VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
PROCUREMENT DEPARTMENT

ADDENDUM NO. 1

DATE:	January 28, 2026
TO:	All Offerors
FROM:	Deirdre Curry, Contracting Officer
TOTAL PAGE(S):	7 page (not including attachments)
SOLICITATION TITLE:	VT Military Building Renovation
SOLICITATION NUMBER:	443882606

I. CLARIFICATIONS AND ADDITIONAL INFORMATION

1. The sign-in sheet from the Pre-Bid Meeting held on Wednesday, January 14, 2026, is attached as **Exhibit A** for reference.

2. An agenda from the Pre-Bid Meeting is attached as **Exhibit B** for reference.

3. The new deadline for submitting bids is now **2:00 PM on Wednesday, February 18, 2026**.

4. The bid opening will occur on **Thursday, February 19, 2026, at 2:00 PM**, the zoom link remains the same as posted in the Instruction to Bidders.

5. Structural Calculations is attached as **Exhibit C** for reference.

6. The Roof Warranty is attached as **Exhibit D** for reference.

7. The required special inspections (HECO 6a and HECO 6b) is attached as **Exhibit E** for reference.

8. The Updated Final Working Drawings is attached as **Exhibit F** for reference.

II. REQUESTS FOR INFORMATION

1. Can a window(s) be removed in order to bring materials and/or install a trash shoot?

Virginia Tech Response: *If it is necessary and/or critical to completing the project on-time and within a reasonable budget, then yes window(s) can be removed. It will be the responsibility of the contractor to remove, replace, and/or repair any windows if damaged. Any windows removed must be stored in a secured location in order to prevent damage.*

2. Given the time line of bid due date and mobilization, there will be a price increase. How should we, the GC, handle this?

Virginia Tech Response: *It is the responsibility of the contractor to propose a bid that captures any possible pricing increase for the duration of the project.*

3. Will added AHU equipment be needed?

Virginia Tech Response*: Yes, mechanical scope is currently being revised. Stay tuned for Addendum 2.*

4. **Are there specific wage rate requirements on this project?**

   Virginia Tech Response*: No.*

5. **What is the existing roof material?**

   Virginia Tech Response*: Existing roof is a membrane roof, it appears to be EPDM. See photos below:*







6. **Please provide roof warranty as references in Sheet 7.01 on sheet A-103.**

Virginia Tech Response*: See Roof Warranty in Exhibit D.*

7. **Sheet Keynote 5.01 calls for railings with the BOD being Viva Railings, Circa railing system. Viva Railings has 7 different Circa rail systems: Circa Glass, Circa Wire Mesh, Circa Laser Cut, Circa Cable, Circa Picket, Circa Multline, and Circ Cablenet. Which Circa system should the rails be based on?**

   Virginia Tech Response*:*
   Keynote 5.01 to be revised to: HANDRAILS AT 36" AFF. PROVIDE 1-1/4" PAINTED STEEL RAILINGS THAT CONNECT TO 1-1/4" PAINTED STEEL POSTS THAT ARE ATTACHED TO FLAT PLATE AT DIMENSION THAT WILL ALLOW THEM TO BE FREESTANDING. PROVIDE SEGMENTS THAT ARE NO GREATER THAN 4'-0" BETWEEN POSTS. EACH 4'-0" SECTION TO BE FREESTANDING AND CONNECTED TO ADJACENT 4'-0" SECTION WITH REMOVABLE ATTACHMENT. NO INFILL IS REQUIRED AS RAILINGS WILL SERVE TO DELINEATE EXIT PATHWAY.

8. **General Note C on sheet A-102B states to ask owner which type of blocking, FRT wood or metal strapping, to use for each unique wall mounted item. General Note E on sheet A-600 states to use FRT wood blocking for all wall mounted items. Which general note should be followed?**

   Virginia Tech Response*: AECOM recommends FRT Wood Blocking. VT will confirm in Addendum 2 if they are allowing metal strapping.*

9. **Please provide locker specifications for lockers referred to in note 12.04 on A-901.**

   Virginia Tech Response*: Lockers no longer in scope. Wall has been removed between Locker Room and Pick Up Storage room.*

10. **Can you provide approximate start and finish dates for the whole building sprinkler protection project referred to on GI102?**

    Virginia Tech Response*: This project is still TBD, but the plan to have the fire suppression contractor work in coordination with the awarded GC. So, both projects will be at the same time.*

11. **Can you provide approximate start and finish dates for the window replacement project referred to in Sheet Keynote 2.35 on sheets AS102A and AD102B?**

    Virginia Tech Response*: Window replacement project has been completed as of September 2025. Note has been updated in most current set of documents included in this addendum*

12. **Is the window replacement GC responsible for lead abatement of metal windows and metal window sills?**

    Virginia Tech Response*: Window replacement project has been completed as of September 2025. No added scope for windows is part of this project, with exception if the awarded GC*

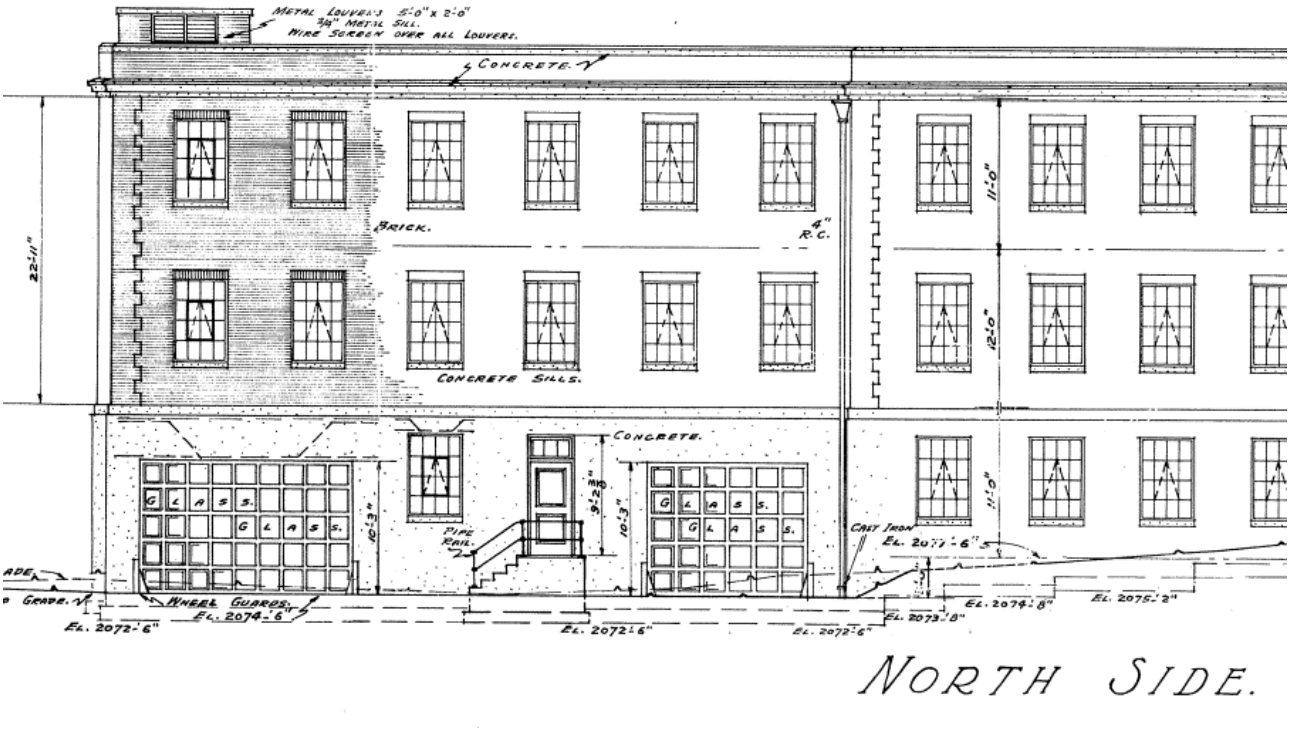
chooses to remove a window(s) to bring in materials and/or install a trash shoot – Reference RFI question #1

13. **Can you please provide the following specifications that are referred to in the Room Finish Schedule on sheet A-800?**
    a. **09 8420**
    b. **09 65 00**
    c. **09 30 00**
    d. **09 67 23.16**
    e. **06 41 16.00 10**
    f. **09 30 10**
    g. **03 30 00**
    h. **06 61 16**
    i. **06 20 00**

Virginia Tech Response*: Masterspec section numbers were included for reference only should they be needed during construction. If information beyond what is provided in the finish legend is required, contractor to reach out to product manufacturer/sales representative for installation recommendations.*

14. **What is the distance between the top of the finished floor on the second floor to the concrete roof slab?**

Virginia Tech Response*: See below from original 1934 drawings:*



15. **Temporary door T2 is listed twice in the Door Schedule on sheet A-612 but is only shown once on sheet G-003. Please clarify.**

Virginia Tech Response*: There are two temporary doors. One is in location of new door 200, although only a single door 3'-6" wide.*

16. **For the furniture and equipment that are to be removed and stored for future reinstallation (notes 2.09 and 2.10 on AD102A and AD102B), will VT provide storage space or does the GC have to provide the storage space?**

Virginia Tech Response*: GC to provide storage for these items as needed.*

17. **Please clarify wall type for new wall at the plan north-west of the C1 stair landing on sheet A-102B. Please see blue cloud on attached sheet.**

Virginia Tech Response*: New wall is one hour rated P23.*

18. **Please confirm that the window sills are not being replaced per Pre-bid Meeting discussion. If the window sills are being replaced, please see questions 17 and 18.**

Virginia Tech Response*: Window sills will not be replaced as part of this project, unless they are damaged during the course of 2nd floor renovation*

19. **Are all window sills being replaced with SSC-1 or only the sills on sheets A-102A marked with keynote tag 9.13?**

Virginia Tech Response*: Window sills will not be replaced as part of this project, unless they are damaged during the course of 2nd floor renovation.*

20. **Are the window sills being replaced with SSC-1 on sheet A-102B? There is not a note on this sheet that directs the replacement of the sills.**

Virginia Tech Response*: Window sills will not be replaced as part of this project, unless they are damaged during the course of 2nd floor renovation.*

21. **Please confirm that as discussed at the Pre-bid Meeting, the start date is August 3, 2026 and not March 5, 2026 as stated on the bid form DGS-30-220.**

Virginia Tech Response*: On-site mobilization to begin Aug 2026, but if there is opportunity to begin non-invasive work, meaning it does not hinder the Tailor Shop operations, then work can begin sooner. Notice to Proceed is roughly March 5, 2026, which is 30-days after Bid Opening.*

22. **Does wall type P12 use 3-5/8" metal studs? Framing material is not listed on A-600 for this wall type.**

Virginia Tech Response*: P12 on sheet A-600 states 3 5/8" metal studs @ 16" O.C.*

23. The project manual includes specification 07 95 13 Interior Expansion Joint Cover Assemblies. The plans do not show expansion joints. Where are the expansion joints covers to be installed?

Virginia Tech Response*: This specification section no longer applies.*

24. Prebid meeting notes state that the storage company will deliver the new AHU to the site. Is the delivery fee already paid by VT or should it be included in the bid? If the GC is to cover the delivery cost, please provide delivery company contact information.

Virginia Tech Response*: Yes, the current storage facility/firm (ECC Contracting) is covering delivery costs.*

25. Sheet A800 lists the Epoxy flooring as Stonhard Stonclad GS. Can other equal epoxy flooring products be priced or does the epoxy flooring must be by Stonhard?

Virginia Tech Response*: Other equal epoxy flooring products can be submitted for review. Any substitutions must be equal or greater in quality.*

26. The documents note on various sheets that we are to provide a breakout of the costs for all asbestos/lead remediation work as a separate line item on the bid form. The bid form doesn't have a line item on it for abatement; please confirm that we are to simply include the abatement scopes within our Total Base Bid amount?

Virginia Tech Response*: Submit your bid as notated on bid form. All breakouts will occur in the Schedule of Values*

27. The partition schedule shows various wall details that have slotted deflection track along the tops. Would 2" deep leg track be acceptable to substitute by removing the top of stud screw once board is hung? This will offer cost savings.

Virginia Tech Response*: Provide slotted deflection track assembly as shown in partition schedule on A-600.*

28. Please clarify what is surrounding Mech C2 on sheet A-102A. Is the surrounding material the Circa railing by Viva Railings or some other enclosure material?

Virginia Tech Response*: There is a railing surrounding Mech C2 similar to the railing that delineates the egress pathway as shown on sheet A-102B.*

29. I have looked into this project and see there are some lockers in room 220H. The note 12.04 states to get locker details from a VT representative. Can you please send me sizes and specifications on what style of locker they would like quoted?

Virginia Tech Response*: Refer to RFI# 9 but lockers are no longer part of this scope.*

EXHIBIT A
Pre-Bid Sign-In Sheet

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
ATTENDANCE ROSTER
NON-MANDATORY PRE-BID CONFERENCE

Bid Numbers: 443882606

Date: 1/14/2026 Time: 10:00 PM

PLEASE PRINT

REPRESENTATIVE	COMPANY NAME	PHONE/EMAIL
Deirdre Curry	VT	PHONE: 540-231-4775 EMAIL: currydr11@vt.edu
Jeremy Hurt	SRC, Inc	PHONE: 304 809 2779 EMAIL: jeremyhurt@src-inc.net bids@src-inc.net
Anthony Munsey	ACI	PHONE: 540 5770037 EMAIL: anthony.munsey@acibuilds.com
Jack Bryant	ACI	PHONE 540-598-8582 EMAIL: Jack.bryant@acibuilds.com
DAVID KISER	VT	PHONE: 540-553-6411 EMAIL dmkiser@vt.edu
Charlie Windle	Branch	PHONE: ~~Email~~ 540-682-9888 EMAIL: Charlie.Windle@branchbuilds.com
Toby Coyner	Semco Services	PHONE: 540-290-8065 EMAIL: Toby@semcoservices.com

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
ATTENDANCE ROSTER
NON-MANDATORY PRE-BID CONFERENCE

Bid Numbers: 443882606

Date: 1/14/2026 Time: 10:00 PM

PLEASE PRINT

REPRESENTATIVE	COMPANY NAME	PHONE/EMAIL
Bryan Petak	KNA Contracting	PHONE: 540 759 1817 EMAIL: estimating@knacontracting.com
Derrick Parker	ACI	PHONE: 434-262-1514 EMAIL: derrick.parker@aciboilds.com
JACK BULLS	AVIS CONSTRUCTION	PHONE: 540-982-3558 EMAIL: BULLSJ@AVISCONSTRUCTION.COM
BRIAN BOWER	THOR CONSTRUCTION	PHONE 540 580 6887 EMAIL: bbower@thorconstruction.com
Tabitha Rust	Wall Construction	PHONE: 434-841-3974 EMAIL tabitha@wallconstruction.biz
Robert Woodhall	MB Contracts	PHONE: 540-798-5158 EMAIL: bids@mbcontractors.com
John Williams	FES Building innovations	PHONE: 540-655-0288 EMAIL: JWilliams@FSBuildinginc.com

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
ATTENDANCE ROSTER
NON-MANDATORY PRE-BID CONFERENCE

Bid Numbers: 443882606

Date: 1/14/2026 Time: 10:00 PM

PLEASE PRINT

REPRESENTATIVE	COMPANY NAME	PHONE/EMAIL
Doug Martin	Waco, Inc.	PHONE: 540-537-0318 EMAIL: dmartin@wacoinc.net
Chris Boone	Southern Air	PHONE: 434-841-9297 EMAIL: Chris.Boone@Southern-air.com
TOMMY Godley	Environmental	PHONE: 540-392-8582 EMAIL: [redacted] tommygodley@gmail.com
DANIEL DiMARCO	AECOM	PHONE 540-521-4811 EMAIL: daniel.dimarco@aecom.com
JAMES HUGHES	VARNEY INC	PHONE: 434 944-5880 EMAIL JHUGHES@VARNEYINC.COM
MACK WORRELL	VARNEY INC.	PHONE: 540-765-9971 EMAIL: mworrell@varneyinc.com
		PHONE: EMAIL:

EXHIBIT B
Pre-Bid Agenda

PRE-BID MEETING

Project Name:	Military Building – 2nd Floor Renovation	Work Order #:	25-754816
VTR Project Manager:	David Kiser	Meeting Date:	1.14.2026
Architect:	AECOM	Meeting Time:	10 am
VT Building #:	0203	Meeting Location:	On-Site

1. **PROJECT OVERVIEW**
   a. **Scope of Work**. The project's scope can generally be summarized as follows:
      1. Entire 2nd floor of the military building is being renovated
      2. Essentially the floor will be flipped – where the tailor shop is now will be renovated to where the storage rooms are, and vice versa
      3. New AHU (with curb) to be installed – already procured by VT and is being stored in Roanoke
         a. Once project mobilizes and the new AHU is ready to be installed, the storage company will deliver
      4. Crane work will need to be coordinated with the VT Airport
      5. Project to be completed in two phases as notated in the design documents
         a. Current storage side to be renovated first, with minimal impact to Tailor Shop operations
         b. Once that phase is completed, the customers will move all items to newly renovated space then second phase will mobilize. Again, maintaining minimal impact to Tailor Shop operations
      6. The 1st floor will be occupied during the 2nd floor renovations and there needs to be proper coordination to avoid disrupting 1st floor operations (different customers from 2nd floor)

   ii. **Key Dates**
      1. Pre-bid RFI due date: Monday January 19, 2026 at 2 pm
      2. Bid due date: **Wednesday February 4, 2026 at 2 pm**

   iii. **Documents**
      1. The Contractor will receive permitted drawings and UBO issued permits electronically at the Preconstruction meeting. A set of permitted drawings, permits and project revisions/RFIs, submittals are to be kept in a project binder on-site at all times.

   iv. **Work Hours**
      1. All work is to be performed between the hours of ***7a-5p.*** Off Hours/Weekend work is allowed, but must be coordinated in advance with the VTR Project Manager.

   v. **Parking**
      1. Parking passes are the responsibility of the contractors. Parking on the Blacksburg campus is extremely limited. Contractor personnel are to park in designated areas only. Park on paved or gravel areas only, do not park in the grass. Blocking accessible routes/sidewalks/ramps is not acceptable at any time; violators will be towed without warning.

vi. **Utilities Shutdowns**

1. Coordinate with VTR Project Manager for utility shutdowns. Please allow 1 week notice for local shutdown and 1 month notice if a full building shutdown is required. Failure to give proper notification to Virginia Tech can result in delay of your shutdown and will be the responsibility of the contractor to make up any time lost due to the postponement.

vii. **Dumpster(s)/Connex(s)**

1. Identify dumpster locations and verify that all necessary coordination has taken place prior to dumpster(s') arrival. If parking spaces are used for placement of dumpster/connex, parking services will charge per day/per space or per month/per space, which will be the contractor's responsibility to pay for. Contractor to check with Parking Services for rates.

viii. **Road/Sidewalk Closures**

1. Contractor to provide at least 2 weeks' notice for single lane closures and 1 month for full road closure.

ix. **NI&S**

1. NI&S provides demo and wiring of data. Coordination between contractor and NI&S for this scope of work. Please allow 2 weeks' notice for coordination with NI&S prior to demo or installation of new devices.

x. **Key Shop**

1. The Key Shop operating hours are 6:00 am to 4:30 pm. Please limit the number of keys checked out for each job. The GC should check out the keys for its subcontractors to share. All contractors must provide a name for the person(s) that will be checking out keys to be added to the key shop list. All Keys must be returned at the end of each shift. Key pick up for off hours/weekend work must coordinated thru the VTR project manager.

xi. **Restrooms**

1. Assume the restrooms within the building area available for use. The restrooms must be kept clean and the use of the respectful at all times. 1 incident related to contractors use of the restrooms, the contractor will be responsible to place/maintain within 24 hours a portable toilet outside of the building (location TBD by VTR Project Manager).

2. **SAFETY**
   a. **Personal Protective Equipment (PPE)**
      i. Job site safety is the contractor's responsibility.
      ii. Proper hand protection, hard-soled shoes, hard hats and safety glasses will be required for all workers on the project. Signage shall be posted at the jobsite notifying all personnel of PPE requirements (per VT EHS standards).

   b. **Virginia Tech Environmental Health & Safety (EHS)**
      i. Any work that can create a spark, welding or an open flame requires a Hot Work Permit program and shared with the VT Project Manager. Hot work program should be kept onsite at all times.
      ii. Safety Data Sheets (SDSs) for any hazardous chemicals will need to be submitted to Robin McCall-Miller and copied to the VTR Project Manager. In addition, the SDS sheets must be available on-site at all times throughout the duration of the project.
      iii. Visit the link below for EHS standards for construction on the Virginia Tech campus
      iv. http://www.ehss.vt.edu/programs/contractor_safety.php
      v. All contractor personnel are to wear an item that identifies the worker as an employee of the Contractor.
      vi. Daily Reports. Each General Contractor is to submit a Daily Report for every project. The Daily Report is to include the name of EVERY individual working that day and where they were working. "Where they are working" includes the floor of the building.
      vii. *In the event of a health and safety concern adhere to state, local, university and CDC guidelines at all times.*

3. **ADMINISTRATION**
   a. **VTR Project Manager**. Below is the contact information for the VTR Project Manager.

Name	Mobile Phone	E-mail Address
David Kiser	540-553-6411	dmkiser@vt.edu

   b. **Submittals**
      i. Submittals are to be as specified in the Project Manual, as specified in notes on the Drawings or if not listed coordinated with the VTR Project Manager after award/prior to construction.
      ii. All submittals are to be sent to the VTR Project Manager, who will review and forward them on to the project's Architect/Engineer; reviewed submittals will be returned by the Architect/Engineer to the VTR Project Manager, who will review and forward them to the Contractor.

   c. **Requests for Information (RFIs)**
      i. Any questions/clarifications that arise during construction should be submitted in writing as an official RFI to the VTR Project Manager, who will coordinate with the client and Project Architect/Engineer, as required. E-mails will not suffice, although an RFI form can be e-mailed. Answered RFIs will be transmitted to the Contractor through the VTR Project Manager.
      ii. Issues may be verbally discussed with the VTR Project Manager prior to submission, but doing so will not negate the requirement of a written submission.
      iii. Answered/Approved RFI's are to be kept on-site for reference during UBO inspections.

d. **Change Orders**
   i. No additional work is to be performed without receipt of a fully executed VT (Change Order) Purchase Order.
   ii. Any proposed changes should be submitted to the VTR Project Manager.
   iii. All change orders must be submitted using a GCI, SCI, SSI Form or DGS-30-092 CO-11 form (for IFB projects only).
   iv. ***Since this is an IFB, all change orders must be accompanied with proof of cost for all materials***

e. **Invoices**
   i. Invoices should be submitted electronically to the VTR Project Manager.
   ii. Retainage will be released at the end of the project after all as-builts and close-out documents have been submitted and approved.
   iii. The VTR PM will review, approve or reject the invoice in 48 hours from receipt. The invoice will be processed and release payment within 30 days.
   iv. Include an updated schedule with each submitted invoice.

f. **Conflicts**
   i. The Contractor shall contact the VTR Project Manager should any conflicts arise during the project. The VTR Project Manager will engage the necessary resources to resolve such conflicts.

4. **SCHEDULE**

Proposed NTP	Construction Start Date	Substantial Completion Date	Final Completion Date
NLT ~30 days after bids are due	August 3, 2026	May 7, 2027	June 17, 2027

**Actual dates will be coordinated between VT Non-Capital and winning GC*

5. **INSPECTION(S)**
   a. The Contractor will be responsible for notifying the VTR Project Manager when an inspection needs to be scheduled. Please allow 48-72 hours to schedule inspections. The VTR Project Manager will coordinate with the UBO office to arrange for the required inspections.

6. **ROUNDTABLE**
   a. There will be a partnering Fire Suppression/Sprinkler project, executed outside of this project, but must be coordinated at the same time. This project and the FS project were both designed by the same A/E, so overlapping work should not be an issue.
   b. Any work on the north side of the building, which houses the VT Rescue Squad, must remain accessible at all times. If it is imperative to work on that side and block accessibility, there needs to be clear communication and scheduling to inform the necessary parties.
   c. Work is to be completed in two phases, in order to allow the Tailor Shop to remain operational during construction
      i. Proposed schedule on page 178 (011000-3) of the project manual includes a general schedule to follow
      ii. There will be an approx.. 1-month work stoppage between phase 1 and phase 2, to allow the customer time to move their equipment to newly renovated side.

EXHIBIT C
Structural Calculations

AECOM

VT Military Building

Structural Engineering

Calculation Book

Prepared by: Brandon C. Morgan, EIT

Approved by: David W. Reynolds

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AECOM
Address
City, State
Phone

JOB TITLE	VT Military Bldg CA Project		
JOB NO.	60763454	**SHEET NO.**	
CALCULATED BY	BCM	**DATE**	10/6/25
CHECKED BY		**DATE**	

STRUCTURAL CALCULATIONS

FOR

VT Military Bldg CA Project

Code Search

Code: ASCE 7 - 22

Occupancy:

Occupancy Group = B Business

Risk Category & Importance Factors:

Risk Category =	II
Wind Factor =	1.00
Snow Factor	1.00
Seismic Importance factor =	1.00

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	0.00 / 12	0.0 deg
Building length	208.0 ft	
Least width	64.0 ft	
Mean Roof Ht (h)	23.0 ft	
Parapet ht above grd	23.0 ft	
Minimum parapet ht	4.0 ft	
hb for Elevated bldg	0.0 ft	

Live Loads:

Roof
0 to 200 sf: 20 psf
200 to 600 sf: 24 - 0.02Area, but not less than 12 psf
over 600 sf: 12 psf

Floor:

Typical Floor	50 psf
Partitions	15 psf
Corridors above first floor	80 psf
Lobbies & first floor corridors	100 psf
Stairs and exit ways	100 psf

AECOM
Address
City, State
Phone

JOB TITLE	VT Military Bldg CA Project		
JOB NO.	60763454	**SHEET NO.**	
CALCULATED BY	BCM	**DATE**	10/6/25
CHECKED BY		**DATE**	

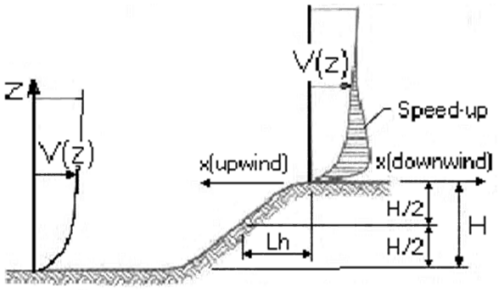
Wind Loads : ASCE 7- 22

Ultimate Wind Speed	108 mph
Nominal Wind Speed	83.7 mph
Risk Category	II
Exposure Category	B
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Bldg Directionality (Kd)	0.85
Kh MWFRS<=60	0.700
Kh all other	0.642
Type of roof	Monoslope

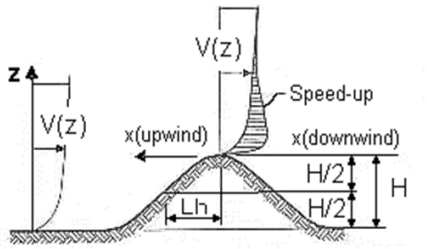
Topographic Factor (Kzt)

Topography		Flat
Hill Height	(H)	80.0 ft
Half Hill Length (Lh)		100.0 ft
Actual H/Lh	=	0.80
Use H/Lh	=	0.50
Modified Lh	=	160.0 ft
From top of crest: x =		50.0 ft
Bldg up/down wind?		downwind

H/Lh= 0.50 K_1 = 0.000
x/Lh = 0.31 K_2 = 0.792
z/Lh = 0.14 K_3 = 1.000
At Mean Roof Ht:
Kzt = $(1+K_1K_2K_3)^2$ = 1.00



ESCARPMENT



2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h = 23.0 ft
B = 64.0 ft
/z (0.6h) = 30.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
If building h/B>4 then may be flexible and should be investigated.
h/B = 0.36 Rigid structure (low rise bldg)

G = 0.85 Using rigid structure default

Rigid Structure

$\bar{e}$ =	0.33	
ℓ =	320 ft	
z_{min} =	30 ft	
c =	0.30	
g_Q, g_v =	3.4	
L_z =	310.0 ft	
Q =	0.88	
I_z =	0.30	
G =	**0.86**	use G = 0.85

Flexible or Dynamically Sensitive Structure

Natural Frequency (η_1) =	0.7 Hz		
Damping ratio (β) =	0.01		
/b =	0.470		
/α =	0.222		
Vz =	72.9		
N_1 =	2.98		
R_n =	0.070		
R_h =	0.563	η = 1.016	h = 23.0 ft
R_B =	0.291	η = 2.827	
R_L =	0.032	η = 30.763	
g_R =	4.104		
R =	0.792		
Gf =	1.103		

AECOM
Address
City, State
Phone

JOB TITLE	VT Military Bldg CA Project		
JOB NO.	60763454	**SHEET NO.**	
CALCULATED BY	BCM	**DATE**	10/6/25
CHECKED BY		**DATE**	

Wind Loads - MWFRS h≤60' (Low-rise Buildings) except for open buildings

Base pressure (qh) = 20.9 psf
(Kd qh) = **17.8 psf**
GCpi = +/-0.18

Kz = Kh = 0.700

Edge Strip (a) = 6.4 ft
End Zone (2a) = 12.8 ft
Zone 2 length = 32.0 ft

Wind Pressure Coefficients

	CASE A				CASE B		
Surface	GCpf	θ = 0 deg w/-GCpi	w/+GCpi		GCpf	w/-GCpi	w/+GCpi
1	0.40	0.58	0.22		-0.45	-0.27	-0.63
2	-0.69	-0.51	-0.87		-0.69	-0.51	-0.87
3	-0.37	-0.19	-0.55		-0.37	-0.19	-0.55
4	-0.29	-0.11	-0.47		-0.45	-0.27	-0.63
5					0.40	0.58	0.22
6					-0.29	-0.11	-0.47
1E	0.61	0.79	0.43		-0.48	-0.30	-0.66
2E	-1.07	-0.89	-1.25		-1.07	-0.89	-1.25
3E	-0.53	-0.35	-0.71		-0.53	-0.35	-0.71
4E	-0.43	-0.25	-0.61		-0.48	-0.30	-0.66
5E					0.61	0.79	0.43
6E					-0.43	-0.25	-0.61

Ultimate Wind Surface Pressures (psf)

1		10.3	3.9		-4.8	-11.2
2		-9.1	-15.5		-9.1	-15.5
3		-3.4	-9.8		-3.4	-9.8
4		-2.0	-8.4		-4.8	-11.2
5					10.3	3.9
6					-2.0	-8.4
1E		14.0	7.6		-5.3	-11.7
2E		-15.8	-22.2		-15.8	-22.2
3E		-6.2	-12.6		-6.2	-12.6
4E		-4.4	-10.8		-5.3	-11.7
5E					14.0	7.6
6E					-4.4	-10.8

Parapet

Windward parapet = 24.4 psf (GCpn = +1.5)
Leeward parapet = -16.3 psf (GCpn = -1.0)

Windward roof overhangs = 12.4 psf (upward) add to windward roof pressure

Horizontal MWFRS Simple Diaphragm Pressures (psf)

Transverse direction (normal to L)

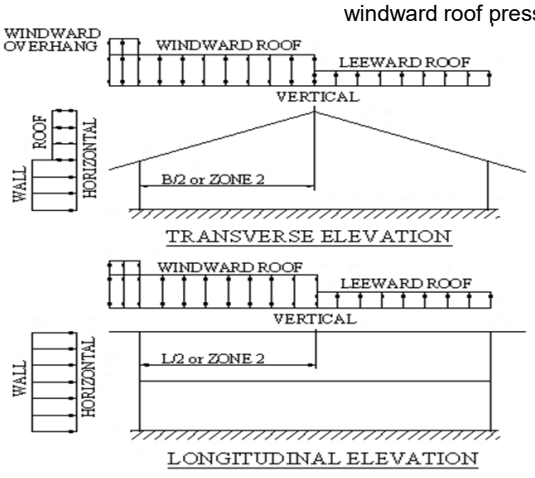
Interior Zone: Wall 12.3 psf
Roof -5.7 psf **
End Zone: Wall 18.5 psf
Roof -9.6 psf **

Longitudinal direction (parallel to L)

Interior Zone: Wall 12.3 psf
End Zone: Wall 18.5 psf

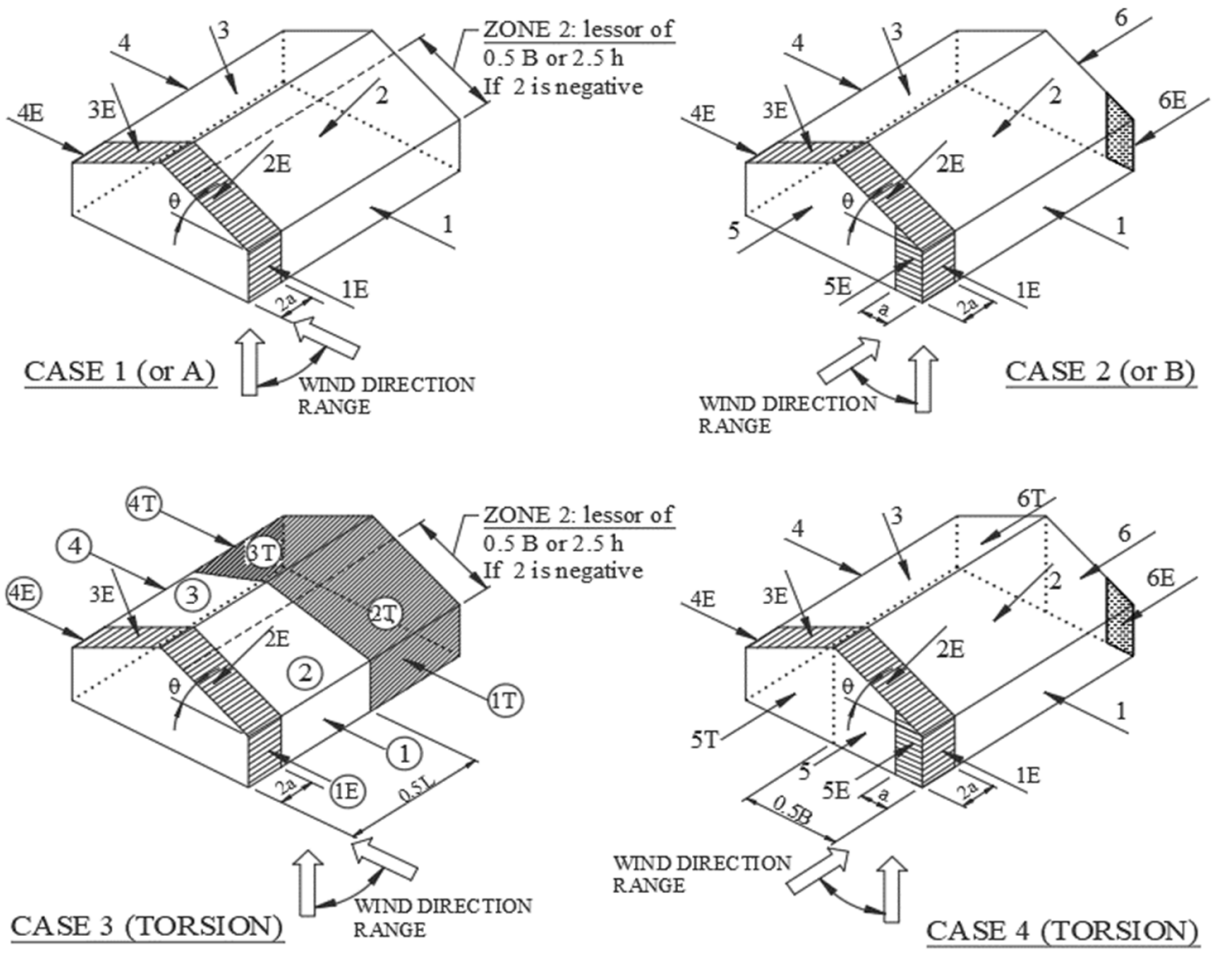
** NOTE: Total horiz force shall not be less than that determined by neglecting roof forces (except for MWFRS moment frames).

The code requires the MWFRS be designed for a min ultimate force of 16 psf multiplied by the wall area plus an 8 psf force applied to the vertical projection of the roof.



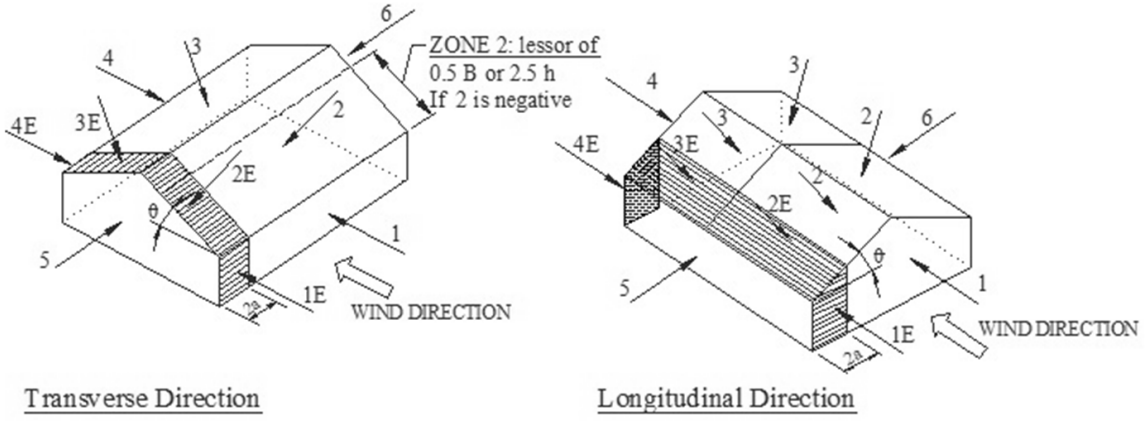
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NOTE: Torsional loads are 25% of zones 1 - 6.
Exception: One story buildings h<30' and 1 to 2 storybuildings framed with light-frame construction or with flexible diaphragms need not be designed for the torsional load case.

ASCE 7-98 & ASCE 7-10 (& later) - MWFRS wind pressure zones



NOTE: Torsional loads are 25% of zones 1 - 4. See code for loading diagram.
Exception: One story buildings h<30' and 1 to 2 storybuildings framed with light-frame construction or with flexible diaphragms need not be designed for the torsional load case.

ASCE 7-02 and ASCE 7-05 - MWFRS wind pressure zones

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Ultimate Wind Pressures

Wind Loads - Components & Cladding : h ≤ 60'

Base pressure (qh) =	19.2 psf	Kh =	0.642		~~100.0 ft~~	~~30.0 ft~~
(Kd qh) =	**16.3 psf**	h =	23.0 ft	0.2h = 4.6 ft	~~100.0 ft~~	
Minimum parapet ht =	4.0 ft	0.6h =	13.8 ft		~~100.0 ft~~	
Roof Angle (θ) =	0.0 deg	GCpi =	+/-0.18			
Type of roof =	Monoslope	Kd qi = Kd qh =	16.3 psf			

Roof

	GCp +/- Gcpi				Surface Pressure (psf)				User input	
Area	10 sf	100 sf	500 sf	1000 sf	10 sf	100 sf	500 sf	1000 sf	20 sf	50 sf
Negative Zone 1	-1.88	-1.47	-1.18	-1.18	-30.6	-23.9	-19.2	-19.2	-28.6	-25.9
Negative Zone 1'	-1.08	-1.08	-0.73	-0.58	-17.6	-17.6	-16.0	-16.0	-17.6	-17.6
Negative Zone 2	-2.48	-1.95	-1.58	-1.58	-40.4	-31.8	-25.7	-25.7	-37.8	-34.4
Negative Zone 3	-2.48	-1.95	-1.58	-1.58	-40.4	-31.8	-25.7	-25.7	-37.8	-34.4
Positive Zone 1 & 1'	0.48	0.38	0.38	0.38	16.0	16.0	16.0	16.0	16.0	16.0
Positive Zones 2 & 3	1.08	0.92	0.81	0.76	17.6	16.0	16.0	16.0	16.8	16.0
Overhang Zone 1&1'	-1.70	-1.60	-1.00	-1.00	-27.7	-26.1	-16.3	-16.3	-27.2	-26.6
Overhang Zone 2	-2.30	-1.59	-1.10	-1.10	-37.5	-26.0	-17.9	-17.9	-34.0	-29.4
Overhang Zone 3	-2.30	-1.59	-1.10	-1.10	-37.5	-26.0	-17.9	-17.9	-34.0	-29.4

Negative zone 3 = zone 2, since parapet >= 3ft.
Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0
Overhang soffit pressure equals adj wall pressure (which includes internal pressure of 2.9 psf)

Parapet

Kd qp = 16.3 psf

		Surface Pressure (psf)						User input
Solid Parapet Pressure		10 sf	20 sf	50 sf	100 sf	200 sf	500 sf	50 sf
CASE A:	Zone 2 :	52.1	48.8	44.3	40.9	37.5	33.1	44.3
	Zone 3 :	52.1	48.8	44.3	40.9	37.5	33.1	44.3
CASE B:	Interior zone :	-30.8	-29.2	-27.2	-25.6	-24.1	-22.0	-27.2
	Corner zone :	-35.2	-32.9	-29.8	-27.4	-25.1	-22.0	-29.8

wall a = 6.4 ft

Walls

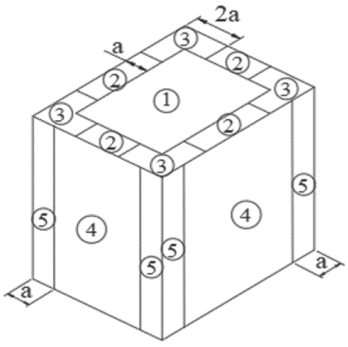
	GCp +/- GCpi				Surface Pressure at h				User input	
Area	10 sf	100 sf	200 sf	500 sf	10 sf	100 sf	200 sf	500 sf	20 sf	50 sf
Negative Zone 4	-1.17	-1.01	-0.96	-0.90	-19.1	-16.5	-16.0	-16.0	-18.3	-17.3
Negative Zone 5	-1.44	-1.12	-1.03	-0.90	-23.5	-18.3	-16.7	-16.0	-21.9	-19.8
Positive Zone 4 & 5	1.08	0.92	0.87	0.81	17.6	16.0	16.0	16.0	16.8	16.0

Note: GCp reduced by 10% due to roof angle <= 10 deg.

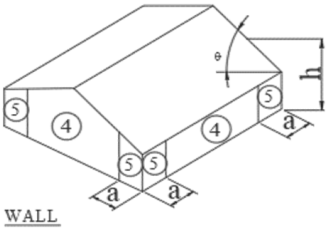
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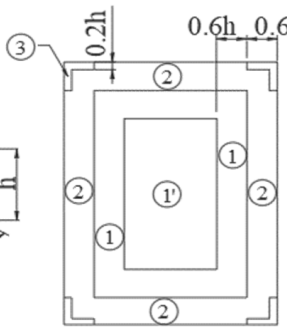
Location of C&C Wind Pressure Zones - ASCE 7-22



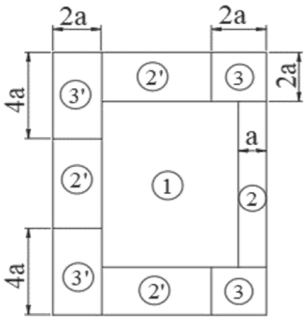
Roofs w/ θ ≤ 10°
and all walls
h > 60'



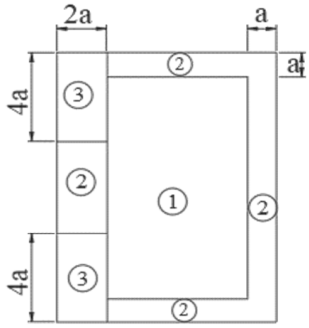
Walls h ≤ 60'
& alt design h<90'



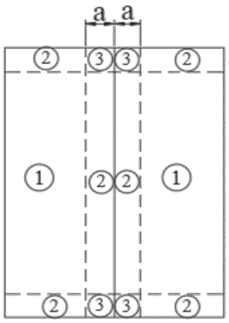
Multispan Gable & Sawtooth ≤ 10°
& Gable θ ≤ 7 degrees &
Monoslope ≤ 3 degrees
h ≤ 60' & alt design h<90'



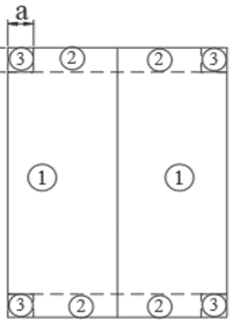
Monoslope roofs
3° < θ ≤ 10°
h ≤ 60' & alt design h<90'



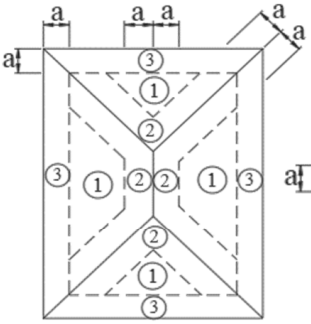
Monoslope roofs
10° < θ ≤ 30°
h ≤ 60' & alt design h<90'



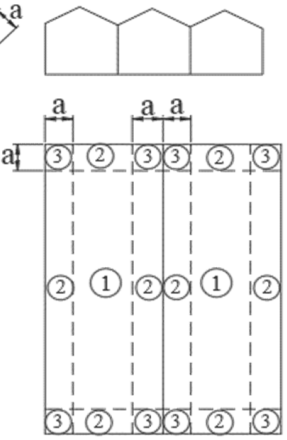
Gable 7° < θ ≤ 27°



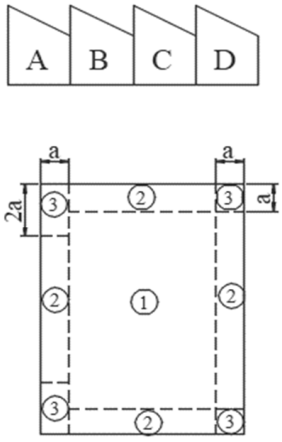
Gable 27° < θ ≤ 45°



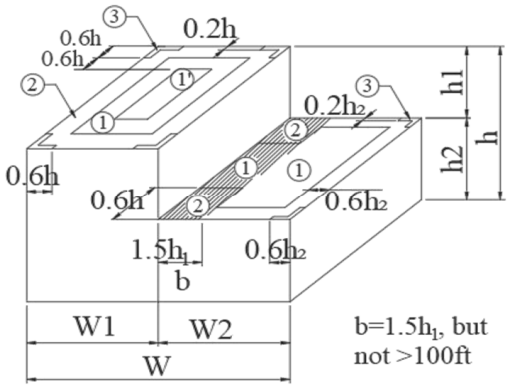
Hip 7° < θ ≤ 45°



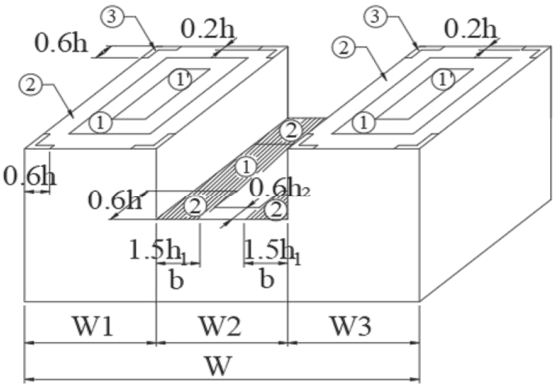
Multispan gable 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'



Sawtooth 10° < θ ≤ 45°
h ≤ 60' & alt design h<90'



b=1.5h1, but
not >100ft



Stepped roofs θ ≤ 3°
h ≤ 60' & alt design h<90'

Note: The hatched area indicates where roof positive pressures are equal to the adjacent wall positive pressure.

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Wind Loads - Rooftop Structures & Canopies

Ultimate Wind Pressures

Building (L) = 208.0 ft
Building (B) = 64.0 ft

Directionality (Kd) = 0.85

Rooftop Structures & Equipment #1 Mech Unit

Equipment length parallel to L = 6.0 ft
Equipment length parallel to B = 22.0 ft
Height of equipment = 4.6 ft

Base pressure (Kd qh) = **17.8 psf**

Vertical wind pressure		Wind normal to building B		Wind normal to building L	
Ar =	132.0 sf	Af =	101.2 sf	Af =	27.6 sf
GCr =	1.500	GCr =	1.90	GCr =	1.90
F = KdqhGCr Ar =	**26.6** Ar (psf)	F = KdqhGCr Af =	**33.8** Af (psf)	F = KdqhGCr Af =	**33.8** Af (psf)
Fv =	**3.5** kips	Fh =	**3.4** kips	Fh =	**0.9** kips

Rooftop Structures & Equipment #2

Equipment length parallel to L = 0.0 ft
Equipment length parallel to B = 0.0 ft
Height of equipment = 0.0 ft

Base pressure (Kd qh) = **17.8 psf**

Vertical wind pressure		Wind normal to building B		Wind normal to building L	
Ar =	0.0 sf	Af =	0.0 sf	Af =	0.0 sf
GCr =	1.500	GCr =	1.90	GCr =	1.90
F = KdqhGCr Ar =	**26.6** Ar (psf)	F = KdqhGCr Af =	**33.8** Af (psf)	F = KdqhGCr Af =	**33.8** Af (psf)
Fv =	**-** kips	Fh =	**-** kips	Fh =	**-** kips

Attached Canopies on Buildings : h ≤ 60'

Mean Roof Ht (h)= 23.0 ft
Mean eave height (he) = 0.0 ft
Mean Canopy height (hc) = 0.0 ft error hc >= he
hc/he = #DIV/0!

Base pressure (Kd qh) = **16.3 psf**

	C&C Surface Pressure (psf)				User input
Area	10 sf	20 sf	50 sf	100 sf	75 sf
Separate Individual Surfaces:					
Upper surface negative pressure	-18.7	-16.8	-14.2	-12.2	-13.0
Lower surface negative pressure	-13.0	-12.3	-11.3	-10.6	-10.9
Upper or Lower surface pos pressure	13.0	12.0	10.7	9.8	10.2
Combined Upper & Lower Surfaces (net):					
Negative pressure	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Positive pressure	14.7	13.4	11.8	10.6	11.1

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Snow Loads : ASCE 7- 22

Ultimate Snow Forces

Roof slope		=	0.0 deg
Horiz. eave to ridge dist (W)		=	64.0 ft
Roof length parallel to ridge (L)		=	208.0 ft
Type of Roof			Monoslope
Ground Snow Load	Pg	=	45.0 psf
Risk Category		=	II
Snow Factor		=	1.0
Roof R value	Rroof	=	30
Thermal Factor	Ct	=	1.150
Exposure Factor	Ce	=	0.9
Pf = 0.7*Ce*Ct*I*Pg		=	32.6 psf
Unobstructed Slippery Surface			no
Sloped-roof Factor	Cs	=	1.00
Balanced Snow Load		=	**32.6 psf**
Rain on Snow Surcharge Angle			1.28 deg
Code Maximum Rain Surcharge			8.0 psf
Rain on Snow Surcharge		=	0.0 psf
Ps plus rain surcharge		=	32.6 psf
Minimum Snow Load	Pm	=	30.0 psf
Uniform Roof Design Snow Load		=	**32.6 psf**

Near ground level surface balanced snow load = **45.0 psf**

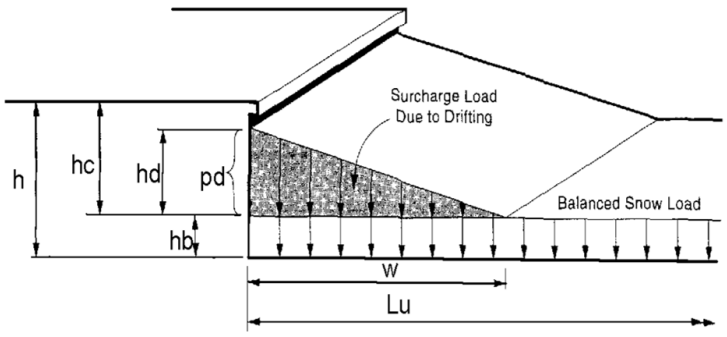
NOTE: Alternate spans of continuous beams shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code for loading diagrams and exceptions for gable roofs

Winter Wind Parameter W2 = 0.55

Snow Drift 1 - Against roof projections, parapets, etc

Exst Parapet

Up or downwind fetch	lu	=	112.0 ft
Projection height	h	=	4.0 ft
Projection width/length	lp	=	64.0 ft
Snow density	γ	=	19.9 pcf
Balanced snow height	hb	=	1.64 ft
	hd	=	3.24 ft
	hc	=	2.36 ft
hc/hb >0.2 = 1.4	**Therefore, design for drift**		
Drift height (hc)		=	2.36 ft
Drift width	w	=	17.81 ft
Surcharge load:	pd = γ*hd	=	**46.8 psf**
Balanced Snow load:		=	32.6 psf
			79.4 psf



Note: If bottom of projection is at least 2 feet above hb then snow drift is not required.

Snow Drift 2- Against roof projections, parapets, etc

Mech Unit

Up or downwind fetch	lu	=	104.5 ft
Projection height	h	=	7.6 ft
Projection width/length	lp	=	22.0 ft
Snow density	γ	=	19.9 pcf
Balanced snow height	hb	=	1.64 ft
	hd	=	3.16 ft
	hc	=	5.96 ft
hc/hb >0.2 = 3.6	**Therefore, design for drift**		
Drift height (hd)		=	3.16 ft
Drift width	w	=	12.65 ft
Surcharge load:	pd = γ*hd	=	**62.8 psf**
Balanced Snow load:		=	32.6 psf
			95.4 psf

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Seismic Loads: ASCE 7- 22

Strength Level Forces

Risk Category : II
Importance Factor (Ie) : 1.00
Site Class : D

Ss (0.2 sec) = 0.29 g
S1 (1.0 sec) = 0.08 g

Site specific ground motion analysis performed:

Sms = 0.330 S_{DS} = 0.220 Design Category = B
Sm1 = 0.160 S_{D1} = 0.107 Design Category = B

Seismic Design Category = **B**
Redundancy Coefficient ρ = 1.00
Number of Stories: 2

Structure Type: All other building systems
Horizontal Struct Irregularities: No plan Irregularity
Vertical Structural Irregularities: No vertical Irregularity
Flexible Diaphragms: No
Building System: **Bearing Wall Systems**
Seismic resisting system: **Intermediate reinforced masonry shear walls**
System Structural Height Limit: **Height not limited**
Actual Structural Height (hn) = 23.0 ft

DESIGN COEFFICIENTS AND FACTORS

Response Modification Coefficient (R) = 3.5
Over-Strength Factor (Ωo) = 2.5
Deflection Amplification Factor (Cd) = 2.25

To = 0.2(Sd1/Sds) = 0.097
Ts = Sd1/Sds = 0.485
Long Period Transition Period (TL) = **error, you need to enter TL (see link above right)**

S_{DS} = 0.220
S_{D1} = 0.107

Seismic Load Effect (E) = Eh +/-Ev = ρ Q_E +/- 0.2S_{DS} D = Qe +/- 0.000D
Special Seismic Load Effect (Em) = Emh +/- Ev = Ωo Q_E +/- 0.2S_{DS} D = &G40&"(0.044D

Q_E = horizontal seismic force
D = dead load

ALLOWABLE STORY DRIFT

Structure Type: All other structures

Allowable story drift Δa = 0.020hsx where hsx is the story height below level ›

PERMITTED ANALYTICAL PROCEDURES

Index Force Analysis - Method Not Permitted (only applies to Seismic Category A)

Model & Seismic Response Analysis - Permitted (see code for procedure)

Equivalent Lateral-Force (ELF) Analysis - Permitted

Building period coef. (C_T) = 0.020 Cu = 1.69
Approx fundamental period (Ta) = $C_T h_n^x$ = 0.210 sec x= 0.75 Tmax = CuTa = 0.354 sec
User calculated fundamental period = T = 0.210 sec

Method 2:
Seismic response coef. (Cs) = SdsI/R = 0.063
need not exceed Cs = Sd1 I TL/RT^2 = 0.000
but not less than Cs = 0.044Sds*I = 0.010
USE Cs = 0.010

Design Base Shear V = 0.010W

Method 1:
Enter Sa =
Seismic response coef. (Cs) = SaI/R = 0.000
but not less than Cs = 0.044Sds*I = 0.010
Cs = Method not applicable

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VT Military Building – Wall Removal Calcs

Structural Engineering

Calculation Book

Existing Military Building Roof Gravity Loading:

Roof Slab (Trib Width = 5' 7.5")		
4"x150pcfx5' 7.5"=	0.3	klf
1" Insulation Board		
1.5psfx5' 7.5"=	0.01	klf
Slag Roofing		
1.5psfx5' 7.5"=	0.01	klf
3 Wythe Parapet		
13"x42"x115pcf=	0.4	klf
Concrete Topping		
13"x6"x150pcf=	0.08	klf
Concrete Band		
13"x18"x150pcf =	0.2	klf
Σ =	1	klf
Brick Façade to Hide Beam		
39psf x 12"=	0.04	klf

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

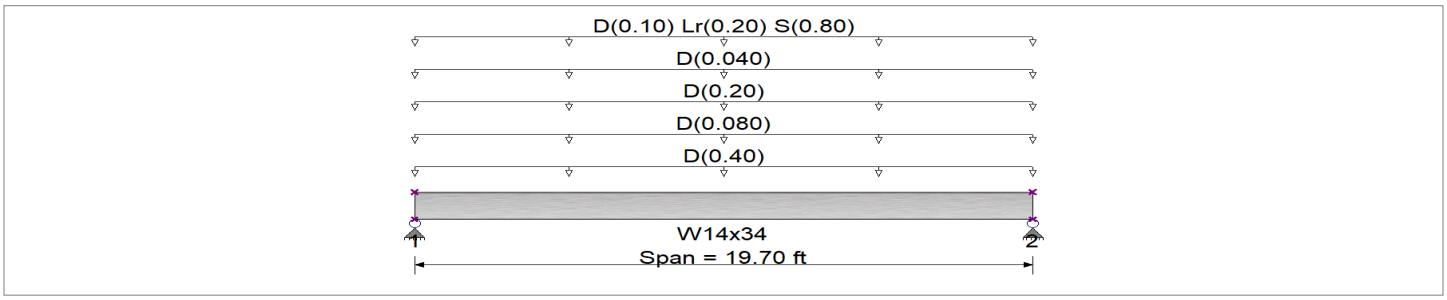
DESCRIPTION: W-Beam Lintel

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, SDPWS 2021
Load Combination Set : ASCE 7-22 / IBC 2024

Material Properties

Analysis Method :	Load Resistance Factor Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Loads on all spans...
Uniform Load on ALL spans : D = 0.010, Lr = 0.020, S = 0.080 ksf, Tributary Width = 10.0 ft
Uniform Load : D = 0.40 k/ft, Tributary Width = 1.0 ft, (Parapet)
Uniform Load : D = 0.080 k/ft, Tributary Width = 1.0 ft, (Parapet Topping)
Uniform Load : D = 0.20 k/ft, Tributary Width = 1.0 ft, (Concrete Band)
Uniform Load : D = 0.040 k/ft, Tributary Width = 1.0 ft, (Brick Facade to Hide Beam)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.874 : 1	Maximum Shear Stress Ratio =	0.150 : 1
Section used for this span	W14x34	Section used for this span	W14x34
Mu : Applied	88.523 k-ft	Vu : Applied	17.974 k
Mn * Phi : Allowable	101.254 k-ft	Vn * Phi : Allowable	119.70 k
Load Combination	+1.20D+S	Load Combination	+1.20D+S
		Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.276 in	Ratio =	855	>=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0	<360	n/a
Max Downward Total Deflection	0.488 in	Ratio =	484	>=180	Span: 1 : +D+0.70S
Max Upward Total Deflection	0 in	Ratio =	0	<180	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
+1.40D													
Dsgn. L = 19.70 ft	1	0.573	0.098	58.00		58.00	112.50	101.25	1.14	1.00	11.78	119.70	119.70
+1.20D+0.50Lr													
Dsgn. L = 19.70 ft	1	0.539	0.093	54.57		54.57	112.50	101.25	1.14	1.00	11.08	119.70	119.70
+1.20D+0.30S													
Dsgn. L = 19.70 ft	1	0.606	0.104	61.36		61.36	112.50	101.25	1.14	1.00	12.46	119.70	119.70
+1.20D+1.60Lr													
Dsgn. L = 19.70 ft	1	0.644	0.111	65.24		65.24	112.50	101.25	1.14	1.00	13.25	119.70	119.70
+1.20D+S													
Dsgn. L = 19.70 ft	1	0.874	0.150	88.52		88.52	112.50	101.25	1.14	1.00	17.97	119.70	119.70
+0.90D													
Dsgn. L = 19.70 ft	1	0.368	0.063	37.29		37.29	112.50	101.25	1.14	1.00	7.57	119.70	119.70
+1.20D+0.150S													
Dsgn. L = 19.70 ft	1	0.548	0.094	55.54		55.54	112.50	101.25	1.14	1.00	11.28	119.70	119.70

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.70S	1	0.4882	9.906		0.0000	0.000

Project Title:
Engineer:
Project ID:
Project Descr:

Steel Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: W-Beam Lintel

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	13.928	13.928
Max Upward from Load Combinations	13.928	13.928
Max Upward from Load Cases	8.412	8.412
D Only	8.412	8.412
+D+Lr	10.382	10.382
+D+0.70S	13.928	13.928
+D+0.750Lr	9.889	9.889
+D+0.5250S	12.549	12.549
+0.60D	5.047	5.047
+D+0.10S	9.200	9.200
Lr Only	1.970	1.970
S Only	7.880	7.880

AECOM Imagine it. Delivered.

JOB TITLE VT MILITARY BLDG

PROJECT/JOB NO. _____ CALCULATION NO. _____

COMPUTED BY DWM DATE _____

VERIFIED BY _____ DATE _____

SCALE _____ SHEET NO. 1 OF 4

EXST BRICK PIER CHECK

ROOF DEAD
5" CONC SLAB = 62.5 PSF
ROOFING/INS = 10 PSF
MEP/CLG = 5 PSF
77.5 PSF Say 80PSF

ROOF SNOW = 30 PSF — 80 psf : Using Snow Drift from Code Search

TYP. ROOF BEAM TRIB = 19'-8/2 = 9.835' x 80 = 787 PLF
x 30 = 295 PLF — 787 plf

BEAM SELF WT : 12 x (22-5)
= 204 IN²/144 = 1.42 FT² x 150
= 213 PLF

UNIFORM DEAD (787+213) = 1000 PLF (D)
295 PLF (S) — 1000 plf

TRIB WIDTH ON GIRDER 21'-2/2 + 22'-0/2 = 21.58'
CONC LOAD ON GIRDER = 1000 x 21.58' = 21.6K (D)
295 x 21.58' = 6.4K (S) — 21.6 kips

GIRDER SPAN = 19'-8
GIRDER WT = 18" x (30-5)
= 450 IN²/144 = 3.125 FT² x 150
469 PLF (D)

REACTION ON (E) MASONRY 21.6 K(D)/2 = 10.8 K (D) — 21.6 kips
6.4K (S)/2 = 3.2K (S) — 10.8 kips
1/2 BM WT 19'-8/2 x 468 = 4.6K

CONCENTRATED LOAD FROM CONC. GIRDER ON ORIGINAL 1937 SLAB
TOTAL = 15.4 K (D)
3.2 K (S) — 10.8 kips

4x4 = 1 in

CONCENTRATED LOAD FROM CONC GIRDER ON 1965 ADDITION

80 psf

ROOF DEAD & SNOW ARE SAME, USE 50PSF(D) + 30PSF(S)

TYP. ROOF BEAM THIS : 9'-6

UNIFORM BEAM LOAD = 9½ x 80 = 760 PLF
9½ x 30 = 285 PLF

80

760 plf

BM SELF WT : 12 x (15 - 5)
= 120 IN²/144 • 0.83 FT² x 150 = 125 PLF

UNIFORM BEAM LOAD = 760 + 125 = 885 PLF (D)
285 PLF (S)

760 plf

TRIB WIDTH SUPPORTED BY GIRDER = 19'-8/2 + 24'-0/2 = 21.84'

CONC. LOAD ON GIRDER = 885 x 21.84' = 19.3 k (D)
285 x 21.84' = 6.2 k (S)

16.6 kips

760 plf

GIRDER SPAN = 19'-0

GIRDER WT = 14 x (23 - 5) = 252 IN²/144
1.75 ft² x 150 = 263 PLF (D)

REACTION ON (E) MASONRY 19.3 k/2 = 9.7 k (D)

16.6 k 6.2 k/2 = 3.1 k (S) 8.3 kips

½ BM WT = 19'-0/2 x 263 = 2.5 k

ADDITIONAL BEAM AT F.O. EXST MASON SELF WT 125 PLF x 21.84' = 2.7 k

TOTAL CONCENTRATED LOAD FROM CONC. GIRDER ON 1965 ADDITION D = 9.7 + 2.5 + 2.7 = 14.9 k (D)
S = 3.1 k 8.3 kips

AECOM Imagine it. Delivered.

JOB TITLE VT MILITARY BLDG

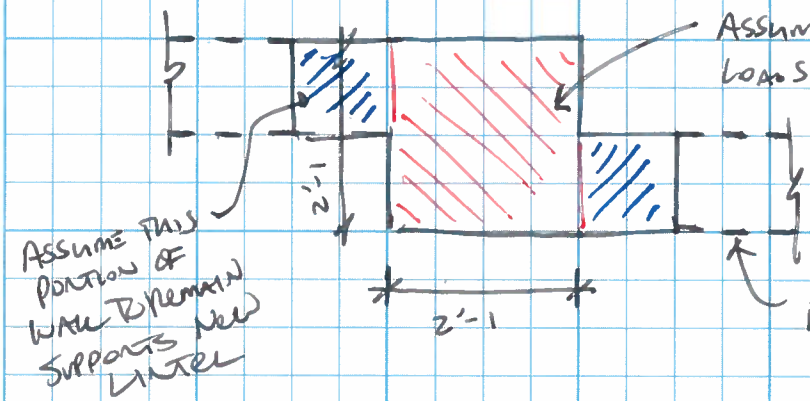
PROJECT/JOB NO. _____ CALCULATION NO. _____

COMPUTED BY DWR DATE _____

VERIFIED BY _____ DATE _____

SCALE _____ SHEET NO. 3 OF 4

EXST. BRICK PIER TO REMAIN



PIER SIZE = 2'-1 x 2'-1 = 4.167 ft^2 x 144
= 600 in^2

- EXST GIRDERS LOAD PIER FROM EACH SIDE AND ARE CLOSE IN MAGNITUDE SO NO ECCENTRICITY IS CREATED

TOTAL LOAD FROM 1937 SIDE 15.4k (D)
3.2k (S) 10.8 kips

FROM 1965 SIDE 14.9k (D)
3.1 k (S) 8.3 kips

TOTAL = 30.3 k (D)
6.3 k (S) 19.1 kips
36.6k 49.4 kips

COMPRESSIVE STRESS IN PIER = 36,600 #/600 in^2
= 61 psi 82.3 psi

49,400 lbs

4x4 = 1 in

EXST PIER

$A = 600\ in^2$

$I = bh^3/12 = 25(25)^3/12 = 32{,}552\ in^4$

$r = \sqrt{I/A} = \sqrt{32{,}552/600} = 7.37\ in$

PIER HT, $h = 11' \times 12 = 132''$

$h/r = 132/7.37 = 17.9 < 99$

$F_a = 1/4\ f'_m \left[1 - \left(\frac{h}{140r}\right)^2\right]$ (TMS 402-16, eq 8-13)

$= 1/4\ f'_m\ [0.98]$

ASCE 41 GIVES DEFAULT LOWER-BOUND STRENGTH OF URM AS $1000\ psi \times 0.6 = 600\ psi$

ALLOWABLE COMPRESSIVE STRESS: $F_a = 1/4\,(600)\,0.98$

$= 147\ psi > 61\ psi$

> 82.3 psi

∴ EXST BRICK PIER TO REMAIN IS ADEQUATE TO SUPPORT EXST CONC. GIRDERS.

NOTE: NEW BEAM LINTELS FOR REMOVAL OF EXST. WALL WILL BE SUPPORTED ON MASONRY PIERS ADJACENT TO COLUMN.

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Masonry Pier Loads on Exst Beam

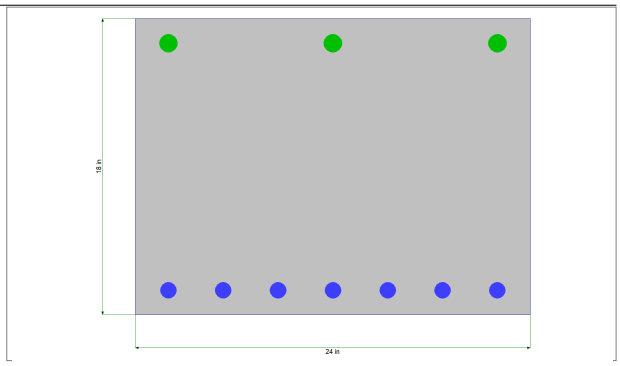
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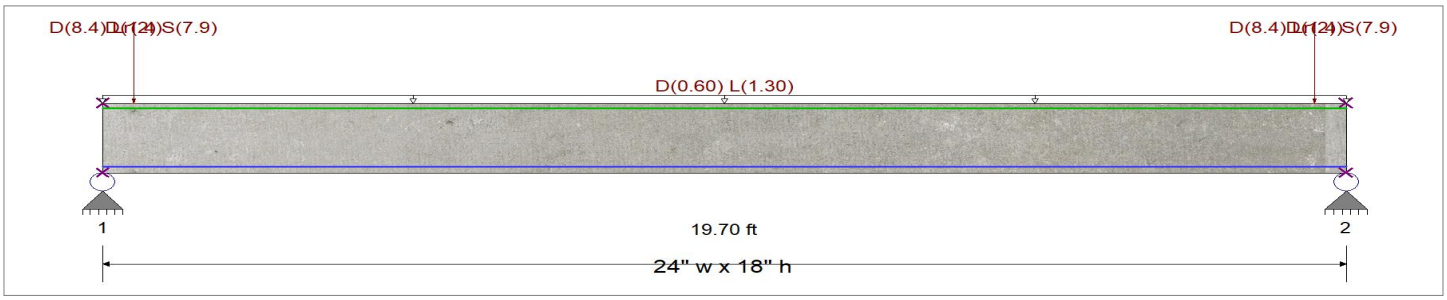
Calculations per ACI 318-19, IBC 2021, SDPWS 2021
Load Combination Set : ASCE 7-22 / IBC 2024

General Information

f'c	= 3.0 ksi	ϕ Phi Values	Flexure :	0.90	
fr = f'c^1/2 * 7.50	= 410.792 psi		Shear :	0.750	
ψ Density	= 145.0 pcf	β 1	=	0.850	
λ LtWt Factor	= 1.0				
Elastic Modulus	= 3,122.0 ksi	Fy - Stirrups		40.0 ksi	
fy - Main Rebar	= 60.0 ksi	E - Stirrups	=	29,000.0 ksi	
E - Main Rebar	= 29,000.0 ksi	Stirrup Bar Size #		3	
		Number of Resisting Legs Per Stirrup	=	2	

Seismic Design Category = A





Cross Section & Reinforcing Details

Rectangular Section, Width = 24.0 in, Height = 18.0 in
Span #1 Reinforcing....
7-#8 at 1.50 in from Bottom, from 0.0 to 19.70 ft in this span
3-#9 at 1.50 in from Top, from 0.0 to 19.70 ft in this spa

Beam self weight calculated and added to loads
Loads on all spans...
D = 0.060, L = 0.130
Uniform Load on ALL spans : D = 0.060, L = 0.130 ksf, Tributary Width = 10.0 ft
Point Load : D = 1.40 k @ 0.50 ft, (Masonry Pier)
Point Load : D = 1.40 k @ 19.20 ft, (Masonry Pier)
Point Load : D = 8.40, Lr = 2.0, S = 7.90 k @ 0.50 ft, (Steel Lintel Reactions)
Point Load : D = 8.40, Lr = 2.0, S = 7.90 k @ 19.20 ft, (Steel Lintel Reactions)

DESIGN SUMMARY

Check As Max Limits!

Maximum Bending Stress Ratio =	**0.451** : 1	
Section used for this span	**Typical Section**	
Mu : Applied	168.219	k-ft
Mn * Phi : Allowable	372.947	k-ft
Location of maximum on span	9.868	ft
Span # where maximum occurs	Span # 1	

Maximum Deflection

Max Downward Transient Deflection	0.149 in	Ratio =	1587	>=360.0	Lr Only
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360.0	L Only
Max Downward Total Deflection	0.329 in	Ratio =	718	>=180.0	Span: 1 : +D+L
Max Upward Total Deflection	0.000 in	Ratio =	0	<180.0	Span: 1 : +D+0.750L+0.5250S

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	33.746	33.746

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Masonry Pier Loads on Exst Beam

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from Load Combinations	33.746	33.746
Max Upward from Load Cases	19.995	19.995
D Only	19.995	19.995
+D+L	32.800	32.800
+D+Lr	21.995	21.995
+D+0.70S	25.525	25.525
+D+0.750Lr+0.750L	31.098	31.099
+D+0.750L+0.5250S	33.746	33.746
+0.60D	11.997	11.997
+D+0.750L+0.10S	30.389	30.389
Lr Only	2.000	2.000
L Only	12.805	12.805
S Only	7.900	7.900

Shear Stirrup Requirements

Between 0.00 to 4.95 ft, Av,min per T9.6.3.4, use #3 stirrups spaced at 7 in
Between 4.99 to 14.71 ft, Ties Not Req'd, Stirrups are not required.
Between 14.75 to 19.66 ft, Av,min per T9.6.3.4, use #3 stirrups spaced at 7 in

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)	Av, min Req'd?	Spacing Req'd (in)	ΦVc (k)	ΦVs (k)	ΦVn (k)	Vu / ΦVn	Vc Eqn (T22.5.5.1)	Spacing Provision
+1.20D+1.60L+0.30S	1	0.00	16.50	46.85	Yes	7.33	32.53	14.85	47.38	0.989	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	0.22	16.50	46.14	Yes	7.33	32.53	14.85	47.38	0.974	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	0.43	16.50	45.42	Yes	7.33	32.53	14.85	47.38	0.959	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	0.65	16.50	30.58	Yes	7.33	32.53	14.85	47.38	0.645	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	0.86	16.50	29.86	Yes	7.33	32.53	14.85	47.38	0.630	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	1.08	16.50	29.15	Yes	7.33	32.53	14.85	47.38	0.615	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	1.29	16.50	28.43	Yes	7.33	32.53	14.85	47.38	0.600	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	1.51	16.50	27.72	Yes	7.33	32.53	14.85	47.38	0.585	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	1.72	16.50	27.00	Yes	7.33	32.53	14.85	47.38	0.570	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	1.94	16.50	26.28	Yes	7.33	32.53	14.85	47.38	0.555	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	2.15	16.50	25.57	Yes	7.33	32.53	14.85	47.38	0.540	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	2.37	16.50	24.85	Yes	7.33	32.53	14.85	47.38	0.525	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	2.58	16.50	24.14	Yes	7.33	32.53	14.85	47.38	0.509	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	2.80	16.50	23.42	Yes	7.33	32.53	14.85	47.38	0.494	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	3.01	16.50	22.71	Yes	7.33	32.53	14.85	47.38	0.479	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	3.23	16.50	21.99	Yes	7.33	32.53	14.85	47.38	0.464	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	3.44	16.50	21.28	Yes	7.33	32.53	14.85	47.38	0.449	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	3.66	16.50	20.56	Yes	7.33	32.53	14.85	47.38	0.434	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	3.88	16.50	19.85	Yes	7.33	32.53	14.85	47.38	0.419	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	4.09	16.50	19.13	Yes	7.33	32.53	14.85	47.38	0.404	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	4.31	16.50	18.42	Yes	7.33	32.53	14.85	47.38	0.389	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	4.52	16.50	17.70	Yes	7.33	32.53	14.85	47.38	0.374	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	4.74	16.50	16.99	Yes	7.33	32.53	14.85	47.38	0.358	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	4.95	16.50	16.27	Yes	7.33	32.53	14.85	47.38	0.343	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	5.17	16.50	15.56	No	N/A	27.23	0.00	27.23	0.571	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	5.38	16.50	14.84	No	N/A	27.23	0.00	27.23	0.545	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	5.60	16.50	14.13	No	N/A	27.23	0.00	27.23	0.519	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	5.81	16.50	13.41	No	N/A	27.23	0.00	27.23	0.493	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	6.03	16.50	12.70	No	N/A	27.23	0.00	27.23	0.466	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	6.24	16.50	11.98	No	N/A	27.23	0.00	27.23	0.440	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	6.46	16.50	11.26	No	N/A	27.23	0.00	27.23	0.414	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	6.67	16.50	10.55	No	N/A	27.23	0.00	27.23	0.387	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	6.89	16.50	9.83	No	N/A	27.23	0.00	27.23	0.361	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	7.10	16.50	9.12	No	N/A	27.23	0.00	27.23	0.335	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	7.32	16.50	8.40	No	N/A	27.23	0.00	27.23	0.309	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	7.54	16.50	7.69	No	N/A	27.23	0.00	27.23	0.282	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	7.75	16.50	6.97	No	N/A	27.23	0.00	27.23	0.256	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	7.97	16.50	6.26	No	N/A	27.23	0.00	27.23	0.230	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	8.18	16.50	5.54	No	N/A	27.23	0.00	27.23	0.204	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	8.40	16.50	4.83	No	N/A	27.23	0.00	27.23	0.177	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	8.61	16.50	4.11	No	N/A	27.23	0.00	27.23	0.151	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	8.83	16.50	3.40	No	N/A	27.23	0.00	27.23	0.125	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	9.04	16.50	2.68	No	N/A	27.23	0.00	27.23	0.099	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	9.26	16.50	1.97	No	N/A	27.23	0.00	27.23	0.072	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	9.47	16.50	1.25	No	N/A	27.23	0.00	27.23	0.046	Eqn (c)	Ties Not Req'd

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Masonry Pier Loads on Exst Beam

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)	Av, min Req'd?	Spacing Req'd (in)	Φ Vc (k)	Φ Vs (k)	Φ Vn (k)	Vu / Φ Vn	Vc Eqn (T22.5.5.1)	Spacing Provision
+1.20D+1.60L+0.30S	1	9.69	16.50	0.54	No	N/A	27.23	0.00	27.23	0.020	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	9.90	16.50	-0.18	No	N/A	27.23	0.00	27.23	0.007	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	10.12	16.50	-0.89	No	N/A	27.23	0.00	27.23	0.033	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	10.33	16.50	-1.61	No	N/A	27.23	0.00	27.23	0.059	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	10.55	16.50	-2.32	No	N/A	27.23	0.00	27.23	0.085	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	10.77	16.50	-3.04	No	N/A	27.23	0.00	27.23	0.112	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	10.98	16.50	-3.75	No	N/A	27.23	0.00	27.23	0.138	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	11.20	16.50	-4.47	No	N/A	27.23	0.00	27.23	0.164	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	11.41	16.50	-5.19	No	N/A	27.23	0.00	27.23	0.190	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	11.63	16.50	-5.90	No	N/A	27.23	0.00	27.23	0.217	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	11.84	16.50	-6.62	No	N/A	27.23	0.00	27.23	0.243	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	12.06	16.50	-7.33	No	N/A	27.23	0.00	27.23	0.269	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	12.27	16.50	-8.05	No	N/A	27.23	0.00	27.23	0.296	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	12.49	16.50	-8.76	No	N/A	27.23	0.00	27.23	0.322	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	12.70	16.50	-9.48	No	N/A	27.23	0.00	27.23	0.348	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	12.92	16.50	-10.19	No	N/A	27.23	0.00	27.23	0.374	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	13.13	16.50	-10.91	No	N/A	27.23	0.00	27.23	0.401	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	13.35	16.50	-11.62	No	N/A	27.23	0.00	27.23	0.427	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	13.56	16.50	-12.34	No	N/A	27.23	0.00	27.23	0.453	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	13.78	16.50	-13.05	No	N/A	27.23	0.00	27.23	0.479	Eqn (c)	Ties Not Req'd
+1.20D+0.50Lr+1.60L	1	13.99	16.50	-13.77	No	N/A	27.23	0.00	27.23	0.506	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	14.21	16.50	-14.48	No	N/A	27.23	0.00	27.23	0.532	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	14.43	16.50	-15.20	No	N/A	27.23	0.00	27.23	0.558	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	14.64	16.50	-15.91	No	N/A	27.23	0.00	27.23	0.585	Eqn (c)	Ties Not Req'd
+1.20D+1.60L+0.30S	1	14.86	16.50	-16.63	Yes	7.33	32.53	14.85	47.38	0.351	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	15.07	16.50	-17.34	Yes	7.33	32.53	14.85	47.38	0.366	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	15.29	16.50	-18.06	Yes	7.33	32.53	14.85	47.38	0.381	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	15.50	16.50	-18.77	Yes	7.33	32.53	14.85	47.38	0.396	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	15.72	16.50	-19.49	Yes	7.33	32.53	14.85	47.38	0.411	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	15.93	16.50	-20.21	Yes	7.33	32.53	14.85	47.38	0.426	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	16.15	16.50	-20.92	Yes	7.33	32.53	14.85	47.38	0.442	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	16.36	16.50	-21.64	Yes	7.33	32.53	14.85	47.38	0.457	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	16.58	16.50	-22.35	Yes	7.33	32.53	14.85	47.38	0.472	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	16.79	16.50	-23.07	Yes	7.33	32.53	14.85	47.38	0.487	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	17.01	16.50	-23.78	Yes	7.33	32.53	14.85	47.38	0.502	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	17.22	16.50	-24.50	Yes	7.33	32.53	14.85	47.38	0.517	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	17.44	16.50	-25.21	Yes	7.33	32.53	14.85	47.38	0.532	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	17.65	16.50	-25.93	Yes	7.33	32.53	14.85	47.38	0.547	Eqn (a)	Av,min per T9.6.3.4
+1.20D+0.50Lr+1.60L	1	17.87	16.50	-26.64	Yes	7.33	32.53	14.85	47.38	0.562	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	18.09	16.50	-27.36	Yes	7.33	32.53	14.85	47.38	0.577	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	18.30	16.50	-28.07	Yes	7.33	32.53	14.85	47.38	0.592	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	18.52	16.50	-28.79	Yes	7.33	32.53	14.85	47.38	0.608	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	18.73	16.50	-29.50	Yes	7.33	32.53	14.85	47.38	0.623	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	18.95	16.50	-30.22	Yes	7.33	32.53	14.85	47.38	0.638	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	19.16	16.50	-30.93	Yes	7.33	32.53	14.85	47.38	0.653	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	19.38	16.50	-45.78	Yes	7.33	32.53	14.85	47.38	0.966	Eqn (a)	Av,min per T9.6.3.4
+1.20D+1.60L+0.30S	1	19.59	16.50	-46.49	Yes	7.33	32.53	14.85	47.38	0.981	Eqn (a)	Av,min per T9.6.3.4

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	19.700	168.22	372.95	0.45
+1.40D					
Span # 1	1	19.700	77.15	372.95	0.21
+1.20D+0.50Lr+1.60L					
Span # 1	1	19.700	167.53	372.95	0.45
+1.20D+1.60L+0.30S					
Span # 1	1	19.700	168.22	372.95	0.45
+1.20D+1.60Lr+L					
Span # 1	1	19.700	130.80	372.95	0.35
+1.20D+1.60Lr					
Span # 1	1	19.700	67.73	372.95	0.18
+1.20D+L+S					
Span # 1	1	19.700	133.15	372.95	0.36
+1.20D+S					
Span # 1	1	19.700	70.08	372.95	0.19

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Masonry Pier Loads on Exst Beam

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
+1.20D+0.50Lr+L					
Span # 1	1	19.700	129.70	372.95	0.35
+1.20D+L+0.30S					
Span # 1	1	19.700	130.38	372.95	0.35
+0.90D					
Span # 1	1	19.700	49.60	372.95	0.13
+1.20D+L+0.150S					
Span # 1	1	19.700	129.79	372.95	0.35

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft	Load Combination	Max. "+" Defl (in)	Location in Span (ft
+D+L	1	0.3288	9.850		0.0000	0.000

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Exst Column Supporting Conc Beam and New Masonry Piers

Code References

Calculations per ACI 318-19, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-22 / IBC 2024

General Information

f'c : Concrete 28 day streng	=	3.0 ksi
E =	=	3,122.0 ksi
Density	=	150.0 pcf
β	=	0.850
fy - Main Rebar	=	60.0 ksi
E - Main Rebar	=	29,000.0 ksi
Allow. Reinforcing Limits		*ASTM A615 Bars Used*
Min. Reinf.	=	1.0 %
Max. Reinf.	=	8.0 %
Seismic Design Category	=	B

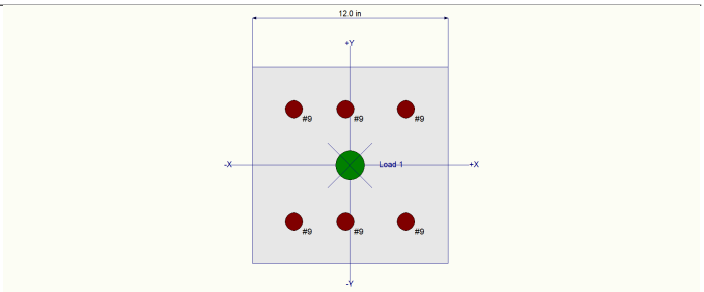
Overall Column Height	=	12.0 ft
End Fixity		Top & Bottom Pinned

Brace condition for deflection (buckling) along colum
X-X (width) axis :
Unbraced Length for buckling ABOUT X-X Axis = 12.0 ft, K = 1.0
Y-Y (depth) axis :
Unbraced Length for buckling ABOUT Y-Y Axis = 12.0 ft, K = 1.0

Column Cross Section

Column Dimensions : 12.0in Square Column, Column Edge to Rebar Edge Cover = 2.0in

Column Reinforcing : 4 - #9 bars @ corners,, 1 - #9 bars top & bottom between corner bars



Applied Loads

Entered loads are factored per load combinations specified by user.

Column self weight included : 1,800.0 lbs * Dead Load Factor
AXIAL LOADS . . .
Exst Conc Beam Reactions (W/ pier & Lintel Loads): Axial Load at 12.0 ft above base, D = 20.0, LR = 2.0, L = 12.80, S = 7.90 k

DESIGN SUMMARY

Load Combination		+1.20D+1.60L+0.30S	
Location of max.above base		11.919 ft	
Maximum Stress Ratio		**0.137 : 1**	
Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5			
Pu =	49.010 k	φ * Pn =	357.648 k
Mu-x =	0.0 k-ft	φ * Mn-x =	0.0 k-ft
Mu-y =	3.921 k-ft	φ* Mn-y =	28.179 k-ft
Mu Angle =	90.0 deg	φ =	0.650
Mu at Angle =	3.921 k-ft	φMn at Angle =	28.484 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Column Capacities . .

Pnmax : Nominal Max. Compressive Axial Capaci	711.90 k
Pnmin : Nominal Min. Tension Axial Capacity	k
φ Pn, max : Usable Compressive Axial Capacity	370.188 k
φ Pn, min : Usable Tension Axial Capacity	k

Maximum SERVICE Load Reactions .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Deflections . .

Along Y-Y for load combination :	0.0 in	at	0.0 ft	above base
Along X-X for load combination :	0.0 in	at	0.0 ft	above base

General Section Informatio β = 0.850 θ = 0.80

ρ : % Reinforcing	4.167 %	Rebar % Ok
Reinforcing Area	6.0 in^2	
Concrete Area	144.0 in^2	

Governing Load Combination Results

Governing Factored Load Combination	Moment		Dist. from base ft	Axial Load k Pu	φ * Pn	Bending Analysis k-ft δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
	X-X	Y-Y											
+1.40D	Actual	M2,min	11.92	30.52	357.65	1.000		1.000	2.44	90.000	2.44	28.48	**0.086**

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Exst Column Supporting Conc Beam and New Masonry Piers

Governing Load Combination Results

Governing Factored Load Combination	Moment		Dist. from	Axial Load		Bending Analysis k-ft							Utilization
	X-X	Y-Y	base ft	k Pu	φ * Pn	δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Ratio
+1.40D	M2,min	Actual	11.92	30.52	369.99	1.000	2.44	1.000		0.000	2.44	29.72	**0.082**
+1.20D+0.50Lr+1.60L	Actual	M2,min	11.92	47.64	357.65	1.000		1.000	3.81	90.000	3.81	28.48	**0.133**
+1.20D+0.50Lr+1.60L	M2,min	Actual	11.92	47.64	369.99	1.000	3.81	1.000		0.000	3.81	29.72	**0.128**
+1.20D+1.60L+0.30S	Actual	M2,min	11.92	49.01	357.65	1.000		1.000	3.92	90.000	3.92	28.48	**0.137**
+1.20D+1.60L+0.30S	M2,min	Actual	11.92	49.01	369.99	1.000	3.92	1.000		0.000	3.92	29.72	**0.132**
+1.20D+1.60Lr+L	Actual	M2,min	11.92	42.16	357.65	1.000		1.000	3.37	90.000	3.37	28.48	**0.118**
+1.20D+1.60Lr+L	M2,min	Actual	11.92	42.16	369.99	1.000	3.37	1.000		0.000	3.37	29.72	**0.114**
+1.20D+1.60Lr	Actual	M2,min	11.92	29.36	357.65	1.000		1.000	2.35	90.000	2.35	28.48	**0.082**
+1.20D+1.60Lr	M2,min	Actual	11.92	29.36	369.99	1.000	2.35	1.000		0.000	2.35	29.72	**0.079**
+1.20D+L+S	Actual	M2,min	11.92	46.86	357.65	1.000		1.000	3.75	90.000	3.75	28.48	**0.131**
+1.20D+L+S	M2,min	Actual	11.92	46.86	369.99	1.000	3.75	1.000		0.000	3.75	29.72	**0.126**
+1.20D+S	Actual	M2,min	11.92	34.06	357.65	1.000		1.000	2.72	90.000	2.72	28.48	**0.095**
+1.20D+S	M2,min	Actual	11.92	34.06	369.99	1.000	2.72	1.000		0.000	2.72	29.72	**0.092**
+1.20D+0.50Lr+L	Actual	M2,min	11.92	39.96	357.65	1.000		1.000	3.20	90.000	3.20	28.48	**0.112**
+1.20D+0.50Lr+L	M2,min	Actual	11.92	39.96	369.99	1.000	3.20	1.000		0.000	3.20	29.72	**0.108**
+1.20D+L+0.30S	Actual	M2,min	11.92	41.33	357.65	1.000		1.000	3.31	90.000	3.31	28.48	**0.116**
+1.20D+L+0.30S	M2,min	Actual	11.92	41.33	369.99	1.000	3.31	1.000		0.000	3.31	29.72	**0.111**
+0.90D	Actual	M2,min	11.92	19.62	357.65	1.000		1.000	1.57	90.000	1.57	28.48	**0.055**
+0.90D	M2,min	Actual	11.92	19.62	369.99	1.000	1.57	1.000		0.000	1.57	29.72	**0.053**
+1.20D+L+0.150S	Actual	M2,min	11.92	40.15	357.65	1.000		1.000	3.21	90.000	3.21	28.48	**0.112**
+1.20D+L+0.150S	M2,min	Actual	11.92	40.15	369.99	1.000	3.21	1.000		0.000	3.21	29.72	**0.108**

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction k @ Base	@ Top	Axial Reaction @ Base	Mx - End Moments k-ft @ Base	@ Top	My - End Moments k-ft @ Base	@ Top
D Only					21.800				
+D+L					34.600				
+D+Lr					23.800				
+D+0.70S					27.330				
+D+0.750Lr+0.750L					32.900				
+D+0.750L+0.5250S					35.548				
+0.60D					13.080				
+D+0.750L+0.10S					32.190				
Lr Only					2.000				
L Only					12.800				
S Only					7.900				

Maximum Moment Reactions

Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis @ Base	@ Top	Moment About Y-Y Axis @ Base	@ Top
D Only	k-ft		k-ft	
+D+L	k-ft		k-ft	
+D+Lr	k-ft		k-ft	
+D+0.70S	k-ft		k-ft	
+D+0.750Lr+0.750L	k-ft		k-ft	
+D+0.750L+0.5250S	k-ft		k-ft	
+0.60D	k-ft		k-ft	
+D+0.750L+0.10S	k-ft		k-ft	
Lr Only	k-ft		k-ft	
L Only	k-ft		k-ft	
S Only	k-ft		k-ft	

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+Lr	0.0000 in	0.000 ft	0.000 in	0.000 ft

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

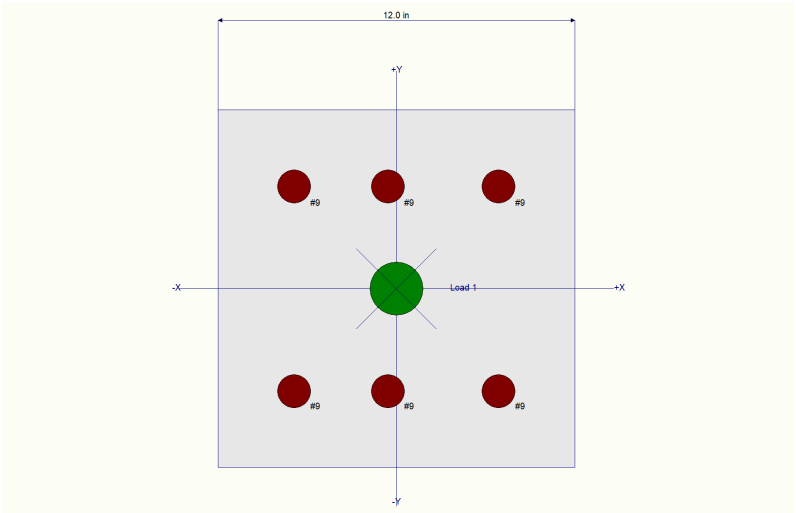
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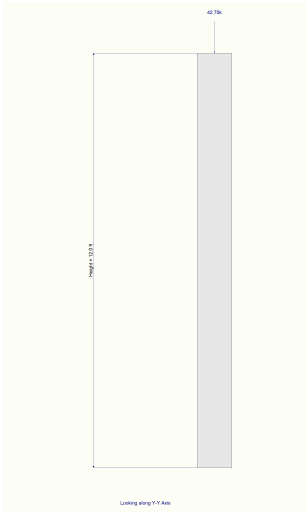
DESCRIPTION: Exst Column Supporting Conc Beam and New Masonry Piers

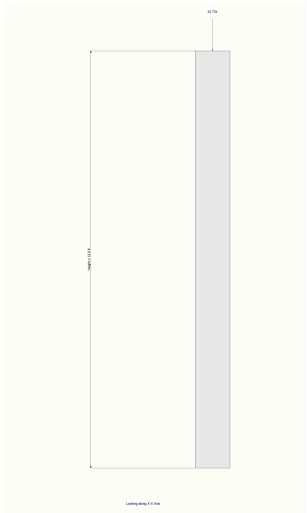
Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+0.70S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.5250S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.10S	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Sketches







Interaction Diagrams

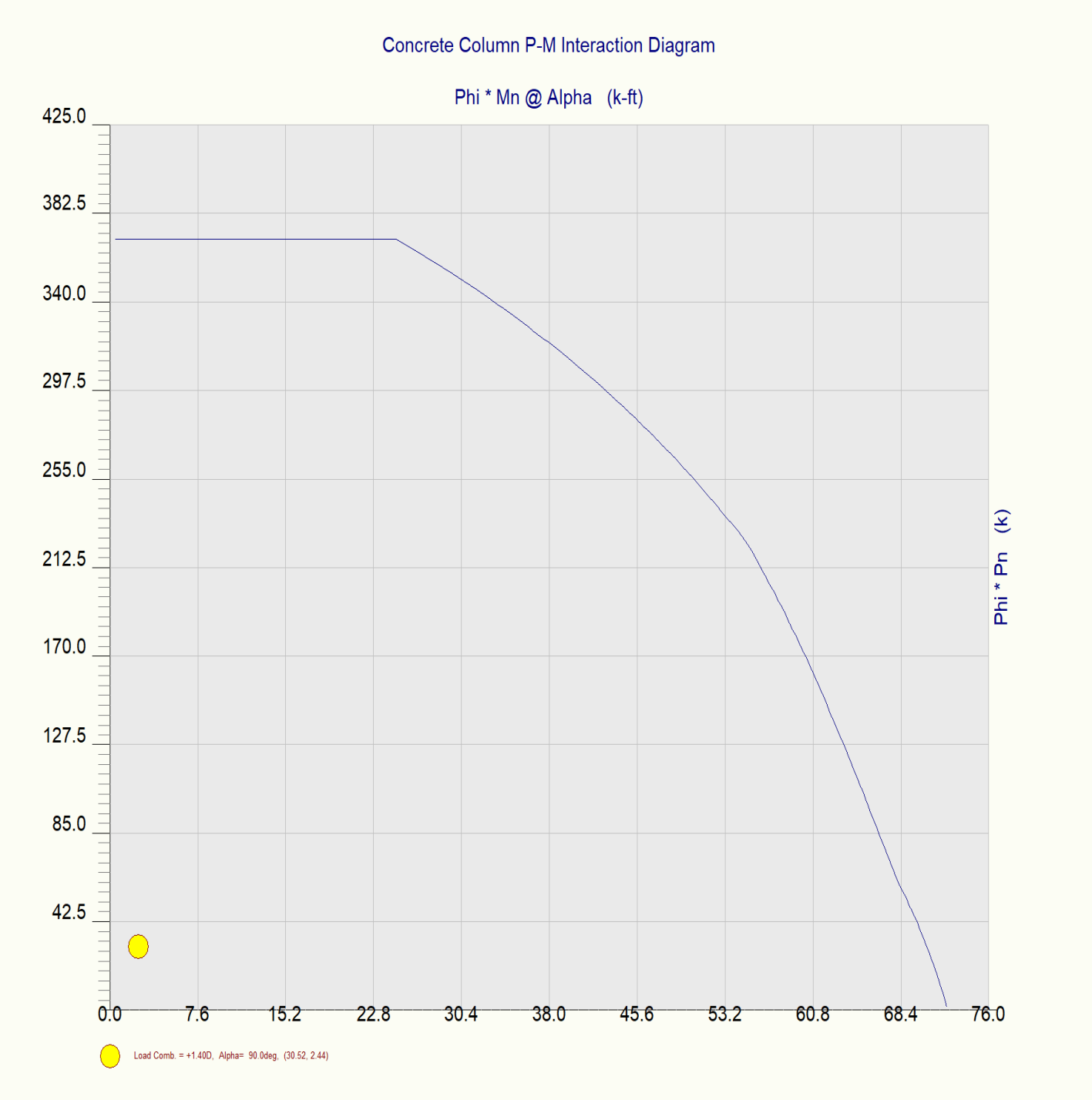
Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Exst Column Supporting Conc Beam and New Masonry Piers

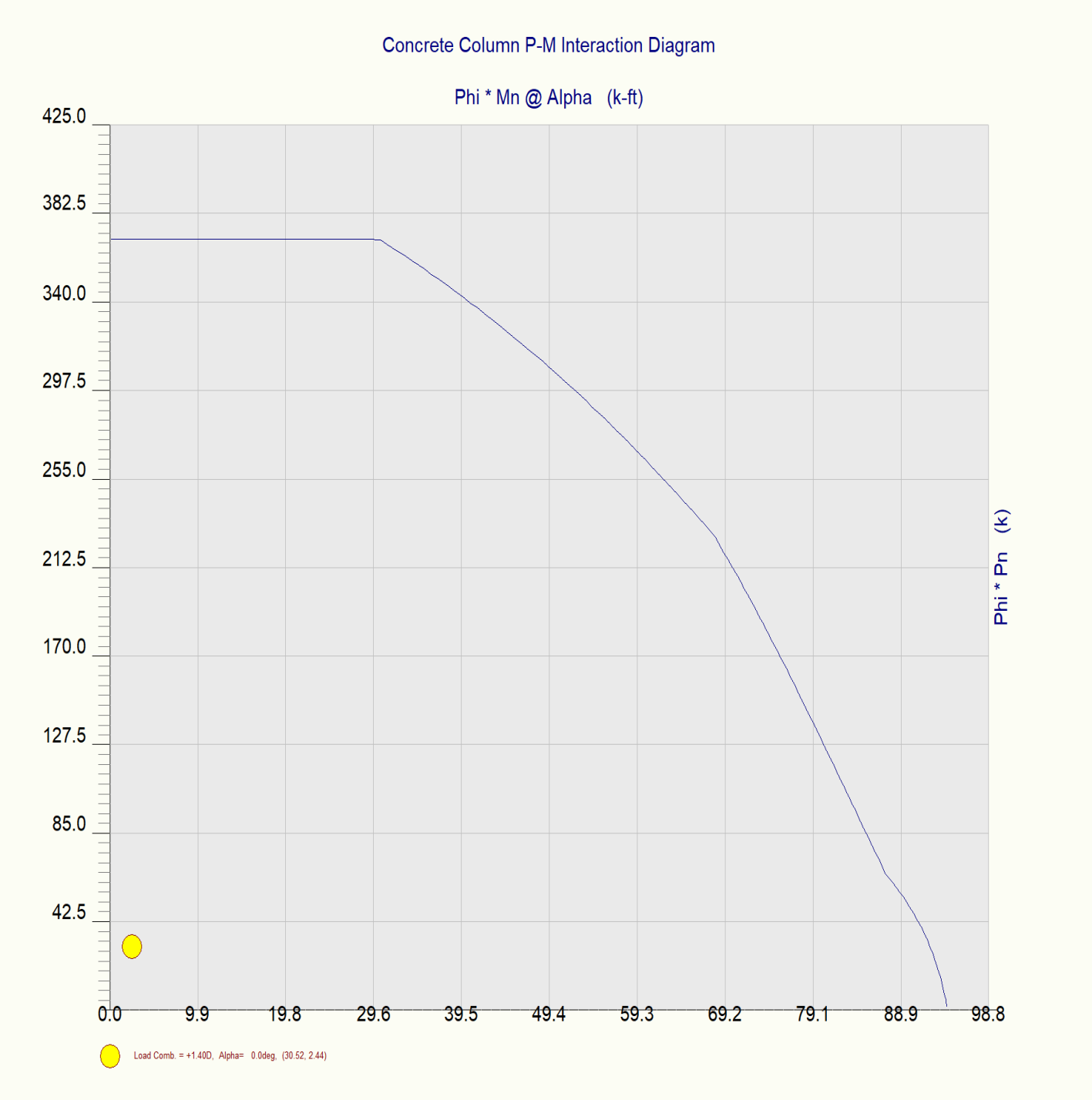


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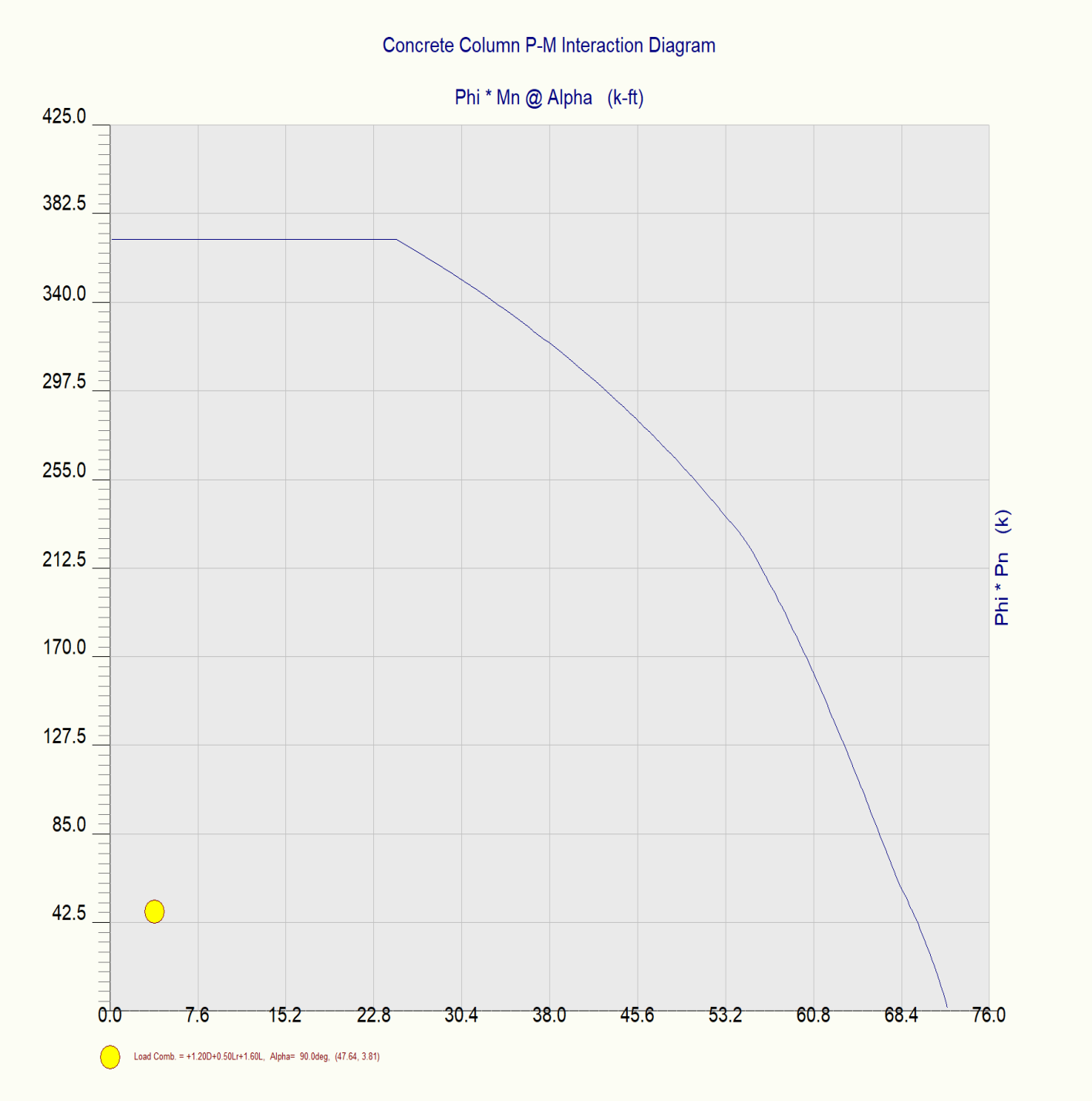


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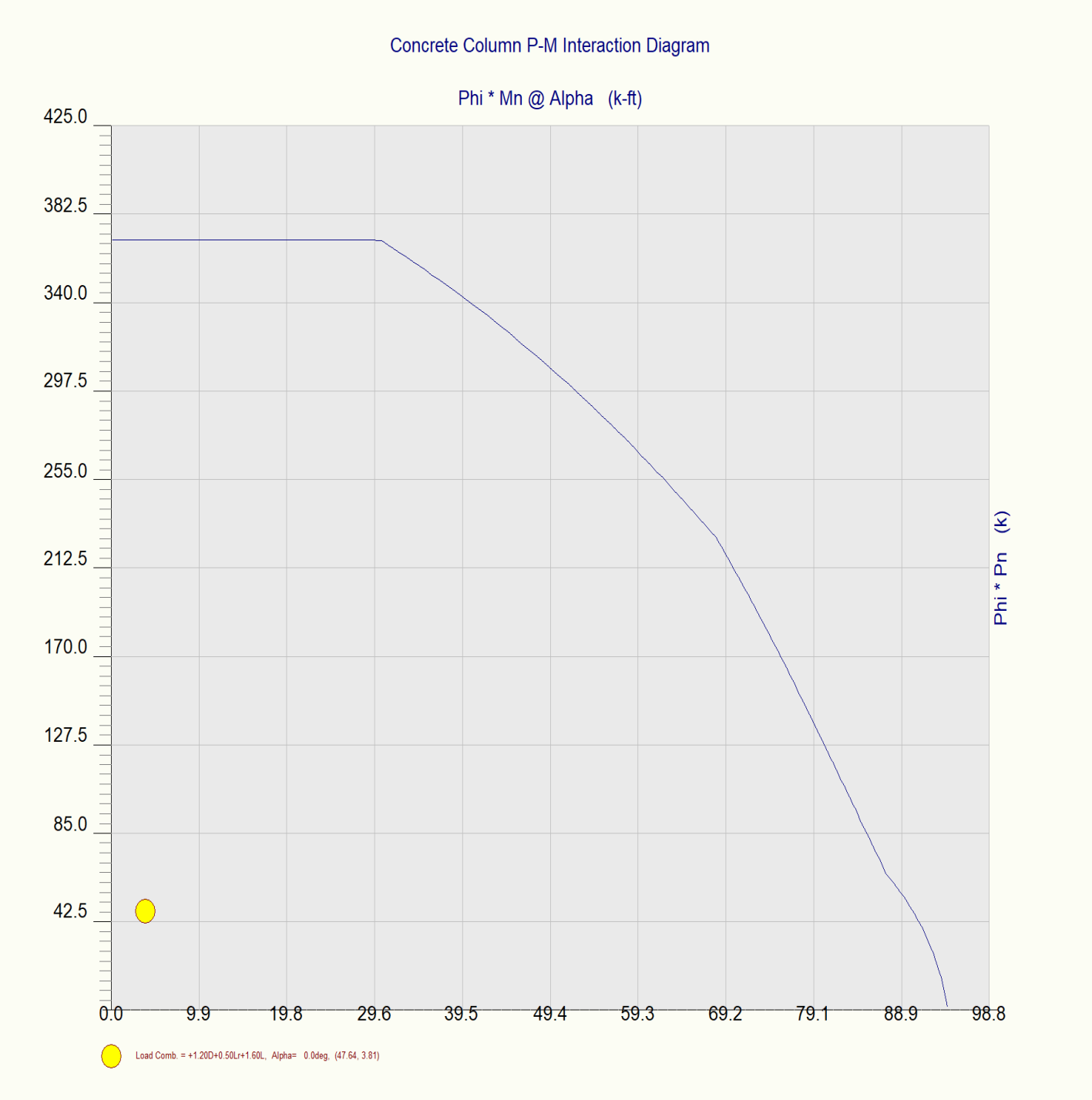
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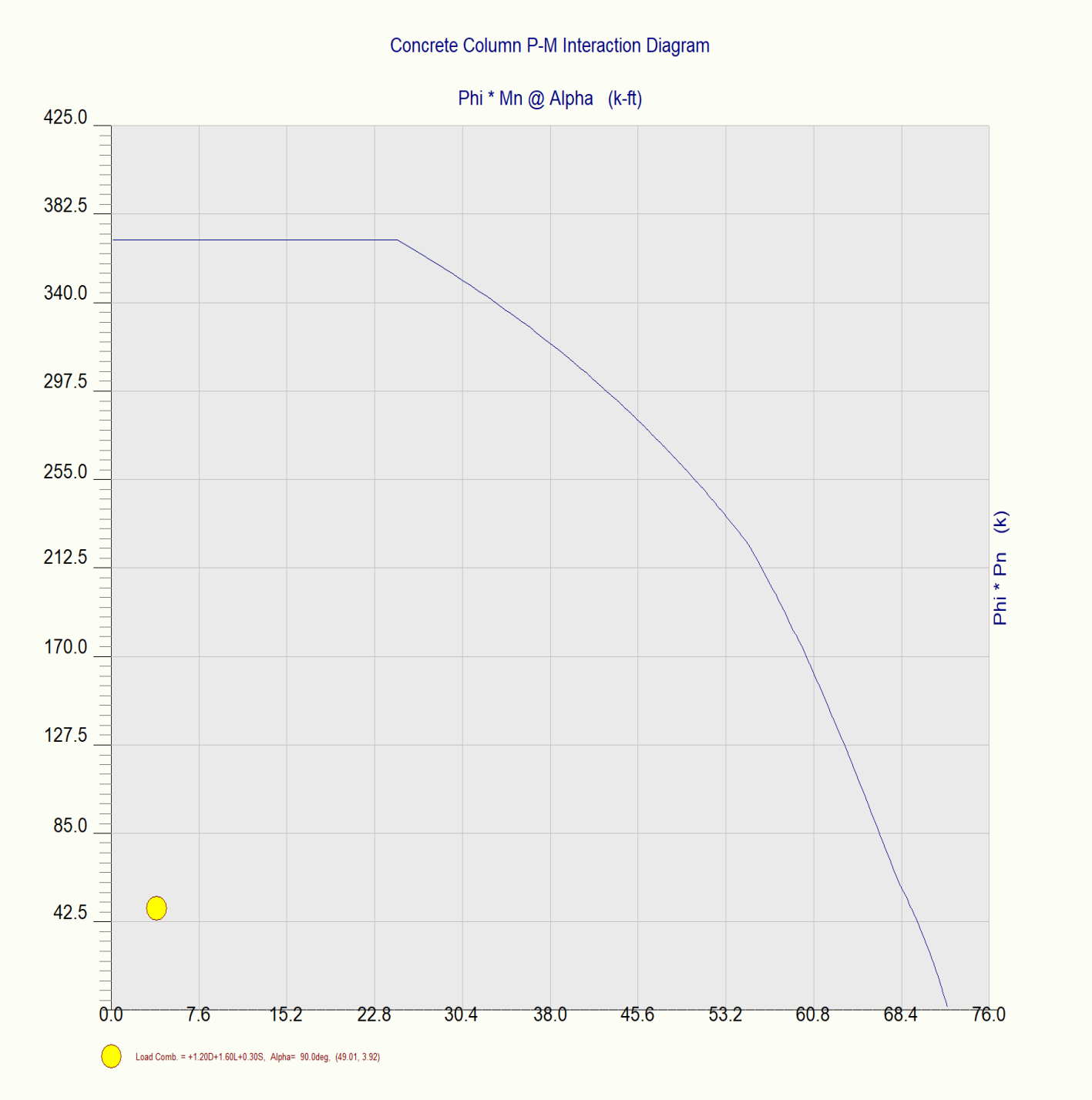
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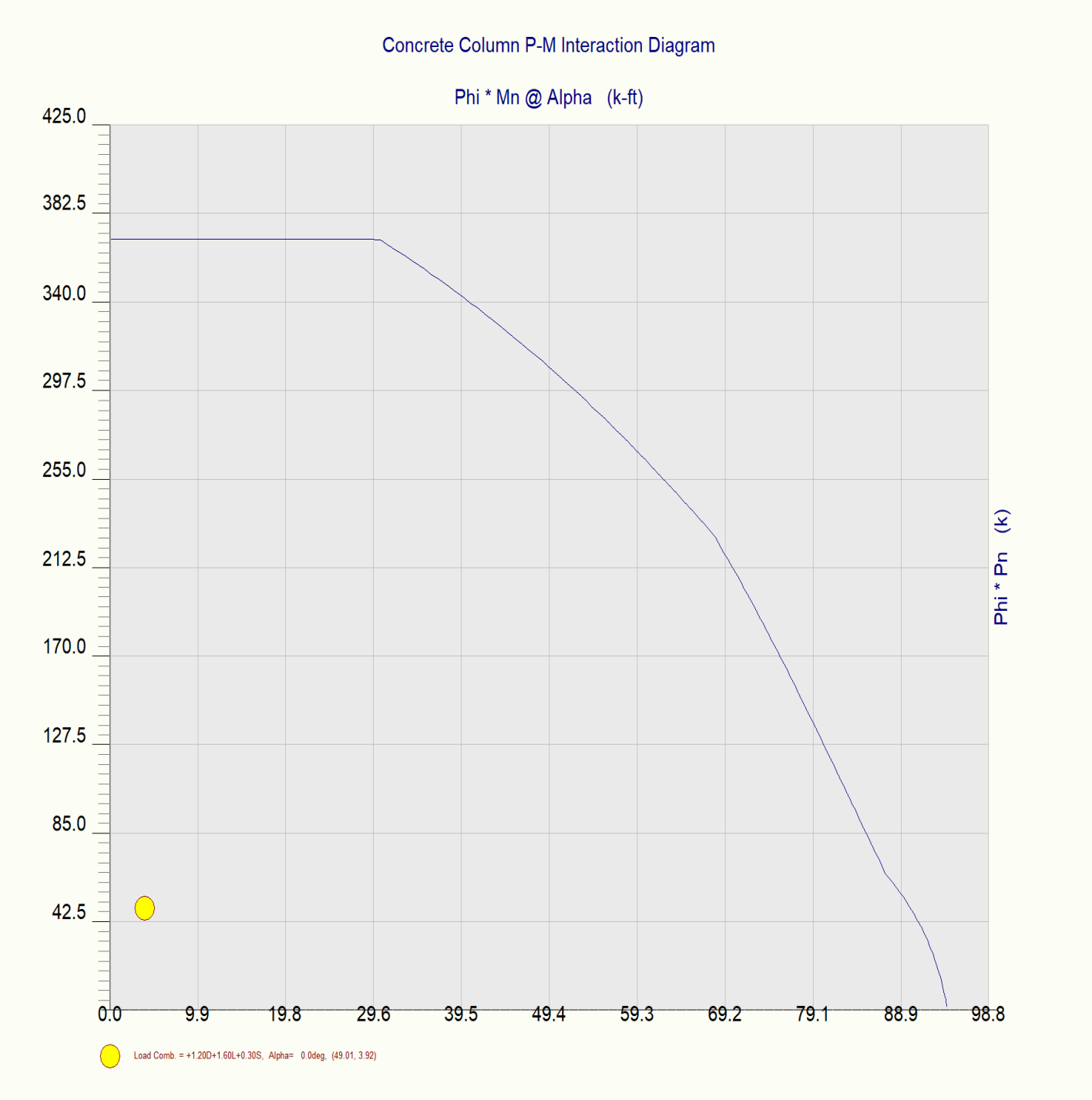


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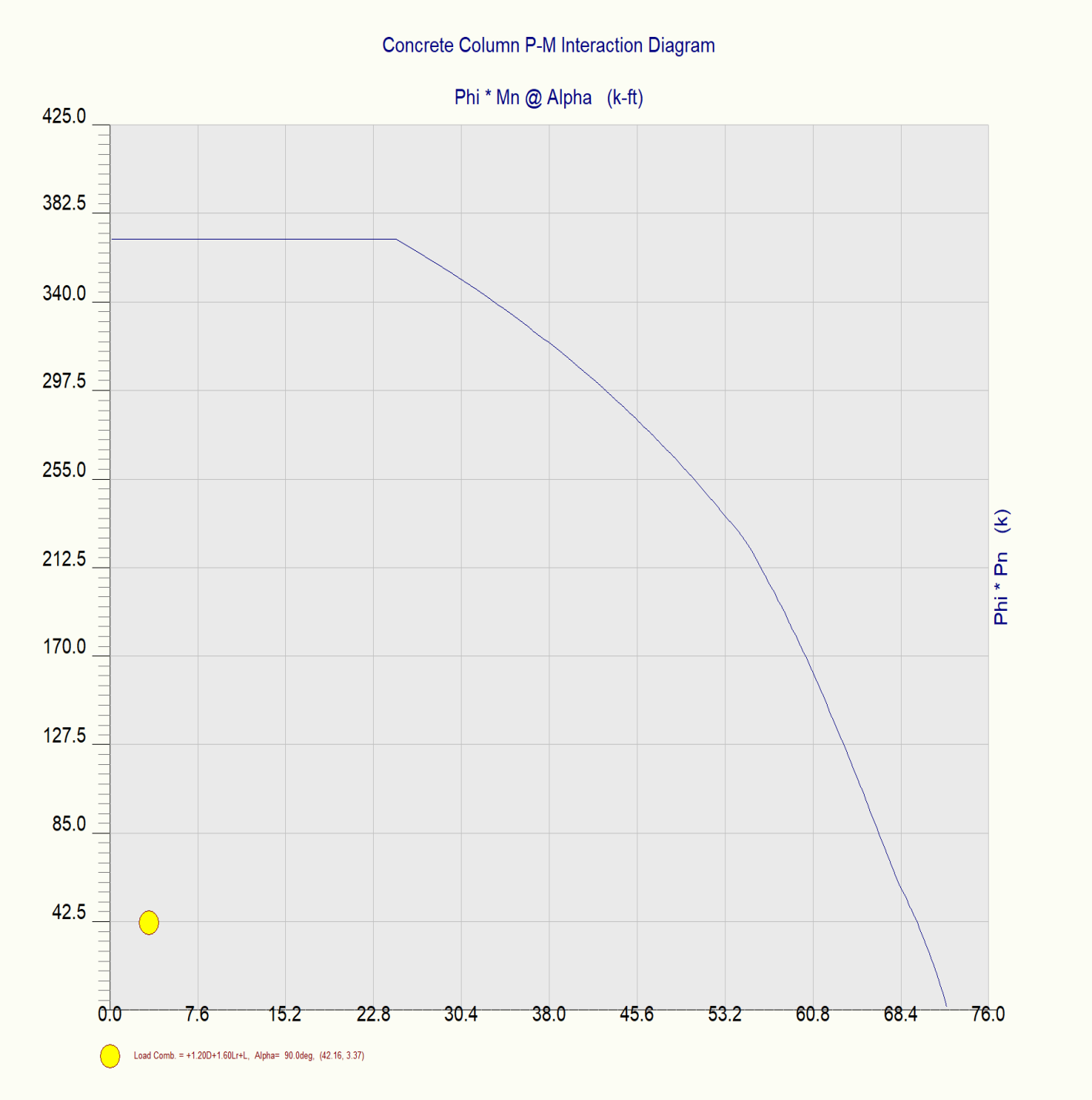


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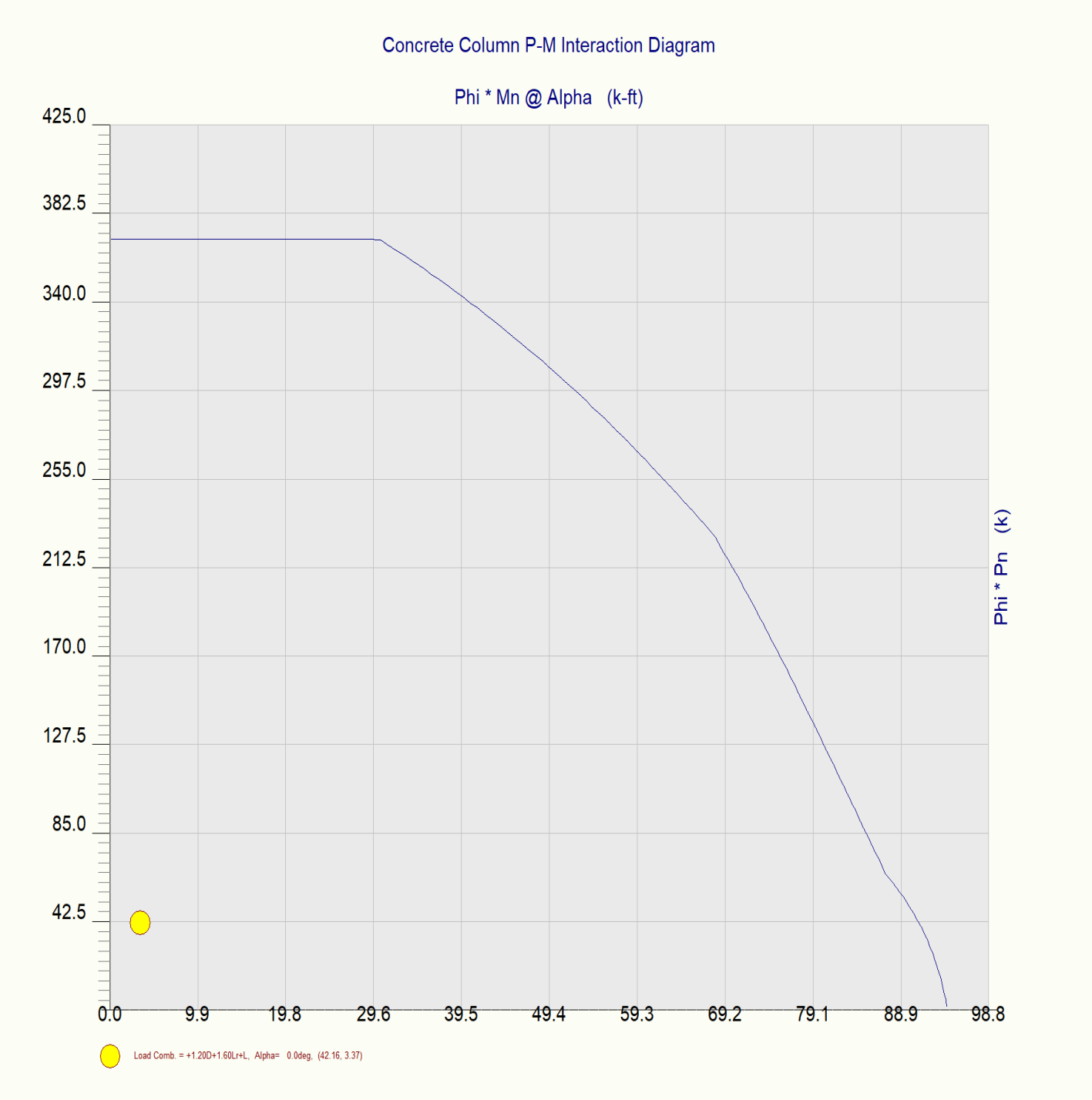
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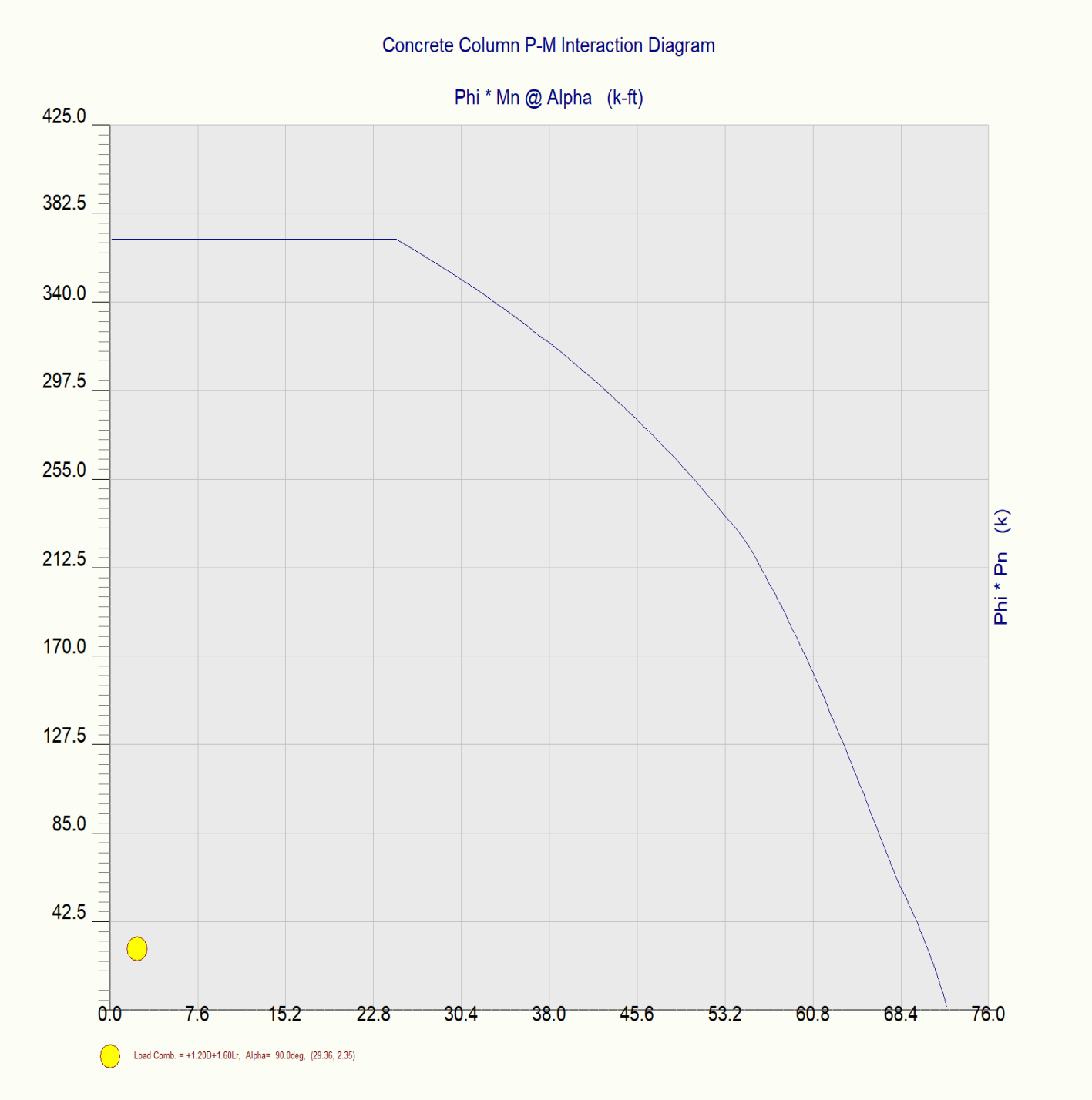
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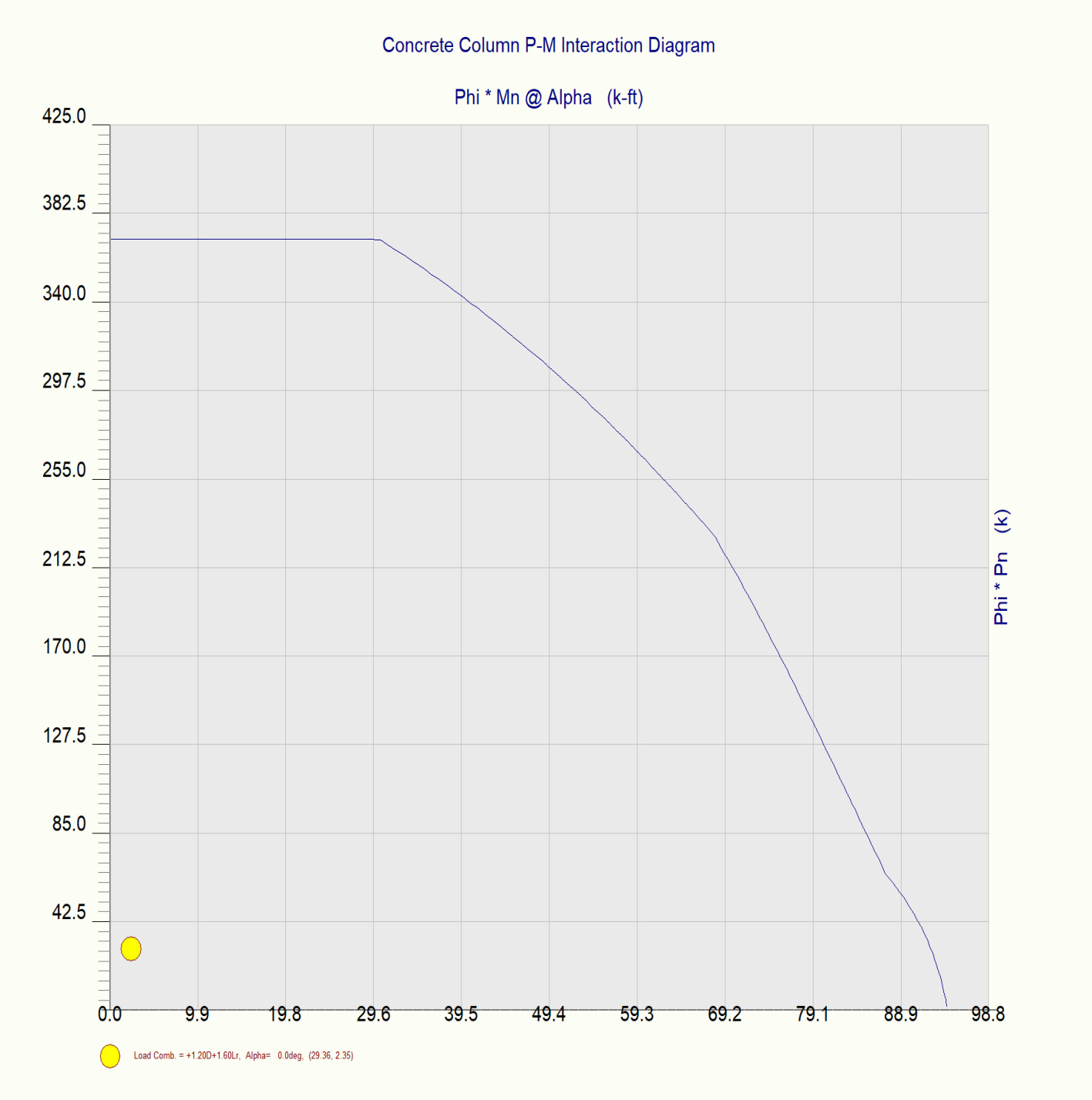


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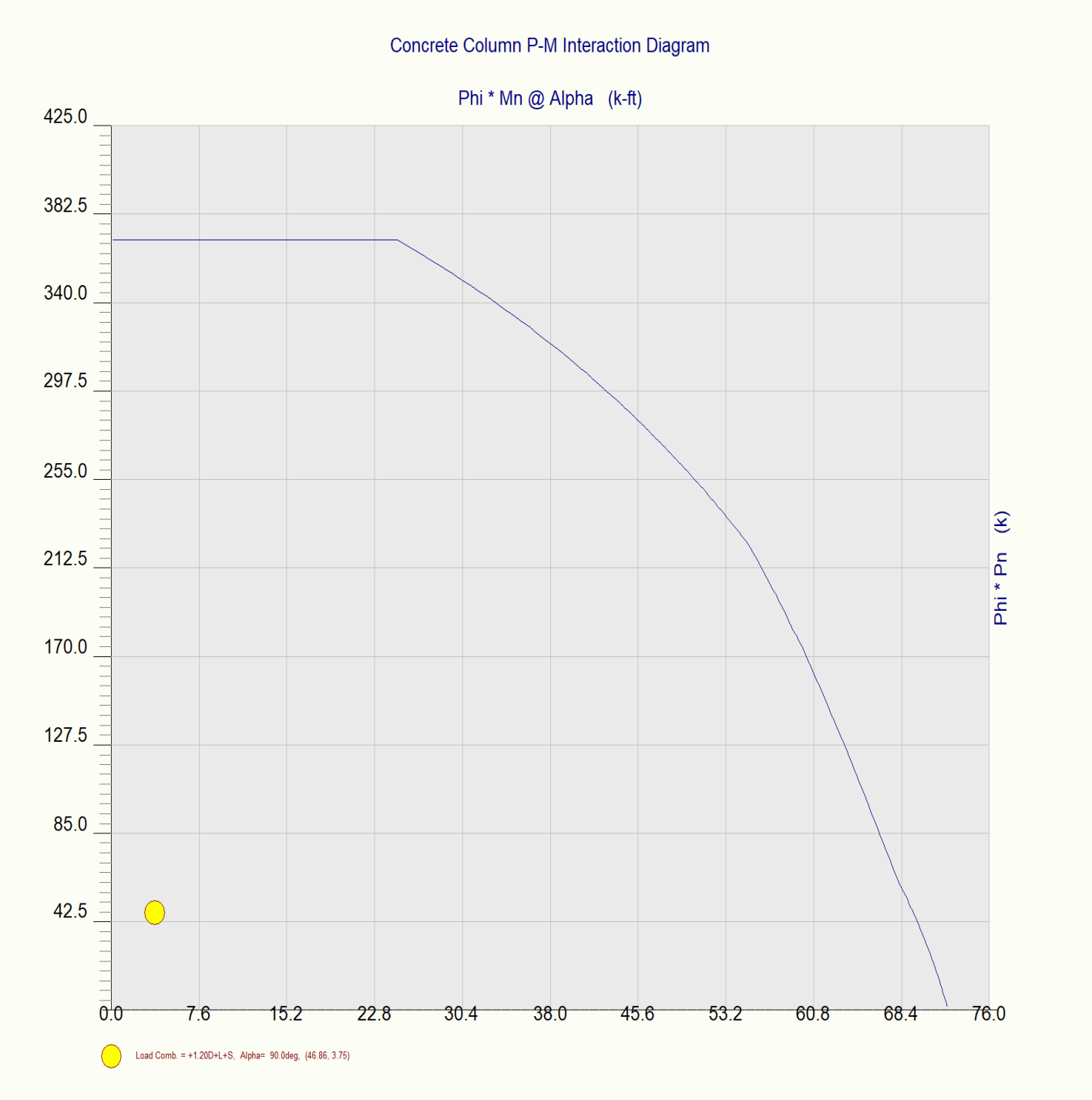
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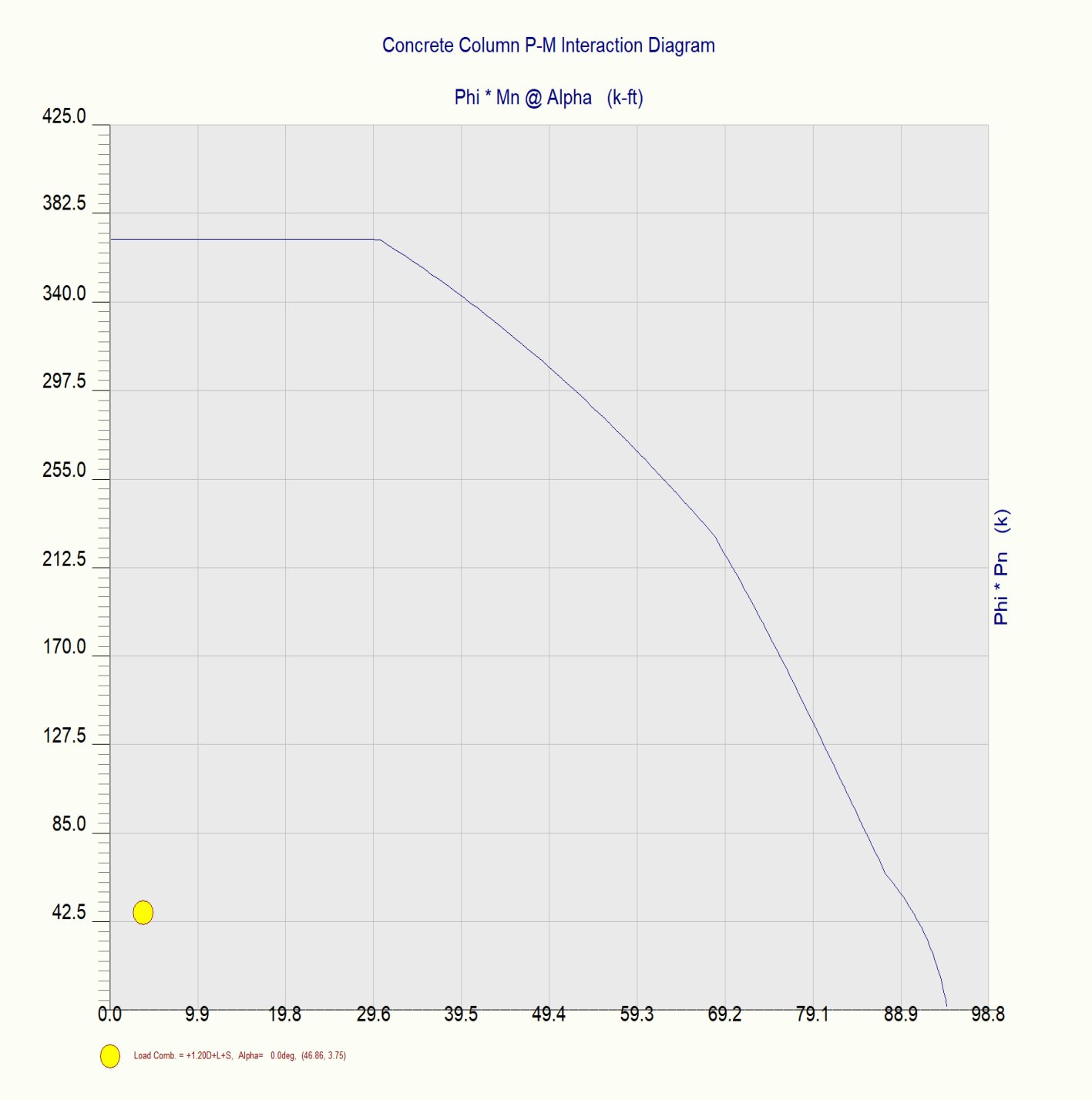


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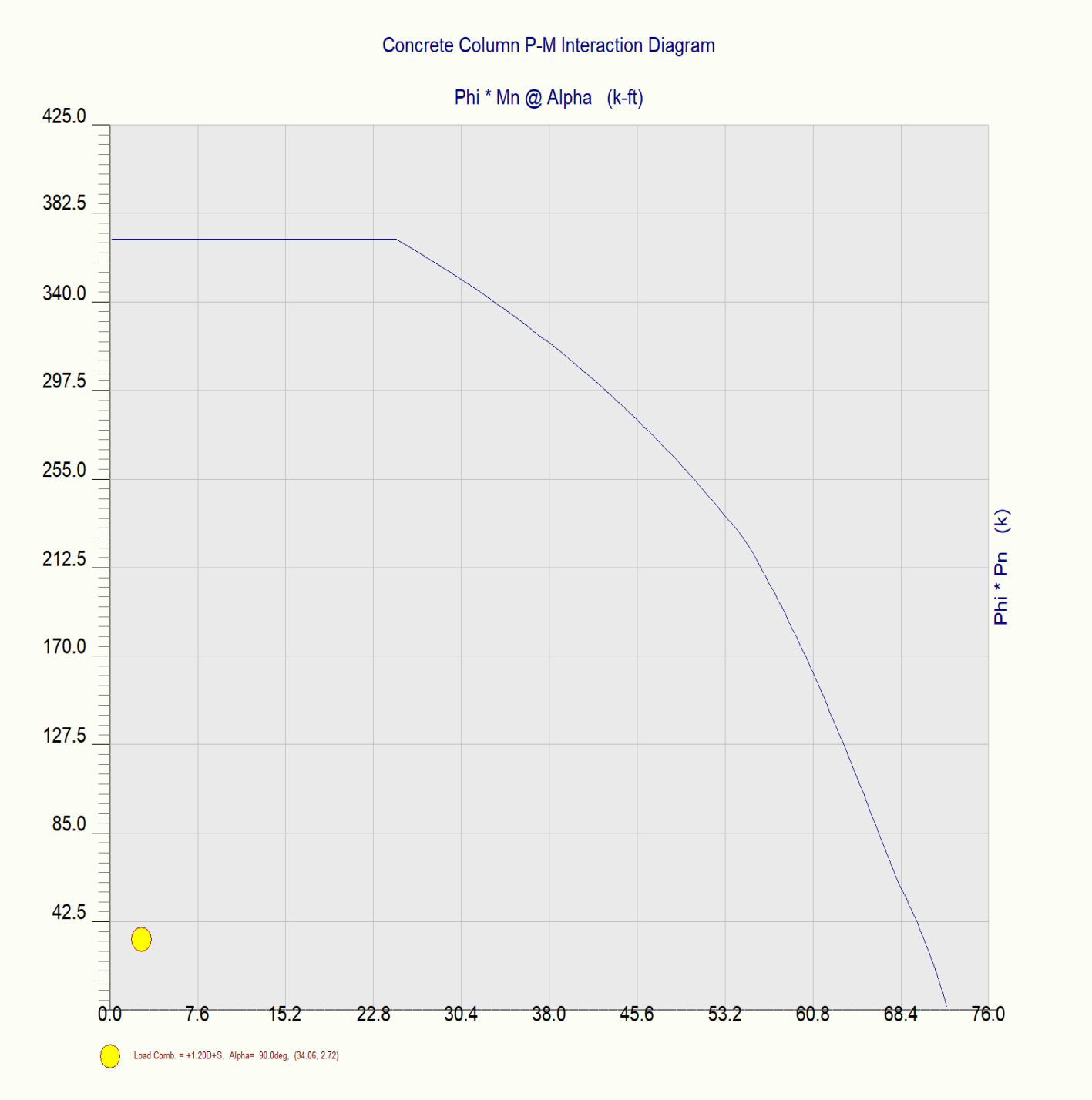


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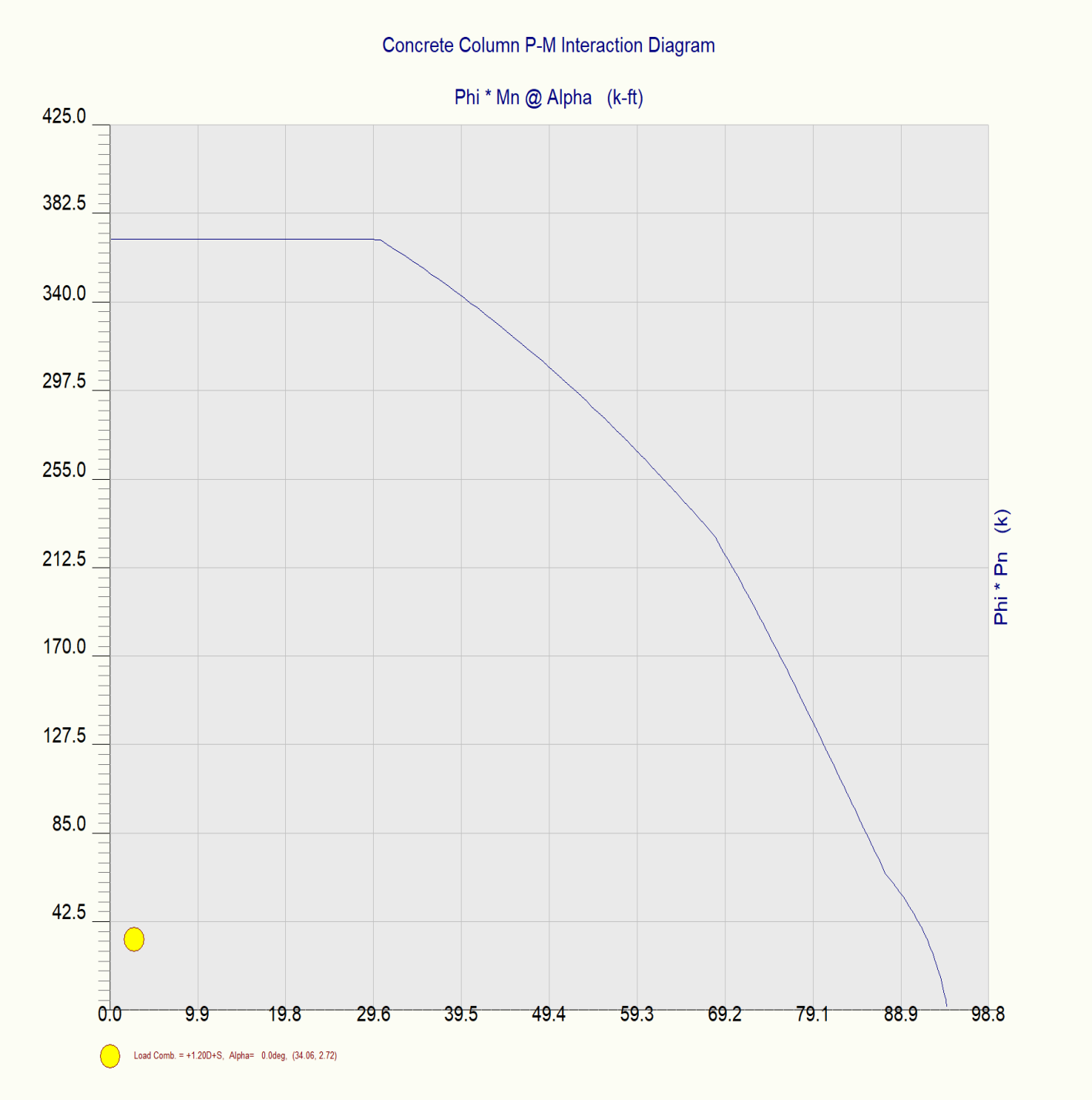
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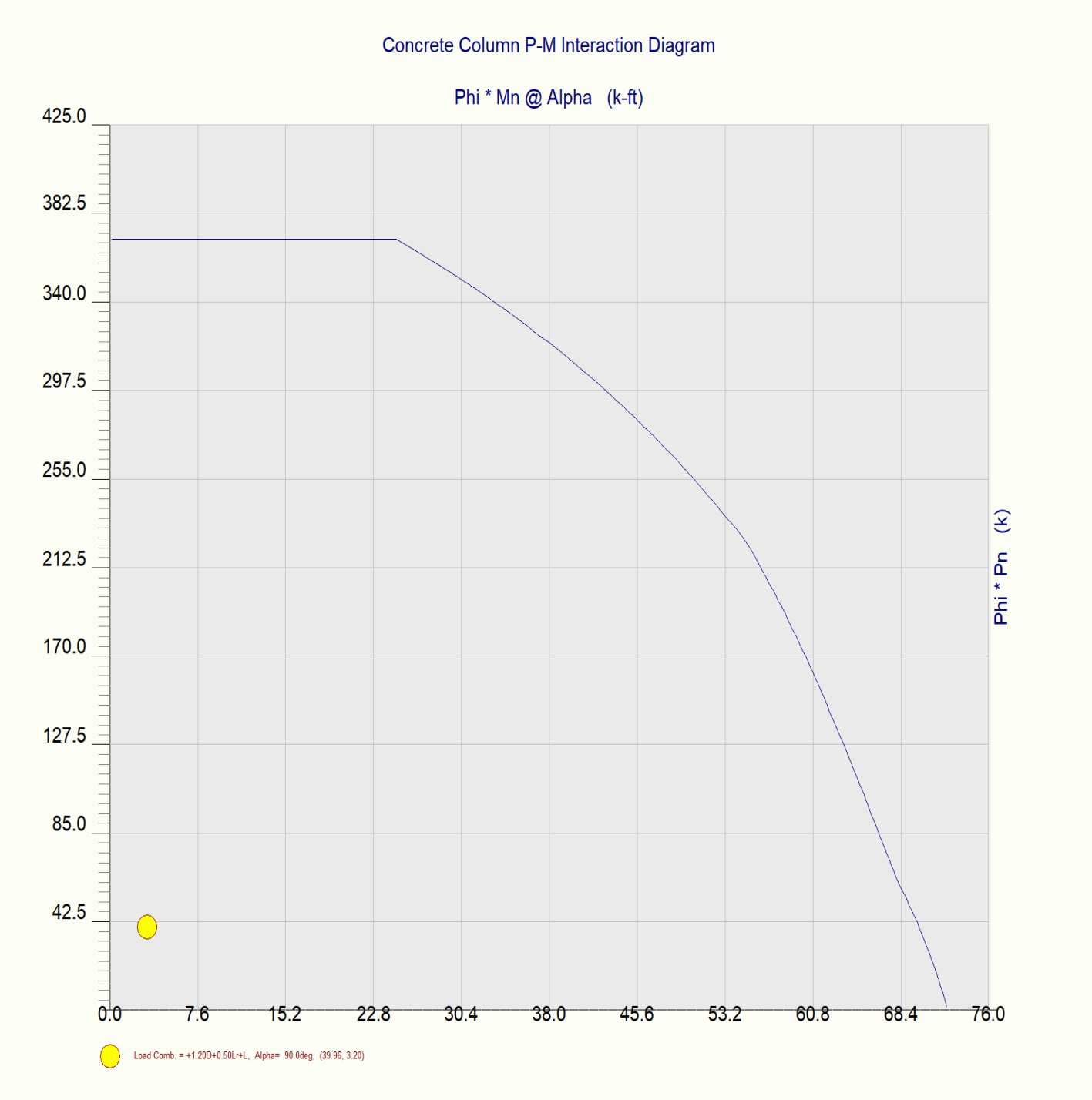


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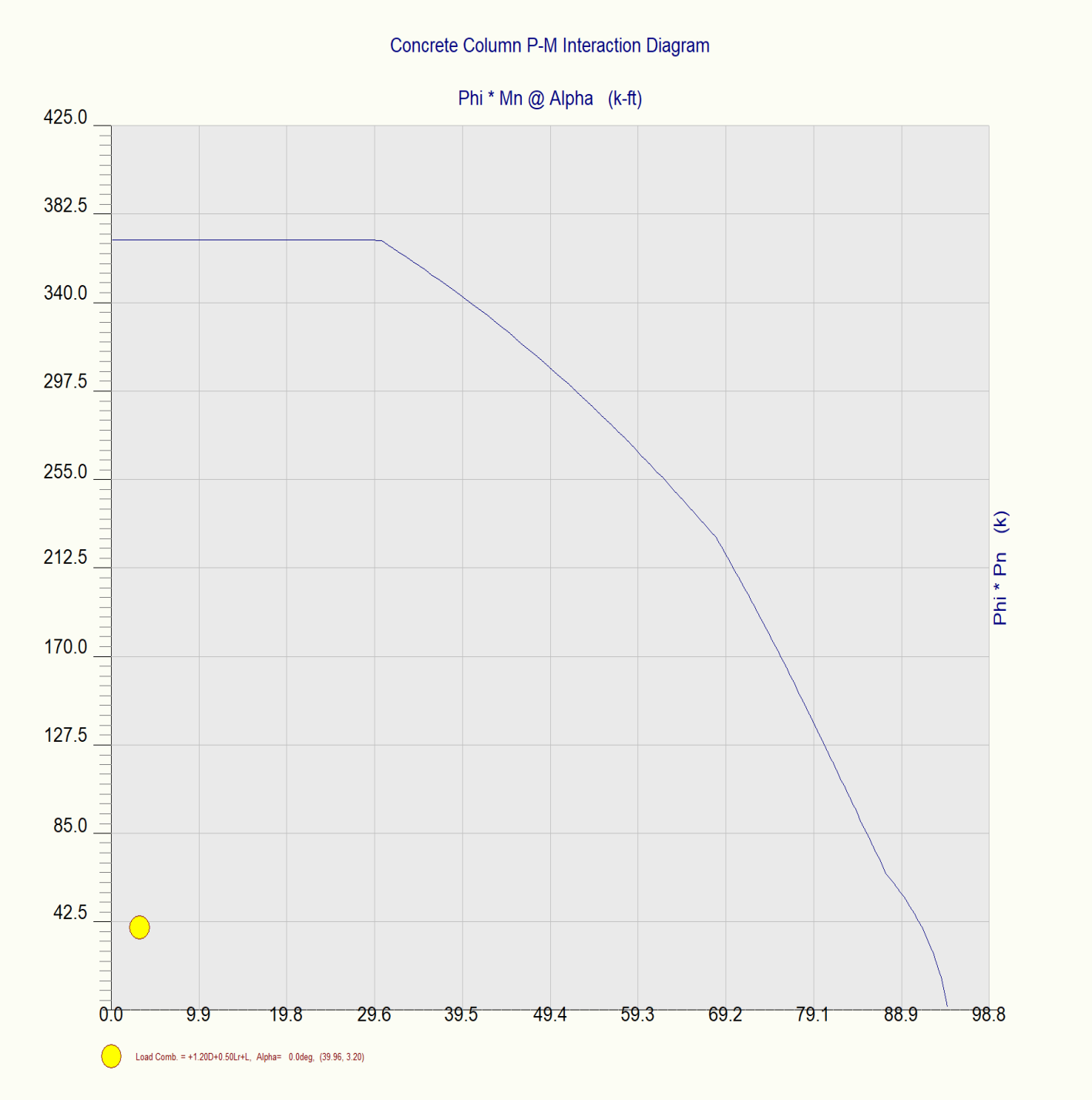


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Project ID:
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Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Exst Column Supporting Conc Beam and New Masonry Piers



AECOM

VT Military Building – Mechanical Unit Calcs

Structural Engineering

Calculation Book

T-Beam Flange Width
ACI 318-19: Table 6.3.2.1

8h = 4in x 8 = 32in
sw/2 = 91in / 2 = 45.5in
ln/8 = 244in / 8 = 30.5in

Roof Loading:
DL: 5.0 psf
2" Rigid Insulation 3.0 psf
Roof Membrane 1.5 psf

CONCRETE BEAMS.

BEAM NOS.	SIZE.	REINF. STEEL.	STIRRUPS FROM EACH END OF BEAMS.
301 TO 306 INC. 310 TO 314 INC. 347 TO 352 INC. 356 TO 361 INC.	12" X 15" T	2-$\frac{7}{8}$"ϕ BARS. 2-$\frac{3}{4}$"ϕ	$\frac{3}{8}$"ϕ U 3$\frac{1}{4}$"-6$\frac{1}{2}$"-7"-7$\frac{1}{2}$"-8"-10"-10"
307-308-309-315 353-354-355	12" X 15" T	4-$\frac{7}{8}$"ϕ	$\frac{3}{8}$"ϕ U 3"-6"-6$\frac{1}{2}$"-6$\frac{1}{2}$"-6$\frac{1}{2}$"-6$\frac{1}{2}$"-6$\frac{1}{2}$" 6$\frac{1}{2}$"-6$\frac{1}{2}$"-6$\frac{1}{2}$"
324 TO 338 INC.	12" X 15" T	2-$\frac{7}{8}$"ϕ 2-$\frac{3}{4}$"ϕ	SAME AS 307.
362-363	8" X 12"	4-$\frac{1}{2}$"ϕ	NO.
GIRDERS.			
316-323-339-346	14" X 23"	TOP 2-$\frac{5}{8}$"ϕ 2-$\frac{3}{4}$"ϕ BOT 4-1"ϕ	$\frac{3}{8}$"ϕ U 3$\frac{1}{2}$"-7"-7$\frac{1}{2}$"-7$\frac{3}{4}$"-8"-8$\frac{1}{4}$"-8$\frac{1}{2}$" 8$\frac{3}{4}$"-9"-9$\frac{1}{4}$"-9$\frac{1}{2}$" AND 9$\frac{3}{4}$" O.C. IN MIDDLE OF GIRDERS.
317 TO 322 INC. 340 TO 345 INC.	14" X 23"	4-$\frac{7}{8}$"ϕ	$\frac{3}{8}$"ϕ U 3$\frac{1}{2}$"-7"-8"-8$\frac{1}{2}$"-8$\frac{3}{4}$"-9"-9$\frac{1}{4}$"-9$\frac{1}{2}$" 9$\frac{3}{4}$"-9$\frac{3}{4}$" AND 10" O.C. IN MIDDLE OF GIRDERS.
NOTES:	BEAM NOTES ON SHEET R1 - APPLY ALSO FOR THIS ROOF.		

BEAMS & GIRDERS CENTERED OVER BEAMS & GIRDERS ON FLOOR BELOW - UNLESS OTHERWISE SHOWN.

CONCRETE SLAB.

MARKED.	REMARKS.
"C"	4" SLAB REINFORCED WITH $\frac{1}{2}$"ϕ BARS 8" O.C. $\frac{3}{8}$"ϕ TEMP. BARS 12" O.C.
NOTE:	SLAB NOTES ON SHEET R1 - APPLY ALSO FOR THIS FLOOR.

Trane Performance Climate Changer Air Handler

Unit Overview - MAU-1 10-20

Application	Unit Size	External Dimensions			Weight	
		Height	Width 6'	Length 22'	Installed	Rigging
Outdoor unit	CSAA017	55.2 in	72.0 in	265.968 in	5237 lb	4789 lb

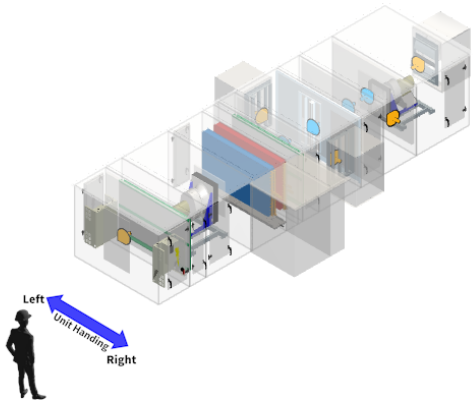
Quantity of Shipping Sections	Largest Ship Split			Heaviest Ship Split	Elevation
	Height	Width	Length		
1 piece(s)	55.2 in	72.0 in	265.7 in	4880 lb	2150.00 ft

Supply Fan				Return/Exhaust Fan			
Airflow	7670 cfm	Total Static Pressure	3.675 in H2O	Airflow	7670 cfm	Total Static Pressure	1.283 in H2O

Note: Height includes air handler sloped roof panel and standing seam.

Construction Features

Panel	2in. foam injected R-13 with thermal break
Panel Material	All unit inner panels - galvanized
Integral Base Frame	6in. integral base frame
Paint	Slate gray
Agency Approval	UL listed unit
Roof Curb Type	Standard roof curb



Roof Loading:
5237lbs/(6'x22') = 40 psf
Trib Width (beam) = 9.25'
Load Length = 6'

Unit Electrical

Circuit	Voltage/Phase/Frequency	FLA	MCA	Max Fuse Size
Circuit number 1 Supply fan motor(s)	200-208/3/60	42.00 A	52.50	90.00
Circuit number 2 Exhaust fan motor(s)	200-208/3/60	22.00 A	27.50	45.00

Unit Controls

Controller Type	No controller

Pipe cabinet section

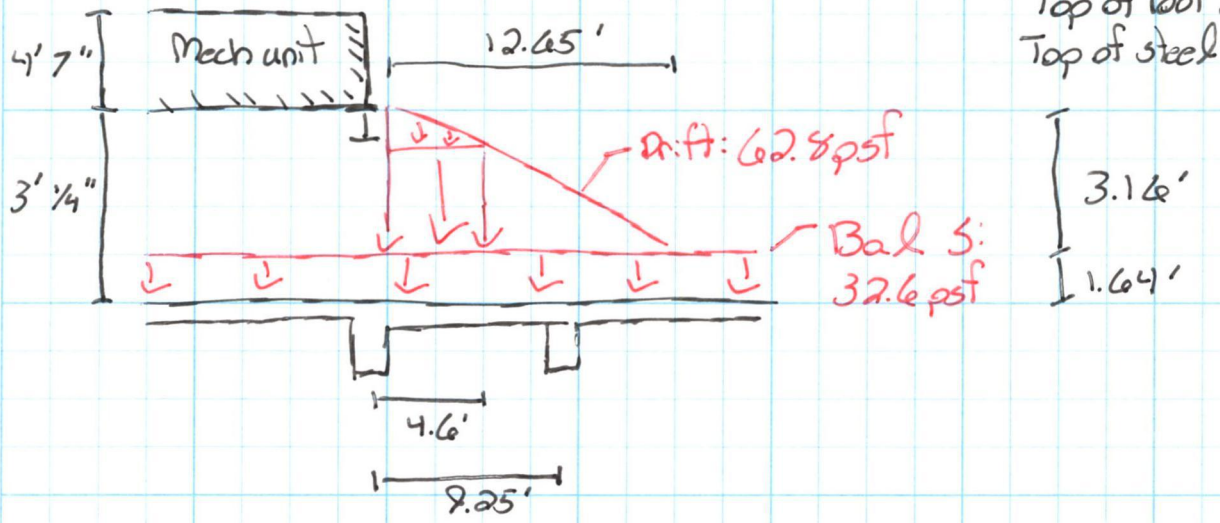
Pipe Cabinet	Front Door	Back Door	Side Door	Weight
Pipe Cabinet 1			One side door	202.8 lb

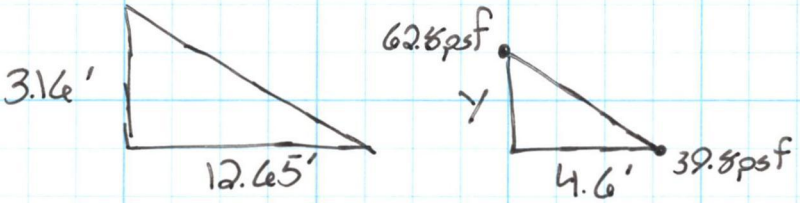
AECOM Imagine it. Delivered.

JOB TITLE VT Mil Bldg CA - Snow loading
PROJECT/JOB NO. _____ CALCULATION NO. _____
COMPUTED BY BCM DATE _____
VERIFIED BY _____ DATE _____
SCALE _____ SHEET NO. _____ OF _____

Unit w/ 2'-0" clear from roof to bot of steel:

Top of roof slab = 34'4"
Top of steel = 37'-4¼"



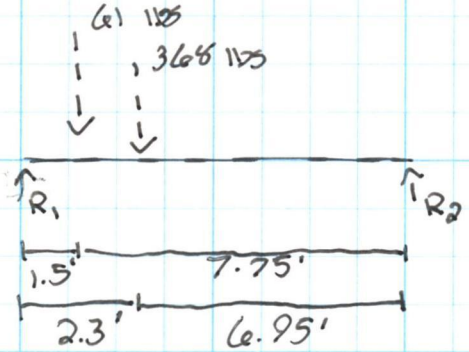


$y = 1.15'$ $\frac{62.8\,psf}{12.65'} = 5\,psf/ft$

Triangular load: Drift
$\frac{1}{2}(4.6')(1.15') \times 23\,psf = 61$ lbs

Rectangular load: Drift
$39.8\,(4.6')(3.16' - 1.15') = 368$ lbs

Drift FBD



$\Sigma M_{R_2} \circlearrowleft + = 0 = -R_1(9.25') + 61(7.75') + 368(6.95') = 0$

$R_1 = 327.6$ lbs
$= 0.3$

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Snow drift on Existing Roof Beam (No Mech Unit Loading)

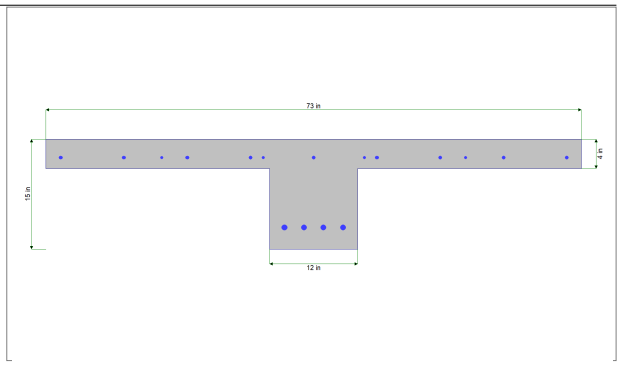
CODE REFERENCES

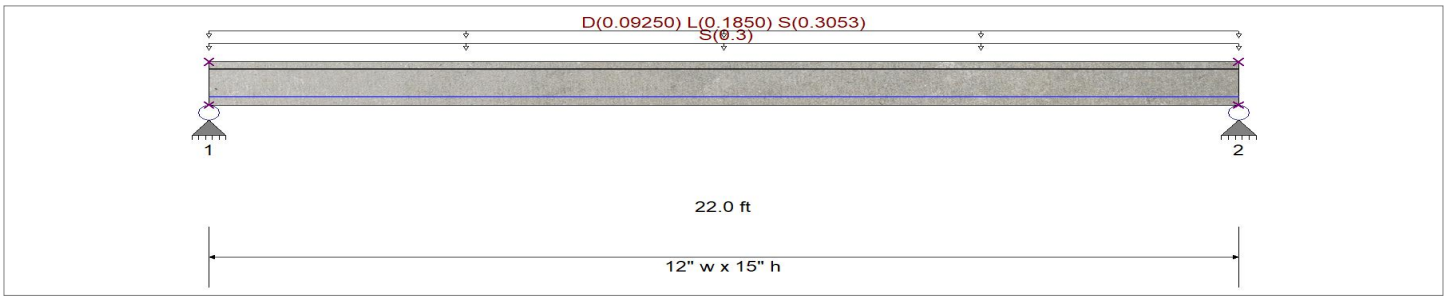
Calculations per ACI 318-19, IBC 2021, SDPWS 2021
Load Combination Set : ASCE 7-22 / IBC 2024

General Information

f'c	= 3.0 ksi	ϕ Phi Values	Flexure :	0.90
fr = f'c$^{1/2}$ *7.50	= 410.792 psi		Shear :	0.750
ψ Density	= 145.0 pcf	β_1	=	0.850
λ LtWt Factor	= 1.0			
Elastic Modulus	= 3,122.02 ksi	Fy - Stirrups		40.0 ksi
fy - Main Rebar	= 60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	= 29,000.0 ksi	Stirrup Bar Size #		3
		Number of Resisting Legs Per Stirrup	=	2

Seismic Design Category = B





Cross Section & Reinforcing Details

Tee Section, Stem Width = 12.0 in, Total Height = 15.0 in, Top Flange Width = 73.0 in, Flange Thickness = 4.0 in
Span #1 Reinforcing....
4-#6 at 3.0 in from Bottom, from 0.0 to 22.0 ft in this span
6-#3 at 2.50 in from Top, from 0.0 to 22.0 ft in this span
9-#4 at 2.50 in from Top, from 0.0 to 22.0 ft in this span

Beam self weight calculated and added to loads
Loads on all spans...
D = 0.010, L = 0.020, S = 0.0330

Uniform Load on ALL spans : D = 0.010, L = 0.020, S = 0.0330 ksf, Tributary Width = 9.250 ft

Load for Span Number 1
Uniform Load : S = 0.30 k/ft, Tributary Width = 1.0 ft, (Drift Snow Load)

DESIGN SUMMARY

Check As Max Limits!

Maximum Bending Stress Ratio =	**0.786**	: 1
Section used for this span	**Typical Section**	
Mu : Applied	85.522	k-ft
Mn * Phi : Allowable	108.796	k-ft
Location of maximum on span	11.020	ft
Span # where maximum occurs	Span # 1	

Maximum Deflection

Max Downward Transient Deflection	0.348 in	Ratio =	758	>=360.0	L Only
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360.0	S Only
Max Downward Total Deflection	0.802 in	Ratio =	329	>=180.0	Span: 1 : +D+0.750L+0.5250S
Max Upward Total Deflection	0.000 in	Ratio =	0	<180.0	Span: 1 : +D+0.750L+0.5250S

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	10.735	10.735
Max Upward from Load Combinations	10.735	10.735
Max Upward from Load Cases	6.658	6.658

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

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DESCRIPTION: Snow drift on Existing Roof Beam (No Mech Unit Loading)

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
D Only	5.714	5.714
+D+L	7.749	7.749
+D+0.70S	10.374	10.374
+D+0.750L	7.240	7.240
+D+0.750L+0.5250S	10.735	10.735
+0.60D	3.428	3.428
+D+0.750L+0.10S	7.906	7.906
L Only	2.035	2.035
S Only	6.658	6.658

Shear Stirrup Requirements

Between 0.00 to 6.81 ft, Max spacing per T9.7.6.2.2, use #3 stirrups spaced at 6 in
Between 6.85 to 15.15 ft, Ties Not Req'd, Stirrups are not required.
Between 15.19 to 21.96 ft, Max spacing per T9.7.6.2.2, use #3 stirrups spaced at 6 in

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)	Av, min Req'd?	Spacing Req'd (in)	Φ Vc (k)	Φ Vs (k)	Φ Vn (k)	Vu / Φ Vn	Vc Eqn (T22.5.5.1)	Spacing Provision
+1.20D+L+S	1	0.00	12.00	15.55	Yes	6.00	12.19	13.20	25.39	0.612	Eqn (b)	Max spacing per T9.7.6.
+1.20D+L+S	1	0.24	12.00	15.21	Yes	6.00	11.83	13.20	25.03	0.608	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	0.48	12.00	14.87	Yes	6.00	11.83	13.20	25.03	0.594	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	0.72	12.00	14.53	Yes	6.00	11.83	13.20	25.03	0.580	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	0.96	12.00	14.19	Yes	6.00	11.83	13.20	25.03	0.567	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	1.20	12.00	13.85	Yes	6.00	11.83	13.20	25.03	0.553	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	1.44	12.00	13.51	Yes	6.00	11.83	13.20	25.03	0.540	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	1.68	12.00	13.17	Yes	6.00	11.83	13.20	25.03	0.526	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	1.92	12.00	12.83	Yes	6.00	11.83	13.20	25.03	0.513	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	2.16	12.00	12.49	Yes	6.00	11.83	13.20	25.03	0.499	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	2.40	12.00	12.15	Yes	6.00	11.83	13.20	25.03	0.485	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	2.64	12.00	11.81	Yes	6.00	11.83	13.20	25.03	0.472	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	2.89	12.00	11.47	Yes	6.00	11.83	13.20	25.03	0.458	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	3.13	12.00	11.13	Yes	6.00	11.83	13.20	25.03	0.445	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	3.37	12.00	10.79	Yes	6.00	11.83	13.20	25.03	0.431	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	3.61	12.00	10.45	Yes	6.00	11.83	13.20	25.03	0.418	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	3.85	12.00	10.11	Yes	6.00	11.83	13.20	25.03	0.404	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	4.09	12.00	9.77	Yes	6.00	11.83	13.20	25.03	0.390	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	4.33	12.00	9.43	Yes	6.00	11.83	13.20	25.03	0.377	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	4.57	12.00	9.09	Yes	6.00	11.83	13.20	25.03	0.363	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	4.81	12.00	8.75	Yes	6.00	11.83	13.20	25.03	0.350	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	5.05	12.00	8.41	Yes	6.00	11.83	13.20	25.03	0.336	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	5.29	12.00	8.07	Yes	6.00	11.83	13.20	25.03	0.322	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	5.53	12.00	7.73	Yes	6.00	11.83	13.20	25.03	0.309	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	5.77	12.00	7.39	Yes	6.00	11.83	13.20	25.03	0.295	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	6.01	12.00	7.05	Yes	6.00	11.83	13.20	25.03	0.282	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	6.25	12.00	6.71	Yes	6.00	11.83	13.20	25.03	0.268	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	6.49	12.00	6.37	Yes	6.00	11.83	13.20	25.03	0.255	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	6.73	12.00	6.03	Yes	6.00	11.83	13.20	25.03	0.241	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	6.97	12.00	5.69	No	N/A	10.39	0.00	10.39	0.548	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	7.21	12.00	5.35	No	N/A	10.39	0.00	10.39	0.515	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	7.45	12.00	5.01	No	N/A	10.39	0.00	10.39	0.482	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	7.69	12.00	4.67	No	N/A	10.39	0.00	10.39	0.450	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	7.93	12.00	4.33	No	N/A	10.39	0.00	10.39	0.417	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	8.17	12.00	3.99	No	N/A	10.39	0.00	10.39	0.384	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	8.42	12.00	3.65	No	N/A	10.39	0.00	10.39	0.352	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	8.66	12.00	3.31	No	N/A	10.39	0.00	10.39	0.319	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	8.90	12.00	2.97	No	N/A	10.39	0.00	10.39	0.286	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	9.14	12.00	2.63	No	N/A	10.39	0.00	10.39	0.253	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	9.38	12.00	2.29	No	N/A	10.39	0.00	10.39	0.221	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	9.62	12.00	1.95	No	N/A	10.39	0.00	10.39	0.188	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	9.86	12.00	1.61	No	N/A	10.39	0.00	10.39	0.155	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	10.10	12.00	1.27	No	N/A	10.39	0.00	10.39	0.123	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	10.34	12.00	0.93	No	N/A	10.39	0.00	10.39	0.090	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	10.58	12.00	0.59	No	N/A	10.39	0.00	10.39	0.057	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	10.82	12.00	0.25	No	N/A	10.39	0.00	10.39	0.025	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	11.06	12.00	-0.08	No	N/A	10.39	0.00	10.39	0.008	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	11.30	12.00	-0.42	No	N/A	10.39	0.00	10.39	0.041	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	11.54	12.00	-0.76	No	N/A	10.39	0.00	10.39	0.074	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	11.78	12.00	-1.10	No	N/A	10.39	0.00	10.39	0.106	Eqn (c)	Ties Not Req'd

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Snow drift on Existing Roof Beam (No Mech Unit Loading)

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)	Av, min Req'd?	Spacing Req'd (in)	ΦVc (k)	ΦVs (k)	ΦVn (k)	Vu / ΦVn	Vc Eqn (T22.5.5.1)	Spacing Provision
+1.20D+L+S	1	12.02	12.00	-1.44	No	N/A	10.39	0.00	10.39	0.139	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	12.26	12.00	-1.78	No	N/A	10.39	0.00	10.39	0.172	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	12.50	12.00	-2.12	No	N/A	10.39	0.00	10.39	0.204	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	12.74	12.00	-2.46	No	N/A	10.39	0.00	10.39	0.237	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	12.98	12.00	-2.80	No	N/A	10.39	0.00	10.39	0.270	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	13.22	12.00	-3.14	No	N/A	10.39	0.00	10.39	0.302	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	13.46	12.00	-3.48	No	N/A	10.39	0.00	10.39	0.335	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	13.70	12.00	-3.82	No	N/A	10.39	0.00	10.39	0.368	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	13.95	12.00	-4.16	No	N/A	10.39	0.00	10.39	0.401	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	14.19	12.00	-4.50	No	N/A	10.39	0.00	10.39	0.433	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	14.43	12.00	-4.84	No	N/A	10.39	0.00	10.39	0.466	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	14.67	12.00	-5.18	No	N/A	10.39	0.00	10.39	0.499	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	14.91	12.00	-5.52	No	N/A	10.39	0.00	10.39	0.531	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	15.15	12.00	-5.86	No	N/A	10.39	0.00	10.39	0.564	Eqn (c)	Ties Not Req'd
+1.20D+L+S	1	15.39	12.00	-6.20	Yes	6.00	11.83	13.20	25.03	0.248	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	15.63	12.00	-6.54	Yes	6.00	11.83	13.20	25.03	0.261	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	15.87	12.00	-6.88	Yes	6.00	11.83	13.20	25.03	0.275	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	16.11	12.00	-7.22	Yes	6.00	11.83	13.20	25.03	0.289	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	16.35	12.00	-7.56	Yes	6.00	11.83	13.20	25.03	0.302	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	16.59	12.00	-7.90	Yes	6.00	11.83	13.20	25.03	0.316	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	16.83	12.00	-8.24	Yes	6.00	11.83	13.20	25.03	0.329	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	17.07	12.00	-8.58	Yes	6.00	11.83	13.20	25.03	0.343	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	17.31	12.00	-8.92	Yes	6.00	11.83	13.20	25.03	0.356	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	17.55	12.00	-9.26	Yes	6.00	11.83	13.20	25.03	0.370	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	17.79	12.00	-9.60	Yes	6.00	11.83	13.20	25.03	0.384	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	18.03	12.00	-9.94	Yes	6.00	11.83	13.20	25.03	0.397	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	18.27	12.00	-10.28	Yes	6.00	11.83	13.20	25.03	0.411	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	18.51	12.00	-10.62	Yes	6.00	11.83	13.20	25.03	0.424	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	18.75	12.00	-10.96	Yes	6.00	11.83	13.20	25.03	0.438	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	18.99	12.00	-11.30	Yes	6.00	11.83	13.20	25.03	0.451	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	19.23	12.00	-11.64	Yes	6.00	11.83	13.20	25.03	0.465	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	19.48	12.00	-11.98	Yes	6.00	11.83	13.20	25.03	0.479	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	19.72	12.00	-12.32	Yes	6.00	11.83	13.20	25.03	0.492	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	19.96	12.00	-12.66	Yes	6.00	11.83	13.20	25.03	0.506	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	20.20	12.00	-13.00	Yes	6.00	11.83	13.20	25.03	0.519	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	20.44	12.00	-13.34	Yes	6.00	11.83	13.20	25.03	0.533	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	20.68	12.00	-13.68	Yes	6.00	11.83	13.20	25.03	0.547	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	20.92	12.00	-14.02	Yes	6.00	11.83	13.20	25.03	0.560	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	21.16	12.00	-14.36	Yes	6.00	11.83	13.20	25.03	0.574	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	21.40	12.00	-14.70	Yes	6.00	11.83	13.20	25.03	0.587	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	21.64	12.00	-15.04	Yes	6.00	11.83	13.20	25.03	0.601	Eqn (a)	Max spacing per T9.7.6.
+1.20D+L+S	1	21.88	12.00	-15.38	Yes	6.00	11.83	13.20	25.03	0.614	Eqn (a)	Max spacing per T9.7.6.

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	22.000	85.52	108.80	0.79
+1.40D					
Span # 1	1	22.000	44.00	108.80	0.40
+1.20D+1.60L					
Span # 1	1	22.000	55.62	108.80	0.51
+1.20D+1.60L+0.30S					
Span # 1	1	22.000	66.60	108.80	0.61
+1.20D+L					
Span # 1	1	22.000	48.90	108.80	0.45
+1.20D					
Span # 1	1	22.000	37.71	108.80	0.35
+1.20D+L+S					
Span # 1	1	22.000	85.52	108.80	0.79
+1.20D+S					
Span # 1	1	22.000	74.33	108.80	0.68
+1.20D+L+0.30S					
Span # 1	1	22.000	59.89	108.80	0.55
+0.90D					
Span # 1	1	22.000	28.28	108.80	0.26
+1.20D+L+0.150S					

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

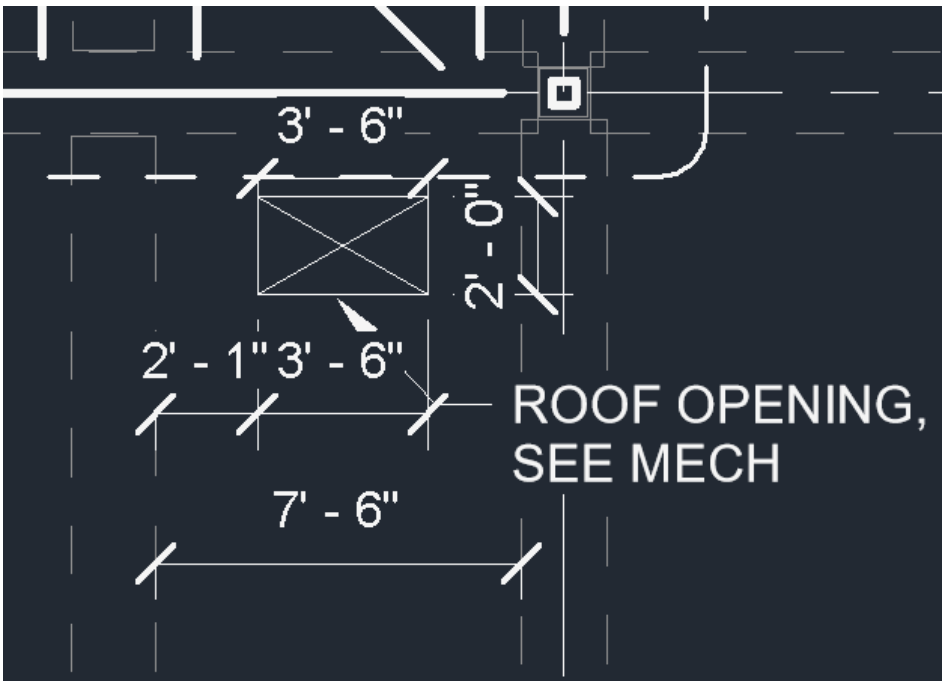
DESCRIPTION: Snow drift on Existing Roof Beam (No Mech Unit Loading)

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
Span # 1	1	22.000	54.40	108.80	0.50

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft	Load Combination	Max. "+" Defl (in)	Location in Span (ft
+D+0.750L+0.5250S	1	0.8017	11.000		0.0000	0.000

Roof Opening:



Loading:
DL = 5 psf
LL = 20 psf
S = 33 psf

1'x1' area:
DL = 0.005 k
LL = 0.02 k
S = 0.033 k

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Roof Slab Opening Check

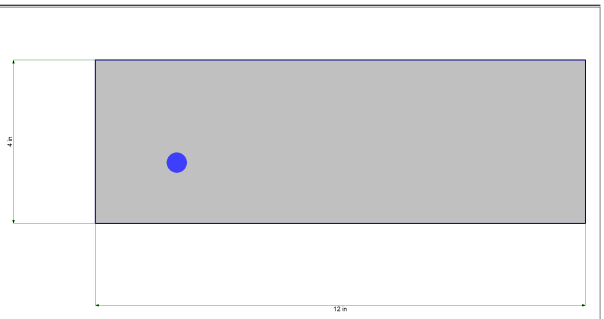
CODE REFERENCES

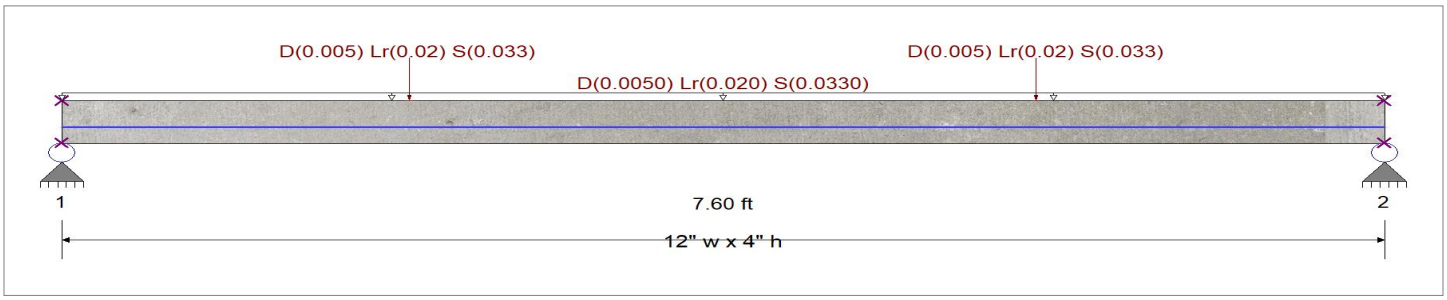
Calculations per ACI 318-19, IBC 2021, SDPWS 2021
Load Combination Set : ASCE 7-16

General Information

f'c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
fr = f'c$^{1/2}$ *7.50	=	410.792 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.850
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups		40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #		3
			Number of Resisting Legs Per Stirrup	=	2

Seismic Design Category = A





Cross Section & Reinforcing Details

Rectangular Section, Width = 12.0 in, Height = 4.0 in
Span #1 Reinforcing....
1-#4 at 1.50 in from Bottom, from 0.0 to 7.60 ft in this span

Beam self weight calculated and added to loads
Loads on all spans...
D = 0.0050, Lr = 0.020, S = 0.0330
Uniform Load on ALL spans : D = 0.0050, Lr = 0.020, S = 0.0330 k/ft
Point Load : D = 0.0050, Lr = 0.020, S = 0.0330 k @ 2.0 ft, (Opening Point Reaction)
Point Load : D = 0.0050, Lr = 0.020, S = 0.0330 k @ 5.60 ft, (Opening Point Reaction)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	**0.463** : 1	
Section used for this span	**Typical Section**	
Mu : Applied	0.9609	k-ft
Mn * Phi : Allowable	2.074	k-ft
Location of maximum on span	3.807	ft
Span # where maximum occurs	Span # 1	

Maximum Deflection

Max Downward Transient Deflection	0.016 in	Ratio =	5652	>=360.0	Lr Only
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360.0	S Only
Max Downward Total Deflection	0.037 in	Ratio =	2483	>=180.0	Span: 1 : +D+S
Max Upward Total Deflection	0.000 in	Ratio =	0	<180.0	Span: 1 : +D+S

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	0.366	0.366
Max Upward from Load Combinations	0.366	0.366
Max Upward from Load Cases	0.208	0.208

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Roof Slab Opening Check

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
D Only	0.208	0.208
+D+Lr	0.304	0.304
+D+S	0.366	0.366
+D+0.750Lr	0.280	0.280
+D+0.750S	0.326	0.326
+0.60D	0.125	0.125
Lr Only	0.096	0.096
S Only	0.158	0.158

Shear Stirrup Requirements

Entire Beam Span Length : Max spacing per T9.7.6.2.2, use #3 stirrups spaced at 1 in

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)	Av, min Req'd?	Spacing Req'd (in)	Φ Vc (k)	Φ Vs (k)	Φ Vn (k)	Vu / Φ Vn	Vc Eqn (T22.5.5.1)	Spacing Provision
+1.20D+1.60S	1	0.00	2.50	0.50	No	1.25	2.46	13.20	15.66	0.032	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.08	2.50	0.49	No	1.25	2.46	13.20	15.66	0.031	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.17	2.50	0.48	No	1.25	2.46	13.20	15.66	0.031	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.25	2.50	0.47	No	1.25	2.46	13.20	15.66	0.030	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.33	2.50	0.46	No	1.25	2.46	13.20	15.66	0.030	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.42	2.50	0.45	No	1.25	2.46	13.20	15.66	0.029	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.50	2.50	0.44	No	1.25	2.46	13.20	15.66	0.028	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.58	2.50	0.43	No	1.25	2.46	13.20	15.66	0.028	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.66	2.50	0.43	No	1.25	2.46	13.20	15.66	0.027	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.75	2.50	0.42	No	1.25	2.46	13.20	15.66	0.027	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.83	2.50	0.41	No	1.25	2.46	13.20	15.66	0.026	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	0.91	2.50	0.40	No	1.25	2.46	13.20	15.66	0.025	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.00	2.50	0.39	No	1.25	2.46	13.20	15.66	0.025	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.08	2.50	0.38	No	1.25	2.46	13.20	15.66	0.024	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.16	2.50	0.37	No	1.25	2.46	13.20	15.66	0.023	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.25	2.50	0.36	No	1.25	2.46	13.20	15.66	0.023	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.33	2.50	0.35	No	1.25	2.46	13.20	15.66	0.022	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.41	2.50	0.34	No	1.25	2.46	13.20	15.66	0.022	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.50	2.50	0.33	No	1.25	2.46	13.20	15.66	0.021	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.58	2.50	0.32	No	1.25	2.46	13.20	15.66	0.020	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.66	2.50	0.31	No	1.25	2.46	13.20	15.66	0.020	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.74	2.50	0.30	No	1.25	2.46	13.20	15.66	0.019	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.83	2.50	0.29	No	1.25	2.46	13.20	15.66	0.018	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.91	2.50	0.28	No	1.25	2.46	13.20	15.66	0.018	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	1.99	2.50	0.27	No	1.25	2.46	13.20	15.66	0.017	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.08	2.50	0.20	No	1.25	2.46	13.20	15.66	0.013	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.16	2.50	0.19	No	1.25	2.46	13.20	15.66	0.012	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.24	2.50	0.18	No	1.25	2.46	13.20	15.66	0.012	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.33	2.50	0.17	No	1.25	2.46	13.20	15.66	0.011	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.41	2.50	0.16	No	1.25	2.46	13.20	15.66	0.010	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.49	2.50	0.15	No	1.25	2.46	13.20	15.66	0.010	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.57	2.50	0.14	No	1.25	2.46	13.20	15.66	0.009	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.66	2.50	0.13	No	1.25	2.46	13.20	15.66	0.009	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.74	2.50	0.12	No	1.25	2.46	13.20	15.66	0.008	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.82	2.50	0.11	No	1.25	2.46	13.20	15.66	0.007	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.91	2.50	0.10	No	1.25	2.46	13.20	15.66	0.007	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	2.99	2.50	0.09	No	1.25	2.46	13.20	15.66	0.006	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.07	2.50	0.08	No	1.25	2.46	13.20	15.66	0.005	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.16	2.50	0.08	No	1.25	2.46	13.20	15.66	0.005	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.24	2.50	0.07	No	1.25	2.46	13.20	15.66	0.004	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.32	2.50	0.06	No	1.25	2.46	13.20	15.66	0.004	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.41	2.50	0.05	No	1.25	2.46	13.20	15.66	0.003	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.49	2.50	0.04	No	1.25	2.46	13.20	15.66	0.002	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.57	2.50	0.03	No	1.25	2.46	13.20	15.66	0.002	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.65	2.50	0.02	No	1.25	2.46	13.20	15.66	0.001	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.74	2.50	0.01	No	1.25	2.46	13.20	15.66	0.000	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.82	2.50	-0.00	No	1.25	2.46	13.20	15.66	0.000	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.90	2.50	-0.01	No	1.25	2.46	13.20	15.66	0.001	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	3.99	2.50	-0.02	No	1.25	2.46	13.20	15.66	0.001	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.07	2.50	-0.03	No	1.25	2.46	13.20	15.66	0.002	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.15	2.50	-0.04	No	1.25	2.46	13.20	15.66	0.003	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.24	2.50	-0.05	No	1.25	2.46	13.20	15.66	0.003	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.32	2.50	-0.06	No	1.25	2.46	13.20	15.66	0.004	Eqn (a)	Max spacing per T9.7.6.

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Roof Slab Opening Check

Detailed Shear Information

Load Combination	Span Number	Distance (ft)	'd' (in)	Vu (k)	Av, min Req'd?	Spacing Req'd (in)	ΦVc (k)	ΦVs (k)	ΦVn (k)	Vu / ΦVn	Vc Eqn (T22.5.5.1)	Spacing Provision
+1.20D+1.60S	1	4.40	2.50	-0.07	No	1.25	2.46	13.20	15.66	0.004	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.49	2.50	-0.08	No	1.25	2.46	13.20	15.66	0.005	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.57	2.50	-0.09	No	1.25	2.46	13.20	15.66	0.006	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.65	2.50	-0.10	No	1.25	2.46	13.20	15.66	0.006	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.73	2.50	-0.11	No	1.25	2.46	13.20	15.66	0.007	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.82	2.50	-0.12	No	1.25	2.46	13.20	15.66	0.008	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.90	2.50	-0.13	No	1.25	2.46	13.20	15.66	0.008	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	4.98	2.50	-0.14	No	1.25	2.46	13.20	15.66	0.009	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.07	2.50	-0.15	No	1.25	2.46	13.20	15.66	0.009	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.15	2.50	-0.16	No	1.25	2.46	13.20	15.66	0.010	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.23	2.50	-0.17	No	1.25	2.46	13.20	15.66	0.011	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.32	2.50	-0.18	No	1.25	2.46	13.20	15.66	0.011	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.40	2.50	-0.19	No	1.25	2.46	13.20	15.66	0.012	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.48	2.50	-0.20	No	1.25	2.46	13.20	15.66	0.013	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.57	2.50	-0.21	No	1.25	2.46	13.20	15.66	0.013	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.65	2.50	-0.27	No	1.25	2.46	13.20	15.66	0.018	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.73	2.50	-0.28	No	1.25	2.46	13.20	15.66	0.018	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.81	2.50	-0.29	No	1.25	2.46	13.20	15.66	0.019	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.90	2.50	-0.30	No	1.25	2.46	13.20	15.66	0.019	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	5.98	2.50	-0.31	No	1.25	2.46	13.20	15.66	0.020	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.06	2.50	-0.32	No	1.25	2.46	13.20	15.66	0.021	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.15	2.50	-0.33	No	1.25	2.46	13.20	15.66	0.021	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.23	2.50	-0.34	No	1.25	2.46	13.20	15.66	0.022	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.31	2.50	-0.35	No	1.25	2.46	13.20	15.66	0.022	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.40	2.50	-0.36	No	1.25	2.46	13.20	15.66	0.023	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.48	2.50	-0.37	No	1.25	2.46	13.20	15.66	0.024	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.56	2.50	-0.38	No	1.25	2.46	13.20	15.66	0.024	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.64	2.50	-0.39	No	1.25	2.46	13.20	15.66	0.025	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.73	2.50	-0.40	No	1.25	2.46	13.20	15.66	0.026	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.81	2.50	-0.41	No	1.25	2.46	13.20	15.66	0.026	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.89	2.50	-0.42	No	1.25	2.46	13.20	15.66	0.027	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	6.98	2.50	-0.43	No	1.25	2.46	13.20	15.66	0.027	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.06	2.50	-0.44	No	1.25	2.46	13.20	15.66	0.028	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.14	2.50	-0.45	No	1.25	2.46	13.20	15.66	0.029	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.23	2.50	-0.46	No	1.25	2.46	13.20	15.66	0.029	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.31	2.50	-0.47	No	1.25	2.46	13.20	15.66	0.030	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.39	2.50	-0.48	No	1.25	2.46	13.20	15.66	0.031	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.48	2.50	-0.49	No	1.25	2.46	13.20	15.66	0.031	Eqn (a)	Max spacing per T9.7.6.
+1.20D+1.60S	1	7.56	2.50	-0.50	No	1.25	2.46	13.20	15.66	0.032	Eqn (a)	Max spacing per T9.7.6.

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	7.600	0.96	2.07	0.46
+1.40D					
Span # 1	1	7.600	0.55	2.07	0.27
+1.20D+0.50Lr					
Span # 1	1	7.600	0.57	2.07	0.27
+1.20D+0.50S					
Span # 1	1	7.600	0.63	2.07	0.30
+1.20D+1.60Lr					
Span # 1	1	7.600	0.77	2.07	0.37
+1.20D+1.60S					
Span # 1	1	7.600	0.96	2.07	0.46
+0.90D					
Span # 1	1	7.600	0.36	2.07	0.17
+1.20D+0.20S					
Span # 1	1	7.600	0.53	2.07	0.26

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft	Load Combination	Max. "+" Defl (in)	Location in Span (ft
+D+S	1	0.0367	3.800		0.0000	0.000

VT Mil Bldg: Exst Col Loading

Unfactored:

Roof:

Dl =	55	psf	4" Slab Weight + 5 psf roofing
LLr =	20	psf	
S =	33	psf	

Third Flr:

Dl =	55	psf	4" Slab Weight + 5 psf misc
LL =	125	psf	*assumed

Second Flr:

Dl =	68	psf	5" Slab Weight + 5 psf misc
LL =	125	psf	*assumed

Col Tributary Area: 410 ft^2

Exst Structure: Roof	A (ft^2)	Weight (klf)	L (ft)	R (k)	Number acting on Col	Load on Col (k)
21.25ft Beam: 12"x12" T	1	0.15	21.25	1.6	3	4.8
22ft Beam: 12"x12" T	1	0.15	22	1.7	3	5.0
18.5ft Girder: 14"x23"	2.2	0.33	18.5	3.1	2	6.1
					SUM =	15.8 kips
			R=(W*L)/2			

Exst Structure: 3rd Flr	A (ft^2)	Weight (klf)	L (ft)	R (k)	Number acting on Col	Load on Col (k)
21.25ft Beam: 12"x18" T	1.5	0.225	21.25	2.4	3	7.2
22ft Beam: 12"x18" T	1.5	0.225	22	2.5	3	7.4
18.5ft Girder: 18"x30"	3.75	0.5625	18.5	5.2	2	10.4
			R=(W*L)/2		SUM =	25.0 kips

VT Mil Bldg: Staad Mech unit Reactions

DL =	3.4	kips
LL =	2.1	kips

Col Loading @ Roof Level:

Exst Structure

DL =	38.4	kips			
LLr =	8.2	kips			
S =	13.53	kips			

Mech Unit Staad reactions

DL =	3.4	kips			
LL =	2.1	kips			

Total @ Roof Level

DL =	41.8	kips			
LLr =	10.3	kips			
S =	13.5	kips	Pu =	66.7	Kips

Col Loading @ 3rd Flr Level:

Exst Structure

DL =	63.4	kips	Roof +3rd Flr: Typ		
LLr =	8.2	kips			
LL =	51.25	kips			
S =	13.53	kips	Pu =	162	Kips

Exst Structure + Mech Unit

DL =	66.8	kips			
LLr =	8.2	kips			
LL =	53.35	kips			
S =	13.53	kips	Pu =	169	Kips
			Note: 4.3% Increase OKAY		

Roof Member Data

CONCRETE COLUMNS.

COLUMN NOS.		1 TO 13 INC.	14.	
THIRD FL.	SIZE.	14"x14"	14"x14"	
	STEEL.	4-5/8" ϕ BARS.	4-5/8" ϕ BARS.	
	1/4" ϕ STAYS.	10" O.C.	10" O.C.	
	MIXTURE.	1:2:4	1:2:4	
SECOND FL.	SIZE.	18"x18"	18"x18"	
	STEEL.	8-1" SQ.	8-1" SQ.	
	1/4" ϕ STAYS.	12" O.C.	12" O.C.	
	MIXTURE.	1:2:4	1:2:4	
FIRST FL.	SIZE.	20"x20"	20"x20"	
	CORE.	16" DIAM.	16" DIAM.	
	STEEL.	8-1" SQ.	4-1"SQ. 4-1" ϕ	
	HOOPING.	3/8" ϕ	3/8" ϕ	
	PITCH.	2 1/2"	2 1/2"	
	MIXTURE.	1:1 1/2:3	1:1 1/2:3	

SEE SECTION FOR FLOOR HEIGHTS.
SEE SHEET R1 FOR PLATFORM.
SEE SHEET 1 FOR COLUMN FOOTINGS.

IN THE COLUMN SCHEDULE ABOVE THE CORE DIAMATER IS CENTER TO CENTER OF SPIRAL HOOPING, AND 4" LESS THAN OUTSIDE DIMENSIONS OF COLUMNS.

ALL STEEL, WHETHER SQUARE OR ROUND TO BE DEFORMED BARS.

VERTICAL STEEL TO PROJECT 20 DIAMATERS ABOVE FLOOR SLAB OVER AT SECOND AND THIRD FLOOR LINES.

CONCRETE BEAMS.

BEAM NOS.	SIZE.	REINF. STEEL.	STIRRUPS FROM EACH END OF BEAMS.
301 TO 306 INC. 310 TO 314 INC. 347 TO 352 INC. 356 TO 361 INC.	12"x15" T	2-7/8" ϕ BARS. 2-3/4" ϕ	3/8" ϕ @ 3 1/4"-6 1/2"-7"-7 1/2"-8"-10"-10"
307-308-309-315 353-354-355	12"x15" T	4-7/8" ϕ	3/8" ϕ @ 3"-6"-6 1/2"-6 1/2"-6 1/2"-6 1/2"-6 1/2"-6 1/2"-6 1/2"
324 TO 338 INC.	12"x15" T	2-7/8" ϕ 2-3/4" ϕ	SAME AS 307.
362-363	8"x12"	4-1/2" ϕ	NO.
GIRDERS.			
316-323-339-346	14"x23"	TOP 2-5/8" ϕ 2-3/4" ϕ BOT 4-1" ϕ	3/8" ϕ @ 3 1/2"-7"-7 1/2"-7 3/4"-8"-8 1/4"-8 1/2"-8 3/4"-9"-9 1/4"-9 1/2" AND 9 3/4" O.C. IN MIDDLE OF GIRDERS.
317 TO 322 INC. 340 TO 345 INC.	14"x23"	4-7/8" ϕ	3/8" ϕ @ 3 1/2"-7"-8"-8 1/2"-8 3/4"-9"-9 1/4"-9 1/2"-9 3/4"-9 3/4" AND 10" O.C. IN MIDDLE OF GIRDERS.
NOTES:	BEAM NOTES ON SHEET R1- APPLY ALSO FOR THIS ROOF.		

CONCRETE SLAB.

MARKED.	REMARKS.
"C"	4" SLAB REINFORCED WITH 1/2" ϕ BARS 8" O.C. 3/8" ϕ TEMP. BARS 12" O.C.

3rd Flr Member Data

CONCRETE BEAMS.

BEAM NOS.	SIZE.	REINF. STEEL.	STIRRUPS FROM EACH END OF BEAMS.
201 TO 206 INC. 210 TO 215 INC. 249 TO 253 INC. 259- 260-	12"x 22" T	2-1" ϕ BARS. 2-⅞" ϕ	½" ϕ U 4-3⅛"-8-8¾"-10"-10"-10"-10"-10"
207- 209	12" x 22" T	4-1" ϕ	½" ϕ U 4"-8"-9"-10"-10"-10"-10"-10"
216-	12" x 17" T	4-⅞" ϕ	½" ϕ U 4"-8"-8"-8"-8"-8"-8"-8"
225-227-229-231-233 235-236-237-239	12" x 22" T	2-1" ϕ 2-⅞" ϕ	½" ϕ U 3¾"-7½"-8½"-9½"-10"-10"-10"-10"-10"
226-228-230-232-234-238-	12"x 22" T	4-1" ϕ	½" ϕ U 3¼-6½-8-8½-9-10-10-10-10-10-
240-	12"x 17" T	2-1" ϕ 2-⅞" ϕ	½" ϕ U 4"-8"-8"-8"-8"-8"-8"-8"-8"
254-258-	12" x 22" T	2-1" Sq. 2-1" ϕ	½" ϕ U 3½"-7"-7¾"-8¾"-9½"-10"-10"-10"-10"-10
208-255-256-257-261	12"x 22" T	2-1" Sq. 2-1" ϕ	½" ϕ U 3½"-7"-8"-9"-10"-10"-10"-10"-10"-10"
262-	8"x 16"	4-½" ϕ	⅜" ϕ U 3"-6"-6"
263-	12"x 17"	2-¾" ϕ 2-⅝" ϕ	⅜" ϕ U 3"-6"-7"-7"-7"-7"
264-265-	12"x 17"	2-⅝" ϕ 2-½" ϕ	⅜" ϕ U 3½"-7"-7"-7"
266	12"x 16"	4-⅝" ϕ	⅜" ϕ U 3"-6"-6"-6"-6"-6"
267-268	8"x 17"	2-⅝" ϕ 2-½" ϕ	⅜" ϕ U 3¾"-7½" AND 7½" O.C. IN MIDDLE OF BEAMS.
"W" SEE DETAILS.	12"x 9"		NO.
GIRDER NOS.			
217	18"x 30"	TOP. 2-1" SQ 4-⅞" ϕ BOT. 3-1⅛" SQ. 3-1" ϕ	⅜" ϕ W 3"-6"-6¼"-6½"-6¾"-6¾"-7"-7"-7⅛"-7½"-7⅞" AND 10" O.C. IN MIDDLE OF GIRDERS.
218 TO 223 INC. 243-246-247	18"x 30"	2-1" SQ. 2-⅞" ϕ 2-¾" ϕ	⅜" ϕ W 4½"-9"-9½"-11"-11½"-11¾" AND 12" O.C. IN MIDDLE OF GIRDERS.
224-242-248	18"x 30"	TOP. 6-¾" ϕ BOT. 3-1" SQ 3-1" ϕ	⅜" ϕ W 4"-8"-8½"-8¾"-9"-9½"-9½"-9¾"-10" AND 11" O.C. IN MIDDLE OF GIRDERS.
241	18"x 30"	TOP. 4-¾" ϕ BOT. 2-1" SQ 2-1" ϕ 2-⅞" ϕ	⅜" ϕ W 3½"-7"-7½"-7¾"-8"-8¼"-8½"-8¾"-9" AND 10" O.C. IN MIDDLE OF GIRDERS.
244-245	18"x 30"	TOP. 3-½" ϕ BOT. 3-1" SQ 3-¾" ϕ	⅜" ϕ W 4¼"-8½"-8¾"-9"-9¼"-9½"-9¾"-10"-10½" AND 11" O.C. IN MIDDLE OF GIRDERS.
NOTES:	BEAM NOTES ON SHEET R1- APPLY ALSO FOR THIS FLOOR.		

CONCRETE SLABS.

MARKED.	REMARKS.
"A"	5" SLAB REINFORCED WITH ½" ϕ BARS 6" O.C. ⅜" ϕ TEMP. BARS 11" O.C.
"C"	4" SLAB REINFORCED WITH ½" ϕ BARS 8" O.C. ⅜" ϕ TEMP. BARS 12" O.C.

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Column with Mech Load

Code References

Calculations per ACI 318-19, IBC 2021, SDPWS 2021
Load Combinations Used : ASCE 7-22 / IBC 2024

General Information

f'c : Concrete 28 day streng	=	3 ksi
E =	=	3122 ksi
Density	=	150 pcf
β	=	0.850
fy - Main Rebar	=	60 ksi
E - Main Rebar	=	29000 ksi
Allow. Reinforcing Limits		*ASTM A615 Bars Used*
Min. Reinf.	=	1 %
Max. Reinf.	=	8 %
Seismic Design Category	=	B

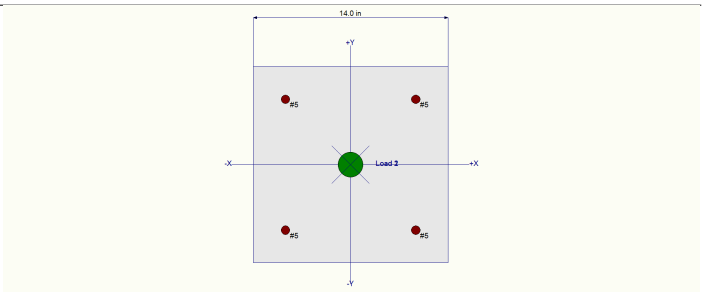
Overall Column Height = 11.0 ft
End Fixity Top & Bottom Pinned

Brace condition for deflection (buckling) along colum
X-X (width) axis :
Unbraced Length for buckling ABOUT X-X Axis = 11.0 ft, K = 1.0
Y-Y (depth) axis :
Unbraced Length for buckling ABOUT Y-Y Axis = 11.0 ft, K = 1.0

Column Cross Section

Column Dimensions : 14.0in Square Column, Column Edge to Rebar Edge Cover = 2.0in

Column Reinforcing : 4 - #5 bars @ corners,



Applied Loads

Entered loads are factored per load combinations specified by user.

Column self weight included : 2,245.83 lbs * Dead Load Factor
AXIAL LOADS . . .
Exst Col Loading Roof Level: Axial Load at 11.0 ft above base, D = 38.40, LR = 8.20, S = 13.50 k
Mech Frame: Axial Load at 11.0 ft above base, D = 3.40, L = 2.10 k

DESIGN SUMMARY

Load Combination			+1.20D+L+S
Location of max.above base			10.926 ft
Maximum Stress Ratio			**0.230 : 1**
Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5			
Pu =	68.455 k	φ * Pn =	296.940 k
Mu-x =	0.0 k-ft	φ * Mn-x =	0.0 k-ft
Mu-y =	5.819 k-ft	φ* Mn-y =	24.963 k-ft
Mu Angle =	90.0 deg	φ =	0.650
Mu at Angle =	5.819 k-ft	φMn at Angle =	25.385 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Column Capacities . .

Pnmax : Nominal Max. Compressive Axial Capaci	571.04 k
Pnmin : Nominal Min. Tension Axial Capacity	k
φ Pn, max : Usable Compressive Axial Capacity	296.940 k
φ Pn, min : Usable Tension Axial Capacity	k

Maximum SERVICE Load Reactions .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Deflections . .

Along Y-Y 0.0 in at 0.0 ft above base
for load combination :

Along X-X 0.0 in at 0.0 ft above base
for load combination :

General Section Informatio β = 0.850 θ = 0.80

ρ : % Reinforcing 0.6327 % Rebar < Min of 1.0 %
Reinforcing Area 1.240 in^2
Concrete Area 196.0 in^2

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Concrete Column

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LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Column with Mech Load

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	φ * Pn	Bending Analysis k-ft δx	δx * Mux	δy	δy * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.40D	Actual	M2,min	10.93	61.66	296.94	1.000		1.000	5.24	90.000	5.24	25.38	**0.207**
+1.40D	M2,min	Actual	10.93	61.66	296.94	1.000	5.24	1.000		0.000	5.24	25.38	**0.207**
+1.20D+0.50Lr+1.60L	Actual	M2,min	10.93	60.32	296.94	1.000		1.000	5.13	90.000	5.13	25.38	**0.203**
+1.20D+0.50Lr+1.60L	M2,min	Actual	10.93	60.32	296.94	1.000	5.13	1.000		0.000	5.13	25.38	**0.203**
+1.20D+1.60L+0.30S	Actual	M2,min	10.93	60.27	296.94	1.000		1.000	5.12	90.000	5.12	25.38	**0.202**
+1.20D+1.60L+0.30S	M2,min	Actual	10.93	60.27	296.94	1.000	5.12	1.000		0.000	5.12	25.38	**0.202**
+1.20D+1.60Lr+L	Actual	M2,min	10.93	68.08	296.94	1.000		1.000	5.79	90.000	5.79	25.38	**0.229**
+1.20D+1.60Lr+L	M2,min	Actual	10.93	68.08	296.94	1.000	5.79	1.000		0.000	5.79	25.38	**0.229**
+1.20D+1.60Lr	Actual	M2,min	10.93	65.98	296.94	1.000		1.000	5.61	90.000	5.61	25.38	**0.222**
+1.20D+1.60Lr	M2,min	Actual	10.93	65.98	296.94	1.000	5.61	1.000		0.000	5.61	25.38	**0.222**
+1.20D+L+S	Actual	M2,min	10.93	68.46	296.94	1.000		1.000	5.82	90.000	5.82	25.38	**0.230**
+1.20D+L+S	M2,min	Actual	10.93	68.46	296.94	1.000	5.82	1.000		0.000	5.82	25.38	**0.230**
+1.20D+S	Actual	M2,min	10.93	66.36	296.94	1.000		1.000	5.64	90.000	5.64	25.38	**0.223**
+1.20D+S	M2,min	Actual	10.93	66.36	296.94	1.000	5.64	1.000		0.000	5.64	25.38	**0.223**
+1.20D+0.50Lr+L	Actual	M2,min	10.93	59.06	296.94	1.000		1.000	5.02	90.000	5.02	25.38	**0.198**
+1.20D+0.50Lr+L	M2,min	Actual	10.93	59.06	296.94	1.000	5.02	1.000		0.000	5.02	25.38	**0.198**
+1.20D+L+0.30S	Actual	M2,min	10.93	59.01	296.94	1.000		1.000	5.02	90.000	5.02	25.38	**0.198**
+1.20D+L+0.30S	M2,min	Actual	10.93	59.01	296.94	1.000	5.02	1.000		0.000	5.02	25.38	**0.198**
+0.90D	Actual	M2,min	10.93	39.64	296.94	1.000		1.000	3.37	90.000	3.37	25.38	**0.133**
+0.90D	M2,min	Actual	10.93	39.64	296.94	1.000	3.37	1.000		0.000	3.37	25.38	**0.133**
+1.20D+L+0.150S	Actual	M2,min	10.93	56.98	296.94	1.000		1.000	4.84	90.000	4.84	25.38	**0.191**
+1.20D+L+0.150S	M2,min	Actual	10.93	56.98	296.94	1.000	4.84	1.000		0.000	4.84	25.38	**0.191**

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	Mx - End Moments k-ft @ Base	@ Top	My - End Moments @ Base	@ Top
D Only						44.046				
+D+L						46.146				
+D+Lr						52.246				
+D+0.70S						53.496				
+D+0.750Lr+0.750L						51.771				
+D+0.750L+0.5250S						52.708				
+0.60D						26.428				
+D+0.750L+0.10S						46.971				
Lr Only						8.200				
L Only						2.100				
S Only						13.500				

Maximum Moment Reactions

Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis @ Base	@ Top	Moment About Y-Y Axis @ Base	@ Top
D Only	k-ft		k-ft	
+D+L	k-ft		k-ft	
+D+Lr	k-ft		k-ft	
+D+0.70S	k-ft		k-ft	
+D+0.750Lr+0.750L	k-ft		k-ft	
+D+0.750L+0.5250S	k-ft		k-ft	
+0.60D	k-ft		k-ft	
+D+0.750L+0.10S	k-ft		k-ft	
Lr Only	k-ft		k-ft	
L Only	k-ft		k-ft	
S Only	k-ft		k-ft	

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L	0.0000 in	0.000 ft	0.000 in	0.000 ft

Project Title:
Engineer:
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Concrete Column

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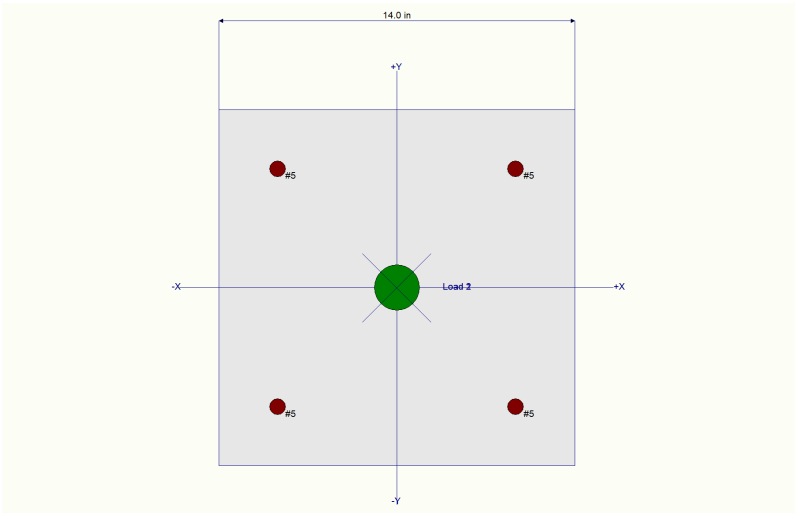
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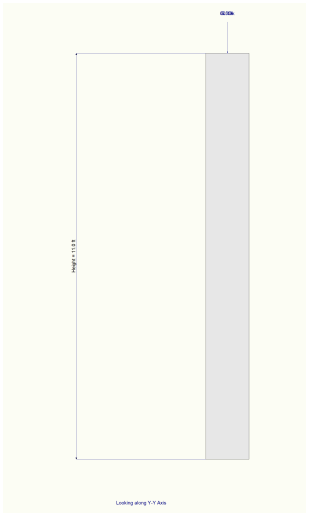
DESCRIPTION: Column with Mech Load

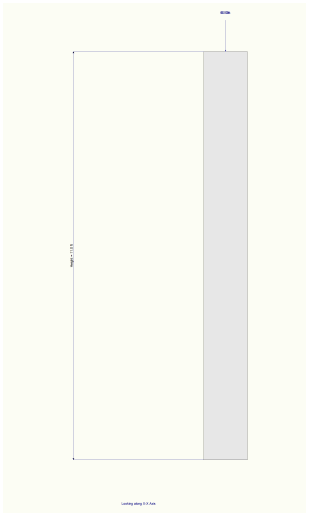
Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+Lr	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.70S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.5250S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.10S	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Sketches







Interaction Diagrams

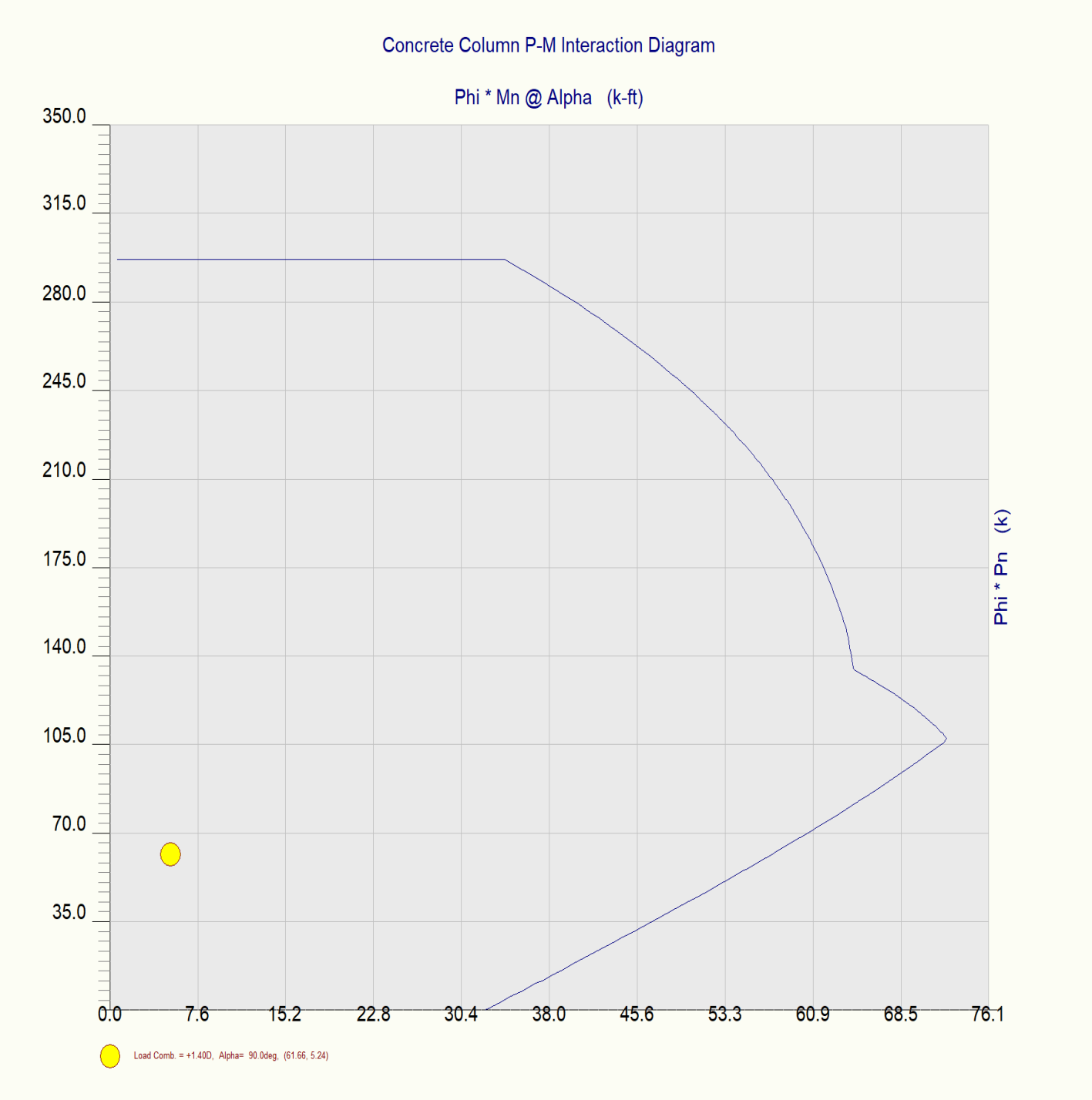
Project Title:
Engineer:
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Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Column with Mech Load

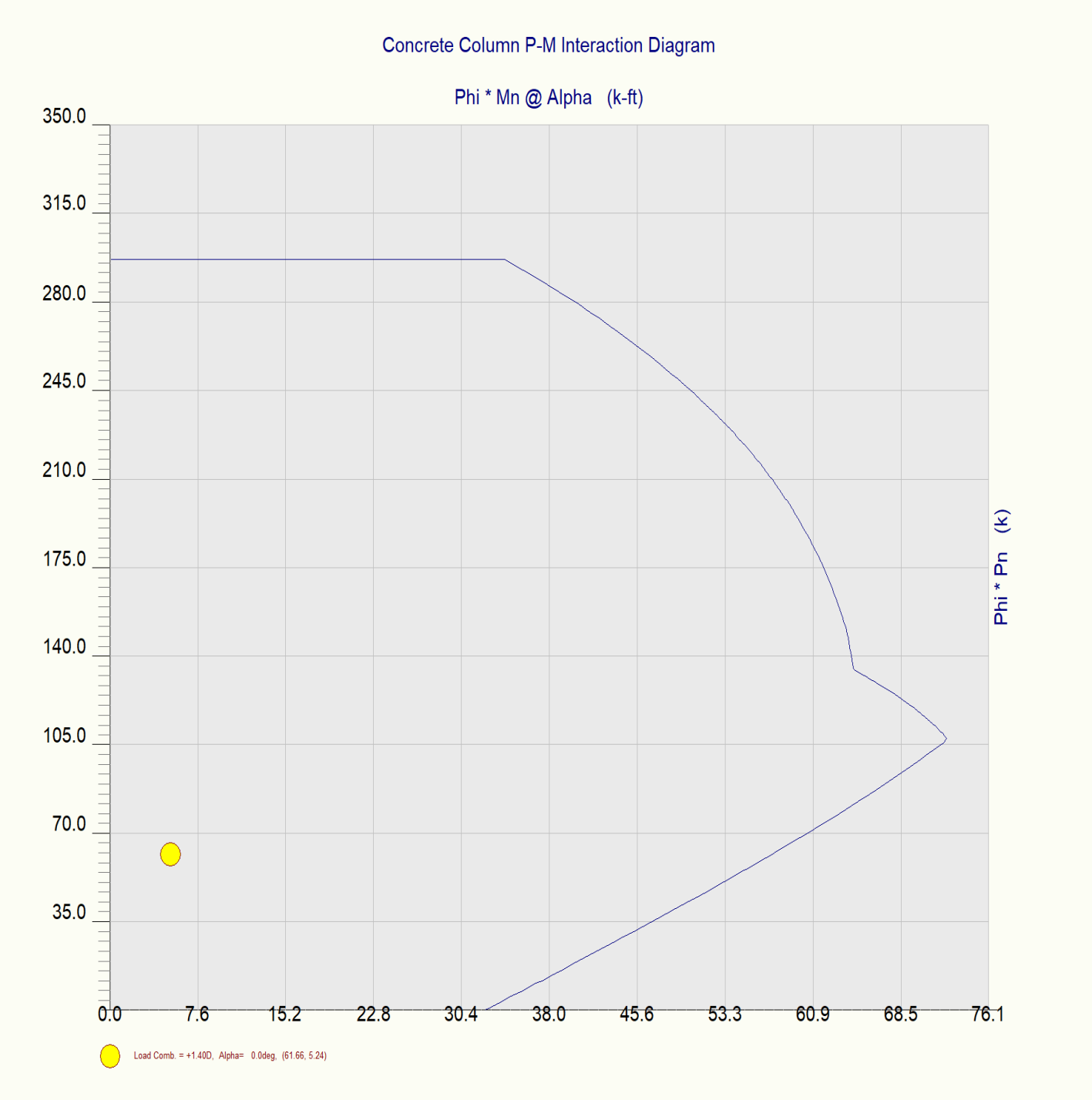


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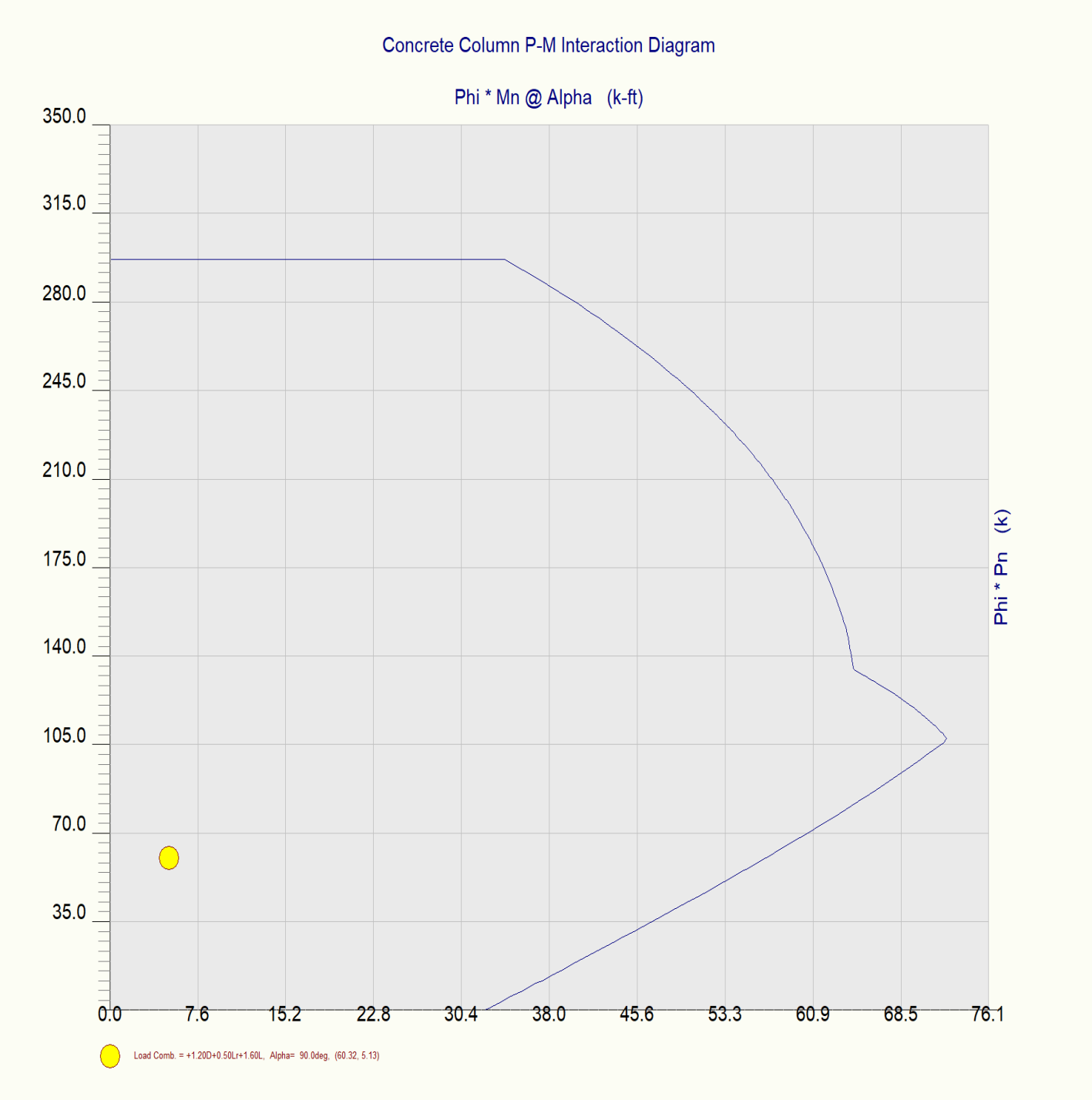
DESCRIPTION: Column with Mech Load



Concrete Column

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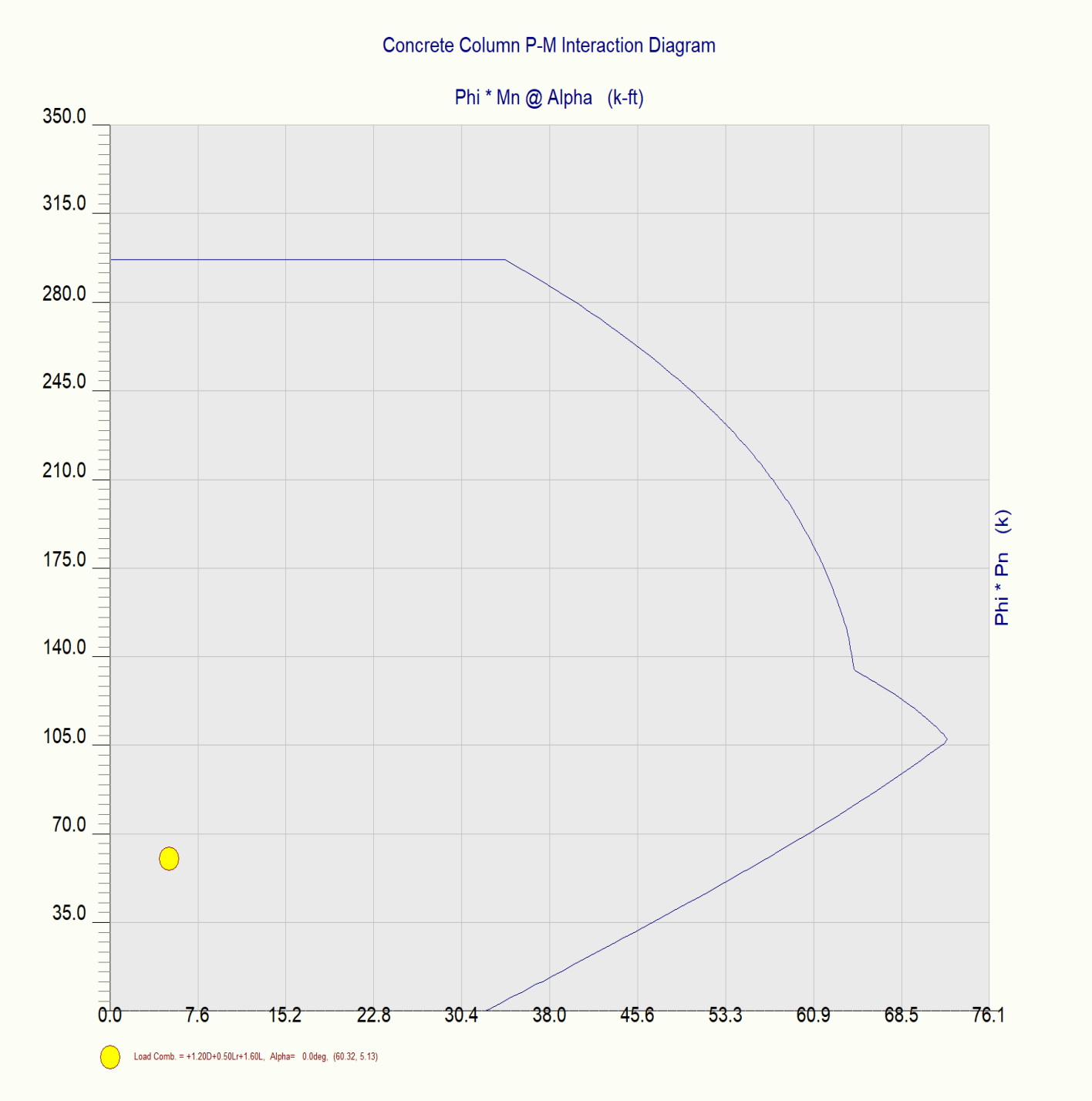
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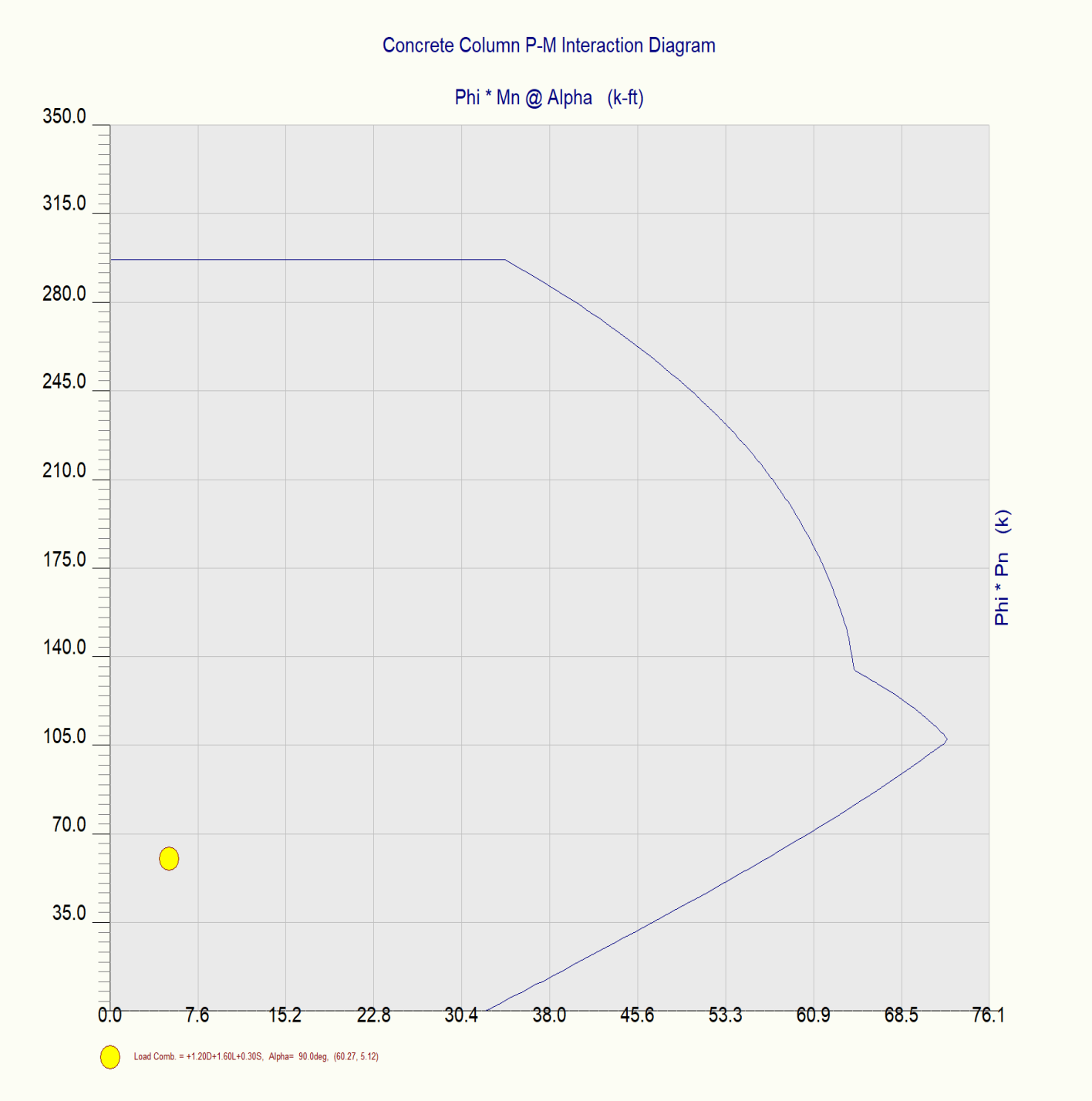
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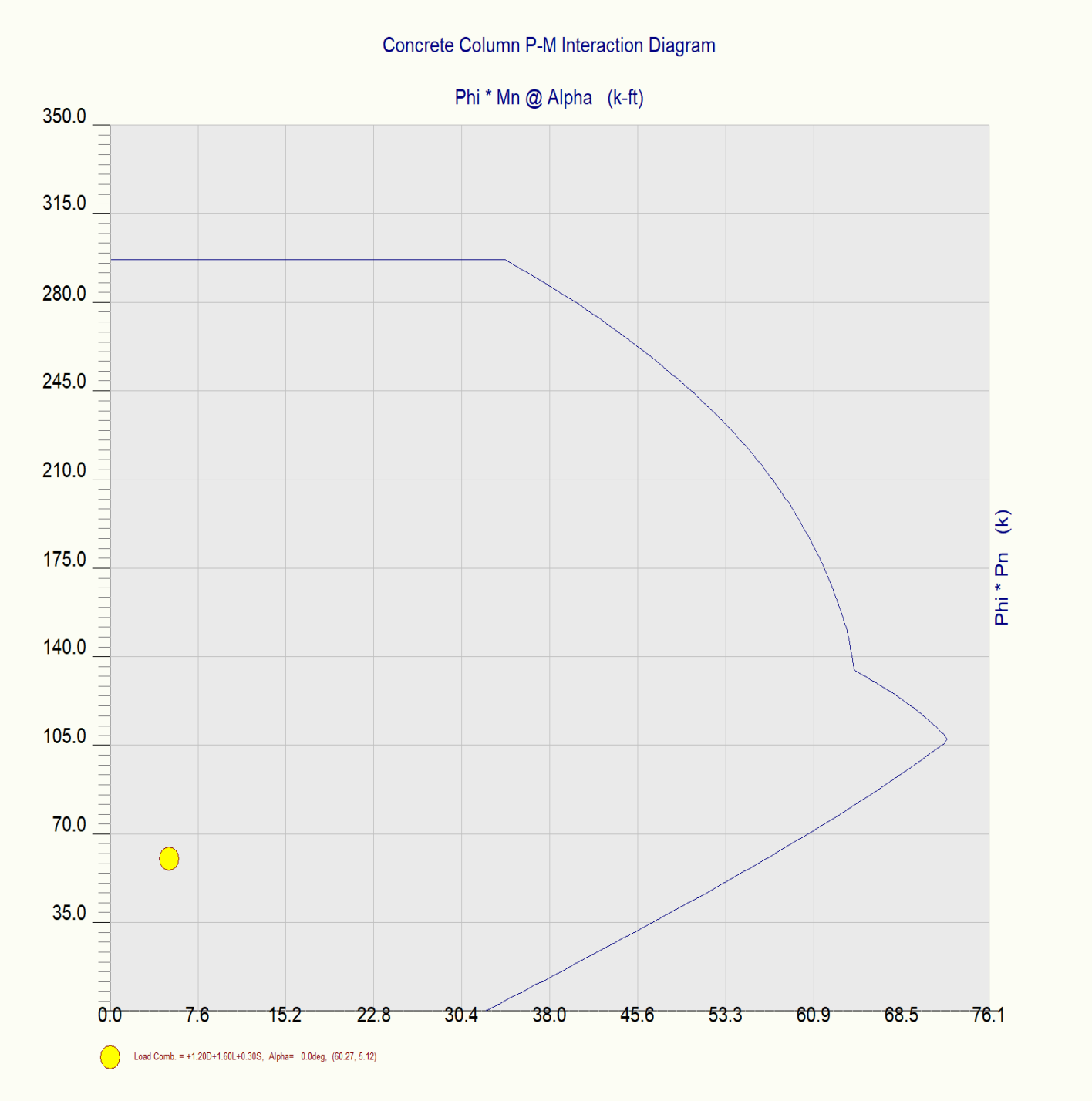
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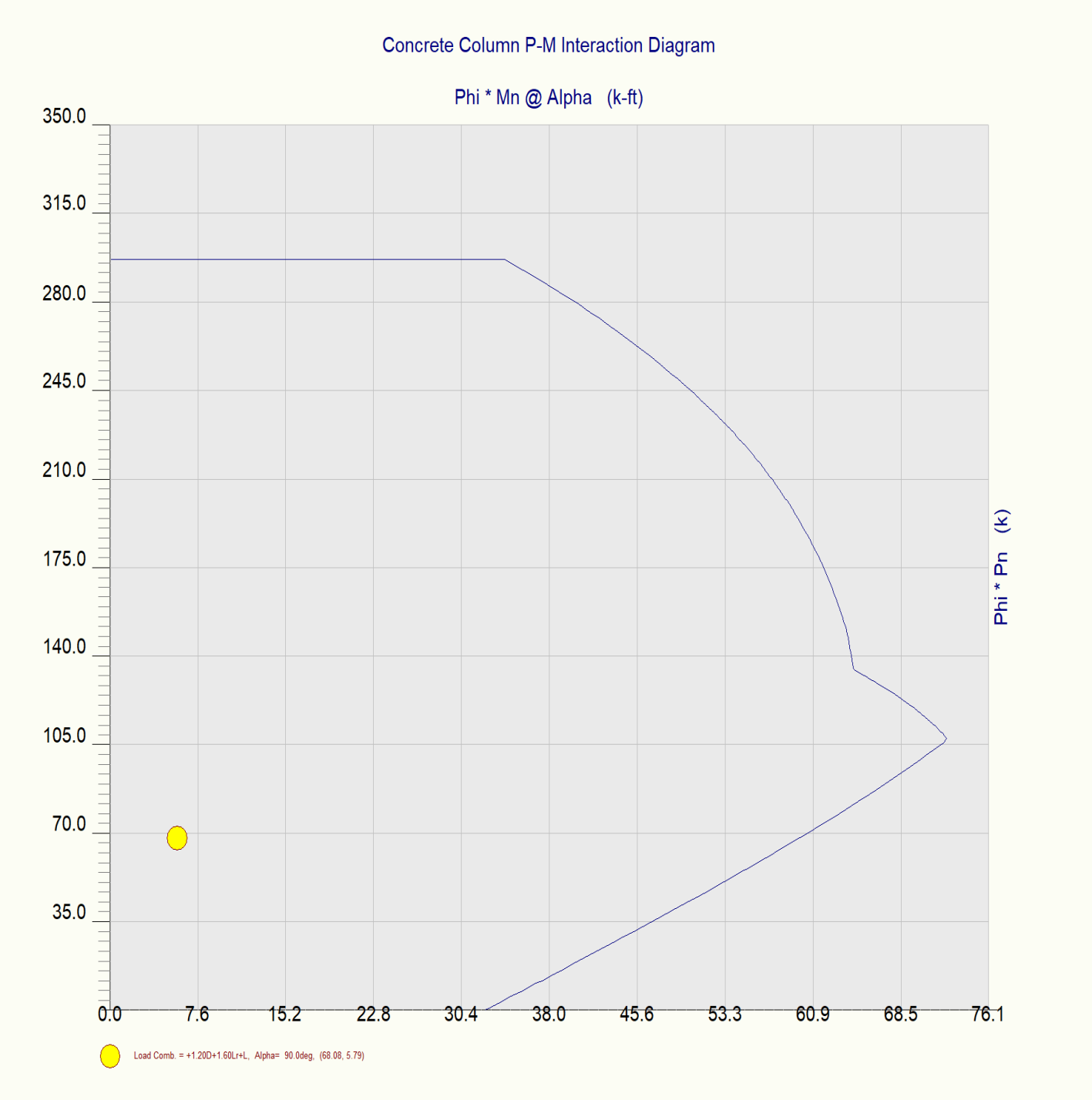


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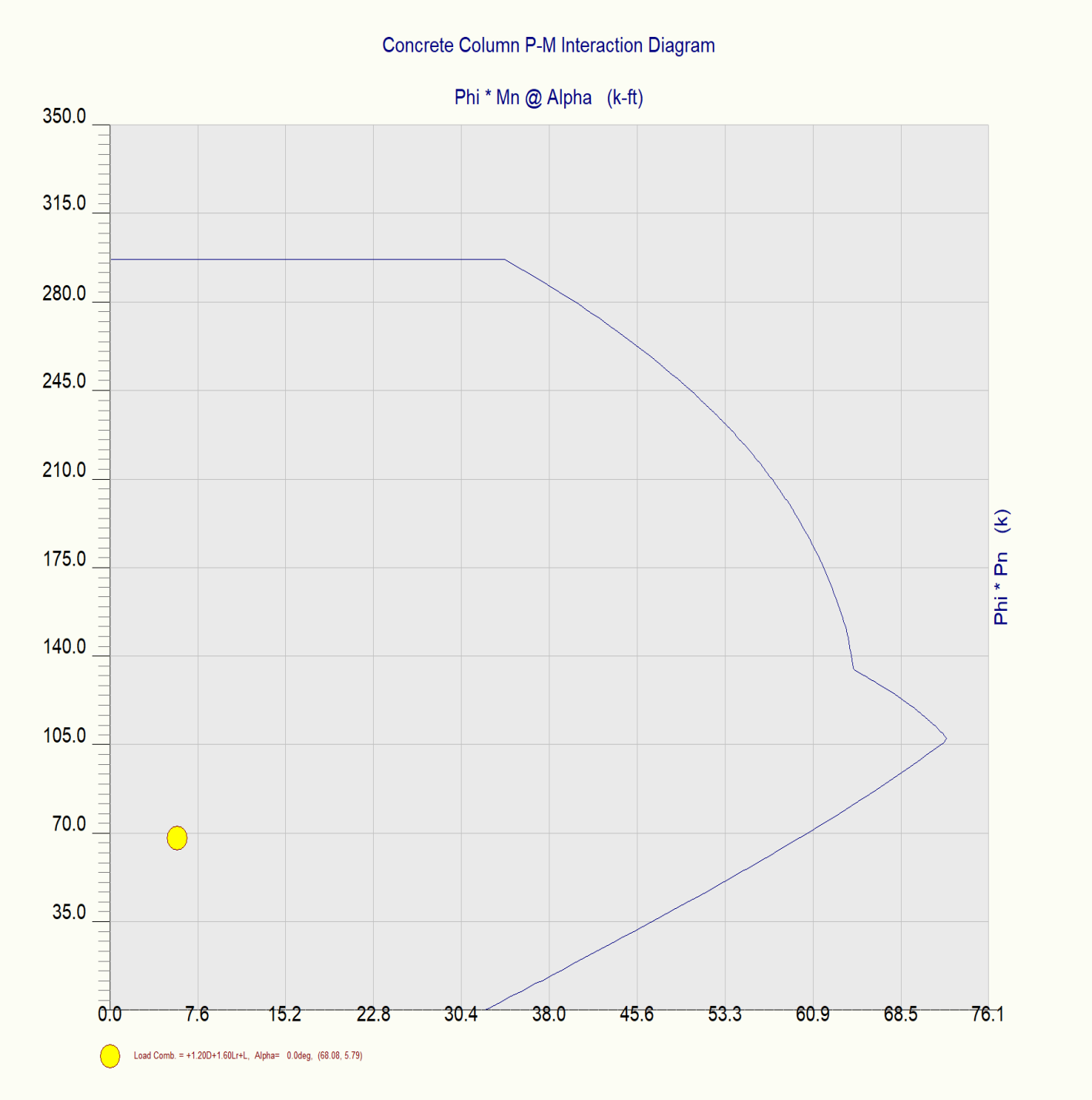
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LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

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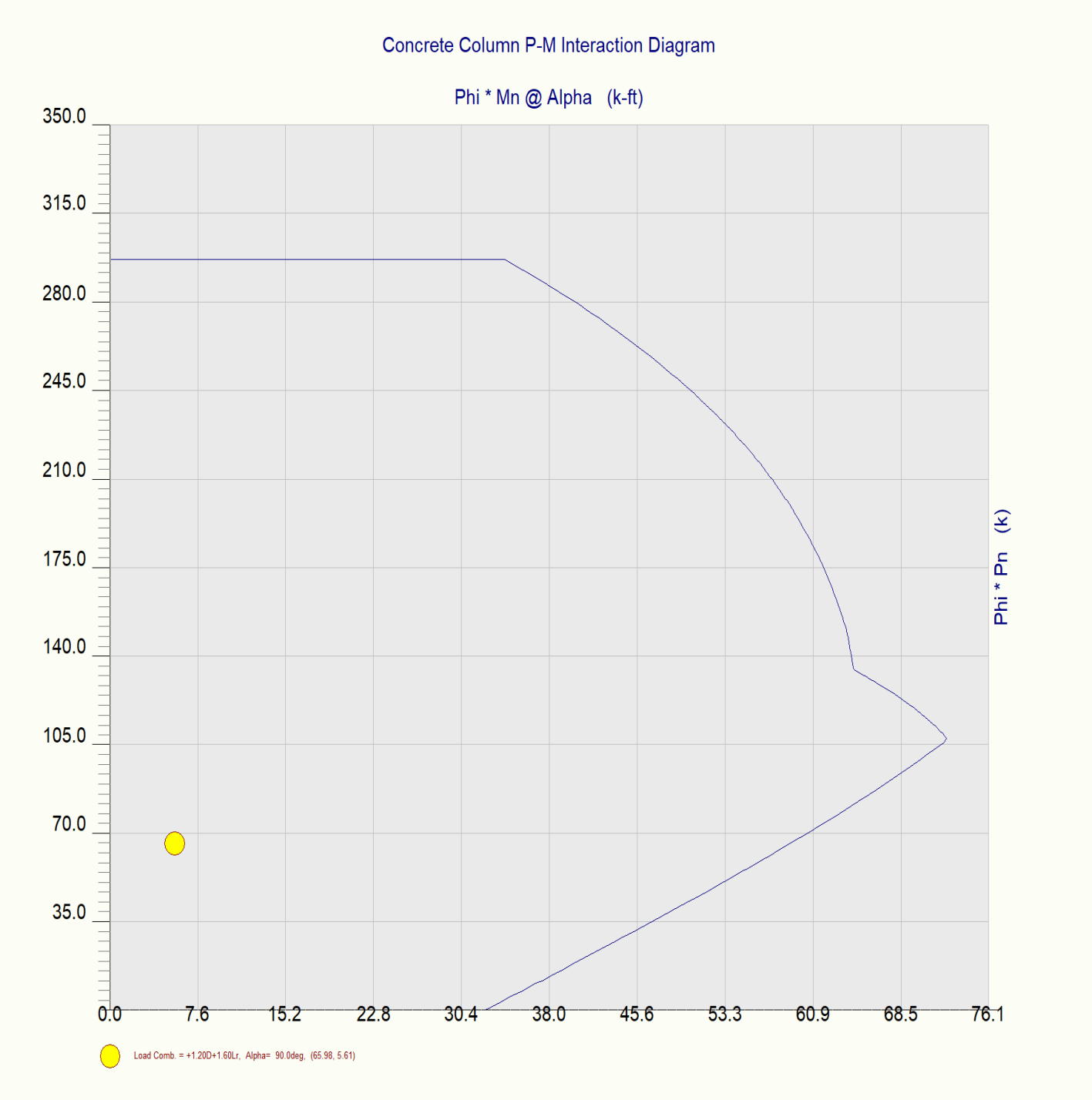


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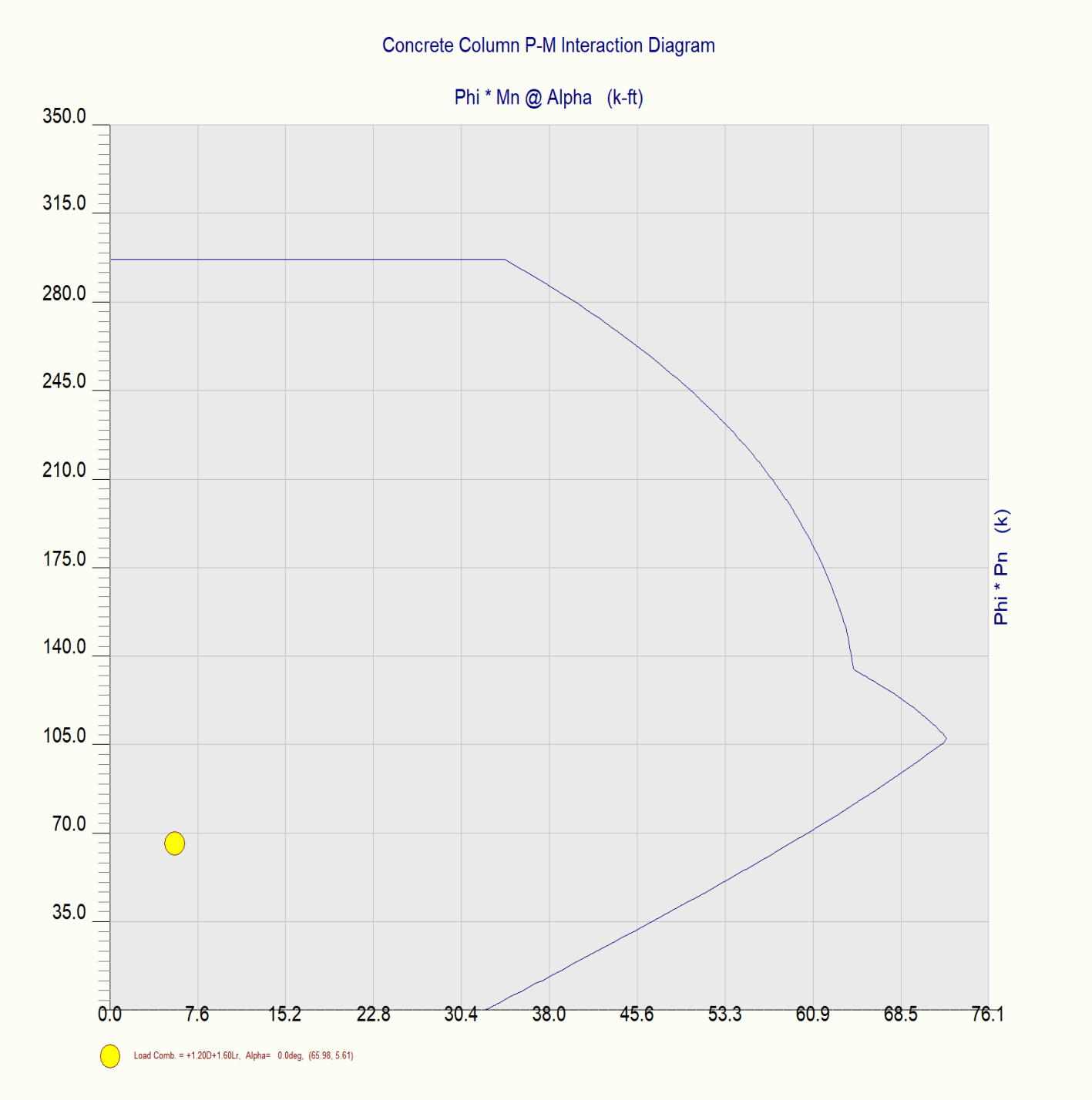


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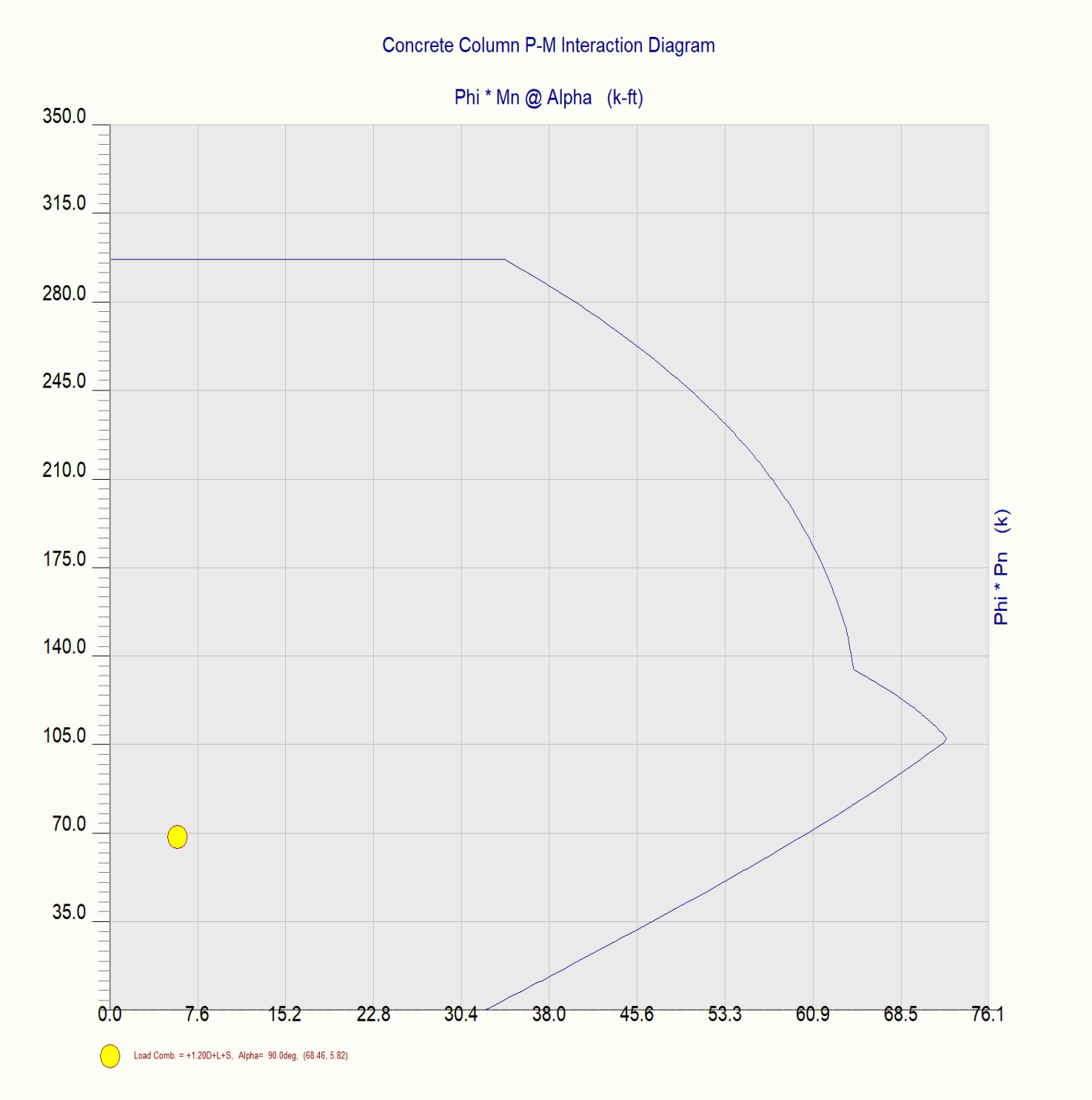


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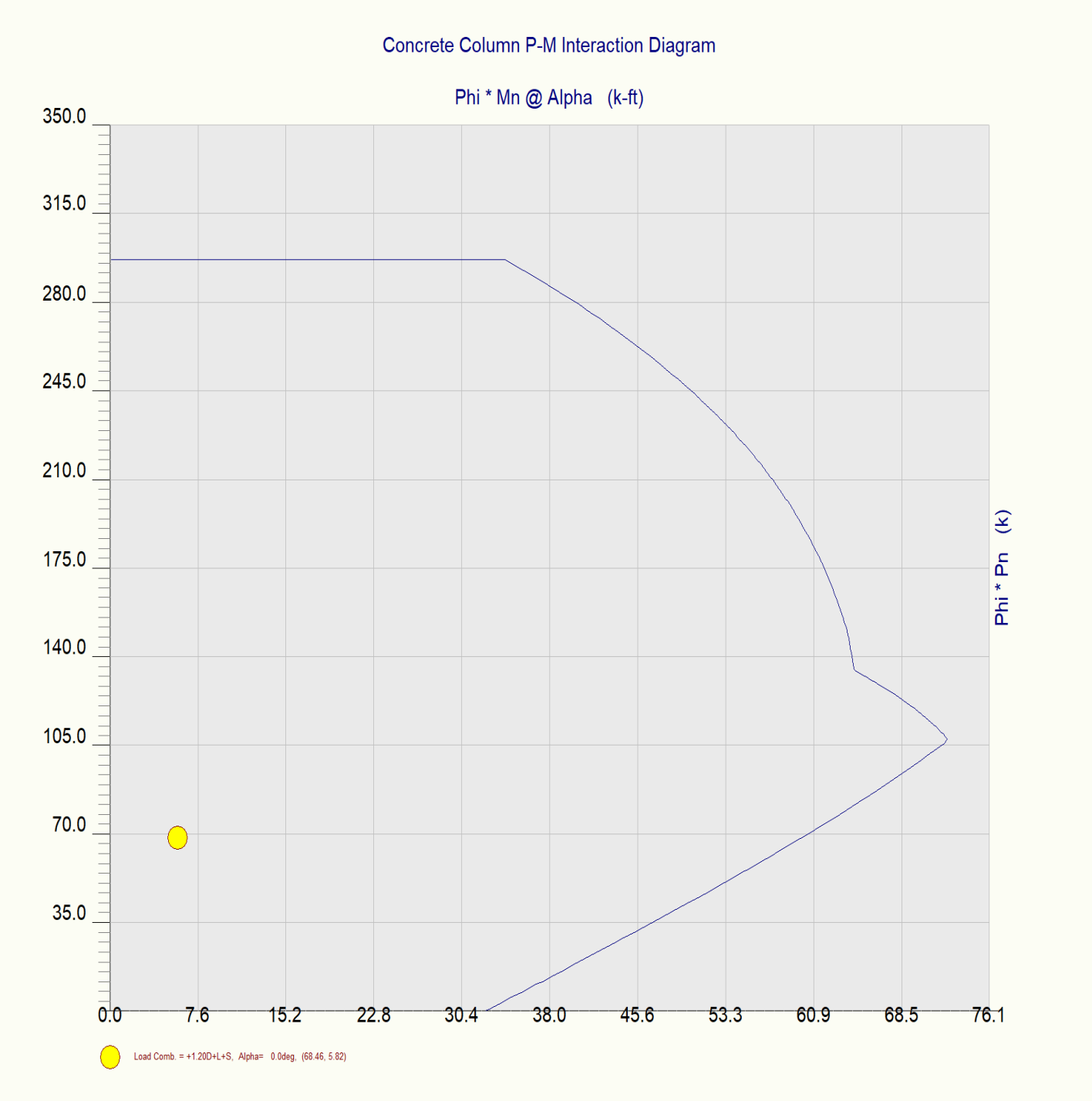


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Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

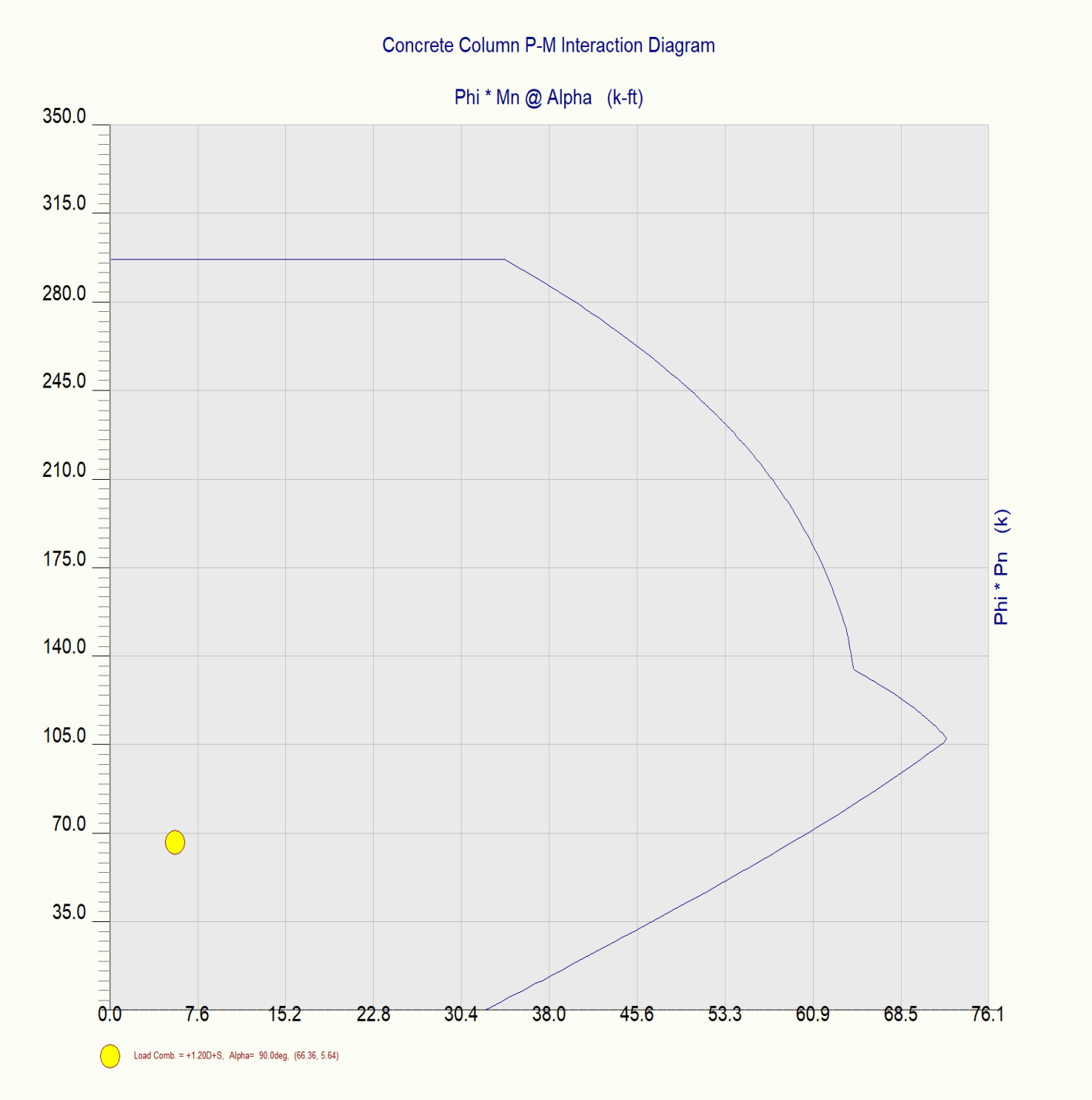
DESCRIPTION: Column with Mech Load



Concrete Column

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Column with Mech Load

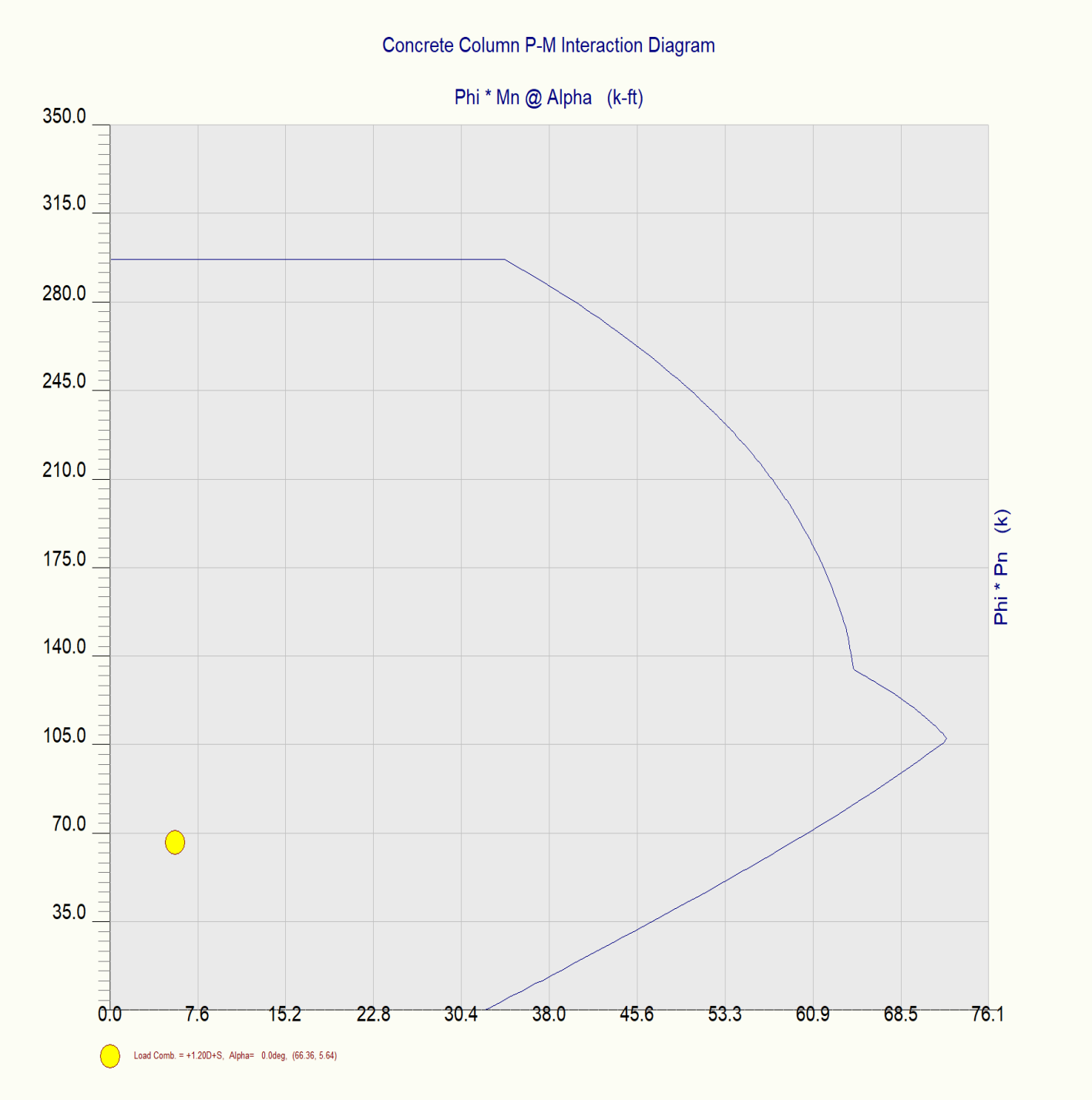


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Column with Mech Load

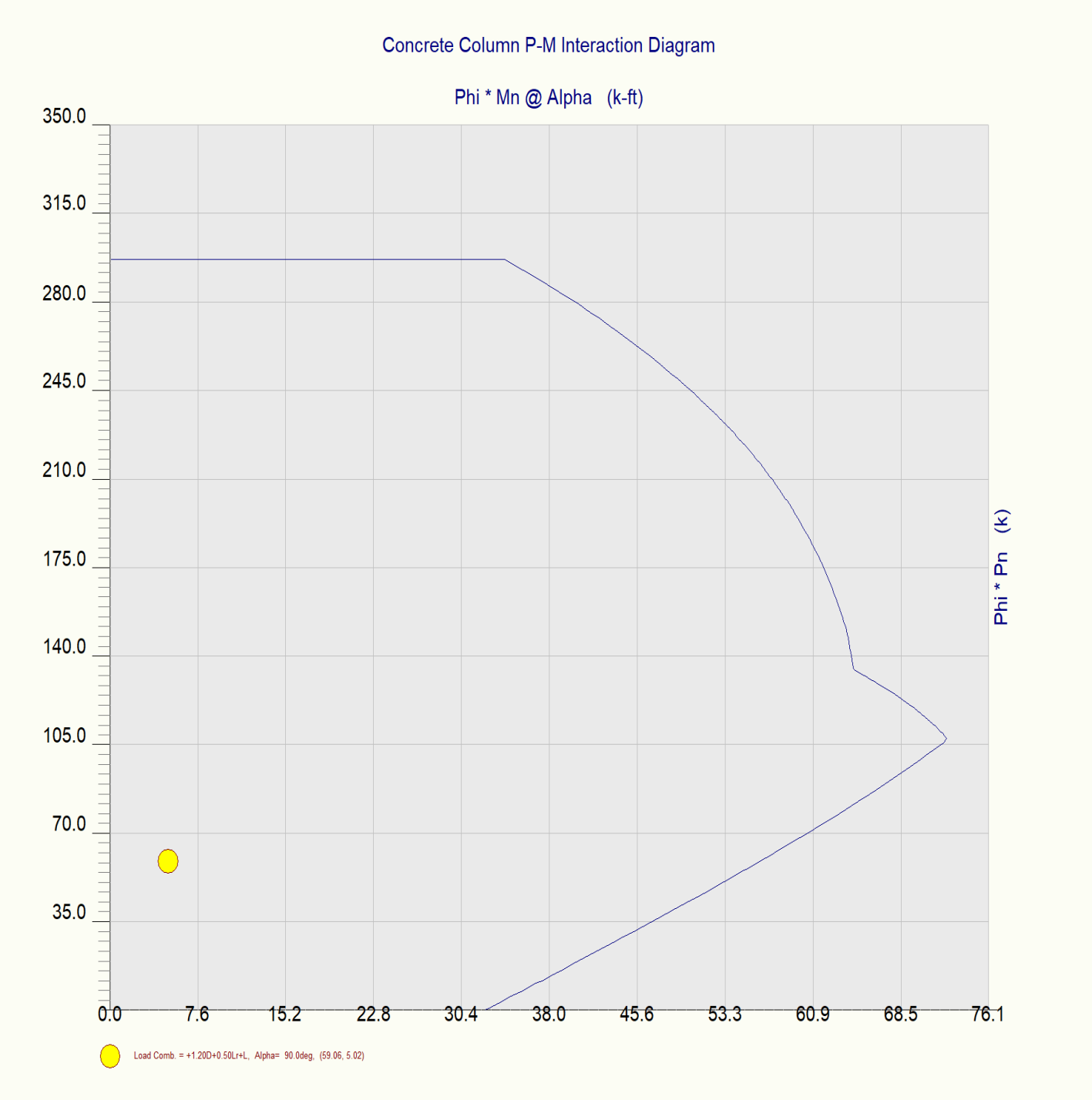


Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

DESCRIPTION: Column with Mech Load



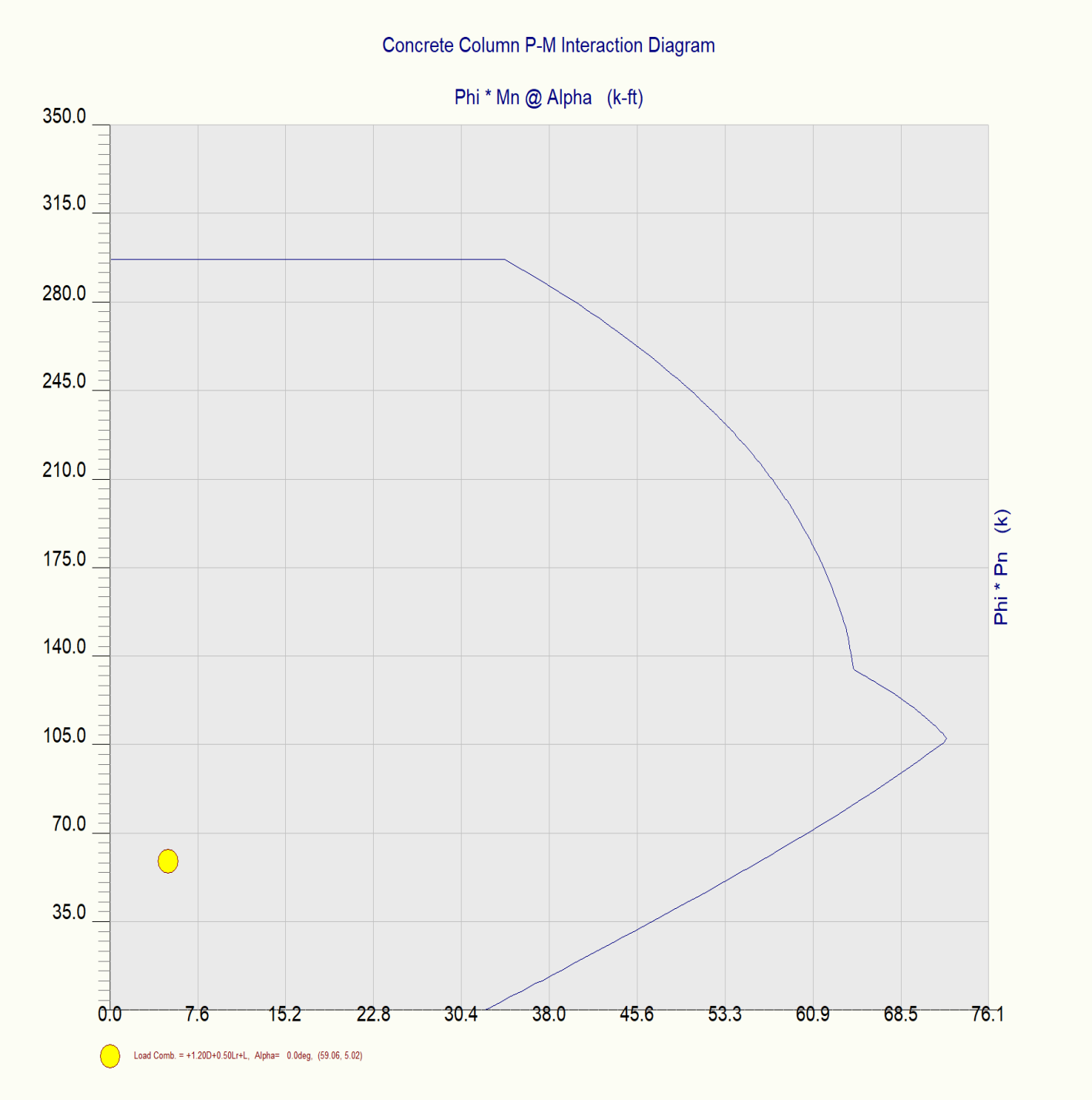
Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Column

Project File: VT Mil BLDG CA ENERCALC.ec6

LIC# : KW-06015150, Build:20.24.09.03 AECOM (c) ENERCALC, LLC 1982-2025

DESCRIPTION: Column with Mech Load



RAM Connection

AECOM

Current Date: 12/4/2025 1:23 PM
Units system: English
File name: L:\DCS\Resources\BDL\Structural\Projects\VT Military Bldg CA Project\RAM Connections\VT Mil Bldg CA.rcnx

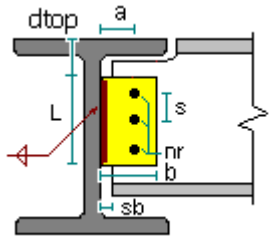
Steel Connections Data

Connection: 4V - SP_BG_1/4PL_2B3/4

Family: Beam - Girder (BG)
Type: Single plate
Description: Beam to girder

General information

Connector



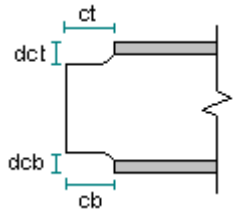
Members

Beam

General

Beam section	:	W 8X10
Beam material	:	A572 Gr50
sb: Beam setback	:	0.5 in
Beam to girder alignment	:	Top
Horizontal angle (deg)	:	0
Vertical angle (deg)	:	0
Braced	:	No

Coped



dct: Top cope depth	:	0.68 in
ct: Top cope length	:	3.13 in
dcb: Bottom cope depth	:	0.68 in
cb: Bottom cope length	:	3.13 in

Girder

General

Girder section	:	W 12X26
Girder material	:	A992 Gr50

Single plate

Connector

Section	:	PL 3/8x4x6
b: Width	:	4 in
L: Length	:	6 in
Plate type	:	Standard
tp: Plate thickness	:	0.375 in
Material	:	A36
Plate position on beam	:	Center
Bolts	:	3/4" A325 N
nr: Bolt rows	:	2
nc: Bolt columns	:	1
s: Pitch - longitudinal center-to-center spacing	:	3 in
Lev: Vertical edge distance	:	1.5 in
Leh: Horizontal edge distance	:	1.5 in
a: Distance between weld and bolts	:	2.5 in
Hole type on plate	:	Standard (STD)
Hole type on beam	:	Standard (STD)
Weld	:	E70XX
D: Weld size (1/16 in)	:	4
Wo: Obtuse side weld size (AWS) (1/16 in)	:	4
Wa: Acute side weld size (AWS) (1/16 in)	:	4
Wo: Obtuse side weld size (AISC) (1/16 in)	:	4
Wa: Acute side weld size (AISC) (1/16 in)	:	4

RAM Connection AECOM

Current Date: 12/4/2025 1:23 PM
Units system: English
File name: L:\DCS\Resources\BDL\Structural\Projects\VT Military Bldg CA Project\RAM Connections\VT Mil Bldg CA.rcnx

Steel Connections Results

Connection: 4V - SP_BG_1/4PL_2B3/4

Family: Beam - Girder (BG)
Type: Single plate
Description: Beam to girder

Design code: AISC 360-22 LRFD

Demands

Description	Beam Ru [kip]	Beam Pu [kip]	Left beam Ru [kip]	Left beam Pu [kip]	Load type
DL	2.90	0.80	0.00	0.00	Design
LL	1.40	0.50	0.00	0.00	Design
S	0.70	0.80	0.00	0.00	Design
W	0.70	0.80	0.00	0.00	Design
D1	4.06	1.12	0.00	0.00	Design
D2	5.72	1.76	0.00	0.00	Design
D3	3.69	1.20	0.00	0.00	Design
D4	5.93	2.00	0.00	0.00	Design
D5	4.18	1.76	0.00	0.00	Design
D6	3.83	1.36	0.00	0.00	Design
D7	5.58	2.26	0.00	0.00	Design
D8	4.53	2.16	0.00	0.00	Design
D9	4.18	1.76	0.00	0.00	Design
D10	4.39	2.00	0.00	0.00	Design
D11	5.58	2.26	0.00	0.00	Design
D12	5.79	2.50	0.00	0.00	Design
D13	3.31	1.52	0.00	0.00	Design

Geometric Considerations

Dimensions	Unit	Value	Min.	Max.	Sta.	References
Shear plate						
Number of bolts		2	2	12	✔	p. 10-49
Distance from the bolt line to the weld line	[in]	2.50	--	3.50	✔	p. 10-49
Minimum plate or beam web thickness	[in]	0.17	--	0.44	✔	Table 10-9
Length	[in]	6.00	3.44	6.53	✔	p. 10-8
Vertical edge distance	[in]	1.50	1.00	--	✔	Tables J3.4, J3.5
Horizontal edge distance	[in]	1.50	1.50	--	✔	p. 10-49
Vertical center-to-center spacing (pitch)	[in]	3.00	2.00	4.08	✔	Sec. J3.6
Clear distance between holes (longitudinal)	[in]	2.19	0.75	--	✔	Sec. J3.4
Beam						
Vertical edge distance	[in]	1.76	1.00	--	✔	Tables J3.4,

						J3.5
Horizontal edge distance	[in]	2.00	1.50	--	✔	p. 10-49
Support						
Weld size	[1/16in]	4	4	--	✔	p. 10-49
Weld length	[in]	6.00	1.00	--	✔	Sec. J2.2b

Design Check

Verification	Unit	Capacity	Demand	Ctrl EQ	Ratio	References
Shear plate						
Bolts shear	[Kip]	17.51	6.31	D12	**0.36**	Tables (7-1..14)
Bolt bearing under shear load	[Kip]	28.72	6.31	D12	**0.22**	Tables (7-1..14)
Bolt tearout under shear load	[Kip]	26.76	6.31	D12	**0.24**	Sec. J3.7
Shear yielding	[Kip]	48.60	5.93	D4	**0.12**	Eq. J4-3
Shear rupture	[Kip]	41.60	5.93	D4	**0.14**	Eq. J4-4
Block shear	[Kip]	44.67	5.93	D4	**0.13**	Eq. J4-5
Flexural rupture	[Kip]	41.60	5.93	D4	**0.14**	p. 9-7
Flexural yielding	[Kip*ft]	9.11	1.24	D4	**0.14**	Eq. F11-1
Lateral torsional buckling	[Kip*ft]	9.01	1.24	D4	**0.14**	Sec. F1
Tension yielding	[Kip]	72.90	2.50	D12	**0.03**	Eq. J4-1
Tension rupture	[Kip]	69.33	2.50	D12	**0.04**	Eq. J4-2
Compression	[Kip]	70.01	0.00	DL	**0.00**	Sec. J4.4
Tear out under axial load	[Kip]	52.89	2.50	D12	**0.05**	Eq. J4-5
Plate (support side)						
Weld capacity	[Kip]	72.86	6.26	D4	**0.09**	Tables 8-4 .. 8-11
Interaction of axial, flexure and shear yielding		1.00	0.04	D4	**0.04**	Eq. 12-2
Interaction of axial, flexure and shear rupture		1.00	0.04	D4	**0.04**	Eq. 12-2
Shear and axial interaction for block shear		1.00	0.02	D4	**0.02**	Eq. 12-1
Beam						
Bolt bearing under shear load	[Kip]	14.59	6.31	D12	**0.43**	Tables (7-1..14)
Shear yielding	[Kip]	33.30	5.93	D4	**0.18**	Eq. J4-3
Shear rupture	[Kip]	23.77	5.93	D4	**0.25**	Eq. J4-4
Flexural yielding	[Kip]	22.47	5.93	D4	**0.26**	Eq. F11-1
Local web buckling	[Kip]	22.47	5.93	D4	**0.26**	p. 9-8
Block shear	[Kip]	30.12	5.93	D4	**0.20**	Eq. J4-5
Flexural rupture	[Kip]	24.34	5.93	D4	**0.24**	p. 9-6
Yielding strength due to axial load	[Kip]	133.20	2.50	D12	**0.02**	Eq. D2-1
Tension rupture	[Kip]	39.05	2.50	D12	**0.06**	Eq. J4-2
Tear out under axial load	[Kip]	32.91	2.50	D12	**0.08**	Eq. J4-5
Shear and axial interaction for block shear		1.00	0.04	D12	**0.04**	Eq. 12-1
Bolt group						
Bolt effective strength	[Kip]	14.59	6.31	D12	**0.43**	Sec. J3.7
Support						
Welds rupture	[Kip/ft]	107.64	7.65	D4	**0.07**	p. 9-6
Shear strength at welds	[Kip]	80.73	5.93	D4	**0.07**	Eq. J4-4
Global critical strength ratio	**0.43**					

Notes

The plate is designed with the conventional configuration criteria.

References

[14] Dowswell, B. et al, 2016, "Design of wrap-around gusset plates", Structural Design Solutions, LLC.

RAM Connection AECOM

Current Date: 12/4/2025 1:14 PM
Units system: English
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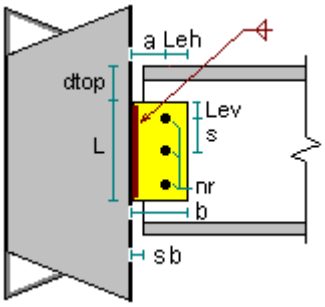
Steel Connections Data

Connection: 2V - SP_BCF_1/4PL_2B3/4

Family:	Beam - Column flange (BCF)
Type:	Single plate
Description:	Beam to column flange

General information

Connector



Members

Beam

General

Beam section	:	W 12X26
Beam material	:	A992 Gr50
sb: Beam setback	:	0.5 in
Horizontal angle (deg)	:	0
Vertical angle (deg)	:	0
Horizontal eccentricity	:	0 in
Braced	:	No

Coped

dct: Top cope depth	:	0 in
ct: Top cope length	:	0 in
dcb: Bottom cope depth	:	0 in
cb: Bottom cope length	:	0 in

Column

General

Support section	:	HSS_SQR 4X4X1_4
Support material	:	A992 Gr50
Is column end	:	No

Single plate

Connector

Section	:	PL 3/8x4x9
b: Width	:	4 in
L: Length	:	9 in
tp: Plate thickness	:	0.375 in
Material	:	A36
Plate position on beam	:	Center
Bolts	:	3/4" A325 N
nr: Rows of Bolts	:	3
nc: Bolt columns	:	1
s: Pitch - longitudinal center-to-center spacing	:	3 in
Lev: Vertical edge distance	:	1.5 in
Leh: Horizontal edge distance	:	1.5 in
a: Distance between weld and bolts	:	2.5 in
Hole type on plate	:	Standard (STD)
Hole type on beam	:	Standard (STD)
Welding electrode to support	:	E70XX
D: Weld size to support (1/16 in)	:	4
Wo: Obtuse side weld size (AWS) (1/16 in)	:	4
Wa: Acute side weld size (AWS) (1/16 in)	:	4
Wo: Obtuse side weld size (AISC) (1/16 in)	:	4
Wa: Acute side weld size (AISC) (1/16 in)	:	4

RAM Connection AECOM

Current Date: 12/4/2025 1:16 PM
Units system: English
File name: L:\DCS\Resources\BDL\Structural\Projects\VT Military Bldg CA Project\RAM Connections\VT Mil Bldg CA.rcnx

Steel Connections Results

Connection: 2V - SP_BCF_1/4PL_2B3/4

Family: Beam - Column flange (BCF)
Type: Single plate
Description: Beam to column flange

Design code: AISC 360-22 LRFD

Demands

Description	Beam Ru [kip]	Beam Pu [kip]	Left beam Ru [kip]	Left beam Pu [kip]	Column Pu [kip]	Column Mu22 [kip*ft]	Column Mu33 [kip*ft]	Load type
DL	2.90	0.80	0.00	0.00	0.00	0.00	0.00	Design
LL	1.40	0.50	0.00	0.00	0.00	0.00	0.00	Design
S	0.70	0.80	0.00	0.00	0.00	0.00	0.00	Design
W	0.70	0.80	0.00	0.00	0.00	0.00	0.00	Design
D1	4.06	1.12	0.00	0.00	0.00	0.00	0.00	Design
D2	5.72	1.76	0.00	0.00	0.00	0.00	0.00	Design
D3	3.69	1.20	0.00	0.00	0.00	0.00	0.00	Design
D4	5.93	2.00	0.00	0.00	0.00	0.00	0.00	Design
D5	4.18	1.76	0.00	0.00	0.00	0.00	0.00	Design
D6	3.83	1.36	0.00	0.00	0.00	0.00	0.00	Design
D7	5.58	2.26	0.00	0.00	0.00	0.00	0.00	Design
D8	4.53	2.16	0.00	0.00	0.00	0.00	0.00	Design
D9	4.18	1.76	0.00	0.00	0.00	0.00	0.00	Design
D10	4.39	2.00	0.00	0.00	0.00	0.00	0.00	Design
D11	5.58	2.26	0.00	0.00	0.00	0.00	0.00	Design
D12	5.79	2.50	0.00	0.00	0.00	0.00	0.00	Design
D13	3.31	1.52	0.00	0.00	0.00	0.00	0.00	Design

Geometric Considerations

Dimensions	Unit	Value	Min.	Max.	Sta.	References
Shear plate						
Number of bolts		3	2	12	✔	p. 10-49
Distance from the bolt line to the weld line	[in]	2.50	--	3.50	✔	p. 10-49
Minimum plate or beam web thickness	[in]	0.23	--	0.44	✔	Table 10-9
Length	[in]	9.00	5.42	10.84	✔	p. 10-8
Thickness, precludes a punching failure of the HSS...	[in]	0.38	--	--	✔	
Vertical edge distance	[in]	1.50	1.00	--	✔	Tables J3.4, J3.5
Horizontal edge distance	[in]	1.50	1.50	--	✔	p. 10-49
Vertical center-to-center spacing (pitch)	[in]	3.00	2.00	5.52	✔	Sec. J3.6
Clear distance between holes (longitudinal)	[in]	2.19	0.75	--	✔	Sec. J3.4
Beam						

Vertical edge distance	[in]	3.10	1.00	--	✔	Tables J3.4, J3.5
Horizontal edge distance	[in]	2.00	1.50	--	✔	p. 10-49
Support						
Maximum value of the specified yield stress	[Kip/in2]	50.00	--	--	✔	
Yield stress to tensile stress ratio		0.77	--	0.80	✔	Table K2.1
Weld size	[1/16in]	4	4	--	✔	p. 10-49
Weld length	[in]	9.00	1.00	--	✔	Sec. J2.2b

Design Check

Verification	Unit	Capacity	Demand	Ctrl EQ	Ratio	References
Shear plate						
Bolts shear	[Kip]	35.32	6.31	D12	**0.18**	Tables (7-1..14)
Bolt bearing under shear load	[Kip]	57.94	6.31	D12	**0.11**	Tables (7-1..14)
Bolt tearout under shear load	[Kip]	66.89	6.31	D12	**0.09**	Sec. J3.7
Shear yielding	[Kip]	72.90	5.93	D4	**0.08**	Eq. J4-3
Shear rupture	[Kip]	62.40	5.93	D4	**0.10**	Eq. J4-4
Block shear	[Kip]	62.89	5.93	D4	**0.09**	Eq. J4-5
Flexural rupture	[Kip]	96.63	5.93	D4	**0.06**	p. 9-7
Flexural yielding	[Kip*ft]	20.50	1.24	D4	**0.06**	Eq. F11-1
Lateral torsional buckling	[Kip*ft]	20.03	1.24	D4	**0.06**	Sec. F1
Tension yielding	[Kip]	109.35	2.50	D12	**0.02**	Eq. J4-1
Tension rupture	[Kip]	103.99	2.50	D12	**0.02**	Eq. J4-2
Compression	[Kip]	105.02	0.00	DL	**0.00**	Sec. J4.4
Tear out under axial load	[Kip]	87.55	2.50	D12	**0.03**	Eq. J4-5
Plate (support side)						
Weld capacity	[Kip]	109.29	6.26	D4	**0.06**	Tables 8-4 .. 8-11
Interaction of axial, flexure and shear yielding		1.00	0.01	D4	**0.01**	Eq. 12-2
Interaction of axial, flexure and shear rupture		1.00	0.01	D4	**0.01**	Eq. 12-2
Shear and axial interaction for block shear		1.00	0.01	D4	**0.01**	Eq. 12-1
Beam						
Bolt bearing under shear load	[Kip]	39.83	6.31	D12	**0.16**	Tables (7-1..14)
Shear yielding	[Kip]	84.18	5.93	D4	**0.07**	Eq. J4-3
Yielding strength due to axial load	[Kip]	344.25	2.50	D12	**0.01**	Eq. D2-1
Tension rupture	[Kip]	118.15	2.50	D12	**0.02**	Eq. J4-2
Tear out under axial load	[Kip]	68.35	2.50	D12	**0.04**	Eq. J4-5
Bolt group						
Bolt effective strength	[Kip]	35.32	6.31	D12	**0.18**	Sec. J3.7
Support						
Welds rupture	[Kip/ft]	109.04	5.10	D4	**0.05**	p. 9-6
Shear strength at welds	[Kip]	122.67	5.93	D4	**0.05**	Eq. J4-4
Punching shear (shear rupture)	[Kip]	73.60	5.93	D4	**0.08**	p. 10-96
HSS wall strength due out-of-plane transverse load	[Kip]	24.88	2.50	D12	**0.10**	p. 9-18
Global critical strength ratio	**0.18**					

Notes

The plate is designed with the conventional configuration criteria.

References

[14] Dowswell, B. et al, 2016, "Design of wrap-around gusset plates", Structural Design Solutions, LLC.

Job Information

	Engineer	Checked	Approved
Name:			
Date:	22-Oct-25		

Project ID	
Project Name	

Structure Type	SPACE FRAME

Number of Nodes	40	Highest Node	40
Number of Elements	64	Highest Beam	64

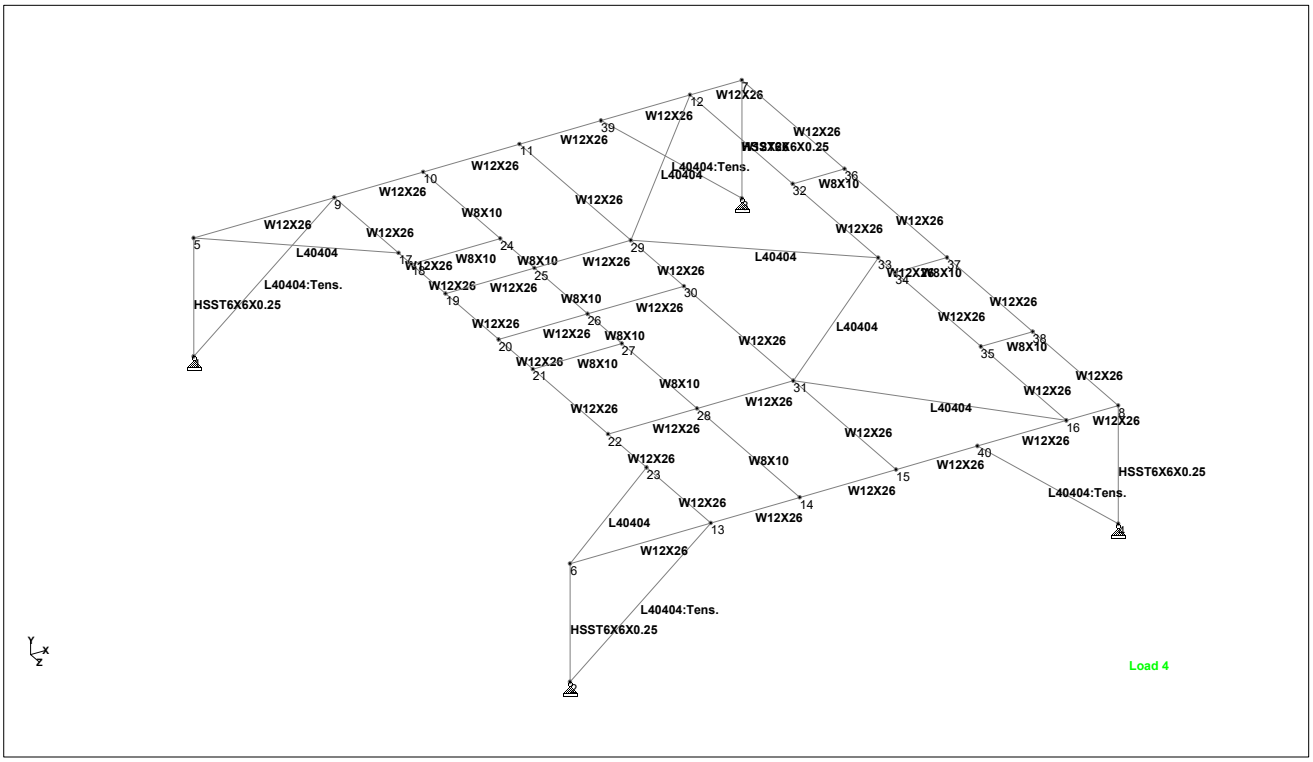
Number of Basic Load Cases	3
Number of Combination Load Cases	7

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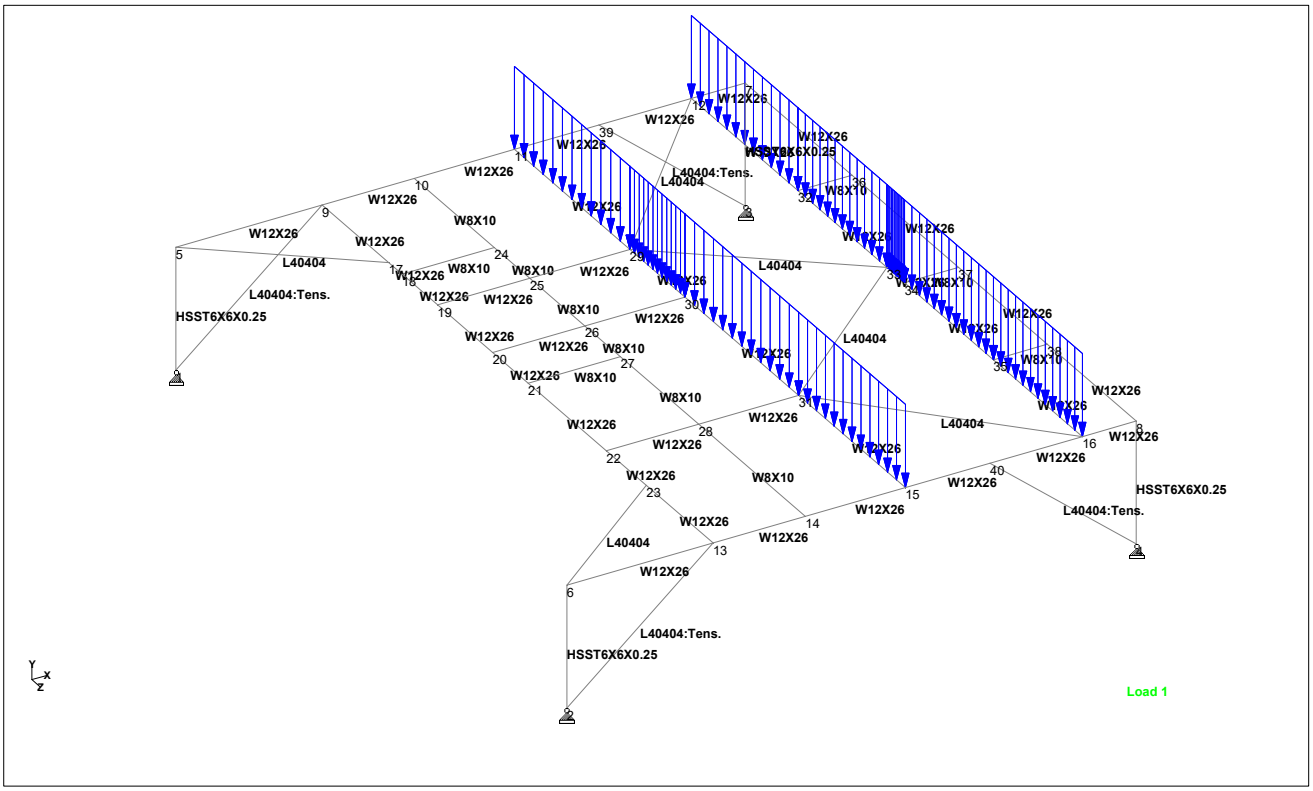
All	The Whole Structure

Included in this printout are results for load cases:

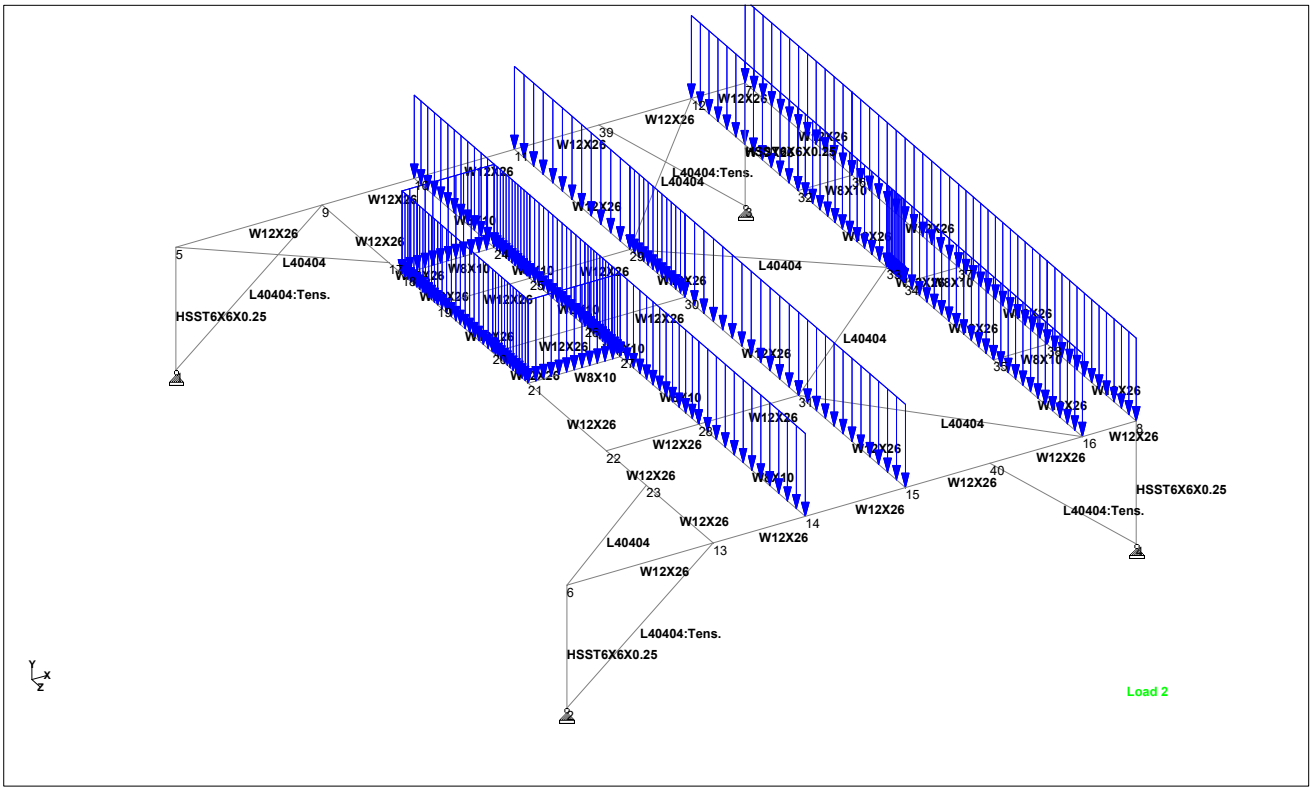
Type	L/C	Name
Primary	1	DL
Primary	2	LL
Primary	3	Wind X
Combination	4	COMB - 1.4 Dead
Combination	5	COMB - 1.2 Dead + 1.6 Live
Combination	6	COMB - 1.2 Dead + 0.5 Live
Combination	7	COMB - 1.2 Dead + 0.5 Wind
Combination	8	COMB - 1.2 Dead + 0.5 Live + 1 Wind
Combination	9	COMB - 0.9 Dead + 1 Wind
Combination	10	COMB - 0.9 Dead



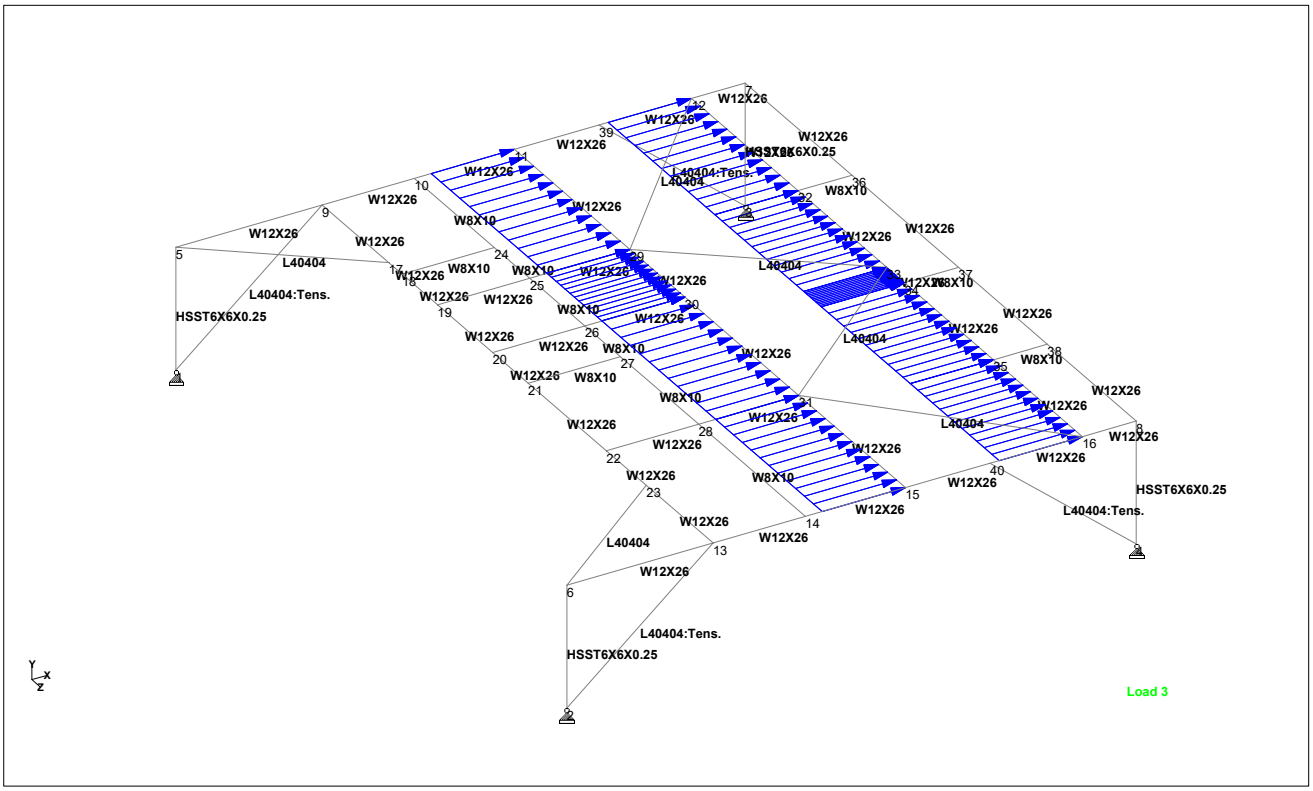
Layout



DL Layout



LL Layout



Wind Load Layout

Nodes

Node	X (ft)	Y (ft)	Z (ft)
1	0	0	0
2	0	0	22.000
3	18.500	0	0
4	18.500	0	22.000
5	0	4.000	0
6	0	4.000	22.000
7	18.500	4.000	0
8	18.500	4.000	22.000
9	4.750	4.000	0
10	7.750	4.000	0
11	11.000	4.000	0
12	16.750	4.000	0
13	4.750	4.000	22.000
14	7.750	4.000	22.000
15	11.000	4.000	22.000
16	16.750	4.000	22.000
17	4.750	4.000	3.750
18	4.750	4.000	4.500

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
19	4.750	4.000	6.500
20	4.750	4.000	9.600
21	4.750	4.000	11.600
22	4.750	4.000	16.000
23	4.750	4.000	18.250
24	7.750	4.000	4.500
25	7.750	4.000	6.500
26	7.750	4.000	9.600
27	7.750	4.000	11.600
28	7.750	4.000	16.000
29	11.000	4.000	6.500
30	11.000	4.000	9.600
31	11.000	4.000	16.000
32	16.750	4.000	6.000
33	16.750	4.000	11.000
34	16.750	4.000	12.000
35	16.750	4.000	17.000
36	18.500	4.000	6.000
37	18.500	4.000	12.000
38	18.500	4.000	17.000
39	13.750	4.000	0
40	13.750	4.000	22.000

Beams

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
1	5	9	4.750	2	0
2	9	10	3.000	2	0
3	10	11	3.250	2	0
4	11	39	2.750	2	0
5	12	7	1.750	2	0
6	6	13	4.750	2	0
7	13	14	3.000	2	0
8	14	15	3.250	2	0
9	15	40	2.750	2	0
10	16	8	1.750	2	0
11	18	24	3.000	3	0
12	19	25	3.000	2	0
13	25	29	3.250	2	0
14	20	26	3.000	2	0
15	26	30	3.250	2	0
16	21	27	3.000	3	0
17	22	28	3.000	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
18	28	31	3.250	2	0
19	32	36	1.750	3	0
20	34	37	1.750	3	0
21	35	38	1.750	3	0
22	9	17	3.750	2	0
23	17	18	0.750	2	0
24	18	19	2.000	2	0
25	19	20	3.100	2	0
26	20	21	2.000	2	0
27	21	22	4.400	2	0
28	22	23	2.250	2	0
29	23	13	3.750	2	0
30	10	24	4.500	3	0
31	24	25	2.000	3	0
32	25	26	3.100	3	0
33	26	27	2.000	3	0
34	27	28	4.400	3	0
35	28	14	6.000	3	0
36	11	29	6.500	2	0
37	29	30	3.100	2	0
38	30	31	6.400	2	0
39	31	15	6.000	2	0
40	12	32	6.000	2	0
41	32	33	5.000	2	0
42	33	34	1.000	2	0
43	34	35	5.000	2	0
44	35	16	5.000	2	0
45	7	36	6.000	2	0
46	36	37	6.000	2	0
47	37	38	5.000	2	0
48	38	8	5.000	2	0
49	5	17	6.052	4	0
50	6	23	6.052	4	0
51	16	31	8.310	4	0
52	31	33	7.620	4	0
53	33	29	7.302	4	0
54	29	12	8.678	4	0
55	1	5	4.000	1	0
56	2	6	4.000	1	0
57	3	7	4.000	1	0
58	4	8	4.000	1	0
59	2	13	6.210	4	0
60	1	9	6.210	4	0
61	3	39	6.210	4	0
62	4	40	6.210	4	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
63	39	12	3.000	2	0
64	40	16	3.000	2	0

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
1	HSST6X6X0.25	5.240	28.600	28.600	45.600	STEEL_50_KS
2	W12X26	7.650	17.300	204.000	0.300	STEEL_50_KS
3	W8X10	2.960	2.090	30.800	0.043	STEEL_50_KS
4	L40404	1.930	4.863	1.216	0.041	STEEL_50_KS

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6.5E -6
2	CONCRETE	3.15E+3	0.170	8.68e-05	5.5E -6
3	ALUMINUM	10E+3	0.330	9.8e-05	12.8E -6
4	STAINLESSSTEEL	28E+3	0.300	0.000	9.9E -6
5	STEEL_36_KSI	29E+3	0.300	0.000	6.5E -6
6	STEEL_50_KSI	29E+3	0.300	0.000	6.5E -6
7	STEEL_275_NMM2	29.7E+3	0.300	0.000	6.67E -6
8	STEEL_355_NMM2	29.7E+3	0.300	0.000	6.67E -6
9	Q235	29.9E+3	0.300	0.000	6.67E -6
10	Q345	29.9E+3	0.300	0.000	6.67E -6
11	Q355	29.9E+3	0.300	0.000	6.67E -6
12	Q390	29.9E+3	0.300	0.000	6.67E -6
13	Q420	29.9E+3	0.300	0.000	6.67E -6
14	Q460	29.9E+3	0.300	0.000	6.67E -6
15	TIMBER	1.5E+3	0.150	0.000	3E -6

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip-ft/deg)	rY (kip-ft/deg)	rZ (kip-ft/deg)
1	Fixed	Fixed	Fixed	-	-	-
2	Fixed	Fixed	Fixed	-	-	-
3	Fixed	Fixed	Fixed	-	-	-
4	Fixed	Fixed	Fixed	-	-	-

Releases

Beam ends not shown in this table are fixed in all directions.

Beam	Node	x	y	z	rx	ry	rz
1	5	Fixed	Fixed	Fixed	Pin	Pin	Fixed
5	7	Fixed	Fixed	Fixed	Pin	Pin	Fixed
6	6	Fixed	Fixed	Fixed	Pin	Pin	Fixed
10	8	Fixed	Fixed	Fixed	Pin	Pin	Fixed
11	18	Fixed	Fixed	Fixed	Pin	Pin	Fixed
11	24	Fixed	Fixed	Fixed	Pin	Pin	Fixed
12	19	Fixed	Fixed	Fixed	Pin	Pin	Fixed
13	29	Fixed	Fixed	Fixed	Pin	Pin	Fixed
14	20	Fixed	Fixed	Fixed	Pin	Pin	Fixed
15	30	Fixed	Fixed	Fixed	Pin	Pin	Fixed
16	21	Fixed	Fixed	Fixed	Pin	Pin	Fixed
16	27	Fixed	Fixed	Fixed	Pin	Pin	Fixed
17	22	Fixed	Fixed	Fixed	Pin	Pin	Fixed
18	31	Fixed	Fixed	Fixed	Pin	Pin	Fixed
19	32	Fixed	Fixed	Fixed	Pin	Pin	Fixed
19	36	Fixed	Fixed	Fixed	Pin	Pin	Fixed
20	34	Fixed	Fixed	Fixed	Pin	Pin	Fixed
20	37	Fixed	Fixed	Fixed	Pin	Pin	Fixed
21	35	Fixed	Fixed	Fixed	Pin	Pin	Fixed
21	38	Fixed	Fixed	Fixed	Pin	Pin	Fixed
22	9	Fixed	Fixed	Fixed	Pin	Pin	Fixed
29	13	Fixed	Fixed	Fixed	Pin	Pin	Fixed
30	10	Fixed	Fixed	Fixed	Pin	Pin	Fixed
35	14	Fixed	Fixed	Fixed	Pin	Pin	Fixed
36	11	Fixed	Fixed	Fixed	Pin	Pin	Fixed
39	15	Fixed	Fixed	Fixed	Pin	Pin	Fixed
40	12	Fixed	Fixed	Fixed	Pin	Pin	Fixed
44	16	Fixed	Fixed	Fixed	Pin	Pin	Fixed
45	7	Fixed	Fixed	Fixed	Pin	Pin	Fixed
48	8	Fixed	Fixed	Fixed	Pin	Pin	Fixed
49	5	Fixed	Fixed	Fixed	Pin	Pin	Fixed
49	17	Fixed	Fixed	Fixed	Pin	Pin	Fixed
50	6	Fixed	Fixed	Fixed	Pin	Pin	Fixed
50	23	Fixed	Fixed	Fixed	Pin	Pin	Fixed
51	16	Fixed	Fixed	Fixed	Pin	Pin	Fixed
51	31	Fixed	Fixed	Fixed	Pin	Pin	Fixed
52	31	Fixed	Fixed	Fixed	Pin	Pin	Fixed
52	33	Fixed	Fixed	Fixed	Pin	Pin	Fixed
53	33	Fixed	Fixed	Fixed	Pin	Pin	Fixed
53	29	Fixed	Fixed	Fixed	Pin	Pin	Fixed
54	29	Fixed	Fixed	Fixed	Pin	Pin	Fixed
54	12	Fixed	Fixed	Fixed	Pin	Pin	Fixed

Primary Load Cases

Number	Name	Type
1	DL	Dead
2	LL	Live
3	Wind X	Wind

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
4	COMB - 1.4 Dead	1	DL	1.40
5	COMB - 1.2 Dead + 1.6 Live	1	DL	1.20
		2	LL	1.60
6	COMB - 1.2 Dead + 0.5 Live	1	DL	1.20
		2	LL	0.50
7	COMB - 1.2 Dead + 0.5 Wind	1	DL	1.20
		3	Wind X	0.50
8	COMB - 1.2 Dead + 0.5 Live + 1 Wind	1	DL	1.20
		2	LL	0.50
		3	Wind X	1.00
9	COMB - 0.9 Dead + 1 Wind	1	DL	0.90
		3	Wind X	1.00
10	COMB - 0.9 Dead	1	DL	0.90

Load Generators

There is no data of this type.

1 DL : Beam Loads

Beam	Type	Direction	Fa	Da (ft)	Fb	Db	Ecc. (ft)
36	UNI kips/ft	GY	-0.120	-	-	-	-
37	UNI kips/ft	GY	-0.120	-	-	-	-
38	UNI kips/ft	GY	-0.120	-	-	-	-
39	UNI kips/ft	GY	-0.120	-	-	-	-
40	UNI kips/ft	GY	-0.120	-	-	-	-
41	UNI kips/ft	GY	-0.120	-	-	-	-
42	UNI kips/ft	GY	-0.120	-	-	-	-
43	UNI kips/ft	GY	-0.120	-	-	-	-
44	UNI kips/ft	GY	-0.120	-	-	-	-

1 DL : Selfweight

Direction	Factor	Assigned Geometry
Y	-1.000	1 - 64

2 LL : Beam Loads

Beam	Type	Direction	Fa	Da (ft)	Fb	Db	Ecc. (ft)
11	UNI kips/ft	GY	-0.060	-	-	-	-
16	UNI kips/ft	GY	-0.060	-	-	-	-
24	UNI kips/ft	GY	-0.060	-	-	-	-
25	UNI kips/ft	GY	-0.060	-	-	-	-
26	UNI kips/ft	GY	-0.060	-	-	-	-
30	UNI kips/ft	GY	-0.060	-	-	-	-
31	UNI kips/ft	GY	-0.060	-	-	-	-
32	UNI kips/ft	GY	-0.060	-	-	-	-
33	UNI kips/ft	GY	-0.060	-	-	-	-
34	UNI kips/ft	GY	-0.060	-	-	-	-
35	UNI kips/ft	GY	-0.060	-	-	-	-
36	UNI kips/ft	GY	-0.060	-	-	-	-
37	UNI kips/ft	GY	-0.060	-	-	-	-
38	UNI kips/ft	GY	-0.060	-	-	-	-
39	UNI kips/ft	GY	-0.060	-	-	-	-
40	UNI kips/ft	GY	-0.060	-	-	-	-
41	UNI kips/ft	GY	-0.060	-	-	-	-
42	UNI kips/ft	GY	-0.060	-	-	-	-
43	UNI kips/ft	GY	-0.060	-	-	-	-
44	UNI kips/ft	GY	-0.060	-	-	-	-
45	UNI kips/ft	GY	-0.060	-	-	-	-
46	UNI kips/ft	GY	-0.060	-	-	-	-
47	UNI kips/ft	GY	-0.060	-	-	-	-
48	UNI kips/ft	GY	-0.060	-	-	-	-

3 Wind X : Beam Loads

Beam	Type	Direction	Fa	Da (ft)	Fb	Db	Ecc. (ft)
36	UNI kips/ft	GX	0.150	-	-	-	-
37	UNI kips/ft	GX	0.150	-	-	-	-
38	UNI kips/ft	GX	0.150	-	-	-	-
39	UNI kips/ft	GX	0.150	-	-	-	-
40	UNI kips/ft	GX	0.150	-	-	-	-
41	UNI kips/ft	GX	0.150	-	-	-	-
42	UNI kips/ft	GX	0.150	-	-	-	-
43	UNI kips/ft	GX	0.150	-	-	-	-
44	UNI kips/ft	GX	0.150	-	-	-	-

Node Displacement Summary

	Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
Max X	35	3:Wind X	**0.067**	-0.005	0.000	0.067	-0.000	-0.000	0.000
Min X	8	5:COMB - 1.2 [	**-0.008**	-0.002	-0.000	0.008	-0.001	0	0.002
Max Y	1	1:DL	0	**0**	0	0	-0.000	0	0.000
Min Y	30	5:COMB - 1.2 [	-0.008	**-0.444**	-0.000	0.444	0.001	-0.000	-0.003
Max Z	5	3:Wind X	0.034	-0.000	**0.011**	0.036	0.000	0	-0.001
Min Z	6	3:Wind X	0.034	-0.000	**-0.006**	0.034	-0.000	0	-0.001
Max rX	11	5:COMB - 1.2 [	-0.006	-0.156	-0.000	0.156	**0.003**	-0.000	0.001
Min rX	15	5:COMB - 1.2 [	-0.007	-0.149	-0.000	0.149	**-0.004**	-0.000	0.001
Max rY	34	3:Wind X	0.054	-0.005	-0.000	0.054	-0.000	**0.000**	0.000
Min rY	22	3:Wind X	0.046	-0.035	0.003	0.058	-0.000	**-0.000**	0.000
Max rZ	37	5:COMB - 1.2 [	-0.007	-0.075	0.000	0.075	-0.000	-0.000	**0.011**
Min rZ	21	5:COMB - 1.2 [	-0.008	-0.255	-0.001	0.255	-0.000	-0.000	**-0.003**
Max Rst	30	5:COMB - 1.2 [	-0.008	-0.444	-0.000	**0.444**	0.001	-0.000	-0.003

Beam Displacement Detail Summary

Displacements shown in italic indicate the presence of an offset

	Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
Max X	40	3:Wind X	4.800	**0.068**	-0.005	-0.001	0.068
Min X	55	5:COMB - 1.2 [	2.400	**-0.019**	-0.001	-0.001	0.019
Max Y	55	1:DL	0	0	**0**	0	0
Min Y	38	5:COMB - 1.2 [	1.280	-0.008	**-0.448**	-0.000	0.449
Max Z	1	3:Wind X	0	0.034	-0.000	**0.011**	0.036
Min Z	6	3:Wind X	0	0.034	-0.000	**-0.006**	0.034
Max Rst	38	5:COMB - 1.2 [	1.280	-0.008	-0.448	-0.000	**0.449**

Beam End Displacement Summary

Displacements shown in italic indicate the presence of an offset

	Beam	Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)
Max X	21	35	3:Wind X	**0.067**	-0.005	0.000	0.067
Min X	10	8	5:COMB - 1.2 [	**-0.008**	-0.002	-0.000	0.008
Max Y	55	1	1:DL	0	**0**	0	0
Min Y	15	30	5:COMB - 1.2 [	-0.008	**-0.444**	-0.000	0.444
Max Z	1	5	3:Wind X	0.034	-0.000	**0.011**	0.036
Min Z	6	6	3:Wind X	0.034	-0.000	**-0.006**	0.034
Max Rst	15	30	5:COMB - 1.2 [	-0.008	-0.444	-0.000	**0.444**

Beam End Force Summary

The signs of the forces at end B of each beam have been reversed. For example: this means that the Min Fx entry gives the largest tension value for an beam.

				Axial	Shear		Torsion	Bending	
	Beam	Node	L/C	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-ft)	My (kip-ft)	Mz (kip-ft)
Max Fx	57	3	5:COMB - 1.2 [	**7.363**	1.852	0.712	0	0.000	-0.000
Min Fx	60	1	3:Wind X	**-3.091**	0	0	0	0	0
Max Fy	1	5	8:COMB - 1.2 [	1.267	**3.652**	0.027	0	0	4.931
Min Fy	5	7	5:COMB - 1.2 [	1.852	**-5.821**	-0.017	-0	-0	7.408
Max Fz	42	33	3:Wind X	-2.222	-0.002	**1.257**	0.004	-1.499	-0.054
Min Fz	41	33	3:Wind X	-2.409	0.004	**-0.761**	-0.001	-1.499	-0.053
Max Mx	41	32	4:COMB - 1.4 [	-0.009	1.033	0.000	**0.018**	-0.000	-10.031
Min Mx	42	33	5:COMB - 1.2 [	-0.008	-0.086	-0.000	**-0.130**	0.002	-16.800
Max My	57	7	5:COMB - 1.2 [	7.277	1.852	0.712	-0	**2.850**	-7.408
Min My	58	8	5:COMB - 1.2 [	7.170	1.769	-0.715	-0	**-2.858**	-7.078
Max Mz	5	7	8:COMB - 1.2 [	2.068	-4.986	-0.106	-0	-0	**8.754**
Min Mz	37	30	5:COMB - 1.2 [	0.022	0.479	-0.007	0.003	-0.016	**-19.445**

Reaction Summary

			Horizontal	Vertical	Horizontal	Moment		
	Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (kip-ft)	MY (kip-ft)	MZ (kip-ft)
Max FX	1	5:COMB - 1.2 [	**1.854**	3.700	0.030	0	0	0
Min FX	1	3:Wind X	**-2.401**	-0.714	-0.003	0	0	0
Max FY	3	5:COMB - 1.2 [	-1.852	**7.387**	0.712	0	0	0
Min FY	1	3:Wind X	-2.401	**-0.714**	-0.003	0	0	0
Max FZ	3	5:COMB - 1.2 [	-1.852	7.387	**0.712**	0	0	0
Min FZ	4	5:COMB - 1.2 [	-1.769	7.280	**-0.715**	0	0	0
Max MX	1	1:DL	0.861	1.662	0.011	**0**	0	0
Min MX	1	1:DL	0.861	1.662	0.011	**0**	0	0
Max MY	1	1:DL	0.861	1.662	0.011	0	**0**	0
Min MY	1	1:DL	0.861	1.662	0.011	0	**0**	0
Max MZ	1	1:DL	0.861	1.662	0.011	0	0	**0**
Min MZ	1	1:DL	0.861	1.662	0.011	0	0	**0**

Utilization Ratio

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
1	W12X26	W12X26	0.088	1.000	0.088	Eq.H1-3a(H1-	8	7.650	204.000	17.300	0.300
2	W12X26	W12X26	0.105	1.000	0.105	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
3	W12X26	W12X26	0.129	1.000	0.129	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
4	W12X26	W12X26	0.129	1.000	0.129	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
5	W12X26	W12X26	0.069	1.000	0.069	Cl.G1	5	7.650	204.000	17.300	0.300
6	W12X26	W12X26	0.086	1.000	0.086	Eq.H1-3a(H1-	8	7.650	204.000	17.300	0.300
7	W12X26	W12X26	0.099	1.000	0.099	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
8	W12X26	W12X26	0.125	1.000	0.125	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
9	W12X26	W12X26	0.125	1.000	0.125	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
10	W12X26	W12X26	0.068	1.000	0.068	Cl.G1	5	7.650	204.000	17.300	0.300
11	W8X10	W8X10	0.004	1.000	0.004	Cl.G1	5	2.960	30.800	2.090	0.043
12	W12X26	W12X26	0.011	1.000	0.011	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
13	W12X26	W12X26	0.011	1.000	0.011	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
14	W12X26	W12X26	0.003	1.000	0.003	Eq.H1-1b	5	7.650	204.000	17.300	0.300
15	W12X26	W12X26	0.004	1.000	0.004	Eq.H1-1b	9	7.650	204.000	17.300	0.300
16	W8X10	W8X10	0.004	1.000	0.004	Cl.G1	5	2.960	30.800	2.090	0.043
17	W12X26	W12X26	0.010	1.000	0.010	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
18	W12X26	W12X26	0.010	1.000	0.010	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
19	W8X10	W8X10	0.003	1.000	0.003	Cl.E3	8	2.960	30.800	2.090	0.043
20	W8X10	W8X10	0.006	1.000	0.006	Eq.H1-1b	8	2.960	30.800	2.090	0.043
21	W8X10	W8X10	0.004	1.000	0.004	Cl.E3	8	2.960	30.800	2.090	0.043
22	W12X26	W12X26	0.043	1.000	0.043	Eq.H1-1b	5	7.650	204.000	17.300	0.300
23	W12X26	W12X26	0.050	1.000	0.050	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
24	W12X26	W12X26	0.067	1.000	0.067	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
25	W12X26	W12X26	0.074	1.000	0.074	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
26	W12X26	W12X26	0.074	1.000	0.074	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
27	W12X26	W12X26	0.071	1.000	0.071	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
28	W12X26	W12X26	0.054	1.000	0.054	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
29	W12X26	W12X26	0.036	1.000	0.036	Eq.H1-1b	5	7.650	204.000	17.300	0.300
30	W8X10	W8X10	0.053	1.000	0.053	Eq.H1-1b	5	2.960	30.800	2.090	0.043
31	W8X10	W8X10	0.049	1.000	0.049	Eq.H1-1b	5	2.960	30.800	2.090	0.043
32	W8X10	W8X10	0.063	1.000	0.063	Eq.H1-1b	8	2.960	30.800	2.090	0.043
33	W8X10	W8X10	0.074	1.000	0.074	Eq.H1-1b	5	2.960	30.800	2.090	0.043
34	W8X10	W8X10	0.081	1.000	0.081	Eq.H1-1b	5	2.960	30.800	2.090	0.043
35	W8X10	W8X10	0.043	1.000	0.043	Eq.H1-1b	5	2.960	30.800	2.090	0.043
36	W12X26	W12X26	0.125	1.000	0.125	Eq.H1-1b	5	7.650	204.000	17.300	0.300
37	W12X26	W12X26	0.139	1.000	0.139	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
38	W12X26	W12X26	0.147	1.000	0.147	Cl.F2.2	5	7.650	204.000	17.300	0.300
39	W12X26	W12X26	0.116	1.000	0.116	Eq.H1-1b	5	7.650	204.000	17.300	0.300
40	W12X26	W12X26	0.098	1.000	0.098	Eq.H1-1b	5	7.650	204.000	17.300	0.300
41	W12X26	W12X26	0.144	1.000	0.144	Eq.H1-1b	8	7.650	204.000	17.300	0.300
42	W12X26	W12X26	0.144	1.000	0.144	Eq.H1-1b	8	7.650	204.000	17.300	0.300
43	W12X26	W12X26	0.119	1.000	0.119	Eq.H1-1b	5	7.650	204.000	17.300	0.300
44	W12X26	W12X26	0.085	1.000	0.085	Eq.H1-1b	5	7.650	204.000	17.300	0.300
45	W12X26	W12X26	0.027	1.000	0.027	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
46	W12X26	W12X26	0.040	1.000	0.040	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
47	W12X26	W12X26	0.040	1.000	0.040	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
48	W12X26	W12X26	0.031	1.000	0.031	Eq.H1-1b	3	7.650	204.000	17.300	0.300
49	L40404	L40404	0.046	1.000	0.046	Eq.H2-1	5	1.930	1.183	4.895	0.040
50	L40404	L40404	0.042	1.000	0.042	Eq.H2-1	5	1.930	1.183	4.895	0.040
51	L40404	L40404	0.264	1.000	0.264	Eq.H2-1	8	1.930	1.183	4.895	0.040
52	L40404	L40404	0.063	1.000	0.063	Eq.H2-1	8	1.930	1.183	4.895	0.040
53	L40404	L40404	0.067	1.000	0.067	Eq.H2-1	5	1.930	1.183	4.895	0.040
54	L40404	L40404	0.281	1.000	0.281	Eq.H2-1	8	1.930	1.183	4.895	0.040
55	HSST6X6	HSST6X6	0.187	1.000	0.187	Eq.H1-1b	5	5.240	28.600	28.600	45.600
56	HSST6X6	HSST6X6	0.178	1.000	0.178	Eq.H1-1b	5	5.240	28.600	28.600	45.600
57	HSST6X6	HSST6X6	0.260	1.000	0.260	Eq.H1-1b	5	5.240	28.600	28.600	45.600
58	HSST6X6	HSST6X6	0.252	1.000	0.252	Eq.H1-1b	5	5.240	28.600	28.600	45.600
59	L40404	L40404	0.036	1.000	0.036	Cl.D2	3	1.930	1.183	4.895	0.040
60	L40404	L40404	0.036	1.000	0.036	Cl.D2	3	1.930	1.183	4.895	0.040
61	L40404	L40404	0	1.000	0	Cl.D2	1	1.930	1.183	4.895	0.040
62	L40404	L40404	0	1.000	0	Cl.D2	1	1.930	1.183	4.895	0.040
63	W12X26	W12X26	0.080	1.000	0.080	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300
64	W12X26	W12X26	0.078	1.000	0.078	Eq.H1-3a(H1-	5	7.650	204.000	17.300	0.300

Failed Members

There is no data of this type.

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Fastening point:			

Specifier's comments:

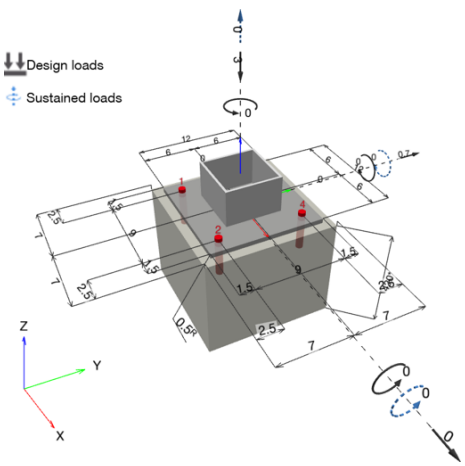
1 Input data



Anchor type and diameter:	**HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) 3/4**
Item number:	2198028 HAS-V-36 3/4"x6" (element) / 2334276 HIT-HY 200-R V3 (adhesive)
Specification text:	Hilti ∅ 3/4 in HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) with 3.5 in nominal embedment depth per ICC-ES ESR-4868 , Hammer drill bit installation per MPII
Effective embedment depth:	$h_{ef,opti}$ = 3.500 in. ($h_{ef,limit}$ = 15.000 in.)
Material:	ASTM F1554 Grade 36
Evaluation Service Report:	ESR-4868
Issued I Valid:	11/1/2024 | 11/1/2026
Proof:	Design Method ACI 318-14 / Chem
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-14 Fig. R.17.5.2.1b)
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate[R] :	l_x x l_y x t = 12.000 in. x 12.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Square HSS (AISC), HSS6X6X.250; (L x W x T) = 6.000 in. x 6.000 in. x 0.250 in.
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 420.000 in., Temp. short/long: 32/32 °F
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: condition B, shear: condition B; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [kip, ft.kip]



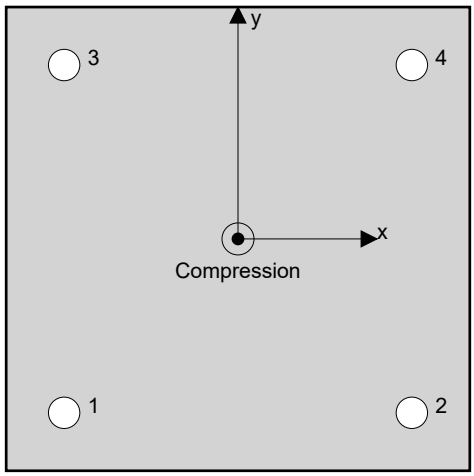
Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1.1 Design results

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -3.000; V_x = 0.000; V_y = 0.700; M_x = 0.00000; M_y = 0.00000; M_z = 0.00000; N_{sus} = 0.000; $M_{x,sus}$ = 0.00000; $M_{y,sus}$ = 0.00000;	no	41

2 Load case/Resulting anchor forces



Anchor reactions [kip]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0.000	0.175	0.000	0.175
2	0.000	0.175	0.000	0.175
3	0.000	0.175	0.000	0.175
4	0.000	0.175	0.000	0.175

Max. concrete compressive strain:	0.00 [‰]
Max. concrete compressive stress:	0.021 [ksi]
Resulting tension force in (x/y)=(-/-):	0.000 [kip]
Resulting compression force in (x/y)=(0.000/0.000):	3.000 [kip]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [kip]	Capacity ϕ N_n [kip]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	N/A	N/A	N/A	N/A
Bond Strength**	N/A	N/A	N/A	N/A
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4 Shear load

	Load V_{ua} [kip]	Capacity ϕ V_n [kip]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	0.175	7.566	3	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Bond Strength controls)**	0.700	4.883	15	OK
Concrete edge failure in direction y+**	0.700	1.712	41	OK

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4868
ϕ $V_{steel} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

Variables

$A_{se,V}$ [ft.^{2}]	f_{uta} [ksi]
0.0023	58.000

Calculations

V_{sa} [kip]
11.640

Results

V_{sa} [kip]	ϕ_{steel}	ϕ V_{sa} [kip]	V_{ua} [kip]
11.640	0.650	7.566	0.175

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4.2 Pryout Strength (Bond Strength controls)

$V_{cpg} = k_{cp}\left[\left(\frac{A_{Na}}{A_{Na0}}\right) \psi_{ec1,Na}\ \psi_{ec2,Na}\ \psi_{ed,Na}\ \psi_{cp,Na}\ N_{ba}\right]$ ACI 318-14 Eq. (17.5.3.1b)

$\phi\ V_{cpg} \geq V_{ua}$ ACI 318-14 Table 17.3.1.1

A_{Na} see ACI 318-14, Section 17.4.5.1, Fig. R 17.4.5.1(b)

$A_{Na0} = (2\ c_{Na})^2$ ACI 318-14 Eq. (17.4.5.1c)

$c_{Na} = 10\ d_a \sqrt{\frac{\tau_{uncr}}{1100}}$ ACI 318-14 Eq. (17.4.5.1d)

$\psi_{ec,Na} = \left(\frac{1}{1 + \frac{e'_N}{c_{Na}}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.3)

$\psi_{ed,Na} = 0.7 + 0.3\left(\frac{c_{a,min}}{c_{Na}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.4b)

$\psi_{cp,Na} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{c_{Na}}{c_{ac}}\right) \leq 1.0$ ACI 318-14 Eq. (17.4.5.5b)

$N_{ba} = \lambda_a \cdot \tau_{k,c} \cdot \pi \cdot d_a \cdot h_{ef}$ ACI 318-14 Eq. (17.4.5.2)

Variables

k_{cp}	$\alpha_{overhead}$	$\tau_{k,c,uncr}$ [ksi]	d_a [in.]	h_{ef} [in.]	$c_{a,min}$ [in.]	$\tau_{k,c}$ [ksi]
2	1.000	2.220	0.750	3.500	2.500	1.260

$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	c_{ac} [in.]	λ_a
0.000	0.000	4.529	1.000

Calculations

c_{Na} [in.]	A_{Na} [ft.^{2}]	A_{Na0} [ft.^{2}]	$\psi_{ed,Na}$
10.607	1.3611	3.1250	0.771

$\psi_{ec1,Na}$	$\psi_{ec2,Na}$	$\psi_{cp,Na}$	N_{ba} [kip]
1.000	1.000	1.000	10.391

Results

V_{cpg} [kip]	$\phi_{concrete}$	$\phi\ V_{cpg}$ [kip]	V_{ua} [kip]
6.976	0.700	4.883	0.700

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4.3 Concrete edge failure in direction y+

$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ec,V}\ \psi_{ed,V}\ \psi_{c,V}\ \psi_{h,V}\ \psi_{parallel,V}\ V_b$ — ACI 318-14 Eq. (17.5.2.1b)

$\phi\ V_{cbg} \geq V_{ua}$ — ACI 318-14 Table 17.3.1.1

A_{Vc} see ACI 318-14, Section 17.5.2.1, Fig. R 17.5.2.1(b)*

$A_{Vc0} = 4.5\ c_{a1}^2$ — ACI 318-14 Eq. (17.5.2.1c)

$\psi_{ec,V} = \left(\frac{1}{1 + \frac{2e'_v}{3c_{a1}}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.5.2.5)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ — ACI 318-14 Eq. (17.5.2.6b)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ — ACI 318-14 Eq. (17.5.2.8)

$V_b = \left(7\left(\frac{l_e}{d_a}\right)^{0.2}\sqrt{d_a}\right)\lambda_a\sqrt{f'_c}\,c_{a1}^{1.5}$ — ACI 318-14 Eq. (17.5.2.2a)

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\psi_{c,V}$	h_a [in.]
2.500	2.500	0.000	1.000	420.000

l_e [in.]	λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
3.500	1.000	0.750	2,500	1.000

Calculations

A_{Vc} [ft.^{2}]	A_{Vc0} [ft.^{2}]	$\psi_{ec,V}$	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [kip]
0.3255	0.1953	1.000	0.900	1.000	1.630

Results

V_{cbg} [kip]	$\phi_{concrete}$	$\phi\ V_{cbg}$ [kip]	V_{ua} [kip]
2.446	0.700	1.712	0.700

*Anchor row defined by: Anchor 3, 4; Case 3 controls

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (EN1992-4, AS5216, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://viewer.joomag.com/profis-design-guide-us-en-summer-2021/0841849001625154758?short&/
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-14, Section 17.8.1.

Fastening meets the design criteria!

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6 Installation data

Profile: Square HSS (AISC), HSS6X6X.250; (L x W x T) = 6.000 in. x 6.000 in. x 0.250 in.

Hole diameter in the fixture: d_f = 0.812 in.

Plate thickness (input): 0.500 in.

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) 3/4

Item number: 2198028 HAS-V-36 3/4"x6" (element) / 2334276 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 0.10000 ft.kip

Hole diameter in the base material: 0.875 in.

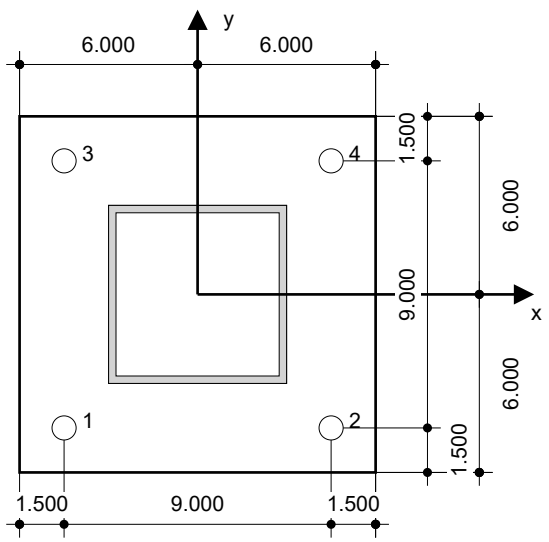
Hole depth in the base material: 3.500 in.

Minimum thickness of the base material: 5.250 in.

Hilti ∅ 3/4 in HIT-HY 200 V3 + HAS-V-36 (ASTM F1554 Gr.36) with 3.5 in nominal embedment depth per ICC-ES ESR-4868 , Hammer drill bit installation per MPII

6.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Compressed air with required accessories to blow from the bottom of the hole • Proper diameter wire brush	• Dispenser including cassette and mixer • Torque wrench



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-4.500	-4.500	2.500	11.500	2.500	11.500
2	4.500	-4.500	11.500	2.500	2.500	11.500
3	-4.500	4.500	2.500	11.500	11.500	2.500
4	4.500	4.500	11.500	2.500	11.500	2.500

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Input data and results must be checked for conformity with the existing conditions and for plausibility!
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EXHIBIT D
Roof Warranty

Inspection Report

Job Information

MILITARY BUILDING ROOF REPLACEMENT
203 BARGER STREET
BLACKSBURG VA 24061

Job #: 1275237
Job Start: 8/5/2019
Job Completion: 10/1/2019
Date Inspected: 10/25/2019

Facility Owner: VIRGINA POLYTECHNIC INSTITUTE
System: A
Material: .060 FR EPDM
Total Square Feet: 13200
EB: N

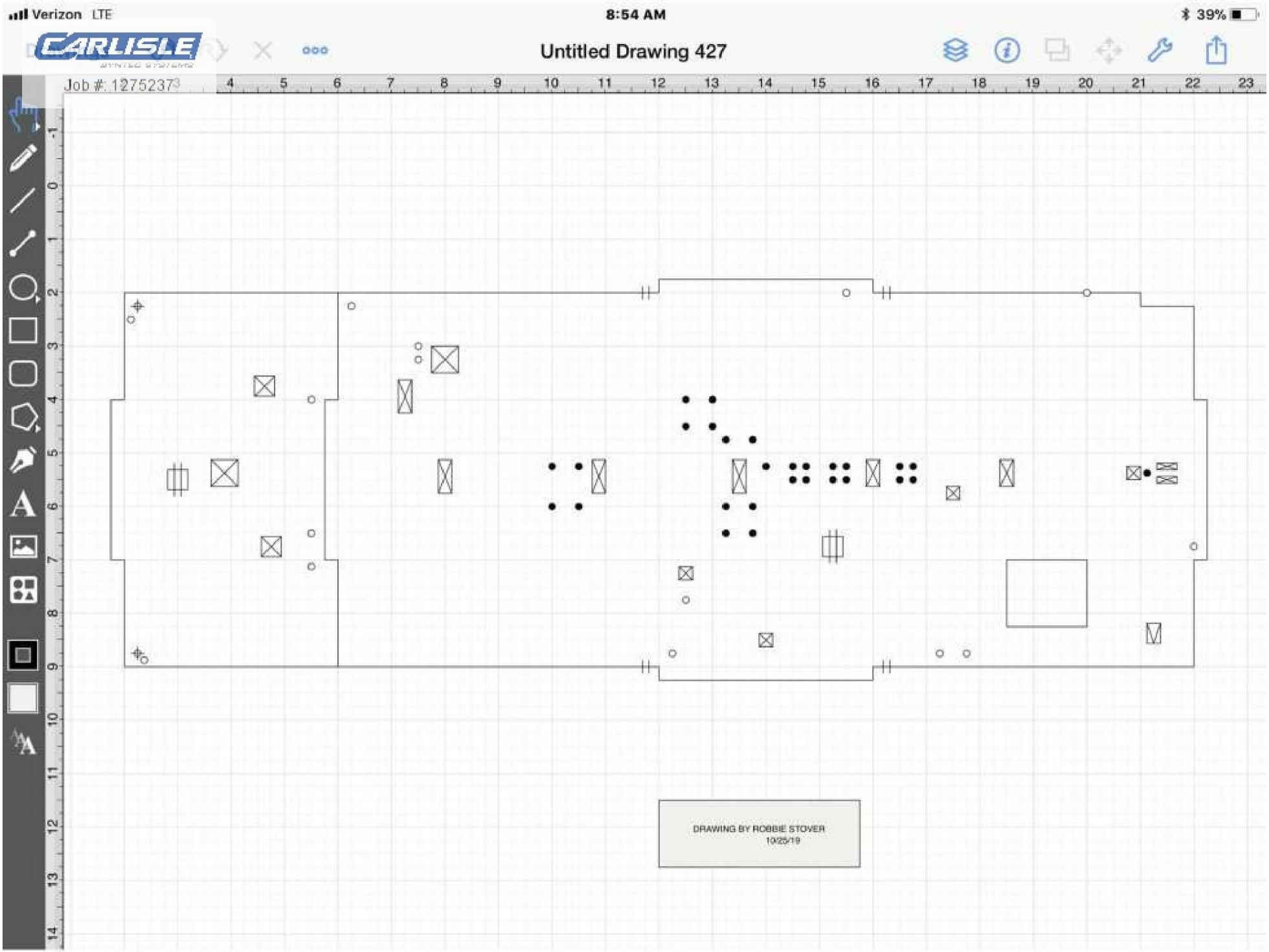
Inspection Summary

Inspection #	Field Service Rep	Attending Roofer	Approved	Re-inspection
1	ROBBIE STOVER	Marocs	Yes	No

Repair Summary

I hereby represent, with full intention that Carlisle justifiably rely hereupon in the issuance of its warranty, that the project described above now conforms in its entirety with all Carlisle specifications, details and installation instructions. Please return signed report to fax 717-245-7121 or email to repairforwarranty@carlisleccm.com for processing.

REPAIRS COMPLETED ON: _____ SIGNATURE: _____


Verizon LTE
8:54 AM
39%
CARLISLE
Untitled Drawing 427
Job #: 12752373
DRAWING BY ROBBIE STOVER
10/25/19

CARLISLE

GOLDEN SEAL TOTAL ROOFING SYSTEM WARRANTY

Edge-to-Edge

SERIAL NO. 10188691 **917** **DATE OF ISSUE: October 25, 2019**

BUILDING OWNER: VIRGINA POLYTECHNIC INSTITUTE
NAME OF BUILDING: MILITARY BUILDING ROOF REPLACEMENT
BUILDING ADDRESS: 203 BARGER STREET, BLACKSBURG, VA
DATE OF COMPLETION OF THE CARLISLE TOTAL ROOFING SYSTEM: 10/01/2019
DATE OF ACCEPTANCE BY CARLISLE: 10/25/2019 **CMD1275237**

Carlisle Roofing Systems, Inc., (Carlisle) warrants to the Building Owner **(Owner)** of the above described building, that; subject to the terms, conditions, and limitations stated in this warranty, Carlisle will repair any leak in the Carlisle Golden Seal™Total Roofing System **(Carlisle Total Roofing System)** installed by a Carlisle Authorized Roofing applicator for a period of **20** years commencing with the date of Carlisle's acceptance of the Carlisle Total Roofing System installation. However, in no event shall Carlisle's obligations extend beyond **20.5** years subsequent to the date of substantial completion of the Carlisle Total Roofing System. See below for exact date of warranty expiration.

The Carlisle Total Roofing System is defined as the following Carlisle brand materials: Membrane, Flashings, Adhesives and Sealants, Insulation, Cover Boards, Fasteners, Fastener Plates, Fastening Bars, Edge Metal, Insulation Adhesives, and any other Carlisle brand products utilized in this installation.

TERMS, CONDITIONS, LIMITATIONS

1. Owner shall provide Carlisle with written notice via letter, fax or email within thirty (30) days of the discovery of any leak in the Carlisle Total Roofing System. Owner should send written notice of a leak to Carlisle's Warranty Services Department at the address set forth at the bottom of this warranty. By so notifying Carlisle, the Owner authorizes Carlisle or its designee to investigate the cause of the leak. Should the investigation reveal the cause of the leak to be outside the scope of this Warranty, investigation and repair costs for this service shall be paid by the Owner.
2. If, upon inspection, Carlisle determines that the leak is caused by a defect in the Carlisle Total Roofing System's materials, or workmanship of the Carlisle Authorized Roofing Applicator in installing the same, Owner's remedies and Carlisle's liability shall be limited to Carlisle's repair of the leak.
3. This warranty shall not be applicable if, upon Carlisle's inspection, Carlisle determines that any of the following has occurred:
   (a) The Carlisle Total Roofing System is damaged by natural disasters, including, but not limited to, lightning, fire, insect infestations, earthquake, tornado, hail, hurricanes, and winds of (3 second) peak gust speeds of one hundred fifteen mph or higher measured at 10 meters above ground; or
   (b) Loss of integrity of the building envelope and, or structure including, but not limited to partial or complete loss of roof decking, wall siding, windows, doors or other envelope components or from roof damage by wind-blown objects, or:
   (c) The Carlisle Total Roofing System is damaged by any intentional or negligent acts, accidents, misuse, abuse, vandalism, civil disobedience, or the like.
   (d) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, non-Carlisle brand metal work, etc., occurs and causes a leak, or otherwise damages the Carlisle Total Roofing System; or
   (e) Acids, oils, harmful chemicals and the like come in contact with the Carlisle Total Roofing System and cause a leak, or otherwise damage the Carlisle Total Roofing System.
   (f) The Carlisle Total Roofing System encounters leaks or is otherwise damaged by condensation resulting from any condition within the building that may generate moisture.
4. This Warranty shall be null and void if any of the following shall occur:
   (a) If, after installation of the Carlisle Total Roofing System by a Carlisle Authorized Roofing Applicator there are any alterations or repairs made on or through the roof or objects such as, but not limited to, structures, fixtures, solar panels, wind turbines, roof gardens or utilities are placed upon or attached to the roof without first obtaining written authorization from Carlisle; or
   (b) Failure by the Owner to use reasonable care in maintaining the roof, said maintenance to include, but not be limited to, those items listed on Carlisle's Care & Maintenance Information sheet which accompanies this Warranty.
5. Only Carlisle brand insulation products are covered by this warranty. Carlisle specifically disclaims liability, under any theory of law, for damages sustained by or caused by non-Carlisle brand insulation products.
6. During the term of this Warranty, Carlisle shall have free access to the roof during regular business hours.
7. Carlisle shall have no obligation under this Warranty while any bills for installation, supplies, service, and warranty charges have not been paid in full to the Carlisle Authorized Roofing Applicator, Carlisle, or material suppliers.
8. Carlisle's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provision.
9. Carlisle shall not be responsible for the cleanliness or discoloration of the Carlisle Total Roofing System caused by environmental conditions including, but not limited to, dirt, pollutants, or biological agents.
10. Carlisle shall have no liability under any theory of law for any claims, repairs, restoration, or other damages including, but not limited to, consequential or incidental damages relating, directly or indirectly, to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in the building or in the air, land, or water serving the building.
11. This warranty shall be transferable upon a change in ownership of the building when the owner has completed certain procedures including a transfer fee and an inspection of the Roofing System by a Carlisle representative.

CARLISLE DOES NOT WARRANT PRODUCTS UTILIZED IN THIS INSTALLATION WHICH IT HAS NOT FURNISHED; AND SPECIFICALLY DISCLAIMS LIABILITY, UNDER ANY THEORY OF LAW, ARISING OUT OF THE INSTALLATION AND PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY CARLISLE OR THE PRIOR EXISTING ROOFING MATERIAL OVER WHICH THE CARLISLE ROOFING SYSTEM HAS BEEN INSTALLED

THE REMEDIES STATED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES FOR FAILURE OF THE CARLISLE TOTAL ROOFING SYSTEM OR ITS COMPONENTS. THERE ARE NO WARRANTIES EITHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, WHICH EXTEND BEYOND THE FACE HEREOF. CARLISLE SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS UNDER ANY THEORY OF LAW.

Mark J Long

BY: Mark Long
AUTHORIZED SIGNATURE
TITLE: Director, Technical and Warranty Services

This Warranty Expires: October 24, 2039

CARLISLE

GOLDEN SEAL TOTAL ROOFING SYSTEM WARRANTY

Edge-to-Edge

SERIAL NO. 10188691 **917** **DATE OF ISSUE: October 25, 2019**

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Mark J Long

BY: Mark Long
AUTHORIZED SIGNATURE
TITLE: Director, Technical and Warranty Services
This Warranty Expires: October 24, 2039

EXHIBIT E
Required Special Inspections
HECO-6a and HECO 6b

VIRGINIA TECH

2021 Code Version

STATEMENT OF VUSBC SPECIAL INSPECTIONS & STRUCTURAL OBSERVATIONS

HECO-6a

University Building Official
Sterrett Facilities Complex, 30A
VTUBO-g@vt.edu

DATE: 12/03/2025

INSTITUTION/AGENCY: Virginia Tech

PROJECT TITLE: Virginia Tech - Tailor Shop Renovation

UBO NUMBER: 25-754816

PROJECT MANAGER

The following firms are designated to perform the Special Inspections required herein. The firm has the experience, qualifications, certifications and/or licenses required to perform the functions indicated.

OWNER'S TESTING AND INSPECTION SERVICE

OWNER'S TEST LAB	SPECIAL INSPECTION RDP	SMOKE CONTROL INSPECTION & TESTING RDP
Co. Name:	Co. Name:	Co. Name:
Phone:	Phone:	Phone:
Virginia RDP Seal	Virginia RDP Seal	Virginia RDP Seal
(Seal & Signature) *(Date)*	*(Seal & Signature)* *(Date)*	*(Seal & Signature)* *(Date)*

Inspection and/or Testing responsibilities are indicated on the attached List of Special Inspections, Form HECO-6b. Copies of all test data and reports shall be provided to the Architect/Engineer of Record and to the Owner's Project Manager on a timely basis. The Contractor and UBO shall be notified of all deficiencies and discrepancies in a timely manner so that corrective action can be taken.

PROFESSIONAL OVERSIGHT AND CERTIFICATION

STRUCTURAL ENGINEER OF RECORD	A/E of RECORD	SMOKE CONTROL RDP
Co. Name: AECOM	Co. Name:	Co. Name:
Phone: 540-857-3100	Phone:	Phone:
Virginia RDP Seal	Virginia RDP Seal	Virginia RDP Seal
COMMONWEALTH OF VIRGINIA DAVID W. REYNOLDS Lic. No. 047908 12-03-25 PROFESSIONAL ENGINEER		
(Seal & Signature) *(Date)*	*(Seal & Signature)* *(Date)*	*(Seal & Signature)* *(Date)*

CODE OFFICIAL'S ACCEPTANCE

☐ Acceptable as submitted

☐ Acceptable as marked

By: _____

University Building Official *(Date)*

Attachment: HECO-6b List of Special Inspections

2021 SPECIAL INSPECTIONS

University Building Official
Sterrett Facilities Complex, 30A
vtubo-g@vt.edu

Project Title: Virginia Tech - Tailor Shop Renovation

Rev. 03/25 **Project Code:** 25-754816 HECO 6b

MATERIAL / ACTIVITY	TYPE OF INSPECTION (RDP add lines as needed to identify other required items)	Required?	REFERENCE	INSPECTION / TEST BY: SPECIAL INSPECTOR/ TEST LAB	RDP OF RECORD	OTHER
CONTRACTOR RESPONSIBILITY (see Note #7)						
Structure	Special Inspections for Wind Resistance and/or Seismic resistance.	☐	VCC 1704.6	Continuous		
		☐				
STRUCTURAL OBSERVATIONS (see Note #6)						
Structure	Structural observations for structures as identified by the structural observer in a written statement.	☐	VCC 1704.6	☐ Continuous ☐ Periodic		
		☐				
FOUNDATIONS						
Soil	Verify material below shallow foundations are adequate to achieve the design bearing capacity.	☐	VCC T1705.6 #1	Periodic		
Soil	Verify excavation is extended to proper depth and has reached proper material.	☐	VCC T1705.6 #2	Periodic		
Soil	Perform classification and testing of compacted fill materials.	☐	VCC T1705.6 #3	Periodic		
Soil	During fill placement verify conformance to geotechnical report.	☐	VCC T1705.6 #4	Continuous		
Soil	Prior to fill, inspect subgrade to verify prepared properly.	☐	VCC T1705.6 #5	Periodic		
Helical Pile	Install equipment, pile dimensions, tip elevations, final depth, final installation torque and other pertinent installation data.	☐	VCC 1705.9	Continuous		
Deep Foundations	Reasonable doubt as to the structural integrity.	☐	VCC 1705.10	Continuous	Note #8	
Deep Foundations	Verify element materials, sizes and lengths.	☐	VCC T1705.7 #1	Continuous		
Deep Foundaitons	Determine capacities of test elements and conduct additional load tests.	☐	VCC T1705.7 #2	Continuous		
Deep Foundations	Inspect driving operations and maintain complete and accurate records.	☐	VCC T1705.7 #3	Continuous		
Deep Foundations	Record placement and install criteria.	☐	VCC T1705.7 #4	Continuous		
Deep Foundations	For steel elements, perform special inspections per 1705.2	☐	VCC T1705.7 #5	Continuous		
Deep Foundations	For concrete elements, perform special inspections per 1705.3	☐	VCC T1705.7 #6	Continuous		
Deep Foundations	For speciality elements, perform additional inspections per the RDP.	☐	VCC T1705.7 #7	Continuous		
Cast Deep Fnds	Inspect drilling operations and maintain complete and accurate records.	☐	VCC T1705.8 #1	Continuous		
Cast Deep Fnds	Record placement and install criteria.	☐	VCC T1705.8 #2	Continuous		
Cast Deep Fnds	For concrete elements, perform special inspections per 1705.3	☐	VCC T1705.8 #3	Continuous		
		☐				
		☐				

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CONCRETE CONSTRUCTION						
Concrete	Reinforcement, including prestressing tendons, verfiy placement.	☐	VCC T1705.3 #1	Periodic		
Concrete	Reinforcing bar welding.	☐	VCC T1705.3 #2	☐ Continuous ☐ Periodic		
Concrete	Inspect anchors cast in concrete	☐	VCC T1705.3 #3	Periodic		
Concrete	Inspect anchors post-installed.	☐	VCC T1705.3 #4	☐ Continuous ☐ Periodic		
Concrete	Verify use of required design mix	☐	VCC T1705.3 #5	Periodic		
Concrete	Concrete test specimens	☐	VCC T1705.3 #6	Continuous		
Concrete	Concrete and shotcrete placement for proper application.	☐	VCC T1705.3 #7	Continuous		
Concrete	Verify maintenance of specified curing temperature and techniques.	☐	VCC T1705.3 #8	Periodic		
Concrete	Prestressed concrete application of forces and grouting.	☐	VCC T1705.3 #9	Continuous		
Concrete	Precast concrete member erection.	☐	VCC T1705.3 #10	Periodic		
Concrete	Precast concrete diaphragm connections or reinforcement at joints classified MDE or HDE.	☐	VCC T1705.3 #11	Continuous		
Concrete	Tolerances of precast concrete diaphragm connections.	☐	VCC T1705.3 #12	Periodic		
Concrete	Verify in-situ concrete strength.	☐	VCC T1705.3 #13	Periodic		
Concrete	Inspect formwork.	☐	VCC T1705.3 #14	Periodic		
		☐				
		☐				
STEEL CONSTRUCTION						
Fabricator	Quality Control Inspection Of Shop	☐	VCC 1704.2.5	Periodic	Note #2	
Steel	Welding	☑	AISC 360-16 N5.1	Periodic		
Steel	High Strength Bolting	☑	AISC 360-16 N5.1	Periodic		
Steel	Galvanized structural steel	☑	AISC 360-16 N5.1	Periodic		
Decking	Cold Form Steel Decking	☐	VCC 1705.2.2	Periodic		
Joist	1a open web joist and joist girders end connections.	☐	VCC T1705.2.3	Periodic	Note #2	
Joist	1b1 open web joist and joist girder standard bridging.	☐	VCC T1705.2.3	Periodic	Note #2	
Joist	1b2 open web joist and joist girder other bridging.	☐	VCC T1705.2.3	Periodic	Note #2	
Trusses	Cold form steel trusses, span >60 feet	☐	VCC 1705.2.4	Periodic	Note #2	
		☐				
		☐				

MATERIAL / ACTIVITY	TYPE OF INSPECTION (RDP add lines as needed to identify other required items)		REFERENCE	INSPECTION / TEST BY: RDP OF RECORD		
MASONRY CONSTRUCTION *Indicate Quality Assurance Level (1, 2, 3)*			*TMS 402 3.1*	*Level 1* ☐	*Level 2* ☐	*Level 3* ☐
Masonry - Verify	Verification of compliance of submittals.	☐	TMS 602 1.6 Table 3	Note #2	Note #2	Note #2
Masonry - Verify	Verify f'm and f'AAC.	☑	TMS 602 1.6 Table 3		Note #2	Note #2
Masonry - Verify	Verify slump flow and Visual Stability Index for self consolidating grout.	☐	TMS 602 1.6 Table 3		Note #2	Note #2
Masonry - Verify	Verfiy f'm and f'AAC, for every 5,000 sq.ft.	☐	TMS 602 1.6 Table 3			Note #2
Masonry - Verify	Verify proportions as delivered to the project site.	☐	TMS 602 1.6 Table 3			Note #2
Masonry - Inspect	1a Proportions of site-prepared mortar.	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	1b Grade and size of prestressing tendons and anchorage.	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	1c Grade, type and size of reinforcement, connectors, anchor bolts, and prestresssing tendons and anchorage.	☑	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	1d Prestressing technique	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	1e Properties of thin-bed mortar for AAC masonry	☐	TMS 602 1.6 Table 4		☐ Continuous ☐ Periodic	Continuous
Masonry - Inspect	1f sample panel construction	☐	TMS 602 1.6 Table 4		Periodic	Continuous
Masonry - Inspect	2a Grout Space	☐	TMS 602 1.6 Table 4		Periodic	Continuous
Masonry - Inspect	2b Placement of prestressing tendons and anchorages	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	2c Placement of reinforcement, connectors, and anchor bolts	☑	TMS 602 1.6 Table 4		Periodic	Continuous
Masonry - Inspect	2d Proportions of site-prepared grout and prestressing grout for bonded tendons.	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	3a Materials and procedures with the approved submittals	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	3b Placement of masonry units and mortar joint construction	☑	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	3c Size and location of structural members	☑	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	3d Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.	☐	TMS 602 1.6 Table 4		Periodic	Continuous
Masonry - Inspect	3e Welding of reinforcement	☐	TMS 602 1.6 Table 4		Continuous	Continuous
Masonry - Inspect	3f Preparation, construction, and protection of masonry during cold or hot weather (<40F or >90F)	☐	TMS 602 1.6 Table 4		Periodic	Periodic
Masonry - Inspect	3g Application and measurement of prestressing force.	☐	TMS 602 1.6 Table 4		Continuous	Continuous
Masonry - Inspect	3h Placement of grout and prestressing grout for bonded tendons is in compliance.	☐	TMS 602 1.6 Table 4		Continuous	Continuous
Masonry - Inspect	3i Placement of AAC masonry units and construction of thin-bed mortor joints.	☐	TMS 602 1.6 Table 4		☐ Continuous ☐ Periodic	Continuous
Masonry - Inspect	4 Observe preparation of grout specimens, mortar specimens, and/or prisms.	☐	TMS 602 1.6 Table 4		Periodic	Continuous
Glass Unit	Glass unit masonry and masonry veneer in Risk Category IV	☐	VCC 1705.4.1			
Vertical Masonry	Vertical masonry foundation elements	☐	VCC 1705.4.2			
		☐				
		☐				

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WOOD CONSTRUCTION						
Wood	Wood material labeling	☐	VCC 1703.5	Periodic	Note #2	
Wood	Quality Control Inspection Of Shop Fabrication	☐	VCC 1704.2.5	Periodic	Note #2	
Wood	High-load Diaghragms	☐	VCC 1705.5.1	Periodic		
Wood-Trusses	Metal-plate counnected wood trusses, span >60 feet	☐	VCC 1705.5.2	Periodic	Note #2	
Mass Timber	Anchorage and connections to timber deep foundation systems	☐	VCC T1705.5.3	Periodic		
Mass Timber	Inspect erection of mass timber construction	☐	VCC T1705.5.3	Periodic		
Mass Timber	Inspect connections where installation methods are required to meet design loads - Threaded connections	☐	VCC T1705.5.3	Periodic		
Mass Timber	Inspect connections where installation methods are required to meet design loads - adhesive anchors - sustained tension loads	☐	VCC T1705.5.3	Continuous		
Mass Timber	Inspect connections where installation methods are required to meet design loads - other adhesive anchors	☐	VCC T1705.5.3	Periodic		
Mass Timber	Inspect connections where installation methods are required to meet design loads - bolted connections	☐	VCC T1705.5.3	Periodic		
Mass Timber	Inspect connections where installation methods are required to meet design loads - concealed connections.	☐	VCC T1705.5.3	Periodic		
Sealing	Sealants or adhesives where required by section 703.7	☐	VCC 1705.20	Periodic		
		☐				
		☐				
WIND FORCE RESISTANCE *Wind exposure category B, where V >= 150 mph or Wind exposure category C or D, where V >= 140 mph*						
Wood	Field gluing, nailing, bolting, anchoring, and other fastening of MWFRS, including wood shear walls, wood diaphragms, drag struts, braces, and hold downs.	☐	VCC 1705.12.1	☐ Continuous ☐ Periodic		
Cold Formed Steel	Welding, screw attachment of MWFRS, including shear walls, braces, diaphrams, collectors, and hold downs.	☐	VCC 1705.12.2	Periodic		
Components	Fastening of the roof covering, roof deck, roof framing connections, exterior wall covering, and wall connections to roof and floor diaphragms and framing.	☐	VCC 1705.12.3	Periodic		
		☐				
		☐				

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SEISMIC RESISTANCE						
Steel	Steel in SFRS for SDC B,C,D,E, or F.	☐	VCC 1705.13.1.1	Periodic		
Steel	Steel in SFRS for SDC B,C,D,E, or F other than above	☐	VCC 1705.13.1.2	Periodic		
Wood	Wood in SFRS for SDC C, D, E, or F	☐	VCC 1705.13.2	☐ Continuous ☐ Periodic		
Cold Formed Steel	Cold Formed Steel for SDC C, D, E, or F	☐	VCC 1705.13.3	Periodic		
Designated systems	For SDC C,D,E, or F designated seismic systems requiring qualificaiton in accordance with 13.2.2 of ASCE 7 shall be inspected to verify label, anchorage and mounting conform to the certificate of compliance.	☐	VCC 1705.13.4	Periodic		
Architectural	Inspection is required for erection and fastening of cladding, interior and exterior nonbearing walls and interior/ exterior veneer in SDC D, E, F.	☐	VCC 1705.13.5	Periodic		
Access Floors	Anchorage of access floors in SDC D, E, or F.	☐	VCC 1705.13.5.1	Periodic		
MEP components	Inspection of anchorage depending on application, SDC C, D, E, or F.	☐	VCC 1705.13.6	Periodic		
Storage Racks	Materials used, to verify compliance with one or more of the material test reports in accordance with construction documents. SDC D, E, or F.	☐	VCC T1705.13.7 #1	Periodic		
Storage Racks	Fabricated storage rack elements SDC D, E, or F.	☐	VCC T1705.13.7 #2	Periodic		
Storage Racks	Storage rack anchorage installation.	☐	VCC T1705.13.7 #3	Periodic		
Storage Racks	Completed system, to indicate compliance with construction docs.	☐	VCC T1705.13.7 #4	Periodic		
Isolation Systems	Systems in seismically isolated structures in SDC B, C, D, E or F	☐	VCC 1705.13.8	Periodic		
Cold Formed Steel	Cold Formed Steel special bolted moment frames SDC D, E, F	☐	VCC 1705.13.9	Periodic		
Testing	Structural Steel SDC B, C, D, E, F	☐	VCC 1705.14.1	Periodic		
Testing	Nonstructural Components SDC B, C, D, E, F	☐	VCC 1705.14.2		Note #2	
Testing	Designated Seismic Systems SDC C, D, E, F	☐	VCC 1705.14.3		Note #2	
Testing	Seismic Isolation Systems SDC B, C, D, E, F	☐	VCC 1705.14.4	Periodic		
		☐				
		☐				

MATERIAL / ACTIVITY	TYPE OF INSPECTION (RDP add lines as needed to identify other required items)	Required?	REFERENCE	INSPECTION / TEST BY: SPECIAL INSPECTOR/ TEST LAB	RDP OF RECORD	OTHER
FIREPROOFING (See Note #9)						
Spray-on	Physical and Visual Tests	☐	VCC 1705.15.1	Continuous		
Spray-on	Surface Conditions	☐	VCC 1705.15.2	Continuous		
Spray-on	Application	☐	VCC 1705.15.3	Continuous		
Spray-on	Thickness	☐	VCC 1705.15.4	Continuous		
Spray-on	Density	☐	VCC 1705.15.5	Continuous		
Spray-on	Bond Strength	☐	VCC 1705.15.6	Continuous		
Mastic/Intumescent	Mastic and Inumescent Fire-Resistant Coatings	☐	VCC 1705.16	Continuous		
		☐				
		☐				
EXTERIOR INSULATION & FINISH SYSTEMS (EIFS)						
Coating	Water-Resistive Barrier Coating	☐	VCC 1705.17.1	Continuous		
Materials	Manufacturer's Data	☐	Specifications	Continuous		
Preparation	Condition Of Substrate	☐	Specifications	Continuous		
Application	Methods, Proportions & Thickness Of Installation	☐	Specifications	Continuous		
		☐				
		☐				
SMOKE CONTROL (see note #5)				**SMOKE CONTROL**		
Testing	Testing for Smoke Control	☐	VCC 1705.19	Continuous		
Ducts	Device Location And Air Duct Leakage	☐	Specifications	Continuous		
System	Pressure Difference, Flow Measurements & Detection Testing	☐	Specifications	Continuous		
Controls	Control Verification, Activation Sequence	☐	Specifications	Continuous		
		☐				
		☐				

NOTES

1. Fabricator, supplier, ready-mixed plant or other production plant shall provide certificates from an approved independent inspection, testing or quality assurance agency attesting that the plant meets at least one of the following criteria:
    a. The plant is a certified production plant meeting the quality assurance standards of a recognized national standards organization for that product.
    b. The plant maintains an agreement with an independent inspection or quality assurance agency to conduct periodic in-plant quality assurance inspections. The frequency of these inspections shall not be less than one every six months.
    c. The plant has an in-shop quality assurance inspection program by an independent testing or quality assurance agency for the work/product to be provided on this project.
2. RDP of Record shall review fabricator/supplier/producer certificates for conformance or compliance with appropriate standards of practice and quality assurance.
3. Contractor/supplier shall submit manufacturer's certificates of compliance for the materials/products as required by VCC 1704.5.
4. A/E shall review records and test results of all special inspections for conformance with requirements.
5. Special Inspection firm shall have expertise in fire protection engineering, mechanical engineering, and certification as an air balancer. The special inspector listed on the cover page and the Agency are responsible for verifying that the inspector(s) for smoke control is qualified as required by VCC 1705.19.2.
6. The Owner's structural observer shall submit a written statement to the UBO identifying the frequency and extent of structural observations as required by VCC 1704.6.
7. VCC 1704.3 requires special inspections for seismic or wind resistance. This statement of inspections shall identify systems or components that are subject to such special inspections or tests in accordance with VCC 1704.3.2 and 1704.3.3. The contractor shall complete, sign and submit the written statement of responsibility in HECO-6c prior to the commencement of work in acknowledgement of awareness of the special inspections as required by VCC 1704.4.
8. The RDP of Record shall determine the frequency of the special inspections (continuous or periodic) in accordance with the adopted codes and standards and shall be noted accordingly on this form.
9. Inspections for sprayed fire-resistant materials, mastic, and intumescent fire-resistant coatings shall be performed during construction. An additional visual inspection shall be performed after the rough installation and where applicable, prior to the concealment of electrical, automatic sprinkler, mechanical and plumbing systems.

EXHIBIT F
Updated Final Working Drawings

VIRGINIA TECH MILITARY BUILDING
TAILOR SHOP
RENOVATION PROJECT

BLACKSBURG, VIRGINIA

FINAL WORKING DRAWING SUBMITTAL

03 DECEMBER, 2025
VT WORK ORDER NUMBER- 25-754816
AECOM PROJECT NO. 60763454

VICINITY MAP



SHEET INDEX

SHEET NUMBER	SHEET NAME
GENERAL	
G-001	COVER SHEET
G-002	ABBREVIATIONS, LEGENDS, & GENERAL NOTES
G-003	PHASING PLAN
GENERAL INFORMATION	
GI102	SECOND FLOOR LIFE SAFETY PLAN
STRUCTURAL	
S-001	GENERAL NOTES
S-101	FRAMING PLAN
S-301	SECTIONS AND DETAILS
ARCHITECTURE	
AD001	GENERAL DEMOLITION NOTES AND LEGEND
AD100	OVERALL GROUND FLOOR DEMOLITION PLAN
AD101	OVERALL FIRST FLOOR DEMOLITION PLAN
AD102	OVERALL SECOND FLOOR DEMOLITION PLAN
AD102A	SECOND FLOOR DEMOLITION PLAN - AREA A
AD102B	SECOND FLOOR DEMOLITION PLAN - AREA B
AD103	OVERALL ROOF DEMOLITION PLAN
AD151	FIRST FLOOR DEMOLITION RCP
AD152	SECOND FLOOR DEMOLITION RCP
AD152A	SECOND FLOOR DEMOLITION RCP - AREA A
AD152B	SECOND FLOOR DEMOLITION RCP - AREA B
A-001	GENERAL NOTES AND LEGENDS
A-100	OVERALL GROUND FLOOR PLAN
A-101	OVERALL FIRST FLOOR PLAN
A-102	OVERALL SECOND FLOOR PLAN
A-102A	SECOND FLOOR PLAN - AREA A
A-102B	SECOND FLOOR PLAN - AREA B
A-103	OVERALL ROOF PLAN
A-152	OVERALL SECOND FLOOR CEILING PLAN
A-152A	SECOND FLOOR CEILING PLAN - AREA A
A-152B	SECOND FLOOR CEILING PLAN - AREA B
A-421	ENLARGED PLAN AND SECTION
A-431	INTERIOR ELEVATIONS
A-531	ROOF DETAILS
A-600	PARTITION TYPE SCHEDULE, NOTES AND DETAILS
A-612	DOOR SCHEDULE AND DETAILS
A-701	MILLWORK DETAILS
A-711	INTERIOR CEILING DETAILS
A-800	FINISH LEGENDS AND SCHEDULES
A-900	ARCHITECTURAL SPECIFICATIONS
A-901	SECOND FLOOR INTERIOR FURNITURE PLAN
FIRE PROTECTION	
FA102	SECOND FLOOR FIRE ALARM PLANS
FA401	FIRE ALARM SEQUENCE OF OPERATIONS AND ELEVATOR FIRE ALARM PLAN
PLUMBING	
P-001	PLUMBING LEGEND AND GENERAL NOTES
PD102A	SECOND FLOOR DEMOLITION PLAN - AREA A

SHEET INDEX

SHEET NUMBER	SHEET NAME
PD102B	SECOND FLOOR DEMOLITION PLAN - AREA B
PL100	GROUND FLOOR PLUMBING PLAN
PL102A	SECOND FLOOR PLUMBING PLAN - AREA A
PL102B	SECOND FLOOR PLUMBING PLAN - AREA B
P-501	DETAILS
P-601	SCHEDULES & SPECIFICATIONS
MECHANICAL	
M-001	MECHANICAL LEGEND AND GENERAL NOTES
MD101	MECHANICAL DEMOLITION PLAN - SECOND FLOOR
MD102	MECHANICAL DEMOLITION PLAN - ROOF
MH101	MECHANICAL DUCTWORK PLAN - SECOND FLOOR
MH102	MECHANICAL DUCTWORK PLAN - ROOF
MP101	MECHANICAL PIPING PLAN - SECOND FLOOR
M-501	MECHANICAL DETAILS
M-601	MECHANICAL SCHEDULES
M-701	MECHANICAL CONTROLS
M-702	MECHANICAL CONTROLS
M-703	MECHANICAL CONTROLS
ELECTRICAL	
E-001	ELECTRICAL LEGEND AND GENERAL NOTES
E-002	ELECTRICAL SPECIFICATIONS
EDL102	SECOND FLOOR LIGHTING PLAN - DEMOLITION
EDP102	SECOND FLOOR POWER PLAN - DEMOLITION
EDP103	ROOF POWER PLAN - DEMOLITION
EL102	OVERALL SECOND FLOOR LIGHTING PLAN - NEW WORK
EL102A	SECOND FLOOR LIGHTING PLAN - NEW WORK - AREA A
EL102B	SECOND FLOOR LIGHTING PLAN - NEW WORK - AREA B
EM102	SECOND FLOOR MECHANICAL POWER PLAN - NEW WORK
EM103	ROOF MECHANICAL POWER PLAN - NEW WORK
EP100	GROUND FLOOR POWER PLAN - NEW WORK
EP102	SECOND FLOOR POWER PLAN - NEW WORK
EP401	ENLARGED POWER PLAN
E-501	ELECTRICAL DETAILS
E-601	ELECTRICAL ONE-LINE DIAGRAM
E-701	PANEL SCHEDULES
E-801	LIGHTING CALCULATIONS - SECOND FLOOR - NORMAL
E-802	LIGHTING CALCULATIONS - SECOND FLOOR - EMERGENCY

CONTRACTOR'S SAFETY NOTE

THE CONTRACTOR SHALL COMPLY WITH VIRGINIA TECH'S SAFETY REQUIREMENTS FOR CONTRACTORS AND SUBCONTRACTORS PROGRAM, WHICH IS INCORPORATED BY REFERENCE. COPIES OF THIS PROGRAM ARE AVAILABLE FROM THE OWNER OR MAY BE DOWNLOADED AT WWW.EHSS.VT.EDU.

ASBESTOS AND LEAD ABATEMENT

CONTRACTOR TO PROVIDE ASBESTOS AND LEAD ABATEMENT AS REQUIRED BY REPORT INCLUDED IN PROJECT SPECIFICATIONS, APPENDIX A. PROVIDE COST FOR ALL REMEDIATION SCOPE DESCRIBED AS SEPARATE LINE ITEM ON BID FORM.

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

AECOM

PROJECT
VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER
60763454

SHEET TITLE
COVER SHEET

SHEET NUMBER
G-001

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ABBREVIATIONS

AAF	ABOVE ACCESS FLOOR
ABUT	ABUTMENT
ACST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJACENT
ADJT	ADJUST (ADJUSTABLE)
AF	ACCESS FLOOR
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZE (ANODIZED)
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATTEN	ATTENUATION
AUX	AUXILIARY
AWP	ACOUSTICAL WALL PANEL
B	WALL BASE
B/	BOTTOM OF
BD	BOARD
BF	BOTH FACES
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BOD	BASIS OF DESIGN
BOT	BOTTOM
BRDG	BRIDGING
BRG	BEARING
BRKT	BRACKET
BSMT	BASEMENT
BTWN / B/N	BETWEEN
C	CARPET
C/C	CENTER TO CENTER
CAB	CABINET
CERT	CERTIFIED
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CG	CORNER GUARD
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CM	CENTIMETER
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CLEAN OUT
COL	COLUMN
COMPR	COMPRESSIBLE
CONC	CONCRETE
CONN	CONNECTOR
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CORR	CORRIDOR
CR	CARD READER
CRT	CURTAIN
CSK	COUNTERSINK
CSWK	CASEWORK
CT	CERAMIC TILE
CTR	CENTER
CW	CURTAINWALL
DAT	DATUM
DB	DOOR BASE CABINET
DBL	DOUBLE
DD	DOOR/DRAWER BASE CABINET
DEG	DEGREE
DEMO	DEMOLITION
DET	DETAIL
DFB	DRAWER/FILE BASE CABINET
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DISPEN	DISPENSER
DKG	DECKING
DL	DEAD LOAD
DN	DOWN
DO	DOOR/OPEN BASE CABINET
DP	DECORATIVE WALL PANEL
DR	DOOR
DS	DOWN SPOUT
DW	DISHWASHER
DWG	DRAWING
DWR	DRAWER
E	EAST
EA	EACH
EF	EACH FACE / EPOXY FLOORING
EHD	ELECTRIC HAND DRYER
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENCL	ENCLOSURE
ENG	ENGINEER
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EPT	EPOXY PAINT
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
ETR	EXISTING TO REMAIN
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXG	EXISTING
EXP	EXPOSED
EXP STR	EXPOSED TO STRUCTURE
EXT	EXTERIOR
F	FILLER PIECE (3/4" MIN - 2 1/2" MAX)
F/	FACE OF
F/F	FACE TO FACE
F/M	FACE OF MULLION
FACT	FACTORY
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FACE
FIN	FINISH
FIXT	FIXTURE
FL	FLOOR
FLUOR	FLUORESCENT
FM	FILM
FNDN	FOUNDATION
FRP	FIBERGLASS REINFORCED PLASTIC
FRT	FIRE RESISTANT TREATED
FT	FEET / FOOT
FTG	FOOTING
FURN	FURNITURE
FUT	FUTURE
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GEN	GENERAL
GL	GLASS
GLAZ	GLAZING
GYP	GYPSUM
GYP BD	GYPSUM BOARD
HDR	HEADER
HDW	HARDWARE

ABBREVIATIONS

HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HPL	HIGH PRESSURE LAMINATE
HR	HOUR
HT	HEIGHT
HVAC	HEATING-VENTILATING-AIR CONDITIONING
ID	INSIDE DIAMETER
IN	INCH(ES)
INCL	INCLUDE(ED)(ING)
INSUL	INSULATED
INT	INTERIOR
JAN	JANITOR
JST	JOIST
JT	JOINT
KO	KNOCKOUT
L	PLASTIC LAMINATE
LAM	LAMINATE(D)
LAV	LAVATORY
LB	POUND
LEVPL	LEVELING PLATE
LF	LINEAR FOOT (FEET)
LKR	LOCKER
LL	LIVE LOAD
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW POINT
LTG	LIGHTING
LVL	LEVEL
LVR	LOUVER
M	METER (METRIC MEASURE)
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MARKER BOARD
MC	MICROWAVE CABINET
MDF	MEDIUM DENSITY FIBERBOARD
MECH	MECHANICAL
MEZZ	MEZZANINE
MF	MOBILE DRAWER/FILE CABINET
MFR	MANUFACTURER
MHO	MAGNETIC HOLD OPEN
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MO	MASONRY OPENING
MRT	MOISTURE/MILDEW RESISTANT TREATED
MTL	METAL
MTR	METER (UTILITIES)
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
O/O	OUT TO OUT
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFC	OPEN FACE CABINET
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFD	OVERFLOW DRAIN
OFOI	OWNER FURNISHED OWNER INSTALLED
OHC	OVERHEAD COILING DOOR
OHD	OVERHEAD
OHS	OPEN CABINET W/ HORIZONTAL SLOTS
OPNG	OPENING
OPP	OPPOSITE
OSC	OPEN SINK CABINET
OUP	OFFICE OF UNIVERSITY PLANNING
P	PAINT
P/L	PROPERTY LINE
PC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PERIM	PERIMETER
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC
PLMB	PLUMBING
PLSTR	PLASTER
PLY	PLYWOOD
PNL	PANEL
POL	POLISHED
PR	PARTITION
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PROJ	PROJECTION
PROP	PROPERTY
PRTBD	PARTICAL BOARD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PTN	PARTITION (WALL)
PVC	POLYVINYL CHLORIDE
PYC	POLYURETHANE COATING
QT	QUARRY TILE
QTY	QUANTITY
R	RISER
RAD	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REBAR	REINFORCING BAR
RECT	RECTANGULAR
REF	REFERENCE
REINF	REINFORCE(ING)
REQ	REQUIRE(D)
RESIN	RESINOUS
REV	REVISE (REVISION)
RF	RESILIENT FLOORING
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
S	SOUTH
SB	SINK BASE CABINET
SC	SEALED CONCRETE
SCHED	SCHEDULE
SD	SOAP DISPENSER
SDC	SLIDING DOOR CABINET
SECT	SECTION
SF	SQUARE FOOT (FEET)
SHT	SHEET
SI	SQUARE INCH(ES)
SIM	SIMILAR
SLD	SOLID SURFACE
SLV	SLEEVE
SOG	SLAB ON GRADE
SPEC	SPECIFICATION(S)
SPKR	SPEAKER
SQ	SQUARE
SS/EE	SAFETY SHOWER / EMERGENCY EYEWASH
SSM	SOLID SURFACE MATERIAL
ST	STONE
ST STL	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFEN(ER)
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURE(AL)
SUSP	SUSPENDED
SYM	SYMMETRICAL
T	TREAD / TILE
T&B	TOP AND BOTTOM

ABBREVIATIONS

T&G	TONGUE AND GROOVE
T/	TOP OF
T/M	TOP OF MULLION
TB	TACK BOARD
TBD	TO BE DETERMINED
TEMP	TEMPERATURE
TERM	TERMINATION
TLT	TOILET
TPO	THERMPLASTIC POLYOLEFIN
TPTN	TOILET PARTITION
TRF	TERRAZZO FLOORING
TV	TELEVISION
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
VCT	VINYL COMPOSITE TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VNR	VENEER
VPR	VAPOR
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WF	WOOD FLOORING
WL	WIND LOAD
WP	WALL PROTECTION
WT	WINDOW TREATMENT
WVP	WOOD VENEER PANEL
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
YD	YARD
YR	YEAR

GENERAL NOTES

A. THE CONSTRUCTION DRAWINGS ILLUSTRATE THE DESIGN INTENT OF THE WORK. THEY INDICATE LOCATION, DIMENSIONS AND TYPICAL DETAILS. THE ARCHITECTURAL DRAWINGS ARE PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSIST OF ALL DRAWINGS LISTED BY THE INDEX OF DRAWINGS AND THE PROJECT SPECIFICATIONS. CONSEQUENTLY, THE WORK DESCRIBED BY THE DRAWINGS OF ANY ONE DISCIPLINE MAY AFFECT THE WORK DESCRIBED ON THE DRAWINGS OF ANOTHER DISCIPLINE, AND MAY REQUIRE REFERENCE TO THE DRAWINGS OF ANOTHER DISCIPLINE. THEREFORE, PARTIAL SETS OF DRAWINGS ARE INCOMPLETE AND SHALL NOT BE DISTRIBUTED OR UTILIZED BY ANYONE.

B. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF ALL APPLICABLE STATE AND/OR LOCAL CODES, LAWS, AMENDMENTS, ORDINANCES, INCLUDING ALL CODES LISTED IN THE APPLICABLE CODES SECTION.

C. DO NOT SCALE DRAWINGS.

D. FIELD VERIFY ALL DIMENSIONS PRIOR TO START OF WORK.

E. CONTACT THE ARCHITECT FOR DETERMINING A REQUIRED DIMENSION THAT CANNOT BE OBTAINED BASED ON DRAWING INFORMATION, BEFORE PROCEEDING WITH THE WORK.

F. WHERE DISCREPANCIES OCCUR BETWEEN FLOOR PLANS, DETAILS, AND LARGE SCALE PLANS, OR WHERE DISCREPANCIES OCCUR BETWEEN ARCHITECTURAL DRAWINGS AND ENGINEERING DRAWINGS, CONTACT THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.

G. NOT ALL CODED NOTES FOR A PARTICULAR SERIES APPEAR OR ARE USED ON EACH SHEET WITHIN THE SERIES - TYPICAL.

H. THE CONTRACTOR SHALL INSTALL OWNER FURNISHED EQUIPMENT IDENTIFIED AS "OFCI" IN THE EQUIPMENT SCHEDULES.

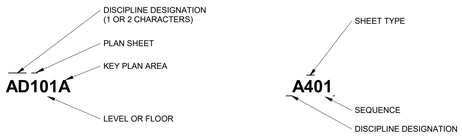
I. THE OWNER IS INSTALLING OWNER FURNISHED EQUIPMENT IDENTIFIED AS "OFOI" IN THE EQUIPMENT SCHEDULES.

J. THE CONTRACTOR SHALL FURNISH AND INSTALL EQUIPMENT IDENTIFIED AS "CFCI" IN THE EQUIPMENT SCHEDULES.

K. REFERENCE THE DRAWING SERIES LEGEND FOR INFORMATION CONTAINED IN EACH ARCHITECTURAL DRAWING SERIES.

L. THE RELATIVE DESIGN REFERENCE ELEVATION OF +0'-0", AS INDICATED ON THE DRAWINGS, CORRESPONDS TO THE FINISH FLOOR ELEVATION OF THE FLOOR IN QUESTION.

SHEET NUMBERING



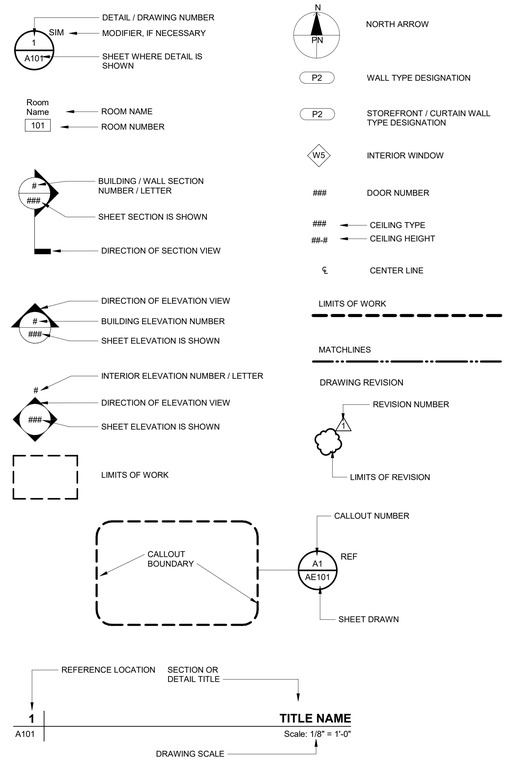
SHEET FILE DISCIPLINE DESIGNATORS

G-	GENERAL - **1**
GI	GENERAL INFORMATION - **2**
H	HAZARDOUS MATERIALS - **3**
HA	ASBESTOS ABATEMENT
V-	SURVEY - **4**
B-	GEOTECHNICAL - **5**
BB	BORING LOGS
CD	CIVIL DEMOLITION - **6**
C-	CIVIL
CC	CIVIL EROSION AND SEDIMENT CONTROL
CE	CIVIL EXISTING
CS	CIVIL SITE
CG	CIVIL GRADING
CP	CIVIL PAVING
CU	CIVIL UTILITIES
LD	LANDSCAPE DEMOLITION - **7**
L-	LANDSCAPE
LS	LANDSCAPE SITE
LL	LANDSCAPE LIGHTING
LP	LANDSCAPE PLANTING
SD	STRUCTURAL DEMOLITION - **8**
S-	STRUCTURAL
SS	STRUCTURAL SITE
SB	STRUCTURAL SUBSTRUCTURE
SF	STRUCTURAL FRAMING
SC	STRUCTURAL COMPONENTS
SR	STRUCTURAL REINFORCEMENT
SC	STRUCTURAL COMPONENTS
SR	STRUCTURAL REINFORCEMENT
AD	ARCHITECTURAL DEMOLITION - **10**
A-	ARCHITECTURAL
AS	ARCHITECTURAL SITE
AE	ARCHITECTURAL ELEMENTS
AI	ARCHITECTURAL INTERIORS
AF	ARCHITECTURAL FINISHES
ID	INTERIORS DEMOLITION - **11**
I-	INTERIORS
IN	INTERIOR DESIGN
IF	INTERIOR FURNISHINGS
IG	INTERIOR GRAPHICS
QF	FOOD SERVICE - **12**
FD	FIRE PROTECTION DEMOLITION - **13**
F-	FIRE PROTECTION
FA	FIRE ALARM
FX	FIRE PROTECTION/SUPPRESSION
PD	PLUMBING DEMOLITION - **14**
P-	PLUMBING
PS	PLUMBING SITE
PL	PLUMBING FIXTURES
PP	PLUMBING PIPING
PQ	PLUMBING EQUIPMENT
DQ	MATERIAL HANDLING - **15**
MD	MECHANICAL DEMOLITION - **16**
M-	MECHANICAL
MH	MECHANICAL HVAC
MI	MECHANICAL INSTRUMENTATION
MP	MECHANICAL PIPING
MS	MECHANICAL SITE
MY	MECHANICAL HYDRAULIC SYSTEMS
MW	MECHANICAL DISTRIBUTED ENERGY
ED	ELECTRICAL DEMOLITION - **17**
E-	ELECTRICAL
ES	ELECTRICAL SITE
EI	ELECTRICAL INSTRUMENTATION
EL	ELECTRICAL LIGHTING
EP	ELECTRICAL POWER
ET	ELECTRICAL TELECOMMUNICATIONS
EY	ELECTRICAL AUXILIARY SYSTEMS
EG	ELECTRICAL GROUNDING
TD	TELECOMMUNICATIONS DEMOLITION - **18**
T-	TELECOMMUNICATIONS
TA	AUDIO VISUAL
TC	CLOCK AND PROGRAM
TI	INTERCOM
TM	MONITORING
TN	DATA NETWORKS
TT	TELEPHONE
TY	SECURITY
TS	SCADA

SHEET TYPE DESIGNATORS

0	GENERAL (SYMBOLS LEGEND, NOTES, ETC.)
1	PLANS (HORIZONTAL VIEWS)
2	ELEVATIONS AND PROFILES (VERTICAL VIEWS)
3	SECTIONS (SECTIONAL VIEWS, CROSS-SECTIONS, ETC.)
4	LARGE SCALE VIEWS (ENLARGED PLANS AND ELEVATIONS)
5	DETAILS
6	SCHEDULES AND DIAGRAMS
7	USER DEFINED
8	USER DEFINED
9	3D REPRESENTATIONS (PERSPECTIVES AND PHOTOGRAPHS)

SYMBOLOGY



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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

ABBREVIATIONS, LEGENDS, & GENERAL NOTES

SHEET NUMBER

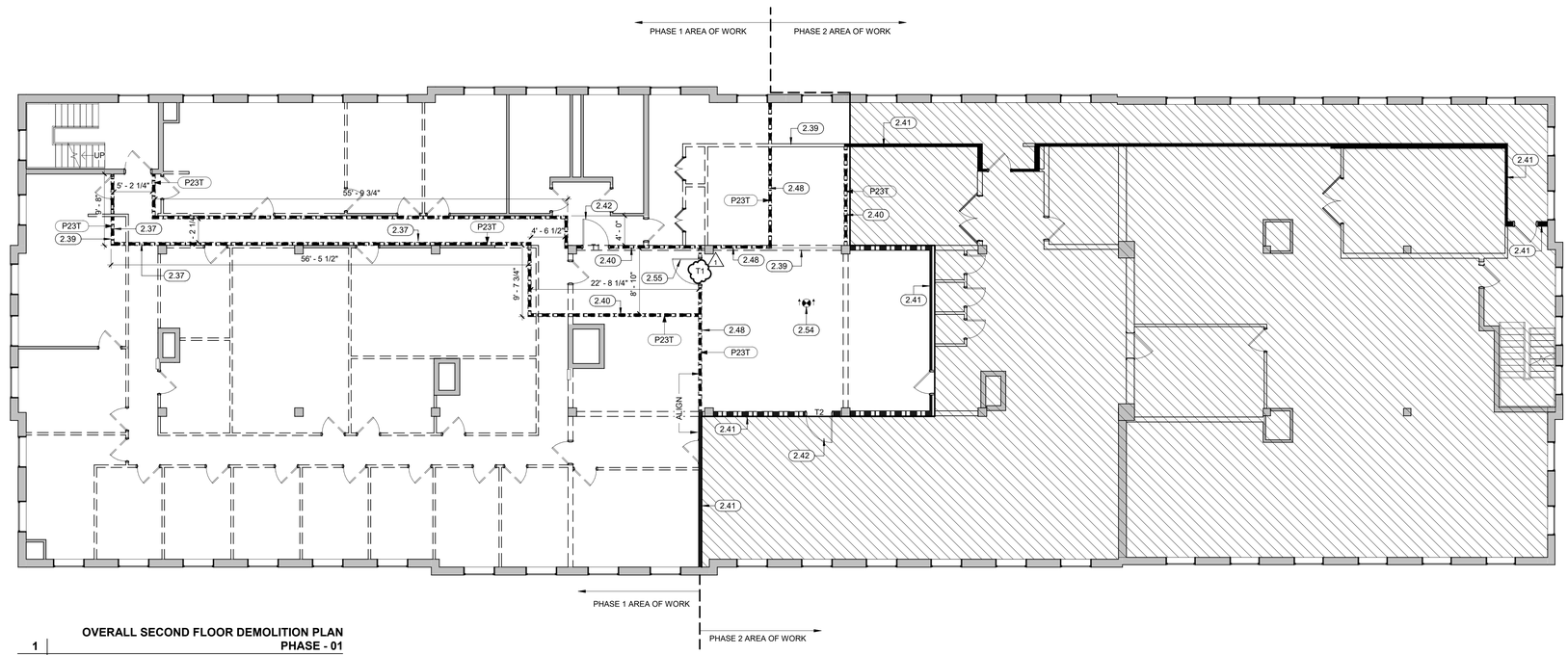
G-002

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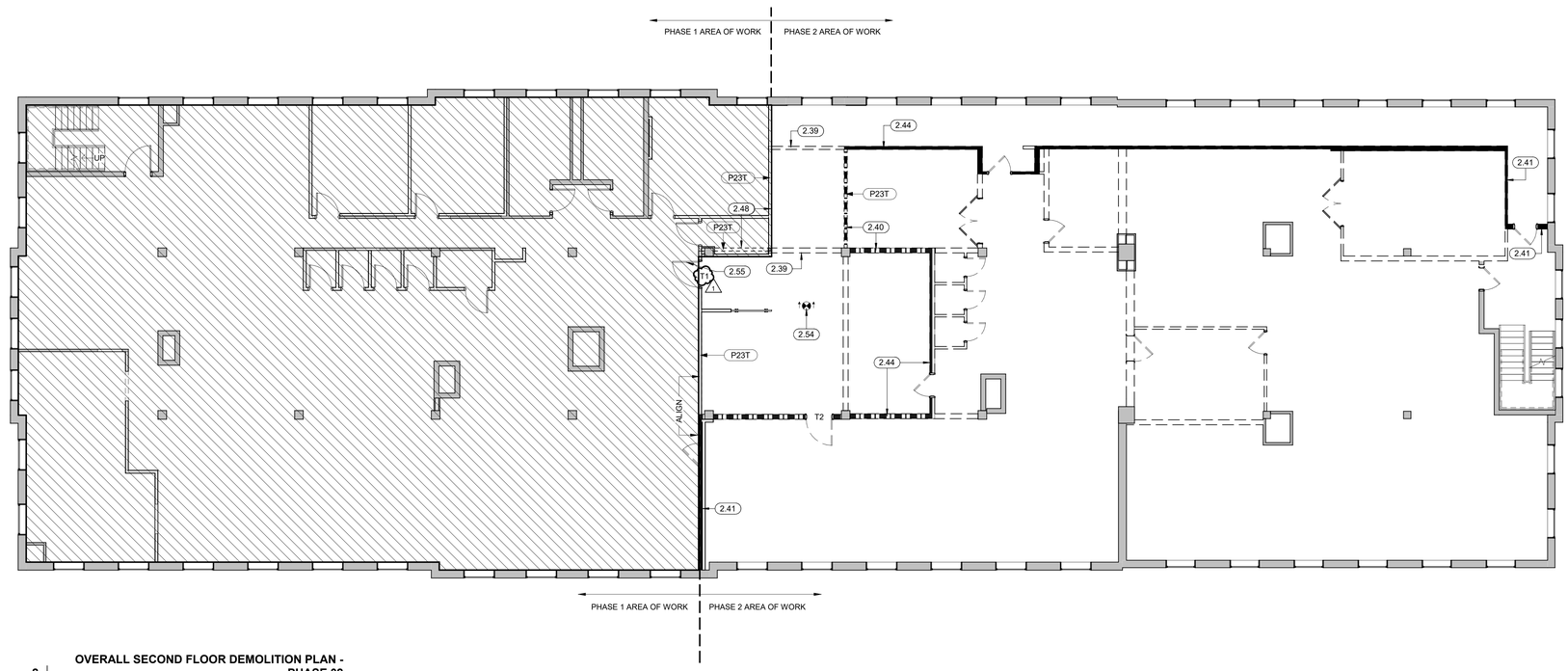
CONSTRUCTION APPROACH:

TWO PHASED CONSTRUCTION APPROACH

A. CURRENT TAILOR SHOP WILL REMAIN OPERATIONAL WITHIN THE CONSTRAINTS OF ANNOTATED PHASE 2
B. CURRENT STORAGE ROOMS WILL BE THE FIRST AREA OF CONSTRUCTION AS ANNOTATED AS PHASE 1
C. ONCE PHASE 1, STORAGE ROOMS, CONSTRUCTION IS COMPLETE THERE WILL BE ROUGHLY 1-MONTH DOWNTIME TO ALLOW THE TAILOR SHOP OCCUPANTS TO MOVE FROM THEIR EXISTING SPACE TO NEWLY RENOVATED SPACE.
D. ONCE MOVE IS COMPLETED, PRIOR PHASE 2 WILL NOW BECOME THE ACTIVE CONSTRUCTION AREA AND PRIOR PHASE 1 WILL BE THE OPERATIONAL TAILOR SHOP.
E. CONTRACTOR TO PROVIDE PHASING PLANS WITH ANY PROPOSED CHANGES TO VT'S PM AND AECOM PRIOR TO PRE-CONSTRUCTION MEETING



1 OVERALL SECOND FLOOR DEMOLITION PLAN - PHASE - 01
G-003 Scale: 1/8" = 1'-0"



2 OVERALL SECOND FLOOR DEMOLITION PLAN - PHASE 02
G-003 Scale: 1/8" = 1'-0"

PHASE 1 NOTES:

1. HATCHED AREAS REPRESENT OCCUPANTS TO REMAIN FOR FUNCTIONING TAILOR SHOP; COORDINATE WITH VT REPRESENTATIVE.
2. REFERENCE SHEET AD102, AD102A, AND AD102B FOR EXTENT OF SECOND FLOOR DEMOLITION.
3. PHASE 1 AREA OF WORK WILL BE VACATED PRIOR TO CONTRACTOR STARTING PHASE 1 CONSTRUCTION.
4. MAINTAIN EGRESS THROUGH CORRIDOR CR2A AND STAIR CR2. PROVIDE TEMPORARY 1-HR FIRE RATED EXIT PASSAGEWAY TO MAINTAIN EGRESS THROUGH EXISTING STAIR C5 FOR DURATION OF CONSTRUCTION.
5. PHASING EXTENTS TO BE CONFIRMED AND COORDINATED WITH VT REPRESENTATIVE PRIOR TO START OF CONSTRUCTION.
6. AT COMPLETION OF PHASE 1, OCCUPANTS OF EXISTING TAILOR SHOP WILL RELOCATE TO NEWLY RENOVATED PHASE 1 AREA PRIOR TO START OF PHASE 2 CONSTRUCTION. OBTAIN A TEMPORARY CERTIFICATE OF OCCUPANCY PRIOR TO THE RELOCATION OF THE OCCUPANTS. COORDINATE WITH VT PM.

MECHANICAL

1. PERFORM MECHANICAL WORK RELATED TO RTU-1, TU-1 THROUGH TU-8, UH-1 AND UH-2, AND EF-1. SEE MECHANICAL SHEETS.
2. COORDINATE ABOVE CEILING ROUTING OF RTU-1 RETURN DUCTWORK, LOW PRESSURE STEAM AND CONDENSATE, HOT WATER SUPPLY AND RETURN, CHILLED WATER SUPPLY AND RETURN PIPING THROUGH HATCHED REGIONS OUTSIDE OF PHASE 1 WORK TO RTU-1 WITH CURRENT OCCUPANCY.

ELECTRICAL

1. EXISTING PANELS LV202 & F SHALL REMAIN IN SERVICE DURING PHASE 1 TO SUPPORT THE EXISTING TAILOR SHOP OPERATION.
2. EXISTING PANEL ELVP-3A SHALL REMAIN IN SERVICE DURING PHASE 1 & 2 TO MAINTAIN THE EGRESS PATH FOR THE TAILOR SHOP OCCUPANTS. CIRCUITS SHOWN AS BEING REMOVED FROM ELVP-3A BY PANEL SCHEDULE ON SHEET E-701 TO BE COMPLETED AT PROJECT CLOSE-OUT.
3. DURING PHASE 1, WITHIN EXISTING PANEL L5A IN ELECTRICAL ROOM 13 ON THE GROUND FLOOR, DEMOLISH 200A BREAKER AND ASSOCIATED FEEDER SERVING EXISTING PANEL 2A ON THE SECOND FLOOR. CONTRACTOR TO COORDINATE INTERRUPTION OF SERVICE WITH VT REPRESENTATIVE, SERVICE MUST NOT BE INTERRUPTED FOR MORE THAN 4 HOURS.
4. EXISTING PANEL 2A TO BE DEMOLISHED DURING PHASE 1.
5. SHOULD THE DEMOLITION OF EXISTING PANEL 2A RESULT IN ANY UNFORESEEN LOSS OF POWER IN THE TAILOR SHOP AREA THAT WOULD HINDER OPERATIONS, TEMPORARY POWER SHALL BE RAN FROM EXISTING PANELS LV202 & F, PRIORITIZING PANEL LV202, TO SERVE THE EQUIPMENT THAT HAS LOST POWER. CONTRACTOR TO COORDINATE WITH VT REPRESENTATIVE.
6. CONNECTION TO ROOFTOP EQUIPMENT EF-1, UH-1, & RTU-1 TO BE INSTALLED DURING PHASE 1.

PLUMBING

1. MAINTAIN CONNECTION TO PRESS EQUIPMENT THROUGHOUT THE PROJECT PHASES.
2. ALL PIPING ROUTED FROM THE FIRST FLOOR TO BE DONE IN PHASE 1.

PHASE 02 NOTES:

1. HATCHED AREAS REPRESENT RELOCATED OCCUPANTS OF TAILOR SHOP.
2. REFERENCE SHEET AD102, AD102A, AND AD102B FOR EXTENT OF SECOND FLOOR DEMOLITION.
3. PHASE 2 AREA OF WORK WILL BE VACATED PRIOR TO CONTRACTOR STARTING PHASE 2 CONSTRUCTION.
4. MAINTAIN EGRESS THROUGH EXISTING CORRIDOR CR2A AND STAIR CR2 AND TEMPORARY 1-HR FIRE RATED CORRIDOR AND EXISTING STAIR C5 FOR DURATION OF CONSTRUCTION.
5. RENOVATION TO EGRESS STAIRS TO BE COMPLETED DURING PHASE 2.
6. PHASING EXTENTS TO BE CONFIRMED AND COORDINATED WITH VT REPRESENTATIVE PRIOR TO START OF CONSTRUCTION.
7. AT COMPLETION OF PHASE 2, DEMOLISH TEMPORARY CORRIDOR AND REMAINDER OF WALLS INDICATED IN EXISTING CORRIDOR C2A TO BE OPEN TO NEWLY RENOVATED OPEN STORAGE 200.

MECHANICAL

1. PERFORM MECHANICAL WORK RELATED TO EXISTING RTU-2. SEE MECHANICAL SHEETS.

ELECTRICAL

1. NEW PANEL 2A WILL SERVE THE NEW TAILOR SHOP AREA DURING PHASE 2.
2. EXISTING PANEL ELVP-3A SHALL REMAIN IN SERVICE DURING PHASE 1 & 2 TO MAINTAIN THE EGRESS PATH FOR THE TAILOR SHOP OCCUPANTS. CIRCUITS SHOWN AS BEING REMOVED FROM ELVP-3A BY PANEL SCHEDULE ON SHEET E-701 TO BE COMPLETED AT PROJECT CLOSE-OUT.
3. DURING PHASE 2, WITHIN PANEL L5A IN ELECTRICAL ROOM 13 ON THE GROUND FLOOR, DEMOLISH 200A BREAKER & ASSOCIATED FEEDER SERVING EXISTING PANEL LV202 AND 100A BREAKER & ASSOCIATED FEEDER SERVING EXISTING PANEL F. CONTRACTOR TO COORDINATE INTERRUPTION OF SERVICE WITH VT REPRESENTATIVE, SERVICE MUST NOT BE INTERRUPTED FOR MORE THAN 4 HOURS.
4. EXISTING PANELS LV202 & F TO BE DEOMOLISHED DURING PHASE 2.
5. DURING PHASE 2, TEMPORARY POWER SHALL BE RAN FROM NEW PANEL 2A TO SERVE THE EXISTING AIR COMPRESSOR AND AIR VACUUM. AT PROJECT CLOSE-OUT, REMOVE TEMPORARY POWER CONNECTION AND POWER FROM NEW PANEL F AS INDICATED ON THE PANEL SHCEDULES ON SHEET E-701. CONTRACTOR TO COORDINATE WITH VT REPRESENTATIVE.
6. CONNECTION TO ROOFTOP EQUIPMENT RTU-2 AND ROOFTOP RECEPTACLES TO BE INSTALLED DURING PHASE 2.

GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G-002 FOR ABBREVIATIONS, LEGENDS, & GENERAL NOTES.

B. ALL EXISTING SERVICES AND UTILITIES SHALL BE MAINTAINED TO ADJACENT AREAS THAT ARE IN OPERATION AND SERVED BY THESE UTILITIES. COORDINATE DISRUPTIONS WITH THE OWNER. COORDINATE AND SCHEDULE ALL HVAC AND ELECTRICAL OUTAGES AND CHANGE OVERS WITH THE OWNER AND FOLLOW ALL SHUT DOWN PROCEDURES INCLUDING ADVANCED SCHEDULING AND APPROVALS PRIOR TO A SHUT DOWN.

C. COORDINATE ALL CONSTRUCTION WITH APPROVED PHASING PLANS TO BE DEVELOPED BY THE CONTRACTOR AND APPROVED BY THE OWNER. CONTRACTOR TO COORDINATE WITH VT REPRESENTATIVE AND TAILOR SHOP FOR TRANSITIONING FROM PHASE 1 TO PHASE 2. THE OPERATIONAL TAILOR SHOP WILL NEED TO MOVE AND BECOME OPERATIONAL IN NEW AREA PRIOR TO START OF PHASE 2 DEMOLITION. THERE ARE LIKELY SMALLER TRANSITIONAL STEPS BETWEEN PHASES AND AFTER AFTER PHASE 2 TO REMOVE EGRESS CORRIDOR.

D. PROVIDE AND COORDINATE TEMPORARY BUILDING SIGNAGE WITH THE OWNER.

E. PROTECT ALL SURROUNDING AREAS, PLANTS, SHRUBS, TREES, ETC. FROM DAMAGE DURING DURATION OF PROJECT AND PROVIDE TEMPORARY PROTECTION DURING THE WORK. ALL DAMAGED ITEMS MUST BE REPLACED IN KIND AT NO EXPENSE TO THE OWNER.

F. REMOVAL OF DEBRIS IS TO BE DISPOSED OF IN A CONTRACTOR SUPPLIED DUMPSTER(S) AT A CENTRALIZED LOCATION. COORDINATE DUMPSTER(S) LOCATION WITH THE OWNER. PROTECT SURFACE BELOW DUMPSTER(S) AS REQUIRED. REPAIR ANY DAMAGED OR TURF AREAS AT PROJECT COMPLETION.

G. PROTECT ALL EXTERIOR BUILDING FACADES FROM DAMAGE FOR THE DURATION OF THE PROJECT AND UTILIZE PROTECTIVE COVERINGS AS REQUIRED. MAINTAIN BUILDING IN WEATHER-TIGHT CONDITION.

H. PROVIDE ALL GRADING, SITE WORK, AND UTILITY CONNECTIONS AS REQUIRED FOR TEMPORARY TRAILERS LOCATED ONSITE. PREPAIR ALL DAMAGED SIDEWALKS, PAVEMENTS OR TURF AREAS AS REQUIRED.

I. DRAWING SHOWING EXISTING SITE CONSTRUCTION AND UTILITIES ARE FOR REFERENCE ONLY AND HAVE BEEN DEVELOPED FROM FIELD OBSERVATION AND/OR OWNER PROVIDED AS-BUILT DRAWINGS AND MAY NOT REFLECT ACTUAL FIELD CONDITIONS. OBTAIN COPIES OF EXISTING DRAWINGS AND VERIFY ACTUAL FIELD CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ARCHITECT AND OWNER IN WRITING OF ANY WORK DESCRIBED IN THE CONTRACT DOCUMENTS WHICH CANNOT BE PERFORMED DUE TO EXISTING CONDITIONS.

J. FIRE PROTECTION MEASURES DURING CONSTRUCTION TO COMPLY WITH VIRGINIA CONSTRUCTION CODE, 2021, NFPA 72 AND VT DESIGN AND CONSTRUCTION STANDARDS MANUAL 2022.

K. ADEQUATE MEANS OF EGRESS SHALL BE MAINTAINED FOR THE FACILITY, FOR THE APPROPRIATE OCCUPANCY, AT ALL TIMES DURING CONSTRUCTION AND COORDINATED WITH THE OWNER.

L. EXISTING FIRE ALARM SYSTEMS TO BE COORDINATE WITH TEMPORARY BARRIERS AND MAINTAINED DURING CONSTRUCTION.

M. COORDINATE DEMOLITION AND NEW WORK PHASING WITH EXTENTS OF NEW SPRINKLER SYSTEM BEING DONE UNDER SEPARATE CONTRACT.

SHEET KEYNOTES

2.37	PROVIDE A TEMPORARY 1-HR RATED CORRIDOR FOR THE DURATION OF PHASE 1 TO MAINTAIN TWO MEANS OF EGRESS FROM THE PLAN-EAST OF THE BUILDING. ENSURE EXIT PASSAGEWAY INTEGRITY IS MAINTAINED AT CONVENIENCE DOORS TO ACCESS DIFFERENT AREAS.
2.39	DEMOLISH WALLS TO EXTENTS SHOWN TO PROVIDE CONTINUITY TO THE CORRIDOR.
2.40	PROVIDE TEMPORARY 1-HR FIRE RESISTANCE RATED BARRIER
2.41	MAINTAIN EXISTING WALL UNTIL COMPLETION OF PHASE 2. CONFIRM EXISTING WALL MEETS EQUVALENCY OF 1 HOUR RATED BARRIER, SEE UL U419 OR APPROVED EQUAL.
2.42	PROVIDE FLUSH DOOR 3'-6" X 7'-0" TO BE 45 MIN RATED. SEE DOOR SCHEDULE
2.44	MAINTAIN PORTION OF THE EXISTING 1-HR WALL UNTIL COMPLETION OF PHASE 2. UPGRADE EXISTING WALL TO BE 1-HOUR COMPLIANT AS NEEDED. DEMOLISH TEMPORARY BARRIER AT PROJECT CLOSE-OUT, REPAIR ALL FLOOR FINISHES.
2.48	PROVIDE A 1-HR RATED BARRIER TO MAINTAIN TWO MEANS OF EGRESS FROM THE PLAN-EAST OF THE BUILDING DURING CONSTRUCTION. ENSURE CORRIDOR INTEGRITY IS MAINTAINED AT CONVENIENCE DOORS TO ACCESS DIFFERENT AREAS DURING CONSTRUCTION. MAINTAIN WALL AFTER PHASE 2 CONSTRUCTION; PATCHWORK ANY DAMAGES DURING CONSTRUCTION; SEE FINISH SCHEDULE FOR FINISHES.
2.54	PROVIDE TEMPORARY CEILING MOUNTED EXIT SIGN UNTIL COMPLETION OF PHASE 2. CIRCUIT TEMPORARY EXIT SIGN TO PANEL ELVP-3A. DEMOLISH TEMPORARY EXIST SIGN AT PROJECT CLOSE-OUT.
2.55	PROVIDE NEW 45 MIN 3'-6" FLUSH PANEL DOOR IN A 45 MINUTE HM FRAME THAT WILL BE TEMPORARY DOOR DURING PHASE 1 CONSTRUCTION. DOOR TO HAVE FOLLOWING HARDWARE WITH MANUFACTURERS THAT MEET SPECIFICATION SECTION 087100. 3 HINGE (HEAVY WEIGHT) US26DMK 1 EXIT DEVICE (PASSAGE)US32DSA 1 SURFACE CLOSER 1 KICK PLATE 10" US32DRO 1 DOOR STOP (TO SUIT) US26DRO 1 GASKETING (HEAD/JAMBS) PE

EXISTING WALLS TO REMAIN THROUGH PHASE 1 AND PHASE 2

1-HR FIRE RATED WALLS

AREA SHOWN WITH THIS HATCH TO BE FUNCTIONING TAILOR SHOP. COORDINATE WITH VT REPRESENTATIVE (CORDINATE EXTENTS WITH OWNER)

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PN
TN

1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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PROJECT

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

PHASING PLAN

SHEET NUMBER

G-003

BUILDING CODE / LIFE SAFETY CODE ANALYSIS

1. PRIMARY APPLICABLE BUILDING CODES:

- VIRGINIA CONSTRUCTION CODE (VCC), 2021
- VIRGINIA EXISTING BUILDING CODE (VEBC), 2021
- VIRGINIA STATEWIDE FIRE PREVENTION CODE (VSFPC), 2021
- ICC A117.1, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, 2017
- STANDARDS FOR ACCESSIBLE DESIGN, 2010
- VT DESIGN AND CONSTRUCTION STANDARDS MANUAL (VT DCSM), 2023
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 10, STANDARD FOR PORTABLE FIRE EXTINGUISHERS, 2018
- NFPA 13, STANDARD FOR INSTALLATION OF SPRINKLER SYSTEMS, 2019
- NFPA 70, NATIONAL ELECTRICAL CODE, 2020
- NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE, 2019

2. OCCUPANCY AND ALTERATION CLASSIFICATION:

THE WORK AREA IS CLASSIFIED AS MIXED NON-SEPARATED BUSINESS GROUP B (VCC §304.1) AND STORAGE GROUP S-1 (VCC §311.1) OCCUPANCIES. SINCE THE SPACE IS USED FOR TAILOR WORK AS WELL AS STORAGE OF UNIFORMS. THERE WILL BE NO CHANGE IN OCCUPANCY.

ALTERATION CLASSIFICATION: LEVEL 2 (VEBC §601.2.2)

ALTERATIONS MUST BE DONE IN A MANNER THAT MAINTAINS THE LEVEL OF FIRE PROTECTION THAT IS EXISTING. ALL NEW CONSTRUCTION ELEMENTS ARE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF VCC IN ACCORDANCE WITH VEBC §601.1.

3. CONSTRUCTION TYPE:

CONSTRUCTION IS TYPE IIIB (VCC §602 & TABLE 601).

BUILDING ELEMENT	FIRE-RESISTANCE RATING
PRIMARY STRUCTURAL FRAME	0 HR
EXTERIOR BEARING WALLS	2 HR
FLOOR CONSTRUCTION	0 HR
ROOF CONSTRUCTION	0 HR

4. BUILDING HEIGHT AND AREA:

THE BUILDING IS 23 ft TALL WITH TWO STORIES ABOVE GRADE PLANE.
THE BUILDING AREA IS 12,827 ft²

5. FIRE RESISTIVE SEPARATION REQUIREMENTS:

ALL PENETRATIONS OF FIRE AND SMOKE RATED ASSEMBLIES MUST BE PROPERLY FIRESTOPPED TO AN APPROVED UL LISTED SYSTEM.

6. TRAVEL DISTANCE LIMITATIONS (VEBC §601.1; VCC §1020.4, TABLE 1006.2.1 & TABLE 1017.2):

ALTERATIONS MUST BE SUCH THAT THE BUILDING IS NO LESS CONFORMING TO THE REQUIREMENTS OF THE VCC THAN THE EXISTING BUILDING WAS PRIOR TO THE ALTERATION. AS SUCH, TRAVEL DISTANCES FOR THE NEW SPACE LAYOUT MUST NOT BE LESS COMPLIANT THAN THE SPACE WAS.

THE MAXIMUM ALLOWABLE COMMON PATH OF TRAVEL, DEAD-END CORRIDOR LENGTH, AND EXIT ACCESS TRAVEL DISTANCE IN AN UNSPRINKLERED BUILDING ARE SUMMARIZED IN THE TABLE BELOW:

OCCUPANCY	CORRIDOR DEAD-END (ft)	COMMON PATH OF TRAVEL (ft)	EXIT ACCESS TRAVEL DISTANCE (ft)
GROUP B AND S-1	20	75	200

7. FIRE SUPPRESSION:

THE BUILDING IS PROVIDED WITH A SPRINKLER SYSTEM ON THE FIRST FLOOR. HOWEVER, THE SECOND FLOOR IS NOT SPRINKLERED.

ADDITIONALLY, THERE IS A SEPARATE ONGOING PROJECT TO PROVIDE SPRINKLER PROTECTION FOR THE WHOLE BUILDING. THE GENERAL CONTRACTOR IS REQUIRED TO COORDINATE WITH THE FIRE SUPPRESSION CONTRACTOR TO ENSURE THE PROPER INTEGRATION OF THE FIRE SPRINKLER SYSTEM WITH THE REST OF THE WORK.

8. FIRE ALARM:

THE BUILDING IS PROVIDED WITH A FIRE ALARM SYSTEM. THE LAYOUT WILL BE REVISED TO ACCOMMODATE THE NEW SPACE CONFIGURATION. SEE FA DRAWINGS FOR FIRE ALARM WORK.

OCCUPANT LOAD CALCULATIONS

NAME	USE	AREA	SF / PERSON	GROSS/NET	LOAD
BREAK ROOM	ASSEMBLY, UNCONC.	224 ft²	15	NET	15
HOUSE KEEPING CLOSET	STORAGE, MECH. EQUIP.	49 ft²	300	GROSS	1
MECHANICAL ROOM	STORAGE, MECH. EQUIP.	53 ft²	300	GROSS	1
OPEN STORAGE	WAREHOUSES	6,843 ft²	500	GROSS	14
PICKUP STORAGE	STORAGE, MECH. EQUIP.	449 ft²	300	GROSS	1
TAILOR SHOP	BUSINESS	4,865 ft²	150	GROSS	32
WAITING AREA	ASSEMBLY, CONC.	293 ft²	7	NET	42
TOTALS:		12,777 ft²			106

NOTE: PLUMBING FIXTURE COUNTS ONLY ARE BASED ON CODE MODIFICATION TO REDUCE THE OCCUPANT LOAD TO 50 PEOPLE TO MORE CLOSELY REFLECT THE ACTUAL USE OF THE SPACE.

TRAVEL DISTANCES

TRAVEL PATH	DISTANCE (ft)	ALLOWABLE (ft)
CPT	28	75
TDE	131	200

EGRESS COMPONENT SCHEDULE

EXIT NUMBER	PROVIDED EGRESS WIDTH (in)	CAPACITY FACTOR (PERSONS / in)	PROVIDED EGRESS CAPACITY (PERSONS)	REQUIRED EGRESS CAPACITY (PERSONS)
E-1	40	0.2	198	72
E-2	40	0.2	198	34

		WATER CLOSETS						LAVATORIES				DRINKING FOUNTAINS	SERVICE SINKS	OTHER SINKS
PER VCC 2021 - TABLE 403.1:	# OF OCCUPANTS	MALE	FEMALE	UNISEX	TOTAL	URINALS	SHOWERS	MALE	FEMALE	UNISEX	TOTAL			
BUSINESS GROUP B AND STORAGE GROUP S-1	M/F - 25/25	1 PER 25 (FOR 1ST 50); THEN 1 PER 50						1 PER 40 (FOR 1ST 80); THEN 1 PER 80				1 PER 100	1 SERVICE SINK	
REQUIRED		1	1		2			1	1		2	1	1	
TOTAL FIXTURES REQUIRED		1	1		2			1	1		2	1	1	
TOTAL FIXTURES PROVIDED		2	1		3			1	2		3	2	1	1

GENERAL NOTES THIS SHEET:

A. REFER TO GENERAL SHEETS FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND.

B. ALL DIMENSIONS SHOWN IN FEET UNLESS NOTED OTHERWISE.

C. LIFE SAFETY DRAWINGS ARE PROVIDED TO CONSOLIDATE LIFE SAFETY REQUIREMENTS AND INTENDED SOLELY TO DEMONSTRATE COMPLIANCE WITH APPLICABLE BUILDING CODES. ALL BUILDING COMPONENTS, MATERIALS, HARDWARE, SIZES, DIMENSIONS, ETC. ARE INDICATED ELSEWHERE ON THE CONSTRUCTION DOCUMENTS OF THE APPLICABLE DISCIPLINES.

D. FLOOR AREA VALUES SHOWN MAY DIFFER BETWEEN THE LIFE SAFETY SHEETS AND OTHER DISCIPLINE SHEETS. FLOOR AREAS ON THE LIFE SAFETY SHEETS ARE COMPUTED IN ACCORDANCE WITH APPLICABLE BUILDING CODES.

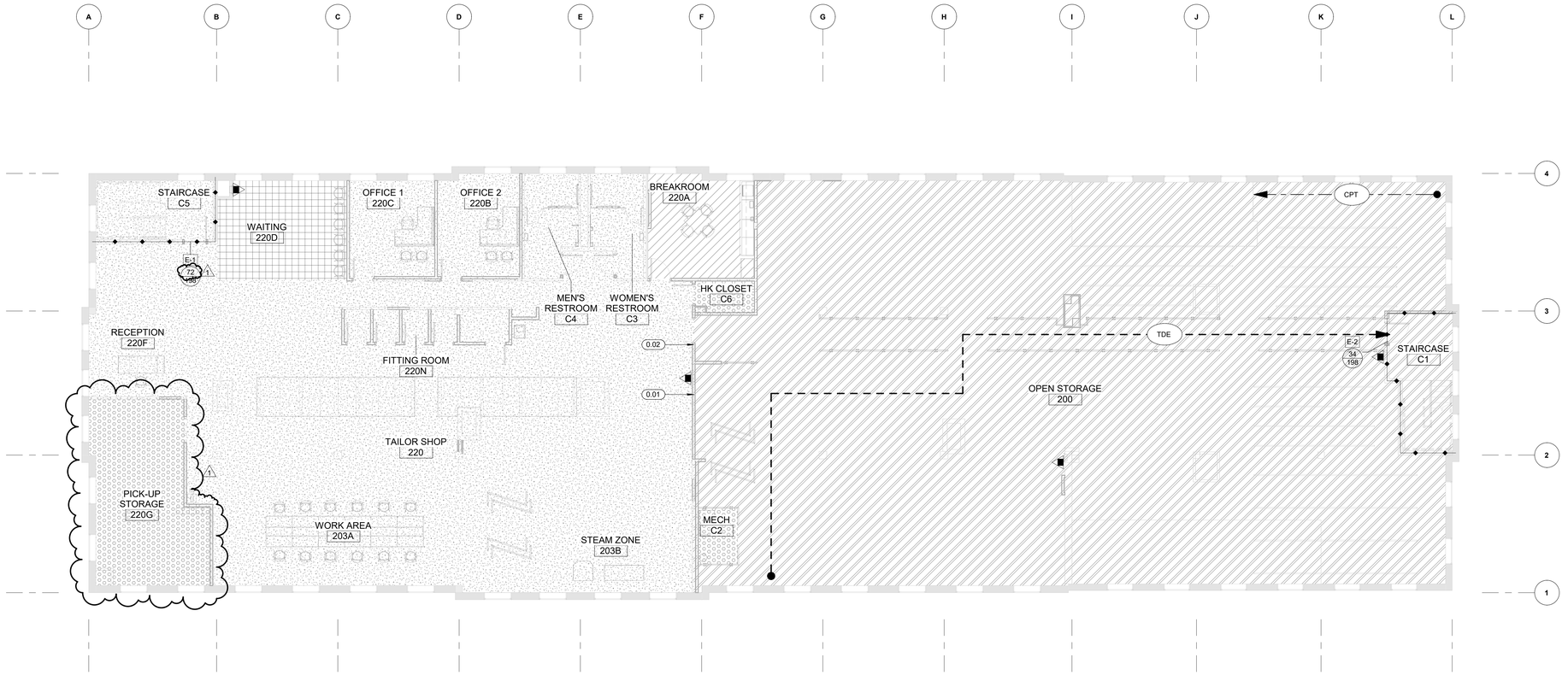
E. FIRE EXTINGUISHER LOCATIONS ARE SHOWN FOR INFORMATION ONLY. REFER ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND DETAILS.

F. A CODE MODIFICATION WILL BE PROVIDED FOR OCCUPANT LOAD FOR PLUMBING FIXTURE CALCULATIONS. THE OCCUPANTS ARE A TOTAL OF 50 (25 MALE, 25 FEMALE). BASED ON ACTUAL USE. THIS IS IN ALIGNMENT WITH CHAPTER 4 OF THE VIRGINIA PLUMBING CODE, SECTION 403.1 THAT STATES THAT PLUMBING FIXTURES SHALL BE PROVIDED BASED ON THE ACTUAL USE OF THE BUILDING OR SPACE, NOT NECESSARILY THE OCCUPANCY CLASSIFICATION USED FOR STRUCTURAL OR FIRE SAFETY PURPOSES. EGRESS CALCULATIONS WILL BE BASED ON OVERALL OCCUPANT CALCULATIONS.

SHEET KEYNOTES:

0.01 WALL CONSTRUCTED AS 1-HR FIRE RESISTANCE RATED BARRIER FOR PROTECTION OF OCCUPANTS DURING PHASED WORK ONLY. SEPARATION IS NOT REQUIRED FOR END STATE, BUT FIRE BARRIER WILL BE KEPT. SEE DRAWING G-003 FOR WALL RATINGS DURING PHASED WORK.

0.02 FIRE DOOR PROVIDED FOR PROTECTION OF OCCUPANTS DURING PHASED WORK ONLY. SEPARATION IS NOT REQUIRED FOR END STATE. BUT FIRE DOOR WILL BE KEPT. SEE DRAWING G-003 FOR DOOR RATINGS DURING PHASED WORK.



SECOND FLOOR LIFE SAFETY PLAN
1/8" = 1'-0"

LIFE SAFETY LEGEND

DESCRIPTION	SYMBOL
1-HR FIRE BARRIER	
COMMON PATH OF TRAVEL	CPT
TRAVEL DISTANCE TO EXIT	TDE
DEAD END CORRIDOR	DEC
FIRE EXTINGUISHER, DRY CHEMICAL (ABC TYPE)	
EGRESS COMPONENT	E-# COMPONENT IDENTIFIER; ### REQUIRED CAPACITY; ### PROVIDED CAPACITY

USE - VCC

- ASSEMBLY WITHOUT FIXED SEATS: CONCENTRATED
- ASSEMBLY WITHOUT FIXED SEATS: UNCONCENTRATED
- ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
- BUSINESS AREAS
- WAREHOUSES

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GRAPHIC SCALES
1/8"=1'-0" 8' 4' 0 8' 16'

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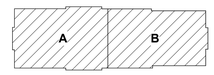
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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN



PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR LIFE SAFETY PLAN

SHEET NUMBER
GI102

GENERAL NOTES:

LOAD CRITERIA:

1. STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE, 2021 EDITION

2. DESIGN LIVE LOADS (REDUCED AS ALLOWED BY THE BUILDING CODE):

ROOF	20 PSF

3. DESIGN SNOW LOAD:

GROUND SNOW LOAD,	Pg	45 PSF
FLAT ROOF SNOW LOAD,	Pf	33 PSF
EXPOSURE FACTOR,	Ce	0.9
RISK CATEGORY		II
ROOF THERMAL FACTOR,	Ct	1.15
SLOPE FACTOR,	Cs	1.0
DRIFT SURCHARGE LOAD,	Pd	47 PSF
SNOW DRIFT WIDTH,	W	18 FT
WINTER WIND PARAMETER,	W2	0.35

4. RAIN INTENSITY, I 2.61 IN/HR

5. DESIGN WIND LOADS:

BASIC WIND SPEED,	Vult	108 MPH (THREE SECOND GUST)
ALLOWABLE WIND SPEED,	Vasd	84 MPH (THREE SECOND GUST)
RISK CATEGORY,		II
EXPOSURE		B
INTERNAL PRESSURE COEFF	GCpi	+/- 0.18

COMPONENTS AND CLADDING WIND LOADS

WALLS

ZONE	EFFECTIVE WIND AREA (SQ FT)	ULTIMATE PRESSURE (PSF)
4	10	+17.6/-19.1
4	20	+16.8/-18.3
4	50	+16.0/-17.3
4	100	+16.0/-16.5
5	10	+17.6/-23.5
5	20	+16.8/-21.9
5	50	+16.0/-19.8
5	100	+16.0/-18.3

ROOF

ZONE	EFFECTIVE WIND AREA (SQ FT)	ULTIMATE PRESSURE (PSF)
1	10	+16/-30.6
1	20	+16/-28.6
1	50	+16/-25.9
1	100	+16/-23.9
1'	10	+16/-17.6
1'	20	+16/-17.6
1'	50	+16/-17.6
1'	100	+16/-17.6
2	10	+17.6/-40.4
2	20	+16.8/-37.8
2	50	+16.0/-34.4
2	100	+16.0/-31.8
3	10	+17.6/-40.4
3	20	+16.8/-37.8
3	50	+16.0/-34.4
3	100	+16.0/-31.8

CORNER AND EDGE ZONES ARE 14 FEET WIDE.

PARAPET

ZONE	EFFECTIVE WIND AREA (SQ FT)	ULTIMATE PRESSURE (PSF)
2	10	+52.1
2	20	+48.8
2	50	+44.3
2	100	+40.9
3	10	+52.1
3	20	+48.8
3	50	+44.3
3	100	+40.9
INTERIOR	10	-30.8
INTERIOR	20	-29.2
INTERIOR	50	-27.2
INTERIOR	100	-25.6
CORNER	10	-35.2
CORNER	20	-32.9
CORNER	50	-29.8
CORNER	100	-27.4

6. DESIGN SEISMIC LOADS ARE BASED ON THE FOLLOWING DATA:

MAPPED SHORT PERIOD SPECTRAL RESPONSE ACCELERATION,	Ss 0.29
MAPPED 1-SEC PERIOD SPECTRAL RESPONSE ACCELERATION,	S1 0.076
SHORT PERIOD DESIGN SPECTRAL RESPONSE ACCELERATION,	Sds 0.22
1-SEC PERIOD DESIGN SPECTRAL RESPONSE ACCELERATION,	Sd1 0.11
RISK CATEGORY	II
SEISMIC DESIGN CATEGORY	B

COORDINATION:

1. DO NOT SCALE DRAWINGS. CHANGES AFFECTING THE LAYOUT SHOWN MUST BE SPECIFIC AND CLEARLY CONVEYED TO THE OWNER'S REPRESENTATIVE IN WRITTEN FORM AS A CHANGE FOR INCLUSION INTO THESE PLANS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LAYOUT PRIOR TO CONSTRUCTION. ALL DIMENSIONS ON STRUCTURAL DRAWINGS SHALL BE CHECKED AGAINST ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IMMEDIATELY. SEE THE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.

2. SHOP DRAWINGS SHALL BE PREPARED BY THE FABRICATOR. COPYING OF THESE CONSTRUCTION DOCUMENTS FOR USE AS SHOP DRAWINGS WILL NOT BE PERMITTED.

3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS MAY BE NECESSARY.

4. ALL TEMPORARY SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL SUBMIT SIGNED AND SEALED SHORING PLAN FOR APPROVAL PRIOR TO DEMOLITION. EXISTING ROOF BEAMS, ROOF SLAB, AND PARAPET TO REMAIN SHALL BE SHORED.

5. EQUIPMENT FRAMING LOADS, OPENINGS AND STRUCTURE IN ANY WAY RELATED TO HVAC, PLUMBING, PROCESS OR ELECTRICAL REQUIREMENTS ARE SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL OBTAIN APPROVAL OF THE PERTINENT TRADES BEFORE PROCEEDING WITH SUCH PORTION OF THE WORK. EXCESS COST RELATED TO VARIATION IN THESE REQUIREMENTS SHALL BE BORNE BY THE APPROPRIATE CONTRACTOR.

MASONRY:

1. MASONRY WORK SHALL CONFORM TO THE LATEST EDITIONS OF ACI 530 AND 530.1.

2. MASONRY STRENGTH

MASONRY SYSTEM COMPRESSIVE STRENGTH	f'_m = 2000 PSI
MORTAR SHALL BE	TYPE S
GROUT COMPRESSIVE STRENGTH	2000 PSI

3. REINFORCING BARS IN MASONRY SHALL BE FULLY GROUTED FOR THEIR ENTIRE LENGTH AND SHALL BE LAP SPLICED 48 BAR DIAMETERS, UNO. VERTICAL REINFORCEMENT SHALL CONFORM TO ASTM A615 GRADE 60.

STEEL:

1. MATERIAL STRENGTH

WIDE FLANGE SHAPES ASTM A 992	Fy = 50 KSI
STRUCTURAL RECTANGULAR TUBING ASTM A 500 GRADE B OR C	Fy = 46 KSI
ALL OTHER STRUCTURAL STEEL ASTM A 36	Fy = 36 KSI

2. THE CENTERLINES OF ALL COLUMNS AND BEAMS SHALL BE LOCATED ON COLUMN LINES UNLESS OTHERWISE SHOWN.

3. BEAMS SHALL BE FABRICATED AND INSTALLED WITH THE NATURAL CAMBER UP.

4. WELDING ELECTRODES SHALL CONFORM TO REQUIREMENTS SHOWN IN TABLE 5.4 OF AWS D1.1:2020, AND FILLER METAL SHALL HAVE A MINIMUM YIELD STRENGTH OF 70 KSI. WHERE WELD SIZE IS NOT GIVEN WELD SIZE SHALL BE A MINIMUM IN ACCORDANCE WITH TABLE 7.7 OF AWS D1.1:2020.

5. WELDS INDICATED "CJP" SHALL BE COMPLETE JOINT PENETRATION GROOVE WELDS. FABRICATOR SHALL PRODUCE COMPLETE JOINT PENETRATION GROOVE WELDS WHICH CONFORM TO ALL AWS D1.1 QUALIFIED WELD REQUIREMENTS AND WHICH ARE APPLICABLE TO THE SPECIFIC CONDITIONS SHOWN.

6. WHERE THE WORK OF OTHER TRADES REQUIRES CUTS, HOLES, ETC., IN STRUCTURAL STEEL MEMBERS, CUTS, HOLES, ETC., SHALL BE MADE IN THE SHOP AND SHALL BE SHOWN ON THE SHOP DRAWINGS. MAKING HOLES OR CUTS IN STRUCTURAL STEEL MEMBERS IN THE FIELD WILL NOT BE PERMITTED WITHOUT SPECIFIC APPROVAL OF THE OWNER'S REPRESENTATIVE.

7. BOLTS SHALL BE 3/4 INCH DIAMETER, ASTM F3125, GRADE A325N GALVANIZED, UNLESS OTHERWISE INDICATED.

8. PROVIDE SHOP DRAWINGS SHOWING FABRICATION OF STRUCTURAL STEEL COMPONENTS.

9. PROVIDE HOT-DIP GALVANIZED FINISH FOR ALL STRUCTURAL STEEL, APPLY ZINC COATING BY THE HOT-DIP PROCESS TO STRUCTURAL STEEL IN ACCORDANCE WITH ASTM A123.

RENOVATION AND EXISTING STRUCTURES:

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, ETC., NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE STRUCTURE TO THE EXISTING STRUCTURE. THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS NECESSARY FOR PROPER FABRICATION AND ERECTION OF ALL STRUCTURAL MEMBERS. THE CONTRACTOR SHALL SUPPORT, BRACE AND SECURE EXISTING STRUCTURES AS REQUIRED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF EXISTING STRUCTURES DURING CONSTRUCTION.

2. BEFORE PROCEEDING WITH ANY WORK WITHIN OR ADJACENT TO THE EXISTING STRUCTURE, THE CONTRACTOR SHALL BECOME FAMILIAR WITH EXISTING CONDITIONS. DURING THE PROCESS OF CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF THE EXISTING STRUCTURE WHERE THE EXISTING STRUCTURE IS MODIFIED TO ACCOMMODATE NEW CONSTRUCTION AND TO PROTECT FROM DAMAGE THOSE PORTIONS OF THE EXISTING STRUCTURE, WHICH ARE TO REMAIN.

3. ALL EXISTING STRUCTURAL ELEMENTS (SLABS, BEAMS, WALLS, COLUMNS, FOUNDATIONS...) SHALL REMAIN INTACT UNLESS SPECIFICALLY NOTED TO BE REMOVED BY THE DEMOLITION DOCUMENTS OR OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS.

4. INFORMATION PROVIDED ON THESE DRAWINGS RELATED TO EXISTING CONDITIONS IS BASED ON AVAILABLE DESIGN DOCUMENTS AND LIMITED FIELD OBSERVATION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY AND AWAIT DIRECTION FROM THE OWNER'S REPRESENTATIVE IF ANY DISCREPANCY BETWEEN THE CONTRACT DOCUMENTS AND THE EXISTING CONDITIONS IS DISCOVERED.

5. THIS PROJECT REQUIRES DRILLING INTO EXISTING REINFORCED CONCRETE STRUCTURE. THE CONTRACTOR SHALL NOT RECEIVE ADDITIONAL PAYMENT FOR DIFFICULTIES ENCOUNTERED IN DRILLING DUE TO HARDNESS OF MATERIALS, HITTING OF EXISTING REINFORCING, ETC. ALL COSTS ASSOCIATED WITH RE-DRILLING OF HOLES DUE TO HITTING EXISTING REINFORCING STEEL SHALL BE BORNE BY THE CONTRACTOR. THIS INCLUDES FILLING UNNECESSARY AND UNUSED HOLES WITH EPOXY GROUT. DO NOT CUT REINFORCING STEEL DURING CONCRETE DRILLING OR CORING OPERATIONS. LOCATE REINFORCING USING NON-DESTRUCTIVE TESTING PRIOR TO DRILLING AND CORING OPERATIONS.

6. CORE DRILLS REQUIRED BY MECHANICAL OR ELECTRICAL TRADES BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE DOCUMENTED SHOWING EXACT DIMENSIONS AND LOCATIONS. THE DRAWING SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO PROCEEDING WITH THE DRILLING OPERATION.

SPECIAL INSPECTIONS:

1. SPECIAL INSPECTIONS WILL BE PERFORMED IN ACCORDANCE WITH THE STATEMENT OF SPECIAL INSPECTIONS

2. CONTRACTOR SHALL DIRECTLY EMPLOY AND PAY FOR SERVICES OF THE SPECIAL INSPECTORS TO PERFORM REQUIRED SPECIAL INSPECTIONS.

3. THE FOLLOWING GENERAL TYPES OF WORK REQUIRE SPECIAL INSPECTION: (REFER TO STATEMENT OF SPECIAL INSPECTIONS FOR DETAILED INSPECTION REQUIREMENTS)

MASONRY
STRUCTURAL STEEL
STRUCTURAL WELDING
HIGH STRENGTH BOLTS

4. STRUCTURAL OBSERVATIONS SHALL BE PERFORMED BY THE ENGINEER OF RECORD IN ACCORDANCE WITH CHAPTER 17 OF THE BUILDING CODE.

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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KEY PLAN

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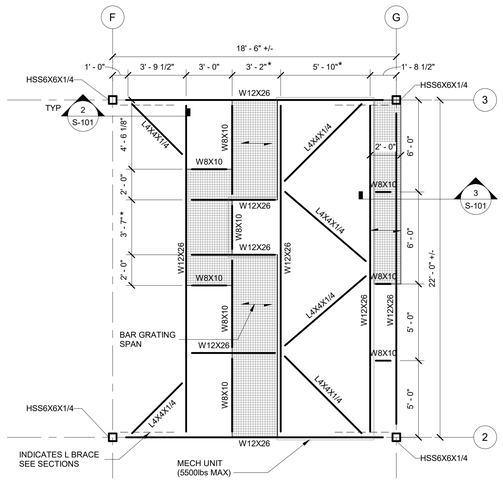
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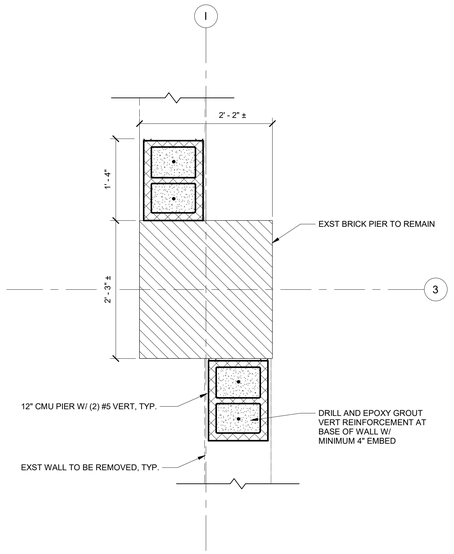
GENERAL NOTES

SHEET NUMBER

S-001

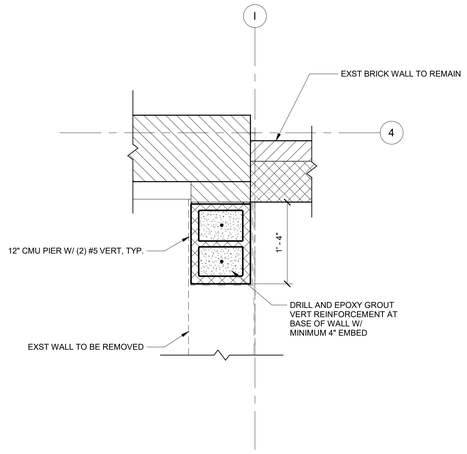
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F
G
18' - 6" +/-
1' - 0"
3' - 9 1/2"
3' - 0"
3' - 2"*
5' - 10"*
1' - 8 1/2"
HSS6X6X1/4
HSS6X6X1/4
TYP
2
S-101
3
W12X26
L4X4X1/4
W8X10
W12X26
W8X10
W12X26
W8X10
W12X26



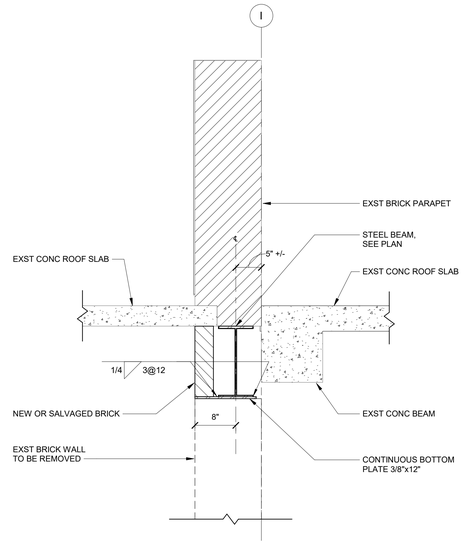
1 PLAN DETAIL

1" = 1'-0"



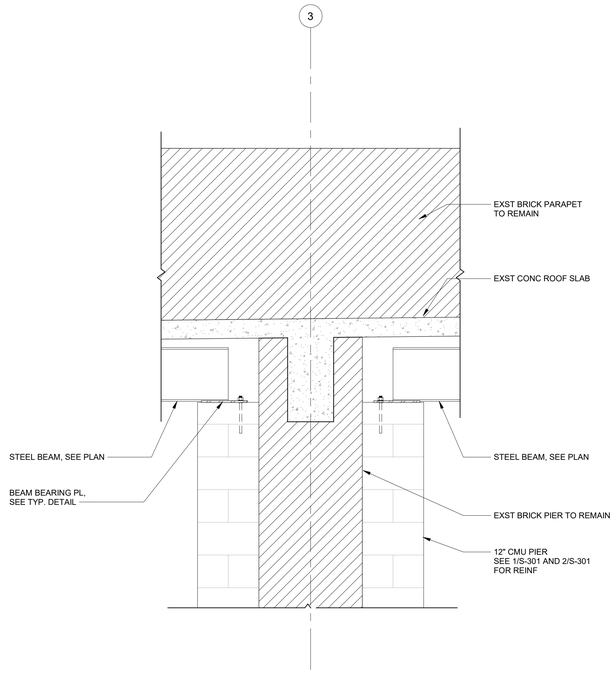
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1" = 1'-0"



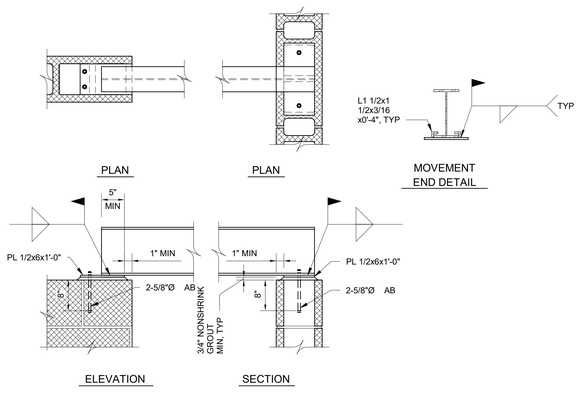
3 SECTION

1" = 1'-0"



4 SECTION

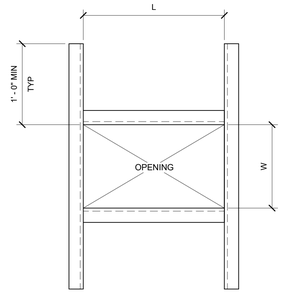
3/4" = 1'-0"



NOTES:
1. PROVIDE 3 COURSES OF SOLID OR CONCRETE FILLED HOLLOW UNITS MIN 2'-0" EA SIDE OF CL PLATE.
2. AT ALL BEAMS WELD ONE END TO THE BEARING PLATE AND USE ANGLES TO ALLOW FOR MOVEMENT AT OTHER END.

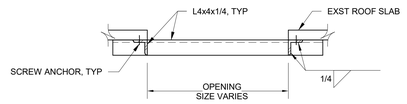
5 TYPICAL BEARING PLATE DETAIL

NOT TO SCALE



PLAN

NOTE: SEE ARCH. ROOF PLANS AND MECH DWGS FOR SIZE AND LOCATION OF ROOF OPENINGS.



SECTION

NOTES:
1. ATTACH STEEL ANGLES TO THE UNDERSIDE OF THE EXST CONC ROOF SLAB W/ 3/8" HILTI KWIK HUS-EZ SCREW ANCHOR W/ 1-5/8" MIN EMBED @ 12" O.C.
2. MIN EDGE DISTANCE OF ANCHOR TO THE EDGE OF CONC IS 2".

6 TYPICAL FRAMING FOR ROOF OPENING

NOT TO SCALE

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12" 6" 0 1' 2' 3' 4' 5'
1/2"=1'-0"

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

GRAPHIC SCALES

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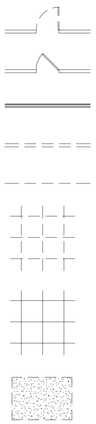
SHEET NUMBER

S-301

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GENERAL DEMOLITION NOTES AND LEGEND

LEGEND



ARCHITECTURAL

1. VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD PRIOR TO START OF WORK. NOTIFY ARCHITECT AND OWNER IN WRITING OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THOSE SHOWN ON THE DRAWINGS. FAILURE BY THE CONTRACTOR TO HAVE REVIEWED AVAILABLE INFORMATION CONCERNING EXISTING CONDITIONS SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITIES OF PERFORMANCE OF WORK IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.

2. DEMOLITION WORK SHOWN IS BASED ON INFORMATION TAKEN FROM EXISTING DRAWINGS AND LIMITED FIELD INSPECTION. ACTUAL CONDITIONS MAY VARY FROM THOSE DEPICTED. THE CONTRACTOR SHALL OBTAIN COPIES OF EXISTING DRAWINGS AND HAVE ACCESS TO VISIT THE BUILDING SITE TO FIELD VERIFY CONDITIONS OF THE EXISTING BUILDING PRIOR TO BIDDING AND/OR STARTING THE WORK AND IS RESPONSIBLE FOR PERFORMING COMPLETE DEMOLITION. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND OWNER IN WRITING OF ANY WORK DESCRIBED IN THE CONTRACT DOCUMENTS WHICH CANNOT BE PERFORMED DUE TO EXISTING CONDITIONS.

3. DEMOLITION INCLUDES ALL COMPONENTS, MATERIALS, FINISHES, FIXTURES AND EQUIPMENT TO LIMITS SHOWN IN DRAWINGS AND SPECIFICATIONS, AND AS REQUIRED FOR CONSTRUCTION OF NEW WORK LAYOUT. REMOVE WALLS AS SHOWN, ASSOCIATED CEILING, AND FLOORING MATERIALS. DEMO AND REMOVE OR ADJUST ALL HIDDEN ITEMS SUCH AS PIPING, CONDUIT, ETC. CONTRACTOR SHALL COORDINATE EXTENT OF DEMOLITION TO SCOPE OF NEW WORK. REMOVAL SHALL BE COMPLETE AND BE PREPARED TO RECEIVE NEW WORK AS SHOWN. REFER TO RENOVATION DOCUMENTS IN THIS SET FOR INCIDENTAL WORK NOT SHOWN ON DEMOLITION DRAWINGS. PATCH HOLES IN STRUCTURAL SLAB WHERE DRAINS, CONDUIT, AND/OR DUCTWORK ARE REMOVED WITH APPROPRIATELY RATED FIRESTOPPING SYSTEMS.

4. IF HAZARDOUS MATERIALS ARE DISCOVERED DURING REMOVAL OPERATIONS, STOP WORK AND NOTIFY OWNER. HAZARDOUS MATERIALS INCLUDE, BUT ARE NOT LIMITED TO, REGULATED ASBESTOS CONTAINING MATERIALS, LEAD BASED PAINTS, PCB'S AND MERCURY.

5. PRIOR TO PROCEEDING WITH ANY WORK WITHIN THE EXISTING STRUCTURE, THE CONTRACTOR SHALL BECOME FAMILIAR WITH EXISTING CONDITIONS. DURING THE PROCESS OF CONSTRUCTION, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF EXISTING WORK WHERE EXISTING WORK IS MODIFIED TO ACCOMMODATE NEW CONSTRUCTION AND TO PROTECT FROM DAMAGE THOSE PORTIONS OF EXISTING WORK, WHICH ARE TO REMAIN.

6. SHORE AND BRACE ALL WORK TO REMAIN.

7. IF DEMOLITION IMPACTS EXISTING PARTITIONS, UTILITIES OR OTHER ELEMENTS THAT REQUIRE SUPPORT, THE CONTRACTOR SHALL PROVIDE APPROPRIATE TEMPORARY BRACING UNTIL A PERMANENT TIE-IN IS ACHIEVED WITH THE FINAL CONSTRUCTION.

8. FURNISHINGS AND EQUIPMENT IN ALL AREAS OF RENOVATION SHALL BE PROTECTED DURING CONSTRUCTION.

9. DURING DEMOLITION PHASE, ANY DAMAGE THAT IS DONE TO THE BUILDING AREAS THAT ARE TO REMAIN SHALL BE REPAIRED TO MATCH EXISTING. SURFACES DAMAGED DURING DEMOLITION ARE TO BE PATCHED AND REPAIRED AS REQUIRED AND FINISHED TO MATCH ADJACENT AREAS. ANY ITEMS THAT ARE SCHEDULED TO BE SALVAGED FOR RE-USE AND ARE DAMAGED SHALL BE REPLACED IN KIND.

10. SALVAGE ITEMS ARE THE PROPERTY OF THE OWNER. OWNER HAS FIRST RIGHT OF REFUSAL OF ALL SALVAGED MATERIALS.

11. OWNER'S REPRESENTATIVE IS TO REMOVE ALL SYSTEMS FURNITURE AND MEDICAL EQUIPMENT PRIOR TO ANY DEMOLITION. ALL ITEMS REMAINING AT START OF CONSTRUCTION WILL NOT BE SCHEDULED FOR SALVAGE.

12.THE CONTRACTOR SHALL PREPARE A DETAILED DEMOLITION AND PHASING PLAN FOR REMOVAL, ON SITE TEMPORARY PLACEMENT AND FINAL DISPOSAL OF MATERIALS. PLAN SHALL ALSO INDICATE PROTECTIVE MEASURES AT EXISTING UTILITY SERVICES, SITE HARDSCAPING AND LANDSCAPE ELEMENTS SCHEDULED TO REMAIN. DEMOLITION AND PHASING PLANS ALSO TO INCLUDE LOCATION OF TEMPORARY BARRIERS DIVIDING AREAS OF WORK FROM ADJACENT REAS THAT ARE TO REMAIN OPERATIONAL. ALL DEMOLITION AND PHASING PLANS TO BE APPROVED BY OWNER PRIOR TO BEGINNING WORK.

13. STRUCTURAL COLUMNS, SLABS, ROOF STRUCTURE, STAIR ENCLOSURE WALLS, CONCRETE STAIRS AND EXTERIOR MASONRY WALLS WHERE SHOWN TO REMAIN SHALL BE PROTECTED FROM WEATHER OR EQUIPMENT DAMAGE DURING DEMOLITION PROCESSES AND UTILIZE PROTECTIVE COVERINGS AS REQUIRED. CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED TO ENSURE NO STRUCTURAL ELEMENTS ARE OVERLOADED.

14. CONTRACTOR SHALL REMOVE DESIGNATED WALLS IN ENTIRETY TO FULL HEIGHT FROM FLOOR TO UNDERSIDE OF STRUCTURE AND REMOVE ALL REMAINING CONNECTORS, HARDWARE AND FITTINGS. REPAIR REMAINING BUILDING COMPONENTS TO ORIGINAL EXISTING CONDITION.

15. PROVIDE WALK-OFF MATS AT ALL CONSTRUCTION ENTRANCES AND EXITS. CHECK WALK-OFF MATS DAILY AND CHANGE FREQUENTLY. BASIS OF DESIGN SHALL BE POLY-TAK STICKY MAT SELF-ADHESIVE CLEAN ROOM MATS. SEE ICRA REQUIREMENTS FOR ADDITIONAL MEASURES REQUIRED TO CONTAIN DUST AND DEBRIS.

16. CONTRACTOR SHALL PROTECT ALL SURROUNDING AREAS, PLANTS, SHRUBS, TREES, ETC. FROM DAMAGE DURING DURATION OF PROJECT AND SHALL BE RESPONSIBLE FOR ANY REQUIRED TEMPORARY PROTECTION DURING THE WORK. NO WORK WILL BE DONE WITHIN DRIP LINE OF TREES TO BE SAVED.

17. THE CONTRACTOR SHALL KEEP PREMISES CLEAN AND FREE OF ACCUMULATIONS OF WASTE MATERIALS, RUBBISH AND DEBRIS CAUSED BY DEMOLITION OPERATIONS AT ALL TIMES. CONTROL SPREAD OF DUST TO THE SURROUNDING AREA. DO NOT STOCKPILE DEMOLISHED MATERIALS ON SITE.

18. AFTER COMPLETION OF DEMOLITION ACTIVITIES, THE SITE AND AREAS OF WORK SHALL BE COMPLETELY CLEANED. ALL DEBRIS SHALL BE REMOVED, BARRICADES, SCAFFOLDS, DUST CONTROL BARRIERS AND TEMPORARY BARRIERS SHALL BE REMOVED.

19. ALL REFUSE AND DEBRIS CREATED BY THE WORK OF THIS PROJECT SHALL BE REMOVED FROM THE PREMISES AND LEGALLY DISPOSED OF AT AN OFF-SITE LOCATION, UNO. REMOVAL OF DEBRIS IS TO BE DISPOSED OF IN CONTRACTOR SUPPLIED DUMPSTER(S) AT A CENTRALIZED LOCATION. COORDINATE DUMPSTER LOCATION WITH FACILITY MANAGEMENT. PROTECT SURFACE BELOW DUMPSTER(S) AS REQUIRED, CONTRACTOR SHALL REPAIR ANY DAMAGED OR TURF AREAS AT PROJECT COMPLETION.

20. THE CONTRACTOR SHALL COORDINATE WITH OWNER'S AND UTILITY COMPANY REPRESENTATIVES FOR SHUT OFF PROCEDURE, TIMING AND TAGGING OF ALL EXISTING UTILITY SERVICES PRIOR TO THE START OF DEMOLITION WORK. UTILITY SERVICES CONNECTED TO CAMPUS WIDE SYSTEMS SHALL BE BY-PASSED AS NECESSARY TO ASSURE CONTINUITY OF SERVICES TO DOWN-LINE FACILITY USES.

21. EXISTING FIRE SPRINKLER AND FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH TEMPORARY BARRIERS AND MAINTAINED DURING CONSTRUCTION.

22. AT DOORS SHOWN TO BE DEMOLISHED, REMOVE EXISTING DOOR, FRAME, AND HARDWARE. SALVAGE AND TURN OVER HARDWARE TO OWNER.

23. PROVIDE TEMPORARY FIRESTOPPING AT RATED PARTITIONS WHERE EXISTING MATERIALS ARE REQUIRED TO BE REMOVED. SUCH TEMPORARY FIRESTOPPING SHALL REMAIN IN PLACE UNTIL NEW WORK IS COMPLETE AND PENETRATIONS ARE PROPERLY SEALED.

ASBESTOS AND LEAD ABATEMENT

CONTRACTOR TO PROVIDE ASBESTOS AND LEAD ABATEMENT AS REQUIRED BY REPORT INCLUDED IN PROJECT SPECIFICATIONS, APPENDIX A. PROVIDE COST FOR ALL REMEDIATION SCOPE DESCRIBED AS SEPARATE LINE ITEM ON BID FORM.

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

AECOM

PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

CLIENT

VIRGINIA TECH

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CONSULTANT

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

GENERAL DEMOLITION NOTES AND LEGEND

SHEET NUMBER

AD001

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1 OVERALL GROUND FLOOR PLAN
AD100 Scale: 1/8" = 1'-0"

FOR REFERNCE ONLY

GENERAL NOTES THIS SHEET:

A. DRAWINGS PROVIDE A GENERAL DESCRIPTION OF THE EXTENT OF DEMOLITION. FIELD VERIFY AND REVIEW WITH OWNER BEFORE STARTING ANY DEMOLITION OR REMOVALS.
B. DEMOLITION DRAWINGS ARE BASED ON AVAILABLE INFORMATION AND FIELD WORK AND MAY NOT REPRESENT ALL EXISTING CONDITIONS; FIELD VERIFY.
C. ALL DEMOLITION WORK TO BE COORDINATED WITH THE NEW CONSTRUCTION WORK AS SHOWN ON ALL OTHER DRAWINGS.
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F. ALL EXISTING SERVICES AND UTILITIES SHALL BE MAINTAINED TO ADJACENT AREAS THAT ARE IN OPERATION AND SERVED BY THESE UTILITIES. COORDINATE DISRUPTIONS WITH THE OWNER. CONTACT THE OWNER REGARDING UTILITY SHUT DOWN PROCEDURES AND ADVANCE SCHEDULING OF A SHUT DOWN.
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K. EXISTING ITEMS, EQUIPMENT, PLUMBING FIXTURES, ETC. TO REMAIN SHALL BE PROTECTED FROM DIRT AND DAMAGE DURING DEMOLITION AND CONSTRUCTION.
L. HOLES IN FLOOR OR DECK LEFT AFTER REMOVAL OF PIPES, DUCTS, ETC., SHALL BE FILLED WITH MATCHING MATERIALS THAT MAINTAIN THE PROPER FIRE RATING.
M. INFILL ALL VOIDS IN WALLS WHERE LOUVERS, GRILLS, PIPING, ELECTRICAL PANELS, ETC. HAVE BEEN DEMOLISHED. INFILL TO MATCH ADJACENT WALL CONSTRUCTION UNLESS OTHERWISE NOTED.
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Q. CONTRACTOR SHALL REMOVE ALL WALL MOUNTED ITEMS (TACK BOARDS, MIRRORS, MARKERBOARDS, ETC.).
R. CONTRACTOR SHALL CAREFULLY REMOVE AND TURN OVER SELECT ITEMS TO THE OWNER.

PROJECT AREA

RENOVATION AREA - 11,930 SQ FT

TOTAL PROJECT AREA - 11,930 SQ FT

ASBESTOS AND LEAD ABATEMENT

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LIMITS OF WORK

PN

GRAPHIC SCALES
1/8"=1'-0" 8' 4' 0 8' 16'

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PROJECT
VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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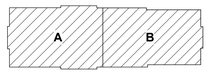
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REGISTRATION

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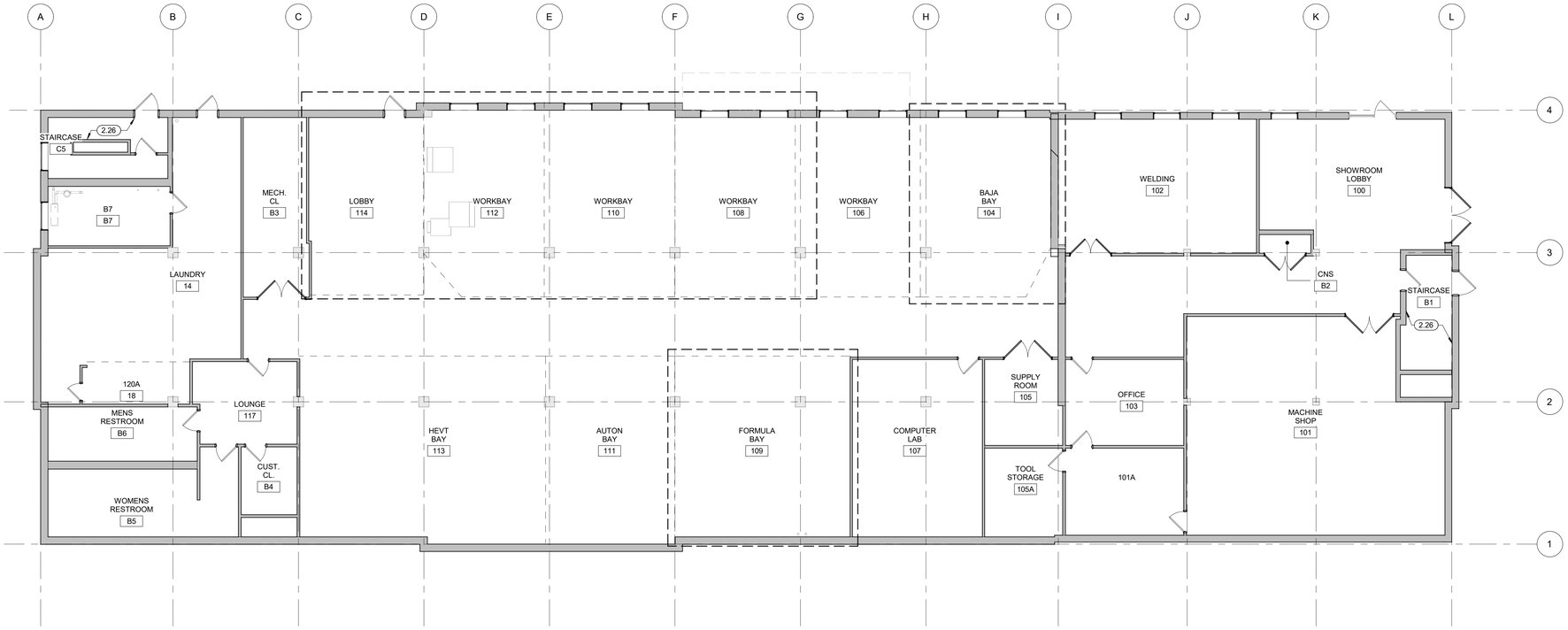
KEY PLAN



PROJECT NUMBER
60763454

SHEET TITLE
OVERALL GROUND FLOOR DEMOLITION PLAN

SHEET NUMBER
AD100



1 AD101 **OVERALL FIRST FLOOR DEMOLITION PLAN**

Scale: 1/8" = 1'-0"

GENERAL NOTES THIS SHEET:

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PROJECT AREA

RENOVATION AREA - 11,930 SQ FT

TOTAL PROJECT AREA - 11,930 SQ FT

SHEET KEYNOTES

2.26 REMOVE ALL EXISTING WALL GRAPHICS; PREPARE WALL FOR NEW FINISHES

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VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

LIMITS OF WORK

PN

TN

8' 4' 0 8' 16'

1/8"=1'-0"

GRAPHIC SCALES

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

CLIENT

VIRGINIA TECH

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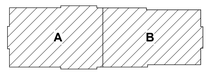
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KEY PLAN



PROJECT NUMBER

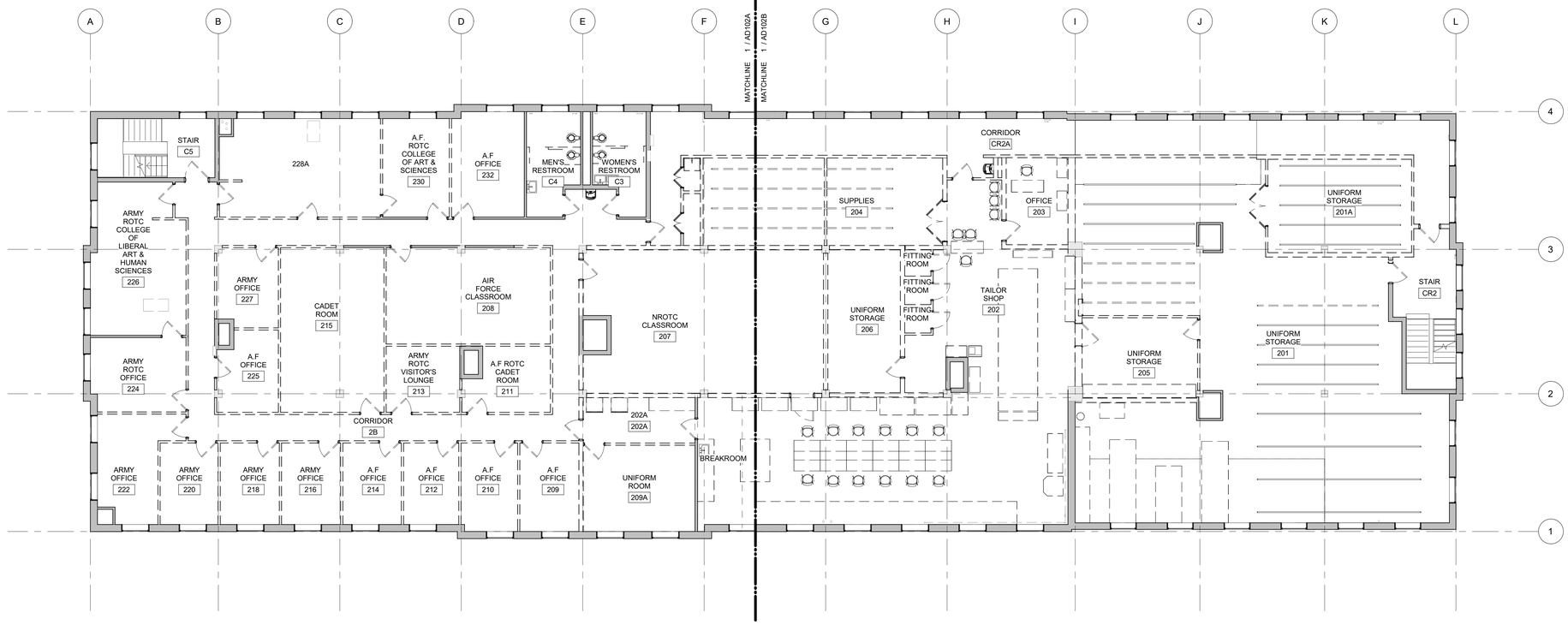
60763454

SHEET TITLE

OVERALL FIRST FLOOR DEMOLITION PLAN

SHEET NUMBER

AD101



1 AD102 **OVERALL SECOND FLOOR DEMOLITION PLAN**

Scale: 1/8" = 1'-0"

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PROJECT AREA

RENOVATION AREA - 11,930 SQ FT

TOTAL PROJECT AREA - 11,930 SQ FT

ASBESTOS AND LEAD ABATEMENT

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VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

PN

TN

8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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REGISTRATION

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I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

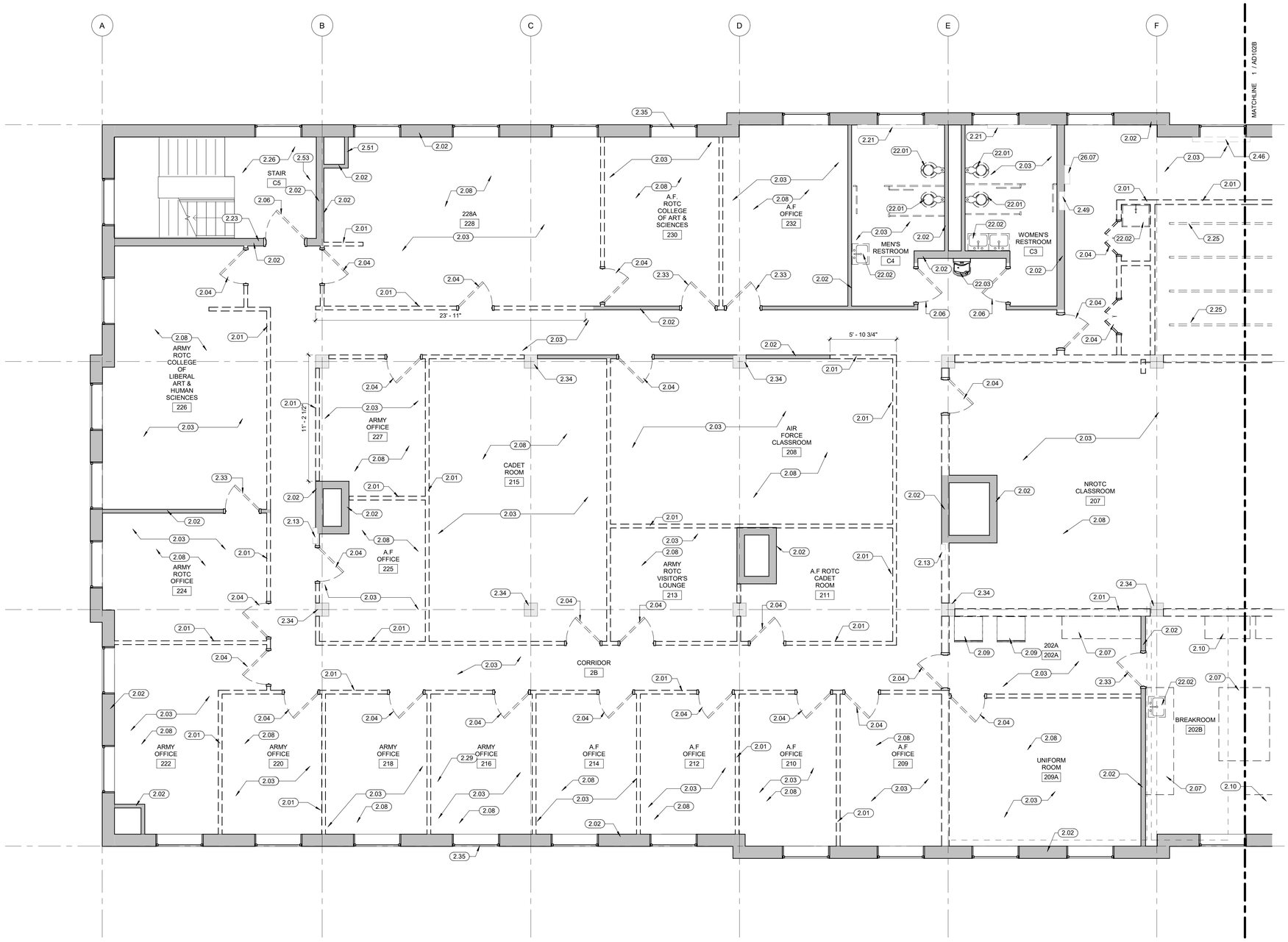
60763454

SHEET TITLE

OVERALL SECOND FLOOR DEMOLITION PLAN

SHEET NUMBER

AD102



1 SECOND FLOOR DEMOLITION PLAN - AREA A
AD102A
Scale: 1/4" = 1'-0"

ASBESTOS AND LEAD ABATEMENT

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SHEET KEYNOTES

2.01	DEMOLISH PARTITION TO EXTENTS SHOWN. FILL ANY HOLES IN FLOOR AND PREP FOR NEW FINISHES, TYP.
2.02	EXISTING WALL TO REMAIN; PROTECT DURING CONSTRUCTION. PREPARE WALL FOR NEW FINISH. SEE SHEET A-801 FOR FINISHES
2.03	REMOVE EXISTING FLOOR FINISH AND BASE COMPLETELY; PATCH AND PREPARE EXISTING SUBSTRATE BELOW TO RECEIVE NEW FLOOR FINISHES AS INDICATED ON SHEET A-801
2.04	REMOVE EXISTING DOOR, FRAME, AND HARDWARE; RETURN TO VT REPRESENTATIVE.
2.06	REMOVE EXISTING DOOR, FRAME AND HARDWARE. PREPARE OPENING FOR NEW DOOR. SEE DOOR SCHEDULE SHEET A-680
2.07	REMOVE EXISTING CASEWORK, COUNTERTOPS AND/OR SHELVING OCCURRING. REMOVE ANY SOFFITS OCCURRING OVER CASEWORK COMPLETELY AND RETURN TO VT REPRESENTATIVE
2.08	REMOVE EXISTING FURNITURE; RETURN TO VT REPRESENTATIVE
2.09	REMOVE EXISTING EQUIPMENT; PROTECT DURING CONSTRUCTION AND STORE TEMPORARILY DURING CONSTRUCTION. COORDINATE DEMOLITION OF UTILITIES AT CURRENT LOCATION WITH MEP DEMOLITION DRAWINGS. RELOCATE TO NEW LOCATION; SEE NEW WORK PLAN. COORDINATE WITH MEP NEW WORK DRAWINGS
2.10	REMOVE EXISTING FURNITURE; STORE IN SAFE LOCATION, COORDINATE WITH VT FOR NEW LOCATION. INSTALL AT END OF PROJECT. CLEAN ALL SURFACES FOR ANY DAMAGES DURING CONSTRUCTION. SOME FURNITURE AND CASEWORK WILL REQUIRE DISASSEMBLE AND REASSEMBLE AT END OF PROJECT. IF THAT IS NOT POSSIBLE NOTIFY VT PM AND ARRANGEMENTS WILL BE MADE FOR REPLACEMENT.
2.13	REMOVE EXISTING ACCESS DOOR AND SALVAGE EXISTING FEC IN NEW LOCATION. SEE NEW WORK PLAN FOR LOCATION
2.21	EXISTING PERIMETER HEATING UNIT TO REMAIN; PROTECT DURING CONSTRUCTION. CLEAN AND PAINT TO MATCH NEW WALL FINISHES; SEE MECHANICAL DRAWINGS
2.23	FIELD VERIFY EXISTING WALLS AND PENETRATIONS TO BE 1-HR FIRE RATED.
2.25	EXISTING RACK TO BE REMOVED AND REINSTALLED IN NEW LOCATION. COORDINATE LOCATION WITH VT REPRESENTATIVES
2.26	REMOVE ALL EXISTING WALL GRAPHICS; PREPARE WALL FOR NEW FINISHES
2.29	PREPARE FLOOR FOR NEW FLOOR BOXES. COORDINATE LOCATIONS WITH NEW WORK PLANS; CONFIRM LOCATIONS WITH VT REPRESENTATIVES. SEE ELECTRICAL DRAWINGS.
2.33	REMOVE EXISTING DOOR, FRAME, AND HARDWARE; RETURN TO VT REPRESENTATIVE. INFILL WALL OPENING TO MATCH EXISTING
2.34	EXISTING COLUMNS TO REMAIN; PROTECT DURING CONSTRUCTION. TYP. SEE FINISH SCHEDULE
2.35	EXISTING WINDOWS TO REMAIN; PROTECT DURING CONSTRUCTION. COORDINATE WITH VT REPRESENTATIVES
2.46	DEMOLISH EXISTING PERIMETER HEATING UNIT; SEE MECHANICAL DRAWINGS
2.49	EXISTING ELECTRICAL PANEL TO BE DEMOLISHED; INFILL WALL TO MATCH EXISTING.
2.51	CUT OPENING IN EXISTING WALL FOR NEW CABINET. REUSE EXISTING FULLY RECESSED FEC IN NEW LOCATION. PATCH WALL AFTER INSTALLATION TO MATCH NEW FINISHES. ANY PENETRATIONS THROUGH WALL TO BE FIRESTOPPED WITH 1HR RATED SYSTEM. PROVIDE SUBMITTALS FOR PRODUCTS TO BE USED WITH UL TESTED ASSEMBLIES INDICATED.
2.53	EXISTING LADDER TO ROOF HATCH TO REMAIN
22.01	DEMOLISH EXISTING FIXTURE. PREPARE CONNECTIONS FOR IN-KIND REPLACEMENT FIXTURE; SEE PLUMBING DRAWINGS
22.02	DEMOLISH EXISTING FIXTURE AND REMOVE PIPING BACK TO THE MAIN CONNECTION AND CAP; SEE PLUMBING DRAWINGS
22.03	DEMOLISH EXISTING DRINKING FOUNTAIN AND REMOVE PIPING BACK TO THE MAIN CONNECTION AND CAP. SEE PLUMBING DRAWINGS
26.07	EXISTING ELECTRICAL PANEL TO REMAIN; PROTECT DURING CONSTRUCTION; SEE ELECTRICAL DRAWINGS

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1/4"=1'-0" 4' 2' 0 4' 8'

GRAPHIC SCALES

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

CLIENT

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

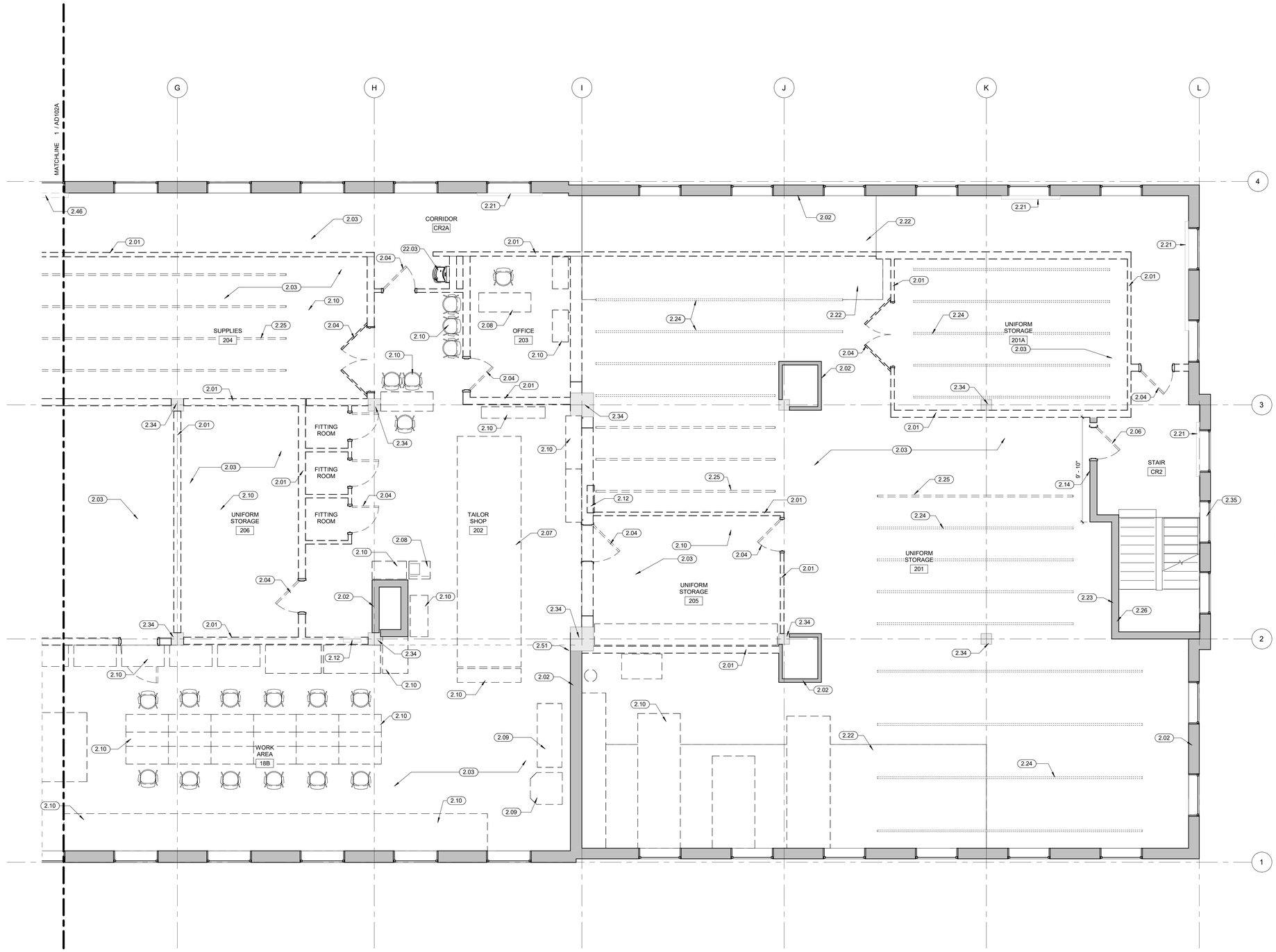
60763454

SHEET TITLE

SECOND FLOOR DEMOLITION PLAN - AREA A

SHEET NUMBER

AD102A



1 SECOND FLOOR DEMOLITION PLAN - AREA B
AD102B
Scale: 1/4" = 1'-0"

ASBESTOS AND LEAD ABATEMENT

CONTRACTOR TO PROVIDE ASBESTOS AND LEAD ABATEMENT AS REQUIRED BY REPORT INCLUDED IN PROJECT SPECIFICATIONS, APPENDIX A. PROVIDE COST FOR ALL REMEDIATION SCOPE DESCRIBED AS SEPARATE LINE ITEM ON BID FORM.

GENERAL NOTES THIS SHEET:

A. DRAWINGS PROVIDE A GENERAL DESCRIPTION OF THE EXTENT OF DEMOLITION. FIELD VERIFY AND REVIEW WITH OWNER BEFORE STARTING ANY DEMOLITION OR REMOVALS.
B. DEMOLITION DRAWINGS ARE BASED ON AVAILABLE INFORMATION AND FIELD WORK AND MAY NOT REPRESENT ALL EXISTING CONDITIONS; FIELD VERIFY.
C. ALL DEMOLITION WORK TO BE COORDINATED WITH THE NEW CONSTRUCTION WORK AS SHOWN ON ALL OTHER DRAWINGS.
D. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION AND OCCUPANT ACCESS AND EGRESS THROUGHOUT DEMOLITION AND CONSTRUCTION PHASES, AND MAINTAIN THE BUILDING IN A WEATHER TIGHT CONDITION.
E. PRIOR TO BEGINNING DEMOLITION WORK THE CONTRACTOR SHALL INSPECT THE EXISTING BUILDING AND VERIFY THE LOCATION AND CONDITION OF ALL ITEMS AFFECTED BY THE WORK WITH THE OWNER. CONFLICTS OR OMISSIONS WITH THE DOCUMENTS SHALL BE REPORTED TO THE OWNER BEFORE BEGINNING DEMOLITION/CONSTRUCTION IN THE AFFECTED AREA.
F. ALL EXISTING SERVICES AND UTILITIES SHALL BE MAINTAINED TO ADJACENT AREAS THAT ARE IN OPERATION AND SERVED BY THESE UTILITIES. COORDINATE DISRUPTIONS WITH THE OWNER. CONTACT THE OWNER REGARDING UTILITY SHUT DOWN PROCEDURES AND ADVANCE SCHEDULING OF A SHUT DOWN.
G. ALL ITEMS SHOWN DASHED SHALL BE REMOVED AND RETURNED TO VT REPRESENTATIVES UNLESS OTHERWISE MENTIONED.
H. ALL REFUSE AND DEBRIS CREATED BY THE WORK OF THIS PROJECT SHALL BE REMOVED FROM THE PREMISES AND LEGALLY DISPOSED OF AT AN OFF-SITE LOCATION, UNLESS OTHERWISE NOTED. COORDINATE DISPOSAL TIME WITH OWNER.
I. LOAD BEARING ITEMS (SUCH AS MASONRY WALLS, COLUMNS, ETC) ARE TO REMAIN UNLESS OTHERWISE NOTED.
J. EXISTING FIREPROOFING THAT IS DISTURBED OR DAMAGED SHALL BE PATCHED.
K. EXISTING ITEMS, EQUIPMENT, PLUMBING FIXTURES, ETC. TO REMAIN SHALL BE PROTECTED FROM DIRT AND DAMAGE DURING DEMOLITION AND CONSTRUCTION.
L. HOLES IN FLOOR OR DECK LEFT AFTER REMOVAL OF PIPES, DUCTS, ETC., SHALL BE FILLED WITH MATCHING MATERIALS THAT MAINTAIN THE PROPER FIRE RATING.
M. INFILL ALL VOIDS IN WALLS WHERE LOUVERS, GRILLS, PIPING, ELECTRICAL PANELS, ETC. HAVE BEEN DEMOLISHED. INFILL TO MATCH ADJACENT WALL CONSTRUCTION UNLESS OTHERWISE NOTED.
N. ALL UNIDENTIFIED MECHANICAL AND ELECTRICAL RUNS DISCOVERED WITHIN A DEMOLISHED WALL OR ABOVE A DEMOLISHED CEILING ARE TO BE IDENTIFIED IN NATURE AND EXTENT OF RUN BY THE CONTRACTOR. THEN CONTACT THE ARCHITECT/ENGINEER FOR FURTHER CLARIFICATION AND DIRECTION.
O. SURFACES DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION ARE TO BE PATCHED & REPAIRED AS REQUIRED AND FINISHED TO MATCH ADJACENT AREAS.
P. EXISTING UNUTILIZED CONDUITS, CABLE TRAYS, DUCTS, PIPING, ETC. ABOVE CEILING OR BELOW FLOOR LEVEL SHALL BE REMOVED. SIMILARLY, REMOVE ALL UNUSED AND ABANDONED FASTENERS, SUPPORTS, BRACKETS, HANGERS, ETC. ABOVE THE CEILING (OR BELOW THE FLOOR).
Q. CONTRACTOR SHALL REMOVE ALL WALL MOUNTED ITEMS (TACK BOARDS, MIRRORS, MARKERBOARDS, ETC.).
R. CONTRACTOR SHALL CAREFULLY REMOVE AND TURN OVER SELECT ITEMS TO THE OWNER.

SHEET KEYNOTES

2.01	DEMOLISH PARTITION TO EXTENTS SHOWN. FILL ANY HOLES IN FLOOR AND PREP FOR NEW FINISHES, TYP.
2.02	EXISTING WALL TO REMAIN; PROTECT DURING CONSTRUCTION. PREPARE WALL FOR NEW FINISH. SEE SHEET A-801 FOR FINISHES
2.03	REMOVE EXISTING FLOOR FINISH AND BASE COMPLETELY; PATCH AND PREPARE EXISTING SUBSTRATE BELOW TO RECEIVE NEW FLOOR FINISHES AS INDICATED ON SHEET A-801
2.04	REMOVE EXISTING DOOR, FRAME, AND HARDWARE; RETURN TO VT REPRESENTATIVE.
2.06	REMOVE EXISTING DOOR, FRAME AND HARDWARE. PREPARE OPENING FOR NEW DOOR, SEE DOOR SCHEDULE SHEET A-680
2.07	REMOVE EXISTING CASEWORK, COUNTERTOPS AND/OR SHELVING OCCURRING. REMOVE ANY SOFFITS OCCURRING OVER CASEWORK COMPLETELY AND RETURN TO VT REPRESENTATIVE
2.08	REMOVE EXISTING FURNITURE; RETURN TO VT REPRESENTATIVE
2.09	REMOVE EXISTING EQUIPMENT; PROTECT DURING CONSTRUCTION AND STORE TEMPORARILY DURING CONSTRUCTION. COORDINATE DEMOLITION OF UTILITIES AT CURRENT LOCATION WITH MEP DEMOLITION DRAWINGS. RELOCATE TO NEW LOCATION; SEE NEW WORK PLAN. COORDINATE WITH MEP NEW WORK DRAWINGS
2.10	REMOVE EXISTING FURNITURE; STORE IN SAFE LOCATION, COORDINATE WITH VT FOR NEW LOCATION. REINSTALL AT END OF PROJECT. CLEAN ALL SURFACES FOR ANY DAMAGES DURING CONSTRUCTION
2.12	REMOVE EXISTING ELECTRICAL PANEL; SEE ELECTRICAL DEMO DRAWINGS. INFILL WALL OPENING TO MATCH EXISTING WALL. SEE FINISH SCHEDULE FOR FINISHES
2.14	CUT OPENING IN EXISTING WALL FOR NEW CABINET. REUSE EXISTING FULLY RECESSED FEC IN NEW LOCATION IF EXISTING CABINET IS RATED 1 HOUR OR GREATER. IF EXISTING CABINET IS NOT RATED, PROVIDE NEW RATED FIRE EXTINGUISHER CABINET. PATCH WALL AFTER INSTALLATION TO MATCH NEW FINISHES. ANY PENETRATIONS THROUGH WALL TO BE FIRESTOPPED WITH 1HR RATED SYSTEM. PROVIDE SUBMITTALS FOR PRODUCTS TO BE USED WITH UL TESTED ASSEMBLIES INDICATED.
2.21	EXISTING PERIMETER HEATING UNIT TO REMAIN; PROTECT DURING CONSTRUCTION. CLEAN AND PAINT TO MATCH NEW WALL FINISHES; SEE MECHANICAL DRAWINGS
2.22	EXISTING WOOD FLOORING SYSTEM TO BE PREPARED FOR NEW UNDERLAYMENT TO BE INSTALLED ON TOP OF EXISTING WOOD. SEE NEW WORK PLANS
2.23	FIELD VERIFY EXISTING WALLS AND PENETRATIONS TO BE 1-HR FIRE RATED.
2.24	REMOVE EXISTING RACKS; AND REINSTALL AT NEW HEIGHTS TO ACCOMMODATE NEW SPRINKLERS IN OTHER PROJECT. SEE INTERIOR ELEVATIONS FOR TYPICAL RACK HEIGHTS. FIELD VERIFY
2.25	EXISTING RACK TO BE REMOVED AND REINSTALLED IN NEW LOCATION. COORDINATE LOCATION WITH VT REPRESENTATIVES
2.26	REMOVE ALL EXISTING WALL GRAPHICS; PREPARE WALL FOR NEW FINISHES
2.34	EXISTING COLUMNS TO REMAIN; PROTECT DURING CONSTRUCTION, TYP. SEE FINISH SCHEDULE
2.35	EXISTING WINDOWS TO REMAIN; PROTECT DURING CONSTRUCTION. COORDINATE REPLACEMENT OF WINDOW WITH PROJECT BY OTHERS, TYP. COORDINATE WITH VT REPRESENTATIVES
2.46	DEMOLISH EXISTING PERIMETER HEATING UNIT; SEE MECHANICAL DRAWINGS
2.51	CUT OPENING IN EXISTING WALL FOR NEW CABINET. REUSE EXISTING FULLY RECESSED FEC IN NEW LOCATION. PATCH WALL AFTER INSTALLATION TO MATCH NEW FINISHES. ANY PENETRATIONS THROUGH WALL TO BE FIRESTOPPED WITH 1HR RATED SYSTEM. PROVIDE SUBMITTALS FOR PRODUCTS TO BE USED WITH UL TESTED ASSEMBLIES INDICATED.
22.03	DEMOLISH EXISTING DRINKING FOUNTAIN AND REMOVE PIPING BACK TO THE MAIN CONNECTION AND CAP; SEE PLUMBING DRAWINGS

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GRAPHIC SCALES
1/4"=1'-0" 4' 2' 0 4' 8'

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KEY PLAN

A B

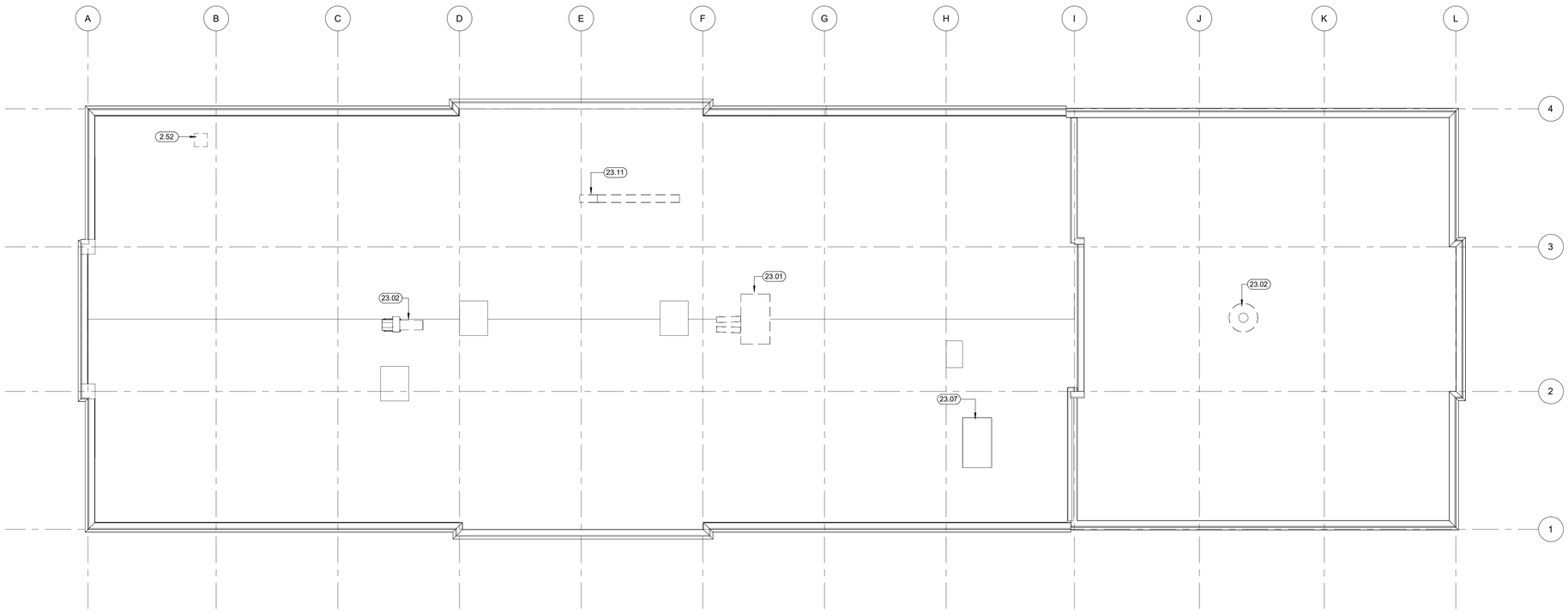
PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR DEMOLITION PLAN - AREA B

SHEET NUMBER
AD102B

GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G002 FOR ABBREVIATIONS.
B. REFER TO SHEET A001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS.
C. REFER TO MECHANICAL, PLUMBING, FIRE PROTECTION, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL WORK AND COORDINATE EXTENT WITH RESPECTIVE TRADES.
D. SEE NEW WORK PLANS FOR INFORMATION REGARDING ROOF TOP PENETRATIONS AND INSTALLATION OF NEW EQUIPMENT. PROVIDE ROOF DEMO TO ACCOMMODATE NEW SCOPE OF WORK.
E. ANY DEMOLISHED ROOF PENETRATION TO BE PROTECTED FROM WATER AND INCLEMENT WEATHER UNTIL NEW WORK OCCURS.
F. ENSURE ITEMS NOT IN SCOPE OF WORK TO REMAIN AND ARE PROTECTED AS REQUIRED.
G. PROVIDE WALK PADS FROM ROOF HATCH TO NEW LADDER LOCATION.



1 OVERALL ROOF PLAN DEMO
AD103 Scale: 1/8" = 1'-0"

SHEET KEYNOTES

2.52	EXISTING ROOF HATCH FOR ROOF ACCESS
23.01	DEMOLISH EXISTING ROOFTOP AIR HANDLING UNITS; REFER TO SHEET MD102
23.02	DEMOLISH EXISTING EXHAUST FANS AND ASSOCIATED DUCTWORK; REFER TO SHEET MD102
23.07	EXISTING AHU TO REMAIN; PROTECT DURING CONSTRUCTION; SEE MECHANICAL DRAWINGS
23.11	DEMOLISH EXISTING DUCT WORK; SEE MECHANICAL DRAWINGS

ASBESTOS AND LEAD ABATEMENT

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1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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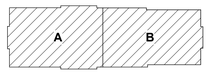
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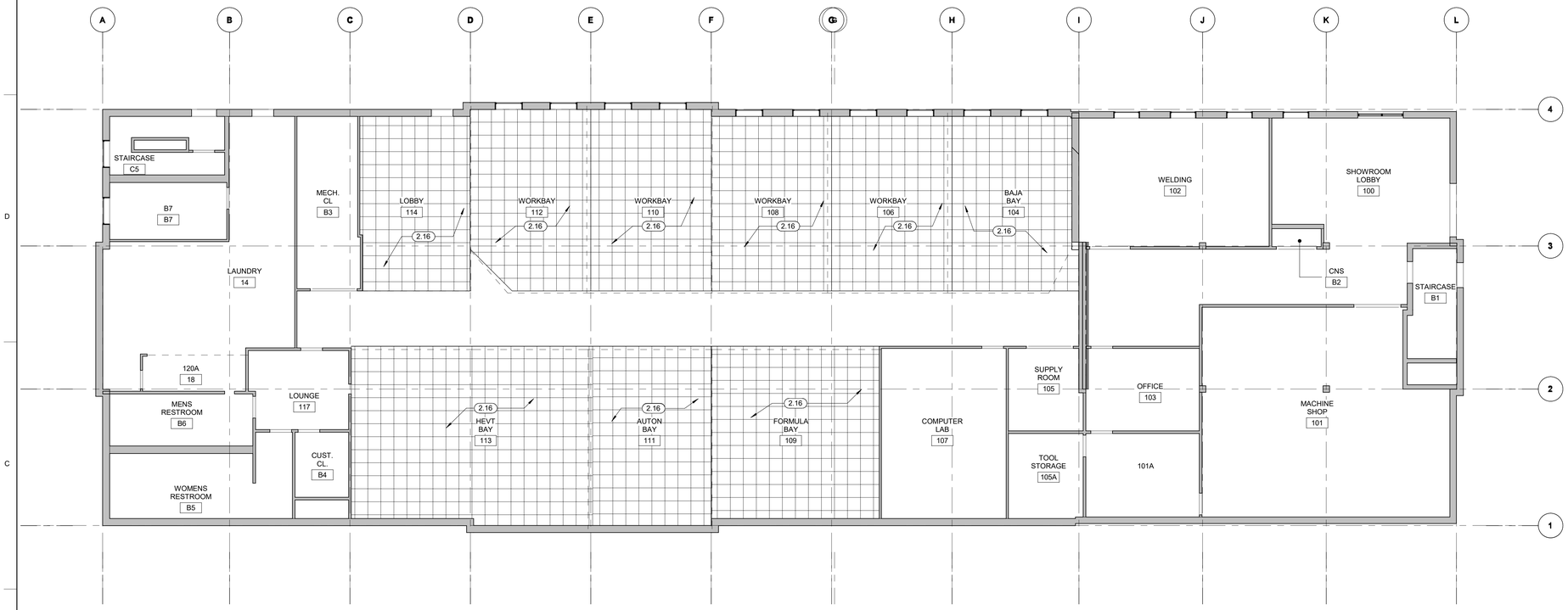
60763454

SHEET TITLE

OVERALL ROOF DEMOLITION PLAN

SHEET NUMBER

AD103



1 OVERALL FIRST FLOOR DEMOLITION RCP
AD151 Scale: 1/8" = 1'-0"

GENERAL NOTES THIS SHEET:

A. DRAWINGS PROVIDE A GENERAL DESCRIPTION OF THE EXTENT OF DEMOLITION. FIELD VERIFY AND REVIEW WITH OWNER BEFORE STARTING ANY DEMOLITION OR REMOVALS.
B. DEMOLITION DRAWINGS ARE BASED ON AVAILABLE INFORMATION AND FIELD WORK AND MAY NOT REPRESENT ALL EXISTING CONDITIONS; FIELD VERIFY.
C. ALL DEMOLITION WORK TO BE COORDINATED WITH THE NEW CONSTRUCTION WORK AS SHOWN ON ALL OTHER DRAWINGS.
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F. ALL EXISTING SERVICES AND UTILITIES SHALL BE MAINTAINED TO ADJACENT AREAS THAT ARE IN OPERATION AND SERVED BY THESE UTILITIES. COORDINATE DISRUPTIONS WITH THE OWNER. CONTACT THE OWNER REGARDING UTILITY SHUT DOWN PROCEDURES AND ADVANCE SCHEDULING OF A SHUT DOWN.
G. ALL ITEMS SHOWN DASHED SHALL BE REMOVED AND RETURNED TO VT REPRESENTATIVES UNLESS OTHERWISE MENTIONED.
H. ALL REFUSE AND DEBRIS CREATED BY THE WORK OF THIS PROJECT SHALL BE REMOVED FROM THE PREMISES AND LEGALLY DISPOSED OF AT AN OFF-SITE LOCATION, UNLESS OTHERWISE NOTED. COORDINATE DISPOSAL TIME WITH OWNER.
I. LOAD BEARING ITEMS (SUCH AS MASONRY WALLS, COLUMNS, ETC) ARE TO REMAIN UNLESS OTHERWISE NOTED.
J. EXISTING FIREPROOFING THAT IS DISTURBED OR DAMAGED SHALL BE PATCHED.
K. EXISTING ITEMS, EQUIPMENT, PLUMBING FIXTURES, ETC. TO REMAIN SHALL BE PROTECTED FROM DIRT AND DAMAGE DURING DEMOLITION AND CONSTRUCTION.
L. HOLES IN FLOOR OR DECK LEFT AFTER REMOVAL OF PIPES, DUCTS, ETC., SHALL BE FILLED WITH MATCHING MATERIALS THAT MAINTAIN THE PROPER FIRE RATING.
M. INFILL ALL VOIDS IN WALLS WHERE LOUVERS, GRILLS, PIPING, ELECTRICAL PANELS, ETC. HAVE BEEN DEMOLISHED. INFILL TO MATCH ADJACENT WALL CONSTRUCTION UNLESS OTHERWISE NOTED.
N. ALL UNIDENTIFIED MECHANICAL AND ELECTRICAL RUNS DISCOVERED WITHIN A DEMOLISHED WALL OR ABOVE A DEMOLISHED CEILING ARE TO BE IDENTIFIED IN NATURE AND EXTENT OF RUN BY THE CONTRACTOR. THEN CONTACT THE ARCHITECT/ENGINEER FOR FURTHER CLARIFICATION AND DIRECTION.
O. SURFACES DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION ARE TO BE PATCHED & REPAIRED AS REQUIRED AND FINISHED TO MATCH ADJACENT AREAS.
P. EXISTING UNUTILIZED CONDUITS, CABLE TRAYS, DUCTS, PIPING, ETC. ABOVE CEILING OR BELOW FLOOR LEVEL SHALL BE REMOVED. SIMILARLY, REMOVE ALL UNUSED AND ABANDONED FASTENERS, SUPPORTS, BRACKETS, HANGERS, ETC. ABOVE THE CEILING (OR BELOW THE FLOOR).
Q. CONTRACTOR SHALL REMOVE ALL WALL MOUNTED ITEMS (TACK BOARDS, MIRRORS, MARKERBOARDS, ETC.).
R. CONTRACTOR SHALL CAREFULLY REMOVE AND TURN OVER SELECT ITEMS TO THE OWNER.

SHEET KEYNOTES

2.16 REMOVE AND RE-INSTALL CEILING WHERE ABOVE CEILING ACCESS IS REQUIRED FOR MEP WORK. COORDINATE EXTENTS OF WORK WITH ELECTRICAL, MECHANICAL AND PLUMBING DRAWINGS.

ASBESTOS AND LEAD ABATEMENT

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1/8"=1'-0" 8' 4' 0 8' 16'

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KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

FIRST FLOOR DEMOLITION RCP

SHEET NUMBER

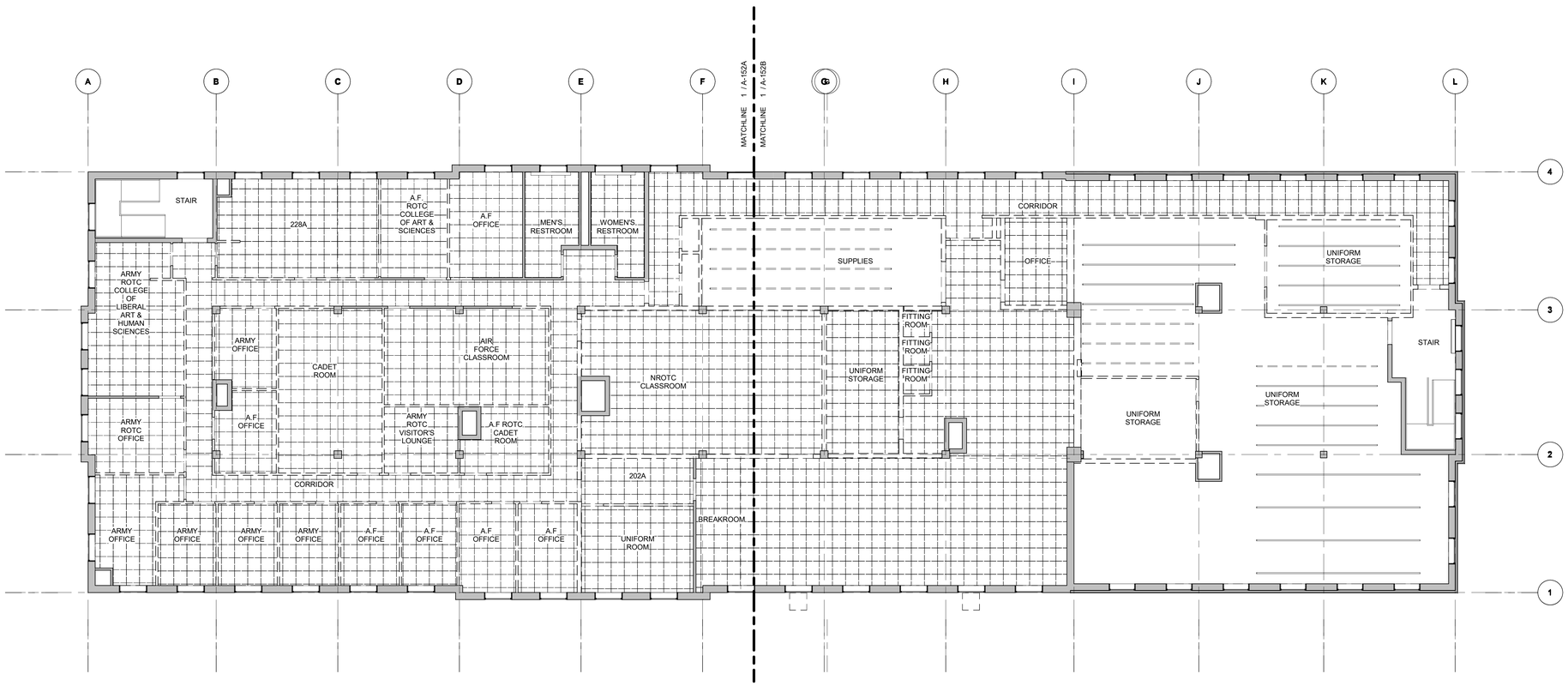
AD151

GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G-002 FOR ABBREVIATIONS.
B. REFER TO SHEET A-001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS.
C. REFER TO STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, TELECOM AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL WORK AND COORDINATE EXTENT WITH RESPECTIVE TRADES.

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1 | **OVERALL SECOND FLOOR DEMOLITION RCP**
AD152 | Scale: 1/8" = 1'-0"

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1/8"=1'-0" 8' 4' 0 8' 16'

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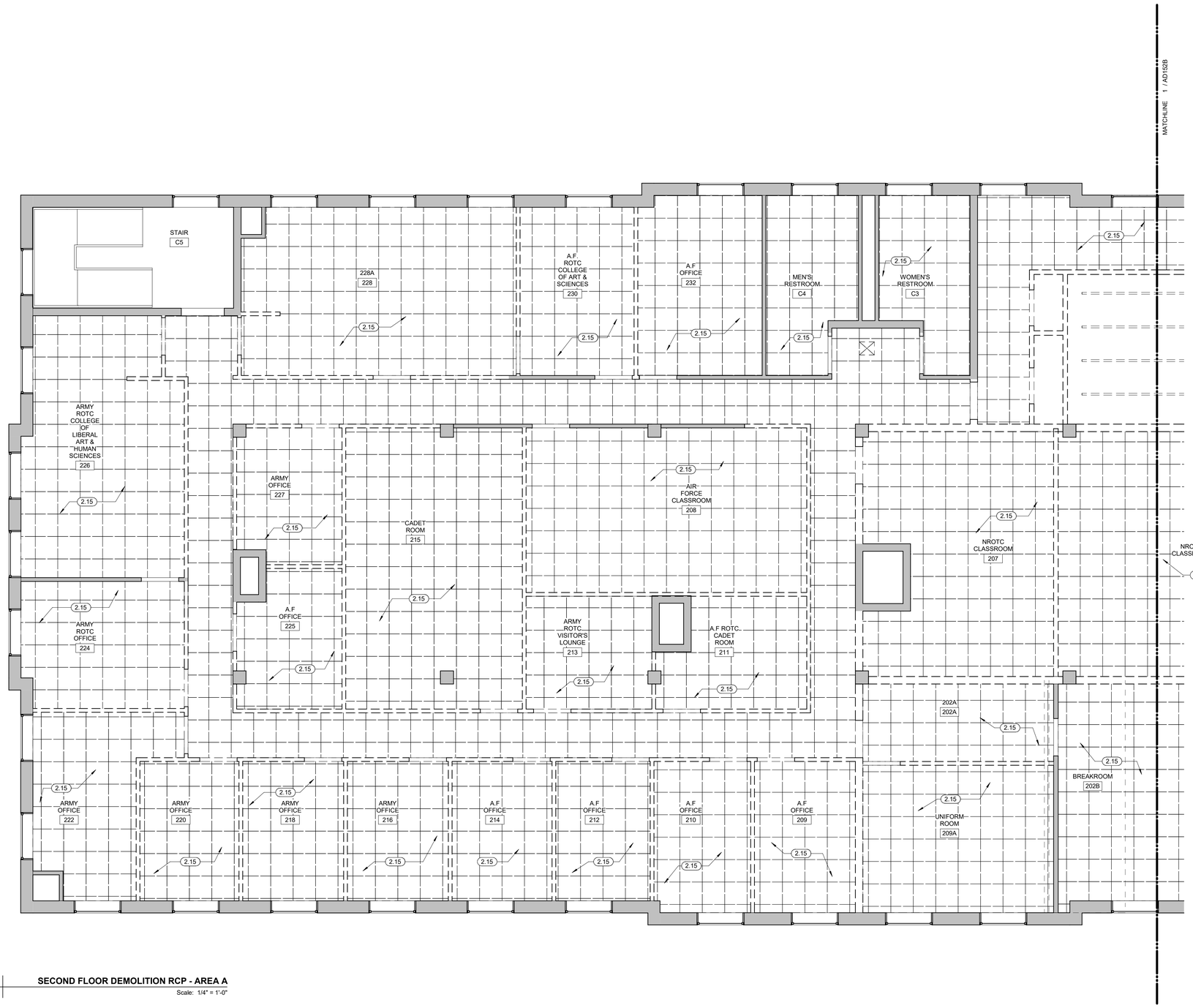


PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR DEMOLITION RCP

SHEET NUMBER
AD152

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1 | AD152A **SECOND FLOOR DEMOLITION RCP - AREA A**

Scale: 1/4" = 1'-0"

GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G-002 FOR ABBREVIATIONS.
B. REFER TO SHEET A-001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS.
C. REFER TO STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, TELECOM AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL WORK AND COORDINATE EXTENT WITH RESPECTIVE TRADES.

SHEET KEYNOTES

2.15 REMOVE EXISTING CEILING TILE, AND CEILING GRID, PREPARE FOR NEW CEILING. SEE NEW WORK DRAWINGS. COORDINATE DEMO WITH MEP DEMOLITION DRAWINGS

ASBESTOS AND LEAD ABATEMENT

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1/4"=1'-0" 4' 2' 0 4' 8'

GRAPHIC SCALES

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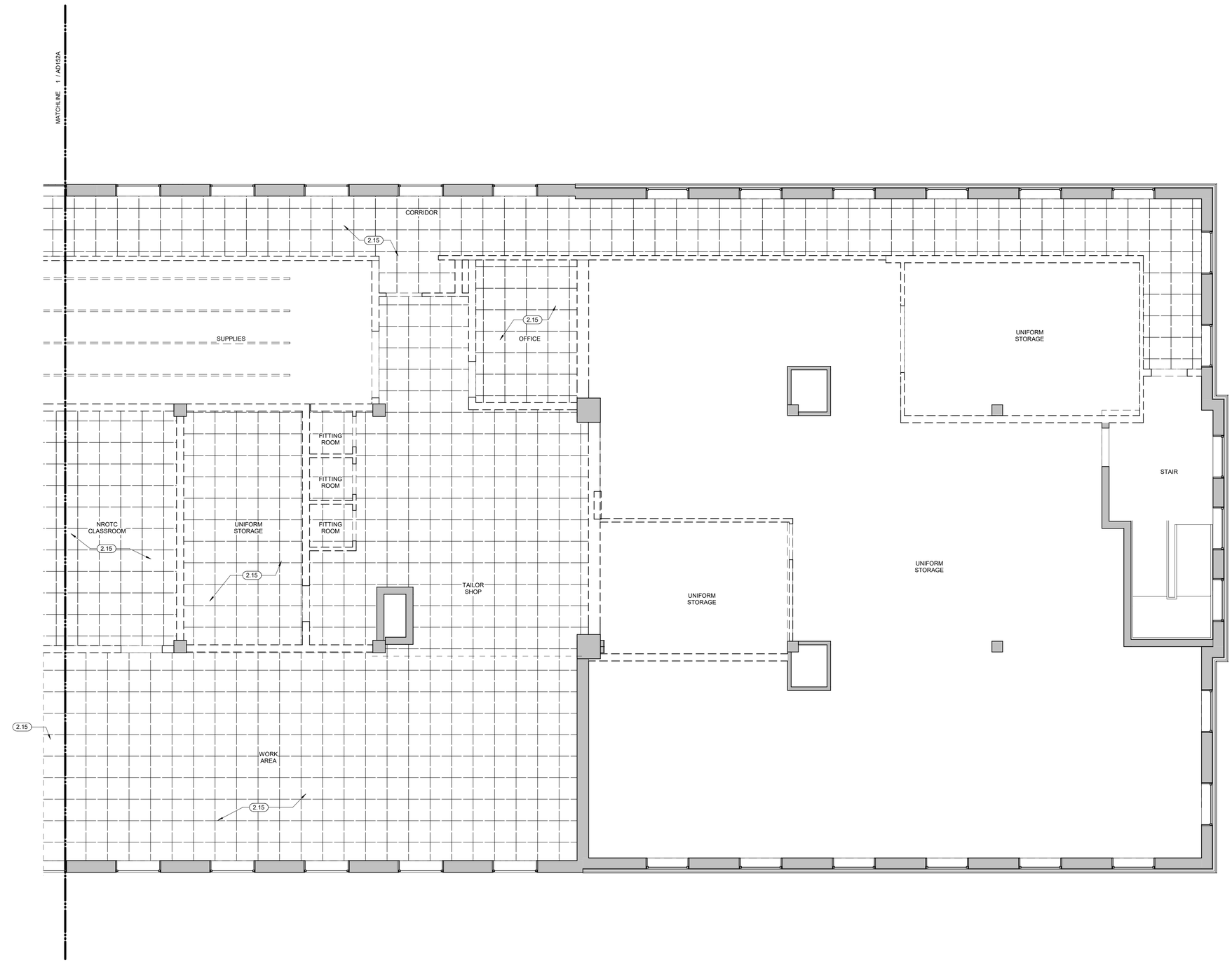
60763454

SHEET TITLE

SECOND FLOOR DEMOLITION RCP - AREA A

SHEET NUMBER

AD152A



1 | AD152B **SECOND FLOOR DEMOLITION RCP - AREA B**
Scale: 1/4" = 1'-0"

GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G-002 FOR ABBREVIATIONS.
B. REFER TO SHEET A-001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS.
C. REFER TO STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, TELECOM AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL WORK AND COORDINATE EXTENT WITH RESPECTIVE TRADES.

SHEET KEYNOTES

2.15 REMOVE EXISTING CEILING TILE, AND CEILING GRID, PREPARE FOR NEW CEILING. SEE NEW WORK DRAWINGS. COORDINATE DEMO WITH MEP DEMOLITION DRAWINGS

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1/4"=1'-0" 4' 2' 0 4' 8'

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KEY PLAN

A B

PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR DEMOLITION RCP - AREA B

SHEET NUMBER
AD152B

GENERAL REFLECTED CEILING PLAN NOTES, LEGEND AND SYMBOLS

LEGEND AND SYMBOLS

MATERIALS

2' x 2' GRID AND TILE SYSTEM - SEE SPECIFICATIONS

2' x 4' GRID AND TILE SYSTEM - SEE SPECIFICATIONS

GYPSUM BOARD CEILING, SOFFIT AND/OR BULKHEAD AS INDICATED ON PLAN. SEE FINISH PLAN FOR PAINT SPECIFICATIONS

ANNOTATIONS

X' - X" — FINISHED CEILING HEIGHT AS INDICATED ON PLAN UNO.

ALIGN — ALIGN SYMBOL

X'-XX" — FINISHED CEILING HEIGHT AS INDICATED ON PLAN U.O.N.

X / X — FINISH TAG, REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.

START POINT

NOTE: NOT ALL SYMBOLS MAY BE USED

LIGHT FIXTURES

NEW 2' x 2' RECESSED SEMI-INDIRECT LED FIXTURE

NEW 2' x 2' RECESSED SEMI-INDIRECT LED FIXTURE (EMERGENCY)

NEW 2' x 4' RECESSED SEMI-INDIRECT LED FIXTURE

NEW 2' x 4' RECESSED SEMI-INDIRECT LED FIXTURE (EMERGENCY)

NEW 1' x 4' RECESSED SEMI-INDIRECT LED FIXTURE

NEW 1' x 4' RECESSED SEMI-INDIRECT LED FIXTURE (EMERGENCY)

T-BAR LIGHTING FIXTURE

CAN LIGHT

OCCUPANCY SENSOR

DAYLIGHT SENSOR

HVAC

CEILING SUPPLY DIFFUSER

CEILING RETURN DIFFUSER

CEILING EXHAUST DIFFUSER

LIFE SAFETY

EXIT SIGN, ARROW INDICATES PATH OF TRAVEL

LIFE SAFETY SPEAKER

LIFE SAFETY STROBE

SPRINKLER

EXISTING SPRINKLER

ARCHITECTURAL

1. ALL STROBES SHALL BE LOCATED AT XX. SEE ENGINEER'S DRAWINGS FOR LOCATIONS AND SPECIFICATIONS.

2. ALL STROBES TO ALIGN VERTICALLY WITH RECEPTACLES AND/OR SWITCHES BELOW WHERE OCCURS.

3. ARCHITECT TO REVIEW ALL LIGHT/CEILING FIXTURE LOCATIONS PRIOR TO INSTALLATION.

4. INSTALL THE SUSPENDED CEILING GRID TO BE LEVEL WITHIN A TOLERANCE OF 1/8". ANCHOR AS REQUIRED.

5. ARCHITECT TO REVIEW LOCATIONS OF ALL SLOT DIFFUSERS, SPRINKLERS, SMOKE DETECTORS, ETC. IN GYP BD CEILINGS PRIOR TO INSTALLATION BY SHOP DRAWING REVIEW.

6. REFLECTED CEILING PLANS INDICATED CEILING TYPE AND DESIGN INTENT; REFER TO MECHANICAL, PLUMBING, FIRE PROTECTION, TELECOM AND ELECTRICAL DRAWINGS FOR ADDITIONAL WORK AND COORDINATE.

7. WHERE ACOUSTICAL PANELS ARE REQUIRED TO BE CUT, CUT THE PANELS TO MAINTAIN A SHARP AND NEAT EDGE.

8. ALTHOUGH SPRINKLER HEADS ARE NOT SHOWN, THE BUILDING IS FULLY SPRINKLERED. LOCATE SPRINKLER HEADS IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.

9. INSTALL LIGHT FIXTURES IN THE CENTER OF THE ACOUSTICAL CEILING PANEL AND/OR CENTERED IN THE ROOM AS INDICATED, UNO.

10. ALL ACOUSTICAL CEILING TILES TO BE INSTALLED CENTERED IN ROOMS, UNO.

11. REFER TO FINISH SCHEDULE FOR CEILING TYPES AND FINISHES.

GENERAL NOTES, LEGENDS AND SYMBOLS

LEGEND AND SYMBOLS

XXX — NEW DOOR AND TAG, SEE SHEET A-611 FOR DOOR SCHEDULE

EXISTING DOOR TO REMAIN

EXISTING PARTITION TO REMAIN

NEW GWB PARTITION

NEW CMU PARTITION

NEW CAST-IN-PLACE CONCRETE PARTITION

CUBICLE CURTAIN AND CEILING MOUNTED TRACK

PXX — PARTITION TYPE TAG

AXX — TOILET ACCESSORY TAG

W# — WINDOW TAG

L# — LOUVER TAG

S P — SMOKE PARTITION

S — SMOKE BARRIER - 1 HR

S — SMOKE BARRIER - 2 HR

FIRE BARRIER - 1 HR

FIRE BARRIER - 2 HR

FEC — SEMI-RECESSED CABINET WITH FIRE EXTINGUISHER

FE — BRACKET MOUNTED FIRE EXTINGUISHER

FD — FLOOR DRAIN, SEE PLUMBING

ARCHITECTURAL

1. VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD PRIOR TO START OF WORK. NOTIFY ARCHITECT AND OWNER IN WRITING OF ANY WORK DESCRIBED IN THE CONTRACT DOCUMENTS WHICH CANNOT BE PERFORMED DUE TO EXISTING CONDITIONS.

2. COORDINATE ALL CONSTRUCTION WITH APPROVED PHASING PLANS TO BE DEVELOPED BY THE CONTRACTOR.

3. CONTRACTOR TO PROVIDE AND COORDINATE TEMPORARY INTERIOR AND EXTERIOR BUILDING SIGNAGE WITH OWNER.

4. PRIOR TO LAYING OUT NEW WALLS, CONFIRM LOCATIONS OF EXISTING WALLS IN AREA OF WORK AND NOTIFY ARCHITECT IF THERE ARE DISCREPANCIES WITH FLOOR PLANS. ADDITIONAL DEMOLITION OR ADJUSTMENT TO FLOOR PLAN MAY BE REQUIRED TO ACCOMMODATE FOR AS-BUILT CONDITIONS.

5. SHORE AND BRACE ALL WORK TO REMAIN. COORDINATE ANY STRUCTURAL ADDITIONS OR MODIFICATIONS WITH THE STRUCTURAL DRAWINGS.

6. PRIOR TO PROCEEDING WITH ANY WORK WITHIN THE EXISTING STRUCTURE, THE CONTRACTOR SHALL BECOME FAMILIAR WITH EXISTING CONDITIONS. DURING THE PROCESS OF CONSTRUCTION, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF EXISTING WORK WHERE EXISTING WORK IS MODIFIED TO ACCOMMODATE NEW CONSTRUCTION AND TO PROTECT FROM DAMAGE THOSE PORTIONS OF EXISTING WORK, WHICH ARE TO REMAIN.

7. FURNISHINGS AND EQUIPMENT IN ALL AREAS OF RENOVATION SHALL BE PROTECTED DURING CONSTRUCTION.

8. ALL CONSTRUCTION AND WORK SHOWN ON THE COMPLETE SET OF DRAWINGS IS ASSUMED TO BE NEW AND FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS NOTED NIC.

9. IF A CONFLICT EXISTS WITHIN THE DRAWINGS AND/OR SPECIFICATIONS THE MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY. ITEMS SHOWN ON DRAWINGS, BUT NOT SPECIFIED, SHALL APPLY AND BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF AN ITEM IS SHOWN ON THE DRAWINGS, BUT IS NOT INCLUDED IN THE SPECIFICATIONS, PROVIDE ITEM OF A QUALITY LEVEL CONSISTENT WITH THE GENERAL QUALITY LEVEL OF THE CONTRACT REQUIREMENTS. BRING CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY FOR CLARIFICATION.

10. WRITTEN INFORMATION TAKES GENERAL PRECEDENCE OVER DRAWING LINES. BRING CONFLICTS BETWEEN WRITTEN INFORMATION AND DRAWN LINES TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.

11. IF AN AREA OR SPACE IS SHOWN, BUT IS NOT CLEARLY DEFINED OR INDICATED BY NOTES, PROVIDE THE SAME MATERIALS, FINISHES AND QUALITY OF CONSTRUCTION AS SCHEDULED OR DETAILED FOR AREAS OF SIMILAR USE ELSEWHERE IN THE WORK.

12. TYPICAL DETAILS THROUGHOUT THE DRAWING SET SHALL APPLY FOR ALL APPLICABLE CONDITIONS, EVEN IF NOT SPECIFICALLY SHOWN OR REFERENCED.

13. ALL APPURTENANCES BUILT INTO OR THROUGH WALLS, INCLUDING DOORS, WINDOWS, DUCTS, LOUVERS, GRILLES, PIPING, MECHANICAL WORK, ETC. SHALL FIT TIGHTLY AND BE THOROUGHLY SEALED AROUND PERIMETERS. USE FIRESTOPPING SYSTEMS THAT HAVE RATINGS THAT MEET REQUIREMENTS OF ASSEMBLIES BEING PENETRATED.

14. PROVIDE ADA-COMPLIANT TRANSITION STRIPS AT ALL CHANGES IN FLOOR ELEVATIONS AND CHANGES IN FLOOR FINISH MATERIAL.

15. REFER TO MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL DRAWINGS FOR LOCATIONS AND DESCRIPTIONS OF ACCESS PANELS, LOUVER OPENINGS, VENTILATORS, GRILLES, VALVE CABINETS, FIRE DAMPERS OR OTHER APPURTENANCES AFFECTING WALLS, CEILINGS OR FLOORS. PROVIDE NECESSARY LINTELS, SUPPORT AND ANCHORAGE. SEE STRUCTURAL DRAWINGS FOR LINTEL REQUIREMENTS.

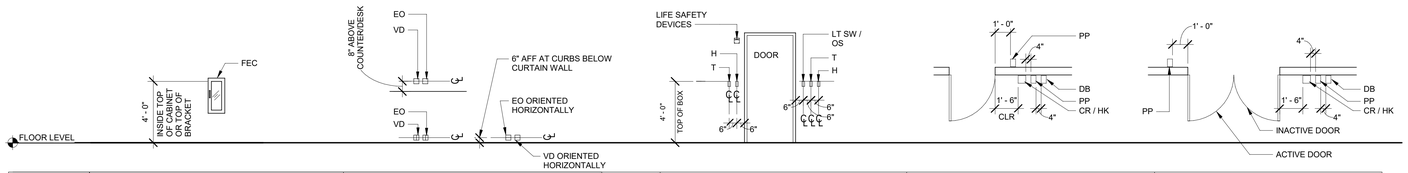
16. EXISTING FIRE SPRINKLER AND FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH TEMPORARY BARRIERS AND MAINTAINED DURING CONSTRUCTION.

17. ALL ABANDONED SLAB ON GRADE PENETRATIONS, UP TO 8" IN DIAMETER, SHALL BE INFILLED WITH NON-SHRINK GROUT, FULL THICKNESS OF EXISTING SLAB.

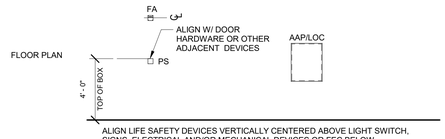
18. CONTRACTOR SHALL VERIFY EXISTING FLOOR ELEVATIONS PRIOR TO BEGINNING WORK.

19. ALL EXISTING SLABS ARE TO BE PREPPED FOR NEW FINISHES INCLUDING FLOOR LEVELING AS REQUIRED TO ACHIEVE FLAT SURFACE. THIS INCLUDES LOCATION OF COLD JOINTS WITH NEW SLAB. GRIND CONCRETE AS REQUIRED.

MOUNTING HEIGHTS

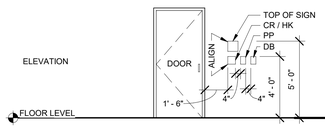


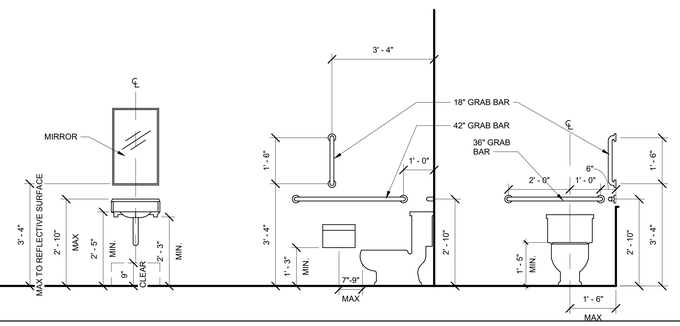
DESCRIPTION	FIRE EQUIPMENT SPECIALTIES	OUTLETS		LIGHT SWITCH AND MECHANICAL DEVICES	SIGNAGE AT SINGLE DOOR FLUSH WITH WALL	SIGNAGE AT DOUBLE DOOR FLUSH WITH WALL
NOTES :	1. SEMI-RECESSED FIRE EXTINGUISHER CABINET (FEC) 2. FIRE HOSE VALVE CABINET (FHVC). 3. BRACKET MTD FIRE EXTINGUISHER, MATCH T.O. BRACKET TO TYP MOUNTING HEIGHT AS SHOWN	1. MOUNT HEIGHTS SHOWN FOR ABOVE FLOOR AND ABOVE COUNTER UNO., REFER TO ELEVATIONS FOR LOCATIONS. 2. ELECTRICAL OUTLET (EO) 3. VOICE/DATA OUTLET (VD)		1. THERMOSTAT (T) 2. HUMIDISTAT (H) 3. LIGHT SWITCH (LT SW) 4. OCCUPANCY SENSOR * LIFE SAFETY DEVICES INCLUDE WALL MOUNTED STROBE , SPEAKER AND/OR HORN.	1. CARD READER (CR) 2. PUSH PLATE FOR DOOR OPERATOR (PP) 3. DOOR BELL (DB) 4. KEYPAD (HK)	1. CARD READER (CR) 2. PUSH PLATE FOR DOOR OPERATOR (PP) 3. DOOR BELL (DB) 4. KEYPAD (K)



ALIGN LIFE SAFETY DEVICES VERTICALLY CENTERED ABOVE LIGHT SWITCH, SIGNS, ELECTRICAL AND/OR MECHANICAL DEVICES OR FEC BELOW.

DESCRIPTION	FIRE ALARM (FA)	FIRE / LIFE SAFETY PANELS
NOTES :	1. FIRE ALARM* (FA) 2. PULL STATION (PS) * INCLUDES WALL MOUNTED STROBE , SPEAKER AND/OR HORN.	1. ALARM ANNUNCIATOR PANEL (AAP) 2. LOCAL OPERATING CONSOLE (LOC)





VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

GENERAL NOTES AND LEGENDS

SHEET NUMBER

A-001

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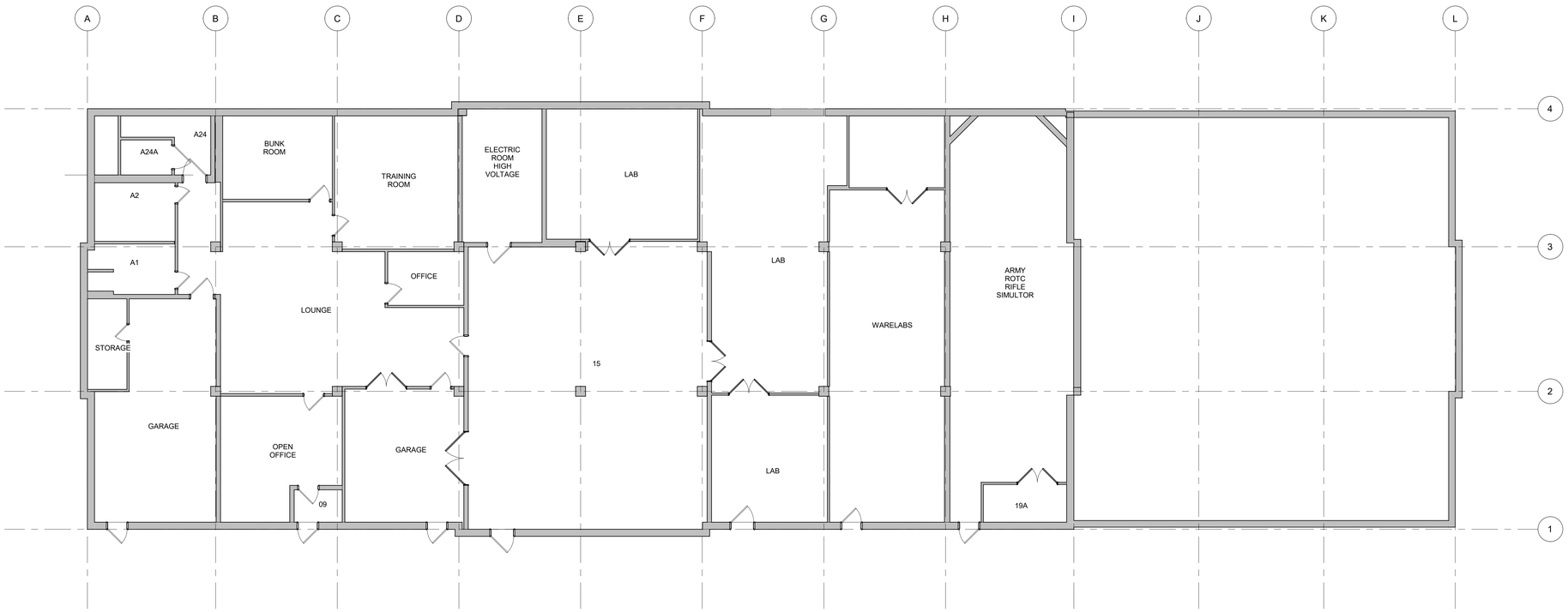
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PROJECT AREA

RENOVATION AREA - 11,930 SQ FT

TOTAL PROJECT AREA - 11,930 SQ FT



1 OVERALL GROUND FLOOR PLAN
A-100 Scale: 1/8" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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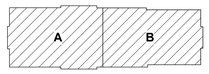
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I/R	DATE	DESCRIPTION
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I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN



PROJECT NUMBER

60763454

SHEET TITLE

OVERALL GROUND FLOOR PLAN

SHEET NUMBER

A-100

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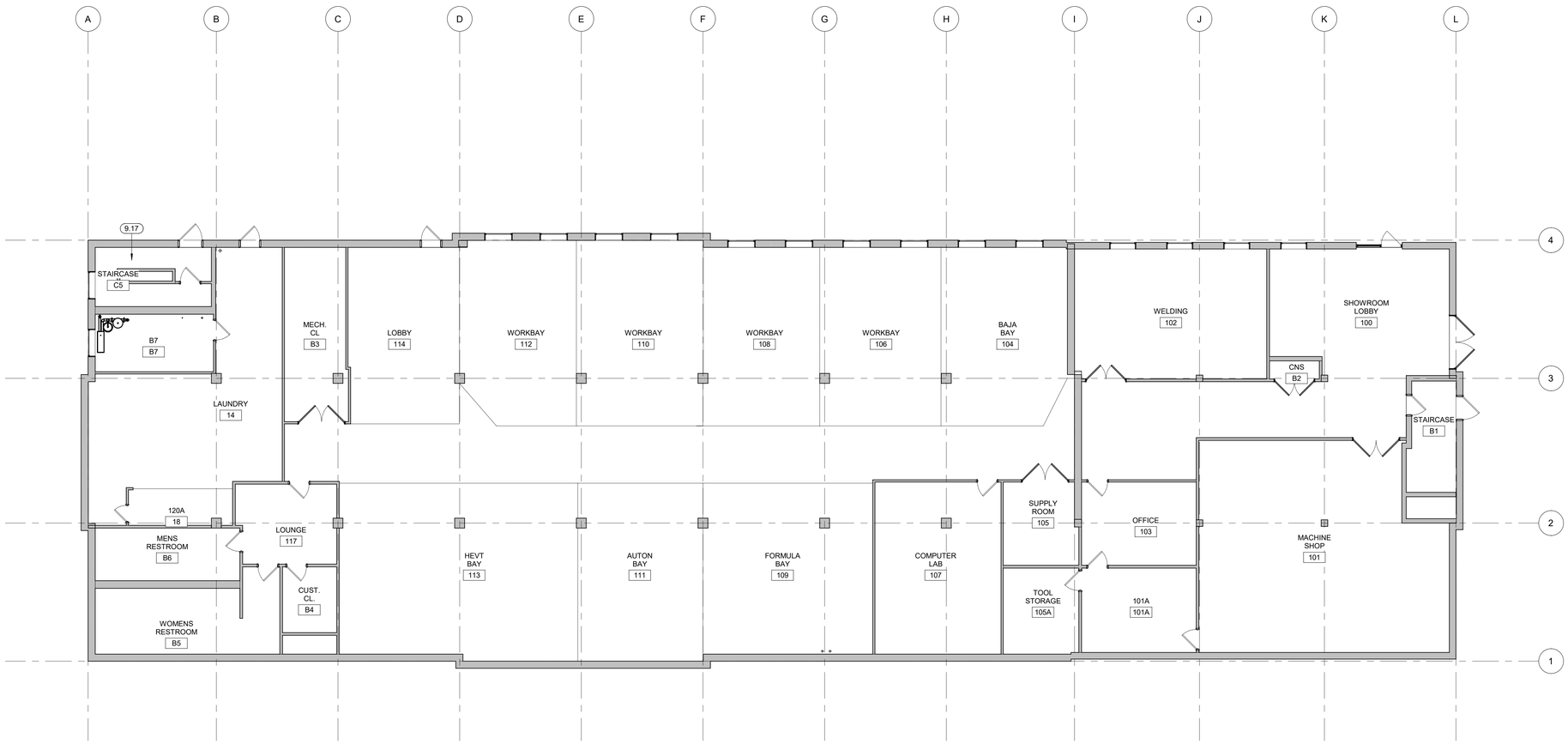
PROJECT AREA

RENOVATION AREA - 11,930 SQ FT

TOTAL PROJECT AREA - 11,930 SQ FT

SHEET KEYNOTES

9.17 FILL WALL DAMAGE WHERE NEEDED AND PREP EXISTING STAIR WALLS FOR NEW PAINT. PAINT ALL STAIR WALLS WITH PNT-1.



1 OVERALL FIRST FLOOR PLAN
A-101 Scale: 1/8" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

OVERALL FIRST FLOOR PLAN

SHEET NUMBER

A-101

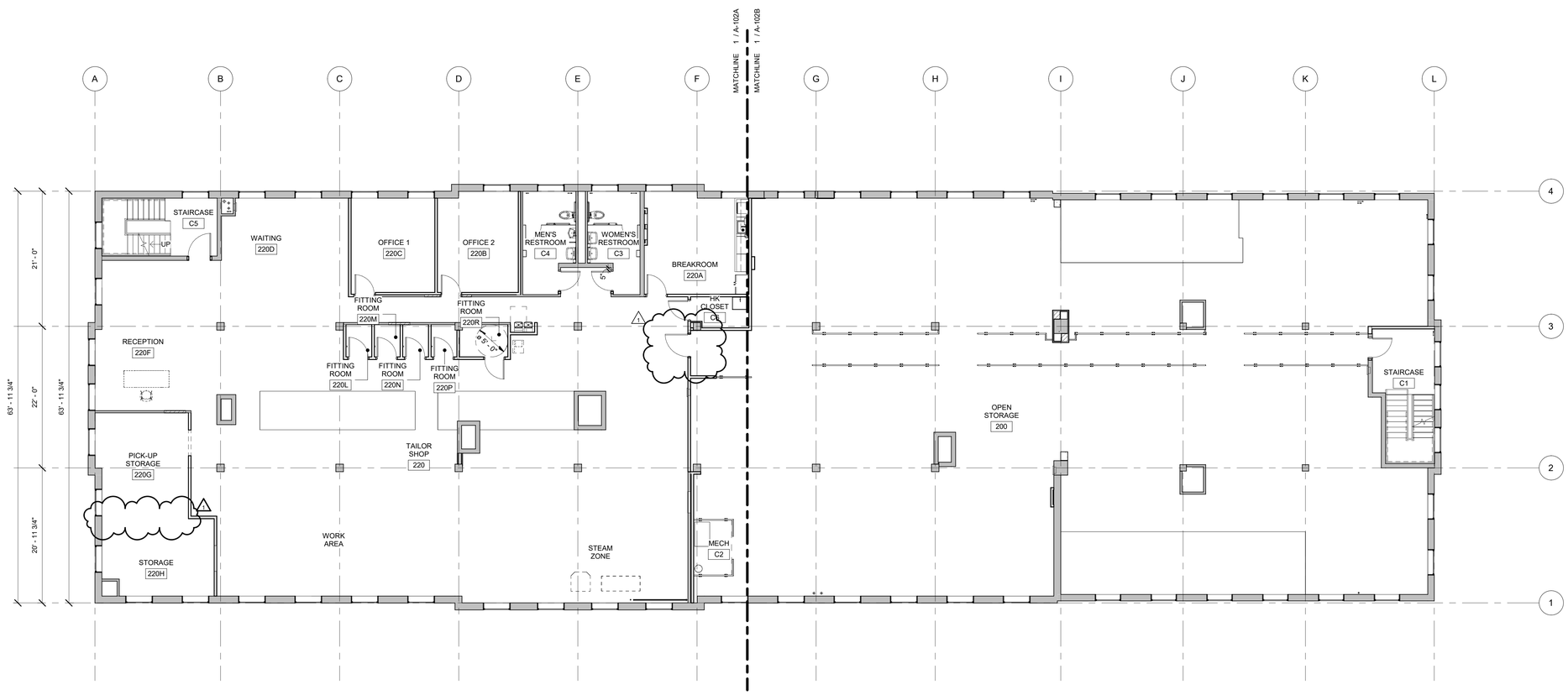
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PROJECT AREA

RENOVATION AREA - 11,930 SQ FT

TOTAL PROJECT AREA - 11,930 SQ FT



1 OVERALL SECOND FLOOR PLAN
A-102 Scale: 1/8" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

AECOM

PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS
I/R	DATE	DESCRIPTION

KEY PLAN

A | B

PROJECT NUMBER

60763454

SHEET TITLE

OVERALL SECOND FLOOR PLAN

SHEET NUMBER

A-102

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SHEET KEYNOTES

2.34	EXISTING COLUMNS TO REMAIN; PROTECT DURING CONSTRUCTION, TYP. SEE FINISH SCHEDULE
9.01	WALL INFILL TO MATCH EXISTING ADJACENT WALL TYPE; SEE FINISH SCHEDULE SHEET A-601, TYP
9.02	ALIGN FACE OF GYPSUM WITH ADJACENT. SEE PARTITION SCHEDULE FOR TYPE; SEE FINISH SCHEDULE FOR FINISHES.
9.04	P-LAM LOWER AND UPPER CABINETS; REFER INTERIOR ELEVATIONS AND CASEWORK DETAILS SHEETS. SEE FINISH SCHEDULE
9.06	PROVIDE NEW FLOOR FINISH AND BASE; SEE FINISH SCHEDULE ON SHEET A-601. PROVIDE FLOOR PREP AS NEEDED PRIOR TO INSTALLATION OF NEW MATERIALS.
9.08	PREPARE ALL WALLS FOR NEW FINISHES. SEE FINISH SCHEDULE. REPAIR WALL AS NEEDED PRIOR TO RECEIVING FINISH. PATCH ALL WALLS WHERE EXISTING PARTITIONS HAVE BEEN REMOVED.
9.13	PROVIDE SSC-1 WINDOW SILL SOLID SURFACE.
9.16	PROVIDE NEW WALL WITH A 1" SEPERATION FROM THE EXISTING WALL. SEE SHEET A-601 FOR FINISH SCHEDULE.
9.17	FILL WALL DAMAGE WHERE NEEDED AND PREP EXISTING STAIR WALLS FOR NEW PAINT. PAINT ALL STAIR WALLS WITH PNT-1.
10.03	RECESSED FIRE EXTINGUISHER CABINET, SEE FIRE PROTECTION DRAWINGS
11.01	STEAMER AND PRESSER TO BE RELOCATED TO LOCATION; CONFIRM LOCATION WITH VT REPRESENTATIVES. COORDINATE ALL UTILITIES WITH MEP DRAWINGS.
11.02	REFRIGERATOR; OWNER PROVIDED; COORDINATE UTILITIES WITH MEP DRAWINGS. VERIFY SIZE OF OPENING WITH VT REPRESENTATIVE.
11.03	MICROWAVE; OWNER PROVIDED; COORDINATE UTILITIES WITH MEP DRAWINGS
12.01	OWNER PROVIDED COPY AND PRINTER TO BE COORDINATED WITH VT
22.04	PROVIDE NEW DRINKING FOUNTAIN AND WATER BOTTLE FILLING STATION; SEE PLUMBING DRAWINGS
22.05	PROVIDE NEW BREAK ROOM SINK WITH FAUCET AND ALL ASSOCIATED SUPPLY, DRAIN AND VENT PIPING; SEE PLUMBING DRAWINGS
22.06	PROVIDE NEW MOP SINK WITH FAUCET AND ALL ASSOCIATED SUPPLY, DRAIN, AND VENT PIPING; SEE PLUMBING DRAWINGS
26.07	EXISTING ELECTRICAL PANEL TO REMAIN; PROTECT DURING CONSTRUCTION; SEE ELECTRICAL DRAWINGS
26.08	PROVIDE NEW ELECTRICAL PANEL, SEE ELECTRICAL DRAWINGS
28.01	PROVIDE CONDUIT AND BOX FOR INSTALLATION OF CARD READER AT DOOR LOCATION

ACCESSORY SCHEDULE

CODE	DESCRIPTION	Comments	Height
A	MIRROR, GLASS 24"X36"	CFCI	40"
B	BOBRICK STRAIGHT GRAB BAR, 36"	CFCI	
C	BOBRICK STRAIGHT GRAB BAR, 18"	CFCI	
D	BOBRICK STRAIGHT GRAB BAR, 42"	CFCI	
F	SOAP DISPENSER	OFCI	<varies>
G	PAPER TOWEL DISPENSER	OFCI	<varies>
H	WALL HOOK	CFCI	48" / 70"
I	TOILET PAPER DISPENSER	OFCI	
J	RESTROOM PARTITIONS, URINAL SCREEN	CFCI	
K	TOILET PARTITIONS	CFCI	

1 SECOND FLOOR PLAN - AREA A
A-102A
Scale: 1/4" = 1'-0"

PN
TN

1/4"=1'-0" 4' 2' 0 4' 8'

GRAPHIC SCALES

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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PROJECT
VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

CLIENT
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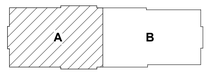
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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN



PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR PLAN - AREA A

SHEET NUMBER
A-102A

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GENERAL NOTES THIS SHEET:

A. REFER TO SHEET A-001 FOR GENERAL NOTES, AND LEGENDS
B. ALL FIRE RATED PARTITION INTERSECTIONS WITH NON-RATED OR LOWER RATED PARTITIONS SHALL CONTINUE THROUGH THE INTERSECTION.
C. PROVIDE FRT OF WOOD BLOCKING FOR EACH UNIQUE ITEM (EQUIPMENT, FIXTURE, ETC.) THAT WILL BE WALL-MOUNTED. CONTRACTOR SHALL PROVIDE ALL BLOCKING AS REQUIRED TO SUPPORT WALL MOUNTED ACCESSORIES, INCLUDING BUT NOT LIMITED TO DOOR STOPS, CABINETS, AND SHELVING.
D. DIMENSIONS FOR INTERIOR PARTITION AND EXTERIOR WALL LAYOUT ARE TO FINISHED FACE OF WALL, UNLESS OTHERWISE NOTED.
E. NEW PARTITIONS OR INFILL WITHIN AN EXISTING PARTITION SHALL MATCH THE EXISTING PARTITION TYPE, ASSEMBLY, AND TOTAL THICKNESS.
F. PATCH AND REPAIR ALL WALLS, FLOORS AND CEILINGS AT POINTS AFFECTED BY DEMOLITION. PREP FOR NEW FINISHES AS NEEDED.
G. REMOVE GWB AT LOCATIONS WHERE WALL TILE TO BE INSTALLED. PROVIDE GLASS MAT TILE BACKERBOARD TO MATCH THICKNESS OF EXISTING ADJACENT GWB.
H. PROVIDE A 1-HOUR FIRESTOPPING REQUIRED AT ALL FLOOR PENETRATIONS. INSTALL BASED ON MANUFACTURER'S RECOMMENDATIONS SUBMIT ASSEMBLY DESCRIPTION AND TEST DATA TO VT AND ARCHITECT FOR FINAL APPROVAL. BASIS OF DESIGN IS UL AJ-1016 OR APPROVED EQUAL.

SHEET KEYNOTES

2.34	EXISTING COLUMNS TO REMAIN; PROTECT DURING CONSTRUCTION, TYP. SEE FINISH SCHEDULE
4.02	PROVIDE NEW CMU PIER AT LOCATION. SEE NEW WORK STRUCTURAL DRAWINGS. SEE FINISH SCHEDULE FOR FINISHES.
5.01	HANDRAILS AT 36" AFF. PROVIDE 1-1/4" PAINTED STEEL RAILINGS THAT CONNECT TO 1-1/4" PAINTED STEEL VERTICAL POSTS THAT ARE ATTACHED TO FLAT PLATE AT DIMENSION THAT WILL ALLOW THEM TO BE FREESTANDING. PROVIDE SEGMENTS THAT ARE NO GREATER THAN 4'-0" BETWEEN POSTS. EACH 4'-0" SECTION TO BE FREESTANDING AND CONNECTED TO ADJACENT 4'-0" SECTION WITH REMOVABLE ATTACHMENT. NO INFILL IS REQUIRED AS RAILINGS WILL SERVE TO DELINEATE EXIT PATHWAY.
6.01	PROVIDE 5/8" FIRE RETARDANT TREATED PLYWOOD TO COVER THE EXISTING WOOD FLOOR SYSTEM. TO BE PAT. SEAL ALL JOINTS SMOKE TIGHT AND PERIMETERS WITH SEALANT TO MATCH COLOR OF EXISTING CONCRETE SLAB. PAINT WOOD TO MATCH CONCRETE
9.02	ALIGN FACE OF GYPSUM WITH ADJACENT. SEE PARTITION SCHEDULE FOR TYPE; SEE FINISH SCHEDULE FOR FINISHES.
9.04	P-LAM LOWER AND UPPER CABINETS; REFER INTERIOR ELEVATIONS AND CASEWORK DETAILS SHEETS. SEE FINISH SCHEDULE
9.08	PREPARE ALL WALLS FOR NEW FINISHES. SEE FINISH SCHEDULE. REPAIR WALL AS NEEDED PRIOR TO RECEIVING FINISH. PATCH ALL WALLS WHERE EXISTING PARTITIONS HAVE BEEN REMOVED.
10.03	RECESSED FIRE EXTINGUISHER CABINET, SEE FIRE PROTECTION DRAWINGS
11.02	REFRIGERATOR; OWNER PROVIDED; COORDINATE UTILITIES WITH MEP DRAWINGS. VERIFY SIZE OF OPENING WITH VT REPRESENTATIVE.
11.03	MICROWAVE; OWNER PROVIDED; COORDINATE UTILITIES WITH MEP DRAWINGS
12.03	OWNER PROVIDED FURNITURE TO BE COORDINATED WITH VT. INCLUDE OUP IN THE FURNITURE SELECTION PROCESS TO ENSURE PRODUCT PERFORMANCE, QUALITY AND FINISH
22.05	PROVIDE NEW BREAK ROOM SINK WITH FAUCET AND ALL ASSOCIATED SUPPLY, DRAIN AND VENT PIPING; SEE PLUMBING DRAWINGS
22.06	PROVIDE NEW MOP SINK WITH FAUCET AND ALL ASSOCIATED SUPPLY, DRAIN, AND VENT PIPING; SEE PLUMBING DRAWINGS
26.08	PROVIDE NEW ELECTRICAL PANEL, SEE ELECTRICAL DRAWINGS
28.01	PROVIDE CONDUIT AND BOX FOR INSTALLATION OF CARD READER AT DOOR LOCATION

1 A-102B **SECOND FLOOR PLAN - AREA B**
Scale: 1/4" = 1'-0"

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GRAPHIC SCALES
1/4"=1'-0" 4' 2' 0 4' 8'

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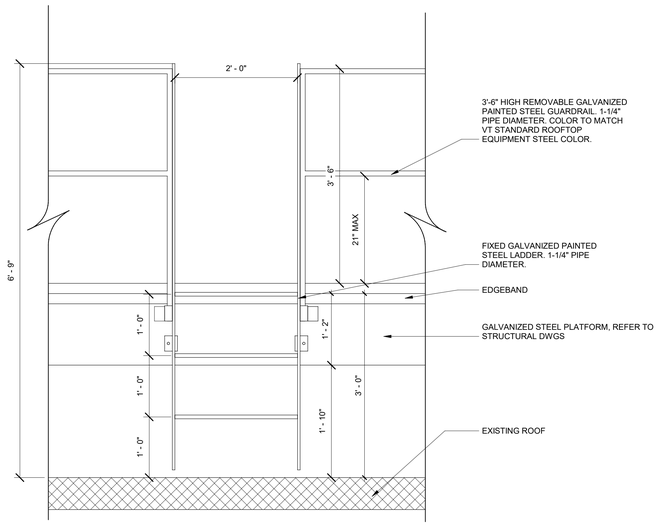
I/R	DATE	DESCRIPTION
1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN
A B

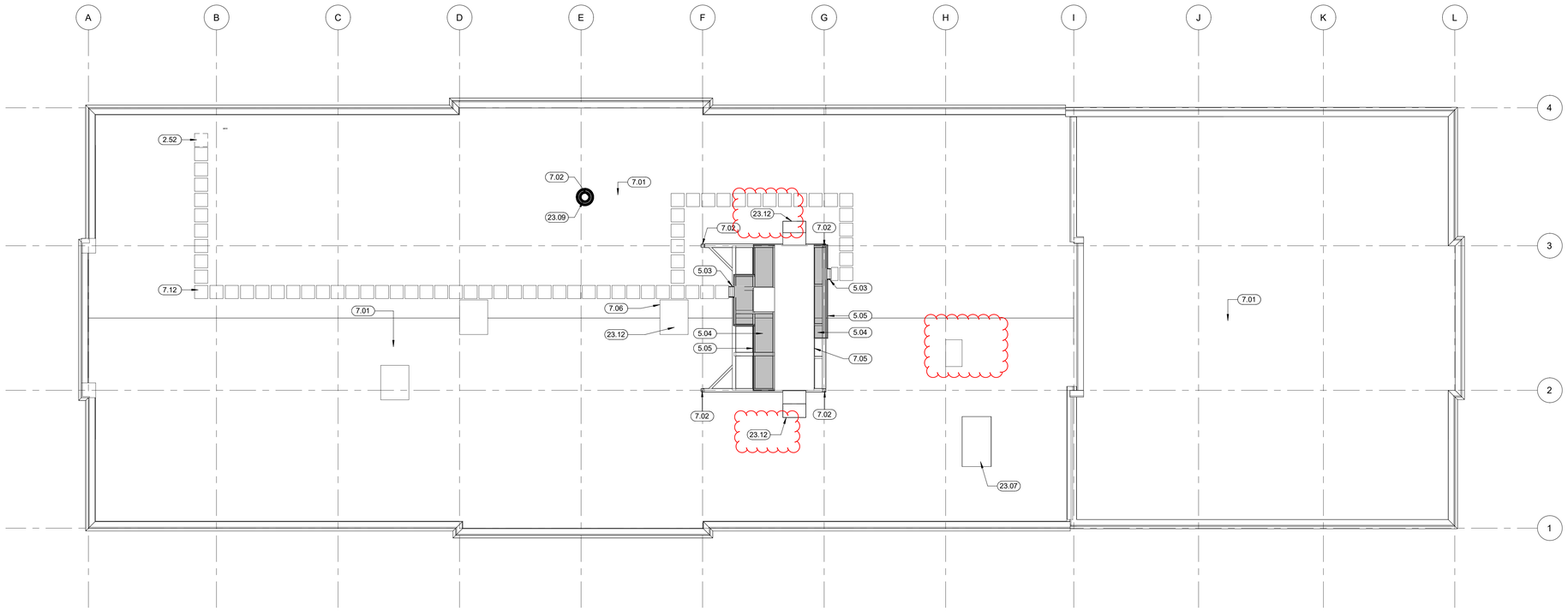
PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR PLAN - AREA B

SHEET NUMBER
A-102B



2 | PLATFORM LADDER
A-103 | Scale: 1" = 1'-0"



1 | OVERALL ROOF PLAN
A-103 | Scale: 1/8" = 1'-0"

GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G002 FOR ABBREVIATIONS.
B. REFER TO SHEET A001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS.
C. REFER TO MECHANICAL, PLUMBING, FIRE PROTECTION, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL WORK AND COORDINATE EXTENT WITH RESPECTIVE TRADES.
D. SEE NEW WORK PLANS FOR INFORMATION REGARDING ROOF TOP PENETRATIONS AND INSTALLATION OF NEW EQUIPMENT. PROVIDE ROOF DEMO TO ACCOMMODATE NEW SCOPE OF WORK.
E. ANY DEMOLISHED ROOF PENETRATION TO BE PROTECTED FROM WATER AND INCLEMENT WEATHER UNTIL NEW WORK OCCURS.
F. ENSURE ITEMS NOT IN SCOPE OF WORK TO REMAIN AND ARE PROTECTED AS REQUIRED.
G. PROVIDE WALK PADS FROM ROOF HATCH TO NEW LADDER LOCATION.

SHEET KEYNOTES

2.52	EXISTING ROOF HATCH FOR ROOF ACCESS
5.03	PROVIDE FIXED GALVANIZED PAINTED STEEL LADDER.
5.04	PROVIDE STEEL PLATFORM. REFER TO STRUCTURAL DRAWINGS.
5.05	PROVIDE 3' 6" HIGH GALVANIZED PAINTED STEEL GUARDRAIL. PROVIDE REMOVABLE CONNECTIONS FOR EQUIPMENT ACCESS, SERVICE, OR REPLACEMENT.
7.01	INSTALL DECK, INSULATION, AND MEMBRANE ROOFING TO MATCH EXISTING. INSTALL ROOF MEMBRANE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR PATCHING AND REPAIR. COORDINATE INSTALLATION DETAILS WITH ROOF WARRANTY REQUIREMENTS, TYP.
7.02	ROOF PENETRATION, SEE DETAIL IN SHEET 5/A-531
7.05	ROOF CURB DETAIL; SEE SHEET 2/A-531
7.06	FLASHING DETAIL; SEE SHEET 1/A-531
7.12	PROVIDE NEW WALKWAY PADS TO COORDINATE WITH ROOFTOP AHU ACCESS.
23.07	EXISTING AHU TO REMAIN; PROTECT DURING CONSTRUCTION; SEE MECHANICAL DRAWINGS
23.09	PROVIDE NEW EXHAUST FAN; SEE MECHANICAL DRAWINGS.
23.12	COORDINATE NEW MECHANICAL PENETRATION WITH EXISTING ROOF STRUCTURE. MODIFY ROOF OPENING AS NEEDED TO ACCOMMODATE NEW DUCTWORK. NEW ROOF OPENING WILL NEED STRUCTURAL FRAME TO SUPPORT FIRE RETARDANT TREATED PLYWOOD DECK, 3" OF POLYISO RIGID INSULATION AND PREFINISHED METAL PANEL PENETRATION CAP. INSTALL FLASHING TIGHT TO DUCTWORK AND SEAL ALL JOINTS. SEE DETAIL ON M-501.

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1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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KEY PLAN

A | B

PROJECT NUMBER

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SHEET TITLE

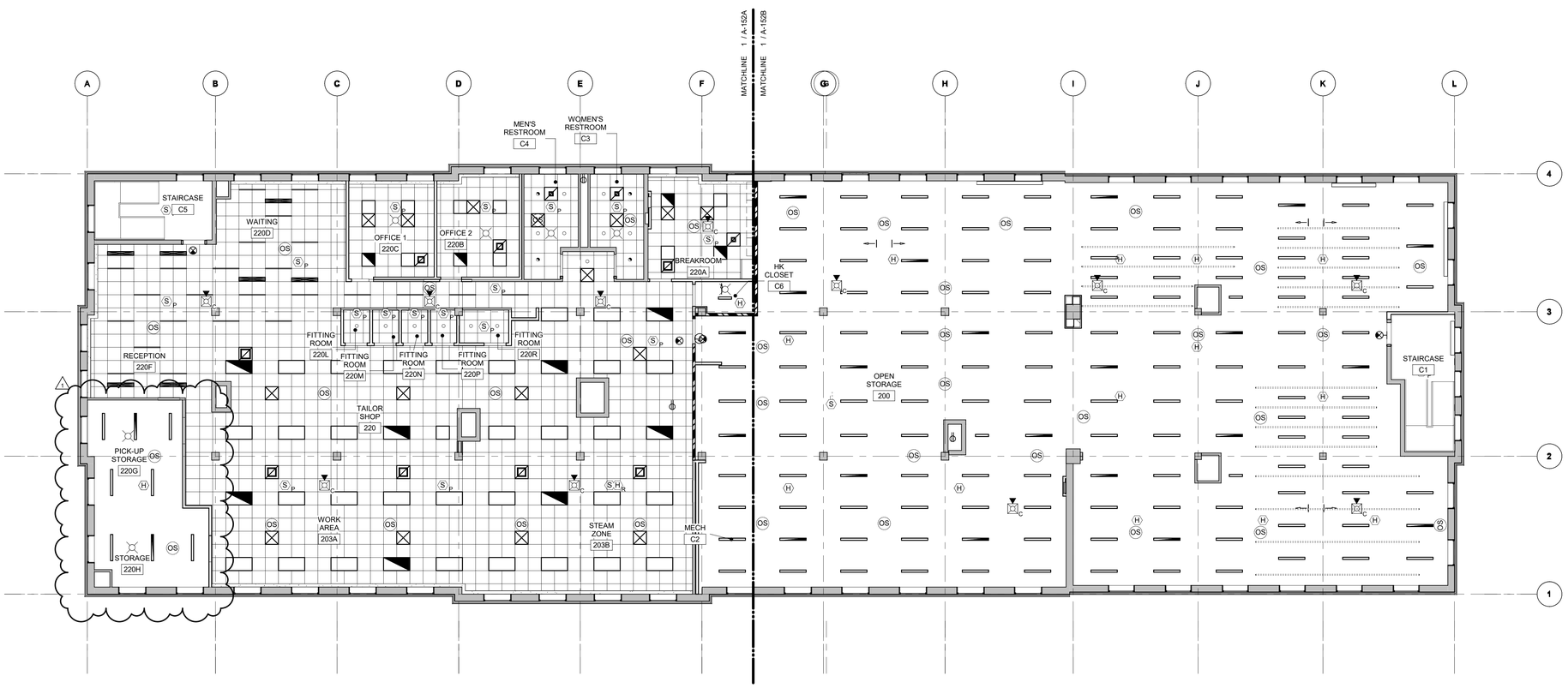
OVERALL ROOF PLAN

SHEET NUMBER

A-103

GENERAL NOTES THIS SHEET:

A. REFER TO THE SHEET A-001 GENERAL NOTES FOR GENERAL PROJECT REQUIREMENTS, LEGENDS AND SYMBOLS.
B. ALL CEILING HEIGHTS ARE ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.
C. THE REFLECTED CEILING PLANS SHALL BE USED FOR LAYOUT OF ALL CEILING DEVICES. CONSULT ARCHITECT IF A CONFLICT ARISES WITH STRUCTURAL OR MEP DRAWINGS.
D. CENTER RECESSED LIGHT FIXTURES, ELECTRICAL AND MECHANICAL DEVICES, AND SPRINKLER HEADS WITHIN A CEILING TILE EXCEPT FOR DEVICES NOTED OTHERWISE.
COORDINATE LAYOUT WITH ALL OTHER CEILING MOUNTED DEVICES.
E. CAREFULLY REMOVE CEILINGS AS REQUIRED FOR ABOVE CEILING WORK IN AREAS WITH NO OR LIMITED ARCHITECTURAL DEMOLITION WORK. REINSTALL CEILING AND PATCH TO MATCH EXISTING.
F. NOT ALL CEILING MOUNTED DEVICES ARE SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER TO PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR LOCATIONS OF SPRINKLER HEADS, EXIT SIGNS, AND ADDITIONAL CEILING MOUNTED DEVICES.
G. PROVIDE BLOCKING AS REQUIRED FOR CEILING MOUNTED PROJECTORS. EQUIPMENT IS OFCI, BUT CONTRACTOR TO COORDINATE BLOCKING AND ELECTRICAL REQUIRED FOR EQUIPMENT.



1 | A-152 **OVERALL SECOND FLOOR CEILING PLAN**
Scale: 1/8" = 1'-0"

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1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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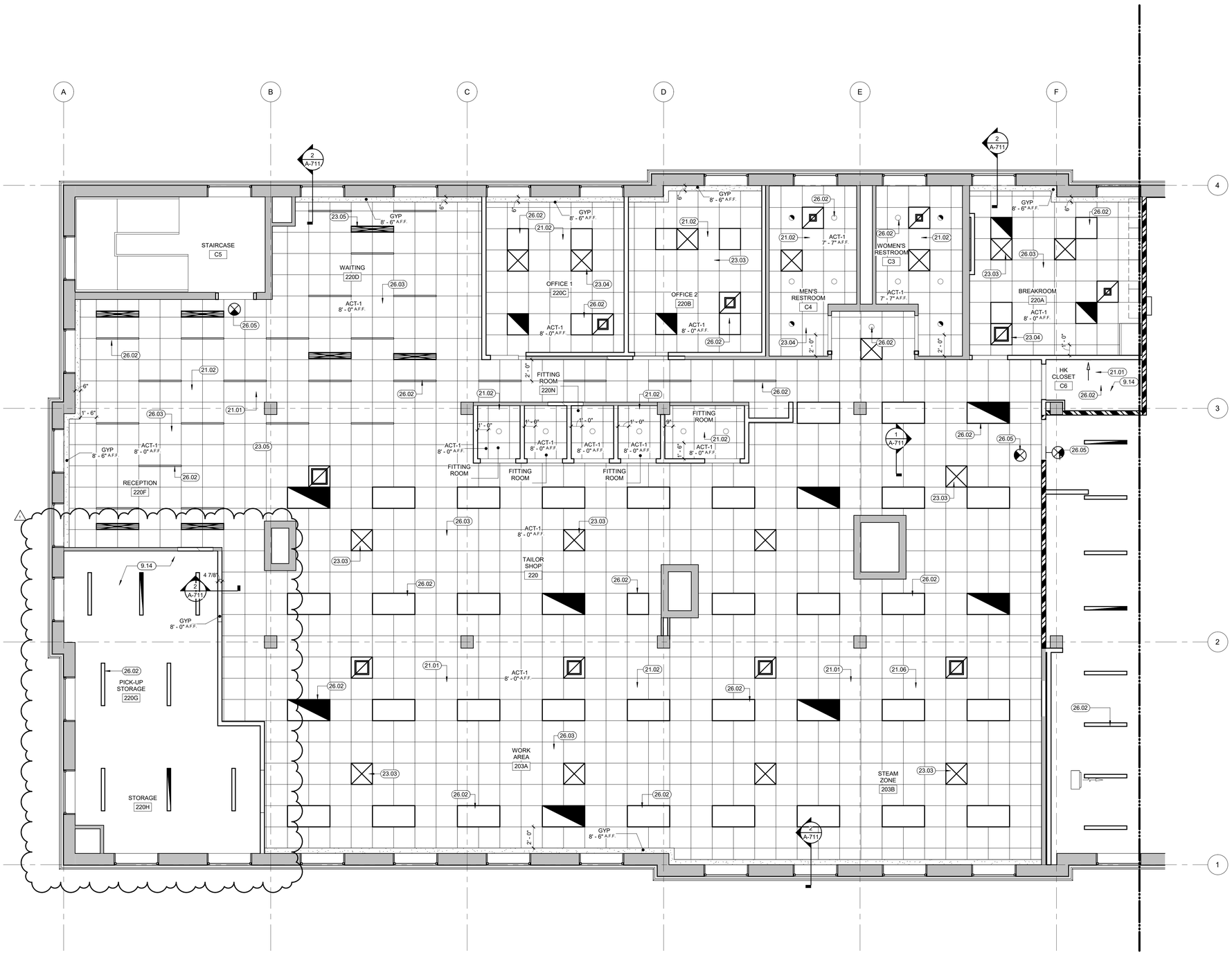
KEY PLAN

PROJECT NUMBER
60763454

SHEET TITLE
OVERALL SECOND FLOOR CEILING PLAN

SHEET NUMBER
A-152

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1 SECOND FLOOR CEILING PLAN - AREA A
A-152A Scale: 1/4" = 1'-0"

GENERAL NOTES THIS SHEET:

A. REFER TO THE SHEET A-001 GENERAL NOTES FOR GENERAL PROJECT REQUIREMENTS, LEGENDS AND SYMBOLS.
B. ALL CEILING HEIGHTS ARE ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.
C. THE REFLECTED CEILING PLANS SHALL BE USED FOR LAYOUT OF ALL CEILING DEVICES. CONSULT ARCHITECT IF A CONFLICT ARISES WITH STRUCTURAL OR MEP DRAWINGS.
D. CENTER RECESSED LIGHT FIXTURES, ELECTRICAL AND MECHANICAL DEVICES, AND SPRINKLER HEADS WITHIN A CEILING TILE EXCEPT FOR DEVICES NOTED OTHERWISE.
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G. PROVIDE BLOCKING AS REQUIRED FOR CEILING MOUNTED PROJECTORS. EQUIPMENT IS OFCI, BUT CONTRACTOR TO COORDINATE BLOCKING AND ELECTRICAL REQUIRED FOR EQUIPMENT.

SHEET KEYNOTES

9.14	OPEN CEILING, SEE FINISH SCHEDULE
21.01	CEILING MOUNTED STROBE. SEE FIRE PROTECTION DRAWINGS
21.02	CEILING MOUNTED SMOKE DETECTORS, SEE FIRE PROTECTION DRAWINGS
21.06	HEAT/SMOKE DETECTOR; SEE FIRE PROTECTION DRAWINGS
23.03	DIFFUSERS, SEE MECHANICAL DRAWINGS
23.04	CEILING MOUNTED EXHAUST GRILLE, SEE MECHANICAL DRAWINGS
23.05	PLENUM SLOT DIFFUSER, SEE MECHANICAL DRAWINGS
26.02	LIGHTING FIXTURE, SEE ELECTRICAL DRAWINGS, TYP
26.03	OCCUPANCY SENSORS, SEE ELECTRICAL DRAWINGS, TYP
26.05	EXIT SIGN, SEE ELECTRICAL DRAWINGS, TYP

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1/4"=1'-0" 4' 2' 0 4' 8'

GRAPHIC SCALES

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KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

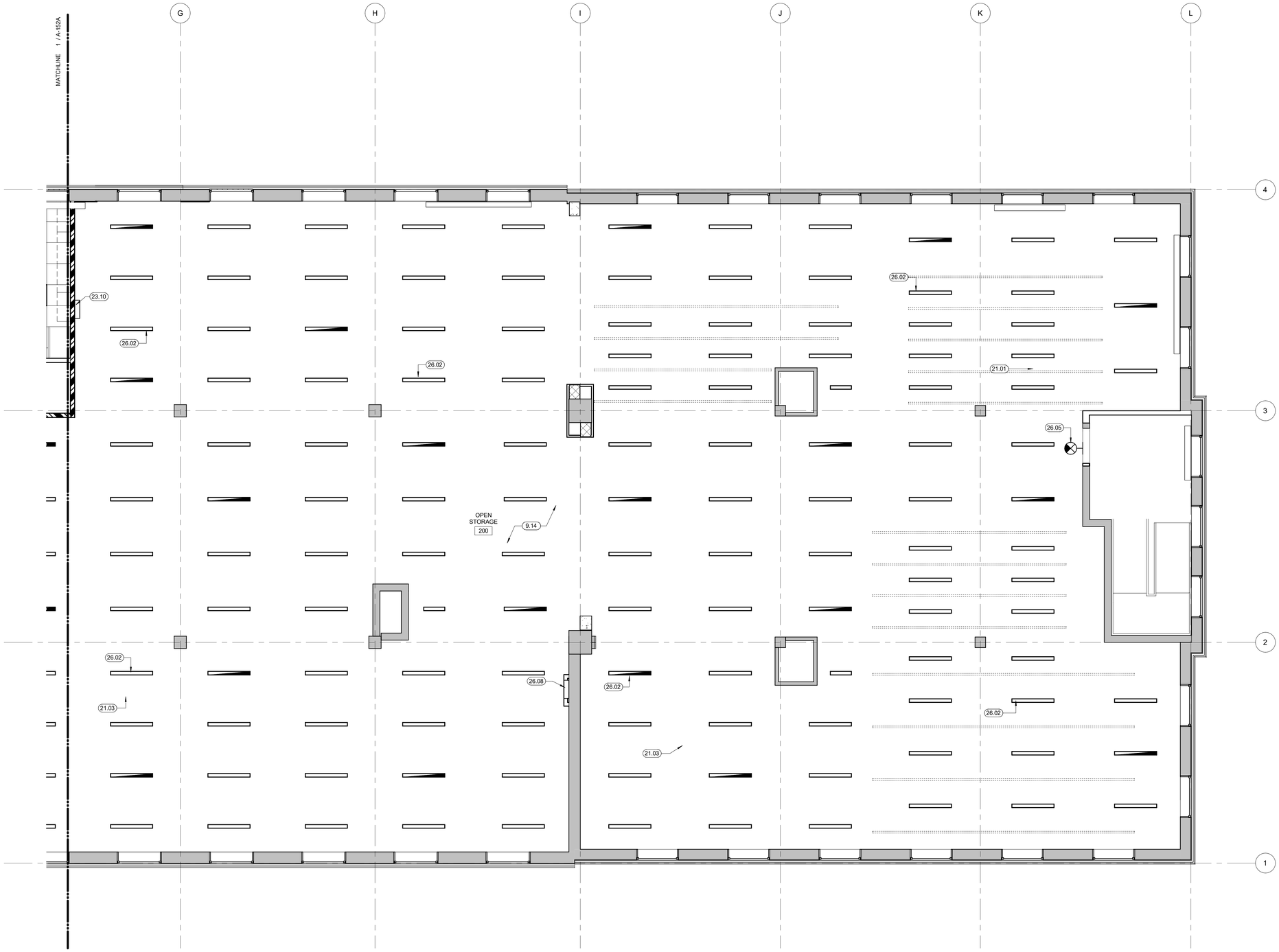
SECOND FLOOR CEILING PLAN - AREA A

SHEET NUMBER

A-152A

GENERAL NOTES THIS SHEET:

A. REFER TO THE SHEET A-001 GENERAL NOTES FOR GENERAL PROJECT REQUIREMENTS, LEGENDS AND SYMBOLS.
B. ALL CEILING HEIGHTS ARE ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.
C. THE REFLECTED CEILING PLANS SHALL BE USED FOR LAYOUT OF ALL CEILING DEVICES. CONSULT ARCHITECT IF A CONFLICT ARISES WITH STRUCTURAL OR MEP DRAWINGS.
D. CENTER RECESSED LIGHT FIXTURES, ELECTRICAL AND MECHANICAL DEVICES, AND SPRINKLER HEADS WITHIN A CEILING TILE EXCEPT FOR DEVICES NOTED OTHERWISE.
COORDINATE LAYOUT WITH ALL OTHER CEILING MOUNTED DEVICES.
E. CAREFULLY REMOVE CEILINGS AS REQUIRED FOR ABOVE CEILING WORK IN AREAS WITH NO OR LIMITED ARCHITECTURAL DEMOLITION WORK. REINSTALL CEILING AND PATCH TO MATCH EXISTING.
F. NOT ALL CEILING MOUNTED DEVICES ARE SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER TO PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR LOCATIONS OF SPRINKLER HEADS, EXIT SIGNS, AND ADDITIONAL CEILING MOUNTED DEVICES.
G. PROVIDE BLOCKING AS REQUIRED FOR CEILING MOUNTED PROJECTORS. EQUIPMENT IS OFCI, BUT CONTRACTOR TO COORDINATE BLOCKING AND ELECTRICAL REQUIRED FOR EQUIPMENT.



1 SECOND FLOOR CEILING PLAN - AREA B
A-152B Scale: 1/4" = 1'-0"

SHEET KEYNOTES

9.14	OPEN CEILING, SEE FINISH SCHEDULE
21.01	CEILING MOUNTED STROBE. SEE FIRE PROTECTION DRAWINGS
21.03	CEILING MOUNTED HEAT DETECTORS; SEE FIRE PROTECTION DRAWINGS
23.10	CONTROL PANEL; SEE MECHANICAL DRAWINGS
26.02	LIGHTING FIXTURE, SEE ELECTRICAL DRAWINGS, TYP
26.05	EXIT SIGN, SEE ELECTRICAL DRAWINGS, TYP
26.08	PROVIDE NEW ELECTRICAL PANEL, SEE ELECTRICAL DRAWINGS

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TN

GRAPHIC SCALES
1/4"=1'-0" 4' 2' 0 4' 8'

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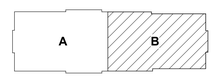
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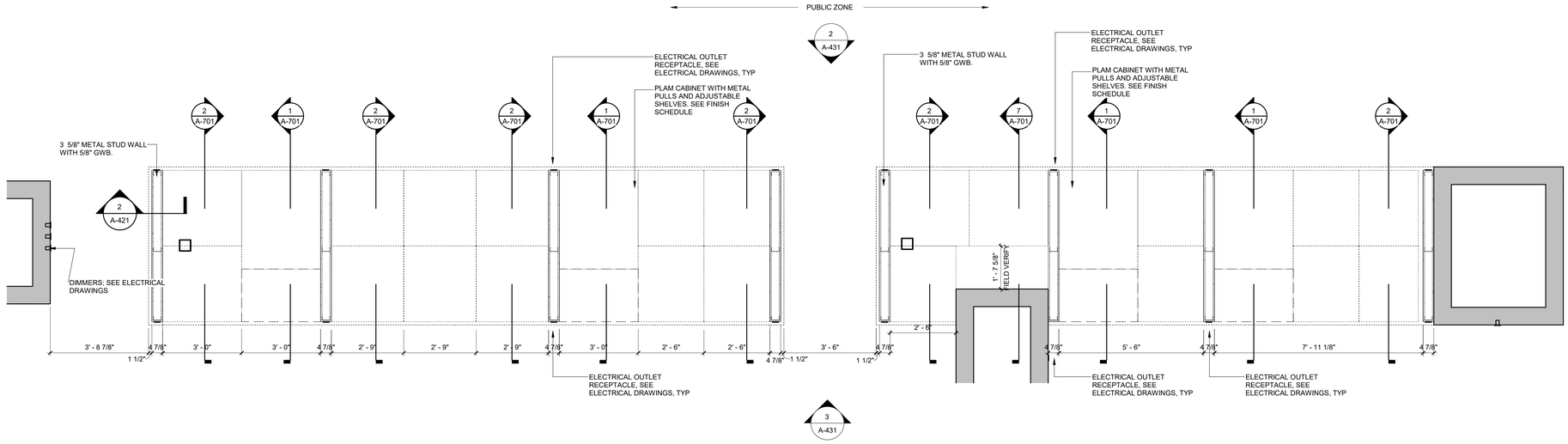


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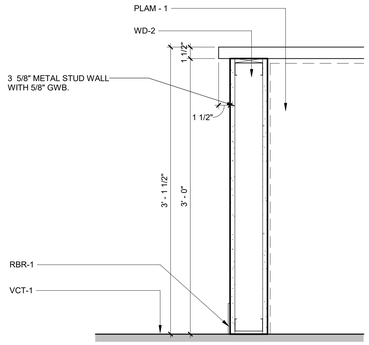
SHEET TITLE
SECOND FLOOR CEILING PLAN - AREA B

SHEET NUMBER
A-152B

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1 WORK STATION - PLAN DETAILS
A-421 Scale: 1/2" = 1'-0"



2 WALL SECTION
A-421 Scale: 1 1/2" = 1'-0"

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GRAPHIC SCALES
1-1/2"=1'-0": 12" 9" 6" 3" 0 1'
1/2"=1'-0": 12" 6" 0 1' 2' 3' 4' 5'
PN
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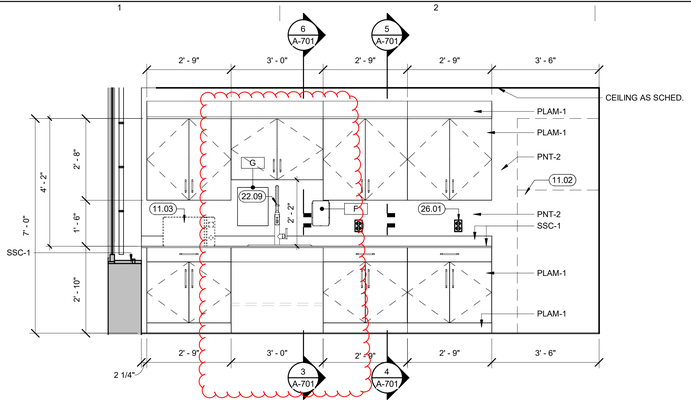
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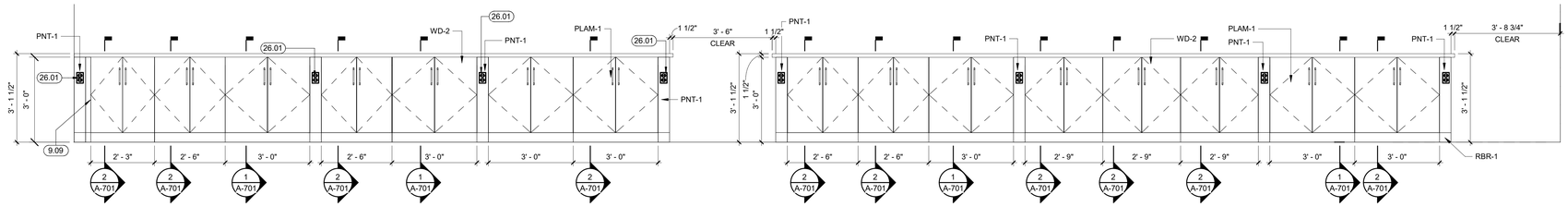
PROJECT NUMBER
60763454

SHEET TITLE
ENLARGED PLAN AND SECTION

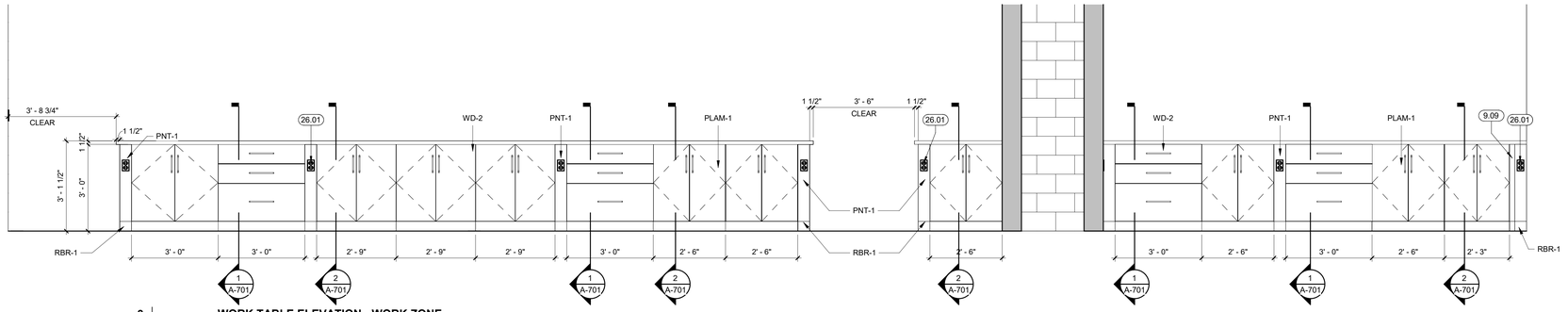
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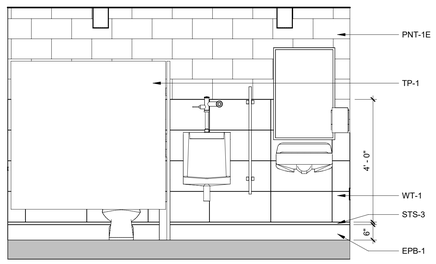
1 A-431 **BREAKROOM ELEVATION**
Scale: 1/2" = 1'-0"



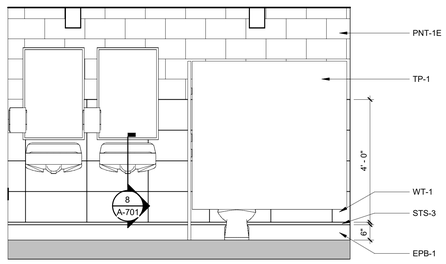
2 A-431 **WORK TABLE ELEVATION - PUBLIC ZONE**
Scale: 1/2" = 1'-0"



3 A-431 **WORK TABLE ELEVATION - WORK ZONE**
Scale: 1/2" = 1'-0"



4 A-431 **MEN'S RESTROOM**
Scale: 1/2" = 1'-0"



5 A-431 **WOMEN'S RESTROOM**
Scale: 1/2" = 1'-0"

GENERAL NOTES THIS SHEET:

A. SUBMIT ALL SHOP DRAWINGS BEFORE FABRICATION FOR FINAL APPROVAL FROM ARCHITECT, OWNER, AND OUP.
B. SEE SHEET A-801 FOR FINISH SCHEDULE.
C. ALL DRAWERS TO BE PROVIDED WITH FULL EXTENSION GLIDES.

SHEET KEYNOTES

9.09	FILLER PLATE; TO MATCH CABINET FINISH
11.02	REFRIGERATOR; OWNER PROVIDED; COORDINATE UTILITIES WITH MEP DRAWINGS, VERIFY SIZE OF OPENING WITH VT REPRESENTATIVE.
11.03	MICROWAVE; OWNER PROVIDED; COORDINATE UTILITIES WITH MEP DRAWINGS
22.09	PROVIDE NEW SINK AND FAUCET; SEE PLUMBING DRAWINGS
26.01	ELECTRICAL OUTLET RECEPTACLE, SEE ELECTRICAL DRAWINGS, TYP

ACCESSORY SCHEDULE

CODE	DESCRIPTION	Comments	Height
A	MIRROR, GLASS 24"X36"	CFCI	40"
B	BOBRICK STRAIGHT GRAB BAR, 36"	CFCI	
C	BOBRICK STRAIGHT GRAB BAR, 18"	CFCI	
D	BOBRICK STRAIGHT GRAB BAR, 42"	CFCI	
F	SOAP DISPENSER	OFCI	<varies>
G	PAPER TOWEL DISPENSER	OFCI	<varies>
H	WALL HOOK	CFCI	48" / 70"
I	TOILET PAPER DISPENSER	OFCI	
J	RESTROOM PARTITIONS, URINAL SCREEN	CFCI	
K	TOILET PARTITIONS	CFCI	

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1-1/2"=1'-0" 12" 9" 6" 3" 0 1'

1/2"=1'-0" 12" 6" 0 1' 2' 3' 4' 5'

GRAPHIC SCALES

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www.aecom.com

REGISTRATION

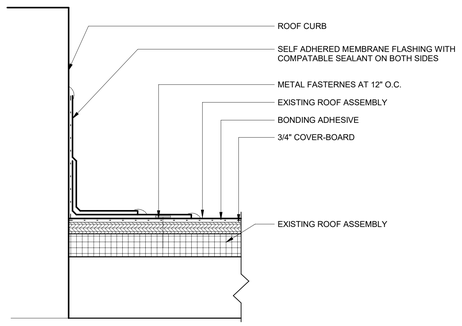
ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

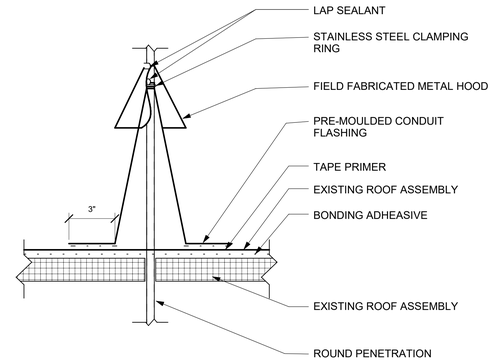
PROJECT NUMBER
60763454

SHEET TITLE
INTERIOR ELEVATIONS

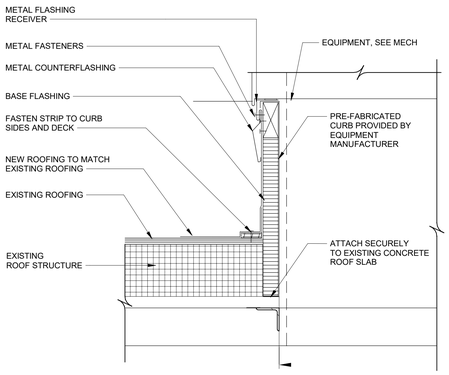
SHEET NUMBER
A-431



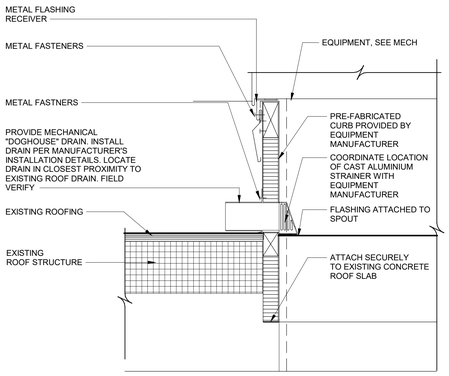
1 A-531 **ROOF FLASHING DETAIL**
Scale: 3" = 1'-0"



4 A-531 **CONDUIT PENETRATIONS**
NTS

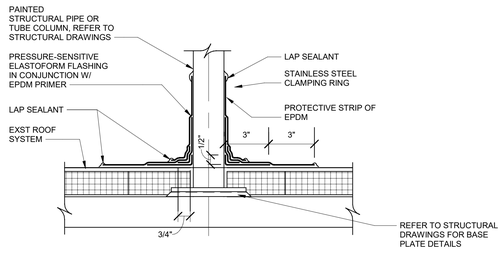


2 A-531 **ROOF CURB**
Scale: 1 1/2" = 1'-0"



INSTALL PER ROOFING MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR PATCHING AND REPAIR. COORDINATE INSTALLATION DETAILS WITH EQUIPMENT WARRANTY REQUIREMENTS

3 A-531 **ROOF CURB THROUGH WALL DRAIN**
Scale: 1 1/2" = 1'-0"

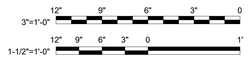


NOTES:

1. PIPE FLASHING MAY BE USED WITH SQUARE OR RECTANGULAR STRUCTURAL TUBING WITH ROUNDED CORNERS.
2. EPDM PRIMER MUST BE APPLIED TO THE MATING SURFACES PRIOR TO APPLYING PRESSURE-SENSITIVE ELASTOFORM FLASHING.
3. IN COLDER TEMPERATURES, A HEAT GUN MUST BE USED WHEN FORMING PRESSURE-SENSITIVE ELASTOFORM FLASHING.
4. ON MECHANICALLY FASTENED ROOFING SYSTEMS, ADDITIONAL MEMBRANE SECUREMENT IS REQUIRED.

5 A-531 **ROOF PENETRATION DETAILS**
Scale: 3" = 1'-0"

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GRAPHIC SCALES

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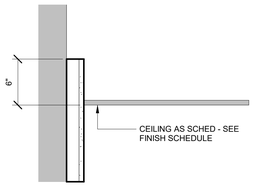
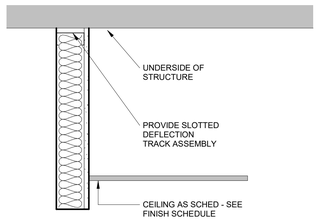
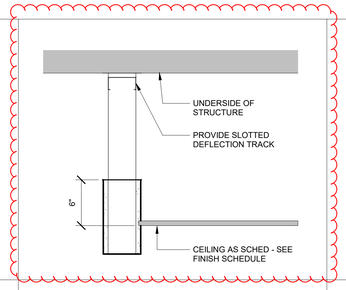
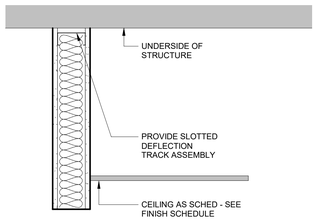
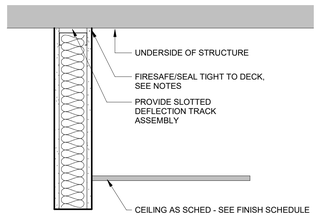
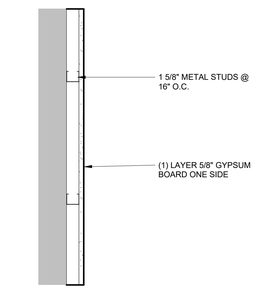
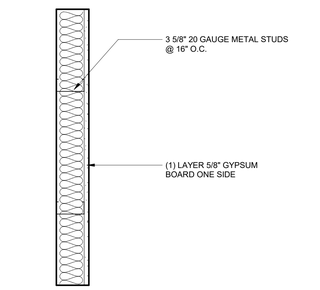
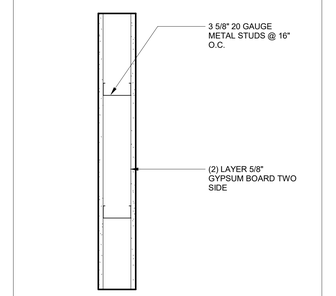
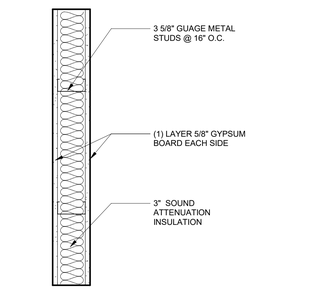
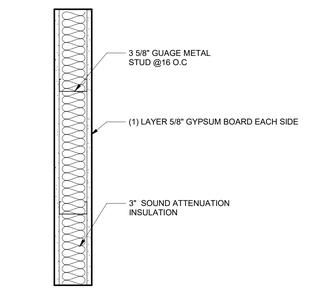
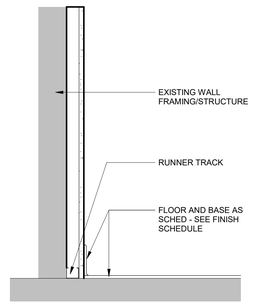
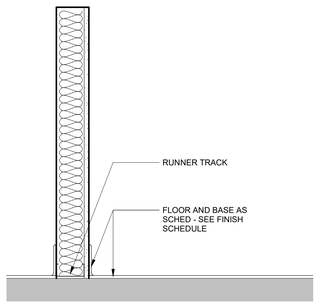
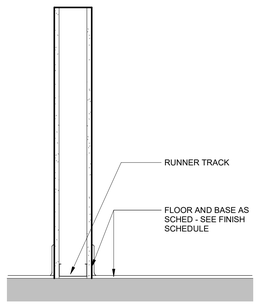
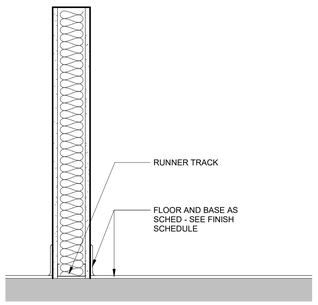
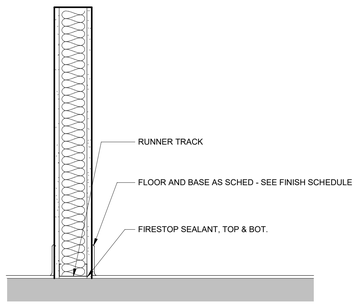
SHEET TITLE
ROOF DETAILS

SHEET NUMBER
A-531

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GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G-002 FOR ABBREVIATIONS
B. REFER TO SHEET A-001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS
C. REFER TO LIFE SAFETY PLANS FOR REQUIRED FIRE RATED PARTITION LOCATION
D. ALL FULL HEIGHT PARTITIONS SHALL PROVIDE FOR VERTICAL MOVEMENT AT THE STRUCTURAL JOINT AT THE SLAB ABOVE. ALL METAL STUD PARTITIONS SHALL BE CONSTRUCTED WITH A SLIP JOINT BETWEEN STUDS AND THE TOP RUNNER TRACK OR USE A SLOTTED DEFLECTION TRACK THAT ALLOWS FOR A MAXIMUM STRUCTURAL DEFLECTION OF ONE INCH. SEAL ALL JOINTS TOP AND BOTTOM.
E. PROVIDE SOLID FRT WOOD BLOCKING AT METAL STUD OR FURRED PARTITIONS TO ACCOMMODATE INSTALLATION OF CASEWORK, LOCKERS, GRAB BARS, HANDRAILS, AV EQUIPMENT, SIGNAGE AND OTHER WALL MOUNTED SCHEDULED EQUIPMENT AND ACCESSORIES
F. GYPSUM BOARD PARTITIONS SPANNING ABOVE DOOR/WINDOW OPENINGS 6'-0" WIDE OR MORE SHALL BE DIAGONALLY BRACED AT 6'-0" ON CENTER

Top					
Plan					
Base					
	P02 1 5/8" METAL STUDS @ 16" O.C. **P02A** 2 1/2" METAL STUDS @ 16" O.C.	**P11** 3 5/8" METAL STUDS @ 16" O.C. **P11A** 2 1/2" METAL STUDS @ 16" O.C. **P11B** 6" METAL STUDS @ 16" O.C.	**P12** **P12A** 2 1/2" METAL STUDS @ 16" O.C. **P12B** 6" METAL STUDS @ 16" O.C.	**P21** 3 5/8" METAL STUDS @ 16" O.C., W/ ACOUSTICAL BATT INSULATION **P21A** 6" METAL STUDS @ 16" O.C., W/ ACOUSTICAL BATT INSULATION **P21B** 3 5/8" METAL STUDS @ 16" O.C., W/ NO ACOUSTICAL BATT INSULATION **P21C** 6" METAL STUDS @ 16" O.C., W/ NO ACOUSTICAL BATT INSULATION	**P23T** 1 HR FIRE/SMOKE BARRIER UL DESIGN NO. U419 **P23** 1 HR FIRE/SMOKE BARRIER UL DESIGN NO. U419 **UL DESIGN NO. U419 - 1 HOUR SYSTEM W/UL SYSTEM NO. HW.D-0060 AT HEAD JOINT.** NOTE: PROVIDE SUBMITTAL FOR UL U419 PRODUCT DATA FOR VT UBO AND ARCHITECT APPROVAL

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I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

PARTITION TYPE SCHEDULE, NOTES AND DETAILS

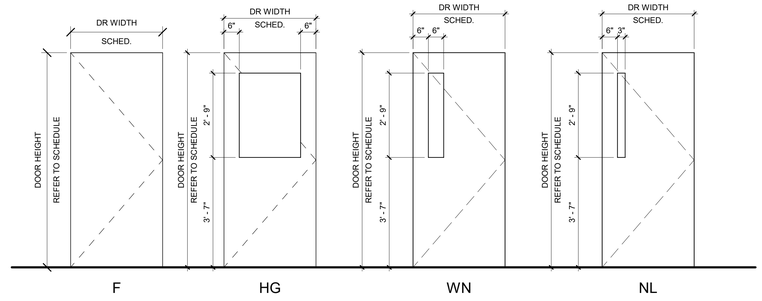
SHEET NUMBER

A-600

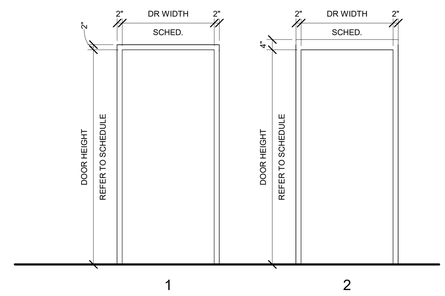
DOOR SCHEDULE

DOOR SCHEDULE																
DOOR NUMBER	DOOR SIZE		DOOR PANEL			FRAME		FRAME TYPE	GLAZING	UNDERCUT	FIRE RATING	DETAILS			Comments
	WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	MATERIAL	FINISH					HEAD	JAMB	SILL	
200	3' - 6"	7' - 0"	F	WD	STAIN	HM	PNT-3	1			45 MIN	1/A680	2/A680		1,2,6,8,9
220A	3' - 0"	7' - 0"	HG	WD	STAIN	HM	PNT-3	1	GL-1			1/A680	2/A680		5,9
220B	3' - 0"	7' - 0"	WN	WD	STAIN	HM	PNT-3	1	GL-1			1/A680	2/A680		4
220C	3' - 0"	7' - 0"	WN	WD	STAIN	HM	PNT-3	1	GL-1			1/A680	2/A680		4
220G	4' - 0"	7' - 0"	-	-	-	HM	PNT-3	1				5/A680	6/A680		CASED OPENING
220H	4' - 0"	7' - 0"		-	-	HM	PNT-3	1				5/A680	6/A680		CASED OPENING
220L	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				1/A680	2/A680		7,9
220M	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				1/A680	2/A680		7,9
220N	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				1/A680	2/A680		7,9
220P	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				1/A680	2/A680		7,9
220R	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				1/A680	2/A680		7,9
C1	3' - 0"	7' - 0"	NL	WD	STAIN	HM	PNT-3	2	GL-2		1 HR	3/A680	4/A680		1,6
C3	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				3/A680	4/A680		5
C4	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				3/A680	4/A680		5
C5B	3' - 6"	7' - 0"	NL	WD	STAIN	HM	PNT-3	2			1 HR	3/A680	4/A680		1,6,9
C6	3' - 0"	7' - 0"	F	WD	STAIN	HM	PNT-3	1				1/A680	2/A680		4,9
T1	3' - 6"	7' - 0"	F	WD	STAIN	HM	-	1			45 MIN	1/A680	2/A680		TEMPORARY DOOR
T2	3' - 6"	7' - 0"	F	WD	STAIN	HM	-	1			45 MIN	1/A680	2/A680		TEMPORARY DOOR

DOOR FRAME LEGEND



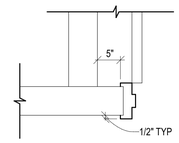
DOOR PANEL LEGEND



GENERAL NOTES THIS SHEET:

A. REFER TO SHEET G-002 FOR ABBREVIATIONS.
B. REFER TO SHEET A-001 FOR GENERAL NOTES, LEGENDS AND SYMBOLS.
C. REFER TO ARCHITECTURAL ENLARGED AREA PLANS FOR DOOR TAG LOCATIONS
D. COORDINATE REQUIRED FIRE-RATED DOORS WITH FIRE-RATED PARTITIONS, REFER TO LIFE SAFETY PLAN
E. FRAME DEPTH FOR WRAP-AROUND HOLLOW METAL FRAMES SHALL BE THE WIDTH OF THE PARTITION PLUS 1-1/8" OR AS NOTED. SEE PARTITION TYPES FOR WIDTH OF PARTITIONS
F. FIELD VERIFY ALL DIMENSION OF ROUGH OPENINGS PRIOR TO FABRICATION
G. ALL VIEW WINDOWS IN RATED DOORS ARE TO BE 100 SQ. INCHES MAXIMUM AND GLAZING TO BE FIRE RATED TO MATCH RATING OF DOOR.
H. SEE SPECIFICATIONS FOR DOOR HARDWARE SETS. REVIEW ALL HARDWARE SETS AND LOCK FUNCTIONS WITH OWNER PRIOR TO DEVELOPING FINAL HARDWARE SETS
I. SEE SPECIFICATIONS FOR GLAZING SCHEDULE

SEE BELOW:

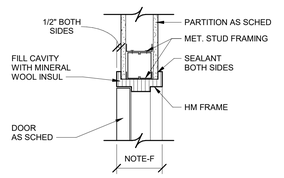


GLAZING TYPES:

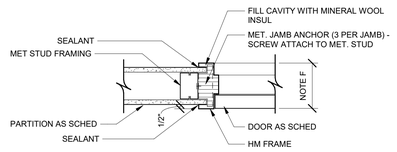
GL-1: 1/4" VISION GLASS, CLEAR, TEMPERED
GL-2: 1/4" FIRE RATED GLAZING, CLEAR, TEMPERED

LEGENDS:

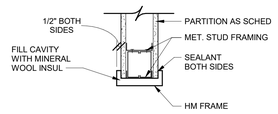
1. CARD READER
2. DOORS TO BE EQUIPPED WITH DELAYED EGRESS LOCK THAT MUST RELEASE WITHIN 15 SECONDS, HAVE AN AUDIBLE SIGNAL THAT WILL SOUND DURING THE DELAY PERIOD, AND SIGNAGE ON THE DOOR CLEARLY INDICATING THE DELAY AND UNLOCKING PROCESS.
3. UPGRADE DOOR HARDWARE FOR CARD READER
4. ENTRY LOCK
5. PASSAGE SET
6. FIRE EXIT HARDWARE
7. PRIVACY LOCK
8. MAGNETIC HOLD OPEN
9. 10" HIGH KICK PLATE



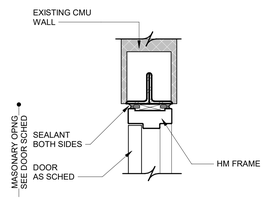
1 A-612 **TYP HM HEAD** Scale: 1 1/2" = 1'-0"



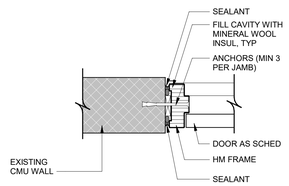
2 A-612 **TYP JAMB DETAIL** Scale: 1 1/2" = 1'-0"



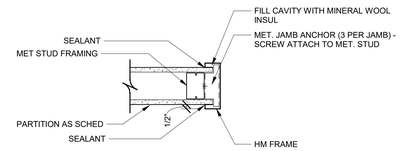
5 A-612 **TYP HM HEAD CASED OPENING** Scale: 1 1/2" = 1'-0"



3 A-612 **TYP HEAD DETAIL @ EXISTING WALL** Scale: 1 1/2" = 1'-0"



4 A-612 **TYP JAMB DETAIL @ EXISTING WALL** Scale: 1 1/2" = 1'-0"



6 A-612 **TYP JAMB DETAIL CASED OPENING** Scale: 1 1/2" = 1'-0"

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I	12/03/2025	FINAL WORKING DRAWINGS

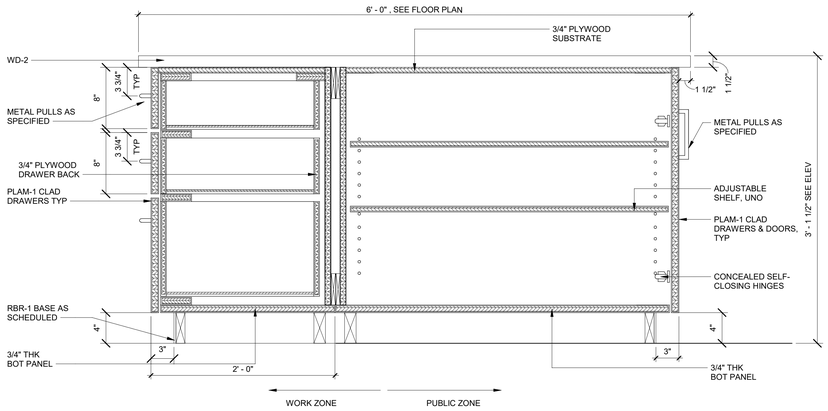
KEY PLAN

PROJECT NUMBER
60763454

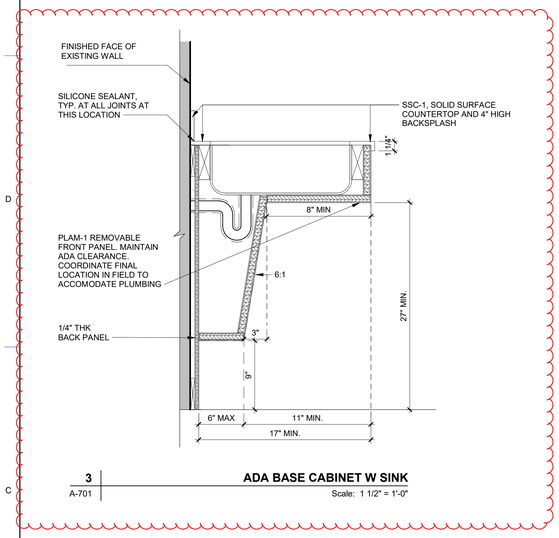
SHEET TITLE
DOOR SCHEDULE AND DETAILS

SHEET NUMBER
A-612

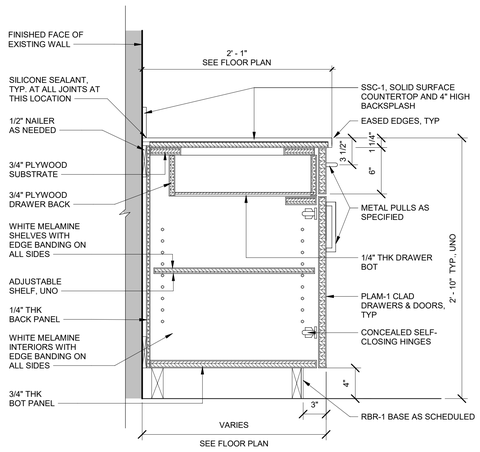
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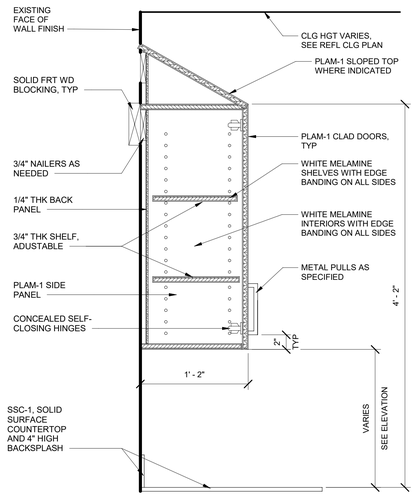
1 | 3 DRAWER & FULL CABINET- WORK STATION
A-701 | Scale: 1 1/2" = 1'-0"



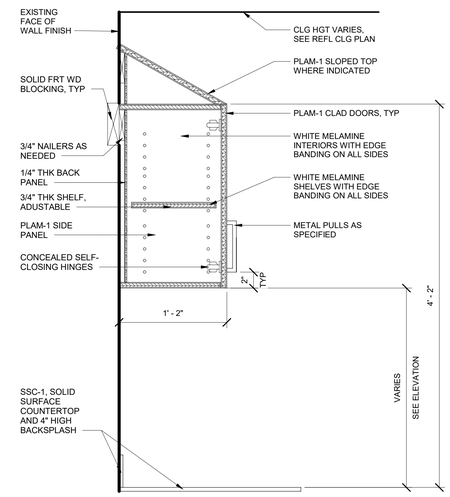
3 | ADA BASE CABINET W SINK
A-701 | Scale: 1 1/2" = 1'-0"



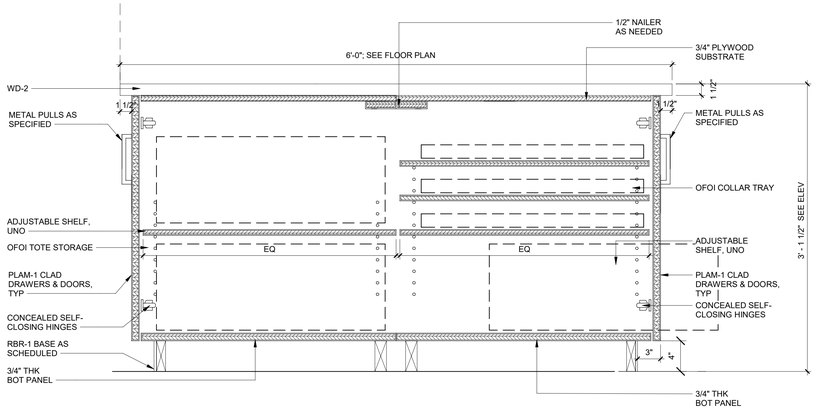
4 | TYP BASE CABINET W DRAWER
A-701 | Scale: 1 1/2" = 1'-0"



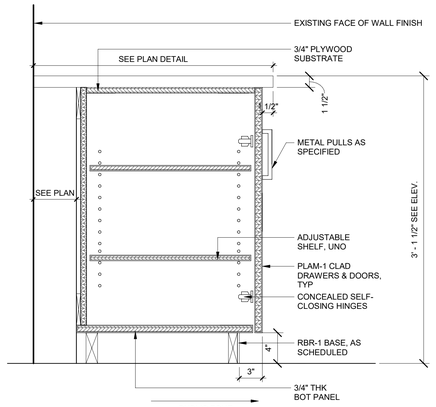
5 | UPPER CABINET
A-701 | Scale: 1 1/2" = 1'-0"



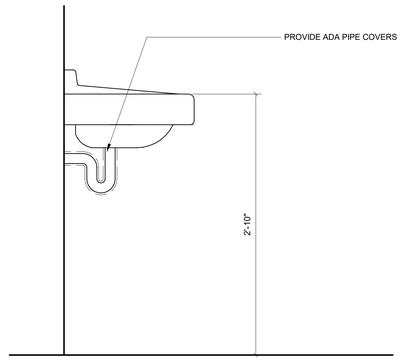
6 | UPPER CABINET ABOVE SINK
A-701 | Scale: 1 1/2" = 1'-0"



2 | BASE FULL LENGTH CABINET - WORK STATION
A-701 | Scale: 1 1/2" = 1'-0"



7 | FULL CABINET- WORK STATION
A-701 | Scale: 1 1/2" = 1'-0"



8 | ADA SINK SECTION
A-701 | Scale: 1 1/2" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

1-1/2"=1'-0" 12" 9" 6" 3" 0 1'

GRAPHIC SCALES

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AECOM

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VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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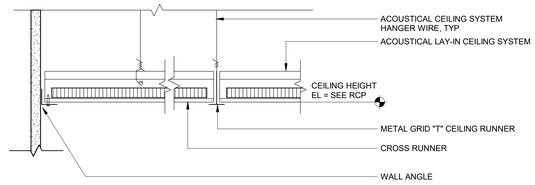
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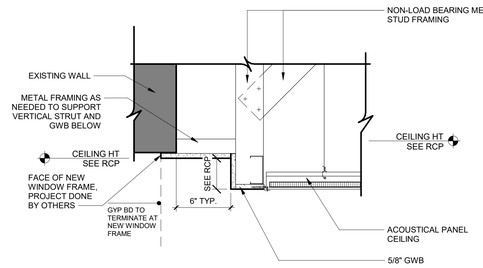
SHEET TITLE
MILLWORK DETAILS

SHEET NUMBER
A-701

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1 | **TYP ACOUSTICAL CEILING SYSTEM**
A-711 | Scale: 3" = 1'-0"



2 | **TYP CEILING DETAIL TRANSITION**
A-711 | Scale: 1 1/2" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

3"=1'-0" 12" 9" 6" 3" 0

GRAPHIC SCALES

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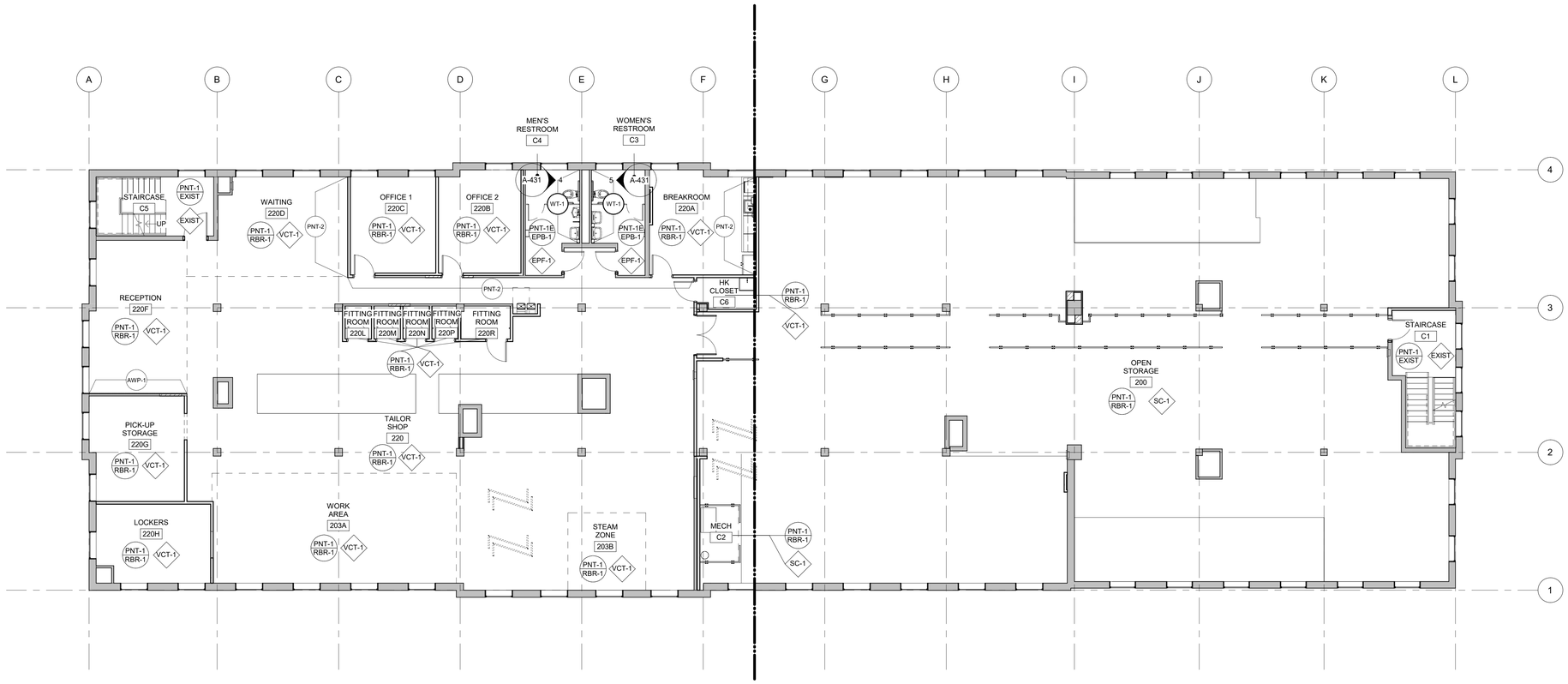
SHEET TITLE

INTERIOR CEILING DETAILS

SHEET NUMBER

A-711

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1 | **03 SECOND FLOOR FINISH PLAN -- COMPOSITE**
A-800 | Scale: 1/8" = 1'-0"

ROOM FINISH LEGEND

MATERIAL CODE	MATERIAL TYPE	MANUFACTURER	STYLE	MODEL NUMBER/ COLOR	ADDITIONAL NOTES	SPEC SECTION
ACT-1	ACOUSTICAL CEILING TILE	ARMSTRONG	CALLA HEALTH ZONE AIRASSURE	WHITE	PROVIDE 24" X 24" X 1" THICK , SQUARE LAY-IN 15/16" PANELS	09 51 00
AWP-1	ACOUSTICAL WALL PANEL	FRASCH	STRATA - 22 MM	MEDIUM WALNUT	MDF PANEL 22 MM WITH MEDIUM WALNUT; RUN PANELS VERTICALY ON WALL; PROVIDE SIDE TRIM PIECE AT EXPOSED EDGE.	09 84 20
RBR-1	RUBBER BASE	TARKETT	JOHNSONITE BASE WORKS 4"	GREY HAZE 24	PROVIDE TOELESS BASE	09 65 00
WT-1	CERAMIC WALL TILE	DALTILE	MEDIAN	WHITE MN40	PROVIDE 12" X 24" POLISHED TILE. INSTALL TO WAINSCOT HEIGHT AT WET WALLS (TOILETS AND URINALS). PROVIDE 1/8" GROUT JOINT. INSTALL IN HORIZONTAL STACK, WITH FOUR FULL TILES PROVIDED ABOVE BASE AND TRANSITION STRIP. FOLLOW MANUFACTURER'S INSTALL INSTRUCTIONS.	09 30 00
EPF-1	EPOXY FLOORING	STONHARD	STONCLAD GS	COOL SHALE	ADD STONKOTE GS4 AND TWO COATS OF STONSEAL GS6 WITH ALUMINUM OXIDE TO COMPLETE 5 COAT SYSTEM; USE TEXTURE LEVEL TBD	09 67 23. 16
EPB-1	EPOXY FLOORING BASE	STONHARD	STONCLAD GS	COOL SHALE	ADD STONKOTE GS4 AND TWO COATS OF STONSEAL GS6 WITH ALUMINUM OXIDE TO COMPLETE 5 COAT SYSTEM; USE TEXTURE LEVEL TBD. PROVIDE INTEGRAL FINISH THAT RUNS 0'-6" UP WALLS.	09 67 23. 16
GWB-1	GYPSUM WALL BOARD	--	--	--		09 21 16
TP-1	HDPE TOILET PARTITIONS	SCRANTON PRODUCTS	ECLIPSE PARTITIONS	GREY	SELECT ORANGE PEEL FINISH. INSTALL PER MANUFACTURER'S INSTRUCTIONS UTILIZING FLOOR MOUNTING ASSEMBLY APPROPRIATE FOR FLOOR FINISH.	10 28 00
STS-2	STAINLESS STEEL PULLS	--	ROUND TOP DRAWER PULL	DP128 SERIES	SELECT MATTE CHROME (26M) FINISH. PROVIDE 9" AT ALL DRAWERS AND 6 11/16" AT ALL CABINET DOORS.	06 41 16.00 10
STS-3	STAINLESS STEEL EDGING	SCHLUTER SYSTEMS	RONDEC	--	SELECT STAINLESS STEEL FINISH. PROVIDE TYPE APPROPRIATE FOR TILE THICKNESS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.	09 30 10
PNT-1	GENERAL PAINT	SHERWIN WILLIAMS	LATEX PAINT, SEMI GLOSS FINISH	HIGH REFLECTIVE WHITE 7757	ALL EXPOSED CEILINGS, STRUCTURAL MEMBERS, AND CONDUIT TO BE REPAINTED.GWB CEILINGS TO BE PAINTED.	09 90 00
PNT-1E	GENERAL PAINT	SHERWIN WILLIAMS	EPOXY PAINT, SEMI GLOSS FINISH	HIGH REFLECTIVE WHITE 7757	USE FOR RESTROOM WALLS	09 90 00
PNT-2	ACCENT PAINT	SHERWIN WILLIAMS	LATEX PAINT, SEMI GLOSS FINISH	INDIGO BATIK 7602		09 90 00
PNT-3	METAL PAINT	SHERWIN WILLIAMS	LATEX PAINT, SEMI GLOSS FINISH	DRIFT OF MIST 7757	USE FOR HOLLOW METAL DOOR FRAMES AND RAILINGS.	09 90 00
PNT-4	METAL PAINT	SHERWIN WILLIAMS	LATEX PAINT, SEMI GLOSS FINISH	HIGH REFLECTIVE WHITE 7757	USE FOR PERIMETER HEATING UNITS.	09 90 00
PLAM-1	PLASTIC LAMINATE	WILSONART	HIGH PRESSURE PLASTIC LAMINATE	LANDMARK WOOD 7981K-12	FINISH: MATTE FINISH	06 41 16.00 10
SC-1	SEALED CONCRETE	H&C	HEAVY SHIELD WATER BASED SOLID COLOR CONCRETE STAIN	SHERWIN WILLIAMS HIGH REFLECTIVE WHITE	PROVIDE EXTRA WHITE TINT BASE AND TINT TO SHERWIN WILLIAMS HIGH REFLECTIVE WHITE	03 30 00
SSC-1	SOLID SURFACE	WILSONART	SOLID SURFACE COUNTERTOPS AND WINDOWSILLS	CARRARA EMPORIO 9909SS	PROVIDE 1/2" THICK MATERIAL AT ALL WINDOWSILL LOCATIONS. USE FOR COUNTERTOPS IN BREAK AREA.	06 61 16
VCT-1	VINYL COMPOSITION TILE	ARMSTRONG FLOORING	EXCELON IMPERIAL VCT	COOL WHITE 51899	PROVIDE 3% ATTIC STOCK. SUBMITTALS: PROVIDE PRODUCT DATA AND SHOP DRAWINGS FOR FINAL APPROVAL. PROVIDE VCT-1 SAMPLES FOR FINAL APPROVAL.	09 65 00
WD-1	WOOD DOOR	--	WOOD SPECIES AND STAIN	--	MATCH DOOR SPECIES AND STAIN TO EXISTING DOORS ON THE FIRST FLOOR.	08 14 00
WD-2	WOOD WORKTOPS	BALLY BLOCK	BLACK WALNUT COUNTERTOP	--	PROVIDE 1 1/2" BLACK WALNUT COUNTERTOP WITH MANUFACTURER'S RECOMMENDED FINISH FOR THIS APPLICATION. SUBMIT SAMPLES OF BOTH BLACK WALNUT AND MAPLE OPTIONS FOR FINAL APPROVAL. DESIGNER TO PARTICIPATE WITH CLIENT IN WORKTOP SELECTION. SUBMITTALS: PROVIDE PRODUCT DATA AND SHOP DRAWINGS FOR FINAL APPROVAL. MATCH AWP-1 IN WOOD GRAIN. BASIS OF DESIGN IS BALLY BLOCK WOOD WELDED BUTCHER BLOCK: https://butcherblock.com/bally-block-products/commercial-food-service/prep-table-tops/	06 20 00

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR	BASE	WALL	WALL ACCENT	CEILING
200	OPEN STORAGE	SC-1	RBR-1	PNT-1		PNT-1
203A	WORK AREA	VCT-1	RBR-1	PNT-1		ACT-1
203B	STEAM ZONE	VCT-1	RBR-1	PNT-1		ACT-1
220	TAILOR SHOP	VCT-1	RBR-1	PNT-1	PNT-2	ACT-1
220A	BREAKROOM	VCT-1	RBR-1	PNT-1	PNT-2	ACT-1
220B	OFFICE 2	VCT-1	RBR-1	PNT-1		ACT-1
220C	OFFICE 1	VCT-1	RBR-1	PNT-1		ACT-1
220D	WAITING	VCT-1	RBR-1	PNT-1	PNT-2	ACT-1
220F	RECEPTION	VCT-1	RBR-1	PNT-1	AWP-1	ACT-1
220G	PICK-UP STORAGE	VCT-1	RBR-1	PNT-1		PNT-1
220H	LOCKERS	VCT-1	RBR-1	PNT-1		ACT-1
220L	FITTING ROOM	VCT-1	RBR-1	PNT-1		ACT-1
220M	FITTING ROOM	VCT-1	RBR-1	PNT-1		ACT-1
220N	FITTING ROOM	VCT-1	RBR-1	PNT-1		ACT-1
220P	FITTING ROOM	VCT-1	RBR-1	PNT-1		ACT-1
220R	FITTING ROOM	VCT-1	RBR-1	PNT-1		ACT-1
C1	STAIRCASE	EXIST	EXIST	PNT-1		EXIST
C2	MECH	SC-1	RBR-1	PNT-1		PNT-1
C3	WOMEN'S RESTROOM	EPF-1	EPB-1	PNT-1E	WT-1	ACT-1
C4	MEN'S RESTROOM	EPF-1	EPB-1	PNT-1E	WT-1	ACT-1
C5	STAIRCASE	EXIST	EXIST	PNT-1		EXIST
C6	HK CLOSET	VCT-1	RBR-1	PNT-1		ACT-1

GENERAL FINISH NOTES

A. GENERAL CONTRACTOR TO CONFIRM PAINT SPECIFICATION WITH VT MAINTENANCE STAFF IN FIELD. MATCH EXISTING FIELD PAINT SPECIFICATION.
B. PAINT EXTERIOR CMU WALLS IN THE CORRIDORS PNT-1.
C. FINAL COLORS OF ALL FINISHES AIRE TO BE APPROVED BY ARCHITECT AND OWNER. SUBMIT 8-1/2" X 11" SAMPLES FOR FINAL APPROVAL FOR ALL FINISHES. APPROVAL FROM BOTH VT AND AECOM REQUIRED.
D. CONTRACTOR TO SUBMIT FLOORING SAMPLES TO VT REPRESENTATIVE FOR FINAL SELECTION. ARCHITECT TO BE NOTIFIED OF FINAL COLOR SELECTION.
E. ALL INTERIOR FINISH SUBMITTALS TO BE REVIEWED BY OUP TO ENSURE PRODUCT PERFORMANCE, QUALITY, AND FINISH.
F. GENERAL CONTRACTOR TO FOLLOW MANUFACTURER'S INSTALLATION GUIDE FOR ALL PLAM - 1 CASEWORK FABRICATION.
G. MATCH DOOR SPECIES AND STAIN TO EXISTING DOORS ON THE FIRST FLOOR. GENERAL CONTRACTOR TO CONFIRM SPECIES AND STAIN WITH ARCHITECT AND OWNER.
H. PAINT WOOD FLOOR PATCHES TO MATCH ADJACENT SEALED CONCRETE. GENERAL CONTRACTOR TO CONFIRM PAINT COLOR WITH ARCHITECT AND OWNER.
I. FOR EPOXY FLOORING TEXTURE, MATCH RECENTLY COMPLETED WALLACE HALL FOOD LAB PROJECT. SUBMIT SAMPLES FOR FINAL SELECTION, FOLLOWED BY A MOCK UP FOR FULL APPROVAL. APPROVAL FROM BOTH VT AND AECOM REQUIRED.
J. PROVIDE RUBBER REDUCER AT TRANSITION FROM EPF-1 TO VCT-1 APPROPRIATE FOR USE. SUBMIT SAMPLES FOR FINAL APPROVAL. APPROVAL FROM BOTH VT AND AECOM REQUIRED.

LEGEND - FINISH MATERIALS

ANNOTATIONS

- FLOOR — FLOOR FINISH TAG
- WALL / BASE — WALL/BASE FINISH TAG
- ACCENT — WALL ACCENT FINISH TAG
- EXTENT OF WALL FINISH

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

PN
TN

GRAPHIC SCALES

AECOM

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SHEET TITLE
FINISH LEGENDS AND SCHEDULES

SHEET NUMBER
A-800

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SPECIFICATIONS

NOTE: SEE VIRGINIA TECH STANDARD PARTS BINDER FOR ADDITIONAL PRODUCT REQUIREMENTS

SECTION 08 11 13 HOLLOW METAL FRAME

MANUFACTURER:
1. STEELCRAFT WWW.STEELCRAFT.COM.

HOLLOW METAL FRAMES:
1. COMPLY WITH ANSI/ICC A117.1.
2. FINISH: FACTORY PRIMED, FOR FIELD FINISHING.
3. 16 GAUGE FRAME.
4. INTERIOR FIRE RATED: FACE WELDED TYPE. PROVIDE LABELS ON FRAMES FOR ALL FIIRE RATED OPENINGS.

SECTION 08 14 16 FLUSH WOOD DOORS

MANUFACTURER:
1. VT INDUSTRIES ARCHITECTURAL WOOD DOORS - 404 WITH 2 PART HARDWOOD STILE
2. OR APPROVED EQUAL

FLUSH WOOD DOORS:
1. QUALITY LEVEL: PREMIUM GRADE, HEAVY DUTY PERFORMANCE IN ACCORDANCE WITH WDMA I.S.1-A
2. DOOR EDGE PROFILE: BEVELED ON BOTH EDGES. DOOR TEXTURE: SMOOTH FACES.
3. WOOD VENEER FACED DOORS: 5-PLY
4. THICKNESS: 1-3/4", STAIN GRADE
5. DOORS SHALL HAVE A 3MM PVC IMPACT EDGE ON STILES IN A FACE-COMPLIMENTING COLOR, AND 1 MM BLACK PVC CLEAN EDGE ON TOP AND BOTTOM RAILS.
6. STAIN FINISH AND SPECIES TO MATCH VIRGINIA TECH STANDARDS AND EXISTING DOORS ON THE FIRST FLOOR.
7. DOOR HANDLES TO MATCH VIRGINIA TECH STANDARDS AND EXISTING DOORS ON THE FIRST FLOOR.

SECTION 08 80 00 GLAZING
MANUFACTURERS:
1. "FIRELITE" OR APPROVED EQUAL FOR GLAZING
   INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT)
1. CUT GLAZING TAPE TO LENGTH AND INSTALL AGAINST PERMANENT STOPS, PROJECTING 1/16 INCH (1.6 MM) ABOVE SIGHT LINE.
2. PLACE SETTING BLOCKS AT 1/4 POINTS WITH EDGE BLOCK NO MORE THAN 6 INCHES FROM CORNERS. REST GLAZING ON SETTING BLOCKS AND PUSH AGAINST TAPE TO ENSURE FULL CONTACT AT PERIMETER OF PANE OR UNIT.
3. INSTALL REMOVABLE STOPS, SPACER SHIMS INSERTED BETWEEN GLAZING AND APPLIED STOPS AT 24 INCH INTERVALS, 1/4 INCH BELOW SIGHT LINE.
4. FILL GAPS BETWEEN PANE AND APPLIED STOP WITH SILICONE TYPE SEALANT TO DEPTH EQUAL TO BITE ON GLAZING, TO UNIFORM AND LEVEL LINE.
5. TRIM PROTRUDING TAPE EDGE.

SECTION 09 21 16 GYPSUM BOARD ASSEMBLIES

PROVIDE COMPLETED ASSEMBLIES COMPLYING WITH ASTM C 840 AND GA-216.
a. METAL FRAMING MATERIALS
   a. NON-LOADBEARING FRAMING SYSTEM COMPONENTS: ASTM C 645; GALVANIZED SHEET STEEL OF SIZES, HEIGHTS, AND SPACINGS INDICATED WITH BASE METAL PROPERTIES AS REQUIRED FOR THE FOLLOWING CONDITIONS:
   b. ASSEMBLIES FACED WITH GYPSUM BOARD: MAXIMUM DEFLECTION OF L/240 AT 5 PSF (240 PA).
   c. CEILING FRAMING MEMBERS AND METAL FURRING: TYPES, SIZES, AND SPACINGS IN ACCORDANCE WITH REQUIREMENTS SPECIFIED IN ASTM C 754.
   d. CEILING HANGERS: TYPE AND SIZE AS SPECIFIED IN ASTM C 754 FOR SPACING REQUIRED. SEE STRUCTURAL SPECIFICATION BY OTHERS.
   e. PARTITION HEAD TO STRUCTURE CONNECTIONS: PROVIDE SLOTTED TRACK FASTENED TO STRUCTURE WITH LEGS OF SUFFICIENT LENGTH TO ACCOMMODATE ±1/2" OF DEFLECTION.

STANDARD GYPSUM BOARD MATERIALS
1. GYPSUM WALLBOARD: ASTM C 1396/C 1396M. SIZES TO MINIMIZE JOINTS IN PLACE; ENDS SQUARE CUT. REGULAR TYPE: USE FOR VERTICAL SURFACES, UNLESS OTHERWISE INDICATED. THICKNESS: 5/8 INCH.
2. EDGES: TAPERED.
3. PAINT PER MANUFACTURER'S INSTALLATION NOTES

GLAS MAT TILE BACKER BOARD
1. BASIS OF DESIGN: ASTM C1178, STANDARD SPECIFICATION FOR COATED GLASS MAT WATER-RESISTANT GYPSUM BACKING PANEL. USG DUROCK™ GLASS-MAT TILE BACKERBOARD EXCEEDS ASTM C1178, WHICH IS THE STANDARD SPECIFICATION FOR
   COATED GLASS-MAT WATER-RESISTANT GYPSUM BACKING PANELS. PROVIDE WITH MANUFACTURER'S STANDARD EDGES. 5/8" THICK, MATCH ADJACENT GWB.
2. INSTALL PER MANUFACTURER'S STANDARD INSTALLATION INSTRUCTIONS.

ACCESSORIES
1. ACOUSTIC SEALANT: NON-HARDENING, NON-SKINNING, FOR USE IN CONJUNCTION WITH GYPSUM BOARD.
2. FINISHING ACCESSORIES: ASTM C 1047, GALVANIZED STEEL OR ROLLED ZINC, UNLESS OTHERWISE INDICATED.
   a. TYPES: AS DETAILED OR REQUIRED FOR FINISHED APPEARANCE.
3. EDGE TRIM: ASTM C 1047, LC BEAD.
4. RESILIENT CHANNEL: 22 MIL, 2-5/8" X 1/2" DEEP WITH 1-1/2" SCREW FLANGE. "CLARKEDIETRICK RC DELUXE" OR APPROVED EQUAL.
5. JOINT MATERIALS: ASTM C 475 AND AS RECOMMENDED BY GYPSUM BOARD MANUFACTURER FOR PROJECT CONDITIONS.
   a. TAPE: 2 INCH WIDE, COATED GLASS FIBER TAPE FOR JOINTS AND CORNERS, EXCEPT AS OTHERWISE INDICATED.
   b. READY-MIXED VINYL-BASED JOINT COMPOUND.
8. SCREWS: ASTM C 1002; SELF-PIERCING TAPPING TYPE; CADMIUM-PLATED FOR EXTERIOR LOCATIONS.

LEVEL 2 FINISH - OPEN STORAGE
LEVEL 4 FINISH - TAILOR SHOP

SECTION 09 51 00 ACOUSTICAL CEILING:

CEILING TYPE:
1. ACOUSTICAL UNITS : ASTM E 1264, CLASS A. SEE FINISH LEGEND ON SHEET A801
2. SUSPENSION SYSTEM: ASTM C 635; DIE CUT AND INTERLOCKING COMPONENTS, WITH STABILIZER BARS, CLIPS, SPLICES, PERIMETER
3. ACCESSORIES
   SUPPORT CHANNELS AND HANGERS: GALVANIZED STEEL; SIZE AND TYPE TO SUIT APPLICATION AND CEILING SYSTEM SPECIFIED. PERIMETER MOLDINGS: SAME MATERIAL AND FINISH AS GRID.
   AT EXPOSED GRID: PROVIDE L-SHAPED MOLDING FOR MOUNTING AT SAME ELEVATION AS FACE OF GRID.
4. INSTALL PER ASTM C636, INTERMEDIATE DUTY.

SECTION 07 92 00 JOINT SEALANTS:

JOINT SEALANTS, GENERAL:
1. COMPATABILITY: 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 JOINT-SEALANT MANUFACTURER, BASED ON TESTING AND FIELD EXPERIENCE.
2. VOC CONTENT: SEALANTS ADN SELANT PRIMERS SHALL COMPLY WITH THE FOLLOWING:
   a. ARCHITECTURAL SEALANTS SHALL HAVE A VOC CONTENT OF 250 G/L OR LESS.
   b. SEALANTS AND SEALANT PRIMERS FOR POROUS SUBSTRATES SHALL HAVE A VOC CONTENT OF 775 G/L OR LESS.
   c. SEALANT SHALL COMPLY IWTH TEH TESTING AND PRODUCT REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH'S "STANDARD METHOD FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMICAL EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS."
3. COLORS OF EXPOSED JOINT SELANTS: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE.

SILICONE JOINT SEALANTS:
1. SILICONE, S, NS, 100/50, NT: SINGLE-COMPONENT, NONSAG, PLUS 100 PERCENT AND MINUS 50 PERCENT MOVEMENT CAPABILITY, NONTRAFFIC-USE, NEUTRAL-CURING SILICONE JOINT SEALANT; ASTM C 920, TYPE S, GRADE NS, CLASS 100/50, USE NT.
   a. DOW CORNING
   b. GE CONSTRUCTION SEALANTS
   c. SIKA CORPORATION
   d. OR APPROVED EQUAL

PREPARATION:
1. SURFACE CLEANING OF JOINTS: CLEAN OUT JOINTS IMMEDIATELY BEFORE INSTALLING JOINT SEALANTS TO COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTRUCTIONS.

INSTALLATION OF JOINT SEALANTS:
1. GENERAL: COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS FOR PRODUCTS AND APPLICATIONS INDICATED, UNLESS MORE STRINGENT REQUIREMENTS APPLY.
2. SEALANTE INSTALLATION STANDARD: COMPLY WITH RECOMMENDATIONS IN ASTM C 1193 FOR USE OF JOINT SEALANTS AS APPPLICABLE TO MATERIALS, APPLICATIONS, AND CONDITIONS INDICATED.
3. INSTALL SEALANT BACKINGS OF KIND 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.
4. INSTALL BOND-BREAKER TAPE BEHIND SEALANTS WHERE SEALANT BACKINGS ARE NOT USED BETWEEN SEALANTS AND BACKS OF JOINTS.

SECTION 09 90 00 PAINTING AND COATING

1. MAINTAIN ONE COPY OF RELEVANT PORTIONS OF MPI ARCHITECTURAL PAINTING SPECIFICATION MANUAL AND MATERIAL SAFETY DATA SHEETS ON PROJECT SITE AT ALL TIMES.
2. DELIVERY, STORAGE, HANDLING, AND FIELD CONDITIONS
   a. FOLLOW MANUFACTURER'S RECOMMENDED PROCEDURES FOR PRODUCING BEST RESULTS, INCLUDING TESTING OF SUBSTRATES, MOISTURE IN SUBSTRATES, AND HUMIDITY AND TEMPERATURE LIMITATIONS.
3. EXTRA MATERIALS
   a. SUPPLY 2 GALLONS OF EACH COLOR; STORE WHERE DIRECTED.
   b. LABEL EACH CONTAINER WITH COLOR IN ADDITION TO THE MANUFACTURER'S LABEL.
4. MANUFACTURERS: SEE FINISH LEGEND.
5. PAINTS AND COATINGS: ANY MANUFACTURER LISTED IN MPI APPROVED PRODUCTS LIST (AT WWW.PAINTINFO.COM) UNDER APPLICABLE MPI PRODUCT REFERENCE NUMBER, UNLESS OTHERWISE INDICATED.
6. PROVIDE ALL PAINT AND COATING PRODUCTS USED IN ANY INDIVIDUAL SYSTEM FROM THE SAME MANUFACTURER; NO EXCEPTIONS.
7. MATERIALS - GENERAL
   a. VOLATILE ORGANIC COMPOUND (VOC) CONTENT:
      • PROVIDE COATINGS THAT COMPLY WITH THE MOST STRINGENT REQUIREMENTS SPECIFIED IN THE FOLLOWING:
      • 40 CFR 59, SUBPART D--NATIONAL VOLATILE ORGANIC COMPOUND EMISSION STANDARDS FOR ARCHITECTURAL COATINGS.
      • OZONE TRANSPORT COMMISSION (OTC) MODEL RULE, ARCHITECTURAL, INDUSTRIAL, AND MAINTENANCE COATINGS; WWW.OTCAIR.ORG; SPECIFICALLY:
         i. OPAQUE, NONFLAT: 150 G/L, MAXIMUM.
         ii. OPAQUE, HIGH GLOSS: 250 G/L, MAXIMUM.
   b. ARCHITECTURAL COATINGS TO COMPLY WITH VOC LIMITS OF THE COMMONWEALTH OF VIRGINIA.
      i. CHEMICAL CONTENT: THE FOLLOWING COMPOUNDS ARE PROHIBITED: AROMATIC COMPOUNDS: IN EXCESS OF 1.0 PERCENT BY WEIGHT OF TOTAL AROMATIC COMPOUNDS (HYDROCARBON COMPOUNDS CONTAINING ONE OR MORE BENZENE RINGS). ACROLEIN, ACRYLONITRILE, ANTIMONY, BENZENE, BUTYL BENZYL PHTHALATE, CADMIUM, DI (2-ETHYLHEXYL) PHTHALATE, DI-N-BUTYL PHTHALATE, DI-N-OCTYL PHTHALATE, 1,2-DICHLOROBENZENE, DIETHYL PHTHALATE, DIMETHYL PHTHALATE, ETHYLBENZENE, FORMALDEHYDE, HEXAVALENT CHROMIUM, ISOPHORONE, LEAD, MERCURY, METHYL ETHYL KETONE, METHYL ISOBUTYL KETONE, METHYLENE CHLORIDE, NAPHTHALENE, TOLUENE (METHYLBENZENE), 1,1,1-TRICHLOROETHANE, VINYL CHLORIDE.
   c. PAINTS AND COATINGS: PROVIDE PRODUCTS LISTED IN MASTER PAINTERS INSTITUTE APPROVED PRODUCT LIST, CURRENT EDITION AVAILABLE AT WWW.PAINTINFO.COM, FOR SPECIFIED MPI CATEGORIES, EXCEPT AS OTHERWISE INDICATED.
      • PROVIDE READY MIXED PAINTS AND COATINGS.
      • PROVIDE MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND THE SUBSTRATES INDICATED UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
      • PATCHING MATERIAL AND FASTENER HEAD COVER MATERIAL: LATEX FILLER.
   a. PAINT SYSTEMS
      • PROVIDE PREMIUM GRADE SYSTEMS (2 TOP COATS) AS DEFINED IN MPI ARCHITECTURAL PAINTING SPECIFICATION MANUAL, EXCEPT AS OTHERWISE INDICATED.
      • PROVIDE COLORS AS INDICATED ON FINISH SCHEDULE.
   b. INTERIOR PAINT SYSTEMS- SEE FINISH SCHEDULE FOR MANUFACTURER AND PRODUCT INFORMATION
      • STRUCTURAL STEEL AND METAL FABRICATIONS:
         1. INT 5.1A QUICK DRY ENAMEL: Q.D. PRIMER MPI #95, Q.D. ENAMEL MPI #81, SEMI-GLOSS.
      • GYPSUM BOARD:
         1. APPLICATIONS INCLUDE BUT ARE NOT LIMITED TO WALLS, CEILINGS, SOFFITS, AND BULKHEADS. USE MATERIALS SUITABLE FOR SUBSTRATE THAT THEY ARE APPLIED TO.
         2. INT 9.2A LATEX: LATEX PRIMER SEALER MPI #50, LATEX #52, GLOSS LEVEL 3.
         3. INT 9.2C ALKYD: LATEX PRIMER SEALER MPI #50, ALKYD MPI #47, 48, 49 OR 51. SHEEN SHALL MATCH EXISTING AND/OR ADJACENT PAINT FINISH.
   c. PREPARATION
      • PREPARE SURFACES AS SPECIFIED IN MPI ARCHITECTURAL PAINTING SPECIFICATION MANUAL AND AS FOLLOWS FOR THE APPLICABLE SURFACE AND COATING;
      • COORDINATE PAINTING WORK WITH CLEANING AND PREPARATION WORK SO THAT DUST AND OTHER CONTAMINANTS DO NOT FALL ON NEWLY PAINTED, WET SURFACES.
   d. APPLICATION
      • APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND AS SPECIFIED OR RECOMMENDED BY MPI MANUAL, USING THE PREPARATION, PRODUCTS, SHEENS, TEXTURES, AND COLORS AS INDICATED.
      • REMOVE, REFINISH, OR REPAINT WORK NOT COMPLYING WITH REQUIREMENTS.

SECTION 102800 - TOILET ACCESSORIES

PART 1 - GENERAL
1.4 COORDINATION
   A. COORDINATE THE WORK WITH THE PLACEMENT OF INTERNAL WALL REINFORCEMENT AND REINFORCEMENT OF TOILET PARTITIONS TO RECEIVE ANCHOR ATTACHMENTS.

PART 2 - PRODUCTS
2.1 MATERIALS
   A. ACCESSORIES - GENERAL: SHOP ASSEMBLED, FREE OF DENTS AND SCRATCHES AND PACKAGED COMPLETE WITH ANCHORS AND FITTINGS, STEEL ANCHOR PLATES, ADAPTERS, AND ANCHOR COMPONENTS FOR INSTALLATION.
   B. GRIND WELDED JOINTS SMOOTH.
      1. FABRICATE UNITS MADE OF METAL SHEET OF SEAMLESS SHEETS, WITH FLAT SURFACES.
   C. STAINLESS STEEL SHEET: ASTM A 666, TYPE 304.
   D. MIRROR GLASS: FLOAT GLASS, ASTM C 1036 TYPE I, CLASS 1, QUALITY Q2, WITH SILVERING, COPPER COATING, AND SUITABLE PROTECTIVE ORGANIC COATING TO COPPER BACKING.
   E. ADHESIVE: TWO COMPONENT EPOXY TYPE, WATERPROOF.

2.2 FINISHES
   A. STAINLESS STEEL: NO. 4 SATIN BRUSHED FINISH, UNLESS OTHERWISE NOTED.
   B. BACK-PAINT COMPONENTS WHERE CONTACT IS MADE WITH BUILDING FINISHES TO PREVENT ELECTROLYSIS.

2.3 TOILET ROOM ACCESSORIES
   A. MIRROR, MARK A: AS INDICATED ON THE DRAWINGS.
      1. MIRRORS: BOBRICK B-165 24" X 36" RECTANGULAR FLAT STAINLESS STEEL CHANNEL-FRAMED WALL MOUNTED MIRROR, 1/4" GLASS.
         a. SIZE: 24 INCHES X 36 INCHES.
         b. BACKING: FULL-MIRROR SIZED, MINIMUM 0.03 INCH GALVANIZED STEEL SHEET AND NONABSORPTIVE FILLER MATERIAL.
   B. MIRROR, MARK E: AS INDICATED ON THE DRAWINGS.
      1. MIRRORS: BOBRICK B-165 48" X 36" RECTANGULAR FLAT STAINLESS STEEL CHANNEL-FRAMED WALL MOUNTED MIRROR, 1/4" GLASS.
         a. SIZE: 48 INCHES X 36 INCHES.
         b. BACKING: FULL-MIRROR SIZED, MINIMUM 0.03 INCH GALVANIZED STEEL SHEET AND NONABSORPTIVE FILLER MATERIAL.
   C. GRAB BAR, MARK D: AS INDICATED ON THE DRAWINGS.
      1. GRAB BARS: STAINLESS STEEL, 1-1/4 INCHES OUTSIDE DIAMETER, MINIMUM 0.05 INCH WALL THICKNESS, NONSLIP GRASPING SURFACE FINISH, CONCEALED FLANGE MOUNTING; 1-1/2 INCHES CLEARANCE BETWEEN WALL AND INSIDE OF GRAB BAR.
         a. LENGTH: 42 INCHES.
   D. GRAB BAR, MARK B: AS INDICATED ON THE DRAWINGS.
      1. GRAB BARS: STAINLESS STEEL, 1-1/4 INCHES OUTSIDE DIAMETER, MINIMUM 0.05 INCH WALL THICKNESS, NONSLIP GRASPING SURFACE FINISH, CONCEALED FLANGE MOUNTING; 1-1/2 INCHES CLEARANCE BETWEEN WALL AND INSIDE OF GRAB BAR.
         a. LENGTH: 36 INCHES.
   E. HOOK, MARK H AS INDICATED ON DRAWINGS.
      1. HOOK: "BOBRICK" DOUBLE ROBE HOOK B-672. 18-8, TYPE-304, 22-GAUGE STAINLESS STEEL FLANGE AND SUPPORT BRACKET. CONCEALED, 16-GAUGE STAINLESS STEEL MOUNTING BRACKET.
         a. MOUNTING HEIGHT: 48 INCHES (ADA FITTING ROOM AND ADA TOILET STALLS) AND 72 INCHES.
   F. TOILET PARTITIONS, MARK "K" AS INDICATED ON DRAWINGS.
      1. IRONWOOD MANUFACTURING, ZERO SIGHTLINE HDPE TOILET PARTITIONS OR APPROVED EQUAL IS SPECIFIED AS BASIS OF DESIGN
      2. PRODUCT DATA: SUBMIT DATA ON PANEL CONSTRUCTION, HARDWARE, AND ACCESSORIES.
      3. SAMPLES: SUBMIT TWO SAMPLES OF PARTITION PANELS, 4 X 4 INCHES IN SIZE ILLUSTRATING PANEL FINISH, COLOR, AND SHEEN FOR FINAL APPROVAL TO VT REPRESENTATIVES. FINAL COLOR SELECTION BY ARCHITECT AND OUP FROM MANUFACTURER'S FULL RANGE OF COLORS.
   G. URINAL SCREENS, MARK "J" AS INDICATED ON DRAWINGS.
      1. FLOOR MOUNTED WITH TWO PANEL BRACKETS, AND FLOOR VERTICAL UPRIGHT CONSISTING OF PILASTER ANCHORED TO FLOOR AND PANEL.

SECTION 10 44 00 FIRE PROTECTION SPECIALTIES

1. FIRE EXTINGUISHER
   a. DRY CHEMICAL TYPE: STAINLESS STEEL TANK, WITH PRESSURE GAGE. ALL FIRE EXTINGUISHERS TO BE IN ACCORDANCE WITH THE 2023 VT DESIGN AND CONSTRUCTION STANDARDS MANUAL, SECTION 3.10.6.
   b. FINISH: BAKED ENAMEL, RED COLOR
2. FIRE EXTINGUISHER CABINET
   a. METAL: FORMED PRIME SHEET STEEL, 0.036 INCH BASE METAL.
   b. FULLY-RECESSED TYPE, SIZE TO ACCOMMODATE FIRE EXTINGUISHER. ALL FIRE EXTINGUISHER CABINETS TO BE IN ACCORDANCE WITH THE 2023 VT DESIGN AND CONSTRUCTION STANDARDS MANUAL, SECTION 3.10.5.
   c. TRIM: RETURN TO WALL SURFACE, WITH SQUARE TRIM, 1-1/4 INCH WIDE FACE
   d. DOOR DESIGN: FLUSH PANEL, VERTICAL STRIP GLAZED, 1/8" THICK FLOAT, TEMPERED GLASS
   e. FINISH OF CABINET INTERIOR: WHITE ENAMEL
   f. FINISH OF CABINET EXTERIOR: COLOR TO MATCH EXISTING WALLACE HALL FIRE EXTINGUISHER CABINET COLOR
   g. CABINET SIGNAGE: "FIRE EXTINGUISHER"
C. INSTALLATION
   a. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
   b. INSTALL IN ACCORDANCE WITH ADA REQUIREMENTS: 48 INCHES FROM FLOOR TO DOOR LATCH

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER
60763454

SHEET TITLE
ARCHITECTURAL SPECIFICATIONS

SHEET NUMBER
A-900

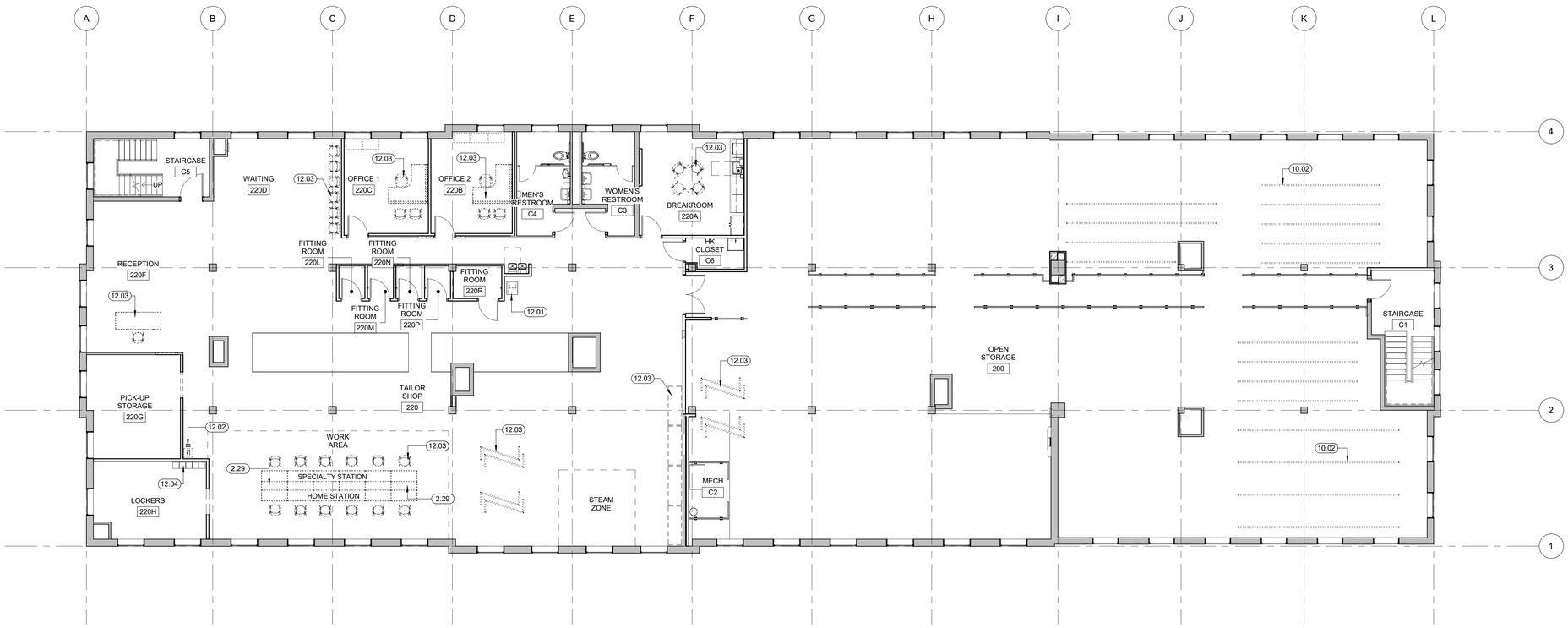
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GENERAL NOTES THIS SHEET:

A. ALL FURNITURE SHOWN IS NOTIONAL, TO BE FURNISHED BY VIRGINIA TECH.

SHEET KEYNOTES

2.29	PREPARE FLOOR FOR NEW FLOOR BOXES. COORDINATE LOCATIONS WITH NEW WORK PLANS; CONFIRM LOCATIONS WITH VT REPRESENTATIVES. SEE ELECTRICAL DRAWINGS.
10.02	HIGH RACK TO BE INSTALLED 9'-2" AFF MAX . COORDINATE LOCATIONS WITH VT REPRESENTATIVES.
12.01	OWNER PROVIDED COPY AND PRINTER TO BE COORDINATED WITH VT
12.02	OWNER PROVIDED CASH REGISTER TO BE COORDINATED WITH VT
12.03	OWNER PROVIDED FURNITURE TO BE COORDINATED WITH VT. INCLUDE OUP IN THE FURNITURE SELECTION PROCESS TO ENSURE PRODUCT PERFORMANCE; QUALITY AND FINISH
12.04	PROVIDE NEW LOCKERS; COORDINATE TYPE AND LOCATION WITH VT REPRESENTATIVE.



1 **SECOND FLOOR INTERIOR FURNITURE PLAN**
A-901 Scale: 1/8" = 1'-0"

FOR REFERENCE ONLY

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PN
TN

1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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PROJECT

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I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

SECOND FLOOR INTERIOR FURNITURE PLAN

SHEET NUMBER

A-901

FIRE ALARM GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF WORK WITH THE OWNER'S ACTIVITIES AND OTHER TRADES AT THE PROJECT SITE TO INSTALL NECESSARY COMPONENTS OF THE FIRE ALARM SYSTEMS AS REQUIRED FOR A FINISHED AND FULLY FUNCTIONAL SYSTEM.
2. EXISTING FIRE ALARM PLAN IS BASED ON RECORD DRAWINGS. CONTRACTOR MUST FIELD VERIFY THE LAYOUT OF DEVICES TO BE RETAINED TO CONFIRM THAT ADEQUATE COVERAGE IS PROVIDED.
3. ALL NEW FIRE ALARM COMPONENTS MUST BE COMPATIBLE WITH THE EXISITNG SIMPLEX FIRE ALARM SYSTEM. THE FIRE ALARM CONTROL PANEL IS LOCATED IN SHOWROOM LOBBY 100.
4. ANY WORK THAT REQUIRES DISABLING OF FIRE ALARM SYSTEMS MUST BE COORDINATED THROUGH THE VIRGINIA TECH PROJECT MANAGER AND ALL RESPECTIVE VIRGINIA TECH DEPARTMENTS HAVING JURISDICTION PRIOR TO COMMENCING.
5. CONTRACTOR MUST INSTALL SYSTEM IN ACCORDANCE WITH THE THE VT DESIGN AND CONSTRUCTION STANDARDS MANUAL AND IS RESPONSIBLE FOR ENSURING THAT THE SYSTEM PROVIDES THE REQUIRED REPORTING CAPABILITES.
6. FIRE ALARM SYSTEM TESTING MUST BE PROVIDED, INCLUDING VERIFICATION OF THE FINAL CONNECTION AND INTERACTIONS WITH THE EXISTING SYSTEM PER NFPA 72.
7. CONTRACTOR IS RESPONSIBLE FOR PRETESTING THE SYSTEM BEFORE FINAL INSPECTION AND TESTING AT FINAL INSPECTION.
8. EXISTING NOTIFICATION AND INITIATION DEVICES MUST BE PROTECTED DURING CONTRUCTION, RELOCATED, AND RE-USED WHEREVER POSSIBLE.
9. NEW NOTIFICATION APPLIANCES MUST MATCH EXISTING TYPE.
10. CANDELA RATINGS OF NOTIFICATION APPLIANCES MUST BE IN ACCORDANCE WITH NFPA 72.
11. ALL FIRE ALARM SYSTEM WIRING MUST BE UL LISTED AND LABELED IN ACCORDANCE WITH NFPA 70.
12. CONTRACTOR MUST VERIFY AND PROVIDE ADDITIONAL BATTERY BACKUP CAPACITY IF REQUIRED.
13. NEW FIRE ALARM WIRING SHALL BE PROTECTED AS REQUIRED BY THE 2023 VT DCSM §3.10.7.3.(5)B.
14. CONTRACTOR SHALL PROVIDE A SET OF "AS-BUILT" DRAWINGS UPON COMPLETION OF THE FIRE ALARM SYSTEM FOR THE RENOVATED AREA TO THE UBO'S OFFICE. THIS SET SHALL BE USED FOR THE FINAL FIRE ALARM INSPECTION AND TEST.

FIRE ALARM LEGEND

EXISTING	DEMOLISHED	NEW	DESCRIPTION	SYMBOL	DESCRIPTION
CD	CD	CD	CEILING MOUNTED STROBE, CD DENOTES CANDELA RATING		LIMITS OF CONSTRUCTION
CD	CD	CD	WALL MOUNTED STROBE, CD DENOTES CANDELA RATING		
CD C	CD C	CD C	CEILING MOUNTED SPEAKER/STROBE, CD DENOTES CANDELA RATING		
CD	CD	CD	WALL MOUNTED SPEAKER/STROBE, CD DENOTES CANDELA RATING		
H	H	H	HEAT DETECTOR		
S P	S P	S P	PHOTOELECTRIC SMOKE DETECTOR		
S	S	S	DUCT SMOKE DETECTOR		
S H R	S H R	S H R	SMOKE/HEAT DETECTOR		

GENERAL NOTES THIS SHEET :

A. ALL DIMENSIONS SHOWN IN INCHES UNLESS NOTED OTHERWISE.

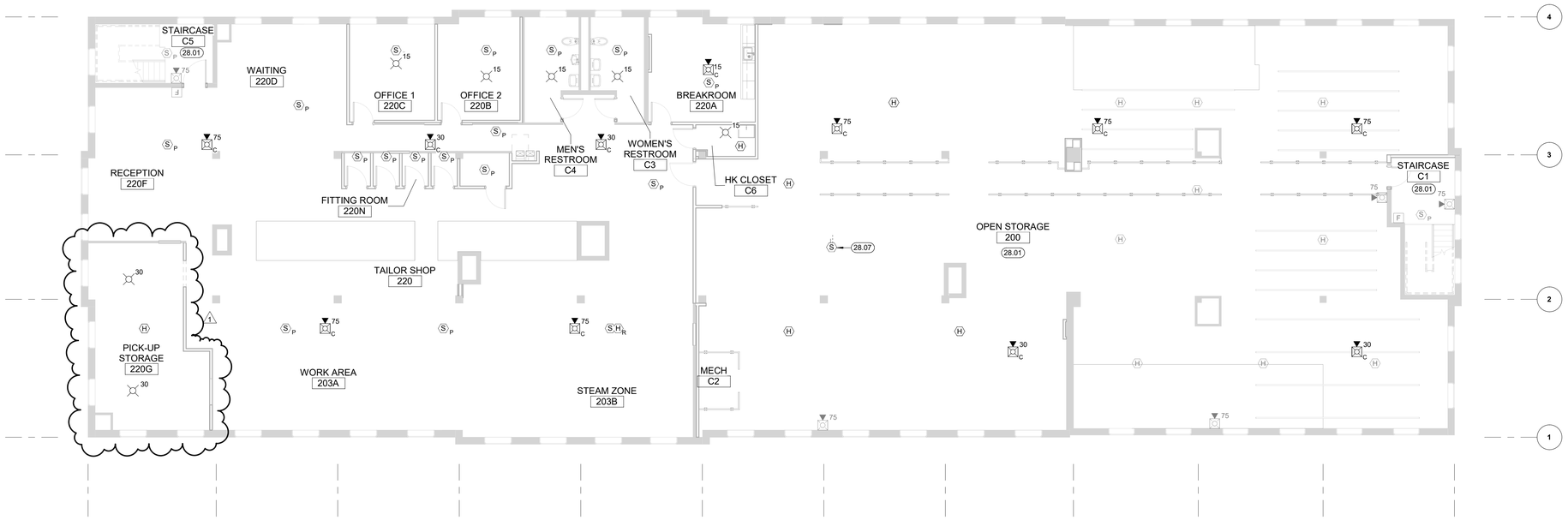
SHEET KEYNOTES:

28.01 PROTECT DEVICES TO BE REUSED DURING DEMOLITION AND NEW WORK.

28.07 PROVIDE DUCT SMOKE DETECTOR FOR AHU SHUTDOWN.

DEMO SECOND FLOOR FIRE ALARM PLAN

1/8" = 1'-0"



SECOND FLOOR FIRE ALARM PLAN

1/8" = 1'-0"

PN

TN

GRAPHIC SCALES

1/8"=1'-0" 8' 4' 0 8' 16'

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	1/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

SECOND FLOOR FIRE ALARM PLANS

SHEET NUMBER

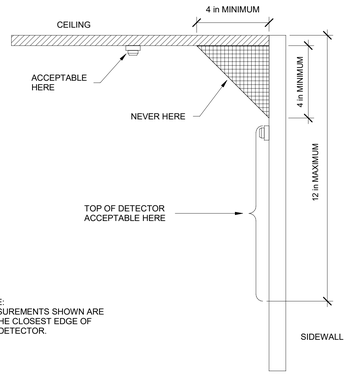
FA102

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SYSTEM INPUTS			SYSTEM OUTPUTS	ALARM																		MISC
			DISPLAY CHANGE OF STATUS AT FACU	ACTUATE AUDIBLE AND VISUAL ALARM SIGNAL AT FACU	ACTUATE AUDIBLE AND VISUAL ALARM SIGNAL AT FACU	ACTUATE AUDIBLE AND VISUAL SUPERVISORY SIGNAL AT FACU	ACTUATE AUDIBLE AND VISUAL TROUBLE SIGNAL AT FACU	ACTUATE FIRE ALARM VISIBLE NOTIFICATION	ACTUATE FIRE ALARM AUDIBLE NOTIFICATION	TRANSMIT ALARM SIGNAL TO RECEIVING STATION	TRANSMIT SUPERVISORY SIGNAL TO RECEIVING STATION	TRANSMIT TROUBLE SIGNAL TO RECEIVING STATION	SILENCE FA SYSTEM AND BACKGROUND MUSIC	RESET FIRE ALARM VISUAL NOTIFICATION APPLIANCES	RESET FIRE ALARM AUDIBLE NOTIFICATION APPLIANCES	UNLOCK LOCKED DOORS IN MEANS OF EGRESS	UNLOCK DELAYED EGRESS DOORS	RESET SIGNALS TO EXTERNAL SYSTEMS	ACTIVATE LIGHTS TO PROVIDE MINIMUM REQUIRED ILLUMINATION LEVEL WITHIN THE MEANS OF EGRESS	SHUT DOWN ASSOCIATED AHU	
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q		
ALARM	MANUAL FIRE ALARM BOX (PULL STATION)	1	●	●			●	●	●			●			●	●		●		1	
	SMOKE DETECTOR	2	●	●			●	●	●			●			●	●		●		2	
	DUCT SMOKE DETECTOR - AHU RETURN	3	●		●						●								●	3	
	HEAT DETECTOR	4	●	●			●	●	●			●			●	●		●		4	
FA SYSTEM MONITORING	ALARM SILENCING SWITCH	5	●											●						5	
	WALK TEST	6	●				●													6	
	PANEL RESET	7	●										●	●				●		7	
	FACU - DEVICE ISSUES (SYSTEM COMPONENT FAULT, NO RESPONSE, COMMON TROUBLE)	8	●			●						●								8	
	FACU - CIRCUIT ISSUES (OPEN CIRCUIT, GROUND FAULT, SHORT CIRCUIT)	9	●			●						●								9	
	FACU - POWER ISSUES (AC POWER FAILURE, LOW BATTERY, BATTERY TROUBLE)	10	●			●						●								10	
	FACU - NAC BPS ISSUES (AC POWER FAILURE, LOW BATTERY, COMMON TROUBLE)	11	●			●						●								11	
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q		

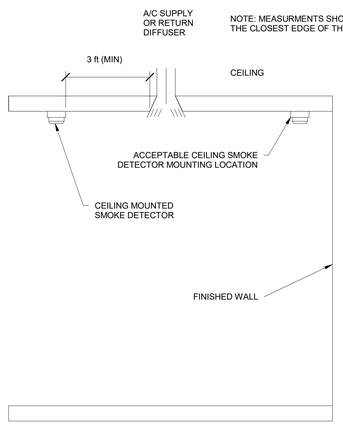
FIRE ALARM SEQUENCE OF EVENTS

NTS



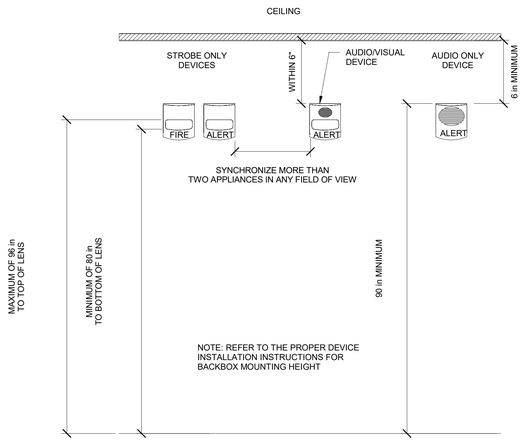
HEAT DETECTORS INSTALLATION HEIGHT

NTS



SMOKE DETECTOR INSTALLATION HEIGHT

NTS



AUDIO/VISUAL DEVICE INSTALLATION HEIGHT

NTS

GENERAL NOTES THIS SHEET :

A. ALL DIMENSIONS SHOWN IN INCHES UNLESS NOTED OTHERWISE.

B. REFER TO SHEET FA102 FOR LEGEND.

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I	12/03/2025	FINAL WORKING DRAWINGS

PROJECT NUMBER

60763454

SHEET TITLE

FIRE ALARM SEQUENCE OF OPERATIONS AND ELEVATOR FIRE ALARM PLAN

SHEET NUMBER

FA401

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PIPING SYMBOLS

- (E) — EXISTING PIPING TO REMAIN
- EXISTING PIPING TO BE REMOVED
- DOMESTIC COLD WATER (CW)
- DOMESTIC HOT WATER (HW)
- DOMESTIC HOT WATER CIRCULATING (HWC)
- SANITARY VENT (V)
- SANITARY DRAIN (SAN)
- CA — COMPRESSED AIR (CA)
- CV — CENTRAL VACUUM (CV)

PIPE FITTING SYMBOLS

- GATE VALVE
- GLOBE VALVE
- HOSE VALVE WITH CAP
- BUTTERFLY VALVE
- CHECK VALVE
- BALANCING VALVE
- BALL VALVE
- PLUG VALVE
- S — SOLENOID VALVE
- SAFETY OR PRESSURE RELIEF, ANGLE VALVE
- SAFETY OR PRESSURE RELIEF, STRAIGHT THRU VALVE
- PRESSURE REDUCING VALVE (PRV)
- THERMOSTATIC MIXING VALVE (TMV)
- BLIND FLANGE
- WYE
- CAP
- ELBOW, 90°
- ELBOW, 90° TURNED UP
- ELBOW 90°, TURNED DOWN
- ELBOW, 45°
- TEE
- TEE, OUTLET TURNED UP
- TEE, OUTLET TURNED DOWN
- UNION
- FLEXIBLE PIPE CONNECTION
- PRESSURE GAUGE WITH SHUT OFF COCK AND SIPHON OR PULSATION DAMPENER.
- T — TEMPERATURE GAUGE
- THERMOMETER
- FD — FLOOR DRAIN W/TRAP
- TD — TRENCH DRAIN
- FCO — FLOOR CLEAN OUT
- WCO — WALL CLEAN OUT
- WHA — WATER HAMMER ARRESTER
- HB — HOSE BIBB
- WH — WALL HYDRANT
- REDUCED PRESSURE ZONE BACKFLOW PREVENTER
- Y-TYPE STRAINER
- Y-TYPE STRAINER WITH HOSE DRAIN VALVE
- M — WATER METER
- PUMP

GENERAL NOTES

A. SEE GENERAL SHEETS FOR ABBREVIATIONS AND GENERAL SYMBOLS. CHARACTER IDENTIFIERS MAY ALSO BE USED FOR PIPING DESCRIPTIONS.

B. PLUMBING LAYOUTS ARE SCHEMATIC ONLY. CONTRACTOR TO PROVIDE ANY ADDITIONAL DROPS, RISES, OR OFFSETS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE EXACT ROUTING OF WORK WITH ALL OTHER TRADES AND OBSTRUCTIONS.

C. UNLESS OTHERWISE INDICATED, ROUTE ALL PIPING ABOVE CEILING. ROUTE ALL PIPING AS HIGH AS POSSIBLE IN AREAS WITHOUT CEILINGS.

D. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING/CONTROL DEVICES IN ACCESSIBLE LOCATIONS WITH A STRAIGHT SECTION OF PIPE UPSTREAM AND DOWNSTREAM, AS RECOMMENDED BY THE DEVICE MANUFACTURER FOR ACCURACY. INSTALL THERMOMETER IN A VERTICAL AND TILTED POSITION TO ALLOW READING BY OBSERVER STANDING ON FLOOR.

E. ALL WORK INDICATED IS NEW UNLESS NOTED AS EXISTING.

F. VERIFY EXACT SIZES AND LOCATIONS OF EXISTING WORK PRIOR TO PROVIDING NEW WORK.

G. SOME SYMBOLS INDICATED ON THIS LEGEND SHEET MAY NOT APPEAR ON THE DRAWINGS.

H. DO NOT LOCATE PLUMBING WORK IN ELEVATOR, ELECTRICAL, OR COMMUNICATION ROOMS, EXCEPT FOR RUNOUTS SPECIFICALLY SERVING THE RESPECTIVE ROOM.

I. WATER HAMMER ARRESTORS SHALL BE INSTALLED, SIZED, AND LOCATED PER PDI WH-201. LOCATE WATER HAMMER ARRESTORS WITHIN 6 FEET OF QUICK ACTING VALVE.

J. CONTRACTOR TO COORDINATE AND PROVIDE ACCESS PANELS FOR ALL COMPONENTS INSTALLED IN INACCESSIBLE AREAS THAT MAY REQUIRE MAINTENANCE.

K. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL A COMPLETE AND OPERABLE PLUMBING SYSTEM AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE. ALL MATERIALS SHALL BE NEW AND OF GOOD QUALITY. ALL WORK SHALL BE INSTALLED IN A NEAT AND ORDERLY MANNER.

L. INSTALL ALL PLUMBING EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, MAINTENANCE REQUIREMENTS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.

M. UNIONS AND/OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT AND IN BYPASSES TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.

N. PROVIDE DIELECTRIC CONNECTIONS BETWEEN DISSIMILAR MATERIALS.

O. TYPICAL DETAILS THROUGHOUT THE DRAWING SET SHALL APPLY FOR ALL APPLICABLE CONDITIONS, EVEN IF NOT SPECIFICALLY SHOWN OR REFERENCED.

GENERAL DEMOLITION NOTES

A. DEMOLISH ALL PLUMBING FIXTURES, ASSOCIATED COMPONENTS, AND PIPING THAT WILL BE RENDERED OBSOLETE DUE TO CHANGES TO THE BUILDING. COORDINATE THE EXTENT OF DEMOLITION AND COMPONENTS TO REMAIN WITH THE NEW WORK SHEETS. FIELD VERIFY ACTUAL PIPE ROUTING.

B. REMOVE ALL APPLICABLE PIPING TO WHERE IT CONNECTS TO ACTIVE MAINS THAT WILL NOT BE DEMOLISHED. AFTER THE DEMOLITION IS COMPLETE NO DEAD-END PIPING SHALL REMAIN. UNDER SLAB PIPING THAT IS RENDERED OBSOLETE BY CHANGES TO THE BUILDING CAN BE ABANDONED IN PLACE IF THE FOLLOWING CONDITIONS ARE MET:
1) INACTIVE PIPING SHALL BE DISCONNECTED AND CAPPED AS CLOSE AS POSSIBLE TO THE ACTIVE MAIN AND NO MORE THAN 2 TIME THE PIPE DIAMETER.
2) REMOVE PIPE STUB-OUTS THROUGH THE SLAB AND REPAIR SLAB TO MATCH EXISTING.
3) DOES NOT CONFLICT WITH OTHER TRADES.

C. BEFORE WORK HAS BEGUN, CONTRACTOR SHALL MAKE A THOROUGH SURVEY OF THE BUILDING AND NOTIFY THE OWNER OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THOSE SHOWN ON THE DRAWINGS. FAILURE BY THE CONTRACTOR TO HAVE ACQUAINTED HIMSELF WITH AVAILABLE INFORMATION CONCERNING EXISTING CONDITIONS SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITIES OF PERFORMANCE OF WORK IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.

D. DRAWINGS SHOWING EXISTING CONSTRUCTION AND UTILITIES ARE FOR REFERENCE ONLY AND HAVE BEEN DEVELOPED FROM EXISTING DRAWINGS AND MAY NOT REFLECT ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL OBTAIN COPIES OF EXISTING DRAWINGS AND VERIFY ACTUAL FIELD CONDITIONS PRIOR TO STARTING WORK. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE IN WRITING OF ANY WORK DESCRIBED IN THE CONTRACT DOCUMENTS WHICH CANNOT BE PREFORMED DUE TO EXISTING CONDITIONS.

E. DURING THE PLUMBING DEMOLITION PROCESS ANY DAMAGE THAT IS DONE TO THE BUILDING AREAS THAT ARE TO REMAIN SHALL BE REPAIRED TO MATCH EXISTING.

F. IF HAZARDOUS MATERIALS ARE DISCOVERED DURING REMOVAL OPERATIONS, STOP WORK AND NOTIFY THE OWNER; HAZARDOUS MATERIALS INCLUDE BUT ARE NOT LIMITED TO REGULATED ASBESTOS CONTAINING MATERIALS, LEAD, PCB'S AND MERCURY.

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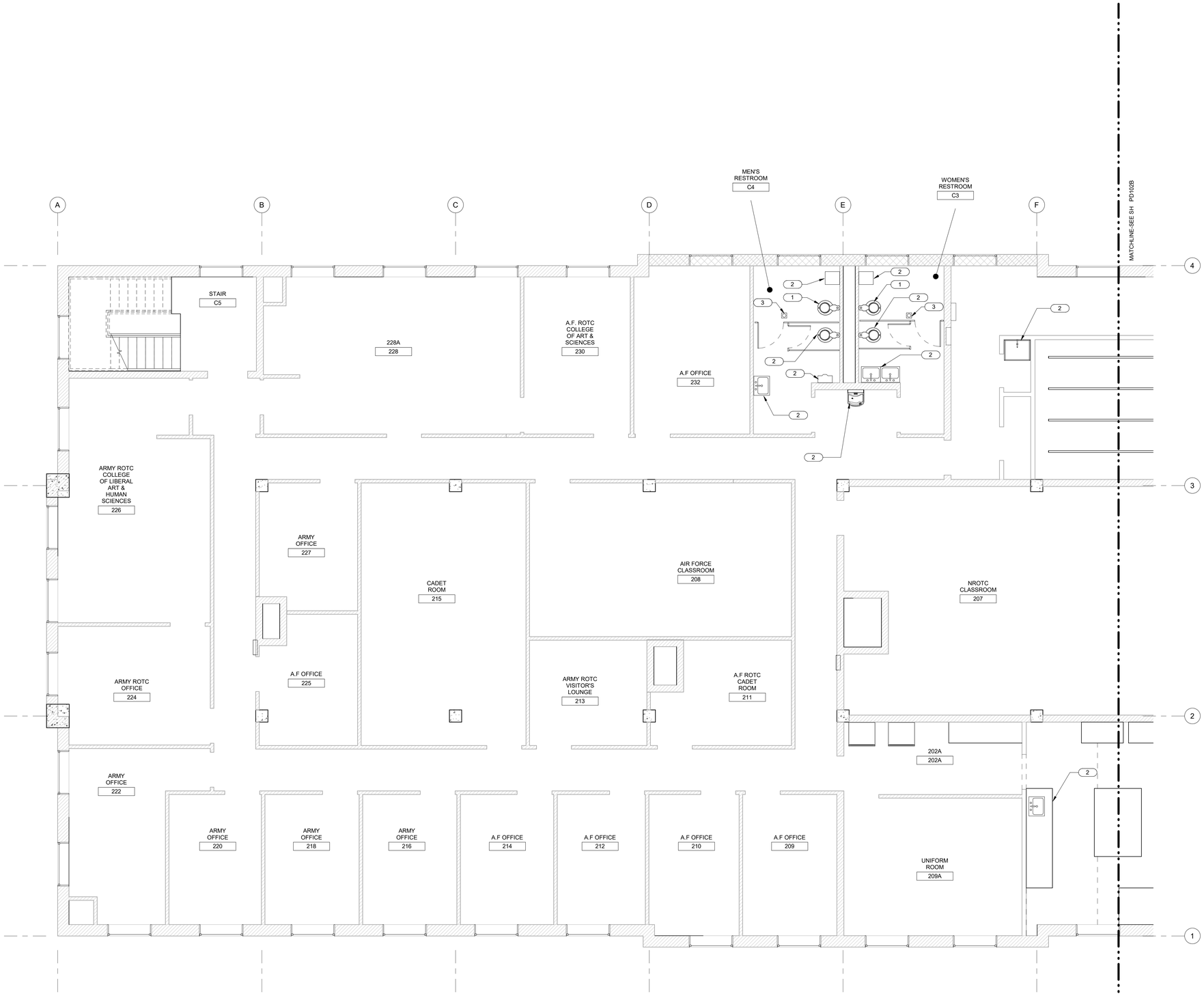
SHEET TITLE

PLUMBING LEGEND AND GENERAL NOTES

SHEET NUMBER

P-001

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1 PD102A **SECOND FLOOR DEMOLITION PLAN - AREA A**
Scale: 1/4" = 1'-0"

GENERAL NOTES THIS SHEET:

A. SEE SHEET P-001 FOR LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

1 DEMOLISH EXISTING FIXTURE, PREPARE CONNECTIONS FOR UPDATED REPLACEMENT FIXTURE.

2 DEMOLISH EXISTING FIXTURE AND REMOVE PIPING BACK TO THE MAIN CONNECTION AND CAP. COORDINATE SURFACE REPAIR WITH ARCHITECT. NEW FIXTURE TO BE INSTALLED IN A DIFFERENT LOCATION.

3 EXISTING FLOOR DRAINS TO REMAIN.

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1/4"=1'-0" 4' 2' 0 4' 8'

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KEY PLAN

A B

PROJECT NUMBER

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SHEET TITLE

SECOND FLOOR DEMOLITION PLAN - AREA A

SHEET NUMBER

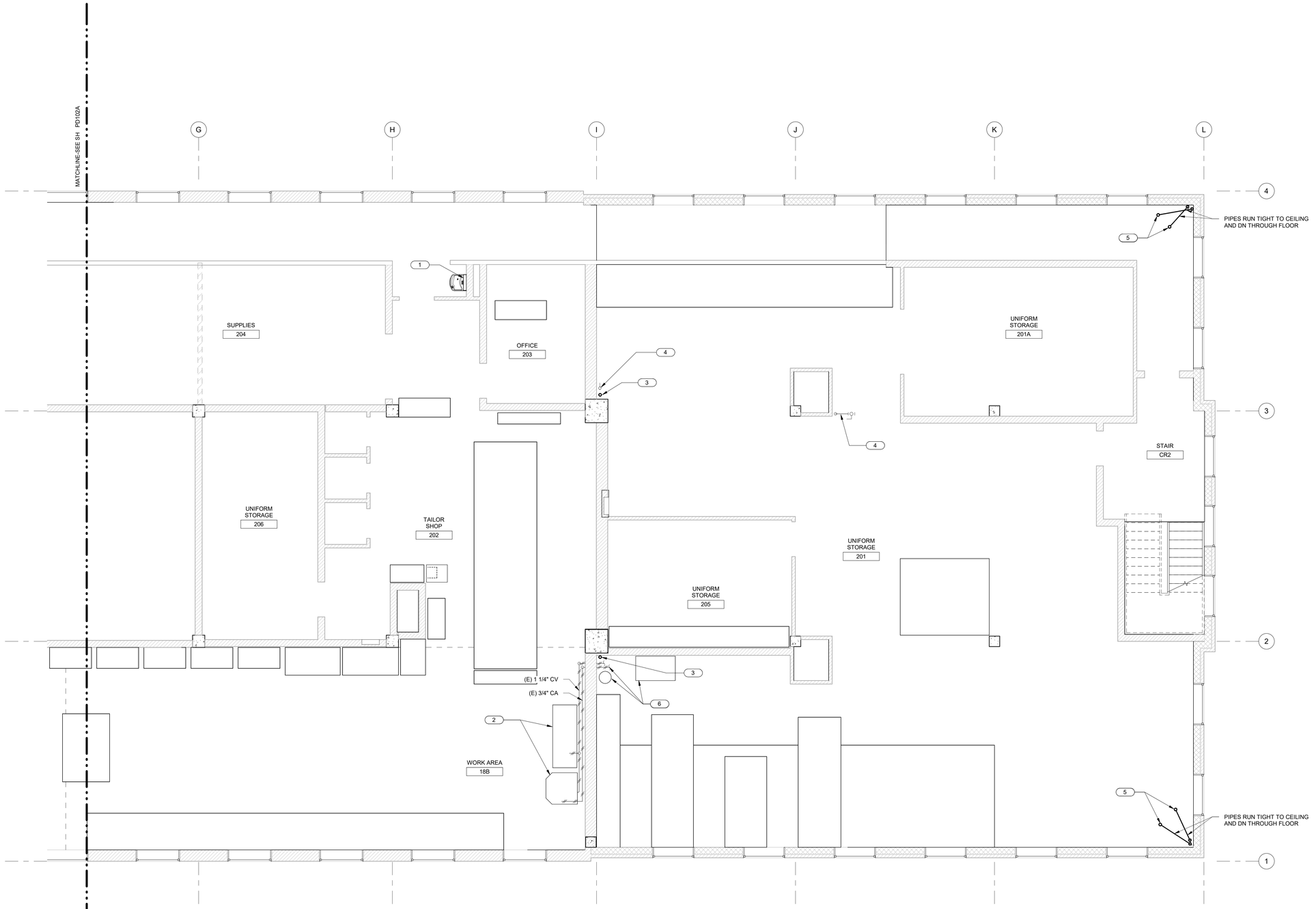
PD102A

GENERAL NOTES THIS SHEET:

A. SEE SHEET P-001 FOR LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

1. DEMOLISH EXISTING FIXTURE AND REMOVE PIPING BACK TO THE MAIN CONNECTION AND CAP. COORDINATE SURFACE REPAIR WITH ARCHITECT. NEW FIXTURE TO BE INSTALLED IN A DIFFERENT LOCATION.
2. STEAM PRESS EQUIPMENT TO BE RELOCATED BY OTHERS. DEMOLISH VACUUM AND COMPRESSED AIR PIPING BACK TO SOURCE. COORDINATE WALL REPAIR WITH ARCHITECT.
3. EXISTING PLUMBING VENT TO REMAIN.
4. EXISTING CAPPED COLD WATER LINE. REMOVE BACK TO MAIN CONNECTION AND CAP. COORDINATE SURFACE REPLACEMENT WITH ARCHITECT.
5. EXISTING 5" ROOF DRAIN AND 4" SECONDARY DRAINS TO REMAIN.
6. DEMOLISH EXISTING AIR COMPRESSOR AND VACUUM PUMP PIPING TO STEAM PRESS EQUIPMENT. ALL EQUIPMENT TO BE RELOCATED BY OTHERS.



1 | PD102B **SECOND FLOOR DEMOLITION PLAN - AREA B**
Scale: 1/4" = 1'-0"

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1/4"=1'-0" 4' 2' 0 4' 8'

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SHEET TITLE

SECOND FLOOR DEMOLITION PLAN - AREA B

SHEET NUMBER

PD102B

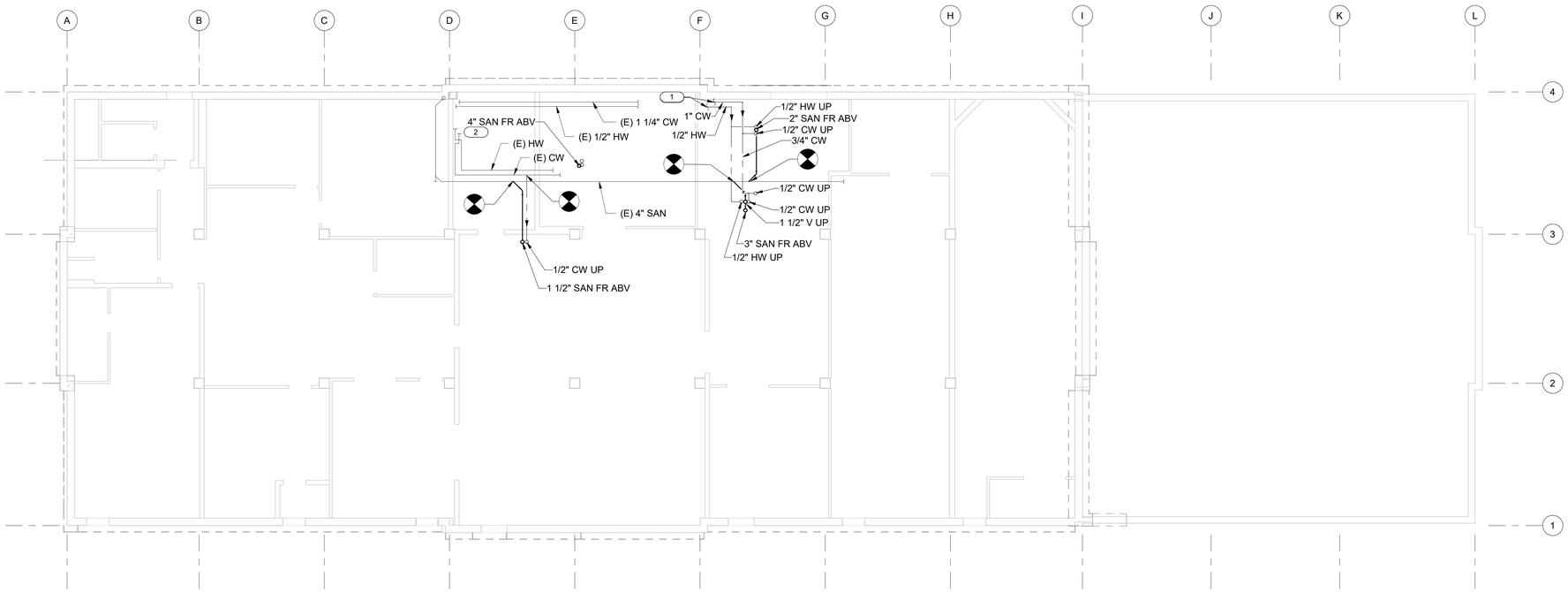
GENERAL NOTES THIS SHEET:

A. SEE SHEET P-001 FOR LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

1 CONNECT NEW FIXTURES TO EXISTING HOT, COLD, SANITARY, AND VENT PIPING CURRENTLY AVAILABLE IN THE BUILDING.

2 ROUTING OF 4" SAN AND 2" VENT DEDUCTED FROM EXISTING DRAWINGS. FIELD ADJUSTMENT TO FIT CONDITIONS WILL BE REQUIRED.



1 PL100 **GROUND FLOOR PLUMBING PLAN**
Scale: 1/8" = 1'-0"

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8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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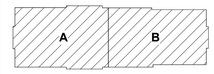
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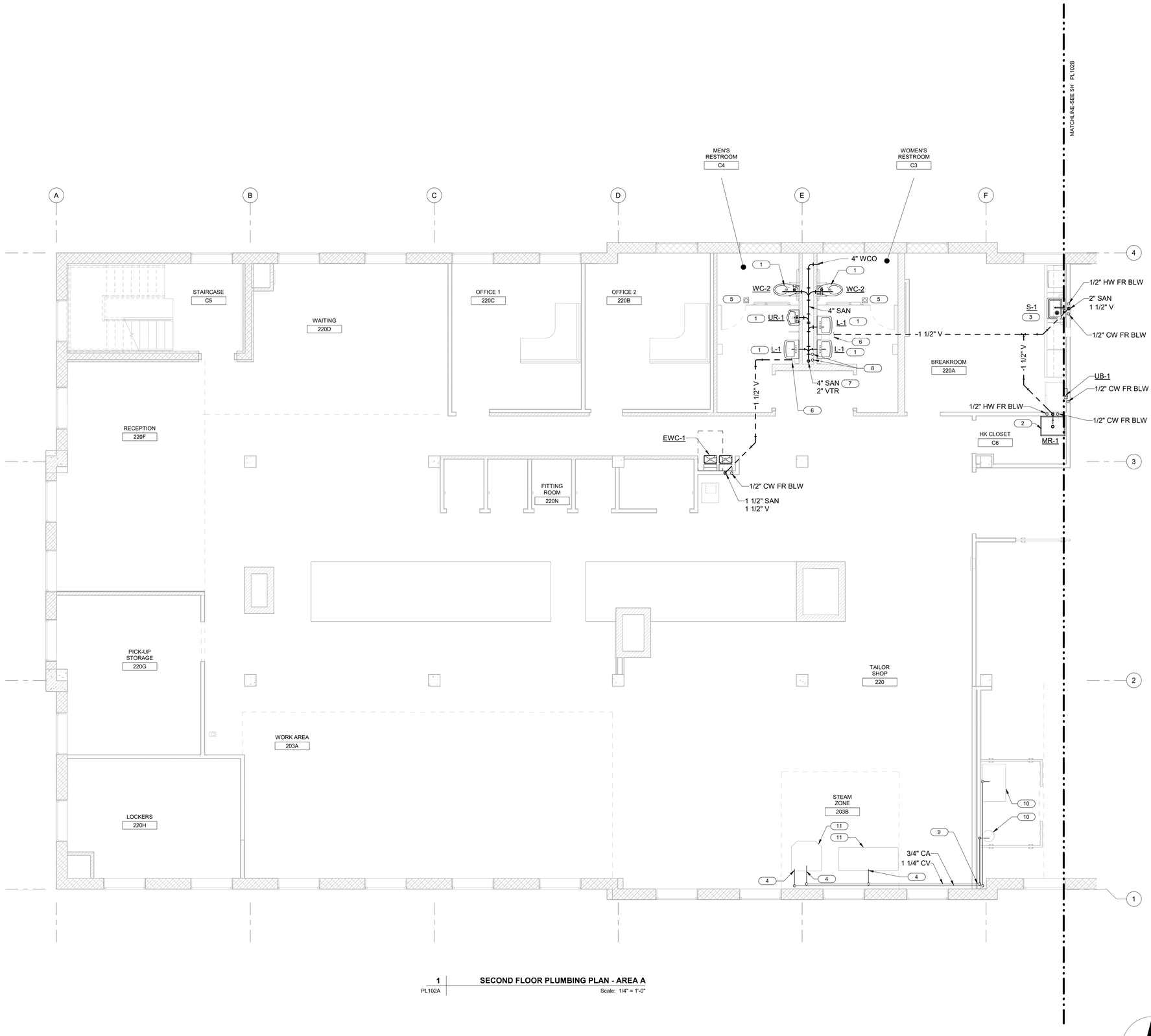
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SHEET TITLE

GROUND FLOOR PLUMBING PLAN

SHEET NUMBER

PL100



1 | PL102A **SECOND FLOOR PLUMBING PLAN - AREA A**
Scale: 1/4" = 1'-0"

GENERAL NOTES THIS SHEET:

A. SEE SHEET P-001 FOR LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

1. CONNECT NEW FIXTURE TO EXISTING UTILITIES IN CHASE. PROVIDE ACCESSIBLE WATER SHUTOFF VALVES.
2. PROVIDE NEW MOP SINK WITH FAUCET AND ALL ASSOCIATED SUPPLY, DRAIN, AND VENT PIPING. PROVIDE WATER SHUTOFF VALVES IN AN ACCESSIBLE LOCATION.
3. PROVIDE NEW BREAK ROOM SINK WITH FAUCET AND ALL ASSOCIATED SUPPLY, DRAIN AND VENT PIPING. PROVIDE ACCESSIBLE WATER SHUTOFF VALVES IN CABINET.
4. RECONNECT COMPRESSED AIR AND VACUUM PIPING TO RELOCATED EQUIPMENT.
5. EXISTING FLOOR DRAINS TO REMAIN.
6. CONNECT NEW FIXTURES TO EXISTING HOT, COLD, SANITARY, AND VENT PIPING CURRENTLY AVAILABLE IN THE BUILDING.
7. ROUTING OF 4" SAN AND 2" VENT DEDUCTED FROM EXISTING DRAWINGS. FIELD ADJUSTMENT TO FIT CONDITIONS WILL BE REQUIRED.
8. PROVIDE ONE ACCESSIBLE TYPE "B" HAMMER ARRESTOR WITHIN CHASE FOR COLD WATER SUPPLY AND ONE TYPE "A" HAMMER ARRESTOR FOR HOT WATER.
9. TRANSITION TO ABOVE CEILING IN NEW TAILOR SHOP.
10. NEW LOCATION OF RELOCATED AIR COMPRESSOR AND VACUUM PUMP. RECONNECT TO NEW PIPING SHOWN.
11. NEW LOCATION OF RELOCATED STEAM PRESS EQUIPMENT (BY OTHERS).

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GRAPHIC SCALES
1/4"=1'-0" 4' 2' 0 4' 8'

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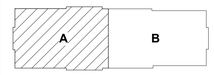
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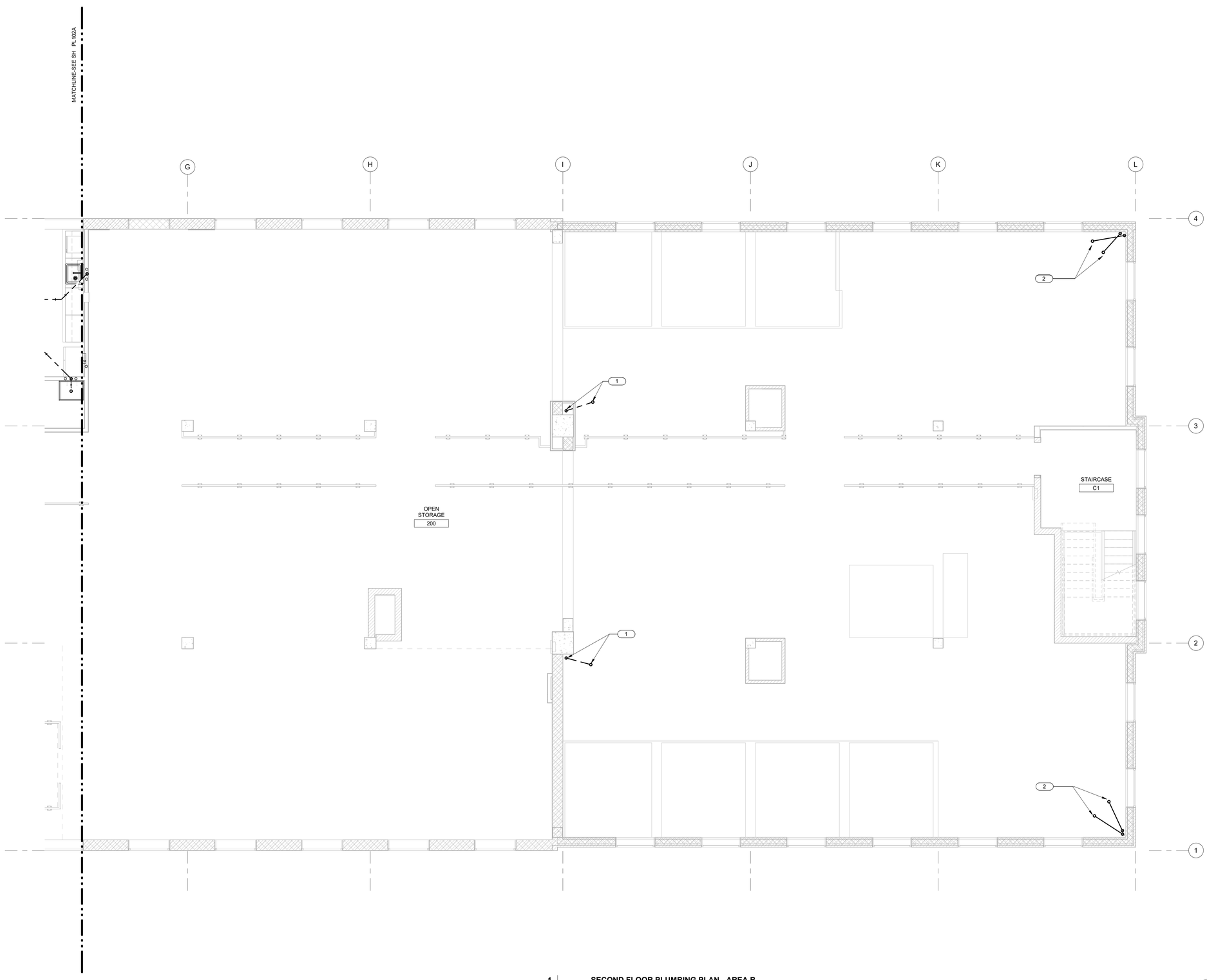


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SHEET TITLE
SECOND FLOOR PLUMBING PLAN - AREA A

SHEET NUMBER
PL102A

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1 SECOND FLOOR PLUMBING PLAN - AREA B
PL102B
Scale: 1/4" = 1'-0"

GENERAL NOTES THIS SHEET:

A. SEE SHEET P-001 FOR LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

1 EXISTING PLUMBING VENT TO REMAIN.
2 EXISTING 5" ROOF DRAIN AND 4" SECONDARY DRAINS TO REMAIN.

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1/4"=1'-0" 4' 2' 0 4' 8'

GRAPHIC SCALES

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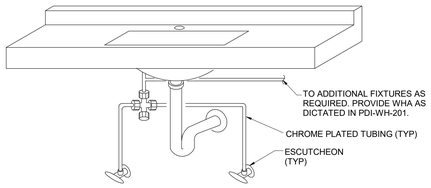
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SHEET TITLE

SECOND FLOOR PLUMBING PLAN - AREA B

SHEET NUMBER

PL102B



1 **POINT OF USE MIXING VALVE DETAIL**
P-501 Scale: NO SCALE

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SHEET TITLE

DETAILS

SHEET NUMBER

P-501

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PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE DESCRIPTION	MOUNTING HEIGHT	COLD WATER SIZE	HOT WATER SIZE	TEMPERED WATER SIZE	TRAP SIZE	DRAIN SIZE	VENT SIZE	NOTES
EWC-1	BI-LEVEL WATER COOLER W/ BOTTLE FILLER	PER ADA	1/2"	-	-	1 1/4"	1 1/2"	1 1/2"	-
L-1	WALL-HUNG LAVATORY, 0.5 GPM	34"	1/2"	1/2"	3/8"	1 1/4"	1 1/2"	1 1/2"	PROVIDE ASSE 1070 POINT OF USE MIXING VALVE UNDER FIXTURE OR GROUP OF FIXTURES AND SET AT 105° F. VALVE SHALL BE CAPABLE OF SUPPLYING REQUIRED FLOW OF FIXTURE(S) BEING SERVED. FOR GROUP BATHROOMS, PROVIDE ONE HB-1 UNDER ONE LAVATORY FOR MAINTENANCE.
MR-1	PRECAST TERRAZZO BASIN WITH WALL MOUNTED FAUCET	FLOOR	1/2"	1/2"	-	3"	3"	1 1/2"	-
S-1	UNDERMOUNT SINK, 1.5 GPM	COUNTERTOP	1/2"	1/2"	1/2"	1 1/2"	1 1/2"	1 1/2"	PROVIDE ASSE 1070 POINT OF USE MIXING VALVE UNDER FIXTURE AND SET AT 105° F.
UB-1	UTILITY BOX, COLD ONLY	VARIES	1/2"	-	-	-	-	-	PROVIDE WHA-AA FOR CW CONNECTION. MOUNT UTILITY BOX. FOR REFRIGERATOR 12 "AFF. PROVIDE ASSE 1024 INLINE BACKFLOW VALVE.
UR-1	URINAL, 0.125 GPF BATTERY FLUSH VALVE	24" TO FLOOD RIM LEVEL	3/4"	-	-	INTEGRAL	2"	1 1/2"	FOR ADA COMPLIANT FIXTURES, FLUSH VALVE CONTROLS SHALL BE LOCATED ON THE OPEN SIDE OF THE FIXTURE.
WC-2	WALL HUNG WATER CLOSET, BATTERY FLUSH VALVE, ADA, 1.28 GPF	17" TO FLOOD RIM LEVEL	1"	-	-	INTEGRAL	4"	2"	FOR ADA COMPLIANT FIXTURES, FLUSH VALVE CONTROLS SHALL BE LOCATED ON THE OPEN SIDE OF THE FIXTURE. COORDINATE INSTALLATION OF FLUSH VALVE WITH GRAB BAR FOR WATER CLOSETS. REFER TO ARCHITECTURAL DRAWINGS.

Plumbing comment P-601, Steven Smith

PLUMBING SPECIFICATIONS

GENERAL:

PROVIDE AND TEST COMPONENTS IN ACCORDANCE WITH THE VIRGINIA PLUMBING CODE (2021), MANUFACTURERS INSTRUCTIONS, AND APPROVED PRODUCT DATA SUBMITTALS.

PIPING MATERIALS, PLUMBING FIXTURES, AND EQUIPMENT SHALL BEAR WARNING SIGNS, LABELS, STAMPS, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.

CLEAN INTERIOR OF PIPING. REMOVE DIRT AND DEBRIS AS WORK PROGRESSES.

PROTECT PIPING DURING REMAINDER OF CONSTRUCTION PERIOD TO AVOID CLOGGING WITH DIRT AND DEBRIS AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.

DRAWINGS INDICATE ONLY A GENERAL ARRANGEMENT OF PIPING, FITTINGS, AND SPECIALTIES.

CONTRACTOR SHALL PROVIDE CUT SHEETS OF ALL EQUIPMENT, FIXTURES, AND PIPING FOR ENGINEER REVIEW. CUT SHEETS SHALL SHOW MARKINGS OF SPECIFIED TESTING AGENCY AND CLEARLY INDICATE THE SELECTED MODEL.

SANITARY WASTE AND VENT PIPING (ABOVE GROUND):

A. MATERIAL: HUBLESS CAST IRON
B. PIPE: ASTM A 888, CISPI STD 301
C. FITTINGS: CISPI STD 310
D. COUPLINGS: ASTM C 1277

DOMESTIC WATER PIPING:

ABOVE GROUND
A. MATERIAL: COPPER TYPE L.
B. PIPE: ASTM B88. CAST- OR WROUGHT- COPPER
C. FITTINGS: CAST COPPER, SOLDER JOINT ASME B32, LEAD-FREE ALLOYS.
D. JOINTS: BRAZED OR SOLDERED

COMPRESSED AIR PIPING:

A. MATERIAL: GALVANIZED STEEL
B. PIPE: ASTM A53/A53M, TYPE S, GRADE B SEAMLESS
C. FITTINGS:ASME B16.3
D. JOINTS:THREADED

VACUUM PIPING:

A. MATERIAL: COPPER
B. PIPE: SEAMLESS, TYPE L, ASTM B88
C. FITTINGS: WROUGHT COPPER AND BRONZE, ASME B16.22 OR CAST COPPER ASME B16.18
D. JOINTS: SOLDER

PIPING INSULATION:

A. COLD WATER PIPE 1 INCH AND SMALLER: FLEXIBLE ELASTOMERIC OR GLASS-FIBER, TYPE 1 - 1/2 INCH THICK
B. COLD WATER PIPE 1-1/4 INCHES AND LARGER: FLEXIBLE ELASTOMERIC OR GLASS-FIBER, TYPE 1 - 1/2 INCH THICK
C. HOT WATER PIPE 4 INCH AND SMALLER: FLEXIBLE ELASTOMERIC - 3/4 INCH THICK OR GLASS-FIBER, TYPE 1 - 1/2 INCH THICK.

VALVES:

ALL VALVES SHALL BE RATED FOR THEIR WORKING FLUID/GAS TEMPERATURE AND PRESSURE.

BALL VALVES 2 INCHES AND SMALLER SHALL BE BRASS OR BRONZE WITH THREADED BODIES FOR PIPE AND SOLDER-TYPE CONNECTIONS FOR TUBING.

Y-TYPE STRAINERS SHALL HAVE CAST IRON BODY IN ACCORDANCE WITH ASTM A 126.

VALVE TAGS SHALL BE BRASS AND STAMPED OR ENGRAVED WITH 1/2 INCH LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2 INCH NUMBERS FOR PIPE SIZE. TAGS SHALL BE ATTACHED BY BRASSWIRE-LINK CHAIN.

METERS AND GAGES

PRESSURE GAGES SHALL BE DIRECT-MOUNTED, METAL-CASE, DIAL-TYPE WITH GLASS WINDOW, METAL RING, AND GRADE A ACCURACY.

THERMOMETERS SHALL BE METAL-CASE, COMPACT-STYLE, LIQUID-IN-GLASS TYPE.

WATER CLOSETS (WC-2)

A. STANDARD: ASME A112.19.2
B. TYPE: WALL MOUNTED, BACK OUTLET WITH ELECTRONIC BATTERY-POWERED FLUSH VALVE
C. BOWL MATERIAL: VITREOUS CHINA
D. HEIGHT: 17 INCHES
E. COLOR: WHITE
F. TOILET SEAT: COMMERCIAL (HEAVY DUTY), WHITE PLASTIC OPEN FRONT

URINALS (UR-1):
A. STANDARD: ASME A112.19.2
B. TYPE: ABA WALL MOUNT WITH ELECTRONIC BATTERY-POWERED FLUSH VALVE
C. MATERIAL: VITREOUS CHINA
D. HEIGHT: 17" FOR ADA; 24" REGULAR HEIGHT TO FLOOD RIM
E. COLOR: WHITE

LAVATORIES (L-1):
A. STANDARD: ASME A112.19.2
B. TYPE: VITREOUS CHINA, WALL MOUNTED, WHITE
C. NOMINAL SIZE: RECTANGULAR, 20-1/2 X 18-1/4 INCHES
D. HEIGHT: 34 INCHES
E. FAUCET: TOP THREE-HOLE PUNCH WITH MANUALLY OPERATED FAUCET, CHROME FINISH

SINKS (S-1):
A. STANDARD: ASME A112.19.1
B. TYPE: ENAMALED CAST IRON, WHITE
C. NOMINAL SIZE: 25 X 22 INCHES
D. HEIGHT: CABINET UNDERMOUNT
E. FAUCET: SINGLE HOLE, 3 FUNCTION PULL-DOWN SPRAY HEAD, CHROME FINISH

WATER COOLER (EWC-1):
A. STANDARD: ASME A112.18.1
B. TYPE: STAINLESS STEEL, BI-LEVEL, BOTTLE FILLER
C. NOMINAL SIZE: 34-1/8 X 18-3/4 INCHES
D. HEIGHT: 33 INCHES

MOP SINK (MR-1):

A. STANDARD: ASME A112.18.2
B. TYPE: MOLDED STONE, FLOOR MOUNTED, RECTANGULAR
C. NOMINAL SIZE: 30 BY 30 INCHES
D. HEIGHT: 6 INCHES
E. FAUCET: WALL MOUNT TYPE WITH ROUGH CHROME FINISH, WALL BRACE, VACUUM BREAKER, PAIL HOOK, LEVER HANDLES, AND STOPS.

CONNECTIONS:

CONNECT DOMESTIC WATER, WASTE, AND VENT PIPING TO WATER-SERVICE PIPING AS INDICATED, BUT NOT SMALLER THAN REQUIRED BY EQUIPMENT AND FIXTURES.

ESCUTCHEONS AND FLOOR PLATES:

INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS. ESCUTCHEONS SHALL BE ONE-PIECE, STEEL TYPE WITH POLISHED, CHROME-PLATED FINISH AND SETSCREW FASTENER.

INSTALL FLOOR PLATES FOR PIPING PENETRATIONS OF EQUIPMENT-ROOM FLOORS. SPLIT FLOOR PLATES SHALL BE OF CAST BRASS WITH CONCEALED HINGE.

IDENTIFICATION AND LABELS:

PROVIDE AND INSTALL LABELS ON EQUIPMENT. LABELS SHALL BE BLACK WITH WHITE LETTERING. LABELS SHALL BE CLEARLY READABLE FROM A DISTANCE OF 5 FEET.

PROVIDE AND INSTALL LABELS INDICATING LOCATION AND MARK OF EQUIPMENT LOCATED ABOVE CEILING REQUIRING ROUTINE MAINTENANCE. LABELS SHALL BE WHITE WITH BLACK LETTERING AND SHALL BE CLEARLY READABLE FROM A DISTANCE OF 5 FEET.

PROVIDE PRE-PRINTED SELF-ADHESIVE PIPE LABELS WITH LABELS INDICATING SERVICE, AND SHOWING FLOW DIRECTION IN ACCORDANCE WITH ASME A13.1.

PIPE SUPPORT:

PROVIDE PIPE SUPPORT IN ACCORDANCE WITH ANSI/MSS SP-58.

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PROJECT NUMBER

60763454

SHEET TITLE

SCHEDULES & SPECIFICATIONS

SHEET NUMBER

P-601

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SV	STEAM VENT
HWS	HEATING-HOT WATER SUPPLY
HWR	HEATING-HOT WATER RETURN
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
HCS	HOT/CHILLED WATER SUPPLY
HCR	HOT/CHILLED WATER RETURN
B	BRINE SUPPLY
BR	BRINE RETURN
D	CONDENSATE DRAIN
C	COLD CONDENSER WATER
CR	HOT CONDENSER WATER
MU	MAKE-UP WATER
HG	REFRIGERANT HOT GAS
RS	REFRIGERANT SUCTION
RL	REFRIGERANT LIQUID
CP	CONDENSATE PUMP DISCHARGE
BFW	BOILER FEEDWATER
BD	BOILER BLOW DOWN
FOS	FUEL-OIL SUPPLY
FOR	FUEL-OIL RETURN
FOV	FUEL-OIL VENT
RHS	REHEAT HOT WATER SUPPLY
RHR	REHEAT HOT WATER RETURN
LPS	LOW PRESSURE STEAM
LPC	LOW PRESSURE CONDENSATE
PSC	PUMPED STEAM CONDENSATE
	STEAM TRAP
DS	DRIP STATION
P.R.S	PRESSURE REDUCING STATION

PA	PIPE ANCHOR
PG	PIPE GUIDE OR SLEEVES
	EXPANSION JOINT
	VENTURI
	GATE VALVE
	GLOBE VALVE
	HOSE VALVE WITH CAP
	BUTTERFLY VALVE
	CHECK VALVE
	BALANCING VALVE
	CALIBRATED BALANCING VALVE
PICBV	TWO WAY PRESSURE INDEPENDENT CONTROL AND BALANCING VALVE
	AUTOMATIC FLOW CONTROL VALVE
	BALL VALVE
	PLUG VALVE
S	SOLENOID VALVE
	SAFETY OR PRESSURE RELIEF, ANGLE VALVE
	SAFETY OR PRESSURE RELIEF, STRAIGHT THRU VALVE
	PRESSURE REDUCING VALVE (PRV)
	AUTOMATIC CONTROL VALVE, 2 WAY
	AUTOMATIC CONTROL VALVE, 3 WAY
	BLIND FLANGE
	LATERAL Y
	CAP
	ELBOW, 90°
	ELBOW, 90° TURNED UP
	ELBOW 90°, TURNED DOWN
	ELBOW, 45°
	TEE
	TEE, OUTLET TURNED UP
	TEE, OUTLET TURNED DOWN
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER (STRAIGHT INVERT)
	UNION
	FLEXIBLE PIPE CONNECTION
	PRESSURE GAGE WITH SHUT OFF COCK AND SIPHON OR PULSATION DAMPENER.
T	TEMPERATURE GAGE
	THERMOMETER
PT	PRESSURE/TEMPERATURE TEST PORT
	DOUBLE CHECK VALVE BACKFLOW PREVENTER

DOUBLE LINE DUCTWORK SYMBOLS

12x6	RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
12"ø	ROUND DUCT
12x6Θ	FLAT OVAL DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
	FLEXIBLE ROUND DUCT
	FLEXIBLE DUCT CONNECTION
	DAMPERS 3FD: 3HR FIRE DAMPER BDD: BACKDRAFT DAMPER FSD: FIRE/SMOKE DAMPER FD: FIRE DAMPER MD: MOTORIZED DAMPER SD: SMOKE DAMPER VD: VOLUME DAMPER SP: SECURE PENETRATION
	DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
	DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
	DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT OVAL
R	INCLINED RISE W/RESPECT TO AIR FLOW, RECTANGULAR
D	INCLINED DROP W/RESPECT TO AIR FLOW, RECTANGULAR
R	INCLINED RISE W/RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
D	INCLINED DROP W/RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
	90° ELBOW, RECTANGULAR WITH TURNING VANES
	45° ELBOW, RECTANGULAR
	90° ELBOW, ROUND OR FLAT OVAL (SMOOTH OR 5 PIECE ELBOWS)
	MITERED 90° ELBOW, ROUND OR FLAT OVAL
	45° ELBOW, ROUND OR FLAT OVAL (SMOOTH OR 3 PIECE ELBOWS)
VD	DIVIDED FLOW FITTING
	DUCT W/LINING (SPECIFIED WHEN SHOWN TYPICAL RECTANGULAR, ROUND, OVAL) SEE MECHANICAL GENERAL NOTE 4.

	TAP-IN BRANCH, RECTANGULAR
	BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
	BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
	BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
	SUPPLY DUCT SECTION
	RETURN/EXHAUST DUCT SECTION
	90° ELBOW TURNED UP, RECTANGULAR
	90°ELBOW TURNED DOWN, RECTANGULAR
	90° ELBOW TURNED UP, ROUND
	90° ELBOW TURNED DOWN, ROUND
	90° ELBOW TURNED UP, FLAT OVAL
	90° ELBOW TURNED DOWN, FLAT OVAL
	CEILING DIFFUSER (4-WAY THROW UNLESS INDICATED OTHERWISE BY ARROWS)
	CEILING DIFFUSER (4-WAY THROW UNLESS INDICATED OTHERWISE BY ARROWS)
	CEILING REGISTER OR GRILLE (RETURN)
	CEILING REGISTER OR GRILLE (SUPPLY)
	REGISTER OR GRILLE
	CEILING DIFFUSER WITH FLEXIBLE DUCT CONNECTION (4-WAY THROW UNLESS INDICATED OTHERWISE BY ARROWS)
S-000	LIGHT TROFFER WITH FLEXIBLE DUCT CONNECTION "S" INDICATES SOFFIT, NUMBER INDICATES CFM
SPS	CEILING LINEAR SLOT OR INTEGRATED CEILING DIFFUSER (CLSD) WITH FLEXIBLE DUCT CONNECTION (ARROWS INDICATE THROW DIRECTIONS)
	STATIC PRESSURE SENSOR
H	HUMIDIFIER

MECHANICAL GENERAL NOTES

1. SEE SH G-002 FOR ABBREVIATIONS, CHARACTER IDENTIFIERS IN LINES ON PIPING LEGEND ARE ALSO USED FOR ABBREVIATIONS.
2. MECHANICAL LAYOUTS ARE SCHEMATIC. PROVIDE ANY ADDITIONAL DROPS, RISES, OR OFFSETS REQUIRED FOR A COMPLETE INSTALLATION,COORDINATE EXACT ROUTING OF WORK WITH ALL OTHER TRADES AND OBSTRUCTIONS. WORK WITH LIGHTS, CEILING GRID, AND OTHER OBSTRUCTIONS.
3. UNLESS OTHERWISE INDICATED, ROUTE ALL DUCTWORK AND PIPING ABOVE CEILINGS. ROUTE ALL DUCTWORK AND PIPING AS HIGH AS POSSIBLE IN AREAS WITHOUT CEILINGS.
4. DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS. INCREASE SHEET METAL DIMENSIONS ON LINED DUCTWORK TO MAINTAIN THE INSIDE CLEAR DIMENSIONS INDICATED.
5. UNLESS OTHERWISE INDICATED, PROVIDE DUCT RUNOUTS TO TERMINAL UNITS SAME SIZE AS TERMINAL UNIT CONNECTION OR AIR DEVICE CONNECTION.
6. SIZE FLEXIBLE DUCT RUNOUTS TO TERMINAL AIR DEVICES AS FOLLOWS:

SIZE	CFM
5"ø	0-65
6"ø	70-110
7"ø	115-160
8"ø	165-240
9"ø	245-320
10"ø	325-420
12"ø	425-700

7. INSTALL CALIBRATED BALANCING VALVES AND VENTURIS WITH A MINIMUM UNRESTRICTED STRAIGHT RUN OF 5 PIPE DIAMETERS UPSTREAM AND 3 PIPE DIAMETERS DOWNSTREAM.
8. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DIFFUSERS, LINEAR SLOT DIFFUSERS, REGISTERS, AND GRILLES.
9. VERIFY EXACT SIZES AND LOCATIONS OF EXISTING WORK BEFORE PURCHASING OR FABRICATING NEW WORK FOR CONNECTION TO OR INSTALLATION IN EXISTING WORK. VERIFY INTEGRITY OF EXISTING CHILLED WATER, HOT WATER, STEAM, AND STEAM CONDENSATE SYSTEMS BEFORE MAKING CONNECTIONS.
10. SOME SYMBOLS INDICATED ON THIS LEGEND SHEET MAY NOT APPEAR ON THE DRAWINGS.
11. DO NOT LOCATE MECHANICAL WORK IN ELECTRICAL OR COMMUNICATION ROOMS, EXCEPT FOR RUNOUTS SPECIFICALLY SERVING THE RESPECTIVE ROOM.
12. DUCTS CROSSING WALLS WITH A RATING OF ONE-HOUR OR LESS SHALL HAVE GALVANIZED DUCTWORK OF AT LEAST 1.2 MM THICK.

MISC SYMBOLS

0000	ROOM NUMBER
ø	ROUND DUCT
	FLAT OVAL DUCT
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
	POINT BETWEEN EXISTING WORK TO REMAIN AND EXISTING WORK TO BE REMOVED
	WATER SENSOR (LOCATED BELOW ACCESS FLOOR)
HD	HEAT DETECTOR
SD	SMOKE DETECTOR
DPS	DIFFERENTIAL PRESSURE SENSOR
VFD	VARIABLE FREQUENCY DRIVE
ATFP	ANTI TERRORISM / FORCE PROTECTION SWITCH
M	METER
	INTERVAL TIMER
H	HUMIDISTAT
T	THERMOSTAT
N	NIGHT THERMOSTAT
S	WALL SWITCH
V	FUEL VAPOR SENSOR
S1A	AIR DEVICE TYPE (SEE AIR DEVICE SCHEDULE)
150	AIR DEVICE AIRFLOW (CFM)
	FLOW ARROWS INDICATE AIRFLOW DIRECTION (WHEN LESS THAN 4-WAY THROW)

SINGLE LINE DUCTWORK SYMBOLS

300x150	RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
1500ø	ROUND DUCT
900x450Θ	FLAT OVAL DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
	FLEXIBLE ROUND DUCT
	FLEXIBLE DUCT CONNECTION
	DAMPERS BDD: BACKDRAFT DAMPER FSD: FIRE/SMOKE DAMPER FD: FIRE DAMPER MD: MOTORIZED DAMPER SD: SMOKE DAMPER VD: VOLUME DAMPER
	DUCT TRANSITION
R	INCLINED RISE W/RESPECT TO AIR FLOW, RECTANGULAR
D	INCLINED DROP W/RESPECT TO AIR FLOW, RECTANGULAR
R	INCLINED RISE W/RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
D	INCLINED DROP W/RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
	90° ELBOW, RECTANGULAR WITH TURNING VANES
	90° ELBOW, ROUND OR FLAT OVAL (SMOOTH OR 5-PIECE ELBOWS)
	45° ELBOW, RECTANGULAR
	45° ELBOW, ROUND OR FLAT OVAL (SMOOTH OR 3-PIECE ELBOWS)
DF	DIVIDED FLOW FITTING, RECTANGULAR
	RECTANGULAR TAP-IN BRACH OR ROUND OR FLAT OVAL CONICAL TEE
	INCLINED CONICAL TAKE-OFF, ROUND OR FLAT OVAL
	"Y" FITTING, ROUND OR FLAT OVAL
	90° ELBOW TURNED UP, RECTANGULAR
	90° ELBOW TURNED, DOWN, RECTANGULAR
	90° ELBOW TURNED UP, ROUND, FLAT OVAL SIMILAR
	90° ELBOW TURNED DOWN, ROUND, FLAT OVAL SIMILAR
	CEILING DIFFUSER (ARROWS INDICATE THROW DIRECTIONS)
	CEILING REGISTER OR GRILLE,RETURN
	CEILING REGISTER OR GRILLE, SUPPLY
SPS	STATIC PRESSURE SENSOR
	END OF DUCT RUN

SYSTEM TYPES AND ABBREVIATIONS

SA	SUPPLY AIR DUCT (SA)
EA	EXHAUST AIR DUCT (EA)
RA	RETURN AIR DUCT (RA)
OA	OUTDOOR (FRESH) AIR DUCT (OA)
MUA	MAKEUP (COMBUSTION) AIR DUCT (MUA)
REL	RELIEF AIR DUCT (REL)
TA	TRANSFER AIR DUCT (TA)

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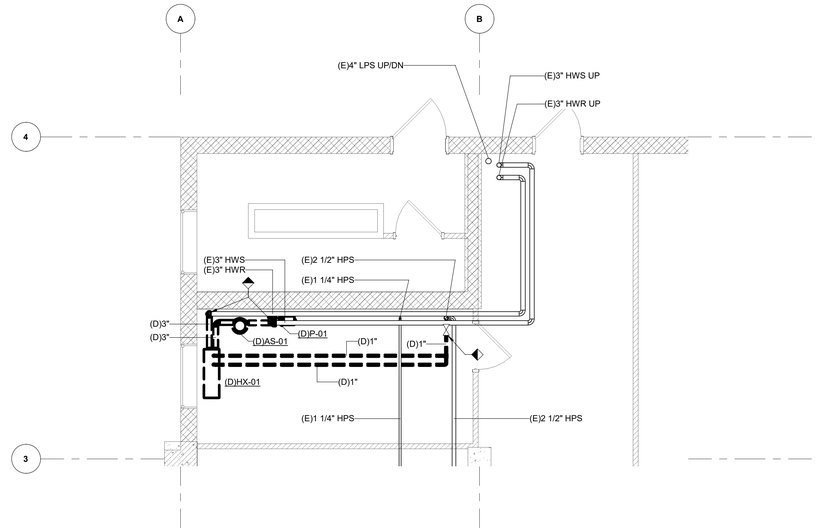
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I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

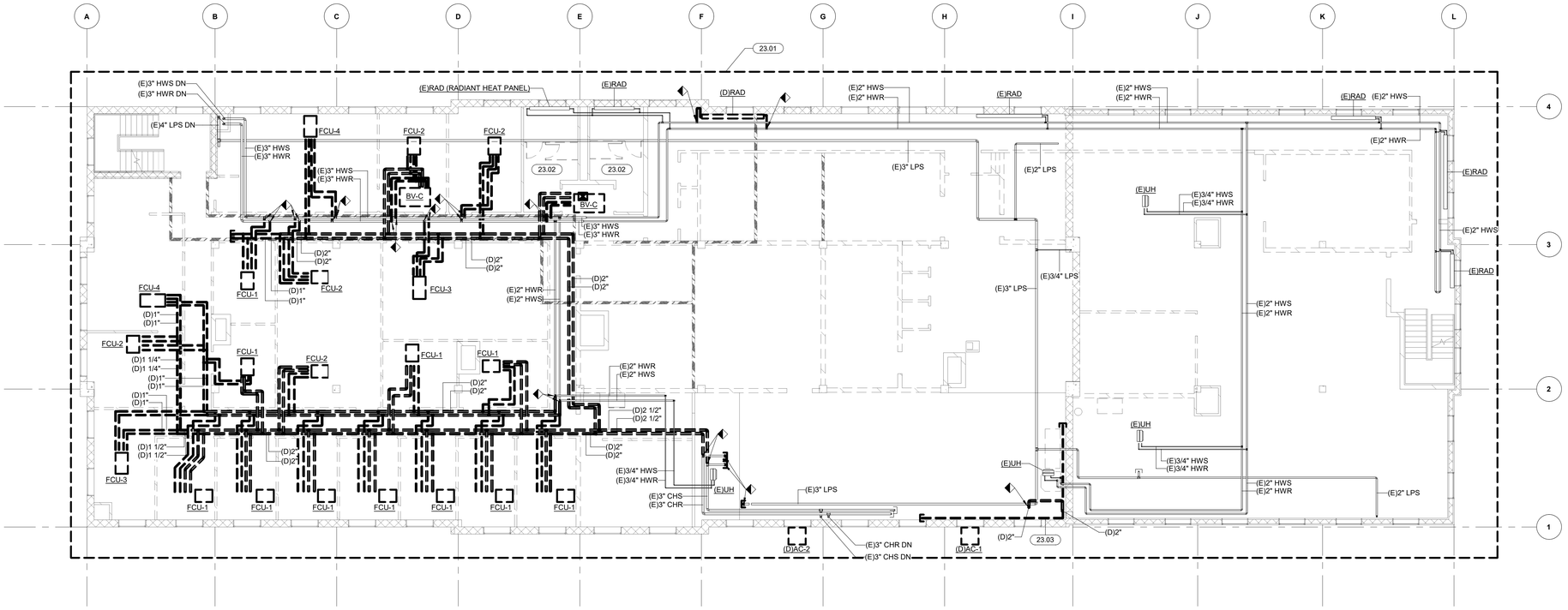
PROJECT NUMBER
60763454

SHEET TITLE
MECHANICAL LEGEND AND GENERAL NOTES

SHEET NUMBER
M-001



2 **FIRST FLOOR PARTIAL DEMOLITION PLAN**
Scale: 1/4" = 1'-0"



1 **SECOND FLOOR DEMOLITION PLAN**
Scale: 1/8" = 1'-0"

GENERAL NOTES THIS SHEET

A. REFER TO SHEET M001 FOR MECHANICAL LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

23.01 DEMOLISH EXISTING FAN COIL UNITS, AIR DEVICES, DUCT WORK, CONDENSATE DRAIN PIPING, AND TEMPERATURE CONTROLS ON THE SECOND FLOOR. CUT AND CAP HW RUNNOUTS AS INDICATED. DEMOLISH FCU CHW RUNNOUTS AND PORTIONS OF CHW MAINS AS INDICATED. RELOCATE EXISTING RTU-2 THERMOSTAT, REFER TO MP101 FOR LOCATION. HW AND STEAM PIPING MAINS ARE TO REMAIN IN PLACE AS INDICATED.

23.02 DEMOLISH EXISTING TOILET EXHAUST FANS AND ITS ASSOCIATED DUCTWORK.

23.03 DEMOLISH EXISTING LPS AND LPC FROM LAUNDRY EQUIPMENT BACK TO MAIN.

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1/4"=1'-0" 4' 2' 0 4' 8'
1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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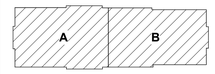
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KEY PLAN



PROJECT NUMBER
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SHEET TITLE
MECHANICAL DEMOLITION PLAN - SECOND FLOOR

SHEET NUMBER
MD101

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GENERAL NOTES THIS SHEET

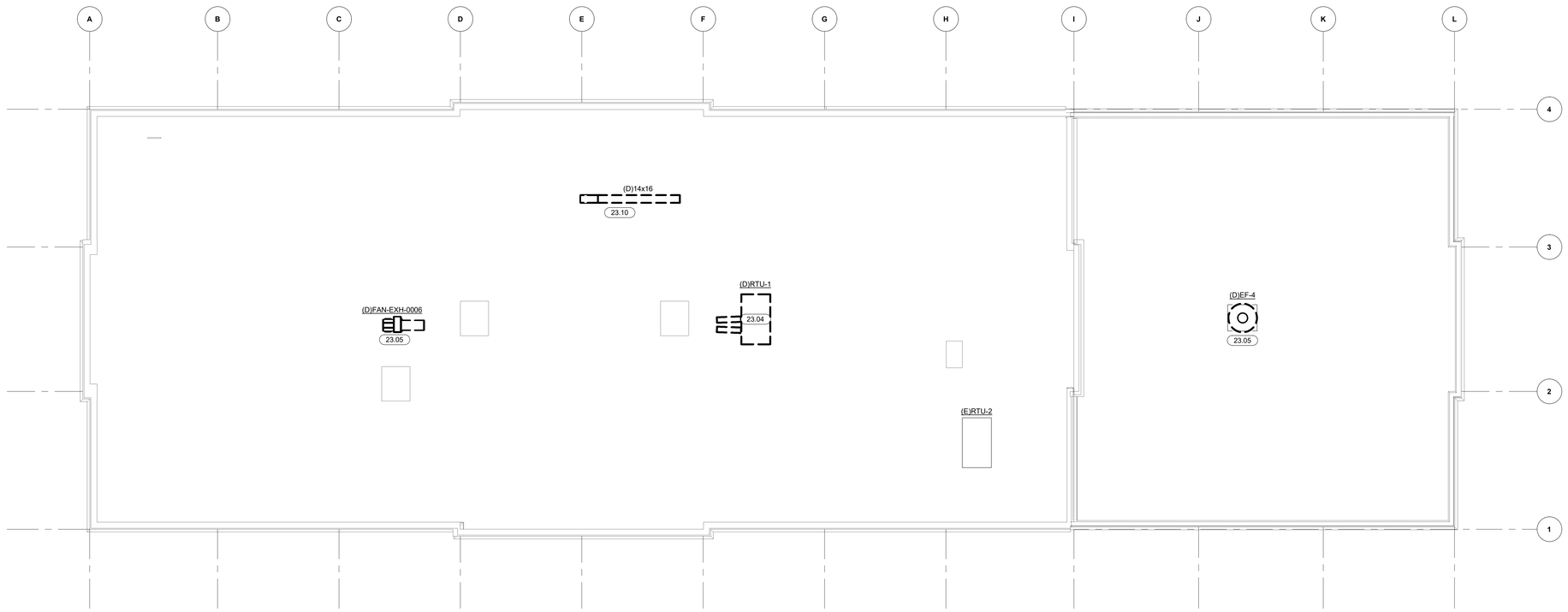
A. REFER TO SHEET M001 FOR MECHANICAL LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

23.04 DEMOLISH EXISTING ROOFTOP AIR HANDLING UNIT SERVING THE 2ND FL.

23.05 DEMOLISH EXISTING EXHAUST FANS SERVING THE 2ND FL AND THEIR ASSOCIATED DUCTWORK ON THE ROOF.

23.10 DEMOLISH EXISTING DUCTWORK.



1 ROOF DEMOLITION PLAN

Scale: 1/8" = 1'-0"

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8' 4' 0 8' 16'

1/8"=1'-0"

GRAPHIC SCALES

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KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

MECHANICAL DEMOLITION PLAN - ROOF

SHEET NUMBER

MD102

GENERAL NOTES THIS SHEET

A. REFER TO SHEET M001 FOR MECHANICAL LEGEND AND GENERAL NOTES.

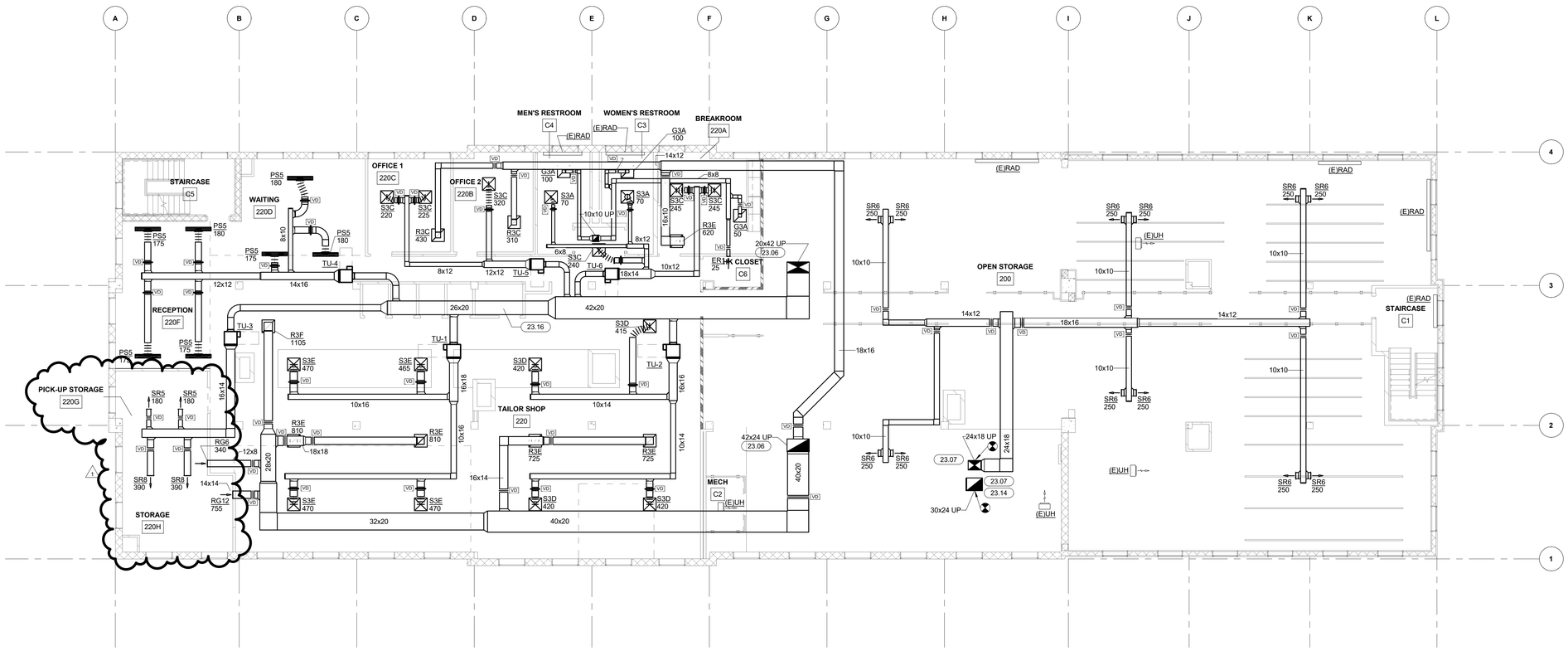
SHEET KEYNOTES:

23.06 ROUTE SUPPLY AND RETURN DUCTWORK UP TO ROOFTOP AIR HANDLING UNIT RTU-1.

23.07 ROUTE SUPPLY AND RETURN DUCTWORK UP THROUGH EXISTING OPENING TO EXISTING ROOFTOP AIR HANDLING UNIT RTU-2.

23.14 PROVIDE OPEN END OF RETURN DUCT WITH WIRE MESH SCREEN.

23.16 LOCATE RTU-1 DUCT DIFFERENTIAL PRESSURE SENSOR.



1 | SECOND FLOOR PLAN - HVAC

Scale: 1/8" = 1'-0"

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8' 4' 0 8' 16'

1/8"=1'-0"

GRAPHIC SCALES

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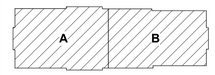
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KEY PLAN



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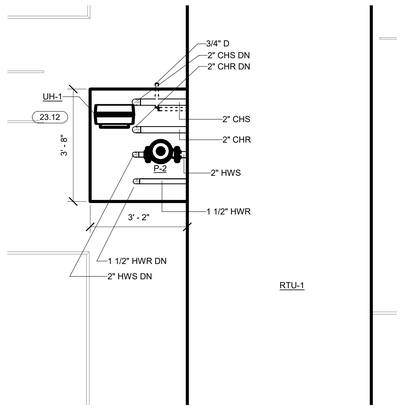
60763454

SHEET TITLE

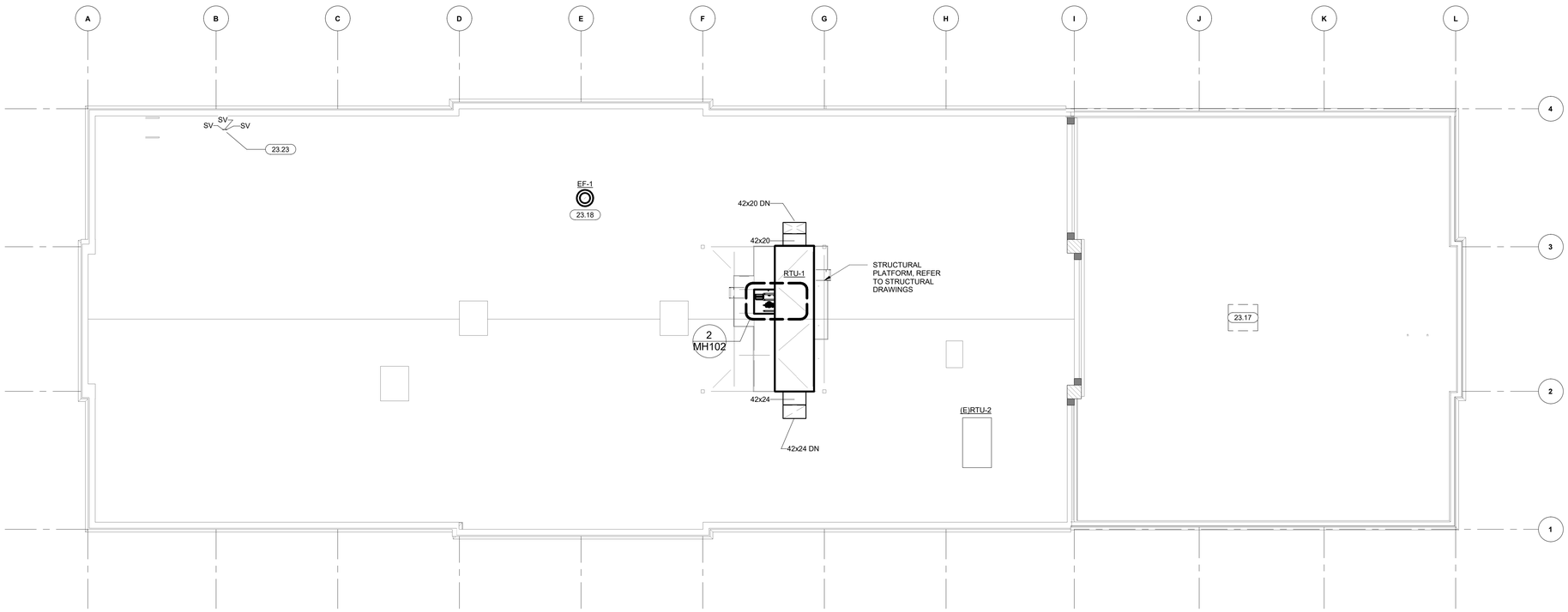
MECHANICAL DUCTWORK PLAN - SECOND FLOOR

SHEET NUMBER

MH101



2 | MH102 **ENLARGED ROOF PLAN - HVAC**
Scale: 1/2" = 1'-0"



1 | **ROOF PLAN - HVAC**
Scale: 1/8" = 1'-0"

GENERAL NOTES THIS SHEET

A. REFER TO SHEET M001 FOR MECHANICAL LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

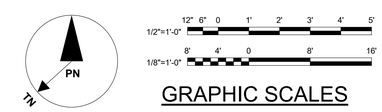
23.12 PROVIDE ROOFTOP UNIT WITH MANUFACTURER'S INSULATED PIPING CABINET. REFER TO ARCH DRAWINGS FOR FLASHING AND CABINET SCUPPER DRAIN DETAIL. PROVIDE ROOF PIPING PENETRATIONS WITH PIPE CURB, REFER TO DETAIL M-501/10. LOCATE RTU-1 VFD AND UH-1 THERMOSTAT INSIDE OF CABINET. PIPE CONDENSATE DRAIN OUTSIDE OF CABINET.

23.17 PROVIDE EXISTING PENETRATION WITH INSULATED GALVANIZED STEEL CAP.

23.18 LOCATE FAN OVER EXISTING OPENING AND ROUTE DUCTWORK THROUGH EXISTING OPENNING TO 2ND FLOOR.

23.23 DISCHARGE STEAM VENT WITH WEATHER HOOD FROM BELOW. PROVIDE WATER-TIGHT ROOF PENETRATION WITH WARRANTY.

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GRAPHIC SCALES
1/2"=1'-0" 1/2" 6" 0 1' 2' 3' 4' 5'
1/8"=1'-0" 8' 4' 0 8' 16'

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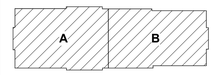
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I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN



PROJECT NUMBER
60763454

SHEET TITLE
MECHANICAL DUCTWORK PLAN - ROOF

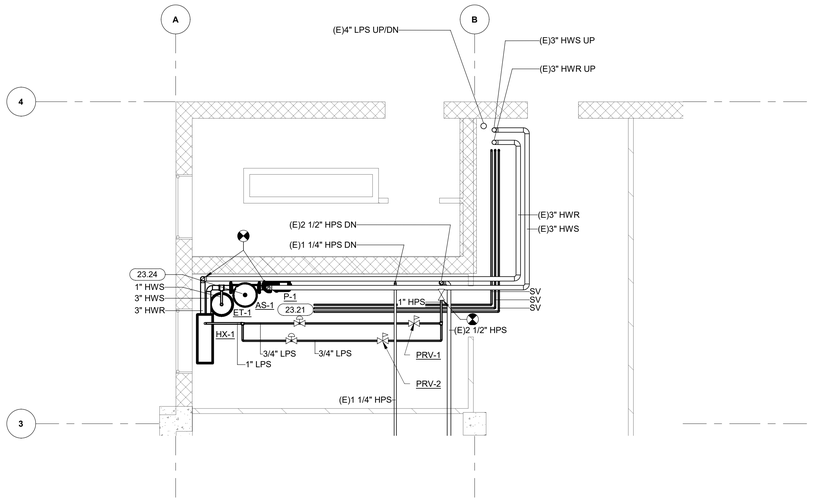
SHEET NUMBER
MH102

GENERAL NOTES THIS SHEET

A. REFER TO SHEET M001 FOR MECHANICAL LEGEND AND GENERAL NOTES.

SHEET KEYNOTES:

23.09 RELOCATE EXISTNG RTU-2 THERMOSTAT.
23.20 CONNECT LPS TO STEAM EQUIPMENT AND ROUTE LPC DN TO GROUND FLOOR LPC RETURN SYSTEM.
23.21 CONNECT STEAM VENTS TO STEAM PRESSURE SAFETY VALVES, REFER TO DETAIL M-501/15.
23.22 ROUTE STEAM VENTS UP TO ROOF, REFER TO MH102.
23.24 RECONNECT EXISTING MAKEUP WATER TO AT AS-01. REFER TO DETAIL M-501/11.
23.25 LOCATE HEATING HOT WATER SYSTEM DIFFERENTIAL PRESSURE SENSOR.



2 **FIRST FLOOR PARTIAL PLAN**
Scale: 1/4" = 1'-0"

1 **SECOND FLOOR PLAN - PIPING**
Scale: 1/8" = 1'-0"

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PN
TN

1/4"=1'-0" 4' 2' 0 4' 8'
1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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KEY PLAN

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PROJECT NUMBER

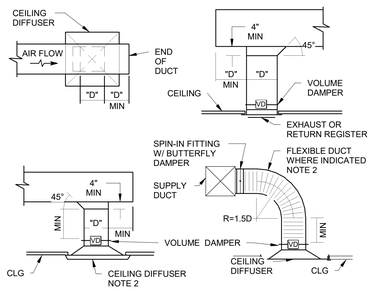
60763454

SHEET TITLE

MECHANICAL PIPING PLAN - SECOND FLOOR

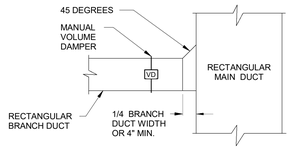
SHEET NUMBER

MP101

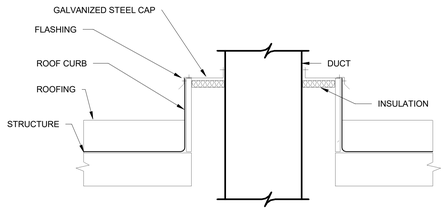


NOTES:
1. "D" IS THROAT DIA OR SIDE DIM. OF SQUARE CONN.
2. MIN LENGTH OF STRAIGHT DUCT ABOVE CD IS "D".
3. ABOVE DETAILS ARE REPRESENTATIVE OF STANDARD DUCT CONNECTIONS, ONLY. THESE DETAILS ARE NOT INTENDED TO SHOW ALL POSSIBLE DUCT CONNECTIONS.

1 TYPICAL DUCT CONNECTION DETAILS
Scale: NO SCALE

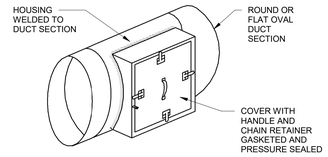


2 BRANCH DUCT DETAIL
Scale: NO SCALE

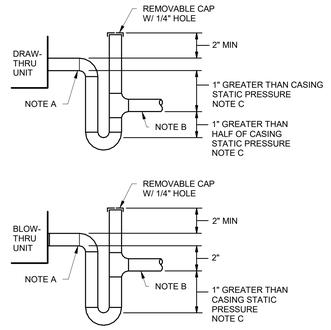


NOTES:
A. EXTERNALLY INSULATED DUCT SHALL BE CAULKED TO PROVIDE A COMPLETE SEAL BETWEEN THE INSULATION AND CLOSURE COLLAR.

3 TYPICAL DUCT PENETRATION THRU ROOF
Scale: NO SCALE

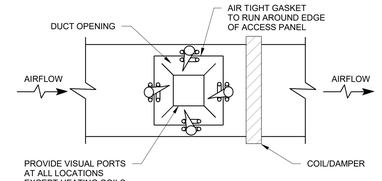


4 TYPICAL ACCESS SECTION FOR ROUND/OVAL DUCT DETAIL
Scale: NO SCALE



NOTES:
A. DRAIN SHALL BE FULL SIZE OF AH UNIT CONNECTION.
B. EXTEND TO NEAREST FLOOR DRAIN. FOR ROOFTOP UNITS, DISCHARGE ON SPLASH BLOCK.
C. CASING STATIC PRESSURE SHALL BE DETERMINED BY AIR-HANDLING UNIT MANUFACTURER. ADJUST DIMENSIONS WHERE REQUIRED TO CONFORM TO MANUFACTURER'S RECOMMENDATIONS.

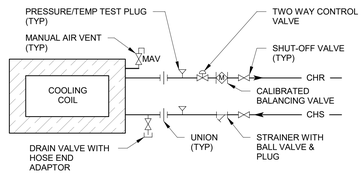
5 TYPICAL AIR HANDLING UNIT CONDENSATE DRAIN
Scale: NO SCALE



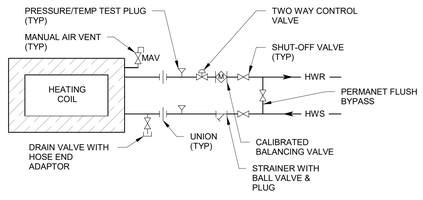
ACCESS PANEL SIZE SCHEDULE	
DUCT SIZE	ACCESS PANEL SIZE
6" TO 15"	10" W x (DUCT DEPTH - 2")D
15" TO 21"	12" W x (DUCT DEPTH - 2")D
21" AND ABOVE	18" W x (DUCT DEPTH - 2")D

ALL OTHER ACCESS PANELS TO BE A MINIMUM OF 15" x 15" WHERE DUCT SIZE ALLOWS. USE FOR CAM LATCHES ON PANELS LARGER THAN 15" x 15" SIZE.

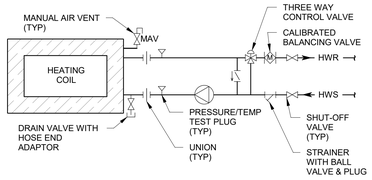
6 DUCT ACCESS PANEL DETAIL
Scale: NO SCALE



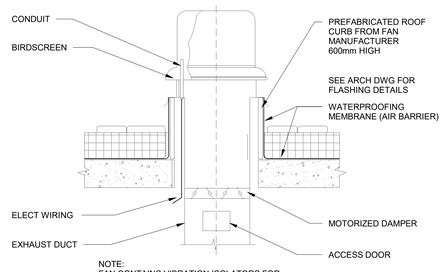
7 TYPICAL CHW COIL PIPING DETAIL (2-WAY)
Scale: NO SCALE



8 TYPICAL HW COIL PIPING DETAIL (2-WAY)
Scale: NO SCALE

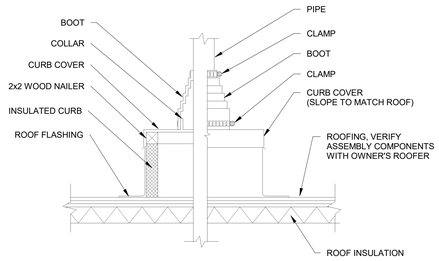


9 TYPICAL HW PREHEAT COIL PIPING DETAIL (3-WAY)
Scale: NO SCALE



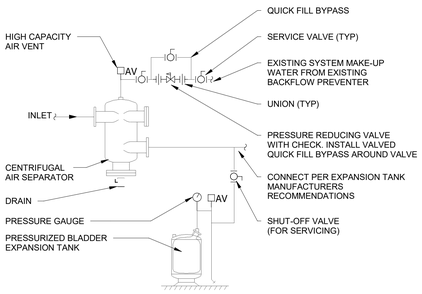
NOTE:
FAN CONTAINS VIBRATION ISOLATORS FOR SUPPORTING THE DRIVE ASSEMBLY AND FAN WHEEL. PROVIDE WARRANTY FOR WATERTIGHT ROOF PENETRATIONS.

10 ROOF MOUNTED EXHAUST FAN DETAIL
Scale: NO SCALE

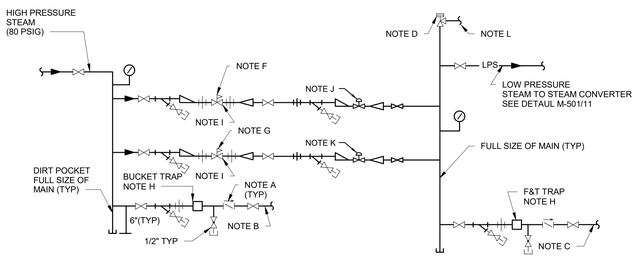


NOTES:
A. PROVIDE WARRANTY FOR WATERTIGHT ROOF PENETRATIONS.

11 PIPE CURB
Scale: NO SCALE

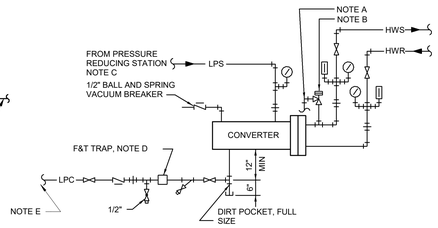


12 HYDRONIC SYSTEM AIR SEPARATOR AND EXPANSION TANK SYSTEM CONNECTION
Scale: NTS



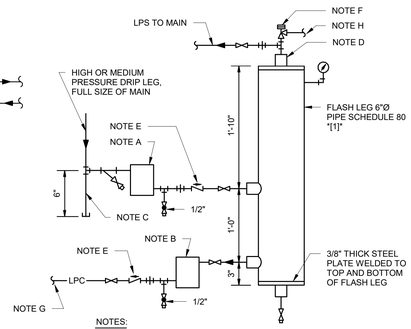
NOTES:
A. PROVIDE CHECK VALVE ONLY WHERE CONDENSATE MAIN IS ABOVE TRAP DISCHARGE.
B. ROUTE TO FLASH LEG.
C. ROUTE TO EXISTING LOW PRESSURE CNDS MAIN.
D. SAFETY VALVE SHALL HAVE PRESSURE SETTING OF 15 PSIG. CAPACITY OF SAFETY VALVE SHALL EQUAL SUM OF FULL OPEN CAPACITIES OF PRV'S. SEE TYPICAL STEAM PRESSURE SAFETY VALVE DETAIL
E. DO NOT PROVIDE BYPASS LINE ON PRESSURE REDUCING STATION.
F. PRV-1 CAPACITY SHALL BE 338 LB/HR OF STEAM REDUCED TO 10 PSIG.
G. PRV-2 CAPACITY SHALL BE 168 LB/HR OF STEAM REDUCED TO 10 PSIG.
H. STEAM TRAP CAPACITY SHALL BE 200 LB/HR MINIMUM.
I. INSTALL PRV TO MANUFACTURER'S REQUIREMENTS.
J. STEAM CONTROL VALVE (10 PSIG INLET PRESSURE, PD = 3 PSIG, CAPACITY = 338 LB/HR). SEE DETAUL M-501/11.
K. STEAM CONTROL VALVE (10 PSIG INLET PRESSURE, PD = 3 PSIG, CAPACITY = 168 LB/HR). SEE DETAUL M-501/11.
L. EXTEND PIPING FULL SIZE OF RELIEF VALVE DISCHARGE TO NEAREST FLOOR DRAIN.

13 TYPICAL SINGLE STAGE STEAM PRESSURE REDUCING STATION
Scale: NO SCALE



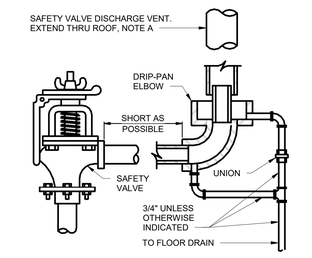
NOTES:
A. EXTEND PIPING FULL SIZE OF RELIEF VALVE DISCHARGE TO NEAREST FLOOR DRAIN.
B. PRESSURE RELIEF VALVE (SET AT 100 PSIG, CAPACITY= MBH).
C. REFER TO PRESSURE REDUCING STATION DETAIL M-501/10 FOR 1/3 - 2/3 CONTROL VALVES.
D. TRAP CAPACITY SHALL BE THREE TIMES CONVERTER CAPACITY.
E. ROUTE TO EXISTING LOW PRESSURE CNDS MAIN.

14 TYPICAL STEAM HEAT EXCHANGER UNIT PIPING
Scale: NO SCALE



NOTES:
A. BUCKET TRAP, MIN CAP.=200LB/HR.
B. F&T TRAP, MIN CAP.=200 LB/HR.
C. DIRT POCKET, FULL SIZE OF MAIN.
D. HALF COUPLING WELDED TO FLASH LEG (TYPICAL OF 4)
E. PROVIDE CHECK VALVE ONLY WHERE CONDENSATE MAIN IS ABOVE TRAP DISCHARGE.
F. SAFETY VALVE SHALL HAVE PRESSURE SETTING OF 15 PSIG. CAPACITY=200 LB/HR. SEE TYPICAL STEAM PRESSURE SAFETY VALVE DETAIL.
G. ROUTE TO EXISTING LOW PRESSURE CNDS MAIN.
H. EXTEND PIPING FULL SIZE OF RELIEF VALVE DISCHARGE TO NEAREST FLOOR DRAIN.

15 TYPICAL FLASH LEG DETAIL
Scale: NO SCALE



NOTE:
A. SIZE OF VENT SHALL BE AT LEAST ONE SIZE LARGER THAN SAFETY VALVE DISCHARGE CONNECTION. SUPPORT VENT PIPING INDEPENDENT OF SAFETY VALVE.

16 TYPICAL STEAM PRESSURE SAFETY VALVE DETAIL
Scale: NO SCALE

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KEY PLAN

PROJECT NUMBER
60763454

SHEET TITLE
MECHANICAL DETAILS

SHEET NUMBER
M-501

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AIR DEVICE SCHEDULE

TAG	FUNCTION	MANUFACTURER	MODEL	FACE SIZE	NECK DIAMETER	MATERIAL	INTEGRAL VOLUME DAMPER	MAX NC	SCHEDULE NOTES
S3A	CEILING SUPPLY	TITUS	PSS-AA	24 x 24	6	ALUMINUM	Yes	25	AD1
S3C	CEILING SUPPLY	TITUS	PSS-AA	24 x 24	10	ALUMINUM	Yes	25	AD1
S3D	CEILING SUPPLY	TITUS	PSS-AA	24 x 24	12	ALUMINUM	Yes	25	AD1
S3E	CEILING SUPPLY	TITUS	PSS-AA	24 x 24	14	ALUMINUM	Yes	25	AD1
R3C	CEILING RETURN	TITUS	50F	24 x 24		ALUMINUM	Yes	25	AD1
R3E	CEILING RETURN	TITUS	50F	24 x 24		ALUMINUM	Yes	25	AD1
R3F	CEILING RETURN	TITUS	50F	24 x 24		ALUMINUM	Yes	25	AD1
G3A	CEILING RETURN	TITUS	50F	24 x 24		ALUMINUM	No	25	AD1
SR5	WALL SUPPLY	TITUS	300FL	10 x 10		ALUMINUM	Yes	25	AD1
SR6	WALL SUPPLY	TITUS	300FL	12 x 8		ALUMINUM	Yes	25	AD1
SR8	WALL SUPPLY	TITUS	300FL	14 x 12		ALUMINUM	Yes	25	AD1
ER1	WALL EXHAUST	TITUS	350FL	8 x 8		ALUMINUM	Yes	25	AD1
RG6	WALL RETURN	TITUS	350FL	14 x 10		ALUMINUM	No	25	AD1
RG12	WALL RETURN	TITUS	350FL	16 x 16		ALUMINUM	No	25	AD1
PS5	CEILING DIFFUSER	TITUS	TBDI-80	24 x 24	12	ALUMINUM	Yes	25	AD1

TERMINAL BOX SCHEDULE (HEATING HOT WATER REHEAT

TAG	NECK SIZE (IN)	MANUFACTURER	MODEL	MIN AIRFLOW (CFM)	MAX AIRFLOW (CFM)	AIRFLOW (CFM)	CAPACITY (MBH)	FLOW (GPM)	EWT (°F)	LWT (°F)	EAT DB (°F)	LAT DB (°F)	SCHEDULE NOTES
TU-1	14	TRANE	VCME	675	1875	675	18.11	1.2	180.0	150.0	55.0	81.4	TU.01, TU.02
TU-2	14	TRANE	VCME	685	1675	685	17.42	1.2	180.0	150.0	55.0	80.0	TU.01, TU.02
TU-3	12	TRANE	VCME	360	1140	360	9.15	0.6	180.0	150.0	55.0	80.0	TU.01, TU.02
TU-4	12	TRANE	VCME	370	1240	370	12.40	0.8	180.0	150.0	55.0	87.9	TU.01, TU.02
TU-5	10	TRANE	VCME	250	765	250	7.00	0.5	180.0	150.0	55.0	82.5	TU.01, TU.02
TU-6	10	TRANE	VCME	260	870	290	7.98	0.5	180.0	150.0	55.0	85.7	TU.01, TU.02

UNIT HEATER SCHEDULE (ELECTRIC)

TAG	TYPE	MANUFACTURER	MODEL	AIRFLOW (CFM)	EAT DB (°F)	LAT DB (°F)	CAPACITY (KW)	STAGES	VOLTS	PHASE	SCHEDULE NOTES
UH-1	HORIZONTAL	REZNOR	EGHB	310	50.0	80.0	3.00	1	208	1	UH.01
UH-2	HORIZONTAL	REZNOR	EGHB	310	50.0	80.0	3.00	1	208	1	UH.01
UH-3	CEILING MOUNTED RECESSED	QMARK	CDF-548	300	50.0	70.0	2.00	1	208	1	UH.01

FAN SCHEDULE

Mark	LOCATION	FUNCTION	MANUFACTURER	MODEL	FAN TYPE	FLOW (CFM)	ESP (IN WG)	DRIVE TYPE	HP	BHP	VOLTS	PHASE	WEIGHT (LBS)	SCHEDULE NOTES
EF-1	ROOF	TOILET EXHAUST	GREENHECK	G-098-B	DOWNBLAST POWER VENTILATOR	275	0.40	DIRECT	0.17	0.07	120	1	49	F.01

HEAT EXCHANGER SCHEDULE (STEAM TO WATER)

TAG	LOCATION	FUNCTION	MANUFACTURER	MODEL	TYPE	CAPACITY (MBH)	SURFACE AREA (SQ FT)	FLUID TYPE	INLET PPRESSURE (PSIG)	STEAM TEMP (°F)	FLOW (LB/HR)	PD (PSIG)	FLUID TYPE	FLOW (GPM)	EWT (°F)	LWT (°F)	WPD (PSIG)	SCHEDULE NOTES
HX-1	MECH ROOM	HEATING HOT WATER	BELL & GOSSETT	SU-63-4	SHELL AND TUBE	488.1	13.1	STEAM	7.00	231.6	506.9	4.34	WATER	33.3	150.0	180.0	6.50	

SCHEDULE NOTES THIS SHEET

AD.01	COLOR SELECTED BY ARCHITECT
AH.01	EXTERNAL STATIC PRESSURE DROP DOES NOT INCLUDE COOLING COIL, HEATING COIL, FILTER, MIXING BOX, OR CASING LOSSES.
AH.02	COOLING COIL CAPACITIES SHALL BE BASED ON 45 °F E.W.T. WATER. PRESURE DROP SHALL NOT EXCEED 3.92 FT. WG.
AH.03	COIL FACE VELOCITY SHALL NOT EXCEED 500 FPM.
AH.04	HOT WATER COIL CAPACITIES SHALL BE BASED ON 180°F E.W.T WATER. PRESSURE DROP SHALL NOT EXCEED 0.37 FT WG.
F.01	PROVIDE WITH VARIABLE SPEED ELECTRICALLY COMMUTATED MOTOR FOR BALANCING.
TU.01	HOT WATER COIL CAPACITIES SHALL BE BASED ON 55°F E.A.T, AND 180°F E.W.T. WITH A 30°F TEMPERATURE DROP. WATER PRESSURE DROP SHALL NOT EXCEED 12 FT WG.
TU.02	MINIMUM INLET STATIC PRESSURE DROP AT THE INDCATED MAX CFM SHALL NOT EXCEED 0.5 IN. WG.
UH.01	UNIT HEATERS SHALL BE HORIZONTAL DISCHARGE TYPE.

EXPANSION TANK SCHEDULE

TAG	FUNCTION	MANUFACTURER	MODEL	MIN TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	SYSTEM VOLUME (GAL)	SCHEDULE NOTES
ET-1	HEATING HOT WATER	BELL & GOSSETT	HFT-60V	27.47	5.8	210	

ROOFTOP UNIT SCHEDULE (CHILLED WATER / HOT WATER) (PART 1 OF 2)

TAG	LOCATION	MANUFACTURER	MODEL	TOTAL AIRFLOW (CFM)	MIN OA (CFM)	ESP (IN WG)	FAN TYPE	# OF FANS	HP (EACH)	BHP (EACH)	VOLTS	PHASE	FREQUENCY (HZ)	VFD	TOTAL AIRFLOW (CFM)	ESP (IN WG)	FAN TYPE	# OF FANS	HP (EACH)	BHP (EACH)	VOLTS	PHASE	VFD	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	EWT (°F)	LWT (°F)	FLUID TYPE	FLOW (GPM)	ROWS
RTU-1	ROOF	TRANE	CSAA	7,670	1,040	1.25	DIRECT DRIVE PLENUM	1	10.00	6.60	208	3	60	Yes	6,630	0.75	DIRECT DRIVE PLENUM	1	5.00	3.70	208	3	Yes	181.9	173.2	77.1	62.9	54.9	54.9	45	55	WATER	39.7	6

ROOFTOP UNIT SCHEDULE (CHILLED WATER / HOT WATER) (PART 2 OF 2)

TAG	HEATING AIRFLOW (CFM)	EAT DB (°F)	LAT DB (°F)	OUTPUT CAPACITY (MBH)	EWT (°F)	LWT (°F)	FLOW (GPM)	FILTER (MERV)	MCA	VOLTS	PHASE	FREQUENCY (HZ)	WEIGHT (LBS)	SCHEDULE NOTES
RTU-1	7,670	62.8	85.0	170.8	180	150	11.37	8	52.5	208	3	60	4,121	AH.01, AH.02, AH.03, AH.04

PUMP SCHEDULE

TAG	LOCATION	FUNCTION	MANUFACTURER	MODEL	PUMP TYPE	FLUID TYPE	FLOW (GPM)	EXT WPD (FT HD)	EFF (%)	HP	BHP	RPM	VOLTS	PHASE	ECM	WEIGHT (LBS)	SCHEDULE NOTES
P-1	GROUND FL MECH	HEATING HOT WATER	Bell & Gossett	ECOCIRC	IN-LINE	WATER	33.0	9	51.5	0.17	0.14	2190	120	1	Yes	22	
P-2	ROOF	PREHEAT COIL	Bell & Gossett	ECOCIRC	IN-LINE	WATER	11.4	7	47.6	0.17	0.04	2046	120	1	Yes	16	

AIR SEPARATOR SCHEDULE

TAG	FUNCTION	TYPE	MANUFACTURER	MODEL	MAX FLOW CAPACITY (GPM)	DESIGN FLOR (GPM)	WPD (FT HD)	CONNECTION SIZE (IN)	WIEGHT	SCHEDULE NOTES
AS-1	HEATING HOT WATER	CENTRIFUGAL	Bell & Gossett	RL-3F	190	33	0.06	3	173	

MECHANICAL SPECIFICATIONS
SUBMITTALS:
PROVIDE MANUFACTURER'S CATALOG DATA AND SHOP DRAWINGS FOR THE FOLLOWING,
ROOFTOP AIR HANDLING UNITS
TERMINAL UNITS
UNIT HEATERS
FANS
AIR DEVICES
PUMP
HEAT EXCHANGERS
AIR SEPERATORS
EXPANSION TANKS
DDC CONTROLS
TAB REPORT

1. COORDINATION OF WORK:
COORDINATE MECHANICAL WORK WITH OTHER TRADES INVOLVED IN THE CONSTRUCTION PROJECT. PROVIDE DROPS, RISES, OR OFFSETS NOT INDICATED BUT NECESSARY FOR PROPER INSTALLATION OF WORK. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO COORDINATE WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL FEATURES OF CONSTRUCTION. VERIFY AT SITE ALL LOCATIONS, GRADES, ELEVATIONS, AND UTILITY SERVICE CONNECTIONS. MAKE REQUIRED CHANGES OR RELOCATIONS NECESSARY TO RESOLVE ANY CONFLICTS.

2. TESTING AND BALANCING:
TAB CONTRACTOR SHALL BE AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING AGENCY CERTIFIED BY AABC AND/OR NEBB IN THE TESTING AND BALANCING DISCIPLINES REQUIRED FOR THIS PROJECT. AGENCY SHALL HAVE AT LEAST 3 YEARS OF SUCCESSFUL TESTING, ADJUSTING, AND BALANCING EXPERIENCE ON PROJECTS OF SIMILAR SIZE AND COMPLEXITY AS THIS PROJECT. AGENCY SHALL BE THE SINGLE SOURCE OF RESPONSIBILITY FOR TESTING, ADJUSTING, AND BALANCING THE BUILDING MECHANICAL SYSTEMS TO MEET THE DESIGN OBJECTIVES. SERVICES SHALL INCLUDE CHECKING INSTALLATIONS FOR CONFORMITY TO DESIGN, MEASUREMENT AND ESTABLISHMENT OF THE FLOW QUANTITIES OF THE MECHANICAL SYSTEMS AS REQUIRED TO MEET DESIGN SPECIFICATION, AND RECORDING AND REPORTING THE RESULTS.

PROVIDE DUCT AIR LEAKAGE TESTING FOR ALL OUTDOOR DUCTWORK.

3. IDENTIFICATION AND LABELS:
PROVIDE AND INSTALL LABELS ON EQUIPMENT. LABELS SHALL BE BLACK WITH WHITE LETTERING. LABELS SHALL BE CLEARLY READABLE FROM A DISTANCE OF 5 FT.
PROVIDE AND INSTALL LABELS INDICATING LOCATION AND MARK OF EQUIPMENT LOCATED ABOVE CEILING REQUIRING ROUTINE MAINTENANCE. LABEL SHALL BE WHITE WITH BLACK LETTERING AND SHALL BE CLEARLY READABLE FROM A DISTANCE OF 5 FT.
PROVIDE PRE-PRINTED, SELF-ADHESIVE PIPE LABELS WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION ACCORDING TO ASME A13.1.
PROVIDE PLASTIC-LAMINATED, SELF-ADHESIVE LABELS. GREEN LABEL WITH WHITE LETTERING FOR SUPPLY, RETURN, AND EXHAUST AIR. LABELS SHALL BE CLEARLY READABLE FROM A DISTANCE OF 5 FT.

4. BUILDING TEMPERATURE CONTROLS:
INTEGRATE TO EXISTING CONTROL SYSTEM WITH ASHRAE 135 COMMUNICATION PROTOCOL.
PROVIDE WHITE COLOR THERMOSTATS AND HUMIDISTATS WITH DIGITAL DISPLAY. MOUNT 48" AFF.

5. HYDRONIC PIPE AND FITTINGS:
STEAM AND CONDENSATE PIPING: USE ONLY STEAM RATED PIPING, FITTINGS, AND VALVES. DO NOT USE BRASS VALVES OR FITTINGS.
STEAM AND HEATING HOT WATER 2 1/2" AND ABOVE PIPING:
STEEL PIPE: ASTM A53/A53M BLACK STEEL WITH PLAIN ENDS; WELDED AND SEAMLESS, GRADE B, SCHEDULE 40, GRADE B STEEL PIPE.
CAST-IRON THREADED FITTINGS: ASME B16.4; CLASSES 125.
JOINT FITTINGS: ASTM A536, GRADE 65-45-12 DUCTILE IRON; ASTM A47/A47M, GRADE 32510 MALLEABLE IRON; ASTM A53/A53M, TYPE F, E, OR S, GRADE B FABRICATED STEEL; OR ASTM A106/A106M, GRADE B STEEL FITTINGS WITH GROOVES OR SHOULDERS CONSTRUCTED TO ACCEPT GROOVED-END COUPLINGS; WITH NUTS, BOLTS, LOCKING PIN, LOCKING TOGGLE, OR LUGS TO SECURE GROOVED PIPE AND FITTINGS.
COUPLINGS: DUCTILE- OR MALLEABLE-IRON HOUSING AND EPDM GASKET OF CENTRAL CAVITY PRESSURE-RESPONSIVE DESIGN; WITH NUTS, BOLTS, LOCKING PIN, LOCKING TOGGLE, OR LUGS TO SECURE GROOVED PIPE AND FITTINGS.
PLAIN-END MECHANICAL-JOINT COUPLINGS:
1. SOURCE LIMITATIONS: OBTAIN PLAIN-END MECHANICAL-JOINT COUPLINGS FROM SINGLE MANUFACTURER.
2. HOUSING: ASTM A536, GRADE 65-45-12 SEGMENTED DUCTILE IRON OR TYPE 304 STAINLESS STEEL.
3. HOUSING COATING: NONE.
4. GASKET: EPDM.
5. SEALING MECHANISM: DOUBLE-LIP SEALING SYSTEM OR CARBON STEEL CASE-HARDENED JAWS.
6. BOLTS, HEX NUTS, WASHERS, OR LOCK BARS BASED ON MANUFACTURER'S DESIGN.
7. MINIMUM PRESSURE RATING: EQUAL TO THAT OF THE JOINED PIPES.
8. STEEL PIPE NIPPLES: ASTM A733, MADE OF SAME MATERIALS AND WALL THICKNESSES AS PIPE IN WHICH THEY ARE INSTALLED.
HEATING HOT WATER 2" AND BELOW PIPING:
COPPER TUBE: ASTM B88, TYPE K OR L
WROUGHT-COPPER FITTINGS, SOLDER JOINT: ASME B16.22.
WROUGHT-COPPER FITTINGS, BRAZED JOINT: ASME B16.50.
WROUGHT-COPPER UNIONS: ASME B16.22.
SOLDER FILLER METALS: ASTM B32, USE 95-5 TIN ANTIMONY OR ALLOY HB SOLDER TO JOIN COPPER SOCKET FITTINGS ON COPPER PIPE.
BRAZING FILLER METALS: AWS A5.8M/A5.8.
INSULATION, ONE OF THE FOLLOWING:
1. CELLULAR GLASS: 2 INCHES (50 MM) THICK.
2. FLEXIBLE ELASTOMERIC: 2 INCHES (50 MM) THICK.
3. GLASS-FIBER, PREFORMED PIPE INSULATION, TYPE I: 2 INCHES (50 MM) THICK.
4. MINERAL WOOL, PREFORMED PIPE INSULATION, TYPE II: 2 INCHES (50 MM) THICK.

6. DUCTS:
ALL DUCTWORK SHALL BE GALVANIZED STEEL. DUCT SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
ALL SUPPLY AIR DUCTWORK SHALL BE PROVIDED WITH MINERAL OR GLASS FIBER INSULATION COMPLYING WITH ASTM C 553, TYPE II AND ASTM C 1290 TYPE III WITH FACTORY-APPLIED FSK JACKET. INSULATION SHALL HAVE A FLAME-SPREAD INDEX OF 25 OR LESS AND A SMOKE-DEVELOPED RESISTANCE OF 50 OR LESS. THICKNESS OF INSULATION SHALL ENSURE AN R-VALUE GREATER THAN OR EQUAL TO R-6. COAT INTERIOR SURFACES OF THE FIRST 20 FEET OF SUPPLY AIR DUCTS WITH A FACTORY APPLIED ANTIMICROBIAL COATING FOSTER 40-20, AGION ANTIMICROBIAL COMPOUND TREATMENT FOR METAL DUCT AND EQUIPMENT BLUE COATING PROCESSED BY LINDAB INCM, AVRON46 BY SEMCO, OR EQUAL APPOVED BY VT.
FSK JACKET: ALUMINUM-FOIL, FIBERGLASS-REINFORCED SCRIM WITH WHITE KRAFT-PAPER BACKING; COMPLYING WITH ASTM C 1136, TYPE II.
PROVIDE DOUBLE-WALL DUCTWORK FOR DUCTS LOCATED OUTDOORS PAINTED WITH WEATHER RESISTANT PAINT. PROVIDE A FLANGED PREFABRICATED SYSTEM WITH FACTORY FABRICATED DUCT SECTIONS AND FITTINGS. THERMAL BRIDGES ARE NOT ALLOWED.
1. OUTER DUCT: ALUMINUM, ASTM B209, ALLOY 3003-H14, MINIMUM THICKNESS 0.016".
2. INNER DUCT: GALVANIZED STEEL.
3. INTERSTITIAL INSULATION: MINIMUM R-6 FIBERGLASS INSULATION. INSTALL SPACERS THAT POSITION THE INNER DUCT AT UNIFORM DISTANCE FROM OUTER DUCT WITHOUT COMPRESSING INSULATION.
PROVIDE TRAPEZE DUCT SUPPORTS ALUMINUM OR GALVANIZED STEEL COATED WITH ZINC CHROMATE. FLASH DUCT SUPPORT BASE WITH ROOFING.
PROVIDE DUCT SEAL CLASS A, LEAKAGE CLASS 4, AND THE FOLLOWING PRESSURE RATINGS:
OUTSIDE AIR: 2 INCHES WG
SUPPLY UPSTREAM OF TU'S: 2 INCHES WG
SUPPLY DOWNSTREAM OF TU'S: 1 INCH WG
RETURN: -2 INCHES WG
EXHAUST: -2 INCH WG
TRANSFER DUCT: -0.5 INCH

7. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGER WITH SPRING. STEEL FRAME, FABRICATED FOR CONNECTION TO THREADED HANGER RODS AND TO ALLOW FOR MAXIMUM OF 30 DEGREES OF ANGULAR HANGER-ROD MISALIGNMENT. OUTSIDE SPRING DIAMETER NOT LESS THAT 80 PERCENT OF THE COMPRESSED HEIGHT OF THE SPRING AT RATED LOAD. MINIMUM ADDITIONAL TRAVEL 50 PERCENT OF THE REQUIRED DEFLECTION AT RATED LOAD. LATERAL STIFFNESS: MORE THAN 80 PERCENT OF RATED VERTICAL STIFFNESS. MINIMUM 1: DEFLECTION. OVERLOAD CAPACITY: SUPPORT 200 PERCENT OF RATED LOAD, FULLY COMPRESSED. MOLDED ELASTOMERIC ELEMENT, OIL-RESISTANT RUBBER OR NEOPRENE. STEEL-WASHER-REINFORCED CUP TO SUPPORT SPRING AND BUSHING PROJECTING THROUGH THE BOTTOM OF FRAME. ADJUSTABLE CERTICAL STOP: STEEL WASHER WITH NEOPRENE WASHER "UP-STOP" ON LOWER THREADED ROD. SELF-CENTERING HANGER ROD CAP TO ENSURE CONCENTRICITY BETWEEN HANGER AND SUPPORT SPRING COIL.

8. LINEAR SLOT DIFFUSERS
MATERIAL: ALUMINUM.
FINISH: BAKED ENAMEL, WHITE.
MOUNTING: LINEAR SLOT LAY IN T-BAR.
PATTERN:ONE PIECE SECTION.
DAMPERS: DEFLECTOR BLADES.

9. LAY IN DIFFUSERS
MATERIAL: ALUMINUM.
FINISH: BAKED ENAMEL, WHITE.
MOUNTING: LAY IN.
PATTERN:FOUR-WAY FIXED DISCHARGE WITH REMOVABLE CORE.
DAMPERS: RADIAL OPPOSED BLADE.

10. GRILLES:
MATERIAL: ALUMINUM.
FINISH: BAKED ENAMEL, WHITE.
FACE BLADE ARRANGEMENT:FIXED EGGCRATE GRID SPACED 1/2 INCH APART.
MOUNTING: LAY IN.
DAMPER TYPE: NONE.
ACCESSORY: MERV 8 DISPOSABLE FILTER.

11. TERMINAL UNITS:
HYDRONIC COILS: COPPER TUBE, WITH MECHANICALLY BONDED ALUMINUM FINS SPACED NO CLOSER THAN 0.1 INCH (2.5 MM), RATED FOR A MINIMUM WORKING PRESSURE OF 290 PSIG (1378 KPA) AND A MAXIMUM ENTERING-WATER TEMPERATURE OF 220 DEG F (104 DEG C). INCLUDE MANUAL AIR VENT AND DRAIN.
COIL SECTION INSULATION: 1/2-INCH- THICK, GLASS FIBER COMPLYING WITH ASTM C1071 AND ATTACHED WITH ADHESIVE COMPLYING WITH ASTM C916.
SURFACE-BURNING CHARACTERISTICS: INSULATION AND ADHESIVE SHALL HAVE A COMBINED MAXIMUM FLAME-SPREAD INDEX OF 25 AND SMOKE-DEVELOPED INDEX OF 50 WHEN TESTED ACCORDING TO ASTM E84 BY A QUALIFIED TESTING AGENCY.
AIRSTREAM SURFACES: SURFACES IN CONTACT WITH THE AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ASHRAE 62.1.
MAIN AND AUXILIARY DRAIN PANS: STAINLESS STEEL, FABRICATE PANS AND DRAIN CONNECTIONS TO COMPLY WITH ASHRAE 62.1.
CHASSIS: GALVANIZED STEEL, FOR MOUNTING UNITS SHALL HAVE LEVELING SCREWS.
TWO-PIECE BALL VALVES: BRONZE BODY WITH FULL-PORT, CHROME-PLATED BRONZE BALL; PTFE OR TFE SEATS; AND 600-PSIG (4140-KPA) MINIMUM CWP RATING AND BLOWOUT-PROOF STEM.
FILTERS: NONE
FACTORY, HYDRONIC PIPING PACKAGE: ASTM B88, TYPE L COPPER TUBE WITH WROUGHT-COPPER FITTINGS AND BRAZED JOINTS. LABEL PIPING TO INDICATE SERVICE, INLET, AND OUTLET.

12. CENTRIFUGAL ROOF EXHAUST FAN:
HOUSING: ALUMINUM
FAN TYPE: CENTRIFUGAL BACKWARD INCLINDED
WHEEL: ALUMINUM
DRIVE: DIRECT DRIVEN MOTOR MOUNTED ON VIBRATION ISOLATION
MOTORS: COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS.
ENCLOSURE TYPE: TOTALLY ENCLOSED, FAN COOLED.
EFFICIENCY: PREMIUM EFFICIENT MOTORS AS DEFINED IN NEMA MG 1.

13.ROOFTOP AIR HANDLING UNIT
FRAME: MODULAR AND PROVIDING OVERALL STRUCTURAL INTEGRITY WITHOUT RELIANCE ON CASING PANELS FOR STRUCTURAL SUPPORT.
BASE RAIL: GALVANIZED STEEL HEIGHT 6 INCHES.
CASING JOINTS: HERMETICALLY SEALED AT EACH CORNER AND AROUND ENTIRE PERIMETER.
DOUBLE-WALL CONSTRUCTION: INSIDE CASING WALL GALVANIZED STEEL. CASING INSULATION THICKNESS: 2 INCHES. PROVIDE CONTINUITY OF INSULATION WITH NO THROUGH-CASING METAL IN CASING WALLS, FLOORS, OR ROOFS OF AIR-HANDLING UNIT.
PANELS, DOORS, AND WINDOWS: FORMED AND REINFORCED, DOUBLE-WALL AND INSULATED PANELS OF SAME MATERIALS AND THICKNESSES AS CASING.
FABRICATE WINDOWS IN ACCESS PANELS AND DOORS OF DOUBLE-GLAZED, SAFETY GLASS WITH AN AIRSPACE BETWEEN PANES AND SEALED WITH INTERIOR AND EXTERIOR RUBBER SEALS.
CONDENSATE DRAIN PANS: DOUBLE-WALL, STAINLESS-STEEL SHEET WITH SPACE BETWEEN WALLS FILLED WITH FOAM INSULATION AND MOISTURE-TIGHT SEAL.

FAN AND DRIVE ASSEMBLIES: STATICALLY AND DYNAMICALLY BALANCED AND DESIGNED FOR CONTINUOUS OPERATION AT MAXIMUM-RATED FAN SPEED AND MOTOR HORSEPOWER.
FANS: CENTRIFUGAL, GALVANIZED STEEL; MOUNTED ON SOLID-STEEL SHAFT.
SHAFTS: WITH FIELD-ADJUSTABLE ALIGNMENT. TURNED, GROUND, AND POLISHED HOT-ROLLED STEEL WITH KEYWAY.
HOUSINGS: FORMED- AND REINFORCED-STEEL PANELS TO FORM CURVED SCROLL HOUSINGS WITH SHAPED CUTOFF AND SPUN-METAL INLET BELL.
BRACING: STEEL ANGLE OR CHANNEL SUPPORTS FOR MOUNTING AND SUPPORTING FAN SCROLL, WHEEL, MOTOR, AND ACCESSORIES.
HOUSINGS, PLENUM FANS: STEEL FRAME AND PANEL; FABRICATED WITHOUT FAN SCROLL AND VOLUTE HOUSING. PROVIDE INLET SCREENS FOR TYPE SWSI FANS.
DRIVE, DIRECT: FACTORY-MOUNTED, DIRECT DRIVE.
MOTORS: COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS.
ENCLOSURE TYPE: TOTALLY ENCLOSED, FAN COOLED.
EFFICIENCY: PREMIUM EFFICIENT MOTORS AS DEFINED IN NEMA MG 1.
CONTROLLERS, ELECTRICAL DEVICES, AND WIRING: COMPLY WITH REQUIREMENTS FOR ELECTRICAL DEVICES AND CONNECTIONS SPECIFIED IN ELECTRICAL SECTIONS.
VARIABLE-FREQUENCY MOTOR CONTROLLER: CONTROL SIGNAL INTERFACE: ELECTRIC. PROPORTIONAL INTEGRAL DIRECTIVE (PID) CONTROL INTERFACE. DDC SYSTEM FOR HVAC PROTOCOLS FOR NETWORK COMMUNICATIONS: ASHRAE 135.

GENERAL REQUIREMENTS FOR COIL SECTION: COMPLY WITH AHRI 410. FABRICATE COIL SECTION TO ALLOW REMOVAL AND REPLACEMENT OF COIL FOR MAINTENANCE AND TO ALLOW IN-PLACE ACCESS FOR SERVICE AND MAINTENANCE OF COIL(S). COILS SHALL NOT ACT AS STRUCTURAL COMPONENT OF UNIT.
HYDRONIC COILS: COPPER TUBE MECHANICALLY BONDED TO FIN TYPE PLATE FIN MATERIAL: ALUMINUM.
PANEL FILTERS DESCRIPTION: PLEATED FACTORY-FABRICATED, SELF-SUPPORTED, DISPOSABLE AIR FILTERS WITH HOLDING FRAMES. FILTER UNIT CLASS UL 900. INTERLACED GLASS, SYNTHETIC OR COTTON FIBERS COATED WITH NONFLAMMABLE ADHESIVE. FILTER-MEDIA FRAME BEVERAGE BOARD WITH PERFORATED METAL RETAINER, OR METAL GRID, ON OUTLET SIDE.

TWO-PIECE BALL VALVES: BRONZE BODY WITH FULL-PORT, CHROME-PLATED BRONZE BALL; PTFE OR TFE SEATS; AND 600-PSIG (4140-KPA) MINIMUM CWP RATING AND BLOWOUT-PROOF STEM.

OUTDOOR-AIR DAMPER: LOW-LEAKAGE, DOUBLE-SKIN, AIRFOIL-BLADE, GALVANIZED-STEEL DAMPERS WITH COMPRESSIBLE JAMB SEALS AND EXTRUDED-VINYL BLADE EDGE SEALS IN PARALLEL-BLADE ARRANGEMENT WITH ZINC-PLATED STEEL OPERATING RODS ROTATING IN STAINLESS STEEL SLEEVE BEARINGS MOUNTED IN A SINGLE GALVANIZED-STEEL FRAME, AND WITH OPERATING RODS CONNECTED WITH A COMMON LINKAGE. LEAKAGE RATE SHALL NOT EXCEED 4 CFM/SQ. FT. AT 1-INCH WG AND 8 CFM/SQ. FT. AT 4-INCH WG (LEAKAGE CLASS 1).
ELECTRONIC DAMPER OPERATORS: DIRECT-COUPLED TYPE DESIGNED FOR MINIMUM 60,000 FULL-STROKE CYCLES AT RATED TORQUE. ELECTRONIC DAMPER POSITION INDICATOR SHALL HAVE VISUAL SCALE INDICATING PERCENT OF TRAVEL AND 2- TO 10-V DC, FEEDBACK SIGNAL.

OPERATOR MOTORS: COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS FOR MOTORS SPECIFIED IN SECTION 230513 "COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT." SIZE TO OPERATE WITH SUFFICIENT RESERVE POWER TO PROVIDE SMOOTH MODULATING ACTION OR TWO-POSITION ACTION. PERMANENT SPLIT-CAPACITOR OR SHADED-POLE TYPE: GEAR TRAINS COMPLETELY OIL IMMERSED AND SEALED. EQUIP SPRING-RETURN MOTORS WITH INTEGRAL SPIRAL-SPRING MECHANISM IN HOUSINGS DESIGNED FOR EASY REMOVAL FOR SERVICE OR ADJUSTMENT OF LIMIT SWITCHES, AUXILIARY SWITCHES, OR FEEDBACK POTENTIOMETER. SPRING-RETURN MOTORS FOR DAMPERS LARGER THAN 25 SQ. FT.: SIZE FOR RUNNING AND BREAKAWAY TORQUE OF 150 IN. X LBF. ELECTRONIC OVERLOAD OR DIGITAL ROTATION-SENSING CIRCUITRY.MECHANICAL, SPRING-RETURN MECHANISM WITH EXTERNAL, MANUAL GEAR RELEASE ON NONSPRING-RETURN ACTUATORS.

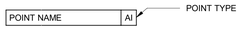
PROVIDE WARRANTY FOR WATERTIGHT ROOF PENETRATIONS.

14. ELECTRICAL RESISTANCE UNIT HEATERS
DELECTRIC-RESISTANCE HEATING COILS: NICKEL-CHROMIUM HEATING WIRE OR TUBULAR ELEMENTS IN COIL FINS, FREE OF EXPANSION NOISE AND HUM, WITH FUSES IN TERMINAL BOX FOR OVERCURRENT PROTECTION AND CONTINUOUS LIMIT CONTROLS FOR HIGH-TEMPERATURE PROTECTION. TERMINATE ELEMENTS IN STAINLESS-STEEL MACHINE-GROOVED TERMINALS SECURED WITH STAINLESS-STEEL HARDWARE.
FAN: FORWARD CURVED, DOUBLE WIDTH, CENTRIFUGAL; DIRECTLY CONNECTED TO MOTOR. THERMOPLASTIC OR PAINTED-STEEL WHEELS, AND ALUMINUM, PAINTED-STEEL, OR GALVANIZED-STEEL FAN SCROLLS.
FAN SHAFT AND BEARINGS: HOLLOW-STEEL SHAFT WITH PERMANENTLY LUBRICATED, RESILIENTLY MOUNTED BEARINGS.
DRIVE, DIRECT: FACTORY-MOUNTED, DIRECT DRIVE.
MOTORS: COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS.
ENCLOSURE TYPE: TOTALLY ENCLOSED, FAN COOLED.
EFFICIENCY: PREMIUM EFFICIENT MOTORS AS DEFINED IN NEMA MG 1.

15. STEAM TO HOT WATER HEAT EXCHANGER
CONSTRUCTION: FACTORY-FABRICATED WITH CAST-IRON FLANGED HEAD BOLTED TO STEEL
SHELL; SEAMLESS COPPER TUBES OF DIAMETER DETERMINED BY MANUFACTURER TO
MEET SERVICE REQUIREMENTS; STEEL TUBE-SHEETS AND BAFFLES; AND PIPING
CONNECTIONS. FABRICATE AND LABEL HEAT EXCHANGERS TO COMPLY WITH ASME BOILER
AND PRESSURE VESSEL CODE, SECTION VIII, "PRESSURE VESSELS," DIVISION 1.
A. PIPING CONNECTIONS 2 INCHES NPS AND SMALLER SHALL HAVE THREADED ENDS.
B. PIPING CONNECTIONS 2-1/2 INCHES AND LARGER SHALL HAVE FLANGED ENDS.
CONFIGURATION: U-TUBE
TUBE SIDE 150 PSIG

CONTROL SYMBOLS

CONTROL POINT INPUT/OUTPUT



DUCT/EQUIPMENT/PIPE MOUNTED CONTROL DEVICE



CEILING/WALL MOUNTED CONTROL DEVICE



2-WAY CONTROL VALVE



3-WAY CONTROL VALVE



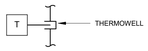
AVERAGING / CONTINUOUS SENSING ELEMENT SENSOR OR SWITCH



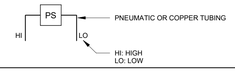
SINGLE POINT SENSOR OR SWITCH



IMMERSION TEMPERATURE SENSOR



DIFFERENTIAL PRESSURE SENSOR OR SWITCH



AIRFLOW MEASURING DEVICE OR HUMIDIFIER



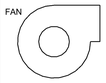
AIR FILTER



ELECTRIC, HYDRONIC, DX, STEAM OR GAS COIL



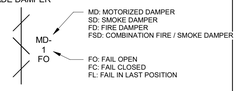
FAN



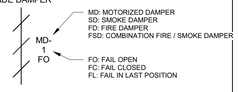
PUMP



OPPOSED BLADE DAMPER



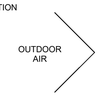
PARALLEL BLADE DAMPER



MOTOR STARTER, ELECTRONICALLY COMMUTATED MOTOR, VARIABLE FREQUENCY DRIVE, CONTROL PANEL



DUCT CONTINUATION



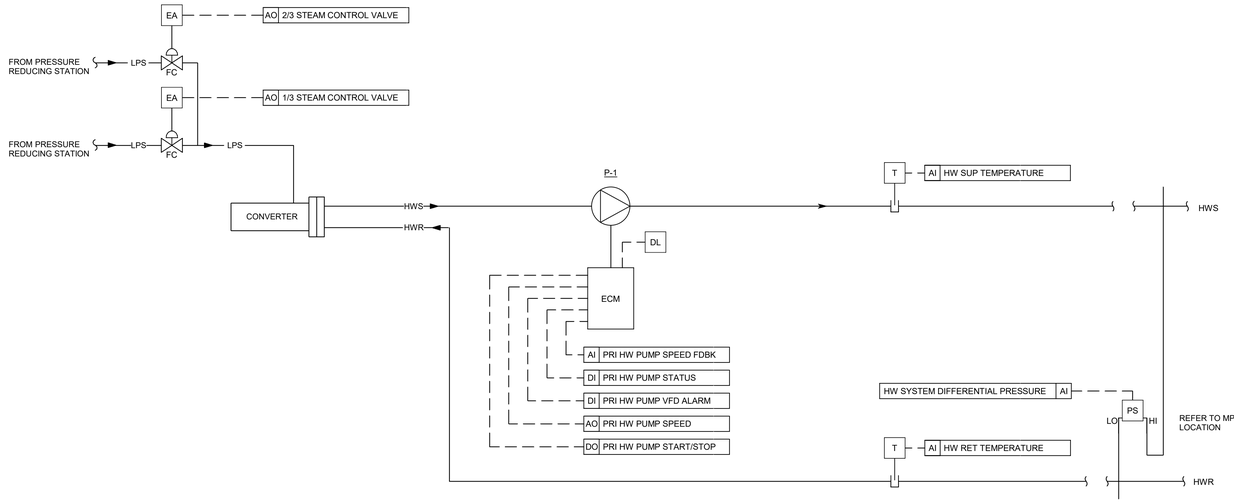
PIPE CONTINUATION

CONTROL ABBREVIATIONS

AI: ANALOG INPUT
AO: ANALOG OUTPUT
AF: AIRFLOW MEASURING DEVICE
AS: AIRFLOW SWITCH
CO2: CARBON DIOXIDE SENSOR
CO: CARBON MONOXIDE SENSOR
CS: CURRENT SENSOR
CSW: CURRENT SWITCH
DI: DIGITAL INPUT
DL: DATA LINK
DO: DIGITAL OUTPUT
DSD: DUCT SMOKE DETECTOR
EA: ELECTRIC ACTUATOR
ECM: ELECTRONICALLY COMMUTATED MOTOR
ES: END SWITCH
FM: FLOW METER
FS: FLOW SWITCH
FZ: FREEZESTAT
H: HUMIDITY SENSOR
LS: LEVEL SENSOR
LSW: LEVEL SWITCH
MS: MOTOR STARTER
OS: OCCUPANCY SENSOR
PS: PRESSURE SENSOR
PSW: PRESSURE SWITCH
S: SWITCH
T: TEMPERATURE SENSOR
TH: TEMPERATURE AND HUMIDITY SENSOR
TS: TEMPERATURE SWITCH
VFD: VARIABLE FREQUENCY DRIVE
VS: VIBRATION SENSOR
VSW: VIBRATION SWITCH

GENERAL SEQUENCE OF OPERATION

A. ADJUSTABLE SET POINTS: PROVIDE FUNCTIONALITY TO ADJUST ALL SET POINTS OR SET POINT LIMITS, WHERE SET POINT RESET LOGIC IS UTILIZED, AT THE BUILDING MANAGEMENT SYSTEM (BMS) GRAPHICAL INTERFACE.
B. TRENDING: PROVIDE FUNCTIONALITY TO SELECT POINTS FOR TRENDING, ADJUST THEIR FREQUENCY AND GENERATE CUSTOM TREND REPORTS AT THE BMS GRAPHICAL INTERFACE.
C. DUCT SMOKE DETECTOR ALARM / EQUIPMENT SHUTDOWN: ON ACTIVATION OF DUCT SMOKE DETECTOR, REPORT THE ALARM DIRECTLY TO THE FIRE ALARM SYSTEM (FAS) AND SHUT DOWN ASSOCIATED EQUIPMENT BY THE BMS.
D. RUNTIME ROTATION OF LEAD/LAG MECHANICAL EQUIPMENT: ROTATE LEAD/LAG MECHANICAL EQUIPMENT BASED ON ACCUMULATIVE RUNTIME ONCE EVERY 720 HOURS EXCEPT WHERE EQUIPMENT ROTATION IS PROVIDED BY EQUIPMENT MANUFACTURER'S CONTROL PANEL.
E. VARIABLE FREQUENCY DRIVE COMMUNICATIONS DATA LINK: PROVIDE, AT MINIMUM, THE FOLLOWING VARIABLE FREQUENCY DRIVE VIRTUAL POINTS BY ITS COMMUNICATIONS DATA LINK: ACCUMULATIVE RUN TIME, ACCUMULATIVE KILOWATT HOURS, FAULT RESET, OUTPUT VOLTAGE, OUTPUT AMPERAGE AND OUTPUT FREQUENCY. PROVIDE ALL AVAILABLE MAINTENANCE, FAULT OR ALARM STATUS VIRTUAL POINTS.
F. SYSTEM SET POINT RESET BASED ON ZONES OR SYSTEMS: AUTOMATICALLY DETECT ZONES AND SYSTEMS THAT EXCESSIVELY DRIVE SET POINT RESET LOGIC AND GENERATE AN ALARM. PROVIDE FUNCTIONALITY TO REMOVE ZONES OR SYSTEMS FROM SET POINT RESET LOGIC AT THE BMS GRAPHICAL INTERFACE.
G. SET POINT DEVIATION ALARM: ON DEVIATION OF TEMPERATURE, HUMIDITY, AIRFLOW OR OTHER CONTROL VARIABLE FROM SET POINT, GENERATE AN ALARM.
H. COMMAND FAILURE ALARM: ON COMMAND FAILURE, WHERE EQUIPMENT COMMAND DOES NOT MATCH ITS FEEDBACK OR STATUS, GENERATE AN ALARM.
I. COMMUNICATIONS FAILURE ALARM: ON FAILURE TO COMMUNICATE WITH A CONTROLLER OR CONTROL DEVICE, GENERATE AN ALARM.
J. ALARM LIMITS AND DELAYS: INCLUDE ALARM HIGH AND LOW LIMITS AND TIMED DELAYS THAT PREVENT NUISANCE ALARMS FROM OCCURRING WITHIN NORMAL ERROR OR RESPONSE TIME.
K. POWER FAILURE: ON LOSS OF POWER, RETURN VALVE AND DAMPER ACTUATORS TO THEIR FAIL SAFE POSITIONS. ON RESTORATION OF POWER, AUTOMATICALLY RESUME NORMAL OPERATION.



HEATING HOT WATER SYSTEM SEQUENCE OF OPERATION

A. GENERAL: SERVES MULTIPLE HOT WATER HEATING COILS. CONTROL TO MAINTAIN HEATING HOT WATER SUPPLY TEMPERATURE AND DIFFERENTIAL PRESSURE SET POINTS.
B. SCHEDULING: WHEN THE HEATING HOT WATER SYSTEM IS ENABLED, OPERATE CONTINUOUSLY.
C. HEATING HOT WATER SUPPLY TEMPERATURE SET POINT RESET: RESET HEATING HOT WATER SUPPLY TEMPERATURE LINEARLY FROM 120°F AT 60°F OUTSIDE AIR TEMPERATURE TO 180°F AT 20°F OUTSIDE AIR TEMPERATURE.
D. HEATING HOT WATER PUMP START/STOP CONTROL: WHEN THE SYSTEM IS ENABLED, ENERGIZE THE HEATING HOT WATER PUMP AND MODULATE THE 1/3 AND 2/3 CONTROL VALVES TO MAINTAIN HEATING HOT WATER SUPPLY TEMPERATURE AT SET POINT. WHEN THE SYSTEM IS DISABLED, DEENERGIZE THE PUMP AND CLOSE THE VALVES.
E. HOT WATER SUPPLY TEMPERATURE CONTROL: ON FALL IN HEATING HOT WATER SUPPLY TEMPERATURE BELOW SET POINT MODULATE THE 1/3 CONTROL VALVE OPEN. ON FURTHER FALL IN HEATING HOT WATER SUPPLY TEMPERATURE, MODULATE THE 2/3 CONTROL VALVE OPEN. ON A RISE IN HEATING HOT WATER SUPPLY TEMPERATURE ABOVE SET POINT, REVERSE THE SEQUENCE.
F. HEATING HOT WATER PUMP SPEED CONTROL: ON A FALL IN DIFFERENTIAL PRESSURE BELOW SET POINT, INCREASE HEATING HOT WATER PUMP SPEED. ON A RISE IN DIFFERENTIAL PRESSURE ABOVE SET POINT, REVERSE THE ACTION.
G. HEATING HOT WATER PUMP FAILURE ALARM: ON HEATING HOT WATER PUMP FAILURE, AS SENSED BY ITS ASSOCIATED ECM DRIVE, DEENERGIZE THE PUMP AND GENERATE AN ALARM.

1 HEATING HOT WATER SYSTEM
Scale: NO SCALE

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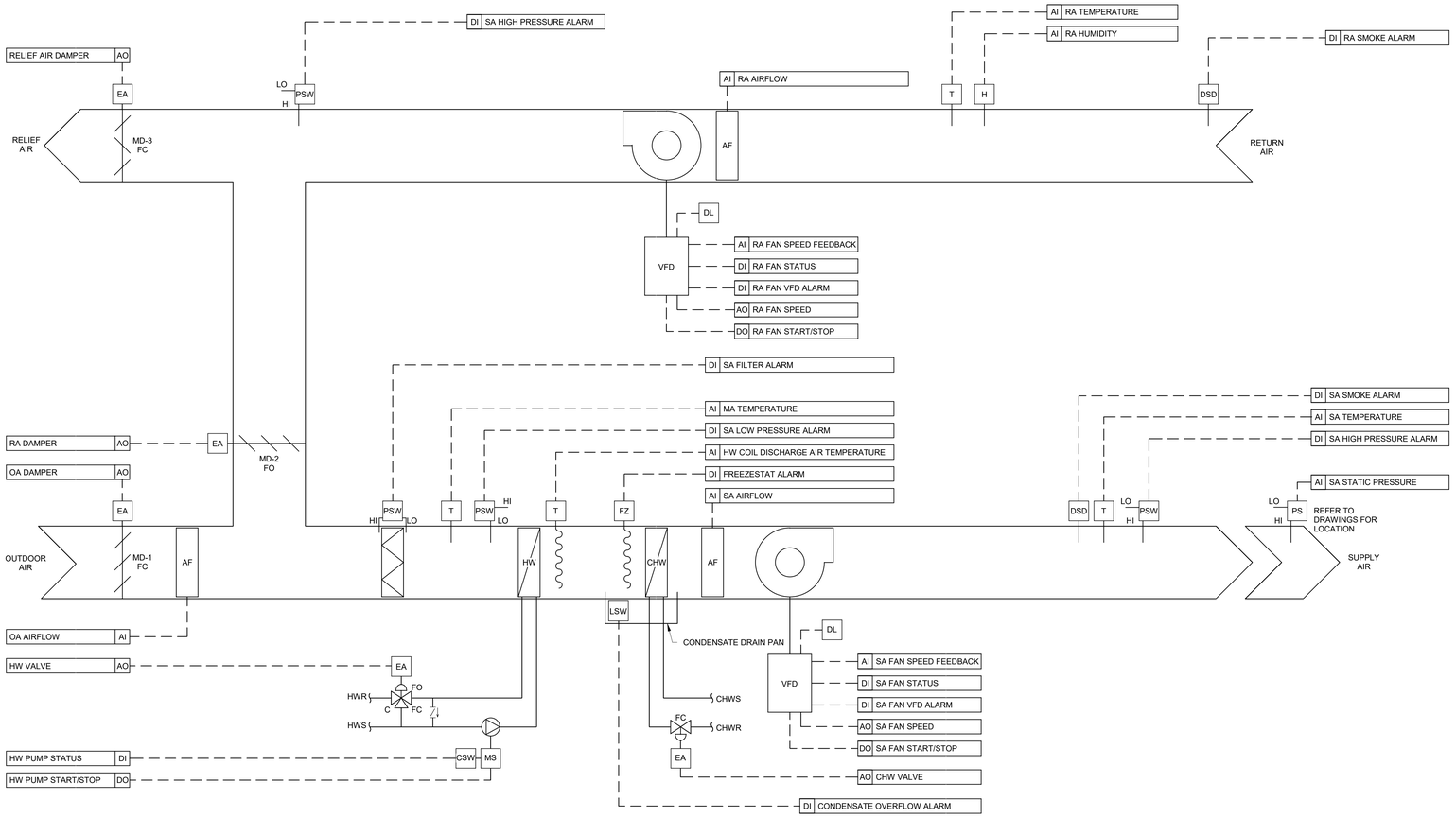
KEY PLAN

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SHEET TITLE
MECHANICAL CONTROLS

SHEET NUMBER
M-701

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VARIABLE AIR VOLUME AIR HANDLING UNIT (RTU-01) SEQUENCE OF OPERATION

A. GENERAL: SERVES MULTIPLE ZONES. CONTROL TO SATISFY ZONE DEMAND.

B. SCHEDULING: OPERATE OCCUPIED OR UNOCCUPIED MODE BASED ON TIME OF DAY SCHEDULING. OPERATE OCCUPIED IF ANY ASSOCIATED ZONES ARE OCCUPIED. OPERATE AIR HANDLING UNIT TO SATISFY ASSOCIATED ZONE TEMPERATURE SET POINTS IN BOTH OCCUPIED AND UNOCCUPIED MODES. PRIOR TO SCHEDULED OCCUPIED PERIOD, OPERATE THE AIR HANDLING UNIT AND ITS ASSOCIATED TERMINAL UNITS IN MORNING WARM-UP MODE. CALCULATE THE OPTIMUM START TIME TO BEGIN MORNING WARM-UP BASED ON ASSOCIATED ZONE TEMPERATURE DEVIATION FROM OCCUPIED SET POINTS AND OUTSIDE AIR TEMPERATURE.

C. ECONOMIZER MODE DECISION: ON A FALL IN OUTDOOR AIR TEMPERATURE BELOW 72°F AND OUTDOOR AIR ENTHALPY 2 BTU/LB BELOW RETURN AIR ENTHALPY, ENABLE TO ECONOMIZER MODE. ON A RISE IN OUTDOOR AIR TEMPERATURE ABOVE 75 °F OR OUTDOOR AIR ENTHALPY ABOVE RETURN AIR ENTHALPY, DISABLE TO ECONOMIZER MODE.

D. DEHUMIDIFICATION MODE DECISION: ON A RISE RETURN AIR RELATIVE HUMIDITY ABOVE 50% RH, ENABLE DEHUMIDIFICATION MODE. ON A FALL RETURN AIR RELATIVE HUMIDITY BELOW 40% RH, DISABLE DEHUMIDIFICATION MODE.

E. SUPPLY STATIC PRESSURE SET POINT RESET: CONTINUOUSLY POLL DAMPER POSITION OF SUPPLY TERMINAL UNITS. ON A FALL IN THE GREATEST TERMINAL UNIT DAMPER POSITION BELOW 90% OPEN, GRADUALLY RESET SUPPLY STATIC PRESSURE SET POINT TOWARDS MINIMUM STATIC PRESSURE SET POINT. ON A RISE IN THE GREATEST TERMINAL UNIT POSITION ABOVE 95% OPEN, GRADUALLY RESET SUPPLY STATIC PRESSURE SET POINT TOWARDS MAXIMUM STATIC PRESSURE SET POINT.

F. SUPPLY AIR TEMPERATURE SET POINT RESET:
1. WHEN RETURN AIR RELATIVE HUMIDITY IS BELOW 40%, ENABLE SUPPLY AIR TEMPERATURE SET POINT RESET BASED ON COOLING DEMAND. CONTINUOUSLY POLL COOLING DEMAND OF ASSOCIATED TERMINAL UNITS. ON A FALL IN COOLING DEMAND, GRADUALLY RESET SUPPLY AIR TEMPERATURE SET POINT TOWARD 60°F. ON A RISE IN DEMAND, GRADUALLY RESET SUPPLY AIR TEMPERATURE SET POINT TOWARDS 55°F. WHEN RETURN AIR RELATIVE HUMIDITY IS ABOVE 50%, DISABLE SUPPLY AIR TEMPERATURE SET POINT RESET BASED ON COOLING DEMAND AND RESET SUPPLY AIR TEMPERATURE SET POINT TO 55°F.
2. IN MORNING WARM-UP MODE, ON A FALL AVERAGE ZONE SPACE TEMPERATURE BELOW ITS OCCUPIED SPACE TEMPERATURE SET POINT, INCREASE SUPPLY AIR TEMPERATURE SET POINT TOWARDS 85°F. ONE A RISE IN AVERAGE ZONE TEMPERATURE ABOVE SET POINT, DECREASE SUPPLY AIR TEMPERATURE TOWARDS 55°F.
3. IN DEHUMIDIFICATION MODE, RESET THE SUPPLY AIR TEMPERATURE SET POINT TO 52°F.

G. SUPPLY FAN START/STOP CONTROL:
1. IN OCCUPIED OR MORNING WARM-UP MODE, OPERATE THE SUPPLY FAN CONTINUOUSLY.
2. IN UNOCCUPIED MODE, CYCLE THE SUPPLY FAN ON AND OFF TO SATISFY ASSOCIATE ZONE TEMPERATURE SET POINTS. ON A FALL IN ANY ASSOCIATED ZONE SPACE TEMPERATURE BELOW ITS UNOCCUPIED SPACE TEMPERATURE HEATING SET POINT OR ON A RISE ABOVE ITS UNOCCUPIED SPACE TEMPERATURE COOLING SET POINT, ENERGIZE THE SUPPLY FAN. ON A RETURN IN ASSOCIATE ZONE SPACE TEMPERATURE WITHIN UNOCCUPIED SET POINTS, DEENERGIZE THE SUPPLY FAN. MAINTAIN A 5°F DEAD BAND BETWEEN ENERGIZING AND DEENERGIZING THE SUPPLY FAN.

H. SUPPLY FAN SPEED CONTROL: ON A FALL IN SUPPLY STATIC PRESSURE BELOW SET POINT, INCREASE SUPPLY FAN SPEED. ON A RISE IN STATIC PRESSURE, REVERSE THE SEQUENCE.

I. RETURN FAN SPEED CONTROL: CONTROL RETURN FAN SPEED TO TRACK SUPPLY FAN SPEED BY A FIXED AIRFLOW OFFSET.

J. SUPPLY AIR TEMPERATURE CONTROL:
1. WHEN THE SUPPLY FAN IS ENERGIZED, ON A RISE IN SUPPLY AIR TEMPERATURE ABOVE SET POINT, MODULATE THE CHILLED WATER COOLING COIL CONTROL VALVE OPEN. ON A FALL IN SUPPLY AIR TEMPERATURE BELOW SET POINT, REVERSE THE SEQUENCE. OF A FURTHER FALL IN SUPPLY AIR TEMPERATURE, MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE OPEN AND ENERGIZE THE PREHEAT COIL PUMP. ON A RISE IN SUPPLY AIR TEMPERATURE ABOVE SET POINT, REVERSE THE SEQUENCE. WHEN THE PREHEAT COIL CONTROL VALVE IS FULLY CLOSED DEENERGIZE THE PREHEAT COIL PUMP, UNLESS OUTDOOR AIR TEMPERATURE IS BELOW 38°F, ENERGIZE THE PREHEAT COIL PUMP TO RUN CONTINUOUSLY. WHEN THE SUPPLY FAN IS DEENERGIZE, CLOSE THE CHILLED WATER COOLING COIL CONTROL VALVE AND HOT WATER REHEAT COIL UNLESS OUTDOOR AIR TEMPERATURE IS BELOW 38°F, ENERGIZE THE HOT WATER PREHEAT COIL CIRCULATION PUMP AND MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE TO MAINTAIN HOT WATER PREHEAT COIL DISCHARGE AIR TEMPERATURE AT 55°F.
2. IN ECONOMIZER MODE, CLOSE THE CHILLED WATER COOLING COIL CONTROL VALVE. ON A RISE IN SUPPLY AIR TEMPERATURE ABOVE SET POINT, MODULATE THE OUTDOOR AIR DAMPER AND RELIEF AIR DAMPER OPEN AND THE RETURN AIR DAMPER CLOSED. ON A FURTHER RISE IN SUPPLY AIR TEMPERATURE ABOVE SET POINT, MODULATE THE CHILLED WATER CONTROL VALVE OPEN. ON A FALL IN SUPPLY AIR TEMPERATURE, REVERSE THE SEQUENCE. ON A FURTHER FALL IN SUPPLY AIR TEMPERATURE BELOW SET POINT, MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE OPEN AND ENERGIZE THE PREHEAT COIL PUMP. ON A RISE IN SUPPLY AIR TEMPERATURE, REVERSE THE SEQUENCE.

K. OUTDOOR AIRFLOW CONTROL:
1. IN OCCUPIED MODE, CONTROL THE OUTSIDE AIR DAMPER AND RETURN AIR DAMPER TO MAINTAIN OUTSIDE AIRFLOW AT SET POINT UNLESS OVERRIDE BY ECONOMIZER MODE. ON A FALL IN OUTDOOR AIRFLOW BELOW SET POINT, MODULATE OUTDOOR AIR DAMPER OPEN AND RETURN AIR DAMPER CLOSED. ON A RISE IN OUTDOOR AIRFLOW, REVERSE THE SEQUENCE.
2. IN MORNING WARM-UP OR UNOCCUPIED MODE, CLOSE THE OUTDOOR AIR AND RELIEF AIR DAMPERS AND OPEN THE RETURN AIR DAMPER UNLESS OVERRIDDEN BY ECONOMIZER MODE.

L. DIRTY FILTER ALARM: ON A RISE IN FILTER DIFFERENTIAL PRESSURE ABOVE SET POINT, GENERATE AN ALARM.

M. FREEZESTAT ALARM: ON FREEZESTAT ACTIVATION, DEENERGIZE THE SUPPLY AND RETURN FAN, CLOSE THE OUTDOOR AIR DAMPER AND RELIEF AIR DAMPER, OPEN THE RETURN AIR DAMPER, CLOSE THE CHILLED WATER COOLING COIL CONTROL VALVE, OPEN THE HOT WATER PRE-HEAT COIL CONTROL VALVE AND GENERATE AN ALARM.

N. HIGH / LOW STATIC PRESSURE SWITCH ALARM: ON HIGH OR LOW STATIC PRESSURE SWITCH ACTIVATION, DEENERGIZE THE SUPPLY AND RETURN FAN, CLOSE THE OUTDOOR AIR DAMPER AND RELIEF AIR DAMPER, OPEN THE RETURN AIR DAMPER AND CLOSE THE CHILLED WATER COOLING COIL CONTROL VALVE AND HOT WATER PRE-HEAT COIL CONTROL VALVE UNLESS OUTDOOR AIR TEMPERATURE IS BELOW 38°F. ENERGIZE THE HOT WATER PREHEAT COIL CIRCULATION PUMP AND MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE TO MAINTAIN HOT WATER PREHEAT COIL DISCHARGE AIR TEMPERATURE AT 55°F AND GENERATE AN ALARM.

O. SUPPLY/RETURN DUCT SMOKE DETECTOR ALARM: ON DUCT SMOKE DETECTOR ACTIVATION, DEENERGIZE THE SUPPLY AND RETURN FAN, CLOSE THE SUPPLY AIR SMOKE DAMPER, RETURN AIR SMOKE DAMPER, OUTDOOR AIR DAMPER AND RELIEF AIR DAMPER, OPEN THE RETURN AIR DAMPER AND CLOSE THE CHILLED WATER COOLING COIL CONTROL VALVE AND HOT WATER PRE-HEAT COIL CONTROL VALVE UNLESS OUTDOOR AIR TEMPERATURE IS BELOW 38°F. ENERGIZE THE HOT WATER PREHEAT COIL CIRCULATION PUMP AND MODULATE THE HOT WATER PREHEAT COIL CONTROL VALVE TO MAINTAIN HOT WATER PREHEAT COIL DISCHARGE AIR TEMPERATURE AT 55°F AND GENERATE AN ALARM.

P. CONDENSATE OVERFLOW ALARM: ON CONDENSATE OVERFLOW ALARM SWITCH ACTIVATION, GENERATE AN ALARM.

1 VAV AIR HANDLING UNIT

Scale: NO SCALE

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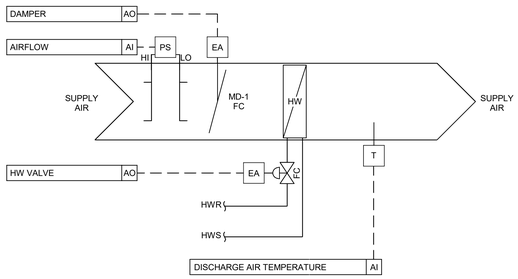
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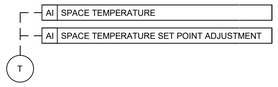
MECHANICAL CONTROLS

SHEET NUMBER

M-702

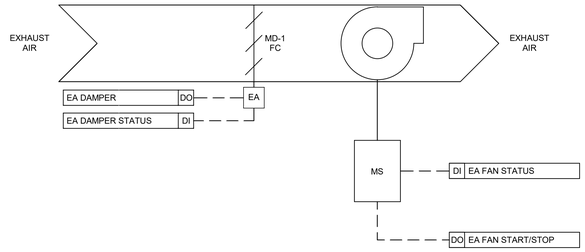
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TYPICAL VAV TERMINAL UNIT WITH HOT WATER REHEAT AND PERIMETER RADIATION (TU-) SEQUENCE OF OPERATION
A. GENERAL: PRESSURE INDEPENDENT THROUGH ITS OPERATING RANGE. CONTROL TO MAINTAIN ZONE TEMPERATURE.
B. SCHEDULING: OPERATE OCCUPIED OR UNOCCUPIED MODE BASED ON TIME OF DAY SCHEDULING. DURING OCCUPIED MODE OR MORNING WARM-UP MODE, MAINTAIN OCCUPIED SPACE TEMPERATURE SET POINT OF 72°F AND OCCUPIED MINIMUM AIRFLOW SET POINT. DURING UNOCCUPIED MODE, MAINTAIN UNOCCUPIED SPACE TEMPERATURE HEATING SET POINT OF 60°F, UNOCCUPIED SPACE TEMPERATURE COOLING SET POINT OF 80°F, AND UNOCCUPIED MINIMUM AIRFLOW SET POINT.
1. SPACE TEMPERATURE SET POINT ADJUSTMENT: ALLOW SET POINT ADJUSTMENT AT SPACE TEMPERATURE SENSOR AND LIMIT ADJUSTMENT TO ± 3°F.
2. UNOCCUPIED MODE OVERRIDE PUSH BUTTON: UPON ACTIVATION OF THE SPACE SENSOR UNOCCUPIED MODE OVERRIDE PUSH BUTTON, OPERATE OCCUPIED AND DISABLE DEMAND CONTROLLED VENTILATION FOR 2 HOURS.
3. DEMAND CONTROLLED VENTILATION: IN OCCUPIED MODE, RESET MINIMUM AIRFLOW SET POINT BASED ON ZONE OCCUPANCY. IF SPACE OCCUPANCY SENSOR(S) HAVE NOT SENSED ACTIVITY IN THE ZONE FOR 30 MINUTES, RESET MINIMUM AIRFLOW TO MINIMUM UNOCCUPIED AIRFLOW SET POINT. UPON ACTIVATION OF ANY SPACE OCCUPANCY SENSOR, RESET MINIMUM AIRFLOW TO MINIMUM OCCUPIED AIRFLOW SET POINT.
C. SPACE TEMPERATURE CONTROL: ON A RISE IN SPACE TEMPERATURE ABOVE SET POINT, RESET AIRFLOW SET POINT TOWARDS MAXIMUM AIRFLOW SET POINT. ON A FALL IN SPACE TEMPERATURE BELOW SET POINT, RESET AIRFLOW SET POINT TOWARDS MINIMUM AIRFLOW SET POINT. ON A FURTHER FALL IN SPACE TEMPERATURE, RESET AIRFLOW SET POINT TO MINIMUM HEATING AIRFLOW SET POINT AND MODULATE THE HOT WATER CONTROL VALVE OPEN. ON A RISE IN SPACE TEMPERATURE, REVERSE THE SEQUENCE. MAINTAIN A 5°F DEAD BAND BETWEEN HEATING AND COOLING MODES.
D. AIRFLOW CONTROL: ON A FALL IN AIRFLOW BELOW SET POINT, MODULATE THE DAMPER OPEN TO MAINTAIN AIRFLOW AT SET POINT. ON A RISE IN AIRFLOW ABOVE SET POINT, REVERSE THE SEQUENCE.

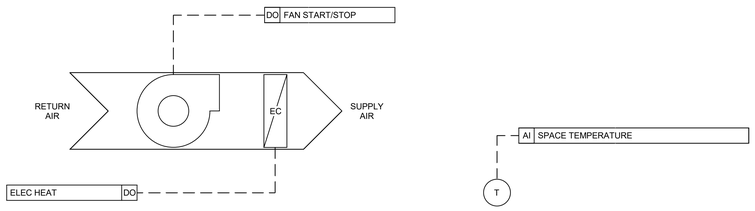
1 SUPPLY TERMINAL UNIT - VARIABLE VOLUME
Scale: NO SCALE



TYPICAL CONSTANT AIR VOLUME EXHAUST FAN (EF-) SEQUENCE OF OPERATION

A. SCHEDULING: OPERATE OCCUPIED OR UNOCCUPIED BASED ON TIME OF DAY SCHEDULING.
B. EXHAUST FAN START/STOP CONTROL:
1. IN OCCUPIED MODE, OPEN THE EXHAUST FAN ISOLATION DAMPER AND ENERGIZE THE EXHAUST FAN TO RUN CONTINUOUSLY.
2. IN UNOCCUPIED MODE, DEENERGIZE THE EXHAUST FAN AND CLOSE THE EXHAUST AIR DAMPER.

2 EXHAUST FAN
Scale: NONE



TYPICAL ELECTRIC UNIT HEATER (UH-1, UH-2, UH-3) SEQUENCE OF OPERATION

A. GENERAL: CONTROL TO MAINTAIN ZONE TEMPERATURE.
B. SCHEDULING: OPERATE THE UNIT HEATER CONTINOUSLY.
C. SUPPLY FAN START/STOP CONTROL:
1. IN OCCUPIED MODE, OPERATE THE SUPPLY FAN CONTINUOUSLY.
D. SPACE TEMPERATURE CONTROL: ON A FALL IN SPACE TEMPERATURE BELOW SET POINT OF 50°F, ENERGIZE THE FAN AND ITS ELECTRIC HEAT. ON A RISE IN SPACE TEMPERATURE ABOVE SET POINT, REVERSE THE SEQUENCE.

3 ELECTRIC UNIT HEATER
Scale: NO SCALE

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POWER DISTRIBUTION

- 3P 60 / 40 , 3R — FUSED DISCONNECT SWITCH. 60 = SWITCH RATING, 40 = FUSE RATING, 3P = NO. OF POLES, 3R = NEMA ENCLOSURE RATING; NO RATING SHOWN INDICATES NEMA 1.
- 3P 60 / NF , 3R — NON-FUSED DISCONNECT SWITCH. 60= SWITCH RATING, NF = NON-FUSIBLE, 3P = NO. OF POLES, 3R = NEMA ENCLOSURE RATING; NO RATING SHOWN INDICATES NEMA 1.
- T — TRANSFORMER
- ATS — AUTOMATIC TRANSFER SWITCH
- PANELBOARD TO BE DEMOLISHED OR RELOCATED
- PANELBOARD - MOUNTING TYPE DESIGNATED ON PANEL SCHEDULE
- NL1D1 — PANEL DESIGNATION TYPICAL
  - NUMBER DENOTES PANEL SEQUENCE
  - D DENOTES DISTRIBUTION PANEL
    L DENOTES LIGHTING PANEL
    M DENOTES MECHANICAL PANEL
    R DENOTES RECEPTACLE PANEL
    C DENOTES COMMUNICATIONS PANEL
    F DENOTES FIRE ALARM PANEL
  - DENOTES FLOOR NUMBER
  - H DENOTES 480Y/227 VOLTS
    L DENOTES 208Y/120 VOLTS
  - E DENOTES EMERGENCY PANEL CONNECTED TO GENERATOR
    N DENOTES NORMAL POWER PANEL
- HA-1,3 — CIRCUIT HOME RUN. LETTERS AND NUMBERS DESIGNATE PANEL AND CIRCUITS.

POWER DEVICES

ANNOTATION FOR RECEPTACLE AND JUNCTION BOX WIRING DEVICES AND EQUIPMENT CONNECTIONS:

SUBSCRIPTS INDICATE THE FOLLOWING FOR ALL RECEPTACLES, JUNCTION BOXES AND EQUIPMENT CONNECTIONS:

AC	MOUNT ABOVE COUNTER TOP, MH 42"AFF UON.
DW	DISHWASHER
GFI	GROUND FAULT CIRCUIT INTERRUPTER (GFCI)
MW	MICROWAVE
O	OCCUPANCY SENSING CONTROLLED RECEPTACLE. SEE SPECIFICATIONS SHEET E-002.
P	PRINTER
REF	REFRIGERATOR
USB	RECEPTACLE WITH (x1) TYPE-A USB PORT AND (x1) TYPE-C USB PORT
WC	WATER COOLER
WP	WEATHERPROOF WHILE-IN-USE COVER
XX"	MH AT XX" AFF

- DUPLEX RECEPTACLE TO BE DEMOLISHED OR RELOCATED
- SIMPLEX RECEPTACLE. WALL MOUNT AT 18" AFF TO CENTER UON.
- DUPLEX RECEPTACLE. WALL MOUNT AT 18" AFF TO CENTER UON.
- QUADRAPLEX,TYP OR DOUBLE DUPLEX RECEPTACLE. WALL MOUNT AT 18" AFF TO CENTER UON
- SPECIAL RECEPTACLE WITH NEMA CONFIGURATION. COORDINATE NEMA CONFIGURATION WITH EQUIPMENT MANUFACTURER. WALL MOUNT AT 18" AFF TO CENTER UON.
- JUNCTION BOX. WALL MOUNT AT 18" AFF TO CENTER UON. RECESSED FLUSH.
- JUNCTION BOX. CEILING MOUNTED.
- POKE-THRU WITH QUADRAPLEX OR DOUBLE DUPLEX RECEPTACLE. SEE DETAIL 6 SHEET E-501.
- POKE-THRU FLOOR JUNCTION BOX.
- $_{M}$ — 20A, 120/277V SINGLE POLE SWITCH, SUBSCRIPTS INDICATE THE FOLLOWING.
  M MOTOR RATED

TELECOM AND SECURITY DEVICES

- COMBINATION TELECOMMUNICATIONS/DATA OUTLET, MOUNTING HEIGHT 18" AFF UON WITH 1" EMT CONDUIT STUBBED ABOVE CEILING OR TO 9' AFF IF THERE IS NO CEILING IN ROOM.
  TV - DENOTES MOUNTED ON WALL 60" AFF UON.
- DATA OUTLET, MOUNTING HEIGHT 18" AFF UNLESS OTHERWISE NOTED WITH 1" EMT CONDUIT STUBBED ABOVE CEILING OR TO 9' AFF IF THERE IS NO CEILING IN ROOM.
- DATA CONNECTION, CEILING MOUNTED.
- CR — CARD READER WITH MINIMUM 1" EMT CONDUIT STUBBED ABOVE CEILING WITH PULL STRING. MOUNTING HEIGHT 54"AFF.

LIGHTING

ANNOTATION FOR LIGHTING:

SUBSCRIPTS INDICATE THE FOLLOWING FOR ALL LIGHTING FIXTURES.
A DENOTES FIXTURE TYPE
a DENOTES CONTROL ZONE

- CEILING MOUNTED RECESSED, SURFACE OR PENDANT MOUNTED LIGHT FIXTURE. DESIGNATION DENOTES TYPE, SEE THE FIXTURE SCHEDULE. SOLID FILL INDICATES EMERGENCY FIXTURE; PROVIDE WITH EMERGENCY DRIVER. CONNECT EMERGENCY BATTERY BACKUP AHEAD OF THE LOCAL SWITCH.
- WALL MOUNTED LIGHT FIXTURE. DESIGNATION DENOTES TYPE, SEE THE FIXTURE SCHEDULE. SOLID FILL INDICATES EMERGENCY FIXTURE; PROVIDE WITH EMERGENCY DRIVER. CONNECT EMERGENCY BATTERY BACKUP AHEAD OF THE LOCAL SWITCH.
- CEILING MOUNTED RECESSED, SURFACE OR PENDANT MOUNTED FIXTURE. DESIGNATION DENOTES TYPE, SEE THE FIXTURE SCHEDULE. SOLID FILL INDICATES EMERGENCY FIXTURE; PROVIDE WITH EMERGENCY DRIVER. CONNECT EMERGENCY BATTERY BACKUP AHEAD OF THE LOCAL SWITCH.
- CEILING MOUNTED EXIT LIGHT. SOLID FILL INDICATES LIT FACE(S). FACE ARROWS INDICATE THE DIRECTION OF TRAVEL TO EXIT
- WALL MOUNTED EXIT LIGHT. SOLID FILL INDICATES LIT FACE(S). FACE ARROWS INDICATE THE DIRECTION OF TRAVEL TO EXIT
- OS$_{a}$ — OCCUPANCY SENSOR. CEILING MOUNTED. SUBSCRIPT 'a' DESIGNATES ZONE CONTROLLED (WHEN PRESENT).
- OS$_{a}$ — WALL MOUNTED OCCUPANCY SENSOR. SUBSCRIPT 'a' DESIGNATES ZONE CONTROLLED (WHEN PRESENT).
- $_{a}$ — SINGLE POLE SWITCH. SUBSCRIPT 'a' DESIGNATES ZONE CONTROLLED (WHEN PRESENT).
- $_{3a}$ — 3-WAY SWITCH. SUBSCRIPT 'a' DESIGNATES ZONE CONTROLLED (WHEN PRESENT).
- $_{Da}$ — TOGGLE DIMMER SWITCH. SUBSCRIPT 'a' DESIGNATES ZONE CONTROLLED (WHEN PRESENT).
- $_{OSa}$ — OCCUPANCY SENSING SWITCH, SINGLE POLE. SUBSCRIPT 'a' DESIGNATES ZONE CONTROLLED (WHEN PRESENT).

ONE-LINE DIAGRAM

- CIRCUIT BREAKER
  X INDICATES FRAME SIZE,
  Y INDICATES TRIP RATING,
  Z INDICATES NUMBER OF POLES IF OTHER THAN 3.
- SPD — SURGE PROTECTION DEVICE
- 24N — FEEDER SCHEDULE INDICATOR
- LOAD / EQUIPMENT
- TRANSFORMER
- MOTOR LOAD
- DRAWOUT BREAKER
  X INDICATES FRAME SIZE,
  Y INDICATES TRIP RATING,
  Z INDICATES NUMBER OF POLES IF OTHER THAN 3.
- C — ONE-LINE DIAGRAM CONTINUATION SYMBOL
- M — SUB-METER WITH PEAK DEMAND AND KWH
- N — NEUTRAL BAR
- G — GROUND BAR

ELECTRICAL GENERAL NOTES - DEMO

1. REMOVE INDICATED ELECTRICAL WORK. REMOVE RACEWAYS, WIRING, AND EQUIPMENT WHERE INSTALLED EXPOSED OR WHERE INSTALLED CONCEALED BEHIND ACCESSIBLE CONSTRUCTION. RACEWAYS THAT CANNOT BE REMOVED AS INDICATED ABOVE SHALL BE ABANDONED IN PLACE AND ASSOCIATED WIRING AND DEVICES SHALL BE REMOVED.
2. ASSOCIATED CIRCUITRY SHALL BE DEFINED TO INCLUDE ALL RACEWAYS, CONDUCTORS, BOXES, WIRING DEVICES, PLATES, LAMPS, LUMINAIRES, SWITCHES, STARTERS, ETC. WHICH ARE ASSOCIATED WITH THE ITEM TO BE REMOVED.
3. THE PROTECTIVE DEVICE SHALL REMAIN AS AN INTEGRAL PART OF THE EXISTING PANEL.
4. WHERE CONDUIT ASSOCIATED WITH AN ITEM TO BE REMOVED IS IN AN INACCESSIBLE AREA, SUCH AS ENCASED IN CONCRETE, THE INACCESSIBLE CONDUIT ONLY SHALL BE ABANDONED IN PLACE, UNLESS INDICATED TO BE REUSED. ALL CONDUCTORS SHALL BE REMOVED AND CONDUIT SHALL BE CUT OFF FLUSH AND CAPPED. LABEL BOTH ENDS OF CONDUIT.
5. WHERE SUCH INACCESSIBLE CONDUIT ENDS OR MUST BE TERMINATED IN FINISHED SPACE, REMOVE THE CONDUIT OR BOX TO BELOW THE FINISHED SURFACE OF WALL, CEILING OR FLOOR, FILL VOID WITH NON-SHRINKING GROUT AND FINISH TO MATCH SURROUNDING SURFACES.
6. WHERE DEMOLITION OF CONDUITS WOULD CREATE OPENINGS IN THE EXTERIOR WALLS OR ROOF THAT WOULD REQUIRE PATCHING, DEMOLISH UP TO 12" OF WALL OR ROOF AND CAP CONDUIT.
7. WHERE A PORTION OF EQUIPMENT IS IDENTIFIED TO BE REMOVED, REMOVE ONLY THAT PORTION AND MAINTAIN REMAINING EQUIPMENT IN GOOD CONDITION FOR RECONNECTION.
8. WHERE EXTENSION OF AN EXISTING CIRCUIT IS REQUIRED TO MAINTAIN SERVICE, RUN CONDUIT AND WIRE AS INDICATED FROM THE CIRCUIT'S EXISTING LOCATION TO ITS NEW LOCATION.
9. REMOVE EQUIPMENT, DEVICES, AND CIRCUITRY ASSOCIATED WITH WORK OF OTHER TRADES; SEE ARCHITECTURAL/INTERIORS, MECHANICAL, PLUMBING, DRAWINGS FOR DETAILS.
10. WHERE AN ITEM OF EQUIPMENT IS INDICATED TO BE RETAINED, REMOVE AND STORE. INFORM OWNER AND ENGINEER OF ANY DEFECTS AT TIME OF REMOVAL.
11. REMOVE ANY ELECTRICAL ASSOCIATED WITH ABANDONED EQUIPMENT OR SYSTEMS.
12. DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER OR THE OWNER'S REPRESENTATIVE AND SHALL NOT INTERFERE WITH ACTIVITIES IN OTHER BUILDING AREAS. DEMOLISHED MATERIALS, UNLESS SPECIFICALLY INDICATED TO REMAIN OR BE TURNED OVER TO THE OWNER, SHALL BE PROMPTLY AND APPROPRIATELY REMOVED DISPOSED OF, PARTICULARLY MATERIALS CONTAINING HAZARDOUS MATERIALS SUCH AS LAMPS CONTAINING MERCURY OR TRANSFORMERS CONTAINING PCB'S. CONTRACTOR SHALL COORDINATE APPROPRIATE STAGING AREA WITH THE OWNER. COORDINATE WITH OWNER FOR OWNER-REMOVAL OF PROPERTY FROM THE PROJECT LOCATION. COORDINATE ANY POWER INTERRUPTIONS THAT AFFECT AREAS OUTSIDE THE LIMITS OF WORK WITH OWNER PRIOR A MINIMUM OF TEN WORKING DAYS PRIOR TO WORK.
13. DEMOLITION DRAWINGS AND/OR NOTES ARE BASED ON AS BUILT DRAWINGS AND CASUAL FIELD OBSERVATION AND SCHEMATICALLY INDICATE THE GENERAL SCOPE OF DEMOLITION. THE CONTRACTOR SHALL FIELD-VERIFY EXISTING CONDITIONS BEFORE WORK. FAILURE BY THE CONTRACTOR TO HAVE ACQUAINTED HIMHERSELF WITH AVAILABLE INFORMATION CONCERNING EXISTING CONDITIONS, INCLUDING EXISTING DRAWINGS, SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITIES OF PERFORMANCE OF WORK IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.
14. CONTRACTOR SHALL REPAIR DAMAGE TO THE BUILDING AREAS IDENTIFIED TO REMAIN WHICH OCCURS DURING THE COURSE OF THE DEMOLITION. REPAIR TO MATCH SURROUNDING SURFACES.
15. PROVIDE TEMPORARY POWER FOR EQUIPMENT REQUIRED TO REMAIN OPERATIONAL FOR THE PRESERVATION OF THE BUILDING. EXISTING ELECTRICAL WORK ASSOCIATED WITH SUCH EQUIPMENT SHALL REMAIN UNTIL REPLACEMENT EQUIPMENT IS OPERATIONAL.
16. PERFORM DEMOLITION IN PHASES WHERE INDICATED OR REQUIRED. PROVIDE TEMPORARY SERVICES TO AFFECTED SYSTEMS FROM SOURCES OUTSIDE AFFECTED AREA TO MAINTAIN SERVICE WHERE REQUIRED.
17. WHERE TEMPORARY REMOVAL OF WORK IS REQUIRED TO ACCOMMODATE WORK OF THIS OR OTHER TRADES, REMOVE AND STORE ELECTRICAL ITEMS IN THE PATH OF WORK. REINSTALL AND RECONNECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND/OR AS DIRECTED AFTER COMPLETION OF THE WORK IN THE AREA. PROVIDE TEMPORARY SERVICES SUCH AS EGRESS LIGHTING AND EXIT SIGNAGE AND ASSOCIATED CIRCUITRY TO AN UNAFFECTED APPROPRIATE POWER SOURCE WHERE THE WORK AREA MUST BE MAINTAINED OPEN FOR EGRESS.
18. WHERE CEILINGS ARE REMOVED TEMPORARILY FOR ABOVE-CEILING WORK, REMOVE/STORE OR TEMPORARILY SUPPORT CEILING-MOUNTED DEVICES/EQUIPMENT IN PLACE. REINSTALL AND RECONNECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND/OR AS DIRECTED AFTER COMPLETION OF THE WORK IN THE AREA.

ELECTRCAL GENERAL NOTES - NEW WORK

1. SEE SHEET G002 FOR ABBREVIATIONS AND GENERAL LEGEND.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC VERSION 2020), APPLICABLE NFPA SECTIONS AND ALL OTHER APPLICABLE CODES INCLUDING LOCAL AMENDMENTS.
3. THE DRAWINGS REPRESENT THE DESIGN INTENT. PROVIDE ALL ACCESSORIES AND APPURTENANCES INCLUDING, BUT NOT LIMITED TO, SLEEVES, OPENINGS, SUPPORTS, BOXES, AND PATCHING AS REQUIRED TO EXECUTE THE CONTRACT DOCUMENTS.
4. MOUNTING HEIGHT, UNLESS OTHERWISE NOTED, IS TO CENTER LINE OF EQUIPMENT; EXCEPT MOUNTING HEIGHT OF LIGHTING FIXTURES IS TO BOTTOM OF FIXTURE.
5. MOUNT OUTLET BOXES SO THAT NONE OCCUR BACK TO BACK IN WALLS. COORDINATE DEVICE MOUNTING HEIGHTS WITH DETAIL 1 SHEET E-501, APPROVED CASEWORK SUBMITTALS, ARCHITECTURAL ELEVATIONS AND DETAILS, AND WORK OF OTHER TRADES PRIOR TO INSTALLATION.
6. MECHANICAL EQUIPMENT IS SHOWN IN APPROXIMATE LOCATIONS. FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT AND PIPING, SEE MECHANICAL DRAWINGS.
7. COORDINATE THE LOCATIONS AND MOUNTING HEIGHTS OF LIGHTING FIXTURES IN MECHANICAL, ELECTRICAL AND ELEVATOR ROOMS WITH THE FINAL LOCATIONS OF PIPES, DUCTS AND OTHER EQUIPMENT FOR BEST ARRANGEMENT. FIXTURES SHALL BE EASILY ACCESSIBLE FOR MAINTENANCE.
8. MOUNT BOTTOM OF WALL-MOUNTED EXIT SIGNS 6" ABOVE THE TOP OF DOOR FRAME.
9. WHERE LIGHT SWITCHES ARE INDICATED TO BE MOUNTED BEHIND DOOR, MOUNT SUCH SWITCHES A MINIMUM OF 3'-9" FROM HINGED SIDE.
10. WHERE MORE THAN ONE SWITCH OCCURS IN HOLLOW METAL FRAME, MOUNT ONE ABOVE THE OTHER WITH TOP SWITCH MOUNTED AT 4'-0".
11. GROUNDING CONDUCTORS ARE NOT INDICATED IN BRANCH CIRCUIT RACEWAYS. PROVIDE GROUND CONDUCTORS AS SPECIFIED.
12. REVISE PANELBOARD SCHEDULES ON AS-BUILT-DRAWING AND PANEL DIRECTORIES TO REFLECT FINAL INSTALLATION CONDITIONS.
13. CONDUIT ROUTING IS PROVIDED FOR DESIGN INTENT UNLESS INDICATED OTHERWISE. COORDINATE ROUTE WITH FIELD CONDITIONS AND WORK OF OTHER TRADES. ROUTE CONDUIT WITHIN BUILDING PARALLEL AND PERPENDICULAR TO THE BUILDING LINES.
14. LOCATE ALL RACEWAYS TO AVOID INTERFERENCE WITH DUCTS, PIPES, MECHANICAL EQUIPMENT, WITH REMOVAL OF CEILING TILES, OR WITH ACCESS TO EQUIPMENT WHICH REQUIRES PERIODIC ADJUSTMENT OR MAINTENANCE.
15. COORDINATE THE LOCATION OF CONDUIT ENTRANCES FOR ALL EQUIPMENT WITH APPROVED SUBMITTALS PRIOR TO INSTALLING THE PATHWAYS TO SERVE THE EQUIPMENT.
16. EXTEND 2-1" EMPTY CONDUITS FROM RECESSED PANELBOARDS TO ABOVE CEILING AND CAP AND LABEL IN AN ACCESSIBLE LOCATION FOR FUTURE USE.
17. PROVIDE PULL BOXES TO FACILITATE CABLE PULLING AT A MINIMUM OF ONE PULL BOX EVERY 100 FEET OF STRAIGHT CONDUIT AND ONE AFTER TWO 90 DEGREE (OR EQUIVALENT) BENDS).
18. SEAL PENETRATIONS THROUGH FLOORS OR RATED PARTITIONS TO MAINTAIN THE INTEGRITY OF THE FIRE AND ACOUSTIC RATINGS. COORDINATE LOCATIONS OF SMOKE/FIRE PARTITIONS WITH LIFE-SAFETY DRAWINGS.
19. STOP CABLE TRAY SHORT OF RATED PARTITIONS. UTILIZE CONDUIT SLEEVES OF EQUIVALENT CAPACITY AND LISTED FIRESTOP ASSEMBLIES TO PENETRATE RATED PARTITIONS.
20. CONDUCTOR QUANTITIES (HASH MARKS) ARE NOT INDICATED ON CONDUIT SYMBOL. PROVIDE CONDUCTORS AS REQUIRED TO ACCOMPLISH INDICATED CIRCUIT INSTALLATION AND SWITCHING AS INDICATED FOR LIGHTING.
21. INDIVIDUAL BRANCH CIRCUITS FROM SIMILAR POWER SOURCE MAY BE CONSOLIDATED UNLESS INDICATED OTHERWISE; CONDUIT FILL AND CONDUCTOR DERATING SHALL BE PER NEC. CONSIDER NEUTRAL CONDUCTORS TO BE CURRENT CARRYING WHEN DERATNG CONDUCTORS.
22. PROVIDE A 4" THICK CONCRETE PAD UNDER ALL FLOOR-MOUNTED ELECTRICAL DISTRIBUTION EQUIPMENT.
23. THE CONTRACTOR BEFORE INSTALLING ANY OF THE WORK SHALL COORDINATE THE CLEARANCES REQUIRED FOR ELECTRICAL EQUIPMENT AND FINISHED COLUMNS, HUNG CEILING, AND PARTITIONS. THE CONTRACTOR IS RESPONSIBLE FOR NEGATIVE CONSEQUENCES RESULTING FROM MISCOORDINATION OF EQUIPMENT.
24. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL WALL OUTLET BOXES FOR RECEPTACLES, SWITCHES, ETC. WITH THE ARCHITECT AND OTHER TRADES PRIOR TO INSTALLATION.
25. VERIFY THE FINAL CONNECTION REQUIREMENTS FOR ALL EQUIPMENT WITH SUPPLIER AND PROVIDE JUNCTION BOXES, RECEPTACLES OR DISCONNECT SWITCHES AS REQUIRED. MAKE ALL CONNECTIONS AS REQUIRED.
26. ALL RACEWAYS RUNNING ACROSS AN EXPANSION JOINT SHALL BE EQUIPPED WITH EXPANSION FITTINGS. FURNISH APPROVED EXPANSION FITTINGS.
27. ALL EXTERIOR ELECTRICAL EQUIPMENT, RACEWAYS AND DEVICES SHALL BE WEATHERPROOF TYPE.
28. FURNISH PULL STRING IN EACH RACEWAY OVER 10'-0" IN LENGTH WHERE PERMANENT WIRE IS NOT INSTALLED. PULL STRING SHALL BE RATED FOR 200LBS.
29. ALL WIRING SHALL BE RUN CONCEALED UNLESS SPECIFIED OTHERWISE.
30. PROVIDE MINIMUM NUMBER OF LUGS AND NECESSARY PROVISIONS TO ACCOMMODATE FEEDERS.
31. IF A CONFLICT EXISTS WITHIN THE DRAWINGS AND/OR SPECIFICATIONS THE MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY. ITEMS SHOWN ON DRAWINGS, BUT NOT SPECIFIED, SHALL APPLY AND BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF AN ITEM SHOWN ON THE DRAWINGS, BUT IS NOT INCLUDED IN THE SPECIFICATIONS, PROVIDE ITEM OF A QUALITY LEVEL CONSISTENT WITH THE GENERAL QUALITY LEVEL OF THE CONTRACT REQUIREMENTS. BRING CONFLICTS BETWEEN DRAWINGS AND SPECIFICATIONS TO THE ATTENTION OF THE ENGINEER IMMEDIATELY FOR CLARIFICATION.
32. TYPICAL DETAILS THROUGHOUT THE DRAWING SET SHALL APPLY FOR ALL APPLICABLE CONDITIONS, EVEN IF NOT SPECIFICALLY SHOWN OR REFERENCED.
33. PROVIDE NAMEPLATES ON THE EXTERIOR OF ALL ELECTRICAL PANELS AND ENCLOSURES AS FOLLOWS:

LINE 1: DEVICE ID
LINE 2: DEVICE RATING
LINE 3: POWER SOURCE
LINE 4: INSTALLATION DATE

PANEL L1D1
100A, 208Y/120V - 3ϕ, 4W
FEEDS FROM PANEL MDP
INSTALLED: 2023

FOR DISCONNECT SWITCHES AND MOTOR STARTERS THE TOP LINE SHALL BE THE NAME/DESIGNATION OF THE EQUIPMENT BEING FED BY THE SWITCH/STARTER.

ELECTRICAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED.

ABBREVIATION	DESCRIPTION
1P	1 POLE (2P,3P,4P, ETC.)
1PH	SINGLE-PHASE
2/C	2 CONDUCTOR (3/C, 4/C, ETC.)
2W	2-WIRE (3W, 4W, ETC.)
3PH	THREE-PHASE
A	AMPERE
A/C	AIR CONDITIONING UNIT
A/E	ARCHITECT/ENGINEER
A/V	AUDIO / VISUAL
AC	ALTERNATING CURRENT
ACT	ABOVE COUNTERTOP
ADDL	ADDITIONAL
ADJ	ADJACENT, ADJOINING
ADO	AUTOMATIC DOOR OPENER
AF	AMPERE FRAME OR AMP FUSE
AFC	AVAILABLE FAULT CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ALT	ALTERNATE
AMB	AMBIENT
AMP	AMPLIFIER
APPROX	APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURAL
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BAT	BATTERY
BKR	BREAKER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BYP	BYPASS
C	CONDUIT
CAP	CAPACITY
CAT	CATALOG
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CD	CANDELA
CD	CONSTRUCTION DOCUMENTS
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
COAX	COAXIAL CABLE
COMB	COMBINATION
COMM	COMMUNICATION
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE, CONTINUATION
CONTR	CONTRACTOR
CPT	CONTROL POWER TRANSFORMER
CR	CRITICAL
CRI	COLOR RENDERING INDEX
CT	CURRENT TRANSFORMER
CTR	CENTER
CU	COPPER
DB	DUCTBANK
DBA	DECIBEL
DC	DIRECT CURRENT
DEG C	DEGREES CELSIUS
DEG F	DEGREES FAHRENHEIT
DEMO	DEMOLITION
DIA	DIAMETER
DIAG	DIAGRAM
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DS	DISCONNECT SWITCH
DWG	DRAWING
E.O.	ELECTRICALLY OPERATED
EC	ELECTRICAL CONTRACTOR
EG	EQUIPMENT GROUND
EL	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
EM	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMT	ELECTRICAL METALLIC TUBING
EPMS	ELECTRICAL POWER MANAGEMENT SYSTEM
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
EXP	EXPLOSION PROOF
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FABP	FIRE ALARM BOOSTER POWER SUPPLY PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FC	FOOTCANDLE
FCU	FAN COIL UNIT
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE METALLIC CONDUIT
FLR	FLOOR
FLT	FLOODLIGHT
FLUOR	FLUORESCENT
FT	FEET OR FOOT
FU	FUSE
G/GRD/GND	GROUND
GA	GAUGE
GAL	GALLON
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GRC	GALVANIZED RIGID CONDUIT
GTB	GROUND TERMINAL BOX
HH	HANDHOLE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HRG	HIGH RESISTANCE GROUND
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HZ	HERTZ
I/O	INPUT / OUTPUT
ICCB	INSULATED CASE CIRCUIT BREAKER
IESNA	ILLUMINATION ENGINEERING SOCIETY OF NORTH AMERICA
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IR	INFRARED
J-BOX	JUNCTION BOX
kV	KILOVOLT
kV/H	KILOVOLT AMPERE PER HOUR

ELECTRICAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED.

ABBREVIATION	DESCRIPTION
kVA	KILOVOLT AMPERE
kVAR	KILOVOLT AMPERE REACTIVE
kW	KILOWATT
kWH	KILOWATT HOUR
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LED	LIGHT EMITTING DIODE
LF	LINEAR FEET (FOOT)
LP	LIGHT POLE
LRA	LOCKED ROTOR AMPS
LRP	LIGHTING RELAY PANEL
LS	LIFE SAFETY
LSIG	LONG, SHORT, INSTANTANEOUS, GROUND
LTG	LIGHTING
LTNG	LIGHTNING
LV	LOW VOLTAGE
MAX	MAXIMUM
MC	METAL-CLAD
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MSB	MAIN SWITCHBOARD
MT,MTD,MTG	MOUNT, MOUNTED, MOUNTING
MTR	MOTOR, MOTORIZED
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
MVA	MEGAVOLT-AMPERE
MW	MEGAWATT
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT OR N	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, OR PUSHBUTTON
PF	POWER FACTOR
PH	PHASE
PIV	POST INDICATOR VALVE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER POLE
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE (PLASTIC)
PWR	POWER
QTY	QUANTITY
RCP	REFLECTED CEILING PLAN
RCPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
RTU	ROOF TOP UNIT
SA	SURGE ARRESTER
SCC	SHORT CIRCUIT CAPACITY
SEC	SECONDARY
SF	SQUARE FOOT (FEET)
SP	SPARE
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
SPST	SINGLE POLE, SINGLE THROW
STD	STANDARD
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
SYS	SYSTEM
TIC	TIME CLOCK
TL	TWIST LOCK
TR	TAMPER RESISTANT
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
V	VOLT, VOLTAGE
VA	VOLT AMPERE
VAR	VOLT AMPERE REACTIVE
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
W/	WITH
W/O	WITHOUT
WG	WIRE GUARD
WH	WATER HEATER
WP	WEATHERPROOF
XFER	TRANSFER
XFMR	TRANSFORMER

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

PROJECT NUMBER
60763454

SHEET TITLE
ELECTRICAL LEGEND AND GENERAL NOTES

SHEET NUMBER
E-001

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PART 1 - GENERAL

1.1 REFERENCES

A. CONDITIONS OF THE CONTRACT AND DIVISION 1, GENERAL REQUIREMENTS, APPLY TO WORK OF THIS SECTION. WHERE PARAGRAPHS OF THIS SECTION CONFLICT WITH SIMILAR PARAGRAPHS OF DIVISION 1, REQUIREMENTS OF THIS SECTION SHALL PREVAIL.

B. EXAMINE DRAWINGS AND OTHER SECTIONS OF SPECIFICATIONS FOR REQUIREMENTS THAT AFFECT WORK OF THIS SECTION.

C. AS USED IN THIS SECTION, "PROVIDE" MEANS "FURNISH AND INSTALL" AND "POS" MEANS "PROVIDED UNDER OTHER SECTIONS." "FURNISH" MEANS "TO PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT," AND "INSTALL" MEANS "TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT." THE WORD "PROVIDE" IS IMPLIED IN ALL STATEMENTS.

D. PERFORM WORK AND PROVIDE MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED OR INDICATED IN THIS SECTION OF THE SPECIFICATIONS. COMPLETELY COORDINATE WORK OF THIS SECTION WITH WORK OF OTHER TRADES AND PROVIDE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIED AND NOT SHOWN, AND WORK SHOWN AND NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES, AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE, AND COMPLETE INSTALLATION. REMOVE ALL DEBRIS CAUSED BY CONTRACTORS WORK.

E. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN CONTRACT. IT IS NOT INTENDED TO SPECIFY OR TO SHOW EVERY OFFSET, FITTING, OR COMPONENT; HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFIED AS NECESSARY TO MAKE INSTALLATION COMPLETE AND OPERATIONAL.

F. PERFORM WORK STRICTLY AS REQUIRED BY RULES, REGULATIONS, STANDARDS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.

G. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES (IF REQUIRED), PAY FEES AND BACKCHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.

H. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY, INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN.

I. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
1. PANELBOARDS
2. GROUNDING COMPONENTS
3. LIGHTING FIXTURES, INCLUDING LAMPS AND DRIVERS
4. CONDUIT AND RACEWAYS
5. WIRE AND CABLE
6. BRANCH CIRCUIT WIRING
7. WIRING DEVICES AND PLATES
8. SAFETY SWITCHES
9. FIRE SEAL, (AND) FIRE-PROOF FOAM
10. LIGHTING CONTROLS
11. NAMEPLATES, LABELS, AND TAGS
12. TESTING

1.2 CONTRACT DOCUMENTS

A. WORK TO BE PERFORMED UNDER THIS SECTION IS SHOWN PRIMARILY ON THE ELECTRICAL DRAWINGS.

B. LISTING OF DRAWINGS DOES NOT LIMIT RESPONSIBILITY OF DETERMINING FULL EXTENT OF WORK REQUIRED BY CONTRACT DOCUMENTS. REFER TO ARCHITECTURAL, ELECTRICAL, AND OTHER DRAWINGS AND OTHER SECTIONS THAT INDICATE TYPES OF CONSTRUCTION IN WHICH WORK SHALL BE INSTALLED AND WORK OF OTHER TRADESWITH WHICH WORK OF THIS SECTION MUST BE COORDINATED.

C. EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF ANY ITEM, IN THE DRAWINGS OR SPECIFICATIONS OR BOTH, CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM, REGARDLESS OF WHETHER OR NOT THIS INSTRUCTION IS EXPLICITLY STATED AS PART OF THE INDICATION OR DESCRIPTION.

D. ITEMS REFFERED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS SHALL BE PROVIDED IN QUANTITIES NECESSARY TO COMPLETE WORK.

E. DRAWINGS ARE DIAGRAMMATIC. THEY ARE NOT INTENDED TO BE ABSOLUTELY PRECISE; THEY ARE NOT INTENDED TO SPECIFY OR TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE PURPOSE OF THE DRAWINGS IS TO INDICATE A SYSTEMS CONCEPT, THE MAIN COMPONENTS OF THE SYSTEMS, AND THE APPROXIMATEGEOMETRICAL RELATIONSHIPS. BASED ON THE SYSTEMS CONCEPT, THE MAIN COMPONENTS, AND THE APPROXIMATE GEOMETRICAL RELATIONSHIPS, THE CONTRACTOR SHALL PROVIDE ALL OTHER COMPONENTS AND MATERIALS NECESSARY TO MAKE THE SYSTEMS FULLY COMPLETE AND OPERATIONAL.

1.3 DISCREPANCIES IN DOCUMENTS

A. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.

1.4 CODES, STANDARDS, AUTHORITIES, AND PERMITS

A. PERFORM WORK IN STRICT ACCORDANCE WITH THE RULES, REGULATIONS, STANDARDS,CODES,ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES HAVING LEGAL JURISDICTION OVER THE SITE.

1.5 RECORD DRAWINGS

A. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.

1.6 SUBMITTALS

A. SUBMIT SHOP DRAWINGS AND PRODUCT DATA WITHIN 5 DAYS AFTER AWARD OF CONTRACT. CHECK, STAMP AND MARK WITH PROJECT NAME SUBMITTALS BEFORE TRANSMITTING TO OWNER. INDICATE DEVIATIONS FROM CONTRACT DOCUMENTS.

B. SCHEDULE AT LEAST TEN WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW.

C. MATERIAL AND EQUIPMENT REQUIRING SHOP DRAWING AND PRODUCT DATA SUBMITTAL SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO:
1. LIGHTING FIXTURES, LAMPS, AND DRIVERS
2. WIRING DEVICES AND PLATES
3. RACEWAY, PULL BOXES, JUNCTION BOXES
4. SAFETY SWITCHES
5. LIGHTING CONTROLS
6. PANELBOARDS
7. MOTOR CONTROLLERS
8. GROUNDING COMPONENTS

D. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PREPARE AN OPERATION AND MAINTENANCE MANUAL, WHICH SHALL INCLUDE, AS-BUILT DRAWINGS, CATALOG DATA, EQUIPMENT INFORMATION, WIRING DIAGRAMS, WARRANTY INFORMATION, TEST REPORTS, ETC., FOR THE ELECTRICAL INSTALLATION. SUBMIT TWO COPIES TO THE OWNER FOR APPROVAL.

E. UPON COMPLETION OF WORK THE CONTRACTOR SHALL DEMONSTRATE THE INSTALLATION AND MAKE SUCH TESTS AS MAY BE REQUIRED TO SATISFY THE ARCHITECT/ENGINEER AND OWNER THAT WORK IS INSTALLED IN ACCORDANCE WITH DRAWINGS, SPECIFICATIONS AND INSTRUCTIONS. COMPLETE OPERATING INSTRUCTIONS IN HARD COPY SHALL BE LEFT WITH OWNER.

PART 2 - PRODUCTS

2.1 RACEWAYS

A. ELECTRICAL METALLIC TUBING (EMT), ANSI C80.3 GALVANIZED STEEL.

B. FLEXIBLE METAL CONDUIT (FMC), GALVANIZED STEEL, UL1. LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC) IN WET LOCATIONS.

C. RIGID STEEL CONDUIT (RGS), ANSI C80.1.

D. GALVANIZED RIGID STEEL CONDUIT (RGS), ANSI C80.1.

E. MALLEABLE IRON OR STEEL CONNECTORS AND COUPLINGS WITH INSULATED THROATS; MANUFACTURED ELBOWS; LOCKNUTS; AND PLASTIC OR BAKELITE BUSHINGS AT TERMINATIONS. COUPLINGS AND CONNECTORS SHALL BE GLAND AND RING COMPRESSION OR STAINLESS STEEL MULTIPLE POINT LOCKING OR STEEL CONCRETE-TIGHT SET SCREW. COMPRESSION COUPLINGS & CONNECTORS SHALL FORM POSITIVE GROUND. SET-SCREW CONNECTORS AND COUPLINGS SHALL HAVE WALL THICKNESS EQUAL TO CONDUIT, CASE-HARDENED, HEX-HEAD SCREWS AND SEPARATE GROUND WIRE. BUSHINGS FOR RIGID STEEL AND CONNECTORS FOR EMT SHALL HAVE INSULATING INSERTS THAT MEET REQUIREMENTS OF UL 514 FLAME TEST.

F. RACEWAYS SHALL BE 3/4" MINIMUM UNLESS INDICATED OTHERWISE, COMPLY WITH APPLICABLE UL AND ANSI STANDARDS APPLICABLE FOR RACEWAYS USED.

2.2 OUTLET BOXES

A. FOR CONCEALED WORK SHALL BE AT LEAST 4" SQUARE OR OCTAGONAL, GALVANIZED PRESSED STEEL WITH PLASTER RINGS AS REQUIRED. FOR EXPOSED CONDUIT WORK SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS.

B. FITTED WITH GALVANIZED STEEL PLASTER COVERS OF REQUIRED DEPTH TO FINISH FLUSH WITH FINISHED WALL OR CEILING.

C. SWITCH BOXES, RECEPTACLE BOXES, AND OTHER OUTLET BOXES SHALL BE STANDARD 4" SQUARE WITH PLASTER RINGS OR GANG COVER AS REQUIRED.

D. PROVIDE ONLY ENOUGH CONDUIT OPENINGS TO ACCOMMODATE CONDUITS AT INDIVIDUAL LOCATION. EACH BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE NUMBER AND SIZES OF CONDUITS, WIRES, AND SPLICES TO MEET NEC REQUIREMENTS, BUT SHALL BE AT LEAST SIZE SHOWN OR SPECIFIED. NECESSARY VOLUME SHALL BE OBTAINED BY USING BOXES OF PROPER DIMENSIONS.

2.3 JUNCTION BOXES AND PULL BOXES

A. PROVIDE CODE GAUGE GALVANIZED STEEL JUNCTION AND PULL BOXES FOR CONDUIT 1-1/4" TRADE SIZE AND LARGER, WHERE INDICATED AND AS NECESSARY TO FACILITATE INSTALLATION, OF REQUIRED DIMENSIONS, WITH ACCESSIBLE, REMOVABLE SCREW-ON COVERS. PROVIDE JUNCTION AND PULL BOXES IN SPECIAL SIZES AND SHAPES DETERMINED IN FIELD WHERE NECESSARY.

B. COVERS SHALL BE ACCESSIBLE. DO NOT INSTALL JUNCTION BOXES ABOVE CEILING EXCEPT WHERE CEILING IS REMOVABLE OR WHERE ACCESS PANEL IS PROVIDED.

C. SHEET METAL PULL BOXES SHALL BE SUPPORTED ADEQUATELY TO MAINTAIN SHAPE. LARGER BOXES SHALL HAVE STRUCTURAL STEEL BRACING WELDED INTO RIGID ASSEMBLY FORMED ADEQUATELY TO MAINTAIN ALIGNMENT IN SHIPMENT AND INSTALLATION. SECURE COVERS WITH CORROSION-RESISTANT SCREWS OR BOLTS.

2.4 WIRE AND CABLE (600 V INSULATION)

A. PROVIDE SINGLE-CONDUCTOR, ANNEALED COPPER WIRE AND CABLE WITH INSULATION RATED 600V, OF SIZES SPECIFIED AND SCHEDULED ON DRAWINGS, FOR SECONDARY SERVICE, FEEDERS, BRANCH, AND SYSTEM WIRING. WIRE INSULATED FOR 300V MAY BE USED WHERE VOLTAGE IS LESS THAN 100V, IF ISOLATED FROM HIGHER VOLTAGES. WIRE SIZES SHOWN AND SPECIFIED ARE AMERICAN WIRE GAUGE FOR COPPER.

B. WIRE #10 AND LARGER SHALL BE STRANDED; #12 AND SMALLER SHALL BE SOLID. WIRE AND CABLE SHALL HAVE THWN-THHN OR XHHW INSULATION, 75°C.

C. WIRING WITHIN LIGHT FIXTURES AND OTHER HIGH-TEMPERATURE EQUIPMENT SHALL HAVE 150°C INSULATION AS REQUIRED BY NEC.

D. SPLICES AND TERMINATIONS
1. MAKE SPLICES IN BRANCH CIRCUIT WIRING WITH UL-LISTED, SOLDERLESS CONNECTORS RATED 600V, OF SIZES AND TYPES REQUIRED BY MANUFACTURER'S RECOMMENDATIONS WITH TEMPERATURE RATINGS EQUAL TO THOSE OF WIRES. SPLICE CONNECTORS SHALL BE SCREW-ON. INSULATE SPLICES WITH INTEGRAL COVERS OR WITH PLASTIC OR RUBBER FRICTION TAPE TO PRESERVE CHARACTERISTICS OF WIRE AND CABLE INSULATION.
2. PROVIDE STANDARD BOLT-ON LUGS WITH HEX SCREWS TO ATTACH COPPER WIRE AND CABLE TO PANELBOARDS AND ELECTRICAL EQUIPMENT.
3. AMPACITY OF SPLICES AND CONNECTORS SHALL BE EQUAL TO THOSE OF ASSOCIATED WIRES AND CABLES.
4. PRODUCTS TO COMPLY WITH UL 486A AND UL 486B.

2.5 COLOR CODING

A. COLOR CODE SECONDARY SERVICE, FEEDERS, AND BRANCH CIRCUIT CONDUCTORS AS FOLLOWS: 208Y/120V WHITE (NEUTRAL), BLACK, RED AND BLUE. PROVIDE WITH SOLID GREEN GROUNDING CONDUCTOR. 480Y/277V GRAY (NEUTRAL), BROWN, ORANGE, AND YELLOW. PROVIDE GREEN WITH YELLOW STRIPE GROUNDING CONDUCTOR.

B. BRANCH CIRCUIT CONDUCTORS #12 AND #10 SHALL HAVE SOLID COLOR COMPOUND, SOLID COLOR COATING. NEUTRALS AND EQUIPMENT GROUNDS SHALL HAVE SOLID COMPOUND OR SOLID COLOR COATING (WHITE AND GREEN), EXCEPT WHERE COLORED STRIPES ARE REQUIRED. CONDUCTORS #8 AND LARGER WITH STRIPES, BANDS OR HASH MARKS SHALL HAVE BACKGROUND COLOR OTHER THAN WHITE AND GREEN.

2.6 WIRE PULLING EQUIPMENT

A. PROVIDE POLYETHYLENE ROPES WITH NOT LESS THAN 200-LB TENSILE STRENGTH FOR PULLING WIRE.

B. PROVIDE FISH WIRES FOR TELEPHONE AND OTHER EMPTY CONDUIT SYSTEMS REQUIRED, WITHOUT SPLICES AND WITH AMPLE EXPOSED LENGTHS AT EACH END.

2.7 WIRING DEVICES

A. PROVIDE WIRING DEVICES BY SINGLE MANUFACTURER. DEVICE COLORS SHALL BE WHITE. PROVIDE COMMERCIAL GRADE TYPE DEVICES.

B. TOGGLE SWITCHES:
1. SINGLE-POLE SHALL BE 20A., 120-277V AC.
2. THREE-WAY SHALL BE 20A., 120-277V AC.
3. SPECIFICATION GRADE TO COMPLY WITH UL20.

C. RECEPTACLES:
1. DUPLEX SHALL BE 125V, 20A, 2-POLE, 3W GROUNDING.
2. HEAVY DUTY RECEPTACLES SHALL BE SIZED AS REQUIRED FOR INTENDED SERVICE.
3. SPECIFICATION GRADE, COMPLY WITH NEMA WD1 AND UL 498.
4. CONTROLLED OUTLETS SHALL HAVE ENGRAVED IDENTIFICATION.

D. RECEPTACLES WITH USB TYPE-A AND C PORTS:
1. DUPLEX SHALL BE 125V, 20A, 2-POLE, 3W GROUNDING.
2. HEAVY DUTY RECEPTACLES SHALL BE SIZED AS REQUIRED FOR INTENDED SERVICE.
3. SPECIFICATION GRADE, COMPLY WITH NEMA WD1 AND UL 498.
4. CONTROLLED OUTLETS SHALL HAVE ENGRAVED IDENTIFICATION.
5. PROVIDE ONE TYPE-A USB PORT AND ONE TYPE-C USB PORT.

E. OCCUPANCY SENSORS:
1. WALL SWITCH: PASSIVE INFRARED SENSOR WITH SINGLE OR DOUBLE OVERRIDE SWITCH AS INDICATED BY SYMBOL.
   a. DEVICE SHALL FIT STANDARD DECORA-STYLE DEVICE PLATE.
   b. DEVICE SHALL DETECT SMALL MOTION WITHIN 20' IN ALL DIRECTIONS (180 DEGREE PATTERN).
   c. SHALL HAVE PHOTOCELL OPTION (WITH DISABLE) WHERE DEVICE IS SHOWN IN A ROOM WITH NATURAL LIGHT.
   d. ADJUST SENSORS FOR CONSISTENT DETECTION OF PEOPLE WITHOUT FALSE TRIGGERING DUE TO HVAC OR SUNLIGHT.
   e. COORDINATE TIME DELAY SETTING WITH OWNER.

2.7 WIRING DEVICES (CON'T)

E. OCCUPANCY SENSORS (CON'T):
2. CEILING AND WALL SENSOR: ULTRASONIC DUAL-TECHNOLOGY.
   a. DEVICE SHALL DETECT MOTION WITHIN 20' IN ALL DIRECTIONS (360 DEGREE PATTERN).
   b. PROVIDE POWER PACK FOR EACH CONTROLLED CIRCUIT.
   c. SYSTEM SHALL ACCEPT INTERCONNECTION OF MULTIPLE SENSORS AND/OR MULTIPLE POWER PACKS.
   d. POWER PACKS SHALL BE RATED FOR 20A, 120/277V. PROVIDE ISOLATED HVAC CONTROL RELAY OPTION.
   e. COORDINATE TIME DELAY SETTING WITH OWNER. 20 MINUTE STANDARD.
   f. ADJUST SENSORS FOR CONSISTENT DETECTION OF PEOPLE WITHOUT FALSE TRIGGERING DUE TO HVAC OR SUNLIGHT.

F. ALL LIGHTING CONTROLS SHALL BE PROVIDED BY THE SAME MANUFACTURER AND SHALL BE COMPATIBLE WITH THE LUMAIRES PROVIDED. COORDINATE WITH THE LIGHTING CONTROLS MANUFACTURER TO PROVIDE A COMPLETE AND FULLY FUNCTIONING SYSTEM, INCLUDING BUT NOT LIMITED TO POWER PACKS, MODULES, INTERCONNECTING CIRCUITRY AND ACCESSORIES.

2.8 WIRING DEVICE PLATES

A. ONE-PIECE, SCREW FASTENED, COMPLY WITH UL 514A.

B. NAMEPLATE DESIGNATIONS FOR DEVICE PLATES SHALL BE ENGRAVED DIRECTLY ON PLATES AND FILLED IN IN BLACK.

C. PROVIDE PLASTIC DEVICE WALL PLATES FOR TELEPHONE/DATA DEVICES. COORDINATE WALL PLATE WITH TELEPHONE/DATA OUTLET INSERT.

D. DEVICE PLATES SHALL BE BY MANUFACTURER OF WIRING DEVICES.

E. RECEPTACLE DEVICE PLATES FOR CIRCUITS OTHER THAN 120V, 2-WIRE, SHALL BE ENGRAVED WITH 1/4" LETTERS, FILLED RED, INDICATING VOLTAGE CHARACTERISTICS AND CIRCUIT NUMBER OF OUTLET.

F. OUTLETS SHALL BE FLUSH TO SURFACE UNLESS OTHERWISE INDICATED.

2.9 LUMINAIRES

A. INSTALL LIGHTING FIXTURES, EQUIPMENT AND COMPONENTS WHERE SHOWN ON DRAWINGS, AS LISTED IN FIXTURE SCHEDULES AND AS SPECIFIED, WIRED AND ASSEMBLED. PROVIDE APPROVED ALIGNER CANOPIES, HANGERS, AND OTHER APPURTENANCES AS REQUIRED.

B. LED AND LOW VOLTAGE FIXTURES SHALL BE SUPPLIED AS A SINGLE SYSTEM. ALL CONTROL GEAR (POWER SUPPLIES, TRANSFORMERS, DIMMING INTERFACES, LED DRIVERS, ETC.) REQUIRED FOR NORMAL OPERATION OF LED LUMINAIRES SHALL BE SUPPLIED.

C. ALL LED FIXTURES REPRESENT THE MOST CURRENT VERSION AVAILABLE FROM THE SPECIFIED MANUFACTURER AT TIME OF SPECIFICATION. DUE TO THE INEVITABLE DELAY BETWEEN 100% CD SPECIFICATION AND FIXTURE SUBMITTAL BY CONTRACTOR AND INEVITABLE IMPROVEMENTS IN LED TECHNOLOGY, UPDATES TO THE LED FIXTURES ARE ANTICIPATED. AT TIME OF FIXTURE SUBMITTAL, CONTRACTOR MUST SUBMIT THE MOST CURRENT, UP TO DATE FIXTURE EQUIVALENT OF THE SPECIFIED FIXTURE FROM THE MANUFACTURER.

D. LED DRIVERS SHALL HAVE A 10-YEAR MINIMUM WARRANTY, 10%-100% DIMMING USING 0-10V LOW VOLTAGE SIGNAL.

E. WHERE LUMINAIRE IS INDICATED TO BE POWERED VIA A LIGHTING INVERTER FOR EMERGENCY SERVICE, PROVIDE UL 924 LISTED RELAY DESIGNED TO ALLOW FOR OVERRIDE OF LUMINAIRE CONTROLLER AND FOR FULL LIGHT OUTPUT FOR 90 MINUTES FOLLOWING A POWER LOSS.

2.10 CIRCUIT BREAKERS

A. PROTECTIVE DEVICES SHALL BE MOLDED CASE CIRCUIT BREAKERS PROVIDING COMPLETE CIRCUIT OVERCURRENT PROTECTION BY HAVING INVERSE TIME AND INSTANTANEOUS TRIPPING CHARACTERISTICS.

B. CIRCUIT BREAKERS SHALL BE OPERATED BY A TOGGLE-TYPE HANDLE AND SHALL HAVE A QUICK-MAKE, QUICK-BREAK OVER-CENTER SWITCHING MECHANISM THAT IS MECHANICALLY TRIP FREE.

C. AUTOMATIC TRIPPING OF THE BREAKER SHALL BE CLEARLY INDICATED BY THE HANDLE POSITION.

D. PROVIDE HACR RATED CIRCUIT BREAKERS FOR MOTOR CIRCUIT PROTECTION WHERE CONNECTED TO MOTORS OR MECHANICAL EQUIPMENT.

E. COMPLY WITH UL 489.

F. SERIES RATED EQUIPMENT SHALL NOT BE UTILIZED.

2.11 SURGE PROTECTIVE DEVICES:

A. COMPLY WITH UL 1449.

2.12 GROUNDING AND BONDING:

A. COMPLY WITH UL 467.

2.13 SAFETY SWITCHES:

A. FUSED AND NONFUSED SAFETY SWITCHES SHALL BE PROVIDED AS REQUIRED. SAFETY SWITCHES SHALL BE ENCLOSED HEAVY-DUTY TYPE WITH QUICK-MAKE, QUICK-BREAK MECHANISM AND EXTERNAL LOCKING OPERATING HANDLE.

B. FUSES SHALL BE NON-RENEWABLE. DUAL ELEMENT, TIME DELAY "RK5".

C. ALL DISCONNECT SWITCHES SHALL BE CAPABLE OF BEING LOCKED IN THE OFF POSITION.

D. SERIES RATED EQUIPMENT SHALL NOT BE UTILIZED.

2.14 PANELBOARDS

A. PANELBOARDS SHALL BE LABELED WITH A UL SHORT CIRCUIT WITHSTAND RATING.

B. INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED WITH BOLT-ON DEVICES.

C. PROVIDE COMPLETE WITH HINGED DOOR COVERING. ALL CIRCUIT BREAKER HANDLES AND SEMI-FLUSH CYLINDER LOCK WITH CATCH ASSEMBLY.

D. MAIN BUS BARS SHALL BE 100% COPPER SIZED IN ACCORDANCE WITH UL STANDARDS LIMIT TEMPERATURE RISE ON ANY CURRENT CARRYING PART TO A MAXIMUM 65°C ABOVE AN AMBIENT OF 40° MAXIMUM.

E. PROVIDE BOLTED GROUND COPPER BAR AND FULL SIZE NEUTRALS, UNLESS OTHERWISE NOTED.

F. ENCLOSURE SHALL BE AT LEAST 20 INCHES WIDE, MADE OF GALVANIZED STEEL. PROVIDE MINIMUM GUTTER SPACE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

G. PROVIDE ENGRAVED NAMEPLATE FOR EACH PANEL SECTION.

H. SURFACES OF THE TRIM ASSEMBLY SHALL BE PROPERLY CLEANED, PRIMED, AND A FINISH COAT OF GRAY ANSI 61 PAINT APPLIED.

I. SERIES RATED EQUIPMENT SHALL NOT BE UTILIZED.

J. SERVICE ENTRANCE EQUIPMENT: SUITABLE FOR USE WITH SERVICE EQUIPMENT. COMPLY WITH UL 869A.

PART 3 - EXECUTION

3.1 MATERIALS AND WORKMANSHIP

A. WORK SHALL BE EXECUTED IN WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR, AND MECHANICAL APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEADROOM AT ALL TIMES. DO NOT RUN PIPES AND DUCTS EXPOSED UNLESS SHOWN EXPOSED ON DRAWINGS. MATERIAL AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDED BEST PRACTICE SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.

3.2 CONTINUITY OF SERVICES

A. DO NOT INTERRUPT EXISTING SERVICES WITHOUT OWNER'S AND ARCHITECT'S APPROVALS.

3.3 TESTING, INSPECTION, AND CLEANING

A. TEST WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS BEFORE FIXTURES ARE CONNECTED; DEMONSTRATE INSULATION RESISTANCE BY MEGGER TEST AS REQUIRED. INSULATION RESISTANCE BETWEEN CONDUCTORS AND GROUNDS FOR SECONDARY DISTRIBUTIONS SYSTEMS SHALL MEET NEC REQUIREMENTS.

B. TEST LIGHTING FIXTURES WITH SPECIFIED LAMPS IN PLACE FOR 10 HOURS; CHECK FIXTURES IN SECTIONS. DO NOT OPERATE LAMPS OTHER THAN FOR TESTING BEFORE FINAL INSPECTION BY ARCHITECT. REPLACE LAMPS THAT FAIL WITHIN 90 DAYS AFTER ACCEPTANCE BY ARCHITECT WITHIN CONTRACT PRICE.

C. FAILURE OR DEFECTS IN WORKMANSHIP OR MATERIALS REVEALED BY TESTS OR INSPECTION SHALL BE CORRECTED PROMPTLY AND RETESTED. REPLACE DEFECTIVE MATERIAL.

D. CLEAN PANELS AND OTHER EQUIPMENT. PANELBOARD INTERIORS SHALL BE CLEANED AND VACUUMED. EQUIPMENT WITH DAMAGE TO PAINTED FINISH SHALL BE REPAIRED TO ARCHITECT'S SATISFACTION.

E. EQUIPMENT
1. AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS SECTION, INCLUDING CONCRETE RESIDUE.

F. ELECTRICAL AND MECHANICAL CLOSETS SHALL BE CLEANED AND VACUUMED.

3.4 NAMEPLATES

A. PROVIDE NAMEPLATES IN OR ON PANELBOARDS, JUNCTION BOXES AND CABINETS, AND FOR SPECIAL PURPOSE SWITCHES OR OTHER CONTROLS FURNISHED OR INSTALLED UNDER THIS SECTION. NAMEPLATES SHALL DESIGNATE EQUIPMENT CONTROLLED AND FUNCTION.

B. NAMEPLATES SHALL BE LAMINATED BLACK BAKELITE WITH 1/4" HIGH WHITE RECESSED LETTERS. NAMEPLATES SHALL BE SECURELY ATTACHED TO THE EQUIPMENT WITH GALVANIZED SCREWS. ADHESIVES OR CEMENTS SHALL NOT BE USED.

C. LABEL RECEPTACLES AND SWITCHES WITH PANEL AND CIRCUIT NUMBER.

D. LABEL JUNCTION BOXES WITH PANEL AND CIRCUIT NUMBER.

E. LABEL PANELBOARDS WITH ARC FLASH LABELS IN ACCORDANCE WITH NFPA ARTICLE 70 (NEC) 110.16 AND NFPA ARTICLE 70E.

F. LABEL DISCONNECT SWITCHES WITH ARC FLASH LABELS IN ACCORDANCE WITH NFPA ARTICLE 70 (NEC) 110.16 AND NFPA ARTICLE 70E.

3.5 WIRING METHODS

A. INSTALL WIRE AND CABLE IN APPROVED RACEWAYS AS SPECIFIED AND AS APPROVED BY AUTHORITIES THAT HAVE JURISDICTION. SURFACE METAL RACEWAYS SHALL NOT BE USED UNLESS EXPLICITLY SPECIFIED AND SHOWN ON DRAWINGS. DO NOT USE SURFACE RACEWAYS ON FLOOR. TYPE MC OR ARMORED CABLE SHALL NOT BE UTILIZED.

B. WIRE FROM POINT OF SERVICE CONNECTION TO RECEPTACLES, LIGHTING FIXTURES, DEVICES, EQUIPMENT, OUTLETS FOR FUTURE EXTENSION, AND OTHER ELECTRICAL APPARATUS AS SHOWN ON DRAWINGS. PROVIDE SLACK WIRE FOR CONNECTIONS. TAPE ENDS OF WIRES AND PROVIDE BLANK COVERS FOR OUTLET BOXES DESIGNATED FOR FUTURE USE.

C. FOLLOW HOMERUN CIRCUIT NUMBERS SHOWN ON DRAWINGS TO CONNECT CIRCUITS TO PANELBOARDS. WHERE HOMERUN CIRCUIT NUMBERS ARE NOT SHOWN ON DRAWINGS, DIVIDE SIMILAR TYPES OF CONNECTED LOADS AMONG PHASE BUSES SO THAT CURRENTS ARE APPROXIMATELY EQUAL IN NORMAL USAGE. CONNECT EACH BRANCHCIRCUIT HOMERUN WITH TWO OR MORE CIRCUITS AND COMMON NEUTRAL TO CIRCUIT BREAKER OR SWITCH IN THREE-WIRE OR FOUR-WIRE BRANCH CIRCUIT PANELBOARD SO THAT NO TWO CIRCUITS ARE FED FROM SAME BUS. WHERE PANELBOARD CABINETS ARERECESSED, PROVIDE CONDUITS WITH SUFFICIENT CAPACITY FOR FUTURE CONDUCTORS FOR SPARE BRANCH CIRCUIT CIRCUIT PROTECTIVE DEVICES AND SPACES IN PANELBOARD; STUB UP CONCEALED TO JUNCTION BOX. PROVIDE EXTENSIONS ABOVECEILING.

D. ELECTRICAL METALLIC TUBING MAY BE USED GENERALLY, IF APPROVED BY LOCAL CODES, FOR LIGHTING FIXTURE AND RECEPTACLE CIRCUITS, TELEPHONE, INTER-COMMUNICATIONS, SIGNAL AND INSTRUMENTATION CIRCUITS, AND FOR CONTROL CCIRCUITS. EMT MAY BE USED GENERALLY, IF APPROVED BY AUTHORITIES, IN MASONRY WALLS, ABOVE HUNG CEILINGS, IN EQUIPMENT ROOMS, IN MECHANICAL AND ELECTRICAL CHASES AND CLOSETS, IN EXPOSED LOCATIONS ALONG CEILINGS OR WALLS ABOVENORMAL TRAFFIC LEVEL AND WHERE NOT SUBJECT TO ACCIDENTAL DAMAGE OR ABUSE.

E. INSTALL CONNECTORS AND COUPLINGS AS RECOMMENDED BY MANUFACTURERS. COMPRESSION FITTINGS SHALL NOT BE USED WITH RGS.

F. PROVIDE FLEXIBLE CONDUITS FOR CONNECTIONS TO ELECTRICAL EQUIPMENT AND TO EQUIPMENT FURNISHED UNDER DIVISIONS 14 AND 15 THAT ARE SUBJECT TO MOVEMENT, VIBRATION, OR MISALIGNMENT; WHERE AVAILABLE SPACE DICTATES; AND WHERE NOISE TRANSMISSION MUST BE ELIMINATED OR REDUCED. FLEXIBLE CONDUIT SHALL BE LIQUID-TIGHT UNDER FOLLOWING CONDITIONS:
1. MOISTURE OR HUMIDITY-LADEN ATMOSPHERES
2. CORROSIVE ATMOSPHERES
3. WHERE WASH-DOWN OPERATIONS ARE POSSIBLE
4. WHERE SEEPAGE OR DRIPPING OF OIL, GREASE, OR WATER IS POSSIBLE.

G. RUN CONCEALED CONDUIT IN AS DIRECT LINES AS POSSIBLE WITH MINIMUM NUMBER OF BENDS OF LONGEST POSSIBLE RADIUS. RUN EXPOSED CONDUIT AND EMT PARALLEL TO OR AT RIGHT ANGLES TO BUILDING LINES. ENDS SHALL BE FREE FROM DENTS OR FLATTENING.

H. CONDUIT AND EMT RUNS SHALL BE MECHANICALLY AND ELECTRICALLY CONTINUOUS FROM SERVICE ENTRANCE TO OUTLETS. CONDUIT SHALL ENTER AND BE SECURED TO CABINET, JUNCTION BOX, PULL BOX, OR OUTLET BOX WITH LOCKNUT OUTSIDE AND BUSHING INSIDE, OR WITH LIQUID-TIGHT, THREADED, SELF-LOCKING, COLD-WELD WEDGE ADAPTER. PROVIDE ADDITIONAL WRENCH-TIGHTEN LOCKNUT FOR EMT OR FLEXIBLE CONDUIT WHERE CIRCUIT VOLTAGE EXCEEDS 250 V. LOCKNUTS AND BUSHINGS OR SELF-LOCKING ADAPTERS WILL NOT BE REQU

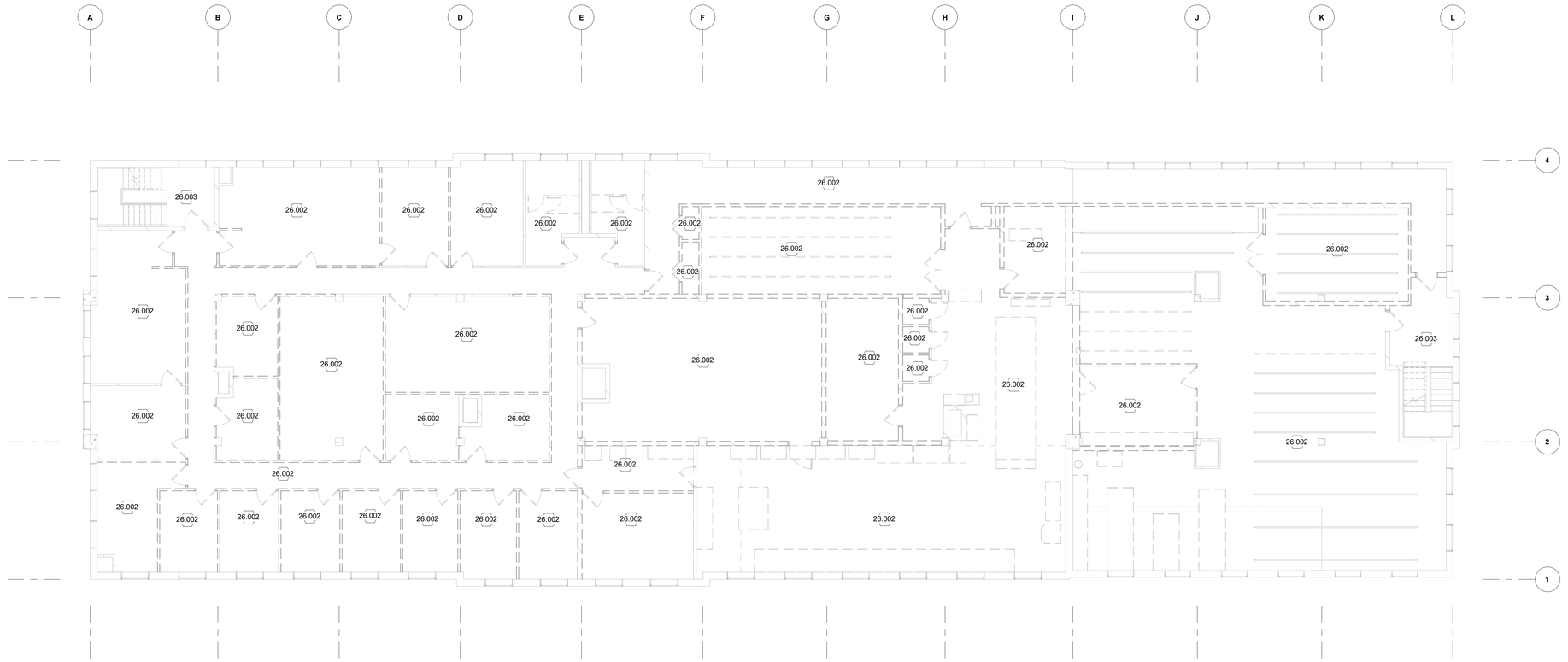
GENERAL NOTES - DEMOLITION:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL DEMOLITION ELECTRICAL GENERAL NOTES.

SHEET KEYNOTES:

26.002 DEMOLISH EXISTING LIGHTING FIXTURES AND ASSOCIATED CIRCUITRY IN THIS SPACE BACK TO SOURCE UON.

26.003 LIGHTING FIXTURES IN THIS SPACE TO REMAIN AS IS.



1 SECOND FLOOR LIGHTING PLAN - DEMOLITION
EDL102 Scale: 1/8" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

PN
TN

8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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AECOM

PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

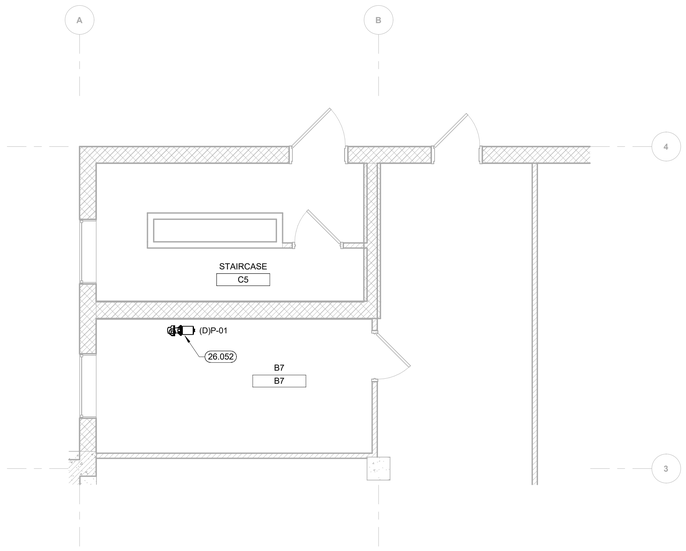
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SHEET TITLE

SECOND FLOOR LIGHTING PLAN - DEMOLITION

SHEET NUMBER

EDL102



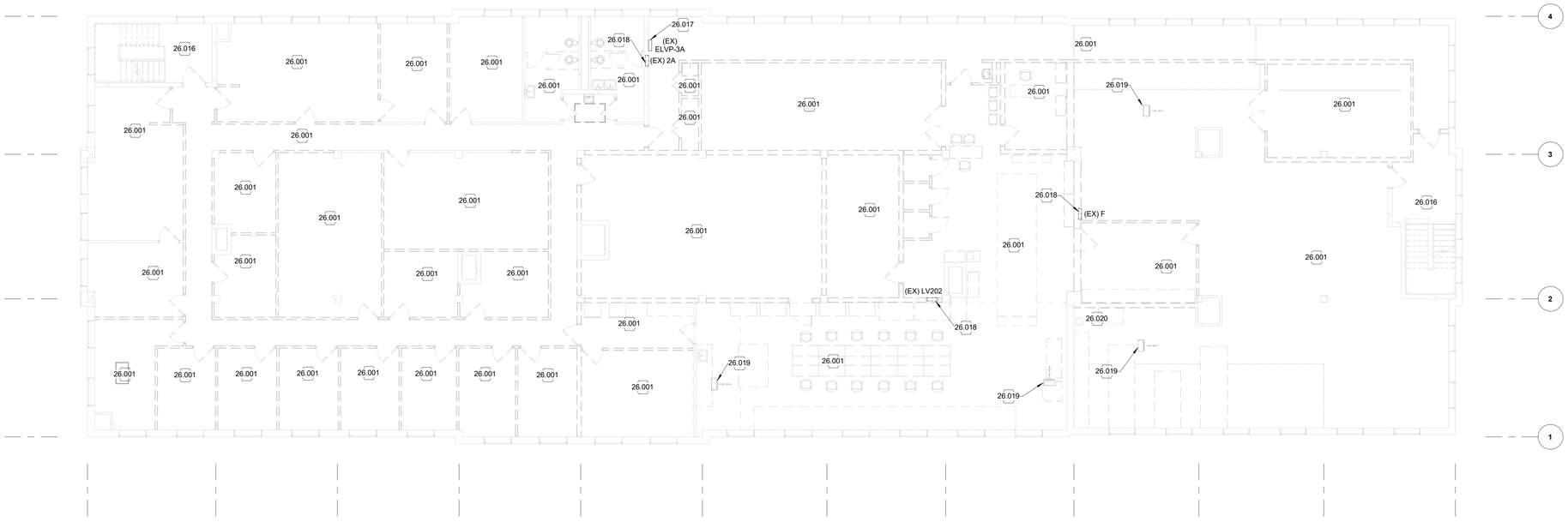
1 | FIRST FLOOR PARTIAL POWER PLAN - DEMOLITION
EDP102 | Scale: 1/4" = 1'-0"

GENERAL NOTES - DEMOLITION:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL DEMOLITION ELECTRICAL GENERAL NOTES.

SHEET KEYNOTES:

26.001	DEMOLISH ALL DEVICES AND ASSOCIATED CIRCUITRY IN THIS SPACE BACK TO SOURCE UON.
26.016	EXISTING DEVICES IN THIS SPACE TO REMAIN UON.
26.017	EXISTING EMERGENCY PANEL ELVP-3A TO REMAIN. DEMOLISH ASSOCIATED CIRCUITRY OF CIRCUITS 15, 17, & 18. RELABEL THESE CIRCUITS AS SPARES. CIRCUIT 16 TO REMAIN AS IS.
26.018	DEMOLISH EXISTING PANEL AND ASSOCIATED CIRCUITRY BACK TO PANEL LSA LOCATED IN ELECTRICAL ROOM 13 ON THE GROUND FLOOR.
26.019	EXISTING UNIT HEATER TO REMAIN. DEMOLISH ASSOCIATED CIRCUITRY BACK TO SOURCE.
26.020	EXISTING AIR VACUUM AND AIR COMPRESSOR AND ASSOCIATED SWITCHES TO BE RELOCATED DURING CONSTRUCTION. RETAIN AND PROTECT EQUIPMENT FOR REUSE DURING CONSTRUCTION. DEMOLISH ASSOCIATED CIRCUITRY.
26.052	EXISTING PUMP (D)P-01 TO BE DEMOLISHED. DEMOLISH ASSOCIATED CIRCUITRY BACK TO EXISTING PANEL. EXISTING PANEL FEEDING PUMP (D)P-01 WILL BE USED TO SERVE NEW PUMP P-1. CONTRACTOR MUST VERIFY THAT THE EXISTING POWER PANEL IS SUFFICIENT FOR SERVICE TO PUMP P-1 OR IDENTIFY ANOTHER SUFFICIENT PANEL.



2 | SECOND FLOOR POWER PLAN - DEMOLITION
EDP102 | Scale: 1/8" = 1'-0"

PN
TN

4' 2' 0 4' 8'
1/4"=1'-0"
8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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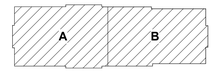
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KEY PLAN



PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR POWER PLAN - DEMOLITION

SHEET NUMBER
EDP102

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GENERAL NOTES - DEMOLITION:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL DEMOLITION ELECTRICAL GENERAL NOTES.

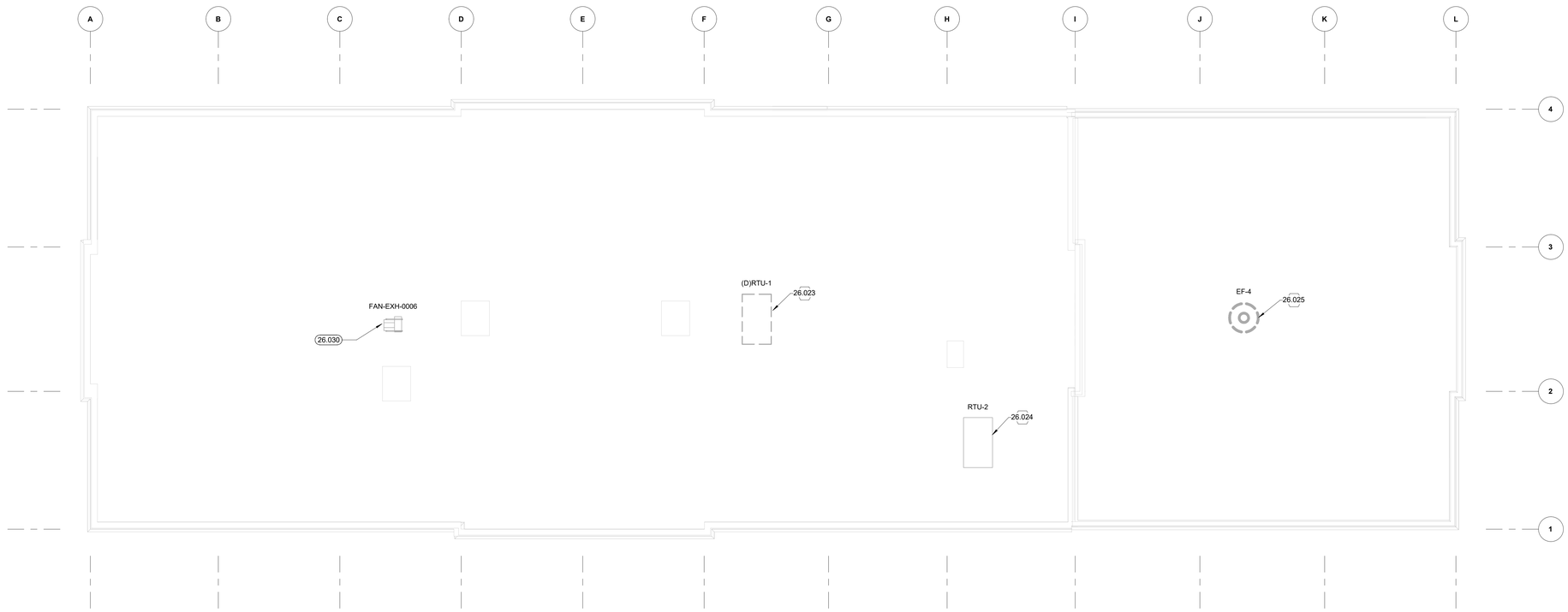
SHEET KEYNOTES:

26.023 EXISTING ROOFTOP UNIT TO BE DEMOLISHED. DEMOLISH ASSOCIATED CIRCUITRY BACK TO SOURCE.

26.024 EXISTING RTU-2 TO REMAIN. RETAIN AND PROTECT ASSOCIATED CIRCUITRY FOR REUSE DURING CONSTRUCTION. ASSOCIATED CIRCUITRY TO BE EXTENDED TO NEW PANEL LOCATION DURING CONSTRUCTION.

26.025 EXISTING EXHAUST FAN TO BE DEMOLISHED. DEMOLISH ASSOCIATED CIRCUITRY BACK TO SOURCE.

26.030 EXISTING EXHAUST FAN TO BE DEMOLISHED. DEMOLISH ASSOCIATED CIRCUITRY BACK TO SOURCE.



1 EDP103 **ROOF POWER PLAN - DEMOLITION**
Scale: 1/8" = 1'-0"

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1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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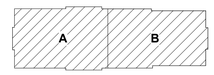
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PROJECT NUMBER

60763454

SHEET TITLE

ROOF POWER PLAN - DEMOLITION

SHEET NUMBER

EDP103

GENERAL NOTES - LIGHTING - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL ELECTRICAL GENERAL NOTES.

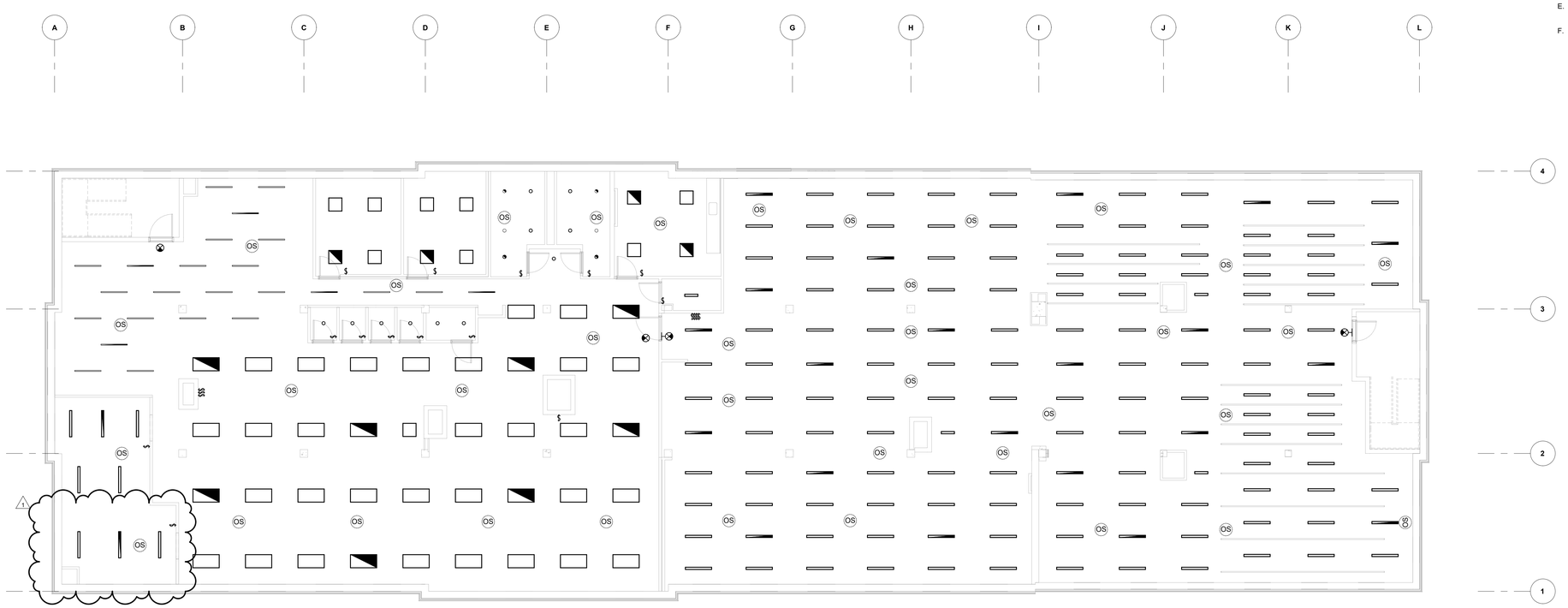
B. ADJACENT SWITCHES SHALL BE GANGED UNDER ONE COVER PLATE. ADJACENT DIMMERS SHALL BE GANGED WITH INDIVIDUAL COVER PLATES BUT IMMEDIATELY ADJACENT TO EACH OTHER. DO NOT MODIFY DIMMER IN ANY MANNER.

C. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT PRIOR TO INSTALLATION BY CONTRACTOR.

D. WHERE EMERGENCY FIXTURES ARE PROVIDED IN A SPACE, THEY SHALL BE CONTROLLED SIMILARLY BY THE CONTROL DEVICES AS THE NORMAL FIXTURES. EMERGENCY FIXTURES IN EGRESS PATH SHALL TURN ON TO FULL OUTPUT UPON LOSS OF POWER.

E. FOR TYPICAL LIGHTING CONTROL SEQUENCE OF OPERATIONS, SEE SHEET E-002.

F. FOR OCCUPANCY SENSOR CONTROL POWER DETAIL, SEE DETAIL 3 SHEET E-501.



1 | EL102 — **OVERALL SECOND FLOOR LIGHTING PLAN - NEW WORK**
Scale: 1/8" = 1'-0"

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	LAMP	VOLTAGE	LUMENS	WATTS	COLOR TEMP	MANUFACTURER (BASIS OF DESIGN)	SERIES	DESCRIPTION	REMARKS
AA	LED	120	495/FT	4/FT	4000K	GOLDEN EYE	AL 0.5 ES 48 40K 90+	4' T-BAR RECESSED LED FIXTURE	0-10V DIMMING
A1									NO LONGER IN USE
A2	LED	120	5517	38.7	4000K	LITHONIA LIGHTING	2TAKS 2X4 AL06 SWW1 ML 40K	2'X4' RECESSED LED FIXTURE	0-10V DIMMING
B1	LED	120	2052	16.4	4000K	LITHONIA LIGHTING	2BLT2 20L EZ1 LP840	2'X2' RECESSED LED FIXTURE	0-10V DIMMING
B2	LED	120	3391	26.5	4000K	LITHONIA LIGHTING	2BLT2 33L EZ1 LP840	2'X2' RECESSED LED FIXTURE	0-10V DIMMING
B3	LED	120	4144	31.0	4000K	LITHONIA LIGHTING	2BLT2 40L EZ1 LP840	2'X2' RECESSED LED FIXTURE	0-10V DIMMING
C	LED	120	528	5.8	4000K	LITHONIA LIGHTING	LDN6 40/ 05 L06 AR LSS TRW MVOLT GZ10 E10WCP	6" RECESSED CAN LIGHT	0-10V DIMMING
D1	LED	120	3277	25.8	4000K	LITHONIA LIGHTING	CLX L24 3500LM SEF FDL MVOLT EZ1 40K 80CRI E10WLCP	1'X2' LINEAR LED FIXTURE	SURFACE MOUNTED, 0-10V DIMMING
D2	LED	120	2985	18.5	4000K	LITHONIA LIGHTING	CLX L48 3000LM SEL FDL MVOLT EZ1 40K 80CRI E10WLCP	1'X4' LINEAR LED FIXTURE	SURFACE MOUNTED, 0-10V DIMMING
D3	LED	120	3955	25.5	4000K	LITHONIA LIGHTING	CLX L48 4000LM SEF FDL MVOLT EZ1 40K 80CRI E10WLCP	1'X4' LINEAR LED FIXTURE	SURFACE MOUNTED, 0-10V DIMMING
DD1	LED	120	4312	23.8	4000K	LITHONIA LIGHTING	CLX L48 4000LM HEF L/LENS ND MVOLT EZ1 40K 80CRI E10WLCP	1'X4' LINEAR NARROW DISTRIBUTION LED FIXTURE	SURFACE MOUNTED, 0-10V DIMMING
H	LED	120	3132	23.0	4000K	LITHONIA LIGHTING	WDGE2 LED P3 40K 80CRI VF MVOLT E20WC PE DDBXD	EXTERIOR WALL PACK W/ EMERG BATTERY PACK	WALL MOUNTED, INTEGRAL PHOTOCELL
X/XW	LED	120		1		LITHONIA LIGHTING	EXRG EL M6	EXIT LIGHT WITH INTEGRAL 90 MIN BATTERY PACK	X-CEILING MOUNTED, XW-WALL MOUNTED

NOTE 1: ONLY PROVIDE EMERGENCY DRIVERS FOR FIXTURES SHOWN WITH HALF SHADING IN PLAN.

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8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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KEY PLAN

A B

PROJECT NUMBER

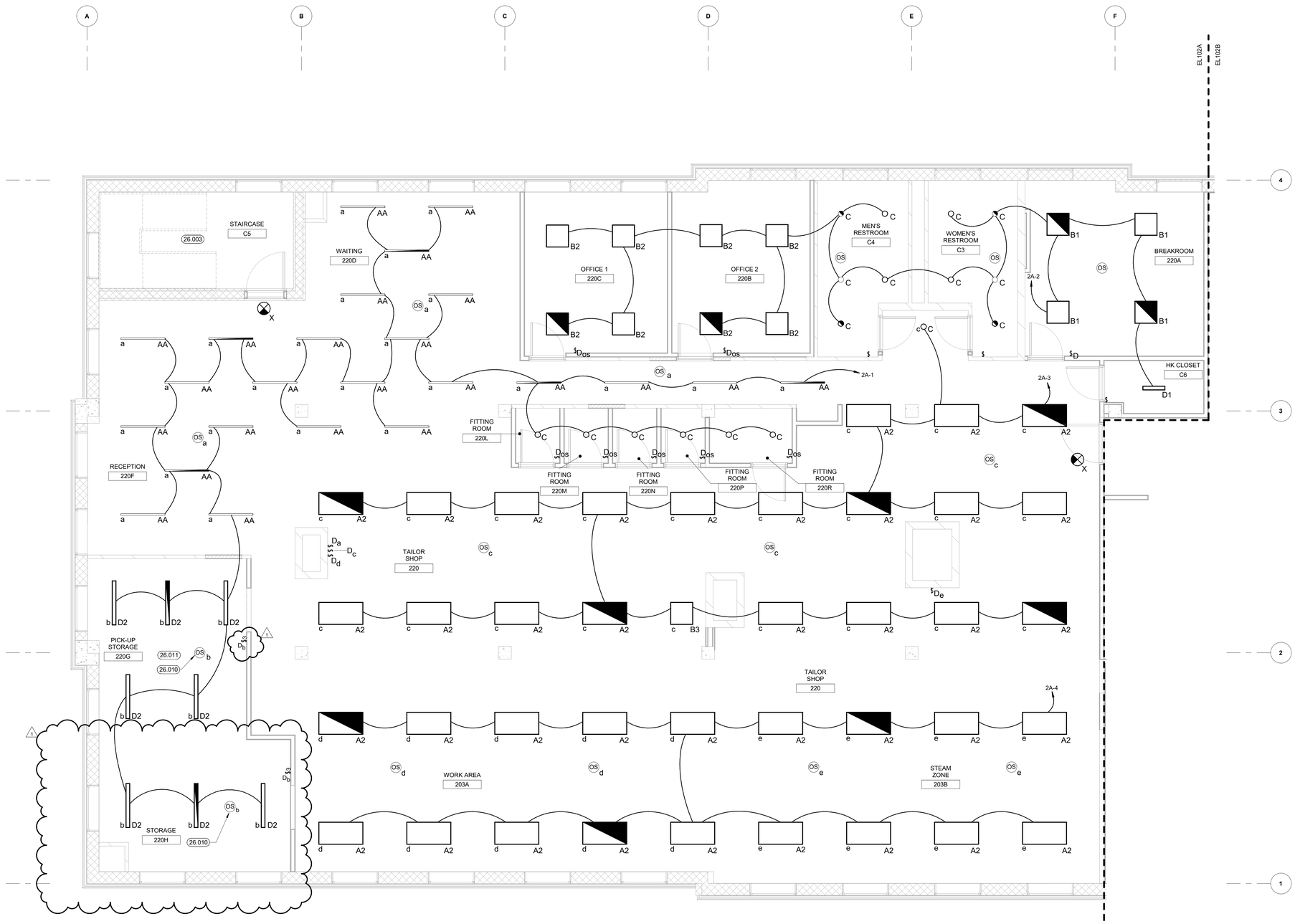
60763454

SHEET TITLE

OVERALL SECOND FLOOR LIGHTING PLAN - NEW WORK

SHEET NUMBER

EL102



1 EL102A

SECOND FLOOR LIGHTING PLAN - NEW WORK - AREA A

Scale: 1/4" = 1'-0"

GENERAL NOTES - LIGHTING - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL ELECTRICAL GENERAL NOTES.

B. ADJACENT SWITCHES SHALL BE GANGED UNDER ONE COVER PLATE. ADJACENT DIMMERS SHALL BE GANGED WITH INDIVIDUAL COVER PLATES BUT IMMEDIATELY ADJACENT TO EACH OTHER. DO NOT MODIFY DIMMER IN ANY MANNER.

C. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT PRIOR TO INSTALLATION BY CONTRACTOR.

D. WHERE EMERGENCY FIXTURES ARE PROVIDED IN A SPACE, THEY SHALL BE CONTROLLED SIMILARLY BY THE CONTROL DEVICES AS THE NORMAL FIXTURES. EMERGENCY FIXTURES IN EGRESS PATH SHALL TURN ON TO FULL OUTPUT UPON LOSS OF POWER.

E. FOR TYPICAL LIGHTING CONTROL SEQUENCE OF OPERATIONS, SEE SHEET E-002.

F. FOR OCCUPANCY SENSOR CONTROL POWER DETAIL, SEE DETAIL 3 SHEET E-501.

SHEET KEYNOTES:

26.003 LIGHTING FIXTURES IN THIS SPACE TO REMAIN AS IS.

26.010 SURFACE MOUNT OCCUPANCY SENSOR ON STRUCTURAL FRAMING.

26.011 SURFACE MOUNT ALL LIGHTING FIXTURES IN THIS SPACE AT 10' 9" AFF.

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GRAPHIC SCALES

1/4"=1'-0" 4' 2' 0 4' 8'

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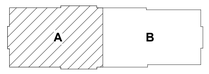
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KEY PLAN



PROJECT NUMBER

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SHEET TITLE

SECOND FLOOR LIGHTING PLAN - NEW WORK - AREA A

SHEET NUMBER

EL102A

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GENERAL NOTES - LIGHTING - NEW WORK:

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B. ADJACENT SWITCHES SHALL BE GANGED UNDER ONE COVER PLATE. ADJACENT DIMMERS SHALL BE GANGED WITH INDIVIDUAL COVER PLATES BUT IMMEDIATELY ADJACENT TO EACH OTHER. DO NOT MODIFY DIMMER IN ANY MANNER.

C. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT PRIOR TO INSTALLATION BY CONTRACTOR.

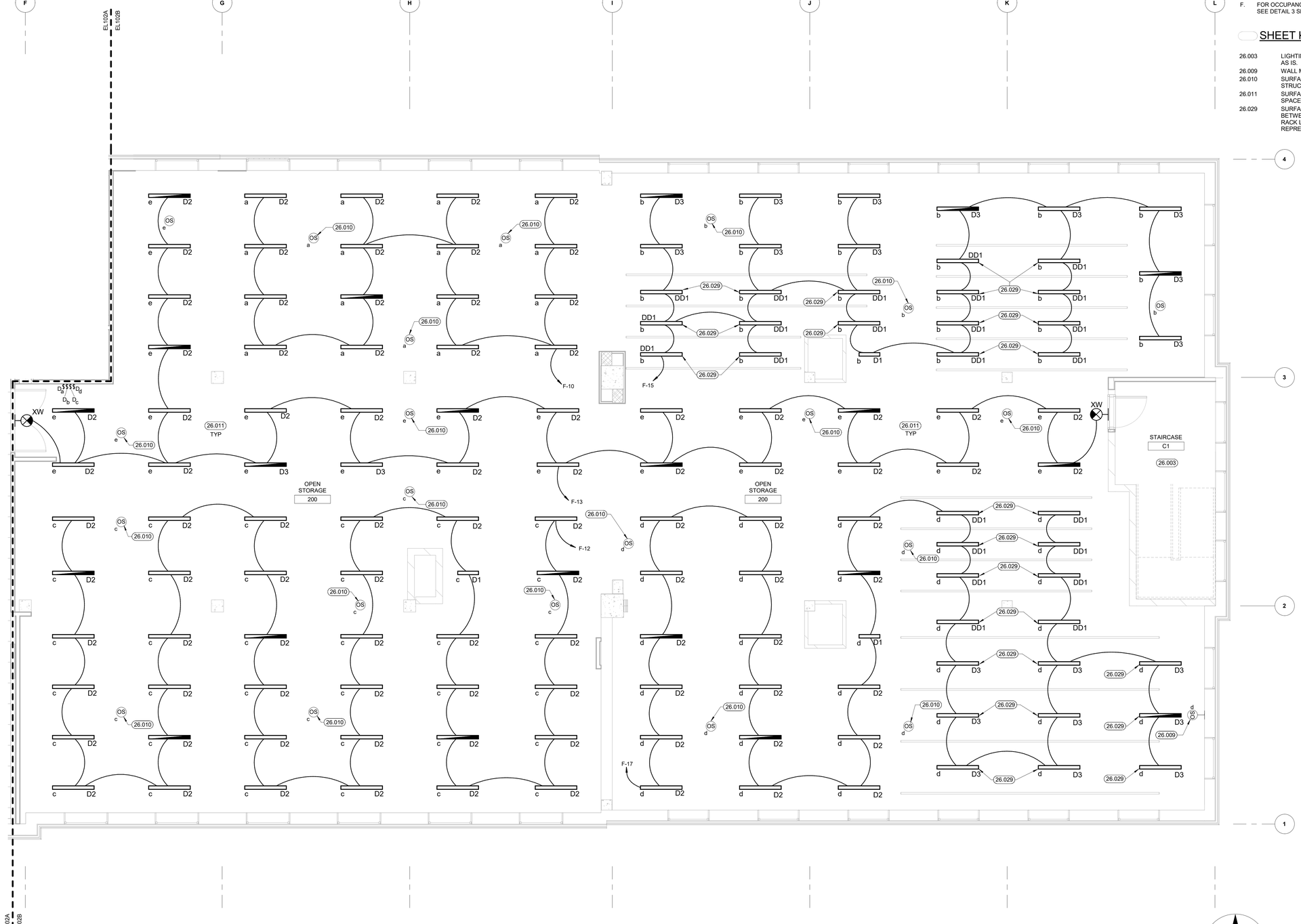
D. WHERE EMERGENCY FIXTURES ARE PROVIDED IN A SPACE, THEY SHALL BE CONTROLLED SIMILARLY BY THE CONTROL DEVICES AS THE NORMAL FIXTURES. EMERGENCY FIXTURES IN EGRESS PATH SHALL TURN ON TO FULL OUTPUT UPON LOSS OF POWER.

E. FOR TYPICAL LIGHTING CONTROL SEQUENCE OF OPERATIONS, SEE SHEET E-002.

F. FOR OCCUPANCY SENSOR CONTROL POWER DETAIL, SEE DETAIL 3 SHEET E-501.

SHEET KEYNOTES:

26.003	LIGHTING FIXTURES IN THIS SPACE TO REMAIN AS IS.
26.009	WALL MOUNT OCCUPANCY SENSOR 8' AFF.
26.010	SURFACE MOUNT OCCUPANCY SENSOR ON STRUCTURAL FRAMING.
26.011	SURFACE MOUNT ALL LIGHTING FIXTURES IN THIS SPACE AT 10' 9" AFF.
26.029	SURFACE MOUNT INDICATED FIXTURE CENTERED BETWEEN ADJACENT PERMANENT CLOTHING RACK LOCATIONS. COORDINATE WITH VT REPRESENTATIVE PRIOR TO INSTALLATION.



1 SECOND FLOOR LIGHTING PLAN - NEW WORK - AREA B
EL102B Scale: 1/4" = 1'-0"

GRAPHIC SCALES
1/4"=1'-0" 4' 2' 0 4' 8'

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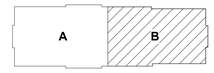
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SHEET TITLE
SECOND FLOOR LIGHTING PLAN - NEW WORK - AREA B

SHEET NUMBER
EL102B

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GENERAL NOTES - POWER - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL ELECTRICAL GENERAL NOTES.

B. RECEPTACLE COVER PLATES SHALL BE LABELED WITH CIRCUIT AND PANELBOARD IDENTIFICATION.

C. 120V, 20A, 1-POLE CIRCUITS OVER 60 FEET SHALL UTILIZE #10, #8, OR #6 AWG WIRE AS REQUIRED. TOTAL CIRCUIT VOLTAGE DROP SHALL NOT EXCEED 5%.

D. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.

E. COORDINATE EXACT REQUIREMENTS FOR MECHANICAL EQUIPMENT PRIOR TO INSTALLATION.

F. FURNISH JUNCTION BOXES WHERE REQUIRED BY CODE OR WHERE INDICATED OR WHERE REQUIRED TO FACILITATE PULLING WIRES REGARDLESS OF WHETHER SHOWN ON DRAWINGS OR NOT.

G. COORDINATE EXACT LOACATIONS AND REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO INSTALLATION.

H. FINAL LOCATIONS OF POWER SUPPLIES TO SPECIFIC ITEMS OR FIXED EQUIPMENT TO BE COORDINATED WITH FINAL FIXED EQUIPMENT INFORMATION. CONTRACTOR TO USE FINAL EQUIPMENT INFORMATION IN THE PREPARATION OF DIVISION 26 ELECTRICAL SHOP DRAWINGS. THIS INCLUDES ALL AV EQUIPMENT PLANNED AND PROVDED BY OTHERS.

I. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT AND INTERIOR DESIGNER PRIOR TO INSTALLATION BY CONTRACTOR.

J. ALL RECEPTACLES LOCATED WITHIN 6' OF SINKS AND EMERGENCY SHOWERS SHALL BE GFCI.

K. CONFIRM LOCATION OF ALL DATA OUTLETS WITH VT REPRESENTATIVE DURING ROUGH IN.

SHEET KEYNOTES:

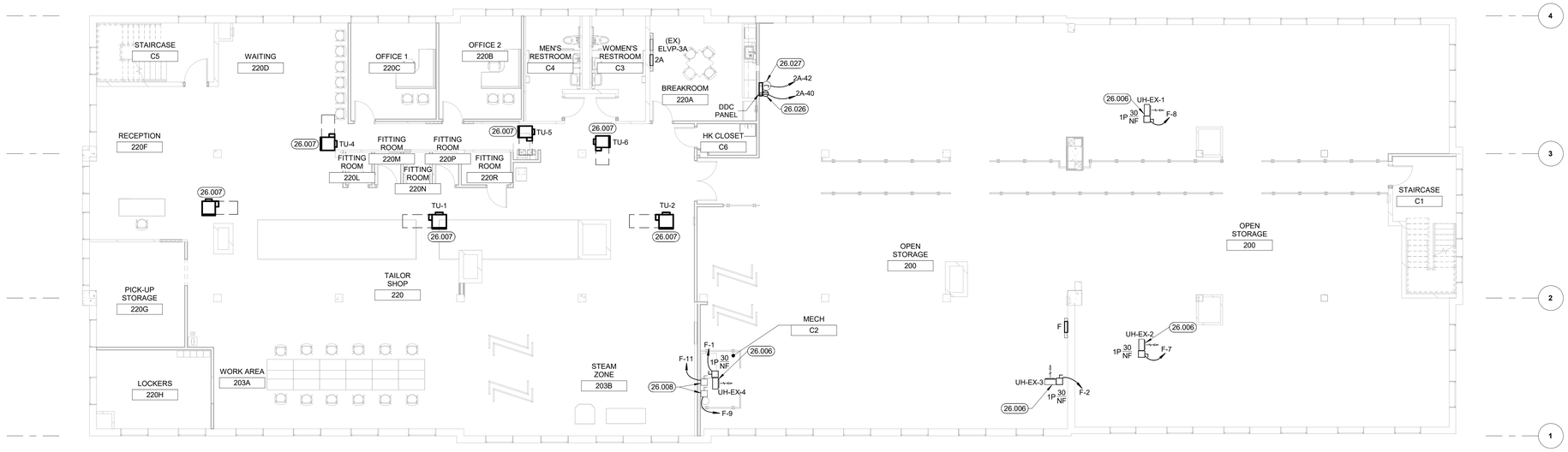
26.006 CONTRACTOR TO CONNECT EXISTING UNIT HEATERS TO NEW PANEL F. PROVIDE DISCONNECT SWITCH, FEEDER, AND CONDUIT AS INDICATED.

26.007 TU UNITS TO BE POWERED BY DDC PANEL.

26.008 LOCATE EXISTING AIR VACUUM AND AIR COMPRESSOR AND ASSOCIATED SWITCHES RETAINED DURING DEMOLITION. RELOCATE EQUIPMENT TO LOCATION SHOWN. COORDINATE FINAL LOCATION OF EQUIPMENT WITH VT REPRESENTATIVE PRIOR TO INSTALLATION.

26.026 RECEPTACLE LOCATED INSIDE OF DDC PANEL. COORDINATE MOUNTING LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.

26.027 POWER CONNECTION FOR DDC PANEL. COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO MAKING CONNECTION.



1 SECOND FLOOR MECHANICAL POWER PLAN - NEW WORK
EM102 Scale: 1/8" = 1'-0"

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GRAPHIC SCALES
1/8"=1'-0" 8' 4' 0 8' 16'

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SHEET TITLE
SECOND FLOOR MECHANICAL POWER PLAN - NEW WORK

SHEET NUMBER
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GENERAL NOTES - POWER - NEW WORK:

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B. RECEPTACLE COVER PLATES SHALL BE LABELED WITH CIRCUIT AND PANELBOARD IDENTIFICATION.

C. 120V, 20A, 1-POLE CIRCUITS OVER 60 FEET SHALL UTILIZE #10, #8, OR #6 AWG WIRE AS REQUIRED. TOTAL CIRCUIT VOLTAGE DROP SHALL NOT EXCEED 5%.

D. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.

E. COORDINATE EXACT REQUIREMENTS FOR MECHANICAL EQUIPMENT PRIOR TO INSTALLATION.

F. FURNISH JUNCTION BOXES WHERE REQUIRED BY CODE OR WHERE INDICATED OR WHERE REQUIRED TO FACILITATE PULLING WIRES REGARDLESS OF WHETHER SHOWN ON DRAWINGS OR NOT.

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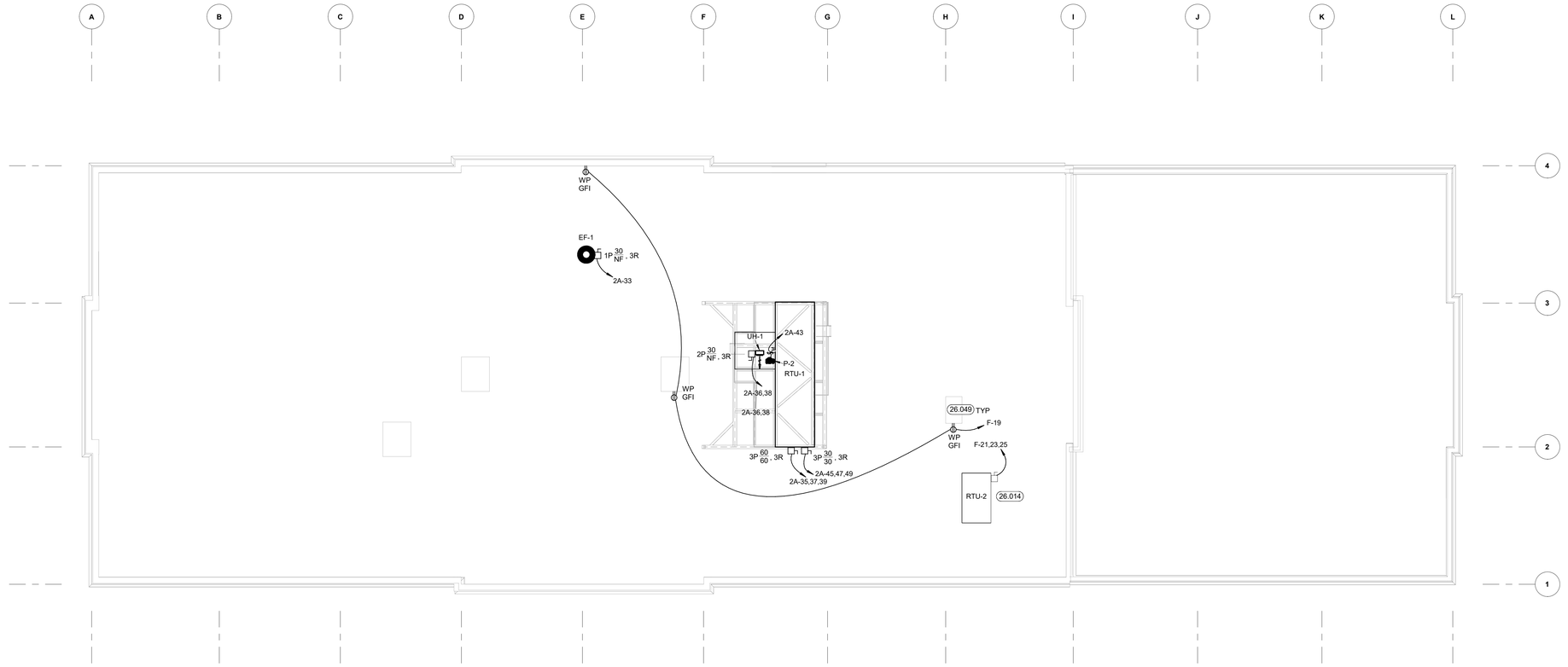
J. ALL RECEPTACLES LOCATED WITHIN 6' OF SINKS AND EMERGENCY SHOWERS SHALL BE GFCI.

K. CONFIRM LOCATION OF ALL DATA OUTLETS WITH VT REPRESENTATIVE DURING ROUGH IN.

SHEET KEYNOTES:

26.014 EXISTING RTU-2 TO REMAIN. EXTEND ASSOCIATED CIRCUITRY RETAINED DURING DEMOLITION FROM OLD LOCATION TO NEW PANEL F AND RECONNECT. SEE SHEET EP102 FOR PANEL LOCATION.

26.049 SEE ROOF PENETRATION DETAIL ON SHEET A531.



1 EM103 **ROOF POWER PLAN - NEW WORK**
Scale: 1/8" = 1'-0"

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PN
TN

8' 4' 0 8' 16'
1/8"=1'-0"

GRAPHIC SCALES

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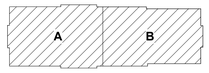
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SHEET TITLE

ROOF MECHANICAL POWER PLAN - NEW WORK

SHEET NUMBER

EM103

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GENERAL NOTES - POWER - NEW WORK:

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B. RECEPTACLE COVER PLATES SHALL BE LABELED WITH CIRCUIT AND PANELBOARD IDENTIFICATION.

C. 120V, 20A, 1-POLE CIRCUITS OVER 60 FEET SHALL UTILIZE #10, #8, OR #6 AWG WIRE AS REQUIRED. TOTAL CIRCUIT VOLTAGE DROP SHALL NOT EXCEED 5%.

D. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.

E. COORDINATE EXACT REQUIREMENTS FOR MECHANICAL EQUIPMENT PRIOR TO INSTALLATION.

F. FURNISH JUNCTION BOXES WHERE REQUIRED BY CODE OR WHERE INDICATED OR WHERE REQUIRED TO FACILITATE PULLING WIRES REGARDLESS OF WHETHER SHOWN ON DRAWINGS OR NOT.

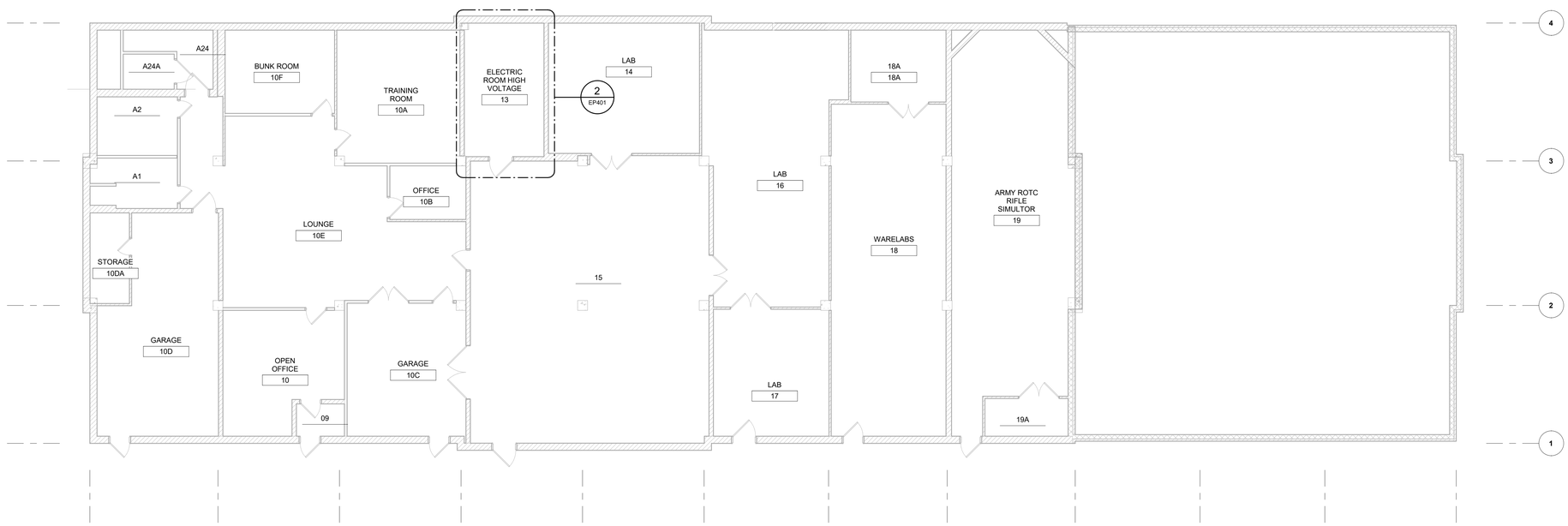
G. COORDINATE EXACT LOACATIONS AND REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO INSTALLATION.

H. FINAL LOCATIONS OF POWER SUPPLIES TO SPECIFIC ITEMS OR FIXED EQUIPMENT TO BE COORDINATED WITH FINAL FIXED EQUIPMENT INFORMATION. CONTRACTOR TO USE FINAL EQUIPMENT INFORMATION IN THE PREPARATION OF DIVISION 26 ELECTRICAL SHOP DRAWINGS. THIS INCLUDES ALL AV EQUIPMENT PLANNED AND PROVDED BY OTHERS.

I. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT AND INTERIOR DESIGNER PRIOR TO INSTALLATION BY CONTRACTOR.

J. ALL RECEPTACLES LOCATED WITHIN 6' OF SINKS AND EMERGENCY SHOWERS SHALL BE GFCI.

K. CONFIRM LOCATION OF ALL DATA OUTLETS WITH VT REPRESENTATIVE DURING ROUGH IN.



1 | **GROUND FLOOR POWER PLAN - NEW WORK**
EP100 | Scale: 1/8" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

PN
TN

1/8"=1'-0" 8' 4' 0 8' 16'

GRAPHIC SCALES

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PROJECT

VIRGINIA TECH - TAILOR SHOP RENOVATION PROJECT

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I/R	DATE	DESCRIPTION
I	12/03/2025	FINAL WORKING DRAWINGS

KEY PLAN

A B

PROJECT NUMBER

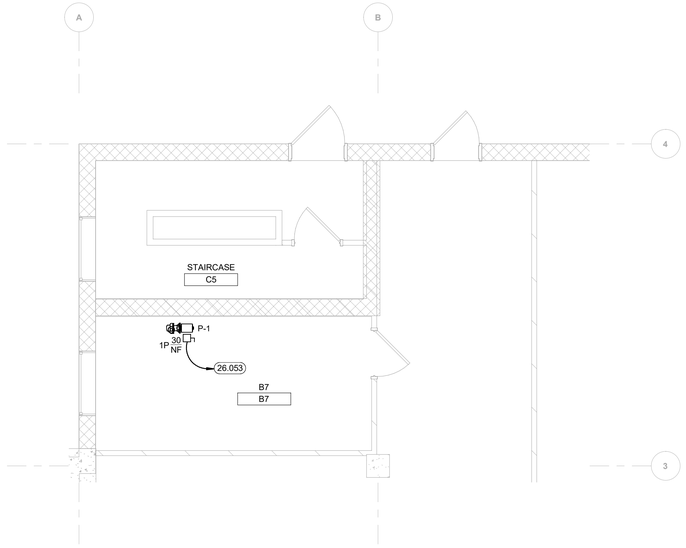
60763454

SHEET TITLE

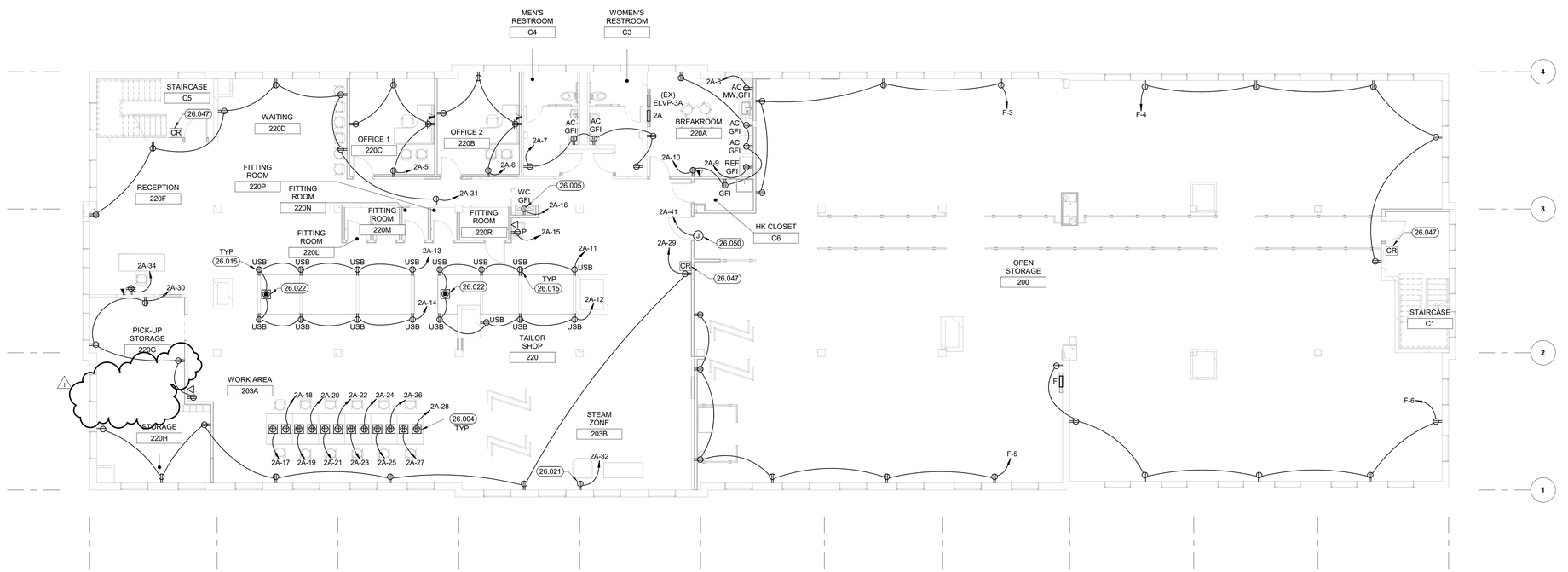
GROUND FLOOR POWER PLAN - NEW WORK

SHEET NUMBER

EP100



1 | **FIRST FLOOR PARTIAL POWER PLAN - NEW WORK**
EP102 | Scale: 1/4" = 1'-0"



2 | **SECOND FLOOR POWER PLAN - NEW WORK**
EP102 | Scale: 1/8" = 1'-0"

GENERAL NOTES - POWER - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL ELECTRICAL GENERAL NOTES.

B. RECEPTACLE COVER PLATES SHALL BE LABELED WITH CIRCUIT AND PANELBOARD IDENTIFICATION.

C. 120V, 20A, 1-POLE CIRCUITS OVER 60 FEET SHALL UTILIZE #10, #8, OR #6 AWG WIRE AS REQUIRED. TOTAL CIRCUIT VOLTAGE DROP SHALL NOT EXCEED 5%.

D. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.

E. COORDINATE EXACT REQUIREMENTS FOR MECHANICAL EQUIPMENT PRIOR TO INSTALLATION.

F. FURNISH JUNCTION BOXES WHERE REQUIRED BY CODE OR WHERE INDICATED OR WHERE REQUIRED TO FACILITATE PULLING WIRES REGARDLESS OF WHETHER SHOWN ON DRAWINGS OR NOT.

G. COORDINATE EXACT LOACATIONS AND REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO INSTALLATION.

H. FINAL LOCATIONS OF POWER SUPPLIES TO SPECIFIC ITEMS OR FIXED EQUIPMENT TO BE COORDINATED WITH FINAL FIXED EQUIPMENT INFORMATION. CONTRACTOR TO USE FINAL EQUIPMENT INFORMATION IN THE PREPARATION OF DIVISION 26 ELECTRICAL SHOP DRAWINGS. THIS INCLUDES ALL AV EQUIPMENT PLANNED AND PROVDED BY OTHERS.

I. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT AND INTERIOR DESIGNER PRIOR TO INSTALLATION BY CONTRACTOR.

J. ALL RECEPTACLES LOCATED WITHIN 6' OF SINKS AND EMERGENCY SHOWERS SHALL BE GFCI.

K. CONFIRM LOCATION OF ALL DATA OUTLETS WITH VT REPRESENTATIVE DURING ROUGH IN.

SHEET KEYNOTES:

26.004	SEE DETAIL 6 ON SHEET E-501 FOR TYPICAL POKE-THRU ASSEMBLY DETAIL.
26.005	RECEPTACLE FOR WATER COOLER UNIT. MOUNT AT 24 3/4" AFF.
26.015	RECEPTACLE TO BE MOUNTED BELOW COUNTERTOP WITH 3" BETWEEN THE TOP OF THE DEVICE BOX AND THE BOTTOM OF THE COUNTERTOP.
26.021	RECEPTACLE FOR MUSHROOM TOPPER STEAM PRESS. COORDINATE FINAL LOCATION WITH EQUIPMENT LOCATION AND WITH VT REPRESENTATIVE PRIOR TO INSTALLATION.
26.022	FLOOR BOX FOR WORK TABLE RECEPTACLES. SIZE FLOOR BOX IN ACCORDANCE WITH THE NEC.
26.047	MOUNT CARD READER 54" AFF. SEE DETAIL 5 ON SHEET E-501 FOR MORE INFORMATION.
26.050	JUNCTION BOX FOR DOOR SECURITY DEVICES. SURFACE MOUNT ON STRUCTURAL CEILING.
26.053	PROVIDE A 20A SINGLE-POLE BREAKER IN AN AVAILABLE SPARE SPACE OF EXISTING PANEL. PROVIDE CONDUIT AND CONDUCTOR SIZED ACCORDING TO BRANCH CIRCUIT SCHEDULE ON SHEET E-601. SEE PLAN 1 ON SHEET EDP102 FOR WORK IN THIS AREA.

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GRAPHIC SCALES
1/4"=1'-0": 4' 2' 0 4' 8'
1/8"=1'-0": 8' 4' 0 8' 16'

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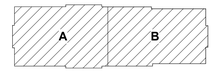
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REGISTRATION

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1	01/23/2026	ADDENDUM 01
I	12/03/2025	FINAL WORKING DRAWINGS
I/R	DATE	DESCRIPTION

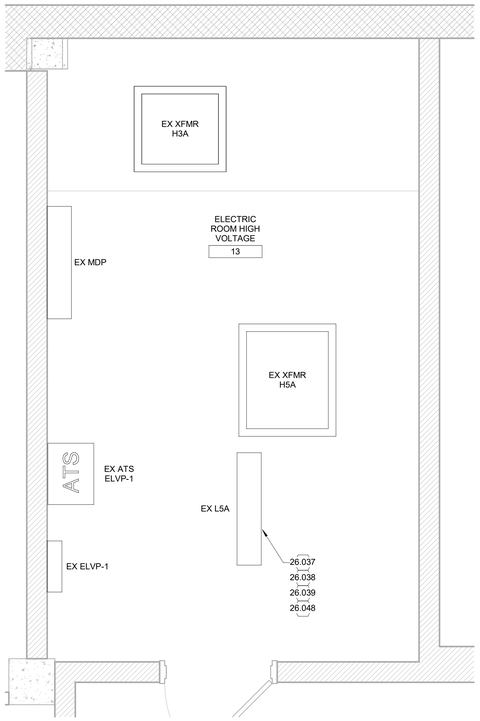
KEY PLAN



PROJECT NUMBER
60763454

SHEET TITLE
SECOND FLOOR POWER PLAN - NEW WORK

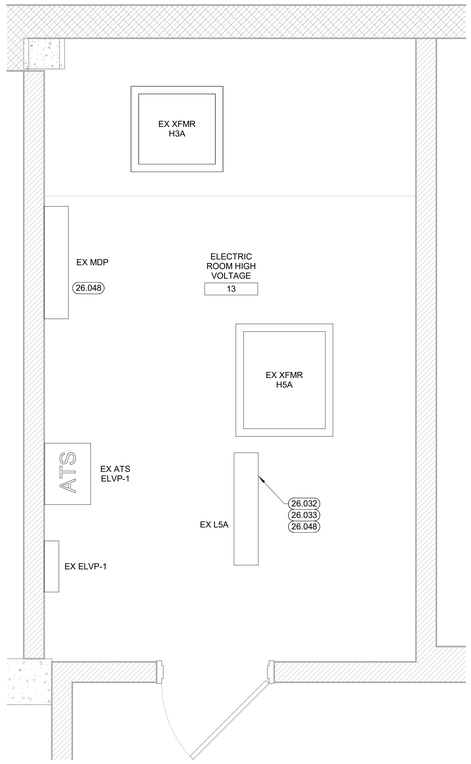
SHEET NUMBER
EP102



ENLARGED ELEC ROOM 13 POWER PLAN - DEMOLITION

1 EP401

Scale: 1/2" = 1'-0"



ENLARGED ELEC ROOM 13 POWER PLAN - NEW WORK

2 EP401

Scale: 1/2" = 1'-0"

GENERAL NOTES - POWER - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL ELECTRICAL GENERAL NOTES.

B. RECEPTACLE COVER PLATES SHALL BE LABELED WITH CIRCUIT AND PANELBOARD IDENTIFICATION.

C. 120V, 20A, 1-POLE CIRCUITS OVER 60 FEET SHALL UTILIZE #10, #8, OR #6 AWG WIRE AS REQUIRED. TOTAL CIRCUIT VOLTAGE DROP SHALL NOT EXCEED 5%.

D. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.

E. COORDINATE EXACT REQUIREMENTS FOR MECHANICAL EQUIPMENT PRIOR TO INSTALLATION.

F. FURNISH JUNCTION BOXES WHERE REQUIRED BY CODE OR WHERE INDICATED OR WHERE REQUIRED TO FACILITATE PULLING WIRES REGARDLESS OF WHETHER SHOWN ON DRAWINGS OR NOT.

G. COORDINATE EXACT LOACATIONS AND REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO INSTALLATION.

H. FINAL LOCATIONS OF POWER SUPPLIES TO SPECIFIC ITEMS OR FIXED EQUIPMENT TO BE COORDINATED WITH FINAL FIXED EQUIPMENT INFORMATION. CONTRACTOR TO USE FINAL EQUIPMENT INFORMATION IN THE PREPARATION OF DIVISION 26 ELECTRICAL SHOP DRAWINGS. THIS INCLUDES ALL AV EQUIPMENT PLANNED AND PROVDED BY OTHERS.

I. COLOR OF COVERPLATES ON MILLWORK, FABRIC, GLASS, STAINLESS, AND OTHER SPECIAL FINISH MAY BE DIFFERENT THAN WHITE AND WILL BE SELECTED BY ARCHITECT AND INTERIOR DESIGNER PRIOR TO INSTALLATION BY CONTRACTOR.

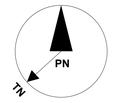
J. ALL RECEPTACLES LOCATED WITHIN 6' OF SINKS AND EMERGENCY SHOWERS SHALL BE GFCI.

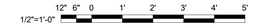
K. CONFIRM LOCATION OF ALL DATA OUTLETS WITH VT REPRESENTATIVE DURING ROUGH IN.

SHEET KEYNOTES:

26.032	EXISTING PANEL L5A. INSTALL 225A 3-POLE BREAKER FOR NEW PANEL 2A. SEE PANEL SCHEDULE ON SHEET E-701. SEE ONE-LINE DIAGRAM ON SHEET E-601 FOR FEEDER WIRE AND CONDUIT SIZE.
26.033	EXISTING PANEL L5A. INSTALL 225A 3-POLE BREAKER FOR NEW PANEL F. SEE PANEL SCHEDULE ON SHEET E-701. SEE ONE-LINE DIAGRAM ON SHEET E-601 FOR FEEDER WIRE AND CONDUIT SIZE.
26.037	EXISTING PANEL L5A. DEMOLISH 100A BREAKER LABELED "TAILOR SHOP PANEL (LAUNDRY)" AND FEEDER THAT IS FEEDING EXISTING PANEL F.
26.038	EXISTING PANEL L5A. DEMOLISH 200A BREAKER LABELED "R.O.T.C. PANEL" AND FEEDER THAT IS FEEDING EXISTING PANEL 2A.
26.039	EXISTING PANEL L5A. DEMOLISH 200A BREAKER LABELED "TAILOR SHOP PANEL" AND FEEDER THAT IS FEEDING EXISTING PANEL LV202.
26.048	CONTRACTOR TO COORDINATE INTERRUPTION OF SERVICE WITH VT REPRESENTATIVE 24 HOURS PRIOR TO INTERRUPTION OF SERVICE. SERVICE MUST NOT BE INTERRUPTED FOR MORE THAN 4 HOURS.

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GRAPHIC SCALES

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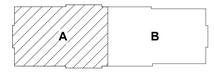
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REGISTRATION

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I/R	DATE	DESCRIPTION
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KEY PLAN



PROJECT NUMBER

60763454

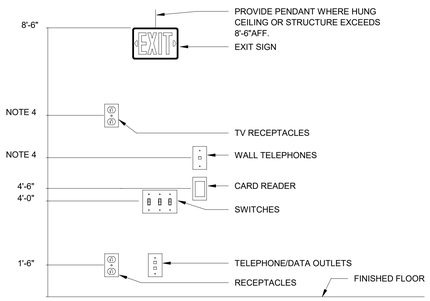
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ENLARGED POWER PLAN

SHEET NUMBER

EP401

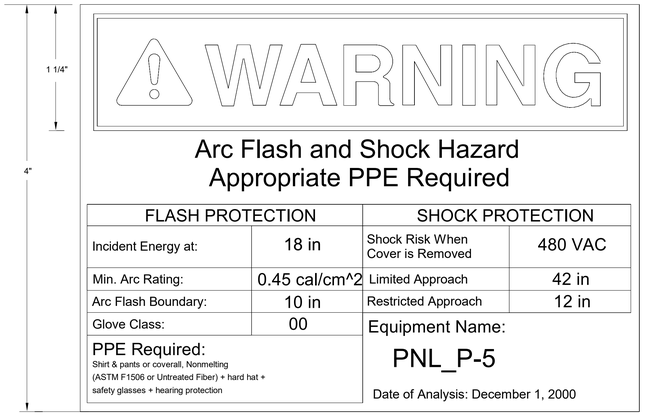
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NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL DRAWINGS AND ELEVATIONS AND CASEWORK DETAILS PRIOR TO INSTALLATION.

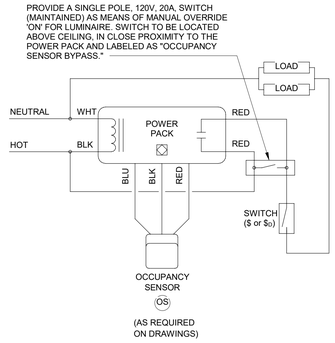
1 | TYPICAL DEVICE MOUNTING HEIGHTS DETAIL
E-501 | NTS



NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.

2 | TYPICAL ARCFLASH WARNING LABEL
E-501 | NTS

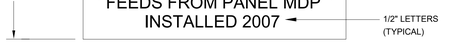


CONTROL FOR SINGLE LEVEL SWITCHING

DETAIL NOTES

1. ALL SENSOR LOCATIONS ARE APPROXIMATE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO INSTALLATION. IF PENDANT MOUNTED LUMINAIRES ARE PRESENT, LOCATION AND COVERAGE OF SENSORS SHOULD BE REVIEWED.
2. ULTRASONIC CEILING MOUNT SENSORS REQUIRE THAT THEY BE LOCATED NO CLOSER THAN 6'-0" TO AIR SUPPLY REGISTERS AND TO AIR RETURN REGISTERS.
3. CONTRACTOR IS RESPONSIBLE FOR PROPER SENSITIVITY AND TIME DELAY SETTINGS, VERIFICATION OF MANUFACTURER'S RECOMMENDED PLACEMENT, AND FIELD VERIFICATION OF CIRCUITS WITH RESPECT TO POWER PACK PLACEMENT.
4. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF REQUIRED NUMBER OF POWER PACKS.
5. A MINIMUM OF ONE POWER PACK IS REQUIRED FOR EACH CIRCUIT THAT IS TO BE CONTROLLED.
6. THE MAXIMUM NUMBER OF SENSORS THAT CAN BE WIRED IN PARALLEL TO A SINGLE POWER PACK IS DEPENDENT ON THE SENSOR MODEL (SEE INDIVIDUAL DATA SHEETS FOR POWER CONSUMPTION).

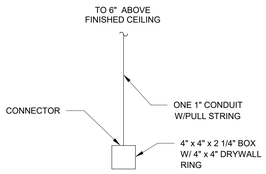
3 | CONTROL FOR SINGLE LEVEL SWITCHING DETAIL
E-501 | NTS



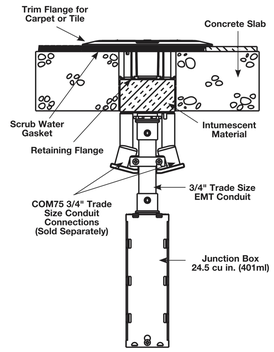
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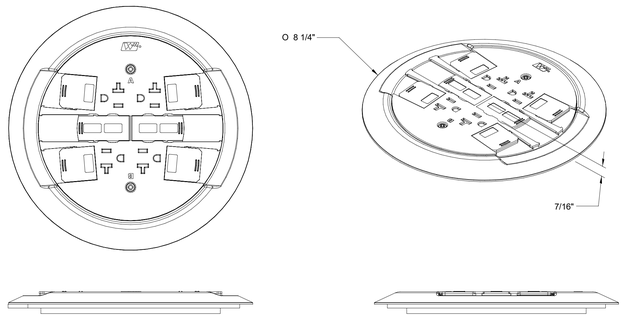
1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK WHITE PLASTIC WITH BLACK CENTER LAMINATION. FACE SHALL BE WHITE, ENGRAVED LETTERS SHALL BE BLACK.
3. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS. ADHESIVE CEMENT SHALL NOT BE ALLOWED.

4 | TYPICAL ELECTRICAL EQUIPMENT NAMEPLATE DETAIL
E-501 | NTS



5 | TYPICAL CARD READER INFRASTRUCTURE DETAIL
E-501 | NTS

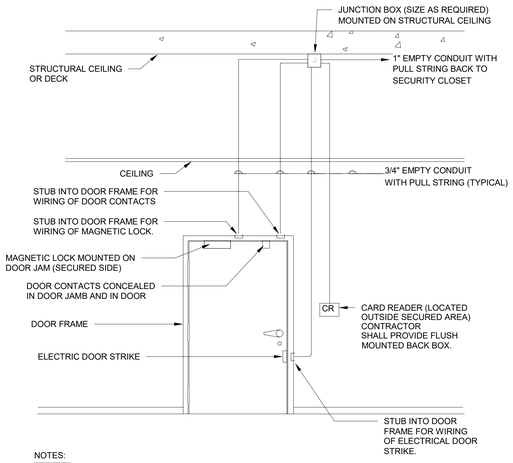




NOTES:

1. PROVIDE 1-HR FIRE RATING.
2. COLOR OF FLANGE AND COVER WILL BE SELECTED BY ARCHITECT AND INTERIOR DESIGNER PRIOR TO INSTALLATION BY CONTRACTOR.
3. CATALOG NUMBER: WIREMOLD RC4ATC & RC4CTC.
4. PROVIDE SUBMITTALS OF POKE-THRU ASSEMBLIES TO VT FOR FINAL APPROVAL.

6 | TYPICAL POKE-THRU ASSEMBLY
E-501 | NTS



NOTES:

1. ALL LOW VOLTAGE WIRING AND SECURITY EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY SECURITY SYSTEM SUPPLIER.
2. COORDINATE EXACT LOCATIONS AND MOUNTING REQUIREMENTS OF ALL DEVICES WITH ARCHITECTURAL DRAWINGS.
3. PROVIDE INSULATED BUSHINGS ON ALL CONDUITS.
4. ELECTRIC DOOR STRIKES AND HINGES SHALL BE FURNISHED AND INSTALLED BY BY OTHERS.
5. VERIFY DOOR HARDWARE CONNECTIONS WITH MANUFACTURERS INSTALLATION MANUAL.

7 | TYPICAL DOOR SECURITY SCHEMATIC
E-501 | NTS

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KEY PLAN

PROJECT NUMBER

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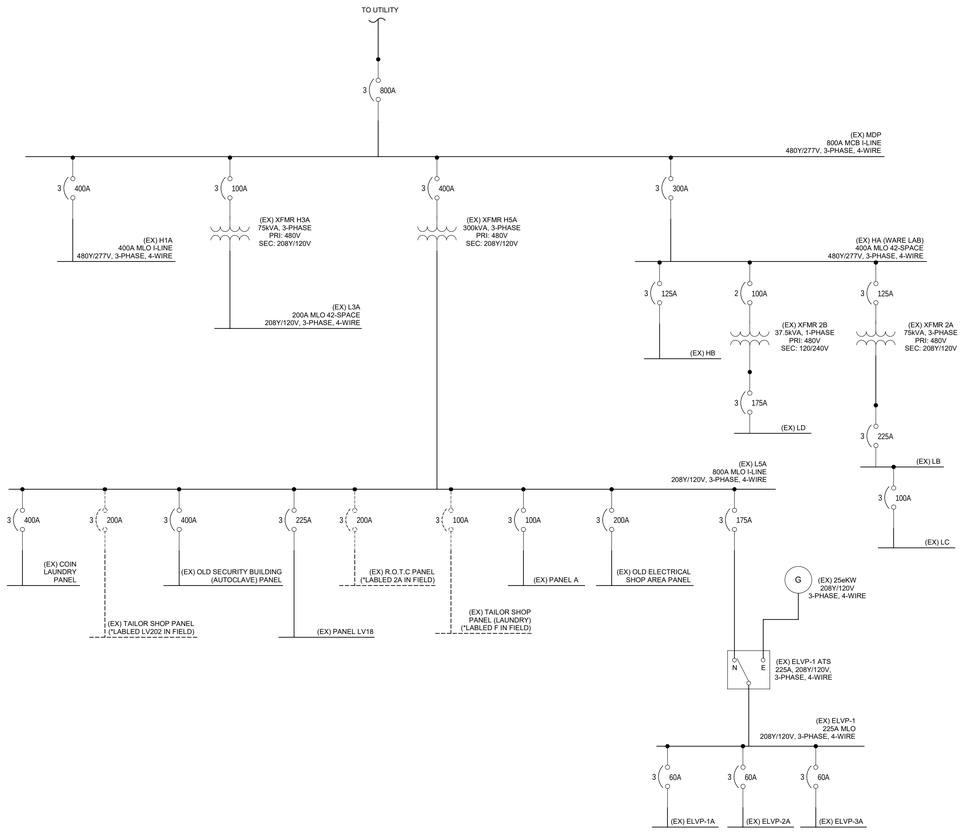
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ELECTRICAL DETAILS

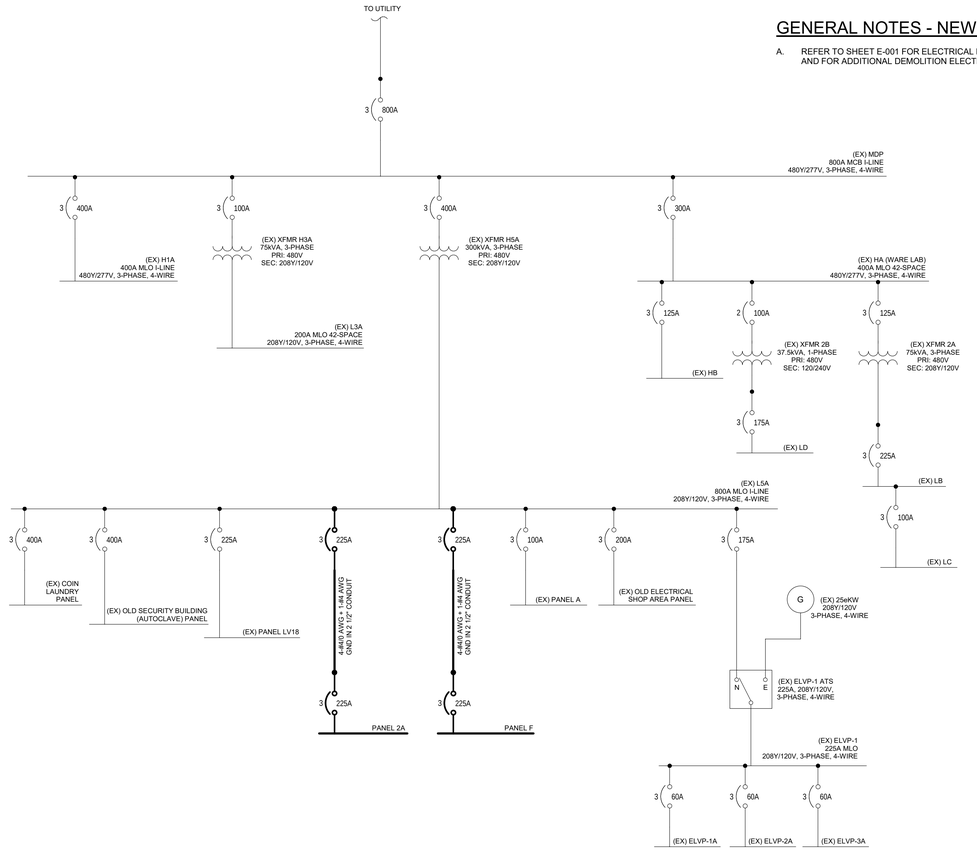
SHEET NUMBER

E-501

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1 **ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION**
E-601 Scale: NO SCALE



2 **ELECTRICAL ONE-LINE DIAGRAM - NEW WORK**
E-601 Scale: NO SCALE

GENERAL NOTES - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL DEMOLITION ELECTRICAL GENERAL NOTES.

Electrical - Jack Thompson

NET GAIN LOAD CALCULATIONS

PANEL	LOAD REMOVED (kVA)	LOAD ADDED (kVA)	NET CHANGE (kVA)
EX F	29.9	-	(29.9)
EX 2A	15.1	-	(15.1)
EX LV202	25.1	-	(25.1)
EX ELVP-3A	1.1	-	(1.1)
NEW 2A	-	59.4	59.4
NEW F	-	21.3	21.3
TOTAL	71.2	80.7	9.5

NOTE: LOAD REMOVED VALUES BASED ON 30 DAY LOAD STUDY RESULTS OF ASSOCIATED PANEL.

EX L5A NET LOAD CALCULATIONS

LOAD REMOVED (kVA)	LOAD ADDED (kVA)	NET CHANGE (kVA)
71.2	80.7	9.5

BRANCH CIRCUIT SCHEDULE

CIRCUIT TYPE	CIRCUIT BREAKER	CONDUCTORS	CONDUIT
1 POLE - 1 PHASE 2 WIRE + GROUND	15/20A-1P	2 #12 + 1 #12 G.	3/4"
	30A-1P	2 #10 + 1 #10 G.	3/4"
	40A-1P	2 #8 + 1 #10 G.	3/4"
	50A-1P	2 #6 + 1 #10 G.	3/4"
	60A-1P	2 #4 + 1 #10 G.	1 1/4"
2 POLE - 1 PHASE 2 WIRE + GROUND	15/20A-2P	2 #12 + 1 #12 G.	3/4"
	30A-2P	2 #10 + 1 #10 G.	3/4"
	40A-2P	2 #8 + 1 #10 G.	3/4"
	50A-2P	2 #6 + 1 #10 G.	3/4"
	60A-2P	2 #4 + 1 #10 G.	1 1/4"
2 POLE - 1 PHASE 3 WIRE + GROUND	15/20A-2P	3 #12 + 1 #12 G.	3/4"
	30A-2P	3 #10 + 1 #10 G.	3/4"
	40A-2P	3 #8 + 1 #10 G.	3/4"
	50A-2P	3 #6 + 1 #10 G.	3/4"
	60A-2P	3 #4 + 1 #10 G.	1 1/4"
3 POLE - 3 PHASE 3 WIRE + GROUND	15/20A-3P	3 #12 + 1 #12 G.	3/4"
	30A-3P	3 #10 + 1 #10 G.	3/4"
	40A-3P	3 #8 + 1 #10 G.	3/4"
	50A-3P	3 #6 + 1 #10 G.	3/4"
	60A-3P	3 #4 + 1 #10 G.	1 1/4"
3 POLE - 3 PHASE 4 WIRE + GROUND	15/20A-3P	4 #12 + 1 #12 G.	3/4"
	30A-3P	4 #10 + 1 #10 G.	3/4"
	40A-3P	4 #8 + 1 #10 G.	3/4"
	50A-3P	4 #6 + 1 #10 G.	1"
	60A-3P	4 #4 + 1 #10 G.	1 1/4"

Schedule Notes:

1. CONDUCTOR SIZING BASED ON COPPER CONDUCTORS.
2. TYPE AC AND MC CABLE SHALL NOT BE UTILIZED
3. REFER TO FEEDER SCHEDULE ON THIS SHEET FOR ADDITIONAL INFORMATION.
4. ALL CONDUCTOR SIZES ARE BASED ON CONDUIT LENGTHS OF 58 FEET FOR 120 VOLT BRANCH CIRCUITS. IF LENGTH EXCEEDS 58 FEET (120V, 20A CIRCUITS), THEN USE WIRE SIZE DENOTED BELOW AND INCREASE CONDUIT SIZE AS REQUIRED BY NEC.

WIRE SIZE	CONDUCTORS	
	120V CIRCUIT	277V CIRCUIT
#10	58' TO 93'	135' TO 215'
#8	93' TO 147'	240' TO 340'
#6	147' AND ABOVE	340' AND ABOVE

AECOM

PROJECT

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KEY PLAN

PROJECT NUMBER

60763454

SHEET TITLE

ELECTRICAL ONE-LINE DIAGRAM

SHEET NUMBER

E-601

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Panel Designation: 2A

Location: BREAKROOM 220A
Supply From: (EX) PANEL L5A
Mounting: RECESSED
Enclosure: NEMA 1

Volts: 208/120 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10kAIC
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Circuit Description	CKT
1	LIGHTING - FITTING ROOMS & RM 220F, 220D...	20 A	1	0.51			0.36			1	20 A	LIGHTING - RM 220C, 220B, C3, C4, 220A, C6	2
3	LIGHTING - RM 220	20 A	1		0.81			0.76		1	20 A	LIGHTING - RM 203A, 203B, 220H	4
5	RCPT - RM 220C	20 A	1			0.90			0.90	1	20 A	RCPT - RM 220B	6
7	RCPT - RM C3, C4, 208	20 A	1	0.90			1.20			1	20 A	MICROWAVE - RM 220A	8
9	REFRIGERATOR - RM 220A	20 A	1		1.50			0.90		1	20 A	RCPT - RM 220A, C6	10
11	WORK TABLE RCPT - RM 220	20 A	1			0.72			0.72	1	20 A	WORK TABLE RCPT - RM 220	12
13	WORK TABLE RCPT - RM 220	20 A	1	0.72			0.72			1	20 A	WORK TABLE RCPT - RM 220	14
15	PRINTER - RM 220	20 A	1		1.50			0.58		1	20 A	EWC-1 - RM 220	16
17	FLOOR POKE-THRU - RM 203A	20 A	1			1.80			1.80	1	20 A	FLOOR POKE-THRU - RM 203A	18
19	FLOOR POKE-THRU - RM 203A	20 A	1	1.80			1.80			1	20 A	FLOOR POKE-THRU - RM 203A	20
21	FLOOR POKE-THRU - RM 203A	20 A	1		1.80			1.80		1	20 A	FLOOR POKE-THRU - RM 203A	22
23	FLOOR POKE-THRU - RM 203A	20 A	1			1.80			1.80	1	20 A	FLOOR POKE-THRU - RM 203A	24
25	FLOOR POKE-THRU - RM 203A	20 A	1	1.80			1.80			1	20 A	FLOOR POKE-THRU - RM 203A	26
27	FLOOR POKE-THRU - RM 203A	20 A	1		1.80			1.80		1	20 A	FLOOR POKE-THRU - RM 203A	28
29	RCPT - RM 220, 203A, 203B, 220H	20 A	1			1.26			0.72	1	20 A	RCPT - RM 220, 220G	30
31	RCPT - RM 220D, 220F	20 A	1	1.26			0.18			1	20 A	MUSHROOM TOPPER PRESS - RM 203B	32
33	EF-1 ROOF	20 A	1		0.67			0.36		1	20 A	RCPT - RM220F	34
35						5.04			1.50	2	20 A	UH-1 - ROOF	36
37	RTU-1 ROOF - SUPPLY FAN MOTOR	60 A	3	5.04			1.50						38
39					5.04			0.18		1	20 A	DDC PANEL RCPT RM 200	40
41	DOOR SECURITY JUNCTION BOX - RM 200	20 A	1			0.75			0.18	1	20 A	DDC PANEL POWER CONNECTION RM 200	42
43	P-2 - ROOF	20 A	1	0.51			0.00			1	20 A	SPARE	44
45					2.65			0.00		1	20 A	SPARE	46
47	RTU-1 ROOF - EXHAUST FAN MOTOR	30 A	3			2.65			0.00	1	20 A	SPARE	48
49				2.65			0.00			1	20 A	SPARE	50
51	SPACE	--	1		--			--		1	--	SPACE	52
53	SPACE	--	1			--			--	1	--	SPACE	54
		Total Load:		22.7 kVA		22.1 kVA		22.5 kVA					
		Total Amps:		190.0 A		183.9 A		188.4 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LIGHTING	2918.57 VA	125.00%	3648.22 VA		
RECEPTACLE	37745 VA	63.25%	23872.5 VA	**Total Conn. Load:**	67334.52 VA
MECHANICAL EQUIPMENT	26733 VA	65.00%	17376.45 VA	**Total Est. Demand:**	44822.65 VA
				Total Conn.:	187 A
				Total Est. Demand:	124 A

Panel Designation: F

Location: OPEN STORAGE 200
Supply From: (EX) L5A
Mounting: RECESSED
Enclosure: NEMA 1

Volts: 208/120 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10kAIC
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A (kVA)	B (kVA)	C (kVA)	A (kVA)	B (kVA)	C (kVA)	Poles	Trip	Circuit Description	CKT
1	EX UH-4 - RM 200 AREA C	20 A	1	0.50			0.50			1	20 A	EX UH-3 - RM 200 AREA C	2
3	RCPT - RM 200 AREA A	20 A	1		0.72			0.90		1	20 A	RCPT - RM 200 AREA B	4
5	RCPT - RM 200 AREA C	20 A	1			1.08			1.08	1	20 A	RCPT - RM 200 AREA D	6
7	EX UH-2 - RM 200 AREA D	20 A	1	0.50			0.50			1	20 A	EX UH-1 - RM 200 AREA B	8
9	EXISTING AIR VACUUM	20 A	1		1.20			0.30		1	20 A	LIGHTING - RM 200 AREA A	10
11	EXISTING AIR COMPRESSOR	20 A	1			0.31			0.67	1	20 A	LIGHTING - RM 200 AREA C	12
13	LIGHTING - RM 200 AREA E	20 A	1	0.50			0.00			1	20 A	SPARE	14
15	LIGHTING - RM 200 AREA B	20 A	1		0.69			0.00		1	20 A	SPARE	16
17	LIGHTING - RM 200 AREA D	20 A	1			0.76			0.00	1	20 A	SPARE	18
19	RCPT - ROOF	20 A	1	0.54			0.00			1	20 A	SPARE	20
21					3.57			0.00		1	20 A	SPARE	22
23	EX RTU-2 - ROOF	40 A	3			3.57			0.00	1	20 A	SPARE	24
25				3.57			0.00			1	20 A	SPARE	26
27	SPACE	--	1		--			--		1	--	SPACE	28
29	SPACE	--	1			--			--	1	--	SPACE	30
31	SPACE	--	1	--			--			1	--	SPACE	32
33	SPACE	--	1		--			--		1	--	SPACE	34
35	SPACE	--	1			--			--	1	--	SPACE	36
37	SPACE	--	1	--			--			1	--	SPACE	38
39	SPACE	--	1		--			--		1	--	SPACE	40
41	SPACE	--	1			--			--	1	--	SPACE	42
		Total Load:		6.6 kVA		7.3 kVA		7.4 kVA					
		Total Amps:		54.8 A		62.0 A		62.7 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LIGHTING	2913.5 VA	125.00%	3641.88 VA		
RECEPTACLE	4320 VA	100.00%	4320 VA	**Total Conn. Load:**	21313.42 VA
MECHANICAL EQUIPMENT	14206 VA	65.00%	9233.9 VA	**Total Est. Demand:**	17051.84 VA
				Total Conn.:	59 A
				Total Est. Demand:	47 A

Panel Designation: (EX) ELVP-3A

Location: BREAKROOM 220A
Supply From: (EX) ELVP-1
Mounting: RECESSED
Enclosure: NEMA 1

Volts: 208/120 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10 kAIC
Mains Type: MLO
Mains Rating: 225 A
MCB Rating: 225 A

Notes:
1. BOLD FONT FOR CIRCUITS INDICATES NEW WORK.

CKT	Circuit Description	Trip	Poles	A (kVA)	B (kVA)	C (kVA)	A (kVA)	B (kVA)	C (kVA)	Poles	Trip	Circuit Description	CKT
1	SPACE	--	1	--			--			1	--	SPACE	2
3	SPACE	--	1		--			--		1	--	SPACE	4
5	SPACE	--	1			--			--	1	--	SPACE	6
7	SPACE	--	1	--			--			1	--	SPACE	8
9	SPACE	--	1		--			--		1	--	SPACE	10
11	SPACE	--	1			--			--	1	--	SPACE	12
13	SPACE	--	1	--			--			1	--	SPACE	14
15	**SPARE**	**20 A**	**1**		**0.00**			0.00		1	20 A	STAIRWELL TAYLOR ROOM END	16
17	**SPARE**	**20 A**	**1**			**0.00**			**0.00**	**1**	**20 A**	**SPARE**	**18**
		Total Load:		0.0 kVA		0.0 kVA		0.0 kVA					
		Total Amps:		0.0 A		0.0 A		0.0 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
				Total Conn. Load:	0 VA
				Total Est. Demand:	0 VA
				Total Conn.:	0 A
				Total Est. Demand:	0 A

Panel Designation: EX L5A

Location: ELECTRICAL ROOM 13
Supply From: XFMR H5A
Mounting: SURFACE
Enclosure: NEMA 1

Volts: 208/120 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type: MLO
Mains Rating: 800 A
MCB Rating: -

Notes:
1. BOLD FONT FOR CIRCUITS INDICATES NEW WORK.

CKT	Circuit Description	Trip	Poles	A (kVA)	B (kVA)	C (kVA)	A (kVA)	B (kVA)	C (kVA)	Poles	Trip	Circuit Description	CKT
1				--				0.00					2
3	SPACE	--	3		--				0.00	3	50 A	CHILL WATER PUMP - RIFLE RANGE	4
5						--							6
7				--				0.00					8
9	SPACE	--	3		--				0.00	3	70 A	DUCT HEATER - COMPUTER LAB	10
11						--							12
13				0.00			0.00						14
15	COIN LAUNDRY	400 A	3		0.00			0.00		3	225 A	PANEL LV18	16
17						0.00			0.00				18
19				0.00				--					**20**
21	METERING POTENTIAL - DO NOT TURN OFF OR RECONNECT	20 A	3		0.00			--		**3**	**--**	**SPACE**	**22**
23						0.00			--				**24**
25				**22.73**				0.00					26
27	**PANEL 2A - 2ND FLOOR RM 220A**	**225 A**	**3**		**22.07**			0.00		3	100 A	PANEL A	28
29						**22.54**			0.00				30
31				**6.58**				0.00					32
33	**PANEL F - 2ND FLOOR OPEN STORAGE 200**	**225 A**	**3**		**7.32**				0.00	3	175 A	ELVP-1	34
35						**7.41**			0.00				36
37				0.00				0.00					38
39	OLD SECURITY BUILDING - AUTO CLAVE	400 A	3		0.00				0.00	3	200 A	OLD ELECTRIC SHOP AREA	40
41						0.00			0.00				42
		Total Load:		29.3 kVA		29.4 kVA		29.9 kVA					
		Total Amps:		244.3 A		245.0 A		249.6 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LIGHTING	5823.86 VA	125.00%	7279.82 VA		
RECEPTACLE	42065 VA	61.89%	26032.5 VA	**Total Conn. Load:**	88638.81 VA
MECHANICAL EQUIPMENT	40939 VA	65.00%	26610.35 VA	**Total Est. Demand:**	59700.33 VA
				Total Conn.:	246 A
				Total Est. Demand:	166 A

Electrical - Jack Thompson

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

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KEY PLAN

PROJECT NUMBER
60763454

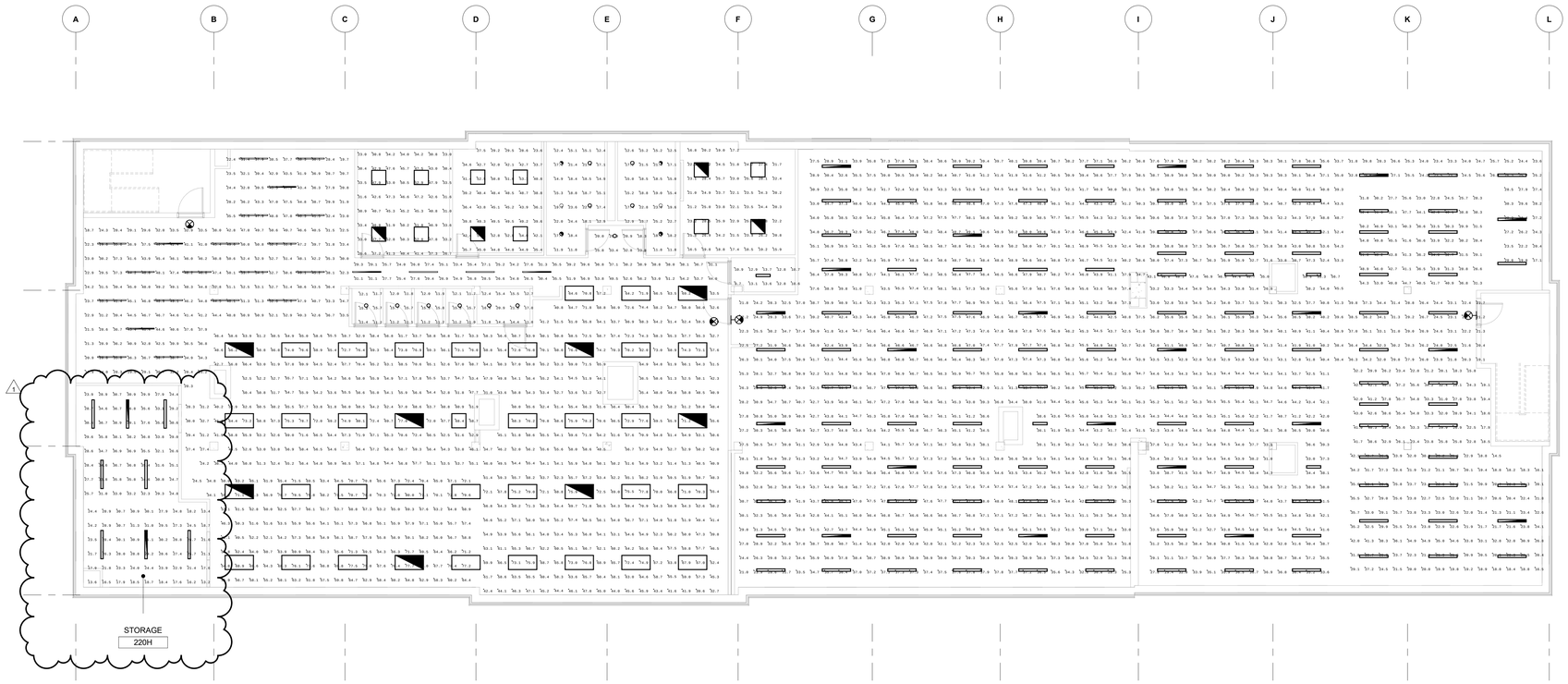
SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E-701

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GENERAL NOTES - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL DEMOLITION ELECTRICAL GENERAL NOTES.



Calculation Summary							
Scene: 3 per space							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Breakroom_220A	Illuminance	FC	22.76	28.5	15.9	1.43	1.79
Clothing Rack Area 1	Illuminance	FC	46.75	56.7	35.0	1.34	1.62
Clothing Rack Area 2	Illuminance	FC	38.35	54.3	22.8	1.68	2.38
Clothing Rack Area 3	Illuminance	FC	30.51	43.6	15.8	1.93	2.72
Clothing Rack Area 4	Illuminance	FC	25.38	42.1	14.5	1.75	2.90
Corridor	Illuminance	FC	33.87	56.9	10.3	1.85	3.11
Fitting Room_220L	Illuminance	FC	12.98	15.8	11.2	1.16	1.41
Fitting Room_220M	Illuminance	FC	12.92	15.7	11.1	1.16	1.41
Fitting Room_220N	Illuminance	FC	12.98	15.8	11.2	1.16	1.41
Fitting Room_220O	Illuminance	FC	12.92	15.7	11.1	1.17	1.41
Fitting Room_220P	Illuminance	FC	17.25	21.0	14.8	1.17	1.42
HK Closet_C6	Illuminance	FC	12.08	13.7	9.7	1.25	1.41
Storage_220H	Illuminance	FC	24.28	31.3	13.2	1.84	2.37
Office 1_220C	Illuminance	FC	40.51	53.0	23.0	1.76	2.30
Office 2_220B	Illuminance	FC	42.85	54.1	23.6	1.82	2.29
Open Storage_200	Illuminance	FC	40.33	54.3	17.1	2.36	3.18
Pick-Up Storage_220G	Illuminance	FC	32.38	39.1	23.9	1.35	1.64
Reception Waiting Area_220F	Illuminance	FC	38.35	54.5	17.6	1.20	3.48
Restroom_Men's_C2	Illuminance	FC	19.43	27.0	11.2	1.47	2.41
Restroom_Women's_C3	Illuminance	FC	17.44	25.2	11.8	1.48	2.14
Tailor Shop_220	Illuminance	FC	59.95	82.0	24.2	2.48	3.39
Work Area_203A	Illuminance	FC	62.97	80.0	24.5	2.57	3.27

SECOND FLOOR LIGHTING CALCULATIONS - NORMAL

4 / E-801

Scale: 1/8" = 1'-0"

PN

TN

8' 4' 0 8' 16'

1/8"=1'-0"

GRAPHIC SCALES

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VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

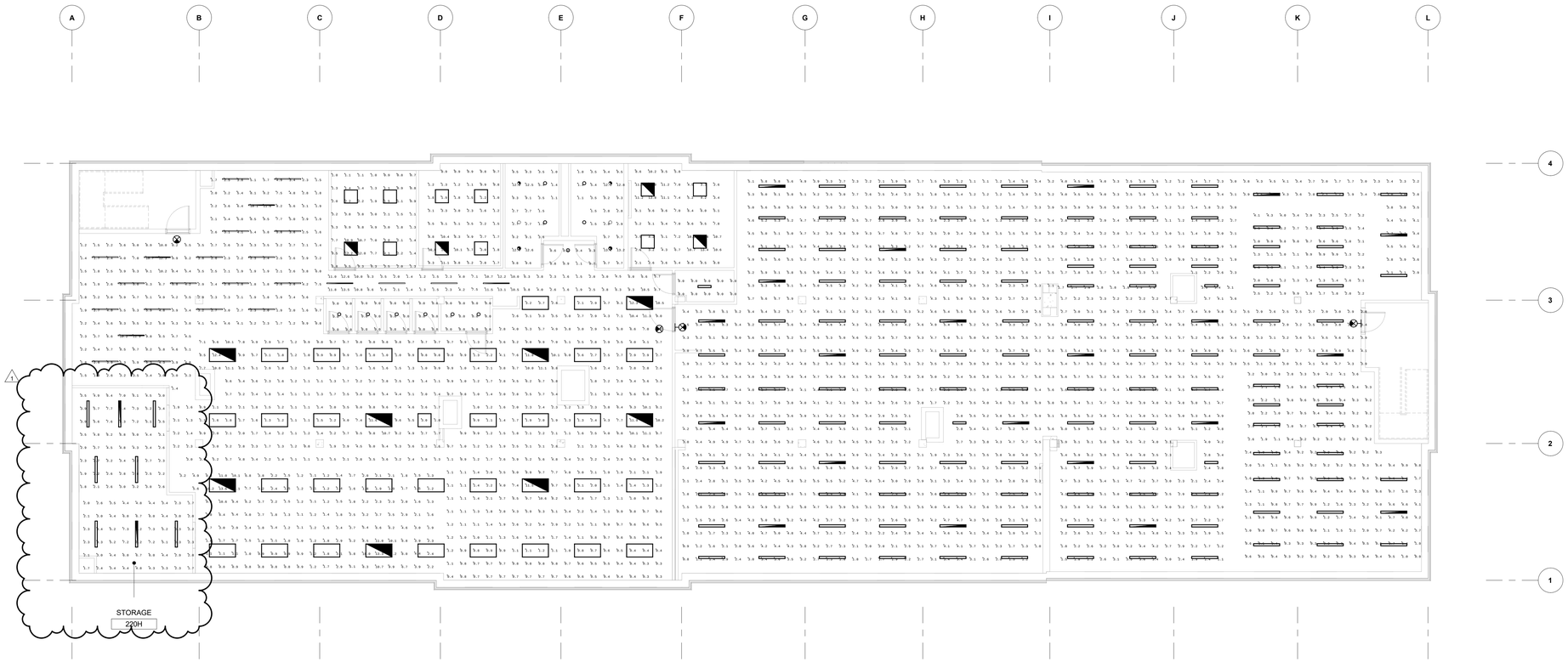
LIGHTING CALCULATIONS - SECOND FLOOR - NORMAL

SHEET NUMBER

E-801

GENERAL NOTES - NEW WORK:

A. REFER TO SHEET E-001 FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND FOR ADDITIONAL DEMOLITION ELECTRICAL GENERAL NOTES.



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Breakroom_220A	Illuminance	Fc	7.37	14.0	2.1	3.51	6.67
Clothing Rack Area 1	Illuminance	Fc	2.10	3.5	1.0	2.10	3.50
Clothing Rack Area 2	Illuminance	Fc	1.84	4.3	0.6	3.07	7.17
Clothing Rack Area 3	Illuminance	Fc	1.30	4.2	0.2	6.50	21.00
Clothing Rack Area 4	Illuminance	Fc	1.17	4.8	0.2	5.85	24.00
Corridor	Illuminance	Fc	5.07	13.5	0.3	16.90	45.00
Fitting Room_220L	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Fitting Room_220M	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Fitting Room_220N	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Fitting Room_220P	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Fitting Room_220Q	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
HK Closet_CR	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Storage_220H	Illuminance	Fc	4.09	8.2	1.7	2.41	4.82
Office 1_220C	Illuminance	Fc	3.67	12.2	0.7	5.24	17.43
Office 2_220B	Illuminance	Fc	3.80	13.1	0.7	5.43	18.71
Open Storage_200	Illuminance	Fc	3.64	6.7	0.8	4.55	8.38
Pick-Up Storage_220G	Illuminance	Fc	4.18	8.4	1.8	2.32	4.67
Receptio~Waiting_220D,220F	Illuminance	Fc	4.12	12.3	0.7	5.89	17.57
Restroom_Men's_CR	Illuminance	Fc	2.18	12.3	1.6	1.36	17.20
Storage_Open_CS	Illuminance	Fc	3.96	7.1	1.3	3.05	5.46
Tailor Shop_220	Illuminance	Fc	3.09	13.5	0.3	10.30	45.00
Work Area_203A	Illuminance	Fc	3.44	13.6	0.8	4.30	17.00

SECOND FLOOR LIGHTING CALCULATIONS - EMERGENCY

1 | E-802

Scale: 1/8" = 1'-0"

VT UNIVERSITY BUILDING OFFICIAL APPROVAL STAMP

PN

1/8"=1'-0" 8' 4' 0 8' 16'

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KEY PLAN

A B

PROJECT NUMBER

60763454

SHEET TITLE

LIGHTING CALCULATIONS - SECOND FLOOR - EMERGENCY

SHEET NUMBER

E-802