

### GENERAL NOTES

- THE REQUIREMENTS OF THE CONTRACT DOCUMENTS INCLUDE FURNISHING ALL LABOR AND MATERIALS TO COMPLETE THE PROJECT AS DESCRIBED BY THE DOCUMENTS. THE CONTRACT DOCUMENTS SHALL INCLUDE THE OWNER/CONTRACTOR AGREEMENT, GENERAL CONDITIONS, THE DRAWINGS, SPECIFICATIONS AND ALL ADDENDA AND REVISIONS. UNLESS OTHERWISE AGREED TO, THE GENERAL CONDITIONS SHALL BE AIA DOCUMENT A201, LATEST EDITION.
- ALL WORK SHALL MEET OR EXCEED ALL APPLICABLE CODES, REGULATIONS, ORDINANCES, ETC. OF THE AUTHORITY HAVING JURISDICTION AND SHALL CONFORM WITH THE RULES AND REGULATIONS OF OSHA. UNLESS OTHERWISE AGREED TO, THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING, PHASING AND OBTAINING ALL REQUIRED PERMITS, INSPECTIONS, AND FINAL WRITE-OFFS AT THE PROJECT COMPLETION. THE CONTRACTOR SHALL ARRANGE FOR ALL INSPECTIONS NECESSARY TO OBTAIN A CERTIFICATE OF OCCUPANCY.
- THE CONTRACTOR SHALL VISIT AND EXAMINE THE PROJECT SITE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS. THE CONTRACTOR SHALL REVIEW THE CONSTRUCTION DOCUMENTS AND VERIFY DIMENSIONS AND ACTUAL FIELD CONDITIONS. ANY CONFLICTS/OMISSIONS OR DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE CONSTRUCTION DOCUMENTS, OR ANY DISCREPANCIES WITHIN THE CONSTRUCTION DOCUMENTS THEMSELVES, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. IN WRITING, THREE (3) BUSINESS DAYS BEFORE RETURN OF BID. DRAWINGS OF EXISTING CONDITIONS ARE BASED UPON EXISTING BUILDING DRAWINGS OBTAINED THROUGH THE OWNER. ACTUAL FIELD CONDITIONS MAY VARY FROM THAT SHOWN IN THE CONSTRUCTION DOCUMENTS.
- ANY CONFLICTS FOUND IN THE CONSTRUCTION DOCUMENTS OR ANY APPARENT ERRORS OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. IN INSTANCES OF CONFLICT BETWEEN THE ARCHITECTURAL DRAWINGS AND THE ENGINEERING DRAWINGS FOR LOCATIONS OF MATERIALS AND EQUIPMENT, THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE. FOR DISCREPANCIES NOT BROUGHT TO THE ATTENTION OF THE ARCHITECT IT WILL BE ASSUMED THAT THE CONTRACTOR HAS BID THE MORE EXPENSIVE METHOD OF CONSTRUCTION.
- PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL VERIFY THAT ITS DRAWINGS AND SPECIFICATIONS ARE THE LATEST ISSUE.
- DO NOT SCALE DRAWINGS. IF ADDITIONAL INFORMATION OR DIMENSIONS ARE REQUIRED, CONTACT THE ARCHITECT. ALL DIMENSIONS INDICATED ON THE DRAWINGS ARE FROM FACE OF FRAMING FOR NEW PARTITIONS / CONSTRUCTION AND FROM FINISH FACE FOR EXISTING CONSTRUCTION. UNLESS OTHERWISE NOTED, DIMENSIONS NOTED AS "(A)" OR "FIELD VERIFY" ARE DIMENSIONS THAT MUST BE CONFIRMED IN THE FIELD. DIMENSIONS NOTED AS "CLEAR" ARE MINIMUM CLEAR DIMENSIONS TO FINAL FINISH FACE OF MATERIAL AT THE MOST CONSTRUCTIVE WIDTH OR HEIGHT.
- ALL EXISTING ITEMS NOT SHOWN OR NOT INDICATED AS PART OF THE WORK ARE TO REMAIN.
- ALLOW FOR PATCHING AND MISCELLANEOUS REPAIR WORK TO TIE NEW WORK INTO OLD. PATCHED SURFACES SHALL MATCH EXISTING. WHERE EXISTING SURFACES ARE PATCHED, THE ENTIRE SURFACE - NOT ONLY THE PATCH - SHALL BE REFINISHED. PATCH, REPAIR AND PAINT ALL EXISTING WALLS TO REMAIN AS REQUIRED BY THE CONSTRUCTION, BY DAMAGE DURING CONSTRUCTION, AND BY THE SCOPE OF WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, PROCEDURES, AND COORDINATION OF ALL WORK PERFORMED UNDER ITS SUPERVISION INCLUDING WORK PERFORMED BY ITS SUBCONTRACTORS.
- ALL ITEMS REQUIRED BY THESE DRAWINGS BUT NOT SPECIFIED SHALL MATCH BUILDING STANDARD.
- PROVIDE METAL STUD AND POLYETHYLENE DUST BARRIERS AS REQUIRED TO PREVENT DUST CONTAMINATION OF OCCUPIED SPACE. REPLACE ALL MECHANICAL AIR FILTERS REGULARLY DURING DEMOLITION & DRYWALL SANDING TO PREVENT CLOGGING. NEVER OPERATE SYSTEMS WITHOUT FILTERS. REPLACE FILTERS AS FINAL CLEANING PROCEDURES ARE COMPLETE. BAG AND PROTECT ALL EXISTING WINDOW BLINDS PRIOR TO COMMENCING WORK.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN THE NECESSARY COVERINGS, BOARDS, TEMPORARY PARTITIONS, AND DOORS AS REQUIRED TO PROTECT NEW AND EXISTING WORK, MATERIALS, AND FINISHES ALREADY IN PLACE. ANY AREAS IN THE BUILDING DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
- NO WORK AND/OR CONSTRUCTION OPERATIONS SHALL BE PERFORMED THAT WILL UNDERMINE THE STRUCTURAL INTEGRITY OF THE BUILDING. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING THE WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTION, AND/OR MISALIGNMENT IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, AND GOOD PRACTICE.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL FIELD CONDITIONS AND LAYOUT THE PROPOSED PARTITIONS FOR REVIEW BY THE ARCHITECT FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT. INSTALLATION OF STUDS SHALL NOT PROCEED WITHOUT THIS REVIEW AND APPROVAL. APPROVAL BY THE ARCHITECT DOES NOT RELEASE THE CONTRACTOR FROM THE RESPONSIBILITY TO MAINTAIN CRITICAL DIMENSIONS AND CLEARANCES.
- AFTER COMPLETION OF ALL WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING COMPLETE ARCHITECTURAL AND ENGINEERING AS-BUILT DRAWINGS.
- ALL ABANDONED OR UNUSED EXISTING SWITCHES, PLUGS, OUTLETS, AND JUNCTION BOXES SHALL BE REMOVED AND HOLES PATCHED WITH GYPSUM BOARD TO MATCH ADJACENT SURFACES. NO BLANK COVERS WILL BE ACCEPTED.
- SUBSTITUTIONS, REVISIONS, OR CHANGES MUST BE SUBMITTED TO THE ARCHITECT FOR REVIEW AND APPROVAL IN ACCORDANCE WITH THE SPECIFIED PROCEDURES PRIOR TO PURCHASE, FABRICATION, OR INSTALLATION. REQUESTS FOR SUBSTITUTION OF SPECIFIED ITEMS SHALL BE SUBMITTED WITHIN TEN (10) DAYS OF CONTRACT AWARD AND WILL BE CONSIDERED ONLY IF THE SUBSTITUTION ITEM PROVIDES EQUAL OR BETTER PERFORMANCE, HAS A MORE ADVANTAGEOUS DELIVERY DATE, AND WHERE THERE IS NO SACRIFICE IN QUALITY, APPEARANCE, OR FUNCTIONALITY. IT IS THE SOLE DISCRETION OF THE ARCHITECT TO DETERMINE IF THE PROPOSED SUBSTITUTION IS ACCEPTABLE.
- FOR A PERIOD OF ONE YEAR FROM THE DATE OF CONSTRUCTION, COMPLETION, AND ACCEPTANCE BY THE OWNER, THE CONTRACTOR SHALL ADJUST, REPAIR, OR REPLACE, AT NO COST TO THE OWNER, ANY EQUIPMENT, MATERIALS, OR WORKMANSHIP UNDER THIS CONTRACT FOUND TO BE DEFECTIVE.
- THE CONTRACTOR SHALL COORDINATE AND SCHEDULE WORK TO BE PERFORMED BY OTHERS AND SHALL COORDINATE THE EXACT LOCATIONS AND DO ALL NECESSARY CONSTRUCTION, CUTTING, FITTING, AND PATCHING THAT MAY BE REQUIRED TO FACILITATE THE WORK PERFORMED BY OTHERS AS INDICATED IN THE CONTRACT DOCUMENTS.

- AT THE TIME OF BID SUBMISSION, THE CONTRACTOR SHALL IDENTIFY ALL LONG-LEAD ITEMS THAT MAY ADVERSELY IMPACT THE CONSTRUCTION SCHEDULE. BY TENDERING ITS BID THE CONTRACTOR WARRANTS THAT ALL OF THE ITEMS SPECIFIED IN THE CONTRACT DOCUMENTS WILL BE READILY AVAILABLE AND THAT NO SUBSTITUTIONS WILL BE ALLOWED FOR AN ITEM THAT WAS NOT IDENTIFIED BY THE CONTRACTOR AS "LONG-LEAD" AT THE TIME OF BID SUBMISSION.
- ALL WORK SHALL BE PERFORMED DURING NORMAL BUSINESS HOURS UNLESS AGREED TO OTHERWISE. WORK INVOLVING EXCESSIVE NOISE OR WORK THAT WOULD OTHERWISE INTERFERE WITH THE NORMAL OPERATION OF THE FACILITY AND/OR THE COMFORT OF OTHER BUILDING OCCUPANTS SHALL BE DONE DURING NON-REGULAR HOURS ON AN AS-REQUIRED BASIS. THIS SHALL BE IDENTIFIED IN THE BID AND BE COORDINATED THROUGH THE OWNER.
- THE FOLLOWING LIST OF WORK ITEMS SHALL BE COORDINATED WITH THE OWNER: SCHEDULING OF TIME AND LOCATIONS FOR DELIVERIES, COORDINATION OF BUILDING ACCESS, AND THE USE AND CLEARANCE OF AVAILABLE ELEVATORS. THE CONTRACTOR SHALL DETERMINE THE EXTENT OF, MAKE ARRANGEMENTS FOR, AND INCLUDE IN ITS BID FOR: HOISTING, CARTING, ELEVATOR SERVICE STANDARD, AND OVERTIME SERVICES BY THE OWNER.
- WORK AREAS SHALL BE MAINTAINED IN A SECURE AND LOCKABLE CONDITION DURING CONSTRUCTION. PROVIDE, WHERE NECESSARY, TEMPORARY LOCKABLE DOORS AND KEYS TO MAINTAIN CONSTANT ACCESS AND SECURITY FOR THE TENANT TO SPACES NOT UNDER CONSTRUCTION.
- ALL MANUFACTURED ARTICLES, MATERIALS, AND/OR EQUIPMENT SHALL BE INSTALLED CONNECTED, ERRECTED, CLEANED, AND/OR CONDITIONED PER MANUFACTURER'S INSTRUCTIONS BY THE APPROPRIATE SUBCONTRACTOR UNDER THE GENERAL CONTRACTOR'S SUPERVISION. IN CASE OF A DISCREPANCY BETWEEN THE MANUFACTURER'S INSTRUCTIONS AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
- IMMEDIATELY PRIOR TO THE OWNER'S OCCUPANCY THE CONTRACTOR SHALL THOROUGHLY CLEAN SURFACES OF DUST, DEBRIS, LOOSE CONSTRUCTION MATERIAL, AND SHALL LEAVE FLOORS VACUUMED AND CLEAN. THE CONTRACTOR SHALL CLEAN WINDOWS, AND BLINDS (UNLESS PREVIOUSLY BAGGED) AND SHALL VACUUM THE INSIDE OF INDUCTION UNIT ENCLOSURES.
- UNLESS NOTED OTHERWISE ALL ROOF PENETRATIONS SHALL BE ADEQUATELY PATCHED, FLASHED, AND SEALED IN ACCORDANCE WITH THE NATIONAL ROOFING CONTRACTOR'S ASSOCIATIONS (NRCA) GUIDELINES AND DETAILS. MOST RECENT EDITION.
- THE CONTRACTOR IS RESPONSIBLE FOR ATTAINING A COPY OF THE BUILDING OWNER'S RULES AND REGULATIONS. ALL CONTRACTORS, VENDORS, AND SUBCONTRACTORS ARE TO BE PROVIDED WITH AND ABIDE BY ALL OF THE BUILDING RULES.
- FOR THE DURATION OF THE PROJECT THE CONTRACTOR SHALL MAINTAIN EXITS, EGRESS LIGHTING, AND FIRE PROTECTION DEVICES AND ALARMS CONFORMING TO ALL LOCAL BUILDING CODE REQUIREMENTS.
- THE ELECTRICAL PLUMBING, MECHANICAL, FIRE PROTECTION WORK PRESENTED IN THESE DOCUMENTS IS INTENDED TO SHOW THE GENERAL ARRANGEMENT AND LOCATION OF EXISTING AND PROPOSED FIXTURES AND ACCESSORIES. THE CONTRACTOR SHALL MODIFY EXISTING ELECTRICAL, PLUMBING, MECHANICAL AND FIRE PROTECTIONS SYSTEMS AS REQUIRED TO ACCOMMODATE THE NEW LAYOUT AND AS REQUIRED TO MEET ALL APPLICABLE BUILDING CODES.
- UPON AWARD OF THE CONTRACT, DETERMINE THE DELIVERY SCHEDULE OF MATERIALS NEEDED FOR THE COMPLETION OF THE WORK. IF THE DELIVERY TIME OF ANY PRODUCT IMPEDES THE CONSTRUCTION SCHEDULE, NOTIFY THE OWNER WITHIN (10) BUSINESS DAYS OF THE CONTRACT BEING AWARDED.

#### SUBMITTALS:

- SHOP DRAWINGS / SUBMITTALS ARE REQUIRED FOR BUT NOT LIMITED TO THE FOLLOWING: MILLWORK, DOORS/FRAME/HARDWARE, ALL FLOORING, PAINT AND VVC, ACT GRID / TILE, ALL SPECIALTY ITEMS.
- WITHIN TEN (10) DAYS OF THE AWARD OF THE CONTRACT THE CONTRACTOR SHALL SUBMIT A DETAILED CONSTRUCTION SCHEDULE INCLUDING MAJOR TASKS AND DEADLINES WITH START AND COMPLETION DATES.
- SUBMITTALS SHALL INCLUDE THREE (3) SETS OF ALL APPLICABLE, DRAWINGS, CUT-SHEETS, TECHNICAL DATA, AND SAMPLES.
- CONTRACTOR SHALL REVIEW REQUIRED SHOP DRAWINGS TO ASSURE THEY ARE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CORRELATING AND CONFIRMING DIMENSIONS AND QUANTITIES, CHOOSING THE FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES, COORDINATING RELATED TRADES, AND PERFORMING THE WORK IN A SAFE AND SATISFACTORY MANNER.
- WHEN APPLICABLE, DESIGN/BUILD DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR TO THE ARCHITECT FOR REVIEW. DESIGN, COORDINATION, AND CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

#### MECHANICAL:

- ALL RETURN GRILLES LOCATED WITHIN THE CONSTRUCTION ZONE THAT WILL REMAIN OPERABLE DURING CONSTRUCTION ARE TO BE COVERED WITH AN APPROPRIATE FILTER MEDIA AND MAINTAINED ON A WEEKLY BASIS FOR THE DURATION OF THE PROJECT.
- A NON-CERTIFIED AIR BALANCE REPORT IS REQUIRED AS PART OF THE CLOSE-OUT DOCUMENTS FOR THE PROJECT.

#### ELECTRICAL:

- DATA AND TELEPHONE OUTLETS SHALL CONSIST OF A TRIM RING WITH PULL STRING TO BE LOCATED ABOVE THE CEILING.

### ABBREVIATIONS

A	AMP	FF	FINISHED FLOOR	OPNG	OPENING
A/C	AIR CONDITIONING	FL	FLOORING	OPP	OPPOSITE
ACM	ALUMINUM COMPOSITE MATERIAL	FLASHG	FLASHING	PBD	PARTICLE BOARD
ACT	ACOUSTIC CEILING TILE	FLUOR	FLUORESCENT	PH	PHASE
ADJ	ADJUSTABLE	F.O.	FACE OF	P-LAM	PLASTIC LAMINATE
AFF	ABOVE FINISHED FLOOR	FRP	FIBER-REINFORCED PLASTIC	PLAS	PLASTER
AL (ALUM)	ALUMINUM	FRT	FIRE RETARDANT TREATED	PLYWD	PLYWOOD
AL	ALTER	FTG	FOOTING	PT	PRESSURE TREATED
ANOD	ANODIZED	GA	GAGE (GAUGE)	PNTD OR PTD	PAINTED
ARCH	ARCHITECTURAL	GALV	GALVANIZED	PVC	POLYVINYL CHLORIDE
AWG	AMERICAN WIRE GAUGE	GB	GRAB BAR	QT	QUARRY TILE
BD	BOARD	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	R	REMOVE
BITUM	BITUMINOUS	GLAZ	GLASS, GLAZING	R	RISER
BLDG	BUILDING	GOVT	GOVERNMENT	RAS	RAIL & STILE
BLK(G)	BLOCK(ING)	GWB	GYPSUM WALL BOARD	RAF	RAISED ACCESS FLOORING
B.O.	BOTTOM OF	GYP BD	GYPSUM BOARD	RD	ROOF DRAIN
BRKR	BREAKER	HB	HOSE BIBB	REINF	REINFORCE(D), (ING)
BRNG	BEARING	HC	HOLLOW CORE	REQD	REQUIRED
BS	BOTH SIDES	HDR	HEADER	RM	ROOM
BW / EW	BOTH WAYS / EACH WAY	HRDW	HARDWARE	R.O.	ROUGH OPENING
CL	CENTER LINE	HM	HOLLOW METAL	SC	SOLID CORE
CF	CUBIC FOOT	HOR / HORIZ	HORIZONTAL	SF	STREDFRONT
CFM	CUBIC FEET PER MINUTE	HPL	HIGH PRESSURE LAMINATE	SHT	SHEET
CJ	CONTROL JOINT	HT	HEIGHT	SIM	SIMILAR
CLG	CEILING	HTG	HEATING	SOG	SLAB ON GRADE
CLR	CLEAR	HEAT	HEATING, VENTILATING & AIR CONDITIONING	SPEC	SPECIFICATION(S)
CMU	CONCRETE MASONRY UNIT	HVAC	HEATING, VENTILATING & AIR CONDITIONING	SQ	SQUARE
COL	COLUMN	ID	INSIDE DIAMETER	SS	STAINLESS STEEL
CONC	CONCRETE	INSUL	INSULATE(D), (ING)	STC	SOUND TRANSMISSION COEFFICIENT
CONT	CONTINUOUS, CONTINUE	INT	INTERIOR	STD	STANDARD
CPT	CARPET	KD	KNOCK DOWN FRAME	STL	STEEL
CRS	COURSES	LAM	LAMINATE(D)	STRUC	STRUCTURAL
CT	CERAMIC TILE	LAV	LAVATORY	T	TREAD
CY	CUBIC YARD	M	METER	TBD	TO BE DETERMINED
DEMO	DEMOLISH, DEMOLITION	MAS	MASONRY	T&G	TONGUE AND GROOVE
DF	DRINKING FOUNTAIN	MATL	MATERIAL	T.O.	TOP OF
DR	DOOR	MAX	MAXIMUM	TEL	TELEPHONE
DS	DOWN SPOUT	MCB	MAIN CIRCUIT BREAKER	TEMPR	TEMPERED
DTL	DETAIL	MECH	MECHANIC(AL)	THK	THICKNESS
DWG	DRAWING	MED	MEDIUM	TYP	TYPICAL
EXIST OR (E)	EXISTING	MFG	MANUFACTURE(R)	UN	UNDERWRITER'S LAB
EA	EXISTING RELOCATED	MIN	MINIMUM	UL	UNLESS OTHERWISE NOTED
ER	EACH	MISC	MISCELLANEOUS	VCT	VINYL COMPOSITE TILE
EL	ELEVATION	MM	MILLIMETER	VERT	VERTICAL
ELEC	ELECTRIC(AL)	M.O.	MASONRY OPENING	VIF	VERIFY IN FIELD
EQ	EQUAL	MR	MOISTURE RESISTANT	W	WIRE
ES	EACH SIDE	MTG	MEETING OR MOUNTING	W	WITH
ETR	EXISTING TO REMAIN	MTL	METAL	WC	WATER CLOSET
EWC	ELECTRIC WATER COOLER	NAT	NATURAL	WD	WOOD
EXH	EXHAUST	NIC	NOT IN CONTRACT	W/DW	WINDOW
EXT	EXTERIOR	NOM	NOMINAL	WH	WATER HEATER
FIN	FINISHED	NRC	NOISE REDUCTION COEFFICIENT	WRB	WATER RESISTANT BARRIER
FD	FLOOR DRAIN	NRS	NOT TO SCALE	WWF	WELDED WIRE FABRIC
FOUND	FOUNDATION	O.C.	ON CENTER(S)		
FE	FIRE EXTINGUISHER	OD	OUTSIDE DIAMETER		

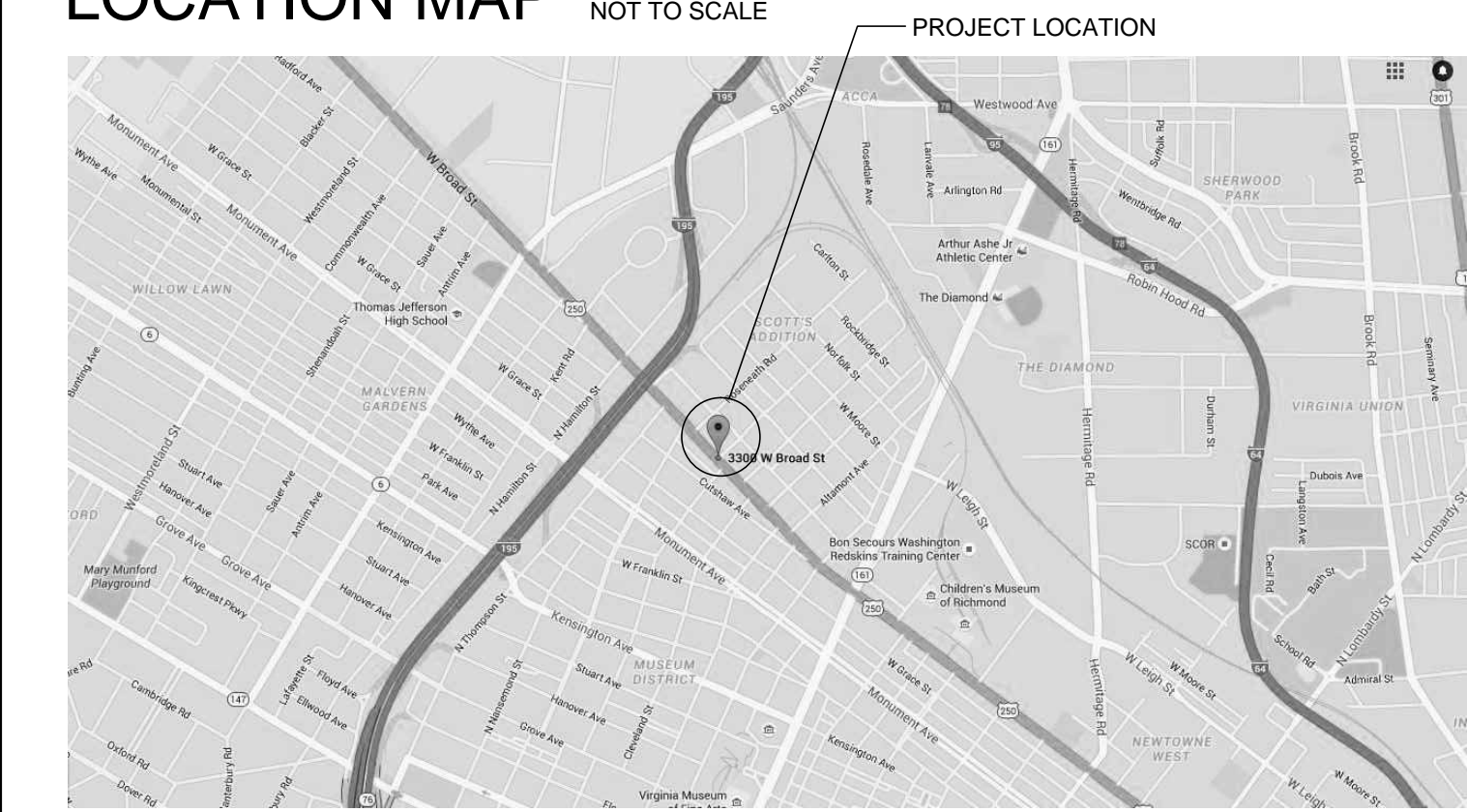
### SYMBOLS

—	EXISTING WALL OR PARTITION	—	ELEVATION
—	NEW RATED WALL OR PARTITION	—	CENTERLINE
—	TYPICAL NEW WALL OR PARTITION	00	COLUMN GRID
—	ITEM TO BE DEMOLISHED	—	CUTLINE
---	WORK ABOVE OR BEYOND AS NOTED	0	KEYNOTE
—	EXISTING DOOR TO REMAIN	0-X-0	EXTERIOR WALL / CONSTRUCTION TYPE
—	NEW DOOR / SWING	X	PARTITION TYPE
—	WALL SECTION MARKER	ROOM NAME	ROOM TAG
—	EXTERIOR ELEVATION MARKER	000	DOOR TAG
—	DETAIL/ENLARGED PLAN MARKER	X	WINDOW TAG
—	DETAIL SECTION MARKER	XX-0	FINISH TAG
—	INTERIOR ELEVATION MARKER	△	REVISION TAG
—		∅	DIAMETER
—		±	PLUS OR MINUS
—		—	ALIGN FINISHED FACE

### PROJECT TEAM

<b>ARCHITECT:</b> 510 ARCHITECTS LLC 3121 W MARSHALL ST RICHMOND, VA 23230 804.353.1576	<b>STRUCTURAL ENGINEER:</b> STROUD PENCE & ASSOCIATES 1503 SANTA ROSA RD, SUITE #210 RICHMOND, VA 23229 804.346.3935
<b>GENERAL CONTRACTOR:</b> DOMINION CONSTRUCTION PARTNERS 840 WEST BROAD STREET, SUITE #300 RICHMOND, VA 23220 804.249.2600	<b>M / E / P ENGINEER:</b> INVERSTY CONSULTING ENGINEERS, PLLC 530 EAST MAIN STREET, SUITE 209 RICHMOND, VIRGINIA 23219 804.977.0403

### LOCATION MAP



### BUILDING DATA

<b>PROJECT LOCATION:</b>	3300 WEST BROAD STREET RICHMOND, VIRGINIA 23230 CITY OF RICHMOND						
<b>DESCRIPTION OF WORK:</b>	SCOPE TO INCLUDE FULL INTERIOR RENOVATION WITH EXTERIOR IMPROVEMENTS: LIMITED DEMOLITION, NEW WALLS & PARTITIONS, INSTALLATION OF SPRINKLER SYSTEM THROUGHOUT, FINISHES AND POWER / LIGHTING / PLUMBING / HVAC AS REQUIRED FOR LAYOUT. <i>PROJECT WILL BE PHASED. SEE PHASING PLAN FOR MORE INFORMATION.</i>						
<b>APPLICABLE CODE:</b>	VIRGINIA REHABILITATION CODE 2012						
<b>WORK CLASSIFICATION:</b>	LEVEL III						
<b>CONSTRUCTION TYPE:</b>	VB						
<b>SPRINKLERED:</b>	YES (PROPOSED)						
<b>USE / OCCUPANCY CLASSIFICATION:</b>	A-2 (BANQUET HALL) WITH NON-SEPARATED A-3 (GALLERY) AND BUSINESS USES						
<b>OVERALL BUILDING AREA:</b>	16,504 SF TOTAL 11,221 GSF 1ST FLR * 5,283 GSF 2ND FLR * * AUTOMATIC SPRINKLER SYSTEM INCREASE ALLOWS 12,000 SF PER STORY, 2 STORIES MAXIMUM						
<b>USE GROUP AREAS:</b>	13,112 GSF BUSINESS 410 NSF CLASSROOM 1,471 NSF GALLERY / BANQUET HALL 627 GSF KITCHEN						
<b>OCCUPANT LOAD:</b>	253 OCCUPANTS (131 BUSINESS + 20 CLASSROOM + 98 GALLERY+ 4 KITCHEN)						
<b>NUMBER OF EXITS REQUIRED:</b>	2						
<b>NUMBER OF EXITS PROVIDED:</b>	4						
<b>PLUMBING FIXTURES ANALYSIS:</b>							
	<table border="0"> <tr> <th>REQUIRED</th> <th>PROVIDED</th> </tr> <tr> <td>WATER CLOSETS 4 (2 MALE / 2 FEMALE)</td> <td>10 (4 MALE / 4 FEMALE / 2 UNISEX)</td> </tr> <tr> <td>LAVATORIES 2 (1 MALE / 1 FEMALE)</td> <td>10 (4 MALE / 4 FEMALE / 2 UNISEX)</td> </tr> </table>	REQUIRED	PROVIDED	WATER CLOSETS 4 (2 MALE / 2 FEMALE)	10 (4 MALE / 4 FEMALE / 2 UNISEX)	LAVATORIES 2 (1 MALE / 1 FEMALE)	10 (4 MALE / 4 FEMALE / 2 UNISEX)
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LAVATORIES 2 (1 MALE / 1 FEMALE)	10 (4 MALE / 4 FEMALE / 2 UNISEX)						
DRINKING FOUNTAIN	1 HI / LO						
SERVICE SINK	1						

#### NOTE REGARDING ACCESSIBILITY

THE ARCHITECT HAS USED ITS REASONABLE PROFESSIONAL EFFORTS AND JUDGMENT TO INTERPRET APPLICABLE ACCESSIBILITY REQUIREMENTS IN EFFECT AS OF THE DATE OF SUBMISSION TO BUILDING AUTHORITIES AND AS THEY APPLY TO THE PROJECT. THE ARCHITECT, HOWEVER, CANNOT AND DOES NOT WARRANT OR GUARANTEE THAT THE CLIENT'S PROJECT WILL COMPLY WITH ALL INTERPRETATIONS OF THE ACCESSIBILITY REQUIREMENTS AND/OR THE REQUIREMENTS OF OTHER FEDERAL, STATE AND LOCAL LAWS, RULES, CODES, ORDINANCES AND REGULATIONS AS THEY APPLY TO THE PROJECT.

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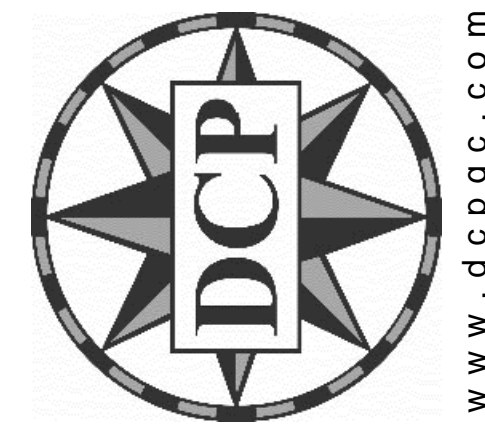
# THE HIGHPOINT COLLECTIVE LLC RENOVATION

DATE	ISSUE
04.18.16	PERMIT

### COVER SHEET & PROJECT INFORMATION

# CS





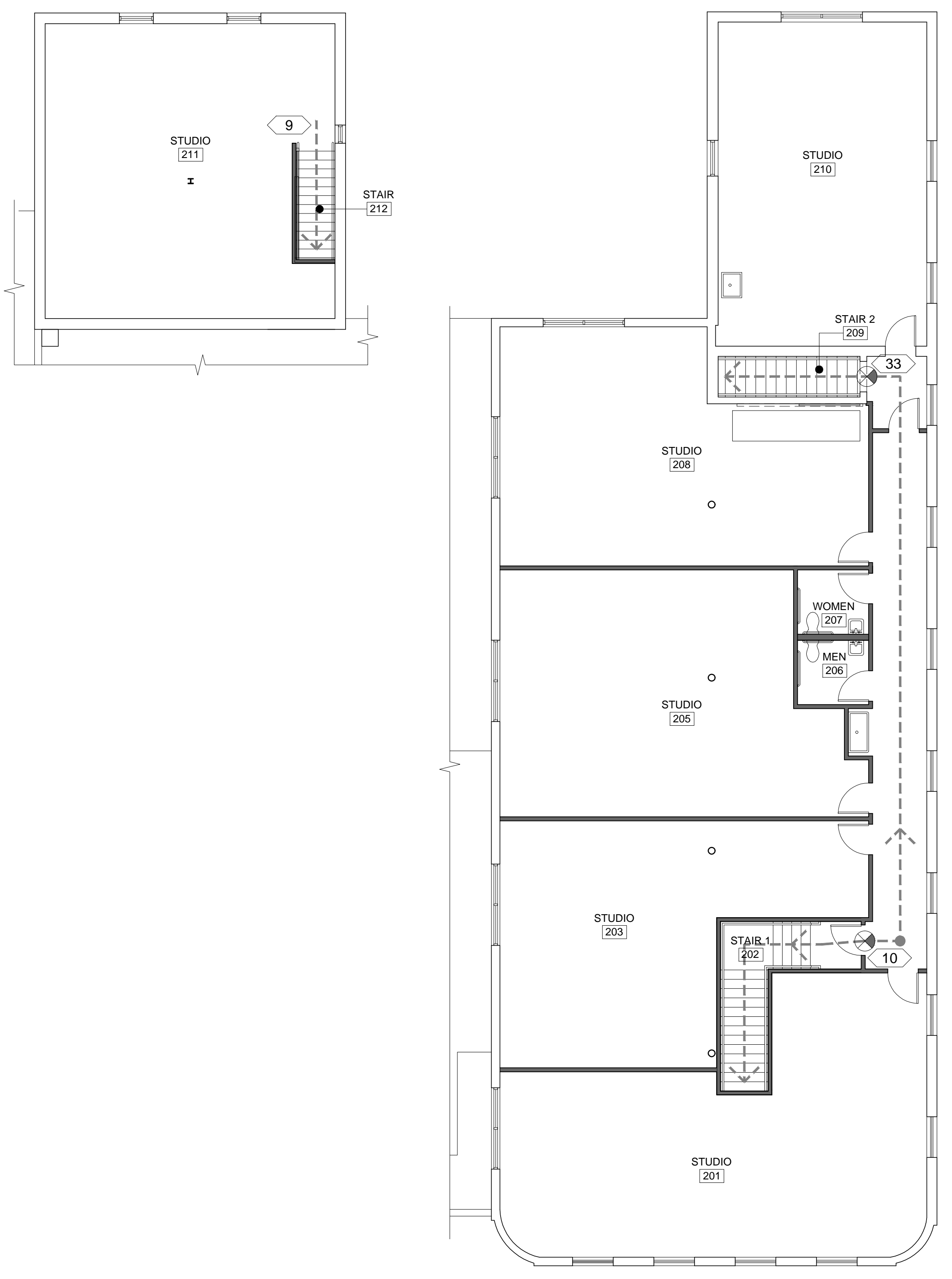
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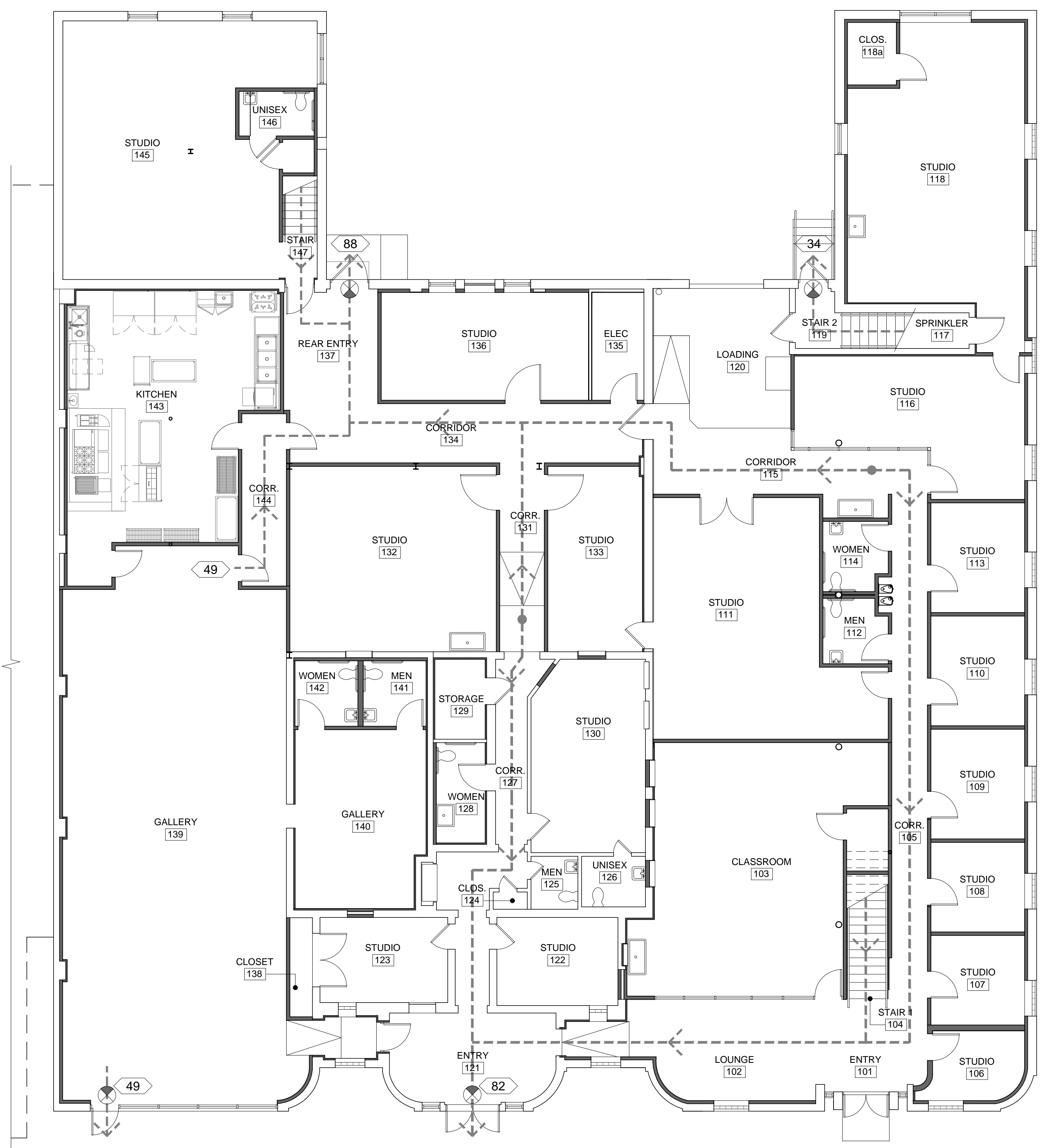
## EGRESS PLANS A0.1

### EGRESS PLAN LEGEND

- EXIT
- NUMBER OF OCCUPANTS SERVED
- DIRECTION OF TRAVEL

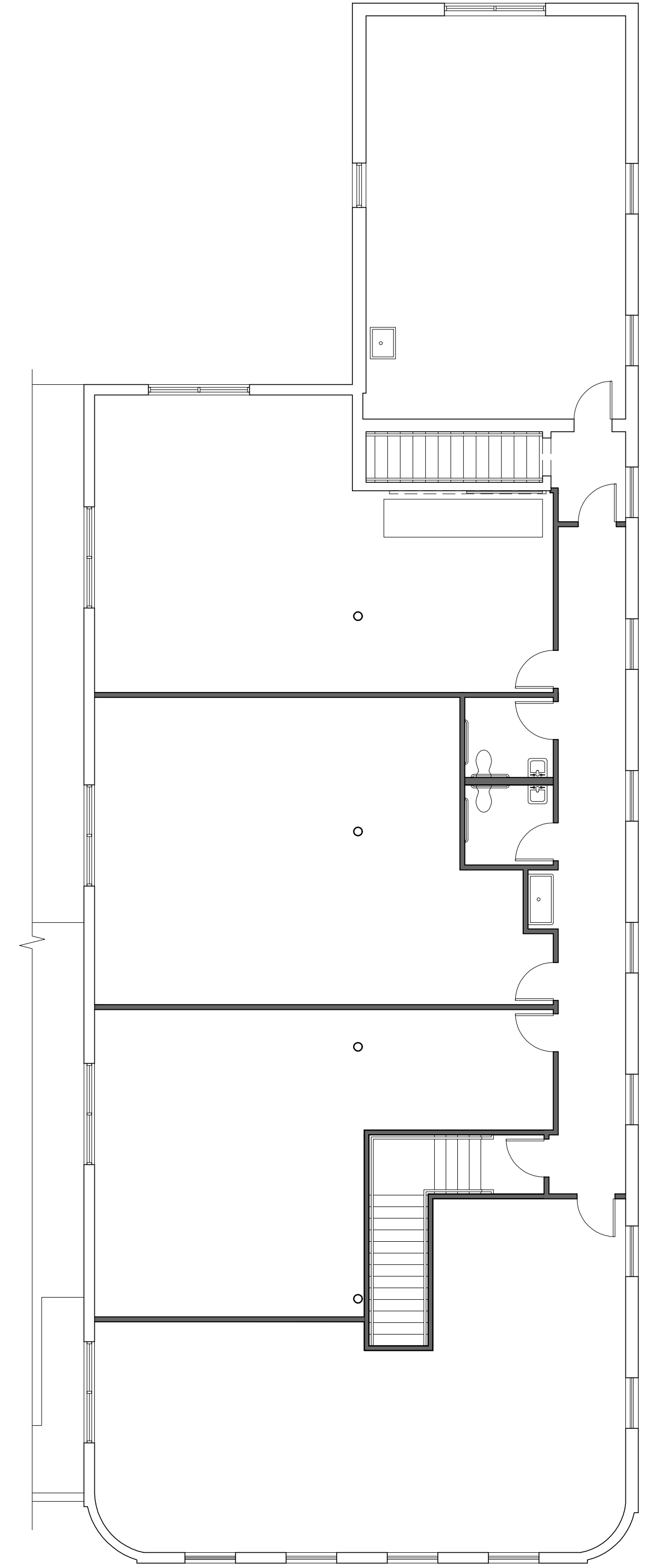
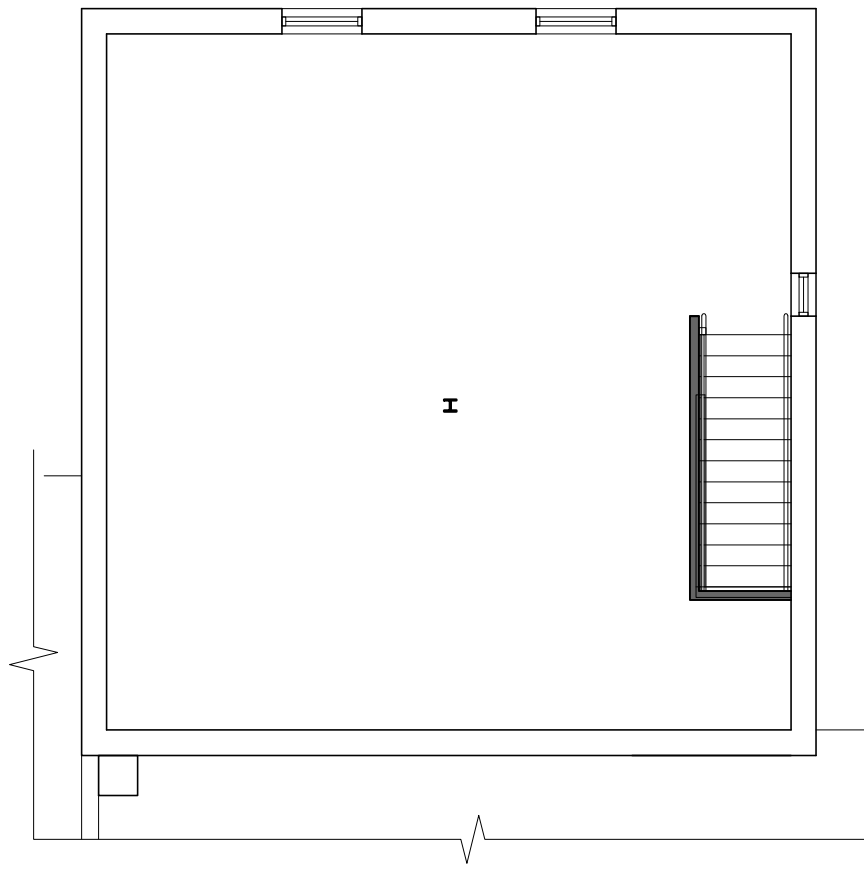


SECOND FLOOR EGRESS PLAN 2  
 1/8" = 1'-0"

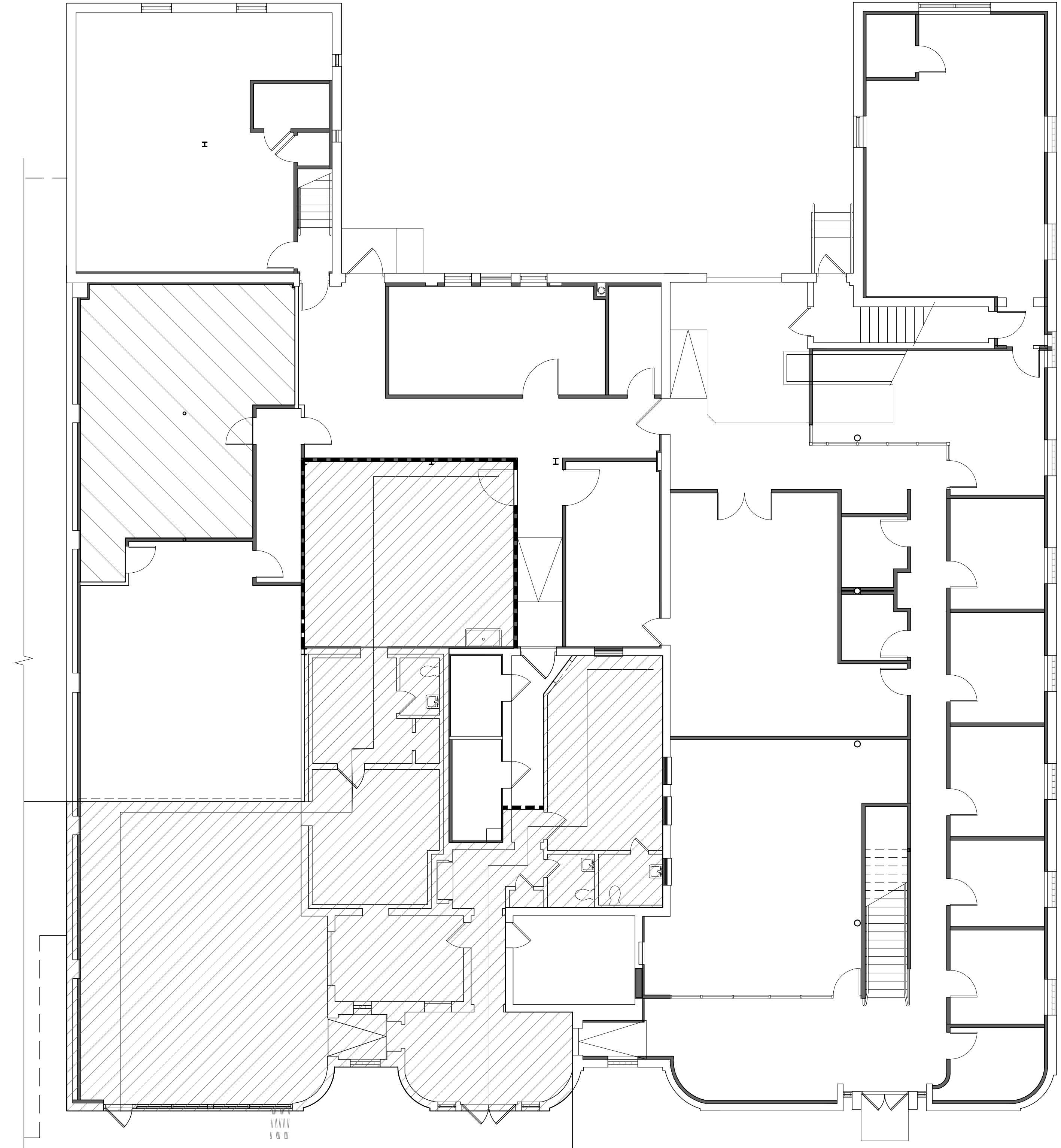


FIRST FLOOR EGRESS PLAN 1  
 1/8" = 1'-0"

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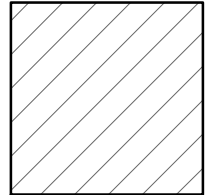
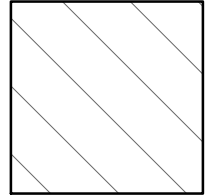

SECOND FLOOR PHASING PLAN 2  
 1/8" = 1'-0"

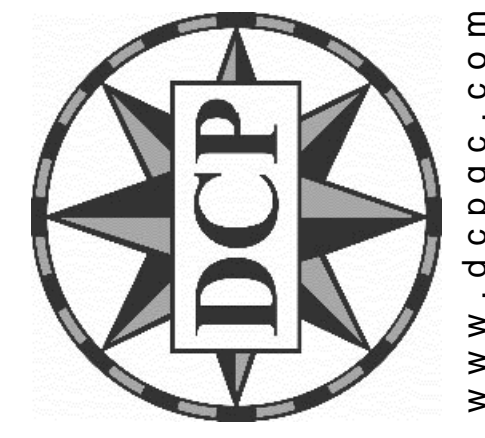


FIRST FLOOR PHASING PLAN 1  
 1/8" = 1'-0"

**PHASING PLAN LEGEND**

PHASE 1 CONSTRUCTION INCLUDES ALL AREAS NOT NOTED AS PHASE 2 OR FUTURE WORK.

- 
 PHASE 2: AREA TO BE OCCUPIED BY BUSINESS DURING PHASE 1 CONSTRUCTION, COMPLETED AFTER COMPLETION OF PHASE 1
- 
 FUTURE WORK: AREA TO BE ROUGHED-IN FOR FUTURE KITCHEN AS PART OF PHASE 1 CONSTRUCTION. INSTALLATION OF KITCHEN EQUIPMENT & FIXTURES TO BE COMPLETED AT A FUTURE TIME UNDER SEPARATE PERMIT
- 
 TEMPORARY WALL CONSTRUCTED OF WOOD OR METAL STUDS AT 16" O.C. TO STRUCTURE ABOVE WITH 1/2" GYPSUM BOARD ON ONE SIDE



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**PHASING  
 PLANS  
 A0.2**



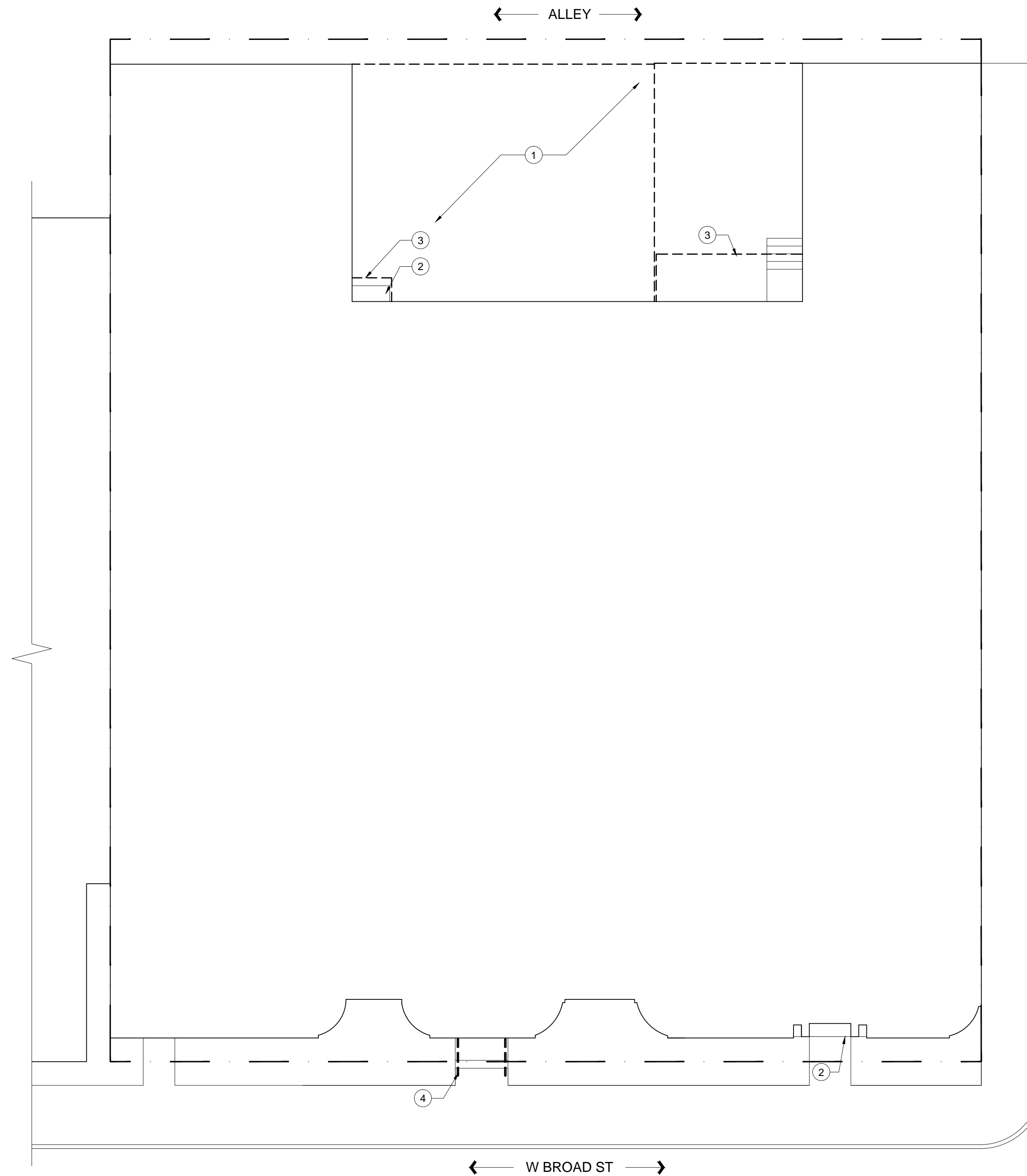
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**ARCHITECTURAL SITE DEMOLITION PLAN KEYNOTES**

- ① DEMOLISH ASPHALT & CONCRETE PAVING AS REQUIRED FOR NEW PARKING
- ② REMOVE STEP / RAMP AS REQUIRED. PREPARE CONCRETE FOR EXTENDED LANDING / NEW RAMP
- ③ REMOVE CORRUGATED CANOPY ROOF, SUPPORTS TO REMAIN
- ④ REMOVE HANDRAIL, TO BE REPLACED WITH SIMILAR IN SAME LOCATION

**ARCHITECTURAL SITE DEMOLITION PLAN GENERAL NOTES**

1. PROTECT ALL EXISTING SITE ELEMENTS TO REMAIN THROUGHOUT DEMOLITION ACTIVITIES.
2. ARCHITECTURAL SITE PLAN IS FOR DESIGN INTENT ONLY - FINAL GRADING, TIE-IN, ETC TO BE COORDINATED BY OTHERS.
3. SEE NEW WORK PLANS FOR ADDITIONAL INFORMATION.



ARCHITECTURAL SITE DEMOLITION PLAN

1" = 10'-0"

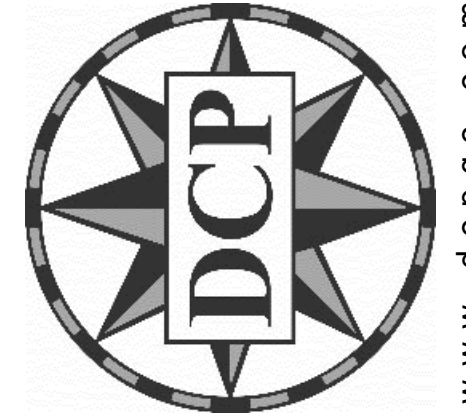
1

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ARCHITECTURAL  
SITE  
DEMOLITION  
PLAN

**A1.0**



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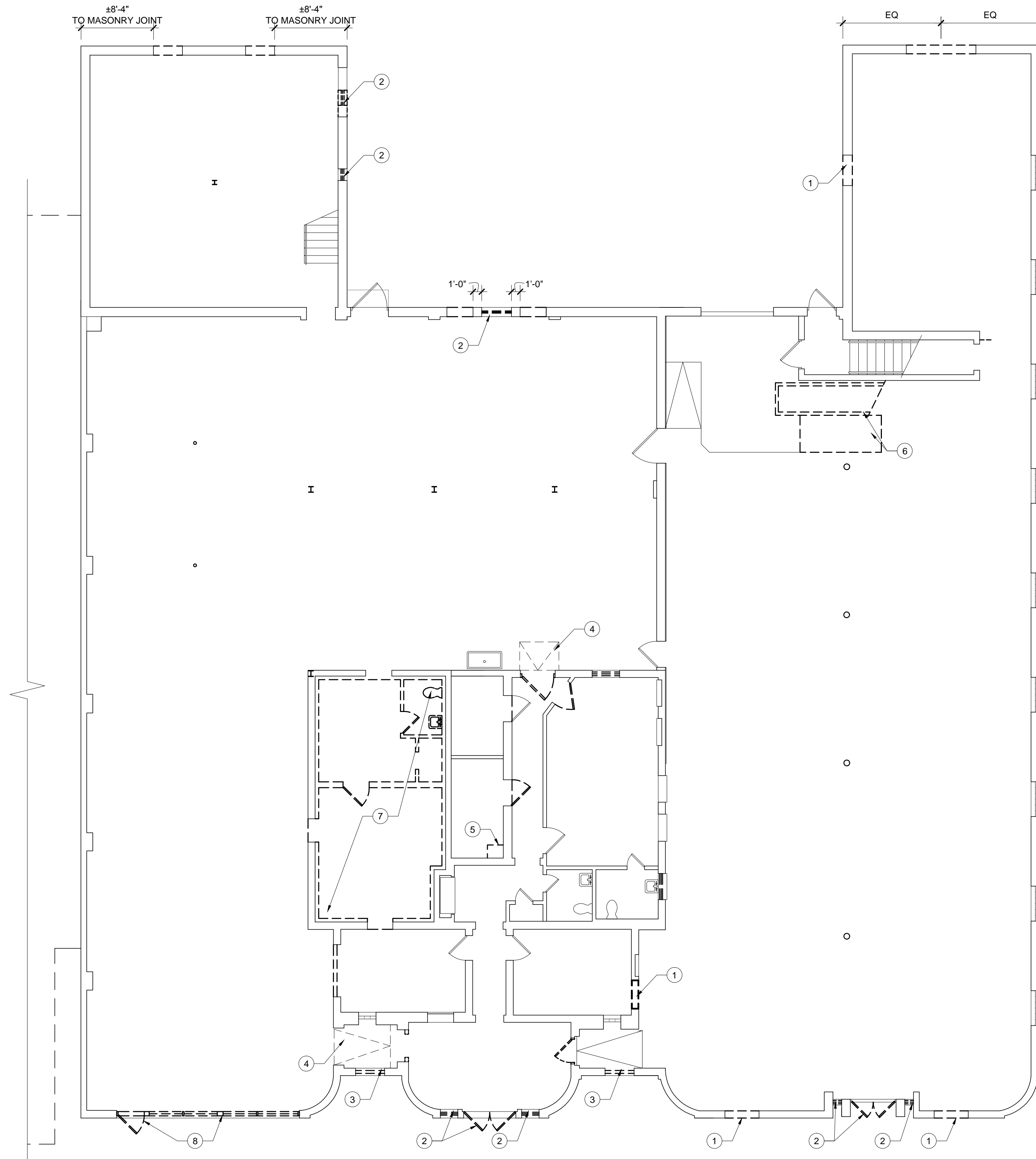


**FIRST FLOOR DEMOLITION PLAN KEYNOTES**

- ① REMOVE INFILL TO EXPOSE EXISTING DOOR / WINDOW OPENING. TOOTH-IN NEW BRICK TO MATCH EXISTING AS REQUIRED AT EXTERIOR LOCATIONS
- ② REMOVE WINDOW / DOOR AND FRAME. PREPARE OPENING FOR REPLACEMENT
- ③ REMOVE GLASS BLOCK AND FIXED WINDOW ABOVE. PREPARE OPENING FOR NEW GLASS BLOCK
- ④ GRIND DOWN OR REMOVE CONCRETE RAMP AS REQUIRED FOR NEW
- ⑤ REMOVE CHIMNEY IN ITS ENTIRETY
- ⑥ REMOVE CONVEYOR EQUIPMENT AND PORTION OF WOOD PLATFORM AS SHOWN DASHED. SALVAGE WOOD DECKING
- ⑦ REMOVE CORK (¾" THICK) FROM WALLS, FLOOR & CEILING
- ⑧ REMOVE DAMAGED STOREFRONT SYSTEM AND PREPARE OPENING FOR NEW, TO INCLUDE REMOVAL OF EXISTING CURB, GRIND SLAB / BRICK EDGE FOR SMOOTH TRANSITION AT FLOOR LEVEL BELOW NEW STOREFRONT WINDOW AND DOOR

**FIRST FLOOR DEMOLITION PLAN GENERAL NOTES**

1. PROTECT ALL EXISTING FINISHES TO REMAIN THROUGHOUT CONSTRUCTION ACTIVITIES.
2. REFERENCE WINDOW SCHEDULE FOR ROUGH OPENING SIZES.
3. REMOVE DROPPED CEILINGS THROUGHOUT (EXCEPT AT RESTROOMS TO REMAIN). REPLACE TO EXTENT SHOWN AS NEW ON ARCHITECTURAL REFLECTED CEILING PLAN.
4. SALVAGE ALL REMOVED DOORS AND HARDWARE AND RETURN TO OWNER.



FIRST FLOOR DEMOLITION PLAN - CURRENT 1

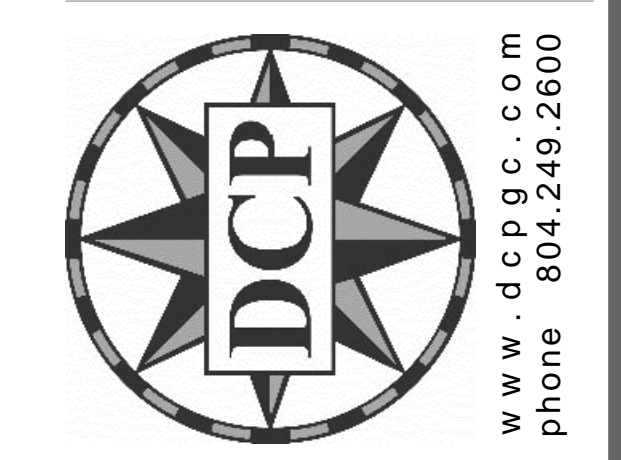
1/8" = 1'-0"

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**FIRST FLOOR  
DEMOLITION  
PLAN - CURRENT**

**A1.1**



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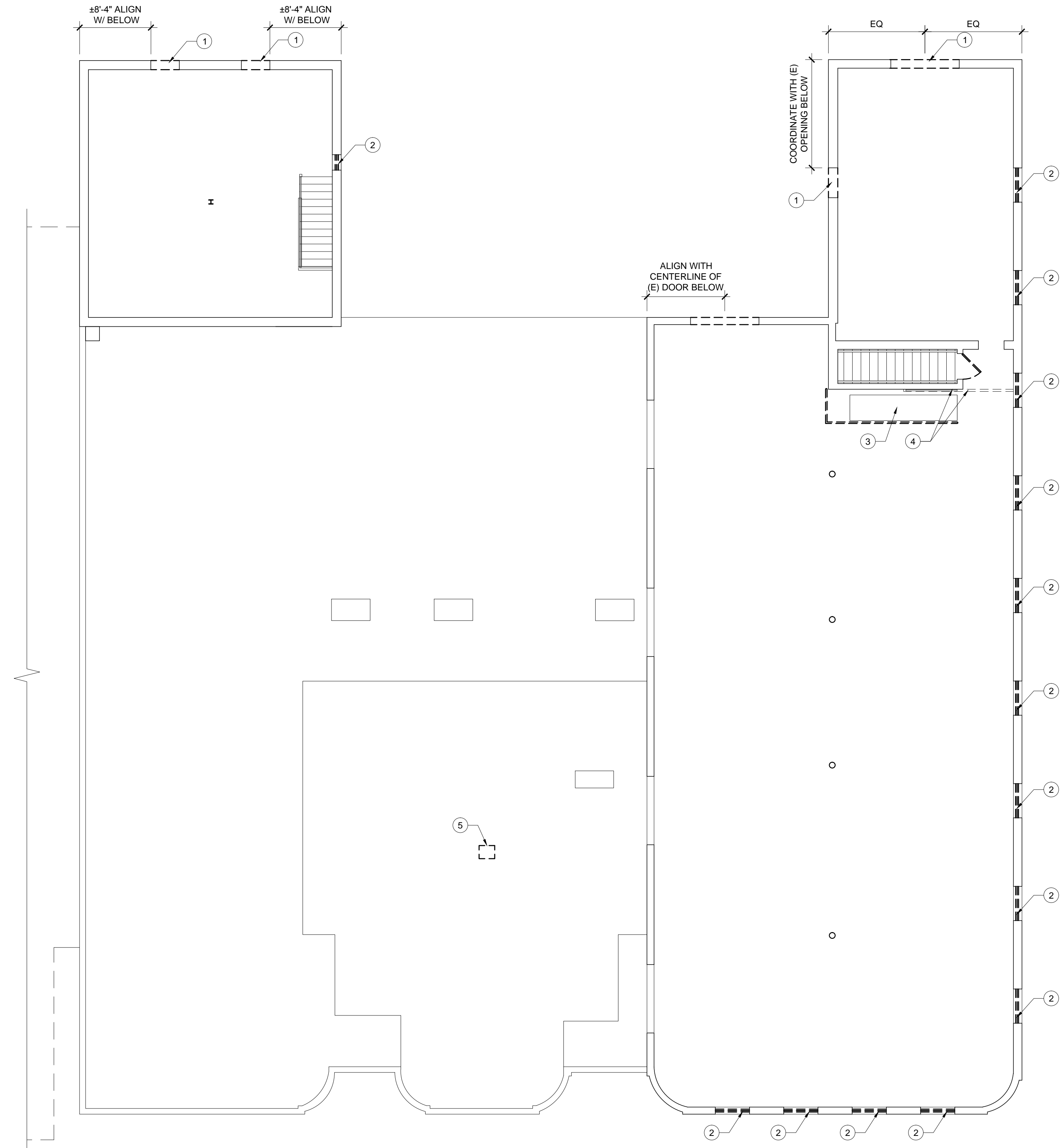


**SECOND FLOOR DEMOLITION PLAN KEYNOTES**

- ① NEW MASONRY OPENING FOR NEW STOREFRONT WINDOW
- ② REMOVE WINDOW AND PREPARE OPENING FOR REPLACEMENT. SALVAGE AND RETURN TO OWNER
- ③ EXISTING PLATFORM AT CONVEYOR OPENING TO REMAIN. REMOVE PORTION AT NEW CORRIDOR END TO ACCOMMODATE NEW WALL
- ④ REMOVE TRACK AND DOOR. SALVAGE FOR REINSTALLATION
- ⑤ REMOVE CHIMNEY IN ITS ENTIRETY (NOT VISIBLE FROM STREET LEVEL)

**SECOND FLOOR DEMOLITION PLAN GENERAL NOTES**

1. PROTECT ALL EXISTING FINISHES TO REMAIN THROUGHOUT CONSTRUCTION ACTIVITIES.
2. REFERENCE WINDOW SCHEDULE FOR ROUGH OPENING SIZES.
3. REMOVE DROPPED CEILING AT NW CORNER. REPLACE TO EXTENT SHOWN AS NEW ON ARCHITECTURAL REFLECTED CEILING PLAN.
4. SALVAGE ALL REMOVED DOORS, WINDOWS AND HARDWARE AND RETURN TO OWNER.



SECOND FLOOR DEMOLITION PLAN - CURRENT 1

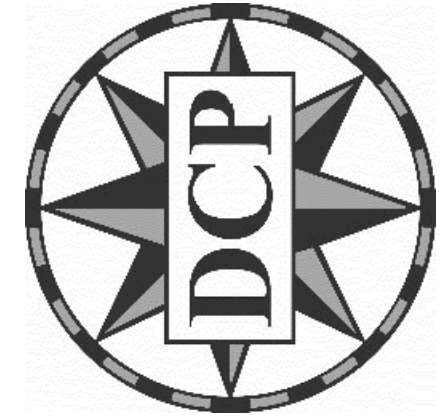
1/8" = 1'-0"

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SECOND FLOOR  
DEMOLITION  
PLAN - CURRENT

**A1.2**



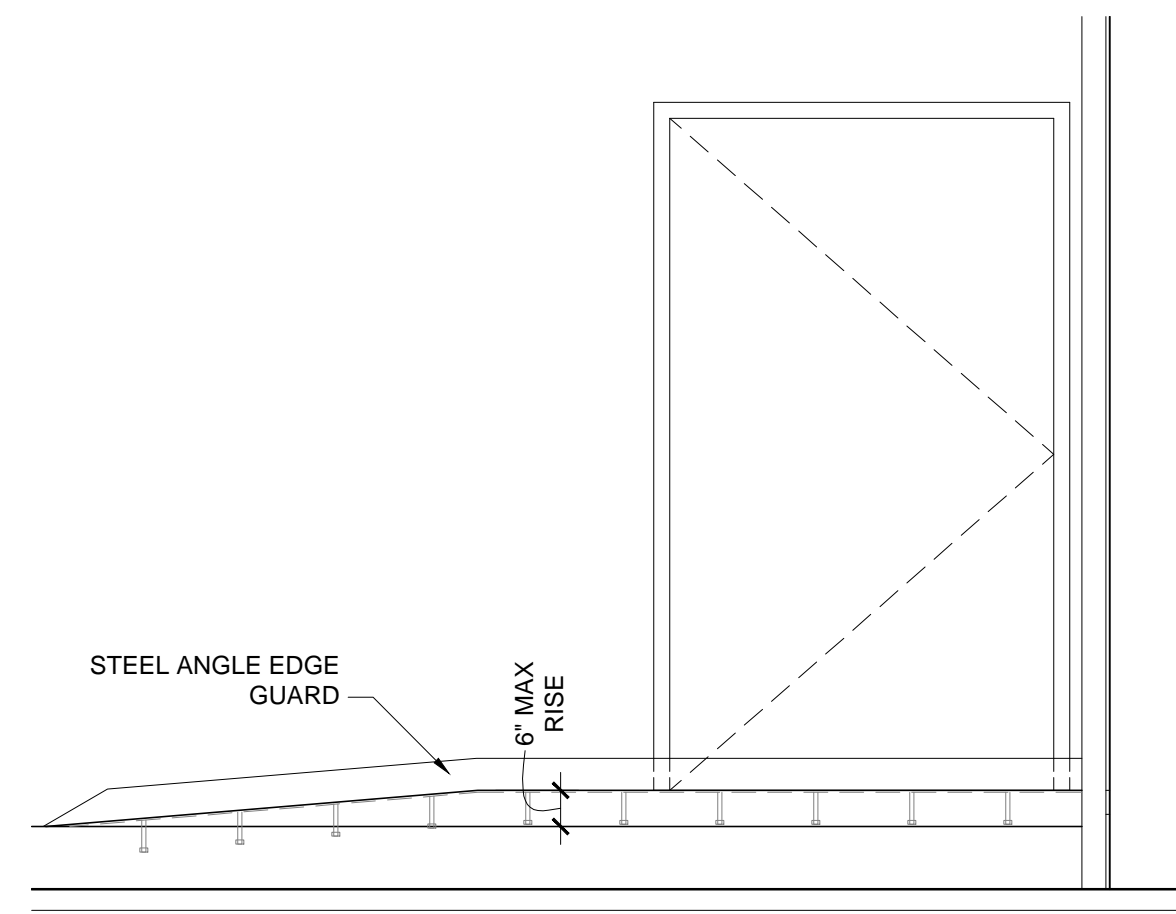
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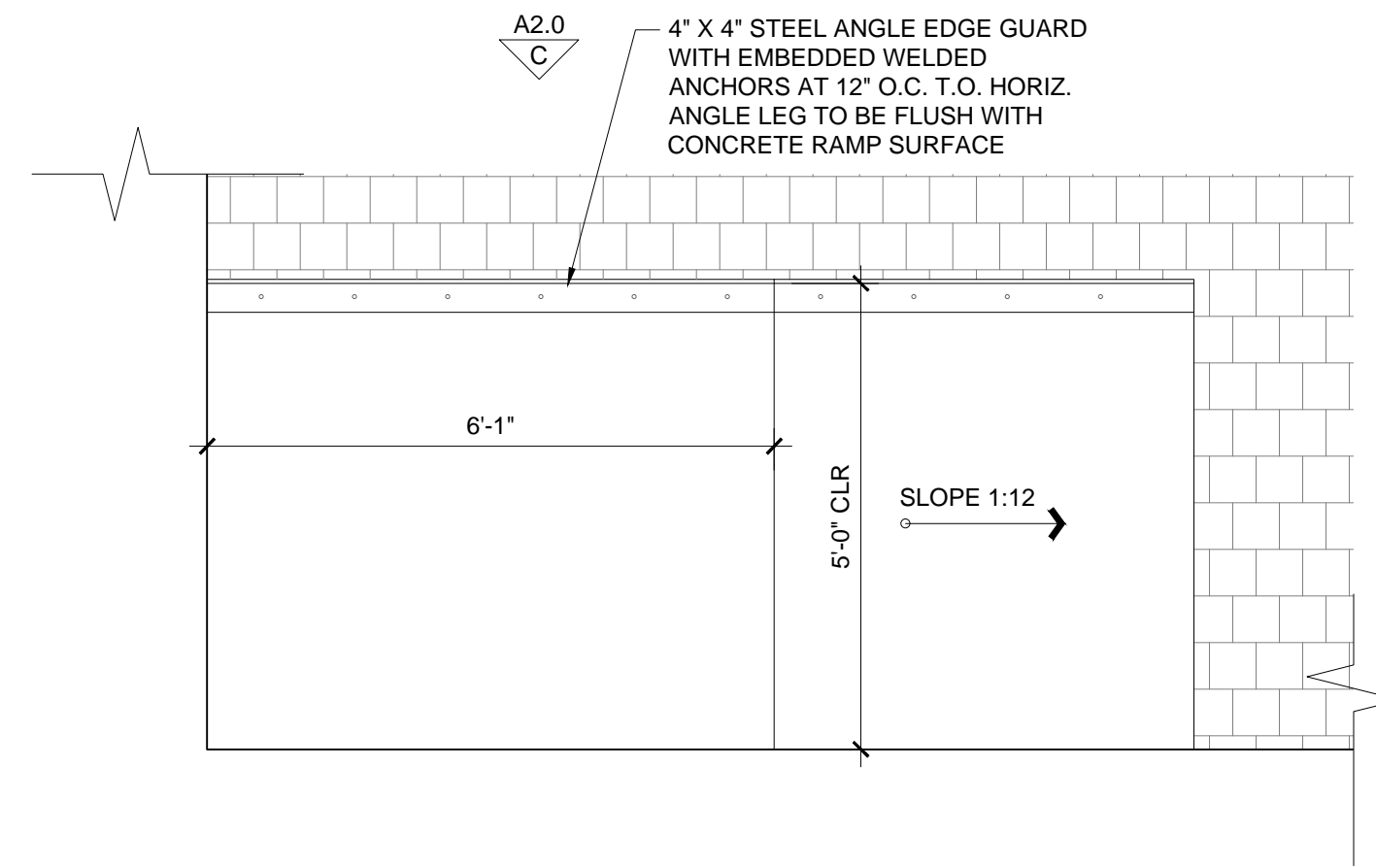
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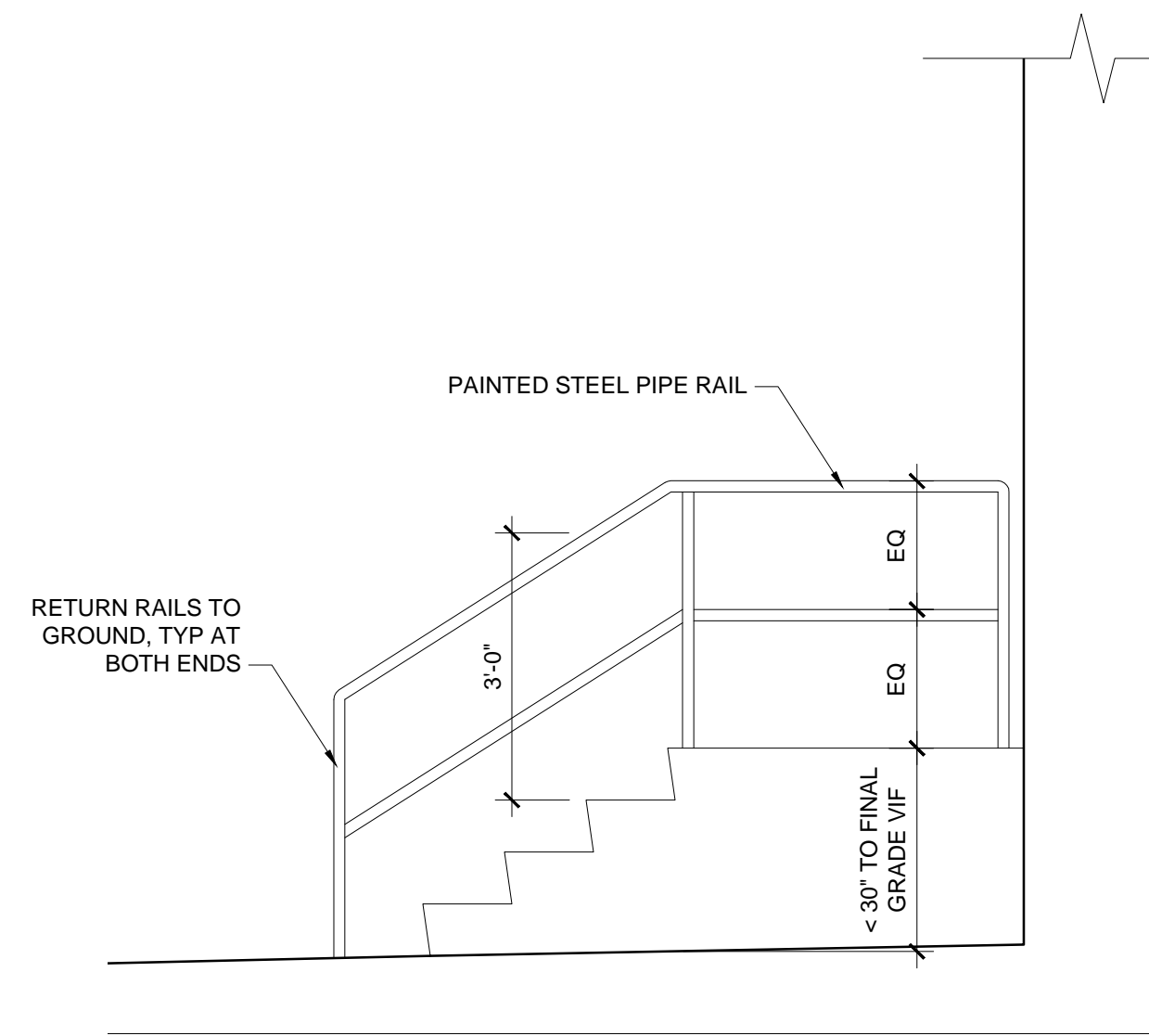




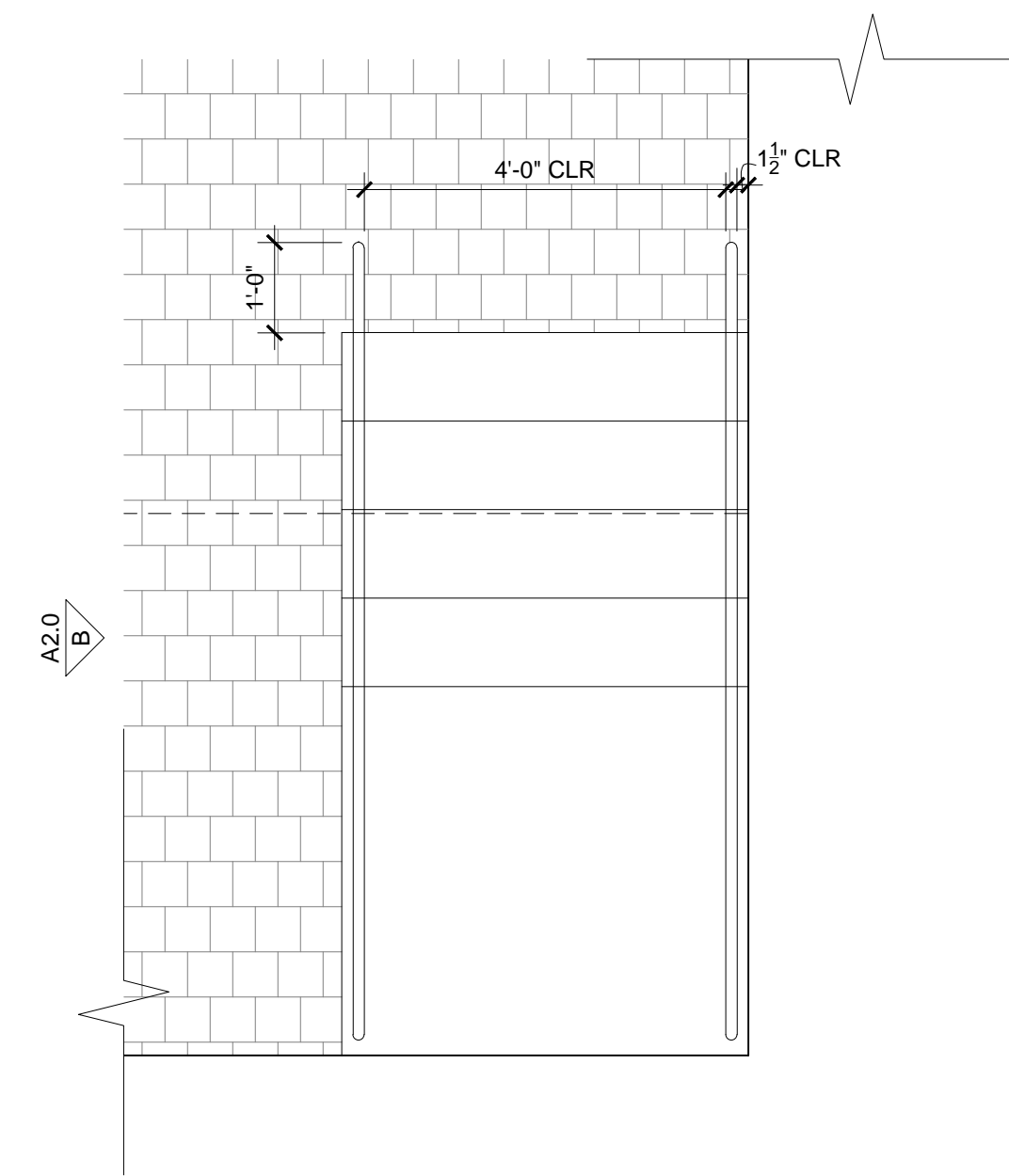
REAR RAMP HANDRAIL ELEVATION C  
1/2" = 1'-0"



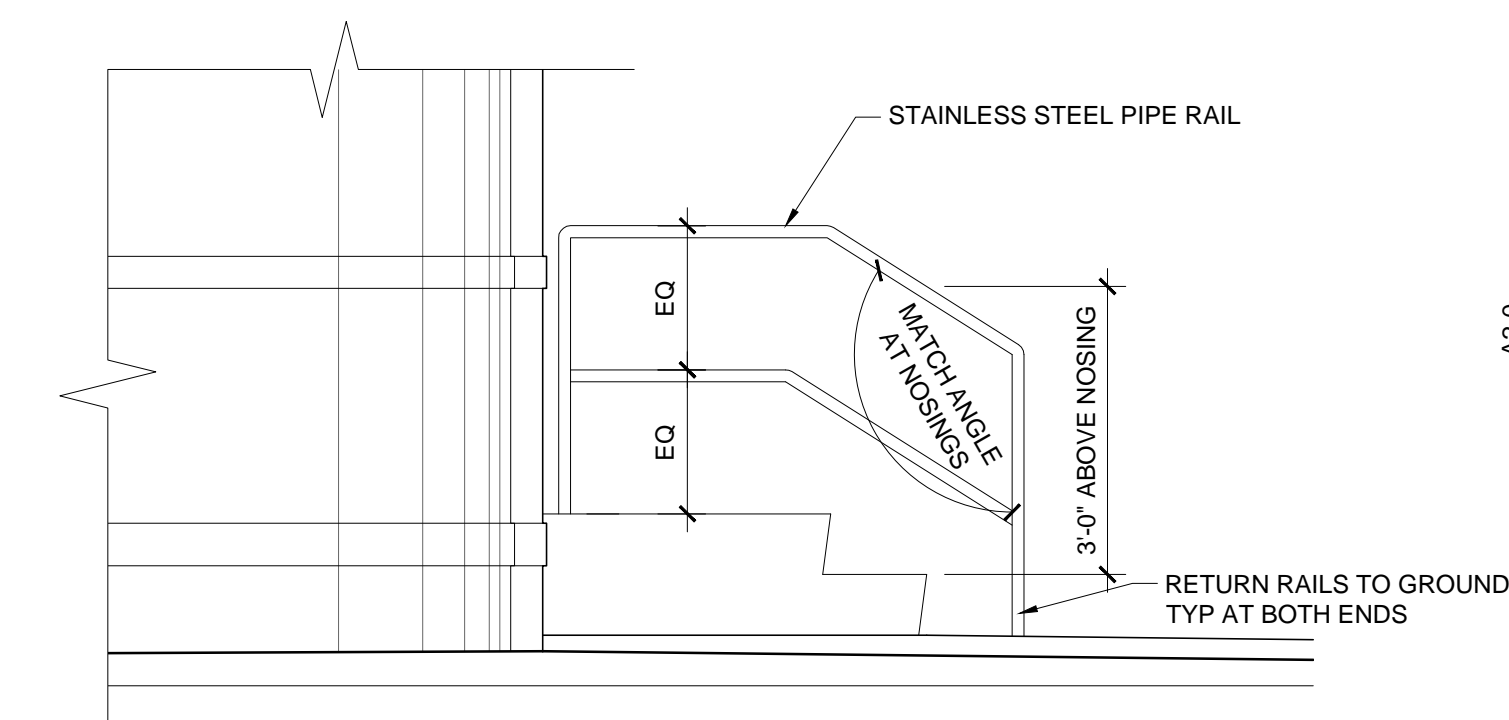
ENLARGED REAR RAMP PLAN 4  
1/2" = 1'-0"



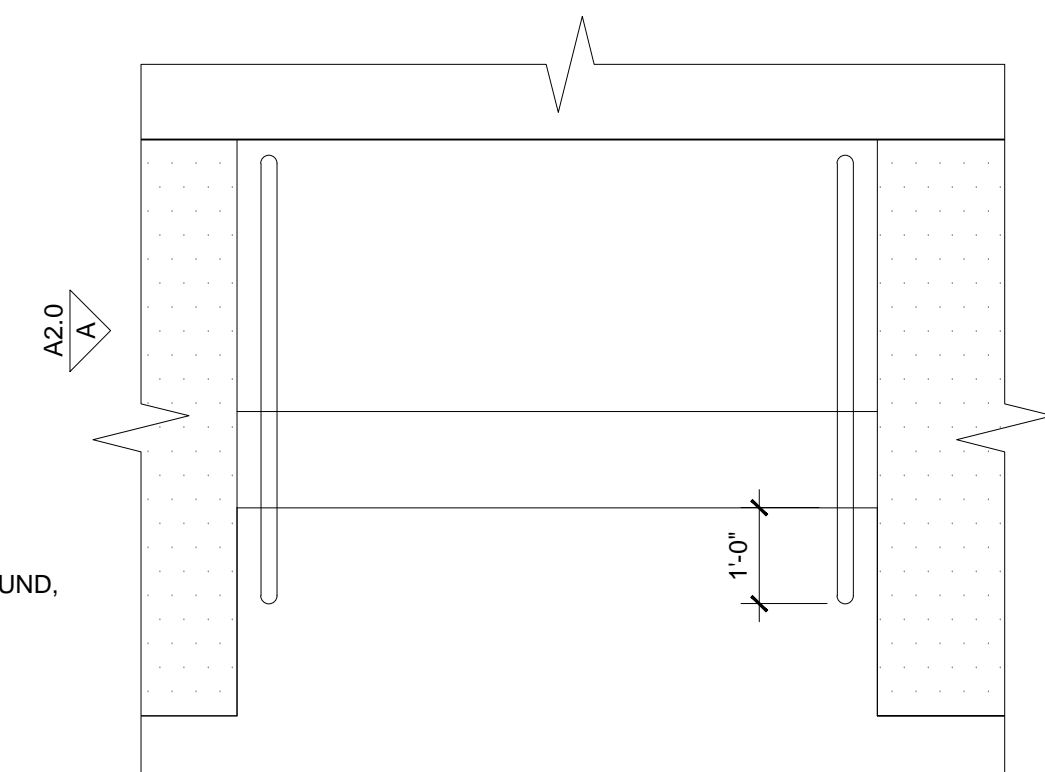
REAR STAIR GUARD & HANDRAIL ELEVATION B  
1/2" = 1'-0"



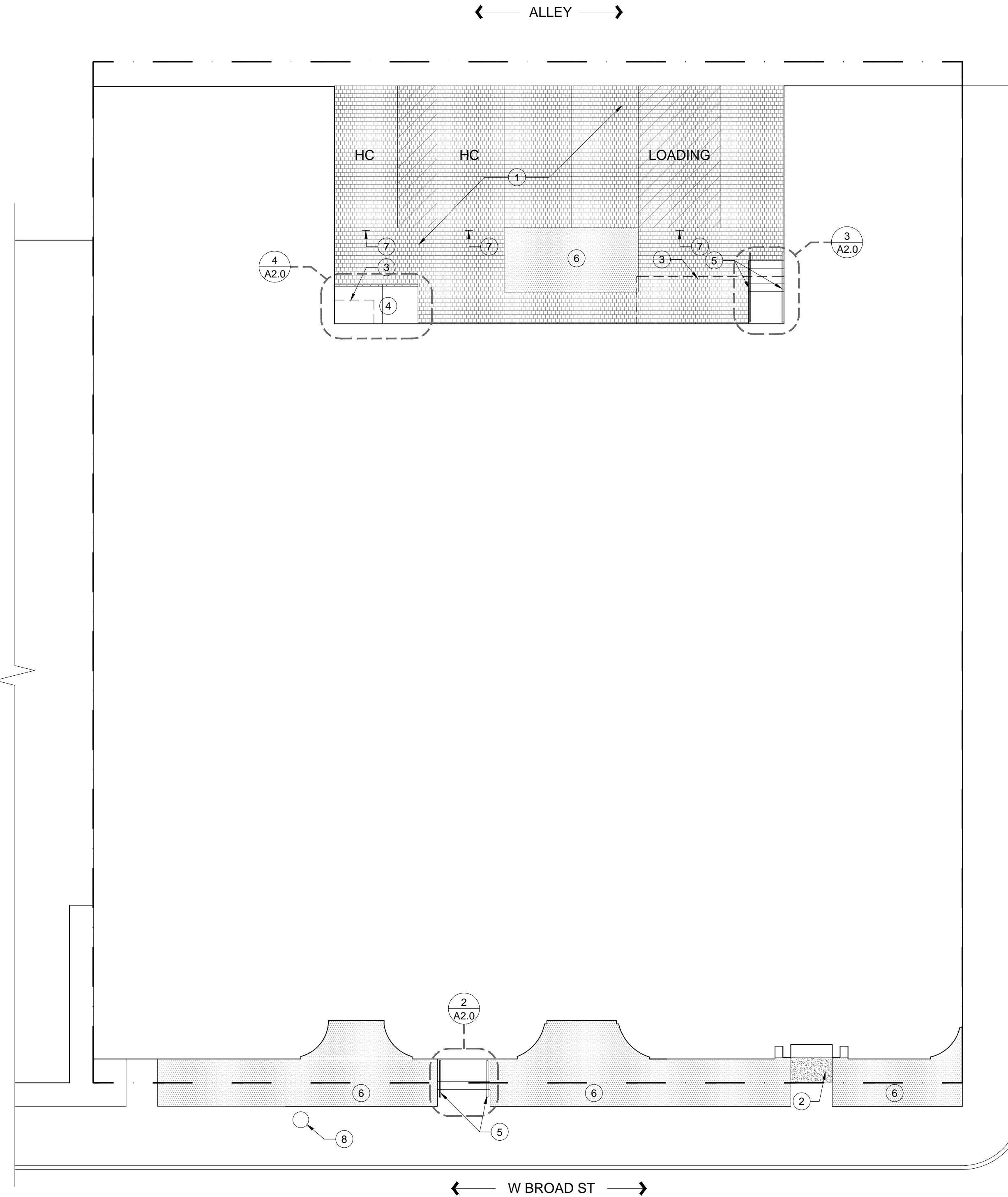
ENLARGED REAR STAIR PLAN 3  
1/2" = 1'-0"



FRONT ENTRY HANDRAIL ELEVATION A  
1/2" = 1'-0"



ENLARGED FRONT ENTRY PLAN 2  
1/2" = 1'-0"



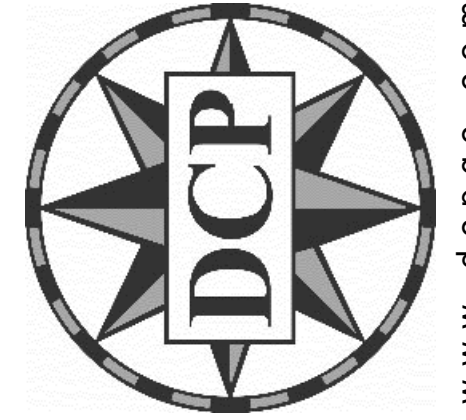
ARCHITECTURAL SITE PLAN 1  
1" = 10'-0"

**ARCHITECTURAL SITE PLAN KEYNOTES**

- 1 CONCRETE PAVERS WITH STRIPING FOR PARKING AND LOADING SPACES AS INDICATED. SPACES NOTED 'HC' TO MEET ACCESSIBLE STANDARDS FOR DIMENSIONS AND CROSS SLOPE
- 2 EXTEND CONCRETE LANDING FULL WIDTH OF EXISTING STEP. ALIGN WITH TOP OF STEP
- 3 GALVANIZED CORRUGATED CANOPY ROOF ON EXISTING STEEL SUPPORTS. STEEL SUPPORTS TO BE REPAINTED
- 4 ACCESSIBLE CONCRETE RAMP AND LANDING. LANDING TO ALIGN WITH FLOOR LEVEL AT DOOR TRANSITION. RISE TO BE LESS THAN 6". COORDINATE WITH FINAL GRADE
- 5 STEEL PIPE HANDRAILS AT EXISTING CONCRETE STAIR. SEE ELEVATIONS
- 6 PLANTING BED. TOPSOIL AND LANDSCAPING BY OWNER
- 7 SIGN INDICATING ACCESSIBLE PARKING OR LOADING AS APPLICABLE
- 8 MONITORING MANHOLE. REFER TO PLUMBING DRAWINGS

**ARCHITECTURAL SITE PLAN GENERAL NOTES**

1. PROTECT ALL EXISTING SITE ELEMENTS TO REMAIN THROUGHOUT CONSTRUCTION ACTIVITIES.
2. ARCHITECTURAL SITE PLAN IS FOR DESIGN INTENT ONLY - FINAL GRADING, TIE-IN, ETC TO BE COORDINATED BY OTHERS.



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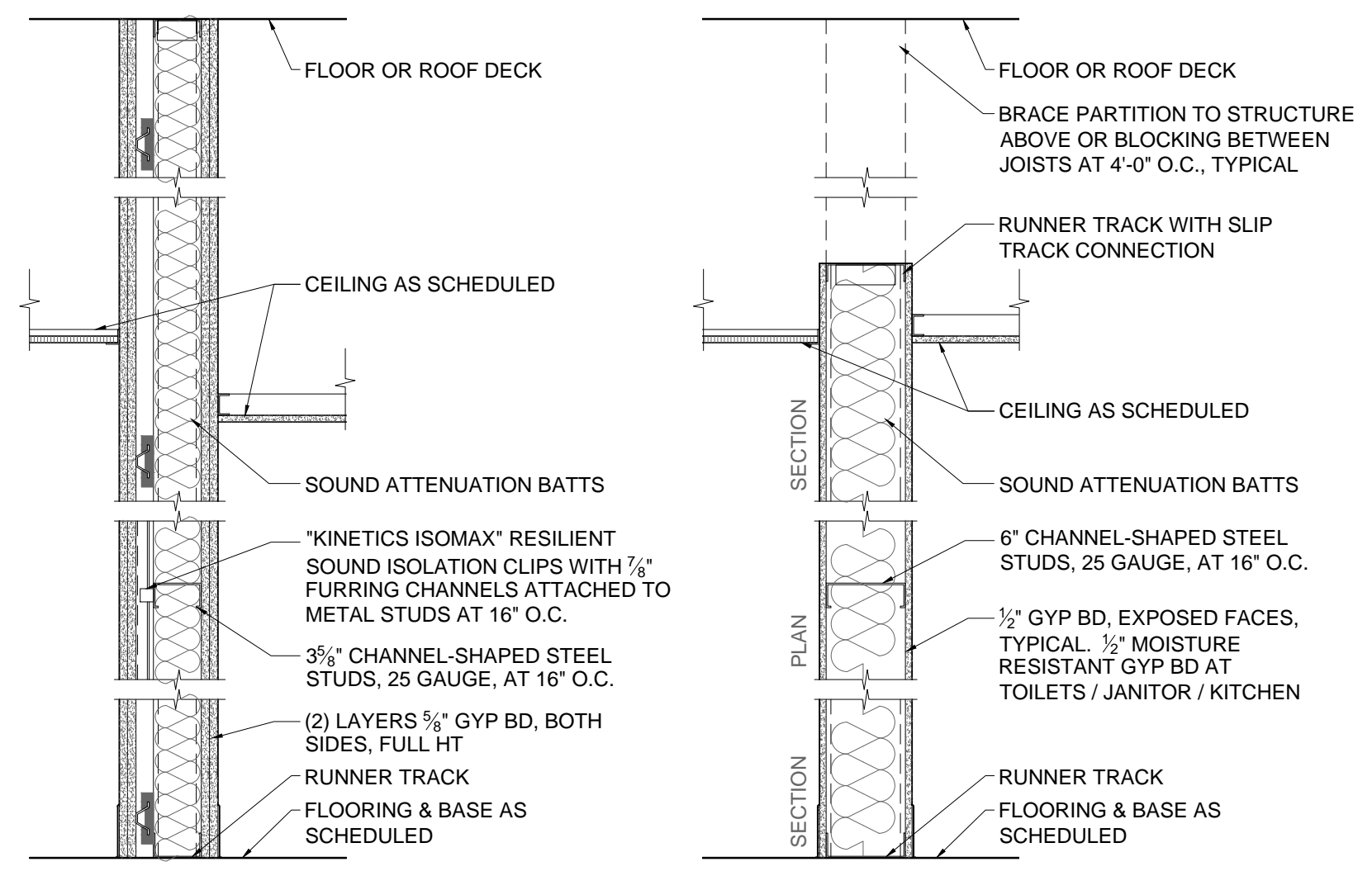
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ARCHITECTURAL  
SITE PLAN

A2.0

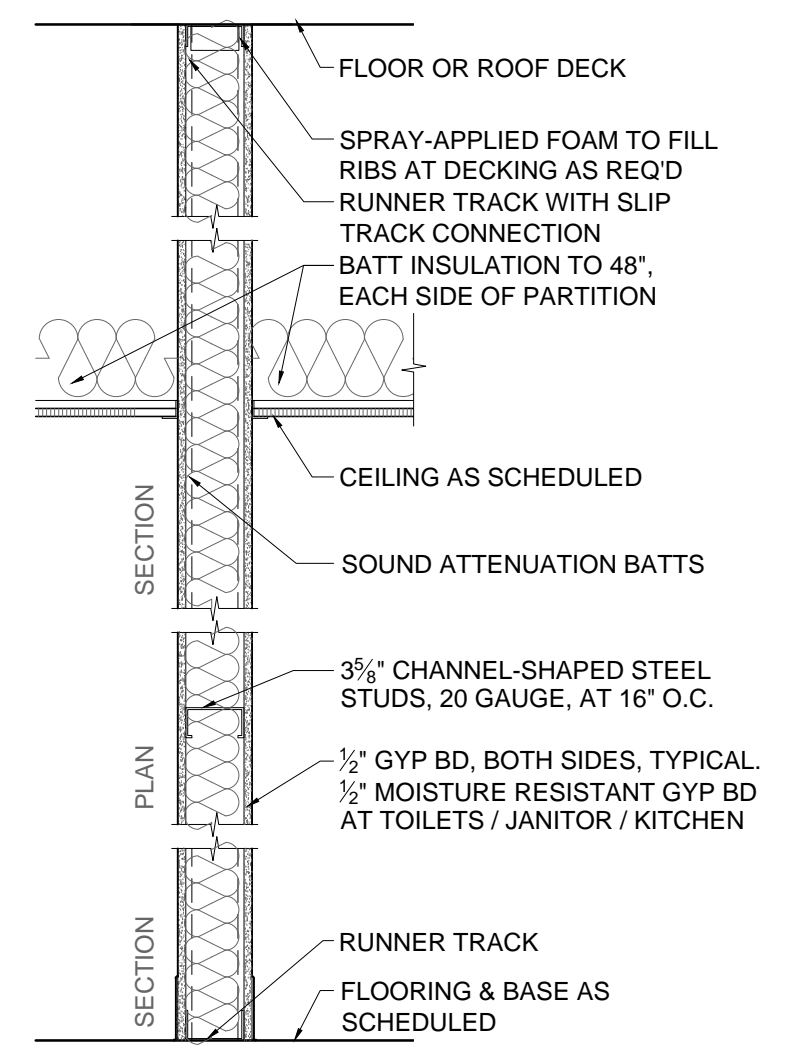
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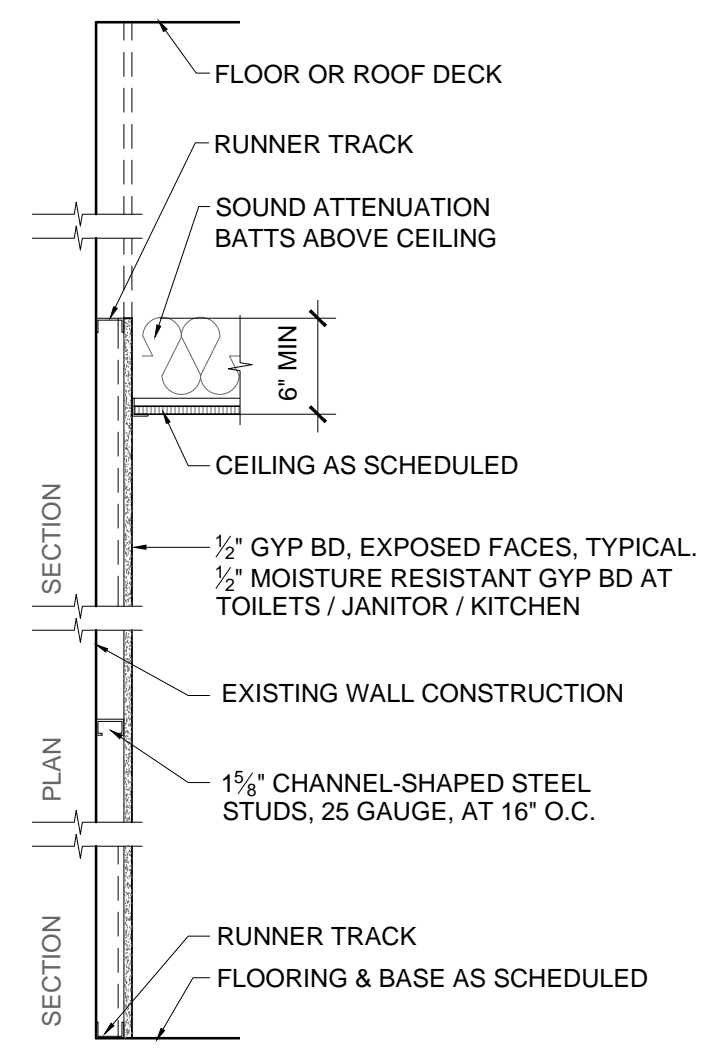


**SOUND PARTITION** H

**6" PARTITION TO 6" ABOVE CLG** G

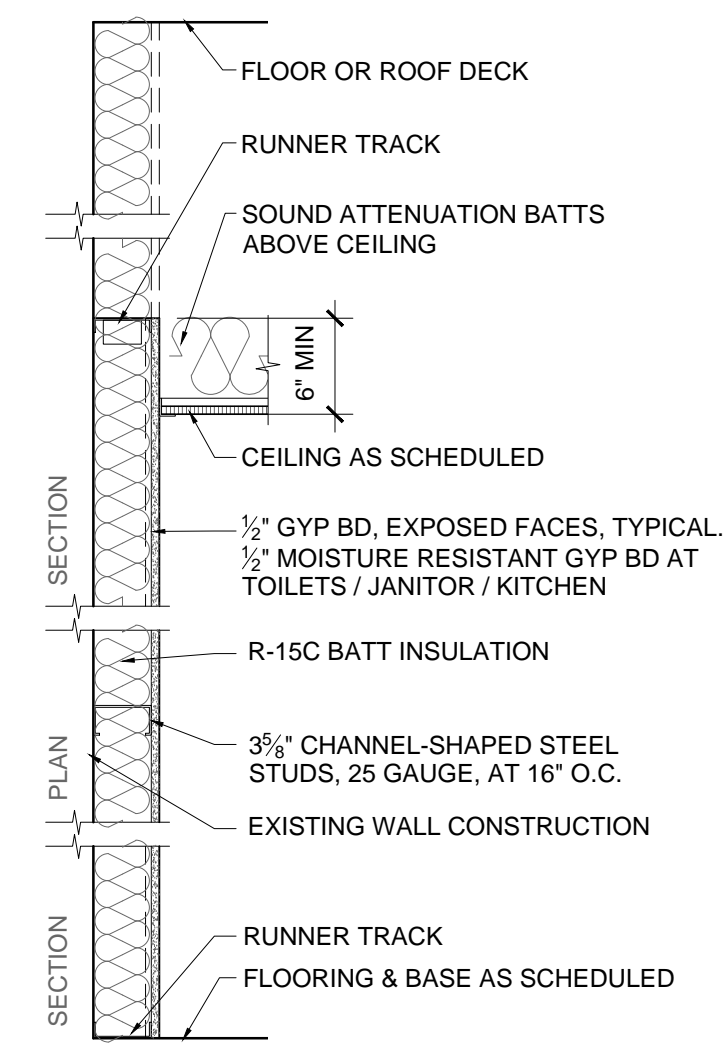


**FULL-HEIGHT PARTITION** F



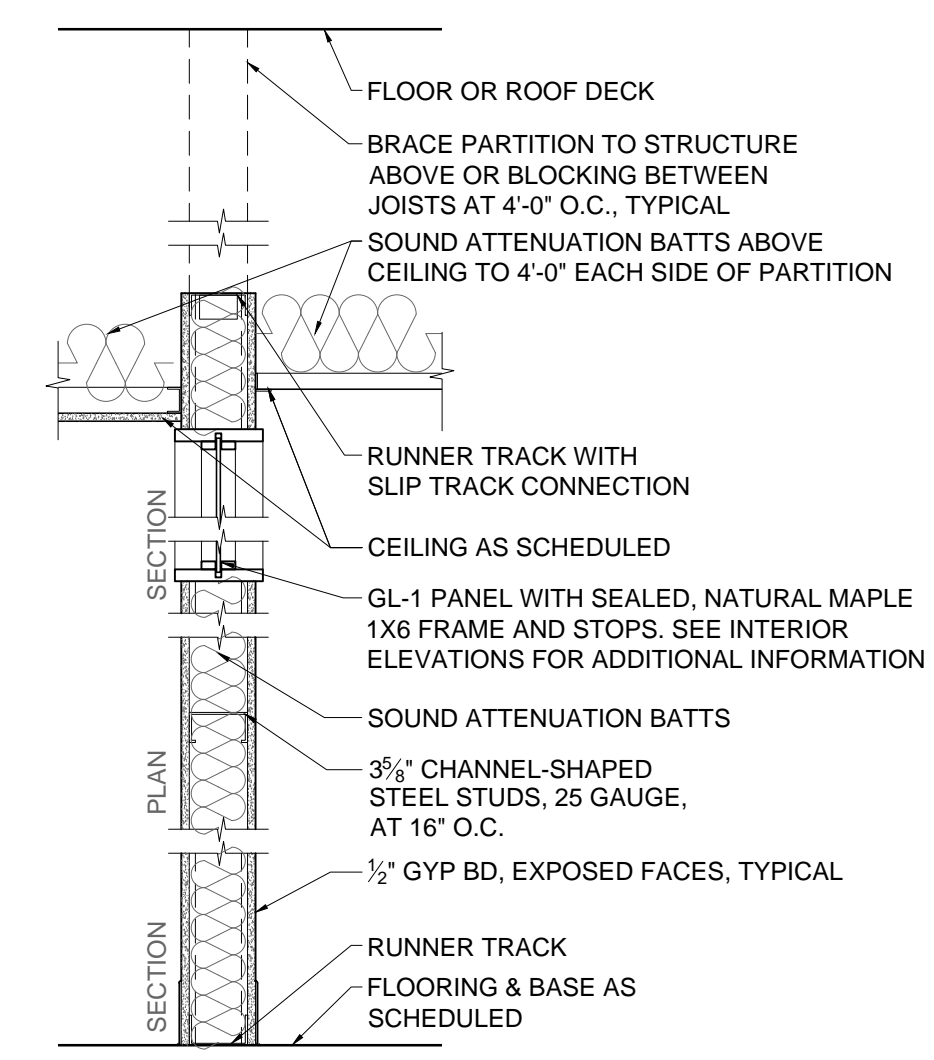
**1 5/8" FURRING, FULL HT** E1

**1 5/8" FURRING AT (E) CONSTRUCTION** E

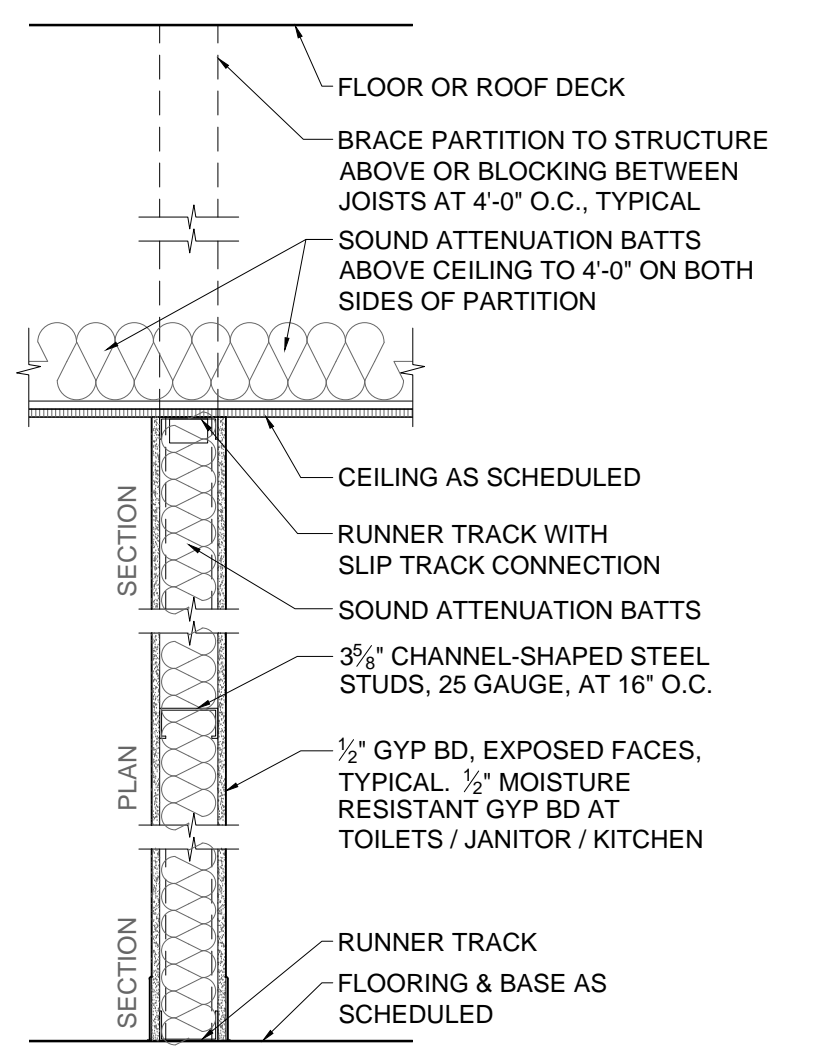


**3 5/8" FURRING, FULL HT** D1

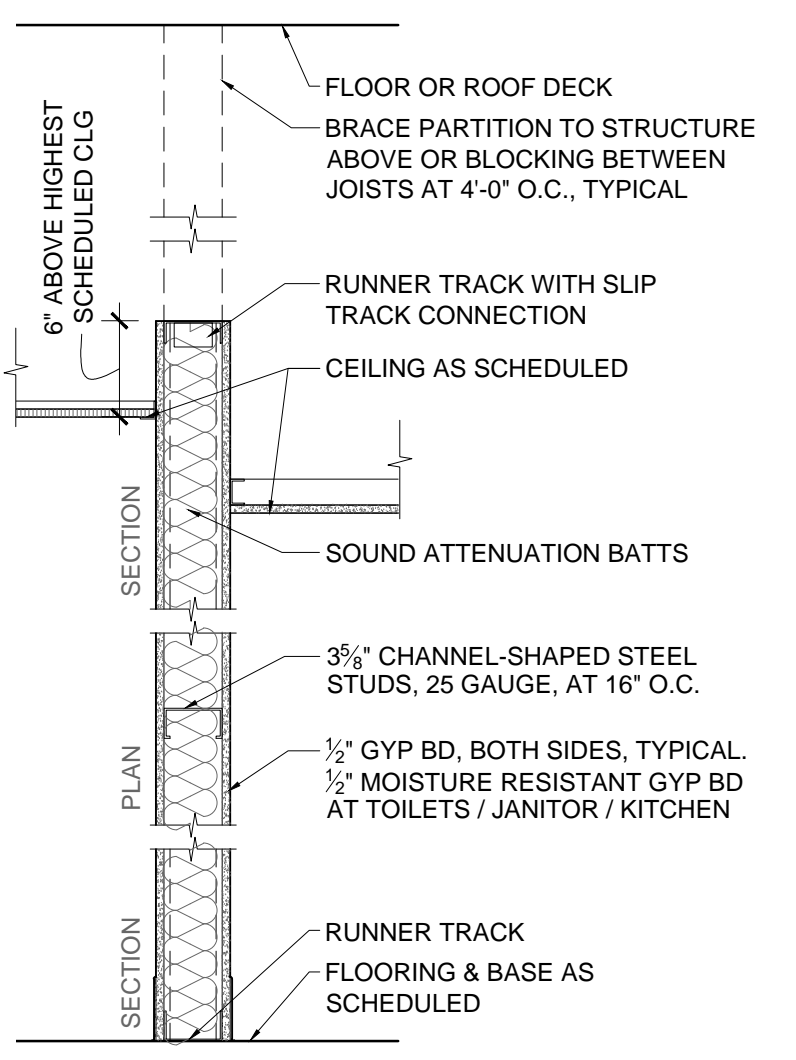
**3 5/8" FURRING AT (E) CONSTRUCTION** D



**PARTITION W/ TRANSOM** C



**PARTITION TO UNDERSIDE OF CEILING** B



**TYPICAL NEW PARTITION** A

**PARTITION TYPES** 2

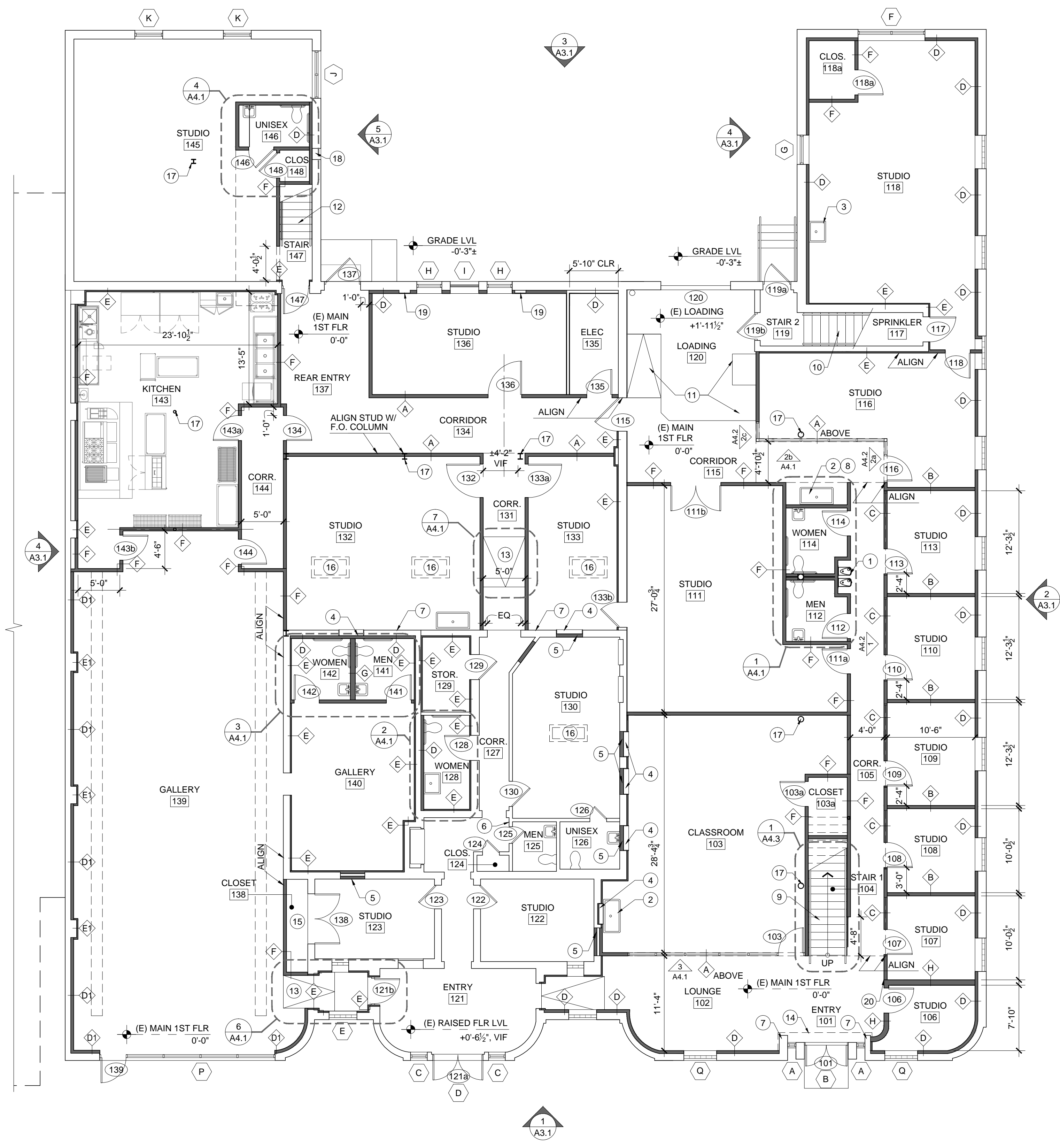
\* SEE REFLECTED CEILING PLAN FOR CEILING HEIGHTS \*

**FIRST FLOOR CONSTRUCTION PLAN KEYNOTES**

- 1 HI-LO DRINKING FOUNTAIN
- 2 UTILITY SINK, ±4'-0" WIDE
- 3 UTILITY SINK, ±2'-6" WIDE
- 4 INFILL (E) OPENING WITH DISPLAY SHELVES. SEE INTERIOR ELEVATION
- 5 INFILL WALL TO MATCH EXISTING ADJACENT MATERIAL & FINISH
- 6 SIGNAGE COMPLIANT WITH ICC A117.1-2009, SECTION 703, DIRECTING USERS TO ACCESSIBLE FACILITIES
- 7 EXPOSED ORIGINAL BRICK WALL. PATCH OR REPAIR WITH SIMILAR BRICKS UP TO CEILING HEIGHT
- 8 SERVICE SINK
- 9 STEEL PAN AND CONCRETE STAIR WITH PAINTED STEEL HANDRAILS. SEE SECTION / ELEVATION
- 10 EXISTING CONCRETE STAIR AND STEEL HANDRAILS IN CMU ENCLOSURE TO REMAIN (NOTE: STAIR AND HANDRAILS NOT COMPLIANT WITH CURRENT CODES)
- 11 EXISTING PLATFORM AND RAMP TO REMAIN. PATCH WITH SALVAGED WOOD DECKING AS REQUIRED
- 12 EXISTING WOOD STAIR AND HISTORICAL WOOD HANDRAIL TO REMAIN WITH REPAIRS AS REQUIRED. ADD PAINTED STEEL PIPE HANDRAILS, BOTH SIDES, AT 34" ABOVE NOSING WITH EXTENSIONS AT TOP AND BOTTOM AS INDICATED
- 13 ACCESSIBLE CONCRETE RAMP AND LANDING. REFER TO ENLARGED PLAN
- 14 GYPSUM BOARD EYEBROW ABOVE
- 15 INFILL WITH CONCRETE AS REQUIRED TO CREATE FLOOR FLUSH WITH EXISTING ADJACENT
- 16 SKYLIGHT ABOVE. REFER TO REFLECTED CEILING PLAN & ROOF PLAN
- 17 EXPOSED STEEL COLUMN, PAINTED. DO NOT ENGAGE IN WALL UNLESS OTHERWISE NOTED
- 18 EXHAUST VENT IN (E) MASONRY OPENING
- 19 LOCATE WALL FRAMING TO ALLOW GYPSUM BOARD APPLIED FLUSH TO FACE OF PIER
- 20 LOCATE WALL FRAMING TO ALLOW FLUSH GYPSUM BOARD FACE ON CORRIDOR SIDE

**FIRST FLOOR CONSTRUCTION PLAN GENERAL NOTES**

1. PROTECT ALL EXISTING FINISHES TO REMAIN THROUGHOUT CONSTRUCTION ACTIVITIES.
2. REFER TO HISTORIC REVIEW DRAWING SET FOR ADDITIONAL INFORMATION.
3. REFER TO A2.2 FOR DOOR SCHEDULE.
4. REFER TO A3.2 FOR EXTERIOR WINDOW SCHEDULE.
5. REFER TO ARCHITECTURAL SITE PLAN FOR EXTERIOR STAIRS, RAMPS AND HANDRAIL DETAILS.
6. PROVIDE SIGNAGE WITH BRAILLE AT CORRIDOR SIDE OF ALL INTERIOR DOORS, COMPLIANT WITH ICC A117.1-2009, SECTION 703. COORDINATE DESIGN WITH OWNER.



**FIRST FLOOR CONSTRUCTION PLAN** 1

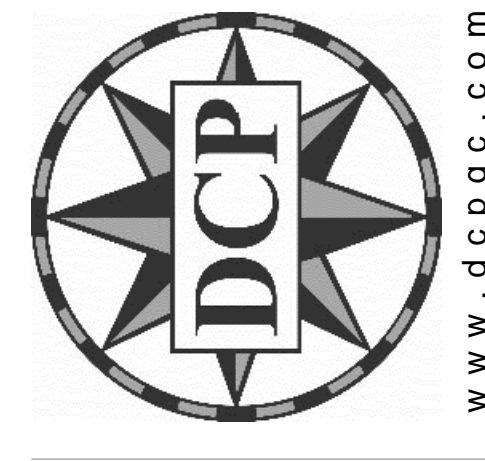
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**FIRST FLOOR CONSTRUCTION PLAN & PARTITION TYPES**

**A2.1**

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NOTE: BATT INSULATION SHALL BE UNFACED WITH FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 450.

1" = 1'-0"

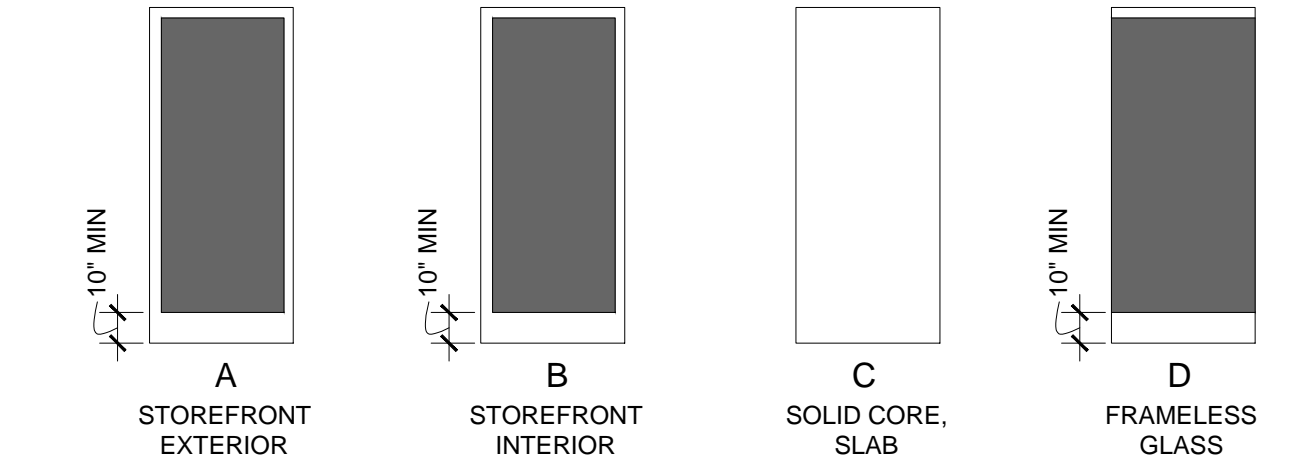
1/8" = 1'-0"



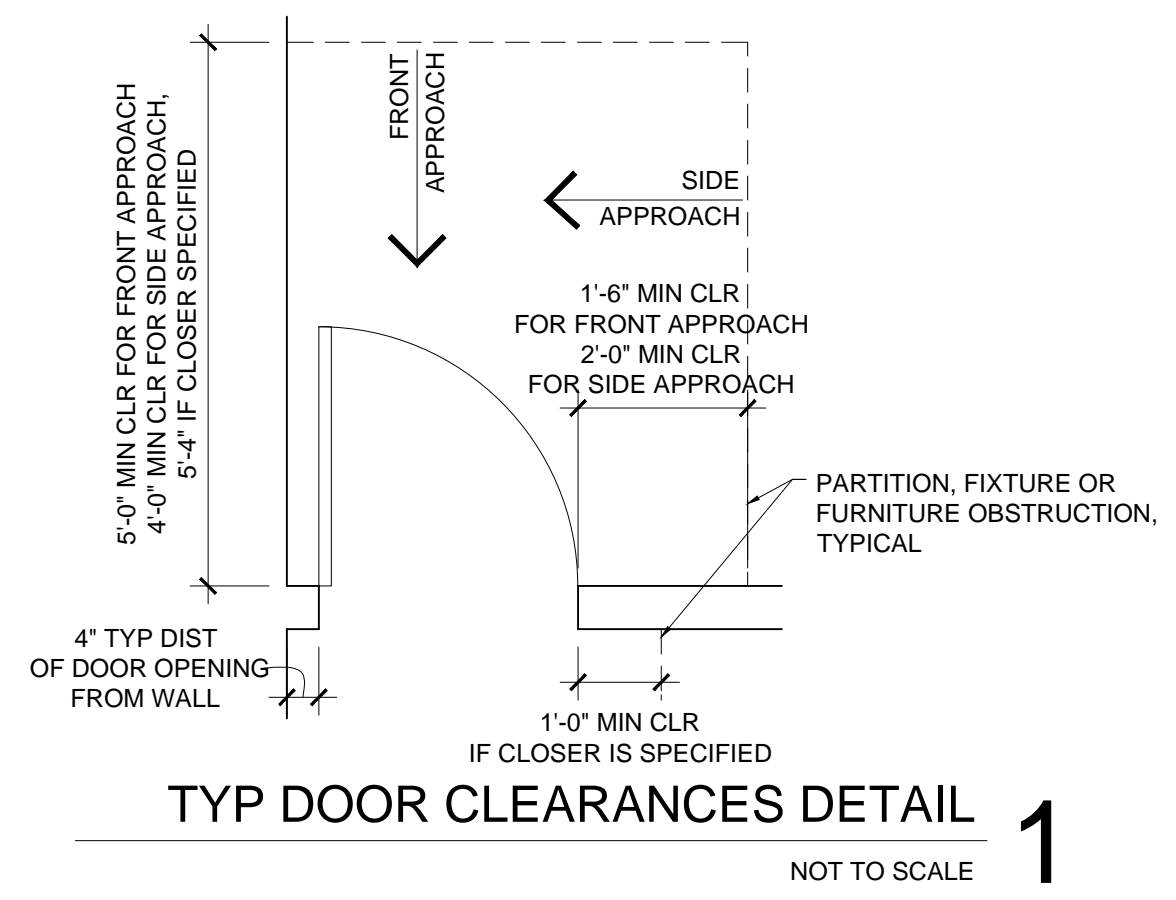
DOOR SCHEDULE								
#	DOOR				FRAME		HARDWARE	REMARKS
	TYPE	SIZE (WxH)	MATERIAL	FINISH	MATERIAL	FINISH		
FIRST FLOOR								
101	A	(2) 2'-6" x 7'-0" VIF	ALUM. SF	CLR ANOD	ALUM. SF	(E)	ENTRY	NEW DOOR IN EXISTING MASONRY OPENING
102	-	-	-	-	-	-	-	-
103	B	3'-0" x 7'-0"	ALUM. SF	CLR ANOD	ALUM. SF	CLR ANOD	OFFICE	-
103a	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	STOREROOM	-
104	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-
106	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	2 1/4" DOOR THICKNESS WITH FULL PERIMETER NEOPRENE, FRAME APPLIED GASKETS AND ACCESSIBLE ALUMINUM SADDLE THRESHOLD
107	-	-	-	-	-	-	OFFICE	-
108	-	-	-	-	-	-	OFFICE	-
109	-	-	-	-	-	-	OFFICE	-
110	-	-	-	-	-	-	OFFICE	-
111a	-	-	-	-	-	-	OFFICE	-
111b	-	(2) 3'-0" x 7'-0"	-	-	-	-	OFFICE	-
112	-	3'-0" x 7'-0"	-	-	-	-	PRIVACY	-
113	-	3'-0" x 7'-0"	-	-	-	-	OFFICE	-
114	-	3'-0" x 7'-0"	-	-	-	-	PRIVACY	-
115	(E)	(E)	(E)	PTD	(E)	-	PASSAGE	REPAIR DOOR AS REQUIRED
116	B	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	ALUM. SF	CLR ANOD	OFFICE	-
117	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	STOREROOM	-
118	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
118a	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
119a	(E)	(E)	(E)	PTD	(E)	PTD	ENTRY	-
119b	(E)	(E)	(E)	PTD	(E)	PTD	PASSAGE	-
120	(E)	(E)	(E)	PTD	(E)	PTD	N/A	OVERHEAD DOOR
121a	A	(2) 3'-0" x 7'-0" VIF	ALUM. SF	CLR ANOD	ALUM. SF	CLR ANOD	ENTRY	-
121b	D	3'-0" x 7'-0"	GLASS	FRAMELESS	-	-	SEE NOTE	CRL WEDGE-LOCK DRY GLAZE DOOR RAIL SYSTEM WITH CRL-BLUMCRAFT DESIGNER 110 SERIES PANIC HARDWARE BRUSHED STAINLESS STEEL FINISH
122	(E)	(E)	(E)	(E)	(E)	(E)	(E)	-
123	-	-	-	-	-	-	-	-
124	-	-	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-
126	-	-	-	-	-	-	-	-
127	-	-	-	-	-	-	-	-
128	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	PRIVACY	-
129	(E)	(E)	(E)	(E)	(E)	(E)	STOREROOM	-
130	(E)	(E)	(E)	(E)	(E)	(E)	OFFICE	-
131	-	-	-	-	-	-	-	-
132	C	4'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
133a	C	4'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
133b	(E)	(E)	(E)	PTD	(E)	-	PASSAGE	WITH DEADBOLT, MASTER KEY-OPERATED FROM BOTH SIDES
134	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	PANIC	WITH KEYED ACCESS
135	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	STOREROOM	-
136	C	4'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
137	(E)	(E)	(E)	PTD	(E)	(E)	ENTRY	-
138	C	(2) 3'-0" x 7'-0" VIF	SC WD	BIRCH, SEALED	KD / HM	PTD	PASSAGE	VERIFY WIDTH IN EXISTING OPENING
139	A	3'-0" x 7'-0"	ALUM. SF	CLR ANOD	ALUM. SF	CLR ANOD	SEE NOTE	CONCEALED VERTICAL ROD PANIC DEVICE W/ INTERIOR CYLINDER DOGGING FUNCTION
140	-	-	-	-	-	-	-	-
141	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	PRIVACY	-
142	-	-	-	-	-	-	PRIVACY	-
143a	-	-	-	-	-	-	PUSH/PULL	WITH KEYED ACCESS AND KICKPLATE
143b	-	-	-	-	-	-	PUSH/PULL	WITH KEYED ACCESS AND KICKPLATE
144	-	-	-	-	-	-	PANIC	-
145	-	-	-	-	-	-	-	-
146	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	PRIVACY	**NO CLOSER PERMITTED
147	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	**NO CLOSER PERMITTED
148	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	PASSAGE	-
SECOND FLOOR								
201	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
202	-	-	-	-	-	-	PASSAGE	-
203	-	-	-	-	-	-	OFFICE	-
204	-	-	-	-	-	-	PASSAGE	-
205	-	-	-	-	-	-	OFFICE	-
206	-	-	-	-	-	-	PRIVACY	-
207	-	-	-	-	-	-	PRIVACY	-
208	-	-	-	-	-	-	OFFICE	-
209	-	-	-	-	-	-	-	-
210	C	3'-0" x 7'-0"	SC WD	BIRCH, SEALED	KD / HM	PTD	OFFICE	-
211	-	-	-	-	-	-	-	-
212	-	-	-	-	-	-	-	-

**DOOR SCHEDULE NOTES**

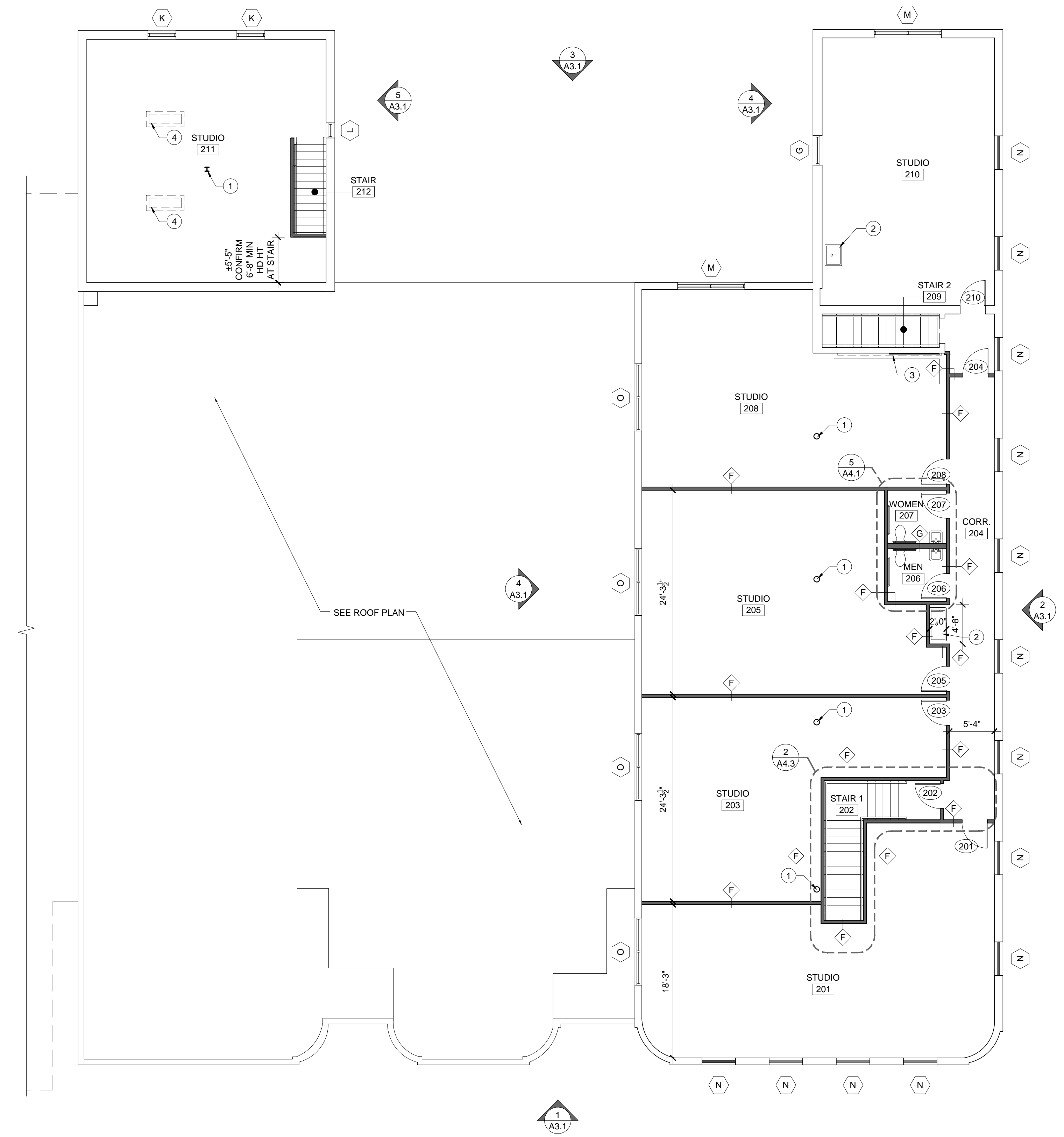
- DOOR HARDWARE BASIS OF DESIGN: DORMA C500 SERIES OR EQ, SATIN CHROME FINISH (US26D).
- CONFIRM HARDWARE TYPES WITH OWNER PRIOR TO ORDERING. COORDINATE KEYING WITH OWNER.



**DOOR TYPES**  
NOT TO SCALE 2



**TYP DOOR CLEARANCES DETAIL**  
NOT TO SCALE 1



**SECOND FLOOR CONSTRUCTION PLAN**  
1/8" = 1'-0" 1

**SECOND FLOOR CONSTRUCTION PLAN GENERAL NOTES**

- PROTECT ALL EXISTING FINISHES TO REMAIN THROUGHOUT CONSTRUCTION ACTIVITIES.
- REFER TO HISTORIC REVIEW DRAWING SET FOR ADDITIONAL INFORMATION.
- REFER TO A2.1 FOR PARTITION TYPES.
- REFER TO A3.2 FOR EXTERIOR WINDOW SCHEDULE.
- REFER TO ARCHITECTURAL SITE PLAN FOR EXTERIOR STAIRS, RAMPS AND HANDRAIL DETAILS.
- PROVIDE SIGNAGE WITH BRAILLE AT CORRIDOR SIDE OF ALL INTERIOR DOORS, COMPLIANT WITH ICC A117.1-2009, SECTION 703. COORDINATE DESIGN WITH OWNER.

**SECOND FLOOR CONSTRUCTION PLAN KEYNOTES**

- EXPOSED STEEL COLUMN, PAINTED
- UTILITY SINK, ±4'-0" WIDE
- REINSTALL SALVAGED DOOR PANEL AND TRACK IN FIXED POSITION WITHIN ADJACENT STUDIO
- SKYLIGHT ABOVE, REFER TO REFLECTED CEILING PLAN & ROOF PLAN

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**SECOND FLOOR CONSTRUCTION PLAN & SCHEDULES**

**A2.2**

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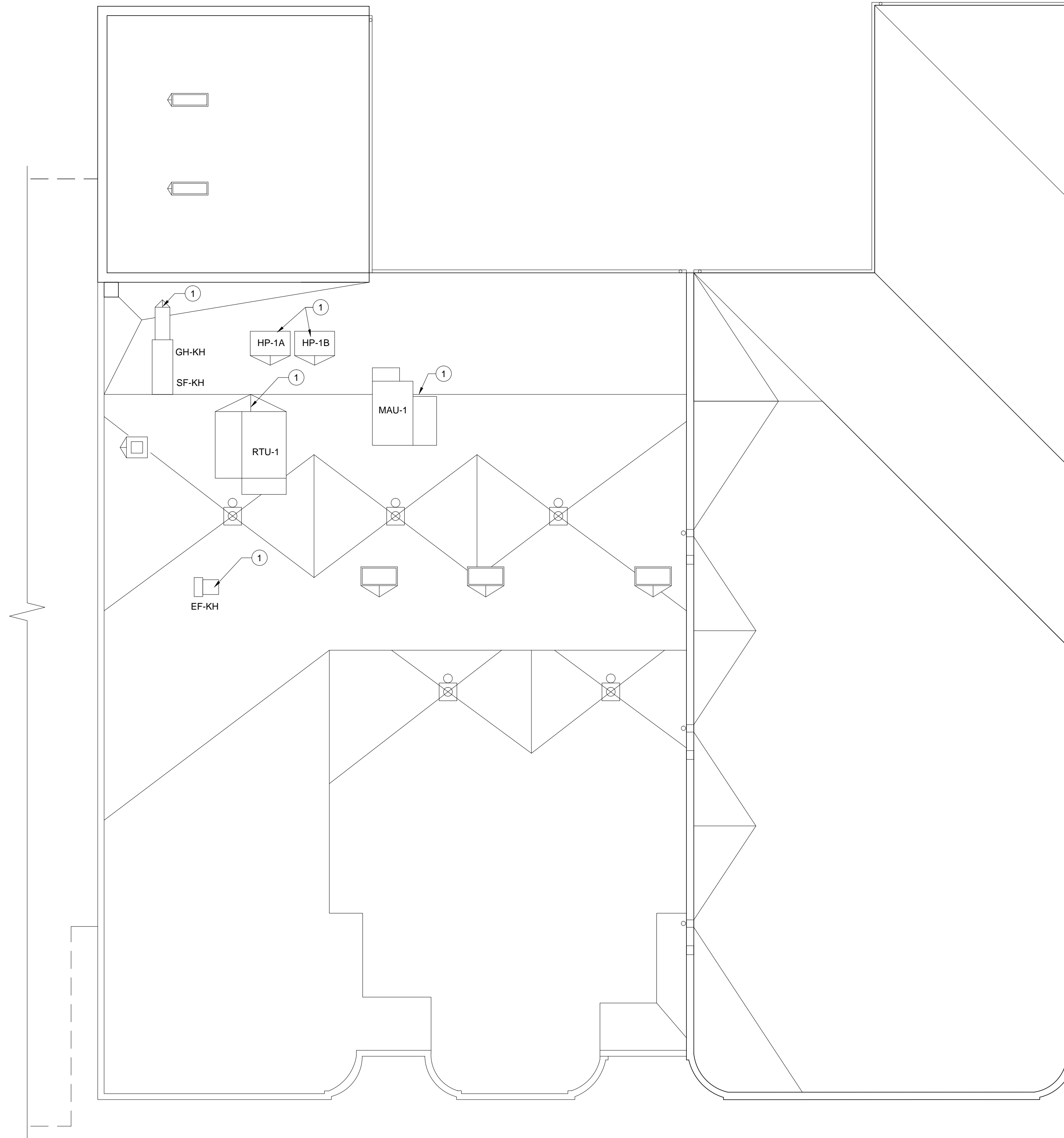


**ROOF PLAN KEYNOTES**

- 1 NEW MECHANICAL UNIT ON CURB. ADD CRICKET AS REQUIRED.

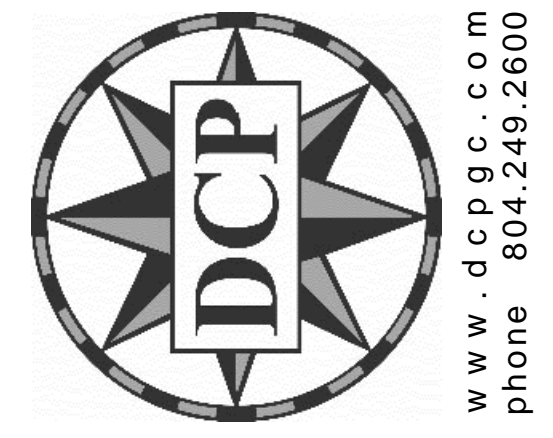
**ROOF PLAN GENERAL NOTES**

- 1. ALL ROOFING MATERIALS, ACCESSORIES AND PENETRATION DETAILS TO BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ROOF TYPE AND SPECIFIED WARRANTY PERIOD. NOTIFY ARCHITECT IMMEDIATELY OF ANY CONFLICTS WITH ARCHITECTURAL DETAILS.
- 2. ENSURE MINIMUM SLOPE OF 1/4" PER FOOT AT CRICKETS.



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ROOF PLAN 1  
1/8" = 1'-0"

ROOF PLAN  
**A2.3**

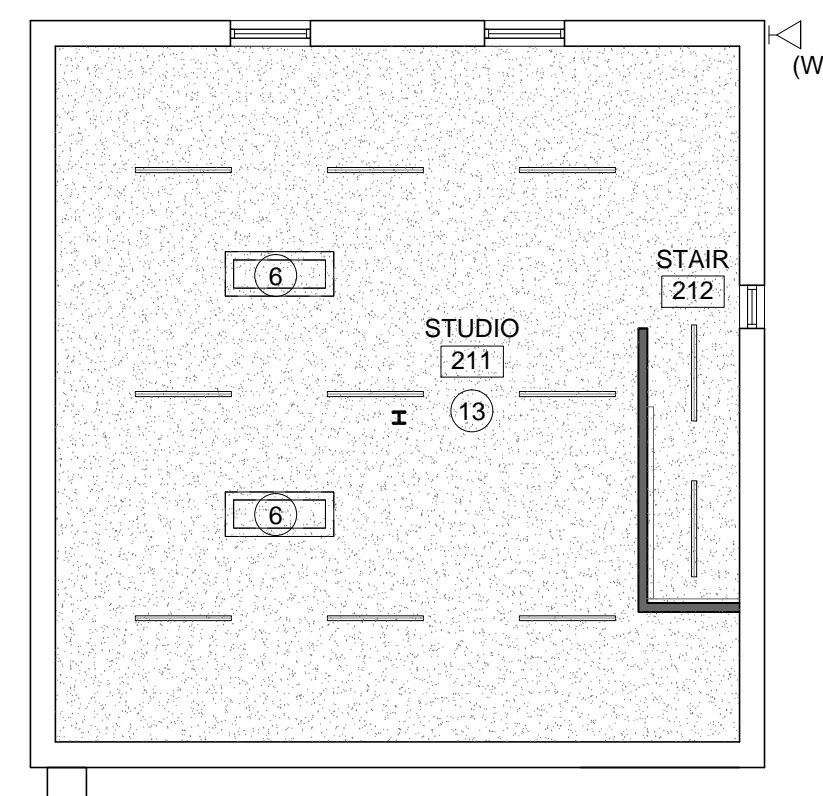
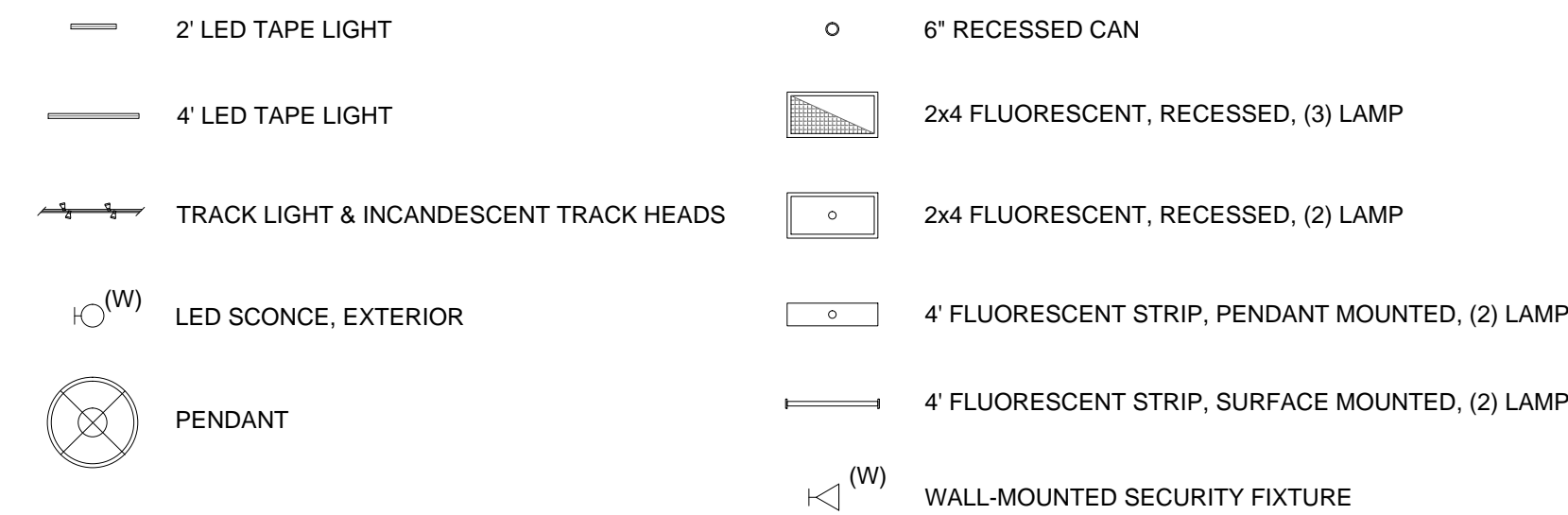
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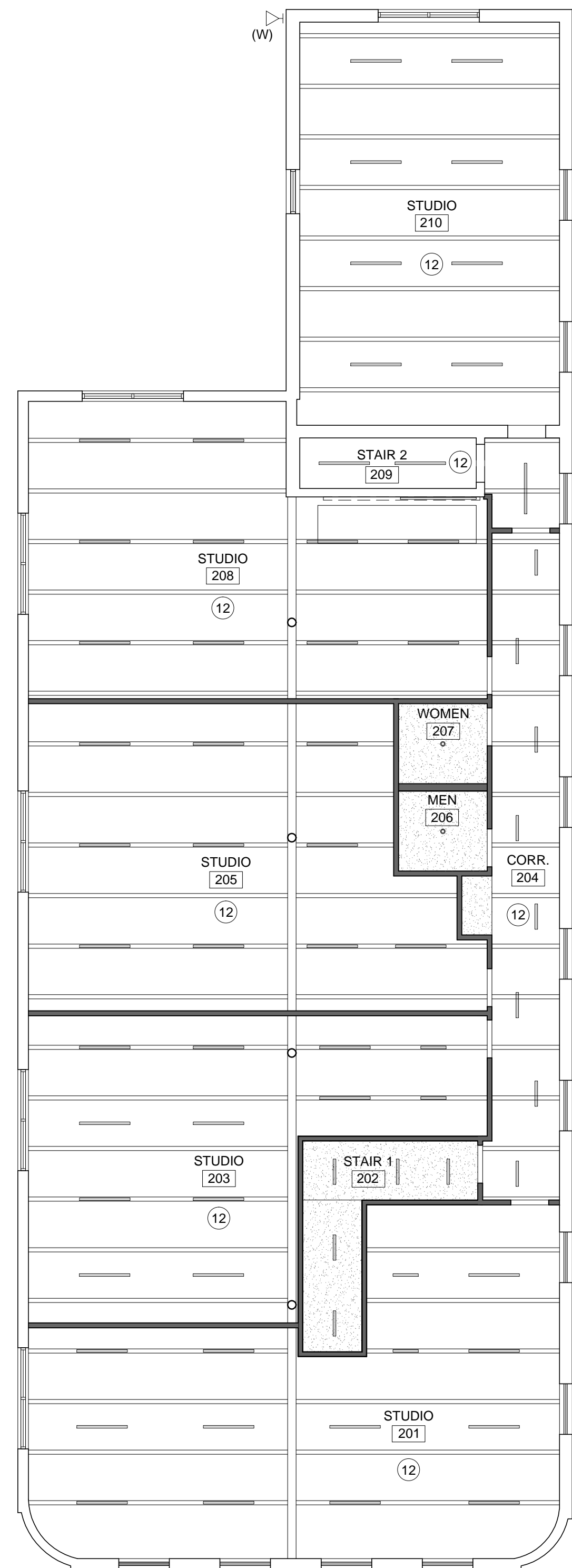
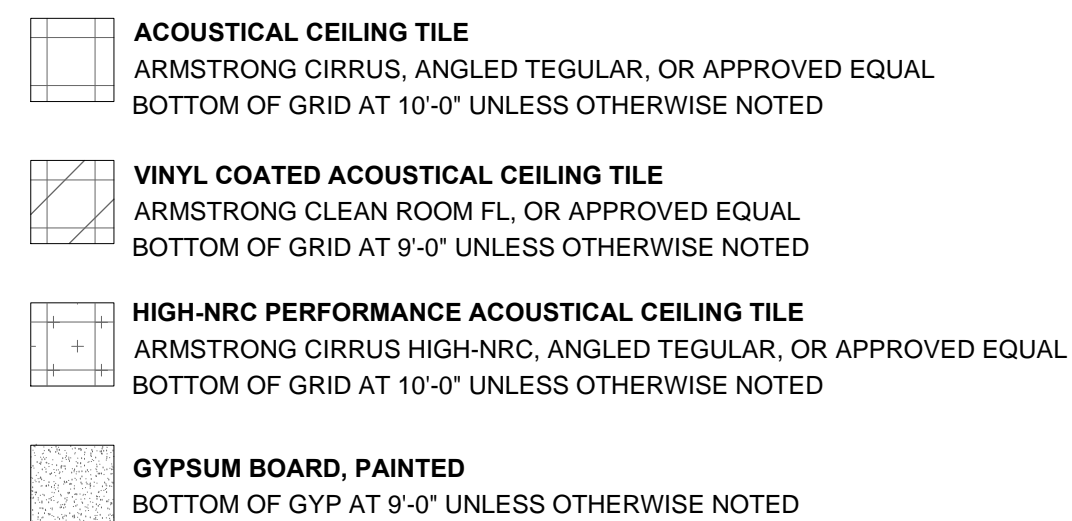
**LIGHT FIXTURE LEGEND**

**GENERAL NOTES:**

1. (W) INDICATES EXTERIOR OR WET RATED FIXTURE
2. (E) INDICATES EXISTING FIXTURE TO REMAIN
3. STUDIOS, GALLERIES, LOUNGE & ENTRY #121 LIGHTING TO BE ON DIMMERS, TYPICAL.



**CEILING MATERIAL LEGEND**

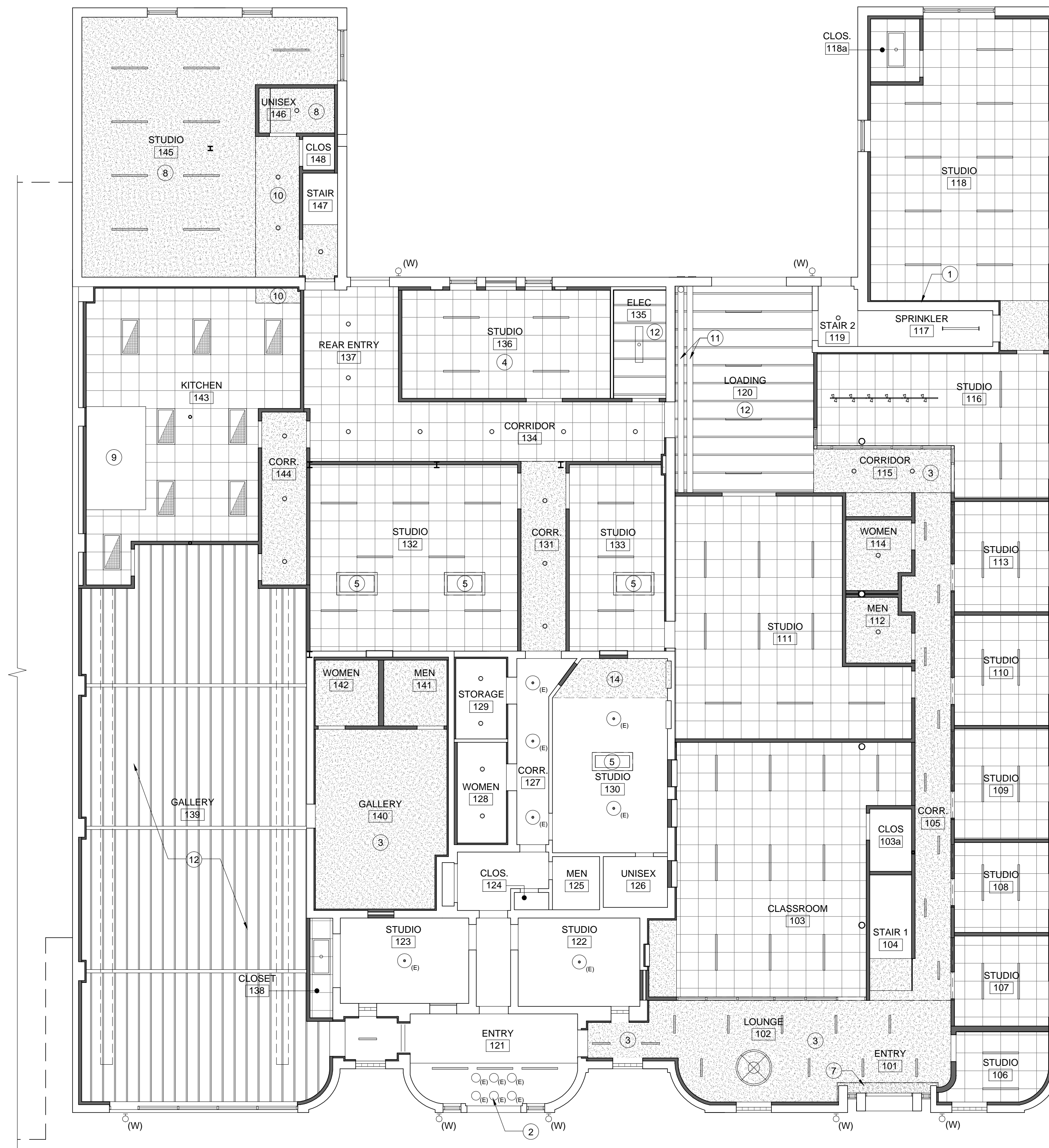


SECOND FLOOR REFLECTED CEILING & LIGHTING PLAN 2

1/8" = 1'-0"

**REFLECTED CEILING & LIGHTING PLAN KEYNOTES**

1. INCLUDE POWER FOR (6) REFRIGERATORS ON SEPARATE CIRCUIT
2. REFURBISH (E) ENTRY DOWNLIGHTS
3. GYPSUM BOARD CEILING AT 10'-0" AFF
4. ACOUSTICAL TILE CEILING AT 11'-0" AFF
5. SKYLIGHT, 24'-6" x 2'-6", WITH FINISHED GYPSUM BOARD PERIMETER TO 6" BELOW CEILING - SEE DETAIL THIS SHEET
6. SKYLIGHT, 24'-6" x 1'-10", WITH FINISHED GYPSUM BOARD PERIMETER TO 6" BELOW CEILING - SEE DETAIL THIS SHEET
7. GYPSUM BOARD SOFFIT / EYEBROW ABOVE EXISTING BRICK PIERS
8. GYPSUM BOARD CEILING TIGHT TO EXISTING JOISTS, ± 8'-2" AFF
9. EXHAUST HOOD, SEE KITCHEN EQUIPMENT DRAWINGS
10. GYPSUM BOARD BULKHEAD TIGHT TO NEW DUCTWORK TO MAXIMIZE HEIGHT, 7'-6" AFF MIN
11. (2) 8" EXPOSED ROOF DRAIN PIPES AT LOCATION OF REMOVED PIPE
12. EXPOSE EXISTING STRUCTURE & DECKING ABOVE, DO NOT FINISH
13. GYPSUM BOARD CEILING FRAMED TO BE FLAT, TIGHT TO LOW END OF ROOF JOISTS, ± 9'-0" AFF
14. PATCH GYPSUM BOARD CEILING TO ALIGN WITH EXISTING ADJACENT



FIRST FLOOR REFLECTED CEILING & LIGHTING PLAN 1

1/8" = 1'-0"

**REFLECTED CEILING & LIGHTING PLAN GENERAL NOTES**

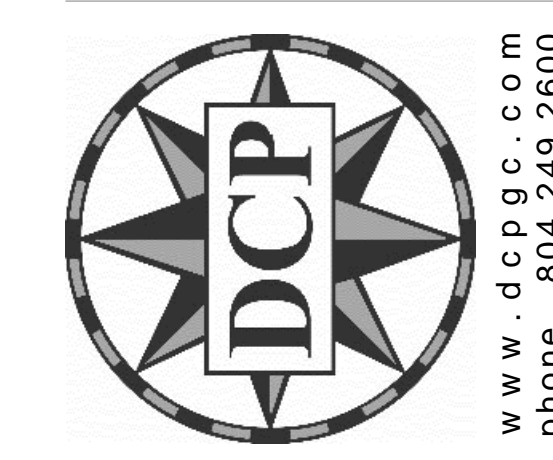
1. LIGHTING SHOWN FOR DESIGN INTENT ONLY. REFER TO ELECTRICAL DRAWINGS FOR SPECIFICATIONS AND DETAILS.
2. REFER TO KITCHEN EQUIPMENT LIST FOR ADDITIONAL INFORMATION.
3. SECOND FLOOR EAST BAY BAR JOISTS AND CONCRETE ROOF PANELS TO REMAIN EXPOSED, DO NOT FINISH

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REFLECTED CEILING & LIGHTING PLANS

A2.4



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FINISH SCHEDULE							
TAG	DESCRIPTION	MANUFACTURER	ITEM	SIZE	COLOR / FINISH	NOTES	
FLOORING & BASE	EP-1	EPOXY COATING	TBD	N/A	TBD	TYPICAL AT 1ST FLOOR CONCRETE FLOORS UNLESS OTHERWISE NOTED	
	CT-1	CERAMIC TILE & COORD. WALL BASE	AMERICAN OLEAN	FUSION COTTO	12X24	CF13 MARRONE	1/3RD STAGGER BRICK PATTERN, WITH COORD. BULLNOSE BASE
	VT-1	VINYL TILE	PROCEDO FLOORING	FORTANA	12X12	WINNIPEG FWII	TYPICAL AT SECOND FLOOR UNLESS OTHERWISE NOTED
	WD-1	WOOD, RECLAIMED	N/A	TBD			PROVIDED BY OWNER, FOR STUDIO #211 ONLY
	TH-1	THRESHOLD, SLOPED	TBD	ACCESSIBLE THRESHOLD	TBD	TBD	TYPICAL AT CONCRETE TO TILE TRANSITIONS
	VB-1	VINYL WALL BASE	JOHNSONITE	TRADITIONAL BASE, COVE	4" HIGH, 1/8" THK	31 ZEPHYR	TYPICAL AT CONCRETE & VINYL TILE FLOORS UON
PAINT & WALLS	PT-1	LATEX PAINT, GYP BD CEILINGS	TBD	N/A		TBD	SATIN FINISH
	PT-2	OIL BASED PAINT, HM TRIM					SEMI-GLOSS FINISH ON PAINTED DOORS / HMTRIM / WALLS AS NOTED
	PT-3	LATEX PAINT, TYPICAL WALL					SATIN FINISH
	PT-4	LATEX PAINT, GALLERY WALL					FLAT FINISH
	PT-5	LATEX PAINT, ACCENT WALL					SATIN FINISH
	PT-6	LATEX PAINT, TOILET ROOMS					SEMI-GLOSS FINISH, TOILET WALLS
	PT-7	OIL BASED PAINT, EXPOSED STEEL					SEMI-GLOSS
MISC	GL-1	GLAZING	TBD	1/4" GLASS PANEL	VARIES	CLEAR	TRANSOM GLAZING IN WALL TYPE "C"

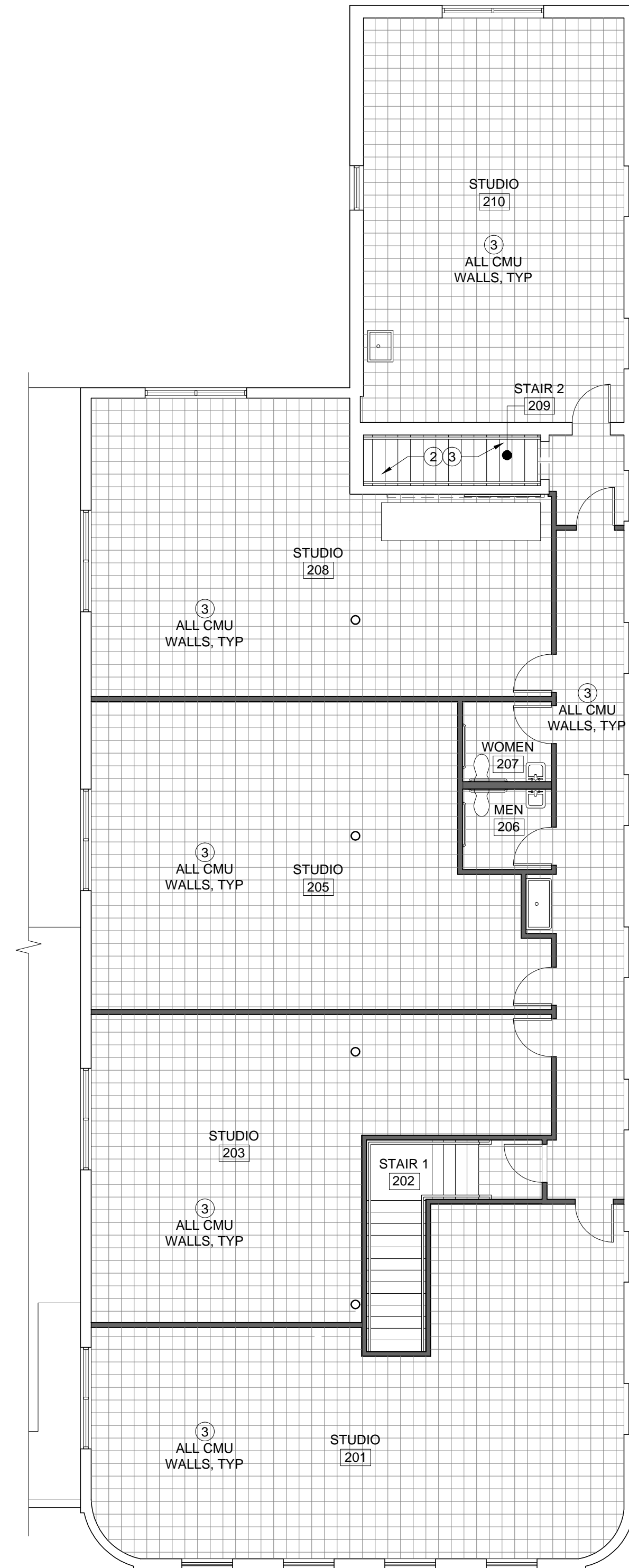
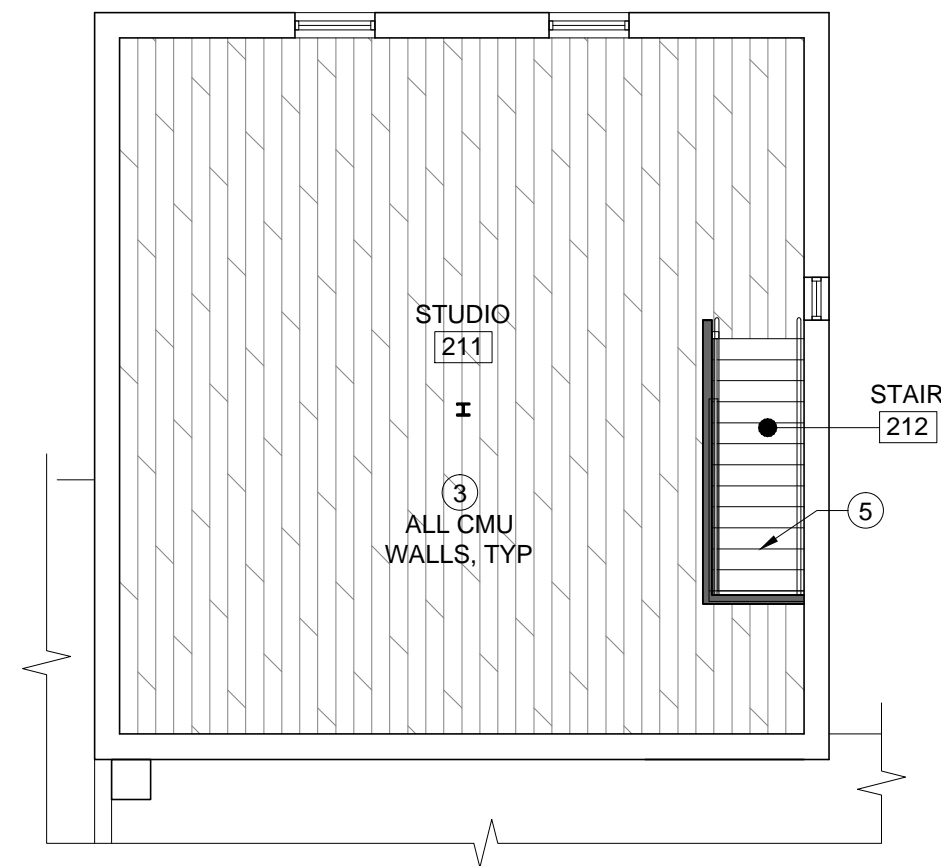
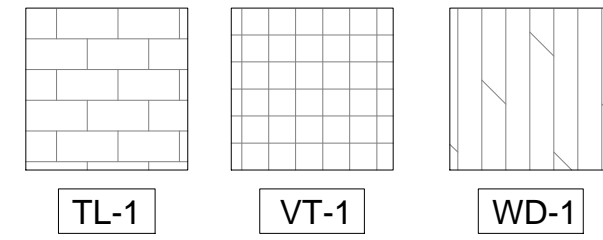
**FINISH PLAN KEYNOTES**

- 1 REPAINT PARGED MASONRY
- 2 EXISTING STAIRS TO RECEIVE CLEAR, NON-SLIP PROTECTIVE COATING
- 3 EXPOSED / UNFINISHED CMU TO REMAIN. PROTECT DURING CONSTRUCTION
- 4 REPAIR / REPOINT ORIGINAL BRICK FACADE
- 5 PATCH AND REPAIR EXISTING STAIR TREADS, MATCH 2ND FLOOR WOOD FINISH. REPAIR RISERS

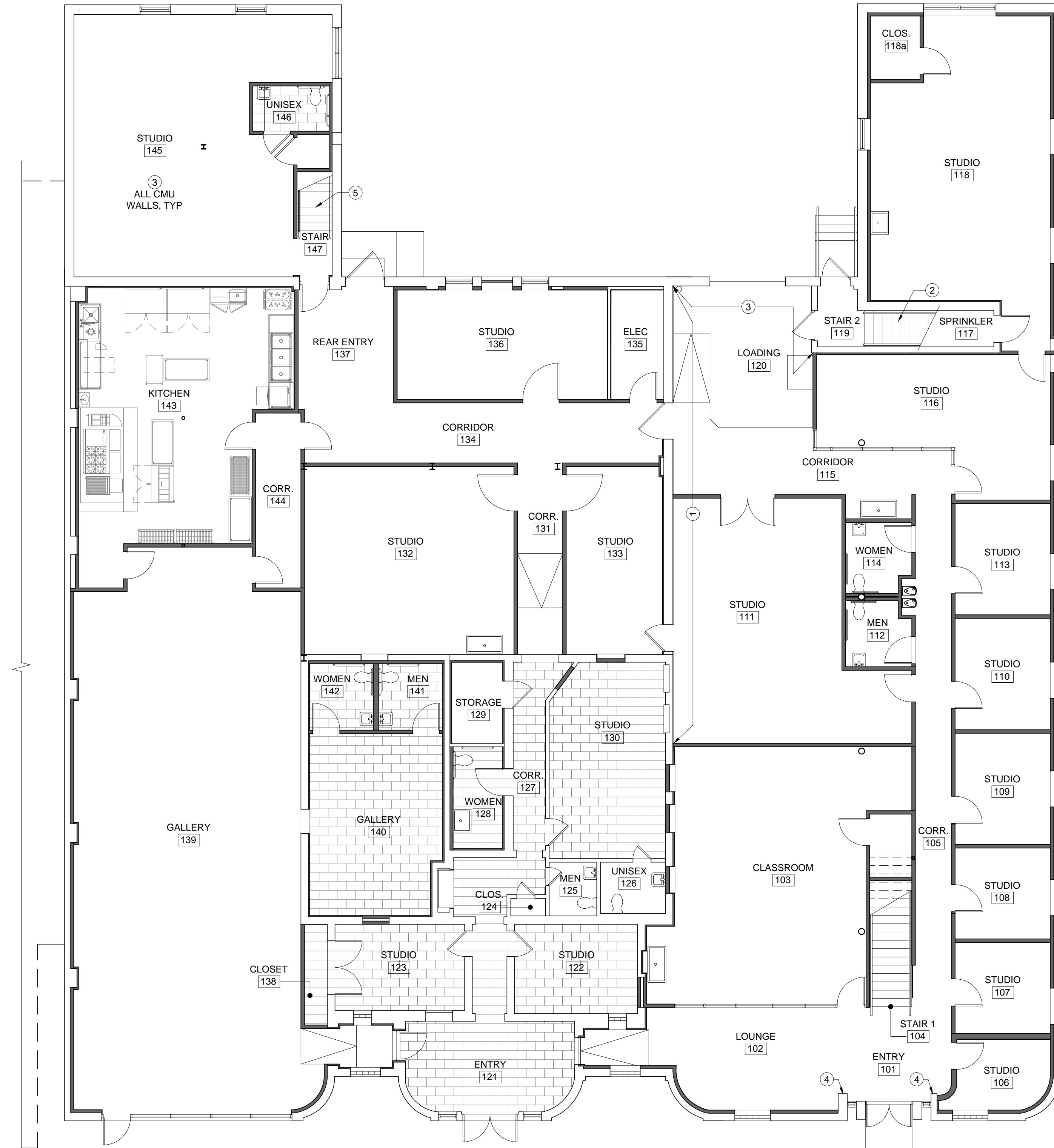
**FINISH PLAN GENERAL NOTES**

1. SEE FINISH SCHEDULE AND INTERIOR ELEVATIONS FOR ADDITIONAL FINISH INFORMATION.
2. FIRST FLOOR TO BE EPOXY COATED [EP-1], TYPICAL UNLESS OTHERWISE NOTED.
3. ALL WALLS TO BE PAINTED [PT-3], TYPICAL, UNLESS OTHERWISE NOTED ON SCHEDULE OR FINISH PLAN.
4. ALL EXPOSED STEEL TO BE PAINTED [PT-7], TYPICAL.
5. PATCH / REPAIR SECOND FLOOR SUBFLOOR AS REQUIRED TO RECEIVE NEW FLOORING AS SCHEDULED.

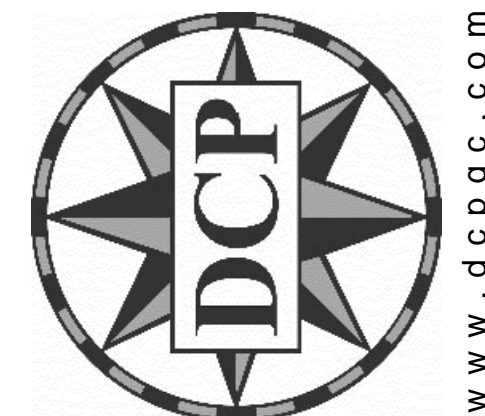
**FLOORING MATERIALS LEGEND**



SECOND FLOOR FINISH PLAN 2  
1/8" = 1'-0"



FIRST FLOOR FINISH PLAN 1  
1/8" = 1'-0"



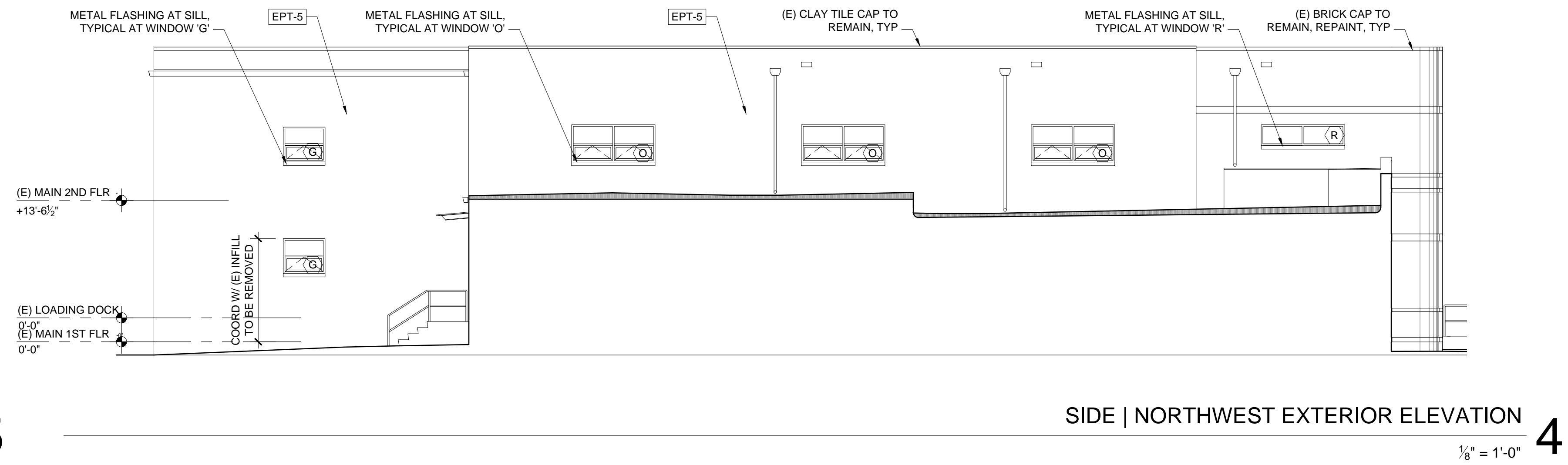
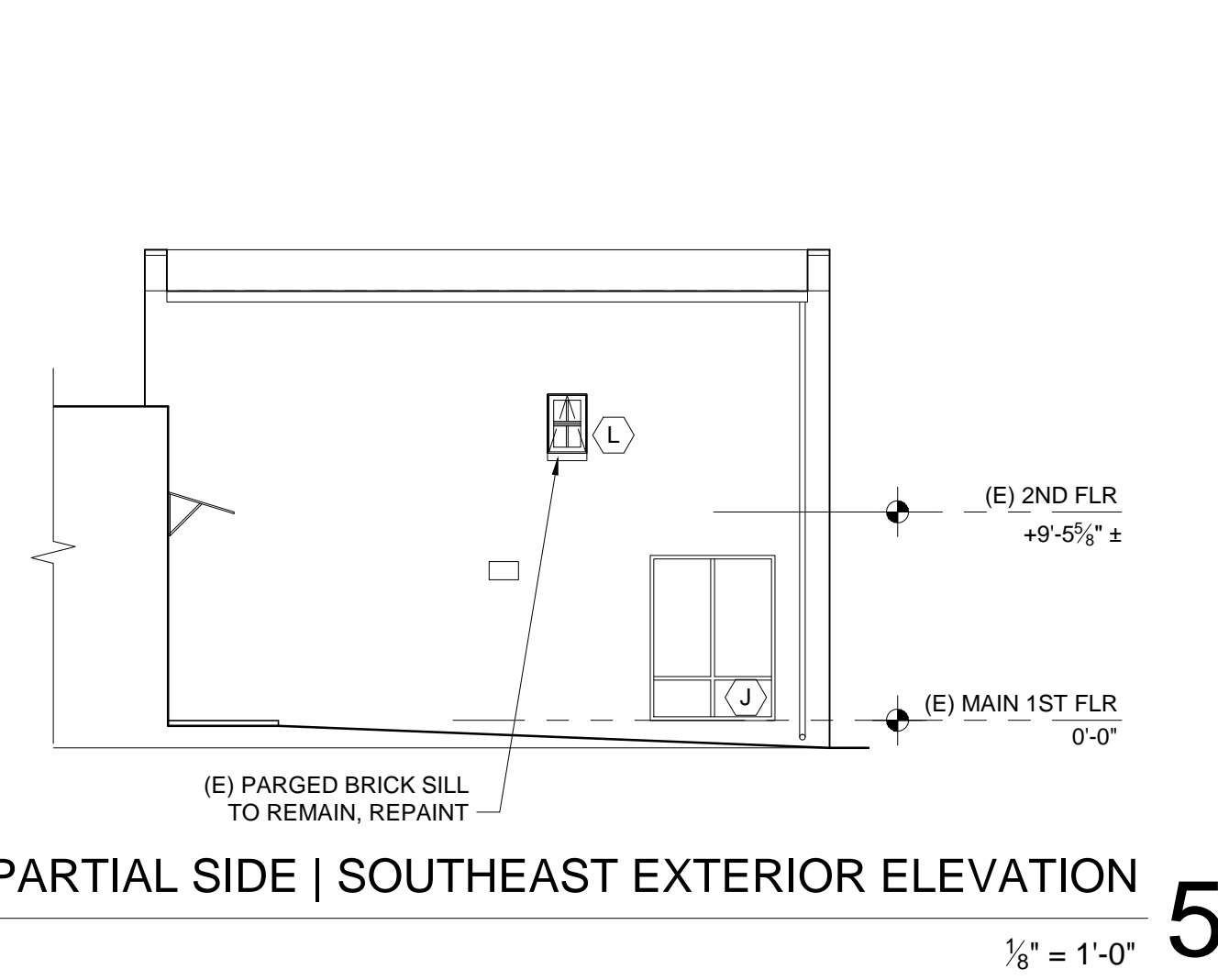
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FINISH PLANS & FINISH SCHEDULE  
**A2.5**

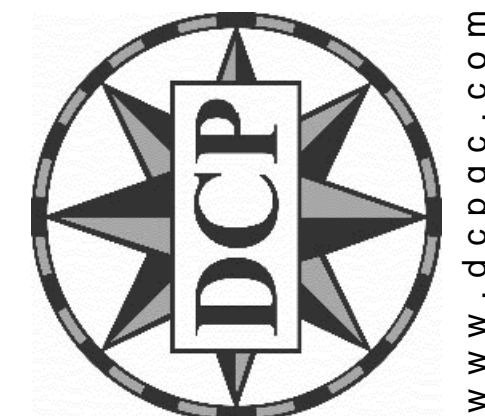
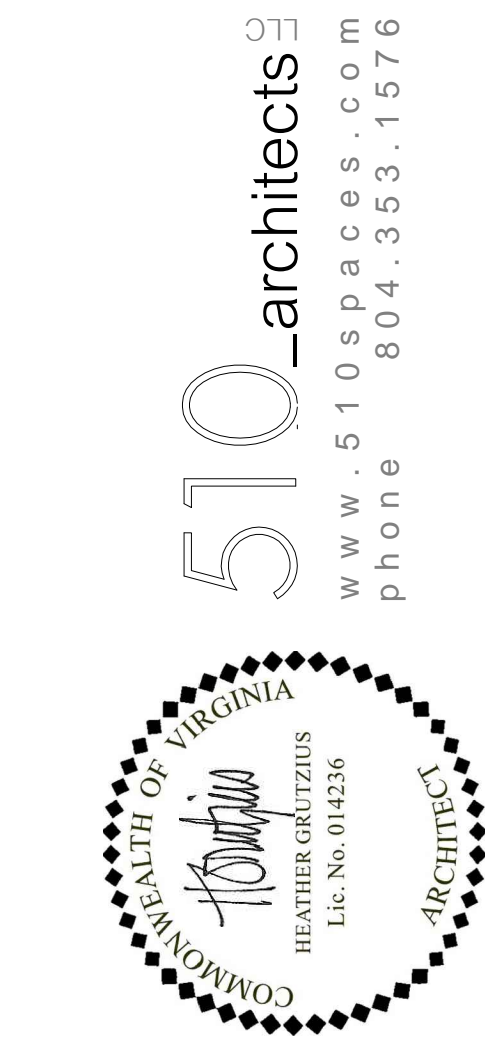
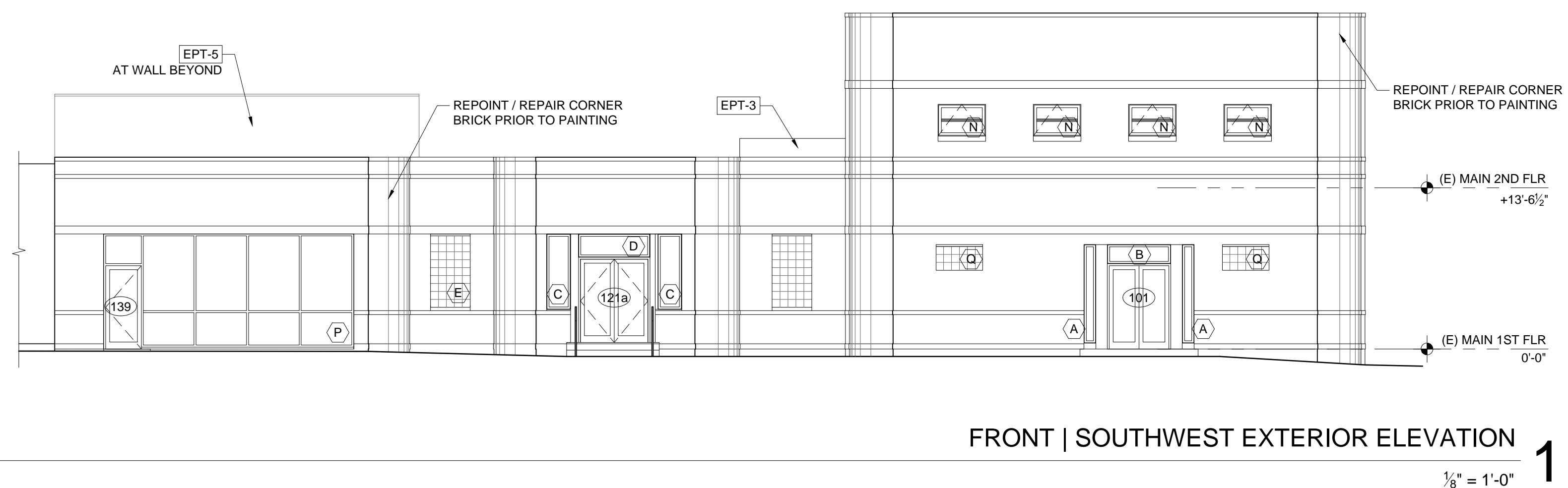
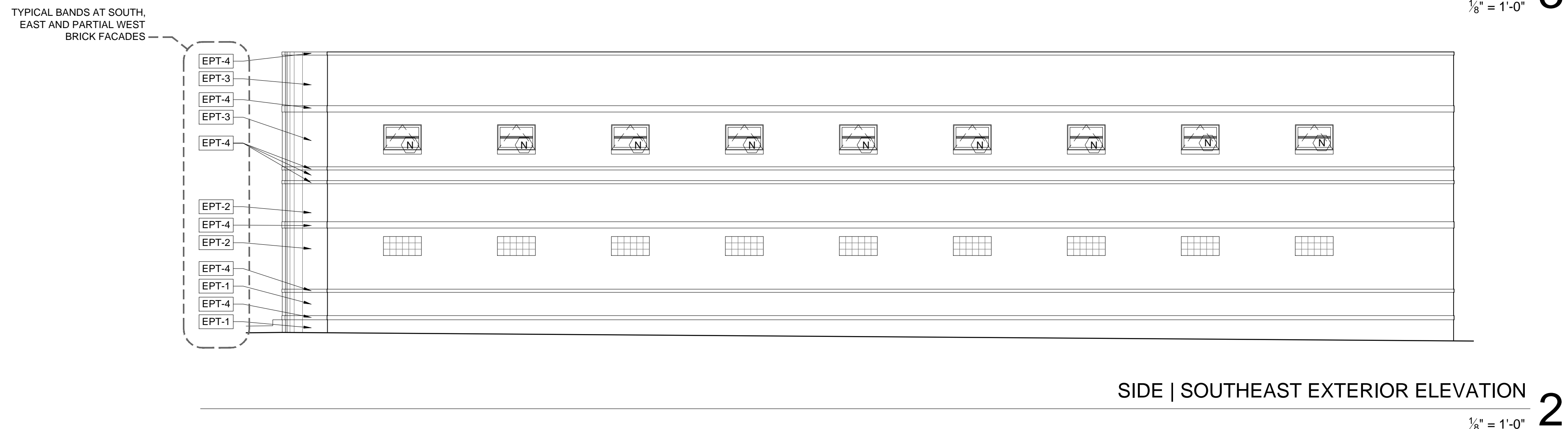
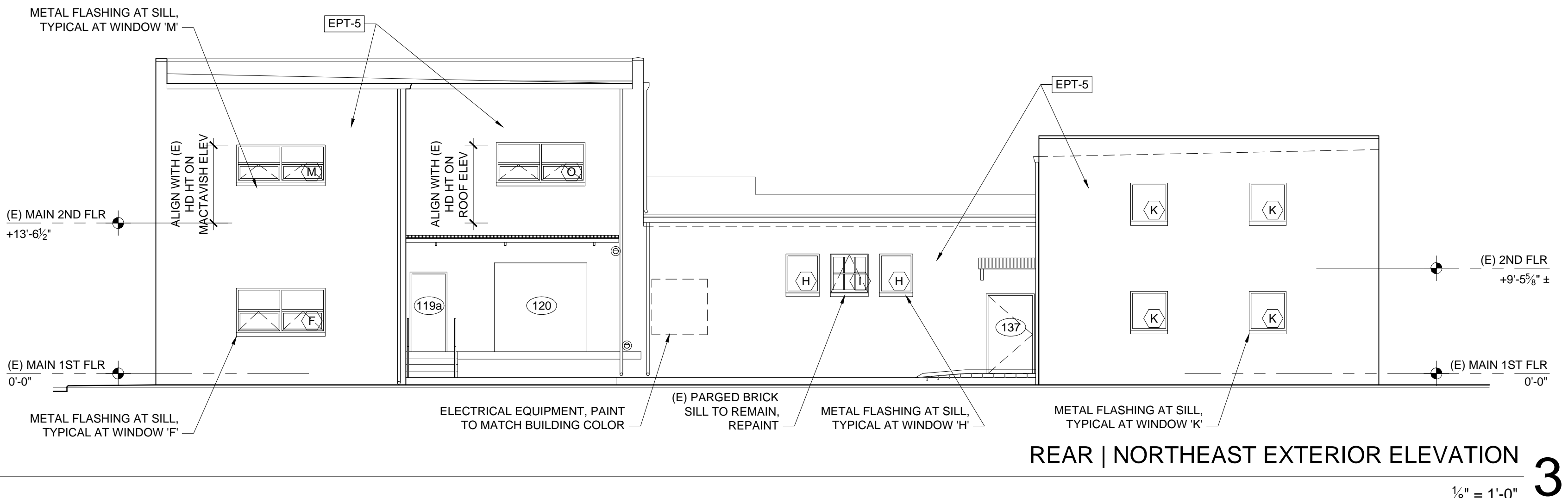
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EXTERIOR FINISH SCHEDULE				
TAG	DESCRIPTION	MANUFACTURER	COLOR / FINISH	NOTES
EPT-1	EXTERIOR LATEX PAINT, BASE	TBD	TBD	SATIN
EPT-2	EXTERIOR LATEX PAINT, 1ST STORY BRICK			SATIN
EPT-3	EXTERIOR LATEX PAINT, 2ND STORY BRICK			SATIN
EPT-4	EXTERIOR LATEX PAINT, ACCENT BANDS			SATIN
EPT-5	EXTERIOR LATEX PAINT, FIELD			SATIN, TYPICAL FIELD COLOR U.O.N.
EPT-6	OIL-BASED PAINT, EXPOSED STEEL			SEMI-GLOSS, TYPICAL AT EXPOSED STEEL ANGLES

\*\* SEE ARCHITECTURAL SITE PLAN AND ROOF PLAN FOR ADDITIONAL NOTES ON EXTERIOR FINISHES \*\*



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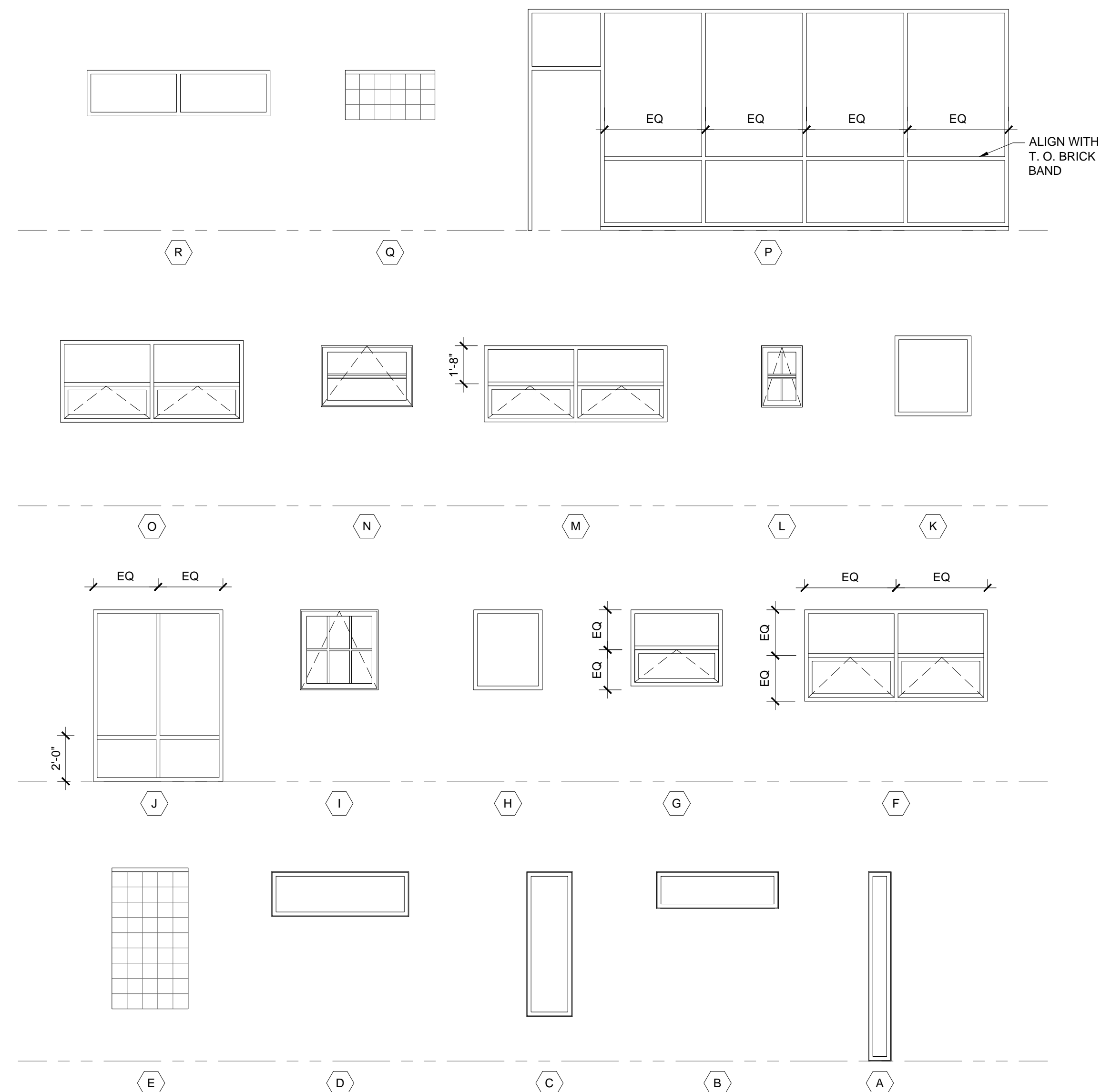
**EXTERIOR  
 ELEVATIONS  
 A3.1**

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EXTERIOR WINDOW SCHEDULE				
WDW	TYPE	R.O. SIZE, W x H	FINISH	REMARKS
A	STOREFRONT, FIXED	±1'-0" x ±8'-3 1/2" VIF	CLR. ANOD.	INFILL IN EXISTING OPENING
B	STOREFRONT, FIXED	±5'-4" x ±1'-7 1/2" VIF		INFILL IN EXISTING OPENING
C	STOREFRONT, FIXED	±2'-0" x ±6'-4" VIF		INFILL IN EXISTING OPENING
D	STOREFRONT, FIXED	±6'-0" x ±2'-0" VIF		INFILL IN EXISTING OPENING
E	GLASS BLOCK	±3'-4" x ±6'-0" VIF	CLR.	INFILL IN EXISTING OPENING, PITTSBURGH CORNING ENDURA PATTERN
F	STOREFRONT FIXED / AWNING	8'-0" x 4'-0" OVERALL (2) 4'-0" x 4'-0" UNITS	CLR. ANOD.	COORDINATE WITH NEW MASONRY OPENING, SEE DEMOLITION PLANS
G	STOREFRONT FIXED / AWNING	4'-0" x 3'-4"		COORDINATE SIZE & LOCATION WITH EXISTING INFILL AT FIRST FLOOR
H	STOREFRONT, FIXED	3'-0" x ±3'-6" VIF		COORD WITH NEW MASONRY OPENING, SEE DEMOLITION PLANS, MATCH HT W/ (E) ADJ
I	ALUM. WINDOW UNIT, AWNING	±3'-5" x ±3'-6" VIF		
J	STOREFRONT, FIXED	5'-8" x ±7'-6" VIF		COORDINATE WITH NEW MASONRY OPENING / EXISTING STEEL LINTEL TO REMAIN
K	STOREFRONT, FIXED	3'-4" x 3'-6"		COORDINATE WITH NEW MASONRY OPENING, SEE DEMOLITION PLANS
L	ALUM. WINDOW UNIT, AWNING	±1'-9 1/2" x ±2'-8" VIF		INFILL IN EXISTING OPENING, WITH HORIZONTAL TRUE MUNTIN, SEE ELEVATION FOR GRILLE PATTERN
M	STOREFRONT FIXED / AWNING	8'-0" x 3'-4" OVERALL (2) 4'-0" x 3'-4" UNITS		COORDINATE WITH NEW MASONRY OPENING, SEE DEMOLITION PLANS
N	ALUM. WINDOW UNIT, AWNING	±4'-0" x ±2'-8" VIF		INFILL IN EXISTING OPENING, WITH HORIZONTAL TRUE MUNTIN
O	STOREFRONT FIXED / AWNING	8'-0" x 3'-7" OVERALL (2) 4'-0" x 3'-7" UNITS		COORD WITH NEW MASONRY OPENING, SEE DEMOLITION PLANS
P	STOREFRONT	±21'-0" x 9'-8"		COORDINATE WITH ADJACENT STOREFRONT DOOR
Q	GLASS BLOCK	±3'-11" x ±2'-2" VIF	CLR.	PITTSBURGH CORNING ENDURA PATTERN
R	STOREFRONT	8'-0" x 2'-0" OVERALL	CLR. ANOD.	COORD WITH NEW MASONRY OPENING, EXISTING STEEL LINTEL TO REMAIN

- WINDOW SCHEDULE GENERAL NOTES**
- ROUGH OPENING DIMENSIONS DO NOT INCLUDE SILLS. SEE EXTERIOR ELEVATIONS FOR SILL LOCATIONS & TYPES.
  - SEE EXTERIOR ELEVATIONS FOR ROUGH OPENING / WINDOW HEAD HEIGHT INFORMATION.
  - EXTERIOR STOREFRONT GLAZING TO BE CLEAR.
  - INTERIOR STOREFRONT GLAZING TO BE CLEAR.



EXTERIOR WINDOW ELEVATIONS 1  
NOT TO SCALE

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EXTERIOR WINDOW SCHEDULE & DETAILS

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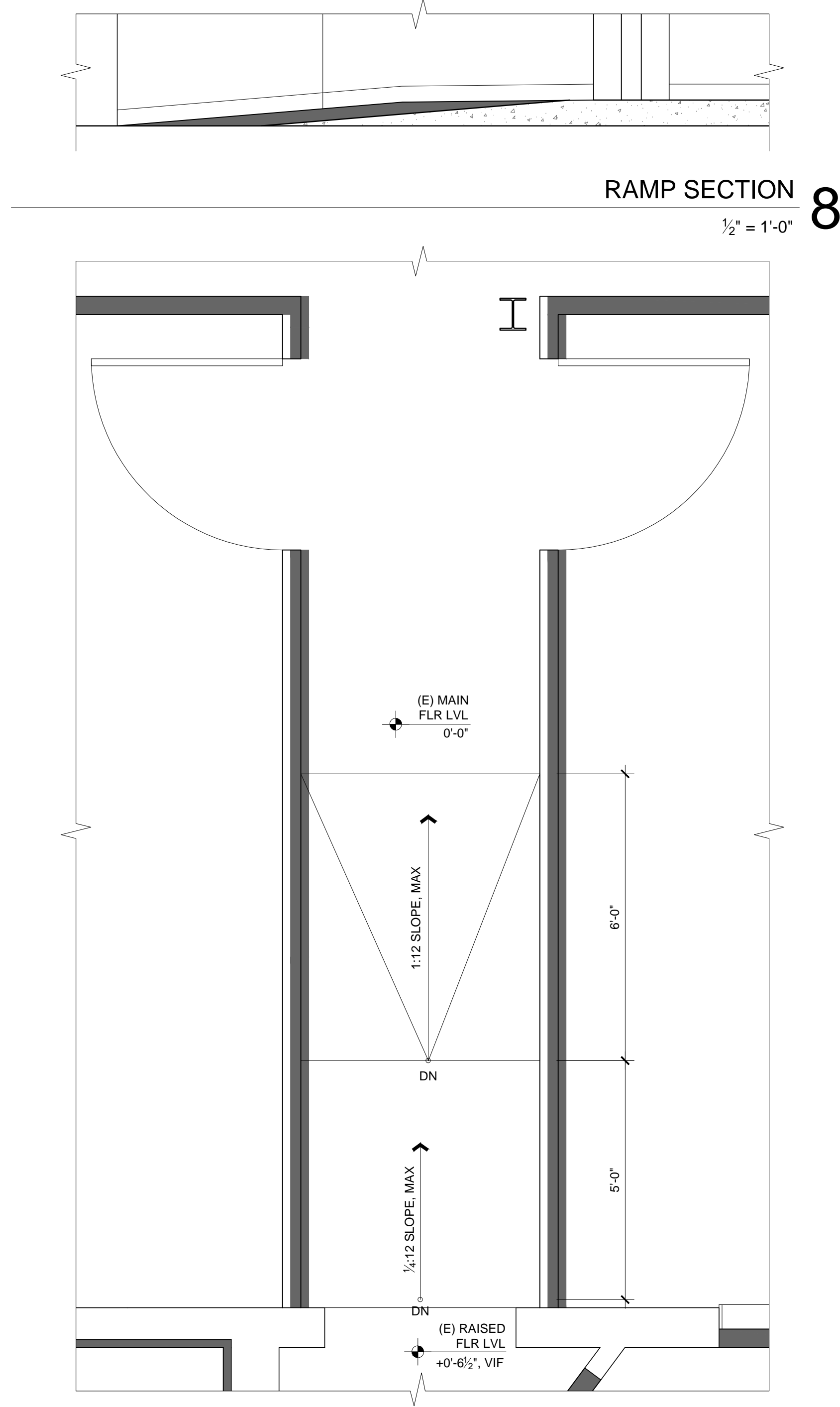
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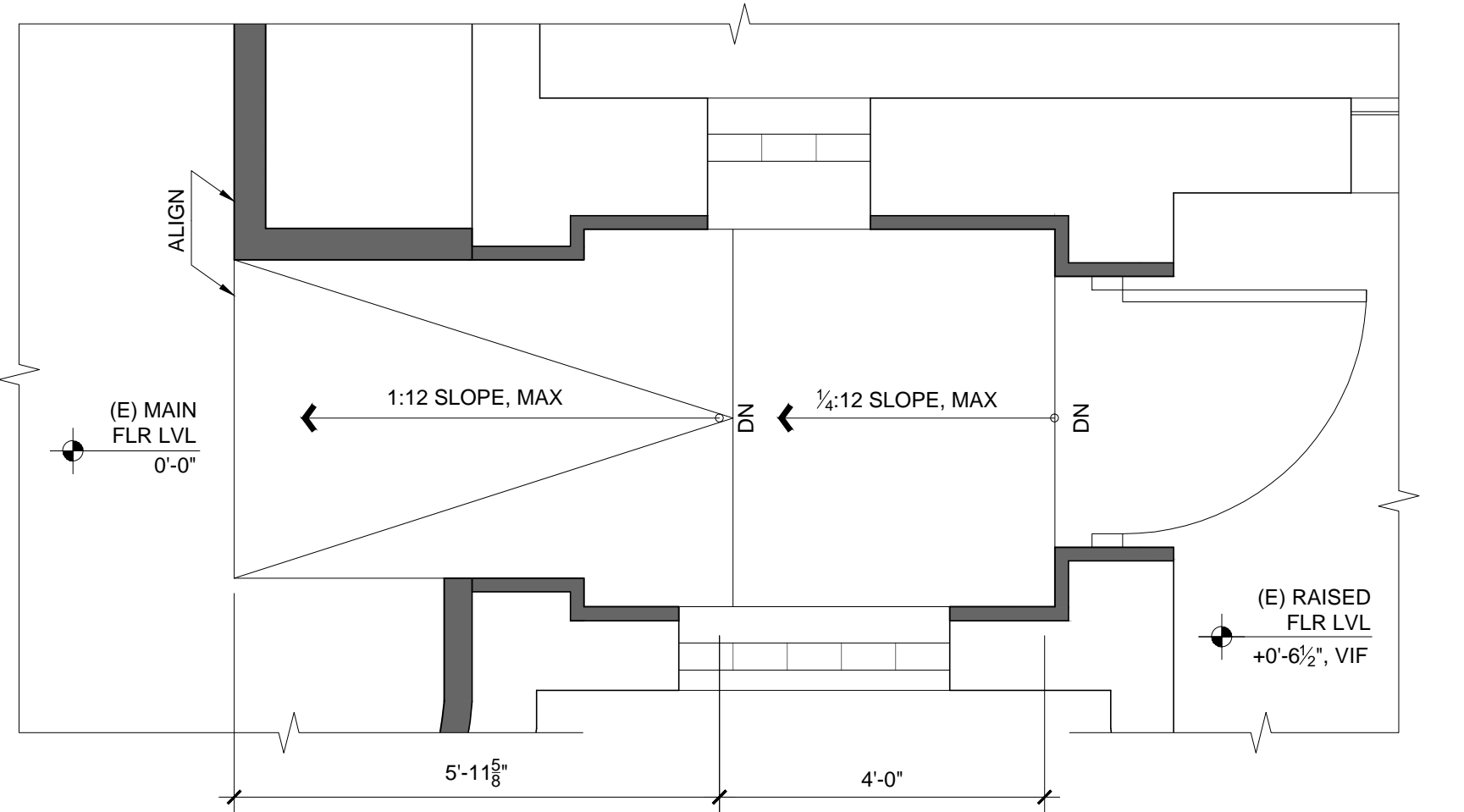
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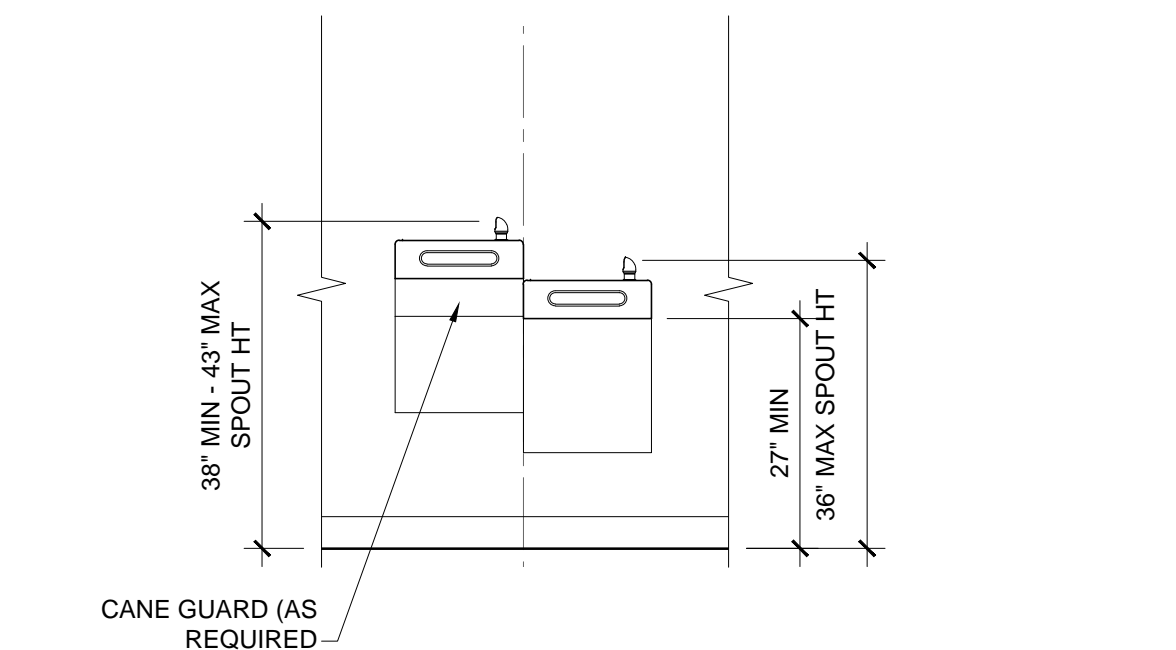
RAMP SECTION 8  
1/2" = 1'-0"

ENLARGED PLAN | RAMP AT CORRIDOR #131 7  
1/2" = 1'-0"

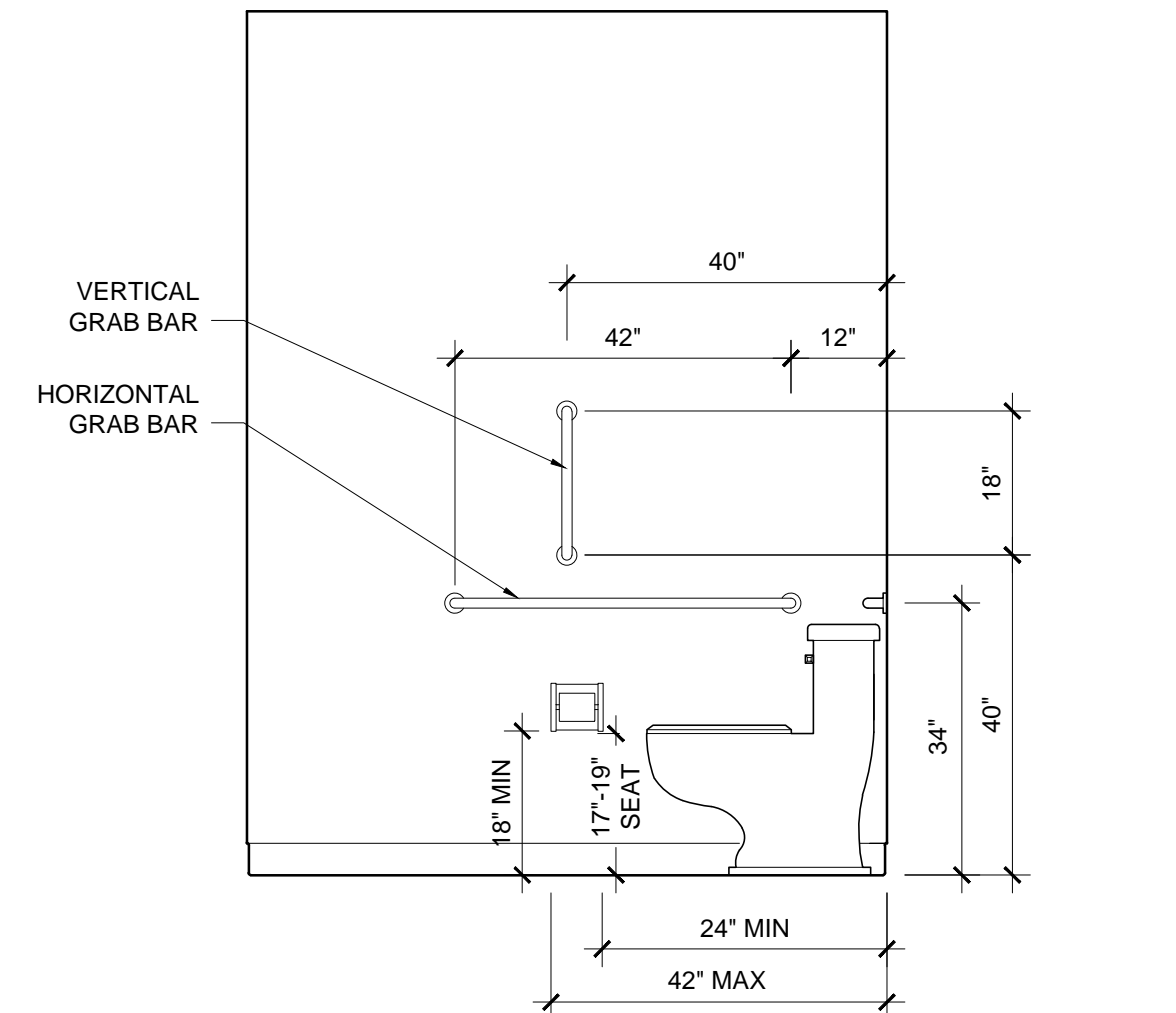


ENLARGED PLAN | RAMP AT ENTRY #121 6  
1/2" = 1'-0"

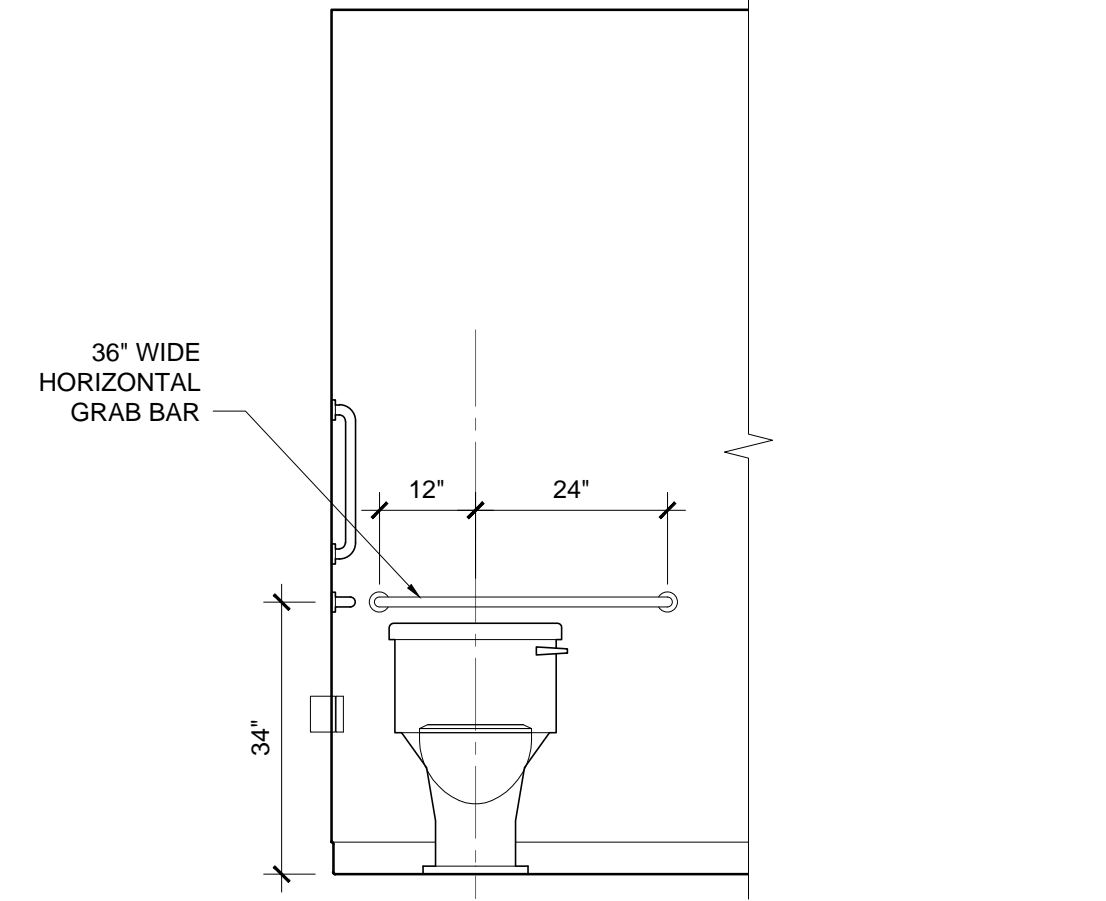
NOTE: NO HANDRAIL REQUIRED WHEN RISE IS LESS THAN 6"



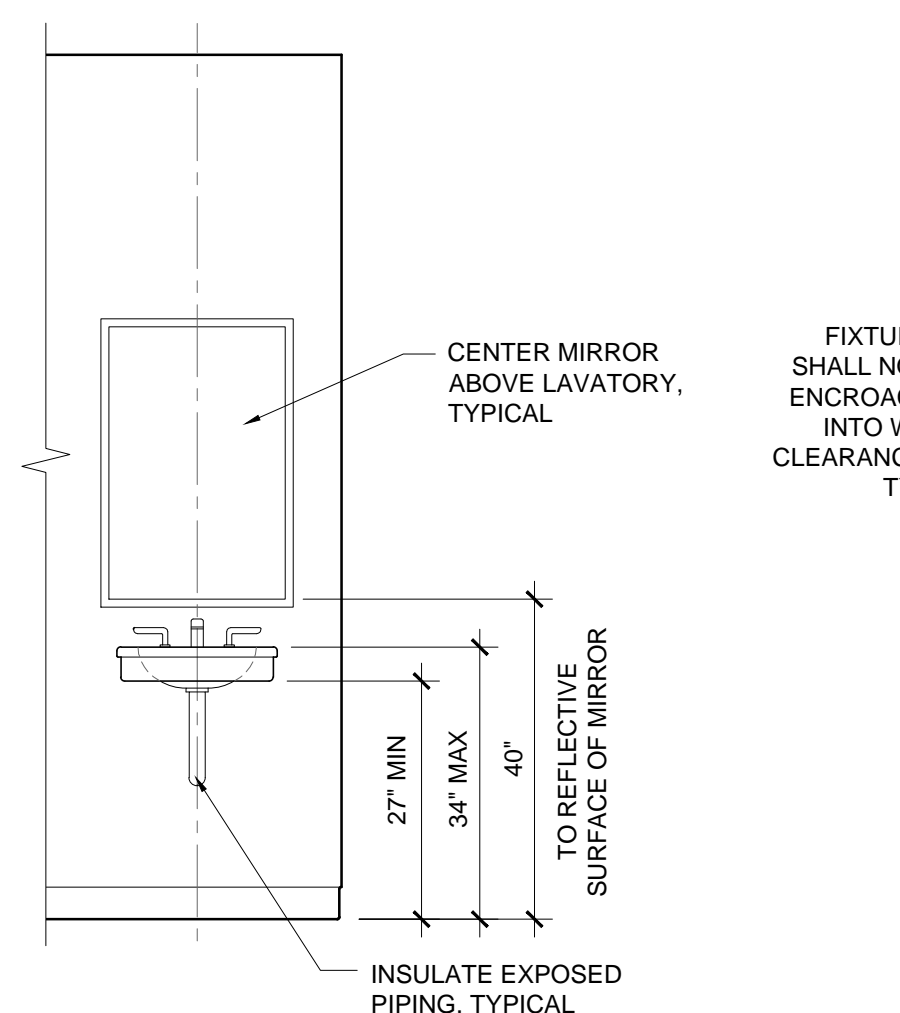
TYPICAL DRINKING FOUNTAIN ELEVATION D  
1/2" = 1'-0"



TYPICAL TOILET GRAB BAR - SIDE C  
1/2" = 1'-0"

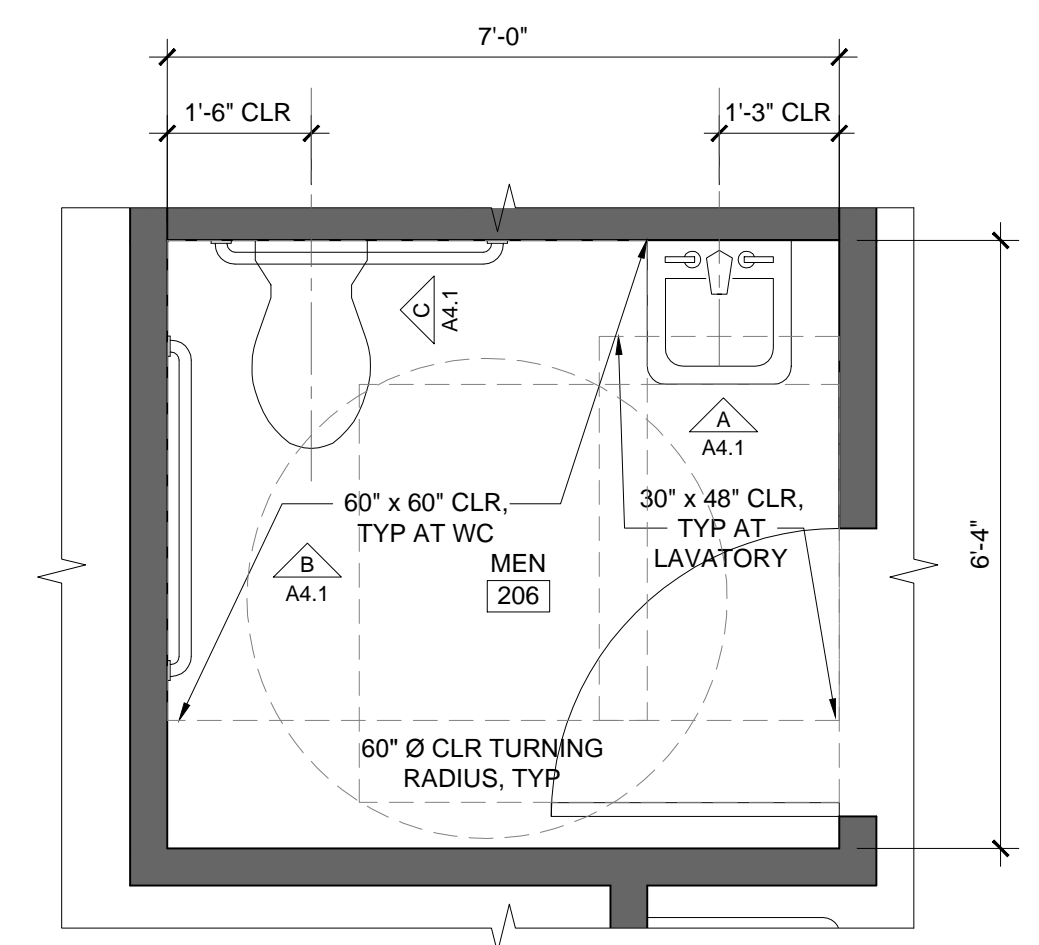


TYPICAL TOILET GRAB BAR - FRONT B  
1/2" = 1'-0"



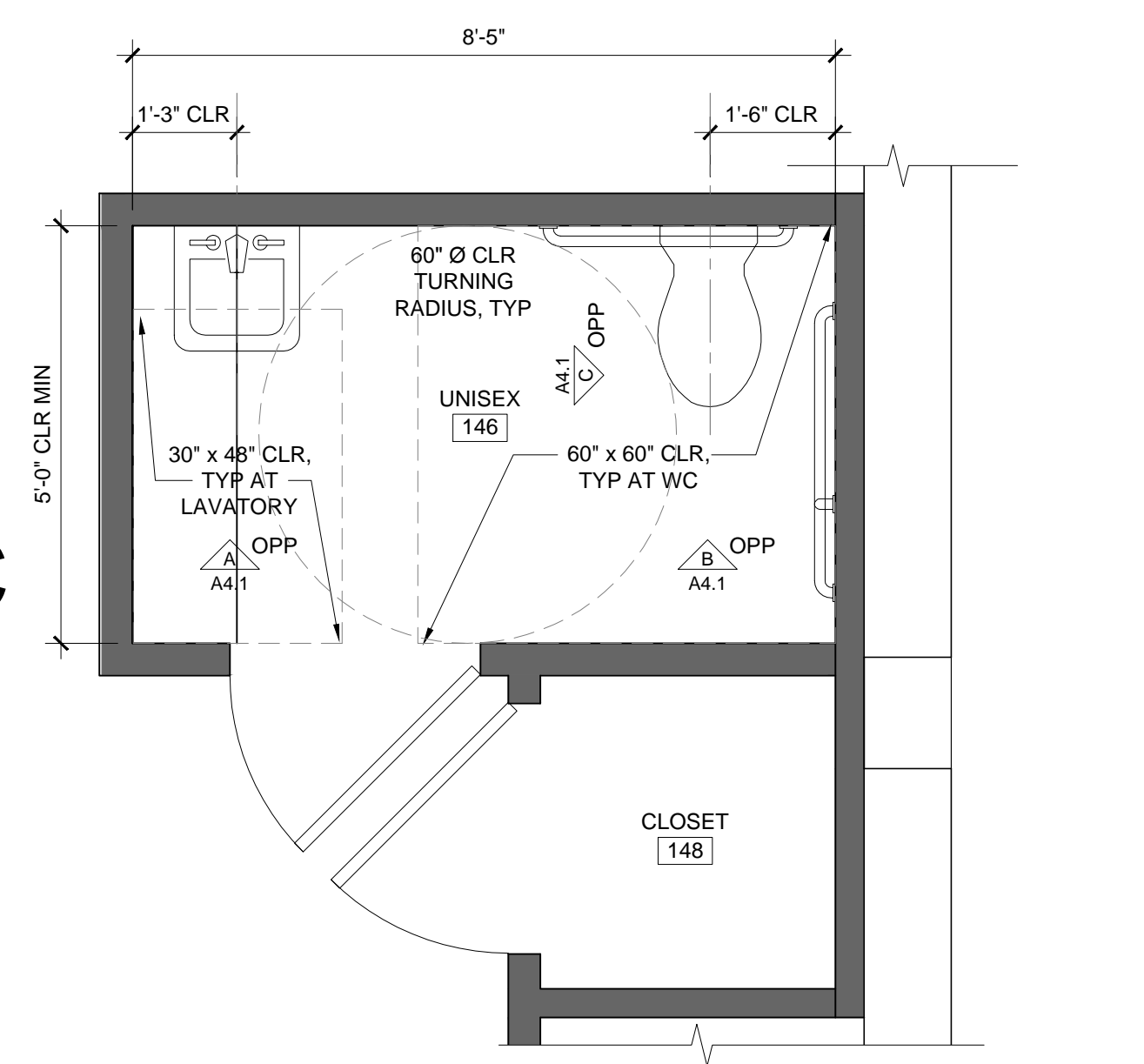
TYPICAL LAVATORY ELEVATION A  
1/2" = 1'-0"

NOTE: ALL TOILET ACCESSORIES SHALL COMPLY WITH ICC A117.1-2009 ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES GUIDELINES

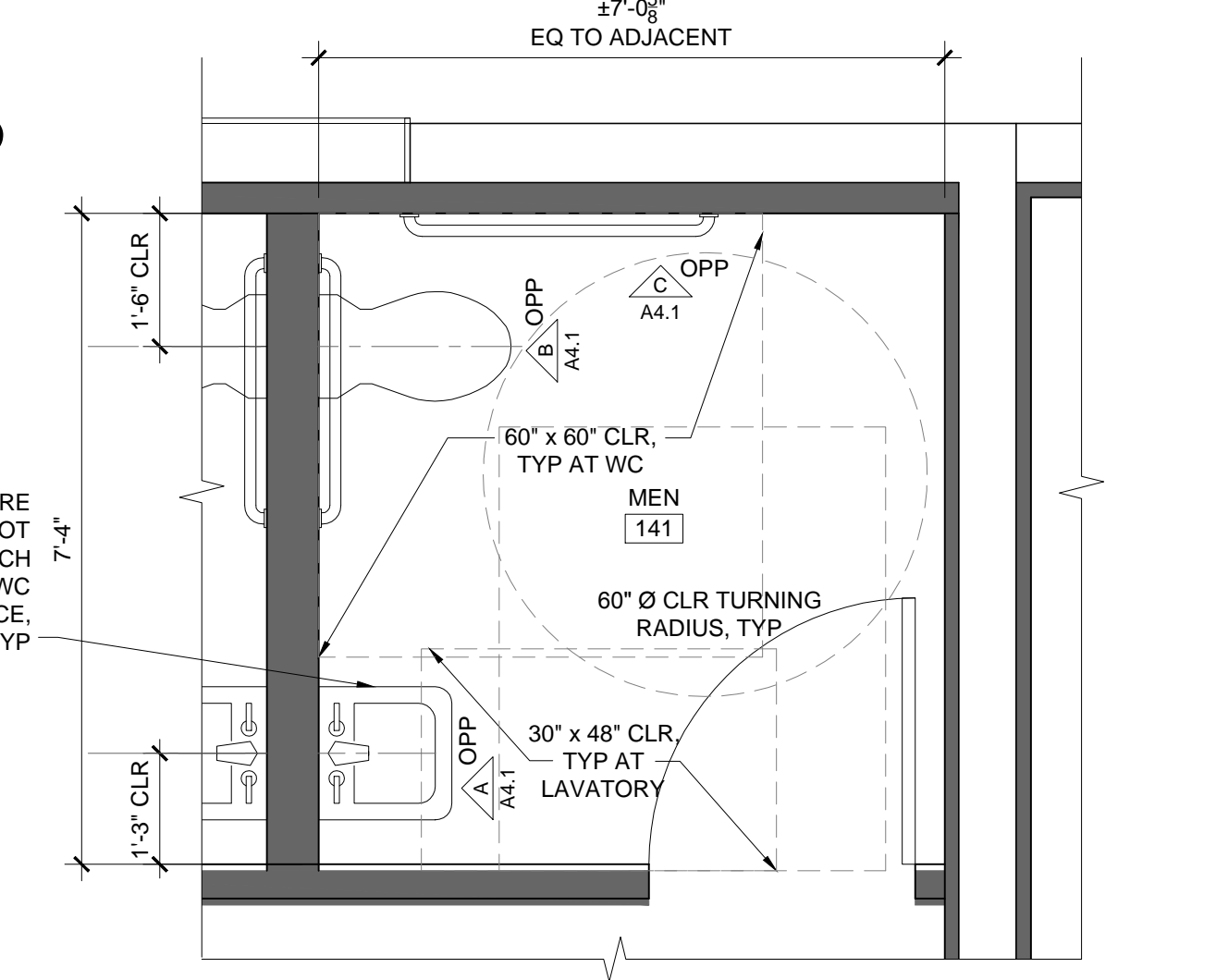


ENLARGED PLAN | MEN #206 5  
1/2" = 1'-0"

NOTE: WOMEN #207, OPPOSITE ORIENTATION

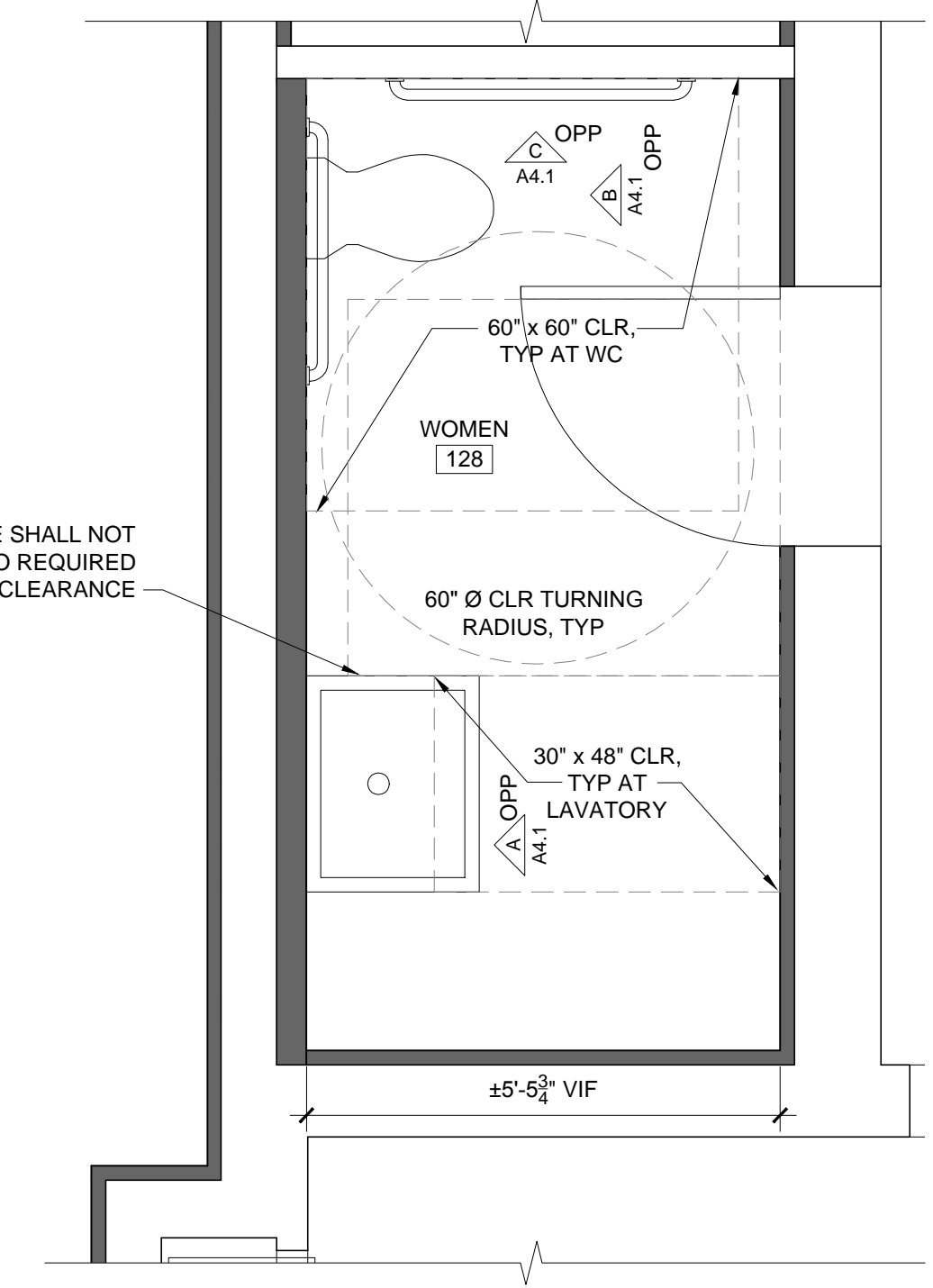


ENLARGED PLAN | UNISEX # 146 4  
1/2" = 1'-0"



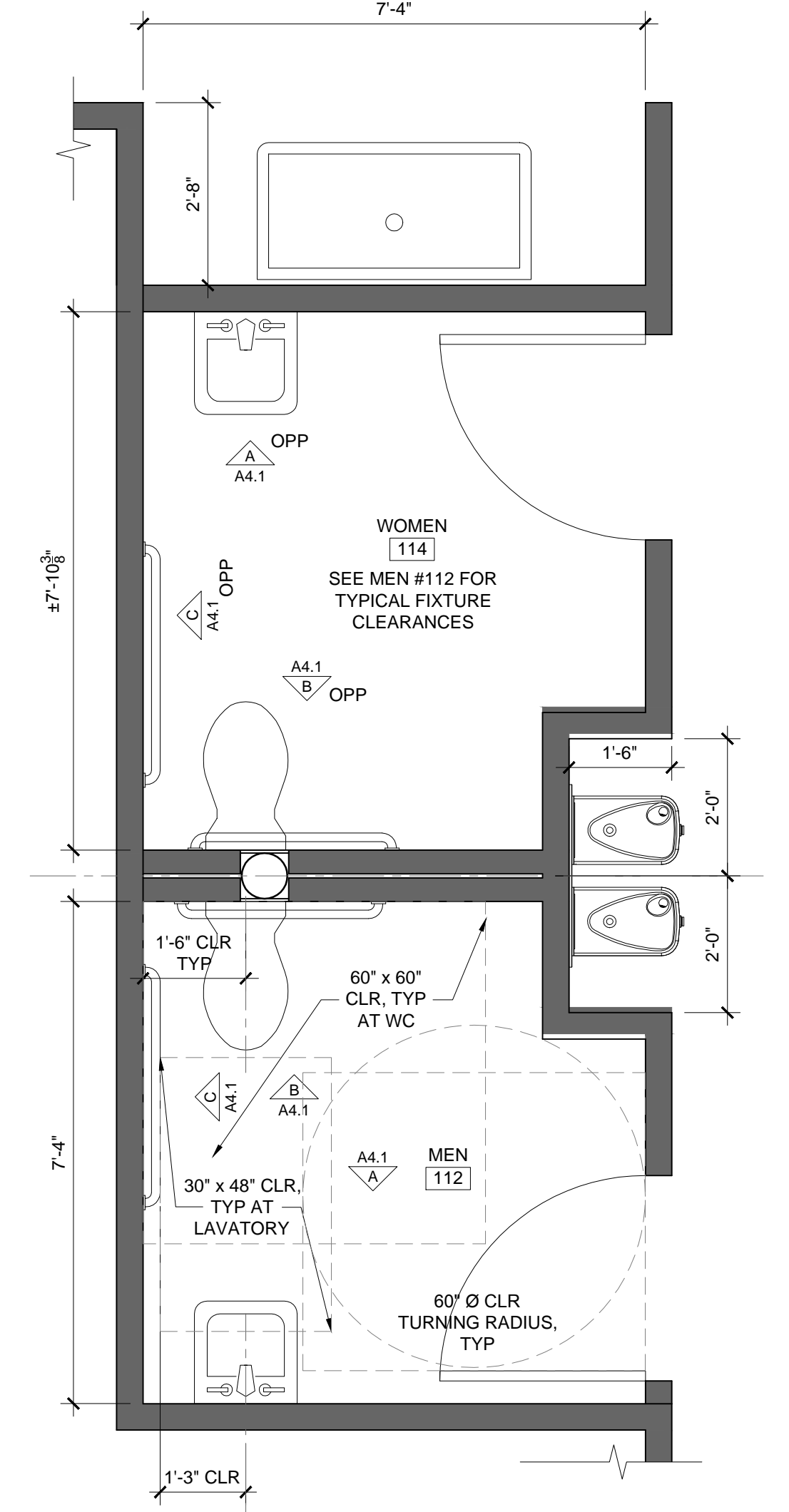
ENLARGED PLAN | MEN # 141 3  
1/2" = 1'-0"

NOTE: WOMEN #142, OPPOSITE ORIENTATION



ENLARGED PLAN | WOMEN #128 2  
1/2" = 1'-0"

FIXTURE SHALL NOT ENCR OACH INTO REQUIRED DOOR CLEARANCE



ENLARGED PLAN | MEN #112 & WOMEN #114 1  
1/2" = 1'-0"

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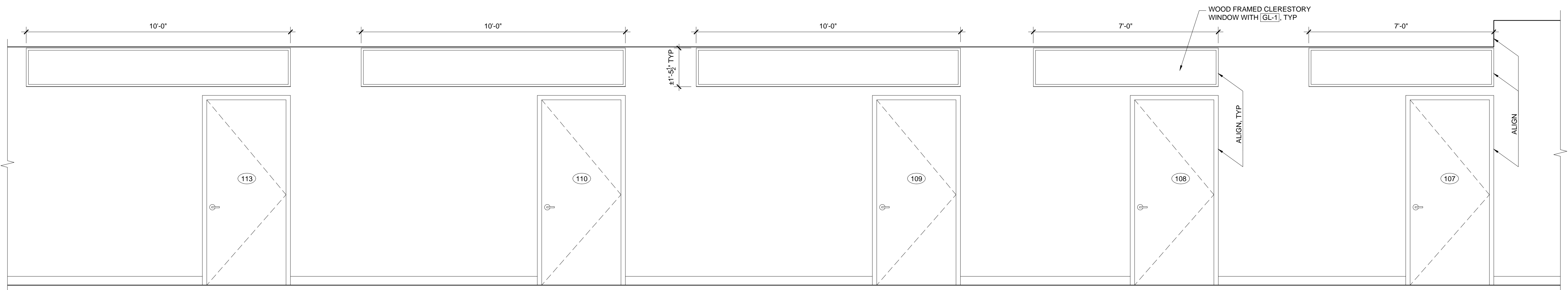
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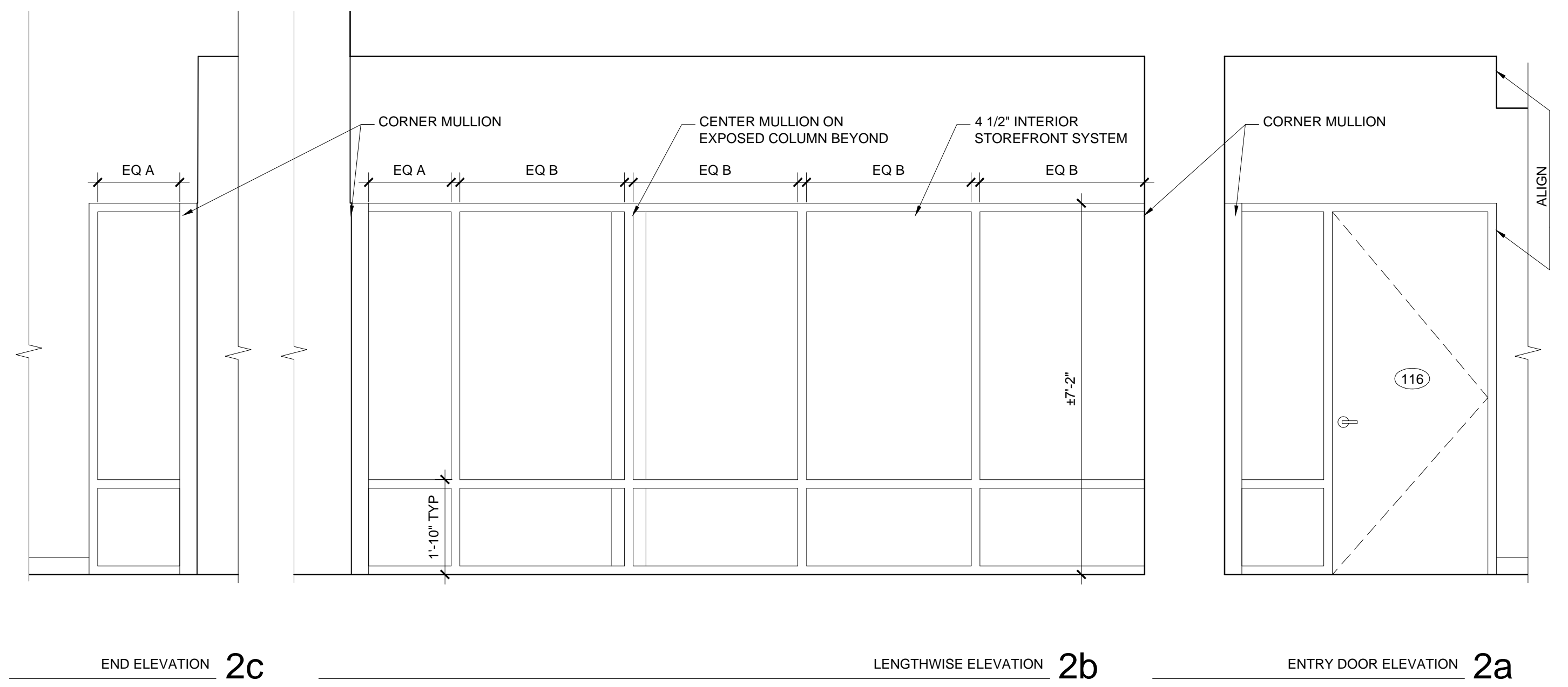
ENLARGED  
PLANS &  
INTERIOR  
ELEVATIONS

A4.1

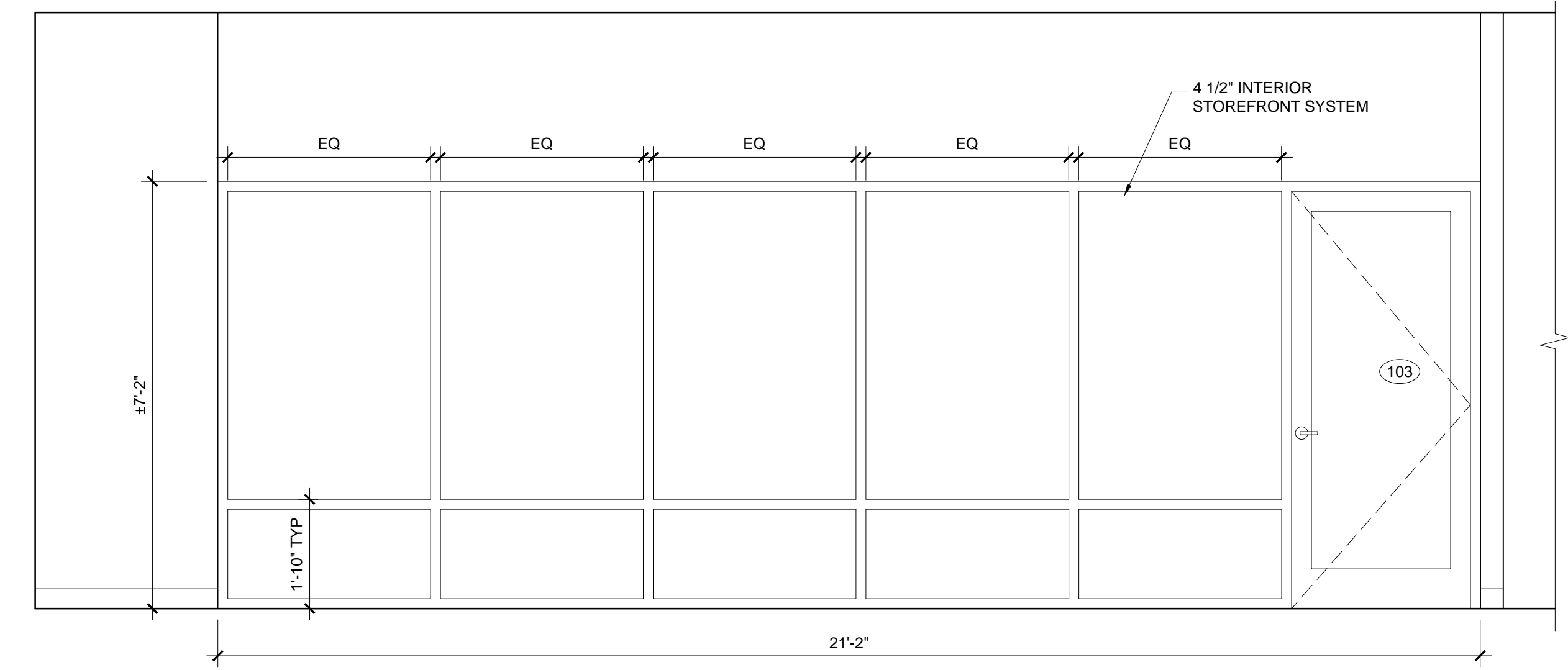




STUDIO TRANSOM ELEVATIONS 1  
1/2" = 1'-0"



STUDIO #116 STOREFRONT INTERIOR ELEVATIONS 2  
1/2" = 1'-0"



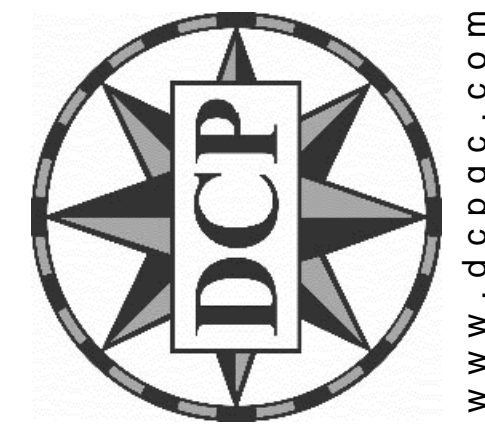
CLASSROOM #103 STOREFRONT ELEVATION 3  
1/2" = 1'-0"

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INTERIOR ELEVATIONS

A4.2

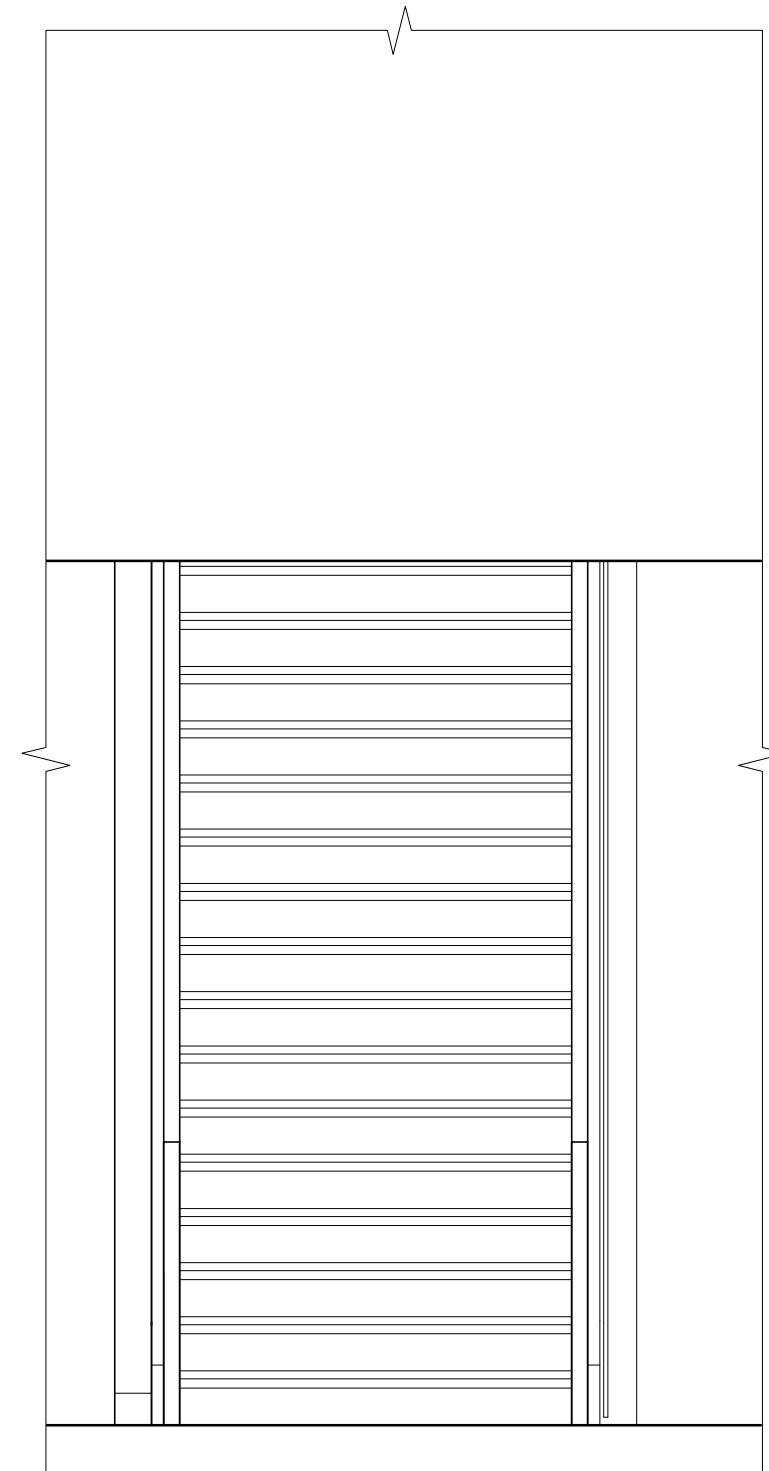


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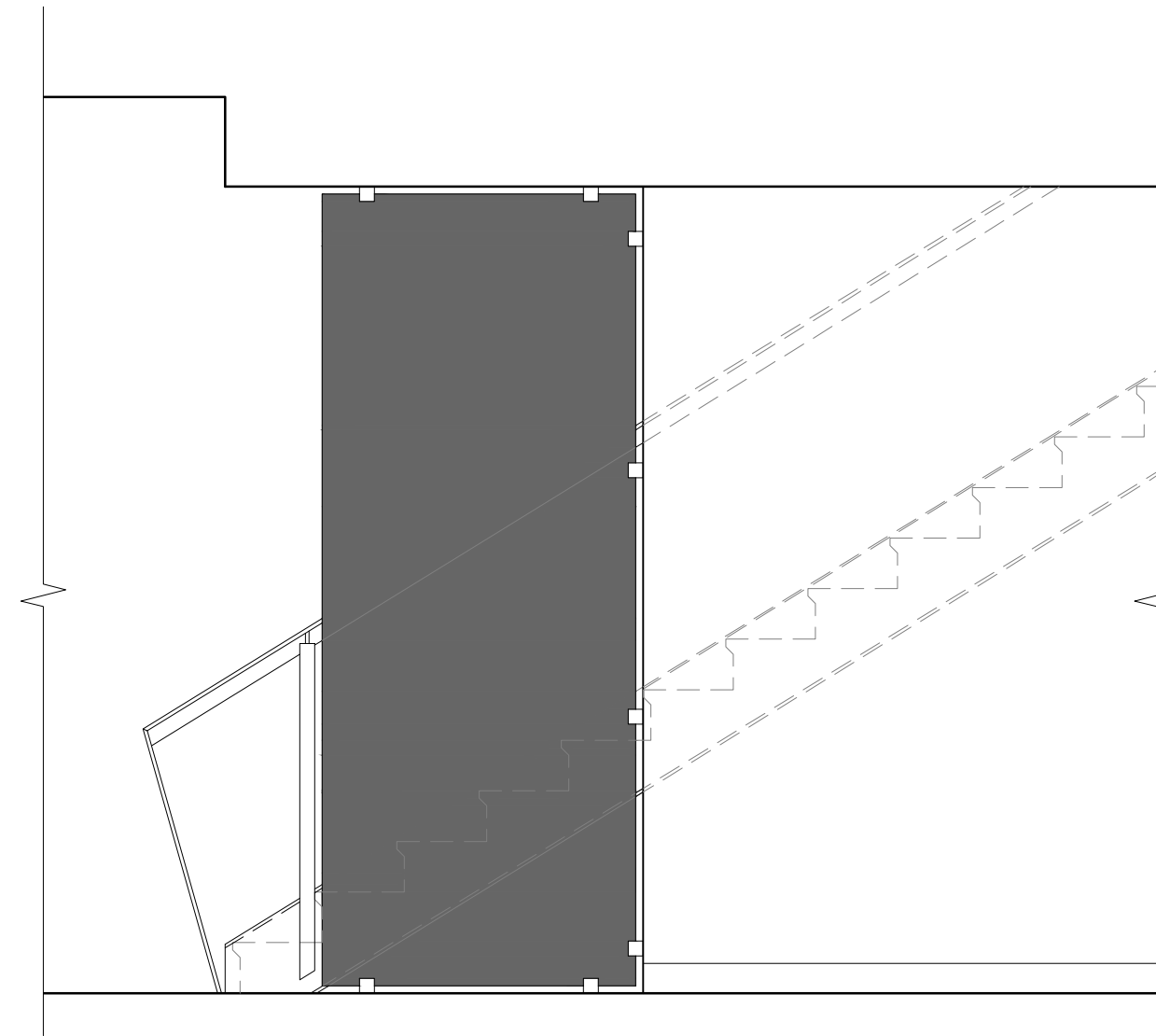


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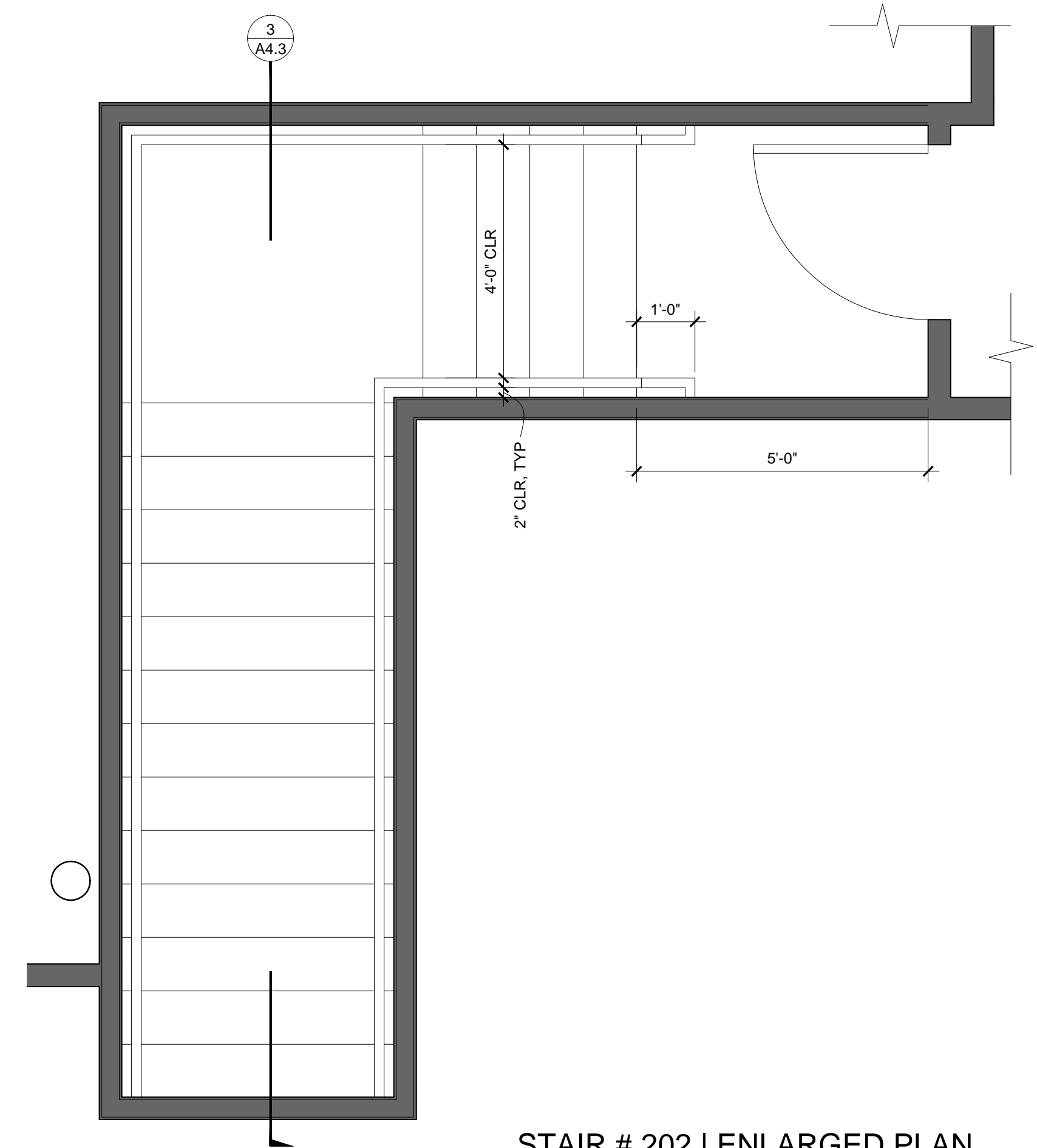
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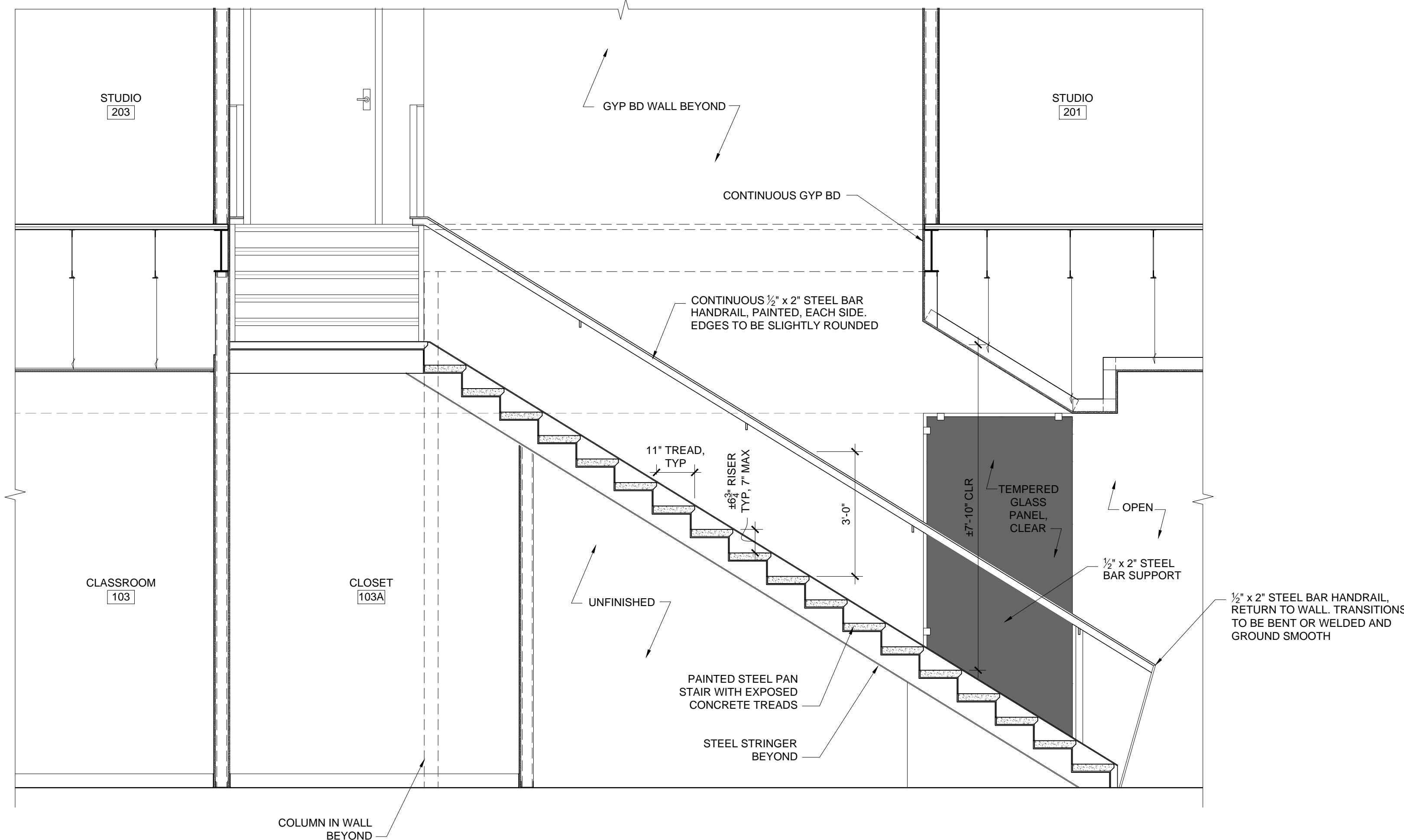
STAIR # 104 | END ELEVATION  
 $\frac{1}{2}'' = 1'-0''$  **5**



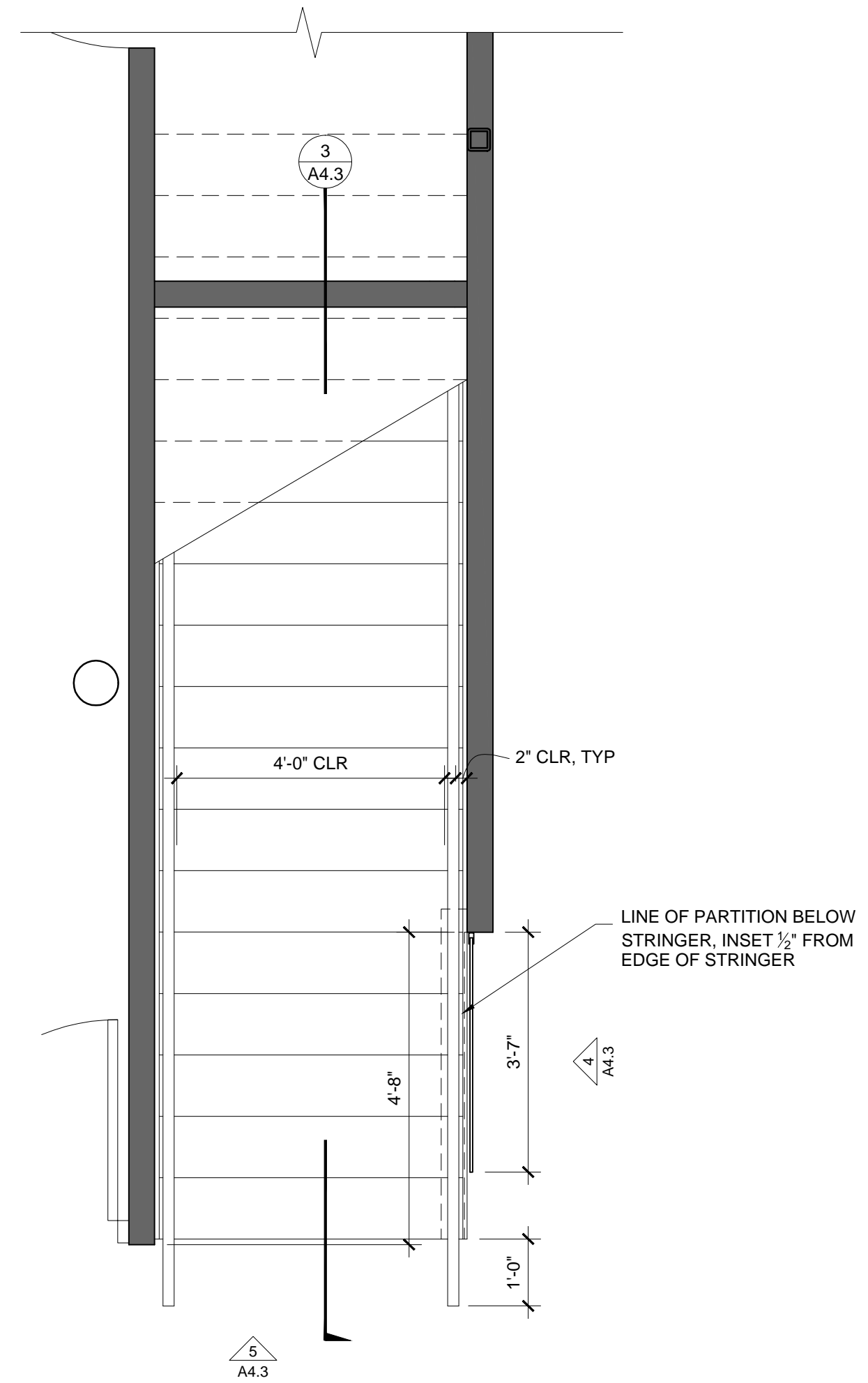
STAIR # 104 | SIDE ELEVATION  
 $\frac{1}{2}'' = 1'-0''$  **4**



STAIR # 202 | ENLARGED PLAN  
 $\frac{1}{2}'' = 1'-0''$  **2**



STAIR # 104 & 202 | SECTION  
 $\frac{1}{2}'' = 1'-0''$  **3**



STAIR # 104 | ENLARGED PLAN  
 $\frac{1}{2}'' = 1'-0''$  **1**



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STAIR PLAN,  
 ELEVATIONS &  
 DETAILS

**A4.3**

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**GENERAL NOTES:**

1. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS, AND THE SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERTS, ANCHORS, HOLES, AND ADDITIONAL ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK.
2. THE NEW PORTIONS OF THIS STRUCTURE HAVE BEEN DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF THE VIRGINIA CONSTRUCTION CODE, 2012 EDITION.
3. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING REQUIRED TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT UNTIL PERMANENT SUPPORTS AND LATERAL BRACING ARE IN PLACE.
4. PORTIONS OF THE STRUCTURE NOT ALTERED AND NOT AFFECTED BY THE ALTERATION HAVE NOT BEEN DESIGNED TO COMPLY WITH THE CODE REQUIREMENTS FOR A NEW STRUCTURE.
5. BEFORE PROCEEDING WITH WORK WITHIN THE EXISTING STRUCTURE, THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING STRUCTURAL CONDITIONS. ANY SHORING OR BRACING SHOWN IS A PARTIAL AND SCHEMATIC REPRESENTATION OF THAT REQUIRED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE DESIGN AND ERECTION OF ANY AND ALL SAFEGUARDS NECESSARY TO PROTECT THE EXISTING STRUCTURE. THE CONTRACTOR SHALL PROVIDE SHORING, BRACING, AND OTHER SAFEGUARDS TO MAINTAIN ALL PARTS OF THE STRUCTURE IN A SAFE CONDITION AT ALL TIMES DURING THE PROCESS OF DEMOLITION AND CONSTRUCTION.
6. THE CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS, ELEVATIONS, AND OTHER REQUIREMENTS NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE STRUCTURE TO THE EXISTING. ANY DIMENSIONS SHOWN OF EXISTING STRUCTURES SHALL BE CONSIDERED AS APPROXIMATE AND ADEQUATE FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL MAKE ALL MEASUREMENTS NECESSARY FOR THE FABRICATION AND ERECTION OF STRUCTURAL MEMBERS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
7. DESIGN CRITERIA:

**LIVE LOADS - UNIFORM:**

SLAB ON GRADE	100 PSF
ELEVATED FLOOR	50 PSF
ROOF	20 PSF
PARTITION ALLOWANCE	15 PSF

**SNOW LOADS:**

GROUND SNOW LOAD	20 PSF
FLAT-ROOF LOAD	20 PSF
IMPORTANCE FACTOR (I <sub>s</sub> )	1.0
THERMAL FACTOR (C <sub>t</sub> )	1.0
EXPOSURE FACTOR (C <sub>e</sub> )	1.0

RISK CATEGORY ..... II

**WIND LOADS:**

BASIC SPEED (ULTIMATE)	115MPH
EXPOSURE CATEGORY	B
INTERNAL PRESSURE COEFFICIENT	±0.18
COMPONENT AND CLADDING PRESSURES:	
WALLS, ZONE 5 (10 SF)	29 PSF
ROOF, ZONE 3 (10 SF)	60 PSF

**SEISMIC LOADS:**

SEISMIC DESIGN CATEGORY	B		
IMPORTANCE FACTOR (I <sub>e</sub> )	1.0		
SPECTRAL RESPONSE ACCELERATIONS:			
S <sub>s</sub>	0.2	S <sub>v</sub>	0.065
S <sub>MS</sub>	0.32	S <sub>M1</sub>	0.156
S <sub>DS</sub>	0.213	S <sub>D1</sub>	0.104
SITE CLASSIFICATION	D (ASSUMED)		
ANALYSIS PROCEDURE:	EQUIVALENT LATERAL FORCE		
BASIC STRUCTURAL SYSTEM:	ORDINARY UNREINFORCED MASONRY SHEAR WALLS		
RESPONSE MODIFICATION COEFFICIENT (R)	1.5		
SEISMIC RESPONSE COEFFICIENT (C <sub>s</sub> )	0.142		

**FOUNDATION NOTES:**

1. FOUNDATIONS HAVE BEEN DESIGNED FOR AN ASSUMED NET ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
2. PRIOR TO PLACING FOUNDATION CONCRETE, ALL FOUNDATION EXCAVATIONS SHALL BE INSPECTED BY THE SPECIAL INSPECTOR TO EXPLORE THE EXTENT OF LOOSE, SOFT, EXPANSIVE, OR OTHERWISE UNSATISFACTORY SOIL MATERIAL AND TO VERIFY DESIGN BEARING PRESSURE. DIRECTION FOR CORRECTIVE ACTION WILL BE PROVIDED WHERE REQUIRED.

**CONCRETE MASONRY NOTES:**

1. NEW CONCRETE MASONRY MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE (ACI) 530.
2. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C 90 AND SHALL BE MADE WITH LIGHTWEIGHT AGGREGATE. MINIMUM NET AREA COMPRESSIVE STRENGTH OF MASONRY UNITS SHALL BE 1,900 PSI AT 28 DAYS.
3. COMPRESSIVE STRENGTH OF MASONRY SHALL BE DETERMINED BY THE UNIT STRENGTH METHOD AS SET FORTH IN ACI 530.1. THE NET AREA COMPRESSIVE STRENGTH OF MASONRY, F<sub>m</sub>, SHALL BE 1,500 PSI AT 28 DAYS.
4. MORTAR SHALL BE TYPE M OR S AND SHALL COMPLY WITH ASTM C270, PROPORTIONS OR PROPERTIES SPECIFICATION.
5. GROUT SHALL COMPLY WITH ASTM C 476 PROPERTIES SPECIFICATION, AND SHALL BE PROPORTIONED TO OBTAIN A 28 DAY COMPRESSIVE STRENGTH OF 2,000 PSI.
6. REINFORCING STEEL SHALL COMPLY WITH ASTM A 615, GRADE 60. SHOP FABRICATE REINFORCING BARS WHICH ARE SHOWN TO BE BENT OR HOOKED.
7. REINFORCED CELLS AND CELLS WITH EXPANSION BOLTS, EMBED PLATES OR OTHER ANCHORS AND ALL CELLS BELOW GRADE SHALL BE GROUTED SOLID. GROUT PROCEDURE SHALL COMPLY WITH ACI 530.1.
8. PROVIDE REINFORCING BARS OF THE GIVEN SIZE AND SPACING SHOWN. LAP CONTINUOUS REINFORCING STEEL 72 BAR DIAMETERS UNLESS OTHERWISE NOTED.
9. PROVIDE STANDARD 9 GAGE TRUSS TYPE HORIZONTAL JOINT REINFORCING IN CMU WALLS AT 16 INCHES ON CENTER AND IN TWO JOINTS IMMEDIATELY ABOVE AND BELOW ALL OPENINGS, EXTENDING A MINIMUM OF 2 FEET BEYOND THE JAMB ON EACH SIDE OF THE OPENING, EXCEPT AT CONTROL JOINTS.

**STRUCTURAL STEEL NOTES:**

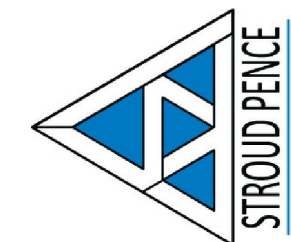
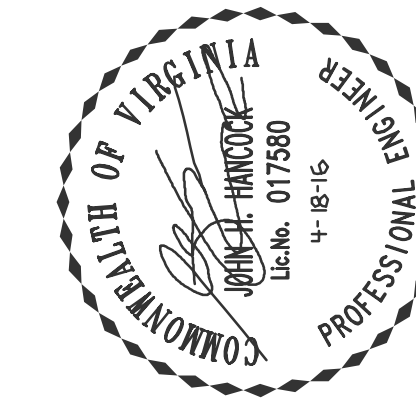
1. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360.
2. STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS:
  - A. STRUCTURAL STEEL SHAPES, PLATES AND BARS (EXCEPT W-SHAPES) - ASTM A 36, F<sub>y</sub> = 36 KSI
  - B. STRUCTURAL STEEL W-SHAPES - ASTM A 992/A572, GRADE 50, F<sub>y</sub> = 50 KSI
  - C. HOLLOW STRUCTURAL SHAPES (HSS): SQUARE AND RECTANGULAR - ASTM A 500, GRADE B, F<sub>y</sub> = 46 KSI
  - D. HIGH STRENGTH BOLTS - ASTM A325 (TYPICAL UON)
  - E. WASHERS - ASTM F 436
  - F. NUTS - ASTM A 563
3. CONNECTIONS SHALL BE AISC "STANDARD FRAMED BEAM CONNECTIONS" WITH ASTM A 325 BOLTS, DESIGNED FOR ONE-HALF THE UNIFORM LOAD CONSTANTS FOR LATERALLY SUPPORTED BEAMS GIVEN IN PART 3 OF THE "STEEL CONSTRUCTION MANUAL".
4. HIGH STRENGTH BOLTS MAY BE TIGHTENED TO THE "SNUG TIGHT" CONDITION IN LIEU OF FULL PRETENSIONING, EXCEPT FOR THE FOLLOWING CONNECTIONS WHICH SHALL BE FULLY PRETENSIONED:
  - A. BOLTED CONNECTIONS USING NON-STANDARD HOLES.
5. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1, "STRUCTURAL WELDING CODE - STEEL". WELD ELECTRODES SHALL BE E70XX LOW HYDROGEN. UNLESS OTHERWISE NOTED, PROVIDE CONTINUOUS FILLET WELDS WITH MINIMUM SIZE REQUIRED BY TABLE J2.4, PART 4 OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360.
6. HOT DIP GALVANIZE AFTER FABRICATION THE FOLLOWING:
  - A. SHELF ANGLES SUPPORTING MASONRY IN EXTERIOR WALLS.
  - B. LINTELS AND LINTEL ASSEMBLIES SUPPORTING MASONRY IN EXTERIOR WALLS.
  - C. ALL STEEL EXPOSED TO WEATHER IN THE FINAL CONSTRUCTION.

**ROUGH CARPENTRY NOTES:**

1. ROUGH CARPENTRY SHALL BE IN ACCORDANCE WITH THE AMERICAN FOREST AND PAPER ASSOCIATION (AF&PA) "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION".
2. UNLESS OTHERWISE NOTED, ALL NAILING SHALL CONFORM TO THE "FASTENING SCHEDULE" TABLE 2304.9.1 OF THE BUILDING CODE.
3. WOOD FRAMING MEMBERS SHALL COMPLY WITH PS 20 "AMERICAN SOFTWOOD LUMBER STANDARD" AND THE FOLLOWING REQUIREMENTS:
  - A. MOISTURE CONTENT - SEASONED, WITH 19 PERCENT MAXIMUM MOISTURE CONTENT.
  - B. GRADE - NO. 2, OR BETTER UNLESS OTHERWISE NOTED.
  - C. SPECIES - SOUTHERN PINE GRADED UNDER SPIB RULES.
4. CONSTRUCTION PANELS SHALL COMPLY WITH PS 1 "U.S. PRODUCT STANDARD FOR CONSTRUCTION AND INDUSTRIAL PLYWOOD" FOR PLYWOOD CONSTRUCTION PANELS AND THE FOLLOWING REQUIREMENTS:
  - A. FLOOR SHEATHING: 3/4 INCH (ASSUMED - TO MATCH EXISTING FLOOR DECKING), TONGUE AND GROOVE, APA RATED SHEATHING, EXPOSURE 1 DURABILITY CLASSIFICATION.
  - B. ROOF SHEATHING: 3/4 INCH (ASSUMED - TO MATCH EXISTING ROOF DECKING), APA RATED SHEATHING, [EXTERIOR EXPOSURE] [EXPOSURE 1] DURABILITY CLASSIFICATION. PROVIDE TONGUE-AND-GROOVE EDGES OR USE "PLY-CLIPS" AT MID-SPAN BETWEEN EACH SUPPORT.
5. ALL WOOD FRAMING MEMBERS PERMANENTLY EXPOSED TO THE WEATHER SHALL BE PRESERVATIVE-TREATED IN ACCORDANCE WITH THE SPECIFICATIONS.
6. STEEL PLATE CONNECTORS SHALL COMPLY WITH ASTM A 36 SPECIFICATIONS (F<sub>y</sub>= 36 KSI). BOLTS CONNECTING WOOD MEMBERS SHALL COMPLY WITH ASTM A 307 COMMON STEEL BOLTS, AND SHALL BE [ ] INCH DIAMETER, UNLESS OTHERWISE NOTED.
7. METAL FRAMING ANCHORS, HOLD DOWNS, HURRICANE TIES, HANGERS, ETC. SHALL COMPLY WITH ASTM A 653 AND BE CAPABLE OF SUPPORTING THE REACTIONS SHOWN. WHERE PRODUCTS OF A SPECIFIC MANUFACTURER ARE SHOWN, EQUAL PRODUCTS OF ANOTHER MANUFACTURER MAY BE USED IF APPROVED.
8. ALL CONNECTION HARDWARE IN CONTACT WITH PRESERVATIVE TREATED WOOD SHALL BE HOT DIPPED GALVANIZED COATED.

**ABBREVIATIONS:**

ARCH	ARCHITECT	HSS	HOLLOW STRUCTURAL SECTIONS
BM	BEAM	MAS	MASONRY
BOT. B	BOTTOM	MATL	MATERIAL
BRG	BEARING	MAX	MAXIMUM
BTWN	BETWEEN	MFR	MANUFACTURER
CL	CENTERLINE	MIN	MINIMUM
CLR	CLEAR	NTS	NOT TO SCALE
CMU	CONCRETE MASONRY UNIT	OC	ON CENTER
COL	COLUMN	OPNG	OPENING
CONC	CONCRETE	PL	PLATE
CONN	CONNECTION	REF	REFERENCE, REFER TO
CONT	CONTINUOUS	REINF	REINFORCE, REINFORCED, REINFORCING
CTR	CENTER	REQD	REQUIRED
DBL	DOUBLE	TYP	TYPICAL
DWGS	DRAWINGS	UON	UNLESS OTHERWISE NOTED
EA	EACH	W/	WITH
EL	ELEVATION	WWR	WELDED WIRE REINFORCING
EMBED	EMBEDMENT		
EQ	EQUAL		
EW	EACH WAY		
EXIST	EXISTING		
EXP	EXPANSION		
FTG	FOOTING		



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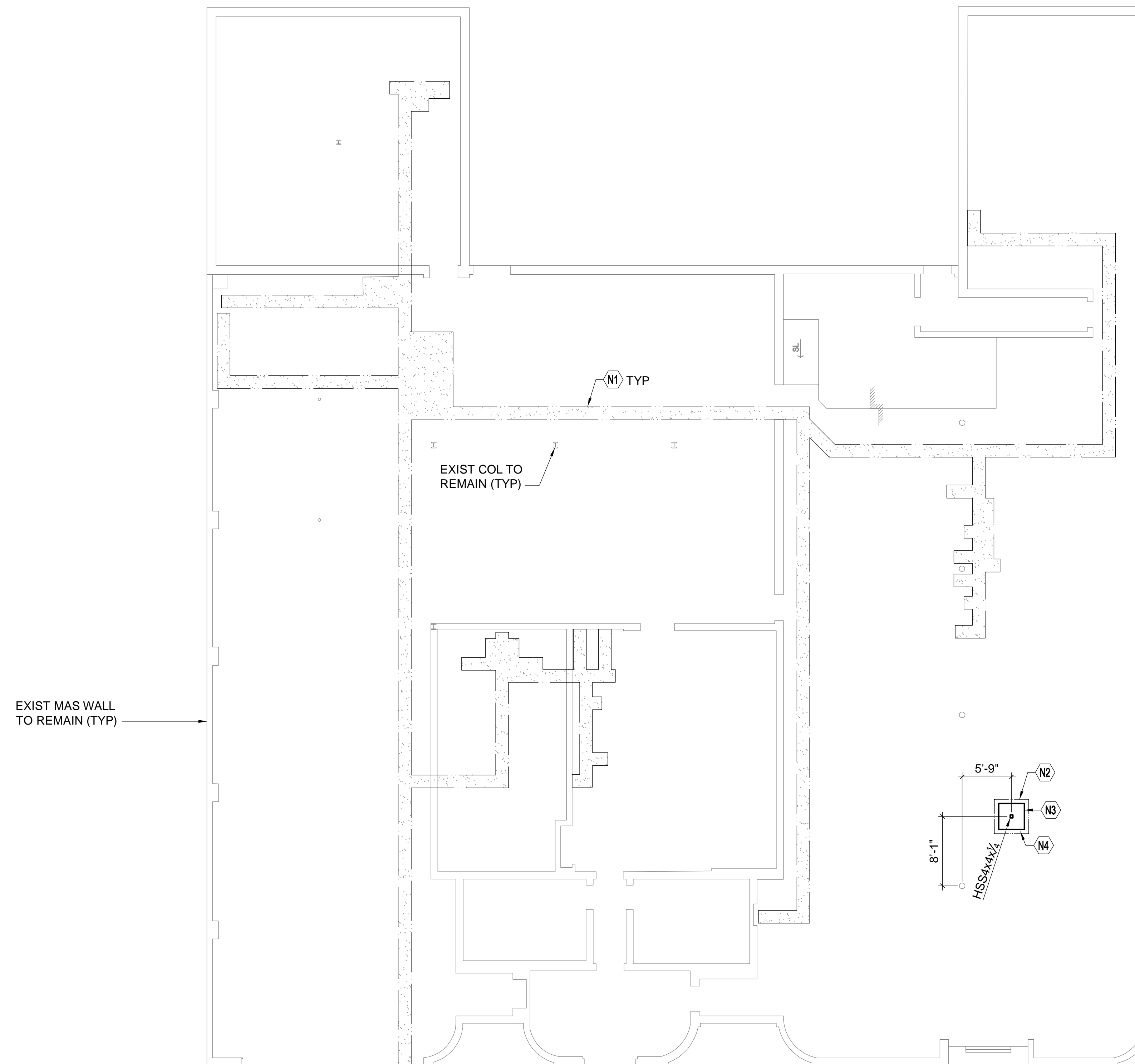
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GENERAL NOTES

**S0.1**

FOUNDATION KEY NOTES:

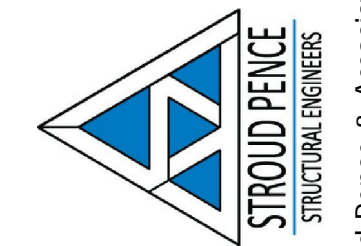
- N1. SAW CUT AND REMOVE SLAB ON GRADE AS REQUIRED FOR NEW UNDERGROUND UTILITIES. LOCATIONS SHOWN ARE APPROXIMATE AND MAY NOT SHOW ALL LOCATIONS, CONTRACTOR TO FIELD VERIFY.
- N2. SAWCUT AND REMOVE SLAB ON GRADE FOR NEW NEW FOOTING.
- N3. NEW FOOTING. REFER TO TYPICAL DETAIL ON S5.1. TOP OF FOOTING = 0'-8".
- N4. AFTER APPROVAL OF NEW COLUMN AND ANCHOR BOLT INSTALLATION, PROVIDE NEW 4" THICK SLAB ON GRADE REINFORCED WITH WWR 6x6 W1.4 x W1.4, 1" CLEAR FROM TOP OF SLAB. REFER TO TYPICAL DETAILS ON S5.1.



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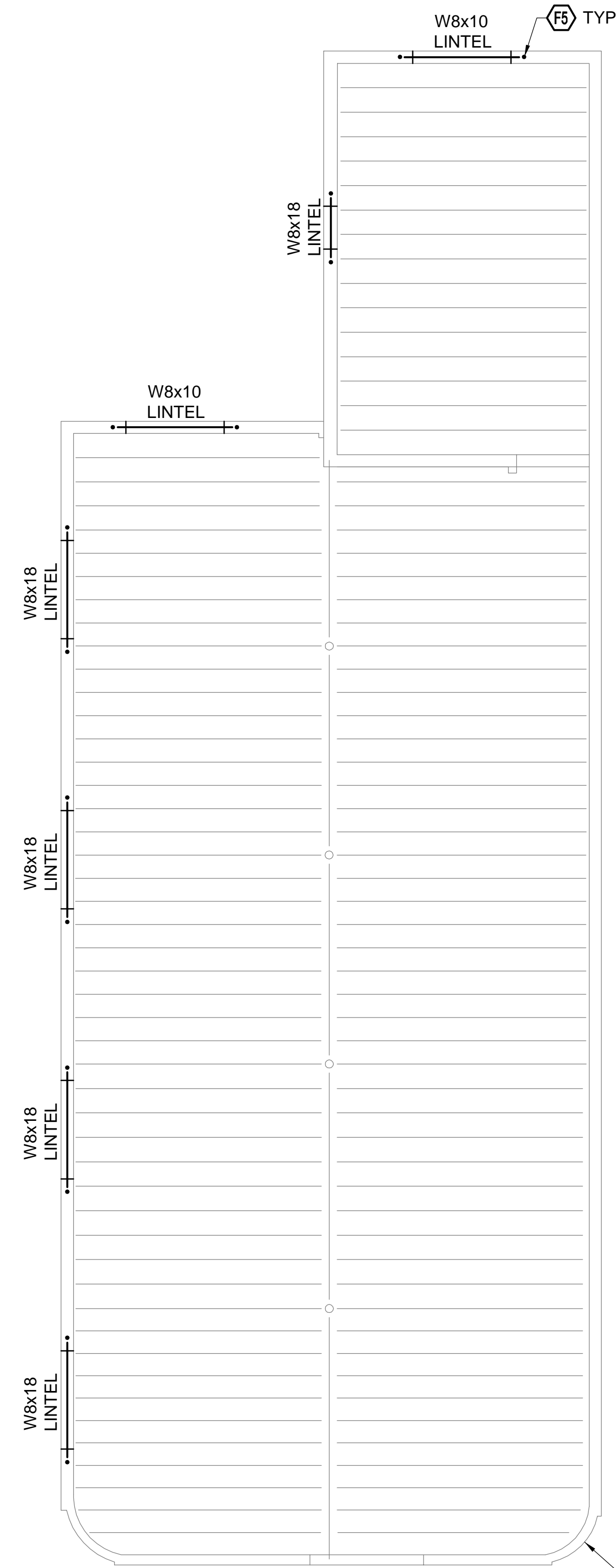
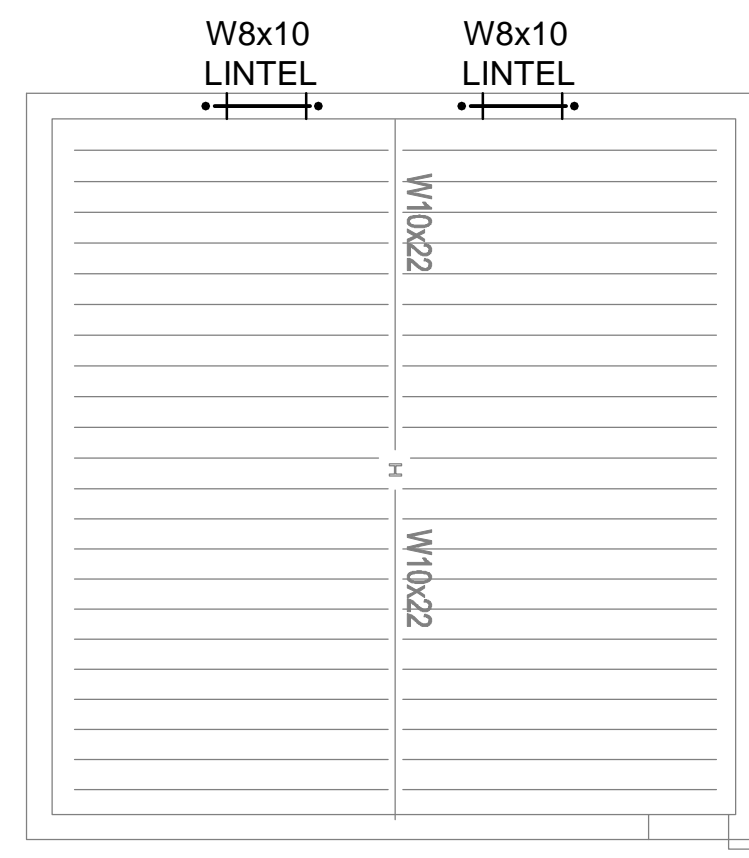
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REMOVE ALL DAMAGED  
BRICK AT CORNER AND  
REBUILD TO MATCH  
EXISTING

ROOF FRAMING PLAN  
1  
3/8" = 1'-0"

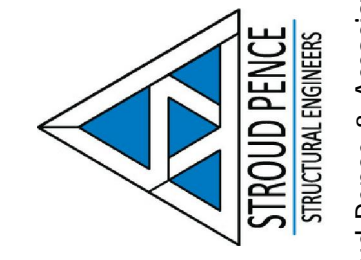
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ROOF  
FRAMING  
PLAN

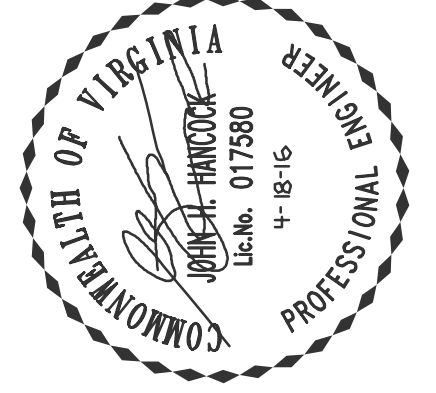
S1.3

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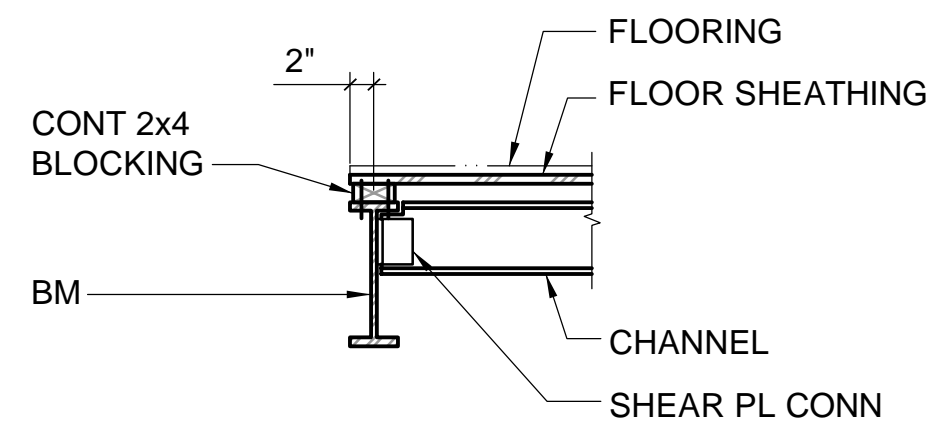


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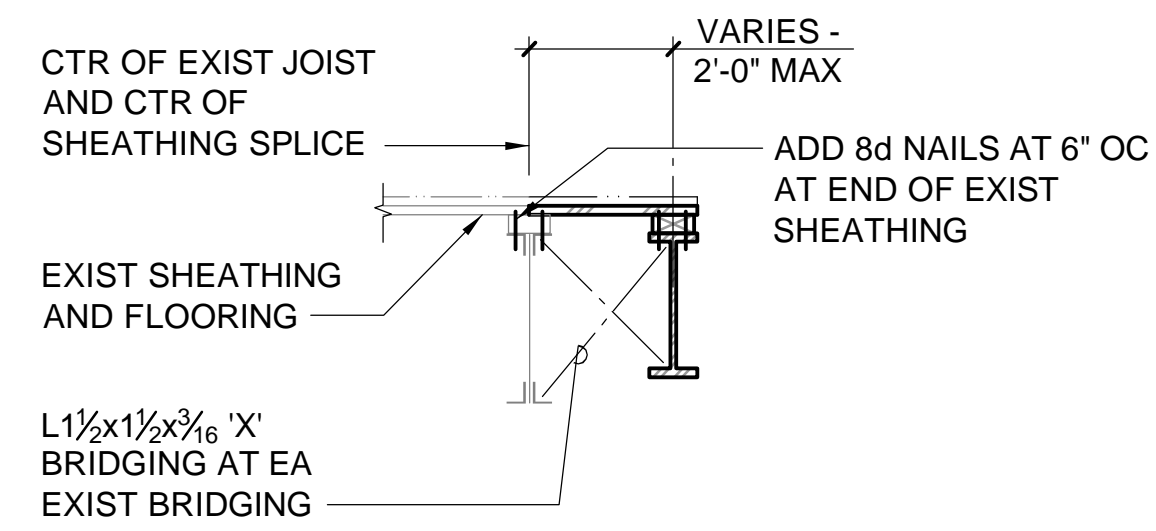


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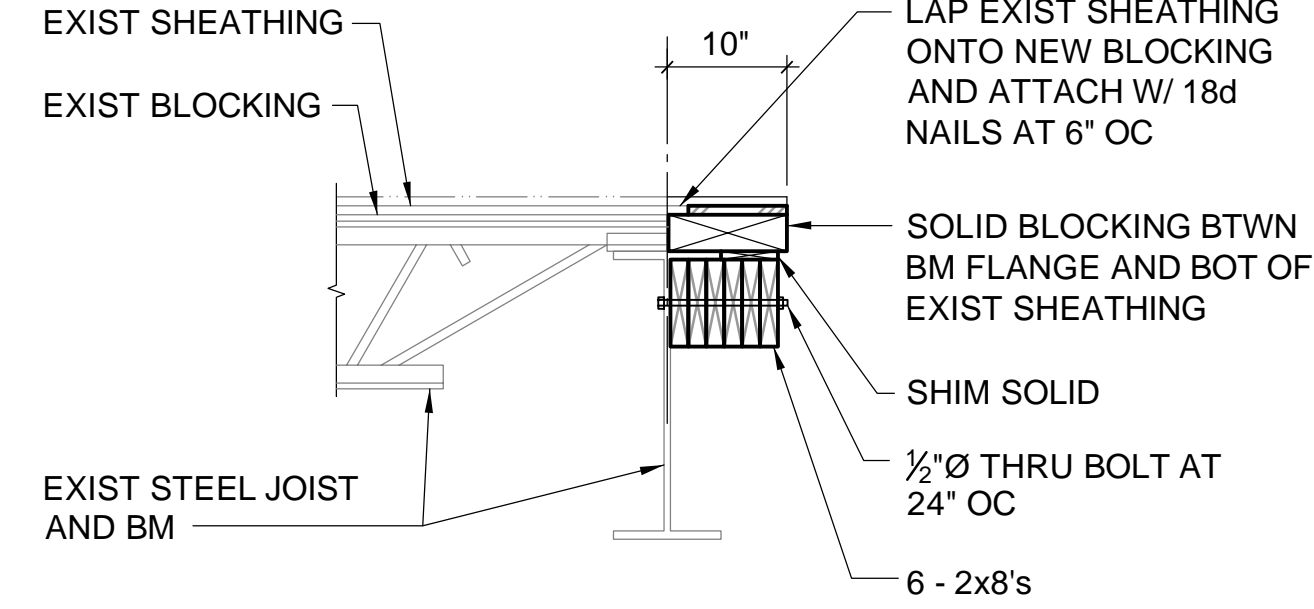


**1 SECTION**  
S5.1 3/4"=1'-0"



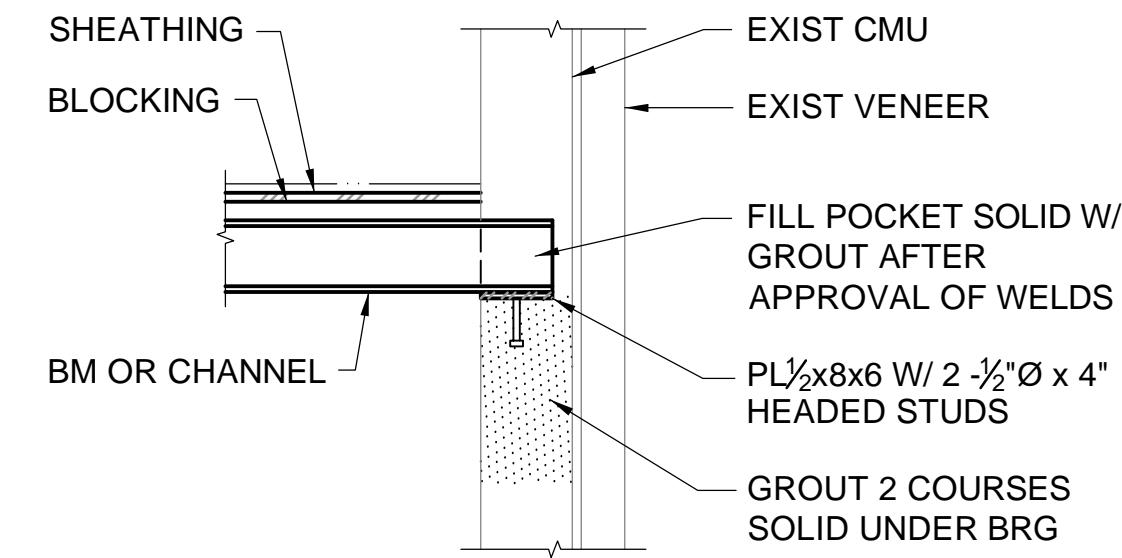
**2 SECTION**  
S5.1 3/4"=1'-0"

FOR DETAILS NOT NOTED REF SECTION 1/S5.1



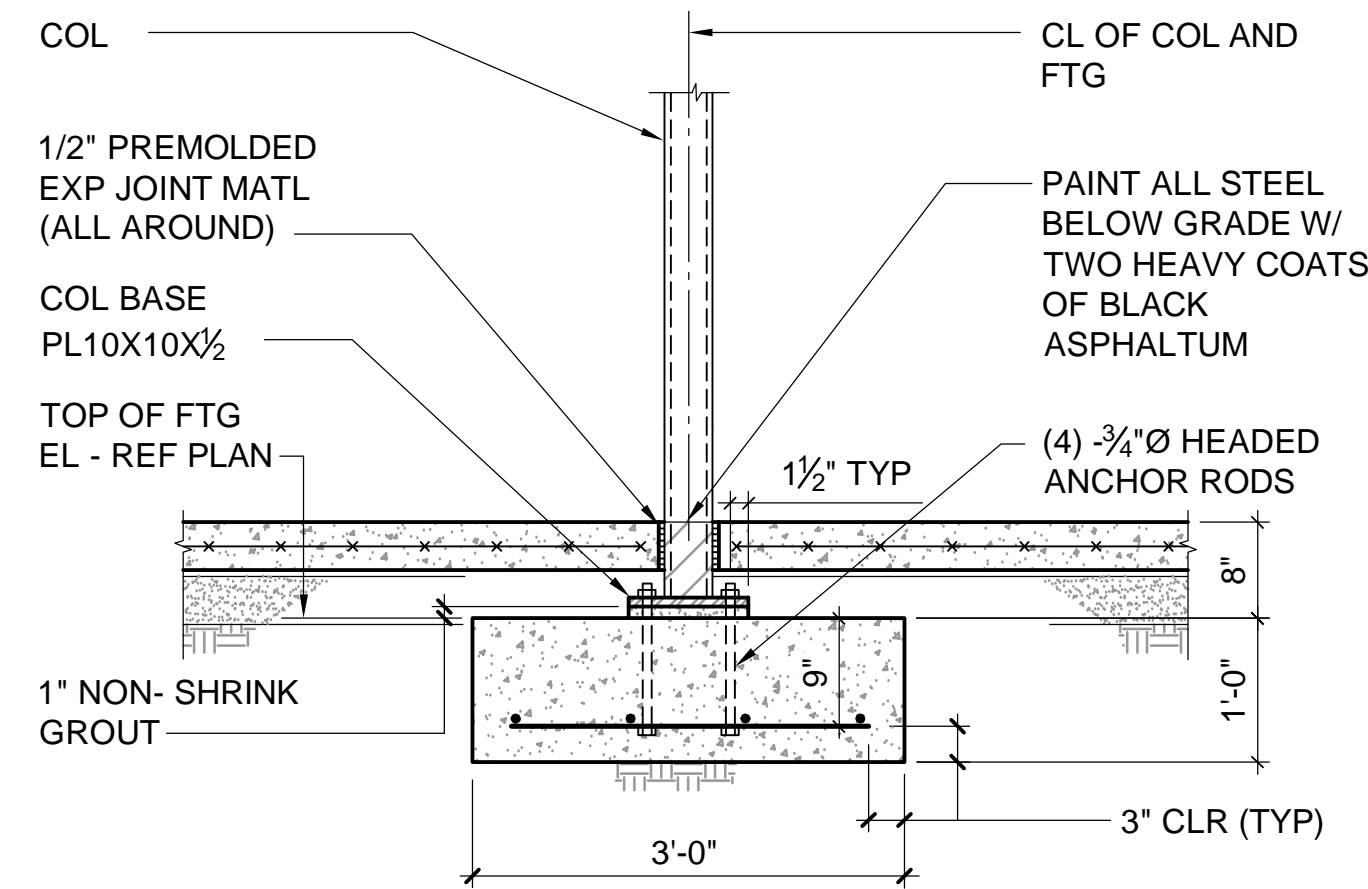
**3 SECTION**  
S5.1 3/4"=1'-0"

REF NOTE F2

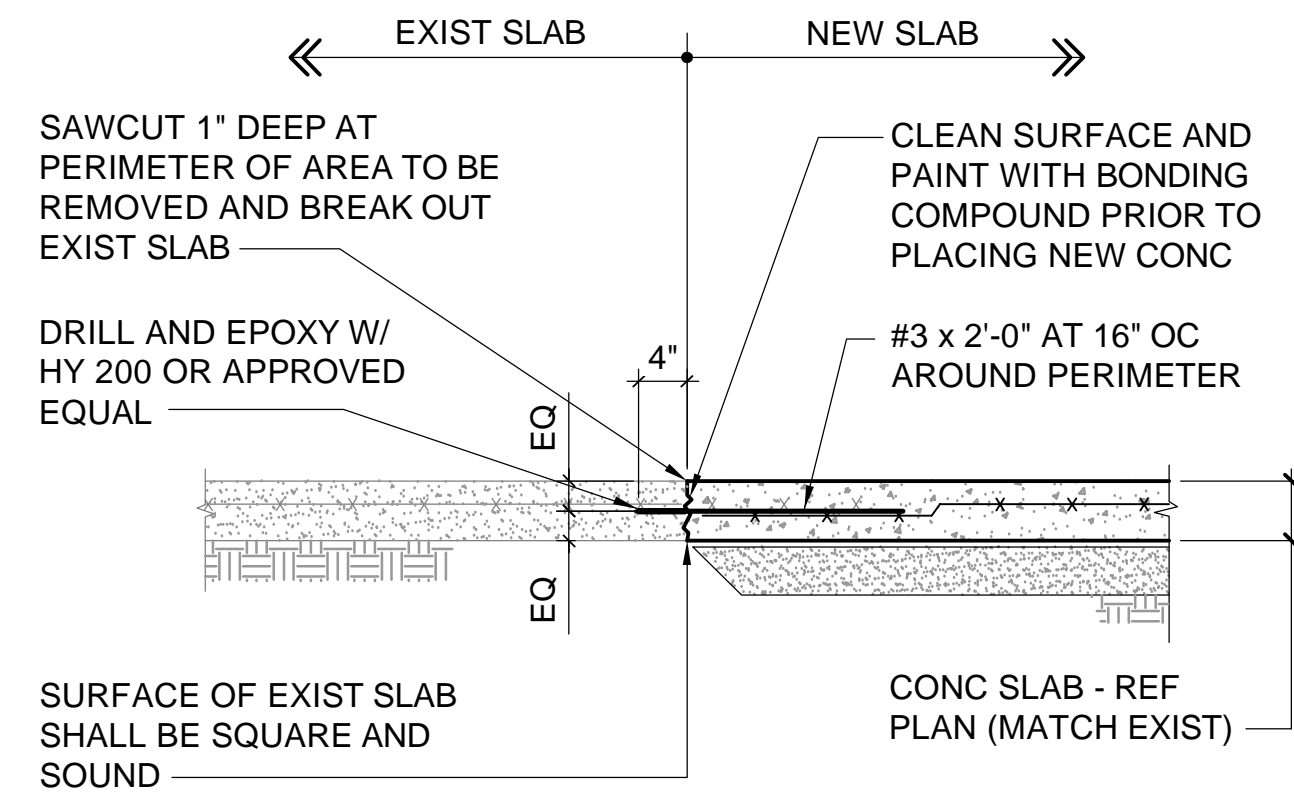


**4 SECTION**  
S5.1 3/4"=1'-0"

FOR DETAILS NOT NOTED REF SECTION 1/S5.1



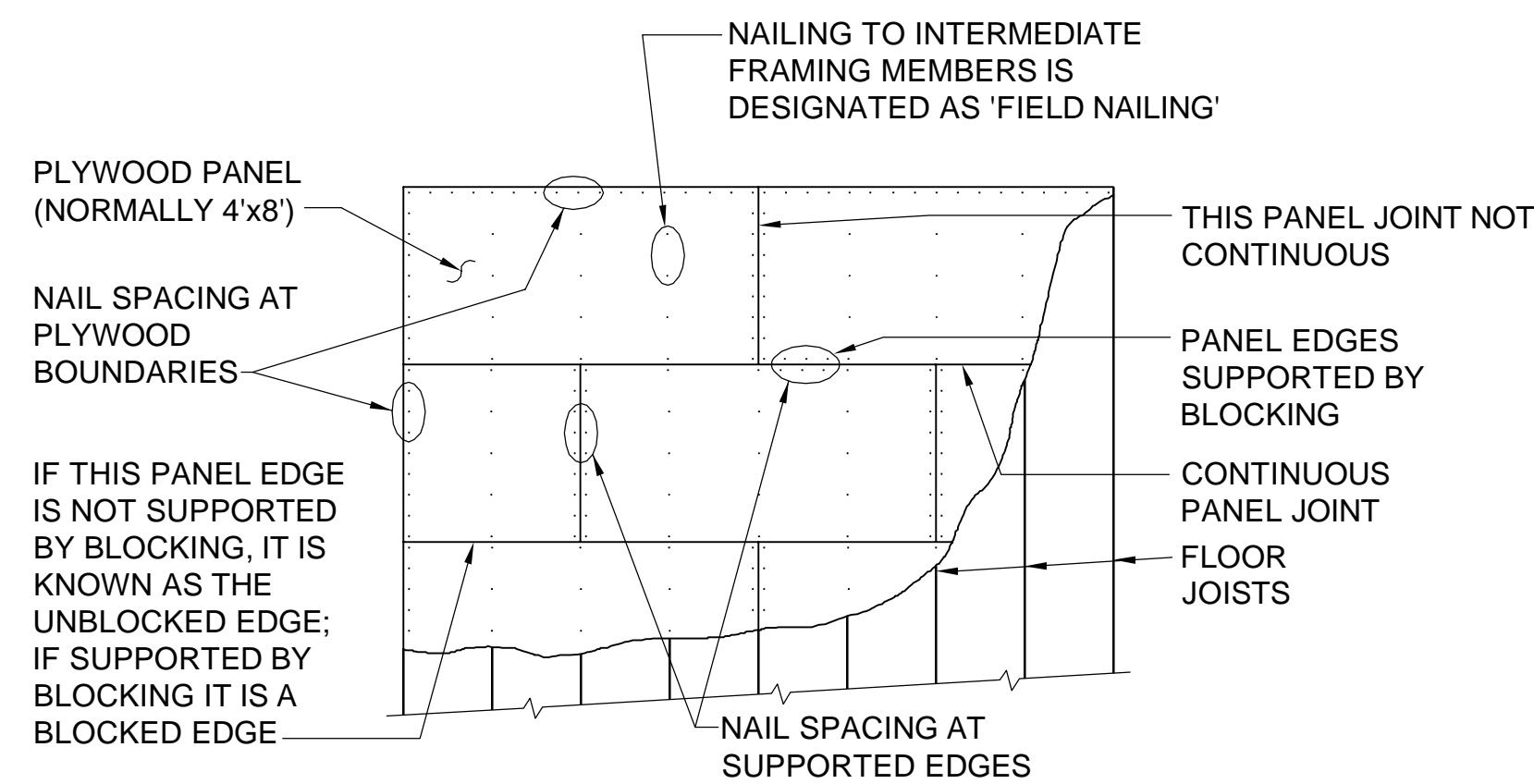
**TYPICAL COLUMN AND FOOTING DETAIL**  
NTS



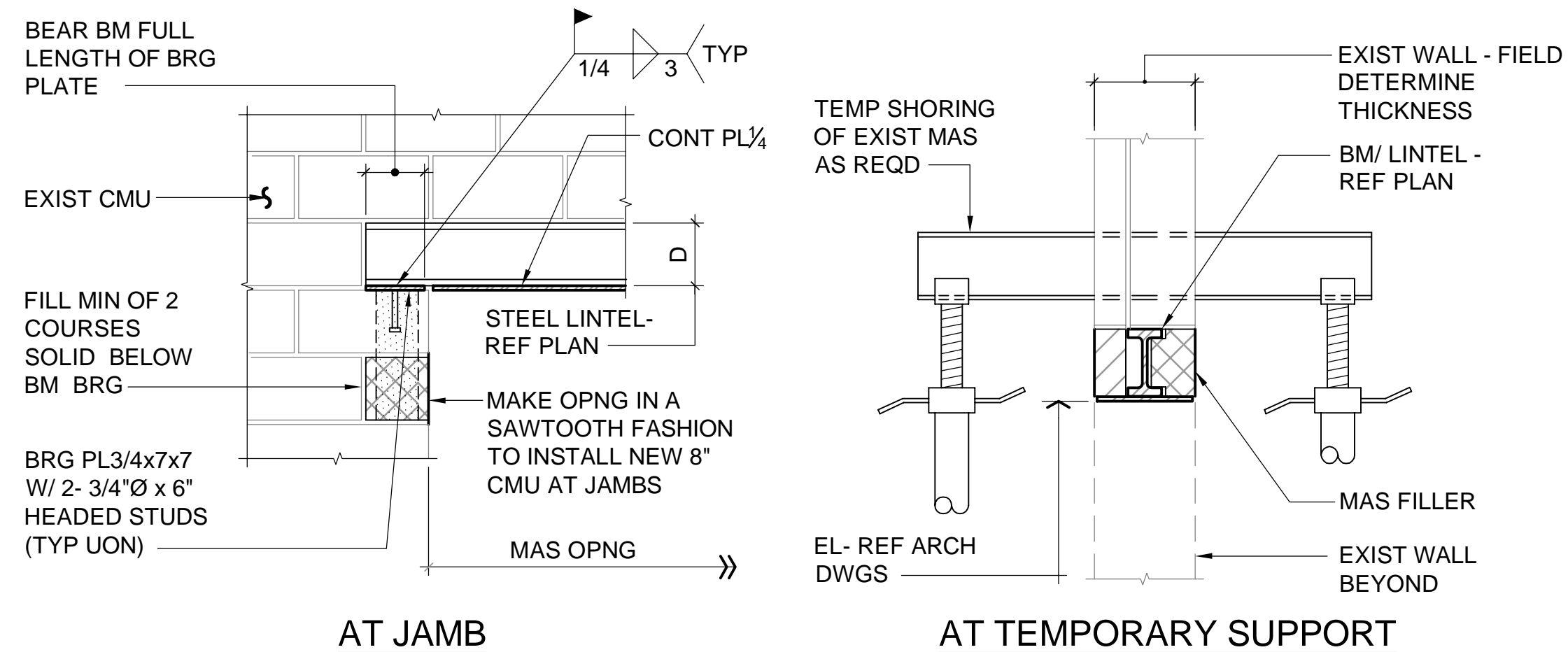
**TYPICAL SLAB REMOVAL AND REPLACEMENT DETAIL**  
NTS

FLOOR SHEATHING NAILING SCHEDULE: EXCEPT WHERE OTHERWISE NOTED OR DETAILED, PLYWOOD SHEATHING SHALL BE NAILED W/ 8d NAILS AT 6" OC AT PANEL EDGES, 12" OC FIELD. BLOCK UNSUPPORTED EDGES WHERE INDICATED ON PLAN.

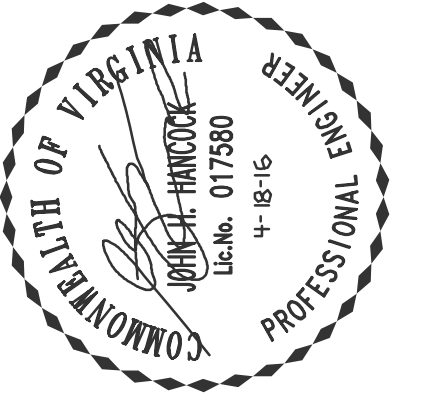
**DEFINITION OF TERMS:**



**TYPICAL NEW FLOOR SHEATHING DETAIL**  
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**TYPICAL STEEL LINTEL BEARING ON EXISTING MASONRY DETAILS**  
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RICHMOND, VIRGINIA 23230

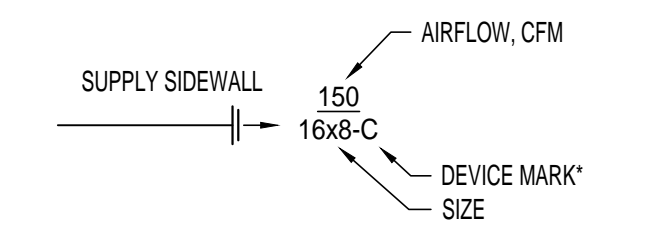
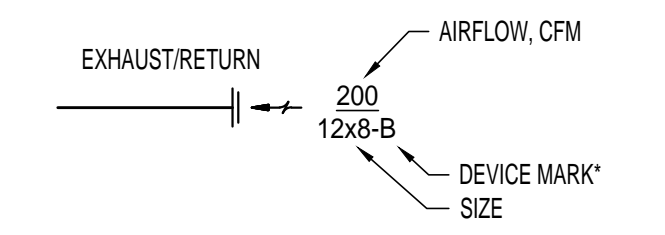
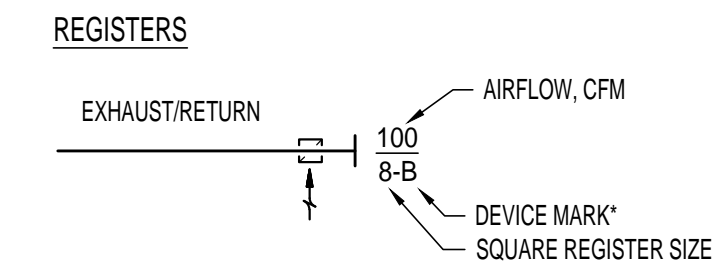
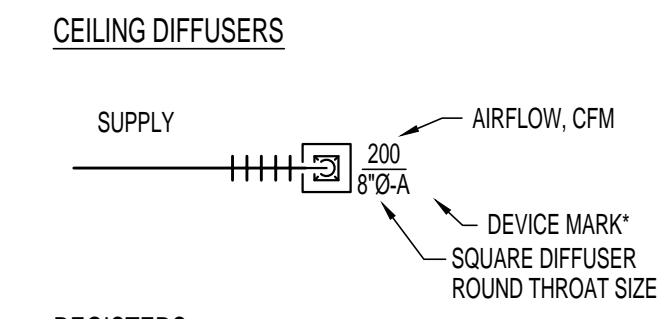
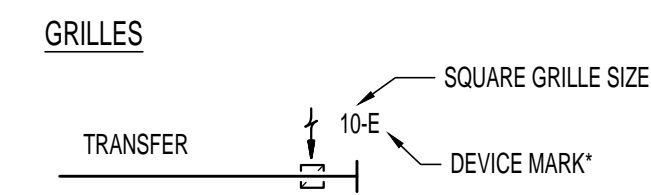
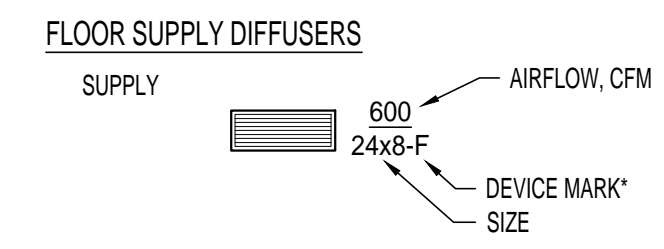
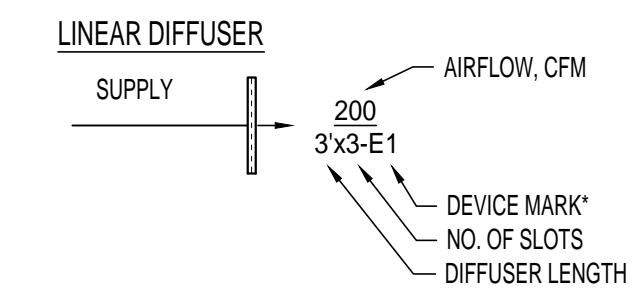
DATE 04.18.16 ISSUE PERMIT

**SECTIONS  
AND  
TYPICAL  
DETAILS**

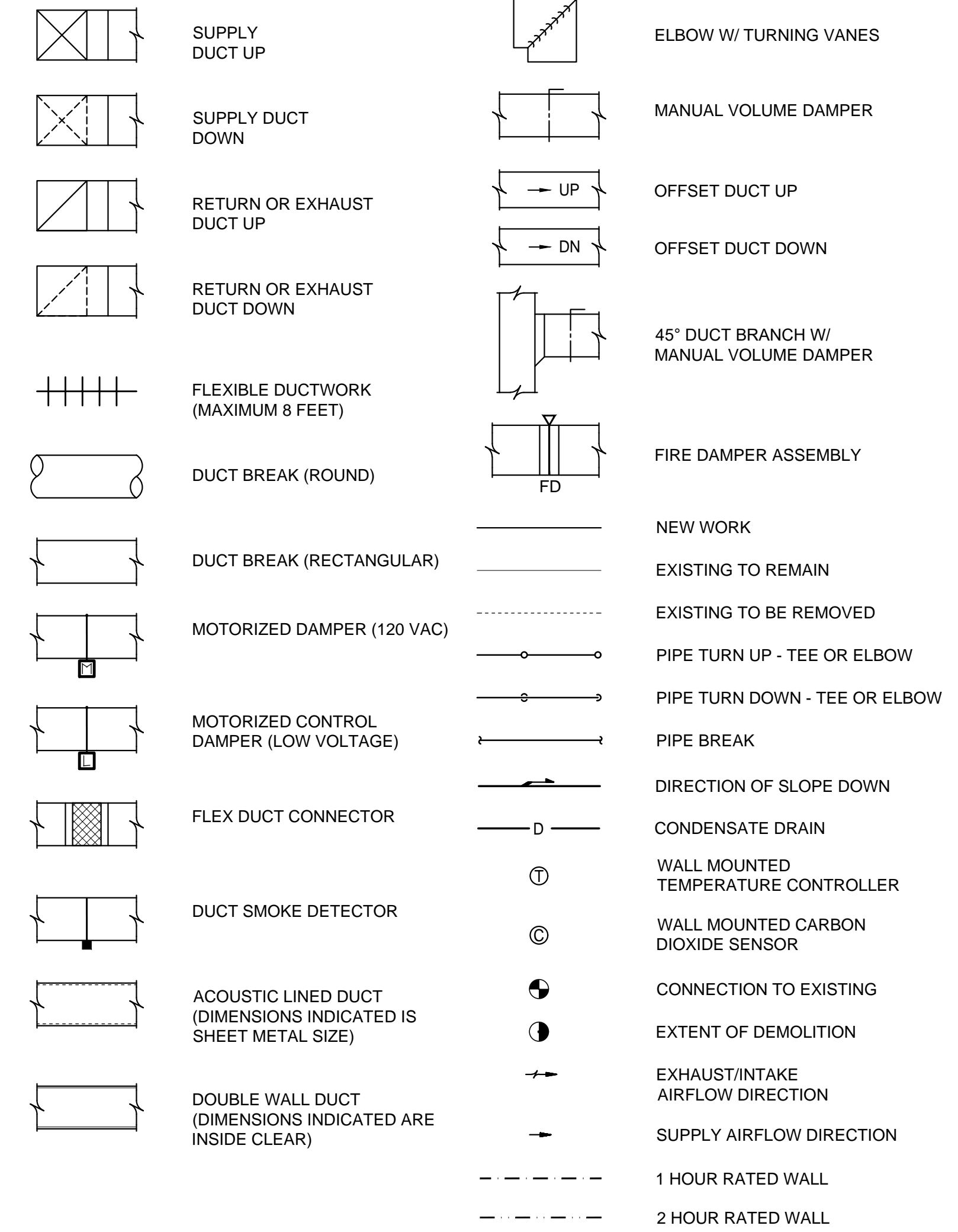
**S5.1**

## DIFFUSER, REGISTER & GRILLE LEGEND

\* REFER TO AIR DISTRIBUTION TERMINAL DEVICE SCHEDULE



## MECHANICAL LEGEND



## MECHANICAL SHEET INDEX

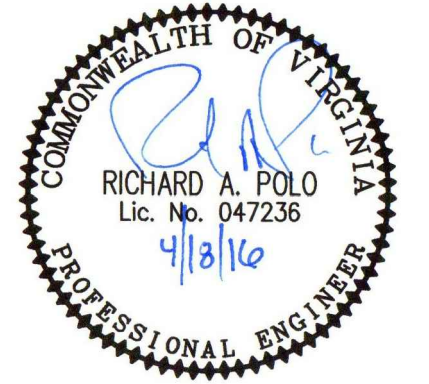
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MECHANICAL  
LEGEND,  
SYMBOLS &  
SHEET INDEX

# M0.1

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THE HIGHPOINT COLLECTIVE LLC  
RENOVATION

3300 W BROAD ST  
RICHMOND, VIRGINIA 23230



# MECHANICAL SCHEDULES

VRF INDOOR UNIT SCHEDULE				SAMSUNG														
MARK	SPACE SERVED	NUMBER	TYPE	NOMINAL CAPACITY (BTU/H)			REQUIRED CAPACITY (BTU/H)			STANDARD AIRFLOW (CFM)	AIRFLOW (CFM)	ELECTRICAL				WEIGHT (LBS)	NOTES	
				COOLING	HEATING		COOLING (TOTAL)	COOLING (SENSIBLE)	HEATING			VOLTAGE	PHASE	MCA	MOP (AMPS)			
FCU-1	STUDIO 106	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		2,762	2,584	2,386	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-2	STUDIO 107	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		4,458	4,222	1,631	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-3	STUDIO 108	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		4,135	3,917	1,516	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-4	STUDIO 109	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,264	4,988	1,935	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-5	STUDIO 110	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,264	4,988	1,935	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-6	STUDIO 113	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,264	4,988	1,935	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-7	STUDIO 116	AM012HNQDCH/AA	HIGH WALL UNIT	12,000	13,500		9,396	8,710	2,702	328 / 293 / 258	NOTE 9	208	1	0.30	15	19	1 - 6, 11	
FCU-8	STUDIO 118	AM024HNQDCH/AA	HIGH WALL UNIT	23,200	23,800		18,754	17,452	10,558	494 / 441 / 388	NOTE 9	208	1	0.40	15	28	1 - 6, 11	
FCU-9	LOADING 120, CORRIDOR 105	AM007JNMDCH/AA	CONCEALED DUCTED	7,500	8,500		3,121	3,121	2,168	265 / 237 / 212		280	208	1	0.24	15	91	1 - 4, 7-10
FCU-10	STUDIO 111	AM009HNQDCH/AA	HIGH WALL UNIT	9,500	10,500		7,790	6,654	507	290 / 254 / 219	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-11	CLASSROOM 103	AM024HNQDCH/AA	HIGH WALL UNIT	23,200	23,800		20,256	13,506	896	494 / 441 / 388	NOTE 9	208	1	0.40	15	28	1 - 6, 11	
FCU-12	ENTRY 102, LOUNGE 102	AM018JNMDCH/AA	CONCEALED DUCTED	18,000	20,000		15,865	15,426	5,987	512 / 460 / 407		450	208	1	0.40	15	95	1 - 4, 7-10
FCU-13	STUDIO 122	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		2,287	2,003	285	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-14	STUDIO 123	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		2,512	2,200	313	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-15	STUDIO 130	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,505	4,941	672	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-16	GALLERY 140	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,584	4,566	636	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-17	STUDIO 133	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		4,357	3,937	396	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-18	STUDIO 132	AM024HNQDCH/AA	HIGH WALL UNIT	23,200	23,800		9,748	8,780	888	494 / 441 / 388	NOTE 9	208	1	0.40	15	28	1 - 2, 4 - 6, 11 - 12	
FCU-19	ENTRY 121, CORRIDOR 127	AM009JNMDCH/AA	CONCEALED DUCTED	9,500	10,500		8,642	8,642	4,125	318 / 282 / 247		280	208	1	0.24	15	92	1 - 4, 7-10
FCU-20	STUDIO 136	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,562	5,018	2,347	275 / 240 / 205	NOTE 9	208	1	0.25	15	19	1 - 6, 11	
FCU-21	CORRIDOR 134, REAR ENTRY 138	AM007JNMDCH/AA	CONCEALED DUCTED	7,500	8,500		3,716	3,716	923	265 / 237 / 212		280	208	1	0.24	15	92	1 - 4, 7-10
FCU-22	STUDIO 145	AM018HNQDCH/AA	HIGH WALL UNIT	18,000	20,000		12,875	11,513	4,641	424 / 371 / 318	NOTE 9	208	1	0.36	15	28	1 - 6, 11	
FCU-23	STUDIO 201	AM024HNQDCH/AA	HIGH WALL UNIT	23,200	23,800		19,923	18,175	7,497	494 / 441 / 388	NOTE 9	208	1	0.40	15	28	1 - 6	
FCU-24	STUDIO 203	AM018HNQDCH/AA	HIGH WALL UNIT	18,000	20,000		13,484	12,138	3,006	424 / 371 / 318	NOTE 9	208	1	0.36	15	28	1 - 6	
FCU-25	STUDIO 205	AM018HNQDCH/AA	HIGH WALL UNIT	18,000	20,000		15,963	13,339	3,339	424 / 371 / 318	NOTE 9	208	1	0.36	15	28	1 - 6	
FCU-26	CORRIDOR 204	AM007HNQDCH/AA	HIGH WALL UNIT	7,500	8,500		5,448	5,448	3,703	340 / 270 / 230	NOTE 9	208	1	0.30	15	19	1 - 6	
FCU-27	STUDIO 208	AM018HNQDCH/AA	HIGH WALL UNIT	18,000	20,000		15,049	13,583	4,611	424 / 371 / 318	NOTE 9	208	1	0.36	15	28	1 - 6	
FCU-28	STUDIO 210	AM018HNQDCH/AA	HIGH WALL UNIT	18,000	20,000		13,730	12,402	5,940	424 / 371 / 318	NOTE 9	208	1	0.36	15	28	1 - 6	
FCU-29	STUDIO 211	AM024HNQDCH/AA	HIGH WALL UNIT	23,200	23,800		18,524	16,486	7,497	494 / 441 / 388	NOTE 9	208	1	0.40	15	28	1 - 6	
FCU-30	KITCHEN 143	AM048JNMDCH/AA	CONCEALED DUCTED	48,000	54,000		37,837	36,737	1,293	1,236 / 1,148 / 1060		1200	208	1	1.76	15	28	1 - 4, 7-10

- NOTES
- NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COOLING COIL EAT OF 80°F / 67°F (DB / WB), OUTDOOR OF 95°F (DB).
  - NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB).
  - REQUIRED COOLING CAPACITIES ARE THE DESIGNED COOLING LOAD CAPACITIES NEEDED BY THE UNIT BASED ON OCCUPIED SPACE WITH RETURN AIR TEMP (75/62.6) AND OUTSIDE AIR TEMP (95/76.4) AT SCHEDULED AIRFLOWS.
  - REQUIRED HEATING CAPACITY IS THE DESIGNED HEATING CAPACITY NEEDED BY THE UNIT BASED ON UNOCCUPIED SPACE WITH RETURN AIR TEMP (70°F) AND OUTSIDE AIR TEMP (10°F) AT SCHEDULED AIRFLOWS.
  - INSTALL DUCTLESS HIGH WALL UNIT UTILIZING FACTORY WALL FRAME. UNIT INSTALLATION SHALL BE LEVEL WITH BOTTOM OF UNIT 8'-0" +/- ABOVE FINISHED FLOOR.
  - DUCTLESS HIGH WALL UNITS DO NOT REQUIRE BALANCING TO A SET CFM. SPEED CONTROL AND AIRFLOW SHALL BE CONTROLLABLE BY THE WALL MOUNTED UNIT CONTROLLER.
  - INDOOR UNIT SHALL INCLUDE A FACTORY PROVIDED INTERNAL CONDENSATE LIFT PUMP CAPABLE OF 29" OF LIFT FROM BOTTOM OF UNIT.
  - INDOOR UNIT SHALL INCLUDE CONDENSATE OVERFLOW SWITCH PROVIDING THE REQUIRED SECONDARY CONDENSATE PROTECTION.
  - SELECT MOTOR SPEED SETTING/TAP AS REQUIRED TO OBTAIN SPECIFIED AIRFLOW. BALANCE TO AIRFLOW INDICATED.
  - UNIT RETURN AIR SHALL INCLUDE CEILING RETURN AIR FILTER GRILLE, FILTER SHALL BE 1" THICK MERV-8. REFER TO AIR DISTRIBUTION TERMINAL DEVICE MARK H FOR DETAILS.
  - HIGH WALL UNIT SHALL BE PROVIDED WITH A CONDENSATE LIFT PUMP, EQUAL TO MODEL ASP-MO-UNI-MINI-ORANGE PUMP MANUFACTURED BY ASPEN. PUMP SHALL BE INSTALLED CONCEALED INSIDE EVAPORATOR.
  - LARGER NOMINAL CAPACITY SCHEDULED FOR THIS UNIT TO OBTAIN THE REQUIRED CAPACITY DUE TO LOWER SPACE TEMPERATURE SETPOINT. CAPACITY SHALL BE OBTAINED USING 63°F DB / 58°F WET BULB RETURN AIR TEMPERATURE.

AIR DISTRIBUTION TERMINAL DEVICE SCHEDULE:				METAL AIRE				
MARK	SERVICE	TYPE	AIR PATTERN	MOUNTING	FINISH	DAMPER	MODEL NUMBER	NOTES
A	SUPPLY	REGISTER	15" FIXED, 1/4" O.C.	WALL OR CEILING, SURFACE	WHITE	OBD	RC41CD-1	1, 2
B	RETURN/EXHAUST	REGISTER	45" FIXED, 2/3" O.C.	WALL OR CEILING, SURFACE	WHITE	OBD	RH-1	1, 2
C	SUPPLY	DIFFUSER	FLUSH CONE	CEILING, SURFACE	WHITE	RSD	3000-1	2
D	SUPPLY	SLOT DIFFUSER	LINEAR	SPIRAL MOUNTING	NOTE 3	PATTERN CONTROLLER	6610-SP	N/A
E	TRANSFER	GRILLE	45" FIXED, 2/3" O.C.	WALL OR CEILING, SURFACE	WHITE	N/A	RH-1	1, 2, 4
F	SUPPLY	REGISTER	30" FIXED DEFLECTION	FLOOR	NOTE 3	OBD	2030 FP	3
G	SUPPLY	DIFFUSER	3 OR 4 WAY	CEILING, LAY-IN, 2x2 PANEL	WHITE	OBD, ROUND ADAPTER	5000-6	2, 5, 6
H	RETURN	FILTER GRILLE	45" FIXED, 2/3" O.C.	CEILING	WHITE	N/A	RHF	2, 7

NOTES

- WHEN USED IN SIDEWALL APPLICATIONS, COORDINATE ELEVATION WITH ARCHITECT OR ARCHITECTURAL ELEVATIONS.
- WHEN CEILING MOUNTED, REGISTER OR DIFFUSER SHALL BE SUPPORTED BY THE STRUCTURE, NOT THE BY CEILING SYSTEM.
- FINISH SHALL BE SELECTED BY ARCHITECT/OWNER DURING SHOP DRAWING SUBMITTALS. SUBMIT COLOR CHART.
- MARK E TRANSFER GRILLE SHALL MATCH MARK B RETURN REGISTER WITHOUT OPPOSED BLADE DAMPER.
- SQUARE THROAT IS 6"x6" UP TO 120 CFM, 8"x8" FOR 125 CFM TO 280 CFM, & 12"x12" FOR 285 CFM TO 450 CFM.
- PROVIDE EQUALIZING GRID AND SQUARE TO ROUND TRANSITION.
- PROVIDE 1" THICK MERV-8 FILTER AND COUNTER SUNK SCREW HOLES.

KITCHEN HOOD EXHAUST & SUPPLY FAN SCHEDULE															
MARK	MODEL	SERVICE	PERFORMANCE			MOTOR		NATURAL GAS HEAT EXCHANGER				WEIGHT LBS	ELECTRICAL		NOTES
			CFM	ESP IN. WC	RPM	BHP	HP	INPUT, MBH	OUTPUT, MBH	TEMP RISE	INLET PRESSURE		V / PH / HZ	MCA	
EF-KH	GREENHECK SWB-215-15	KITCHEN HOOD EXHAUST FAN	2,625	1.50	1,727	1.15	1.5	----	----	----	----	230	208 / 3 / 60	5.0	1
SF-KH	CAPTIVE AIRE A1-D.500-G10	SUPPLY FAN	2,150	0.60	1,147	1.03	1.5	----	----	----	----	591	208 / 3 / 60	5.0	2, 3
GH-KH		GAS FIRED HEAT FOR MAKE-UP AIR	2,150	----	----	----	----	138.8	127.7	55°F	7-14 IN WC	(NOTE 2)	----	----	2, 3

NOTES

- EXHAUST FAN MUST BE UL 762 LISTED FOR GREASE EXHAUST APPLICATIONS. INCLUDE ALL REQUIRED ACCESSORIES AND SHALL DISCHARGE MINIMUM 40' ABOVE ROOF.
- LISTED WEIGHT IS THE COMBINED SUPPLY MAKE-UP AIR/GAS FIRED HEAT EXCHANGER WEIGHT.
- PROVIDE COMMON CURB FOR ROOF MOUNTING OF SF-KH AND GH-KH. PROVIDE MOTORIZED DAMPER FOR SUPPLY FAN.

VRF OUTDOOR UNIT SCHEDULE - HEAT RECOVERY										SAMSUNG					
MARK	MODEL	NOMINAL CAPACITY (BTU/H)		WEIGHT LBS	COMPRESSORS		COOLING EFFICIENCY		HEATING EFFICIENCY		ELECTRICAL			NOTES	
		COOLING	HEATING		NUMBER	TYPE	EER	IEER	(COP) AT 47°F	V/PHZ	MCA	MOP			
HP-1A	AM168HXVAFR/AA	168,000	189,000	732	2	SSC Scroll	9.8	19.4	3.20		208 / 3 / 60	66	80	1 - 4	
HP-1B	AM168HXVAFR/AA	168,000	189,000	732	2	SSC Scroll					208 / 3 / 60	66	80	1 - 4	

NOTES

- NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COOLING COIL EAT OF 80°F / 67°F (DB / WB), OUTDOOR OF 95°F (DB).
- NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB).
- EFFICIENCY VALUES FOR IEER AND COP ARE BASED ON AHR1 1230 TEST METHOD FOR MIXTURE OF DUCTED & NON-DUCTED INDOOR UNITS.
- HP-1A AND HP-1B SHALL BE COMBINED UNIT, TWO MODULES. COMBINED MODEL NUMBER IS AM336JXVAFR/AA.

VRF HEAT RECOVERY UNITS														SAMSUNG					
MARK	MODEL	PORTS	HEAT RECOVERY FAN COIL UNITS SERVED						MAX BTU/H (PER PORT)	WEIGHT LBS	CONNECTED COOLING		ELECTRICAL						
			PORT A	PORT B	PORT C	PORT D	PORT E	PORT F			BTU/H, NOMINAL	VOLTS/PH	MCA	MOP					
HRU-1	MCU-S6NEE1N	6	FCU-1	FCU-2	FCU-3	FCU-4	FCU-5	FCU-26	198,000 (36,000)	60	45,000	208/1	0.4	15					
HRU-2	MCU-S4NEE1N	4	FCU-6	FCU-7	FCU-8	FCU-28	N/A	N/A	198,000 (36,000)	60	60,700	208/1	0.4	15					
HRU-3	MCU-S6NEE1N	6	FCU-15	FCU-13	FCU-12	FCU-23	FCU-10	FCU-11	198,000 (36,000)	60	88,900	208/1	0.4	15					
HRU-4	MCU-S4NEE1N	4	FCU-24	FCU-25	FCU-27	FCU-9	N/A	N/A	198,000 (36,000)	60	61,500	208/1	0.4	15					
HRU-5	MCU-S6NEE1N	6	FCU-20	FCU-16	FCU-14	FCU-18	FCU-19	FCU-17	198,000 (36,000)	60	62,700	208/1	0.4	15					
HRU-6	MCU-S6NEE1N	6	FCU-21	FCU-22	FCU-29	FCU-30	FCU-30	N/A	198,000 (36,000)	60	96,700	208/1	0.4	15					

NOTES

- FCU-30 REQUIRES Y-CONNECTOR AND WILL UTILIZE TWO PORTS DUE TO EXCEEDING 36,000 BTU/H LIMIT OF SINGLE PORT.
- INSTALL HEAT RECOVERY UNITS AS HIGH AS POSSIBLE TO ALLOW GREATER CONDENSATE DRAIN ROUTING DISTANCES.

MAKE-UP AIR UNIT		DAIKIN	
MARK	MODEL NO.	MAU-1	DPS006A
	TYPE	100% DOAS	
	ENERGY RECOVERY WHEEL (NOTE 3)		
	SUMMER PERFORMANCE		
	OUTSIDE AIRFLOW, CFM		
	EAT, °F DB/°F WB	95.0 / 76.4	
	LAT, °F DB/°F WB	85.4 / 70.6	
	EXHAUST AIRFLOW, CFM	900	
	EAT, °F DB/°F WB	75.0 / 62.6	
	RECOVERED CAPACITY	33.5 MBH	
	EFFECTIVENESS, TOTAL / SENSIBLE	0.77 / 0.82	
	WINTER PERFORMANCE		
	OUTSIDE AIRFLOW, CFM	1,520	
	EAT, °F DB/°F WB	10.0 / 9.0	
	LAT, °F DB/°F WB	38.3 / 36.7	
	EXHAUST AIRFLOW, CFM	900	
	EAT, °F DB/°F WB	70.0 / 53.0	
	RECOVERED CAPACITY	65.9 MBH	
	EFFECTIVENESS, TOTAL / SENSIBLE	0.77 / 0.83	
	COOLING		
	AIRFLOW, CFM	1,520	
	EAT, °F DB/°F WB	85.4 / 70.6	
	LAT, °F DB/°F WB	55.9 / 55.8	
	CAPACITY, MBH (TOTAL/SENSIBLE)	73.8 / 49.2	
	HOT GAS REHEAT COIL		
	AIRFLOW, CFM	1,520	
	EAT, °F DB	55.9	
	LAT, °F DB	75.0	
	REQUIRED CAPACITY, MBH	31.5	
	NATURAL GAS HEAT EXCHANGER		
	AIRFLOW, CFM	1,520	
	EAT, °F DB	38.3	
	LAT, °F DB	75.0	
	REQUIRED CAPACITY, MBH	60.5	
	INPUT CAPACITY, MBH	120.0	
	OUTPUT CAPACITY, MBH	96.0	
	TURNDOWN	MODULATING 5:1	
	SUPPLY FAN (NOTE 1)		
	AIRFLOW, CFM	1,520	
	ESP, IN. WC	1.0	
	TSP, IN. WC	2.85	
	TYPE / SIZE	SWSI AF / 14"	
	HORSEPOWER, (BHP / MOTOR HP)	1.24 / 2.3	
	EXHAUST FAN (NOTE 2)		
	AIRFLOW, CFM	900	
	ESP, IN. WC	1.0	
	TYPE / SIZE	SWSI AF / 12"	
	HORSEPOWER, (BHP / MOTOR HP)	0.5 / 1.3	
	CONDENSING SECTION		
	TYPE COMPRESSOR / 1	INVERTER SCROLL / 1	
	EER / IEER	11.3 / 19.3	
	ELECTRICAL DATA		



# MECHANICAL SPECIFICATIONS

- ALL MECHANICAL WORK AND MATERIALS SHALL COMPLY WITH 2012 EDITION OF VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND LOCAL BUILDING CODES, THE 2012 INTERNATIONAL PLUMBING AND MECHANICAL CODES, NFPA CODES AND ALL OTHER APPLICABLE CODES. OBTAIN PERMITS, INSPECTIONS, LICENSES AND TESTS REQUIRED FOR THIS WORK AND PAY ALL FEES IN CONNECTION THEREWITH.
- DRAWINGS: THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND SHOW THE GENERAL ARRANGEMENT OF ALL DUCTWORK, PIPING, EQUIPMENT AND APPURTENANCES AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHER TRADES WILL PERMIT. BECAUSE OF THE SMALL SCALE OF THE MECHANICAL DRAWINGS, IT IS NOT FEASIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES THAT MAY BE REQUIRED. THE CONTRACTOR SHALL INVESTIGATE THE CONSTRUCTION CONDITIONS AFFECTING THE WORK AND PROVIDE FITTINGS AND ACCESSORIES AS REQUIRED TO MEET ACTUAL CONDITIONS.
- COORDINATION OF WORK: GENERAL: THE CONTRACT DOCUMENTS INDICATE THE EXTENT AND GENERAL ARRANGEMENT OF THE MECHANICAL SYSTEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER RELATION OF THE MECHANICAL WORK TO THE BUILDING STRUCTURE AND TO THE WORK OF OTHER TRADES. NO ADDITIONAL COMPENSATION OR EXTENSION OF COMPLETION TIME WILL BE GRANTED FOR EXTRA WORK CAUSED BY THE LACK OF COORDINATION. COOPERATION: THE CONTRACTOR SHALL PROVIDE DIMENSIONS AND LOCATIONS OF ALL OPENINGS, SHAFTS AND SIMILAR ITEMS TO THE PROPER TRADES AND INSTALL WORK AS REQUIRED SO AS NOT TO INTERFERE WITH, OR DELAY, THE BUILDING CONSTRUCTION. LOCATIONS OF LINES AND EQUIPMENT SHALL BE DETERMINED FROM ACTUAL FIELD MEASUREMENTS. THE OUTLINES OF THE BUILDING SHOWN ON THE MECHANICAL DRAWINGS ARE INTENDED ONLY AS A GUIDE TO INDICATE RELATIVE LOCATIONS OF THE MECHANICAL WORK. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING CONSTRUCTION DETAILS. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING AND LOCATION OF HIS SYSTEMS PRIOR TO FABRICATION OR INSTALLATION OF ANY SYSTEM COMPONENT. ACCURATE MEASUREMENTS AND COORDINATION SHALL BE COMPLETED TO VERIFY DIMENSIONS AND CHARACTERISTICS FOR THE INSTALLATION OF EACH SYSTEM. UNLESS NECESSITATED BY EQUIPMENT ACCESS OR OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS, ALL PIPING, DUCTWORK, AND CONDUIT CONCEALED ABOVE CEILINGS AND IN FINISHED OR UTILITY SPACES SHALL BE ROUTED AS HIGH AS POSSIBLE. OFFSETS, TRANSITIONS AND CHANGES OF DIRECTION IN ALL SYSTEMS SHALL BE MADE AS REQUIRED TO MAINTAIN PROPER HEADROOM AND PITCH OF SLOPING LINES WHETHER OR NOT INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE MANUAL AIR VENTS AND DRAINS AS REQUIRED FOR HIS WORK TO AFFECT THESE OFFSETS, TRANSITIONS AND CHANGES IN DIRECTION, AS APPLICABLE.
- EQUIPMENT INSTALLATION: GENERAL: EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO CONFORM WITH THE DETAILS AND APPLICATION INDICATED. WHERE MANUFACTURER'S RECOMMENDATIONS OR INSTALLATION INSTRUCTIONS REQUIRE OPTIONS OR ACCESSORIES NOT SPECIFIED, THEY SHALL BE INCLUDED AND INSTALLED BY THE CONTRACTOR. SUPPORTS: PROVIDE NECESSARY SUPPORTS FOR ALL EQUIPMENT AND APPURTENANCES AS REQUIRED. ROOFTOP EQUIPMENT SHALL BE SET ON PRE-MANUFACTURED CURBS ANCHORED TO THE ROOF AND FLASHED INTO THE ROOFING SYSTEM. ROOFTOP EQUIPMENT SHALL BE ANCHORED TO THE CURB EXCEPT WHERE VIBRATION ISOLATION IS INSTALLED BETWEEN THE CURB AND THE EQUIPMENT. SERVICE AREA: ALL EQUIPMENT AND APPURTENANCES SHALL BE LOCATED TO PERMIT ADEQUATE SERVICE CLEARANCE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS OTHERWISE REQUIRED. SERVICE CLEARANCE SHALL INCLUDE BUT NOT BE LIMITED TO SERVICE AND REMOVAL OF FILTERS, COILS, MOTORS, CONTROLS AND REMOVAL OF EQUIPMENT SECTIONS. SERVICE CLEARANCE IN FRONT OF ELECTRICAL PANELS SHALL BE MINIMUM AS REQUIRED BY NATIONAL ELECTRIC CODE (NEC) WHERE APPLICABLE.
- SUBSTANTIAL COMPLETION INSPECTION: THE ENGINEER WILL VISIT THE SITE FOR THE PURPOSE OF CONDUCTING A SUBSTANTIAL COMPLETION INSPECTION ONCE THE FOLLOWING ITEMS HAVE BEEN MET BY THE CONTRACTOR:
  - ALL HVAC SYSTEMS SHALL BE COMPLETE, OPERATIONAL AND UNDER AUTOMATIC CONTROL.
  - HVAC SYSTEMS CLEANING, BALANCING, AND TESTING SHALL BE COMPLETE AND THE FINAL REPORT SHALL BE APPROVED BY THE ENGINEER.
  - THE CONTRACTOR SHALL PROVIDE CERTIFICATION FROM AN AUTHORIZED OFFICIAL OF THE EQUIPMENT MANUFACTURER(S) STATING THAT ALL REFRIGERANT PIPING AND SPECIALTIES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
  - THE NOISE AND VIBRATION CONTROL SUPPLIER SHALL PROVIDE A LETTER STATING THAT ALL ITEMS HAVE BEEN INSTALLED PROPERLY AND THAT ALL EQUIPMENT IS ADEQUATELY ISOLATED AND/OR RESTRAINED.
  - THE CONTRACTOR SHALL ATTEST BY LETTER THAT ALL EQUIPMENT HAS BEEN WIRED AND TESTED TO VERIFY THAT THE INDICATED SEQUENCE OF MOTOR CONTROL IS ESTABLISHED, THAT ALL SAFETY CONTROLS FUNCTION PROPERLY, THAT ALL MOTOR PROTECTIVE DEVICES ARE SIZED CORRECTLY, AND THAT THE SYSTEMS ARE OPERATING AT THE PROPER SET POINTS.
- ASBESTOS FREE MATERIALS: THE INTENTION OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THERE ARE NO ASBESTOS-CONTAINING MATERIALS INSTALLED ON THIS PROJECT. TO THE BEST OF THE ARCHITECTS AND ENGINEERS KNOWLEDGE, NONE OF THE MATERIAL OR EQUIPMENT SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS CONTAINS ASBESTOS. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PREVENT ANY ASBESTOS MATERIALS FROM BEING INSTALLED IN OR USED ON THE CONSTRUCTION OF THE PROJECT. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL CERTIFY BY LETTER THAT TO THE BEST OF HIS KNOWLEDGE, NO ASBESTOS-CONTAINING MATERIALS WERE USED FOR OR IN THE CONSTRUCTION OF THIS PROJECT.
- MATERIAL AND WORKMANSHIP: ALL EQUIPMENT AND MATERIALS USED IN THE PROJECT SHALL BE NEW AND UNDAMAGED. THE INSTALLATION SHALL FIT INTO THE SPACE ALLOTTED AND SHALL ALLOW ADEQUATE AND ACCEPTABLE CLEARANCES FOR ENTRY, SERVICING AND MAINTENANCE. SIMILAR TYPES OF EQUIPMENT SHALL BE THE PRODUCTS OF THE SAME MANUFACTURER UNLESS SPECIFIED OTHERWISE. WORK SHALL BE PERFORMED BY MECHANICS OR TRADESMEN SKILLED IN THE TRADE INVOLVED. ALL DUCTWORK, PIPING AND CONDUIT SHALL BE INSTALLED IN A NEAT AND ORGANIZED MANNER, PARALLEL TO OTHER WORK AND THE NEAREST BUILDING ELEMENTS, UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS. EQUIPMENT AND MATERIALS SHALL BE SUITABLE FOR USE IN THE ENVIRONMENT IN WHICH THEY ARE INSTALLED. EQUIPMENT EXPOSED TO OUTSIDE CONDITIONS SHALL BE ADEQUATELY PROTECTED FROM THE WEATHER, MANUFACTURED FROM MATERIALS SUITABLE FOR OUTDOOR USE, AND DESIGNED SPECIFICALLY FOR USE IN OUTDOOR ENVIRONMENTS.
- THE CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS REQUIRED TO PROVIDE A COMPLETE WORKING SYSTEM AS SHOWN ON THE DRAWINGS AND ACQUIRE ALL PERMITS NECESSARY TO PERFORM WORK. ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER AND SHALL BE SUBJECT TO APPROVAL BY THE OWNER.
- SUBMITTALS: SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR ALL MECHANICAL EQUIPMENT USED ON THIS PROJECT. ELECTRONIC COPIES OF THE SUBMITTAL SHALL BE SUBMITTED. THE SUBMITTAL WILL BE RETURNED TO THE CONTRACTOR ELECTRONICALLY (PDF FORMAT). WHERE HARD COPIES OF DRAWINGS ARE SUBMITTED, THE CONTRACTOR SHALL SUBMIT A MINIMUM OF TWO (2) SETS OF FULL SCALE PRINTS. ALL PRODUCT DATA SHALL BE CORRECTLY MARKED TO INDICATE PROJECT NAME, AND THE EXACT MODEL, STYLE OR SIZE OF ITEM BEING SUBMITTED. IMPROPERLY IDENTIFIED SUBMITTALS WILL NOT BE REVIEWED BY THE ENGINEER. EACH ITEM SUBMITTED FOR REVIEW SHALL BEAR THE SUBCONTRACTOR'S STAMP WHICH STATES THAT THEY HAVE REVIEWED THE SUBMISSION, THAT IT IS COMPLETE, AND THAT IN THEIR OPINION, THE SUBMITTED PRODUCT MEETS THE CONTRACT REQUIREMENTS.
- OPERATION AND MAINTENANCE MANUAL(S): SHALL BE SUBMITTED AND SHALL INCLUDE A COMPLETE PRODUCT INDEX, A COPY OF ALL ACCEPTED SHOP DRAWINGS, INSTALLATION AND MAINTENANCE DATA, SEQUENCE OF CONTROLS, PARTS LISTS, AND THE NAME, ADDRESS AND TELEPHONE NUMBER OF SUPPLIER OR NEAREST REPRESENTATIVE. ALL MECHANICAL DEVICES AND EQUIPMENT SHALL BE INCLUDED AND ALL OTHER SUCH ITEMS WHICH WILL REQUIRE SERVICING BEFORE THE DURATION OF ITS USEFUL LIFE HAS BEEN REACHED. THE MANUAL(S) SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND TRANSMITTED TO THE OWNER BEFORE THE FINAL PAYMENT IS RECOMMENDED. MANUAL FORMAT SHALL INCLUDE: 8-1/2" X 11" WHITE BOND PAPER, MINIMUM 20 LB. WEIGHT; HEAVY-DUTY 3-RING BINDER WITH CONCEALED BINDING MECHANISM; AND PERMANENT TABS TO NEATLY ORGANIZE AND PARTITION THE MANUAL. MANUAL SHALL INCLUDE NEAT TYPE WRITTEN PAGES AND SHALL INCLUDE A TABLE OF CONTENTS. THE FRONT COVER SHALL CLEARLY IDENTIFY THE GENERAL SUBJECT ON THE MANUAL.
- GUARANTEE/WARRANTY: ALL MECHANICAL EQUIPMENT, MATERIALS AND LABOR REQUIRED BY THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS SHALL BE GUARANTEED TO BE FREE FROM DEFECTIVE MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE PROJECT EXCEPT EXTENDED WARRANTIES AS SPECIFIED ELSEWHERE IN THESE DOCUMENTS ON SPECIFIC ITEMS OF EQUIPMENT WILL BE FURNISHED BY THE TRADE PROVIDING THE EQUIPMENT. DEFECTS IN MATERIAL OR WORKMANSHIP OCCURRING DURING THIS PERIOD SHALL BE CORRECTED WITH NEW MATERIAL AND EQUIPMENT OR ADDITIONAL LABOR AT NO COST TO THE OWNER. MANUFACTURER'S CERTIFICATES OF WARRANTY SHALL BE TRANSMITTED TO THE OWNER BEFORE FINAL PAYMENT IS RECOMMENDED. THE CONTRACTOR SHALL WARRANT FOR A PERIOD OF ONE YEAR ALL WORK PROVIDED UNDER THE CONTRACT TO INCLUDE, BUT NOT NECESSARILY LIMITED TO, ALL SYSTEMS, EQUIPMENT, MATERIALS, AND WORKMANSHIP. THIS SHALL NOT BE CONSTRUED TO LIMIT ANY EXTENDED WARRANTY PERIODS OF LONGER THAN ONE YEAR FOR SPECIFIC ITEMS OR SYSTEMS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS. THE WARRANTY PERIOD SHALL COMMENCE ON THE DATE OF ACCEPTANCE BY THE OWNER AND SHALL COVER ALL PARTS AND LABOR AS REQUIRED TO FULFILL THE WARRANTY AT NO COST TO THE OWNER. INFORMATION ON ALL WARRANTIES SHALL BE INCLUDED IN THE O&M MANUALS SPECIFIED HEREIN TO BE PROVIDED TO THE OWNER.
- EXISTING CONDITIONS: THE MECHANICAL CONTRACTOR SHALL VISIT THE JOB SITE AND SURVEY ALL EXISTING CONDITIONS WHICH MAY AFFECT THE RESPECTIVE TRADES WORK PRIOR TO CONTRACT PRICE AGREEMENT. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO ACCURATELY ESTIMATE THE DIFFICULTIES AND COST TO PERFORM WORK. THE MECHANICAL TRADE SHALL COORDINATE ALL WORK WITH WORK OF OTHER TRADES. CONFLICTS DUE TO FAILURE OF THE CONTRACTOR TO COORDINATE WORK WILL BE CORRECTED AT THE EXPENSE OF THE RESPONSIBLE TRADE, INCLUDING COSTS FOR REPAIRS TO WORK OF OTHER TRADES.

- EXISTING EQUIPMENT: CARE SHALL BE EXERCISED TO PROTECT ALL EXISTING EQUIPMENT TO BE REUSED. IF INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL REMOVE FROM OPERATION ALL EQUIPMENT THAT IS SHOWN TO BE REUSED AND PROVIDE ADEQUATE PROTECTION INCLUDING BUT NOT LIMITED TO PREVENTION OF CORROSION, PROTECTION OF SEALS, PREVENTION OF LEAKING, AND PREVENTION OF INTERNAL/EXTERNAL CONTAMINATION. ALL ELECTRONIC COMPONENTS SHALL BE PROTECTED FROM WEATHER AND MOISTURE, DETERIORATION AND LOSS OF PROGRAMMING.
- WOODEN STRUCTURE: WHERE PIPING, DUCTWORK AND CONDUIT ARE SUPPORTED FROM WOODEN STRUCTURE, THE CONTRACTOR SHALL PROVIDE STEEL SUPPORTS BEARING AT PANEL POINTS AND SPANNING A MINIMUM OF TWO TRUSSES. ANY WOODEN BLOCKING SHALL BE FIRE RETARDANT LUMBER IN ACCORDANCE WITH ASTM E-84 AND SHALL BEAR THE MARK OF AN APPROVED TESTING AGENCY. ALL CONNECTIONS TO WOODEN FRAMING SHALL BE MADE THRU SHEAR HANGERS AT THE FACE OF WOODEN MEMBERS. ALL CONNECTIONS SHALL BE MADE BY SCREWS.
- ELECTRICAL WIRING AND EQUIPMENT: WIRING, LOW VOLTAGE (100 VOLTS OR LESS) CONTROL WIRING SHALL BE PROVIDED AS A PART OF DIVISION 23 IN STRICT ACCORDANCE WITH DIVISION 26 AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO COMPLY WITH THE SEQUENCE OF CONTROL INDICATED. VERIFY THAT WIRING OF ALL MOTORS AND CONTROLS REQUIRED BY EQUIPMENT FURNISHED IS ACCOMPLISHED FOR THE CORRECT SEQUENCE OF OPERATION. WIRING, LINE VOLTAGE (101 VOLTS OR HIGHER), POWER WIRING SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 26. DISCONNECTS FOR EACH ITEM OF EQUIPMENT SHALL BE PROVIDED UNDER DIVISION 26 UNLESS SPECIFIED OTHERWISE. MISCELLANEOUS MANUAL OR AUTOMATIC CONTROL AND PROTECTIVE OR SIGNAL DEVICES REQUIRED FOR THE SEQUENCE OF OPERATION INDICATED FOR MECHANICAL EQUIPMENT SHALL BE PROVIDED UNDER DIVISION 23 WHERE THE ITEM OF EQUIPMENT IS SPECIFIED UNLESS INDICATED OTHERWISE.
- COMMON MOTOR REQUIREMENTS: MOTORS SHALL BE PROVIDED IN PLACE AS AN INTEGRAL PART OF THE DRIVEN EQUIPMENT, READY FOR ELECTRICAL CONNECTIONS. MOTORS SHALL BE IN ACCORDANCE WITH NEMA STANDARDS AND OF DESIGN SUITABLE FOR THE STARTING AND RUNNING CHARACTERISTICS OF THE DRIVEN EQUIPMENT. UNLESS SPECIFIED OTHERWISE, ALL MOTORS SHALL HAVE CONTINUOUS DUTY CLASSIFICATION, 40° CENTIGRADE AMBIENT TEMPERATURE, SHALL HAVE ENCLOSURE SUITABLE FOR INDICATED APPLICATION AND SHALL BE WOUND FOR 120 VOLT, SINGLE PHASE, 60 CYCLE CURRENT, EXCEPT MOTORS ABOVE 1/2 HORSEPOWER (UNLESS INDICATED OTHERWISE) SHALL BE WOUND FOR 200V OR 230V/460V AS REQUIRED BY THE SECONDARY VOLTAGE SPECIFIED FOR MAIN SERVICE IN DIVISION 26. EACH MOTOR SHALL BE SELECTED AND RATED AT THE VOLTAGE INDICATED SO THAT THE DRIVEN LOAD DOES NOT EXCEED THE NAMEPLATE RATING AND SERVICE FACTOR OF THE MOTOR. MOTOR STARTERS AND MOTOR PROTECTIVE SWITCHES SHALL BE PROVIDED UNDER DIVISION 26 EXCEPT WHERE SPECIFIED TO BE FURNISHED SPECIFICALLY WITH THE DRIVEN EQUIPMENT. ACCESSORIES SUCH AS AUXILIARY CONTACTS, HAND-OFF-AUTOMATIC SWITCHES, START-STOP SWITCHES, PILOT LIGHTS, CONTROL POWER TRANSFORMERS AND OTHER SIMILAR ITEMS SHALL BE PROVIDED IN OR ON THE CONTROLLERS AS REQUIRED BY THE CONTROL SEQUENCE INDICATED. STARTING EQUIPMENT, UNLESS FACTORY MOUNTED ON THE EQUIPMENT, SHALL BE INSTALLED UNDER DIVISION 26.
- HANGERS AND SUPPORTS FOR HVAC EQUIPMENT: SUSPENDED HORIZONTAL PIPING SHALL BE SUPPORTED BY ADJUSTABLE WROUGHT STEEL CLEVIS HANGERS. PIPE SUPPORT SPACING SHALL BE SUPPORTED SIX FEET ON CENTER. SMALL LOW PRESSURE DUCTWORK SUPPORTS SHALL CONSIST OF NOT LESS THAN 1" BY 1/16" GALVANIZED STEEL STRAP HANGERS SPACED NOT OVER 4 FEET ON CENTER WITH STRAPS LAPPED ACROSS THE BOTTOM OF DUCTS A MINIMUM OF 1 INCH. ALL SUSPENDED HVAC EQUIPMENT OR DUCTWORK SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE. THREADED ROD SHALL BE USED THROUGH JOIST CHORDS FOR LOADS GREATER THAN 50 LB. HVAC EQUIPMENT, PIPING AND DUCTWORK SHALL NOT BE SUPPORTED FROM THE CEILING SYSTEM OR ANY OTHER BUILDING SERVICES. HEAVY DUCTWORK AND SUSPENDED EQUIPMENT SHALL BE SUPPORTED BY HANGER RODS AND TRAPEZE ANGLES IF REQUIRED, SHALL BE ATTACHED TO THE TOP CHORD ONLY ON STEEL JOISTS AND BEAMS BY JOIST OR BEAM CLAMPS WITHOUT WELDING. WELDING OF SUPPORT RODS AND CONNECTION AT ANY PLACE OTHER THAN THE TOP CHORD WILL NOT BE PERMITTED UNLESS WRITTEN APPROVAL IS GRANTED BY THE ENGINEER AND THE ARCHITECT. HANGERS SHALL BE SPACED SO THAT THE SUPPORTED LOAD DOES NOT EXCEED THE LOAD RECOMMENDED BY THE MANUFACTURER. THE SUPPORTED LOAD SHALL NOT OVERSTRESS THE BUILDING STRUCTURAL MEMBERS. AT THE CONTRACTORS OPTION, SUPPORTS CAN INCLUDE A WIRE ROPE AND CABLE LOCK SYSTEM (WHERE APPLICABLE), EQUAL TO DURO DYNE DTCL12. ALL CABLE LOCKS SHALL HAVE AN ULTIMATE BREAKING STRENGTH (U.B.S.) OF AT LEAST 5 TIMES THE WIRE ROPE PUBLISHED WORKING LOAD LIMIT (W.L.L.). ALL WIRE ROPE SHALL HAVE A U.B.S. OF 5 TIMES THE PUBLISHED W.L.L. WIRE ROPES SHALL BE OF THE SIZE AND SPACED PER MANUFACTURERS PRINTED SPECIFICATIONS.
- VIBRATION ISOLATION: SUSPENDED HVAC EQUIPMENT SHALL INCLUDE AN ELASTOMER-IN-SHEAR VIBRATION ISOLATOR ENCASED IN A WELDED STEEL BRACKET AT EACH SUPPORT. THE ELASTOMER SHALL BE BONDED TO THE HANGER BRACKET AND SHALL BE SELECTED TO SUPPORT THE LOAD WITHIN ITS PUBLISHED LOAD RATING. THE HANGER BRACKET SHALL BE DESIGNED TO CARRY A FIVE (5) TIMES OVERLOAD WITHOUT FAILURE AND ALLOW UP TO 15° ROD MISALIGNMENT WITHOUT SHORT CIRCUITING. ISOLATOR SHALL BE EQUAL TO KINETICS MODEL RH. FLEXIBLE CONNECTIONS SHALL BE INCORPORATED IN THE DUCTWORK ADJACENT TO ALL AIR MOVING UNITS AS PART OF THE SHEET METAL WORK. INCLUDING SUSPENDED FAN COIL UNITS AND ROOFTOP AIR HANDLERS.
- IDENTIFICATION FOR HVAC EQUIPMENT: EACH ITEM OF MECHANICAL EQUIPMENT AND EQUIPMENT CONTROL DEVICES SUCH AS MOTOR STARTERS, DISCONNECT SWITCHES, ETC. SHALL BE PROPERLY MARKED WITH LAMINATED ENGRAVED PLASTIC NAMEPLATES FASTENED WITH SHEET METAL SCREWS, BOLTS OR PERMANENT ADHESIVE. PRESSURE SENSITIVE TAPE IS NOT ACCEPTABLE. EQUIPMENT IDENTIFICATION SHALL MATCH EQUIPMENT MARKS AS SCHEDULED ON THE DRAWINGS. PIPING SYSTEM MARKERS SHALL BE PROVIDED FOR ALL HVAC PIPING AT MAXIMUM 20 FOOT SPACING. PIPE MARKERS SHALL BE PRESSURE SENSITIVE VINYL, 12 INCHES LONG WITH 1 1/4 INCH HIGH LETTERS. ATTACH TO PIPING WITH 2 INCH WIDE TAPE WITH INTEGRAL CLEAR PROTECTIVE COATING AND DIRECTIONAL ARROWS. PIPE MARKERS AND TAPE SHALL BE IN ANSI COLORS.
- TESTING AND BALANCING: FOR THE AIR CONDITIONING, HEATING AND VENTILATION SYSTEMS, THE CONTRACTOR SHALL PROVIDE ALL SERVICES (IF QUALIFIED) OR SHALL OBTAIN THE SERVICES OF QUALIFIED INDEPENDENT TESTING ORGANIZATION FOR TOTAL SYSTEM AIR TESTING AND BALANCING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING CHANGES IN PULLEYS, BELTS AND DAMPERS WHERE NECESSARY TO OBTAIN THE REQUIRED AIR VOLUME. THE CONTRACTOR SHALL PROVIDE ALL LABOR, ENGINEERING AND TEST EQUIPMENT REQUIRED TO ADJUST, TEST AND BALANCE ALL HEATING, VENTILATING, AIR CONDITIONING AS SPECIFIED. ALL PERSONNEL INVOLVED IN THE WORK SHALL BE EXPERIENCED AND TRAINED SPECIFICALLY IN THE TOTAL BALANCING OF MECHANICAL SYSTEMS. TEST DATA SHALL BE SUBMITTED FOR ALL EQUIPMENT AND SYSTEMS WHERE SPECIFICALLY REQUIRED BY THIS SPECIFICATION. DUCTWORK SHALL BE THOROUGHLY BLOWN OUT OR FLUSHED AND CLEANED OF ALL FOREIGN MATTER BEFORE CONNECTIONS ARE MADE TO EQUIPMENT. AFTER COMPLETION OF TEST AND BALANCING, NEW FILTERS SHALL BE INSTALLED IN ALL AIR UNITS THAT ARE PART OF THIS PROJECT.

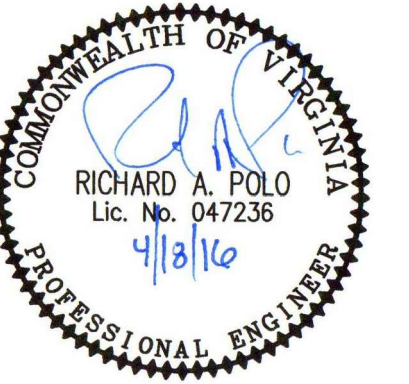
PRIOR TO CONDUCTING THE HVAC SYSTEM TESTING AND BALANCING, THE CONTRACTOR SHALL SUBMIT THE NAME OF THE TESTING ORGANIZATION, A PROOF OF CERTIFICATION BY THE ASSOCIATED AIR BALANCE COUNCIL OR NATIONAL ENVIRONMENTAL BALANCING BUREAU, AND A LIST OF FIVE LOCAL PROJECTS ON WHICH TESTING AND BALANCING HAS BEEN COMPLETED FOR TWO YEARS, FOR APPROVAL BY THE ARCHITECT/ENGINEER. THE SUBMITTAL SHALL INCLUDE TAB PROCEDURES PROPOSED FOR THE SYSTEMS SPECIFIC TO THIS PROJECT. AT A TIME NO LATER THAN THE SUBSTANTIAL COMPLETION INSPECTION, THE CONTRACTOR SHALL PROVIDE THE ARCHITECT/ENGINEER WITH TWO (2) TYPEWRITTEN COPIES OF SCHEDULES CONTAINING AIR SYSTEM BALANCE AND PERFORMANCE DATA.

#### PROCEDURES:

- DUCTS SHALL BE TESTED AND MADE SUBSTANTIALLY AIR TIGHT AT STATIC PRESSURE INDICATED FOR THE SYSTEM. SUBSTANTIALLY AIR TIGHT SHALL BE CONSTRUED TO MEAN THAT NO AIR LEAKAGE IS NOTICEABLE THROUGH THE SENSE OF FEELING OR HEARING.
- PLACE ALL RELATED SUPPLY, EXHAUST AND RETURN AIR SYSTEMS IN OPERATION W/ FANS RUNNING AT DESIGN RPM.
- MEASURE SUPPLY AIR VOLUMES BY MEANS OF THE DUCT TRAVERSE METHOD, MAKING A MINIMUM OF SIXTEEN (16) READINGS. TEST HOLES SHALL BE IN STRAIGHT DUCT AS FAR AS POSSIBLE DOWNSTREAM FROM ELBOWS, TAKEOFFS, DAMPERS, ETC. SEAL DUCT ACCESS HOLES WITH METAL SNAP-IN PLUGS. THE USE OF DUCT TAPE TO SEAL ACCESS HOLES WILL NOT BE PERMITTED.
- ADJUST BALANCING DAMPERS FOR REQUIRED BRANCH DUCT AIR QUANTITIES. DUCTS WITH MULTIPLE BRANCHES SHALL HAVE AT LEAST ONE BRANCH WITH VOLUME DAMPER(S) COMPLETELY OPEN.
- ADJUST GRILLES AND DIFFUSERS TO WITHIN 10% OF INDIVIDUAL REQUIREMENTS SPECIFIED, AND ALSO ADJUST SO AS TO MINIMIZE DRAFTS AND SOUND IN ALL AREAS. RESTRICTION IMPOSED BY FLOW REGULATING DEVICES IN OR AT TERMINALS SHALL BE MINIMAL. FINAL MEASUREMENT OF AIR QUANTITY SHALL BE MADE AFTER OPTIMUM AIR PATTERN HAS BEEN ACHIEVED.
- ADJUST QUANTITY OF AIR ON EACH ZONE TO THE VALUES GIVEN IN THE PLANS.
- IF THE SUPPLY FAN VOLUME IS NOT WITHIN PLUS OR MINUS 10% OF THE DESIGN CAPACITY AT DESIGN RPM, DETERMINE THE REASON BY REVIEWING ALL SYSTEM CONDITIONS, PROCEDURES AND RECORDED DATA. CHECK AND RECORD THE AIR PRESSURE DROP ACROSS FILTERS, COILS, ELIMINATORS, SOUND TRAPS, ETC., TO SEE IF EXCESSIVE LOSS IS OCCURRING. PARTICULARLY STUDY DUCT AND CASING CONDITIONS AT THE FAN INLET AND OUTLET.
- ANY CHANGES THAT ARE REQUIRED FOR THE FINAL BALANCING RESULTS WILL BE PROVIDED FOR BY THE RESPECTIVE CONTRACTORS WHO SUPPLIED AND INSTALLED SUCH EQUIPMENT UNDER THEIR CONTRACTUAL OBLIGATIONS. SUCH CHANGES MAY ENCOMPASS, BUT ARE NOT NECESSARILY RESTRICTED TO, THE CHANGING OF PULLEYS, BELTS, DAMPERS OR ADDING DAMPERS OR ACCESS HOLES.

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MECHANICAL SPECIFICATIONS

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# MECHANICAL SPECIFICATIONS

BALANCE DATA: THE FOLLOWING BALANCE DATA SHALL BE PROVIDED. DESIGN AND ACTUAL AND AIR FLOWS SHALL BE PROVIDED IN TABULAR FORM.

- A. ALL AIR HANDLING AND AIR CONDITIONING EQUIPMENT USED FOR HEATING, COOLING AND VENTILATING:
  - SYSTEM NOMENCLATURE AND IDENTIFICATION.
  - NAMEPLATE INFORMATION: MANUFACTURER, MODEL AND SERIAL NUMBER, HORSEPOWER, RPM, VOLTAGE, PHASE, MAXIMUM AMPERAGE.
  - FAN SPEED AND STATIC PRESSURE PROFILE - READING BETWEEN ALL COMPONENTS AND TOTAL EXTERNAL STATIC PRESSURE.
  - OUTSIDE, RETURN, AND SUPPLY AIR QUANTITIES.
  - ACTUAL RUNNING MOTOR AMPERAGE.
- B. AIR OUTLET AND INLETS:
  - ROOM IDENTIFICATION, MANUFACTURER, SIZE, FREE AREA FACTOR, AIR QUANTITY, AND VELOCITY.
- C. KITCHEN HOOD:
  - NAMEPLATE INFORMATION: MANUFACTURER, MODEL AND SERIAL NUMBER.
  - TOTAL EXHAUST AIRFLOW AND TOTAL SUPPLY AIRFLOW.
  - HOOD FACE VELOCITIES.
- D. FAN AIRFLOW AND SPEED SETTING (IF APPLICABLE).
- E. CORRECTION FACTORS FOR CALIBRATION OF FLOW RING ON VAV TERMINAL UNITS.

PERFORMANCE DATA: THE FOLLOWING INFORMATION SHALL BE RECORDED TWICE EACH DAY AND TWICE EACH NIGHT DURING THE PERFORMANCE TEST. READING SHALL BE TAKEN FOR EACH ITEM AT A DIFFERENT TIME EACH SUCCEEDING DAY AT LEAST TWO HOURS LATER THAN THE TIME THE READING WAS TAKEN ON THE PRECEDING DAY.

- A. ALL AIR HANDLING AND AIR CONDITIONING EQUIPMENT USED FOR HEATING, COOLING AND VENTILATING:
  - SYSTEM NOMENCLATURE AND IDENTIFICATION.
  - DRY BULB AND WET BULB TEMPERATURES ENTERING AND LEAVING ALL COILS.
- B. TEMPERATURE: EACH ROOM IN BUILDING. TEMPERATURE MEASUREMENTS SHALL BE TAKEN WITH THE CONTRACTOR'S CALIBRATED EQUIPMENT. TRENDED DATA FROM THE TEMPERATURE CONTROL SYSTEM IS NOT ACCEPTABLE.

20. INSULATION:

ALL INSULATION MATERIALS, JACKETS AND FITTING COVERS SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25, AND SMOKE DEVELOPED RATING NOT EXCEEDING 50 AS TESTED UNDER PROCEDURE ASTM E-84-75, NFPA 255 AND UL 723. DUCT COVERINGS AND LININGS SHALL NOT FLAME, GLOW, SMOLDER OR SMOKE WHEN TESTED IN ACCORDANCE WITH ASTM C411.

PIPING INSULATION:  
CONDENSATE DRAIN PIPING (WHERE HORIZONTAL AND CONCEALED ABOVE CEILINGS): FINE HEAVY DENSITY FIBROUS GLASS OR RIGID PHENOLIC FOAM INSULATION WITH FACTORY APPLIED FOIL-SCRIM-WHITE KRAFT PAPER VAPOR BARRIER JACKET, MOLDED TO CONFORM TO PIPING, 0.24 BTUIN./SQ.FT./"F/HR. MAXIMUM "K" VALUE AT 75° F. REFRIGERANT PIPING: CLOSED CELL FLEXIBLE ELASTOMERIC INSULATION, 0.28 BTUIN./SQ.FT./"F/HR. MAXIMUM "K" VALUE AT 75°F., MAXIMUM WATER VAPOR TRANSMISSION RATING OF 0.1 PERMS-INCH. INSULATION LOCATED OUTSIDE THE BUILDING SHALL HAVE A SELECTIVE FINISH TO PROTECT INSULATION FROM ULTRA VIOLET (UV) SOLAR RADIATION, UNLESS SPECIFICALLY DESIGNED TO WITHSTAND UV RADIATION.

EXTERNAL DUCT INSULATION:  
ALL SUPPLY DUCTWORK OTHER THAN PRE-INSULATED FLEXIBLE DUCTWORK OR DOUBLE WALL DUCTWORK SHALL HAVE EXTERNAL FLEXIBLE FIBROUS GLASS INSULATION, 1.0 LB. DENSITY, 0.27 BTUIN./SQ.FT./"F/HR. MAXIMUM "K" VALUE AT 75°F, WITH FACTORY APPLIED REINFORCED ALUMINUM FOIL VAPOR BARRIER. EXTERNAL DUCT INSULATION SHALL NOT BE REQUIRED ON EXHAUST /RETURN/ TRANSFER DUCTWORK. FLEXIBLE DUCT INSULATION SHALL BE PROVIDED WITH A MINIMUM 2" FACING FLAP OVERLAPPING ADJACENT AND CONNECTING INSULATION. SEAMS SHALL BE STAPLED APPROXIMATELY 6" ON CENTER WITH 1/2" OUTWARD CLINCHING STAPLES. WHERE RECTANGULAR DUCTS ARE 24" IN WIDTH OR GREATER, INSULATION SHALL BE SECURED TO THE BOTTOM OF THE DUCT WITH MECHANICAL FASTENERS TO PREVENT SAGGING. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED. ALL JOINTS, VOIDS AND PUNCTURES IN FACING SHALL BE SEALED VAPOR TIGHT WITH MASTIC. COVERS SHALL BE NEATLY FINISHED AND COMPLETELY WATERTIGHT. EXTERNAL DUCT INSULATION SHALL BE TWO INCH THICK UNLESS NOTED OTHERWISE.

ACOUSTIC LINING (WHERE INDICATED AND/OR NOTED ON DRAWINGS): FIBERGLASS INSULATION, 0.26 BTUIN./SQ.FT./"F/HR. MAXIMUM "K" VALUE AT 75°F, ABSOLUTE ROUGHNESS OF EXPOSED SURFACE SHALL NOT EXCEED 0.005 FT., COATED TO PREVENT EROSION AT AIR VELOCITIES UP TO 2000 FPM, 1.5 LBS/CU.FT. MINIMUM DENSITY. NOISE REDUCTION CO-EFFICIENT SHALL AVERAGE NOT LESS THAN 0.60 WHEN TESTED BY ACOUSTICAL MATERIAL ASSOCIATION PROCEDURE MOUNTING 6. LINER SHALL BE PROVIDED WITH EPA APPROVED BIOCIDES IN THE EROSION COATING TO PROTECT AGAINST MICROBIAL GROWTH. LINER SHALL MEET OR EXCEED REQUIREMENTS OF ASTM G21 (FUNGI RESISTANCE) AND ASTM G22 (BACTERIAL RESISTANCE). ACOUSTIC LINING SHALL BE ONE INCH THICK UNLESS SPECIFICALLY NOTED OTHERWISE.

21. HVAC PIPING: HVAC CONDENSATE DRAIN PIPING SHALL BE TYPE L HARD DRAWN COPPER TUBING OR SCHEDULE 40 PVC. FITTINGS SHALL MATCH THE PIPE USED AND SHALL BE SUITABLE FOR 125 PSI WATER SERVICE. REFRIGERANT PIPING SHALL BE TYPE "ACR" HARD DRAWN COPPER TUBING OR AS RECOMMENDED BY THE VRF SYSTEM MANUFACTURER, FACTORY CLEANED, DEHYDRATED AND CAPPED WITH WROUGHT COPPER FITTINGS. ALL REFRIGERANT PIPING SHALL BE SIZED AND ROUTED PER MANUFACTURER RECOMMENDATIONS. ALL REFRIGERANT PIPING SPECIALTIES REQUIRED BY VRF SYSTEM MANUFACTURER SHALL BE PROVIDED AND INSTALLED PER MANUFACTURER RECOMMENDATIONS. ALL COMPONENTS SHALL BE SELECTED AND SIZED FOR THE LOWEST PRESSURE DROP AT THE CAPACITIES INDICATED. PRIOR TO OFFERING THE SYSTEM FOR FINAL ACCEPTANCE, THE CONTRACTOR SHALL SUBMIT A WRITTEN CERTIFICATION FROM AN AUTHORIZED OFFICIAL OF THE EQUIPMENT MANUFACTURER STATING THE COMPLETE SYSTEM, TO INCLUDE REFRIGERANT PIPING, HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS.

22. DUCTWORK: DUCT SIZES: SIZES SHOWN ON DRAWINGS ARE ACTUAL SHEET METAL DIMENSIONS.

DUCT CONSTRUCTION AND FABRICATION: DUCTWORK SHALL BE GALVANIZED STEEL, LOCK FORMING QUALITY, HAVING ZINC COATING OF 0.90 OUNCES PER SQUARE FOOT FOR EACH SIDE (G90, ASTM A 525 AND A 527). FASTENERS SHALL BE RIVETS, BOLTS OR SELF TAPPING SHEET METAL SCREWS. DUCT SEALANT SHALL BE WATER AND FIRE RESISTANT WHEN DRY AND BE COMPATIBLE WITH MATING MATERIALS. DUCTWORK SHALL BE LAPPED IN THE DIRECTION OF AIRFLOW. DUCT TRANSITIONS SHALL HAVE A MAXIMUM SLOPE RATIO OF 4:1. ALL DUCT JOINTS AND SEAMS SHALL BE MECHANICALLY TIGHT, AND SEALED WITH SEALANT TO PROVIDE A SUBSTANTIALLY AIRTIGHT SYSTEM. DUCTWORK SHALL HAVE A MINIMUM GAUGE OF 22. ALL DUCTWORK SHALL CONFORM ACCURATELY TO THE DIMENSIONS INDICATED ON PLANS AND SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE GUIDE AND DATA BOOKS AND SMACNA DUCT CONSTRUCTION STANDARDS, EXCEPT THAT SHEET METAL GAUGES AND ZINC COATING SHALL NOT BE LIGHTER THAN SPECIFIED. ALL RECTANGULAR SHEET METAL DUCTS OVER 18" WIDE SHALL BE CROSS-BROKEN FOR RIGIDITY. REINFORCING ANGLES, STIFFENERS AND TIE-RODS FOR ALL SHEET METAL DUCTS SHALL BE PROVIDED WHERE REQUIRED TO PREVENT SAGGING, BUCKLING, AND VIBRATION IN ACCORDANCE WITH THE LATEST SMACNA DUCT CONSTRUCTION STANDARDS PUBLICATION. HAMMER DOWN EDGES AND SLIPS TO LEAVE SMOOTH INTERIOR SURFACE. WHERE SQUARE ELBOWS ARE INDICATED ON THE DRAWINGS, CURVED ELBOWS MAY BE USED PROVIDED THE CENTERLINE RADIUS IS NOT LESS THAN 1-1/2 TIMES THE WIDTH OF DUCT AND AS SPACE ALLOWS. PROVIDE TURNING VANES IN ALL SQUARE ELBOWS. PROVIDE AIR FOIL TYPE TURNING VANES ON ALL DUCTS MORE THAN 24" WIDE. ALL DUCT JOINTS AND SEAMS SHALL BE MECHANICALLY TIGHT, AND SEALED WITH SEALANT OR GASKETS TO PROVIDE A SUBSTANTIALLY AIRTIGHT SYSTEM. ALL DUCT LINERS SHALL BE INSTALLED USING FASTENERS IN STRICT ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS. FASTENER PINS SHALL BE CLINCHED PIN TYPE OR WELDED PIN TYPE. THE USE OF ADHESIVE TYPE PINS IS NOT ACCEPTABLE. ALL LINERS SHALL HAVE TRANSVERSE EDGES COATED WITH ADHESIVE, ALL CORNERS LAPPED AND BUTTED OR FOLDED. RECTANGULAR BRANCH TAKE-OFF CONNECTIONS FROM MAINS SHALL BE MADE USING 45 DEGREE ENTRY FITTINGS PER SMACNA 1995 FIGURE 2-6.

KITCHEN EXHAUST DUCT: FIELD FABRICATED DUCTWORK SHALL BE CONSTRUCTED FROM 16 GAUGE BLACK SHEET STEEL WITH ALL JOINTS, SEAMS AND PENETRATIONS WELDED LIQUIDTIGHT. MECHANICAL FASTENERS SHALL NOT BE USED FOR ASSEMBLY OR SUPPORT WHERE SUCH FASTENERS COULD PENETRATE THE DUCT WALLS. DUCTS SHALL RUN CONTINUOUS FROM THE HOOD CONNECTION UP THROUGH ROOF AND HORIZONTALLY ACROSS ROOF (MINIMUM 18" CLEARANCE ABOVE ROOF) TO THE EXHAUST FAN CONNECTION. ACCESS DOORS SHALL BE PROVIDED IN THE SIDE OF HORIZONTAL SECTIONS OF DUCT FOR CLEANING PURPOSES. HORIZONTAL GREASE EXHAUST DUCT SHALL SLOPE 1/4" PER FOOT SO ALL GREASE GRAVITY DRAINS BACK TO THE HOOD. ACCESS DOORS SHALL BE A MINIMUM OF 12 INCHES OR SHALL BE THE FULL WIDTH OF THE DUCT AND SHALL BE LOCATED AT A MAXIMUM SPACING OF 20 FEET. THE EXHAUST DUCT SHALL BE INSULATED WITH 2" THICK CALCIUM SILICATE BLOCKS FROM THE CEILING ABOVE THE HOOD TO A POINT MINIMUM 18" ABOVE THE ROOF LINE. INSULATION SHALL BE HELD AWAY FROM THE DUCT AT LEAST ONE INCH AND ANCHORED WITH ANGLES, WELDED STUDS OR CLIPS. INSULATION SHALL BE SECURED WITH NO. 12 GAUGE ANNEALED WIRE NOT OVER 12" ON CENTER. FINISH WITH INSULATING CEMENT TROWELED ON IN A 1/2" THICK COAT OVER CHICKEN WIRE. THE ENTIRE INSULATED DUCT ASSEMBLY SHALL BE ENCASED IN A 22 GAUGE

GALVANIZED SHEET METAL JACKET. FIRE RESISTANT DUCT WRAP IS NOT ACCEPTABLE.

EXPOSED ROUND DUCT (IN GALLERY): SHALL BE DOUBLE-WALLED INTERNALLY INSULATED DUCT WITH PERFORATED INTERNAL LINER, 1" ACOUSTIC INSULATION AND PAINT GRIP OR GALVANEAL COATING ON EXTERIOR. PROVIDE ALL FITTINGS AND ADAPTERS TO MATCH LINED DUCT. INSULATION SHALL HAVE K FACTOR OF 0.27 BTU/HR./SQ.FT./IN./"F AT 75°F MEAN TEMPERATURE AND MINIMUM NOISE ATTENUATION OF 1.54 DB/FT. AT A CENTER FREQUENCY OF 1000 HZ AND 2000 FPM IN 24" DIAMETER DUCT. DUCTWORK SHALL BE UNITED MCGILL ACOUSTI-K27 OR APPROVED EQUAL. JOINT MASTIC SHALL BE TOTALLY CONCEALED WITHIN FITTING COUPLINGS.

FLEXIBLE DUCT: SHALL BE EQUAL TO FLEXMASTER TYPE 8M OR THERMAFLEX TYPE M-KE. DUCT SHALL INCORPORATE ACOUSTIC RATED CPE INNER LINER, 1" THICK FIBERGLASS INSULATION, AND REINFORCED METALIZED VAPOR BARRIER. MAXIMUM C FACTOR SHALL BE 0.24 BTU/HR./SQ.FT./"F AT 75°F MEAN TEMPERATURE. DUCT SHALL HAVE A WORKING PRESSURE OF NOT LESS THAN 6 INCHES W.G. FOR POSITIVE PRESSURE AND 1 INCH W.G. FOR NEGATIVE PRESSURE AND SUITABLE FOR VELOCITIES UP TO 4000 FPM. VAPOR TRANSMISSION SHALL BE LESS THAN 0.05 PERM WHEN TESTED IN ACCORDANCE WITH ASTM E96, PROCEDURE A. THE ENTIRE ASSEMBLY SHALL BE RATED AND MARKED AS UL 181 CLASS FLEXIBLE DUCT SHALL BE PROPERLY SUPPORTED TO PREVENT ANY SHORT RADIUS BENDS OR KINKS. CONNECTIONS TO DIFFUSERS SHALL BE MADE USING LONG RADIUS BENDS OR ELBOWS WITH TURNING VANES TO ENSURE THAT AIRFLOW IS DISTRIBUTED EVENLY ACROSS THE NECK OF THE DIFFUSER. CONDITIONS THAT CREATE HIGHER AIRFLOWS IN ONE QUADRANT OF DIFFUSER THROW ARE NOT ACCEPTABLE. MAXIMUM FLEXIBLE DUCT RUNOUT LENGTH SHALL BE 5 FEET. FLEXIBLE DUCT SHALL NOT PENETRATE ANY TYPE OF WALL CONSTRUCTION.

23. MANUAL VOLUME DAMPERS:

SHALL BE OPPOSED BLADE MULTI-LOUVER CONSTRUCTION 16 GAUGE MINIMUM WITH MOLDED SYNTHETIC OR STAINLESS STEEL BEARINGS, GALVANIZED CHANNEL IRON FRAME AND MAXIMUM BLADE WIDTH OF 8 INCHES. AXLES SHALL BE POSITIVELY LOCKED INTO BLADES TO PREVENT SLIPPAGE OR LOOSENING. DAMPER BLADES SHALL BE INTERLOCKING TYPE WITH LINKAGE AND CONTROL SHAFT.

24. HVAC FANS:

(EF-KH): ROOF MOUNTED KITCHEN EXHAUST FAN: KITCHEN EXHAUST FAN SHALL BE MANUFACTURED BY GREENHECK, MODEL SWB-215-15 OR APPROVED EQUAL. FAN SHALL BE BELT DRIVEN UTILITY FAN TYPE IN AMCA ARRANGEMENT 10 WITH A SINGLE WIDTH, SINGLE INLET HOUSING, IN CW ROTATION UPBLAST DISCHARGE AS SPECIFIED. THE HOUSING SHALL BE CONSTRUCTED OF HEAVY GAUGE STEEL WITH AIR TIGHT LOCK FORMED SEAMS. THE HOUSING SHALL BE FIELD ROTATABLE TO ANY OF THE EIGHT STANDARD DISCHARGE POSITIONS AND SHALL BE FIELD SET TO UPBLAST DISCHARGE, MINIMUM 40" ABOVE ROOF SURFACE. HOUSING AND BEARING SUPPORTS SHALL BE CONSTRUCTED OF WELDED STEEL MEMBERS TO PREVENT VIBRATION AND TO RIGIDLY SUPPORT THE SHAFT AND BEARINGS. FAN SHALL BE UL 762 LISTED FOR OUTDOOR INSTALLATION AND USE AS A POWER VENTILATOR FOR RESTAURANT EXHAUST APPLICATIONS. PROVIDE FAN WITH WEATHERHOOD, 1" THREADED DRAIN CONNECTION FOR FAN UNIT HOUSING AND ACCESS DOOR. PROVIDE 1" FIELD DRAIN PIPE FROM HOUSING TO SPLASH BLOCK ON ROOF. PROVIDE FAN WITH GALVANIZED STEEL EQUIPMENT SUPPORTS. EQUIPMENT SUPPORT HEIGHT SHALL BE FIELD DETERMINED TO ACCOUNT FOR MINIMUM FAN DISCHARGE HEIGHT AND REQUIRED EXHAUST DUCT SLOPE. PROVIDE MOUNTING RAILS AND FREE STANDING SPRING ISOLATORS FOR FAN MOUNTING TO EQUIPMENT SUPPORTS. THE FAN WHEEL SHALL BE OF THE NON-OVERLOADING BACKWARD INCLINED, CENTRIFUGAL FAN TYPE AND CONSTRUCTED OF HEAVY GAUGE STEEL. WHEELS SHALL BE STATICALLY AND DYNAMICALLY BALANCED. THE WHEEL CONE AND FAN INLET CONE SHALL BE CAREFULLY MATCHED FOR MAXIMUM PERFORMANCE AND OPERATING EFFICIENCY. FAN MOTOR SHALL BE HEAVY DUTY, BALL BEARING TYPE MATCHED TO THE FAN LOAD AND FURNISHED AT THE SPECIFIED VOLTAGE, PHASE AND ENCLOSURE. THE FAN SHAFT SHALL BE GROUND AND POLISHED SOLID STEEL MOUNTED IN HEAVY DUTY, PERMANENTLY SEALED, PILLOW BLOCK BALL BEARINGS. BEARINGS SHALL BE SELECTED FOR A MINIMUM L10 LIFE IN EXCESS OF 100,000 HOURS (L50 AVERAGE LIFE OF 500, 000 HOURS) AT MAXIMUM CATALOGED OPERATING SPEED. DRIVES SHALL BE SIZED FOR A MINIMUM OF 150% OF DRIVEN HORSEPOWER. PULLEYS SHALL BE OF THE FULLY MACHINED CAST IRON TYPE, KEYS AND SECURELY ATTACHED TO THE WHEEL AND MOTOR SHAFTS. THE MOTOR PULLEY SHALL BE ADJUSTABLE FOR FINAL SYSTEM BALANCING. PROVIDE FAN WITH ROOF EQUIPMENT RAILS. FAN PERFORMANCE SHALL BE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH AMCA STANDARD 210 FOR AIR MOVING DEVICES, AND FANS SHALL BE LICENSED TO BEAR THE AMCA CERTIFIED RATINGS SEAL FOR AIR PERFORMANCE.

ROOF MOUNTED KITCHEN SUPPLY FAN (SF-KH): KITCHEN HOOD SUPPLY FAN MANUFACTURED BY CAPTIVE AIRE. SUPPLY FAN SHALL BE DIRECT FIRED HEATED MAKE-UP AIR UNIT MODEL A1-D-500-G10 OR APPROVED EQUAL. SUPPLY FAN AND NATURAL GAS FIRED HEATER SHALL BE ROOF MOUNTED ON COMMON 20" TALL EQUIPMENT CURB. SUPPLY FAN SHALL BE CAPABLE OF DELIVERING 2,150 CFM OF OUTSIDE MAKE-UP AIR WITH 55°F TEMPERATURE RISE TO THE PERIMETER SUPPLY PLENUM SUPPLIED ON THE KITCHEN EXHAUST HOOD. SUPPLY FAN OPERATION SHALL BE ELECTRICALLY INTERLOCKED TO OPERATE WHENEVER THE KITCHEN EXHAUST HOOD AND FAN ARE IN OPERATION. MAXIMUM FAN HORSEPOWER SHALL BE 5.0 HP. CASING SHALL BE FULLY INSULATED WITH G-90 GALVANIZED STEEL CONSTRUCTION. BURNER SHALL BE STAINLESS STEEL WITH ELECTRONIC FLAME MODULATION AND SELF-ADJUSTING BURNER PROFILE. CONTROLS SHALL INCLUDE AIRFLOW PROVING SWITCH AND HIGH-TEMPERATURE LIMIT SAFETY SWITCH. SUPPLY FAN DISCHARGE SHALL BE VERTICAL THROUGH ROOF AND FAN SHALL INCLUDE MOTORIZED TWO-POSITION DAMPER. FAN INLET SHALL BE SLOPED WITH REMOVABLE WASHABLE ALUMINUM MESH FILTERS.

25. KITCHEN CANOPY EXHAUST HOOD: EXHAUST HOOD SHALL BE MANUFACTURED BY CAPTIVE AIRE. HOOD SHALL BE A TYPE 1 KITCHEN WALL MOUNTED CANOPY HOOD SUITABLE FOR GREASE HOOD APPLICATION. HOOD SHALL BE CONSTRUCTED OF 304 STAINLESS STEEL. HOOD SHALL INCLUDE A PERIMETER SUPPLY PLENUM, UTILITY CABINET, ANSUL FIRE SUPPRESSION SYSTEM, HEAT DETECTOR, LIGHTS, MATCHING STAINLESS STEEL CEILING SKIRT AND ALL ACCESSORIES AS REQUIRED BY CODE AND APPLICATION. . REFER TO MECHANICAL DRAWING M4.1 FOR KITCHEN CANOPY EXHAUST HOOD DIMENSIONS, SCHEDULE, CONTROLS AND FURTHER DETAILS.

26. AIR OUTLETS AND INLETS:

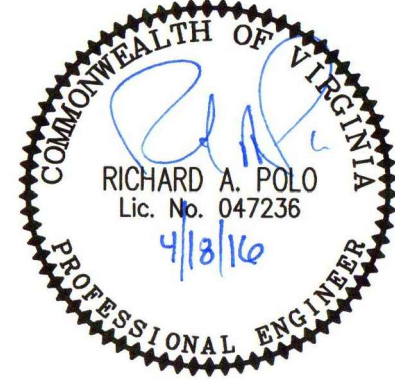
GENERAL AIR OUTLETS/INLETS REQUIREMENTS: ALL DEVICES SHALL BE COMMERCIAL GRADE AND SHALL BE CONSTRUCTED OF STEEL OR ALUMINUM AS SCHEDULED. MANUFACTURER SHALL CERTIFY CATALOGED PERFORMANCE AND ENSURE CORRECT APPLICATION OF EACH AIR DEVICE TO PROVIDE AIR PATTERN, VELOCITY, PRESSURE DROP AND SOUND CHARACTERISTICS NC SUITABLE FOR SPACE INSTALLED. SHOP DRAWINGS SHALL INCLUDE AIR QUANTITY, SIZE, PRESSURE DROP, THROW FT, AND SOUND LEVEL NC. ALL DEVICES LOCATED IN CEILINGS SHALL HAVE WHITE BAKED ENAMEL FINISH. MAXIMUM AIR OUTLET NOISE LEVEL SHALL NOT EXCEED NC35. PROVIDE SPONGE RUBBER SEAL AROUND EDGES OF ALL GRILLES, DIFFUSERS AND REGISTERS.

WALL, CEILING OR SURFACE MOUNTED SUPPLY REGISTER (MARK A AS SCHEDULED): REGISTER SHALL BE MODEL RC41CD-1 AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL. DIFFUSER SHALL INCLUDE SINGLE DEFLECTION GRILLE OF WITH AN EXTRUDED ALUMINUM BORDER AND A SINGLE SET OF ALUMINUM FIXED DEFLECTION FINS. UNITS SHALL HAVE A 1 1/4" CURVED OUTER BORDER WITH A 3/4" RADIUS. THE AIR INLET/OUTLET SHALL ALSO INCLUDE A REMOVABLE INNER CORE WITH A 5/8" BORDER. THE UNITS SHALL BE THE SIZE AND QUANTITY AS OUTLINED IN THE PLANS AND SPECIFICATIONS. THE REMOVABLE CORE SHALL INCLUDE FIXED LOUVER FINS ADJUSTABLE TO PROVIDE 5 OR 15 DEGREE, UPWARD OR DOWNWARD DEFLECTION AIR PATTERNS. THE REMOVABLE CORE SHALL BE HELD IN PLACE WITH SPRING CLIPS. THE INNER CORE ASSEMBLY SHALL HAVE FINS ON 1/4" CENTERS AND INCLUDE MULLION SUPPORT BARS ON 5" MAXIMUM SPACING. UNITS SHALL BE DESIGNED TO BE FASTENED INSIDE THE DUCT OPENING WITH HIDDEN SCREWS. PROVIDE WITH STEEL MODEL OBD OPPOSED BLADE DAMPER.

WALL, CEILING OR SURFACE MOUNTED RETURN/EXHAUST REGISTER (MARK B AS SCHEDULED): REGISTER SHALL BE MODEL RH-1 AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL. REGISTER SHALL BE ALUMINUM CONSTRUCTION WITH AN EXTRUDED ALUMINUM BORDER AND A SINGLE SET OF FIXED DEFLECTION BLADES. THE UNITS SHALL BE THE SIZE AND QUANTITY AS OUTLINED IN THE PLANS. BORDER SHALL BE 1 1/4" WIDE WITH AERODYNAMICALLY SHAPED DEFLECTOR BLADES ON .666" CENTERS SET AT 40°. PROVIDE WITH STEEL MODEL OBD OPPOSED BLADE DAMPER.

CEILING OR SURFACE MOUNTED SUPPLY DIFFUSER (MARK C AS SCHEDULED): DIFFUSER SHALL BE MODEL 3000-1 AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL. DIFFUSER SHALL BE CONSTRUCTED OF 3 ROUND INNER CONES AND A ROUND OUTER CONE. OUTLET SHALL BE ADJUSTABLE TO ALLOW THE DISCHARGE PATTERN TO BE SET FROM FULL HORIZONTAL TO VERTICAL. UNITS SHALL BE ALUMINUM CONSTRUCTION. THE UNITS SHALL BE THE SIZE AND QUANTITY AS OUTLINED IN THE PLANS. PATTERN ADJUSTMENT SHALL BE ACCOMPLISHED BY ROTATING THE INNERMOST CONE. THE INNER CORE ASSEMBLY SHALL BE REMOVABLE FOR INSTALLATION AND FOR ACCESS INTO THE DUCTWORK. THE CENTER CONE SHALL INCLUDE AN ACCESS HOLE TO ALLOW ADJUSTMENT OF AN OPTIONAL DAMPER. OUTLET SHALL HAVE AN OUTER CONE THAT ALLOWS FLUSH MOUNTING TO THE CEILING OPENING. PROVIDE WITH RADIAL SHUTTER DAMPER MODEL RSD.

SPIRAL DUCT MOUNTED SUPPLY DIFFUSER (MARK D AS SCHEDULED): DIFFUSER SHALL BE MODEL 6610-SP LINEAR SLOT AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL. DIFFUSER SHALL BE CONSTRUCTED OF HEAVY GAUGE EXTRUDED ALUMINUM. UNITS SHALL INCLUDE 1" SLOT WIDTHS. THE PATTERN CONTROLLER SHALL BE CURVED, AERODYNAMICALLY SHAPED, CAPABLE OF ADJUSTMENT FROM THE FACE OF THE DIFFUSER. THE PATTERN CONTROLLER SHALL ALLOW ADJUSTMENT FROM VERTICAL TO HORIZONTAL PATTERNS AS WELL AS DAMPER THE VOLUME THROUGH THE FACE OF THE DIFFUSER. PATTERN CONTROLLERS SHALL BE ALUMINUM CONSTRUCTION. STEEL PATTERN CONTROLLERS ARE NOT ACCEPTABLE. SLOT DIFFUSERS SHALL BE PROVIDED IN ONE-PIECE SECTIONS. UNITS SHALL BE PROVIDED WITH 3 SLOTS AS INDICATED ON DRAWINGS. CONTRACTOR SHALL PROVIDE AVAILABLE FINISH SELECTION SHART FOR COLOR SELECTION BY OWNER/ARCHITECT. PATTERN CONTROLLERS SHALL BE BLACK FINISH.



# THE HIGHPOINT COLLECTIVE LLC RENOVATION

3300 W BROAD ST  
RICHMOND, VIRGINIA 23230

DATE	ISSUE
04.18.16	PERMIT

## MECHANICAL SPECIFICATIONS

# MO.4



# MECHANICAL SPECIFICATIONS

WALL, CEILING OR SURFACE MOUNTED TRANSFER GRILLE (MARK E AS SCHEDULED): GRILLE SHALL BE MODEL RH-1 AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL AND SHALL MATCH REGISTER PROVIDED FOR MARK B EXCEPT WITHOUT OPPOSABLE BLADE DAMPER.

FLOOR MOUNTED SUPPLY REGISTERS (MARK F AS SCHEDULED) SHALL BE MODEL 2030FF AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL. DIFFUSERS SHALL BE PENCIL PROOF ALUMINUM LINEAR GRILLE WITH 30° FIXED DEFLECTION GRILLE BARS FOR SUPPLY. GRILLE BARS SHALL BE SPACED AT NOT MORE THAN 1/2 INCHES ON CENTER. GRILLE SHALL BE COMPLETE WITH 1" MARGIN FRAME WITH COUNTERSUNK SCREW HOLES. DAMPER SHALL BE FACTORY MOUNTED OPPOSED BLADE FACE OPERATED TYPE WITH REMOVABLE KEY. FINISH SHALL BE AS REQUESTED/SELECTED BY OWNER & ARCHITECT.

SQUARE CEILING SUPPLY DIFFUSERS (MARK G AS SCHEDULED): DIFFUSERS SHALL BE METALAIRE MODEL 5000-6 OR APPROVED EQUAL. DIFFUSER SHALL CONSIST OF A FIXED PATTERN LOUVERED CORE FASTENED INTO A BORDER WITH SPRING LOADED LATCHES. CORE SHALL BE REMOVABLE WITHOUT THE USE OF TOOLS. OUTLETS SHALL BE ENGINEERED FOR HIGH CAPACITY APPLICATIONS AND INCLUDE STRAIGHT DEFLECTOR BLADES (WITHOUT A HORIZONTAL LIP). UNITS WITH A HORIZONTAL LIP AT THE ENDS OF THE DEFLECTOR BLADES ARE NOT ACCEPTABLE. PROVIDE EQUALIZING GRID, SQUARE TO ROUND ADAPTER AND STEEL OPPOSABLE BLADE DAMPER MODEL OBD FOR EACH DIFFUSER. PROVIDE 1" TALL HORIZONTAL LEGS FOR EACH DIFFUSER.

CEILING MOUNTED FILTER RETURN GRILLE (MARK H AS SCHEDULED): FILTER GRILLE SHALL BE MODEL RHF AS MANUFACTURED BY METALAIRE OR APPROVED EQUAL. GRILLES SHALL BE ALUMINUM CONSTRUCTION WITH AN EXTRUDED ALUMINUM BORDER AND A SINGLE SET OF FIXED DEFLECTION BLADES. UNITS SHALL INCLUDE A HINGED FACE AND INTEGRAL FRAME DESIGNED TO ACCEPT A 1" THICK MERV-8 FILTER. BORDER SHALL BE 1 1/4" WIDE WITH AERODYNAMICALLY SHAPED DEFLECTOR BLADES ON .666" CENTERS SET AT 45°. PROVIDE COUNTERSUNK SCREW HOLES.

## 27. ROOFTOP AIR HANDLING UNIT AND MAKE-UP AIR UNIT (RTU-1 & MAU-1):

GENERAL: ROOFTOP AIR CONDITIONING UNITS SHALL BE EQUAL TO DAIKIN APPLIED REBEL SINGLE ZONE HEATING AND COOLING UNIT MODEL DPS. UNIT PERFORMANCE AND ELECTRICAL CHARACTERISTICS SHALL BE PER THE MECHANICAL SCHEDULES. UNITS SHALL BE FACTORY FABRICATED UNITS FURNISHED COMPLETE WITH ALL COMPONENTS AS SPECIFIED HEREIN AND AS REQUIRED BY APPLICATION AND MODEL NUMBER INDICATED ON DRAWINGS. UNITS SHALL BE PACKAGED DIRECT EXPANSION SINGLE-ZONE DRAW THROUGH TYPE COMPLETE WITH AIR-TIGHT AND WEATHER-TIGHT INSULATED AND GASKETED CASING, FANS, MOTORS, DRAIN PAN, COOLING COIL, HOT GAS REHEAT COIL, ENERGY RECOVERY (MAU-1 ONLY), MODULATING NATURAL GAS FURNACE, COMPRESSORS, AIR COOLED CONDENSER, FILTER, AND ECONOMIZER. EACH UNIT SHALL HAVE PHYSICAL DIMENSIONS SUITABLE FOR ALLOTTED SPACE AND ALLOW COMPLETE REMOVAL OF FILTERS, COILS, DRAIN PANS AND ACCESSORIES WITHOUT HAVING TO DISMANTLE THE UNIT, ADJACENT EQUIPMENT OR BUILDING COMPONENTS. UNITS SHALL BE PROVIDED WITH UNIT MOUNTED AND WIRED ECM MOTOR PROPORTIONAL SPEED CONTROLLERS FOR VARIABLE AIR VOLUME APPLICATIONS.

UNIT CASING: PANEL CONSTRUCTION SHALL BE DOUBLE-WALL CONSTRUCTION FOR ALL PANELS. ALL FLOOR PANELS SHALL HAVE A SOLID GALVANIZED STEEL INNER LINER ON THE AIR STREAM SIDE OF THE UNIT TO PROTECT INSULATION DURING SERVICE AND MAINTENANCE. INSULATION SHALL BE A MINIMUM OF 1" THICK WITH AN R-VALUE OF 7.0, AND SHALL BE 2 PART INJECTED FOAM. PANEL DESIGN SHALL INCLUDE NO EXPOSED INSULATION EDGES. UNIT CABINET SHALL BE DESIGNED TO OPERATE AT TOTAL STATIC PRESSURES UP TO 5.0 INCHES W.G. EXTERIOR SURFACES SHALL BE CONSTRUCTED OF PRE-PAINTED GALVANIZED STEEL FOR AESTHETICS AND LONG TERM DURABILITY. PAINT FINISH TO INCLUDE A BASE PRIMER WITH A HIGH QUALITY, POLYESTER RESIN TOPCOAT OF A NEUTRAL BEIGE COLOR. FINISHED PANEL SURFACES TO WITHSTAND A MINIMUM 750-HOUR SALT SPRAY TEST IN ACCORDANCE WITH ASTM B117 STANDARD FOR SALT SPRAY RESISTANCE. SERVICE DOORS SHALL BE PROVIDED ON THE FAN SECTION, FILTER SECTION, CONTROL PANEL SECTION, AND HEATING VESTIBULE IN ORDER TO PROVIDE USER ACCESS TO UNIT COMPONENTS. ALL SERVICE ACCESS DOORS SHALL BE MOUNTED ON MULTIPLE, STAINLESS STEEL HINGES AND SHALL BE SECURED BY A LATCH SYSTEM. REMOVABLE SERVICE PANELS SECURED BY MULTIPLE MECHANICAL FASTENERS ARE NOT ACCEPTABLE. THE UNIT BASE SHALL OVERHANG THE ROOF CURB FOR POSITIVE WATER RUNOFF AND SHALL SEAT ON THE ROOF CURB GASKET TO PROVIDE A POSITIVE, WEATHERTIGHT SEAL. LIFTING BRACKETS SHALL BE PROVIDED ON THE UNIT BASE TO ACCEPT CABLE OR CHAIN HOOKS FOR RIGGING THE EQUIPMENT.

ECONOMIZER SECTION: UNIT SHALL BE PROVIDED WITH AN OUTDOOR AIR ECONOMIZER SECTION. THE ECONOMIZER SECTION SHALL INCLUDE OUTDOOR, RETURN, AND EXHAUST AIR DAMPERS. THE ECONOMIZER OPERATION SHALL BE FULLY INTEGRAL TO THE MECHANICAL COOLING AND ALLOW UP TO 100% OF MECHANICAL COOLING IF NEEDED TO MAINTAIN THE COOLING DISCHARGE AIR TEMPERATURE. THE OUTDOOR AIR HOOD SHALL BE FACTORY INSTALLED AND CONSTRUCTED FROM GALVANIZED STEEL FINISHED WITH THE SAME DURABLE PAINT FINISH AS THE MAIN UNIT. THE HOOD SHALL INCLUDE MOISTURE ELIMINATOR FILTERS TO DRAIN WATER AWAY FROM THE ENTERING AIR STREAM. THE OUTSIDE AND RETURN AIR DAMPERS SHALL BE SIZED TO HANDLE 100% OF THE SUPPLY AIR VOLUME. THE DAMPERS SHALL BE PARALLEL BLADE DESIGN. DAMPER BLADES SHALL BE GASKETED WITH SIDE SEALS TO PROVIDE AN AIR LEAKAGE RATE OF 1.5 CFM / SQUARE FOOT OF DAMPER AREA AT 1" DIFFERENTIAL PRESSURE IN ACCORDING WITH TESTING DEFINED IN AMCA 500. A BAROMETRIC EXHAUST DAMPER SHALL BE PROVIDED TO EXHAUST AIR OUT OF THE BACK OF THE UNIT. A BIRD SCREEN SHALL BE PROVIDED TO PREVENT INFILTRATION OF RAIN AND FOREIGN MATERIALS. EXHAUST DAMPER BLADES SHALL BE LINED WITH VINYL GASKETING ON CONTACT EDGES. CONTROL OF THE DAMPERS SHALL BE BY A FACTORY INSTALLED DIRECT COUPLED ACTUATOR. DAMPER ACTUATOR SHALL BE OF THE MODULATING, SPRING RETURN TYPE. A COMPARATIVE ENTHALPY CONTROL SHALL BE PROVIDED TO SENSE AND COMPARE ENTHALPY IN BOTH THE OUTDOOR AND RETURN AIR STREAMS TO DETERMINE IF OUTDOOR AIR IS SUITABLE FOR "FREE" COOLING. IF OUTDOOR AIR IS SUITABLE FOR "FREE" COOLING, THE OUTDOOR AIR DAMPERS SHALL MODULATE IN RESPONSE TO THE UNITS TEMPERATURE CONTROL SYSTEM. PROVIDE A FIELD INSTALLED DUCT/SPACE MOUNTED CO2 SENSOR. OUTSIDE AIR DAMPER POSITION WILL MODULATE BETWEEN THE DEMAND CONTROL VENTILATION LIMIT (MINIMUM POSITION SETPOINT) AND THE VENTILATION LIMIT (MAXIMUM NON-ECONOMIZER POSITION SETPOINT) TO SATISFY THE SPACE REQUIREMENTS. DAMPER POSITION WILL BE CONTROLLED TO THE GREATER OF THE TWO COMMAND SIGNALS, EITHER MINIMUM OUTSIDE AIR FLOW OR SPACE IAQ (CO2).

ENERGY RECOVERY (MAU-1 ONLY): THE ROOFTOP UNIT SHALL BE PROVIDED WITH AN AHRI CERTIFIED ROTARY WHEEL AIR-TO-AIR HEAT EXCHANGER IN A CASSETTE FRAME COMPLETE WITH SEALS, DRIVE MOTOR AND DRIVE BELT. THE ENERGY RECOVERY WHEEL SHALL BE AN INTEGRAL PART OF THE ROOFTOP UNIT WITH UNITARY CONSTRUCTION AND DOES NOT REQUIRE FIELD ASSEMBLY. BOLT-ON ENERGY RECOVERY UNITS THAT REQUIRE FIELD ASSEMBLY AND SECTION TO SECTION GASKETING AND SEALING ARE NOT ACCEPTABLE. THE WHEEL CAPACITY, AIR PRESSURE DROP AND EFFECTIVENESS SHALL BE AHRI CERTIFIED PER AHRI STANDARD 1060. THERMAL PERFORMANCE SHALL BE CERTIFIED BY THE MANUFACTURER IN ACCORDANCE WITH ASHRAE STANDARD 84, METHOD OF TESTING AIR-TO-AIR HEAT EXCHANGERS AND AHRI STANDARD 1060, RATING AIR-TO-AIR HEAT EXCHANGERS FOR ENERGY RECOVERY VENTILATION EQUIPMENT. THE ROOFTOP UNIT SHALL BE DESIGNED WITH A TRACK SO THE ENTIRE ENERGY RECOVERY WHEEL CASSETTE CAN SLIDE OUT FROM THE ROOFTOP UNIT TO FACILITATE CLEANING. THE UNIT SHALL HAVE 2" MERV 7 FILTERS FOR THE OUTDOOR AIR BEFORE THE WHEEL TO HELP KEEP THE WHEEL CLEAN AND REDUCE MAINTENANCE. FILTER ACCESS SHALL BE BY A HINGED ACCESS DOOR WITH ¼ TURN LATCHES. THE MATRIX DESIGN SHALL HAVE CHANNELS TO REDUCE CROSS CONTAMINATION BETWEEN THE OUTDOOR AIR AND THE EXHAUST AIR. THE LAYERS SHALL BE EFFECTIVELY CAPTURED IN ALUMINUM AND STAINLESS STEEL SEGMENT FRAMES THAT PROVIDE A RIGID AND SELF-SUPPORTING MATRIX. ALL DIAMETER AND PERIMETER SEALS SHALL BE PROVIDED AS PART OF THE CASSETTE ASSEMBLY AND SHALL BE FACTORY SET. DRIVE BELT(S) OF STRETCH URETHANE SHALL BE PROVIDED FOR WHEEL RIM DRIVE WITHOUT THE NEED FOR EXTERNAL TENSIONERS OR ADJUSTMENT. THE TOTAL ENERGY RECOVERY WHEEL SHALL BE COATED WITH SILICA GEL DESICCANT PERMANENTLY BONDED WITHOUT THE USE OF BINDERS OR ADHESIVES, WHICH MAY DEGRADE DESICCANT PERFORMANCE. THE SUBSTRATE SHALL BE LIGHTWEIGHT POLYMER AND SHALL NOT DEGRADE NOR REQUIRE ADDITIONAL COATINGS FOR APPLICATION IN MARINE OR COASTAL ENVIRONMENTS. COATED SEGMENTS SHALL BE WASHABLE WITH DETERGENT OR ALKALINE COIL CLEANER AND WATER. DESICCANT SHALL NOT DISSOLVE NOR DELIQUESCE IN THE PRESENCE OF WATER OR HIGH HUMIDITY. WHEELS SHALL BE PROVIDED WITH REMOVABLE ENERGY TRANSFER MATRIX. WHEEL FRAME CONSTRUCTION SHALL BE A WELDED HUB, SPOKE AND RIM ASSEMBLY OF STAINLESS, PLATED AND/OR COATED STEEL AND SHALL BE SELF-SUPPORTING WITHOUT MATRIX SEGMENTS IN PLACE. SEGMENTS SHALL BE REMOVABLE WITHOUT THE USE OF TOOLS TO FACILITATE MAINTENANCE AND CLEANING. WHEEL BEARINGS SHALL BE SELECTED TO PROVIDE AN L-10 LIFE IN EXCESS OF 400,000 HOURS. RIM SHALL BE CONTINUOUS ROLLED STAINLESS STEEL. WHEELS SHALL BE CONNECTED TO THE SHAFT BY MEANS OF TAPER LOCK HUBS. THE EXHAUST AIR FAN SHALL BE A DIRECT DRIVE SWSI PLENUM FAN. THE EXHAUST FAN SHALL BE SIZED FOR THE AIRFLOW REQUIREMENTS PER THE CONSTRUCTION SCHEDULE. THE UNIT CONTROLLER SHALL CONTROL THE EXHAUST FAN TO MAINTAIN BUILDING PRESSURE. THE EXHAUST FAN MOTOR SHALL BE AN ECM MOTOR WITH PROPORTIONAL SPEED CONTROLLER. THE ROOFTOP UNIT SHALL HAVE SINGLE POINT ELECTRICAL POWER CONNECTION AND SHALL BE ETL LISTED. THE CONTROL OF THE ENERGY RECOVERY WHEEL SHALL BE AN INTEGRAL PART OF THE ROOFTOP UNITS DDC CONTROLLER. THE DDC CONTROLLER SHALL HAVE VISIBILITY OF THE OUTDOOR AIR TEMPERATURE, LEAVING WHEEL TEMPERATURE, RETURN AIR TEMPERATURE, AND EXHAUST AIR TEMPERATURE. THESE TEMPERATURES SHALL BE DISPLAYED AT THE ROOFTOP UNITS DDC CONTROLLER LCD DISPLAY. ALL OF THESE TEMPERATURES SHALL BE MADE AVAILABLE THROUGH THE BACNET INTERFACE. THE ROOFTOP UNIT WITH THE ENERGY RECOVERY WHEEL SHALL INCORPORATE THE ECONOMIZER OPERATION. THE ENERGY RECOVERY WHEEL SHALL HAVE A BYPASS DAMPER. WHEN THE UNIT IS IN THE ECONOMIZER MODE OF OPERATION THE ENERGY RECOVERY WHEEL SHALL STOP AND THE BYPASS DAMPERS SHALL BE OPENED. THE OUTDOOR AIR SHALL BE DRAWN THROUGH THE BYPASS DAMPERS TO REDUCE THE PRESSURE DROP OF THE OUTDOOR AIRSTREAM. THE ROOFTOP UNIT DDC CONTROLLER SHALL PROVIDE FROST CONTROL FOR THE ENERGY RECOVERY WHEEL. WHEN A FROST CONDITION IS ENCOUNTERED THE UNIT CONTROLLER SHALL STOP THE WHEEL. WHEN IN THE FROST CONTROL MODE THE WHEEL SHALL BE JOGGED PERIODICALLY AND NOT BE ALLOWED TO STAY IN THE STATIONARY POSITION.

EXHAUST FAN: (MAU-1 ONLY): EXHAUST FAN SHALL BE A SINGLE WIDTH, SINGLE INLET (SWSI) AIRFOIL CENTRIFUGAL FAN. THE FAN WHEEL SHALL BE CLASS II CONSTRUCTION WITH ALUMINUM FAN BLADES THAT ARE CONTINUOUSLY WELDED TO THE HUB PLATE AND END RIM. THE EXHAUST FAN SHALL BE A DIRECT DRIVE FAN MOUNTED TO THE MOTOR SHAFT. BELTS AND SHEAVES ARE NOT ACCEPTABLE DUE TO THE ADDITIONAL MAINTENANCE. THE FAN MOTOR SHALL BE A TOTALLY ENCLOSED EC MOTOR THAT IS SPEED CONTROLLED BY THE ROOFTOP UNIT CONTROLLER. THE MOTOR SHALL INCLUDE THERMAL OVERLOAD PROTECTION AND PROTECT THE MOTOR IN THE CASE OF EXCESSIVE MOTOR TEMPERATURES. THE MOTOR SHALL HAVE

PHASE FAILURE PROTECTION AND PREVENT THE MOTOR FROM OPERATION IN THE EVENT OF A LOSS OF PHASE. MOTORS SHALL BE PREMIUM EFFICIENCY.

FILTERS: UNIT SHALL BE PROVIDED WITH A DRAW-THROUGH FILTER SECTION. THE FILTER RACK SHALL BE DESIGNED TO ACCEPT A 2" PREFILTER AND A 4" FINAL FILTER. THE UNIT DESIGN SHALL HAVE A HINGED ACCESS DOOR FOR THE FILTER SECTION. THE MANUFACTURER SHALL SHIP THE ROOFTOP UNIT WITH 2" MERV 8 CONSTRUCTION FILTERS. THE CONTRACTOR SHALL FURNISH AND INSTALL, AT BUILDING OCCUPANCY, THE FINAL SET OF FILTERS PER THE CONTRACT DOCUMENTS.

COOLING COIL: THE INDOOR COIL SECTION SHALL BE INSTALLED IN A DRAW THROUGH CONFIGURATION, UPSTREAM OF THE SUPPLY AIR FAN. THE COIL SECTION SHALL BE COMPLETE WITH A FACTORY PIPED COOLING COIL AND AN ASHRAE 62.1 COMPLIANT DOUBLE SLOPED DRAIN PAN. THE DIRECT EXPANSION (DX) COOLING COILS SHALL BE FABRICATED OF SEAMLESS HIGH EFFICIENCY COPPER TUBING THAT IS MECHANICALLY EXPANDED INTO HIGH EFFICIENCY ALUMINUM PLATE FINS. COILS SHALL BE A MULTI-ROW, STAGGERED TUBE DESIGN WITH A MINIMUM OF 3 ROWS. ALL COOLING COILS SHALL HAVE AN INTERLACED COIL CIRCUITING THAT KEEPS THE FULL COIL FACE ACTIVE AT ALL LOAD CONDITIONS. ALL COILS SHALL BE FACTORY LEAK TESTED WITH HIGH PRESSURE AIR UNDER WATER. THE COOLING COIL SHALL HAVE AN ELECTRONIC CONTROLLED EXPANSION VALVE. THE UNIT CONTROLLER SHALL CONTROL THE EXPANSION VALVE TO MAINTAIN LIQUID SUBCOOLING AND THE SUPERHEAT OF THE REFRIGERANT SYSTEM. THE REFRIGERANT SUCTION LINES SHALL BE FULLY INSULATED FROM THE EXPANSION VALVE TO THE COMPRESSORS. THE DRAIN PAN SHALL BE STAINLESS STEEL AND POSITIVELY SLOPED. THE SLOPE OF THE DRAIN PAN SHALL BE IN TWO DIRECTIONS AND COMPLY WITH ASHRAE STANDARD 62.1. THE DRAIN PAN SHALL HAVE A MINIMUM SLOPE OF 1/8" PER FOOT TO PROVIDE POSITIVE DRAINING. THE DRAIN PAN SHALL EXTEND BEYOND THE LEAVING SIDE OF THE COIL. THE DRAIN PAN SHALL HAVE A THREADED DRAIN CONNECTION EXTENDING THROUGH THE UNIT BASE.

HOT GAS REHEAT COIL: UNIT SHALL BE EQUIPPED WITH A FULLY MODULATING HOT GAS REHEAT COIL WITH HOT GAS COMING FROM THE UNIT CONDENSER. HOT GAS REHEAT COIL SHALL BE A MICRO CHANNEL DESIGN. THE ALUMINUM TUBE SHALL BE A MICRO CHANNEL DESIGN WITH HIGH EFFICIENCY ALUMINUM FINS. FINS SHALL BE BRAZED TO THE TUBING FOR A DIRECT BOND. THE CAPACITY OF THE REHEAT COIL SHALL ALLOW FOR A 20°F TEMPERATURE RISE AT ALL OPERATING CONDITIONS. THE MODULATING HOT GAS REHEAT SYSTEMS SHALL ALLOW FOR INDEPENDENT CONTROL OF THE COOLING COIL LEAVING AIR TEMPERATURE AND THE REHEAT COIL LEAVING AIR TEMPERATURE. THE COOLING COIL AND REHEAT COIL LEAVING AIR TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE THROUGH THE UNIT CONTROLLER. DURING THE DEHUMIDIFICATION CYCLE THE UNIT SHALL BE CAPABLE OF 100% OF THE COOLING CAPACITY. THE HOT GAS REHEAT COIL SHALL PROVIDE DISCHARGE TEMPERATURE CONTROL WITHIN +/- 2°F. EACH COIL SHALL BE FACTORY LEAK TESTED WITH HIGH-PRESSURE AIR UNDER WATER.

SUPPLY FAN: SUPPLY FAN SHALL BE A SINGLE WIDTH, SINGLE INLET (SWSI) AIRFOIL CENTRIFUGAL FAN. THE FAN WHEEL SHALL BE CLASS II CONSTRUCTION WITH FAN BLADES THAT ARE CONTINUOUSLY WELDED TO THE HUB PLATE AND END RIM. THE SUPPLY FAN SHALL BE A DIRECT DRIVE FAN MOUNTED TO THE MOTOR SHAFT. BELTS AND SHEAVES ARE NOT ACCEPTABLE. ALL FAN ASSEMBLIES SHALL BE STATICALLY AND DYNAMICALLY BALANCED AT THE FACTORY, INCLUDING A FINAL TRIM BALANCE, PRIOR TO SHIPMENT. SUPPLY FAN AND MOTOR ASSEMBLY COMBINATIONS LARGER THAN 8 HP OR 22" DIAMETER SHALL BE INTERNALLY ISOLATED ON 1" DEFLECTION, SPRING ISOLATORS AND INCLUDE REMOVABLE SHIPPING TIE DOWNS. THE FAN MOTOR SHALL BE A TOTALLY ENCLOSED EC MOTOR THAT IS SPEED CONTROLLED BY THE ROOFTOP UNIT CONTROLLER. THE MOTOR SHALL INCLUDE THERMAL OVERLOAD PROTECTION AND PROTECT THE MOTOR IN THE CASE OF EXCESSIVE MOTOR TEMPERATURES. THE MOTOR SHALL HAVE PHASE FAILURE PROTECTION AND PREVENT THE MOTOR FROM OPERATION IN THE EVENT OF A LOSS OF PHASE. MOTORS SHALL BE PREMIUM EFFICIENCY. THE SUPPLY FAN SHALL BE CAPABLE OF AIRFLOW MODULATION FROM 30% TO 100% (RTU-1 ONLY) OF THE SCHEDULED DESIGNED AIRFLOW. THE FAN SHALL NOT OPERATE IN A STATE OF SURGE AT ANY POINT WITHIN THE MODULATION RANGE.

VARIABLE AIR VOLUME CONTROL (RTU-1 ONLY): THE UNIT CONTROLLER SHALL PROPORTIONALLY CONTROL THE ELECTRONICALLY COMMUTATED MOTORS (ECM) ON THE SUPPLY AND EXHAUST FANS. THE SUPPLY FAN SHALL BE CONTROLLED TO MAINTAIN AN ADJUSTABLE DUCT PRESSURE SETPOINT. A DUCT STATIC PRESSURE SENSOR SHALL BE FACTORY MOUNTED IN THE CONTROL PANEL. THE FIELD SHALL FURNISH AND INSTALL THE PNEUMATIC TUBING FOR THE DUCT STATIC PRESSURE SENSOR AND THE BUILDING PRESSURE SENSOR. THE FIELD SHALL FURNISH AND INSTALL THE OUTDOOR AIR PRESSURE SENSOR. THE UNIT CONTROLLER SHALL PROPORTIONAL CONTROL THE ECM MOTORS ON THE SUPPLY FAN BASED ON SPACE TEMPERATURE. THE UNIT CONTROLLER SHALL INCREASE/DECREASE THE SPEED OF THE SUPPLY FAN IN ORDER TO MAINTAIN THE SPACE TEMPERATURE WITHIN ITS SETPOINT AND DEADBAND. THE UNIT CONTROLLER SHALL PROVIDE DISCHARGE AIR TEMPERATURE CONTROL WITH THE COMPRESSOR MODULATION.

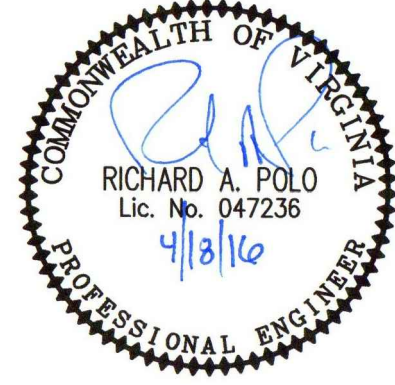
NATURAL GAS HEATING: THE ROOFTOP UNIT SHALL INCLUDE A NATURAL GAS HEATING SECTION. THE GAS FURNACE DESIGN SHALL BE ONE NATURAL GAS FIRED HEATING MODULE FACTORY INSTALLED DOWNSTREAM OF THE SUPPLY AIR FAN IN THE HEAT SECTION. THE HEATING MODULE SHALL BE A TUBULAR DESIGN WITH IN-SHOT GAS BURNERS. EACH MODULE SHALL HAVE TWO STAGES OF HEATING CONTROL. THE MODULE SHALL BE COMPLETE WITH FURNACE CONTROLLER AND CONTROL VALVE CAPABLE OF 5:1 MODULATING OPERATION. THE HEAT EXCHANGER TUBES SHALL BE CONSTRUCTED OF STAINLESS STEEL. THE MODULE SHALL HAVE AN INDUCED DRAFT FAN THAT WILL MAINTAIN A NEGATIVE PRESSURE IN THE HEAT EXCHANGER TUBES FOR THE REMOVAL OF THE FLUE GASES. EACH BURNER MODULE SHALL HAVE TWO FLAME ROLL-OUT SAFETY PROTECTION SWITCHES AND A HIGH TEMPERATURE LIMIT SWITCH THAT WILL SHUT THE GAS VALVE OFF UPON DETECTION OF IMPROPER BURNER MANIFOLD OPERATION. THE INDUCED DRAFT FAN SHALL HAVE AN AIRFLOW SAFETY SWITCH THAT WILL PREVENT THE HEATING MODULE FROM TURNING ON IN THE EVENT OF NO AIRFLOW IN THE FLUE CHAMBER. THE FACTORY-INSTALLED DDC UNIT CONTROL SYSTEM SHALL CONTROL THE GAS HEAT MODULE. FIELD INSTALLED HEATING MODULES SHALL REQUIRE A FIELD ETL CERTIFICATION. THE MANUFACTURER'S ROOFTOP UNIT ETL CERTIFICATION SHALL COVER THE COMPLETE UNIT INCLUDING THE GAS HEATING MODULES.

CONDENSING SECTION: OUTDOOR COILS SHALL BE CAST ALUMINUM, MICRO-CHANNEL COILS OR SEAMLESS COPPER TUBES. PLATE FINS SHALL BE PROTECTED AND BRAZED BETWEEN ADJOINING FLAT TUBES SUCH THAT THEY SHALL NOT EXTEND OUTSIDE THE TUBES. A SUB-COOLING COIL SHALL BE AN INTEGRAL PART OF THE MAIN OUTDOOR AIR COIL. EACH OUTDOOR AIR COIL SHALL BE FACTORY LEAK TESTED WITH HIGH-PRESSURE AIR UNDER WATER. FAN MOTORS SHALL BE AN ECM TYPE MOTOR FOR PROPORTIONAL CONTROL. THE UNIT CONTROLLER SHALL PROPORTIONALLY CONTROL THE SPEED OF THE CONDENSER FAN MOTORS TO MAINTAIN THE HEAD PRESSURE OF THE REFRIGERANT CIRCUIT FROM AMBIENT CONDITION OF 0-120°F. MECHANICAL COOLING SHALL BE PROVIDED TO 25° F. THE MOTOR SHALL INCLUDE THERMAL OVERLOAD PROTECTION AND PROTECT THE MOTOR IN THE CASE OF EXCESSIVE MOTOR TEMPERATURES. THE MOTOR SHALL HAVE PHASE FAILURE PROTECTION AND PREVENT THE MOTOR FROM OPERATION IN THE EVENT OF A LOSS OF PHASE. THE CONDENSER FAN SHALL BE LOW NOISE BLADE DESIGN. FAN BLADE DESIGN SHALL BE A DYNAMIC PROFILE FOR LOW TIP SPEED. FAN BLADE SHALL BE OF A COMPOSITE MATERIAL. THE UNIT SHALL HAVE SCROLL COMPRESSORS. ONE OF THE COMPRESSORS SHALL BE AN INVERTER COMPRESSOR PROVIDING PROPORTIONAL CONTROL. THE UNIT CONTROLLER SHALL CONTROL THE SPEED OF THE COMPRESSOR TO MAINTAIN THE DISCHARGE AIR TEMPERATURE. THE INVERTER COMPRESSOR SHALL HAVE A SEPARATE OIL PUMP AND AN OIL SEPARATOR FOR EACH COMPRESSOR THAT ROUTES OIL BACK TO THE COMPRESSOR INSTEAD OF THROUGH THE DISCHARGE LINE. PRESSURE TRANSDUCERS SHALL BE PROVIDED FOR THE SUCTION PRESSURE AND HEAD PRESSURE. TEMPERATURE SENSOR SHALL BE PROVIDED FOR THE SUCTION TEMPERATURE AND THE REFRIGERANT DISCHARGE TEMPERATURE OF THE COMPRESSORS. ALL OF THE ABOVE DEVICES SHALL BE AN INPUT TO THE UNIT CONTROLLER AND THE VALUES BE DISPLAYED AT THE UNIT CONTROLLER. REFRIGERANT CIRCUIT SHALL HAVE A BYPASS VALVE BETWEEN THE SUCTION AND DISCHARGE REFRIGERANT LINES FOR LOW HEAD PRESSURE COMPRESSOR STARTING AND INCREASED COMPRESSOR RELIABILITY. WHEN THERE IS A CALL FOR MECHANICAL COOLING THE BYPASS VALVE SHALL OPEN TO EQUALIZING THE SUCTION AND DISCHARGE PRESSURES. WHEN PRESSURES ARE EQUALIZED THE BYPASS VALVE SHALL CLOSE AND THE COMPRESSOR SHALL BE ALLOWED TO START. EACH CIRCUIT SHALL BE DEHYDRATED AND FACTORY CHARGED WITH R-410A REFRIGERANT AND OIL.

ELECTRICAL: UNIT WIRING SHALL COMPLY WITH NEC REQUIREMENTS AND WITH ALL APPLICABLE UL STANDARDS. ALL ELECTRICAL COMPONENTS SHALL BE UL RECOGNIZED WHERE APPLICABLE. ALL WIRING AND ELECTRICAL COMPONENTS PROVIDED WITH THE UNIT SHALL BE NUMBER AND COLOR-CODED AND LABELED ACCORDING TO THE ELECTRICAL DIAGRAM PROVIDED FOR EASY IDENTIFICATION. THE UNIT SHALL BE PROVIDED WITH A FACTORY WIRED WEATHERPROOF CONTROL PANEL. UNIT SHALL HAVE A SINGLE POINT POWER TERMINAL BLOCK FOR MAIN POWER CONNECTION. A TERMINAL BOARD SHALL BE PROVIDED FOR LOW VOLTAGE CONTROL WIRING. BRANCH SHORT CIRCUIT PROTECTION, 115-VOLT CONTROL CIRCUIT TRANSFORMER AND FUSE, SYSTEM SWITCHES, AND A HIGH TEMPERATURE SENSOR SHALL ALSO BE PROVIDED WITH THE UNIT. EACH COMPRESSOR AND CONDENSER FAN MOTOR SHALL BE FURNISHED WITH CONTACTORS AND INHERENT THERMAL OVERLOAD PROTECTION. SUPPLY FAN MOTORS SHALL HAVE CONTACTORS AND EXTERNAL OVERLOAD PROTECTION. KNOCKOUTS SHALL BE PROVIDED IN THE BOTTOM OF THE MAIN CONTROL PANELS FOR FIELD WIRING ENTRANCE. A SINGLE NON-FUSED DISCONNECT SWITCH SHALL BE PROVIDED FOR DISCONNECTING ELECTRICAL POWER AT THE UNIT. DISCONNECT SWITCHES SHALL BE MOUNTED INTERNALLY TO THE CONTROL PANEL AND OPERATED BY AN EXTERNALLY MOUNTED HANDLE.

CONTROLS: PROVIDE A COMPLETE INTEGRATED MICROPROCESSOR BASED DIRECT DIGITAL CONTROL (DDC) SYSTEM TO CONTROL ALL UNIT FUNCTIONS INCLUDING TEMPERATURE CONTROL, SCHEDULING, MONITORING, UNIT SAFETY PROTECTION, INCLUDING COMPRESSOR MINIMUM RUN AND MINIMUM OFF TIMES, AND DIAGNOSTICS. THIS SYSTEM SHALL CONSIST OF ALL REQUIRED TEMPERATURE SENSORS, PRESSURE SENSORS, CONTROLLER AND KEYPAD/DISPLAY OPERATOR INTERFACE. ALL MCBS AND SENSORS SHALL BE FACTORY MOUNTED, WIRED AND TESTED. THE STAND-ALONE DDC CONTROLLERS SHALL NOT BE DEPENDENT ON COMMUNICATIONS WITH ANY ON-SITE OR REMOTE PC OR MASTER CONTROL PANEL FOR PROPER UNIT OPERATION. THE MICROPROCESSOR SHALL MAINTAIN EXISTING SET POINTS AND OPERATE STAND ALONE IF THE UNIT LOSES EITHER DIRECT CONNECT OR NETWORK COMMUNICATIONS. THE MICROPROCESSOR MEMORY SHALL BE PROTECTED FROM VOLTAGE FLUCTUATIONS AS WELL AS ANY EXTENDED POWER FAILURES. ALL FACTORY AND USER SET SCHEDULES AND CONTROL POINTS SHALL BE MAINTAINED IN NONVOLATILE MEMORY. NO SETTINGS SHALL BE LOST, EVEN DURING EXTENDED POWER SHUTDOWNS.

ROOF CURB: A PREFABRICATED HEAVY GAUGE GALVANIZED STEEL, MOUNTING CURB SHALL BE PROVIDED FOR FIELD ASSEMBLY ON THE ROOF DECKING PRIOR TO UNIT SHIPMENT. THE ROOF CURB SHALL BE A FULL PERIMETER TYPE WITH COMPLETE PERIMETER SUPPORT OF THE AIR HANDLING SECTION AND CONDENSING SECTION. THE CURB SHALL BE A MINIMUM OF 14" HIGH AND INCLUDE A NOMINAL 2" X 4" WOOD NAILING STRIP. GASKET SHALL BE PROVIDED FOR FIELD MOUNTING BETWEEN THE UNIT BASE AND ROOF CURB.



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# MECHANICAL SPECIFICATIONS

WARRANTY: MOTOR-COMPRESSOR SHALL BE GUARANTEED FOR 5 YEARS.

## 28. VRF SYSTEM:

THE VRF SYSTEM BASIS OF DESIGN SHALL BE SAMSUNG ELECTRONICS DVM S (VARIABLE REFRIGERANT FLOW) SYSTEM. THE DVM S SYSTEMS SHALL BE HR (HEAT RECOVERY) SPLIT SYSTEM CAPABLE OF SIMULTANEOUS HEATING/COOLING AT ALL INDOOR UNITS. ALL SYSTEMS SHALL BE CAPABLE OF PROVIDING THE SCHEDULED REQUIRED CAPACITY AT THE LOCATION OF THE INDOOR UNIT REGARDLESS OF PIPE LENGTH. NOMINAL OR CATALOG CAPACITIES WILL NOT BE ACCEPTED. THE HEAT RECOVERY SYSTEM SHALL CONSIST OF AIR SOURCE SAMSUNG OUTDOOR CONDENSING UNIT, MULTIPLE MULTI-PORT HEAT RECOVERY UNITS, AND MULTIPLE SAMSUNG INDOOR FAN COIL UNITS, ALL OF WHICH IS SCHEDULED ON M0.2. SYSTEM SHALL ALSO INCLUDE SAMSUNG CONTROL NETWORK, WALL MOUNTED CONTROLLERS, REFRIGERANT PIPING AND ALL ACCESORIES OR OPTIONS AS REQUIRED FOR A COMPLETE OPERATIONAL SYSTEM.

THE ENTIRE VRF SYSTEM SHALL INCLUDE 1 YEAR PARTS AND LABOR WARRANTY AT NO ADDITIONAL COST TO THE OWNER. VRF SYSTEM COMPRESSORS, EVAPORATOR COILS, CONDENSING COILS AND SYSTEM CONTROLS SHALL INCLUDE ADDITIONAL 4 YEAR WARRANTY FOR A TOTAL OF 5 YEAR WARRANTY. VRF SYSTEM WARRANTY SHALL COMMENCE ON THE DATE OF OWNER ACCEPTANCE OF COMPLETE INSTALLATION.

HEAT RECOVERY OUTDOOR UNIT (HP-1A & HP-1B):

THE OUTDOOR UNIT SHALL BE EQUAL TO SAMSUNG DVM S HEAT RECOVERY MODEL AM336JVAFR/AA AS SCHEDULED ON M0.2. THE UNIT ELECTRICAL POWER SHALL BE 208 VOLTS, 3 PHASE, 60 HERTZ AS SPECIFIED. THE HEAT RECOVERY SYSTEM SHALL HAVE THE ABILITY OF SIMULTANEOUS HEATING AND COOLING OPERATION MODES ON ALL INDOOR UNITS. UNITS SHALL HAVE WEATHER TIGHT CONSTRUCTION FOR OUTDOOR INSTALLATION. THE HEAT RECOVERY OUTDOOR UNIT SHALL BE EQUIPPED WITH MULTIPLE CIRCUIT BOARDS TO INTERFACE WITH CONTROL SYSTEM. THESE BOARDS SHALL PERFORM ALL FUNCTIONS NECESSARY FOR OPERATION. THE OUTDOOR UNIT SHALL BE COMPLETELY FACTORY ASSEMBLED, INTERNALLY PIPED AND WIRED. EACH UNIT SHALL BE RUN TESTED AT THE FACTORY. INDIVIDUAL OUTDOOR UNIT MODULES SHALL HAVE A SOUND RATING NO HIGHER THAN 64 DB(A). ALL REFRIGERANT LINES FROM THE OUTDOOR UNIT TO THE HEAT RECOVERY BOXES SHALL BE INSULATED. ALL REFRIGERANT LINES FROM THE HEAT RECOVERY UNITS TO THE INDOOR UNITS SHALL BE INSULATED. THE OUTDOOR UNIT SHALL HAVE AN ACCUMULATOR WITH HEATER AND CONTROLS. THE OUTDOOR UNIT SHALL HAVE A HIGH PRESSURE SAFETY SWITCH, HIGH VOLTAGE FUSES, OVER-CURRENT PROTECTION, PHASE DETECTION PROTECTION, THERMAL FAN PROTECTION, LOW PRESSURE PROTECTION, COMPRESSOR OVERCURRENT PROTECTION, FAN MOTOR VOLTAGE PROTECTION, CURRENT TRANSFORMER(S), CRANK CASE HEATERS, AND INTELLIGENT LOGIC TO ENSURE PROPER OPERATION WITHIN UNIT DESIGN LIMITATIONS AND OPERATIONAL PARAMETERS. THE OUTDOOR UNIT SHALL BE CAPABLE OF OPERATING IN COOLING MODE FROM 23°F TO 120°F. THE OUTDOOR UNIT SHALL BE CAPABLE OF OPERATING IN HEATING MODE FROM 75°F TO -13°F AMBIENT TEMPERATURES WITHOUT ADDITIONAL LOW AMBIENT CONTROLS, ADDITIONAL MODULES, OR LOW AMBIENT ACCESSORIES. THE OUTDOOR UNIT SHALL HAVE A HIGH EFFICIENCY OIL SEPARATOR PLUS ADDITIONAL LOGIC CONTROLS TO ENSURE ADEQUATE OIL VOLUME IN THE COMPRESSOR IS MAINTAINED. THE OUTDOOR UNITS SHALL PROVIDE CONTINUOUS HEATING DURING OIL RETURN AND THE DEFROST CYCLE THROUGH THE USE OF ROTATIONAL DEFROST. (MULTIPLE MODULE SYSTEMS).

THE UNIT CASING(S) SHALL BE FABRICATED OF GALVANIZED STEEL, BONDERIZED AND FINISHED WITH A POWDER COATED BAKED ENAMEL. THE OUTDOOR UNIT CONDENSER FANS SHALL BE FURNISHED WITH DIRECT DRIVE, VARIABLE SPEED MOTOR(S). ALL FAN MOTORS SHALL HAVE INHERENT MOTOR PROTECTION, HAVE PERMANENTLY LUBRICATED BEARINGS. ALL FAN MOTORS SHALL BE MOUNTED FOR QUIET OPERATION. ALL FANS SHALL BE PROVIDED WITH A RAISED GUARD TO PREVENT CONTACT WITH MOVING PARTS. THE OUTDOOR UNIT SHALL HAVE VERTICAL DISCHARGE AIRFLOW. R410A REFRIGERANT SHALL BE REQUIRED FOR VRF OUTDOOR UNIT SYSTEMS. MANUFACTURER SHALL ONLY PROVIDE THE REFRIGERANT AS REQUIRED FOR UNIT CHARGE. CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADDITIONAL REFRIGERANT, AMOUNT IS BASED ON INSTALLED REFRIGERANT PIPE DIAMETERS AND LENGTHS AND INDOOR EQUIPMENT MODEL NUMBER AND QUANTITY. THE OUTDOOR CONDENSER COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH LANCED OR CORRUGATED PLATE FINS ON COPPER TUBING. THE COIL SHALL BE PROTECTED WITH AN INTEGRAL METAL GUARD.

THE VRF HEAT RECOVERY OUTDOOR UNITS SHALL BE EQUIPPED WITH INVERTER DRIVEN VAPOR INJECTION ASYMMETRIC SCROLL COMPRESSOR(S). THE ASYMMETRIC DESIGN WILL ALLOW FOR ONLY ONE POINT OF CONTACT FOR THE SCROLL COMPRESSOR BLADES RESULTING IN REDUCED FRICTION, AND INCREASED EFFICIENCY. CONVENTIONAL SCROLL COMPRESSORS WITH 2-POINTS OF CONTACT WILL NOT BE ALLOWED. THE OUTDOOR UNIT COMPRESSOR SHALL UTILIZE INVERTER DRIVEN TECHNOLOGY TO MODULATE CAPACITY. THE COMPRESSORS SHALL ALSO UTILIZE ADVANCED TECHNOLOGY ADAPTIVE SINE WAVE CONTROL FOR REDUCED HARMONICS AND FASTER FREQUENCY ACCELERATION. THE COMPRESSOR SHALL BE CAPABLE OF 1/60TH SECOND ADVANCED MICRO-CONTROL. THE OUTDOOR UNIT COMPRESSOR SHALL UTILIZE VAPOR INJECTION TECHNOLOGY WHICH SHALL INCREASE THE MASS FLOW RATE OF REFRIGERANT, RESULTING IN IMPROVED PERFORMANCE FOR LOW TEMPERATURE CONDITIONS. THE COMPRESSOR WILL BE EQUIPPED WITH AN INTERNAL THERMAL OVERLOAD PROTECTION. THE COMPRESSOR SHALL BE MOUNTED TO AVOID THE TRANSMISSION OF VIBRATIONS.

HEAT RECOVERY UNITS: (HRU-1, HRU-2, HRU-3, HRU-4, HRU-5, & HRU-6)

THE HEAT RECOVERY UNIT SHALL BE SPECIFICALLY USED WITH HEAT RECOVERY OUTDOOR UNITS. THESE UNITS SHALL BE EQUIPPED WITH A CIRCUIT BOARD THAT INTERFACES TO THE SAMSUNG DVM S NASA CONTROL NETWORK SOLUTION AND SHALL PERFORM ALL FUNCTIONS NECESSARY FOR OPERATION. THE UNIT SHALL HAVE A GALVANIZED STEEL FINISH. THE UNIT SHALL BE COMPLETELY FACTORY ASSEMBLED, PIPED AND WIRED. EACH UNIT SHALL BE RUN TESTED AT THE FACTORY. THE UNIT SHALL BE MOUNTED CONCELAED ABOVE A CEILING INDOORS.

THE HEAT RECOVERY UNIT SHALL BE SAMSUNG MODEL MCU-S4NEE1N (CONNECTING UP TO 4 INDOOR UNITS) OR MODEL MCU-S6NEE1N )CONNECTING UP TO 6 INDOOR UNITS) WITH A MAXIMUM INDOOR UNIT CAPACITY THAT DOES NOT EXCEED 198 MBH (198,000 BTU/H). WHEN CONNECTING INDOOR UNIT MODELS 36 MBH (36,000 BTU/H) OR GREATER, TWO ADJACENT PORTS MUST BE TWINNED TOGETHER WITH INCLUDED Y-CONNECTORS.

AN INTEGRAL CONDENSATE PAN AND DRAIN SHALL BE PROVIDED. UNIT SHALL REQUIRE FIELD CONDENSATE DRAINAGE PIPING ALONG WITH P-TRAP. UNIT ELECTRICAL POWER SHALL BE 208 VOLTS, 1 PHASE, 60 HERTZ. THE UNIT SHALL BE CONTROLLED BY INTEGRAL MICROPROCESSORS.

INDOOR UNITS:

HIGH WALL UNITS (FCU-1, FCU-2, FCU-3, FCU-4, FCU-5, FCU-6, FCU-7, FCU-8, FCU-10, FCU-11, FCU-13, FCU-14, FCU-15, FCU-16, FCU-17, FCU-18, FCU-20, FCU-22, FCU-23, FCU-24, FCU-25, FCU-26, FCU-27, FCU-28, & FCU-29):

THE WALL-MOUNTED INDOOR UNIT SECTION SHALL HAVE A SLIM SILHOUETTE AND AN INTERNAL EEV (ELECTRONIC EXPANSION VALVE) THE WALL-MOUNTED INDOOR UNIT SHALL BE COMPATIBLE WITH DVM S HR (HEAT RECOVERY) OUTDOOR UNITS. THE WALL-MOUNTED INDOOR UNIT SHALL SUPPORT INDIVIDUAL CONTROL USING SAMSUNG DVM S NASA CONTROL NETWORK SOLUTION.

THE INDOOR UNIT SHALL BE FACTORY ASSEMBLED, WIRED AND RUN TESTED. CONTAINED WITHIN THE UNIT SHALL BE ALL FACTORY WIRING, PIPING, CONTROL CIRCUIT BOARD AND FAN MOTOR. THE UNIT SHALL HAVE A SELF-DIAGNOSTIC FUNCTION, 3-MINUTE TIME DELAY MECHANISM, AN AUTO RESTART FUNCTION. INDOOR UNIT AND REFRIGERANT PIPES SHALL BE CHARGED WITH DEHYDRATED AIR (NITROGEN GAS) BEFORE SHIPMENT FROM THE FACTORY. THE CASING SHALL HAVE A GLOSS WHITE FINISH, HIPS CHASSIS CERTIFIED TO UL94 V0. MULTI DIRECTIONAL DRAIN AND REFRIGERANT PIPING OFFERING FOUR (4) DIRECTIONS FOR REFRIGERANT PIPING AND FOUR (4) DIRECTIONS FOR DRAINING SHALL BE STANDARD. THERE SHALL BE A SEPARATE GALVANIZED STEEL MOUNTING PLATE WHICH SECURES THE UNIT FIRMLY TO THE WALL.

WHERE INDICATED IN THE EQUIPMENT SCHEDULE (ALL 1ST FLOOR UNITS), WALL MOUNTED INDOOR UNITS SHALL BE PROVIDED WITH A CONDENSATE LIFT PUMP, EQUAL TO MODEL ASP-MO-UNI MINI-ORANGE PUMP MANUFACTURED BY ASPEN. PUMP SHALL BE INSTALLED INSIDE EVAPORATOR.

THE INDOOR FAN ASSEMBLY SHALL BE A CROSS-FLOW FAN DIRECT DRIVEN BY A SINGLE MOTOR. THE INDOOR FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED TO RUN ON A MOTOR WITH PERMANENTLY LUBRICATED BEARINGS. A MANUAL ADJUSTABLE GUIDE VANE SHALL BE PROVIDED WITH THE ABILITY TO CHANGE THE AIRFLOW FROM SIDE TO SIDE (LEFT TO RIGHT). A MOTORIZED AIR SWEEP LOUVER SHALL PROVIDE AN AUTOMATIC CHANGE IN AIRFLOW BY DIRECTING THE AIR UP AND DOWN TO PROVIDE UNIFORM AIR DISTRIBUTION. THE INDOOR FAN SHALL CONSIST OF VARIOUS SPEEDS INCLUDING LOW, MEDIUM AND HIGH.

RETURN AIR SHALL BE FILTERED BY MEANS OF AN EASILY REMOVABLE, WASHABLE FILTER. SUPPLEMENTAL ANTIBACTERIAL AND ANTI-ODOR FILTERS SHALL BE INCLUDED.

THE INDOOR COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH SLIT FINS ON COPPER TUBING. THE TUBING SHALL HAVE INNER GROOVES FOR HIGH EFFICIENCY HEAT EXCHANGE. ALL TUBE JOINTS SHALL BE BRAZED WITH PHOS-COPPER OR SILVER ALLOY. THE COILS SHALL BE PRESSURE TESTED AT THE FACTORY. A CONDENSATE PAN AND DRAIN SHALL BE PROVIDED UNDER THE COIL. THE COIL FINS ARE COATED WITH HYDROPHILIC PAINTS. BOTH REFRIGERANT LINES TO THE WALL-MOUNTED INDOOR UNIT SHALL BE INSULATED.

THE UNIT ELECTRICAL POWER SHALL BE 208 VOLTS, 1-PHASE, 60 HERTZ. THE SYSTEM SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITS OF 187-228 VOLTS. THE CONTROL CIRCUIT BETWEEN THE INDOOR UNITS, MCU (MODE CHANGE UNIT) AND THE HEAT PUMP OUTDOOR UNIT SHALL BE 0.5VDC - 7VDC COMPLETED USING STRANDED, ANNEALED COPPER CONDUCTOR, TWO-CORE, 16 AWG, SHIELDED CABLE TO PROVIDE TOTAL INTEGRATION OF THE SYSTEM. THE INDOOR UNIT SHALL HAVE A THERMAL FUSE UNDER HIGH-VOLTAGE TERMINAL BLOCK TO DISABLE UNIT IN THE EVENT OF OVERHEATING DUE TO ELECTRICAL MALFUNCTION/POOR CONNECTION.

INDOOR UNITS SHALL BE PROVIDED WITH A WALL MOUNTED CONTROLLER. CONTROLS SHALL BE ABLE TO PERFORM FUNCTIONS NECESSARY TO OPERATE THE SYSTEM.

CONCEALED DUCTED UNITS (FCU-9, FCU-12, FCU-19, FCU-21 & FCU-30):

THE INDOOR UNIT SHALL BE A SUSPENDED CONCEALED DUCTED INDOOR FAN COIL THAT MOUNTS ABOVE THE CEILING WITH A RETURN AND A FIXED HORIZONTAL DISCHARGE SUPPLY AND SHALL HAVE A MODULATING EXPANSION DEVICE. THE CEILING-CONCEALED DUCTED INDOOR UNIT SHALL BE COMPATIBLE WITH DVM S HR (HEAT RECOVERY) OUTDOOR UNITS. THE CEILING-CONCELAED INDOOR UNIT SHALL SUPPORT INDIVIDUAL CONTROL USING SAMSUNG DVM S NASA CONTROL NETWORK SOLUTION.

THE INDOOR UNIT SHALL BE FACTORY ASSEMBLED, WIRED AND RUN TESTED. CONTAINED WITHIN THE UNIT SHALL BE ALL FACTORY WIRING, PIPING, ELECTRONIC MODULATING LINEAR EXPANSION DEVICE, CONTROL CIRCUIT BOARD AND FAN MOTOR. THE UNIT SHALL HAVE A SELF-DIAGNOSTIC FUNCTION, 3-MINUTE TIME DELAY MECHANISM, AND AN AUTO RESTART FUNCTION. THE INDOOR UNIT SHALL HAVE A DISCHARGE AIR TEMPERATURE SENSOR. THE INDOOR UNIT DISCHARGE TEMPERATURE SENSOR SHALL ALLOW CONFIGURATION TO CONTROL UNIT OPERATION BASED ON TARGET COOLING AND HEATING DISCHARGE AIR TEMPERATURES (COOLING: 46-64° F, HEATING: 86-109° F).

CONCEALED DUCTED INDOOR UNITS SHALL HAVE A BUILT-IN CONDENSATE PUMP AS STANDARD WITH A 29' MAXIMUM VERTICAL LIFT. UNIT SHALL ALSO INCLUDE A CONDENSATE OVERFLOW SWITCH PROVIDING THE REQUIRED SECONDARY CONDENSATE PROTECTION OR SHALL BE PROVIDED WITH A 2" DEEP AUXILIARY DRAIN PAN EXTENDING 4" PAST UNIT ON ALL SIDES. IF AUXILIARY DRAIN PAN IS USED, PAN SHALL BE PROVIDED WITH WATER SENSOR THAT SHALL BE INTERLOCKED TO SHUT DOWN UNIT IF PRIMARY DRAIN HAS FAILED.

THE CABINET SHALL BE CONSTRUCTED OF INSULATED GALVANIZED STEEL. THE UNIT FAN SHALL BE AN ASSEMBLY WITH TWO SIROCCO FANS DIRECT DRIVEN BY A SINGLE MOTOR. THE INDOOR FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED TO RUN ON A MOTOR WITH PERMANENTLY LUBRICATED BEARINGS. THE INDOOR FAN SHALL CONSIST OF THREE (3) SPEEDS, HIGH, MID, AND LOW. THE INDOOR UNIT SHALL HAVE A DUCTED AIR OUTLET SYSTEM AND DUCTED RETURN AIR SYSTEM. THE FAN SPEED SHALL BE ADJUSTABLE BY OPTIONAL REMOTE CONTROLLER OR MANUFACTURER PROVIDED SERVICE SOFTWARE ACCORDING TO EXTERNAL STATIC PRESSURE.

RETURN AIR SHALL BE FILTERED BY MEANS OF A CEILING MOUNTED RETURN AIR FILTER GRILLE. FILTER SHALL BE 1" THICK MERV-8.

THE INDOOR COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH SLIT FINS ON COPPER TUBING. THE TUBING SHALL HAVE INNER GROOVES FOR HIGH EFFICIENCY HEAT EXCHANGE. ALL TUBE JOINTS SHALL BE BRAZED WITH PHOS-COPPER OR SILVER ALLOY. THE COILS SHALL BE PRESSURE TESTED AT THE FACTORY. A CONDENSATE PAN AND DRAIN SHALL BE PROVIDED UNDER THE COIL. THE CONDENSATE SHALL BE GRAVITY DRAINED FROM THE FAN COIL. BOTH REFRIGERANT LINES TO THE INDOOR UNITS SHALL BE INSULATED.

THE UNIT ELECTRICAL POWER SHALL BE 208 VOLTS, 1-PHASE, 60 HERTZ. THE SYSTEM SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITS OF 187-228 VOLTS. THE CONTROL CIRCUIT BETWEEN THE INDOOR UNITS, MCU (MODE CHANGE UNIT) AND THE HEAT PUMP OUTDOOR UNIT SHALL BE 0.5VDC - 7VDC COMPLETED USING STRANDED, ANNEALED COPPER CONDUCTOR, TWO-CORE, 16 AWG, SHIELDED CABLE TO PROVIDE TOTAL INTEGRATION OF THE SYSTEM. THE INDOOR UNIT SHALL HAVE A THERMAL FUSE UNDER HIGH-VOLTAGE TERMINAL BLOCK TO DISABLE UNIT IN THE EVENT OF OVERHEATING DUE TO ELECTRICAL MALFUNCTION/POOR CONNECTION.

INDOOR UNITS SHALL BE PROVIDED WITH A WALL MOUNTED CONTROLLER. CONTROLS SHALL BE ABLE TO PERFORM FUNCTIONS NECESSARY TO OPERATE THE SYSTEM.

ACCESSORIES/CONTROLS:

PROVIDE A SAMSUNG DVM CONTROLS NETWORK SOLUTION CAPABLE OF SUPPORTING REMOTE CONTROLLERS, SCHEDULE TIMERS, SYSTEM CONTROLLERS, CENTRALIZED CONTROLLERS, AND AN INTEGRATED WEB BASED INTERFACE. THE DVM S CONTROLS SOLUTION SHALL OPERATE AT 12V DC (EXCLUDING MCM-A202DN ON/OFF CONTROLLER). CONTROLLER POWER AND COMMUNICATIONS SHALL BE VIA A COMMON COMMUNICATIONS BUS. MAIN SYSTEM CONTROL WIRING SHALL BE INSTALLED IN A SYSTEM DAISY CHAIN CONFIGURATION FROM THE INDOOR EQUIPMENT TO MAIN OUTDOOR UNIT. THIS CABLE SHALL BE 16 AWG X 2, SHIELDED CABLE. ZONE CONTROL WIRING TO WIRED REMOTE CONTROLLERS SHALL BE RUN FROM THE INDOOR UNIT TERMINAL BLOCK TO THE CONTROLLER ASSOCIATED WITH THAT UNIT. THIS CABLE SHALL BE 16 AWG X 2, SHIELDED CABLE. CONTROL WIRING SHALL BE 2-CONDUCTOR, 16 AWG X 2, SHIELDED CABLE. NETWORK WIRING SHALL BE CAT-5E WITH RJ-45 CONNECTION.

PROVIDE PREMIUM WIRED REMOTE TEMPERATURE CONTROLLER FOR EACH INDOOR UNIT. WALL CONTROLLER SHALL BE EQUAL TO SAMSUNG MODEL MWR-WE10N. REMOTE SHALL UTILIZE A MULTI-FUNCTION LCD DISPLAY AND SHALL POSSESSES THE FOLLOWING FUNCTIONALITY: TEMPERATURE SET POINT CONTROL, BUILT-IN ROOM TEMPERATURE SENSOR, OPERATION MODE: AUTO-COOL-DRY-FAN-HEAT, FAN SPEED: AUTO-LOW-MED-HIGH, FILTER ALARM RESET (TIMER), REAL-TIME CLOCK INCLUDES CURRENT TIME, DAY DISPLAY, DAYLIGHT SAVINGS TIME ADJUSTMENT (PROGRAM IN THE DATE), WEEKLY OPERATING SCHEDULING, UPPER/LOWER TEMPERATURE LIMIT SETTINGS, ERROR DISPLAY, SERVICE MODE PROVIDES CONFIGURATION SETTINGS, AND SECURITY LOCK CODE.

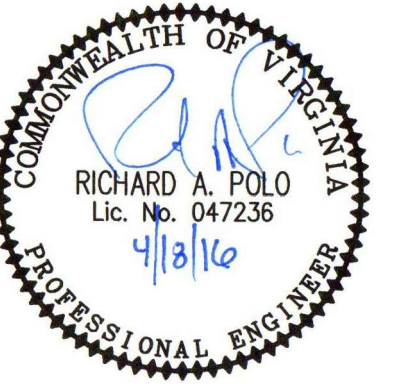
PROVIDE VRF SYSTEM CENTRAL CONTROLLER. CONTROLLER SHALL BE A 7" TOUCH LCD CONTROLLER COMPATIBLE WITH THE SAMSUNG DVM S HEAT RECOVERY SYSTEM. CENTRALIZED CONTROLLER SHALL BE EQUAL TO SAMSUNG MODEL MCM-A300N. THE CENTRAL TOUCHSCREEN CONTROLLER SHALL ALLOW CONTROL AND MONITORING OF INDOOR UNIT: OPERATION MODE, SET TEMPERATURE, ROOM TEMPERATURE, FAN SPEED, LOUVER POSITION, REMOTE CONTROL RESTRICTION, AND POWER. THE CENTRAL TOUCHSCREEN CONTROLLER SHALL HAVE AN SD CARD SLOT FOR DATA BACKUP AND FUTURE FIRMWARE UPDATES. THE CENTRAL TOUCHSCREEN CONTROLLER SHALL PROVIDE SCHEDULING CAPABILITY. SCHEDULING SHALL CONTROL OF INDOOR UNIT: OPERATION MODE, SET TEMPERATURE, FAN SPEED, LOUVER POSITION, REMOTE CONTROL RESTRICTION, AND POWER. THE CENTRAL TOUCHSCREEN CONTROLLER SHALL ALLOW CREATION OF ZONES AND GROUPING OF INDOOR UNITS. THE CENTRAL TOUCHSCREEN CONTROLLER SHALL HAVE MENU LOCK CAPABILITY ALLOWING RESTRICTION OF INDOOR UNIT CONTROL. SCHEDULE SETTING/CHANGING, AND TOUCHSCREEN CONTROLLER SETTINGS BY DAILY (NON-MANAGEMENT) TOUCHSCREEN CONTROLLER USERS. THE CENTRALIZED CONTROLLER SHALL REQUIRED A UNIT ELECTRICAL POWER OF 120 VOLTS, 1-PHASE, 60 HERTZ.

PROVIDE Y-JOINT KITS AS REQUIRED FOR SAMSUNG VRF-SYSTEMS WITH MULTIPLE EVAPORATORS ON SAME SYSTEM. Y-JOINTS SHALL BE PROVIDED FOR LIQUID, AND SUCTION FITTINGS AS REQUIRED. Y-JOINTS SHALL BE PROVIDED WITH POLYSTYRENE INSULATION. Y-BRANCHES SHALL FACILITATE DIFFERENT PIPE SIZES WITHOUT HAVING TO BRAZE ADDITIONAL FITTINGS. FIELD FABRICATION OR SUBSTITUTION OF NON-SAMSUNG Y-JOINTS SHALL NOT BE ACCEPTED. KITS SHALL BE INSTALLED PER MANUFACTURER GUIDELINES.

29. MISCELLANEOUS CONTROL COMPONENTS: (IF REQUIRED) MISCELLANEOUS RELAYS, TRANSFORMERS, SWITCHES AND OTHER DEVICES SHALL BE PROVIDED FOR THE CONTROL OF THE HVAC EQUIPMENT INDICATED. RELAYS SHALL BE LOCATED ADJACENT TO THE CONTROLLED DEVICE SUCH AS MOTOR OR MOTOR STARTER. RELAYS MAY BE LOCATED WITHIN STARTERS AND EQUIPMENT CONTROL PANELS WHERE SPACE IS AVAILABLE AND WHERE APPROVED BY NEC. RELAYS OUTSIDE OF THE CONTROLLED DEVICE SHALL BE PROVIDED WITH NEMA ENCLOSURE SUITABLE FOR LOCATION WHERE INSTALLED.

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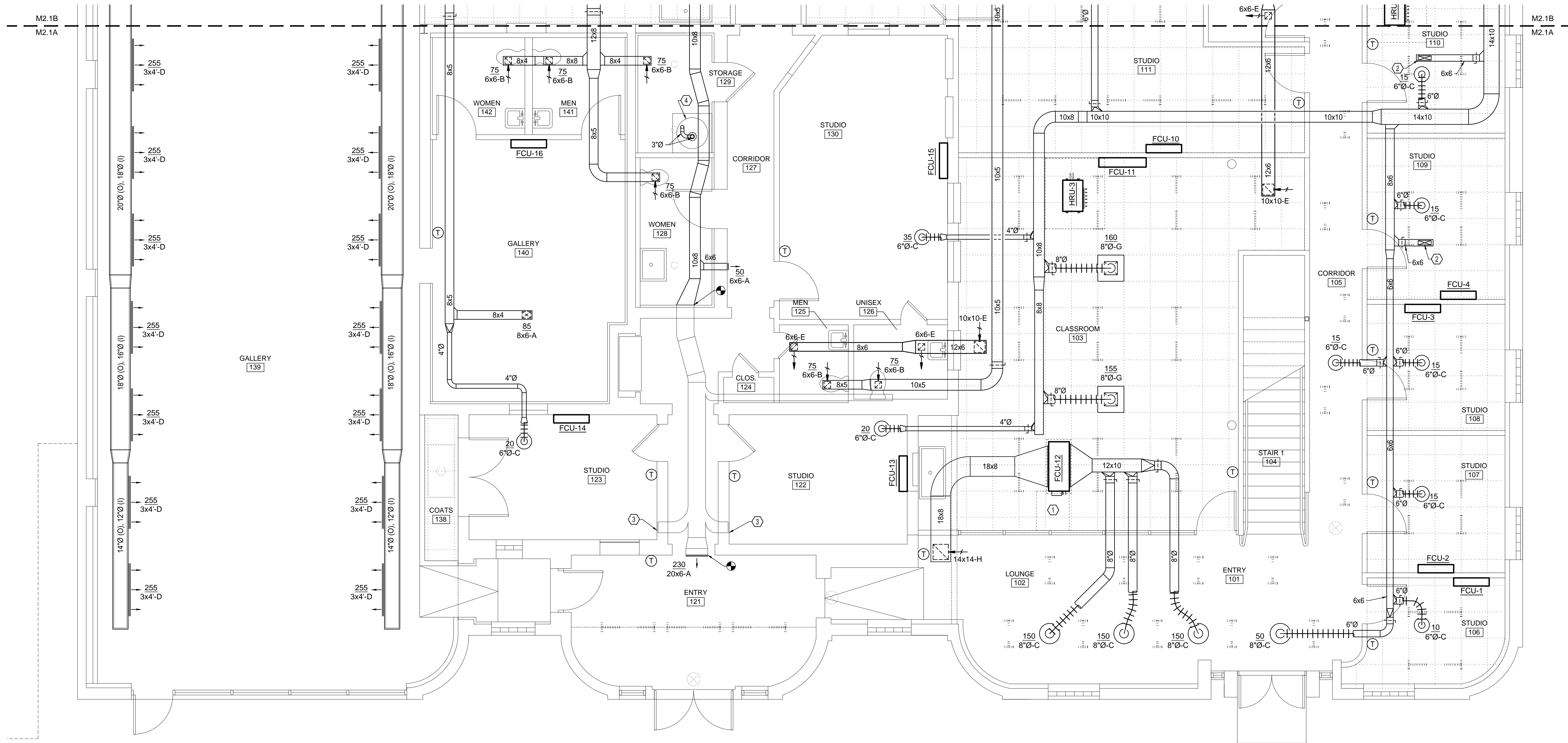
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MECHANICAL  
SPECIFICATIONS

M0.6

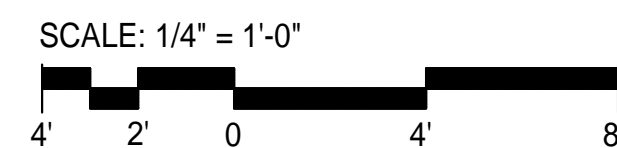




**PLAN REFERENCE NOTES - AREA A:**

- ① REQUIRED ELECTRICAL ACCESS AND SERVICE CLEARANCE. KEEP CLEAR OF OBSTRUCTIONS.
- ② 12x4 VENTILATION UP TO FLOOR REGISTER ON SECOND FLOOR. COORDINATE EXACT LOCATION WITH JOISTS.
- ③ CAP AND SEAL EXISTING SUPPLY DISCHARGE AIR TIGHT. CONCEAL IN WALL.
- ④ DOMESTIC WATER HEATER. REFER TO PLUMBING DRAWINGS FOR DETAILS. PROVIDE 3"Ø PVC INTAKE VENT AND 3"Ø PVC EXHAUST VENT. ROUTE INTAKE/EXHAUST TO A CONCENTRIC INTAKE/ EXHAUST VENT THROUGH ROOF. VENTING SHALL BE ROUTED AND INSTALLED PER MANUFACTURERS INSTRUCTIONS.

**GRAPHIC SCALE**



FIRST FLOOR PLAN - AREA A

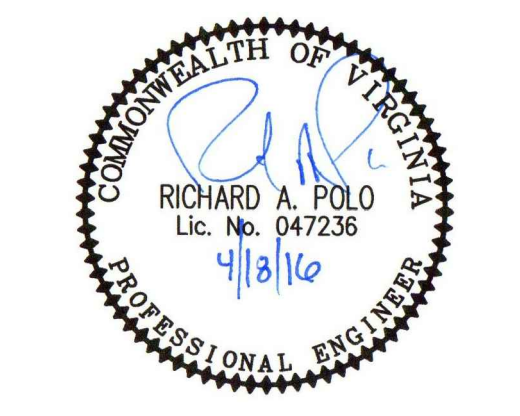
1/4" = 1'-0"

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MECHANICAL  
FIRST FLOOR  
PLAN - AREA A

**M2.1A**



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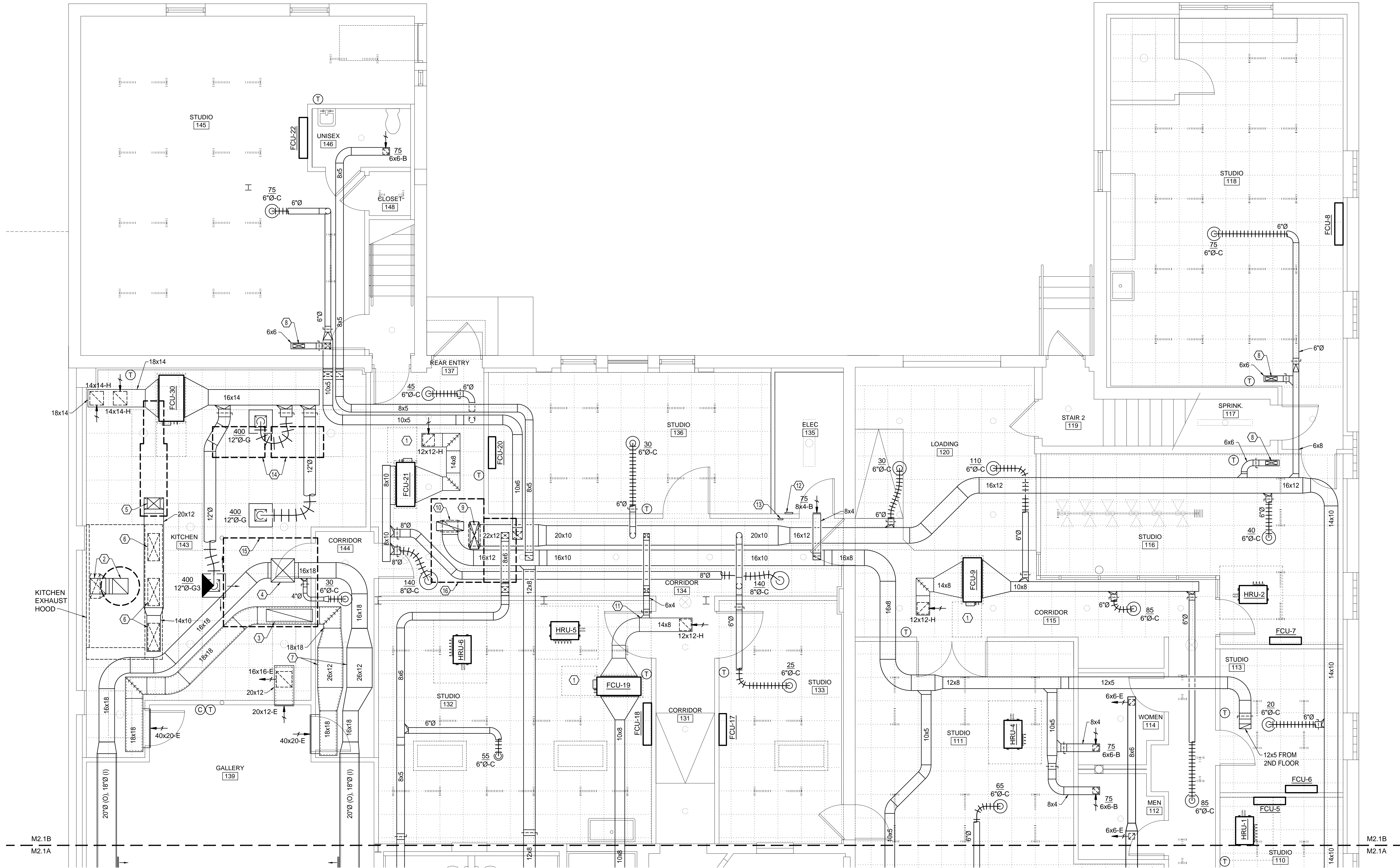
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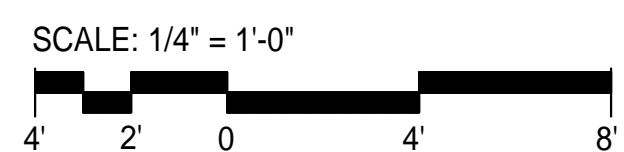


PLAN REFERENCE NOTES - AREA B:

- 1 REQUIRED ELECTRICAL ACCESS AND SERVICE CLEARANCE. KEEP CLEAR OF OBSTRUCTIONS.
- 2 TRANSITION FROM KITCHEN HOOD CONNECTION SIZE TO 16x16 IN VERTICAL. ROUTE 16x16 UP TO ABOVE ROOF.
- 3 48x12 RETURN AIR TO RTU-1 ON ROOF. PROVIDE RETURN AIR DUCT SMOKE DETECTOR IN VERTICAL.
- 4 24x24 SUPPLY AIR FROM RTU-1 ON ROOF.
- 5 SUPPLY AIR DUCT FROM SF-KH ON ROOF. CONVERT FROM UNIT CONNECTION SIZE TO 20x12 IN VERTICAL.
- 6 28x12 SUPPLY CONNECTION TO KITCHEN HOOD PERIMETER SUPPLY PLENUM.
- 7 TRANSITION DUCT AS INDICATED OR REQUIRED TO COORDINATE WITH STORM DRAIN PIPING IN THIS LOCATION.
- 8 12x4 VENTILATION UP TO FLOOR REGISTER ON SECOND FLOOR. COORDINATE EXACT LOCATION WITH JOISTS.
- 9 22x12 VENTILATION SUPPLY FROM MAU-1 ON ROOF. CONVERT FROM UNIT CONNECTION SIZE IN VERTICAL.
- 10 16x12 EXHAUST UP TO MAU-1 ON ROOF. CONVERT TO UNIT CONNECTION SIZE IN VERTICAL.
- 11 BALANCE VENTILATION AIR TO RETURN OF FCU-19 TO 35 CFM.
- 12 CENTRALIZED CONTROLLER FOR VRF SYSTEM.
- 13 REMOTE USER INTERFACE FOR OWNER OCCUPIED/UNOCCUPIED OVERRIDE OF MAU-1.
- 14 OUTLINE OF HP-1A & HP-1B ON ROOF.
- 15 OUTLINE OF RTU-1 ON ROOF.
- 16 OUTLINE OF MAU-1 ON ROOF.



GRAPHIC SCALE



FIRST FLOOR PLAN - AREA B

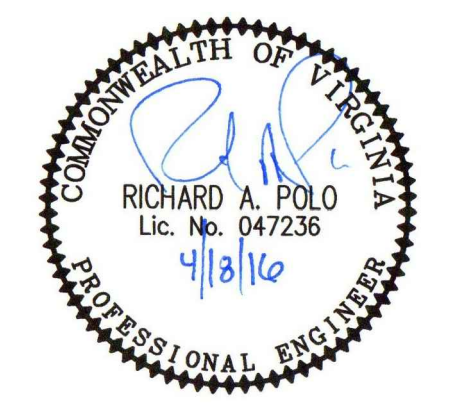
1/4" = 1'-0"

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MECHANICAL  
FIRST FLOOR  
PLAN - AREA B

M2.1B

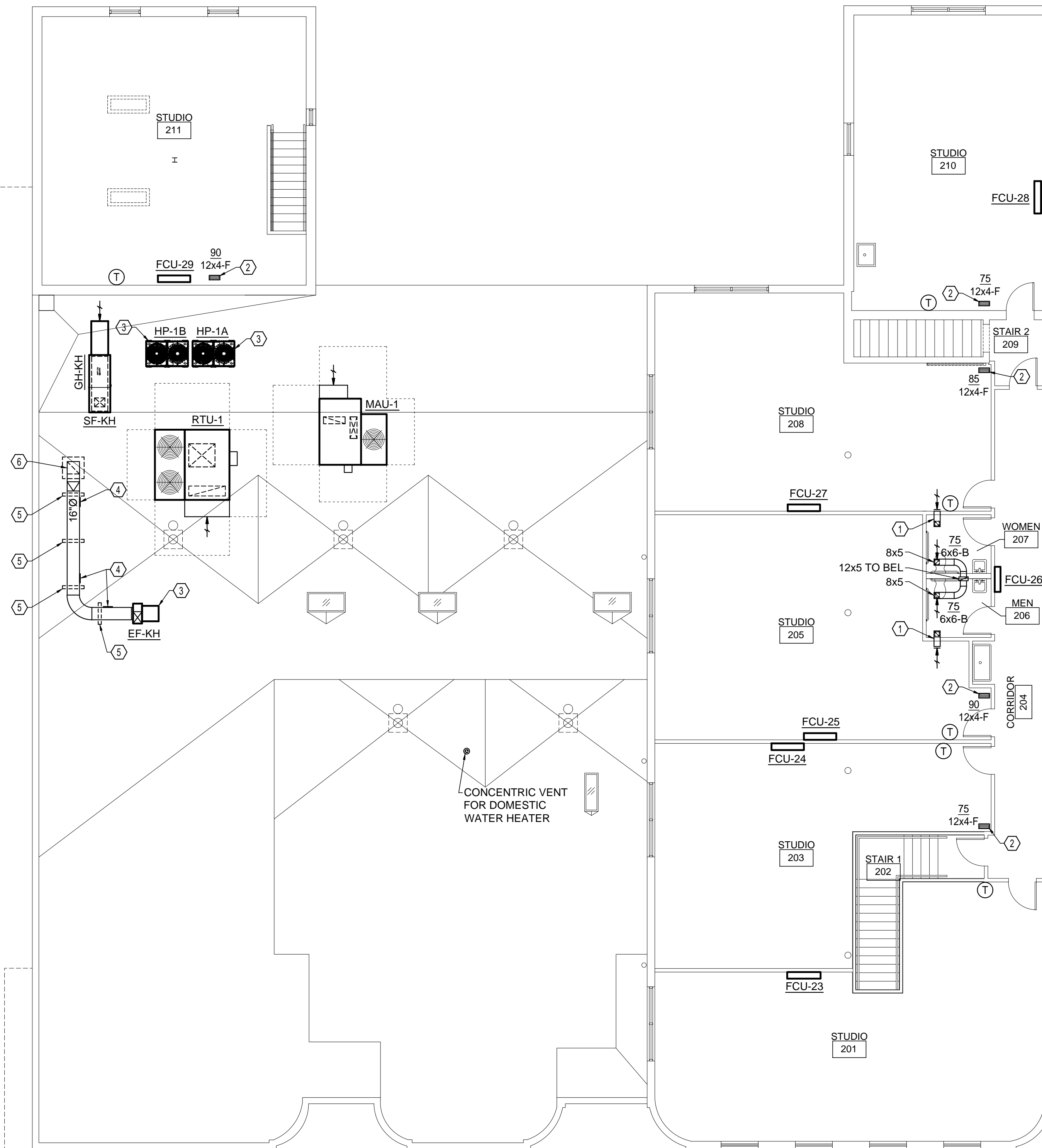


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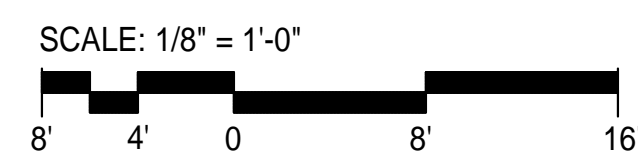
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- PLAN REFERENCE NOTES:**
- ① PROVIDE TRANSFER GRILLE AND DUCT. PROVIDE 8x4-E TRANSFER GRILLE ON STUDIO WALL MOUNTED 11'-6" AFF. CONNECT TO 6x6-E TRANSFER GRILLE IN CEILING OF RESTROOM WITH 8x4 DUCT.
  - ② 12x4 VENTILATION DUCT FROM 1ST FLOOR. CONNECT TO FLOOR REGISTER AS INDICATED. COORDINATE EXACT LOCATION WITH EXISTING JOIST SPACING.
  - ③ INSTALL ROOFTOP EQUIPMENT ON PREFAB ROOF EQUIPMENT SUPPORT RAILS. REFER TO DETAILS ON SHEET M4.2.
  - ④ GREASE DUCT CLEANOUT ACCESS DOOR.
  - ⑤ PROVIDE EQUIPMENT SUPPORT RAIL WITH UNISTRUT FRAMING TO SUPPORTED HORIZONTAL ROUTED DUCTWORK ABOVE ROOF. MAINTAIN PROPER SLOPE OF KITCHEN EXHAUST DUCT.
  - ⑥ INSULATE KITCHEN EXHAUST DUCT TO 18" ABOVE FINISHED ROOF.



**GRAPHIC SCALE**



SECOND FLOOR PLAN

1/8" = 1'-0"

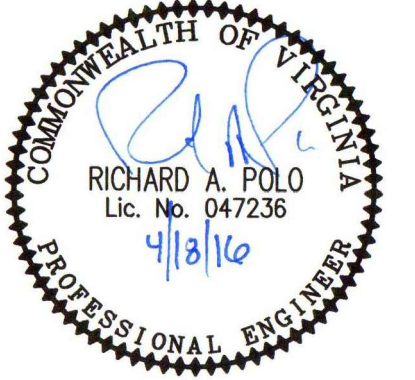
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MECHANICAL  
SECOND  
FLOOR PLAN

**M2.2**

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RENOVATION**

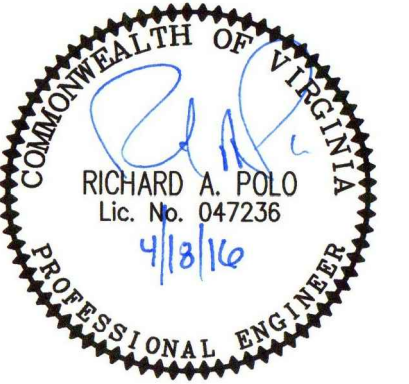
3300 W BROAD ST  
RICHMOND, VIRGINIA 23230



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**THE HIGHPOINT COLLECTIVE LLC  
 RENOVATION**

3300 W BROAD ST  
 RICHMOND, VIRGINIA 23230

DATE: 04.18.16  
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**MECHANICAL  
 FIRST  
 FLOOR PLAN -  
 PIPING**

**M3.1**

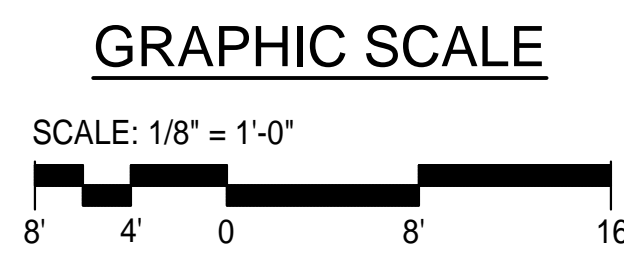
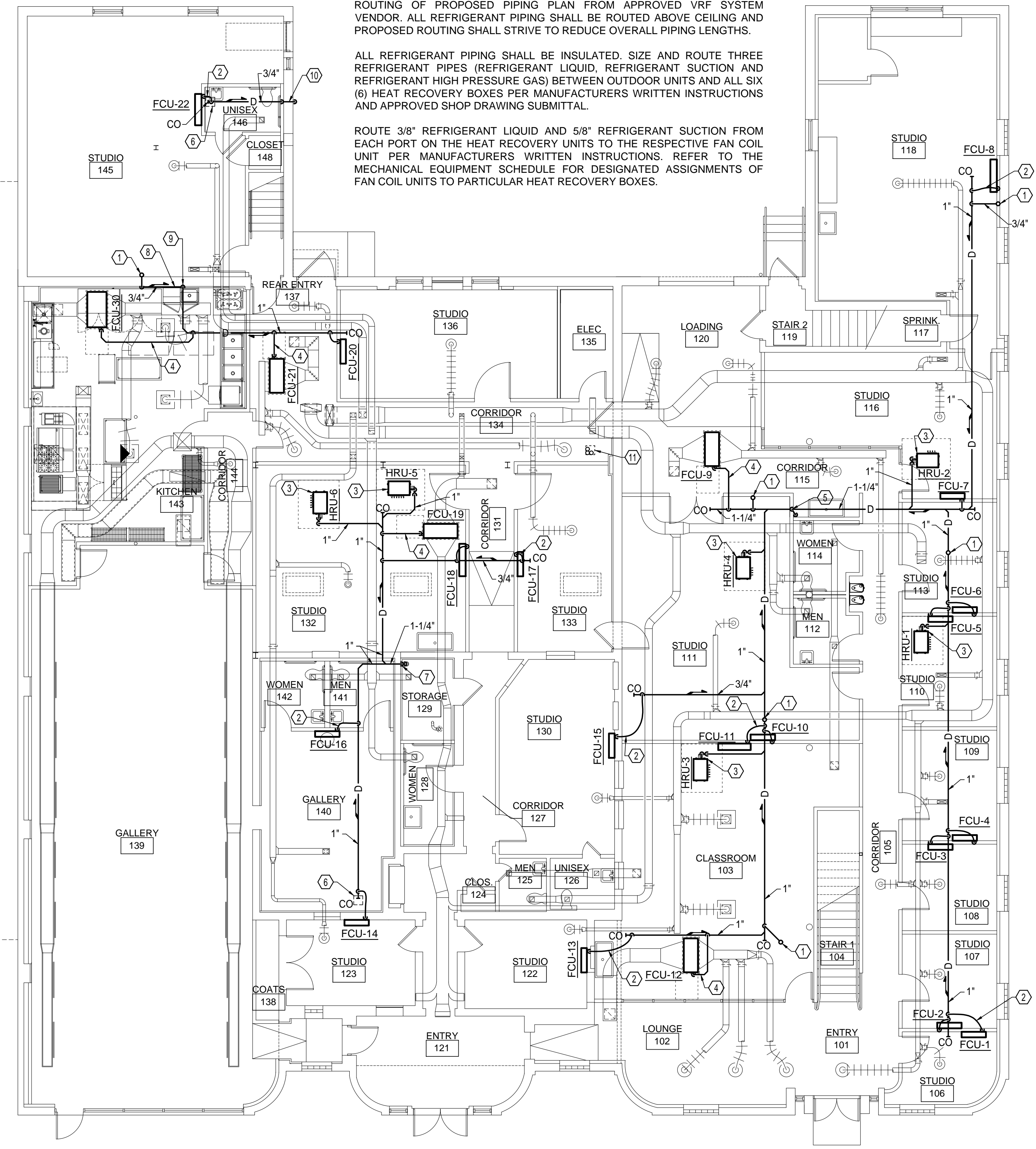
- PLAN REFERENCE NOTES:**
- ① 3/4" DRAIN FROM FAN COIL UNIT ON 2ND FLOOR.
  - ② 1/4" PUMPED CONDENSATE FROM MINI CONDENSATE PUMP WITHIN WALL MOUNTED FAN COIL UNIT. ROUTE UP IN WALL AND CONNECT TO TOP OF CONDENSATE DRAIN. (TYPICAL OF WALL MOUNTED UNITS INSTALLED ON FIRST FLOOR, REFER TO DETAIL SHEET M4.2).
  - ③ PROVIDE 1" CONDENSATE DRAIN WITH P-TRAP FROM HEAT RECOVERY UNIT.
  - ④ 3/4" PUMPED CONDENSATE FROM SUSPENDED FAN COIL UNIT INTERNAL CONDENSATE PUMP. ROUTE UP AND CONNECT TO TOP OF CONDENSATE MAIN AS INDICATED.
  - ⑤ ROUTE 1-1/4" CONDENSATE DRAIN DOWN IN WALL. EXIT WALL 8" ABOVE FLOOR AND TURN CONDENSATE DRAIN DOWN TOWARDS OPEN HUB DRAIN, TERMINATING LEVEL WITH TOP OF OPEN HUB 4" ABOVE FINISHED FLOOR.
  - ⑥ PROVIDE ACCESS PANEL IN CEILING TO ACCESS CONDENSATE CLEAN-OUT.
  - ⑦ ROUTE 1-1/4" CONDENSATE DRAIN DOWN EXPOSED TIGHT TO WALL, OFFSET DRAIN NEAR FLOOR AND TERMINATE WITHIN 1" OF FLOOR DRAIN.
  - ⑧ ROUTE 3/4" CONDENSATE DRAIN CONCEALED WITHIN FURRED WALL, MAINTAIN REQUIRED SLOPE AND CONNECT TO 1" CONDENSATE DRAIN RISER.
  - ⑨ ROUTE 1" CONDENSATE DRAIN DOWN CONCEALED WITHIN WALL FURRING, OFFSET DRAIN JUST ABOVE MOP SINK AND TERMINATE 2" ABOVE FLOOD LEVEL OF SINK.
  - ⑩ PROVIDE 3/4" CONDENSATE DRAIN, ROUTE DOWN IN WALL AND EXIT EXTERIOR WALL 12" ABOVE GRADE. PROVIDE DISCHARGE ELBOW AND SPILL CONDENSATE ON GRADE.
  - ⑪ REFRIGERANT LIQUID, REFRIGERANT SUCTION & REFRIGERANT HIGH PRESSURE GAS PIPING FROM HEAT RECOVERY OUTDOOR CONDENSING UNITS ON ROOF. LOCATE ABOVE CORRIDOR, REFER TO SHEET M4.2 FOR PIPING PENETRATION DETAIL.

**REFRIGERANT PIPING GENERAL NOTE:**

REFRIGERANT PIPE ROUTING NOT INDICATED ON THE PLAN FOR CLARITY. PRIOR TO INSTALLATION OF ANY REFRIGERANT PIPING, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT AND ENGINEER FOR REVIEW A PROPOSED REFRIGERANT PIPING SHOP DRAWING BASED ON PROPOSED DISTANCES AND ROUTING OF PROPOSED PIPING PLAN FROM APPROVED VRF SYSTEM VENDOR. ALL REFRIGERANT PIPING SHALL BE ROUTED ABOVE CEILING AND PROPOSED ROUTING SHALL STRIVE TO REDUCE OVERALL PIPING LENGTHS.

ALL REFRIGERANT PIPING SHALL BE INSULATED. SIZE AND ROUTE THREE REFRIGERANT PIPES (REFRIGERANT LIQUID, REFRIGERANT SUCTION AND REFRIGERANT HIGH PRESSURE GAS) BETWEEN OUTDOOR UNITS AND ALL SIX (6) HEAT RECOVERY BOXES PER MANUFACTURERS WRITTEN INSTRUCTIONS AND APPROVED SHOP DRAWING SUBMITTAL.

ROUTE 3/8" REFRIGERANT LIQUID AND 5/8" REFRIGERANT SUCTION FROM EACH PORT ON THE HEAT RECOVERY UNITS TO THE RESPECTIVE FAN COIL UNIT PER MANUFACTURERS WRITTEN INSTRUCTIONS. REFER TO THE MECHANICAL EQUIPMENT SCHEDULE FOR DESIGNATED ASSIGNMENTS OF FAN COIL UNITS TO PARTICULAR HEAT RECOVERY BOXES.



FIRST FLOOR PLAN - PIPING  
 1/8" = 1'-0"

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**PLAN REFERENCE NOTES:**

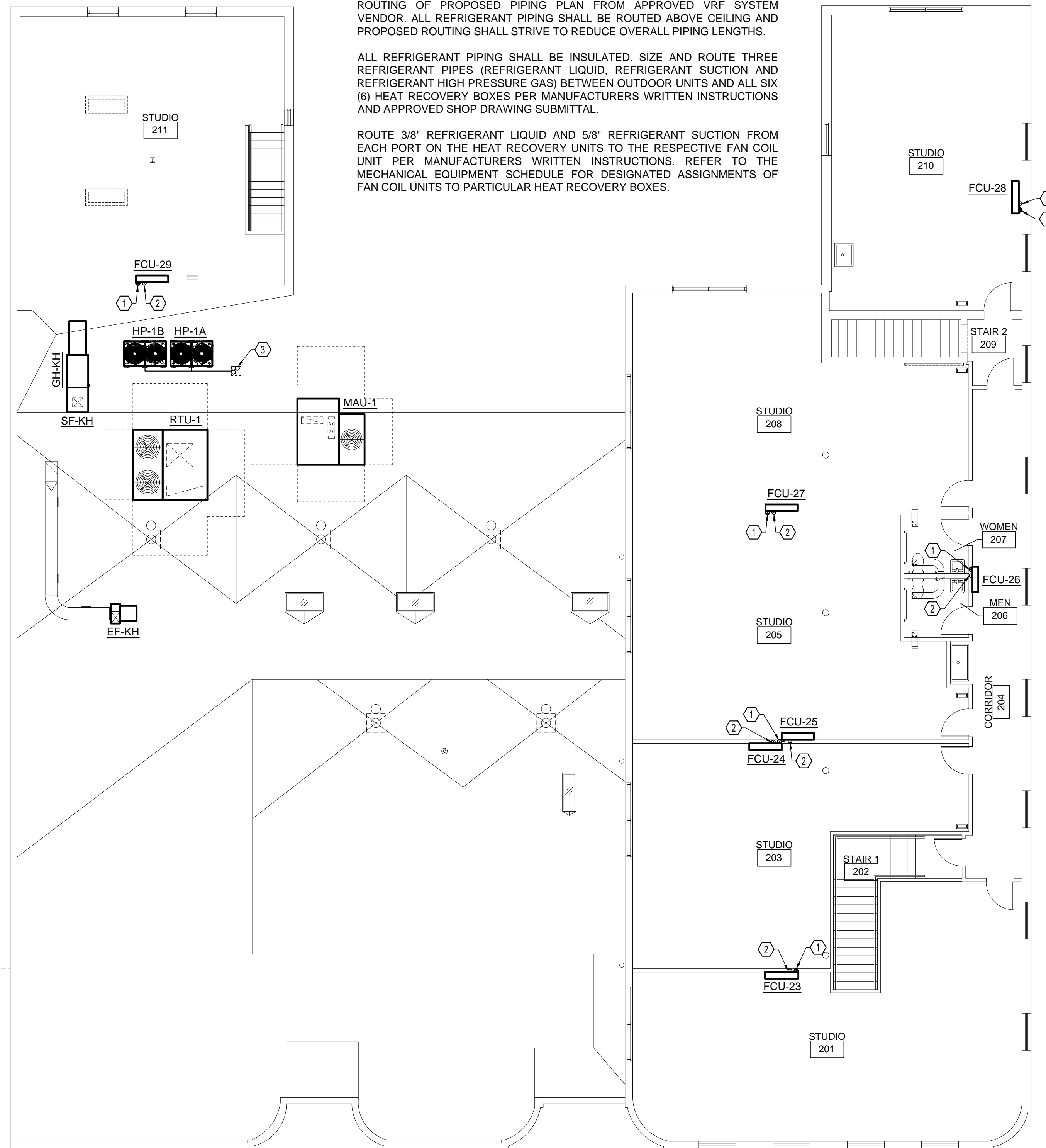
- ① 3/4" CONDENSATE DRAIN DOWN IN WALL TO FIRST FLOOR.
- ② REFRIGERANT PIPING FROM BELOW, ROUTED CONCEALED IN WALL. ALL HORIZONTAL REFRIGERANT PIPE ROUTING SHALL OCCUR ON THE FIRST FLOOR. REFER TO GENERAL NOTE FOR FURTHER DETAILS.
- ③ ROUTE REFRIGERANT LIQUID, REFRIGERANT SUCTION & REFRIGERANT HIGH PRESSURE GAS PIPING FROM HEAT RECOVERY OUTDOOR CONDENSING UNITS THROUGH ROOF. REFER TO SHEET M4.2 FOR ROOF PIPING PENETRATION DETAIL.

**REFRIGERANT PIPING GENERAL NOTE:**

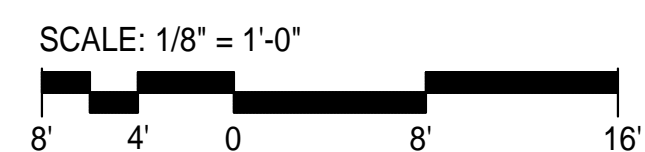
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ALL REFRIGERANT PIPING SHALL BE INSULATED. SIZE AND ROUTE THREE REFRIGERANT PIPES (REFRIGERANT LIQUID, REFRIGERANT SUCTION AND REFRIGERANT HIGH PRESSURE GAS) BETWEEN OUTDOOR UNITS AND ALL SIX (6) HEAT RECOVERY BOXES PER MANUFACTURERS WRITTEN INSTRUCTIONS AND APPROVED SHOP DRAWING SUBMITTAL.

ROUTE 3/8" REFRIGERANT LIQUID AND 5/8" REFRIGERANT SUCTION FROM EACH PORT ON THE HEAT RECOVERY UNITS TO THE RESPECTIVE FAN COIL UNIT PER MANUFACTURERS WRITTEN INSTRUCTIONS. REFER TO THE MECHANICAL EQUIPMENT SCHEDULE FOR DESIGNATED ASSIGNMENTS OF FAN COIL UNITS TO PARTICULAR HEAT RECOVERY BOXES.



**GRAPHIC SCALE**



**SECOND FLOOR PLAN - PIPING**

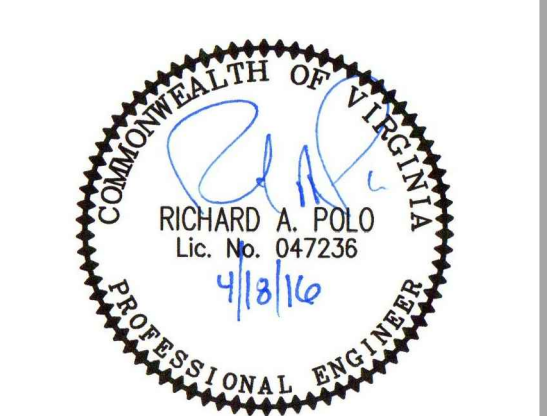
1/8" = 1'-0"

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**MECHANICAL  
SECOND  
FLOOR PLAN -  
PIPING**

**M3.2**



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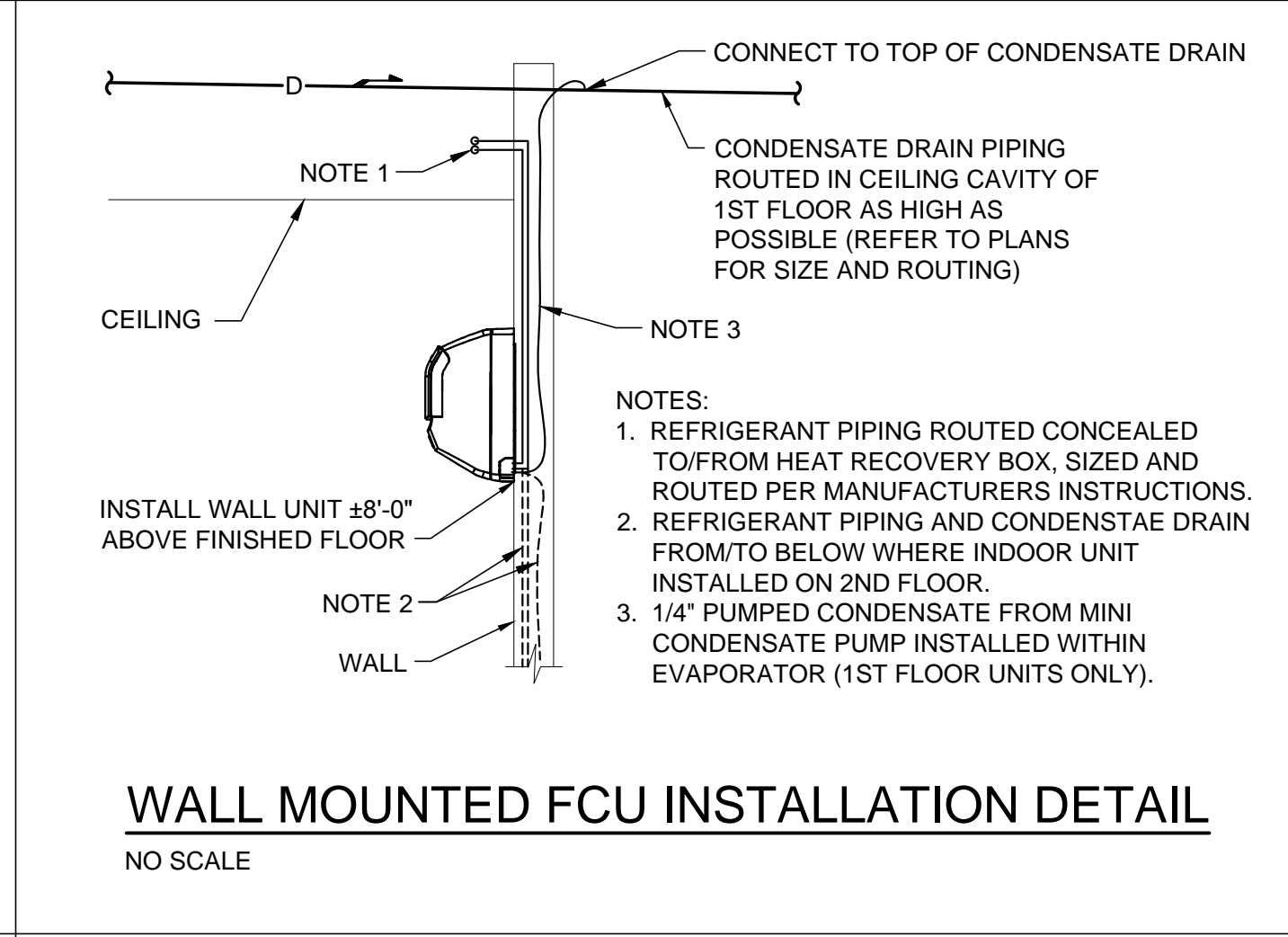
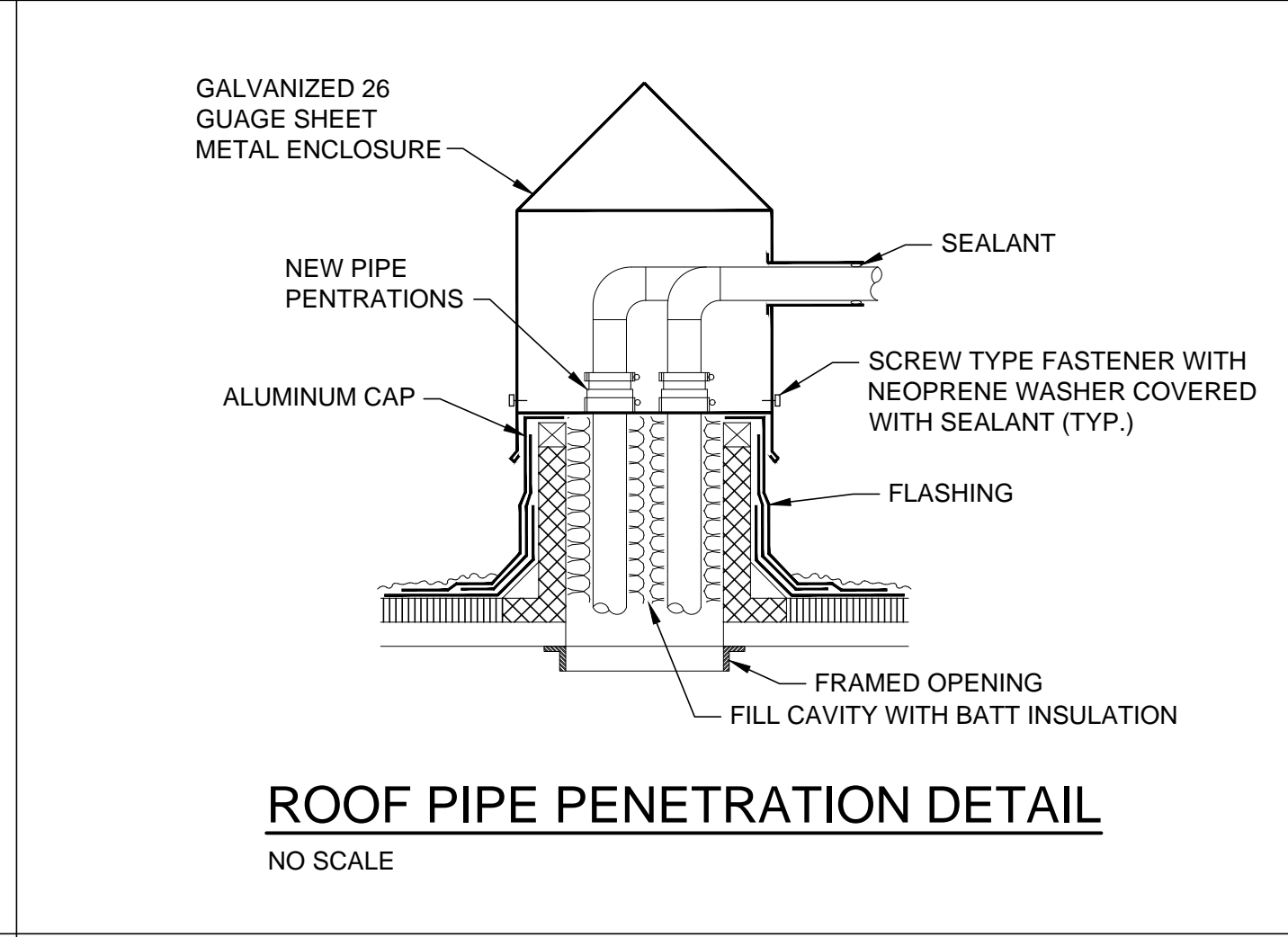
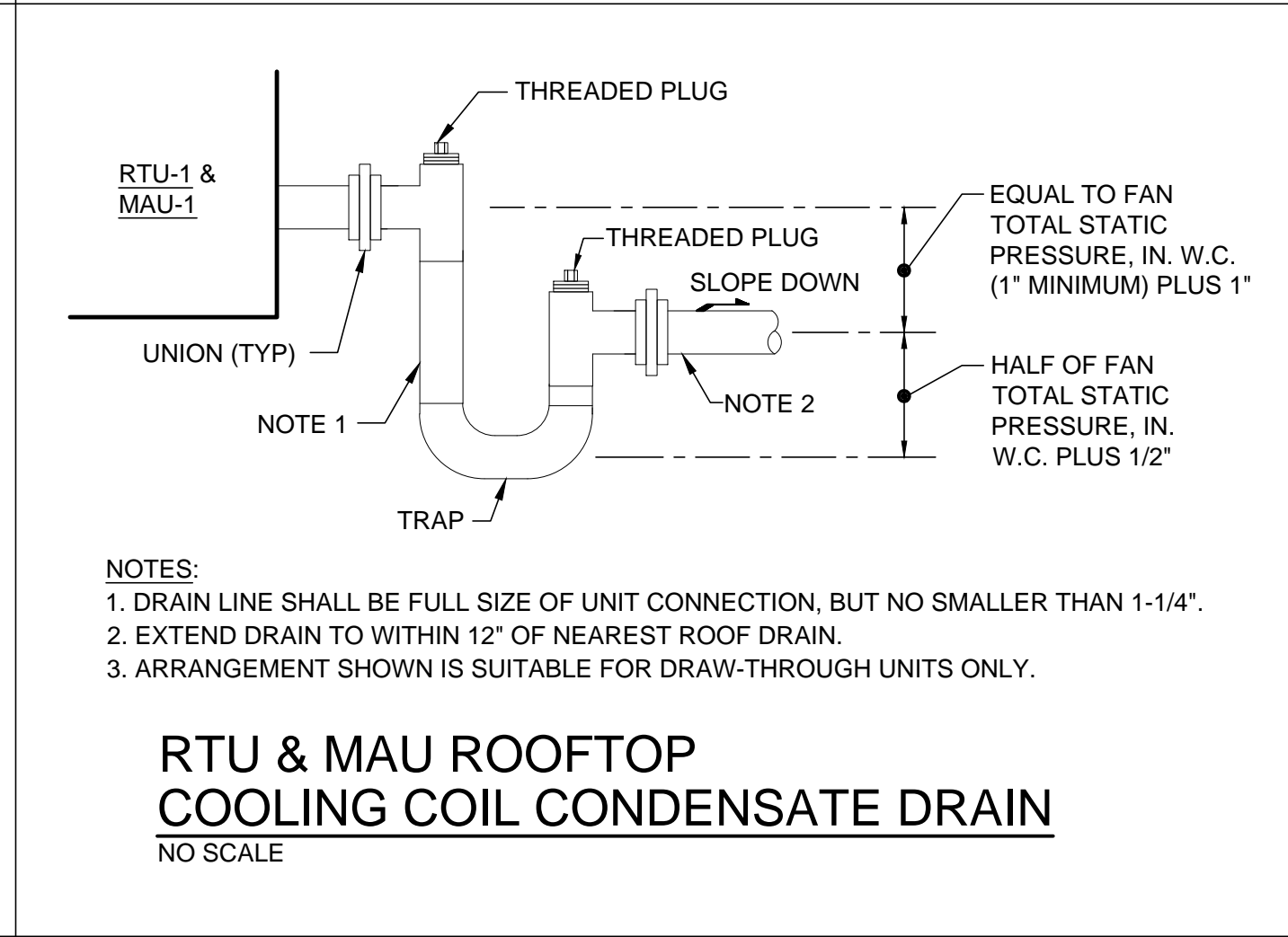
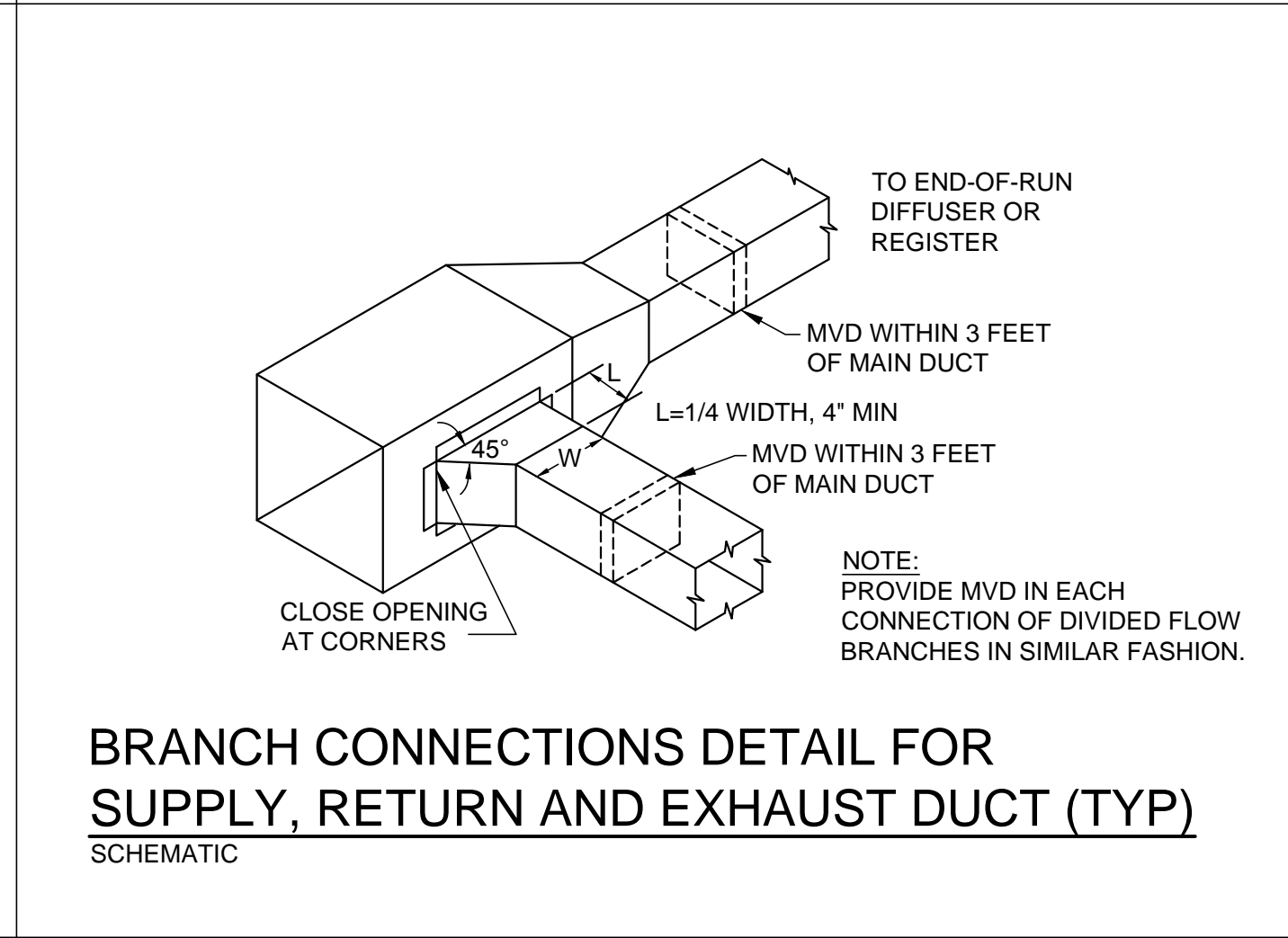
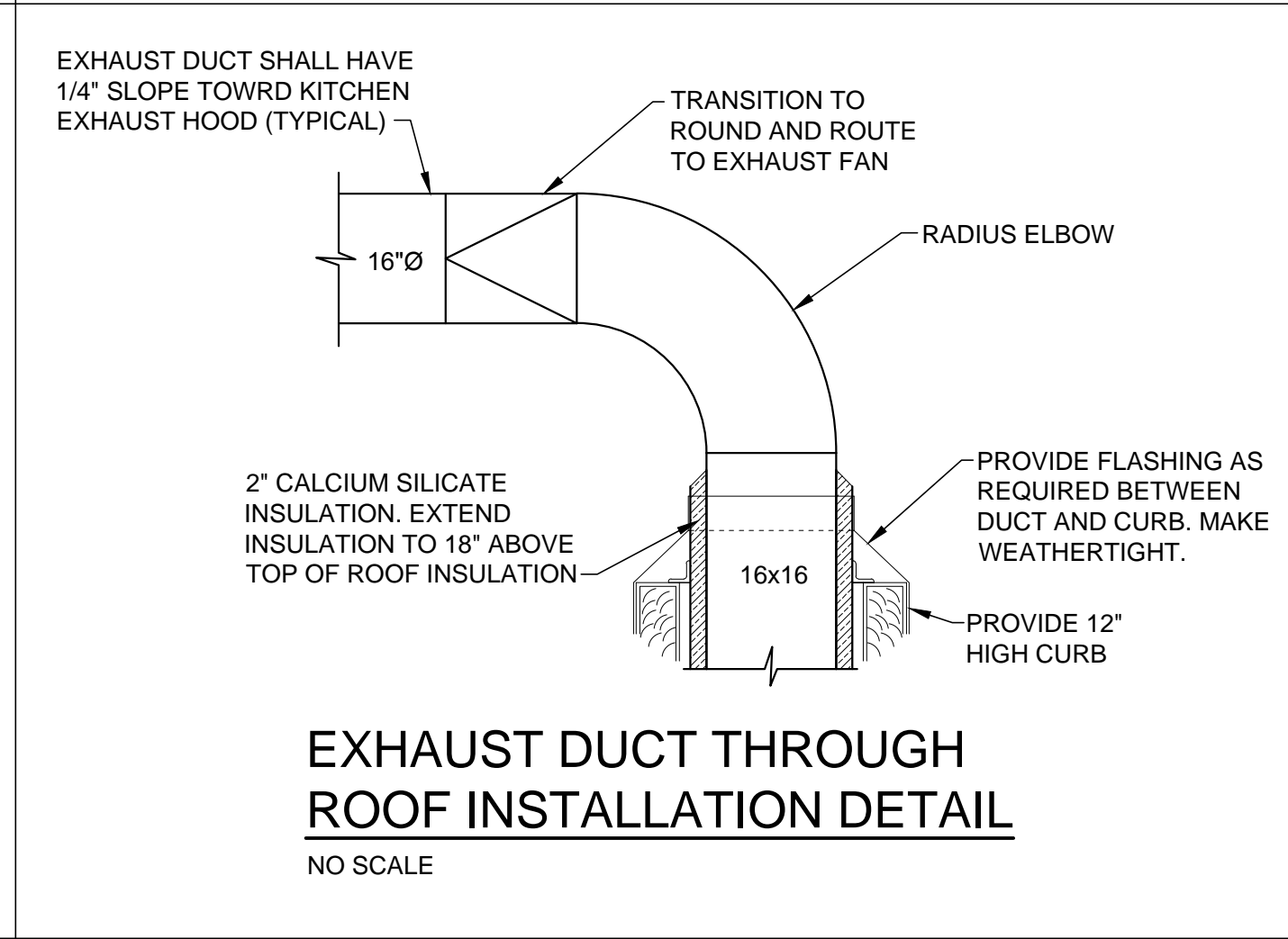
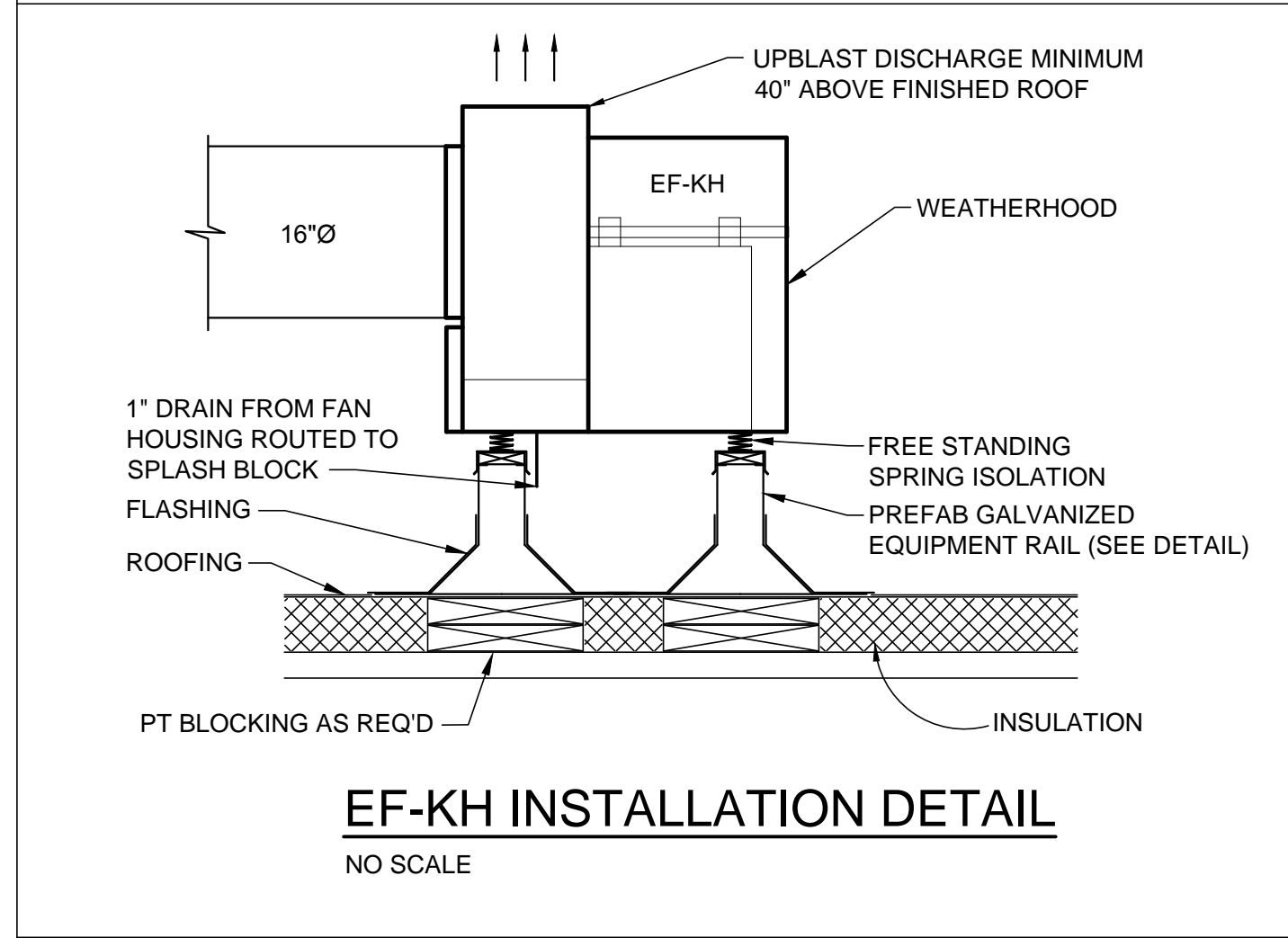
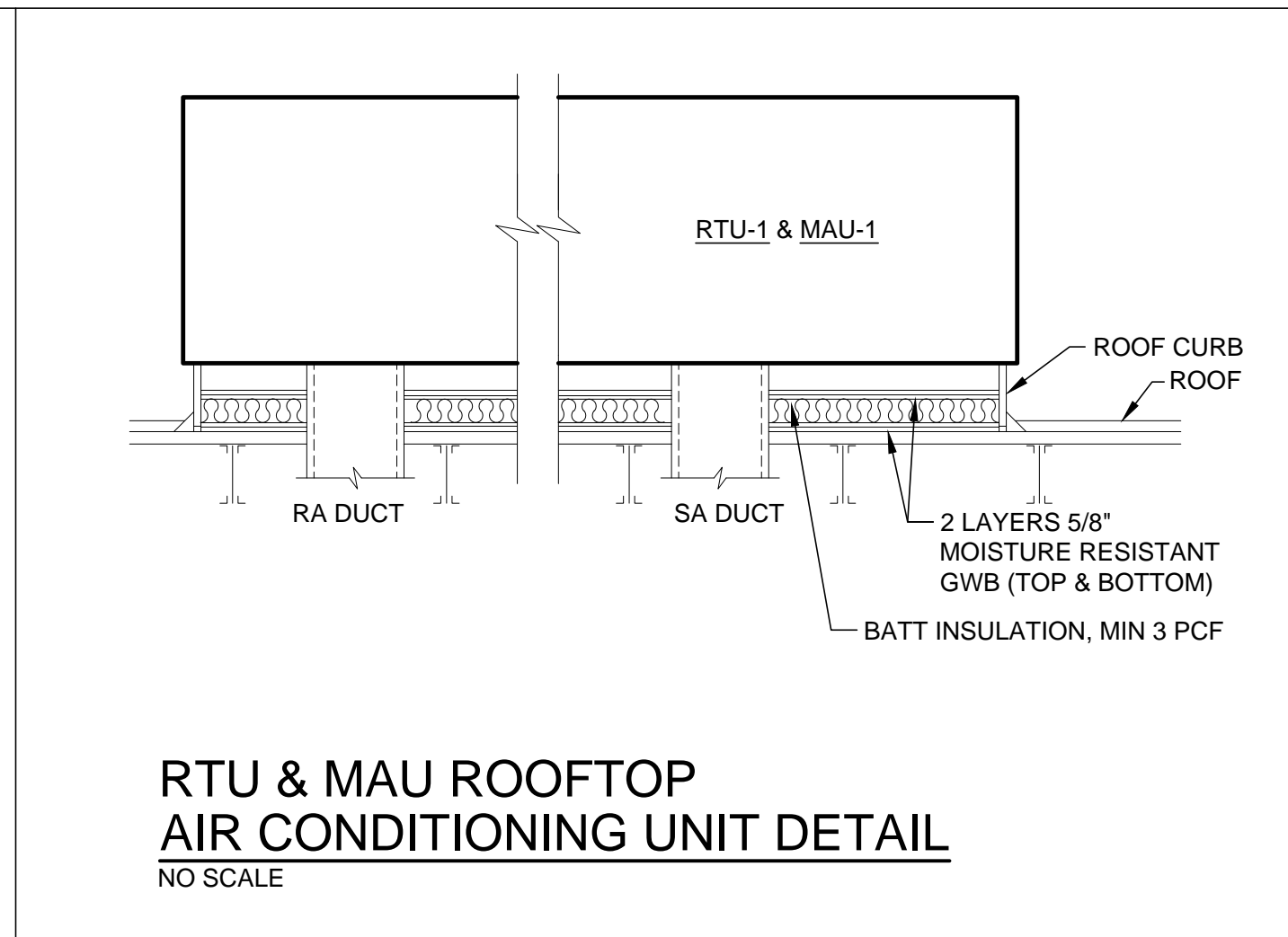
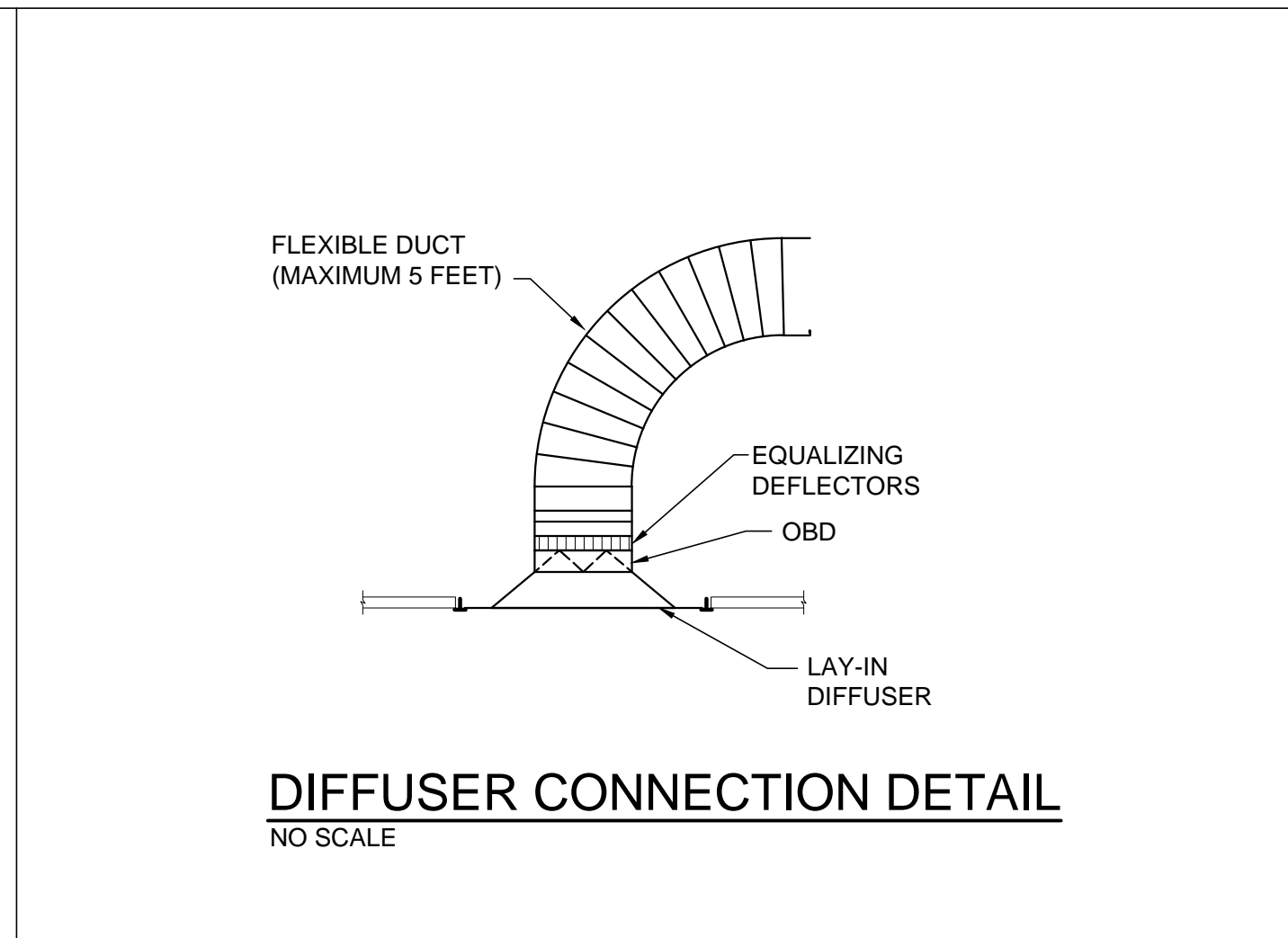
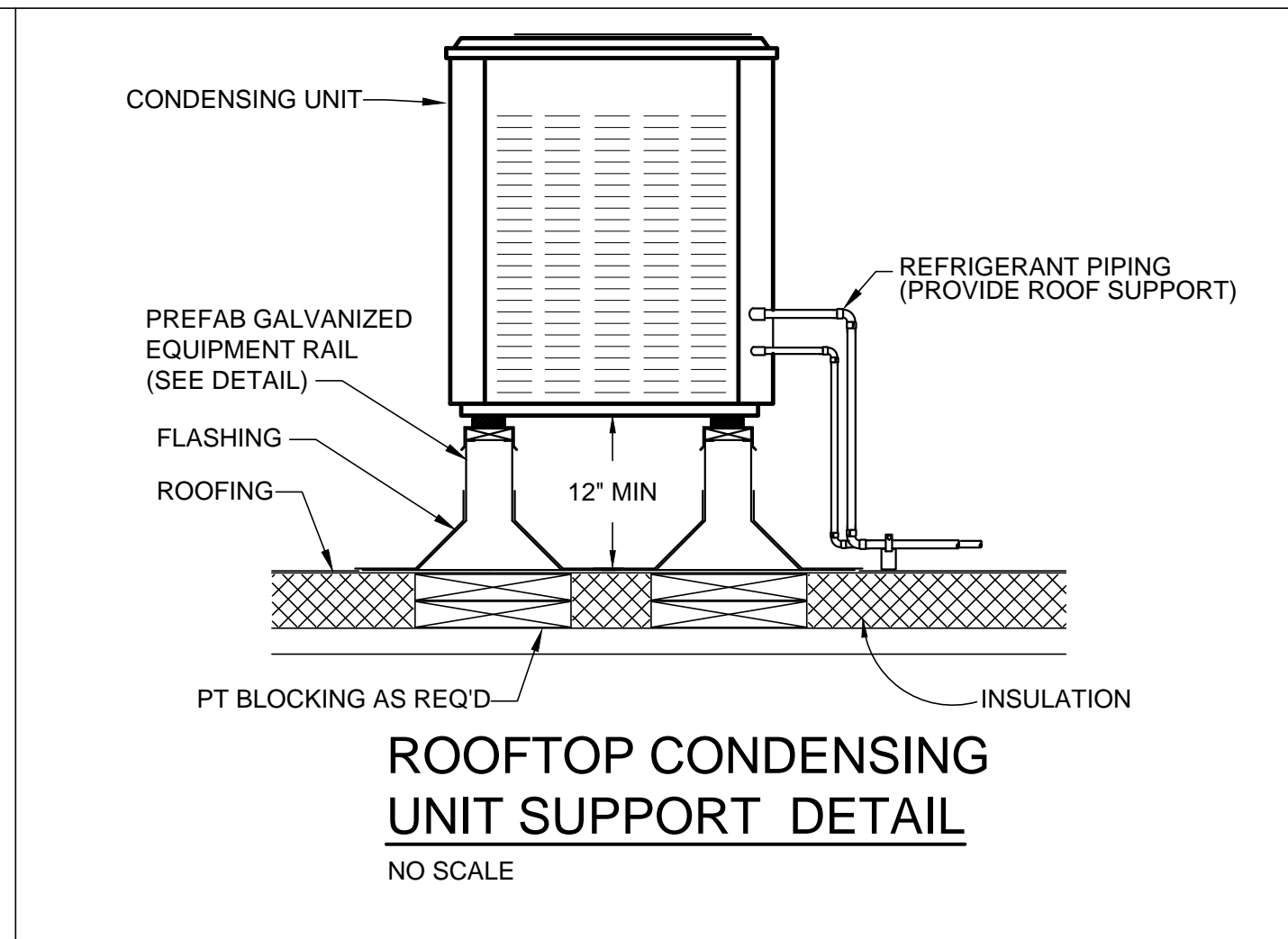
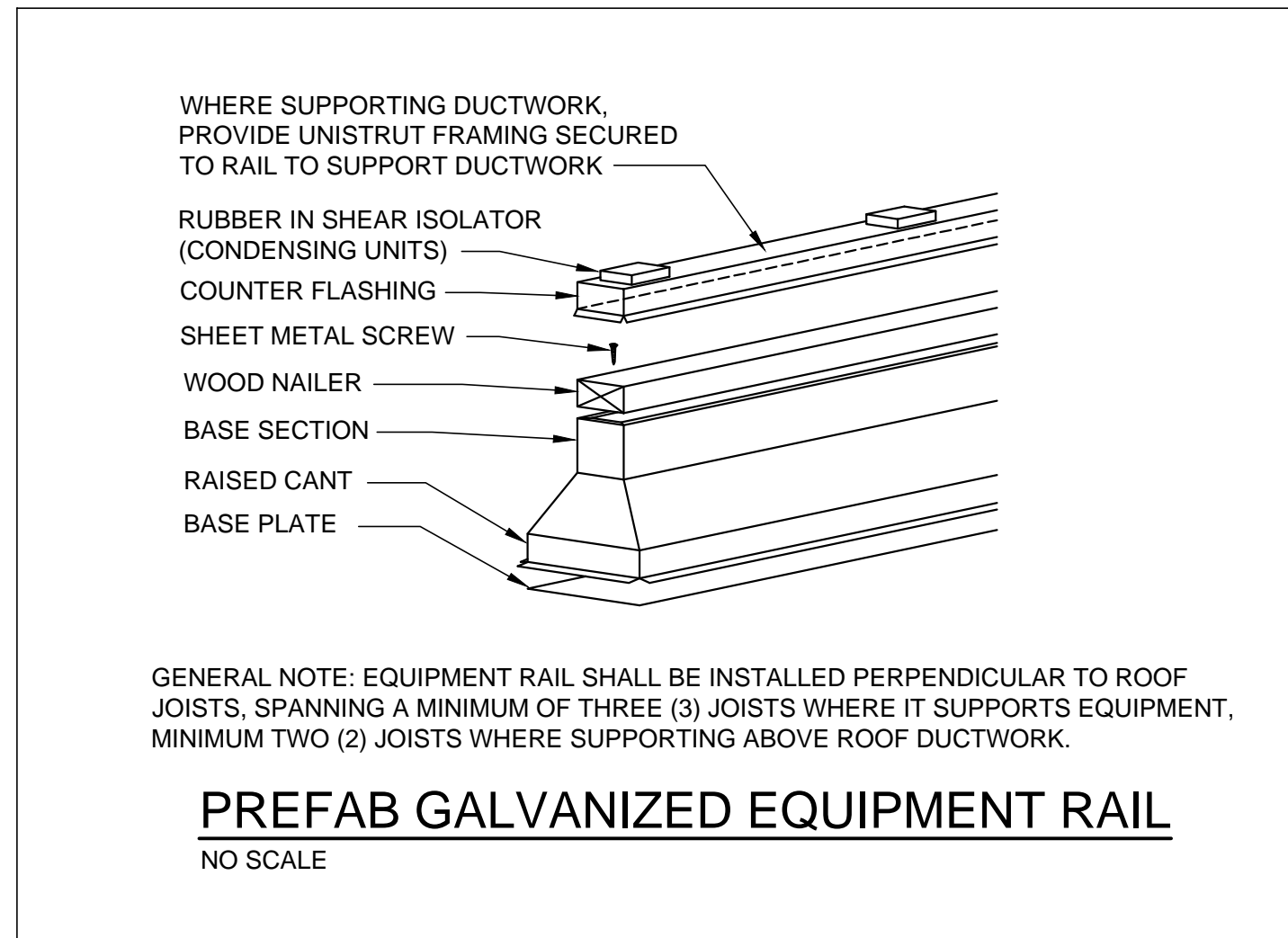
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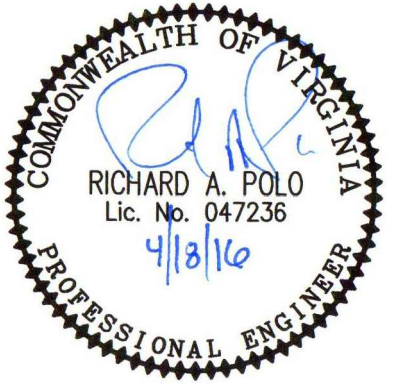




MECHANICAL DETAILS



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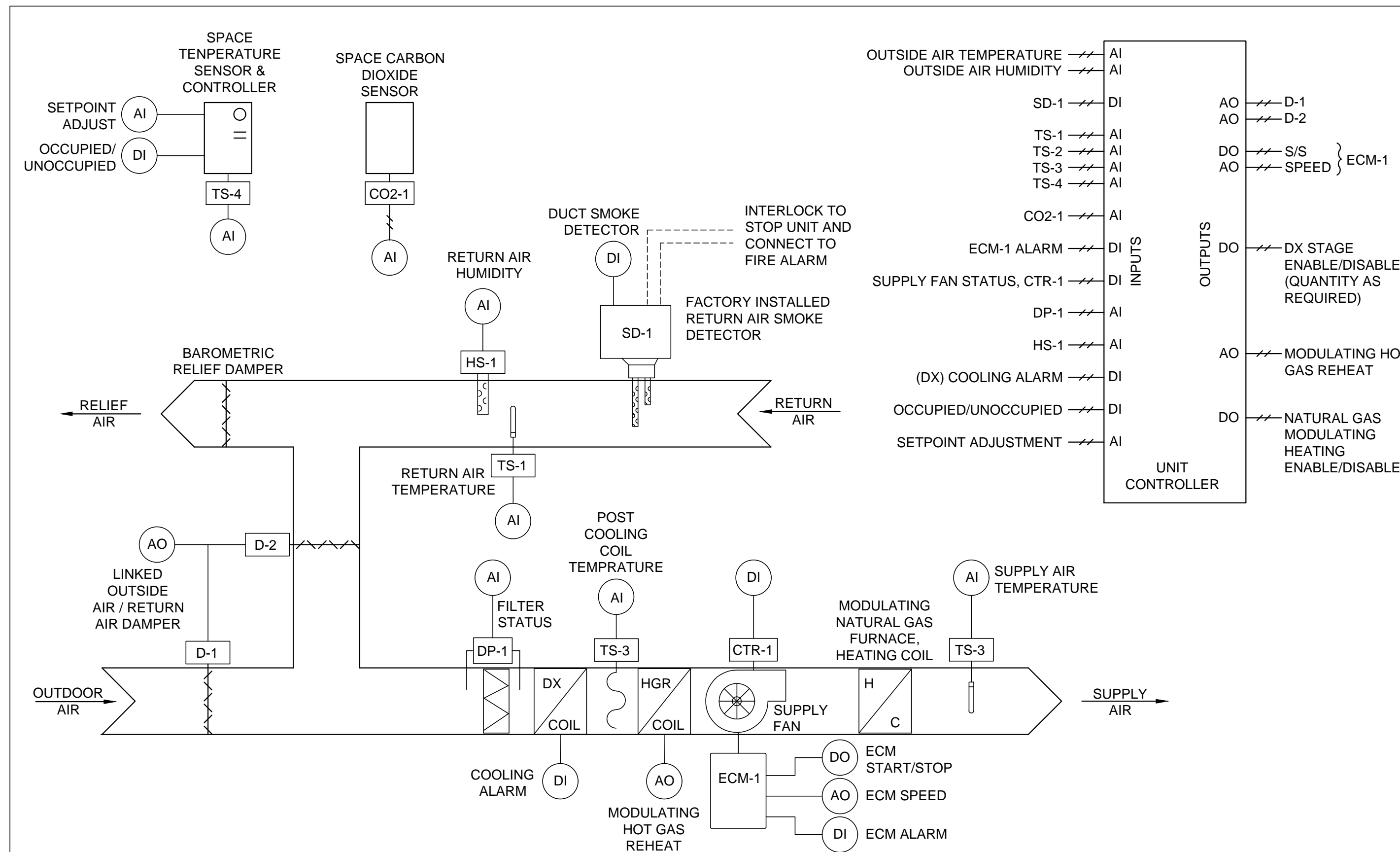
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MECHANICAL  
DETAILS  
M4.2

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# MECHANICAL CONTROLS



### RTU-1 SEQUENCE OF OPERATION:

UNIT SCHEDULE OF OPERATION: RTU-1 OCCUPIED/UNOCCUPIED SCHEDULE SHALL BE DETERMINED BY THE OWNER AND PROGRAMMED INTO THE UNIT CONTROLLER. ADDITIONALLY, THE SPACE MOUNTED CONTROLLER SHALL ALLOW FOR OWNER ADJUSTED TEMPERATURE CONTROL AND ADJUSTMENT TO OCCUPIED/UNOCCUPIED SCHEDULES AND TEMPERATURE SETPOINTS.

OCCUPIED CONTROL: DURING OCCUPANCY, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE LINKED OUTSIDE AIR/RETURN AIR DAMPER SHALL BE OPENED TO THE MINIMUM OUTSIDE AIR POSITION WHILE PROPORTIONALLY CLOSING THE RETURN AIR DAMPER.

DEMAND BASED VENTILATION CONTROL: WHEN THE CO2 LEVEL IN THE SPACE IS BELOW 1000 PPM (ADJ.), THE UNIT CONTROLLER SHALL MODULATE OPEN THE OUTDOOR AIR DAMPER D-1 FROM THE LOW MINIMUM POSITION (475 CFM) TOWARD THE HIGH MINIMUM POSITION (1,040 CFM), UPON REDUCING ZONE CO2 LEVELS BACK BELOW 800 PPM (ADJ.), THE UNIT CONTROLLER SHALL MODULATE THE AIR HANDLER OUTSIDE AIR DAMPER D-1 FROM ITS HIGH MINIMUM POSITION TOWARD ITS LOW MINIMUM POSITION.

### TEMPERATURE CONTROL:

COOLING OPERATION IS CONSTANT TEMPERATURE, VARIABLE VOLUME. THE AIR HANDLER SHALL UTILIZE THE ENTHALPY BASED ECONOMIZER AS MUCH AS POSSIBLE. THE UNIT SHALL CONTROL TO A CONSTANT LEAVING AIR TEMPERATURE (55°F) DURING COOLING MODE AND VARY THE FAN SPEED AS REQUIRED. TEMPERATURE CONTROL SHALL BE AS FOLLOWS: ON A RISE IN DISCHARGE AIR TEMPERATURE ABOVE 55°F AS SENSED BY TS-3, THE UNIT CONTROLLER SHALL MODULATE THE OUTSIDE AIR DAMPER D-1 OPEN WHILE PROPORTIONATELY CLOSING D-2. ON A FURTHER RISE IN DISCHARGE AIR TEMPERATURE, THE UNIT CONTROLLER SHALL ENABLE AND STAGE DX COOLING TO MEET DISCHARGE AIR SETPOINT. ON A FALL IN DISCHARGE AIR TEMPERATURE, THE REVERSE SHALL OCCUR. ON A RISE IN SPACE TEMPERATURE, AS SENSED BY TS-4, THE UNIT CONTROLLER SHALL SLOWLY RAMP UP THE SUPPLY FAN SPEED VIA THE ECM SPEED CONTROLLER IN INCREMENTAL STEPS, WAITING 10 MINUTES (ADJ.) AT EACH INCREMENT FOR SUPPLY AIR TEMPERATURE TO RESPOND OR CONTINUE RISING. AT EACH INCREMENT THE UNIT CONTROLLER SHALL TRIM DAMPERS TO MAINTAIN CONSTANT LEAVING AIR TEMPERATURE AND SHALL TRIM DAMPERS TO MAINTAIN CO2 LEVELS AS HEREINBEFORE SPECIFIED. ON A FALL IN SPACE TEMPERATURE, THE REVERSE SHALL OCCUR AND THE FAN SHALL BE REDUCED TO MINIMUM SPEED. ON A FURTHER FALL IN SPACE TEMPERATURE AND RETURN AIR HUMIDITY LEVELS BELOW 50% (ADJ.) THE UNIT CONTROLLER SHALL DISABLE DX COOLING TO ALLOW DISCHARGE AIR TEMPERATURE TO RISE TO SATISFY SPACE AIR TEMPERATURE SETPOINT. THE UNIT CONTROLLER SHALL RESET THE DISCHARGE AIR TEMPERATURE HIGHER BY 1°F AT 15 MINUTE INCREMENTS TO A MAXIMUM OF 65°F (ADJ.). AT ANY TIME THE OUTSIDE AIR ENTHALPY, AS SENSED AND CALCULATED BY THE UNIT CONTROLLER, EXCEEDS THE RETURN AIR ENTHALPY, THE UNIT CONTROLLER SHALL CLOSE OUTSIDE AIR DAMPER D-1 TO ITS LOW MINIMUM POSITION (WHEN ALLOWED BY DEMAND BASED VENTILATION CONTROL AS SEQUENCED ABOVE), WHILE PROPORTIONALLY OPENING RETURN DAMPER D-2.

HEATING OPERATION IS CONSTANT VOLUME, VARIABLE TEMPERATURE. THE UNIT CONTROLLER SHALL CONTROL TO A CONSTANT SPACE TEMPERATURE DURING HEATING MODE WITH CONSTANT FAN AIRFLOW (75% OF FULL AIRFLOW, ADJ.). SPACE TEMPERATURE SET POINT TS-4 SHALL BE MAINTAINED BY RESETTING THE DISCHARGE AIR TEMPERATURE TS-3 SLOWLY UP OR DOWN AS REQUIRED. ON A FALL IN DISCHARGE TEMPERATURE BELOW SET POINT, THE UNIT CONTROLLER SHALL ENABLE AND STAGE THE MODULATING GAS HEATING TO MEET SPACE TEMPERATURE SETPOINTS. SHOULD THE RTU SUPPLY TEMPERATURE SET POINT REACH 90°F WITHOUT SATISFYING SPACE TEMPERATURE, THE UNIT CONTROLLER SHALL SLOWLY RAMP THE SUPPLY FAN AIRFLOW UP FROM THE 75% SETTING TO 100% TO MEET SPACE TEMPERATURE SETPOINTS.

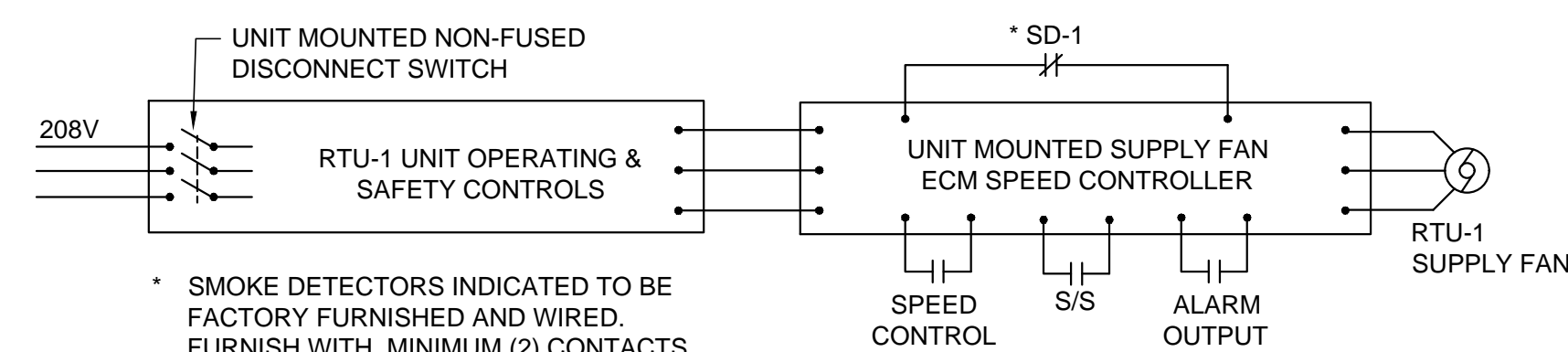
HIGH LIMIT HUMIDITY CONTROL: SHOULD THE RETURN AIR HUMIDITY BEGIN RISING ABOVE 50% (ADJ.) AS SENSED BY HUMIDISTAT HS-1, THE UNIT CONTROLLER SHALL PLACE THE AIR HANDLER IN DEHUMIDIFICATION MODE. THE UNIT CONTROLLER SHALL ENABLE AND STAGE DX COOLING TO MAINTAIN 55°F COOLING COIL DISCHARGE AIR TEMPERATURE WHILE ENABLING THE HOT GAS REHEAT COIL FOR FREE REHEAT TO MAINTAIN TEMPERATURE SETPOINT. ON A FALL IN RETURN AIR HUMIDITY THE REVERSE SHALL OCCUR AND THE UNIT CONTROLLER SHALL RESUME HEATING/COOLING AS REQUIRED.

DUCT SMOKE DETECTOR: WHEN PRODUCTS OF COMBUSTION ARE SENSED BY SD-1, THE UNIT FAN SHALL BE DEENERGIZED, OUTSIDE DAMPER D-1 SHALL FULLY CLOSE, AND THE UNIT CONTROLLER SHALL BE ALARMED. A MANUAL RESTART SHALL BE REQUIRED.

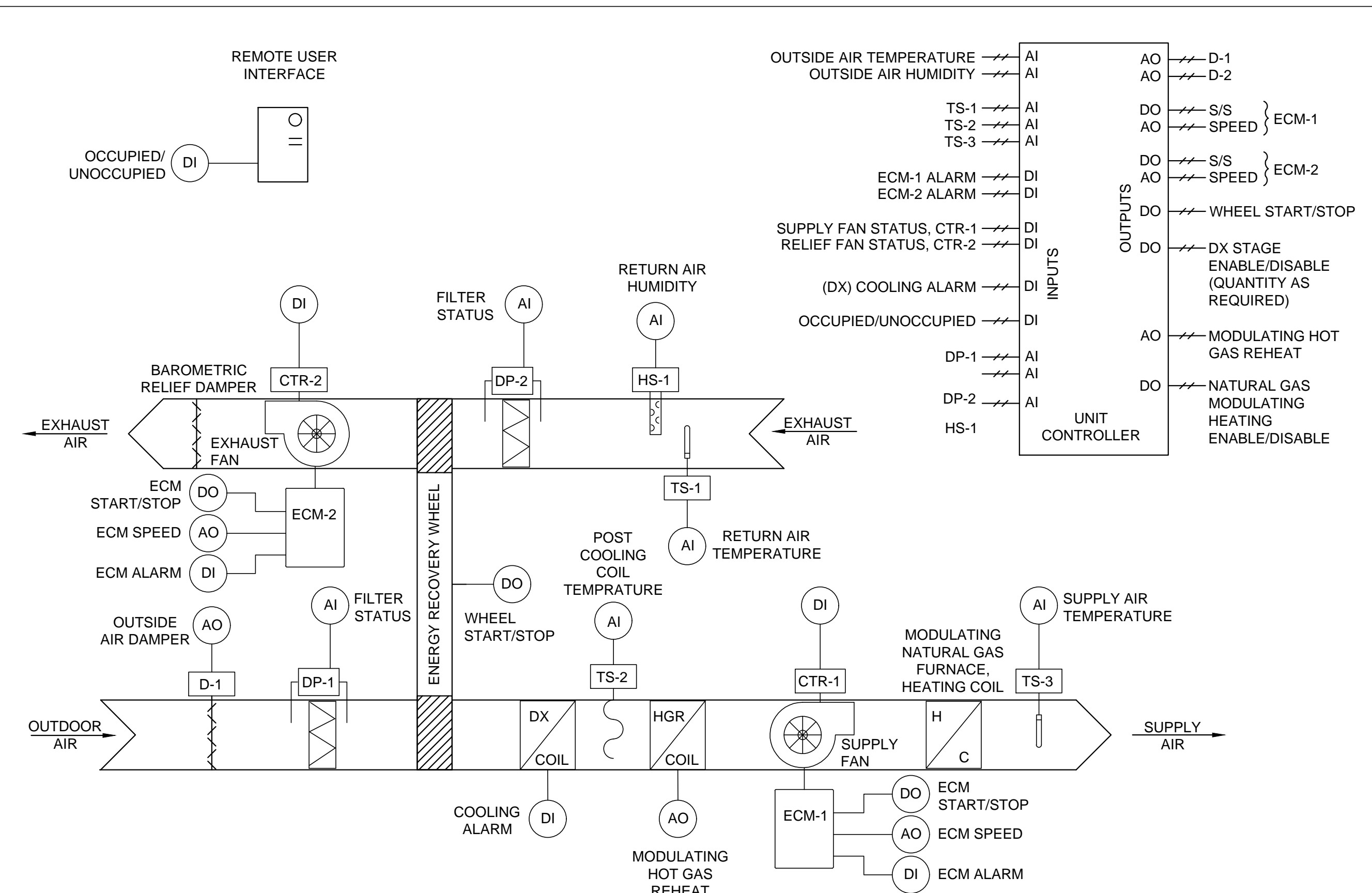
SYSTEM MONITORING: IN ADDITION TO ALL POINTS LISTED ABOVE, THE UNIT CONTROLLER SHALL MONITOR RETURN AIR TEMPERATURE THROUGH TS-1; RETURN AIR HUMIDITY THROUGH HS-1; FILTER STATUS THROUGH DP-1, DX COOLING ALARMS; AND ECM ALARMS.

### ROOFTOP AIR CONDITIONING UNIT (RTU-1) CONTROL SEQUENCE

NO SCALE



### ROOFTOP AIR CONDITIONER (RTU-1) ELECTRIC SEQUENCE



### MAU-1 SEQUENCE OF OPERATION:

UNIT SCHEDULE OF OPERATION: MAU-1 OCCUPIED/UNOCCUPIED SCHEDULE SHALL BE DETERMINED BY THE OWNER AND PROGRAMMED INTO THE UNIT CONTROLLER. ADDITIONALLY, THE SPACE REMOTE USER INTERFACE SHALL ALLOW FOR OWNER OVERRIDE TO THE UNOCCUPIED SCHEDULE.

OCCUPIED CONTROL: DURING OCCUPANCY, THE SUPPLY FAN, EXHAUST FAN AND ENERGY RECOVERY WHEEL SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER D-1 SHALL BE OPENED.

### TEMPERATURE CONTROL:

UNIT OPERATION SHALL PROVIDE A CONSTANT VOLUME OF DRY DEHUMIDIFIED 100% VENTILATION AIR.

COOLING: WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 75°F, THE UNIT CONTROLLER SHALL ENABLE AND STAGE DX COOLING FOR A DISCHARGE TEMPERATURE OF 55°F AT TS-2 AND SHALL MODULATE HOT GAS REHEAT AS REQUIRED TO PROVIDE A CONSTANT VOLUME OF SUPPLY AIR AT 72°F (ADJ) DISCHARGE AIR TEMPERATURE AS MEASURED BY SUPPLY AIR TEMPERATURE SENSOR TS-3. MAXIMUM SUPPLY AIR DEWPOINT SHALL NOT EXCEED 55°F.

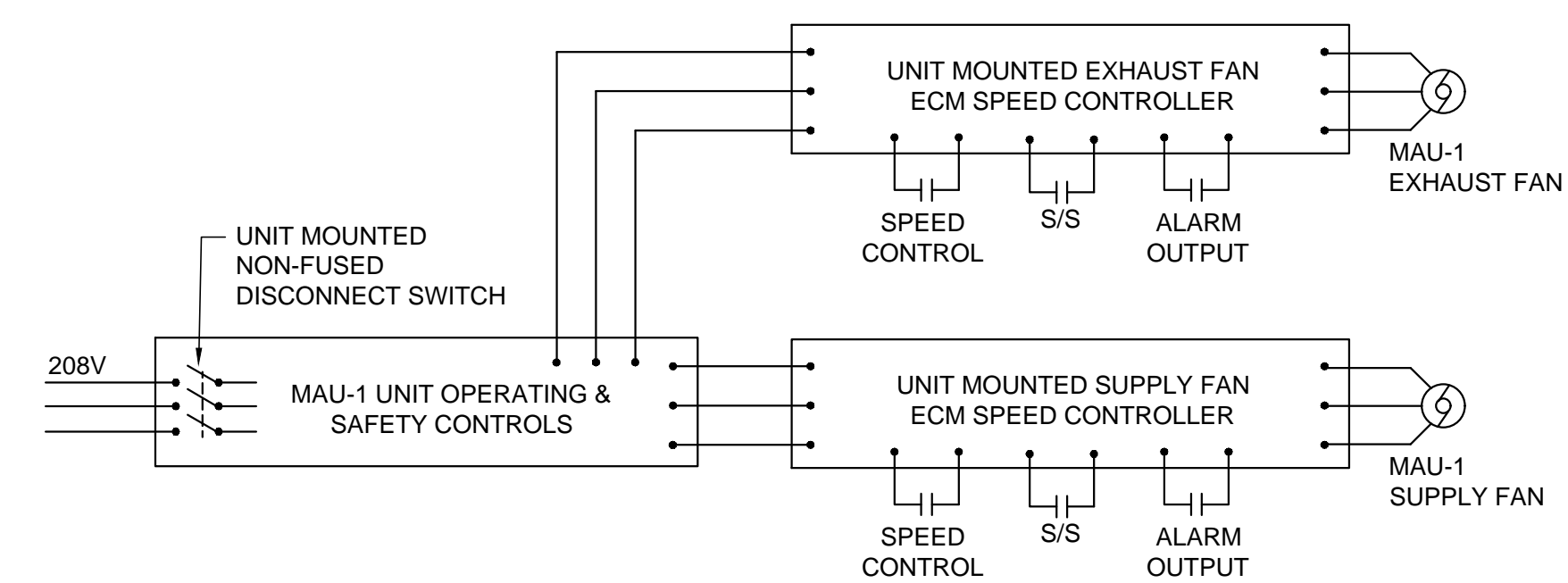
HEATING: WHEN OUTSIDE AIR TEMPERATURE IS BELOW 55°F, THE UNIT CONTROLLER SHALL DISABLE DX COOLING, ENABLE AND MODULATE THE NATURAL GAS HEAT EXCHANGER AS REQUIRED TO PROVIDE A CONSTANT VOLUME OF SUPPLY AIR AT 70°F (ADJ) DISCHARGE AIR TEMPERATURE AS MEASURED BY SUPPLY AIR TEMPERATURE SENSOR TS-3.

WHEN OUTSIDE AIR TEMPERATURES ARE BETWEEN 55°F AND 75°F, THE UNIT CONTROLLER SHALL CALCULATE RETURN AIR ENTHALPY THROUGH TS-1 AND HS-1. IF RETURN AIR ENTHALPY EXCEEDS 26.40 BTU/LB (±52.4°F DEWPOINT), THE UNIT CONTROLLER SHALL ENABLE COOLING OPERATION (PROVIDING DEHUMIDIFICATION) AS SEQUENCED ABOVE. AS RETURN AIR ENTHALPY DROPS BELOW 26.40 BTU/LB, THE UNIT CONTROLLER SHALL DISABLE THE DEHUMIDIFICATION SEQUENCE AND CONTROL DISCHARGE AIR TO A NEUTRAL DISCHARGE AIR TEMPERATURE OF 70°F TO 72°F (ADJ.).

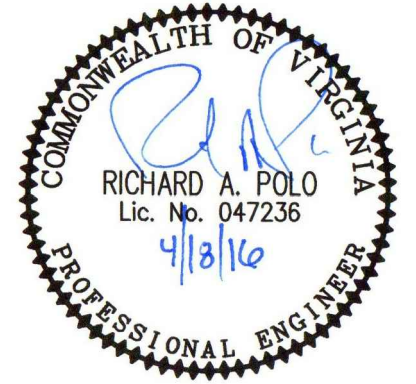
SYSTEM MONITORING: IN ADDITION TO ALL POINTS LISTED ABOVE, THE UNIT CONTROLLER SHALL MONITOR RETURN AIR TEMPERATURE THROUGH TS-1; RETURN AIR HUMIDITY THROUGH HS-1; SUPPLY AND EXHAUST FILTER STATUS THROUGH DP-1 AND DP-2, DX COOLING ALARMS; AND ECM ALARMS.

### ROOFTOP MAKEUP AIR CONDITIONING UNIT (MAU-1) CONTROL SEQUENCE

NO SCALE



### ROOFTOP MAKEUP AIR CONDITIONING UNIT (MAU-1) ELECTRIC SEQUENCE





Building Code:	VIRGINIA REHABILITATION CODE 2012	Electrical Code Year:	2011	Construction Type:	VB
Use group:	B-BUSINESS WITH SEPARATED A-3 (GALLERY)	Change of Use?	No	Occupancy Load:	240
Is project in flood plain:	No	BFE per NGVD1929:	N/A	DFE:	N/A
Square footage of project:	15,432	Total square footage of building:	16,504		

ELECTRICAL ABBREVIATIONS					
A	-	AMPS	HP	-	HORSEPOWER
AC	-	AIR CONDITIONING	HW	-	HOT WATER
ACS	-	ABOVE COUNTER SPLASHBACK	HWCP	-	HOT WATER CIRCULATING PUMP
ATS	-	AUTOMATIC TRANSFER SWITCH	HZ	-	HERTZ
BRKR	-	BREAKER	IBS	-	IN BASE OF SHELVES
C	-	CONDUIT	IMC	-	INTERMEDIATE METAL CONDUIT
CLG	-	CEILING	JB	-	JUNCTION BOX
COMB	-	COMBINATION	KVA	-	KILOVOLT-AMPS
CKT	-	CIRCUIT	KW	-	KILOWATT
CT	-	CURRENT TRANSFORMER	MP	-	MOTOR PROTECTIVE SWITCH
CUH	-	CABINET UNIT HEATER	MS	-	MOTOR STARTER
CW	-	COLD WATER	NF	-	NON-FUSIBLE
DDC	-	DIRECT DIGITAL CONTROLLER	PB	-	PUSH BUTTON
DH	-	DOOR HOLDER	PC	-	PHOTOCELL
DISC	-	DISCONNECT SWITCH	PNL	-	PANEL
DP	-	DOUBLE POLE	PAC	-	PACKAGED AIR
DS	-	DOOR SWITCH		-	CONDITIONING UNIT
DT	-	DOUBLE THROW	R	-	REMOVE
E	-	EXISTING	REC	-	RECEPTACLE
EGC	-	EQUIPMENT GROUND CONDUCTOR	S/N	-	SOLID NEUTRAL
EM	-	EMERGENCY	S/O	-	SPACE ONLY
EMT	-	ELECTRIC METALLIC TUBING	SP	-	SINGLE POLE
ESC	-	ELECTRIC SEQUENCE CONTROLS	ST	-	SINGLE THROW
EUH	-	ELECTRIC UNIT HEATER	SW	-	SWITCH
EWC	-	ELECTRIC WATER COOLER	TRANS	-	TRANSFORMER
FA	-	FIRE ALARM	UH	-	UNIT HEATER
FLA	-	FULL LOAD AMPS	V	-	VOLT
FP	-	FAN POWERED VARIABLE	VV	-	VARIABLE VOLUME
	-	VOLUME BOXES	W	-	WATTS
GEC	-	GROUND ELECTRODE CONDUCTOR	WH	-	WALL HEATER
GEN	-	GENERATOR	WL	-	WHILE-IN-USE
GF	-	GROUND FAULT INTERRUPT	WP	-	WEATHERPROOF
GRS	-	GALVANIZED RIGID STEEL CONDUIT	Ø	-	PHASE
HOA	-	HAND-OFF-AUTOMATIC			

SCHEDULE OF CONNECTED DIVISION 22 & 23 EQUIPMENT					
VRF INDOOR UNITS			VRF OUTDOOR UNITS		
MARK	VOLTAGE/PHASE	WATTS	MARK	VOLTAGE/PHASE	KVA
FCU-1	208V-1P	52	HP-1A	208V-3P	23.8
FCU-2	208V-1P	52	HP-1B	208V-3P	23.8
FCU-3	208V-1P	52			
FCU-4	208V-1P	52			
FCU-5	208V-1P	52			
FCU-6	208V-1P	52			
FCU-7	208V-1P	62			
FCU-8	208V-1P	83			
FCU-9	208V-1P	50			
FCU-10	208V-1P	52			
FCU-11	208V-1P	83			
FCU-12	208V-1P	83			
FCU-13	208V-1P	52			
FCU-14	208V-1P	52			
FCU-15	208V-1P	52			
FCU-16	208V-1P	52			
FCU-17	208V-1P	52			
FCU-18	208V-1P	104			
FCU-19	208V-1P	50			
FCU-20	208V-1P	52			
FCU-21	208V-1P	50			
FCU-22	208V-1P	75			
FCU-23	208V-1P	83			
FCU-24	208V-1P	75			
FCU-25	208V-1P	75			
FCU-26	208V-1P	62			
FCU-27	208V-1P	75			
FCU-28	208V-1P	75			
FCU-29	208V-1P	83			
FCU-30	208V-1P	366			
ROOFTOP AIR HANDLING UNIT			VRF HEAT RECOVERY UNITS		
MARK	VOLTAGE/PHASE	KVA	MARK	VOLTAGE/PHASE	WATTS
RTU-1	208V-3P	18.4	HRU-1	208V-1P	83
			HRU-2	208V-1P	83
			HRU-3	208V-1P	83
			HRU-4	208V-1P	83
			HRU-5	208V-1P	83
			HRU-6	208V-1P	83

SYSTEM	AFF TOP OF OUTLET UNLESS NOTED	SYMBOL	DESCRIPTION
FIRE		FACP	FIRE ALARM NAC CONTROL PANEL
		FARA	FIRE ALARM REMOTE ANNUNCIATOR PANEL, SURFACE MOUNTED
		FARA	FIRE ALARM REMOTE ANNUNCIATOR PANEL, RECESSED MOUNTED
		FNAC	FIRE ALARM NAC EXTENDER PANEL
	CEILING	Ⓢ	FIRE ALARM SYSTEM SMOKE (PHOTOELECTRIC) DETECTOR
	CEILING	Ⓢ	FIRE ALARM SYSTEM HEAT DETECTOR
	4'-0"	F	FIRE ALARM SYSTEM DUAL ACTION MANUAL PULL STATION, WALL
	7'-0"	Ⓢ4	FIRE ALARM, AUDIO/VISUAL ALARM, WALL
	7'-0"	Ⓢ4	FIRE ALARM, VISUAL (STROBE) ONLY ALARM, WALL
		ⓈD	FIRE ALARM DUCT SMOKE DETECTOR, COORDINATE EXACT LOCATIONS AND QUANTITIES WITH DIVISION 23
EXISTING		ⓈE	EXISTING RECESSED OR SURFACE MOUNTED FIXTURE TO REMAIN
		ⓈE	EXISTING WALL MOUNT LINEAR FIXTURE TO REMAIN
		ⓈE	EXISTING LOCAL SWITCH TO REMAIN
		Ⓢ3E	EXISTING 3-WAY LOCAL SWITCH TO REMAIN
		—	EXISTING CIRCUIT CONNECTION WIRE TO REMAIN
		ⓈE	EXISTING ELECTRICAL PANEL TO REMAIN
		TELE	EXISTING FLUSH MOUNT TELEPHONE BOX TO REMAIN
		ⓈE	EXISTING FLUSH MOUNT CEILING JUNCTION BOX TO REMAIN
		ⓈE	EXISTING DUPLEX RECEPTACLE TO REMAIN
		ⓈE	EXISTING DOUBLE DUPLEX RECEPTACLE TO REMAIN
DEMOLITION		ⓈE	EXISTING ELECTRIC MOTOR TO REMAIN
		ⓈE	EXISTING OVERHEAD DOOR CONTROLLER TO REMAIN
		ⓈE	EXISTING CEILING RECESSED OR SURFACE MOUNTED FLUORESCENT OR INCANDESCENT FIXTURE TO BE REMOVED
		ⓈE	EXISTING WALL MOUNTED FIXTURE TO BE REMOVED
		ⓈE	EXISTING LIGHT FIXTURE/EXHAUST FAN COMBO UNIT TO BE REMOVED
		Ⓢ	EXISTING LOCAL SWITCH TO BE REMOVED
		Ⓢ	EXISTING LOCAL SWITCH INSTALLED IN SURFACE RACEWAY TO BE REMOVED
		Ⓢ3	EXISTING 3-WAY LOCAL SWITCH TO BE REMOVED
		ⓈE	EXISTING DUPLEX RECEPTACLE TO BE REMOVED
		ⓈE	EXISTING DUPLEX RECEPTACLE MOUNTED IN SURFACE RACEWAY TO BE REMOVED
	ⓈE	EXISTING DISCONNECT SWITCH TO BE REMOVED	
	PNL	EXISTING SURFACE MOUNT ELECTRICAL PANEL TO BE REMOVED	

SYSTEM	AFF TOP OF OUTLET UNLESS NOTED	SYMBOL	DESCRIPTION
BOXES/WIRING		Ⓢ	ELECTRIC MOTOR
		—	CONDUIT ABOVE CEILING OF AREA WHERE SHOWN
		-----	CONDUIT UNDER FLOOR OR GRADE OF AREA WHERE SHOWN
		— —	GROUNDING ELECTRODE CONDUCTOR (GEC) CONNECTED TO GROUND
	5'-0"	Ⓢ	DISCONNECT SWITCH
		Ⓢ	JUNCTION BOX
		Ⓢ	PULLBOX
	5'-0" OR PER DWG E5.1	Ⓢ	MOTOR PROTECTIVE SWITCH
	6'-0"	PNL	ELECTRICAL PANEL, FLUSH MOUNT
	6'-0"	PNL	ELECTRICAL PANEL, SURFACE MOUNT
RECEPTACLES		Ⓢ	DIRECT CONNECTION TO EQUIPMENT
		Ⓢ	CORD REEL, SEE DETAIL ON SHEET E3.3 FOR REQUIREMENTS
	4'-0"	ⓈE	EMERGENCY STOP STATION FOR GAS-FIRED WATER HEATER WITH FLUSH ROUND RED MAINTAINED PUSHBUTTON UNDER PADLOCKABLE CLEAR LID LABELED "EMERGENCY STOP" AND "PUSHBUTTON". STATION LABELLED "EMERGENCY - SHUT-OFF" AND NORMALLY OPEN AND NORMALLY CLOSED STACKABLE CONTACT BLOCK. STATION SHALL BE PILLA #WPS-CP2-SO-PILNOCB/PILNOCB OR ACCEPTABLE EQUAL. COORDINATE PROPER CONNECTION WITH DIVISION 22.
		ⓈE	LIGHTING CONTACTOR
		—	CIRCUIT CONNECTION WIRE
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX RECEPTACLE, WALL NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DOUBLE DUPLEX RECEPTACLE, WALL IN DOUBLE-GANG BOX NEMA 5-20R
	ABOVE COUNTER	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX RECEPTACLE, WALL MOUNTED ABOVE COUNTER BACKSPLASH (OR 48" AFF IF NO COUNTER) NEMA 5-20R
	ABOVE COUNTER	ⓈE	125V, 3W, 20A, 2P, 1Ø DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED ABOVE COUNTER BACKSPLASH (OR 48" AFF IF NO COUNTER) NEMA 5-20R
	AS REQ'D FOR EWC	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL LOCATED WITHIN ELECTRIC WATER COOLER COVER NEMA 5-20R
LIGHTING	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	ABOVE COUNTER	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL MOUNTED ABOVE COUNTER BACKSPLASH (OR 48" AFF IF NO COUNTER) NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-8"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, WALL WITH WHILE-IN-USE COVER NEMA 5-20R
	1'-0"	ⓈE	125V, 3W, 20A, 2P, 1Ø DUPLEX GROUND FAULT RECEPTACLE, ROOF OR GRADE MOUNTED IN SPECIFIED FS (FD) BOX WITH WHILE-IN-USE COVER NEMA 5-20R
LIGHTING		Ⓢ	CEILING OUTLET WITH RECESSED 2'x4' RECESSED LAY-IN FLUORESCENT TROFFER
		Ⓢ	CEILING OUTLET WITH SURFACE OR PENDANT MOUNTED LINEAR FLUORESCENT FIXTURE
		Ⓢ	CEILING OUTLET WITH RECESSED LED DOWNLIGHT
	AS SPEC'D	Ⓢ	WALL OUTLET WITH WALL MOUNTED COMPACT FLUORESCENT OR LED FIXTURE
		Ⓢ	CEILING OUTLET WITH PENDANT MOUNTED LED OR FLUORESCENT FIXTURE
		LT	LIGHT TRACK
		Ⓢ	FIXTURE MOUNTED TO LIGHT TRACK
		TL	LED TAPE LIGHT, FIXTURE TYPE A ON LIGHTING SCHEDULE, SHEET E0.2
		Ⓢ	CEILING OUTLET WITH EXIT SIGN FIXTURE, SINGLE OR DOUBLE FACED, WITH DIRECTIONAL ARROWS WHERE SHOWN
	ABV DOOR LINTEL	Ⓢ	WALL OUTLET WITH EXIT SIGN FIXTURE, SINGLE OR DOUBLE FACED, WITH DIRECTIONAL ARROWS WHERE SHOWN
LIGHTING	4'-0"	Ⓢ	LOCAL SWITCH, SINGLE POLE, 120-277V, 20A
	4'-0"	Ⓢ3	LOCAL SWITCH, 3-WAY, 120-277V, 20A
	4'-0"	Ⓢ4	LOCAL SWITCH, 4-WAY, 120-277V, 20A
	4'-0"	D	DIMMER, SEE SPECIFICATIONS, SHEET E5.1, FOR REQUIREMENTS
	4'-0"	D3	3-WAY DIMMER, SEE SPECIFICATIONS, SHEET E5.1, FOR REQUIREMENTS
	4'-0"	ⓈL	LOCAL LOW VOLTAGE MOMENTARY SWITCH, SEE SPECIFICATIONS, SHEET E5.1, FOR REQUIREMENTS
	4'-0"	ⓈM	LOCAL SWITCH, SINGLE POLE, 120-277V, 20A WITH BUILT-IN OCCUPANCY SENSOR
	4'-0"	Ⓢ	OCCUPANCY SENSOR, CEILING MOUNT, 360 DEGREE
	4'-0"	Ⓢ	LIGHTING TRANSFER RELAY (GTR), SEE SPECIFICATIONS, SHEET E5.1 FOR REQUIREMENTS

ELECTRICAL SHEET INDEX	
E0.1	ELECTRICAL SYMBOL LIST & EQUIPMENT SCHEDULE
E0.2	ELECTRICAL LIGHT FIXTURE SCHEDULE & DETAILS
E1.1	ELECTRICAL FIRST FLOOR PLAN - DEMOLITION
E1.2	ELECTRICAL SECOND FLOOR PLAN - DEMOLITION
E2.1	ELECTRICAL FIRST FLOOR PLAN - LIGHTING
E2.2	ELECTRICAL SECOND FLOOR PLAN - LIGHTING
E2.3	ELECTRICAL FIRST FLOOR - LIGHTING CALCULATIONS
E2.4	ELECTRICAL SECOND FLOOR - LIGHTING CALCULATIONS
E2.5	ELECTRICAL FIRST FLOOR - EGRESS EMER. LIGHTING CALCS
E2.6	ELECTRICAL SECOND FLOOR - EGRESS EMER. LIGHTING CALCS
E3.1	ELECTRICAL FIRST FLOOR PLAN - POWER
E3.2	ELECTRICAL SECOND FLOOR PLAN - POWER
E3.3	ELECTRICAL KITCHEN PLAN
E4.1	ELECTRICAL ONE-LINE DIAGRAM & PANELBOARDS
E4.2	ELECTRICAL PANELBOARD SCHEDULES
E5.1	ELECTRICAL SPECIFICATIONS

THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.

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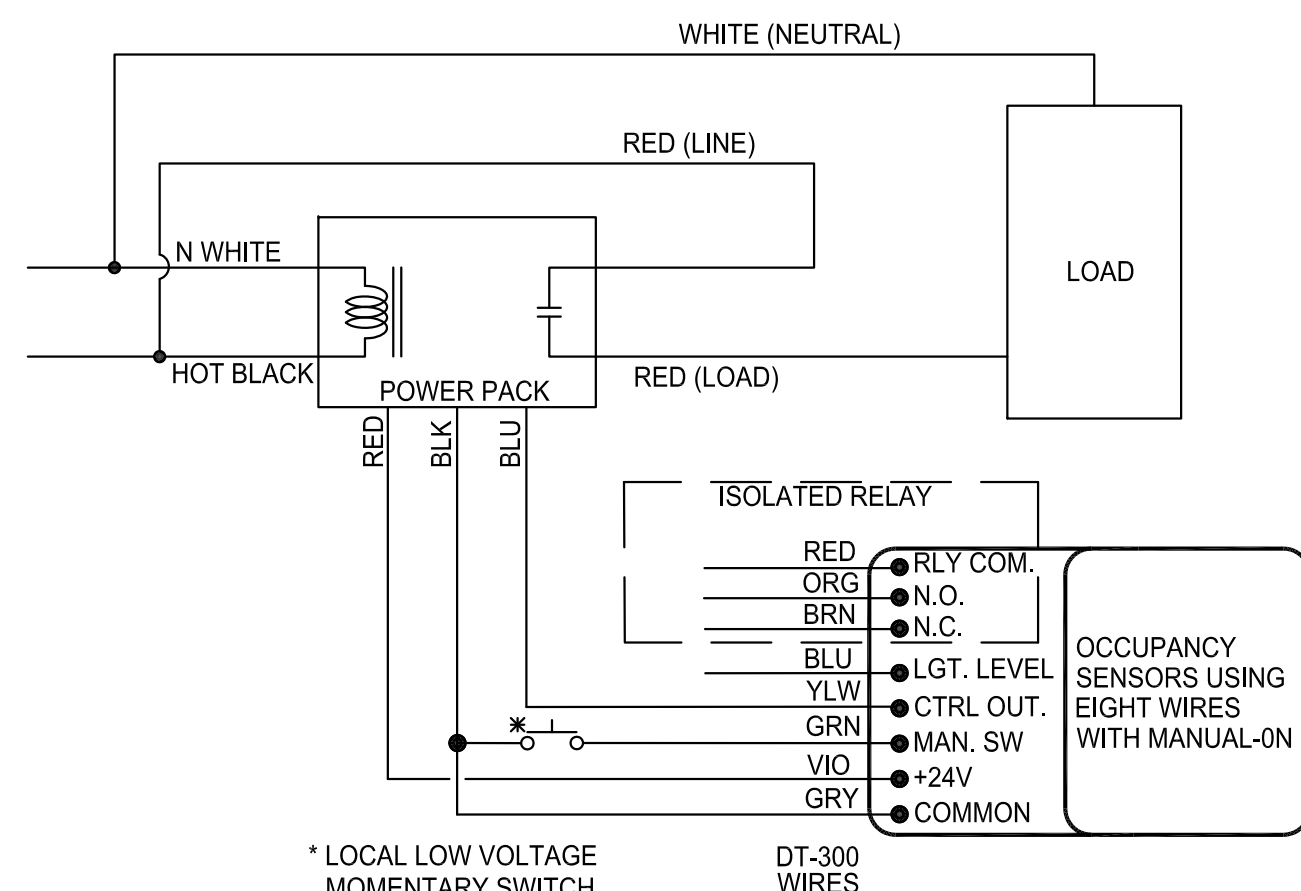
ELECTRICAL SYMBOL LIST & EQUIPMENT SCHEDULE

E0.1

3300 W BROAD ST  
RICHMOND, VIRGINIA 23230

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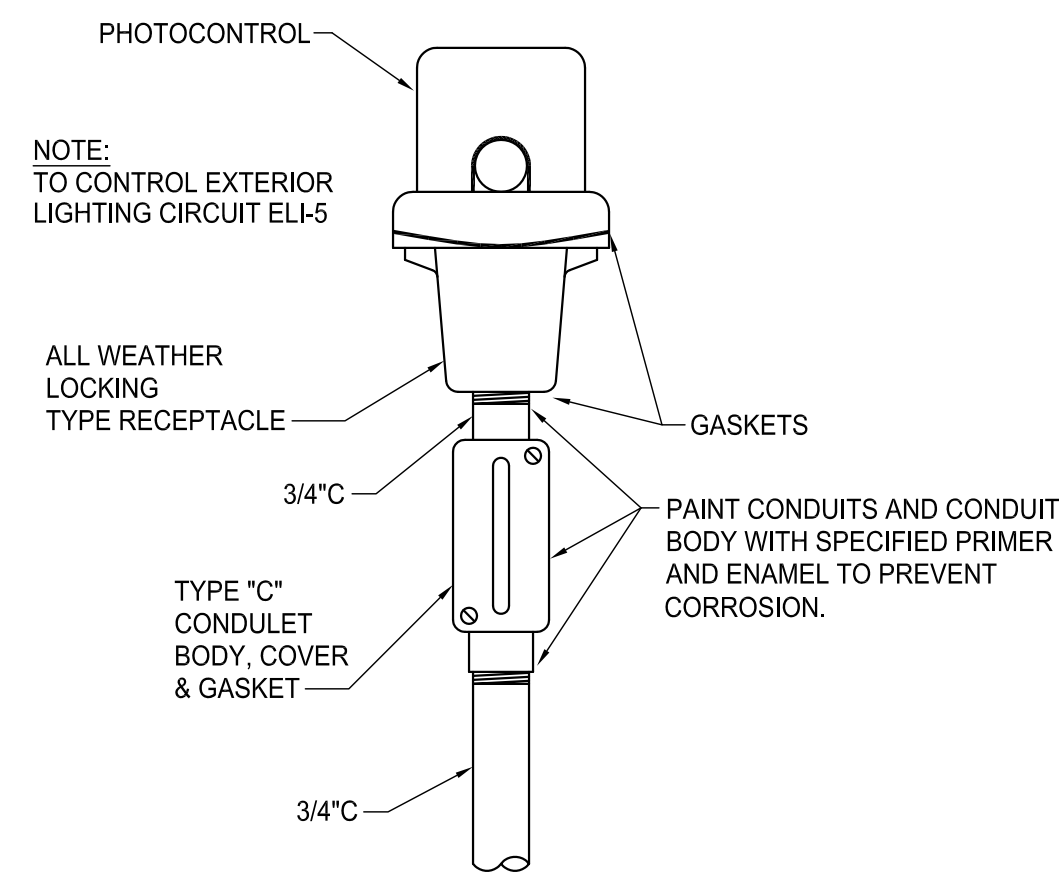




**OCCUPANCY SENSOR MANUAL-ON**  
**WIRING DIAGRAM**

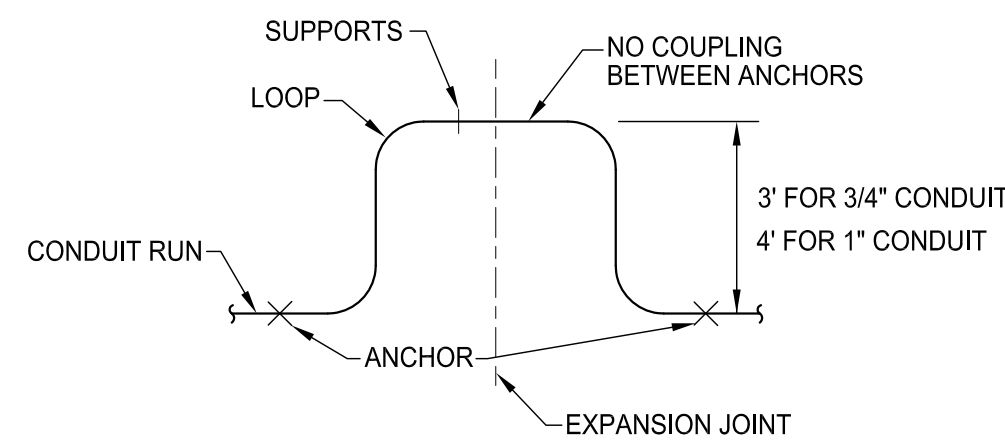
NO SCALE

- NOTES:
- DIAGRAM IS BASED ON THE WATT-STOPPER DT-300 OCCUPANCY SENSOR. VERIFY ALL WIRING CONNECTIONS WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR THE TYPE OF OCCUPANCY SENSOR PROVIDED.
  - WHERE MORE THAN ONE LOW VOLTAGE SWITCH IS SHOWN FOR A ROOM, WIRE THE ADDITIONAL SWITCHES IN PARALLEL WITH THE SWITCH SHOWN IN THE DIAGRAM TO ALLOW ANY SWITCH IN THE ROOM TO TURN ON THE LIGHTS.
  - VERIFY WIRING REQUIRED WITH MANUFACTURER FOR MANUAL-ON OPERATION WHEN MULTIPLE OCCUPANCY SENSORS ARE REQUIRED IN A SPACE.



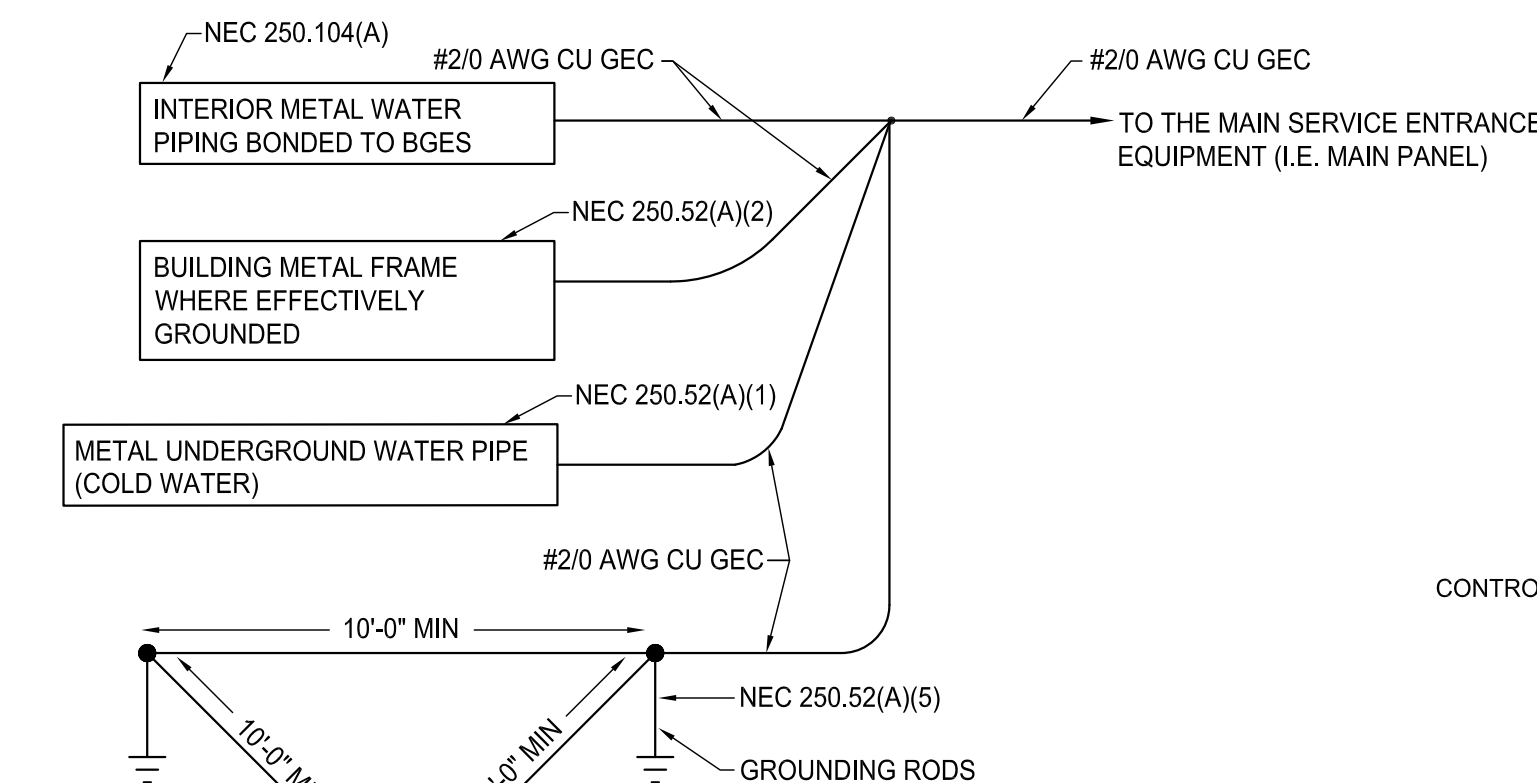
**PHOTOCELL MOUNTING DETAIL**

NO SCALE



**DETAIL OF CONDUIT LOOP AT EXPANSION JOINT**

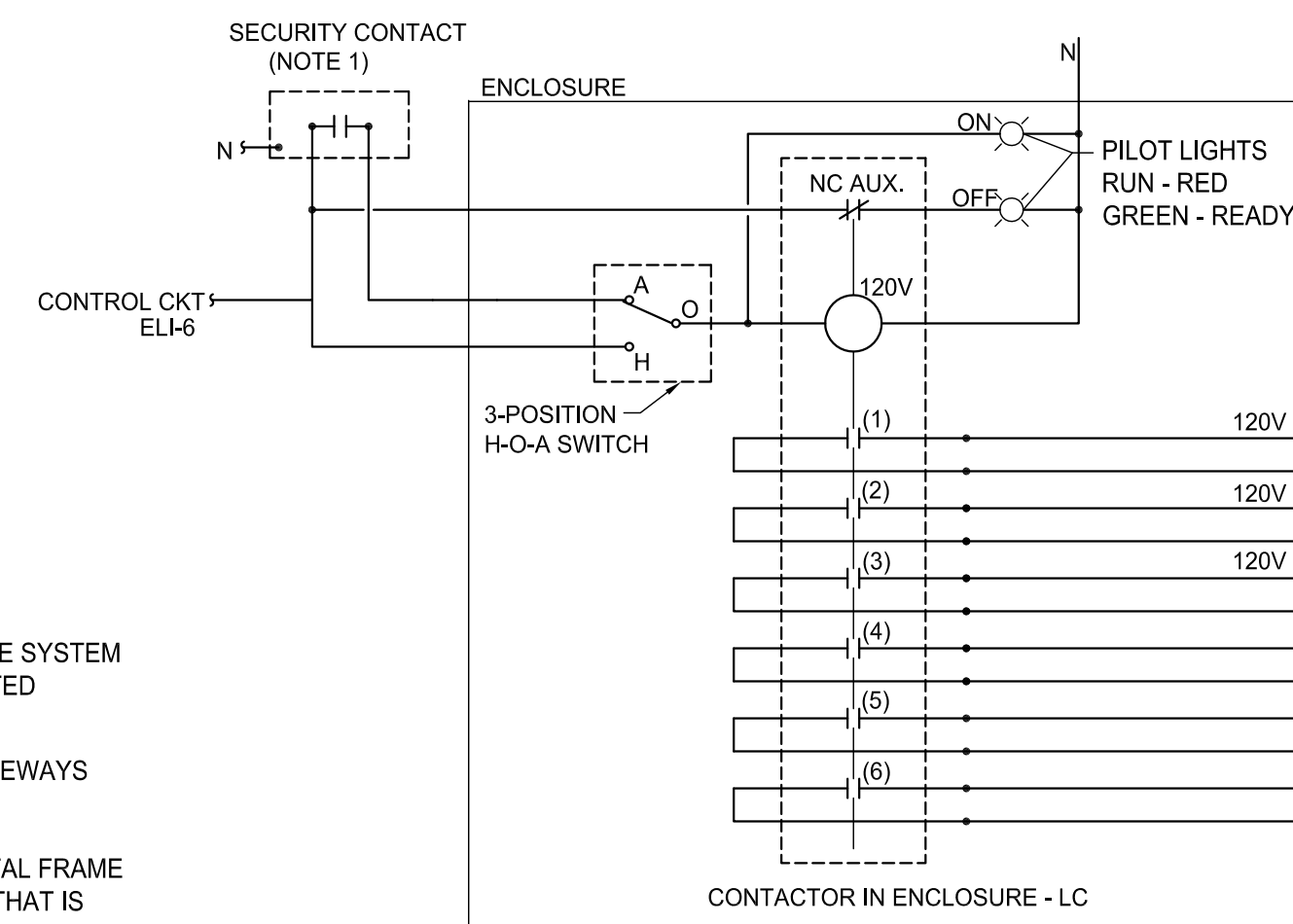
NO SCALE



- NOTES:
- ALL CONNECTIONS IN THE GROUNDING ELECTRODE SYSTEM SHALL BE EXOTHERMICALLY WELDED OR BE A LISTED GROUNDING CONNECTION.
  - BOND ALL GROUNDING ELECTRODE METALLIC RACEWAYS PER NEC 250.64(B).
  - BOND ANY OTHER METAL PIPING OR BUILDING METAL FRAME NOT INTENTIONALLY OR INHERENTLY GROUNDING THAT IS LIKELY TO BECOME ENERGIZED TO THE BGES IN ACCORDANCE WITH NEC 250.104(B) & 250.104(C).

**BUILDING GROUNDING ELECTRODE SYSTEM (BGES)**

SCHEMATIC



**LIGHTING CONTACTOR SEQUENCE (LC)**

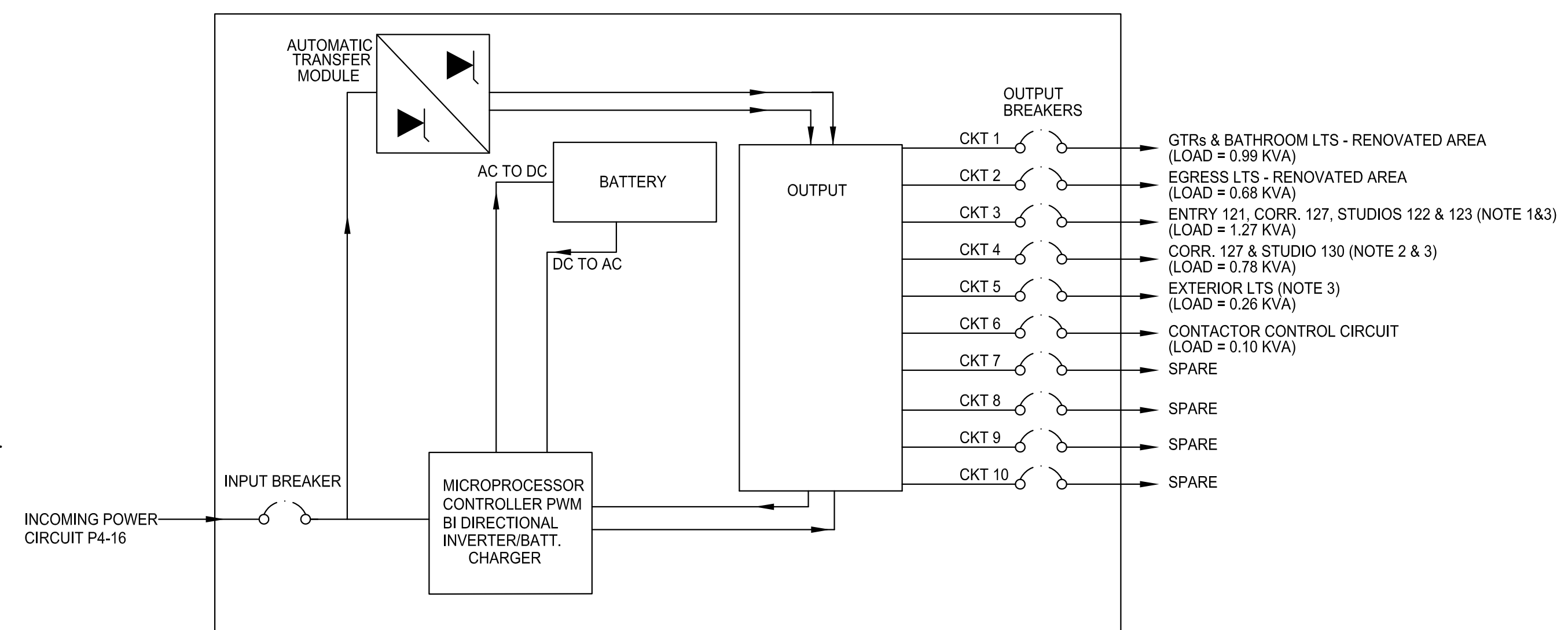
SCHEMATIC

- NOTES:
- SECURITY SYSTEM SHALL PROVIDE CONTACT CLOSURE TO TURN ON LIGHTS CONTROLLED BY THE CONTACTOR WHEN SYSTEM IS DISARMED INDICATING BUILDING IS OCCUPIED. THE SECURITY SYSTEM SHALL OPEN THE CONTACT AND TURN THE LIGHTS OFF WHEN THE SYSTEM IS ARMED (BUILDING IS UNOCCUPIED). COORDINATE THESE REQUIREMENTS WITH THE OWNER'S SECURITY SYSTEM PROVIDER.

MARK	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	LAMPS			VOLTS	MOUNTING	APPROX. QUANTITY (VERIFY ON PLANS)	INPUT WATTS	NOTES
				NO.	WATTS	TYPE					
A	12 VOLT LED TAPE LIGHT, 120 DEG. BEAM ANGLE, FIELD CUTTABLE, 3000K, 543 LUMENS/FT, MOUNTED IN ALUMINUM CHANNEL WITH FROSTED COVER	DIODE LED	DI-12V-DB30-8009 DOUBLE BLAZE SERIES	-	6/FT	LED	120V (AT POWER SUPPLY)	CHANNEL	600 FT	6 WATTS/FT	1,2,6,7
B	6" LED DOWNLIGHT WITH FRAME-IN KIT, NON-DIM DRIVER, SATIN REFLECTOR, WHITE FLANGE, 2000 LUMENS, 3000K, WIDE FLOOD BEAM SPREAD	LITON LIGHTING	LRALD6SWF141-860 W/ LHALD625C071UE FRAME-IN KIT AND LED DRIVER	-	25	LED	120	RECESSED	33	25	-
LT	SINGLE CIRCUIT EXTRUDED ALUMINUM LIGHT TRACK, 20 AMP, SOLID COPPER CONDUCTORS	LITON LIGHTING	LP SERIES	-	-	-	120	SURFACE	12'	-	3,4
C	LED LINE VOLTAGE LIGHT TRACK FIXTURE WITH GIMBAL RING, AIMING MECHANISM, HORIZONTAL & VERTICAL ADJUSTMENTS	LITON LIGHTING	LT824	1	14	PAR30 LED	120	LIGHT TRACK	12	14	4
D	SURFACE MOUNT 2-LAMP FLUORESCENT FIXTURE, COLD-ROLLED STEEL HOUSING, SMOOTH WHITE ACRYLIC LENS, WHITE FINISH	TEXAS FLUORESCENTS	555-MW-232-MV-WH	2	32	T8	120	SURFACE	1	60	-
F	2' X 4' 3-LAMP RECESSED FLUORESCENT TROFFER, 1/8" PRISMATIC ACRYLIC #12 LENS, DOUBLE GASKETING	TEXAS FLUORESCENTS	131A125-332-MV	3	32	T8	120	RECESSED	8	90	5
G	2' X 4' 2-LAMP RECESSED FLUORESCENT TROFFER, 1/8" PRISMATIC ACRYLIC #12 LENS	TEXAS FLUORESCENTS	131A125-232-MV	2	32	T8	120	RECESSED	2	60	-
H	PENDANT MOUNT 2-LAMP FLUORESCENT STRIP FIXTURE, DIE-FORMED STEEL HOUSING, WHITE STEEL REFLECTOR, WIREGUARD	TEXAS FLUORESCENTS	IND-232-W30-MV	2	32	T8	120	PENDANT	1	60	-
J	4.5" DIAMETER WALLMOUNT LED CYLINDER, CLEAR TEMPERED GLASS LENS, 1820 LUMEN, 3000K, WET LOCATION LISTING	LURALINE LIGHTING	278UD-2T78-2L13DOB	-	26	LED	120	WALL	6	26	4
K	LED WALLPACK, DIE-CAST ALUMINUM HOUSING, HIGH IMPACT BOROSILICATE GLASS LENS, 3000K COLOR, 7600 LUMENS, WET LOCATION LISTING	NORIBACHI	LIN-036-B-WW-MT-WPX-COL[RAL]	-	54	LED	120	WALL	2	54	4
EX-1	LED UNIVERSAL EXIT SIGN, SINGLE/DOUBLE FACED, RED LETTERS, WHITE THERMOPLASTIC HOUSING, CHEVRON INDICATORS	LIGHT ALARMS	QLX500-RN	-	2.5	LED	120	UNIVERSAL	20	2.5	-

**LIGHTING FIXTURE SCHEDULE NOTES:**

- PROVIDE ALL ACCESSORIES FOR LED TAPE LIGHT NECESSARY FOR A COMPLETE INSTALLATION IN RUNS OF LENGTHS SHOWN ON DRAWINGS INCLUDING POWER SUPPLY/LOW VOLTAGE DRIVER, DC PLUG, CONNECTORS, MOUNTING CHANNEL, ETC.
- LED TAPE LIGHT SHALL BE MOUNTED IN A FIELD CUTTABLE. DOUBLE-ANODIZED ALUMINUM EXTRUDED CHANNEL WITH FROSTED POLYCARBONATE LENS AND END CAPS. CHANNEL SHALL BE KLUSDESIGN GIZA SERIES OR EQUAL RECOMMENDED BY THE FIXTURE MANUFACTURER. COORDINATE THE MOUNTING REQUIREMENTS OF THE CHANNEL WITH THE MANUFACTURER FOR THE TYPE OF SURFACE THE CHANNEL MOUNTS TO IN EACH SPECIFIC LOCATION.
- PROVIDE ALL ACCESSORIES FOR LIGHT TRACK NECESSARY FOR A COMPLETE INSTALLATION INCLUDING END CAPS, CONNECTORS, ETC. PROVIDE TYPE C FIXTURES IN QUANTITY SHOWN ON PLAN.
- FINISH SHALL BE CHOSEN BY THE ARCHITECT.
- FIXTURE SHALL BE PROVIDED WITH DOUBLE GASKETING (ONE GASKET BETWEEN LENS AND DOOR FRAME AND ONE GASKET BETWEEN DOOR FRAME AND FIXTURE BODY) FOR USE IN KITCHEN.
- CONSTANT WATTAGE (NON-DIMMED) POWER SUPPLIES FOR LED TAPE LIGHT SHALL BE MAXIMUM 60 WATT AND MOUNTED IN MANUFACTURER'S JUNCTION BOX (MODEL #DI-0906 IN LO-PRO #DI-0980 JUNCTION BOX). POWER SUPPLIES MAY SERVE MULTIPLE FIXTURE LOCATIONS, BUT ONE POWER SUPPLY SHALL NOT SERVE MORE THAN TWO (2) 4' FIXTURES. PROVIDE PROPER QUANTITY FOR THE LENGTHS OF TAPE LIGHT SHOWN ON THE PROJECT. POWER SUPPLIES SHALL BE INSTALLED ABOVE ACCESSIBLE CEILINGS, IN THE STRUCTURE OF EXPOSED CEILINGS, OR OTHER ACCESSIBLE LOCATION THAT IS NOT PART OF THE NORMALLY OCCUPIED SPACE. INSTALL IN ACCORDANCE WITH ALL MANUFACTURER INSTRUCTIONS.
- WHERE DIMMING IS SHOWN, PROVIDE MAXIMUM 300 WATT MAGNETIC DIMMABLE DRIVER IN NEMA-3R ENCLOSURE (MODEL #DI-DM-12V300W-MT). MOUNT AND INSTALL AS CALLED FOR IN NOTE 6 ABOVE FOR CONSTANT WATTAGE POWER SUPPLIES. FOR CONTROL OF DRIVER, PROVIDE LUTRON #DVLV DIVA SERIES PRESET MAGNETIC LOW VOLTAGE DIMMERS (SINGLE OR 3-WAY AS SHOWN ON THE DRAWINGS) OR OTHER DIMMER APPROVED BY THE DRIVER MANUFACTURER.



**6.6 KVA EMERGENCY LIGHTING CENTRAL INVERTER SYSTEM (ELI)**

SCHEMATIC (SINGLE PHASE 208V INPUT, 120V OUTPUTS)

NOTES:

- CIRCUIT SHALL POWER EXISTING LIGHTS TO REMAIN POWERED FROM CIRCUIT #3 IN EXISTING PANEL A TO BE REMOVED.
- CIRCUIT SHALL SUPPLY EXISTING LIGHTS TO REMAIN POWERED FROM CIRCUIT #7 IN EXISTING PANEL A TO BE REMOVED.
- CIRCUITS ELI-2, ELI-3, & ELI-4 SHALL BE CONTROLLED BY LIGHTING CONTACTOR, SEE DETAIL, THIS SHEET. CIRCUIT ELI-5 SHALL BE CONTROLLED BY PHOTOCELL, SEE DETAIL, THIS SHEET.
- TOTAL LOAD ON CENTRAL LIGHTING INVERTER SYSTEM IS 4.1 KVA.

THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.

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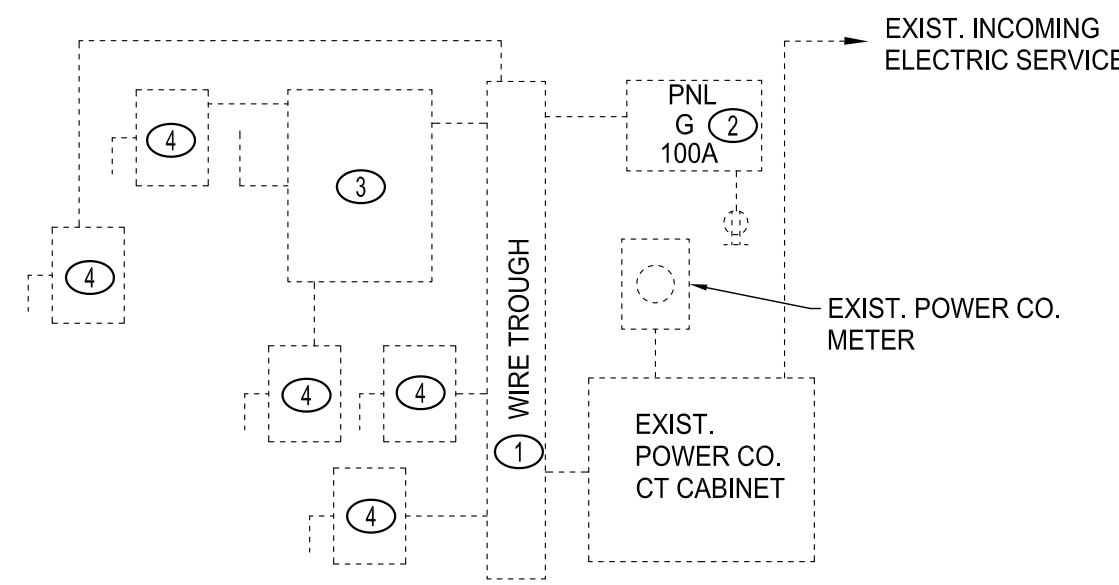
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**ELECTRICAL**  
**LIGHT FIXTURE**  
**SCHEDULE &**  
**DETAILS**

**E0.2**





## EXISTING ELECTRIC SERVICE EQUIPMENT

SCHEMATIC

### NOTES:

- ① EXISTING WIRE TROUGH SERVES PANEL B DIRECTLY. WIRE TROUGH SHALL REMAIN UNTIL PANEL B, PANEL A, AND EXISTING CIRCUITS IN PANEL G ARE CONNECTED TO THE NEW SERVICE EQUIPMENT.
- ② EXISTING 120/240V, 100 AMP LOAD CENTER (PANEL G) SHALL REMAIN IN PHASE 1 UNTIL THE EXISTING OUTLETS SUPPLIED BY THE PANEL THAT NEED TO REMAIN IN SERVICE THROUGH PHASE 1 CAN BE TEMPORARILY RELOCATED TO ONE OF THE NEW PANELBOARDS.
- ③ EXISTING 3-POLE, 200 AMP DISCONNECT SWITCH FUSED AT 125 AMPS SERVES PANEL A. SWITCH SHALL REMAIN IN PHASE 1 UNTIL EQUIPMENT IN PANEL A NEEDING TO REMAIN POWERED IS CONNECTED TO AND POWERED BY THE NEW SERVICE EQUIPMENT.
- ④ EXISTING DISCONNECT SWITCH IS NOT IN SERVICE.

### FIRST FLOOR DEMOLITION PLAN REFERENCE NOTES:

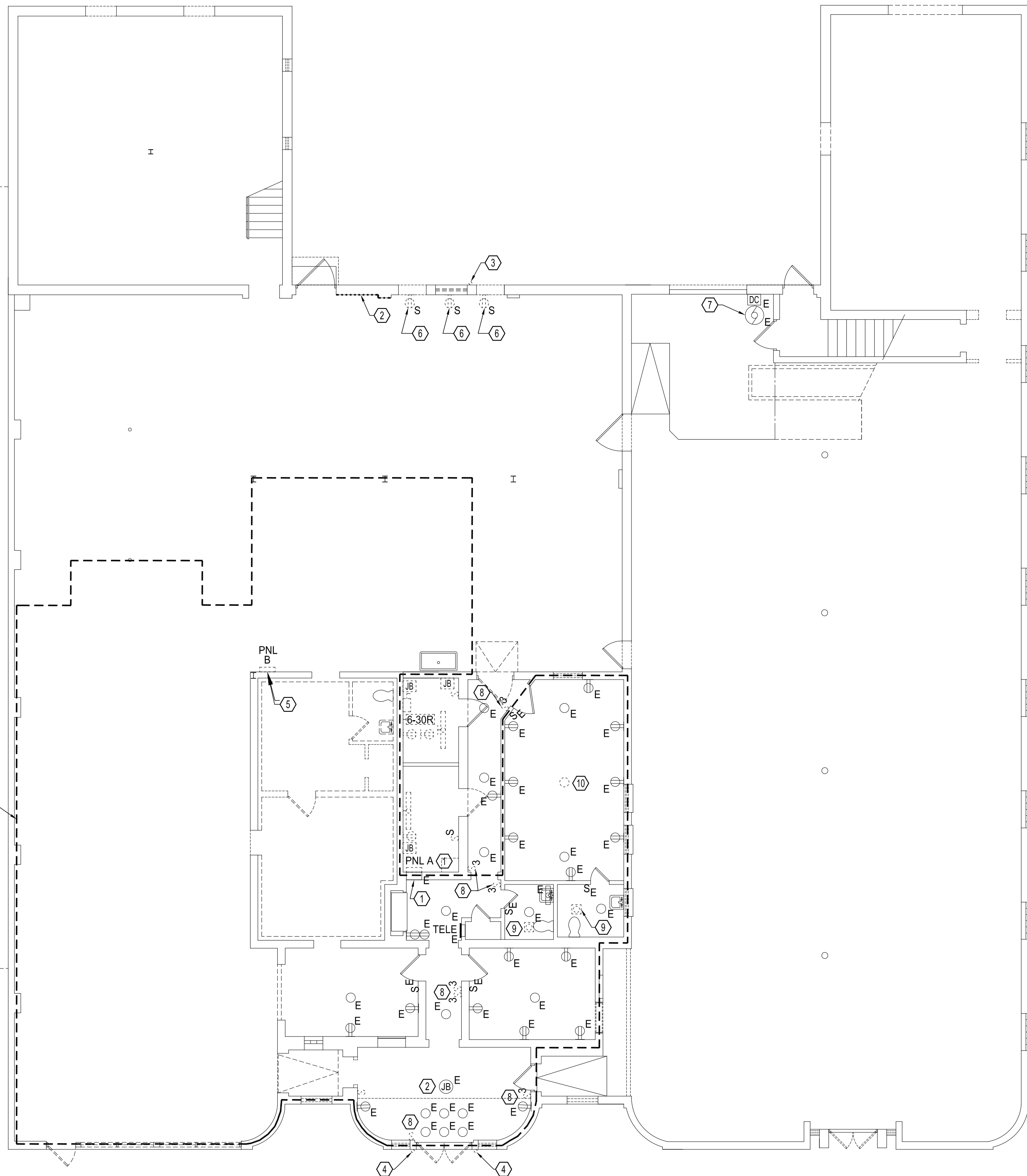
- ① CIRCUITRY FROM PANEL A EXTENDS THROUGH EXISTING RECESSED JUNCTION BOX TO REMAIN. AS PART OF PHASE 1, DISCONNECT CIRCUITRY AND REMOVE EXISTING PANEL A. EXCEPT FOR SCHEDULED OUTAGES FOR CIRCUIT CHANGEOVER, COORDINATE WORK TO INSURE EQUIPMENT POWERED FROM THE PANEL THAT IS LOCATED IN PHASE 2 REMAINS IN SERVICE THROUGHOUT PHASE 1. SEE SHEET E3.1 FOR DETAILS.
- ② EXISTING ELECTRIC SERVICE EQUIPMENT LOCATION. SEE DETAIL THIS SHEET. REMOVE ALL OF THE ELECTRIC SERVICE EQUIPMENT IN PHASE 1 AFTER THE NEW SERVICE IS IN PLACE AND ALL CIRCUITRY REQUIRED TO CONTINUE OPERATION OF PHASE 2 IS RELOCATED TO THE NEW SERVICE EQUIPMENT.
- ③ REMOVE EXISTING ELECTRIC SERVICE HEAD AS PART OF EXISTING ELECTRIC SERVICE REMOVAL.
- ④ EXISTING OPEN CONDUIT STUB THROUGH BRICK WALL. THE EXTERIOR LIGHT FIXTURE THAT WAS ORIGINALLY SUPPLIED BY THE CONDUIT STUB HAS ALREADY BEEN REMOVED.
- ⑤ PANEL SHALL REMAIN IN SERVICE THROUGH COMPLETION OF PHASE 1 BEFORE BEING REMOVED. PROVIDE TEMPORARY CONNECTION TO NEW SERVICE MAIN PANEL MDP AS MAY BE NECESSARY TO COMPLETE PHASE 1 WORK WHILE ALLOWING PANEL TO REMAIN IN SERVICE.
- ⑥ RECEPTACLES SERVE REFRIGERATORS AND FREEZERS REQUIRED TO REMAIN IN SERVICE THROUGH COMPLETION OF PHASE 1. CONNECT TO SPARE CIRCUITRY IN NEW DISTRIBUTION EQUIPMENT AS MAY BE NECESSARY TO COMPLETE PHASE 1 WORK WHILE ALLOWING RECEPTACLES TO REMAIN IN SERVICE.
- ⑦ EXISTING MOTORIZED OVERHEAD DOOR AND CONTROLLER TO REMAIN.
- ⑧ REMOVE EXISTING SWITCH(ES) AND WIRE TO ALLOW EXISTING LIGHTING FIXTURE CIRCUITS TO BE CONTROLLED AS SHOWN ON SHEETS E0.2 & E2.1.
- ⑨ EXISTING EXHAUST FAN WITH LIGHT TO BE REMOVED AS REQUIRED BY HVAC DRAWINGS.
- ⑩ REMOVE EXISTING FIXTURE AS MAY BE REQUIRED TO ALLOW FOR INSTALLATION OF NEW SKYLIGHT. COORDINATE WITH SKYLIGHT INSTALLATION.

### GENERAL NOTES:

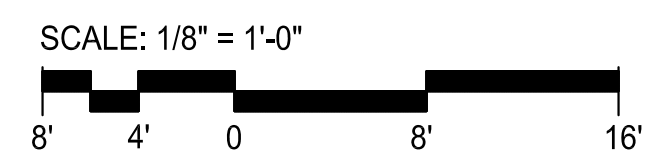
1. THE OWNER HAS ALREADY UNDER SEPARATE CONTRACT, REMOVED MOST ELECTRICAL EQUIPMENT, DEVICES, WIRING, AND RACEWAYS IN THE AREAS THAT ARE PART OF THE RENOVATION. ONLY EQUIPMENT AND DEVICES TO REMAIN, EQUIPMENT OR DEVICES AFFECTING THE RENOVATION ACTIVITIES, OR EQUIPMENT AND DEVICES AFFECTED BY THE PHASING ARE SHOWN. ANY ELECTRICAL EQUIPMENT, DEVICES, RACEWAYS, OR WIRING THAT DOES NOT FIT WITH THE NEW WORK PLANS OR IS NOT SPECIFICALLY SHOWN AS EXISTING TO REMAIN, SHALL BE REMOVED EVEN THOUGH NOT SHOWN ON THE DEMOLITION PLANS.
2. VERIFY CIRCUIT NUMBERS FOR ALL FIXTURES, OUTLETS, DEVICES, AND EQUIPMENT TO BE REMOVED PRIOR TO DISCONNECTING AND REMOVING THE DESIGNATED ITEMS.
3. DISCONNECT ANY DIVISION 22 & 23 EQUIPMENT SHOWN FOR REMOVAL, COORDINATE WITH PLUMBING AND MECHANICAL DRAWINGS FOR ALL EQUIPMENT TO BE DISCONNECTED. UNLESS OTHERWISE NOTED, REMOVE ALL ASSOCIATED DISCONNECT SWITCHES, MOTOR STARTERS, MOTOR PROTECTIVE SWITCHES, AND OTHER ASSOCIATED EQUIPMENT.
4. ALL ACCESSIBLE RACEWAY ASSOCIATED WITH EQUIPMENT INDICATED FOR DEMOLITION SHALL BE REMOVED BACK TO THE SOURCE. INACCESSIBLE RACEWAY SHALL BE CAPPED OFF AT NEAREST ACCESSIBLE LOCATION. ALL WIRE ASSOCIATED WITH EQUIPMENT FOR DEMOLITION SHALL BE REMOVED BACK TO THE SOURCE.

5. EXISTING OUTLET BOXES RECESSED IN EXISTING WALLS TO REMAIN AS IS MAY BE REUSED WHERE NEW OUTLETS ARE SHOWN ON SHEET E3.1 IN THAT LOCATION. OTHERWISE, PROVIDE A BLANK COVER PLATE OVER ANY SUCH OUTLET BOX THAT IS NOT REUSED. WHERE SURFACE MOUNTED OUTLET BOXES AND RACEWAY ARE DESIGNATED FOR DEMOLITION, THEY SHALL BE REMOVED COMPLETELY.
6. ANY DAMAGE FOUND TO ELECTRICAL RACEWAY, WIRING, OR EQUIPMENT SHOWN TO REMAIN IN PLACE SHALL BE DOCUMENTED PRIOR TO BEGINNING CONSTRUCTION AND ISSUED TO THE A/E FOR REVIEW. ANY DAMAGE TO EXISTING ELECTRICAL MATERIALS TO REMAIN NOT DOCUMENTED AND FOUND AFTER WORK HAS BEGUN WILL BE CONSIDERED CONSTRUCTION DAMAGE AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
7. COORDINATE ALL WORK FOR DEMOLITION OF DATA, TELEPHONE, COMMUNICATION, AND SECURITY SYSTEMS WITH THE OWNER'S PROVIDER/CONTRACTOR FOR THESE SYSTEMS.

WORK FOR PORTION OF BUILDING WITHIN DASHED LINE IS IN PHASE 2. ALL OTHER AREAS PART OF PHASE 1.



### GRAPHIC SCALE



THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.

FIRST FLOOR PLAN - DEMOLITION

1/8" = 1'-0"

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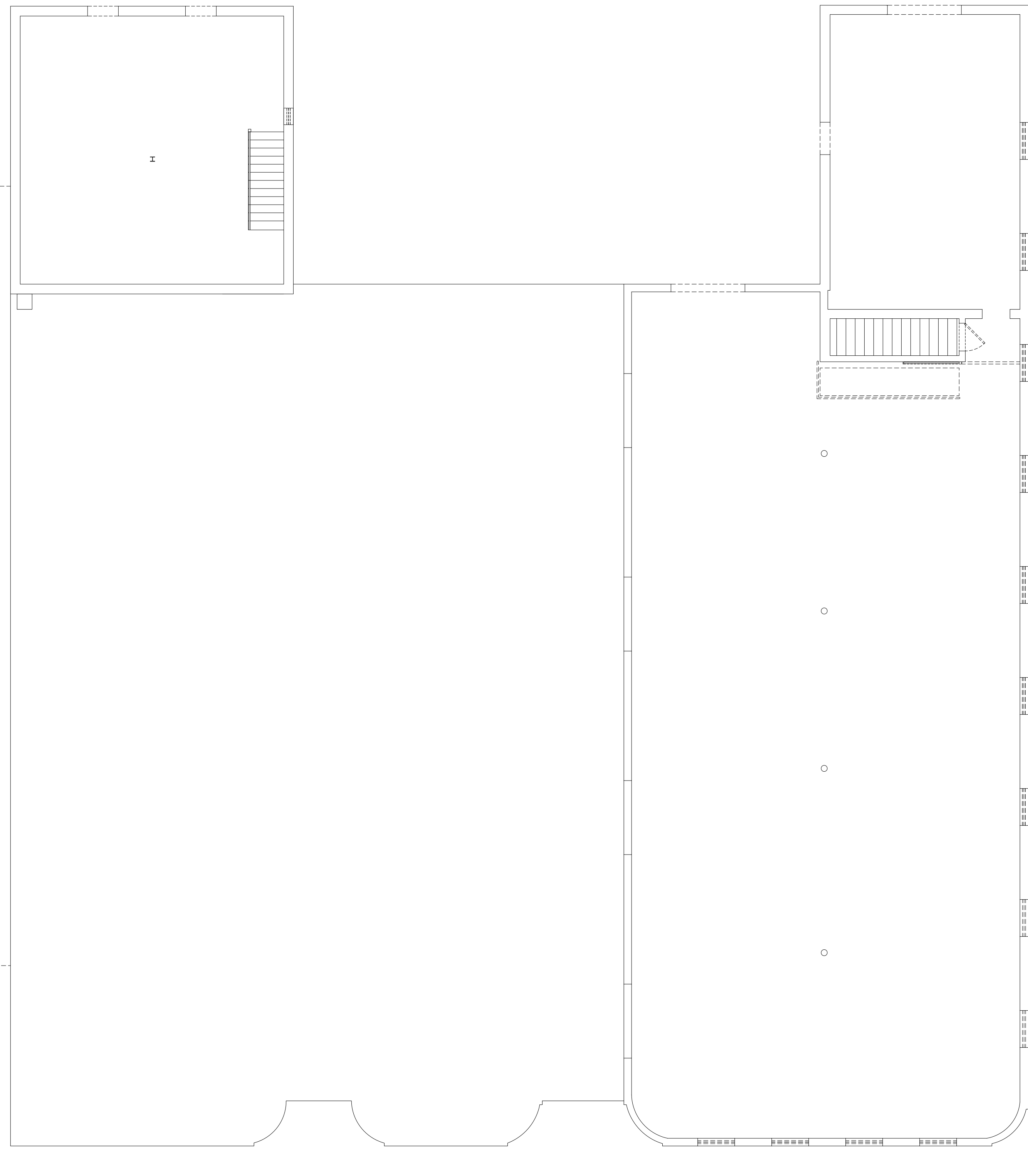
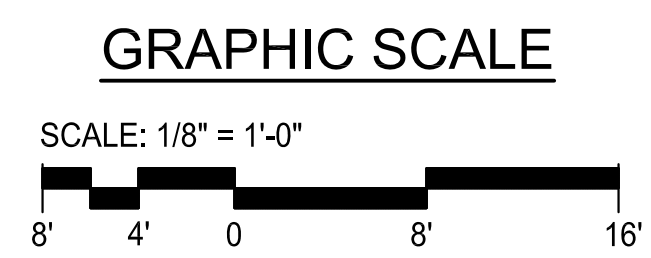
ELECTRICAL  
FIRST FLOOR  
PLAN -  
DEMOLITION

# E1.1



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- GENERAL NOTE:
1. THE OWNER HAS ALREADY UNDER SEPARATE CONTRACT, REMOVED MOST ELECTRICAL EQUIPMENT, DEVICES, WIRING, AND RACEWAYS ON THIS FLOOR. ANY REMAINING ELECTRICAL EQUIPMENT, DEVICES, RACEWAYS, OR WIRING THAT DOES NOT FIT WITH THE NEW WORK PLANS SHALL BE REMOVED EVEN THOUGH NOT SPECIFICALLY SHOWN ON THE DEMOLITION PLAN.



SECOND FLOOR PLAN- DEMOLITION  
1/8" = 1'-0"

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ELECTRICAL  
SECOND  
FLOOR PLAN -  
DEMOLITION

E1.2

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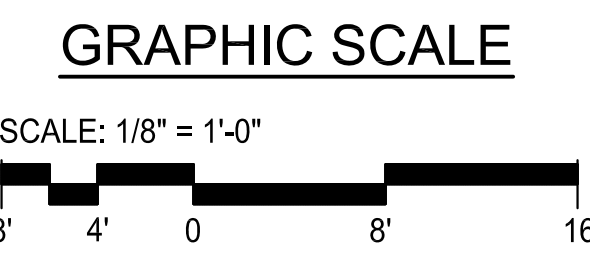
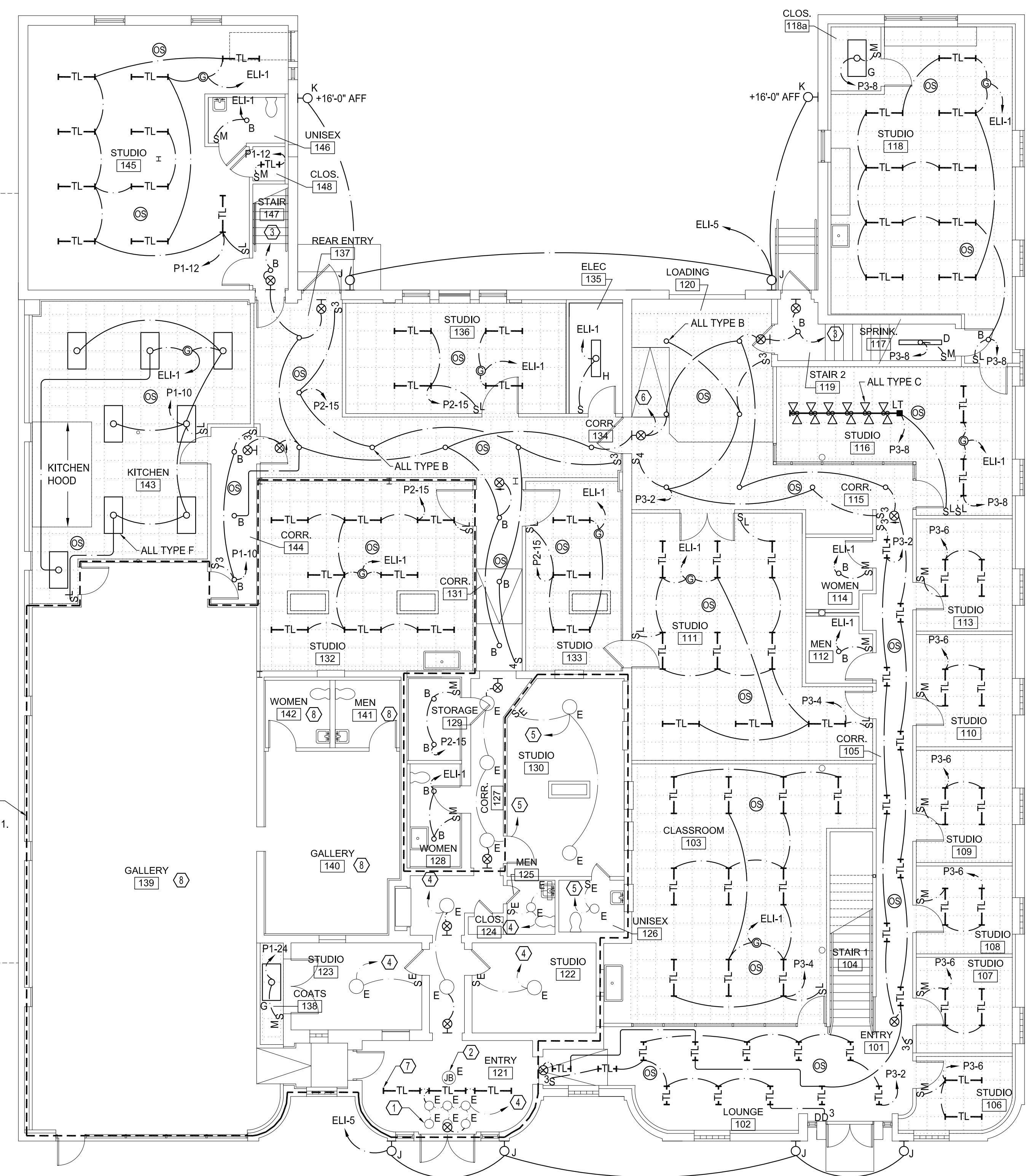
ELECTRICAL  
 FIRST FLOOR  
 PLAN - LIGHTING

E2.1

- FIRST FLOOR LIGHTING PLAN REFERENCE NOTES:**
- CLEAN AND RE-LAMP EXISTING ENTRY DOWNLIGHTS (TYP OF SIX (6)).
  - PROVIDE COVERPLATE OVER EXISTING CEILING JUNCTION BOX.
  - SEE SHEET E2.2 FOR CONTINUATION OF CIRCUIT TO TYPE A FIXTURES OVER STAIR.
  - EXISTING LIGHTS POWERED FROM CIRCUIT #3 IN EXISTING PANEL A. CIRCUIT SHALL BE EXTENDED TO CIRCUIT #3 ON THE EMERGENCY LIGHTING CENTRAL INVERTER SYSTEM THROUGH LIGHTING CONTACTOR PER DETAIL ON SHEET E0.2. IN CORRIDOR 127 AND ENTRY 121, EXTEND CIRCUIT TO NEW EXIT SIGNS AS SHOWN.
  - EXISTING LIGHTS POWERED FROM CIRCUIT #7 IN EXISTING PANEL A. CIRCUIT SHALL BE EXTENDED TO CIRCUIT #4 ON THE EMERGENCY LIGHTING CENTRAL INVERTER SYSTEM THROUGH LIGHTING CONTACTOR PER DETAIL ON SHEET E0.2. IN CORRIDOR 127, EXTEND CIRCUIT TO NEW EXIT SIGNS AS SHOWN.
  - ALL DESIGNATED EGRESS LIGHTING FIXTURES AND EXIT SIGNS IN THE RENOVATED PORTIONS OF THE BUILDING SHALL BE CONNECTED AS SHOWN TO CIRCUIT #2 ON THE EMERGENCY LIGHTING CENTRAL INVERTER SYSTEM THROUGH THE LIGHTING CONTACTOR PER THE DETAILS ON SHEET E0.2. THE EGRESS LIGHTING AND EXIT SIGNS SHALL NOT BE CONTROLLED BY THE LOCAL SWITCHES OR OCCUPANCY SENSORS.
  - SEE ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL OF TYPE A LED TAPE LIGHT AT EXISTING COVE. EXTEND EXISTING CIRCUIT FROM EXISTING DOWNLIGHTS AS SHOWN TO POWER NEW TYPE A FIXTURES.
  - LIGHTING DESIGN TO BE COMPLETED AND SUBMITTED FOR THIS AREA PRIOR TO BEGINNING PHASE 2 CONSTRUCTION WORK.

- GENERAL NOTES:**
- IN THE CENTER PORTION OF THE BUILDING WHERE MINIMAL RENOVATION IS INDICATED, COORDINATE ROUTING OF WIRING TO NEW LIGHTING AND EQUIPMENT TO MINIMIZE REMOVAL OF THE EXISTING CEILINGS. THIS MAY REQUIRE ROUTING OF WIRING AROUND THESE EXISTING AREAS TO THE EXTENT POSSIBLE. CEILING REMOVAL SHALL BE MINIMIZED AND WHERE REQUIRED, SHALL BE APPROVED BY THE ARCHITECT AND OWNER PRIOR TO BEGINNING WORK. WHERE CEILINGS ARE REMOVED, THEY SHALL BE REINSTALLED TO MATCH EXISTING AS DIRECTED BY THE ARCHITECT.
  - WHERE EXISTING LIGHTS ARE SHOWN TO REMAIN IN AREAS WHERE THE CEILING IS TO BE REMOVED TO FACILITATE THE WORK OF OTHER TRADES, REMOVE THE EXISTING LIGHT FIXTURE AND REINSTALL IN THE SAME LOCATION AFTER INSTALLATION OF THE NEW CEILING.
  - THERE ARE NO FIRE RATED ASSEMBLIES OR FIRE WALLS ON THIS PROJECT.

WORK FOR PORTION OF BUILDING WITHIN DASHED LINE IS IN PHASE 2. ALL OTHER AREAS PART OF PHASE 1.

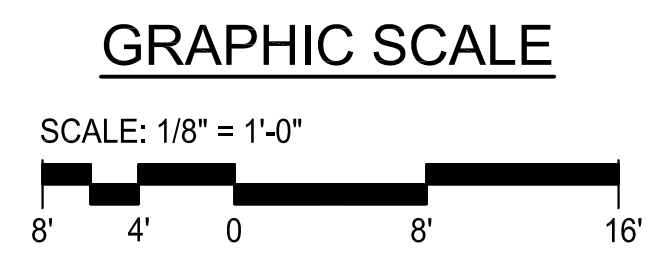


FIRST FLOOR PLAN  
 1/8" = 1'-0"

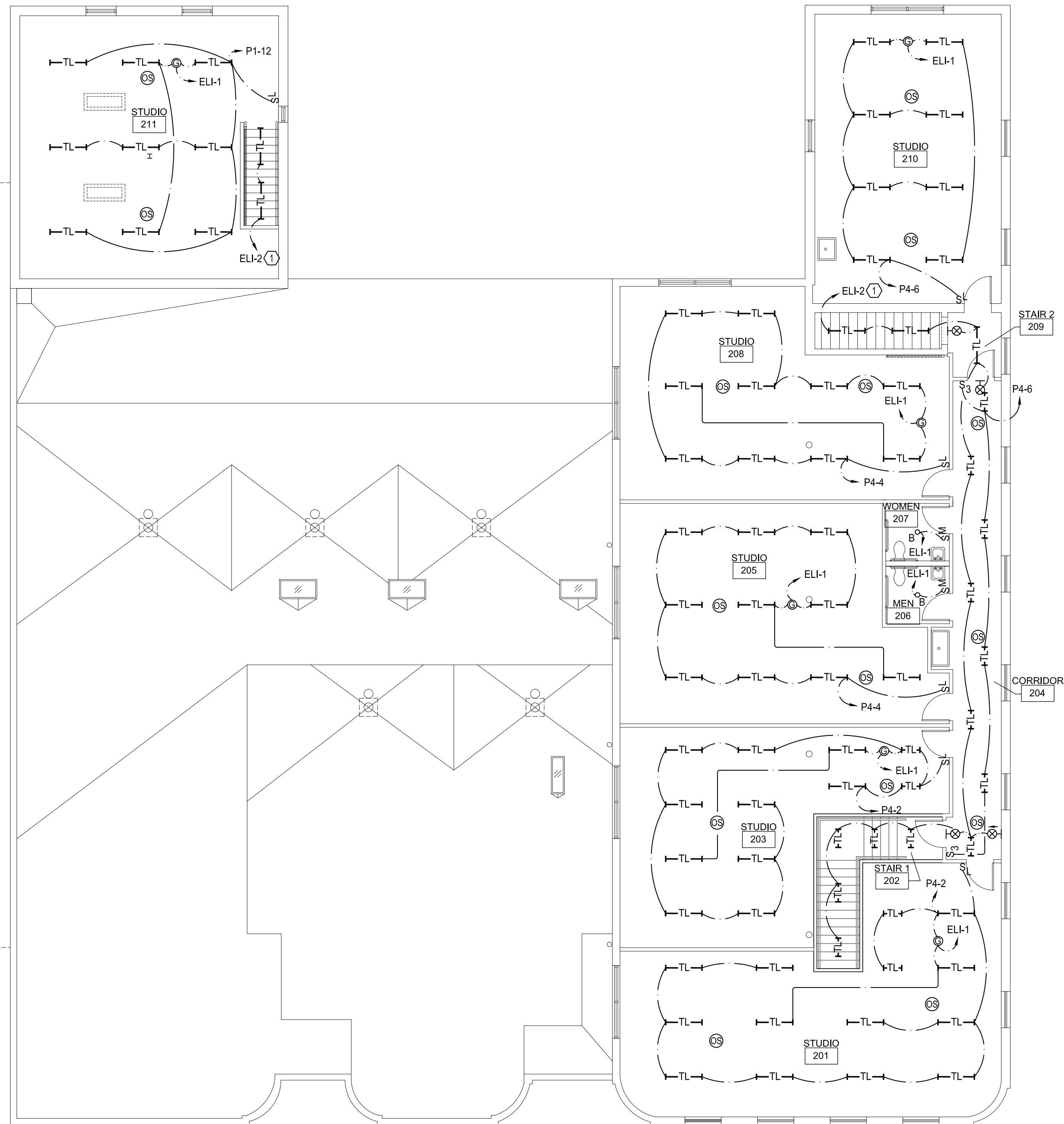
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- SECOND FLOOR LIGHTING PLAN REFERENCE NOTES:**
- ① SEE SHEET E2.1 FOR CONTINUATION OF CIRCUIT TO FIRST FLOOR EGRESS LIGHTS.
- GENERAL NOTES:**
- 1. THERE ARE NO FIRE RATED ASSEMBLIES OR FIRE WALLS ON THIS PROJECT.



**SECOND FLOOR PLAN**  
 1/8" = 1'-0"

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**ELECTRICAL**  
**SECOND FLOOR**  
**PLAN - LIGHTING**

**E2.2**

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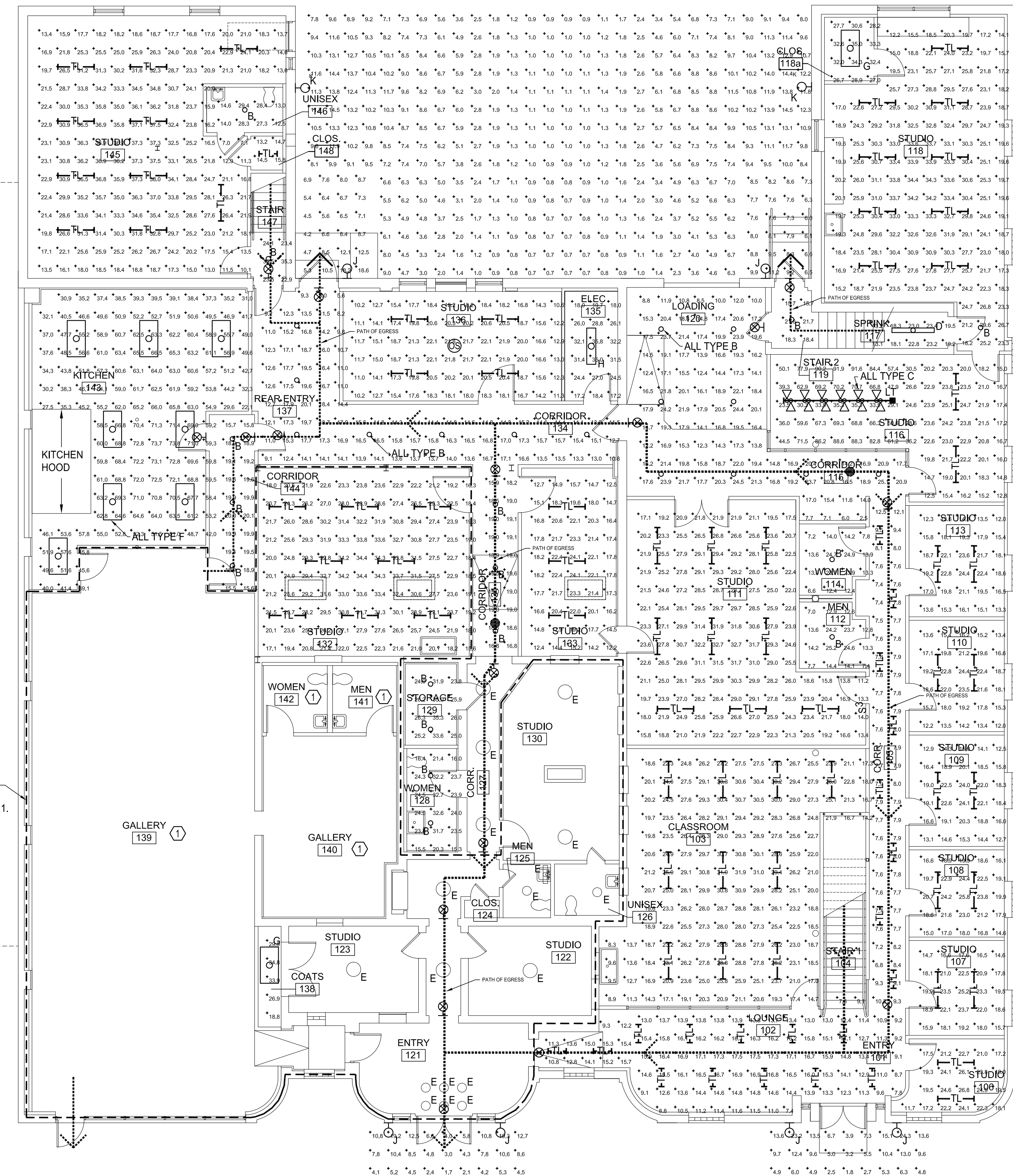
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ELECTRICAL  
 FIRST FLOOR -  
 LIGHTING  
 CALCULATIONS

E2.3



GENERAL NOTES:

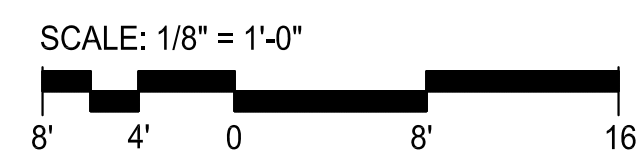
- POINT-BY-POINT VALUES SHOWN ARE LIGHTING LEVELS IN FOOTCANDLES. CALCULATIONS PERFORMED BY COMPUTER SIMULATION USING VISUAL SOFTWARE. TOTAL LIGHT LOSS FACTOR (INCLUDING LAMP LUMEN DEPRECIATION, LUMINAIRE DIRT DEPRECIATION, AND BALLAST FACTOR) USED IN CALCULATIONS IS 0.9 FOR LED FIXTURES AND 0.75 FOR LINEAR FLUORESCENT FIXTURES.

FIRST FLOOR LIGHTING CALCULATION PLAN REFERENCE NOTES:

- LIGHTING DESIGN TO BE COMPLETED AND SUBMITTED FOR THIS AREA PRIOR TO BEGINNING PHASE 2 CONSTRUCTION WORK.

WORK FOR PORTION OF BUILDING WITHIN DASHED LINE IS IN PHASE 2. ALL OTHER AREAS PART OF PHASE 1.

GRAPHIC SCALE



FIRST FLOOR PLAN - LIGHTING CALCULATIONS

1/8" = 1'-0"

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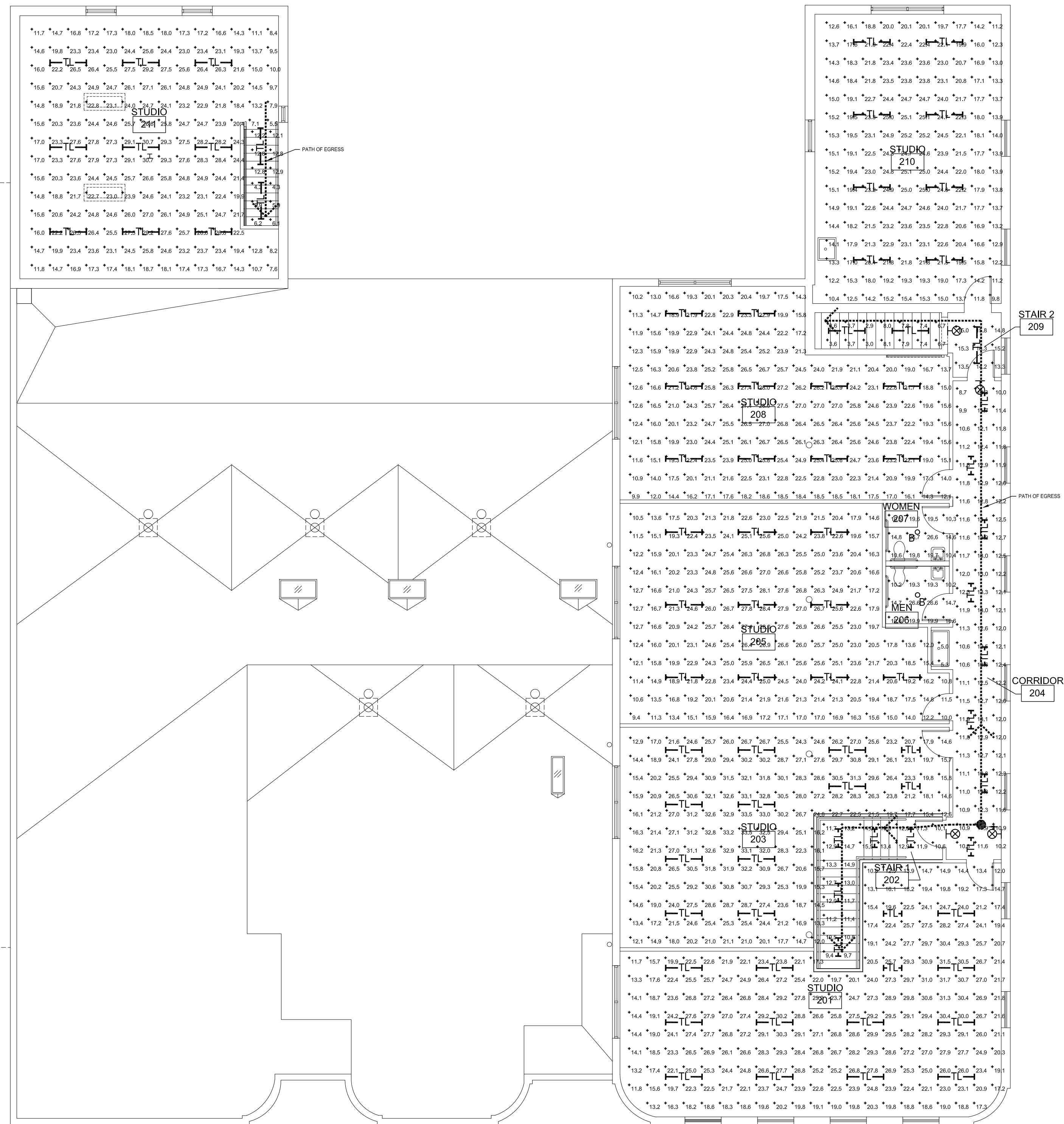
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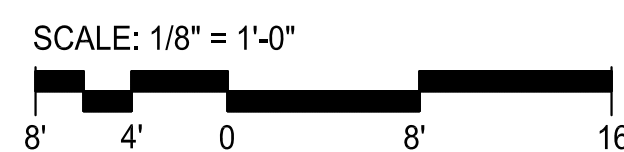
ELECTRICAL  
 SECOND FLOOR  
 - LIGHTING  
 CALCULATIONS

E2.4



- GENERAL NOTES:
- POINT-BY-POINT VALUES SHOWN ARE LIGHTING LEVELS IN FOOTCANDLES. CALCULATIONS PERFORMED BY COMPUTER SIMULATION USING VISUAL SOFTWARE. TOTAL LIGHT LOSS FACTOR (INCLUDING LAMP LUMEN DEPRECIATION, LUMINAIRE DIRT DEPRECIATION, AND BALLAST FACTOR) USED IN CALCULATIONS IS 0.9 FOR LED FIXTURES AND 0.75 FOR LINEAR FLUORESCENT FIXTURES.

GRAPHIC SCALE



SECOND FLOOR PLAN - LIGHTING CALCULATIONS

1/8" = 1'-0"

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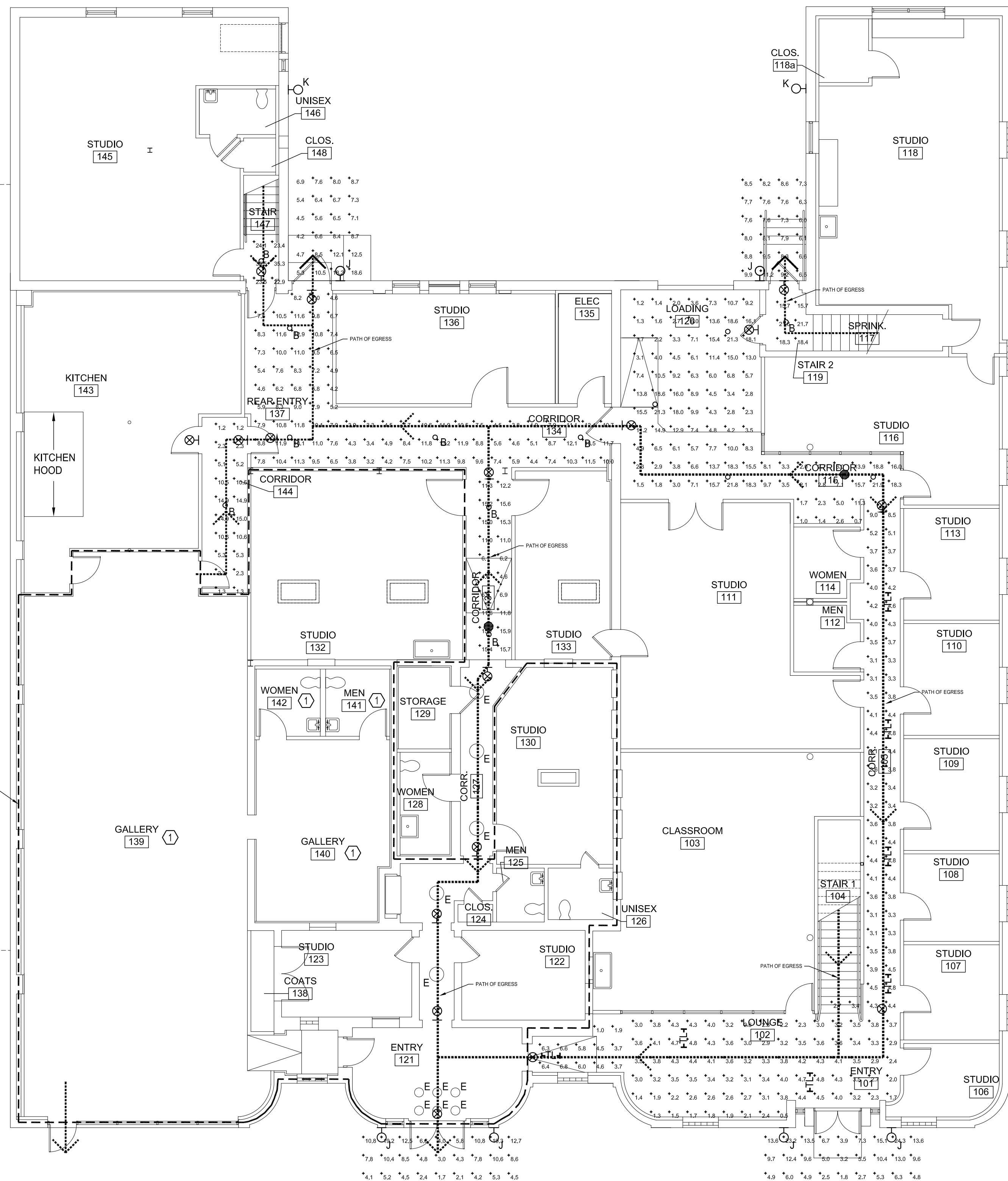
**ELECTRICAL  
 FIRST FLOOR -  
 EGRESS EMER.  
 LIGHTING CALCS**

**E2.5**

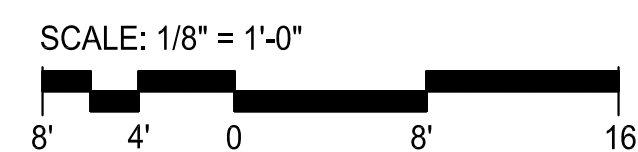
- GENERAL NOTES:**
- POINT-BY-POINT VALUES SHOWN ARE LIGHTING LEVELS IN FOOTCANDLES. CALCULATIONS PERFORMED BY COMPUTER SIMULATION USING VISUAL SOFTWARE. TOTAL LIGHT LOSS FACTOR (INCLUDING LAMP LUMEN DEPRECIATION, LUMINAIRE DIRT DEPRECIATION, AND BALLAST FACTOR) USED IN CALCULATIONS IS 0.9 FOR LED FIXTURES AND 0.75 FOR LINEAR FLUORESCENT FIXTURES.
  - THE EMERGENCY EGRESS LIGHTING THROUGH CORRIDOR 127 AND ENTRY 121 CONSISTS OF ALL THE EXISTING NORMAL LIGHTING FIXTURES THROUGH THESE AREAS. THE COMPLETE LIGHTING CIRCUITS THROUGH THESE AREAS IS BACKED UP BY THE CENTRAL LIGHTING INVERTER SHOWN ON SHEET E3.1.

- FIRST FLOOR EGRESS EMERGENCY CALCULATION PLAN REFERENCE NOTES:**
- LIGHTING DESIGN TO BE COMPLETED AND SUBMITTED FOR THIS AREA PRIOR TO BEGINNING PHASE 2 CONSTRUCTION WORK.

WORK FOR PORTION OF BUILDING WITHIN DASHED LINE IS IN PHASE 2. ALL OTHER AREAS PART OF PHASE 1.



**GRAPHIC SCALE**

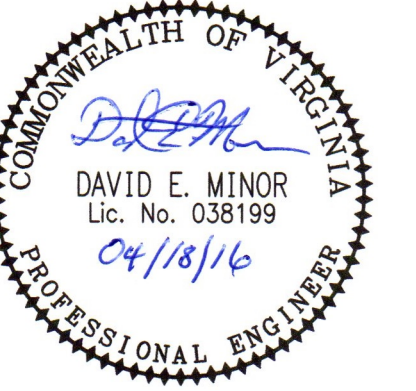


**FIRST FLOOR PLAN - EGRESS EMERGENCY LIGHTING CALCULATIONS**

1/8" = 1'-0"

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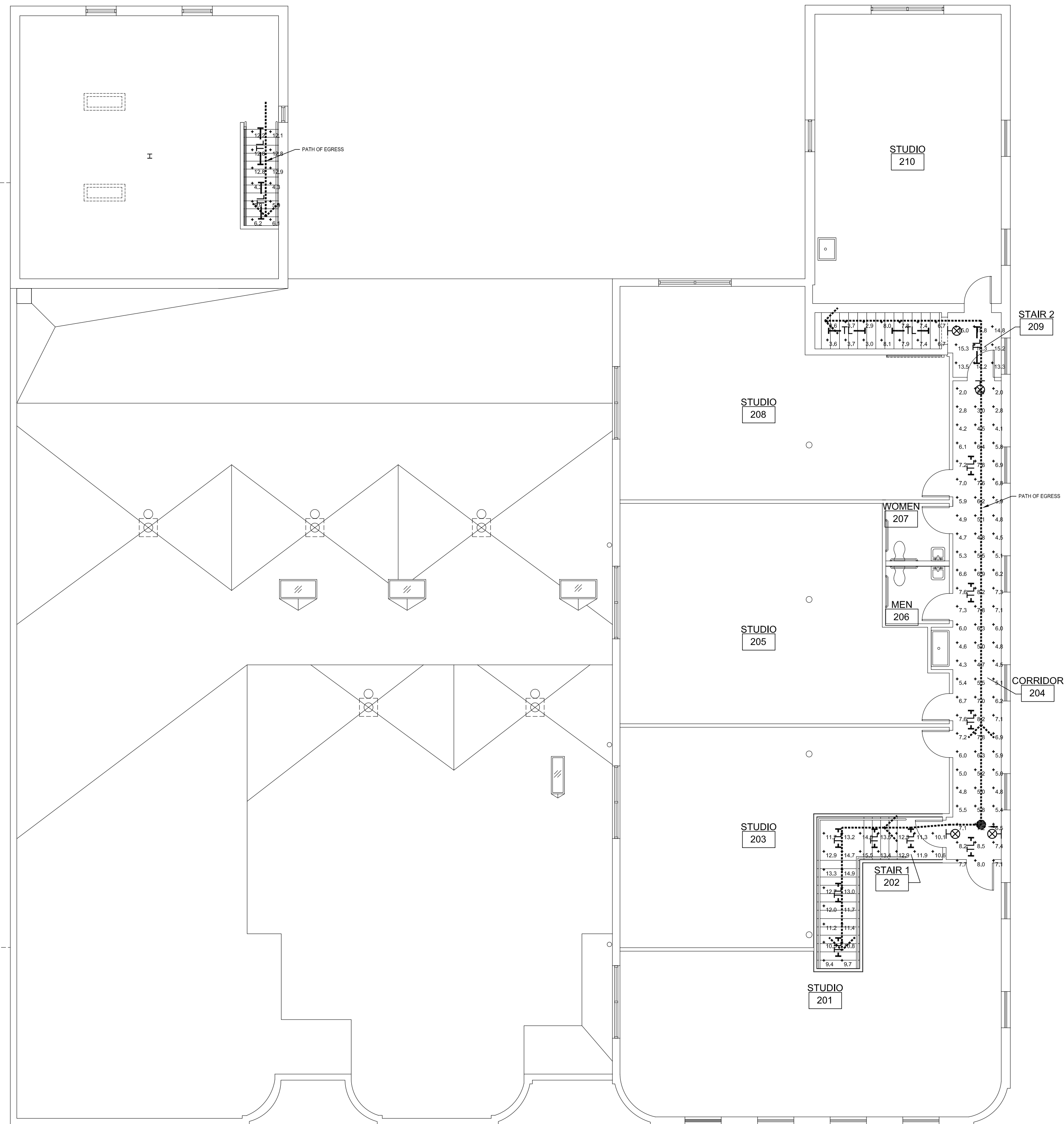
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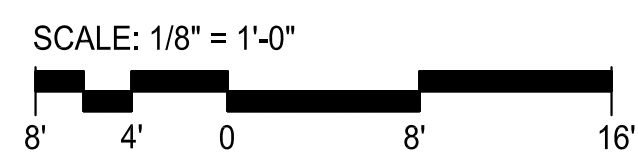
ELECTRICAL  
 SECOND FLOOR -  
 EGRESS EMER.  
 LIGHTING CALCS

## E2.6

- GENERAL NOTES:**
1. POINT-BY-POINT VALUES SHOWN ARE LIGHTING LEVELS IN FOOTCANDLES. CALCULATIONS PERFORMED BY COMPUTER SIMULATION USING VISUAL SOFTWARE. TOTAL LIGHT LOSS FACTOR (INCLUDING LAMP LUMEN DEPRECIATION, LUMINAIRE DIRT DEPRECIATION, AND BALLAST FACTOR) USED IN CALCULATIONS IS 0.9 FOR LED FIXTURES AND 0.75 FOR LINEAR FLUORESCENT FIXTURES.



**GRAPHIC SCALE**

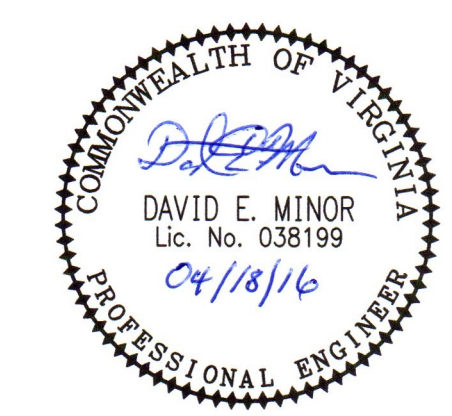


SECOND FLOOR PLAN - EGRESS EMERGENCY LIGHTING CALCULATIONS

1/8" = 1'-0"

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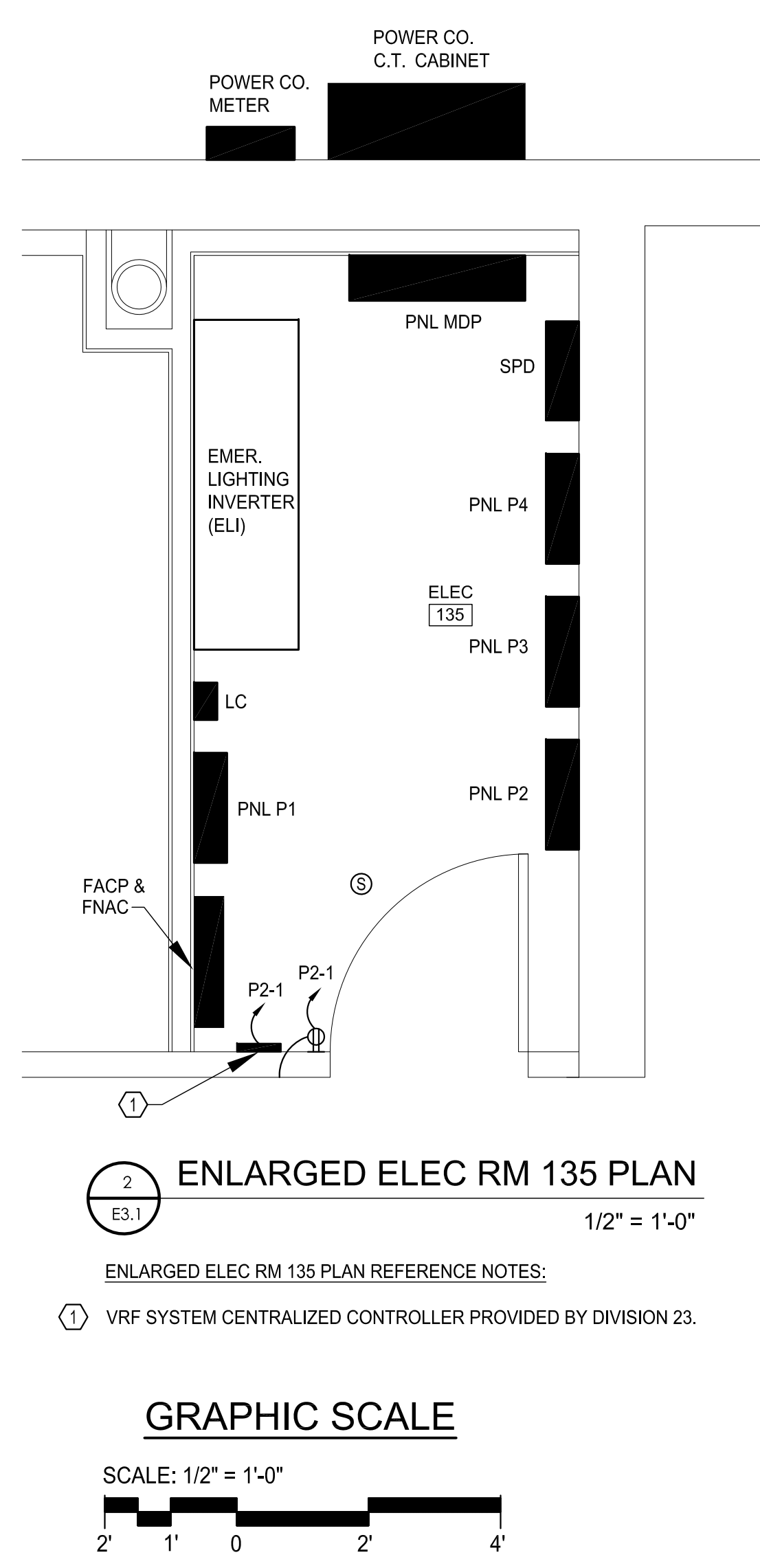


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**RENOVATION**

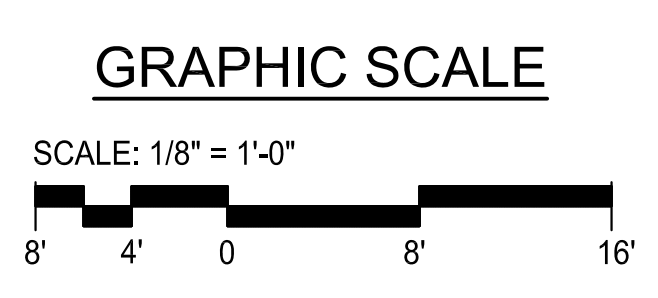
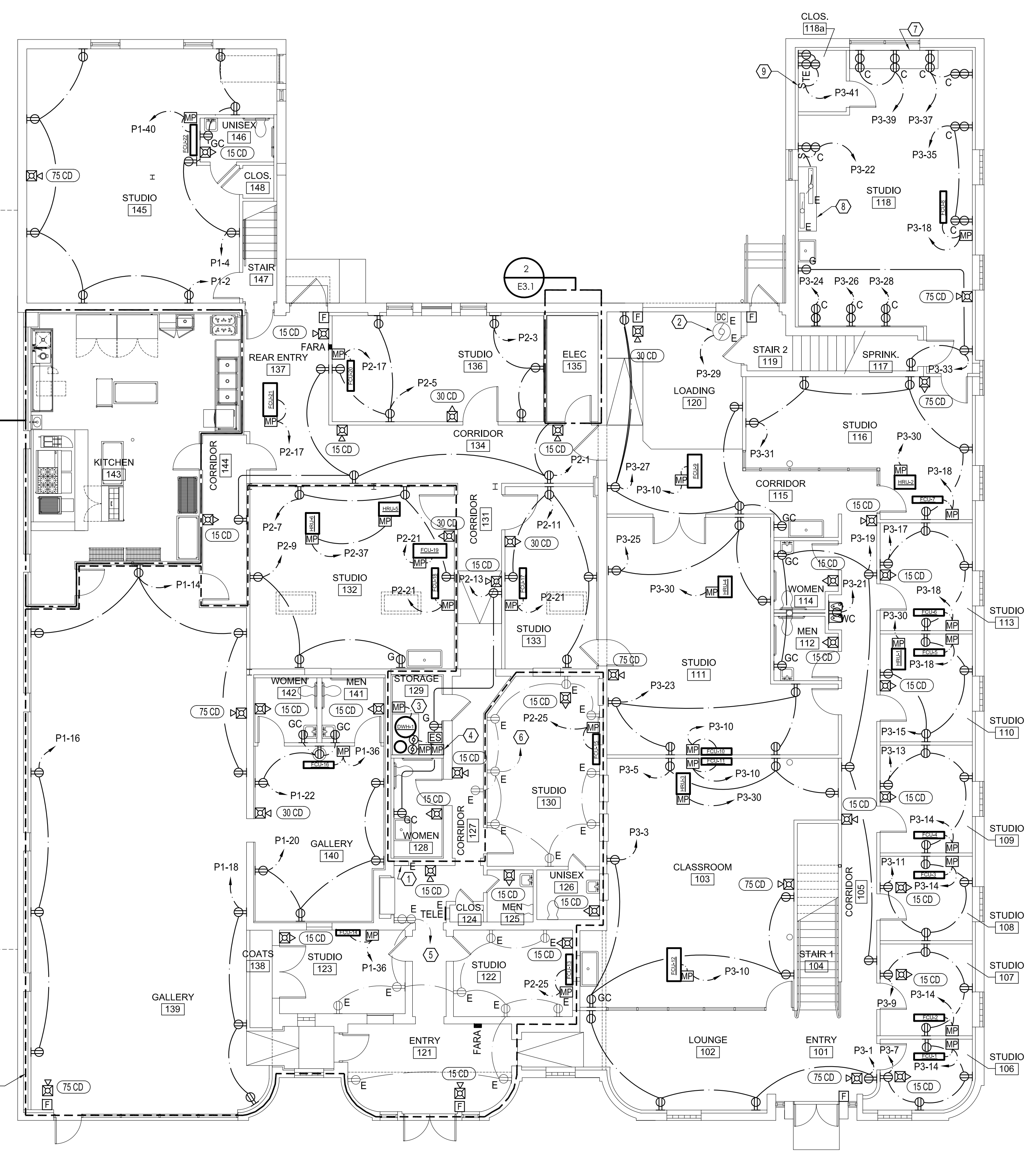
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**ELECTRICAL**  
**FIRST FLOOR**  
**PLAN - POWER**  
**E3.1**

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- FIRST FLOOR POWER PLAN REFERENCE NOTES:**
- EXISTING JUNCTION BOX RECESSED IN WALL WITH CIRCUITRY EXTENDING FROM PANEL A REMOVED AS PART OF DEMOLITION. EXTEND CIRCUITRY FROM JUNCTION BOX TO NEW PANEL P2 PER GENERAL NOTE #2 BELOW. PROVIDE NEW SOLID METAL COVERPLATE OVER JUNCTION BOX ON CORRIDOR SIDE.
  - EXISTING OVERHEAD DOOR AND CONTROLLER TO REMAIN. CONNECT TO NEW CIRCUIT SHOWN.
  - PROVIDE CIRCUIT P2-29 THROUGH MP SWITCH TO DOMESTIC GAS FIRED WATER HEATER DWH-1 INSTALLED ON DOMESTIC WATER HEATER PUMP SKID.
  - PROVIDE CIRCUIT P2-31 THROUGH MP SWITCHES TO DOMESTIC HOT WATER RECIRCULATION PUMPS DHWP-1 & DHWP-2 INSTALLED ON DOMESTIC WATER HEATER PUMP SKID.
  - EXISTING RECEPTACLES POWERED FROM CIRCUITS #9 & #13 IN EXISTING PANEL A. CIRCUITS SHALL BE EXTENDED TO CIRCUITS #6 & 10 IN NEW PANEL P2.
  - EXISTING RECEPTACLES POWERED FROM CIRCUIT #16 IN EXISTING PANEL A. CIRCUITS SHALL BE EXTENDED TO CIRCUIT #12 IN NEW PANEL P2.
  - WORKBENCH RELOCATED FROM EXISTING TAXIDERMY AREA. MOUNT OUTLETS ABOVE BACKSPASH, COORDINATE EXACT HEIGHT WITH THE BENCH. ALL OUTLETS SHOWN TO BE AT COUNTER HEIGHT IN STUDIO 118 SHALL BE AT THE SAME HEIGHT.
  - METAL WORKSTATION RELOCATED FROM EXISTING TAXIDERMY AREA. LIGHTS ARE EXISTING AS PART OF THE WORKSTATION.
  - RELOCATE EXISTING TIMER SWITCH AND EMERGENCY CUTOFF FROM EXISTING TAXIDERMY AREA FOR CONTROL OF RECEPTACLES.
- GENERAL NOTES:**
- IN THE CENTER PORTION OF THE BUILDING WHERE MINIMAL RENOVATION IS INDICATED, COORDINATE ROUTING OF WIRING TO NEW DEVICES AND EQUIPMENT TO MINIMIZE REMOVAL OF THE EXISTING CEILINGS. THIS MAY REQUIRE ROUTING OF WIRING AROUND THESE EXISTING AREAS TO THE EXTENT POSSIBLE. CEILING REMOVAL SHALL BE MINIMIZED AND WHERE REQUIRED, SHALL BE APPROVED BY THE ARCHITECT AND OWNER PRIOR TO BEGINNING WORK. WHERE CEILINGS ARE REMOVED, THEY SHALL BE REINSTALLED TO MATCH EXISTING AS DIRECTED BY THE ARCHITECT.
  - IN THE CENTER PORTION OF THE BUILDING WHERE MINIMAL RENOVATION IS INDICATED, RECEPTACLES AND CIRCUITRY SHOWN AS EXISTING TO REMAIN IS BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. THESE LOADS APPEAR TO BE SERVED FROM PANEL A TO BE REMOVED AND ASSOCIATED CIRCUITRY SERVING EQUIPMENT TO REMAIN SHALL BE EXTENDED TO NEW PANEL P2 IN ELEC RM 135. KNOWN CIRCUITS TO BE EXTENDED ARE SHOWN ON PLAN SHEETS E2.1 & E3.1. IT IS THOUGHT THAT EXISTING CIRCUITS #1-13 ODD AND CIRCUIT #16 REQUIRE EXTENSION TO PANEL P2. HOWEVER, VERIFY EXACTLY WHAT EQUIPMENT EACH CIRCUIT FROM PANEL A POWERS (INCLUDING THOSE EXTENDING THROUGH THE JUNCTION BOX NOTED IN PLAN REFERENCE NOTE #1 ABOVE) PRIOR TO BEGINNING WORK. AND EXTEND ALL CIRCUITRY SERVING EQUIPMENT TO REMAIN SUPPLIED FROM PANEL A (WHETHER KNOWN OR UNKNOWN) TO NEW PANEL P2 IN ELEC RM 135. ALL CIRCUITRY AND ASSOCIATED WIRING FROM PANEL A THAT SUPPLIED EQUIPMENT THAT HAS BEEN DEMOED SHALL BE REMOVED.
  - PROVIDE ALL REQUIRED FIRE ALARM CONNECTIONS TO THE SPRINKLER SYSTEM. COORDINATE WITH THE SPRINKLER CONTRACTOR.
  - THERE ARE NO FIRE RATED ASSEMBLIES OR FIRE WALLS ON THIS PROJECT.



FIRST FLOOR PLAN  
 1/8" = 1'-0"

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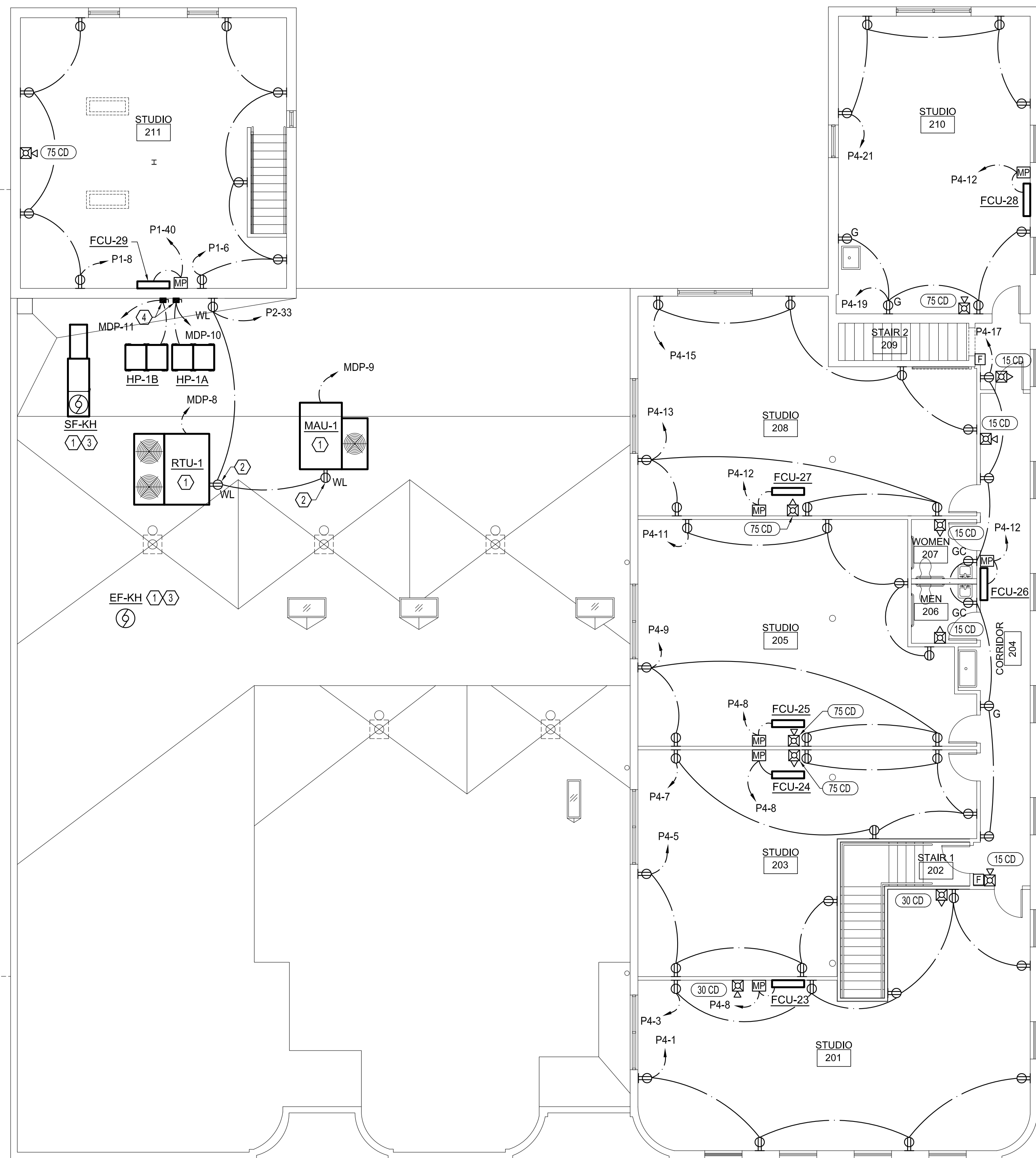
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**ELECTRICAL  
 SECOND FLOOR  
 PLAN - POWER**

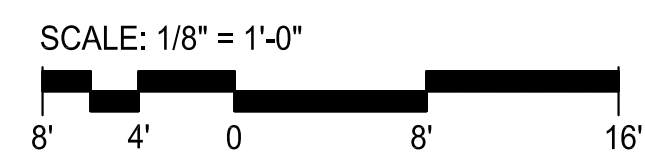
**E3.2**



- SECOND FLOOR POWER PLAN REFERENCE NOTES:**
- ① UNIT IS FURNISHED WITH LOCAL DISCONNECT SWITCH AS PART OF THE EQUIPMENT.
  - ② SERVICE RECEPTACLE IS PROVIDED ON THE UNIT BY THE EQUIPMENT MANUFACTURER, BUT IS FIELD-POWERED FROM SEPARATE CIRCUIT SHOWN.
  - ③ MOTOR STARTER LOCATED IN KITCHEN AS PART OF HOOD FAN CONTROL PANEL. SEE SHEET E3.03. EXTEND CIRCUIT SHOWN ON SHEET E3.03 FOR FAN CONTROL PANEL TO EQUIPMENT IN ACCORDANCE WITH UNIT AND HOOD MANUFACTURER'S INSTRUCTIONS.
  - ④ PROVIDE A 3-POLE, 100 AMP NEMA-3R FUSED DISCONNECT SWITCH, FUSED AT 80 AMPS.

- GENERAL NOTES:**
1. PROVIDE ALL REQUIRED FIRE ALARM CONNECTIONS TO THE SPRINKLER SYSTEM. COORDINATE WITH THE SPRINKLER CONTRACTOR.
  2. THERE ARE NO FIRE RATED ASSEMBLIES OR FIRE WALLS ON THIS PROJECT.

**GRAPHIC SCALE**

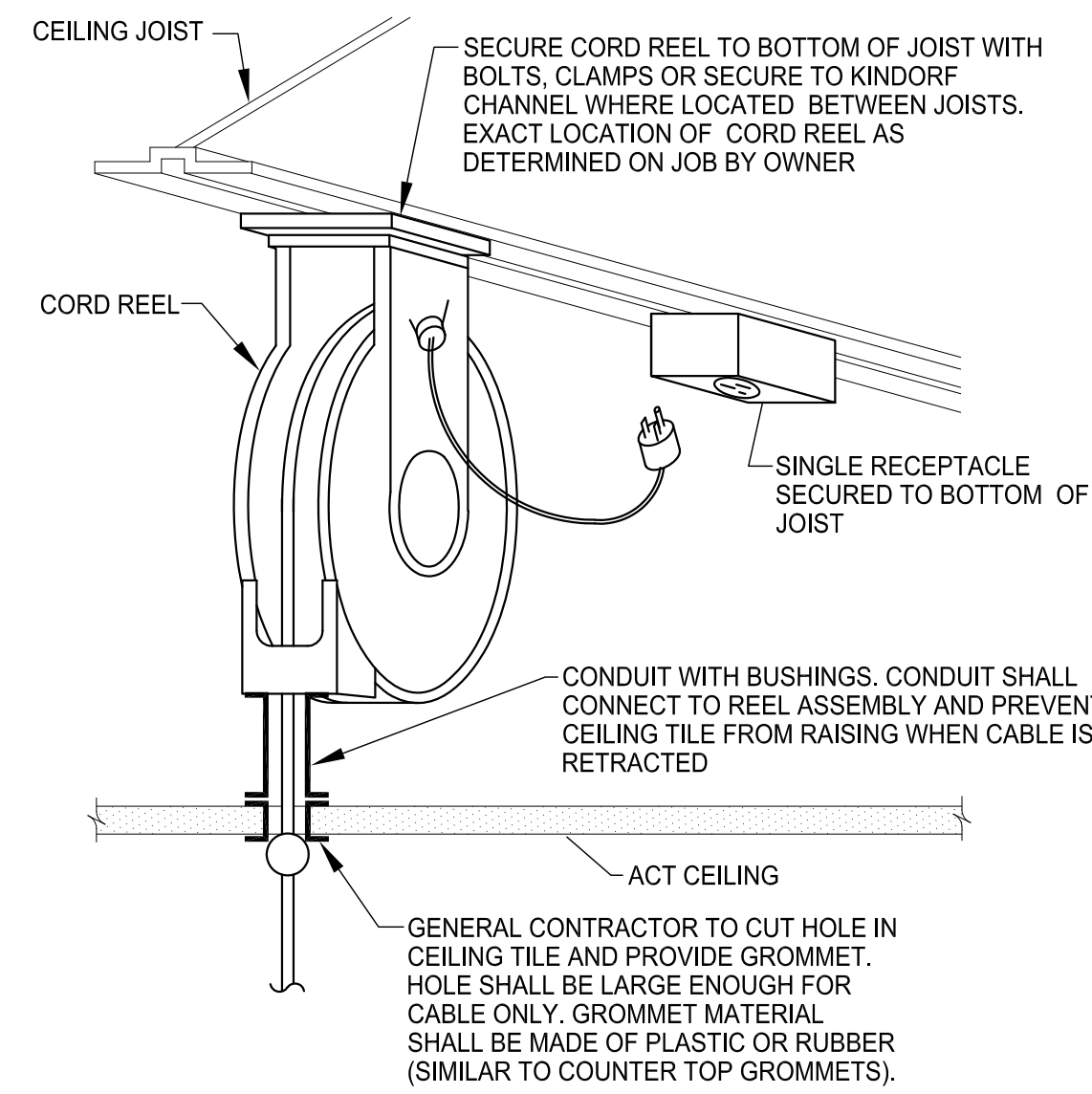


SECOND FLOOR PLAN

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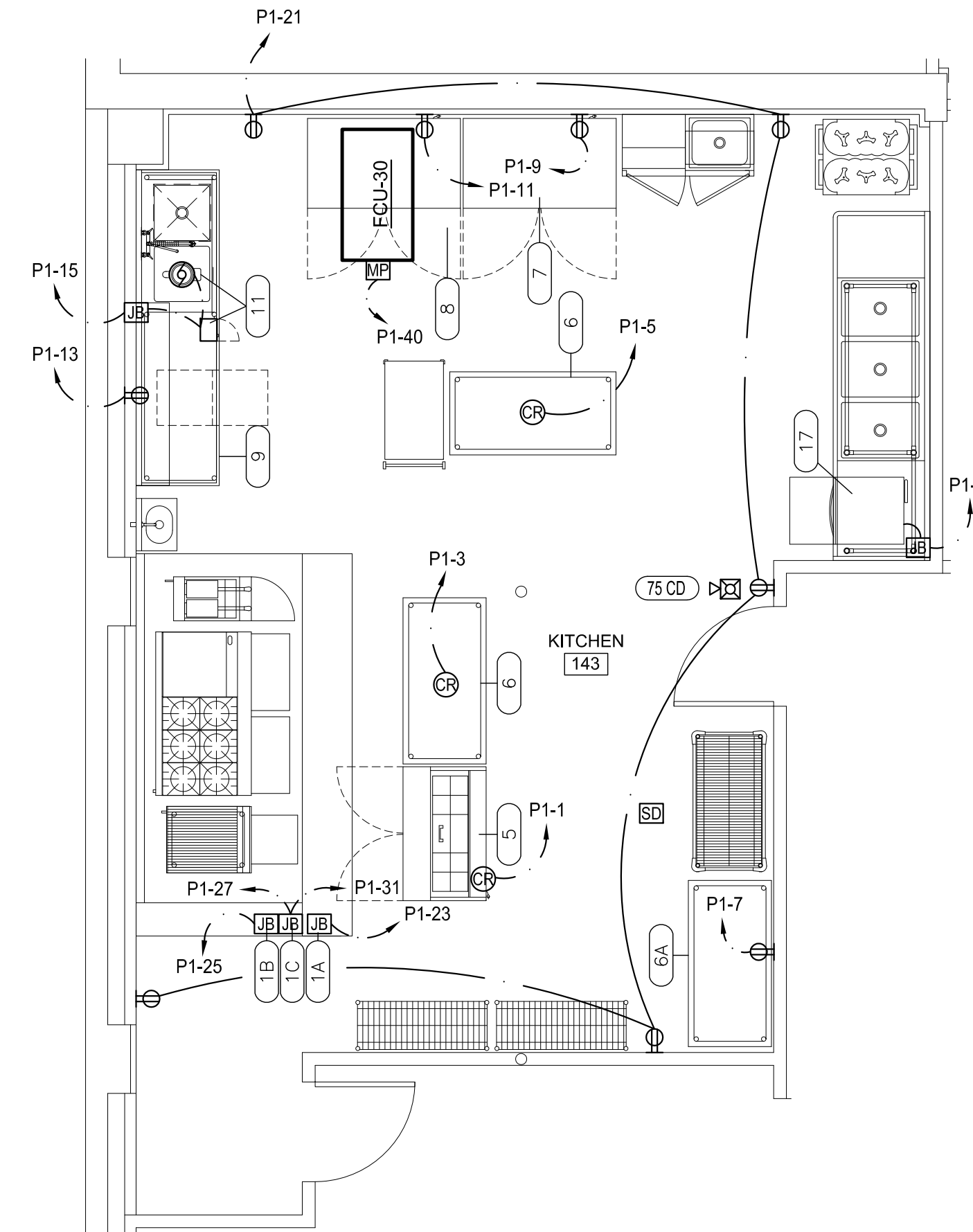
**DETAIL OF CORD REEL**  
NO SCALE

**NOTE:**

1. CORD REEL AND SINGLE 120V RECEPTACLE MOUNTED ABOVE CEILING. DANIEL WOODHEAD #997 CORD REEL OR ACCEPTACLE EQUAL. PROVIDE DANIEL WOODHEAD #3000 OR ACCEPTACLE EQUAL 15A PENDANT OUTLET BOX ON END OF CORD.

**GENERAL NOTES:**

1. COORDINATE ALL WORK FOR THE HOOD WITH DIVISION 23 AND PROVIDE ALL CIRCUITRY AND WIRING CONNECTIONS AS REQUIRED BY THE HOOD MANUFACTURER. PROVIDE ALL CONNECTIONS BETWEEN THE HOOD FAN CONTROL PANEL AND THE ROOFTOP EXHAUST AND MAKEUP AIR FANS. ALL HOOD SWITCHES, CONTACTS, RELAYS, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONNECTIONS FROM THE HOOD FIRE SUPPRESSION SYSTEM TO THE FIRE ALARM PANEL FOR SUPERVISION AND MONITORING.
2. PER KITCHEN EQUIPMENT MANUFACTURER'S RECOMMENDATIONS, IN LEIU OF GFCI RECEPTACLES, ALL RECEPTACLES IN THE KITCHEN ARE SUPPLIED FROM GFCI CIRCUIT BREAKERS IN PANEL P1. SEE PANELBOARD SCHEDULE, SHEET E4.1.
3. FOR MOUNTING HEIGHTS OF ALL RECEPTACLES AND ELECTRICAL OUTLET BOXES, SEE ROUGH-IN SCHEDULE, THIS SHEET.
4. COORDINATE ALL WORK IN THE KITCHEN WITH THE FOODSERVICE DRAWINGS AND THE FOODSERVICE EQUIPMENT INSTALLER.



**KITCHEN PLAN**  
1/4" = 1'-0"

ELECTRICAL ROUGH-IN SCHEDULE													
ITEM	QTY	DESCRIPTION	VOLT	PHASE	KW	HP	AMP	CONN	SUGGESTED ROUTING				REMARKS
									WL	FLR	DFA	HGT	
1A	1	EXHAUST HOOD WITH PSP	115	1	-	-	8	J-BOX	-	-	X	80	NOTE 1, 3
1B	1	FIRE SUPPRESSION SYSTEM	115	1	-	-	12	J-BOX	-	-	X	84	NOTE 1, 3
1C	1	FAN CONTROL PANEL	115	1	-	-	15	J-BOX	-	-	X	84	NOTE 1, 3
			208	3	-	-	12.4	J-BOX	-	-	X	84	NOTE 1, 4
1D	1	EXHAUST FAN - ROOF MOUNTED (SEE SHEET E3.2)	208	3	-	1-1/2	5.0	J-BOX	-	-	-	-	EXTEND CIRCUIT FROM ITEM 1C TO FAN ON ROOF
1E	1	MAKE-UP AIR FAN - ROOF MOUNTED (SEE SHEET E3.2)	208	3	-	1-1/2	6.2	J-BOX	-	-	-	-	EXTEND CIRCUIT FROM ITEM 1C TO FAN ON ROOF
5	1	REFRIGERATED SANDWICH PREP TABLE	115	1	-	1/3	6.5	C&P	-	-	X	72	NEMA 5-15R OUTLET ON CORD REEL, SEE DETAIL THIS SHEET
6	2	WORKTABLE ON CASTERS	115	1	-	-	1.5	RECP	-	-	X	72	NEMA 5-15R CONVENIENCE OUTLET ON CORD REEL, SEE DETAIL THIS SHEET
6A	1	WORKTABLE ON CASTERS	115	1	-	-	1.5	RECP	X	-	-	52	NEMA 5-20R CONVENIENCE OUTLET
7	1	2-SECTION REACH-IN REFRIGERATOR	115	1	-	1/3	8	C&P	X	-	-	48	NEMA 5-15P
8	1	2-SECTION REACH-IN FREEZER	115	1	-	3/4	12	C&P	X	-	-	48	NEMA 5-15P
9	1	PREP TABLE WITH SINKS	115	1	-	-	1.5	RECP	X	-	-	52	NEMA 5-20R CONVENIENCE OUTLET
11	1	DISPOSER WITH CONTROL PANEL	115	1	-	1-1/2	12.2	J-BOX	X	-	-	12	NOTE 2
17	1	UNDERCOUNTER DISHWASHER	208	1	-	3/4	38.4	J-BOX	X	-	-	8	NOTE 1

**KITCHEN ROUGH-IN SCHEDULE REMARKS:**

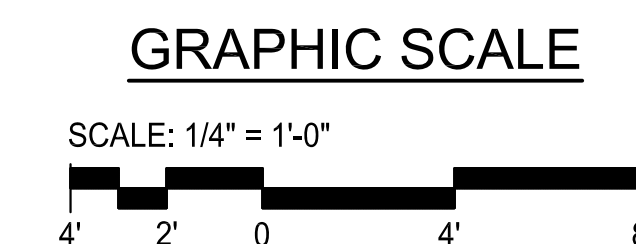
- NOTE 1: PROVIDE CIRCUIT IN LIQUID TIGHT CONDUIT TO APPLIANCE.  
 NOTE 2: CONNECT CIRCUIT THRU CONTROL PANEL TO SOLENOID VALVE AND MOTOR.  
 NOTE 3: CONNECT HOOD LIGHT CIRCUIT, CONTROL CIRCUIT TO FIRE SUPPRESSION RELAYS AND FROM RELAYS TO FAN CONTROLS.  
 NOTE 4: PROVIDE FAN CIRCUIT TO SECTION 114000 FURNISHED AND MOUNTED FAN CONTROL CENTER AND EXTEND LOAD CIRCUIT TO FAN ON ROOF

**ELECTRICAL ROUGH-IN SCHEDULE LEGEND**

- C&P - CORD AND PLUG  
 WL - WALL  
 FLR - FLOOR  
 DFA - DOWN FROM ABOVE  
 HGT AFF - HEIGHT IN INCHES TO CENTERLINE OF ROUGH-IN

DATE \_\_\_\_\_ ISSUE \_\_\_\_\_  
 04.18.16 PERMIT \_\_\_\_\_

THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.

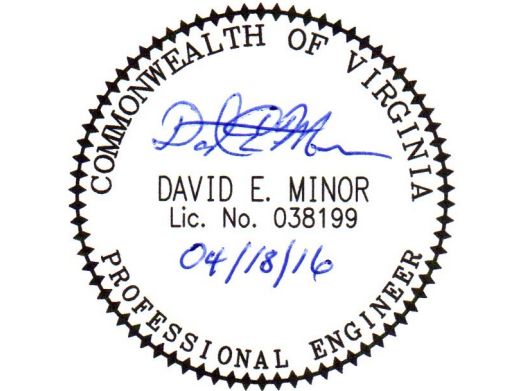


**ELECTRICAL KITCHEN PLAN**

**E3.3**

**THE HIGHPOINT COLLECTIVE LLC  
RENOVATION**

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RICHMOND, VIRGINIA 23230

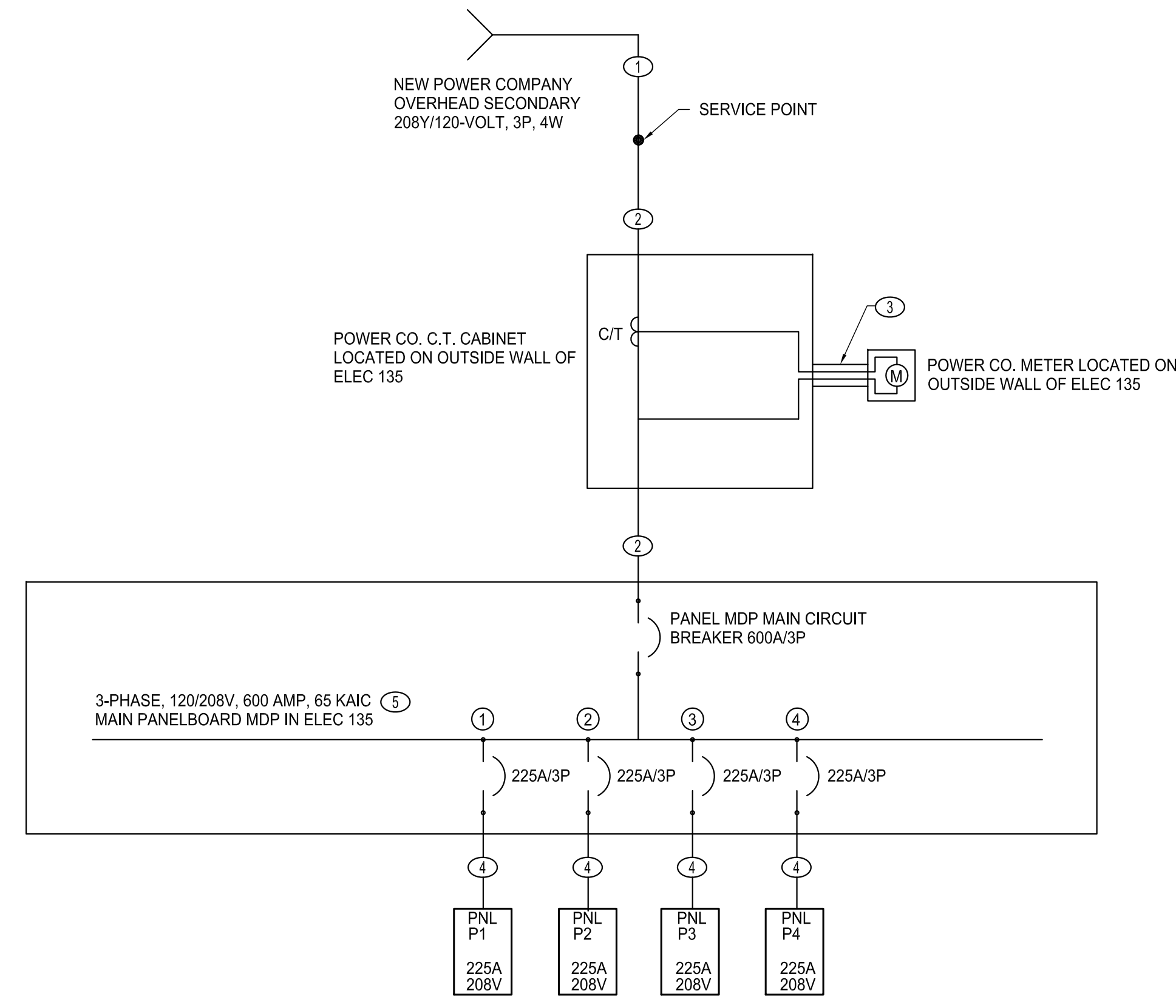


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PANEL MDP		VOLTS 120/208		MAIN CRT. BRK. - POLE 3, AMPS 600, FRAME MG, LOCATION BOT																
MFG SQUARE-D		WIRE 4		MAIN AMPS 600																
PNL TYPE H-LINE - HCM		PHASE 3		NEUTRAL AMPS 600																
ENCLOSURE SURFACE																				
CIRCUIT NO	CIRCUIT DESCRIPTION	KVA	BRKR.			WIRE			CONDUIT	MAIN BREAKER	WIRE			BRKR.			KVA	CIRCUIT DESCRIPTION	CIRCUIT NO	
			F	P	A	K	P	N			E	G	C	E	N	P				A
1	PNL P1	31.4	JG	3	225	65	40	4/0	2	2.5	1.25	10	4	65	60	3	HG	18.4	RTU-1	8
2	PNL P2	15.8	JG	3	225	65	40	4/0	2	2.5	1	10	6	65	45	3	HG	10.8	MAU-1	9
3	PNL P3	21.6	JG	3	225	65	40	4/0	2	2.5	1.25	8	3	65	80	3	HG	23.8	HP-1A	10
4	PNL P4	14.4	JG	3	225	65	40	4/0	2	2.5	1.25	8	3	65	80	3	HG	23.8	HP-1B	11
5	SPD	-	HG	3	60	65	4	4	8	1.25								S/O	12	
6	S/O																	S/O	13	
7	S/O																	S/O	14	
TOTAL		83.2	← ADD →										TOTAL	76.8	=	TOTAL	160.0 KVA (NOTE 1) (444.1 AMPS)			
PANEL LOCATION: ELEC 135		REMARKS: 1. TOTAL LOAD SHOWN IS CONNECTED LOAD. SEE LOAD SUMMARY, THIS SHEET FOR ACTUAL LOAD WITH APPLIED DIVERSITY FACTORS. 2. PANELBOARD SHALL BE SERVICE ENTRANCE RATED AND LABELED.																		
S/O = SPACE ONLY																				

PANEL P1		VOLTS 120/208		MAIN AMPS 225																
MFG SQUARE-D		WIRE 4		NEUTRAL AMPS 225																
PNL TYPE NQ		PHASE 3																		
ENCLOSURE SURFACE																				
CIRCUIT NO	CIRCUIT DESCRIPTION	KVA	BRKR.			WIRE			CONDUIT	MAIN LUGS	WIRE			BRKR.			KVA	CIRCUIT DESCRIPTION	CIRCUIT NO	
			F	P	A	K	P	N			E	G	C	E	N	P				A
1	CORD REEL - REFRIG. SANDWICH PREP TABLE (ITEM #5)	0.75	QOB-GFI	1	15	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.90	RECEPTS. - STUDIO 145	2
3	CORD REEL - WORKTABLE (ITEM #6)	0.18	QOB-GFI	1	15	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.90	RECEPTS. - STUDIO 145, UNISEX 146	4
5	CORD REEL - WORKTABLE (ITEM #6)	0.18	QOB-GFI	1	15	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.90	RECEPTS. - STUDIO 211	6
7	RECEPT - WORKTABLE (ITEM #6A)	0.18	QOB-GFI	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.72	RECEPTS. - STUDIO 211	8
9	RECEPT - REACH-IN REFRIG (ITEM #7)	0.92	QOB-GFI	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.77	LIGHTS - KITCHEN 143, CORR 144	10
11	RECEPT - REACH-IN FREEZER (ITEM #8)	1.38	QOB-GFI	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.44	LIGHTS - STUDIOS 145 & 211	12
13	RECEPT. - PREP TABLE (ITEM #9)	0.18	QOB-GFI	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.72	RECEPTS. - GALLERY 139	14
15	DISPOSER WITH CONTROL PANEL (ITEM #11)	1.40	QOB	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.54	RECEPTS. - GALLERY 139	16
17	UNDERCOUNTER DISHWASHER (ITEM #17)	8.00	QOB	2	50	10	6	6	10	1	3/4	12	12	10	20	1	QOB	0.72	RECEPTS. - GALLERY 139	18
21	RECEPT - GENERAL CONVENIENCE	0.90	QOB-GFI	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.72	RECEPTS. - GALLERY 140	20
23	EXHAUST HOOD WITH PSP (ITEM #1A)	0.92	QOB	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.72	RECEPTS. - GALLERY 140, MEN 141, WOMEN 142	22
25	HOOD FIRE SUPPRESSION SYSTEM (ITEM #1B)	1.38	QOB	1	20	10	12	12	3/4		3/4	12	12	10	20	1	QOB	0.06	LIGHTS - COATS 138	24
27	HOOD FAN CONTROL PANEL CONTROL POWER (ITEM #1C)	1.73	QOB	1	20	10	12	12	3/4								QOB	-	SPARE	26
31	HOOD FAN CONTROL PANEL (ITEM #1C)	4.47	QOB	3	15	10	12	12	3/4								QOB	-	SPARE	28
35	SPARE		QOB	1	20	10											QOB	-	SPARE	30
37	SPARE		QOB	1	20	10											QOB	-	SPARE	32
39	SPARE		QOB	1	20	10											QOB	-	SPARE	34
41	SPARE		QOB	1	20	10											QOB	-	SPARE	36
TOTAL		22.6	← ADD →										TOTAL	8.8	=	TOTAL	31.4 KVA (87.2 AMPS)			
PANEL LOCATION: ELEC 135		REMARKS: 1. THE BRANCH BREAKERS IN THIS PANEL ARE SERIES RATED WITH THE FEEDER BREAKER IN PANEL MDP SUPPLYING THIS PANEL. PANEL KAIC RATING IS 65 KAIC.																		
S/O = SPACE ONLY																				



**ONE-LINE DIAGRAM**  
SCHEMATIC

- ONE-LINE DIAGRAM NOTES:
- SERVICE DROP FROM POWER COMPANY POLE, PROVIDED BY POWER CO.
  - PROVIDE SERVICE ENTRANCE CONDUCTORS FROM SERVICE POINT THROUGH C.T. CABINET TO MAIN PANELBOARD MDP. SERVICE ENTRANCE SHALL BE 2@(#350 IN 3-1/2" CONDUIT). PROVIDE PROPER SERVICE HEAD AND ALL MATERIAL NOT FURNISHED BY THE POWER CO. NECESSARY FOR COMPLETE OVERHEAD SERVICE ENTRANCE. ALL ASPECTS OF THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE POWER CO. (DOMINION VIRGINIA POWER).
  - PROVIDE ONE (1) 1-1/4" EMPTY CONDUIT FOR ELECTRIC METER WIRING BY THE POWER CO.
  - 4#4/0 & 1#2 EGC IN 2-1/2" CONDUIT.
  - IN ADDITION TO THE FEEDERS SERVING DISTRIBUTION EQUIPMENT SHOWN IN THIS DIAGRAM, PANEL MDP ALSO SUPPLIES INDIVIDUAL BRANCH LOADS. SEE MDP PANELBOARD SCHEDULE, THIS SHEET.

GENERAL NOTES:

- ALL CONDUCTOR SIZES GIVEN IN THE ONE-LINE DIAGRAM ARE BASED ON COPPER CONDUCTORS.

LOAD SUMMARY	
LOAD CATEGORY	KVA
LIGHTING	7.9
ESTIMATED FUTURE ADDITIONAL LIGHTING	2.7
RECEPTACLES (NOTE 1)	23.7
MISCELLANEOUS EQUIPMENT LOADS	7.5
HVAC (GAS HEAT)	72.2
HOT WATER HEATING (GAS)	0.7
REFRIGERATORS/FREEZERS	6.6
KITCHEN EQUIPMENT	19.5
TOTAL	140.8

- NOTES:
- LOAD SHOWN IS DEMAND PER NEC 220.44.

THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.

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ELECTRICAL  
ONE-LINE  
DIAGRAM &  
PANELBOARDS

E4.1

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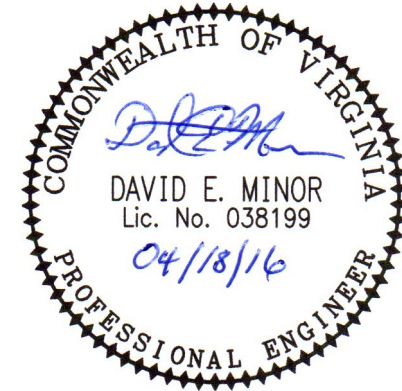
PANEL P2		VOLTS 120/208		MAIN AMPS 225																	
MFG SQUARE-D		WIRE 4		NEUTRAL AMPS 225																	
PNL TYPE NQ		PHASE 3																			
ENCLOSURE SURFACE																					
CIRCUIT NO	CIRCUIT DESCRIPTION	KVA	BRKR.			WIRE			CONDUIT	MAIN LUGS	WIRE			BRKR.			KVA	CIRCUIT DESCRIPTION	CIRCUIT NO		
			F	P	A	K	P	N			E	E	N	P	A	F				K	P
1	RECEPTS. - CORR 134, 144, ENTRY 137, ELEC 135	0.90	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	1.92	EXIST. UNKNOWN LOAD (A-1) *	2
3	RECEPTS. - STUDIO 136	0.54	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	1.92	EXIST. UNKNOWN LOAD (A-5) *	4
5	RECEPTS. - STUDIO 136	0.54	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	1.08	EXIST. RECS. - STUDIO 122 & 123, ENTRY, CORR. (A-9) **	6
7	RECEPTS. - STUDIO 132	0.54	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	1.92	EXIST. UNKNOWN LOAD (A-11) *	8
9	RECEPTS. - STUDIO 132	0.54	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.90	EXIST. RECS. - STUDIO 122 & 123, ENTRY, CORR. (A-13)**	10
11	RECEPTS. - STUDIO 133	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	1.62	EXIST. RECS. - CORR. 127 & STUDIO 130 (A-16)**	12
13	RECEPTS. - CORR 131, STOR 129, WOMEN 128	0.54	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	14
15	LIGHTS - CORR 134 & 131, ROOMS 132, 133, 136, 129	0.57	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	16
17	FCU-20, FCU-21	0.10	QOB	2	15	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	18
21	FCU-17, FCU-18, FCU-19	0.21	QOB	2	15	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	22
25	FCU-13, FCU-15	0.10	QOB	2	15	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	24
29	DWH-1	0.54	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	26
31	DHWP-1 & DHWP-2	0.20	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	28
33	RECEPTS. - ROOFTOP	0.54	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	30
35	VRF SYSTEM CENTRALIZED CONTROLLER	0.24	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	32
37	HRU-5, HRU-6	0.16	QOB	2	15	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	34
41	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	40
TOTAL		6.4	← ADD →										TOTAL	9.4	=	TOTAL	15.8 KVA (43.9 AMPS)				
PANEL LOCATION: ELEC 135		REMARKS: 1. THE BRANCH BREAKERS IN THIS PANEL ARE SERIES RATED WITH THE FEEDER BREAKER IN PANEL MDP SUPPLYING THIS PANEL. PANEL KAIC RATING IS 65 KAIC. 2. * INDICATES CIRCUIT IS EXTENDED FROM EXISTING PANEL A REMOVED AS PART OF DEMOLITION (CIRCUIT IN PANEL A IS SHOWN IN PARENTHESIS). LOAD IS UNKNOWN AND FOR PURPOSES OF LOAD CALCULATION IS ASSUMED TO BE THE MAXIMUM POSSIBLE FOR THAT SIZE OF CIRCUIT. 3. ** INDICATES CIRCUIT IS EXTENDED FROM EXISTING PANEL A REMOVED AS PART OF DEMOLITION (CIRCUIT IN PANEL A IS SHOWN IN PARENTHESIS). THE LOAD SHOWN FOR THE CIRCUIT IS BASED ON FIELD INVESTIGATION. 4. SPARE CIRCUITS #18 THROUGH #42 MAY BE USED FOR ANY ADDITIONAL CIRCUITS TO BE EXTENDED FROM PANEL A.																			

PANEL P4		VOLTS 120/208		MAIN AMPS 225																	
MFG SQUARE-D		WIRE 4		NEUTRAL AMPS 225																	
PNL TYPE NQ		PHASE 3																			
ENCLOSURE SURFACE																					
CIRCUIT NO	CIRCUIT DESCRIPTION	KVA	BRKR.			WIRE			CONDUIT	MAIN LUGS	WIRE			BRKR.			KVA	CIRCUIT DESCRIPTION	CIRCUIT NO		
			F	P	A	K	P	N			E	E	N	P	A	F				K	P
1	RECEPTS. - STUDIO 201	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.58	LIGHTS - STUDIOS 201 & 203	2
3	RECEPTS. - STUDIO 201	0.90	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.48	LIGHTS - STUDIOS 205 & 208	4
5	RECEPTS. - STUDIO 203	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.24	LIGHTS - STUDIO 210, CORR 204	6
7	RECEPTS. - STUDIO 203	0.90	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	15	2	QOB	0.23	FCU-23, FCU-24, FCU-25	8
9	RECEPTS. - STUDIO 205	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
11	RECEPTS. - STUDIO 205	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
13	RECEPTS. - STUDIO 208	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
15	RECEPTS. - STUDIO 208	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
17	RECEPTS. - CORR 204, MEN 206, WOMEN 207, STAIR 209	1.08	QOB	1	20	10	12	12	3/4	↑↑↑	1.25	10	4	4	10	60	2	QOB	4.10	EMERGENCY LIGHTING INVERTER	16
19	RECEPTS. - STUDIO 210	0.72	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	20
21	RECEPTS. - STUDIO 210	0.72	QOB	1	20	10	12	12	3/4	↑↑↑					10	20	1	QOB	-	SPARE	22
23	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	24
25	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	26
27	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	28
29	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	30
31	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	32
33	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	34
35	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	36
37	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	38
39	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	40
41	SPARE	-	QOB	1	20	10				↑↑↑					10	20	1	QOB	-	SPARE	42
TOTAL		8.6	← ADD →										TOTAL	5.8	=	TOTAL	14.4 KVA (40.0 AMPS)				
PANEL LOCATION: ELEC 135		REMARKS: 1. THE BRANCH BREAKERS IN THIS PANEL ARE SERIES RATED WITH THE FEEDER BREAKER IN PANEL MDP SUPPLYING THIS PANEL. PANEL KAIC RATING IS 65 KAIC.																			
S/O = SPACE ONLY																					

THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.

PANEL P3		VOLTS 120/208		MAIN AMPS 225																	
MFG SQUARE-D		WIRE 4		NEUTRAL AMPS 225																	
PNL TYPE NQ		PHASE 3																			
ENCLOSURE SURFACE																					
CIRCUIT NO	CIRCUIT DESCRIPTION	KVA	BRKR.			WIRE			CONDUIT	MAIN LUGS	WIRE			BRKR.			KVA	CIRCUIT DESCRIPTION	CIRCUIT NO		
			F	P	A	K	P	N			E	E	N	P	A	F				K	P
1	RECEPTS. - ENTRY 101, LOUNGE 102	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.26	LIGHTS - FRONT ENTRY, CORRIDORS, & LOADING	2
3	RECEPTS. - CLRM 103	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.46	LIGHTS - CLRM 103, STUDIO 111	4
5	RECEPTS. - CLRM 103	0.54	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.29	LIGHTS - STUDIOS 106-110, 113	6
7	RECEPTS. - STUDIO 106	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	20	1	QOB	0.39	LIGHTS - STUDIOS 116 & 118, SPRINKLER 117	8
9	RECEPTS. - STUDIO 107	0.72	QOB	1	20	10	12	12	3/4	↑↑↑	3/4	12	12	12	10	15	2	QOB	0.29	FCU-9, FCU-10, FCU-11, FCU-12	10
11	RECEPTS. - STUDIO 108	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
13	RECEPTS. - STUDIO 109	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
15	RECEPTS. - STUDIO 110	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
17	RECEPTS. - STUDIO 113	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
19	RECEPTS. - CORR 105, MEN 112, WOMEN 114	0.90	QOB	1	20	10	12	12	3/4	↑↑↑											
21	RECEPT. - EWC IN CORR 105	0.54	QOB	1	20	10	12	12	3/4	↑↑↑											
23	RECEPTS. - STUDIO 111	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
25	RECEPTS. - STUDIO 111	0.54	QOB	1	20	10	12	12	3/4	↑↑↑											
27	RECEPTS. - CORR 115, LOADING 120	0.90	QOB	1	20	10	12	12	3/4	↑↑↑											
29	OVERHEAD DOOR - LOADING 120	1.13	QOB	1	20	10	12	12	3/4	↑↑↑											
31	RECEPTS. - STUDIO 116	0.90	QOB	1	20	10	12	12	3/4	↑↑↑											
33	RECEPTS. - STUDIO 116, SPRINK. 117	0.54	QOB	1	20	10	12	12	3/4	↑↑↑											
35	RECEPTS. - STUDIO 118	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
37	RECEPTS. - STUDIO 118	0.72	QOB	1	20	10	12	12	3/4	↑↑↑											
39	RECEPTS. - STUDIO 118	0.72	QOB																		





THE HIGHPOINT COLLECTIVE LLC  
RENOVATION

DATE	ISSUE
04.18.16	PERMIT

ELECTRICAL SPECIFICATIONS  
**E5.1**

3300 W BROAD ST  
RICHMOND, VIRGINIA 23230

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**ELECTRICAL SPECIFICATIONS:**

1. ALL ELECTRICAL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND THE 2011 NATIONAL ELECTRICAL CODE (NEC).
2. ALL ELECTRICAL EQUIPMENT AND MATERIAL USED SHALL BEAR THE UNDERWRITER'S LABORATORY (UL) LABEL FOR THE INTENDED APPLICATION.
3. THE CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS REQUIRED TO PROVIDE COMPLETE WORKING ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND ACQUIRE ALL PERMITS NECESSARY TO PERFORM WORK. ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER AND SHALL BE SUBJECT TO APPROVAL BY THE ARCHITECT/ENGINEER (A/E) AND OWNER. THE CONTRACTOR SHALL WARRANT FOR A PERIOD OF ONE YEAR ALL WORK PROVIDED UNDER THE CONTRACT TO INCLUDE, BUT NOT NECESSARILY LIMITED TO, ALL SYSTEMS, EQUIPMENT, MATERIALS, AND WORKMANSHIP. THIS SHALL NOT BE CONSTRUED TO LIMIT ANY EXTENDED WARRANTY PERIODS OF LONGER THAN ONE YEAR FOR SPECIFIC ITEMS AS CALLED FOR IN THESE SPECIFICATIONS. THE WARRANTY PERIOD SHALL COMMENCE ON THE DATE OF ACCEPTANCE BY THE OWNER AND SHALL COVER ALL PARTS AND LABOR AS REQUIRED TO FULFILL THE WARRANTY AT NO COST TO THE OWNER.
4. THE ELECTRICAL TRADE SHALL VISIT THE JOB SITE AND SURVEY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS WORK PRIOR TO CONTRACT PRICE AGREEMENT. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO ACCURATELY ESTIMATE THE DIFFICULTIES AND COST TO PERFORM WORK. THE ELECTRICAL TRADE SHALL COORDINATE ALL WORK WITH THE WORK OF OTHER TRADES. CONFLICTS DUE TO FAILURE OF THE ELECTRICAL TRADE TO COORDINATE WORK WILL BE CORRECTED AT THE EXPENSE OF THE ELECTRICAL TRADE, INCLUDING COSTS FOR REPAIRS TO WORK OF OTHER TRADES.
5. THE ELECTRICAL TRADE SHALL SUBMIT ALL ELECTRICAL MATERIALS REQUIRED BY THESE SPECIFICATIONS FOR REVIEW BY A/E IN ACCORDANCE WITH ARCHITECT'S SUBMITTAL PROCEDURES. SUBMITTALS ARE REQUIRED FOR ALL EQUIPMENT AND MATERIALS INDICATED WITH AN (S) BEHIND THE PRODUCT TITLE. THIS SHALL INCLUDE SUBMISSION OF THE SPECIFIED PRODUCTS EQUIPMENT AND MATERIALS. ALL SUBMITTAL DATA SHALL BE CORRECTLY IDENTIFIED TO SHOW PROJECT NAME, AND THE EXACT MODEL, STYLE, OR SIZE OF ITEM BEING SUBMITTED AND SHALL BEAR THE SUBCONTRACTOR'S STAMP WHICH STATES THAT THEY HAVE REVIEWED THE SUBMISSION, IT IS COMPLETE, AND THAT IN THEIR OPINION IT MEETS THE CONTRACT REQUIREMENTS.
6. AT COMPLETION OF PROJECT, THE ELECTRICAL TRADE SHALL SUBMIT IN ACCORDANCE WITH ARCHITECT'S SUBMITTAL PROCEDURE, OPERATION AND MAINTENANCE DATA (OM) FOR ALL ELECTRICAL ITEMS WHICH WILL REQUIRE SERVICING BEFORE THE DURATION OF THEIR USEFUL LIFE HAS BEEN REACHED. OM MANUALS SHALL INCLUDE A COMPLETE PRODUCT INDEX, INSTALLATION AND MAINTENANCE DATA, SEQUENCE OF CONTROLS, PARTS LISTS, AND THE NAME, ADDRESS, AND TELEPHONE NUMBER OF SUPPLIER OR NEAREST REPRESENTATIVE.
7. ALL WIRING FOR CIRCUITRY 120 VOLT OR GREATER SHALL BE COPPER THWN OR THHN IN METALLIC CONDUIT. ALL WIRES FOR 20 AMP CIRCUITS TO BE #12 ON RUNS 0' TO 100'; #10 ON RUNS 101' TO 250'; #8 ON RUNS 251' TO 500' AND #6 ON RUNS 501' AND ABOVE. ALL WIRE SHALL BE #12 AWG OR LARGER. ALL WIRE #8 AWG OR LARGER SHALL BE STRANDED.
8. ALL POWER LIMITED SHIELDED TWISTED PAIR CABLE SHALL BE AS MANUFACTURED BY BELDEN, ALPHA, WEST PENN, OR AMIXTER. FURNISH PROPER NUMBER OF CONTROL WIRING PAIRS, SHIELDING, INSULATION, ETC. AS REQUIRED BY CONTROLLED SYSTEM MANUFACTURER.
9. GROUNDING NOTE: ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC. ALL CIRCUITRY SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR (GEC). PROVIDE BUILDING GROUNDING ELECTRODE SYSTEM (GSES) PER DETAIL ON SHEET E0.2.
10. ALL CONDUIT SHALL BE RIGID HEAVY WALL CONDUIT (GRS), INTERMEDIATE METAL CONDUIT (IMC), OR ELECTRICAL METALLIC TUBING (EMT) AS PERMITTED BY NEC. MINIMUM SIZE SHALL BE 3/4" EXCEPT FOR FLEXIBLE CONDUIT. CONDUIT SHALL BE BY REPUBLIC, STEELDUCT, ALLIED TUBING, WHEATLAND, OR OTHER ACCEPTABLE MANUFACTURER. PVC CONDUIT IS NOT PERMITTED FOR THIS PROJECT.
11. FLEXIBLE METAL CONDUIT SHALL BE USED FOR ALL FLEXIBLE CONNECTIONS, PLUS ALL SHORT MOTOR CONNECTIONS, AND ALL EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATION. FLEXIBLE METAL CONDUIT MAY ALSO BE USED AS THE FLEXIBLE CONNECTION TO RECESSED LIGHTING FIXTURE ASSEMBLIES AND IN EXISTING WALL VOIDS. FLEXIBLE METAL CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC AND ALL LIMITATIONS THEREIN AND SHALL BE LIMITED TO 6' MAXIMUM LENGTH. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE USED IN EXTERIOR APPLICATIONS AND ALL INTERIOR WET LOCATIONS.
12. METAL CLAD (MC) CABLING MAY BE USED FOR BRANCH CIRCUITRY AS PERMITTED BY THE NEC AND SHALL BE CONCEALED IN WALLS OR CEILINGS, AND SHALL BE SUBJECT TO ALL NEC INSTALLATION REQUIREMENTS. IT SHALL NOT BE PERMITTED TO BE INSTALLED EXPOSED IN FINISHED AND NORMALLY OCCUPIED AREAS. ALL FEEDERS SHALL BE RUN IN CONDUIT.
13. SURFACE RACEWAYS [S]:
  - A. IN NORMALLY OCCUPIED LOCATIONS THAT ARE PART OF THE FULL RENOVATION WITH EXPOSED STRUCTURAL CEILINGS OR WHERE THE WALL FINISH IS EXISTING EXPOSED SOLID MASONRY OR CONCRETE (SUCH AS THE SECOND FLOOR STUDIOS), WIRING SHALL BE INSTALLED IN EXPOSED EMT WITH EXPOSED METAL OUTLET BOXES IN ACCORDANCE WITH ALL NEC REQUIREMENTS.
  - B. IN EXISTING AREAS WITH MINIMAL RENOVATIONS (LITTLE OR NO CHANGES PROPOSED TO EXISTING WALL OR CEILING PARTITIONS), PROVIDE SURFACE RACEWAY WIREMOLD 200, 500, OR 700 PROVIDED COMPLETE WITH ALL FITTINGS, PLATES, ADAPTERS, ETC. SURFACE RACEWAY SHALL BE LIMITED TO USE ON EXISTING SOLID MASONRY OR CONCRETE WALLS AND WHERE WIRING CANNOT BE FISHED THROUGH WALLS. INSTALLATIONS SHALL BE APPROVED, IN ADVANCE, BY THE ARCHITECT.
14. OUTLET BOXES:
  - A. ALL OUTLET BOXES SHALL BE ONE-PIECE CONSTRUCTION WITH PROPER CONDUIT KNOCKOUTS AS REQUIRED, AND EQUAL TO STEEL CITY OR RACO. PROVIDE PROPER DEVICE COVER AS REQUIRED FOR DEVICES AND WALL FINISH. ALL BOXES SHALL BE PROPERLY SUPPORTED IN ACCORDANCE WITH NEC.
  - B. ALL CEILING OUTLET BOXES SHALL HAVE ADJUSTABLE BAR HANGERS AND PROPER FIXTURE ADAPTER COVER.
  - C. ALL OUTLET BOX COVER PLATES SHALL BE HIGH IMPACT THERMOPLASTIC OR POLYCARBONATE WITH SMOOTH FINISH UNLESS OTHERWISE INDICATED. PLATE COLOR SHALL BE AS DIRECTED BY THE ARCHITECT.
  - D. ALL UNUSED KNOCKOUTS IN BOXES SHALL BE PLUGGED.
15. VERIFY DOOR SWINGS SHOWN ON DRAWINGS BEFORE INSTALLING SWITCH BOXES TO INSURE PROPER LOCATION. INSTALL BOXES 4" FROM TRIM ON DOOR JAMB.
16. FURNISH AND INSTALL CONDUIT RUNS TO PRODUCE SWITCHING AND CIRCUIT CONTROL INDICATED ON THE DRAWINGS. ALLOW FOR MAKING CONNECTIONS TO ALL OUTLETS, LIGHT FIXTURES, ETC. INDICATED AND CHECK PLANS TO INSURE ALL OUTLETS, ETC., HAVE A DESIGNATED CIRCUIT. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOUND. CIRCUITS SHALL BE IN INDIVIDUAL HOMERUNS. MULTI-WIRE BRANCH CIRCUITS ARE NOT PERMITTED.
17. FIRESTOPPING: PROVIDE FIRE SEALS FOR EACH CONDUIT OR CABLE PASSING THROUGH FIRE-RATED WALLS AND FLOORS WHERE THE FLOOR, WALL, OR SMOKE PARTITION HAS A RATING UP TO THREE (3) HOURS IN ACCORDANCE WITH MANUFACTURER'S APPLICATION DATA. INSTALL IN ACCORDANCE WITH THE APPROPRIATE UL LISTED ASSEMBLY FOR THE TYPE OF CONSTRUCTION AND FIRE-RATING OF THE PARTITION.

18. WIRING DEVICES [S]:
  - A. LINE VOLTAGE TOGGLE SWITCHES: SPECIFICATION GRADE HUBBELL HBL SERIES, COOPER AC QUIET SERIES, OR PASS & SEYMOUR (P&S) PS SERIES, SINGLE, THREE-WAY, FOUR-WAY, ETC. AS REQUIRED. DEVICE COLOR SHALL BE CHOSEN BY THE ARCHITECT.
  - B. LOW VOLTAGE MOMENTARY SWITCHES: HUBBELL LVSM1NP SERIES OR ACCEPTABLE EQUAL. SINGLE BUTTON AND SHALL FIT IN STANDARD SINGLE GANG WALL BOX. PROVIDE STANDARD DECORATOR STYLE WALL PLATE. PROVIDE ALL REQUIRED SETUP AND PROGRAMMING. COLOR SHALL BE CHOSEN BY THE ARCHITECT.
  - C. DIMMERS: DIMMERS FOR CONTROL OF LED FIXTURES SHALL BE LINE VOLTAGE SLIDER TYPE WITH ON/OFF BUTTON (PRESET) AND CAPABLE OF 3-WAY OPERATION. DIMMERS SHALL BE SIMILAR TO LEVITON RENOR II SERIES OR ACCEPTABLE EQUAL. COORDINATE EXACT CHOICE OF DIMMER WITH MANUFACTURER OF EACH FIXTURE TO BE CONTROLLED TO INSURE DIMMER IS COMPATIBLE WITH THE FIXTURE'S DRIVER. DIMMERS FOR INCANDESCENT FIXTURES SHALL BE SIMILAR IN OPERATION AND APPEARANCE TO LED DIMMERS.
  - D. RECEPTACLES: HEAVY DUTY SPECIFICATION GRADE HUBBELL HBL SERIES, COOPER 5362 SERIES OR P&S 5362 SERIES, DUPLEX, GFCI, ETC. AS REQUIRED WITH SPECIFIED COVER PLATES. PROVIDE COVER RATED AS WEATHERPROOF "WHILE-IN-USE" FOR ALL RECEPTACLES INSTALLED ON THE EXTERIOR. DEVICE COLOR SHALL BE CHOSEN BY THE ARCHITECT.
19. OCCUPANCY SENSORS [S]:
  - A. CEILING MOUNT OCCUPANCY SENSOR: SHALL BE DUAL TECHNOLOGY (INFRARED AND ULTRASONIC) COMPLETE WITH POWER PACKS. PROVIDE A SATELLITE RELAY AS NECESSARY FOR ADDITIONAL CIRCUITS UNDER THE SENSOR'S CONTROL. SENSOR SHALL BE WATT-STOPPER DT-300 OR ACCEPTABLE EQUAL BY HUBBELL/UNENCO, SENSORSWITCH, OR LUTRON. THE OCCUPANCY SENSOR SHALL BE PROVIDED WITH LOW VOLTAGE MOMENTARY SWITCH AND WIRED FOR MANUAL-ON OPERATION, SEE DETAIL ON DRAWINGS. SET SENSORS FOR 30 MINUTE TIME DELAY FOR AUTOMATIC OFF.
  - B. SWITCH MOUNT OCCUPANCY SENSOR: SHALL BE SINGLE POLE DUAL TECHNOLOGY (INFRARED AND ULTRASONIC) OCCUPANCY SENSING WALL SWITCH WITH 170 DEGREE FIELD OF VIEW. SWITCH SHALL BE WATT-STOPPER #DW-100 OR ACCEPTABLE EQUAL BY HUBBELL/UNENCO, SENSORSWITCH, OR LUTRON. SWITCHES SHALL BE CONFIGURED FOR MANUAL-ON OPERATION AND TIME DELAY SET FOR 30 MINUTES.
20. PHOTOCELLS [S]: SHALL BE PRECISION MULTIPLE CONTROLS #P2275 (1800 VA - 120V) OR ACCEPTABLE EQUAL. INSTALL WITH VIEW WINDOW ORIENTED TO THE NORTH AND AWAY FROM DIRECT OR REFLECTED ARTIFICIAL OR NATURAL LIGHT SOURCES. SEE DETAIL, SHEET E0.2. PHOTOCELL SHALL BE PROVIDED FOR CONTROL OF EXTERIOR LIGHTING CIRCUIT.
21. LIGHTING CONTACTORS [S]: SHALL BE SQUARE D CLASS 8903 TYPE L ELECTRICALLY HELD, IN NEMA 1 ENCLOSURE. SELECT CORRECT COIL VOLTAGE, NORMALLY OPEN AND NORMALLY CLOSED CONTACTS, AS SHOWN ON THE DETAIL ON SHEET E0.2. CONTACTOR SHALL BE PROVIDED WITH A HAND-OFF-AUTO SWITCH AND LED INDICATORS FOR GREEN = READY AND RED = RUN.
22. LIGHTING FIXTURES [S]: LIGHTING FIXTURES SHALL BE AS SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE OR ACCEPTABLE EQUALS. FOR SUBSTITUTIONS OF LIGHTING FIXTURES THAT ARE PART OF THE EMERGENCY EGRESS PATH, SUBMIT POINT-BY-POINT FOOTCANDLE CALCULATIONS PROVIDING SIMILAR INFORMATION AS SHOWN ON SHEET E2.5 & E2.6. PROVIDE LIGHTING FIXTURES COMPLETE WITH ALL REQUIRED LAMPS, PLATES, RINGS, HANGERS, TRIM AND ALL ACCESSORIES NECESSARY FOR A COMPLETE AND SECURE INSTALLATION. ALL FIXTURES SHALL BE ADEQUATELY SUPPORTED BY FIXTURE STUDS, CONDUIT STEMS, STEEL RODS, OR BAR HANGERS. RECESSED FIXTURES IN ACT CEILINGS SHALL BE PROVIDED WITH A MINIMUM OF TWO (2) AUXILIARY SUPPORT WIRES AT THE DIAGONAL CORNERS OF THE FIXTURE. THE AUXILIARY SUPPORT WIRES SHALL BE ATTACHED TO THE STRUCTURE AND CAPABLE OF SUPPORTING THE FIXTURE IF THE CEILING SYSTEM SUPPORT WIRES ARE COMPROMISED. FIXTURES SHALL NOT BE MOUNTED TO OR SUSPENDED FROM ANY MECHANICAL SYSTEM.
23. LAMPS [S]:
  - A. T8 FLUORESCENT: SHALL BE 32 WATT, 2950 LUMENS, 3000K COLOR TEMPERATURE, CRI=85, AND SHALL BE PHILIPS F32T8/TL830 OR ACCEPTABLE EQUAL BY OSRAM SYLVANIA OR GE.
  - B. TRACK LAMPS: DIMMABLE LED PAR30 (EQUIVALENT TO 75 WATT HALOGEN) WITH SCREW BASE, FLOOD DISTRIBUTION, 25000 HOUR MINIMUM RATED LIFE, LONG OR SHORT NECK AS REQUIRED BY THE FIXTURE TYPE.
  - C. INCANDESCENT: PHILIPS OSRAM SYLVANIA, GE, OR ACCEPTED EQUAL, GENERAL LIGHTING LINE, INSIDE FROSTED, 2500 HOUR AVERAGE LIFE, 130 VOLTS UNLESS OTHERWISE NOTED.
24. FLUORESCENT BALLASTS [S]: FURNISH AND INSTALL CLASS A ALL ELECTRONIC INTEGRATED CIRCUIT TECHNOLOGY PROGRAMMED RAPID START FLUORESCENT BALLASTS. BALLAST SHALL BE AS MANUFACTURED BY MOTOROLA, ADVANCE, OR ACCEPTABLE EQUAL AND SHALL OPERATE WITH LESS THAN 10% TOTAL HARMONIC DISTORTION.
25. DISCONNECT SWITCHES [S]: DISCONNECT SWITCHES SHALL BE HEAVY DUTY, VISIBLE BLADE TYPE, FUSIBLE SWITCHES WITH GROUNDING KIT, SQUARE D CLASS 3110 SERIES OR ACCEPTABLE EQUAL, AND RATED FOR THE VOLTAGE ENCOUNTERED, POLES AND AMPERAGE AS REQUIRED WITH PROPER NEMA ENCLOSURE PER NEC AND ENVIRONMENTAL CONDITIONS. PROVIDE NEUTRAL ASSEMBLY WHERE REQUIRED.
26. FUSES [S]: FUSES SHALL BE REJECTION TYPE, DUAL-ELEMENT, TIME DELAY TYPE, CLASS RK-1 OR RK-5. FUSES FOR HVAC EQUIPMENT SHALL BE SIZED IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S MAXIMUM OVERCURRENT PROTECTION (MOP) RATING. ALL OTHER FUSES SHALL BE SIZED IN ACCORDANCE WITH NEC.
27. MOTOR PROTECTIVE (MP) SWITCHES [S]: FURNISH AND INSTALL MANUAL TYPE SQUARE D CLASS 2510 OR ACCEPTABLE EQUAL WITH OVERLOAD RELAY WITH POLES AS REQUIRED AND SEPARATELY WIRED NEON OR LED PILOT LIGHT. MP SWITCH AND PILOT SHALL BE MOUNTED ON ONE (1) SINGLE OR MULTI-GANG PLATE. FOR WALL-MOUNTED INDOOR VRF UNITS MOUNTED ON NEW WALLS, SWITCH SHALL BE RECESSED MOUNTED IN WALL BESIDE UNIT AT UNIT HEIGHT. SWITCHES MAY BE SURFACE MOUNTED ABOVE CEILING FOR CEILING MOUNTED INDOOR VRF UNITS AND FOR ALL EQUIPMENT MOUNTED IN MECHANICAL/ELECTRICAL SPACES. ALL MP SWITCHES SHALL BE LABELED TO INDICATE EQUIPMENT CONTROLLED BY SWITCH.
28. COORDINATE EXACT LOCATIONS AND REQUIREMENTS OF MECHANICAL AND PLUMBING EQUIPMENT WITH THE PROVIDERS/INSTALLERS OF THE EQUIPMENT. FOR ALL MECHANICAL AND PLUMBING EQUIPMENT, FURNISH AND INSTALL ALL POWER AND CONTROL WIRING, CONDUIT, SWITCHES, PILOT LIGHTS, AUXILIARY CONTACTS, ETC., AS REQUIRED BY ELECTRIC SEQUENCE CONTROL DIAGRAMS. FURNISH ALL CONTROL DEVICES AS CALLED FOR BY ALL MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.

29. ELECTRIC SERVICE [S]:
  - A. THE CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION WITH DOMINION VIRGINIA POWER (DVP) NECESSARY FOR THE INSTALLATION OF THE NEW ELECTRIC SERVICE CALLED FOR IN THESE DRAWINGS. WORK SHALL BE SCHEDULED WITH DVP TO MAINTAIN PROJECT CONSTRUCTION SCHEDULE. THE SECONDARY FOR THE NEW SERVICE SHALL BE 208Y/120 VOLTS, 3-PHASE, 4-WIRE. DVP SHALL PROVIDE THE OVERHEAD SECONDARY SERVICE CONDUCTORS TO THE CONTRACTOR PROVIDED SERVICE HEADS. INSTALL THE C.T. CABINET, CURRENT TRANSFORMERS, AND METER BASE/CABINET FURNISHED BY THE POWER COMPANY. PROVIDE A 1-1/4" EMPTY CONDUIT BETWEEN THE C.T. CABINET AND METER BASE. WIRING TO BE INSTALLED BETWEEN THE TWO BY THE POWER COMPANY. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT AND PROVIDE ALL WORK NOT SPECIFICALLY PERFORMED BY THE POWER COMPANY FOR A COMPLETE INSTALLATION.
  - B. THE OWNER WILL PAY DIRECTLY TO THE POWER COMPANY ALL POWER COMPANY CHARGES AND FEES FOR INSTALLATION OF THE POWER COMPANY PORTION OF THE PRIMARY AND SECONDARY SERVICE WORK.
  - C. THE CONTRACTOR SHALL OBTAIN A FAULT CURRENT LETTER FROM DVP INDICATING THE FAULT CURRENT AVAILABLE AT THE TERMINALS OF THE POWER COMPANY TRANSFORMER(S) SUPPLYING THE SECONDARY ELECTRIC SERVICE TO THE BUILDING. THE CONTRACTOR SHALL PROVIDE THE FAULT CURRENT LETTER TO THE CITY OF RICHMOND (COR) IF REQUIRED BY COR PLAN REVIEW. THE RATINGS OF THE SWITCHGEAR SHOWN ON THE DRAWINGS IS BASED ON CONSERVATIVE ESTIMATES OF THE AVAILABLE FAULT CURRENT. THE CONTRACTOR SHALL INSURE THAT THE RATINGS PROVIDED ARE SUFFICIENT FOR THE FAULT CURRENT PRIOR TO SUBMITTING THE SWITCHGEAR FOR SHOP DRAWING REVIEW. AT HIS DISCRETION, THE CONTRACTOR MAY PROVIDE LOWER RATINGS THAN CALLED FOR ON THE DRAWINGS IF THE AVAILABLE FAULT CURRENT FROM THE POWER COMPANY IS LESS THAN THE RATINGS SHOWN ON THE DRAWINGS.
  - D. THE RENOVATION WILL OCCUR IN PHASES WITH THE REMOVAL OF THE EXISTING SERVICE AND INSTALLATION OF THE NEW SERVICE TO OCCUR IN PHASE 1. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE DISCONNECTION AND REMOVAL OF THE EXISTING SERVICE WITH CONNECTION OF THE NEW SERVICE IN ORDER TO MAINTAIN POWER TO PORTIONS OF THE BUILDING THAT ARE NOT PART OF PHASE 1. THE OUTAGE REQUIRED FOR THE CHANGEOVER SHALL BE KEPT TO A MINIMUM AND SCHEDULED TO SUIT THE OWNER. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY ARRANGEMENTS TO MAINTAIN POWER TO THE OTHER PHASES PRIOR TO THEIR RENOVATION.
30. EMERGENCY LIGHTING EQUIPMENT [S]:
  - A. UNINTERRUPTIBLE POWER SYSTEM (CENTRAL LIGHTING INVERTER): SHALL BE DUAL-LITE D SERIES MODEL #LSN OR ACCEPTABLE EQUAL BY MYERS POWER PRODUCTS, PHILIPS CHLORIDE, OR OTHER ACCEPTED EQUAL, COMPLETE WITH THE FOLLOWING FEATURES:
    1. SHALL BE A SINGLE-PHASE, SOLID-STATE CENTRAL INVERTER SYSTEM WITH 208V INPUT AND MULTIPLE 120V, 1 POLE OUTPUT CIRCUIT BREAKERS PER DETAIL ON DRAWING. POWER RATING SHALL BE AS SHOWN ON DRAWING. THE SYSTEM SHALL INCORPORATE A HIGH FREQUENCY PULSE WIDTH MODULATED (PWM) INVERTER USING IGBT TECHNOLOGY. THE SYSTEM SHALL CONTAIN THE INVERTER, AN AC DISTRIBUTION MODULE WITH AN INPUT CIRCUIT BREAKER, A TRANSFER SWITCH, AND CONTROL AND MONITORING SUBSYSTEMS.
    2. SHALL MEET ALL UL, NEC, NFPA 101, AND IBC REQUIREMENTS FOR LIFE SAFETY USE.
    3. SHALL BE MOUNTED IN A SINGLE FREESTANDING NEMA 1 ENCLOSURE WITH FORCED AIR INTERNALLY MOUNTED FANS WITH NO AIR FILTERS AND POWERED FROM THE UPS.
    4. BATTERIES: SHALL BE 10-YEAR SEALED, VALVE REGULATED FRONT ACCESS LEAD ACID BATTERIES. BATTERIES SHALL BE CAPABLE OF PROVIDING 90 MINUTE MINIMUM RUNTIME.
    5. BATTERY CHARGER: SHALL RECHARGE FULLY DISCHARGED BATTERIES WITHIN A 24 HOUR PERIOD. THE CHARGER SHALL BE AN INTEGRATED 3 STEP WITH EQUALIZE, MICROPROCESSOR CONTROLLER AND TEMPERATURE COMPENSATING.
    6. DESIGNED TO OPERATED WITH A 50 MILLISECOND TRANSFER TIME.
    7. OVERLOAD CAPABILITY UP TO 115% FOR 10 MINUTES
    8. EFFICIENCY: MINIMUM 97%
    9. UNIT WARRANTY: SHALL BE 2 YEARS AFTER INITIAL START-UP OR ACCEPTANCE BY A/E. BATTERIES SHALL BE 10-YEAR - ONE YEAR FULL REPLACEMENT PLUS AN ADDITIONAL NINE YEARS PRO-RATA.
    10. MONITORING AND CONTROLS: THE UPS SYSTEM SHALL PROVIDE OPERATION MONITORING AND CONTROL, AUDIBLE ALARMS, AND SELF DIAGNOSTICS. THE SYSTEM SHALL HAVE A CONTINUOUS SCROLLING DISPLAY SHOWING DATE & TIME, SYSTEM STATUS, AND ANY SYSTEM FAULTS. THE SYSTEM SHALL PROVIDE METERING OF INPUT AND OUTPUT VOLTAGES, BATTERY VOLTAGE AND CURRENT, SYSTEM CURRENT AND WATTAGE AND SYSTEM TEMPERATURE. THE AUDIBLE ALARM SHALL ACTIVATE ON FAULTS, HIGH OR LOW VOLTAGES, AND HIGH TEMPERATURE.
    11. THE SYSTEM SHALL HAVE CAPABILITY FOR FUTURE REMOTE MONITORING AND EMAIL NOTIFICATION.
    12. THE SYSTEM SHALL HAVE MANUAL AND AUTOMATIC TEST MODES INCLUDING PROGRAMMABLE SELF-DIAGNOSTIC MONTHLY AND YEARLY TESTING AND RECORDING OF ALL TEST RESULTS.
    13. THE SYSTEM SHALL HAVE FORM C CONTACTS THAT CHANGE STATE ON ALARM CONDITIONS. THE SYSTEM SHALL ALSO HAVE FORM C NORMALLY OFF CONTACTS THAT CHANGE STATE WHEN THE SYSTEM TRANSFERS TO EMERGENCY MODE.
    14. MAINTENANCE BYPASS SWITCH: THE DEVICE IS INTERNALLY MOUNTED AND PERMITS MAINTENANCE PERSONNEL TO EASILY BYPASS THE PROTECTED EQUIPMENT DIRECTLY TO AC UTILITY POWER TO ALLOW FOR SERVICING.
    15. PROVIDE ALL PROGRAMMING, START-UP TESTING, AND COMMISSIONING BY MANUFACTURER'S FIELD SERVICE REPRESENTATIVE. PROVIDE TRAINING TO OWNER'S PERSONNEL ON PROPER OPERATION AND MAINTENANCE INCLUDING O&M AND TRAINING MANUALS. PROVIDE OPTION FOR PREVENTIVE AND FULL-SERVICE MAINTENANCE CONTRACT.
  - B. LIGHTING TRANSFER RELAY (GTR): PROVIDE A LIGHTING TRANSFER RELAY TO WORK IN CONJUNCTION WITH THE CENTRAL LIGHTING INVERTER SYSTEM TO TRANSFER MULTIPLE FIXTURES TO THE INVERTER SYSTEM REGARDLESS OF THE FIXTURES NORMAL LIGHTING CONTROLS. GTR SHALL BE A BODINE #GTD20A OR ACCEPTABLE EQUAL AND SHALL BE CAPABLE OF TRANSFERRING CIRCUITS LOADED UP TO 20 AMPS. DEVICE SHALL BE UL924 LISTED. DEVICE SHALL INCLUDE TEST SWITCH AND INDICATOR LIGHTS FOR NORMAL POWER AND ALTERNATE (EMERGENCY) POWER. DEVICE SHALL BE PROVIDED WITH A 5 YEAR WARRANTY. THE GTR SHALL BE MOUNTED ABOVE AN ACCESSIBLE CEILING SPACE. WHERE THE GTR CANNOT BE LOCATED ABOVE AN ACCESSIBLE CEILING, PROVIDE AN ACCESS DOOR IN THE INACCESSIBLE CEILING AND ALL SUCH LOCATIONS SHALL BE APPROVED IN ADVANCE BY THE ARCHITECT. WHERE THE CEILING IS EXPOSED STRUCTURE, MOUNT IN THE CEILING STRUCTURE. EACH GTR SHALL TRANSFER ALL FIXTURES SHOWN ON THE PLANS TO BE DOWNSTREAM OF THE DEVICE TO THE EMERGENCY CIRCUIT ON LOSS OF NORMAL POWER AND REGARDLESS OF NORMAL LIGHTING CONTROLS.

31. PANELBOARDS [S]: PANELBOARDS SHALL BE CIRCUIT BREAKER TYPE SQUARE D (AS CALLED FOR ON DRAWINGS) OR ACCEPTABLE EQUAL BY G.E., CUTLER-HAMMER, OR SIEMENS, AND SHALL MEET ALL REQUIREMENTS GIVEN IN THE PANELBOARD SCHEDULES. PANELBOARDS SHALL HAVE SILVER OR TIN PLATED COPPER BUS, FULL NEUTRAL, GROUND BAR, AND ALL CIRCUIT PROTECTIVE DEVICES INDICATED. ALL BRANCH PANELBOARDS SHALL HAVE FAULT CURRENT RATING EQUAL TO THE UPSTREAM MAIN PANELBOARD BREAKER SUPPLYING THE BOARD. RATING MAY BE ACHIEVED BY SERIES RATING BRANCH CIRCUIT BREAKERS TO THE FEEDER BREAKER. CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE, ONE, TWO, OR THREE POLE AS INDICATED WITH COMMON TRIP ON MULTI-POLE BREAKERS. MOUNT PANELBOARDS CABINETS LEVEL AND PLUMB, T2" TO TOP ABOVE FLOOR. LOAD DESIGNATIONS SHALL BE FILLED OUT FOR ALL CIRCUITS. PANELBOARDS SHALL INCLUDE ARC-FLASH WARNING LABEL AS REQUIRED BY NEC 110.16.
32. SURGE PROTECTIVE DEVICE [S]: SURGE PROTECTIVE DEVICE SHALL BE A HYBRID HIGH-ENERGY POWER CONDITIONING FILTER INCORPORATING SURGE PROTECTIVE DEVICE AND HIGH-FREQUENCY ELECTRICAL LINE NOISE FILTERING. THE UNIT SHALL PROVIDE EFFECTIVE HIGH-ENERGY TRANSIENT VOLTAGE SUPPRESSION, SURGE CURRENT DIVERSION, HIGH-FREQUENCY ATTENUATION, AND LINE CONTROL ON THE LOAD SIDE OF THE FACILITY'S DISTRIBUTION SYSTEM. THE UNIT SHALL BE CONNECTED IN PARALLEL WITH THE FACILITY'S WIRING AND COMPLETE WITH THE FOLLOWING FEATURES:
  - A. MAXIMUM CONTINUOUS OPERATING VOLTAGE SHALL NOT BE LESS THAN 125% OF THE FACILITY'S NOMINAL VOLTAGE.
  - B. PROTECTION MODE IN WYE CONFIGURATION SHALL BE L-N, N-G, L-G, AND L-L. MAXIMUM VOLTAGE PROTECTION RATING SHALL BE 700 VOLTS.
  - C. RATED SINGLE PULSE SURGE CURRENT CAPACITY IN AMPS SHALL BE NO LESS THAN 120 KA PER MODE OR 240 KA PER PHASE.
  - D. UNIT SHALL CONTAIN THERMALLY PROTECTED MOVs AND FUSE ARRAYS FOR OVERCURRENT PROTECTION AND SHALL BE CAPABLE OF WITHSTANDING THE FULL SINGLE PULSE SURGE OF EVERY MODE WITHOUT FAILURE OF THE OVERCURRENT PROTECTION OR FUSES.
  - E. MANUFACTURER SHALL PROVIDE A FULL TEN (10) YEAR WARRANTY.
  - F. UNIT MAY BE EXTERNALLY OR INTERNALLY MOUNTED IN THE MAIN PANELBOARD. EXTERNAL MOUNTING IS SHOWN ON THE DRAWINGS. IF THE CONTRACTOR CHOOSES INTERIOR MOUNTING, THE SPD MUST ALSO BE PROVIDED WITH A DISCONNECTION MEANS THAT WILL ALLOW THE SPD TO BE TAKEN OUT OF SERVICE FOR MAINTENANCE WITHOUT REQUIRING SHUTDOWN OF THE ENTIRE PANELBOARD. INTERNAL MOUNTED SPD SHALL BE FACTORY INSTALLED AND CERTIFIED BY THE PANELBOARD MANUFACTURER.
  - G. SPD SHALL BE PROVIDED WITH 2 SETS OF FORM "C" DRY CONTACTS (ONE NORMALLY OPEN AND ONE NORMALLY CLOSED) FOR REMOTE MONITORING. THE SPD SHALL INCLUDE DISPLAY EVENT COUNTER, AND BATTERY POWERED AUDIBLE ALARM AND LED INDICATORS.
33. FIRE ALARM SYSTEM [S]:
  - A. PROVIDE A COMPLETE AND FULLY OPERATIONAL ADDRESSABLE FIRE ALARM SYSTEM. SYSTEM SHALL BE A NOTIFIER FIRE-WARDEN NFV2-100 OR ACCEPTABLE EQUAL BY SIMPLEX, SIEMENS, FIRE-LITE, OR EST. PROVIDE ALL EQUIPMENT, DEVICES, WIRING, CONDUIT, ETC. THE SYSTEM SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH ALL APPLICABLE BUILDING CODES INCLUDING NFPA-72, NEC, AND ADA.
  - B. THE COMPLETE SYSTEM IS NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL DEVELOP FIRE ALARM PLANS DETAILING THE COMPLETE SYSTEM. THE PLANS SHALL BE IN ACCORDANCE WITH AND PROVIDE ALL INFORMATION REQUIRED BY THE CITY OF RICHMOND "FIRE ALARM PLAN CHECKLIST". AUTOCAD PLANS WILL BE PROVIDED TO THE CONTRACTOR BY THE A/E FOR DEVELOPING THESE PLANS. THE PLANS SHALL BE SUBMITTED TO THE A/E FOR APPROVAL AND AFTER APPROVAL BY THE A/E, THE CONTRACTOR SHALL SUBMIT TO THE CITY OF RICHMOND FOR APPROVAL.
  - C. THE FIRE ALARM SYSTEM WORK SHALL ONLY BE PERFORMED BY QUALIFIED PERSONNEL TRAINED AND CERTIFIED BY THE FIRE ALARM MANUFACTURER FOR WORK ON THE SYSTEM. ALL WORK SHALL BE SUPERVISED BY A NICET CERTIFIED LEVEL 3 TECHNICIAN.
  - D. PROVIDE ALL REQUIRED ADDRESSABLE INTELLIGENT FIELD INITIATION DEVICES INCLUDING DUAL-ACTION MANUAL PULL STATIONS, PHOTOELECTRIC SMOKE DETECTORS, DUCT DETECTORS, MONITOR, CONTROL, AND RELAY MODULES, ETC. ALL DEVICES AND EQUIPMENT INSTALLED SHALL BE OF THE LATEST TECHNOLOGY COMPATIBLE WITH THE MAIN CONTROL PANEL.
  - E. PROVIDE ALL REQUIRED FIELD NOTIFICATION DEVICES INCLUDING WALL MOUNTED HORN/STROBE COMBINATION DEVICES, STROBE ONLY ALARMS, ETC. VISUAL ALARMS SHALL BE SELECTABLE WITH CANDELA. FIRE ALARM CONTRACTOR SHALL DETERMINE EXACT CANDELA RATING REQUIRED AT EACH ALARM LOCATION AND REQUIRED SOUND OUTPUT LEVEL AT EACH HORN LOCATION. ALL DEVICES AND EQUIPMENT INSTALLED SHALL BE OF THE LATEST TECHNOLOGY COMPATIBLE WITH THE MAIN CONTROL PANEL.
  - F. PROVIDE ALL REQUIRED SYSTEM AUXILIARY EQUIPMENT INCLUDING ALL REQUIRED CIRCUIT BOARDS, DACT, POWER SUPPLIES, EXTENDER PANELS, REMOTE ANNUNCIATORS, ETC. AS SHOWN ON THE DRAWINGS AND AS REQUIRED FOR A COMPLETE SYSTEM. ALL DEVICES AND EQUIPMENT INSTALLED SHALL BE OF THE LATEST TECHNOLOGY COMPATIBLE WITH THE MAIN CONTROL PANEL.
  - G. PROVIDE ALL CONNECTIONS FOR FLOW SWITCHES, PRESSURE SWITCHES, ELECTRICALLY SUPERVISED VALVES, ETC. ASSOCIATED WITH THE SPRINKLER SYSTEM, EVEN THOUGH THESE CONNECTIONS MAY NOT BE SHOWN ON THE DRAWINGS. COORDINATE REQUIREMENTS WITH THE SPRINKLER SYSTEM CONTRACTOR.
  - H. COORDINATE CONNECTIONS FOR ALL DUCT SMOKE DETECTORS WITH DIVISION 23 AS SHOWN ON THE MECHANICAL DRAWINGS. SOME EQUIPMENT SUCH AS THE SAMPLING TUBE, MAY BE PROVIDED AS PART OF THE HVAC EQUIPMENT. PROVIDE ALL OTHER DETECTORS, RELAYS, MODULES, EQUIPMENT, AND CONNECTIONS NOT PROVIDED BY OTHERS AS NECESSARY FOR A COMPLETE WORKING INSTALLATION. COORDINATE WITH DIVISION 23 FOR CONTROL OF THE ASSOCIATED HVAC EQUIPMENT. EACH DUCT DETECTOR SHALL ALSO BE PROVIDED WITH KEY-OPERATED TEST STATION AND REMOTE LED ALARM INSTALLED IN AN ACCESSIBLE LOCATION.
  - I. THE SYSTEM SHALL BE PROVIDED WITH ENOUGH EMERGENCY POWER (BATTERIES) FOR 24 HOURS BACKUP FOLLOWED BY 5 MINUTES OF ALARM.
  - J. THE SYSTEM SHALL BE FULLY PROGRAMMED, FULLY OPERATIONAL, AND FULLY TESTED PRIOR TO ACCEPTANCE BY THE OWNER. DOCUMENTATION OF ALL TESTING SHALL BE SUBMITTED.
  - K. THE FIRE ALARM SYSTEM INSTALLER SHALL WARRANT THE SYSTEM FOR A MINIMUM OF TWO (2) YEARS FROM DATE OF ACCEPTANCE BY THE OWNER AGAINST DEFECTIVE PARTS AND/OR WORKMANSHIP AND SHALL PROVIDE PARTS AND LABOR TO FULFILL THIS WARRANTY AT NO COST TO THE OWNER.
34. PHASING OF WORK: THE WORK FOR THIS PROJECT WILL BE PHASED, SEE ARCHITECTURAL DRAWINGS FOR PHASING PLAN. DEVELOP CONSTRUCTION PLAN ACCORDINGLY. POWER SHALL BE MAINTAINED TO THE AREAS THAT ARE NOT PART OF A PARTICULAR PHASE OF RENOVATION. PROVIDE ALL TEMPORARY WIRING, TEMPORARY POWER DISTRIBUTION EQUIPMENT, ETC. AS NECESSARY TO MAINTAIN POWER TO PORTIONS OF THE BUILDING THAT ARE NOT UNDERGOING RENOVATION DURING EACH PHASE. OUTAGES REQUIRED FOR CIRCUIT CHANGEOVERS SHALL BE MINIMIZED AND SCHEDULED WITH THE ARCHITECT AND OWNER IN ADVANCE.

THESE DRAWINGS WERE PREPARED BASED ON LIMITED FIELD INVESTIGATION AND NO EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO PERFORMING WORK.



GAS WATER HEATER SCHEDULE:																		
MARK	DESCRIPTION	RECOVERY RATE GPH	TEMP RISE °F	FUEL TYPE	INPUT MBH	THERMAL EFFICIENCY	BURNER TURN DOWN	VENT SIZE IN	STORAGE			ELECTRICAL				BASIS OF DESIGN		NOTES
									CAP GAL	DIA IN	HT IN	MFS	FLA	V	PH	MANUFACTURER	MODEL NO	
DWH-1	GAS FIRED WATER HEATER	175	100	NAT GAS	150	96%	5:1	3	90	28	75-1/2	15	3.0	120	1	LOCHINVAR	SNA151-100	1, 2, 3, 4, 5, & 6

NOTES:  
1. UNIT TO BE PACKAGED UNIT COMPLETE WITH STORAGE TANK AND NATURAL GAS HEATER.  
2. PROVIDE CONDENSATE NEUTRALIZATION KIT.  
3. PROVIDE CONCENTRIC VENT KIT.  
4. PROVIDE WATER HEATER WITH FACTORY CONTROLS.  
5. CONDENSING WATER HEATER SHALL BE SUITABLE FOR VENTING WITH PVC.  
6. SET WATER HEATER STORAGE TEMPERATURE AT 140°F.

PLUMBING FIXTURE SCHEDULE:									
MARK	DESCRIPTION	WASTE	VENT	C.W.	H.W.	BASIS OF DESIGN		NOTES	
						MANUFACTURER	MODEL NUMBER		
EFD-1	5" SQUARE POLISHED BRASS FLOOR DRAIN WITH 1/2" TRAP PRIMER CONNECTION	3"	2"	-	-	ZURN	FD2211-ST	1	
EWC-1	ELECTRIC BI-LEVEL WATER COOLER WITH BOTTLE FILLING STATION	2"	1-1/2"	1/2"	-	ELKAY	EZSTL8WSLK	2 & 3	
FS-1	12" SQUARE STAINLESS STEEL FLOOR SINK WITH 1/2" TRAP PRIMER CONNECTION	3"	2"	-	-	ZURN	Z1751	1	
FD-1	5" SQUARE POLISHED BRASS FLOOR DRAIN WITH 1/2" TRAP PRIMER CONNECTION	3"	2"	-	-	ZURN	FD2211-ST	1	
L-(E)	EXISTING LAVATORY	-	-	1/2"	1/2"	---	---	5	
L-1	WALL HUNG, 20"x18" VITREOUS CHINA LAVATORY, 0.5 GPM FLOWRATE	2"	2"	1/2"	1/2"	AMERICAN STANDARD	0356.421	2, 5 & 6	
MS-1	MOP SINK, 24"x24"x10" DEEP	3"	1-1/2"	1/2"	1/2"	ZURN	Z1996-24	7, 8, & 9	
S-X	OWNER FURNISHED, CONTRACTOR INSTALLED	2"	1-1/2"	1/2"	1/2"	---	---	2 & 5	
S-(E)	EXISTING SINK	2"	1-1/2"	1/2"	1/2"	---	---	5	
WC-(E)	EXISTING WATER CLOSET	-	-	1/2"	-	---	---	---	
WC-1	FLOOR MOUNTED, VITREOUS CHINA, 1.6 GPF, ADA COMPLIANT WATER CLOSET	4"	2"	1/2"	-	AMERICAN STANDARD	2467.016	2, 4, & 10	

NOTES:  
1. PROVIDE FLOOR DRAIN WITH 1/2" TRAP PRIMER CONNECTION.  
2. MOUNTING HEIGHTS OF ALL ACCESSIBLE FIXTURES SHALL BE IN ACCORDANCE WITH ICC A117.1 "ACCESSIBLE AND USABLE BUILDING AND FACILITIES".  
3. WATER COOLER SHALL PROVIDE 8 GPH OF 50°F WATER AT 90°F AMBIENT AND 80°F INLET WATER TEMPERATURES.  
4. FLUSH CONTROL OPERATOR SHALL BE LOCATED ON THE OPEN SIDE OF THE WATER CLOSET.  
5. INSULATE EXPOSED TRAP AND SUPPLIES IN ACCORDANCE WITH ICC A117.1 "ACCESSIBLE AND USABLE BUILDING AND FACILITIES".  
6. PROVIDE LAVATORY WITH CONCEALED ARM CARRIER AND 0.5 GPM, 4" CENTERSET SINGLE LEVER FAUCET SIMILAR TO KOHLER K-15593-F.  
7. ONE PIECE MOP BASIN WITH STAINLESS STEEL DRAIN AND STRAINER.  
8. PROVIDE MOP SINK WITH HOSE AND HOSE BRACKET AND MANUFACTURER'S STAINLESS STEEL WALL GUARDS.  
9. PROVIDE CHROME PLATED SERVICE-SINK FAUCET WITH VACUUM BREAKER, INTEGRAL STOPS, 8" CENTERS, PAIL HOOK, WALL BRACE AND 3/4" HOSE THREAD ON SPOUT SIMILAR TO FIAT 830-AA.  
10. BOWL RIM HEIGHT 16.5", SEAT HEIGHT 17" AFF. WATER CLOSET SHALL INCLUDE FLUSHMATE III FLUSHOMETER TANK OPERATING SYSTEM TANK. PROVIDE WITH OPEN FRONT SEAT.

PLUMBING PIPING INSULATION SCHEDULE:				
SERVICE	SIZE RANGE	THICKNESS	MATERIAL	MAXIMUM THERMAL CONDUCTIVITY
ABOVEGROUND DOMESTIC COLD WATER	ALL	1"	FINE HEAVY DENSITY FIBROUS GLASS OR RIGID PHENOLIC FOAM INSULATION WITH FACTORY APPLIED FOIL-SCRIM-WHITE KRAFT PAPER VAPOR BARRIER JACKET, MOLED TO CONFORM TO PIPING	0.25 BTU/(IN*HR*FT2*F)
ABOVEGROUND DOMESTIC HOT WATER	ALL	1"	FINE HEAVY DENSITY FIBROUS GLASS, RIGID PHENOLIC FOAM OR CALCIUM SILICATE INSULATION WITH GENERAL PURPOSE JACKET, MOLED TO CONFORM TO PIPING	0.25 BTU/(IN*HR*FT2*F)
ABOVEGROUND HORIZONTAL STORM FROM ROOF DRAIN TO VERTICAL EXTEND 2 FEET DOWN VERTICAL	ALL	1"	FINE HEAVY DENSITY FIBROUS GLASS, RIGID PHENOLIC FOAM OR CALCIUM SILICATE INSULATION WITH GENERAL PURPOSE JACKET, MOLED TO CONFORM TO PIPING	0.25 BTU/(IN*HR*FT2*F)

POTABLE EXPANSION TANK:						
MARK	TANK VOLUME	ACCEPTANCE VOLUME	DIMENSIONS		BASIS OF DESIGN	
	GAL	GAL	DIA IN	LENGTH IN	MANUFACTURER	MODEL NO
ET-DHW	15	10	16	24	WATTS	DETA 30

THERMOSTATIC MIXING VALVES:							
MARK	FLOW MIN GPM	DESIGN GPM	PRESSURE DROP PSI	BASIS OF DESIGN		TEMPERATURE SETTING	NOTES
				MANUFACTURER	MODEL NO		
TMV-1	2.0	25	5	BRADLEY	S59-3080	120°F	-

DOMESTIC HOT WATER RECIRCULATION PUMPS:								
MARK	CAP GPM	HEAD FT. H2O	HP	ELECTRICAL		BASIS OF DESIGN		SYSTEM/ AREA SERVED
				V	PH	MANUFACTURER	MODEL NO	NOTES
DHWP-1	2	12	1/25	120	1	TACO	008-BC6	140°F RETURN 1, 3, & 4
DHWP-2	5	12	1/25	120	1	TACO	008-BC6	120°F RETURN 2, 3, & 4

NOTES:  
1. PUMP TO BE CONTROLLED BY THERMOSTAT. TURN PUMP ON WHEN RETURN TEMP <120°F, TURN PUMP OFF WHEN RETURN TEMP >130°F.  
2. PUMP TO BE CONTROLLED BY THERMOSTAT. TURN PUMP ON WHEN RETURN TEMP <100°F, TURN PUMP OFF WHEN RETURN TEMP >110°F.  
3. PROVIDE TIMER TO CONTROL RECIRC PUMP. COORDINATE SCHEDULE WITH OWNER.  
4. PROVIDE PUMP WITH NON-METALIC IMPELLER AND BRONZE VOLUTE.

GREASE INTERCEPTOR:										
MARK	DIMENSIONS			FLOW RATE GPM	GREASE CAP LBS	INLET SIZE IN	OUTLET SIZE IN	BASIS OF DESIGN		NOTES
	WIDTH IN	LENGTH IN	HEIGHT IN					MANUFACTURER	MODEL NO	
GI-1	20-3/4	35-1/2	24-1/4	50	100	3	3	J. R. SMITH	8250	1 & 2

NOTES:  
1. PROVIDE INTERCEPTOR WITH GASKETED EXTENSION AS REQUIRED FOR LID TO BE FLUSH WITH FLOOR.  
2. PROVIDE MANUFACTURER'S FLOW CONTROL FITTING.

PLUMBING PIPING SCHEDULE:				
SERVICE	SIZE RANGE	SLOPE	MATERIAL	STANDARD
ABOVEGROUND DOMESTIC WATER	ALL	-	TYPE L COPPER, PEX, OR CPVC	ASTM B 88
BELOWGROUND DOMESTIC WATER	ALL	-	TYPE K COPPER	ASTM B 88
ABOVEGROUND SANITARY / WASTE / STORM	<3"	2%	PVC SCHEDULE 40 W/ DWV FITTINGS	ASTM D 2665
ABOVEGROUND SANITARY / WASTE / STORM	> OR EQUAL TO 3"	1%	PVC SCHEDULE 40 W/ DWV FITTINGS	ASTM D 2665
BELOWGROUND SANITARY / WASTE / STORM	<3"	2%	PVC SCHEDULE 40 W/ DWV FITTINGS	ASTM D 2665
BELOWGROUND SANITARY / WASTE / STORM	> OR EQUAL TO 3"	1%	PVC SCHEDULE 40 W/ DWV FITTINGS	ASTM D 2665
NAT GAS	ALL	-	STEEL SCHEDULE 40	ASTM A 53
VENT	ALL	1%	PVC SCHEDULE 40 W/ DWV FITTINGS	ASTM D 2665

### ABBREVIATIONS

ABV - ABOVE	H - HOT WATER
AD - ACCESS DOOR	HR - HOT WATER RECIRC
BEL - BELOW	INV - INVERT
BP - BACKFLOW PREVENTER	L - LAVATORY
CO - CLEAN-OUT	MS - MOP SINK
C - COLD WATER	P&T - PRESSURE & TEMPERATURE
DN - DOWN	RELIEF VALVE
DFU - DRAINAGE FIXTURE UNIT	SA - SHOCK ABSORBER
E - EXISTING	S - SANITARY
EL - ELEVATION	U - URINAL
FCO - FLOOR CLEAN OUT	V - VENT
FD - FLOOR DRAIN	VTR - VENT-THRU-ROOF
FL - FLOOR	W - WASTE
	WC - WATER CLOSET

### PLUMBING LEGEND

### IDENTIFICATION KEY

## PLUMBING SHEET INDEX

- P0.1 PLUMBING LEGEND, SYMBOLS & SCHEDULES
- P0.2 PLUMBING NOTES & SPECIFICATIONS
- P1.1 PLUMBING FIRST FLOOR PLAN - DEMOLITION
- P1.2 PLUMBING SECOND FLOOR PLAN - DEMOLITION
- P2.0 PLUMBING BELOW SLAB PLAN
- P2.1 PLUMBING FIRST FLOOR PLAN
- P2.2 PLUMBING SECOND FLOOR PLAN
- P3.1 PLUMBING ENLARGED PLANS
- P3.2 PLUMBING ISOMETRIC & RISER

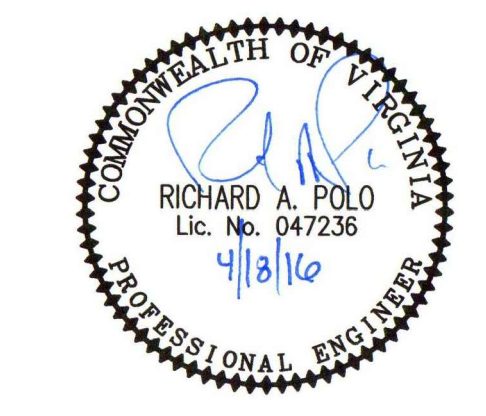
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PLUMBING  
LEGEND,  
SYMBOLS &  
SCHEDULES

# P0.1

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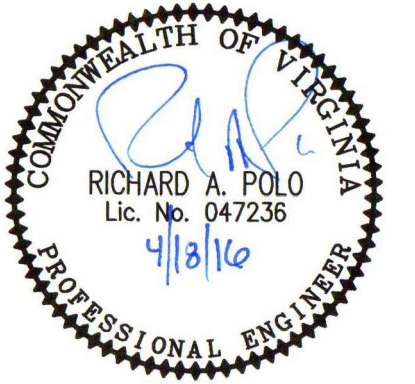
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RENOVATION

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GENERAL PLUMBING NOTES			
<p>1. MAKE PROPER H &amp; C, W, V, ETC. PIPING CONNECTIONS TO ALL FIXTURES AND EQUIPMENT EVEN THOUGH ALL BRANCH MAINS, ELBOWS AND CONNECTIONS ARE NOT SHOWN.</p> <p>2. CHECK WITH ARCHITECTURAL WORKING DRAWINGS BEFORE ROUGHING-IN PLUMBING FIXTURES.</p> <p>3. SLOPES AND INVERT ELEVATIONS OF SEWERS, MANHOLES, SEPTIC TANKS, ETC., SHALL BE ESTABLISHED AND VERIFIED BY PLUMBING CONTRACTOR BEFORE ANY PIPING IS INSTALLED IN ORDER THAT PROPER SLOPES WILL BE MAINTAINED AND NECESSARY INVERT ELEVATIONS OBTAINED.</p> <p>4. COORDINATE THE LOCATION OF ALL PIPING WITH LIGHTING FIXTURES, DUCT, GRILLES, HEATING, PIPING, ETC..</p> <p>5. PROVIDE 1/2" C TO TANK TYPE WC'S, 1/2" H &amp; C TO LAVS, 1/2" C TO EWC'S AND 3/4" H &amp; C TO SERVICE/MOP SINKS.</p> <p>6. ALL FLOOR DRAINS SHALL HAVE STANDARD 3" SEAL, "P" TRAPS UNLESS OTHERWISE NOTED. FLOOR DRAIN TRAP SEALS SUBJECT TO LOSS BY EVAPORATION SHALL BE EQUIPPED WITH TRAP PRIMERS.</p> <p>7. ALL CUTOFF VALVES, SHOCK ABSORBERS, ETC. SHALL BE ACCESSIBLE THROUGH AN ACCESS DOOR OR THROUGH LAY-IN CEILING. PROVIDE ACCESS DOOR WHERE REQUIRED.</p> <p>8. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL EXISTING PIPING, MANHOLES, ETC. BEFORE ANY NEW PIPING IS INSTALLED.</p> <p>9. WALL CLEANOUTS SHALL BE INSTALLED AT THE BASE OF ALL NEW SOIL OR WASTE STACKS.</p> <p>10. ALL VENT TERMINALS ABOVE ROOF SHALL BE LOCATED A MINIMUM DISTANCE OF 15 FEET FROM ANY HVAC UNIT AIR INTAKE OR INTAKE LOUVER.</p> <p>11. BALL VALVES SHALL BE MSS SP-110 ONE PIECE BRASS OR BRONZE BODY WITH THREADED OR SOLDER JOINT ENDS, PTFE OR TFE SEATS, BRASS STEM, CHROME-PLATED BRASS BALL, AND A MINIMUM COLD WORKING PRESSURE RATING OF 200 PSIG.</p> <p>12. CHECK VALVES SHALL BE MSS SP-80, TYPE 3 SWING CHECK TYPE WITH BRONZE BODY, THREADED ENDS, HORIZONTAL FLOW WITH BRONZE DISC AND A MINIMUM COLD WORKING PRESSURE RATING OF 200 PSIG.</p> <p>13. GLOBE VALVES SHALL BE MSS SP-80, TYPE 1 BRONZE BODY WITH INTEGRAL SEAT AND SCREW IN BONNET, THREADED OR SOLDER JOINT ENDS, BRONZE STEM, BRONZE DISC AND A MINIMUM COLD WORKING PRESSURE OF 200 PSIG.</p> <p>14. PIPE HANGERS SHALL BE MSS SP-58, TYPE 1 THROUGH 58, FACTORY FABRICATED COMPONENTS.</p> <p>15. HANGER RODS SHALL BE CONTINUOUS THREADED ROD MADE OF CARBON STEEL WITH CARBON STEEL NUTS AND WASHERS.</p> <p>16. INSULATION-INSERT MATERIAL FOR COLD PIPING: ASTM C 552, TYPE II CELLULAR GLASS WITH 100-PSIG OR ASTM C 591, TYPE VI, GRADE 1 POLYISOCYANURATE WITH 125-PSIG MINIMUM COMPRESSIVE STRENGTH AND VAPOR BARRIER.</p> <p>17. INSULATION-INSERT MATERIAL FOR HOT PIPING: WATER-REPELLENT TREATED, ASTM C 533, TYPE I CALCIUM SILICATE WITH 100-PSIG ASTM C 552, TYPE II CELLULAR GLASS WITH 100-PSIG OR ASTM C 591, TYPE VI, GRADE 1 POLYISOCYANURATE WITH 125-PSIG MINIMUM COMPRESSIVE STRENGTH.</p> <p>18. FOR CLEVIS OR BAND HANGERS: INSERT AND SHIELD SHALL COVER LOWER 180 DEGREES OF PIPE. INSERT SHALL EXTEND 2 INCHES BEYOND SHEET METAL SHIELD FOR PIPING OPERATING BELOW AMBIENT AIR TEMPERATURE.</p> <p>19. PIPE POSITIONING SYSTEMS SHALL BE: IAPMO PS 42, POSITIONING SYSTEM OF METAL BRACKETS, CLIPS, AND STRAPS FOR POSITIONING PIPING IN PIPE SPACES; FOR PLUMBING FIXTURES IN COMMERCIAL APPLICATIONS.</p>	<p>19. PIPE LABELS SHALL BE PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION. PRE-COILED, SEMIRIGID PLASTIC FORMED TO FULLY COVER CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, AND AN ARROW INDICATING FLOW DIRECTION. LETTERING SIZE SHALL BE AT LEAST 1 INCHES HIGH.</p> <p>20. FURNISH ACCESS DOORS WHERE INDICATED AND/OR REQUIRED TO PROVIDE ACCESS TO CUTOFF VALVES IN BRANCH HOT AND COLD WATER MAINS, SHOCK ABSORBER, TRAP PRIMERS, ETC</p> <p>21. PIPING NOTED "TC": CONCRETE ASTM C14.92, OR VITRIFIED CLAY PIPE ASTM C.700 EXTRA STRENGTH SEWER PIPE CONFORMING FOR JOINTS AS SPECIFIED.</p> <p>22. VENT TERMINALS AND FLASHINGS: ALL VENTS THROUGH ROOF SHALL EXTEND 12 INCHES ABOVE ROOF. COORDINATE FLASHING WITH OTHER TRADES.</p> <p>23. AIR ADMITTANCE VALVES SHALL BE STUDOR, OATEY OR RECTORSEAL, MECHANICAL VALVE WITH SCREEN TO PREVENT TRAP SIPHONAGE, ANSIS/ASSE 1051 LISTED, PVC CONSTRUCTION. RECESSED VALVES SHALL BE INSTALLED IN MULTI-PURPOSE RECESSED WALL BOX COMPLETE WITH LOUVERED COVER.</p> <p>24. MANHOLES: 24.1. GENERAL: PRECAST MONOLITHIC CONCRETE WITH CAST IRON FRAMES AND COVERS. ALL MANHOLES SHALL BE BUILT TO A HEIGHT THAT WILL ALLOW THE TOP OF THE COVER TO CONFORM TO FINISHED GRADE OF THE SURFACE. JOINTS SHALL BE SEALED WITH PLASTIC CEMENT OR O-RING GASKETS. INVERTS SHALL BE SMOOTH, ACCURATELY SHAPED AND BUILT BY BUILDING UP THE INVERT WITH BRICK AND MORTAR TO THE PROPER SHAPE AND SIZE. 24.2. CONCRETE: CEMENT SHALL CONFORM TO THE LATEST ASTM SPECIFICATIONS AND TESTS FOR PORTLAND CEMENT. SAND SHALL BE CLEAN, HARD, DURABLE UNCOATED GRAINS FREE FROM SALT, LOAM AND CLAY. COARSE AGGREGATE SHALL BE HARD DURABLE UNCOATED CRUSHED STONE OR GRAVEL NOT TO EXCEED 1 1/2" IN SIZE. MIXING WATER SHALL BE CLEAN AND FREE FROM OIL, ACID, VEGETABLE MATTER, OR OTHER INJURIOUS MATTER. 24.3. MANHOLE AND/OR STRUCTURE FRAMES, COVERS, OR GRATINGS: IRON CASTINGS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR GREY IRON CASTING ASTM SPECIFICATIONS A.48, CLASS 30.</p> <p>25. PROVIDE BRASS OR BRONZE SCREW PLUG CLEANOUTS WHEREVER INDICATED, AND WHERE DIRECTION CHANGES IN ACCORDANCE WITH LOCAL CODES. SET CLEANOUT PLUGS IN GRAPHITE GREASE. FLOOR CLEANOUTS SHALL BE SET FLUSH WITH FINISHED FLOOR. PROVIDE FLASHING CLAMP FOR WATERPROOFED FLOORS. CLEANOUTS INSTALLED IN CARPETED FLOORS SHALL HAVE CARPET MARKERS.</p> <p>26. SET CLEANOUTS FLUSH WITH FINISHED WALL OR FLOOR. EXPOSED CLEANOUT PLUGS IN UNFINISHED ROOMS TO BE SANDED CAST BRASS. FLOOR CLEANOUTS IN FINISHED PORTION OF BUILDING SHALL BE HAVE SCORLATED NICKEL BRONZE RING AND COVER PLATE. WALL LOCATED CLEANOUTS IN FINISHED PORTION OF BUILDING TO BE COVERED WITH STAINLESS STEEL COVER IN EXPOSED MASONRY WALLS AND FLUSH NICKEL-BRONZE WALL COVER IN PLASTERED WALLS.</p> <p>27. EXPOSED EXTERIOR GAS PIPING SHALL HAVE A PROTECTIVE COATING EQUIVALENT TO THE TYPE USED BY THE LOCAL GAS COMPANY.</p>	<p>28. GAS LINE VALVES SHALL BE UL, AGA LISTED FOR GAS SERVICE, BRASS BODY BALL TYPE, FOR SIZES UP TO AND INCLUDING 2", AND OF THE CAST IRON, STEEL OR BRASS LUBRICATED PLUG COCK TYPE FOR SIZES 2-1/2" AND LARGER. THE VALVES SHALL BE TESTED WITH AIR TO AT LEAST 125 POUNDS PER SQUARE INCH PRESSURE WITHOUT DEVELOPING ANY LEAKAGE. FURNISH LEVER HANDLE OR OPERATING WRENCH FOR EACH VALVE.</p> <p>29. BALANCING VALVES SHALL BE BRONZE BODY BALL VALVE. TWO READOUT TAPS WITH CAPS, MEMORY STOP, SWEAT OR NPT ENDS, MINIMUM 200PSI WORKING PRESSURE WOG.</p> <p>30. SHOCK ABSORBERS (WATER HAMMER ARRESTER) SHALL BE INSTALLED FOR FLUSH VALVES AND/OR QUICK CLOSING VALVES, AND BRANCHES IN ACCORDANCE WITH STANDARD PDI-WH-201 AND AS INDICATED ON THE DRAWINGS. SHOCK ABSORBERS SHALL BE APPROVED BY THE PLUMBING AND DRAINAGE INSTITUTE OR LISTED UNDER ASSE STANDARD 1010.</p> <p>31. TRAP PRIMERS SHALL BE MIFAB M-500 SERIES 1/2" SIZE AUTOMATIC TRAP PRIMER, MACHINED BRASS CONSTRUCTION, AUXILIARY DISTRIBUTION UNIT AS REQUIRED TO SERVE MULTIPLE FLOOR DRAINS. EXTEND 1/2" COPPER DISCHARGE LINE BELOW FLOOR SLABS TO FLOOR DRAINS AS INDICATED.</p> <p>32. STRAINERS SHALL BE BRASS Y TYPE STRAINERS WITH BRONZE BASKET.</p> <p>33. PROVIDE AND INSTALL ALL FIXTURES AS INDICATED WITH ALL SUPPLIES, WASTE AND VENT CONNECTIONS, ALL FITTINGS, ALL NECESSARY SUPPORTS, FAUCETS, VALVES AND TRAPS. FURNISH INDIVIDUAL STOPS ON SUPPLY PIPES OF ALL FIXTURES. ALL EXPOSED TRIMMINGS AND FIXTURE SUPPLY PIPES TO BE POLISHED CHROMIUM PLATED FINISH. FAUCET LOCATIONS SHALL BE UNIFORM, WITH COLD WATER FAUCET ON THE RIGHT SIDE OF THE FIXTURE AND HOT WATER ON THE LEFT SIDE. FIXTURE COLOR SHALL BE WHITE. JOINTS FORMED WHERE FIXTURES COME IN CONTACT WITH WALLS OR FLOORS SHALL BE SEALED.</p> <p>34. CUT PIPE ACCURATELY TO MEASUREMENT ESTABLISHED AT PROJECT. PROVIDE PLUGS AND CAPS AS INDICATED AND WHERE NECESSARY. PROVIDE PROPERLY FOR EXPANSION, CONTRACTION AND DRAINAGE IN ALL PIPING.</p> <p>35. SUPPORT ALL HORIZONTAL PIPING WITHOUT STRAIN OR SAGGING. HANGERS SHALL BE PIPE RING, SPLIT PIPE RING, EXTENSION SPLIT PIPE CLAMP, OR CLEVIS TYPE, WITH MEANS FOR ADJUSTING LENGTH OF HANGER ROD. HANGERS SHALL BE SUPPORTED FROM BEAM CLAMPS. PIPE HANGER RODS SHALL BE ATTACHED TO THE TOP CHORD ONLY ON STEEL JOISTS AND BEAMS BY JOIST OR BEAM CLAMPS, WITHOUT WELDING. PIPE HANGERS FROM WOOD TRUSSES SHALL BE EYE RODS OR FLANGES SCREWED TO TRUSSES WITH 18 X 1-1/2" WOOD SCREWS OR BOLTED TO SUPPLEMENTAL MEMBERS NAILED TO TRUSSES. WELDING OF SUPPORT RODS OR DRILLING OF WOOD TRUSS MEMBERS FOR INSTALLATION OF BOLTS OR LAG SCREWS WILL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE ARCHITECT, ENGINEER, WIRE, THIN STRAP, AND PERFORATED STRAP HANGERS WILL NOT BE ACCEPTABLE.</p> <p>36. SUPPORT ALL RISERS AND STACKS AT EACH FLOOR WITH RISER CLAMPS. SUPPORT PIPING ON WALLS WITH RING OR SPLIT RING HANGERS WITH WALL FLANGE.</p> <p>37. PROVIDE FACTORY FABRICATED SADDLES OR SHIELDS UNDER ALL HANGERS AND SUPPORTS PROVIDED FOR INSULATED WATER PIPING. SIZE SADDLES AND SHIELDS FOR EXACT FIT TO MATE WITH PIPE INSULATION. ALL OTHER INSULATED PIPES SHALL BE SUPPORTED DIRECTLY BY THE HANGER; NO SADDLE OR SHIELD REQUIRED.</p>	<p>38. HANGER SPACING FOR COPPER AND STEEL PIPES: SPACE NOT OVER 6 FT., APART FOR 1-1/4" OR SMALLER PIPE, AND NOT OVER 10 FT., APART FOR PIPES 1-1/2" OR LARGER. LOCATE HANGERS AT POINTS WHERE PIPES CHANGE DIRECTION. INTERMEDIATE SUPPORTS SHALL BE PROVIDED ON EXPOSED VERTICAL PIPING TO PREVENT SWAYING OF PIPING.</p> <p>39. HANGER SPACING FOR DWV PVC PIPES: SPACE NOT FURTHER THAN 3'-6" APART FOR 2" SIZE AND 4'-0" APART FOR 3" AND 4" SIZES. LOCATE HANGERS AND FITTINGS AT POINTS WHERE PIPES CHANGE DIRECTION.</p> <p>40. SUPPORT OF PIPING: WHERE TRENCHES ARE EXCAVATED SUCH THAT THE BOTTOM OF THE TRENCH FORMS THE BED FOR THE PIPE, SOLID AND CONTINUOUS LOAD BEARING SUPPORT SHALL BE PROVIDED BETWEEN JOINTS. SOIL SERVING AS BEDDING FOR UNDERGROUND PIPE SHALL BE COMPACT AND CAPABLE OF SUPPORTING THE ENTIRE LENGTH OF THE PIPE SYSTEM INCLUDING ANY COUPLINGS AND FITTINGS.</p> <p>41. AT ALL LOCATIONS WHERE DISSIMILAR METALS ARE JOINED, PROVIDE DIELECTRIC INSULATING CONNECTIONS ESPECIALLY BUILT TO PREVENT ELECTROLYSIS SUCH AS SPECIAL COUPLINGS, FITTINGS OR UNIONS.</p> <p>42. THE GAS SERVICE MAIN TO THE PRESSURE REGULATING VALVE AND GAS METER WILL BE FURNISHED AND INSTALLED BY THE LOCAL GAS COMPANY. CONSULT WITH THE GAS COMPANY AND MAKE NECESSARY ARRANGEMENTS AND PROPER PROVISIONS FOR INSTALLATION OF SAME.</p> <p>43. EQUIPMENT IN THE KITCHEN AND FOOD SERVICE AREAS WILL BE FURNISHED AND SET IN PLACE AS SPECIFIED IN OTHER SECTIONS. NO PIPING OR ROUGHING-IN IN THESE AREAS SHALL BE INSTALLED UNTIL THE EQUIPMENT HAS BEEN SELECTED AND DETAIL DRAWINGS HAVE BEEN FURNISHED BY THE EQUIPMENT SUPPLIER. HOWEVER, THE PLUMBING CONTRACTOR SHALL INCLUDE IN HIS BID ALL PLUMBING WORK IN THESE AREAS FOR A COMPLETE INSTALLATION INCLUDING WATER AND WASTE CONNECTIONS, AND WASTE EXTENSIONS. FURNISH ALL CUT-OFF VALVES, TRAPS, PIPING CONNECTIONS, PIPE, PIPE FITTINGS, AND ALL OTHER ITEMS OF MATERIALS AND APPURTENANCES NECESSARY, AND MAKE ALL PLUMBING CONNECTIONS TO THIS EQUIPMENT. TRIM FITTINGS, FAUCETS, STRAINERS, AND TAIL PIECES WILL BE FURNISHED WITH EQUIPMENT UNLESS OTHERWISE INDICATED. SHOULD ANY REARRANGEMENT OF THE EQUIPMENT FROM THE LAY-OUT AS INDICATED ON THE DRAWINGS BE MADE (BY OTHERS) BEFORE THE EQUIPMENT IS INSTALLED, THIS CONTRACTOR SHALL AT NO EXTRA COST MAKE PROPER CONNECTIONS TO THE EQUIPMENT.</p> <p>44. REFER TO RISER DIAGRAM AND ISOMETRIC DIAGRAMS FOR PIPE SIZES NOT LISTED ON PLANS.</p>

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PLUMBING  
NOTES &  
SPECIFICATIONS

P0.2

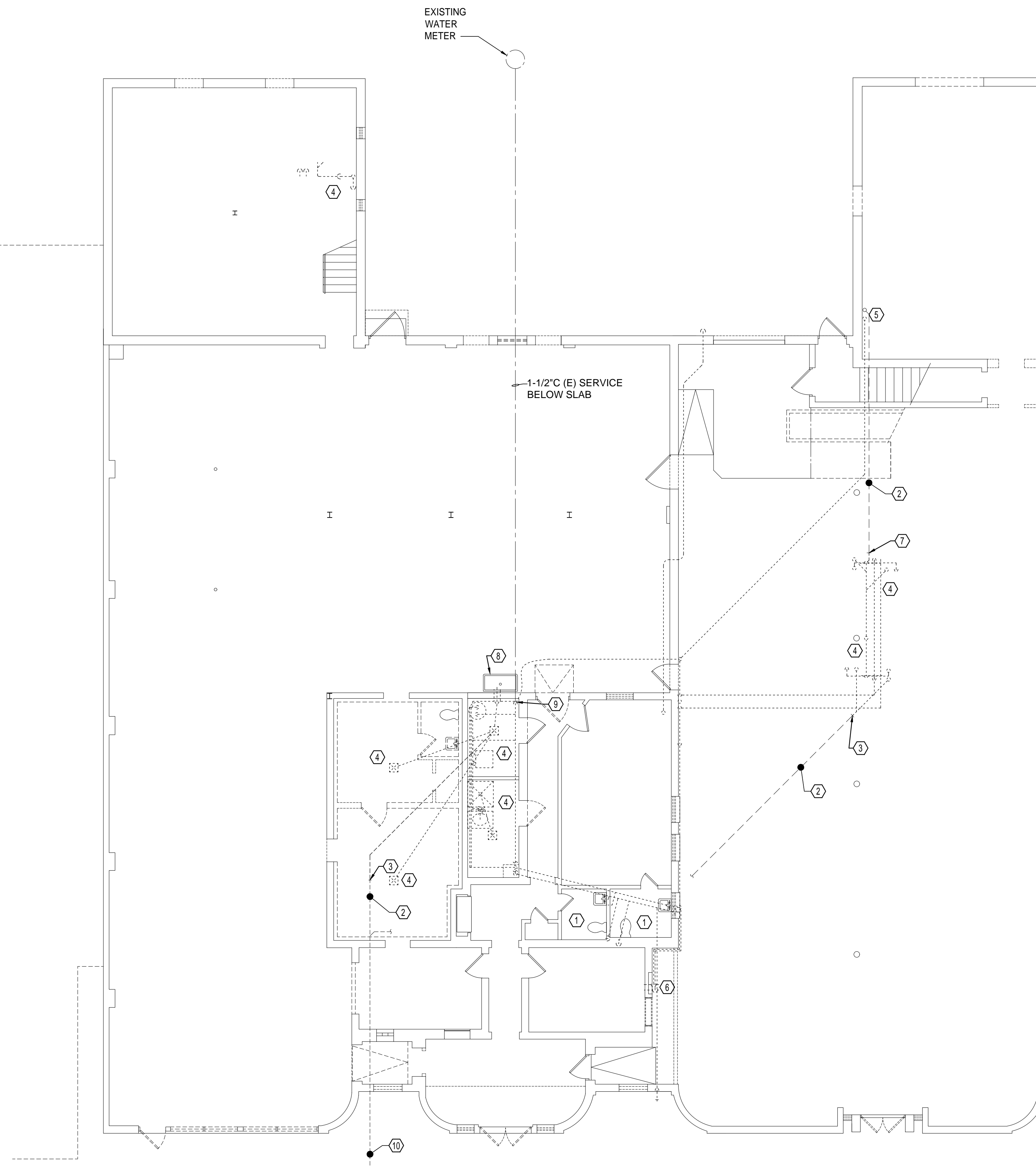


**DEMOLITION PLAN GENERAL NOTES:**

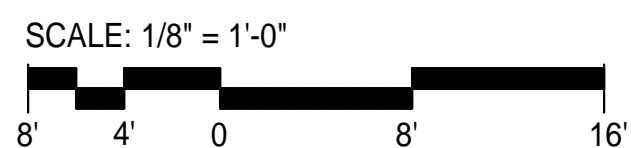
1. LOCATION OF UNDERGROUND UTILITIES AND PIPING IS APPROXIMATE. CONTRACTOR IS RESPONSIBLE TO LOCATE UNDERGROUND UTILITIES AND PIPING PRIOR TO THE START OF ANY DEMOLITION WORK OR CONNECTION TO EXISTING SYSTEMS.
2. WHERE UNDERGROUND PIPING IS TO BE REMOVED, PIPING MAY BE CAPPED AND SEALED AND ABANDONED IN PLACE.

**DEMOLITION PLAN REFERENCE NOTES:**

- ① PROVIDE TEMPORARY DOMESTIC HOT AND COLD WATER TO FIXTURES EXISTING TOILET ROOMS UNTIL FINAL CONNECTION TO NEW DOMESTIC COLD AND HOT WATER SERVICE PIPING. TOILET ROOMS TO REMAIN FUNCTIONAL AND OCCUPIED DURING CONSTRUCTION. COORDINATE ALL WORK WITHIN TOILET ROOMS WITH OWNER. EXISTING SANITARY/WASTE AND VENT PIPING TO REMAIN. PLUG ALL SANITARY/WASTE AND VENT BRANCH PIPING TO FIXTURES INDICATED TO BE REMOVED.
- ② EXISTING SANITARY PIPING BELOW SLAB. CAP AND SEAL OPEN ENDS AND ABANDON IN PLACE.
- ③ REMOVE EXISTING 3" S PIPE BELOW SLAB TO APPROXIMATE LOCATION. CAP AND SEAL EXISTING PIPING TO REMAIN, ABANDON BELOW SLAB.
- ④ REMOVE ALL PLUMBING FIXTURES, PIPING, SUPPORTS, AND APPURTENANCES WITHIN THIS SPACE. WHERE PIPING RUNS BELOW SLAB, REMOVE PIPING TO BELOW SLAB, CAP AND SEAL OPEN ENDS OF PIPE AND ABANDON IN PLACE.
- ⑤ REMOVE ALL PLUMBING FIXTURES, PIPING, SUPPORTS, AND APPURTENANCES WITHIN THIS SPACE. REMOVE SANITARY/WASTE PIPING TO JUST ABOVE FLOOR SLAB. CAP AND SEAL EXISTING PIPING TO REMAIN, ABANDONED BELOW SLAB.
- ⑥ REMOVE WASTE PIPING BACK TO LAVATORY AND PLUG BRANCH CONNECTION. REMOVE DOMESTIC WATER PIPING.
- ⑦ REMOVE EXISTING 2" W PIPE BELOW SLAB TO APPROXIMATE LOCATION. CAP AND SEAL EXISTING PIPING TO REMAIN, ABANDONED BELOW SLAB.
- ⑧ EXISTING SINK TO REMAIN. SINK TO REMAIN IN SERVICE WHILE TENANT REMAINS. COORDINATE ROUGH-IN REPLACEMENT WITH OWNER. PROVIDE TEMPORARY PLUMBING SERVICES AS NECESSARY.
- ⑨ REMOVE EXISTING 1-1/2" C WATER ENTRANCE PIPING TO +/- 6" ABOVE FLOOR SLAB. CLEAN AND PREPARE END OF PIPING FOR CONNECTION TO NEW WORK. PROVIDE NEW FULL OPEN SERVICE ENTRANCE VALVE.
- ⑩ EXISTING BUILDING SANITARY SEWER BELOW SLAB/GRADE SERVING EXISTING FIXTURES TO REMAIN IN TOILET ROOMS 125 & 126.



**GRAPHIC SCALE**



FIRST FLOOR PLAN

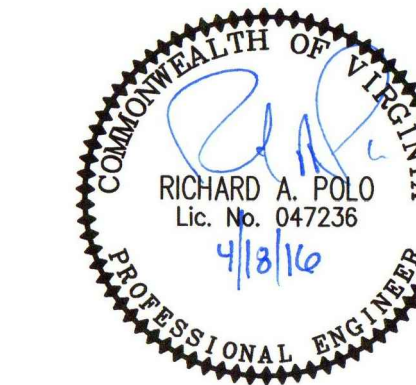
1/8" = 1'-0"

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**PLUMBING  
FIRST FLOOR  
PLAN -  
DEMOLITION**

**P1.1**



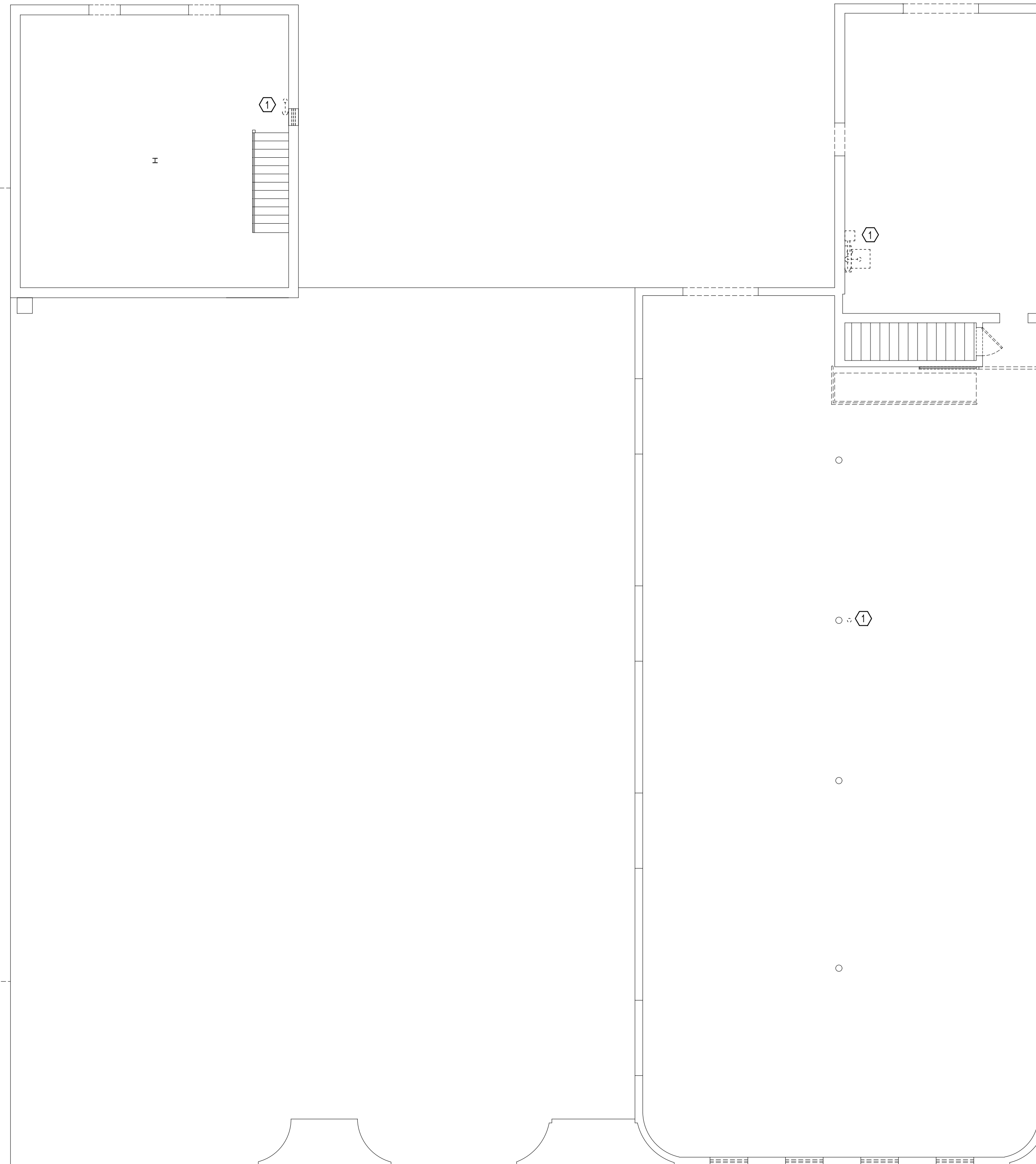
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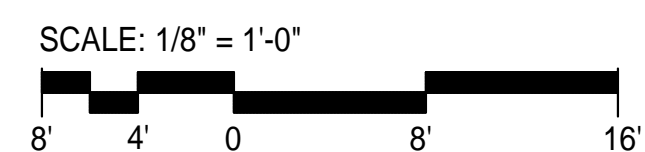


**DEMOLITION PLAN REFERENCE NOTES:**

① REMOVE ALL PLUMBING FIXTURES, PIPING, SUPPORTS, AND APPURTENANCES WITHIN THIS SPACE.



**GRAPHIC SCALE**



FIRST FLOOR PLAN

1/8" = 1'-0"

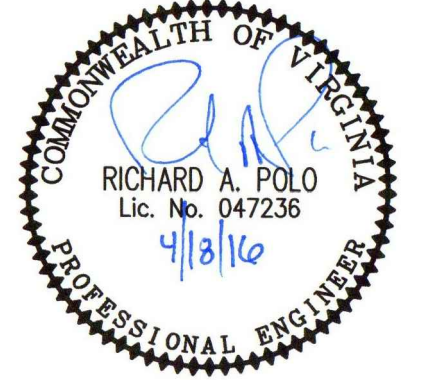
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**PLUMBING  
SECOND FLOOR  
PLAN -  
DEMOLITION**

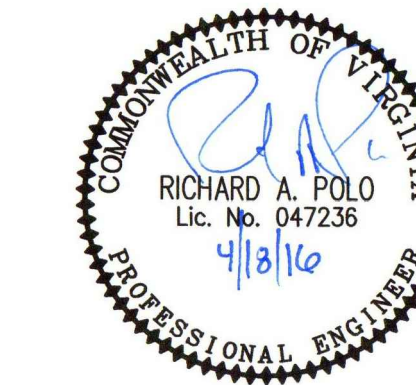
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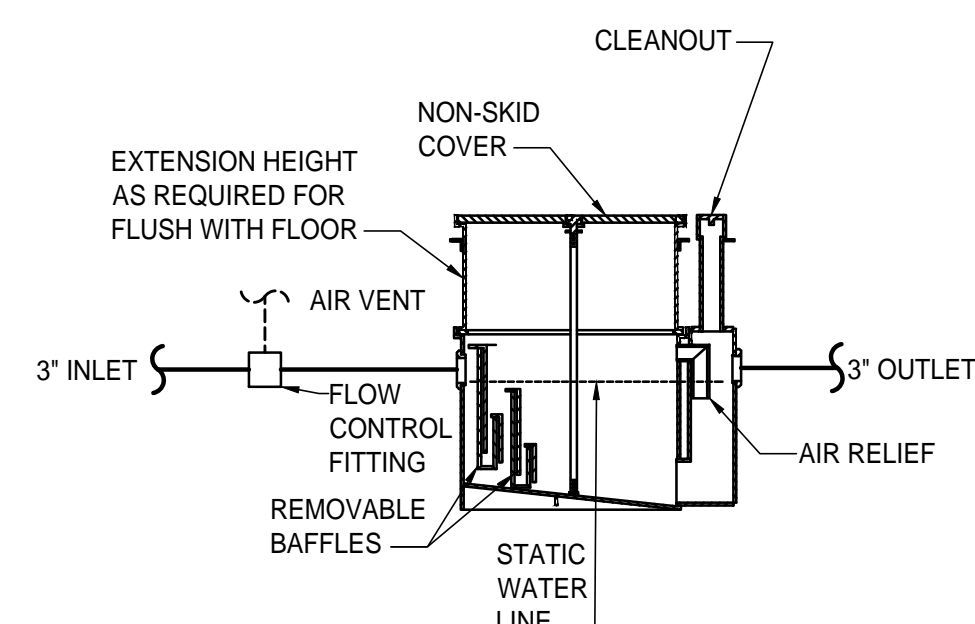
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PLUMBING  
BELOW SLAB  
PLAN

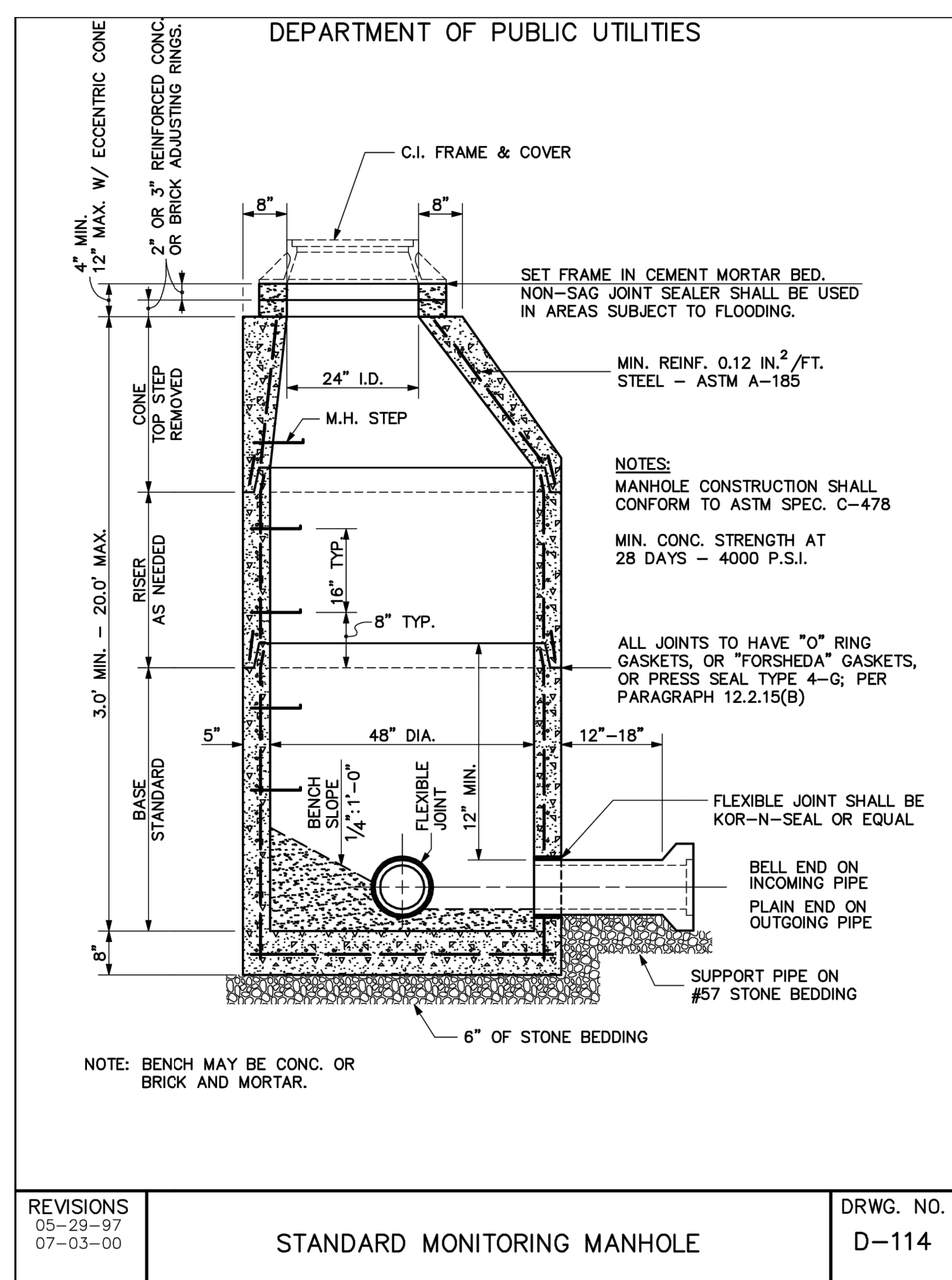
P2.0



HYDRO-MECHANICAL GREASE INTERCEPTOR  
NO SCALE

PLAN REFERENCE NOTES:

- ① COORDINATE WITH RICHMOND DEPARTMENT OF PUBLIC WORKS AND FIELD VERIFY EXACT LOCATION, AND DEPTH OF EXISTING 18" TC PUBLIC COMBINED SEWER. SEWER INVERT APPROXIMATELY -13'-0" BELOW FINISHED FLOOR.
- ② CONNECT NEW 6" S TO EXISTING 18" TC PUBLIC SEWER IN ACCORDANCE WITH RICHMOND DEPARTMENT OF PUBLIC UTILITIES REQUIREMENTS.
- ③ 3' DEEP SEAL P-TRAP WITH TRAP FROM EFD-1 ABOVE.
- ④ 3' DEEP SEAL P-TRAP WITH TRAP FROM FS-1 ABOVE.
- ⑤ 2' DEEP SEAL P-TRAP WITH TRAP FROM MOP SINK ABOVE.
- ⑥ SLOPE WASTE PIPE AT A MINIMUM 1/4" / 1'-0".
- ⑦ 3' DEEP SEAL P-TRAP WITH TRAP FROM FD-1 ABOVE.
- ⑧ FLOW CONTROL FITTING BY GREASE INTERCEPTOR MANUFACTURER. INSTALL IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS. EXTEND 2'V FROM FLOW CONTROL FITTING UP TO 1ST FLOOR.
- ⑨ 3'GW UP TO FLOOR SINK. GREASE INTERCEPTOR TO SERVE AS FLOOR SINK TRAP IN ACCORDANCE WITH VPC 1002.1 EXCEPTION 3.

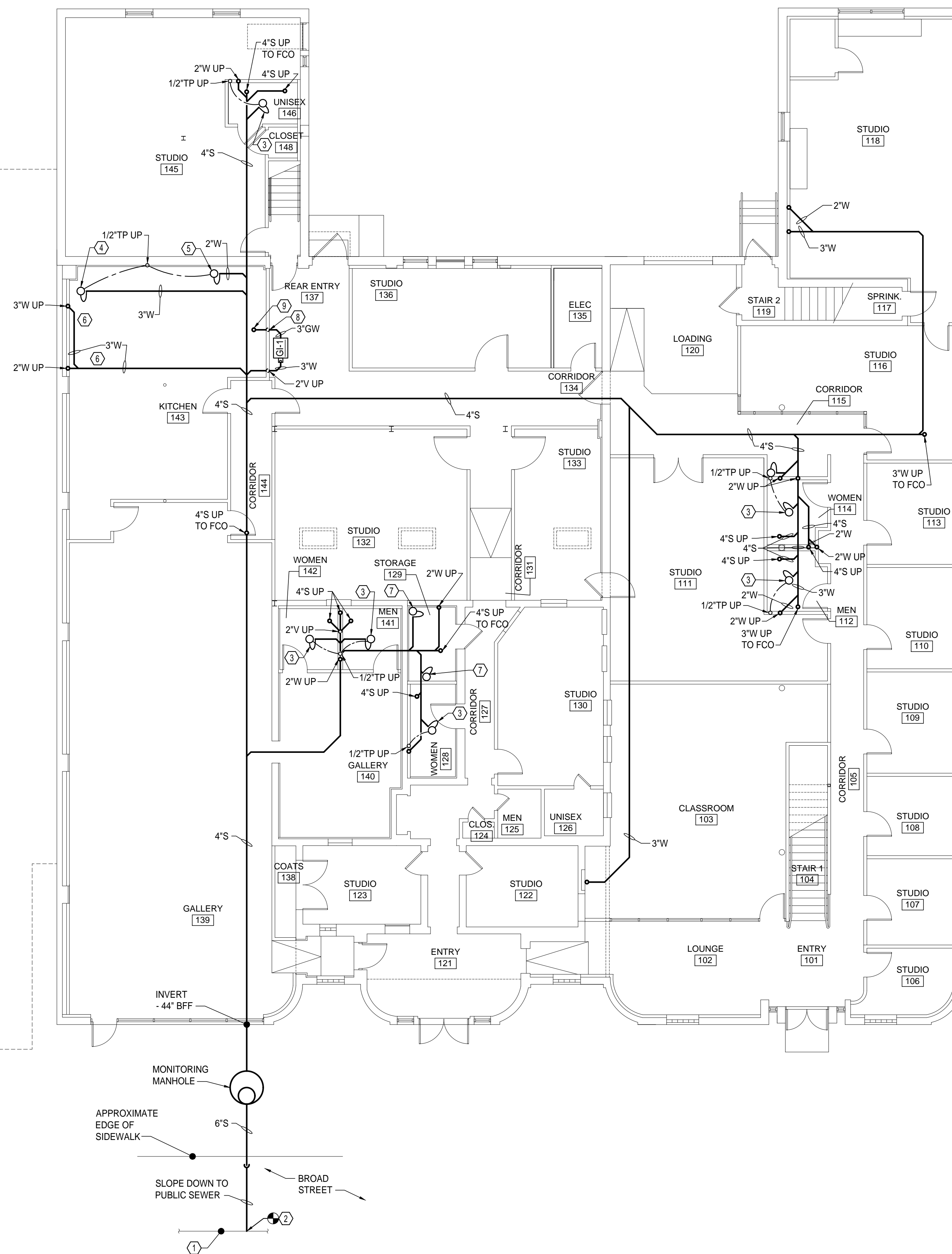
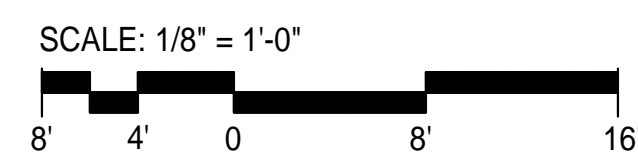


STANDARD MONITORING MANHOLE

DRWG. NO. D-114

MONITORING MAN HOLE DETAIL  
NO SCALE

GRAPHIC SCALE



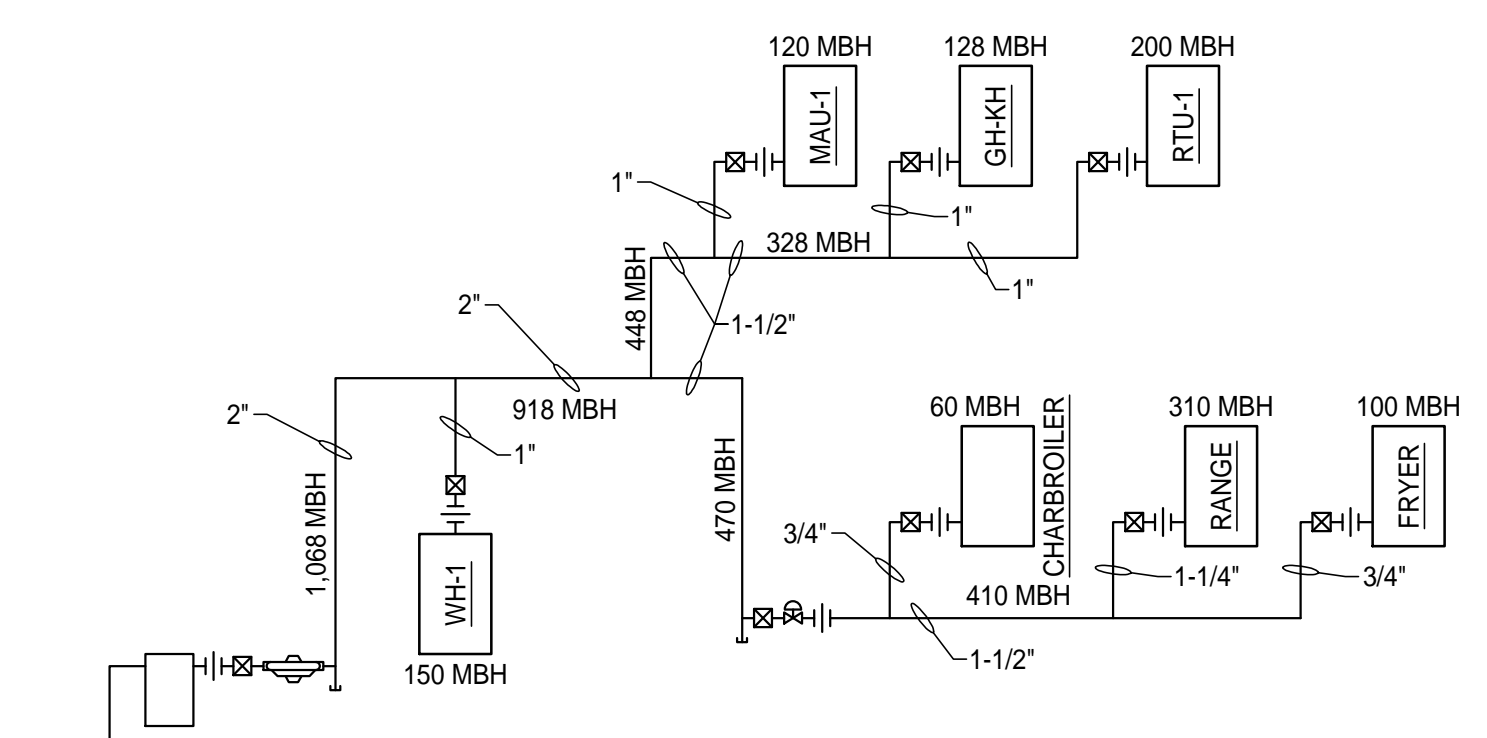
BELOW SLAB PLAN

1/8" = 1'-0"



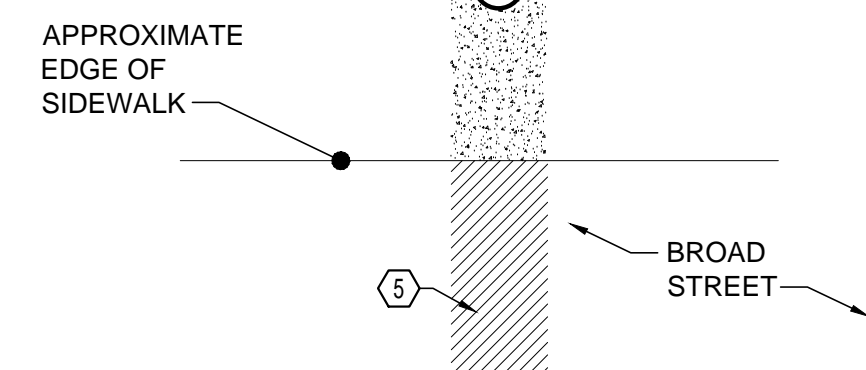
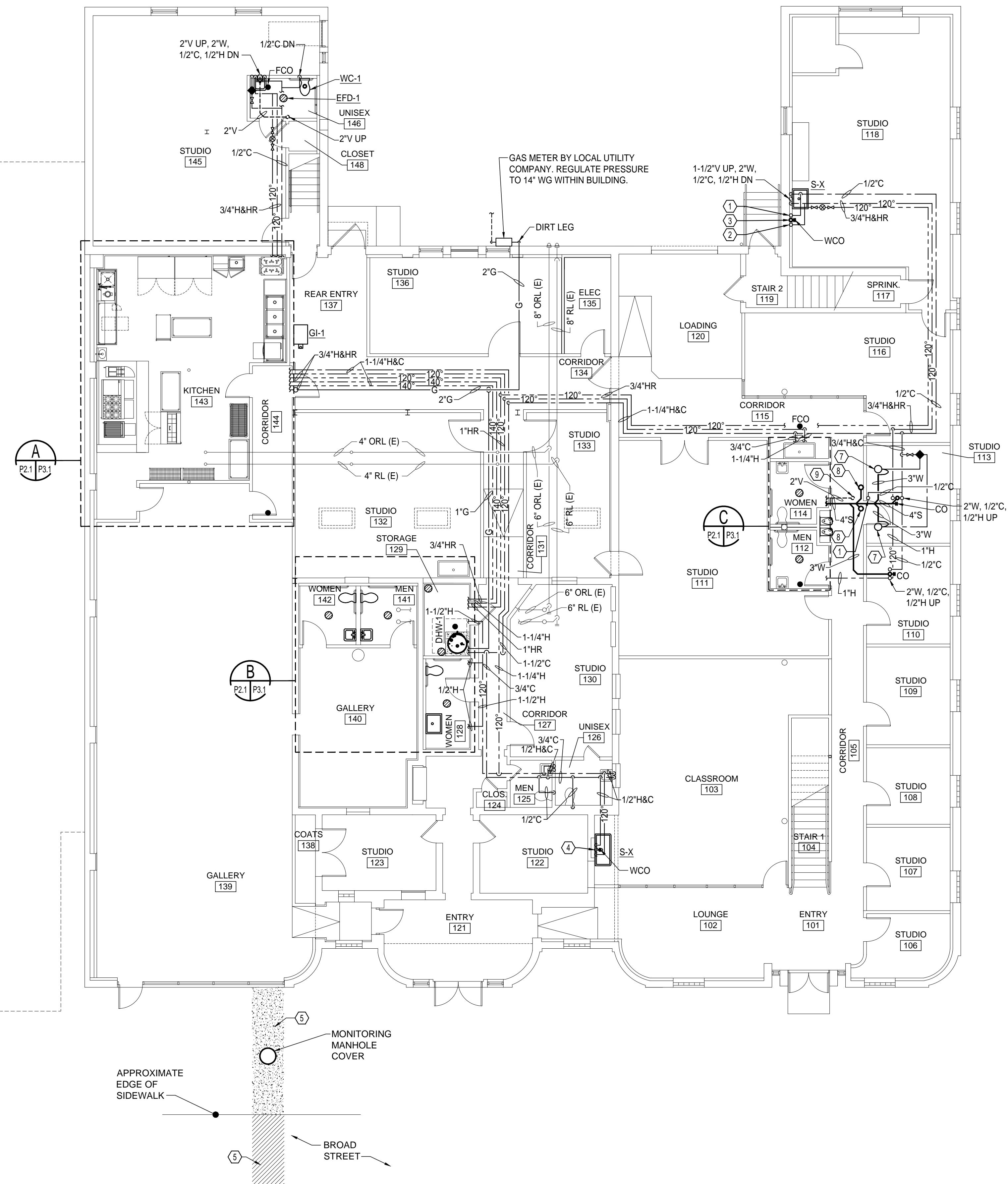
**PLAN REFERENCE NOTES:**

- ① 1/2" C UP TO 2ND FLOOR.
- ② 1/2" H UP TO 2ND FLOOR.
- ③ 2" W FROM 2ND FLOOR DOWN TO 3" W AT WCO DOWN TO BELOW SLAB.
- ④ 2" W DOWN TO 3" W AT WCO DOWN TO BELOW SLAB, 1-1/2" V UP TO AAV MINIMUM 6" ABOVE TRAP.
- ⑤ AFTER INSTALLATION AND INSPECTION OF NEW SANITARY LATERAL, CONTRACTOR SHALL PATCH CONCRETE SIDEWALK AND ASPHALT ON BROAD STREET. MATCH THICKNESS AND PATCH TO MATCH CITY OF RICHMOND STANDARDS.
- ⑥ 2" V UP, 2" W DOWN TO 3" W AT WCO DOWN TO BELOW SLAB.
- ⑦ 3" DEEP SEAL P-TRAP WITH TRAP FROM EFD-1 ABOVE.
- ⑧ 4" S FROM CLOSET FLANGE ABOVE.
- ⑨ 2" V UP TO 2ND FLOOR.

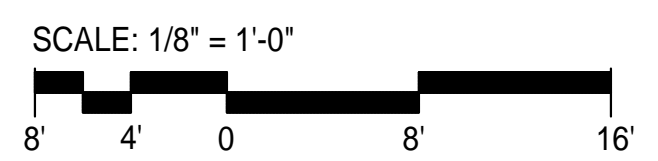


NOTE: GAS PIPING SIZED USING THE LONGEST LENGTH METHOD IAW VPC 402.4.1. MAX LENGTH = 125'. SIZING: TABLE 402.4(10) (COPPER, 1" WC PRESSURE DROP)

**GAS RISER DIAGRAM**  
NOT TO SCALE



**GRAPHIC SCALE**



**FIRST FLOOR PLAN**

1/8" = 1'-0"

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**PLUMBING**  
**FIRST**  
**FLOOR PLAN**

**P2.1**



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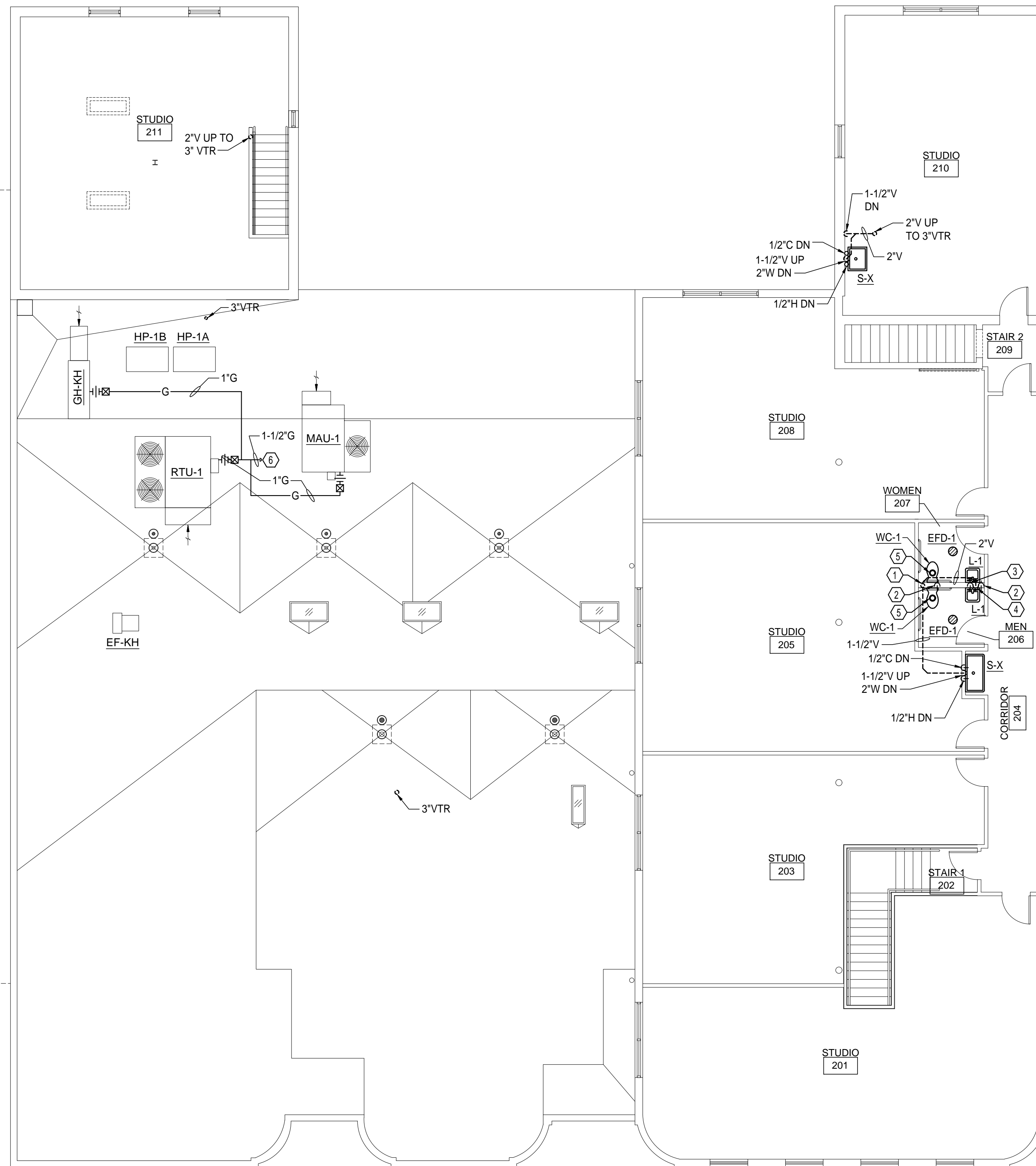
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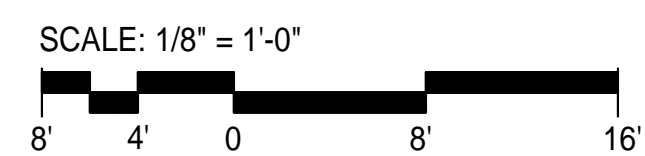


**PLAN REFERENCE NOTES:**

- ① 2" V FROM 1ST FLOOR UP TO 3" VTR.
- ② 1/2" C FROM 1ST FLOOR.
- ③ 1/2" H FROM 1ST FLOOR.
- ④ 2" W DOWN TO 1ST FLOOR, 1-1/2" V UP.
- ⑤ 4" S FROM CLOSET FLANGE DOWN TO 1ST FLOOR.
- ⑥ 1-1/2" G FROM 1ST FLOOR.



**GRAPHIC SCALE**



**SECOND FLOOR PLAN**

1/8" = 1'-0"

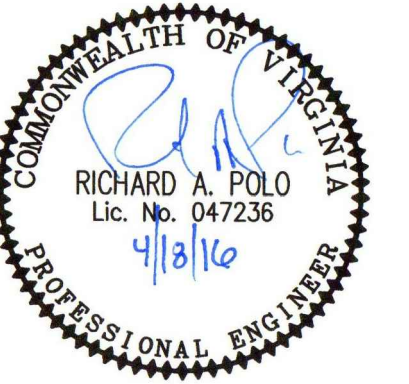
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**PLUMBING  
SECOND  
FLOOR PLAN**

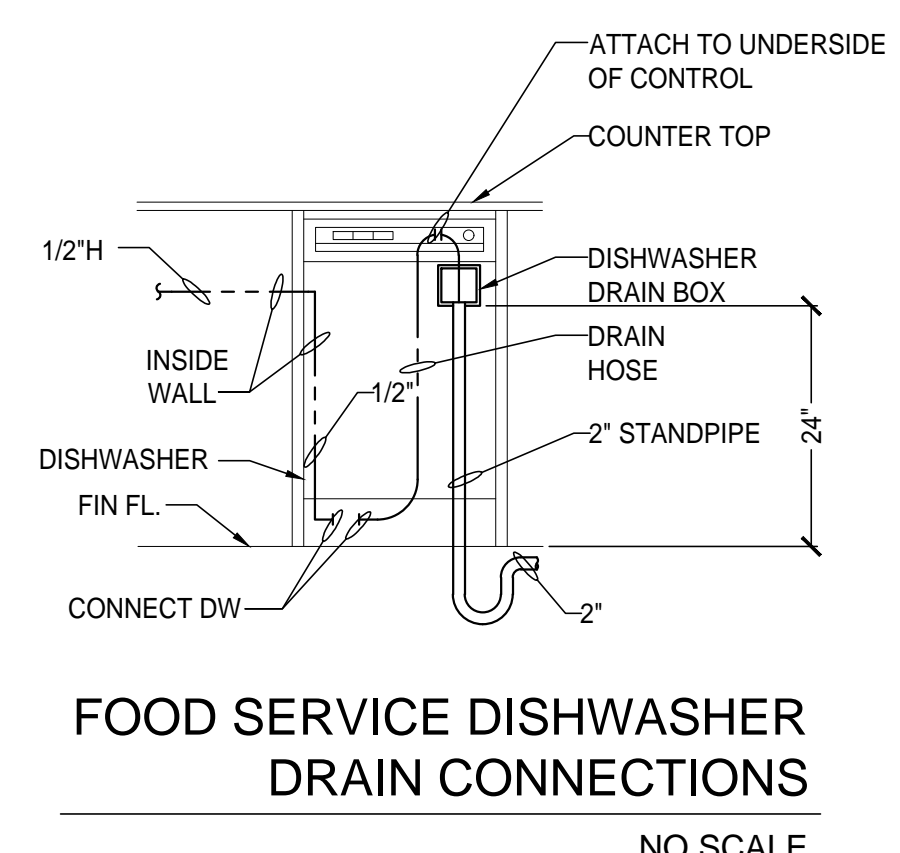
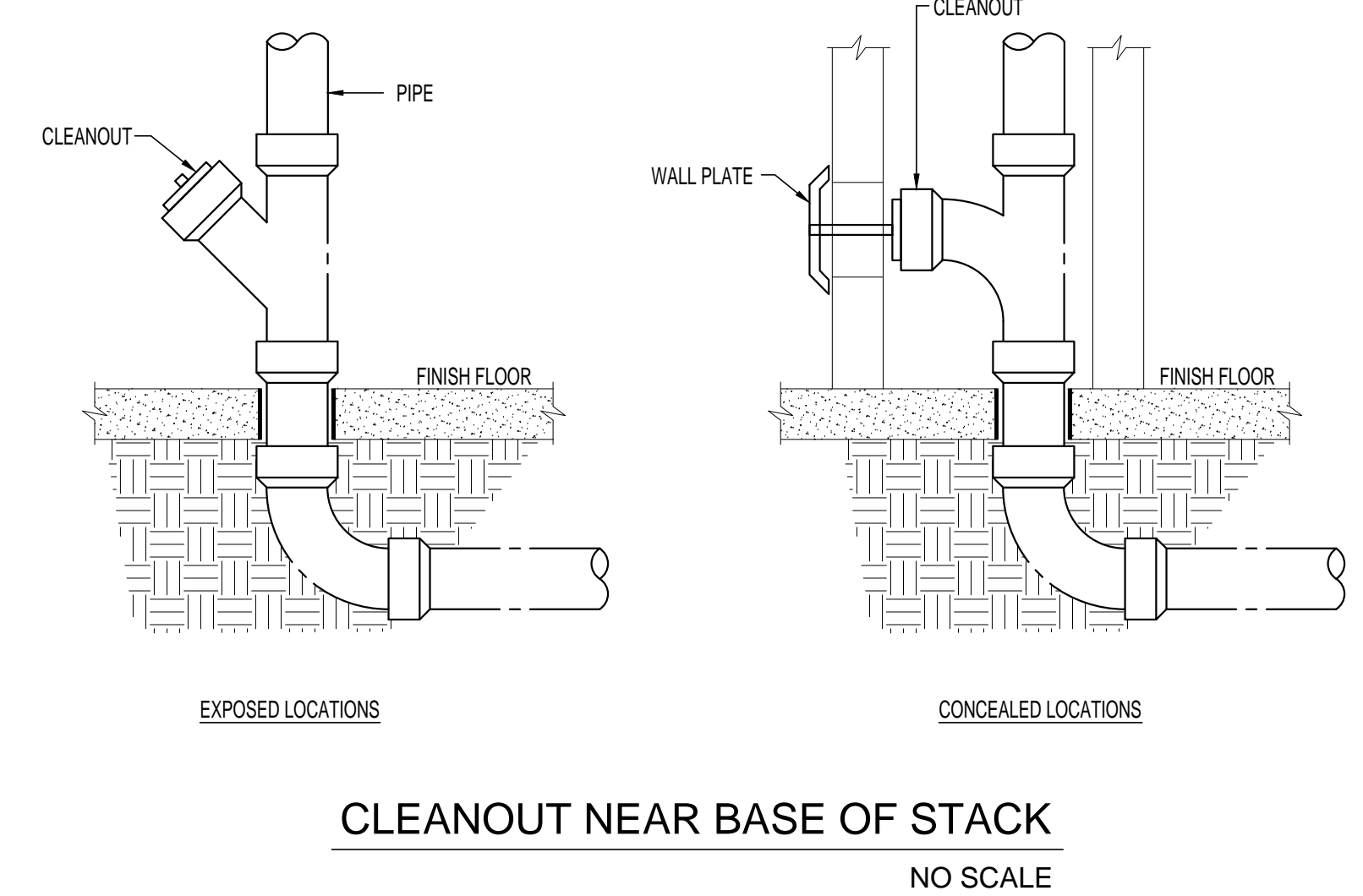
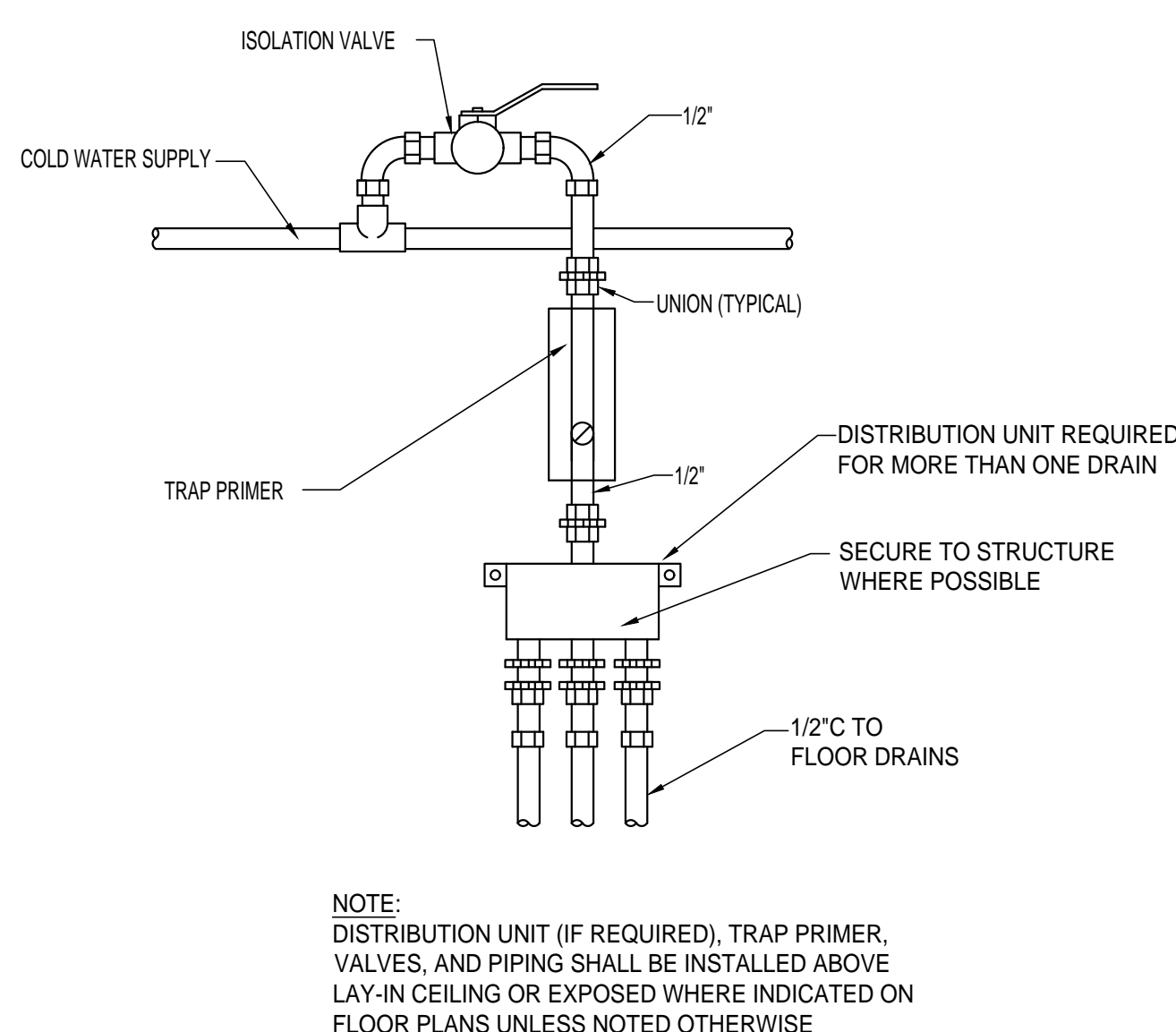
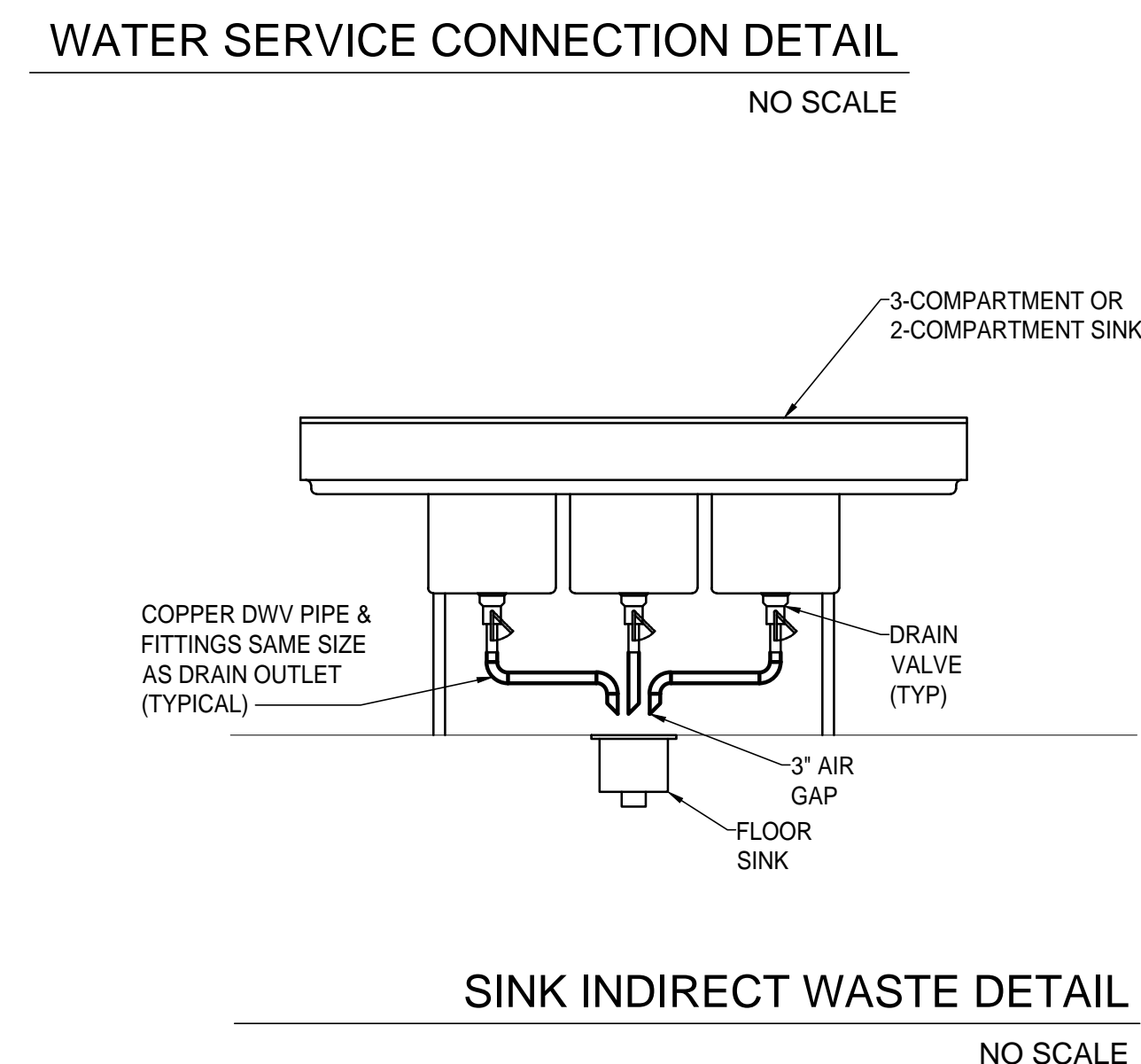
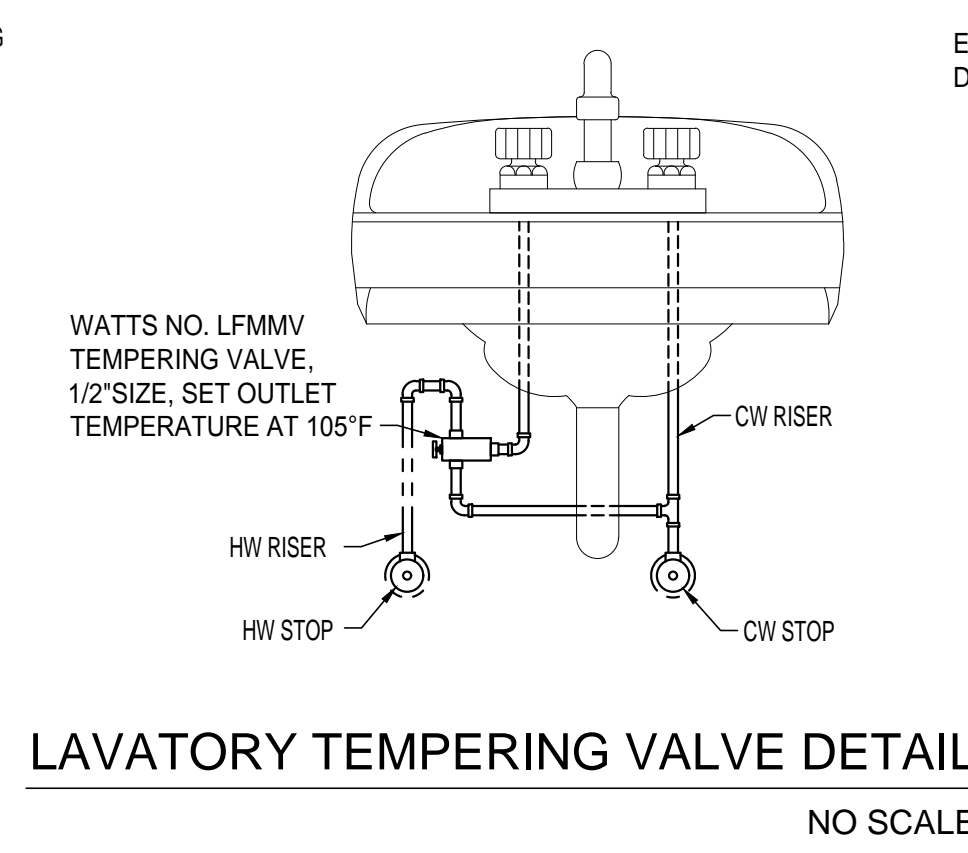
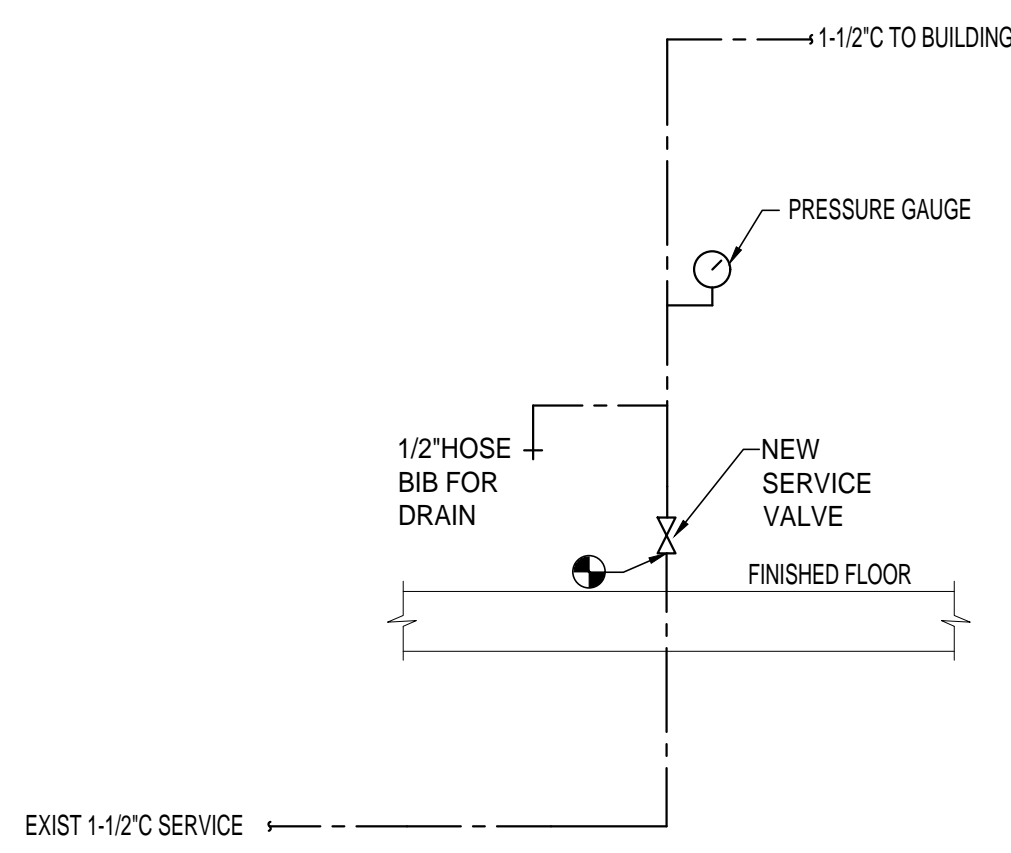
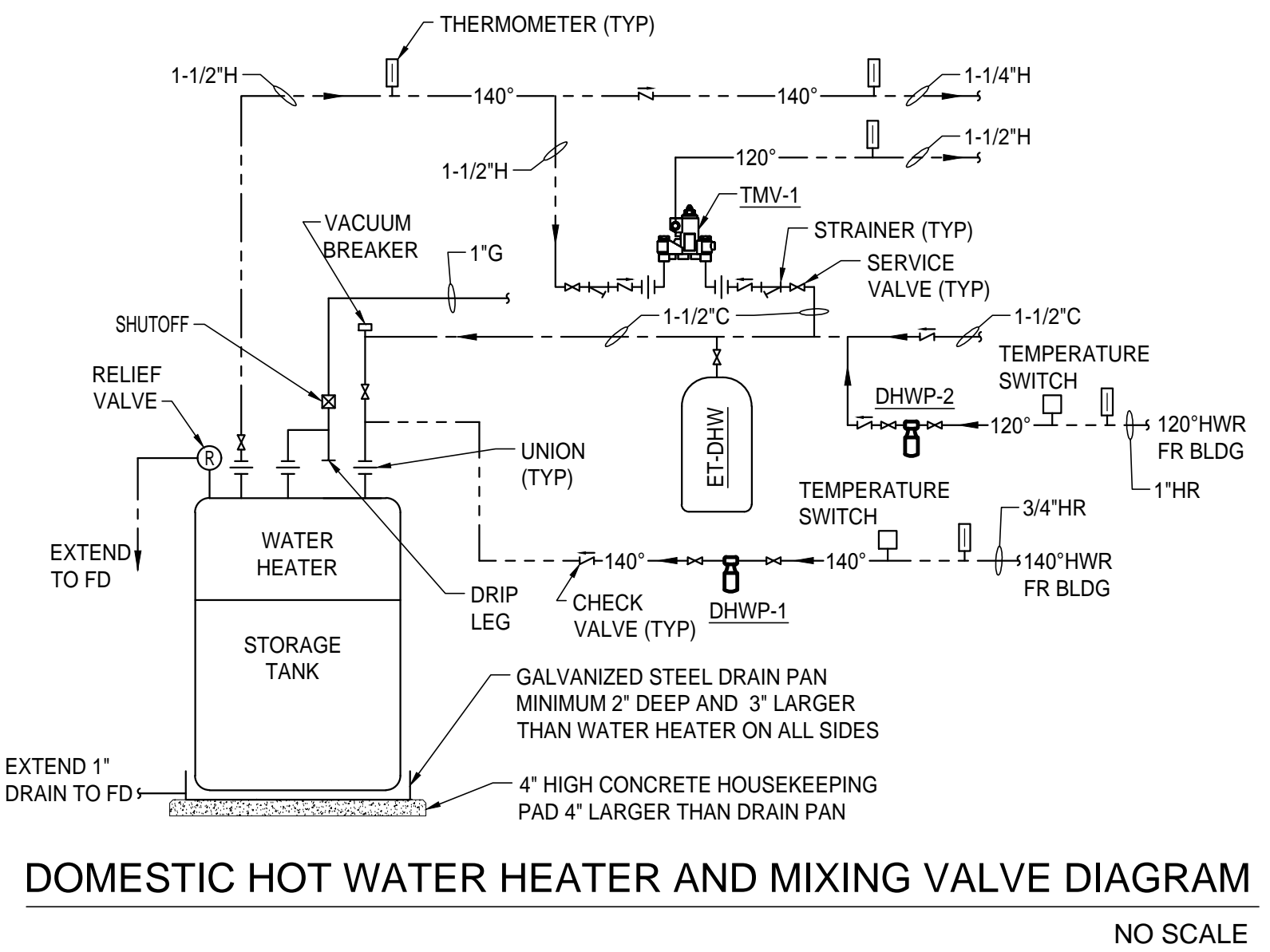
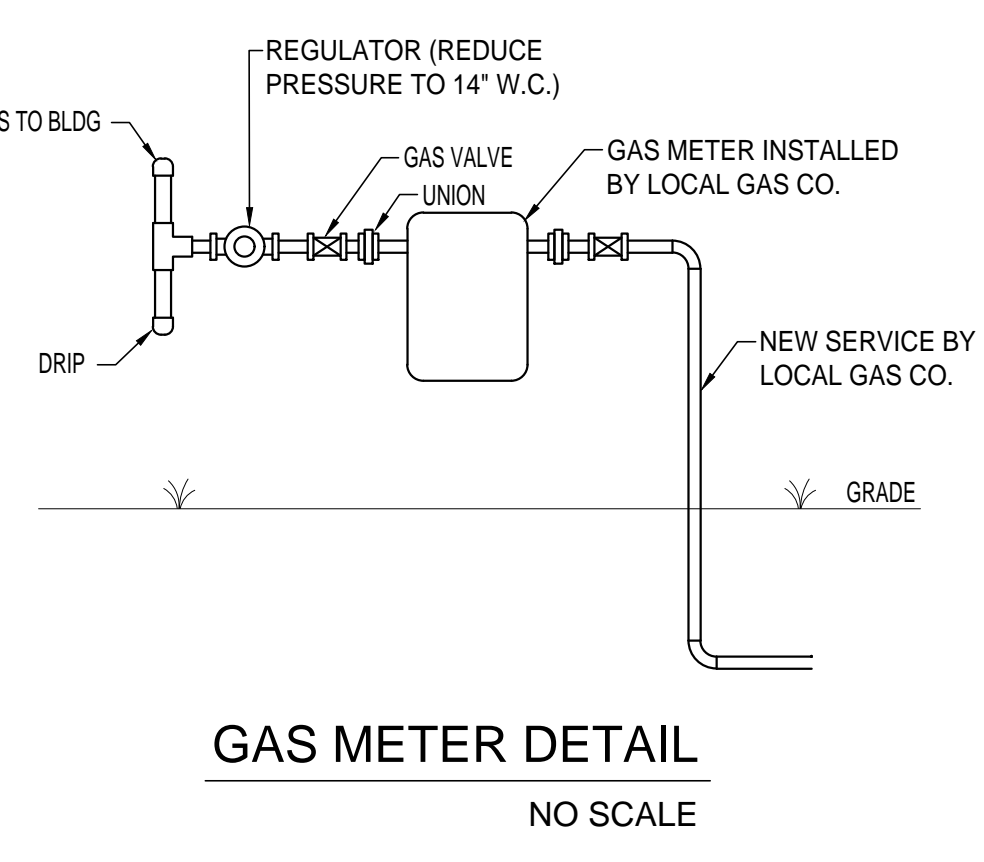
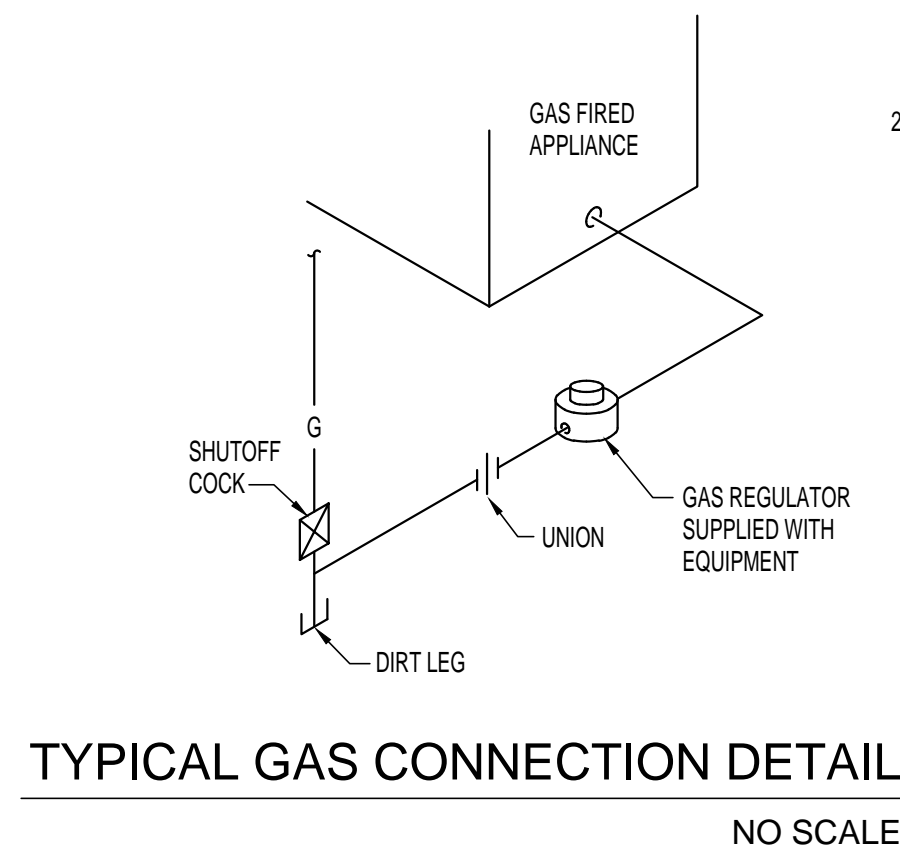
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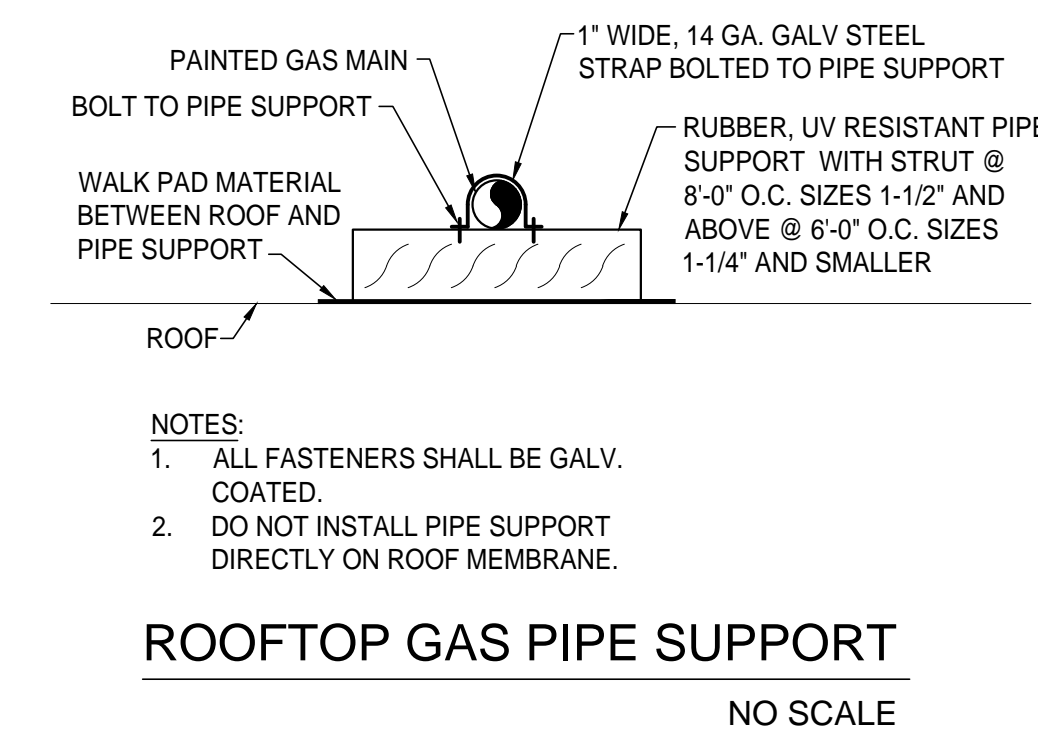


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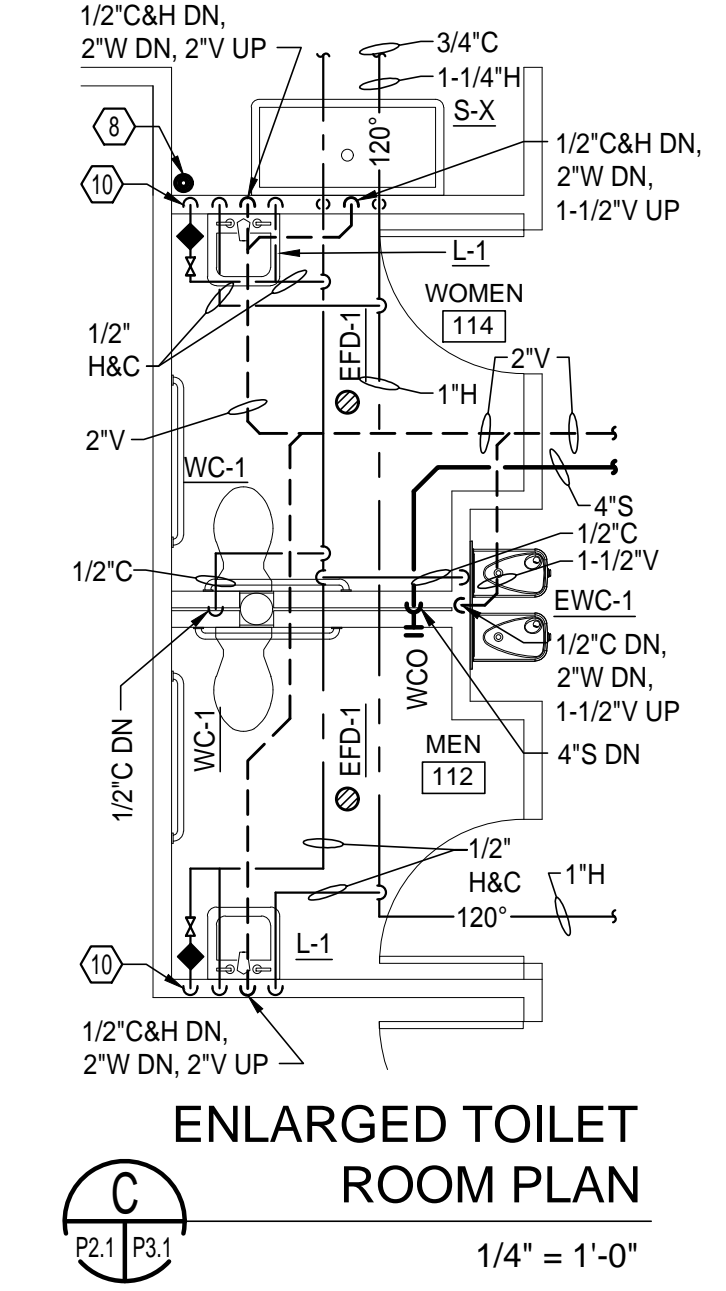
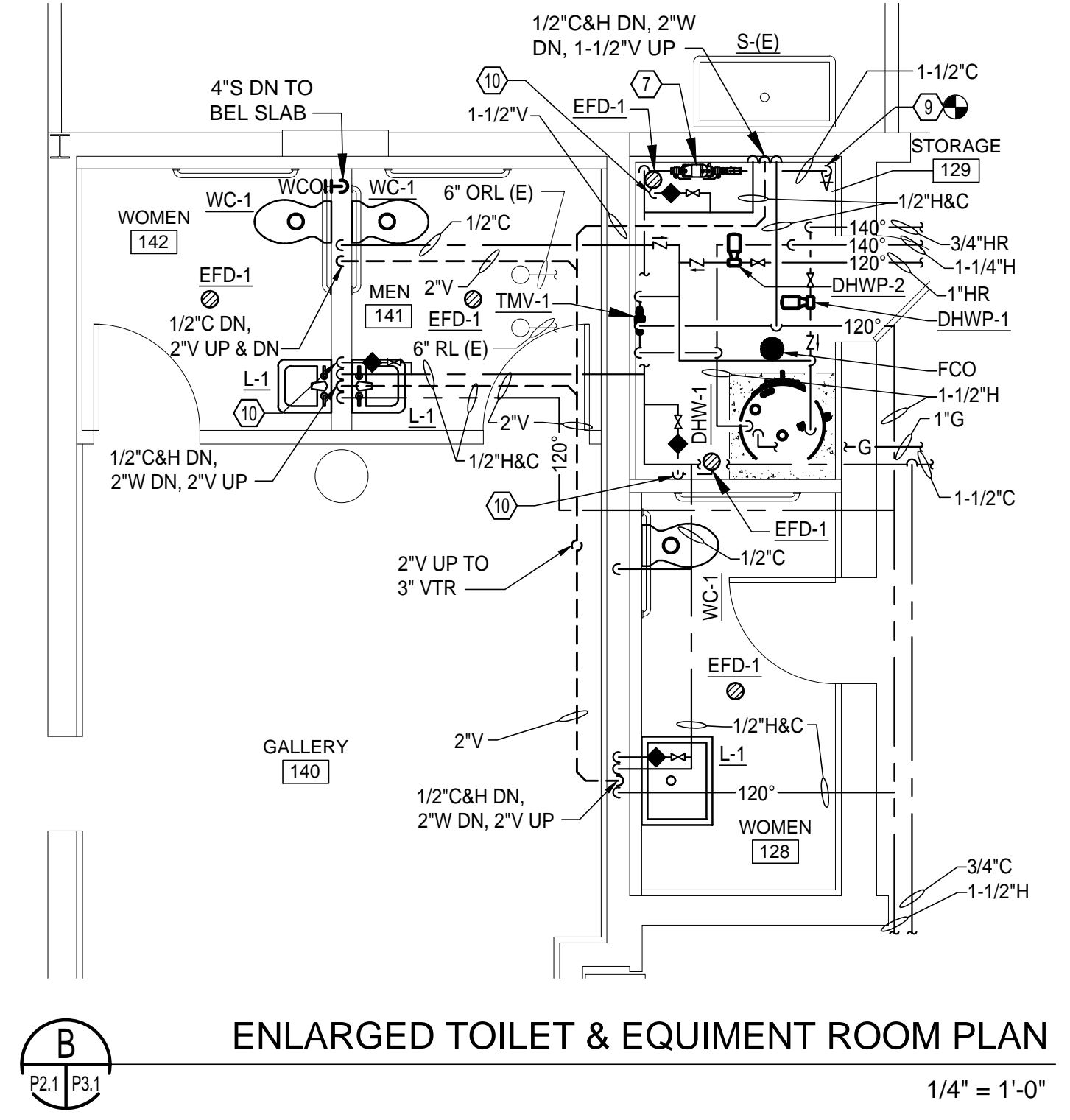




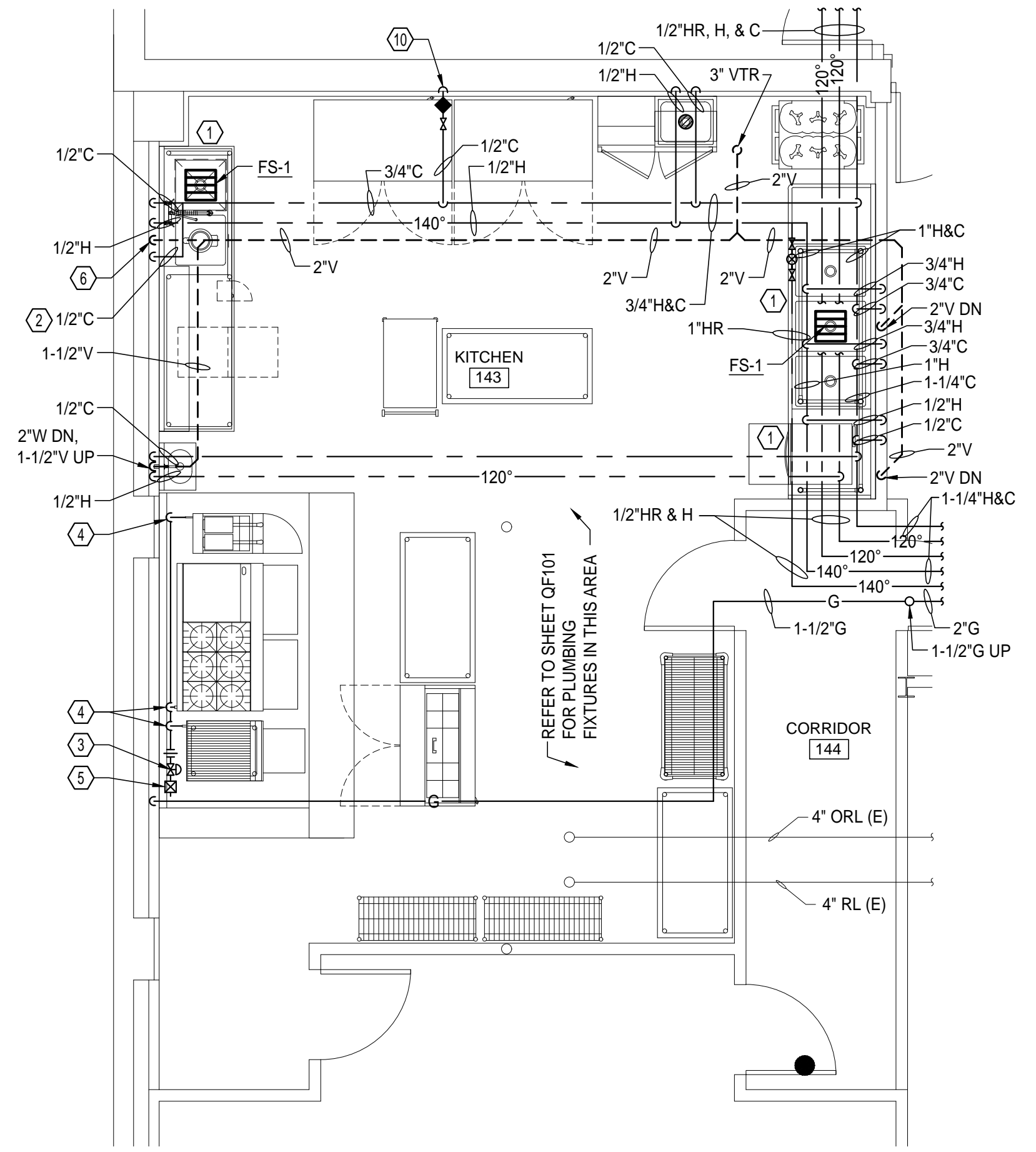
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P2.1 P3.1



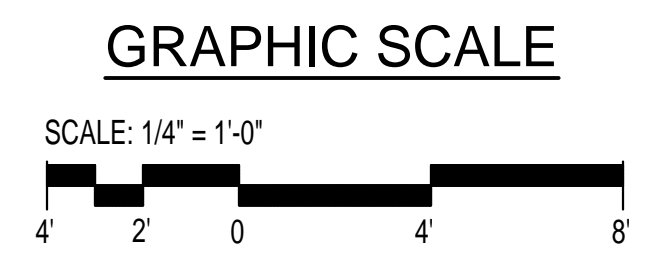
NOTES:  
1. ALL FASTENERS SHALL BE GALV. COATED.  
2. DO NOT INSTALL PIPE SUPPORT DIRECTLY ON ROOF MEMBRANE.



- PLAN REFERENCE NOTES:
1. PROVIDE FIXTURE WITH INDIRECT WASTE WITH AIR GAP. REFER TO SHEET QF101.
  2. PROVIDE DECK-MOUNTED VACUUM BREAKER ON WATER SUPPLY TO FOOD WASTE GRINDER. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND A MINIMUM OF 1\"/>
  - 3. EMERGENCY GAS SHUT OFF VALVE INTERLOCK WITH HOOD FIRE SUPPRESSION SYSTEM. REFER TO SHEET QF101.
  - 4. PROVIDE EACH GAS APPLIANCE WITH MANUAL SHUT OFF VALVE, UNION, AND FLEXIBLE APPLIANCE CONNECTOR.
  - 5. MANUAL SHUT OFF VALVE.
  - 6. 1-1/2\"/>
  - 7. WATTS MODEL LF009-QTS 1-1/2\"/>
  - 8. PROVIDE 4\"/>
  - 9. 1-1/2\"/>
  - 10. 1/2\"/>



ENLARGED KITCHEN PLAN PLAN  
1/4" = 1'-0"



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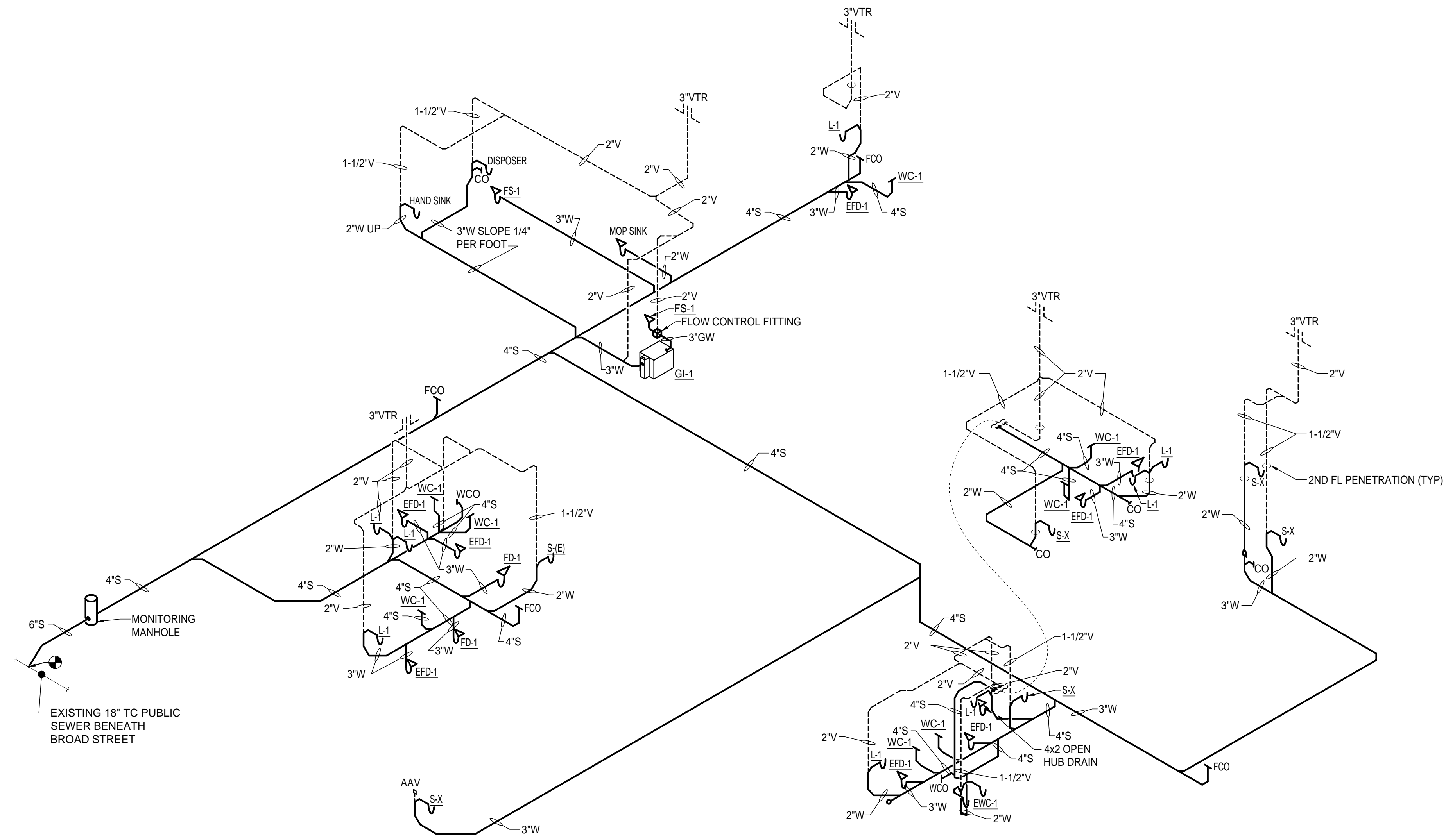
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04.18.16 PERMIT \_\_\_\_\_

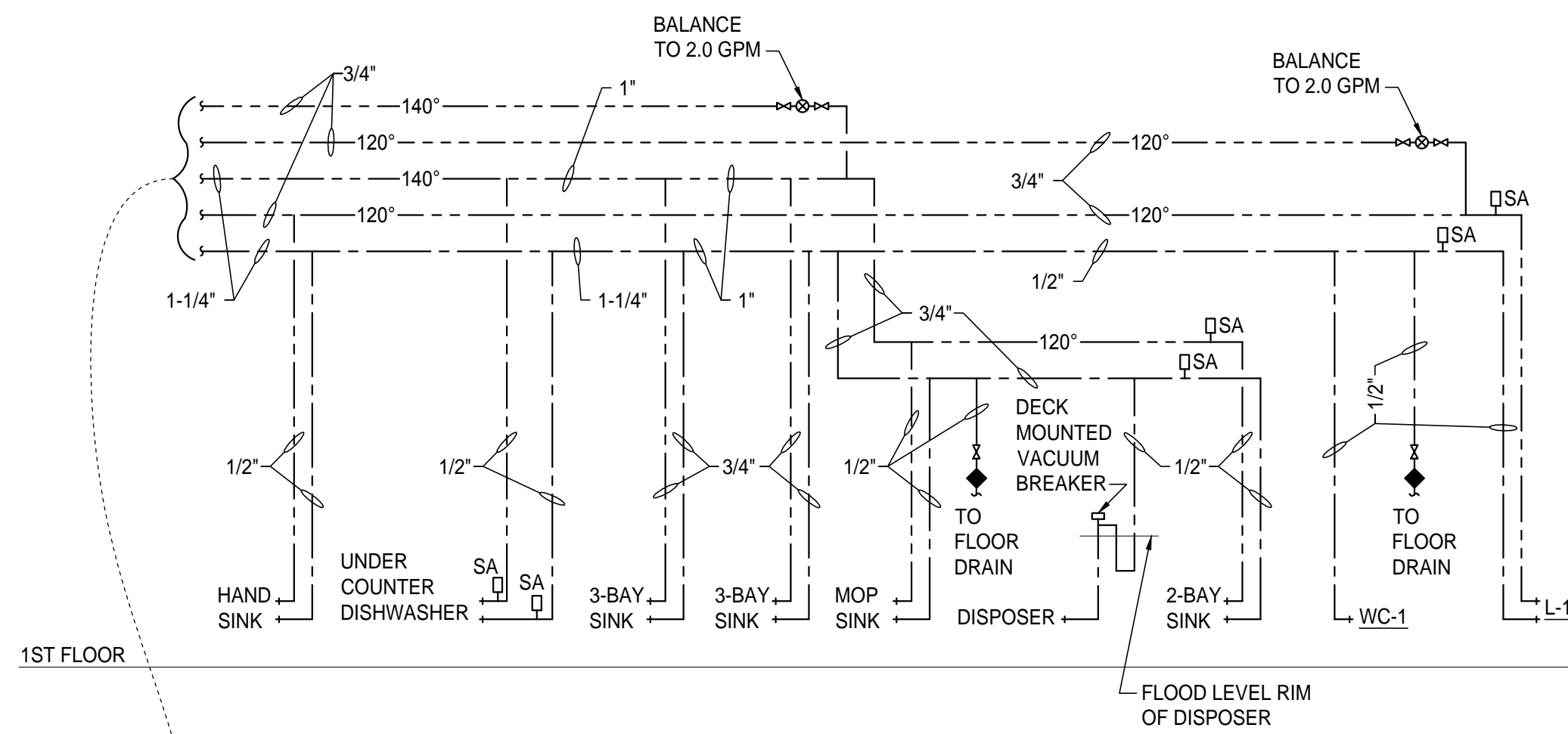
**PLUMBING ENLARGED PLANS  
P3.1**

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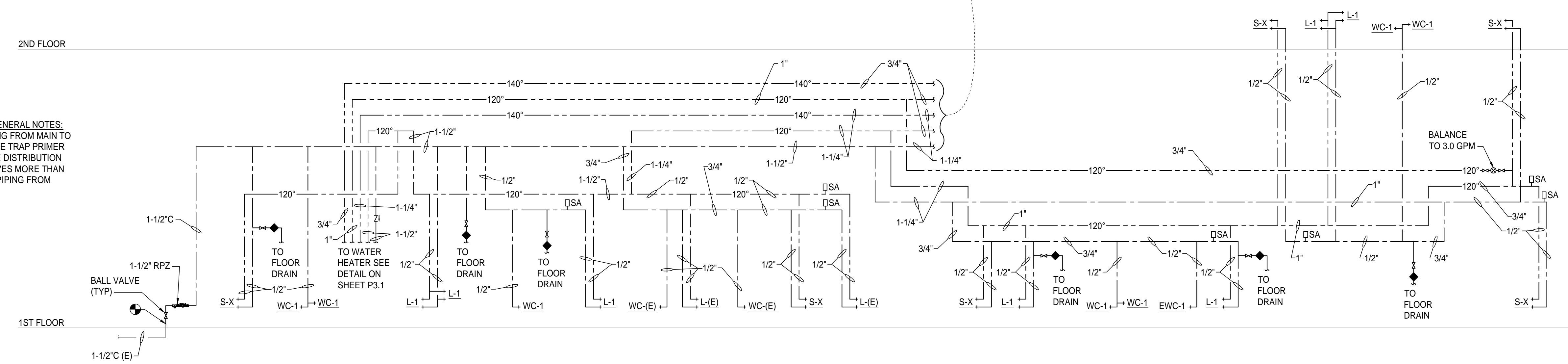




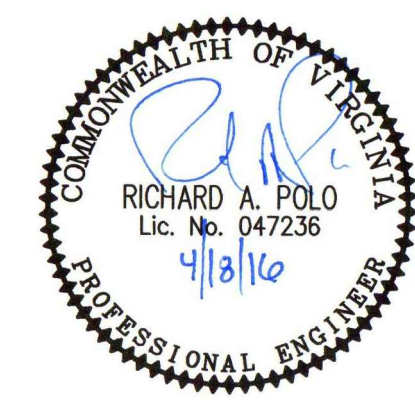
**SANITARY, WASTE, AND VENT ISOMETRIC DIAGRAM**  
NO SCALE



**DOMESTIC HOT AND COLD WATER GENERAL NOTES:**  
1. ALL COLD WATER BRANCH PIPING FROM MAIN TO TRAP PRIMERS IS 1/2". PROVIDE TRAP PRIMER WITH AIR GAP FITTING. PROVIDE DISTRIBUTION BOX WHERE TRAP PRIMER SERVES MORE THAN ONE DRAIN. ALL TRAP PRIMER PIPING FROM TRAP PRIMER TO DRAIN IS 1/2".



**DOMESTIC HOT AND COLD WATER RISER DIAGRAM**  
NO SCALE



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**PLUMBING ISOMETRIC & RISER**  
**P3.2**