NORTHEASTERN OKLAHOMA A&M COLLEGE
STUDENT UNION GALLEY RENOVATION
200 I STREET NE
MIAMI, OKLAHOMA 74074

INDEX TO DRAWINGS

CODE SUMMARY OFFICE BUILDING

BUILDING CODE:	2018 INTERNATIONAL BUILDING CODE
	2018 INTERNATIONAL EXISTING BUILDING CODE (LEVEL 3 ALTERATION)
PLUMBING CODE:	2018 INTERNATIONAL PLUMBING CODE
MECHANICAL CODE:	2018 INTERNATIONAL MECHANICAL CODE
ELECTRICAL CODE:	2023 NATIONAL ELECTRICAL CODE
FIRE CODE:	2018 INTERNATIONAL FIRE CODE
ACCESSIBILITY CODE:	ICC A117.1-2009
EXISTING USE GROUP:	(A3)
PROPOSED USE GROUP:	(A3)
CONSTRUCTION TYPE:	IIB
TOTAL PROJECT AREA	1,582 SF
TOTAL BUILDING AREA	44,136 SF
FIRE SPRINKLER SYSTEM:	YES
FIRE ALARM SYSTEM:	YES
NUMBER OF FLOORS ABOVE GRADE:	1
YEAR BUILT:	2002

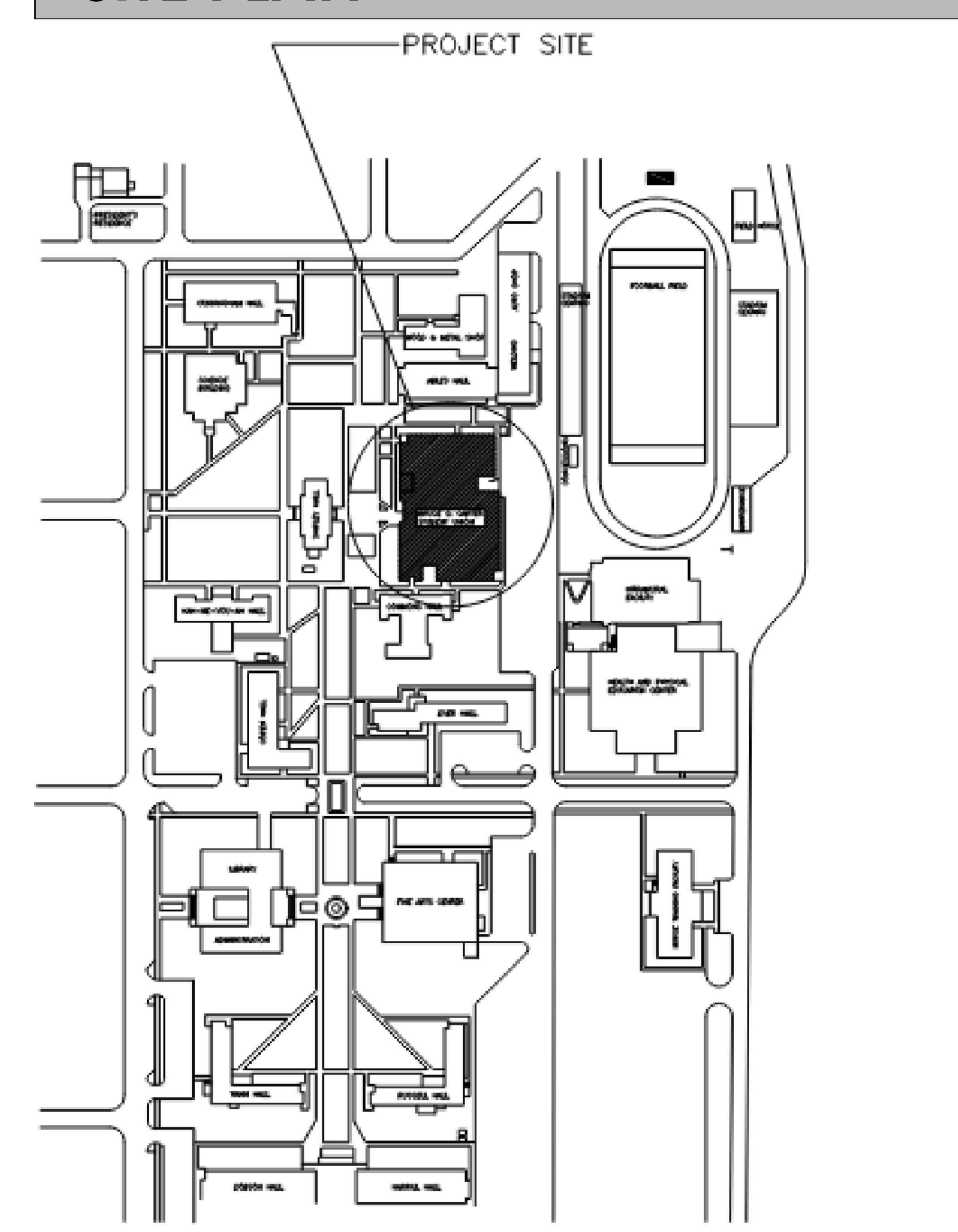
LEGAL DESCRIPTION:

SECTION: 23
RANGE: 02E
TOWNSHIP: 19N
NEIGHBORHOOD: STILLWATER SOUTHCENTRAL
Orig Town Stillwater Blk 21 Lots 16-24

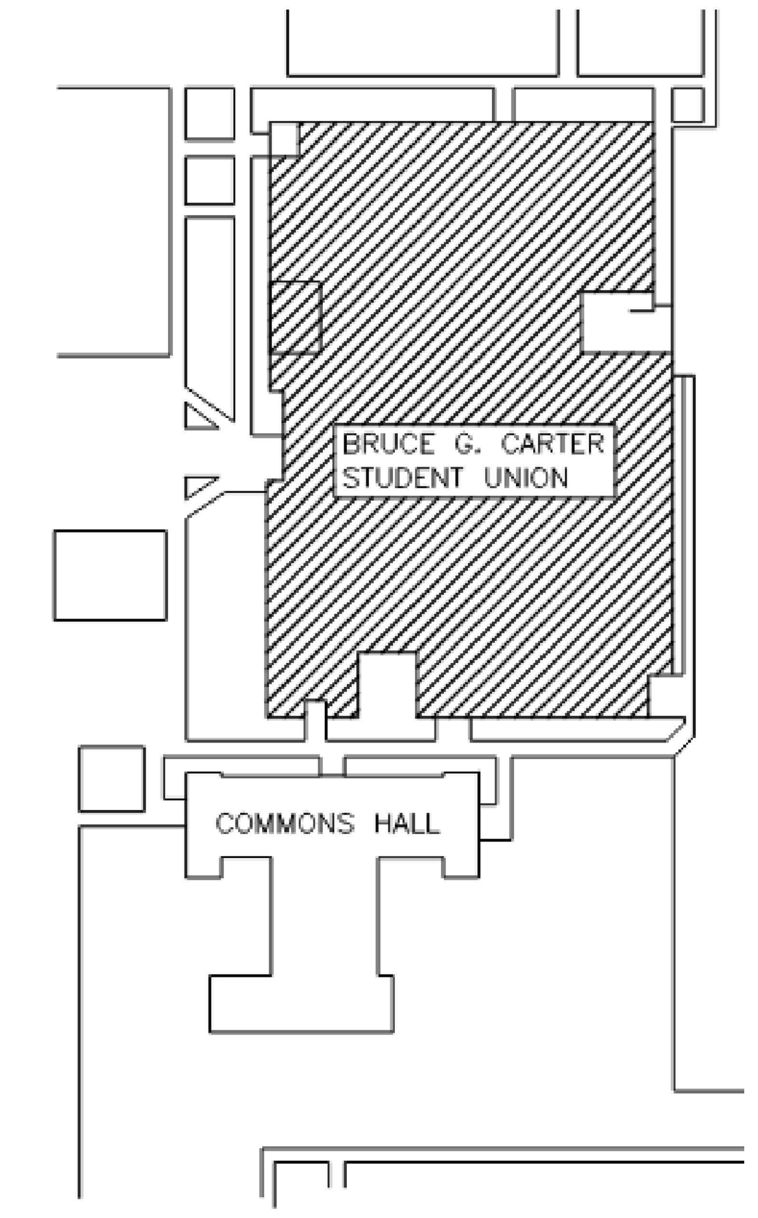
GENERAL NOTES

1. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL JOB CONDITIONS, DIMENSIONS, AND DETAILS PRIOR TO SUBMITTING ANY BIDS. TENANTS' REPRESENTATIVE SHALL BE NOTIFIED OF ANY DISCREPANCIES, OMISSIONS, OR BUILDING CONDITIONS WHICH WOULD INTERFERE WITH THE SATISFACTORY COMPLETION OF THE WORK PRIOR TO THE SUBMISSION OF BIDS. ADDENDA OR CLARIFICATION WILL BE ISSUED TO ALL BIDDERS IF REQUIRED.
2. ALL MATERIALS AS WELL AS METHODS AND PROCESSES USED IN THE PERFORMANCE OF THE WORK SHALL CONFORM TO THE STANDARDS OF THE BUILDING, UNLESS OTHERWISE INDICATED, AND THE GENERAL CONTRACTOR SHALL BECOME FAMILIAR WITH SUCH REQUIREMENTS.
3. THE GENERAL CONTRACTOR SHALL COMPLY WITH THE RULES OF THE BUILDING AS TO THE HOURS OF AVAILABILITY OF HANDLING MATERIALS, EQUIPMENT, AND DEBRIS TO AVOID CONFLICT AND INTERFERENCE WITH BUILDING OPERATIONS.
4. THE CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR THE EXISTING STRUCTURE, FACILITIES, AND IMPROVEMENTS ADJOINING THE AREA UNDER THIS CONTRACT. ANY DISTURBANCE OR DAMAGE TO ADJOINING PROPERTY RESULTING DIRECTLY OR INDIRECTLY FROM THE CONTRACTOR'S OPERATIONS SHALL BE PROMPTLY RESTORED, REPAIRED, OR REPLACED TO THE SATISFACTION OF OWNER AT NO ADDITIONAL COST.
5. CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION OF OLD AND NEW WORK DURING THE CONSTRUCTION PERIOD. SHOULD DAMAGE OCCUR, THE CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE.
6. CONTRACTOR TO CONTROL CLEANING TO PREVENT DIRT OR DUST FROM LEAVING THE JOB SITE AND INFILTRATING AREAS NOT INVOLVED IN THE PROJECT. CONTRACTOR SHALL KEEP THE AREA REASONABLY CLEAN AND DUST FREE DURING THE WORKING HOURS AND LEGALLY DISPOSE OF ALL RUBBISH DAILY. CONTRACTOR SHALL DO A FINAL CLEANUP AFTER CONSTRUCTION IS COMPLETED AND LEAVE SPACE FREE OF DUST OR DEBRIS CAUSED BY CONSTRUCTION.
7. CONTRACTOR MUST COMPLY WITH ALL APPROPRIATE MUNICIPAL AND REGULATORY AGENCIES, CODES, AND REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR SECURING AND PAYING FOR ALL NECESSARY PERMITS AND APPROVALS FOR ALL TRADES.
8. ALL WORK IS TO BE DONE IN A FIRST CLASS MANNER AND IN ACCORDANCE WITH BEST PRACTICES WITH FIRST CLASS MATERIALS. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS SUBMITTED IN WRITING BY THE CONTRACTOR AND APPROVED BY TENANT'S AGENT.
9. FURNISH AND INSTALL ALL NECESSARY DUCTWORK, DEVICES, TRIM, ETC. TO PROVIDE A COMPLETE OPERATING MECHANICAL SYSTEM. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE, LATEST EDITION, AND ANY OTHER APPLICABLE CODES. PROVIDE ADEQUATE AIR SUPPLY AND ADEQUATE CONTROLS TO PROVIDE PROPER INSIDE TEMPERATURE IN ALL CONDITIONED SPACES.
10. FURNISH AND INSTALL ALL NECESSARY PIPING, FITTINGS, TRIM, ETC. TO PROVIDE A COMPLETE OPERATING PLUMBING SYSTEM. ALL WORK SHALL BE DESIGNED, FURNISHED, AND INSTALLED BY THE CONTRACTOR AND SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL PLUMBING CODE, LATEST EDITIONS, AND ANY OTHER APPLICABLE CODES.
11. ALL MODIFICATIONS TO THE BUILDING MECHANICAL SYSTEMS SHALL BE PERFORMED BY QUALIFIED MECHANICAL CRAFTSMEN TOTALLY FAMILIAR WITH THE SYSTEM. WORK OUTSIDE THE LIMITS OF WORK AREA SHALL BE COORDINATED WITH THE BUILDING MANAGEMENT.
12. ALL NEW ELECTRICAL WORK TO MEET NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL STATE AND LOCAL CODES AND ORDINANCES. ELECTRICAL CIRCUITING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL SUB-CONTRACTOR.
13. ALL WALLS ARE TO BE PREPARED AND ALL WALLCOVERINGS ARE TO BE INSTALLED FOLLOWING MANUFACTURER'S ENCLOSED INSTRUCTIONS. IF THESE ARE MISSING, NOTIFY WALLCOVERING VENDOR BEFORE BEGINNING INSTALLATION FOR APPROPRIATE INSTRUCTIONS.
HANG THREE STRIPS OF WALLCOVERING AND INSPECT FOR SEAMING PROBLEMS OR IMPERFECTIONS IN MATERIAL. IF PROBLEMS ARE DETECTED, STOP INSTALLATION AND NOTIFY ARCHITECT.
14. PREPARE FLOOR SURFACES AS NEEDED TO INSURE THAT ALL FINISH SURFACES ARE AT THE SAME LEVEL/HEIGHT. INSTALL SCHLUTER-SCHIENE METAL EDGING, OR EQUAL, WHERE STONE/CERAMIC FLOORING MEETS CARPET.
15. DIMENSIONS ARE GIVEN TO FACE OF (CMU OR STUD OR GYPSUM BOARD) UNLESS NOTED OTHERWISE. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS OF EXISTING AND NEW CONSTRUCTION.
16. DO NOT SCALE DRAWINGS.
17. FURNISH LABOR, MATERIALS, TOOLS, TRANSPORTATION, EQUIPMENT, SERVICES AND FACILITIES REQUIRED FOR THE COMPLETE INSTALLATION OF WORK SHOWN ON THE DRAWINGS AND AS THE SPECIFIED. WORK SHALL INCLUDE MATERIAL, EQUIPMENT AND APPARATUS NOT SHOWN BUT WHICH ARE NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION OF SYSTEMS. DRAWINGS AND SPECIFICATIONS ARE NOT FABRICATION DRAWINGS OR STEP-BY-STEP INSTRUCTIONS. THEIR INTENT IS TO ESTABLISH THE MINIMUM STANDARD OF PERFORMANCE THAT IS ACCEPTABLE FOR THIS PROJECT. WORK AND EVERY DEVICE IS NOT NECESSARILY DESCRIBED OR INDICATED. CONTRACTOR IS EXPECTED TO INCLUDE THESE ITEMS IN THE BID BY FORESIGHT FROM PREVIOUS EXPERIENCE.
18. MATERIALS SHALL COMPLY WITH APPLICABLE FLAME SPREAD AND FIRE RETARDANT REQUIREMENTS. (PER IBC 2018, SECTIONS 803.1.1 - 803.13, TABLE 803.13, SECTIONS 804.2 - 804.4.2, 806, AND IFC 807)
19. BE FAMILIAR WITH DRAWINGS AND SPECIFICATIONS INCLUDED IN THIS PACKAGE PRIOR TO SUBMITTING A BID. FIELD MEASURING AND COORDINATION OF TRADES IS MANDATORY. ARCHITECT SHALL BE NOTIFIED OF DISCREPANCIES, OMISSIONS, AND BUILDING CONDITIONS THAT MAY INTERFERE WITH THE SATISFACTORY COMPLETION OF WORK PRIOR TO BEGINNING WORK IN AREA OF DISCREPANCY.
20. WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA).
21. DIMENSION MARKED "CLEAR" SHALL BE MAINTAINED AND SHALL ALLOW FOR THICKNESSES OF FINISHES.
22. "TYP" SHALL MEAN THAT THE CONDITION IS REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT, UNLESS OTHERWISE NOTED. DETAILS ARE USUALLY KEYED AND NOTED "TYP." ONLY ONCE.
23. "SIM" SHALL MEAN COMPARABLE CHARACTERISTICS FOR CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATIONS ON PLANS AND ELEVATIONS.
24. ANY DISCREPANCIES BETWEEN DIMENSIONS IN THE FIELD AND ON THE DRAWINGS SHALL BE REPORTED TO THE ARCHITECT FOR DIRECTION PRIOR TO PROCEEDING WITH CONSTRUCTION. WRITTEN DIMENSIONS GOVERN. DO NOT SCALE DRAWINGS.
25. WOOD BLOCKING TO BE FIRE RETARDANT TREATED. CONTRACTOR TO PROVIDE & COORDINATE LOCATION OF ALL WOOD BLOCKING REQUIRED FOR NEW OR EXISTING CASEWORK, EQUIPMENT, ETC.
26. DOORS TO BE LOCATED SO THAT OUTSIDE OF FRAME IS 4" FROM ADJACENT WALL OR CENTERED BETWEEN WALLS UNLESS OTHERWISE NOTED.
27. WALLS EXTENDING TO THE BOTTOM SIDE OF THE CONCRETE SLAB/STRUCTURE ABOVE SHALL HAVE A DEEP LEG, SLIP TRACK AT TOP OF WALL TO ACCOMMODATE 1/2" OF MOVEMENT. FIRE-RATED WALLS SHALL HAVE "FIRE-TRAK" TOP TRACK OR OTHER U.L. APPROVED SLIP TRACK DETAIL.
28. PENETRATIONS IN FIRE-RATED CONSTRUCTION SHALL BE SEALED WITH U.L. APPROVED SEALANT JOINT MEETING THE FIRE RATING REQUIREMENT FOR THE WALL.
29. EXISTING CONCRETE SLAB TO BE LEVELED AND FILLED AS REQUIRED FOR LEVEL INSTALLATION OF NEW FLOORING.
30. VERIFY WITH ARCHITECT THE RATING REQUIREMENTS FOR ANY PENETRATIONS THROUGH EXISTING WALLS TO REMAIN.
31. REPAIR/INFILL DAMAGED AREA AT EXISTING WALLS TO REMAIN AT LOCATIONS WHERE EXISTING ABUTTING WALLS HAVE BEEN REMOVED OR WHERE A PORTION OF AN EXISTING WALL IS REMOVED. PROVIDE A SMOOTH LEVEL FINISH SURFACE MATCHING SURROUNDING WALL TO REMAIN.
32. EXISTING AND NEW WALL SURFACES IN AREA TO RECEIVE WORK ARE TO BE PAINTED UNLESS NOTED OTHERWISE.
33. PREPARE AND PAINT EXISTING DOOR AND WINDOW FRAMES.
34. IN AREAS WITH MILLWORK, THE MILLWORK MUST BE INSTALLED BEFORE THE RUBBER FLOOR BASE IS INSTALLED. COORDINATE THE INSTALLATION OF THE FLOOR BASE AND INSTALL BASE AROUND MILLWORK.
35. PROVIDE SUBMITTALS FOR MILLWORK, DOORS, DOOR HARDWARE, FINISHES, PLUMBING FIXTURES, GLAZING AND GLAZING SYSTEMS, APPLIANCES, AND LIGHTING.
36. CONFIRM EXSTINGUISHER TYPE, SIZE, AND QUANTITY AND LOCATIONS WITH FIRE MARSHALL. COORDINATE FINAL LOCATION WITH ARCHITECT.
37. PER SECTION 2403.4 OF IBC, THE DEFLECTION OF THE GLASS SHALL NOT BE GREATER THAN THE THICKNESS OF THE PANELS WHEN A FORCE OF 50 POUNDS PER LINEAR FOOT IS APPLIED HORIZONTALLY TO ONE PANEL AT ANY POINT UP TO 42 INCHES ABOVE THE WALKING SURFACE.
38. ALL EXISTING WINDOWS SHOWN ON PLAN ARE SAFETY GLASS.

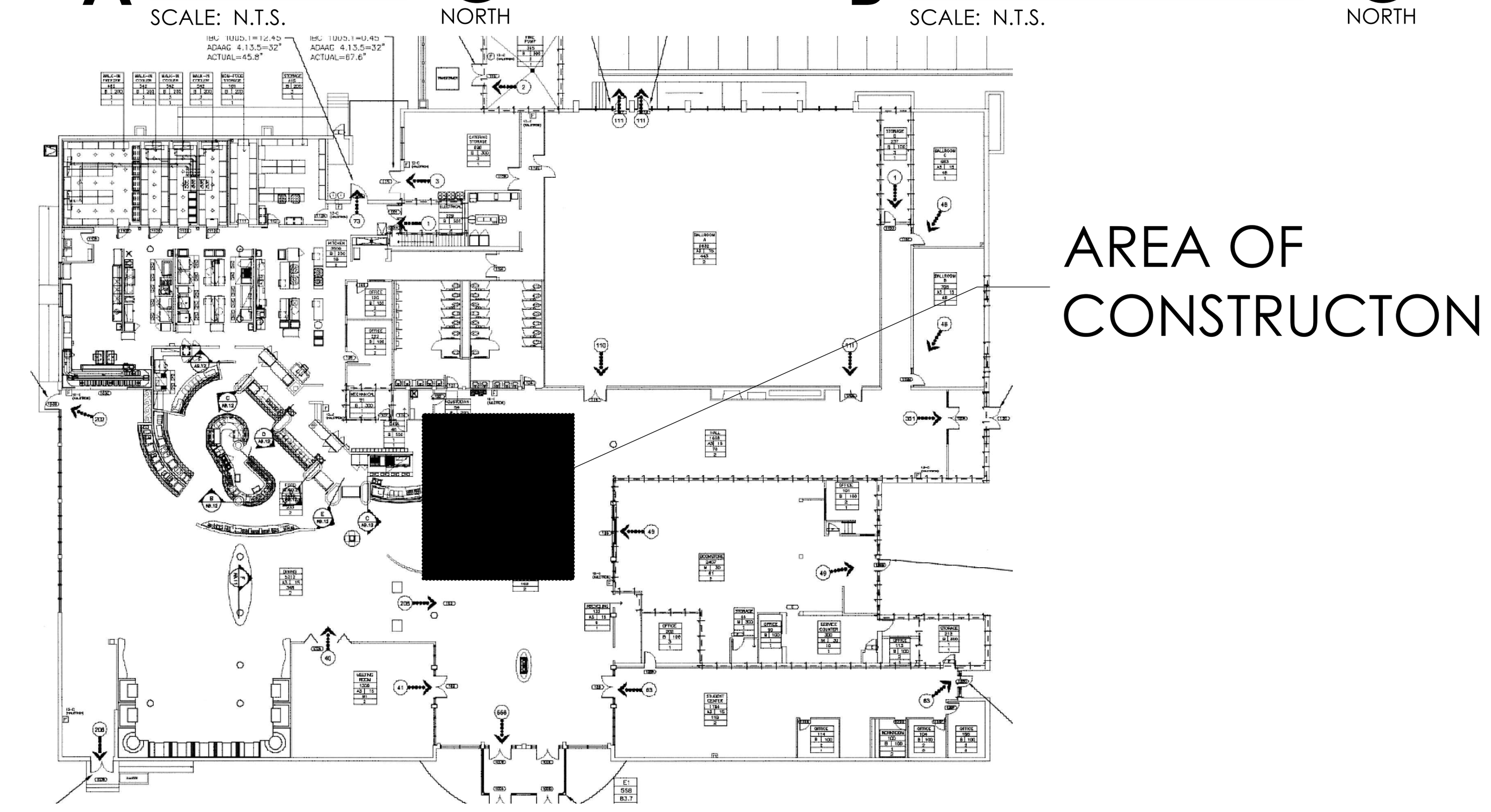
SITE PLAN



A **SITE PLAN**
SCALE: N.T.S. NORTH



B **PROJECT PLAN**
SCALE: N.T.S. NORTH



C **KEY PLAN**
SCALE: N.T.S. NORTH

PROJECT TEAM

ARCHITECT:

KKT
ARCHITECTURE \ INTERIORS \ ENGINEERING

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C OF A #534 EXPIRES 6/30/25

MEP:

PEC PROJECT NUMBER: 238012-035
PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
1924 S. UTICA AVE., SUITE 1400, TULSA, OK 74104
918-664-5400 www.pec1.com
C.O.A. #1046 PE/LS EXPIRES JUNE 30, 2025

STATE OF OKLAHOMA
SARAH J. GOULD
No. 6367
TULSA OK
LICENSED ARCHITECT
1/16/26

06.03.25	CD_SET
01.16.2026	ADD.-#1

COVER

FILE: W:\Architecture_Interiors\NEO - MIAMI OK\NEO Galley Renovation - A250067\04 Drawing Files\AutoCad\2025 - CD's\Addendum\2025-0116-NEOSU-GALLEY-A1_ADD1r.dwg
PRINTED 1/20/2026 BY Everett Steele

RCP DEMO PLAN LEGEND:

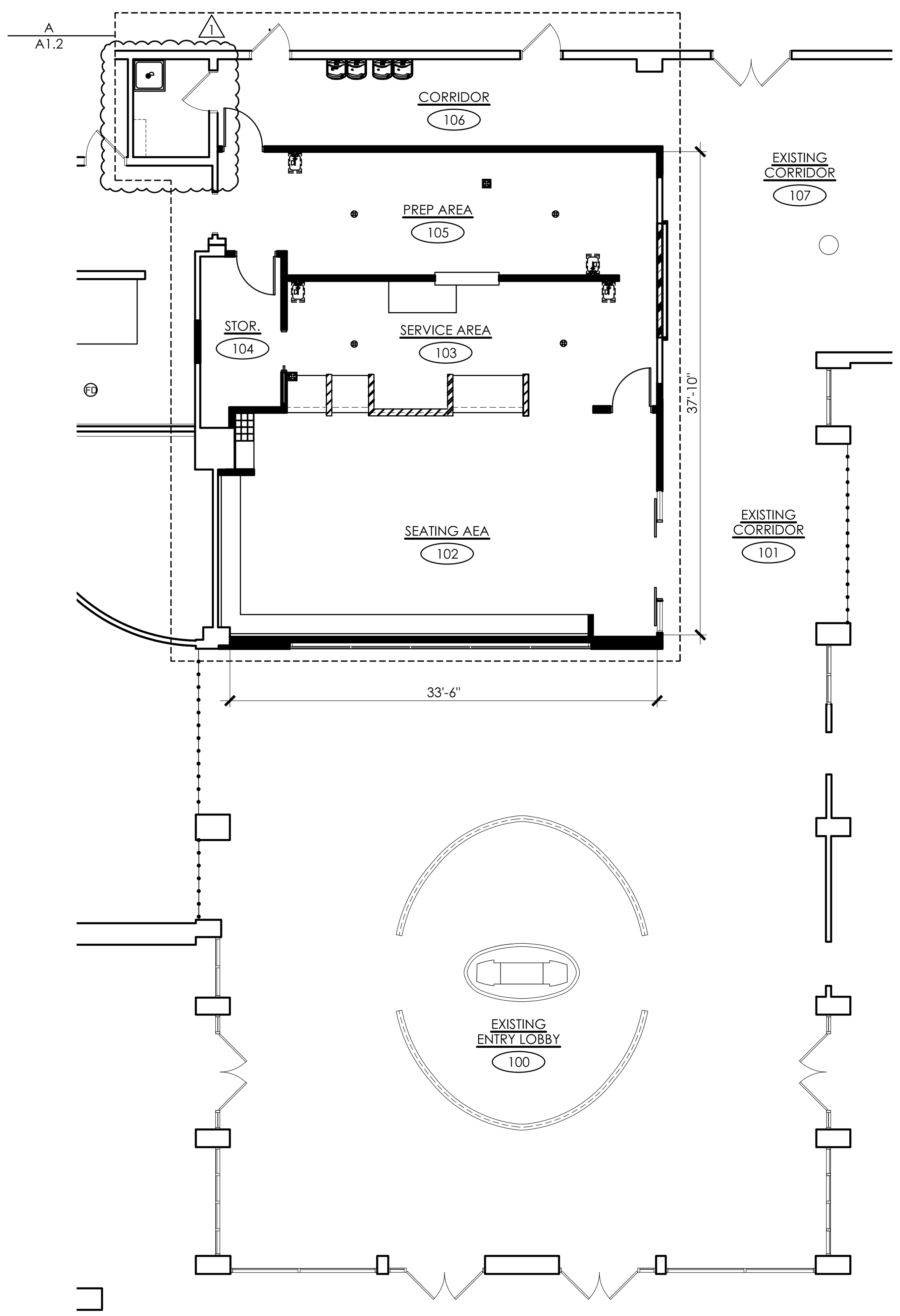
	DEMO EXISTING 2'x2' LIGHT FIXTURE STORE FOR FUTURE USE
	DEMO EXISTING PENDANT LIGHT FIXTURE STORE FOR FUTURE USE
	DEMO EXISTING 8" RECESSED CAN LIGHT FIXTURE STORE FOR FUTURE USE
	DEMO EXISTING SPEAKER STORE FOR FUTURE USE
	DEMO EXISTING WALL SCONCE STORE FOR FUTURE USE
	DEMO EXISTING GYP. BD. CEILING
	DEMO EXISTING CEILING GRID AND TILE STORE TILE FOR FUTURE USE

DEMO PLAN LEGEND:

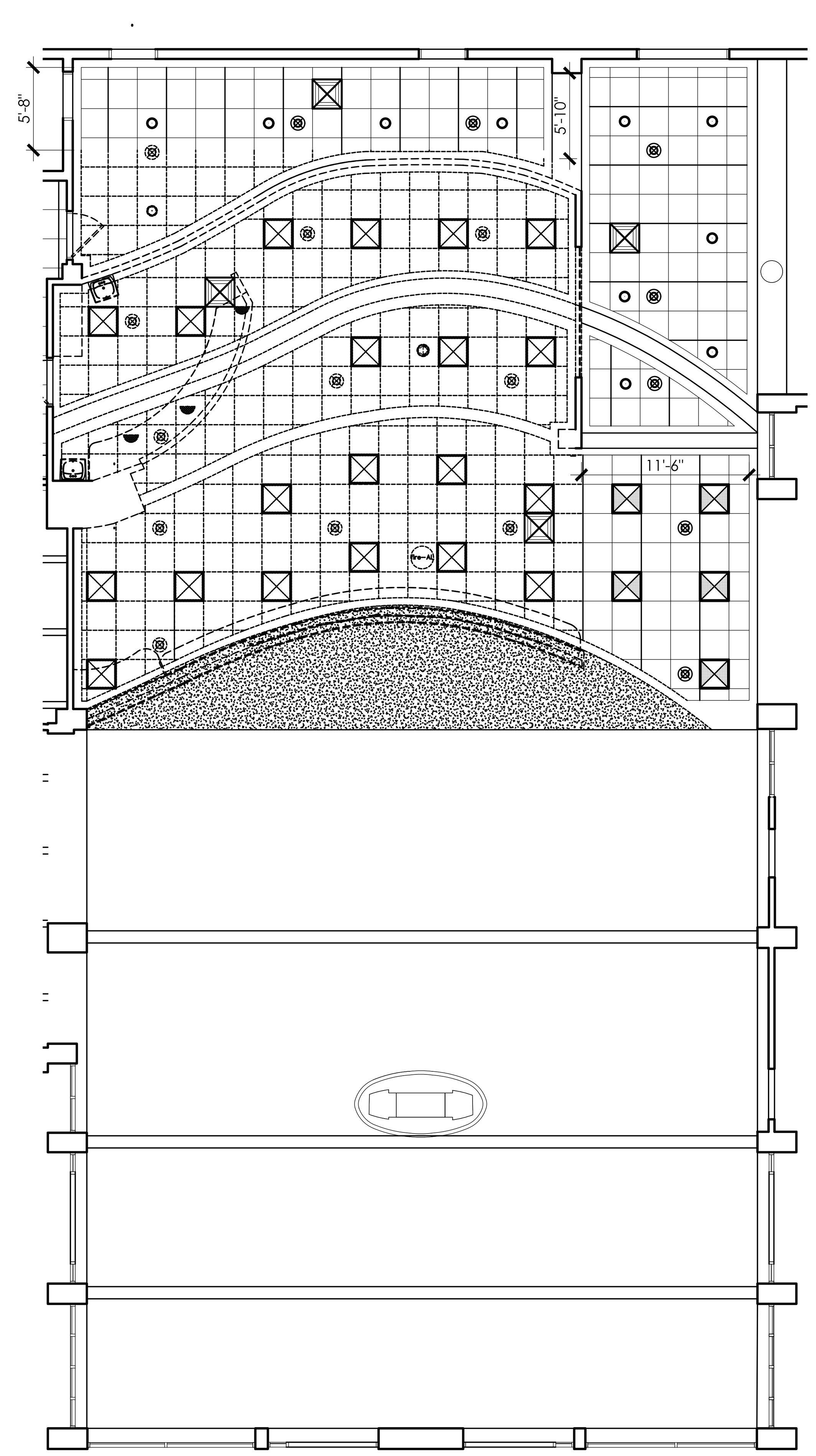
	EXISTING WALL
	DEMO WALL
	EXISTING DOOR WITH EXISTING HARDWARE
	DEMO DOOR

DEMO PLAN NOTES:

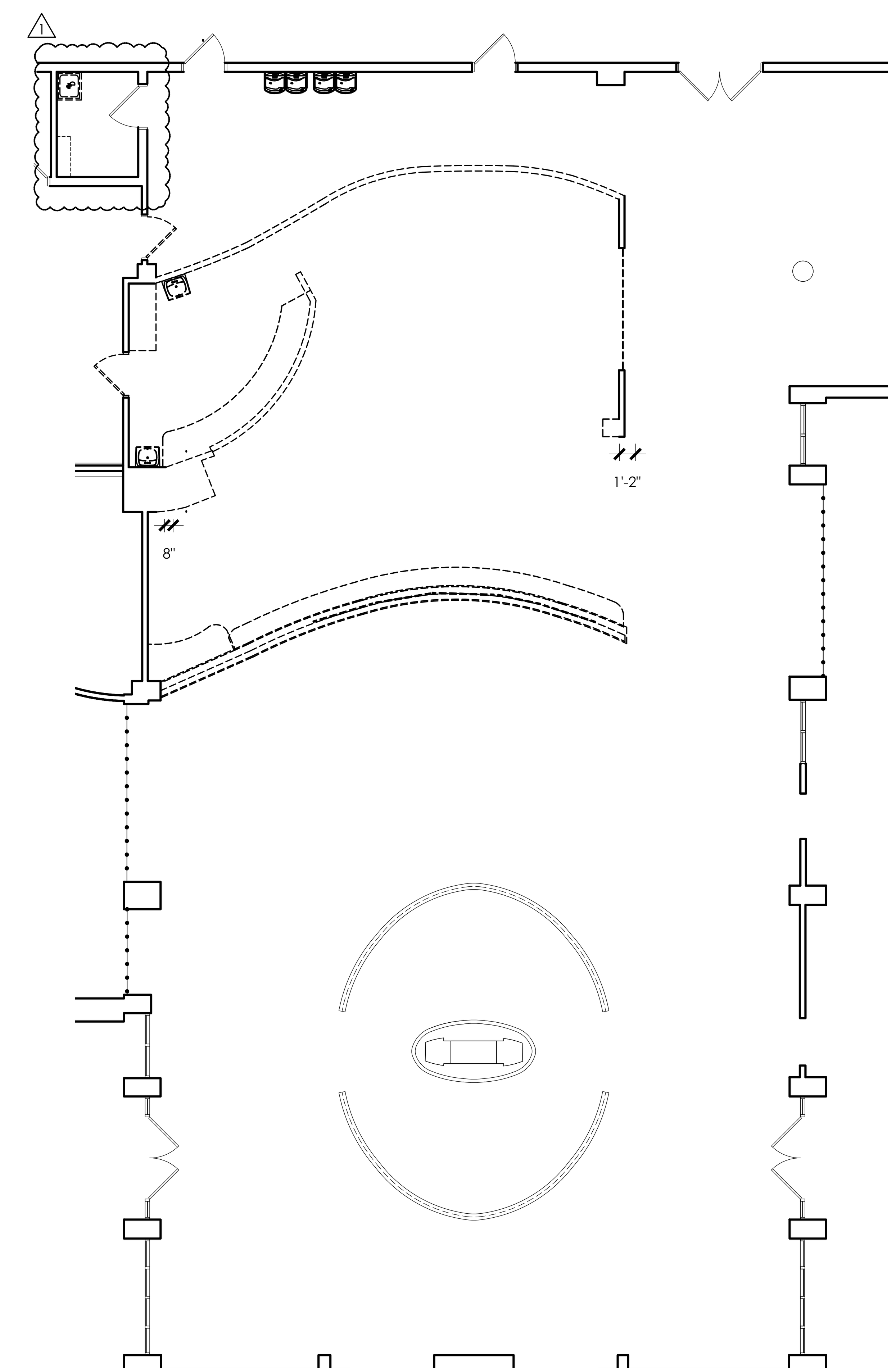
1. REMOVE ALL EXISTING FLOORING WITHIN THE AREA OF CONSTRUCTION AND SCRAPE FLOOR TO REMOVE ALL LEFT OVER MORTAR.
2. CAREFULLY REMOVE AND STORE THE EXISTING ETCHED GLAZING AND HARWARE FOR REUSE VERIFY AREA OF STORAGE WITH NEO.
3. REMOVE EXISTING MOVEABLE WALLS AND ALL ITS COMPONENTS.



C FLOOR PLAN
SCALE: 1/8"=1'-0"
NORTH



B RCP DEMOLITION PLAN
SCALE: 1/8"=1'-0"
NORTH



A FLOOR DEMOLITION PLAN
SCALE: 1/8"=1'-0"
NORTH

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STATE OF OKLAHOMA
SARAH J. GOULD
No. 6367
LICENSED ARCHITECT
1/16/26

06.03.2025		
01.16.2026		ADD.-#1

DEMOLITION
RCP DEMOLITION
FLOOR PLAN

A1.0

REFLECTED CEILING PLAN LEGEND:

⊠	2' x 2' BLDG. STD. LIGHT
▢	NEW 2' x 2' EMERGENCY LED LIGHT FIXTURE
E	EXISTING
N	NEW
R	RELOCATED
⊠	HVAC VENT - SHOWN IN EXISTING LOCATION ONLY, CONTRACTOR TO MODIFY PER MEP ENGINEERING DRAWINGS
▫	6" SQUARE RECESSED LIGHT FIXTURE
▫ EM	6" SQUARE RECESSED EMERGENCY LED LIGHT FIXTURE
⊗	3.5" DIA. PENDANT LED LIGHT FIXTURE FOCAL POINT- PURE CYLINDER PENDANT
◎	KODA HOIST LED PENDANT LIGHT FIXTURE HP-14-B-PCXX-30-220_TR_DEX-IP65
▭	LEDI- FLEXIBLE LINEAR OPTIC WALL WASH STRIP LIGHT FIXTURE
$	SINGLE POLE LIGHT SWITCH
$a	SINGLE POLE LIGHT SWITCH WITH LOWER CASE LETTER INDICATES FIXTURE TO BE CONTROLED
$D	LIGHT SWITCH WITH DIMMER
⊗	EXIT SIGN
Ⓢ	SPEAKER
▦	GYP. BOARD CEILING PAINTED: P3

FLOOR PLAN NOTES:

1. ALL EGRESS DOORS TO HAVE FREE AND CLEAR ACCESS IN THE DIRECTION OF EGRESS WITHOUT THE USE OF KEY OR SPECIAL KNOWLEDGE. THE UNLATCHING OF ANY DOOR OR LEAF SHALL NOT REQUIRE MORE THAN ON CONTINUOUS OPERATION.
2. BUILDING IS FULLY SPRINKLED. CONTRACTOR TO ADJUST SPRINKLER HEADS AND LOCATIONS PER BUILDING CODE REQUIREMENTS.

△1

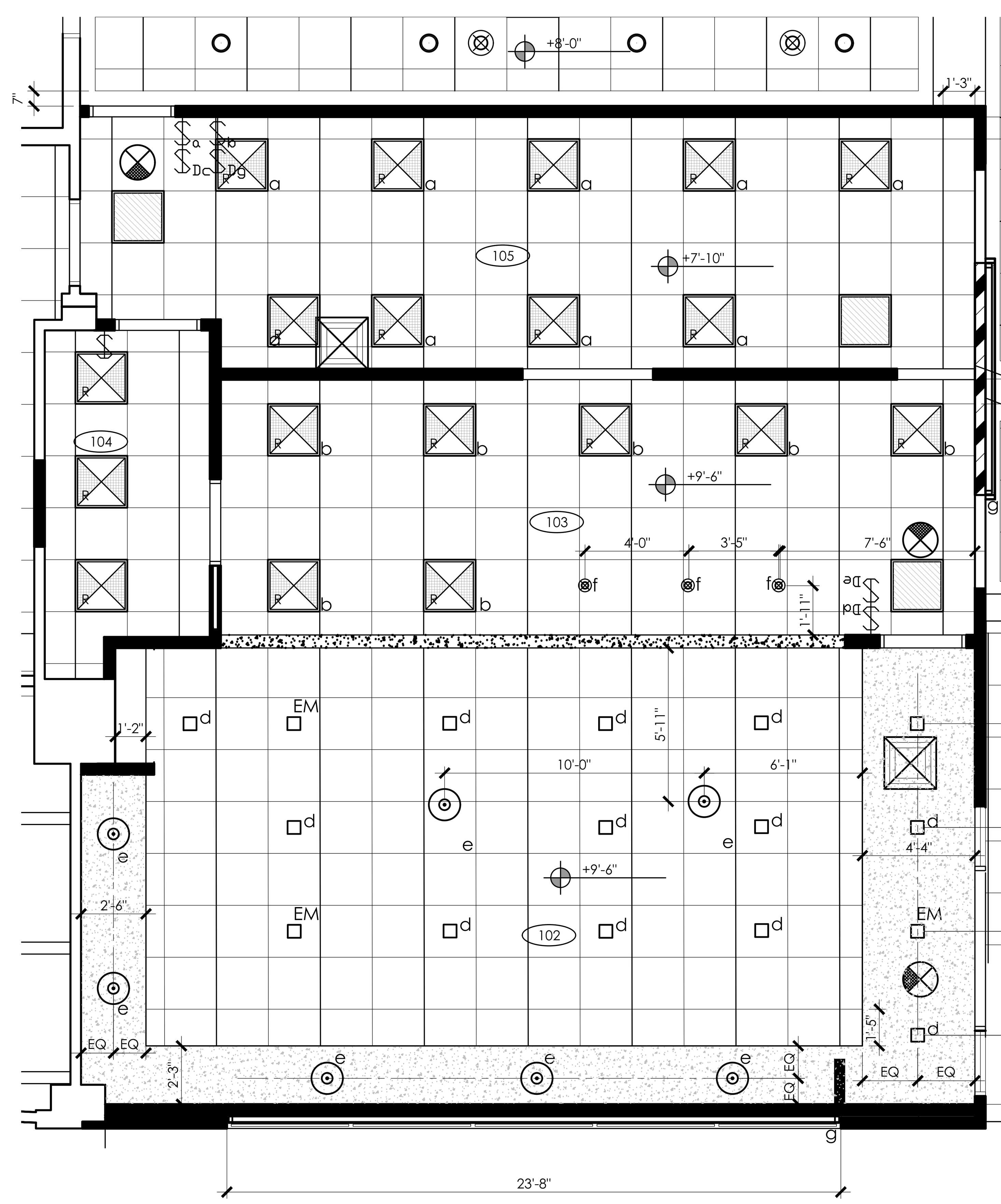
FLOOR PLAN KEYNOTES:

(1) PROVIDE AND INSTALL WATER LINES FOR KITCHEN EQUIPMENT PER MANUFACTURER SPECIFICATIONS. (REFER TO MEP PLANS FOR DETAILS)

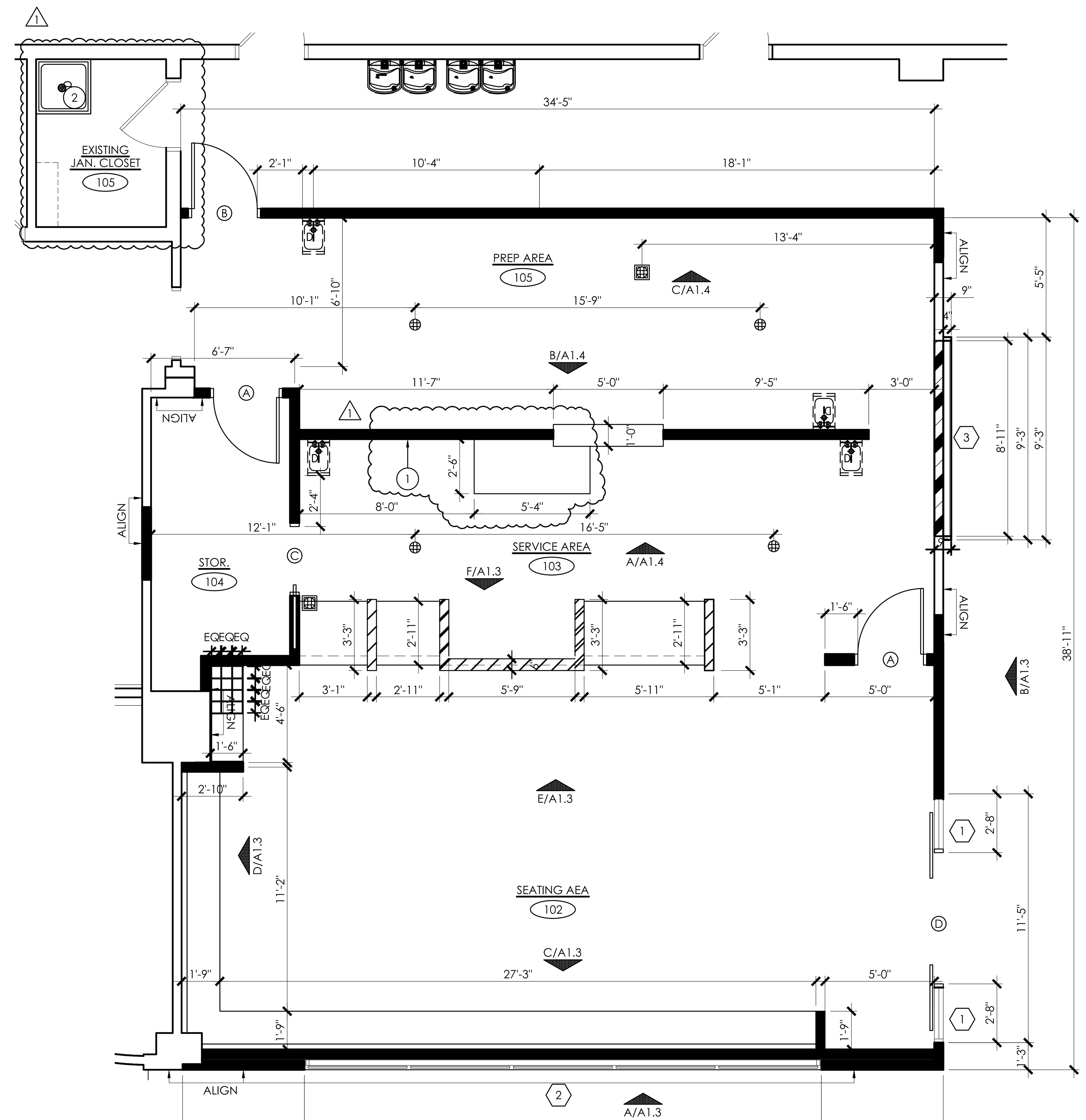
(2) PROVIDE AND INSTALL NEW JOHN BOOS PBJC-303084 30-INCH STAINLESS STEEL MOP SINK CABINET W/ DRAIN (RESTAURANT SUPPLY.COM)

FLOOR PLAN LEGEND:

(solid wall)	NEW WALL TO BE 3-5/8" 25 GAUGE METAL STUDS W/ 5/8" GYP. BD. BOTH SIDES. SPACING OF STUDS TO MATCH BUILDING STANDARD
(open wall)	EXISTING WALL
(hatched wall)	NEW 3'-10"H LOW WALL TO BE 3-5/8" 25 GAUGE METAL STUDS W/ 5/8" GYP. BD. BOTH SIDES. SPACING OF STUDS TO MATCH BUILDING STANDARD
(dashed wall)	NEW WALL TO BE DOUBLE 3-5/8" 25 GAUGE METAL STUDS W/ 5/8" GYP. BD. BOTH SIDES. SPACING OF STUDS TO MATCH BUILDING STANDARD (REFER TO SECTION J/A1.4)
NAME? ####	ROOM NAME AND NUMBER
⬡1	REINSTALL (4) EXISTING ETCHED GLASS PANELS IN 1-INCH C-CHANNELS SPACED EQUALLY; 4"H RECESSED POCKETS TO BE AT BOTH TOP AND BOTTOM OF PANELS FOR STRIP LIGHT FIXTURE
⬡2	NEW FULL DOOR HEIGHT STOREFRONT SAFETY GLASS WINDOW DOOR TO MATCH EXISTING WINDOW WITHIN SPACE
⬡3	REINSTALL (3) EXISTING ETCHED GLASS PANELS IN 1-INCH C-CHANNELS SPACED EQUALLY; 4"H RECESSED POCKETS TO BE AT BOTH TOP AND BOTTOM OF PANELS FOR STRIP LIGHT FIXTURE
(door)	EXISTING DOOR WITH EXISTING HARDWARE
Ⓒ	NEW 3'-0" BUILDING STANDARD POCEKT DOOR WITH PUSH-PULL HARDWARE
Ⓓ	NEW PAIR OF 3'-0" BUILDING STANDARD STOREFRONT POWERED SLIDING DOORS AND SIDELITE SYSTEM
←①	KEY NOTE
▲ A-1	ELEVATION KEY
—▲ A-1	SECTION
Ⓐ	NEW OR RELOCATED 3'-0" BUILDING STANDARD DOOR WITH LEVER HARDWARE, LATCH, AND CLOSER
Ⓑ	NEW OR RELOCATED 3'-0" BUILDING STANDARD DOOR WITH LEVER HARDWARE, LATCH, CLOSER, AND LOCKSET
△1	REVISION NOTE



B ENLARGED REFLECTED CEILING PLAN
SCALE: 1/4"=1'-0" NORTH



A ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0" NORTH

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06.03.2025
△1 01.16.2026 ADD.-#1

ENLARGED FLOOR AND REFLECTED CEILING PLAN

A1.1

FINISH LEGEND:

MARK	MATERIAL	MANUFACTURER	STYLE	COLOR	SIZE	NOTES
BASE						
B1	RUBBER BASE	ROPPE	PINNACLE	CHARCOAL 123	4" H	STANDARD TOE BASE
B2	BULLNOSE BASE TILE	CROSSVILLE	CROSS COLOR MINGLES	GRAPHITE	4"H x 8"W	COVE BASE / TRIM / UPS
WALL FINISH						
P1	PAINT	SHERWIN WILLIAMS		ICE CUBE SW6252		FLAT FOR CEILINGS; EGGSHELL FOR WALLS
P2	PAINT	SHERWIN WILLIAMS		LAZY GRAY SW6254		EGGSHELL FOR WALLS
P3	PAINT	SHERWIN WILLIAMS		PEPPERCORN SW7674		EGGSHELL FOR WALLS; SEMI-GLOSS FOR DOORS & FRAMES
F1	FIBERGLASS REINFORCED PANEL	MARLITE	SYMMETRIX RECTANGLE VERTICAL 6X12	WHITE WITH GREY GROUT LINES SS917	48" W X 96"H	
F2	FIBERGLASS REINFORCED PANEL	MARLITE	STANDARD- SMOOTH	WHITE S 100G	48"W X 96"H	
WC1	WALLCOVERING	VERSA	PATINA BLOCKS	CHALK A208-038	52" W	INSTALL: REVERSE HANG
COUNTER TOP / PLASTIC LAMINATE						
PL1	PLASTIC LAMINATE	PANOLAM NEVAMAR	TEXTURED	BASIC BLACK HAUTELINK HLT001T		
PL2	PLASTIC LAMINATE	WILSONART	MATTE	DESIGNER WHITE D354		
Q1	QUARTZ	CORIAN	POLISHED	BLACK GOLDSTONE	1/2" THICKNESS	
TILE						
WT1	HEXAGONAL WALL TILE	TILE BAR	HEXART	POP GRIS	8"	GROUT- LATICRETE, COLOR-STERLING SILVER
WT2	WALL TILE	DALTILE	COLOR WHEEL LINEAR	BISCUIT K175	4" W X 12" H	INSTALL: STACKED; GROUT- LATICRETE PERMACOLOR, COLOR-MATCH **P5**
WT3	WALL TILE	DALTILE	COLOR WHEEL LINEAR	SEA BREEZE 1174	4" W X 12" H	INSTALL: STACKED; GROUT- LATICRETE, COLOR-STERLING SILVER
FLOORING						
LVT1	LUXURY VINYL PLANK	J+J FLOORING	RETREAT V5056	SHAPE 1191	9" W X 48" H	INSTALL: STAGGERED
LVT2	LUXURY VINYL PLANK	PATCRAFT	ITERATE I638V	INTEGRATE-V1 00400	9" W X 36" H	INSTALL: ASHLAR
T1	PORCELAIN FLOOR TILE	CROSSVILLE	CROSS COLOR MINGLES	GRAPHITE	8" W X 8" L	FINISH: CROSS-TREAD (CTS) INSTALL: MONOLITHIC GROUT-LATICRETE COLOR- STERLING SILVER 78
CEILING						
C1	ACOUSTICAL CEILING TILE	ARMSTRONG	FINE FISSURED HIGH NRC	WHITE	24" W X 24" L	15/16 ANGLED TEGULAR ITEM NO.: 1756 SUSPENSION SYSTEM: PRELUDE XL
C2	KITCHEN LAY-IN	USG CEILINGS	CLIMAPLUS	WHITE	24" W X 24" L	ITEM NO.: 3210 GRID PROFILE: A (USG DX)

FINISH PLAN LEGEND:

NAME? ####	ROOM NAME & NUMBER
(1)	KEY NOTE
C1 / W1 / B1 / F1	FINISH SCHEDULE: CEILING, WALLS, BASE, FLOOR FINISH
F1	CHANGE IN FINISH
M.E.	MATCH EXISTING FINISH.
EX.	EXISTING FINISH TO REMAIN.
(symbol)	CHANGE IN FLOOR FINISH MATERIAL REQUIRING A TRANSITION STRIP

TRANSITION STRIP:

TRANSITION

TS-1	LVT TO OTHER FLOOR FINISH SCHLUTER SYSTEMS STYLE: VINPRO-S FINISH: ANODIZED ALUMINUM
TS-2	WALL TILE TO FLOOR SCHLUTER SYSTEMS STYLE: DILEX-AHKA FINISH: SATIN ANODIZED ALUMINUM
TS-3	WALL TILE INSIDE CORNERS SCHLUTER SYSTEMS STYLE: DILEX-EKE FINISH: SATIN ANODIZED ALUMINUM

FINISH NOTES:

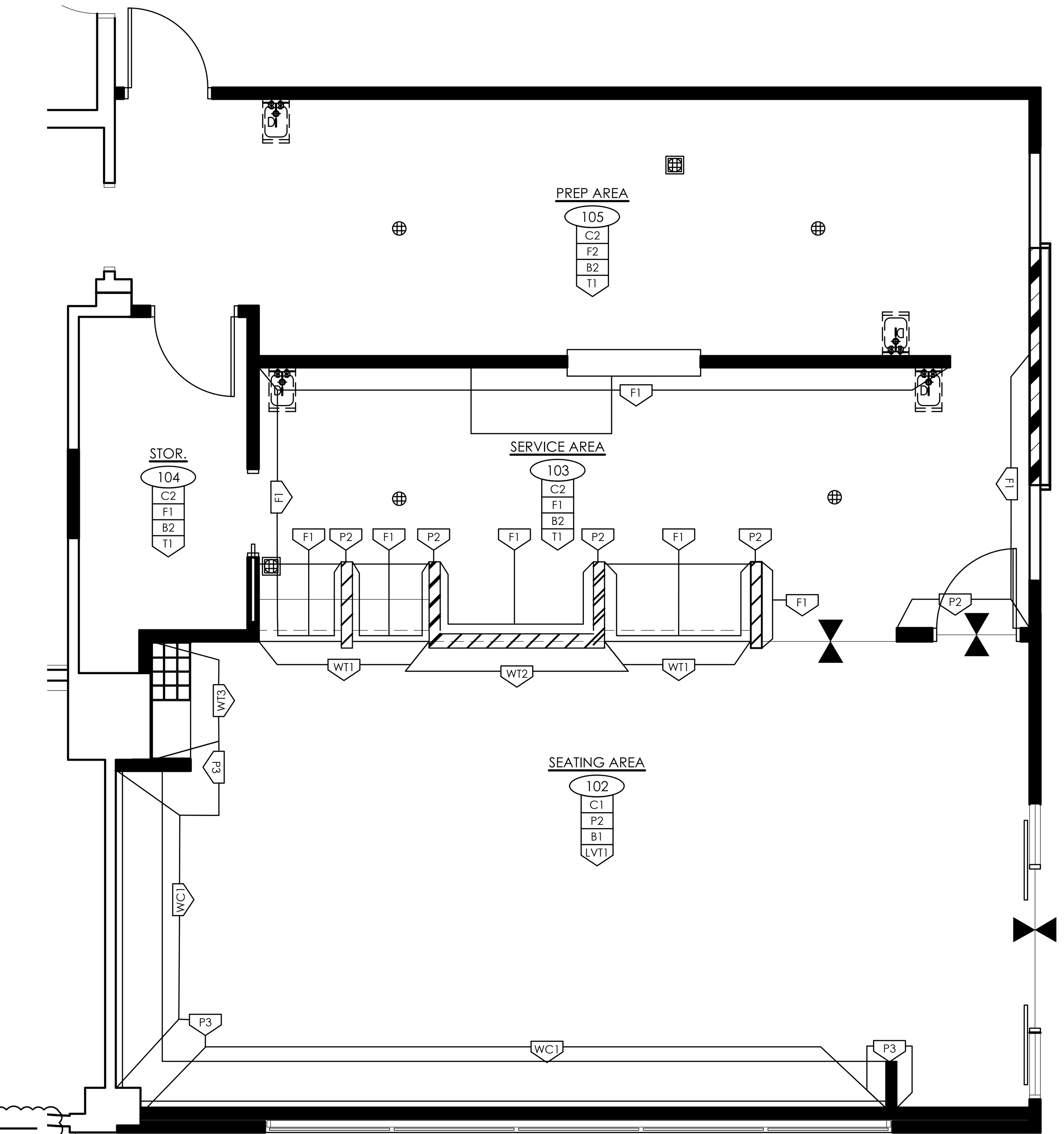
1. ALL EXISTING HOLLOW METAL DOOR FRAMES TO BE PAINTED P3, UNLESS NOTED OTHERWISE.
2. ALL EXISTING ANODIZED ALUMINUM DOOR FRAMES THAT ARE PART OF MODULAR WALL SYSTEM TO BE TOUCHED UP WHERE APPLICABLE.
3. ALL EXISTING STAINED WOOD DOORS TO BE TOUCHED UP WHERE APPLICABLE.

MILLWORK NOTES:

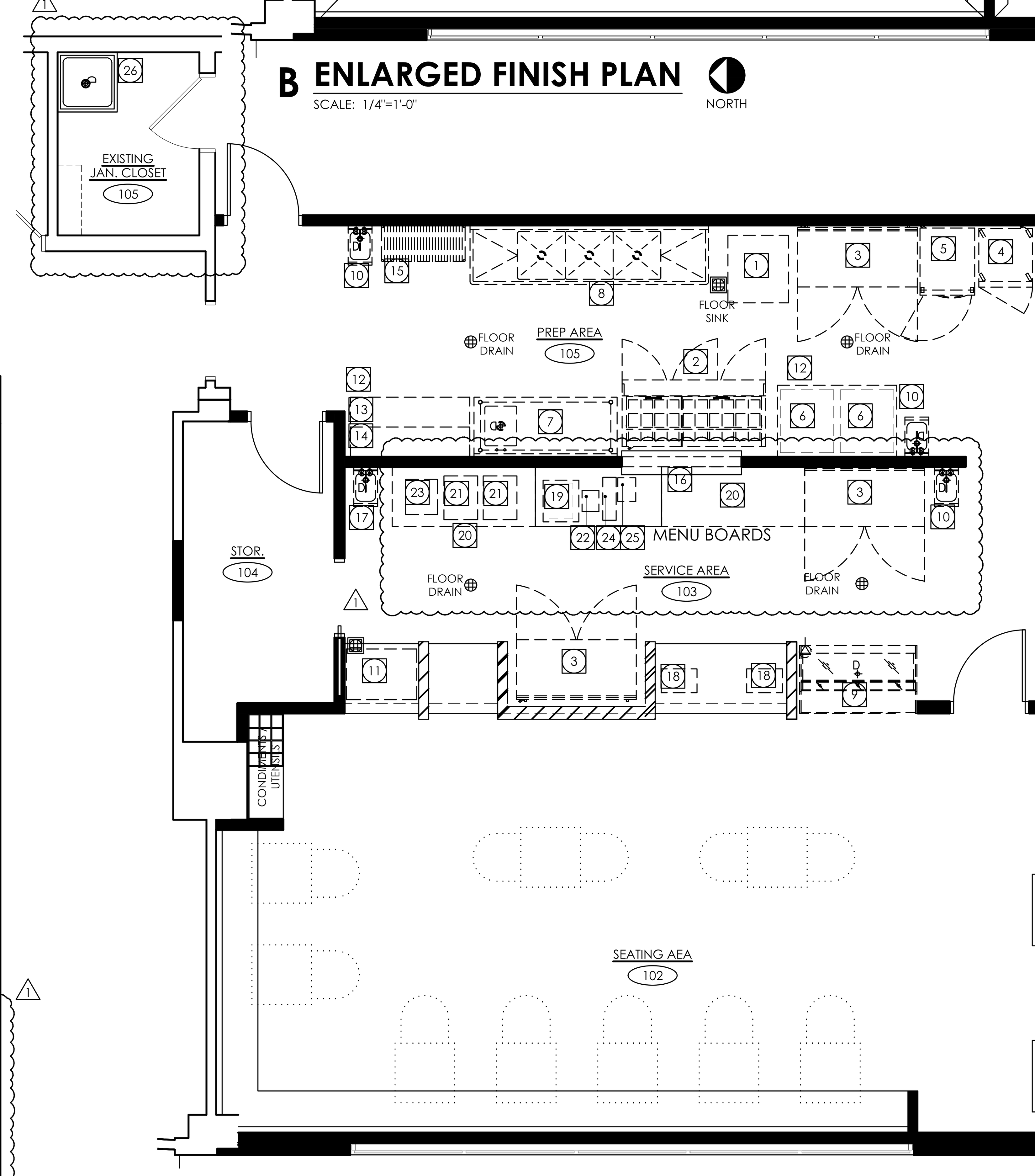
1. PROVIDE MILLWORK SHOPS FOR ALL MILLWORK.
2. PLASTIC LAMINATE CABINET CONSTRUCTION STYLE TO BE FULL FLUSH OVERLAY WITH SLAB STYLE DOORS.
3. MDF & PLYWOOD ARE BOTH ACCEPTABLE SUBSTRATES.
4. PLASTIC LAMINATE CABINETS TO HAVE WHITE MELAMINE INTERIORS.
5. PLASTIC LAMINATE CABINETS TO HAVE ADJUSTABLE PIN MOUNTED SHELVES. PIN HOLES TO HAVE METAL SLEEVES. REFER TO ELEVATIONS FOR QUANTITY OF SHELVES.
6. EXPOSED ENDS OF MILLWORK RUNS TO HAVE FINISHES ENDS SIMILAR TO FACE OF MILLWORK.
7. BASE CABINETS TO HAVE RECESSED TOE KICKS FINISHED WITH REQUIRED BASE.
8. HINGES ARE TO BE CONCEALED WITH 110 DEGREE OPENING.
9. DOOR FRONTS TO BE CONSTRUCTED WITH PLASTIC LAMINATE SELF EDGE.
10. CABINET BUMPERS/SILENCERS TO BE PROVIDED AT ALL DOORS AND DRAWERS.
11. COUNTERTOPS TO BE PROVIDED WITH 4" HIGH BACK SPLASHES AS SHOWN ON ELEVATIONS.
12. FIELD VERIFY ALL DIMENSIONS AS REQUIRED.
13. VERIFY DIRECTION OF LAMINATE PATTERNS AS WELL AS ANY SEAMING DIAGRAMS DURING SUBMITTAL PHASE.
14. ALL TAB PULLS TO BE POLISHED CHROME FINISH.

KITCHEN EQUIPMENT LEGEND:

KEY	Equipment Name	Quantity	Supplier Number	Sizes (Spec Sheets Provided)	Warranty & Notes
1	Hoshizaki Ice Maker (920lb/day) & 500lb Bin	1	KM-901MAJ+ B-500SF	30"x32.3"x46" (WxDxH)	3 yr Parts/Labor on ice maker and 5 on evaporator. 5 year parts on Compressor
2	Deli Make Table	1	69K-138	71-3/4"x34-1/2"x43-3/8" (WxDxH)	3 year parts/labor + 5 year compressor
3	Under Counter Coolers w/ Work Top	3	TWT-60	60-3/8"x30-1/8"x33-3/8" (LxDxH	1 Year parts and Labor + 5 Year Compressor
4	Reach-In Single Door Refrigerator	1	CLBM-23R-FS-L	27"x33-1/2"x78" (LxDxH)	6 Year Parts and Labor + 1 addtional Year on Compressor Parts
5	Reach-In Single Door Freezer	1	CLBM-23F-FS-L	27"x33-1/2"x78" (LxDxH)	6 Year Parts and Labor + 1 addtional Year on Compressor Parts
6	Turbo Chef Oven	2	i1-9500-400	16"x29.8"x25" (WxDxH	1 Year Parts and Labor Only
7	Prep Table w/ Sink	1	EPT6R5-3072SSK-R	72"x30"x35-3/4" (LxWxH)	N/A
8	3 Compartment Sink	1	E3S8-24-14T24	120"x29-1/2"x43-3/4" (LxWxH)	N/A
9	Merchandiser/Cooler/Display	1	SSRC-5952	59"x34"x52" (WxDxH)	1 Year Parts/Labor. Years 2-5 "part only service compressor"
10	Advance Tabco - Hand Sink	3	7-PS-84	12" Wide	
11	Soda and Ice Despenser	1	Pepsi Provided		Supplied By Owner
12	Stainless Steel Table	3	TABCO or Equal	60"Wx30"D	
13	Stainless Steel Mounted Shelf	1	TABCO or Equal	60"Wx15"D	
14	Hanging Shelf	1	TABCO or Equal	60"Wx15"D	
15	Wire Dryiing Rack	1	TABCO or Equal	60"Wx18"D	
16	Stainless Steel PASS-THRU Shelf	1		60"Wx12"D	
17	Prep Sink	1	Steelton	12" Underbar Hand Sink	
18	POS	2			Supplied By Owner
19	Advance Tabco - SS Drop-In Ice Bin	1	24-IBL-7	18"Wx21"L	
20	Advance Tabco - SS Sliding Door Work Table	2	CF-SS-306	30"Wx72"L	
21	Coffee Art Plus TouchIT	2		17"Wx22"Lx28"H	Provide water line per manufacturer requirements / Provide 3" Dia. Access hole w/ black hollow rubber hole caplocated rear center of machine
22	Vitamix (The Quiet One) Blender	1		17"Wx22"Lx28"H	
23	BUNN Axiom Twin Airpot Brewer	1	SKU# 01106169	16"Wx17.7"Lx23.5"H	Provide water line per manufacturer requirements
24	Cold Brew & Nitro Countertop System	1	#90084048	6.7"Wx21.6"Lx20.3"H	
25	1.5 Gallon Cold Brew Server with Adaptor	1	#90084038	9.07"Wx11.87"Lx14.68"H	
26	Mop Closet	1	PBJC-303084	30"Wx30"Dx84"H	



B ENLARGED FINISH PLAN
SCALE: 1/4"=1'-0"
NORTH



A ENLARGED EQUIPMENT PLAN
SCALE: 1/4"=1'-0"
NORTH

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STUDENT UNION GALLEY RENOVATION

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200 I STREET NE
MIAMI, OK

NEO A&M COLLEGE

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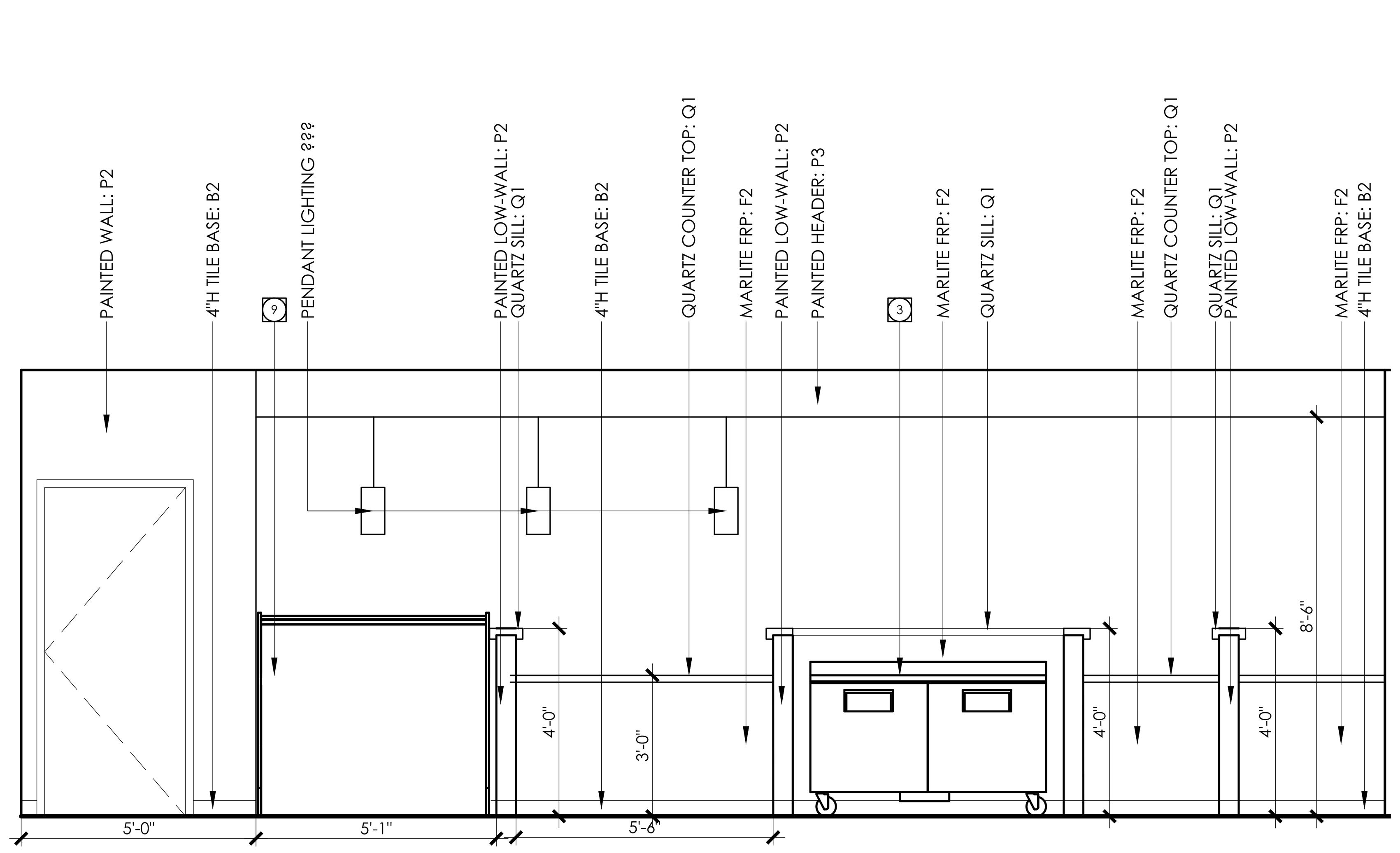
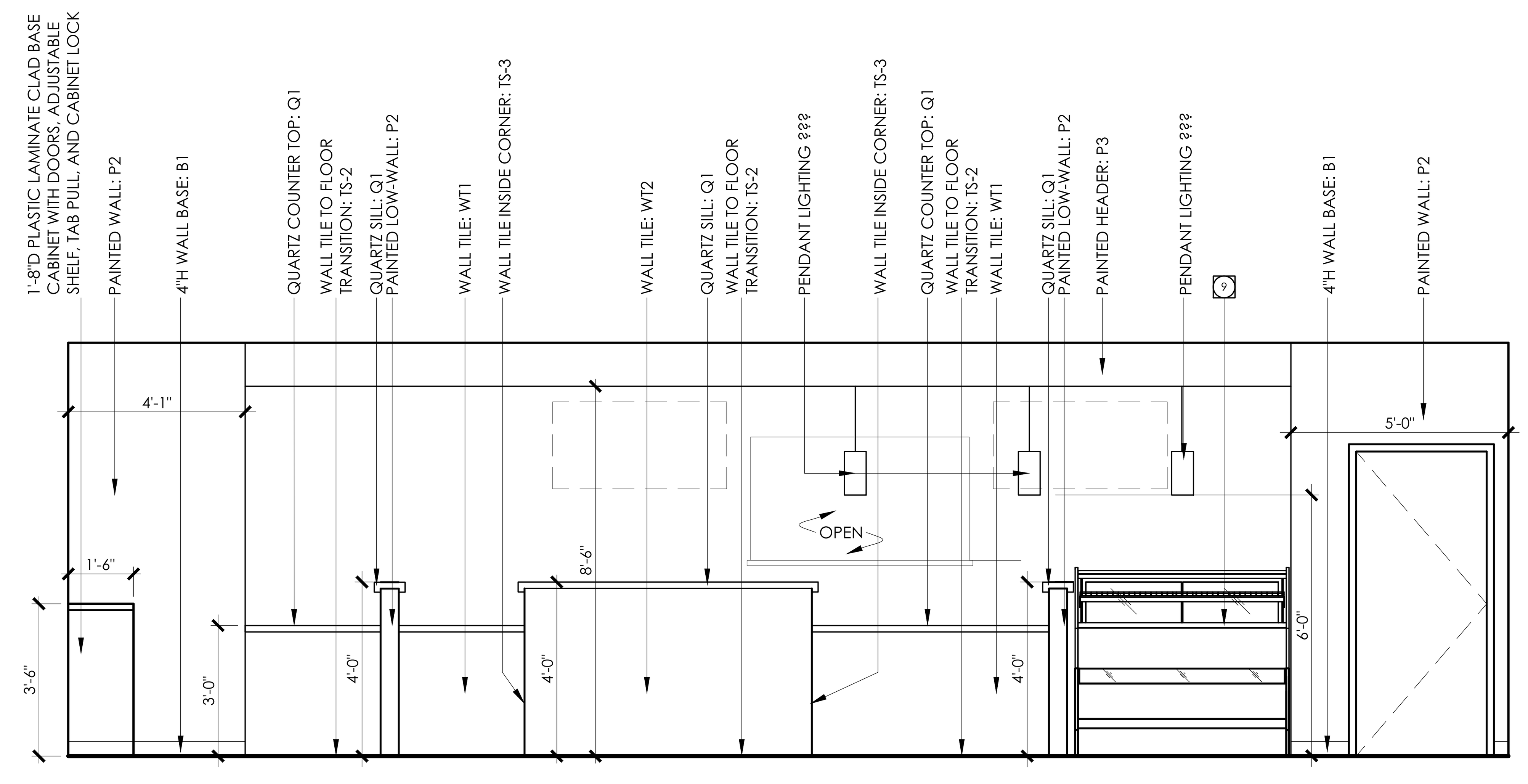
△1 01.16.2026 ADD.-#1

ENLARGED EQUIPMENT AND FINISH PLAN

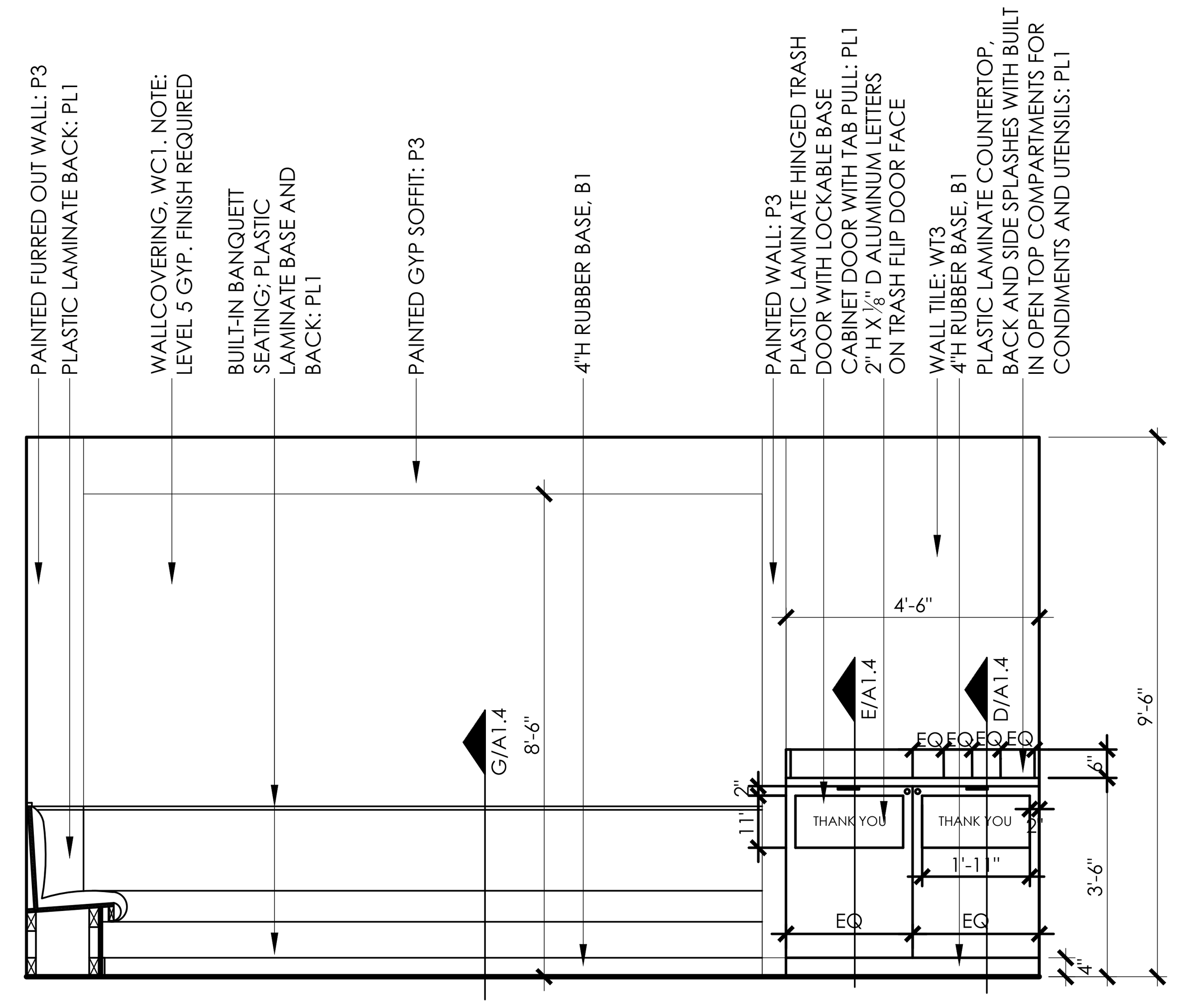
A1.2



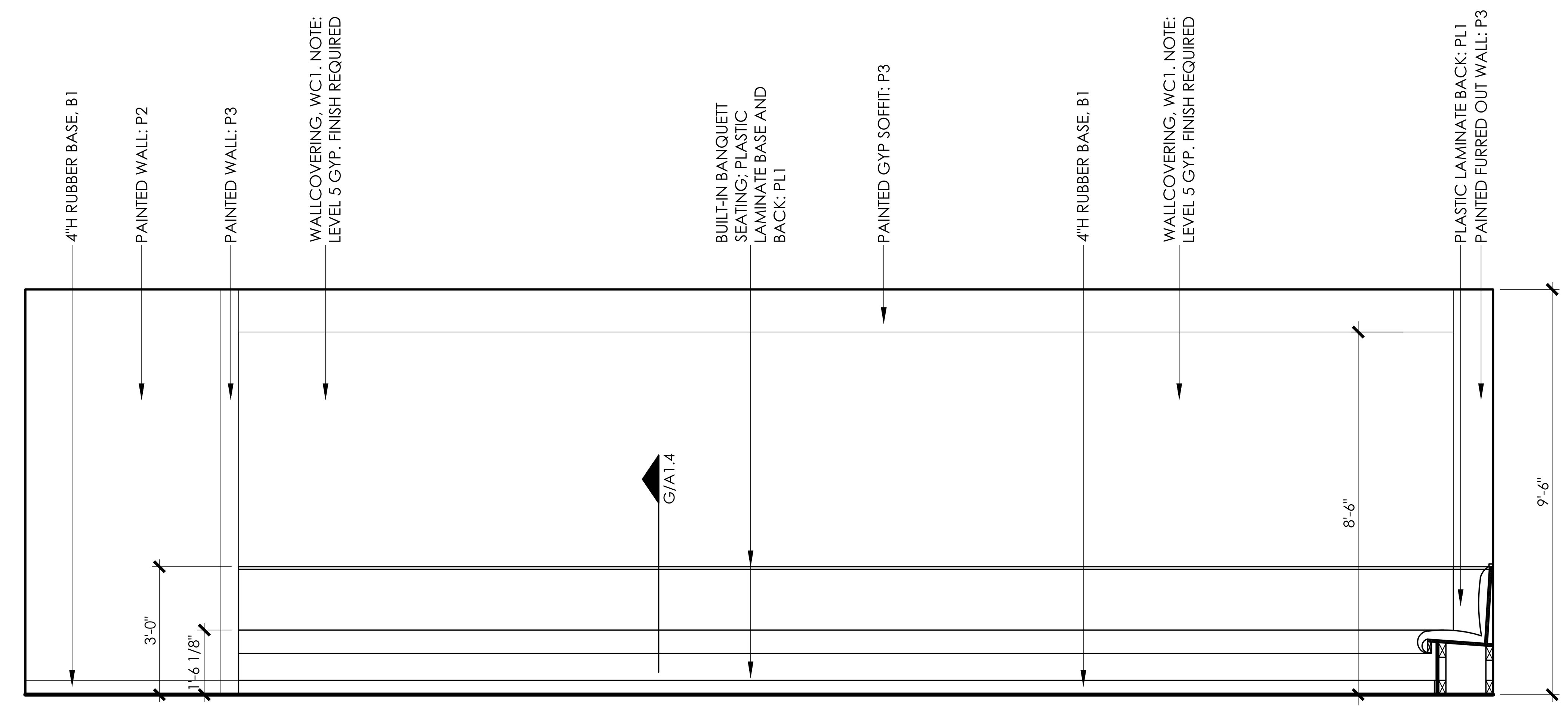
F SERVICE AREA
SCALE: 3/8"=1'-0"



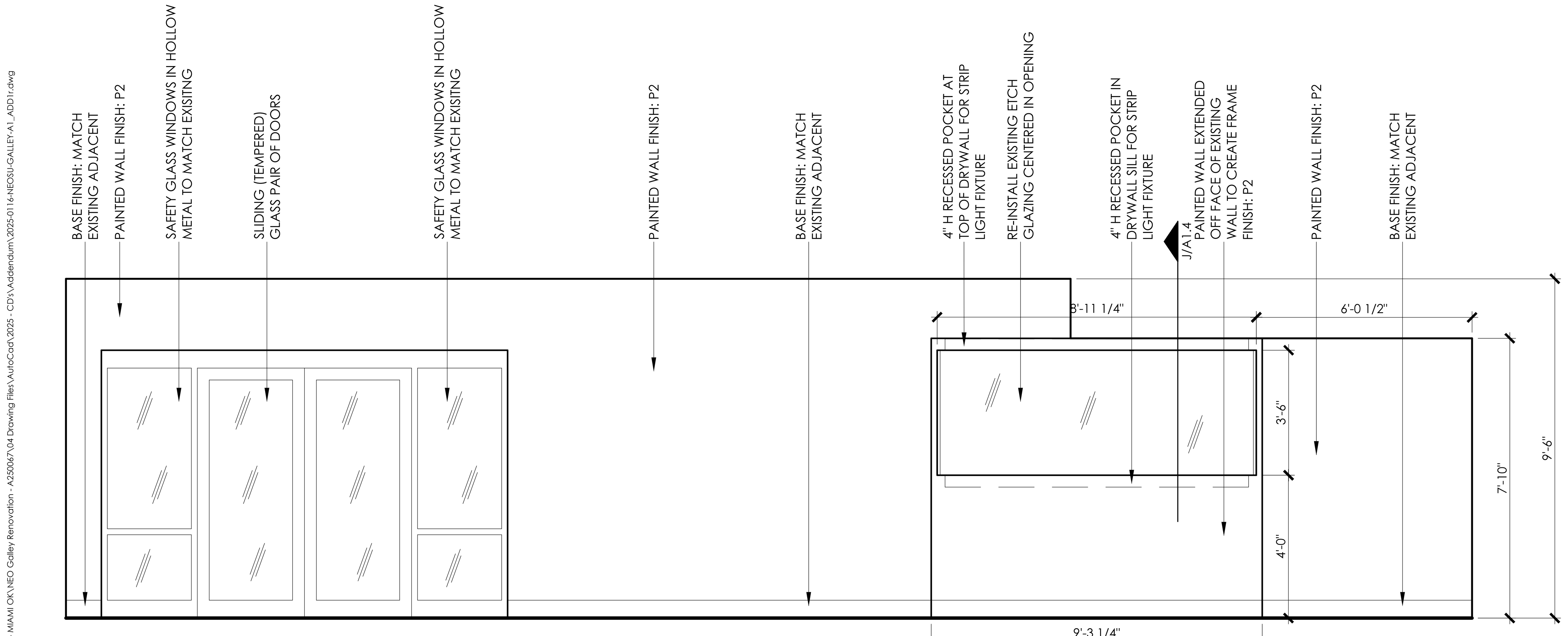
E SERVICE COUNTER
SCALE: 3/8"=1'-0"



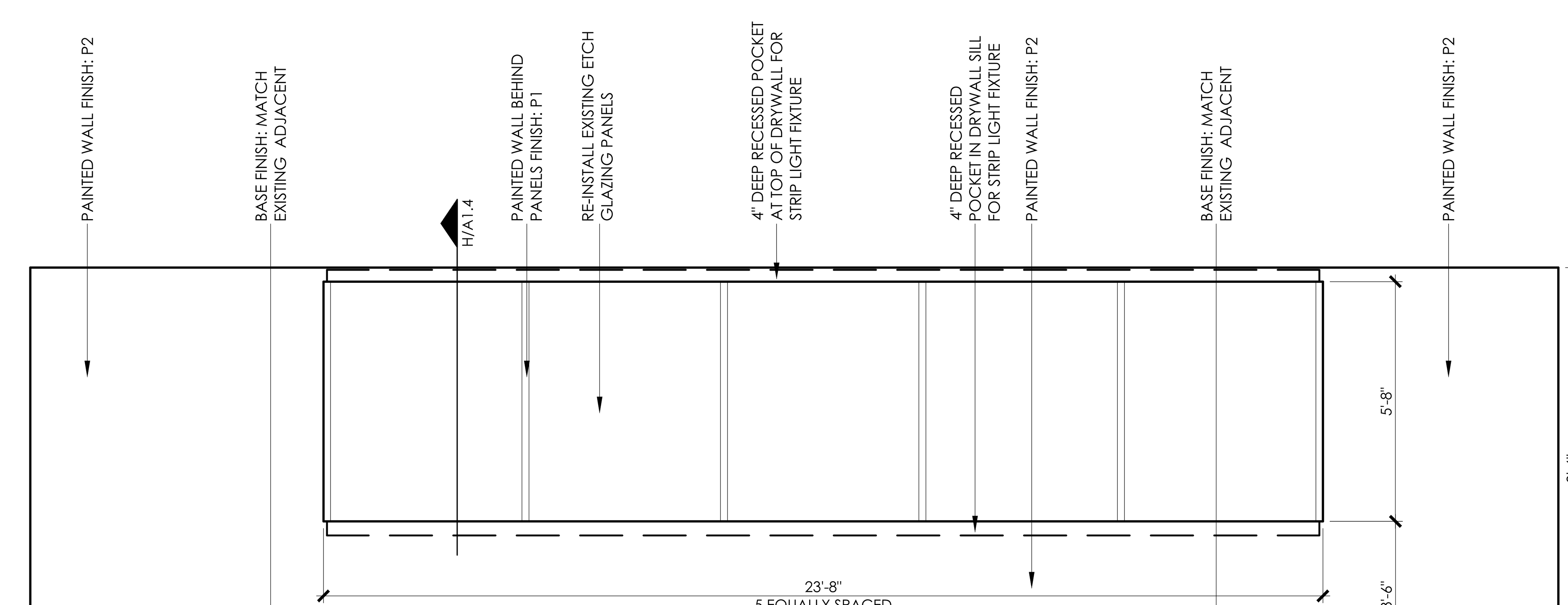
D BANQUETTE SEATING & TRASH
SCALE: 3/8"=1'-0"



C BANQUETTE SEATING
SCALE: 3/8"=1'-0"



B ENTRY
SCALE: 3/8"=1'-0"



A ETCHED PANELS
SCALE: 3/8"=1'-0"

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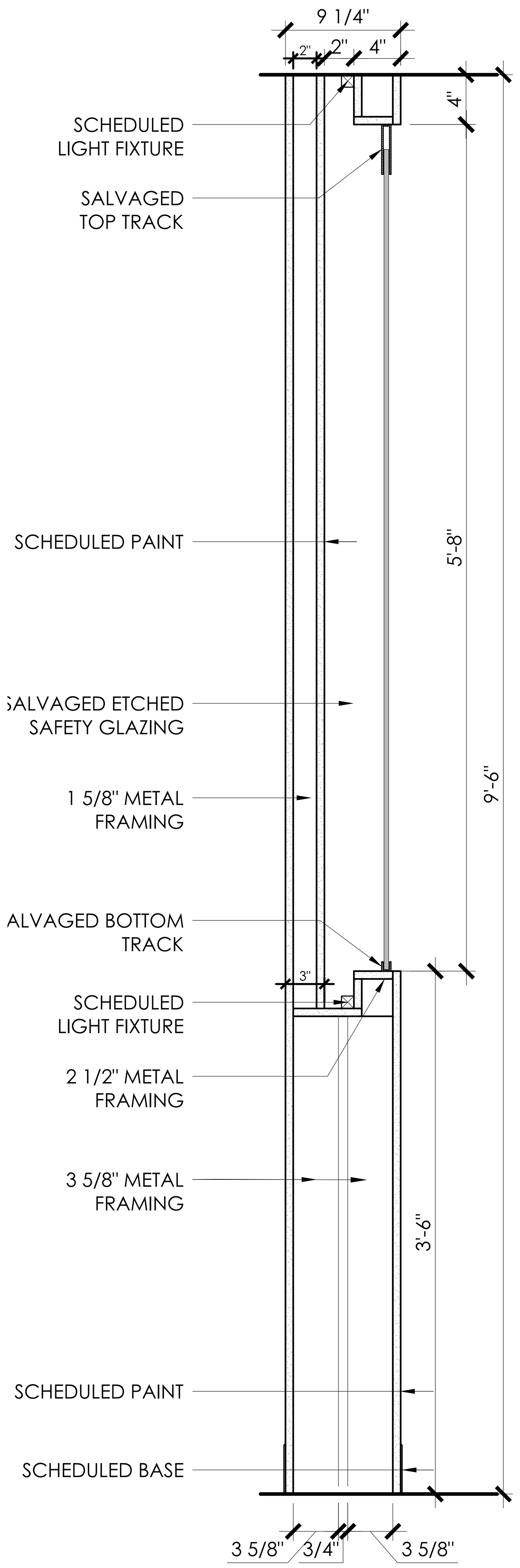
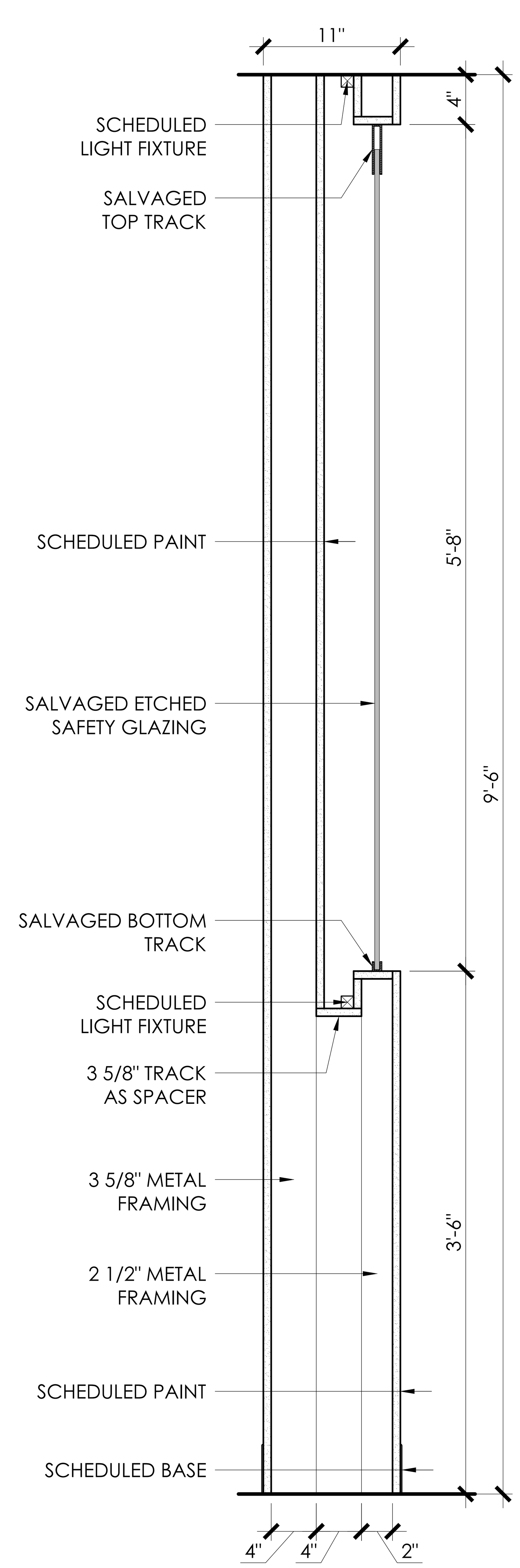
INTERIOR ELEVATIONS

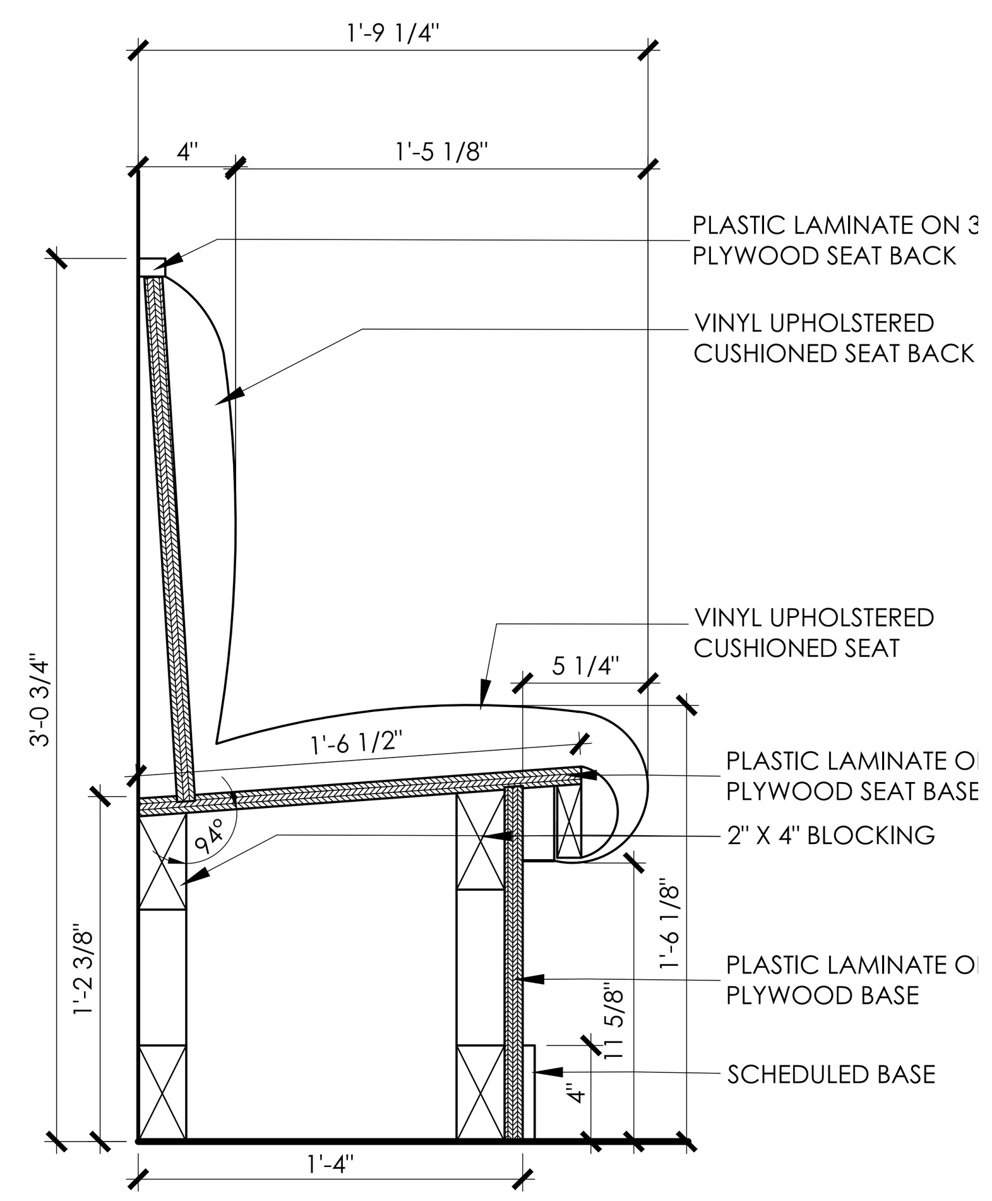
A1.3



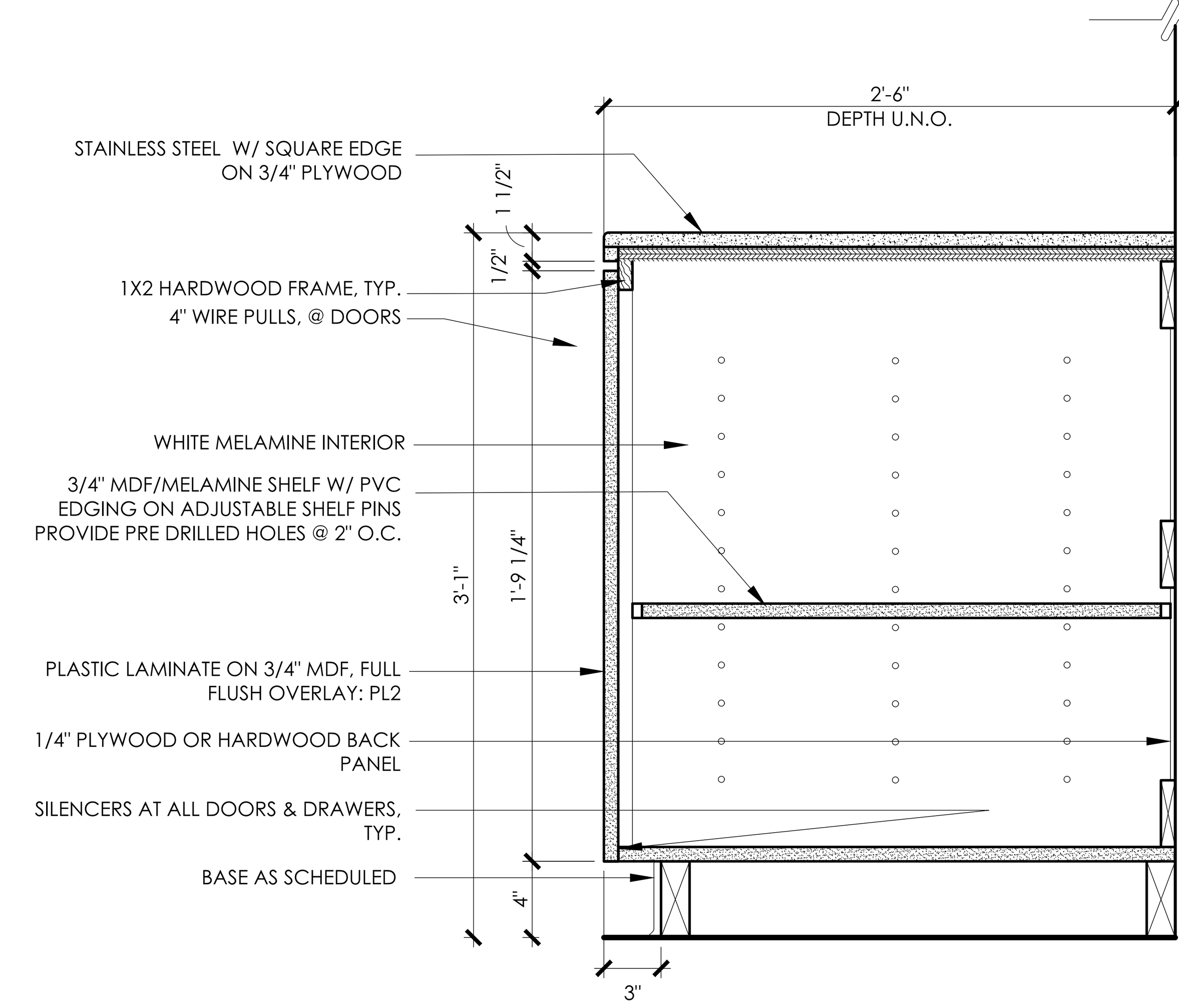
J **ETCHED PANELS & RECESSED LIGHTS**
SCALE: 1 1/2"=1'-0"



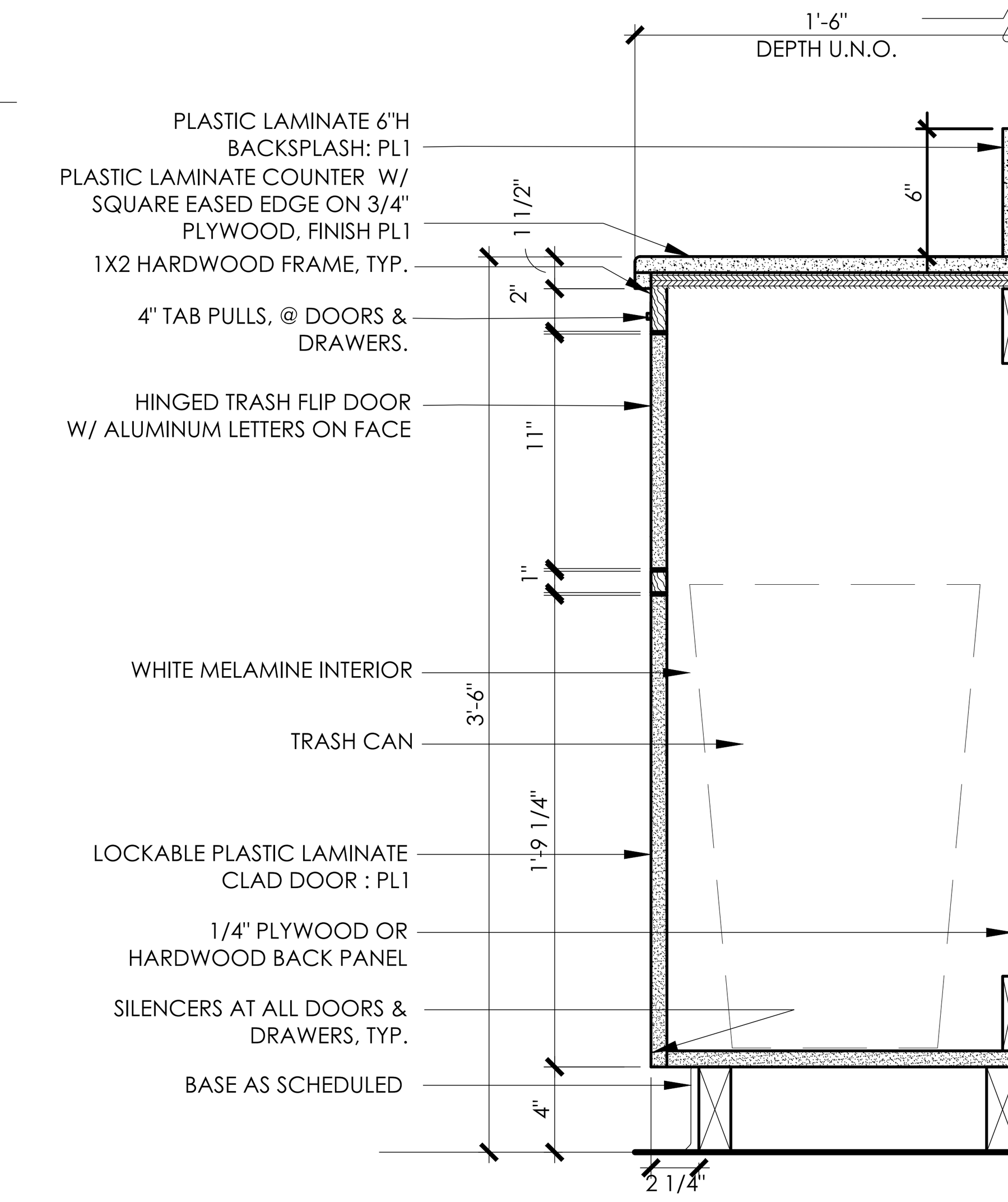
H **ETCHED PANELS & RECESSED LIGHTS**
SCALE: 1 1/2"=1'-0"



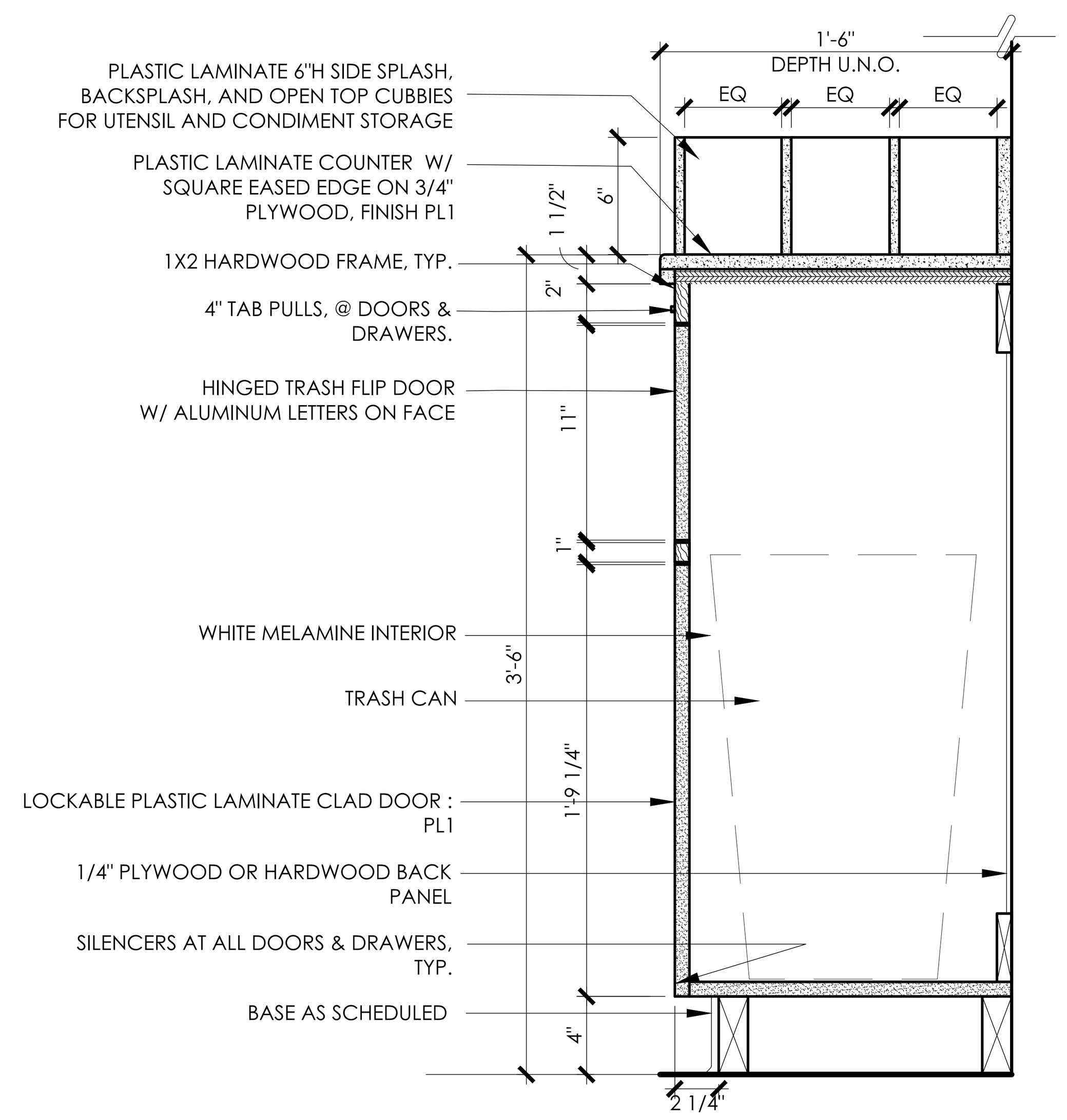
G **BANQUETTE SECTION**
Scale: 1 1/2" = 1'-0"



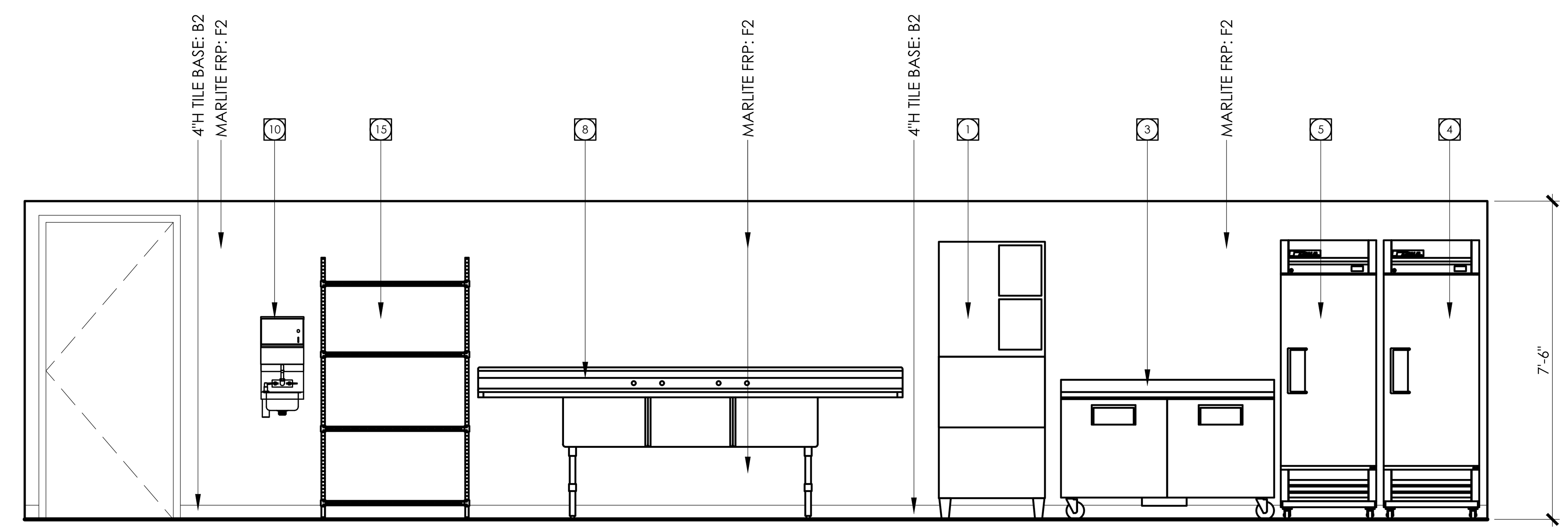
F **CABINET SECTION**
Scale: 1 1/2" = 1'-0"



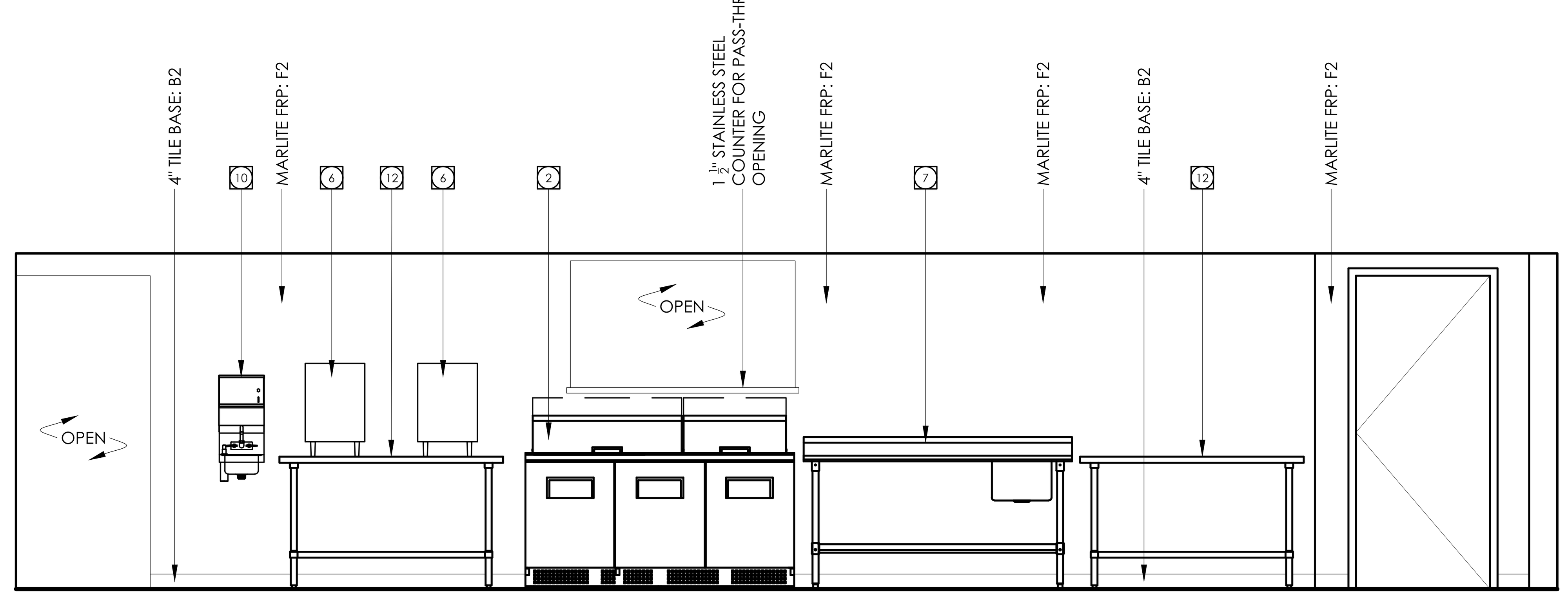
E **TRASH CABINET SECTION**
Scale: 1 1/2" = 1'-0"



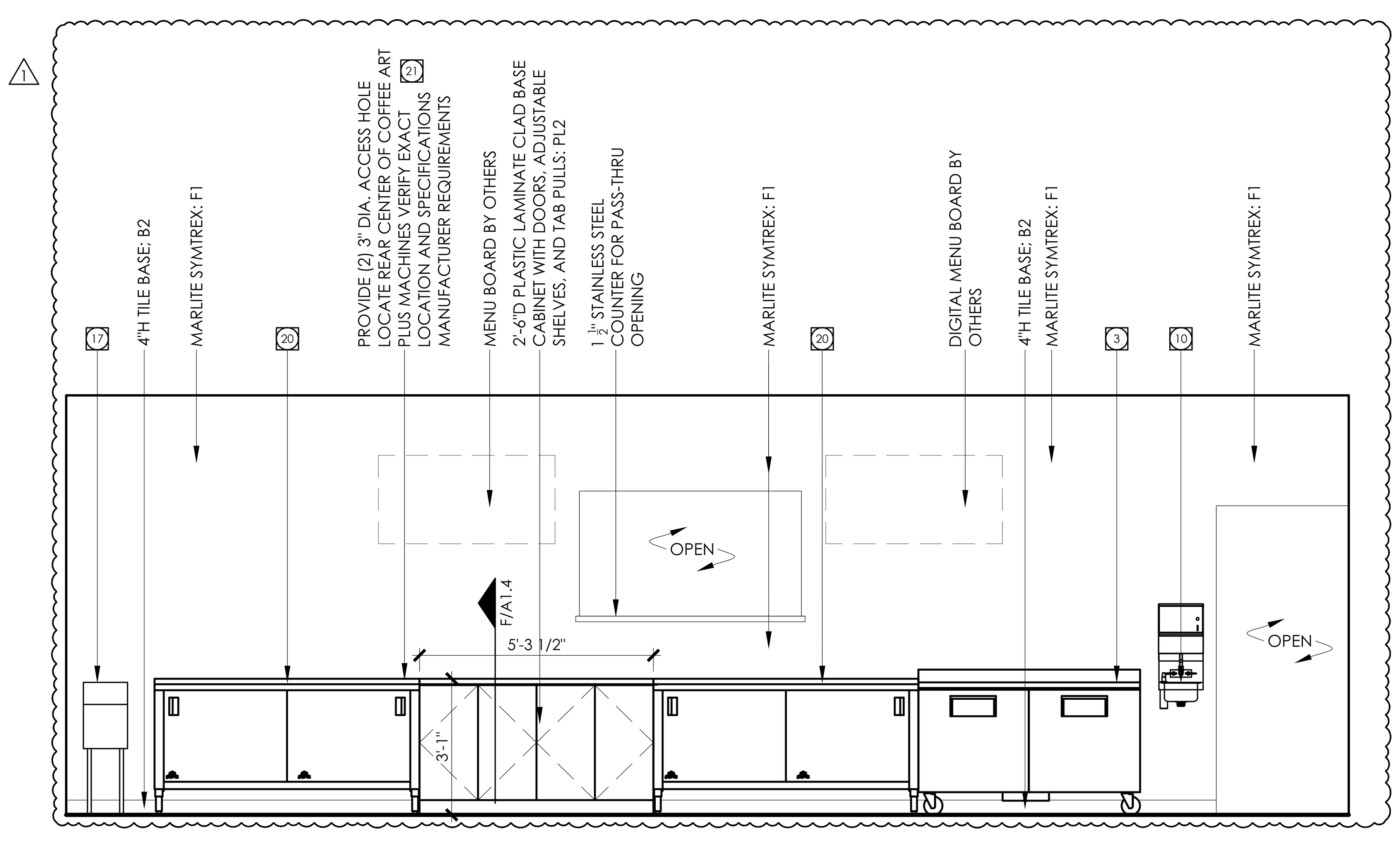
D **TRASH & CUBBY CABINET SECTION**
Scale: 1 1/2" = 1'-0"



C **PREP AREA**
SCALE: 3/8"=1'-0"



B **PREP AREA**
SCALE: 3/8"=1'-0"



A **SERVICE AREA**
SCALE: 3/8"=1'-0"

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STATE OF OKLAHOMA
SARAH J. GOULD
No. 6367
LICENSED ARCHITECT
1/16/26

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INTERIOR ELEVATIONS

A1.4

MECHANICAL ABBREVIATIONS

Ø	ROUND DIAMETER
ABV	ABOVE
AC	AIR CONDITIONING
ADD	ADDENDUM
AFF	ABOVE FINISHED FLOOR
AFMS	AIRFLOW MEASURING STATION
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
ALT	ALTERNATE
ARCH	ARCHITECT/ARCHITECTURAL
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BLW	BELOW
BOD	BOTTOM OF DUCT ELEVATION ABOVE FLOOR
BOP	BOTTOM OF PIPE ELEVATION ABOVE FLOOR
BOS	BOTTOM OF STEEL
BTU	BRITISH THERMAL UNITS
BTUH	BRITISH THERMAL UNITS PER HOUR
CAP	CAPACITY
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CLG	CEILING
COP	COEFFICIENT OF PERFORMANCE
CV	CONSTANT AIR VOLUME
DB	DECIBELS
DB	DRY BULB TEMPERATURE
DIA	DIAMETER
DEMO	DEMOLISH
DN	DOWN
DP	DIFFERENTIAL PRESSURE
(E)	EXISTING COMPONENT DESIGNATION
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
ETR	EXISTING TO REMAIN
EQUIP	EQUIPMENT
EWT	ENTERING WATER TEMPERATURE
°F	DEGREES FAHRENHEIT
FDC	FIRE DEPARTMENT CONNECTION
FHC	FIRE HOSE CABINET
FLR	FLOOR
FL	FLOW LINE
FOG	FUEL OIL GAUGE
FOV	FUEL OIL VENT
FPM	FEET PER MINUTE
FT	FOOT/FEET
GAL	GALLON
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HP	HORSE POWER
HR	HOSE REEL
HTG	HEATING
IN	INCH
INV	INVERT
LB / (#)	POUND
LB/HR	POUNDS PER HOUR
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBH	ONE THOUSAND BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTR	MOTOR
NCR	NOISE CRITERIA RATING
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OBD	OPPOSED BLADE DAMPER
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PRESS	PRESSURE
PVC	POLYVINYL CHLORIDE PIPE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PWR	POWER
(R)	RELOCATED COMPONENT DESIGNATION
RH	RELATIVE HUMIDITY
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SF	SQUARE FOOT
SP	STATIC PRESSURE
STM	STEAM
TCC	TEMPERATURE CONTROL CONTRACTOR
TOD	TOP OF DUCT ELEVATION ABOVE FLOOR
TOP	TOP OF PIPE ELEVATION ABOVE FLOOR
TEMP	TEMPERATURE
TYP	TYPICAL
UG	UNDERGROUND
VAV	VARIABLE AIR VOLUME
VVT	VARIABLE VOLUME AND TEMPERATURE
VCP	VITRIFIED CLAY PIPE
VENT	VENTILATION
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THROUGH ROOF
WB	WET BULB TEMPERATURE

COMPONENT ABBREVIATIONS

AC-#	AIR CONDITIONING UNIT
AD-#	AREA DRAIN
AHU-#	AIR HANDLING UNIT
AS-#	AIR SEPARATOR
B-#	BOILER
BF-#	BOTTLE FILLER
BT-#	BATH TUB
CH-#	CHILLER
CRAC-#	COMPUTER ROOM AIR CONDITIONING UNIT
CO	CLEANOUT
CT-#	COOLING TOWER
CU-#	AIR COOLED CONDENSING UNIT
CUH-#	CABINET UNIT HEATER
CWP-#	CHILLED WATER PUMP
CWPP-#	CHILLED WATER PRIMARY PUMP
CWSP-#	CHILLED WATER SECONDARY PUMP
DWBP-#	DOMESTIC WATER BOOSTER PUMP
DF-#	DRINKING FOUNTAIN / WATER COOLER
DHWP-#	DOMESTIC HOT WATER CIRCULATING PUMP
EE-#	EMERGENCY EYE WASH
EF-#	EXHAUST FAN
EDH-#	ELECTRIC DUCT HEATER
ES-#	EMERGENCY SHOWER
ET-#	EXPANSION TANK
F-#	FURNACE
FCO	FLOOR CLEANOUT
FCU-#	FAN COIL UNIT
FD-#	FLOOR DRAIN
FS-#	FLOOR SINK
FTU-#	FAN POWERED TERMINAL UNIT
FP-#	FIRE PUMP
FTR-#	FIN TUBE RADIATOR
GI-#	GREASE INTERCEPTOR
H-#	HUMIDIFIER
HB-#	HOSE BIBB
HWP-#	HEATING WATER PUMP
HWPP-#	HEATING WATER PRIMARY PUMP
HWSP-#	HEATING WATER SECONDARY PUMP
HRU-#	HEAT RECOVERY UNIT
IU-#	INDOOR UNIT
L-#	LOUVER
LV-#	LAVATORY
MAU-#	MAKE-UP AIR UNIT
MB-#	MOP BASIN
MSS-#	MINI SPLIT SYSTEM
ORD	OVERFLOW ROOF DRAIN
OU-#	OUTDOOR UNIT
PRV	PRESSURE REDUCING VALVE
RCP-#	RADIANT CEILING PANEL
RD	ROOF DRAIN
RF-#	RETURN/RELIEF FAN
RH-#	ROOF HOOD
RHD-#	ROOF HYDRANT
RTU-#	ROOFTOP UNIT
SF-#	SUPPLY AIR FAN
SH-#	SHOWER
SK-#	SINK
SP-#	SUMP PUMP
ST-#	STEAM TRAP
TD	TRENCH DRAIN
TMV-#	THERMOSTATIC MIXING VALVE
TU-#	TERMINAL UNIT
UH-#	UNIT HEATER
UR-#	URINAL
UV	ULTRAVIOLET STERILE CONDITIONER
WB-#	WALL BOX (PLUMBING UTILITY)
WC-#	WATER CLOSET
WH-#	WATER HEATER
WHD-#	WALL HYDRANT

NOTE:
ALL GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET. THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

MECHANICAL SHEET INDEX

GENERAL SYMBOLS

- (#) (#) (#) REFER TO PLAN NOTES
- EXISTING COMPONENT PEN WEIGHT
- DEMOLITION PEN WEIGHT - COMPONENT SHADED
- ROOM 111 — ROOM CALLOUT
- AREA NOT IN SCOPE HATCHING
- REVISION NUMBER
- CONNECT NEW TO EXISTING - VERIFY EXACT LOCATION
- DISCONNECT FROM EXISTING - VERIFY EXACT LOCATION
- PIPE / DUCT CONTINUATION SYMBOL
- 5 / M3.6 — DETAIL NUMBER; SHEET NUMBER WHERE DRAWN
- B / M3.6 — SECTION LETTER; SHEET NUMBER WHERE DRAWN
- FC-01 — UNIQUE I.D. (FAN COIL UNIT NO. 1); TYPICAL EQUIPMENT CALLOUT; EQUIPMENT TYPE (FC=FAN COIL UNIT)

HVAC SYMBOLS

- LOW VELOCITY SUPPLY AIR DUCT (SA)
- MEDIUM VELOCITY SUPPLY AIR DUCT (MVSA)
- RETURN AIR DUCT (RA)
- EXHAUST AIR DUCT (EA)
- OUTDOOR AIR DUCT (OA)
- RELIEF AIR DUCT (RLF)
- FLUE GAS DUCT (FG)
- COMBUSTION AIR DUCT (CA)
- 24x12 — (UP)DUCT SECTION, POSITIVE PRESSURE- FIRST SIZE IS TOP DIM.(TYP.)
- 24x12 — (DOWN) DUCT SECTION, POSITIVE PRESSURE
- 24x12 — (UP) DUCT SECTION, NEGATIVE PRESSURE
- 24x12 — (DOWN) DUCT SECTION, NEGATIVE PRESSURE
- FLEXIBLE DUCT
- TURNING VANES
- 18x12 — DUCT SIZE, FIRST IS SIDE SHOWN CLEAR INSIDE DIM.
- R — DUCT CHANGE OF ELEVATION RISE(R) DROP(D)
- FLEXIBLE CONNECTION
- SIDE WALL SUPPLY REGISTER
- BALANCE DAMPER - MANUAL LOCKING QUADRANT RECT: OPPOSED BLADE / ROUND: BUTTERFLY
- BALANCE DAMPER - MOTORIZED LOCKING QUADRANT RECT: OPPOSED BLADE / ROUND: BUTTERFLY
- FD / FD — FIRE DAMPER (FD) IN WALL / FLOOR
- SD / SD — SMOKE DAMPER (SD) IN WALL / FLOOR
- FSD / FSD — COMBO FIRE/SMOKE DAMPER (FSD) IN WALL / FLOOR
- T / T — THERMOSTAT (TSTAT) / TEMPERATURE SENSOR
- H / H — HUMIDISTAT (HSTAT) / HUMIDITY SENSOR
- P — PRESSURE SENSOR
- M — MOTOR
- SUPPLY FLOW ARROW / RETURN FLOW ARROW
- T1.1 (200) — EQUIPMENT CALLOUT; EQUIPMENT AIRFLOW (CFM)

GRD CALLOUT SYMBOLS

ROUND	MARK IN SCHEDULE SUPPLY DIFFUSER CFM	SB10 250	CONNECTION & RUNOUT SIZE (10"ø) ALT → SB10-250
RECTANGULAR	MARK IN SCHEDULE RETURN GRILLE CFM	RB12x12 250	CONNECTION & RUNOUT SIZE (12x12) ALT → RB12x12-250
SLOT	MARK IN SCHEDULE SLOT DIFFUSER CFM	LSL8-2s 200	CONNECTION & RUNOUT SIZE (8"ø) NUMBER OF SLOTS ALT → LSL8-2s-200

PLUMBING SYMBOLS

- DOMESTIC COLD WATER (CW)
- DOMESTIC HOT WATER (HW)
- DOMESTIC HOT WATER RECIRC. (HWR)
- W — WASTE (W)
- BELOW GRADE WASTE (W)
- VENT
- RL — RAINLEADER
- ORL — OVERFLOW RAINLEADER
- G — NATURAL GAS
- LP — LIQUID PROPANE
- CA — COMPRESSED AIR
- CD — CONDENSATE DRAIN
- D — DRAIN
- OW — OIL WASTE
- GW — GREASE WASTE
- IW — INDUSTRIAL WASTE
- PW — PRODUCTION WASTE
- SCW — SOFT COLD WATER
- FCW — FILTERED COLD WATER
- RO — REVERSE OSMOSIS WATER
- ROR — REVERSE OSMOSIS RETURN WATER
- DI — DEIONIZED WATER
- DIR — DEIONIZED WATER RETURN
- HW 140° — DOMESTIC HOT WATER HIGH TEMP
- HWR 140° — DOMESTIC HOT WATER HIGH TEMP RECIRC
- FG — FLUE GAS
- CA — COMBUSTION AIR
- CO / FCO — CLEANOUT (FLOOR)
- 2-WAY CO — 2-WAY CLEANOUT (FLOOR/GRADE)
- WCO / CO — WALL CLEANOUT / END OF LINE CLEANOUT

PIPE SYMBOLS

- DIRECTION OF FLOW
- PIPE DROP / SIDE CONNECTION / PIPE RISE
- TEE OUTLET DOWN / TEE OUTLET UP
- BOTTOM / TOP CONNECTION, 45° OR 90°
- CAP / CAPPED OUTLET
- BALL VALVE / GLOBE VALVE
- CONCENTRIC / ECCENTRIC REDUCER OR INCREASER
- ANCHOR / FLEXIBLE CONNECTION
- BUTTERFLY VALVE
- CIRCUIT SETTER
- CHECK VALVE
- STRAINER / UNION
- BLIND FLANGE / FLOW METER
- BACKFLOW PREVENTER (BFP)
- PRESSURE REDUCING VALVE / PLUG VALVE
- WATER METER / IRRIGATION WATER METER
- PLUG VALVE / NEEDLE VALVE
- GAS COCK
- PRESSURE REGULATING VALVE / PETE'S PLUG
- WATER HAMMER ARRESTOR (WHA)
- SLEEVE / EXPANSION JOINT
- D / R — PIPE PITCH DOWN / PIPE RISE UP
- S / P — SOLENOID VALVE / PNEUMATIC 3-WAY CONTROL VALVE
- M / M — ELECTRIC 3-WAY / 2-WAY CONTROL VALVE
- EM — MANUAL / EMERGENCY 3-WAY CONTROL VALVE
- THERMOMETER / PRESSURE GAUGE
- STEAM TRAP
- TEMPERATURE/PRESSURE RELIEF VALVE

MECH. PIPING SYMBOLS

- HWS — HEATING WATER SUPPLY
- HWR — HEATING WATER RETURN
- CWS — CHILLED WATER RETURN
- CWR — CHILLED WATER RETURN
- CHWS — CHILLED/HEATING WATER SUPPLY
- CHWR — CHILLED/HEATING WATER RETURN
- CS — CONDENSER WATER RETURN
- CR — CONDENSER WATER RETURN
- RL — REFRIGERANT LIQUID LINE (SUPPLY)
- RS — REFRIGERANT SUCTION LINE (RETURN)
- RLS — REFRIGERANT DUAL TEMPERATURE LINE
- FOS — FUEL OIL SUPPLY
- FOR — FUEL OIL RETURN
- BFW — BOILER FEEDWATER
- BMW — BOILER MAKEUP WATER
- LPS — LOW PRESSURE STEAM SUPPLY
- LPR — LOW PRESSURE STEAM RETURN
- MPS — MEDIUM PRESSURE STEAM SUPPLY
- MPR — MEDIUM PRESSURE STEAM RETURN
- HPS — HIGH PRESSURE STEAM SUPPLY
- HPR — HIGH PRESSURE STEAM RETURN
- T1.1 (0.75) — EQUIPMENT CALLOUT; WATER COIL FLOW (GPM)

GENERAL DEMO. NOTES

1. VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. BRING ANY DISCREPANCIES FROM THE DRAWINGS AND NOTES TO THE ARCHITECT IMMEDIATELY. MINOR CHANGES IN THE SCOPE OF THE DEMOLITION WORK SHALL NOT JUSTIFY AN ADDITIONAL COST.
2. REMOVAL OF EXISTING FIXTURES AND EQUIPMENT WILL REQUIRE ISOLATING THE PIPING RISERS OR MAINS VIA SHUT-OFF VALVES. INSTALL NEW ISOLATION VALVES WHERE REQUIRED FOR COMPLETION OF WORK.
3. REMOVAL OF EXISTING PLUMBING FIXTURES AND EQUIPMENT, ETC. WILL REQUIRE CAPPING AND SEALING EXISTING MAINS OR BRANCHES AS NECESSARY AND REQUIRED TO ALLOW THE REMAINING SYSTEMS TO FULLY OPERATE WITHOUT DEGRADATION.
4. CONTRACTOR SHALL PROVIDE PROTECTIVE PLASTIC DROP CLOTHS TO PROTECT THE EXISTING OCCUPIED AREAS AND EQUIPMENT FROM DUST AND DEBRIS DURING THE CONSTRUCTION WORK, AND SHALL CLEAN THE AREAS OF ALL CONSTRUCTION DIRT DAILY, AND UPON COMPLETION OF THE WORK.
5. ALL DRAINED PIPING RISERS AND MAINS SHALL BE REFILLED WITH PROPER FLUID AND PROPERLY VENTED BY THIS CONTRACTOR, ONCE NEW WORK HAS BEEN INSTALLED.
6. COORDINATE WITH GENERAL CONTRACTOR THE REMOVAL AND REPLACEMENT OF ALL EXISTING CEILINGS, WALLS, ETC. AS REQUIRED FOR MECHANICAL DEMOLITION WORK.
7. EXISTING PIPING AND EQUIPMENT, ETC., NOT TO BE UTILIZED IN THE COMPLETED BUILDING SHALL BE DISCONTINUED OR REMOVED AS REQUIRED. ALL ENDS OF DISCONTINUED PIPING SHALL BE CAPPED IN THE NEAREST WALL, CEILING OR FLOOR SO THAT THEY ARE COMPLETELY CONCEALED. OPENINGS LEFT IN WALLS, CEILINGS, ETC., WHERE EQUIPMENT AND PIPE, ETC., ARE REMOVED AND NOT REPLACED, SHALL BE PATCHED NEATLY WITH SIMILAR MATERIAL TO ADJACENT CONSTRUCTION. REFER TO DRAWINGS DELINEATING NEW WORK FOR ADDITIONAL INFORMATION REGARDING SYSTEMS OR PORTIONS OF SYSTEMS WHERE USE IS TO BE DISCONTINUED.
8. EXISTING PIPING, FIXTURES AND EQUIPMENT THAT ARE NOT TO BE REUSED SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE OWNER IF THEY WISH TO RETAIN OWNERSHIP OF SAME. IF NOT, EQUIPMENT SHALL BECOME THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AS SOON AS PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.
9. ALL CUTTING AND CHANNELING OF EXISTING BUILDING SHALL BE ACCOMPLISHED IN A NEAT AND WORKMANLIKE MANNER WITHOUT REMOVAL OF EXCESS MATERIALS. THIS CONTRACTOR SHALL PATCH AND REPLACE WITH MATERIAL SIMILAR TO ADJACENT CONSTRUCTION.
10. PORTIONS OF EXISTING SYSTEMS MAY BE SHOWN FOR CLARITY EVEN THOUGH IT MAY NOT BE NECESSARY TO MODIFY OR REVISE THEM. ALL EXISTING SYSTEMS ARE SHOWN BASED ON ORIGINAL OR REMODEL BUILDING DRAWINGS. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS.
11. ALL WORK MUST BE COORDINATED AND SCHEDULED WITH THE OWNER AND OCCUPANTS OF THIS BUILDING SO AS TO PROVIDE THE LEAST AMOUNT OF DISRUPTION OF BUILDING ACTIVITIES AS POSSIBLE. MAINTAIN CONDITIONED SPACE FOR ALL OWNER OCCUPIED AREAS DURING CONSTRUCTION.
12. ALL ACCESSIBLE ABANDONED PIPING AND DUCTWORK SHALL BE REMOVED AND PROPERLY DISPOSED OF.
13. CAP ALL EXISTING PIPING AND DUCTWORK SHOWN TO BE DISCONNECTED AND NOT REUSED AT MAIN. ALL ACCESSIBLE PIPING SHALL BE REMOVED.
14. RELOCATE EXISTING DUCTWORK, PIPING, ELECTRICAL CONDUITS, AND CABLING AS NECESSARY TO ACCOMPLISH FINAL INSTALLATION AS SHOWN. ALERT ENGINEER TO ANY MAJOR RELOCATIONS REQUIRED.

GENERAL NOTES

1. VERIFY JOB SITE CONDITIONS AND DIMENSIONS BEFORE BEGINNING WORK. PLANS ARE SCHEMATIC IN NATURE. LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS.
2. NO PIPING, DUCTWORK, ETC. SHALL PENETRATE STRUCTURAL MEMBERS.
3. PROVIDE MISCELLANEOUS CUTTING, PATCHING AND REPAIRING OF FINISHES, ROOF, WALLS, ETC., AS REQUIRED TO ACCOMMODATE THE NEW WORK.
4. G.C. IS TO PATCH ANY OPENINGS IN CORRIDORS REQUIRED TO BE CONSTRUCTED TO LIMIT THE TRANSFER OF SMOKE AND IN SMOKE BARRIERS AS REQUIRED TO MEET CODE REQUIREMENTS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT LOCATION, CONFIGURATION AND ROUTING OF EXISTING SYSTEMS REQUIRED TO REMAIN IN OPERATION DURING THE PROJECT TO PREVENT DAMAGE DURING DEMOLITION AND PHASING.
6. REMOVE ALL EXISTING EQUIPMENT, DUCTWORK AND PIPING THAT IS NOT REQUIRED FOR A WORKING INSTALLATION.
7. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
8. UNLESS OTHERWISE INDICATED, INSTALL ALL SPACE THERMOSTATS AND OTHER OCCUPANT ADJUSTABLE CONTROL DEVICES SAME HEIGHT AS ADJACENT LIGHT SWITCHES, BUT IN NO CASE HIGHER THAN 48 INCHES ABOVE FINISHED FLOOR PER ADA REQUIREMENTS. COORDINATE EXACT HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
9. ALL CUTTING AND PATCHING SHALL BE CLOSELY COORDINATED WITH THE G.C.
10. COORDINATE ROUTING OF PLUMBING, AND HVAC PIPING WITH DUCTWORK, LIGHTS, ARCHITECTURAL CEILING AND STRUCTURAL ELEMENTS. PIPING SHALL RISE AND DROP, JOG OR OFFSET AS REQUIRED TO AVOID CONFLICTS. DUCTWORK SHALL TAKE PRECEDENCE OVER ALL PIPING, EXCEPT WHERE GRADE MUST BE MAINTAINED FOR DRAINAGE. REWORK OF INSTALLED WORK TO RESOLVE CONFLICTS RISING FROM LACK OF COORDINATION SHALL NOT JUSTIFY AN INCREASE IN THE CONTRACT AMOUNT.
11. ALL DIFFUSERS ARE 4-WAY BLOW UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
12. FLEXIBLE DUCTWORK IS ALLOWED ON RUNOUTS TO SUPPLY DIFFUSERS ONLY. UTILIZE ONLY ABOVE LAY-IN ACCESSIBLE CEILINGS. DO NOT INSTALL FLEX DUCT ABOVE HARD CEILINGS OR WHERE EXPOSED. A MAXIMUM LENGTH OF 6'-0" MAY BE USED AT EACH CONNECTION.
13. SEAL TRANSVERSE AND LONGITUDINAL JOINTS OF ALL DUCTWORK USING HARDCAST DT TAPE AND FTA-20 ADHESIVE OR HARDCAST AFG-1402 "FOIL GRIP" PER MANUFACTURERS INSTRUCTIONS.
14. INSTALL BALANCE DAMPER WITH STANDOFF AND LOCKING QUADRANT IN AN ACCESSIBLE LOCATION AT EACH RUNOUT TO SUPPLY DIFFUSERS, EXHAUST GRILLES, AND RETURN GRILLES WHERE AIRFLOW IS INDICATED, OR AS INDICATED OTHERWISE.
15. ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRE STOPPED BY THE TRADE MAKING THE PENETRATION. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
16. DO NOT ROUTE PIPING OR DUCTWORK OVER ELECTRICAL PANELS OR EQUIPMENT. PIPING OR DUCTWORK SHALL NOT BE ROUTED THROUGH ELECTRICAL ROOMS, TELECOM ROOMS OR ELEVATOR EQUIPMENT ROOMS UNLESS SPECIFICALLY SERVING THAT ROOM. COORDINATE WITH E.C. PROVIDE WATERTIGHT DRIP PAN WITH DRAIN TO NEAREST APPROVED RECEPTOR WHERE REQUIRED.
17. COORDINATE SIZE AND LOCATION OF ACCESS DOORS IN CONSTRUCTION REQUIRED FOR ACCESS TO MECHANICAL EQUIPMENT WITH G.C.
18. COORDINATE SIZE AND LOCATION OF MECHANICAL EQUIPMENT PADS WITH G.C.
19. ALL WORK IS TO CONFORM WITH APPLICABLE CODES AND STANDARDS.
20. DUCT SIZES SHOWN ARE ACTUAL INSIDE CLEAR DIMENSIONS. INCREASE SHEET METAL DIMENSIONS AS REQUIRED TO ACCOMMODATE DUCT LINER WHERE LINER IS SPECIFIED.
21. ALL EQUIPMENT SUPPORT STANDS SHALL BE PRIMED AND PAINTED WITH EPOXY ENAMEL.
22. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES.
23. PAINT INSIDE OF DUCTWORK BLACK ANYWHERE VISIBLE THROUGH FACE OF GRILLE OR DIFFUSER.
24. WHERE HYDRONIC RUNOUT SIZES ARE NOT INDICATED, SIZE PER THE FOLLOWING:
    UP TO 3 GPM - 3/4"; UP TO 6 GPM - 1"; UP TO 10 GPM - 1-1/4"; UP TO 17 GPM - 1-1/2".
25. COORDINATE ACCESS TO EQUIPMENT AND VALVES INSTALLED ABOVE 'HARD' CEILINGS AND IN MASONRY CHASES WITH GENERAL CONTRACTOR. PROVIDE LOCKING ACCESS DOORS FOR INSTALLATION BY CONTRACTOR AS REQUIRED TO SERVICE CONCEALED DAMPERS, VALVES AND EQUIPMENT. CEILING ACCESS DOORS FOR FIRE DAMPERS, SMOKE DAMPERS AND FIRE SMOKE DAMPERS FURNISHED AND INSTALLED BY CONTRACTOR.
26. CONTRACTOR TO INSTALL TEMPORARY FILTERS OVER ALL RETURN AND EXHAUST GRILLES IN WORK AREA DURING CONSTRUCTION.
27. EQUIPMENT THAT REQUIRES MAINTENANCE SHALL BE LOCATED A MINIMUM OF 10'-0" FROM THE BUILDING ROOF EDGE WHERE REQUIRED BY CODE.
28. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF TEMPORARY PARTITIONS.
29. SQUARE THROAT NOT ALLOWED ON RADIUS ELBOWS.

PRESSURE CLASS SCHEDULE

AIR SYSTEM	PRESSURE CLASS	SEAL CLASS	LEAKAGE CLASS	
			ROUND	RECT
DISHWASHER AND LAUNDRY EXHAUST	2 INCH WG (500 PA)	A	3	6
GENERAL EXHAUST	2 INCH WG (500 PA)	A	3	6
LABORATORY EXHAUST DUCTWORK	6 INCH WG (1500 PA)	A	3	6
LOW-PRESSURE SUPPLY	2 INCH WG (500 PA)	A	6	12
MEDIUM PRESSURE SUPPLY (UPSTREAM OF VAV & CV BOXES)	6 INCH WG (1500 PA)	A	3	6
RETURN AND RELIEF	2 INCH WG (500 PA)	A	6	12

HVAC DESIGN CONDITIONS

REMARKS:
1. AMBIENT CONDITIONS ARE BASED ON 2021 ASHRAE WEATHER DATA CONDITIONS BASED ON 99.6% HEATING AND 0.4% COOLING VALUES.

SPACE OR AREA	OUTDOOR AIR		INDOOR HEATING °F	INDOOR COOLING °F	REMARKS
	SUMMER DB/WB °F	WINTER DB °F			
CORRIDOR / STORAGE	99.3/75.4	12.2	70	75	1
PREP AREA / SERVICE AREA	99.3/75.4	12.2	70	73	1
SEATING AREA	99.3/75.4	12.2	70	73	1

KKT
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PEC PROJECT NUMBER: 238012-035
PEC
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STUDENT UNION GALLEY RENOVATION

NEO A&M COLLEGE
200 I STREET NE
MIAMI, OK

NEO OKLAHOMA A&M COLLEGE

LICENSED PROFESSIONAL ENGINEER
SHAUN M. CONWAY
35679
01/14/2026
OKLAHOMA

REV. DATE	#	DESCRIPTION
06/03/2025		CD'S

MECHANICAL COVER SHEET

M0.1

SECTION 200500 – COMMON WORK RESULTS FOR FIRE PROTECTION, PLUMBING, AND MECHANICAL

1.1 GENERAL CONDITIONS
A. The General Conditions, Supplemental General Conditions, Special Conditions and General Requirements in Division 01 are part of this contract and shall be referred to as they apply to this section of the specifications.

1.2 EXAMINATION OF SITE
A. Visit the site, inspect the existing conditions, and check the drawings and specifications so as to be fully informed of the requirements for completion of the work. Lack of such information shall not justify an extra to the contract price.

1.3 SCOPE
A. The Mechanical Work shall include labor, materials, and equipment to install systems as shown on plans and hereinafter specified. The installation shall include all labor, materials, tools, transportation, equipment, services, and facilities, required for the complete, proper and substantial installation of all mechanical work shown on the plans, and/or outlined in these specifications. The installation shall include all materials, appliances, and apparatus not specifically mentioned herein or noted on the drawings, but which are necessary to make a complete working installation of all mechanical systems.
B. Show on prints in red ink all changes from original plans made during the installation. Return these prints to the Architect upon completion of the project.
C. By bidding, this contractor acknowledges his understanding of the work to be done and agrees to install complete and workable systems.

1.4 CODES
A. Execute work in compliance with all applicable Federal, State and Municipal laws, codes, ordinances, and local customs regarding the trade to perform the work. The Contractor is required to verify that all installations comply with applicable codes. The codes applicable to this specific project may be listed on the Architect's code compliance sheet. If not, it is the Contractor's responsibility to determine which codes apply to the installations.
B. Codes shall govern in case of any direct conflict between codes and plans and specifications; except when plans and specifications require higher standards than those required by code. Variance from the plan and specifications made to comply with code must be approved by the Architect. If approved, they shall be made with no increased cost to the Owner.

1.5 DEFINITIONS
A. It shall be understood that the drawings and specifications complement one another, and items specified shall also meet the criteria set forth on the drawings.
B. Where any device or item is referred to in the singular sense (such as "the unit"), such reference applies to as many devices as are required to complete the installation as shown on the drawings.
C. The term "work" shall mean all obligations imposed upon the Contractor by the Contract Documents.

1.6 ABBREVIATIONS
ADA - Americans with Disabilities Act
AGA - American Gas Association
AISI - American Iron and Steel Institute
AMCA - Air Moving and Conditioning Association, Inc.
ANSI - American National Standards Institute
ASHRAE - American Society of Heating, Refrigeration & Air-Conditioning Engineers
ASME - American Society of Mechanical Engineers
ASTM - American Society for Testing and Materials
AWWA - American Water Works Association
BPVC - Boiler and Pressure Vessel Code of ASME
CISPI - Cast Iron Soil Pipe Institute
NFPA - National Fire Protection Association
SMACNA - Sheet Metal and Air-Conditioning Contractors National Association
UL - Underwriters' Laboratories, Inc.
ETL - ETL Testing Laboratories, Inc.
OSHA - Occupational Safety and Health Administration

1.7 PERMITS
A. Obtain and pay for all licenses and permits, fees, inspection and certificates required for the execution of this work.
B. Pay fees and charges for connection to outside services and use of property.
C. Deliver permits and certificates to the Architect for transmittal to the Owner.

1.8 UTILITY SERVICES:
A. This Contractor shall pay for all expenses, deposits, reimbursements, etc., required by the local rules and codes for the service to the buildings, complete and ready for use.
B. Consult gas, water, and sewer utility for their requirements and for coordinating with their installation. Contractor shall provide any work thus required beyond that indicated by the drawings and specifications. Contractor shall bear all expense involved for the complete installation of the gas service (both temporary and permanent) to the building ready for operation, including utility service charges, except as specifically excluded on the plans.
C. This Contractor shall consult all local departments to verify requirements and bid installation for service in accordance with local codes and Utility company rules and regulations.

1.9 RESPONSIBILITY
A. This contractor will be held responsible for any and all damage to any part of the building or to the work of other contractors, as may be caused through his operation.
B. The operation and maintenance of the new Mechanical equipment during construction shall be the responsibility of this contractor until the acceptance of the building by the Owner.
C. The General Contractor shall pay for all fuel cost for operation of the equipment, unless indicated otherwise in the specifications.
D. The Mechanical and General Contractors shall coordinate to make all provisions for entry of equipment, installed under this Contract, to the installed location. Contractors shall provide openings in existing construction if necessary. Contractors shall perform repairs necessary to restore the building to the original condition. During the period of entry of equipment and removal of trash, no disruption of the Owner's normal business shall occur.

1.10 WORK TO BE DONE BY GENERAL CONTRACTOR
A. Build in all openings, sleeves, chases, etc., for piping, as established, furnished, and set by this contractor.
B. Mechanical Contractor shall furnish bolts, brackets, hangers, etc., required for work established and arrange for General Contractor to build into concrete structure. General Contractor shall install all factory sleeved fire dampers, furnished by Mechanical Contractor, in walls and floors.
C. Frame around and provide openings for ductwork, louvers, roof drains, etc.
D. Build curb or install factory curb and provide flashing for roof mounted mechanical equipment. Provide heavy steel angle support under entire perimeter of roof curb for rooftop equipment. Metal deck and roof insulation shall be installed within the roof curb area of rooftop equipment for acoustical considerations.
E. Provide lintels over wall openings.
F. Build concrete base for equipment furnished and set by this contractor.
G. Provide concrete housing for sewage ejector and sump pump basins.
H. Paint all mechanical equipment so specified. Use paint which is specified by the Architect.
I. Do excavation, provide moisture barrier, sand and/or gravel, tie down wire, and a minimum thickness of 3" of lightweight concrete for installation of duct below grade. Mechanical Contractor shall furnish duct and set in place in preparation for concrete pour.

1.11 WORK TO BE DONE BY ELECTRICAL CONTRACTOR
A. The Electrical Contractor shall provide all motor starters complete with auxiliary contacts where required for the function of this system unless specifically noted otherwise on the plans or in these specifications.
B. All required line voltage wiring for the mechanical control system shall be furnished and installed by the Electrical Contractor under supervision of the Control Manufacturer's representative.
C. Check mechanical specifications to verify wiring requirements for motor driven equipment. Provide complete wiring for the equipment including all required interlocking. Provide complete wiring for power factor correction capacitors.
D. The Electrical Contractor shall install the power factor correction capacitors furnished by the Mechanical Contractor for equipment so specified.

1.12 ELECTRICAL REQUIREMENTS BY MECHANICAL CONTRACTOR
A. Mechanical Contractor shall furnish all motors, motor interlocking control devices, certain magnetic starters, etc.
B. Submittals shall include complete equipment wiring diagrams and temperature control drawings for all the equipment furnished.
C. Submittals shall show all wiring connections, starters, auxiliary contactors, interlocking selector switches, separate control voltage power supplies, for each and every item of equipment, etc., requiring wiring.
D. Provide one copy of Engineer approved shop drawings showing all wiring and temperature control requirements of all mechanical equipment to the Electrical Contractor.
E. Build curb or install factory curb and provide flashing for roof mounted mechanical equipment. Provide heavy steel angle support under entire perimeter of roof curb for rooftop equipment. Metal deck and roof insulation shall be installed within the roof curb area of rooftop equipment for acoustical considerations.
F. Provide lintels over wall openings.
G. Build concrete base for equipment furnished and set by this contractor.
H. Provide concrete housing for sewage ejector and sump pump basins.
I. Paint all mechanical equipment so specified. Use paint which is specified by the Architect.
J. Do excavation, provide moisture barrier, sand and/or gravel, tie down wire, and a minimum thickness of 3" of lightweight concrete for installation of duct below grade. Mechanical Contractor shall furnish duct and set in place in preparation for concrete pour.

1.11 WORK TO BE DONE BY ELECTRICAL CONTRACTOR
A. The Electrical Contractor shall provide all motor starters complete with auxiliary contacts where required for the function of this system unless specifically noted otherwise on the plans or in these specifications.
B. All required line voltage wiring for the mechanical control system shall be furnished and installed by the Electrical Contractor under supervision of the Control Manufacturer's representative.
C. Check mechanical specifications to verify wiring requirements for motor driven equipment. Provide complete wiring for the equipment including all required interlocking. Provide complete wiring for power factor correction capacitors.
D. The Electrical Contractor shall install the power factor correction capacitors furnished by the Mechanical Contractor for equipment so specified.

1.12 ELECTRICAL REQUIREMENTS BY MECHANICAL CONTRACTOR
A. Mechanical Contractor shall furnish all motors, motor interlocking control devices, certain magnetic starters, etc.
B. Submittals shall include complete equipment wiring diagrams and temperature control drawings for all the equipment furnished.
C. Submittals shall show all wiring connections, starters, auxiliary contactors, interlocking selector switches, separate control voltage power supplies, for each and every item of equipment, etc., requiring wiring.
D. Provide one copy of Engineer approved shop drawings showing all wiring and temperature control requirements of all mechanical equipment to the Electrical Contractor.

1.13 WORKMANSHIP AND COORDINATION
A. Make installation substantially as shown on the plans.
B. Pipe and duct routing and equipment location shown on the drawings are schematic in nature. Make alterations in location of apparatus or piping as may be required to conform to building construction without extra charge.
C. Equipment service clearances, per equipment manufacturers' specifications, shall be maintained from general construction. No pipe or ductwork shall be installed within these clearances. No piping, coils, or ductwork shall be installed above electrical panels, starters, or switch gear, or in elevator equipment rooms.
D. Cooperate with other contractors in their installation of work.
E. The ductwork shall take precedence over all pipe work except where it is necessary to maintain an even grade or specific slope on the piping.
F. Use only experienced mechanics.

1.14 MATERIALS
A. Material and equipment shall be new, of best quality and design and free from defects. A manufacturer's nameplate affixed in a conspicuous place will be required on each major component of equipment stating manufacturer's name, address, and catalog number.

1.15 MATERIALS OF APPROVED EQUAL
A. Where items of equipment and/or materials are specifically identified herein by a manufacturer's name, model, or catalog number, only such specific items may be used in the base bid, except as hereinafter provided.
B. Unless requests for changes in base bid specifications are received and approved and noted by addendum prior to the opening of bids, the successful contractor will be held to furnish specified item.
C. After contract is awarded, changes in specifications shall be made only as defined under "Substitution of Equipment".

1.16 SUBSTITUTION OF EQUIPMENT
A. After execution of the contract, substitution of equipment of makes other than those specifically named in the contract documents will be approved by the Engineer only if the equipment named in the specifications cannot be delivered to the job in time to complete the work in proper sequence to work of other contractors, due to conditions beyond control of the contractor.
B. Requests for substitutions must be accompanied by documentary proof of equality or difference in price and delivery, if any, in form of certified quotations from suppliers of both specified and proposed equipment.
C. The Owner shall receive all benefits of the difference in cost involved in any substitution, and the contract altered by change order to credit Owner with any savings so obtained.

1.17 SUBMITTALS
A. Contractor shall send to the Architect for approval submittals on all equipment, accessories, and components.
B. Submittals shall be in electronic format (PDF) and all submittals by each trade shall be submitted together as a package to be reviewed together. Incomplete submittals packages or submittals sections sent in a piecemeal manner will not be reviewed until all sections are received.
C. Where catalog cuts are used, mark them to indicate equipment, capacities, controls, fittings, valves, sizes, etc.
D. Reference each item to applicable specification paragraph number and plan sheet number. Reference items not appearing in base specification to applicable alternate numbers, change order numbers, letters of authorization, etc.
E. All shop drawings shall be checked and signed by the mechanical contractor prior to submittal to the Engineer.
F. Shop drawings submitted without contractor's signature or approval and verification will not be approved. Quantities will not be checked or verified. It is the contractor's responsibility to provide the proper quantities required to complete the job.
G. Portions of the work requiring a shop drawing submittal shall not begin until the shop drawing has been approved by the Engineer.
H. Submit wiring diagrams for all mechanical equipment requiring field wiring clearly showing all required connections.
I. Engineer's acceptance of Compliance Submittals will not relieve Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall any acceptance by Engineer relieve Contractor from responsibility for errors or omissions in Compliance Submittals.

1.18 CUTTING AND PATCHING
A. Notify the General Contractor in ample time, of the location of all chases, sleeves, and any other openings required in connection with the work of this contract.
B. Cutting and patching made necessary because of failure to comply with the above shall be done by the General Contractor at the expense of the Mechanical Contractor.

1.19 TESTING
A. Furnish testing equipment and test all piping systems under methods and conditions as specified or per code.
B. Make all necessary replacements and repair and repeat tests until the entire system is approved and satisfactory.
C. Test under pressure with liquid or gas as directed or specified.
D. Refer to TAB and piping sections for further information on duct and pipe testing.

1.20 PAINTING
A. All painting shall be done by the General Contractor.
B. Painting shall be for the following items: all piping, ductwork, framework, and all equipment not furnished with factory finish, etc., in all exposed areas of the building and/or as noted on the drawings. Omit painting of piping in tunnels and in concealed areas.

1.21 LABELING
A. Install mechanically engraved metal or plastic label at equipment, not less than 2-1/2 inches wide by 3/4 inch tall with letters between 1/4 inch and 1/2 inch tall. Utilize labels with pre-drilled holes and stainless-steel rivets or self-tapping screws, or labels with contact-type permanent adhesive.
B. Identify all service piping which is accessible for maintenance operation with semi rigid plastic markers complete with direction of flow arrows. Each marker must show approved color-coded background, proper color of legend, approved legend letter size and approved marker length. Use snap on or self-adhesive markers on diameters 3/4" thru 5". Use strap-on or self-adhesive on diameter 6" and larger. Locate pipe markers at each valve, each branch and riser takeoff, each passage through wall or floor construction, each passage to underground and at 25-foot intervals on all horizontal pipe runs.
C. Install valve tags, stamped, or engraved with 1/4" high letters for piping system abbreviation and 1/2" high numbers. and predrilled or stamped holes for attachment hardware.
1. In existing buildings, coordinate with existing numbering system.
2. Furnish valve schedule on 8-1/2"x11" paper indicating valve numbering and where valves are installed. Include schedule in Operating and Maintenance Instructions.

Pipe Diameter	Marker Size	Letter Height
3/4" thru 2"	1"x8"	3/4"
2-1/4" thru 7-7/8"	2-1/4"x13"	1-3/4"

1.22 OPERATING INSTRUCTIONS
A. Prepare and submit to the Engineer for approval operating instructions made in conjunction with Equipment Manufacturer's representative. Instruction shall contain equipment starting sequence, interlocks, controls, switches, etc. which affect the equipment operation. Place copies in maintenance instructions brochure.

1.23 MAINTENANCE INSTRUCTIONS
A. Prepare a brochure covering all systems and equipment furnished and installed under this contract. Each brochure shall include certified equipment drawings and/or catalog data as submitted, complete maintenance instructions, parts lists for each item of equipment, any special emergency operating instructions, all equipment warranties with starting dates identified, and a list of service organizations including addresses and telephone numbers.
B. Label cover with the following:
1. Project name and address
2. Section of work covered by brochure, i.e., "Plumbing Heating, Ventilation, Air Conditioning", etc.
3. Name and address of Architect, Engineer, Contractor.
4. Telephone number of Contractor including night and emergency numbers.
C. Brochures shall be submitted to the Engineer for approval and delivery to the Owner.

1.24 LOOSE EQUIPMENT
A. All keys and special wrenches furnished with the equipment shall be kept in a safe place during construction and presented to the Owner at the completion of the project.

1.25 FINAL INSPECTION
A. Final inspection will be made upon written request from the Mechanical Contractor after the project is completed and Test and Balance (TAB) has been complete.
B. Furnish a workman familiar with this project to accompany the Engineer on final inspection and have available ladders, drop cords, and other equipment as required to gain access to any portion of this system.
C. Submit TAB Report to Engineer for review at least 5 days prior to final inspection.
D. This contractor and his principal sub-contractors shall be represented at the inspection by a person of authority responsible to demonstrate to the Engineer that his work conforms to the intent of the plans and specifications.
E. Extra inspections made necessary by the Mechanical Contractor's failure to comply with the conditions as set forth above shall be charged to the contractor at the inspector's time both on the job and spent in travel between the office and the project site.

1.26 GUARANTEE
A. Guarantee all work, material and equipment for a period of one year after date of final certificate of acceptance by the Architect.
B. During the year guarantee period the mechanical contractor shall be responsible for any defects which develop in the mechanical systems. Upon notification of a defect by the Architect, the Contractor shall make immediate effort to correct it and shall notify the Architect when this work is completed.
C. Repairs and/or replacements shall be made with no cost to Owner.

SECTION 200600 – MATERIALS AND METHODS COMMON TO FIRE PROTECTION, PLUMBING, AND MECHANICAL.

1.1 PIPING SYSTEMS - GENERAL
A. Pipe for piping systems shall be cut accurately to measurements taken on the job.
B. Install offset connections for alignment of vertical to horizontal piping wherever required to make a true connection.
C. Make branch connections with offsets to provide for movement with the expansion of the piping system.
D. Install horizontal piping parallel to the building walls and partitions.
E. Do not run piping through elevator equipment rooms, transformer vaults or other electrical equipment spaces (unless the piping serves that room) or above electrical gear or panels.
F. Valves, strainers, control valves, check valves and fittings shall be full size of the line they serve. Make change in pipe size noted on plans after last fitting on larger pipe. When supply pipes are larger than equipment tappings, reduce pipe size immediately prior to equipment connection.

1.2 PIPE AND FITTINGS
A. Each piece of pipe must be clearly labeled or stenciled with manufacturer's name, type of pipe and length, in accordance with ASTM standards. All pipe must be new. Re-processed pipe which has been cleaned and re-finished due to extended yard storage will not be accepted. All pipe must be corrosion free. Submit shop drawings on piping along with certified mill specifications.
B. Mechanically Formed Tee Connections: (Optional)
1. Mechanically extracted collars shall be formed in a continuous operation consisting of drilling a pilot hole and drawing out the tube surface to form a collar having a height of not less than three times the thickness of the tube wall. The collaring device shall be fully adjustable as to insure proper tolerance and complete uniformity of the joint.
2. The branch shall be notched to conform with the inner curve of the run tube and dimpled to ensure penetration of the branch tube into the collar is of sufficient depth for brazing and that the branch tube does not obstruct the flow in the main line tube.
3. All joints shall be brazed in accordance with the Copper Development Association Copper Tube Handbook using B-cup series filler metal.
4. Note: Soft Soldered joints will not be permitted.
C. Polyvinyl Chloride Pipe and Fittings conform to ASTM D2665.
D. Cast Iron Soil Pipe and Fittings: weight in compliance with Specification; ASTM A-74 carrying the insignia of the Cast Iron Soil Pipe Institute.
E. Cast Iron No-hub Pipe and Fittings: conform to Standard 301 of the Cast Iron Soil Pipe Institute.
F. Copper tubing: seamless copper water tube conforming to ASTM Standard Specification B88.
G. Black or Galvanized Steel Pipe and Fittings: For pipe 2" and smaller A-120/A53 continuous weld pipe, threaded and coupled, with 150# cast iron screwed fittings. For steel nipples close and short use extra strong weight.
H. For black steel pipe 2 1/2" and larger A53 Grade B ERW electric resistance welded pipe, beveled plain end, with ASTM A234 butt weld fittings. Flanges for steel pipe ASA-B 16.5 flat face, 150# welding neck. For galvanized pipe 2 1/2" and larger use 150# cast iron screwed fittings.
I. Weld in accordance with American Welding Society Code. Mitering and notching of pipe to form elbows and tees is not permitted.

1.3 HANGERS AND SUPPORTS
A. Use strap type pipe ring hangers on pipe up thru 3" equal to Grinnel Fig. 69 or CT-69. Use standard duty clevis hangers on piping larger than 3" equal to Grinnel Fig. 260.
B. Use inserts or supporting members in construction above for overhead suspension. Set inserts or supporting members for hangers in form for concrete construction. Use expansion inserts only where approved by the Architect's inspector.
C. Use heavy welded steel brackets for wall suspension. Mount brackets and wall supports on masonry walls with bolts through the wall and a suitable steel back plate on the back of the wall.
D. Provide all surface mounted and concealed unistrut for pipe supports in all equipment rooms and above ceilings for pipe and duct mounting. Unistrut shall all be at a minimum of heavy 12 ga., 1-5/8" construction. Contractor shall insure adequate support of each unistrut section based on the load that section is to handle.
E. Support fire protection piping independent of all other piping.
F. Size hangers on insulated pipe 3" and smaller to fit the pipe. Use copper plated hangers for copper pipe. Size hangers on insulated pipe 4" and larger to fit the insulation and provide pipe sleeves and high density insulation inserts as specified under "Insulation and Pipe Covering".
G. Space hangers 8'-0" on center for steel, iron, and copper pipe up to 1".
H. Space hangers 10'-0" on center for steel, iron, and copper pipe above 1".
I. Space hangers 5'-0" on center for cast iron soil pipe.
J. Space hangers 4'-0" on center for PVC.
K. Space hangers 32" on center for PEX.
L. Mount piping so that all runs are parallel and evenly spaced.
M. Except as otherwise indicated, provide factory-fabricated vertical-piping clamps complying with MSS SP-58, of one of the following types listed, selected by Installer to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
N. Two-Bolt Riser Clamps: MSS Type 8.
O. Except as otherwise indicated, provide factory-fabricated hanger-rod attachments complying with MSS SP-58, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select size of hanger-rod attachments to suit hanger rods. Provide copper-plated hanger-rod attachments where attachments are in direct contact with copper piping.
P. Except as otherwise indicated, provide factory-fabricated building attachments complying with MSS SP-58, selected by Installer to suit building substrate conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments where attachments are in direct contact with copper piping.
Q. Install hangers and supports to allow controlled movement of piping systems and to permit freedom of movement. Resting of pipe in framing or structural members is not permitted.
R. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
S. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed by ANSI B31 are not exceeded.
T. Insulated Piping: Comply with the following installation requirements:
1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
2. Shields: Where low-compressive-strength insulation or vapor barriers are indicated on cold or chilled water piping, install coated protective shields.
3. Saddles: Where insulation without vapor barrier is indicated, install protection saddles.

1.4 VALVES
A. Provide all valves required for operation, service, and maintenance of systems and equipment, i.e., shut off valves both sides of equipment, coils, etc.
B. Where Used:
1. Domestic and Hydronic Piping shut-off valves 2" and smaller shall be ball valves
2. Domestic and Hydronic Piping shut-off valves 2-1/2" and larger shall be butterfly valves.
3. Valves in air lines and throttling valves shall be globe valves.
4. Flow control valves shall be plug valves.
5. Steam piping shut-off valves shall be globe or gate valves. On low pressure applications, at the appliance or 2" or smaller, ball valves are acceptable, UNO.
6. Steam piping valves 2-1/2" and larger shall be gate valves.
C. Ball Valves:
1. Ball valves two inches and smaller shall have a forged bronze body with screwed pipe ends for steel pipe and sweat ends for copper pipe. Body shall be two-piece assembly full port. Hard chrome plated brass ball or stainless steel ball with full port flow, self-aligning and free floating between two Viton seats (300 psi) to provide positive seal in either direction. Stem shall be brass or stainless steel and extended 1 1/4" above the valve to clear insulation and to receive molded packing brass packing nut and handle nut. Handle shall be constructed of zinc plated steel with partial plastic coating. Valve shall be rated for 150 psig at 180°F.
D. Butterfly Valves:
1. Butterfly valves shall conform to MSS-SP-67. Liners and discs shall be suitable for the intended service.
2. Butterfly valves shall be lug type suitable for dead end service. Body constructed of cast or ductile iron - heavy duty stem bushing to absorb operator side thrust - aluminum bronze disc - 300 series stainless steel stem - EPDM seat - operators with ten position lever lock for sizes 2 1/2" thru 4" - wormgear with handwheel for sizes above 4" - valve pressure rated for 150 psig at 180°F.
E. Gate and Globe Valves:
1. All gate and globe valves shall be designed for repacking under pressure when fully opened and shall be equipped with packing suitable for the intended service. When the valve is fully opened, the back seat shall protect the packing and the stem threads from the fluid. All gate and globe valves shall have a gland follower. The pressure-temperature rating of valves shall be not less than the design criteria applicable to all components of the system.
2. Gate valves shall be of the solid wedge type, designed and manufactured in such a way that seating surfaces are prevented from contacting until near the point of closure. Valves two inches and smaller shall be rising stem with threaded, solder, socket, or flanged end to suit service. Valves 2 1/2" and larger shall be flanged, and unless otherwise specified all shall be OS&Y.
3. Globe valves two inches and smaller shall be threaded, flanged, solder end or socket end, to suit service. Globe valves 2 1/2 inches and larger shall be flanged, unless otherwise specified. Where composition discs are used, the disc shall be suitable for the intended service. For steam throttling service, composition disc valves shall be fitted with throttling nut. Metal seated globe valves shall have hardened stainless steel disc and seat ring.
4. Pressure containing parts of iron body valves shall be of material conforming to ASTM Specification A-126 Grade B. If the wedge in OS&Y gate valves is fastened to the stem by threads, it shall be secured by a nickel alloy or monel pin.
5. Face-to-face and end-to-end dimensions of iron body valves shall conform to ANSI B16.10. Design, workmanship, materials, and testing shall conform to MSS-SP-70 and MSS-SP-71.
6. By-pass valves shall be globe type, and these two inches and smaller at pressure reducing stations, shall be 500 Brinnel plug disc and seat ring type, or stellite. Those 2 1/2 inches through 4 inches shall be hardened stainless steel plug disc globe valves.
F. Check Valves:
1. Unless a composition disc is specified, swing check valves two inches and smaller shall be bronze, regrinding, with seating angle 40 to 45 degrees. A stop plug is required as a renewable stop for the hanger, unless otherwise specified. Disc and hanger shall be separate parts, and the disc shall be free to rotate. Hanger pins shall be supported on both ends by removable side plugs.
2. Lift check valves two inches and smaller shall be bronze or forged steel, to suit the service.
3. Check valves 2 1/2 inches and larger shall be flanged, swing type, unless otherwise specified.
G. Standard valves shall have 125 psi. working steam pressure or 200 psi. for water, oil and gas.
H. Sweat joint valves shall be used on all copper pipe.
I. Bronze valves with the basic saturated steam rating of 125 psi or 150 psi shall have pressure containing parts of a material having at least the physical properties of ASTM Specification B-62. Metallic seated bronze globe, angle, check and gate valves with a basic steam rating of 200 or 300 psi shall have pressure containing parts of material conforming to ASTM Specification B-61, for temperatures to 550°F.
J. Stems of bronze and Iron Bodied Bronze Mounted valves shall be of ASTM-B-198 Class 13C (cast silicon brass), ASTM B-371, Alloy A (rolled silicon brass), or other material equally resistant to dezincification.
K. All pressure casting shall be free of any impregnating materials.
L. Each valve is to be given shell and seat tests by the manufacturer and will carry a permanently affixed indication that tests have been successfully completed.
M. Insofar as possible, all valves of the same type shall be of the same manufacturer. Before purchasing any valve, contractor shall submit for approval the name of the manufacturer, the figure number which he proposes to furnish, and engineering data on each figure number, if not using those specified. The intent of this requirement is to obtain the most suitable valve for each service. Nonstandard valves will not be considered.
N. Pressure Independent Control Valves for Hydronic Systems.
1. Manufacturer: Danfoss, Belimo or an approved equal.
2. Capacity: Flow rate to match equipment served, regardless of system pressure fluctuation, within ± 5%. Control range shall be 1 to 14 PSI, 2 to 32 PSI, 4 to 57 PSI or 8 to 128 PSI depending on location within the piping system.
3. Submittal shall include a schedule which delineates the control range for each specific flow controller at every unit along with the valve size.
4. Valve shall include all internal working parts shall be of passivated stainless steel or nickel plated brass. The valve shall be tamperproof when installed. Body pressure tappings suitable for pressure gauge and thermometer installation and verification of pressure differential across valve orifice shall be provided - Bronze body - 150 PSI and 250°F rating - Units 1 1/2" and smaller located at coils shall have female threaded ball valve with lever handle on system side of controller for isolation with female sweat connection on unit side. A metal identification tag on chain will be provided for each valve. The tag will give valve model number, rated flow GPM, absorption range. Units 3" and above shall be gray iron body Class 150 for flanged installation.

1.5 JOINTS
A. Provide joints of type indicated in each piping system.
1. Full and clean cut.
2. Ream to the full inside diameter of the pipe with all burrs removed.
3. Sweat joints in copper tubing - with 95-5 solder.
4. Thread pipe in accordance with ANSI B2.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint compound, or pipe joint tape (Teflon) where recommended by pipe/fitting manufacturer, on male threads at each joint and tighten joint to leave not more than 3 threads exposed.
5. Braze copper tube-and-fitting joints where indicated, in accordance with ANSI B31.
6. Solder copper tube-and-fitting joints where indicated, in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner which will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.
7. Copper Pressure Seal Joint fittings shall be in accordance with ASME B16.18 or ASME B16.23.
B. Use insulating unions on HVAC and domestic water lines where steel and copper pipe are jointed.
C. Use brass ferrules on plumbing systems where dissimilar metals are joined.

1.6 UNIONS
A. Unions 2" and Smaller (150 WSP - 200 WOG): Standard Weight brass to iron seat malleable iron body with screwed ends.
B. Unions 2 1/2" and Larger: (125 PSI WSP) Standard cast iron body with flanged ends.
C. Install wherever necessary for repair, replacement, or service of the equipment or system.

1.7 STRAINERS
A. Provide basket or "Y" type strainers with iron bodies of same size as pipeline, removable screen inserts of not less than 22 gauge brass, perforated for a total net free area opening equal to four times the pipe area.
B. Use brass bodied strainers on copper pipe.

1.8 SLEEVES AND COVER PLATES
A. Install for all pipes passing through floors, walls, or partitions. Size sleeves large enough to allow for free movement of the pipes with expansion.
B. Floor sleeves: 20-gauge galvanized sheet metal flanged at the bottom and attached to the forms before concrete is poured (straighten sleeve after floor is poured).
C. Sleeves for insulated pipe passing through walls or partitions: 24-gauge galvanized sheet metal with plaster bead set flush with the wall finish.
D. Sleeves for uncovered pipe passing through walls or partitions: Galvanized steel pipe sleeves, extending outside of the wall finish as required to attach the cover plates.
E. Sleeves for basement walls or floors: Provide "Link-Seal" as manufactured by GPT or silicone pressure sealants as manufactured by General Electric or Dow Chemical Co., field applied under the direction of the local Manufacturer's Representative.
F. Provide chrome plated brass cover plates attached to the sleeves independent of the pipe on all pipes which pass through floors, walls, ceilings, and partitions in finished rooms.
G. Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Furnish pipe escutcheons with nickel or chrome finish for occupied areas, escutcheons not required for unoccupied areas.
H. Pipe Escutcheons for Moist Areas: For waterproof floors, and areas where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split or split hinged.
I. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.
J. Install pipe escutcheons on each pipe penetration thru floors, walls, partitions, and ceilings where penetration is exposed to view, and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole and is flush with adjoining surface.

1.9 FIRE BARRIER THROUGH PENETRATION PROTECTION SYSTEMS
A. Manufacturer: Subject to compliance with requirements, provide fire barrier penetration seals of one of the following:
1. 3M Fire Protection Products
2. Hilti Corp.
B. Provide seals for any opening through fire-rated walls, floors, roof, or ceilings used as passage for mechanical components such as piping or ductwork.
C. Cracks, Voids or Holes Up to 4" Diameter: Use putty or calking, one-piece intumescent elastomer, non-corrosive to metal, compatible with synthetic cable jackets, and capable of expanding 10 times when exposed to flame or heat, UL-listed.
D. Openings 4" or Greater: Use sealing system capable of passing 3-hour fire test in accordance with ASTM E-814, consisting of wall wrap or liner, partitions, and end caps capable of expanding when exposed to temperatures of 250 to 350°F (121 to 177°C), UL-listed.
E. Execution: Fill entire opening with sealing compound. Adhere to manufacturer's installation instructions.

1.10 PRESSURE GAGES
A. Manufacturers: Ashcroft – Flo Fab – Miljoco – Palmer Wahl – Tel-Tru – Trerice – Watts – Weiss - Winters.
B. Capacity: Anticipated pressure to be 50% of full scale unless otherwise indicated on the plans.
C. Features: Phosphor bronze bourdon tube - 4 1/2" diameter dial of white laminated phenol with black figures and graduation lines - nylon movement in rotary gear design - adjustable micrometer type pointer readily accessible from front of gage - black enameled cast - glass face window - tightly constructed to be dust and moisture resistant - accuracy within 1/2 of 1% of scale range.
D. Accessories: Pressure snubber utilizing porous metal filter to damper pulsations - syphon loop (steam duty only) - 1/4" brass T handle cock.

1.11 THERMOMETERS
A. Manufacturers: Ashcroft - Miljoco – Palmer Wahl – Tel-Tru – Trerice – Weiss - Winters
B. Capacity: Full range of anticipated temperatures or as indicated on plans.
C. Features: Industrial glass thermometer - full 9" scale opening - metal scale with etched, scribed, or inlaid lines and figures vividly contrasting with background material - red reading mercury tube - heavy rattle proof glass cover to make unit dust and moisture resistant - non-corrosive steel bulb chamber - threaded connection - swivel and lock nut.
D. Accessories: Separable socket on all liquid or vapor sensing thermometers - union connection on all air sensing thermometers.

1.12 EQUIPMENT SUPPORTS
A. Provide each piece of equipment or apparatus suspended from ceilings or mounted above floor level with suitable structural support, platform or carrier in accordance with best recognized practice. All such supporting or mounting means shall be furnished by respective contractor who shall arrange for their inclusion and attachment to building structure, unless otherwise indicated on plans or herein specified. Contractors shall exercise extreme care that structural members of building are not overloaded by such equipment. In all cases details of such hangers, platforms, and supports, together with total weights of mounted equipment shall be approved by Architect-Engineer.

1.13 MOTORS
A. Polyphase motors: NEMA MG 1, Design B medium induction motor, premium efficient, with 1.15 service factor. Multispeed motors shall have a separate winding for each speed. Bearings shall be regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading. Class B temperature rise with class F insulation.
B. Polyphase motors with additional requirements: With motors used with reduced voltage and multispeed controllers, match wiring connection requirements for controller with required motor leads. Motors used with variable frequency controllers shall have copper magnet wire windings, premium efficient motors shall be Class B temperature rise with Class F insulation, and inverter duty motors shall be Class F temperature rise with Class H insulation. All motors 10 HP and larger, driven by a variable frequency PWM drive shall include a factory installed maintenance free, circumferential, conductive micro-fiber or carbon brush shaft grounding ring to discharge shaft currents to ground. The conductive microfibers shall redirect shaft currents and provide a reliable, very low impedance path from shaft to motor frame by-passing motor bearings entirely. For vertical turbine pump motors, the upper shaft shall be provided with a coating to isolate the shaft from the bearings and the shaft grounding ring shall be installed within the motor casing. This information shall be provided with the shop drawing submittal for verification of method of installation and to ensure they are to be supplied. Comply with NEMA MG 1 for thermally protected motors.
C. Single phase motors: Motors larger than 1/20 HP shall be permanent-split capacitor, split phase, or capacitor start. Multispeed motors shall be variable torque, permanent-split capacitor type. Bearings shall be prelubricated, antifriction ball bearings or sleeve bearings. Motors 1/20 HP and smaller shall be shaded pole type. All motors shall have internal automatic thermal protection calibrated to insulation temperature rating.

1.14 MOTOR STARTERS
A. Unless specifically noted otherwise on the mechanical plans, or in the specifications, all motor starters shall be furnished and installed by the Electrical Contractor. Refer to the Electrical Specifications for Motor Starter requirements.

1.15 V-BELT DRIVES
A. Capacity of V-Belt Drives at rated RPM shall be not less than 150 percent of motor nameplate horsepower rating.
B. V-Belt Drive combinations shall be limited to A, B, C, and fractional horsepower belts. 3V, 5V, and 8V belts and sheaves shall not be used.
C. Drives requiring single belt application shall be of the adjustable pitch type. Multiple belt drives shall be of the non-adjustable type. All fixed pitch sheaves, including single groove fan sheaves, shall be of the bushed type. Fixed bore sheaves will not be acceptable for non-adjustable pitch sheaves.

1.16 ACCESS DOORS
A. Where valves, traps, dampers, devices or equipment of any kind is subject to service and maintenance are installed in inaccessible concealed spaces, access doors shall be furnished by the Mechanical Contractor and installed by the General Contractor. Doors shall be 12" x 12" for handhole and 24" x 24" for manhole where required.
B. Doors shall be:
1. Milcor Style "K" in plastered wall or ceiling.
2. Milcor Style "M" in masonry wall.
3. Doors in unfinished walls to have a rustproof prime coat finish.
4. Doors in tile finished walls shall be all stainless steel with satin finish.
5. Milcor Style "DW" in drywall construction.
6. Fire rated doors - Milcor style as described above for various types of construction except with U.L. 1 1/2 hr. "B" label.
C. Equivalent doors as manufactured by Bilco, J.L. Industries, MIFAB, Karp Assoc, Nystrom.

1.17 DRIP PANS
A. Provide drip pans fabricated from corrosion-resistant sheet metal with watertight joints, and with edges turned up 2-1/2". Reinforce top, either by structural angles or by rolling top over 1/4" steel rod. Provide hole, gasket, and flange at low point for watertight joint and 1" drain line connection.
B. Locate drip pans under piping passing within 3' horizontally of electrical equipment, and elsewhere as indicated. Hang from structure with rods and building attachments, weld rods to sides of drip pan. Brace to prevent sagging or swaying. Connect 1" drain line to drain connection, and run to nearest plumbing drain or elsewhere as indicated.

SECTION 200700 - INSULATION

1.1 PIPE COVERING
A. Manufacturers: Johns Manville - Owens Corning - CertainTeed - Knauf.
B. Features: All completed insulation of pipe and fittings shall have the following Underwriters Laboratories Fire Hazard Classification:
1. Flame spread not to exceed - 25.
2. Fuel contributed not to exceed - 50.
3. Smoke developed not to exceed - 50.
C. Four (4 lb.) density glass fiber insulation used for all pipe covering in this section shall have a maximum "K" factor of .23 at 75° F. mean temperature.
D. Prepare all exposed insulated covering for painting. Apply insulation over clean dry surface. Butt all longitudinal joints tightly together. Insulate domestic hot and domestic cold water and condensate drains in their entirety. Rain leaders need not be insulated below grade.
E. Domestic Water Pipe:
1. Insulate Domestic Hot Water supply and Recirculating pipe up through 1-1/2" with 1" thick glass fiber pipe insulation. Insulate piping 2" and larger with 1-1/2" thick insulation.
2. Insulate domestic cold water, interior rain leaders and downspouts with 1" thick glass fiber pipe insulation.
F. Hydronic Water Pipe:
1. Insulate heating water supply and return piping through 1-1/2" with 1.5" thick glass fiber pipe insulation and 2" or larger with 2" thick insulation.
2. Insulate chilled water supply and return piping through 1-1/2" with 0.5" thick glass fiber pipe insulation and 2" or larger with 1" thick insulation.
G. All pipe insulation to be covered with factory applied flame retardant vapor barrier jacket. Manville Micro-Lok 850 fiberglass AP-T Plus jacket or equal.
1. Interior concealed fittings and pipe hangers shall be insulated with flexible glass fiber to a thickness equal to the adjoining pipe insulation. Finish by spiral wrapping with white vinyl and apply a brush coat of vapor barrier mastic. Childers CP-30 or equal.
2. Interior exposed fittings shall be insulated with PVC fitting covers installed over flexible glass fiber inserts to a thickness equal to the adjoining pipe insulation. Manville Zeston or equal. Vapor seal all joints with Childers CP-30 or equal.
H. In finished rooms or areas where insulated pipes are subject to abuse, additionally finish with .032 embossed aluminum jacketing or 30 mil PVC jacketing for a distance of not less than 9 ft. up from finished floor or to finished ceiling level.
I. Provide high density inserts at hanger locations between the pipe and pipe shield for pipe sizes 4" and larger. Maintain a continuous vapor barrier through the hangers and match the jacketing of adjoining pipe insulation.
J. Outdoor Piping (exposed to weather): Use the same insulation for interior exposed pipes carrying the same product and add: a jacket of .032 embossed aluminum with factory applies vapor barrier. Finish fittings with Foster Sealfas G-P-M 35-00 reinforced with Foster Mast-a-Fab.
K. Refrigerant Suction Lines: insulate with 1" thick and condensate drain lines with 1/2" thick Armstrong AP Armaflex, applied in strict accordance with manufacturer's instruction. Finish all exposed piping with two coats of white Armstrong Armaflex finish. Manville Aerotube or Owens-Corning O.C. flexible tubing approved equal.

1.2 EQUIPMENT
A. Insulate roof drain sumps, with Armstrong Armaflex II sheet insulation 1/2" thick. Apply in accordance with manufacturers recommendations.
B. Prepare all exposed insulated covering for painting. Apply insulation over clean dry surface. Butt all longitudinal joints tightly together.

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NORTHEASTERN NEO OKLAHOMA A&M COLLEGE

LICENSED PROFESSIONAL ENGINEER
SHAUN M. CONWAY
35679
01/14/2026
OKLAHOMA

REV. DATE	#	DESCRIPTION
06/03/2025	•	CD'S

MECHANICAL SPECIFICATIONS

M0.2

1.3 DUCT LINER (INTERNAL)
A. Manufacturers: Johns Manville – Owens Corning - CertainTeed - Knauf.
B. Internal Liner Thickness:

DUCTWORK SYSTEM	THICKNESS (IN.)
Low velocity, rectangular supply	1.0
Low velocity, rectangular return	0.5
Ductwork routed in unconditioned building spaces	1.5
Return air transfer ducts	1.0
Ductwork located exterior to the building, liner thickness listed plus 2" external rigid glass board insulation with vapor retarder jacket, cover with membrane duct jacket and aluminum jacket. Caulk all seams.	1.0
Rectangular exhaust ducts for last 15 feet before fan in all directions	0.5

C. Liner shall be Type I per ASTM C 1071 and have a NRC not less than 0.45 as tested per ASTM C423, with a minimum density of 2 pounds per cubic foot and a maximum "K" factor of 0.26 at 75°F mean temperature. The liner air stream surface coating shall contain an EPA registered, anti-microbial agent.
D. Use mechanical fastening of Graham Welded pins, or Stick-Klips on maximum 16" centers at top sections when width exceeds 12" and on sides when height exceeds 24".
E. Manufacturers shall print density and thickness on face of duct liner.
F. Duct liner shall have an Underwriters Laboratories flame spread rating not to exceed 25, fuel contributed rating not to exceed 50, and smoke developed rating not to exceed 50.
G. DUCT SIZES ON DRAWINGS ARE FOR DIMENSIONS INSIDE OF LINING AND SHEET METAL SIZE SHALL BE INCREASED ACCORDINGLY.
H. Adhesive and Application:
1. Adhere liner to interior sides of duct with minimum 90% coverage of fire retardant adhesive.
2. Apply a brush width of Foster's Fire Retardant Coating over all joints, visible cut edges and leading edges of insulation to prevent fiber erosion.
3. Apply with coated side to air stream in cut to fit pieces fastened to interiors of duct with adhesive. Coat all exposed edges with adhesive.
4. Adhesives shall be approved and listed by Underwriters Laboratories and shall bear the U. L. Label.

1.4 DUCT WRAP INSULATION (EXTERNAL)
A. Manufacturers: Johns Manville - CertainTeed - Owens Corning - Knauf.
B. Insulate externally all concealed round ducts and rectangular outdoor air ducts with 0.75-pound per cubic foot minimum density fiberglass ductwrap with a Foil-scrim Kraft vapor barrier applied with outward-clinching staples.
C. The duct insulation shall have Underwriters Laboratories flame spread rating not to exceed 25 - fuel contributed rating not to exceed 50 - smoke developed rating not to exceed 50.
D. Insulation shall be continuous through partitions, coils, etc. Insulate fire damper sleeves to partitions.

1.5 DUCT INSULATION APPLICATION AND THICKNESS
A. Ductwork insulation minimum R-values to comply with the latest adopted year of ASHRAE/IESNA 90.1, based on Climate Zone and duct location. If not adopted, utilize 90.1-2016 values: Exterior Ducts: R-12, Fully Ducted Plenums: R-6, and Un-ducted (Return Air) Plenums: R-1.9.
B. Duct Wrap Insulation Thickness:

DUCTWORK SYSTEM	THICKNESS (IN.)
Non-hospital, Low velocity, round/oval supply	1.5
Non-hospital, Medium and high velocity supply	1.5
Non-hospital, Round supply and return exposed to Outdoor Air or Exterior to Building	3.0
Non-hospital, Rectangular supply and return exposed to Outdoor Air or Exterior to Building (Liner, plus external rigid glass board insulation with vapor retarder jacket, cover with membrane duct jacket & aluminum jacket. Caulk all seams.)	1.0 Liner, plus 2.0 Wrap
Exhaust fan discharge duct between backdraft / isolation damper and exterior opening	1.5

SECTION 220400 - PLUMBING

1.1 WATER SERVICE
A. Install underground service pipe from main to within 5'-0" of the building wall in accordance with requirements of the Water Department, including required cut off valves and service box.
B. Install underground with a minimum coverage of 3'-6". Verify frost line depth with project location.
C. Connect through building wall or floor in pipe sleeve 1" larger than pipe and link seal or silicone pressure sealant.
D. Service piping 3" and smaller: ASTM B 88 Type K copper pipe, per local code and water department requirements.
E. Service piping 4" to 6": Ductile iron water pipe with mechanical joints, or C-900 PVC (conforming to AWWA C-900) with DICL or CICL mechanical joint fittings per local code and water department requirements.

1.2 DOMESTIC WATER PIPING
A. Domestic hot, cold and recirculated water pipe: From 5'-0" outside of the building wall, below grade use ASTM B 88 Type "K" hard drawn copper tube with wrought fittings. Above grade use ASTM B 88 Type "L" hard drawn copper tube with wrought fittings. Below concrete floors within the building use soft annealed Type "K" copper tubing with no fittings.
B. Install water hammer arrestors per PDI-WH 201 and where indicated on the plans.
C. Test under 130 psi hydrostatic pressure.

1.3 CLEANING AND TREATING DOMESTIC WATER SYSTEM
A. Sterilize domestic hot and cold-water systems to meet State Board of Health requirements. Prior to treatment flush the system of all dirt and foreign matter, then fill with water treated with 50 ppm of chlorine. Open all valves and faucets several times during the flushing and treatment filling processes. Leave treated water in the systems for 24 hours. Test the chlorine content at the end of this period and if exceeding 10 ppm, flush the system; if less than 10 ppm, repeat the sterilization process. After sterilization, flush the systems with clean water until the chlorine content is no greater than 0.1 ppm. After sterilization, obtain State Board of Health approval on samples of water taken from the systems or repeat the sterilization process until approval is obtained.
B. In addition to sterilization testing, samples shall be collected at the city supply and at all tap locations for testing of lead content to ensure compliance with EPA regulations.

1.4 SANITARY WASTE PIPING
A. Grade all waste piping less than 4" in diameter at a uniform fall of not less than 1/4" per foot. Grade piping 4" diameter and greater 1/8" per foot with approval of Administrative Authority.
B. Install cleanouts at the base of all vertical stacks, changes in direction, where necessary for easy cleaning, and as indicated on the plans.
C. Size cleanouts the full size of the pipe.
D. Branch connections and changes in direction made with 45 degree "Y" fittings or long sweep ells, except only that sanitary tees or short sweep ells may be used on vertical stacks and closet connections.
E. Provide means for expansion in vertical stacks to roof.
F. Extend vent stacks full size through the roof.
G. Install vent connections on all fixtures, traps, and equipment connected to the soil and waste system and extend vertical not less than 3'-6" above the floor line before connecting to any horizontal run.
H. Conceal vent lines within the building and extend one foot above roof line.
I. Use standard cast iron soil pipe and fittings with No-Hub joints for waste pipe within the building, and gasketed joints under the building, and to a point 5'-0" outside the building.
J. If there are no return plenums in the building, it is acceptable to use Schedule 40 solid wall PVC plastic pipe with solvent welded DWV fittings for waste pipe located above floor slab within the building and to a point 5'-0" outside the building.
K. Below grade waste pipe can be either cast iron as noted above or Schedule 40 solid wall pipe PVC pipe with solvent welded DWV fittings.
L. Test soil, waste, and vent piping systems with 10 ft. water column.

1.5 TRAPS
A. Provide traps required, including traps not furnished in combination with the fixtures and equipment.
B. Separately trap all fixtures with waste connections with a water sealed trap placed as close to the fixture as possible.
C. Provide deep seal traps at floor drains, condensate drain boxes, and where shown on the plans.
D. All exposed traps in finished areas shall be of chromium plated cast brass.

1.6 CLEANOUTS
A. Manufacturers: Wade - Zurn - Josam - J. R. Smith - Mifab.
B. Accessible cleanouts shall be installed as required to clean all horizontal waste lines at no greater than 100 ft. intervals. Plumbing Superintendent on the job shall mark in Red on Blue Line Drawings desired locations and install only following approval of these locations by the Architects Inspector.
C. Cleanouts in floors shall be submitted to architect and engineer for review with each floor type identified in submittal.
D. Accessories: Clamping collar required in all locations.

1.7 DRAINS
A. Manufacturers: Wade - Zurn - Josam - J. R. Smith - Mifab.
B. General Floor Drains: Cast iron floor drain with seepage flange and round nickel bronze strainer. 2" outlet shall have a 5" strainer, 3" outlet shall have a 6" strainer, 4" outlet shall have an 8" strainer.
C. Accessories: Trap guard on all floor drains subject to evaporation by Pro Set or equivalent. Cast iron soil-P-trap, deep seal. Backwater valves on all drains installed below grade as required.

1.8 CONDENSATE DRAIN PIPING (COOLING COIL DRIP)
A. Type M copper pipe with sweat drainage fittings, Schedule 40 steel pipe with screwed drainage fittings or Schedule 40 PVC plastic pipe with solvent welded fittings.
B. Pitch all horizontal lines to drain at a minimum fall of 1" per 10 feet of run.
C. Provide air trap at each equipment connection.

SECTION 224000 - PLUMBING FIXTURES AND TRIM

1.1 PLUMBING FIXTURES - GENERAL
A. All fixtures shall be furnished complete with trim. All exposed trim shall be chrome plated brass. China fixtures shall be of the best grade vitreous ware without pit holes or blemishes and the outlines shall be generally true. The Architect reserves the right to reject any pieces which, in his opinion are faulty.
B. All fixtures shall be set true and level with solid backing behind lavatory supports. Nipples through the wall to the fixture connection shall be brass and all necessary supports for the fixtures shall be installed before the wall is finished. All fixtures fitting against walls shall have ground backs. All fixtures shall be cleaned before setting, and the installation shall be left ready for use.
C. All fixtures indicated to be installed for handicap accessibility to be installed per ADA Standards for Accessible Design. Insulate hot water and drain piping at accessible sinks with pre-manufactured insulating covers.
D. Fixtures indicated on the plans must be set and all plumbing connections required for its function installed.

1.2 PLUMBING FIXTURE SCHEDULE
A. China Fixture Manufacturers: American Standard - Toto - Kohler – Eljer – Zurn - Sloan.
B. Stainless Steel Fixture manufacturers: Elkay - Just - Bradley - Acorn.
C. Faucet Manufacturers: Delta – Kohler – Chicago Faucets – American Standard - Zurn - Sloan.
D. Shower Fixture Manufacturers: Bradley – Chicago Faucet – Symmons - Powers - Leonard - Acorn.
E. Drinking Fountain Manufacturers: Haws - Elkay - Halsey Taylor - Oasis.
F. Carrier Manufacturers: Zurn - Josam – Mifab - Wade - J. R. Smith. Specific carriers shall be submitted for approval with fixture shop drawings.
G. Water Closet Seat Manufacturers: Bemis - Church - Olsonite - Beneke.
H. Flush Valve Manufacturers: Sloan – Zurn – Toto.
I. Service Stops: All lavatories, sinks, and tank type closets unless otherwise specified shall be provided with chrome plated loose key quarter-turn stops and flexible risers.

SECTION 230593 - AIR TEST AND BALANCE

1.1 SCOPE
A. The Mechanical Contractor shall procure the services of an independent air balancing agency, fully certified with the National Environmental Balancing Bureau (NEBB) to test air moving equipment and air distribution and exhaust systems and to supervise the balance and adjustment of these systems. All work shall be done under direct supervision of a qualified and licensed Heating and Ventilating Engineer. The mechanical contractor shall provide workmen of the proper trade to make adjustments to the systems as determined by the Engineer. The Contractor shall provide access as required, including any necessary scaffolding, and shall cooperate with testing laboratory personnel. All instruments used in this work shall be accurately calibrated and maintained in good working order. If requested the tests shall be conducted in the presence of the Mechanical Engineer responsible for the project and/or his representative. Air balance and testing shall not begin until the system has been completed and is in full working order. The Contractor shall put all heating, ventilating, and air conditioning systems and equipment into full operation 24 hours prior to the onset of testing and balancing and shall continue the operation of same during each working day until the completion of all test and balance work. The Contractor shall award the test and balance contract upon receipt of his contract to proceed with the air conditioning installation, to allow the Air Balance and Testing Engineer to schedule his work in cooperation with other trades involved and comply with completion date. Upon completion of the air conditioning system installation, the Air Balance and Testing Engineer shall perform the following tests, supervise adjustments and system modifications, and compile the test data as required for evaluation and approval.
B. In addition to procuring the services of an air balancing engineer as hereinafter specified the mechanical contractor shall:
1. Clean air filters, ductwork, coils, fans, etc. in the air system to remove all construction dust and debris.
2. Start, lubricate and balance all fans. Change and/or adjust drive pulleys on fans to give required capacity.
3. Supply and install all balancing dampers as required for final balancing as determined by the balancing engineer.
4. Furnish workmen familiar with this project and of the proper trade to assist the balancing engineer in the air and water balancing. Also make available subject to request by the balancing engineer trained servicemen of the control and equipment suppliers to assist as needed during the testing of their portion of the project.
5. Furnish plans, operating manuals, and shop drawings of all equipment installed for use by the Air and Water Balancing Agency.
6. Have all systems in full operation a minimum of 24 hours before Balancing Engineer arrives on job.

1.2 AIR SYSTEM TEST AND BALANCE PROCEDURE
A. Procedure:
1. Bring all fans to design RPM.
2. Bring air volume in each air handling system to the design air volume using pitot tube transverse method.
3. Test and record fan motor data.
4. Bring air diffusers and registers to design CFM.
5. Make recommendations for system modifications and adjustments required to facilitate proper system balancing as determined by preceding test.
6. Retest and readjust all system segments affected by system modifications.
B. If any issues arise during the test and balance procedure that prevent it from being properly completed, bring issues to owner and engineer before submitting report to investigate.

1.4 DATA FILE
A. Prepare complete data file on all equipment and devices tested indicating name plate data, design requirements and final operating conditions. Submit a PDF of the final balance report for review. Upon approval of the TAB Report, provide a copy of the revised TAB Report to the Mechanical Contractor for inclusion in the Operation and Maintenance manuals presented to the Owner.

1.5 INSTRUCTION
A. At the completion of the balancing, review the operating and maintenance brochures as supplied by the Mechanical Contractor supplement these instructions as determined through balancing experience. Meet with Owner's personnel to review proper operating procedures.
B. Warranty that the system is set in accordance with values as established by the plans and specifications.

SECTION 230800 - AIR DISTRIBUTION

1.1 DEFINITIONS
A. Low Velocity Ductwork: Supply, return, make-up, and exhaust ductwork systems that are sized at 2,000 FPM or lower.
B. Low Pressure Ductwork: Ductwork connected to fan systems with a 2" w.c. or less deadhead rating.

1.2 PERFORMANCE REQUIREMENTS
A. Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
B. All work shall comply with the Mechanical Codes.
C. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible".
D. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.3 SHEET METAL DUCT WORK CONSTRUCTION
A. The work under this heading includes all sheet metal work as required to complete supply and exhaust systems including ducts, housings, ventilating hoods, exhaust hoods, louvers, dampers, grilles, diffusers, registers, access doors, access panels, etc.
B. Duct material shall be galvanized steel unless noted otherwise on the drawings.
C. Seal all ducts to Seal Class A per SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"
D. Make ductwork and installation in conformance with the applicable local Mechanical Code and Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) HVAC Duct Construction Standards (Latest Edition) amended as follows:
1. Seal all transverse joints, fittings, connections, and seams with Hardcast DT tape and FTA adhesive, Hardcast AFG-1402 "Foil-Grip" applied per manufacturers instructions, or brushed-on liquid based joint and seam sealant.
2. Make all branch connections with 45° entry clinch collar.
3. Round branch duct take-offs shall be high efficiency takeoffs (HETO), made with 45° entry clinched collar and rectangular to round transition. If damper is provided with HETO, it shall meet the requirements of the manual balance damper section below.
E. Use square type elbows with turning vanes for changes in direction and fittings for branch ducts. Radius elbows may also be used for duct changes in direction, refer to drawings.
F. Offset ducts to clear pipes and obstructions.
G. Patch all duct holes airtight after installation.
H. All round ductwork shall be a minimum of 26 gauge sheet metal or heavier as required by SMACNA and the Mechanical Code.
I. Exposed Spiral Ductwork:
1. Provide factory-fabricated duct and fittings, manufactured on automatic spiral duct forming machines, for round (spiral) low, medium and high velocity duct systems.
2. Round and Oval Ductwork: Construct of galvanized sheet steel complying with ASTM A527 by the following methods and in minimum gages listed.
J. Duct up to 14" diameter shall be a minimum gage of 26.
K. Duct 16" to 26" diameter shall be minimum of 24 gage.
L. Duct 28" to 36" diameter shall be minimum of 22 gage
M. Duct 38" to 50" diameter shall be minimum of 20 gage
1. Fittings and Couplings: Construct of minimum gages listed. Provide continuous welds along seams.
a. Duct up to 36" diameter shall be a minimum gage of 20.
b. Duct over 36" diameter shall be 18 gage.
2. Use duct taps for conical 90° tees or takeoffs as per plans. Five piece 90° or smooth ells with 1 1/2 diameter radius, conical 90° reducing tees, conical 90° cross and bell mouth plenum taps.
3. Exposed ductwork shall be coordinated with the architect to determine if it will be painted. If ductwork will be painted, duct shall be paint-lok or equivalent.
N. Duct Cleaning: Clean new and existing duct system(s) before testing, adjusting, and balancing.

1.4 FLEXIBLE DUCTS
A. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
D. Flexible ducts - Thermaflex Type MKE or equivalent, meeting amended code standards of NFPA and NEFU Pamphlet 90A with U.L. Fire rating of not over 25 flame spread and a developed smoke rating of not over 50. U.L. Standard 181 Class 1 woven and coated fiberglass supported by helically wound spring steel wire. 1" fibrous glass insulation. Aluminized vapor barrier film. Pressure rating of 10 inch wg positive and 2 inch wg negative. A maximum of six feet of flexible duct may be used for each connection to supply diffusers only, only above accessible ceilings.
E. Accessories: Strap clamps with stainless steel band and cadmium plated hex screw to tighten band with worm-gear action.
F. Installation: Duct connections to collars shall be made in accordance with the duct manufacturer's recommendations.

1.5 GRILLES, REGISTERS, AND DIFFUSERS
A. Manufacturers: Titus - Krueger - Price
B. Capacity: As indicated on drawings.
C. Accessories: As scheduled on the drawings for finish, opposed blade dampers, borders, directional vanes, etc.

1.6 MANUAL VOLUME DAMPERS (UNDER 1500 FPM)
A. Manufacturers: Air Balance Inc. - Ruskin - Carnes - Nailor – Greenheck – Pottorff –McGill Airflow or equivalent.
B. Features: 20 gauge min. galvanized steel blades - 20 gauge min. galvanized steel frame with blade stops - noncorrosive bearings (Oilite or Nylon) - rectangular dampers to have blade linkage concealed in frame - full width 3/8" minimum square cadmium plated steel axle shaft extending through frame - manual locking quadrant bracketed 1-1/2" minimum from frame to allow for insulation.
C. Single blade dampers may be used for duct sizes of 12" high x 36" wide and less. Sizes greater than 12" high or 36" wide shall be multiple opposed blade dampers.

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MECHANICAL SPECIFICATIONS

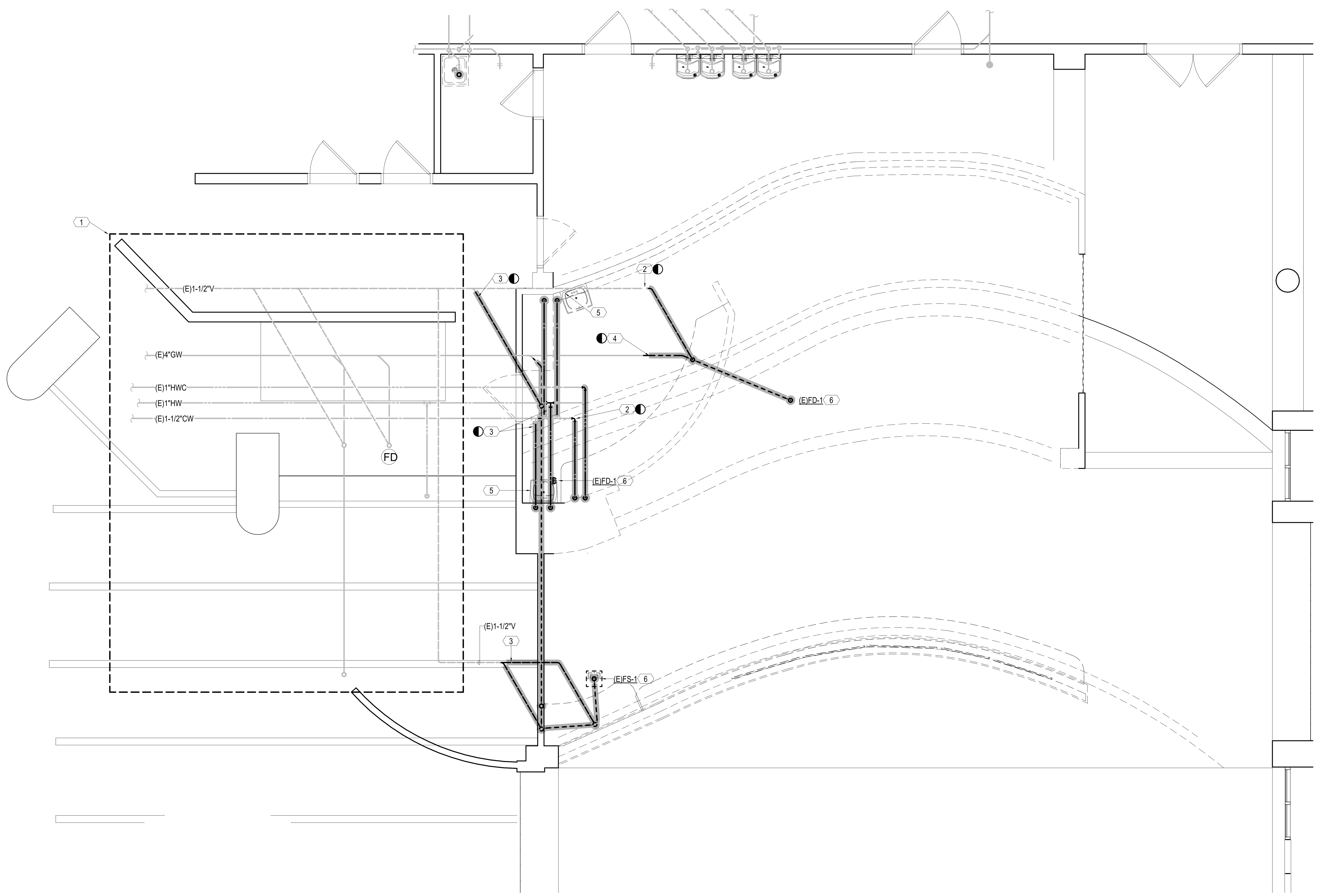
M0.3

PLUMBING DEMO NOTES

1. PLANS ARE SCHEMATIC IN NATURE, LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS. BRING ANY DISCREPANCIES FROM THE DRAWINGS AND NOTES TO THE OWNER'S REPRESENTATIVE IMMEDIATELY. MINOR CHANGES IN THE SCOPE OF THE DEMOLITION WORK SHALL NOT JUSTIFY AN ADDITIONAL COST.
2. CONTRACTOR SHALL CLEAN ALL EXISTING PLUMBING FIXTURES TO REMAIN OR BE REUSED IN AREA OF WORK TO LIKE-NEW CONDITION AND PROVIDE A LIST OF ANY DEFICIENCIES TO OWNER'S REPRESENTATIVE.
3. DEMOLISH ALL DUCTWORK, PIPING AND EQUIPMENT SHOWN SHADED AND DASHED IN A DARK LINE WEIGHT.
4. OPERATIONAL FACILITY. PRIOR TO DEMOLITION, COORDINATE WITH FACILITY MANAGER TO PREPARE FOR WATER SHUT DOWN.

SHEET KEYNOTES

#	
1	AREA NOT IN SCOPE. PIPING AND FIXTURES IN THIS AREA ARE EXISTING TO REMAIN.
2	REMOVE EXISTING PIPING. PREPARE PIPE CONNECTIONS TO BE RECONNECTED IN NEW WORK.
3	REMOVE EXISTING PIPING BACK TO POINT SHOWN. CAP AND SEAL AT LOCATION SHOWN.
4	EXISTING GREASE WASTE MAIN FOR BUILDING. PREPARE FOR NEW PIPE CONNECTIONS.
5	REMOVE SINK, HANGER, AND PIPING BACK TO MAIN AND CAP. CAP SANITARY PIPING AT FLOOR PENETRATION. GENERAL CONTRACTOR TO INFILL AND LEVEL FLOOR IN PREPARATION FOR NEW FLOORING.
6	REMOVE FLOOR SINK/DRAIN AND PIPING BACK TO MAIN AND CAP. GENERAL CONTRACTOR TO INFILL AND LEVEL FLOOR IN PREPARATION FOR NEW FLOORING.



N

1 **PLUMBING DEMO PLAN**

0' 4' 8' 12'

1/4" = 1'-0"

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PLUMBING DEMO PLAN

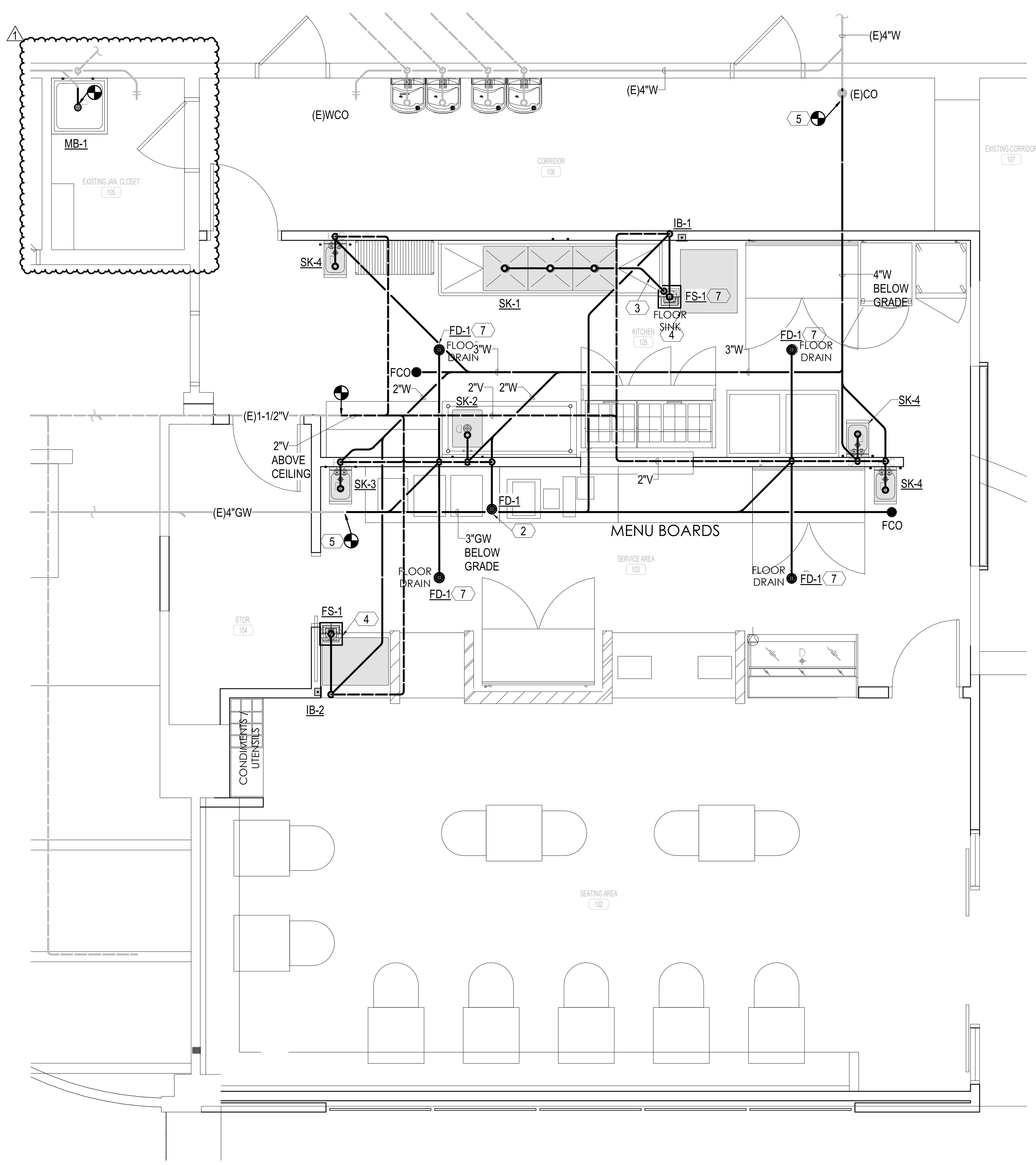
P1.1

PLUMBING GENERAL NOTES

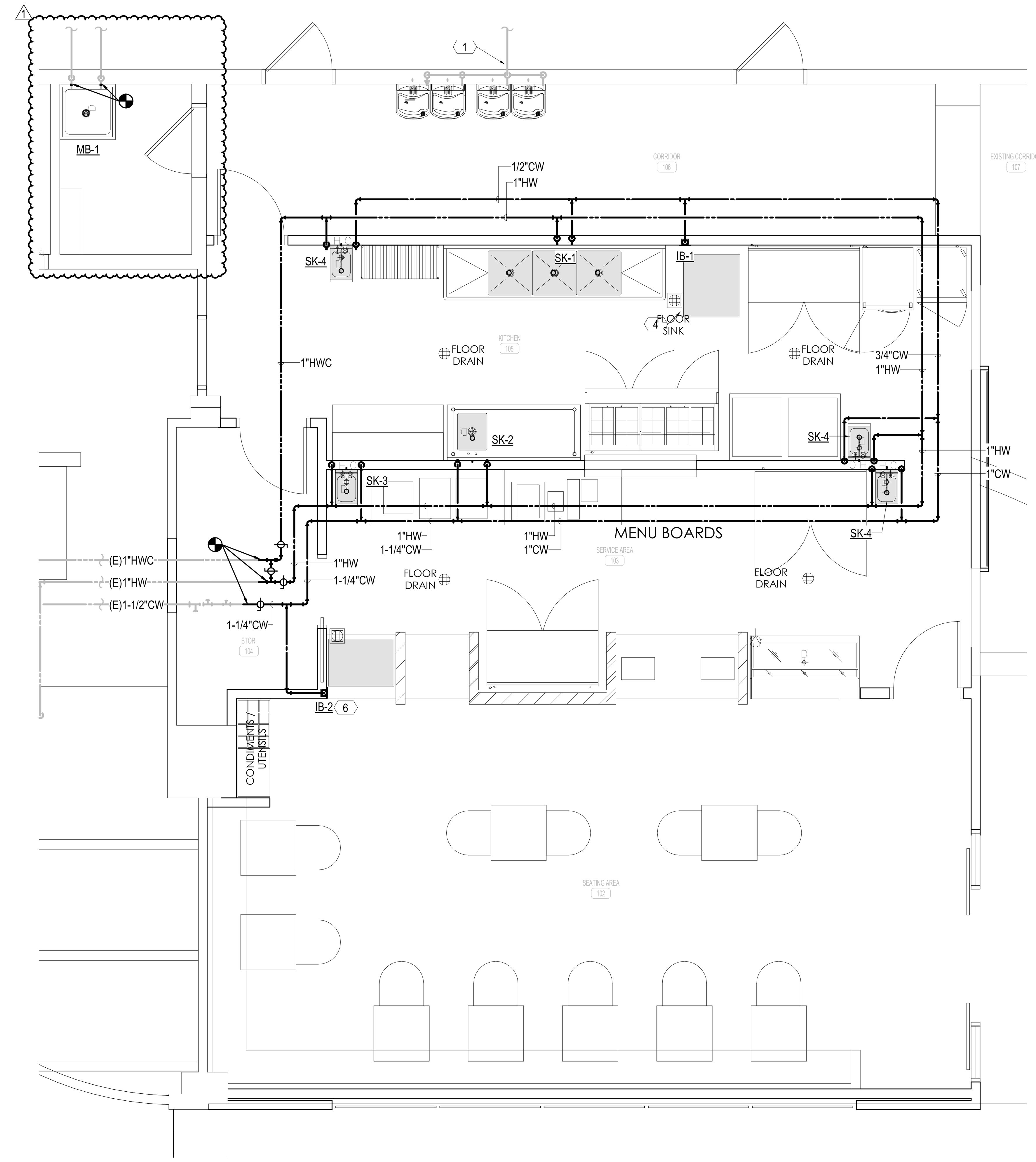
1. REFER TO THE PLUMBING FIXTURE SCHEDULE FOR PIPE SIZES TO INDIVIDUAL FIXTURES.
2. NOT ALL REQUIRED CLEANOUTS ARE NECESSARILY SHOWN ON THESE PLANS. PROVIDE CLEANOUTS ON WASTE, VENT AND STORM PIPING AS REQUIRED BY CODE AND FOR REASONABLE MAINTENANCE BASED ON ACTUAL FIELD INSTALLATION.
3. PIPING ON EXTERIOR WALLS OR PRE-CAST WALLS TO BE ROUTED IN FRAMED WALL ON INTERIOR SIDE OF INSULATION.
4. TERMINATE PLUMBING VENTS NOT LESS THAN 12" ABOVE ROOF AND A MINIMUM OF 10'-0" FROM MECHANICAL OUTDOOR AIR INTAKES.
5. AVOID ROUTING OVER ELECTRICAL ROOMS AND ELECTRICAL PANELS; MAINTAIN N.E.C. CLEARANCES. COORDINATE ROUTING WITH ELECTRICAL CONTRACTOR.
6. ALL VALVES SHALL BE INSTALLED ABOVE DROP-IN CEILINGS IN ACCESSIBLE LOCATIONS, OR WITH ACCESS PANELS IN HARD LID CEILINGS.
7. ACCESS PANELS SHALL BE 24x24, UNLESS NOTED OTHERWISE. LOCATIONS SHOWN ARE APPROXIMATE, EXACT LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS AND EQUIPMENT LOCATIONS. PROVIDE RATED ACCESS PANELS WHEREVER REQUIRED BY APPLICABLE CODES.
8. ALL PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE IN THE CEILING SPACE. UTILIZE JOIST SPACE WHEN POSSIBLE, ESPECIALLY WHERE CROSSING OTHER PIPES, DUCTS AND ELECTRICAL.
9. PROVIDE ACCESSIBLE SHUT-OFF VALVES TO ALL APPLIANCES AND EQUIPMENT.
10. TRAP PRIMERS OR TRAP GUARDS SHALL BE INSTALLED AT ALL FLOOR RECEPTORS. INSTALL IN ACCORDANCE WITH IPC.
11. CEILING PLENUM IS USED AS A RETURN AIR PATH. KEEP PLENUM FREE OF COMBUSTIBLES, PVC PIPING AND ANY OTHER MATERIALS NOT ALLOWED BY THE IFC.
12. COORDINATE ROUTING OF CONDENSATE DRAIN LINES WITH OTHER TRADES PRIOR TO INSTALLATION TO ENSURE SLOPE CAN BE MET.
13. VERIFY AND REFER TO ARCHITECTURAL DIMENSIONAL FLOOR PLAN FOR EXACT LOCATIONS OF ALL FIXTURES AND EQUIPMENT.
14. OPERATIONAL FACILITY. PRIOR TO NEW WORK, COORDINATE WITH FACILITY MANAGER TO PREPARE FOR WATER SHUT DOWN.

SHEET KEYNOTES

#	
1	PIPING TO EXISTING ELECTRIC WATER COOLERS TO REMAIN.
2	DRAIN ICE BIN INDIRECT TO FLOOR DRAIN UNDERNEATH TABLE.
3	DRAIN THREE COMPARTMENT SINK INDIRECT TO FLOOR SINK.
4	COORDINATE INSTALLATION OF ICE MAKER/DISPENSER WITH KITCHEN CONSULTANT. PROVIDE FILTER AND INDIRECT DRAIN TO FLOOR SINK.
5	PRIOR TO DEMOLITION AND NEW WORK, FIELD VERIFY EXISTING LOCATION AND DEPTH TO VERIFY IF FLOW LINE GRADE IS ATTAINABLE. CONTACT ENGINEER IF NOT ATTAINABLE.
6	COORDINATE WITH OWNER'S REP, KITCHEN CONSULTANT, AND PEPSI MANUFACTURER FOR WATER CONNECTION LOCATION FOR SODA & ICE DISPENSER.
7	COORDINATE FINISH WITH ARCHITECT PRIOR TO ORDERING.



1 **WASTE AND VENT PLAN**
0' 4' 8' 12'
1/4" = 1'-0"



2 **WATER AND GAS PLAN**
0' 4' 8' 12'
1/4" = 1'-0"

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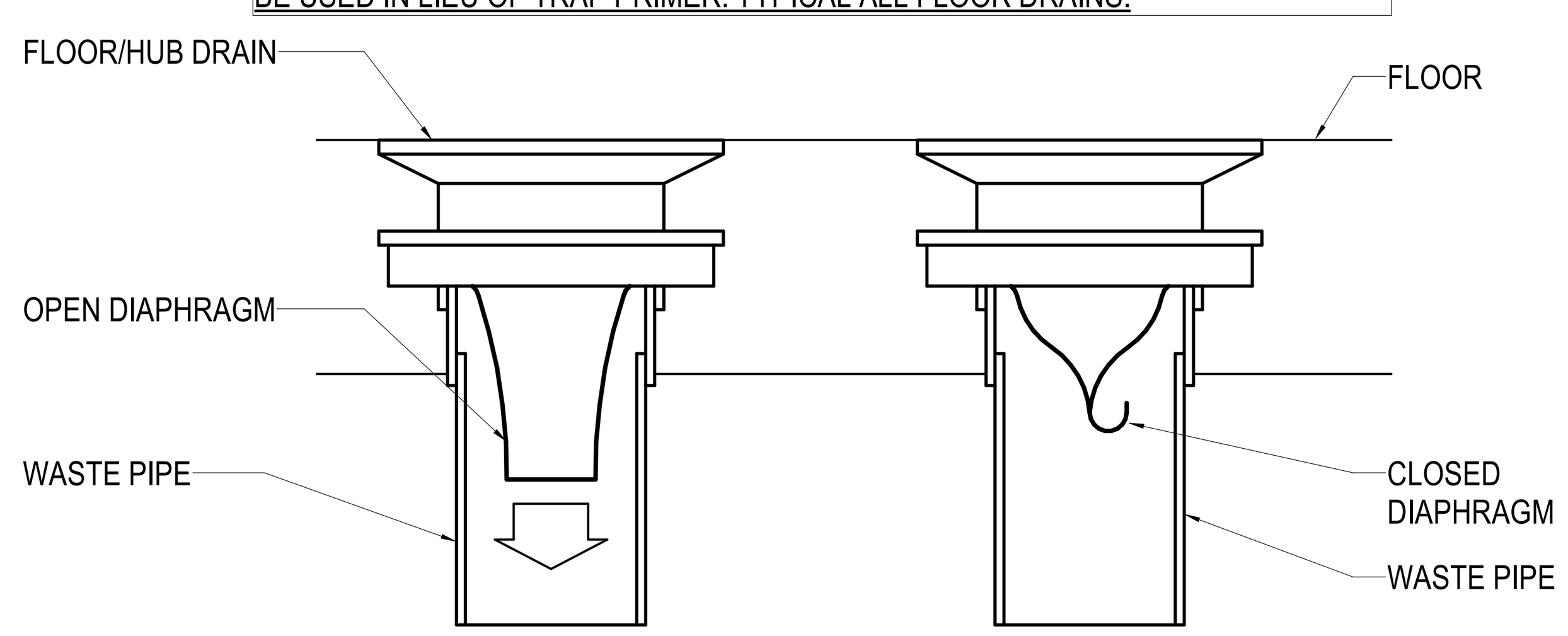
PLUMBING PLANS

P2.1

PLUMBING FIXTURE SCHEDULE

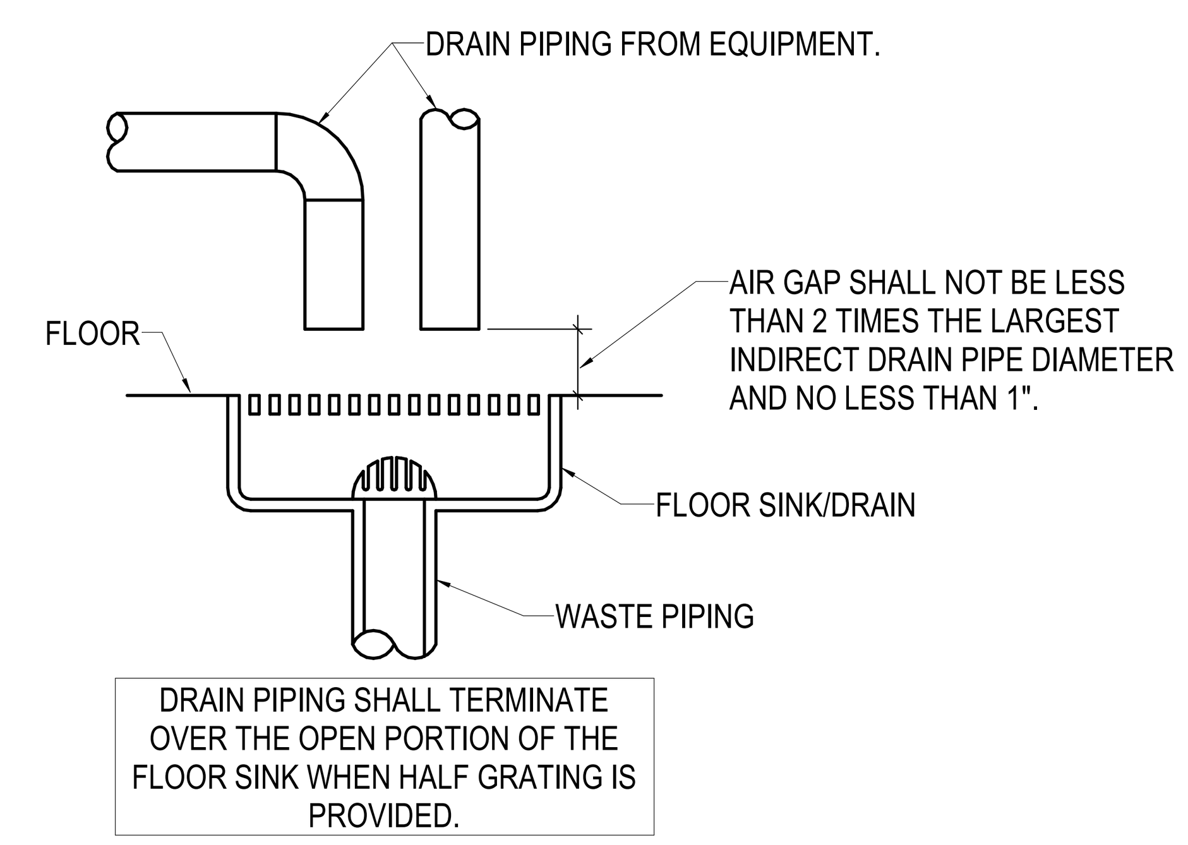
MARK	DESCRIPTION	MANUFACTURER	MODEL	DIMENSIONS	ADA COMPLIANT	MATERIAL AND FINISH	MANUFACTURER	MODEL	CONTROL TYPE	POWER	FLOW	PIPE RUNOUT SIZES				SPECIFICATION
											GALLONS PER MINUTE (GPM)	COLD WATER	HOT WATER	WASTE	VENT	
FD-1	FLOOR DRAIN	ZURN	Z-415B	8" ROUND, 2" BOTTOM OUTLET	--	COORDINATE WITH ARCHITECT	--	--	--	--	--	--	--	2"	1-1/2"	FLOOR DRAIN - CAST IRON BODY. TRAP SEAL - 2", PLASTIC HOUSING WITH FLEXIBLE DIAPHRAGM, SEALING GASKETS, RECLOSES AND SEALS WHEN DISCHARGE IS COMPETED.
FS-1	FLOOR SINK	ZURN	Z1901	12" x 12" TOP, 6" DEEP	--	COORDINATE WITH ARCHITECT	--	--	--	--	--	--	--	4"	2"	FLOOR SINK - CAST IRON BODY. PROVIDE WITH TRAP SEAL. PROVIDE WITH BASKET STRAINER.
IB-1	ICEMAKER WALL BOX	SIOUX CHIEF	696-1010	5-3/4" x 7-1/4" x 3-1/2"	--	ABS PLASTIC	--	--	--	--	--	1/2"	--	--	--	SIOUX CHIEF 696-1010 ICE MAKER OUTLET BOX WITH ABS BOX AND FRAME, QUARTER TURN BALL VALVE, WATER HAMMER ARRESTOR, SUPPORT BRACKET AS NEEDED.
IB-2	ICE DISPENSER WALL BOX	PEPSI	--	--	--	--	--	--	--	--	--	1/2"	--	1"	--	COORDINATE WITH PEPSI SODA & ICE DISPENSER MANUFACTURER.
MB-1	MOP BASIN	JOHN BOOS	PBJC-303084	30" x 30" x 84"	--	STAINLESS STEEL	JOHN BOOS	PBF-SS-6	MANUAL	--	--	3/4"	3/4"	3"	2"	STAINLESS STEEL CAPS - STAINLESS STEEL BACKPLASH PANELS ON ADJACENT WALLS - FAUCET WITH VACUUM BREAKER, STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK, 3/4" HOSE THREAD SPOUT - 3" P-TRAP, CAST BRASS DRAIN WITH STAINLESS STEEL STRAINER.
SK-1	3 COMPARTMENT SINK	JOHN BOOS	E3S8-24-14T24	120" x 29-1/2" x 43-3/4"	--	STAINLESS STEEL	CHICAGO FAUCET CO	510-G613L15 XKCAB	MANUAL	--	1.0	1/2"	1/2"	2"	--	140°F HW OPERATION. 1-1/8" FAUCET HOLES IN BACKSPLASH. ADJUSTABLE FAUCET ARMS, 14" L-TYPE SWING SPOT. VANDAL PROOF 2-3/8" LEVER HANDLE. CERAMIC 1/4 TURN OPERATING CARTRIDGE WITH INTEGRATED CHECK VALVE, LEFT & RIGHT-HAND. PVC INDIRECT DRAIN TO FLOOR SINK.
SK-2	SINK - SINGLE BOWL, INTEGRAL WITH PREP TABLE	JOHN BOOS	EPT6R5-3072SSK-R	72" x 30" x 35-3/4"	--	STAINLESS STEEL & SATIN	--	--	MANUAL	--	1.0	1/2"	1/2"	2"	1-1/2"	PREP TABLE WITH SINK - INCLUDES DECK-MOUNTED FAUCET 4" O.C. WITH 10" SWING SPOUT - ASSE 1070 THERMOSTATIC MIXING VALVE SET TO 120°F - PROVIDE WITH DUO STRAINER WITH NEOPRENE STOPPER - WALL SUPPLIES WITH LOOSE KEY QUARTER TURN STOPS - 1-1/2" CHROME PLATED CAST BRASS P-TRAP.
SK-3	SINK - SINGLE BOWL, WALL HUNG	STEELTON	EPT6R5-3072SSK-R	10" x 14" x 10"	--	STAINLESS STEEL	CHICAGO FAUCET CO	891-317ABCP	MANUAL	--	2.2	1/2"	1/2"	2"	1-1/2"	STEELTON 12" HAND SINK - CHICAGO FAUCET 4" O.C. WITH 6" S-TYPE SWING SPOUT. ASSE 1070 THERMOSTATIC MIXING VALVE SET TO 120°F. PROVIDE WITH DUO STRAINER WITH NEOPRENE STOPPER. WALL SUPPLIES WITH LOOSE KEY QUARTER TURN STOPS. 1-1/2" CHROME PLATED CAST BRASS P-TRAP.
SK-4	SINK - SINGLE BOWL, WALL HUNG	ADVANCE TABCO	7-PS-84	72" x 30" x 35-3/4"	--	STAINLESS STEEL	ADVANCE TABCO	7-PS-84	MANUAL	--	1.0	1/2"	1/2"	2"	1-1/2"	ADVANCE TABCO 12" WIDE HAND SINK - WITH SOAP AND TOWEL DISPENSER. 4" O.C. K-123 SPLASH MOUNTED FAUCET WITH AERATOR. ASSE 1070 THERMOSTATIC MIXING VALVE SET TO 120°F. LIQUID SOAP AND TOWEL DISPENSER WITH HINGED TOWEL BOX.

NOTES:
TRAP GUARD DIAPHRAGM AS MANUFACTURED BY PROVENT SYSTEMS, INC. REFER TO SPECIFICATION. WHERE ALLOWED BY LOCAL CODE, TRAP GUARD MAY BE USED IN LIEU OF TRAP PRIMER. TYPICAL ALL FLOOR DRAINS.



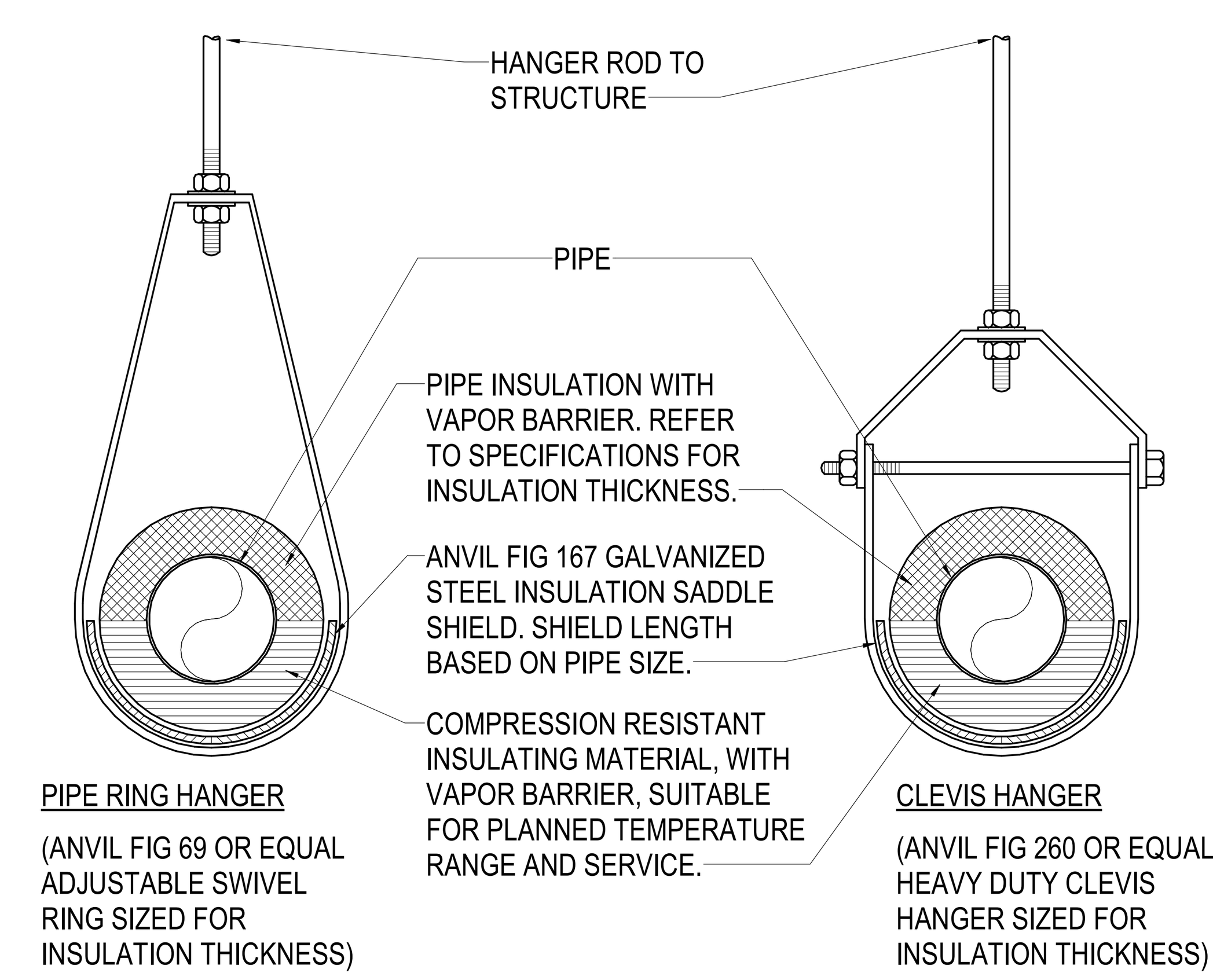
1 FLOOR DRAIN TRAP GUARD DETAIL

NO SCALE



2 INDIRECT WASTE CONNECTION DETAIL

NO SCALE



NOTES:
1. OMIT COMPRESSION RESISTANT INSULATING MATERIAL ON PIPES 1-1/2" AND SMALLER.
2. REFER TO SPECIFICATIONS FOR GUIDANCE ON HANGER SELECTION, APPLICATION, AND INSTALLATION.

3 INSULATED PIPE AT HANGER DETAIL

NO SCALE

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MIAMI, OK

NORTHEASTERN NEO OKLAHOMA A&M COLLEGE

LICENSED PROFESSIONAL ENGINEER
SHAUN M. CONWAY
35679
01/14/2026
OKLAHOMA

REV. DATE	#	DESCRIPTION
06/03/2025		CD'S
01/14/2026	1	ADDENDUM #1

PLUMBING SCHEDULES & DETAILS

P3.1

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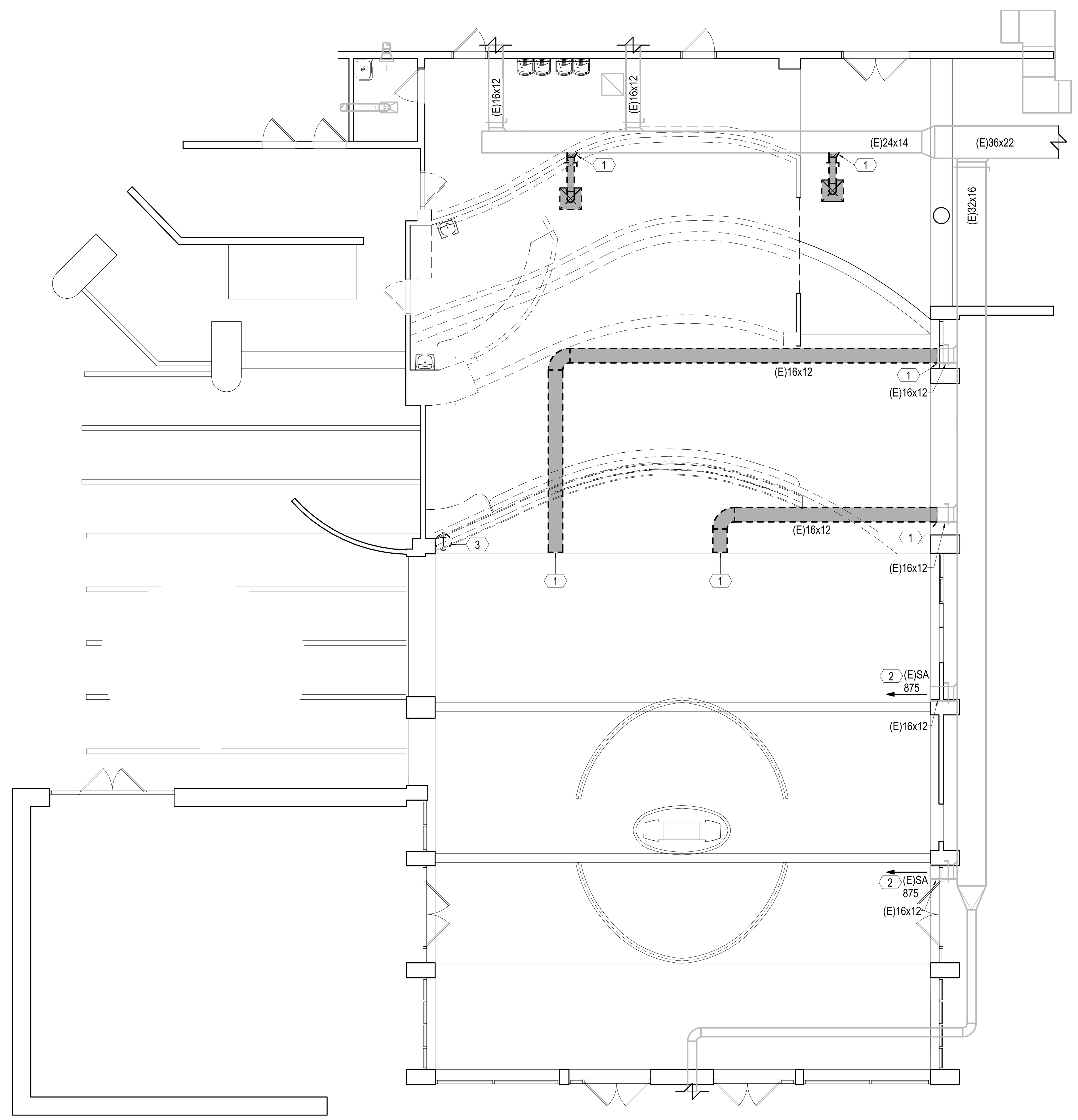

N

1 HVAC DEMO PLAN

0' 4' 8' 12'

1/8" = 1'-0"

HVAC DEMO NOTES

1. PLANS ARE SCHEMATIC IN NATURE. LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS. BRING ANY DISCREPANCIES FROM THE DRAWINGS AND NOTES TO THE OWNER'S REPRESENTATIVE IMMEDIATELY. MINOR CHANGES IN THE SCOPE OF THE DEMOLITION WORK SHALL NOT JUSTIFY AN ADDITIONAL COST.
2. DEMOLISH ALL DUCTWORK, PIPING, AND EQUIPMENT SHOWN SHADED, DASHED AND IN A DARK LINE WEIGHT.

HVAC PRE-BALANCE NOTE

1. PRE-BALANCE SYSTEM PRIOR TO DEMOLITION WORK TO MAINTAIN SYSTEM INTEGRITY. REPORT TO ENGINEER PRIOR TO NEW WORK INSTALLATION IF CONCERNS ARISE.

SHEET KEYNOTES

1 REMOVE INDICATED SECTION OF DUCT, DAMPER, AND ASSOCIATED DIFFUSER. PROVIDE INSULATED CAP TO MATCH DUCT SIZE BEING REMOVED AND PREPARE FOR NEW WORK.

2 EXISTING REGISTER TO REMAIN. CLEAN AND ENSURE OPERATION IS IN GOOD WORKING ORDER.

3 RELOCATE AVERAGING SENSOR. SEE NEW WORK PLAN FOR RELOCATION.

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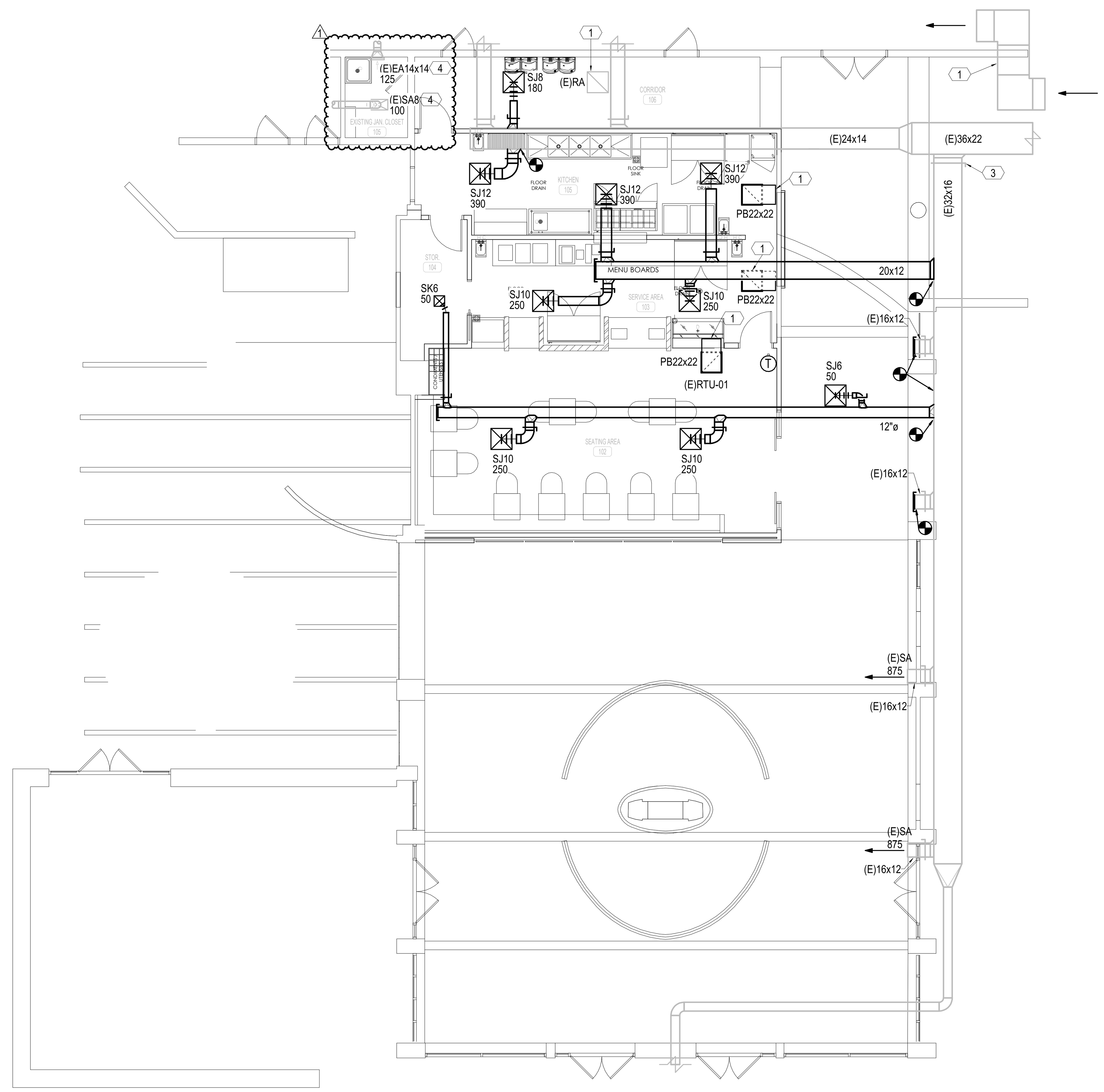
HVAC DEMO PLAN

M1.1



A HVAC PLAN

0' 4' 8' 12'

1/8" = 1'-0"

HVAC GENERAL NOTES

1. DUCT SIZES SHOWN ARE ACTUAL INSIDE CLEAR DIMENSIONS. INSULATION THICKNESS HAS NOT BEEN ACCOUNTED FOR. DUCTWORK EXPOSED TO SPACE SHALL NOT HAVE EXTERIOR INSULATION.
2. THE SPACE ABOVE THE CEILING IS BEING UTILIZED AS A RETURN AIR PLENUM. ALL RETURN GRILLES SHALL BE PROVIDED WITH SOUND BOOTS AND A DIRECT PATH TO THE AIR HANDLING SYSTEM RETURN AIR DUCT SHALL BE PROVIDED. WHERE FULL HEIGHT WALLS ARE BEING USED AND THE RETURN AIR PATH IS COMPROMISED, THE SOUND BOOT SHALL EXTEND THROUGH THE WALL OR TRANSFER DUCTS SHALL BE PROVIDED.
3. T-STATS, HUMIDISTATS AND CO2 SENSORS SHALL BE LOCATED NEXT TO LIGHT SWITCH WITHIN THE ROOM SHOWN. COORDINATE WITH GC AND ELECTRICAL CONTRACTOR TO MATCH HEIGHT AND LOCATION.
4. AVOID ROUTING DUCTWORK OVER ELECTRICAL ROOMS AND ELECTRICAL PANELS. MAINTAIN N.E.C. CLEARANCES. COORDINATE ROUTING WITH ELECTRICAL CONTRACTOR.
5. ALL SUPPLY AND EXHAUST AIR BRANCHES FOR DIFFUSERS OR GRILLES SHALL HAVE MANUAL BALANCE DAMPERS. RETURN AIR BRANCHES SHALL HAVE MANUAL BALANCE DAMPERS EXCEPT IN THE CASE OF RETURN AIR PLENUM. FOR PLAN CLARITY, NOT ALL DAMPERS MAY BE SHOWN. WHERE HARD LID CEILINGS PREVENT BALANCE DAMPER ACCESS, CONFIRM WITH GRD SCHEDULE OR CONFIRM WITH ENGINEER TO USE OBD'S OR REMOTE BALANCE DAMPERS IF NOT ALREADY INDICATED.
6. ALL DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE WITHIN THE CEILING SPACE. UTILIZE JOIST SPACE WHERE POSSIBLE, ESPECIALLY WHEN CROSSING OTHER DUCT, PIPE, AND ELECTRICAL.
7. PROVIDE FLEXIBLE DUCT AND PIPE CONNECTIONS TO ALL MOTORIZED EQUIPMENT.
8. VERIFY ALL EQUIPMENT ACCESS PANELS WITH MANUFACTURER AND ARCHITECT. ACCESS PANELS SHALL BE 24X24 UNLESS NOTED OTHERWISE LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECT AND THE LOCATIONS OF THE EQUIPMENT THEY SERVE.
9. COORDINATE FINISH OF ALL EXPOSED DUCT WITH ARCHITECT. DUCTWORK THAT IS TO BE PAINTED SHALL HAVE A PAINT GRIP FINISH ACCEPTABLE FOR PAINTING.
10. EXPOSED SPIRAL DUCT GRILLES SHALL BE INSTALLED AT A 30 DEGREE ANGLE DOWNWARD BELOW HORIZONTAL.
11. REFER TO GRD SCHEDULE FOR DUCT CONNECTION SIZES. REFER TO TERMINAL BOX SCHEDULE FOR INLET DUCT SIZES.
12. CEILING COORDINATION OF ALL MEP SYSTEMS (LIGHTING, DUCTWORK, DIFFUSERS, ELECTRICAL, ETC.) MUST BE COMPLETED BY THE CONTRACTOR PRIOR TO THE START OF ANY NEW INSTALLATION.

SHEET KEYNOTES

1 FIELD VERIFY EXISTING RETURN PATH BACK TO UNIT. PROVIDE MEANS OF RETURN PATH IF NOT EXISTING.
2 RELOCATE AVERAGING SENSOR TO LOCATION SHOWN ON PLAN. EXTEND CONTROL WIRING AS REQUIRED.
3 BALANCE TO AIRFLOWS SHOWN ON PLAN.
4 EXISTING GRILLE AND ASSOCIATED DUCTWORK TO REMAIN.

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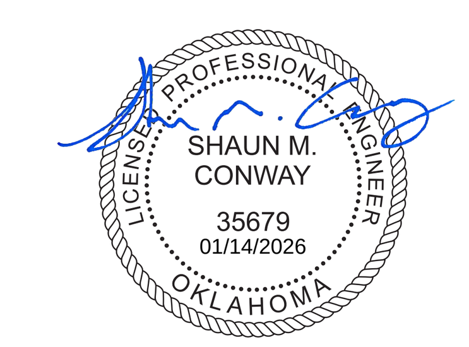


REV. DATE	#	DESCRIPTION
06/03/2025	·	CD'S
01/14/2026	1 ·	ADDENDUM #1

HVAC PLAN

M2.1

PACKAGED RTU SCHEDULE - DX COOL GAS HEAT (FOR REFERENCE ONLY)

REMARKS:
1. EXISTING TO REMAIN. REBALANCE TO AIRFLOWS SHOWN ON PLAN.
2. SCHEDULE IS FOR REFERENCE ONLY. UNIT IS NOT LOCATED ABOVE AREA OF SCOPE AND NOT SHOWN ON PLAN.

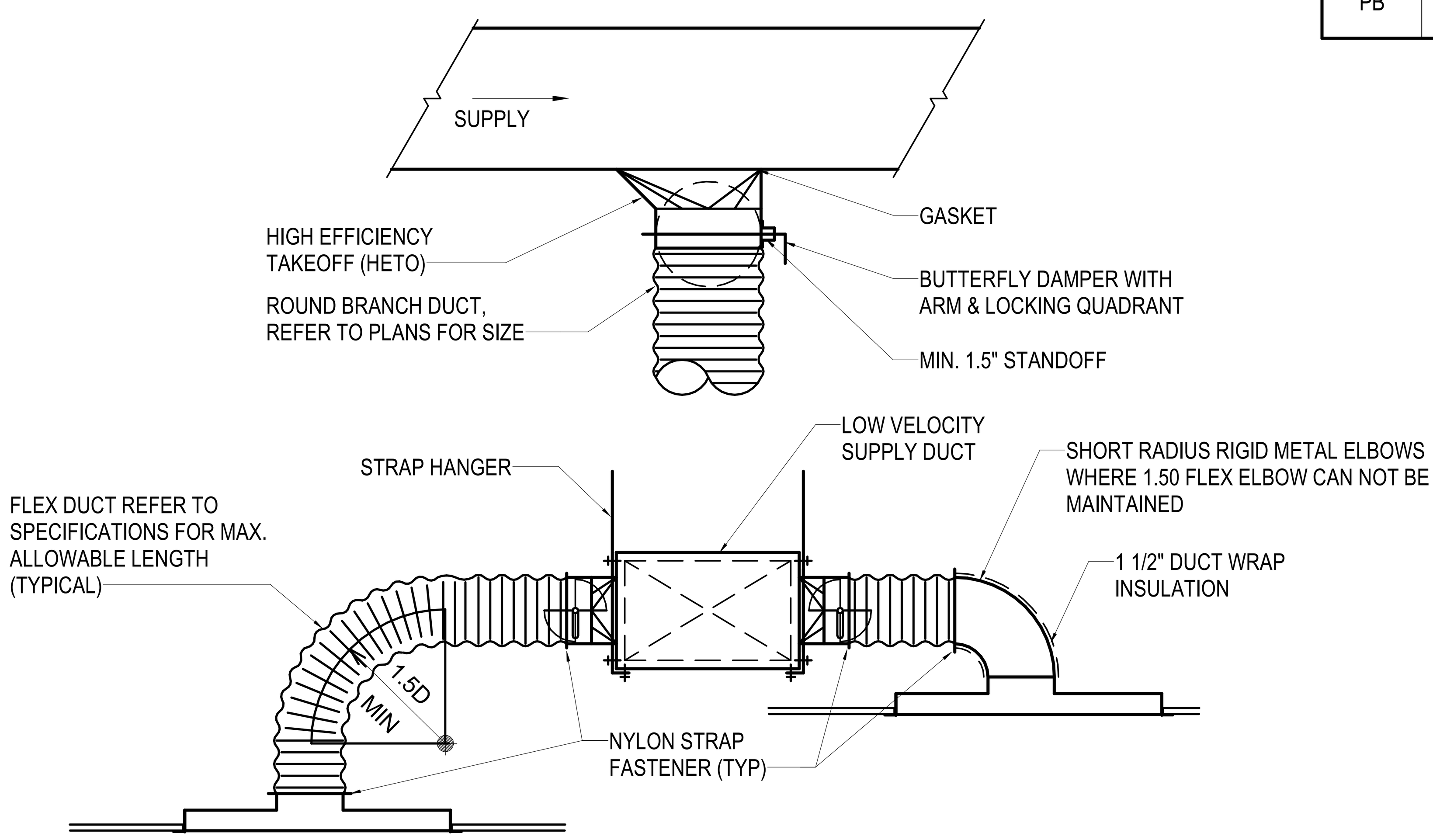
MARK	MFR	MODEL	SUPPLY FAN			DX COOLING		CONDENSER				GAS HEAT				ELECTRICAL				REMARKS
			MIN OA (CFM)	FLOW (CFM)	ESP (IN WC)	LAT DB (°F)	COOLING CAPACITY TOTAL (MBH)	COMPRESSOR NO	COMPRESSOR RLA	COND FAN HP	COND FAN NO	INPUT (MBH)	OUTPUT (MBH)	EAT DB (°F)	GAS PRESSURE (IN WC)	VOLT	PHASE	MCA	MOP	
RTU-01	TRANE	YCD301E3	2400	7400	1.2	56.4	300,000	2	5.5	1	2	400,000	324,000	0	2.5 - 14	208	3	122	150	1,2

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

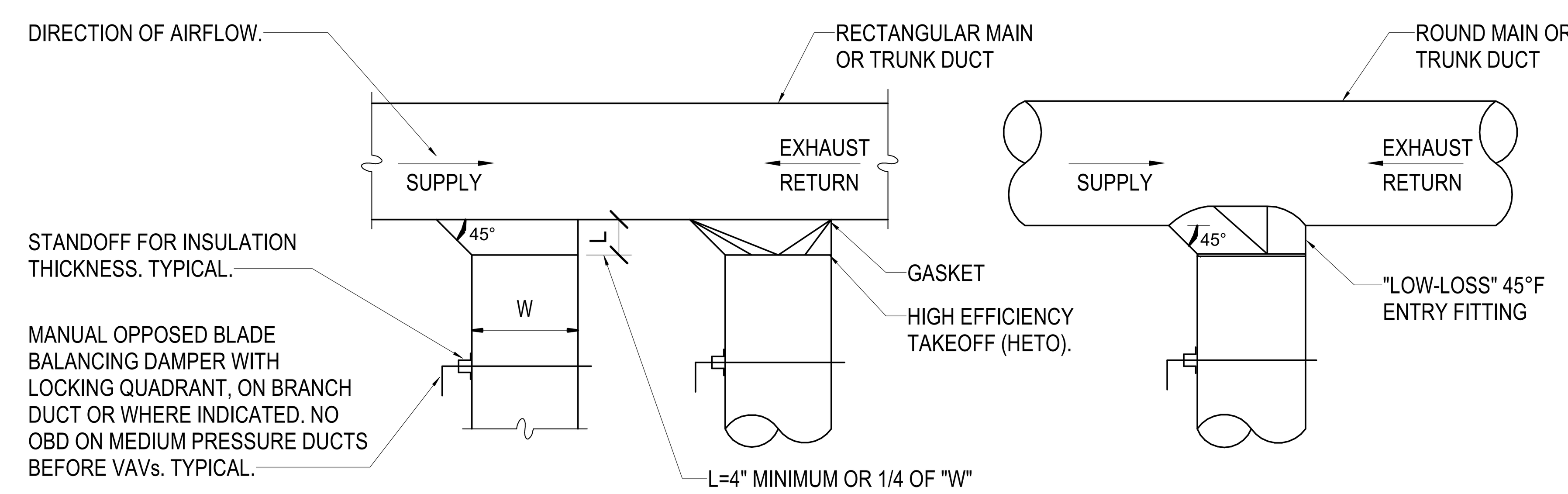
FIRST LETTER IN MARK:
S = SUPPLY DIFFUSER
R = RETURN GRILLE
P = PLENUM RETURN GRILLE
E = EXHAUST GRILLE
L = SLOT DIFFUSER
M = LAMINAR FLOW SUPPLY DIFFUSER
C = SECURITY GRILLE
U = FLOOR MOUNTED SUPPLY GRILLE

NOTES:
1. PROVIDE SQUARE TO ROUND ADAPTERS AS REQUIRED TO ACCOMMODATE ROUND RUNOUTS.
2. PROVIDE ALL LAY-IN GRDs WITH 24x24 LAY-IN PANEL AS REQUIRED.
3. FINISH TO BE WHITE UNLESS OTHERWISE SPECIFIED. COORDINATE AND VERIFY ALL FINISHES WITH ARCHITECT.
4. ALL SELECTIONS ARE BASED ON A MAXIMUM NC OF 25 UNLESS NOTED OTHERWISE.
5. CONTRACTOR SHALL VERIFY ALL CEILING TYPES AND ASSOCIATED BORDER TYPES.
6. MARKS USED MAY NOT BE IN SEQUENCE.
7. LOUVERED GRILLES TO HAVE FRONT BLADES PARALLEL TO LONG DIMENSION UNLESS WALL MOUNTED.
8. WALL MOUNTED LOUVERED GRILLES TO HAVE FRONT BLADES PARALLEL TO FLOOR.

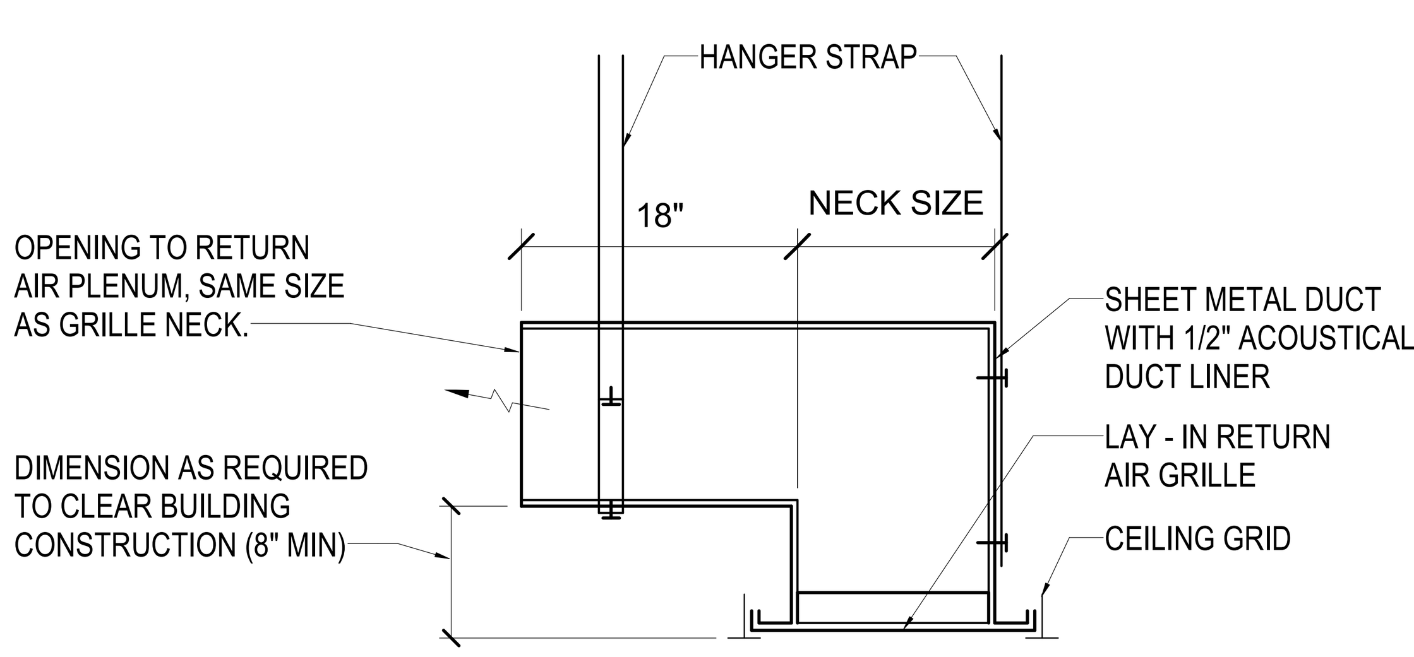
MARK	TYPE	IMAGE	BASED ON MFR	BASED ON MODEL	MOUNT	PANEL SIZE (FACE SIZE)	MATERIAL	BLADE SPACING / SLOT WIDTH	DEFLECTION	COLOR	REMARKS
SJ	SUPPLY DIFFUSER		TITUS	OMNI-AA	LAY-IN	24x24	ALUMINUM	--	--	WHITE	--
SK	SUPPLY DIFFUSER		TITUS	OMNI-AA	LAY-IN	12x12	ALUMINUM	--	--	WHITE	--
PB	RETURN GRILLE (PLENUM RETURN)		TITUS	350FL	LAY-IN	24x24 (22x22)	ALUMINUM	3/4"	35°	WHITE	REFER TO SOUND TRAP DETAIL



1 DIFFUSER INSTALLATION DETAIL
NO SCALE



2 DUCT TAKEOFF DETAILS
NO SCALE



3 RETURN GRILLE SOUND TRAP DETAIL
NO SCALE

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06/03/2025	.	CD'S

MECHANICAL SCHEDULES & DETAILS

M3.1

GENERAL NOTES

1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) & THE AMERICANS WITH DISABILITIES ACT (ADA).
2. REFER TO RELATED ARCHITECTURAL, MECHANICAL, STRUCTURAL, TECHNOLOGY, AND CIVIL DRAWINGS FOR RELATED INFORMATION.
3. REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
4. E.C. SHALL REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTION OF INTERLOCKING AND CONTROLS OF MECHANICAL UNITS AND THERMOSTAT LOCATIONS.
5. COORDINATE OUTLET BOX LOCATIONS WITH MASONRY TO MINIMIZE CUTTING OF BRICK OR BLOCK.
6. ALL MOUNTING HEIGHTS TO CENTERLINE OF ITEM UNLESS OTHERWISE NOTED. VERIFY ALL OUTLET LOCATIONS ON THE JOB PRIOR TO ROUGH-IN.
7. CONDUIT RUN W/CONDUCTORS AS INDICATED & GROUND WIRE SIZED PER N.E.C. 250.122. CONDUIT SIZE AS REQUIRED.
8. WHEN INCREASED CONDUCTOR SIZES ARE SHOWN ON THE PLANS, THE LARGER CONDUCTOR SIZE SHALL BE USED THROUGHOUT THE LENGTH OF THE CIRCUIT, INCLUDING NEUTRAL AND GROUND.
9. E.C. SHALL REFERENCE ARCHITECTURAL FINISH DRAWINGS FOR LOCATIONS AND HEIGHTS OF RIGID WALL COVERINGS, TILE, CHAIR RAIL, WAINSCOATING, ETC. AND ADJUST ELECTRICAL BOX ROUGH-IN HEIGHTS SO THAT COVERPLATES DO NOT PARTIALLY OVERLAP THESE ITEMS.
10. BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.
11. JUNCTION BOX OR RECEPTACLE FOR DRINKING FOUNTAINS SHALL BE LOCATED BEHIND THE EQUIPMENT SKIRT UNLESS OTHERWISE NOTED. COORDINATE CONNECTION TYPE AND LOCATION WITH EQUIPMENT PROVIDED.
12. LABEL THE FRONT OF EACH RECEPTACLE COVERPLATE WITH PANEL DESIGNATION AND CIRCUIT NUMBER USING CLEAR THERMAL TRANSFER (ELECTRONIC DYMO) LABELS WITH 1/8" HIGH BLACK LETTERS (OR CONTRASTING COLOR IF COVERPLATES ARE BLACK OR BROWN). LABELS SHALL BE SUITABLE FOR INDOOR/OUTDOOR USE. LABEL THE BACK OF EACH LIGHT SWITCH COVERPLATE WITH PANEL DESIGNATION AND CIRCUIT NUMBER USING A FINE BLACK PERMANENT MARKER.
13. PROVIDE 18" LONG (MIN.) CONDUIT SLEEVES THRU ALL WALLS WHERE CABLES ARE INDICATED OR REQUIRED TO PASS THRU WALLS. PROVIDE BUSHINGS ON BOTH ENDS. SIZE CONDUIT FOR CABLES INSTALLED. AT CABLE TRAYS, PROVIDE ONE 4" CONDUIT SLEEVE FOR EACH 4" WIDTH OF CABLE TRAY. MAXIMUMS SHALL BE:
    1"C. = 10 CABLES
    2 1/2"C. = 20 CABLES
    3"C. = 30 CABLES
    4"C. = 50 CABLES
14. LOCATE CABLE TRAYS 6" ABOVE CEILING. OFFSET TRAY UP AND OVER LIGHT FIXTURES AND DUCTWORK (FIELD VERIFY AND PROVIDE AS REQUIRED). IF PHYSICALLY IMPOSSIBLE TO RUN CABLE TRAY UP AND OVER, THEN PROVIDE CABLE SUPPORT HOOKS FROM STRUCTURE ABOVE, SIZED AND RATED FOR INSTALLED CABLES PLUS 25% SPARE.
15. PROVIDE DIMMER PER THE SPECIFICATIONS. COORDINATE DIMMER TYPE AND WIRING WITH ASSOCIATED LIGHT FIXTURE DIMMING REQUIREMENTS (I.E. 3-WIRE, 0-10V, ELECTRONIC OR MAGNETIC LOW VOLTAGE, ETC.) OR WITH LIGHTING CONTROL SYSTEM PROPRIETARY REQUIREMENTS (I.E. LUTRON, nLIGHT, DALI, ETC.) AS NECESSARY. 3-WIRE DIMMERS SHALL BE PROVIDED WITH A DEDICATED NEUTRAL FOR EACH CONTROL ZONE. 0-10V DIMMERS SHALL BE PROVIDED WITH DIM/ON/OFF CONTROL. COORDINATE PHASE CONTROL OF LED DRIVERS (I.E. REVERSE PHASE, FORWARD PHASE, ETC.) WITH LIGHT FIXTURE MANUFACTURER'S RECOMMENDATIONS. LOW VOLTAGE CONTROL WIRING IS NOT SHOWN ON PLANS FOR CLARITY, BUT SHALL BE PROVIDED AS REQUIRED.
16. "CT" INDICATED ADJACENT TO DEVICE INDICATES DEVICE MOUNTED ABOVE BACKSPLASH OF COUNTER TOP. VERIFY EXACT HEIGHT WITH ARCHITECTURAL PLANS AND ELEVATIONS.

FIRE ALARM

F1. THE FIRE ALARM SYSTEM SHOWN HAS BEEN DESIGNED PER THE REQUIREMENTS OF NFPA 72, 2013 EDITION. DEVICES SHOWN INDICATE DESIGN INTENT AND SHALL BE THE MINIMUM PROVIDED. SYSTEM SUPPLIER SHALL PROVIDE ANY ADDITIONAL CODE REQUIRED DEVICES OR DEVICES REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

F2. FIELD VERIFY LOCATIONS OF AREA SMOKE DETECTORS AND HEAT DETECTORS. DO NOT LOCATE WITHIN 36" OF A HVAC DIFFUSER (SUPPLY OR RETURN), IN A DIRECT AIR FLOW, WITHIN 36" OF A SPRINKLER HEAD, OR WITHIN 36" OF THE TIP OF A CEILING FAN BLADE. SMOKE DETECTORS FOR DOOR RELEASE SHALL BE LOCATED ON THE CENTER LINE OF THE DOOR AND A MAXIMUM OF 5 FEET FROM THE DOOR. THE MINIMUM DISTANCE FROM THE DOOR IS THE DEPTH OF THE WALL SECTION ABOVE THE DOOR, BUT NOT LESS THAN 12".

F3. FAN SHUTDOWN RELAY WIRING SHALL BE LOCATED WITHIN 3 FEET OF THE FAN CONTROLS AND THE WIRING TO THE RELAY SHALL BE MONITORED.

F4. LABEL REMOTE ALARM INDICATOR FOR DUCT MOUNTED SMOKE DETECTORS (I.E. RTU-1 SUPPLY, RTU-2 RETURN, FIRE/SMOKE DAMPER, ETC.). DUCT DETECTORS SHOULD BE LOCATED IN THE AREA BETWEEN 6 AND 10 DUCT EQUIVALENT DIAMETERS OF STRAIGHT, UNITERRUPTED DUCTWORK. DUCT DETECTORS FOR FIRE/SMOKE DAMPERS SHOULD BE LOCATED BETWEEN THE LAST INLET OR OUTLET UPSTREAM OF THE DAMPER AND THE FIRST INLET OR OUTLET DOWNSTREAM OF THE DAMPER.

F5. PROVIDE 120V POWER AND FUSTAT FOR EACH FIRE/SMOKE DAMPER. INTERLOCK WITH FIRE ALARM CONTROL PANEL TO CLOSE THE FIRE/SMOKE DAMPER UPON ANY ALARM AT THE FIRE ALARM CONTROL PANEL AND TO SHUTDOWN THE ASSOCIATED MECHANICAL UNIT.

LOW VOLTAGE ROUGH-IN ONLY

R1. DEVICES AND INFORMATION SHOWN ARE FOR ROUGH-IN PURPOSES ONLY AND ARE NOT INTENDED TO CONVEY TECHNOLOGY DESIGN SCOPE.

ELECTRICAL SHEET INDEX

SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
ONE-LINE					
LSIG / GFI / ST / K	CIRCUIT BREAKER ACCESSORIES: LSIG = LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND FAULT; GFI = GROUND FAULT; ST = SHUNT TRIP; K = KIRK KEY INTERLOCK		1	FEEDER DESIGNATION	
	INDICATOR LIGHT(G=GREEN, R=RED)		# A A 2P	FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES) (# OF POLES IF OTHER THAN 3)	
	ENERGY REDUCING MAINTENANCE SWITCH (ERMS) INDICATING LIGHT PER SPECIFICATIONS		# A A 2P '1'	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	CONTACTS (N.O., N.C.)				
	FUSE		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP) (CIRCUIT NUMBER / TRIP SIZE / # OF POLES) (FRAME SIZE / TRIP SIZE) (# OF POLES IF OTHER THAN 3)	
	CIRCUIT BREAKER				
	OVERLOADS				
	DRAWOUT CONTACTS				
	DISCONNECT SWITCH (SEE EQUIP CONN SCHED) (VOLTAGE / SWITCH SIZE / FUSE SIZE / # OF POLES - NOTED IF EQUIPMENT NOT SCHEDULED)			3Ø TRANSFORMER (DELTA PRIMARY / WYE SECONDARY)	
	STARTER (SEE EQUIP CONN SCHED) (VOLTAGE / STARTER SIZE / # OF POLES - NOTED IF EQUIPMENT NOT SCHEDULED)			1Ø TRANSFORMER	
	GROUND CONNECTION		PANEL SPD	PANELBOARD (BUILT-IN SPD)	
	LIGHTNING ARRESTOR				
SPD	SURGE PROTECTIVE DEVICE		N E ATS	TRANSFER SWITCH (ATS = AUTOMATIC, MTS = MANUAL) (AMP SIZE / VOLTAGE / POLES / AIC RATING / NEMA RATING) (NEMA RATING IF OTHER THAN NEMA-1)	
M	METER (UTILITY / PANEL MOUNTED)				
HP KW	EQUIPMENT (SINGLE MOTOR / MULTI-MOTOR OR OTHER TYPE AS NOTED)		'1' RV AT	MOTOR STARTER [SINGLE SPEED ACROSS-THE-LINE (UON)] (NEMA SIZE / RV AT= REDUCED VOLTAGE / AUTO-TRANSFORMER / SS = SOLID STATE)	
VFD	VARIABLE FREQUENCY DRIVE (HP SIZE IF NOT SCHEDULED)				
FIRE ALARM					
'FACP'	FIRE ALARM CONTROL PANEL	WALL		FIRE ALARM MANUAL STATION	46"AFF
'FAAP'	FIRE ALARM REMOTE ANNUNCIATOR	WALL	S S AC S UF	PHOTO ELECTRIC AREA SMOKE DETECTOR (GEN NOTE F2)	CLG/WALL ABOVE CLG UNDER FLR
'VEP'	VOICE EVACUATION PANEL	WALL			
	FIRE ALARM HORN	BOTTOM 80"	S	DUCT SMOKE DETECTOR (GEN NOTE F4)	DUCTWORK
C	FIRE ALARM HORN	CEILING			
	FIRE ALARM VISUAL SIGNAL	BOTTOM 80"	S S FSD SD	DUCT SMOKE DETECTOR & FIRE/ SMOKE DAMPER (FSD) OR SMOKE DAMPER (SD) (GEN NOTES F4 & F5)	DUCTWORK
	FIRE ALARM VISUAL SIGNAL	CEILING			
	COMB. F.A. HORN & VISUAL SIGNAL	BOTTOM 80"	H R H H	HEAT DETECTOR (GEN NOTE F2) (FIXED TEMPERATURE UON) R = RATE OF RISE H = HIGH TEMPERATURE	
C	COMB. F.A. HORN & VISUAL SIGNAL	CEILING			
S	FIRE ALARM SPEAKER	WALL	CO	CARBON MONOXIDE DETECTOR	
SC	FIRE ALARM SPEAKER	CEILING	CO2	CARBON DIOXIDE DETECTOR	
S	COMB. F.A. SPEAKER & VIS SIGNAL	BOTTOM 80"	SMOKE	SMOKE CAMERA (EQUAL TO XTRALIS OSID)	WALL (AS HIGH AS POSSIBLE)
SC	COMB. F.A. SPEAKER & VIS SIGNAL	CEILING	PS	FIRE SPRINKLER PRESSURE SWITCH	
C F	CHIME	WALL	TS	FIRE SPRINKLER TAMPER SWITCH	SPRKLR RSR
F	FIRE SPRINKLER ALARM BELL	WALL	FS	FIRE SPRINKLER WATER FLOW SW	SPRKLR RSR
DH	ELECTROMAGNETIC DOOR HOLDER	WALL			
R	FIRE ALARM RELAY (GEN NOTE F3)				
CM	FIRE ALARM CONTROL MODULE				
MM	FIRE ALARM MONITOR MODULE				
COMMUNICATION / DATA					
	1-GANG COMMUNICATIONS EMPTY OUTLET (GEN NOTE T1)				
SECURITY					
	CCTV CAMERA - BULLET		'ACS#'	ACCESS CONTROL SYSTEM PANEL	WALL
	CCTV CAMERA - PAN/TILT/ZOOM			DOOR POSITION SWITCH	
			E	ELECTRIC DOOR STRIKE	
	CCTV CAMERA - 360° QUAD SENSOR WITH PTZ ATTACHMENT		M	MAGNETIC LOCK	
			CR	CARD READER	WALL
	CCTV DOME CAMERA - FIXED (SINGLE SENSOR)		CR M	CARD READER	MULLION
			K	KEY PAD	
	CCTV DOME CAMERA - FIXED (DUAL SENSOR)		ED	REQUEST TO EXIT DEVICE (MOTION)	
			RE	REQUEST TO EXIT DEVICE (PSHBTN)	WALL
	CCTV DOME CAMERA - FIXED (TRI SENSOR)		###	DOOR TAG	
			IC	INTERCOM	WALL
	CCTV DOME CAMERA - FIXED (QUAD SENSOR)		IC V	VIDEO INTERCOM	WALL
			IC VC	VIDEO INTERCOM W/ CARD READER	WALL
	CCTV DOME CAMERA - FIXED (360° FISH EYE)		'IDS#'	INTRUSION DETECTION SYST PANEL	WALL
				GLASS BREAK SENSOR	
	DURESS		B	SECURITY BEAM DETECTOR	
	DOOR RELEASE BUTTON			SEC ROOM MOTION DETECTOR	WALL/CLG
				SEC ROOM MOTION DETECTOR	CEILING
				SEC CORRIDOR MOTION DETECTOR	

- - - SYMBOL LIST IS FOR REFERENCE ONLY. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT. - - -

SPECIAL OUTLETS

MARK	DESCRIPTION
6-30	30A, 250V, 2P, 3W SINGLE GROUNDED RECEPTACLE (NEMA 6-30R) WITH MATCHING STAINLESS STEEL COVERPLATE. VERIFY DEVICE PLUG CONFIGURATION TO MATCH RECEPTACLE.
L6-30	30A, 250V, 2P, 3W SINGLE GROUNDED LOCKING RECEPTACLE (NEMA L6-30R) WITH MATCHING STAINLESS STEEL COVERPLATE. VERIFY DEVICE PLUG CONFIGURATION TO MATCH RECEPTACLE.

SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
ABBREVIATIONS					
NL	NIGHT LIGHT - WIRE AHEAD OF CONTROLS		AFF	ABOVE FINISHED FLOOR	
			AFG	ABOVE FINISHED GRADE	
EM	ON EMERGENCY POWER		DF	DRINKING FOUNTAIN - SEE GENERAL NOTE 11	
WP	WEATHERPROOF				
CT	COUNTERTOP (SEE GEN. NOTE 16)		GAP	GENERATOR ANNUNCIATOR PANEL	
UON	UNLESS OTHERWISE NOTED		CLG	CEILING	
W	WALL				
CONDUIT AND WIRING					
X	EMERGENCY CIRCUIT	CLG/WALL		CONDUIT HOME RUN, 1 CIRCUIT. 2#12 & 1#12 GRD. - 1/2"C.	CLG/WALL
	MASTER/SLAVE FIXTURE WHIP	CEILING		CONDUIT HOME RUN, 2 CIRCUITS. 4#12 & 1#12 GRD. - 1/2"C.	CLG/WALL
	LOW VOLTAGE WIRING	CLG/WALL		CONDUIT HOME RUN, 3 CIRCUITS. 6#12 & 1#12 GRD. - 1/2"C.	CLG/WALL
	CDT RUN 2#12 & 1#12 GRD.- 1/2"C. OR CDT RUN AS NOTED ON PLAN	CLG/WALL		CONDUIT HOME RUN, 2 CIRCUITS PHASE CONDUCTORS/ NEUTRAL CONDUCTOR (#12 UON) SWITCH LEGS (#12 UON) GROUND CONDUCTOR (#12 UON)	CLG/WALL
	CDT RUN 2#12 & 1#12 GRD.- 3/4"C. OR CDT RUN AS NOTED ON PLAN	EARTH/ FLOOR			
#10	CONDUIT HOME RUN, 1 CIRCUIT. 2#10 & 1#10 GRD. (GEN. NOTES 7 & 8)	CLG/WALL			
	CONDUIT RUN PARTIAL CIRCUIT. 2#12 & 1#12 GRD. - 1/2"C.	CLG/WALL			
	MISC. EQUIPMENT CONNECTION				
	CONDUIT SEAL OFF				
POWER					
	SINGLE GROUNDED RECEPTACLE	18"	A	BRANCH CIRCUIT PANEL AND PANEL DESIGNATION	72" TO TOP
	DUPLEX GROUNDED RECEPTACLE	18"		ELECTRICAL DISTRIBUTION EQUIP	
	DUPLEX GROUNDED RECEPTACLE	CEILING	XX XX	EQUIPMENT - SEE EQUIPMENT CONNECTION SCHEDULE	
	DOUBLE DUPLEX GROUNDED REC	18"		CONDUIT SLEEVE (GEN NOTE 13)	
	GROUND FAULT DUPLEX REC	18"		CABLE TRAY - WIRE BASKET, LADDER (GEN NOTE 14)	
	GRD FAULT DOUBLE DUPLEX REC	18"	M	MOTOR	
	DUPLEX GRD REC BOTTOM SWITCHD	18"		DISCONNECT SWITCH	
	TAMPER-PROOF DUPLEX REC	18"	$M	MANUAL STARTER	
	TAMPER-PROOF GFCI DUPLEX REC	18"		CIRCUIT BREAKER	
A A	SPECIAL OUTLET (SEE SCHEDULE OR AS NOTED)	FLOOR/WALL		STARTER OR ATS (AS NOTED)	
FB# PT#	FLOOR BOX / POKE-THRU (SEE SCHEDULE OR AS NOTED)	FLOOR		COMBINATION STARTER/DISC	
2	FEEDER DESIGNATION		R	RELAY	
J	JUNCTION BOX - 1-GANG			PUSHBUTTON (1-, 2-, 3-BUTTON)	46"
J	JUNCTION BOX - 2-GANG		T	BOX MOUNTED TRANSFORMER	
F	FUSTAT BUSS #SSY	46"	C	CONTACTOR	
TS	THERMOSTAT/TEMP SENSOR	46"		METER	
P	PLUG LOAD SENSOR	CEILING		PLUGMOLD SURFACE RACEWAY	WALL
H	HANDICAP DOOR PUSHBUTTON	36" AFF		BUSDUCT PLUG	
LIGHTING, SWITCHES AND SENSORS					
A A	LIGHT FIXTURE & FIXTURE LETTER	CLG SURF/ RECESSED	$ $2 $3 $4	SWITCHES (1-POLE, 2-POLE, 3-WAY, 4-WAY)	46"
A	STRIP LIGHT FIXTURE & FIXTURE LETTER	CEILING	$K $P $T	SWITCHES (KEYED, PILOT, TIMER)	46"
A A A A A	LIGHT FIXTURE & FIXTURE LETTER	CLG SURF/ RECESSED	a, b, c	INDICATES SWITCHING SCHEME	
A	LIGHT FIXTURE & FIXTURE LETTER	WALL	M	1 RELAY OCCUPANCY SENSOR SW	46"
A	EXIT SIGN (SHADING DENOTES EXIT FACE SIDE)	CLG/WALL	2M	2 RELAY OCCUPANCY SENSOR SW	46"
			1D	1 RELAY OCCUPANCY SENSOR/ DIMMER SWITCH (GEN NOTE 15)	46"
A	LIGHT FIXTURE & FIXTURE LETTER	WALL	D	DIMMER SWITCH (GEN NOTE 15)	46"
A A	FIXTURE WITH SHADED LAMP(S) ON EMERGENCY POWER	CLG SURF/ RECESSED	$	LOW VOLTAGE SWITCH	46"
A A	EMERGENCY BATTERY LIGHT FIXT	CEIL/WALL	$1	ON/OFF SWITCH	46"
A A	COMBO EXIT SIGN/EM BATTERY LIGHT	WALL	$2	ON/OFF/0-10V DIMMING SWITCH	46"
A A	LIGHT FIXTURE & FIXTURE LETTER	POLE	$3	DUAL TECH ON/OFF SENSOR	46"
A A A A A A T	LIGHTING TRACK, TRACK FIXTURES, & FIXTURE LETTERS	CEILING	$4	16-SCENE WALL CONTROLLER	46"
			$5	DUAL TECH ON/OFF/0-10V DIM SW	46"
				OCCUPANCY SENSOR	CLG/WALL
PC	PHOTOCELL		LP	LIGHTING CONTROL POWER PACK	
			EP	UL-924 LISTED POWER PACK	
			AV	AV SYSTEM/LIGHTING INTERFACE	
			DS	DAYLIGHT SENSOR	CEILING

PEN WEIGHT LEGEND

ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK SOLID LINES ARE NEW TO BE INSTALLED		ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK DASHED LINES ARE EXISTING TO BE REMOVED	
	NEW DUPLEX GROUNDED RECEPTACLE		DUPLEX GROUNDED REC TO BE REMOVED
	NEW LIGHT FIXTURE		LIGHT FIXTURE TO BE REMOVED
ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN HALFTONE SOLID LINES ARE EXISTING TO REMAIN		ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT DASHED LINES ARE EXISTING TO BE RELOCATED	
	EXISTING DUPLEX GROUNDED REC TO REMAIN		DUPLEX GROUNDED REC TO BE RELOCATED
	EXISTING LIGHT FIXTURE TO REMAIN		LIGHT FIXTURE TO BE RELOCATED

- - - SYMBOL LIST IS FOR REFERENCE ONLY. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT. - - -

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STUDENT UNION GALLEY RENOVATION

NEO A&M COLLEGE
200 I STREET NE
MIAMI, OK

NORTHEASTERN NEO A&M COLLEGE

REV.	DATE	#	DESCRIPTION
	06/03/2025		CD'S

ELECTRICAL GENERAL NOTES AND SYMBOLS

E0.1

DIVISION 26 - ELECTRICAL

SECTION 260500 - BASIC METHODS AND REQUIREMENTS (ELECTRICAL)

PART 1 - GENERAL

1.1 GENERAL CONDITIONS
A. The General Conditions, Supplementary General Conditions, General Requirements, and Special Conditions shall be and are hereby made a part of this Section of the specifications.

1.2 SCOPE
A. The Electrical work shall include all labor, materials, tools, transportation,equipment, services and facilities, required for the complete, proper and substantial installation of all electrical work shown on the plans, and/or outlined in these specifications. The Installation shall include all materials, appliances, and apparatus not specifically mentioned herein or noted on the drawings but which are necessary to make a complete working installation of all electrical systems.
B. All of the electrical related work required for this project (unless specified otherwise) is a part of the Electrical Contract price and is not necessarily specified under this division of the specifications or shown on the electrical drawings. Therefore, all divisions of the specifications and all drawings shall be consulted.
C. The drawings showing the layout of the work indicate the approximate locations of outlets, apparatus, and equipment. The drawings are schematic only and are not intended to show the exact routing of conduits, etc. The final determination as to the routing shall be governed by structural conditions and other obstructions. This shall not be construed to mean the design of the system may be changed. It merely refers to the exact run of a raceway between given points. The Contractor shall consult all contract drawings which may affect the location of any outlet, apparatus or equipment to avoid possible interference and permit full coordination of all work. The right to make any reasonable change (within 6"-0") in the location of apparatus, outlets, and equipment up to the time of roughing-in is reserved by the Architect without involving any additional expense to the Owner.

1.3 MINIMUM REQUIREMENTS
A. Codes, Rules, and Regulations: Execute all work under the latest rules and regulations of the National Electrical Code Standard of the National Board of Fire Underwriters and with all laws, regulations and ordinances of the County, State, City, and the Utility Company.
B. Codes shall govern in case of any direct conflict between codes and plans and specifications; except when plans and specifications require higher standards than those required by code. Variance from the plan and specifications made to comply with code must be approved by the Architect. If approved they shall be made with no increased cost to the Owner.

1.4 EXAMINATION OF SITE
A. Visit the site, inspect the existing conditions and check the drawings and specifications so as to be fully informed of the requirements for completion of the work.
B. Lack of such information shall not justify an extra to the contract price.
C. Existing systems and conditions shown on drawings for existing buildings are to be noted "for guidance only". The Electrical Contractor shall field check all existing conditions prior to bidding and is to include in his bid an allowance for extension, removal and/or relocation of existing conduits, wires, devices, fixtures, or other equipment as indicated on the plans or as required to coordinate and adapt new and existing electrical system to all other work.

1.5 PERMITS
A. Obtain and pay for all licenses and permits, fees, inspection and certificates required for the execution of this work.
B. Pay fees and charges for connection to outside services and use of property.
C. Deliver permits and certificates to the Architect to be transmitted to the Owner.

1.6 SERVICES
A. This Contractor shall pay for all expenses, deposits, reimbursements, etc., required by the local rules and codes for the service to the building, complete and ready for use. See plot plan.
B. Consult Utility Company for their requirements and for coordinating with their installation. This Contractor shall bear all expense involved for the complete installation of the electrical service (both temporary and permanent) to the building ready for operation, except as specifically excluded on the plans. Expense shall also include guard posts around transformer and pedestals per Utility Company Standards.
C. This Contractor shall consult all local departments to verify requirements and bid installation of service in accordance with local codes and Utility company rules and regulations.
D. This Contractor shall bear all expense involved for the complete telephone service conduit installation and pull wire ready for cable installation. Verify complete installation with the local telephone company and bid installation to comply with their requirements.
E. System outages shall be permitted only at times approved by Owner in writing. Work which could result in an accidental outage (beyond branch circuits) shall be performed with the Owner's maintenance personnel advised of such work.

1.7 RESPONSIBILITY AND EQUIPMENT PROTECTION
A. This Contractor will be held responsible for any and all damage to any part of the building or to the work of other contractors, as may be caused through his operation.
B. Any mutilation of building finishes or equipment initiated by electrical construction shall be properly corrected by the respective finishing contractor and paid for by the Electrical Contractor.
C. During installation, equipment, controls, controllers, circuit protective devices, and other like items, shall be protected against entry of foreign matter and be vacuum cleaned both inside and outside before testing, operating and painting.
D. The operation of the temporary power and the permanent electrical system shall be the responsibility of this Contractor until acceptance of the building by the Owner.

1.8 WORK TO BE DONE BY GENERAL CONTRACTOR
A. Build in all openings sleeves, chases etc., for conduit and equipment as established, furnished and set by this Contractor. He shall seal or grout all openings after this Contractor has installed his conduits.
B. Build in bolts, brackets, hangers etc. for work established, furnished and set by this Contractor.
C. Do all concrete work required for equipment furnished and set by this Contractor, including clean up pads under electrical gear, fixture bases, etc.
D. All painting of Electrical equipment installed in finished areas shall be done by the General Contractor. Painting will not be required on receptacles, switches, circuit breakers etc. All fixtures and exterior poles specified to be factory-primed shall be painted by General Contractor.
E. Provide fireproofing above fixture per U.L. requirements where fixtures are located in fire rated ceilings.
F. Pay all utility costs for operation of electrical system during construction until acceptance of building by the Owner.

1.9 WORK DONE BY THE MECHANICAL CONTRACTOR
A. The Mechanical Contractor shall furnish wiring diagrams and temperature control drawings of all equipment furnished to the Electrical Contractor. Catalog information is unacceptable, provide point to point drawings.
B. The Mechanical Contractor shall furnish and install all control equipment requiring connections to air, water, steam, etc., such as pneumatic electric relays, remote bulb temperature controls, solenoid valves, aquastats and pressure controls.
C. The Mechanical Contractor shall reimburse the Electrical Contractor for any changes in system design i.e.; control or equipment which effects the Electrical Contractor.

1.10 WORKMANSHIP AND COORDINATION
A. Make installation substantially as shown on the plans.
B. Make alterations in location of apparatus or conduit as may be required to conform to building construction without extra charge.
C. Mechanical equipment service clearances and electrical apparatus service clearances as specified in their respective manufacturer's product data shall be maintained free from conduit.
D. Cooperate with other contractors in their installation of work.
E. Complete the installation in a workmanlike manner, completely connected and ready to give proper and continuous service.
F. Use only experienced licensed electricians.

1.11 CUTTING AND PATCHING
A. Notify the General Contractor in ample time, of the location of all chases, sleeves, and any other openings required in connection with the work of this contract.
B. Cutting and patching made necessary because of failure to comply with the above shall be done by the General Contractor at the expense of the Electrical Contractor.
C. When it is necessary for the Electrical Contractor to cut building materials to install his work, it shall be done in a neat and workmanlike manner meeting with the approval of the Architect.
D. Holes through concrete shall be carefully done with a "Concrete Termite" drill. A Star drill or Air Hammer will not be permitted. Structural members shall not be cut without approval from the Architect.
E. Any penetrations thru roof shall be made with "Stoneman" flashing connections as manufactured by Stoneman Engineering and Manufacturing Co., Inglewood, California.
F. Any penetrations made in exterior or basement foundation walls shall be sealed with Thunderline "Link-Seal" connections, as manufactured by Thunderline Corporation, Wayne, Michigan.

1.12 MANUFACTURER'S INSTRUCTIONS
A. Apply, install, connect, erect, use, clean, and condition articles, materials and equipment as directed by the manufacturer.

1.13 CEILING TILE MOUNTED DEVICES
A. Provide separate support for all devices mounted in or to lay-in ceiling tile. Ceiling tile shall not be used to support any device.

1.14 EQUIPMENT INSTALLATION AND REQUIREMENTS:
A. Equipment location shall be as close as practical to locations shown on the drawings.
B. Working spaces shall not be less than specified in the National Electrical Code for all voltages specified.
C. Inaccessible Equipment:
1. Where the Engineer determines that the Contractor has installed equipment without proper clearances or not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled as directed at no additional cost to the Owner. Install access panels as approved by the Architect to provide access to all equipment, J-boxes, and outlets located in non-accessible spaces. Panels shall be flush, locking type with a fire rating equal to the ceiling system.
2. "Conveniently accessible" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as motors, pumps, belt guards, transformers, piping, and ductwork.
D. Distribution Equipment:
1. All items of Electrical Distribution Equipment (switchboards, fusible panelboards, panelboards, disconnect switches and transformers) shall be of one manufacturer, unless specifically noted on the drawings, in the specifications, or approved by the Engineer. Intermixing of distribution equipment by different manufacturers will not be permitted.
2. Equipment layouts on the drawings are based on one manufacturer. Verify all actual equipment sizes with equipment manufacturer prior to bidding.
3. If layout changes are required due to other electrical manufacturers equipment size, they must be submitted to and approved by the engineer. National Electric Code working clearances must be maintained at all times. In no case will extra remuneration be allowed for layout changes that differ from those shown.
4. Provide and install all steel supports as required for mounting of electrical equipment.
5. Anchor all free standing electrical equipment to the floor with plated 1/2" minimum anchor bolts as recommended by the manufacturer.
6. Electrical equipment that is likely to require maintenance while energized shall be field or factory marked to warn qualified persons of potential electric arc flash hazard per N.E.C. Section 110.16.

1.15 EQUIPMENT CONNECTIONS, CONTROLS AND INSTRUMENTATION
A. General: The following applies to all Electrical Power and Control Connections for all equipment requiring electrical installation work provided by others.
B. The Electrical Contractor shall furnish, install and connect all wiring, conduit, boxes, toggle switches, thermal switches, disconnect switches, remote pushbutton stations not included in magnetic starters, etc., for all equipment requiring electrical power that is either furnished or specified by other Contractors and/or the Owner, shown on drawings or listed below. The Electrical Contractor shall receive, install and connect all starters, controllers, variable frequency drives, over current devices, capacitors, power factor correction devices, transformers, alarms, bells, horns, relays, remote switches for equipment supplied by others (i.e. starters or capacitors or power factor correction devices for Mechanical Equip., etc.).
C. In general, all major equipment will be specified to be factory prewired with only service and interconnecting required at the site by the Electrical Contractor; however, all divisions of the specification shall be reviewed to verify whether the equipment is specified to be factory prewired and if not, then it shall be the responsibility of the Electrical Contractor to provide the complete wiring of the equipment in accordance with wiring diagrams provided by other Contractors and/or Owner to the Electrical Contractor. All interconnecting of equipment shall be by the Electrical Contractor.
D. All line and low voltage wiring/connections required to control equipment shall be provided as indicated below. Where the Mechanical Contractor (MC) is indicated, this also includes the Temperature Controls Contractor (TCC) if utilized on the project.
a. Line voltage conduit by EC
b. Line voltage wiring and connections by EC
c. Controls provided by MC
d. Low voltage control wiring and terminations shall be provided and installed by the MC
e. Conduit and rough-ins for low voltage control wiring shall be provided by MC. Conduit shall be provided for low voltage control wiring as required by Mechanical drawings/specifications.
E. The Electrical Contractor shall provide 120 volt control power supply; # 12 gauge CU. THWN in 1/2"-inch C. minimum at all points required by controls, and instrumentation and sprinkler risers. Circuit to the nearest 120 volt panel. Use spare 20 Amp. breakers. Each control panel shall be on a separate circuit unless otherwise indicated. If the controlled equipment is fed from the emergency system, then the control power supply must feed from the emergency system.
F. The Contractor shall be familiar with the equipment to be furnished by the other Contractors and/or the Owner in connection with this work and provisions for such connections and work shall be included in the Contractor's price. In no case will extra remuneration be allowed for such work.
G. Connections to all equipment have been designed from units as specified on the drawings or in the specifications. In the event equipment differs on approved shop drawings it shall be the responsibility of the supplying Contractor to coordinate electrical connections to the units and reimburse Electrical Contractor for any changes in system design. These changes shall not involve additional cost to the Owner.
H. Review all plans and specifications to verify all equipment connections that are required by Mechanical and/or other contractors. Although the electrical drawings will show equipment connection requirements, it is the Electrical Contractors responsibility to connect all equipment furnished by other Contractors at no extra cost to the Owner even if this equipment connection is not shown on the electrical drawings. Coordinate all required connections not shown on the electrical drawings with the Engineer.

1.16 NAMEPLATES
A. General: The following items shall be equipped with nameplates:
1. Disconnect Switches (fused or nonfused), switchgear, switchboards, panelboards, separately mounted circuit breakers, contactors and relays.
2. Special Electrical Systems (JCI Controls, etc.) shall be so identified at junction and pull boxes, terminal cabinet and equipment racks.
B. Inscription: Nameplates shall adequately describe the function or use of the particular equipment involved. Nameplates for panelboards and switchboards shall include the panel designation, voltage, phase, and A.I.C. rating of the supply (See Schedules). For example, "Panel A" 120/208 V, 3-Phase, 4-Wire, 10,000 A.I.C.". The name used for a machine nameplate shall be the same as the one used on the machine's motor starter, disconnect and P.B. station nameplates. Nameplates for fused switches and panels shall also indicate fuse type and size.
1. In addition to the instructions listed above:
a. All panelboards and transfer switches fed from the emergency system shall be labeled "Emergency System".
b. All panelboards and transfer switches fed from the standby system shall be labeled "Standby System".
A. Construction: Nameplates shall be as follows:
1. Normal Power - laminated phenolic plastic white front and back with black core.
2. Emergency System - laminated phenolic plastic red front and back with white core.
3. Standby System - laminated phenolic plastic blue front and back with white core.
4. Standby Power - laminated phenolic plastic blue front and back with white core.
B. Lettering shall be engraved through front layer to form 1/4-inch white characters (1/2" white letters for distribution panel and switchboard names). Branch switch labels shall be 1/4-inch letters. Nameplates shall be securely fastened to the equipment to be identified, with No. 4 Phillips, round head, cadmium plated, steel self tapping screws or nickel plated brass bolts. Motor nameplate may be nonferrous metal not less than 0.03 inches thick, die stamped. In lieu of separate plastic nameplates, engraving directly on device plates is acceptable. Letters engraved thus, shall be filled with contrasting enamel. All nameplates and their installation are part of this work. Free hand lettering or dymo label marker will not be acceptable.

1.17 MATERIALS
A. Materials and equipment furnished shall be new, of best quality and design, free from defects, of current production by manufacturers regularly engaged in the manufacture of such items for at least 3 years, for which replacement parts should be available. All items used on this project shall be free of asbestos, PCB, and mercury material. A manufacturer's nameplate affixed in a conspicuous place will be required on each major component of equipment stating manufacturer's name, address and catalog number.
B. All material and equipment shall be listed, labeled or certified by Underwriter's Laboratories, Inc., where such standards have been issued. Equipment and material which are not covered by UL Standards will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory.
C. Where items of equipment and/or materials are specifically identified herein by a manufacturer's name, model or catalog number, only such specific items may be used in the base bid, except as hereinafter provided.
D. Unless requests for changes in base bid specifications are received and approved and noted by written addendum prior to the opening of bids, the successful contractor will be held to furnish specified items.
E. After contract is awarded, changes in specifications shall be made only as defined under "Substitution of Equipment"

1.18 SUBSTITUTION OF EQUIPMENT
A. After execution of the contract, substitution of equipment of makes other than those specifically named in the contract documents may be approved by the Engineer only if the equipment named in the specifications cannot be delivered to the job in time to complete the work in proper sequence to work of other Contractors, due to conditions beyond control of the contractor.
B. Requests for substitutions must be accompanied by documentary proof of equality or difference in price and delivery, if any, in form of certified quotations from suppliers of both specified and proposed equipment.
C. The Owner shall receive all benefits of the difference in cost involved in any substitution, and the contract altered by change order to credit Owner with any savings so obtained.

1.19 SUBMITTALS
A. The Engineer's approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval will not be permitted at the job site.
B. All submittals shall be submitted electronically and include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Engineer to ascertain that the proposed equipment and materials comply with specification requirements. Catalog cuts submitted for approval shall be legible and clearly identify equipment being submitted.
C. Submittals shall be complete and submitted together for each section. Individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assemble as a whole. Partial submittals will not be considered for approval.
D. Mark the submittals, "SUBMITTED UNDER SECTION_____". Mark out all statements on sheets that do not apply otherwise. The Engineer may select options and equipment not originally specified. All options that are not marked out will be assumed that the Contractor will furnish the same.
E. Mark catalog cuts to indicate equipment, capacities, finishes, sizes, etc. Each individual item shall have its own sheet provided for approval. (Example: Separate sheets for each panelboard.)
F. All shop drawings shall be checked and signed by this contractor and general contractor prior to submittal to the Architect/Engineer.
G. Shop drawings submitted without Contractor's signatures or approval and verification will not be approved.
H. The submittals shall include the following:
1. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
2. Elementary and interconnection wiring diagrams for communication and signal systems, control system and equipment assemblies. All terminal points and wiring shall be identified on wiring diagrams.
3. Quantities of materials will not be verified by the Architect or Engineer. Approval stamp on shop drawings does not constitute approval of quantities listed on shop drawings.
I. Shop drawings shall be submitted on wire, cables, devices, lighting fixtures (including distribution curves), lighting controls, motor starters, panelboards, disconnects, transformers, switchboards, motor control centers, conduit, raceway systems, low-voltage systems, etc.
J. Submittals for low-voltage systems (fire alarm, security, PA, controls, sound, clock, nurses' call, intercom, etc.) shall include complete riser diagrams showing all conductors and conduit sizes.
K. Engineer's acceptance of Compliance Submittals will not relieve the Contractor from his responsibility for any deviations from the requirements of the contract documents, unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and the Engineer has given written approval to the specific deviation; nor shall any acceptance by Engineer relieve Contractor from responsibility for errors or omissions in Compliance Submittals.

1.20 ELECTRICAL WORK COMPLETION
A. Before requesting final inspection the following work must be completed.
B. Operating Instructions:
1. The Contractor shall submit along with the shop drawings of the equipment, three (3) copies of operating instructions for all items. Instructions shall be prepared by the manufacturer of the equipment.
2. After the operating instructions have been approved by the Architect, the Contractor shall include the three (3) copies in maintenance instructions brochures.
3. The Contractor shall also obtain all manufacturer's instructions, manuals, and one complete set of drawings and turn these over to the Architect at the completion of the project.
4. The Contractor shall keep in a safe place, all keys and special wrenches furnished with equipment under this contract and shall give same to the Engineer at the completion of the project.
5. The Contractor shall prepare a complete brochure, in triplicate, covering all systems and equipment furnished and installed under this Contract. Brochures shall be submitted to the Architect for approval and delivery to the Owner. The cost of this brochure shall be included in the contract cost. Brochures shall contain the following:
a. Certified equipment drawings and/or catalog data clearly marked for equipment furnished as required for approval submission under detailed section of the specifications.
b. Complete operating and maintenance instructions for each item of equipment.
c. Complete part list for each equipment item.
d. Any special emergency operating instructions or a list of service organizations (including addresses and telephone numbers) capable of rendering emergency service to the various parts of the system.
7. In addition to these written instructions, each respective contractor shall fully and carefully instruct the Owner, or the Owner's representatives, as to the proper operation, care and maintenance of each system and its equipment.

1.21 TESTING AND ADJUSTMENT
A. Upon completion of the project, record loads for a 48 hour period on each phase of all existing panelboards, distribution panels and switchboards, in which new loads are being added to and submit final readings to the Engineer for records. This Contractor shall adjust equipment, instruments, gages, meters etc., as required to test and adjust these systems.
B. Check test and adjust the mechanisms of all electrical equipment as required for optimum performance.
C. Perform tests for insulation resistance in accordance with the requirements of the National Electrical Code and insure that all circuits are free from short circuits.
D. Keep a calibrated voltmeter and ammeter available at all times and provide service for test readings when and as required up until the project is accepted by the Owner.

1.22 AS-BUILT DRAWINGS
A. Show on blue line prints in red ink all changes from original plans made during the installation. Return two (2) sets of red marked drawings, specifications and addenda, as set forth in the General Conditions, to the Architect upon completion of the Project.

1.23 FINAL INSPECTION
A. Final inspection will be made upon written request from the General Contractor after the project is completed; in accordance with the Supplementary General Conditions.
B. Furnish a workman familiar with this project to accompany the Engineer on final inspection and have available ladders, drop cords, and other equipment as required to gain access to any portion of this system.
C. This Contractor and principal subcontractors shall be represented at the inspection by a person of authority responsible to demonstrate to the Engineer that the work conforms to the intent of the plans and specifications.
D. Extra inspections made necessary by the Electrical Contractor's failure to comply with the conditions as set forth above shall be charged to the contractor for the inspector's time both on the job and spent in travel between the office and the project site.

1.24 GUARANTEE
A. Guarantee all work, material and equipment for a period of one year after date of substantial completion.
B. During the year guarantee period the Electrical Contractor shall be responsible for any defects which develop in the electrical systems. Upon notification of a defect by the General Contractor, the Electrical Contractor shall make immediate effort to correct it and shall notify the Architect when this work is completed. This guarantee does not include ordinary lamp failure.
C. Repairs and/or replacements shall be made with no cost to Owner.
D. Provide as part of the work of this contract, in addition to the first year's guarantee on equipment and materials, the following routine maintenance and inspection. (The one year time period will not start until each item is completed in accordance with plans and specifications and accepted by the Owner). Correct and adjust all emergency systems, controls, fire alarm, transformer, etc. This service to be provided throughout the guarantee period.

END OF SECTION 260500

SECTION 261000 - BASIC MATERIALS

1.1 CONDUIT
A. Materials:
1. Rigid conduit shall be standard size, hot dip galvanized conduit as manufactured by the Republic, Allied Tube, LTV, or equal. Rigid steel conduits and intermediate metal conduits shall be provided with threaded fittings and couplings.
2. EMT tubing shall be Allied, Republic, LTV, or equal with U.L. approved National Electric Code type fittings. Indenter type fittings shall not be used.
3. All conduit exposed to physical abuse (i.e. industrial locations), installed in wet locations, in slabs, below grade or exposed exterior to the building, shall be rigid steel or intermediate metal conduit (IMC).
4. EMT conduit may be used where code permits except as outlined above.
5. A ground wire sized per N.E.C. Section 250.122 shall be installed in each conduit containing phase conductors.
6. Liquid-tight flexible metal conduit: Flexible galvanized steel tubing covered with extruded liquid-tight jacket of polyvinyl chloride (PVC). Provide conduit with a continuous copper bonding conductor spiral between the convolutions. Provide steel or malleable iron fittings. Connectors shall have insulated throats.
7. U. L. approved Schedule 40 P.V.C. conduit may be used where feeders or branch circuits are to be run in earth or slabs (3/4" minimum). Use all steel ells and risers with PVC coating approved for underground use. Use conduit adapters when converting from P.V.C. to steel conduit. Use plastic spacers when more than one conduit is installed together. See Drawings for areas requiring concrete encasement.
8. Short runs of galvanized flexible conduit may be used when approved by the Engineer. Otherwise, flexible conduit such as metal clad cable is not approved for general use.
B. Bushings And Locknuts:
1. Bushings for terminating conduits smaller than 1-1/4-inches are to have flared bottom and ribbed sides, with smooth upper edges to prevent injury to cable insulation.

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STUDENT UNION GALLEY RENOVATION

NEO A&M COLLEGE
200 I STREET NE
MIAMI, OK

NEO A&M COLLEGE

OKLAHOMA PROFESSIONAL ENGINEER
WILLIAM E. RENNER
25178
OKLAHOMA
06-03-25

REV. DATE	#	DESCRIPTION
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ELECTRICAL SPECIFICATIONS

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2. Install insulated type bushings for terminating conduits 1-1/4-inches and larger. Bushings are to have flared bottom and ribbed sides. Upper edge to have phenolic insulating ring molded into bushing.
3. Where required, bushings of standard or insulated type shall have screw type grounding terminal.

C. Conduit Installation:
1. All conduit work shall be installed concealed in walls, floor and roof construction or concealed within furred spaces or above ceilings. In equipment or mechanical rooms exposed work shall include feeders and connections to equipment unless noted otherwise.
2. All exposed conduits (where approved by the Engineer) shall be routed parallel or perpendicular to building elements.
3. Conduit shall be installed to the requirements of the structure and to requirements of all the other work on the project. Conduit shall be installed to clear all openings, depressions, pipes, ducts, reinforcing steel, etc. Conduit set in forms for concrete structure shall be installed in a manner that installation will not affect the strength of the structure as determined by the Structural Engineer. Maximum size of conduit in concrete slab is 1-1/4-inches trade size.
4. Conduit shall be installed continuous between connections to outlets, boxes and cabinets with a minimum possible number of bends and not more than the equivalent of 4-90 degree bends between connections. Bends shall be smooth and even and shall be made without flattening conduit or flaking enamel. Radius of bends shall be as long as possible and never shorter than the corresponding trade elbow. Long radius elbows shall be used where necessary.
5. Conduits shall be securely fastened in place with approved straps, hangers, and supports as required. See Specification Section entitled SUPPORTING DEVICES for conduit support requirements.
6. Conduit shall be reamed before installation and all conduit shall be thoroughly cleaned before installation and kept clean after installation. Openings and boxes shall be plugged or covered as required to keep conduit clean during construction and all conduit shall be fished clear of obstructions before the pulling of wires. All conduit shall be as sized above and shall not be smaller than code requirements.
7. All work shall be protected against damage during construction and any work damaged or moved out of line after roughing-in shall be repaired and reset to the approval of the Architect without additional cost to the Owner.
8. Conduit terminations at panelboards, switchboards, motor control equipment, junction boxes, etc., shall be aligned and installed true and plumb. Wood or steel bucks or templates shall be used where required.
9. Install sleeves and sleeve seals at exterior floor, exterior wall, and roof conduit penetrations and completely seal clearances around the conduit and sleeve and make watertight.
10. Rooftop raceways or cables shall be supported up off the surface of the roof with a polymeric rooftop support equal to Caddy Pyramid series. Supports shall be non-penetrating and shall be designed to prevent damage to the roofing materials. Wood supports are not allowed.
11. Where conduits cross construction expansion joints, contractor shall provide Appleton XJ expansion couplings or equal with copper bonding jumpers.
12. Use flexible metal conduit (Type FMC) for connections to motors and other electrical equipment subject to movement, vibration, misalignment, cramped quarters, or noise transmission. Provide liquid-tight flexible metal conduit Type (LFMC) for installation in exterior locations, kitchens, moisture or humidity laden atmosphere, corrosive atmosphere, water or spray wash-down operations, etc.
13. All branches of the emergency system shall be installed entirely independent of other raceway systems. Common supports and hangers may be used.

1.2 WIRES AND CABLES
A. Southwire, General Cable, Allied or equal code gauge wire, finished with fadeless color solution for National Electric Code system of color coding and bearing Underwriter's label. Wires shall be soft annealed stranded copper with properties conforming to the National Electric Code requirements. No. 8 gauge and larger shall be stranded. No. 10 gauge and smaller shall be solid.
B. Aluminum conductors are NOT allowed.
C. Wire smaller than No. 12 gauge shall not be used unless specifically called for.
D. All feeder conductors shall be the same size and type and be continuous from overcurrent device to panel.
E. Wires for general use within the building shall be Type THWN, XHHW, or combination THHN/THWN except where called for on the drawings. Type THW may be used for #6 AWG and larger sizes. All conductor sizes must be as specified on drawings regardless of insulation type. Wires for other than general use shall be as hereinafter specified for specific services.
F. A ground wire sized per N.E.C. Section 250.122 shall be installed in each conduit containing phase conductors.
G. All control wiring shall be copper, solid or stranded, #14 ga. or larger depending upon current requirements. Insulation Type for 90 degree C. Where stranded conductors are used provide with spade type insulated copper terminals.
H. See riser diagrams and/or other sections of the Specifications for types and ratings for sound, fire alarm, control and other special cables.
I. All conductors shall be identified at all termination points and in all pull and junction boxes by the following method of color coding. Means of identification shall be permanently posted at each branch circuit panel with a nameplate identifying color coding where more than one nominal voltage system is in the same building.

208Y/120 volt system:	480Y/277 volt system:
• Phase A - Black	Phase A - Brown
• Phase B - Red	Phase B - Orange
• Phase C - Blue	Phase C - Yellow
• Neutral - White	Neutral - Gray
• Ground - Green	Ground - Green

J. All conductors size #8 Awg and smaller shall have colored insulation. Where conductors with black insulation are used for the larger wire sizes (#6 Awg and larger) color coding shall be provided with two layers-one half lapped of No. 35 colored Scotch Vinyl electrical tape. Where any conductor is or can be supplied from an emergency system the Contractor shall mark each conductor with an additional two layers-one half lapped of Purple colored Scotch Vinyl Electrical tape.
K. Individual neutrals shall be provided for each circuit. Multi-wire branch circuits (i.e. Two or more phases sharing a neutral conductor) shall not be allowed, unless specifically noted or shown on the plans. Where multi-wire branch circuits are shown or noted on the plans, provide a disconnecting means that will simultaneously disconnect all phase conductors at the panel where the branch circuit originates.

1.3 FIRE BARRIER PENETRATION SEALS
A. Manufacturer: Subject to compliance with requirements, provide fire barrier penetration seals shall be equal to Electro Products Div./3M.
B. Provide seals for any opening through fire-rated walls, floors or ceilings used as passage for components such as conduits or cables.
1. Cracks, Voids or Holes Up to 4-inches Diameter: Use putty or caulking, one-piece intumescent elastomer, non-corrosive to metal, compatible with synthetic cable jackets, and capable of expanding 10 times when exposed to flame or heat, UL-listed.
2. Openings 4-inches or Greater and Conduit Sleeves Thru Floors at Telephone Terminal Boards: Use sealing system capable of passing 3-hour fire test in accordance with ASTM E-814, consisting of wall wrap or liner, partitions, and end caps capable of expanding when exposed to temperatures of 250 to 350 degrees F (121 to 177°C), UL-listed. KBS "Sealbags" manufactured by P-W Industries will be acceptable.
C. Execution: Fill entire opening with sealing compound. Adhere to manufacturer's installation instructions. All fire barrier seals shall meet the rating of the wall.

1.4 WIRE CONNECTIONS
A. All wires shall be run in conduit, shall be continuous between outlets and boxes (with no splices or taps in conduits). Splices and taps for #6 and larger conductors shall be with block type with insulating jacket or split bolt connectors, covered and completely insulated with a minimum of three half-lapped layers of Scotch No. 33+ (105°C) plastic electrical tape or by approved insulated fastener. All splices and taps having irregular surfaces shall be properly padded with Scotchfil putty before application of insulating plastic tape. Scotchlok electrical pre-insulated spring pressure connectors or equal may be used for up to #8 conductors. Connectors shall be installed so that all wires are properly insulated.

1.5 PULL AND JUNCTION BOXES
A. Pull and junction boxes shall be code gauge steel boxes with hinged, bolted or screwed covers. Boxes shall be flush or surface mounted as shown or required.
B. Junction and pull box shall be installed where shown on drawings and additional boxes shall be installed if required for pulling of wire provided location and installation is approved by the Architect. All boxes shall be code construction with screw type cover and shall be installed in accessible locations.
C. Exterior boxes for underground wiring shall comply with SCTE 77 and be designed for flush burial with open bottom unless otherwise indicated. Provide polymer concrete box and cover with tamper-resistant locking devices, structural load rating consistent with enclosure and handhole location, and molded lettering identifying use (i.e. "ELECTRIC"). Provide minimum 12" pervious material below pullbox for drainage.

1.6 OUTLET BOXES
A. All electrical service outlets, including plug receptacles, lamp receptacles, lighting fixtures and switches shall be provided with Steel City, Appleton, or RACO 4-inches square, code gauge steel knockout boxes, galvanized or sherardized and of required depth for service and appliances. Boxes installed in plaster finish shall have code gauge galvanized raised covers set to plaster ground with outside edge flush with plaster finish. Covers shall be selected with proper openings for devices installed in box. Boxes installed in concrete and boxes larger than 2 gang may be masonry type boxes. All outlet boxes in walls, partitions, and ceilings shall be flush mounted unless specifically noted otherwise on the drawings, or as approved by the Engineer.
B. Sectional boxes shall not be used except where directed and approved by the Architect for installation in unplastered tile walls and provided conduit connections are installed concealed in walls.
C. Where lighting fixtures and appliance outlets are to be mounted on concrete or on plaster finish on concrete, outlet boxes shall be installed in forms of exact dimensions from bench marks, columns, walls or floors. Where lighting fixtures and appliances outlets are to be mounted on masonry walls and/or plastered furring or other Finish, outlet boxes shall be roughed in to general location before installation of walls and furring and shall be reset to exact dimensions before walls and furring are constructed. All outlet boxes shall be set true to horizontal and vertical lines parallel to walls, floors and ceilings and true to finish lines. All boxes shall be secured to ceilings or walls so all installation are solidly mounted. Boxes mounted to wall studs shall be secured to a horizontal box mounting bracket equal to B-Line Series #BB2 or #BB26. Metal stud clips with farside box supports are not acceptable.
D. Furnish and install plaster rings for all boxes installed in plastered ceilings and walls. Verify construction with general construction plans.
E. Boxes for exterior exposed work (where approved by the Engineer) shall be Appleton or Crouse-Hinds Type FS or FSC for shallow devices and Type FD or FDC for deep devices. Boxes for ceiling mounted light fixtures shall have approved no-bolt fixture studs. Boxes used as junction boxes shall have beveled edge flat steel blank cover.
F. Where outlet boxes are mounted exposed in unfinished areas, (where approved by the Engineer) surface mounted boxes shall be 4-inches square, have rounded corners and 1/2 inch raised steel cover plates.
G. Location of outlets on small drawings is approximate and exact dimensions for location of outlets shall be as taken from large scale plans and details on drawings or as directed by the Architect/Engineer. Outlets shall be located generally from column centers and finished wall lines or to center or joints of wall panels. Ceiling outlets shall be installed at elevation of suspended ceilings and connected to outlets in ceiling or slab above. Where necessary to fit and center with panel or ceilings and wall spaces, the Contractor must at his own expense shift the lighting outlets or other outlets as required by the Architect.
H. Boxes for switches at or near doors shall be installed on the side opposite the hinge. Verify door swing direction prior to rough-in.
I. To prevent sound from traveling through walls, electrical devices from different rooms shall not be mounted in the same stud place. Through-wall boxes shall not be used. In fire rated walls or partitions, outlet boxes on opposite sides of walls or partitions shall be separated by a horizontal distance of 24-inches. Outlet boxes larger than 4-inches square shall not be installed in fire rated walls or partitions. Verify location of fire rated walls or partitions with Architectural drawings prior to rough-in.
J. It shall be the duty of this Contractor to examine the plaster, painting, and other finishes before making his installation to make sure that these accessories, when installed, will fit and cover properly and leave no open or unfinished surface showing. He shall refuse to complete his installation where faulty work on the part of others is found, and he shall promptly report the trouble to the Architect.

1.7 WALL SWITCHES
A. Wall switches in general, used to control lighting, shall be quiet operating, listed by U.L. and conform to NEMA standards as well as the latest Federal Specification W-S-896e.
B. Switches shall be single pole, two-pole, three-way, four-way, keyed, or with pilot light as called for on the drawings. Groups of switches shall be under one gangplate. Where switches are in fire rated walls. groups of switches shall be maximum of two (2) gangs under one cover plate.
C. Switches shall be 20A., 125V., 277V. unless specified otherwise.
D. LIST OF ACCEPTABLE SWITCH MANUFACTURERS:

Mfgr:	Switch:	Key Switch:	Pilot Light Switch:
P&S	PS20AC Series	PS20AC-I Series	PS20AC-CPL Series
Hubbell	HBL1220 Series	HBL1220-L Series	1120-PL Series
Leviton	1220 Series	1220-L Series	1220-PLR Series
Bryant	4900 Series	4900L Series	4900PLR Series
Cooper	1220 Series	AH1990L Series	AH1990PL Series

E. Pilot light switches shall be illuminated toggle switch lighted red in "on" position. Key switches shall be master keyed.
F. Provide barriers between 277V. switches and between 277V. and 120V. switches installed in a common outlet box.
G. Incandescent wall box dimmers shall be linear slide type with preset, no exposed cooling fins, equal to Lutron DIVA Series. Wattage as required by load plus 25%. A. Provide with single pole or three-way switching per the drawings.
H. Color of switches/dimmers as selected by the Architect. Verify colors prior to ordering. Loads fed from emergency panel shall have red bodies.

1.8 RECEPTACLES
A. Convenience duplex receptacles shall be grounded twin outlet receptacle rated 20 amperes at 125 volts.
B. Where receptacles are indicated on the drawings as "WP" (weatherproof), provide weather resistant GFCI grounded duplex receptacle with "In-Use" extra-duty metallic weatherproof cover. Hubbell #WP26E or equal by Taymac or Red Dot.
C. Receptacle body shall be formed of high-impact thermoplastic or urea with nylon face and receptacle contacts shall be Bronze. Certification that receptacle meets or exceeds N.E.M.A. Standards shall be submitted to the Engineer for approval.
D. All 120V and 250V receptacles rated 50A or less located in bathrooms, kitchens, within 6 feet of a sink, exterior locations, elevator machine rooms, elevator pits, garages, per NFPA 70 and as located on the plans shall be ground fault circuit interrupters (GFCI) for personnel protection (Class A) with 5ma trip. Feed through GFCI receptacles or GFCI breakers may be used to protect other receptacles in the same room and on the same circuit if wired per the manufacturer's recommendations. Prior to final inspection, perform ground fault test on each protected receptacle and submit list of all receptacles tested with results to the Engineer. Label receptacles that are GFCI protected by another feed through GFCI receptacle or by GFCI breaker "GFCI protected". Where receptacles aren't readily accessible, then GFCI protection shall be provided integral with the associated circuit breaker.
E. LIST OF ACCEPTABLE RECEPTACLE MANUFACTURERS:

Mfgr:	Duplex:	GFCI Duplex:	GFCI WR Duplex:
P&S	5362	2097	2097TRWR
Hubbell	5352A	GFRST20	GFWRST20
Levition	5352	G5362-WT	G5362-WT
Bryant	BRY 5362	---	---
Cooper	5352	---	---

F. Install receptacles to clear all cabinets, equipment, etc.
G. Color of receptacles as selected by the Architect. Verify colors prior to ordering. Loads fed from emergency panel shall have red bodies.
H. Provide duplex receptacle on separate circuit beside each telephone terminal board location and other communications equipment requiring 120V. power.
I. Provide tamper resistant receptacles for all 15A and 20A nonlocking type receptacles rated 125V and 250V as required per N.E.C. Section 406.12.

1.9 WALL PLATES
A. Wall plates shall be flexible (non-breakable) nylon unless noted otherwise. Wall plates in industrial areas, gymnasiums, maintenance areas, warehouses and other high abuse areas shall be stainless steel. Plates shall be set plumb and parallel with the wall.
B. Color of wall plates as selected by the Architect. Verify colors prior to ordering. Loads fed from an emergency panel shall have red plates.

1.10 FUSTATS
A. 120V motor loads up to 1/2 HP: Shall be Bussmann "SSY" with Edison-base fuse holder and integral toggle switch. Where located in damp or wet locations, provide weatherproof unit equal to Bussmann #SSN.
B. 120V motor loads, 3/4 HP: Shall consist of horsepower rated Edison-base fuse holder and separately mounted 30A. 1P. 120V. horsepower rated toggle switch adjacent to fuse holder.
C. 120V motor loads up to 1HP: Shall be Siemens "LF111N" 30A, 120V disconnect switch with Edison-base fuse holder.
D. 120V motor loads, 1 HP or 277V motor loads: Shall consist of horsepower and voltage rated manual motor starter switch and a horsepower and voltage rated fuse holder designed to hold a time-delay Class CC rejection-type fuse.
E. Mount fustats in housings of equipment served. Fuses for motors shall be sized based on 125 percent of manufacturer's nameplate full load amperage unless otherwise indicated on drawings.

1.11 TOGGLE TYPE SWITCHES
A. Provide/install toggle type switches voltage and horsepower rated for the load served 20 Amp and/or 30 Amp for all small 3 phase mechanical equipment as indicated and under all exterior mounted fan hoods.

1.12 SUPPORTING DEVICES
A. Conduits shall be supported at intervals not greater than 10 ft., within 3 ft. of any bend and every outlet or junction box. This shall apply on vertical runs as well as horizontal runs.
B. All supports for conduits shall be independent from other trades unless noted otherwise on drawings or written approval by the Engineer. Contractor shall work with other trades where a common support structure is provided and has been approved by Engineer.
C. Plastic or wood anchors of any type shall not be used.
D. Multiple Runs
1. Where a number of conduits are to be run exposed and parallel, one with another, they shall be grouped and supported by trapeze hangers.
2. Hanger rods shall be fastened to structural steel members with suitable beam clamps or to concrete inserts set flush with surface. A reinforcing rod shall be installed through the openings provided in the concrete inserts.
3. Inserts shall be Grinnell Fixture 282, Code Devices, Inc., No. 1 or equal.
4. Beam clamps or clips shall be suitable for structural members and conditions.
5. Rods shall be steel 3/8-inches dia. minimum or approved by the Engineer.
6. Trapeze hangers shall be Unistrut P-1000 Series or equal.
7. Each conduit shall be clamped to the trapeze hanger with conduit clamps. Clamps for rigid conduit shall be Unistrut No. P-1111 through P-1124 or equal. Clamps for electrical metallic tubing shall be Unistrut No. P-1426 through P-1431 or equal.
E. Single Runs
1. Where conduits are run individually, they shall be supported by approved pipe straps, or clips secured by adequate means. The use of perforated strap will not be permitted.
2. Conduits installed exposed on the surface in damp locations or in refrigerated areas shall be provided with clamp backs under each conduit clamp to prevent accumulation of moisture around the conduits.
3. Conduits installed in open web joists shall be supported with manufactured support clips approved for the purpose. Wire wrapped around conduits will not be approved for conduit support. Conduit will not be supported from ceiling suspension wires, except that flexible connections to light fixtures in suspended ceilings may be supported from ceiling support wires with approved bat-wing clips if the ceiling installer verifies that the hangers are designed to support the additional load.

1.13 LOW VOLTAGE SYSTEMS
A. These specifications include the furnishing of all labor, and materials necessary for the complete installation of a system of conduits, outlets, and boards for use by the System Suppliers.
B. This installation must be done according to the requirements of the System Suppliers and the general specifications covering "Light and Power" herewith.
C. Provide and install nylon pull wires in all low voltage conduits. All conduit ends shall be equipped with non-metallic insulated bushings.
D. Provide and install pull boxes at all locations as required by the System Suppliers.
E. Provide and install conduit sleeves thru floors and walls as required by the System Suppliers.
F. Provide a main service conduit sized as indicated on drawings or as required by each system provider. Each outlet location requires 1-inch empty conduit with pull wire unless noted otherwise. Conduits shall be stubbed into accessible ceiling void. Verify conditions of job prior to rough-in. All cables shall be plenum rated.
G. All 2, 3 and 4-inch conduits within buildings shall include pull boxes after every two 90 degree bends. Size per N.E.C. Article 370.
H. All wall outlets shall be installed with standard square box plates. Jacks shall be furnished by System Suppliers, or as directed. Outlet boxes not used shall be provided with blank covers.
I. All empty conduits located in equipment closets or on backboards shall be sealed with a standard non-hardening duct seal compound to prevent the entrance of moisture and gases and to meet fire resistance requirements.
J. Backboards shall be provided for each telephone terminal board. Backboards shall be 3/4" thick AC grade plywood (C grade side toward wall), 8' tall with width as required for installation. Plywood shall be painted with two coats of high fire resistant, non conductive white paint to match fire rating of the wall.

1.14 COLOR CODING OF BOXES, CONDUIT, AND RACEWAYS
A. All boxes, conduit, and raceways, shall be color coded as follows:
a. Essential Electrical System:
1. Life Safety Branch - Yellow
b. Other Systems:
1. Fire Alarm - Red
2. Building Automation and Controls - Blue

END OF SECTION 261000

SECTION 264000 - SERVICE AND DISTRIBUTION

1.2 GROUNDING
A. All conductors, motor frames, etc., that require grounding shall be grounded in accordance with the requirements of the National Electrical Code, local power company and local electrical codes. All ground connections to ground rods shall be with Cadweld connections. Provide additional ground rods as required to achieve a resistance of 25 ohms or less per N.E.C. Section 250.53, at the request of the Engineer provide a copy of the test results. Multiple ground rods (when required) shall not be less than 6 feet apart. Bond all conductive piping systems in the building to the electrical system ground. Bonding connections shall be made as close as practical to the water pipe ground or service equipment ground bus.

1.3 DISCONNECT SWITCHES
A. The Contractor shall furnish and install Eaton, Square D by Schneider Electric, General Electric or Siemens Infrastructure and Cities (Siemens IC), externally operated, heavy duty, horsepower rated disconnect switches at all points indicated on the drawings or required by code. All disconnect switches shall be fused except for disconnect switches that have individual fuse protection at the point where the circuit receives its supply. Provide disconnect switches with fuse clips, Class "J" or Class "L". Provide dead front type on all exterior disconnects on grade when required by local code.
B. The enclosure shall have the proper NEMA rating for the environment.

1.4 FUSES
A. Cartridge type fuses of proper size and type as required shall be furnished and installed for all switches throughout and an additional supply of three spare fuses of each size and type shall be furnished in original packages to the Owner. Furnish NEMA 1 enclosure for storing all spare fuses located adjacent to main service equipment.
B. Approved Manufacturers: Bussmann, Littelfuse, Mersen.
C. Fuse Classifications:
1. 601 amps and larger 600 volts and less: Class L
2. 600 amps and less 600 volts and less: Class J
3. Class R fuses will not be accepted.
D. Fuses for motor and mechanical equipment shall be sized per nameplate data and the N.E.C.. Fuse manufacturer must list in shop drawings specifically which fuse to install for each motor and starter required to provide Type '2' no damage protection. The Contractor must provide and install the selected fuse and switch.
E. Fuses installed on project shall be by one manufacturer only. (Do not intermix manufacturers.).

1.5 MOTOR STARTERS (SEPARATELY MOUNTED)
A. The Contractor shall furnish and install starters for all devices shown on all plans unless specifically noted otherwise on the plans. Starters shall be manufactured by Allen-Bradley, Eaton, Furnas, General Electric, Siemens Infrastructure and Cities (Siemens IC), or Square D by Schneider Electric.
B. Starters shall have melting alloy relays or bimetallic overload relays (as required for load served). Each starter shall have H-O-A switch in cover and control transformer for controls. See plans for multi-speed starter requirements. Starters shall be fully NEMA rated; I.E.C. rated starters will not be acceptable.
C. Combination starters shall incorporate a fusible disconnect switch into the same enclosure.
D. Housings shall be made of code gauge steel. The enclosure shall have the proper NEMA rating for the environment.
E. Provide a phase loss relay with automatic reset (Time Mark 258) for all motors 10 horsepower and larger.
F. All starters for motors 10 HP and larger shall be reduced voltage type unless noted otherwise on the drawings. (Verify type of reduced voltage starter with engineer prior to bidding.

END OF SECTION 264000

SECTION 265000 - LIGHTING

1.1 GENERAL
A. This work shall include all lighting fixtures as specified in the schedule and lamps for all fixtures as specified. Fixtures shall be completely free of defects, dents, rust or chipped surfaces. No cracked, broken, or chipped lenses will be acceptable. Fixtures shall be furnished complete including hickeys, suspension nipples, and all other material and equipment as required for hanging fixtures in accordance with U.L. and NEC requirements. This Contractor shall furnish and install lamps for all fixtures and shall wipe fixtures and lamps before and after installation. Fixtures that are cracked, broken, chipped, rusted, dented or otherwise damaged, shall be replaced at no extra cost to the Owner. All recessed mounted fixtures shall be mounted with the trim flush to the ceiling, free of gaps or cracks.
B. Electrical Contractor shall verify exact ceiling type in all areas with Architectural room finish schedule for exact fixture mounting (i.e. grid or flange type mounting) prior to ordering of fixtures. Electrical Contractor shall verify ceiling construction in all areas and provide appropriate mounting hardware for installation of lighting fixtures. All surface mounted fixtures shall be supported independent from ceiling system and shall be securely mounted. Lay-in fixtures shall be supported directly from structure, unless ceiling system has been designed for support of such fixtures.
C. Framing members of suspended ceiling systems used to support fixtures shall be securely fastened to each other and shall be securely attached to the building structure at appropriate intervals. Fixtures shall be securely fastened to the ceiling, framing member by mechanical means, such as bolts, screws, or rivets. Clips identified for use with the type of ceiling framing member(s) and fixture(s) shall also be permitted.
D. General Contractor shall provide fireproofing around recessed fixtures installed in fire rated ceiling per U.L. requirements. Electrical Contractor shall coordinate.

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NORTHEASTERN OKLAHOMA A&M COLLEGE

LICENSED PROFESSIONAL ENGINEER
WILLIAM E. RENNER
STATE OF OKLAHOMA
06/03/25

REV. DATE	#	DESCRIPTION
06/03/2025		CD'S

ELECTRICAL SPECIFICATIONS

E0.3

E. Connection to all fixtures mounted in lay-in ceilings shall be as follows. Provide J-Box on structure above fixtures for connections. Install UL listed 1/2-inches flexible conduit whip down to each fixture. Each whip shall be field cut to length to allow fixture to be relocated 4-feet-0-inches in any direction. Whips shall include 2 or 3 #12 Cu. THWN conductors (numbers as indicated) and a #12 ground. Fixtures supplied with UL listed whip shall be supplied with ground conductors. Tandem fluorescent fixtures shall have a factory supplied UL listed whip with conductors as required to interconnect fixtures. Length shall allow mounting fixtures 12-feet-0-inches on center in any direction.

F. Fixture lenses shall be 100 percent virgin acrylic and a minimum of 0.125 inch thick. Styrene lenses shall not be provided for any fixture lenses.

G. All fixtures (housing, door, etc.) shall be provided with factory applied baked enamel finish applied after final fabrication unless specifically noted otherwise on the lighting fixture schedule.

1.2 LAMPS

A. The Contractor shall provide lamps compatible with the fixtures installed on the job site. Where the lamp specified is of a different type than the lamp recommended by the fixture manufacturer, the Contractor shall contact the engineer prior to lamping the fixture. Failure to do so will not justify an extra for relamping.

B. Incandescent lamps shall be extended life inside frosted unless otherwise called for in the fixture specifications. Incandescent lamps shall be as manufactured by General Electric, or Sylvania or equal. (Rated at 130 volts, 2500 hr. average rated life).

C. Fluorescent lamps unless noted otherwise on the drawings, shall be F032/835 as manufactured by Sylvania or approved equal by Engineer.

D. Metal halide lamps for interior use shall be Metalarc/C (coated) as manufactured by Sylvania or approved equal by Engineer.

E. Metal halide lamps for exterior use shall be Metalarc (clear) as manufactured by Sylvania or equal as approved by Engineer.

F. High pressure sodium lamps for interior use shall be Lumalux/D (coated) as manufactured by Sylvania or approved equal by Engineer.

G. High pressure sodium lamps for exterior use shall be Lumalux (clear) as manufactured by Sylvania or equal as approved by Engineer.

1.3 FLUORESCENT FIXTURES AND BALLASTS

A. Where fluorescent fixtures are mounted in continuous rows, each row shall be supplied with 2#12 Awg 90 degrees C copper conductors in 1/2-inch flex conduit. Feed-through wiring shall also be #12 Awg 90 degrees C copper. Where flexible metal conduit is to be used, a grounding conductor shall be installed and all fittings shall be U.L. labeled for the purpose.

B. When different lamps in the same fixture are controlled by separate switches (2 or 3 level lighting), the switches shall control the same lamps in all fixtures controlled by those switches. Arrangement of switching will be: one switch controls middle lamp or lamps, and the other switch controls outside lamps.

C. All fluorescent fixtures using rapid start, tubular type lamps shall be provided with twist-in Type Bi-pin lamp holders.

D. High-frequency electronic ballasts: Ballasts shall operate the lamps at a frequency between 20 and 40 KHZ from input frequency of 60 HZ. Ballast shall be manufactured by Advance, Magna-Tek, Howard, or equal approved by Engineer.
   1. Starting: The ballast shall be capable of starting the specified lamps at an ambient temperature of 50 degree F or more for an input voltage of plus or minus 10 percent about the center design voltage. Provide 0 degree ballasts where indicated on the drawings.
   2. Operation:
      a. The ballast shall safely and reliably operate in a room ambient temperature from 50 degree F to 105 degree F.
      b. The light output shall not vary by more than plus or minus 15 percent for a plus or minus 10 percent variation of the input voltage about the center design voltage.
      c. The ballast shall operate the lamps in a manner that will not adversely curtail the normal life of the lamp.
   3. Surge withstand capability: The ballast shall be able to withstand a single input surge of 6,000 volts from a 50 ohm 50 KHz damped sinewave source.
   4. Flicker: The flicker shall be less than 5 percent.
   5. Noise: The audible noise levels should be equivalent to the Class A rating of CBM certified ballasts.
   6. Electromagnetic interference (EMI): The EMI, conducted and radiated, shall meet the Federal Communication Commission's Part 18 Subsection H.
   7. Rated Life: The ballast shall have a rated life of 10 years or 30,000 hours (based on a 10 hour day).
   8. Power Factor: Not less than 90 percent.
   9. Labels: Ballasts must be labeled or listed by U.L. or E.T.L.

1.4 LED FIXTURES AND DRIVERS

A. LED modules shall include the following features unless otherwise indicated:
   1. Comply with IES LM-79, LM-80, LM-82 and TM-21 requirements.
   2. Minimum CRI 80
   3. Minimum Rated Life: IES L70 = 50,000 hours.
   4. LED chips shall be wired so that failure of one chip does not prohibit operation of the remainder of the chip array.
   5. Output lumens and color temperature as noted on LIGHTING FIXTURE SCHEDULE.

B. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

C. LED driver general requirements: Unless otherwise indicated, driver features shall meet the following requirements:
   1. Voltage Range: +/- 10 percent of rated input.
   2. Total Harmonic Distortion Rating: ≤ 20 percent.
   3. Power Factor: ≥ 95 Percent.
   4. UL Class 2 output.
   5. Line Frequency: 60 Hz.
   6. Inrush Current: Per NEMA 410.
   7. Ambient Temperature Range: 0°C to 25°C.
   8. Maximum Case Temperature: 90°C.
   9. Sound Rating: Class A or better.
   10. Integral Short Circuit, Open Circuit, and Overload Protection: IEEE C82.41.2
   11. Electromagnetic Compliance: FCC Title 47, Park 15, Class A.

1.5 EMERGENCY LIGHTING AND POWER

A. When emergency battery power packs are optional to the specified exit signs and emergency fixtures and are not included in the model number in the light fixture schedule, the emergency battery power packs shall be included as part of the specified fixture when they are not connected to an emergency generator system. Verify on drawings.

B. Fixtures shown in the fixture schedule or lighting plans as an emergency fixture shall be supplied with a factory installed sealed replaceable nickel cadmium battery and a solid state inverter charger and switch systems.
   1. Other fluorescent lamps not on emergency system in same fixture will be switched with area lights. Lamp sockets in Emergency Fluorescent fixtures shall be in the exact same position as lamp sockets in non-emergency fixtures of the same type and number of lamps. All components shall be contained within the fixture.

C. The emergency battery system shall operate two fluorescent lamps (1100 lumen minimum) or designated LED fixture for a minimum of 90 minutes. Battery charger shall be capable of recharging batteries to a full charge within 24 hours after complete discharge. Fixture shall contain pilot light to indicate charger condition and a test switch to simulate power failure. Systems shall be unconditionally guaranteed for three (3) years by the factory. Unit to be Underwriter's Laboratory listed and labeled as an emergency unit. Units shall be Bodine "B-50" or IOTA I 80/2.

D. Batteries for exit signs and other emergency fixtures shall be lead calcium, pure lead, or nickel cadmium. Lead acid will not be accepted. Batteries shall be unconditionally guaranteed for one (1) year with a ten (10) year prorated warranty from the factory. Units shall be Underwriter's Laboratory listed an labeled as an emergency unit. Batteries shall be provided as standard or as optional equipment of the same series of the specified fixtures.

E. The emergency Battery Section shall be connected on the same circuit as the light ahead of any switches or contactors controlling area lights so that emergency lighting is maintained at all times.

1.6 ACCESSORIES

A. Provide clear tempered glass shields on all metal halide, and quartz fixtures. Exterior fixtures shall be constructed with gasketed shield and bug tight.

B. Provide thermal switches on all recessed fixtures as required by N.E.C..

1.7 LIGHTING CONTROL EQUIPMENT

A. Time Switches
   1. Time switches by Tork, Intermatic, and Paragon equal to those indicated below and approved by the Engineer will be acceptable.
   2. Exterior lighting or interior time switches shall be equal to one of the models listed below depending on the number of zones required:
      A. Intermatic #ET70215C, 7 day, Astro, 20A., 2 zone
      B. Intermatic #ET90415CR, 7 day Astro, 20A., 4 zone
      C. Intermatic #ET90815CR, 7 day Astro, 20A., 8 zone
   3. All time switches shall be provided with momentary contacts if required.
   4. All time switches shall be provided with manual bypass switches.

B. Photo Electric Controls
   1. Photo Electric Controls by Tork, Intermatic and Paragon equal to those indicated below and approved by the Engineer will be acceptable.
   2. Photo Electric Controls (Photo Switches; Photo Cells) shall be Intermatic #EK4136S rated at 6 amps for Electronic Ballast (LED) 120-277 volts and be weatherproof with 8 year warranty. Mount on roof and orient photo electric controls to the north. Photo-electric controls supplied as a part of a fixture assembly shall be as provided by Fixture Manufacturer.

C. Contactors And Relays
   1. Shall be as manufactured by Cutler-Hammer, Allen Bradley, G.E. or Square 'D'. They shall be as sized on the drawings.
   2. All contactors and relays shall be Tungsten rated.

D. Occupancy Sensors
   1. Line Voltage Wall Switch Sensor - Provide dual technology sensor for 900sq of coverage. Sensor Switch WSX series or approved equal.
   2. Line Voltage Wall Switch Sensor with Dimming - Provide dual technology sensor for 900sq of coverage and 0-10V dimming control. Sensor Switch WSX-D series or approved equal.
   3. Ceiling Mount Low Voltage Sensor - Provide dual technology sensor with coverage and/or quantity as required by space. Sensor switch CM-PDT series or approved equal.
   4. Relay/Power Pack: Dry contacts rated for 20A ballast load at 120V and 277V ac, for 13A tungsten at 120V ac, and for 1 hp at 120V ac. Power supply to sensor shall be 24V dc, 150mA, Class 2 power source as defined by NFPA 70.

END OF SECTION 265000

SECTION 266000 - SEISMIC PROTECTION FOR ELECTRICAL EQUIPMENT

1.1 PERFORMANCE REQUIREMENTS:

A. The requirements for sesimic protection measures to be applied to electrical equipment and systems specified herein are in addition to any other items called for in other sections of these specifications.

B. Electrical equipment shall include the following items to the extent required on plans or in other sections of these specifications:
   1. Light Fixtures
   2. Switchboards
   3. Engine Driven Generators
   4. Transformers

C. Seismic-Restraint Loading:
   1. Site Class: Refer to Structural Drawings.
   2. Risk Category: Refer to Structural Drawings.
   3. Importance Factor: Refer to Structural Drawings.
   4. Seismic Design Category: Refer to Structural Drawings.

D. Seismic restraints may be omitted from electrical conduit 2-1/2 inches trade size and smaller. All other interior electrical conduit shall be seismically protected as specified.

1.2 SUBMITTALS

A. Product Data: For the following:
   1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
   2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component used.
   3. Restrained-Isolation Devices: Include ratings for horizontal, vertical, and combined loads.

B. Delegated-Design Submittal: For vibration isolation and seismic-restraint details indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation and licensed in the project location.
   1. Design Calculations: Calculate static and dynamic loading due to equipment weight and operation, seismic forces required to select vibration isolators and seismic restraints.
      a. Coordinate design calculations with wind-load calculations required for equipment mounted outdoors.
   2. Indicate materials and dimensions and identify hardware, including attachment and anchorage devices.
   3. Field fabricated supports.
   4. Seismic-Restraint Details:
      a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
      b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacing's. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events.

1.3 MATERIALS AND EQUIPMENT:

A. Bolts and Nuts: Squarehead and hexhead bolts, and heavy hexagon nuts, ASME B18.2.1 and ASME B18.2.2 or ASTM A307 for bolts and ASTM A563/A563M for nuts.

B. Sway Bracing:
   1. Plates, rods, and rolled shapes, ASTM A36/A36M.
   2. Wire Rope, ASTM A603.
   3. Tubes, ASTM A500/A500M, Grade B.
   4. Pipes, ASTM A53/A53M, Type E, Grade B.
   5. Light gauge angles, less than 1/4-inch thickness, ASTM A653/A653M.

1.4 SEISMIC-RESTRAINT DEVICES

A. General Requirements: Rated strengths, features, and application requirements shall be defined in reports by an agency acceptable to authorities having jurisdiction.

B. Channel Support System: MFMA-3, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building at the other end and other matching components and with corrosion-resistant coating, and rated in tension, compression, and torsion forces.

C. restraint Cables: ASTM A 603 galvanized-steel or ASTM A 492 stainless-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service and with a minimum of two clamping bolts for cable engagement.

D. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections to hanger rods. Do not weld stiffeners to rods.

E. Bushings for Floor Mounted Equipment Anchor: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchors and studs.

F. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices.

G. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

H. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.

I. Adhesive Anchor: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

1.5 EXAMINATION:

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

1.6 APPLICATIONS:

A. Multiple Raceways or Cables: Secure raceways and cables to trapeze member with clamps approved for the application.

B. Hanger Rod Stiffeners: Install hanger rod stiffeners where indicated and where required to prevent buckling of hanger rods to seismic forces

C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.

1.7 SWAY BRACES:

A. Equipment sway bracing shall be provided for all items supported from overhead floor or roof structures. Braces shall consist of angles, rods, bars, or pipes arranged as shown and secured at both ends with not less than 1/2-inch bolts. Braces shall conform to schedule "Maximum Length for Anchor Braces." Bracing shall be provided in two planes of directions, 90 degrees apart, for each item of equipment. Details of all equipment bracing shall be submitted for approval. In lieu of bracing with vertical supports, these items may be supported with hangers inclined at 45 degrees directed up and radially away from equipment and oriented symmetrically in 90-degree intervals on the horizontal plane, bisecting the angles of each corner of the equipment, provided that supporting members are properly sized to support operating weight of equipment when hangers are inclined at a 45-degree angle.

B. Sway braces shall be installed on conduit to preclude damage during seismic activity. All bracing shall conform to the arrangements shown. Provisions of this paragraph apply to all conduits within a 5-foot line around outside of building unless buried in the ground. Conduit grouped for support on trapeze-type hangers shall be braced at the same intervals as determined by the smallest diameter conduit of the group.

C. No trapeze-type hanger shall be secured with less than two 1/2-inch bolts. Bracing rigidly attached to conduit, shall not be used where it would interfere with thermal expansion of conduit.

D. Sway Braces for Conduit:
   1. Transverse Sway Bracing: Transverse sway bracing shall be provided at intervals not to exceed those given in schedule "Maximum Span for Transverse Sway Brace in Seismic Zone 4".
   2. Longitudinal Sway Bracing: Longitudinal sway bracing shall be provided at 40-foot intervals.
   3. Vertical Runs: Vertical runs of conduit shall be braced at not more than 10-foot vertical intervals. For smaller tubing, bracing shall be provided at no more than 4-foot spacing.
   4. Anchor Rods, Angles, and Bars: Anchor rods, angles, and bars shall be bolted to clamps or conduit at one end and cast-in-place concrete or masonry insert or clip angles bolted to the steel structure on the other end. Rods shall be solid metal or pipe as specified below. Anchor rods, angles, and bars shall not exceed lengths given in schedule "Maximum Lengths for Anchor Braces."
   5. Bolts: Bolts used for attachment of anchors to conduit and structure shall be not less than 1/2-inch diameter.

1.8 SPREADERS:

A. Spreaders shall be provided between racked or adjacent conduit runs or piping to prevent contact during seismic activity whenever surfaces are less than 4 inches apart or four times the maximum displacement due to seismic force. Spreaders to be applied at same interval as sway braces.

B. All underground conduit 4-inch or larger, shall have flexible couplings installed adjacent to building as shown. Additional flexible couplings shall be provided as follows:
   1. On each side of the joints of demarcation between soils having widely differing degrees of consolidation.
   2. At all points that can be considered to act as anchors.
   3. On each side of an elbow.

1.9 ANCHOR BOLTS:

A. All floor or pad mounted equipment required by any section of these specifications shall use cast-in-place anchor bolts. Two nuts shall be provided on each bolt. If the size and number of the anchor bolts are not shown on the drawings then anchor bolts shall conform to the schedule for the various equipment weights or the manufacturer's installation recommendations, whichever is the most stringent. Anchor bolts that exceed normal depth of equipment foundation piers or pads shall either extend into concrete floor or the foundation pads shall be increased in depth to accommodate bolt lengths. Expansion anchors shall not be used to resist seismic or vibratory loads unless test data are provided to verify the adequacy of the specific anchor and application.

B. Drilled-In Anchors:
   1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
   2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
   3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
   4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
   5. Set anchors to manufacturer's recommended torque, using a torque wrench.

C. Based on four bolts per item, a minimum embedment of twelve bolts diameters, a minimum bolt spacing of sixteen bolts diameters and a minimum edge distance of twelve bolts diameters. Use equivalent total cross-sectional area when more than four bolts per item are provided. Anchor bolts must conform to ASTM A 307. Anchor bolts shall have an embedded straight length equal to at least twelve times nominal diameter of the bolt.

1.10 LIGHTING FIXTURES IN BUILDINGS:

A. Light fixture supports should use materials that are suitable for this purpose. Cast metal parts shall be malleable iron only.

B. Hardware for recessed lighting fixtures:
   1. All fixtures mounting devices connecting fixtures to the ceiling system or building structure shall have a capacity for a horizontal force of **//150//** percent of the fixture weight and a vertical force of 400 percent of the fixture weight.
   2. Mounting devices shall clamp the fixture to the ceiling system structure (main grid runners or fixture framing cross runners) at four points in such a manner as to resist spreading of these supporting members. Each support point device shall utilize a screw or approved hardware to 'lock' the fixture housing to the ceiling system, restraining the fixture from movement in any direction relative to the ceiling. The screw (size No. 10 minimum) or approved hardware shall pass through the ceiling member (T-bar, channel or spline), or it may extend over the inside of the flange of the channel (or spline) which faces away from the fixture, in a manner which prevents any fixture movement.
   3. In addition to the above the following are required for fixtures exceeding 20 pounds in weight. Note: Ceiling types are defined in ASTM Standard C635-69.
      a. Where fixtures mounted in "Intermediate" and "Heavy Duty" ceilings weight between 20 pounds and 56 pounds provide two 12 gauge safety hangers hung slack between diagonal corners of the fixture and the building structure.
      b. Where fixtures weight over 56 pounds they shall be independently supported from the building structure by approved hangers. Two-way angular bracing of hangers shall be provided to prevent lateral motion.
   4. Where ceiling cross runners are installed for support of lighting fixtures, they must have a carrying capacity equal to that of the main ceiling runners and be rigidly secured to the main runners.
1. Surface mounted lighting fixtures:
   1. Fixtures shall be bolted against the ceiling independent of the outlet box at four points spaced near the corners of each unit. The bolts (or stud clips) shall be minimum 1/4-20 - secured to main ceiling runners and/or secured to cross runners. Non-turning studs may be attached to the main ceiling runners and cross runners with special non-friction clip devices designed for the purpose, provided they bolt through the runner, or are also secured to the building structure by 12 gauge safety hangers. Studs or bolts securing fixtures weighing in excess of 56 pounds shall be supported directly from the building structure.
   2. Where ceiling cross runners are installed for support of lighting fixtures they must have a carrying capacity equal to that of the main ceiling runners and be rigidly secured to the main runners.
   3. Fixtures less than 15 pounds in weight and occupying less than two square feet of ceiling area may, (when designed for the purpose) be supported directly from the outlet box when all the following conditions are met.
      a. Screws attaching the fixture to the outlet box pass through round holes (not keyhole slots) in the fixture body.
      b. The outlet box is attached to a main ceiling runner (or cross runner) with approved hardware.
      c. The outlet box is supported vertically from the building structure.
   4. Fixtures mounted in open construction shall be secured directly to the building structure with approved bolting and clamping devices.
2. Single or double pendent-mounted lighting fixtures:
   1. Loop and hook or swivel hanger assemblies should be fitted with restraining devices to hold their stems in the support position during seismic motions.
   2. Flexible banger devices shall be provided at their attachments to the fixture channel to preclude breaking of the support.
   3. Motion of swivels or hinged joints shall not cause sharp binds in conductors or damage conductor insulation.
   4. Each stem shall be supported by an approved outlet box, mounted swivel joint and canopy which holds the stem captive and provides spring load (or approved equivalent) dampening of fixture oscillations. Outlet box shall be supported vertically from the building structure.
3. Outlet boxes for support of lighting fixtures (where permitted) shall be secured directly to the building structure with approved devices or supported vertically in a hung ceiling from the building structure with a nine gauge wire hanger, and secured by approved device to a main ceiling runner or cross runner to prevent any horizontal movement relative to the ceiling.

1.11 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION:

A. Install flexible connections in runs of raceways, cables, wireways, cable trays, and busways where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where they terminate with connection to equipment that is anchored to a different structural element from the one supporting them as they approach equipment.

1.12 ADJUSTING:

A. Adjust isolators after isolated equipment is at operating weight.

B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

C. Adjust active height of spring isolators.

D. Adjust restraints to permit free movement of equipment within normal mode of operation.

END OF SECTION 266000

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NEO A&M COLLEGE

WILLIAM E. RENNER
OKLAHOMA
06-03-25

REV. DATE	#	DESCRIPTION
06/03/2025		CD'S

ELECTRICAL SPECIFICATIONS

E0.4

SECTION 283111 - FIRE ALARM SYSTEM

1.1 DESCRIPTION:
A. This section of the specifications includes the furnishing, installation, and connection of new and relocated fire alarm devices to the existing fire alarm system. It shall include, but not be limited to, alarm initiating devices, alarm indicating devices, power supplies, and wiring. The setting of all addressable devices shall be performed by the manufacturer.
B. Fire Alarm systems shall comply with requirements of NFPA 70, 72, (including appendices) 90A, 101 for local building systems except as modified and supplemented by this specification. This is a performance specification. The drawings indicate a sample of device locations. Provide all other devices as required by all codes and local inspectors.
C. The Electrical Contractor shall prepare design drawings (including plans showing device locations and riser diagram), calculations, and catalog cut sheets on all components and submit as shop drawings for approval. Submit with all other required submittals to the local Fire Department and obtain approval. After approval stamp is secured from the local Fire Department, the shop drawings shall be submitted to the Engineer for final approval.

1.3 POST CONTRACT MAINTENANCE:
A. Complete maintenance and inspection service for the fire alarm system shall be provided, by a factory trained authorized representative of the manufacturer of the major equipment, for a period of two (2) years after acceptance of the installation by the engineer.
B. Maintenance and inspection service shall be performed by factory trained authorized representatives of the major equipment manufacturer. Service availability shall be within 150 miles.
C. Maintenance service shall include the following:
1. Inspection:
a. Systematic examination of all equipment at six (6) month intervals.
b. Testing, cleaning, adjusting, repairing, and replacing of all components as necessary, to keep the system in reliable condition and proper working order.
c. Furnishing all tools, test instruments, cleaning materials, and parts required.
d. Battery and charger maintenance shall be included.
2. Emergency Service:
a. Normal and overtime emergency call-back service shall consist of responding to calls within four (4) hours of notification of system trouble.
b. Overtime emergency call-back service shall be limited to minor adjustments and repairs to effect the integrity of the system.
D. Install access panels approved by the architect for all devices located in non-accessible spaces. Panels shall be flush locking type with a fire rating equal to the ceiling system.

1.4 EQUIPMENT AND MATERIAL, GENERAL:
A. All equipment and components shall be new and compatible with the existing fire alarm system. The materials, appliances, equipment and devices shall be tested and listed by Underwriters Laboratories, Inc., and Factory Mutual Research Corporation. The authorized representative of the manufacturer of the major equipment such as control panel, annunciator, transmitters, and initiating devices, shall install and be responsible for satisfactory total system operation and its certification. Manufacturer shall provide NICET certified personnel to test equipment.
B. Approved Manufacturers: Match existing system.

1.5 WIRING:
A. Basic Materials Section 261000 shall apply:
1. This contractor shall furnish and install all wiring, conduit, junction boxes and outlet boxes required for the installation of a complete system. All wiring shall be installed in metallic conduit, shall be color coded throughout and shall test free and clear of opens, grounds and shorts between conductors. All wiring shall be #18 gauge or minimum size as determined by the manufacturer, copper, with the exception of audio and visual alarm devices which shall have #14 gauge copper. All wiring shall have a minimum insulation rating of 300V. All equipment shall be grounded with an approved earth ground wire being supplied at the control panel. All wiring shall be in conformance with Article 760 of the National Electric Code. Audible and visual devices shall be capable of being controlled individually.
2. Contractor and equipment supplier shall jointly provide a proposed riser diagram for the fire alarm system indicating all devices, equipment, and wiring with the submittals prior to construction. If changes are made during construction a corrected riser diagram shall be submitted with the operating and maintenance manuals upon project completion. Riser diagram shall use symbols as shown on the drawings and shall have room numbers adjacent to all devices. All wiring shall be in conduit.
3. Wires in junction boxes and cabinets shall be permanently tagged and identified with metal or phenolic tags attached by nylon ties.
B. Terminal Boxes, Junction Boxes and Cabinets:
1. Shall be galvanized steel and in accordance with UL.
2. Paint box and cover red and identify with letters of white paint stenciled as "Fire Alarm System" in accordance with Section PAINTING.
3. Junction boxes shall have a volume 40 percent greater than required by the NEC. Minimum sized wire shall be considered as 14 AWG for calculation purposes.
4. Terminal cabinets shall have identified pressure type terminal strips, and shall be located at the base of each riser as shown on the drawings.
C. Initiating circuits shall be arranged to serve like categories (manual, smoke, waterflow). Mixed category circuitry shall not be permitted.
D. Audible indicating devices and visual indicating devices shall be capable of being controlled individually.

1.7 BATTERY AND CHARGER:
A. Battery:
1. Provide additional power supplies as required.

1.8 LOCATION CHARTS:
A. Print with easily readable, uppercase type, minimum 3/16-inch size letters.
B. Laminate or mount under plexiglass in a neat frame, and install adjacent to the fire alarm control panel. Six additional unframed charts shall be delivered to the Owner.

1.9 AUDIO/VISUAL FIRE ALARM SIGNAL DEVICES:
A. Shall be electrical supervised, vibrating, horn type, flush mounted at 80" AFF per ADA. Audio devices shall use the ANSI S3.41 Three-Pulse Temporal Code Standard Evacuation Signal.
B. Unless otherwise shown on the drawings, shall have a nominal rating of 87 dB at ten feet.
C. Mount on removable adapter plates on conduit boxes.
D. Audio signals located outdoors shall be weatherproof type with metal housing and protective grille.
E. Each signal circuit (audio or visual) shall have a minimum of twenty percent spare capacity.
F. Visual Signal: Shall be integral with the audio signal and shall have translucent white dome with 1/2-inch permanent red letters. Lettering to read "FIRE" and be visible from all viewing directions. Dome to be high impact non-yellowing plastic. Lamps shall be low voltage type for flashing service with a xenon flasher that meets ADA and UL 1971 requirements. Lamp circuits shall be supervised.
G. Provide all additional devices as required to meet all codes, inspector's requirements and ADA.
H. Strobes shall be synchronized.

1.10 ADDRESSABLE MANUAL STATIONS:
A. Furnish and install a double action, non-coded, manual fire alarm station, flush mounted.
B. This station shall be connected to a remote interface monitor module as required, for addressable operation. Each module will have an engraved nameplate, acceptable to the engineer, with the same name setup in programming.
C. To operate the station you must push the face panel and manually pull down which in turn activates the associated remote interface monitor module. The face panel locks in the down position providing a positive indication that the station has been operated. The station can be reset to the normal position by the use of a special reset key.
D. The station shall be constructed of a die cast metal or fire retardant polycarbonate, finished in red enamel with raised white lettering. The station shall be jam-proof and shall be surface or semi-flush mountable. The station shall offer a break rod feature which shall not be necessary for station operation.

1.11 SMOKE/HEAT DETECTORS:
A. Addressable Ceiling Smoke Detectors:
1. Furnish and install as indicated a ceiling mounted photoelectric detector. This detector shall be environmentally compensated, and calibrated and adjusted for sensitivity at the manufacturer's factory to U.L. Standard 268 (Nominal 2.3% per foot smoke obscuration level). Each detector shall utilize solid state components and be equipped with a fully regulated LED light source for long life reliability and an insect screen to minimize nuisance alarms. The detector shall provide a multiple pulse coincidence circuit to minimize false alarms from transient smoke conditions. When the alarm threshold value is exceeded for the first time, the detector shall go into alarm only after at least 2 more consecutive sample pulses have exceeded the alarm threshold values. The detector shall be able to transmit obscuration information to FACP. Detector shall have environmental compensation circuits and shall maintain constant sensitivity even when maintenance required messages are produced.
2. Either the detector head itself or the detector base shall use magnetic (switchless), binary dipswitches, or rotary decimal (hexadecimal) switches for the assignment of its individual address number when it is being field programmed. It shall also have a data communication line/alarm (flashing/steady) LED and terminals for making data communication line circuit connections. The detector/base assembly shall draw its power from the fire alarm control panel via the data communication line. The detector/base shall flash its LED, to assure communication, as it is being polled for status from the fire alarm control panel and shall report alarm or trouble status changes to it.
3. Outlet boxes for detectors shall be flush mounted. Each detector will have an engraved nameplate, acceptable to the engineer, with the same name setup in programming.
4. Smoke detectors shall not be located within 36" of any air diffuser or sprinkler head.
5. Provide a remote alarm indicator for each detector located in a concealed location or located where the detector's alarm indicator is not readily visible. Flush mount the remote alarm indicator in the ceiling near the detector.
B. Addressable Heat Detectors:
1. Furnish and install heat detectors flush mounted as indicated on the drawings. Detectors shall be combination rate-of-rise and fixed temperature. Each detector shall utilize solid state components and the activation of the rate-of-rise or fixed temperature alarm functions shall be capable of being reset from the fire alarm control panel.
2. Either the detector head itself or the detector base shall use magnetic (switchless), binary dipswitches, or rotary decimal (hexadecimal) switches for the assignment of its individual address number when it is being field programmed. It shall also have a data communication line/alarm (flashing/steady) LED and terminals for making data communication line circuit connections. The detector/base assembly shall draw its power from the fire alarm control panel via the data communication line. The detector/base shall flash its LED, to assure communication, as it is being polled for status from the fire alarm control panel and shall report alarm or trouble status changes to it.
3. Outlet boxes for detectors shall be flush mounted.
C. Operation shall be by 24 volt DC supplied from the fire alarm control panel. Coordinate door holders as to voltage, ampere drain, and voltage drop with the battery, battery charger, wiring, and fire alarm system for the operation specified.
D. A maximum of eight door holders shall be provided for each circuit with its own fuses, disconnect switch and pilot light.
E. Associated relay control circuits shall be electrically supervised.
F. Smoke detectors shall not be incorporated as an integral part of door holders, but are functionally associated as hereinafter specified.
G. Provide master control switches with pilot light, for maintaining power to door holders during fire alarm tests. A switch shall be located at the fire alarm control panel.

1.12 INSTALLATION:
A. Installation shall be in accordance with the NEC, as shown on the drawings, and as recommended by the major equipment manufacturer.
B. Install smoke detector heads not more than two weeks prior to final inspection. Test the detectors in place. Cleaning detectors at the time of final inspection is the contractors responsibility.
C. Field verify location of area smoke detectors and heat detectors. Do not locate within 36-inches of a HVAC diffuser (supply or return), in a direct air flow or within 36-inches of a sprinkler head. Smoke detectors for door release shall be located on the centerline of the door and a maximum of 5 feet from the door. The minimum distance from the door is the depth of the wall section above the door, but not less than 12".
D. Duct smoke detectors should be located in the area between 6 and 10 duct equivalent diameters of straight, uninterrupted run. Duct smoke detectors for fire/smoke dampers should be located between the last inlet or outlet upstream of the damper and the first inlet or outlet downstream of the damper.
E. Fan shutdown relay wiring shall be located within 3 feet of the fan controls and the wiring to the relay shall be monitored.

1.13 TYPICAL OPERATION:
A. Normal System Operation: Actuation of any manual station, smoke detector, or water flow switch shall cause the following operations to occur, unless otherwise specified:
1. Operate the audible/visual signals in the building. Audible devices shall be temporal coded.
2. Transmit a separate alarm/trouble signal, via phone line to a central monitoring agency.
3. Duct type smoke detectors and waterflow switches shall, in addition to the above, perform the functions specified in the mechanical specifications or shown on the mechanical drawings.
4. Operation of any sprinkler and standpipe valve supervisory switch shall cause the system to go into trouble condition.
a. It shall not cause the system to go into alarm condition.
b. It shall not prevent any flow switch from actuating an alarm.
5. Provide duct detectors in both the supply and return air ducts for air handling units, fan coil units make-up air unit, and exhaust fans 2000 CFM or larger. Provide fan shut down relays to shut down AHU's, make-up air units, relief fans, exhaust fans and fan coil units over 2000 CFM.
B. System Supervision: System supervision shall include the following conditions:
1. Loss of operating or standby power.
2. A signal ground or open circuit in alarm initiating circuits, alarm indicating circuits, and auxiliarized transmitter trip circuits, and sprinkler and standpipe valve circuits. Each circuit shall have its own supervisory devices.
3. Off-normal position of sprinkler and standpipe valves.
4. Battery and battery charger shall have supervision as specified elsewhere in this section.
C. Trouble Signals:
1. Derangement of any of the above supervised conditions shall be visually and audible annunciated at the fire alarm control panel. Each circuit shall have individual visual annunciation.
2. Operation of the sprinkler and standpipe valves towards the closed position shall cause a supervisory signal.
3. Trouble signals shall be retransmitted, via an individual auxiliarized transmitter, to remote locations.

1.14 TESTS:
A. Provide the service of a competent, NICET certified, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system. Make all adjustments and tests in the presence of the engineer.
B. When the systems have been completed and prior to the scheduling of the final inspection, furnish testing equipment and perform the following tests in the presence of the engineer. When any defects are detected, make repairs or install replacement components, and repeat the tests until such time that the complete fire alarm systems meets all contract requirements. After the system has passed the test and been approved by the engineer, the contractor may request a final inspection. Final acceptance of system will not be made until retested at final inspection.
1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
2. Test the insulation on all installed cable and wiring by standard methods as recommended by the equipment manufacturer.
3. Run water through all flow switches. Drain the water by hose to the nearest drain. Check to verify whether all codes are coming in clearly and correctly. Check time delay on water flow switches to assure that water surges do not trip transmitters. (Submit a report listing all water flow switch operations and their retard time in seconds.)
4. Open fire alarm station circuits to see if trouble signal actuates.
5. Open audible signal circuits to see if the trouble signal actuates.
6. Ground fire alarm station circuits and verify response of trouble signals.
7. Ground audible signal circuits and verify response of trouble signals.
8. Check transmission of all fire alarm devices.
9. Check installation, supervision, operation and sensitivity of smoke detectors to ascertain that they will avoid false alarm signals and will function as specified. See Article SMOKE/HEAT DETECTORS.
10. Upon completion of Fire Alarm System Testing, submit to engineer one (1) copy of Testing and Inspection Report signed off as 100 percent functioning by the System Supplier and the Electrical contractor. Bind one (1) additional copy in each of the operation and maintenance manuals.

1.15 FINAL INSPECTION:
A. At the final inspection a factory trained representative of the manufacturer of the major equipment shall perform the tests in Article TESTS. In addition the representative shall demonstrate that the systems function properly in every respect. The demonstration shall be made in the presence of the Owners Representative.

END SECTION 283111

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C.O.A. #1046 PE/LS EXPIRES JUNE 30, 2027

STUDENT UNION GALLEY RENOVATION

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REV. DATE	#	DESCRIPTION
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ELECTRICAL SPECIFICATIONS

E0.5

POWER GENERAL NOTES

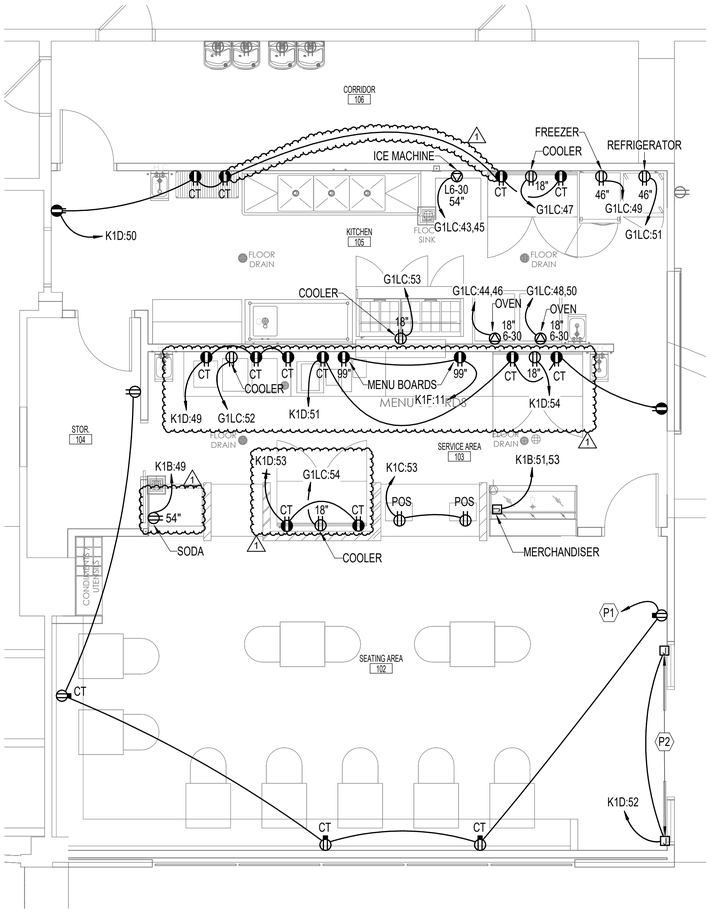
1. BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.
2. A GROUND CONDUCTOR SIZED PER N.E.C. ARTICLE 250 IS REQUIRED IN ALL CONDUITS.
3. FOR CONNECTION REQUIREMENTS TO MECHANICAL UNITS, SEE MECHANICAL EQUIPMENT CONNECTION SCHEDULE.
4. REFER TO THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS OF FIRE RATED WALLS AND CEILINGS AND THE ASSOCIATED U.L. ASSEMBLY NUMBERS.
5. FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS, PROVIDE AN ASTM E814 COMPLIANT, U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM THAT IS SPECIFIC TO THE WALL OR CEILING CONSTRUCTION ASSEMBLY. INSTALL SYSTEM IN STRICT COMPLIANCE WITH THE U.L. ASSEMBLY INDICATED IN THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
6. ALL PIPING, CONDUIT, AND OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) IN FIRE RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIAL.
7. OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES OR PROTECTED BY OTHER MEANS ALLOWED BY THE SPECIFIC U.L. ASSEMBLY.
8. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF STC RATED WALLS. OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF STC RATED WALLS SHALL BE LIMITED TO TWO OUTLET BOXES PER STUD SPACE AND COVERED WITH "PUTTY PAD" TYPE MOLDABLE FIRE BARRIER.

DEMOLITION GENERAL NOTES

1. DEMOLITION PLANS SHOW THE GENERAL EXTENT OF THE ELECTRICAL DEMOLITION WORK. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT ELECTRICAL SERVICES TO ALL EQUIPMENT BEING REMOVED, SEE MECHANICAL PLANS. OWNER SHALL HAVE THE OPTION TO RETAIN REUSABLE ITEMS, SUCH AS COVERPLATES, RECEPTACLES, LIGHTS, PANELS, ETC. NOT BEING USED IN THE FINISHED WORK. COORDINATE WITH OWNER PRIOR TO STARTING DEMOLITION. PROPERLY AND LEGALLY DISPOSE OF ALL EQUIPMENT AND MATERIALS BEING REMOVED.
2. REMOVE ALL CONDUIT LEFT EXPOSED BY REMOVAL OF WALLS AND CEILINGS IN REMODELED AREAS. PLUG BOTH ENDS OF REMAINING CONDUIT IN WALL OR FLOOR WHERE CUT.
3. ELECTRICAL OUTLETS, ETC. POSSIBLY CONCEALED BY STORAGE SHELVING, CASEWORK, FURNITURE, ETC. ARE NOT SHOWN AND MAY REQUIRE REMOVAL.
4. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING ALL OPENINGS IN EXISTING CONSTRUCTION AFTER REMOVAL OF EQUIPMENT, RACEWAY SYSTEMS, OUTLET BOXES, ETC.
5. WHERE EQUIPMENT AND OTHER DEVICES ARE BEING REMOVED, THE CIRCUITING SHALL BE REMOVED, IF POSSIBLE, BACK TO POINT OF SUPPLY. WHERE REQUIRED, CIRCUITING SHALL BE EXTENDED TO MAINTAIN CONTINUITY OF THE CIRCUIT OR OPERATION OF THE SYSTEM.
6. ALL DEVICES SHOWN DASHED ON THE DEMOLITION PLAN(S) SHALL BE REMOVED, UNLESS NOTED OTHERWISE.
7. PROVIDE MATCHING BLANK COVERPLATES WHERE DEVICES ARE BEING REMOVED FROM FLUSH-MOUNTED OUTLET BOXES IN EXISTING WALLS TO REMAIN.
8. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO BEGINNING WORK.

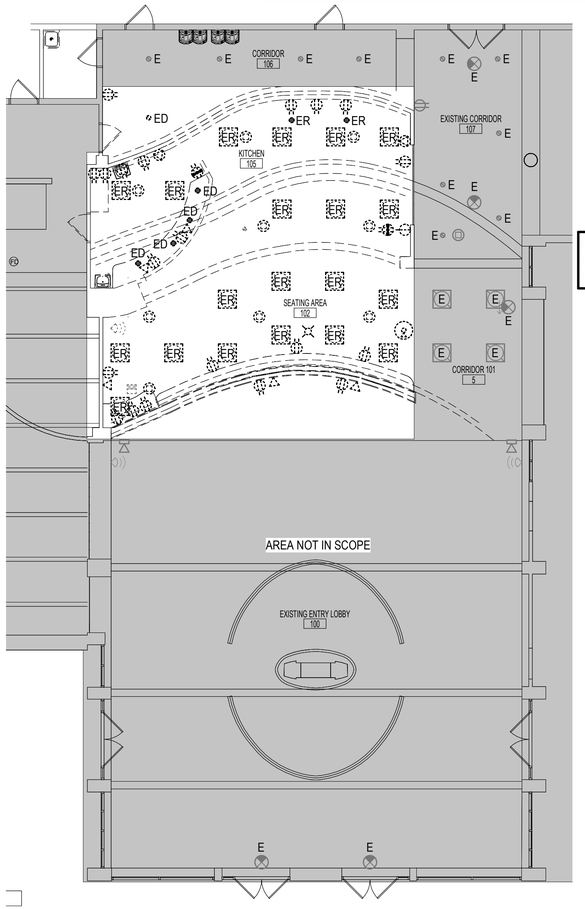
SHEET KEYNOTES

P1	RECEPTACLES SHALL BE CIRCUITED TO CIRCUIT PREVIOUSLY SERVING AREA.
P2	PROVIDE POWER CONNECTION FOR AUTOMATIC DOOR OPENERS. COORDINATE WITH DOOR INSTALLER PRIOR TO INSTALLATION.



B **POWER PLAN**

0' 2' 4' 6' 1/4" = 1'-0"



FIXTURES LABLED 'ER' SHALL BE REMOVED, RELAMPED AND STORED IN A SAFE LOCATION UNTIL BEING REINSTALLED IN NEW LOCATION AS SHOWN ON SHEET E2.1. REFER TO LIGHT FIXTURE SCHEDULE FOR REPLACEMENT LAMPS AND ADDITIONAL INFORMATION.

A **ELECTRICAL DEMOLITION PLAN**

0' 4' 8' 12' 1/8" = 1'-0"

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REV. DATE	#	DESCRIPTION
06.03.2025	-	CD'S
01.14.2026	1	ADDENDUM #1

ELECTRICAL DEMOLITION AND POWER PLANS

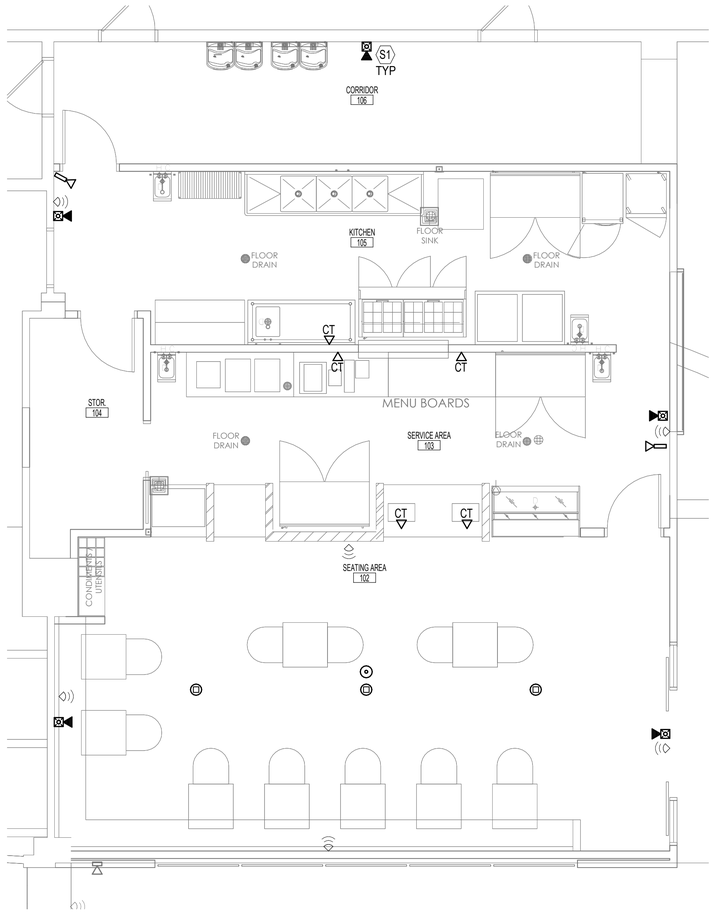
E1.1

(1)(2)(3)(4) (P.E.C.)

LIGHTING FIXTURE SCHEDULE

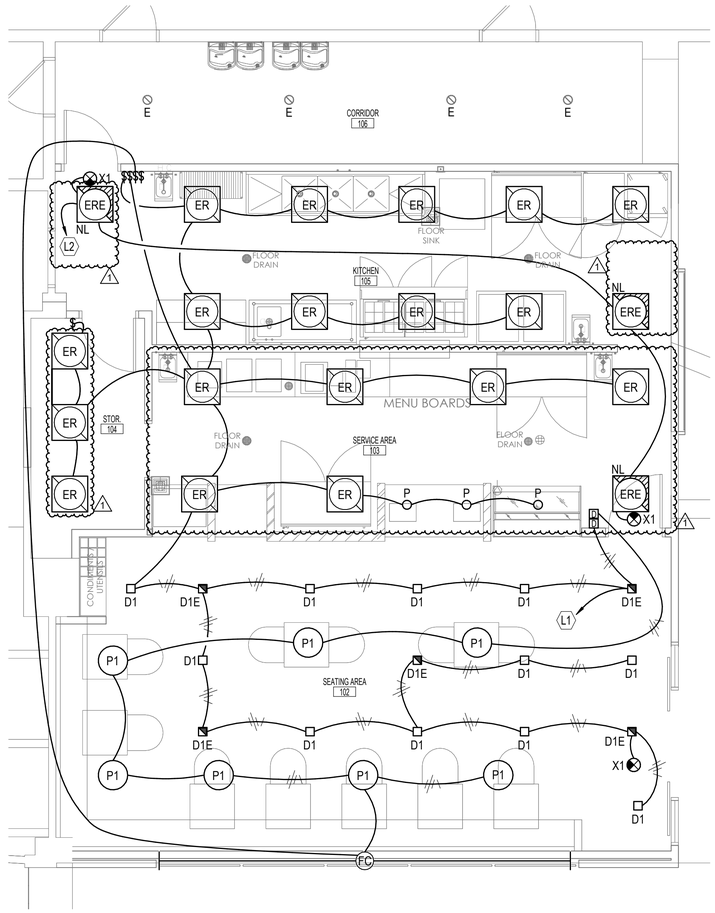
1. GENERAL CONTRACTOR SHALL PROVIDE FIREPROOFING AROUND RECESSED FIXTURES INSTALLED IN FIRE RATED CEILING PER U.L. REQUIREMENTS. ELECTRICAL CONTRACTOR WILL COORDINATE.
2. MANUFACTURERS LISTED IN THIS SCHEDULE OR APPROVED BY WRITTEN ADDENDUM WILL BE THE ONLY APPROVED MANUFACTURERS TO BID THE LIGHTING FIXTURES FOR THIS PROJECT. CONTRACTORS AND SUPPLIERS USING PRICING FROM MANUFACTURERS NOT LISTED ON SCHEDULE OR BY ADDENDUM DO SO AT THEIR OWN RISK.
3. LIGHT FIXTURE SELECTIONS ARE BASED ON THE MANUFACTURER IN THE LEFT MOST COLUMN AS LISTED IN THE SCHEDULE. FIXTURES APPROVED AS EQUALS IN THIS SCHEDULE OR BY ADDENDUM SHALL BE EQUAL TO THE UNIT SPECIFIED IN THE LEFT MOST COLUMN, IE: SPRING LOADED LATCHES, POST PAINTED FINISH, PHOTOMETRICS.
4. ALL LIGHT FIXTURES SHALL BE SECURED TO THE CEILING FRAMING SYSTEM BY MECHANICAL MEANS (SUCH AS BOLTS, SCREWS, OR RIVETS) OR BY CLIPS IDENTIFIED FOR USE WITH THE TYPE OF CEILING FRAMING MEMBER AND LIGHT FIXTURE.
5. RELAMP RELOCATED 2X2 FIXTURES WITH KEYSTONE KT-LED8T8-24GC-830-S/G3 LED LAMPS. IF FIXTURES ARE DAMAGED DURING DEMO OR INSTALLATION COORDINATE WITH OWNER FOR REPLACEMENT AT CONTRACTORS EXPENSE. (1)
6. LIGHT FIXTURES SHALL BE PROVIDED WITH 0-10V DIMMING DRIVERS. DRIVERS SHALL BE CAPABLE OF DIMMING TO A MINIMUM OF 10% TOTAL LIGHT OUTPUT. LED DRIVERS SHALL HAVE A DISCONNECTING MEANS MEETING THE REQUIREMENTS OF NEC SECTION 410.130(G), EXCEPT FOR THOSE INSTALLED IN CORD AND PLUG CONNECTED FIXTURES. WHERE APPLICABLE, WHEN DIMMING SWITCHES ARE NOT PROVIDED AS PART OF THE DESIGN, CONTRACTOR SHALL CAP OFF THE 0-10V DIMMING WIRES FOR FUTURE EXTENSION BY THE OWNER.
7. PROVIDE ARROWS AND FACES AS INDICATED ON THE DRAWINGS. [PROVIDE EXTRA EXIT SIGNS OF EACH TYPE SPECIFIED AS FOLLOWS TO ACCOMMODATE ADDITIONAL THAT MAY BE REQUIRED BY THE AHJ DURING INSPECTION: 2 TOTAL OF EACH TYPE.
8. TO COMPLY WITH NEC SECTION 410.130(G), ALL EXISTING OR RELOCATED LIGHT FIXTURES WITHOUT A BALLAST OR DRIVER DISCONNECTING MEANS SHALL HAVE A BALLAST OR DRIVER DISCONNECTING MEANS INSTALLED UNDER ANY OF THE FOLLOWING CONDITIONS:
   a. WHEN AN EXISTING BALLAST OR DRIVER IS REPLACED.
   b. WHEN AN EXISTING LIGHT FIXTURE IS RELOCATED.
   c. WHEN AN EXISTING LIGHT FIXTURE IS RECIRCUITED.

MARK	DESCRIPTION	MANUFACTURER 1 CATALOG NUMBER	LIGHT SOURCE #	TYPE	WATTS	VOLTS	LENS/LOUVER/FINISH	REF. NOTE	REMARKS
D1	4" RECESSED SQUARE DOWNLIGHT WITH LENS	LITHONIA LDN4SQ-AL03-30K-LS4-WR-TRW-LSS-WD-MVOLT-UGZ	1	LED	25	UNV	SEMI-CLEAR	6	2019LM; 3000K; 80CRI
D1E	4" RECESSED SQUARE DOWNLIGHT WITH LENS & EMERGENCY BATTERY	LITHONIA LDN4SQ-AL03-30K-LS4-WR-TRW-LSS-WD-MVOLT-UGZ-E10WCP	1	LED	25	UNV	SEMI-CLEAR	6	2019LM; 3000K; 80CRI; EM BATTERY
E	FIXTURE TO REMAIN		1	LED	0				
ED	EXISTING TO BE DEMOLISHED		1	LED	0				
ER	FIXTURE TO BE RELOCATED		2	LED	20			5, 8	RELAMP LED 3000K
ERE	FIXTURE TO BE RELOCATED		2	LED	20			5, 8	RELAMP LED 3000K
FC	32' LED WALL WASH	LEDI OP1-58-10D-30-32'	1	LED	185	UNV	ACRYLIC	6	425LM/FT; 3000K; 80CRI
P	LED PENDANT	FOCAL POINT FLCY3N-RD-7H-900-830K-1C-UNV-SC-WH-LZ1-C72-WH-DNT-WFL-CD-WH	1	LED	10	UNV		6	900LM; 3000K; 80CRI
P1	DECORATIVE PENDANT	KODA HP-14-B-PCXX-30-220_TR_DEX-IP65	1	LED	11	UNV		6	1000LM: 3000K; 80CRI
X1	1 FACE/AC EXIT	LITHONIA LE-S-1-R	1	LED	5	UNV	CAST ALUMINUM	7	RED W BATTERY



B SYSTEMS PLAN

0' 2' 4' 6' 1/4" = 1'-0"



A LIGHTING PLAN

0' 2' 4' 6' 1/4" = 1'-0"

LIGHTING GENERAL NOTES

1. BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.
2. A GROUND CONDUCTOR SIZED PER N.E.C. ARTICLE 250 IS REQUIRED IN ALL CONDUITS.
3. REFER TO THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS OF FIRE RATED WALLS AND CEILINGS AND THE ASSOCIATED U.L. ASSEMBLY NUMBERS.
4. FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS, PROVIDE AN ASTM E814 COMPLIANT, U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM THAT IS SPECIFIC TO THE WALL OR CEILING CONSTRUCTION ASSEMBLY. INSTALL SYSTEM IN STRICT COMPLIANCE WITH THE U.L. ASSEMBLY INDICATED IN THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
5. ALL PIPING, CONDUIT, AND OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) IN FIRE RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIAL.
6. OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES OR PROTECTED BY OTHER MEANS ALLOWED BY THE SPECIFIC U.L. ASSEMBLY.
7. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF STC RATED WALLS. OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF STC RATED WALLS SHALL BE LIMITED TO TWO OUTLET BOXES PER STUD SPACE AND COVERED WITH "PUTTY PAD" TYPE MOLDABLE FIRE BARRIER.
8. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LIGHT FIXTURE LOCATIONS. VERIFY ALL DISCREPANCIES WITH ARCHITECT PRIOR TO ROUGH-IN.

SYSTEMS GENERAL NOTES

1. REFER TO THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS OF FIRE RATED WALLS AND CEILINGS AND THE ASSOCIATED U.L. ASSEMBLY NUMBERS.
2. FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS, PROVIDE AN ASTM E814 COMPLIANT, U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM THAT IS SPECIFIC TO THE WALL OR CEILING CONSTRUCTION ASSEMBLY. INSTALL SYSTEM IN STRICT COMPLIANCE WITH THE U.L. ASSEMBLY INDICATED IN THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
3. ALL PIPING, CONDUIT, AND OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) IN FIRE RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIAL.
4. OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES OR PROTECTED BY OTHER MEANS ALLOWED BY THE SPECIFIC U.L. ASSEMBLY.
5. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF STC RATED WALLS. OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF STC RATED WALLS SHALL BE LIMITED TO TWO OUTLET BOXES PER STUD SPACE AND COVERED WITH "PUTTY PAD" TYPE MOLDABLE FIRE BARRIER.
6. WHERE THE SAME DEVICE IS SHOWN IN THE SAME LOCATION ON BOTH THE POWER AND SYSTEMS PLAN, ONLY ONE DEVICE IS REQUIRED. PROVIDE BOTH POWER AND SYSTEMS WIRING AS SHOWN.
7. THE FIRE ALARM SYSTEM SHOWN HAS BEEN DESIGNED PER THE REQUIREMENTS OF NFPA 72. DEVICES SHOWN INDICATE THE DESIGN INTENT AND SHALL BE THE MINIMUM PROVIDED. SYSTEM SUPPLIER SHALL PROVIDE ANY ADDITIONAL CODE REQUIRED DEVICES OR DEVICES REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

SHEET KEYNOTES

#	
L1	LIGHTING SHALL BE CIRCUITED TO EXISTING CIRCUIT PREVIOUSLY SERVING THE AREA.
L2	LIGHTING SHALL BE CIRCUITED TO THE NEAREST AVAILABLE G1LB LIFE SAFETY BRANCH LIGHTING CIRCUIT. (1)
S1	RELOCATE EXISTING OR PROVIDE NEW FIRE ALARM DEVICES COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM PRESENT IN FIELD AND OF THE SAME MANUFACTURER. COORDINATE MODIFICATION OF EXISTING SYSTEM WITH OWNERS FACILITIES.

KKT
ARCHITECTURE \ INTERIORS \ ENGINEERING

KKT ARCHITECTS, INC.
2200 SOUTH UTICA PLACE, SUITE 200
TULSA, OKLAHOMA 74114
[P] 918.744.4270 \ [F] 918.744.7849
WWW.KKTARCHITECTS.COM

PEC PROJECT NUMBER: 238012-035

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
1924 S. UTICA AVE., SUITE 1400, TULSA, OK 74104
918-664-5400 www.pec1.com
C.O.A. #1046 PE/LS EXPIRES JUNE 30, 2027

STUDENT UNION GALLEY RENOVATION

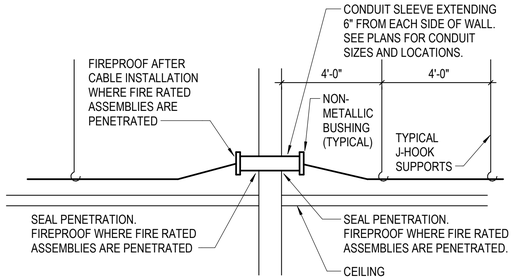
NEO A&M COLLEGE
200 I STREET NE
MIAMI, OK

NORTHEASTERN NEO A&M COLLEGE

REV. DATE	#	DESCRIPTION
06.03.2025	-	CD'S
01.14.2026	1	ADDENDUM #1

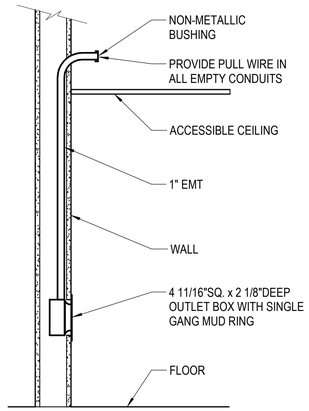
LIGHTING AND SYSTEMS PLANS

E2.1



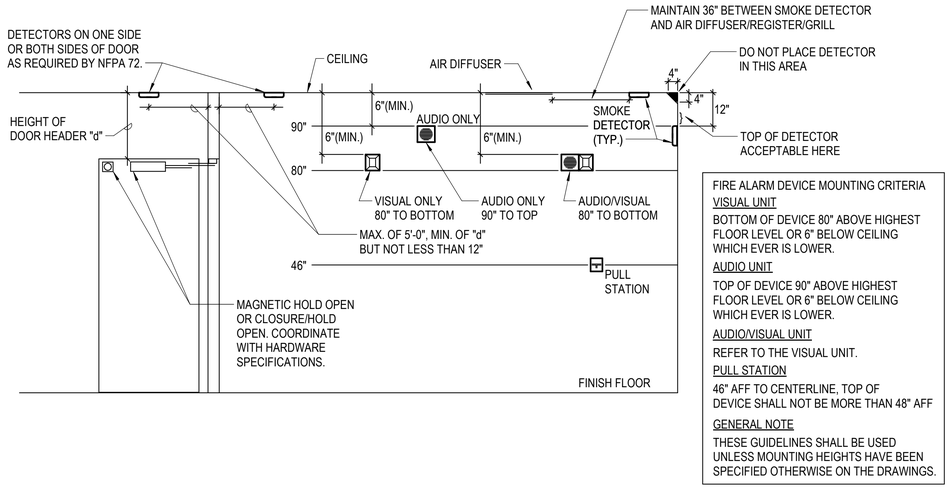
6 WALL PENETRATION DETAIL - J-HOOKS

NTS



5 TYPICAL TELECOM OUTLET MOUNTING DETAIL

NTS



FIRE ALARM DEVICE MOUNTING CRITERIA

VISUAL UNIT

BOTTOM OF DEVICE 80" ABOVE HIGHEST FLOOR LEVEL OR 6" BELOW CEILING WHICH EVER IS LOWER.

AUDIO UNIT

TOP OF DEVICE 90" ABOVE HIGHEST FLOOR LEVEL OR 6" BELOW CEILING WHICH EVER IS LOWER.

AUDIO/VISUAL UNIT

REFER TO THE VISUAL UNIT.

PULL STATION

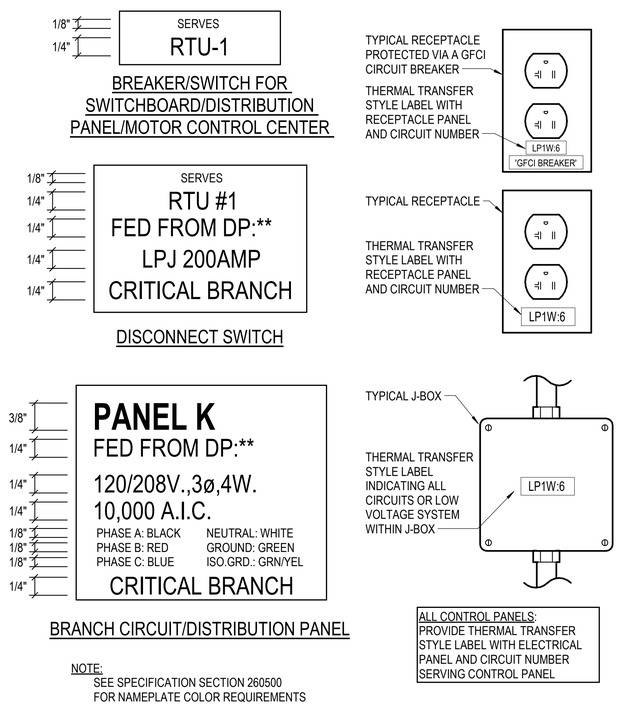
46" AFF TO CENTERLINE, TOP OF DEVICE SHALL NOT BE MORE THAN 48" AFF

GENERAL NOTE

THESE GUIDELINES SHALL BE USED UNLESS MOUNTING HEIGHTS HAVE BEEN SPECIFIED OTHERWISE ON THE DRAWINGS.

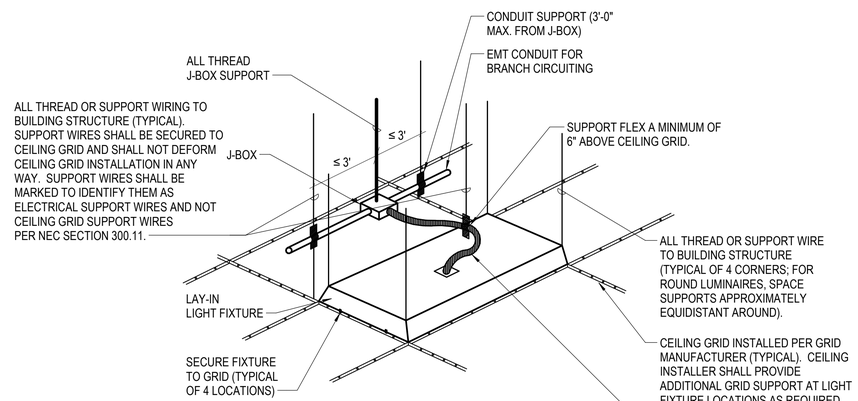
4 FIRE ALARM DEVICE MOUNTING DETAIL

NTS



3 TYPICAL NAMEPLATES AND LABELS

NTS

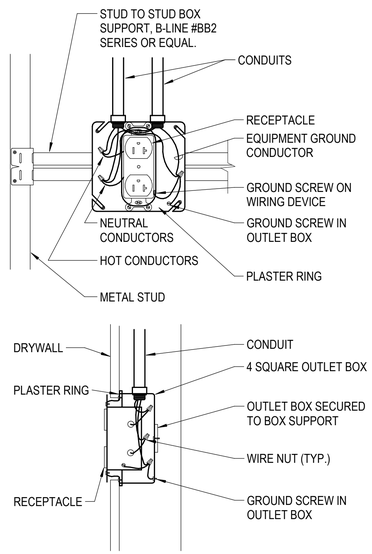


NOTES:

1. ADDITIONAL LIGHT FIXTURE SUPPORT MAY BE REQUIRED DUE TO POTENTIAL SEISMIC CONDITIONS, BUILDING OCCUPANCY, AND FIXTURE TYPE. REFER TO THE SPECIFICATIONS.
2. MOUNTING AND CONNECTION OF RECESSED CAN LIGHTS SHALL UTILIZE BAR HANGERS SECURED TO GRID.

2 TYPICAL LAY-IN FIXTURE INSTALLATION

NTS



1 TYPICAL RECEPTACLE MOUNTING DETAIL

NTS

KKT
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KKT ARCHITECTS, INC.
2200 SOUTH UTICA PLACE, SUITE 200
TULSA, OKLAHOMA 74114
[P] 918.744.4270 \ [F] 918.744.7849
WWW.KKTARCHITECTS.COM

PEC PROJECT NUMBER: 238012-035
PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
1924 S. UTICA AVE., SUITE 1400, TULSA, OK 74104
918-664-5400 www.pec1.com
C.O.A. #1046 PE/LS EXPIRES JUNE 30, 2027

STUDENT UNION GALLEY RENOVATION

NEO A&M COLLEGE
200 I STREET NE
MIAMI, OK

NORTHEASTERN NEO A&M COLLEGE

OKLAHOMA PROFESSIONAL ENGINEER
WILLIAM E. RENNER
35178
OKLAHOMA
06-03-25

REV. DATE	#	DESCRIPTION
06/03/2025		CD'S

ELECTRICAL DETAILS

E3.1

EXIST. PANEL: K1D

208Y/120 VOLTS, 3 PHASE, 4 WIRE
400 AMP MLO, SURFACE MTD.
22000 AIC LABELED

W/GRD. BUS

	CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P.	AMP SIZE	PHASE	AMP SIZE	P.	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.	
(1)	1		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		2	(1)
(1)	3		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		4	(1)
(1)	5		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		6	(1)
(1)	7		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		8	(1)
(1)	9		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		10	(1)
(1)	11		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		12	(1)
(1)	13		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		14	(1)
(1)	15		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		16	(1)
(1)	17		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		18	(1)
(1)	19		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		20	(1)
(1)	21		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		22	(1)
(1)	23		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		24	(1)
(1)	25		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		26	(1)
(1)	27		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		28	(1)
(1)	29		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		30	(1)
(1)	31		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		32	(1)
(1)	33		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		34	(1)
(1)	35		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		36	(1)
(1)	37		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		38	(1)
(1)	39		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		40	(1)
(1)	41		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		42	(1)
(1)	43		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		44	(1)
(1)	45		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		46	(1)
(1)	47		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		48	(1)
(2)	49	600	RCPT	SERVICE AREA 103: RECPTS	1	20	A	20	1	KITCHEN 103: RECPTS	RCPT	1000	50	(2)
(2)	51	600	RCPT	SERVICE AREA 103: RECPTS	1	20	B	20	1	SEATING AREA 102: AUTO DOOR	POWR	1000	52	(2)
(2)	53	400	RCPT	SERVICE AREA 103: RECPTS	1	20	C	20	1	SERVICE AREA 103: COOLER	KTCH	204	54	(2)

(1) EXISTING CIRCUIT BREAKER AND LOAD TO REMAIN.
(2) PROVIDE AND INSTALL CIRCUIT BREAKER IN EXISTING SPACE. CIRCUIT BREAKER SHALL MATCH EXISTING CIRCUIT BREAKERS AND SHALL BE RATED FOR THE MAX. AIC RATING WITHIN EXISTING PANEL. VERIFY ALL REQUIREMENTS IN FIELD.

EXIST. PANEL: K1C

208Y/120 VOLTS, 3 PHASE, 4 WIRE
400 AMP MLO, SURFACE MTD.
22000 AIC LABELED

W/GRD. BUS

	CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P.	AMP SIZE	PHASE	AMP SIZE	P.	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.	
(1)	1		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		2	(1)
(1)	3		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		4	(1)
(1)	5		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		6	(1)
(1)	7		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		8	(1)
(1)	9		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		10	(1)
(1)	11		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		12	(1)
(1)	13		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		14	(1)
(1)	15		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		16	(1)
(1)	17		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		18	(1)
(1)	19		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		20	(1)
(1)	21		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		22	(1)
(1)	23		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		24	(1)
(1)	25		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		26	(1)
(1)	27		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		28	(1)
(1)	29		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		30	(1)
(1)	31		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		32	(1)
(1)	33		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		34	(1)
(1)	35		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		36	(1)
(1)	37		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		38	(1)
(1)	39		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		40	(1)
(1)	41		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		42	(1)
(1)	43		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		44	(1)
(1)	45		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		46	(1)
(1)	47		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		48	(1)
(1)	49		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		50	(1)
(1)	51		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		52	(1)
(3)(2)	53	400	RCPT	SERVING AREA 103: POS	1	20	C	20	1	EXISTING LOAD	EXST		54	(1)

(1) EXISTING CIRCUIT BREAKER AND LOAD TO REMAIN.
(2) PROVIDE AND INSTALL CIRCUIT BREAKER IN EXISTING SPACE. CIRCUIT BREAKER SHALL MATCH EXISTING CIRCUIT BREAKERS AND SHALL BE RATED FOR THE MAX. AIC RATING WITHIN EXISTING PANEL. VERIFY ALL REQUIREMENTS IN FIELD.
(3) GFCI BREAKER SHALL PROVIDE GROUND FAULT PERSONEL PROTECTION PER NEC.

EXIST. PANEL: K1B

208Y/120 VOLTS, 3 PHASE, 4 WIRE
400 AMP MLO, SURFACE MTD.
22000 AIC LABELED

W/GRD. BUS

	CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P.	AMP SIZE	PHASE	AMP SIZE	P.	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.	
(1)	1		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		2	(1)
(1)	3		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		4	(1)
(1)	5		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		6	(1)
(1)	7		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		8	(1)
(1)	9		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		10	(1)
(1)	11		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		12	(1)
(1)	13		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		14	(1)
(1)	15		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		16	(1)
(1)	17		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		18	(1)
(1)	19		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		20	(1)
(1)	21		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		22	(1)
(1)	23		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		24	(1)
(1)	25		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		26	(1)
(1)	27		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		28	(1)
(1)	29		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		30	(1)
(1)	31		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		32	(1)
(1)	33		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		34	(1)
(1)	35		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		36	(1)
(3)(2)	37		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		38	(1)
(3)(2)	39		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		40	(1)
	41		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		42	(1)
	43		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		44	
	45		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		46	
	47		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		48	
(3)(2)	49	1000	KTCH	SERVING ARE 103: SODA FOUNTAIN	1	20	A	20	1	EXISTING LOAD	EXST		50	
(3)(2)	51	1200	KTCH	SERVING ARE 103: MERCHANDISER	2	20	B	20	1	EXISTING LOAD	EXST		52	
	53	----	--	----------	--	|	C	20	1	EXISTING LOAD	EXST		54	

(1) EXISTING CIRCUIT BREAKER AND LOAD TO REMAIN.
(2) PROVIDE AND INSTALL CIRCUIT BREAKER IN EXISTING SPACE. CIRCUIT BREAKER SHALL MATCH EXISTING CIRCUIT BREAKERS AND SHALL BE RATED FOR THE MAX. AIC RATING WITHIN EXISTING PANEL. VERIFY ALL REQUIREMENTS IN FIELD.
(3) GFCI BREAKER SHALL PROVIDE GROUND FAULT PERSONEL PROTECTION PER NEC.

EXIST. PANEL: G1LC

208Y/120 VOLTS, 3 PHASE, 4 WIRE
250 AMP MLO, SURFACE MTD.
22000 AIC LABELED

W/GRD. BUS

	CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P.	AMP SIZE	PHASE	AMP SIZE	P.	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.	
(1)	1		EXST	EXISTING LOAD	3	30	A	30	3	EXISTING LOAD	EXST		2	(1)
	3	----	--	----------	--	|	B	|	--	----------	--	----	4	
	5	----	--	----------	--	|	C	|	--	----------	--	----	6	
(1)	7		EXST	EXISTING LOAD	3	20	A	20	3	EXISTING LOAD	EXST		8	(1)
	9	----	--	----------	--	|	B	|	--	----------	--	----	10	
	11	----	--	----------	--	|	C	|	--	----------	--	----	12	
(1)	13		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		14	(1)
(1)	15		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		16	(1)
(1)	17		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		18	(1)
(1)	19		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		20	(1)
(1)	21		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		22	(1)
(1)	23		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		24	(1)
(1)	25		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		26	(1)
(1)	27		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		28	(1)
(1)	29		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		30	(1)
(1)	31		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		32	(1)
(1)	33		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		34	(1)
(1)	35		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		36	(1)
(1)	37		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		38	(1)
(1)	39		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		40	(1)
(1)	41		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		42	(1)
(3)(2)	43	4684	KTCH	KITCHEN 105: ICE MACHINE	2	30	A	30	2	KITCHEN 105: OVEN	KTCH	6300	44	(2)(3)
	45	----	--	----------	--	|	B	|	--	----------	--	----	46	
(3)(2)	47	204	KTCH	KITCHEN 105; COOLER	1	20	C	30	2	KITCHEN 105: OVEN	KTCH	6300	48	(2)(3)
(3)(2)	49	780	KTCH	KITCHEN 105; FREEZER	1	20	A	|	--	----------	--	----	50	
(3)(2)	51	456	KTCH	KITCHEN 105; REFRIGERATOR		20	B	20		SERVICE AREA 103: COOLER	KTCH	204	52	(2)(3)
(3)(2)	53	204	KTCH	KITCHEN 105; COOLER		20	C	20		SERVICE AREA 103: COOLER	KTCH	204	54	(2)(3)

(1) EXISTING CIRCUIT BREAKER AND LOAD TO REMAIN.
(2) PROVIDE AND INSTALL CIRCUIT BREAKER IN EXISTING SPACE. CIRCUIT BREAKER SHALL MATCH EXISTING CIRCUIT BREAKERS AND SHALL BE RATED FOR THE MAX. AIC RATING WITHIN EXISTING PANEL. VERIFY ALL REQUIREMENTS IN FIELD.
(3) GFCI BREAKER SHALL PROVIDE GROUND FAULT PERSONEL PROTECTION PER NEC.

EXIST. PANEL: K1F

208Y/120 VOLTS, 3 PHASE, 4 WIRE
400 AMP MLO, SURFACE MTD.
22000 AIC LABELED

W/GRD. BUS

	CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P.	AMP SIZE	PHASE	AMP SIZE	P.	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.	
(1)	1		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		2	(1)
(1)	3		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		4	(1)
(1)	5		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		6	(1)
(1)	7		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		8	(1)
(1)	9		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		10	(1)
(2)	11	1000	RCPT	SERVING AREA 103: MENUBOARDS	1	20	C	20	1	EXISTING LOAD	EXST		12	(1)
(1)	13		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		14	(1)
(1)	15		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		16	(1)
(1)	17		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		18	(1)
(1)	19		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		20	(1)
(1)	21		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		22	(1)
(1)	23		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		24	(1)
(1)	25		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		26	(1)
(1)	27		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		28	(1)
(1)	29		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		30	(1)
(1)	31		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		32	(1)
(1)	33		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		34	(1)
(1)	35		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		36	(1)
(1)	37		EXST	EXISTING LOAD	1	20	A	20	1	EXISTING LOAD	EXST		38	(1)
(1)	39		EXST	EXISTING LOAD	1	20	B	20	1	EXISTING LOAD	EXST		40	(1)
(1)	41		EXST	EXISTING LOAD	1	20	C	20	1	EXISTING LOAD	EXST		42	(1)

(1) EXISTING CIRCUIT BREAKER AND LOAD TO REMAIN.
(2) PROVIDE AND INSTALL CIRCUIT BREAKER IN EXISTING SPACE. CIRCUIT BREAKER SHALL MATCH EXISTING CIRCUIT BREAKERS AND SHALL BE RATED FOR THE MAX. AIC RATING WITHIN EXISTING PANEL. VERIFY ALL REQUIREMENTS IN FIELD.

KKT
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WWW.KKTARCHITECTS.COM

PEC PROJECT NUMBER: 238012-035
PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
1924 S. UTICA AVE., SUITE 1400, TULSA, OK 74104
918-664-5400 www.pec1.com
C.O.A. #1046 PE/LS EXPIRES JUNE 30, 2027

STUDENT UNION GALLEY RENOVATION

NEO A&M COLLEGE
200 I STREET NE
MIAMI, OK

NORTHEASTERN OKLAHOMA A&M COLLEGE

REGISTERED PROFESSIONAL ENGINEER
WILLIAM E. REED
OKLAHOMA
01-14-26

REV. DATE	#	DESCRIPTION
06.03.2025	-	CD'S
01.14.2026	1	ADDENDUM #1

ELECTRICAL SCHEDULES

E4.2