

PROJECT MANUAL

**RENOVATIONS AND ADDITIONS TO
BRANDON OAKS FISHWICK & NRC
PHASES 2D & 3**

FOR

**VIRGINIA LUTHERAN HOMES
3887 BRANDON AVENUE S.W.
ROANOKE, VA 24018**

**RLPS, LLP
REGISTERED ARCHITECTS
250 VALLEYBROOK DRIVE
LANCASTER, PENNSYLVANIA 17601**

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28 AUGUST 2020

PROJECT NO. 2019060

VOLUME I

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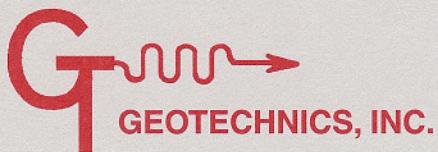
END OF TABLE OF CONTENTS

DOCUMENT 00 31 00 – AVAILABLE PROJECT INFORMATION

The following information is being issued to Bidders for information only, these documents are not a part of the Contract Documents unless incorporated by the Agreement or by the Conditions of the Contract.

1. Report of Geotechnical Study.

END OF DOCUMENT 00 31 00



Telephone (540) 966-4795
Fax (540) 992-4234

686 Lee Highway South
Roanoke, Virginia 24019

SUBSURFACE INVESTIGATION
ADDITION TO BRANDON OAKS
NURSING AND REHAB
3837 BRANDON AVENUE
ROANOKE, VIRGINIA

Geotechnics, Inc.
Commission No. 4450
3 July 2013

SUBSURFACE INVESTIGATION**ADDITION TO BRANDON OAKS****NURSING AND REHAB****3837 BRANDON AVENUE****ROANOKE, VIRGINIA****General -**

Seven (7) test borings were made at the above identified site on the 21st of June and the 2nd and 3rd of July 2013. All test borings were made with a CME-45 trailer-mounted power auger using six (6) inch diameter hollow-stem continuous flight augers. Standard Penetration tests were made at five (5) foot intervals or less, with an automatic SPT Hammer.

The test borings were made at the approximate locations shown on site sketch provided by the Contractor (Lionberger). The elevation of the ground surface at each boring location was interpolated from a Site Plan prepared by the Engineer (Lumsden Associates). See the attached site sketch for the approximate boring locations.

All soil samples were retained by Geotechnics and may be examined at this office, upon request, for a period of sixty (60) days from the date of this report, by the Owner, his Architect or Engineer, Contractors or other authorized persons.

Detailed descriptions of the materials encountered and recorded groundwater measurements are shown on the accompanying logs.

Location -

The existing Brandon Oaks Nursing and Rehab Facility at 3837 Brandon Avenue in Roanoke, Virginia; between Corporate Circle and Stratford Park Drive. The proposed addition is located to the east and south of the southern portion of the existing building.

The proposed building area slopes moderately from north to south with about fifteen (15) feet of topographic relief across the site. Due to the sloping topography, the southern portion of the proposed addition will be founded on a basement.

Geology -

The site is underlain by the Rome Formation of Cambrian age. The Rome Formation is extremely heterogeneous, consisting of alternating beds of vari-colored shales, with some limestone and dolomite. The shales, which predominate the formation, are vari-colored, including maroon, reddish-brown, gray-green, green, dark

gray and tan to yellow. They are fine-grained, close jointed and break with a splintery or hackly fracture. The limestones and dolomites are generally thin to medium bedded, highly fractured (usually calcite healed) and range in color from light gray to dark blue-gray.

Soils -

Soils identified in the test borings include topsoil, asphalt pavement and crushed stone, man-made fill, alluvium, and residuum. A 0.4 foot thickness of topsoil was penetrated at the ground surface in Borings No. 1, 4, 5, 6 and 7. A 0.3 foot thickness of asphalt pavement underlain by a 0.5 foot thickness of crushed stone was penetrated at the ground surface in Borings No. 2 and 3.

Man-made fill was identified beneath the crushed stone in Borings No. 2 and 3 and beneath the topsoil at Boring No. 5, and varied in thickness from about 1.6 feet at Boring No. 5 to roughly 3.2 feet at Boring No. 3. The fill was described as reddish-tan silty clay or tan silty clay with shale fragments.

Alluvium (material transported and deposited by moving water) was identified beneath the topsoil at Borings No. 1, 4, 6 and 7; and beneath the man-made fill at Boring No. 5. Alluvium was largely described as red sandy clayey silt, or tan, gray or reddish-tan silty clay or clayey silt. The alluvium varied in

thickness penetrated from about 6.5 feet at Boring No. 5 to 21.1 feet at Boring No. 4.

Residuum (soil derived from the in-place weathering or decomposition of bedrock) was identified beneath the man-made fill in Borings No. 2 and 3 and beneath the alluvium in Borings No. 1 and 5. The thickness of residuum penetrated varied from 8.0 feet at Boring No. 5 to 22.5 feet at Boring No. 3. Residuum was largely described as tan or gray silty sand with shale fragments; or tan, yellow-tan, reddish-tan and/or orange-tan clayey silt or silty clay.

Foundation Conditions -

Standard Penetration tests on man-made fill indicate the allowable bearing value ranges from about 2,000 PSF to more 4,000 PSF.

The allowable bearing value for alluvium, as indicated by Standard Penetration tests, varies from about 1,500 PSF to more than 6,000 PSF.

Standard Penetration tests on residuum indicate the allowable bearing value ranges from about 1,500 PSF to more than 8,000 PSF. The higher values are believed to be erroneously high due to shale fragments in the materials sampled.

Laboratory Testing -

Two (2) split-spoon samples from borings were also selected for laboratory Soil Classification Testing.

Sample No. 3 from Boring 5 classified as a low plasticity silt (ML), with a Liquid Limit of 43, a Plastic Limit of 38 and a Plasticity Index of 5; with 90.1 % Passing a No. 200 sieve.

Sample No. 1 from Boring 6 classified as an elastic silt (MH), with a Liquid Limit of 51, a Plastic Limit of 38 and a Plasticity Index of 13; with 64.7 % Passing a No. 200 sieve.

Discussion -

The proposed building area slopes moderately from north to south with about fifteen (15) feet of topographic relief across the site. Due to the sloping topography, and the southern portion of the proposed addition will be founded on a basement with the finished floor level at Elevation 1041.1. The northern portion of the addition will be a slab-on-grade structure with the finished floor level at Elevation 1054.1, to match the existing building.

All topsoil and organic material should be stripped or removed from the proposed building area plus about five (5) feet beyond the building perimeter.

In proposed fill areas, the exposed cut surface should be examined by an engineering geologist or soils engineer, scarified

and proof-rolled or recompacted. Any soft spots or other deficiencies should be undercut and replaced with controlled fill.

The on-site cut from the proposed basement area may be utilized for fill or backfill to raise the northern portion (non-basement area) to grade. Some drying may be required to achieve adequate compaction. All fill and backfill placed at the site should be continuously controlled, placed in eight (8) inch loose horizontal lifts and compacted to at least 95% of Standard Proctor.

The proposed building may be founded on individual column and continuous wall footings bearing on the alluvium, residuum or new controlled fill. An allowable bearing value not to exceed 2,000 PSF may be utilized for design.

A cantilever retaining wall will be constructed along the north side of the proposed basement area to accommodate the grade change. Where the proposed basement area extends along the south end of the existing building, the basement footing excavation will be within about seven (7) feet horizontally of the existing building and about fifteen (15) lower in elevation. At Boring No. 3, the existing soils were relatively soft from about four (4) feet to about fifteen (15) feet; and the temporary cut slope should not be steeper than 1:1 (horizontal:vertical). Consequently, the south end of the existing building should be underpinned with helical piers, or otherwise supported.

Alternatively, the addition could be shifted about eight (8) feet further to the south to enable a flatter temporary cut slope.

The materials exposed in the bottom of all footing excavations should be examined by a Geotechnical Engineer, prior to pouring concrete, to assure the adequacy of the founding materials.

All load bearing wall footings should be at least 24 inches wide and should be reinforced with a minimum of one (1) No. 5 rebar per each eight (8) inches of footing width. Perimeter wall footings should bear at least 2.5 feet below the exterior grade for frost protection. Total and differential settlement will not exceed one (1) inch provided the proposed foundation is properly constructed.

The subgrade materials supporting the slabs-on-grade should be proof-rolled or recompactd after the footings have been poured and immediately prior to placing the crushed stone. The concrete floor slab should then be poured as soon as possible after placement of the crushed stone. In the event that the crushed stone is placed well ahead of the slab pour, a dense graded aggregate (such as VDOT No. 21-A) should be utilized in lieu of an open-graded aggregate (such as VDOT No. 57).

A Subgrade Modulus of 125 PCI may be utilized for designing concrete slabs-on-grade, provided the subgrade materials are properly compacted prior to placing the crushed stone.

The geologic mapping and soil test borings indicate Site Classification D should be utilized for Seismic Design.

Soils are frequently classified as having low, moderate or high shrink-swell potential based on a correlation with the Plasticity Index (PI). Soils with a PI between 0 and 15 are considered to have a low shrink-swell potential. Soils with a PI between 15 and 30 are considered to have a moderate shrink-swell potential. Soils with a PI of 30 or more are considered to have a high shrink-swell potential.

Based on the Plasticity Indices of the on-site soils (PI=5 and 13), the soils have a low shrink-swell potential, and no special design provisions are required with respect to shrink-swell soils for the proposed structure.

The following soil parameters may be utilized for designing below grade walls provided positive drainage is provided to prevent development of hydrostatic pressure and the backfill material is properly compacted:

Soil Eq. Active Pressure	50 PCF
Soil Eq. At Rest Pressure	70 PCF
Soil Eq. Passive Pressure	250 PCF
Sliding Friction Factor	0.35
Soil Moist Density	120 PCF

If an open-graded aggregate material, such as VDOT No. 57 crushed stone wrapped in a geo-textile filter fabric is utilized for backfill, the following parameters may be utilized for design provided the select fill material is properly compacted:

Soil Eq. Active Pressure	30 PCF
Soil Eq. At Rest Pressure	45 PCF
Soil Eq. Passive Pressure	500 PCF
Sliding Friction Factor	0.35
Soil Moist Density	125 PCF

Open-graded aggregate should not be utilized for backfill beneath any foundation.

Groundwater was encountered in Boring No. 3 about 21.5 feet below the present grade. Groundwater is not anticipated to be a problem during the building construction, provided the work is not performed during or immediately after a prolonged wet period.

Conclusions and Recommendations -

1. The proposed building area slopes moderately from north to south. The southern portion of the proposed addition will be founded on a basement with the finished floor level at Elevation 1041.1. The northern (non-basement) portion of the addition will be a slab-on-grade structure with the finished floor level at Elevation 1054.1, to match the existing building.
2. All topsoil and organic material should be stripped or removed from the proposed building area plus about five (5) feet beyond the building perimeter.
3. The on-site cut from the proposed basement area may be utilized for fill or backfill to raise the northern portion (non-basement area) to grade. Some drying may

be required to achieve adequate compaction. All fill and backfill placed at the site should be continuously controlled, placed in eight (8) inch loose horizontal lifts and compacted to at least 95% of Standard Proctor.

4. The proposed addition may be founded on individual column and continuous wall footings bearing on the alluvium, residuum or new controlled fill. An allowable bearing value not to exceed 2,000 PSF may be utilized for design.
5. A cantilever retaining wall will be constructed along the north side of the proposed basement area to accommodate the grade change. The temporary cut slope should not be steeper than 1:1 (horizontal:vertical). Consequently, the south end of the existing building should be underpinned or otherwise supported.
6. The materials exposed in the bottom of all footing excavations should be examined by a Geotechnical Engineer, prior to pouring concrete, to assure the adequacy of the founding materials.
7. All load bearing wall footings should be at least 18 inches wide and should be reinforced with a minimum of one (1) No. 5 rebar per each eight (8) inches of footing width. Perimeter wall footings should bear at least 2.5 feet below the exterior grade for frost

protection. Total and differential settlement will not exceed one (1) inch provided the proposed foundation is properly constructed.

8. The geologic mapping and soil test borings indicate Site Classification D should be utilized for Seismic Design.
9. Groundwater was encountered in Boring No. 3 about 21.5 feet below the present grade. Groundwater is not anticipated to be a problem during the building construction, provided the work is not performed during or immediately after a prolonged wet period.
10. Upon completion of the Plans and Specifications, and prior to release for construction, a copy of these documents should be submitted to Geotechnics for our review and comments.

Geotechnics, Inc.
686 Lee Highway
Roanoke, VA 24019



**ADDITION TO BRANDON OAKS
NURSING AND REHAB**

BORING LOG

Comm. No. 4450
Sheet 1 of 1
Boring No. 1
Date 21 JUN 13

Location 3837 BRANDON AVE.

Structure BUILDING

Geologist _____

Contractor Geotechnics, Inc.

Engineer JRC

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data		
Elevation	Depth	Legend		Blows	Penetration		Length of hole 26.5'		
1053	0						Rock ----		
							Wt. of hammer 140#		
							Avg. fall of hammer 30"		
							El of ground water		
							REMARKS		
1052.6	0.4		TOPSOIL ALLUVIUM Tan Clayey SILT	3 5 6	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'		
					1 2 2	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5' Sample Wet	
				Manganese Staining	2 3 3	0.5' 0.5' 0.5'	3	SAMPLE 10.0'-11.5' Sample Wet	
1039.5	13.5			RESIDUUM Tan and Yellow-Tan Clayey SILT with Sand	1 2 3	0.5' 0.5' 0.5'	4	SAMPLE 15.0'-16.5' Sample Wet	
1035.5	17.5				Tan and Gray Silty SAND with Shale Fragments	5 6 6	0.5' 0.5' 0.5'	5	SAMPLE 20.0'-21.5'
							3 4 6	0.5' 0.5' 0.5'	6
1026.5	26.5		BOTTOM OF HOLE Completed: 11:55 AM 21 JUN 13					W.L. @ Completion: Dry	

**ADDITION TO BRANDON OAKS
NURSING AND REHAB**

BORING LOG

Location 3837 BRANDON AVE.

Structure BUILDING

Comm. No. 4450

Sheet 1 of 1

Geologist _____

Boring No. 2

Contractor Geotechnics, Inc.

Engineer JRC

Date 2 JUL 13

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 11.5'
1054	0						Rock ----
1053.7	0.3		ASPHALT PAVEMENT				Wt. of hammer 140#
1053.2	0.8		Crushed Stone				Avg. fall of hammer 30"
			FILL				El of ground water
1051	3.0		Tan Silty CLAY with Shale Fragments	15	0.5'	1	REMARKS
			RESIDUUM				
			Tan Silty SAND with Shale Fragments				
				6	0.5'	2	
				10	0.5'		
1047	7.0		Highly Weathered to Decomposed Tan Shale	10	0.5'		Drilled Very Hard 7'-10' Augers Deflecting
1044	10.0		Tan Silty SAND with Shale Fragments	5	0.5'	3	
1042.5	11.5			6	0.5'		
				5	0.5'		
			AUGERS DEFLECTING BOTTOM OF HOLE Completed: 10:15 AM 2 JUL 13				W.L. @ Completion: Dry

**ADDITION TO BRANDON OAKS
NURSING AND REHAB**

BORING LOG

Comm. No. 4450

Location 3837 BRANDON AVE.

Structure BUILDING

Sheet 1 of 1

Geologist _____

Boring No. 3

Contractor Geotechnics, Inc.

Engineer JRC

Date 3 JUL 13

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 26.5'
1054	0						Rock ----
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water
							REMARKS
1053.7 1053.2	0.3 0.8		ASPHALT PAVEMENT				
			Crushed Stone				
			FILL				
			Reddish-Tan Silty CLAY	3 3 3	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'
1050	4.0		RESIDUUM				
			Orange-Tan and Reddish-Tan Silty CLAY with Sand	1 2 2	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5'
1046	8.0		Reddish-Tan and Orange-Tan Clayey SILT				
				2 3 3	0.5' 0.5' 0.5'	3	SAMPLE 10.0'-11.5'
1038.5	15.5		Tan Silty SAND with Shale Fragments	2 8 9	0.5' 0.5' 0.5'	4	SAMPLE 15.0'-16.5'
1036	18.0		Reddish-Tan and Orange-Tan Clayey SILT				
				2 2 2	0.5' 0.5' 0.5'	5	SAMPLE 20.0'-21.5'
1028 1027.5	26.0 26.5		Tan Silty SAND with Shale Fragments	2 2 14	0.5' 0.5' 0.5'	6	SAMPLE 25.0'-26.5'
			BOTTOM OF HOLE Completed: 10:10 AM 3 JUL 13				W.L. @ Completion: 21.5'

**ADDITION TO BRANDON OAKS
NURSING AND REHAB**

BORING LOG

Comm. No. 4450
Sheet 1 of 1
Boring No. 4
Date 21 JUN 13

Location 3837 BRANDON AVE.

Structure BUILDING

Geologist _____

Contractor Geotechnics, Inc.

Engineer JRC

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 21.5'
							Rock ----
1047	0						Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water
							REMARKS
1046.6	0.4		TOPSOIL ALLUVIUM Red Sandy Clayey SILT	7 9 12	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5'
				3 8 14	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5'
				3 6 10	0.5' 0.5' 0.5'	3	SAMPLE 10.0'-11.5'
1033.5	13.5		Yellow-Tan Clayey SILT with Sand	3 4 4	0.5' 0.5' 0.5'	4	SAMPLE 15.0'-16.5'
				4 6 8	0.5' 0.5' 0.5'	5	SAMPLE 20.0'-21.5'
1025.5	21.5		BOTTOM OF HOLE Completed: 10:25 AM 21 JUN 13				W.L. @ Completion: Dry

**ADDITION TO BRANDON OAKS
NURSING AND REHAB**

BORING LOG

Location 3837 BRANDON AVE.

Structure BUILDING

Comm. No. 4450

Sheet 1 of 1

Geologist _____

Boring No. 5

Contractor Geotechnics, Inc.

Engineer JRC

Date 21 JUN 13

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 16.5'
1049	0						Rock ----
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water
							REMARKS
1048.6	0.4		TOPSOIL				
			FILL				
1047	2.0		Reddish-Tan Silty CLAY				
			ALLUVIUM				
			Tan Sandy SILT	3	0.5'	1	SAMPLE 2.0'-3.5'
				5	0.5'		
				9	0.5'		
1045	4.0		Orange-Tan Silty CLAY				
				2	0.5'	2	SAMPLE 5.0'-6.5'
				4	0.5'		
				6	0.5'		
1040.5	8.5		RESIDUUM				
			Orange-Tan SILT				
				3	0.5'	3	SAMPLE 10.0'-11.5'
				5	0.5'		LL=43, PL=38, PI=5 (ML)
				8	0.5'		90.1% PASSING No. 200,
1036.5	12.5		Highly Weathered to Decomposed Tan and Gray Shale				
				10	0.5'	4	SAMPLE 15.0'-16.5'
				21	0.5'		
				25	0.5'		
1032.5	16.5		BOTTOM OF HOLE Completed: 9:20 AM 21 JUN 13				W.L. @ Completion: Dry

**ADDITION TO BRANDON OAKS
NURSING AND REHAB**

BORING LOG

Comm. No. 4450
Sheet 1 of 1
Boring No. 6
Date 21 JUN 13

Location 3837 BRANDON AVE.

Structure BUILDING

Geologist _____

Contractor Geotechnics, Inc.

Engineer JRC

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 16.5'
							Rock ----
1042	0						Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water
							REMARKS
1041.6	0.4		TOPSOIL ALLUVIUM Red Sandy Clayey SILT	3 4 10	0.5' 0.5' 0.5'	1	SAMPLE 2.0'-3.5' LL=51, PL=38, PI=13 (MH) 64.7% PASSING No. 200
				3 6 10	0.5' 0.5' 0.5'	2	SAMPLE 5.0'-6.5'
1033.5	8.5		Tan, Gray and Reddish-Tan Silty CLAY with Sand	2 6 9	0.5' 0.5' 0.5'	3	SAMPLE 10.0'-11.5'
				3 6 8	0.5' 0.5' 0.5'	4	SAMPLE 15.0'-16.5'
1025.5	16.5		BOTTOM OF HOLE Completed: 9:50 AM 21 JUN 13				W.L. @ Completion: Dry

DOCUMENT 00 41 00 - BID FORM

_____, 2020

BID TO: Virginia Lutheran Homes
3837 Brandon Avenue S.W.
Roanoke, VA 24018

BID FROM: _____

GENTLEMEN:

This Bid Form is submitted in accordance with the Instructions to Bidders, to Bid on the Renovations & Additions to Brandon Oaks Fishwick & NRC Phase 2A, 2B, 2C at 3804 Brandon Avenue S.W., Roanoke, VA 24018.

Having carefully examined the Contract Documents, comprising the Plans, Specifications and all Documents bound therewith, together with all Addenda and Bulletins thereto all as prepared by RLPS, LLP, Lancaster, Pennsylvania, and being familiar with the various conditions affecting the work, the undersigned herein agrees to furnish all material, perform all labor and do all else necessary to complete the Contract Work, in accordance with said Contract Documents.

In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

1. This Bid will remain subject to acceptance for sixty (60) after the day of Bid opening;
2. The Owner shall have the right to waive, or not to waive, irregularities in bids; to reject any and all bids; to consider any factors which it, in its sole discretion, determines to be appropriate; and to award the contract to a bidder who is not the lowest bidder. No bidder shall have any claim of any kind or nature whatsoever against Owner unless and until Owner shall have awarded the contract to such bidder, the contract has been fully executed by all parties, and the bidder shall have fulfilled all requirements of the contract precedent to the commencement of the Work, including claims arising from any action of Owner to (i) waive any irregularity in any bid, (ii) decline to waive any irregularity in any bid, (iii) reject any bid or bidder, (iv) award the contract to a party who is not the lowest bidder, or (v) take, or fail to take, any other action with respect to any bid or bidder, including any act or omission asserted to be unreasonable, arbitrary, or capricious.;
3. Bidder will sign and submit the Agreement with the Bonds and other documents within 10 days after the date of Owner's Notice of Award;
4. Bidder has examined copies of all of the Bidding Documents;
5. Bidder has visited the site and become familiar with the general, local, and site conditions;

6. Bidder is familiar with federal, state and local laws and regulations;
7. Bidder has correlated the information known to the Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
8. This Bid is genuine and not made in the interest of or on behalf of an undisclosed person, firm, organization or corporation and is not submitted in conformity with an agreement or rules of a group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited another Bidder to submit a false Bid; Bidder has not solicited or induced a person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself an advantage over another Bidder or over the Owner.
9. The Bidder hereby acknowledges receipt of the following Addenda and has prepared this Proposal accordingly:

Addendum No. _____	Date Received _____
Addendum No. _____	Date Received _____
Addendum No. _____	Date Received _____
Addendum No. _____	Date Received _____
Addendum No. _____	Date Received _____
Addendum No. _____	Date Received _____

BID SUM: Stipulated Sum

A. For the General Building Construction of the Renovations & Additions to Brandon Oaks Fishwick & NRC Phase 1A and Phase 1B, including Site Construction and all other work necessary to complete Work, the Lump Sum Price will be:

_____ Dollars

(\$ _____)

CONSTRUCTION COMPLETION TIME

Number of Calendar Days from Notice to Proceed to substantially complete the Work and have the Project ready for final payment in accordance with the General Conditions.

_____ Days.

UNIT PRICES: Refer to Division 01 Section "Unit Prices" for complete description of unit prices.

- A. Unit Price No. 1: Hospital grade, tamper resistant, duplex receptacle per assembly. \$ _____
- B. Unit Price No. 2: Additional exit signs per assembly. \$ _____
- C. Unit Price No. 3: Additional smoke detectors per assembly. \$ _____
- D. Unit Price No. 4: Additional fire alarm horn/strobe devices per assembly \$ _____
- E. Unit Price No. 5: Additional telecommunications outlets per assembly. \$ _____

ALTERNATES: I agree to modify the base bid by either additive or deductive alternates, if any, as are accepted by the Owner for the sum or sums of money as indicated below. Refer to Division 01 Section "Alternates" for complete description of alternates.

Note: Circle the term "ADD", or "DEDUCT" as is appropriate for each alternate.

Alternate No. 1: Provide Armstrong International DMC25 Flex domestic hot water mixing valve assembly in lieu of the Lawler 802 primary, thermostatic, water mixing valve. Plumbing contractor shall coordinate change in piping requirements and include in alternate cost.

(ADD) (DEDUCT) _____ Dollars
(\$ _____)

Alternate No. 2: Provide Armstrong International DRV25 digital recirculation valve in lieu of the Lawler 802 primary, thermostatic, water mixing valve. Plumbing contractor shall coordinate change in piping requirements and include in alternate cost.

(ADD) (DEDUCT) _____ Dollars
(\$ _____)

Alternate No. 3: Provide swinging wood doors and hardware in lieu of operable penal walls.

(ADD) (DEDUCT) _____ Dollars
(\$ _____)

Alternate No. 4: Delete all work associated with Unit Type 8 shall not be included in the Contractor's Scope of Work and shall be performed by Owner.

(DEDUCT) _____ Dollars
(\$ _____)

Alternate No. 5: All existing toilets, sinks, and grab bars in existing resident room bathrooms shall remain in lieu of replacing with new fixtures.

(DEDUCT) _____ Dollars

(\$ _____)

Alternate No. 6: All existing toilets, sinks, grab bars, and existing VCT flooring in existing resident room bathrooms shall remain in lieu of replacing with new fixtures and new ceramic tile flooring.

(DEDUCT) _____ Dollars

(\$ _____)

Alternate No. 7: All existing door hardware on existing doors (E) D and (E) F shall remain in lieu of being replaced with new door hardware.

(DEDUCT) _____ Dollars

(\$ _____)

SIGNED:

_____ a corporation under the laws of

_____ a partnership consisting of

_____ an individual trading as

OFFICIAL ADDRESS:
(Required of all Bidders)

above)

Date Signed _____

Attest:

Dated _____

By: _____

Title: _____

(Strike out inapplicable words in the

DOCUMENT 00 61 13 - PERFORMANCE AND PAYMENT BONDS

The following AIA A312 Performance Bond and Payment Bond forms are for use on this project.



AIA[®] Document A312[™] – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT

Date:
Amount: \$
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: \$
Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL	SURETY
Company: <i>(Corporate Seal)</i>	Company: <i>(Corporate Seal)</i>
Signature: _____	Signature: _____
Name and _____	Name and _____
Title: _____	Title: _____

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____
Signature: _____
(Corporate Seal)

SURETY

Company: _____
Signature: _____
(Corporate Seal)

Name and Title: _____
Address: _____

Name and Title: _____
Address: _____

AIA[®] Document A312[™] – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT

Date:
Amount: \$
Description:
(Name and location)

BOND

Date:
(Not earlier than Construction Contract Date)

Amount: \$
Modifications to this Bond: None See Section 18

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*
Signature: _____

SURETY

Company: *(Corporate Seal)*
Signature: _____

Name and Title: _____ Name and Title: _____
(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____ (Corporate Seal)
Signature: _____

SURETY

Company: _____ (Corporate Seal)
Signature: _____

Name and Title: _____
Address: _____

Name and Title: _____
Address: _____

DOCUMENT 00 72 00 - GENERAL CONDITIONS

The following Document is the AIA Document A201 – 2007, General Conditions of the Contract for Construction.

AIA[®] Document A201[™] – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

TABLE OF ARTICLES

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ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503[™], Guide for Supplementary Conditions.

Init.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™-2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely

upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during

that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;

- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

DOCUMENT 00 73 00 - SUPPLEMENTARY CONDITIONS

1. The following Supplementary Conditions shall apply to that certain Standard Form of Agreement Between Owner and Contractor (the "Agreement") dated _____, 20____, between _____, as Owner, and _____ as Contractor, concerning construction of a Project located at _____ in which RLPS, LLP is the Architect.
2. For purposes of these Supplementary Conditions, capitalized terms shall have the meaning given to them in the Contract Documents (as such term is defined in Article 1 of the Agreement), unless otherwise defined in these Supplementary Conditions.
3. The following paragraphs supplement, modify, or amend that certain Contract Document entitled "General Conditions of the Contract for Construction," AIA Document A201, Sixteenth Edition, 2017, Articles 1 through 15 inclusive (the "General Conditions"). Where only a portion of any provision of the General Conditions is supplemented, modified, or amended, the remaining portions of that provision shall remain unaltered and in effect. In the event of any inconsistency between the General Conditions and these Supplementary Conditions, the terms of these Supplementary Conditions shall apply. Hereinafter, all references to the General Conditions shall mean the General Conditions as amended by these Supplementary Conditions.
 - A. PARAGRAPH 1.1.1 "The Contract Documents" is hereby modified by deleting the last sentence, beginning with "Unless specifically....", in its entirety and adding the following new sentence:

The Contract Documents shall also include the Bidding Requirements such as the Invitation to Bid, Instructions to Bidders, Contractor's Bid Forms and portions of Addenda relating to bidding requirements and shall be enumerated on the Agreement.
 - B. PARAGRAPH 1.2 "Correlation and Intent of the Contract Documents" is hereby supplemented by the addition of the following sub-paragraph:

1.2.1.2 In the case of overlapping or conflicting requirements, the most stringent (generally most costly) applies and will be enforced, unless more detailed language written directly into Contract Documents clearly indicates that a less stringent requirement is acceptable. Refer uncertainties to Architect for decision before proceeding.
 - C. PARAGRAPH 1.2.4 "Correlation and Intent of the Contract Documents" is hereby supplemented by the addition of the following sub-paragraph:

1.2.4 Where no explicit quality or standards for materials or workmanship are established for Work, such Work is to be of good quality for the intended use and consistent with quality of the surrounding Work and of the construction of the Project generally.
 - D. PARAGRAPH 1.2.5 "Correlation and Intent of the Contract Documents" is hereby supplemented by the addition of the following sub-paragraph:

1.2.5 All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

- E. PARAGRAPH 1.2.6 "Correlation and Intent of the Contract Documents" is hereby supplemented by the addition of the following sub-paragraph:

1.2.6 The Mechanical, Electrical and Fire Protection Drawings are diagrammatic only, and are not intended to show the alignment, physical locations or configurations of such Work. Such Work shall be installed without additional cost to the Owner to clear all obstructions, permit proper clearances for the Work of other trades, and present an orderly appearance where exposed. Prior to beginning such Work, the Contractor shall prepare coordination drawings showing exact alignment, physical location and configuration of the Mechanical, Electrical and Fire Protection installations and demonstrating to the Contractor's satisfaction that the installations will comply with the preceding sentence.

- F. PARAGRAPH 3.3 "SUPERVISION AND CONSTRUCTION PROCEDURES" is hereby supplemented by the addition of the following sub-paragraphs:

3.3.4. The Contractor shall carefully check its own work and that of Subcontractors as the Work is being performed. The Contractor shall ensure that incorrect or faulty Work is corrected immediately.

3.3.5. During the finishing stages of the project, the Contractor shall make frequent inspections of the Work in the presence of the Architect, and the applicable Subcontractor(s) involved, if any, and the Architect shall identify incorrect and faulty Work. The Contractor shall ensure that incorrect or faulty Work is corrected immediately.

- G. PARAGRAPH 3.4 "LABOR AND MATERIALS" is hereby supplemented by addition of the following Sub-paragraphs:

3.4.4 Should the Owner make reasonable objection, based upon qualifications, fitness, behavior or temperament, to the presence of any personnel of Contractor or any subcontractor, such person shall not perform services on the Project site, or otherwise in connection with the Project, without written consent of the Owner.

3.4.5 The Contractor shall not change or replace the assigned Project Manager or Superintendent without written consent by the Owner.

- H. PARAGRAPH 3.5 "WARRANTY" is hereby supplemented by the addition of the following sub-paragraphs:

3.5.3 In the event of a claim by the Owner against the Contractor under Paragraph 3.5.1. of these General Conditions or under any other express warranty made by the Contractor for any item of Work performed under the Contract Documents, the Owner shall give notice (a "Warranty Notice") of the claim to the Architect and the Contractor and thereafter, the Architect and the Contractor shall inspect the item(s) of Work in question. If following its inspection the Architect determines that any such item is included within the Contractor's warranty under the Contract Documents, then the following procedures shall apply.

- a. For any individual item that the Architect determines will cost \$1,000.00 or less to cure:

(1) the Architect's determination shall be deemed conclusive in the absence of bad faith, the burden of proof of which shall be on the Contractor;

- (2) the Contractor shall have thirty (30) days from the date of the Warranty Notice to cure the item or if the item is incapable of a complete cure within thirty (30) days (a "Longer Cure Item") then the Contractor shall begin to cure the item within such thirty (30) days and shall thereafter diligently proceed to promptly complete the cure; and
 - (3) if the Contractor fails to comply with clause (2) immediately above, then the Owner shall have the right to engage a third party Contractor of the Owner's sole selection to cure or complete the cure of the warranty item at the Contractor's expense.
 - b. For any individual item that the Architect determines will cost more than \$1,000.00 to cure:
 - (1) the Contractor shall have thirty (30) days, notwithstanding any other time period specified in the Contract Documents, to either (a) complete the cure for the item or, for a Longer Cure Item, commence the cure and thereafter diligently proceed to complete the cure, or (b) if the Contractor disputes the warranty coverage of the item, commence the dispute resolution procedures described in Section 15.1 of the General Conditions.
 - (2) if upon the expiration of the thirty (30) day period the Contractor has failed to satisfy the provisions of either clause (1) (a) or clause (1) (b) immediately above, then the Owner shall have the right to engage a third party Contractor of the Owner's sole selection to cure or complete the cure of the warranty item at the Contractor's expense.
 - c. If the Contractor fails to cure an item within the required time and if, in the case of an item determined by the Architect to cost more than \$1,000 to cure, the item is finally determined by arbitration or, when permitted, judicial proceedings to be covered by any Contractor's warranty under the Contract Documents, then the Contractor shall be liable for all expenses incurred by the Owner in enforcing its warranty claim including legal and Architectural fees and expenses, an administrative charge of fifteen percent (15%) of the cost to cure the warranty item to cover the Owner's administrative costs to enforce the warranty claim, and, when a third party Contractor has been engaged by the Owner under this Paragraph 3.5.3, the costs and expenses of the third party Contractor.
- I. PARAGRAPH 3.6 "TAXES" is hereby supplemented by the addition of the following subparagraph:
 - 3.6.2 The Contractor shall check all materials, equipment and labor entering into the Work and shall keep such full and detailed accounts as may be necessary for proper financial management under this Contract, and the system shall be satisfactory to Owner. Such accounts shall be sufficient to support a request for refund of sales and use tax. The Owner or its representative shall be afforded access to all of the Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to this Contract, and the Contractor shall preserve all such records for a period of three years, or for such longer period as may be required by law, after the final payment.

3.6.3 The Contractor agrees to assign and transfer to the Owner all of its rights to sales and use tax which may be refunded as a result of a claim for refund for materials purchased in connection with this Contract. The Contractor further agrees that it will not file a claim for refund for any sales or use tax which is the subject of this Assignment. The Contractor shall cooperate with and assist the Owner in obtaining any refund of sales and use tax for the Owner's benefit.

3.6.4 The Contractor agrees to include the language of Paragraphs 3.6.2 and 3.6.3 (with the word Contractor changed to "Subcontractor") in any contract with Subcontractors.

- J. ARTICLE 3.16 "ACCESS TO WORK" is hereby supplemented by addition of the following Subparagraph:

"3.16.2 Representatives of the State Agencies shall have access at all reasonable times to the Work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection."

- K. PARAGRAPH 4.2.4 "COMMUNICATIONS" is hereby supplemented by the additions of the following subparagraphs:

4.2.4.1 The following definitions shall apply to construction communications:

4.2.4.1.1 Contract Document Clarifications: An answer from the Architect, in response to an inquiry from the Contractor, intended to make some requirement(s) of the Drawings or plans clearly understood. Drawing/plan clarifications may be sketches, drawings, or in a narrative form and will not change any requirements of the Contract Documents. Responses to Contractor inquiries shall be as outlined in the Article "Requests For Information" of these General Conditions.

4.2.4.1.2 Non-Conformance Notice: A Notice issued by the Architect documenting that the Work or some portion thereof has not been performed in accordance with the requirements of the Contract Documents. Payment shall not be made on any portion of the Work for which a Non-Conformance Notice has been issued and the Work not corrected to the satisfaction of the Architect.

Upon receipt of a Non-Conformance Notice the Contractor shall provide a written Response to the Non-Conformance Notice within five (5) working days after receipt of the Notice. The Contractor's response shall state either (a) the basis of contractor's determination that the Work was performed in accordance with the Contract Documents or (b) the corrective action contractor intends to take, at its sole expense, to correct the non-conforming work.

If the Contractor disputes issuance of the Notice the Architect has five (5) working days in which to respond by either (a) withdrawing the Notice of Non-Conformance or (b) directing the Contractor to correct the Work. Such determination by the Architect shall be final and conclusive of the matter.

If directed to correct the Work, the Contractor shall do so within five (5) working days after receipt of such direction from the Architect, or such other time as may be agreed to with the Architect.

4.2.4.1.3 Requests for Information: A written request from the Contractor or one of its subcontractors, to the Architect, seeking an interpretation or a clarification of some

requirement of the Contract Documents. The Contractor shall clearly and concisely set forth the issue for which it seeks clarification or interpretation and why a response is needed from the Architect. The Contractor shall, in the written request, set forth its interpretation or understanding of the Contract's requirements along with reasons why it has reached such an understanding. Responses from the Architect will not change any requirements of the Contract Documents. Responses to Contractor inquiries shall be as outlined in the Article "Requests For Information" of these General Conditions.

4.2.4.1.4 Substitution/Or-Equal Submittals: A written request from the Contractor to substitute a material, article, device, product, fixture, form, type of construction, or process called for in the Contract Documents with another item that shall substantially equal in all respects to that so indicated or supplied. Each such request shall specifically set forth any manner in which the proposed change does not conform to the Contract Documents and Contractor (and any subcontractor initiating the request) warrants that the proposed substitute conforms in all respects with the contract documents except as specifically identified as non-conforming in the request.

4.2.4.1.5 Submittals/Shop Drawings: When required by any technical specification included in these Contract Documents, the Contractor shall transmit to the Architect technical submittals, shop drawings, or samples, including supporting catalog cuts, manufacturer's literature, sketches or drawings, calculations, and other pertinent, in sufficient detail to enable the Architect to review the information and determine that the Contractor clearly understands the requirements of the Contract Documents. Contractor (and any subcontractor initiating a submittal) warrants that all Work and materials depicted in technical submittals, shop drawings and samples shall conform in all respects to the requirements of the Contract. Documents except as otherwise specifically identified as non-conforming.

4.2.4.1.6 Schedule Submittals: When required by the Construction Schedule Specification of these Contract Documents, the Contractor shall submit required schedules, schedule updates, schedule revisions, time impact analysis, etc. for review and acceptance.

- L. PARAGRAPH 7.3 "CONSTRUCTION CHANGE DIRECTIVES", is hereby modified as follows:

7.3.3.3 The following fees apply to Changes to the Work;

7.3.3.3.1 10 percent overhead and profit shall be applied to the net cost of Work performed by the General Contractor's own forces.

7.3.3.3.2 5 percent markup shall be applied by the General Contractor on the net cost of work performed by any subcontractor.

7.3.3.3.3 10 percent overhead and profit to the subcontractor on the net cost of the subcontractor's own work.

- M. PARAGRAPH 9.4 "CERTIFICATES FOR PAYMENT" is hereby supplemented by the addition of the following to Subparagraph 9.4.1:

"Not more than once each month, payments shall be made by the Owner as follows:

The Contractor shall be paid 90% of the earned sum when payment is due, 10% being retained to assure faithful performance of the Contract until the work is 50% complete. At

the time the work is 50% complete, and thereafter, the Contractor shall be paid 100% of the earned sum relating to work in excess of 50% completion provided that the Architect determines that satisfactory progress is being made in the work. When Substantial Completion is achieved, retainage shall be reduced as specified in Section 13.6. Owner will consider releasing retainage for trades that complete their work early in the construction process if work performed is completed in accordance with Contract Documents and accepted by the Owner.

Final payment shall be due the Contractor within thirty days after completion and acceptance by Architect of all work included in the Contract, including all punch list items, and fulfillment by Contractor of all requirements of the Contract Documents for final acceptance.

The date of substantial completion shall be determined by certification."

- N. PARAGRAPH 9.5 "DECISIONS TO WITHHOLD CERTIFICATION" is hereby supplemented by the addition of the following subparagraph:

"9.5.5 If the Architect withholds certification of an Application for Payment in whole or in part, the Contractor may assert a claim for any amount in dispute. The Contractor may not stop or delay work or terminate the Contract because the Architect withholds certification for an Application for Payment in whole or in part."

- O. SUBPARAGRAPH 9.6.2 "PROGRESS PAYMENTS" is hereby supplemented by addition of the following paragraphs:

The Contractor shall pay their Subcontractors 90% of their earned sums when payments are due, 10% being retained to assure faithful performance of their Contracts, until the work is 50% complete. At the time the work is 50% complete and thereafter, the Subcontractors shall be paid 100% of the earned sum relating to work in excess of 50% completion provided the Architect determines that satisfactory progress is being made in the work of the Subcontractors.

Final payment shall be made by the Contractor to each Subcontractor 30 days after receipt of payment from the Owner on account of 100% completion of such Subcontractor's Contract."

- P. PARAGRAPH 9.8.1. of the General Conditions is hereby deleted in its entirety and the following is substituted in lieu thereof:

9.8.1 "Substantial Completion" of the Project shall be deemed to occur when the Architect determines that the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use and, in addition, all requirements of the Contract Documents for Substantial Completion, including the following conditions, have been fulfilled as follows:

- a. the Contractor has delivered an accurate and complete set of as-built drawings, record specifications, record product data, record samples and maintenance manuals, of the Project to the Architect;
- b. the Contractor has delivered to the Architect all written warranties and related documents required by the Contract Documents; and

- c. the cost to complete all Punch List items (the term "Punch List" being defined in Paragraph 9.8.2.1. of the General Conditions), as reasonably determined by the Architect, is one-half percent ($\frac{1}{2}\%$) or less of either the Contract Sum or the Guaranteed Maximum Cost (as the applicable term is defined in the Agreement) to complete the Project, as applicable. The requirement described in this subparagraph c. is called the "Half Percent Requirement."

- Q. PARAGRAPH 9.8.2. of the General Conditions is hereby deleted in its entirety and the following Paragraphs 9.8.2.1. through 9.8.2.6. are substituted in lieu thereof:

9.8.2.1. When the Contractor considers that the Work, or portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Following receipt of the Contractor's list, the Architect will make an inspection (the "Initial Punch List Inspection") to determine whether the Work or designated portion thereof is Substantially Complete. Upon completion of its Initial Punch List Inspection, the Architect shall prepare and submit to the Contractor and the Owner the Architect's list (the "Punch List") of items to be completed or corrected. For each item on the Punch List, the Architect shall specify:

- a. a date (a "Punch Item Date") by which such item shall be completed, which Punch Item Date shall be no more than forty-five (45) days from the date of the Punch List unless the Architect determines that reasonable cause exists for a later completion date; and
- b. the cost to complete or correct the item as reasonably determined by the Architect.

The Architect shall expressly state on the Punch List what the Contractor must do to achieve Substantial Completion under Paragraph 9.8.1 of the General Conditions and whether or not the Half Percent Requirement of Paragraph 9.8.1(c) has been met. If as a result of the Initial Punch List Inspection the Architect determines that Substantial Completion has occurred, the Architect shall prepare a Certificate of Substantial Completion pursuant to Paragraph 9.8.2.5 below.

9.8.2.2 If the Contractor has not given notice that the Work is substantially complete and requested inspection thereof on or before the date for Substantial Completion set by the parties in the Contract Documents, then the Owner may request the Architect to make an Initial Punch List Inspection of the Work to (x) prepare the Punch List pursuant to the provisions of Paragraph 9.8.2.1. above and (y) determine if Substantial Completion has occurred. If such inspection discloses that the Work is not substantially complete, the fees and expenses of the Architect shall be borne by the Contractor as provided in Paragraph 9.8.2.6.

9.8.2.3. Upon the request of the Contractor prior to the expiration of the relevant Punch Item Date(s) and for good cause shown, the Architect may extend any Punch Item Date(s) for a reasonable period. Following receipt of the Punch List and the Contractor's compliance with the requirements of Paragraph 9.8.1. above, the Contractor may submit a request for another inspection by the Architect, if necessary, to determine whether Substantial Completion of the Work has been achieved.

9.8.2.4. If the Contractor fails to satisfactorily complete any item(s) on the Punch List by the applicable Punch Item Date(s), then the Owner shall have the right in its sole discretion to have a third party or parties selected by the Owner perform the work necessary to complete such Punch List item(s). The Owner may, but shall not be required to notify the Contractor of the Owner's engagement of the third party to complete any Punch List item. The Owner may use or retain any part of the retainage held by the Owner under the Contract Documents to the extent required for the payment of:

- a. the fees and costs of the third party contractor(s);
- b. any Architect's fees and disbursements caused by or resulting from engagement of the third party contractor(s); and
- c. a reasonable charge for the Owner's administrative costs not to exceed fifteen percent (15%) of the third party contractor(s) fees and costs.

Upon any third party's commencement of its work upon the Contractor's receipt of notice that a third party has been engaged by Owner., the Contractor shall forfeit its right to complete the Punch List item(s) being performed by the third party Contractor. All actions and determinations by the Owner under this Paragraph 9.8.2.4. shall be deemed conclusive in the absence of proof of bad faith by the Owner, the burden of proof of which shall be on the Contractor. Performance of any Work by any third party Contractor shall not affect any warranty given by the Contractor to the Owner under the Contract Documents and the Work performed and the materials and equipment furnished by any third party Contractor shall be deemed included within the Contractor's warranty.

9.8.2.5. When the requirements of Paragraph 9.8.1. above have been met and upon the request of either the Owner or the Contractor, the Architect shall prepare a Certificate of Substantial Completion, in the form set out in Paragraph 9.8.3 below, which shall establish the date of Substantial Completion and shall establish responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise specifically stated in the Contract Documents or in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of responsibilities assigned to them in such certificate.

9.8.2.6 Notwithstanding any other provision to the contrary in the Contract Documents, the Contractor shall be liable for the Architect's fees and expenses related to all inspections of the Project by the Architect which take place after any one of the following events has occurred:

- a. the Half Percent Requirement is not met at the time of the Initial Punch List Inspection by the Architect; or
- b. the Contractor has not satisfactorily completed any item on the Punch List by the Punch List Date applicable to that item; or
- c. the Contractor has not achieved substantial Completion by the date for Substantial Completion set by the parties in the Contract Documents; or

- d. following the Initial Punch List Inspection the Contractor gives notice that any items on the Punch List have been corrected and the Architect determines upon inspection that any such items are not satisfactorily complete.

Upon application by the Architect, the Owner may use any part of the retainage held by the Owner under the Contract Documents to the extent required for the payment of any Architect's fees and expenses for inspections for which the Contractor is liable under this Paragraph 9.8.2.6.

- R. PARAGRAPH 9.8.3. of the General Conditions is hereby deleted in its entirety and the following is substituted in lieu thereof:

9.8.3. Forms of Certificate of Substantial Completion shall be addressed to the Owner and the Contractor and shall be in the form set out below.

CERTIFICATE OF SUBSTANTIAL COMPLETION

RLPS, LLP
LANCASTER, PENNSYLVANIA

(Date)

Project No.:

Project:

Project or Designated Portion Shall Include:

To Whom It May Concern:

1. This certificate is issued in connection with a certain document titled "Standard Form of Agreement Between Owner and Contractor" dated _____, between _____, as Owner, and _____, as Contractor, as supplemented by the "General Conditions of the Contract for Construction," and as further amended and supplemented by the "Supplementary Conditions" (all of the foregoing, collectively, the "Contract Documents").

2. Capitalized terms used in this Certificate shall have the meaning assigned to them in the Contract Documents unless otherwise defined herein.

3. The Work which has been performed to date under the Contract Documents has been found to be Substantially Complete.

4. The cost to complete the Punch List prepared by the undersigned Architect totals \$_____, which is one-half percent or less of the Contract Sum/Guaranteed Maximum Price of the Project.

5. The undersigned Architect has/has not received from the Contractor all written warranties and related documents required by the Contract Documents.

6. The undersigned Architect has/has not received from the Contractor an accurate and complete set of as-built drawings of the Project.

7. The date of Substantial Completion is _____, 20____.

8. Owner shall assume full possession of the Project at ___(time)___ on ___(date)_____. The responsibility of the Contractor to provide heat, utilities, and insurance under the terms of the Contract Documents shall cease at that time.

ARCHITECT

By: _____
(name/title)

Agreed and accepted:

CONTRACTOR:

By: _____
(name/title)

OWNER:

By: _____
(name/title)

S. PARAGRAPH 11.1 "CONTRACTOR'S INSURANCE AND BONDS" In the first line of Subparagraph 11.1.1, following the word "insurance," insert the following:

"in a Company acceptable to the Owner and."

T. PARAGRAPH 11.1 "CONTRACTOR'S INSURANCE AND BONDS" Add the following to subparagraph 11.1.1:

"Certificates called for herein shall be furnished in duplicate and shall specifically set forth evidence of all coverages required and the Contractor shall furnish to the Architect copies of all endorsements that are subsequently issued amending coverage or limits."

U. PARAGRAPH 13.4 "TESTS AND INSPECTIONS" is hereby supplemented by the addition of the following subparagraph:

"13.4.7 When work has been installed contrary to any Contract requirements and the Contractor requests the privilege of testing in lieu of removal, such testing shall be at the Contractor's expense."

V. The following PARAGRAPH 13.6 is hereby added to the ARTICLE 13 of the General Conditions:

"13.6 RETAINAGE - Notwithstanding any other provision in the Contract Documents to the contrary, upon Substantial Completion of the Work the Owner shall be entitled to retain from the Contract Sum due to the Contractor, as applicable, an amount equal to the

greater of: (a) the product obtained by multiplying four (4) times the total cost of completion of the Punch List items as estimated by the Architect; or (b) (\$5,000.00 where the Contract Sum is \$500,000.00 or less, and \$15,000.00 when the Contract Sum exceeds \$500,000.00.)”

- W. PARAGRAPH 15.1.6.2 of the General Conditions is hereby deleted in its entirety and the following is substituted in lieu thereof:

“For purposes of this contract a total of five (5) calendar days per calendar month (non-cumulative) shall be anticipated as "adverse weather" at the job site, and such time will not be considered justification for an extension of time. If in any month, adverse weather develops beyond five (5) days, the Contractor shall be allowed to claim additional days to compensate for the excess weather delays only to the extent that the construction schedule's critical path has been impacted on the approved construction schedule. The remedy for this condition is for an extension of time only, not money.”

- X. PARAGRAPH 15 “CLAIMS AND DISPUTES” is hereby supplemented by the addition of the following subparagraph:

15.1.8 (“Claims for Economic Loss”) “The Contractor shall have no claim against or any right of recovery of damages from the Owner or the Architect for economic loss sustained, in whole or in part, by any act or omission of the Architect unless and only to the extent that such act or omission constitutes a breach of contract by Owner. Any such claim by the Contractor shall be asserted and determined only as a Claim, as defined in Subparagraph 15.1.1. Specifically, and without limiting the generality of the foregoing, the Contractor shall have no claim against the Owner or the Architect for economic loss based upon negligence, negligent misrepresentation or any other tort-based theory of liability.”

- Y. Add the following new Article:

ARTICLE 16: REQUESTS FOR INFORMATION

16.1.1 In the event that the Contractor or its subcontractor, at any tier, determines that some portion of the Drawings, Specifications, or other Contract Documents requires clarification or interpretation by the Architect, the Contractor shall submit a Request for Information in writing to the Architect. Requests for Information may only be submitted by the Contractor and shall be submitted on the Request for Information Forms provided by the Architect or a Request for Information Form approved by the Owner and Architect. The Contractor shall clearly and concisely set forth the issue for which clarification and interpretation is sought and why a response is needed from the Architect. In the Request for Information, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

16.1.2 The Owner acknowledges that this is a complex project. Based upon the Owner's past experience with projects of similar complexity, the Owner anticipates that there will probably be some Requests for Information on this Project.

16.1.3 The Architect will review all Requests for Information to determine whether they are Requests for Information within the meaning of this term. If the Architect determines that the document is not a Request for Information, it will be returned to the Contractor, unreviewed as to content, for resubmittal on the proper form and in the proper manner.

- 16.1.4 Responses from the Architect will not change any requirement of the Contract Documents. In the event the Contractor believes that a response to a Request for Information will cause a change to the requirements of the Contract Document, the Contractor shall immediately give written notice to the Architect stating that the Contractor considers the response to be a Change Order. Failure to give such written notice immediately shall waive the Contractor's right to seek additional time or cost under the Changes article of these General Conditions.

END OF SUPPLEMENTARY CONDITIONS

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Work by Owner.
5. Use of premises.
6. Owner's occupancy requirements.
7. Work restrictions.
8. Badges and background checks.
9. Preferred Subcontractors.
10. Specification formats and conventions.

- B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Renovations and Additions to Brandon Oaks Fishwick & NRC

1. Project Location: 3804 Brandon Avenue S.W., Roanoke, VA 24018.

- B. Owner: Virginia Lutheran Homes, 3837 Brandon Avenue S.W., Roanoke, VA 24018.

- C. Architect: RLPS, LLP, 250 Valleybrook Drive, Lancaster, Pennsylvania 17601.

- D. The Owner's Civil Engineering Consultant, Lumsden Associates, P.C., 4664 Brambleton Ave. #A, Roanoke, VA 24018, prepared Civil Drawings and Specifications. Lumsden Associates, P.C., is responsible for all questions and coordination issues during the Bidding and Construction phase of this project as related to the Civil Drawings. Owner Consultant information is included in the Project Manual and Drawings for convenience purposes only and is not work of RLPS. The Architect is not responsible for any of the work provided or coordination of items provided by the Owner's Consultants.

1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.

1.5 PHASED CONSTRUCTION

- A. The Work shall be conducted in multiple phases, with each phase substantially complete before the next phase begins.

1.6 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Concurrent Work: Owner will perform the following construction operations at Project site. Those operations will be conducted simultaneously with Work under this Contract.
 - 1. Furnishing and installing nurse call pull cords.
 - 2. Furnishing and installing TV and AV equipment.
 - 3. Furnishing and installing telephone from plug to the phone.

1.7 USE OF PREMISES

- A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits and work areas.
- B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine constructions operations to minimal areas as required for staging and construction operations as approved by the Owner.
 - 2. The Contractor's employees, and subcontractors at any tier shall conform and abide by the following:
 - a. Obey posted speed limit.
 - b. Parking shall be in assigned lots only.
 - c. No alcohol, drugs or firearms shall be permitted on the site.
 - d. No profanity or fighting on the site.
 - e. Shirts shall be worn at all times.
 - f. Hard hats, safety glasses, ear protection required by OSHA shall be utilized.
 - g. Trash generated by construction personnel shall be cleaned up daily.
 - 3. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.
 - 4. Driveways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

- C. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.8 OWNER'S OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.9 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.
 - 1. Weekend Hours: Only if approved by Owner in writing.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- C. Nonsmoking Building: Smoking and tobacco products are not permitted within building or on campus.

1.10 BADGES AND BACKGROUND CHECKS

- A. Contractor shall put in place a badge system for all workmen onsite. Each day workmen shall sign in and receive their identification badge. Workmen shall wear badge so it visible at all times. Badge shall be reviewed and approved by Owner prior to workmen being onsite.
- B. The Contractor shall file a Criminal History Report in accordance with the Code of Virginia with the Owner for any employee who will be working at the site. The Contractor shall pay the cost for background checks.

1.11 PREFERRED SUBCONTRACTORS

- A. The Contractor shall obtain bids from the following subcontractors. The Contractor is not required to use the following subcontractors in preparation of their Bid/GMP but is required to receive pricing from the following subcontractors.

1. Templeton Vest.
2. GSS – Tim Snyder.

1.12 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.
1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
 2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
- B. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- C. Types of allowances include unit-cost allowances.
- D. Related Sections include the following:
 - 1. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
 - 2. Divisions 02 through 49 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 UNIT-COST ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
- B. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Provide additional hospital grade, tamper resistant, duplex receptacle:
 - 1. Description: Each additional receptacle shall include:
 - a. (1) – 20A, 125V, Tamper Resistant duplex receptacle.
 - b. (1) – single gang wall box.
 - c. (1) – Cover plate.
 - d. 100 feet of conductors and conduit or cable permitted by this Specification for the application.
 - e. Installation labor for all items above.
 - 2. Unit of Measurement: Per receptacle assembly.
 - 3. Include in the Price the cost for 5 additional receptacles in addition to those shown in the Contract Documents. Receptacle outlets not installed will be credited to the Owner at the closeout of the Contract via a Change Order.
- B. Allowance No. 2: Provide additional exit signs:

1. Description: Each additional exit sign shall include:
 - a. (1) – Exit sign matching those used throughout the project.
 - b. (1) – Single gang box.
 - c. 50 feet of conductors and conduit or cable permitted by this Specification for the application.
 2. Unit of Measure: Per exit sign assembly.
 3. Include in the Price the cost of 2 additional signs in addition to those shown in the Contract Documents. Exit signs shall be credited to the Owner at the closeout of the Contract by Change Order.
- C. Allowance No. 3: Provide additional smoke detectors:
1. Description: Each additional smoke detector shall include:
 - a. (1) – Addressable smoke detector base.
 - b. (1) – Smoke detector head matching others used on the project.
 - c. (1) – Back box.
 - d. (1) – Tap into addressable fire alarm loop.
 - e. 30 feet of conductors and/or conduit permitted by this Specification for the application.
 - f. Installation for all items above.
 2. Unit of Measure: Per smoke detector assembly.
 3. Include in Price the cost of 5 additional smoke detectors in addition to those shown on the Contract Documents. Smoke detectors not installed shall be credited to the Owner at the closeout of the Contract by Change Order.
- D. Allowance No. 4: Provide additional fire alarm horn/strobe devices.
1. Descriptions: Each additional fire alarm horn/strobe shall include:
 - a. (1) - Horn/strobe device matching the others used on the project.
 - b. (1) - Back box.
 - c. (1) – Tap into addressable fire alarm loop.
30 feet of conductors and/or conduit permitted by this Specification for the application.
 - d. Installation for all items above.
 2. Unit of Measure: Per speaker/strobe assembly.
 3. Include in the Price the cost of 2 additional horn/strobes in addition to those shown on the Contract Documents. Horn/strobes not installed shall be credited to the Owner at the closeout of the Contract by Change Order.
- E. Allowance No. 5: Provide additional telecommunications outlets. Provide a dual outlet with two RJ-45 jacks.
1. Description: Each Telecommunications Outlet Includes:
 - a. (2) – RJ-45 jacks.
 - b. (1) – Two gang box.
 - c. (1) – Single gang cover plate.
 - d. 10 feet of $\frac{3}{4}$ inch conduit.

- e. 100 feet of category 6 data cable per jack (total 200'-0")
 - f. Installation labor for all items above.
- 2. Unit of Measurement: Per telecommunications assembly.
 - 3. Include in the Price the cost of 5 telecommunications outlet assemblies in addition to those shown in the Contract Documents.
- F. Allowance No. 6: Provide an allowance to provide 1-inch aluminum miniblinds for all resident room, physical therapy, and staff office spaces.
- G. Allowance No. 7: Allow the sum of \$70.00/per square foot acoustical wall panel (AWP-2). Allowance amount is for material only. Installation shall be included in the guaranteed maximum price.

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
 - 1. Division 1 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.
 - 2. Division 1 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. Unit Price No. 1 – Additional hospital grade, tamper resistant, duplex receptacles:
 - 1. Description: Refer to Allowance No. 1 in Section 012100 for description of Unit price.
 - 2. Unit of Measurement: Per receptacle assembly.

B. Unit Price No. 2 – Additional exit signs:

1. Description: Refer to Allowance No. 2 in Section 012100 for description of Unit Price.
2. Unit of Measurement: Per edge lit exit sign assembly.

C. Unit Price No. 3 – Additional smoke detectors:

1. Description: Refer to Allowance No. 3 in Section 012100 for description of Unit Price.
2. Unit of Measurement: Per smoke detector assembly.

D. Unit Price No. 4 – Additional fire alarm horn/strobe devices:

1. Description: Refer to Allowance No. 4 in Section 012100 for description of Unit Price.
2. Unit of Measurement: Per fire alarm horn/strobe device assembly.

E. Unit Price No. 5 – Additional telecommunications outlets:

1. Description: Refer to Allowance No. 5 in Section 012100 for description of Unit price.
2. Unit of Measurement: Per telecommunications outlet assembly.

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items reasonably inferable to be part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Refer to Drawing OCVR.2 - Cover Sheet for a complete list of alternates.

END OF SECTION 01 23 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

- 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

- a. Application for Payment forms with Continuation Sheets.
- b. Submittals Schedule.
- c. Contractor's Construction Schedule.

- 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

- 3. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

- 1. Identification: Include the following Project identification on the Schedule of Values:

- a. Project name and location.
- b. Name of Architect.
- c. Architect's project number.
- d. Contractor's name and address.
- e. Date of submittal.

- 2. Submit draft of AIA Document G703 Continuation Sheets.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
 - a. Breakdown payment applications as follows for Phase 1A and Phase 1B.
 - 1) Site Construction: Divisions 31 through 33.
 - 2) Building Construction: Divisions 1 through 28.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. In addition to the Architect's copies of the Application for Payment submit one copy to the Owner at the same time copies are submitted to the Architect.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Schedule of unit prices.
 6. Submittals Schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
 16. Initial settlement survey and damage report if required.
- G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination Drawings.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
- B. Related Sections include the following:
 - 1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
 - 2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
 9. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate required installation sequences.
 - c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 3. Number of Copies: Submit three opaque copies of each submittal. Architect will return one copy.
 4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
 1. Include special personnel required for coordination of operations with other contractors.

1.6 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Architect will schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of Record Documents.
 - l. Use of the premises.
 - m. Work restrictions.
 - n. Owner's occupancy requirements.
 - o. Responsibility for temporary facilities and controls.
 - p. Construction waste management and recycling.
 - q. Parking availability.
 - r. Office, work, and storage areas.
 - s. Equipment deliveries and priorities.

- t. First aid.
 - u. Security.
 - v. Progress cleaning.
 - w. Working hours.
3. Minutes: Architect will record and distribute meeting minutes to the Owner and Contractor. Contractor shall distribute meeting minutes to subcontractors, suppliers and other parties present or should have been present.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. The Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- A. Progress Meetings: Contractor shall conduct progress meetings at monthly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) RFIs.
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
 3. Minutes: Contractor shall record and distribute meeting minutes to the Owner and Architect. Contractor shall distribute meeting minutes to subcontractors, suppliers and other parties present or should have been present.
 4. Reporting: Contractor shall distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- B. Coordination Meetings: Conduct Project coordination meetings at biweekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: Subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work. Notify the Owner and Architect of scheduled meeting dates.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Submittals Schedule.
 - 3. Daily construction reports.
- B. Related Sections include the following:
 - 1. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
 - 2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
 - 4. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by Architect.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to Owner.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Fagnets: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- H. Major Area: A story of construction, a separate building, or a similar significant construction element.
- I. Milestone: A key or critical point in time for reference or measurement.
- J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- K. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 SUBMITTALS

- A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- B. Preliminary Network Diagram: Submit six opaque copies, large enough to show entire network for entire construction period. Show logic ties for activities.
- C. Contractor's Construction Schedule: Submit six opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
 - 1. Submit an electronic copy of schedule, using software indicated, on CD-R or flash drive, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit six copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.

E. Daily Construction Reports: Submit two copies at weekly intervals.

1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
 2. Verify availability of qualified personnel needed to develop and update schedule.
 3. Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy.
 4. Review delivery dates for Owner-furnished products.
 5. Review schedule for work of Owner's separate contracts.
 6. Review time required for review of submittals and resubmittals.
 7. Review requirements for tests and inspections by independent testing and inspecting agencies.
 8. Review time required for completion and startup procedures.
 9. Review and finalize list of construction activities to be included in schedule.
 10. Review submittal requirements and procedures.
 11. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from parties involved.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. All submittals shall be received by the Architect within 90 days from Notice to Proceed.
2. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
3. Initial Submittal: Submit concurrently with preliminary network diagram. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
4. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than 3 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
8. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Permanent space enclosure.
 - c. Completion of mechanical installation.
 - d. Completion of electrical installation.
 - e. Substantial Completion.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
 1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
- G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

- H. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Preliminary Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 - 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 4. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing.
 - 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 - 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
 1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the Schedule of Values).
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions.
 7. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events (refer to special reports).
 10. Stoppages, delays, shortages, and losses.
 11. Meter readings and similar recordings.
 12. Emergency procedures.
 13. Orders and requests of authorities having jurisdiction.
 14. Change Orders received and implemented.
 15. Construction Change Directives received and implemented.
 16. Services connected and disconnected.
 17. Equipment or system tests and startups.
 18. Partial Completions and occupancies.

19. Substantial Completions authorized.

- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation on CSI Form 13.2A. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 01 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - 5. Division 01 Section "Closeout Procedures" for submitting warranties.
 - 6. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 7. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 8. Division 01 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
 - 9. Divisions 02 through 26 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of REVIT Drawings of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals upon execution of the required release forms and written approval of the Owner. Consult the office of the Architect for costs and other information pertaining to the process for the release of REVIT files.

- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. The Contractor shall submit all required submittals within 120 days of the Notice to Proceed.
- E. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 21 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 21 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 28 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 6. Submit samples, chips, charts for materials and products for which color, pattern, texture of other characteristics are required to be selected, including items where color is specified. All color submittals will be required before any color selections will be approved, in order to ensure color integrity for the entire project. Approval for color selections may take up to 30 days after all samples are received.
 7. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- F. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.

- f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06 10 00.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06 10 00.01.A).
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.
- G. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- H. The Contractor shall transmit all submittals via electronic email. The Architect will not retrieve or return submittals via a construction management software program.
- 1. All submittals shall be sent via email unless the size is over 25MB.
 - 2. Submittals larger than 25MB must be transmitted only via the Architect's Newforma site.
- I. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
- 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
 - 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
 - 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Contractor.
 - e. Name of firm or entity that prepared submittal.
 - f. Names of subcontractor, manufacturer, and supplier.
 - g. Category and type of submittal.
 - h. Submittal purpose and description.
 - i. Specification Section number and title.
 - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Related physical samples submitted directly.

- n. Indication of full or partial submittal.
 - o. Transmittal number, numbered consecutively.
 - p. Submittal and transmittal distribution record.
 - q. Other necessary identification.
 - r. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
- a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
- K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- L. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
- 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.

2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit 2 full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product.
 2. Number and name of room or space.
 3. Location within room or space.
- F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

- G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

- I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- M. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."
- N. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- O. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- P. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- R. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- S. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
 2. Required substrate tolerances.
 3. Sequence of installation or erection.
 4. Required installation tolerances.
 5. Required adjustments.
 6. Recommendations for cleaning and protection.
- T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- U. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- V. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.

2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. Final Unrestricted Release: When the Architect marks a submittal "Approved," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 - 2. Final-But-Restricted Release: When the Architect marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 - 3. Restricted Release, Returned for Resubmittal: When the Architect marks a submittal "Approved as Noted, Revise and Resubmit," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - 4. Returned for Resubmittal: When the Architect marks a submittal "Not Approved, Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - 5. Do not use, or allow others to use, submittals marked "Not Approved, Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

RENOVATIONS AND ADDITIONS TO
BRANDON OAKS FISHWICK & NRC
FOR VIRGINIA LUTHERAN HOMES

2019091

28 AUGUST 2020

PHASES 2D & 3

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Division 01 Section "Allowances" for testing and inspecting allowances.
 - 2. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 3. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 4. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where

indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; unless more stringent requirements are indicated in specific specification Section; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
 2. Description of test and inspection.
 3. Identification of applicable standards.
 4. Identification of test and inspection methods.
 5. Number of tests and inspections required.
 6. Time schedule or time span for tests and inspections.
 7. Entity responsible for performing tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - e. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 6. Demolish and remove mockups when directed, unless otherwise indicated.
- K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the organizations responsible for the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG Americans with Disabilities Act (ADA) (800) 872-2253
Architectural Barriers Act (ABA) (202) 272-0080
Accessibility Guidelines for Buildings and Facilities
Available from Access Board
www.access-board.gov

CFR Code of Federal Regulations (866) 512-1800
Available from Government Printing Office (202) 512-1800
www.gpoaccess.gov/cfr/index.html

DOD Department of Defense Military Specifications and Standards (215) 697-6257
Available from Department of Defense Single Stock Point
<http://dodssp.daps.dla.mil>

DSCC Defense Supply Center Columbus
(See FS)

FED-STD Federal Standard
(See FS)

FS Federal Specification (215) 697-6257
Available from Department of Defense Single Stock Point
<http://dodssp.daps.dla.mil>

Available from Defense Standardization Program
www.dps.dla.mil

Available from General Services Administration (202) 619-8925
www.gsa.gov

Available from National Institute of Building Sciences (202) 289-7800
www.nibs.org

FTMS Federal Test Method Standard

(See FS)

MIL (See MILSPEC)

MIL-STD (See MILSPEC)

MILSPEC Military Specification and Standards (215) 697-6257
Available from Department of Defense Single Stock Point
<http://dodssp.daps.dla.mil>

UFAS Uniform Federal Accessibility Standards (800) 872-2253
Available from Access Board (202) 272-0080
www.access-board.gov

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA BOCA International, Inc.
(See ICC)

IAPMO International Association of Plumbing and Mechanical Officials (909) 472-4100
www.iapmo.org

ICBO International Conference of Building Officials
(See ICC)

ICBO ES ICBO Evaluation Service, Inc.
(See ICC-ES)

ICC International Code Council (888) 422-7233
www.iccsafe.org (703) 931-4533

ICC-ES ICC Evaluation Service, Inc. (800) 423-6587
www.icc-es.org (562) 699-0543

SBCCI Southern Building Code Congress International, Inc.
(See ICC)

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-7923
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOD	Department of Defense http://dodssp.daps.dla.mil	(215) 697-6257
DOE	Department of Energy www.energy.gov	(202) 586-9220
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(866) 835-5322
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
GSA	General Services Administration www.gsa.gov	(800) 488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	Office of Public Health and Science www.osophs.dhhs.gov/ophs	(202) 690-7694

RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board www.nas.edu/trb	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

D. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CBHF	State of California, Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation www.dca.ca.gov/bhfti	(800) 952-5210 (916) 574-2041
CPUC	California Public Utilities Commission www.cpuc.ca.gov	(415) 703-2782
TFS	Texas Forest Service Forest Resource Development http://txforestservation.tamu.edu	(936) 639-8180

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
 - 1. Contractor shall have access to the lower parking lot for temporary office trailer, material storage and staging area. Coordinate extent of parking area needed with Owner. Contractor shall provide and extend electrical and water connections to their temporary facilities. Owner will provide a data drop for the Contractor.
- B. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.
- C. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.

2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top rails.
- B. Open-Mesh Plastic Fencing: Heavyweight orange colored plastic, open mesh, safety fence, 4 feet high with posts set in compacted mixture of gravel and earth.
- C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- D. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats minimum 36 by 60 inches.
- E. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 2. Conference room of sufficient size to accommodate meetings of 12 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
 3. Drinking water and private toilet.
 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel.
1. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineers' offices.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
- A. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail, in common-use facilities.
1. Provide DSL, cable or T-1 line in primary field office.

3.4 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: Use designated areas of Owner's existing parking areas for construction personnel. Coordinate location for parking of construction personnel with Owner.

1. Lower parking lot is available for Contractor parking. In addition, overflow parking from lower lot should be in the upper lots. Contractor shall review and coordinate parking locations with the Owner prior to parking in the upper lots.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs as indicated on Drawings.
 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 3. Maintain and touch up signs so they are legible at all times.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 01 73 00 "Execution."
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- H. Temporary Elevator Use: Use of elevators is not permitted.
- I. Existing Elevator Use: Use of elevators is not permitted.
- J. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- K. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- L. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 01 10 00 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- G. Site Enclosure Fence: Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
 - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - 3. Insulate partitions to control noise transmission to occupied areas.
 - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 - 5. Protect air-handling equipment.
 - 6. Provide walk-off mats at each entrance through temporary partition.
- M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.6 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
 2. Protect stored and installed material from flowing or standing water.
 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 4. Remove standing water from decks.
 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 2. Keep interior spaces reasonably clean and protected from water damage.
 3. Periodically collect and remove waste containing cellulose or other organic matter.
 4. Discard or replace water-damaged material.
 5. Do not install material that is wet.
 6. Discard and replace stored or installed material that begins to grow mold.
 7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.
- 3.7 OPERATION, TERMINATION, AND REMOVAL
- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 01 Section "Allowances" for products selected under an allowance.
 - 2. Division 01 Section "Alternates" for products selected under an alternate.
 - 3. Division 01 Section "References" for applicable industry standards for products specified.
 - 4. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
 - 5. Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service

performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 5. Architect's Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles. Requests for substitution including all back up information shall be submitted to the Owner and Architect at the same time for review. Submit only one copy of information to the Owner.
1. Substitution Request Form: Use facsimile of form provided at end of Section.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

- c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
- a. Form of Acceptance: Change Order.
 - b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.
 - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 - 4. Store cementitious products and materials on elevated platforms.
 - 5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 - 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 7. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 - 3. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.

- C. The warranty period on materials, products, systems or equipment shall begin at date of Substantial Completion in part or whole. Contractor shall make provisions as required to extend the manufacturer's warranty from time of initial operation of systems or equipment until Substantial Completion is given in writing.
- D. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 - 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 - 7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
 - 1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Substitutions may be considered if submitted prior to receipt of bids.
 - 3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements. Substitutions may be considered if submitted prior to receipt of bids.
 - 4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Substitutions may be considered if submitted prior to receipt of bids.
 - 5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product. Substitutions may be considered if submitted prior to receipt of bids.
 - 6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.

7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Architect will consider requests for substitution if received within 10 days prior to receipt of bids. Requests received after that time may be considered or rejected at discretion of Architect. Requests for substitution including all back up information shall be submitted to the Owner and Architect at the same time for review.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted with fully executed "Substitution Request Form" attached to the end of this Section.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.

6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

- A. Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SUBSTITUTION REQUEST FORM

Date: _____

Owner: _____

Project: _____

Contractor: _____

Subcontractor: _____

Architect: RLPS LLP Architects

Requested Substitution:

Replacing:

Contractor and Subcontractor request that Owner and Architect authorize the Requested Substitution described above. Contractor and Subcontractor, jointly and severally, make the following promises and representations about the Requested Substitution:

1. The Requested Substitution complies in all respects with all applicable building laws, codes and regulations.
2. Contractor and Subcontractor have carefully evaluated the Authorized Substitution and have determined that it complies in all respects with all requirements of the plans, specifications and contract documents for the Project except as specifically noted herein or in any attached exhibit.
3. Contractor and Subcontractor clearly understand that any authorizations to make the Requested Substitution will be based entirely on the promises and representations of Contractor and Subcontractor and **will not permit, authorize or approve any deviation from the plans, specifications or contract documents except as specifically set forth herein or in any exhibit.**
4. Contractor and Subcontractor **are completely and solely responsible for compliance of the Requested Substitution with all requirements of the plans, specifications and contract documents except as specifically set forth herein or in any attached exhibit.**

Contractor and Subcontractor expressly warrant that the Requested Substitution is merchantable and suitable for its intended purpose.

6. The Requested Substitution varies from the requirements of the plans, specifications and contract documents only in the following respects:

7. Errors, omissions or oversights by Owner or Architect in review of this request shall not be the basis for any claim or defense by Contractor or Subcontractor.

Contractor

Subcontractor

Owner and Architect hereby authorize the Requested Substitution to be made.

Dated: _____
(Owner)

Dated: _____
(Architect)

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

- B. Related Sections include the following:

1. Division 01 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
2. Division 01 Section "Submittal Procedures" for submitting surveys.
3. Division 01 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.

1.3 SUBMITTALS

- A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of utilities and other construction affecting the Work.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the

Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation." Contractor shall follow requirement of General and Supplementary Conditions governing Requests for Information.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction forces.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.
 - 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually

agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00



REQUEST FOR INTERPRETATION

Project: _____	R.F.I. Number: _____
_____	From: _____
To: _____	Date: _____
_____	A/E Project Number: _____
Re: _____	Contract For: _____

Specification Section: _____	Paragraph: _____	Drawing Reference: _____	Detail: _____
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Request:

Signed by: _____	Date: _____
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Response:

Attachments

Response From: _____	To: _____	Date Rec'd: _____	Date Ret'd: _____
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Signed by: _____	Date: _____
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Copies: Owner Consultants _____ _____ _____ _____ File

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Division 01 Section "Selective Structure Demolition" for demolition of selected portions of the building.
 - 2. Divisions 02 through 49 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 3. Division 07 Section "Penetration Firestopping" for patching fire-rated construction.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
 - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
 1. Primary operational systems and equipment.
 2. Air or smoke barriers.
 3. Fire-suppression systems.
 4. Mechanical systems piping and ducts.
 5. Control systems.
 6. Communication systems.
 7. Conveying systems.
 8. Electrical wiring systems.
 9. Operating systems of special construction in Division 13 Sections.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:
 1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Exterior curtain-wall construction.
 4. Equipment supports.
 5. Piping, ductwork, vessels, and equipment.
 6. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 29

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

- 1. Inspection procedures.
- 2. Warranties.
- 3. Final cleaning.

- B. Related Sections include the following:

- 1. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
- 2. Division 01 Section "Execution" for progress cleaning of Project site.
- 3. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- 4. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- 5. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
- 6. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

- 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
- 2. Advise Owner of pending insurance changeover requirements.
- 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
- 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.
- 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.

7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise Owner of changeover in heat and other utilities.
 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup painting.
 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.

1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

- q. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - s. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00



PUNCH LIST

Project: _____

From (A/E): _____

Site Visit Date: _____

To (Contractor): _____

A/E Project Number: _____

Contract For: _____

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Item Number	Room Number	Location (Area)	Description	Correction/Completion Date	Verification A/E Check
-------------	-------------	-----------------	-------------	----------------------------	------------------------

Attachments

Signed by: _____ Date: _____

Copies: Owner Consultants _____ _____ _____ _____ _____ _____ _____ File

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Maintenance manuals for the care and maintenance of products, materials, and finishes and systems and equipment.
- B. Related Sections include the following:
 - 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Division 01 Section "Closeout Procedures" for submitting operation and maintenance manuals.
 - 3. Division 01 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
 - 4. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 2. One paper copy. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

1.5 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
1. List of documents.
 2. List of systems.
 3. List of equipment.
 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the

Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name, address, and telephone number of Contractor.
 6. Name and address of Architect.
 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. System, subsystem, and equipment descriptions.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
 1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training videotape, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
1. Do not use original Project Record Documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 01 Section "Closeout Procedures" for general closeout procedures.
 - 2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up Record Prints and one PDF electronic file of marked-up Record Drawings.
 - a. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - 1) Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - 2) Enable inserted reviewer comments on draft submittals.
- B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one copy of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Identification: As follows:
 - a. Project name.

- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 - 5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project

Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training videotapes.
- B. Related Sections include the following:
 - 1. Division 01 Section "Project Management and Coordination" for requirements for preinstruction conferences.
 - 2. Divisions 02 through 49 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. At completion of training, submit one complete training manual(s) for Owner's use.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
- D. Demonstration and Training Videotapes: Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect and Construction Manager.
 - d. Name of Contractor.
 - e. Date videotape was recorded.

- f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding videotape. Include name of Project and date of videotape on each page.

1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- B. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 1. Inspect and discuss locations and other facilities required for instruction.
 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 3. Review required content of instruction.
 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

- a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
- a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
- a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
- a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.

7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.

8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 1. Schedule training with Owner, through Architect, with at least seven days' advance notice.
- C. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 1. At beginning of each training module, record each chart containing learning objective and lesson outline.

- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.
1. Submit video recordings on CD-ROM or thumb drive.
 2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
 3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. Email address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
1. Furnish additional portable lighting as required.
- E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

END OF SECTION 01 79 00

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
- 2. Demolition and removal of selected site elements.
- 3. Salvage of existing items to be reused or recycled.

- B. Related Requirements:

- 1. Section 01 10 00 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
- 2. Section 01 73 00 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and store.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

D. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.10 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.11 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs or video and templates.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

- Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area on-site.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- 3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS
- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
- E. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Section 073113 – Asphalt Shingles and 075323 – Ethylene-Propylene-Diene-Monomer (EPDM) Roofing for new roofing requirements.
 - 1. Remove existing roof membrane, flashings, copings, and roof accessories.
 - 2. Remove existing roofing system down to substrate.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.

3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

- B. Related Requirements:

- 1. Section 31 20 13 Earthwork within Perimeter of Building Footprint for drainage fill under slabs-on-ground.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

- B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

- a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.
 - e. Special concrete finish Subcontractor.

- 2. Review the following:

- a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction joints, control joints, isolation joints, and joint-filler strips.
 - c. Semirigid joint fillers.

- d. Vapor-retarder installation.
- e. Anchor rod and anchorage device installation tolerances.
- f. Cold and hot weather concreting procedures.
- g. Concrete finishes and finishing.
- h. Curing procedures.
- i. Forms and form-removal limitations.
- j. Methods for achieving specified floor and slab flatness and levelness.
- k. Floor and slab flatness and levelness measurements.
- l. Concrete repair procedures.
- m. Concrete protection.
- n. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)
- o. Protection of field cured field test cylinders.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Silica fume.
5. Aggregates.
6. Admixtures:
 - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
7. Vapor retarders.
8. Floor and slab treatments.
9. Liquid floor treatments.
10. Curing materials.
11. Joint fillers.
12. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Durability exposure class.
4. Maximum w/cm.
5. Slump limit.
6. Air content.
7. Nominal maximum aggregate size.
8. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
9. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.6 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Adhesives.
5. Vapor retarders.
6. Semirigid joint filler.
7. Joint-filler strips.
8. Repair materials.

B. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Silica fume.
5. Aggregates.
6. Admixtures:

C. Preconstruction Test Reports: For each mix design.

D. Field quality-control reports.

E. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

- D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.
 - 1. Include the following information in each test report:
 - a. Admixture dosage rates.
 - b. Slump.
 - c. Air content.
 - d. Seven-day compressive strength.
 - e. 28-day compressive strength.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301.

1.10 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.
 - 1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 3. Do not use frozen materials or materials containing ice or snow.
 - 4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
 - 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
 - 1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I, gray or white.
2. Fly Ash: ASTM C618, Class C or F.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
4. Silica Fume: ASTM C1240 amorphous silica.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:
 - a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.
 - b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.
 - c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.
2. Maximum Coarse-Aggregate Size: 1 inch for foundation concrete, 3/4 inch for elevated slabs nominal.
3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

- F. Water and Water Used to Make Ice: ASTM C94/C94M, potable or complying with ASTM C1602/C1602M, including all limits listed in Table 2 and the requirements of paragraph 5.4.

2.3 VAPOR RETARDERS

- A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Raven Industries Inc.; Vapor Block 15.
 - b. Stego Industries, LLC; Stego Wrap, 15 mils.

2.4 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Conspec by Dayton Superior; Aquafilm.
 - b. Dayton Superior Corporation; Sure Film (J-74).
 - c. Euclid Chemical Company (The), an RPM Company; Eucobar.
 - d. L&M Construction Chemicals, Inc.; E-CON.
 - e. Meadows, W. R., Inc.; EVAPRE.
 - f. Silka Corporation; SiksFilm.

- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

- C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

- D. Water: Potable or complying with ASTM C1602/C1602M.

- E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Anti-Hydro International, Inc.
 - b. Dayton Superior.
 - c. Euclid Chemical Company (The); an RPM company.
 - d. W.R. Meadows, Inc.

- F. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B.

1. L & M Construction Chemicals, Inc. Dress & Seal WB30.

2.5 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 in accordance with ASTM D2240.
- C. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:
1. Types I and II, nonload bearing and Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.6 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.
 4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.7 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.
1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
1. Fly Ash or Other Pozzolans: 25 percent by mass.
 2. Slag Cement: 50 percent by mass.
 3. Silica Fume: 10 percent by mass.

4. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
5. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, and concrete with a w/cm below 0.50.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Refer to Structural Drawings.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.4 INSTALLATION OF VAPOR RETARDER

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.
 - 1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
 - 2. Face laps away from exposed direction of concrete pour.
 - 3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
 - 4. Lap joints 6 inches and seal with manufacturer's recommended tape.
 - 5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
 - 6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
 - 7. Protect vapor retarder during placement of reinforcement and concrete.
 - a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

3.5 JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
 - 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
 - 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.
 - b. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.

7. Where indicated, use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Shrinkage Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:
1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.
- D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 07 92 00 "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints:
1. Install dowel bars and support assemblies at joints where indicated on Drawings.
 2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
1. If a section cannot be placed continuously, provide construction joints as indicated.
 2. Deposit concrete to avoid segregation.
 3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Do not place concrete floors and slabs in a checkerboard sequence.
 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 3. Maintain reinforcement in position on chairs during concrete placement.
 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 5. Level concrete, cut high areas, and fill low areas.
 6. Slope surfaces uniformly to drains where required.
 7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
 8. Do not further disturb slab surfaces before starting finishing operations.

3.7 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
 - a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
 - b. Remove projections larger than 1 inch.
 - c. Tie holes do not require patching.
 - d. Surface Tolerance: ACI 117 Class D.
 - e. Apply to concrete surfaces not exposed to public view.

B. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish:
1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied.
 2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch in one direction.
 3. Apply scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.
- C. Float Finish:
1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
 2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
 3. Apply float finish to surfaces to receive trowel finish..
- D. Trowel Finish:
1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
 2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
 3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 4. Do not add water to concrete surface.
 5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
 6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Finish and measure surface so gap at any point between concrete surface and an unveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
 - 2) Specified overall values of flatness, F_F 25; and of levelness, F_L 20; with minimum local values of flatness, F_F 17; and of levelness, F_L 15.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.
1. Coordinate required final finish with Architect before application.
 2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete pads, steps, ramps, and locations indicated on Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

3.9 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. Prior to pouring concrete, place and secure anchorage devices.
 - a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - b. Cast anchor-bolt insert into bases.
 - c. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.10 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
3. If forms remain during curing period, moist cure after loosening forms.

4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.
- C. Curing Unformed Surfaces: Begin curing immediately after finishing concrete. Comply with ACI 308.1 by one or a combination of the following methods:
 - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12-inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.
 - 3) Curing Compound:
 - a) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - b) Recoat areas subjected to heavy rainfall within three hours after initial application.
 - c) Maintain continuity of coating, and repair damage during curing period.
 - d) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.
 - 4) Floors to Receive Curing and Sealing Compound:

- a) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
- b) Recoat areas subjected to heavy rainfall within three hours after initial application.
- c) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.11 TOLERANCES

- A. Conform to ACI 117.

3.12 APPLICATION OF LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.
 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 2. Do not apply to concrete that is less than 28 days' old.
 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
 4. Rinse with water; remove excess material until surface is dry.
 5. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.

3.13 JOINT FILLING

- A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least one month.
 2. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.
- D. Overfill joint, and trim joint filler flush with top of joint after hardening.

3.14 CONCRETE SURFACE REPAIRS

- A. Defective Concrete:
 1. Repair and patch defective areas when approved by Architect.
 2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch.
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces:
 - 1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
 - a. Correct low and high areas.
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 3. After concrete has cured at least 14 days, correct high areas by grinding.
 - 4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
 - 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
 - a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
 - 6. Correct other low areas scheduled to remain exposed with repair topping.

- a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
 - b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
- a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.
- a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

- A. Testing and Inspection Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
 2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
 3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
 - a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:
 - 1) Project name.
 - 2) Name of testing agency.
 - 3) Names and certification numbers of field and laboratory technicians performing inspections and testing.

- 4) Name of concrete manufacturer.
 - 5) Date and time of inspection, sampling, and field testing.
 - 6) Date and time of concrete placement.
 - 7) Location in Work of concrete represented by samples.
 - 8) Date and time sample was obtained.
 - 9) Truck and batch ticket numbers.
 - 10) Design compressive strength at 28 days.
 - 11) Concrete mixture designation, proportions, and materials.
 - 12) Field test results.
 - 13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
 - 14) Type of fracture and compressive break strengths at seven days and 28 days.
- B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.
- C. Inspections:
1. Steel reinforcement size, spacing, placement, support, cover and laps.
 2. Dowel size, spacing, placement, support and embedment.
 3. Bolts, studs, and other embedments, and size, location and embedment depth.
 4. Verification of use of required design mixture.
 5. Concrete placement, including conveying and depositing.
 6. Curing procedures and maintenance of curing temperature.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C143/C143M:
 - a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete.
 - a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C1064/C1064M:

- a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C31/C31M:
 - a. Cast and laboratory cure two sets of two 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C39/C39M.
 - a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
 9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 10. Additional Tests:
 - a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.
 - 1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.
 11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 48 hours of completion of floor finishing and promptly report test results to Architect.

END OF SECTION 03 30 00

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Concrete masonry units.
2. Salvaged face brick
3. New face brick.
4. Mortar and grout.
5. Steel reinforcing bars.
6. Masonry-joint reinforcement.
7. Miscellaneous masonry accessories.

- B. Products Installed but not Furnished under This Section:

1. Steel lintels in unit masonry.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.
 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of the following:
 - 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - 2. Cementitious materials. Include name of manufacturer, brand name, and type.
 - 3. Mortar admixtures.
 - 4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 5. Grout mixes. Include description of type and proportions of ingredients.
 - 6. Reinforcing bars.
 - 7. Joint reinforcement.
 - 8. Anchors, ties, and metal accessories.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 - 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- C. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 24 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within 20 feet vertically and horizontally of a walking surface.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C90.
 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 2. Density Classification: Medium weight or Normal weight unless otherwise indicated.
 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

2.5 MASONRY LINTELS

- A. General: Provide lintels as indicated on the structural drawings. If not indicated provide one of the following:
- B. Concrete Lintels: ASTM C1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.
- C. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.6 FACE BRICK

- A. Used salvaged brick for infilling brick where indicated on Drawings.
- B. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
 - 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
 - 2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
 - 3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
 - 4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- C. Clay Face Brick: Facing brick complying with ASTM C216.
 - 1. Grade: SW.
 - 2. Type: FBS.
 - 3. Match existing brick in size, color, type and texture.

2.7 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Aggregate for Mortar: ASTM C144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
- E. Aggregate for Grout: ASTM C404.
- F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BASF Corporation.
 - b. Euclid Chemical Company (The); an RPM company.

- G. Water: Potable.

2.8 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
- C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
 - 1. Interior Walls: Hot-dip galvanized carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized carbon steel.
 - 3. Wire Size for Side Rods: 0.148-inch diameter.
 - 4. Wire Size for Cross Rods: 0.148-inch diameter.
 - 5. Wire Size for Veneer Ties: 0.187-inch diameter.
 - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o. c.
 - 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
- E. Masonry-Joint Reinforcement for Multiwythe Masonry:
 - 1. Tab type, either ladder or truss design, with one side rod at each face shell of backing wythe and with rectangular tabs sized to extend at least halfway through facing wythe, but with at least 5/8-inch cover on outside face.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- B. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
 - 3. For exterior masonry, use portland cement-lime mortar.
 - 4. For reinforced masonry, use portland cement-lime mortar.
 - 5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. For masonry below grade or in contact with earth, use Type S.
 - 2. For reinforced masonry, use Type S.
 - 3. For mortar parge coats, use Type S or Type N.
 - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; and for other applications where another type is not indicated, use Type S.
 - 5. For interior nonload-bearing partitions, Type N.
- D. Grout for Unit Masonry: Comply with ASTM C476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 - 2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 - 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
 - 4. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.

- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

- 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
- 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
- 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

- 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
- 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
- 3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
- 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
- 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
- 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2-inch maximum.
- 7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

- 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
- 2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
- 3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
- 4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
- 5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 07 84 43 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
 - 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

- B. Lay solid masonry units and hollow brick with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Rake out mortar joints at pre-faced CMUs, glazed brick to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
 - 1. For glazed masonry units, use a nonmetallic jointer 3/4 inch or more in width.

3.6 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together as follows:
 - 1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use tab-type reinforcement.
- B. Bond wythes of composite masonry together using bonding system indicated on Drawings.
- C. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
 - 1. Provide continuity with masonry-joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.

3.7 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o .c.
 - 2. Space reinforcement not more than 8 inches o. c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at[**corners,**] returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Install preformed control-joint gaskets designed to fit standard sash block.

3.9 LINTELS

- A. Install steel lintels where indicated.
- B. Provide concrete or masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.10 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 60 inches.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- D. Mortar Test: For each mix provided, according to ASTM C780. Test mortar for compressive strength.
- E. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.
 7. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
 8. Clean stone trim to comply with stone supplier's written instructions.
 9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.13 MASONRY WASTE DISPOSAL

- A. Excess Masonry Waste: Remove excess masonry waste and legally dispose of off Owner's property.

RENOVATIONS AND ADDITIONS TO
BRANDON OAKS FISHWICK & NRC
FOR VIRGINIA LUTHERAN HOMES

2019091

28 AUGUST 2020

PHASES 2D & 3

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Structural steel.
- 2. Shrinkage-resistant grout.

- B. Related Requirements:

- 1. Section 05 50 00 "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame, miscellaneous steel fabrications and other steel items not defined as structural steel.

1.3 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

1.4 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 ACTION SUBMITTALS

- A. Product Data:

- 1. Structural-steel materials.
- 2. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength, bolt-nut-washer assemblies.

B. Field quality-control reports.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 360.

3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Fabricator's experienced steel detailer shall select or complete connections in accordance with ANSI/AISC 303.
 - a. Select and complete connections using schematic details indicated and ANSI/AISC 360.
 - b. Use Allowable Stress Design; data are given at service-load level.

2.2 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: [ASTM A992/A992M] [ASTM A572/A572M, Grade 50.
- B. Channels, Angles, [M-Shapes] [, S-Shapes]: ASTM A36/A36M.
- C. Plate and Bar: ASTM A36/A36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade B structural tubing.
- E. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS AND CONNECTORS

1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with plain finish.
- B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex, round head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
 1. Finish: Mechanically deposited zinc coating.

2.4 RODS

- A. Unheaded Anchor Rods: ASTM F1554, Grade 36.
 1. Configuration: Hooked.
 2. Nuts: ASTM A563 heavy-hex carbon steel.
 3. Plate Washers: ASTM A36/A36M carbon steel.
 4. Washers: ASTM F436, Type 1, hardened carbon steel.
 5. Finish: Hot-dip zinc coating, ASTM A153/A153M, Class C.
- B. Headed Anchor Rods: ASTM F1554, Grade 36, straight.
 1. Nuts: ASTM A563 heavy-hex carbon steel.
 2. Plate Washers: ASTM A36/A36M carbon steel.

3. Washers: ASTM F436, Type 1, hardened carbon steel.
4. Finish: Hot-dip zinc coating, ASTM A153/A153M, Class C.

C. Threaded Rods: ASTM A36/A36M.

1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM F436, Type 1, hardened, ASTM A36/A36M carbon steel.
3. Finish: Hot-dip zinc coating, ASTM A153/A153M, Class C.

2.5 PRIMER

A. Steel Primer:

1. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.6 SHRINKAGE-RESISTANT GROUT

2.7 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
2. Mark and match-mark materials for field assembly.
3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 2. or SSPC-SP 3.

F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.

2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.8 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.9 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.
 1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
 2. Galvanize; Items indicated on drawings to be galvanized.

2.10 SHOP PRIMING

- A. Shop prime steel surfaces, except the following:
 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 2. Surfaces to be field welded.
 3. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 4. Galvanized surfaces unless indicated to be painted.
- B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards:
 1. SSPC-SP 2, or
 2. SSPC-SP 3.
- C. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner or in accordance with SSPC-SP 16.

- D. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.
- B. Baseplates, bearing plates, and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 2. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 3. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.
- C. Maintain erection tolerances of structural steel within ANSI/AISC 303.
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for

discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.5 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Painting:

1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

3.6 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
 2. Verify weld materials and inspect welds.
 3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
 2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

END OF SECTION 05 12 00

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Load-bearing wall and roof framing.

- B. Related Requirements:

- 1. Section 05 50 00 "Metal Fabrications" for miscellaneous steel shapes, and connections used with cold-formed metal framing.
 - 2. Section 09 22 16 "Non-Structural Metal Framing" for standard, interior non-load-bearing, metal-stud framing, with height limitations and ceiling-suspension assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:

- 1. Cold-formed steel framing materials.
 - 2. Load-bearing wall framing.
 - 3. Roof-rafter framing.
 - 4. Post-installed anchors.
 - 5. Power-actuated anchors.

- B. Shop Drawings:

- 1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
 - 2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Welding certificates.
- C. Product Certificates: For each type of code-compliance certification for studs and tracks.

D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Expansion anchors.
2. Power-actuated anchors.
3. Mechanical fasteners.
4. Miscellaneous structural clips and accessories.

E. Research Reports:

1. For nonstandard cold-formed steel framing post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

- A. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- B. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. ClarkWestern Building Systems, Inc.
 2. Dietrich Metal Framing; a Worthington Industries Company.
 3. MarinoWARE.
 4. Nuconsteel; a Nucor Company.
 5. Steel Network, Inc. (The).
 6. Super Stud Building Products, Inc.
 7. United Metal Products, Inc.

2.2 PERFORMANCE REQUIREMENTS

- A. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200, and the following:

1. Floor and Roof Systems: AISI S210.
 2. Wall Studs: AISI S211.
 3. Headers: AISI S212.
 4. Lateral Design: AISI S213.
- B. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 COLD-FORMED STEEL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:
1. Grade: As indicated on drawings.
 2. Coating: G60.

2.4 LOAD-BEARING WALL AND ROOF FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as indicated on the drawings.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as indicated on the drawings.
- C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as indicated on the drawings.

2.5 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
1. Supplementary framing.
 2. Bracing, bridging, and solid blocking.
 3. Web stiffeners.
 4. Anchor clips.
 5. End clips.
 6. Foundation clips.
 7. Gusset plates.
 8. Stud kickers and knee braces.
 9. Joist hangers and end closures.
 10. Hole-reinforcing plates.
 11. Backer plates.

2.6 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.
- B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.
- C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58, or ICC-ES AC308 as appropriate for the substrate.
 - 1. Uses: Securing cold-formed steel framing to structure.
 - 2. Type: As indicated.
 - 3. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
 - 4. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.
- D. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

2.7 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A780/A780M, MIL-P-21035B, or SSPC-Paint 20.
- B. Cement Grout: Portland cement, ASTM C150/C150M, Type I; and clean, natural sand, ASTM C404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.
- D. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

2.8 FABRICATION

- A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
 2. Cut framing members by sawing or shearing; do not torch cut.
 3. Fasten cold-formed steel framing members by welding, or screw fastening.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screws penetrating joined members by no fewer than three exposed screw threads.
 4. Fasten other materials to cold-formed steel framing by welding, bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.
- C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:
1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that required to obtain fire-resistance ratings indicated. Protect remaining fire-resistive materials from damage.
- C. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/16 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.

3.3 INSTALLATION, GENERAL

- A. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.
- B. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- C. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed steel framing members by welding, or screw fastening. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.
- D. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- E. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- G. Install insulation, specified in Section 07 21 00 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- H. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.4 INSTALLATION OF LOAD-BEARING WALL FRAMING

- A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:
 - 1. Anchor Spacing: To match stud spacing and as shown on Shop Drawings.
- B. Squarely seat studs against top and bottom tracks, with gap not exceeding 1/16 inch between the end of wall-framing member and the web of track.
 - 1. Fasten both flanges of studs to top and bottom tracks.

2. Space studs as follows:
 - a. Stud Spacing: As indicated on Drawings.
 - C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.
 - D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.
 - E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.
 - F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure.
 - G. Install headers over wall openings wider than stud spacing. Locate headers above openings. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
 1. Frame wall openings with not less than a double stud at each jamb of frame. Fasten jamb members together to uniformly distribute loads.
 2. Install tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.
 - H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
 1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
 - I. Install horizontal bridging in stud system, spaced vertically as indicated on Shop Drawings. Fasten at each stud intersection.
 1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of two screws into each flange of the clip angle for framing members up to 6 inches deep.
 2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges, and secure solid blocking to stud webs or flanges.
 3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
 - J. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.
- 3.5 INSTALLATION TOLERANCES
- A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.6 REPAIR

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 40 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Steel framing and supports for mechanical and electrical equipment.
2. Metal ladders.
3. Metal bollards.
4. Rooftop equipment access platform.
5. Loose bearing and leveling plates for applications where they are not specified in other Sections.

- B. Products furnished, but not installed, under this Section include the following:

1. Loose steel lintels.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

- C. Related Requirements:

1. Section 04 20 00 "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Metal ladders.
4. Metal bollards.
5. Rooftop equipment access platform.

- B. Delegated-Design Submittal: For rooftop equipment access platform and ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design rooftop equipment access platform and ladders.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

- C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
 - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.

2.4 MISCELLANEOUS MATERIALS

- A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Concrete: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi.

2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form exposed work with accurate angles and surfaces and straight edges.
- D. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.
- E. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- F. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- G. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- H. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
 - 1. Furnish inserts for units installed after concrete is placed.
- C. Galvanize miscellaneous framing and supports where indicated.
- D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 METAL LADDERS

- A. Steel Ladders:
 - 1. Space siderails 18 inches apart unless otherwise indicated.
 - 2. Siderails: Continuous, 3/8-by-2-1/2-inch steel flat bars, with eased edges.
 - 3. Rungs: 3/4-inch-diameter, steel bars.
 - 4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.

5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
6. Source Limitations: Obtain nonslip surfaces from single source from single manufacturer.
7. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted steel brackets.
8. Primeladders, including brackets and fasteners, with zinc-rich primer.

2.8 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 80 steel pipe.
- B. Prime steel bollards with zinc-rich primer.

2.9 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.
- C. Galvanize loose steel lintels located in exterior walls.

2.10 ROOFTOP EQUIPMENT ACCESS PLATFORM

- A. Manufacturers:
 1. MIRO Industries.
 2. PHP Systems and Design.
- B. Fabricate rooftop equipment access platforms from hot dipped galvanized steel pipe and tube members and serrated galvanized steel bar grating walkway planking.
- C. Paint rooftop equipment access platform in the field.

2.11 GENERAL FINISH REQUIREMENTS

- A. Finish metal fabrications after assembly.
- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.12 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.
- C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
 1. Shop prime with universal shop primer.
- D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor shelf angles securely to construction as detailed on Structural Drawings.

3.3 INSTALLATION OF METAL BOLLARDS

- A. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- B. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 INSTALLATION OF ROOFTOP EQUIPMENT ACCESS PLATFORM

- A. Install in accordance with manufacturer's instructions and final shop drawings.

3.5 REPAIRS

- A. Touchup Painting:
 - 1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 50 00

SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and tube railings at roof area.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- B. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design railings, including attachment to building construction.

- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
 - b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
 - 1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.3 STEEL AND IRON

- A. Tubing: ASTM A500 (cold formed) or ASTM A513.
- B. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- C. Plates, Shapes, and Bars: ASTM A36/A36M.

2.4 FASTENERS

- A. General: Provide the following:
 - 1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5 for zinc coating.
 - 2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Form Changes in Direction as Follows:
 - 1. As detailed.
 - 2. By bending.
- J. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
 - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

2.7 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
2. Comply with ASTM A123/A123M for hot-dip galvanized railings.
3. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
4. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

D. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

E. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Delete first subparagraph below if only one shop primer for uncoated steel is specified.

1. Do not apply primer to galvanized surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- #### A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

- #### A. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
2. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

- #### B. Adjust railings before anchoring to ensure matching alignment at abutting joints.

- #### C. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.4 ANCHORING POSTS

- A. Anchor posts to metal or wood surfaces with floor type flanges as required by conditions, connected to posts and to metal or wood supporting members as follows and in accordance with delegated design shop drawing anchoring details:
 - 1. For steel pipe railings, weld flanges to post and bolt to metal or wood supporting surfaces.

3.5 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 05 52 13

SECTION 05 73 00 - DECORATIVE METAL RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Aluminum Railings.

1.3 DEFINITIONS

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas, pedestrian guidance and support, visual separation, or wall protection.

1.4 PERFORMANCE REQUIREMENTS

- A. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:

- 1. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate tensile strength divided by 1.95.

- B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

- 1. Handrails:

- a. Uniform load of 50 lbf/ ft. applied in any direction.
- b. Concentrated load of 200 lbf applied in any direction.
- c. Uniform and concentrated loads need not be assumed to act concurrently.

- 2. Top Rails of Guards:

- a. Uniform load of 50 lbf/ ft. applied in any direction.
- b. Concentrated load of 200 lbf applied in any direction.
- c. Uniform and concentrated loads need not be assumed to act concurrently.

- 3. Infill of Guards:

- a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
- b. Uniform load of 25 lbf/sq. ft. applied horizontally.
- c. Infill load and other loads need not be assumed to act concurrently.

- C. Thermal Movements: Provide exterior railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of railings assembled from standard components.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design, including mechanical finishes.
- D. Samples for Verification: For each type of exposed finish required.
- E. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- F. Welding certificates.
- G. Qualification Data: For professional engineer.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according ASTM E 894 and ASTM E 935.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of railings and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- C. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.2, "Structural Welding Code--Aluminum."

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.
 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
 2. Provide allowance for trimming and fitting at site.

1.8 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS FOR ALUMINUM RAILING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Basis of Design: Sterling Dula
 - a. System Type: Contemporary System.
 - b. Top Rail: TR-028.
 - c. Insert Channel: CH-125A.
 - d. Lower Rail: CH-201-A and CH-200.
 - e. Posts: TB-306-1T6.
 - f. Pickets: PT-206
 - g. Bottom Rail: CH-201-A.
 - h. Mounting Device: Welded Plate Base.
 2. Julius Blum & Co., Inc.
 3. Blumcraft of Pittsburgh.
 4. Braun, J. G., Company; a division of the Wagner Companies.
 5. Livers Bronze Co.
 6. Superior Aluminum Products, Inc.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

2.3 ALUMINUM

- A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
- B. Extruded Bars and Shapes, Including Extruded Tubing:
 - 1. ASTM B 221, Alloy 6063-T5/T52 or ASTM B 221, Alloy 6061-T5.
- C. Extruded Structural Pipe and Round Tubing:
 - 1. ASTM B 429, Alloy 6063-T6 or ASTM B 221, Alloy 6061-T5.
 - 2. Provide Standard Weight (Schedule 40) pipe, unless otherwise indicated.
- D. Drawn Seamless Tubing: ASTM B 210, Alloy 6063-T832.
- E. Plate and Sheet: ASTM B 209, Alloy 6061-T6.
- F. Die and Hand Forgings: ASTM B 247, Alloy 6061-T6.
- G. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.

2.4 FASTENERS

- A. General: Provide the following:
 - 1. Aluminum Components: Type 304 stainless-steel fasteners.
 - 2. Dissimilar Metals: Type 304 stainless-steel fasteners.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Anchors: Provide cast-in-place, chemical or torque-controlled expansion anchors, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

1. For aluminum railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove flux immediately.
 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- H. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- I. Baseplates:
 1. Weld all base plates to required structural load. All baseplates shall be factory welded to posts using a NOMMA #3 finish.
 2. Baseplate 6061-T6 alloy.
- J. Close exposed ends of hollow railing members with prefabricated end fittings.

2.7 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 ALUMINUM FINISHES

A. Railing Finishes:

1. High-Performance Organic Finish, Two-Coat Polyvinylidene Fluoride (PVDF): Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color as selected by the Architect from manufacturers standard colors.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Corrosion Protection: Coat concealed surfaces of aluminum and copper alloys that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 ANCHORING POSTS

- A. Anchor posts to substrate in accordance with manufacturer's instructions.

3.3 RAILING INSTALLATION

- A. Install aluminum railings in accordance with manufacturer's instructions.

3.4 CLEANING

- A. Clean aluminum by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.
- B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

3.5 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 73 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Rooftop equipment bases and support curbs.
 - 3. Wood blocking, cants, and nailers.

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.
- C. Exposed Framing: Framing not concealed by other construction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.
 - 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
 - 1. Fire-retardant-treated wood.
 - 2. Power-driven fasteners.
 - 3. Post-installed anchors.
 - 4. Metal framing anchors.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Treatment shall not promote corrosion of metal fasteners.
 - 2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
 - 3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 - 4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664 and design value adjustment factors shall be calculated according to ASTM D6841. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not bleed through, contain colorants, or otherwise adversely affect finishes.
- F. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood joists.

2.3 DIMENSION LUMBER FRAMING

- A. Refer to Structural Drawings.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
- B. Dimension Lumber Items: Construction or No. 2 of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine or southern pine; SPIB.
 - 3. Spruce-pine-fir; NLGA.

- C. Concealed Boards: 15 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
 - 2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
 - 3. Spruce-pine-fir south or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, C-C Plugged, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.6 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193, or ICC-ES AC308] as appropriate for the substrate.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

2.7 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Alpine Engineered Products, Inc.
 - 2. Simpson Strong-Tie Co., Inc.

3. USP Structural Connectors.
 - B. Allowable design loads, as published by manufacturer, shall meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
 - C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
 1. Use for interior locations unless otherwise indicated.
 - D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
 1. Use for fire retardant and-preservative-treated lumber and where indicated.
 - E. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
 1. Use for exterior locations and where indicated.
 - F. Joist Hangers: U-shaped joist hangers with 2-inch-long seat and 1-1/4-inch-wide nailing flanges at least 85 percent of joist depth.
 1. Thickness: 0.062 inch.
 - G. I-Joist Hangers: U-shaped joist hangers with 2-inch-long seat and 1-1/4-inch-wide nailing flanges full depth of joist. Nailing flanges provide lateral support at joist top chord.
 1. Thickness: 0.062 inch.
 - H. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
 1. Strap Width: 2 inches.
 2. Thickness: 0.062 inch.
 - I. Bridging: Rigid, V-section, nailless type, 0.050 inch thick, length to suit joist size and spacing.
 - J. Post Bases: As indicated on the drawings.
 - K. Rafter Tie-Downs (Hurricane or Seismic Ties): As indicated. If not indicated, bent strap tie for fastening rafters or roof trusses to wall studs below, 2-1/4 inches wide by 0.062 inch thick. Tie fits over top of rafter or truss and fastens to both sides of rafter or truss, face of top plates, and side of stud below.
 - L. Hold-Downs: As indicated on the drawings.

2.8 MISCELLANEOUS MATERIALS

- A. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chlorpyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- C. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- D. Do not splice structural members between supports unless otherwise indicated.
- E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o. c.
- F. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- G. Comply with AWWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.10.1, "Fastening Schedule," in the 2015 Virginia Uniform Statwide Building Code.
 - 2. ICC-ES evaluation report for fastener.
- I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 INSTALLATION OF CEILING JOIST AND RAFTER FRAMING

- A. Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.
 - 1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate, and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal-size or 2-by-4-inch nominal-size stringers spaced 48 inches o.c. crosswise over main ceiling joists.
- B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
 - 1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against valley rafters.
 - 2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip rafter.
- C. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal-size boards between every third pair of rafters, but not more than 48 inches o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.
- D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.4 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 06 16 00 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Wall sheathing.
- 2. Roof sheathing.

- B. Related Requirements:

- 1. Section 06 10 00 "Rough Carpentry" for plywood backing panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

- A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- B. Factory mark panels to indicate compliance with applicable standard.

2.2 WALL SHEATHING

- A. Plywood Sheathing: DOC PS 1, Exposure 1 sheathing.
 - 1. Span Rating: Not less than 24/0.

2. Nominal Thickness: Not less than 1/2 inch.

2.3 ROOF SHEATHING

- A. Plywood Sheathing: DOC PS 1, Exposure 1 sheathing.
 1. Span Rating: Not less than 24/0.
 2. Nominal Thickness: Not less than 5/8 inch as indicated on Drawings.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 1. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
 2. For wall sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

2.5 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with ASTM D3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
 2. ICC-ES evaluation report for fastener.

- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Roof and Wall Sheathing:
 - a. Nail to wood framing.
 - b. Space panels 1/8 inch apart at edges and ends.

END OF SECTION 06 16 00

SECTION 06 20 13 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Exterior PVC trim.
- 2. Exterior Crown moulding.

- B. Related Requirements:

- 1. Section 06 10 00 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

- 1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
- 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

- B. Samples for Verification:

- 1. For each species and cut of lumber and panel products, with half of exposed surface finished; 50 sq. in. for lumber and 8 by 10 inches for panels.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.

- 1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
- 2. Provide for air circulation around stacks and under coverings.

1.5 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 EXTERIOR TRIM

- A. Cellular PVC Trim: Extruded, expanded PVC with a small-cell microstructure, recommended by manufacturer for exterior use, made from UV- and heat-stabilized rigid material.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Intex Millwork.
 - b. Royal Building Products.
 - c. Wolfpac Technologies, Inc.; Versatex.
 - d. Vycom Corp.; Azek.
 - 2. Density: Not less than 31 lb/cu. ft.
 - 3. Heat Deflection Temperature: Not less than 130 deg F, according to ASTM D 648.
 - 4. Coefficient of Thermal Expansion: Not more than 4.5×10^{-5} inches/inch x deg F.
 - 5. Water Absorption: Not more than 1 percent, according to ASTM D 570.
 - 6. Flame-Spread Index: 75 or less, according to ASTM E 84.
- B. Fasteners for cellular PVC Trim and Column Wraps: Provide hidden screws, in sufficient length to penetrate not less than 1-1/2 inches into substrate.
 - 1. Provide FastenMaster –“Cortex Hidden fastening system”. Do not use staples, small brads and wire nails.
 - a. Cellular PVC Trim Fasteners: Provide stainless steel fasteners of type designed for wood trim and wood siding. Fasteners shall be long enough to penetrate solid wood substrate 1-1/2 inches. Use 2 fasteners for every framing member for trim board applications. Trim boards 12 inches or wider, as well as sheets, provide additional fasteners, spaced 4 inches apart. Fasteners shall be installed no more than 2 inches from the end of each board. Fasten into a flat solid substrate.
- C. Fasteners for Polyurethane Ornamental Brackets: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.
 - 1. For foam plastic components, provide stainless steel fasteners.
- D. Adhesive for Cellular PVC Trim: Product recommended by trim manufacturer.

2.2 EXTERIOR CROWN MOULDING

- A. Provide Model MLD412-16 as manufactured by Fypon, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION OF CELLULAR PVC EXTERIOR TRIM

- A. Install cellular PVC trim to comply with manufacturer's written instructions.
- B. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of trim available. Do not use pieces less than 24 inches long, except where necessary.
 - 1. Use scarf joints for end-to-end joints.
 - 2. Stagger end joints in adjacent and related members.
- C. Fit exterior joints to exclude water.
 - 1. Cope at returns and miter at corners to produce tight-fitting joints, with full-surface contact throughout length of joint.
- D. Where face fastening is unavoidable, use hidden fasteners with flush cap to match trim.
- E. Apply adhesive to all corners of column wraps. Remove excess adhesive.

3.2 INSTALLATION OF EXTERIOR CCROWN MOULDING

- A. Install in accordance with manufacturer's instructions.

END OF SECTION 06 20 13

SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior standing and running trim.
 - 2. Interior frames and jambs.
 - 3. Fabric wrapped tack panels.
 - 4. MDF wall panels.
 - 5. Decorative MDF panels.
 - 6. Interior wood windows.
 - 7. Shop priming of interior architectural woodwork.
 - 8. Shop finishing of interior architectural woodwork.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing interior architectural woodwork that are concealed within other construction before interior architectural woodwork installation.

1.3 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that interior architectural woodwork can be supported and installed as indicated.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Anchors.
 - 2. Adhesives.
 - 3. Shop finishing materials.
- B. Shop Drawings:
 - 1. Include the following:
 - a. Dimensioned plans, elevations, and sections.
 - b. Attachment details.

2. Show large-scale details.
 3. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.
 4. Apply AWI Quality Certification Program label to Shop Drawings.
- C. Samples: For each exposed product and for each shop-applied color and finish specified.
1. Size:
 - a. Panel Products: 12 inches by 12 inches.
 - b. Lumber Products: Not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For architectural woodwork manufacturer and Installer.

1.7 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.
 2. Installer Qualifications: Manufacturer of products and Licensed participant in AWI's Quality Certification Program.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the Architectural Woodwork Standards, Section 2.
- B. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas.
- C. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of the construction period.
- B. Field Measurements: Where interior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where interior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for

trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.10 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain requirements that are more stringent than the Architectural Woodwork Standards. Comply with Contract Documents and Architectural Woodwork Standards.

2.2 MATERIALS

- A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Species and Cut for Transparent Finish: Hard select white maple, plain sawn or sliced.
- C. Wood Species for Opaque Finish: Any closed-grain hardwood.
- D. Tempered Float Glass for Windows/Doors: ASTM C 1048, Kind FT, Condition A, Type I, Class 1 (clear), Quality-Q3, 6 mm thick, unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- C. Handrail Brackets: Cast from aluminum with wall flange drilled and tapped for concealed hanger bolt and with support arm for screwing to underside of rail. Sized to provide 1-1/2-inch clearance between handrail and wall.
 - 1. Basis of Design: Model 166 by Julius Blum & Co., Inc.
 - 2. Other Acceptable Manufacturers:

- a. J. G. Braun.
- b. R. B. Wagner.

- D. Concealed Countertop Brackets: Provide sizes indicated on Drawings as manufactured by A & M Hardware, Inc. Provide brackets powder coated in color as selected by Architect.
 - 1. Type: Extended Concealed Bracket.
- E. Vanity Panel Clips: Hafele, Cat. No. 262.50.359 and 262.50.368. Provide hardware for panel at front of vanity to allow for removal of panel for maintenance.

2.4 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Architectural Woodwork Standards Grade: Custom.
- B. Hardwood Lumber:
 - 1. Species: Hard select white maple.
 - 2. Cut: Plain sliced/plain sawn.
 - 3. Wood Moisture Content: 5 to 10 percent.
 - 4. For trim items other than base wider than available lumber, use veneered construction. Do not glue for width.
 - 5. For rails thicker than available lumber, use veneered construction. Do not glue for thickness.

2.5 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Architectural Woodwork Standards Grade: Custom.
 - 1. Wood Species: Any closed-grain hardwood.
 - 2. Wood Moisture Content: 5 to 10 percent.

2.6 INTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH

- A. Architectural Woodwork Standards Grade: Custom.
- B. Wood Species: Any closed-grain hardwood.
 - 1. Wood Moisture Content: 5 to 10 percent.

2.7 MISCELLANEOUS MATERIALS

- A. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.
 - 1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
 - 2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.8 FABRIC WRAPPED TACK PANELS

- A. Fiberboard: ANSI A208.2, Grade MD.
- B. Tack Panel Assembly: Provide fabric factory laminated to 1/2-inch-thick fiberboard backing with ends and edges fabric wrapped.
- C. Panel Fabric (FWTB-1): Refer to Division 09 Section "Color Schedule".

2.9 MDF WALL PANELS (MDF-1)

- A. Quality Standard: Comply with AWI Section 500 requirements.
- B. Grade: Custom.
- C. Wood Species and Cut: Medium Density Fiberboard.
 - 1. Provide machined grooved panels to match profile indicated in Section 09 05 00 – Color Schedule.
- D. Finish and Color: Refer to Section 09 05 00 – Color Schedule.

2.10 DECORATIVE MDF PANELS (DP-1)

- A. Manufacturer, Product and Finish: Refer to Section 09 05 00 – Color Schedule.
- B. Material: Medium Density Fiberboard.
- C. Thickness: ¾ inch.
- D. Application: Interior.

2.11 FABRICATION

- A. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.
 - 1. Ease edges to radius indicated for the following:
 - a. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
 - b. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.
- B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.
 - 1. Disassemble components only as necessary for shipment and installation.
 - 2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

2.12 SHOP PRIMING

- A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.

- B. Interior Architectural Woodwork for Opaque Finish: Shop prime with one coat of wood primer as specified in Section 09 91 10 "Painting."
 - 1. Backpriming: Apply one coat of primer, compatible with finish coats, to concealed surfaces of woodwork.

2.13 SHOP FINISHING

- A. Finish interior architectural woodwork with transparent finish at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
- B. Preparation for Finishing: Comply with Architectural Woodwork Standards, Section 5 for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of interior architectural woodwork. Apply two coats to end-grain surfaces.
- C. Transparent Finish (STN.-1):
 - 1. Architectural Woodwork Standards Grade: Custom.
 - 2. Finish: System - 11, catalyzed polyurethane.
 - 3. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to woodwork made from closed-grain wood before staining and finishing.
 - 4. Staining: Match Architect's sample.
 - 5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter according to ASTM D523.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.
- B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming of concealed surfaces.

3.2 INSTALLATION

- A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.
- B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.
- C. Install interior architectural woodwork level, plumb, true in line, and without distortion.
 - 1. Shim as required with concealed shims.
 - 2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

- E. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.
 - 1. Secure with countersunk, concealed fasteners and blind nailing.
 - 2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with interior architectural woodwork.
 - 3. For shop-finished items, use filler matching finish of items being installed.

- F. Standing and Running Trim:
 - 1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
 - 2. Do not use pieces less than 96 inches long, except where shorter single-length pieces are necessary.
 - 3. Scarf running joints and stagger in adjacent and related members.
 - 4. Fill gaps, if any, between top of base and wall with plastic wood filler; sand smooth; and finish same as wood base if finished.
 - 5. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

- G. Fabric Wrapped Tack Panels: Attach panels to wall surface with egg-size moisture-resistant thermoplastic type adhesive gobs at 16 inches o.c. horizontally and vertically.

3.3 REPAIR

- A. Repair damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects and to result in interior architectural woodwork being in compliance with requirements of Architectural Woodwork Standards for the specified grade.

- B. Where not possible to repair, replace defective woodwork.

- C. Shop Finish: Touch up finishing work specified in this Section after installation of interior architectural woodwork.
 - 1. Fill nail holes with matching filler where exposed.
 - 2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

- D. Field Finish: See Section 09 91 10 "Painting" for final finishing of installed interior architectural woodwork not indicated to be shop finished.

3.4 CLEANING

- A. Clean interior architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION 06 40 23

SECTION 06 64 00 - PLASTIC PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Plastic sheet paneling.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For plastic paneling and trim accessories, in manufacturer's standard sizes.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain plastic paneling and trim accessories from single manufacturer.

2.2 PLASTIC SHEET PANELING (FRP-1)

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319. Panels shall be USDA accepted for incidental food contact.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Crane Composites, Inc.
 - b. Marlite.
 - c. Nudo Products, Inc.

2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
3. Nominal Thickness: Not less than 0.09 inch.
4. Surface Finish: Molded pebble texture.
5. Color: Refer to Section 09 05 00 – "Color Schedule".

2.3 ACCESSORIES

- A. Trim Accessories: Manufacturer's standard two-piece, snap-on vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.
 1. Color: Match panels.
- B. Concealed Mounting Splines: Continuous, H-shaped aluminum extrusions designed to fit into grooves routed in edges of factory-laminated panels and to be fastened to substrate.
- C. Adhesive: As recommended by plastic paneling manufacturer.
- D. Sealant: Mildew-resistant, single-component, neutral-curing or acid-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove wallpaper, vinyl wall covering, loose or soluble paint, and other materials that might interfere with adhesive bond.
- B. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.
- C. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
- D. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.

- E. Lay out paneling before installing. Locate panel joints to provide equal panels at ends of walls not less than half the width of full panels.
 - 1. Mark plumb lines on substrate at trim accessory locations for accurate installation.
 - 2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

3.3 INSTALLATION

- A. Install plastic paneling according to manufacturer's written instructions.
- B. Install panels in a full spread of adhesive.
- C. Install trim accessories with adhesive and fasteners. Do not fasten through panels.
- D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
- E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
- F. Maintain uniform space between adjacent panels and between panels and floors, ceilings, and fixtures. Fill space with sealant.
- G. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 06 64 00

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Extruded polystyrene foam-plastic board.
 - 2. Glass-fiber blanket.
 - 3. Spray applied foam insulation.
- B. Related Requirements:
 - 1. Section 07 53 23 "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing" for insulation specified as part of roofing construction.
 - 2. Section 09 29 00 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
 - 1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
 - 3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD

- A. Extruded Polystyrene Board, Type IV: ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E84.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
 - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 GLASS-FIBER BLANKET

- A. Glass-Fiber Blanket, Kraft Faced: ASTM C665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.

2.3 CLOSED-CELL SPRAY POLYURETHANE FOAM

- A. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 2.0 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.2 deg F x h x sq. ft./Btu at 75 deg F.
 - 1. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- B. Manufacturers and Products: Subject to compliance with requirements, provide one of the following products:
 - 1. Closed Cell Foam:
 - a. Products Tested and meeting the requirements of AC377 Acceptance Criteria for Spray-Applied Foam Plastic Insulation (Modified NFPA 286):
 - 1) Demilec "Heatlok XT".
 - 2) CertainTeed; "CertaSpray Closed Cell Foam".
 - b. Products with a spray applied ignition barrier.
 - 1) BASF Corporation Spraytite 178 with Intertek "No Burn Plus".
 - 2) John Manville CorBond III with JM Ignition Barrier.
- C. Products by type and locations:

1. Interior locations concealed by Thermal Ignition Barrier: Closed cell; Any closed cell foam listed above.
 2. Interior locations not covered by Thermal and Ignition Barrier: Closed Cell; Any closed cell foam listed above with manufacturer's tested and approved intumescent thermal/ignition barrier.
- D. Precautions: In additions to precautions recommended by the manufacturers shall take the following precautions:
1. Spray foam in layers to prevent excessive heat build-up.
 2. Seal joints between existing masonry walls and new framing with minimal-expanding, low pressure-build, flexible polyurethane foam sealant as specified in Section 07 92 00 and take other precautions to prevent foam insulation from bowing or displacing framing and blocking.
 3. After installation of spray foam insulation areas shall be ventilated utilizing fans recommended by the foam manufacturer for a minimum of 72 hours prior concealing foam or enclosing areas to remove off gassing from the building. Provide additional ventilation as required by foam manufacturer.

2.4 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
- B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF SLAB INSULATION

- A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches in from exterior walls.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached.
- C. Adhesive Installation: Install with adhesive according to manufacturer's written instructions.

3.5 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
 - 4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
 - 5. For wood-framed construction, install blankets according to ASTM C1320 and as follows:
 - a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
 - 6. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
 - a. Exterior Walls: Set units with facing placed toward interior of construction.
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
 - 1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.6 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

SECTION 07 23 00 - CONTINUOUS INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes continuous insulation on exterior walls.
- B. Related Sections:
 - 1. Section 05 40 00 Cold-Formed Metal Framing: Load-bearing, metal exterior wall framing assemblies.
 - 2. Section 06 16 00 Sheathing; exterior sheathing products other than insulated sheathing.
 - 3. Section 07 21 00 Thermal Insulation
 - 4. Section 07 62 00 Sheet Metal Flashing and Trim
 - 5. Section 07 92 00 Joint Sealants
 - 6. Section 09 21 16 Gypsum Board Assemblies: Interior gypsum board wall finish.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each product specified.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver continuous insulation materials in manufacturer's unopened containers or bundles, fully identified by name, brand, type and grade. Exercise care to avoid damage during unloading, storing and installation.
- B. Store, protect and handle continuous insulation materials in accordance with the Manufacturer's recommendations to prevent damage, contamination and deterioration. Keep materials clean, dry, free of dirt and other foreign matter.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements: Install continuous insulation work only when weather conditions are in compliance with manufacturer's specific environmental requirements and conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

PART 2 - PRODUCTS

2.1 INSULATING SHEATHING

- A. Exterior Insulation (Exterior Layer over Gypsum Sheathing): Glass-fiber-reinforced enhanced polyisocyanurate foam core sheathing faced with nominal 4 mil embossed white or blue acrylic-coated aluminum on one side and 1.25 mil embossed aluminum on the other side, complying with ASTM C1289 and meeting the following physical properties:
1. ASTM C1289 Type 1, Class 2
 2. Compressive Strength (ASTM D1621): 25 psi, minimum.
 3. Flexural Strength (ASTM C203): Minimum 40 psi.
 4. Water Absorption (ASTM C209): Maximum 1.0 percent by volume.
 5. Water Vapor Permeance (ASTM E96): <0.3 perms.
 6. Maximum Use Temperature: 250 degrees F.
- B. Acceptable Products: The Dow Chemical Company "THERMAX™ Xarmor Exterior Wall Insulation."
1. Panel Size: 4'-0" wide x 8'-0" or 12'-0" long, shiplap panels.
 2. Thicknesses: As indicated on Drawings.
 3. Compressive Strength: 25 psi minimum.
 4. Aged Thermal Resistance (ASTM C518, measured at Mean Temp of 75F)
 5. Provide 15 year thermal warranty

2.2 ACCESSORIES

- A. Fasteners: Provide insulated sheathing manufacturer's recommended polymer or other corrosion-protective coated steel screw fasteners for anchoring sheathing to metal wall framing or concrete masonry units.
1. Acceptable Products: Wind-lock Corporation "ci-Lock Steel Series Selection" with 1-3/4 inch diameter high-grade plastic washers. Fastener length and size based on wall sheathing thickness.
- B. Flexible polyethylene foam gasketing strip to reduce air infiltration between a concrete foundation and sill plate.
1. Acceptable Products: The Dow Chemical Company "WEATHERMATE™ Sill Seal Foam Gasket.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and installation conditions for compliance with requirements for installation conditions affecting performance of the work.
1. Panel Substructure: Verify level and plumb, free of defects detrimental to work and erected in conformance with established building tolerances,

- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.2 INSULATION INSTALLATION

- A. Install insulation in accordance with manufacturer's recommendations. Fasten to exterior face of exterior metal stud wall framing through plywood sheathing using sheathing manufacturer's recommended type and length screw fasteners with washers. Abut panels tightly together and around openings and penetrations.
 - 1. Install rigid insulation layer using maximum lengths to minimize number of joints. Locate edge joints parallel to and on framing. Center end joints over supports and stagger in each course. Provide additional framing wherever panel joints do not bear against framing, plates or sill members.
 - 2. Install sheathing panels horizontally with blue aluminum facing to exterior. Use maximum lengths to minimize number of joints. Locate edge joints parallel to and on framing. Center end joints over supports and stagger in each course. Provide additional framing wherever panel joints do not bear against framing, plates or sill members.
 - 3. Fasten panels to each support with fasteners spaced 12 inches on center at perimeter and 16 inches on center in panel field. Set back perimeter fasteners 3/8" from edges and ends of panel units. Drive fasteners to bear tight and flush with surface of insulation. Do not countersink. Perimeter fasteners can be detailed to bridge the gap of abutting board joints due to the 1.75" diameter of the washer used to fasten the board to the studs. Maximum of two board joints may be bridged per fastener.

END OF SECTION 07 23 00

SECTION 07 27 20 - FLUID-APPLIED MEMBRANE AIR AND WATER BARRIER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Fluid-applied interior membrane air barrier, water retarding.
- B. Related Sections include the following:
 - 1. Division 07 Section "Self Adhering Sheet Air and Water Barriers".
 - 2. Division 07 Section "Joint Sealants" for joint-sealant materials and installation.

1.3 SUBMITTALS

- A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of air barrier.
- B. Shop Drawings: Show locations and extent of air and water barrier. Include project specific details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, window and door openings, terminations, and tie-ins with adjoining construction. Manufacturer's standard generic details are not acceptable.
 - 1. Include details of interfaces with other materials that form part of air and water barrier.
 - 2. Project specific details shall be reviewed and approved by fluid-applied air and water barrier manufacturer prior to submitting to Architect.
- C. Qualification Data: For Applicator.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Installer shall have completed training through a Grace Construction Products Training Program. Installer shall have completed a training program by Grace Construction Products prior to Contractor submitting a bid.
 - 1. Installer shall have completed a minimum of 5 projects with the products specified in this section similar in type and size of this project. Provide project information for 5 projects of similar type and size including project name, product used on each project, area of wall that air and water barrier was applied and reference contact for each project.
- B. Preinstallation Conference: Conduct conference at Project site.

1. Include fluid-applied membrane air/water barrier manufacturer's technical representative and installers of other construction connecting to air barrier, including roofing, waterproofing, cast stone, masonry, sealants, windows, glazed curtain walls, and door frames.
 - a. **Manufacturer's Technical Representative:** Manufacturer's technical representative shall have authority to make decisions on details and installation procedures behalf of fluid-applied membrane air/water barrier manufacturer. An independent sales representative or manufacturer's representative not able to make binding decisions on behalf of the fluid-applied membrane air/water barrier manufacturer is not acceptable.
2. Review air and water barrier requirements including surface preparation, substrate condition and pretreatment, minimum substrate curing period, forecasted weather conditions, special details and sheet flashings, mockups, installation procedures, sequence of installation, testing and inspecting procedures, and protection and repairs.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.
- B. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- C. Store rolls according to manufacturer's written instructions.
- D. Protect stored materials from direct sunlight.

1.6 PROJECT CONDITIONS

- A. **Environmental Limitations:** Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturer. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 FLUID-APPLIED MEMBRANE AIR/WATER BARRIER

- A. **Fluid Applied Membrane:**
 1. **Description:** a two part, self-curing, synthetic rubber based material free of solvents, isocyanates and bitumen.
 2. **Performance Requirements:**
 - a. **Water Vapor Permeance:** Less than 11.2 Perms per ASTM E 96, Method BW.
 - b. **Cured Film Thickness:** 0.060 in. nominal
 - c. **Air Permeance at 75Pa (0.3 in. water) Differential Pressure:** 0.0004 cfm/ft² per ASTM E 283-91
 3. **Acceptable Material:**

- a. Perm-A-Barrier VP[®] Liquid from Grace Construction Products.
- b. Tremco – ExoAir 110T.
- c. Henry Air-Bloc All Weather STPE

B. Transition Tape:

1. Description: 36 mils of self-adhesive rubberized asphalt integrally bonded to 4 mil of cross-laminated, high-density polyethylene film to provide a min. 40 mil thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed.
2. Performance Requirements:
 - a. Water Water Transmission: ASTM E 96, Method B: 0.05 perms max.
 - b. Air Permeance at 0.3 in. water pressure difference: 0.00012 cfm/ft² max.
 - c. Puncture Resistance: ASTM E 154: 40 lbs. min.
 - d. Lap Adhesion at 25°F: ASTM D 1876: 5.0 lbs./in. of width min.
 - e. Low Temperature Flexibility ASTM D 1970: Unaffected to -45°F.
 - f. Tensile Strength: ASTM D 412, Die C Modified: min. 400 psi
 - g. Elongation, Ultimate Failure of Rubberized Asphalt: ASTM D 412 Die C: min. 200%
3. Acceptable Material:
 - a. Perm-A-Barrier VP Wall Membrane manufactured by Grace Construction Products.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate patching membrane.

- E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- F. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.3 JOINT TREATMENT

- A. Plywood: Ensure that plywood is sufficiently stabilized with corners and edges fastened with appropriate screws. Pre-treat all board joints with transition tape. Center tape over board joints. Gaps greater than ¼ inch shall be filled with mastic or caulk, allowing sufficient time to cure before application of transition tape and fluid applied membrane.

3.4 FLUID APPLIED MEMBRANE AIR/WATER BARRIER INSTALLATION

- A. Refer to manufacturer's literature for recommendations on installation.
- B. Application of Fluid Applied Membrane:
 - 1. Spray or trowel apply a continuous uniform film at min. 60 mils wet film thickness using multiple, overlapping passes.
 - 2. When spraying use a cross-hatching technique (alternating horizontal and vertical passes) to ensure even thickness and coverage.
 - 3. When spraying use high pressure, multi-component, airless spray equipment approved by material manufacturer.
 - 4. Carry membrane into any openings a minimum of 2 inch.
- C. Application of Transition Membrane:
 - 1. After allowing the Fluid Applied Membrane to cure to tack-free, apply transition membrane with a minimum overlap of 3 inch onto each surface at all beams, columns and joints as indicated in detail drawings.
 - 2. Tie in to window and door frames, roof and floor intersections and changes in substrate.
 - 3. Use pre-cut, easily handled lengths for each location.
 - 4. Remove silicone-coated release paper and position membrane flashing carefully before placing it against the surface.
 - 5. When properly positioned, place against surface by pressing firmly into place by hand roller.
 - 6. Overlap adjacent pieces 2 inch and roll all seams with a hand roller.
 - 7. Seal top edge of flashing with termination mastic.
 - 8. Form sill pans with ends dams using transition membranes.

3.5 TRANSITION AT FOOTING

- A. Where air/water barrier does not transition to waterproofing, apply air/water barrier down foundation to footing and lap onto footing 6 inches.

3.6 CLEANING AND PROTECTION

- A. Protect air and water barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Protect air and water barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace air barrier exposed for more than 21 days.
 2. Protect air and water barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, and sealants not approved by air barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.
- C. Remove masking materials after installation.

END OF SECTION 07 27 20

SECTION 07 31 13 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Asphalt shingles.
2. Underlayment.

1.3 DEFINITION

- A. Roofing Terminology: See ASTM D1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For the following products, of sizes indicated:
 1. Asphalt Shingles: Provide five (5) full size shingles to confirm match with existing shingles.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture according to manufacturer's written instructions.
- B. Store underlayment rolls on end on pallets or other raised surfaces. Do not double stack rolls.
- C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.
- D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard warranty for product selected..

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance according to ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D3462/D3462M, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
 - 1. Match existing shingle in size, type and color.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering Sheet Underlayment, Granular Surfaced (Waterproof Underlayment): ASTM D1970/D1970M, minimum of 40-mil- thick sheet; glass-fiber-mat-reinforced, SBS-modified asphalt; mineral-granule surfaced; with release backing; cold applied.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle WIP Products; a brand of Carlisle Construction Materials.
 - b. CertainTeed Corporation.
 - c. GAF.
 - d. Henry Company.

2.4 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F1667; aluminum, stainless-steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch-diameter, sharp-pointed, with a minimum 3/8-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
 - 1. Shank: Barbed.

2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

2.5 METAL FLASHING AND TRIM

- A. General: Comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provisions have been made for flashings and penetrations through asphalt shingles.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

- A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
- B. Self-Adhering Sheet Underlayment (Waterproof Underlayment): Install, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install lapped in direction that sheds water. Lap sides not less than 3-1/2 inches. Lap ends not less than 6 inches staggered 24 inches between courses. Roll laps with roller. Cover underlayment within seven days.
 1. Install waterproof underlayment under all new asphalt shingles.

3.3 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."
 1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

3.4 ASPHALT-SHINGLE INSTALLATION

- A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Install starter strip along lowest roof edge, consisting of an asphalt-shingle strip with tabs removed with self-sealing strip face up at roof edge.
- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt-shingle strips with a minimum of four roofing nails located according to manufacturer's written instructions.
 - 1. When ambient temperature during installation is below 50 deg F, seal asphalt shingles with asphalt roofing cement spots.

END OF SECTION 07 31 13

SECTION 07 46 33 - PLASTIC SOFFIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes soffit.

1.3 COORDINATION

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Verification: For each type, color, texture, and pattern required.
 - 1. 12-inch-long-by-actual-width Sample of soffit.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish full lengths of vinyl siding and soffit including related accessories, in a quantity equal to 2 percent of amount installed.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with labels intact until time of use.
- B. Store materials under cover.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracking, fading, and deforming.
 - b. Deterioration of materials beyond normal weathering.
 2. Fading is defined as loss of color, after cleaning with product recommended by manufacturer, of more than 4 Hunter color-difference units as measured according to ASTM D2244.
 3. Warranty Period: 50 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 VINYL SOFFIT (BALCONY CEILINGS)

- A. Vinyl Soffit: Integrally colored product complying with ASTM D4477.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Basis of Design: CertainTeed Corporation; Beaded Triple 2".
 - b. Alside.
 - c. Mastic Home Exteriors; PLY GEM Siding Group.
- B. Pattern: 6-inch exposure in beaded pattern, triple, 2-inch beaded style.
- C. Texture: Smooth.
- D. Ventilation: Provide invisible venting of soffit.
- E. Nominal Thickness: 0.039 inch.

- F. Color: As selected by Architect.

2.3 ACCESSORIES

- A. Vinyl Accessories: Integrally colored vinyl accessories complying with ASTM D3679 except for wind-load resistance.
- B. Fasteners:
 - 1. For fastening to wood, use siding nails of sufficient length to penetrate a minimum of 1 inch into substrate.
 - 2. For fastening vinyl, use hot-dip galvanized fasteners. Where fasteners are exposed to view, use prefinished aluminum fasteners in color to match item being fastened.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of vinyl soffit and related accessories.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. Center nails in elongated nailing slots without binding siding to allow for thermal movement.
- B. Install vinyl soffit and related accessories according to ASTM D4756.
 - 1. Install fasteners for soffit in accordance with manufacturer's instructions.

3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

RENOVATIONS AND ADDITIONS TO
BRANDON OAKS FISHWICK & NRC
FOR VIRGINIA LUTHERAN HOMES

2019091

28 AUGUST 2020

PHASES 2D & 3

END OF SECTION 07 46 33

SECTION 07 46 46 - FIBER-CEMENT TRIM AND SIDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fiber-cement trim and Siding.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for wood furring, grounds, nailers, and blocking.

1.3 COORDINATION

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish full lengths of fiber-cement trim and siding including related accessories, in a quantity equal to 2 percent of amount installed.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with labels intact until time of use.
- B. Store materials on elevated platforms, under cover, and in a dry location.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracking and deforming.
 - b. Deterioration of materials beyond normal weathering.
 2. Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 FIBER-CEMENT TRIM

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. James Hardie Building Products, Inc.
- B. Nominal Thickness: 4/4 and 5/4.
- C. Trim Width: Provide widths as indicated on Drawings.
 1. Texture: Smooth.
- D. Factory Priming: Manufacturer's standard acrylic primer.

2.3 FIBER-CEMENT SIDING

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. James Hardie Building Products, Inc.
 - b. Nichia Fiber Cement
- B. Nominal Thickness: Not less than 5/16 inch.
- C. Pattern: Lap Siding.
 - 1. Narrow Lap: Cedar 5 1/4" with 4" exposure.
 - 2. Wide Lap: Cedar 8 1/4" with 7" exposure.
- D. Factory Priming: Manufacturer's standard acrylic primer.
- E. Refer to Section 09 05 00 "Color Schedule" for color to be painted in the field.

2.4 FURRING STRIPS

- A. Provide 1-3/4 inch wide by 3/4 inch thick fully saturated ground contact rated pressure treated plywood strips.

2.5 SIDING VENTILATION SYSTEM

- A. Siding Vent System: Provide SV-3 siding vent as manufactured by Cor-A-Vent, Inc.
 - 1. Size: 7/16 inch thick by 3 inches tall by 4 feet long.

2.6 ACCESSORIES

- A. Fasteners:
 - 1. For fastening to wood, use siding nails of sufficient length to penetrate a minimum of 1 inch into substrate.
 - 2. For fastening fiber cement, use stainless-steel fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of fiber-cement siding and related accessories.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. Do not install damaged components.
 - 2. Install fasteners no more than 24 inches o.c.
- B. Install joint sealants as specified in Section 07 92 00 "Joint Sealants" and to produce a weathertight installation.

3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 07 46 46

SECTION 07 53 23 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Adhered membrane roofing system.
 - 2. Roof insulation.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
 - 3. Division 07 Section "Joint Sealants."

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. FMG Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
 - 1. Fire/Windstorm Classification: Class 1A-90.
 - 2. Uplift pressure shall be designed in accordance with authorities having jurisdiction.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: For roofing system. Include plans, elevations, sections, project specific details, and attachments to other Work. Shop drawings shall be reviewed and approved by roof membrane manufacturer prior to submission to Architect.
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation, including slopes.
- C. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, licensed or certified by manufacturer to install roofing system.
- D. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.
- E. Qualification Data: For Installer and manufacturer.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- G. Research/Evaluation Reports: For components of membrane roofing system.
- H. Maintenance Data: For roofing system to include in maintenance manuals.
- I. Warranties: Special warranties specified in this Section.
- J. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, licensed or certified by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
 - 1. Carlisle: Centurion Roofer.
 - 2. Firestone: Master Roofer.
 - 3. Manville Roofing: Summit Roofer.
- B. Manufacturer Qualifications: A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain components for membrane roofing system from same manufacturer as roofing membrane.
- E. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.

2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
- F. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following:
1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's technical representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - a. Coordinate roof phasing plan as indicated on the Drawings.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.
 10. Review components that require special fabrication and/or ordering.
- G. Preinstallation Conference: Conduct conference at Project site. Comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's technical representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.
- H. Manufacturer's Technical Representative: Manufacturer's technical representative shall have authority to make decisions on details and installation procedures behalf of roofing system manufacturer. An independent sales representative or manufacturer's representative not able to make binding decisions on behalf of the roofing system manufacturer is not acceptable.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
 - 1. Insulation stored on site shall remain in the factory wrapped protection and up off of the ground. Additional tarps shall be provided to protect from rain, snow and ice.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Materials shall not be stored on completed roof areas.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks and debonding of membrane from substrate.
 - 1. Special warranty includes roofing membrane, base flashings, roofing accessories, roof insulation, walkway products and other components of membrane roofing system.
 - 2. Warranty Period: 20 years from date of Substantial Completion.

1.10 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 EPDM ROOFING MEMBRANE

- A. EPDM Roofing Membrane: ASTM D 4637, Type I, nonreinforced uniform, flexible sheet made from EPDM, and as follows:
1. Manufacturers:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products Company.
 - c. Johns Manville; a Berkshire Hathaway company.
 2. Thickness: 60 mil, nominal.
 3. Exposed Face Color: Black.

2.3 AUXILIARY MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
 2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Gypsum Board and Panel Adhesives: 50 g/L.
 - c. Multipurpose Construction Adhesives: 70 g/L.
 - d. Fiberglass Adhesives: 80 g/L.
 - e. Contact Adhesive: 80 g/L.
 - f. Single-Ply Roof Membrane Sealants: 450 g/L.
 - g. Nonmembrane Roof Sealants: 300 g/L.
 - h. Sealant Primers for Nonporous Substrates: 250 g/L.
 - i. Sealant Primers for Porous Substrates: 775 g/L.
 - j. Other Adhesives and Sealants: 250 g/L.
- B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.
- C. Bonding Adhesive: Manufacturer's standard bonding adhesive, water based.
- D. Seaming Material: Manufacturer's standard synthetic-rubber polymer primer and 3-inch- wide minimum, butyl splice tape with release film.
- E. Lap Sealant: Manufacturer's standard single-component sealant, color to match roofing membrane.
- F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- G. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

- H. Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.4 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4 inch thick.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Georgia-Pacific Corporation; Dens Deck Prime.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.

2.5 AIR AND VAPOR BARRIER

- A. Sheet Vapor Barrier:
 - 1. Subject to compliance with requirements, provide products from the following:
 - a. Carlisle SynTec Systems; VapAir Seal 725TR.
 - b. Firestone Building Products; V-Force Vapor Barrier Membrane.
 - c. Johns Manville; a Berkshire Hathaway company; SA Vapor Barrier.
 - 2. Self-adhering composite vapor barrier, minimum 30 mil thick.

2.6 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces.
 - 1. Manufacturers:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products Company.
 - c. Johns Manville; a Berkshire Hathaway Company.
- C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.

- B. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric mat, water permeable and resistant to ultraviolet degradation, type and weight as recommended by roofing system manufacturer for application.
- C. Metal Securement System: Perimeter securement flashing and strapping fabricated from stainless steel, a minimum of 0.031 inch thick. Provide fasteners as recommended by mortar-faced insulation manufacturer.

2.8 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 1/2 inch thick, and acceptable to membrane roofing system manufacturer.
 - 1. Color: Black.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer and manufacturer's technical representative present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
 - 1. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.

3.4 VAPOR BARRIER

- A. Install vapor barrier as recommended by membrane manufacturer.
 - 1. Prime substrate if recommended by manufacturer.
 - 2. Lap and stagger seams as recommended by membrane manufacturer.
 - 3. Roll membrane to fully seat membrane to substrate.

3.5 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation over metal decking.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install multiple layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 12 inches in each direction.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 2. Fasten insulation according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.

3.6 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.

- E. Mechanically or adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- F. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- G. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing membrane terminations.
- H. Repair tears, voids, and lapped seams in roofing that does not meet requirements.
- I. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.

3.7 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 ROOF DRAIN INSTALLATION

- A. Install roof drains as recommended by drain and membrane manufacturers.
- B. Coordinate the installation of the roof drain, including sump pan with plumbing subcontractor.
- C. Extend vapor barrier onto roof drain bowl flange and adhere.
- D. Place the top layer of insulation over roof drain extension ring flange, cut insulation vertically to the edge of the flange and taper to fit tight in below the drain flange, so that the top of the insulation is horizontally in line with the top edge of the drain flange.
 - 1. Fill all voids with spray foam insulation.
 - 2. Tapered insulation is to be placed at center of the roof drain and cut vertically in line to the roof drain flange below.
- E. Extend EPDM over roof drain with lap seam greater than 5'-0" away. Cut a circular hole in the EPDM without end cuts or burrs on the EPDM, 1/2" maximum inside vertical wall of extension ring.

- F. Seal between the EPDM membrane and drain flange with one full tube of water cut-off mastic, as indicated in manufacturer's standard details.
- G. Place a full tube of water cut-off mastic below the EPDM atop the roof drain extension flange.
- H. Set clamping ring and clamping ring bolts, tighten with braces set in criss-cross pattern across roof drain, set against the clamping ring bolts (do not hand tighten). Set and secure drain dome down flush to top of insulation facer.

3.9 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.10 FIELD QUALITY CONTROL

- A. Roofing system manufacturer's technical representative shall provide interval inspections of the roofing installation, including but not limited to the following, preliminary roofing conference, preinstallation conference, start up, 25 percent completion, and at completion of roofing. Manufacturer's technical representative shall provide written reports of inspections to Contractor, roofing installer, Architect and Owner within 5 business days of each inspection.
 - 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- B. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.
 - 1. White roof membrane shall be cleaned of all construction dirt and dust to provide the white color as new.

END OF SECTION 07 53 23

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Formed roof-drainage sheet metal fabrications.
2. Formed low-slope roof sheet metal fabrications.
3. Exterior aluminum clad standing and running trim.

B. Related Requirements:

1. Division 05 Section "Metal Fabrications" for downspout boots.
2. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
3. Division 07 Section "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.

1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
2. Submit product data for downspout sound reduction inserts.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Include identification of material, thickness, weight, and finish for each item and location in Project.
3. Include details for forming, including profiles, shapes, seams, and dimensions.
4. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
5. Include details of termination points and assemblies.
6. Include details of roof-penetration flashing.
7. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
8. Include details of special conditions.
9. Include details of connections to adjoining work.
10. Detail formed flashing and trim at scale of not less than 3 inches per 12 inches.

C. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

D. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches long.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.9 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.
 - 1. Nonpatinated Exposed Finish: Mill.
- C. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
 - 1. Exposed Coil-Coated Finish:

- a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 2. Color: As selected by Architect from manufacturer's full line.
 3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.
- D. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; with smooth, flat surface.
1. Finish: 2D (dull, cold rolled).

2.3 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.
- B. Self-Adhering, High-Temperature Sheet (Waterproof Underlayment and Transition Tapes): Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle Coatings & Waterproofing Inc.
 - b. Grace Construction Products; W.R. Grace & Co. -- Conn.
 - c. Henry Company.
 2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
 3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.
- C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

- a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
2. Fasteners for Copper Sheet: Copper, hardware bronze or passivated Series 300 stainless steel.
 3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 4. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- C. Solder:
1. For Copper: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
 2. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- H. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 2. Obtain field measurements for accurate fit before shop fabrication.
 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.

4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."
- D. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- E. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.
- I. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in continuous seamless lengths not to exceed 50 feet. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
 1. Gutter Style: K-style.
 2. Gutter Size: As indicated on Drawings.
 3. Expansion Joints: Butt type.
 4. Gutter Hangers: Berger Bros. Co.:
 - a. Type: Model HID5S or HID6S as required for gutter size.
 5. Gutter Splash Guards: 0.040 inch thick aluminum. Finished to match gutter. Provide at inside corners.
 6. Gutters: Fabricate from the following materials:
 - a. Aluminum: 0.032 inch thick.
- B. Downspouts: Fabricate rectangular downspouts complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors.

1. Fabricated Hanger Style: SMACNA figure designation 1-35B.
2. Downspout Size: As indicated on Drawings.
3. Fabricate from the following materials:
 - a. Aluminum: 0.024 inch thick.
4. Downspout Sound Reduction Inserts: Provide downspout inserts at all downspouts with elbow bends at brick sill at Second Floor. Provide straight back or curved back to match downspout bend type.
 - a. Manufacturer and Product: RainQuiet, LLC; RainQuiet Inserts.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof-Penetration Flashing: Fabricate from the following materials:
 1. Copper: 16 oz./sq. ft..
- B. Roof-Drain Flashing: Fabricate from the following materials:
 1. Copper: 12 oz./sq. ft..
- C. Counterflashing: Fabricate from the following materials:
 1. Copper: 16 oz./sq. ft..
- D. Shingle to EPDM Roof Transition Flashing:
 1. Stainless Steel: 0.019 inch.

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

- A. Miscellaneous Flashing: Fabricate from the following materials:
 1. Aluminum: 0.032 inch thick.

2.9 EXTERIOR ALUMINUM CLAD STANDING AND RUNNING TRIM

- A. Lumber and Plywood Substrate: Provide finished lumber and plywood complying with the following requirements including those of the grading agency listed with species:
 1. Lumber Species: Southern yellow pine; SPIB.
 - a. Grade: B & B.
 2. Plywood: DOC PS 1.
 3. Aluminum Clad Lumber: 0.040 inch prefinished aluminum, where face dimension exceeds 6 inches provide 0.050 inch prefinished aluminum.
 4. Aluminum Clad Plywood: 0.062 inch thick prefinished aluminum.
 5. Exposed Fasteners shall be prefinished corrosion resistant to match sheet metal finish.

6. Finish shall be two coat fluoropolymer system with 70% resin in a color as selected by the Architect.
- B. Fabrication of aluminum clad trim shall be as follows:
1. Provide horizontal cleats and clips to fasten aluminum cladding to wood trim.
 2. Exposed fasteners shall not be permitted without written approval of the Architect.
 3. Corners shall be seam locked.
 4. Provide pencil rod stiffing lines for fascia more than 6 inches tall.
- C. Vertical joints shall be spaced evenly and uniformly around the perimeter of the building. Section lengths shall be 10 feet to 12 feet long.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
1. Verify compliance with requirements for installation tolerances of substrates.
 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.
- B. Self-Adhering Sheet Underlayment (Waterproof Underlayment): Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 5. Torch cutting of sheet metal flashing and trim is not permitted.
 6. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not solder aluminum sheet.
2. Do not use torches for soldering.
3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters: Join sections with lapped joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter hangers spaced not more than 16 inches apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
 1. Loosely lock hangers to front gutter bead and anchor to fascia board.
 2. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet apart. Install expansion-joint caps.
- C. Downspouts: Join sections with 1-1/2-inch telescoping joints.
 1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c. in between.
 2. Connect downspouts to underground drainage system indicated.

3.5 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- C. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

3.6 EXTERIOR ALUMINUM CLAD STANDARD AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary.

Stagger joints in adjacent and related standing and running trim. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.

1. Fit exterior joints to exclude water. Apply flat grain lumber with bark side exposed to weather.

3.7 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.8 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 62 00

SECTION 07 71 00 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following manufactured roof specialties:
 - 1. Roof edge flashings.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 07 Section "Sheet Metal Flashing and Trim" for custom- and site-fabricated sheet metal flashing and trim.
 - 3. Division 07 Section "Roof Accessories" for roof hatches.
 - 4. Division 07 Section "Joint Sealants" for field-applied sealants.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Manufacture and install manufactured roof specialties to resist thermally induced movement and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Manufacture and install roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressures:
 - 1. Design Pressure: As indicated on Drawings and in accordance with IBC 2009.
- C. Thermal Movements: Provide manufactured roof specialties that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- D. Water Infiltration: Provide manufactured roof specialties that do not allow water infiltration to building interior.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show layouts of manufactured roof specialties, including plans and elevations. Identify factory- vs. field-assembled work. Include the following:
 - 1. Job specific details for fastening, joining, supporting, and anchoring manufactured roof specialties including fasteners, clips, cleats, and attachments to adjoining work.
 - 2. Job specific details for expansion and contraction.
- C. Samples for Initial Selection: For each type of manufactured roof specialty indicated with factory-applied color finishes.
- D. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.6 COORDINATION

- A. Coordinate installation of manufactured roof specialties with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

1.7 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace manufactured roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Products: Subject to compliance with requirements, provide one of the products specified.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 EXPOSED METALS

- A. Aluminum Sheet: ASTM B 209, alloy and temper recommended by manufacturer for use and finish indicated, finished as follows:
 - 1. Surface: Smooth, flat finish.
 - 2. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.

2.3 CONCEALED METALS

- A. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.
- C. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
- D. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

2.5 ROOF EDGE FLASHINGS

- A. Roof Edge Fascia: Manufactured, two-piece, roof edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet and a continuous formed- or extruded-aluminum anchor bar with integral drip edge cleat to engage fascia cover. Provide matching mitered and welded corner units.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following as required to maintain 30 year roof system warranty:
 - a. Firestone Building Products; Anchorgard HG.
 - b. Carlisle SynTec; SecureEdge 3000XT.
 - 2. Cover: Fabricated from the following exposed metal:
 - a. Formed Aluminum: 0.050 inch thick.
 - 3. Fascia Cover Color: As selected by Architect from manufacturer's full range.
 - 4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.
 - 1. Examine walls, roof edges, and parapets for suitable conditions for manufactured roof specialties.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install manufactured roof specialties according to manufacturer's written instructions. Anchor manufactured roof specialties securely in place and capable of resisting forces specified in performance requirements. Use fasteners, separators, sealants, and other miscellaneous items as required to complete manufactured roof specialty systems.
 - 1. Install manufactured roof specialties with provisions for thermal and structural movement.
 - 2. Torch cutting of manufactured roof specialties is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
- C. Install manufactured roof specialties level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil-canning, buckling, or tool marks.

- D. Install manufactured roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
- E. Expansion Provisions: Provide for thermal expansion of exposed manufactured roof specialties. Space movement joints at a maximum of 12 feet with no unplanned joints within 18 inches of corners or intersections.
- F. Fasteners: Use fasteners of type and size recommended by manufacturer but of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- G. Seal joints with elastomeric sealant as required by manufacturer of roofing specialties.

3.3 ROOF EDGE FLASHING INSTALLATION

- A. Install cleats, cant dams, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings to resist uplift and outward forces according to performance requirements.

3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as manufactured roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.
- D. Replace manufactured roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 71 00

SECTION 07 81 00 - APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes sprayed fire-resistive materials (SFRM).

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For paints and coatings, documentation including printed statement of VOC content.
- B. Shop Drawings: Framing plans, schedules, or both, indicating the following:
 - 1. Extent of fireproofing for each construction and fire-resistance rating.
 - 2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
 - 3. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
 - 4. Treatment of fireproofing after application.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 44 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.

- B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fireproofing for each fire-resistance design from single source.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction and the following VOC limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Primers, Sealers, and Undercoaters: 200 g/L.
 - 4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
- E. Asbestos: Provide products containing no detectable asbestos.

2.2 SPRAYED FIRE-RESISTIVE MATERIALS

- A. SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application or conveyed in a dry state and mixed with atomized water at place of application.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Isolatek International; Cafco Blaze-Shield II.
 - 2. Application: Designated for exterior use by a qualified testing agency acceptable to authorities having jurisdiction.
 - 3. Bond Strength: Minimum 150-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E 736.
 - 4. Density: Not less than 15 lb/cu. ft. and as specified in the approved fire-resistance design, according to ASTM E 605.
 - 5. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch.
 - 6. Combustion Characteristics: ASTM E 136.

7. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 10 or less.
 - b. Smoke-Developed Index: 10 or less.
8. Compressive Strength: Minimum 16 lbf/sq. in. according to ASTM E 761.
9. Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
10. Deflection: No cracking, spalling, or delamination according to ASTM E 759.
11. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
12. Air Erosion: Maximum weight loss of 0.025 g/sq. ft. in 24 hours according to ASTM E 859.
13. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21 or rating of 10 according to ASTM D 3274 when tested according to ASTM D 3273.
14. Sound Absorption: NRC of 0.65 to 0.75 according to ASTM C 423 for Type A mounting according to ASTM E 795.
15. Finish: As selected by Architect from manufacturer's standard finishes.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:
 1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.
- C. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.
- D. Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.
- E. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.
- F. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.

- G. Sealer: Transparent-drying, water-dispersible, tinted protective coating recommended in writing by fireproofing manufacturer for each fire-resistance design.
 - 1. Product: Subject to compliance with requirements, provide "Cafco Bond-Seal" by Isolatek International.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:
 - 1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
 - 2. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
 - 3. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.
- B. Verify that concrete work on steel deck has been completed before beginning fireproofing work.
- C. Verify that roof construction, installation of roof-top HVAC equipment, and other related work is complete before beginning fireproofing work.
- D. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.
- E. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.
- B. Clean substrates of substances that could impair bond of fireproofing.
- C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.
- D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.3 APPLICATION

- A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.
 - 1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
 - 2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.
- D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.
- E. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.
- F. Extend fireproofing in full thickness over entire area of each substrate to be protected.
- G. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.
- H. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.
- I. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.
- J. Cure fireproofing according to fireproofing manufacturer's written recommendations.
- K. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.
- L. Finishes: Where indicated, apply fireproofing to produce the following finishes:
 - 1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
 - 2. Spray-Textured Finish: Finish left as spray applied with no further treatment.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Test and inspect as required by the IBC, 1704.10.
- B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fireproofing will be considered defective if it does not pass tests and inspections.
 - 1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
 - 2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

3.5 CLEANING, PROTECTING, AND REPAIRING

- A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
- B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.
- C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.
- D. Repair fireproofing damaged by other work before concealing it with other construction.
- E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 07 81 00

SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Penetrations in fire-resistance-rated walls.
- 2. Penetrations in horizontal assemblies.

- B. Related Requirements:

- 1. Section 07 84 43 "Joint Firestopping" for joints in or between fire-resistance-rated construction, at exterior curtain-wall/floor intersections, and in smoke barriers.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

- 1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

- B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approval according to FM Approval 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 - 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 - 3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- E. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
 - 1. Permanent forming/damming/backing materials.
 - 2. Substrate primers.
 - 3. Collars.
 - 4. Steel sleeves.

2.3 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

- E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.

- B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.
 - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.
- B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb"

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Where Intertek Group-listed systems are indicated, they refer to design numbers in Intertek Group's "Directory of Listed Building Products" under "Firestop Systems."

END OF SECTION 07 84 13

SECTION 07 84 43 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Joints in or between fire-resistance-rated constructions.

- B. Related Requirements:

- 1. Section 07 84 13 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers[**and for wall identification**].

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

- 1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

- B. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."

2.2 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint

firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
 - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.
- D. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
 - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
- B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install joint firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
1. The words "Warning - Joint Firestopping - Do Not Disturb"

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2393.
- B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

3.7 JOINT FIRESTOPPING SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHBN or Category XHDG.

- B. Where Intertek Group-listed systems are indicated, they refer to design numbers in Intertek Group's "Directory of Listed Building Products" under product category Expansion/Seismic Joints or Firestop Systems.

END OF SECTION 07 84 43

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Latex joint sealants.
 - 4. Solvent-release-curing joint sealants.
 - 5. Preformed joint sealants.
 - 6. Acoustical joint sealants.
- B. Related Sections include the following:
 - 1. Division 04 Section "Unit Masonry" for masonry control and expansion joint fillers and gaskets.
 - 2. Division 08 Section "Glazing" for glazing sealants.
 - 3. Division 09 Section "Gypsum Board" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.
- D. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.

- E. Field Test Report Log: For each elastomeric sealant application.
- F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty periods.
 - 1. Warranty Period:
 - a. 5 years from date of Substantial Completion for polyurethane sealant.
 - b. 20 years from date of Substantial Completion for silicone sealant.
- B. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants Primers: Provide sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
 - 1. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 2. Sealant Primers for Porous Substrates: 775 g/L.
 - 3. Other: 750 g/L.
- C. VOC Content of Interior Sealants: Provide sealant for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant for Porous Substrates: 50 g/L.
 - 3. Metal to Metal: 50 g/L.
 - 4. Wood: 30 g/L.
 - 5. Plastic Foams: 50 g/L.
 - 6. Other: 420 g/L.
- D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range of colors, unless otherwise indicated.

2.3 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Suitability for Immersion in Liquids. Where elastomeric sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247 and qualify for the length of exposure indicated by reference to ASTM C 920 for Class 1 or 2. Liquid used for testing sealants is deionized water, unless otherwise indicated.
- D. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

- E. Single-Component Neutral- and Basic-Curing Silicone Sealant ES-1:
1. Products:
 - a. Dow Corning Corporation; 790.
 - b. GE Silicones; SilPruf LM SCS2700.
 - c. Tremco; Spectrem 1.
 2. Type and Grade: S (single component) and NS (non-sag).
 3. Class: 50.
 4. Use Related to Exposure: NT (non-traffic).
 5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
 6. Use O Joint Substrates: Coated glass, color anodic aluminum, aluminum coated with a high-performance coating, galvanized steel, ceramic tile and wood.
 7. Stain-Test-Response Characteristics: Non-staining to porous substrates per ASTM C 1248.
 8. High-performance coating, galvanized steel and ceramic tile.
- F. Single-Component Acid-Curing Silicone Sealant ES-2:
1. Products:
 - a. Bostik Findley; Chem-Calk 1200.
 - b. Dow Corning Corporation; 999-A.
 - c. Dow Corning Corporation; Trademate Glazing.
 - d. GE Silicones; Construction SCS1200.
 - e. GE Silicones; Contractors SCS1000.
 - f. Pecora Corporation; 860.
 - g. Sonneborn, Division of ChemRex Inc.; OmniPlus.
 - h. Tremco; Proglaze.
 - i. Tremco; Tremsil 200.
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 25.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Joint Substrates: G, A, and, as applicable to joint substrates indicated, O.
 - a. Use O Joint Substrates: Coated glass, color anodic aluminum, aluminum coated with a high-performance coating, galvanized steel and ceramic tile.
- G. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant or Single-Component Mildew-Resistant Acid-Curing Silicone Sealant ES-3:
1. Products:
 - a. Dow Corning Corporation; 786 Mildew Resistant.
 - b. GE Silicones; Sanitary SCS1700.
 - c. Pecora Corporation; 898.
 - d. Tremco; Tremsil 600 White.
 2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 25.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Joint Substrates: G, A, and, as applicable to joint substrates indicated, O.
 6. Use O Joint Substrates: Coated glass, color anodic aluminum, aluminum coated with a high-performance coating, galvanized steel and ceramic tile.
- H. Multicomponent Non-sag Urethane Sealant ES-4:
1. Products:
 - a. Pecora Corporation; Dynatrol II.
 - b. Tremco; Dymeric 240/240FC.
 - c. Tremco; Vulkem 922.

2. Type and Grade: M (multicomponent) and NS (non-sag).
3. Class: 50.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.
6. Use O Joint Substrates: Ceramic tile and wood.

I. Multicomponent Non-sag Urethane Sealant ES-5:

1. Products:
 - a. Pecora Corporation; Dynatred.
 - b. Sika Corporation, Inc.; Sikaflex - 2c NS TG.
 - c. Sonneborn, Division of ChemRex Inc.; NP 2.
 - d. Tremco; Vulkem 227.
 - e. Tremco; Vulkem 322 DS.
2. Type and Grade: M (multicomponent) and NS (non-sag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic).
5. Uses Related to Joint Substrates: M and as applicable to joint substrates indicated, O.
 - a. Use O Joint Substrates: Ceramic tile.

J. Multicomponent Pourable Urethane Sealant ES-6:

1. Products:
 - a. Pecora Corporation; Urexpan NR-200.
 - b. Tremco; THC-901.
 - c. Tremco; THC-900.
 - d. Tremco; Vulkem 245.
 - e. Pecora Corporation; Urexpan NR 300, Type H.
 - f. Pecora Corporation; Urexpan NR 300, Type M.
 - g. Sika Corporation, Inc.; Sikaflex - 2c SL.
 - h. Sonneborn, Division of ChemRex Inc.; SL 2.
2. Type and Grade: M (multicomponent) and P (pourable).
3. Class: 25.
4. Use Related to Exposure: T (traffic).
5. Uses Related to Joint Substrates: M.

2.4 SOLVENT-RELEASE JOINT SEALANTS

A. Butyl-Rubber-Based Solvent-Release Joint Sealant SRS-1: Comply with ASTM C 1085.

1. Bostik Findley; Bostik 300.
2. Pecora Corporation; BC-158.
3. Sonneborn, Division of ChemRex Inc.; Sonneborn Multi-Purpose Sealant.
4. Tremco; Tremco Butyl Sealant.

2.5 LATEX JOINT SEALANTS

A. Latex Sealant LS-1: Comply with ASTM C 834, Type P, Grade NF.

1. Bostik Findley; Chem-Calk 600.
2. Pecora Corporation; AC-20+.
3. Sonneborn, Division of ChemRex Inc.; Sonolac.
4. Tremco; Tremflex 834.

2.6 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints AS-1: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834 and the following:
 - 1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 2. Products:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
- B. Acoustical Sealant for Concealed Joints AS-2: Manufacturer's standard, nondrying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.
 - 1. Pecora Corporation; BA-98.
 - 2. Tremco; Tremco Acoustical Sealant.

2.7 PREFORMED JOINT SEALANTS

- A. Preformed Foam Sealant PS-1:
 - 1. Manufacturer's standard preformed, precompressed, open-cell foam sealant that is manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent; is factory produced in precompressed sizes in roll or stick form to fit joint widths indicated; is coated on one side with a pressure-sensitive adhesive and covered with protective wrapping; develops a watertight and airtight seal when compressed to the degree specified by manufacturer; EMSEAL Joint Systems, Ltd.; Backerseal.
 - 2. Properties: Permanently elastic, mildew resistant, non-migratory, non-staining, and compatible with joint substrates and other joint sealants. Manufacturer's standard density.

2.8 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.9 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply

primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- G. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- H. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application JS-1: Exterior vertical joints between masonry; ES-3
- B. Joint-Sealant Application JS-2: Exterior non-traffic vertical joints between different materials listed above and exterior non-traffic joints between dissimilar materials where the joining of the two surfaces leaves a gap between the meeting materials or components as may be dictated by the various methods of construction to make watertight.
 - 1. Joint Sealant: ES-4, unless otherwise noted.
 - 2. Joint Sealant: ES-1. Provide at metal to metal and metal to other materials.
- C. Joint-Sealant Application JS-3: Exterior perimeter joints of door, window and louver frames; ES-1.
- D. Joint-Sealant Application JS-4: Exterior control and expansion joints in horizontal traffic surfaces of concrete slabs and other paving materials; ES-6.
- E. Joint-Sealant Application JS-5: Interior perimeter joints of exterior openings; ES-3.
- F. Joint-Sealant Application JS-6: Interior ceramic tile, and other paving material expansion, control, contraction, and isolation joints in horizontal traffic surfaces; ES-5.
- G. Joint-Sealant Application JS-7: Interior joints between plumbing fixtures and adjoining walls, floors, and counters. Sanitary joints in toilet rooms and food service areas; ES-3.
- H. Joint-Sealant Application JS-8: Perimeter joints between interior wall surfaces and frames of interior doors and windows; LS-1.
- I. Joint-Sealant Application JS-9: Joints of casework and millwork to walls except in sanitary conditions specified above; LS-1.
- J. Joint-Sealant Application JS-10: Interior control, expansion, and isolation joints in concrete slabs.
 - 1. Joint Sealant: ES-6.
- K. Joint-Sealant Application JS-11: Under aluminum thresholds; SRS-1.
- L. Joint-Sealant Application JS-12: Joints in STC rated walls; AS-1 or AS-2. Provide AS-1 at exposed sealant locations.

- M. Joint-Sealant Application JS-13: Gaps at exterior joints not previously indicated in Joint Sealant Schedule between dissimilar materials where the joining of the two surfaces leaves a gap between the meeting materials or components.
 - 1. Joint Sealant: ES-5.

- N. Joint-Sealant Application JS-14: Gaps at interior joints not previously indicated in Joint Sealant Schedule between dissimilar materials where the joining of the two surfaces leaves a gap between the meeting materials or components.
 - 1. Joint Sealant: ES-3.

END OF SECTION 07 92 00

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Interior standard steel doors and frames.
 - 2. Exterior standard steel doors and frames.
- B. Related Requirements:
 - 1. Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
 - 7. Details of anchorages, joints, field splices, and connections.

8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Ceco Door; ASSA ABLOY.
 2. Curries Company; ASSA ABLOY.
 3. Deansteel Manufacturing Company, Inc.
 4. Mesker Door Inc.
 5. Pioneer Industries.
 6. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At locations indicated in the Door and Frame Schedule.
 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch.
 - d. Edge Construction: Model 2, Seamless.

- e. Core: Manufacturer's standard Kraft-paper honeycomb, Polyurethane or Polyisocyanurate.
- f. Fire-Rated Core: Manufacturer's standard core for fire-rated doors.
- 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
 - b. Sidelite Frames: Fabricated from same thickness material as adjacent door frame.
 - c. Construction: Face Welded
 - d. Provide frames with no backbends where indicated on drawings.
- 3. Exposed Finish: Prime.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum G60 coating.
 - d. Edge Construction: Model 2, Seamless.
 - e. Core: Manufacturer's standard Polyurethane or Polyisocyanurate.
 - f. Fire-Rated Core: Manufacturer's standard core for fire-rated doors.
 - 2. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum G60 coating.
 - b. Construction: Face welded. Refer to details on drawings.
 - 3. Exposed Finish: Prime.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
 - 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
 - 3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
 - 4. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 5. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 - 6. Provide weld in anchors for frames with no backbends.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.6 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

2.7 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 1. Sidelite Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding, or by rigid mechanical anchors.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
- C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.
 1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.

4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.8 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11 or NAAMM-HMMA 840.
 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 2. Fire-Rated Openings: Install frames according to NFPA 80.
 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
 5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 6. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

- c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
- 1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8 NAAMM-HMMA 841 and NAAMM-HMMA guide specification indicated.
 - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 08 11 13

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Five-ply flush wood veneer-faced doors for opaque finish.
 - 2. Five-ply flush wood veneer-faced doors for transparent finish.
 - 3. Factory finishing flush wood doors.
 - 4. Factory fitting flush wood doors to frames and factory machining for hardware.
- B. Related Requirements:
 - 1. Section 06 40 23 "Interior Architectural Woodwork" for wood door frames.
 - 2. Section 08 80 00 "Glazing" for glass view panels in flush wood doors.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including the following:
 - 1. Door core materials and construction.
 - 2. Door edge construction
 - 3. Door face type and characteristics.
 - 4. Door trim for openings.
 - 5. Door frame construction.
 - 6. Factory-priming specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:
 - 1. Door schedule indicating door and frame location, type, size, and swing.
 - 2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
 - 3. Details of frame for each frame type, including dimensions and profile.
 - 4. Dimensions and locations of blocking for hardware attachment.
 - 5. Dimensions and locations of mortises and holes for hardware.
 - 6. Clearances and undercuts.
 - 7. Requirements for veneer matching.
 - 8. Doors to be factory primed and application requirements.
- C. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.
2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Delamination of veneer.
 - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS AND FRAMES, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.

1. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.

2.3 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS

A. Interior Doors:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eggers Industries.
 - b. Graham Wood Doors; an Assa Abloy Group Company.
 - c. Masonite.
 - d. Oshkosh Door Company.
 - e. VT Industries Inc.
2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
3. Grade: Custom.
4. Faces: Single-ply wood veneer not less than 1/50 inch thick.
 - a. Species:
 - 1) Opaque Finish Doors: Any closed grain hardwood.
 - 2) Transparent Finish Doors: Hard select white maple, except Door A112-2.
 - a) Door A112-2: Provide black walnut veneer. Coordinate veneer cut, color and matching with architectural wood veneer specified in Section 09 05 00 – Color Schedule.
 - b. Cut: Plain sliced (flat sliced).
 - c. Match between Veneer Leaves: Book match.
 - d. Assembly of Veneer Leaves on Door Faces: Balance match.
5. Exposed Vertical Edges: Applied wood edges of same species as faces and covering edges of crossbands - Architectural Woodwork Standards edge Type D.
6. Core for Non-Fire-Rated Doors:
 - a. ANSI A208.1, Grade LD-2 particleboard.
 - b. WDMA I.S. 10 structural composite lumber.
 - c. Blocking: provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.
 - d. Provide doors with structural composite lumber cores instead of particleboard cores for doors where distance between lock and lite cutout or from edge of door to edge of lite does not exceed 5 inches in order to maintain door warranty.
7. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.

1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.
2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.

- C. Openings: Factory cut and trim openings through doors.
 - 1. Light Openings: Trim openings with moldings of material and profile indicated.
 - 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 08 80 00 "Glazing."

2.5 FACTORY FINISHING

- A. Comply with referenced quality standard for factory finishing.
 - 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 - 2. Finish faces, all four edges, edges of cutouts, and mortises.
- B. Opaque Finish:
 - 1. ANSI/WDMA I.S. 1A Grade: Custom.
 - 2. Finish: Architectural Woodwork Standards System-11, Polyurethane, Catalyzed.
 - 3. Color: Custom color as selected by Architect.
 - 4. Sheen: Semi-gloss.
- C. Transparent Finish: ANSI/WDMA I.S. 1A TR-6 Catalyzed Polyurethane.
 - 1. Provide custom color stain for maple and walnut doors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
 - 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Section 08 71 00 "Door Hardware."
- B. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.

- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 16

SECTION 08 14 33 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior stile and rail wood doors.
 - 2. Factory finishing doors with transparent finish.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including the following:
 - 1. Details of construction and glazing.
 - 2. Door frame construction.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:
 - 1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
 - 2. Door elevations, dimensions and location of hardware, lite locations, and glazing thickness.
 - 3. Details of frame for each frame type, including dimensions and profile.
 - 4. Dimensions and locations of mortises and holes for hardware.
 - 5. Clearances and undercuts.
- C. Samples for Verification:
 - 1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in opaque plastic bags or cardboard cartons.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity levels designed for building occupants for the remainder of construction period.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors and frames that fail in materials or workmanship within specified warranty period.
 - 1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors and frames.
 - 2. Warranty shall be in effect during specified period of time from date of Substantial Completion.
 - 3. Warranty Period for Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain custom stile and rail wood doors from single manufacturer.

2.2 MATERIALS

- A. Use only materials that comply with referenced standards and other requirements specified.
 - 1. Assemble interior doors, including components, with either dry-use or wet-use adhesives complying with ASTM D5572 for finger joints and with ASTM D5751 for joints other than finger joints.
- B. Panel Products: Any of the following unless otherwise indicated:
 - 1. Particleboard: ANSI A208.1, Grade M-2.
 - 2. Medium-density fiberboard (MDF,) complying with ANSI A208.2, Grade 130.

3. Structural Composite Lumber

- C. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

2.3 INTERIOR STILE AND RAIL WOOD DOORS

- A. Interior Stile and Rail Wood Doors: Interior custom doors complying with WDMA I.S. 6A and with other requirements specified.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Assa Abloy, Maiman.
 - b. Eggers Industries.
 - c. Karon by JELD-WEN.
 - d. Masonite International, Harring Doors.
2. Performance Grade: WDMA I.S. 6A Extra Heavy Duty.
3. WDMA I.S. 6A Grade: Custom.
4. Panel Designs: Indicated on Drawings. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
5. Finish: Transparent.
6. Wood Species and Cut for Transparent Finish: Hard Select White Maple.
7. Door Construction for Transparent Finish:
 - a. Stile and Rail Construction: Veneered, structural composite lumber. Select veneers for similarity of grain and color, and arrange for optimum match between adjacent pieces.
8. Stile and Rail Widths: As indicated.
9. Raised-Panel Thickness: As indicated.
10. Glass: Complying with Section 08 80 00 "Glazing."
11. Mark, label, or otherwise identify stile and rail wood doors as complying with WDMA I.S. 6A and grade specified.

2.4 STILE AND RAIL WOOD DOOR FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:

1. Clearances:
 - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
 - b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering.
 - c. Where threshold is shown on Drawings or scheduled, provide not more than 3/8 inch from bottom of door to top of threshold.
2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

- B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.
 2. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.
 3. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.
- C. Glazed Openings: Factory install glazing in doors, complying with Section 08 80 00 "Glazing." Install glass using manufacturer's standard elastomeric glazing sealant complying with ASTM C920. Secure glass in place with removable wood moldings. Miter wood moldings at corner joints.

2.5 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish: ANSI/WDMA I.S. 1A TR-6 Catalyzed Polyurethane.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Section 08 71 00 "Door Hardware."
- B. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory- Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.

END OF SECTION 08 14 33

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes access doors and frames for ceilings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings:
 - 1. Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments of other work.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of access doors and frames through one source from a single manufacturer.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

- A. Flush Access Doors with Exposed Flanges:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Acudor Products, Inc.
 - b. Best Access Doors.
 - c. Cendrex Inc.
 - d. Williams Bros. Corporation of America (The).
 - 2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
 - 3. Locations: Masonry walls.

4. Door Size: As indicated on drawings.
5. Uncoated Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
6. Frame Material: Same material, thickness, and finish as door.
7. Latch and Lock: Cam latch, screwdriver operated.

B. Flush Access Doors with Concealed Flanges:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Acudor Products, Inc.
 - b. Best Access Doors.
 - c. Cendrex Inc.
 - d. Williams Bros. Corporation of America (The).
2. Description: Face of door flush with frame; with concealed flange for gypsum board installation and concealed hinge.
3. Locations: Gypsum board ceilings and walls.
4. Door Size: As indicated on drawings.
5. Uncoated Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
6. Frame Material: Same material and thickness as door.
7. Latch and Lock: Cam latch, screwdriver operated.

2.2 FIRE-RATED ACCESS DOORS AND FRAMES

A. Fire-Rated, Flush Access Doors with Exposed Flanges:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Acudor Products, Inc.
 - b. Best Access Doors.
 - c. Cendrex Inc.
 - d. Williams Bros. Corporation of America (The).
2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with exposed flange, self-closing door, and concealed hinge.
3. Locations: Masonry walls.
4. Door Size: As indicated on drawings.
5. Fire-Resistance Rating: Not less than that of adjacent construction.
6. Temperature-Rise Rating: 450 deg F at the end of 30 minutes.
7. Uncoated Steel Sheet for Door: Nominal 0.036 inch, 20 gage, factory primed.

8. Frame Material: Same material, thickness, and finish as door.
9. Latch and Lock: Self-latching door hardware, Cam latch, screwdriver operated.

B. Fire-Rated, Flush Access Doors with Concealed Flanges:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Acudor Products, Inc.
 - b. Best Access Doors.
 - c. Cendrex Inc.
 - d. Williams Bros. Corporation of America (The).
2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with concealed flange for gypsum board installation, self-closing door, and concealed hinge.
3. Locations: Gypsum board ceilings and walls.
4. Door Size: As indicated on drawings.
5. Fire-Resistance Rating: Not less than that of adjacent construction.
6. Temperature-Rise Rating: 450 deg F at the end of 30 minutes.
7. Uncoated Steel Sheet for Door: Nominal 0.036 inch, 20 gage, factory primed.
8. Frame Material: Same material, thickness, and finish as door.

2.3 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.
- C. Frame Anchors: Same material as door face.
- D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.4 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
 - 1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.
- D. Latch and Lock Hardware:
 - 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
 - 2. Keys: Furnish two keys per lock and key all locks alike.

2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - 1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 31 13

SECTION 08 52 00 - WOOD WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes Vinyl-clad wood windows.
 - 1. Types:
 - a. Double hung.
 - b. Fixed.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review, discuss, and coordinate the interrelationship of wood windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
 - 3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
 - 4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for wood windows.
- B. Shop Drawings: For wood windows.
 - 1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
 - 2. Include Samples of hardware and accessories involving color selection.
- C. Samples for Verification: For wood windows and components required, prepared on Samples of size indicated below:
 - 1. Exposed Finishes: 2 by 4 inches.

2. Exposed Hardware: Full-size units.

D. Product Schedule: For wood windows. Use same designations indicated on Drawings.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace wood windows that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

- a. Window: 10 years from date of Substantial Completion.
- b. Glazing Units: 20 years from date of Substantial Completion.
- c. Vinyl-Cladding Finish: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain wood windows from single source from single manufacturer.

2.2 WOOD WINDOWS

A. Vinyl-Clad Wood Windows:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Andersen Windows; Andersen Corporation.

1) 400 Series.

B. Operating Types: Provide the following operating types in locations indicated on Drawings:

1. Double hung.
2. Fixed.

C. Frames and Sashes: Fine-grained wood lumber complying with AAMA/WDMA/CSA 101/I.S.2/A440; kiln dried to a moisture content of not more than 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch deep by 2 inches wide; water-repellent preservative treated.

1. Exterior Finish: Vinyl-clad wood.

- a. Vinyl Finish: Manufacturer's standard Perma-Shield finish.
- b. Exposed Unfinished Wood Surfaces: Pine.
- c. Color: As selected by Architect from manufacturer's full range.

2. Interior Finish: Manufacturer's standard factory-prime coat.

D. Insulating-Glass Units: ASTM E2190.

1. Glass: ASTM C1036, Type 1, Class 1, q3.

- a. Tint: Clear.
 - b. Kind: Fully tempered where indicated on Drawings.
2. Lites: Two.
 3. Filling: Fill space between glass lites with argon.
 4. Low-E Coating: Sputtered on second surface.
- E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- F. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.
1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.
- G. Hung Window Hardware:
1. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.
 2. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only.
 3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis to facilitate cleaning exterior surfaces from the interior.
- H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- I. Provide simulated divided lite (SDL) grilles in windows as indicated on Drawings. Provide contoured grilles to match color of windows.

2.3 ACCESSORIES

- A. Sill Pan Flashing: Window sills shall be flashed with SillDry Sill Plan Flashing; Contact Sill Dry Industries, LLC.; 215-634-9440.
1. Depth: 6-5/8 inches

2.4 INSECT SCREENS

- A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
1. Type and Location: Full, outside for double-hung sashes.
- B. Aluminum Frames: Manufacturer's standard aluminum alloy complying with SMA 1004 or SMA 1201. Fabricate frames with mitered or coped joints or corner extrusions, concealed fasteners, and removable PVC spline/anchor concealing edge of frame.
1. Finish for Exterior Screens: Baked-on organic coating in color to match windows.

2.5 FABRICATION

- A. Fabricate wood windows in sizes indicated. Include a complete system for installing and anchoring windows.
- B. Glaze wood windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.
- E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.
- B. Provide SillDry flashing pan as indicated on the Drawings.
- C. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

- B. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
 - 1. Keep protective films and coverings in place until final cleaning.
- C. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.
- D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 08 52 00

SECTION 08 71 00 – DOOR HARDWARE (AREA A)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware, power supplies, back-ups and surge protection.
- C. Related Sections:
 - 1. Division 06 Section "Rough Carpentry".
 - 2. Division 06 Section "Finish Carpentry".
 - 3. Division 08 Section "Operations and Maintenance".
 - 4. Division 08 Section "Door Hardware Schedule".
 - 5. Division 08 Section "Hollow Metal Doors and Frames".
 - 6. Division 08 Section "Flush Wood Doors".
 - 7. Division 08 Section "Stile and Rail Wood Doors".
 - 8. Division 28 Section "Access Control".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.
- E. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.4 QUALITY ASSURANCE

- A. **Manufacturers Qualifications:** Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. **Installer Qualifications:** Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. **Door Hardware Supplier Qualifications:** Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff an Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
 - 1. **Scheduling Responsibility:** Preparation of door hardware and keying schedules.
- D. **Source Limitations:** Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
- E. **Regulatory Requirements:** Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
 - 1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. **Handles, Pulls, Latches, Locks, and other Operating Devices:** Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. **Door Closers:** Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. **Thresholds:** Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
 - 2. **NFPA 101:** Comply with the following for means of egress doors:
 - a. **Latches, Locks, and Exit Devices:** Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. **Thresholds:** Not more than 1/2 inch high.

3. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document.
 1. Plans for existing and future key system expansion.
 2. Requirements for key control storage.
 3. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products.
 2. Review and finalize construction schedule and verify availability of materials.
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for extra heavy duty cylindrical (bored) locks and latches.
 - 2. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 3. Five years for exit hardware.
 - 4. Twenty five years for manual surface door closers.
 - 5. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
 - 1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

- a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- B. Substitutions: Products listed are based on existing manufacturers in the facility and items that are approved substitutions. No other products will be allowed to be substituted.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - 1) Out-swinging exterior doors.
 - 2) Out-swinging access controlled doors.
 5. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. **McKinney Products (MK).**
 - c. Stanley Hardware (ST).
 - d. Ives (IVE)

- B. Continuous Geared Hinges: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), full surface, or half surface, in standard and heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be U.L. listed for use on up to and including 90 minute rated door installations and U.L. listed for windstorm components where applicable. Factory cut hinges for door size and provide with removable service power transfer panel where indicated at electrified openings.
1. Acceptable Manufacturers:
 - a. Select Hinges (SEL).
 - b. Pemko Manufacturing (PE).
 - c. Stanley Hardware (ST).
- C. Sliding Door Hardware: Sliding door hardware is to be of type and design as specified and should comply with ANSI/BHMA A156.14.
1. Sliding Bi-Passing Pocket Door Hardware: Provide complete sets consisting of track, hangers, stops, bumpers, floor channel, guides, and accessories indicated.
 2. Bi-folding Door Hardware: Rated for door panels weighing up to 125 lb.
 3. Pocket Sliding Door Hardware: Rated for doors weighing up to 200 lb.
 4. Barn Door Sliding Hardware: Rated for doors up to 200 lb.
 - a. Acceptable Manufacturers:
 - 1) Hafele Manufacturing (HF).
 - 2) **Johnson Hardware (JOH).**

2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Acceptable Manufacturers:
 - a. Hager Companies (HA) - ETW-QC (# wires) Option.
 - b. McKinney Products (MK) - QC (# wires) Option.
- B. Electrified Quick Connect Continuous Geared Transfer Hinges: Provide electrified transfer continuous geared hinges with a 12" removable service panel cutout accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Acceptable Manufacturers:
 - a. Select Hinges (BO)ATW (# of wires) Option.

- b. McKinney Products (MK) - SER-QC (# wires) Option.
 - c. Pemko Manufacturing (PE) - SER-QC (# wires) Option.
- C. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
- 1. Acceptable Manufacturers:
 - a. Adams Rite (AD) - 4612-ELX.
 - b. Corbin Russwin (RU) - EPTL.
 - c. McKinney (MK) - EL-EPT.
 - d. Securitron (SU) - EL-CEPT Series.
 - e. Von Duprin (VD) - EPT-10 Series.
- D. Electric Door Hardware Cords: Provide electric transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
- 1. Acceptable Manufacturers:
 - a. McKinney Products (MK) – QC-C Series.
- Provide one each of the following tools as part of the base bid contract:
- a. McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products (MK) - Connector Hand Tool: QC-R003.

2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified automatic, self-latching, and manual flush bolts and surface bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
- 1. Acceptable Manufacturers:
 - a. Hager (HA)
 - b. Ives (IV).
 - c. **Rockwood Manufacturing (RO).**

- d. Trimco (TC).
- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Coordinators fabricated from steel with nylon-coated strike plates and built-in adjustable safety release.
- 1. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hager (HA)
 - c. Ives (IV).
 - d. Rockwood Manufacturing (RO).
 - e. Trimco (TC).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
- 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 - 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 - 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 - 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 - a. Acceptable Manufacturers:
 - 1) Burns Manufacturing (BU).
 - 2) Hager (HA).
 - 3) Ives (IV).
 - 4) **Rockwood Manufacturing (RO).**
 - 5) Trimco (TC).

2.5 CYLINDERS AND KEYING

- A. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets unless otherwise indicated.
- 1. Acceptable Manufacturers:
 - a. **Schlage (SC).**
 - b. No Substitution – Facility Standard.
- B. Cylinders: Original manufacturer cylinders complying with the following:
- 1. Keyway: Match Facility Standard.
- C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Provide removable core (large format) as specified in Hardware Sets.
- D. Keying System: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference, and as follows:
 1. Existing System: Master key or grand master key locks to Owner's existing system.
- E. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Three (3)
 2. Master Keys (per Master Key Group): Two (2)
 3. Grand Master Keys (per Grand Master Key Group)(If required): Two (2)
 4. Permanent Control Keys : Four (4)
- F. Key Registration List: Provide keying transcript list to Owner's representative.
- G. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
 1. Acceptable Manufacturers:
 - a. Lund Equipment (LU).
 - b. MMF Industries (MM).
 - c. Telkee (TK).

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified cylindrical (bored) locksets furnished in the functions as specified in the Hardware Sets. Lock chassis fabricated of heavy gauge steel, zinc dichromate plated, with through-bolted application. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt. Locks are to be non-handed and fully field reversible.
 1. Locksets to incorporate a free-wheeling lever design with a lifetime warranty against lever sag and spring breakage on all locking functions.
 2. Acceptable Manufacturers:
 - a. **Schlage (SC) – ND Series.**
 - b. No Substitution – Facility Standard.
- B. Push/Pull Latches:
 1. Acceptable Manufacturers:
 - a. **Sargent (SA) 114 Series.**
 - b. No Substitution- Facility standard.

2.7 ELECTROMECHANICAL LOCKING DEVICES

- A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, and request-to-exit signaling. Unless otherwise indicated, provide electrified locksets standard as fail secure.
 2. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
 3. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML20900 Series.
 - b. Sargent Manufacturing (SA) - 8200 Series.
 - c. Schlage (SC) - L9000 EL/EU/RX Series.
 - d. Stanley Best (BE) - 40HW EL/EU Series.
 - e. Yale Locks and Hardware (YA) - 8890 Series.
 - f. No Substitution – Facility Standard.
- B. Electromechanical Cylindrical Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical cylindrical locksets, electrified locksets to be of type and design as specified below.
1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, and request-to-exit signaling. Unless otherwise indicated, provide electrified locksets standard as fail secure.
 2. Acceptable Manufacturers:
 - a. Schlage (SC) ND Series.

2.8 AUXILIARY LOCKS

- A. Cylindrical Deadlocks: ANSI/BHMA A156.5, Grade 1, cylindrical type deadlocks to fit standard ANSI 161 preparation and 1 3/8" to 1 3/4" thickness doors. Provide tapered collars to resist vandalism and 1" throw solid steel bolt with hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other locksets.
1. Acceptable Manufacturers:
 - a. **Schlage (SC) - B600 Series.**
 - a. No Substitution – Facility Standard.
- B. Narrow Case Deadlocks and Deadlatches: ANSI/BHMA 156.13 Series 1000 Grade 1 certified narrow case deadlocks and deadlatches for swinging or sliding door applications. All functions shall be manufactured in a single sized case formed from 12 gauge minimum, corrosion resistant steel (option for fully stainless steel case and components). Provide minimum 2 7/8" throw laminated stainless steel bolt. Bottom rail deadlocks to have 3/8" diameter bolts.

1. Acceptable Manufacturers:
 - a. Adams Rite Manufacturing (AD) - MS1850S / MS1950 Series.
 - b. Adams Rite Manufacturing (AD) – 4900 Series.

2.9 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
- B. Standards: Comply with the following:
 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 2. Strikes for Bored Locks and Latches: BHMA A156.2.
 3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
 4. Dustproof Strikes: BHMA A156.16.

2.10 ELECTRIC STRIKES

- A. Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified.
 1. Acceptable Manufacturers:
 - a. **HES (HES) – 8000 Series.**
 - b. Trine (TR)
- B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.
 1. Acceptable Manufacturers:
 - a. **HES (HS) - 9500/9600 Series.**
 - b. Trine (TR) 4800 Series.

- C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.11 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
5. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty trim with cold forged escutcheons, beveled edges, and four threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
7. Vertical Rod Exit Devices: Provide and install interior surface vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
9. Rail Sizing: Provide exit device rails factory sized for proper door width application.

- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.

1. Acceptable Manufacturers:
 - a. **Sargent Manufacturing (SA) - 80 Series.**
 - b. Von Duprin (VD) - 35A/98 XP Series.

C. Conventional Push Rail Exit Devices, Aluminum Entrances: ANSI/BHMA A156.3, Grade 1 certified panic devices furnished in the functions specified in the Hardware Sets. Push bar to be made of extruded aluminum, maximum projection of 3", available in clad or anodized architectural finishes. Exit device design to fit narrow (minimum 2"), medium, or wide stile aluminum door applications.

1. Acceptable Manufacturers:
 - a. Adams Rite Manufacturing (AD) - 8000 Series.
 - b. Falcon Hardware (FA) - Dor-O-Matic 1490/1590 Series.
 - c. No Substitution – Facility Standard.

2.12 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.
 - b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
 - c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
 - d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.

6. Closer Covers: Provide PVC free closer covers with a painted finish to match other hardware on the project.
 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as specified in the door Hardware Sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Acceptable Manufacturers:
 - a. LCN Closers (LC) - 4040XP Series.
 - b. **Sargent Manufacturing (SA) - 351 Series.**
- C. Door Closers, Surface Mounted (Utility Grade): ANSI/BHMA 156.4, Grade 1 certified surface mounted, utility grade door closers with complete spring power adjustment, sizes 1 thru 6. Closers to be rack and pinion type, cast aluminum case construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide closer standard packed for regular, top-jamb, and parallel arm type mounting applications.
1. Acceptable Manufacturers:
 - a. Dorma Products (DO) - 7400 Series.
 - b. Falcon Hardware (FA) - Dor-O-Matic SC60 Series.
 - c. Norton Door Controls (NO) - 1601 Series.
 - d. Stanley Hardware (ST) - CLD-3551 Series.
 - e. Yale Locks and Hardware (YA) - 51BC Series.
 - f. No Substitution – Facility Standard.

2.13 AUTOMATIC DOOR OPERATORS

- A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.
1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
- B. Electromechanical Door Operators: Self-contained units powered by permanent magnet DC motor, with closing speed controlled mechanically by gear train, connections for power, activation and safety device wiring, and manual operation including spring closing when power is off.
- C. Electrohydraulic Door Operators: Self-contained low-pressure units with rack and pinion design contained within a cast aluminum housing. Door closing speed controlled by independent hydraulic adjustment valves in the sweep and latch range of the closing cycle. Operator is to provide conventional door closer opening and closing forces unless the power operator motor is

activated. Unit is to include an adjustable hydraulic backcheck valve to cushion the door speed if opened violently. Non-handed units for both push and pull side applications.

- D. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.
- E. Standard: Certified ANSI/BHMA A156.19.
 - 1. Performance Requirements:
 - a. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
 - b. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.
- F. Configuration: Surface mounted. Door operators to control single swinging and pair of swinging doors.
- G. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19. When not in automatic mode, door operator to function as manual door closer with fully adjustable opening and closing forces, with or without electrical power.
 - 1. On-off switch to control power to be key switch operated.
- H. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.
- I. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
- J. Activation Devices: Provide activation devices in accordance with ANSI/BHMA A156.19 standard, for condition of exposure indicated and for long term, maintenance free operation under normal traffic load operation. Coordinate activation control with electrified hardware and access control interfaces. Activation switches are standard SPST, with optional DPDT availability.
- K. Signage: As required by cited ANSI/BHMA A156.19 standard for the type of operator.
 - 1. Acceptable Manufacturers:
 - a. Besam Automated Entrance Systems (BE) - SW100 Series.
 - b. Horton Automatics (HO) - 4000 Series.
 - c. LCN Closers (LC) - 4640 Series.
 - d. Norton Door Controls (NO) - 5600 Series.
 - e. Norton Door Controls (NO) - 5700 LEO Series.
 - f. Norton Door Controls (NO) - 5900 X-in Series.
 - g. Norton Door Controls (NO) - 6000 Series.
 - h. Stanley Access (ST) - Magic Force Series.

- i. No Substitution – Facility Standard.

2.14 SURFACE MOUNTED HOLDERS

- A. Electromagnetic Door Holders: Certified ANSI A156.15 electromagnetic door holder/releases with a minimum 20 to 40 pounds holding power and single coil construction able to accommodate 12VDC, 24VAC, 24VDC and 120VAC. Coils to be independently wound, employing an integral fuse and armatures to include a positive release button.

1. Acceptable Manufacturers:
 - a. LCN Door Closers (LC) - SEM7800 Series.
 - b. **Rixson (RIX) - 990 Series.**

2.15 ARCHITECTURAL TRIM

- A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Metal Protection Plates: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from the following:
 - a. Stainless Steel: 300 series, .050-inch thick, with countersunk screw holes (CSK).
 - b. Brass or Bronze: .050-inch thick, with countersunk screw holes (CSK).
 - c. Laminate Plastic or Acrylic: 1/8-inch thick, with countersunk screw holes (CSK).
4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
5. Metal Door Edging: Door protection edging fabricated from a minimum .050-inch thick metal sheet, formed into an angle or "U" cap shapes, surface or mortised mounted onto edge of door. Provide appropriate leg overlap to account for protection plates as required. Height to be as specified in the Hardware Sets.
6. Acceptable Manufacturers:
 - a. Hager (HA).
 - b. Ives (IV).
 - c. **Rockwood Manufacturing (RO).**
 - d. Trimco (TC).

2.16 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 - 1. Acceptable Manufacturers:
 - a. Hager (HA).
 - b. Ives (IV).
 - c. **Rockwood Manufacturing (RO).**
 - d. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 - 1. Acceptable Manufacturers:
 - a. ABH Manufacturing (AB).
 - b. **Rixson Door Controls (RIX).**
 - c. Glynn Johnson (GJ).

2.17 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
- D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- E. Acceptable Manufacturers:

1. Pemko Manufacturing (PE).
2. **Reese Enterprises, Inc. (RE).**
3. Zero International (ZE).

2.18 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.19 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.

- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

- B. Manufacturer's Abbreviations:

Emtek	EM
Mckinney	MCK
HES	HES
Johnson	JOH
Reese	RE
Rixson	RIX
Rockwood	RO
Sargent	SA
Schlage	SC

Hardware Schedule

PHASE 2

HDWR. SET # 21

Dr. C

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Set Auto Flush Bolts 2942 x US32D	RO
1 Ea. Push/Pull Latch 24-114 x SG x US26D	SA
4 Ea. Kick Plates K1050 12" x 1" LDW x US32D (Plates both sides of doors)	RO
1 Ea. Wall Stop 409 x US32D (Active door only)	RO
1 Set Seals 797B	RE

HDWR. SET #22

Dr. B

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
2 Ea. Dummy Levers ND170 x ATH x US26D	SC
2 Ea. Roller Latches 592 x US26D	RO
1 Ea. Wall Stop 409 x US32D (no stop where door will not hit a wall)	RO
2 Ea. Silencers 608RKW	RO

HDWR. SET # 23

Dr. # A103-2, A106-2

3 Ea. Hinges T4A3386 5" x 4 1/2" x NRP x US32D	MCK
1 Ea. Exit Device 8804 x ETB x LC x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Electric Strike 9600 x 2005M3 x US32D	HES
1 Ea. Card Reader by Owner	
1 Ea. Closer EN351 x P10	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Set Weather Strip 807A	RE
1 Ea. Threshold S483AV	RE

Card Reader releases the strike to allow entry. Entry also by key outside to retract latch. Lever stays rigid.

HDWR. SET # 24

Dr. # A103-1

3 Ea. Hinges T4A3786 5"x 4 1/2" x US26D	MCK
1 Ea. Exit Device 12- 8815 x ETB x US32D (Passage)	SA
1 Ea. Closer EN351 x P10	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 25

Dr. # A104-1

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Exit Device 12-8804 x ETB x LC x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Closer EN351-P10	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

Entry by key on pull side. Lever is locked when key removed.

HDWR. SET # 26

Dr. # A105-1

3 Ea. Hinges TA2714 4 1/2" x 4 1/2" x US26D	MCK
1 Ea. Privacy Set ND40S x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 27

Dr. # A106-1

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Closer EN351 -O (Reg Arm Mt)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 28

Dr. # A106A-1

3 Ea. Hinges TA2714 4 1/2" x 4 1/2" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 29

Dr. # A127-1

3 Ea. Hinges TA2314 4 1/2" x 4 1/2" NRP x US32D	MCK
1 Ea. Exit Device 8804 x ETB x LC x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Closer EN351 x P10	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Threshold S483AV	RE
1 Set Weather Strip 807A	RE

Entry by key from outside to retract the latch. Lever is locked when key removed.

HDWR. SET # 30

Dr. # A107-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Electric Strike 8300C x US32D x 2005M3	HES
1 Ea. Hold Open Closer EN351-H (Pull side mt.)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE
1 Ea. Card Reader by Others.	

Access by card or key. Lever always locked from corridor side.

HDWR. SET # 31

Dr. # A107A-1, A114-1, A115-1, A116-1, A117-1, A119-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Entry Lockset ND53RD x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 32

Dr. # A108-1

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Exit Device 8813 x ETB x LC x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Closer EN351-P10	SA
1 Ea. Magnetic Hold Open 994M x 689	RIX
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

Operation: During business hours the door will be held open by magnetic hold open. Lever trim can be locked or unlocked by key.

HDWR. SET # 33

Dr. # A123-2

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Exit Device 8813 x ETB x LC x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Closer EN351-P10	SA
1 Ea. Kick Plate K1050 8" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

Lever trim can be locked or unlocked by key.

HDWR. SET # 34

Dr. # A110-1

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
2 Ea. Flush Bolts 555 x US26D	RO
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
2 Ea. Wall Stops 409 x US32D	RO
1 Ea. Seal 797B	RE

Metal Astragal by Door Supplier.

HDWR. SET # 35

Dr. # A112-1

3 Ea. Hinges T4A3786 5" x 4 ½" x US26D	MCK
1 Ea. Push Plate 70C 4" x 16" x US32D	RO
1 Ea. Door Pull BF111 x US32D	RO
1 Ea. Deadlock B662R x US26D	SC
1 Ea. Hold Open Closer EN351 -H (Pull side mt)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 36

Dr. # A112-3

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Classroom Lockset ND70RD x ATH x US26D	SC
1 Ea. Closer EN351-O (Reg Arm Mt)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 37

Dr. # A112A-1

3 Ea. Hinges TA2714 4 1/2" x 4 1/2" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 38

Dr. # A112-2

1 Set Sliding Door Hardware 200WM482	JOH
4 Ea. 2030 Bottom Guides to be Mortised Installation. (Bottom of door grooved for guide)	
2 Ea. Flush Modern Pulls 220306 x US15	EM

HDWR. SET # 39

Dr. # A113-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Electric Strike 8300C x US32D x 2005M3	HES
1 Ea. Closer EN351-O (Pull side mt)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE
1 Ea. Card Reader by Others.	

Access by card or key. Lever always locked from corridor side.

HDWR. SET # 40

Dr. # A118-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Electric Strike 8300C x US32D x 2005M3	HES
1 Ea. Closer EN351- P10	SA
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 40A

Dr. # A120-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 41

Dr. # A121-1, A122-1

Existing Hardware to Remain.

HDWR. SET # 42

Dr. # A123-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Classroom Lockset ND70RD x ATH x US26D	SC
1 Ea. Closer EN351-O (Pull side mt)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR SET # 43

Dr. A124-1, A126A-1

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Privacy Set ND40S x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 44

Dr. # A126-1

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Classroom Lockset ND70RD x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

ALTERNATE # 1 (Delete Dr. A112-3 at Set # 36 and add Sets #45 & #46)

HDWR. SET # 45

Dr. # A112-4

6 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
2 Ea. Flush Bolts 555 x US26D	RO
1 Ea. Classroom Lockset ND70RD x ATH x US26D	SC
2 Ea. Wall Stops 409 x US32D	RO
2 Ea. Mop Plates K1050 4" x 1" LDW x US32D	RO
1 Set Seals 797B	RE

Wood Astragal by Door Manufacturer.

HDWR. SET # 46

Dr. # A112-5

6 Ea. Hinges TA3786 5" x 4 1/2" x US26D	MCK
2 Ea. Flush Bolts 555 x US26D	RO
1 Ea. Classroom Lockset ND70RD x ATH x US26D	SC
1 Ea. Overhead Stop 9-436 x US32D	RIX
1 Ea. Wall Stop 409 x US32D	RO
2 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Set Seals 797B	RE

Wood Astragal by Door Manufacturer.

END OF SECTION 08 71 00

SECTION 08 71 13 – DOOR HARDWARE (AREA B)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
1. Swinging doors.
 2. Sliding doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
1. Mechanical door hardware.
 2. Electromechanical door hardware, power supplies, back-ups and surge protection.
- C. Related Sections:
1. Division 06 Section "Rough Carpentry".
 2. Division 06 Section "Finish Carpentry".
 3. Division 08 Section "Operations and Maintenance".
 4. Division 08 Section "Door Hardware Schedule".
 5. Division 08 Section "Hollow Metal Doors and Frames".
 6. Division 08 Section "Flush Wood Doors".
 7. Division 08 Section "Stile and Rail Wood Doors".
 8. Division 28 Section "Access Control".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 2. ICC/IBC - International Building Code.
 3. NFPA 70 - National Electrical Code.
 4. NFPA 80 - Fire Doors and Windows.
 5. NFPA 101 - Life Safety Code.
 6. NFPA 105 - Installation of Smoke Door Assemblies.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
1. ANSI/BHMA Certified Product Standards - A156 Series.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.
- E. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff an Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- D. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
- E. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
 - 1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
 - 2. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Thresholds: Not more than 1/2 inch high.

3. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document.
 1. Plans for existing and future key system expansion.
 2. Requirements for key control storage.
 3. Address and requirements for delivery of keys.
 - G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products.
 2. Review and finalize construction schedule and verify availability of materials.
 - H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
 - B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
 - C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".
- 1.6 COORDINATION
- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
 - B. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for extra heavy duty cylindrical (bored) locks and latches.
 - 2. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 3. Five years for exit hardware.
 - 4. Twenty five years for manual surface door closers.
 - 5. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
 - 1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

- a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- B. Substitutions: Products listed are based on existing manufacturers in the facility and items that an approved substitution. No other products will be allowed to be substituted.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - 1) Out-swinging exterior doors.
 - 2) Out-swinging access controlled doors.
 5. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. **McKinney Products (MK).**
 - c. Stanley Hardware (ST).
 - d. Ives (IVE)
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall

width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), full surface, or half surface, in standard and heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be U.L. listed for use on up to and including 90 minute rated door installations and U.L. listed for windstorm components where applicable. Factory cut hinges for door size and provide with removable service power transfer panel where indicated at electrified openings.

1. Acceptable Manufacturers:

- a. **Select Hinges (SEL).**
- b. Pemko Manufacturing (PE).
- c. Stanley Hardware (ST).

C. Sliding Door Hardware: Sliding door hardware is to be of type and design as specified and should comply with ANSI/BHMA A156.14.

1. Sliding Bi-Passing Pocket Door Hardware: Provide complete sets consisting of track, hangers, stops, bumpers, floor channel, guides, and accessories indicated.
2. Bi-folding Door Hardware: Rated for door panels weighing up to 125 lb.
3. Pocket Sliding Door Hardware: Rated for doors weighing up to 200 lb.
4. Barn Door Sliding Hardware: Rated for doors up to 200 lb.

a. Acceptable Manufacturers:

- 1) Hafele Manufacturing (HF).
- 2) **Johnson Hardware (JOH).**

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified automatic, self-latching, and manual flush bolts and surface bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

1. Acceptable Manufacturers:

- a. Hager (HA)
- b. Ives (IV).
- c. **Rockwood Manufacturing (RO).**
- d. Trimco (TC).

B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Coordinators fabricated from steel with nylon-coated strike plates and built-in adjustable safety release.

1. Acceptable Manufacturers:

- a. Burns Manufacturing (BU).
- b. Hager (HA)

- c. Ives (IV).
 - d. Rockwood Manufacturing (RO).
 - e. Trimco (TC).
- C. Door Push Plates and Pulls: ANS/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
- 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 - 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 - 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 - 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 - a. Acceptable Manufacturers:
 - 1) Burns Manufacturing (BU).
 - 2) Hager (HA).
 - 3) Ives (IV).
 - 4) **Rockwood Manufacturing (RO).**
 - 5) Trimco (TC).

2.4 CYLINDERS AND KEYING

- A. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets unless otherwise indicated.
- 1. Acceptable Manufacturers:
 - a. **Schlage (SC).**
 - b. No Substitution – Facility Standard.
- B. Cylinders: Original manufacturer cylinders complying with the following:
- 1. Keyway: Match Facility Standard.
- C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
- 1. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Provide removable core (large format) as specified in Hardware Sets.
- D. Keying System: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference, and as follows:
- 1. Existing System: Master key or grand master key locks to Owner's existing system.

- E. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Three (3)
 2. Master Keys (per Master Key Group): Two (2)
 3. Grand Master Keys (per Grand Master Key Group)(If required): Two (2)
 4. Permanent Control Keys : Four (4)
- F. Key Registration List: Provide keying transcript list to Owner's representative.
- G. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
1. Acceptable Manufacturers:
 - a. Lund Equipment (LU).
 - b. MMF Industries (MM).
 - c. Telkee (TK).

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified cylindrical (bored) locksets furnished in the functions as specified in the Hardware Sets. Lock chassis fabricated of heavy gauge steel, zinc dichromate plated, with through-bolted application. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt. Locks are to be non-handed and fully field reversible.
1. Locksets to incorporate a free-wheeling lever design with a lifetime warranty against lever sag and spring breakage on all locking functions.
 2. Acceptable Manufacturers:
 - a. **Schlage (SC) – ND Series.**
 - b. No Substitution – Facility Standard.
- B. Push/Pull Latches:
1. Acceptable Manufacturers:
 - a. Sargent (SA) 114 Series.
 - b. No Substitution- Facility standard.

2.6 AUXILIARY LOCKS

- A. Cylindrical Deadlocks: ANSI/BHMA A156.5, Grade 1, cylindrical type deadlocks to fit standard ANSI 161 preparation and 1 3/8" to 1 3/4" thickness doors. Provide tapered collars to resist vandalism and 1" throw solid steel bolt with hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other locksets.
1. Acceptable Manufacturers:
 - a. **Schlage (SC) - B600 Series.**

a. No Substitution – Facility Standard.

B. Narrow Case Deadlocks and Deadlatches: ANSI/BHMA 156.13 Series 1000 Grade 1 certified narrow case deadlocks and deadlatches for swinging or sliding door applications. All functions shall be manufactured in a single sized case formed from 12 gauge minimum, corrosion resistant steel (option for fully stainless steel case and components). Provide minimum 2 7/8" throw laminated stainless steel bolt. Bottom rail deadlocks to have 3/8" diameter bolts.

1. Acceptable Manufacturers:

- a. Adams Rite Manufacturing (AD) - MS1850S / MS1950 Series.
- b. Adams Rite Manufacturing (AD) – 4900 Series.

2.7 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

- 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
- 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
- 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.

B. Standards: Comply with the following:

- 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
- 2. Strikes for Bored Locks and Latches: BHMA A156.2.
- 3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
- 4. Dustproof Strikes: BHMA A156.16.

2.8 ELECTRIC STRIKES

A. Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified.

1. Acceptable Manufacturers:

- a. **HES (HES) – 8000 Series.**
- b. Trine (TR)

B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability

supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.

1. Acceptable Manufacturers:

- a. **HES (HS) - 9500/9600 Series.**
- b. Trine (TR) 4800 Series.

C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
5. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty trim with cold forged escutcheons, beveled edges, and four threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
7. Vertical Rod Exit Devices: Provide and install interior surface vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.

9. Rail Sizing: Provide exit device rails factory sized for proper door width application.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.

1. Acceptable Manufacturers:

a. **Sargent Manufacturing (SA) - 80 Series.**

b. Von Duprin (VD) - 35A/98 XP Series.

C. Conventional Push Rail Exit Devices, Aluminum Entrances: ANSI/BHMA A156.3, Grade 1 certified panic devices furnished in the functions specified in the Hardware Sets. Push bar to be made of extruded aluminum, maximum projection of 3", available in clad or anodized architectural finishes. Exit device design to fit narrow (minimum 2"), medium, or wide stile aluminum door applications.

1. Acceptable Manufacturers:

a. **Sargent (SA) 30 Series.**

b. No Substitutions. Matching Existing.

2.10 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.

b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open

- against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
- c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
 - d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
6. Closer Covers: Provide PVC free closer covers with a painted finish to match other hardware on the project.
 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as specified in the door Hardware Sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Acceptable Manufacturers:
 - a. LCN Closers (LC) - 4040XP Series.
 - b. **Sargent Manufacturing (SA) - 351 Series.**
- C. Door Closers, Surface Mounted (Utility Grade): ANSI/BHMA 156.4, Grade 1 certified surface mounted, utility grade door closers with complete spring power adjustment, sizes 1 thru 6. Closers to be rack and pinion type, cast aluminum case construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide closer standard packed for regular, top-jamb, and parallel arm type mounting applications.
1. Acceptable Manufacturers:
 - a. **Norton Door Controls (NO) - 1601 Series.**
 - b. Yale Locks and Hardware (YA) - 51BC Series.

2.11 AUTOMATIC DOOR OPERATORS

- A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.
1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
- B. Electromechanical Door Operators: Self-contained units powered by permanent magnet DC motor, with closing speed controlled mechanically by gear train, connections for power, activation and safety device wiring, and manual operation including spring closing when power is off.

- C. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.
- D. Standard: Certified ANSI/BHMA A156.19.
 - 1. Performance Requirements:
 - a. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
 - b. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.
- E. Configuration: Surface mounted. Door operators to control single swinging and pair of swinging doors.
- F. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19. When not in automatic mode, door operator to function as manual door closer with fully adjustable opening and closing forces, with or without electrical power.
 - 1. On-off- hold open switch to control power.
- G. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.
- H. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
- I. Activation Devices: Provide activation devices in accordance with ANSI/BHMA A156.19 standard, for condition of exposure indicated and for long term, maintenance free operation under normal traffic load operation. Coordinate activation control with electrified hardware and access control interfaces. Activation switches are standard SPST, with optional DPDT availability.
- J. Signage: As required by cited ANSI/BHMA A156.19 standard for the type of operator.
 - 1. Acceptable Manufacturers:
 - a. **LCN Closers (LCN) - 9500 Series.**
 - b. Stanley Access (ST) - Magic Force Series.

2.12 SURFACE MOUNTED HOLDERS

- A. Electromagnetic Door Holders: Certified ANSI A156.15 electromagnetic door holder/releases with a minimum 20 to 40 pounds holding power and single coil construction able to accommodate 12VDC, 24VAC, 24VDC and 120VAC. Coils to be independently wound, employing an integral fuse and armatures to include a positive release button.
 - 1. Acceptable Manufacturers:

- a. LCN Door Closers (LC) - SEM7800 Series.
- b. **Rixson (RIX) - 990 Series.**

2.13 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Metal Protection Plates: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from the following:
 - a. Stainless Steel: 300 series, .050-inch thick, with countersunk screw holes (CSK).
 - b. Brass or Bronze: .050-inch thick, with countersunk screw holes (CSK).
 - c. Laminate Plastic or Acrylic: 1/8-inch thick, with countersunk screw holes (CSK).
4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
5. Metal Door Edging: Door protection edging fabricated from a minimum .050-inch thick metal sheet, formed into an angle or "U" cap shapes, surface or mortised mounted onto edge of door. Provide appropriate leg overlap to account for protection plates as required. Height to be as specified in the Hardware Sets.
6. Acceptable Manufacturers:
 - a. Hager (HA).
 - b. Ives (IV).
 - c. **Rockwood Manufacturing (RO).**
 - d. Trimco (TC).

2.14 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Acceptable Manufacturers:

- a. Hager (HA).
 - b. Ives (IV).
 - c. **Rockwood Manufacturing (RO).**
 - d. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
1. Acceptable Manufacturers:
 - a. ABH Manufacturing (AB).
 - b. **Rixson Door Controls (RIX).**
 - c. Glynn Johnson (GJ).

2.15 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
- D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- E. Acceptable Manufacturers:
1. Pemko Manufacturing (PE).
 2. **Reese Enterprises, Inc. (RE).**
 3. Zero International (ZE).

2.16 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.17 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."

4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

B. Manufacturer's Abbreviations:

Mckinney	MCK
HES	HES
Johnson	JOH
LCN	LCN
Norton	NO
Reese	RE
Rixson	RIX
Rockwood	RO
Sargent	SA
Schlage	SC
Select Hinge	SEL
Simplex	SIM

Hardware Schedule

HDWR. SET # 01

Dr. # A127-1

1 Ea. Hinge SL11 CL HD	SEL
1 Ea. Exit Device 8504 x ETB x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Electric Strike 9600 x US32D x 2005M#	HES
1 Ea. Card Reader by Others	
1 Ea. Operator 9542 x ANCLR	LCN

2 Ea. Touchless Actuator 8310-813

LCN

1 Ea. Threshold S405A

RE

Weather Strip and Sweep by Door Manufacturer.

Operation: Card readers and actuators retract electric strike and then actuate the operator during the daytime hours. At night Wander Guard locks this door and is opened from outside or inside by readers. Outside Actuator for operator is inoperable at night.

HDWR. SET # 02

Dr. # A160-1

1 Ea. Hinge SL11 CL HD

SEL

1 Ea. Exit Device 8504 x ETB x US32D

SAR

1 Ea. Cylinder 20-057 x US26D

SC

1 Ea. Electric Strike 9600 x US32D x 2005M3

HES

1 Ea. Reuse Existing Card Reader

1 Ea. Closer J1601 x 689

NO

1Ea. Threshold S405A

RE

Weather Strip and Sweep by Door Manufacturer.

Operation: Door has existing wander guard system (mag lock) to be reused. Pin pad reader to release electric strike and mag lock to allow access from outside. Reuse existing numerical pin pad on interior to allow exit.

HDWR. SET # 03

Dr. # A136-2

3 Ea. Hinges T4A3386 5" x 4 1/2" x NRP x US32D

MCK

1 Ea. Passage Set ND10S x ATH x US26D

SC

1 Ea. Double Cylinder Deadlock B662R x US26D

SC

1 Ea. Closer ENB351 x P10

SA

1 Ea. Threshold S483AV

RE

1 Set Weather Strip 807A

RE

HDWR. SET # 04

Dr. # A148-1, A159-1

1 Ea. Hinge SL11 CL HD	SEL
1 Ea. Mag Lock by Others	
1 Ea. Motion Sensor by Others	
1 Ea. Card Reader by Others	
1 Set Push/Pull Bars TBF15747 x US32D	RO
1 Ea. Operator 9542 x 8310-806R Rocker Switch x ANCLR	LCN
2 Ea. Touchless Actuators 8310-813	LCN
1 Ea. Threshold S405A	RE

Weather Strip and Sweep by Door Manufacturer.

Operation: Access to Courtyard by card from inside to release the mag lock and actuator for operator. On courtyard side the motion sensor unlocks the mag lock. Door is always locked. Sign by others saying No Exit.

HDWR. SET # 05

Dr. # A139-2

1 Ea. Hinge SL18 CL HD	SEL
1 Ea. Exit Device 8804 x ETB x LC x US32D	SA
1 Ea. Cylinder 20-057 x US26D	SC
1 Ea. Electric Strike 9600 x 2005M3 x US32D	HES
1 Ea. Card Reader by Others	
1 Ea. Closer EN351-P10	SA
1 Ea. Threshold S483AV	RE
1 Set Weather Strip 807A	RE

Operation: Card reader releases strike to allow entry. Entry by key from outside. Lever remains locked when key is removed.

HDWR. SET # 06

Dr. A

1 Set Sliding Door Hardware 200WM961	JOH
1 Ea. Door Guide 2037 (Floor Mount)	JOH
1 Set Door Pulls Y102 x Y102 x Special 4 ½" CTC BTB x US32D	RO

HDWR. SET # 07

Dr. B, B2

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
2 Ea. Dummy Levers ND170 x ATH x US26D	SC
2 Ea. Roller Latches 592 x US26D	RO
1 Ea. Wall Stop 409 x US32D (no stop where door will not hit a wall)	RO
2 Ea. Silencers 608RKW	RO

HDWR. SET # 08

Dr. C

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Set Auto Flush Bolts 2942 x US26D	RO
1 Ea. Passage Set ND10S x ATH x US26D	SC
2 Ea. Kick Plates K1050 8" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D (Active door only)	RO
1 Set Seals 797B	RE

HDWR. SET # 09

Dr. # A134-1, A154-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lock ND80RD x ATH x US26D	SC
1 Ea. Electric Strike 8300C x 2005M3 x US32D	HES
1 Ea. Card Reader by Others	
1 Ea. Closer ENB351-O (Pull side mt)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO

1 Ea. Wall Stop 409 x US32D RO

3 Ea. Silencers 608RKW RO

Card Reader by Others to Allow Entrance and to Audit Use of Door.

HDWR. SET # 10

Dr. # A130-1, A152-2

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D MCK

1 Ea. Classroom Lockset ND70RD x ATH x US26D SC

1 Ea. Closer ENB351-PS SA

1 Ea. Kick Plate K1050 8" x 2" LDW x US32D RO

1 Ea. Floor Stop 441H x US26D RO

3 Ea. Silencers 608RKW RO

HDWR. SET # 11

Dr. # A132-1

3 Ea. Hinges T4A3786 5" x 4 ½" x US26D MCK

1 Ea. Storeroom Lockset ND80RD x ATH x US26D SC

1 Ea. Closer EN351-PS SA

1 Ea. Magnetic Hold Open 994M x 689 RIX

1 Ea. Kick Plate K1050 8" x 2" LDW RO

3 Ea. Silencers 608RKW RO

HDWR. SET # 12

Dr. # A133-1, A153-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D MCK

1 Ea. Storeroom Lockset ND80RD x ATH x US26D SC

1 Ea. Overhead Stop 10-336 x 5258 x US32D (Pull Side Mount) RIX

1 Ea. Kick Plate K1050 8" x 2" LDW x US32D RO

1 Set Seals 797B RE

RENOVATIONS AND ADDITIONS TO
BRANDON OAKS FISHWICK & NRC
FOR VIRGINIA LUTHERAN HOMES

2019091

28 AUGUST 2020

PHASES 2D & 3

HDWR. SET # 13

Dr. # A135A-1

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Set Auto Flush Bolts 2842 x US26D	RO
1 Ea. Storeroom lockset ND80RD x ATH x US26D	SC
2 Ea. Closers ENB351 x P10	SA
1 Ea. Coordinator 2672 x 2601 x BPC	RO
2 Ea. Wall Stops 409 x US32D	RO
1 Set Seals 797B	RE

Metal Astragal by Door Manufacturer.

HDWR. SET # 14

Dr. # A135-1

6 Ea. Hinges T4A3786 5" x 4 ½" x US26D	MCK
2 Ea. Exit Devices 12-3727 x EN Exit Only	SA
2 Ea. Closers ENB351 - P10	SA
2v Ea. Magnetic Hold Opens 989 x 689	RIX
2 Ea. Kick Plates K1050 8" x 1" LDW x US32D	RO
2 Ea. Silencers 608RKW	RO

HDWR. SET # 15

Dr. # A136-1

3 Ea. Hinges T4A3786 5" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US3	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 16

Dr. # A138-1

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Set Auto Flush Bolts 2942 x US26D	RO
1 Ea. Passage Set ND10S x ATH x US26D	SC
2 Ea. Wall Stops 409 x US32D	RO
2 Ea. Silencers 608RKW	RO

HDWR. Set # 17

Dr. # A139-1

3 Ea. Hinges T4A3786 5" x 4 ½" x US26D	MCK
1 Ea. Exit Device 8815 x ETB x US32D (Passage	SA
1 Ea. Delayed Egress Mag Lock by Others	
1 Ea. Card Reader by Others	
1 Ea. Motion Sensor by Others	
1 Ea. Closer ENB351-O (Pull Side Mount)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seal 797B	RE

Operation: Card reader on push side releases mag lock to exit. On pull side the motion sensor releases the mag lock to allow entry. Mag lock will sound alarm after delay if unauthorized exit is tried.

HDWR. SET # 18

Dr. # A145-1, A165-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Entry Lockset ND50RD x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seal 797B	RE

HDWR. SET # 19

Dr. # A148B-1, A159B-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Overhead Stop 10-236 x 689	RIX
3 Ea. Silencers 608RKW	RO

HDWR SET # 20

Dr. # A151-1, A167-1

1 Set Pivots EP-5J x US26D	MCK
1 Ea. Combination Strike and Stop CSS-9 x US26D	MCK
1 Ea. Privacy Set ND40S x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Mop Plate K1050 4" x 1" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO

HDWR. SET # 21

Dr. # A161-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Pushbutton Combination Lock L1011 x US26D	SIM
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seals 797B	RE

HDWR. SET # 22

Dr. # A162-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Privacy Set ND40S x ATH x US26D	SC
1 Ea. Closer ENB351-O (Pull Side Mount)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seal 797B	RE

HDWR. SET # 23

Dr. # A163-1

6 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Set Auto Flush Bolts 2942 x US26D	RO
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
2 Ea. Wall Stops 409 x US32D	RO
2 Ea. Silencers 608RKW	RO

HDWR. SET # 24

Dr. # A164-1

3 Ea. Hinges T4A3786 5" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Closer ENB351-O (Pull Side Mount)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seal 797B	RE

HDWR. SET # 25

Dr. # A169-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Electric Strike 8300C x US32D x 2005M3	HES
1 Ea. Card Reader by Others	
1 Ea. Closer ENB351-O (Pull Side Mount)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO
1 Set Seal 797B	RE

Operation: Card reader releases electric strike and allows door to be pushed open.

HDWR. SET # 26

Dr. # A201-1

2 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D	MCK
1 Ea. Storeroom Lockset ND80RD x ATH x US26D	SC
1 Ea. Closer ENB351-PS	SA
1 Set Seal 797B	RE

HDWR. SET # 27

Dr. # (E)A143-1, (E)A157-1, (E)A166-1

6 Ea. Hinges T4A3786 5" x 4 ½" x US26D	MCK
2 Ea. Exit Devices 12-3727 x EN Exit Only	SA
2 Ea. Closers EN351 x P10	SA
2 Ea. Reuse Existing Magnetic Hold Opens	
2 Ea. Kick Plates K1050 8" x 1" LDW x US32D	RO

Hardware Supplier to Verify Hinge Size and Weight.

HDWR. SET # 28

Dr. # (E)C

3 Ea. Hinges T4A3786 5" x 4 1/2" x US26D	MCK
1 Ea. Passage Set ND10S x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO

Hardware Supplier to Verify Hinge Size and Weight.

HDWR. SET # 29

Dr. # (E)D, (E)F

3 Ea. Hinges TA2714 4 1/2" x 4 1/2" x US26D	MCK
1 Ea. Passage Set ND10S x ATH x US26D	SC
1 Ea. Wall Stop 409 x US32D	RO

HDWR. SET # 30

Dr. # (E)A140-1

3 Ea. Hinges TA2714 4 1/2" x 4 1/2" x US26D	MCK
1 Ea. Pushbutton Combination Lock L1011 x US26D	SIM
1 Ea. Closer EN351 -O (Pull Side Mt.)	SA
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO

Remove Existing Push Side Closer and Patch Holes.

HDWR. SET # 31

Dr. # (E)A141-1

3 Ea. Hinges TA2714 4 1/2" x 4 1/2" x US26D	MCK
1 Ea. Privacy Set ND40S x ATH x US26D	SC
1 Ea. Kick Plate K1050 8" x 2" LDW x US32D	RO
1 Ea. Wall Stop 409 x US32D	RO

Remove Existing Closer and Patch Holes.

HDWR. SET # 32

Dr. # (E)A142-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D MCK

1 Ea. Entry Lockset ND50RD x ATH x US26D SC

1 Ea. Wall Stop 409 x US32D RO

Remove Existing Closer and Patch Holes.

HDWR. SET # 33

Dr. # (E)A144-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D MCK

1 Ea. Storeroom Lockset ND80RD x ATH x US26D SC

1 Ea. Closer EN351-O (Pull Side Mt) SA

1 Ea. Kick Plate K1050 8" x 2" LDW x US32D RO

1 Ea. Wall Stop 409 x US32D RO

Remove Existing Push Side Closer and Patch Holes.

HDWR. SET # 34

Dr. # (E)A155-1, (E) A156-1, (E)A168-1

3 Ea. Hinges TA2714 4 ½" x 4 ½" x US26D MCK

1 Ea. Storeroom Lockset ND80RD x ATH x US26D SC

1 Ea. Closer EN351-O (Pull Side Mt) SA

1 Ea. Kick Plate K1050 8" x 2" LDW x US32D RO

1 Ea. Wall Stop 409 x US32D RO

Remove Push Side Closer and Patch Holes.

END OF SECTION 08 71 13

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Glass for windows and doors.
 - 2. Glazing sealants and accessories.
- B. Related Requirements:
 - 1. Section 08 83 00 "Mirrors."

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C1036.
- C. IBC: International Building Code.
- D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review temporary protection requirements for glazing during and after installation.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass provide samples; 12 inches square.
 - 1. Coated glass.
 - 2. Insulating glass.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For glass.
- C. Product Test Reports: For coated glass insulating glass and glazing sealants, for tests performed by a qualified testing agency.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
- D. Sample Warranties: For special warranties.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- B. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- C. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.11 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E1300.
 - 1. Design Wind Pressures:

- a. As indicated on Drawings.
 - b. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
 - 1) Wind Design Data: As indicated on Drawings.
 2. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
 3. Probability of Breakage for Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass for a probability of breakage not greater than 0.001.
 4. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
 2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 3. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
 4. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 5. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications: "Glazing Manual."
 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Thickness:
1. Minimum Glass Thickness for Exterior Lites: 6 mm.

2.4 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3.
- B. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 MONOLITHIC GLASS SCHEDULE

A. Glass Type TG-1: Clear fully tempered float glass.

1. Minimum Thickness: 6 mm.
2. Safety glazing required.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 INSULATING GLASS SCHEDULE

A. Glass Type IG-1: Low-E-coated, clear insulating glass.

1. Basis-of-Design Product: PPG; Solarban 60 .
2. Overall Unit Thickness: 1 inch.
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Fully tempered float glass.
5. Interspace Content: Air.
6. Indoor Lite: Fully tempered float glass.
7. Low-E Coating: Sputtered on second surface.
8. Winter Nighttime U-Factor: 0.29 maximum.
9. Summer Daytime U-Factor: 0.27 maximum.
10. Visible Light Transmittance: 70 percent minimum.
11. Solar Heat Gain Coefficient: 0.38 maximum.
12. Safety glazing required.

2.8 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

2.9 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.
 - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.10 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks:
 - 1. Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.
 - 2. Type recommended by sealant or glass manufacturer.
- D. Spacers:
 - 1. Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
 - 2. Type recommended by sealant or glass manufacturer.
- E. Edge Blocks:
 - 1. Elastomeric material with a Shore A durometer hardness per manufacturer's written instructions.
 - 2. Type recommended by sealant or glass manufacturer.
- F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.11 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 08 80 00

SECTION 08 83 00 - MIRRORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes the following types of silvered flat glass mirrors:
 - 1. Wood framed monolithic glass mirrors.
- B. Related Requirements:
 - 1. Refer to Section 09 05 00 – Color Schedule for electric mirror manufacturer and product and Division 26 and Electrical Drawings for electric mirror specifications.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Mirrors. Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.
- B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.
- C. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For mirrors to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Mirror Mastic Compatibility Test: Submit mirror mastic products to mirror manufacturer for testing to determine compatibility of mastic with mirror backing.
 - 1. Testing is not required if data are submitted based on previous testing of mirror mastic products and mirror backing matching those submitted.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect mirrors according to mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SILVERED FLAT GLASS MIRRORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Avalon Glass and Mirror Company.
 - 2. Binswanger Mirror; a division of Vitro America, Inc.
 - 3. D & W Incorporated.
 - 4. Donisi Mirror Company.
 - 5. Gardner Glass, Inc.
 - 6. Gilded Mirrors, Inc.
 - 7. Guardian Glass; SunGuard.
 - 8. Head West.
 - 9. Independent Mirror Industries, Inc.
 - 10. Lenoir Mirror Company.
 - 11. mirrorlot.com.
 - 12. National Glass Industries.
 - 13. Stroupe Mirror Co., Inc.
 - 14. Sunshine Mirror.
 - 15. Virginia Mirror Company, Inc.
 - 16. Walker Glass Co., Ltd.
- B. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.
- C. Source Limitations for Mirror Accessories: Obtain mirror glazing accessories from single source.

- D. Mirrors, General: ASTM C1503.
- E. MIR-1 and MIR-2: Silvered flat glass mirror with safety backing.
 - 1. Size: As indicated on drawings.
- F. Safety Glazing Products: For film-backed and tempered mirrors, provide products that comply with 16 CFR 1201, Category II.
- G. MIR-3: Refer to Section 09 05 00 – Color Schedule for manufacturer and product.

2.2 MISCELLANEOUS MATERIALS

- A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.
- C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. C.R. Laurence Co., Inc.
 - b. Franklin International.
 - c. Liquid Nails Adhesive.
 - d. Macco Adhesives.
 - e. OSI Sealants; Henkel Corporation.
 - f. Palmer Products Corporation.
 - g. Pecora Corporation.
 - h. Royal Adhesives & Sealants.
 - i. Sommer & Maca Industries, Inc.
- D. Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror backing paint as certified by mirror manufacturer.

2.3 MIRROR HARDWARE

- A. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.
- B. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors. Provide galvanized anchors and inserts for applications on inside face of exterior walls and where indicated.

2.4 FABRICATION

- A. Provide prefabricated mirror and wood frame units completely assembled. Provide clear silicone sealant around perimeter of mirror and frame to provide a water tight seal. Remove any

exposed sealant. Seal all exposed ends and joints of frame members to resist water penetration into cut ends.

- B. Fabricate mirrors in the shop to greatest extent possible.
- C. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts so they fit closely around penetrations in mirrors.
- D. Mirror Edge Treatment: Square edge.
 - 1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
 - 2. Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.
- E. Film-Backed Safety Mirrors: Apply film backing with adhesive coating over mirror backing paint, as recommended in writing by film-backing manufacturer, to produce a surface free of bubbles, blisters, and other imperfections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.
- B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.
- C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

- A. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

3.3 INSTALLATION

- A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
- B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.
- C. Install mirrors with mastic and concealed mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.
 - 1. Install mastic as follows for MIR-1:

- a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
- b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
- c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.

3.4 CLEANING AND PROTECTION

- A. Protect mirrors from breakage and contaminating substances resulting from construction operations.
- B. Do not permit edges of mirrors to be exposed to standing water.
- C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.
- D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer.

END OF SECTION 08 83 00

DOCUMENT 09 05 00 – COLOR SCHEDULE

The following pages are the Color Schedule to be used for this project.

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
GENERAL COLOR SCHEDULE NOTES						
1. ITEMS IN THE REMARKS COLUMN ARE NOT ALL INCLUSIVE. REFER TO DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.						
2. PRICING INDICATED IS BUDGETARY MATERIAL PRICING ONLY. INSTALLATION ACCESSORIES, MATERIALS AND LABOR IS NOT INCLUDED.						
ACOUSTICAL PANEL CEILING (APC)						
APC-1	USG	MARS HEALTHCARE	86684	WHITE	24"X24"	(SEE RCP FOR LOCATIONS); SIZE: 2'X2'X3/4" TILES. 9/16" GRID. SLT EDGE PROFILE; CONTACT CUSTOMER SERVICE / (800) 950-3839
APC-2	ARMSTRONG	CALLA	2824	STONE	24"X24"	(BEAUTY SALON) SUPRAFINE 9/16" GRID IN COLOR STONE. CONTACT MEREDITH BAXTER 717-881-2488
APC-3	USG	USG SHEETROCK LAY-IN PANELS GYPSUM PANELS	3260	WHITE	24"x24"	(SERVING KITCHEN & RESIDENT ROOM BATHROOMS); LAY-IN, 15/16" DONN DX SUSPENSION GRID AND ANGLE MOULDING PERIMETER TRIM; CONTACT CUSTOMER SERVICE / (800) 950-3839
APC-4	ARMSTRONG	FINE FISSURED	1732	WHITE	24"X24"	(SERVICE CORRIDOR) 15/16" ANGLED TEGULAR, 15/16" PRELUDE XL GRID, CONTACT MEREDITH BAXTER 717-881-2488
ACOUSTICAL WOOD CEILING (AWC)						
AWC-1	ARMSTRONG	WOODWORKS LINEAR VENEERED PLANKS		NATURAL VARIATIONS WALNUT ESPRESSO	5-1/4", 3/4" THICK	(SEE RCP FOR LOCATIONS); INCLUDE ACOUSTICAL FLEECE, UNPERFORATED; CONTACT MEREDITH BAXTER / (717) 881-2488
AWC-2	ARMSTRONG	WOODWORKS LINEAR VENEERED PLANKS		NATURAL VARIATIONS WALNUT	5-1/4", 3/4" THICK	(SEE RCP FOR LOCATIONS); INCLUDE ACOUSTICAL FLEECE, UNPERFORATED; CONTACT MEREDITH BAXTER / (717) 881-2488
ACOUSTICAL WALL PANEL (AWP)						
AWP-1	SURFACE MATERIALS	ACOUSTICAL SOLUTIONS, TRADITIONAL ACOUSTIC PANELS		GRUOPIE:MONTREAL AS-531-07	CUSTOM, SEE DWGS	SEE INTERIOR ELEVATIONS; CONTACT: MICHELE CIMILLO (267)664-2512
AWP-2		CUSTOM			\$70 SF FOR PANEL	(SEE INTERIOR ELEVATIONS FOR LOCATIONS); BUDGET PRICE DOES NOT INCLUDE GRAPHIC; 2" PANEL
ARCHITECTURAL WOOD VENEER (AWV)						
AWV-1	WOLF GORDON	BILDENWOOD WOOD VENEER	WVF132	AMERICAN BLACK WALNUT	24" WIDTH	STRAIGHT HANG-IN SEQUENCE, MITERED FINISHED CORNERS. KEEP IN MIND VARIATIONS DURING INSTALLATION (MULTI-PURPOSE ROOM INT. ELEV. AND RCP FOR LOCATIONS)
CABINETRY (CAB)						
CAB-1	SHOWPLACE	CHANNING		MID-GREIGE (SOLID PAINT) - NO GLAZE		(DINING); RESIDENTIAL CABINETRY; PROVIDE DECORATIVE HARDWARE, FULL OVERLAY, DECORATIVE MESH INSET WHERE VENTILATION IS REQUIRED; CONTACT DAVID RADER / (717) 226-2097

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
CAB-2	SHOWPLACE	CHANNING		PAINT TO MATCH SHERWIN WILLIAMS RIVERWAY SW6222		(SITTING, LIVING, & SERVING KITCHEN); RESIDENTIAL CABINETRY; PROVIDE DECORATIVE HARDWARE, FULL OVERLAY, DECORATIVE MESH INSET WHERE VENTILATION IS REQUIRED; CONTACT DAVID RADER / (717) 226-2097
CAB-3	SHOWPLACE	CHANNING		PAINT TO MATCH SHERWIN WILLIAMS ACACIA HAZE SW9132		(ACTIVITY); RESIDENTIAL CABINETRY; PROVIDE DECORATIVE HARDWARE, FULL OVERLAY, DECORATIVE MESH INSET WHERE VENTILATION IS REQUIRED; CONTACT DAVID RADER / (717) 226-2097
CAB-4	SHOWPLACE	CHANNING		DORIAN GRAY		(BEAUTY SALON AND MULTI-PURPOSE ROOM); RESIDENTIAL CABINETRY, PROVIDE DECORATIVE HARDWARE, FULL OVERLAY
CORNER GUARD (CG)						
CG-1	INPRO	SURFACE MOUNT CORNER GUARD	150CG	0252 BURLAP		(CORRIDOR BELOW HANDRAIL); PROVIDE AT OUTSIDE CORNERS AS INDICATED ON FINISH FLOOR PLAN, 3" WINGS; CONTACT ERIN MACLEISH / (484) 213-6034
CG-2	INPRO	1/2" TAPE ON CORNER GUARD		0111 EGGSHELL	48" HIGH	(RESIDENT ROOMS); PROVIDE AT OUTSIDE CORNERS AS INDICATED ON FINISH FLOOR PLAN; CONTACT ERIN MACLEISH / (484) 213-6034
CG-3	INPRO	SURFACE MOUNT STAINLESS STEEL CORNER GUARD		STAINLESS STEEL	FULL HEIGHT	(KITCHEN OUTSIDE CORNERS); CONTACT ERIN MACLEISH / (484) 213-6034
CG-4	INPRO	SURFACE MOUNT CORNER GUARD	150CG	0111 EGGSHELL	48" HIGH	(SITTING, ACTIVITY, DINING & SERVICE CORRIDOR); PROVIDE AT OUTSIDE CORNERS AS INDICATED ON FINISH FLOOR PLAN, 3" WINGS; CONTACT ERIN MACLEISH / (484) 213-6034
CARPET (CPT)						
CPT-1	MOHAWK	XERIC	GT406	957 MESA	12"X36" CARPET PLANK	(NURSES STATION & OFFICES); SOLUTION DYED; INSTALL PLANK MONOLITHIC; CONTACT CONNIE HASARA / (570) 977-4072
CPT-2	MILLIKEN	NORDIC STORIES, TECTONIC	TTCC124	174 MALMO FERRY		(MULTI-PURPOSE ROOM), MONOLITHIC INSTALL
DECORATIVE PANEL (DP)						
DP-1	TABLEAUX	TABLEAUX ELEMENTS	ABANO 912	NICKEL ME798		(ACTIVITY); 3/4" THICK; SEE ELEVATIONS FOR CUSTOM DIMENSIONS; CONTACT ASHLEY SEAMAN / (512) 926-6346 EXT. 1010
FIBERGLASS REINFORCED PANELS (FRP)						
FRP-1	MARLITE	STANDARD FRP	S100 S/2/S	WHITE - SMOOTH SURFACE	VARIES	(SOILED UTILITY & BACK KITCHEN); PANELS TO INCLUDE MATCHING TRIM; PROVIDE SEALANT AT ALL SEAMS; CONTACT BRIAN NOLAN / (757) 581-2720

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
HARDWARE (HDW)						
HDW-1	TOP KNOBS	TORBAY PULL	TK863BSN	BRUSHED SATIN NICKEL	3-3/4" CC	RESIDENTIAL CABINETRY AND FOOD SERVICE IN DINING ROOM
HDW-2	AMEROCK	ALLISON	BP865CSG10	SATIN NICKEL	3" CC	UTILITY CABINETRY
IMPACT RESISTANT WALL COVERING (IRWC)						
IRWC-1	INPRO	PALLADIUM BEADBOARD PANELS		ANTIQUÉ WHITE 0104		(RESIDENT ROOMS & STAFF TOILET ROOMS); 4' HIGH; IPC VELVET TEXTURE BEAD BOARD .040; INCLUDE MATCHING TOP CAP (STAFF TOILET ROOMS) & INCLUDE 2" PALLADIUM TOP CAP (RESIDENT ROOMS); CONTACT ERIN MACLEISH / (484) 213-6034
IRWC-2	INPRO	RICOCHET FLEXIBLE WALL	R418	SAIL AWAY		BELOW HANDRAIL IN CORRIDORS A123 AND A125 ONLY
IRWC-3	INPRO	5000 WALL GUARD	280	SHIPROCK	4" H	(SERVICE CORRIDOR)
LUXURY VINYL TILE (LVT)						
LVT-1	SHAW	SOLITUDE	0648V	COCOA 48103	6"X48"	(TYPICAL FLOOR); 5 MM THICK, 20 MIL WEAR LAYER; SEE FINISH FLOOR PLANS FOR LOCATIONS AND PATTERN; CONTACT KELLY MURRAY / (717) 572-2126
LVT-2	SHAW	SOLITUDE	0648V	URBAN ASH 48540	6"X48"	(CORRIDORS A123 & A125); 5 MM THICK, 20 MIL WEAR LAYER; SEE FINISH FLOOR PLANS FOR LOCATIONS AND PATTERN; CONTACT KELLY MURRAY / (717) 572-2126
LVT-3	SHAW	SOLITUDE	0648V	NATURAL 48250	6"X48"	(FOYER, DINING, ACTIVITY, & SITTING); 5 MM THICK, 20 MIL WEAR LAYER; SEE FINISH FLOOR PLANS FOR LOCATIONS AND PATTERN; CONTACT KELLY MURRAY / (717) 572-2126
LVT-4	SHAW	SOLITUDE	0648V	FAWN 48516	6"X48"	(BEAUTY SALON); 5 MM THICK, 20 MIL WEAR LAYER; SEE FINISH FLOOR PLANS FOR LOCATIONS AND PATTERN; CONTACT KELLY MURRAY / (717) 572-2126
LVT-5	SHAW	COMPOUND	4077V	ELEVATE 77518	24"X24"	(CORRIDORS A123 & A125); 5 MM THICK, 20 MIL WEAR LAYER; SEE FINISH FLOOR PLANS FOR LOCATIONS AND PATTERN; CONTACT KELLY MURRAY / (717) 572-2126
MIRROR (MIR)						
MIR-1	CUSTOM WOOD FRAMED MIRROR			MATCH PLAM-4	2"	(TOILET ROOMS); MIRROR WITH 2" WOOD FRAME TO MATCH CASEWORK; SEE INT. ELEV. FOR DIMENSIONS
MIR-2	PLATE GLASS MIRROR					(PHYSICAL THERAPY)
MIR-3	ELECTRIC MIRROR	INTEGRITY	INT2-30.00X42.00-L7CS-30K		30"W X 42"H X 1.75"D	MAKE LED LIGHTING DIMMABLE (BEAUTY SALON)

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
MDF PANELING (MDF)						
MDF-1	ATLANTIC PLYWOOD CORPORATION	FIRE RATED MDF V-GROOVE HORIZONTAL PANELING		PAINT TO MATCH SHERWIN WILLIAMS RIVERWAY SW6222	8", 7/16" WITH 45 DEGREE V-GROOVE	(SITTING & LIVING); HORIZONTAL V-GROOVE PANELING; CAP CORNERS WITH MATCHING WOOD CORNER GUARDS
METAL (MTL)						
MTL-1	RICHELIEU		880025142	PEWTER		CASEWORK INSET WHERE VENTILATION IS REQUIRED
PANEL FABRIC (PF)						
PF-1	MODERNFOLD	VINYL SELECTOR	LINEAGE 459	HERITAGE 484		(MULTI-PURPOSE ROOM OPERABLE PARTITION)
PF-2	GUILFORD OF MAINE	SPRITE	2671	LINEN 7010		(FABRIC WRAPPED TACK BOARD)
PLASTIC LAMINATE (PLAM)						
PLAM-1	WILSONART		7965K-12	WALNUT HEIGHTS		(BREAK ROOM, NURSES STATION, CORRIDOR & PHYSICAL THERAPY) CASEWORK; CONTACT GENEVIEVE WATYCHA / (717) 799-1639
PLAM-2	WILSONART		4945-38	ORGANIC COTTON		WORK ROOM A116 COUNTERTOP AND 4" BACKSPLASH
PLAM-3	WILSONART		4991-38	PRESSED LINEN		(MEDS/CLEAN UTILITY & SOILED UTILITY) CASEWORK; CONTACT GENEVIEVE WATYCHA / (717) 799-1639
PLAM-4	WILSONART		7992-38	PINNACLE WALNUT		(RESIDENT ROOM BATHROOM & PUBLIC TOILET ROOMS) CASEWORK; CONTACT GENEVIEVE WATYCHA / (717) 799-1639
PLAM-5	FORMICA		5342-58	EARTH		(FOOD SERVICE BASE CABINETRY ON SERVICE SIDE); MATTE FINISH; CONTACT PAMELA DERVARICS / (484) 866-5388
PLAM-6	COLLINS	MOSAIC	9285-58	WHITE TWILL		BEAUTY SALON EQUIPMENT
PLAM-7	FORMICA		902-58	PLATINUM - MATTE FINISH		(BEAUTY SALON TOILET) SINK SHROUD TO MATCH CAB-4
PAINT (PNT)						
PNT-1	SHERWIN WILLIAMS	EG-SHEL; EPOXY IN TOILET ROOMS	SW7567	NATURAL TAN		TYPICAL WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-2	SHERWIN WILLIAMS	SEMI-GLOSS	SW7012	CREAMY		TYPICAL TRIM; CONTACT JAMES GEIST / (724) 933-1900
PNT-3	SHERWIN WILLIAMS	FLAT	SW7007	CEILING BRIGHT WHITE		TYPICAL CEILING / SOFFIT; CONTACT JAMES GEIST / (724) 933-1900
PNT-4	SHERWIN WILLIAMS	EG-SHEL	SW7534	OUTERBANKS		(CORRIDOR) BELOW HANDRAIL PAINT; CONTACT JAMES GEIST / (724) 933-1900
PNT-5	SHERWIN WILLIAMS	EG-SHEL	SW6213	HALCYON GREEN		(PHYSICAL THERAPY) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
PNT-6	SHERWIN WILLIAMS	EG-SHEL		TBD		(RESIDENT ROOM) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-7	SHERWIN WILLIAMS	EG-SHEL		TBD		(RESIDENT ROOM) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-8	SHERWIN WILLIAMS	EPOXY EG-SHEL	SW7534	OUTERBANKS		(STAFF TOILET ROOM) WALL PAINT; CONTACT JAMES GEIST / (724) 933-1900
PNT-9	SHERWIN WILLIAMS	EPOXY EG-SHEL	SW7007	CEILING BRIGHT WHITE		(BACK KITCHEN) CEILING / SOFFIT; CONTACT JAMES GEIST / (724) 933-1900
PNT-10	SHERWIN WILLIAMS	EG-SHEL	SW9132	ACACIA HAZE		(ACTIVITY) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-11	SHERWIN WILLIAMS	EG-SHEL	SW6222	RIVERWAY		(SITTING & LIVING ROOM) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-12	SHERWIN WILLIAMS	EPOXY EG-SHEL	SW6213	HALCYON GREEN		(RESIDENT TOILET ROOM) WALL PAINT; CONTACT JAMES GEIST / (724) 933-1900
PNT-13	SHERWIN WILLIAMS	EPOXY EG-SHEL	SW7567	NATURAL TAN		(RESIDENT ROOM BATHROOM) WALL PAINT; CONTACT JAMES GEIST / (724) 933-1900
PNT-14	SHERWIN WILLIAMS	EG-SHEL	SW6458	RESTFUL		(BREAK ROOM) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-15	SHERWIN WILLIAMS	EG=SHEL	SW0025	ROSEDUST		(BEAUTY SALON) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-16	SHERWIN WILLIAMS	EG=SHEL	SW6213	HALCYON GREEN		(RESIDENT ROOM) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
PNT-17	SHERWIN WILLIAMS	EG=SHEL	SW7032	WARM STONE		(MATCH CAB-2) ACCENT WALL; CONTACT JAMES GEIST / (724) 933-1900
QUARTZ SURFACING MATERIAL (QSM)						
QSM-1	WILSONART		Q4013	ISSELBURG		(SERVING KITCHEN, LIVING, & ACTIVITY) COUNTERTOP; 3 CM, EASED EDGE PROFILE WITH RADIUS CORNERS; CONTACT SHAUNA CAPEN / (215) 459-4721
RESILIENT BASE (RB)						
RB-1	TARKETT	MILLWORK COLLECTION	REVEAL	01 SNOW WHITE	6"	(COMMON AREAS, BEAUTY SALON); CONTACT PHIL CAREY / (215) 356-6169
RB-2	TARKETT	TRADITIONAL DURACOVE THERMOPLASTIC RUBBER 1/8" (TYPE TP)		48 GREY	4"	(OFFICES, NURSES STATION, MED ROOM, BACK OF HOUSE AREAS); 4" STRAIGHT AT CARPET, 4" COVE AT RESILIENT; CONTACT PHIL CAREY / (215) 356-6169
RB-3	TARKETT	TRADITIONAL DURACOVE THERMOPLASTIC RUBBER 1/8" (TYPE TP)		01 SNOW WHITE	4"	(RESIDENT ROOMS, PHYSICAL THERAPY, NURSE SUPPLY, STAFF TOILET ROOMS, BREAK ROOM); 4" COVE; CONTACT PHIL CAREY / (215) 356-6169
RB-4	TARKETT	TRADITIONAL DURACOVE THERMOPLASTIC RUBBER 1/8" (TYPE TP)		48 GREY	6"	(MEDS/CLEAN UTILITY); 6" COVE; CONTACT PHIL CAREY / (215) 356-6169

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
RESINOUS FLOORING (RF)						
RF-1	DUR-A-FLEX	SEAMLESS EPOXY FLOORING		Q28-35		(SERVING KITCHEN); FLASH COVE UP WALL 6"; CONTACT SHARON MCDOWELL / (410) 679-6340
SIGNAGE						
SIGNAGE						MATCH EXISTING SIGNAGE- OWNER AND ARCHITECT TO APPROVE
SOLID SURFACE MATERIAL (SSM)						
SSM-1	WILSONART		9077ST	MILK GLASS SPECTRA		(RESIDENT ROOM BATHROOM & PUBLIC TOILET ROOMS & BEAUTY SALON BATHROOM) COUNTERTOP; CONTACT
SSM-2	WILSONART		D354SL	DESIGNER WHITE		(RESIDENT ROOM BATHROOM & PUBLIC TOILET ROOMS & BEAUTY SALON BATHROOM) INTEGRAL BOWL; CONTACT SHAUNA CAPEN / (215) 459-4721
SSM-3	WILSONART		1572SL	ANTIQUÉ WHITE		(RESIDENT ROOM) WINDOW SILL; CONTACT SHAUNA CAPEN / (215) 459-4721
SSM-4	WILSONART		1530TM	BEIGE TEMPEST		(BREAK ROOM, CORRIDOR & PHYSICAL THERAPY) COUNTERTOP; CONTACT SHAUNA CAPEN / (215) 459-4721
SSM-5	WILSONART		9116GS	SOOTHING GREY		(MEDS/CLEAN UTILITY & NURSES STATION) COUNTERTOP; CONTACT SHAUNA CAPEN / (215) 459-4721
SSM-6	WILSONART		9253CM	ARCTIC DUNE		(MULTIPURPOSE ROOM) COUNTERTOP; CONTACT SHAUNA CAPEN / (215) 459-4721
STAIN (STN)						
STN-1	MINWAX		2716	DARK WALNUT		(HANDRAIL - GC TO PROVIDE MOCK UP SAMPLE FOR APPROVAL - CORRIDORS A123 AND A125 ONLY)
STN-2	CUSTOM STAIN			MATCH AWV-1		(MULTI-PURPOSE TRIM)
SHEET VINYL (SV)						
SV-1	POLYFLOR	HOMOGENEOUS SOLID SHEET VINYL	2000 PUR	8150 SHADOW	2.3MM THICK	(BACK OF HOUSE, UTILITY); HEAT WELD WITH COLOR COORDINATED WELD ROD; CONTACT PHIL CAREY (215) 356-6169
SV-2	ECORE	STRAIT RX		6625 TOASTED COCONUT		(PHYSICAL THERAPY); HEAT WELD WITH COLOR COORDINATED WELD ROD; CONTACT PHIL CAREY (215) 356-6169

COLOR SCHEDULE						
CODE	MANUFACTURER	PRODUCT NAME	PRODUCT NO	COLOR	SIZE	REMARKS
TILE						
TILE-1	DALTILE	MUSEO	MU31	ARTISTIC GREY	2"X2"	(RESIDENT ROOM BATHROOM) FLOOR TILE; MATTE FINISH; GROUT JOINT: 1/8" THICK, EPOXY GROUT MAPEI 01 ALABASTER; CONTACT SUSAN METKA (484) 576-9387
TILE-2	DALTILE	MUSEO	P-36C9TB - MU31	ARTISTIC GREY	6"X12"	(RESIDENT ROOM BATHROOM) COVE BASE; MATTE FINISH; USE THE MATCHING COVE BASE OUTCORNER PIECE PC-36C9TB AT ANY OUTSIDE CORNERS; GROUT JOINT: 1/8" THICK, EPOXY GROUT MAPEI 01 ALABASTER; CONTACT SUSAN METKA (484) 576-9387
TILE-3	DALTILE	FLORENTINE	FL08	ARGENTO	12"x12"	(PUBLIC RESIDENT TOILET ROOM) WALL TILE; MATTE FINISH; GROUT JOINT: 1/8" THICK, EPOXY GROUT MAPEI 14 BISCUIT; FINISH CORNERS AND EXPOSED EDGES WITH NICKEL SCHLUTER; CONTACT SUSAN METKA (484) 576-9387
TILE-4	GARDEN STATE TILE	CARESS	GSWDC1026	HUSH CRÈME	3"X12"	(SERVING KITCHEN) BACKSPLASH; GLOSSY TILE; GROUT JOINT: 1/8" THICK, EPOXY GROUT MAPEI 14 BISCUIT, FINISH CORNERS AND EXPOSED EDGES WITH NICKEL SCHLUTER; CONTACT JENNY WAWRZYNIAK (717) 360-1100
TILE-5	AMERICAN OLEAN	INFUSION		BEIGE FABRIC IF51	12"x12"	(PUBLIC RESIDENT TOILET ROOM) FLOOR TILE; MATTE FINISH; GROUT JOINT: 1/8" THICK, EPOXY GROUT MAPEI 14 BISCUIT, FINISH CORNERS AND EXPOSED EDGES WITH NICKEL SCHLUTER; CONTACT SUSAN METKA (484) 576-9387
TILE-6	DALTILE	FABRIQUE	UNPOLISHED	P685	12"x12"	(BEAUTY SALON) INSTALL PATTERN HORIZONTAL ON WALLS, FINISH CORNERS AND EXPOSED EDGES WITH NICKEL SCHLUTER, 1/8" GROUT JOINT, EPOXY GROUT MAPEI 90 LIGHT PEWTER; CONTACT SUSAN METKA (484) 576-9387
WALL COVERING (WCOV)						
WCOV-1	WOLF GORDON	ALLOTROPE	GOH31674833	LIMESTONE	53"W	(PUBLIC TOILET ROOMS ABOVE WALL TILE), STRAIGHT HANG, STRAIGHT MATCH
WCOV-2	VERSA	AURA	A166-189		52/54"W	(BEAUTY SALON), REVERSE HANG/HALF DROP MATCH, PATTERN REPEAT
WALK-OFF MAT / ENTRYWAY SYSTEM (WOM)						
WOM-1	SHAW	WELCOME II	5T031	31751 BLACK CHOCOLATE	24"X24" TILE	(SERVICE CORRIDOR); SOLUTION DYED, SYNTHETIC & ECOWORX BACKING; CONTACT KELLY MURRAY (717) 572-2126
WINDOW TREATMENT (WTR)						
WTR-1	GRABER BLINDS	LAKE FOREST		MILKY WAY 5058		2" FIRE RATED FAUX WOOD BLINDS ALL COMMONS SPACE EXTERIOR WINDOWS, INSIDE MOUNT WITH 2-1/2" CLASSIC WOOD VALANCE, OPERATIVE
WTR-2	ALUMINUM BLINDS			WHITE	1"	1" ALUMINUM MINI BLINDS FOR ALL RESIDENT ROOM, PHYSICAL THERAPY, AND STAFF OFFICE SPACES

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior partitions.
 - 2. Suspension systems for interior ceilings.
 - 3. Grid suspension systems for gypsum board ceilings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.
- B. Evaluation Reports: For embossed, high-strength steel studs and tracks post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.

- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
 - 2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A653/A653M, G40, hot-dip galvanized unless otherwise indicated.
- B. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.
 - 1. Steel Studs and Tracks:
 - a. Minimum Base-Steel Thickness: 0.0329 inch.
 - b. Depth: As indicated on Drawings.
 - 2. Embossed, High Strength Steel Studs and Tracks: Roll-formed and embossed with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.
 - a. Minimum Base-Steel Thickness: As indicated below.

	Yield Strength 33 ksi	Yield Strength 50 ksi	Yield Strength 65 ksi
Steel Stud Minimum Base-Steel Thickness:	0.0296 inch	0.015 inch	0.019 inch
Steel Track Minimum Base-Steel Thickness	0.0296 inch	0.015 inch	0.019 inch

- b. Depth: As indicated on Drawings.
- C. Slip-Type Head Joints: Where indicated, provide the following:
 - 1. Single Long-Leg Track System: ASTM C645 top track with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
- D. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch-wide flanges.
 - 1. Depth: As indicated on Drawings.
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

- E. Hat-Shaped, Rigid Furring Channels: ASTM C645.
 - 1. Minimum Base-Steel Thickness: 0.0329 inch.
 - 2. Depth: As indicated on Drawings.

2.3 SUSPENSION SYSTEMS

- A. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.
- B. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.
 - 1. Depth: As indicated on Drawings.
- C. Furring Channels (Furring Members):
 - 1. Cold-Rolled Channels: 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
 - 2. Steel Studs and Tracks: ASTM C645.
 - a. Minimum Base-Steel Thickness: 0.0329 inch.
 - b. Depth: As indicated on Drawings.
 - 3. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch deep.
 - a. Minimum Base-Steel Thickness: 0.0329 inch.
- D. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
 - b. Chicago Metallic Corporation; Drywall Grid System.
 - c. USG Corporation; Drywall Suspension System.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D226/D226M, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. **Suspended Assemblies:** Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754.
 - 1. **Gypsum Board Assemblies:** Also comply with requirements in ASTM C840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. **Single-Layer Application:** 16 inches o.c. unless otherwise indicated.
 - 2. **Multilayer Application:** 16 inches o.c. unless otherwise indicated.
 - 3. **Tile Backing Panels:** 16 inches o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.

- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Hangers: 48 inches o.c.
 2. Carrying Channels (Main Runners): 48 inches o.c.
 3. Furring Channels (Furring Members): 16 inches o.c.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

- a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 4. Do not attach hangers to steel roof deck.
 5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 7. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 09 22 16

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Interior gypsum board.
- 2. Tile backing panels.

- B. Related Requirements:

- 1. Section 09 22 16 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.

- 1. Build mockups for the following:

- a. Each level of gypsum board finish indicated for use in exposed locations.

- 2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
- 3. Simulate finished lighting conditions for review of mockups.
- 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C1396/C1396M.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. CertainTeed Gypsum.
 - d. Continental Building Products, LLC.
 - e. Georgia-Pacific Gypsum LLC.
 - f. National Gypsum Company.
 - g. USG Corporation.
 - 2. Thickness: 5/8 inch.
 - 3. Long Edges: Tapered.
- B. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. CertainTeed Gypsum.
 - d. Continental Building Products, LLC.
 - e. Georgia-Pacific Gypsum LLC.
 - f. National Gypsum Company.
 - g. USG Corporation.
2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

2.4 SPECIALTY GYPSUM BOARD

- A. Gypsum Board, Type C: ASTM C1396/C1396M. Manufactured to have increased fire-resistive capability.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. CertainTeed Gypsum.
 - d. Continental Building Products, LLC.
 - e. Georgia-Pacific Gypsum LLC.
 - f. National Gypsum Company.
 - g. USG Corporation.
 2. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
 3. Long Edges: Tapered.
- B. Glass-Mat Interior Gypsum Board: ASTM C1658/C1658M. With fiberglass mat laminated to both sides. Specifically designed for interior use.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Georgia-Pacific Building Products; DensArmor Plus.
 - b. National Gypsum Company; eXP Interior Extreme.
 - c. United States Gypsum Company; Sheetrock Glass Mat Panels Mold Tough.
 2. Core: 5/8 inch, Type X.
 3. Long Edges: Tapered.
 4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.5 TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C1178/C1178M, with manufacturer's standard edges.

1. Subject to compliance with requirements, provide the following:
 - a. Georgia-Pacific Gypsum LLC; DensShield Tile Backer.
 - b. CertainTeed Corp.; GlasRoc Tile Backer.
 - c. National Gypsum E²XP Tile Backer
2. Core: 5/8 inch, Type X.
3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.6 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, or paper-faced galvanized-steel sheet.
2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. Expansion (control) joint.
3. No-Coat Structural Laminate Drywall Corner System; "Ultra Trim".
 - a. Shapes:
 - 1) Cornerbead.
 - 2) LC-Bead: J-shaped; exposed long flange receives joint compound.
 - 3) L-Bead: L-shaped; exposed long flange receives joint compound.
 - 4) Expansion (control) joint.

2.7 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
3. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board (All locations except showers): For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.
- D. Joint Compound for Interior Gypsum Board (For Use of Gypsum Board Joints in Showers): For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 4. Finish Coat: For third coat, use setting-type, sandable topping compound.

2.8 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- E. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.
- F. Thermal Insulation: As specified in Section 07 21 00 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Wallboard Type: Vertical and horizontal surfaces unless otherwise indicated.

2. Type X: Where required for fire-resistance-rated assembly.
3. Type C: Where required for specific fire-resistance-rated assembly indicated.
4. Glass-Mat Interior Type: Provide on walls in the following locations:

- a. Prep Kitchen, Toilets and Janitor Closet.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 APPLYING TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at Showers and locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

- B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners.
 - 2. LC-Bead: Use at exposed panel edges.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are substrate for tile.
 - 3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 09 91 10 "Painting."
 - 4. Level 5: Apply to glass-mat, water-resistant backing panels.
 - a. Primer and its application to surfaces are specified in Section 09 91 10 "Painting."

3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 30 13 - CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Ceramic tile.
- 2. Waterproof membrane for thinset applications.
- 3. Metal edge strips.

- B. Related Requirements:

- 1. Section 07 92 00 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
- 2. Section 09 29 00 "Gypsum Board" for glass-mat, water-resistant backer board.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.
- D. Module Size: Actual tile size plus joint width indicated.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Metal edge strips in 6-inch lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile of each type from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
 - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 - 2. Obtain waterproof membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
 - 1. Waterproof membrane.
 - 2. Metal edge strips.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 - 1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.3 TILE PRODUCTS

- A. Tile Type (TILE-1 through TILE-6): Refer to Section 09 05 00 "Color Schedule" for tile manufacturers, products, colors and grout colors.

2.4 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Fabric-Reinforced, Fluid-Applied Membrane: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Ardex 8+9.
 - b. Bostik, Inc.; Hydroment Blacktop 90210.
 - c. Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane.
 - d. Laticrete International, Inc.; Laticrete 9235 Waterproof Membrane.

2.5 SETTING MATERIALS

- A. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Custom Building Products.
 - b. LATICRETE SUPERCAP, LLC.
 - c. MAPEI Corporation.
 - 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
 - 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.6 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout: ANSI A118.3.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Custom Building Products.
 - b. LATICRETE SUPERCAP, LLC.
 - c. MAPEI Corporation.
 - 2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

2.7 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- A. Metal Edge Strips: Metal shape of height to match tile and setting-bed thickness, satin anodized aluminum exposed-edge material.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Schluter Systems L.P.
 - 2. Shapes: Where indicated on Drawings.
 - a. Dilex AHKA.
 - b. Jolly.
 - c. Dilex EHK.
- B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

- a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION OF CERAMIC TILE

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors consisting of tiles 8 by 8 inches or larger.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

- E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Tile: Refer to Section 09 05 00 – Color Schedule.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Metal Edge Strips: Install at locations indicated.

3.4 INSTALLATION OF WATERPROOF MEMBRANE

- A. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.
- C. Extend waterproof membrane on floors up face of wall 4 inches where waterproofing is not installed on walls.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.

2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.6 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.7 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 1. Ceramic Tile Installation: TCNA F122; thinset mortar on waterproof membrane.
 - a. Thinset Mortar: Modified dry-set mortar.
 - b. Grout: Water-cleanable epoxy grout.
 - c. Application: All floor applications.
- B. Interior Wall Installations, Wood or Metal Studs or Furring:
 1. Ceramic Tile Installation: TCNA W243; thinset mortar on gypsum board.
 - a. Thinset Mortar: Modified dry-set mortar.
 - b. Grout: Water-cleanable epoxy grout.
 - c. Application: All wall applications.

END OF SECTION 09 30 13

SECTION 09 50 00 - WOOD PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions 01 Specification sections apply to work of this section

1.2 SUMMARY

A. Section Includes

1. Solid Wood and Wood veneer ceiling panels.
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, wall angle moldings and accessories.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

- 1) ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- 2) ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
- 3) ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- 4) ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- 5) ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- 6) ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- 7) ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- 8) ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
- 9) ASTM E 1264 Classification for Acoustical Ceiling Products

B. Hardwood Plywood & Veneer Association (HPVA)

C. International Building Code

D. ASHRAE Standard 62.1-2004 Ventilation for Acceptable Indoor Air Quality

E. NFPA 70 National Electrical Code

F. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

G. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

H. International Code Council-Evaluation Services Report - Seismic Engineer Report

1. ESR 1308 - Armstrong T-Bar or Dimensional Suspension

I. California Air Resources Board (CARB) compliant

J. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.

B. Installation Instructions: Submit manufacturer's installation instructions as referenced in Part 3, Installation.

C. Samples: Minimum 3-1/2 inch or 5-1/2 inch samples of specified panel; 8 inch long samples of exposed wall molding and suspension system, including main runner.

D. Shop Drawings: Illustrating the layout and details of the ceilings. Show locations of items that are to be coordinated with, or supported by the ceilings.

E. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

F. All products not conforming to manufacturer's current published values must be removed and dispose. Replace with complying product at the expense of the Contractor performing the work.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide ceiling panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: As follows, tested by HPVA (Hardwood Plywood and Veneer Association) under the test standard ASTM E-84 tunnel test and complying with ASTM E 1264 for Class A products.

- a. Flame Spread: 25 or less
- b. Smoke Developed: 50 or less

C. Woodworking Standards: Manufacturer must comply with specified provisions of Architectural Woodworking Institute quality standards.

E. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, wet work i.e. gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store the wood veneer ceiling panels in a dry interior location in their cartons prior to installation to avoid damage. Store the ceiling panel cartons in a flat, horizontal position. Do not remove the protectors between the panels until installation.

B. Do not store in unconditioned spaces with humidity greater than 55 percent or lower than 25 percent relative humidity and temperatures lower than 50 degrees F or greater than 86 degrees F. Do not expose the wood veneer ceiling panels to extreme temperatures, for example, close to a heating source or near a window with direct sunlight.

C. Handle ceiling units carefully to avoid chipped edges or damage to units in any way.

1.7 PROJECT CONDITIONS

A. Prior to installation, the wood veneer ceiling materials are required to reach room temperature and have stabilized moisture content for a minimum of 72 hours.

B. Do not install the wood veneer panels in spaces where the temperature or humidity conditions vary greatly from the temperatures and conditions that will be normal in the occupied space.

C. As interior finish products, the wood veneer panels are designed for installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed and HVAC systems are functioning and will be in continuous operation. Relative humidity should not fall below 25 percent or exceed 55 percent.

1.8 WARRANTY

A. Wood Veneer Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to:

1. Ceiling Panels: Defects in materials or factory workmanship
2. Grid System: Rusting and manufacturing defects

B. Warranty Period:

1. Wood veneer panels: One (1) year from date of installation
2. Grid: One (1) year from date of installation

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.9 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Ceiling Units: Furnish quantity of full-size units equal to 5.0 percent of amount installed.
2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

2.2.1 WOOD VENEER CEILING UNITS (AWC-1 and AWC-2)

A. Ceiling Panels:

1. Surface Texture: Smooth
2. Composition: Fire-retardant Particle Board
3. Species/Finish: Natural Variations Walnut Espresso
4. Size: 5-1/4 in x 96 in
5. Reveal: Plank - 3/4" Reveal
6. Edge Banding and Trim: To match face veneer
7. Noise Reduction Coefficient (NRC): ASTM C 423, Classified with UL label on product carton 0.40
8. Flame Spread: ASTM E84 HPVA Fire Classification (Fire Class)
9. Dimensional Stability: Standard
10. Acceptable Product: WOODWORKS Linear Veneered Planks, Item # 6460W1 as manufactured by Armstrong World Industries

B. Ceiling Accessories (Ceilings) WoodWorks:

1. 5479 - BioAcoustic Infill Panel (Beige - Matte)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.

B. Proper designs for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.3 INSTALLATION

A. Install suspension system and panels in compliance with ASTM C636; CISCA Seismic Guidelines; approved construction drawings; with the authorities having jurisdiction; and in accordance with the manufacturer's installation instructions.

B. Install wall moldings at intersection of suspended ceiling and vertical surfaces.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 50 00

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.
- B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Ceiling suspension-system members.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Method of attaching hangers to building structure.
 - a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
 - 4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
 - 5. Size and location of initial access modules for acoustical panels.
 - 6. Items penetrating finished ceiling and ceiling-mounted items including the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Sprinklers.
 - f. Access panels.

g. Perimeter moldings.

7. Minimum Drawing Scale: 1/4 inch = 1 foot.

B. Qualification Data: For testing agency.

C. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.
3. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E1264.
 - 2. Smoke-Developed Index: 450 or less.

2.3 ACOUSTICAL PANELS (APC-1)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Basis of Design: USG Corporation; Mars Healthcare #86169-SLT.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
 - 1. Pattern: E (lightly textured) and G (smooth).
- D. Color: White.
- E. Light Reflectance (LR): Not less than 0.90.
- F. Ceiling Attenuation Class (CAC): Not less than 35.
- G. Noise Reduction Coefficient (NRC): Not less than 0.75.
- H. Edge/Joint Detail: Tegular.
- I. Thickness: 3/4 inch.
- J. Modular Size: 24 by 24 inches.
- K. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.4 ACOUSTICAL PANELS (APC-2)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Basis of Design: Armstrong Ceiling & Wall Solutions; Calla #2824.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Color: Stone.
- D. Light Reflectance (LR): Not less than 0.85.
- E. Ceiling Attenuation Class (CAC): Not less than 35.
- F. Articulation Class (AC): Not less than 170.
- G. Edge/Joint Detail: Tegular.
- H. Thickness: 1-inch.
- I. Modular Size: 24 by 24 inches.

2.5 ACOUSTICAL PANELS (APC-3)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Basis of Design: USG Corporation; Sheetrock Lay-In Panels #3260.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
 - 1. Pattern: G (smooth).
- D. Color: White.
- E. Light Reflectance (LR): Not less than 0.77.
- F. Ceiling Attenuation Class (CAC): Not less than 35.
- G. Edge/Joint Detail: Square.
- H. Thickness: 1/2 inch.
- I. Modular Size: 24 by 24 inches.

- J. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.6 ACOUSTICAL PANELS (APC-4)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Basis of Design: Armstrong Ceiling & Wall Solutions; Fine Fissured #1732.
 - 2. USG Corporation.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
 - 1. Pattern: CE (perforated, small holes and lightly textured).
- D. Color: White.
- E. Light Reflectance (LR): Not less than 0.85.
- F. Ceiling Attenuation Class (CAC): Not less than 35.
- G. Noise Reduction Coefficient (NRC): Not less than 0.55.
- H. Edge/Joint Detail: Angled tegular.
- I. Thickness: 5/8 inch.
- J. Modular Size: 24 by 24 inches.
- K. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.7 METAL SUSPENSION SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong Ceiling & Wall Solutions.
 - 2. USG Corporation.
- B. Metal suspension systems other than white shall be provided by the same manufacturer as the acoustical panel ceilings.

- C. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.
- D. Narrow-Face, Capped, Double-Web, Steel Suspension System for APC-1: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Cold-rolled steel.
 - 5. Cap Finish: Painted white.
- E. Narrow-Face, Capped, Double-Web, Steel Suspension System for APC-2: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Cold-rolled steel.
 - 5. Cap Finish: Painted Stone color.
- F. Wide-Face, Aluminum-Capped, Double-Web, Hot-Dip Galvanized, G60, Steel Suspension System for APC-3: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G60 coating designation; with prefinished, 15/16-inch-wide aluminum caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. Face Design: Flat, flush.
 - 3. Cap Finish: Painted white.
- G. Wide-Face, Capped, Double-Web, Steel Suspension System for APC-4: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Cold-rolled steel.
 - 5. Cap Finish: Painted white.

2.8 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - 1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing

according to ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.

- a. Type: Postinstalled expansion anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.
2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E1190, conducted by a qualified testing and inspecting agency.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.135-inch- diameter wire.
- C. Hold-Down Clips: Manufacturer's standard hold-down.

2.9 METAL EDGE MOLDINGS AND TRIM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Armstrong World Industries, Inc.
 2. USG Corporation.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
 2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 - 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 8. Do not attach hangers to steel deck tabs.
 - 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 - 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without

attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
 - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
 - 1. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
 - 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 - 5. Install hold-down clips within 12 feet of exterior doors; space according to panel manufacturer's written instructions unless otherwise indicated.
 - a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.

3.4 ERECTION TOLERANCES

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Thermoplastic-rubber base.
 - 2. Vinyl base.
 - 3. Vinyl molding accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.
- C. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC-RUBBER BASE (RB-1)

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Johnsonite; a Tarkett company.
- B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
1. Group: I (solid, homogeneous).
 2. Style: Reveal.
- C. Thickness: ¼".
- D. Height: 6".
- E. Lengths: Cut lengths 96 inches long.
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.
- H. Colors: Refer to Section 09 05 00 – Color Schedule for color selections.

2.2 VINYL BASE (RB-2 through RB-4)

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Johnsonite; a Tarkett company.
- B. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).
1. Group: I (solid, homogeneous).
 2. Style and Location:
 - a. Style B, Cove.
- C. Minimum Thickness: 0.125 inch.
- D. Height:

1. RB-2 and RB-3: 4 inches.
2. RB-4: 6 inches.

- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.
- H. Colors and Patterns: Refer top Section 09 05 00 – Color Schedule for color selections.

2.3 VINYL MOLDING ACCESSORY

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 1. Johnsonite; a Tarkett company.
- B. Description: Vinyl reducer strip for resilient floor covering and transition strips.
- C. Profile and Dimensions: As indicated.
- D. Locations: Provide vinyl molding accessories in areas indicated.
- E. Colors and Patterns: As selected by Architect from manufacturers full range of colors.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Miter or cope corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.

- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 - 1. Remove adhesive and other blemishes from surfaces.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION 09 65 13

SECTION 09 65 16 - RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Vinyl sheet flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: For each type of resilient sheet flooring.

- 1. Include sheet flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- 2. Show details of special patterns.

- C. Samples for Verification: For each type of resilient sheet flooring, in manufacturer's standard size, but not less than 6-by-9-inch sections of each color, texture, and pattern required.

- 1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.

- D. Product Schedule: For resilient sheet flooring. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Resilient Sheet Flooring: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, in roll form and in full roll width for each type, color, and pattern of flooring installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.
 1. Engage an installer who employs workers for this Project who are trained or certified by resilient sheet flooring manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store rolls upright.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 85 deg F, in spaces to receive resilient sheet flooring during the following periods:
 1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during resilient sheet flooring installation.
- D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.
- E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 VINYL SHEET FLOORING (SV-1 and SV-2)

- A. Refer to Section 09 05 00 – Color Schedule for manufacturers, products, patterns and color selections.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.
- C. Seamless-Installation Accessories:
 - 1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
 - a. Colors: Match flooring.
- D. Subfloor Leveler System: Provide under sheet carpet to thickness required so top surface of sheet carpet is flush with ceramic tile.
 - 1. Manufacturer: Johnsonite, Inc; "Resilient Leveler Strips".
 - 2. Construction: Homogeneous composition of polyvinyl chloride (PVC), high quality additives and colorants.
- E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient sheet flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient sheet flooring until materials are the same temperature as space where they are to be installed.
 1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows:
 1. Maintain uniformity of flooring direction.
 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
 3. Match edges of flooring for color shading at seams.
 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install resilient sheet flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring

installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.

- H. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- I. Seamless Installation:
 - 1. Heat-Welded Seams: Comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.
- B. Perform the following operations immediately after completing resilient sheet flooring installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from flooring surfaces before applying liquid floor polish.
 - 1. Apply two coat(s) to floor types requiring floor polish.
- E. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 09 65 16

SECTION 09 65 19 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Luxury vinyl floor tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: For each type of resilient floor tile.

- 1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- 2. Show details of special patterns.

- C. Samples for Verification: Full-size units of each color and pattern of floor tile required.

- D. Product Schedule: For floor tile. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 LUXURY VINYL FLOOR TILE (LVT-1 THROUGH LVT-5)

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Tandus Centiva.
- B. Tile Standard: ASTM F1700.

1. Class: Class III, Printed Film Vinyl Tile.
2. Type: B, Embossed Surface.

- C. Size: 6 by 36 inches and 36 by 36 inches as indicated in Color Schedule.
- D. Colors and Patterns: Refer to Section 09 05 00 – Color Schedule for color selections.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
 3. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles in pattern indicated.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain running in one direction for LVT.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover floor tile until Substantial Completion.

END OF SECTION 09 65 19

SECTION 09 67 23 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Resinous flooring systems.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: For each resinous flooring system required, 6 inches square, applied to a rigid backing by Installer for this Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- B. Material Certificates: For each resinous flooring component, from manufacturer.
- C. Material Test Reports: For each resinous flooring system, by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

- B. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for 24 hours after application unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Flammability: Self-extinguishing according to ASTM D635.

2.2 MANUFACTURERS

- A. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Obtain secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from manufacturer recommended in writing by manufacturer of primary materials.

2.3 RESINOUS FLOORING (RF-1)

- A. Resinous Flooring System: Abrasion-, impact-, and chemical-resistant, aggregate-filled, and resin-based monolithic floor surfacing designed to produce a seamless floor and integral cove base.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Jetrock.
- B. System Characteristics:

1. Color and Pattern: Refer to Section 09 05 00 – Color Schedule.
 2. Wearing Surface: Textured for slip resistance.
 3. Overall System Thickness: 3/16 inch.
 4. Federal Agency Approvals: USDA approved for food-processing environments.
- C. Primer: Type recommended by resinous flooring manufacturer for substrate and resinous flooring system indicated.
- D. Waterproofing Membrane: Type recommended by resinous flooring manufacturer for substrate and resinous flooring system indicated.
1. Formulation Description: High solids.
- E. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- F. Body Coats:
1. Resin: Epoxy.
 2. Formulation Description: 100 percent solids.
 3. Type: Clear.
 4. Application Method: Troweled.
 5. Number of Coats: One.
 6. Thickness of Coats: 3/16 inch.
 7. Aggregates: Colored quartz (ceramic-coated silica).
- G. Topcoats: Sealing or finish coats.
1. Resin: Epoxy.
 2. Formulation Description: 100 percent solids.
 3. Type: Clear.
 4. Number of Coats: One.
 5. Finish: Matte.
- H. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
1. Compressive Strength: 12,400 psi minimum according to ASTM C579.
 2. Tensile Strength: 7,100 psi minimum according to ASTM C307.
 3. Water Absorption: 0.21 percent maximum according to ASTM C413.
 4. Impact Resistance: No chipping, cracking, or delamination and not more than 1/16-inch permanent indentation according to MIL-D-3134J.
 5. Resistance to Elevated Temperature: No slip or flow of more than 1/16 inch according to MIL-D-3134J.
 6. Hardness: 70, Shore D according to ASTM D2240.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry substrate for resinous flooring application.

- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
1. Roughen concrete substrates as follows:
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Comply with ASTM C811 requirements unless manufacturer's written instructions are more stringent.
 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
 3. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with application of resinous flooring only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. of slab area in 24 hours.
 - b. Plastic Sheet Test: ASTM D4263. Proceed with application only after testing indicates absence of moisture in substrates.
 - c. Relative Humidity Test: Use in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 4. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- C. Patching and Filling: Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
1. Control Joint Treatment: Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
- D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

3.2 INSTALLATION

- A. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 3. Expansion and Isolation Joint Treatment: At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- B. Primer: Apply primer over prepared substrate at manufacturer's recommended spreading rate.

- C. Waterproofing Membrane: Apply waterproofing membrane over entire substrate surface, in manufacturer's recommended thickness.
 - 1. Apply waterproofing membrane to integral cove base substrates.
- D. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details, including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.
 - 1. Integral Cove Base: 4 inches high.
- E. Troweled Body Coats: Apply troweled or screeded body coats in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When body coats are cured, remove trowel marks and roughness using method recommended by manufacturer.
- F. Topcoats: Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer and to produce wearing surface indicated.

3.3 FIELD QUALITY CONTROL

- A. Material Sampling: Owner may, at any time and any number of times during resinous flooring application, require material samples for testing for compliance with requirements.
 - 1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
 - 3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.
- B. Core Sampling: At the direction of Owner and at locations designated by Owner, take one core sample per 1000 sq. ft. of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring. Correct deficiencies in installed flooring as indicated by testing.

3.4 PROTECTION

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 09 67 23

SECTION 09 68 13 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Modular carpet tile.

- B. Related Requirements:

- 1. Section 02 41 19 "Selective Demolition" for removing existing floor coverings.
 - 2. Section 09 65 13 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.

- B. Shop Drawings: For carpet tile installation, plans showing the following:

- 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.

6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of edge, transition, and other accessory strips.
9. Transition details to other flooring materials.

C. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd..

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has a minimum of 10 years experience installing carpet tile.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the Carpet and Rug Institute's CRI 104.

1.10 FIELD CONDITIONS

- A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.

- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.11 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, the following:
 - a. More than 10 percent edge raveling, snags, and runs.
 - b. Dimensional instability.
 - c. Excess static discharge.
 - d. Loss of tuft-bind strength.
 - e. Loss of face fiber.
 - f. Delamination.
 - 3. Warranty Period: Limited Commercial Lifetime Warranty from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE (CPT-1 and CPT-2)

- A. Refer to Section 09 05 00 – Color Schedule for manufacturer, product and pattern.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 03 30 00 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
 - 1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.

- B. Installation Method: As recommended in writing by carpet tile manufacturer.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings.
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 09 68 13

SECTION 09 72 00 - WALL COVERINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Vinyl wall covering.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.
- B. Samples for Verification: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 36-inch- long in size.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Wall-Covering Materials: For each type, color, texture, and finish, full width by length to equal to 5 percent of amount installed.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.
- B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.

2.2 VINYL WALL COVERING (WCOV-1 AND WCOV-2)

- A. Manufacturers, Colors, Textures, and Patterns: Refer to Section 09 05 00 – Color Schedule.

2.3 ACCESSORIES

- A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
 - 1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 - 2. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 3. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 WALL-COVERING INSTALLATION

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
- B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
 - 1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.
- D. Install wall covering without lifted or curling edges and without visible shrinkage.
- E. Match pattern 72 inches above the finish floor.
- F. Install seams vertical and plumb at least 6 inches from outside corners and 3 inches from inside corners for vinyl wall covering unless a change of pattern or color exists at corner. Horizontal seams are not permitted.
- G. Install miter and finished corners for wood wall covering
- H. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.
- I. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.4 CLEANING

- A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 09 72 00

SECTION 09 84 33 - SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes shop-fabricated, acoustical panel units tested for acoustical performance, including the following:
 - 1. Sound-absorbing wall panels.

1.3 DEFINITIONS

- A. NRC: Noise Reduction Coefficient.
- B. SAA: Sound Absorption Average.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include fabric facing, panel edge, core material, and mounting indicated.
- B. Shop Drawings: For unit assembly and installation.
 - 1. Include plans, elevations, sections, and mounting devices and details.
 - 2. Include details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge profile and core materials.
 - 3. Include details at cutouts and penetrations for other work.
 - 4. Include direction of fabric weave and pattern matching.
- C. Samples for Verification: For the following products:
 - 1. Fabric: Full-width by approximately 36-inch- long Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of unit to include in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal instructions.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with fabric and unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.
- B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Lighting: Do not install units until a permanent level of lighting is provided on surfaces to receive the units.
- C. Air-Quality Limitations: Protect units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.
- D. Field Measurements: Verify unit locations and actual dimensions of openings and penetrations by field measurements before fabrication, and indicate them on Shop Drawings.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace units and components that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to the following:
 - a. Acoustical performance.
 - b. Fabric sagging, distorting, or releasing from panel edge.
 - c. Warping of core.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain wall units specified in this Section from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

2.3 SOUND-ABSORBING WALL UNITS

- A. Sound-Absorbing Wall Panel (AWP-1 and AWP-2): Manufacturer's standard panel construction consisting of facing material stretched over front face and edges and bonded to the back of the panel.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Acoustical Solutions, Inc.
 - 2. Conwed Designscape; an Owens Corning company.
 - 3. Golterman & Sabo.
 - 4. Sound Concepts Canada, Inc.
- C. Mounting: Back mounted with manufacturer's standard metal clips, secured to substrate.
- D. Core: Glass-fiber board.
- E. Edge Construction: Manufacturer's standard chemically hardened core with no frame.
- F. Edge Profile: Square.
- G. Corner Detail in Elevation: Square with continuous edge profile indicated.
- H. Facing Material: Refer to Section 09 05 00 – Color Schedule.
- I. Acoustical Performance: Sound absorption NRC of 1.05 to 1.15 according to ASTM C423 for mounting according to ASTM E795.
- J. Nominal Core Thickness: 2 inches.
- K. Panel Width: As indicated on Drawings.
- L. Panel Height: As indicated on Drawings.

2.4 MATERIALS

- A. Core Materials:
 - 1. Glass-Fiber Board: ASTM C612; of type standard with manufacturer; nominal density of 6 to 7 lb/cu. ft., unfaced, and dimensionally stable, molded rigid board; and with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
- B. Facing Material: Refer to Section 09 05 00 – Color Schedule.
- C. Mounting Devices: Concealed on back of unit, recommended by manufacturer to support weight of unit, and as follows:
 - 1. Metal Clips: Manufacturer's standard two-part metal "Z" clips, with one part of each clip mechanically attached to back of unit and the other part to substrate, designed to permit unit removal.

2.5 FABRICATION

- A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.
- B. Edge Hardening: For glass-fiber board cores, chemically harden core edges and areas of core where mounting devices are attached.
- C. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.
 - 1. Square Corners: Tailor corners.
 - 2. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches in adjacent units.
- D. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch for the following:
 - 1. Thickness.
 - 2. Edge straightness.
 - 3. Overall length and width.
 - 4. Squareness from corner to corner.
 - 5. Chords, radii, and diameters.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fabric, fabricated units, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting unit performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install units in locations indicated. Unless otherwise indicated, install units with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.
- B. Comply with manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.
- C. Align fabric pattern and grain with adjacent units.

3.3 INSTALLATION TOLERANCES

- A. Variation from Plumb and Level: Plus or minus 1/16 inch in 48 inches, noncumulative.
- B. Variation of Joint Width: Not more than 1/16-inch variation from hairline in 48 inches, noncumulative.

3.4 CLEANING

- A. Clip loose threads; remove pills and extraneous materials.
- B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 09 84 33

SECTION 09 91 10 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.
 - 1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
 - 2. Preparation of existing painted surfaces, indicated to be repainted to accommodate new work, shall be preformed as work of this Section.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
 - 2. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
 - 3. Painting includes finished exposed surfaces of electrical distribution boxes and breaker panels located in public spaces.
- C. Remodeling Work: Where it is necessary to patch and match existing surfaces, prepare surfaces as specified under "Surface Preparation" of this Specification Section. Apply finish paint coats to entire surface adjacent to patched work, terminating paint application at nearest change in surface plane or as directed by Architect.
 - 1. Where required, remove existing wall covering and prepare existing substrate as necessary (sand, prime, and clean) to receive new finish material. Prepare existing painted surfaces to receive painted finish; new paint finish to be applied over properly prepared existing paint finish may be a 2 coat system, eliminating the initial prime coat.
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Architectural woodwork.
 - b. Acoustical wall panels.
 - c. Elevator entrance doors and frames.
 - d. Elevator equipment.
 - e. Finished mechanical and electrical equipment.

- f. Light fixtures.
 - g. Distribution cabinets and breaker panels located in mechanical and electrical rooms.
 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Ceiling plenums.
 - d. Utility tunnels.
 - e. Pipe spaces.
 - f. Duct shafts.
 - g. Elevator shafts.
 3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
 4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
 5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
 - E. Related Sections include the following:
 1. Section 055000 "Metal Fabrications" for shop priming metal fabrications.
 2. Section 055213 "Pipe and Tube Railings" for shop priming pipe and tube railings.
- 1.3 DEFINITIONS
- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.
- 1.4 SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Indicate VOC content.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
- C. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats.
- C. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample Submittals.
 - 1. Architect will select one room or surface to represent surfaces and conditions for application of each type of coating and substrate.
 - a. Wall Surfaces: Provide samples on at least 100 sq. ft..
 - b. Small Areas and Items: Architect will designate items or areas required.
 - 2. Apply benchmark samples, according to requirements for the completed Work, after permanent lighting and other environmental services have been activated. Provide required sheen, color, and texture on each surface.
 - a. After finishes are accepted, Architect will use the room or surface to evaluate coating systems of a similar nature.
 - 3. Final approval of colors will be from benchmark samples.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's stock number and date of manufacture.

4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.7 PROJECT CONDITIONS

A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

C. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

1. Quantity: Furnish Owner with an additional 3 percent, but not less than 1 gal. or 1 case, as appropriate, of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Sherwin-Williams Co. (Sherwin-Williams).

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application

indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

- C. Colors (PNT): Refer to Section 09 05 00 – Color Schedule..

2.3 EXTERIOR PRIMERS

- A. Exterior Ferrous-Metal Primer: Factory-formulated rust-inhibitive metal primer for exterior application.
 1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series: Applied at a dry film thickness of not less than 2.5 mils (0.064 mm).
- B. Exterior Galvanized Metal Primer: Factory-formulated galvanized metal primer for exterior application.
 1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series.

2.4 INTERIOR PRIMERS

- A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.
 1. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer B28W2600 Series: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).
- B. Interior Glass Mat, Water-Resistant, Gypsum Board Primer:
 1. Sherwin-Williams; Builder Solution Latex Primer/Surfacer, A63W100. Apply at a dry film thickness of 11.0 mils.
- C. Interior Wood Primer for Acrylic-Enamel and Semigloss Alkyd-Enamel Finishes: Factory-formulated alkyd- or acrylic-latex-based interior wood primer.
 1. Sherwin-Williams; SW Premium Wall & Wood Primer, B28W8111: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).
- D. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.
 1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).
- E. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.
 1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series.

2.5 LOW ODOR, LOW VOC INTERIOR PRIMER

- A. Interior Gypsum Board and Wood Primer: Factory-formulated low odor, low VOC latex-based primer for interior application.
 1. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer B28W2600: Applied at a dry film thickness of not less than 1.3 mils.

2.6 INTERIOR PRIMERS FOR PREVIOUSLY PAINTED SURFACES

- A. Interior Wood Primer for Acrylic-Enamel and Semigloss Alkyd-Enamel Finishes: Factory-formulated alkyd- or acrylic-latex-based interior wood primer.
 - 1. Sherwin-Williams; Extreme Bond Int./Ext. Bonding Primer, B51W150 series: Applied at a dry film thickness of not less than 1.0 mils.
- B. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive water-based metal primer.
 - 1. Sherwin-Williams; Extreme Bond Int./Ext. Bonding Primer, B51W150 series: Applied at a dry film thickness of not less than 1.0 mils. (If bare metal, substitute Sherwin-Williams Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series)
- C. Interior Zinc-Coated Metal Spot Primer: Factory-formulated galvanized metal primer.
 - 1. Sherwin-Williams; Extreme Bond Int./Ext. Bonding Primer, B51W150 series: Applied at a dry film thickness of not less than 1.0 mils. (If bare metal, substitute Sherwin-Williams Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series)
- D. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.
 - 1. Sherwin-Williams; Extreme Bond Int./Ext. Bonding Primer, B51W150 series: Applied at a dry film thickness of not less than 1.0 mils. (If bare metal, substitute Sherwin-Williams Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 series)
- E. Interior Gypsum Board Spot Primer: Factory-formulated latex-based primer for interior application.
 - 1. Sherwin-Williams; Extreme Bond Int./Ext. Bonding Primer, B51W150 series: Applied at a dry film thickness of not less than 1.0 mils. (If bare drywall, substitute Sherwin-Williams ProMar 200 Zero VOC Latex Primer, B28W2600.)

2.7 EXTERIOR FINISH COATS

- A. Exterior Semigloss Acrylic Enamel: Factory-formulated semigloss waterborne acrylic-latex enamel for exterior application.
 - 1. Sherwin-Williams; SuperPaint Exterior Gloss Latex A-84 Series: Applied at a dry film thickness of not less than 1.4 mils.
- B. Exterior DTM Acrylic Eg-Shel Coating: Factory-formulated Eg-Shel acrylic enamel for exterior application to galvanized metal surfaces.
 - 1. Sherwin-Williams: Pro Industrial DTM Acrylic Eg-Shel, B66-W01251 Series: Applied at a dry film thickness of not less than 2.5-4.0 mils.

2.8 LOW ODOR, LOW VOC INTERIOR FINISH COATS

- A. Interior Flat Acrylic Paint: Factory-formulated flat acrylic latex paint for interior application.
 - 1. Sherwin-Williams: ProMar 200 Zero VOC Interior Flat Latex, B30W12650 Series: Applied at a dry film thickness of not less than 1.6 mils.
- B. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.
 - 1. Sherwin-Williams: ProMar 200 Zero VOC Interior Eg-Shel Latex, B20W12650 Series: Applied at a dry film thickness of not less than 1.6 mils.
- C. Interior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.
 - 1. Sherwin-Williams: ProMar 200 Zero VOC Interior Semi-Gloss Latex, B31W2650 Series: Applied at a dry film thickness of not less than 1.7 mils.

- D. Interior Semigloss Acrylic Enamel For Metal Surfaces: Factory-formulated semigloss acrylic-latex enamel for interior application to metal surfaces.
 - 1. Sherwin-Williams: Pro Industrial DTM Acrylic Semi-Gloss, B66-1150 Series: Applied at a dry film thickness of not less than 2.5-4.0 mils.
- E. Epoxy Paint:
 - 1. Sherwin-Williams; Pro Industrial Pre-Catalyzed Waterbased Epoxy, K46-150 Series: Allied at a dry film thickness of not less than 1.5 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
 - 1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
 - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime.
 - 2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming,

- fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
 - c. If transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
 - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
- a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
5. Previously Painted Surfaces.
- a. General
 - 1) In accordance with good painting practice, all surface and absorbed contaminants (i.e., dirt, dust, grease, oil, mildew, moisture, chemical fall-out, etc.) shall be removed prior to applying new coat is directly proportional to the cleanliness of the substrate.
 - 2) Removal of old painting system prior to the application of a new coat of paint shall not be required unless adhesion problems between the existing coating and new proposed coating cannot be eliminated.
 - 3) A test patch shall be used when previous testing does not exist or is unacceptable to the Architect.
 - b. Wood: Remove all loose, peeling, flaking or scaling paint by scraping, chipping or sanding. Feather back all rough paint edges and any weathered wood to a sound surface, by sanding.
 - 1) Spot prime bare areas as though they were new wood.
 - 2) Seal all knot holes and surface stains with shellac before using recommended primer.
 - 3) Remove gloss from old painted surfaces with sand paper, wire brush, or a liquid de-glossing compound.
 - 4) Wipe clean or flush thoroughly with clean water to remove any invisible contaminates before repainting. Let dry thoroughly.
 - c. Ferrous Metals: Remove all oil, grease and other contaminants with paint manufacturers recommended paint thinner, ammonia-based cleaner, trisodium

phosphate (TSP) solution or similarly effective cleaners acceptable to paint manufacturer. Rinse thoroughly and let dry.

- 1) Remove corrosive deposits and rust by scraping or other suitable means and allow to dry.
- 2) Dust thoroughly to get surface clean.
- 3) Dull all glossy areas with sand paper or use a liquid de-glossing compound. Wipe clean.
- 4) Spot prime all bare ferrous metals with primer as indicated and recommended by paint manufacturer.

d. Galvanized Surfaces: Wash all previously painted galvanized surfaces with a quality paint thinner as recommended by paint manufacturer to remove grease and deposits.

- 1) If the galvanized surface is broken and rust is evident, remove the rust to bare metal by wire brushing, sanding or blasting. Clean thoroughly and spot prime with a rust inhibitive primer as indicated and as recommended by paint manufacturer. When spots have dried, prime with galvanized steel primer indicated and as recommended by paint manufacturer.

e. Gypsum Wallboard (Drywall): Patch gypsum wallboard with joint compound or spackling and as necessary prior to painting.

- 1) Joint compound and spackling shall be sanded smooth and all dust removed from surface.
- 2) Bring all gypsum board up to a Level 4 finish per ASTM C840 unless a Level 5 finish is specified elsewhere.
- 3) Spot primer with a latex primer as indicated and as recommended by paint manufacturer.
- 4) Latex finish coats may be applied directly over existing painted surfaces. If semi-gloss or gloss paints are to be used as the finish coats, test existing surface for adhesion. If adhesion is poor, apply a latex primer prior to application of finish coats.

D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.

2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. For previously painted surfaces provide manufacturer recommended primers or barrier coats even if different from those specified in this Section.
 4. Provide finish coats that are compatible with primers used.
 5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 6. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 7. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 8. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 9. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 10. Sealer tops and bottoms of interior doors.
 11. Finish interior doors on tops, bottoms and side edges the same as faces.
 12. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
 13. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- F. Mechanical items to be painted include, but are not limited to, the following:
 - 1. Uninsulated metal piping.
 - 2. Uninsulated plastic piping.
 - 3. Pipe hangers and supports.
 - 4. Tanks that do not have factory-applied final finishes.
 - 5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 - 6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
 - 7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
- G. Electrical items to be painted include, but are not limited to, the following:
 - 1. Switchgear.
 - 2. Panelboards.
 - 3. Electrical equipment that is indicated to have a factory-primed finish for field painting.
- H. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- I. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- J. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
 - 1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
 - 2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
 - a. Quantitative material analysis.
 - b. Abrasion resistance.
 - c. Apparent reflectivity.
 - d. Flexibility.
 - e. Washability.
 - f. Absorption.
 - g. Accelerated weathering.
 - h. Dry opacity.
 - i. Accelerated yellowness.

- j. Recoating.
- k. Skinning.
- l. Color retention.
- m. Alkali and mildew resistance.

- 3. Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 - 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a rust-inhibitive primer.
 - a. Primer: Exterior ferrous-metal primer.
 - b. Finish Coats: Exterior semigloss acrylic enamel.
- B. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
 - 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal primer.
 - b. Finish Coats: Exterior semigloss acrylic enamel.
- C. Galvanized Steel Rooftop Access Platform: Two finish coats over galvanized steel primer.
 - 1. Exterior DTM Acrylic Eg-Shel Coating: Two finish coats over galvanized steel primer.

- a. Primer: Exterior galvanized metal primer.
 - b. Finish Coats: Exterior DTM Acrylic Eg-Shel.
- D. Cellular PVC Standing and Running Trim: Provide the following finish systems over Cellular PVC surfaces:
- 1. Acrylic-Enamel Finish: Two finish coats. Provide primer where recommended by cellular PVC manufacturer for paint system selected. Provide paint LRV value for paint color selected with paint submittal. Paint LRV value shall be 55 or above unless tested by cellular PVC manufacturer for performance.
- E. Exterior Crown Moulding: Provide the following finish systems over crown moulding surfaces:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a factory primed surface.
 - a. Primer: Factory primer.
 - b. Finish Coats: Exterior semigloss acrylic enamel.

3.8 INTERIOR PAINT SCHEDULE

- A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
- 1. Flat Acrylic Finish (Ceilings): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Low-Luster Acrylic-Enamel Finish (Walls and Bulkheads): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- B. Glass-Mat Interior Gypsum Board, except Toilet Rooms: Provide the following finish systems over interior gypsum board surfaces:
- 1. Flat Acrylic Finish (Ceilings): Two finish coats over a primer.
 - a. Primer: Interior glass mat, water-resistant, gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Low-Luster Acrylic-Enamel Finish (Walls and Bulkheads): Two finish coats over a primer.
 - a. Primer: Interior glass mat, water-resistant, gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- C. Glass-Mat Interior Gypsum Board in Toilet Rooms: Provide the following finish systems over interior gypsum board surfaces:
- 1. Flat Acrylic Finish (Ceilings and Bulkheads): Two finish coats over a primer.
 - a. Primer: Interior glass mat, water-resistant, gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Semi-Gloss Water Base Epoxy Finish (Walls): Two finish coats over a primer.

- a. Primer: Interior glass mat, water-resistant, gypsum board primer.
 - b. Finish Coats: Interior pre-catalyzed waterbased epoxy.
- D. Wood: Provide the following paint finish systems over new interior wood surfaces:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a wood undercoater.
 - a. Primer: Interior wood primer for acrylic-enamel and semigloss alkyd-enamel finishes.
 - b. Finish Coats: Interior semigloss acrylic enamel.
- E. Ferrous Metal: Provide the following finish systems over ferrous metal:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.
- F. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.

3.9 INTERIOR PAINT SCHEDULE FOR PREVIOUSLY PAINTED SURFACES

- A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
- 1. Flat Acrylic Finish (Ceilings): Two finish coats over a spot primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Low-Luster Acrylic-Enamel Finish (Walls and Bulkheads): Two finish coats over a spot primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- B. Wood: Provide the following paint finish systems over new interior wood surfaces:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a wood undercoater.
 - a. Primer: Interior wood primer for acrylic-enamel and semigloss alkyd-enamel finishes.
 - b. Finish Coats: Interior semigloss acrylic enamel.
- C. Ferrous Metal: Provide the following finish systems over ferrous metal:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a spot primer.
 - a. Primer: Interior ferrous-metal primer.

- b. Finish Coats: Interior semigloss acrylic enamel.
- D. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:
- 1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.

END OF SECTION 09 91 10

SECTION 09 91 16 - ELECTROSTATIC PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Included under the Work of this Section is the preparation and the painting by electrostatic process the following mechanical and electrical accessories exposed to public view.
 - 1. Mechanical grilles and diffusers.
 - 2. Electrical panel doors/covers and frames.

1.3 SUBMITTALS

- A. Submit copies of manufacturer's product information and application instructions for each material proposed.
- B. Submit tentative schedule indicating coordination and sequence of other work potentially affecting performance of Work of this Section.

1.4 QUALITY ASSURANCE

- A. Work shall be performed by an experienced electrostatic refinishing company with a minimum of 5 years experience performing type of work required for this project.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide materials specially formulated for hot spray application by electrostatic process.
- B. Material shall have a low percentage of solvents and provide a semi-gloss finish.
- C. Provide required cleaners and primers.
- D. Colors: Custom color to match Architect's samples.

PART 3 - EXECUTION

3.1 GENERAL

- A. All electrostatic painting shall be shop applied, off-site, at the applicators facility unless approved otherwise by the Architect.

3.2 PREPARATION

- A. Clean surfaces to remove dirt, flaking paint, rust, silicone, or wax films that would be detrimental to the adhesion of the new paint.
- B. Rusted areas shall be sanded and primed with an approved rust inhibiting primer.
- C. Surfaces which are not to be repainted, such as handles, pulls, number plates, and other polished metal hardware shall receive a protective mask coating.
- D. Adjacent surfaces shall be protected with masking paper or drop cloths.

3.3 APPLICATION

- A. Coating shall be applied under hydraulic pressure at temperature not less than 130 degrees F.
- B. Use methods and procedures to provide uniform coating of not less than 2 mills thickness on surfaces.
- C. Apply second coat, if necessary, to provide required thickness and uniform coverage.

3.4 CLEANING

- A. Remove and dispose of protective maskings from surfaces adjacent to new coatings.
- B. Reinstall items removed during preparation.
- C. Clean adjacent surfaces as required to remove possible overspray or residue from masking.
- D. Verify that units are ready for normal use and operable units are functioning.

END OF SECTION 09 91 16

SECTION 10 00 02 - SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Types of specialty items include the following:
 - 1. Recessed Dryer Box at each clothes dryer unit.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data for each specialty item, including installation instructions.

PART 2 - PRODUCTS

2.1 RECESSED DRYER BOX

- A. Aluminized steel recessed dryer vent receiver box.
- B. Basis-of-Design Product: Design of dryer box is based on:
 - 1. In-O-Vate Technologies; Model 425
- C. Material: 22 gauge aluminized steel.
- D. Provide 4-1/8 inch hole for ductwork. Coordinate orientation as indicated on the Drawings.
- E. Size: 21 inches by 12-1/2 inches by 5-1/8 inch deep.
- F. Provide dryer box at each clothes dryer unit.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install specialty items in accordance with manufacturer's instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of item. Install items plumb, firmly anchored in locations indicated.

END OF SECTION 10 00 02

SECTION 10 22 36 - FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Manually operated, acoustical partitions.

- B. Related Requirements:

- 1. Division 05 sections for supports that attach supporting tracks to overhead structural system.
 - 2. Section 09 29 00 "Gypsum Board" for fire-rated assemblies and sound barrier construction above the ceiling at track.

1.3 DEFINITIONS

- A. NIC: Noise Isolation Class.
- B. NRC: Noise Reduction Coefficient.
- C. STC: Sound Transmission Class.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For operable panel partitions.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
- C. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For operable panel partitions to include in maintenance manuals.
 - 1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:
 - a. Panel finish facings and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
 - b. Seals, hardware, track, track switches, carriers, and other operating components.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protectively package and sequence panels in order for installation. Clearly mark packages and panels with numbering system used on Shop Drawings. Do not use permanent markings on panels.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of operable panel partitions.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal use.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties according to test methods indicated:
 - 1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance according to ASTM E 90, determined by ASTM E 413, and rated for not less than the STC indicated.
 - 2. Noise-Reduction Requirements: Operable panel partition assembly, identical to partition tested for STC, tested for sound-absorption performance according to ASTM C 423, and rated for not less than the NRC indicated.

3. Noise-Isolation Requirements: Installed operable panel partition assembly, identical to partition tested for STC, tested for NIC according to ASTM E 336, determined by ASTM E 413, and rated for 10 dB less than STC value indicated.
- B. Fire-Test-Response Characteristics: Provide panels with finishes complying with one of the following as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 1. Surface-Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.

2.2 OPERABLE ACOUSTICAL PANELS

- A. Operable Acoustical Panels: Series of paired flat panels hinged together in pairs, manually operated, top supported with operable floor seals and accessories.
 1. Basis-of-Design: Design of manually operated single-panel systems is based on:
 - a. Modernfold, Inc.; Acousti-Seal 931 system.
- B. Panel Operation: Manually operated.
- C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.
- D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.
 1. Panel Width: Standard widths, unless otherwise indicated.
- E. STC: Not less than 50.
- F. Panel Weight: 8 lb/sq. ft. maximum.
- G. Panel Thickness: Not less than 3 inches.
- H. Panel Materials:
 1. Steel Frame: Steel sheet, manufacturer's standard nominal minimum thickness for uncoated steel.
 2. Steel Face/Liner Sheets: Tension-leveled steel sheet, manufacturer's standard minimum nominal thickness for uncoated steel.
- I. Panel Closure: Manufacturer's standard unless otherwise indicated.
 1. Initial Closure: Fixed jamb.

2. Final Closure: Constant-force, lever-operated mechanical closure expanding from panel edge to create a constant-pressure acoustical seal.

J. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.

1. Hinges: Manufacturer's standard.

2.3 SEALS

A. General: Provide seals that produce operable panel partitions complying with performance requirements and the following:

1. Manufacturer's standard seals unless otherwise indicated.
2. Seals made from materials and in profiles that minimize sound leakage.
3. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.

B. Horizontal Top Seals: Continuous-contact, extruded-PVC seal exerting uniform constant pressure on track.

C. Horizontal Bottom Seals: PVC-faced, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on floor when extended, ensuring horizontal and vertical sealing and resisting panel movement.

1. Automatically Operated for Acoustical Panels: Extension and retraction of bottom seal automatically operated by movement of partition, with operating range not less than 2 inches between retracted seal and floor finish.

2.4 PANEL FINISH FACINGS

A. General: Provide finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant non-staining adhesive as recommended by facing manufacturer's written instructions.

1. Provide full height and width standard vinyl surface.
2. Refer to Section 09 05 00 – Color Schedule for panel finish material manufacturers, patterns and colors.

B. Trimless Edges: Fabricate exposed panel edges so finish facing is uninterrupted around panel, covering edge and resulting in an installed partition with facing visible on vertical panel edges, without trim, for minimal sightlines at panel-to-panel joints.

2.5 SUSPENSION SYSTEMS

A. Manufacturer: Modernfold; #17 Bracket Mounted Track Suspension System, heavy-duty, 4.50" gage.

- B. Tracks: Steel or aluminum with adjustable steel hanger rods for overhead support, designed for operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.
 - 1. Panel Guide: Aluminum guide on both sides of the track to facilitate straightening of the panels; finished with factory-applied, decorative, protective finish.
 - 2. Head Closure Trim: As required for acoustical performance; with factory-applied, decorative, protective finish.
 - 3. Finished end caps.
 - 4. Intersecting partition interface.
- C. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.
- D. Steel Finish: Manufacturer's standard, factory-applied, corrosion-resistant, protective coating unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine flooring, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with ASTM E 557 except as otherwise required by operable panel partition manufacturer's written installation instructions.
- B. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.
- C. Install panels from marked packages in numbered sequence indicated on Shop Drawings.
- D. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.
- E. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.

3.3 ADJUSTING

- A. Adjust operable panel partitions, hardware, and other moving parts to function smoothly, and lubricate as recommended by manufacturer.

- B. Adjust storage pocket doors to operate smoothly and easily, without binding or warping.
- C. Verify that safety devices are properly functioning.

3.4 MAINTENANCE SERVICE

- A. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by manufacturer's authorized service representative. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operable-partition operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

END OF SECTION 10 22 36

SECTION 10 26 00 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wall guards.
 - 2. Corner guards.
 - 3. Abuse-resistant wall coverings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For each type of wall and door protection showing locations and extent.
 - 1. Include plans, elevations, sections, and attachment details.
- C. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:
 - 1. Wall Guards: 12 inches long. Include examples of joinery, corners, end caps, and field splices.
 - 2. Corner Guards: 12 inches long. Include example top caps.
 - 3. Abuse-Resistant Wall Covering: 6 by 6 inches square.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type of exposed plastic material.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.

1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Wall-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of cover installed, but no fewer than two, 96-inch- long units.
 2. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of cover installed, but no fewer than two, 48-inch- long units.
 3. Mounting and Accessory Components: Amounts proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
 1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
 2. Keep plastic materials out of direct sunlight.
 3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
 - a. Store corner-guard covers in a vertical position.
 - b. Store wall-guard covers in a horizontal position.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
 - b. Deterioration of metals, metal finishes, plastics, and other materials beyond normal use.
 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain wall- and door-protection products from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Surface Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.

2.3 WALL GUARDS (WG-1)

- A. Bumper Rail: Standard-duty assembly consisting of continuous snap-on plastic cover installed over concealed retainer; designed to withstand impacts.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Inpro Corporation; 5000 Wall Guard.
 - 2. Cover: Extruded rigid plastic, minimum 0.078-inch wall thickness; as follows:
 - a. Profile: As standard with product specified.
 - b. Color and Texture: Refer to Section 09 05 00 – Color Schedule.
 - 3. Continuous Retainer: Minimum 0.080-inch-thick, one-piece, extruded aluminum.
 - 4. End Caps and Corners: Prefabricated, injection-molded plastic; matching color cover; field adjustable for close alignment with snap-on cover.
 - 5. Accessories: Concealed splices and mounting hardware.
 - 6. Mounting: Surface mounted directly to wall.

2.4 CORNER GUARDS

- A. Surface-Mounted, Plastic-Cover Corner Guards (CG-1 and CG-4): Manufacturer's standard assembly consisting of snap-on, resilient plastic cover installed over retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Construction Specialties, Inc.
 - 2. Cover: Extruded rigid plastic, minimum 0.078-inch wall thickness; as follows:
 - a. Profile: Nominal 3-inch-long leg and 1/4-inch corner radius.

- b. Height: 4 feet.
 - c. Color and Texture: Refer to Section 09 05 00 – Color Schedule.
 3. Continuous Retainer: Minimum 0.060-inch-thick, one-piece, extruded aluminum.
 4. Retainer Clips: Manufacturer's standard impact-absorbing clips.
 5. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.
 - B. Surface-Mounted, Opaque-Plastic Corner Guards (CG-2): Fabricated as one piece from PVC plastic; with formed edges; fabricated with 90- or 135-degree turn to match wall condition.
 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Inpro Corporation.
 2. Wing Size: Nominal 1/2 by 1/2 inch.
 3. Mounting: Adhesive or double face tape.
 4. Color and Texture: Refer to Section 09 05 00 – Color Schedule.
 - C. Surface-Mounted, Metal Corner Guards (CG-3): Fabricated as one piece from formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.
 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Inpro Corporation.
 2. Material: Stainless-steel sheet, Type 304.
 - a. Thickness: 16 gage.
 - b. Finish: Directional satin, No. 4.
 3. Wing Size: Nominal 3-1/2 by 3-1/2 inches.
 4. Corner Radius: 1/8 inch.
 5. Mounting: Flat-head, countersunk screws through factory-drilled mounting holes.

2.5 ABUSE-RESISTANT WALL COVERINGS (IRWC-1 AND IRWC-2)

- A. Abuse-Resistant Sheet Wall Covering: Fabricated from semirigid, plastic sheet wall-covering material.
 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Inpro Corporation.
 2. Size: 48 by 96 inches for sheet.
 3. Sheet Thickness: 0.040 inch.
 4. Color, Texture and Type (IRWC-1 and IRWC-2): Refer to Section 09 05 00 – Color Schedule.
 5. Height: 48 inches.
 6. Trim and Joint Moldings: Extruded rigid plastic that matches wall-covering color.

7. Mounting: Adhesive.

2.6 MATERIALS

- A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.
- B. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- C. Adhesive: As recommended by protection product manufacturer.

2.7 FABRICATION

- A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.
- B. Factory Assembly: Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Quality: Fabricate components with uniformly tight seams and joints and with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.8 FINISHES

- A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
 1. For wall protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing wall and door protection.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

- A. **Installation Quality:** Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
- B. **Mounting Heights:** Install wall protection in locations and at mounting heights indicated on Drawings.
- C. **Accessories:** Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
 - 1. Provide anchoring devices and suitable locations to withstand imposed loads.
 - 2. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches apart.
 - 3. Adjust end and top caps as required to ensure tight seams.
- D. **Abuse-Resistant Wall Covering:** Install top and edge moldings, corners, and divider bars as required for a complete installation.

3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.
- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 10 26 00

SECTION 10 28 00 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Toilet accessories.
- B. Related Requirements:
 - 1. Section 08 83 00 "Mirrors" for wood framed mirrors.

1.3 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 TOILET ACCESSORIES (TA-1 through TA-6)

- A. Refer to Section 09 05 00 – Color Schedule for manufacturers and products.

2.2 MATERIALS

- A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.
- C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

2.3 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 28 00

SECTION 10 31 00 – MANUFACTURED FIREPLACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Manufactured electric fireplaces

1.3 REFERENCES

- A. ANSI721.44 – Gas-Fired Gravity and Fan Type Direct Vent Wall Furnaces.
- B. ANSI Z21.88 – Vented Gas Fireplace Heaters.
- C. ANSI Z21.50b – Vented Gas Fireplaces
- D. UL 127 – Standard for Factory-Built Fireplaces.
- E. UL 907 – Standard for Fireplace Accessories.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings:
 - 1. Provide drawing of required clearances, rough-in of enclosure and utilities.
 - 2. Include diagrams for power, signal, and control wiring.
- C. Test Reports:

- D. Samples: For each exposed product, color chips representing manufacturer's full range of available colors and finishes.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years experience manufacturing similar products.
- B. Installer Qualifications:

1.8 WARRANTY

- A. Provide manufacturer's standard warranty against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 ONE-SIDED FIRE-PLACE

- A. Basis of Design:
 - 1. Manufacturer: Napoleon.
 - 2. Model: Alluravision Series, NEFL74CHS.
 - 3. Size: 76-3/4 inches wide by 17-5/16 inches high.
 - 4. Trim: Black.
 - 5. Flame Colors: As selected by Architect.
 - 6. Glass Media Kits: As selected by Architect.
 - 7. LED Lights: As selected by Architect.

2.2 AUXILIARY MATERIALS

- A. Provide materials and labor necessary for a complete and operational installation including, but not limited to, the following:
 - 1. Electrical wiring and devices.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Review manufacturer's installation instructions to determine sequence of work, including work of other trades surrounding fireplace.

- B. Examine installation area to verify manufacturer's recommended clearances to combustible materials.

3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use manufacturer's guidelines for minimum clearances to combustibles, walls, and finishes.
- C. Anchor all components firmly in position.

3.4 FIELD QUALITY CONTROL

- A. Test for proper operation, control and safety devices.
- B. Complete Installer's Warranty Validation Card.

3.5 PROTECTION

- A. Protect installed products from damage until Project completion.

END OF SECTION 10 31 00

SECTION 10 44 13 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Fire-protection cabinets for the following:

- a. Portable fire extinguisher.

- B. Related Requirements:

- 1. Section 10 44 16 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets

1.3 PREINSTALLATION CONFERENCE

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Review methods and procedures related to fire-protection cabinets, including, but not limited to, the following:

- a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing semirecessed-mounting method and relationships of box and trim to surrounding construction.

- B. Shop Drawings: For fire-protection cabinets.

- 1. Include plans, elevations, sections, details, and attachments to other work.

- C. Samples for Initial Selection: For each type of exposed finish required.

- D. Samples for Verification: For each type of exposed finish required, prepared on samples 6 by 6 inches square.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

2.3 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Babcock-Davis.
 - b. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - c. Larsens Manufacturing Company.
 - d. Potter Roemer LLC.
- B. Cabinet Construction: Nonrated and fire rated.
 - 1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch-thick cold-rolled steel sheet lined with minimum 5/8-inch-thick fire-barrier material. Provide factory-drilled mounting holes.
- C. Cabinet Material: Cold-rolled steel sheet.
 - 1. Shelf: Same metal and finish as cabinet.
- D. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
 - 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.

- E. Cabinet Trim Material: Steel sheet.
- F. Door Material: Steel sheet.
- G. Door Style: Fully glazed panel with frame.
- H. Door Glazing: Tempered float glass (clear).
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 1. Provide projecting door pull and friction latch.
 - 2. Provide manufacturer's standard hinge, permitting door to open 180 degrees.
- J. Accessories:
 - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
 - 2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
 - 1) Location: Applied where directed by Architect.
 - 2) Application Process: Decals.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.
- K. Materials:
 - 1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
 - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
 - b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - c. Color: As selected by Architect from manufacturer's full range.
 - 2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.4 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 - 1. Weld joints and grind smooth.
 - 2. Miter corners and grind smooth.
 - 3. Provide factory-drilled mounting holes.
 - 4. Prepare doors and frames to receive locks.

- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
 - 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 - 2. Fabricate door frames of one-piece construction with edges flanged.
 - 3. Miter and weld perimeter door frames and grind smooth.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
 - 2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
 - 3. Fire-Rated Cabinets:

- a. Seal through penetrations with firestopping sealant as specified in Section 07 84 13 "Penetration Firestopping."

C. Identification:

1. Apply decals at locations indicated.

3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 44 13

SECTION 10 44 16 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.
- B. Related Requirements:
 - 1. Section 10 44 13 "Fire Protection Cabinets."

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to fire extinguishers including, but not limited to, the following:
 - a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.7 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
 - 1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amerex Corporation.
 - b. Babcock-Davis.
 - c. Badger Fire Protection.
 - d. Buckeye Fire Equipment Company.
 - e. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - f. Kidde Residential and Commercial Division.
 - g. Larsens Manufacturing Company.
 - h. Potter Roemer LLC.
 - 2. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
 - 3. Valves: Manufacturer's standard.

4. Handles and Levers: Manufacturer's standard.
 5. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.
- B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:60-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
- C. Wet-Chemical Type in Stainless Steel Container: UL-rated 2-A:1-B:C:K, 2.5-gal. nominal capacity, with potassium-based chemical in stainless-steel container; with pressure-indicating gage.
1. Locations: Food Service Kitchen areas.
 2. Identification: Where installed near cooking appliances with fixed suppression systems, provide Class K warning placard complying with NFPA-10.

2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amerex Corporation.
 - b. Babcock-Davis.
 - c. Buckeye Fire Equipment Company.
 - d. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - e. Kidde Residential and Commercial Division.
 - f. Larsens Manufacturing Company.
 - g. Potter Roemer LLC.
 2. Source Limitations: Obtain mounting brackets and fire extinguishers from single source from single manufacturer.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
 - a. Orientation: Vertical.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
1. Remove and replace damaged, defective, or undercharged fire extinguishers.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 10 44 16

SECTION 11 30 13 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Stackable washer/dryer.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. Product Schedule: For appliances. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranties: For manufacturers' special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.7 WARRANTY

- A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within manufacturer's standard warranty period.

PART 2 - PRODUCTS

2.1 STACKABLE WASHERS/DRYERS

- A. Provide Whirlpool, Model WET4027H stackable washer/dryer.
 - 1. Washer Capacity: 3.5 cu. ft.
 - 2. Dryer Capacity: 5.9 cu. ft.
 - 3. 4 drying cycles.
 - 4. Bleach dispenser.
 - 5. Amps: 30.
 - 6. Volts: 240.
 - 7. Wash Cycles: 9.
 - 8. Dryer Cycles: 4.

2.2 ACCESSORIES

- A. Provide all cables, hoses, exhaust vents ductwork, supply drain boxes and other necessary components as required for a complete and functioning installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

3.2 INSTALLATION

- A. Install appliances according to manufacturer's written instructions.
- B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

3.3 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain residential appliances.

END OF SECTION 11 30 13

SECTION 11 40 00 – FOOD SERVICE EQUIPMENT

PART 11 40 01 - SUMMARY:

General and Supplementary conditions of the contract and Division 1 General Requirements apply to this Section.

- A. Index of the 11 40 00 Section
 - 1. Section 11 40 01 – Summary
 - A. Bidding Instructions
 - B. Alternate Proposals
 - C. Drawings and Specifications
 - D. Changes While Bidding
 - E. Examination of Site, Drawings, Etc.
 - F. Conditions of work
 - G. Owner's Option
 - H. Submission of Bids
 - 2. Section 11 40 02 - General Conditions
 - A. Description of Work
 - B. Intent of Specifications
 - C. Permits and Certificates
 - D. Public Liability, Casualty and Workmen's Compensation Insurance
 - E. Materials and Workmanship
 - F. Construction
 - G. Lost or Stolen Food Service Equipment and Accessories
 - H. Contract responsibility and Omissions
 - I. Fire Protection Systems
 - 3. Section 11 40 03 - General Fabrication Standards
 - A. Legs
 - B. Crossbracing
 - C. Undershelves
 - D. Cabinet Shelves
 - E. Wall Shelves
 - F. Overshelves
 - G. Sinks
 - H. Closure Trim Pieces
 - I. Refrigerated Equipment
 - J. Laminated Plastic
 - K. Dish Tables
 - L. Exhaust Hoods and Canopies
 - M. Walk-In Boxes and Refrigeration Standards

4. Section 11 40 04 - Itemized Specifications
 - A. Schedule of Equipment

5. Section 11 40 05 –Execution
 - A. Coordination of Responsibility
 - B. Scheduling Lead Times and Delivery
 - C. General Contractor Responsibilities
 - D. Food Service Equipment Contractor Responsibilities
 - E. Fire Protection System Contractor Responsibilities
 - F. Millwork Fabricator Responsibilities
 - G. Refrigeration Contractor Responsibilities
 - H. Electrical Contractor Responsibilities
 - I. Plumbing Contractor Responsibilities
 - J. HVAC Contractor Responsibilities
 - K. Storage and Delivery
 - L. Site Inspection and Field Verification
 - M. Installation
 - N. Protection
 - O. Project Closeout Procedures
 - P. Project Record Documents
 - Q. Warranties
 - R. Exhibits

B. 11 40 00 Foodservice Equipment Section Includes:

1. Food Service Equipment, including storage, preparation, cooking, serving equipment, Exhaust Hoods, Walk-In Boxes, Custom Fabricated Equipment, and Commercial Grade Custom Food Service Millwork as indicated on the Food Service Equipment (FS) drawings. The Food Service Equipment drawings form part of these specifications and includes the following sections and equipment typically referred to in these sections:

- A. 11 41 00 Foodservice Storage Equipment**
 - i. 11 41 13 Refrigerated Food Storage Cases
 - ii. 11 41 23 Walk-In Coolers
 - iii. 11 41 26 Walk-In Freezers
 - iv. 11 41 33 Foodservice Shelving
- B. 11 42 00 Food Preparation Equipment**
 - i. 11 42 13 Food Preparation Appliances
 - ii. 11 42 16 Food Preparation Surfaces
- C. 11 43 00 Food Delivery Carts and Conveyors**
 - i. 11 43 13 Food Delivery Carts
 - ii. 11 43 16 Food Delivery Conveyors
- D. 11 44 00 Food Cooking Equipment**
 - i. 11 44 13 Commercial Ranges
 - ii. 11 44 16 Commercial Ovens
- E. 11 46 00 Food Dispensing Equipment**
 - i. 11 46 13 Bar Equipment
 - ii. 11 46 16 Service Line Equipment
 - iii. 11 46 19 Soda Fountain Equipment
 - iv. 11 46 23 Coffee and Espresso Equipment
 - v. 11 46 83 Ice Machines
- F. 23 38 00 Ventilation Hoods**
 - i. 23 38 13 Commercial-Kitchen Hoods
 - ii. 23 38 13.13 Listed Commercial-Kitchen Hoods
 - iii. 23 38 13.16 Standard Commercial-Kitchen Hoods

G. 21 23 00 Wet-Chemical Fire-Extinguishing Systems

- i. 21 23 13 Wet-Chemical Fire-Extinguishing Piping
- ii. 21 23 16 Wet-Chemical Fire-Extinguishing Equipment

H. 12 35 00 Specialty Casework

- i. 12 35 39 Commercial Kitchen Casework

C. Related Sections to be performed by other trades and GC on the project including but not limited by the following Sections:

1. **Concrete Section 03 30 00** and all related sub sections to provide any concrete curbs, pads, and anchors to concrete and masonry for all food service equipment compressors, evaporators and hanging of exhaust hoods.
2. **Openings Section 08 00 00** and all related sub sections to provide any required openings, penetrations, and access doors for food service equipment installation, venting and serviceability.
3. **Flooring Section 09 60 00** and all related sub sections to provide any required flooring finishes that would extend into recessed walk-in cooler/freezer boxes.
4. **Residential Equipment Section 11 30 00:** The Food Service Equipment drawings may have additional residential equipment specified to be provided by GC and may include the following sections and equipment. **11 30 13 Residential Appliances, 11 30 13.13 Residential Kitchen Appliances.** GC to bid and supply this equipment outside of Food Service Equipment Dealer (section 11 40 00) scope.
5. **Plumbing Section 22 00 00** and all related sub sections to provide final connections to all food service equipment including all fittings and accessories. Refer to Part V - Execution Section 5.10 for additional Plumbing requirements and coordination with Food Service Equipment.
6. **Heating, Ventilating, and Air Conditioning (HVAC) Section 23 00 00** and all related sub sections to provide final connections to commercial Kitchen Hoods exhaust air and make up air, both tempered and conditioned. Refer to Part V - Execution Section 5.11 for additional HVAC requirements and coordination with Food Service Equipment.
7. **Electrical Section 26 00 00** and all related sub sections to provide final connections to all food service equipment including all breakers, panels, disconnects and accessories Refer to Part V - Execution Section 5.9 for additional Electrical requirements and coordination with Food Service Equipment.
8. **Communications Section 27 00 00** and all related sub sections to provide final connections for all low voltage requirements including but not limited to POS (Point of Sale), POS Printers, Digital Menu Boards, Order Management Screens, HACCP Temperature Monitoring Systems, Video Exhibition Systems.

1.01 Bidding Instructions

- A. Bids for Food Service Equipment must be based on the materials, fabrication methods, equipment and accessories exactly as specified without exception. Failure to follow this instruction will disqualify the bid. The Contract is to be awarded as follows:
1. The competence and responsibility of bidders shall be considered in making the award.
 2. The Architect, Consultant, and/or Owner are not obligated to accept the lowest or any other bid. The award of the Contract and the choice of the Food Service Equipment Contractor (section 11 40 00) shall be at the Architect's, Consultant's, and/or Owner's discretion.

1.02 Alternate Proposals

- A. Various items are specified by brand, trade name, or name of manufacturer and model number. **The base bid must include the price for the manufacturer and model number exactly as specified.**
- B. The Food Service Equipment Contractor (section 11 40 00) may propose alternate equipment to be considered for substitution supplying full data and cut sheet for each item. Alternate bid items to include all options, accessories and features for each individual item clearly noted and listed. For all systems, remote rack, walk-in boxes, cooking suites, etc. FSEC to provide engineered drawings to accompany bid illustrating that the alternate manufacturer has captured all design features and quality of construction. Some alternate manufacturers must provide additional components and accessories beyond what is specified in basis of design to deliver equal performance of system. Change orders for additional components, material, labor, and service to make system fully operational will be rejected.
- C. Dealer to fill out and submit form as provided in specifications, exhibit B – “VE & Alternate Product Certification Form”
- D. Prices for all proposed alternate equipment shall state the amount to be added to or deducted from the base bid if the alternate item is accepted.
- E. The Architect or the Consultant or their representatives shall be the sole judge of the quality and acceptability of the substitute offered.
- F. **Alternates or substitutions shall be considered only at the time of bidding as outlined above. See exhibit 9 – and utilize “VE & Alternate Product Certification Form” for any proposed alternates. Alternates proposed without this form provided will be rejected.**
- G. The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.

H. SHG Alternates Accepted:

Product Category	Accepted Manuf. Alternates	Strictly Prohibited
Bar Equipment	<ul style="list-style-type: none"> • Krowne • Eagle • Perlick 	
Beverage Blenders	<ul style="list-style-type: none"> • Vitamix • Waring • Blendtec 	<ul style="list-style-type: none"> • Avamix • Galaxy
Blast Chillers	<ul style="list-style-type: none"> • Irinox • American Panel • Thermokool 	<ul style="list-style-type: none"> • Electrolux
Braising Pans/Tilt Skillets	<ul style="list-style-type: none"> • Cleveland • Vulcan • Groen 	<ul style="list-style-type: none"> • Eurodib • Infrico
Kitchen blenders	<ul style="list-style-type: none"> • Vitamix • Waring • Blendtec 	<ul style="list-style-type: none"> • Avamix • Galaxy
Carts and Kiosks	<ul style="list-style-type: none"> • Custom • Duke • Vollrath 	
Char Broilers	<ul style="list-style-type: none"> • Vulcan • Garland • Southbound 	
Concession Equipment	<ul style="list-style-type: none"> • Star • APW 	
Cook and Hold Ovens	<ul style="list-style-type: none"> • Winston CVAP • Alto-Shaam • Cres Cor 	
Cooking Suites	<ul style="list-style-type: none"> • Jade • Montague • Vulcan 	<ul style="list-style-type: none"> • Hestan
Custom S/S Counters	<ul style="list-style-type: none"> • Eagle Group • Advance Tabco 	<ul style="list-style-type: none"> • Commercial Stainless • Spokane Stainless • Regency
Dish/Warewashers	<ul style="list-style-type: none"> • Hobart • Champion 	<ul style="list-style-type: none"> • Jackson • CMA • Noble
Display Cases	<ul style="list-style-type: none"> • Structural Concepts • RPI 	<ul style="list-style-type: none"> • Federal
Disposers	<ul style="list-style-type: none"> • Salvajor • InSinkErator 	
Drawer Warmers	<ul style="list-style-type: none"> • Alto-Shaam • Winston-CVAP • Hatco 	
Drop-In Hot Wells Drop-In Cold Wells Drop-In Hot/Cold Wells	<ul style="list-style-type: none"> • Vollrath • Wells • Delfield 	
Espresso Machines	<ul style="list-style-type: none"> • Rancilio • Nuova • Cimbali • Schaerer 	
Food Processors	<ul style="list-style-type: none"> • Robot Coupe • Waring • KitchenAid 	
Fryers	<ul style="list-style-type: none"> • Frymaster • Vulcan • Pitco 	

Gas Hoses	<ul style="list-style-type: none"> ● Dormont ● T&S Brass 	
Glasswasher	<ul style="list-style-type: none"> ● Hobart ● Glastender ● Meiko 	<ul style="list-style-type: none"> ● Noble
Griddles	<ul style="list-style-type: none"> ● Accutemp ● Vulcan ● Garland 	
Heat Lamps	<ul style="list-style-type: none"> ● Hatco 	
Heat Lamps - Decorative	<ul style="list-style-type: none"> ● Baselite ● Hatco 	
High Speed Oven (Ventless)	<ul style="list-style-type: none"> ● Merrychef ● Turbochef ● Amana 	
High Speed Steamers/ Microwaves	<ul style="list-style-type: none"> ● Panasonic ● ACP 	
Hoods	<ul style="list-style-type: none"> ● Captive-Aire ● Halton ● Accurex ● Caddy 	
Hot Food Heating/Holding Cabinets	<ul style="list-style-type: none"> ● Metro ● Alto-Shaam ● Winston-CVAP 	
Hot Food Tables i.e. steamtables	<ul style="list-style-type: none"> ● Vollrath ● Delfield ● Randell ● Duke ● Eagle Group 	
Ice Cream Machine	<ul style="list-style-type: none"> ● Taylor ● Stoelting 	
Ice Cream Dipping Cabinet – Drop-In	<ul style="list-style-type: none"> ● Randell ● Delfield 	
Ice Cream Dipping Cabinet - Stand Alone	<ul style="list-style-type: none"> ● Master-Bilt ● Stoelting 	
Ice Makers	<ul style="list-style-type: none"> ● Follett ● Manitowoc ● Hoshizaki 	
Induction Cooktops	<ul style="list-style-type: none"> ● Vollrath ● Garland ● Spring 	
Kettles	<ul style="list-style-type: none"> ● Cleveland ● Vulcan ● Groen 	
Microwaves	<ul style="list-style-type: none"> ● Panasonic ● Amana/ACP ● Waring 	
Millwork	<ul style="list-style-type: none"> ● Custom 	
Mixers 12+ quarts	<ul style="list-style-type: none"> ● Hobart ● Globe 	
Oven - Combination	<ul style="list-style-type: none"> ● Rational ● Alto-Shaam ● Cleveland 	
Oven - Convection	<ul style="list-style-type: none"> ● Vulcan ● Blodgett ● Southbend 	
Oven - Conveyor	<ul style="list-style-type: none"> ● Lincoln ● Turbochef (Ventless) 	

Oven, Hearth	<ul style="list-style-type: none"> ● Woodstone ● Beech ● Earthstone ● Marra Forni 	
Ovens, Deck	<ul style="list-style-type: none"> ● Baker's Pride ● Blodgett ● Empire 	
Panini Press	<ul style="list-style-type: none"> ● Star ● Hatco ● Equipex 	
Patient Delivery Carts	<ul style="list-style-type: none"> ● Dinex ● Aladdin ● Cambro 	
Pellet Activators	<ul style="list-style-type: none"> ● Dinex ● Aladdin 	
Pot Wash Sinks	<ul style="list-style-type: none"> ● PowerSoak ● Duke 	
Pulpers	<ul style="list-style-type: none"> ● Hobart ● Somat ● InSinkErator 	
Racks	<ul style="list-style-type: none"> ● Metro – MetroMax Q Racks ● Metro – Green Epoxy Coated ● Eagle Group 	<ul style="list-style-type: none"> ● Regency
Ranges	<ul style="list-style-type: none"> ● Vulcan ● Garland ● Southbend 	
Reach In Refrigeration	<ul style="list-style-type: none"> ● Victory ● True Spec Line ● Continental ● Beverage Air ● Hoshizaki 	<ul style="list-style-type: none"> ● Delfield
Refrigeration Racks	<ul style="list-style-type: none"> ● RDT ● ColdZone 	<ul style="list-style-type: none"> ● Cooltec
Remote Beer Systems	<ul style="list-style-type: none"> ● MicroMatic ● Perlick ● ChillRite 	
Rotisseries	<ul style="list-style-type: none"> ● Vertical Rotisserie – Wood Stone ONLY ● Rotisol ● BKI ● Alto-Sham 	
Self-Leveling Dispensers	<ul style="list-style-type: none"> ● Delfield ● Lakeside 	
Serving Carts	<ul style="list-style-type: none"> ● Duke ● Vollrath ● Eagle Group 	
Shelving	<ul style="list-style-type: none"> ● Metro ● Eagle Group 	
Slicers	<ul style="list-style-type: none"> ● Hobart ● Berkel ● Globe 	
Smokers	<ul style="list-style-type: none"> ● Southern Pride ● Cook Shack 	
Sneezeguards	<ul style="list-style-type: none"> ● Premier Metal Glass ● BSI 	
Steamers	<ul style="list-style-type: none"> ● Cleveland ● Vulcan ● Southbend 	

Toasters - Conveyor	<ul style="list-style-type: none"> • Star • Hatco • Waring 	
Ventless Hoods	<ul style="list-style-type: none"> • Wells • Giles 	
Walk In Refrigeration	<ul style="list-style-type: none"> • Thermo-Kool • Bally • American Panel • Kolpak 	<ul style="list-style-type: none"> • ThermalRite
Water Filters	<ul style="list-style-type: none"> • Everpure • OptiPure • Cuno/3M • Rational Filters for Combis 	

1.03 Drawings and Specifications Conflicts and Discrepancies

- A. If any floor plan to written specifications exist, for binding and estimating purposes, the following shall apply.
- B. **Floor Plans vs. Written Specifications:** The project shall be performed in accordance with the requirements of the drawings and specifications combined, subject to modifications as provided in the General Conditions. The drawings and specifications are intended to complement and supplement each other. Any work required by either of them or not by the other shall be performed as if denoted in both.
- C. **Quantities:** Larger quantity takes precedence. If floor plans call out for larger quantity, that quantity shall be provided or if specifications call for larger quantity, that quantity shall be provided.
- D. **Door Swings:** Plan orientation of door swings define function and flow and take precedence over written specification when conflicts exist.
- E. Food Service Equipment Dealer to submit formal RFI's for all above clarifications purposes and record.

1.04 Changes While Bidding

- A. During examination of the contract documents, or the site, should a bidder find any discrepancies, omissions, ambiguities, or conflicts, or be in doubt as to their meaning, the Architect and/or Consultant shall be notified no later than four (4) days before the bid opening date. Where the information sought is not clearly available, the Architect and/or Consultant shall issue a clarifying bulletin to all bidders which shall become a part of the contract documents.

1.05 Examination of Site, Drawings, Etc.

- A. Each bidder shall visit the site of the proposed work, if applicable, and fully acquaint himself with the conditions as they exist so that he may fully understand the facilities, difficulties, and restrictions attending the execution of the work under this contract.
- B. Bidders shall also thoroughly examine and be familiar with the drawings and specifications. The failure or omission of any bidder to receive or examine any form, instrument, or document, or to visit the site and acquaint himself with the conditions there existing shall in no way relieve him from obligation with respect to his bid. By submitting a bid, the bidder agrees and warrants that he has examined these items and finds them to be adequate to produce the desired results. No claim for any extra will be allowed because of alleged difficulties arising from unintentional errors or conflicts in the contract documents.

1.06 Conditions of Work

- A. Insofar as possible, the Food Service Equipment Contractor (section 11 40 00) in carrying out his work must employ such methods or means as necessary to avoid interruption of or interference with the work of any other contractor.

1.07 Owner's Option

- A. It is intended that the contract be awarded as a whole to the successful bidder.
- B. An itemized breakdown is required so that the Owner may, at his option, delete the item in its entirety, supply any part or portion thereof, or increase the quantity, making a suitable adjustment in the contract price based on the breakdown.
- C. The Owner reserves the right to reject any or all bids, or to waive irregularities or informalities, accepting only that best serving his interests.

1.08 Submission of Bids

- A. Bids shall be addressed to:
REFERENCE BIDDERS INVITATION LETTER
- B. Bids shall be received no later than:
REFERENCE BIDDERS INVITATION LETTER
- C. Equipment installation is expected to begin:
REFERENCE BIDDERS INVITATION LETTER

PART 11 40 02 - GENERAL CONDITIONS

2.01 Description of Work

- A. The Food Service Equipment Contractor (section 11 40 00) shall furnish all labor, materials, equipment, and services necessary for all items specified. These shall be delivered prepaid; uncharted; assembled with all components within the equipment proper completely connected; set in place; leveled; fastened to the walls, floor, and ceiling if required; and left ready for final connections by other trades, which shall extend utility lines from rough-in locations to the final connection points on the equipment.
- B. If items appear on drawings and are not included in the specifications, or vice versa, the Food Service Equipment Contractor (section 11 40 00) shall furnish the items as though they appear in both places. If a conflict exists between drawings and specifications the Food Service Equipment Contractor (section 11 40 00) shall notify the Architect or Consultant for a determination as to which is correct.
- C. All work is to be performed by the proper trades using skilled labor. All work shall be performed at hours required to maintain consistent work schedules with all other trades without additional cost to the Architect, Consultant, or Owner.
- D. If any work specified under this Contract must be done by others as a result of jurisdictional trade agreements or other restrictions, this Food Service Equipment Contractor (section 11 40 00) shall sublet such work as necessary or make other satisfactory arrangements at his own expense and with the understanding that such work shall be done in accordance with the specifications and work schedule.
- E. Care shall be taken to prevent any damage whatsoever to the equipment, building, or previous work. Such damage will be repaired at the expense of the Food Service Equipment Contractor (section 11 40 00) causing same.
- F. Any field cutting, or welding shall comply with the provisions of the National Fire Protection Association's "National Fire Codes" or local requirement, whichever is more stringent, pertaining to such work, and the Food Service Equipment Contractor (section 11 40 00) shall be responsible for any damage resulting from failure to comply.
- G. The Food Service Equipment Contractor (section 11 40 00) shall at all times keep the premises free from waste materials or rubbish caused by his work. At the completion of each day's work such refuse must be removed, and the area swept broom clean. Dust partitions shall be constructed around the areas under work.
- H. Prior to turning completed areas over to the Owner, the Food Service Equipment Contractor (section 11 40 00) shall clean and polish all equipment herein specified and make it ready for use, including commissioning and demonstration to the Owner.

2.02 **NOT USED**

2.03 **Intent of Specifications**

- A. Equipment shall be of the finest quality in materials, finish, and workmanship.
- B. Particular attention shall be paid to details of fabrication to insure ready accessibility for cleaning.
- C. All equipment shall strictly adhere to or exceed the guidelines of the National Sanitation Foundation as well as any requirements of the jurisdiction having authority.
- D. All eligible equipment shall display the NSF seal or be rejected.
- E. All eligible equipment shall display the UL label or be rejected.
- F. All fabricated equipment shall meet or exceed the standards of construction used by the National Association of Food Equipment Manufacturers, National Sanitation Foundation, and National Fire Protection Association.
- G. The Food Service Equipment Contractor (section 11 40 00) shall be responsible for checking all pages of this specification, and missing pages will be provided by the Architect or Consultant upon request. When the Food Service Equipment Contract is placed it will be assumed that the Food Service Equipment Contractor (section 11 40 00) has all pages and addenda in his possession and they are part of the Food Service Equipment Contract.

2.04 **Permits and Certificates**

- A. The Owner may withhold any payments which are due, or which may become due to the Food Service Equipment Contractor (section 11 40 00) until the necessary certificates are procured and delivered to him. Copies of certificates shall be provided to the Architect or Consultant upon request.

2.05 **Public Liability, Casualty and Workmen's Compensation Insurance**

- A. The Food Service Equipment Contractor (section 11 40 00), at his own cost and expense, shall procure and maintain satisfactory public and property liability and casualty insurance to adequately protect himself and the Owner against liens for damages and personal injury, including death, which may arise from operations whether by himself or by any subcontractor, or anyone directly or indirectly employed. In the case of new construction, the requirements are as directed by the Architect or Owner. The Food Service Equipment Contractor (section 11 40 00) is responsible for determining what insurance is required before starting work.

2.06 **Not Used**

2.07 **Not Used**

2.08 **Not Used**

2.09 Materials and Workmanship

A. General

1. Stainless steel shall be type 302 or 304, #4 finish where exposed and #2B where concealed. Sheets shall be flat and free of buckles or imperfections.
2. Core materials shall be 3/4" exterior or marine grade plywood unless otherwise specified. Particle board or other pressed wood products are not acceptable.
3. All exterior galvanized parts, exposed framework members, and other areas where painting is indicated shall be cleaned, primed, degreased, and finished with two coats of epoxy-based grey hammertone paint.

B. Plumbing

1. The Food Service Equipment Contractor (section 11 40 00) shall provide all necessary faucets, drains, overflows, pre-rinse spray assemblies and tailpieces. All faucets shall be equipped with a vandal proof non-splash aerator.
2. Where so indicated in the specifications, the Food Service Equipment Contractor (section 11 40 00) shall run piping internally from the fixture(s) to an accessible point for final connection by the plumbing contractor. All horizontal piping shall be run as high as possible within the equipment, and in no case, shall be less than 6" above the floor.

C. Electrical

1. Equipment shall be completely internally pre-wired by the Food Service Equipment Contractor (section 11 40 00) in accordance with applicable codes and regulations. Where multiple electrical requirements occur in a single piece of equipment, the Food Service Equipment Contractor (section 11 40 00) shall wire to a junction box or electrical panel, as shown on the drawings and item specifications, for final connection by the electrical contractor. All wires left for such final connection shall be neatly tagged showing item number, voltage, and load.
2. The Food Service Equipment Contractor (section 11 40 00) shall provide neoprene cords and plugs for all items requiring same and shall coordinate his work with the electrical contractor to insure proper receptacle match. The Electrical Contractor will shorten, lengthen, or conceal all electrical cords as required by the Consultant and/or Architect. The Electrical Contractor will also change all plugs, wires, and outlets so connections can be properly made.
3. The Food Service Equipment Contractor (section 11 40 00) shall provide fluorescent light fixtures, lamps, ballasts, and protective non-breakable sleeves for all equipment requiring fluorescent lighting.

D. Refrigeration

1. Mechanically operated cold pans and similar devices shall be provided with a normally closed liquid line electric solenoid installed before the expansion valve and wired to a switch with a neon "on" indicator. This shall be a circuit separate from the compressor. This arrangement will not directly turn off the compressor but will stop the refrigerant flow and cause the compressor to turn off through the action of the compressor control.

2.10 Construction

A. General

1. All items of custom fabricated equipment shall be constructed in a workmanlike and strong manner, in accordance with the highest standards and traditions of the craft, including the adequate number and gauge of reinforcing members and uprights. Wherever standard sizes will permit, each component shall be from a single sheet of material. Where tops or other large, unbroken surfaces are of such size to require more than one sheet, joints shall be welded, ground, and polished so as to appear integral.
2. Any pipe slots or other openings cut in the equipment for passage of utilities shall be performed in the shop whenever possible and shall be ground to eliminate any possibility of injury or damage to personnel and equipment.

2.11 Lost or Stolen Food Service Equipment and Accessories

- A. Until all the equipment is accepted by the Owner, the Food Service Equipment Contractor (section 11 40 00) is responsible for the replacement of all items that are either lost or stolen regardless of where they were lost.
- B. All costs to replace the items either lost or stolen will be that of the Food Service Equipment Contractor (section 11 40 00).
- C. The Food Service Equipment Contractor (section 11 40 00) must do everything within his control to expedite the fastest delivery to replace the lost or stolen items not excluding air freight and overtime if required to maintain all work schedules.
- D. The Food Service Equipment Contractor (section 11 40 00) has the same replacement responsibility described above on any item that was ordered or shipped incorrectly.

2.12 Contract Responsibility and Omissions

- A. In a case of "omission(s)" of any kind, whether it is a utility or food service equipment, and it is certain that none of the contract documents have any information on the "omission," it is understood that the item or items referred to the omission(s) are to be provided as an 'extra' work order and the Food Service Equipment Contractor (section 11 40 00) will be asked to submit an estimate to furnish the extra item(s). If the "omission(s)" is discovered at the time of estimating the food service equipment, the Food Service Equipment Contractor (section 11 40 00) will furnish a separate bid to include the omission(s).
- B. All utilities such as steam, electric, gas, water, drains, etc., for items of omission will be provided by the General Contractor or subcontractors.

- C. All costs to provide extra work will be processed, reviewed, and assembled by the person that requested the bid.
- D. If a Performance Bond is required by the Owner, it will be requested prior to awarding contracts.

2.13 Not Used

2.14 Fire Protection Systems

- A. The Food Service Equipment Contractor (section 11 40 00) will be responsible for the coordination of all work as it relates to the food service equipment, hoods, ventilators and building so that all installation details are in complete harmony with all other trades.
- B. All piping, wiring, controls, equipment, materials, etc., shall be located in accordance with national, state and local authorities governing the code and the project, with the full understanding of all locations of remote controls.
- C. All electrical, plumbing, and mechanical services shall be provided by the Owner through the General Contractor or subcontractor contract. The extension of utilities to the Fire Protection Equipment will be the responsibility of the Fire Protection Company. If new services are required to install the Fire Protection Equipment, they shall be provided by the General Contractor or the Owner.
- D. If discharge nozzles are located and the equipment is shifted because of mechanical-electrical changes, the company or individual responsible for the change will also pay the cost of relocating the nozzles.
- E. Fire Protection System(s) shall be provided with the necessary mechanical shut-off valve(s) or electrical disconnect contactor. Mechanical valve shall be provided by the Fire Protection Installer for gas line shut-off and installed by Plumber. Electric shut-off shall be provided by Electrical Contractor, installed by same, interwired and connected to all equipment requiring this disconnect.
- F. A "balloon test" and a fire protection certification by the installer must be provided as required by local codes.

PART 11 40 03 - GENERAL FABRICATION STANDARDS

3.01 Legs

- A. Legs shall be constructed of 1-5/8" outside diameter #16-gauge stainless steel tubing meeting specifications for tubing previously set forth. Each leg shall be swaged and tapered at the bottom and be provided with a cast or formed, fully enclosed stainless-steel bullet shaped adjustable foot. This foot shall be threaded into a collar which is welded completely inside the tubular leg in such position as to permit a minimum adjustment of 1" up or 1" down without any thread exposure. The bullet shaped foot must have a minimum bearing surface of 3/4" diameter at floor contact. Leg and foot assemblies shall be equal to Klein series #22R or Klein #1012-1002-1144 or United Show Case #8F-158 for bullet foot and #22F or Klein #1012-1003-1144 for flanged foot without holes. Flanged feet with holes shall be Klein #1012-1004-1144.

- B. The legs shall be fastened to 4" high stainless steel conical shaped, die formed gussets with locking set screw, equal to Klein #483-58 or #1018-1206-1283 or United Show Case #SG-158.
- C. The gussets are to be welded continuously to the sink bottom or to table or dish table bracing with welds filleted, ground and polished to smooth covered radius. Particular care must be taken to prevent warping of sink bottom and to see that legs are plumb and true.
- D. On cabinet fixtures, the legs shall be equal to Klein #222-50 SSA or Klein #1012-1002-1144 or United Show Case #BF-158 for bullet feet, welded directly to bottom angle frame and/or to flat steel triangular plates which are welded fully to bottom frame.

3.02 Crossbracing

- A. All sinks, drainboards and tables, except where fixed undershelves are specified, shall be provided with 1-1/4" outside diameter, #16-gauge stainless steel tubular crossbracing running between legs at a point 10" above floor, Crossbraces shall be continuously welded to legs neatly fitted, ground and polished to provide a smooth covered radius.
- B. In certain fixtures, crossbracing will abut cabinet-type fixtures. In such instances, round, stainless steel collar-type flanges shall be provided for fastening crossbracing to bodies. Flange shall be equal to Klein Hardware #SS-425-FC. The collar shall be tapped and provided with a cone point, stainless steel Allen Headset screw.

3.03 Undershelves

- A. Undershelves shall be constructed of #18-gauge stainless steel. Each corner shall be notched 90° to the exact contour of tubular legs and continuously welded to same, ground smooth and polished.
- B. Shelves shall be turned down 1-1/2" then back 1/2" at a 45° angle. Mount shelf 10" above floor unless otherwise noted. Where abutting walls or fixtures, turn up 2" on a 1/2" radius.
- C. Suitable pipe slots shall be provided through all undershelves on open base fixtures to accommodate necessary service lines. These slots shall be of proper size and shall be neatly made with turned up edges on all four (4) sides to eliminate cutting or defacing of the equipment on the job. Cabinet bases shall be provided with an inner panel duct at ends or rear (or both) of cabinet to allow vertical pipe space to conceal the verdict piping.

3.04 Cabinet Shelves

- A. All shelves shall be constructed of #16-gauge stainless steel, turned up 2" at back and ends on a 1/2" radius. Turn down front (exposed edge) 1-1/2" to 1-3/4" on a 90° angle and back 1/2" on a 45° angle (unless otherwise specified). Close corners by welding continuously for rigidity, grind smooth and polish weld. Where specified as removable, shelves shall be set into 1-1/2" x 1/8" stainless steel angle frame welded in place.
- B. Fixed intermediate shelves shall be welded to front stiles and welded to #14-gauge stainless steel brackets which in turn are welded to the body in such a manner so that intermediate shelves set 1" clear from back and ends of cabinets.

- C. Where adjustable shelves are specified, they shall have edges formed into a channel on four (4) sides with all corners welded, ground smooth and polished. Mount shelves on removable Klein Hardware #502-R-SS (standards), with #503-SS (supports).
- D. Fixed bottom shelves shall be welded to bodies as specified for counters.

3.05 Wall Shelves

- A. Wall shelves shall be size, and shape as shown on plan, constructed of #16-gauge stainless steel with 1-1/2" to 1-5/8" diameter roll on front and turned up 2" on a 1/2" radius on back and unexposed ends adjacent to other fixtures. All corners are to be welded, ground smooth and polished.
- B. Exposed ends of shelf shall be enclosed, full width of shelf to bottom of front roll, fully welded, ground smooth and polished.
- C. Wall brackets of approved shape shall be constructed of #12-gauge stainless steel flanged in under shelf and at wall 1-1/2" with intersecting flanges completely welded. Each bracket shall be fastened to wall with minimum of two (2) 1/4" #20-gauge stainless steel bolts anchored securely by means of toggles or expansion shields, whichever is best suited to wall construction.
- D. Shelves to set either 1" clear from wall or flush with wall and be sealed with silicone sealant. Secure shelf to brackets using 1/4" #20-gauge stainless steel stud bolts, chrome plated lockwashers and cap nuts.

3.06 Overshelves

- A. Shelves mounted over equipment not adjacent to walls shall be fabricated of #16-gauge stainless steel and shall set on 1" outside diameter #16-gauge stainless steel tubular standards neatly fitted with stainless steel base flanges. The top of the tubular standards shall be completely welded to #14-gauge stainless steel support channels which shall run the full width of the overshelf and be welded thereto.
- B. Inside the tubular standards and securely welded to same shall run 1/2" outside diameter steel tension rods, which shall be extended through counter tops and reinforcing angle framing. This extension shall be threaded and secured to framing with nuts and lock washer in such a manner to assure a stable, sway free structure.
- C. Where shelves are mounted over drainboards or dish tables, the stainless-steel tubular uprights shall be continuously welded to the upturned, rolled edges omitting flanges and scribing lower end of the tube to match the contour of the roll.
- D. Wall mounted rack shelves shall be constructed of #14-gauge s/s, all welded, with closed ends and a reversed raised rolled edge. Front edge to terminate in a 1-5/8" diameter 180° roll edge, turned in. Rear edge shall be turned up approximately 120° flush with wall. Support shelf to rear wall at an angle of 40° by means of #12-gauge stainless steel cantilever-type wall plates. Brackets shall be flanged outward 90° at 1-1/2". Drill adequate holes and secure to wall using lead anchors or toggles and stainless-steel bolts. Verify wall construction for proper mounting. Shelf shall be adequately braced with 1" x 3" x 1" #12-gauge stainless steel channels welded to underside of shelf not over 26" on centers. Pitch to 1" outside diameter stainless steel bleeder drain at one end of the shelf by varying the dimension of the horizontal trough bottom. The raised rolled edge shall not be pitched but shall remain parallel to the floor. Provide a flexible drain tube to the stainless-steel drain which shall be firmly mounted and strapped in place, running down from shelf to a point 2" above drainboard or dish table surface.

3.07 **Sinks**

- A. Sinks shall be fabricated from #14-gauge stainless steel with all interior corners rounded to a 3/4" minimum radius, both horizontally and vertically, forming spherical corners. Solder or separate filler pieces to achieve the rounded corner construction will not be used or permitted. All joints shall be butt-edged, electrically welded, ground smooth and polished so that no evidence of welding will appear.
- B. The bottom of each compartment shall be pitched and creased to a die-stamped recess, so tapered and shaped as to receive lever-type waste without use of solder, rivets, or welding.

3.08 **Closure Trim Pieces**

- A. Trim pieces of #16-gauge stainless steel (minimum thickness) one (1) piece construction shall be furnished to seal both horizontal and vertical joints and openings where the conditions given below occur.
 - 1. Where equipment is installed into wall openings, trim shall be applied to both sides of wall. All corners welded, use straps to connect inside trim to outside trim, no screws exposed to view.
 - 2. Where items of similar construction are butted together.
 - 3. Where equipment installed against walls or other equipment, results in a gap or joint where vermin or grease might collect.
 - 4. Butt or overlapping joints will not be acceptable. Where channel-type closures are required, they shall be delivered to the job site before surrounding walls are erected or equipment is set in place.
- B. Silicone sealant shall be used only where trim pieces will not effectively seal the gap. Sealant shall be as specified hereinbefore in Materials and Workmanship.

3.09 **Refrigerated Equipment**

- A. All refrigeration condensing units shall be installed so that adequate air circulation is obtained. Compressor compartments in all fabricated units shall be provided with stainless steel grilles and cross ventilation shall be provided where required.

3.10 **Laminated Plastic**

- A. Where an item is specified to be faced with laminated plastic, Formica, Nevamar, Wilsonart or other selected material shall be used bonded with contact adhesive to exterior grade plywood 3/4" minimum thickness.
- B. Stainless steel counters specified to be finished with plastic laminate shall have all exposed faces and edges faced with 1/16" thick plastic laminate. Unexposed back shall be faced with .020 or .020 cabinet liner. Beveling will be not acceptable on finished edges. Although plastic laminate counter fronts are backed up, the counter unit will be stainless steel on the complete interior.

- C. Millwork counters shall be constructed of 3/4" thick exterior grade plywood for the cabinet body and splashes and 1-1/4" thick exterior grade plywood for the countertop. Blocking shall be provide as required to provide support. Undersides of counter tops shall be finished with backing sheets. All other interior finishes shall be finished with white cabinet liner. All finished edges of cut-outs and recessed surfaces shall be finished with plastic laminate. All exposed exterior surfaces, whether visible to the eye or not, shall be finished with plastic laminate (i.e., door edges, drawer edges, underside of countertop overhang, all shelf edges and surfaces, etc.). Painted finishes will not be acceptable.
- D. Where plastic laminate is specified to be bonded directly to the counter or cabinet bodies, a contact adhesive shall be used as recommended by the plastic laminate manufacturer (compatible with the metal surface).

3.11 Dish Tables

- A. Tops shall be fabricated of #14-gauge stainless steel with all freestanding edges turned up 3" and finished with a 1-5/8" diameter 180° integral roll. Where tables adjoin walls, they shall be turned up integrally 10" on a 1/2" radius at 90° and back 2" at 45° and down 1/2" along the back. Where the table enters the dishwasher, it shall be turned down into the mouth and fastened thereto in a watertight manner as recommended by the manufacturer of the dishwasher. All corners, both horizontal and vertical, shall be coved on a 1" radius.
- B. Tables shall be fully reinforced by means of #14-gauge stainless steel channels to eliminate deflection under full workload. All interior horizontal and vertical corners shall be coved, and exterior corners shall be bullnosed.
- C. Where a scrap trough is indicated, it shall be length as shown on plan x 6" wide x 5" deep and formed integrally with dish tabletop. Trough shall be of all cove corner construction with the bottom only pitched a minimum of 1/8" to the foot downward toward the disposer.
- D. The tables shall be mounted on stainless steel tubular legs with adjustable feet and crossbraces as previously specified. Where scrap blocks are installed in the top, the front crossbrace shall be eliminated for the insertion of garbage can. Undershelves shall be provided where called for in the Schedule of Equipment and when so indicated shall be fabricated as previously specified.

3.12 Exhaust Hoods and Canopies

- A. All hangers, duct work, dampers, collars, cleanouts, filters, and grease receptacles will be furnished and installed by the Food Service Equipment Contractor (section 11 40 00) (in accordance with surrounding construction).
- B. All mechanical and electrical work required for exhaust hoods, canopies and ventilators will be provided by the General Contractor or Subcontractors, not the Food Service Equipment Contractor (section 11 40 00). The only plumbing and electrical work provided by the Food Service Equipment Contractor (section 11 40 00) will be that which is provided as a standard practice by the hood, canopy and/or ventilator supplier or manufacturer.
- C. All vertical and horizontal duct connections will be designed by the HVAC Engineer or exhaust air with proper velocity control and coordination to hood duct collar location(s).
- D. All roofing, curbing, construction openings, general construction and duct work above ceiling related to the final exhausting including the fan(s) will be furnished by Contractors other than the Food Service Equipment Contractor (section 11 40 00).

3.13 Walk-in Boxes and Refrigeration Standards

- A. The Food Service Equipment Contractor (section 11 40 00) will be responsible for furnishing and installing all walk-in boxes including compressors, blowers, coils, evaporators, lights, thermostats, thermometers, condensate lines and heater wires around freezer condensate lines within the freezer walk-in.
- B. All remote and self-contained refrigeration lines will be provided by the Food Service Equipment Contractor (section 11 40 00) as required and shall be adequately insulated.
- C. All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor (section 11 40 00).
- D. All freezer alarms and time clocks will be provided and set in place by the Food Service Equipment Contractor (section 11 40 00) including securing same to walls, floors, or ceilings. All final connections will be made by the Electrical Contractor.
- E. All walk-in box filler panels (stainless steel) will be provided by the Food Service Equipment Contractor (section 11 40 00) as required by the Board of Health, the Architect, Consultant and/or Owner if the boxes are to be right against walls, food service equipment or ceilings.
- F. The refrigerant lines to be sized to maintain proper velocity for good oil return and to prevent capacity loss. The proper sizes of all compressors to maintain adequate temperatures for the various coolers and freezers will be the responsibility of the Food Service Equipment Contractor (section 11 40 00).

PART 11 40 04 - ITEMIZED SPECIFICATIONS

4.1 Schedule of Equipment

- A. Equipment Schedule: Refer to all Contract Documents pertaining to the food service areas. Equipment itemized along with brands and model numbers and salient features establish the standard for construction, operation, and engineering criteria.
- B. Equipment indicated below is intended to establish the standard of quality of the food service equipment. Alternate products by other manufacturers may be considered if equivalent in design, performance, durability, and function.
- C. All alternate items should be submitted prior to bidding. Dealer to fill out and submit form as provided in specifications, exhibit B – “VE & Alternate Product Certification Form”

SECTION 11 40 04 – FOOD SERVICE EQUIPMENT

KITCHEN

ITEM # K100-K100.4 & K103-K103.4 WALK-IN BOX COMBO KIT:
Quantity: One (1)
Manufacturer: Thermo-Kool
Model: CUSTOM

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM To include the following items:
 - Item #K100 - Freezer, Walk-In
 - Item #K100.1 - Freezer Evaporator, Double
 - Item #K100.2 - Freezer Compressor
 - Item #K100.3 - Freezer Junction Heat Tape
 - Item #K100.4 - Air Curtain (Mars, STD248-1UG-OB)
 - Item #K103 - Cooler, Walk-In
 - Item #K103.1 - Cooler Evaporator, Double
 - Item #K103.2 - Cooler Compressor
 - Item #K103.3 - Cooler Junction Heat Tape
 - Item #K103.4 - Air Curtain (Mars, STD248-1UG-OB)
 - Item #K103.5 - UVC Light Add-On (Mars, UVCS36-A-OB)
2. **GENERAL SPECIFICATIONS:**

The THERMO-KOOL walk-in specified shall be prefabricated modular construction. It shall be designed and constructed to allow fast and easy field assembly, disassembly, relocation and enlargement by the addition of like modular panels. Walk-in shall be designed and constructed as shown on plan. Overall size of walk-in shall be actual dimensions to fit exact job site requirements. FSEC to filed verify conditions and adjust accordingly.

Bidders must obtain prior approval if not bidding specified items. Any and all variances in construction, design, performance and accessories from the item specified must be submitted in writing to the owner supervisor in addition to detailed manufacturers specifications ten days prior to bid opening. Successful FSEC responsible for delivering and erecting walk-in and completing installation of refrigeration systems including drain lines.
3. **PANEL CONSTRUCTION:**

Wall and ceiling panel widths shall be within 1" increments up to 46" wide. Corner panels shall be 90-degree angle, 12" x 12". All panels shall be interchangeable with like panels for fast and easy assembly. Partition panel placement shall be within 1" increments to meet shelving space requirements.

All panels shall consist of metal pans formed to precise dimensions. Metal finish to be as specified. Insulation shall be "foamed-in-place" urethane to bond permanently to complete inner surfaces of both interior and exterior metal pans to form strong rigid unit. Panels shall not have internal wood or metal support, framing, straps, or other non-insulating members. Each panel shall be 100% urethane foam insulation exclusive of metal pans. Perimeter structure shall be formed of DURATHANE, high density urethane insulation forming tongues and grooves to assure vapor and airtight joints and to prevent pre-installation damage and deterioration of exposed urethane surfaces.

Exposed exterior, including doors to be #20 gauge textured stainless steel. Unexposed exterior to be #24-gauge gavalume. Interior of box to have a finish of 18-gauge white acrylic enamel baked on aluminum.

4. **INSULATION:**

Insulation shall be 4" or 5" thick rigid, zero ozone depleting HFC 134a blown Class I urethane foam classified according to UL 723 (ASTM-E-84) as tested by Underwriters Laboratories, Inc. The core material has a flame spread of 25 or less and a smoke density of 250.

The urethane foam is foamed-in-place to bond to inner surfaces of metal pans having an average thermal conductivity (K factor) of 0.13 BTU/hr./sq. ft. per degrees /Fahrenheit/inch: and an overall coefficient of heat transfer (U factor) of not more than .0312. As tested in accordance with ASTM C 518-2004, the R factor for coolers at temperatures of 55 F° is greater than 29.0 for 4" thick and greater than 36.0 for 5" thick panels; for freezers at temperatures of 20 F° the R factor is greater than 32.0 for 4" thick and greater than 40.0 for 5" thick panels.

The prefabricated urethane foamed panels shall be supplied with a Class I fire hazard classification according to UL 723 (ASTM-E-84) as tested by Underwriters Laboratories, Inc. Panels shall have a flame spread rating of 25 or less and bear a certifying Underwriters Laboratories, Inc. label.

This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions

5. **METAL FINISHES:**

Metal finishes on interior surfaces are to be .040 White Stucco Embossed Aluminum. Exposed exterior, including doors to be #20 gauge textured stainless steel. Unexposed exterior to be #26 gauge galvanized.

6. **PANEL LOCKING ASSEMBLIES:**

Assembly of walk-in shall be accomplished by "Insta-Loks" consisting of cam-action hook arm assembly set in one panel and a self-aligning, self-centering, pin assembly set in the matching panel. All vertical joints must have a minimum of three Insta-loks. Rotation of the cam-action hook arm shall pull and lock panels together to form airtight, vapor proof joints. No metal straps or connecting rods shall be used inside the panels. Rotation of the cam-locks shall be operated from inside the walk-in through access ports that are sealed with vinyl snap-in closures.

7. **PANEL GASKETS:**

NSF listed double-bead vinyl gasket shall be applied to the tongue side of all panels, on both interior and exterior. Gaskets shall be impervious to stains, grease, oils, mildew, sunlight, etc.

8. **ENTRANCE DOOR AND FRAME:**

Walk-in compartment shall be equipped with a 34" x 78" (contact factory for additional sizes) hinged-type, flush-mounted entrance door mounted in a nominal 4', 5' or 6' frame and located in exact location as shown on drawing. Door placement shall be within 1" increments to meet shelving space and job site requirements. Door shall be manufactured to accommodate floor construction. Door and frame shall be listed by Underwriters Laboratories and bear the UL Seal of Approval and be equipped with the following:

Door shall be equipped with a one-piece perimeter PVC accordion type removable gasket with magnetic core at the top and along the side perimeter of the door. An adjustable wiper gasket shall be mounted along the bottom edge of the door.

Latch shall be break-a-way type with cylinder lock and inside safety release handle so the door can be opened from the inside even if locked. A positive action hydraulic door closer shall be included to ensure gentle closing action of door to opening and to ensure positive closing of door. The latch shall be of high-pressure zinc die cast with highly polished chrome finish.

Hinges shall be nine-inch modified strap, cam-lift, self-closing design with door lift off capability of high-pressure zinc die cast with highly polished chrome finish.

Door frame shall consist of heavy reinforced steel "U" channel frame to encompass entire perimeter of opening, foamed-in-place to give extra support and rigidity to frame and to prevent racking, distortion, warping and twisting. A backup must be welded for added strength.

An armored anti-sweat heater cable shall be run in a breaker strip located behind a removable heavy gauge stainless steel trim for easy access to heater cable. A thermostatically controlled door frame heater cable shall be run under threshold consisting of heavy reinforcement "U" channel breaker strip and heavy gauge stainless steel threshold. A second heater wire shall be provided.

Door section shall be provided with an operating toggle switch and pilot light mounted on the exterior side of the door frame. (Weather tight switches also available for outdoor walk-in applications.) An incandescent vapor proof light and face mounted inlet box shall be mounted on the interior side of the door frame for 115-volt, 60 cycle, 1 phase A.C. service. All wiring shall be in concealed rigid conduit. A 2-1/2" diameter chrome face, flush mount, dual reading, adjustable dial thermometer shall be provided on exterior of door section to provide temperature reading of -40 degrees C to +150 degrees C.

A foot treadle shall be provided on the door to assist for hands free door operation.

A Peep Window for visual observation into the walk-in cooler and/or freezer a 14" x 14" view window shall be installed in the walk-in entrance door. Window shall be a three pane, heated, tempered safety glass (required to meet 2009 Energy Code) to prevent frost formation and fog.

9. **TREADBRITE KICKPLATES:**

Door shall have aluminum diamond treadbrite kickplates and jamb guards 36" high on the interior and exterior. Diamond treadbrite kickplates shall be mounted with adhesive and sealed with silicone. No external fasteners such as screws or pop rivets shall be applied as fastening for the diamond treadbrite kickplates.

10. **HEATED PRESSURE RELIEF VENT:**

Freezer shall be equipped with a two-way heated pressure relief vent to equalize pressure between the interior and exterior caused by defrost cycles and opening of door. Electrical service to be 115v/60/1 phase.

11. **FLOOR CONSTRUCTION:**

Walk-in floor shall be fabricated similar to other panels and be designed to withstand uniformly distributed stationary loads of 600 lbs. per square foot. Interior surface of floor panels to be foamed-in-place (Smooth Aluminum, Treadbrite Aluminum, 1/8" Aluminum Treadplate, 16 Gauge Stainless Steel with non-skid strips, or if floor is covered with tile or concrete 14 Gauge Galvanized may be used).

THERMO-KOOL DURA-FLOOR:

For additional stationary floor load strength of up to 12,000 lbs. per square foot THERMO-KOOL's DURA-FLOOR shall be provided which shall consist of an interior surface of foamed-in-place 1/8" Aluminum Treadplate with high density urethane support structures foamed-in-place on interior of floor panel and firmly attached to a foamed-in-place plywood.

12. **LED LIGHT FIXTURES:**

Provide each section with two additional UL listed, NSF listed and DLC listed Component Hardware vapor proof LED ceiling mounted light fixtures # LED48X762N complete with stainless steel mounting hardware in each compartment and with motion sensor. Install ceiling mounted light fixtures, furnish materials and inter-wire light fixtures and switch. Light must emit at least 6000 lumens.

Provide each door with UL listed, Component Hardware vapor proof LED light fixture with motion sensor, #VXS-LED-PC20W for the cooler and #VXS-LEDN10PC for the freezer complete with toggle switch, pilot light and full perimeter frame condensation heater.

13. **ALARM:**

Each compartment shall be equipped with TK4700 walk-in monitor system. Alarm package includes door status monitoring, automatic lighting control, easy to read blue OLED display, compartment identification and door/door frame/peep window heater control. Controls include panic alarm with TK4 interior panic button, power fail alarm, door open alarm, high/low temperature alarm, temperature probe failure alarm and real time clock with automatic DST adjustment. The alarm will activate when temperature rises or falls above/below desired settings. Alarm to also have door open alarm and auto-off light manager that shuts lights off if left on longer than 15 minutes. Dry contacts are included for remote notification. Temperature probe is to be in the return air stream of evaporator coil. Control panel shall be located at door frame of compartment being monitored. TK4700HL alarm is provided with built-in USB 2.0 for HACCP compliance.

14. **TEMPERATURE MONITORING:**
Provided with Victory Secure-Temp system able to monitor, record and send alerts.
These are loose temperature probes that are supplied by Victory and are to be installed in the walk-in box.
Dealer to set-up temperature monitoring portal and provide training.
Cost of monitoring system is to be included in base of equipment, there shall be no monthly charges or subscriptions for this service.
15. **TRIM AND ENCLOSURES:**
Trim matching the walk-in finish and fabricated to fit building conditions shall be supplied to close all joints between walk-in and building walls. Enclosure panels matching the walk-in finish shall be supplied to close off space between top of walk-in and building ceiling. FSEC to field measure and install.
16. **REFRIGERATION:**
Basic refrigeration components shall consist of a condensing unit of the hermetic. Condensing units shall be factory assembled and UL approved. The condenser shall be air-cooled.
Refrigerant for medium temperature systems and the low temperature system shall be R404-A. Evaporators shall be forced air type with air flow parallel to the walk-in ceiling. Heatcraft SME series with electric defrost. Evaporators shall be low profile series installed flat in the ceiling away from wall allowing to maximize shelving space – total height of the evaporator not to exceed 8". All evaporator coil components shall be housed in heavy gauge aluminum housing. Units shall have drain pan with drainpipe connection.
Condensing unit voltage to be 208-230/60/1.
Units shall have drain pan with drainpipe connection. Evaporators shall be equipped with an automatic electric defrost system including coil heaters, time clock, fan delay control, drain line heaters and liquid line solenoid.
The basic components shall be supplied as specified Remote Preassembled, and shall include condensing unit, evaporator coil, control kit (pressure control, thermostat, liquid line drier, sight glass, suction line vibration eliminator, expansion valve and evaporator coil mounting kit), defrost timer, fan delay control and liquid line solenoid. All parts shall be factory mounted.
A low ambient kit and weatherproof housing shall be supplied with condensing units. The low ambient kit shall consist of a crankcase heater and headmaster valve.
The unit shall include Beacon II Smart Controller with Smart defrost kit and Orbus controller with variable speed motors.
The FSEC shall furnish and install refrigeration piping in accordance with the manufacturer's recommendations. The necessary valves shall be installed in the refrigeration lines to evacuate and discharge the systems. Refrigeration piping shall be hard temper type L copper, with wrought copper fittings, long radius ells, traps, bronze globe shut-off valves, sight glass moisture indicators, vibration isolating hangers and ½ thick insulation. All joints to be made with silver solder.
The refrigeration systems shall be remotely placed, consisting of condensing units installed on concrete pad (or other exterior location as directed by the Architect) and evaporators mounted on the interior of the walk-in ceiling sections. Condensing units to be mounted on a base furnished and installed by the General Contractor. If roof mounted, all roof curbs, flashing, counter flashing, roof sleeves and pitch pockets will be furnished and installed by the General Contractor.
Evaporator supporting angles shall be stainless steel.
17. **NSF CONSTRUCTION:**
The walk-ins provided in the above specifications shall be constructed in accordance with National Sanitation Foundation, Standard No. 7. The NSF approval seal shall be affixed to the serial plate of the walk-in.

18. **QUALITY INSPECTION REQUIREMENTS & INSTALLATION:**
Walk-ins shall be set up at the manufacturer's facility prior to shipment and a quality control inspection performed on the product. A digital photograph of the walk-ins set up at the manufacturer's facility shall be provided for the Food Equipment Contractor's permanent records and emailed to consultants' office prior of unit being shipped to dealers' warehouse. Serial plate on the walk-in box shall list design consultants name for reference. Installation of the unit to be only by factory certified installers.
19. **ELECTRICAL:**
The tops of the walk-in shall be drilled and fitted with conduit for electrical wiring. No exposed conduit will be allowed on the interior of the walk-ins. All conduit shall be routed above the ceiling sections.
The Electrical Contractor will provide and install electric power supply disconnects at the condensing unit location and evaporator location. The FSEC will furnish all necessary control and power wiring between the condensing unit and evaporator, heating wires, lights, control switches, etc. as required to place all refrigeration systems into satisfactory operation. Freezer section drain to be covered with heat tape, heat tape to be provided by electrical contractor. Power connection to be made to a separate circuit provide by Electrical Contractor.
Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.
20. **PLUMBING & DRAIN LINES:**
The FSEC shall furnish and install hard temper L copper waste piping from the evaporator drain to the nearest floor sink. Waste piping shall have two coats of aluminized paint and shall be wrapped with electric heating coil to prevent freezing. All plumbing is to be in accordance with applicable codes.
21. **WARRANTY:**
Panels shall be covered by a Ten-Year Factory Warranty. One-year material warranty on entire refrigeration system, and Five years manufacturer's warranty on compressor.
22. **START-UP:**
FSEC to Provide start-up and testing of complete system.
FSEC to Set and adjust all temperature and defrost cycles.
Cooler to operate at +35 degrees Fahrenheit and Freezer to operate at –10 degrees Fahrenheit.
23. **OPERATION AND MAINTENANCE INSTRUCTIONS:**
The walk-ins shall be supplied with a complete set of installation, operational and maintenance instructions to cover erection of the walk-in, installation operating procedures and routine maintenance schedule.
24. **SHOP DRAWINGS AND SUBMITTALS:**
Refer to food service manufacture specification drawings for more information.

ITEM # K101 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. Twenty (20) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. (10) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. (10) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Twenty (20) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K102 **DUNNAGE RACK**
Quantity: **One (1)**
Manufacturer: **Channel Manufacturing**
Model: **ES2048**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ES2048 Lifetime Tough Dunnage Rack, Heavy Duty, tubular, 48"W x 20"D x 12"H, 4000 lbs. capacity, stainless steel construction, corrections approved, NSF, Made in USA
2. One (1) Lifetime warranty for traditional foodservice applications

ITEM # K104 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. Four (4) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Two (2) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Two (2) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Four (4) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K105 **DUNNAGE RACK**
Quantity: **Two (2)**
Manufacturer: **Channel Manufacturing**
Model: **ES2036**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model ES2036 Lifetime Tough Dunnage Rack, Heavy Duty, tubular, 36"W x 20"D x 12"H, 4000 lbs. capacity, stainless steel construction, corrections approved, NSF, Made in USA
2. One (1) Lifetime warranty for traditional foodservice applications

ITEM # K106 **BUN / SHEET PAN RACK**
Quantity: **Two (2)**
Manufacturer: **Channel Manufacturing**
Model: **AXD1818**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model AXD1818 Lifetime Tough Bun Pan Rack, Heavy Duty, mobile, 22"W x 26"D x 64"H, front load, open sides, 3" spacing, capacity (18) 18" x 26" bun pans, welded heavy duty aluminum construction, 5" x 2" heavy duty swivel plate casters with Zerk grease fittings, corrections approved, NSF, Made in USA (published shipping weight does not reflect 50lb. pallet)
2. One (1) Lifetime warranty for traditional foodservice applications
3. Two (2) Model /5B Caster Brakes, heavy duty (set of 2)
4. FSEC to verify that racks will fit roll-in properly.

ITEM # K107 **TRACK SHELVING SECTION**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **TTS8NA**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TTS8NA Super Erecta®, MetroMax Q™ Top-Track Track Set, 8 ft., includes: necessary sections of track for assembling track runs (only (1) track set is required between stationary units), NSF

ITEM # K107.1 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. One (1) Model TTE24K3 Super Erecta® & Super Adjustable Top-Track Stationary End Unit Kit, 24"W, includes: 86"H Metroseal 3™ epoxy-coated corrosion-resistant posts with Microban® antimicrobial protection, & hardware necessary for connecting stationary end units to track (shelves sold separately)
3. Two (2) Model TTM24K3 Super Erecta® Top-Track Mobile Unit Kit, 24"W, includes: Metroseal 3™ epoxy-coated corrosion-resistant posts with Microban® antimicrobial protection, casters & caster channels, donut bumpers & roller bearing assemblies, (1) kit required per mobile unit, (shelves sold separately)
4. Sixteen (16) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
5. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
6. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K108 **FLOOR TROUGH**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **ASFT-1230-SG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ASFT-1230-SG Anti-Splash Floor Trough, 30"W x 12"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drain pipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. For more information see detail FAB-100 on the typical detail installation sheet.

ITEM # K109 **WATER FILTER SYSTEM, ICE MACHINE**
Quantity: **One (1)**
Manufacturer: **Everpure**
Model: **EV932422**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV932422 Insurice® Twin PF-i2000² Twin System, with prefilter, 18,000 gallon capacity, 3.34 gpm flow rate, 0.5-micron precoat filtration, for cubers up to 1,450 lbs./day or flakers up to 2,200 lbs./day, pressure gauge, flushing valve, NSF, ANSI
2. One (1) Note: This system requires (2) cartridges.
3. Two (2) Model EV961222 Everpure® i2000² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, chlorine taste & odor reduction, scale inhibitor, cyst reduction 35-100° F temperature, 10-125 PSI non-shock required, ANSI, NSF
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
6. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
7. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
9. Install filter as per elevations on food service drawings.
10. FSEC to provide a sticker and date of installation on filter cartridges.
11. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
12. For more information see filter installation detail MEP-101.

ITEM # K110 **TRACK SHELVING SECTION**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **TTS9NA**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TTS9NA Super Erecta®, MetroMax Q™ Top-Track Track Set, 9 ft., includes: necessary sections of track for assembling track runs (only (1) track set is required between stationary units), NSF

ITEM # K110.1 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. One (1) Model TTE24K3 Super Erecta® & Super Adjustable Top-Track Stationary End Unit Kit, 24"W, includes: 86"H Metroseal 3™ epoxy-coated corrosion-resistant posts with Microban® antimicrobial protection, & hardware necessary for connecting stationary end units to track (shelves sold separately)
3. Three (3) Model TTM24K3 Super Erecta® Top-Track Mobile Unit Kit, 24"W, includes: Metroseal 3™ epoxy-coated corrosion-resistant posts with Microban® antimicrobial protection, casters & caster channels, donut bumpers & roller bearing assemblies, (1) kit required per mobile unit, (shelves sold separately)
4. Twenty (20) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
5. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
6. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K111 **S/S WALL FLASHING, POTWASH**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Potwash
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # K112 **S/S WALL FLASHING, DISHWASHING**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Dishwashing
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # K113 **AIR CURTAIN**
Quantity: **One (1)**
Manufacturer: **Mars Air Systems**
Model: **STD248-1UD-OB**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model STD248-1UD-OB Standard Series 2 Air Curtain, for 48" wide door, unheated, galvanized steel cabinet, obsidian black powder coat finish, (1) 1/2 HP motor, 208/230v/60/1-ph, ETL
2. One (1) 5-year warranty, standard
3. One (1) Model B0020 Mounting Bracket Side Extension, 4", 6", 8", & 10" clearance, obsidian black (set of 2)
4. One (1) Model J2148 Filter Kit, for 48" units, aluminum, washable, (2) 46-3/8"W x 11-1/2"H (set of 2)

ITEM # K114 **DUNNAGE RACK**
Quantity: **One (1)**
Manufacturer: **Channel Manufacturing**
Model: **ES2048**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ES2048 Lifetime Tough Dunnage Rack, Heavy Duty, tubular, 48"W x 20"D x 12"H, 4000 lbs. capacity, stainless steel construction, corrections approved, NSF, Made in USA
2. One (1) Lifetime warranty for traditional foodservice applications

ITEM # K115 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. Four (4) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Two (2) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Two (2) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Four (4) Model 2436NK3 Super Erecta® Shelf, wire, 36"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K116 **HAND SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-HSA-0001-00**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K116.1
9. Owner to provide towel & soap dispenser.

ITEM # K116.1 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3101-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K117 **SOILED DISHTABLE, LEFT-HANDED**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **SDTL-72-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SDTL-72-14/3 Spec-Master® Soiled Dishtable, straight design, 72"W x 30"D x 43-1/2"H, left-to-right operation, 14/304 stainless steel top, 8"H backsplash, 20" x 20" x 5" deep pre-rinse sink with basket drain, (1) deck mount faucet hole for pre-rinse, includes scrap block, raised rolled edges on front & side, stainless steel legs & side bracing, adjustable feet, NSF
2. One (1) Model YSCOPOS-VI-ADAPTOR Vibration Isolator Mounting Adaptor Kit, stainless steel construction, mounts to Eagle Group 1-5/8" dia. legs (vibration isolator provided/installed by others)
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # K117.1 **PRE-RINSE SINK BASKET**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **606434**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 606434 Pre-rinse Basket, 17-1/2"W x 19-1/2"L x 2"H, with slide bar, for dish tables, 304 type stainless steel

ITEM # K117.2 **PRE-RINSE FAUCET ASSEMBLY**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0133-CR-BC**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-BC EasyInstall Pre-Rinse Unit, 8" centers, wall mount base & bracket, spring action, ceramas cartridges, low flow valve, (B-0107-C)
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male
3. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
4. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K117.3 **DISHTABLE SORTING SHELF**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **606296**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 606296 Rack Shelf, tubular, wall mounted, 21"W x 15.5"D x 12"H, 1.625"dia. tubing 14/304 stainless steel knock-down construction
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approx. 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K118 **WATER FILTER SYSTEM, WAREWASHING**
Quantity: **One (1)**
Manufacturer: **Everpure**
Model: **EV979911**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # K118.1 **WATER SOFTENER CONDITIONER**
Quantity: **One (1)**
Manufacturer: **Hobart**
Model: **WS40**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model WS40 Water Softening System, 2,527 grains/lb capacity, 5 gallons regeneration volume, & salt alarm, holds 1 bag of salt

ITEM # K119 **CLEAN DISHTABLE**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CDTR-72-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CDTR-72-14/3 Spec-Master® Clean Dishtable, straight design, 72"W x 30"D x 43-1/2"H, left-to-right operation, 14/304 stainless steel top, 8"H backsplash, raised rolled edges on front & side, stainless steel legs & crossbracing, adjustable metal feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, left end
3. One (1) Model YSCOPOS-VI-ADAPTOR Vibration Isolator Mounting Adaptor Kit, stainless steel construction, mounts to Eagle Group 1-5/8" dia. legs (vibration isolator provided/installed by others)
4. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
5. Field verify measurements, adjust table length as necessary to fit field conditions.
6. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
7. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # K119.1 **WIRE RACK, EPOXY COATED, WALL MOUNT, 1-TIER**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **1436NK3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 1436NK3 Super Erecta® Shelf, wire, 36"W x 14"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
2. Two (2) Model 13PDFK3 Post & Mounting Brackets, for Super Erecta® wall mount, consists of (1) double footed post (2) end brackets (BESK3), no intermediate bracket, 13-7/8"H, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
3. Two (2) Model 1WS14K3 Super Erecta® Shelf Support, post mount, single, for 14"D shelf (2) required per shelf, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
6. FSEC to install shelf approximately 20" above countertop of work surface.
7. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K120 **HOSE REEL**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-7132-U03XS2C**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-7132-U03XS2C Hose Reel Assembly, wall-mount open stainless steel hose reel with 3/8" x 35' heavy-duty non-marking hose, ratcheting system, stainless steel rear trigger water gun and swivel with 7/16" orifice and 1/2" NPT female inlet, multi-fit bracket and adjustable hose bumper, 36" flexible water hose connector with stainless steel quick disconnect, wall-mounted polished chrome-plated brass mixing faucet with 8" centers, ceramic cartridges with check valves, lever handles, 1/2" NPT female inlets, 1/2" NPT in-line check valves, 16" riser, control valve, 40" riser, wall brackets, continuous pressure vacuum breaker
2. One (1) 1-year limited warranty for hose, standard
3. One (1) 2-year limited warranty for hose reel, standard
4. G.C. to reinforce wall behind hose reel to sustain weight while in use.
5. G.C. to furnish and install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Hose Reel to be installed as per elevations.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K121 **THREE (3) COMPARTMENT SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **314-16-3-18**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 314-16-3-18 314 Series Sink, three compartment, 90"W x 27-1/2"D, 304 stainless steel construction, coved corners, 16" wide x 20" front-to-back x 13-1/2" deep compartments, 18" drainboards on left & right, 9-1/2"H backsplash with 1" upturn & tile edge, 8" OC splash mount faucet holes, 2" euro-style edges on front & sides, includes (3) 3-1/2" basket drains, galvanized legs & side crossrails, adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end
3. Vendor to provide Chemical Sanitizing Agent System (Pre-Wash, Rinse, Sanitize). Sinks should be clearly labeled showing water lines and cleaning stage.
4. Where top abuts any walls, provide side splash.

ITEM # K121.1 **WIRE RACK, EPOXY COATED, WALL MOUNT, 1-TIER**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **1430NK3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 1430NK3 Super Erecta® Shelf, wire, 30"W x 14"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
2. Two (2) Model 13PDFK3 Post & Mounting Brackets, for Super Erecta® wall mount, consists of (1) double footed post (2) end brackets (BESK3), no intermediate bracket, 13-7/8"H, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
3. Two (2) Model 1WS14K3 Super Erecta® Shelf Support, post mount, single, for 14"D shelf (2) required per shelf, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
6. FSEC to install shelf approximately 20" above countertop of work surface.
7. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K121.2 **PRE-RINSE FAUCET ASSEMBLY, WITH ADD ON FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0133-ADF12-BJ**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0133-ADF12-BJ EasyInstall Pre-Rinse Unit, with mixing faucet, includes 6" wall bracket, wall mount base, 8" centers, B-0044-H stainless steel flexible hose with polyurethane inner hose, overhead spring body & B-0107-J spray valve (1.07 gpm), 18" riser, add-on faucet with (062X) 12" swing nozzle, Eterna cartridges with spring checks, lever handles, 1/2" NPT female inlets, EPAAct2005 compliant
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male
3. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
4. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K121.3 **DRAIN, LEVER / TWIST WASTE**
Quantity: **Three (3)**
Manufacturer: **T&S Brass**
Model: **B-3970**

Furnish and set in place per manufacturer's standard specifications:

1. Three (3) Model B-3970 Waste Valve, lever handle, 3-1/2" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # K122 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. Eight (8) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Four (4) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Four (4) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Eight (8) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K123 **S/S CORNER GUARD**
Quantity: **Six (6)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. Six (6) Model CUSTOM S/S Corner Guard
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # K124 **BUN / SHEET PAN RACK**
Quantity: **Two (2)**
Manufacturer: **Channel Manufacturing**
Model: **430S**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 430S Bun Pan Rack, Under-Counter, mobile, 20-1/2"W x 26"D x 32"H, front load, open sides, 3" spacing, capacity (8) 18" x 26" bun pans, 18/304 stainless steel construction, 5" swivel stem casters, NSF, Made in USA
2. Two (2) 5-year warranty on parts and 90 days labor, standard
3. Two (2) Model /S Solid Top/Work Top, stainless steel
4. Two (2) Model /011 Caster Brakes (set of 2)

ITEM # K125 **SPARE NO.**

ITEM # K126 **ROLL-IN REFRIGERATOR**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **STA2RRI-2S**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model STA2RRI-2S SPEC SERIES® Refrigerator, roll-in, (2) stainless steel doors with locks, cam-lift hinges, digital temperature control, incandescent interior lighting, stainless steel ramps, stainless steel front & sides, aluminum interior, 1/2 HP, 115v/60/1-ph, 11.8 amps, NEMA 5-15P, (accommodates 27"W x 29"D x 66"H carts, NOT included), cULus, UL EPH Classified, Made in USA
2. One (1) Warranty - 3-year parts and labor
3. One (1) Warranty - 5-year compressor; self-contained only
4. One (1) Left door hinged left, right door hinged right standard

ITEM # K126.1 **BUN / SHEET PAN RACK**
Quantity: **Two (2)**
Manufacturer: **Channel Manufacturing**
Model: **AXD1818**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model AXD1818 Lifetime Tough Bun Pan Rack, Heavy Duty, mobile, 22"W x 26"D x 64"H, front load, open sides, 3" spacing, capacity (18) 18" x 26" bun pans, welded heavy duty aluminum construction, 5" x 2" heavy duty swivel plate casters with Zerk grease fittings, corrections approved, NSF, Made in USA (published shipping weight does not reflect 50lb. pallet)
2. One (1) Lifetime warranty for traditional foodservice applications
3. Two (2) Model /5B Caster Brakes, heavy duty (set of 2)
4. FSEC to verify that racks will fit roll-in #K126 properly.

ITEM # K127 **HEATED HOLDING PROOFING CABINET, MOBILE**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **C539-CDC-4**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model C539-CDC-4 C5™ 3 Series Heated Holding & Proofing Cabinet, with Red Insulation Armour™, mobile, full height, insulated, Dutch clear polycarbonate doors, removable bottom mount control module, thermostat to 200°F, fixed wire slides on 3" centers (18) 18" x 26" or (34) 12" x 20" x 2-1/2" pan capacity, 5" casters (2 with brakes), aluminum, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF

ITEM # K128 **SPARE NO.**

ITEM # K129 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T3672STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T3672STEM-BS Spec-Master® Marine Series Work Table, 72"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel cross rails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for items #K129.1, sinks, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # K129.1 **WELD-IN SINK BOWL**
Quantity: **Two (2)**
Manufacturer: **Eagle Group**
Model: **E24**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model E24 Sink, 18" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, sink location per plan.

ITEM # K129.2 **DECK MOUNT FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0221-CR**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass

ITEM # K129.3 **DRAIN, LEVER / TWIST WASTE**
Quantity: **Two (2)**
Manufacturer: **T&S Brass**
Model: **B-3940**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model B-3940 Waste Valve, twist handle, 3" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # K129.4 **SPARE NO.**

ITEM # K129.5 **SMART WALL SYSTEM**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **G3 LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model G3 LOT Smart Wall System
2. One (1) Model SW40K3 SmartWall Wall Track, 40", 12-gauge steel, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection; includes: hardware to join the track to another, NSF
3. One (1) Model WG2436K3 SmartWall Grid, 36" x 24", Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
4. Two (2) Model SWU30K3 SmartWall Upright, 30", Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, slots for grids/shelf supports at 1-1/2" increments; 17 slots total; sold by the piece
5. One (1) Model MX1836F "MetroMax i" Shelf, 36"W x 18"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
6. Two (2) Model SWS18K3 SmartWall Shelf Support, single, for 18"Deep shelf, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, actual dimensions (DxWxH 20-9/16" x 1-1/2" x 8-3/16"); compatible with Super Erecta® wire & solid shelves, MetroMax Q, & MetroMax i; (2) required per shelf
7. Three (3) Model H210K3 SmartWall Storage Basket, 17-3/8"W x 7-1/2"D x 5"H, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
8. Three (3) Model IWA-12K3 SmartWall Large Utensil Holder, 10-3/8"W x 10-1/2"D, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection epoxy finish
9. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
10. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
11. FSEC to install shelf approximately 20" above countertop of work surface.
12. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
13. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K129.6 **SANITIZING SYSTEM, WATER/ICE, ALTERNATE**
Quantity: **One (1)**
Manufacturer: **OptiPure**
Model: **ACS 1 ORP**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ACS 1 ORP ActivTapp® Commercial Series ACS 1, uses Ozone to create sanitizing water, built-in ORP monitor, status panel, (1) outlet, water flow switch, audible leak detection alarm, indicator lamps, service light, water bypass plumbing manifold, stainless steel construction, 120v/50/60/1-ph, 50 watts
2. One (1) Model ACS AIR Air Filter
3. One (1) Model ACS ORP CONTROL PCB ORP Control PCB
4. One (1) Model ACS ORP MONITOR ORP Monitor, handheld
5. One (1) Model ACS ORP PROBE ORP Probe

ITEM # K130 **INGREDIENT BIN**
Quantity: **Two (2)**
Manufacturer: **Cambro**
Model: **IBS20148**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model IBS20148 Ingredient Bin, mobile, 21 gallon capacity, molded polyethylene with sliding cover, S-hook on front, (4) 3" heavy duty casters (2 front swivel, 2 fixed), with bin securely attached to base plate, white with clear cover, NSF
2. Two (2) Model SCP12CW135 Camwear® Scoop, 12 oz., polycarbonate, clear, NSF

ITEM # K131 **HAND SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-HSA-0001-00**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K131.1
9. Owner to provide towel & soap dispenser.

ITEM # K131.1 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3101-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K132 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T3672STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T3672STEM- Spec-Master® Marine Series Work Table, 72"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. Where top abuts any walls, provide side splash.

ITEM # K132.1 **WORKTABLE, TOP ONLY**
Quantity: **One (1)**
Manufacturer: **John Boos**
Model: **BKSC01O**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BKSC01O Worktable Top, wood, 72"W x 36"D x 2-1/4" thick, edge grain flat top, Antimicrobial Northern Hard Rock Maple with penetrating oil finish, NSF

ITEM # K132.2 **SPARE NO.**

ITEM # K132.3 **SMART WALL SYSTEM**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **G3 LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model G3 LOT Smart Wall System
2. One (1) Model SW40K3 SmartWall Wall Track, 40", 12-gauge steel, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection; includes: hardware to join the track to another, NSF
3. One (1) Model WG2436K3 SmartWall Grid, 36" x 24", Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
4. Two (2) Model SWU30K3 SmartWall Upright, 30", Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, slots for grids/shelf supports at 1-1/2" increments; 17 slots total; sold by the piece
5. One (1) Model MX1836F "MetroMax i" Shelf, 36"W x 18"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
6. Two (2) Model SWS18K3 SmartWall Shelf Support, single, for 18"Deep shelf, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, actual dimensions (DxWxH 20-9/16" x 1-1/2" x 8-3/16"); compatible with Super Erecta® wire & solid shelves, MetroMax Q, & MetroMax i; (2) required per shelf
7. Three (3) Model H210K3 SmartWall Storage Basket, 17-3/8"W x 7-1/2"D x 5"H, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
8. Three (3) Model IWA-12K3 SmartWall Large Utensil Holder, 10-3/8"W x 10-1/2"D, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection epoxy finish
9. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
10. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
11. FSEC to install shelf approximately 20" above countertop of work surface.
12. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
13. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K133 **INGREDIENT BIN**
Quantity: **Two (2)**
Manufacturer: **Cambro**
Model: **IBS27148**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model IBS27148 Ingredient Bin, mobile, 27 gallon capacity, 1-pc seamless polyethylene bin, 2-pc sliding polycarbonate lid, S-hook on front (scoop NOT included), (4) 3" heavy duty casters (2 front swivel, 2 fixed), white with clear cover, NSF
2. Two (2) Model SCP24CW135 Camwear® Scoop, 24 oz., polycarbonate, clear, NSF

ITEM # K134 **POT RACK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CM96PR**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CM96PR Pot Rack, ceiling mount, 88"W x 20"D x 18"H, triple-bar design, constructed of 3/16" x 2" stainless steel flat bar, includes (24) double-pronged pot hooks & 24" plated chains for mounting
2. Twenty-Six (26) Model 300696 Pot Hook, stainless steel
3. FSEC to be responsible for providing and installing anchors and any other appropriate hardware to support Pot Rack from ceiling.
4. FSEC to indicate blocking locations in ceiling if required on blocking sheet of shop drawings.
5. Bottom edge of unit shall be installed approximately 80" above finished floor.
6. Provide with 50 ea. Stainless steel pothooks
7. FSEC is responsible for verifying that space available in field will accommodate unit and for verifying that it will interface properly with all associated and adjacent equipment.
8. Equipment to be NSF and UL listed and labeled.

ITEM # K135 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T36132STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T36132STEM-BS Spec-Master® Marine Series Work Table, 132"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (8) stainless steel legs & adjustable bullet feet, NSF
2. Where top abuts any walls, provide side splash.

ITEM # K135.1 **DRAWER**
Quantity: **Two (2)**
Manufacturer: **Eagle Group**
Model: **502946**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle

ITEM # K135.2 **DUPLEX CONVENIENCE RECEPTACLE**
Quantity: **Two (2)**
Manufacturer: **Eagle Group**
Model: **E18**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model E18 Duplex receptacle & mounting plate (under table)

ITEM # K136 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T36132STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T36132STEM-BS Spec-Master® Marine Series Work Table, 132"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel cross rails on side & rear, (8) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for items #K136.1, sinks, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # K136.1 **WELD-IN SINK BOWL**
Quantity: **Two (2)**
Manufacturer: **Eagle Group**
Model: **E24**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model E24 Sink, 36" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, sink location per plan.

ITEM # K136.2 **DECK MOUNT FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0221-CR**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass

ITEM # K136.3 **DRAIN, LEVER / TWIST WASTE**
Quantity: **Two (2)**
Manufacturer: **T&S Brass**
Model: **B-3940**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model B-3940 Waste Valve, twist handle, 3" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # K136.4 **DUPLEX CONVENIENCE RECEPTACLE**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **E18**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model E18 Duplex receptacle & mounting plate (under table)

ITEM # K137 **DISPLAY FREEZER**
Quantity: **One (1)**
Manufacturer: **Master-Bilt Products**
Model: **MSF-31AN**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model MSF-31AN COLDIN-3™ Display Freezer, 7.4 gross cu. ft. (5.8 net cu. ft.), flat tempered glass sliding lids, (2) standard baskets with integrated dividers, external analog thermometer and lock, white zinc-coated enamel steel exterior, painted white steel interior with LED lighting, defrost water drain, temperature range -18° to 10°F (-27° to -12° C), self-contained refrigeration, heavy duty 2" casters, R290 Hydrocarbon refrigerant, 1/3 hp, 115v/60/1-ph, 1.1 amps, 6-1/2' cord, NEMA 5-15P, cETLus, ETL-Sanitation
2. One (1) 1-year parts and labor warranty
3. One (1) 5-year compressor part warranty

ITEM # K138 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T3696STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T3696STEM-BS Spec-Master® Marine Series Work Table, 96"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel cross rails on side & rear, (6) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #K138.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # K138.1 **WELD-IN SINK BOWL**
Quantity: **Two (2)**
Manufacturer: **Eagle Group**
Model: **E24**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model E24 Sink, 18" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, sink locations per plan.

ITEM # K138.2 **PRE-RINSE FAUCET ASSEMBLY**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0133-CR-BC**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-BC EasyInstall Pre-Rinse Unit, 8" centers, wall mount base & bracket, spring action, ceramas cartridges, low flow valve, (B-0107-C)
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male
3. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
4. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K138.3 **SPECIAL DIET MOLD STORAGE CABINET**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Special Diet Mold Storage Cabinet
2. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approximately 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K138.4 **DRAIN, LEVER / TWIST WASTE**
Quantity: **Two (2)**
Manufacturer: **T&S Brass**
Model: **B-3940**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model B-3940 Waste Valve, twist handle, 3" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # K139 **ICE MAKER WITH BIN, CUBE-STYLE**
Quantity: **One (1)**
Manufacturer: **Manitowoc**
Model: **UDE0080A**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model UDE0080A NEO® Undercounter Ice Maker, cube-style, air-cooled, self-contained, 19-11/16"W x 22-11/32"D x 36"H, production capacity up to 102 lb/24 hours at 70°/50° (71 lb at 90°/70°), 31 lb. ice storage capacity, on/off/clean switch, dice size cubes, 6" adjustable legs, NSF, cULus, CE
2. One (1) Model WARRANTY-SM/QM 3-year parts & labor (Machine), standard
3. One (1) (-161B) 115v/60/1-ph, 5.2 amps, cord with NEMA 5-15P

ITEM # K140 **HAND SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-HSA-0001-00**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K140.1
9. Owner to provide towel & soap dispenser.

ITEM # K140.1 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3101-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K141 **EXHAUST HOOD**
Quantity: **One (1)**
Manufacturer: **Captive-Aire**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-A600 - QF-A605 for Captive-Aire engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. **CONSTRUCTION:**
Ventilators to be constructed of #18-gauge, type 304 stainless-steel. Ventilators to have an all welded exterior, ground and polished. Ventilators are ETL Listed to UL Standards, ETL Sanitation Listed, and built in compliance with NFPA pamphlet No. 96, BOCA, ICBO and SBCCI
Provide a concealed, full length grease trough, accessible from the top for cleaning, with removable, concealed grease cup on one end. Provide insulation on all exposed sides (recommended when supply air is below 55° F). Provide make-up air through a front plenum, installed in ceiling, at front of hood. Make-up air shall consist of duct collars, air volume and fire dampers, plenum, air diffuser baffle and ceiling installed discharge registers. Hood shall be designed and installed to automatically activate exhaust fan(s) whenever cooking operations occur. Activation of exhaust fan(s) shall occur through an interlock with cooking appliances, by means of thermostatic heat sensors or by means of other approved methods.
4. **CONTROLS/SWITCHES:**
FSEC shall provide an EMS – Energy Management System control panel with light and fan switches, wall mounted, in a location near hood and shall be easily accessible and factory pre-wired. Electrical Contractor to interconnect to fire suppression system and fan(s). Location of control panel/switches shall be verified before installation.
Room Temperature Sensor - Room temperature sensor is used to automatically activate fans when temperature in the exhaust duct exceeds 15 degrees Fahrenheit of room temperature. Mounting and wiring of room temperature sensor to control panel to be done by Electrical Contractor. Two strand 18 AWG thermostat wire provided by Captive-Aire. Room temperature sensor to be field installed in a safe location free of influence from external heat sources. Do not install room temperature sensor on an external wall. Temp sensor to be located between 5-25' distance from hood.
5. **LIGHTS:**
Provide each ventilator with UL listed Component Hardware recessed 4' LED light fixture, #L82-1040-L22N wired to a main junction box. 22 Watts.
6. **DUCTWORK:**
Exhaust and supply duct collars to extend 6 above the finished ceiling for connection to overhead ductwork. Ductwork to be furnished and installed by the HVAC contractor.
Duct collars to be shipped loose for positioning in field and clearing any obstructions allowing flexibility during installation.
7. **FANS:**
Exhaust and supply air system shall be provided with proper air quantities and velocities for proper exhaust extraction and to maintain a balanced condition within the exhaust hood and surrounding building environment. See hood sheets for CFM requirements.
Exhaust and supply fans to be furnished and installed by the HVAC contractor.
8. **FILTERS:**
Furnish easily removable filters. Horizontal baffles to extract and retain grease out of the air stream. Filters to be Stainless Steel High Efficiency Baffle Filter with Handles and Bottom Hanging Hook, UL Classified. Particulate Capture efficiency, 93%, efficient at 9 microns, 74% efficient at 5 microns. NSF approved.

9. **WALL PANELS:**
Furnish and install 22-gauge stainless-steel wall panels extending from the bottom of the rear of the exhaust hood to the upper edge of the baseboard molding and extending along the full length of all wall surfaces (left, right and rear). Wall panel sections shall be joined with stainless steel divider bars to allow panel sections to fit tightly against the wall and to result in watertight seams. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction. Seal end seams with General Electric clear silicone sealer. Wall panels to be insulated if applied to combustible material.
10. **TRIM:**
FSEC to furnish and install 18-gauge s/s enclosures from top of ventilators to the finished ceiling along all exposed sides, both ends and underside above stub wall to enclose spaces. Verify height of enclosure trim in field.
11. **FINISHES:**
Hoods are specified with decorative finish, hood to be provided with 1" insulated standoff with decorative finishes as specified on all exposed sides. This is to provide a 0" clearance rating per hood manufacturer listing. If the intent is to cover the hood with decorative stainless, laminate, or other panels, this material can be applied directly to the hood using adhesive or fasteners under 1" in length. Decorative finish to be supplied and installed by FSEC.
When installing a large or heavier surround such as tile, coordinate a soffit to be dropped around the hood. This will better support the weight of the cement board and tile. Soffit and tile to be provided and installed by GC. Refer to architectural details.
Refer to "EXH-13 - Hood - Decorative Fascia Finish Detail" for additional information.
12. **FIRE PROTECTION SYSTEM:**
Fire Cabinet, to house fire suppression system and hood controls. FSEC to verify which side of hood and ensure cabinet doors clear for opening.
Hood to be pre-piped for Ansul Fire Protection System, Item #K141.2, there should be no field cutting or modifications to hood.
FSEC is responsible for coordinating installation with Fire Protection System, and cooking equipment.
13. **INSTALLATION:**
Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with 1/2" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
14. **COORDINATION:**
FSEC to coordinate final hood design with HVAC engineers and Contractor to ensure adequate space allocation for hood and verification of duct connection points, clearance above hood, etc. If combustible surfaces exist above the hood - provide 3M insulated stainless steel panel installed above hood for clearance compliance to combustible surfaces. Insulated panel to extend 18" past hood on sides and front.
FSEC to verify rough and finish ceiling heights for final hood dimensions and trim requirements. Applicable trades shall connect building rough ins to hood control cabinet and hood and make all necessary interconnections from the control cabinet to the hood and fans.
Structural engineer shall be responsible for reviewing all hood information and shop drawings and providing an appropriate support structure.

15. **SYSTEM DESIGN VERIFICATION (NOT OPTIONAL):**

After completion of the hood installation and utility connections by site trades, Food Service Equipment Contractor shall secure CAS - "Captive Air Systems" Service to perform a System Design Verification (SDV). The SDV will be performed after all inspections are complete. Any field related discrepancies that are discovered during the SDV will be brought to the attention of Food Service Equipment Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer at no cost. If CAS Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by CAS Services or direct respective trades to remedy those issues.

ITEM # K141.1 **HOOD CONTROLS**
Quantity: **One (1)**
Manufacturer: **Captive-Aire**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Hood Controls
2. **HOOD CONTROL PANEL**
MANUFACTURER: CAPTIVE-AIRE
MODEL: DCV-I 1 1 1
3. **FEATURES:**
DCV-1111 Demand Control Ventilation, w/ 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY THREE PHASE MOTOR REQUIRED to be sized by MEP engineers and provided by mechanical engineer. Room temperature sensor shipped loose for field installation. Dealer to verify distance between VFD and Motor and provide appropriate length.
Control package Includes 4 Duct Thermostat kits. – ESV371N02YXBS71 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS – ESV371N02YXB571 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA I Enclosure, with 2RJ-45 FOR MODBUS – 20 wide XI 8 tall X8.62 deep SS HINGED ELECTRICAL BOX NEMA I – VENTED. Install out of site/view from front of the house and in a recessed wall when possible. Do Not block ventilation ports and provide clearance around the enclosure.
Digital Prewire Lighting Relay Kit. Includes hood lighting relay & terminal blocks. Allows for up to 1400W of lighting each. – Thermistor CABLE – 18/2 AWG GREEN WHITE, plenum rated. USED for thermistor duct stat.
4. Refer to sheet QF-A600 - QF-A605 for Captive-Aire engineering drawings for size and shape of each control package and additional construction information.

ITEM # K141.2 **FIRE PROTECTION SYSTEM**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by the Food Service Equipment Contractor and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless-steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by the FSEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch (4 micro switches furnished and installed by the FSEC) to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Electric Gas shut-off valve to be furnished by the FSEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. Gas shut off valve installation to be visible and accessible
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # K141.3 **MANUAL FIRE PULL STATION**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Manual Fire Pull Station
2. Included in Fire Suppression System item #K141.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # K141.4 **FIRE EXTINGUISHER**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Included in Fire Suppression System item #K141.2
3. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
4. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
5. G.C. to provide blocking in wall.

ITEM # K141.5 **S/S WALL FLASHING, HOOD**
Quantity: **One (1)**
Manufacturer: **Captive-Aire**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Hood
2. Included with item K141, Exhaust Hood.

ITEM # K142 **COMBI OVEN, GAS**
Quantity: **Two (2)**
Manufacturer: **UNOX**
Model: **XAVC-06FS-GPR**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model XAVC-06FS-GPR ChefTop MIND.Maps™ Plus Combi Oven, gas, countertop, (6) 18" x 26" full size sheet or (12) hotel size pan capacity, MIND.Maps™ technology, programmable menu, 3-3/16" shelf spacing, glass door, right-to-left door opening, stainless steel interior & exterior, 0.8kW, 120v/60/1-ph, 82,000 BTU, NSF, cETLus, ENERGY STAR®
2. Two (2) 2 Year parts and 1-year labor warranty standard
3. One (1) UNOX.LONG LIFE4, extended warranty with certified installation. UNOX Long.Life4 program includes the following: 1.) Extended Warranty providing a 4yr/10,000 ON hours parts/1 yr. labor warranty. Oven must be connected to the internet via Ethernet cable or WIFI and must remain accessible for remote login by UNOX. 2) Pre-installation site inspection by an UNOX Certified Service Agent of the site where the UNOX equipment will be installed; Follow-up instructions advising customer of any additional material needed for site preparation required prior to installation; Assembly, setting and leveling of the UNOX equipment & Final Hook-up by Certified UNOX Service Agent.
4. One (1) UNOX.LONG LIFE4, extended warranty with certified installation for 2nd or more unit(s) installed at same time and location as 1st unit.
5. One (1) Stacked unit installation
6. Two (2) Natural gas

7. One (1) Model XUC003 ChefTop MIND.Maps™ Plus First Installation Kit, includes water drain fittings & U-trap, for single ovens
8. Two (2) Model DB1015A0 UNOX Detergent & Rinse Plus, (10) 1-liter tanks, double concentrate, cleaning chemicals for Rotor. Klean™ (NET)
9. Two (2) Model XEC006 ChefTop MIND.Maps™ Plus Wi-Fi Connection Kit
10. Two (2) Model XUC090 Hyper Smoker, works with common smoking materials such as wood chips and shavings, for ChefTop MIND.Maps™ Ovens (excluding XACC-0513-EPR)
11. Two (2) Model XHC001 Hand Shower Kit, suitable for all models
12. Two (2) Model TG 520 "FORO.BLACK" Non-Stick Perforated Aluminum pan, 18"x26". Ideal for Croissants, Fresh Bread, Danish Pastries, Pastry
13. Six (6) Model TG 525 "PAN.FRY" Enamel Coated, 18"x26". Ideal for Pan Frying Breaded Products, Chicken Wings
14. Two (2) Model TG 530 "GRILL" Non-stick Aluminum pan, 18"x 26", U.S. Grill Marks. Ideal for Grilled Fish, Grilled Vegetables, Grilled Meats
15. Six (6) Model GRP 560 CHROMO.GRID, 18"x26", stainless steel
16. Six (6) Model GRP 575 "STEAM&FRY" Basket, 18"x26", stainless steel. Ideal for Steamed Vegetables, French Fries, Pre-Fried items, Sous Vide Cooking
17. One (1) Model XUC008 ChefTop MIND.Maps™ Plus Cooking Essentials Start-Up Kit, includes: (3) 18" x 26" CHROMO.GRIDS (GRP560), (1) 18" x 26" PAN.FRY (TG525), (1) 18" x 26" GRILL(TG530) & (1) 18" x 26" STEAM&FRY (GRP575), for models XAVC-06FS, XAVC-10FS & XAVC-16FS
18. Two (2) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
19. Water Supply to have shut-off valve and back flow preventer furnished and installed by plumbing contractor.
20. Water supply to be hard copper tubing from water filter system. Do not direct connect without filter system.
21. Floor Sink to be located in steam free zone - not below combi oven.
22. Electrical contractor to provide shunt trip breaker.
23. FSEC to verify gas type
24. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
25. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software when it is made available.

ITEM # K142.1 **WATER FILTER SYSTEM, COMBI**
Quantity: **Two (2)**
Manufacturer: **UNOX**
Model: **UX170-52080A**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model UX170-52080A QT1+CR, QT Water Filter System, dual, (1) 10" CTO-Q10 cartridge & (1) 15" CTO-QCR cartridge, 20,000 gallon capacity, 2.5 gpm flow rate, reduces chlorine, taste & odor - 6,000 gallon capacity, 0.5 gpm, reduces chloramine, 0.5 micron particulate. *Standard OptiPure® Limited Warranty of Physical Quality*
2. Two (2) Water Filter installation - must be purchased with corresponding unit LONG.Life4 and installation must take place at same time as unit installation. (NET)
3. Three (3) Model UX164-00216CRA OP175/16 and Chloramine Reduction Reverse Osmosis System, 16-Gallon atmospheric storage tank, integrated dual/parallel prefilters for particulate & chlorine reduction, Mineral-Addition cartridge, dual-read digital TDS meter displays RO membrane performance and optimized water quality, built-in system bypass valve, adjustable reject flow control, storage tank has top-mounted variable-flow repressurization system, sub-micron air breather and low water level pump protection switch, includes: QTPTCR10-1 add on chloramine reduction filter, hose, tubing & fittings required for installation, used with following UNOX single and (double) unit configurations XAVC-10FS-EPR/L; XAVC-10FS-GPR/L; XAVC-10FS-HPR/L; (XAVC-0511/1011-GPR/L) *Standard OptiPure® Limited Warranty of Physical Quality*
4. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
5. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
6. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
8. Install filter as per elevations on food service drawings.
9. FSEC to provide a sticker and date of installation on filter cartridges.
10. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
11. For more information see filter installation detail MEP-101.

ITEM # K143 **RANGE, 60", 6 BURNERS, 24" GRIDDLE**
Quantity: **One (1)**
Manufacturer: **Wolf**
Model: **C60SC-6B24G**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model C60SC-6B24G Challenger XL™ Restaurant Range, 60", gas, (6) 30,000 BTU burners with lift-off burner heads, 24" manual griddle, 7/8" thick, 4" wide front grease trough, (1) standard oven on left, (1) convection oven on right, stainless steel front, sides, back riser & high shelf, fully welded body, 6" adjustable legs, 268,000 BTU, CSA Flame, CSA Star, NSF
2. One (1) 1-year limited parts & labor warranty, standard
3. One (1) Natural gas
4. One (1) 120v/60/1-ph, 4.0 amps, 6' cord & plug, std.
5. Five (5) Spark igniter with flame safety device, for open top burners or griddles
6. One (1) Vulcan Griddle on right side, standard
7. One (1) Stainless steel back riser with lift off shelf, standard
8. Two (2) Model OVRACK-XL20 Extra oven rack, rack guides are included, for 20" wide ovens
9. Two (2) Model CASTERS-RR4 Casters, set of (4)
10. One (1) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
11. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
12. FSEC to verify gas type.

ITEM # K144 **FLOOR TROUGH**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **ASFT-2424-SG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ASFT-2424-SG Anti-Splash Floor Trough, 24"W x 24"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drain pipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. For more information see detail FAB-100 on the typical detail installation sheet.

ITEM # K145 **KETTLE CABINET ASSEMBLY, GAS**
Quantity: **One (1)**
Manufacturer: **Cleveland Range**
Model: **36GMK66300**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 36GMK66300 Kettle/Cabinet Assembly, gas, 36" W cabinet base, with two 6-gallon kettles, standard height cabinet, with 300,000 BTU gas boiler, includes lift-off cover, double pantry faucet, sink & drain, splash guard, factory installed steam control kit(s)
2. One (1) 1-year parts & labor warranty, standard
3. One (1) 5-year pro-rated parts warranty on boilers & steam generators
4. One (1) Performance start-up included at customer request after equipment is installed
5. One (1) Natural Gas
6. One (1) (VOS115) 120v/60/1-ph, 2-wire (DO NOT connect to GFI outlet)
7. One (1) Model BS6 Cooking Basket (6 gallons)
8. One (1) Model KAK Kettle Accessory Kit, includes: clean up brush, paddle, stainless steel whip, brush, draw-off brush, ladle
9. One (1) Model DISSOLVE (PN 106174) Descaling Solution, (6) one-gallon containers with quart markings
10. One (1) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
11. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
12. FSEC to verify gas type.

ITEM # K145.1 **WATER FILTER SYSTEM, STEAM EQUIPMENT**
Quantity: **One (1)**
Manufacturer: **Everpure**
Model: **EV979722**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV979722 KleenSteam II Twin System, 20,000-gallon capacity, 5.0 gpm flow rate, total system for steamers prevents limescale formation, (2) 7CB5 carbon filters, (1) SS-10 scale inhibitor Cartridge, dip tube, (2) 2.2 lbs. canisters ScaleKleen®
2. One (1) Note: This system requires (2) cartridges.
3. Two (2) Model EV961811 Everpure® 7CB5 Filter Cartridge, carbon block, reduces sediments, chlorine taste & odor, 5.0-micron rating, 2.5 gpm flow rate, 10,000-gallon capacity, 10-125 PSI working pressure, 35-100°F operating temperature, NSF
4. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
5. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
6. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
7. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
9. Install filter as per elevations on food service drawings.
10. FSEC to provide a sticker and date of installation on filter cartridges.
11. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
12. For more information see filter installation detail MEP-101.

ITEM # K146 **REACH-IN DUAL TEMP CABINET**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **STA1DT-2HS-HC**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model STA1DT-2HS-HC SPEC SERIES® Refrigerator/Freezer, reach-in, one-section, (2) stainless steel half doors, locks, cam-lift hinges, digital temperature control, (3) chrome shelves, LED interior lights, stainless steel front & sides, aluminum interior, 5" castors, R 1/10Hp, F 1/3Hp, 115v/60/1-ph, 6.4 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA
2. One (1) Warranty - 3-year parts and labor
3. One (1) Warranty - 5-year compressor; self-contained only
4. One (1) Victory Door hinging: on left at factory
5. One (1) (3) chrome shelves and shelf supports standard per section
6. Two (2) Spec Kit #2 - (1) set of #2 type tray slides (equips 1/2 section only) (specify for left, center, or right section AND top 1/2 or bottom 1/2)
7. One (1) 5" castors, set of 4, standard

ITEM # K147 **HAND SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-HSA-0001-00**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K147.1
9. Owner to provide towel & soap dispenser.

ITEM # K147.1 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3101-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K148 **HOSE REEL**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-7132-U03XS2C**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-7132-U03XS2C Hose Reel Assembly, wall-mount open stainless steel hose reel with 3/8" x 35' heavy-duty non-marking hose, ratcheting system, stainless steel rear trigger water gun and swivel with 7/16" orifice and 1/2" NPT female inlet, multi-fit bracket and adjustable hose bumper, 36" flexible water hose connector with stainless steel quick disconnect, wall-mounted polished chrome-plated brass mixing faucet with 8" centers, ceramic cartridges with check valves, lever handles, 1/2" NPT female inlets, 1/2" NPT in-line check valves, 16" riser, control valve, 40" riser, wall brackets, continuous pressure vacuum breaker
2. One (1) 1-year limited warranty for hose, standard
3. One (1) 2-year limited warranty for hose reel, standard
4. G.C. to reinforce wall behind hose reel to sustain weight while in use.
5. G.C. to furnish and install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Hose Reel to be installed as per elevations.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K149 **SANITIZING SYSTEM, WATER/ICE**
Quantity: **One (1)**
Manufacturer: **OptiPure**
Model: **SANIT-ICE**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SANIT-ICE Sanit-ICE Ozone Delivery System, self-contained, wall mount, diffuses disinfectant ozone into water & air, adjustable ozone output, includes mounting hardware, tubing, cord & plug, for ice machines, 120-240v/50/60/1-ph (130-61025)
2. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
4. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Install filter as per elevations on food service drawings.
7. FSEC to provide a sticker and date of installation on filter cartridges.
8. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
9. For more information see filter installation detail MEP-101.

ITEM # K150 **MOP SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **F1916-12**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model F1916-12 Mop Sink, floor mount, 24-5/8"L x 21-1/2" W x 19-1/2"H overall, 20" wide x 16" front-to-back x 12" deep bowl, 16 gauge top with "V" edge, full skirt, 2" NPS drain with stainless steel removable strainer plate, 304 stainless steel construction, NSF

ITEM # K150.1 **WALL / SPLASH MOUNT FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-2465**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-2465 Service Sink Mixing Faucet, splash-mounted, 8" adjustable centers, 4" wrist action handles with color coded indexes, Cerama cartridges with check valves, spout has male garden hose outlet, 1/2" NPT vacuum breaker, upper wall brace, 48" black rubber flex hose, 1/2" NPT female inlets, ADA Compliant

ITEM # K151 **MOP BROOM HOLDER**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **US0824-16/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model US0824-16/3 Utility Shelf with Mop Hanger, 24"W x 8"D, includes mop hangers & hooks for clothes, 16/304 stainless steel construction

ITEM # K152 **S/S WALL FLASHING, JANITOR'S CLOSET**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Janitor's Closet
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # K153 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. Four (4) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Two (2) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Two (2) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Four (4) Model 2424NK3 Super Erecta® Shelf, wire, 24"W x 24"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K154 **EYE WASH STATION**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EW-7656WC**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EW-7656WC Eyewash Unit, recessed, wall mounted, 32"H x 14"W x 5"D, single valve with strainer, 4.2 gpm flow control, polished chrome-plated brass valve, stainless steel housing, 1/2" NPT inlet, 2" NPT waste outlet, cCSAus
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support eye wash on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support eyewash.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K155 **BLIXER**
Quantity: **One (1)**
Manufacturer: **Robot Coupe**
Model: **BLIXER4**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BLIXER4 Blixer® Commercial Blender/Mixer, vertical, 4.5 liter capacity, stainless steel bowl with handle, stainless steel fine serrated "S" blade assembly, on/off buttons, pulse switch, single speed 3450 RPM, 1-1/2 HP, 120v/60/1-ph, 11.0 amps, NEMA 5-15P, cETLus, ETL-Sanitation
2. One (1) 1-year parts & labor warranty
3. One (1) Model 27338 Bowl Assembly, stainless steel, for BLIXER 4 & BLIXER 4V
4. One (1) Model 27449 "S" Blade Assembly, fine serrated edge, stainless steel, for BLIXER 4 & BLIXER 4V
5. One (1) Model 27450 "S" Blade Assembly, coarse serrated edge, stainless steel, for BLIXER 4 & BLIXER 4V

ITEM # K156 **BLENDER, BAR**
Quantity: **Two (2)**
Manufacturer: **Vitamix**
Model: **036019-ABAB**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 036019-ABAB The Quiet One® Twist Lock Blender, countertop, 48 oz. (1.4 liter) capacity, clear Tritan™ BPA free Advance® container, 24-1/2"H with lid open, stackable, removable compact twist lock cover, (6) touch control buttons with (34) program options, includes: Advance® blade assembly & lid, 3-peak HP, 120v/50/60/1-ph, 15.0 amps, NEMA 5-15P, RoHs compliant, CE, cULus, NSF
2. Two (2) 3-years warranty on motor base parts & 1-year warranty on labor, standard
3. Two (2) Model 15978 Advance® Complete Blender Container, 48 oz. (1.4 liter) capacity, clear BPA Free, Tritan™ container, includes: Advance® blade assembly & lid, NSF
4. Two (2) Model 15985 Lid, with plug, rubber, for Advance® containers: 15978, 16016, 15981 & 16019
5. Two (2) Model 15080 Compact Cover, complete, two-piece, with removable cover hinge, copolyester
6. Two (2) Model 15579 Sound Reducing Centering Pad

ITEM # K157 **WIRE RACKS, EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks, Epoxy Coated
2. Eight (8) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Four (4) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Four (4) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Four (4) Model 2436NK3 Super Erecta® Shelf, wire, 36"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
6. Four (4) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, plastic split sleeves are included in each carton, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K158 **CONVECTION STEAMER, COUNTERTOP**
Quantity: **One (1)**
Manufacturer: **Cleveland Range**
Model: **21CET16**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 21CET16 Steamcraft® Ultra 5 Convection Steamer, electric, countertop, 1 compartment, (5) 12 x 20 x 2-1/2" pans/compartment capacity, 60-minute mechanical timer & manual (continuous steaming) bypass switch, left-hand hinged door, controls on right, automatic water level and generator drain, steam shut-off switch, stainless steel construction, 16 kW
2. One (1) 1-year parts & labor warranty, standard
3. One (1) 5-year pro-rated parts warranty on boilers & steam generators
4. One (1) 3-year Convection Steamer Door Warranty, standard
5. One (1) Performance start-up included at customer request after equipment is installed
6. One (1) (VOS1) 208v/60/3-ph, 45.9 amps, 3-wire, standard

ITEM # K159 **KNIFE SANITIZER**
Quantity: **One (1)**
Manufacturer: **Edlund**
Model: **KSUV-18**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model KSUV-18 Knife Sterilizer Cabinet, holds up to 12 knives (2 larger slots to accommodate cleavers), LED light indicator, UV filtered plexiglass door with lockable keyed handle, stainless steel, 115v/60/1-ph, 70 watts, NEMA 5-15P, NSF, cETLus
2. One (1) 1-year limited warranty, standard
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support knife sanitizer on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support knife sanitizer.
6. FSEC to install shelf approximately 20" above countertop of work surface.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K160 **HOSE REEL**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-7132-U03XS2C**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-7132-U03XS2C Hose Reel Assembly, wall-mount open stainless steel hose reel with 3/8" x 35' heavy-duty non-marking hose, ratcheting system, stainless steel rear trigger water gun and swivel with 7/16" orifice and 1/2" NPT female inlet, multi-fit bracket and adjustable hose bumper, 36" flexible water hose connector with stainless steel quick disconnect, wall-mounted polished chrome-plated brass mixing faucet with 8" centers, ceramic cartridges with check valves, lever handles, 1/2" NPT female inlets, 1/2" NPT in-line check valves, 16" riser, control valve, 40" riser, wall brackets, continuous pressure vacuum breaker
2. One (1) 1-year limited warranty for hose, standard
3. One (1) 2-year limited warranty for hose reel, standard
4. G.C. to reinforce wall behind hose reel to sustain weight while in use.
5. G.C. to furnish and install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Hose Reel to be installed as per elevations.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K200 **ICE DISPENSER, Existing/To Be Relocated**
Quantity: **One (1)**
Manufacturer: **Manitowoc**
Model: **SPA310**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SPA310 Vending Ice Dispenser, push button, floor model, 30"W x 32"D x 60-1/2"H, AHRI certified 180-lb capacity, designed for dice or half-dice ice type, bucket filling, stainless steel exterior with vinyl trim, accepts 22" or 30" dice or half-dice machines, NSF, cULus, CE
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # K200.1 **ICE MAKER, CUBE-STYLE, Existing/To Be Relocated**
Quantity: **One (1)**
Manufacturer: **Manitowoc**
Model: **IDT0500N**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model IDT0500N Indigo NXT™ Series Ice Maker, cube-style, air-cooled, designed for remote refrigeration, 30"W x 24"D x 21-1/2"H, production capacity up to 510 lb/24 hours at 70°/50° (445 lb. AHRI certified at 90°/70°), DuraTech™ exterior, dice size cubes, R404a refrigerant, NSF, cULus, CE
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # K201 **SPARE NO.**

ITEM # K202 **CAN RACK, Existing/To Be Relocated**
Quantity: **One (1)**
Manufacturer: **Channel Manufacturing**
Model: **CSR-99**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CSR-99 Can Storage Rack, Heavy Duty, full size, stationary 25-1/2"W x 35"D x 76"H, front or rear loading, holds (162) #10 cans or (216) #5 cans, welded aluminum construction, NSF, Made in USA (FLYER LIST PRICING) (published shipping weight does not reflect 50lb. pallet)
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # K203 **30-QT MIXER, Existing/To Be Relocated**
Quantity: **One (1)**
Manufacturer: **Avantco**
Model: **MX30**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model MX30 30-qt Mixer
2. This unit is existing and is to be relocated.
3. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
4. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
5. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # K300 **EXHAUST FAN FOR ITEM #K141, By MEC**
Quantity: **One (1)**
Manufacturer: **Captive-Aire**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #K141
2. MEC to size and provide.
3. Refer to sheet QF-A600 - QF-A605 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # K301 **MAKE-UP FAN, HEATED, By MEC**
Quantity: **One (1)**
Manufacturer: **Captive-Aire**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Make-Up Fan, Heated
2. MEC to size and provide.
3. Refer to sheet QF-A600 - QF-A605 Captive-Aire engineering drawings for CFM requirements and additional hood information.

ITEM # K302 **WAREWASHER, By Vendor**
Quantity: **One (1)**
Manufacturer: **Ecolab**
Model: **ES-2000HT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ES-2000HT Warewasher
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # K500 **TOWEL/SOAP DISPENSER, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K501 **TRASH CAN, 32-GAL W/ DOLLY, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K502 **TRASH BIN, SLIM JIM, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K503 **TOWEL/SOAP DISPENSER, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K504 **TOWEL/SOAP DISPENSER, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K505 **TRASH BIN, SLIM JIM, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K506 **TRASH BIN, SLIM JIM, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K507 **TRASH CAN, 32-GAL W/ DOLLY, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K508 **TRASH BIN, SLIM JIM, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K509 **TOWEL/SOAP DISPENSER, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K600 **DUPLEX CONVENIENCE RECEPTACLE, BY EC**
Quantity: **Eight (8)**
Manufacturer: **BY EC**
Model: **BY EC**

Furnish and set in place per manufacturer's standard specifications:

1. Eight (8) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # K700-K712 FLOOR SINK & A.F.D PACKAGE, BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 - Item K700 – Floor Sink
 - Item K701 – Area Floor Drain
 - Item K702 – Floor Sink
 - Item K703 – Area Floor Drain
 - Item K704 – Floor Sink
 - Item K705 – Floor Sink
 - Item K706 – Area Floor Drain
 - Item K707 – Floor Sink
 - Item K708 – Floor Sink
 - Item K709 – Area Floor Drain
 - Item K710 – Funnel Floor Drain
 - Item K711 – Area Floor Drain
 - Item K712 – Area Floor Drain
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be sloped to A.F.D
12. Provide additional A.F.D as required.

SERVING STATION

ITEM # S100 **S/S COUNTER**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Counter
2. One (1) Model YSCOPOS-VI-ADAPTOR Vibration Isolator Mounting Adaptor Kit, stainless steel construction, mounts to Eagle Group 1-5/8" dia. legs (vibration isolator provided/installed by others)
3. Provide provisions for item #S100.1, sink, plumbing.
4. Custom S/S Counter Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.

ITEM # S100.1 **PREP/HAND SINK, DROP IN**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-DHSINK**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-DHSINK Self-Rimming Drop-In Sink, two compartment, 10" wide x 14" front-to-back x 14" deep left dump sink, 10" wide x 14" front-to-back x 5" deep right hand sink, s/s center sink splash, (2) faucets, stainless steel construction, NSF
2. Owner to provide towel & soap dispenser.
3. Food Service Equipment Contractor to drop-in and seal sink to millwork stone countertop utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps providing easy cleanability and preventing bacteria growth in gaps.

ITEM # S100.2 **PANTRY FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0325-CR-WH4**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # S100.3 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3100-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # S101 **ICE MACHINE, NUGGET COMPRESSED**
Quantity: **One (1)**
Manufacturer: **Follett LLC**
Model: **MCD425AHT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model MCD425AHT Maestro Plus™ Chewblet® Ice Machine, air-cooled self-contained condenser, for top mount on countertop ice and beverage dispensers, up to 425 lb. production of Chewblet ice in 24 hours, requires stainless steel top kit (sold separately), 115v/60/1-ph, NSF, cETLus, ENERGY STAR®
2. One (1) 3-year parts & labor warranty, additional 2 years compressor warranty (parts only), standard
3. One (1) 3-year parts & labor warranty, additional 2 years compressor warranty (parts only), standard
4. One (1) 115v/60/1, 11.0 amps, NEMA 5-15P, standard
5. One (1) NOTE: Verify correct dispenser for all HCE and MC ice machines, dispenser must be configured for nugget ice
6. Provide adapter kit for installation with specified ice bin and securely mount ice maker on bin in accordance with manufacturers requirements.
7. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.

ITEM # S102 **RACK DOLLY**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **DH2020N**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # S103 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: True Manufacturing Co., Inc.
Model: TUC-27-HC~SPEC3

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TUC-27-HC~SPEC3 SPEC SERIES® Undercounter Refrigerator, 33 - 38°F, SPEC Package 3 includes: 16-ga. stainless steel top, (1) heavy-duty stainless steel door, steel handle, door lock standard, (2) PVC coated adjustable wire shelves, electronic temperature control with digital temperature display, stainless steel sides & back, stainless steel interior, 5" castors, R290 Hydrocarbon refrigerant, 1/6 HP, 115v/60/1-ph, 2.0 amps, NEMA 5-15P, cULus, UL EPH Classified, CE, Made in USA, ENERGY STAR
2. One (1) Self-contained refrigeration standard
3. One (1) Warranty - 5-year compressor; self-contained only
4. One (1) Warranty - 3-year parts and labor
5. One (1) Victory Door hinging: standard on right
6. One (1) 3" Castors, set of 4, in lieu of 5" castors

ITEM # S104 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000 gallon capacity, 3.34 gpm flow rate, 0.2 micron rating, (2) MC 0.2 micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) Note: This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # S300 **BEVERAGE DISPENSER, COLD BREW AND COFFEE, By Vendor**
Quantity: **One (1)**
Manufacturer: **Newco**
Model: **LCD-2-MD**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LCD-2-MD Liquid Coffee Dispenser, (2) products, (2) faucet dispensers, accommodates (2) 1/2-gallon BIB non refrigerated products with a Scholle connectors, hot water button, locking cabinet, metal door, black, cord attached
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # S301 **ICED TEA BREWER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **36700.0300**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 36700.0300 TB6 Twin Iced Tea Brewer, (2) 3-gallon capacity, 16.3 gallon/hour, rotating brew basket, base platform adapter, dedicated dilution nozzles, brew selection switch, adjustable sleep time, SplashGard® funnel, color coded decals, designed for brewing into (2) 3.5 gallon BUNN narrow tea dispensers (sold separately), 120v/60/1-ph, 1730w, 14.4amps, NEMA 5-15P, cord attached, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # S301.1 **TEA / COFFEE DISPENSER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **34100.0000**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 34100.0000 34100.0000 TDO-4 Iced Tea/Coffee Dispenser, cylinder style, 4-gallon capacity (15.1 liters), sump dispense valve, oval shape solid plastic lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # S302 **SUNKIST JUICE DISPENSER, By Vendor**
Quantity: **One (1)**
Manufacturer: **NESTLE PROFESSIONAL**
Model: **VITALITY EXPRESS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model VITALITY EXPRESS Sunkist Juice Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # S303 **SODA DISPENSER, 6 VALVE, By Vendor**
Quantity: **One (1)**
Manufacturer: **Lancer**
Model: **IBD 4500-22**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model IBD 4500-22 Soda Dispenser, 6 Valve
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility information.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. FSEC to verify routing and destination with vendor and all applicable trades and coordinate.
9. Soda Vendor to provide a complete and operational soda delivery system that will adequately handle the soda dispensers as indicated in this specification section.
10. Soda Vendor to provide and install all lines, pumps, gauges, dispensing units, carbonators, racks, product and miscellaneous parts. Coordinate with Food Service Director on site.
11. Soda Vendor to verify location and type of carbonators prior to installation.
12. GC to provide and install 6" PVC conduit for the soda lines. Location to be verified with the design team. Provide any ceiling penetration and access panels as required to access soda line run chase and any bends.
13. Placement of the soda line conduits are critical. Every effort shall be made to locate penetrations, so they are concealed but accessible. All applicable contractors are to coordinate conduit locations with the project manager on site.
14. Millwork fabricator to provide soda line chase and counter cut-outs in beverage counter if required. Millwork fabricator to coordinate with soda Vendor.
15. FSEC to coordinate all specifications and installation of systems in advance of close-in and fabrication with the project manager, equipment fabricators, GC and food service consultant.

ITEM # S304 **BAG AND BOX SYSTEM, By Vendor**
Quantity: **One (1)**
Manufacturer: **By Vendor**
Model: **BY VENDOR**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Bag and Box System
2. Refer to Soda Dispenser, for installation notes.
3. Electrical Contractor to provide standard 20-amp receptacle at location.
4. Refer to Beverage Conduit Installation Detail MEP-401 on Typical Installation Detail Sheet.

ITEM # S500 TOWEL/SOAP DISPENSER, SURFACE MOUNTED, SMALLWARES
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 1471-11

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 1471-11 Towel/Soap Dispenser, Surface Mounted
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # S501 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # S502 GLASS RACK, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # S600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: Three (3)
Manufacturer: BY EC
Model: BY EC

Furnish and set in place per manufacturer's standard specifications:

1. Three (3) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # S700-S701 FLOOR SINK PACKAGE, BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
Item S700 – Floor Sink
Item S701 – Area Floor Drain
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

AL/MC/HC DINING

EQUIPMENT NUMBERING GROUP (LETTER) FOR THE FOLLOWING AREA HAS CHANGED TO AVOID DUPLICATION / CONFUSION WITH PURCHASING AND INSTALLATION DURING CA:
AL/MC/HC DINING LETTER CHANGED TO A

ITEM # A100 INDUCTION GENERATOR SYSTEM, BUILT-IN
Quantity: One (1)
Manufacturer: Garland/US Range
Model: HOIN2400

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model HOIN2400 Induction Hold-Line, built-in, (3) 20.47" x 12.6" ceran ceramic glass top with (3) heat retaining plates, RTCSmp temperature control, remote module generator controls up to 4 top surfaces, dual temperature display per module, ETL, cETLus, CE, FCC (NET)
2. One (1) Two-year on-site parts and labor warranty, standard
3. One (1) 208v/60/1-ph, 3.2 kW, 15.4 amps, generator voltage
4. Three (3) (3) 208v/60/1-ph, .8 kW, heat retaining plates voltage
5. **INSTALLATION:**
Units to be installed flush with 4" separation between glass. Do not use stainless trim around the perimeter for installation as this will interfere with induction performance.
Millwork Fabricator to provide support beams in between units; seal all crevices as required and follow practice outlined in national standard NSF 4. See installation detail MWK-116.
Controls to be recessed into millwork apron.
Digital Thermometer display on glass top to be oriented to operator side.
Installation to be performed by certified factory installers only - NO EXCEPTIONS
6. **STONE COMPATIBILITY:**
Units are compatible with ¾" or 1-1/4" thick standard engineered countertops – other specific countertop material can be used as recommended by manufacturer.
7. **VENTILATION:**
Each unit requires 70 CFM free air flow with adequate enclosure venting and maximum ambient temperature of 122°F. When installed in a closed cabinet, provide McNichols 16-gauge 1833531638 perforated metal mesh or equal on doors.
At location of induction generator, AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting.
Provide cabinet fan for ventilation and air movement.
8. **PROTECTION:**
Generator to be installed on back wall of cabinet above floor of cabinet and enclosed in a mesh safety surround to prevent any accidental access to exposed high voltage contactors. Refer to installation detail MWK-116 for enclosure sizes.
9. **ELECTRICAL CONNECTIONS:**
All internal connections from generator to each induction plate to be interconnected by FSEC utilizing factory provided wiring harness. All wiring harness to be neatly bound and run as close as possible to top corner of cabinet with zip ties. No wiring should be hanging loose on cabinet floor.
Electrical Contractor to provide single point connection to the induction generator with means of disconnect if hard wired, connection to be with a switch.
10. **COORDINATION:**
FSEC is responsible for verifying that space available will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
FSEC is responsible for reviewing millwork shop drawings.

ITEM # A100.1 **CHAFING DISH**
Quantity: **Three (3)**
Manufacturer: **Eastern Tabletop**
Model: **3995G**

Furnish and set in place per manufacturer's standard specifications:

1. Three (3) Model 3995G Jazz Rock Collection Induction Chafer, 8 qt., rectangular, hotel grade, full glass hinged cover, 3-points of drip free feature with condensation catch, includes food pan, hydraulic hinged slowed letdown mechanism (locks in at 180°), works on all induction warmers/cookers/or as a chafer tabletop, 18/10 stainless steel, 7 Star Series
2. Three (3) Model 3995FP Chafing Dish Food Pan, 8 qt., rectangular, stainless steel, for #3995
3. Nine (9) Vollrath Model 30322 Super Pan V® Food Pan, 1/3 size, 2-1/2" deep, 2.6 qt capacity, 22 gauge, 300 series stainless steel, reinforced pour corners, reverse formed flattened edges, anti-jamming design, NSF, Made in USA, Jacob's Pride® Collection, Limited Lifetime Warranty

ITEM # A101 **WARMING DRAWER, BUILT-IN**
Quantity: **Two (2)**
Manufacturer: **Alto-Shaam**
Model: **500-1D**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 500-1D Halo Heat® Warming Drawer, built-in, one drawer, digital controller, (1) 12" x 20" pan, (50) rolls or (34) baked potatoes capacity, drawer can adapt to hold optional oversize pan, adjustable thermostat, stainless steel exterior, EcoSmart®, cULus, UL EPH ANSI/NSF 4, CE, EAC
2. Two (2) 120v/50/60/1-ph, 5.3 amps, .64 kW, NEMA 5-15P, standard
3. Two (2) Non-vented drawers, standard
4. Two (2) Model 5015147 Built-In Trim Kit, for 500-1D one drawer warmer
5. Millwork fabricator to trim drawer unit for a flush mount finish installation. Trim installation should not have any visible fasteners. Unit should not sit on a shelf or floor with surrounding gaps.

ITEM # A102 **EXHIBITION STYLE COOKING STATION**
Quantity: **One (1)**
Manufacturer: **Kaliber Innovations**
Model: **MC-59-FPS-G2-R3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model MC-59-FPS-G2-R3 Exhibition Style Cooking Station
2. Mobile Cooking Station with Integrated Induction Appliances, 4 Stage Filtration and built-in Fire Suppression System.
3. One (1) - 3500W Induction Griddle
4. One (1) - 3500W Induction Range
5. One (1) - Integrated UL300 Fire Suppression System
6. Filtration Kit consisting of (2) - Stainless Steel Baffle Filters, (1) - Hi-Temp Pre-Filter, (1) - HEPA Filter, (1) - Carbon Filter
7. Solid stainless-steel construction with P-LAM to match adjacent millwork finishes (select from standard color options, premium selections upcharge)
8. Recommended 170CFM of make-up air supplied to location of unit by low velocity HVAC diffusers for adequate air circulation.
9. Supply Voltage: 208/240VAC, Single Phase, 60Hz, 38Amps, Plug Type: NEMA 6-50P
10. UL710B/NSF-2 Listed
11. Weight: 750lbs
12. 1-year parts & labor warranty
13. Electrician to recess receptacle in wall in order to prevent unit from being pushed out by cord & plug.
14. Electrician to make final alarm connection to building alarm system from dry contacts provided in Ansul control head.
15. After unit is located, Ansul system to be checked and tagged by local Fire Suppression Authorized Dealer. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
16. Installation to be performed by authorized and licensed dealer only.
17. Provide password protection programmed on keypad for safety shutdown and operation of the unit. Time clock to be set at 120 minutes after unit is turned on to automatically power down.
18. Finish Selection: PLAM-5

ITEM # A102.1 **FIRE EXTINGUISHER**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.
5. This unit is existing and is to be relocated.
6. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
7. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
8. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # A103 **HEAT LAMP**
Quantity: **One (1)**
Manufacturer: **Hatco**
Model: **GRAH-48D3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model GRAH-48D3 Glo-Ray® Infrared Foodwarmer, 48" W, high wattage, tubular metal heater rod, double heater rod housing 3" spacing, aluminum construction, 2200 watts, NSF, cULus, Made in USA
2. One (1) Includes 24/7 parts & service assistance
3. One (1) One-year on-site parts and labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. One (1) 120v/60/1-ph
5. One (1) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle, shipped loose
6. One (1) Model IND.LGT-2-REM (2) Indicator Lights
7. One (1) Model STANDARD Clear Anodized Aluminum, standard

ITEM # A104 **MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **TSSU-27-12M-B-HC~SPEC3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TSSU-27-12M-B-HC~SPEC3 SPEC SERIES® Mega Top Sandwich/Salad Unit, (9) 1/6 size & (3) 1/9 size (4"D) poly pans, SPEC Package 3 includes: stainless steel insulated cover, 8-7/8"D cutting board, (1) door with lock, (2) gray PVC coated adjustable wire shelves, digital temperature control and display, stainless steel front, sides & back, stainless steel interior liner & stainless steel floor with coved corners, 5" castors, R290 Hydrocarbon refrigerant, 1/5 HP, 115v/60/1-ph, 3.5 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA
2. One (1) Warranty - 3-year parts and labor
3. Door Hinging on Right.

ITEM # A105 **PREP/HAND SINK, UNDERMOUNT**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-UMDHSINK**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-UMDHSINK Undermount Sink, two compartment, two compartment, 10" wide x 14" front-to-back x 14" deep left dump sink, 10" wide x 14" front-to-back x 5" deep right hand sink, stainless steel center sink splash, stainless steel construction, mounting clips, faucets by others, NSF
2. Mount and seal sink to underside of stone utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps.

ITEM # A105.1 **PANTRY FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0325-CR-WH4**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # A105.2 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3100-HG

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.
3. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # A105.3 PAPER TOWEL DISPENSER
Quantity: One (1)
Manufacturer: Bobrick Washroom
Model: B-526

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-526 Paper towel dispenser for mounting in countertops shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Flange shall have 1/4" (6mm) 90° return. Paper towel dispenser shall be equipped with two hinged towel retainers and spring-loaded towel tray; capacity shall be 300 C-fold or multifold paper towels. Manufacturer's service and parts manual shall be provided to the building owner/manager upon request.
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's standard facility paper towel size/fold.

ITEM # A105.4 SOAP DISPENSER
Quantity: One (1)
Manufacturer: Bobrick Washroom
Model: B-824

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-824 Automatic, "touch-free" liquid dispenser minimizes cross contamination. Uses universal bulk liquid soaps for significant cost-in-use savings. Top fill dispenser offers a unique portion control Feature that optimizes patron satisfaction with operating budget. Available in a chrome finish for design continuity.

ITEM # A106 **PLATE AND DISH DISPENSER, DROP-IN**
Quantity: **One (1)**
Manufacturer: **Delfield**
Model: **DIS-1013-ET-MOD**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model DIS-1013-ET-MOD Dispenser, Even Temp Heated Dish, drop-in type, single self-elevating dish dispensing tube, maximum dish size approximately 10.12" diameter, steel frame, stainless steel tubes and exterior, cut-out diameter 12-7/8", flange diameter 13-1/2", 7.0 kW, cUL, UL, NSF
2. One (1) Model 0460000N 1-year parts & labor warranty, standard
3. One (1) 120v/60/1-ph, 5.5 amps, NEMA 5-15P, standard
4. One (1) Model DIS-SL Shorten dispenser tubes to special length
5. Overall height of unit to be 25.5" (Including the rubber plate extensions).
6. FSEC to VERIFY plate SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's selection of plates.
7. Unit installation is a drop-in into a pull-out drawer as detailed in millwork detail #MWK-117. Unit shall plug into a receptacle installed in rear of cabinet, behind drawer.
8. FSEC shall verify that space available in counter and will accommodate unit, adjust height if necessary, for drawer installation as detailed in MWK-117.

ITEM # A107 **CORNER GUARD, L-SHAPED**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Corner Guard, L-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # A108 **REFRIGERATOR/FREEZER PREP WORK SYSTEM**
Quantity: **One (1)**
Manufacturer: **Randell**
Model: **FX-1-290**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model FX-1-290 FX Series Flexible Refrigerator or Freezer Base, 43.3" W, 3.0 cubic feet, single drawer with removable ABS insert, self-contained refrigeration with electronic control (40° refrigerator, -5° freezer), unfinished top, stainless steel interior, front & sides, R290 Hydrocarbon refrigerant, 1/4 HP, UL, cUL, NSF, Made in USA
2. One (1) (1) year parts, labor, and compressor warranty, standard
3. One (1) 115v/60/1-ph, 1.7 amps, NEMA 5-15P, standard
4. One (1) Model FX-FLANGE Flange Kit
5. One (1) Model FX-PCBDIVIDER Divider, 3/4" polyboard with handle, for standard height insert
6. One (1) Model FX-DRLOCK Drawer Lock, cylinder 1 each, per drawer

ITEM # A109 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: True Manufacturing Co., Inc.
Model: TUC-48-ADA-HC~SPEC3

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TUC-48-ADA-HC~SPEC3 SPEC SERIES® Undercounter Refrigerator, 34" working height, 33 - 38°F, SPEC Package 3 includes: 16-ga. stainless steel top, (2) heavy-duty stainless steel doors, steel handles, door lock standard, (4) PVC coated adjustable wire shelves, electronic temperature control with digital temperature display, stainless steel sides & back, stainless steel interior, 3" castors, R290 Hydrocarbon refrigerant, 1/5 HP, 115v/60/1-ph, 3.0 amps, NEMA 5-15P, cULus, UL EPH Classified, CE, ADA Compliant, Made in USA
2. One (1) Self-contained refrigeration standard
3. One (1) Warranty - 7-year compressor
4. One (1) Warranty - 3-year parts and labor
5. Unit to be provided with Low Profile Castors.

ITEM # A110 ICE MACHINE & DISPENSER, NUGGET STYLE
Quantity: One (1)
Manufacturer: Follett LLC
Model: 12CI425A-S

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 12CI425A-S Symphony Plus™ Ice & Water Dispenser, countertop, SensorSAFE™ dispense, integral ice machine, Chewblet® ice, air-cooled condenser, up to 425 lb. production in 24 hours, 12 lb. storage capacity, Agion® silver-based antimicrobial protection, stainless steel cabinet with accent trim, 115v/60/1-ph, NSF, cETLus
2. One (1) 3-year parts & labor warranty, additional 2 years compressor warranty (parts only), standard
3. One (1) 115v/60/1-ph, 11.0 amps, NEMA 5-15P, standard
4. One (1) Model 01089580 Pressurized Water Sanitizing Kit, (1) filter housing, (1) dip tube, 12' tubing, for use with Follett Symphony & Symphony Plus ice & water dispensers without a Follett water filtration system.
5. One (1) Model AF10LBLEGS 4" Leg Kit, for 12CI series
6. One (1) Model 01038652 Nu-Calgon IMS-III Sanitizer, case of (12) 16 oz bottles, NSF
7. One (1) Model 01149954 SafeCLEAN Plus, liquid – environmentally responsible ice machine cleaner (6 x 8 oz bottles)
8. Drain to be indirect to the nearest floor sink, piping and connection by PC.
9. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
10. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # A111 **MOBILE BUSSING CART**
Quantity: **One (1)**
Manufacturer: **Kaliber Innovations**
Model: **BC-4036**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BC-4036 Mobile Bussing Cart
2. Dimensions: 37"W x 41.5"H x 24"D
3. Holds 6 bussing pans 21" x 15" x 7" (bussing pans not included)
4. Heavy-duty 5" concealed casters rated at 350 lbs.
5. Integrated pull handles on both sides.
6. Doors open 270 Degrees for easy access.
7. Durable stainless-steel frame.
8. Easy access for cleaning.
9. 12" Clearance between two bottom shelves.
10. Width of the unit with the doors folded down is 38.5".
11. Available in any P-LAM Style and Color; non-premium selection
12. Cart P-LAM finish selection to match adjacent millwork.
13. Finish Selection: PLAM-5

ITEM # A112 **INDUCTION RETHERMALIZER**
Quantity: **One (1)**
Manufacturer: **Vollrath**
Model: **7470110**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 7470110 Mirage® Induction Soup Rethermalizer, 7 quart, dry use, temperature control in °F or °C, (4) soup presets, stir indicator LED, solid state controls with locking function, includes: induction ready inset & inset cover, natural & black finish, 800W, 6.7 amps, cord with NEMA 5-15P, 120v/50/60/1-ph, cULus, NSF, FCC, imported (cover not NSF)
2. One (1) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Three (3) Model 88184 Inset, 7-1/4-quart, induction ready, for Mirage induction rethermalizer, NSF
4. One (1) Model 4980422 Ergo Grip® One-Piece Ladle, equipped with all-natural antimicrobial, 4 oz., stainless steel, 13-1/8" OA length, one-piece construction with black Kool-Touch™ offset handle, shorter overall length for easy serving under low profile breath guards, integrated handle stopper prevents ladle from sliding into containers, Jacob's Pride® Collection, Limited Lifetime Warranty
5. One (1) Model 47493 Contemporary Inset Cover, hinged, fits 7 quart inset, easy on/off lid, welded handle, condensation returns to inset, no friction fit tabs for easy installation & removal, dishwasher safe, stainless steel construction, imported
6. FSEC to install soup well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
7. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
8. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
9. Equipment to be NSF and UL listed and labeled.
10. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge wire mesh framed insert in doors. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting

ITEM # A113 **SPARE NO.**

ITEM # A114 **SHELVING, WALL MOUNTED**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **SWS1548-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SWS1548-14/3 Snap-n-Slide® Shelf, wall-mounted, 48"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 180 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A115 **HAND SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-HSA-0001-00**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #A115.1
9. Owner to provide towel & soap dispenser.

ITEM # A115.1 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3101-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # A116 **SOILED DISHTABLE**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **SDTL-48-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SDTL-48-14/3 Spec-Master® Soiled Dishtable, straight design, 48"W x 30"D x 43-1/2"H overall, left-to-right operation, 14/304 stainless steel top, 8"H backsplash, 20" x 20" x 5" deep pre-rinse sink with basket drain, (1) deck mount faucet hole for pre-rinse, includes scrap block, raised rolled edges on front & side, stainless steel legs & side bracing, adjustable feet, NSF
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # A116.1 **PRE-RINSE FAUCET ASSEMBLY**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0133-CR-BC**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-BC EasyInstall Pre-Rinse Unit, 8" centers, wall mount base & bracket, spring action, ceramas cartridges, low flow valve, (B-0107-C)
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male
3. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
4. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A116.2 **DISPOSER**
Quantity: **One (1)**
Manufacturer: **Salvajor**
Model: **200-SA-WSP**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls (HydroLogic control with operator sensor comes standard mounted to SM/PSM models. ONLY add if additional on/off control is required)
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # A116.3 **DISPOSER CONTROL PANEL, Included**
Quantity: **One (1)**
Manufacturer: **Salvajor**
Model: **ARSS-LD**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Included with item #A116.2, Disposer.

ITEM # A116.4 **DISHTABLE SORTING SHELF**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **606296**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 606296 Rack Shelf, tubular, wall mounted, 21"W x 15.5"D x 12"H, 1.625"dia. tubing 14/304 stainless steel knock-down construction
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approx. 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A117 **DISHWASHER, DOOR TYPE, VENTLESS**
Quantity: **One (1)**
Manufacturer: **Hobart**
Model: **AM15VLT-2**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model AM15VLT-2 Ventless Door Type Dishwasher, Energy Recovery, tall chamber, hot water sanitize, internal condensing system, 40 racks/hr, straight-thru or corner, solid-state controls with digital status, booster heater, electric tank heat, auto-fill, stainless steel tank, doors & feet, 208-240/60/3, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model DOOR LOCK YES With Door lock
4. One (1) Model SPEC-KIT Single point electrical connect AM15 kit
5. One (1) Model DWT-AM15 Drain water tempering kit
6. One (1) Installation of DWT kit
7. One (1) Model DISHRAK-COM20 Combination rack
8. One (1) Model DISHRAK-PEG20 Peg rack
9. One (1) Delime notification available
10. NOTE: This equipment has a built-in condenser system that captures the steam and converts it back to wash water. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # A117.1 **WATER FILTRATION SYSTEM, FOR WAREWASHING UNITS**
Quantity: **One (1)**
Manufacturer: **Everpure**
Model: **EV979911**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # A118 **CLEAN DISHTABLE**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CDTR-48-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CDTR-48-14/3 Spec-Master® Clean Dishtable, straight design, 48"W x 30"D x 43-1/2"H overall, left-to-right operation, 14/304 stainless steel top, 8"H backsplash, raised rolled edges on front & side, stainless steel legs & crossbracing, adjustable metal feet, NSF
2. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Field verify measurements, adjust table length as necessary to fit field conditions.
4. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
5. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # A118.1 **WIRE SHELF, WALL MOUNTED, EPOXY COATED, 1-TIER**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **1836NK3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 1836NK3 Super Erecta® Shelf, wire, 36"W x 18"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
2. Two (2) Model 1WD14C Super Erecta® Direct Wall Mount, single, for 14"D shelf (1) shelf support & mounting plate (2) shelf collar caps, single support at shelf ends (2 required per shelf), chrome plated finish
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A119 **RACK DOLLY**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **DH2020N**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # A120 **WIRE RACKS EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks Epoxy Coated
2. Four (4) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Two (2) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Two (2) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Four (4) Model 2448NK3 Super Erecta® Shelf, wire, 48"W x 24"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # A121 **ROLL-IN REFRIGERATOR**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **STA1RRI-1S**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model STA1RRI-1S SPEC SERIES® Refrigerator, roll-in, one-section, (1) stainless steel door with lock, cam-lift hinges, digital temperature control, aluminum interior, incandescent interior lighting, stainless steel ramp, stainless steel front & sides, 1/3 HP, 115v/60/1-ph, 8.9 amps, NEMA 5-15P (accommodates 27"W x 29"D x 66"H cart, NOT included), cULus, UL EPH Classified, Made in USA
2. One (1) Warranty - 3-year parts and labor
3. One (1) Warranty - 5-year compressor
4. One (1) Left door hinging

ITEM # A121.1 **BUN / SHEET PAN RACK**
Quantity: **One (1)**
Manufacturer: **Channel Manufacturing**
Model: **AXD1818**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model AXD1818 Lifetime Tough Bun Pan Rack, Heavy Duty, mobile, 22"W x 26"D x 64"H, front load, open sides, 3" spacing, capacity (18) 18" x 26" bun pans, welded heavy duty aluminum construction, 5" x 2" heavy duty swivel plate casters with Zerk grease fittings, corrections approved, NSF, Made in USA (published shipping weight does not reflect 50lb. pallet)
2. One (1) Lifetime warranty for traditional foodservice applications
3. One (1) Model /015 Pan Stop, web-strap
4. One (1) Model /024 Corner Bumpers (set of 4)
5. One (1) Model /5B Caster Brakes, heavy duty (set of 2)

ITEM # A122 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T3672STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T3672STEM-BS Spec-Master® Marine Series Work Table, 72"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #A122.1, sink, plumbing.
3. Where top abuts any walls, provide side splashes same height as backsplash, 2 thick with a 45 **degree return to the wall.**

ITEM # A122.1 **PREP SINK, WELD-IN**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **E24A**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain (specify location)

ITEM # A122.2 **DECK MOUNT FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0221-CR**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # A123 **REACH-IN UNDERCOUNTER FREEZER**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **TUC-27F-ADA-HC~SPEC3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TUC-27F-ADA-HC~SPEC3 SPEC SERIES® Undercounter Freezer, 34" working height, -10°F, SPEC Package 3 includes: 16-ga. stainless steel top, (1) heavy-duty stainless steel door, steel handle, door lock standard, (2) PVC coated adjustable wire shelves, electronic temperature control with digital temperature display, stainless steel sides & back, stainless steel interior, 3" castors, R290 Hydrocarbon refrigerant, 1/4 HP, 115v/60/1-ph, 2.3 amps, NEMA 5-15P, cULus, UL EPH Classified, ADA Compliant, Made in USA
2. One (1) Self-contained refrigeration standard
3. One (1) Warranty - 7-year compressor
4. One (1) Warranty - 3-year parts and labor
5. One (1) Door hinging: on left at factory
5. Unit to be provided with Low Profile Castors.

ITEM # A124 SPARE NO.

ITEM # A125 MICROWAVE STEAMER OVEN
Quantity: One (1)
Manufacturer: ACP
Model: AMSO35

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model AMSO35 Amana® Steamer Oven, 1.6 cu. ft., 3500 watts, heavy volume, 4-stage cooking, (11) power levels, (100) memory settings, 60-minute max cooking time, LCD display, touch control, audible end of cycle signal, pull down door with tempered glass, lighted interior, recessed ceramic tray and removable shelf, stainless steel exterior & interior, 208-240v/60/1-ph, 5100 watts (total), 30 MCA, NEMA 6-30P, cETLus, ETL-Sanitation
2. One (1) 3-year full warranty, standard
3. One (1) Model CL10 Amana® Oven Cleaner, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens
4. One (1) Model SH10 Oven Shield, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens, (shipped in USA Only)
5. One (1) Model AP10 Carlisle Pan, full size, 4" deep, 12-7/10 quarts, amber high heat, withstands temperatures up to 375° F, dishwasher safe, BPA free, for use in food bars and steam tables, for AMSO & MSO ovens, NSF
6. One (1) Model AL10 Carlisle Lid, full size, amber high heat, recessed handle, withstands temperatures up to 375° F, dishwasher safe, BPA free, for use in food bars and steam tables, for AMSO & MSO ovens, NSF
7. Two (2) Cambro Model 14HP150 H-Pan™ High Heat Hot Food Pan, full size, 4" deep, hi-temp plastic, -40°F to 375°F, non-stick surface, won't bend or dent, amber, NSF
8. Two (2) Cambro Model 10HPCH150 H-Pan™ Food Cover, high heat, full size, flat, with handle, -40°F to 300°F, non-stick surface, won't bend or dent, amber, NSF

ITEM # A125.1 SHELF, MICROWAVE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Shelf, Microwave
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. Wall Shelf to be #16-gauge, type 304, stainless steel. Rear and both ends to be turned up 2". Front edge to be turned down 1-1/2" with a 1/2" return.
4. FSEC is responsible for field verification of space available prior to fabrication.
5. Verify installation height with the Food Service Director.
6. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
7. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
8. FSEC to install shelf approx. 20" above countertop or work surface.
9. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.

ITEM # A126 **ROOM SERVICE CART**
Quantity: **One (1)**
Manufacturer: **Kaliber Innovations**
Model: **FS-3649**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model FS-3649 Room Service Cart
2. Dimensions: 36"W x 49"H x 27.5"D
3. Capacity for 20 food trays
4. Heavy-duty low-profile concealed casters rated at 350 lbs.
5. Integrated pull handles on both sides.
6. Doors open 270 Degrees for easy access.
7. Recessed top for additional storage space.
8. 4 1/4" Spacing between trays
9. Keyed spacer for easy removal and cleaning.
10. Durable stainless-steel frame.
11. Available in any P-LAM Style and Color; non-premium selection
12. Cart P-LAM finish selection to match adjacent millwork.

ITEM # A127 **MOBILE HEATED CABINET**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **C589-SFS-UA**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model C589-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet, mobile, full height, insulated, universal wire slides (18) 18" x 26" or (34) 12" x 20" x 2-1/2" pan capacity, solid doors, top mount digital control, low temp alarm & memory recall, ducted heating system, thermostat 70° to 200°F temp, 3" OC (adjustable on 1-1/2" increments), 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, ENERGY STAR®
2. One (1) 1-year warranty against manufacturing defects
3. One (1) Left hand hinging
4. One (1) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. One (1) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series
6. One (1) Model C5-6CASTER 6" polyurethane caster upgrade
7. Millwork fabricator to trim drawer unit for a flush mount finish installation. Trim installation should not have any visible fasteners. Unit should not sit on a shelf or floor with surrounding gaps.

ITEM # A128 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000 gallon capacity, 3.34 gpm flow rate, 0.2 micron rating, (2) MC 0.2 micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) Note: This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # A129 KNIFE SANITIZER
Quantity: One (1)
Manufacturer: Edlund
Model: KSUV-18

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model KSUV-18 Knife Sterilizer Cabinet, holds up to 12 knives (2 larger slots to accommodate cleavers), LED light indicator, UV filtered plexiglass door with lockable keyed handle, stainless steel, 115v/60/1-ph, 70 watts, NEMA 5-15P, NSF, cETLus
2. One (1) 1-year limited warranty, standard
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support knife sanitizer on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support knife sanitizer.
6. FSEC to install knife sanitizer approximately 20" above countertop of work surface.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A130 **S/S WALL FLASHING, DISHWASHING**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Dishwashing
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # A200 **FIRE EXTINGUISHER, Existing to Remain**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. This unit is existing and is to remain.

ITEM # A300 **BUILT-IN COMBINATION CONVECTION MICROWAVE/CONVECTION WALL OVEN, BY GC**
Quantity: **One (1)**
Manufacturer: **GE Profile™**
Model: **PT7800SH**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model PT7800SH Built-In Combination Convection Microwave/Convection Wall Oven
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. GC shall furnish and install this item, through his supplier.
4. GC is responsible for verifying manufacturer, model number, size and components with Architect/Interior Designer BEFORE PLACING ORDER FOR THIS ITEM.
5. GC shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and millwork counters.
6. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
7. FSEC Millwork contractor to provide trim kits for residential equipment in order to conceal any gaps creating a complete built-in look.

ITEM # A301 **THERMAL SERVER, BREW-THRU, By Vendor**
Quantity: **Two (2)**
Manufacturer: **BUNN**
Model: **42750.0000**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # A302 **ICED TEA BREWER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **36700.0041**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 36700.0041 36700.0041 TB3Q/TD4T Iced Tea Brewer, 3-gallon capacity single brewer, 26.7 gallon/hour, SplashGard® funnel, Quickbrew system, includes (1) TD4T dispenser (03250.0005) (other dispensers sold separately) 120v/60/1-ph, 1730w, 14.4amps, NEMA 5-15P, cord attached, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # A302.1 **TEA / COFFEE DISPENSER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **34100.0000**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 34100.0000 34100.0000 TDO-4 Iced Tea/Coffee Dispenser, cylinder style, 4-gallon capacity (15.1 liters), sump dispense valve, oval shape solid plastic lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # A303 **JUICE DISPENSER, ELECTRIC, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **37300.0002**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 37300.0002 37300.0002 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses cold water, frozen and ambient products, High Intensity™ mixing technology, push button and portion control, cold water dispense, door lock, juice display, 120v/60/1-ph, 6amps, NEMA 5-15P, NSF, ETL
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # A304 **COFFEE BREWER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **23001.0006**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 23001.0006 23001.0006 CWTF15-APS Airpot Coffee Brewer, automatic, brews 3.8 gallons per hour capacity, digital circuitry with timer function operated by front panel switches, hot water faucet, plastic funnel, accommodates (1) 1.9 to 3.0 liter airpots (sold separately), stainless decor, 120v/60/1-ph, 1370w, 11 amps, NEMA 5-15P
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # A304.1 **THERMAL SERVER, BREW-THRU, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **42750.0000**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # A400-A407 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:

Item #A400 – Wall Oven Surround
Item #A401 – Back Counter
Item #A401.1 – Wall Cabinets
Item #A401.2 – Lights, LED
Item #A401.3 – Perforated S/S Shield for Induction Unit
Item #A401.4 – Hood Surround
Item #A402 – Front Counter
Item #A402.1 – Plate Pull-Out Drawer
Item #A402.2 – Pull-out Waste Basket, Single (Rev-A-Shelf, RV-35)
Item #A402.3 – Jewelry Case Sneezeguard
Item #A402.4 – S/S Corner Guard (Qty. of 2)
Item #A403 – Dutch Door
Item #A404 – Dutch Door
Item #A405 – Bussing Counter
Item #A405.1 – Glove Box Dispenser, Double
Item #A405.2 – Wall Cabinets
Item #A405.3 – Lights, LED
Item #A405.4 – S/S Corner Guard (Qty. of 2)
Item #A406 – Low Wall
Item #A407 – Low Wall

B. **MANUFACTURER:**

Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com

C. **SUBSTITUTIONS:**

Will be considered from those that meet the following qualifications.
Minimum qualifications: Ten (10) years of custom millwork fabrication experience with projects of similar scope and complexity in food service type millwork.
Must be AWI Certified and Member.
Provide firm name, physical address, phone number, email address and contact person.
Provide engineered surface material certification numbers.
Provide brief list of projects recently completed with AWI spec, scope and complexity similar to this type of project.
Full requirements of spec will be expected to be met including core material base construction and warranties as outlined in specification and contract drawing requirements.

D. CERTIFICATION:

AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.

UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.

NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.

E. GENERAL CONDITIONS:

Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.

F. RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDE BY OTHER TRADES:

1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASCTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
 - (1) Hardware finishes to be HDW-1; Refer to architectural/interior design documents for finish selections and locations.
6. **EXTERIOR:** Stained Wood Finish and P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Cabinet finishes to be CAB-1, CAB-2 and P-LAM-5; Refer to architectural/interior design documents for finish selections and locations.

7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.
8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Tile edges are to be finished with trim or Schluter strips. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED:** FINISHED - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR:** APPLIED PANEL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR:** FINISHED - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE:** TOP STRETCHERS or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL TOP - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE:** FULL BOTTOM with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL BOTTOM with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS:** FULL BACK - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moister barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer head design selections.
2. **PANELED PLAM:** Custom Design to be determined by client – Custom to match Showplace Channing
3. **PANELED WOOD:** Custom Design to be determined by client – Custom to match Showplace Channing
4. **VENTILATION:** Will be provided per equipment manufacturer requirements – Casework inset where ventilation is required to be MTL-1.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Countertop finish to be QSM-1 with backsplash tile finish to be TILE-4; Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **GATE HINGES – DUTCH DOOR:** DOUBLE ACTING - BOMMER 7114-603 Adjustable Spring tension hinge SINGLE ACTING – McKinney MacPro MPS60 Adjustable Spring tension hinge. Hinges to be installed at top and bottom of the door.
3. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
4. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
5. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.
6. **LOCKS – DUTCH DOORS:** Provide Progressive Hardware Model #R1000 Bolt Lock. Mount sideways on operator side. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin. Refer to typical detail MWK-115.

7. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
8. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
9. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
10. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with a distance of 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
11. **LED LIGHTS - WALL CABINETS:** All wall cabinets to be provided with SuperBrightLEDs (alternate equal manufactures accepted from the following CALI, DiodeLED, Luminii, Klus, and Optic Arts) Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft. with 90+ CRI rating, housed in a L-TASK-12F LED Aluminum Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of cabinets. Installed below wall cabinet with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured inside a wall cabinet to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall below wall cabinets. Millwork fabricator to provide LED lights and install in wall cabinets complete with all interconnections.
12. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 1/2" unless required by site conditions.
13. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
14. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
15. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.

16. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering). Refer to architectural/interior design documents for finish selections and locations.
 17. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 18. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 19. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 20. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations
- K. EQUIPMENT INTEGRATION & PROTECTION:**
1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
 2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.
 3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
 4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
 5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
 6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
 7. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.

L. COORDINATION:

1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.

M. SUBMITTALS:

1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
3. Include MEP sheet if a part of the Scope.
4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
5. Submit samples of exposed material colors and hardware as requested by the architect/owner.

N. JOB CONDITIONS

1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.
4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent or excessive changes in temperature or humidity level during the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or **FLOORS** in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)

11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
 12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
 13. Walls and Partitions (whether framed, demountable or masonry) must be in place.
 14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
 15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
 16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
 17. Elevator, hoist or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
 18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.
- O. **INSTALLATION, QUALITY ASSURANCE AND WARRANTY:**
1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
 2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
 3. Install and trim millwork to walls, floors, ceiling and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
 4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
 5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
 6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care and maintenance of custom millwork.
 7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # A500 **BEVERAGE DISPENSER, NON-INSULATED, SMALLWARES**
Quantity: **Two (2)**
Manufacturer: **Cal-Mil**
Model: **1580-3INF-74**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 1580-3INF-74 SoHo Beverage Dispenser, 3-gallon capacity, 10"W x 12"D x 24-1/2"H, infusion chamber, spigot, drip tray, glass, silver frame, BPA Free
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # A501 **TRASH BIN, SLIM JIM, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # A502 **SPARE NO.**

ITEM # A503 **TOWEL/SOAP DISPENSER, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A504 **TRASH CAN, 32-GAL W/ DOLLY, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # A505 **GLASS RACK, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # A600 **DUPLEX CONVENIENCE RECEPTACLE, BY EC**
Quantity: **Three (3)**
Manufacturer: **EC**
Model: **BY EC**

Furnish and set in place per manufacturer's standard specifications:

1. Three (3) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown where as to not interfere with food service equipment. Provide additional dual convenience receptacle as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # A700-A706 FOOD SERVICE FLOOR SINK & A.F.D PACKAGE, BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 Item #A700 – Floor Sink
 Item #A701 – Floor Sink
 Item #A702 – Floor Sink
 Item #A703 – Area Floor Drain
 Item #A704 – Floor Sink
 Item #A705 – Area Floor Drain
 Item #A706 – Area Floor Drain
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. See floor sink installation detail MEP-100 on typical installation sheet.
7. Area Floor Drain to be sized and located by Engineer/ PC.
8. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
9. Floor to be slopped to A.F.D
10. Provide additional A.F.D as required.

SC DINING

EQUIPMENT NUMBERING GROUP (LETTER) FOR THE FOLLOWING AREA HAS CHANGED TO AVOID DUPLICATION / CONFUSION WITH PURCHASING AND INSTALLATION DURING CA:
SC DINING LETTER CHANGED TO D

ITEM # D100 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: True Manufacturing Co., Inc.
Model: TUC-27-ADA-HC~SPEC3

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TUC-27-ADA-HC~SPEC3 SPEC SERIES® Undercounter Refrigerator, 34" working height, 33 - 38°F, SPEC Package 3 includes: 16-ga. stainless steel top, (1) heavy-duty stainless steel door, steel handle, door lock standard, (2) PVC coated adjustable wire shelves, electronic temperature control with digital temperature display, stainless steel sides & back, stainless steel interior, 3" castors, R290 Hydrocarbon refrigerant, 1/6 HP, 115v/60/1-ph, 2.0 amps, NEMA 5-15P, cULus, UL EPH Classified, CE, ADA Compliant, Made in USA
2. One (1) Self-contained refrigeration standard
3. One (1) Warranty - 7-year compressor
4. One (1) Warranty - 3-year parts and labor
5. One (1) Door hinging: on left at factory

ITEM # D101 ICE MACHINE & DISPENSER, NUGGET STYLE
Quantity: One (1)
Manufacturer: Follett LLC
Model: 12CI425A-S

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 12CI425A-S Symphony Plus™ Ice & Water Dispenser, countertop, SensorSAFE™ dispense, integral ice machine, Chewblet® ice, air-cooled condenser, up to 425 lb. production in 24 hours, 12 lb. storage capacity, Agion® silver-based antimicrobial protection, stainless steel cabinet with accent trim, 115v/60/1-ph, NSF, cETLus
2. One (1) 3-year parts & labor warranty, additional 2 years compressor warranty (parts only), standard
3. One (1) 115v/60/1-ph, 11.0 amps, NEMA 5-15P, standard
4. One (1) Model 01089580 Pressurized Water Sanitizing Kit, (1) filter housing, (1) dip tube, 12' tubing, for use with Follett Symphony & Symphony Plus ice & water dispensers without a Follett water filtration system.
5. One (1) Model AF10LBLEGS 4" Leg Kit, for 12CI series
6. One (1) Model 01038652 Nu-Calgon IMS-III Sanitizer, case of (12) 16 oz bottles, NSF
7. One (1) Model 01149954 SafeCLEAN Plus, liquid – environmentally responsible ice machine cleaner (6 x 8 oz bottles)
8. Drain to be indirect to the nearest floor sink; piping and connection by PC.
9. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
10. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # D102 **BOTTOM MOUNT, DUAL TEMP. REFRIGERATOR/FREEZER, REACH-IN**
Quantity: **One (1)**
Manufacturer: **Victory Refrigeration**
Model: **VBRF23HC-1-A-R**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model VBRF23HC-1-A-R Bottom Mount, Dual Temp. Refrigerator/Freezer, Reach-In
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Remote refrigeration system by others
4. One (1) 115v/60/1-ph, 3.0 amps, cord with NEMA 5-15P
5. One (1) 115v/60/1-ph, 7.0 amps, cord with NEMA 5-15P
6. One (1) Door hinging: on left at factory
7. Eighteen (18) Type "A" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" pans
8. One (1) Legs, set of 4, 6" high adjustable stainless steel, standard
9. Unit to operate with R404a refrigerant connected to remote power pack item #D125
10. Finish Selection: PLAM-5

ITEM # D103 **EXHIBITION STYLE COOKING STATION**
Quantity: **One (1)**
Manufacturer: **Kaliber Innovations**
Model: **MC-59-FPS-G2-R3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model MC-59-FPS-G2-R3 Exhibition Style Cooking Station
2. Mobile Cooking Station with Integrated Induction Appliances, 4 Stage Filtration and built-in Fire Suppression System.
3. One (1) - 3500W Induction Griddle
4. One (1) - 3500W Induction Range
5. One (1) - Integrated UL300 Fire Suppression System
6. Filtration Kit consisting of (2) - Stainless Steel Baffle Filters, (1) - Hi-Temp Pre-Filter, (1) - HEPA Filter, (1) - Carbon Filter
7. Solid stainless-steel construction with P-LAM to match adjacent millwork finishes (select from standard color options, premium selections upcharge)
8. Recommended 170CFM of make-up air supplied to location of unit by low velocity HVAC diffusers for adequate air circulation.
9. Supply Voltage: 208/240VAC, Single Phase, 60Hz, 38Amps, Plug Type: NEMA 6-50P
10. UL710B/NSF-2 Listed
11. Weight: 750lbs
12. 1-year parts & labor warranty
13. Electrician to recess receptacle in wall in order to prevent unit from being pushed out by cord & plug.
14. Electrician to make final alarm connection to building alarm system from dry contacts provided in Ansul control head.
15. After unit is located, Ansul system to be checked and tagged by local Fire Suppression Authorized Dealer. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
16. Installation to be performed by authorized and licensed dealer only.
17. Provide password protection programmed on keypad for safety shutdown and operation of the unit. Time clock to be set at 120 minutes after unit is turned on to automatically power down.
18. Finish Selection: PLAM-5

ITEM # D103.1 **FIRE EXTINGUISHER**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.
5. This unit is existing and is to be relocated.
6. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
7. GC is responsible for the removal, cleaning, storage, and relocation of the equipment.
8. FSEC to inspect unit and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.

ITEM # D104 **HEAT LAMP**
Quantity: **One (1)**
Manufacturer: **Hatco**
Model: **GRAH-48D3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model GRAH-48D3 Glo-Ray® Infrared Foodwarmer, 48" W, high wattage, tubular metal heater rod, double heater rod housing 3" spacing, aluminum construction, 2200 watts, NSF, cULus, Made in USA
2. One (1) Includes 24/7 parts & service assistance
3. One (1) One-year on-site parts and labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. One (1) 120v/60/1-ph
5. One (1) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle, shipped loose
6. One (1) Model IND.LGT-2-REM (2) Indicator Lights
7. One (1) Model STANDARD Clear Anodized Aluminum, standard

ITEM # D105 **COLD FOOD WELL UNIT, DROP-IN, REFRIGERATED**
Quantity: **One (1)**
Manufacturer: **Vollrath**
Model: **FC-4C-01120-N**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model FC-4C-01120-N NSF7 Refrigerated Cold Pan, drop-In, 1-pan, 6-5/8" deep well, accommodates standard 12" x 20" pans with adaptor bars, drip-free flange, polyurethane foam insulated, 300 series stainless steel, 20 gauge galvanized exterior housing, self-contained refrigeration, 1/5 HP, 120v/60/1-ph, cord, NEMA 5-15P, 3.5 amps, cULus, NSF, Made in USA (contact Vollrath for lead times)
2. All equipment that is specified to be drop-in or recessed in counter shall be shipped to millwork fabricator for factory installation into counter.
3. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
4. Size and location of all cut-outs are to be verified and noted on shop drawings by Kitchen Equipment Contractor.
5. Plumbing Contractor to extend drain line to nearest floor sink.
6. Unit to be furnished with a drain to shut-off valve.
7. FSEC to coordinate and millwork fabricator to construct countertop with appropriate insulation between solid surface material and heat source.
8. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
9. FSEC to coordinate installation of this unit, into countertop, with millwork fabricator.
10. FSEC is responsible for coordinating with millwork shop drawings and associated equipment, including breath protector.
11. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
12. Owner shall supply pans, bowls, crocks, etc.
13. FSEC to verify quantity and sizes of adapter bars to be used with variety of pans.
14. Equipment to be NSF and UL listed and labeled.

ITEM # D106 **PREP/HAND SINK, UNDERMOUNT**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-UMDHSINK**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-UMDHSINK Undermount Sink, two compartment, two compartment, 10" wide x 14" front-to-back x 14" deep left dump sink, 10" wide x 14" front-to-back x 5" deep right hand sink, stainless steel center sink splash, stainless steel construction, mounting clips, faucets by others, NSF
2. Mount and seal sink to underside of stone utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps.

ITEM # D106.1 **PANTRY FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0325-CR-WH4**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # D106.2 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3100-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # D106.3 **TOWEL/SOAP DISPENSER, SURFACE MOUNTED**
Quantity: **One (1)**
Manufacturer: **Bradley Corporation**
Model: **1471-11**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 1471-11 Towel/Soap Dispenser, Surface Mounted
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number accordingly, as required to accommodate owner's standard facility paper towel size/fold.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D107 **PLATE AND DISH DISPENSER, DROP-IN**
Quantity: **One (1)**
Manufacturer: **Delfield**
Model: **DIS-1013-ET-MOD**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model DIS-1013-ET-MOD Dispenser, Even Temp Heated Dish, drop-in type, single self-elevating dish dispensing tube, maximum dish size approximately 10.12" diameter, steel frame, stainless steel tubes and exterior, cut-out diameter 12-7/8", flange diameter 13-1/2", 7.0 kW, cUL, UL, NSF
2. One (1) Model 0460000N 1-year parts & labor warranty, standard
3. One (1) 120v/60/1-ph, 5.5 amps, NEMA 5-15P, standard
4. One (1) Model DIS-SL Shorten dispenser tubes to special length
5. Overall height of unit to be 25.5" (Including the rubber plate extensions).
6. FSEC to VERIFY plate SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's selection of plates.
7. Unit installation is a drop-in into a pull-out drawer as detailed in millwork detail #MWK-117. Unit shall plug into a receptacle installed in rear of cabinet, behind drawer.
8. FSEC shall verify that space available in counter and will accommodate unit, adjust height if necessary, for drawer installation as detailed in MWK-117.

ITEM # D108 **INDUCTION GENERATOR SYSTEM, BUILT-IN**
Quantity: **One (1)**
Manufacturer: **Garland/US Range**
Model: **HOIN2400**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model HOIN2400 Induction Hold-Line, built-in, (3) 20.47" x 12.6" ceran ceramic glass top with (3) heat retaining plates, RTCSmp temperature control, remote module generator controls up to 4 top surfaces, dual temperature display per module, ETL, cETLus, CE, FCC (NET)
2. One (1) Two-year on-site parts and labor warranty, standard
3. One (1) 208v/60/1-ph, 3.2 kW, 15.4 amps, generator voltage
4. Three (3) (3) 208v/60/1-ph, .8 kW, heat retaining plates voltage
5. **INSTALLATION:**
Units to be installed flush with 4" separation between glass. Do not use stainless trim around the perimeter for installation as this will interfere with induction performance.
Millwork Fabricator to provide support beams in between units; seal all crevices as required and follow practice outlined in national standard NSF 4. See installation detail MWK-116.
Controls to be recessed into millwork apron.
Digital Thermometer display on glass top to be oriented to operator side.
Installation to be performed by certified factory installers only - NO EXCEPTIONS
6. **STONE COMPATIBILITY:**
Units are compatible with ¾" or 1-1/4" thick standard engineered countertops – other specific countertop material can be used as recommended by manufacturer.
7. **VENTILATION:**
Each unit requires 70 CFM free air flow with adequate enclosure venting and maximum ambient temperature of 122°F. When installed in a closed cabinet, provide McNichols 16-gauge 1833531638 perforated metal mesh or equal on doors.
At location of induction generator, AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting.
Provide cabinet fan for ventilation and air movement.
8. **PROTECTION:**
Generator to be installed on back wall of cabinet above floor of cabinet and enclosed in a mesh safety surround to prevent any accidental access to exposed high voltage contactors. Refer to installation detail MWK-116 for enclosure sizes.
9. **ELECTRICAL CONNECTIONS:**
All internal connections from generator to each induction plate to be interconnected by FSEC utilizing factory provided wiring harness. All wiring harness to be neatly bound and run as close as possible to top corner of cabinet with zip ties. No wiring should be hanging loose on cabinet floor.
Electrical Contractor to provide single point connection to the induction generator with means of disconnect if hard wired, connection to be with a switch.
10. **COORDINATION:**
FSEC is responsible for verifying that space available will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
FSEC is responsible for reviewing millwork shop drawings.

ITEM # D108.1 **CHAFING DISH**
Quantity: **Three (3)**
Manufacturer: **Eastern Tabletop**
Model: **3995G**

Furnish and set in place per manufacturer's standard specifications:

1. Three (3) Model 3995G Jazz Rock Collection Induction Chafer, 8 qt., rectangular, hotel grade, full glass hinged cover, 3-points of drip free feature with condensation catch, includes food pan, hydraulic hinged slowed letdown mechanism (locks in at 180°), works on all induction warmers/cookers/or as a chafer tabletop, 18/10 stainless steel, 7 Star Series
2. Three (3) Model 3995FP Chafing Dish Food Pan, 8 qt., rectangular, stainless steel, for #3995
3. Nine (9) Vollrath Model 30322 Super Pan V® Food Pan, 1/3 size, 2-1/2" deep, 2.6 qt capacity, 22 gauge, 300 series stainless steel, reinforced pour corners, reverse formed flattened edges, anti-jamming design, NSF, Made in USA, Jacob's Pride® Collection, Limited Lifetime Warranty

ITEM # D109 **WARMING DRAWER, BUILT-IN**
Quantity: **Two (2)**
Manufacturer: **Alto-Shaam**
Model: **500-1D**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 500-1D Halo Heat® Warming Drawer, built-in, one drawer, digital controller, (1) 12" x 20" pan, (50) rolls or (34) baked potatoes capacity, drawer can adapt to hold optional oversize pan, adjustable thermostat, stainless steel exterior, EcoSmart®, cULus, UL EPH ANSI/NSF 4, CE, EAC
2. Two (2) 120v/50/60/1-ph, 5.3 amps, .64 kW, NEMA 5-15P, standard
3. Two (2) Non-vented drawers, standard
4. Two (2) Model 5015147 Built-In Trim Kit, for 500-1D one drawer warmer
5. Millwork fabricator to trim drawer unit for a flush mount finish installation. Trim installation should not have any visible fasteners. Unit should not sit on a shelf or floor with surrounding gaps.

ITEM # D110 **SPARE NO.**

ITEM # D111 **INDUCTION SOUP RETHERMALIZER, BUILT-IN / DROP-IN**
Quantity: **One (1)**
Manufacturer: **Vollrath**
Model: **74701D**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 74701D Mirage® Induction Rethermalizer, drop-in, dry operation, 7 quart, inset with hinged cover, (4) soup presets, stir indicator LED, solid state controls with locking function, temperature control in °F or °C, cabinet mount controls with leads, includes: mounting hardware, cord with NEMA 5-15P, 800 watts, 6.7 amps, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. One (1) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Three (3) Model 88184 Inset, 7-1/4-quart, induction ready, for Mirage induction rethermalizer, NSF
4. One (1) Model 4980422 Ergo Grip® One-Piece Ladle, equipped with all-natural antimicrobial, 4 oz., stainless steel, 13-1/8" OA length, one-piece construction with black Kool-Touch™ offset handle, shorter overall length for easy serving under low profile breath guards, integrated handle stopper prevents ladle from sliding into containers, Jacob's Pride® Collection, Limited Lifetime Warranty
5. One (1) Model 47493 Contemporary Inset Cover, hinged, fits 7 quart inset, easy on/off lid, welded handle, condensation returns to inset, no friction fit tabs for easy installation & removal, dishwasher safe, stainless steel construction, imported
6. One (1) Model 47491 Decorative Ring, for 7 qt. induction soup drop-in units, 22 gauge stainless steel
7. FSEC to install soup well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
8. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
9. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
10. Equipment to be NSF and UL listed and labeled.
11. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge wire mesh framed insert in doors. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting

ITEM # D112 **SPARE NO.**

ITEM # D113 **SHELVING, WALL MOUNTED**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **SWS1560-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SWS1560-14/3 Snap-n-Slide® Shelf, wall-mounted, 60"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 225 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D114 **ROOM SERVICE CART**
Quantity: **One (1)**
Manufacturer: **Kaliber Innovations**
Model: **FS-3649**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model FS-3649 Room Service Cart
2. Dimensions: 36"W x 49"H x 27.5"D
3. Capacity for 20 food trays
4. Heavy-duty low-profile concealed casters rated at 350 lbs.
5. Integrated pull handles on both sides.
6. Doors open 270 Degrees for easy access.
7. Recessed top for additional storage space.
8. 4 1/4" Spacing between trays
9. Keyed spacer for easy removal and cleaning.
10. Durable stainless-steel frame.
11. Available in any P-LAM Style and Color; non-premium selection
12. Cart P-LAM finish selection to match adjacent millwork.
13. Finish Selection: PLAM-5

ITEM # D115 **HAND SINK**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **YSCOPOS-HSA-0001-00**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #D115.1
9. Owner to provide towel & soap dispenser.

ITEM # D115.1 **HANDS FREE ELECTRONIC FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **EC-3101-HG**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # D116 **SOILED DISHTABLE**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **UDT-5L-14/3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model UDT-5L-14/3 Spec-Master® Soiled Dishtable, undercounter, dishwasher on left, 60"W x 27-1/2"D x 43-1/2"H overall, 14/304 stainless steel top, 20" x 20" x 5" pre-rinse sink includes basket drain with removable crumb cup, 8"H backsplash, single deck mount faucet hole for pre-rinse, raised rolled rims on front & sides, accommodates 24" (front-to-back) undercounter dishwasher, stainless steel legs & crossrails with adjustable metal feet, adjustable metal feet, NSF
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # D116.1 **PRE-RINSE FAUCET ASSEMBLY**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0133-CR-BC**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-BC EasyInstall Pre-Rinse Unit, 8" centers, wall mount base & bracket, spring action, ceramas cartridges, low flow valve, (B-0107-C)
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male
3. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
4. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D116.2 **DISPOSER**
Quantity: **One (1)**
Manufacturer: **Salvajor**
Model: **200-SA-WSP**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls (HydroLogic control with operator sensor comes standard mounted to SM/PSM models. ONLY add if additional on/off control is required)
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # D116.3 **DISPOSER CONTROL PANEL, Included**
Quantity: **One (1)**
Manufacturer: **Salvajor**
Model: **ARSS-LD**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Included with item #H116.2, Disposer.

ITEM # D116.4 **DISHTABLE SORTING SHELF**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **606298**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 606298 Rack Shelf, tubular, wall mounted, 63"W x 15.5"D x 12"H, 1.625"dia. tubing 14/304 stainless steel knock-down construction
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approx. 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D117 **DISHWASHER, UNDERCOUNTER**
Quantity: **One (1)**
Manufacturer: **Hobart**
Model: **LXER-2**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LXER-2 Advansys™ Dishwasher, undercounter, 23-15/16"W x 26-13/16"D x 32-1/2"H, high temperature sanitizing, Energy Recovery, 30, 24, 13 Racks/Hour, Fresh Water Rinse, .62 gal/rack, Automated Delime Cycle, Clogged Wash Arm Alert, 3 selectable cycles - light, normal, heavy (Pot & Pan cycle on heavy cycle), Advanced Service Diagnostics, 120/208-240(3W)/60/1, Detergent, Rinse Aid & Delimer Pump, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model CORD-PWRKIT-LXEH Power cord kit, for 120/208-240(3w)/60/1 voltage
4. One (1) Model DWT-LXE Drain water tempering kit for LXe
5. One (1) Installation of DWT kit
6. One (1) Model WTRHAM-ARREST Water hammer arrestor kit, includes 3/4" brass pressure regulator valve
7. One (1) Model DISHRAK-PEG20 Peg rack
8. One (1) Model DISHRAK-COM20 Combination rack
9. One (1) Model LXEDRLK-W/O-BD Door lock, keeps door locked until condensing cycle is complete
10. NOTE: This equipment has a built-in condenser system that captures the steam and converts it back to wash water. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # D117.1 **WATER FILTER SYSTEM, WAREWASHING**
Quantity: **One (1)**
Manufacturer: **Everpure**
Model: **EV979911**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # D118 **WIRE RACKS EPOXY COATED**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **LOT**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model LOT Wire Racks Epoxy Coated
2. Four (4) Model 74UPK3 Super Erecta® SiteSelect™ Post, 73-7/8"H, for use with stem casters, Metroseal 3 epoxy coated corrosion-resistant finish with Microban® antimicrobial protection
3. Two (2) Model 5MP Super Erecta® Stem Caster, swivel, 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
4. Two (2) Model 5MPB Super Erecta® Stem Caster, swivel (with foot operated brake), 5" dia., 1-1/4" face, 300 lb. capacity, polyurethane flat wheel tread, includes bumper
5. Four (4) Model 2436NK3 Super Erecta® Shelf, wire, 36"W x 24"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # D119 **MOBILE HEATED CABINET**
Quantity: **One (1)**
Manufacturer: **Metro**
Model: **C589-SFS-UA**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model C589-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet, mobile, full height, insulated, universal wire slides (18) 18" x 26" or (34) 12" x 20" x 2-1/2" pan capacity, solid doors, top mount digital control, low temp alarm & memory recall, ducted heating system, thermostat 70° to 200°F temp, 3" OC (adjustable on 1-1/2" increments), 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, ENERGY STAR®
2. One (1) 1-year warranty against manufacturing defects
3. One (1) Left hand hinging
4. One (1) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. One (1) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series
6. One (1) Model C5-6CASTER 6" polyurethane caster upgrade
7. Millwork fabricator to trim drawer unit for a flush mount finish installation. Trim installation should not have any visible fasteners. Unit should not sit on a shelf or floor with surrounding gaps.

ITEM # D120 **WORKTABLE, STAINLESS STEEL TOP**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **T36108STEM-BS**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model T36108STEM-BS Spec-Master® Marine Series Work Table, 108"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (6) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #D120.1, sink, plumbing.
3. Where top abuts any walls, provide side splashes same height as backsplash, 2 thick with a 45 degree return to the wall.

ITEM # D120.1 **PREP SINK, WELD-IN**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **E24A**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # D120.2 **DECK MOUNT FAUCET**
Quantity: **One (1)**
Manufacturer: **T&S Brass**
Model: **B-0221-CR**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant (replaces B-0221-CR-SC)
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # D121 **MICROWAVE STEAMER OVEN**
Quantity: **One (1)**
Manufacturer: **ACP**
Model: **AMSO35**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model AMSO35 Amana® Steamer Oven, 1.6 cu. ft., 3500 watts, heavy volume, 4-stage cooking, (11) power levels, (100) memory settings, 60-minute max cooking time, LCD display, touch control, audible end of cycle signal, pull down door with tempered glass, lighted interior, recessed ceramic tray and removable shelf, stainless steel exterior & interior, 208-240v/60/1-ph, 5100 watts (total), 30 MCA, NEMA 6-30P, cETLus, ETL-Sanitation
2. One (1) 3-year full warranty, standard
3. One (1) Model CL10 Amana® Oven Cleaner, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens (shipped in USA Only)
4. One (1) Model SH10 Oven Shield, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens, (shipped in USA Only)
5. One (1) Model AP10 Carlisle Pan, full size, 4" deep, 12-7/10 qts., amber high heat, withstands temperatures up to 375° F, dishwasher safe, BPA free, for use in food bars and steam tables, for AMSO & MSO ovens, NSF
6. One (1) Model AL10 Carlisle Lid, full size, amber high heat, recessed handle, withstands temperatures up to 375° F, dishwasher safe, BPA free, for use in food bars and steam tables, for AMSO & MSO ovens, NSF

ITEM # D121.1 **SHELF, MICROWAVE**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Shelf, Microwave

ITEM # D122 **RACK DOLLY**
Quantity: **Two (2)**
Manufacturer: **Metro**
Model: **DH2020N**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # D123 **UNDERCOUNTER REFRIGERATOR**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **TUC-27-ADA-HC~SPEC3**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model TUC-27-ADA-HC~SPEC3 SPEC SERIES® Undercounter Refrigerator, 34" working height, 33 - 38°F, SPEC Package 3 includes: 16-ga. stainless steel top, (1) heavy-duty stainless steel door, steel handle, door lock standard, (2) PVC coated adjustable wire shelves, electronic temperature control with digital temperature display, stainless steel sides & back, stainless steel interior, 3" castors, R290 Hydrocarbon refrigerant, 1/6 HP, 115v/60/1-ph, 2.0 amps, NEMA 5-15P, cULus, UL EPH Classified, CE, ADA Compliant, Made in USA
2. One (1) Self-contained refrigeration standard
3. One (1) Warranty - 7-year compressor
4. One (1) Warranty - 3-year parts and labor
5. One (1) Door hinging: on right at factory

ITEM # D124 **ROLL-IN REFRIGERATOR**
Quantity: **One (1)**
Manufacturer: **True Manufacturing Co., Inc.**
Model: **STA1RRI-1S**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model STA1RRI-1S SPEC SERIES® Refrigerator, roll-in, one-section, (1) stainless steel door with lock, cam-lift hinges, digital temperature control, aluminum interior, incandescent interior lighting, stainless steel ramp, stainless steel front & sides, 1/3 HP, 115v/60/1-ph, 8.9 amps, NEMA 5-15P (accommodates 27"W x 29"D x 66"H cart, NOT included), cULus, UL EPH Classified, Made in USA
2. One (1) Warranty - 3-year parts and labor
3. One (1) Warranty - 5-year compressor
4. One (1) Left door hinging

ITEM # D124.1 **BUN / SHEET PAN RACK**
Quantity: **One (1)**
Manufacturer: **Channel Manufacturing**
Model: **AXD1818**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model AXD1818 Lifetime Tough Bun Pan Rack, Heavy Duty, mobile, 22"W x 26"D x 64"H, front load, open sides, 3" spacing, capacity (18) 18" x 26" bun pans, welded heavy duty aluminum construction, 5" x 2" heavy duty swivel plate casters with Zerk grease fittings, corrections approved, NSF, Made in USA (published shipping weight does not reflect 50lb. pallet)
2. One (1) Lifetime warranty for traditional foodservice applications
3. One (1) Model /015 Pan Stop, web-strap
4. One (1) Model /024 Corner Bumpers (set of 4)
5. One (1) Model /5B Caster Brakes, heavy duty (set of 2)

ITEM # D125 **REMOTE POWER PACK**
Quantity: **One (1)**
Manufacturer: **RDT**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Remote Power Pack
2. The refrigeration package shall be pre-engineered and factory assembled unit, trade name "Pre-Assembled Remote System" as manufactured by:
Refrigerated Design Technologies
1808 FM 66, Waxahachie, TX 75167
Phone: 972-937-3215 Fax: 972-937-0970
E-mail: info@rdtonline.com
3. Contractor shall furnish and install, where shown on plans, the following RDT UL approved "Pre-Assembled Remote System" air cooled. All units shall be electrically tested and shipped ready for field installation. The units shall be suitable for operation as specified below:
4. **CONSTRUCTION:**
The compressor mounting base shall be made of 14ga galvanized steel. The mounting base shall be pre-assembled, welded, cleaned and primed and powder coated. The condensing unit shall be installed with a minimum of 36" clear all around to allow for unrestricted flow of air through the condensing unit. System to include a painted steel structure.
5. **REFRIGERATION SYSTEMS:**
Single stage compressors with air-cooled condenser operating within the recommended range of suction and discharge pressures for economical operating and with required capacity, are to be furnished and installed in accordance with the refrigeration schedule.
All units shall be new factory assembled, to operate with the refrigerant specified. Refrigerant R404A is used for all medium temperature and low temperature applications.
Compressor shall be Copeland. The speed shall not exceed 1750 RPM. Compressor shall be equipped with suction and discharge service valves.
All units shall be equipped with high-low pressure control switches having adjustable range and differential. The high-pressure cut-out shall be of automatic reset type.
Each condensing unit shall include liquid line drier and sight glass, all assembled and piped.
6. **REFRIGERATION PIPING:**
All refrigerant lines shall be extended to one side of the package.
Ends of lines shall be capped against contamination after the units are completed. These capped ends are to be only at final connection of the package to fixtures.
7. **SAFETY CAUTION:**
Each system and evaporator is shipped under nitrogen pressure. Use caution and exercise safety at all times when preparing for final hookup.
8. **CONSTRUCTION NOTES FOR TRADES:**
It is the responsibility of each contractor to pull necessary permits for their respective work performed.
FOOD SERVICE EQUIPMENT CONTRACTOR:
The Kitchen Equipment Contractor shall verify all dimensions and coordinate with other trades.
The Kitchen Equipment Contractor shall verify all required refrigerant line lengths and runs and to be detailed on shop drawing submittal.
GENERAL CONTRACTORS:
General contractors shall verify all dimensions and coordinate with other trades.
General contractors shall prepare wall openings.

REFRIGERATION CONTRACTOR:

All copper tubing to be refrigerant grade A.C.R.

Silver solder and/or sil-fos shall be used for all refrigerant piping. Soft solder is not acceptable.

All piping to be pressure tested with nitrogen at 300 PSI. After the condensing unit and coil have been connected, the balance of the system shall be leak tested with all valves open.

The complete system shall be evacuated with vacuum pump.

Charge, test and adjust each unit.

Refrigerant contractor to provide and install drain-line heater in freezer to be connected by electrical contractor.

Refrigerant suction lines outside of refrigerated compartments, not run in conduit, shall be insulated back to compressor with Armstrong Arma-Flex AP – 25/50 foamed plastic insulation or equal in accord with direction of the manufacturer. Minimum thickness shall be 3/4 inch for commercial temperature and 1 inch for low temperature.

ELECTRICAL CONTRACTOR:

Electrical contractor provide power for refrigeration package and connect control and defrost system as called for in the wiring diagram.

Electrical contractor to provide 4-wire color coded service from the time clock at the refrigeration package to blower coil in fixture for automatic defrost.

Electrical contractor to connect drain-line heater in freezer.

All electrical wiring and installation shall be in accordance with the wiring diagram and local codes.

Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.

NOTE: Receptacles for units that are built-into counters or millwork are to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

PLUMBING CONTRACTOR:

Plumbing contractor to provide type "M" copper drain lines for walk-in cooler and freezer, pitched 1/2" per foot of run. In freezer, unheated drain line must be outside of insulation to prevent freezing. Trap drain line outside of refrigerated space to avoid entrance of warm and moist air. Plumbing contractor to provide individual drain line for each evaporator unless otherwise called for.

All plumbing installation shall be in accordance with local codes.

9. **SHOP DRAWINGS AND SUBMITTALS:**

Refer to food service manufacture specification drawings for more information. FSEC to submit shop drawings for review and approval before starting manufacturing.

ITEM # D126 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000 gallon capacity, 3.34 gpm flow rate, 0.2 micron rating, (2) MC 0.2 micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) Note: This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5 micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # D127 KNIFE SANITIZER
Quantity: One (1)
Manufacturer: Edlund
Model: KSUV-18

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model KSUV-18 Knife Sterilizer Cabinet, holds up to 12 knives (2 larger slots to accommodate cleavers), LED light indicator, UV filtered plexiglass door with lockable keyed handle, stainless steel, 115v/60/1-ph, 70 watts, NEMA 5-15P, NSF, cETLus
2. One (1) 1-year limited warranty, standard
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support knife sanitizer on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support knife sanitizer.
6. FSEC to install knife sanitizer approximately 20" above countertop of work surface.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D128 **S/S WALL FLASHING, DISHWASHING**
Quantity: **One (1)**
Manufacturer: **Eagle Group**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Dishwashing
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # D200 **FIRE EXTINGUISHER, Existing to Remain**
Quantity: **One (1)**
Manufacturer: **Ansul Fire Protection**
Model: **CUSTOM**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. This unit is existing and is to remain.

ITEM # D300 **THERMAL SERVER, BREW-THRU, By Vendor**
Quantity: **Two (2)**
Manufacturer: **BUNN**
Model: **42750.0000**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # D301 **BUILT-IN COMBINATION CONVECTION MICROWAVE/CONVECTION WALL OVEN, BY GC**
Quantity: **One (1)**
Manufacturer: **GE Profile™**
Model: **PT7800SH**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model PT7800SH Built-In Combination Convection Microwave/Convection Wall Oven
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. GC shall furnish and install this item, through his supplier.
4. GC is responsible for verifying manufacturer, model number, size and components with Architect/Interior Designer BEFORE PLACING ORDER FOR THIS ITEM.
5. GC shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and millwork counters.
6. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
7. FSEC Millwork contractor to provide trim kits for residential equipment in order to conceal any gaps creating a complete built-in look.

ITEM # D302 **COFFEE BREWER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **23001.0006**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 23001.0006 23001.0006 CWTF15-APS Airpot Coffee Brewer, automatic, brews 3.8 gallons per hour capacity, digital circuitry with timer function operated by front panel switches, hot water faucet, plastic funnel, accommodates (1) 1.9 to 3.0 liter airpots (sold separately), stainless decor, 120v/60/1-ph, 1370w, 11 amps, NEMA 5-15P
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # D302.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 42750.0000

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # D303 JUICE DISPENSER, ELECTRIC, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 37300.0002

1. One (1) Model 37300.0002 37300.0002 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses cold water, frozen and ambient products, High Intensity™ mixing technology, push button and portion control, cold water dispense, door lock, juice display, 120v/60/1-ph, 6amps, NEMA 5-15P, NSF, ETL
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # D304 **ICED TEA BREWER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **36700.0041**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model 36700.0041 36700.0041 TB3Q/TD4T Iced Tea Brewer, 3-gallon capacity single brewer, 26.7 gallon/hour, SplashGard® funnel, Quickbrew system, includes (1) TD4T dispenser (03250.0005) (other dispensers sold separately) 120v/60/1-ph, 1730w, 14.4amps, NEMA 5-15P, cord attached, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # D304.1 **TEA / COFFEE DISPENSER, By Vendor**
Quantity: **One (1)**
Manufacturer: **BUNN**
Model: **34100.0000**

1. One (1) Model 34100.0000 34100.0000 TDO-4 Iced Tea/Coffee Dispenser, cylinder style, 4-gallon capacity (15.1 liters), sump dispense valve, oval shape solid plastic lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # D400-D407 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:

Item #D400 – Beverage Counter
Item #D400.1 – S/S Corner Guard (Qty. of 2)
Item #D401 – Refrigerator Surround
Item #D402 – Wall Oven Surround
Item #D403 – Back Counter
Item #D403.1 – Pull-out Waste Basket, Double (Rev-A-Shelf, RV-35)
Item #D404 – Back Counter
Item #D404.1 – Wall Cabinets
Item #D404.2 – Lights, LED
Item #D405 – Front Counter
Item #D405.1 – Plate Pull-Out Drawer
Item #D405.2 – Jewelry Case Sneezeguard
Item #D405.3 – Perforated S/S Shield for Induction Unit
Item #D406 – Bar Counter
Item #D407 – Counter

B. **MANUFACTURER:**

Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com

C. **SUBSTITUTIONS:**

Will be considered from those that meet the following qualifications.
Minimum qualifications: Ten (10) years of custom millwork fabrication experience with projects of similar scope and complexity in food service type millwork.
Must be AWI Certified and Member.
Provide firm name, physical address, phone number, email address and contact person.
Provide engineered surface material certification numbers.
Provide brief list of projects recently completed with AWI spec, scope and complexity similar to this type of project.
Full requirements of spec will be expected to be met including core material base construction and warranties as outlined in specification and contract drawing requirements.

D. **CERTIFICATION:**

AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.
UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.
NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.

E. **GENERAL CONDITIONS:**

Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.

F. RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDE BY OTHER TRADES:

1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASCTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
 - (1) Hardware finishes to be HDW-1; Refer to architectural/interior design documents for finish selections and locations.
6. **EXTERIOR:** Stained Wood Finish and P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Cabinet finishes to be CAB-1, CAB-2 and P-LAM-5; Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.
8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Tile edges are to be finished with trim or Schluter strips. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED: FINISHED** - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR: APPLIED PANEL** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR: FINISHED** - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE: TOP STRETCHERS** or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER: FULL TOP** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE: FULL BOTTOM** with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER: FULL BOTTOM** with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS: FULL BACK** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE: DETACHED** and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moisture barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer head design selections.
2. **PANELED PLAM:** Custom Design to be determined by client – Custom to match Showplace Channing
3. **PANELED WOOD:** Custom Design to be determined by client – Custom to match Showplace Channing
4. **VENTILATION:** Will be provided per equipment manufacturer requirements – Casework inset where ventilation is required to be MTL-1.

I. **CONSTRUCTION – COUNTERTOP:**

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Countertop finish to be QSM-1 with backsplash tile finish to be TILE-4; Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. **FEATURES/OPTIONS/ACCESSORIES:**

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **GATE HINGES – DUTCH DOOR:** DOUBLE ACTING - BOMMER 7114-603 Adjustable Spring tension hinge SINGLE ACTING – McKinney MacPro MPS60 Adjustable Spring tension hinge. Hinges to be installed at top and bottom of the door.
3. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
4. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
5. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.
6. **LOCKS – DUTCH DOORS:** Provide Progressive Hardware Model #R1000 Bolt Lock. Mount sideways on operator side. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin. Refer to typical detail MWK-115.
7. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
8. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
9. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided

10. **SHELVING:**

- (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with a distance of 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
11. **LED LIGHTS - WALL CABINETS:** All wall cabinets to be provided with SuperBrightLEDs (alternate equal manufactures accepted from the following CALI, DiodeLED, Luminii, Klus, and Optic Arts) Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft. with 90+ CRI rating, housed in a L-TASK-12F LED Aluminum Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of cabinets. Installed below wall cabinet with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured inside a wall cabinet to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall below wall cabinets. Millwork fabricator to provide LED lights and install in wall cabinets complete with all interconnections.
 12. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 1/2" unless required by site conditions.
 13. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
 14. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
 15. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
 16. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering). Refer to architectural/interior design documents for finish selections and locations.
 17. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 18. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 19. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 20. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations

K. EQUIPMENT INTEGRATION & PROTECTION:

1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.
3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
7. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.

L. COORDINATION:

1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.

M. SUBMITTALS:

1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
3. Include MEP sheet if a part of the Scope.
4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
5. Submit samples of exposed material colors and hardware as requested by the architect/owner.

N. JOB CONDITIONS

1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.
4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent or excessive changes in temperature or humidity level during the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or **FLOORS** in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
13. Walls and Partitions (whether framed, demountable or masonry) must be in place.

14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
 15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
 16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
 17. Elevator, hoist or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
 18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.
- O. **INSTALLATION, QUALITY ASSURANCE AND WARRANTY:**
1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
 2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
 3. Install and trim millwork to walls, floors, ceiling and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
 4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
 5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
 6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care and maintenance of custom millwork.
 7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # D500 **TRASH BIN, SLIM JIM**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # D501 **BEVERAGE DISPENSER, NON-INSULATED, SMALLWARES**
Quantity: **Two (2)**
Manufacturer: **Cal-Mil**
Model: **1580-3INF-74**

Furnish and set in place per manufacturer's standard specifications:

1. Two (2) Model 1580-3INF-74 SoHo Beverage Dispenser, 3-gallon capacity, 10"W x 12"D x 24-1/2"H, infusion chamber, spigot, drip tray, glass, silver frame, BPA Free
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # D502 **TOWEL/SOAP DISPENSER, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D503 **TRASH BIN, SLIM JIM, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # D504 **GLASS RACK, SMALLWARES**
Quantity: **One (1)**
Manufacturer: **Smallwares**
Model: **SMALLWARES**

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # D600 **DUPLEX CONVENIENCE RECEPTACLE, BY EC**
Quantity: **Six (6)**
Manufacturer: **EC**
Model: **BY EC**

Furnish and set in place per manufacturer's standard specifications:

1. Six (6) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # D700-D705 FLOOR SINK & A.F.D. PACKAGE, BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
Item #D700 – Floor Sink
Item #D701 – Area Floor Drain
Item #D702 – Floor Sink
Item #D703 – Floor Sink
Item #D704 – Floor Sink
Item #D705 – Area Floor Drain
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

ITEM # D706 SOLIDS INTERCEPTOR, By PC
Quantity: One (1)
Manufacturer: Zurn
Model: Z1180

Furnish and set in place per manufacturer's standard specifications:

1. One (1) Model Z1180 Solids Interceptor
2. Solids interceptor to be sized and located by Engineer/PC.

END OF ITEMIZED SPECIFICATIONS

PART 11 40 05 - EXECUTION

5.1 DESCRIPTION AND PURPOSE OF THIS SECTION

- A.** This section is additional supplemental information to sections 01 70 00 "Execution and Closeout Requirements", to further define coordination and responsibilities of all parties involved with executing a Food Service Equipment project.
- B.** The proper sequence of coordination, communication, scheduling, installation, operation, and maintenance of foodservice equipment will help eliminate unnecessary service issues and will facilitate the professional completion of the project. By creating a sequence of work for this foodservice project involving proper process and defining expectations, responsibilities, and sequence upfront is critical for project success. SCOPOS Hospitality Group has created a "Dealer Resources & Process" workgroup site with all this information outlined in an easy to follow format with all exhibit template files for download. If you do not have access to the workgroup site yet, please submit request to info@scoposhg.com and you will be invited to the platform.
- C.** This section contains the following areas of coordination:
 - 1. Description and Purpose of this Section
 - 2. Responsibility Matrix
 - 3. Coordination of Responsibility
 - 4. Scheduling Lead Times and Delivery
 - 5. General Contractor Responsibilities
 - 6. Food Service Equipment Contractor Responsibilities
 - 7. Fire Protection System Contractor Responsibilities
 - 8. Millwork Fabricator Responsibilities
 - 9. Refrigeration Contractor Responsibilities
 - 10. Electrical Contractor Responsibilities
 - 11. Plumbing Contractor Responsibilities
 - 12. HVAC Contractor Responsibilities
 - 13. Storage and Delivery
 - 14. Site Inspection and Field Verification
 - 15. Installation
 - 16. Protection
 - 17. Project Closeout Procedures
 - 18. Project Record Documents
 - 19. Warranties
 - 20. Exhibits

5.2 RESPONSIBILITY MATRIX

Food Service Specification/Design Responsibility

TRADE	FOOD SERVICE CONTRACTOR SPEC SECTION 11 40 00		ELECTRICAL CONTRACTOR SPEC SECTION 26 00 00		PLUMBING CONTRACTOR SPEC SECTION 22 00 00		MECHANICAL CONTRACTOR SPEC SECTION 23 00 00		GENERAL CONTRACTOR SPEC SECTION 01 00 00		BY OWNER	
	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL
ACTIVITY												
FOOD SERVICE EQUIPMENT												
Furnish of Specified Equipment (unless otherwise noted, i.e. by owner, by vendor, etc.)	X	X										
Installation - Deliver, uncrate, and set in place equipment	X	X										
All floor, wall, roof penetrations, sleeving, and fireproofing/insulating/resealing necessary for the performance of your work.									X	X		
Start-up, testing, and calibrating equipment	X	X										
Owner training of equipment - videotaping not included	X	X										
Demolition of Kitchen Equipment (if required - provide additional quote)	X	X										
Refurbishing of Kitchen Equipment (if required - provide additional quote)	X	X										
Modification of Kitchen Equipment (if required - provide additional quote)	X	X										
Sneeze Guards, Furnished by FSEC, Installed by MWC	X	X										
Trim and Seal Foodservice Equipment	X	X										
Liquor Dispensing & Beer System (if required)	X	X										
Provide Warranty Letter and Certification	X	X										
Provide Service Agency Listing and Equipment Catalogue Record	X	X										
FOOD SERVICE GRADE MILLWORK												
Millwork contractor is a sub to Food Service Equipment Contractor	X	X										
Millwork associated with foodservice equipment	X	X										
Engineered Stone associated with foodservice equipment	X	X										
Millwork Shop Drawings, CAD/BIM Level	X	X										
Pre-fit and Install drop-ins at factory	X	X										
Provide Grommets and holes for countertop equipment	X	X										
Seal all exposed raw wood surfaces and trim/seal/caulk millwork to walls	X	X										
All apron mounted receptacles and switches in pre-wired millwork	X	X										
Tile work on millwork accents - match same batches with flooring contractor	X	X										
LED Lighting in millwork counters	X	X										
LED Lighting in millwork counters - Wiring and Light Switch			X	X								
Load Centers in prewired millwork counters	X			X								
ELECTRICAL												
All final electrical connections to equipment from building services			X	X								
All control wiring			X	X								
Interwiring complete for serving counters			X	X								
Electrical safety disconnects as required			X	X								
Electrical Load Centers and/or Panelboards per bid documents			X	X								
All wall mounted electrical receptacles			X	X								
Provide all DCR's shown on foodservice rough-in drawings.			X	X								
Wire provided table limit switch in clean dish table.			X	X								
Low voltage data wiring from POS to manager's office and digital menu boards.			X	X								
Low Voltage wiring of alarm systems to building system.			X	X								
Interconnections of electrical feeds within foodservice equipment that were disconnected for shipping purposes	X	X										
PLUMBING												
Interconnections of plumbing feeds within foodservice equipment that were disconnected for shipping purposes	X	X										
All final Plumbing connections to equipment from building services					X	X						
Indirect waste lines extended from interconnected equipment to drain locations					X	X						
Hand sinks - as noted on foodservice documents	X					X						
Sink faucets/pre-rinse spray assemblies	X					X						
Overflows	X					X						
Lever waste fittings	X					X						
Provide all plumbing materials including pipe, traps, stops, valves, gauges, unions, and insulation.					X	X						
Flexible quick disconnect gas hoses for mobile equipment	X					X						
Flexible quick disconnect water hoses for mobile equipment	X					X						
Appliance gas pressure regulator for main feed to equipment	X					X						
Backflow preventers					X	X						
Beverage 6" PVC Raceway and Conduits (if required)					X	X						
Provide 3-inch PVC Refrigeration Piping Raceway and Conduits					X	X						
Floor Sinks, Area Floor Drains & Standpipes - 700 Series Tags on equipment schedule					X	X						
Floor troughs - Connections	X					X						
Floor troughs - grouting and backfill	X									X		
Provide all grease interceptors and grease traps					X	X						
HOODS												
Exhaust Hood and pre-piping in factory for fire protection system	X	X										
Duct work and duct connections at hood collars, grease & condensate							X	X				
Exhaust Fan, Make-Up Fan							X	X				
Fan starters and/or relays from Exhaust/Make-Up fans to control points.							X	X				
Interwire heat detectors and T-Stats to control panel			X	X								
Control wiring from fan starters to hood fan controls including EMS and VFD's			X	X								
Inter-connecting light circuits at field joints			X	X								
Final electrical connections to lights			X	X								
Light fixtures	X			X								
Light bulbs			X	X								
Provide wiring to all lights/switches in exhaust hoods.			X	X								
Air balancing							X	X				
Permits to hang hoods (if required) Fee is extra	X	X										
Closure panels to finished ceiling	X	X										
Structural engineering or hanging structure									X	X		
Balance system to prevent any cross drafts and negative pressure							X	X				

FIRE SUPPRESSION SYSTEMS										
Complete Fire Protection System, Ansul/RangeGuard	X	X								
Fire protection contractor is a sub to Food Service Equipment Contractor	X	X								
Tanks and control heads	X	X								
Permit, testing, certification	X	X								
Chemical piping from hood to ottoman	X	X								
Gas shut-off valve	X							X		
Resets for electrical gas valve (When Specified)	X				X					
N.O./N.C. Contactors for fan sequencing and/or fire alarm interface (contactors supplied as part of ottoman only)	X	X								
All electrical wiring as required to interconnect ottoman, gas shut-off valves, resets, building alarms, shunt trip circuits, fan controls/sequencing as required				X	X					
Shunt trip breakers				X	X					
WALK-IN BOXES, COOLER/FREEZER										
Wall, ceiling, and floor panel assemblies	X	X								
Installation permit if required	X									
Prefabrication floor panels - recessed in slab	X	X								
Light fixtures	X				X					
Light bulbs	X				X					
All electrical wiring and interwiring to door assembly control interface panel and light fixtures				X	X					
All wiring to heated pressure relief vents				X	X					
All penetrations through wall panels and ceiling panels for required to complete your work - see detail WIB-501				X	X	X	X			
Ceiling closure panels and wall trim - see detail WIB-101	X	X								
Insulation of Piping with heat tape in Walk-In Freezer section - see detail WIB-100	X	X								
Receptacle for heat tape plug-in				X	X					
Low Voltage wiring to remote monitoring stations for temperature alarms				X	X					
Drain lines from coils to floor sinks - see detail WIB-100						X	X			
REMOTE REFRIGERATION										
Refrigeration contractor is a sub to Food Service Equipment Contractor	X	X								
Submit shop drawing of rack system and piping diagram of installation runs	X	X								
Mount refrigeration unit on curb	X	X								
Roof pads/Exterior Concrete floor pads and penetrations								X	X	
Evaporator coils and condensing units	X	X								
Drain lines from coils to floor sinks						X	X			
Refrigeration piping from evaporators to condensing unit(s)	X	X								
Refrigeration Piping Raceway and Conduits (if required)						X	X			
Pull Boxes at equipment locations						X	X			
Permits - if required	X									
Wiring from time clock to freezer evaporators				X	X					
Condenser water connection (When water cooled)								X	X	
Interwire and final electrical connections to coils, condensing units, refrigeration racks, etc.				X	X					
Electrical disconnects (if required)				X	X					
Low voltage wiring and CAT-5 wiring of alarm system to building system				X	X					
Nitrogen test and subsequently charge refrigeration piping.	X	X								
Start-up system and demo to owner's facilities administrator	X	X								
GARBAGE DISPOSERS										
Disposer, Supply & Install - See Detail MEP-104	X	X								
Control Panel	X				X					
Interwire panel to disposer				X	X					
Interwire from panel to solenoid				X	X					
Electrical disconnect (if required)				X	X					
Water connection to disposer						X	X			
Flow control valve	X							X		
Solenoid & Vacuum Breaker	X							X		
Waste connections at disposer						X	X			
HOSE REELS										
Hose reel	X							X		
Control cabinet with mixing valve and shut off valve when specified	X							X		
Vacuum breaker	X							X		
Interpiping blended water from control panel to hose reel						X	X			
ICE MACHINES										
Ice machines & bin	X	X								
Water filter	X							X		
Interpipe water through water filter						X	X			
Final electrical connection				X	X					
Electrical disconnects if required				X	X					
REMOTE FILTER SYSTEMS										
Filter Head and cartridges	X							X		
Water supply to filter system						X	X			
Interpiping from filter system to individual points of use						X	X			
Final utility connection to equipment connected to filter system						X	X			
FINISHES										
FRP (wall panels)								X	X	
Finished floors, walls, and ceilings, building tile work								X	X	
Wall repairs (if required)								X	X	
Bumper rails and corner guards unless specified								X	X	
Stainless Steel Wall Panels	X	X								
Walk-In Refrigeration finished floor (when recessed slab box)								X	X	
MISCELLANEOUS										
Hoisting								X		
Building Access for large items - coordinate ahead of time								X		
Wall blocking								X	X	
Trenching								X	X	
Dumpsters								X		
Removal of packaging material from food service equipment/millwork	X	X								
Water proofing								X	X	

OWNER & VENDOR													
All vendor provided items - 300 series item numbers in the schedule												X	X
Bulk CO2 System - Bag-in-Box (if required)												X	X
Paper Towel and soap dispensers - 300 series item numbers in the schedule												X	X
POS - Point of Sale System - 500 series item numbers in the schedule												X	X
Sound System												X	X
Security System												X	X
Telephone System												X	X
Safe												X	X
Garbage/Recycling bins - 500 series item numbers in the schedule												X	X
COORDINATION & INSPECTIONS													
Project Coordination	X	X	X	X	X	X	X	X	X	X	X	X	X
Host Discipline Coordination meeting and develop "Discipline Coordination Sheet"	X	X											
Coordinate the sequencing of all equipment, hoods-ceilings, boxes-flooring, etc.										X	X		
Floor, Ceiling and Wall Protection during equipment installation										X	X		
Permits (Health Department)												X	X
Health department inspection walk through	X												
Coordination of inspections for foodservice areas	X	X											
Testing, Start-up & Demonstration of Kitchen Equipment	X	X											
Construction Schedule										X	X		
Rough-in Drawings, Electric/Plumbing	X												
Rough-in height and locations - to be shown in FSEC submittal drawings	X			X									
Shop Drawings for all custom fabrication items,	X	X											
BIM/REVIT plans and coordination	X	X											
Critical Dimensions and Hold to Dimensions - provide to FSEC										X			

5.3 COORDINATION OF RESPONSIBILITY

A. The responsibility of the Architect consists of the following:

1. Receive and forward all Submittals to Foodservice Consultant.
2. Receive and forward all RFI's to Foodservice Consultant.
3. Receive and forward all Meeting Minutes to Foodservice Consultant.
4. Receive and forward all Project Schedules to Foodservice Consultant.
5. Notify Foodservice Consultant when project is ready for inspection.

B. The responsibility of the Food Service Consultant consists of the following:

1. Receive and review all Submittals.
2. Receive and review all RFI's.
3. Receive and review all Meeting Minutes.
4. Receive and review all Project Schedules.
5. Complete final project inspection and report.

5.4 SCHEDULING LEAD TIMES AND DELIVERY

A. The Work shall be conducted based on the following sequence and lead times:

1. Schedule starts after PO's are released to FSEC.
2. Submittals and Shop Drawing Lead Time to produce: **Typical 2 weeks.**
3. Shop Drawing Review by General Contractor/Architect/Consultant: **Typical 2 weeks.**
4. Rough ins completed by trades, stub up locations.
5. Field Measure millwork: **Typical 1-2 days.**
6. Install millwork: **Typical 2 weeks** – this varies depending on project size
7. Template Counter Tops: **Typical 1-2 days.**
8. FSEC Partial Installation: **Typical 1 week** – this varies depending on project size
9. Install Countertop: **Typical 1-3 days** – this varies depending on project size
10. FSEC Final Installation: **Typical 1 week** – this varies depending on project size
11. MEP Trades to make final connections.

- B. Delivery:** Coordinate with progress of construction and Owner's operation schedules. Unless otherwise instructed and documented by Owner or General Contractor, the following procedures apply:

1. Field-Assembled Fixed Equipment: Integrated into the structure; including, but not limited to, walk-in box assemblies, exhaust hoods, drain trench or grate assemblies, conveyor systems, and ceiling mounted utensil racks are to be sent to the job-site when directed by the General Contractor and installed or protected accordingly.
2. All other Fixed Equipment: Deliver after completion of adjacent finished ceilings, lighting, finished floor and wall systems; including painting.
3. Major Movable Equipment: Deliver when possible to inventory in a secured area for the interim job site storage or, if secured storage is not available, when fixed equipment installation and clean-up has been completed.

5.5 GENERAL CONTRACTOR (GC) RESPONSIBILITIES

- A. General:** Cooperate fully with the Food Service Consultant so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.

- B.** The General Contractor (GC), or GC's designated sub shall be responsible for the following:

1. Construction Waste and Disposal: Provide dumpsters for foodservice packaging.
2. Building Access: Provide proper building access for all equipment.
3. Critical Dimensions: Carefully coordinate all critical dimensions with FSEC, especially for counters and other special fit items. Provide these dimensions as much in advance as possible to ensure sufficient time for FSEC's fabricator to fabricate these complex counters and "hold" dimensions.
4. Provide refrigeration contractor with refrigeration pack rigging to curb.
5. Floor, Ceiling and Wall Protection: Provide as necessary during the course of the entire project to ensure that no harm comes to any equipment and or new finishes.
6. Coordinate the sequencing of all equipment and items which potentially might adversely affect the installation of same by improper sequencing.
7. Floor troughs: Set and level into concrete wet bed.
8. Carefully coordinate with FSEC all coordinated finishes such as stainless-steel wall panels, location, and heights.
9. Coordinate recess depth: For Walk-In Refrigeration finished floor, thick set quarry tile or as per finish schedule
10. Coordinate and provide concrete pads for remote compressors or rack system.
11. Penetrations: Sealing of penetrations through rooftop and any sleeving of any walls required.
12. Coordinate and supply tile work as needed in recess of millwork pockets.
13. Install FRP (wall panels) in food preparation areas to meet Board of Health sanitation requirements.
14. Host regular Foodservice Specific meetings. Attendees include:
 - a. Architect.
 - b. Food Service Consultant.
 - c. Dining Service representative.
 - d. FSEC.
 - e. Electrical Contractor.
 - f. Plumbing Contractor.
15. Host occasional meeting with vendor/owner provided equipment installers and refrigeration contractor as required.

16. Fire Protection System: Coordinate the items below.
 - a. Wiring to building alarm monitoring stations.
 - b. Installation of gas valves (sized by MEC, supplied by FPSC).
 - c. Wiring between gas valve and Automan (control head unit).
 - d. In wall recesses for remote pull stations – See detail EXH-1
 - e. Power supply and electrical connection to Automan.
17. Contractor shall issue a letter, signed by all sub-contractors involved and co-signed by Owner's representative stating that staff have been satisfactorily instructed in the use of the equipment.
18. GC to consolidate all punch list inspection reports to one report, Food Service, Architects, Engineers, and GC.

C. Composite Crews and Claims of Jurisdiction:

1. The FSEC will be expected to bring all foodservice items to the site and set these items in their proper locations using their labor force.

5.6 FOOD SERVICE EQUIPMENT CONTRACTOR RESPONSIBILITIES

- A. General:** Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner. Dealer is responsible for reviewing, correcting, and guiding food service fabrication process, installation requirements, and codes. Dealer to follow formal protocol and flag any code or compliance issues, submitting RFI's or noting issues on submittals.
1. Coordination of Information: FSEC will coordinate information required by other trades relating to food service equipment and hold a meeting with GC discussing requirements specific for this project. Dealer to provide and generate a "Discipline Coordination Sheet" clearly defining scope of work performed by dealer and scope of work expected by other trades. See attached "Exhibit B - Discipline Coordination Sheet" at the end of this specification.
 2. Subcontracting of Work: Is allowed where due to jurisdictional agreements and/or conditions must be done by others. This is at the expense of the FSEC. Some subcontractors may include Millwork, Stainless Steel Fabrication, Fire Suppression, Refrigeration, etc.
 3. Coordinate details and scheduling work at site with other work to avoid unnecessary interference or damage. Dealer to submit a "Project Plan" outlining sequence of delivery items, like, hoods, walk-in boxes, equipment, millwork, etc. See attached "Exhibit C - Project Plan" at the end of this specification.
 4. Installer's Qualifications: Work will be completed by experienced installers in accordance with Drawings and Specifications.
 5. Staffing Level: Employ qualified installers and supervisors to complete the work without delay.
 6. Final Connections: Notify in writing, a minimum of five (5) days in advance, all trades involved in final connections of food service equipment and prior to beginning of this installation.
 7. Installation and Supervision: Continuous during normal job hours until all equipment is installed and connected.

- B.** The Foodservice Equipment Contractor (FSEC) in compliance with Section 11 4000 will be expected to provide and install the following:
- 1. EXISTING EQUIPMENT (FOOD SERVICE EQUIPMENT CONTRACTOR):**
 - a. The term "existing equipment" as used in this specification shall mean food service equipment now in storage or active use by the Owner. Where such equipment is reused it shall be the responsibility of the Food Service Equipment Contractor (section 11 40 00) to carefully examine each unit beforehand to ascertain proper fitting and alignment in its new location.
 - b. The Food Service Equipment Contractor (section 11 40 00) shall verify and indicate on his rough in plan all utility connections required for the proper installation of existing equipment to be reused.
 - c. GC is responsible for the removal, cleaning, storage, and relocation of the equipment. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
 - d. FSEC to inspect existing equipment and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.
 - 2. RECONDITIONING/REFURBISHING** shall be interpreted to mean:
 - a. A thorough scraping and steam cleaning to remove scale and all foreign material.
 - b. Repainting of all items having exposed, worn, or scarred surfaces which are not of rustproof materials.
 - c. Furnishing any required filler pieces, braces, hardware, and so on necessary to complete the installation in a workmanlike manner.
 - d. Repainting of the understructure (legs, shelves, drawers, etc.) where required shall be in aluminum lacquer or other chip resistant finish. Other items shall be completely repainted or touched up, as required by their condition, in their original color.
 - e. Refrigeration equipment shall have all components checked for efficient operation, and all worn or malfunctioning items shall be replaced.
 - f. Items containing heating elements shall be checked and any electrical components not functioning properly shall be replaced.
 - 3.** When existing equipment is to be reconditioned, the Food Service Equipment Contractor (section 11 40 00) shall submit a time and materials proposal with a list of the items to be reconditioned, which shall be in addition to the base bid.
 - 4.** The GC is responsible for removing and disposing of existing food service equipment which is not to be reused and shall verify with the Owner and obtain written release prior to removing such equipment. The GC shall retain any salvage value, unless specified otherwise by the owner.

5. A schedule of relocating existing equipment shall be determined before the Contract is awarded. If changes are made that cause additional charges, the company causing such changes will be responsible for the costs involved.

C. SUBMITTAL PACKAGE: Including all rough-in drawings, shop drawings, finish samples and all associated submittals in compliance with Section 11 40 00 "Food Service Equipment."

1. Equipment Digital base plan may be requested from Consultant and will be provided by FSEC use in preparation of submittals. Electric/Plumbing rough-ins, equipment details, and millwork sections will not be provided as these need to be generated by the FSEC completing final step of due diligence check generating technical submittals illustrating what is being supplied, how it will be fabricated and how it will be installed. Copying and pasting design document details will not be permitted. All shop drawings are to be submitted to scale or they will be rejected. Hand drawn shop drawings will be rejected.
2. Obtain copies of the latest architectural plans from architect prior to beginning the dimensioned rough-in submittal plans. Submittals are to be based off latest set of drawings, including all addendum/revision released.
3. Submittals are to be coordinated between all engineered systems by FSEC before submitting for review. FSEC is to take ownership of all submittals.
4. Review all shop drawings internally prior to submitting to SHG, especially those that are typically auto generated and are not accurate. check for accessories, utility ratings and dimensions. SHG will reject submittals if they are found to be completely off and not line up with project.
5. Submittals to be sent as a complete package; partial or incomplete submittals will be rejected by GC/Architect/Consultant. Equipment Plans should not be submitted without equipment cutbooks or vice versa. Both need to be submitted together for comprehensive submittal review.
6. Submittals are to be separated out, per specifications. Not lumped together as (1) large submittal file
7. All Equipment plans and rough-in drawings to utilize FS design corresponding item numbers. Do not create your own numbering system.
8. Shop Drawings should not read "confirm" or "verify" - you the dealer as part of the submittal process needs to close those gaps via formal RFI's if need or site survey dimensions or dictate a hold dimension on shop drawings if need be.
9. Shop drawings to include all equipment, including by others for proper spacing verification. Especially millwork shop drawings. Do not submit millwork only with gaps. Exact actual equipment to be shown and how the millwork is constructed around it for proper fabrication, reinforcement, and clearances.
10. Submit the following:
 - a. Equipment Floor Plans and Dimensioned Rough-ins for Electric and Plumbing. See section 9 below for further requirements on this submittal.

- b. Custom Fabricated Shop Drawings, Exhaust Hood, Stainless Steel Fabrication, Millwork etc. See section 10 below for further requirements on this submittal.
 - c. Sneezeguard submittals to be reviewed and coordinated with Millwork, uncoordinated default system generated guards will be rejected. Sneezeguard submittal to be reviewed by millwork fabricator and signed off
 - d. Equipment Cut-Book complete with numbered cover sheets and accessory listing. See section 12 below for further requirements on this submittal.
 - e. "General Responsibility Outline" sheet defining roles and responsibility for all relevant project scope. Refer to SHG Exhibit 6 Form, feel free to replicate and update as relevant.
11. Equipment Floor Plans and Dimensioned Rough-ins for Electric and Plumbing.
- a. Within **30** working days from award of contract, the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the following drawings to the Owner or his designated representative for review:
 - 1). A floor plan of all food service areas showing all items of equipment and sufficient dimensions to indicate placement of equipment from walls, other items, etc. This sheet shall include an equipment schedule indicating item number, quantity, and description. This sheet is to be based on the Architect's dimensional drawings or field review of existing conditions, whichever is available. Under no circumstances will a tracing from the Architect's or Consultant's work be acceptable.
 - 2). A completely and clearly dimensioned electrical rough-in plan indicating exact locations, heights, and services required for each item of food service equipment, as well as any incidental services (for example, convenience receptacles) shown on the Consultant's spot connection plan. This sheet shall also include an equipment schedule, and each utility description on the body of the sheet shall be accompanied by the appropriate item number. It is expected that the Food Service Equipment Contractor (section 11 40 00) will refer to the data prepared by the Architect and Consultant to complete this requirement; however, it is the responsibility of the Food Service Equipment Contractor (section 11 40 00) to verify information shown thereon, and submittal by the Food Service Equipment Contractor (section 11 40 00) will warrant that he is fully satisfied that the information shown on the submittal is totally correct, complete, and ready for use in the field by other trades. On a new project, rough-in dimensions shall be calculated from column center lines or other established datum points. On a project in an existing space, calculations shall be from finished walls. Indicate all interconnection requirements by other trades.
 - 3). A plumbing rough-in plan conforming to the requirements noted in (b) above.
 - 4). A ventilation rough-in plan conforming to the requirements noted in (b) above.
 - 5). A building conditions plan conforming to the requirements noted in (b) above, and including all pertinent information regarding masonry bases, curbs, recesses, critical dimensions of walls and openings, wall

anchorages and overhead supports, and any other special information required to insure a properly completed installation.

- b. The scale of these drawings shall be $1/4" = 1'-0"$, and it shall be the responsibility of the Food Service Equipment Contractor (section 11 40 00) to ensure that his drawings are properly coordinated and that there are no conflicts between sheets. The Food Service Equipment Contractor (section 11 40 00) may, at his option, combine [(b) and (c)] and [(d) and (e)], providing that the scale of all drawings is increased to $1/2" = 1'-0"$.
- c. The review of these drawings by the Owner or his designated representative is for design purposes only, and that review and/or the reviewer's election to review drawings submitted not in accordance with the above directions will not relieve the Food Service Equipment Contractor (section 11 40 00) from responsibility for the consequences of not having prepared the drawings as above described.
- d. The Food Service Equipment Contractor (section 11 40 00) shall be fully responsible for the accuracy of all submissions and drawings made by him. If such mechanical, electrical, refrigeration, illumination, service lines or ventilation service lines are not properly installed because of errors or omissions on said drawings, it shall be the duty of the Food Service Equipment Contractor (section 11 40 00) to remove, relocate or install new lines at his own expense. Cutting, patching, installing, removing, or relocating of such utilities shall be done as directed by the Architect and/or Consultant.
- e. The Food Service Equipment Contractor (section 11 40 00) should attend a slab rough-in inspection before slab is poured to confirm locations of major stub-ups.

10. Manufacturer's Drawings:

- a. It is the responsibility of the Food Service Equipment Contractor (section 11 40 00) to ensure that drawings required from his vendors are received and submitted so as to allow review, correction, re-submittal, and production within the requirements of the project schedule.
- b. The Food Service Equipment Contractor (section 11 40 00) shall review, coordinate, and correct these drawings before submitting them for review. Submit electronic copies for review and approval.
- c. The Food Service Equipment Contractor (section 11 40 00) is responsible for verifying that notes and revisions on these drawings do not conflict with his rough-in drawings and shall immediately notify the Owner or his representative of any such conflicts.

11. Shop Fabrication Drawings:

- a. Within **30** working days from award of contract the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the following drawings showing complete fabrication details of custom fabricated equipment.
- b. The scale of these drawings shall be $3/4" = 1'-0"$, with sufficient cross sections to accurately describe construction. Sections shall be at a scale of $1-1/2" = 1'-0"$. Each drawing shall show name and address of fabricator.
- c. These drawings shall indicate locations of utilities and interconnections in relation to the custom equipment. Junction boxes and breaker panels shall be presented in schedule

form showing individual connections and total load. If requested by the Owner, provide complete wiring diagrams. The sepi copy will be returned.

- d. Shop drawings shall indicate all pertinent details, including item number, type of material, gauge of material, method of fastening, dimensions, hardware, model numbers, location and size of mechanical and electrical connections, number of units required. Where an item of standard production line equipment, i.e., "buy-out" item, is mounted on, or adjacent to a shop fabricated item, it shall be shown in outline form on plan and elevation, accurately scaled, to indicate relationship and clearances.
- e. All fabricators involved should be aware that the project has bought the details specified and the design team will be conducting site inspection and will require that everything gets replaced that does not conform to those details. This is related to Stainless Steel custom fabrication and Food service Millwork. Submittals should reflect all of the details and how they intend to be constructed. Submittals without those details will be rejected for resubmission.
- f. After final approval of shop drawings, the Food Service Equipment Contractor (section 11 40 00) shall furnish additional copies as requested.
- g. Approval of shop drawings shall not relieve the Food Service Equipment Contractor (section 11 40 00) from full compliance with the Contract drawings and specifications unless any deviation from same has been brought to the Consultant's attention in writing and approval for same has been given in writing.

12. Manufacturers' Illustrations:

- a. Within **30** working days from award of contract, the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the equipment cut book to the Owner or his designated representative for review:
- b. Provide a cover sheet for each item number, indicating item number, quantity, description, manufacturer, model number, utilities required, and accessories.

13. The review of these items by the Owner or his representative is for the assistance of the Food Service Equipment Contractor (section 11 40 00) and does not relieve the Food Service Equipment Contractor (section 11 40 00) of any responsibility for accuracy and completeness. When the Food Service Equipment Contractor (section 11 40 00) is notified that further resubmittals will not be required, he shall provide to the Owner a reasonable number of copies of prints and brochures without charge.

**5.7 FIRE PROTECTION SYSTEM CONTRACTOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 1. Provide and install Ansul Fire protection system including the following components.
 - a. Provide Mechanical/Electric Gas Valve, sized by direction of MEC (installed by GC).

- b. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. See fire suppression specifications.
 - c. Required Cabling for a complete system.
 - d. Mounting of Automan (control head unit).
 - e. Mounting of Tanks below ceiling line and located out of customers view.
 - f. Mounting of remote pull station in provided recessed box. Recessed box provided by electrical contractor. Surface mounted pull stations will not be accepted. Refer to detail #EXH-1
 - g. Piping and protection nozzles over equipment and in duct plenum (if hood is not pre-piped from factory).
 - h. Tag and Arm System.
 - i. Provide shop drawing submittal with system information as required by local authority having jurisdiction for permit application and acquire the permit which is to be present during testing procedure.
 - j. Ansul System Tank placement is critical and should be located as per Food Service Design plans. Tanks, Control cabinets, Electrical Panels, all should not be visible from customer in any front of the house applications, such as Bistro's, Cafes, Serveries, Markets, Hospitality Kitchens, Grills, Bars, etc. and should be located back of the house. If placement is not possible per drawings a formal RFI needs to be submitted
- C. Testing and Inspection:** Electrician/plumber should be present and actively involved during testing procedure as it relates to their trade, to ensure equipment operates properly, prevent damage and remedy issues as they occur.
- 1. Perform follow up 6-month inspection.
 - 2. Set-up annual inspection program.
 - 3. The Following items are to be managed and provided by the General Contractor:
 - a. Wiring to building alarm monitoring systems.
 - b. Installation of gas valves (Sized by MEC, supplied by FPSC).
 - c. Wiring between gas valve and Automan (control head unit).
 - d. In wall recesses for remote pull stations.
 - e. Power supply and electrical connection to Automan.

**5.8 MILLWORK FABRICATOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A. General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B. Provide and install the following:
 - 1. Review in detail Food Service Millwork details, specifications, and architectural related finish schedules.
 - 2. Provide detailed CAD level shop drawings showing construction and installation details and how millwork interfaces with foodservice equipment. Hand drawings will not be accepted.
 - 3. Receive all drop-ins and sneezeguards from FSEC, pre-fit in factory.
 - 4. Provide load centers for any island equipment, interconnect all electrical connections in factory
 - 5. Deliver and install millwork counters and sneezeguards in accordance with the project schedule and needs of the project ready for final connections by mechanical trades.
 - 6. Provide, locate and cut-in stainless steel floor sink sleeves after millwork is installed. (Refer to detail MEP-100.)
 - 7. Provide grommet holes, cut in place after equipment installation. Location of grommet holes to be coordinated with kitchen operating staff preferences.
 - 8. Seal all exposed raw wood surfaces and trim/seal/caulk millwork to walls as required to meet board of health regulations.

**5.9 REFRIGERATION CONTRACTOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A. General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B. Provide and install the following:
 - 1. Mount refrigeration unit on curb (rigging to be provided by GC, coordinate schedules as necessary w/ GC rigging dates).
 - 2. Provide all refrigeration piping for units which remotely connect to rooftop refrigeration unit.
- C. Submittals: Submit shop drawing of rack system and piping diagram of installation runs.
- D. Testing:
 - 1. Nitrogen test and subsequently charge refrigeration piping.
 - 2. Factory inspection of installation is required and should be performed prior to startup of system.
 - 3. Startup: Remote refrigeration units in coordination with GC's electrician and in presence of factory engineer.
 - a. Plumber should be present and actively involved in start-up of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.

E. Project Closeout:

1. Provide operation and maintenance manuals for all equipment in digital CD and 3 ring binder form including a comprehensive service listing for all equipment items including fabrication.

F. Work not included in the Refrigeration Contractors Scope to include the following:

1. GC to provide pad for refrigeration rack.
2. Electrical wiring and disconnect to rack.
3. Interconnecting wiring from rack to freezer evaporator coils.
4. Piping of condensate lines from all evaporator coils.
5. Heat trace on freezer section condensate lines.
6. Penetrations and sealing of penetrations through rooftop and any sleeving of any walls as required.
7. Low voltage wiring and CAT-5 wiring of alarm system to building system and to control data software in foodservice manager's office.
8. Piping of condensate lines from all evaporator coils.

G. Meetings: Participate in regularly scheduled (as required) foodservice specific coordination meetings as scheduled by GC.

5.10 ELECTRICAL CONTRACTOR RESPONSIBILITIES

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Provide all rough-ins (required service to utility connections noted on FSEC rough-in drawings).
 2. Electrical Contractor to follow shop drawings submitted by dealer and reviewed by Food Service designers and MEP Engineers. These shop drawings will contain dimensioned rough-ins and utility loads. By no means should the Electrical trades rough-in from design plans as equipment loads and/or manufacturers might change through submittal process.
 3. Provide all final connections to all foodservice equipment.
 4. Electrical Safety Disconnects (provide means of disconnect for all direct wired equipment) Typical for, Dishwasher, Disposer, Heavy duty Mixers, Walk-in Compressors, etc.
 5. Wiring interface from Exhaust/Make-Up fans to control points.
 6. Provide wiring to all lights/switches in exhaust hoods.
 7. Provide switching, interconnected wiring and all associated starters for exhaust/condensate hood fans.
 8. Wire provided table limit switch in clean dish table.
 9. Provide all shunt rips for any electrical cooking equipment and interconnect to Ansul system.
 10. Provide ethernet wiring for walk-in alarm units (interconnected to building alarm monitoring system).
 11. Interconnecting wiring from rack to Walk-In Freezer evaporator coils.
 12. Lighting connections in Walk-In Cooler/Freezer.
 13. Heat trace on condensate lines in Walk-In Freezer section.
 14. Low voltage data wiring from POS to manager's office and digital menu boards.
 15. Ethernet wiring of alarm system to building system.
 16. Main supply to millwork counter, chefs' counters load centers and final connection to load center.
 17. Install loose light fixtures (including penetrations and sealing penetrations) in walk-ins.
 18. LED Lighting in millwork counters will be provided by FSEC. Provide required light switch and wiring to LED light.
 19. Provide all DCR's shown on foodservice rough-in drawings.
- C.** Project Closeout: Electrician should be present and actively involved in startup/testing of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.
- D.** Meetings: Participate in regularly scheduled (as required) foodservice specific coordination meetings as scheduled by GC.
- E.** Temporary Equipment Relocation: If electrician needs to move a piece of equipment for proper access after it has been set then the electrician will be expected to return this same piece of equipment to its correct location or coordinate temporary positioning with FSEC.

5.11 PLUMBING CONTRACTOR RESPONSIBILITIES

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Provide all rough-ins (required service to utility connections noted on FSEC rough-in drawings)
 2. Plumbing Contractor to follow shop drawings submitted by dealer and reviewed by Food Service designers and MEP Engineers. These shop drawings will contain dimensioned rough-ins and utility loads. By no means should the Plumbing trades rough-in from design plans as equipment loads and/or manufacturers might change through submittal process.
 3. Extend all interconnected safe drains to building Floor Sinks for safe indirect waste including indirect waste drain from walk-in cooler/freezer assemblies and refrigeration units to drains.
 4. Provide all Floor Sinks, Area Floor Drains and Standpipes. Install and plumb Floor Through - Floor Throughs will be provided by FSEC.
 5. Install Quick-Disconnect gas hoses and restraining Devices (provided by FSEC).
 6. Install Quick-Disconnect water hoses (provided by FSEC). All mobile equipment is to be connected with a Quick-Disconnect safety water hose – do NOT hard plumb to building.
 7. Provide all connections to all foodservice equipment. All interconnections will be provided by FSEC.
 8. Mount hand wash sinks. (faucets, drain wastes, drain levelers, etc.)
 9. Make joining connections for plumbing connections to large items that need to be broken into smaller components for building access.
 10. Provide all plumbing materials including pipe, traps, stops, valves, gauges, unions, and insulation.
 11. Extra care should be taken to run all piping inside the wall including gas lines as much as possible limiting amount of exposed piping.
 12. Provide all backflow preventers for beverage equipment including vendor supplied beverage equipment.
 13. Install mechanical/electric gas valve provided by FPSC, Run wiring to Automan (Control Head).
 14. Provide 6-inch PVC Beverage Raceway and Conduits, coordinate with owners Vendor/Supplier of Bulk CO2 System for routing.
 15. Provide 3-inch PVC Refrigeration Piping Raceway and Conduits, coordinate with Food Service Equipment refrigeration subcontractor for routing.
 16. Provide interconnecting piping from all water filters to all water filter outlet destinations.
 17. Provide all grease interceptors and grease traps
- C.** Temporary Equipment Relocation: If plumber needs to move a piece of equipment for proper access after it has been set then the plumber will be expected to return this same piece of equipment to its correct location or coordinate temporary positioning with FSEC.

5.12 HVAC CONTRACTOR Section 23 00 00 (retained by GC Section 01 00 00)

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Review all Exhaust Hood Engineered data spec drawings for CFM Exhaust and Make Up Air requirements for all kitchen hoods, cooking, and dishwashing.
 2. Size and engineer ductwork and fans for all kitchen hoods, cooking, and dishwashing. Provide Tempered (heated) air for make-up and conditioned air as required. Ensure fans are VFD compatible for smart on demand hood controls.
 3. Provide and install Grease Ductwork: The HVAC Contractor shall make an approved type connection to hood duct collar in accordance with NFPA 96, Vapor Removal from Cooking Equipment. Ductwork required for the connection of ventilators to the exhaust blower must be of at least 16-gauge carbon steel or 18-gauge stainless steel, all welded watertight construction, and pitched for proper drainage. Long horizontal runs should be avoided if at all possible. All ductwork shall be provided and installed by the HVAC Contractor. HVAC contractor may choose to request duct collars to be shipped loose for flexibility in locating in the field – coordinate with FSEC contractor. Ensure installation complies to any clearance to combustible requirements.
 4. Provide and install Condensate Ductwork: Non-cooking exhaust ductwork such as dishwasher exhaust system, etc. cannot be connected to the grease ductwork. Separate systems must be maintained. Warewashers will commonly be provided with stainless steel ductwork risers by the FSEC to a point 3" above the finished ceiling. The FSEC shall provide a balancing damper for each duct riser. HVAC Contractor shall make the connection to the two straight ducts above.
 5. Ceiling diffusers shall be at least 6'-0" from all sides of the ventilator and the velocity at the diffuser shall not exceed 150 feet per minute (fpm) or ceiling diffusers shall be 15'-0" from all sides of the ventilator and the velocity at the diffuser shall not exceed 300 feet per minute (fpm). The maximum velocity of the make-up air from transfer air, diffusers, etc. Shall not exceed 75 fpm at the ventilator lip. Kitchen pressurization shall not exceed -0.02"w.g. relative to the dining or adjacent spaces, as stated in NFPA-96 and ashrae standard 154.
 6. Balance system to prevent any cross drafts and negative pressure. Provide balancing report to design team.
 7. Dishmachines with Built-In Condenser Systems and Recirculating Hoods generate substantial heat, provide additional exhaust to remove heat as typically these are located in tight pantries

5.13 STORAGE AND DELIVERY (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A. Receive all equipment at an offsite warehouse and store equipment until required
- B. Receive all equipment at an offsite warehouse and store equipment until required.
- C. Field-Assembled Fixed Equipment: For types integrated into the structure; including but not limited to walk-in boxes assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, and ceiling mounted utensil racks, deliver to the jobsite when directed by the General Contractor.
- D. Other Fixed Equipment: Deliver after the work on adjacent finished ceilings, lighting, finished floor and wall systems is complete.
- E. Major Movable Equipment: Deliver to the inventory area for interim job-site storage or, deliver when the fixed equipment installation and clean-up has been completed.
- F. Deliver all equipment to the jobsite in accordance with the project schedule and needs of the project.
 - 1. Exhaust Hoods and Walk-In coolers to be delivered/installed prior to equipment delivery to accommodate construction schedules with other trades (flooring, ceiling contractors).
- G. Coordinate any large equipment that will not fit through standard 36-inch finished door opening and arrange prior delivery/installation with GC
- H. Coordinate with GC any equipment having heavy load bearings to ensure building structure can handle loads. (Hearth Pizza Ovens, etc.).
- I. Field-Assembled Fixed Equipment: For types integrated into the structure; including but not limited to walk-in boxes assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, and ceiling mounted utensil racks, deliver to the jobsite when directed by the General Contractor.
- J. Assemble all equipment and provide manufacturer interconnections of any electrical plumbing work as provided by manufacturer as part of the equipment package. Equipment to be ready for final connections by GC's Electrician and Plumber. This includes:
 - 1. Mount faucets
 - 2. Overflows
 - 3. Disposer(s), Scrapper(s) piping and electrical interconnections to remote on/off switch.
 - 4. Table Mount Shelving.
 - 5. Mobile/Stationary Shelving.
 - 6. Booster Heater water interconnections to warewasher.
 - 7. Heat Lighting Strips.
- K. Trim and seal all equipment to walls once equipment is fully connected, including but not limited to, walk-in boxes, exhaust hood, condensate hoods, tables, and millwork
- L. Provide and Install Stainless Steel Wall Panels behind cooking equipment and in dishrooms prior to electrical face plates and gas manifold line installation when specified.

- M.** Construction Waste Disposal: All equipment packaging and crating to be placed in dumpsters on site as provided by GC. All trash is to be removed from work areas prior to the end of each workday if not accomplished immediately.
- N.** Protection: Provide floor and wall protection as necessary during delivery and setup of equipment to prevent any damage to building and new finishes.
- O.** Hang all exhaust hoods and PSPs (perforated supply plenums) from building structure per factory requirements. Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with ½" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
- P.** Ship all buy-out equipment, drop-ins, sneezeguards etc. to millwork fabrication shop.
- Q.** Coordinate delivery and set-up of millwork counters.
- R.** Provide floor trough(s) for GC to set in wet bed of concrete. Provide detailed recessed slab drawings to GC for proper positioning of floor through(s) to ensure pour path aligns with tilting kettles/skillets.
- S.** Coordinate with GC/Owner for Bulk CO2 System location and installation as supplied by owner's Vendor.

5.14 SITE INSPECTION AND FIELD VERIFICATION (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A.** Installation Inspection - This is the act of a qualified individual reviewing the "job site" to be certain and confirm that all of the mechanical connections to a particular piece of equipment are correct and in accordance with the manufacturer's written specifications. The term MECHANICAL in this definition refers to gas, steam, water, electric and ventilation. The installation inspection also includes proper clearances, service access, positioning and leveling of equipment, and the use of restraining devices when applicable. This inspection does not include confirmation of the installation meeting applicable codes.
 - 1) CFESA Recommended Installation Form – Form shall be completed by the Installer with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 2 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.
- B.** Examine conditions, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Report discrepancies to the Architect.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.
- C.** Review submittals to confirm compliance with contract documents. Report all conflicts in writing to the Architect.

- D. Verifying all dimensions, quantities, construction details, finishes, sizes, etc.
- E. Equipment to be Reused: Inspect to verify the mechanical, electrical, or other service needs required.
 - 1. Report discrepancies to the Architect.
 - 2. Proceed with installation only after mechanical, electrical, or other service needs have been mitigated.

5.15 INSTALLATION (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A. Installation shall include assembly of all food service equipment as shown and scheduled in foodservice equipment plans, properly leveled, fitted and secured in place, ready for other contractors to make final electrical, steam, gas, water, waste and ventilating connections, according to manufacturer's written instructions, original design, and referenced standards.
- B. Except for mobile and adjustable-leg equipment, all equipment resting against walls, floors, ceilings and/or other equipment and accessories shall be sealed to walls, floors, or bases with stainless steel fasteners with silicone sealant approved by NSF, as required to prevent entry of vermin and insects. Gaps over 1/4 inch wide will not be accepted.
- C. All horizontal runs of piping and conduit shall be a minimum of 6 inches above finished floors and 3 inches out from all walls. Extra care should be taken to run all piping inside the wall including gas lines as much as possible limiting amount of exposed piping.
- D. Install equipment with access and maintenance clearances according to manufacturer's written instructions and requirements of authorities having jurisdiction.
- E. FSEC is responsible for access to installation locations in building. If it becomes necessary to schedule construction so that all partitions be erected prior to delivery of foodservice equipment, bidders are cautioned that all equipment must be fabricated so that it can be handled through finished door openings.
 - 1. Removal of and replacement of any doors, door frames, wall windows, or other portion of building for access is responsibility of FSEC and he shall assume all costs for such work.
 - 2. If special hoisting equipment and operators are required, FSEC shall include such costs.
- F. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.
 - 1. Gaps of one-quarter (1/4") inch or less adjacent to or between equipment to be sealed with General Electric Series SE-1200 silicon mastic (clear or silver color to be determined by Architect) with excess neatly and cleanly removed.
 - 2. Gaps greater than one-quarter (1/4") inch to be neatly trimmed with eighteen (18) gauge stainless steel molding of proper shape with concealed attachment. Use epoxy cement or wall matching finish or trimmed fixture.
 - 3. Gaps of more than one and one-half (1-1 1/2") inch are NOT acceptable to trim.
 - 4. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating. Refer to typical installation provisions sheet in food service drawings.
- G. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating. Refer to typical installation provisions sheet in food service drawings.

5.15 PROTECTION (FOOD SERVICE EQUIPMENT CONTRACTOR):

- A. Protective Covering and Coatings: FSEC to remove all protective covering and coatings from work and clean and service all equipment. Leave equipment free from defect, adjusted and lubricated according to manufacturer instructions.
- B. **CAUTION:** Equipment with scratches, dents, discoloration, or any other obvious damage will not be accepted. All work and materials to be in full accordance with the latest rules of U.S. Public Health Service, National Board of Fire Underwriters, and local or State ordinances, regulations of State Fire Marshall and Underwriter's Laboratory.

5.16 PROJECT CLOSEOUT PROCEDURES (FOOD SERVICE EQUIPMENT CONTRACTOR)

- 1. Cleaning and Protection:
 - 1. Clean up and remove from job site all debris resulting from delivery, installation, protection, cleaning, and adjustment of Food Service Equipment as work progresses.
 - 2. Thoroughly clean interior and exterior of all Food Service Equipment prior to demonstration and final observation. Food Service Equipment to be ready for the Owner's use.
 - 3. Clean or replace line strainers, and faucet aerators.
 - 4. Touch up damage to painted fixtures.
- 2. **Final Observation:** Provided by Food Service Design Consultant when the General Contractor will certify that the work is complete, has made a thorough review of the installation and operation of each item in the contract and found it to be in compliance with the Construction Documents.
- 3. Repetitive Final Observations: In excess of two, and all costs associated thereto which may be incurred due to the General Contractor's failure to comply with the requirements of this article will be invoiced on a time and expense basis and reimbursed to Food Service Design Consultant.
- 4. **Contractor's List of Incomplete Items:** The FSEC will complete a walkthrough with GC and architect and issue detailed punch list report for actions needed to be taken.
 - 1. Procedures will be in compliance with Section 01 7700 "Closeout Procedures."
 - 2. GC to consolidate all punch list inspections reports (Food Service, Architects, Engineers and GC) to one report.
- 5. Installation, Connections, and Testing: To be complete a minimum of five (5) days prior to Owner takeover.

6. Start-up Procedures:

Once the equipment is purchased and installed, it is essential for all parties involved that, where needed, a professional start up or performance check be performed by an authorized service company, followed by a thorough demonstration by the manufacturers' representative. Refer to itemized specification, certain items specifically call out this requirement. When a proper installation is completed, one where the Manufacturer's Requirements, as spelled out in the equipment manual, have all been met along with any and all governing codes, the FSEC shall be responsible for scheduling all of the services outlined in this section to aid in providing a professionally complete kitchen project. It is the responsibility of the FSEC to ensure all forms in the exhibit 1-5 are issued for the appropriate equipment as required, completed and copies are provided to the proper parties as described after the completion of each task. These forms have been created through the joint effort of CFESA (Commercial Food Equipment Service Association), FCSI/NAD (Foodservice Consultants Society International / North America Division) and MAFSI (Manufacturer's Agents for the Foodservice Industry).

1. FSEC will provide start-up service for all refrigeration equipment.
2. Lubricate and adjust drawer slides, hinges, and casters.
3. Adjust pressure regulating valves, time delay relays, thermostatic controls, temperature sensors, exhaust hood grilles, etc.
4. Start up and check out operation of all refrigerated systems for at least 72 hours prior to acceptance and turn over.
5. Calibrate all thermometers to reflect actual temperatures of refrigerated equipment.
6. Start up and test run rotary, reel, or hearth ovens for a minimum of forty-eight (48) hours prior to the Owners inspection.
7. Plumber and electrician should be present and actively involved in startup of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.
8. Provide demonstrations for use of all equipment as requested by Owner or Dining Services. Demonstrations to be conducted by factory trained individuals, typically a factory representative firm.
9. Provide operation and maintenance manuals for all equipment in digital USB flash drive including a comprehensive service listing for all equipment items including fabrication.
10. Upon startup ensure and account for all equipment accessories including but not limited to exhaust hood lights, Walk-In Lights, replacement filter cartridges, mixer/bowl/cutter attachments, gas hoses, cleaning kits, keys for lockable equipment, etc.
11. Startup MUST include a written report of all completed work or operation problems with the specific piece of equipment. Start-up cannot occur until an installation inspection has been performed and approved and any warranty service has been completed.
 - a. Provide CFESA Recommended Start-Up/Performance Check Form - Form shall be completed by the authorized service technician with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 3 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

12. Performance Check - Verification, by an authorized service technician, that the manufacturer's installation specifications are met, and utilities are correct for newly installed equipment. To ensure proper operation of the piece of equipment, an authorized technician, may need to perform minor adjustments, alignments, and calibrations. Performance checks are done any time after equipment has been in operation for a minimum of two weeks to a maximum of 90 days.
 - a. CFESA Recommended Start-Up/Performance Check Form - Form shall be completed by the authorized service technician. with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 3 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

7. Certification Letters and Portal Monitoring Accounts:

1. FSEC to provide all the following certification letters and account access information as applicable for the project
 - a. Letters of certification for dishwasher operation and sanitation compliance
 - b. Letter of certification for the Accurex Hood.
 - c. Letter of Certification and SDV - System Design Verification from Captive-air Hoods indicating proper EMS and VFD operation.
 - d. Provide log-in access for Captive-Aire hood operation and maintenance monitoring. Set-up with owner and program automatic error notifications to be notified via email or text as preferred by facilities.
 - e. Provide log-in access for temperature monitoring portal to monitor all refrigeration unit as specified with Victory's SecureTemp system. A live report should be provided showing all units configured and labeled in system using designed item number and short description of unit type and location. Set-up with owner and program automatic notifications to be notified via email or text as preferred by facilities.

8. Demonstration and Training: Provide demonstrations for use of all equipment, item by item, including fabricated equipment as requested by Owner or Dining Services.

1. Demonstrations to be conducted by factory trained individuals, typically a factory representative firm.
 - a. Instruction shall include care and cleaning of all equipment and a complete demonstration of operation
 - b. All buy-out equipment shall be demonstrated by factory trained personnel only.
 - c. All actions within the demonstration should be referenced in the operator manual as prepared by the manufacturer of said piece of equipment.
2. General Contractor will provide a letter, signed by all sub-contractors involved and co-signed by the Owner's Representative stating that dining staff have been adequately instructed in the use of equipment.

3. MAFSI Recommended Demonstration Request Form - Form shall be completed by the FSEC with copies provided to the manufacturer representative. The manufacturer representative will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized). The manufacturer representative is responsible for forwarding a copy to the manufacturer if required. See exhibit 4 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.
 4. MAFSI Recommended Demonstration Inspection Report - Form shall be completed by the manufacturer representative with completed copies provided to the F.E.C. The FSEC will be responsible for forwarding copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized). The manufacturer representative is responsible for forwarding a copy to the manufacturer if required. See exhibit 5 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.
9. In addition to the guarantee called for under the General Conditions, this FSEC shall further agree that in the event of failure of any system or item of equipment or improper functioning of specified work during the guarantee period, he shall have "on call" competent service personal available to make the necessary repairs or replacements of specified work promptly at no cost to the Owner. In the event that replacement of an entire item is required, the Owner shall have the option of full use of the defective equipment until a replacement has been delivered and completely installed.

5.17 PROJECT RECORD DOCUMENTS (FOOD SERVICE EQUIPMENT CONTRACTOR)

1. Operation and Maintenance Manuals: Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.
 1. A minimum of three (3) weeks before the job opening, the Food Service Equipment Contractor shall furnish USB Flash Drive containing digital maintenance and repair manuals, giving operating and maintenance instructions, parts lists.
 - a. Provide wiring and connection diagrams where one or more items are interconnected.
 - b. Provide Authorized Service Agency Listings and representatives for each piece of equipment having electrical and/or mechanical components and 24-hour emergency call numbers.
 - c. Provide excel spreadsheet listing of all equipment utilizing equipment item numbering as per plan, include description of item, manufacturer, model, applicable warranty information and serial number of each unit. Sort spreadsheets into different tabs by restaurant/space areas. First tab to include item b. – Service Agency Listing index. Dealer may submit alternate cataloging process/system they have in place to accomplish same results – i.e. QR code stickers on equipment, etc.
 - d. See exhibit A – “*Service Agency Listing and Equipment Catalogue Record*” example for format.
 2. FSEC shall thoroughly instruct Owner in complete contents of manuals and service agencies and service process.

5.18 WARRANTIES (FOOD SERVICE EQUIPMENT CONTRACTOR)

1. All Equipment shall be warranted in writing from the date of final acceptance for a minimum period of one (1) year (regardless of the duration of the manufacturer's warranty) from defective parts, material, design, and workmanship, whether furnished by the Food Service Equipment Contractor (section 11 40 00) or any of his subcontractors. The Food Service Equipment Contractor (section 11 40 00) will be responsible for the cost of the affected equipment and/or its parts as well as any related costs of affected structural, electrical, mechanical, or other work requiring removal or replacement as a direct or indirect result of the failure of the equipment.
2. Compressors: Additional (4) four-year warranty.
3. No additional costs shall be transferred to the Owner. Neither the final certificate nor payment will relieve the Food Service Equipment Contractor of responsibility for honoring the warranty.
4. If the Food Service Equipment Contractor is requested to provide service necessary as a result of faulty utility connections, misuse or abuse, or other reason beyond the control of the Food Service Equipment Contractor, then they shall be reimbursed for the expenses and costs by the party making the original request for service.
5. Repair/Replacement of any individual unit to be limited to 3 major replacements parts before a new replacement unit to be provided in its place within the time frame of warranty. This is to ensure that there are no hidden damages present in the unit giving the owner a fully functioning equipment. This is limited to countertop and standalone equipment. Hoods, remote refrigeration systems, etc. to be provided with standard service requirements.
6. Initial Warranty Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of Food Service Equipment Contractor. This includes service in the event of failure of any system or equipment component or improper functioning of specified work during the warranty period.
 1. Perform warranty during normal working hours.
 2. Perform emergency callback service during normal working hours with response time of **two** hours or less.
 3. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of **two** hours or less.

5.19 EXHIBITS – SEE ATTACHED TO THIS SPECIFICATION:

1. Service Agency Listing and Equipment Catalogue Record

EXHIBIT 1 – SERVICE AGENCY LISTING						
Manufacturer	Item Description	Model #	Serial #	Warranty Info	Service Info.	
 BEVERAGE-AIR <small>TRAINED IN REFRIGERATION & AIRCRAFT REPAIR SINCE 1961</small>	Reach-In Undercounter Freezer	UCE27A-23	10509428	Limited Warranty: 3 yr parts and labor. Additional 2 yr compressor warranty	NATIONAL REFRIG. A/C SVC. - 713-222-5282	
	Refrigerated Counter, Chest Base	WTRC552-1	10502825			
	Refrigerated Pizza Table	DP46	10506621			
 Delfield	Reach-In Undercounter Refrigerator	UCR27A-23	10504475	(5) year compressor warranty, (1) year parts & (90) day/labor warranty, standard, (1) Year service & labor warranty	Armstrong Repair Center - Houston 713-666-7100	
	Drop-In Cold Food Pan	NR143B	1303150001054			
	Drop-In Cold Food Pan	NR119B	1303150001173			
	Drop-In Hot Well	NR745-D	1303150000941			
 Frymaster	Spill Pot Fryer w/ Basket Lifts	M44SE-2BLC	1303GA0081	FRYPOT warranty - 4th year lifetime part only, standard. FRYPOT & ASSEMBLY warranty - 1st year parts and labor, 2nd and 3rd year part only, standard. CONTROLLER warranty - (1) One year parts and labor, standard. FENWAL THERMOSTAT warranty - (1) One year parts and labor, 2nd year part only, standard. ALL OTHER PARTS warranty - (1) One year parts and labor, standard	Armstrong Repair Center - Houston 713-666-7100	
 Garland	Countertop Griddle	GD-24G	1303100100712	One year limited parts and labor warranty	Armstrong Repair Center - Houston 713-666-7100	
	Charbroiler	GD-24RB	1303100101110			
 Glasternder	Lettuce Crisper	LC	134142864x	1 year parts & labor warranty	Armstrong Repair Center - Houston 713-666-7100	

2. CFESA Installation Form

EXHIBIT 2 – CFESA INSTALLATION FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Installation Form	
Date of Installation _____ Make _____ Model _____ Serial _____ First Visit YES NO Project Manager _____ Sold By _____ Address _____ Phone _____ Fax _____	Customer Name _____ Billing Address _____ Phone _____ Fax _____ Servicer Name _____ Address _____ Phone _____ Fax _____ CFESA Installer # _____
Note: It is the recipient's responsibility to report any concealed or non-concealed damage to freight Company	
Does the equipment, shipping container or any accessories show signs of shipping damage? _____ If so, describe damage _____ Has a freight claim been filed? _____ Has the unit been operated prior to checkout? _____ Is unit located under the exhaust hood? _____ If so, provide Make & Model _____ Verify that the location does not have a negative air pressure situation. Make up air present? _____ Verify there is no down draft present blowing into flue and/or bake chamber _____ Is unit level? _____ Is unit stacked? _____ If so, was a stacking kit used and is it secured properly? _____ Is the unit installed on legs or casters? _____ If casters, is a restraining device installed properly? _____ Type of energy supplied? _____ Rating plate energy specified? Gas _____ Elec _____ Phase _____ Steam _____ Water _____	
Gas Equipment	
Check gas connections and piping for leaks with soap test	
Measure and record pressure entering unit, static _____ and flow _____ What is the incoming pipe size? _____ How far away is the gas meter? _____ What is the gas meter flow rate? _____ Measure pressure at manifold with unit heating _____ Was there a regulator installed before the unit? _____ Is there a separate shut-off? _____ Check burner operation and adjust as necessary _____ Check pilots and bypass settings and adjust as necessary _____	
Electrical	
Note: If supplied voltages are not +/- 10% of the rated voltage stop and consult the factory. Operation under these conditions may void the equipment warranty	
Measure and record incoming voltage with unit off L1-N _____ L2-N _____ L3-N _____ L1-L2 _____ L2-L3 _____ Measure and record amp draw L1 _____ L2 _____ L3 _____ Are the incoming wires properly sized? _____ Does the unit have a separate grounding wire? _____ Does the unit have it's own electrical disconnect? _____ Is it properly sized? _____ Measure and record incoming voltage with unit on L1-N _____ L2-N _____ L3-N _____ L1-L2 _____ L2-L3 _____ L1-L3 _____	
ITEM NO. _____	

Place Service Agency Logo Here

Place Contact Information Here

Steam

Does the unit have a steam pressure regulator installed?
Measure and record incoming steam pressure Static _____ & Flow _____ What size is the supply piping? _____
Measure and record operating flow pressure _____ Check for and repair any leaks _____

Water

If water quality test is required, provide results; PH _____ Hardness _____ Alk _____

Tcolor _____ Fcolor _____
Is there a pressure reg. Installed? _____ What is the incoming water temp _____, pressure? _____
Turbidity Reading _____ Flush Interval Time _____ Flush Duration Time _____ TransMembrane Pressure _____
What is the size of the drain piping? _____ How long is the drain run? _____ # of elbows? _____
How far is the unit located from the nearest floor drain? _____ Is the unit installed over a floor drain? _____

Check all gauges, timers valves and switches for proper operation _____
Proper temperatures achieved? _____
Check any motors for proper operation and calibrate if necessary
Check thermostat operations and calibrate if necessary
Verify all fitting parts operate normally; doors, gaskets and racks

Is kitchen manager present? _____ How many kitchen staff are present? _____
Operating instruction manual given to owner/operator? _____ Managers Name _____
Service agency sticker placed on unit with contact # _____
Customer has been informed of preventative maintenance requirements? _____ Preventative Maintenance offered? _____
Test with customer's product performed? _____ Results satisfactory? _____
If not, explain _____

Warranty terms have been explained? _____

Customer's Approval _____

Technician _____

Date _____

Additional Comments:

ITEM NO. _____



3. CFESA Start-Up Performance Check Form

EXHIBIT 3 – START-UP PERFORMANCE CHECK FORM													
Place Service Agency Logo Here	Place Contact Information Here												
Recommended Start-Up/Performance Check Form													
<p>It is important that we understand and are prepared for the job conditions prior to our visit. To avoid any confusion and possible charges for a second start up attempt, please check off the items which apply and return promptly. Any requests for service outside that which is factory specified in the start up will be the responsibility of the customer and/or dealer requesting such service.</p> <p>Equipment has or will be demonstrated by an authorized factory representative. Please note that we are not trained to demonstrate equipment.</p>													
Recommended Start-Up Request													
Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Preferred day/time for start-up: _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Cert. of occupancy: Yes _____ No _____												
Utilities hooked up and operating: (check those that apply) <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 20px;">• Gas:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Elec:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Steam:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Water:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> </table>		• Gas:	Yes _____	No _____	• Elec:	Yes _____	No _____	• Steam:	Yes _____	No _____	• Water:	Yes _____	No _____
• Gas:	Yes _____	No _____											
• Elec:	Yes _____	No _____											
• Steam:	Yes _____	No _____											
• Water:	Yes _____	No _____											
<table style="width: 100%; border: none;"> <tr> <td>Supplied voltage and phase match nameplate:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> <tr> <td>Exhaust hoods and fire suppression system tested:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> <tr> <td>Fryers have been boiled out and oil is available for testing:</td> <td style="text-align: right;">Yes _____</td> <td style="text-align: right;">No _____</td> </tr> </table>		Supplied voltage and phase match nameplate:	Yes _____	No _____	Exhaust hoods and fire suppression system tested:	Yes _____	No _____	Fryers have been boiled out and oil is available for testing:	Yes _____	No _____			
Supplied voltage and phase match nameplate:	Yes _____	No _____											
Exhaust hoods and fire suppression system tested:	Yes _____	No _____											
Fryers have been boiled out and oil is available for testing:	Yes _____	No _____											
I verify that the information above represents that this project is ready for start-up. Company: _____ Date: _____ Signature: _____													
Recommended Performance Check Request													
Dealer: _____ Contact: _____ Manufacturers: _____ _____ Models: _____ _____ Date of Installation: _____ Date unit was put into service: _____ Preferred day/time for check out: _____ Please list any problems or concerns with equipment: _____ _____	Job Name: _____ Address: _____ City, State, Zip: _____ Phone: _____ Fax: _____ Contact: _____ Installed By: _____ Hours per day of operation: _____												
I verify that the information above represents that this project is ready for performance check. Dealer: _____ Date: _____ Signature: _____													
ITEM NO. _____													
													

4. MAFSI Demonstration Form

EXHIBIT 4 – MAFSI DEMONSTRATION REQUEST FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Demonstration Request Form	
Dealer: _____	Job Name: _____
Contact: _____	Address: _____
Manufacturers: _____	City, State, Zip: _____
_____	Phone: _____
_____	Fax: _____
_____	Contact: _____
<p>Providing a proper demonstration may require more time for various equipment and/ or systems. Please allocate _____ to ensure a complete and professional demonstration.</p> <p>It is important that we understand and are prepared for the job conditions prior to our visit. To avoid any confusion and possible charges for a second demonstration, please check off the points that apply and return promptly.</p>	
1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.	Yes _____ No _____
2. Appointments set for demonstration(s):	Yes _____ No _____ Date _____ Time _____
3. Utilities hooked up and operating:	Yes _____ No _____
• Gas	Yes _____ No _____
• Steam	Yes _____ No _____
• Water	Yes _____ No _____
Electric voltage and phase checked:	Yes _____ No _____
Gas leak tested by utility or plumber:	Yes _____ No _____
Steam pressure regulators adjusted:	Yes _____ No _____
• Boilers running:	Yes _____ No _____
Hoods and Fans operational:	Yes _____ No _____
• UDS Operating	Yes _____ No _____
Accessories and supplies available:	Yes _____ No _____
• Oil in Fryers for Filtration:	Yes _____ No _____
• Filters, Cleaners, Tools:	Yes _____ No _____
4. Appropriate set of instruction manuals with unit to be demonstrated?	Yes _____ No _____
<p>I verify that the information above represents that this project is ready for demonstration.</p> <p>Dealer: _____ Date: _____</p> <p>Signature: _____</p>	
ITEM NO. _____	

5. MAFSI Demonstration Inspection Report

EXHIBIT 5 – MAFSI DEMONSTRATION INSPECTION REPORT FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Demonstration Inspection Report	
Dealer: _____	Customer: _____
Address: _____	Address: _____
City, State, Zip: _____	City, State, Zip: _____
Phone: _____	Phone: _____
Fax: _____	Fax: _____
Date Performed: _____	
Manufacturer(s): _____	

Model: _____	Serial No.: _____
Model: _____	Serial No.: _____
Model: _____	Serial No.: _____
1. Utilities connected:	
• Steam	Yes _____ No _____
• Gas	Yes _____ No _____
• Electricity	Yes _____ No _____
• Water	Yes _____ No _____
• Drain	Yes _____ No _____
Pilots operational:	Yes _____ No _____
Start-Up/Performance Check Done:	Yes _____ No _____
Calibrated/Fired Off:	Yes _____ No _____
Authorized Service Agent:	Yes _____ No _____
Operational/Maintenance Manual:	Yes _____ No _____
All Accessories with Units:	Yes _____ No _____
Installation Notes: _____	

Type of Equipment Demonstrated: _____	
• Reviewed Operation and Controls:	Yes _____ No _____
• Discussed Product Applications:	Yes _____ No _____
• Reviewed Daily and Periodic Cleaning/Maintenance:	Yes _____ No _____
• Provided Authorized Service/Warranty/Information:	Yes _____ No _____
Demonstration Notes/Follow-up: _____	

I verify that the equipment listed above has been demonstrated to my satisfaction.	
Customer: _____	Date: _____
Signature: _____	Manufacturers' Rep: _____
ITEM NO. _____	
	

6. General Responsibilities Outline

EXHIBIT 6 – GENERAL RESPONSIBILITIES OUTLINE FORM				
GENERAL RESPONSIBILITIES				
ITEM	BARING INDUSTRIES	OTHER TRADES		
	Provide	Install	Provide	Install
General				
deliver, uncrate and set in place equipment				
wall blocking				
all floor, wall, roof penetrations, sleeving and fireproofing/insulation				
Electrical				
all final electrical connection and interconnection to equipment room building services				
all control wiring				
all floor, wall, roof penetrations, sleeving and fireproofing/insulating/re-sealing				
Mechanical				
all final plumbing connections and interconnections to equipment from building services				
all plumbing materials including pipes, traps, stops, valves, fittings, shut-offs, water hammer arrestors, pressure reducing valves, etc. for a complete and operable system				
all floor, wall, roof penetrations, sleeving and fireproofing/insulating/re-sealing				

NOTES:
 1. See Baring coordination drawings for location
 2. Maximum gas pressure not to exceed 8" WC natural gas. **Verify gas pressure requirements w/ Baring for LP service**

7. Project Plan Outline

EXHIBIT 7 – PROJECT PLAN OUTLINE FORM

DATE	
PROJECT MGR	
PROJECT NAME	
PROJECT #	
AREA	
NO. OF AREAS	
NUMBER OF ITEMS IN AREA	

PROJECT PLAN						
DESCRIPTION	WEEKS	DURATION/DAYS	START			FINISH
PROJECT REVIEW						
ENGINEERING						
SUBMITTAL APPROVAL						
PURCHASING						
ORDER WIC						
FABRICATE WIC						
SHIP WIC						
INSTALL WIC						
ORDER EXHAUST HOODS						
FABRICATE EXHAUST HPPDS						
SHIP EXHAUST HOODS						
INSTALL EXHAUST HPPDS						
DAYS HOODS/WIC PRIOR TO EQUIPMENT						
ORDER REFRIGERATION						
FABRICATE REFRIGERATION						
SHIP REFRIGERATION						
REFRIGERATION PIPING INSTALL						
FINAL REFRIGERATION HOOK UP						
ORDER CUSTOM FAB						
SHIP CUSTOM FAB						
SHIP CUSTOM FAB						
INSTALL CUSTOM FAB						
ORDER EQUIPMENT BUYOUT						
EQUIPMENT SHIP						
EQUIPMENT TO WAREHOUSE						
EQUIPMENT SHIP						
EQUIPMENT INSTALL						
UTILITY CONNECTION						
FRIESYSTEM INSTALL						
PUNCH LIST						
ANSUL TEST						
BOH						
STARTUP						
TURNOVER						
TRAINING						

8. Submittal Log & Process

EXHIBIT 8 – PROJECT PLAN OUTLINE FORM



The following is our submittal log, record of all submittals we have received to date and the ones we are expecting to review. Please note, written 11 40 00 specifications have a very detailed submittal process, this is spelled out in execution section 5.6/C. You can also find more information in our Dealer Resource Workgroup with examples of submittals, etc. If you don't have access to this workgroup, please submit a request to info@sconoshg.com

SUBMITTAL NUMBER	SUBMITTAL TYPE/SECTION	DATE SUBMITTED	DATE APPROVED	NOTES
BASIC PLANS & CUTS:				
	Equipment Plan & Rough-Ins <i>(needs to be submitted with cutbook)</i>			
	Equipment Cutbook <i>(needs to be submitted with equipment plans)</i>			
ENGINEERED SYSTEMS:				
	Walk-in Boxes			
	Exhaust Hoods			
	Remote Rack Systems			
	Custom Stainless-Steel Fabrication			
	FS Millwork			
	Bar - Crown			
	Cooking Suites			
	Cook Chill Systems			
SPECIALTY EQUIPMENT:				
	Hearth Ovens			
	Sneezeguards			
	Kaliber			
	Custom Display Cases - Ie. Structural Concepts			
	PowerSoak			

300 WEST CHESTNUT STREET, SUITE 201, EPHRATA, PA 17522 (717) 733-5810

SUBMITTAL EXPECTATIONS REMINDER:

- Submittals are to be coordinated between all engineered systems by FSEC before submitting for review. FSEC is to take ownership of all submittals.
- Review all shop drawings internally prior to submitting to SHG, especially those that are typically auto generated and are not accurate. SHG will reject submittals if they are found to be completely off and not line up with project.
- Submit digital copies for review, do not submit hard copies
- Submittals to go through proper channels, GC, Developer, Owners Rep, Architect, Consultant, etc - do not submit them directly to SHG.
- All fabricators involved should be aware that the project has bought the details specified and the design team will be conducting site inspection and will require that everything gets replaced that does not conform to those details. This is related to Stainless Steel custom fabrication and Food service Millwork. Submittals should reflect all of the details and how they intend to be constructed. Submittals without those details will be rejected for resubmission.
- Equipment Plans should not be submitted without equipment cutbooks or vice versa. Both need to be submitted together for comprehensive submittal review.
- Obtain copies of the latest architectural plans from architect prior to beginning the dimensioned rough-in submittal plans. Submittals are to be based off latest set of drawings, including all addendum/revision released.
- Feel free to request CAD backgrounds for use in preparation of your submittals. Please note, we will not provide rough-in CAD exports, we will provide equipment background. Due diligence must be done by the dealer and prepare all rough-in connection points. Digital files will be released once release form is filled out. Please see Release Forms Section ([link here](#))
- All shop drawings are to be submitted to scale or they will be rejected. Hand drawn shop drawings will be rejected.
- Shop drawings to include all equipment, including by others for proper spacing verification. Especially millwork shop drawings. Do not submit millwork only with gaps. Exact actual equipment to be shown and how the millwork is constructed around it for proper fabrication, reinforcement and clearances.
- Confirm all utilities requirements for Owner/Vendor provided equipment.
- Confirm all and any special sizing and verifications, like plate sizes
- Shop Drawings should not read "confirm" or "verify" - you the dealer as part of the submittal process needs to close those gaps via formal RFI's if need or site survey dimensions or dictate a hold dimension on shop drawings if need be.
- All Equipment plans and rough-in drawings to utilize FS design corresponding item numbers. Do not create your own numbering system.
- Shop Drawing submittal to have a "General Responsibility Outline" sheet defining roles and responsibility for all relevant project scope. Refer to SHG Exhibit 6 Form, feel free to replicate and update as relevant.
- Submittals are to be separated out, per specifications. Not lumped together as (1) large submittal file

SCOPOS Hospitality Group, Ephrata, PA

9. VE & Alternate Product Certification Form

EXHIBIT 9 – PROJECT PLAN OUTLINE FORM															
<div style="display: flex; align-items: center; margin-bottom: 20px;">  </div> <h3 style="text-align: center; margin: 0;">VE & Alternate Product Certification Form</h3> <p style="margin: 10px 0;"><i>Alternates or substitutions shall be considered only at the time of bidding. It will be assumed and expected that the base bid included the price for the manufacturer and model number exactly as specified.</i></p> <p style="margin: 10px 0;"><i>If and when project circumstances require alternates to be considered due to scheduling or budgets, dealer is to fill out this form for product comparison and validation before an alternate can be accepted.</i></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 5%; text-align: center; vertical-align: top; padding: 5px;">1</td> <td style="padding: 5px;">Explain goal and purpose of substitution:</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">2</td> <td style="padding: 5px;">Provide cost difference, savings of using this product over specified product:</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">3</td> <td style="padding: 5px;">Provide proof that owner is receiving this savings and how it is being credited back towards the project:</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">4</td> <td style="padding: 5px;">Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">5</td> <td style="padding: 5px;">If a custom fabrication item, such as a spec drawing showing products engineered to project needs to be provided. Please note spec conditions for these items in 11 400 00 Section 1.02/B</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">6</td> <td style="padding: 5px;">GC - General Contractor to carefully evaluate acceptance of alternate manufacturers for utility changes and requirements in MEP design systems for any impact. Please note the following spec 11 400 00 Section 1.02/F</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;"></td> <td style="padding: 5px;">The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.</td> </tr> </table>		1	Explain goal and purpose of substitution:	2	Provide cost difference, savings of using this product over specified product:	3	Provide proof that owner is receiving this savings and how it is being credited back towards the project:	4	Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.	5	If a custom fabrication item, such as a spec drawing showing products engineered to project needs to be provided. Please note spec conditions for these items in 11 400 00 Section 1.02/B	6	GC - General Contractor to carefully evaluate acceptance of alternate manufacturers for utility changes and requirements in MEP design systems for any impact. Please note the following spec 11 400 00 Section 1.02/F		The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.
1	Explain goal and purpose of substitution:														
2	Provide cost difference, savings of using this product over specified product:														
3	Provide proof that owner is receiving this savings and how it is being credited back towards the project:														
4	Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.														
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	The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.														

7	Provide a detailed side by side features and product comparison listing all accessories, properties, certifications and listing such as NSF, UL, etc. in spreadsheet format. Clearly list out any features that alternate manufacturer is not being able to meet. Spec sheets of both, original and alternate to be provided in the package. Use form example below.			
Requested Substitution: (example)				
ITEM #	DESCRIPTION	SPECIFIED	PROPOSED ALTERNATE	NOTES/COMMENTS
K100	DESCRIPTION	Combi Oven	Combi Oven	
	QTY.	2	2	
	MANUF.	Rational	Alto-Shaam	
	MODEL	SCC 62NG	CTP7-20G	
	ACCESSORIES (LIST ALL)	(1) CAP - Chef Assistance Program	NOT AVAILABLE	
		(1) 9999.9951 - RCI Rational Certified Installation	(2) Installation Program:	
		(1) 9999.9812 - Pre-Installation Site Survey	Included with Installation Program	
		(1) 9999.9957 - RCI Rational Certified Installation	Included with Installation Program	
		(2) 8720.1560US - Installation Kit	(2) 5021522 - Installation Kit	
		(2) 56.00.210A - Cleaner tablet (100)	(2) CE-36354 - CombiClean® Cleaning Tabs (90)	
		(2) 56.00.562 - Care Tablets (150)	NOT AVAILABLE	
		(1) 60.71.936 - Combi-Duo Stacking kit	(1) 5016710 - Stacking Hardware	
		(1) 9999.9959 - RCI Rational Certified Installation	Included with Installation Program	
		(2) 87.00.521US - Wearable Parts Kit	NOT AVAILABLE	
		(6) 6010.2101 - Shelf, stainless steel	(6) SH-22584 - Shelf, stainless steel wire	
		(2) - 6015.1103 - Gastronorm Perforated Baking Tray, 2/1 size, 25-5/8" x 20-7/8", aluminum with TriLax® coating	NOT AVAILABLE	
		(2) 6013.1103 - Gastronorm Baking Tray, 1/1 GN, 12-3/4" x 20-7/8", aluminum with Trilax coating	NOT AVAILABLE	
		(2) 6013.2103 - Gastronorm Baking Tray, 2/1 GN, 25-5/8" x 20-7/8", aluminum with Trilax coating	NOT AVAILABLE	
		(2) 60.73.314 - Cross & Stripe Grill Plate, 1/1 GN	(2) SH-26731 - Grilling Grate, 12" x 20"	
		(6) 60.73.216 - Tray, for large roasting/baking pan, steel carrier plate (1/1 GN)	NOT AVAILABLE	
		(6) 6019.1250 - CombiFry Basket, 1/2 GN, 12" x 10"	(2) BS-26730 - Fry Basket, 12" x 20"	
		(2) 60.71.157 - Multibaker, 1/1 GN, 12-3/4" x 20-7/8", 8 molds, TriLax Coating	NOT AVAILABLE	
		(2) - 6017.1002 - Muffin & Timbale moulds, 1/1 GN, 12-3/4" x 20-7/8"	NOT AVAILABLE	
		(2) 6017.1001 - Muffin & Timbale moulds, 2/1 GN, 25-5/8" x 20-7/8"	NOT AVAILABLE	
		(2) 6014.1102 - Gastronorm Container, 1/1 size, 12-3/4" x 20-7/8", 3/4" deep, granite enameled	NOT AVAILABLE	
		(2) Dormont 1675KIT48 - Blue Hose Gas Connector Kit	(2) Dormont 1675KIT48 - Blue Hose Gas Connector Kit	
		(1) Dormont PS - Wheel Placement	(1) Dormont PS - Wheel Placement	
	UTILITIES	208v/60/1-ph, 3.7 amps, NEMA 6-15P cCSAus, NSF, IPX5, ENERGY STAR® (Natural Gas)	208-240v/50/60/1-ph, 4.8-4.2 amps, 1.0kW, 14 AWG, NO cord or plug (Natural Gas)	
	WARRANTY	2 years parts and labor, 5 years steam generator warranty	All units come standard with a one-year warranty . An additional one-year warranty may be purchased at an additional charge. -	Dealer to provide additional 1-year warranty to match 2-year standard from Rational

	K101	DESCRIPTION			
		QTY.			
		MANUFACTURER			
		MODEL			
		ACCESSORIES (LIST ALL)			
		UTILITIES			
		WARRANTY			
<hr/>					
8.0	Acknowledgement				
8.1	Contractor and Subcontractor request that Owner, Architect & Consultant authorize the Requested Substitution described above. Contractor and Subcontractor, jointly and severally, make the following promises and representations about the Requested Substitution:				
8.2	The Requested Substitution complies in all respects with all applicable building laws, codes and regulations.				
8.3	Contractor and Subcontractor have carefully evaluated the Authorized Substitution and have determined that it complies in all respects with all requirements of the plans, specifications and contract documents for the Project except as specifically noted herein or in any attached exhibit-				
8.4	Contractor and Subcontractor clearly understand that any authorizations to make the Requested Substitution will be based entirely on the promises and representations of Contractor and Subcontractor and will not permit, authorize, or approve any deviation from the plans, specifications or contract documents except as specifically set forth herein or in any exhibit.				
8.5	Contractor and Subcontractor are completely and solely responsible for compliance of the Requested Substitution With all requirements of the Plans, specifications, and contract documents except as specifically set forth herein or in any attached exhibit. Contractor and Subcontractor expressly warrant that the Requested Substitution is merchantable and suitable for its intended purpose.				
	SIGNATURES:				
	DEALER:				
	GENERAL CONTRACTOR:				
	FILE WITH OWNER/OWNERS REP:				

END OF SECTION 11 40 00

SECTION 12 21 13 - HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Horizontal louver blinds with faux wood slats.

B. Related Requirements:

- 1. Section 06 10 00 "Rough Carpentry" for wood blocking and grounds for mounting horizontal louver blinds and accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: Show fabrication and installation details for horizontal louver blinds.

- C. Samples for Initial Selection: For each type and color of horizontal louver blind.

- 1. Include similar Samples of accessories involving color selection.

- D. Samples for Verification: For each type and color of horizontal louver blind indicated.

- 1. Slat: Not less than 12 inches long.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For horizontal louver blinds to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. Horizontal Louver Blinds: Full-size units equal to 5 percent of quantity installed for each size, color, texture, pattern, and gloss indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver horizontal louver blinds in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not install horizontal louver blinds until construction and wet and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where horizontal louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain horizontal louver blinds from single source from single manufacturer.

2.2 HORIZONTAL LOUVER BLINDS, FAUX WOOD SLATS (WTR-1)

- A. Basis-of-Design Product: Design of louver blind systems is based on:
 - 1. Graber; Lake Forest Faux Wood Blinds.
- B. Flame-Resistance Rating: Comply with NFPA 701; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- C. Slats: Faux Wood.
 - 1. Color and Finish: Refer to Section 09 05 00 "Color Schedule".
 - 2. Width: 2 inches.
 - 3. Thickness: Manufacturer's standard.
 - 4. Spacing: Manufacturer's standard.
 - 5. Profile: Flat.
 - 6. Corners: Radius.
- D. Headrail: Formed steel or extruded aluminum; long edges returned or rolled. Headrails fully enclose operating mechanisms on three sides and ends.
 - 1. Capacity: One blind per headrail unless otherwise indicated.
 - 2. Manual Lift Mechanism:
 - a. Lift-Cord Lock: Variable; stops lift cord at user-selected position within full operating range.

- b. Operator: Extension of lift cord(s) through lift-cord lock mechanism to form cord pull.
- 3. Manual Tilt Mechanism: Enclosed worm-gear mechanism and linkage rod that adjusts ladders.
 - a. Tilt: Full.
 - b. Operator: Wand matching slats.
 - c. Over-Rotation Protection: Manufacturer's detachable operator or slip clutch to prevent over rotation of gear.
- 4. Manual Lift-Operator and Tilt-Operator Lengths: Manufacturer's standard.
- E. Bottom Rail: Matching slats that secures and protects ends of ladders and lift cords.
 - 1. Type: Manufacturer's standard.
- F. Lift Cords: Manufacturer's standard braided cord.
- G. Ladders: Evenly spaced across headrail at spacing that prevents long-term slat sag.
 - 1. Type: Cloth tape, manufacturer's standard width.
- H. Valance: 2-1/2" Classic Valance to match slats.
- I. Tassels: Finished to match slats.
- J. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.
 - 1. Type: Inside mount.
 - 2. Intermediate Support: Provide intermediate support brackets to produce support spacing recommended by blind manufacturer for weight and size of blind.
- K. Hold-Down Brackets and Hooks or Pins: Manufacturer's standard.
- L. Components: Provide rails, cords, ladders, and materials exposed to view matching or coordinating with slat color unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Install mounting and intermediate brackets to prevent deflection of headrails.

2. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.

3.3 ADJUSTING

- A. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.

3.4 CLEANING AND PROTECTION

- A. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer and that ensures that horizontal louver blinds are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged horizontal louver blinds that cannot be repaired in a manner approved by Architect before time of Substantial Completion.

END OF SECTION 12 21 13

SECTION 12 35 30 - RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Residential cabinetry.
- B. Related Sections include the following:
 - 1. Division 06 Section "Interior Architectural Woodwork" for countertops.

1.3 DEFINITIONS

- A. Exposed Surfaces of Cabinets: Surfaces visible when doors and drawers are closed, including visible surfaces in open cabinets or behind glass doors.
- B. Semiexposed Surfaces of Cabinets: Surfaces behind opaque doors or drawer fronts, including interior faces of doors and interiors and sides of drawers. Bottoms of wall cabinets are defined as "semiexposed."
- C. Concealed Surfaces of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, bottoms of drawers, and ends of cabinets installed directly against and completely concealed by walls or other cabinets. Tops of wall cabinets and utility cabinets are defined as "concealed."

1.4 SUBMITTALS

- A. Product Certificates: Signed by manufacturers of casework certifying that products furnished comply with requirements.
- B. Shop Drawings: For cabinets and countertops. Include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, hardware, edge and backsplash profiles, methods of joining countertops, and cutouts for plumbing fixtures.
- C. Samples for Verification:
 - 1. Solid wood door with transparent finish.
 - 2. Exposed hardware, for each type of item.

1.5 QUALITY ASSURANCE

- A. General: Unless otherwise indicated, comply with the following standards:
 - 1. Cabinets: KCMA A161.1.
 - a. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location of each unit and showing compliance with the above standard.
- B. Source Limitations for Cabinets: Obtain cabinets through one source from a single manufacturer.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Provide fillers and scribes to allow for trimming and fitting.
- C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.
- D. Field Measurements for Countertops: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.7 COORDINATION

- A. Coordinate layout and installation of blocking and reinforcement in partitions for support of casework.
- B. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 CABINET MANUFACTURERS

- A. Refer to Division 09 Section "Color Schedule" for manufacturers, products, colors and finishes.

2.2 CABINETS (CAB-1 through CAB-3)

- A. Face Frames: 3/4 inch thick select solid paint grade hardwood components. Join stiles and rails together with concealed screws and wood glue for strength. Frames shall be dadoed to receive tops, bottoms and end panels.

- B. End Panels: Provide 3/8 inch thick plywood end panels. Exposed ends shall receive stained, sealed and top coated wood veneer. Interior shall be covered with light maple printed urethane coated surface. End panels shall be dadoed to receive tops, bottoms and backs.
- C. Tops and Bottoms: Provide 3/8 inch thick plywood tops and bottoms laminated with light maple printed urethane surface on both sides.
- D. Backs: Provide 1/8 inch thick plywood laminated with matching light maple printed urethane surface on interior.
- E. Backrails: 5/8 inch thick plywood.
- F. Shelving: 3/4 inch thick particleboard laminated on two sides with light maple printed urethane surface and matching PVC edge banding on one long edge. Finished interior cabinets shall receive surfaced shelving with matching wood specie edge banding on one long edge.
 - 1. Base cabinet shelves shall be full depth shelves.
- G. Toeboards: 5/8 inch thick plywood which fits between end panels and reaches the cabinet bottom.
- H. Drawers: Provide four sided drawer constructed with 3/4 inch hardwood, using dovetailed joinery. Bottoms shall be 1/4 inch thick plywood with light birch print; bottoms shall be fully captive within sides and ends.
- I. Crown Molding and Light Valance: Provide crown molding and light valance as supplied and finished by cabinet manufacturer to match finish of cabinets.
- J. Vented Metal Panels (MTL-1): Refer to Section 09 05 00 – Color Schedule for manufacturer, product and finish.
 - 1. Location: Casework inset where ventilation is required.
- K. Finish and Color: Refer to Division 09 Section “Color Schedule”.

2.3 HARDWARE (HDW.-1)

- A. Pulls: Refer to Division 09 Section “Color Schedule”.
- B. Door Hinges: Fully concealed, soft-close, self-closing, 6-way adjustable European hinges.
- C. Drawer Slides: Provide soft closing, full extension ball-bearing undermount glides. Provide for 75 pound capacity dynamic load and 100 pound capacity static load for drawer glides.

2.4 ACCESSORIES

- A. Provide wood blocking in all walls to receive wall cabinets. Provide blocking in location as recommended by cabinet manufacturer for proper installation and support of wall cabinets.

PART 3 - EXECUTION

3.1 CABINET INSTALLATION

- A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.
- B. Install cabinets without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories as indicated.
- C. Install cabinets level and plumb to a tolerance of 1/8 inch in 8 feet.
- D. Fasten cabinets to adjacent units and to backing.
 - 1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.

3.2 COUNTERTOP INSTALLATION

- A. Fasten solid-surfacing-material countertops by screwing through corner blocks of base units into underside of countertop. Align adjacent surfaces, and form seams to comply with manufacturer's written instructions using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 1. Install backsplashes to comply with solid-surfacing-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
- B. Install countertop level and plumb to a tolerance of 1/8 inch in 8 feet.

3.3 ADJUSTING AND CLEANING

- A. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- B. Clean casework on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 12 35 30

SECTION 12 35 54 - INSTITUTIONAL CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Plastic-laminate-faced wood cabinets of stock design.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for wood blocking for anchoring institutional casework.
 - 2. Division 09 Section "Gypsum Board" for reinforcements in gypsum board partitions for anchoring institutional casework.

1.3 DEFINITIONS

- A. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches above floor, and surfaces visible in open cabinets. All surfaces of open shelving.
- B. Semiexposed Portions of Cabinets: Surfaces behind opaque doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches or more above floor are defined as semi-exposed.
- C. Concealed Portions of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for institutional casework. Include plans, elevations, sections, details, and attachments to other Work.
- C. Samples for Verification: 6-inch-square Samples for each type of finish, including top material.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of institutional casework manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain institutional casework through one source from a single manufacturer.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards," Section 1600.
- D. Product Designations: Drawings indicate sizes, configurations, and finish material of institutional casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish material, and complying with the Specifications may be considered. Refer to Division 1 Section "Product Requirements."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver institutional casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install institutional casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where institutional casework is indicated to fit to other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating institutional casework without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

- A. Coordinate layout and installation of metal framing and reinforcements in gypsum board assemblies for support of institutional casework.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Plastic-Laminate-Faced Institutional Casework:
 - a. Stevens Industries, Inc.
 - b. TMI Systems Design Corp.

2.2 MATERIALS

- A. General:
1. Adhesives: Do not use adhesives that contain urea formaldehyde.
 2. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
 3. Hardwood Plywood: HPVA HP-1, either veneer core or particle core, unless otherwise indicated, made without urea formaldehyde.
 4. Softwood Plywood: DOC PS 1.
 5. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 6. Medium-Density Fiberboard: ANSI A208.2, Grade MD-Exterior Glue.
 7. Hardboard: AHA A135.4, Class 1 Tempered.
 8. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
 9. Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 3 mm thick at doors and drawer fronts, 1 mm thick elsewhere.
- B. Exposed Cabinet Materials:
1. Plastic Laminate: Type VGS.
 - a. Unless otherwise indicated, provide plastic laminate for exposed surfaces.
- C. Semiexposed Cabinet Materials:
1. Plastic Laminate: Type CLS.
 - a. Provide plastic laminate for semi-exposed surfaces, unless otherwise indicated.
 2. Melamine-Faced Particleboard: Particleboard with decorative surface of thermally fused, melamine-impregnated web and complying with LMA SAT-1.
 - a. Provide melamine-faced particleboard for semi-exposed surfaces, unless otherwise indicated.
- D. Concealed Cabinet Materials:
1. Plastic Laminate: Type BKL.

- E. Vented Metal Panels (MTL-1): Refer to Section 09 05 00 – Color Schedule for manufacturer, product and finish.
 - 1. Location: Casework inset where ventilation is required.

2.3 DESIGN, COLOR, AND FINISH

- A. Design: Provide institutional casework of the following design:
 - 1. Reveal overlay with wire pulls.
- B. Melamine-Faced Particleboard Colors, Patterns, and Finishes: As selected by Architect from casework manufacturer's full range.
- C. Plastic-Laminate Colors, Patterns, and Finishes (P.LAM.): Refer to Division 09 Section "Color Schedule" for plastic laminate color selections.

2.4 CABINET FABRICATION

- 1. Bottoms and Ends of Base and Tall Cabinets, and Tops of Tall Cabinets: 3/4-inch particleboard, plastic-laminate faced on exposed surfaces and melamine or CLS faced on semi-exposed surfaces.
- 2. Base Cabinet Subtops: 3/4-inch particleboard melamine or CLS faced and glued and pinned.
- 3. Wall Cabinet Bottoms and Tops: One inch particleboard, plastic-laminate faced on exposed surfaces and melamine or CLS faced on semi-exposed surfaces.
- 4. Wall Cabinet Ends: 3/4-inch particleboard, plastic-laminate faced on exposed surfaces and melamine or CLS faced on semi-exposed surfaces.
- 5. Clear inside depth of wall cabinets shall be 12 inches minimum.
- 6. Backs of Cabinets: 3/8 inch particleboard or 1/4 inch prefinished pretempered hardboard, surfaced with plastic-laminate on exposed surfaces and melamine or CLS on semi-exposed surfaces. Backs shall be dadoed into sides, bottoms, and tops where not exposed and glued.
- 7. Exposed Backs: 3/4 inch particleboard, surfaced with plastic laminate of balanced construction, glued and spline doweled, and mechanically attached if required.
- 8. Hanger Rails: 3/4 inch particleboard. Two located at top and bottom of each cabinet back, 3 on tall cabinets located top, bottom and center.
- 9. Drawer Fronts: 3/4-inch particleboard, plastic-laminate faced on both surfaces. Screw attach fronts to drawer box.
- 10. Drawer Sides and Backs: 1/2-inch plastic laminate faced or melamine-faced particleboard, with glued dovetail or multiple-dowel joints.
- 11. Drawer Bottoms:
 - a. Drawer Construction Options
 - 1) Option 1: 1/4-inch plastic laminate faced or melamine-faced medium density fiberboard, 1/4-inch melamine faced particleboard or 1/4 inch melamine faced tempered hardboard glued and dadoed into front, back, and sides of drawers. Drawers 24 inches and wider shall be reinforced. Reinforcement shall be glued, fastened and perimeter sealed with hot melt adhesive. Provide drawer bottom reinforcement as follows.

- a) 1 at 24 inch wide drawers.
 - b) 2 at 36 inch wide drawers.
 - c) 4 at 48 inch wide drawers.
- 2) Option 2: 1/2-inch plastic laminate faced or melamine-faced particleboard screwed directly to the bottom edges of the drawer box. Drawer bottoms less than 1/2-inch thick will not be permitted.
- a) Paper storage drawers shall be constructed similar except retaining hood shall be included at the rear of each drawer.
12. Doors: 3/4-inch particleboard or medium-density fiberboard, plastic-laminate faced on exposed surfaces and melamine or CLS faced on semi-exposed surfaces.
13. Fixed and Adjustable Shelves: One inch thick particleboard.
- a. Exposed Locations: VGS plastic laminate both sides.
 - b. Semiexposed Locations: Melamine or CLS both sides.
 - c. Front and back edges shall have 1 mm thick PVC edging.
- B. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.

2.5 CASEWORK HARDWARE

- A. Hardware, General: Provide manufacturer's standard powder-coated, commercial-quality, heavy-duty hardware complying with requirements indicated.
- 1. Powder coating color to be selected by Architect.
 - 2. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.
- B. Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening, self-closing.
- C. Pulls (HDW.-2):
- 1. Refer to Division 09 Section "Color Schedule".
- D. Door Catches: Zinc-plated, nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48 inches high.
- E. Drawer Slides: Powder-coated, metal-channel, self-closing drawer slides, designed to prevent rebound when drawers are closed, with nylon-wheel, ball-bearing rollers, and complying with BHMA A156.9, Type B05091, and rated for the following loads:
- 1. Box Drawer Slides: 100 lbf.
 - 2. File Drawer Slides: 200 lbf.
 - 3. Pencil Drawer Slides: 45 lbf.
 - 4. Keyboard Slide: 75 lbf.
- F. Drawer and Cupboard Locks: Cylindrical (cam) type, 5-pin tumbler, brass with chrome-plated finish, complying with BHMA A156.11, Grade 1.

1. Provide a minimum of two keys per lock and six master keys.
 2. Provide locks on doors and drawers indicated on Drawings.
 3. Each room shall be keyed alike, unless otherwise noted.
- G. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door units.
- H. Adjustable Shelf Supports: 2-pin locking plastic shelf rests complying with BHMA A156.9, Type B04013. Provide shelf supports with anti-tip-up shelf restraints. Supports shall be configured to retard shelf slide-off and slot for ability to mechanically attach shelf to clip.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of institutional casework.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CASEWORK INSTALLATION

- A. Install plumb, level, and true; shim as required, using concealed shims. Where institutional casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Fasten cabinets to partition framing, wood blocking, or reinforcements in partitions with fasteners spaced 24 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.
1. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24 inches o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than two fasteners.
- C. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Align similar adjoining doors to a tolerance of 1/16 inch.
1. Fasten through back, near top and bottom, at ends, and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.
- D. Countertops: Fasten plastic-laminate countertops by screwing through corner blocks of base units into underside of countertop. Form seams using splines to align adjacent surfaces, and secure with glue and concealed clamping devices designed for this purpose.
1. Provide cutouts for sinks and lavatories, including holes for faucets and accessories.
 2. Seal edges of cutouts by saturating with varnish.

- E. Install hardware uniformly and precisely. Set hinges snug and flat in mortises, unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- F. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protection: Provide 6-mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at a minimum of 48 inches o.c. Remove protection at Substantial Completion.

END OF SECTION 12 35 54

SECTION 12 36 23.13 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes
 - 1. Plastic-laminate-clad countertops.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For plastic-laminate-clad countertops.
 - 1. Include plans, sections, details, and attachments to other work. Detail fabrication and installation, including field joints.
 - 2. Show locations and sizes of cutouts and holes for items installed in plastic-laminate-clad countertops.
 - 3. Apply AWI Quality Certification Program label to Shop Drawings.
- C. Samples for Verification: As follows:
 - 1. Plastic Laminates: For each type, color, pattern, and surface finish required, 8 by 10 inches in size.
 - 2. Wood-Grain Plastic Laminates: For each type, color, pattern, and surface finish required, 12 by 24 inches in size.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 - 1. Shop Certification: AWI's Quality Certification Program accredited participant.
- B. Installer Qualifications: Fabricator of products.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver countertops only after casework and supports on which they will be installed have been completed in installation areas.
- B. Store countertops in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.
- C. Keep surfaces of countertops covered with protective covering during handling and installation.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Established Dimensions: Where countertops are indicated to fit to other construction, establish dimensions for areas where countertops are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD COUNTERTOPS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.
- B. Grade: Custom.
- C. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
- D. Colors, Patterns, and Finishes (PLAM-2): Refer to Section 09 05 00 "Color Schedule" for plastic laminate manufacturers, patterns and color selections.
- E. Edge Treatment: PVC edge banding, 3.0 mm thick, in color, pattern, and finish as selected by Architect from manufacturer's full range of colors.
- F. Core Material: Particleboard or MDF.
- G. Core Material at Sinks: Particleboard made with exterior glue.

- H. Core Thickness: 3/4 inch.
 - 1. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of core material laminated to top.
- I. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.

2.2 WOOD MATERIALS

- A. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of countertop and quality grade specified unless otherwise indicated.
 - 1. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130.
 - 2. Particleboard: ANSI A208.1, Grade M-2.

2.3 MISCELLANEOUS MATERIALS

- A. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive.
- B. Steel Countertop Brackets: Provide sizes indicated on Drawings as manufactured by A & M Hardware, Inc. Provide brackets powder coated in color as selected by Architect.
- C. Concealed Countertop Brackets: Provide sizes indicated on Drawings as manufactured by A & M Hardware, Inc. Provide brackets powder coated in color as selected by Architect.

2.4 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch over base cabinets. Ease edges to radius indicated for the following:
- C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- D. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.
- B. Before installing countertops, examine shop-fabricated work for completion and complete work as required, including removal of packing.

3.2 INSTALLATION

- A. Grade: Install countertops to comply with same grade as item to be installed.
- B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.
 - 1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
 - 1. Secure field joints in countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- D. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Countertop Installation: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Install countertops level and true in line. Use concealed shims as required to maintain not more than a 1/8-inch-in-96-inches variation from a straight, level plane.
 - 2. Secure backsplashes to walls with adhesive.
 - 3. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective countertops, where possible, to eliminate functional and visual defects. Where not possible to repair, replace countertops. Adjust joinery for uniform appearance.

- B. Clean countertops on exposed and semiexposed surfaces.
- C. Protection: Provide Kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches o.c. Remove protection at Substantial Completion.

END OF SECTION 12 36 23.13

SECTION 12 36 61.16 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid surface material countertops.
 - 2. Solid surface material backsplashes.
 - 3. Solid surface material end splashes.
 - 4. Solid surface material sinks.

1.3 ACTION SUBMITTALS

- A. Product Data: For countertop materials and sinks
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
 - 1. Show locations and details of joints.
 - 2. Show direction of directional pattern, if any.
- C. Samples for Verification: For the following products:
 - 1. Countertop material, 6 inches square.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of countertops.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements before countertop fabrication is complete.

1.8 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS (SSM-1 through SSM-6)

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
 - 1. Type: Provide Standard type.
 - 2. Colors and Patterns: Refer to Section 09 05 00 – Color Schedule.
- B. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.

2.2 COUNTERTOP FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Custom.
- B. Configuration:
 - 1. Front: As detailed on Drawings.
 - 2. Backsplash: Straight, slightly eased at corner.
 - 3. End Splash: Matching backsplash.
- C. Countertops: 1/2-inch- thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 1/2-inch- thick, solid surface material.
- E. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

1. Fabricate with loose backsplashes for field assembly.
2. Install integral sink bowls in countertops in the shop.

F. Joints: Fabricate countertops without joints.

G. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures[**in shop**] using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
2. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.
4. Counter-Mounted Cooktops: Prepare countertops in shop for field cutting openings for cooktops. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

- C. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- D. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- E. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 - 1. Install metal splines in kerfs in countertop edges at joints. Fill kerfs with adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
 - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- F. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- G. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Pre-drill holes for screws as recommended by manufacturer.
- H. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
 - 1. Seal edges of cutouts in particleboard subtops by saturating with varnish.
- I. Apply sealant to gaps at walls; comply with Section 07 92 00 "Joint Sealants."

END OF SECTION 12 36 61.16

SECTION 12 36 61.19 - QUARTZ AGGLOMERATE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Quartz agglomerate countertops.
 - 2. Quartz agglomerate backsplashes.
 - 3. Quartz agglomerate end splashes.

1.3 ACTION SUBMITTALS

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
 - 1. Show locations and details of joints.
 - 2. Show direction of directional pattern, if any.
- C. Samples for Verification: For the following products:
 - 1. Countertop material, 6 inches square.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For quartz agglomerate countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.

- B. Installer Qualifications: Fabricator of countertops.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.8 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 QUARTZ AGGLOMERATE COUNTERTOP MATERIALS (QSM-1)

- A. Quartz Agglomerate: Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with ICPA SS-1, except for composition.
 - 1. Manufacturer, Colors and Patterns: Refer to Section 09 05 00 – Color Schedule.

2.2 COUNTERTOP FABRICATION

- A. Fabricate countertops according to quartz agglomerate manufacturer's written instructions and the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Custom.
- B. Configuration:
 - 1. Front: As detailed on Drawings.
 - 2. Backsplash: Straight, slightly eased at corner.
 - 3. End Splash: Matching backsplash.
- C. Countertops: 3 cm thick, quartz agglomerate with front edge built up with same material.
- D. Backsplashes: 2 cm thick, quartz agglomerate.
- E. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with quartz agglomerate manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
- F. Joints: Fabricate countertops in sections for joining in field. Provide joints only where sheet size of countertop material is not larger enough to provide countertop without joints.
 - 1. Joint Locations: Not within 18 inches of a sink or cooktop and not where a countertop section less than 36 inches long would result, unless unavoidable.
 - 2. Joint Type: Bonded, 1/32 inch or less in width.

3. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints. Make width of cuts slightly more than thickness of splines to provide snug fit. Provide at least three splines in each joint.

G. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
2. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.
4. Counter-Mounted Cooktops: Prepare countertops in shop for field cutting openings for cooktops. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by quartz agglomerate manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive quartz agglomerate countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with quartz agglomerate manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

- C. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- D. Secure countertops to subtops with adhesive according to quartz agglomerate manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with quartz agglomerate manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- E. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 - 1. Install metal splines in kerfs in countertop edges at joints. Fill kerfs with adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
 - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- F. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- G. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- H. Apply sealant to gaps at walls; comply with Section 07 92 00 "Joint Sealants."

END OF SECTION 12 36 61.19

SECTION 12 48 13 - ENTRANCE FLOOR MATS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Entrance mats.

1.3 COORDINATION

- A. Coordinate size and location of recesses in concrete to receive floor mats and frames.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for floor mats and frames.

PART 2 - PRODUCTS

2.1 ENTRANCE FLOOR MATS (WOM-1)

- A. Entrance Floor Mat Manufacturer, Product, Pattern and Color: Refer to Section 09 05 00 – Color Schedule.
- B. Adhesive: Type as recommended by entrance floor mat manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install surface-type units with adhesive to comply with manufacturer's written instructions; coordinate with entrance locations and traffic patterns.

END OF SECTION 12 48 13

SECTION 12 53 00 - SALON FURNITURE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Salon furniture.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for detention furniture.

- B. Shop Drawings: For detention furniture.

- 1. Include plans, elevations, sections, and attachment details.

- C. Samples for Verification: For each type of furniture indicated.

- 1. Furniture: Actual 6 inch by 6 inch color samples for all exposed surfaces.

1.4 FIELD CONDITIONS

- A. Field Measurements: Verify openings for furniture by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 SALON FURNITURE

- A. Provide salon furniture as supplied by PS Design & Procurement in Cleveland, Ohio. Phone 440-600-0027.

- 1. PS Exclusive Broom Closet Storage: Provide single door unit with adjustable shelf and interior hooks. Refer to Section 09 05 00 – Color Schedule for laminate color selections. Unit measures 18"W x 16"D x 80.75"H.
- 2. Adjust-A-Sink: Provide system with cultured marble 3050 comfort fit shampoo bowl and accessories. Bowl height shall be adjustable from 34" to 46" from the floor. UPC

- approved. MP3000. Color as selected by Architect. Provide 5 year warranty on hydraulic pump and 2 year warranty on all other parts. Provide all necessary connection for a complete installation.
3. Custom Luma Manicure Table: Provide side ventilation hook up, 3" vent line, fan and filter. The nail space shall have 3 multiple storage drawers. Laminate as selected by Architect. Provide a LED lamp with unit. Unit measures 44"W x 30"H x 20"D. Refer to Section 09 05 00 – Color Schedule for laminate color selections.
 4. Kristin All Purpose Chair with Gas Assist: Provide lightly tufted seat and back with steel frame and vinyl wrapped arm rests. Unit shall include PS T-Bar footrest and 20 x 20 square base. Provide gas assist reclining mechanism. Provide vinyl color as selected by Architect. Unit measures 27.62"W x 32"D x 35"H.
 5. PS Exclusive Classic Low Wet Station: Wet booth unit with bread board pull out, two drawers, fully equipped tilt out panel, utility cabinet with tilt out clean towel storage and tilt out soiled towel hamper (hamper included). Shampoo bowl bulkhead shall have bottle well and shortened lift lid that covers the bottle well only. Provide hardware as selected by Architect. Unit measures 60"W x 80.75"H x 16"D. Refer to Section 09 05 00 – Color Schedule for laminate color selections.
 6. Mobile Dryer and Deluxe Wheel Kit: Unit shall include over-sized smoked hood, removable washable filter and black cabinet. Power requirements shall be 110V, 1400 watts, 13 amps. Black cabinet shall be 12-1/2" x 7" x 24" high ETL approved. Molded hood shall have 5 year warranty and the remainder has a 2 year warranty.
 7. PS Exclusive Modern Dryer Chair: Provide heavily padded and fully upholstered front and back with tapered cast aluminum legs. Upholstery color as selected by Architect. Unit measurement 27"W x 19"D x 30"H.
 8. PS Exclusive Polish Rack with Self Lip: Provide wall hung unit with fully laminated construction with acrylic shelf lips. Refer to Section 09 05 00 – Color Schedule for laminate color selections. Unit measurement 16"W x 23"H.
 9. Universal Catch All Hair Trap: Provide universal hair trap for shampoo bowls. Trap prevents clogging and has clean-out.
 10. Universal Gel Neck Rest: Provide vinyl and foam gel neck rest. Color: Black.
 11. Plastic Laminate Color (PLAM-6): Refer to Section 09 05 00 – Color Schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of furniture.

3.2 INSTALLATION

- A. Install furniture in accordance with manufacturer's instructions and final shop drawings.

END OF SECTION 12 55 00