

# REECE NICHOLS TENANT IMPROVEMENTS

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

## PERMIT DOCUMENTS

1 JUNE, 2022

COLLINS WEBB #: 22046

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### OWNER

REECE NICHOLS  
222 SW MAIN ST.  
LEE'S SUMMIT, MO 64063  
P: 816.524.7272  
www.reecenichols.com

### ARCHITECT

COLLINS WEBB ARCHITECTURE  
307B SW MARKET ST.  
LEE'S SUMMIT, MISSOURI 64063  
P: 816.249.2270  
www.collinsandwebb.com

### MEP ENGINEER

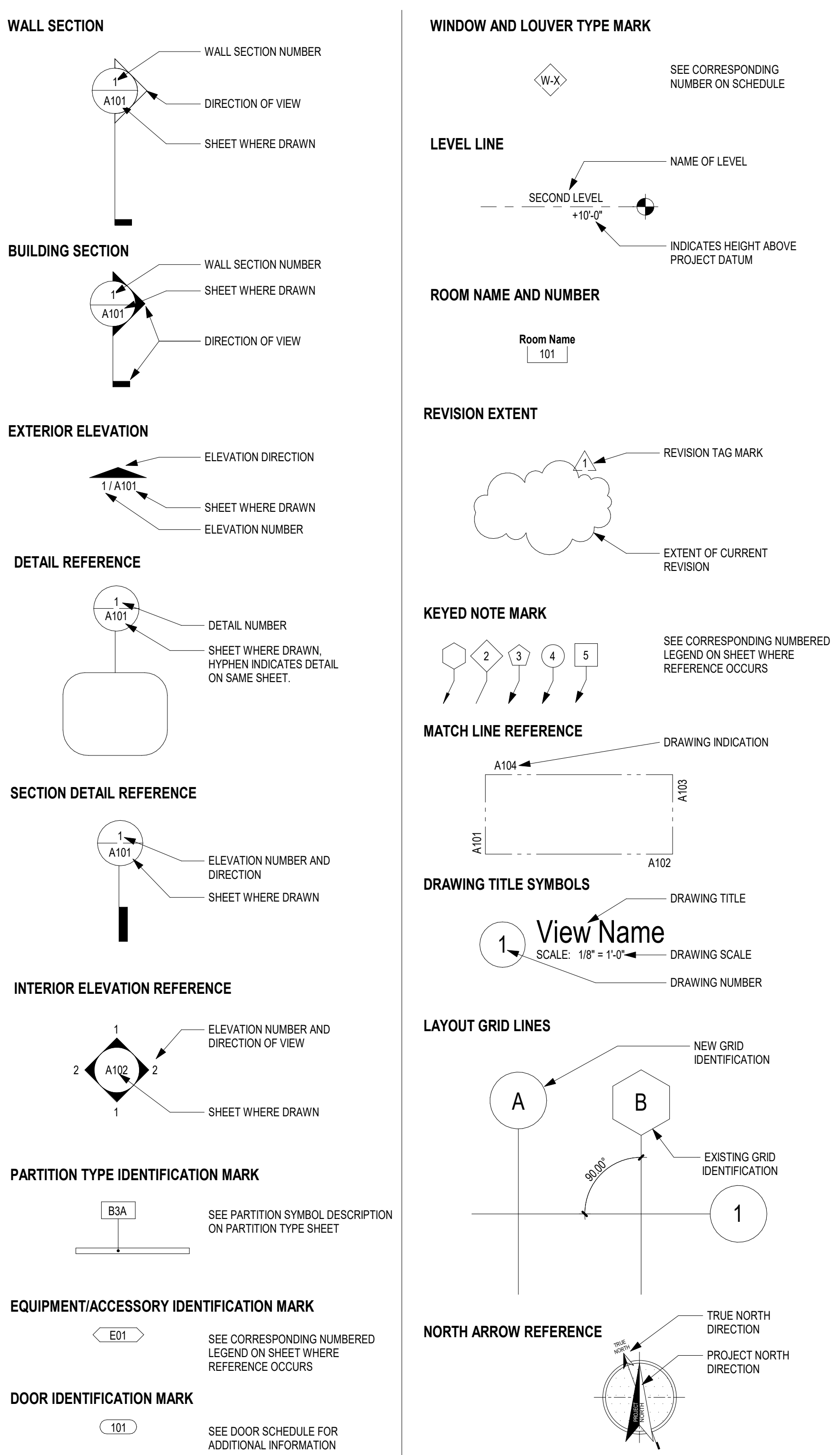
ENGINEERED BUILDING SOLUTIONS  
P.O. BOX #11101  
OVERLAND PARK, KS 66207  
P: 913.735.5654  
www.ebsolutionskc.com

## ARCHITECTURAL ABBREVIATIONS

[illegible]

## TYPICAL ARCHITECTURAL REFERENCE SYMBOLS

## TYPICAL ARCHITECTURAL REFERENCE SYMBOLS

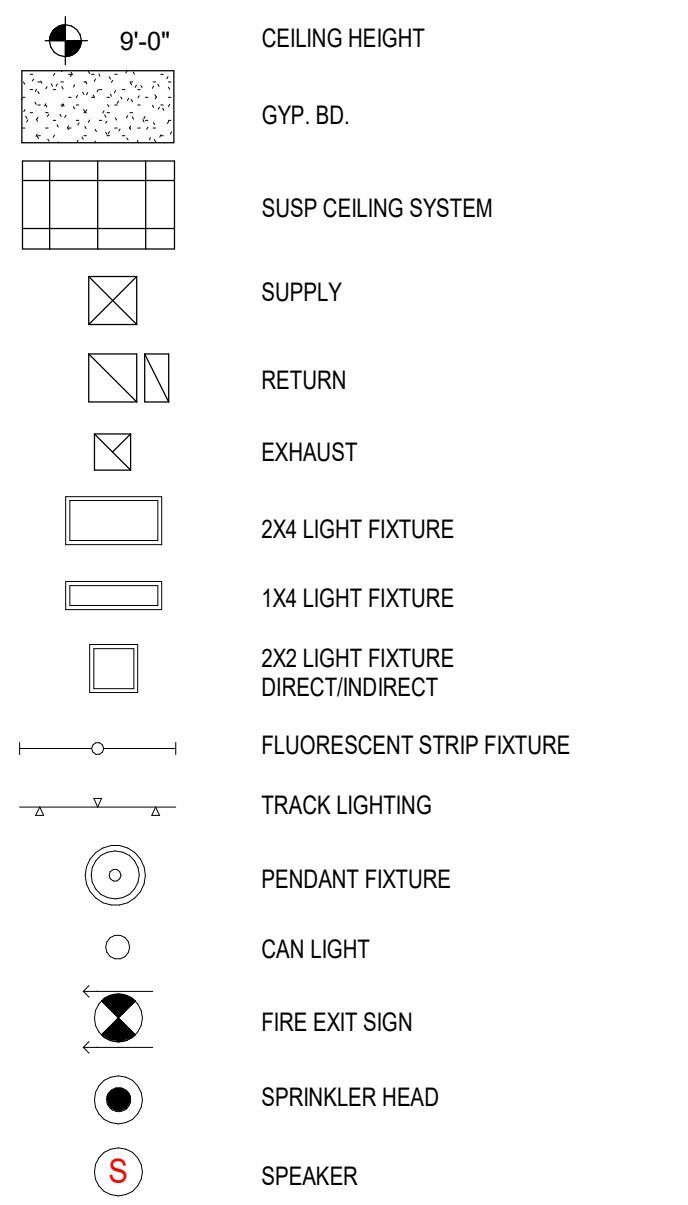


## ARCHITECTURAL DIMENSIONING CONVENTIONS

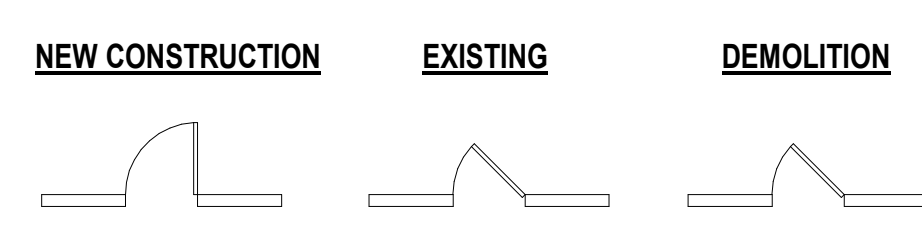
## ARCHITECTURAL DIMENSIONING CONVENTIONS

- EXCEPT WHERE DIRECTED TO PLACE ITEMS OF THE WORK AT THE "APPROXIMATE LOCATION SHOWN," DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION.
- ALL ELEMENTS OF THE DRAWINGS MAY NOT BE DRAWN TO EXACT SCALE. ALL DIMENSIONS REQUIRED ARE SHOWN (OR MAY BE DERIVED FROM TWO SHOWN) ON NOTES OR ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, SCHEDULES, CONFIGURATION DETAILS, AND SPECIFICATIONS. SEE THE NOTES AND FLOOR DIMENSIONING CONVENTIONS USED ON THIS PROJECT.
- EXCEPT WHERE SPECIFICALLY NOTED TO THE CONTRARY, ALL DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS CONFORM TO THE FOLLOWING CONVENTIONS:
- DIMENSIONS UTILIZING THE "CENTERLINE" SYMBOL ARE MEASURED TO:
    - STRUCTURAL OR DIMENSIONAL GRID LINES.
    - CENTERLINE OF CONCRETE OR CONC MASONRY UNIT WALLS EXCLUSIVE OF FURRING OR APPLIED FINISHES HAVING THICKNESS. REFER TO THE ARCH PLANS AND SECTIONS, THE STRUT DRAWINGS, OR PARTITION SCHEDULE TO DETERMINE THE THICKNESS OF CONCRETE OR CONC MASONRY UNIT WALLS.
    - CENTERLINE OF PARTITION ASSEMBLY EXCLUSIVE OF ANY APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS AT PARTITIONS FRAMED WITH METAL STUDS. REFER TO "PARTITION SCHEDULE" TO DETERMINE THICKNESS OF EACH PARTITION TYPE.
    - CENTERLINE OF DOOR, WINDOW, OR SLOUVER OPENING.
    - CENTERLINE OF EQUIPMENT OR
    - CENTERLINE OF OTHER FEATURES AS INDICATED.
  - REFER TO ABBREVIATIONS LEGEND FOR SYMBOL USED TO INDICATE CENTERLINE DIMENSION.
  - DIMENSIONS UTILIZING THE "FACE OF" SYMBOL ARE MEASURED TO:
    - FACE OF CONCRETE OR CONC MASONRY UNIT WALL EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS OR FURRING WHICH MAY BE ADDED TO THE FACE OF SUCH WALLS.
    - FACE OF PARTITION ASSEMBLY EXCLUSIVE OF ANY APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS AS DEFINED BY THE PARTITION SCHEDULE. UNLESS NOTED AS A "FACE OF FINISH" OR "CLEAR" DIMENSION (SEE NOTE E BELOW), DIMENSIONS ARE NOT MEASURED TO THE FACE OF APPLIED FINISH. REFER TO THE "PARTITION SCHEDULE" TO DETERMINE THE THICKNESS OF EACH PARTITION TYPE.
    - INSIDE EDGE OF FINISHED DOOR OPENING. REFER TO THE DOOR SCHEDULE FOR ADDITIONAL DIMENSIONAL INFORMATION.
    - DIMENSION OR WORK POINT AS INDICATED ON RELATED ARCH DETAIL, PLAN, SECTION, ELEVATION, LAYOUT OR CONNECTION DETAIL, OR CONSTRUCTION DETAIL.
  - REFER TO ABBREVIATIONS LEGEND FOR SYMBOL USED TO INDICATE "FACE OF" DIMENSIONS.
  - WHERE "FACE OF FINISH" OR "CLEAR" DIMENSIONS ARE SPECIFICALLY NOTED, THE DIM IS MEASURED TO:
    - FINISH FACES AT THE MOST NARROW OR CONSTRICTED PORTIONS OF SECTION WHEN DIMENSIONING IS SHOWN, WHEN THE DIMENSION OCCURS ACROSS AN OPEN SPACE. THIS CASE, A "FACE OF FINISH" DIMENSION IS EQUIVALENT TO A "CLEAR" DIMENSION.
    - FINISH FACES AT THE WIDEST OR MOST EXPANSIVE PORTIONS OF THE SECTION THE DIMENSION IS SHOWN WHEN THE DIMENSION OCCURS ACROSS AN OBJECT OR GROUP OF OBJECTS.
  - WHERE "EQUAL" DIMENSIONS ARE USED ON REFLECTED CEILING PLANS TO LOCATE CEILING GRID WORK POINTS, MEASURE DIMENSIONS TO:
    - EDGE OF THE INDICATED CEILING AT THE FACE OF THE ADJACENT APPLIED FINISH MEASURED AT THE PLANE OF THE CEILING.
- CAUTION: DUE TO THE POSSIBLE APPLICATION OF APPLIED FINISHES - THICKNESS OF WHICH MAY VARY - THE DIMENSION SHOWN ON FLOOR AND CEILING AND IS NOT ACCOUNTED FOR EXCEPT AS INDICATED BY "TOP" OR "CLEAN" BY THE DIMENSION SHOWN ON THE FLOOR PLANS - THE CONTRACTOR MUST ADJUST, AS NECESSARY, THE FLOOR PLAN DIMENSIONS TO REFLECT THE ACTUAL DIMENSIONS FOUND AT PLACE OF THE CEILING.
- WHERE DOOR OCCURS NOT ADJACENT TO A PERPENDICULAR WALL AND EITHER "DM" OR "DM F" IN DIAGRAM BELOW "10" OR LESS, LOCATE DOOR UTILIZING THE FOLLOWING MINIMUM DIMENSIONS:
- DIMENSION A = 18 INCHES MIN
  - DIMENSION E = 12 INCHES MIN
  - DIMENSION C = DOOR WIDTH + 2 INCHES MINIMUM
  - DIMENSION D = 4 INCHES MIN AT METAL FRAMED GPB OR PARTITIONS OR - EVEN MULTIPLE OF 12 INCH
  - MODULE PLUS 2 INCHES AT CONC MASONRY UNIT WALLS
  - DIMENSIONS E AND F = AS SHOWN ON PLANS
  - DIMENSION H = 60 INCHES MIN
4. WHERE DIMENSIONS ARE NOT PROVIDED ON FLOOR PLANS TO LOCATE DOOR OPENINGS, APPLY THE FOLLOWING RULES, IN ORDER, TO DETERMINE THE LOCATION OF DOOR OPENINGS:
- DOOR OPENINGS MAY BE DIMENSIONED ON DRAWINGS OTHER THAN THE FLOOR PLANS. REFER TO THE SECTIONS, ELEVATIONS, DETAILS, AND DOOR SCHEDULE NOTES FOR ADDITIONAL DIMENSIONAL INFORMATION.
  - WHERE THE HINGE-SIDE OF A DOOR IS SHOWN ADJACENT TO A WALL OR WALLS - PERPENDICULAR TO THE WALL IN WHICH THE DOOR OPENING OCCURS:
    - AT DOORS OCCURRING IN METAL FRAMED OPSUM BARS PARTITIONS, LOCATE THE HINGE-SIDE OF THE DOOR FINISHED OPENING 4 INCHES FROM THE FACE EXCLUSIVE OF APPLIED FINISHES OF THE CLOSEST PERPENDICULAR WALL OR PARTITION ASSEMBLY.
5. WHERE DOOR IS SHOWN LOCATED IN A LARGE EXPENSE OF OPEN WALL "DM" E" AND "DM F" IN DIAGRAM BELOW BOTH EXCEED 10'-0", PLACE DOOR AT APPROXIMATE LOCATION SHOWN ON THE PLANS. WHERE DOOR OCCURS IN CMU WALL, PLACE DOOR AT APPROXIMATE LOCATION SHOWN WHILE MINIMIZING "CLT" OR PARTIAL CMU MODULES ADJACENT TO THE JAMBS.
6. WHERE DOOR OCCURS NOT ADJACENT TO A PERPENDICULAR WALL AND EITHER "DM" OR "DM F" IN DIAGRAM BELOW "10" OR LESS, LOCATE DOOR UTILIZING THE FOLLOWING MINIMUM DIMENSIONS:
- DIMENSION A = 18 INCHES MIN
  - DIMENSION E = 12 INCHES MIN
  - DIMENSION C = DOOR WIDTH + 2 INCHES MINIMUM
  - DIMENSION D = 4 INCHES MIN AT METAL FRAMED GPB OR PARTITIONS OR - EVEN MULTIPLE OF 12 INCH
  - MODULE PLUS 2 INCHES AT CONC MASONRY UNIT WALLS
  - DIMENSIONS E AND F = AS SHOWN ON PLANS
  - DIMENSION H = 60 INCHES MIN
7. IF "SPACE ALLOWS, CENTER DOOR IN WALL SHOWN ON THE DRAWINGS SO THAT EITHER "DM" EQUALS "DM C" OR "DM F" EQUALS "DM D".
8. IF "DM" IN THE DIAGRAMS BELOW IS LESS THAN 10 FEET 0 INCHES, LOCATE DOOR SO THAT MINIMUMS STATED BY NOTE NO 4C ABOVE FOR "DM A", "DM B", AND "DM D" ARE MET - MAXIMIZING "DM A" AND MINIMIZING "DM D" TO THE EXTENT POSSIBLE.
9. WHERE DOOR IS SHOWN LOCATED IN A LARGE EXPENSE OF OPEN WALL "DM" E" AND "DM F" IN DIAGRAM BELOW BOTH EXCEED 10'-0", PLACE DOOR AT APPROXIMATE LOCATION SHOWN ON THE PLANS. WHERE DOOR OCCURS IN CMU WALL, PLACE DOOR AT APPROXIMATE LOCATION SHOWN WHILE MINIMIZING "CLT" OR PARTIAL CMU MODULES ADJACENT TO THE JAMBS.
10. WHERE WALLS AND/OR PARTITIONS OF UNWALL THICKNESS ABUT, ALIGN EXPOSED FACES, UNLESS OTHERWISE NOTED:
- ALIGN
- DIMENSION, WHEN OCCURS

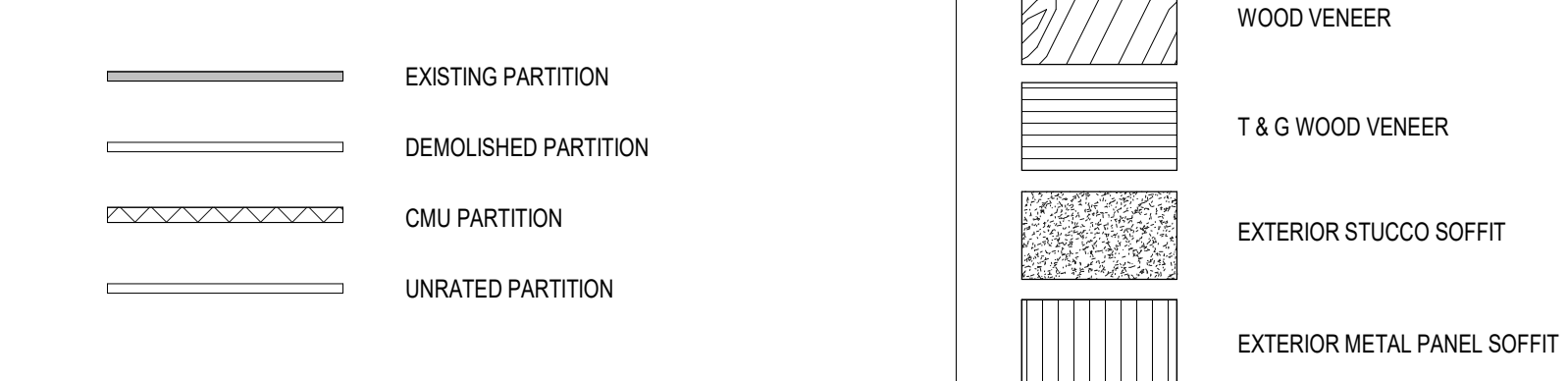
REFLECTED CEILING PLAN SYMBOLS:



### TYP DOOR LEGEND

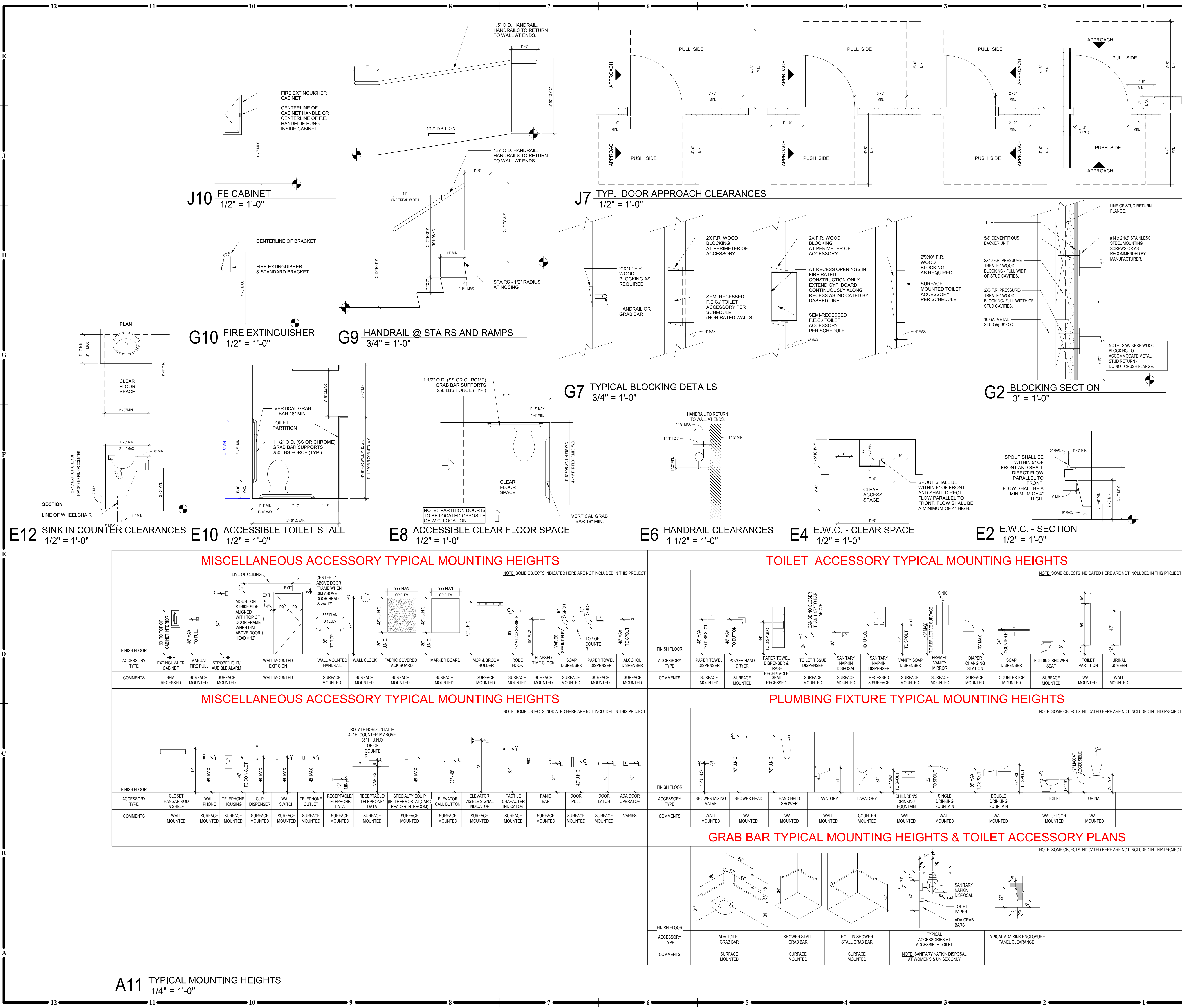


### WALL TYPE LEGEND



**GENERAL**  
**INFORMATION NOTES:**

- [illegible]



**GENERAL NOTES**  
**ACCESSIBILITY**  
**GUIDELINES:**

- NOTE: ALL DIMENSIONS ARE MEASURED FROM FLOOR, UNLESS NOTED OR SHOWN OTHERWISE.
- ADA UNOBSTRUCTED REACH RANGES: ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN.
- ELEVATORS: STANDARD CALL BUTTONS: 36" TO 48" TO C.L. & PROTRUDE 1" MAX. ADA CALL BUTTONS: 42" TO C.L. (TYP.) & 48" MAX. (3/4" SMALLEST DIM.). ADA VISIBLE SIGNALS: 72" MIN. TO C.L. (2 1/2" SMALLEST DIM.). TACTILE SIGNAL ON HOSTWAY: 60" TO BASE OF CHARACTERS W/ TACTILE STAR & 2" HIGH CHARACTERS.
- DOOR HARDWARE (TO CENTER OF HARDWARE): STANDARD MOUNTING HEIGHTS: PUSH PLATES = 42"; PULL HANDLES = 42"; KNOBS/LEVERS = 40"; PANIC EXIT = 42"; CENTERLINE OF BAR, KICKPLATES: WIDTH = DOOR WIDTH MINUS 2"; CENTER HEIGHT = 18" FROM B.O. DOOR THRESHOLDS: STANDARD = 1/2" MAX. AT EXT. SLIDING DOORS = 3/4" MAX. ADA HARDWARE = 34" MIN. TO 48" MAX. DRINKING FOUNTAINS & SPOUTS (TO SPOUT): STANDARD = 40" TYP. 42" MAX. ADA = 38" MAX. (27" MIN. CLEAR KNEE SPACE).
- COUNTERTOPS (TO SINK RIM/COUNTERTOP): ADA = 28" MIN. TO 34" MAX.
- WATER CLOSETS (TO TOP OF SEAT): STANDARD = 14" TO 15" ADA (TO TOP OF SEAT) = 17" TO 19" ADA FLUSH CONTROLS = 44" MAX.
- URINALS (TO RIM): STANDARD = 24" MAX. ADA = 17" MAX. ADA FLUSH CONTROL S = 44" MAX.
- LAVATORIES (TO SINK RIM/COUNTERTOP): STANDARD = 38" MAX. ADA = 34" MAX. (29" MIN. CLEAR KNEE SPACE).
- MIRRORS (TO B.O. REFLECTIVE SURFACE): STANDARD VARIES. ADA = 40" MAX.
- GRAB BARS: ADA (TO TOP OF BAR): WATER CLOSETS = 33" MIN. TO 38" MAX. SHOWERS = 33" MIN. TO 38" MAX. FROM B.O. SHOWER, BATHTUBS: TOP BAR = 33" MIN. TO 38" MAX. BOT. BAR = 8" ABOVE T.O. TUB.
- SHOWER HEADS (FROM FLOOR TO HEAD): STANDARD = 72" TO 84" ADA = SPRAY UNIT W/ HOSE 60" LONG MIN. ADA = FIXED SHOWER HEAD = 48" AFF.
- SHOWER CONTROLS (TO CONTROL AREA): STANDARD = 48" MAX. (TO TOP), ADA = 38" MIN. TO 48" MAX.
- SHOWER ROD (FROM FLOOR TO C.L.): STANDARD = 78" MAX.
- TOILET ROOM PARTITIONS: TOILETS = 12" TO BOT. & 70" TO TOP. URINALS = 18" TO BOT. & 60" TO TOP.
- TOILET PAPER DISPENSERS (TO C.L. OF OUTLET): STANDARD = 24" ADA = 19" MIN. TO 24" MAX.
- WALL MOUNTED SOAP DISPENSERS (TO C.L. OF PUSH BUTTON): STANDARD = 40" ADA VARIES. RE-OBSTRUCTED AND UNOBSTRUCTED REACH RANGES: ADA SIDE REACH = 48" MAX. ABOVE SINK IN COUNTER.
- PAPER TOWEL DISPENSER/WASTE RECEPTACLE (TO TOWEL SLOT): STANDARD = 40" MAX. ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN.
- WARM AIR HAND DRYER (TO PUSH SWITCH): STANDARD = 44" MAX. ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN.
- SHELVES: ADA = 48" MAX.
- COAT HOOKS: STANDARD = 68" ADA = 48" MAX.
- CHALKBOARDS, TACKBOARDS & MARKERBOARDS: STANDARD = 32" TO 36" (TO B.O. BOARD OR CHALKTRAY). STANDARD = 80" (RECOMMENDED TO T.O. BOARD).
- THERMOSTATS & CONTROL DEVICES (TO TOP): ADA FORWARD REACH = 48" MAX. ADA SIDE REACH = 48" MAX. LIGHT SWITCHES & CARD READERS (TO C.L.): LOCATE 6" FROM DOOR JAMB. ADA = 48" MAX.
- CONVENIENCE RECEPTACLES - ELECTRICAL/TELEPHONE/ DATA (TO C.L.): STANDARD = 18" ADA = 15" MIN.
- EXIT LIGHTS - WALL MOUNTED: 2" MIN. BELOW CEILING, 2" MIN. ABOVE DOOR FRAME. EQUAL SPACE FROM CEILING TO TOP OF FRAME.
- FIRE EXTINGUISHERS (TO TOP, U.N.O.): GROSS WT. 40 LBS. OR LESS = 60" MAX. GROSS WT. MORE THAN 40 LBS. = 42" MAX. ADA = 40" MAX. (B.O. CABINET).
- FIRE ALARM PULL STATIONS (TO LEVER): STANDARD = 48" MAX. ADA FORWARD REACH = 48" MAX. ADA SIDE REACH = 48" MAX.
- SMOKE AND/OR HEAT DETECTORS: STANDARD = CEILING HEIGHT.
- HORN/ SPEAKER VISUAL SIGNALS: STANDARD = 80" AFF. OR IF BELOW CEILING - WHICHEVER IS LOWER.
- ROOM SIGNAGE (TO C.L.): STANDARD = 60" HIGH AFF. & WITHIN 18" OF LATCH SIDE OF DOOR.

**REECE NICHOLS TENANT IMPROVEMENTS**

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

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COLLINS WEBB  
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REVISION DATES:



06/01/22

PROFESSIONAL SEAL

**G002**  
ISSUE DATE: 1 JUNE, 2022  
COLLINS WEBB #: 22048

**ACCESSIBILITY GUIDELINES**

**PERMIT DOCUMENTS**



TWO HOUR FIRE BARRIER (2FH) (INCLUDES THE FOLLOWING)

- TWO HOUR SHAFT ENCLOSURE (2SE)

FOUR HOUR FIRE BARRIER (4FH)

THREE HOUR FIRE BARRIER (3FH)

TWO HOUR FIRE BARRIER (2FH) (INCLUDES THE FOLLOWING)

- TWO HOUR SHAFT ENCLOSURE (2SE)

ONE HOUR FIRE BARRIER (1FH) (INCLUDES THE FOLLOWING)

- ONE HOUR SHAFT ENCLOSURE (1SE)

SMOKE TIGHT PARTITION (X) (INCLUDES THE FOLLOWING)

- SMOKE TIGHT PARTITION TO SMOKE TIGHT CEILING (XC)
- SMOKE TIGHT PARTITION WITH FIRE OVERLAP ABOVE CEILING (XP)
- SMOKE TIGHT PARTITION SEPARATION OF INTERSTITIAL SPACES (XI)

DETAIL ABUTMENT OF DISSIMILAR WALL

LOWER PRIORITY WALL

HIGHER PRIORITY WALLS SHALL PASS THROUGH LOWER PRIORITY WALL

INTERSECTION OF RATED WALLS

TAPE & JOINT COMPOUND (TYP)

LOWER PRIORITY WALL

BOARD & SEAL HIGHER PRIORITY WALL BEHIND INTERSECTING LOWER PRIORITY WALL (TYP)

HIGHER PRIORITY WALL

TAPE & JOINT COMPOUND (TYP)

HIGHER PRIORITY WALL

**A**

TAPE & JOINT COMPOUND (TYP)

LOWER PRIORITY WALL

BOARD & SEAL HIGHER PRIORITY WALL BEHIND INTERSECTING LOWER PRIORITY WALL (TYP)

HIGHER PRIORITY WALL

TAPE & JOINT COMPOUND (TYP)

HIGHER PRIORITY WALL

**B**

TAPE & JOINT COMPOUND (TYP)

LOWER PRIORITY WALL

BOARD & SEAL HIGHER PRIORITY WALL BEHIND INTERSECTING LOWER PRIORITY WALL (TYP)

HIGHER PRIORITY WALL

TAPE & JOINT COMPOUND (TYP)

HIGHER PRIORITY WALL

**C**

TAPE & JOINT COMPOUND (TYP)

LOWER PRIORITY WALL

BOARD & SEAL HIGHER PRIORITY WALL BEHIND INTERSECTING LOWER PRIORITY WALL (TYP)

HIGHER PRIORITY WALL

TAPE & JOINT COMPOUND (TYP)

HIGHER PRIORITY WALL

**D**

TAPE & JOINT COMPOUND (TYP)

LOWER PRIORITY WALL

BOARD & SEAL HIGHER PRIORITY WALL BEHIND INTERSECTING LOWER PRIORITY WALL (TYP)

HIGHER PRIORITY WALL

TAPE & JOINT COMPOUND (TYP)

HIGHER PRIORITY WALL

**E**

NOTES

1. REFER TO WALL TYPES ON SHEET G121-TH FOR WALL COMPONENTS, NUMBER OF CYSPUM BOARD LAYERS, TYPE OF CYSPUM BOARD, AND OTHER SIMILAR INFO.
2. THE HIGHER PRIORITY WALL SHALL PASS THROUGH THE LOWER PRIORITY WALL.
3. TAPING AND SEALING OF HIGHER PRIORITY WALLS SHALL BE CONTINUOUS.
4. ALTERNATE LAYERS OF CYSPUM BOARD SHALL OVERLAP AT CORNER INTERSECTIONS OF MULTI-LAYERED RATED CYSPUM BOARD PARTITIONS.

NOTES:

1. REFER TO WALL TYPES ON SHEET G121-TI FOR WALL COMPONENTS, NUMBER OF GYPSUM BOARD LAYERS, TYPE OF GYPSUM BOARD, AND OTHER SIMILAR INFO.
2. THE HIGHER PRIORITY WALL SHALL PASS THROUGH THE LOWER PRIORITY WALL.
3. TAPING AND SEALING OF HIGHER PRIORITY WALLS SHALL BE CONTINUOUS.
4. ALTERNATE LAYERS OF GYPSUM BOARD SHALL OVERLAP AT CORNER INTERSECTIONS OF MULTI-LAYERED RATED GYPSUM BOARD PARTITIONS.

USE  
FIRE WALLS SERVE TO CREATE SEPARATE BUILDINGS FOR THE FOLLOWING REASONS.

- CONSTRUCTION TYPE VARIES FROM ONE BUILDING TO ANOTHER.
- COMPLIANCE WITH MAXIMUM ALLOWABLE AREA REQUIREMENTS.
- TO SEPARATE BUILDINGS WITH DIFFERENT LEVELS OF FIRE PROTECTION.
- TO ADDRESS A PROPERTY LINE DEFINING DIFFERENT OWNERSHIP.

- SPECIAL CONSIDERATIONS
  - THE FIRE WALL REQUIRES SUFFICIENT STRUCTURAL STABILITY UNDER FIRE CONDITIONS TO ALLOW THE COLLAPSE OF CONSTRUCTION ON EITHER SIDE WITHOUT COLLAPSE OF THE WALL.
  - OPENINGS ARE REQUIRED TO BE PROTECTED.
  - OPENINGS ARE LIMITED BASED ON A PERCENTAGE OF WALL LENGTH.
  - EXTENDING THE FIRE WALL THROUGH THE ROOF WITH A PARAPET IS REQUIRED FOR SOME CONSTRUCTION CLASSIFICATIONS.
  - THE REQUIRED FIRE RATING OF A FIRE WALL IS BASED ON OCCUPANCY GROUPS AND CLASS OF CONSTRUCTION.
  - HARDWARE FOR SWING DOORS SHALL INCLUDE A LATCH AND CLOSER.

**DEFINITION**  
A FIRE RATED WALL CONSTRUCTED TO RESTRICT THE SPREAD OF FIRE.  
CONTINUITY SHALL BE MAINTAINED FROM TOP OF FLOOR TO UNDERSIDE OF THE  
FLOOR OR ROOF DECK ABOVE.

**USE FIRE BARRIERS HAVE THE FOLLOWING APPLICATIONS.**

- TO CREATE HORIZONTAL EXITS.
- TO SEPARATE EXIT PASSAGEWAYS.
- OCCUPANCY SEPARATIONS.
- TO SEPARATE INCIDENTAL USE AREAS.
- ISOLATION OF HAZARDS.
- TO SEPARATE ROOMS WITH DIFFERENT LEVELS OF FIRE PROTECTION.
- SMOKE BARRIERS AND SHAFT ENCLOSURES ARE FIRE BARRIERS. SEE ADDITIONAL REQUIREMENTS.

**SPECIAL CONSIDERATIONS**

- WITHIN SOME CONSTRUCTION CLASSIFICATIONS, CONSTRUCTION THAT PROVIDES STRUCTURAL SUPPORT OF A FIRE BARRIER IS REQUIRED TO BE OF THE SAME HOURLY FIRE RATING AS THE FIRE BARRIER, OR BETTER.
- OPENINGS ARE REQUIRED TO BE PROTECTED.
- HARDWARE FOR SWING DOORS SHALL INCLUDE A LATCH AND CLOSER.

## **SHAFT ENCLOSURES (SE)**

**DEFINITION**  
A SHAFT ENCLOSURE IS A FIRE BARRIER FORMING THE BOUNDARY OF A VERTICAL SHAFT.

SPECIAL CONSIDERATIONS

- PENETRATIONS IN SHAFT ENCLOSURES ARE PROHIBITED UNLESS NECESSARY FOR THE FUNCTION OF THE SHAFT. WHERE ALLOWED, OPENINGS ARE REQUIRED TO BE PROTECTED.
- DUCT PENETRATIONS REQUIRE COMBINATION SMOKE AND FIRE DAMPERS EXCEPT FOR EXISTING CONDITIONS THAT ARE GRANDFATHERED.
- HARDWARE FOR SWING DOORS SHALL INCLUDE A LATCH, CLOSER, AND PERIMETER SMOKE SEALS.

HERE "FIRE-RATED SEALANT" IS INDICATED ON WALL  
PERS. PROVIDE FIRE-RATED SEALANT ABOVE TOP TRACK,  
UNDER BOTTOM TRACK, AT ALL PENETRATIONS (BOTH  
IDES), AND AS REQUIRED BY FIRE RATING UL NUMBER.  
EXTEND FIRE-RATED WALL CONSTRUCTION BEHIND  
ACCESS OR BUILT-IN EQUIPMENT; SUCH AS FIRE  
EXTINGUISHER CABINETS (FEC), ELECTRICAL WATER  
TIGHTENERS (EWC), ELECTRICAL PANELS, ETC., UNLESS  
NOTED OTHERWISE.

PROVIDE AND INSTALL ALL STIFFENERS, BRACING, BACK-  
PLATES AND SUPPORTING BRACKETS REQUIRED FOR  
THE INSTALLATION OF ALL CASEWORK AND OF ALL FLOOR  
MOUNTED OR SUSPENDED MECHANICAL, ELECTRICAL OR  
LABORATORY EQUIPMENT.

HERE HVAC OR OTHER MECHANICAL, ELECTRICAL AND

**DEFINITION**  
A FIRE RATED PARTITION THAT IS USED FOR THE APPLICATIONS LISTED BELOW. IT SHALL BE CONTINUOUS FROM TOP OF FLOOR TO UNDERSIDE OF A FIRE-RATED FLOOR/CEILING OR ROOF/CEILING ASSEMBLY. WHERE ALLOWED BY CODE EXCEPTION, A FIRE PARTITION SHALL BE ALLOWED TO TERMINATE AT THE UPPER MEMBRANE OF A FIRE RATED CEILING

USE  
FIRE PARTITIONS ARE USED IN CERTAIN OCCUPANCIES TO DO THE FOLLOWING.

- SEPARATE DWELLING UNITS
- SEPARATE SLEEPING SPACES
- SEPARATE CORRIDORS FROM ADJACENT SPACES
- SEPARATE ELEVATOR LOBBIES
- SEPARATE TENANT SPACES IN COVERED MALL BUILDINGS

SPECIAL CONSIDERATIONS

- OPENINGS ARE REQUIRED TO BE PROTECTED.
- HARDWARE FOR SWING DOORS SHALL INCLUDE A LATCH AND CLOSER.

**DEFINITION**  
AN INTERIOR OR EXTERIOR WALL DESIGNED TO SUPPORT FLOOR OR ROOF LOADS.  
A BEARING WALL IS FIRE-RATED ONLY TO MAINTAIN THE INTEGRITY OF ITSELF AS A  
FIRE RATED STRUCTURAL ELEMENT. THE WALL DOES NOT SERVE AS A FIRE  
SEPARATION FROM ONE SIDE TO THE OTHER SIDE.

USE  
A VERTICAL LOAD BEARING STRUCTURAL ELEMENT.

SPECIAL CONSIDERATIONS

- DOORS AND WINDOWS ARE NOT REQUIRED TO BE RATED.
- HVAC DUCT PENETRATIONS ARE NOT REQUIRED TO BE FIRE-DAMPED.
- PLUMBING, ELECTRICAL, SPRINKLER SYSTEM, AND CABLE PENETRATIONS ARE REQUIRED TO BE FIRE-STOPPED WITH FIRE SEALANT AT BOTH SIDES, FOR WALLS CONSTRUCTED OF HOLLOW CMU OR STUD FRAMING.

- AUTOMATIC SPRINKLER SYSTEM - PROVIDED THROUGHOUT (903.2.1)
- STANDPIPE SYSTEM - PROVIDED IN STAIRS THROUGHOUT (905)
- 1. ADDITIONAL CONNECTIONS PROVIDED AS SHOWN (905)
- ESCALATOR OPENING PROTECTED IN ACCORDANCE WITH IBC 712.1.3.1. DRAFT CURTAIN AND CLOSELY SPACED SPRINKLERS.

1. THE FOLLOWING INFORMATION SERVES TO PROVIDE BUILDING OWNERS WITH CONCISE DEFINITIONS OF WALL TYPES RELATIVE TO LIFE SAFETY ISSUES. THIS INFORMATION IS NOT MEANT TO BE A SUBSTITUTE FOR APPLICABLE BUILDING CODES.
2. WHEN A WALL HAS MORE THAN ONE CLASSIFICATION, THE MOST RESTRICTIVE REQUIREMENTS FOR EACH CLASSIFICATION SHALL APPLY.
3. FOR NEW CONSTRUCTION, PERIMETER SMOKE-SEALS MAY BE REQUIRED ON FIRE-RATED DOORS IN CERTAIN OCCUPANCIES.

PROJECT NAME: REECE NICHOLS TENANT IMPROVEMENTS  
PROJECT LOCATION: 230 SW MAIN ST., LEE'S SUMMIT, MO 64063  
COUNTY: JACKSON  
COLLINS WEBB ARCHITECTURE  
3078 SW MARKET STREET  
LEE'S SUMMIT, MISSOURI 64063  
APPLICABLE CODES:  
INTERNATIONAL BUILDING CODE - 2018 ED.  
INTERNATIONAL PLUMBING CODE - 2018 ED.  
INTERNATIONAL MECHANICAL CODE - 2018 ED.  
INTERNATIONAL FUEL GAS CODE - 2018 ED.  
NATIONAL ELECTRICAL CODE - 2017 ED.  
INTERNATIONAL FIRE CODE - 2018 ED.  
ADA STANDARDS FOR ACCESSIBLE DESIGN - 2010 ED.  
ICC/ANSI A117.1: ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES - 2009 ED.

BUILDING/PROJECT USE: CONSTRUCTION TYPE OCCUPANCY CLASSIFICATION	OFFICE TYPE VB (NON-SPRINKLED) GROUP "B"	SECTION 309 TABLE 601 SECTION 309
BASE ALLOWABLE AREA (B)	9,000 SQ. FT.	TABLE 506.2
FIRST LEVEL	2,440 SQ. FT.	
SECOND LEVEL	5,720 SQ. FT.	
ALLOWABLE STORIES ACTUAL NUMBER OF STORIES	2 STORIES 2 STORIES - EXISTING	TABLE 504.4
ALLOWABLE HEIGHT ACTUAL HEIGHT IN FEET	40'-0" - 29'-10" - EXISTING	TABLE 504.3

PRIMARY FRAME	0 HRS	TABLE 601
NON-BEARING WALLS	0 HRS	TABLE 601
BEARING WALLS INT. / EXT.	0 INT. / 2 EXT. HRS	TABLE 601
FLOOR CONSTRUCTION (SEPARATING OCCUPANCIES)	0 HRS	TABLE 601
CEILING/ROOF	0 HRS	TABLE 601
CORRIDORS	0 HRS	TABLE 1018.1
SEPARATION BETWEEN 1ST FLOOR "A-2" (FUTURE) AND 2ND FLOOR "B"	2 HRS	

1. PROVIDE PORTABLE FIRE EXTINGUISHERS IN OCCUPANCIES AND LOCATIONS AS REQUIRED BY THE LOCAL GOVERNING FIRE PREVENTION CODE. SEE PLANS FOR SUGGESTED LOCATIONS. NOTIFY ARCHITECT OF ANY PROPOSED RELOCATION OR IF A CONFLICT IS ENCOUNTERED.
2. PORTABLE FIRE EXTINGUISHERS SHALL BE INSTALLED, INSPECTED, AND MAINTAINED IN ACCORDANCE WITH NFPA 10, STANDARD FOR PORTABLE FIRE EXTINGUISHERS.

1. ALL MEANS OF EGRESS TO HAVE A MINIMUM CEILING HEIGHT OF 7'-6" A.F.F., NOR SHALL HAVE ANY PROJECTION FROM THE CEILING BE LESS THAN 6'-8" A.F.F.

2. OCCUPIED SPACES, HABITABLE SPACES AND CORRIDORS SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 7'-6" A.F.F.

3. BATHROOMS, TOILET ROOMS, KITCHENS, STORAGE ROOMS AND LAUNDRY ROOMS SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 7'-0" A.F.F.

GROUP A	MAX. FLAME SPREAD	
EXIT ENCLOSURES	CLASS A (0-25)	803.13
LOBBIES & CORRIDORS	CLASS B (26-75)	803.13
ALL OTHER SPACES	CLASS C (76-200)	803.13
TEXTILES	CLASS A (0-25)	805
SMOKE DEVELOPED	0-450	TABLE/SECTION/REFERENCE

**NOTE:**  
Decorative Materials and Trim (including plastics) must comply with IBC Section 806.

EXIT TRAVEL DISTANCE	200 FEET	TABLE 1017.2
DEAD END CORRIDOR	20 FEET	SECTION 1020.4
COMMON PATH OF TRAVEL	75' FEET, OR 100' IF OCC. < 50	SECTION 1006.2.1
MIN. CORRIDOR WIDTH	44", OR 36" IF OCC. < 50	SECTION 1020.2

EVERY ROOM OR SPACE THAT IS AN ASSEMBLY OCCUPANCY SHALL HAVE THE OCCUPANT LOAD OF THE ROOM OR SPACE POSTED IN A CONSPICUOUS PLACE, NEAR THE MAIN EXIT OR EXIT ACCESS DOORWAY FROM THE ROOM OR SPACE. POSTED SIGNS SHALL BE OF AN APPROVED LEGIBLE PERMANENT DESIGN AND SHALL BE MAINTAINED BY THE OWNER OR AUTHORIZED AGENT.

A. REQUIRED CAPACITY	
1. STAIRS - 0.3" / PERSON	1005.1
2. OTHER COMPONENTS - 0.2" / PERSON	1005.1
B. MINIMUM NUMBER	

1. PROVIDE SIGNAGE "IN FIRE EMERGENCY DO NOT USE ELEVATOR, USE EXIT STAIRS" IN ACCORDANCE WITH IBC (3002.3)

OCCUPANT LOAD : FIRST LEVEL	
-----------------------------	--

EXITS PROVIDED THIS LEVEL: B	2 EXITS	
OCCUPANT LOAD : SECOND LEVEL		

**TOTAL OCCUPANT LOAD FOR BUILDING (BUSINESS ONLY): 42 OCCUPANTS**

B OCC WATER CLOSETS	= 1/25 PER FIRST 50, 1/50 FOR 50+ BOTH MALE/ FEMALE
B OCC LAVATORIES	= 1/40 FOR FIRST 80, 1/80 FOR 80+ BOTH MALE/FEMALE
B OCC DRINKING FOUNTAIN	= 1/100
B OCC SERVICE SINK	= 1

<u>PROVIDED:</u> <u>LEVEL</u>	<u>WATER CLOSETS</u>	<u>LAVATORIES</u>	<u>DRINKING FOUNTAINS</u>	<u>SERVICE SINKS</u>
1ST FLOOR	M 8/25 = .32 F 8/25 = .32 1	M 8/40 = .2 F 8/40 = .2 1	15/100 = .15  1	1 REQ  1
2ND FLOOR	M 14/25 = .56 F 14/25 = .56 2	M 14/40 = .35 F 14/40 = .35 1	27/100 = .27  1	1 REQ  1
<u>PROVIDED:</u> <u>LEVEL</u>	<u>WATER CLOSETS</u>	<u>LAVATORIES</u>	<u>DRINKING FOUNTAINS</u>	<u>SERVICE SINKS</u>
1ST FLOOR	2	2	1 BOTTLE FILLER	1
2ND FLOOR	4	2	BOTTLED WATER PROVIDED	

14  
32" x 32"  
EGRESS DOWN  
SET OF EXISTING  
WOODEN STAIRS

EX FE-1

DN

UP

<u>2F</u> W	<u>2F</u> W	<u>2F</u> W	<u>2F</u> W	2 HOUR FIRE WALL
<b>FIRE BARRIERS</b>				
<u>2F</u> B	<u>2F</u> B	<u>2F</u> B	<u>2F</u> B	2 HOUR FIRE BARRIER
<u>1F</u> B	<u>1F</u> B	<u>1F</u> B	<u>1F</u> B	1 HOUR FIRE BARRIER
<b>SHAFT ENCLOSURES</b>				
<u>2S</u>	<u>2S</u>	<u>2S</u>	<u>2S</u>	2 HOUR SHAFT ENCLOSURE
<u>1S</u>	<u>1S</u>	<u>1S</u>	<u>1S</u>	1 HOUR SHAFT ENCLOSURE
<b>FIRE PARTITIONS</b>				
<u>0.5F</u> P	<u>0.5F</u> P	<u>0.5F</u> P	<u>0.5F</u> P	1 HOUR FIRE PARTITION
<u>0.5X</u>	<u>0.5X</u>	<u>0.5X</u>	<u>0.5X</u>	0.5 HOUR FIRE PARTITION
<u>0.5X</u>	<u>0.5X</u>	<u>0.5X</u>	<u>0.5X</u>	0.5 HOUR CORRIDOR PARTITION

**BEARING WALLS**

<u>2BW</u>	<u>2BW</u>	<u>2BW</u>	<u>2BW</u>	2 HOUR BEARING WALL
<u>1BW</u>	<u>1BW</u>	<u>1BW</u>	<u>1BW</u>	1 HOUR BEARING WALL

Diagram illustrating the calculation of the minimum width of means of egress component (N). The diagram shows two exit widths: a rectangular exit width of 200 inches and a circular exit width of 200 inches. The rectangular exit width is divided into 40 inches and 60 inches. The circular exit width is divided into 40 inches, 32 inches, and 68 inches. The minimum width of means of egress component (N) is indicated as 68 inches.

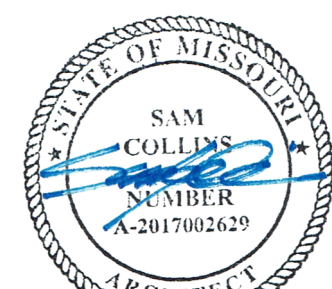
	FROM ROOM OR LEVEL X = CLEAR WIDTH OF OPENING IN CHICES
	FIRE RISER CABINET
	FIRE ALARM CONTROL PANEL
	<b>FIRE DEPARTMENT CONNECTION</b>
	KNOX BOX
	AREA OF RESCUE ASSISTANCE
	ACCESSIBLE EGRESS COMPONENT

# REECE NICHOLS TENANT IMPROVEMENTS

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

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### REVISION DATES



PROFESSIONAL SEAL

# G003

ISSUE DATE: 1 JUNE, 2021  
COLLINS WEBB #: 2204

## CODE INFORMATION AND LIFE SAFETY PLANS

SPECIFICATIONS - PRODUCT & INSTALLATION GENERAL REQUIREMENTS

GENERAL REQUIREMENTS APPLICABLE TO ALL MATERIALS FOR THE PROJECT.

1. NO SUBSTITUTIONS OF MATERIALS WITHOUT COMPLETION OF A SUBSTITUTION REQUEST FORM & APPROVAL OF SUBSTITUTION BY PROJECT MANAGER. FORM CAN BE REQUESTED FROM ARCHITECT.
2. A CONDENSED SET OF SPECIFICATIONS ARE PROVIDED FOR THE PROJECT. STRICT ADHERANCE TO MANUFACTURER REQUIREMENTS AND INSTALLATION ARE REQUIRED TO BE FOLLOWED WITH SECTIONS PROVIDED WITHIN. IF REQUIRED THE ARCHITECT WILL ISSUE ADDITIONAL SECTIONS TO PROVIDE CLARITY TO PRODUCTS OR INSTALLATION REQUIREMENTS.

DIVISION 1 - GENERAL REQUIREMENTS

1. SEE ADMINISTRATION SPECIFICATION FOR GENERAL REQUIREMENTS RELATED TO ADMINISTRATION OF THIS CONTRACT.

A. CONTRACTOR LICENSES

1. THE CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN THE PROJECT SHALL BE REQUIRED TO OBTAIN AND PAY FOR ALL NECESSARY LICENSES AS REQUIRED BY ANY LAW OR AGENCIES HAVING JURISDICTION (AHJ) OVER THE PROJECT.

B. BUILDING PERMITS

1. THE GENERAL CONTRACTOR WILL PAY FOR ALL PERMITS REQUIRED BY ANY AGENCY HAVING JURISDICTION (AHJ) OVER THE PROJECT FOR ALL WORK TO BE PERFORMED BY THE GENERAL CONTRACTOR.

C. UTILITY FEES

1. THE CONTRACTOR SHALL PAY THE NECESSARY FEES TO CONNECT TO EXISTING UTILITIES AT THE PROPERTY LINE OR IN ADJACENT STREETS AND RIGHT OF WAY AS SPECIFIED, NECESSARY AND/OR INCLUDED IN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PAY ALL UTILITY COSTS (BILLS) DURING CONSTRUCTION UNTIL OWNER TAKES POSSESSION OF THE FACILITY OR THE FACILITY IS CERTIFIED AS SUBSTANTIALLY COMPLETE.

D. PROTECTION OF EXISTING WORK

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT FINISHED SURFACES. PROTECTION FOR FINISHES SUCH AS DOORS, WALLS AND FLOORS SHOULD BE PROVIDED AS REQUIRED. ANY DAMAGES TO THESE AREAS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR OR REPLACE.

E. GENERAL CONDITIONS

1. ANY DISCREPANCY OR CONFLICT WITHIN OR BETWEEN DRAWINGS AND ANY DISCREPANCY OR CONFLICT BETWEEN ANY DRAWING AND ANY SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. NOTWITHSTANDING, DISCREPANCIES OR CONFLICTS NOT BROUGHT TO THE ARCHITECTS AND OWNERS ATTENTION AND CLARIFIED DURING THE BIDDING OF THE PROJECT WILL BE DEEMED TO HAVE BEEN OR PROPOSED IN THE MORE COSTLY OR DIFFICULT QUALITY OR GREATER QUANTITY OF THE WORK SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH ARCHITECT'S INTERPRETATION.
2. THE GENERAL CONTRACTOR SHALL KEEP A COMPLETE PROTOTYPE SET OF DOCUMENTS ON THE PROJECT SITE AT ALL TIMES FOR REFERENCE DURING CONSTRUCTION.
3. THE GENERAL CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING THE CONTRACTOR'S BEST SKILLS AND ATTENTION. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER, CONSTRUCTION MEANS AND METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
4. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER ALL JOB SITE SAFETY PROCEDURES AND POLICES. THE GENERAL CONTRACTOR SHALL HAVE A SAFETY COORDINATOR AND BE RESPONSIBLE TO HOLD REGULARLY SCHEDULED SAFETY TRAINING WITH ALL JOB SITE PERSONNEL, INCLUDING ALL SUB CONTRACTOR PERSONNEL.
5. NEITHER THE ARCHITECTS OR THE OWNERS INSPECTION NOR FAILURE TO INSPECT SHALL RELIEVE THE CONTRACTOR OF ANY OBLIGATION HEREUNDER. IF ANY WORK FAILS TO CONFORM TO THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY REMEDY AND/OR REPLACE THE SAME AT THE CONTRACTOR'S EXPENSE AND ACCEPTANCE OR PAYMENT BY THE OWNER OR ARCHITECT SHALL CONSTITUTE A WAIVER OF THE FOREGOING AND NOTHING HEREIN SHALL EXCLUDE OR LIMIT ANY WARRANTIES IMPLIED BY LAW.
6. THE GENERAL CONTRACTOR SHALL SO CONDUCT ITS OPERATIONS AS NOT TO UNREASONABLY INTERFERE WITH TRAFFIC ON PUBLIC THOROUGHFARES ADJACENT OR NEAR TO THE PROJECT SITE.
7. DO NOT SCALE DRAWINGS.

F. PROJECT REQUIREMENTS

1. THE GENERAL CONTRACTOR REPRESENTS THAT IT POSSESSES THE SKILLS REQUIRED FOR THE WORK, ASSUMES THE RESPONSIBILITIES OF AN EMPLOYER FOR PERFORMANCE OF THE WORK, AND ACTS AS AN EMPLOYER OF ONE OR MORE EMPLOYEES BY PAYING WAGES, DIRECTING ACTIVITIES AND PERFORMING OTHER SIMILAR FUNCTIONS. THE GENERAL CONTRACTOR IS AN INDEPENDENT CONTRACTOR, FREE TO DETERMINE THE MANNER IN WHICH THE WORK IS PERFORMED.
2. THE GENERAL CONTRACTOR SHALL PROVIDE, AND MAINTAIN IN GOOD WORKING ORDER, THE FOLLOWING ITEMS FOR USE BY THE PROJECT SUPERINTENDENT DAILY DURING THE ENTIRE DURATION OF THE PROJECT:
- A. LAPTOP WITH INTERNET ACCESS
  - B. DIGITAL CAMERA WITH DATE STAMP CAPABILITY AND WITH PROPER CABLES TO ATTACH TO LAPTOP.
  - C. EMAIL ACCESS THROUGH THE LAPTOP.
  - D. A PRINTER/SCANNER/MF MACHINE WITH PROPER CABLES TO ATTACH TO LAPTOP.
  - E. CELL PHONE.
3. THE GENERAL CONTRACTOR SHALL HAVE A CONSTRUCTION SUPERINTENDENT ASSIGNED TO THIS PROJECT, AND THIS SUPERINTENDENT SHALL HAVE THE AUTHORITY TO SIGN OFF ON ALL WORK. THE SUPERINTENDENT SHALL BE REACHABLE BY PHONE DURING NORMAL BUSINESS HOURS, ONCE ASSIGNED, THE SUPERINTENDENT SHALL NOT BE REMOVED OR REPLACED WITHOUT WRITTEN APPROVAL FROM OWNER & ARCHITECT, UNLESS SPECIFICALLY REQUESTED TO DO SO BY ARCHITECT.
4. THE SUPERINTENDENT WILL BE REQUIRED TO PROVIDE PHOTOGRAPHS (VIA EMAIL USING A DIGITAL CAMERA) TO THE OWNER & ARCHITECT EACH FRIDAY BY NOON CST, SHOWING THE PROGRESS OF CONSTRUCTION. THE GENERAL CONTRACTOR IS REQUESTED TO TAKE PHOTOS DURING CONSTRUCTION TO MAINTAIN AN ACCURATE RECORD OF CONSTRUCTION PROGRESS, RECORD UNCOVERED CONDITIONS, RECORD CONDITION AND AMOUNTS OF VENDOR GOODS UPON RECEIPT, AND RECORD CONSTRUCTION THAT VARIES FROM THE CDS (AS PART OF THE AS-BUILTS). ALL PHOTOS WILL HAVE A DATE STAMP.

G. INSPECTIONS/OBSERVATIONS

1. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OVERSEE CONSTRUCTION OF THE PROJECT, CONTINUALLY INSPECTING THE WORK, MATERIALS, AND WORKMANSHIP PROVIDED BY ALL OF HIS TRADESMEN, SUBCONTRACTORS, SUPPLIERS, ETC. EXCELLENCE IN QUALITY OF CONSTRUCTION CAN ONLY BE ACHIEVED IF THE CONTRACTOR EMPHOSIS HIGH STANDARDS OF ACCEPTABILITY. THE GENERAL CONTRACTOR CANNOT DELEGATE HIS RESPONSIBILITY TO THE SUBCONTRACTORS, BUT MUST CONTINUALLY MONITOR THE WORK OF EACH TRADE OR PROJECT.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REQUEST AND SCHEDULE ALL AGENCIES HAVING JURISDICTION (AHJ) INSPECTIONS NECESSARY TO OBTAIN THE CERTIFICATE OF OCCUPANCY (CERTIFICATE OF COMPLIANCE), PRIOR TO THE DATE OF THE AGENCY INSPECTION. THE GENERAL CONTRACTOR SHOULD INSPECT THE PROJECT TO INSURE THAT CONSTRUCTION MEETS WITH ALL REQUIREMENTS, SCHEDULING FINAL INSPECTIONS WITH AGENCY REPRESENTATIVES WHEN THE PROJECT IS NOT COMPLETE MUST BE AVOIDED. COPIES OF FINAL INSPECTIONS MUST BE PROVIDED TO OWNER & ARCHITECT AS THEY ARE AVAILABLE.
3. PRIOR TO REQUESTING THE AGENCY INSPECTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT HIS OWN PRE-SUBSTANTIAL COMPLETION INSPECTION OF THE CONSTRUCTION FOR QUALITY OF CONSTRUCTION AND COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS.
4. THE FOLLOWING PEOPLE SHOULD BE IN ATTENDANCE FOR THE SUBSTANTIAL COMPLETION INSPECTION:
- A. GENERAL CONTRACTOR
  - B. GENERAL CONTRACTOR SUPERINTENDENT
  - C. MECHANICAL CONTRACTOR
  - D. ELECTRICAL CONTRACTOR
  - E. PLUMBING CONTRACTOR
  - F. PAINTING CONTRACTOR
  - G. FLOORING CONTRACTOR
5. ITEMS TO BE SUBMITTED AS A PRE-REQUISITE TO THE REQUEST FOR THE CERTIFICATE OF SUBSTANTIAL COMPLETION AND OWNER ARCHITECTS MUST BE COMPLETED AND CORRECTED.
- A. GENERAL CONTRACTOR'S PUNCH LISTS
  - B. HVAC TEST AND BALANCE REPORT
  - C. SPRINKLER SYSTEM TEST AND BALANCE INSPECTION REPORT
  - D. COPY OF VIDEO OF COMPLETED SEWER SYSTEM
6. THE REVIEW TEAM SHOULD PROCEED IN AN ORGANIZED MANNER THROUGHOUT THE BUILDING INSPECTING EACH SPACE OR ROOM. THE PUNCH LIST GENERATED BY THE SUBSTANTIAL COMPLETION TOUR IS TO BE PREPARED BY THE GENERAL CONTRACTOR, ALONG WITH THE PUNCH LIST, THE ARCHITECT SHALL PREPARE THE CERTIFICATE OF SUBSTANTIAL COMPLETION.
7. IMMEDIATELY AFTER RECEIPT OF THE PUNCH LIST, THE GENERAL CONTRACTOR AND SUBCONTRACTORS ARE EXPECTED TO BEGIN CORRECTION OF THE OUTSTANDING ITEMS AFTER COMPLETION OF PUNCHLIST. THE CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IN WRITING THAT FULL LIST OF ITEMS TO BE COMPLETED AND OR CORRECT IS FINALIZED.

H. RECORD CLOSE-OUT DOCUMENTS

1. THE OWNER REQUESTS THE GENERAL CONTRACTOR AND SUBCONTRACTORS TO MAINTAIN AN ACCURATE, CURRENT SET OF RECORD DOCUMENTS (AS-BUILTS) AS CONSTRUCTION PROGRESSES, ALL PERTINENT INFORMATION RELATING TO THE PROJECT MUST BE TIMELY MAINTAINED ON THE AS-BUILTS. THE AS-BUILTS MUST BE MAINTAINED ONSITE IN THE GENERAL CONTRACTOR'S OFFICE AND WILL NOT BE USED FOR ANY OTHER PURPOSE, SINCE THE OWNER WILL OWN AND OPERATE THE FACILITY, IT IS IMPERATIVE THAT ALL PARTIES MAINTAIN ACCURATE INFORMATION REGARDING THE ACTUAL CONSTRUCTION OF THE PROJECT.
2. ALL DEVIATIONS FROM THE CONTRACT SET OF DRAWINGS MUST BE NOTED ON THE AS-BUILTS IN RED WITH CLOUDS FOR CLEAR IDENTIFICATION. THE OWNER WILL REVIEW THE AS-BUILTS FOR ACCURACY AND COMPLETENESS MONTHLY, DURING THE PAYMENT APPLICATION REVIEW PROCESS. FAILURE TO POST CHANGES TO THE PROJECT ON THE AS-BUILTS AS IDENTIFIED DURING THE ON-SITE MONTHLY REVIEW WILL BE CAUSE TO SUSPEND PAYMENT UNTIL RECTIFIED. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ENFORCE THE TIMELY POSTING OF AS-BUILT CHANGES WITH THE SUBCONTRACTORS.

I. FINAL CLOSE-OUT OF THE PROJECT

1. WITHIN THIRTY (30) CALENDAR DAYS AFTER THE FINAL PROJECT SUBSTANTIAL COMPLETION, THE GENERAL CONTRACTOR SHALL COMPLY WITH ALL CLOSE-OUT DOCUMENTS AND SUBMIT TO THE OWNER FOR REVIEW. IF THE CONTRACTOR FAILS TO COMPLETE ITS REQUIREMENTS WITHIN THIS TIMELINE ABOVE, THE CONTRACTOR MAY BE SUBJECT TO ADDITIONAL ADMINISTRATION FEES.

J. CLOSE-OUT DOCUMENTS

1. THE CATEGORIES LISTED BELOW SHOULD BE SUBMITTED AT THE SAME TIME.
- A. A DISK WITH ALL PHOTOS TAKEN DURING CONSTRUCTION
  - B. CHANGE ORDERS AND ALL ADDENDA ATTACHED AND POSTED TO THE AS-BUILT DRAWINGS
  - C. AS-BUILT DRAWINGS: ONE HARD COPY TO REMAIN ON SITE AND IN PLANT TUBE; ONE ELECTRONIC COPY TO BE SENT WITH CLOSE-OUT PAPERWORK
  - D. MATERIALS SELECTION DATA - PROVIDE ALL APPROVED SUBMITTALS
  - E. OPERATION AND MAINTENANCE MANUALS (OMM) - PROVIDE OMM MANUALS BOXED AND BOUND. THIS ITEM IS OF SIGNIFICANT IMPORTANCE TO MAINTURE MAINTENANCE ACTIVITIES
  - F. ALL HVAC TEST AND BALANCE REPORTS
  - G. RELEASE OF LIEN (AIA FORM 706), PAYMENT OF DEBT (AIA FORM 706)
  - H. ALL INFORMATION OF LIEN IN THIS CATEGORY WILL BE FURNISHED IN ONE (1) COPY AND BOUND IN A STURDY THREE-RING BINDER WITH A LABEL ON THE OUTSIDE READING "GENERAL CLOSE-OUT DOCUMENTS" TO INCLUDE AN INDEX OF THE CONTENTS. ALL AS-BUILT DOCUMENTS WILL BE ORIGINAL (WITH RED LETTERING ON THE BOTTOM OF THE FORM) AND NOTARIZED. IF THE ELECTRONIC VERSION IS USED A COPY WITH ORIGINAL SIGNATURES WILL BE SUBMITTED. THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR WILL HAVE SEPARATE TABS IDENTIFYING EACH BY NAME. THE GENERAL CONTRACTOR WILL LIST EACH SUBCONTRACTOR ALPHABETICALLY AND WILL CHECK TO INSURE THAT A "RELEASE OF LIEN" - AIA FORM 706A AND A "PAYMENT OF DEBT-AIA FORM 706B IS INCLUDED FOR EACH AND EVERY SUBCONTRACTOR. THE GENERAL CONTRACTOR WILL INCLUDE A "CONSENT OF SURETY" - AIA FORM 707, IN ADDITION. THE GENERAL CONTRACTOR WILL INCLUDE THE FOLLOWING INFORMATION:
    - A. A LIST OF NAMES, BUSINESS ADDRESSES, PHONE NUMBERS AND EMAIL ADDRESSES FOR THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR
    - B. AN ANNOTATED COPY OF THE SUBSTANTIAL COMPLETION PUNCH LIST INDICATING ACTION TAKEN ON EACH ITEM
    - C. WARRANTIES, CERTIFICATES AND AFFIDAVITS SHALL BE INCLUDED FOR ANY EQUIPMENT, MATERIALS OR SYSTEMS COMBINED WITH ALL OF THE ABOVE INFORMATION AND PLACED BEHIND THE TAB OF THE CONTRACTOR THAT ISSUED IT.

DIVISION 4 - MASONRY

04 0500 - MASONRY RESTORATION & TUCKPOINTING

A. REFERENCES

1. AMERICAN CONCRETE INSTITUTE (ACI).
2. ACI 503.1-02 - SPECIFICATION FOR MASONRY FOR MASONRY STRUCTURES.
3. ASTM INTERNATIONAL (ASTM).
4. ASTM C 144 - STANDARD SPECIFICATION FOR AGGREGATE FOR MASONRY MORTAR.
5. ASTM C 150 - STANDARD SPECIFICATION FOR PORTLAND CEMENT.
6. ASTM C 207 - STANDARD SPECIFICATION FOR HYDRATED LIME FOR MASONRY PURPOSES.
7. ASTM C 286 - STANDARD SPECIFICATION FOR AIR-ENTRANING ADMIXTURES FOR CONCRETE.
8. ASTM C 270 - STANDARD SPECIFICATION FOR PRE-BLENDED DRY MORTAR MIX FOR MASONRY.
9. ASTM C 595 - STANDARD SPECIFICATION FOR BLENDED HYDRAULIC CEMENTS.
10. ASTM C 780 - STANDARD TEST METHOD FOR PRE-CONSTRUCTION AND CONSTRUCTION EVALUATION OF MORTARS FOR PLAIN AND REINFORCED CONCRETE.
11. ASTM C 879 - STANDARD SPECIFICATION FOR PIGMENTS FOR INTEGRALLY COLORED CONCRETE.
12. ASTM C 1093 - STANDARD PRACTICE FOR ACCREDITATION OF TESTING AGENCIES FOR UNIT MASONRY.
13. ASTM C 1157 - STANDARD PERFORMANCE SPECIFICATION FOR HYDRAULIC CEMENT.
14. ASTM C 1314 - STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF MASONRY PRISMS.
15. ASTM C 1598 - STANDARD GUIDE FOR QUALITY ASSURANCE OF MORTARS.
16. ASTM C 1714 - STANDARD SPECIFICATION FOR PRE-BLENDED DRY MORTAR MIX FOR UNIT MASONRY.
17. ASTM C 329 - SPECIFICATION FOR MINIMUM REQUIREMENTS FOR AGGREGATES ENGAGED IN THE TESTING AND INSPECTION OF MATERIALS USED IN CONSTRUCTION.
18. ATTACHMENT TO BUILDING CONSTRUCTION.
19. INTERNATIONAL MASONRY INDUSTRY ALL-WEATHER COUNCIL (IMAC).
20. IMAC - INTERNATIONAL MASONRY INDUSTRY ALL-WEATHER COUNCIL (IMAC); RECOMMENDED PRACTICES AND GUIDE SPECIFICATIONS FOR COLD WEATHER MASONRY CONSTRUCTION.
21. IMAC - INTERNATIONAL MASONRY INDUSTRY ALL-WEATHER COUNCIL (IMAC); RECOMMENDED PRACTICES AND GUIDE SPECIFICATIONS FOR HOT WEATHER MASONRY CONSTRUCTION.
22. THE BRICK INDUSTRY ASSOCIATION (BIA).
23. BIA TECHNICAL NOTE 20 - CLEANING BRICK.

B. SUBMITTALS

1. PRODUCT DATA: SUBMIT MANUFACTURER'S PRODUCT DATA.
2. QUALITY ASSURANCE/CONTROL, SUBMITTALS
- A. SUBMIT MANUFACTURER'S CERTIFICATE OF CONFORMANCE.
  - B. SUBMIT TEST RESULTS PREPARED BY A QUALIFIED INDEPENDENT TESTING LABORATORY.
3. QUALITY ASSURANCE
4. MATERIAL SURFACES: GENERAL: PROVIDE MATERIALS WITH SMOOTH SURFACES, WITHOUT SEAM MARKS, ROLLER MARKS, ROLLED TRADE NAMES, STAINS, DISCOLORATIONS, OR BLEMISHES.
5. BRACKETS, FLANGES, AND ANCHORS: CAST OR FORMED METAL OF SAME TYPE OF MATERIAL AND FINISH AS SUPPORTED SURFACES UNLESS OTHERWISE INDICATED.
6. PIPE: ASTM A 53A 53M, TYPE F OR TYPE S, GRADE A, STANDARD WEIGHT (SCHEDULE 40), UNLESS ANOTHER GRADE AND WEIGHT ARE REQUIRED BY STRUCTURAL LOADS.
7. PRE-INSTALLATION MEETING: AT LEAST ONE WEEKS PRIOR TO COMMENCING MASONRY WORK, CONDUCT A MEETING AT THE PROJECT SITE TO DISCUSS CONTRACT REQUIREMENTS AND JOB CONDITIONS, REQUIRE THE ATTENDANCE OF MASONRY CONTRACTOR, AND ALL OTHERS OF RELATED MATERIALS, NOTIFY ARCHITECT IN ADVANCE OF MEETING REVIEW DETAILING AND SEQUENCE OF WORK TO BE PERFORMED.
8. STORAGE AND PROTECTION: CEMENTITIOUS MATERIALS SHALL BE MANUFACTURED AND STORED OFF THE GROUND, UNDER COVER AND SHALL BE KEPT DRY IN ACCORDANCE WITH ASTM C174.

D. PROJECT CONDITIONS

1. MAINTAIN ENVIRONMENTAL CONDITIONS AND PROTECT WORK DURING AND AFTER INSTALLATION TO COMPLY WITH REFERENCED STANDARDS AND MANUFACTURER'S PRINTED RECOMMENDATIONS.
2. DO NOT BUILD OR APPLY MORTAR PRODUCTS ON FROZEN SUBSTRATES.
3. REMOVE AND REPLACE MORTAR DAMAGED BY FROST OR BY FREEZING CONDITIONS.
3. TEMPORARY HEATERS TO EXTERIOR TO PREVENT DAMAGE TO MASONRY WORK FROM CARBON DIOXIDE BUILD-UP.

E. PRODUCTS

1. FOR NON-GALVANIZED STEEL RAILINGS, PROVIDE NON-GALVANIZED FERROUS METAL FITTINGS, BRACKETS, FASTENERS, AND SLEEVES; HOWEVER, GALVANIZE ANCHORS TO BE EMBEDDED IN UNREINFORCED CONCRETE OR MASONRY.
2. PREPARATION FOR SHOP PRIMING: PREPARE UNCOATED FERROUS METAL SURFACES TO COMPLY WITH SSPC-SP 3 "POWER TOOL CLEANING."
3. PRIMER APPLICATION: APPLY SHOP PRIMER TO PREPARED SURFACES OF RAILINGS UNLESS OTHERWISE INDICATED. COMPLY WITH REQUIREMENTS IN SSPC-PA 1 "SHOP AND MAINTENANCE PAINTING OF STEEL" FOR SHOP PAINTING. PRIMER NEED NOT BE APPLIED TO SURFACES TO BE EMBEDDED IN CONCRETE OR MASONRY.
4. TUCKPOINT MORTAR, SPEC MIX TUCKPOINT MORTAR, APPLICABLE STANDARDS: ASTM C 144, ASTM C 150, ASTM C 207, ASTM C 270 FOR TUCKPOINT MORTAR, ASTM C 595, ASTM C 780, ASTM C 1093, ASTM C 1157, ASTM C 1314, ASTM C 1598, ASTM C 1714, ACI 503.1, IMAC.

F. EXECUTION

1. EXAMINE SURFACES TO RECEIVE MASONRY WORK AND CONDITIONS UNDER WHICH MASONRY WILL BE INSTALLED. DO NOT PROCEED WITH MASONRY WORK UNTIL SURFACES AND CONDITIONS COMPLY WITH REQUIREMENTS INDICATED IN REFERENCED MASONRY INSTALLATION STANDARD AND MANUFACTURER'S PRINTED INSTRUCTIONS.

1. REMOVAL OF EXISTING MORTAR
- A. REMOVAL OF EXISTING MORTAR: CUT OUT EXISTING MORTAR JOINTS (BOTH BED AND HEAD JOINTS) AND REMOVE BY MEANS OF A TOOTHING CHISEL OR A SPECIAL POINTERS GRINDER, TO A REMAIN DEPTH OF TO 3/4-INCH (19 MM), OR 1/2-INCH (13 MM) DEEPER FOR MORTAR JOINTS TO BE REPAIRED.
2. TAKE CARE TO NOT DAMAGE EDGES OF EXISTING MASONRY UNITS TO UNIFORM.
3. REMOVE DUST AND DEBRIS FROM THE JOINTS BY BRUSHING, BLOWING WITH AIR OR RINSING WITH WATER, DO NOT RINSE WHEN TEMPERATURE IS BELOW FREEZING.
2. REPLACEMENT OF MASONRY UNITS
- A. REMOVE DAMAGED, SPALLED, LOOSE OR DETERIORATED MASONRY UNITS, CAREFULLY REMOVE ENTIRE UNITS FROM JOINT TO JOINT, WITHOUT DAMAGING SURROUNDING MASONRY, IN A MANNER THAT PERMITS REPLACEMENT WITH FULL SIZE UNITS.
3. SUPPORT AND PROTECT REMAINING MASONRY THAT SURROUNDS REMOVAL AREA, MAINTAIN FLASHING, REINFORCEMENT, LINTELS, AND ADDJONING CONSTRUCTION IN AN UNDAUNAGED CONDITION.
4. CLEAN MASONRY UNITS SURROUNDING REMOVAL AREAS BY REMOVING MORTAR, DUST, AND LOOSE PARTICLES IN PREPARATION FOR REPLACEMENT.
5. REPLACE REMOVED UNITS WITH SALVAGED OR NEW UNITS THAT MATCH EXISTING SIZE AND TEXTURE. DO NOT USE BROKEN UNITS UNLESS THEY CAN BE CUT TO USABLE SIZE.
6. INSTALL REPLACEMENT UNITS INTO BONDING AND COURSEING PATTERN OF EXISTING UNITS. IF CUTTING IS REQUIRED, USE A MOTOR-DRIVEN SAW DESIGNED TO CUT MASONRY WITH CLEAN, SHARP, UNCHIPPED EDGES. UNITS MUST BE TOOTHED IN OR COURSEING SHALL MATCH SURROUNDING IN PLACE WORK.
7. MAINTAIN JOINT WIDTH FOR REPLACEMENT UNITS TO MATCH EXISTING JOINTS.
8. LAY REPLACEMENT UNITS WITH COMPLETELY FILLED BED, HEAD, AND COLLAR JOINTS. BUTTER ENDS WITH SUFFICIENT MORTAR TO FILL HEAD JOINTS AND SHOVE INTO PLACE.
9. AS RECOMMENDED BY MANUFACTURER.
10. RETEMPERING: RETEMPER MORTAR AS RECOMMENDED BY MANUFACTURER

G. INSTALLATION OF TUCK POINTING MORTAR

1. INSTALL MORTAR IN ACCORDANCE WITH AIAAC 530.1.
2. IMMEDIATELY PRIOR TO APPLICATION OF MORTAR, DAMPEN JOINTS TO BE TUCK POINTED. PRIOR TO APPLICATION OF POINTING MORTAR, MORTAR UNITS TO ABSORB SURFACE WATER.
3. THENTLY PACK MORTAR INTO JOINTS IN THIN LAYERS, APPROXIMATELY 1/4-INCH (6 MM) THICK MAXIMUM.
4. ALLOW LAYER TO BECOME "THUMBPRINT HARD" BEFORE APPLYING NEXT LAYER.
5. PACK FINAL LAYER FLUSH WITH SURFACES OF MASONRY UNITS, WHEN MORTAR BECOMES "THUMBPRINT HARD", TOOL JOINTS.
6. MARLINE CRACKING WITHIN THE MORTAR OR MORTAR SEPARATION AT EDGE OF A JOINT IS UNACCEPTABLE. COMPLETELY REMOVE SUCH MORTAR AND REPOINT.
7. TOOL JOINTS IN PATCH WORK WITH A JOINTING TOOL, TO MATCH THE EXISTING SURROUNDING JOINTS.
8. CLEANING
- A. COMPLY WITH CLEANING PROCEDURES AND RECOMMENDATIONS OF THE MANUFACTURERS OF BOTH THE CLEANING SOLUTIONS AND THE UNIT MASONRY.
- B. REMOVE EFFLORESCENCE FROM MASONRY WALL EXPOSED IN THE FINISHED WORK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION, NCM A TC BULLETIN #8-3A AND/OR BIA TECHNICAL NOTE 20 - CLEANING BRICK.
- C. REMOVE DIRT OR STAINS FROM MASONRY WALLS EXPOSED IN THE FINISHED WORK IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, NCM A TC BULLETIN #8-2A AND/OR BIA TECHNICAL, NOTE 20 - CLEANING BRICK.
- D. COMPLY WITH APPLICABLE ENVIRONMENTAL LAWS AND RESTRICTIONS.
- E. AFTER MORTAR HAS FULLY HARDENED, THOROUGHLY CLEAN EXPOSED MASONRY SURFACES OF EXCESS MORTAR AND FOREIGN MATTER, USE WOOD SCRAPERS, STIFF-NOON OR -FIBER BRUSHES, AND CLEAN WATER, SPRAY APPLIED AT LOW PRESSURE.
- F. DO NOT USE METAL SCRAPERS OR BRUSHES.
- G. DO NOT USE ACIDIC OR ALKALINE CLEANERS.

H. PROTECTION

1. PROTECTION: PROTECT NEWLY POINTED JOINTS FROM WEATHER AND ELEMENTS AS RECOMMENDED BY MANUFACTURER AND INDUSTRY STANDARDS, UNTIL POINTED JOINTS ARE SUFFICIENTLY HARD ENOUGH TO PREVENT DAMAGE.
2. PROTECT INSTALLED WORK FROM DAMAGE DUE TO SUBSEQUENT CONSTRUCTION ACTIVITY ON THE SITE.

DIVISION 5 - METALS

05 0215 - PIPE AND TUBE RAILINGS

A. SUBMITTALS

1. PRODUCT DATA AND SHOP DRAWINGS WITH PLANS, ELEVATIONS AND SECTIONS INDICATING MEMBER SIZES AND LAYOUT, VERTICAL AND HORIZONTAL DIMENSIONS, EDGE CONDITIONS, AND CONNECTION DETAILS. INCLUDE DETAILS OF EQUIPMENT ASSEMBLY, INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHOD OF FIELD CONNECTIONS, COMPONENTS, AND LOCATION AND SIZE OF EACH FIELD CONNECTION. SAMPLES FOR INITIAL SELECTION FOR EACH TYPE OF EXPOSED FINISH.
- 1.1. DESIGNATED DESIGN SUBMITTAL: FOR HANDRAIL AND GUARDRAIL SYSTEMS, INCLUDING ANALYSIS DATA SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION.

B. DESIGN

1. METAL TUBE RAILINGS SHALL BE DESIGNED BY FABRICATOR TO SUPPORT CODE-REQUIRED LOADS AND TO MATCH THE CONFIGURATIONS INDICATED IN THE CONSTRUCTION DOCUMENTS. SEE DRAWINGS FOR REQUIRED RAILING ELEVATIONS.

C. FIELD CONDITIONS

1. FIELD MEASUREMENTS: VERIFY ACTUAL LOCATIONS OF WALLS AND OTHER CONSTRUCTION CONTIGUOUS WITH METAL FABRICATED BY FIELD MEASUREMENTS BEFORE FABRICATION.

D. PERFORMANCE REQUIREMENTS

1. A. DELEGATED DESIGN: ENGAGE A QUALIFIED PROFESSIONAL ENGINEER TO DESIGN RAILINGS, INCLUDING FABRICATION BY ATTACHMENT TO BUILDING CONSTRUCTION.
2. STRUCTURAL PERFORMANCE: RAILINGS, INCLUDING ATTACHMENT TO BUILDING CONSTRUCTION, SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND THE FOLLOWING LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED:
- 2.1. HANDRAILS AND TOP RAILS OF GUARDS:
- A. UNIFORM LOAD OF 50 LBF/FT (0.73 kN/M) APPLIED IN ANY DIRECTION.
  - B. CONCENTRATED LOAD OF 200 LBF (0.89 kN) APPLIED IN ANY DIRECTION.
  - C. UNIFORM AND CONCENTRATED LOADS NEED NOT BE ASSUMED TO ACT CONCURRENTLY.

E. FASTENERS

1. FASTENERS FOR ANCHORING RAILINGS TO OTHER CONSTRUCTION: SELECT FASTENERS OF TYPE, GRADE, AND CLASS REQUIRED TO PRODUCE CONNECTIONS SUITABLE FOR ANCHORING RAILINGS TO OTHER TYPES OF CONSTRUCTION. VERIFY FASTENERS ARE AVAILABLE AND CAPABLE OF WITHSTANDING DESIGN LOADS.

F. MISCELLANEOUS MATERIALS

1. METAL SURFACES: GENERAL: PROVIDE MATERIALS WITH SMOOTH SURFACES, WITHOUT SEAM MARKS, ROLLER MARKS, ROLLED TRADE NAMES, STAINS, DISCOLORATIONS, OR BLEMISHES.
2. BRACKETS, FLANGES, AND ANCHORS: CAST OR FORMED METAL OF SAME TYPE OF MATERIAL AND FINISH AS SUPPORTED SURFACES UNLESS OTHERWISE INDICATED.
3. PIPE: ASTM A 53A 53M, TYPE F OR TYPE S, GRADE A, STANDARD WEIGHT (SCHEDULE 40), UNLESS ANOTHER GRADE AND WEIGHT ARE REQUIRED BY STRUCTURAL LOADS.

G. FABRICATION

1. GENERAL: FABRICATE RAILINGS TO COMPLY WITH REQUIREMENTS INDICATED FOR DESIGN, DIMENSIONS, MEMBER SIZES AND SPACING, END DETAILS, FINISH, AND ANCHORS, BUT NOT LESS THAN THAT REQUIRED TO SUPPORT STRUCTURAL LOADS.
2. CUT, DRILL, AND PUNCH ALUMINUM CLEANLY AND ACCURATELY. REMOVE BURRS AND EASE EDGES TO A RADIUS OF APPROXIMATELY 1/16 INCH (1.6 MM), UNLESS OTHERWISE INDICATED. REMOVE SHARP OR ROUGH AREAS ON EXPOSED SURFACES.
3. FABRICATE CONNECTIONS THAT ARE EXPOSED TO WEATHER IN A MANNER THAT EXCLUDES WATER. PROVIDE WEEP HOLES WHERE WATER MAY ACCUMULATE.
4. WELDED CONNECTIONS: USE FULLY WELDED JOINTS FOR PERMANENTLY CONNECTING RAILING COMPONENTS. COMPLY WITH REQUIREMENTS FOR WELDED CONNECTIONS IN "FABRICATION" ARTICLE WHETHER WELDING IS PERFORMED IN THE SHOP OR IN THE FIELD.

H. FINISH

1. FOR NON-GALVANIZED STEEL RAILINGS, PROVIDE NON-GALVANIZED FERROUS METAL FITTINGS, BRACKETS, FASTENERS, AND SLEEVES; HOWEVER, GALVANIZE ANCHORS TO BE EMBEDDED IN UNREINFORCED CONCRETE OR MASONRY.
2. PREPARATION FOR SHOP PRIMING: PREPARE UNCOATED FERROUS METAL SURFACES TO COMPLY WITH SSPC-SP 3 "POWER TOOL CLEANING."
3. PRIMER APPLICATION: APPLY SHOP PRIMER TO PREPARED SURFACES OF RAILINGS UNLESS OTHERWISE INDICATED. COMPLY WITH REQUIREMENTS IN SSPC-PA 1 "SHOP AND MAINTENANCE PAINTING OF STEEL" FOR SHOP PAINTING. PRIMER NEED NOT BE APPLIED TO SURFACES TO BE EMBEDDED IN CONCRETE OR MASONRY.

I. INSTALLATION

1. SUPPLY COMPONENTS REQUIRED FOR ANCHORAGE FABRICATED FROM SAME MATERIAL AND FINISH AS FABRICATION UNLESS NOTED OTHERWISE. SHIM AND LEVEL FABRICATIONS AS NECESSARY. COLD CONCEALED SURFACES OF FABRICATIONS IN CONTACT WITH CONCRETE, GRADE, MASONRY, WOOD, OR DISSIMILAR METALS WITH BITUMINOUS PAINT.
2. FIT EXPOSED CONNECTIONS TOGETHER TO FORM TIGHT, HAIRLINE JOINTS.
3. PERFORM CUTTING, DRILLING, AND FITTING REQUIRED FOR INSTALLING RAILINGS. SET RAILINGS ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION, MEASURED FROM ESTABLISHED LINES AND LEVELS AND FREE OF RACK.
4. DO NOT WELD, CUT, OR GRABDE SURFACES OF RAILING COMPONENTS THAT ARE COATED OR FINISHED AFTER FABRICATION AND THAT ARE INTENDED FOR FIELD CONNECTION BY MECHANICAL OR OTHER MEANS WITHOUT FURTHER CUTTING OR FITTING.
5. SET POSTS FLUSH WITH A TOLERANCE OF 1/16 INCH IN 3 FEET.
6. CONTROL OF CORROSION: PREVENT GALVANIC ACTION AND OTHER FORMS OF CORROSION BY INSULATING METALS AND OTHER MATERIALS FROM DIRECT CONTACT WITH INCOMPATIBLE MATERIALS.
7. ADJUST RAILINGS BEFORE ANCHORING TO ENSURE MATCHING ALIGNMENT AT ABUTTING JOINTS.
8. FASTENING TO IN-PLACE CONSTRUCTION: USE ANCHORAGE DEVICES AND FASTENERS WHERE NECESSARY FOR SECURING RAILINGS AND FOR PROPERLY TRANSFERRING LOADS TO IN-PLACE CONSTRUCTION.
9. PROTECT FINISHES OF RAILINGS FROM DAMAGE DURING CONSTRUCTION PERIOD WITH TEMPORARY PROTECTIVE COVERINGS APPROVED BY RAILING MANUFACTURER. REMOVE PROTECTIVE COVERINGS AT TIME OF SUBSTANTIAL COMPLETION.

05 0600 - STRUCTURAL METAL STUDS AND TRACK

THIS SECTION IS A DELEGATED DESIGN SUBMITTAL. CONTRACTOR SHALL ENGAGE A STRUCTURAL ENGINEER LICENSED IN THE JURISDICTION WHERE THIS PROJECT IS LOCATED. ALL FEES SUBJECT OF THIS SERVICE WILL BE PART OF BASE CONTRACT.

A. SUBMITTALS: PRODUCT DATA: MANUFACTURER'S DATA SHEETS ON EACH PRODUCT TO BE USED, INCLUDING:

1. SHOWING PLANS, SECTIONS, ELEVATIONS, LAYOUTS, PROFILES AND PRODUCT COMPONENT LOCATIONS, INCLUDING ANCHORAGE, BRACING, FASTENERS, ACCESSORIES AND FINISHES.
2. INDICATE COMPONENT DETAILS, FRAMED OPENINGS, BEARING, ANCHORAGE, LOADING, WELDS, TYPE AND LOCATION OF FASTENERS, AND ACCESSORIES.
3. INDICATE METHOD FOR SECURING STUDS AND OTHER COMPONENTS TO TRACKS AND FOR FRAMING CONNECTIONS.
4. SUBMIT CALCULATIONS FOR LOADINGS AND STRESSES UNDER PROFESSIONAL ENGINEER'S SEAL, REGISTERED IN THE STATE OF THE PROJECT.
5. QUALITY STANDARD:
6. MANUFACTURER QUALIFICATIONS: COMPANY SPECIALIZING IN MANUFACTURING PRODUCTS SPECIFIED IN THIS SECTION WITH MINIMUM FIVE YEARS' DOCUMENTED EXPERIENCE.
7. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF THIS SECTION WITH MINIMUM 3 YEARS' DOCUMENTED EXPERIENCE.
8. DESIGN STRUCTURAL ELEMENTS UNDER DIRECT SUPERVISION OF PROFESSIONAL ENGINEER EXPERIENCED IN DESIGN OF THIS WORK AND REGISTERED IN THE STATE OF THE PROJECT.

F. INSTALLATION

1. FOLLOW MANUFACTURER INSTALLATION GUIDELINES. INSTALLATION SHALL BE COMPLIANT WITH APPLICABLE BUILDING CODES.

DIVISION 6 - WOOD AND PLASTICS

06 1000 - ROUGH CARPENTRY

1. PROVIDE SUFFICIENT FIRE RETARDANT TREATED WOOD BLOCKING AT ALL STUDS FOR SECURING OF WALL & CEILING ITEMS, WHETHER FURNISHED BY OWNER OR CONTRACTOR.
2. CONCEALED WOOD IS TO BE FIRE RETARDANT TREATED UNLESS NOTED OTHERWISE.
3. PRESERVATIVE TREATED LUMBER IS REQUIRED FOR ALL ITEMS TO REMAIN IN CONTACT WITH CONCRETE OR MASONRY TO CONFORM TO AWPA STANDARD 5.
4. EXTERIOR WOOD SHALL BE CD GRADE SPRUCE OR YELLOW PINE, ALL PLY-WOOD TO BE FIRE RATED WHERE WALLS ARE INDICATED AS RATED CONSTRUCTION.
5. BLOCKING SHALL BE CLOSELY FITTED, ACCURATELY SET TO REQUIRED LEVELS & LEVELS, SECURELY CONNECTED & FIRMLY FIXED IN PLACE, USING NAILS, SCREWS, &/OR BOLTS AS INDICATED OR REQUIRED BY GOOD PRACTICE AND MANUFACTURER'S RECOMMENDATIONS.

06 2000 - FINISH CARPENTRY

1. PROTECT: PROTECT SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCLUDING DIMENSIONED PLANS, ELEVATIONS, AND SECTIONS.

B. QUALITY STANDARD: ARCHITECTURAL WOODWORK INSTITUTES' "ARCHITECTURAL WOODWORK QUALITY STANDARDS"

C. MATERIALS

1. SOFTWOOD LUMBER: MAXIMUM MOISTURE CONTENT OF 6 PERCENT; WITH VERTICAL GRAIN, OF QUALITY SUITABLE FOR SCHEDULED FINISH.
2. HARDWOOD LUMBER: MAXIMUM MOISTURE CONTENT OF 6 PERCENT; WITH VERTICAL GRAIN, OF QUALITY SUITABLE FOR SCHEDULED FINISH.
3. SHEET MATERIALS: SOFTWOOD PLYWOOD, EXPOSED TO VIEW: FACE SPECIES AS NOTICED, PLAN SAWN, MEDIUM DENSITY FIBERBOARD, CORE: 1/2 GRADE A/5, GLUE TYPE AS RECOMMENDED FOR APPLICATION.
4. INTERIOR WOODWORK
- A. COMPLETE FABRICATION BEFORE SHIPPING TO PROJECT SITE TO MAXIMUM EXTENT FEASIBLE. DISASSEMBLE ONLY AS NEEDED FOR SHIPPING AND INSTALLING, WHERE NECESSARY FOR FITTING AT PROJECT SITE, PROVIDE FOR SCABBING AND TRIMMING.
2. BACKSOT AND GROOVE BACKS OF FLAT MEMBERS, KEF BACKS OF OTHER WIDE, FLAT MEMBERS, EXCEPT WHERE ENDS WILL BE EXPOSED IN FINISHED WORK.

F. INSTALLATION

1. DO NOT OVERLAP OR INSTALL WOODWORK UNTIL BUILDING IS ENCLOSED, NET WORK IS COMPLETED, HVAC IS OPERATING, AND WOODWORK IS CONDITIONED TO PREVAILING CONDITIONS OF SPACE WHERE INSTALLED. MAINTAIN TEMPERATURE BETWEEN 55°F AND 75°F FOR 72 HOURS BEFORE BEGINNING INSTALLATION AND FOR 72 HOURS AFTER.
2. INSTALL WOODWORK LEVEL AND PLUMB AND SHIM AS REQUIRED WITH CONCEALED SHIMS TO 8 TOLERANCES OF 1/16" AND TO COMPLY WITH REFERENCED QUALITY STANDARD FOR GRADE SPECIFIED.
3. SECURE AND TIGHT WOODWORK TO FIT ADJOINING WORK, SEAL CUT SURFACES, AND REPAIR DAMAGED FINISH AT CUTS.
4. INSTALL TRIM WITH MINIMUM NUMBER OF JOINTS POSSIBLE USING FULL-LENGTH PIECES TO GREATEST EXTENT PRACTICABLE. STAGGER JOINTS.
5. LUMBER FOR TRANSPARENT FINISH (STAINED OR CLEAR), USE PIECES MADE OF SOLID LUMBER STOCK.
6. TRIM FOR PAINTED FINISH: AT CONTRACTOR'S OPTION, USE PIECES WHICH ARE EITHER GLUED-UP OR MADE OF SOLID LUMBER STOCK.
7. DISCARD UNITS OF MATERIAL WHICH ARE UNSOUND, WARPED, BOWED, TWISTED, IMPROPERLY TREATED, NOT ADEQUATELY SEPARATED ON JOINTS, TO FABRICATE WORK WITH PROPER JOINT TRANSMISSION, SECURE IN PLACE WITH ADHESIVES OR OTHER ANCHORAGE AS RECOMMENDED BY MANUFACTURER. LOCATE SEAMS AT FRONTS AND REARS, OVERLAP WITH FINISHABLE SURFACES (DUCT PAPER IS NOT SUITABLE).
8. DO NOT PERMIT INSTALLED INSTALLATIONS TO BE DAMAGED PRIOR TO ITS CONCERNMENT.
9. DO NOT INSTALL INSULATION ADHESIVES WHEN TEMPERATURE OR WEATHER CONDITIONS ARE DETRIMENTAL TO SUCCESSFUL INSTALLATION.
10. INSTALL INSULATION IN AREAS AND IN THICKNESSES INDICATED OR REQUIRED TO PRODUCE R-VALUES WHERE INDICATED, CUT AND FIT TIGHTLY AROUND OBSTRUCTIONS AND FILL VOIDS WITH INSULATION.
11. INSTALL AN EXTERIOR WALL AND CEILING SPACES WITHOUT GAPS OR VOIDS. DO NOT COMPRESS INSULATION.
12. TRIM INSULATION NEATLY TO FIT SPACES. INSULATE MISCELLANEOUS GAPS AND VOIDS.
13. EXTEND VAPOR RETARDER TO EXTREMITIES OF AREAS TO BE PROTECTED FROM VAPOR TRANSMISSION.
14. SECURE IN PLACE WITH ADHESIVES OR OTHER ANCHORAGE AS RECOMMENDED BY MANUFACTURER. LOCATE SEAMS AT FRONTS AND REARS, OVERLAP WITH FINISHABLE SURFACES (DUCT PAPER IS NOT SUITABLE).
15. DO NOT PERMIT INSTALLED INSTALLATIONS TO BE DAMAGED PRIOR TO ITS CONCERNMENT.

06 4100 - ARCHITECTURAL WOOD CASEWORK

1. SUBMITTALS: SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCLUDING DIMENSIONED PLANS, ELEVATIONS, AND SECTIONS. INDICATE COMPONENT PROFILES, FASTENING METHODS, JOINT DETAILS, AND ACCESSORIES.

A. SUBMITTALS

1. PRODUCT DATA AND SHOP DRAWINGS WITH PLANS, ELEVATIONS AND SECTIONS INDICATING MEMBER SIZES

12 11 10 9 8 7 6 5 4 3 2 1

**SPECIFICATIONS - PRODUCT & INSTALLATION GENERAL REQUIREMENTS**

**07 5423 - EPDM MEMBRANE ROOFING & ACCESSORIES**

- A. SUBMITTALS:** PRODUCT DATA, AND SHOP DRAWINGS. INDICATE JOINT OR TERMINATION DETAIL CONDITIONS, CONDITIONS OF INTERFACE WITH OTHER MATERIALS, AND PAVING OR WALKWAY PAD LAYOUT.
- B. BASIS OF DESIGN:** FIRESTONE RUBBERGARD® EPDM MEMBRANE WWW.FIRESTONEBPO.COM
- C. BASIS OF DESIGN:** FIRESTONE RUBBERGARD® EPDM MEMBRANE WWW.FIRESTONEBPO.COM
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.

- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.

- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- H. INSTALLATION:**
1. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.
2. VERIFY DECK IS SUPPORTED AND SECURE.
3. INCHES WIDE WITH SELF-SEALING STRIP FACE UP AT ROOF EDGE. INSTALL STARTER STRIP ALONG RAKE EDGE.
4. VERIFY DECK IS CLEAN AND SMOOTH. FLAT, FREE OF DEPRESSIONS, CRACKS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.
5. VERIFY THAT PROJECTIONS HAVE BEEN REMOVED WHERE FIREPROOFING WILL BE EXPOSED TO VIEW AS A FINISH MATERIAL.
6. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND CORNER STRIPS ARE IN PLACE.
7. CLEAN SUBSTRATE THOROUGHLY PRIOR TO ROOF APPLICATION.
8. DO NOT BEGIN WORK UNTIL OTHER WORK THAT REQUIRES FOOT OR EQUIPMENT TRAFFIC ON ROOF IS COMPLETE.
9. APPLY MANUFACTURER'S RECOMMENDED VAPOR RETARDER OR TEMPORARY ROOF BEFORE ROOF INSTALLATION.
10. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.
11. REMOVE WRAPPINGS, EMPTY CONTAINERS, PAPER, AND OTHER DEBRIS FROM THE ROOF DAILY. DISPOSE OF DEBRIS IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
12. IN AREAS WHERE FINISHED SURFACES ARE SOLED BY WORK OF THIS SECTION, CONSULT MANUFACTURER OF SURFACES FOR CLEANING ADVICE AND CONFORM TO THEIR DOCUMENTED INSTRUCTIONS.
13. REPAIR OR REPLACE DEFACED OR DAMAGED FINISHES CAUSED BY WORK OF THIS SECTION.

- I. PROTECTION:**
1. PROTECT INSTALLED ROOFING AND FLASHINGS FROM CONSTRUCTION OPERATIONS.
2. WHERE TRAFFIC MUST CONTINUE OVER FINISHED ROOF MEMBRANE, PROTECT SURFACES USING DURABLE MATERIALS.

- 07 6200 - SHEET METAL FLASHING AND TRIM**
- A. STANDARDS:**
- FABRICATED SHEET METAL ITEMS, INCLUDING FLASHINGS, COUNTERFLASHINGS, AND OTHER ITEMS INDICATED IN SCHEDULE.
- AAMA 811 - VOLUNTARY SPECIFICATION FOR ANODIZED ARCHITECTURAL ALUMINUM 2014 (2015 ERRATA).
- ASTM C920 - STANDARD SPECIFICATION FOR ELASTOMERIC JOINT SEALANTS 2016.
- CDA A4050 - COPPER IN ARCHITECTURE - HANDBOOK CURRENT EDITION.
- SMCNCA (ASMA) - ARCHITECTURAL SHEET METAL MANUAL 2.02.
- B. SUBMITTALS:**
1. SHOP DRAWINGS: INDICATE MATERIAL PROFILE, JOINTING PATTERN, JOINTING DETAILS, FASTENING METHODS, FLASHINGS, TERMINATIONS, AND INSTALLATION DETAILS.
- C. QUALITY ASSURANCE:**
1. PERFORM WORK IN ACCORDANCE WITH SMCNCA (ASMA) AND CDA A4050 REQUIREMENTS AND STANDARD DETAILS, EXCEPT AS OTHERWISE INDICATED.
- D. DELIVERY, STORAGE, AND HANDLING:**
1. STACK MATERIAL TO PREVENT TWISTING, BENDING, AND ABRASION, AND TO PROVIDE VENTILATION. SLOPE METAL SHEETS TO ENSURE DRAINAGE.
2. PREVENT CONTACT WITH MATERIALS THAT COULD CAUSE DISCOLORATION OR STAINING.
- E. PRODUCTS:**
- PREFINISHED ALUMINUM: ASTM B209 (ASTM B209M), 20 GAUGE, (0.032 INCH) THICK, PLAIN FINISH. SHOP PRE-COATED WITH MODIFIED SILICONE COATINGS.
1. FLUOROPOLYMER COATING: HIGH PERFORMANCE ORGANIC FINISH, AAMA 2604, MULTIPLE COAT, THERMALLY CURED FLUOROPOLYMER FINISH SYSTEM.
2. COLOR: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.
- F. FABRICATION:**
1. FORM SECTIONS TRUE TO SHAPE, ACCURATE IN SIZE, SQUARE, AND FREE FROM DISTORTION OR DEFECTS.
2. FORM PIECES IN LONGEST POSSIBLE LENGTHS.
3. HEAVY EXPOSED EDGES ON UNDERSIDE: 10 INCH WATER AND SEAM CORNERS.
4. FORM MATERIAL WITH FLAT LOCK SEAMS, EXCEPT WHERE OTHERWISE INDICATED; AT MOVING JOINTS, USE SEAMED LAPPED, BAYONET-TYPE OR INTERLOCKING HOOKED SEAMS.
5. FABRICATE FLASHINGS TO ALLOW TIE TO EXTEND 2 INCHES OVER ROOFING GRAVEL, RETURN AND BRAKE EDGES.
- G. ACCESSORIES:**
1. FASTENERS: GALVANIZED STEEL, WITH SOFT NEOPRENE WASHERS.
2. PRIMER: ZINC CHROMATE TYPE.
3. CONCEALED SEALANTS: NON-CURING BUTYL SEALANT.
4. EXPOSED SEALANTS: ASTM C920, ELASTOMERIC SEALANT, WITH MINIMUM MOVEMENT CAPABILITY AS RECOMMENDED BY MANUFACTURER FOR SUBSTRATES TO BE SEALED; COLOR TO MATCH ADJACENT MATERIAL.
- H. INSTALLATION:**
1. SECURE FLASHINGS IN PLACE USING CONCEALED FASTENERS, AND USE EXPOSED FASTENERS ONLY WHERE PERMITTED.
2. APPLY PLASTIC CEMENT COMPOUND BETWEEN METAL FLASHINGS AND FELT FLASHINGS.
3. FIT FLASHINGS TIGHT IN PLACE, MAKE CORNERS SQUARE, FLASHINGS TRUE AND STRAIGHT IN PLANES, AND LINES ACCURATE TO PROFILES.
4. SEAL METAL JOINTS WATER-TIGHT.

- 07 8100 - APPLIED FIREPROOFING**
- A. SUBMITTALS:** PRODUCT DATA, PROVIDE DATA INDICATING PRODUCT CHARACTERISTICS.
- B. BASIS OF DESIGN:** FIREPROOFING PRODUCTS COMPANY: WWW.SF.SF
- C. BASIS OF DESIGN:** FIREPROOFING PRODUCTS COMPANY: WWW.SF.SF
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- H. INSTALLATION:**
1. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.
2. VERIFY DECK IS SUPPORTED AND SECURE.
3. INCHES WIDE WITH SELF-SEALING STRIP FACE UP AT ROOF EDGE. INSTALL STARTER STRIP ALONG RAKE EDGE.
4. VERIFY DECK IS CLEAN AND SMOOTH. FLAT, FREE OF DEPRESSIONS, CRACKS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.
5. VERIFY THAT PROJECTIONS HAVE BEEN REMOVED WHERE FIREPROOFING WILL BE EXPOSED TO VIEW AS A FINISH MATERIAL.
6. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND CORNER STRIPS ARE IN PLACE.
7. CLEAN SUBSTRATE THOROUGHLY PRIOR TO ROOF APPLICATION.
8. DO NOT BEGIN WORK UNTIL OTHER WORK THAT REQUIRES FOOT OR EQUIPMENT TRAFFIC ON ROOF IS COMPLETE.
9. APPLY MANUFACTURER'S RECOMMENDED VAPOR RETARDER OR TEMPORARY ROOF BEFORE ROOF INSTALLATION.
10. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.
11. REMOVE WRAPPINGS, EMPTY CONTAINERS, PAPER, AND OTHER DEBRIS FROM THE ROOF DAILY. DISPOSE OF DEBRIS IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
12. IN AREAS WHERE FINISHED SURFACES ARE SOLED BY WORK OF THIS SECTION, CONSULT MANUFACTURER OF SURFACES FOR CLEANING ADVICE AND CONFORM TO THEIR DOCUMENTED INSTRUCTIONS.
13. REPAIR OR REPLACE DEFACED OR DAMAGED FINISHES CAUSED BY WORK OF THIS SECTION.

- I. PROTECTION:**
1. PROTECT INSTALLED ROOFING AND FLASHINGS FROM CONSTRUCTION OPERATIONS.
2. WHERE TRAFFIC MUST CONTINUE OVER FINISHED ROOF MEMBRANE, PROTECT SURFACES USING DURABLE MATERIALS.

- 07 8200 - JOINT SEALANTS**
- A. SUBMITTALS:** PRODUCT DATA, AND SCHEDULE OF LOCATIONS FOR EACH TYPE OF SEALANT SUBMITTED.
- B. BASIS OF DESIGN:** FIREPROOFING PRODUCTS COMPANY: WWW.SF.SF
- C. BASIS OF DESIGN:** FIREPROOFING PRODUCTS COMPANY: WWW.SF.SF
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- H. INSTALLATION:**
1. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.
2. VERIFY DECK IS SUPPORTED AND SECURE.
3. INCHES WIDE WITH SELF-SEALING STRIP FACE UP AT ROOF EDGE. INSTALL STARTER STRIP ALONG RAKE EDGE.
4. VERIFY DECK IS CLEAN AND SMOOTH. FLAT, FREE OF DEPRESSIONS, CRACKS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.
5. VERIFY THAT PROJECTIONS HAVE BEEN REMOVED WHERE FIREPROOFING WILL BE EXPOSED TO VIEW AS A FINISH MATERIAL.
6. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND CORNER STRIPS ARE IN PLACE.
7. CLEAN SUBSTRATE THOROUGHLY PRIOR TO ROOF APPLICATION.
8. DO NOT BEGIN WORK UNTIL OTHER WORK THAT REQUIRES FOOT OR EQUIPMENT TRAFFIC ON ROOF IS COMPLETE.
9. APPLY MANUFACTURER'S RECOMMENDED VAPOR RETARDER OR TEMPORARY ROOF BEFORE ROOF INSTALLATION.
10. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.
11. REMOVE WRAPPINGS, EMPTY CONTAINERS, PAPER, AND OTHER DEBRIS FROM THE ROOF DAILY. DISPOSE OF DEBRIS IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
12. IN AREAS WHERE FINISHED SURFACES ARE SOLED BY WORK OF THIS SECTION, CONSULT MANUFACTURER OF SURFACES FOR CLEANING ADVICE AND CONFORM TO THEIR DOCUMENTED INSTRUCTIONS.
13. REPAIR OR REPLACE DEFACED OR DAMAGED FINISHES CAUSED BY WORK OF THIS SECTION.

12 11 10 9 8 7 6 5 4 3 2 1

**SPECIFICATIONS - PRODUCT & INSTALLATION GENERAL REQUIREMENTS**

**08 0671 - DOOR HARDWARE**

- A. SUBMITTALS:** PRODUCT DATA, AND SHOP DRAWINGS WITH DETAILS OF EACH OPENING, SHOWING ELEVATIONS, GLAZING, FRAME PROFILES, AND ANY INDICATED FINISH REQUIREMENTS.
- B. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
- C. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- H. INSTALLATION:**
1. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.
2. VERIFY DECK IS SUPPORTED AND SECURE.
3. INCHES WIDE WITH SELF-SEALING STRIP FACE UP AT ROOF EDGE. INSTALL STARTER STRIP ALONG RAKE EDGE.
4. VERIFY DECK IS CLEAN AND SMOOTH. FLAT, FREE OF DEPRESSIONS, CRACKS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.
5. VERIFY THAT PROJECTIONS HAVE BEEN REMOVED WHERE FIREPROOFING WILL BE EXPOSED TO VIEW AS A FINISH MATERIAL.
6. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND CORNER STRIPS ARE IN PLACE.
7. CLEAN SUBSTRATE THOROUGHLY PRIOR TO ROOF APPLICATION.
8. DO NOT BEGIN WORK UNTIL OTHER WORK THAT REQUIRES FOOT OR EQUIPMENT TRAFFIC ON ROOF IS COMPLETE.
9. APPLY MANUFACTURER'S RECOMMENDED VAPOR RETARDER OR TEMPORARY ROOF BEFORE ROOF INSTALLATION.
10. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.
11. REMOVE WRAPPINGS, EMPTY CONTAINERS, PAPER, AND OTHER DEBRIS FROM THE ROOF DAILY. DISPOSE OF DEBRIS IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
12. IN AREAS WHERE FINISHED SURFACES ARE SOLED BY WORK OF THIS SECTION, CONSULT MANUFACTURER OF SURFACES FOR CLEANING ADVICE AND CONFORM TO THEIR DOCUMENTED INSTRUCTIONS.
13. REPAIR OR REPLACE DEFACED OR DAMAGED FINISHES CAUSED BY WORK OF THIS SECTION.

- I. PROTECTION:**
1. PROTECT INSTALLED ROOFING AND FLASHINGS FROM CONSTRUCTION OPERATIONS.
2. WHERE TRAFFIC MUST CONTINUE OVER FINISHED ROOF MEMBRANE, PROTECT SURFACES USING DURABLE MATERIALS.

- 08 1013 - HOLLOW METAL DOORS AND FRAMES**
- A. SUBMITTALS:** PRODUCT DATA AND SHOP DRAWINGS WITH DETAILS OF EACH OPENING, SHOWING ELEVATIONS, GLAZING, FRAME PROFILES, AND ANY INDICATED FINISH REQUIREMENTS.
- B. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
- C. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- H. INSTALLATION:**
1. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.
2. VERIFY DECK IS SUPPORTED AND SECURE.
3. INCHES WIDE WITH SELF-SEALING STRIP FACE UP AT ROOF EDGE. INSTALL STARTER STRIP ALONG RAKE EDGE.
4. VERIFY DECK IS CLEAN AND SMOOTH. FLAT, FREE OF DEPRESSIONS, CRACKS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.
5. VERIFY THAT PROJECTIONS HAVE BEEN REMOVED WHERE FIREPROOFING WILL BE EXPOSED TO VIEW AS A FINISH MATERIAL.
6. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND CORNER STRIPS ARE IN PLACE.
7. CLEAN SUBSTRATE THOROUGHLY PRIOR TO ROOF APPLICATION.
8. DO NOT BEGIN WORK UNTIL OTHER WORK THAT REQUIRES FOOT OR EQUIPMENT TRAFFIC ON ROOF IS COMPLETE.
9. APPLY MANUFACTURER'S RECOMMENDED VAPOR RETARDER OR TEMPORARY ROOF BEFORE ROOF INSTALLATION.
10. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.
11. REMOVE WRAPPINGS, EMPTY CONTAINERS, PAPER, AND OTHER DEBRIS FROM THE ROOF DAILY. DISPOSE OF DEBRIS IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
12. IN AREAS WHERE FINISHED SURFACES ARE SOLED BY WORK OF THIS SECTION, CONSULT MANUFACTURER OF SURFACES FOR CLEANING ADVICE AND CONFORM TO THEIR DOCUMENTED INSTRUCTIONS.
13. REPAIR OR REPLACE DEFACED OR DAMAGED FINISHES CAUSED BY WORK OF THIS SECTION.

- I. PROTECTION:**
1. PROTECT INSTALLED ROOFING AND FLASHINGS FROM CONSTRUCTION OPERATIONS.
2. WHERE TRAFFIC MUST CONTINUE OVER FINISHED ROOF MEMBRANE, PROTECT SURFACES USING DURABLE MATERIALS.

- 08 1416 - FLUSH WOOD DOORS**
- A. SUBMITTALS:** PRODUCT DATA, PREFINISHED DOOR SKIN SAMPLES, AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES, TYPES, ELEVATIONS, DETAILS, AND HARDWARE WITH DOOR AND HARDWARE NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.
- B. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
- C. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- H. INSTALLATION:**
1. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.
2. VERIFY DECK IS SUPPORTED AND SECURE.
3. INCHES WIDE WITH SELF-SEALING STRIP FACE UP AT ROOF EDGE. INSTALL STARTER STRIP ALONG RAKE EDGE.
4. VERIFY DECK IS CLEAN AND SMOOTH. FLAT, FREE OF DEPRESSIONS, CRACKS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.
5. VERIFY THAT PROJECTIONS HAVE BEEN REMOVED WHERE FIREPROOFING WILL BE EXPOSED TO VIEW AS A FINISH MATERIAL.
6. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND CORNER STRIPS ARE IN PLACE.
7. CLEAN SUBSTRATE THOROUGHLY PRIOR TO ROOF APPLICATION.
8. DO NOT BEGIN WORK UNTIL OTHER WORK THAT REQUIRES FOOT OR EQUIPMENT TRAFFIC ON ROOF IS COMPLETE.
9. APPLY MANUFACTURER'S RECOMMENDED VAPOR RETARDER OR TEMPORARY ROOF BEFORE ROOF INSTALLATION.
10. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.
11. REMOVE WRAPPINGS, EMPTY CONTAINERS, PAPER, AND OTHER DEBRIS FROM THE ROOF DAILY. DISPOSE OF DEBRIS IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
12. IN AREAS WHERE FINISHED SURFACES ARE SOLED BY WORK OF THIS SECTION, CONSULT MANUFACTURER OF SURFACES FOR CLEANING ADVICE AND CONFORM TO THEIR DOCUMENTED INSTRUCTIONS.
13. REPAIR OR REPLACE DEFACED OR DAMAGED FINISHES CAUSED BY WORK OF THIS SECTION.

- I. PROTECTION:**
1. PROTECT INSTALLED ROOFING AND FLASHINGS FROM CONSTRUCTION OPERATIONS.
2. WHERE TRAFFIC MUST CONTINUE OVER FINISHED ROOF MEMBRANE, PROTECT SURFACES USING DURABLE MATERIALS.

- 08 3100 - ACCESS DOORS AND PANELS**
- A. SUBMITTALS:** PRODUCT DATA, PREFINISHED DOOR SKIN SAMPLES, AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES, TYPES, ELEVATIONS, DETAILS, AND HARDWARE WITH DOOR AND HARDWARE NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.
- B. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
- C. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

12 11 10 9 8 7 6 5 4 3 2 1

**SPECIFICATIONS - PRODUCT & INSTALLATION GENERAL REQUIREMENTS**

**08 1416 - FLUSH WOOD DOORS**

- A. SUBMITTALS:** PRODUCT DATA, PREFINISHED DOOR SKIN SAMPLES, AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES, TYPES, ELEVATIONS, DETAILS, AND HARDWARE WITH DOOR AND HARDWARE NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.
- B. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
- C. BASIS OF DESIGN:** LINCOLN PARK MASONITE, LE CHATEAU COLLECTION. HOLLOW CORE DOORS OR APPROVED EQUAL.
1. WIND UPLIFT DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
2. INSULATION THERMAL RESISTANCE (R-VALUE): 3 PER INCH, MINIMUM, PROVIDE INSULATION OF THICKNESS REQUIRED, MINIMUM R-20.
- D. ROOFING MEMBRANE MATERIALS:**
1. MATERIAL: RUBBERGARD EPDM
- A. B. THICKNESS: 60 MILS (0.060 INCH), MINIMUM.
- B. C. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
- C. D. PRODUCT: FULLY ADHERED.
2. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER.
3. VAPOR RETARDER: MATERIAL APPROVED BY ROOF MANUFACTURER COMPLYING WITH REQUIREMENTS OF FIRE RATING CLASSIFICATION COMPATIBLE WITH ROOFING AND INSULATION MATERIALS. INSTALL WITH FIRE-RETARDANT ADHESIVE.
4. FLEXIBLE FLASHING MATERIAL: SAME MATERIAL AS MEMBRANE.
5. BASE FLASHING: PROVIDE WATERPROOF, FULLY ADHERED BASE FLASHING SYSTEM AT ALL PENETRATIONS, PLANE TRANSITIONS, AND TERMINATIONS.
- E. DECK SHEATHING AND COVER BOARDS:**
- IF SHEATHING OR COVER BOARD IS REFERENCED IN THE DRAWINGS, PROVIDE PRODUCTS COMPLYING WITH BELOW REQUIREMENTS:
1. DECK SHEATHING: GYPSUM SHEATHING, ASTM C1395C1399M, TYPE I SPECIAL FIRE RESISTANT TYPE
2. COVERBOARD: CEMENT ROOF BOARD, COMPLYING WITH ASTM C1325.

- F. INSULATION:**
1. INSULATION COMPLYING WITH MANUFACTURER'S RECOMMENDATIONS.
2. CELLULOSE FIBER BOARD INSULATION: ASTM C208, TYPE II, NATURAL FINISH.
3. EXPANDED POLYSTYRENE (EPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH DRAINAGE CHANNELS ON ONE FACE.
4. TAPERED BOARD: SLOPE AS INDICATED; MINIMUM THICKNESS 1/2 INCH; FABRICATE OF FEWEST LAYERS POSSIBLE.
5. EXTRUDED POLYSTYRENE (XPS) BOARD INSULATION: COMPLES WITH ASTM C578 WITH NATURAL SKIN SURFACE, DRAINAGE CHANNELS ON ONE FACE.

- G. ACCESSORIES:**
1. PROVIDE AND INSTALL ONLY ACCESSORIES WHICH COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE FIRESTONE PREFINISHED FLASHINGS AND CORNERS FOR ITEMS NOT IN DRAWING DETAILS.

- <



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A6 2ND FLOOR DEMO PLAN  
3/16" = 1'-0"

GEN. DEMO NOTES

1. CONTRACTOR TO VISIT PROJECT SITE AND BUILDING, PRIOR TO BID.
2. BUILDING AND SITE TO REMAIN SECURE DURING DEMOLITION AND CONSTRUCTION.
3. PROTECT ALL ITEMS TO REMAIN (WALLS, PLUMBING FIXTURES, PIPING, HVAC UNITS, COLUMNS, ETC.).
4. CARE IS TO BE EXERCISED IN THE DEMOLITION OPERATIONS. EXISTING SURFACES TO REMAIN SHALL BE PROTECTED. ANY DAMAGE INCURRED AS A RESULT OF DEMOLITION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL BEAR THE COST OF REPAIRING SUCH DAMAGE.
5. ALL OPENINGS IN WALLS AND ROOFS RESULTING FROM EQUIPMENT AND/OR PIPE REMOVAL SHALL BE SEALED WEATHERTIGHT. ALL CONDITIONS SHALL BE LEFT SAFE AND HAZARD FREE.
6. CONTRACTOR TO REPAIR ANY AREAS DAMAGED DURING DEMOLITION.
7. CONTRACTOR TO COORDINATE DEMOLITION OPENINGS WITH NEW PLANS AND ELEVATIONS.
8. ALL MEP SYSTEMS TO BE REMOVED TO BE FULLY COORDINATED WITH EXISTING CONDITIONS. ALL SYSTEMS TO BE REMOVED COMPLETELY THAT ARE NOT BEING RE-UTILIZED.
9. PROTECT EXISTING CONDITIONS AND MAINTAIN WEATHER TIGHTNESS FOR ALL OCCUPIED UNOCCUPIED SPACES, BOTH VERTICALLY AND HORIZONTALLY FOR THE ENTIRE DURATION THAT THE BUILDING IS EXPOSED TO THE ELEMENTS. PATCH/REPAIR/REPLACE AS REQUIRED.



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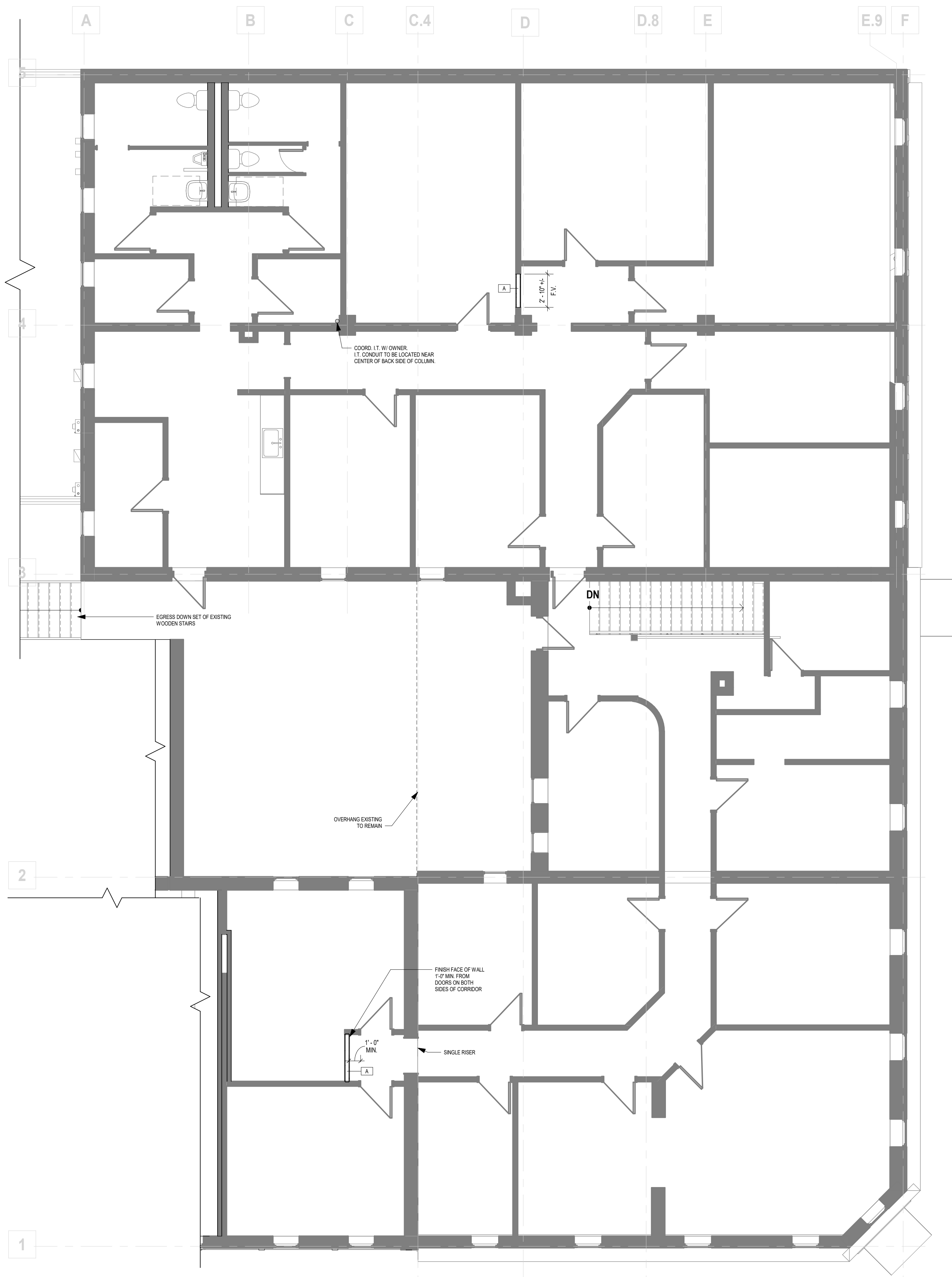
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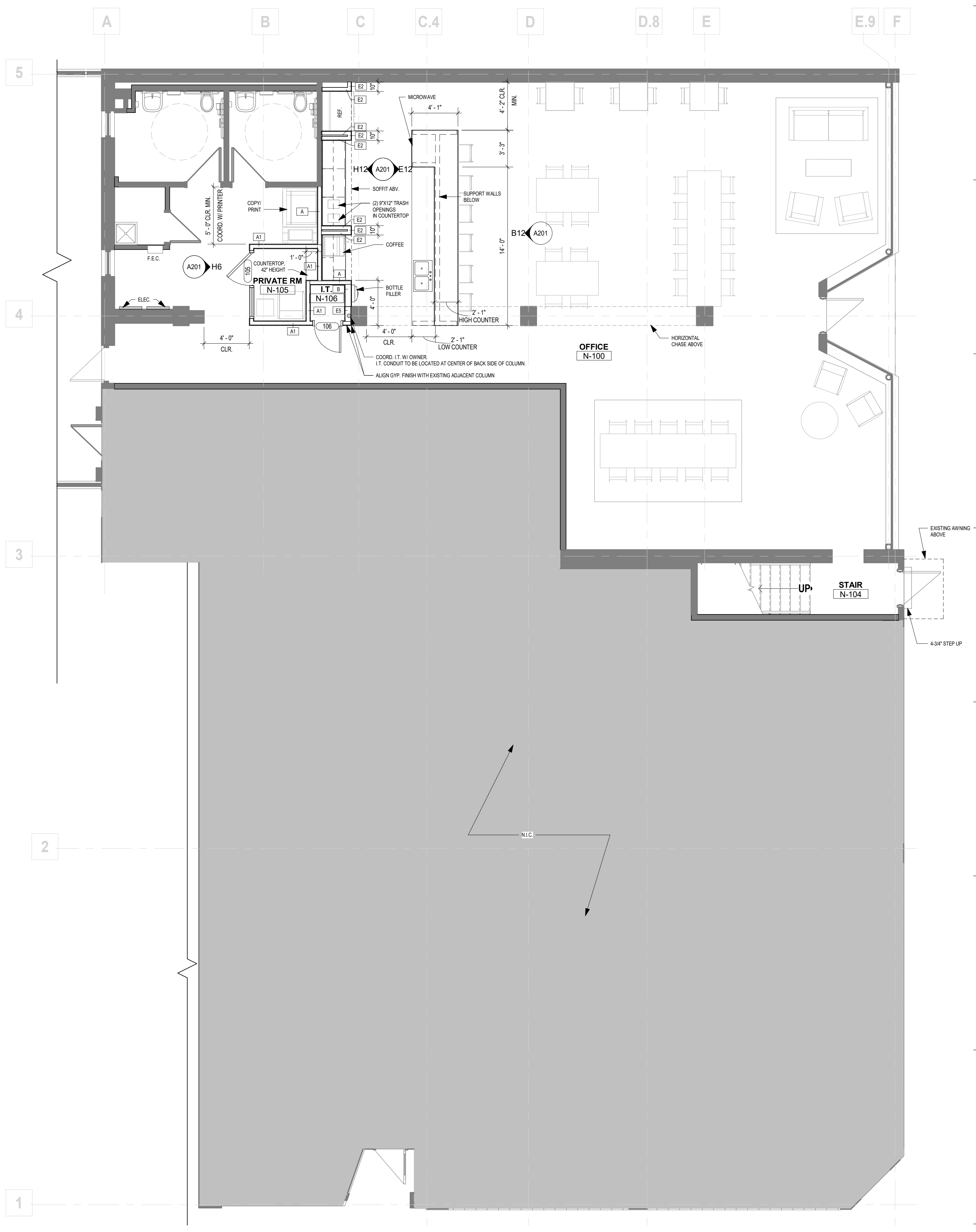
DEMO PLANS

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**A12** 2ND FLOOR PLAN  
3/16" = 1'-0"



**A5** 1ST FLOOR PLAN  
3/16" = 1'-0"

## GENERAL NOTES: FLOOR PLANS

1. RE: GENERAL ARCHITECTURAL SHEETS FOR ADDITIONAL NOTES AND DETAILS THAT ARE APPLICABLE.
2. ARCHITECTURAL ELEVATION 100'-0".
3. DIMENSIONS SHOWN ON THE FLOOR PLAN ARE TO THE FACE OF GYP. BOARD/WALL (FGB), FACE OF MASONRY (FOM), FACE OF CONCRETE WALLS (FOCL) AND COLUMN GRID LINES, UNLESS NOTED OR SHOWN OTHERWISE.
4. NOTE: WALL THICKNESSES ARE ACTUAL DIMENSIONS AND PER WALL TYPES. SEE GENERAL SHEETS.
5. DOOR OPENINGS NOT LOCATED BY DIMENSION SHALL BE CENTERED IN WALL SHOWN OR LOCATED 4 INCHES FROM FINISH WALL TO HINGE SIDE OF THE DOOR, ALWAYS ALLOWING A MINIMUM OF 18" FROM THE PULL SIDE (STRIKE SIDE) OF THE DOOR TO THE INTERSECTING WALL, OR OTHER PROTRUDING OBJECTS.
6. ALL ALCOVES WITHOUT A SPACE IDENTIFICATION NUMBER SHALL HAVE THE SAME FINISHES AS THE ADJOINING SPACES.
7. PROVIDE FINISH LEVELS AS DESCRIBED:  
LEVEL 4:  
- ALL WALLS TO BE BROUGHT UP TO LEVEL 4 FINISH.  
- AREAS FOR BACK OF HOUSE EMPLOYEE OPERATIONS WHERE ROOM SIDE WALLS AND/OR CEILINGS HAVE PAINTED SURFACES.  
- CONCESSION AND CIRCULATION CORRIDORS WHERE ROOM SIDE WALLS AND/OR CEILINGS HAVE PAINTED SURFACES.
8. RE: FINISH LEGEND, FINISH SCHEDULE AND SPECIFICATIONS FOR DOOR AND DOOR FRAME FINISHES.
9. STAIR ENCLOSURES, SHAFT WALLS, EXIT PASSAGE WAYS AND EXTERIOR WALLS TO BE COORDINATED FOR PHASE OF WORK PER MATRIX AND PROJECT SCOPING.
10. MAINTAIN AND PROTECT EXISTING EXPANSION JOINTS DURING CONSTRUCTION. PATCH/REPAIR/REPLACE TO MATCH EXISTING RATINGS AS REQUIRED ON THE SHELL PORTION OF PROJECT.
11. CONSTRUCTION TO BE IN STRICT ACCORDANCE WITH ALL APPLICABLE BUILDING CODES, LOCAL RULES, AND REGULATIONS, AND ALL OTHER CODES, REGULATIONS AND GOVERNING AGENCIES HAVING JURISDICTION WITH ALL APPLICABLE AMENDMENTS UNLESS ALTERED OR CHANGED THROUGH VARIANCES OF OTHER LEGAL PROCEDURES.
12. PAINT SW 6990 CAVIAR (P1) 10'-0" A.F.F. TO DECK FOR ALL GYP WALLS.
13. ALL EXPOSED CONDUIT AND DUCTWORK TO REMAIN UNPAINTED/UNFINISHED.

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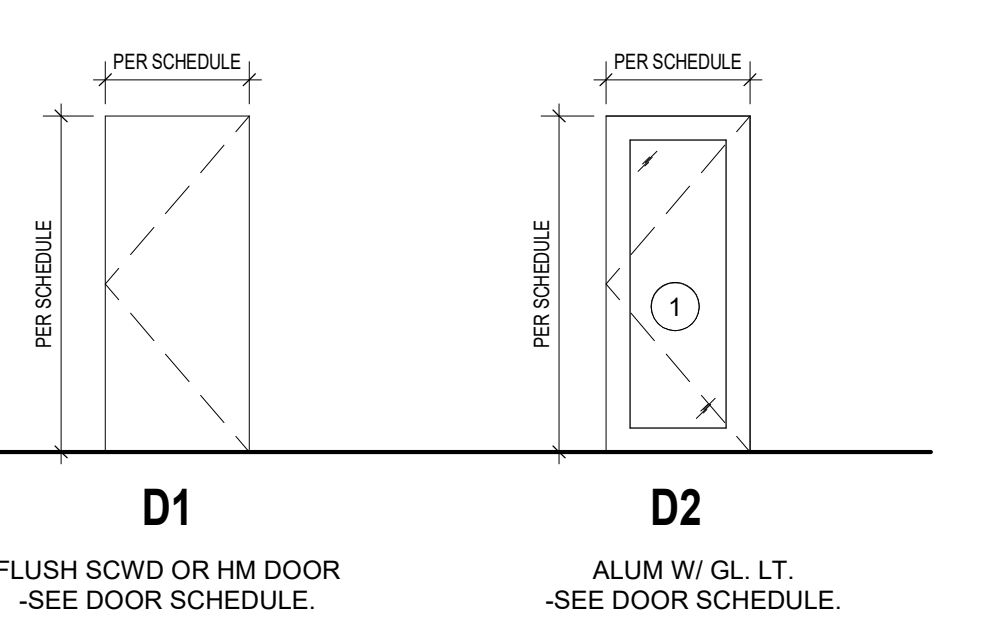
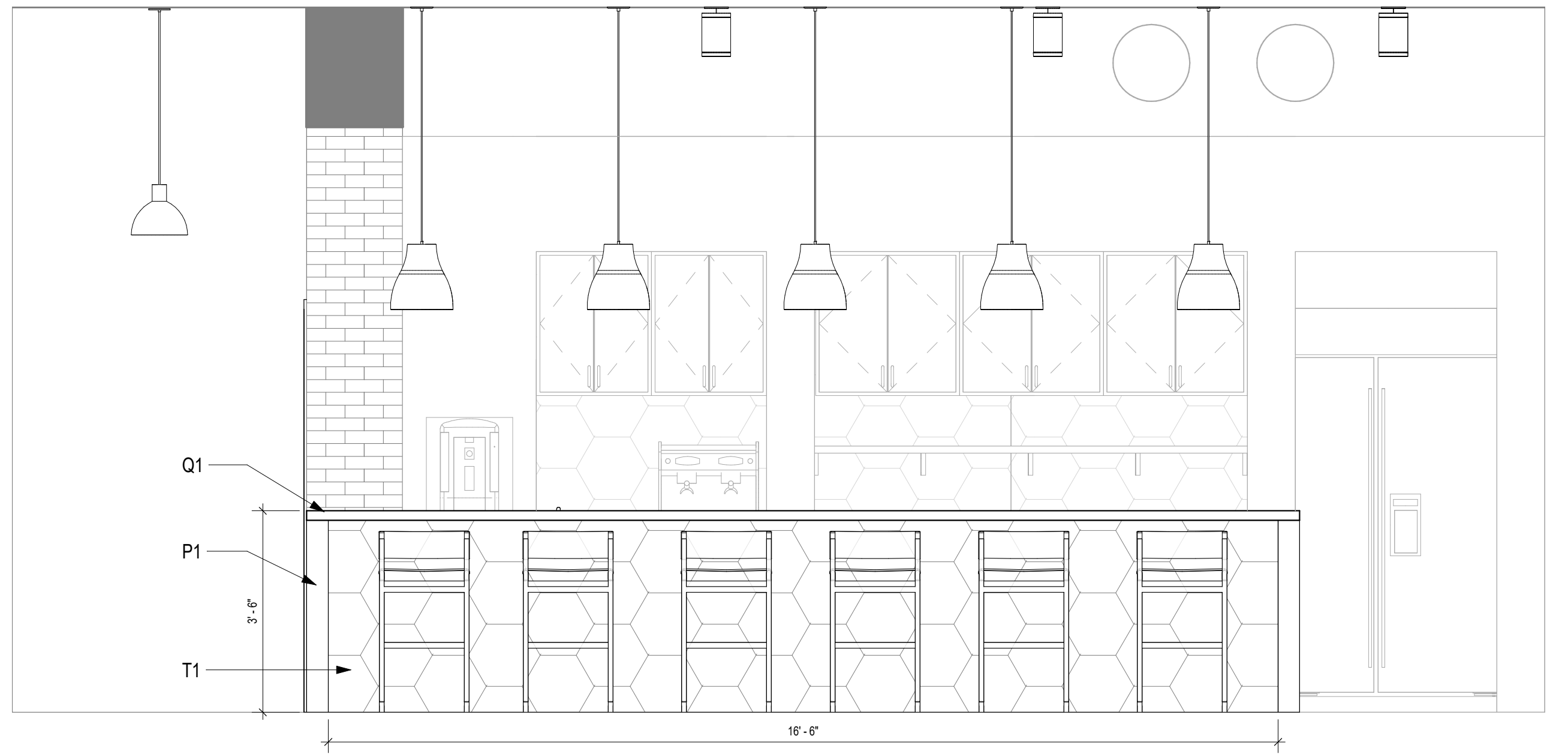
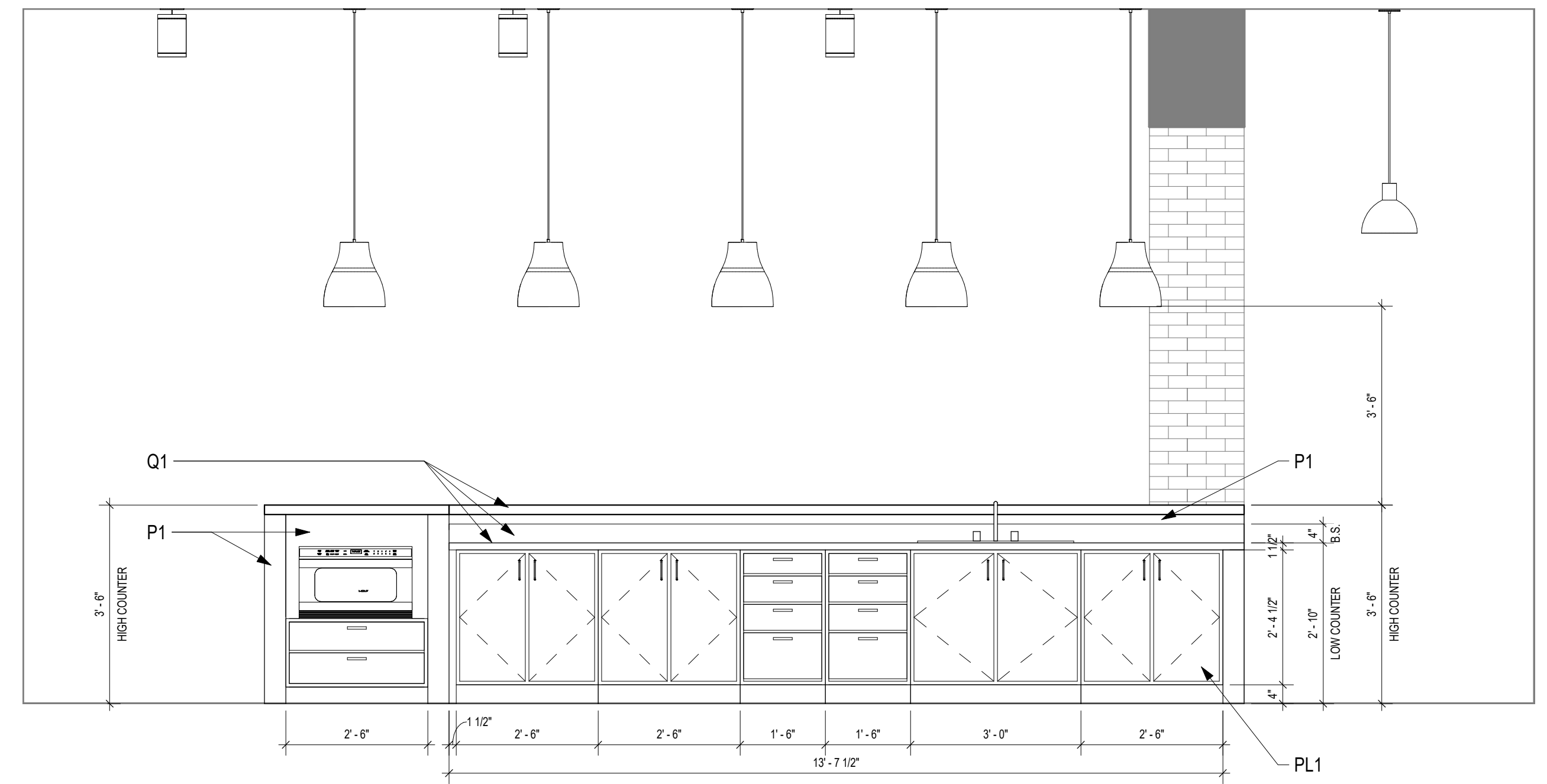
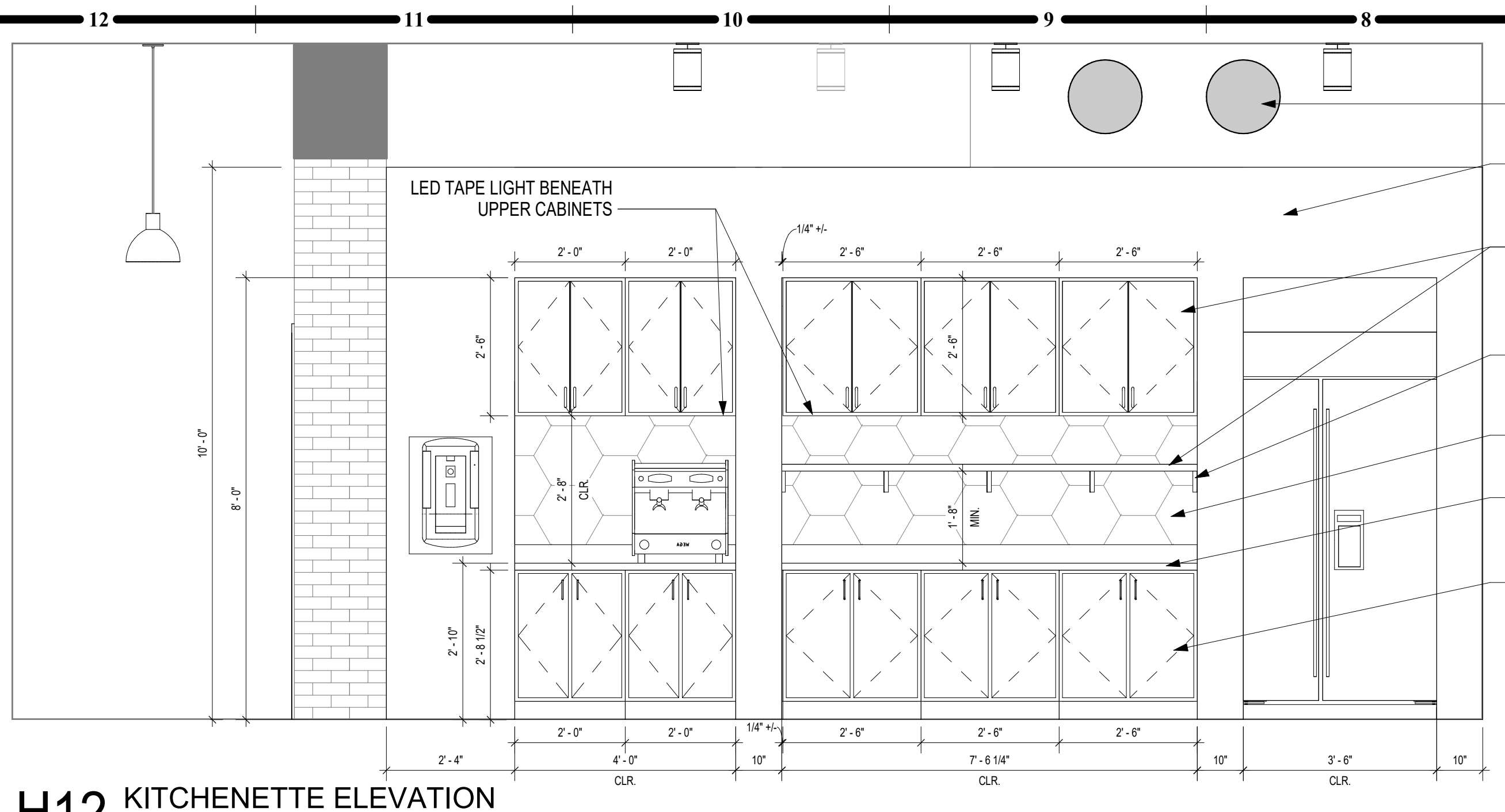
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FLOOR PLANS



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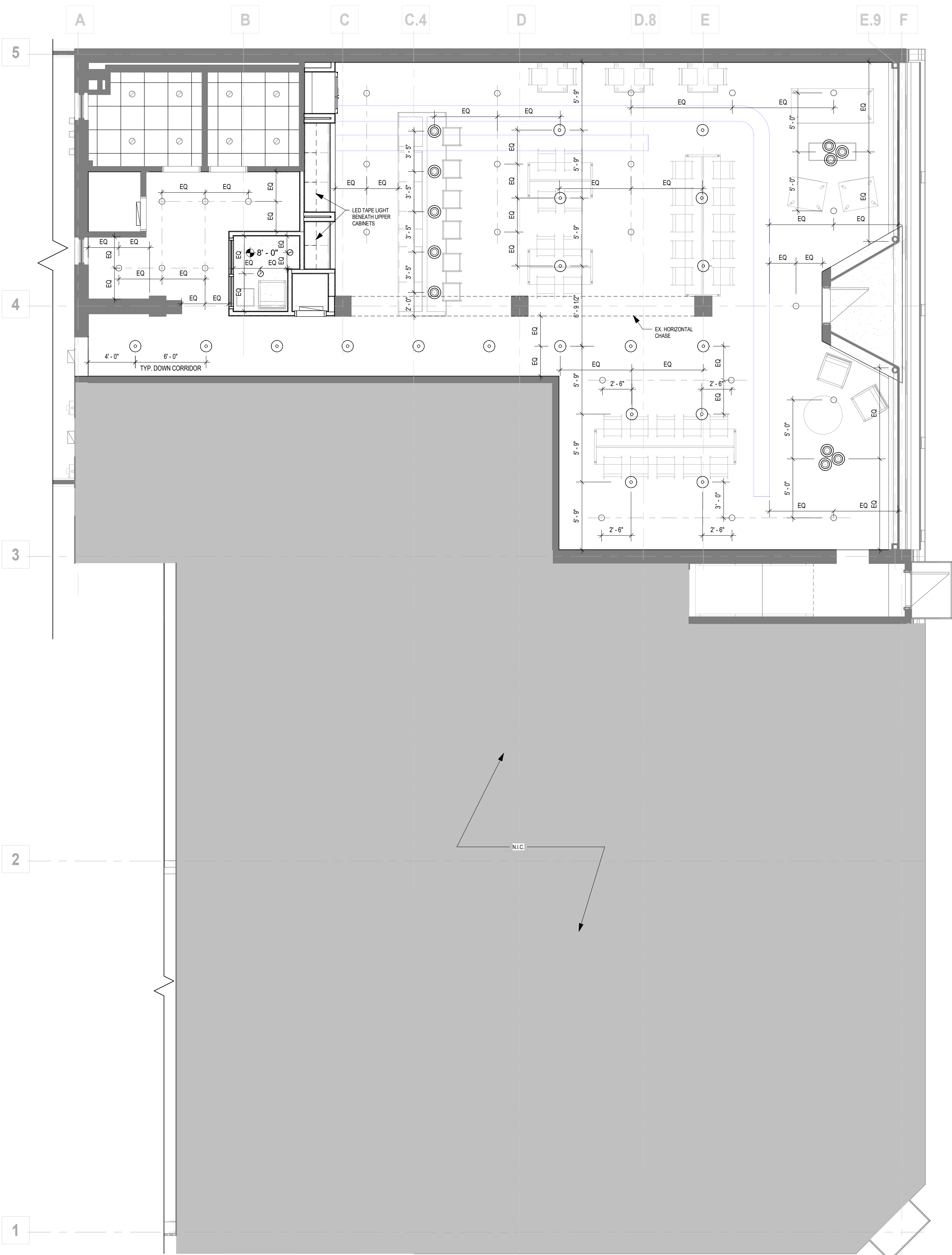
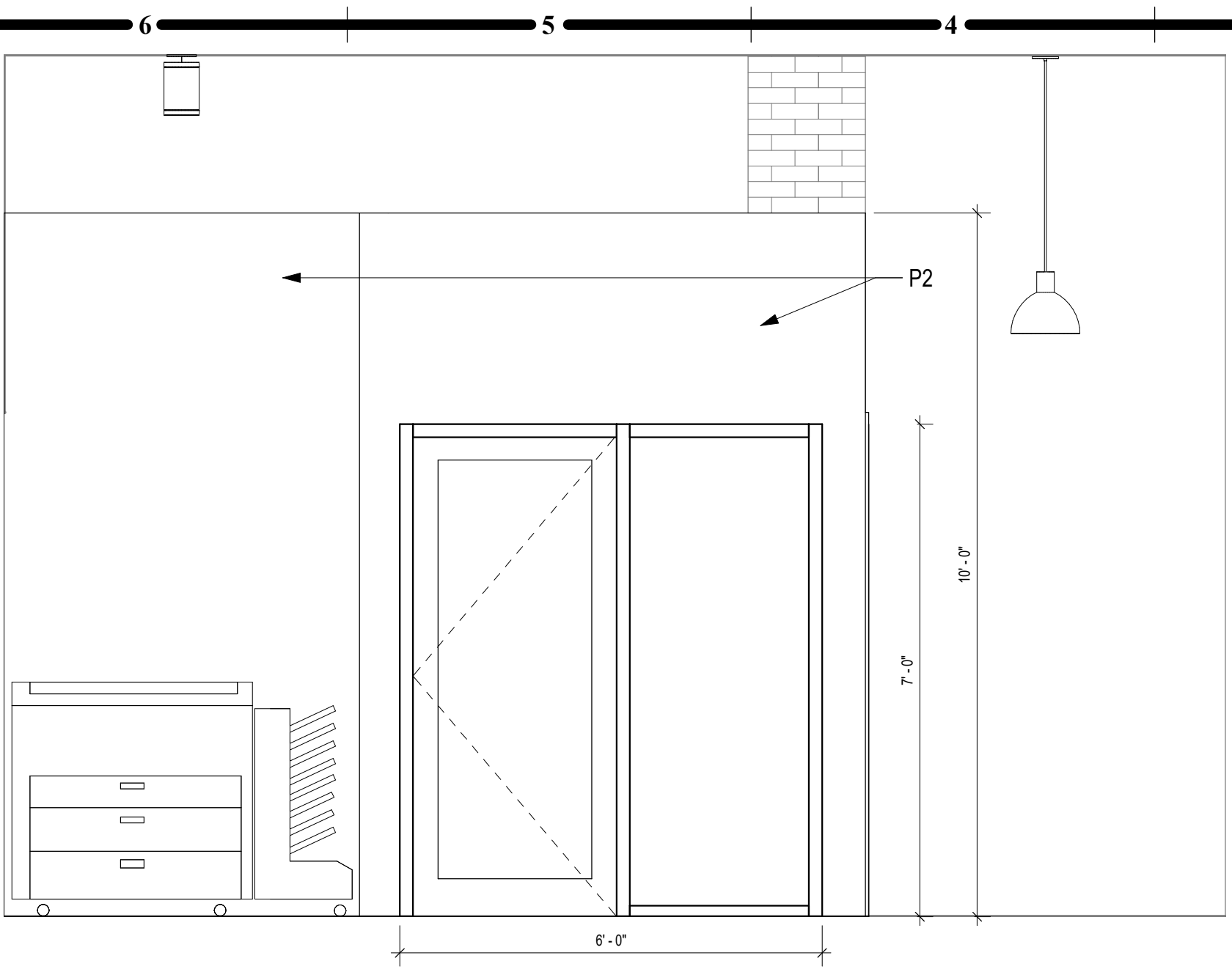


DOOR SCHEDULE									
DOOR #	WIDTH	HEIGHT	ROOM NAME	DOOR		FRAME		RTG	REMARKS
				TYPE	MATERIAL	FINISH	MATERIAL	FINISH	
105	3' - 0"	7' - 0"	PRIVATE ROOM	D2	ALUM/GLASS	ANODIZED	ALUM	ANODIZED	N/A 1, 2, 3, 5, 6
106	2' - 4"	7' - 0"	I.T. CLOSET	D1	SCWD	PAINT - P1	HM	PAINT - P1	N/A 2, 3, 4

**DOOR SCHEDULE REMARKS:**

- MATCH EXISTING MASTER KEYING SYSTEM. COORDINATE WITH BUILDING OWNER.
- PROTECT DOOR AND FRAME FROM DAMAGE THROUGHOUT CONSTRUCTION. ANY DAMAGE TO BE REPAIRED/REPLACED PER OWNER DISCRETION.
- DOOR FRAME 2" OFF FINISHED FACE ON HINGE SIDE, U.N.O.
- DOOR HARDWARE FOR OFFICE TENANT: KWIKSET HALIFAX PRIVACY DOOR LEVER SET WITH SQUARE ROSE, MODEL: 730HFLSQT-514, MATTE BLACK FINISH.
- MANUALLY LOCKABLE FROM INSIDE OF ROOM. MASTER KEY LOCK ON OUTSIDE OF ROOM.
- COORDINATE HARDWARE WITH MANUFACTURER.

GLASS TYPE LEGEND	
DESIGNATION NUMBER	DESCRIPTION
1	TEMPERED GLASS COLOR: CLEAR



## GENERAL NOTES: REFLECTED CEILING PLANS

- RE: SHEET G001 FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
- DIMENSIONS SHOWN ON THE REFLECTED CEILING PLANS ARE TO THE FACE OF GYP. BOARD (FG), AND COLUMN GRID LINES, UNLESS NOTED OR SHOWN OTHERWISE.
- ALL CEILING HEIGHTS AS SHOWN ON PLANS AND DETAILS ARE FROM SLAB OR TILE FLOOR (FINISHED FLOOR) TO FINISH CEILING.
- RE: FINISH LEGEND AND FINISH SCHEDULE FOR ROOM CEILING FINISHES.
- CEILING TILES/GRID TO BE CENTERED IN THE ROOM, UNLESS NOTED OTHERWISE.
- RECESSED LIGHTING, SPEAKERS, SMOKE DETECTORS, ETC. AND PENDANT LIGHT FIXTURES - SHALL BE CENTERED IN CEILING TILE OR GYP. BD. CEILING, UNLESS NOTED OTHERWISE.
- RE: ELECTRICAL SHEETS AND SPECIFICATIONS FOR DETAILED INFORMATION ON LIGHT FIXTURE SCHEDULE.
- RE: MECHANICAL SHEETS AND SPECIFICATIONS FOR DETAILED INFORMATION ON DIFFUSERS.
- IF THERE IS A CONFLICT BETWEEN ANY ABOVE-CEILING MECHANICAL / ELECTRICAL / PLUMBING WORK & THE SCHEDULED OR SHOWN CEILING HEIGHT, CONTACT THE ARCHITECT IMMEDIATELY FOR CLARIFICATION. PROVIDE OVERALL CEILING COORDINATION DRAWING SHOWING ALL DEVICES DURING SHOP SUBMITTAL PROCESS.

## GENERAL NOTES: INTERIOR ELEVATIONS

- RE: SHEET G001 FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
- RE: SHEET G002 ACCESSIBILITY GUIDELINES FOR MOUNTING HEIGHTS OF FIXTURES AND ACCESSORIES.
- RE: A001 FOR FINISH LEGEND AND FINISH SCHEDULE FOR SPECIFIC FINISH INFORMATION AND LOCATIONS.
- PROVIDE PRIMER ON ALL WALL SURFACES THAT ARE TO RECEIVE WALLCOVERING.
- CONTINUE WALL FINISH AS SCHEDULED BEHIND ALL FURNITURE AND EQUIPMENT, INCLUDING UNDER OPEN COUNTERS.
- TRANSITION ALL WALL AND BASE FINISHES, AND/OR COLOR CHANGES AT INSIDE CORNERS, UNLESS NOTED OTHERWISE. CONSULT ARCHITECT FOR CLARIFICATION, IF NECESSARY.
- CONTINUE WALL BASE AT ALL WALLS, FURRED OUT COLUMNS & COLUMN COVERS, AND AT ALL CASEWORK TOE KICKS, SIDE PANELS, AND UNDER OPEN COUNTERS, UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO MILLWORK/ CASEWORK FABRICATION & INSTALLATION.
- CONTRACTOR SHALL PROVIDE COUNTERTOP BRACKETS AT OPEN KNEE SPACES WIDER THAN 42" (TYP.). CENTER IN OPEN AREA AND PAINT TO MATCH WALL COLOR, UNLESS NOTED OR SHOWN OTHERWISE.
- ALIGN ALL WALL TILE JOINTS WITH FLOOR TILE JOINTS, UNLESS NOTED OR SHOWN OTHERWISE.
- MECH. SYMBOLS ARE SHOWN FOR REFERENCE ONLY. COORDINATE LOCATIONS WITH MEP DRAWINGS. CONSULT ARCHITECT FOR CLARIFICATION, IF NECESSARY.

## GENERAL NOTES: DOOR SCHEDULE

- HM REFERS TO HOLLOW METAL.
- AL REFERS TO ALUMINUM.
- WD REFERS TO WOOD.
- SCWD REFERS TO SOLID CORE WOOD.
- PROTECT ALL DOORS & FRAMES FROM DAMAGE THROUGHOUT CONSTRUCTION PHASES.
- ALL DOOR HARDWARE FOR OFFICE TENANT: KWIKSET HALIFAX PRIVACY DOOR LEVER SET WITH SQUARE ROSE, MODEL: 730HFLSQT-514, MATTE BLACK FINISH, U.N.O.

## LIGHTING / RCP LEGEND

○	RECESSED CAN LIGHT FIXTURE, RE: ELEC. FOR TYPE.
○	GENERAL SURFACE-MOUNTED LIGHT FIXTURE, BASIS OF DESIGN: KUZCO LIGHTING - LAMAR EC19404.
○	GENERAL PENDANT-MOUNTED LIGHT FIXTURE, BASIS OF DESIGN: KUZCO LIGHTING - CHROMA PD1712 - 9'-0" A.F.F.
⊙	DECORATIVE PENDANT-MOUNTED LIGHT FIXTURE, ABV ISLAND, BASIS OF DESIGN: TMS LIGHTING - BELLA - 14" F14 SUNSHINE YELLOW - 7'-0" A.F.F. (3'-6" ABV. HIGH COUNTER)
⊙	DECORATIVE PENDANT-MOUNTED LIGHT FIXTURES - COMBINATION OF 3, BASIS OF DESIGN: TMS LIGHTING - BELLA - 10" F18 SATIN ALUMINUM - 8'-3" A.F.F., 14" F14 SUNSHINE YELLOW - 8'-0" A.F.F., 18" F15 MATTE BLACK - 7'-9" A.F.F.
⏏	WALL-MOUNTED 2'-0" LED STRIP, RE: ELEC. FOR TYPE.
⏏	DUCT TRUNK, RE: MECH.

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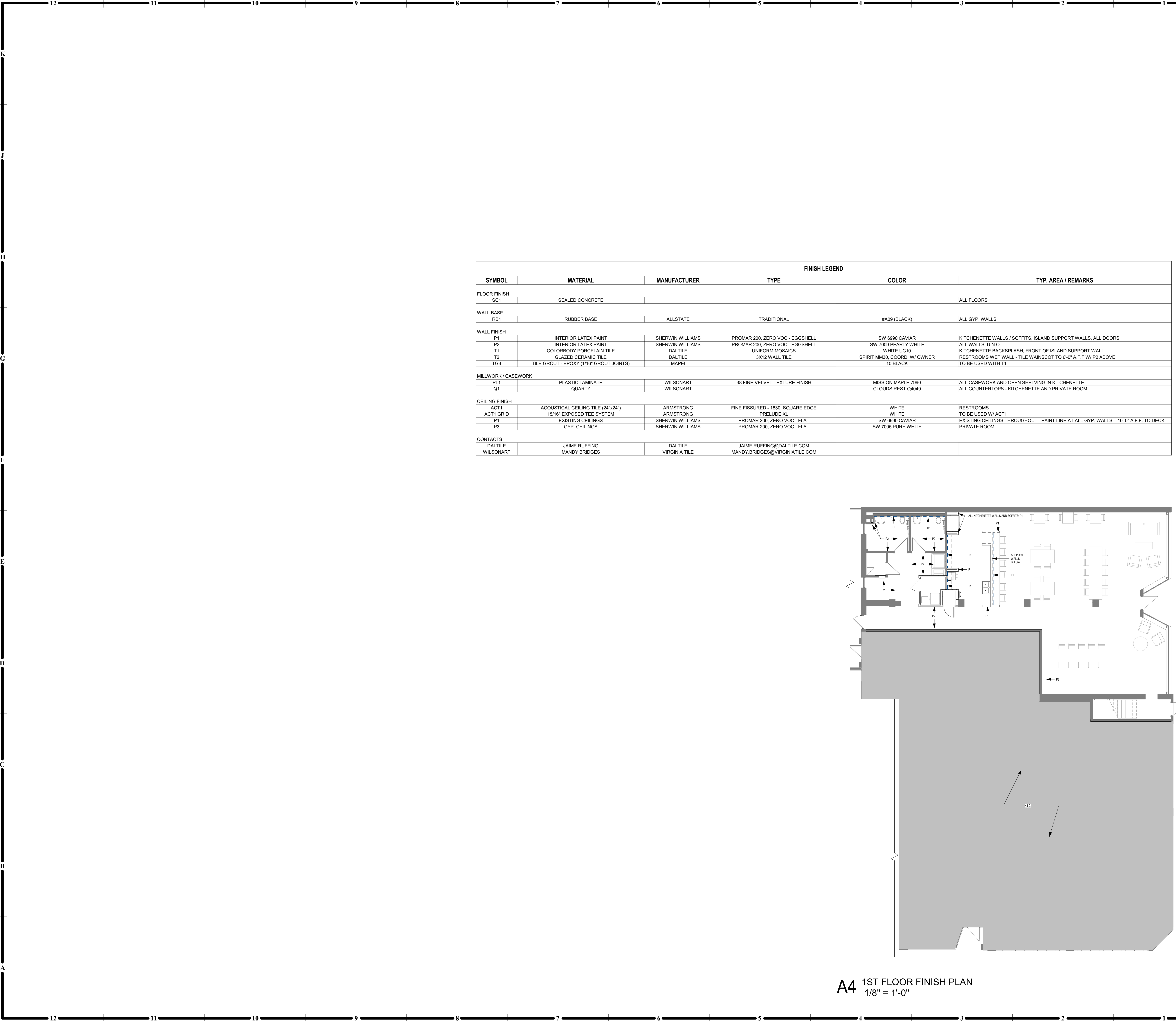
## REFLECTED CEILING PLAN, INTERIOR ELEVATIONS, AND DOOR SCHEDULE

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A4 1ST FLOOR FINISH PLAN  
1/8" = 1'-0"

GENERAL NOTES:  
WALL FINISH / WALL  
PROTECTION PLANS

1. RE: G-SHEETS FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
2. RE: FINISH LEGEND & FINISH SCHEDULE FOR SPECIFIC FINISH INFORMATION & LOCATIONS.
3. CONTRACTOR SHALL PROVIDE ALL NECESSARY BLOCKING FOR WALL PROTECTION ATTACHMENT. THIS INCLUDES, BUT IS NOT LIMITED TO: HANDRAILS, POSTER CASES, TV MONITORS, BATHROOM ACCESSORIES, FIRE EXTINGUISHERS AND EQUIPMENT. RE: ROUGH CARPENTRY SPECIFICATION SECTION FOR CLARIFICATION.
4. CONTRACTOR SHALL PROVIDE MANUFACTURER'S STANDARD ACCESSORY MOLDING OR TRIM FOR WALL PROTECTION ITEMS, UNLESS NOTED OTHERWISE.

NOT IN ARCHITECTURAL SCOPE

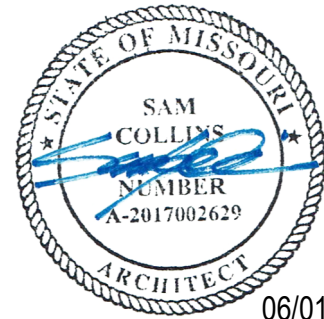
WALL FINISH LEGEND	
---	WALL TILE (T)

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FINISH PLAN AND SCHEDULE



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MECHANICAL ABBREVIATIONS	
(ALPHABETICAL BY ABBREVIATION)	
ABBREVIATION	LONG FORM
ABV	ABOVE
AC OR ACU	AIR-CONDITIONING UNIT
AHAP	AS HIGH AS POSSIBLE
AHU	AIR-HANDLING UNIT
AUTO	AUTOMATIC
BLW	BELOW
C	CHILLER
CD	CONDENSATE
CF	CABINET FAN
CFM	CUBIC FEET PER MINUTE
CH	CABINET HEATER
CHP	CHILLED WATER PUMP
CLNG OR CLG	CEILING
CONC	CONCRETE
CP OR CWP	CONDENSER WATER PUMP
CS	CONDENSER WATER SUPPLY
CR	CONDENSER WATER RETURN
CRAC OR CACU	COMPUTER ROOM AIR-CONDITIONING UNIT
CREF	CHILLER ROOM EXHAUST FAN
CRU	CONDENSATE (STEAM) RETURN UNIT
CT	COOLING TOWER CELL
CTU	CONDENSATE (STEAM) TRANSFER UNIT
CU	CONDENSING UNIT
DV	CONSTANT VOLUME TERMINAL BOX
DEF	DISHWASER EXHAUST FAN
DMR	DAMPER
DN	DOWN
EA	EACH
EBH	ELECTRIC BASEBOARD HEATER
EBH	ELECTRIC DUCT-MOUNTED HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
ELH	ELECTRIC UNIT HEATER
EXH	EXHAUST
FD	FIRE DAMPER
FCU	FAN-COIL UNIT
FF	FINAL FILTER
FFCH	FORCED-FLOW CABINET HEATER
FFU	FAN FILTER UNIT
FP	FAN POWERED TERMINAL BOX
GPM	GALLONS PER MINUTE
HC	HEATING COIL
HUM	HUMIDIFIER
HWP OR HP	HEATING WATER PUMP
HX	HEAT EXCHANGER
KEF	KITCHEN (GREASE HOOD) EXHAUST FAN
KW	KILOWATTS
LD	LINEAR SUPPLY DIFFUSER
MOT	MOTORIZED
MTD	MOUNTED
MJAF	MAKE-UP AIR FAN
MJAHU	MAKE-UP AIR-HANDLING UNIT
OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN
OPG OR OPMG	OPENING

NOT ALL ABBREVIATIONS ON THIS LIST ARE NECESSARILY USED ON THIS PROJECT

MECHANICAL ABBREVIATIONS CONT.	
(ALPHABETICAL BY ABBREVIATION)	
ABBREVIATION	LONG FORM
PF	PREFILTER
PLNM	PLENUM
RA	RETURN AIR
RAF	RETURN AIR FAN
RAG OR RG	RETURN AIR GRILLE
RAR OR RR	RETURN AIR REGISTER
RAS	RETURN AIR SILENCER
RE	IN REFERENCE TO
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SAF OR SF	SUPPLY AIR FAN
SAG OR SG	SUPPLY AIR GRILLE
SAR OR SR	SUPPLY AIR REGISTER
SAS	SUPPLY AIR SILENCER
SCHP	SECONDARY CHILLED WATER PUMP
SD	SMOKE DAMPER OR DETECTOR
SPCHP	SPECIAL PROCESS CHILLED WATER PUMP
TA	THROW AWAY (FILTER TYPE)
TOEF	TRUCK DOCK EXHAUST FAN
TEF	TOILET EXHAUST FAN
TRANS	TRANSITION OR TRANSFER
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
VF	VENTILATION FAN
VFD	VARIABLE FREQUENCY DRIVE
V V	VARIABLE VOLUME TERMINAL BOX
WI	WITH
XPMR OR TMR	TRANSFORMER
XT OR EX	EXPANSION TANK

NOT ALL ABBREVIATIONS ON THIS LIST ARE NECESSARILY USED ON THIS PROJECT

DUCTWORK LEGEND		
(REFER TO SPECIFICATIONS SECTIONS 15015 AND 15020 FOR ADDITIONAL INFORMATION)		
SINGLE LINE	DESCRIPTION	DOUBLE LINE
	ROUND ELBOW DOWN	
	ROUND ELBOW UP	
	OFFSET TO CHANGE ELEVATION (AT 30° WHEN POSSIBLE. ARROW SLOPES DN, U.N.O.)	
	ROUND RADIUS ELBOW	
	90° STRAIGHT TEE	
	90° CONICAL TEE	
	45° LATERAL TAP	
	45° LATERAL CONICAL TEE	
	SIZE OR SHAPE TRANSITION	
	ROUND FLEXIBLE DUCT	
	RECTANGULAR ELBOW DOWN	
	RECTANGULAR ELBOW UP	
	OFFSET TO CHANGE ELEVATION (AT 30° WHERE POSSIBLE. ARROW SLOPES DN, U.N.O.)	
	RECTANGULAR RADIUS ELBOW	
	RECTANGULAR ELBOW WITH TURNING VANES	
	SPLIT BRANCH TAKE-OFF WITH SQUARE ELBOW & SPLITTER DAMPER	
	SPLIT BRANCH TAKE-OFF WITH RADIUS ELBOW & SPLITTER DAMPER	
	SPLIT BRANCH TAKE-OFF TEE WITH STATIONARY SPLITTER DAMPER	
	BRANCH TAKE-OFF WITH 45° LEAD IN TAP	
	INSULATED LINED DUCTWORK (U.N.O.)	
	SQUARE FACED CEILING DIFFUSER 4-WAY DIRECTIONAL THROW (U.N.O.)	
	ROUND FACED CEILING DIFFUSER	
	CEILING RETURN OR EXHAUST AIR GRILLE OR REGISTER	
	SIDEALL SUPPLY GRILLE OR REGISTER	
	SUPPLY DUCT RISER	
	RETURN, EXHAUST OR OUTSIDE AIR DUCT RISER	
	MANUAL BALANCING DAMPER	
	AUTOMATIC (MOTOR-OPERATED) DAMPER	
	FIRE DAMPER	
	GRAVITY BACKDRAFT DAMPER	
	COMBINATION FIRE AND SMOKE DAMPER WITH SMOKE DETECTOR	
	SMOKE DAMPER (AUTOMATIC) WITH SMOKE DETECTOR	
	DUCT MOUNTED SMOKE DETECTOR	

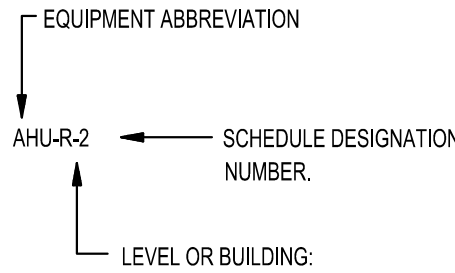
NOT ALL SYMBOLS ON THIS LIST ARE NECESSARILY USED ON THIS PROJECT

STANDARD MECHANICAL SYMBOLS	
SYMBOL	DESCRIPTION
	GATE VALVE
	BALL VALVE
	GLOBE VALVE
	BUTTERFLY VALVE
	PLUG VALVE
	ANGLE VALVE
	CHECK VALVE
	AUTOMATIC CONTROL VALVE (STRAIGHT THROUGH)
	AUTOMATIC CONTROL VALVE (3-WAY)
	AUTOMATIC CONTROL VALVE (ANGLE)
	AUTOMATIC CONTROL VALVE (STRAIGHT THROUGH)
	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	PRESSURE RELIEF VALVE
	GAUGE COCK
	PRESSURE GAUGE WITH GAUGE COCK
	THERMOMETER
	THERMOMETER WELL
	TEST PLUG
	FLOW METER
	TEMPERATURE SENSOR
	PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SWITCH
	IMMERSION THERMOSTAT
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	FLOW SWITCH
	ORIFICE
	PIPE SLEEVE THRU WALL OR FLOOR
	EXPANSION JOINT
	FLEXIBLE PIPE JOINT
	PIPE GUIDE
	ANCHOR
	STRAINER (Y-TYPE)
	STRAINER (BASKET TYPE)
	UNION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	DIRECTION OF FLOW
	DIRECTION OF SLOPE
	THERMOSTAT
	HUMIDISTAT
	FAN SPEED CONTROLLER
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	CONDENSATE DRAIN

NOT ALL SYMBOLS ON THIS LIST ARE NECESSARILY USED ON THIS PROJECT

OTHER SYMBOLS	
SYMBOL	DESCRIPTION
	INDICATES CONNECTION TO EXISTING DUCT OR PIPE

### GENERAL EQUIPMENT DESIGNATION KEY:



- ### MECHANICAL GENERAL NOTES
- PRIOR TO SUBMITTING BID, VISIT THE SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS AND ALL OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
  - COORDINATE THE INSTALLATION OF MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. DUCTWORK AND PIPING SHALL BE ROUTED TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC.
  - TAKE NECESSARY PRECAUTIONS TO AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION DURING WORK. REPAIR ANY DAMAGE CAUSED DURING CONSTRUCTION AT NO COST TO THE OWNER.
  - ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR UNLESS OTHERWISE NOTED.
  - NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING IS SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND SHALL MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. FIELD VERIFY FINAL LOCATIONS TO INSTALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.
  - REFER TO ARCHITECTURAL DRAWINGS FOR ALL RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. CHASE AND PENETRATIONS INTENDED FOR DUCTWORK AND PIPING SHALL BE VERIFIED WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.
  - COORDINATE LOCATION OF ROOF PENETRATIONS WITH THE EXISTING CONDITIONS AND ARCHITECTURAL DRAWINGS.
  - SEAL ALL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS. FIREPROOF ALL PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
  - COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL, AND DUCT INSTALLATION REQUIREMENTS.
  - LOCATION OF CEILING DIFFUSERS, REGISTERS, AND GRILLES SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE FINAL CEILING AND LIGHTING LOCATIONS.
  - DUCTWORK CROSSING FIRE RATED WALL OR OTHER FIRE RATED ASSEMBLIES SHALL BE MINIMUM 26 GAUGE SHEET METAL.
  - PROVIDE FIRE AND/OR FIRE-SMOKE DAMPERS IN DUCTWORK AT CEILINGS AND WALLS AS REQUIRED BY BUILDING CODE AUTHORITY HAVING JURISDICTION. FIRE AND FIRE-SMOKE DAMPERS SHALL CONFORM TO NFPA AS APPLICABLE.
  - PROVIDE WALL AND/OR DUCT ACCESS PANELS OR DOORS FOR ACCESS TO ALL FIRE AND/OR FIRE-SMOKE DAMPERS. ACCESS PANEL OR DOOR SHALL BE MINIMUM SIZE OF 6"x6" AND SHALL BE INSTALLED WITH 12" OF DAMPER. PROVIDE A REMOVABLE DUCT SECTION WHERE DUCT SIZE IS TOO SMALL FOR A 6"x6" ACCESS DOOR.
  - THERMOSTATS AND HUMIDISTATS SHALL BE LOCATED AND SET BY MECHANICAL CONTRACTOR AND WIRED IN CONDUIT BY ELECTRICAL CONTRACTOR. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. MOUNTING HEIGHTS SHALL BE 48" AFF TO MEET ADA REQUIREMENTS UNLESS OTHERWISE NOTED ON PLANS.
  - COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH ANY WALL MOUNTED ITEMS INDICATED ON THE ARCHITECTURAL DRAWINGS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF ANY WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
  - ALL BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS, AND GRILLES SHALL HAVE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULAR ROUND BRANCH DUCT TAKEOFF FITTING WITH MANUAL BALANCING DAMPER AND LOCKING QUADRANT.
  - BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.
  - RIGID DUCTWORK INSULATION: PROVIDE R-8 MINIMUM INSULATION WRAP ON ALL CONCEALED DUCTWORK. PROVIDE R-4 MINIMUM INSULATION DUCT LINER ON ALL EXPOSED DUCTWORK. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE DIMENSIONS. SHEET METAL SIZES SHALL INCREASE ACCORDINGLY. PROVIDE R-12 MINIMUM INSULATION ON ALL DUCTWORK INSTALLED IN UNCONDITIONED SPACES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
  - FLEXIBLE DUCT WORK SHALL BE THERMAFLEX TYPE MKE, FLEXMASTER TYPE BM, OR APPROVED EQUAL. SHALL BE LISTED UNDER 181 AS CLASS 1 AIR DUCT AND SHALL BE PROVIDED WITH INTEGRAL R-8 MINIMUM FIBERGLASS INSULATION. FLEXIBLE DUCTWORK SHALL NOT EXCEED 50' IN LENGTH AND SHALL BE INSTALLED AND SUPPORT TO AVOID SHARP BENDS AND SAGGING.
  - WALL MOUNTED DIFFUSERS AND GRILLES SHALL BE PROVIDED WITH SUITABLE MOUNTING FRAME TO MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.

# REECE NICHOLS TENANT IMPROVEMENTS

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

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REVISION DATES:



PROFESSIONAL SEAL

M101

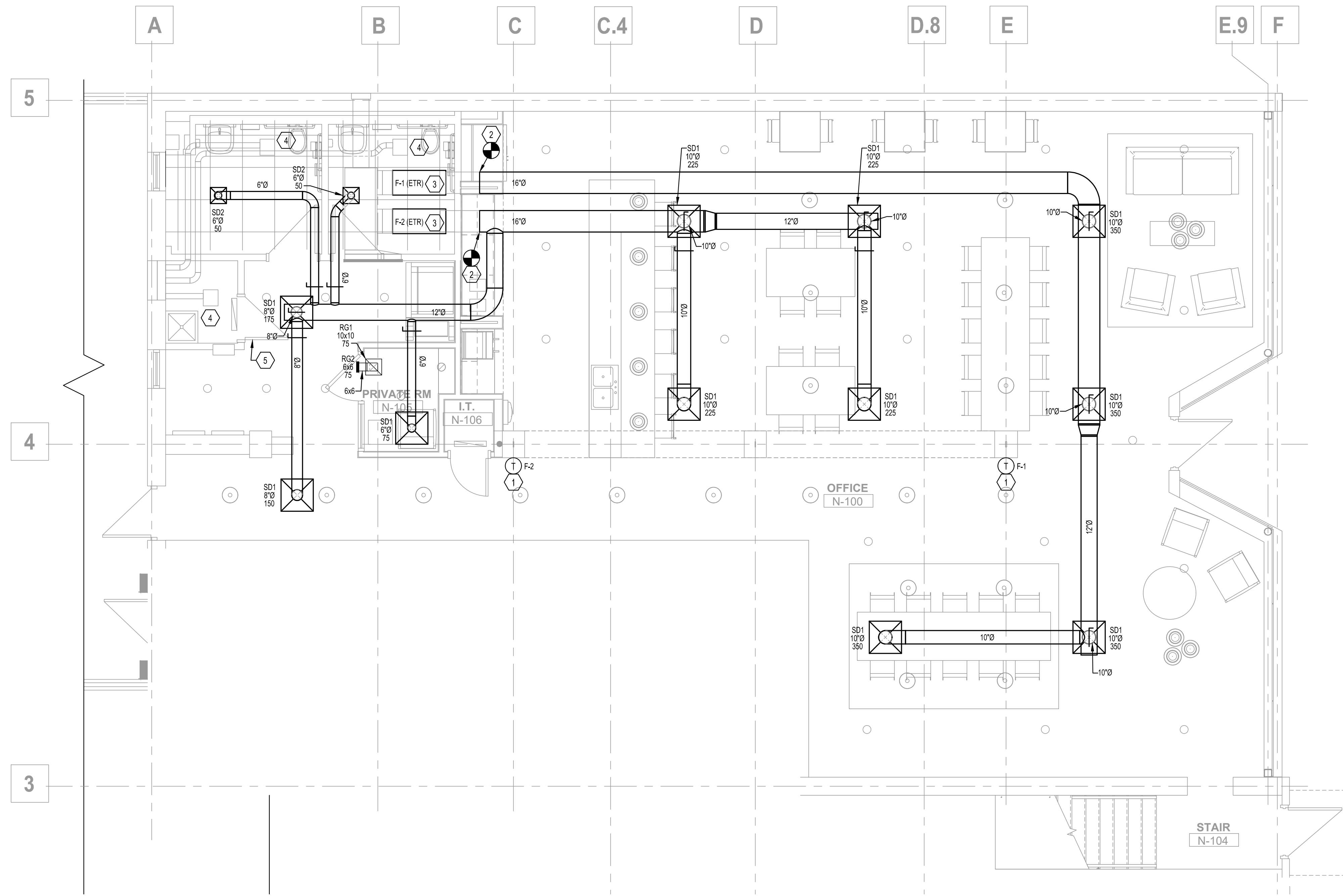
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MECHANICAL  
NOTES, SYMBOLS  
& ABBREVIATIONS

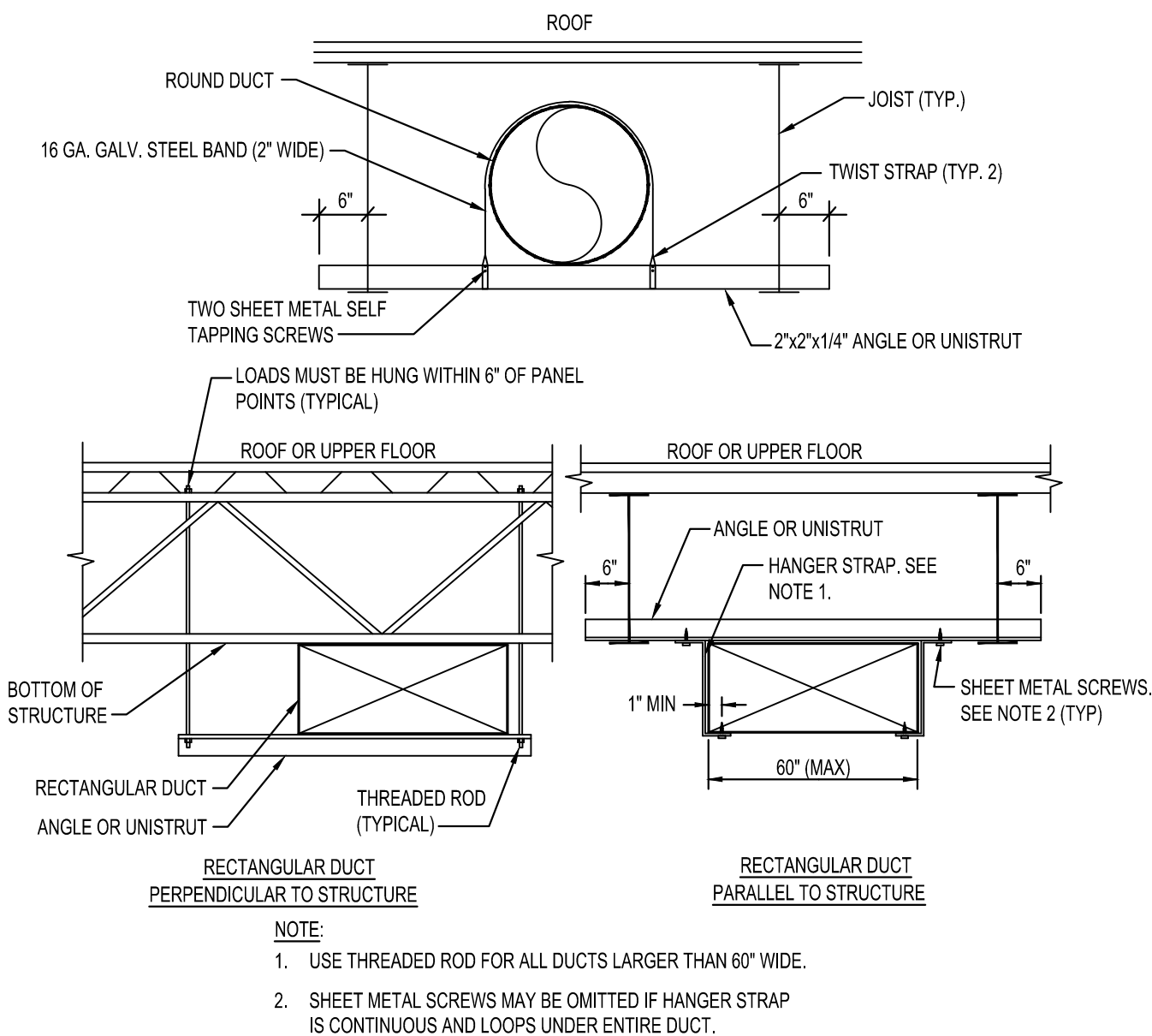


PERMIT DOCUMENTS

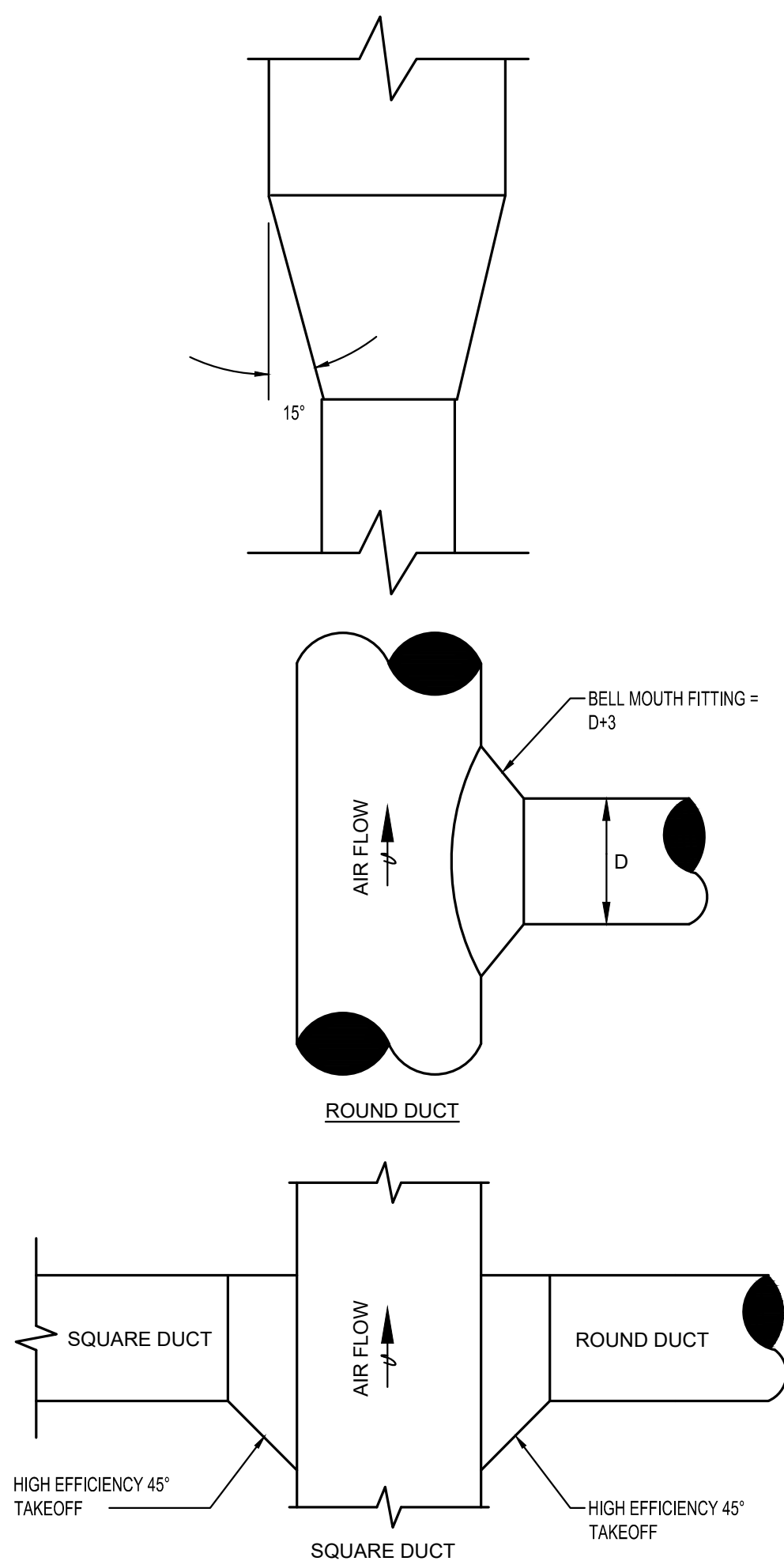
ALL EXPOSED SPIRAL DUCTWORK SHALL NOT BE PAINTED.  
COORDINATE EXACT FINISH WITH ARCHITECT.



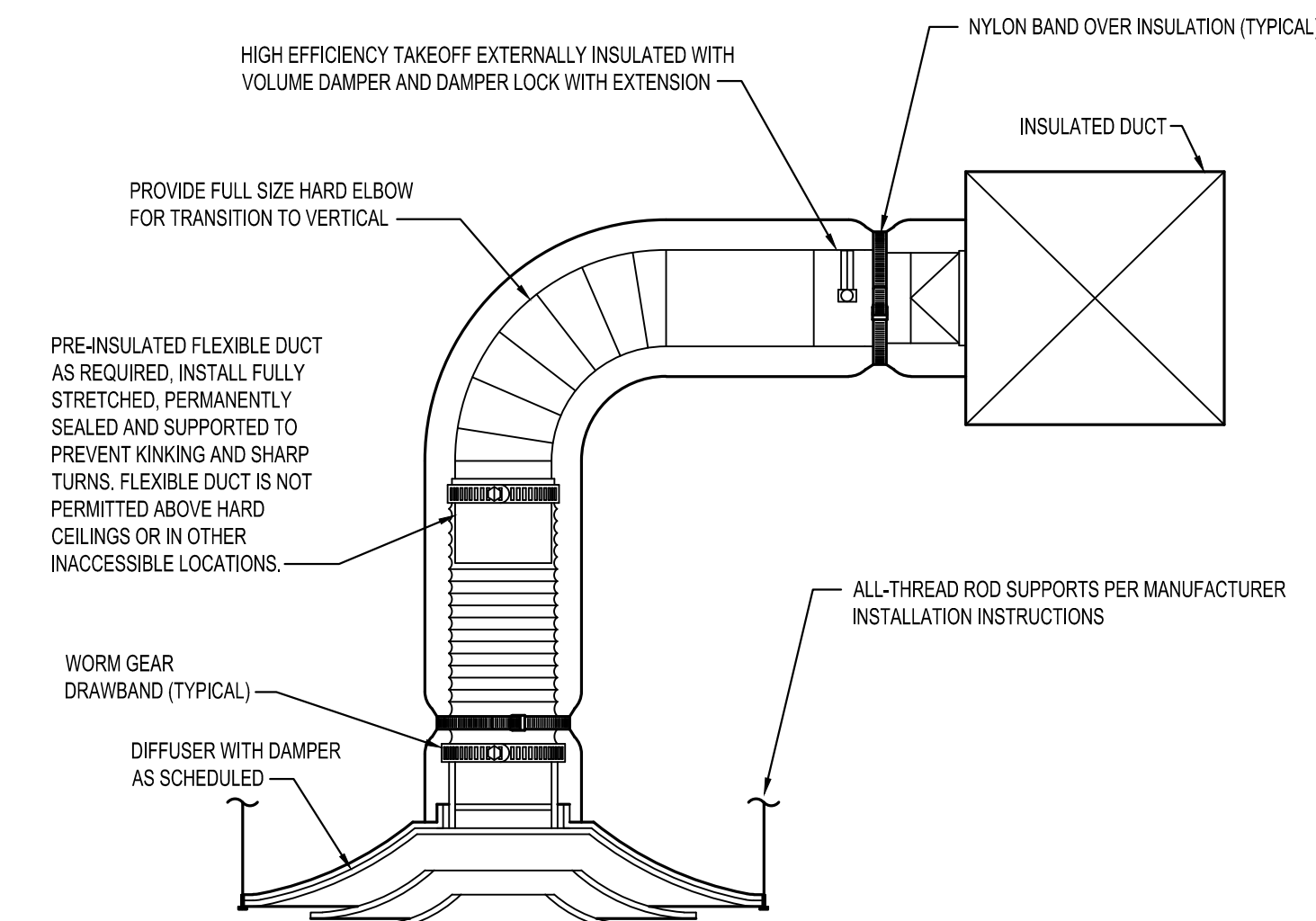
**1 MECHANICAL FIRST FLOOR PLAN**  
SCALE: 1/4" = 1'-0"



**4 DUCT HANGERS AND SUPPORTS**  
NOT TO SCALE



**3 DUCT TAKEOFFS AND FITTINGS**  
NOT TO SCALE



**2 DUCT MOUNTED DIFFUSER**  
NOT TO SCALE

GRILLE, REGISTER, AND DIFFUSER SCHEDULE						
MARK	MANUFACTURER	MODEL	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	NOTES
SD1	TITUS	PAS	PERFORATED	CEILING	24"x24"	A,B,C,D,E,F
RG1	TITUS	PAR	PERFORATED	CEILING	12"x12"	A,C,D,E,F
RG2	TITUS	350FL	LOUVERED	WALL	NECK + 1-3/4"	A,C,D,E,F

NOTES:  
A. NECK SIZE SHOWN ON DRAWINGS.  
B. 4-WAY THROW PATTERN, UNLESS SHOWN OTHERWISE ON DRAWINGS.  
C. BAKED ENAMEL FINISH TO MATCH CEILING/WALL COLOR. COORDINATE WITH ARCHITECTURAL PLANS.  
D. PROVIDE NECK FOR DUCT CONNECTION.  
E. BRANCH DUCT SIZE SHALL BE SAME AS NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.  
F. FRAME TYPE TO MATCH CONSTRUCTION OF MOUNTING LOCATION. COORDINATE WITH ARCHITECTURAL PLANS.

**GENERAL NOTES**

(NOT ALL NOTES APPLY)

1. REFERENCE SHEET M101 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.

**KEYED NOTES:**

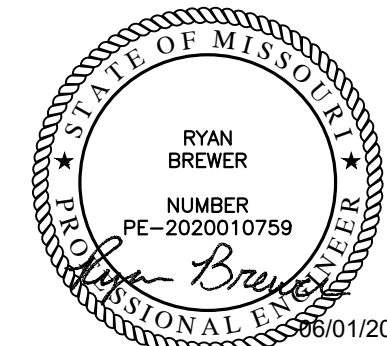
1. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH AUTO-CHANGEOVER BETWEEN HEATING AND COOLING AND 5-DEGREE DEADBAND. MOUNT AT 48" AFF.
2. CONNECT TO EXISTING SUPPLY AIR DUCTWORK FROM EXISTING SUSPENDED FURNACE. FIELD VERIFY EXACT LOCATION.
3. EXISTING SUSPENDED FURNACE, RETURN DUCTWORK, RETURN GRILLE, OUTDOOR AIR DUCTWORK, AND FLUE/VENT PIPING TO REMAIN. FIELD VERIFY EXACT LOCATION; BALANCE SUPPLY AIR TO 1400 CFM AND OUTDOOR AIR TO 200 CFM.
4. EXISTING EXHAUST FAN AND ASSOCIATED EXHAUST DUCTWORK TO REMAIN.
5. UNDERCUT DOOR MINIMUM 1" FOR AIRFLOW.

**REECE NICHOLS TENANT IMPROVEMENTS**

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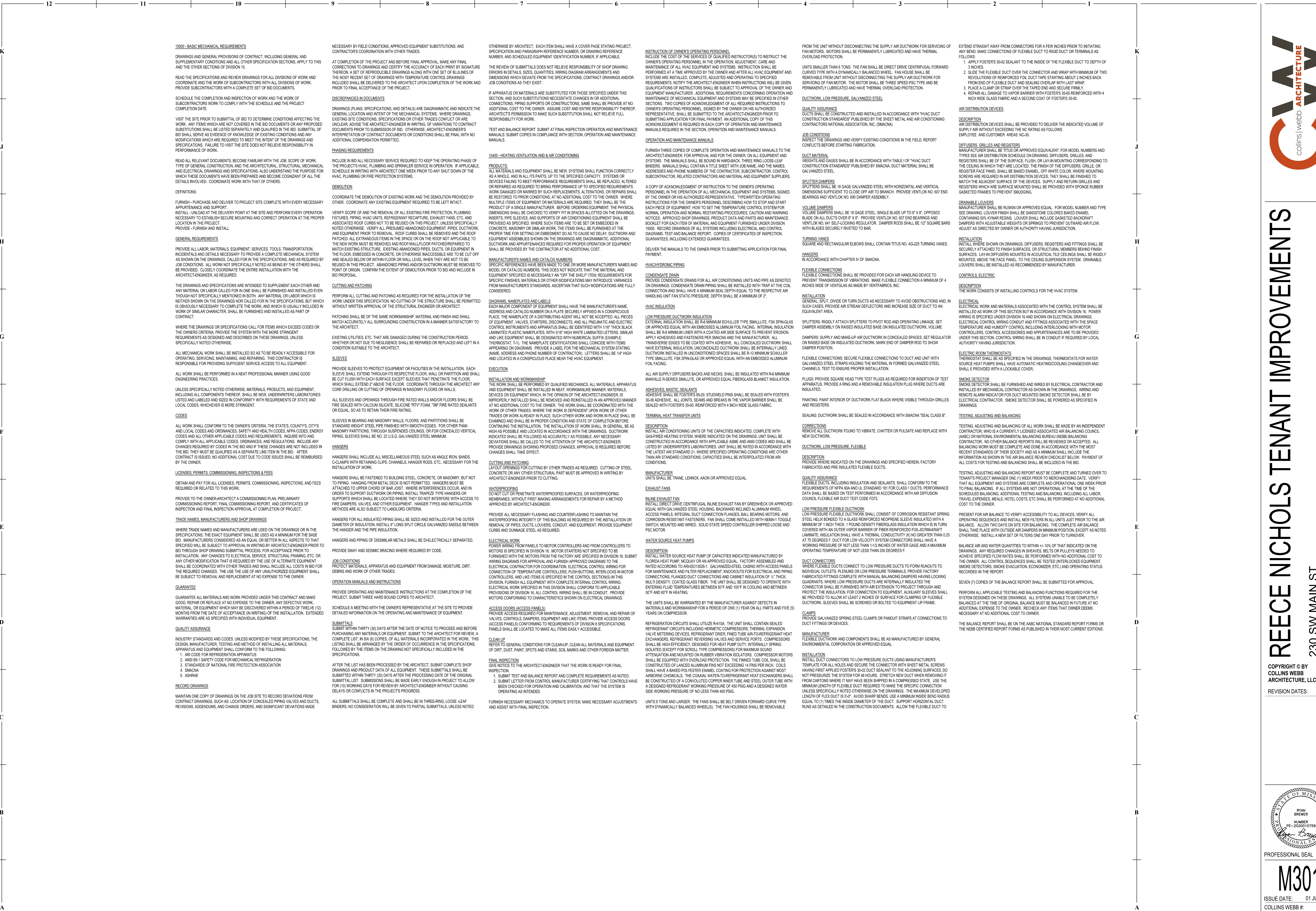
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**MECHANICAL FIRST FLOOR PLAN**



PERMIT DOCUMENTS



**15000 - BASIC MECHANICAL REQUIREMENTS**

DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 15.

READ THE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL DIVISIONS OF WORK AND COORDINATE AND THE WORK OF SUBCONTRACTORS WITH ALL DIVISIONS OF WORK. PROVIDE SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.

SCHEDULE THE COMPLETION AND INSPECTION OF WORK AND THE WORK OF SUBCONTRACTORS WORK TO COMPLY WITH THE SCHEDULE AND THE PROJECT COMPLETION DATE.

VISIT THE SITE PRIOR TO SUBMITTAL OF BID TO DETERMINE CONDITIONS AFFECTING THE WORK. ANY ITEMS WHICH ARE NOT COVERED IN THE BID DOCUMENTS OR ANY PROPOSED SUBSTITUTIONS SHALL BE LISTED SEPARATELY AND QUALIFIED IN THE BID. SUBMITTAL OF BID SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE RESPONSIBILITY IN PERFORMANCE OF WORK.

READ ALL RELEVANT DOCUMENTS, BECOME FAMILIAR WITH THE JOB, SCOPE OF WORK, TYPE OF GENERAL CONSTRUCTION, AND THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS; ALSO DETERMINE THE PURPOSE FOR WHICH THESE DOCUMENTS HAVE BEEN PREPARED AND BECOME CONAANT OF ALL THE DETAILS INVOLVED. COORDINATE WORK WITH THAT OF OTHERS.

**DEFINITIONS:**

FURNISH - PURCHASE AND DELIVER TO PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT.

INSTALL - UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT.

**GENERAL REQUIREMENTS**

PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OTHERS SHALL BE PROVIDED. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH THE ARCHITECT-ENGINEER, AS REQUIRED.

THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF CONTRACT.

WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE OWNERS CRITERIA, PROVIDE THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.

ALL MECHANICAL WORK SHALL BE INSTALLED SO AS TO BE READY TO ACCEPTOR FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.

ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES.

UNLESS SPECIFICALLY NOTED OTHERWISE, MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW, UNDERWRITERS LABORATORIES LISTED AND LABELED AND SIZED IN CONFORMITY WITH REQUIREMENTS OF STATE AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.

**CODES**

ALL WORK SHALL CONFORM TO THE OWNERS CRITERIA, THE STATES, COUNTY'S, CITY'S, AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REBURSED BY THE OWNER.

**LICENSES, PERMITS, COMMISSIONING, INSPECTIONS & FEES**

OBTAIN AND PAY FOR ALL LICENSES, PERMITS, COMMISSIONING, INSPECTIONS, AND FEES REQUIRED OR RELATED TO THIS WORK.

PROVIDE TO THE OWNER/ARCHITECT A COMMISSIONING PLAN, PRELIMINARY COMMISSIONING REPORT, FINAL COMMISSIONING REPORT, AND CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT.

**TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS**

WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL, OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL IN WRITING BY ARCHITECT-ENGINEER PRIOR TO BID THROUGH SHOP DRAWING SUBMITTAL PROCESS. FOR ACCEPTANCE PRIOR TO INSTALLATION, ANY CHANGES TO ELECTRICAL SERVICE, STRUCTURAL FRAMING, ETC. OR ANY OTHER MODIFICATION THAT IS REQUIRED BY THE USE OF AN ALTERNATE EQUIPMENT SHALL BE COORDINATED WITH OTHER TRADES AND SHALL INCLUDE ALL COSTS IN BID FOR THE REQUIRED CHANGES. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT NO EXPENSE TO THE OWNER.

**GUARANTEE**

GUARANTEE ALL MATERIALS AND WORK PROVIDED UNDER THIS CONTRACT AND MAKE GOOD, REPAIR OR REPLACE AT NO EXPENSE TO THE OWNER, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF ACCEPTANCE IN WRITING OF THE INSTALLATION. EXTENDED WARRANTIES ARE AS SPECIFIED WITH INDIVIDUAL EQUIPMENT.

**QUALITY ASSURANCE**

INDUSTRY STANDARDS AND CODES, UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURER, TESTING AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:

1. ARI CODE FOR REFRIGERATION APPARATUS
2. ANSI B31.1 SAFETY CODE FOR MECHANICAL REFRIGERATION
3. STANDARDS OF NATIONAL FIRE PROTECTION ASSOCIATION
4. SMACNA
5. ASHRAE

**RECORD DRAWINGS**

MAINTAIN ONE COPY OF DRAWINGS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS: LOCATION OF CONCEALED PIPING VALVES AND DUCTS, REVISIONS, ADDENDUMS, AND CHANGE ORDERS, AND SIGNIFICANT DEVIATIONS MADE

NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTORS COORDINATION WITH OTHER TRADES.

AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. A SET OF REPRODUCIBLE DRAWINGS ALONG WITH ONE SET OF BLUEPRINTS OF THE MOST RECENT SET OF DRAWINGS WITH TEMPERATURE CONTROL DRAWINGS INCLUDED SHALL BE DELIVERED TO THE ARCHITECT UPON COMPLETION OF THE WORK AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.

**DISCREPANCIES IN DOCUMENTS**

DRAWINGS, PLANS, SPECIFICATIONS, AND DETAILS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE ARCHITECT-ENGINEER IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, ARCHITECT-ENGINEERS INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

**PHASING REQUIREMENTS**

INCLUDE IN BID ALL NECESSARY SERVICE REQUIRED TO KEEP THE OPERATING PHASE OF THE PROJECTS HVAC, PLUMBING AND SPRINKLER SERVICE IN OPERATION. IF APPLICABLE, SCHEDULE IN WRITING WITH ARCHITECT ONE WEEK PRIOR TO ANY SHUT DOWN OF THE HVAC, PLUMBING OR FIRE PROTECTION SYSTEMS.

**DEMOLITION**

COORDINATE THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY OTHER. COORDINATE ANY EXISTING EQUIPMENT REQUIRED TO BELIEF INACT.

VERIFY SCOPE OF AND THE REMOVAL OF ALL EXISTING FIRE PROTECTION, PLUMBING FIXTURES, PIPING, HVAC UNITS, REFRIGERANT RECAPTURE, EXHAUST FANS, ETC. AND ASSURE THE ROOF CURBS NOT TO BE REUSED ON THIS PROJECT. UNLESS SPECIFICALLY NOTED OTHERWISE, VERIFY ALL PRESUMED ABANDONED EQUIPMENT, PIPES, DUCTWORK, AND EQUIPMENT PRIOR TO REMOVAL. ROOF CURBS SHALL BE REMOVED AND THE ROOF PATCHED. ALL EXTRANEIOUS ITEMS IN THE SPACE OR ON THE ROOF NOT APPLICABLE TO THE NEW WORK MUST BE REMOVED AND ROOF/FLOOR PATCHED/REPAIRED TO MATCH EXISTING STRUCTURE. EXISTING ABANDONED PIPES, DUCTS, OR EQUIPMENT IN THE FLOOR, EMBEDDED IN CONCRETE, OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR ON THE FLOOR/CEILING SHALL LEVEL. WHEN THEY ARE NOT TO BE REUSED IN THIS PROJECT, ABANDONED PIPING AND/OR DUCTWORK MUST BE REMOVED TO POINT OF ORIGIN. CONFIRM THE EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE IN BID PROPOSAL.

**CUTTING AND PATCHING**

PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF THE WORK UNDER THIS SPECIFICATION. NO CUTTING OF THE STRUCTURE SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OR ARCHITECT.

PATCHING SHALL BE OF THE SAME WORKMANSHIP, MATERIAL AND FINISH AND SHALL MATCH ACCURATELY ALL SURROUNDING CONSTRUCTION IN A MANNER SATISFACTORY TO THE ARCHITECT.

EXISTING UTILITIES, ETC. THAT ARE DAMAGED DURING THE CONSTRUCTION PERIOD, WHETHER OR NOT DUE TO THE NEGLIGENCE, SHALL BE REPAIRED OR REPLACED AND LEFT IN A CONDITION SATISFABLE TO THE ARCHITECT.

**SLEEVES**

PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR. COORDINATE THROUGH THE ARCHITECT ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY FLOORS OR WALLS.

ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FILL SEALED WITH CALCIUM SULFATE, SILICONE RTV FOM, 3M FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THEIR FIRE RATING.

SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED STEEL MINIMUM.

**HANGERS**

HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL, SUCH AS ANGLE, IRON, BANDS, CALUMNS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.

HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OR BAR JOIST, WHERE INTERFERENCES OCCUR, AND IN ORDER TO SUPPORT DUCTWORK OR PIPING, INSTALL TRAPEZIE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, AND OTHER EQUIPMENT. HANGER TYPES AND INSTALLATION METHODS ARE ALSO SUBJECT TO LANDLORD CRITERIA.

HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL F LONG SPLIT ORICLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.

HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DIELECTRICALLY SEPARATED.

PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODE.

**JOB CONDITIONS**

PROTECT MATERIALS, APPARATUS AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS AND WORK OF OTHER TRADES.

**OPERATION MANUALS AND INSTRUCTIONS**

PROVIDE OPERATING AND MAINTENANCE INSTRUCTIONS AT THE COMPLETION OF THE PROJECT. SUBMIT THREE HARD SOUND COPIES TO ARCHITECT.

SCHEDULE A MEETING WITH THE OWNERS REPRESENTATIVE AT THE SITE TO PROVIDE DETAILED INFORMATION ON THE OPERATING AND REPRESENTATIVE OF EQUIPMENT.

**SUBMITTALS**

SUBMIT WITHIN THIRTY (30) DAYS AFTER THE DATE OF NOTICE TO PROCEED AND BEFORE PURCHASING ANY MATERIALS OR EQUIPMENT. SUBMIT TO THE ARCHITECT FOR REVIEW, A COMPLETE LIST, IN SIX (6) COPIES, OF ALL MATERIALS INCORPORATED IN THE WORK. THIS LISTING SHALL BE ARRANGED BY THE ORDER OF OCCURRENCE IN THE SPECIFICATIONS, FOLLOWED BY THE ITEMS ON THE DRAWING NOT SPECIFICALLY INCLUDED IN THE SPECIFICATIONS.

AFTER THE LIST HAS BEEN PROCESSED BY THE ARCHITECT, SUBMIT COMPLETE SHOP DRAWINGS AND PRODUCT DATA OF ALL EQUIPMENT. THESE SUBMITTALS SHALL BE SUBMITTED WITHIN THIRTY (30) DAYS AFTER THE PROCESSING DATE OF THE ORIGINAL SUBMITTAL LIST. SUBMISSIONS SHALL BE MADE EARLY ENOUGH IN PROJECT TO ALLOW FOR (10) WORKING DAYS FOR REVIEW BY ARCHITECT-ENGINEER WITHOUT CAUSING DELAYS OR CONFLICTS IN THE PROJECT'S PROGRESS.

ALL SUBMITTALS SHALL BE COMPLETE AND SHALL BE IN THREE-FOLD, LOOSE-LEAF BINDERS, NO CONSIDERATION WILL BE GIVEN TO PARTIAL SUBMITTALS, UNLESS NOTED

OTHERWISE BY ARCHITECT. EACH ITEM SHALL HAVE A COVER PAGE STATING PROJECT, SPECIFICATION AND PARAGRAPH REFERENCE NUMBER, OR DRAWING REFERENCE NUMBER, AND SCHEDULED EQUIPMENT IDENTIFICATION NUMBER, IF APPLICABLE.

THE REVIEW OF SUBMITTALS DOES NOT RELIEVE RESPONSIBILITY OF SHOP DRAWINGS PREPARED IN DETAILS, SIZES, QUANTITIES, WIRING DIAGRAM ARRANGEMENTS AND DIMENSIONS WHICH DEViate FROM THE SPECIFICATIONS, CONTRACT DRAWINGS AND/OR JOB CONDITIONS AS THEY EXIST.

IF APPARATUS OR MATERIALS ARE SUBSTITUTED FOR THOSE SPECIFIED UNDER THIS SECTION, AND SUCH SUBSTITUTIONS NECESSITATE CHANGES IN OR ADDITIONAL CONNECTIONS, PIPING SUPPORTS OR CONSTRUCTIONS, SAME SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. ASSUME COST AND ENTIRE RESPONSIBILITY THEREOF ARCHITECTS PERMISSION TO MAKE SUCH SUBSTITUTION SHALL NOT RELIEVE FULL RESPONSIBILITY FOR WORK.

TEST AND BALANCE REPORT: SUBMIT AT FINAL INSPECTION OPERATION AND MAINTENANCE MANUALS. SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATION AND MAINTENANCE MANUALS.

**15400 - HEATING VENTILATION AND & AIR CONDITIONING**

**PRODUCTS**

ALL MATERIALS AND EQUIPMENT SHALL BE NEW, SYSTEMS SHALL FUNCTION CORRECTLY AS A WHOLE, AND IN ALL ITS PARTS, UP TO THE SPECIFIED CAPACITY. SYSTEMS OR DEVICES FAILING TO MEET PERFORMANCE REQUIREMENTS SHALL BE REPLACED, ALTERED OR REPAIRED AS REQUIRED TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS. WORK DAMAGED OR HARMED BY SUCH REPLACEMENTS, ALTERATIONS, OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITIONS, AT NO ADDITIONAL COST TO THE OWNER. WHERE MULTIPLE ITEMS OF EQUIPMENT OR MATERIALS ARE REQUIRED, THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, BEFORE ORDERING EQUIPMENT, THE PHYSICAL DIMENSIONS SHALL BE CHECKED TO VERIFY FIT IN SPACES ALLOTTED ON THE DRAWINGS. INSERTS, PIPE SLEEVES, AND SUPPORTS OF AIR CONDITIONING EQUIPMENT SHALL BE PROVIDED AS SPECIFIED. WHERE SUCH ITEMS ARE TO BE SET OR EMBEDDED IN CONCRETE, MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AT THE PROPER TIME FOR SETTING OR EMBEDMENT SO AS TO CAUSE NO DELAY. DUCTWORK AND EQUIPMENT ASSEMBLIES SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. ADDITIONAL DUCTWORK AND/OR APPURTENANCES REQUIRED FOR PROPER OPERATION OF EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

**MANUFACTURERS NAMES AND CATALOG NUMBERS**

SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURERS NAMES AND MODEL OR CATALOG NUMBERS. THIS DOES NOT INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM. REQUIREMENTS FOR SPECIFIC FINISHES, MATERIALS OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURERS STANDARDS. ASCERTAIN THAT SUCH MODIFICATIONS ARE FULLY CONSIDERED.

**DIAGRAMS, NAMEPLATES AND LABELS**

EACH MAJOR COMPONENT OF EQUIPMENT SHALL HAVE THE MANUFACTURERS NAME, ADDRESS AND CATALOG NUMBER ON A PLATE SECURELY AFFIXED IN A CONSPICUOUS PLACE. THE NAMEPLATE OF A DISTRIBUTING AGENT WILL NOT BE ACCEPTED. ALL PIECES OF EQUIPMENT, VALVES, STARTERS, DISCONNECTS, AND ALL PNEUMATIC AND ELECTRIC CONTROL INSTRUMENTS AND DEVICES SHALL BE IDENTIFIED WITH THE FOLLOWING: BLACK LAMINATED PLATE LABELS, WITH 3/16" HIGH WHITE LAMINATED LETTERS. SIMILAR AND LIKE EQUIPMENT SHALL BE DESIGNATED WITH NUMERICAL SUFFIX (EXAMPLE: THERMOSTAT 1). THE NAMEPLATE IDENTIFICATIONS SHALL CONFORM WITH ITEMS APPEARING ON DIAGRAMS. PROVIDE A LABEL FOR THE MECHANICAL SYSTEM STATING: (NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR), LETTERS SHALL BE 1/4" HIGH AND LOCATED IN A CONSPICUOUS PLACE NEAR THE HVAC EQUIPMENT.

**EXHAUSTION**

**CONDENSATE DRAIN**

PROVIDE CONDENSATE DRAINS FOR ALL AIR CONDITIONING UNITS AND PIPES AS DENOTED ON DRAWINGS. CONDENSATE DRAIN PIPING SHALL BE INSTALLED WITH TRAP AT THE COIL CONNECTION AND SHALL HAVE A MINIMUM SLOPE DEPTHTO EQUAL TO THE RESPECTIVE AIR HANDLING UNIT FAN STATIC PRESSURE. DEPTH SHALL BE A MINIMUM OF 2".

**HVAC INSULATION**

LOW PRESSURE DUCTWORK INSULATION  
EXTERNAL INSULATION SHALL BE A MINIMUM SCHULLER TYPE SMALLTUE, FSK SPIN-GLAS OR APPROVED EQUIVALENT. INSIDE SURFACES OF DUCTS, EXCEPT FOR INSULATION, SHALL BE R-4 MINIMUM LINER WITH A COATED AIR SIDE SURFACE TO PREVENT EROSION. APPLY ADHESIVES AND FASTENERS PER SMACNA AND THE MANUFACTURER. ALL TRANSVERSE EDGES TO BE COATED WITH ADHESIVE. ALL CONCEALED DUCTWORK SHALL HAVE EXTERNAL INSULATION, UNCONCEALED DUCTWORK SHALL BE INTERNALLY LINED. DUCTWORK INSTALLED IN UNCONDITIONED SPACES SHALL BE R-12 MINIMUM SCHULLER TYPE SMALLTUE, FSK SPIN-GLAS OR APPROVED EQUIVA, WITH AN EMBOSSED ALUMINUM FOIL FACING.

ALL AIR SUPPLY DIFFUSERS BACKS AND NECKS, SHALL BE INSULATED WITH R-4 MINIMUM MANVILLE R-SERIES INSULATION, OR APPROVED EQUAL, FIBERGLASS BASED INSULATION.

**ADHESIVES, MASTIC, SEALANTS**

ADHESIVES SHALL BE FOSTERS 80-20. STUPELWOOD PINS SHALL BE SEALED WITH FOSTERS 30-50 ADHESIVE. ALL JOINTS, SEAMS AND BREAKS IN THE VAPOR BARRIER SHALL BE SEALED WITH FOSTERS 35-60, REINFORCED WITH A 1/4" WIDE GLASS FABRIC.

**TERMINAL, HEAT TRANSFER UNITS**

**DESCRIPTION**

INSTALL AIR CONDITIONING SYSTEMS OF THE CAPACITIES INDICATED, COMPLETE WITH GAS-FIRED HEATING SYSTEM, WHERE INDICATED ON THE DRAWINGS. UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE ASME AND ANSI CODES AND SHALL BE LISTED BY UNDERWRITERS LABORATORIES. UNIT SHALL BE RATED IN ACCORDANCE WITH THE LATEST ARI STANDARD 21, WHERE SPECIFIED OPERATING CONDITIONS ARE OTHER THAN ARI STANDARD CONDITIONS. CAPACITIES SHALL BE INTERPOLATED FROM ARI CONDITIONS.

**MANUFACTURERS**

UNITS SHALL BE FRAME LENOX, AAO OR APPROVED EQUAL.

**EXHAUST FANS**

INLINE EXHAUST FAN  
INSTALL DIRECT DRIVE CENTRIFUGAL INLINE EXHAUST FAN BY GREENHECK OR APPROVED EQUAL WITH GALVANIZED STEEL HOUSING, BACKWARD INCLINED ALUMINUM WHEEL, ACCESS PANELS, INTEGRAL DUCT CONNECTION FLANGES, BALL BEARING MOTORS, AND CORROSION RESISTANT FASTENERS. FAN SHALL COME INSTALLED WITH NEUM+ TOGGLE SWITCH, MOUNTED AND WIRED. SOLID STATE SPEED CONTROLLER SHIPPED LOOSE AND PSC MOTOR.

**WATER SOURCE HEAT PUMPS**

**DESCRIPTION**

INSTALL WATER SOURCE HEAT PUMP OF CAPACITIES INDICATED MANUFACTURED BY FLOKIDA HEAT PUMP, MOQUAY OR AN APPROVED EQUAL, FACTORY ASSEMBLED AND RATED ACCORDING TO ANSI/ASHRAE-1, GALVANIZED-STEEL CASING WITH ACCESS PANELS FOR MAINTENANCE AND FILTER REPLACEMENT, ANKOUTS FOR ELECTRICAL AND PIPING CONNECTIONS, FLANGED FLUID CONNECTIONS AND CABINET INSULATION OF 1/2" THICK MULTI DENSITY, COATED GLASS FIBER. THE UNIT SHALL BE DESIGNED TO OPERATE WITH ENTERING FLUID TEMPERATURES BETWEEN 50°F AND 100°F IN COOLING AND BETWEEN 50°F AND 80°F IN HEATING.

THE UNITS SHALL BE WARRANTED BY THE MANUFACTURER AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR ON ALL PARTS AND FIVE (5) YEARS ON COMPRESSOR.

REFRIGERATION CIRCUITS SHALL UTILIZE R-410A. THE UNIT SHALL CONTAIN SEALED REFRIGERANT CIRCUITS INCLUDING HERMETIC COMPRESSORS, THERMAL EXPANSION VALVE, METRIC SIZES, REFRIGERANT DRIER, FINED TUBE AIR-TO-REFRIGERANT HEAT EXCHANGERS, REFRIGERANT DESIGNED VALVES AND SERVICE PORTS. COMPRESSORS SHALL BE HIGH EFFICIENCY, REVERSING FOR HEAT PUMP DUTY, INTERNALLY SPRING ISOLATED (EXCEPT FOR SCROLL TYPE COMPRESSORS) FOR MAXIMUM SOUND ATTENUATION AND MOUNTED ON RUBBER VIBRATION ISOLATORS. COMPRESSOR MOTORS SHALL BE EQUIPPED WITH OVERLOAD PROTECTION. THE FINED TUBE COIL SHALL BE CONSTRUCTED OF FLANGED ALUMINUM FINES NOT EXCEEDING 1/4" INGS PER INCH. COILS SHALL HAVE A BAKED POLYESTER ENAMEL COATING FOR PROTECTION AGAINST MOST ABORNE CHEMICALS. THE COAXIAL WATER-TO-REFRIGERANT HEAT EXCHANGERS SHALL BE CONSTRUCTED OF A CONVULATED COPPER INNER TUBE AND STEEL OUTER TUBE WITH A DESIGNED REFRIGERANT WORKING PRESSURE OF 40 PSIG AND A DESIGNED WATER SIDE WORKING PRESSURE OF NO LESS THAN 400 PSIG.

UNITS 8 TONS AND LARGER, THE FANS SHALL BE BELT DRIVEN FORWARD CURVE TYPE WITH DYNAMICALLY BALANCED WHEELS). THE FAN HOUSINGS SHALL BE REMOVABLE

**INSTRUCTION OF OWNERS OPERATING PERSONNEL**

INCLUDE THE COST OF THE SERVICES OF QUALIFIED INSTRUCTORS TO INSTRUCT THE OWNERS OPERATING PERSONNEL IN THE OPERATION, ADJUSTMENT, CARE AND MAINTENANCE OF ALL HVAC EQUIPMENT AND SYSTEMS. INSTRUCTION SHALL BE PROVIDED AT A TIME APPROVED BY THE OWNER AND AFTER ALL HVAC EQUIPMENT AND SYSTEMS ARE INSTALLED, COMPLETE, ADJUSTED AND OPERATING TO SPECIFIED REQUIREMENTS. NOTIFY THE ARCHITECT-ENGINEER WHEN INSTRUCTIONS WILL BE GIVEN. QUALIFICATIONS OF INSTRUCTORS SHALL BE SUBJECT TO APPROVAL OF THE OWNER AND EQUIPMENT MANUFACTURER. ADDITIONAL REQUIREMENTS CONCERNING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT AND SYSTEMS MAY BE SPECIFIED IN OTHER SECTIONS. TWO COPIES OF ACKNOWLEDGMENT OF ALL REQUIRED INSTRUCTIONS TO OWNERS OPERATING PERSONNEL, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE, SHALL BE SUBMITTED TO THE ARCHITECT-ENGINEER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. AN ADDITIONAL COPY OF THIS ACKNOWLEDGMENT IS REQUIRED IN EACH COPY OF OPERATION AND MAINTENANCE MANUALS REQUIRED IN THE SECTION, OPERATION AND MAINTENANCE MANUALS.

**OPERATION AND MAINTENANCE MANUALS**

FURNISH THREE COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT-ENGINEER, FOR APPROVAL AND FOR THE OWNER, ON ALL EQUIPMENT AND SYSTEMS. THE MANUALS SHALL BE BOUND IN HARD-SACK, THREE RING LOOSE-LEAF BINDERS. MANUALS SHALL CONTAIN A TITLE SHEET WITH JOB NAME AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL, SUBCONTRACTOR, RELATED CONTRACTORS AND MATERIAL AND EQUIPMENT SUPPLIERS.

A COPY OF ACKNOWLEDGMENT OF INSTRUCTION TO THE OWNERS OPERATING PERSONNEL IN THE OPERATION OF ALL MECHANICAL EQUIPMENT AND SYSTEMS, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE, TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNERS PERSONNEL, DESCRIBING HOW TO STOP AND START EACH PIECE OF EQUIPMENT, HOW TO SET THE TEMPERATURE CONTROL SYSTEM FOR NORMAL OPERATION AND NORMAL RESTARTING PROCEDURES, CAUTION AND WARNING NOTICES, APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF MATERIAL AND EQUIPMENT FURNISHED UNDER DIVISION 15000. RECORD DRAWINGS OF ALL SYSTEMS INCLUDING ELECTRICAL, AND CONTROL, DIAGRAMS, TEST AND BALANCE REPORT, COPIES OF CERTIFICATES OF INSPECTION, GUARANTEES, INCLUDING EXTENDED GUARANTEES.

DELIVER THE MANUALS TO THE OWNER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT.

**HVAC/HYDROCNIC PIPING**

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UNITS 8 TONS AND LARGER, THE FANS SHALL BE BELT DRIVEN FORWARD CURVE TYPE WITH DYNAMICALLY BALANCED WHEELS). THE FAN HOUSINGS SHALL BE REMOVABLE

FROM THE UNIT WITHOUT DISCONNECTING THE SUPPLY AIR DUCTWORK FOR SERVICING OF FAN MOTORS. MOTORS SHALL BE PERMANENTLY LUBRICATED AND HAVE THERMAL OVERLOAD PROTECTION.

**DUCTWORK, LOW PRESSURE, GALVANIZED STEEL**

**QUALITY ASSURANCE**

DUCTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA)

**JOB CONDITIONS**

INSPECT THE DRAWINGS AND VERIFY EXISTING CONDITIONS IN THE FIELD. REPORT CONFLICTS BEFORE STARTING FABRICATION.

**DUCT MATERIAL**

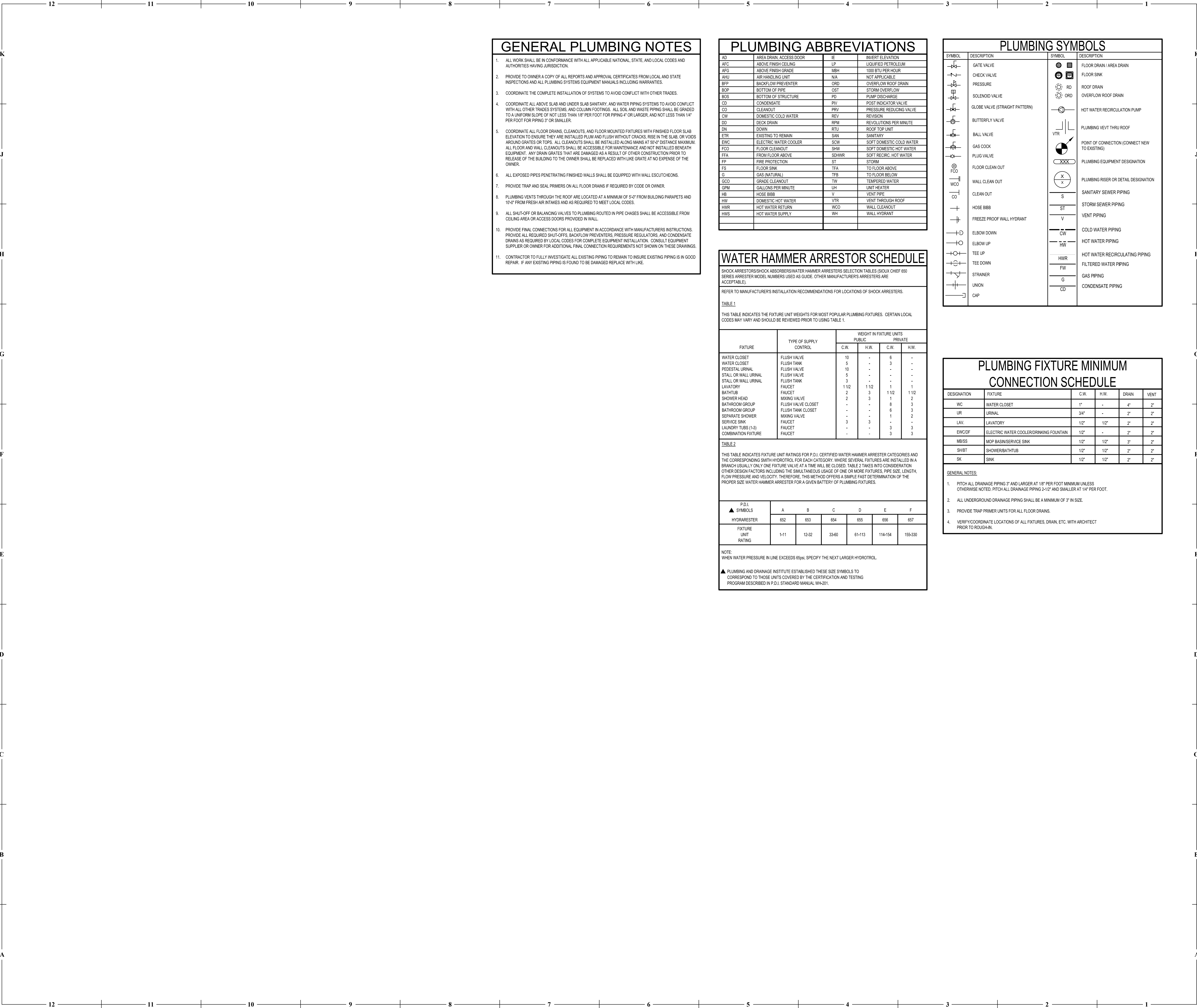
WEIGHTS AND GAGES SHALL BE IN ACCORDANCE WITH TABLE 1 OF "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY SMACNA. DUCT MATERIAL SHALL BE GALVANIZED STEEL.

**SPLITTER DAMPERS**

SPLITTERS SHALL BE 18 GAUGE GALVANIZED STEEL, WITH HORIZONTAL AND VERTICAL DIMENSIONS SUFFICIENT TO CLOSE OFF AIR TO BRANCH. PROVIDE VENTLOK NO. 607 END BEARINGS AND VENTLOK NO. 600 DAMPER ASSEMBLY.

**VOLUME DAMPERS**

VOLUME DAMPERS SHALL BE 18 GAUGE STEEL,



GENERAL PLUMBING NOTES	
1.	ALL WORK SHALL BE IN CONFORMANCE WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
2.	PROVIDE TO OWNER A COPY OF ALL REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS AND ALL PLUMBING SYSTEMS EQUIPMENT MANUALS INCLUDING WARRANTIES.
3.	COORDINATE THE COMPLETE INSTALLATION OF SYSTEMS TO AVOID CONFLICT WITH OTHER TRADES.
4.	COORDINATE ALL ABOVE SLAB AND UNDER SLAB SANITARY, AND WATER PIPING SYSTEMS TO AVOID CONFLICT WITH ALL OTHER TRADES SYSTEMS, AND COLUMN FOOTINGS. ALL SOIL AND WASTE PIPING SHALL BE GRADED TO A UNIFORM SLOPE OF NOT LESS THAN 1/8" PER FOOT FOR PIPING 4" OR LARGER, AND NOT LESS THAN 1/4" PER FOOT FOR PIPING 3" OR SMALLER.
5.	COORDINATE ALL FLOOR DRAINS, CLEANOUTS, AND FLOOR MOUNTED FIXTURES WITH FINISHED FLOOR SLAB ELEVATION TO ENSURE THEY ARE INSTALLED PLUMB AND FLUSH WITHOUT CRACKS, RISE IN THE SLAB, OR VOIDS AROUND GRATES OR TOPS. ALL CLEANOUTS SHALL BE INSTALLED ALONG MAINS AT 5'-0" DISTANCE MAXIMUM. ALL FLOOR AND WALL CLEANOUTS SHALL BE ACCESSIBLE FOR MAINTENANCE AND NOT INSTALLED BENEATH EQUIPMENT. ANY DRAIN GRATES THAT ARE DAMAGED AS A RESULT OF OTHER CONSTRUCTION PRIOR TO RELEASE OF THE BUILDING TO THE OWNER SHALL BE REPLACED WITH LIKE GRATE AT NO EXPENSE OF THE OWNER.
6.	ALL EXPOSED PIPES PENETRATING FINISHED WALLS SHALL BE EQUIPPED WITH WALL ESCUTCHEONS.
7.	PROVIDE TRAP AND SEAL PRIMERS ON ALL FLOOR DRAINS IF REQUIRED BY CODE OR OWNER.
8.	PLUMBING VENTS THROUGH THE ROOF ARE LOCATED AT A MINIMUM OF 5'-0" FROM BUILDING PARAPETS AND 10'-0" FROM FRESH AIR INTAKES AND AS REQUIRED TO MEET LOCAL CODES.
9.	ALL SHUT-OFF OR BALANCING VALVES TO PLUMBING ROUTED IN PIPE CHASES SHALL BE ACCESSIBLE FROM CEILING AREA OR ACCESS DOORS PROVIDED IN WALL.
10.	PROVIDE FINAL CONNECTIONS FOR ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. PROVIDE ALL REQUIRED SHUT-OFFS, BACKFLOW PREVENTERS, PRESSURE REGULATORS, AND CONDENSATE DRAINS AS REQUIRED BY LOCAL CODES FOR COMPLETE EQUIPMENT INSTALLATION. CONSULT EQUIPMENT SUPPLIER OR OWNER FOR ADDITIONAL FINAL CONNECTION REQUIREMENTS NOT SHOWN ON THESE DRAWINGS.
11.	CONTRACTOR TO FULLY INVESTIGATE ALL EXISTING PIPING TO REMAIN TO INSURE EXISTING PIPING IS IN GOOD REPAIR. IF ANY EXISTING PIPING IS FOUND TO BE DAMAGED REPLACE WITH LIKE.

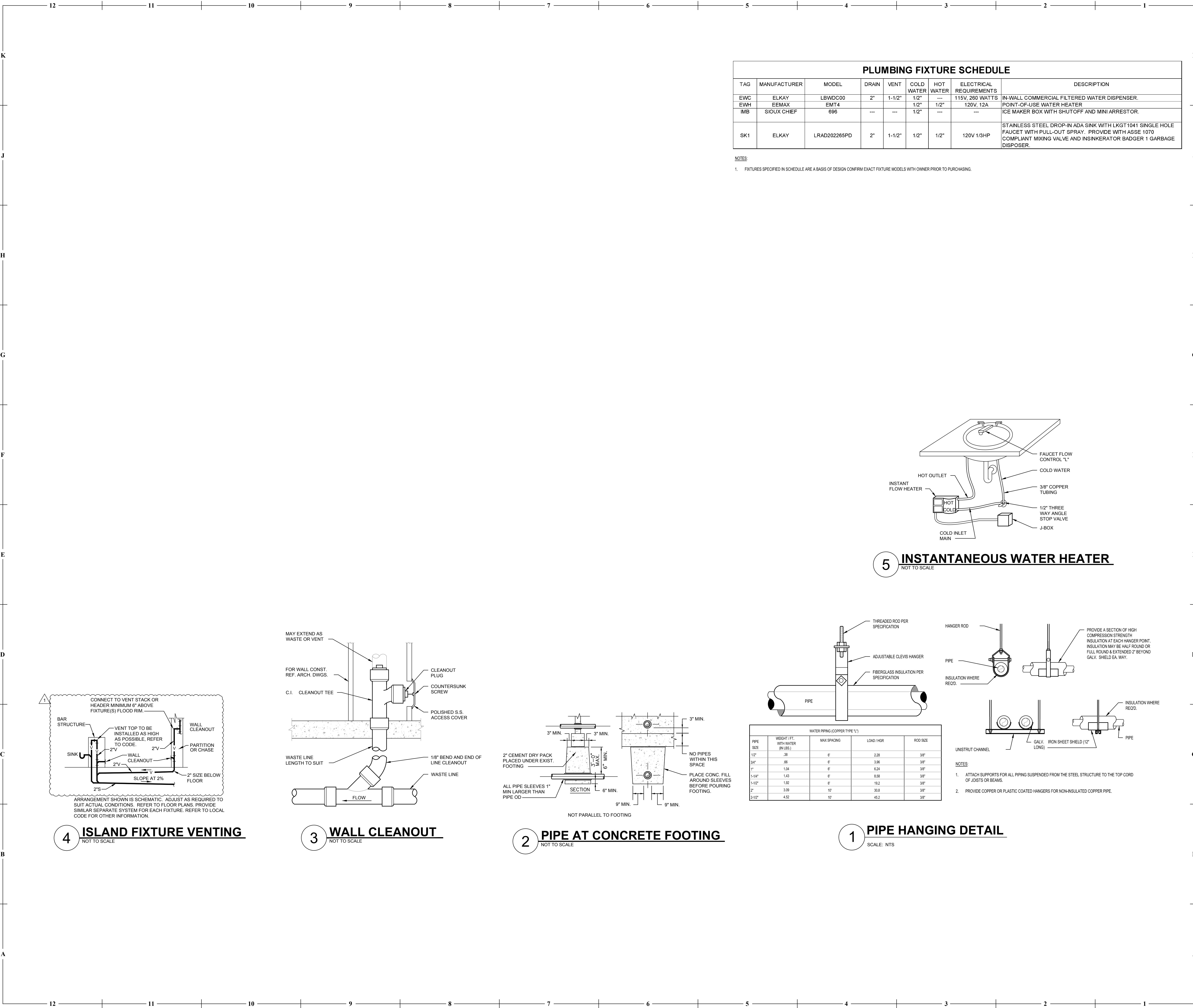
PLUMBING ABBREVIATIONS			
AD	AREA DRAIN, ACCESS DOOR	IE	INVERT ELEVATION
AFC	ABOVE FINISH CEILING	LP	LIQUIFIED PETROLEUM
AFG	ABOVE FINISH GRADE	MBH	1000 BTU PER HOUR
AHU	AIR HANDLING UNIT	NA	NOT APPLICABLE
BFP	BACKFLOW PREVENTER	ORD	OVERFLOW ROOF DRAIN
BOP	BOTTOM OF PIPE	OST	STORM OVERFLOW
BOS	BOTTOM OF STRUCTURE	PD	PUMP DISCHARGE
CD	CONDENSATE	PIV	POST INDICATOR VALVE
CO	CLEANOUT	PRV	PRESSURE REDUCING VALVE
CW	DOMESTIC COLD WATER	REV	REVISION
DD	DECK DRAIN	RPM	REVOLUTIONS PER MINUTE
DN	DOWN	RTU	ROOF TOP UNIT
ETR	EXISTING TO REMAIN	SAN	SANITARY
EW	ELECTRIC WATER COOLER	SCW	SOFT DOMESTIC COLD WATER
FCO	FLOOR CLEANOUT	SHW	SOFT DOMESTIC HOT WATER
FFA	FROM FLOOR ABOVE	SHWR	SOFT RECIRC. HOT WATER
FP	FIRE PROTECTION	ST	STORM
FS	FLOOR SINK	TFA	TO FLOOR ABOVE
G	GAS (NATURAL)	TFB	TO FLOOR BELOW
GCO	GRADE CLEANOUT	TW	TEMPERED WATER
GPM	GALLONS PER MINUTE	UH	UNIT HEATER
HS	HOSE BIBB	V	VENT PIPE
HW	DOMESTIC HOT WATER	VTR	VENT THROUGH ROOF
HWR	HOT WATER RETURN	WCO	WALL CLEANOUT
HWS	HOT WATER SUPPLY	WH	WALL HYDRANT

WATER HAMMER ARRESTOR SCHEDULE						
SHOCK ARRESTORS/SHOCK ABSORBERS/WATER HAMMER ARRESTERS SELECTION TABLES (SLOUX CHIEF 650 SERIES ARRESTER MODEL NUMBERS USED AS GUIDE. OTHER MANUFACTURERS ARRESTERS ARE ACCEPTABLE).						
REFER TO MANUFACTURER'S INSTALLATION RECOMMENDATIONS FOR LOCATIONS OF SHOCK ARRESTERS.						
TABLE 1						
THIS TABLE INDICATES THE FIXTURE UNIT WEIGHTS FOR MOST POPULAR PLUMBING FIXTURES. CERTAIN LOCAL CODES MAY VARY AND SHOULD BE REVIEWED PRIOR TO USING TABLE 1.						
FIXTURE	TYPE OF SUPPLY CONTROL	WEIGHT IN FIXTURE UNITS				
		PUBLIC		PRIVATE		
		C.W.	H.W.	C.W.	H.W.	
WATER CLOSET	FLUSH VALVE	10	-	6	-	
WATER CLOSET	FLUSH TANK	5	-	3	-	
PEDESTAL URINAL	FLUSH VALVE	10	-	-	-	
STALL OR WALL URINAL	FLUSH VALVE	5	-	-	-	
STALL OR WALL URINAL	FLUSH TANK	3	-	-	-	
LAVATORY	FAUCET	1 1/2	1 1/2	1	1	
BATHTUB	FAUCET	2	3	1 1/2	1 1/2	
SHOWER HEAD	MIXING VALVE	2	3	1	2	
BATHROOM GROUP	FLUSH VALVE CLOSET	-	-	8	3	
BATHROOM GROUP	FLUSH TANK CLOSET	-	-	6	3	
SEPARATE SHOWER	MIXING VALVE	-	-	1	2	
SERVICE SINK	FAUCET	3	3	-	-	
LAUNDRY TUBS (1-3)	FAUCET	-	-	3	3	
COMBINATION FIXTURE	FAUCET	-	-	3	3	
TABLE 2						
THIS TABLE INDICATES FIXTURE UNIT RATINGS FOR P.D.I. CERTIFIED WATER HAMMER ARRESTER CATEGORIES AND THE CORRESPONDING SMITH-HYDROTROL FOR EACH CATEGORY. WHERE SEVERAL FIXTURES ARE INSTALLED IN A BRANCH USUALLY ONLY ONE FIXTURE VALVE AT A TIME WILL BE CLOSED. TABLE 2 TAKES INTO CONSIDERATION OTHER DESIGN FACTORS INCLUDING THE SIMULTANEOUS USAGE OF ONE OR MORE FIXTURES, PIPE SIZE, LENGTH, FLOW PRESSURE AND VELOCITY. THEREFORE, THIS METHOD OFFERS A SIMPLE FAST DETERMINATION OF THE PROPER SIZE WATER HAMMER ARRESTER FOR A GIVEN BATTERY OF PLUMBING FIXTURES.						
P.D.I. SYMBOLS	A	B	C	D	E	F
	HYDRARESTER	652	653	654	655	656
FIXTURE UNIT RATING	1-11	12-32	33-60	61-113	114-154	155-330
NOTE: WHEN WATER PRESSURE IN LINE EXCEEDS 65psi, SPECIFY THE NEXT LARGER HYDROTROL.						
▲ PLUMBING AND DRAINAGE INSTITUTE ESTABLISHED THESE SIZE SYMBOLS TO CORRESPOND TO THOSE UNITS COVERED BY THE CERTIFICATION AND TESTING PROGRAM DESCRIBED IN P.D.I. STANDARD MANUAL WH-201.						

PLUMBING SYMBOLS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	GATE VALVE		FLOOR DRAIN / AREA DRAIN
	CHECK VALVE		FLOOR SINK
	PRESSURE		ROOF DRAIN
	SOLENOID VALVE		OVERFLOW ROOF DRAIN
	GLOBE VALVE (STRAIGHT PATTERN)		HOT WATER RECIRCULATION PUMP
	BUTTERFLY VALVE		PLUMBING VENT THRU ROOF
	BALL VALVE		POINT OF CONNECTION (CONNECT NEW TO EXISTING)
	GAS COCK		PLUMBING EQUIPMENT DESIGNATION
	PLUG VALVE		PLUMBING RISER OR DETAIL DESIGNATION
	FLOOR CLEAN OUT		SANITARY SEWER PIPING
	WALL CLEAN OUT		STORM SEWER PIPING
	CLEAN OUT		VENT PIPING
	HOSE BIBB		COLD WATER PIPING
	FREEZE PROOF WALL HYDRANT		HOT WATER PIPING
	ELBOW DOWN		HOT WATER RECIRCULATING PIPING
	ELBOW UP		FILTERED WATER PIPING
	TEE UP		GAS PIPING
	TEE DOWN		CONDENSATE PIPING
	STRAINER		
	UNION		
	CAP		

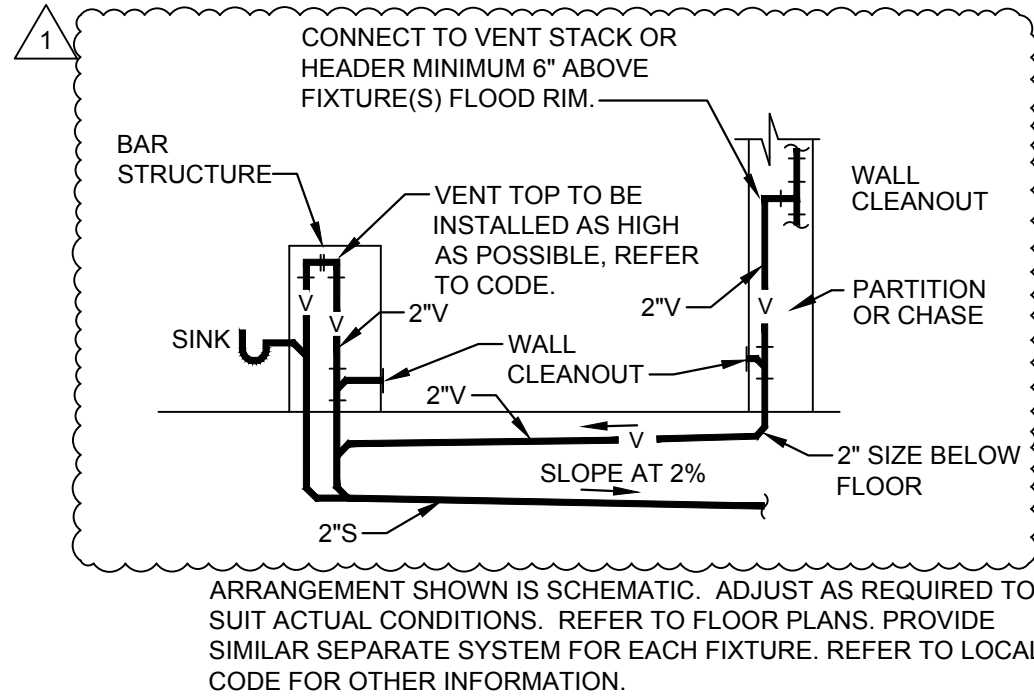
PLUMBING FIXTURE MINIMUM CONNECTION SCHEDULE					
DESIGNATION	FIXTURE	C.W.	H.W.	DRAIN	VENT
WC	WATER CLOSET	1"	-	4"	2"
UR	URINAL	3/4"	-	2"	2"
LAV.	LAVATORY	1/2"	1/2"	2"	2"
EW/COF	ELECTRIC WATER COOLER/DRINKING FOUNTAIN	1/2"	-	2"	2"
MB/SS	MOP BASIN/SERVICE SINK	1/2"	1/2"	3"	2"
SHBT	SHOWER/BATHTUB	1/2"	1/2"	2"	2"
SK	SINK	1/2"	1/2"	2"	2"
GENERAL NOTES:					
1. PITCH ALL DRAINAGE PIPING 3" AND LARGER AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. PITCH ALL DRAINAGE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT.					
2. ALL UNDERGROUND DRAINAGE PIPING SHALL BE A MINIMUM OF 3" IN SIZE.					
3. PROVIDE TRAP PRIMER UNITS FOR ALL FLOOR DRAINS.					
4. VERIFY/COORDINATE LOCATIONS OF ALL FIXTURES, DRAIN, ETC. WITH ARCHITECT PRIOR TO ROUGH-IN.					



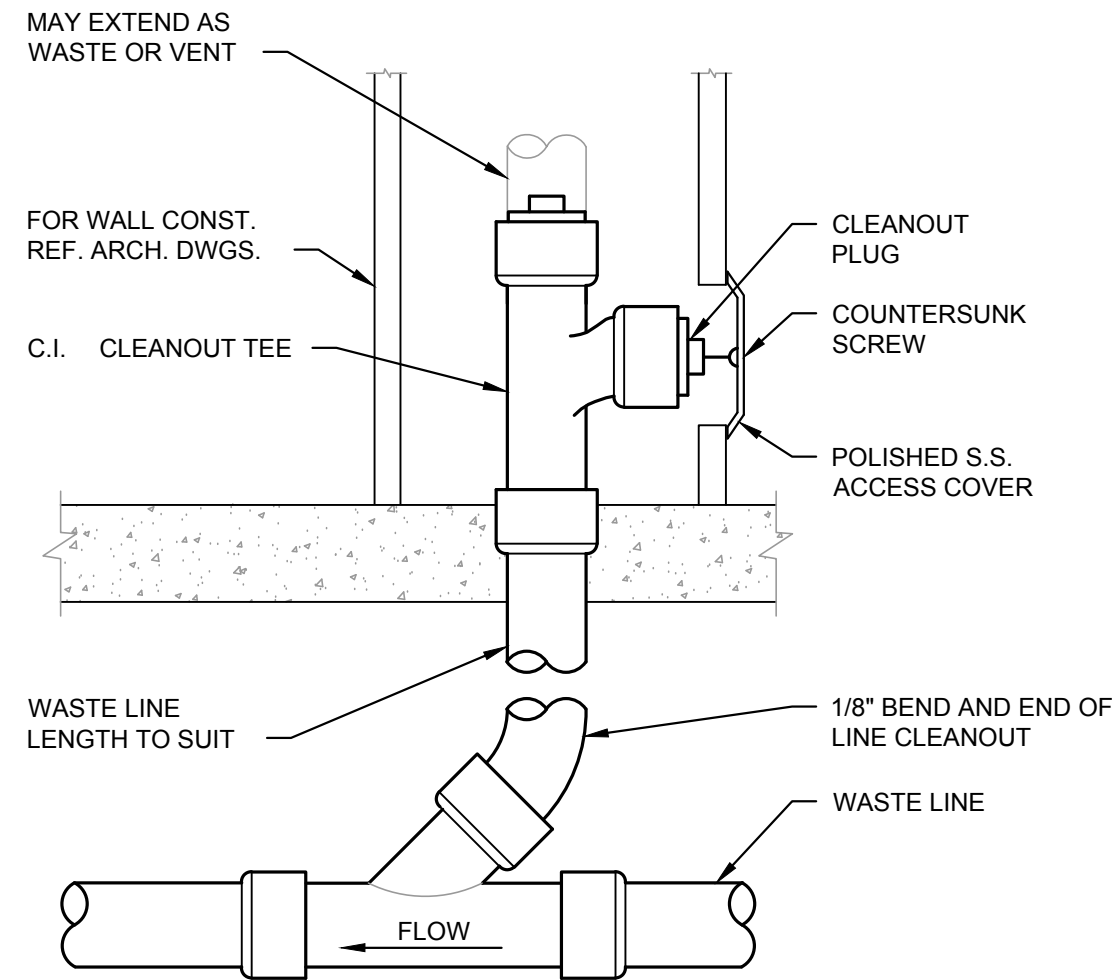


PLUMBING FIXTURE SCHEDULE								
TAG	MANUFACTURER	MODEL	DRAIN	VENT	COLD WATER	HOT WATER	ELECTRICAL REQUIREMENTS	DESCRIPTION
EWC	ELKAY	LBWDC00	2"	1-1/2"	1/2"	---	115V, 260 WATTS	IN-WALL COMMERCIAL FILTERED WATER DISPENSER.
EWB	EEMAX	EMT4	---	---	1/2"	1/2"	120V, 12A	POINT-OF-USE WATER HEATER
IMB	SIOUX CHIEF	696	---	---	1/2"	---	---	ICE MAKER BOX WITH SHUT OFF AND MINI ARRESTOR.
SK1	ELKAY	LRAD202265PD	2"	1-1/2"	1/2"	1/2"	120V 1/3HP	STAINLESS STEEL DROP-IN ADA SINK WITH LKGT1041 SINGLE HOLE FAUCET WITH PULL-OUT SPRAY. PROVIDE WITH ASSE 1070 COMPLIANT MIXING VALVE AND INSINKERATOR BADGER 1 GARBAGE DISPOSER.

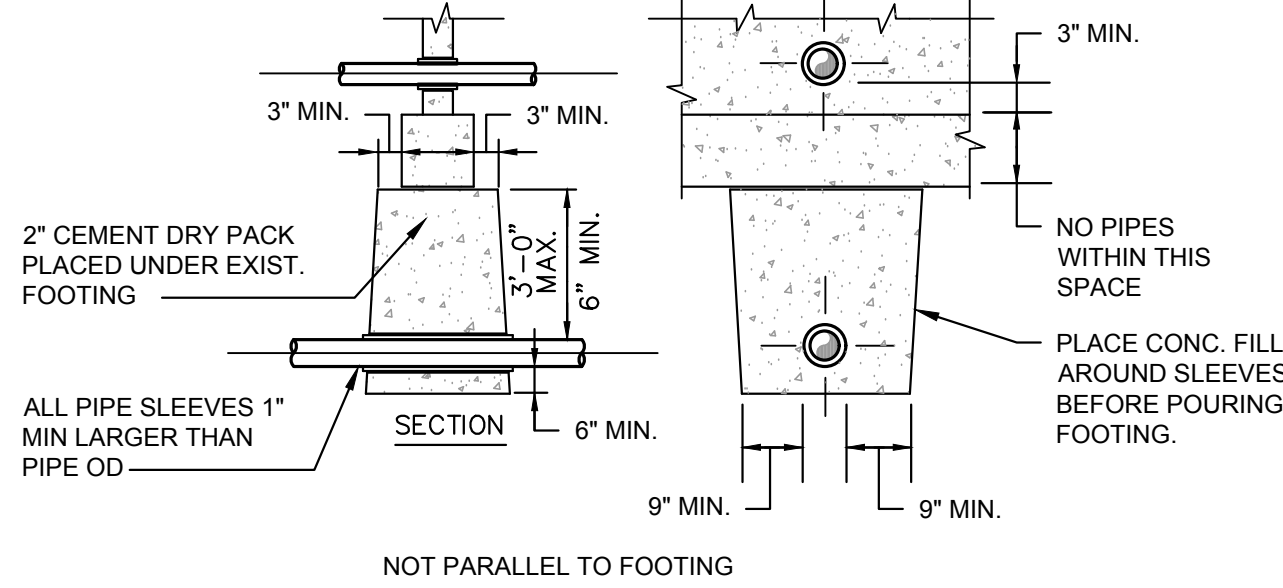
NOTES:  
1. FIXTURES SPECIFIED IN SCHEDULE ARE A BASIS OF DESIGN. CONFIRM EXACT FIXTURE MODELS WITH OWNER PRIOR TO PURCHASING.



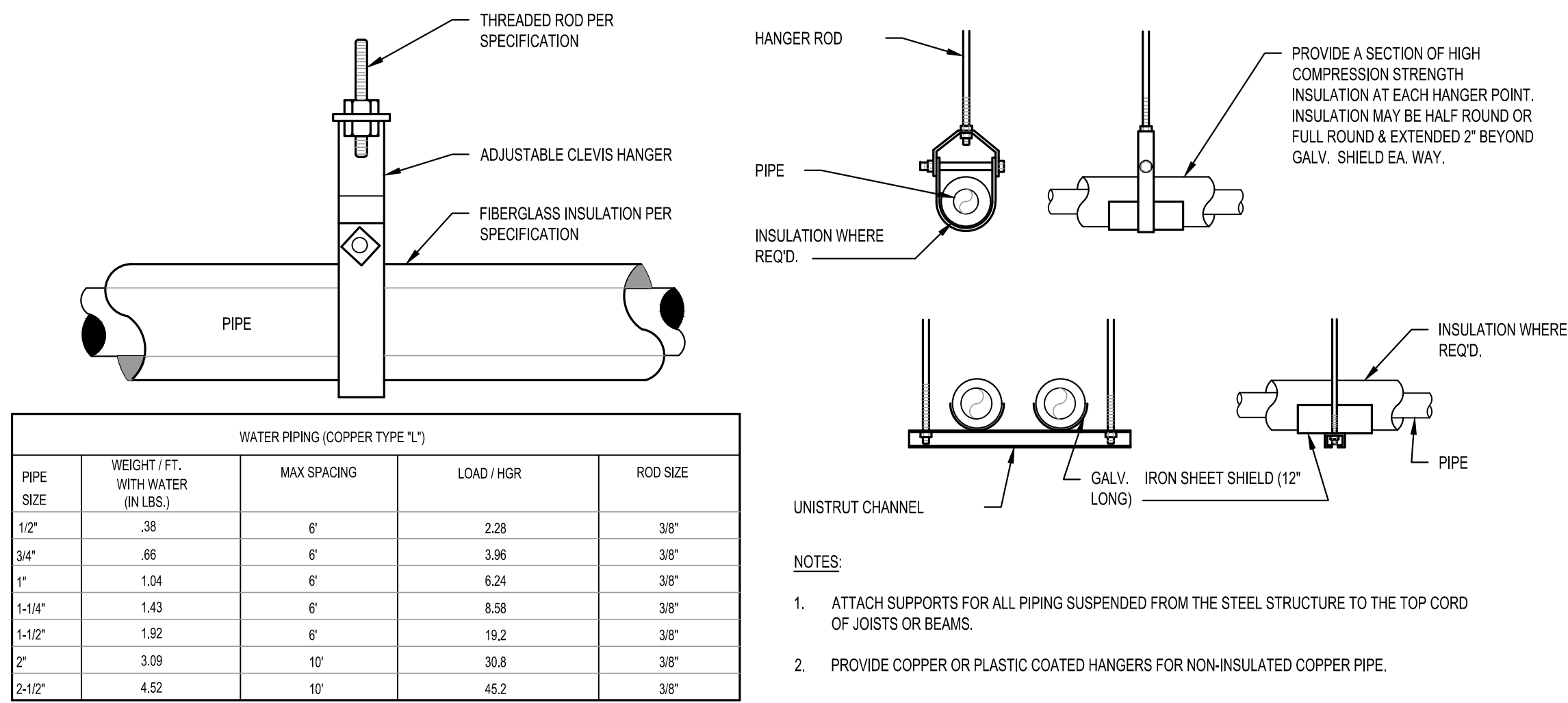
4 ISLAND FIXTURE VENTING  
NOT TO SCALE



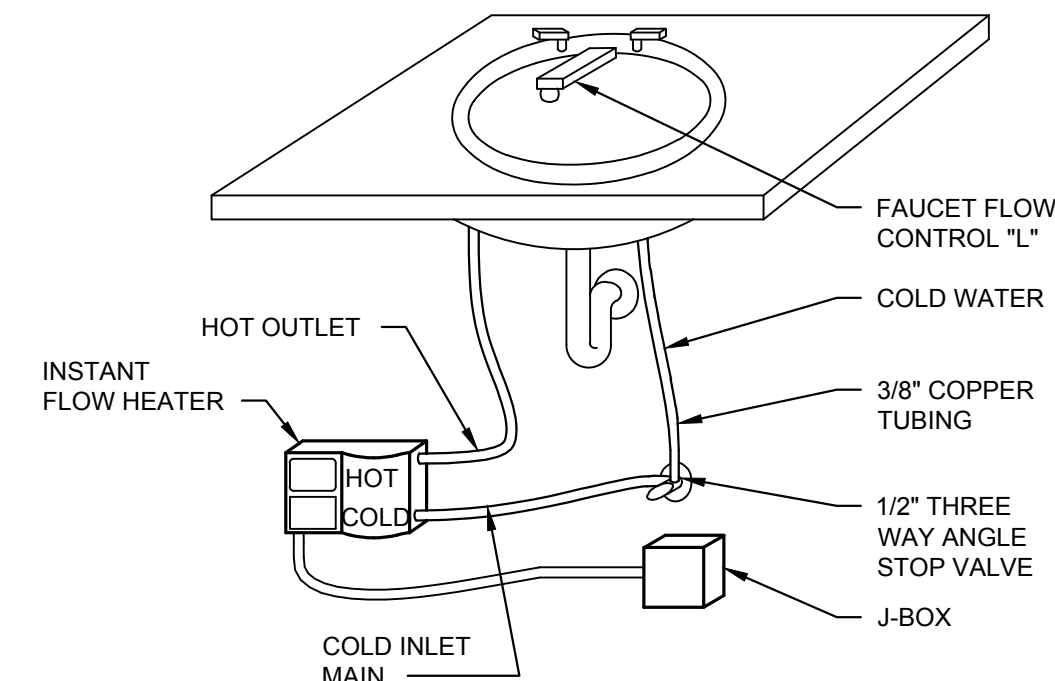
3 WALL CLEANOUT  
NOT TO SCALE



2 PIPE AT CONCRETE FOOTING  
NOT TO SCALE



1 PIPE HANGING DETAIL  
SCALE: NTS



5 INSTANTANEOUS WATER HEATER  
NOT TO SCALE



REECE NICHOLS TENANT IMPROVEMENTS

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

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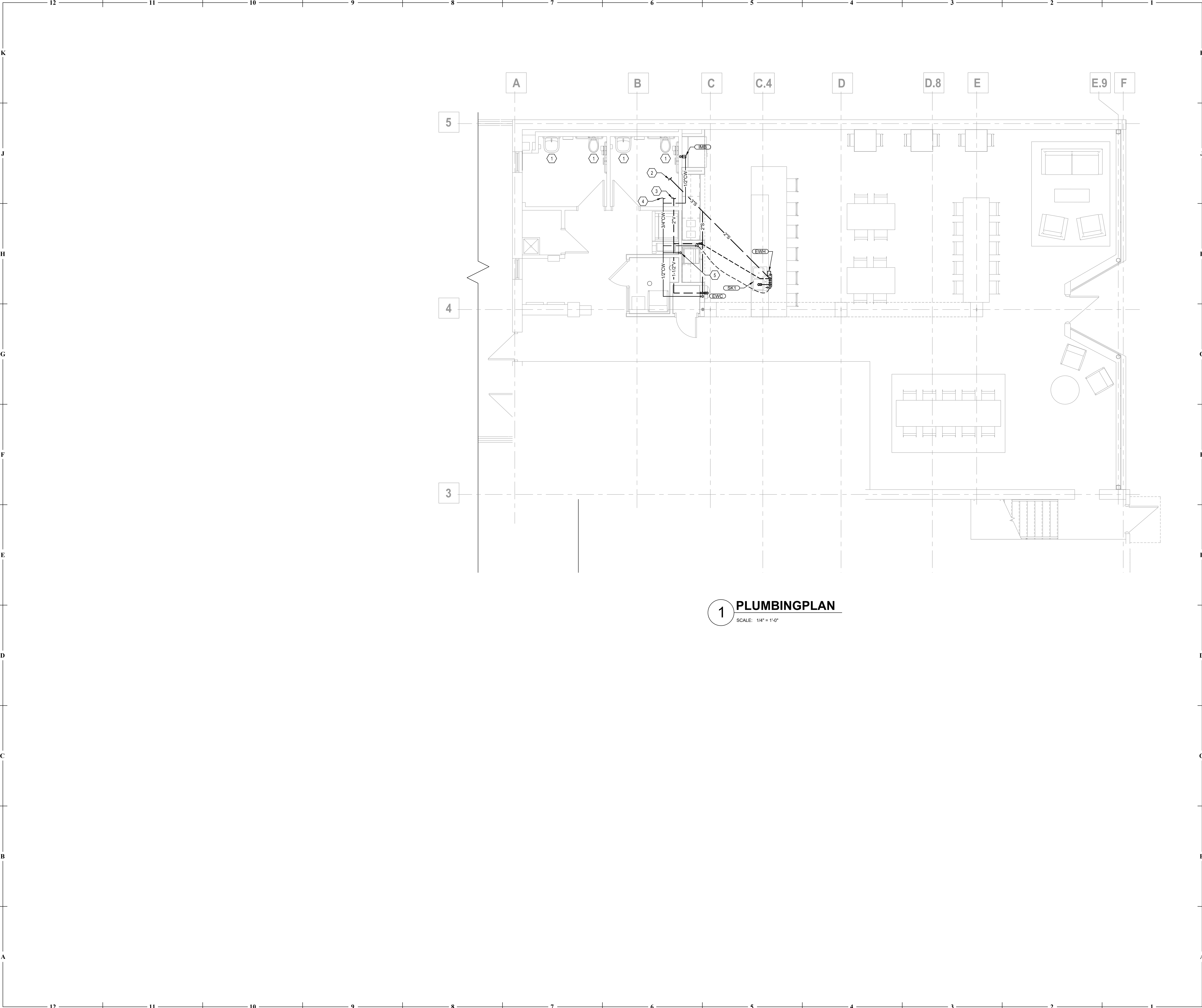
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CITY COMMENTS 06.21.22

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P102

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GENERAL NOTES

- (NOT ALL NOTES APPLY)
1. REFERENCE SHEET P101 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  2. ALL SHUT-OFF OR BALANCING VALVES TO PLUMBING ROUTED IN PIPE CHASES SHALL BE ACCESSIBLE FROM CEILING AREA OR ACCESS DOORS PROVIDED IN WALL.
  3. ALL EXPOSED PIPES PENETRATING FINISHED WALLS SHALL BE EQUIPPED WITH WALL ESCUTCHEONS.
  4. PROVIDE FINAL CONNECTIONS FOR ALL EQUIPMENT SPECIFIED IN PLUMBING FIXTURES AND EQUIPMENT SCHEDULES ON THESE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS. PROVIDE ALL REQUIRED SHUT-OFFS, BACKFLOW PREVENTERS, PRESSURE REGULATORS, AND CONDENSATE DRAINS INDICATED ON PLUMBING SCHEDULES AND AS REQUIRED BY LOCAL CODES FOR COMPLETE EQUIPMENT INSTALLATION. CONSULT EQUIPMENT SUPPLIER OR OWNER FOR ADDITIONAL FINAL CONNECTION REQUIREMENTS NOT SHOWN ON THESE DRAWINGS.

KEYED NOTES:

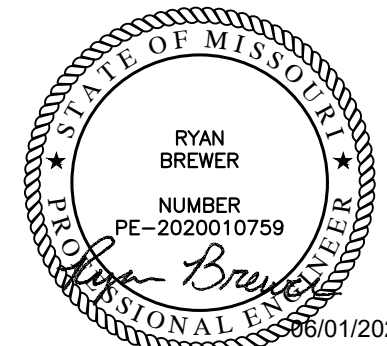
1. EXISTING PLUMBING FIXTURE TO REMAIN.
2. CONNECT NEW SANITARY PIPING INTO EXISTING SANITARY PIPING IN THIS AREA. FIELD VERIFY EXACT CONNECTION POINT, LINE SIZE, MATERIAL, AND AVAILABLE INVERT.
3. CONNECT NEW VENT PIPING INTO EXISTING VENT PIPING IN THIS AREA. FIELD VERIFY EXACT CONNECTION POINT, LINE SIZE, AND MATERIAL.
4. CONNECT NEW COLD WATER PIPING INTO EXISTING COLD WATER PIPING IN THIS AREA. FIELD VERIFY EXACT CONNECTION POINT, LINE SIZE, AND MATERIAL.
5. ROUTE 1/2" CW DOWN IN WALL, TURN PIPING OUT OF WALL AND TERMINATE WITH SHUTOFF VALVE FOR CONNECTION TO COFFEE MAKER.

REECE NICHOLS TENANT IMPROVEMENTS

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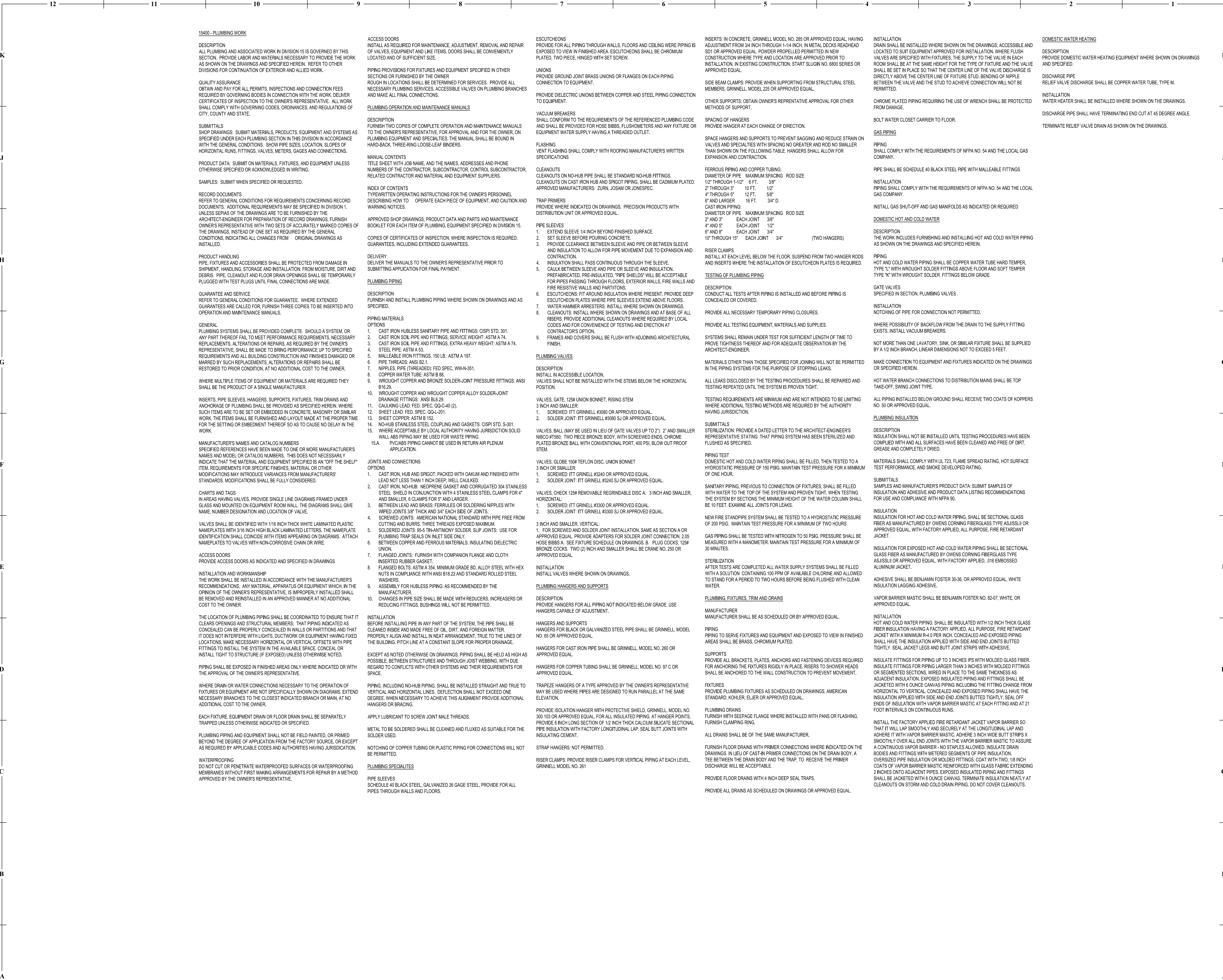
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PERMIT DOCUMENTS



15400 - PLUMBING WORK

DESCRIPTION  
ALL PLUMBING AND ASSOCIATED WORK IN DIVISION 15 IS GOVERNED BY THIS SECTION. PROVIDE LABOR AND MATERIALS NECESSARY TO PROVIDE THE WORK AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. REFER TO OTHER DIVISIONS FOR CONTINUATION OF EXTERIOR AND ALLIED WORK.

QUALITY ASSURANCE  
OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE OWNER'S REPRESENTATIVE. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY AND STATE.

SUBMITTALS  
SHOP DRAWINGS: SUBMIT MATERIALS, PRODUCTS, EQUIPMENT AND SYSTEMS AS SPECIFIED UNDER EACH PLUMBING SECTION IN THIS DIVISION IN ACCORDANCE WITH THE GENERAL CONDITIONS. SHOW PIPE SIZES, LOCATION, SLOPES OF HORIZONTAL RUNS, FITTINGS, VALVES, METERS, GAGES AND CONNECTIONS.

PRODUCT DATA: SUBMIT ON MATERIALS, FIXTURES, AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING.

SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED.

RECORD DOCUMENTS  
REFER TO GENERAL CONDITIONS FOR REQUIREMENTS CONCERNING RECORD DOCUMENTS. ADDITIONAL REQUIREMENTS MAY BE SPECIFIED IN DIVISION 1, UNLESS SEPIAS OF THE DRAWINGS ARE TO BE FURNISHED BY THE ARCHITECT-ENGINEER FOR PREPARATION OF RECORD DRAWINGS. FURNISH OWNER'S REPRESENTATIVE WITH TWO SETS OF ACCURATELY MARKED COPIES OF THE DRAWINGS, INSTEAD OF ONE SET AS REQUIRED BY THE GENERAL CONDITIONS, INDICATING ALL CHANGES FROM ORIGINAL DRAWINGS AS INSTALLED.

PRODUCT HANDLING  
PIPE, FIXTURES AND ACCESSORIES SHALL BE PROTECTED FROM DAMAGE IN SHIPMENT, HANDLING, STORAGE AND INSTALLATION. FROM MOISTURE, DIRT AND DEBRIS. PIPE, CLEANOUT AND FLOOR DRAIN OPENINGS SHALL BE TEMPORARILY PLUGGED WITH TEST PLUGS UNTIL FINAL CONNECTIONS ARE MADE.

GUARANTEE AND SERVICE  
REFER TO GENERAL CONDITIONS FOR GUARANTEE. WHERE EXTENDED GUARANTEES ARE CALLED FOR, FURNISH THREE COPIES TO BE INSERTED INTO OPERATION AND MAINTENANCE MANUALS.

GENERAL  
PLUMBING SYSTEMS SHALL BE PROVIDED COMPLETE. SHOULD A SYSTEM, OR ANY PART THEREOF FAIL TO MEET PERFORMANCE REQUIREMENTS, NECESSARY REPLACEMENTS, ALTERATIONS OR REPAIRS, AS REQUIRED BY THE OWNER'S REPRESENTATIVE, SHALL BE MADE TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS AND ALL BUILDING CONSTRUCTION AND FINISHES DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITION, AT NO ADDITIONAL COST TO THE OWNER.

WHERE MULTIPLE ITEMS OF EQUIPMENT OR MATERIALS ARE REQUIRED THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER.

INSERTS, PIPE SLEEVES, HANGERS, SUPPORTS, FIXTURES, TRIM DRAINS AND ANCHORAGE OF PLUMBING SHALL BE PROVIDED AS SPECIFIED HEREIN, WHERE SUCH ITEMS ARE TO BE SET OR EMBEDDED IN CONCRETE, MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AND LAYOUT MADE AT THE PROPER TIME FOR THE SETTING OR EMBEDMENT THEREOF SO AS TO CAUSE NO DELAY IN THE WORK.

MANUFACTURER'S NAMES AND CATALOG NUMBERS  
SPECIFIED REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAMES AND MODEL OR CATALOG NUMBERS. THIS DOES NOT NECESSARILY INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS AN "OFF THE SHELF" ITEM. REQUIREMENTS FOR SPECIFIC FINISHES, MATERIAL, OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURER'S STANDARDS. MODIFICATIONS SHALL BE FULLY CONSIDERED.

CHARTS AND TAGS  
IN AREAS HAVING VALVES, PROVIDE SINGLE LINE DIAGRAMS FRAMED UNDER GLASS AND MOUNTED ON EQUIPMENT ROOM WALL. THE DIAGRAMS SHALL GIVE NAME, NUMBER DESIGNATION AND LOCATION OF VALVE.

VALVES SHALL BE IDENTIFIED WITH 1/16 INCH THICK WHITE LAMINATED PLASTIC NAMEPLATES WITH 3/16 INCH HIGH BLACK LAMINATED LETTERS. THE NAMEPLATE IDENTIFICATION SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS. ATTACH NAMEPLATES TO VALVES WITH NON-CORROSIVE CHAIN OR WIRE.

ACCESS DOORS  
PROVIDE ACCESS DOORS AS INDICATED AND SPECIFIED IN DRAWINGS

INSTALLATION AND WORKMANSHIP  
THE WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ANY MATERIAL, APPARATUS OR EQUIPMENT WHICH IN THE OPINION OF THE OWNER'S REPRESENTATIVE, IS IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER AT NO ADDITIONAL COST TO THE OWNER.

THE LOCATION OF PLUMBING PIPING SHALL BE COORDINATED TO ENSURE THAT IT CLEARS OPENINGS AND STRUCTURAL MEMBERS. THAT PIPING INDICATED AS CONCEALED CAN BE PROPERLY CONCEALED IN WALLS OR PARTITIONS AND THAT IT DOES NOT INTERFERE WITH LIGHTS, DUCTWORK OR EQUIPMENT HAVING FIXED LOCATIONS. MAKE NECESSARY HORIZONTAL OR VERTICAL OFFSETS WITH PIPE FITTINGS TO INSTALL THE SYSTEM IN THE AVAILABLE SPACE. CONCEAL OR INSTALL TIGHT TO STRUCTURE (IF EXPOSED) UNLESS OTHERWISE NOTED.

PIPING SHALL BE EXPOSED IN FINISHED AREAS ONLY WHERE INDICATED OR WITH THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

WHERE DRAIN OR WATER CONNECTIONS NECESSARY TO THE OPERATION OF FIXTURES OR EQUIPMENT ARE NOT SPECIFICALLY SHOWN ON DIAGRAMS, EXTEND NECESSARY BRANCHES TO THE CLOSEST INDICATED BRANCH OR MAIN, AT NO ADDITIONAL COST TO THE OWNER.

EACH FIXTURE, EQUIPMENT DRAIN OR FLOOR DRAIN SHALL BE SEPARATELY TRAPPED UNLESS OTHERWISE INDICATED OR SPECIFIED.

PLUMBING PIPING AND EQUIPMENT SHALL NOT BE FIELD PAINTED, OR PRIMED BEYOND THE DEGREE OF APPLICATION FROM THE FACTORY SOURCE, OR EXCEPT AS REQUIRED BY APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION.

WATERPROOFING  
DO NOT CUT OR PENETRATE WATERPROOFED SURFACES OR WATERPROOFING MEMBRANES WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY THE OWNER'S REPRESENTATIVE.

ACCESS DOORS  
INSTALL AS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL AND REPAIR OF VALVES, EQUIPMENT AND LIKE ITEMS. DOORS SHALL BE CONVENIENTLY LOCATED AND OF SUFFICIENT SIZE.

PIPING PROVISIONS FOR FIXTURES AND EQUIPMENT SPECIFIED IN OTHER SECTIONS OR FURNISHED BY THE OWNER  
ROUGH IN LOCATIONS SHALL BE DETERMINED FOR SERVICES. PROVIDE ALL NECESSARY PLUMBING SERVICES, ACCESSIBLE VALVES ON PLUMBING BRANCHES AND MAKE ALL FINAL CONNECTIONS.

PLUMBING OPERATION AND MAINTENANCE MANUALS

DESCRIPTION  
FURNISH TWO COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE OWNER'S REPRESENTATIVE, FOR APPROVAL AND FOR THE OWNER, ON PLUMBING EQUIPMENT AND SPECIALTIES. THE MANUAL SHALL BE BOUND IN HARD-BACK, THREE-RING LOOSE-LEAF BINDERS.

MANUAL CONTENTS  
TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL, SUBCONTRACTOR, RELATED CONTRACTOR AND MATERIAL AND EQUIPMENT SUPPLIERS.

INDEX OF CONTENTS  
TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO OPERATE EACH PIECE OF EQUIPMENT, AND CAUTION AND WARNING NOTICES.

APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF PLUMBING, EQUIPMENT SPECIFIED IN DIVISION 15.

COPIES OF CERTIFICATES OF INSPECTION, WHERE INSPECTION IS REQUIRED, GUARANTEES, INCLUDING EXTENDED GUARANTEES.

DELIVERY  
DELIVER THE MANUALS TO THE OWNER'S REPRESENTATIVE PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT.

PLUMBING PIPING

DESCRIPTION  
FURNISH AND INSTALL PLUMBING PIPING WHERE SHOWN ON DRAWINGS AND AS SPECIFIED.

PIPING MATERIALS

- OPTIONS
1. CAST IRON HUBLESS SANITARY PIPE AND FITTINGS: CISPI STD. 301.
  2. CAST IRON SOIL PIPE AND FITTINGS, SERVICE WEIGHT: ASTM A 74.
  3. CAST IRON SOIL PIPE AND FITTINGS, EXTRA HEAVY WEIGHT: ASTM A 74.
  4. STEEL PIPE: ASTM A 53.
  5. MALLEABLE IRON FITTINGS, 150 LB.: ASTM A 197.
  6. PIPE THREADS: ANSI B2.1.
  7. NIPPLES, PIPE (THREADED): FED. SPEC. WWN-351.
  8. COPPER WATER TUBE: ASTM B 88.
  9. WROUGHT COPPER AND BRONZE SOLDER-JOINT PRESSURE FITTINGS: ANSI B16.29.
  10. WROUGHT COPPER AND WROUGHT COPPER ALLOY SOLDER-JOINT DRAINAGE FITTINGS: ANSI B16.29.
  11. CAULKING LEAD: FED. SPEC. QQ-C-40 (2).
  12. SHEET LEAD: FED. SPEC. QQ-L-201.
  13. SHEET COPPER: ASTM B 152.
  14. NO-HUB STAINLESS STEEL COUPLING AND GASKETS: CISPI STD. S-301.
  15. WHERE ACCEPTABLE BY LOCAL AUTHORITY HAVING JURISDICTION SOLID WALL ABS PIPING MAY BE USED FOR WASTE PIPING.
- 15.A. PVC/ABS PIPING CANNOT BE USED IN RETURN AIR PLENUM APPLICATION.

JOINTS AND CONNECTIONS

- OPTIONS
1. CAST IRON, HUB AND SPOOT: PACKED WITH OAKUM AND FINISHED WITH LEAD NOT LESS THAN 1 INCH DEEP, WELL CAULKED.
  2. CAST IRON, NO-HUB: NEOPRENE GASKET AND CORRUGATED 304 STAINLESS STEEL. SHIELD IN CONJUNCTION WITH 4 STAINLESS STEEL CLAMPS FOR 4" AND SMALLER, 6 CLAMPS FOR 5" AND LARGER.
  3. BETWEEN LEAD AND BRASS: FERRULES OR SOLDERING NIPPLES WITH WIPED JOINTS 3/8" THICK AND 3/4" EACH SIDE OF JOINTS.
  4. SCREWED JOINTS: AMERICAN NATIONAL STANDARD WITH PIPE FREE FROM CUTTING AND BURRS. THREE THREADS EXPOSED MAXIMUM.
  5. SOLDERED JOINTS: 80-5 TIN/ANTIMONY SOLDER. SLIP JOINTS: USE FOR PLUMBING TRAP SEALS ON INLET SIDE ONLY.
  6. BETWEEN COPPER AND FERROUS MATERIALS: INSULATING DIELECTRIC UNION.
  7. FLANGED JOINTS: FURNISH WITH COMPANION FLANGE AND CLOTH INSERTED RUBBER GASKET.
  8. FLANGED BOLTS: ASTM A 354. MINIMUM GRADE B0, ALLOY STEEL WITH HEX NUTS IN COMPLIANCE WITH ANSI B16.22 AND STANDARD ROLLED STEEL WASHERS.
  9. ASSEMBLY FOR HUBLESS PIPING: AS RECOMMENDED BY THE MANUFACTURER.
  10. CHANGES IN PIPE SIZE SHALL BE MADE WITH REDUCERS, INCREASERS OR REDUCING FITTINGS. BUSHINGS WILL NOT BE PERMITTED.

INSTALLATION  
BEFORE INSTALLING PIPE IN ANY PART OF THE SYSTEM, THE PIPE SHALL BE CLEANED INSIDE AND MADE FREE OF OIL, DIRT, AND FOREIGN MATTER. PROPERLY ALIGN AND INSTALL IN NEAT ARRANGEMENT, TRUE TO THE LINES OF THE BUILDING. PITCH LINE AT A CONSTANT SLOPE FOR PROPER DRAINAGE.

EXCEPT AS NOTED OTHERWISE ON DRAWINGS, PIPING SHALL BE HELD AS HIGH AS POSSIBLE, BETWEEN STRUCTURES AND THROUGH JOIST WEBBING, WITH DUE REGARD TO CONFLICTS WITH OTHER SYSTEMS AND THEIR REQUIREMENTS FOR SPACE.

PIPING, INCLUDING NO-HUB PIPING, SHALL BE INSTALLED STRAIGHT AND TRUE TO VERTICAL AND HORIZONTAL LINES. DEFLECTION SHALL NOT EXCEED ONE DEGREE, WHEN NECESSARY TO ACHIEVE THIS ALIGNMENT PROVIDE ADDITIONAL HANGERS OR BRACING.

APPLY LUBRICANT TO SCREW JOINT MALE THREADS.

METAL TO BE SOLDERED SHALL BE CLEANED AND FLUXED AS SUITABLE FOR THE SOLDER USED.

NOTCHING OF COPPER TUBING OR PLASTIC PIPING FOR CONNECTIONS WILL NOT BE PERMITTED.

PLUMBING SPECIALTIES

PIPE SLEEVES  
SCHEDULE 40 BLACK STEEL, GALVANIZED 26 GAGE STEEL, PROVIDE FOR ALL PIPES THROUGH WALLS AND FLOORS.

ESCUTCHEONS  
PROVIDE FOR ALL PIPING THROUGH WALLS, FLOORS AND CEILING WHERE PIPING IS EXPOSED TO VIEW IN FINISHED AREA. ESCUTCHEONS SHALL BE CHROMIUM PLATED, TWO PIECE, HINGED WITH SET SCREW.

UNIONS  
PROVIDE GROUND JOINT BRASS UNIONS OR FLANGES ON EACH PIPING CONNECTION TO EQUIPMENT.  
PROVIDE DIELECTRIC UNIONS BETWEEN COPPER AND STEEL PIPING CONNECTION TO EQUIPMENT.

VACUUM BREAKERS  
SHALL CONFORM TO THE REQUIREMENTS OF THE REFERENCED PLUMBING CODE AND SHALL BE PROVIDED FOR HOSE BIBBS, FLUSHMETERS AND ANY FIXTURE OR EQUIPMENT WATER SUPPLY HAVING A THREADED OUTLET.

FLASHING  
VENT FLASHING SHALL COMPLY WITH ROOFING MANUFACTURER'S WRITTEN SPECIFICATIONS

CLEANOUTS  
CLEANOUTS ON NO-HUB PIPE SHALL BE STANDARD NO-HUB FITTINGS. CLEANOUTS ON CAST IRON HUB AND SPOOT PIPING, SHALL BE CADMIUM PLATED, APPROVED MANUFACTURERS: ZURN, JOSAM OR JONESPEC.

TRAP PRIMERS  
PROVIDE WHERE INDICATED ON DRAWINGS. PRECISION PRODUCTS WITH DISTRIBUTION UNIT OR APPROVED EQUAL.

- PIPE SLEEVES
1. EXTEND SLEEVE 1/4 INCH BEYOND FINISHED SURFACE.
  2. SET SLEEVE BEFORE POURING CONCRETE.
  3. PROVIDE CLEARANCE BETWEEN SLEEVE AND PIPE OR BETWEEN SLEEVE AND INSULATION TO ALLOW FOR PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION.
  4. INSULATION SHALL PASS CONTINUOUS THROUGH THE SLEEVE.
  5. CAULK BETWEEN SLEEVE AND PIPE OR SLEEVE AND INSULATION. PREFABRICATED, PRE-INSULATED, "PIPE SHIELDS" WILL BE ACCEPTABLE FOR PIPES PASSING THROUGH FLOORS, EXTERIOR WALLS, FIRE WALLS AND FIRE RESISTIVE WALLS AND PARTITIONS.
  6. ESCUTCHEONS: FIT AROUND INSULATION WHERE PRESENT. PROVIDE DEEP ESCUTCHEON PLATES WHERE PIPE SLEEVES EXTEND ABOVE FLOORS.
  7. WATER HAMMER ARRESTERS: INSTALL WHERE SHOWN ON DRAWINGS.
  8. CLEANOUTS: INSTALL WHERE SHOWN ON DRAWINGS AND AT BASE OF ALL RISERS. PROVIDE ADDITIONAL CLEANOUTS WHERE REQUIRED BY LOCAL CODES AND FOR CONVENIENCE OF TESTING AND ERECTION AT CONTRACTOR'S OPTION.
  9. FRAMES AND COVERS SHALL BE FLUSH WITH ADJOINING ARCHITECTURAL FINISH.

PLUMBING VALVES

DESCRIPTION  
INSTALL IN ACCESSIBLE LOCATION.  
VALVES SHALL NOT BE INSTALLED WITH THE STEMS BELOW THE HORIZONTAL POSITION.

- VALVES, GATE, 125# UNION BONNET, RISING STEM 3 INCH AND SMALLER
1. SCREWED: ITT GRINNELL #3080 OR APPROVED EQUAL.
  2. SOLDER JOINT: ITT GRINNELL #3080 SJ OR APPROVED EQUAL.

VALVES, BALL, MAY BE USED IN LIEU OF GATE VALVES UP TO 2"; 2" AND SMALLER NIBCO #580; TWO PIECE BRONZE BODY, WITH SCREWED ENDS, CHROME PLATED BRONZE BALL WITH CONVENTIONAL PORT, 400 PSI, BLOW OUT PROOF STEM.

- VALVES, GLOBE 150# TEFLON DISC, UNION BONNET 3 INCH OR SMALLER
1. SCREWED: ITT GRINNELL #3240 OR APPROVED EQUAL.
  2. SOLDER JOINT: ITT GRINNELL #3240 SJ OR APPROVED EQUAL.

VALVES, CHECK 125# REMOVABLE REGRINDABLE DISC A. 3 INCH AND SMALLER, HORIZONTAL:

1. SCREWED: ITT GRINNELL #3300 OR APPROVED EQUAL.
2. SOLDER JOINT: ITT GRINNELL #3300 SJ OR APPROVED EQUAL.

3 INCH AND SMALLER, VERTICAL:

1. FOR SCREWED AND SOLDER JOINT INSTALLATION, SAME AS SECTION A OR APPROVED EQUAL, PROVIDE ADAPTERS FOR SOLDER JOINT CONNECTION. 2.05 HOSE BIBBS A. SEE FIXTURE SCHEDULE ON DRAWINGS. B. PLUG COCKS, 125# BRONZE COCKS. TWO (2) INCH AND SMALLER SHALL BE CRANE NO. 250 OR APPROVED EQUAL.

INSTALLATION  
INSTALL VALVES WHERE SHOWN ON DRAWINGS.

PLUMBING HANGERS AND SUPPORTS

DESCRIPTION  
PROVIDE HANGERS FOR ALL PIPING NOT INDICATED BELOW GRADE. USE HANGERS CAPABLE OF ADJUSTMENT.

HANGERS AND SUPPORTS  
HANGERS FOR BLACK OR GALVANIZED STEEL PIPE SHALL BE GRINNELL, MODEL NO. 65 OR APPROVED EQUAL.

HANGERS FOR CAST IRON PIPE SHALL BE GRINNELL, MODEL NO. 260 OR APPROVED EQUAL.

HANGERS FOR COPPER TUBING SHALL BE GRINNELL, MODEL NO. 97 C OR APPROVED EQUAL.

TRAPPEZ HANGERS OF A TYPE APPROVED BY THE OWNER'S REPRESENTATIVE MAY BE USED WHERE PIPES ARE DESIGNED TO RUN PARALLEL AT THE SAME ELEVATION.

PROVIDE ISOLATION HANGER WITH PROTECTIVE SHIELD, GRINNELL, MODEL NO. 300 105 OR APPROVED EQUAL, FOR ALL INSTALLED PIPING AT HANGER POINTS. PROVIDE 6 INCH LONG SECTION OF 1/2 INCH THICK CALCIUM SILICATE SECTIONAL PIPE INSULATION WITH FACTORY LONGITUDINAL LAP. SEAL BUTT JOINTS WITH INSULATING CEMENT.

STRAP HANGERS: NOT PERMITTED.

RISER CLAMPS: PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL, GRINNELL, MODEL NO. 261

INSERTS: IN CONCRETE, GRINNELL, MODEL NO. 265 OR APPROVED EQUAL, HAVING ADJUSTMENT FROM 3/4 INCH THROUGH 1-1/4 INCH. IN METAL, DECKS READHEAD SD OR APPROVED EQUAL. POWDER PROPPED PERMITTED IN NEW CONSTRUCTION WHERE TYPE AND LOCATION ARE APPROVED PRIOR TO INSTALLATION. IN EXISTING CONSTRUCTION, START SLOGIN NO. 6800 SERIES OR APPROVED EQUAL.

SIDE BEAM CLAMPS: PROVIDE WHEN SUPPORTING FROM STRUCTURAL STEEL MEMBERS, GRINNELL, MODEL 225 OR APPROVED EQUAL.

OTHER SUPPORTS: OBTAIN OWNER'S REPRESENTATIVE APPROVAL FOR OTHER METHODS OF SUPPORT.

SPACING OF HANGERS  
PROVIDE HANGER AT EACH CHANGE OF DIRECTION.

SPACE HANGERS AND SUPPORTS TO PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES WITH SPACING NO GREATER AND ROD NO SMALLER THAN SHOWN ON THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION.

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
1/2" THROUGH 1-1/2"	6 FT.	3/8"
2" THROUGH 3"	10 FT.	1/2"
4" THROUGH 5"	12 FT.	5/8"
6" AND LARGER	16 FT.	3/4" D.
DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
2" AND 3"	EACH JOINT	3/8"
4" AND 5"	EACH JOINT	1/2"
6" AND 8"	EACH JOINT	3/4"
10" THROUGH 15"	EACH JOINT	3/4"

(TWO HANGERS)

RISER CLAMPS  
INSTALL AT EACH LEVEL, BELOW THE FLOOR. SUSPEND FROM TWO HANGER RODS AND INSERTS WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED.

TESTING OF PLUMBING PIPING

DESCRIPTION  
CONDUCT ALL TESTS AFTER PIPING IS INSTALLED AND BEFORE PIPING IS CONCEALED OR COVERED.

PROVIDE ALL NECESSARY TEMPORARY PIPING CLOSURES.

PROVIDE ALL TESTING EQUIPMENT, MATERIALS AND SUPPLIES.

SYSTEMS SHALL REMAIN UNDER TEST FOR SUFFICIENT LENGTH OF TIME TO PROVE TIGHTNESS THEREOF AND FOR ADEQUATE OBSERVATION BY THE ARCHITECT-ENGINEER.

MATERIALS OTHER THAN THOSE SPECIFIED FOR JOINING WILL NOT BE PERMITTED IN THE PIPING SYSTEMS FOR THE PURPOSE OF STOPPING LEAKS.

ALL LEAKS DISCLOSED BY THE TESTING PROCEDURES SHALL BE REPAIRED AND TESTING REPEATED UNTIL THE SYSTEM IS PROVEN TIGHT.

TESTING REQUIREMENTS ARE MINIMUM AND ARE NOT INTENDED TO BE LIMITING WHERE ADDITIONAL TESTING METHODS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

SUBMITTALS

STERILIZATION: PROVIDE A DATED LETTER TO THE ARCHITECT-ENGINEER'S REPRESENTATIVE STATING THAT PIPING SYSTEM HAS BEEN STERILIZED AND FLUSHED AS SPECIFIED.

PIPING TEST  
DOMESTIC HOT AND COLD WATER PIPING SHALL BE FILLED, THEN TESTED TO A HYDROSTATIC PRESSURE OF 150 PSIG. MAINTAIN TEST PRESSURE FOR A MINIMUM OF ONE HOUR.

SANITARY PIPING, PREVIOUS TO CONNECTION OF FIXTURES, SHALL BE FILLED WITH WATER TO THE TOP OF THE SYSTEM AND PROVEN TIGHT, WHEN TESTING THE SYSTEM BY SECTIONS THE MINIMUM HEIGHT OF THE WATER COLUMN SHALL BE 10 FEET. EXAMINE ALL JOINTS FOR LEAKS.

NEW FIRE STANDPIPE SYSTEM SHALL BE TESTED TO A HYDROSTATIC PRESSURE OF 200 PSIG. MAINTAIN TEST PRESSURE FOR A MINIMUM OF TWO HOURS.

GAS PIPING SHALL BE TESTED WITH NITROGEN TO 50 PSIG. PRESSURE SHALL BE MEASURED WITH A MANOMETER, MAINTAIN TEST PRESSURE FOR A MINIMUM OF 30 MINUTES.

STERILIZATION  
AFTER TESTS ARE COMPLETED ALL WATER SUPPLY SYSTEMS SHALL BE FILLED WITH A SOLUTION CONTAINING 100 PPM OF AVAILABLE CHLORINE AND ALLOWED TO STAND FOR A PERIOD TO TWO HOURS BEFORE BEING FLUSHED WITH CLEAN WATER.

PLUMBING, FIXTURES, TRIM AND DRAINS

MANUFACTURER  
MANUFACTURER SHALL BE AS SCHEDULED OR BY APPROVED EQUAL.

PIPING  
PIPING TO SERVE FIXTURES AND EQUIPMENT AND EXPOSED TO VIEW IN FINISHED AREAS SHALL BE BRASS, CHROMIUM PLATED.

SUPPORTS  
PROVIDE ANCHORAGE, PLATES, ANCHORS AND FASTENING DEVICES REQUIRED FOR ANCHORING THE FIXTURES RIGIDLY IN PLACE. RISERS TO SHOWER HEADS SHALL BE ANCHORED TO THE WALL CONSTRUCTION TO PREVENT MOVEMENT.

FIXTURES  
PROVIDE PLUMBING FIXTURES AS SCHEDULED ON DRAWINGS, AMERICAN STANDARD, KOHLER, ELIER OR APPROVED EQUAL.

PLUMBING DRAINS  
FURNISH WITH SEEPAGE FLANGE WHERE INSTALLED WITH PANS OR FLASHING, FIXTURES CLAMPING RING.

ALL DRAINS SHALL BE OF THE SAME MANUFACTURER.

FURNISH FLOOR DRAINS WITH PRIMER CONNECTIONS WHERE INDICATED ON THE DRAWINGS. IN LIEU OF CAST-IN PRIMER CONNECTIONS ON THE DRAIN BODY, A TEE BETWEEN THE DRAIN BODY AND THE TRAP, TO RECEIVE THE PRIMER DISCHARGE WILL BE ACCEPTABLE.

PROVIDE FLOOR DRAINS WITH 1 INCH DEEP SEAL TRAPS.

PROVIDE ALL DRAINS AS SCHEDULED ON DRAWINGS OR APPROVED EQUAL.

DOMESTIC WATER HEATING

DESCRIPTION  
PROVIDE DOMESTIC WATER HEATING EQUIPMENT WHERE SHOWN ON DRAWINGS AND SPECIFIED.

DISCHARGE PIPE  
RELIEF VALVE DISCHARGE SHALL BE COPPER WATER TUBE, TYPE M.

INSTALLATION  
WATER HEATER SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS.

DISCHARGE PIPE SHALL HAVE TERMINATING END CUT AT 45 DEGREE ANGLE.

TERMINATE RELIEF VALVE DRAIN AS SHOWN ON THE DRAWINGS.

PIPE SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE FITTINGS

INSTALLATION  
PIPING SHALL COMPLY WITH THE REQUIREMENTS OF NFPA NO. 54 AND THE LOCAL GAS COMPANY.

INSTALL GAS SHUT-OFF AND GAS MANIFOLDS AS INDICATED OR REQUIRED.

DOMESTIC HOT AND COLD WATER

DESCRIPTION  
THE WORK INCLUDES FURNISHING AND INSTALLING HOT AND COLD WATER PIPING AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

PIPING  
HOT AND COLD WATER PIPING SHALL BE COPPER WATER TUBE HARD TEMPER, TYPE "L" WITH WROUGHT SOLDER FITTINGS ABOVE FLOOR AND SOFT TEMPER TYPE "K" WITH WROUGHT SOLDER FITTINGS BELOW GRADE.

GATE VALVES  
SPECIFIED IN SECTION, PLUMBING VALVES.

INSTALLATION  
NOTCHING OF PIPE FOR CONNECTION NOT PERMITTED.

WHERE POSSIBILITY OF BACKFLOW FROM THE DRAIN TO THE SUPPLY FITTING EXISTS, INSTALL VACUUM BREAKERS.

NOT MORE THAN ONE LAVATORY, SINK, OR SIMILAR FIXTURE SHALL BE SUPPLIED BY A 1/2 INCH BRANCH. LINEAR DIMENSIONS NOT TO EXCEED 5 FEET.

MAKE CONNECTION TO EQUIPMENT AND FIXTURES INDICATED ON THE DRAWINGS OR SPECIFIED HEREIN.

HOT WATER BRANCH CONNECTIONS TO DISTRIBUTION MAINS SHALL BE TOP TAKE-OFF, SWING JOINT TYPE.

ALL PIPING INSTALLED BELOW GROUND SHALL RECEIVE TWO COATS OF KOPPERNS NO. 50 OR APPROVED EQUAL.

PLUMBING INSULATION

DESCRIPTION  
INSULATION SHALL NOT BE INSTALLED UNTIL TESTING PROCEDURES HAVE BEEN COMPLETED WITH AND ALL SURFACES HAVE BEEN CLEANED AND FREE OF DIRT, GREASE AND COMPLETELY DRIED.

MATERIALS SHALL COMPLY WITH UL 723, FLAME SPREAD RATING, HOT SURFACE TEST PERFORMANCE, AND SMOKE DEVELOPED RATING.

SUBMITTALS  
SAMPLES AND MANUFACTURER'S PRODUCT DATA: SUBMIT SAMPLES OF INSULATION AND ADHESIVE AND PRODUCT DATA LISTING RECOMMENDATIONS FOR USE AND COMPLIANCE WITH NFPA 90.

INSULATION  
INSULATION FOR HOT AND COLD WATER PIPING, SHALL BE SECTIONAL GLASS FIBER AS MANUFACTURED BY OWENS CORNING FIBERGLASS TYPE ASJSSJLI OR APPROVED EQUAL, WITH FACTORY APPLIED, ALL PURPOSE, FIRE RETARDANT JACKET.

INSULATION FOR EXPOSED HOT AND COLD WATER PIPING SHALL BE SECTIONAL GLASS FIBER AS MANUFACTURED BY OWENS CORNING FIBERGLASS TYPE ASJSSJLI OR APPROVED EQUAL, WITH FACTORY APPLIED, .016 EMBOSSED ALUMINUM JACKET.

ADHESIVE SHALL BE BENJAMIN FOSTER 30-36, OR APPROVED EQUAL, WHITE INSULATION LAGGING ADHESIVE.

VAPOR BARRIER MASTIC SHALL BE BENJAMIN FOSTER NO. 62-07, WHITE, OR APPROVED EQUAL.

INSTALLATION  
HOT AND COLD WATER PIPING: SHALL BE INSULATED WITH 1/2 INCH THICK GLASS FIBER INSULATION HAVING A FACTORY APPLIED, ALL PURPOSE, FIRE RETARDANT JACKET WITH A MINIMUM R-4.0 PER INCH. CONCEALED AND EXPOSED PIPING SHALL HAVE THE INSULATION APPLIED WITH SIDE AND END JOINTS BUTTED TIGHTLY. SEAL JACKET LEGS AND BUTT JOINT STRIPS WITH ADHESIVE.

INSULATE FITTINGS FOR PIPING UP TO 3 INCHES IPS WITH MOLDED GLASS FIBER. INSULATE FITTINGS FOR PIPING LARGER THAN 3 INCHES WITH MOLDED FITTINGS OR SEGMENTED SECTIONS, WIRED IN PLACE TO THE SAME THICKNESS AS ADJACENT INSULATION. EXPOSED INSULATED PIPING AND FITTINGS SHALL BE JACKETED WITH 6 OUNCE CANVAS PIPING INCLUDING THE FITTING CHANGE FROM HORIZONTAL TO VERTICAL. CONCEALED AND EXPOSED PIPING SHALL HAVE THE INSULATION APPLIED WITH SIDE AND END JOINTS BUTTED TIGHTLY. SEAL OFF ENDS OF INSULATION WITH VAPOR BARRIER MASTIC AT EACH FITTING AND AT 21 FOOT INTERVALS ON CONTINUOUS RUNS.

INSTALL THE FACTORY APPLIED FIRE RETARDANT JACKET VAPOR BARRIER SO THAT IT WILL LAP SMOOTHLY AND SECURELY AT THE LONGITUDINAL LAP AND ADHERE IT WITH VAPOR BARRIER MASTIC. ADHERE 3 INCH WIDE BUTT STRIPS X SMOOTHLY OVER ALL END JOINTS WITH THE VAPOR BARRIER MASTIC TO ASSURE A CONTINUOUS VAPOR BARRIER. NO STAPLES ALLOWED. INSULATE DRAIN BODIES AND FITTINGS WITH METERED SEGMENTS OF PIPE INSULATION. OVERSIZED PIPE INSULATION OR MOLDED FITTINGS. COAT WITH TWO, 18 INCH COATS OF VAPOR BARRIER MASTIC REINFORCED WITH GLASS FABRIC EXTENDING 2 INCHES ONTO ADJACENT PIPES. EXPOSED INSULATED PIPING AND FITTINGS SHALL BE JACKETED WITH 8 OUNCE CANVAS. TERMINATE INSULATION NEATLY AT CLEANOUTS ON STORM AND COLD DRAIN PIPING. DO NOT COVER CLEANOUTS.

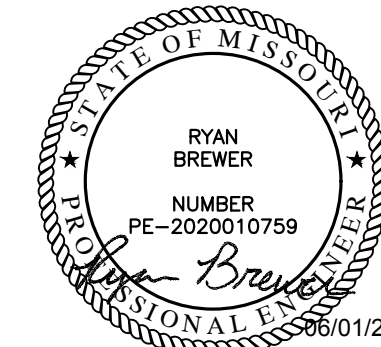


REECE NICHOLS TENANT IMPROVEMENTS

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

PERMIT DOCUMENTS

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PLUMBING SPECIFICATIONS


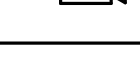

ELECTRICAL ABBREVIATIONS

AC	ALTERNATING CURRENT	KCM	THOUSAND CIRCULAR MILLS
AHU	AIR HANDLING UNIT	KVA	KILOVOLT-AMPERES (1000 VOLT-AMPERES)
A, OR AMPS	AMPERES	KV	KILOVOLT (1000 VOLTS)
AFC	ABOVE FINISH COUNTER	KW	KILOWATTS (1000 WATTS)
AFCI	ARC FAULT CIRCUIT INTERRUPTER	KWH	KILOWATT HOURS
AFF	ABOVE FINISHED FLOOR	MLO	MAIN LUGS ONLY
		MCB	MAIN CIRCUIT BREAKER
AIC	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)	MM	MICRONWAVE (COORD MTS HT W/ ARCHITECT)
ATS	AUTOMATIC TRANSFER SWITCH	NOT IN CONTRACT	
BCP	BUILDING CONTROL POWER (FOR HVAC/BUILDING CONTROLS)	NEC	NATIONAL ELECTRICAL CODE
		NC	NORMALLY CLOSED
BTG	BRANCH TO CONNECTION POINT AND CONNECT EQUIPMENT	NO	NORMALLY OPEN
BTFF	BRANCH TO FIXTURE, FURNISH AND INSTALL RECEPTACLE	NF	NOT FUSED
C	CONDUIT ("E.C." IS EMPTY CONDUIT)	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CF	CEILING FAN	OFOI	OWNER FURNISHED OWNER INSTALLED
CM	COFFEE MAKER	PNL	PANEL
CT	COOKTOP	PH OR Ø	PHASE
D	DEDICATED CIRCUIT	P	POLE
DCD	DUPLEX CONVENIENCE OUTLET	PVC	POLYVINYL CHLORIDE
DP	DISPOSER	RF	REFRIGERATOR
DW	DISHWASHER	RG	RANGE
DY	DRYER	SPD	SURGE PROTECTIVE DEVICE
EMT	ELECTRICAL METALLIC TUBING	T	TAMPERPROOF RECEPTACLE
EF	EXHAUST FAN	TC	TIMECLOCK
ER	EXISTING TO BE REMOVED	TIB	TELEPHONE TERMINAL BOARD
ETP	ELECTRONIC TRAP PRIMER	TV	TELEVISION RECEPTACLE
EWG	ELECTRIC WATER COOLER (WATER-COOLED DRINKING FOUNTAIN)	UC	UNDERCOUNTER REFRIGERATOR (OR ICE MACHINE)
EX	EXISTING	UF	UNDERFLOOR
FLEX	FLEXIBLE CONDUIT	UG	UNDERGROUND
FCU	FAN COIL UNIT	UL	UNDERWRITERS LABORATORIES
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	U.N.D.	UNLESS NOTED OTHERWISE
GFI	GROUND FAULT INTERRUPTER	V	VOLTS
GFP	GROUND FAULT INTERRUPTER PROTECTED	VA	VOLT-AMPERES
GRD	GROUND	VD	VENDING MACHINE (24" AFF)
H	HORIZONTAL MOUNT (RECEPTACLE)	VFD	VARIABLE FREQUENCY DRIVE
HD	VENTILATION HOOD	W	WATTS
HP	HORSEPOWER	WA	WASHER
HT	HEAT TRACE POWER (PROVIDE W/ 20A/1P GFI BREAKER)	WD	WASHING DRAWER
HVAC	HEATING, VENTILATING, & AIR CONDITIONING	WO	WALL OVEN
HZ	HERTZ	WP	WEATHERPROOF
IG	ISOLATED GROUND (DUPLEX RECEPTS. - NEMA 5-20RIG)	WPIWR	WEATHERPROOF/WEATHER RESISTANT
KA	KILOAMPERE (1000 AMPERES)	WUNT	DISCONNECT PROVIDED WITH UNIT

GENERAL ELECTRICAL NOTES

1. DO NOT SCALE FROM THESE DRAWINGS.
2. REFER TO ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES.
3. COORDINATE EACH LIGHT FIXTURE INSTALLATION(S) W/ ACTUAL CEILING TO BE FURNISHED.
4. ALL BRANCH CIRCUITS W/IO CONDUCTOR & CONDUIT INDICATIONS SHALL BE ROUTED TO 20A-1P BREAKER W/ 2H/2.1P/2EG.3/4"C.
5. INDIVIDUAL COMPONENTS OF THIS LIGHT FIXTURE SCHEDULE SHALL NOT BE INTERPRETED SEPARATELY FROM THE ENTIRE SCHEDULE. THAT IS, THE ENTIRE FIXTURE SPECIFICATION INCLUDING ALL COLUMNS IN THE LIGHT FIXTURE SCHEDULE AND ALL SUPPORTING INFORMATION IN THESE DOCUMENTS. ANY CONFLICT BETWEEN MODEL NUMBERS AND OTHER COLUMNS OF THE SCHEDULE SHALL BE IDENTIFIED IN WRITINGS TO THE ARCHITECT. IN THE CASE OF A CONFLICT, CONTRACTOR SHALL BASE BID ON THE MORE EXPENSIVE INTERPRETATION.
6. ALL CIRCUITS (LIGHTING AND POWER) SHALL BE PROVIDED WITH DEDICATED NEUTRALS UNLESS NOTED OTHERWISE. WHERE NEUTRALS ARE INDICATED TO BE SHARED, MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH 2P OR 3P BREAKERS AS REQUIRED PER NEC 210.4.
7. ELECTRICAL EQUIPMENT (PANELBOARDS, TRANSFORMERS, DISTRIBUTION EQUIPMENT, ETC.) IS SHOWN TO SCALE ON THE FLOOR PLANS.
8. SWITCHBOARDS SHOWN ON PLANS WITH BACKS AGAINST A WALL SHALL BE FRONT ACCESSIBLE ONLY. EQUIPMENT REQUIRING REAR ACCESS WILL NOT BE ACCEPTABLE.
9. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE EQUIPMENT THAT WILL FIT IN THE SPACES ALLOWED FOR ON THE PLANS AND COMPLY WITH ALL THE CODE REQUIRED CLEARANCES.
10. IF THE ELECTRICAL CONTRACTOR PROVIDES EQUIPMENT THAT DOES NOT FIT IN THE SPACES INDICATED, OR THAT WILL NOT LEAVE THE REQUIRED CODE CLEARANCES, OR EQUIPMENT REQUIRING CHANGES IN THE DESIGN INDICATED ON THESE DRAWINGS, HE SHALL PAY ALL COSTS INVOLVED TO CORRECT THE INSTALLATION.
11. ELECTRICAL CONTRACTOR TO LABEL ALL DEVICES (RECEPTACLES, SWITCHES, PANELBOARDS, DISCONNECTS, ETC.) WITH CIRCUIT NUMBER AND PANELBOARD DESIGNATION. RECEPTACLES, SWITCHES, AND SIMILAR DEVICES TO HAVE PRE-PRINTED, SELF-ADHESIVE LABEL.
12. PANELBOARDS, DISCONNECT SWITCHES, AND SIMILAR DEVICES TO HAVE ENGRAVED, SELF-ADHESIVE, LAMINATED ACRYLIC LABEL (BLACK W/ WHITE LETTERING).

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
	LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING		20A - 125V/2P/3W GROUNDING SIMPLEX RECEPTACLE (NEMA 5-20R)	WALL - 15" AFF		PANELBOARD 208Y/120V, 3Ø 4W (REFERENCE PANEL SCHEDULES)	
	DIRECTIONAL/WALL/WASHER LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING		20A - 125V/2P/3W GROUNDING DUPLEX RECEPTACLE (NEMA 5-20R)	WALL - 15" AFF U.N.O.		PANELBOARD 480Y/277V, 3Ø 4W (REFERENCE PANEL SCHEDULES)	
	LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	WALL		20A - 125V/2P/3W GROUNDING DUPLEX RECEPTACLE (NEMA 5-20R)	WALL - 6" ABOVE FINISHED COUNTER U.N.O.		DISTRIBUTION PANEL (REFERENCE PANEL SCHEDULES)	
	LIGHT FIXTURE ON EMERGENCY (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING/WALL		20A - 125V/2P/3W GROUNDING QUAD-PLEX RECEPT. (NEMA 5-20R)	WALL - 15" AFF		DRY TYPE TRANSFORMER	
	FLUORESCENT STRIP LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING/ SUSPENDED		SPLIT RECEPTACLE, TOP OUTLET WIRED NOT. BOTTOM OUTLET SWITCHED. (NEMA 5-20R)	WALL - 15" AFF		JUNCTION BOX	WALL - AS NOTED CEILING
	FLUORESCENT LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING		SPECIAL PURPOSE OUTLET (NEMA CONFIG. AS NOTED)	WALL - 15" AFF U.N.O./CEILING		NON-FUSED DISCONNECT SWITCH U.N.O. (E.G. 80A/40 INDIC. 80A SWITCH/40A FUSES)	
	FLUORESCENT LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	WALL		20A - 125V/2P/3W GROUNDING SIMPLEX RECEPTACLE (NEMA 5-20R)	FLOOR - FLUSH		MOTOR STARTER	
	FLUORESCENT LIGHT FIXTURE ON EMERGENCY (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING		20A - 125V/2P/3W GROUNDING DUPLEX RECEPTACLE (NEMA 5-20R)	FLOOR - FLUSH		COMBINATION MOTOR STARTER/ DISCONNECT SWITCH	
	FLUORESCENT LIGHT FIXTURE ON EMERGENCY (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	WALL		20A - 125V/2P/3W GROUNDING QUAD-PLEX RECEPT. (NEMA 5-20R)	FLOOR - FLUSH		ENCLOSED CIRCUIT BREAKER	
	FLUORESCENT STRIP LIGHT FIXTURE ON EMERGENCY (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING/ SUSPENDED		20A - 125V/2P/3W GROUNDING DUPLEX RECEPTACLE (NEMA 5-20R)	CEILING - FLUSH		MANUAL MOTOR SWITCH ("P" INDICATES PILOT LIGHT)	
	BATTERY PACK EMERGENCY TWO HEAD LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	WALL - 9'-0" AFF		MULTI-OUTLET ASSEMBLY			MOTOR (# INDICATES HORSEPOWER)	
	EXIT LIGHT (ARROW(S) AS INDICATED, SHADE INDICATES FACE, LETTER INDICATES FIXTURE TYPE - SEE SCHEDULE)	CEILING/WALL		POKE-THRU, 4" CORE. WIREMOLD RC4 SERIES W/ COM75 ADAPTER, OR EQUAL, W/ 2-DUPLEX RECEPTS & 4-4RJ45 DATA/COMM PORTS - COORD. W/ LV CONSULTANT.	FLOOR - FLUSH		CONDUIT IN OR UNDER FLOOR/GRADE	
	SINGLE POLE SWITCH 20A (120/277V) ②	WALL - 48" AFF		POKE-THRU, 4" CORE. WIREMOLD 4FF SERIES OR EQUAL, FOR POWER AND DATA FURNITURE FEED, DATA FEED TO ACCOMMODATE MINIMUM OF 10 CAT6 CABLES.	FLOOR - FLUSH		CONDUIT EXPOSED	
	THREE WAY SWITCH 20A (120/277V) ②	WALL - 48" AFF		POKE-THRU, 3" CORE. WIREMOLD RC7AFF SERIES W/ COM65 ADAPTOR OR EQUAL, FOR POWER AND DATA FURN. FEED (TYP. SINGLE SERVICE).	FLOOR - FLUSH		CONDUCTOR HOME RUN - (H) HOT, (I) NEUTRAL, (J) EQUIPMENT GROUND, & (J) ISOLATED GROUND	
	FOUR WAY SWITCH 20A (120/277V) ②	WALL - 48" AFF		POKE-THRU, 3" CORE. WIREMOLD RC7AFF SERIES W/ COM65 ADAPTOR OR EQUAL, FOR POWER AND DATA FURN. FEED (TYP. SINGLE SERVICE).	FLOOR - FLUSH		EQUIPMENT CONNECTION	
	KEY OPERATED SWITCH ②	WALL - 48" AFF		POKE-THRU, 3" CORE. WIREMOLD RC39A/2 SERIES OR EQUAL, FOR LARGE CAPACITY DATA FURNITURE FEED, TO ACCOMMODATE MINIMUM OF 20 CAT6 CABLES.	FLOOR - FLUSH		CONDUIT IN CEILING OR WALL	
	DOOR SWITCH	WALL		POKE-THRU, 3" CORE. WIREMOLD RC39A/2 SERIES OR EQUAL, FOR LARGE CAPACITY DATA FURNITURE FEED, TO ACCOMMODATE MINIMUM OF 20 CAT6 CABLES.	FLOOR - FLUSH		SECURITY CAMERA OUTLET (PAN/TILT/ZOOM)	CEILING/WALL
	PILOT LIGHT SWITCH ②	WALL - 48" AFF		POKE-THRU, 6" CORE. WIREMOLD BATCFF SERIES OR EQUAL, FOR POWER AND DATA FURNITURE FEED, TO ACCOMMODATE MINIMUM OF 20 CAT6 CABLES.	FLOOR - FLUSH		SECURITY CAMERA OUTLET (FIXED)	CEILING/WALL
	TIME SWITCH	WALL		POKE-THRU, 6" CORE. WIREMOLD BATCPVP SERIES OR EQUAL, AV STYLE POKE-THRU. COORDINATE POKE- THRU REQUIREMENTS W/ LV CONSULTANT.	FLOOR - FLUSH		SECURITY DOOR STATUS CONTACTS	
	DIMMER SWITCH (SIZE AS REQUIRED) ②	WALL - 48" AFF		POKE-THRU, 6" CORE. WIREMOLD BATCPVP SERIES OR EQUAL, AV STYLE POKE-THRU. COORDINATE POKE- THRU REQUIREMENTS W/ LV CONSULTANT.	FLOOR - FLUSH		ELECTRICAL LOCK	
	OCCUPANCY SENSOR/SENSOR EQUIPMENT (LETTER INDICATES SENSOR TYPE - SEE SCHEDULE) ②	CEILING/WALL		WIREMOLD RFB4 SERIES FLOOR BOX, OR EQUAL, W/ 2-DUPLEX RECEPTS, COORDINATE DATA/COMM REQUIREMENTS W/ LV CONSULTANT.	FLOOR - FLUSH		PUSH BUTTON	
	LOW-VOLTAGE CONTROL STATION ②	WALL - 48" AFF		WIREMOLD 880S SERIES FLOOR BOX, OR EQUAL, 2 OR 3 GANG BOXES AS REQUIRED. COORDINATE DATA/COMM REQUIREMENTS W/ LV CONSULTANT.	FLOOR - FLUSH			
	PHOTOELECTRIC CELL			WIREMOLD 880S SERIES FLOOR BOX, OR EQUAL, FOR FURNITURE FEED, COORDINATE DATA/COMM REQUIREMENTS W/ LV CONSULTANT.	FLOOR - FLUSH			
	CARD READER (VERIFY JUNCTION BOX REQUIREMENTS)							
	POWER PACK ②	ACCESSIBLE CEILING		WIREMOLD 880S SERIES FLOOR BOX, OR EQUAL, FOR FURNITURE FEED, COORDINATE DATA/COMM REQUIREMENTS W/ LV CONSULTANT.	FLOOR - FLUSH			
	DATA, TELEPHONE, OR COMBO TELEDATA OUTLET PROVIDE PULLSTRING IN CONDUIT TO ACCESSIBLE CEILING	WALL - 15" AFF						
	DATA, TELEPHONE, OR COMBO TELEDATA OUTLET PROVIDE PULLSTRING IN CONDUIT TO ACCESSIBLE CEILING	FLOOR						
	TELEPHONE TERMINAL BACKBOARD	WALL						
	CLOCK OUTLET	WALL - AS NOTED OR REF. ARCH. DWGS.						
	TELEVISION OUTLET	WALL						
	TELEVISION OUTLET	FLOOR						
	SPEAKER OUTLET (#4) INDICATES TYPE-ZONE	CEILING						

- ① ALL ELECTRICAL SYMBOLS NOT NECESSARILY USED.
- ② (a,b,c...) INDICATES SWITCHING SCHEME TO RELATED FIXTURES.



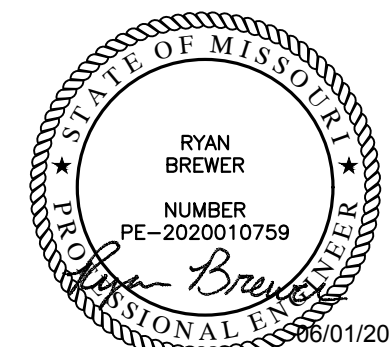
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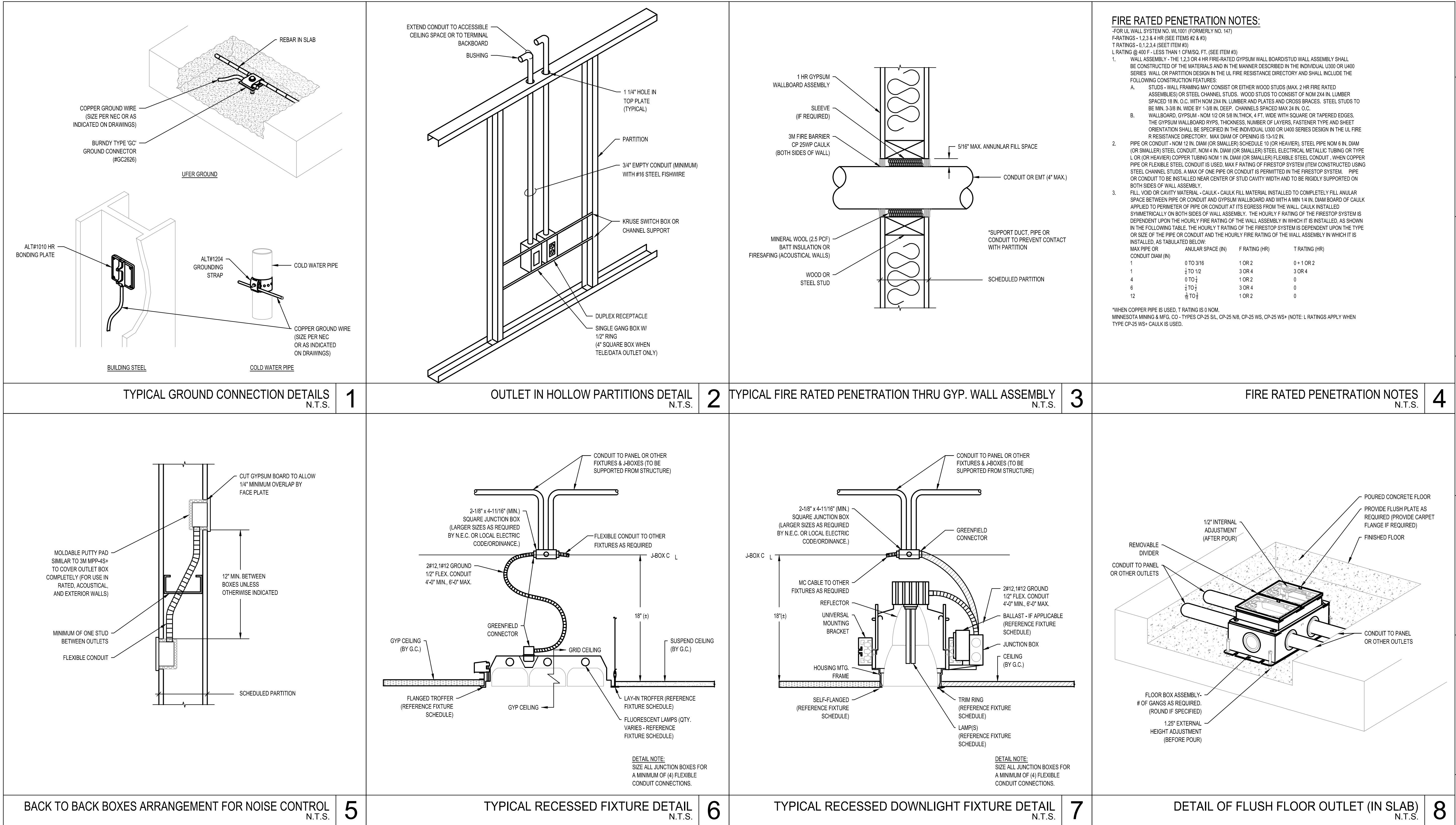


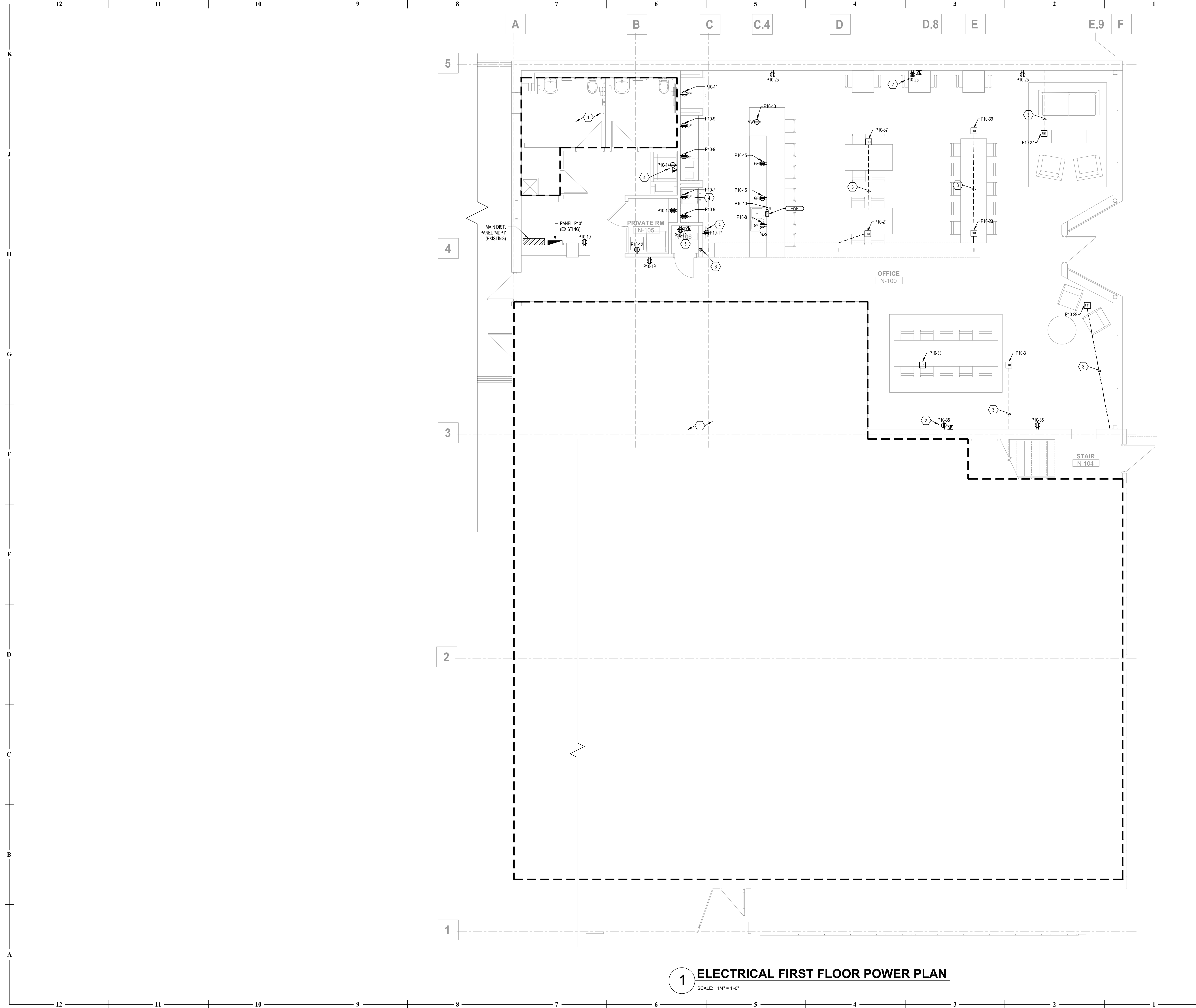
PROFESSIONAL SEAL

E101

ISSUE DATE: 01 JUNE, 2022  
COLLINS WEBB #: 22046

ELECTRICAL NOTES,  
SYMBOLS &  
ABBREVIATIONS





## GENERAL NOTES

K	1. REFERENCE SHEET E101 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
	2. COORDINATE MOUNTING HEIGHTS AND LOCATIONS FOR ALL DEVICES WITH ARCHITECT AND/OR INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.
	3. PROVIDE AND INSTALL 3/4" CONDUIT AND PULL STRINGS FROM TELEPHONE/DATA OUTLETS TO ABOVE ACCESSIBLE CEILING. VERIFY EXACT REQUIREMENTS WITH TELEPHONE EQUIPMENT SUPPLIER AND/OR TENANT.
	4. ALL RECEPTACLES AND COVER PLATES TO BE STAINLESS STEEL

**KEYED NOTES:** 

1. NO SCOPE IN THIS AREA.
2. POWER AND DATA FOR TV. COORDINATE EXACT MOUNTING HEIGHT PRIOR TO ROUGH-IN.
3. PROVIDE (1) 1" CONDUIT FOR POWER AND (1) 1/4" CONDUIT FOR DATA FROM FLOORBOX TO NEAREST WALL AND STUBBED INTO ACCESSIBLE CEILING. FIELD COORDINATE EXACT LOCATION OF FLOORBOX WITH OWNER PRIOR TO ROUGH-IN.
4. COORDINATE EXACT CONNECTION REQUIREMENTS WITH EQUIPMENT PROVIDER PRIOR TO ROUGH-IN.
5. COORDINATE EXACT IT CLOSET POWER REQUIREMENTS WITH OWNER.
6. PROVIDE (1) 4" EMPTY CONDUIT STUB WITH BUSHINGS BETWEEN IT CLOSET AND SECOND FLOOR FOR DATA CABLING. VERIFY EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.

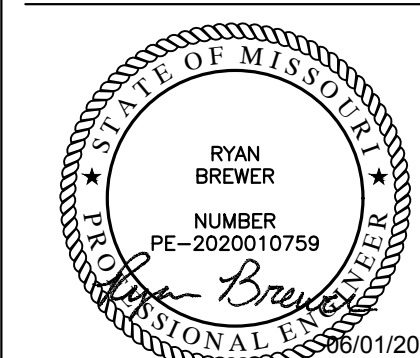


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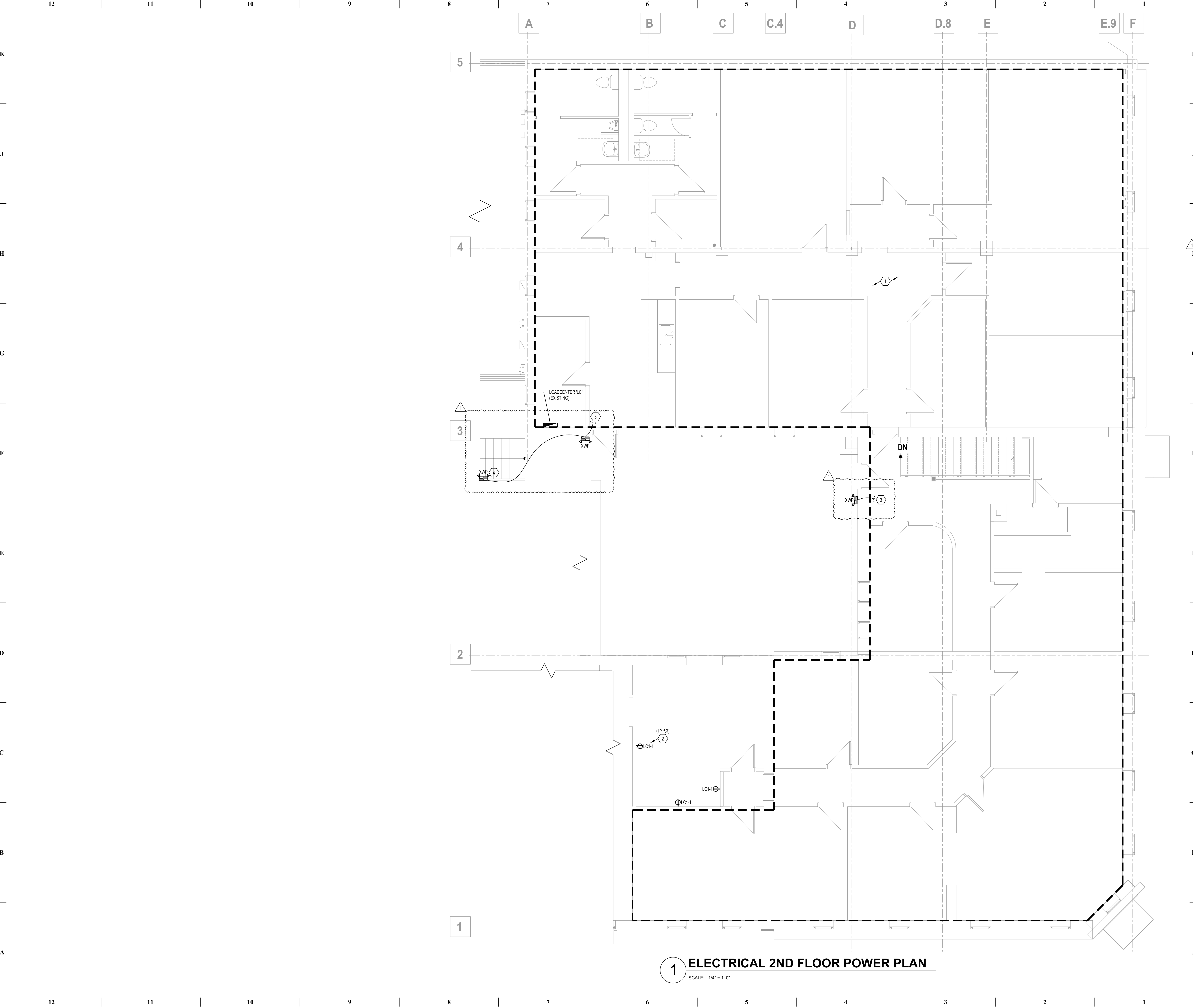


PROFESSIONAL SEAL

# E201

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COLLINS WEBB #: 22046

# ELECTRICAL 1ST FLOOR POWER PLAN



**1 ELECTRICAL 2ND FLOOR POWER PLAN**  
SCALE: 1/4" = 1'-0"

- GENERAL NOTES**  
(NOT ALL NOTES APPLY)
1. REFERENCE SHEET E101 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  2. COORDINATE MOUNTING HEIGHTS AND LOCATIONS FOR ALL DEVICES WITH ARCHITECT AND/OR INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.
  3. PROVIDE AND INSTALL 3/4" CONDUIT AND PULL STRINGS FROM TELEPHONE DATA OUTLETS TO ABOVE ACCESSIBLE CEILING. VERIFY EXACT REQUIREMENTS WITH TELEPHONE EQUIPMENT SUPPLIER AND/OR TENANT.
  4. ALL RECEPTACLES AND COVER PLATES TO BE STAINLESS STEEL.
- KEYED NOTES:**
1. NO SCOPE IN THIS AREA.
  2. CIRCUIT OFFICE RECEPTACLES TO SPARE 1P-20A CIRCUIT IN EXISTING LOADCENTER 'LC1'. IF EXISTING LOADCENTER DOES NOT HAVE ANY SPACE AVAILABLE, CONNECT TO PANEL P10 ON LEVEL BELOW.
  3. CONNECT FIXTURES TO 2ND FLOOR CORRIDOR LIGHTING CIRCUIT AHEAD OF ANY MEANS OF CONTROL FOR PROPER OPERATION.
  4. MOUNT FIXTURE ON WALL ADJACENT TO STAIRS TO PROVIDE EGRESS LIGHTING ON STAIRS DURING LOSS OF NORMAL POWER. FIELD VERIFY EXACT LOCATION.



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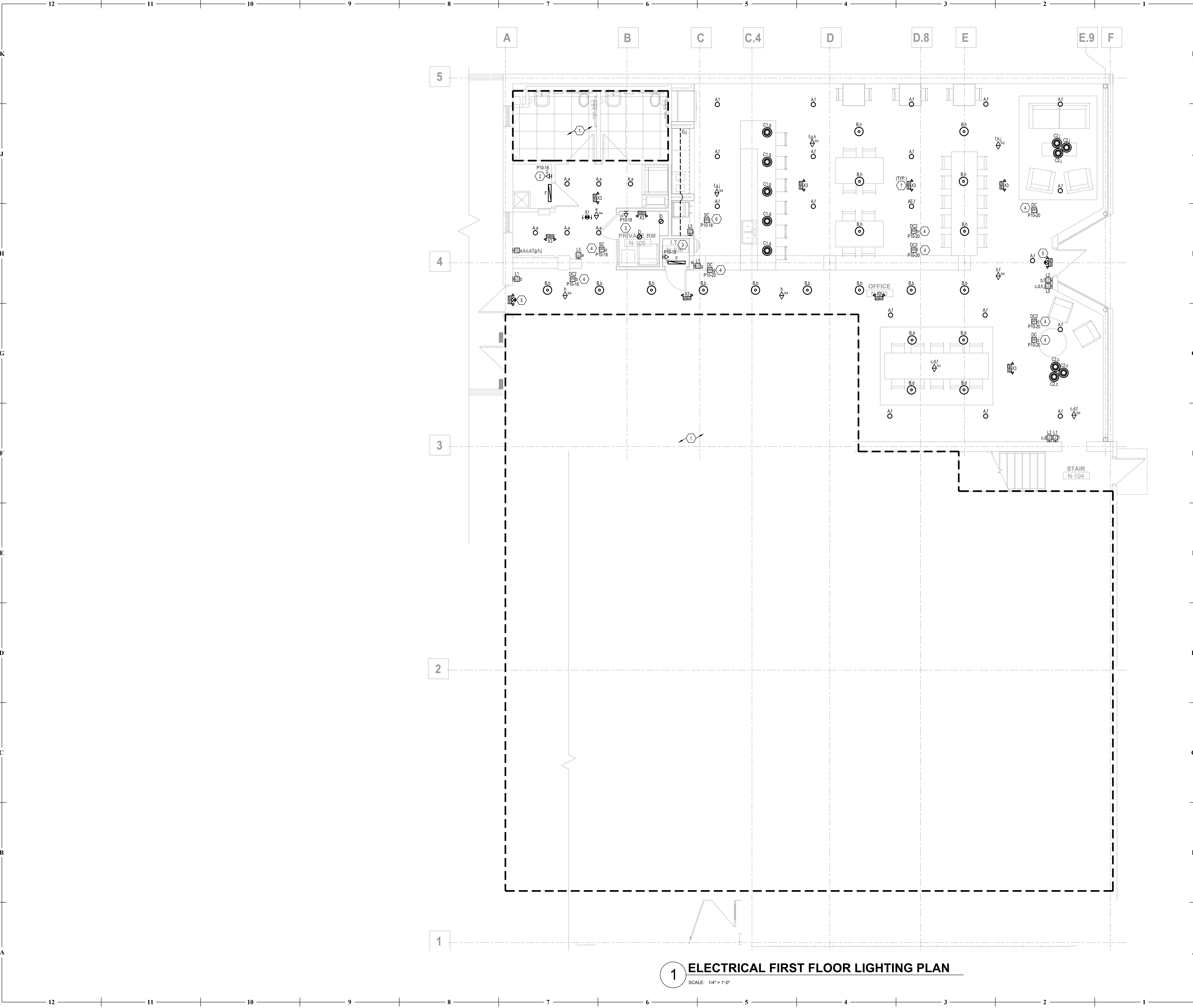


PROFESSIONAL SEAL

**E202**

ISSUE DATE: 01 JUNE, 2022  
COLLINS WEBB #: 22046

**ELECTRICAL**  
**2ND FLOOR**  
**POWER PLAN**




**GENERAL NOTES**  
(NOT ALL NOTES APPLY)

- REFERENCE SHEET E101 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
- COORDINATE MOUNTING HEIGHTS AND LOCATIONS FOR ALL DEVICES WITH ARCHITECT AND/OR INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.
- CIRCUIT ALL EXIT SIGNS TO NEAREST EMERGENCY LIGHTING CIRCUIT (OR NEAREST LIGHTING CIRCUIT IF NO GENERATOR).

**KEYED NOTES:**

- NO SCOPE IN THIS AREA.
- LIGHTING CONTROL INTENT FOR THIS AREA IS FOR FIXTURES TO BE AUTO 'ON/AUTO 'OFF' VIA OCCUPANCY SENSOR SWITCH WITH MANUAL OVERRIDE AVAILABLE AT THE SWITCH.
- LIGHTING CONTROL INTENT FOR THIS AREA IS FOR FIXTURES TO BE MANUAL 'ON/AUTO 'OFF' VIA OCCUPANCY SENSOR SWITCH WITH MANUAL OVERRIDE AVAILABLE AT THE SWITCH.
- LIGHTING CONTROL INTENT FOR THIS ZONE IS FOR FIXTURES TO BE AUTO 'ON/AUTO 'OFF' VIA TIMECLOCK 'TC' AFTER HOURS. FIXTURES TO BE AUTO 'ON/AUTO 'OFF' VIA OCCUPANCY SENSOR WITH MANUAL OVERRIDE AVAILABLE AT THE LOW-VOLTAGE SWITCH.
- EXISTING EXIT SIGN/EMERGENCY LIGHT COMBO TO REMAIN.
- LIGHTING CONTROL INTENT FOR THIS ZONE IS FOR FIXTURES TO BE MANUAL 'ON/AUTO 'OFF' VIA OCCUPANCY SENSOR WITH MANUAL OVERRIDE AVAILABLE AT THE LOW-VOLTAGE SWITCH.
- EMERGENCY BUG-EYE FIXTURES IN AREAS OPEN TO STRUCTURE SHALL BE MOUNTED AT 9'-6" AFF. VERIFY FINISH COLOR WITH ARCHITECT BASED ON MOUNTING LOCATION.

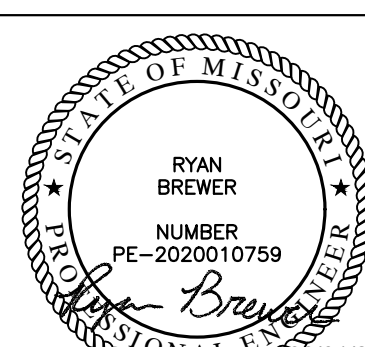
  
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**ELECTRICAL  
1ST FLOOR  
LIGHTING PLAN**

## LIGHTING FIXTURE SCHEDULE

FIXT. TYPE	DESCRIPTION & MANUFACTURER OPTIONS	NO.	LAMPS TYPE	FIXT. VOLT	TOTAL WATTS	FINISH	REMARKS/MOUNTING	NOTES
A	Surface Mounted LED Cylinder w/ ELV Dimming MF KUCCO LTO #ECT19404	1	LED	120V	19W	Coord. w/ Architect	Surface (Ceiling)	
	LED Pendant Mounted Light Fixture w/ ELV Dimming MF KUCCO LTO #PD1712	1	LED	120V	12W	Coord. w/ Architect	Pendant (Verify Ht w/ Architect)	
C1	18" Decorative Pendant Over Island w/ 0-10V Dimming MF TMS LTO #BELLA 333BE-16-20-LED-35K-UNV-_-_-QML-N MF MF	1	LED	UNV	20W	Coord. w/ Architect	Pendant (Verify Ht w/ Architect)	
	Decorative LED Pendant Clusters w/ 0-10V Dimming. Verify Exact Sizes w/ Architect MF TMS LTO #BELLA 333BE-10/14/16-20-LED-35K-UNV-_-_-QML-N MF MF	1	LED	UNV	20W	Coord. w/ Architect	Pendant (Verify Ht w/ Architect)	
D	6" Round LED Downlight MF LIGHTOLIER #6-R-R MF LIGHTOLIER #ZBLT-16-335-W-Q-U	1	LED	UNV	15W	Standard	Recessed (Ceiling - Provide Flange)	
F	2" Linear LED Strip Fixture MF ILP #V52-20WV-LED-U-35-FRAL	1	LED	UNV	20W	Standard	Surface Mounted Flush to Underside of Concrete Beams	
	LED Undercabinet Tape Light MF KELVIX KDK3K-24V MF KELVIX #CH-602-A-2-FR-CP-ED MF KELVIX #PML-20-4, KELVIX #ALV16	1	LED	120/24V	3.3W/FT	Standard	Coord. w/ Architect	
X1	LED Exit Sign, Single/Double Sided, Universal Mount, Emergency Battery Pack. Provide Arrows as Indicated. MF DUAL LITE #EVE-U-R-W-E (EVEN/LITE #TLX-B-RL-W) (OR EQUAL)	1	LED	UNV	2W		Wall/Ceiling/Pendant	1
	LED Emergency Light w/ (2) 2-Watt Adjustable LED Heads and Emergency Battery Backup. Coordinate Finish Color w/ Architect for Each Area MF EVN/LITE #TLX-B-_-_- DUAL LITE #EVD-_-_-	2	LED	UNV	5W	Coord. w/ Architect	Surface (Wall/Ceiling)	1
XMP	LED Emergency Light w/ (2) 3-Watt Adjustable LED Heads and Emergency Battery Backup. Wet Location Rated MF LSL247 #LSM-6-WL-B-HTR	1	LED	UNV	5W	Black	Wall/Ceiling/Pendant	1

## LIGHTING CONTROLS SCHEDULE

FIXTURE TYPE	MANUFACTURER	MODEL #	SETTINGS	DESCRIPTION	NOTES
DC	ACUITY BRANDS: nLIGHT	HP16-B SERIES	ON: MANUAL OFF: 20 MINUTE DELAY	ON/OFF ROOM-3 10V DIMMING CONTROLLER LINE VOLTAGE - SINGLE RELAY	1.2.4
DCA	ACUITY BRANDS: nLIGHT	HP16-B SERIES	ON: AUTOMATIC OFF: 20 MINUTE DELAY	ON/OFF ROOM-3 10V DIMMING CONTROLLER LINE VOLTAGE - SINGLE RELAY	1.2.4
DC2	ACUITY BRANDS: nLIGHT	HP55 PCD-2W.3W.VELC 12	ON: MANUAL OFF: 20 MINUTE DELAY	M.V. ELV. 2-WIRE, 3-WIRE DIMMING POWER PACK	1.2.4
DC2A	ACUITY BRANDS: nLIGHT	HP55 PCD-2W.3W.VELC 12	ON: AUTOMATIC OFF: 20 MINUTE DELAY	M.V. ELV. 2-WIRE, 3-WIRE DIMMING POWER PACK	1.2.4
SCA	ACUITY BRANDS: nLIGHT	HP16-B SERIES	ON: AUTOMATIC OFF: 20 MINUTE DELAY	ON/OFF ROOM SWITCH CONTROLLER LINE VOLTAGE - SINGLE RELAY	1.2.4
L1	ACUITY BRANDS: nLIGHT	rPD0M4DX	-	ON/OFF AND DIMMING LOW VOLTAGE SWITCH WITH 1-CHANNEL CONTROL	1.6
L2	ACUITY BRANDS: nLIGHT	rPD0M4DX	-	ON/OFF AND DIMMING LOW VOLTAGE SWITCH WITH 2-CHANNEL CONTROL	1.6
L3	ACUITY BRANDS: nLIGHT	rPD0P	-	ON/OFF LOW VOLTAGE SWITCH WITH 1-CHANNEL CONTROL	1.6
L5	ACUITY BRANDS: nLIGHT	rPD0M4P	-	ON/OFF AND DIMMING LOW VOLTAGE SWITCH WITH 4-CHANNEL CONTROL	1.6
S1	SENSOR SWITCH	WXX SERIES	ON: AUTOMATIC OFF: 20 MINUTE DELAY	WALL MOUNT OCCUPANCY SENSOR LINE VOLTAGE - SINGLE RELAY	1
S3	ACUITY BRANDS: nLIGHT	RCM-3 SERIES	-	CELING MOUNT OCCUPANCY SENSOR - SMALL MOTION LOW VOLTAGE	3
S4	ACUITY BRANDS: nLIGHT	RCM-10 SERIES	-	CELING MOUNT OCCUPANCY SENSOR - LARGE MOTION LOW VOLTAGE	3
WIRE	-	-	-	CATS, CATS, OR CAT 8 STANDARD OR SLD TERMINATED @ RJ-45 T568A/B	
TC	ACUITY BRANDS: nLIGHT	HTC-WH	-	10V LOW VOLTAGE DIGITAL TOUCHSCREEN WITH TIMELOCK	8

NOTES:

- COORDINATE ALL MODEL NUMBERS WITH MANUFACTURER PRIOR TO ORDERING. PROVIDE DESIGNS TO MEET CONTROL INTENT INDICATED ON THE DRAWINGS.
- PROVIDE 6" OF EXCESS CONTROL WIRING, COILED AND TIED, BETWEEN CEILING MOUNTED OCCUPANCY SENSOR AND CORRESPONDING LOAD CONTROLLER.
- MODIFY LOCATIONS OF CEILING MOUNTED OCCUPANCY SENSORS AS REQUIRED SO THAT NO OCCUPANCY SENSORS IS WITHIN 4' OF AN HVAC SUPPLY DIFFUSER.
- LOCATE DEVICE ABOVE CEILING OR AT STRUCTURE IN ACCESSIBLE LOCATION. LOCATIONS SHOWN ON DRAWINGS ARE SCHEMATIC. ADD ACCESS PANEL, WITH CEILING IF NECESSARY, COORDINATE ACCESS PANEL LOCATION AND SPECIFICATION DIRECTLY WITH ARCHITECT.
- LOCATION SHOWN ON PLAN FOR REFERENCE. ONLY CONTRACTOR MAY RELOCATE BRIDGE PORTS FOR A MORE ECONOMICAL LAYOUT IF DESIRED.
- PROVIDE DESIGNS WITH DEFAULT MANUFACTURE WARNINGS ON BUTTONS.
- ROUTE RECEPTACLE CIRCUIT INDICATED ON PLAN AS "CONTROLLED RECEPTABLES" THROUGH PLUG LOAD CONTROLLER FOR AUTOMATIC ON/OFF CONTROL.
- MAX OCCUPANCY SENSOR, ONE CONTROLLED CIRCUIT PER PLUG CONTROLLER.
- DEVICE TO BE INSTALLED IN SINGLE GANG BOX, COORDINATE TIME-OF-DAY SCHEDULES WITH OWNER FOR ZONES TO BE ON TIME-OF-DAY CONTROL.

## DISTRIBUTION PANEL MDP1 (EXISTING)

[illegible]

## PANEL P10 (EXISTING)

[illegible]

## BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS

BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTHS (FT)				
		120V	208V	240V	277V	480V
20A	12	50	100	110	150	250
	10	100	175	200	250	425
	8	150	275	325	375	675
	6	250	450	550	625	1000
	10	50	100	125	150	275
30A	8	100	175	200	250	400
	6	150	300	350	400	700
	4	275	500	575	650	1000

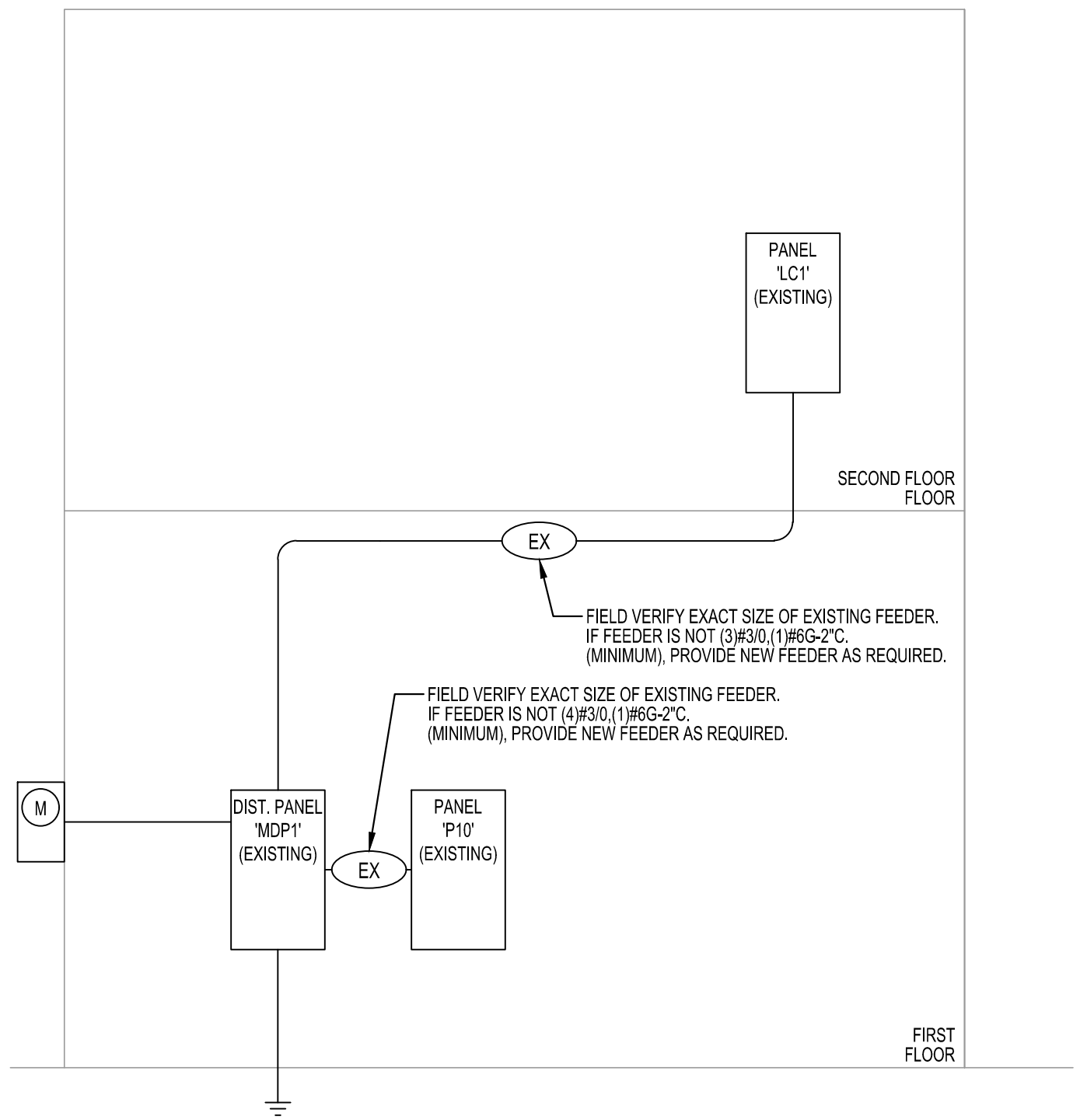
NOTES:

1. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
2. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 7 CURRENT CARRYING COPPER CONDUCTORS IN A SINGLE STEEL CONDUIT. LIMITS FOR CONDUCTOR LENGTH-SHOW ARE BASED ON A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH THE NEC FOR CIRCUITS LOADED GREATER THAN 84% OF BRANCH BREAKER RATING. THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

WIRE SIZES CALLED OUT IN PANEL SCHEDULES DO NOT ACCOUNT FOR VOLTAGE DROP. CONTRACTOR TO INCREASE WIRE SIZES AS REQUIRED UTILIZING VOLTAGE DROP TABLE PROVIDED.

## GENERAL NOTES

1. THIS ONE-LINE DIAGRAM REPRESENTS (AS ACCURATELY AS POSSIBLE) THE ELECTRICAL DISTRIBUTION SYSTEM. FIELD VERIFY ALL SIZES OF EQUIPMENT, CONDUCTORS, FUSES, ETC. ALL EQUIPMENT AND CONDUCTORS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.



## ELECTRICAL RISER DIAGRAM

SCALE: NO SCALE

## GENERAL NOTES

(NOT ALL NOTES APPLY)

1. REFERENCE SHEET E101 FOR GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. COORDINATE MOUNTING HEIGHTS AND LOCATIONS FOR ALL DEVICES WITH ARCHITECT AND/OR INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.
3. PROVIDE AND INSTALL 3/4" CONDUIT AND PULL STRINGS FROM TELEPHONE/DATA OUTLETS TO ABOVE ACCESSIBLE CEILING. VERIFY EXACT REQUIREMENTS WITH TELEPHONE EQUIPMENT SUPPLIER AND/OR TENANT.

**KEYED NOTES:** 



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PROFESSIONAL SEAL

# E401

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COLLINS WEBB #: 22048

## ELECTRICAL RISER DIAGRAM & SCHEDULES

18000 - ELECTRICAL

GENERAL

DESCRIPTION

DIVISION 16 OF THE SPECIFICATIONS COVERS ALL ELECTRICAL WORK FOR THE PROJECT. WORK SHALL INCLUDE LABOR, MATERIAL AND ACCESSORIES NECESSARY TO ACCOMPLISH THE WORK AS SPECIFIED AND SHOWN ON THE DRAWINGS, INCLUDING CONNECTION AND CHECKOUTS OF EQUIPMENT FURNISHED BY OTHERS (OTHER TRADES, THE OWNER AND OTHER CONTRACTORS), AND TO ALL EQUIPMENT ITEMS AND AS INDICATED ON DRAWINGS OR AS REQUIRED.

THE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS INCLUDING THE GENERAL CONDITIONS, INCLUDING ALL SUPPLEMENTS ISSUED THERETO, INSTRUCTIONS TO BIDDERS, AND OTHERS PERTINENT DOCUMENTS ISSUED BY THE ARCHITECT ARE A PART OF THESE SPECIFICATIONS AND ELECTRICAL DRAWINGS. THIS TRADE SHALL CONSULT THEM FOR INSTRUCTIONS WHICH APPLY. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL LAYOUT AND WORK INCLUDED. ELECTRICIAN SHALL FOLLOW DRAWINGS IN LAYOUT OF THE ELECTRICAL WORK AND CONSULT THE DRAWINGS AND LAYOUTS OF OTHER TRADES TO VERIFY LOCATION AND SPACES IN WHICH WORK WILL BE INSTALLED.

CODES, PERMITS, INSPECTION AND COMMISSIONING

INSTALLATION SHALL COMPLY WITH ALL LAWS APPLYING TO ELECTRICAL WORK IN EFFECT, INCLUDING THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (N.E.C.), THE NATIONAL ELECTRICAL SAFETY CODE, ALL LOCAL GOVERNING CODES AND ORDINANCES, WITH THE REGULATIONS OF THE SERVING ELECTRICAL UTILITY COMPANY. PROVIDE ALL REQUIRED PERMITS AND INCLUDE THE COST OF SAME IN THE COST OF THE PROJECT. OBTAIN AND PAY FOR (WITHOUT ADDITIONAL EXPENSE TO THE OWNER) ALL REQUIRED INSPECTIONS AND REVIEWS. PROVIDE FOR AND PAY ALL EXPENSES (WITHOUT ADDITIONAL EXPENSE TO THE OWNER) ASSOCIATED WITH LIGHTING AND LIGHTING CONTROLS COMMISSIONING. ALL COMMISSIONING DOCUMENTATION SHALL BE CERTIFIED AND GIVEN TO OWNER AND DESIGN PROFESSIONAL.

QUALITY ASSURANCE

THE FOLLOWING INDUSTRY STANDARDS AS APPLICABLE TO ELECTRICAL WORK SHALL APPLY TO THE WORK OF THIS DIVISION EXCEPT THAT, WHERE THE REQUIREMENTS OF THESE SPECIFICATIONS ARE MORE THAN THE LISTED STANDARD, THESE SPECIFICATIONS SHALL TAKE PRECEDENCE:

UL - UNDERWRITERS' LABORATORIES

NEMA - NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION  
NECA - NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION  
ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE  
ASTM - AMERICAN SOCIETY OF TESTING MATERIALS.

ALL MATERIALS SHALL BE NEW, UL LISTED AND LABELED WHERE LABELED MATERIALS ARE AVAILABLE, UNDAMAGED AND FREE OF DEFECTS AT TIME OF INSTALLATION. MATERIALS OR EQUIPMENT DAMAGED IN SHIPMENT OR OTHERWISE DAMAGED PRIOR TO OR DURING INSTALLATION SHALL NOT BE REPAIRED AT THE JOB SITE, BUT SHALL BE REPLACED WITH NEW MATERIALS. WHEN THE MANUFACTURER'S NAME APPEARS IN THESE SPECIFICATIONS AND DRAWINGS, IT SHALL BE CONSTRUED THAT THE MANUFACTURER HAS TO MEET THE FULL REQUIREMENTS OF THE SPECIFICATIONS AND DRAWINGS.

SUBMITTALS

SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EQUIPMENT TO THE ARCHITECT FOR ENGINEER'S REVIEW ELECTRONICALLY OR HARD COPIES, INCLUDE SUFFICIENT INFORMATION TO INDICATE COMPLETE COMPLIANCE WITH SPECIFICATIONS. PROVIDE SUBMITTALS AS EARLY AS REQUIRED TO SUPPORT THE PROJECT SCHEDULE. ALLOW ONE WEEK FOR ENGINEER REVIEW TIME. THE ENGINEER'S SUBMITTAL REVIEWS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAILS, SIZE OF MEMBERS, OR QUANTITIES, OR FOR OMITTING COMPONENTS OR FITTINGS, OR FOR NOT COORDINATING ITEMS WITH ACTUAL BUILDING CONDITIONS AND/OR OTHER TRADES.

OWNER RECORDS

ACCUMULATE DURING THE PROGRESS OF THE JOB, THE FOLLOWING DATA IN DUPLICATE, AND PREPARE IN A NEAT BROCHURE OR PACKET FOLDER TO BE TURNED OVER TO THE OWNER AT SUBSTANTIAL COMPLETION. RECORD DRAWINGS PER ABOVE.

ALL WARRANTIES, GUARANTEES, AND MANUFACTURER'S DIRECTION ON EQUIPMENT & MATERIAL FURNISHED.

COMPLETE PLAIN ENGLISH STEP-BY-STEP OPERATING INSTRUCTIONS FOR THE ELECTRICAL SYSTEM, ONE COPY OF EACH. INSTRUCTIONS SHALL BE FRAMED AND POSTED AS DIRECTED ON THE PREMISES.

CERTIFIED LIGHTING AND LIGHTING CONTROLS COMMISSIONING AS REQUIRED BY CURRENTLY ADOPTED ENERGY CODE REQUIREMENTS.

MANUFACTURERS' NAMES AND CATALOG NUMBERS

IN SOME INSTANCES, SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURERS NAME AND MODEL OR CATALOG NUMBERS. USE OF NAMES AND CATALOG NUMBERS DOES NOT INDICATE THAT THE EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM. VARIANCES MAY BE DUE TO REQUIREMENT OF DESIRED FINISH, MATERIAL OR OTHER MODIFICATION.

IN THE CASE OF PANELBOARDS, SAFETY SWITCHES AND OTHER EQUIPMENT REQUIRING WIRE AND CABLE TERMINATIONS, ASCERTAIN THAT LUG SIZES AND WIRING GUTTERS OR WIRING SPACE ALLOWED IS PROPER FOR THE WIRES AND CABLES CONTAINED THEREIN.

WHEN APPROVAL IS GIVEN FOR THE USE OF EQUIPMENT DIFFERING FROM THAT SHOWN ON DRAWINGS IN REGARD TO FOUNDATIONS, SPACE FOR PIPING, OUTWORK, WIRING, INSULATION, ETC. CHANGES REQUIRED TO ACCOMPLISH SUCH DIFFERENCES SHALL BE ACCOMPLISHED AT NO COST TO THE OWNER.

PROTECTION OF EQUIPMENT

ELECTRICAL EQUIPMENT SHALL BE PROTECTED FROM THE WEATHER. IN PARTICULAR, DRIPPING OR SPLASHING WATER, AT ALL TIMES DURING SHIPMENT, STORAGE AND CONSTRUCTION, MANUFACTURERS' RECOMMENDATIONS WITH REGARD TO STORAGE, PROTECTION, AND HANDLING SHALL BE FOLLOWED.

SHOULD ANY APPARATUS BE SUBJECTED TO POSSIBLE INJURY DUE TO WATER, IT SHALL BE THOROUGHLY DRIED AND PUT THROUGH A DIELECTRIC TEST, AT THE EXPENSE OF THE CONTRACTOR, TO ASCERTAIN THE SUITABILITY OF THE APPARATUS OR IT SHALL BE REPLACED WITHOUT ADDITIONAL COST TO THE OWNER.

DAMAGED OR DEFECTIVE EQUIPMENT: INSPECT ALL ELECTRICAL EQUIPMENT AND MATERIALS PRIOR TO INSTALLATION. INSTALLATION OR PLACEMENT INTO SERVICE OF DAMAGED MATERIALS WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER IS PROHIBITED. REPLACE OR REPAIR TO NEW CONDITION AS CERTIFIED BY THE MANUFACTURER, AND TEST DAMAGED EQUIPMENT IN COMPLIANCE WITH INDUSTRY STANDARDS AT NO ADDITIONAL COST TO THE OWNER. EQUIPMENT REQUIRED FOR THE TESTING SHALL BE PROVIDED BY THE CONTRACTOR.

WORKING CLEARANCE

THE SIZE OF ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS IS BASED ON DIMENSIONS OF A PARTICULAR MANUFACTURER. (GENERALLY THE FIRST NAMED), WHILE OTHER MANUFACTURERS MAY BE ACCEPTABLE. IT IS THE RESPONSIBILITY OF THE TRADE TO DETERMINE IF THE EQUIPMENT PROPOSED WILL FIT IN THE ALLOCATED SPACE.

INSTALL ALL EQUIPMENT IN A MANNER TO PERMIT ACCESS TO ALL SURFACES. MAINTAIN PROPER CLEARANCE TO MEET ALL SAFETY AND OPERATING CODES, PARTICULARLY N.E.C. INCLUDE ALL REQUIREMENTS DICTATED BY OPERATION, CONTROL, ADJUSTMENT, MAINTENANCE AND POSSIBLE REPLACEMENT OF EQUIPMENT IN DETERMINING CLEARANCE.

SHOULD THERE BE APPARENT VIOLATIONS OF N.E.C. CLEARANCE, NOTIFY THE ARCHITECT-ENGINEER BEFORE PROCEEDING WITH CONNECTION OR PLACEMENT OF EQUIPMENT.

COORDINATION

INSTALLATION STUDIES ARE REQUIRED TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF OTHER TRADES. PREPARE COORDINATION DRAWINGS AT ACCURATE SCALE WHERE SEVERAL ELEMENTS OF ELECTRICAL OR COMBINED MECHANICAL/STRUCTURAL/ELECTRICAL WORK MUST BE SEQUENCED AND POSITIONED WITH PRECISION IN ORDER TO FIT INTO THE AVAILABLE SPACE.

SHOW THE ACTUAL PHYSICAL DIMENSIONS REQUIRED FOR PROPER INTEGRATION OF EQUIPMENT WITH BUILDING SYSTEMS.

PROVIDE APPROVED SHOP DRAWINGS TO ALL REQUIRED DISCIPLINES AND VERIFY FINAL ELECTRICAL CHARACTERISTICS BEFORE ROUGHING POWER FEEDS TO ANY EQUIPMENT. WHEN ELECTRICAL DATA ON APPROVED SHOP DRAWINGS DIFFERS FROM CONTEMPLEATED DESIGN, MAKE NECESSARY ADJUSTMENTS TO THE WIRING, DISCONNECTS, AND BRANCH/CIRCUIT PROTECTION FOR THE EQUIPMENT ACTUALLY INSTALLED AT NO ADDITIONAL COST TO THE OWNER.

DAMAGE FROM INTERFERENCE CAUSED BY INADEQUATE COORDINATION SHALL BE RECTIFIED AT NO ADDITIONAL COST TO THE OWNER.

WORKMANSHIP

ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.

ANY MATERIAL ITEMS OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THESE SPECIFICATIONS OR VIA-VERSA, OR ANY ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE IN ALL RESPECTS, ARE READY FOR OPERATION SHALL BE PROVIDED WITHOUT ADDITIONAL COST TO THE OWNER.

THIS TRADE SHALL DO OR HAVE DONE BY COMPETENT TRADESMEN ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THIS WORK. NO CUTTING IN CONSTRUCTIVE PARTS OF THE BUILDING LIKELY TO IMPAIR ITS STRENGTH SHALL BE DONE WITHOUT THE ARCHITECT-ENGINEER'S WRITTEN APPROVAL.

EXCAVATION AND BACKFILL

EXCAVATION, TRENCHING AND BACKFILLING ARE SPECIFIED IN SECTION EXCAVATION. TRENCHING AND BACKFILLING FOR UTILITIES. CONDUIT IS TO BE INSTALLED AS SPECIFIED FOR PIPELINES. CONDUIT INSTALLED BENEATH FLOOR SLAB SHALL BE A MINIMUM OF 6" BELOW SLAB. BACKFILL OVER CONDUIT SHALL BE COMPACTED AS FOR SLAB BEDDING MATERIAL. REFER TO STRUCTURAL DRAWINGS FOR DETAILS OF CONDUIT (PIPE) PENETRATION OR EXTERIOR FOOTINGS. COMPLETE INSTALLATION SHALL CONFORM TO N.E.C.

PENETRATIONS

COORDINATE SLEEVE SELECTION AND APPLICATION WITH SELECTION AND APPLICATION OF FIRE-STOPPING SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.

ROOFS: COORDINATE ALL ROOF PENETRATIONS WITH ENGINEER, OWNER, AND AS APPLICABLE, THE ROOFING CONTRACTOR PROVIDING A ROOF WARRANTY. KEEP ALL RACEWAY PENETRATIONS WITHIN MECHANICAL EQUIPMENT CURBS WHEREVER POSSIBLE. COORDINATE WITH DIVISION 15. FLASH AND COUNTERFLASH ALL OPENINGS THROUGH ROOF, AND/OR PROVIDE PRE-FABRICATED MOLDED SEALS COMPATIBLE WITH THE ROOF CONSTRUCTION INSTALLED, OR AS REQUIRED BY THE ENGINEER, OWNER, OR ROOFING CONTRACTOR. ALL ROOF PENETRATIONS SHALL BE LEAKTIGHT AT THE TERMINATING OF THE WORK AND SHALL NOT VOID ANY NEW OR EXISTING ROOF WARRANTIES.

WALLS AND FLOORS - SLEEVES FOR RACEWAYS AND CABLES: STEEL PIPE SLEEVES: ASTM A 53/A 53M, EYE, E, GRADE B, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS AND DRIP RINGS.

CAST IRON PIPE SLEEVES: CAST OR FABRICATED "WALL PIPE," EQUIVALENT TO DUCTILE-IRON PRESSURE PIPE, WITH PLAIN ENDS AND INTEGRAL SATERSTOP, UNLESS OTHERWISE INDICATED.

FIRESTOPPING - FIRE RESISTANT THROUGH PENETRATION SEALANTS - TWO PART, FOAMED-IN-PLACE, SILICONE SEALANT FORMULATED FOR USE IN THROUGH-PENETRATION FIRE-STOPPING AROUND CABLES, RACEWAYS, AND CABLE TRAY PENETRATIONS THROUGH FIRE-RATED WALLS AND FLOORS. SEALANTS AND ACCESSORIES SHALL HAVE FIRE-RESISTANCE RATINGS INDICATED, AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES IN ACCORDANCE WITH ASTM E 814, BY UNDERWRITERS' LABORATORIES, INC., OR OTHER NRTL ACCEPTABLE TO AIA.

ACCEPTABLE MANUFACTURERS: -HILL, INC., 3M CORP. RECTORSEAL, SPECIFY TECHNOLOGY INC., UNITED STATES GYPSUM COMPANY.

ELECTRICAL SERVICE

SERVICE SHALL BE AS SHOWN ON DRAWINGS.

PROVIDE SECONDARY SERVICE INTO THE BUILDING WITH CONDUIT AND WIRING AS SHOWN ON THE PLANS, INCLUDING, BUT NOT LIMITED TO, UNDERGROUND RACEWAYS AND CABLES AND SECONDARY CONNECTIONS TO UTILITY TRANSFORMERS AS REQUIRED BY SERVING ELECTRICAL UTILITY COMPANY. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY PRIOR TO BID.

PROVIDE ALL REQUIRED GROUNDING FOR A COMPLETE SERVICE ENTRANCE GROUNDING SYSTEM. PERMANENTLY AND EFFECTIVELY GROUND AND BOND THE ELECTRICAL INSTALLATION IN A THOROUGH AND EFFICIENT MANNER, AND IN CONFORMANCE (AT A MINIMUM) WITH N.E.C. OR THESE DOCUMENTS, WHERE THEY EXCEED CODE REQUIREMENTS. USE BARE OR INSULATED CONDUCTORS, AS SPECIFIED HEREIN, AND OTHER MATERIALS INDICATED ON THE DRAWINGS.

PROVIDE ALL NECESSARY ENCLOSURES REQUIRED BY THE OWNER FOR THE UTILITY COMPANY METERING. REFER TO DRAWINGS FOR MINIMUM REQUIREMENTS. COORDINATE WITH UTILITY COMPANY PRIOR TO BID FOR ALL REQUIREMENTS.

PRODUCTS

GENERAL

ALL EQUIPMENT OF A PARTICULAR KIND, SUCH AS WIRING DEVICES AND PANELBOARDS AND ALL LIGHTING FIXTURES OF THE SAME TYPE, SHALL BE THE PRODUCT OF THE SAME MANUFACTURER.

PROVIDE ACCESS PANELS FOR ALL EQUIPMENT AND DEVICES REQUIRING SUCH PANELS. SIZE AS REQUIRED FOR PROPER ACCESS AND MAINTENANCE, MINIMUM ACCEPTABLE IS 12 IN BY 12 IN CLEAR OPENING WHERE HAND ACCESS ONLY IS REQUIRED.

PROVIDE LABELS FOR EACH MOTOR CONTROLLER, SAFETY SWITCH, RELAY, PANELBOARD, CONTACTOR, TIMER, CONTROL DEVICE, METER AND CIRCUIT BREAKER. LABELS SHALL BE LAMINATED, PHENOLIC STRIPS 1/16" THICK AND ENGRAVED TO SHOW BLACK LETTERS ON A WHITE BACKGROUND NOT LESS THAN 1/4" HIGH. SIZE STRIPS TO PROPERLY FIT MANUFACTURER'S BRACKETS AND BE LEGIBLE. WHERE MANUFACTURER'S BRACKETS ARE NOT PROVIDED, MOUNT LABELS WITH PROPER SCREWS, OR AN APPROVED ADHESIVE.

RACEWAYS

CONDUIT, RIGID STEEL: GALVANIZED OR SHERADIZED AND MANUFACTURED IN ACCORDANCE WITH ANSI STANDARD C80.1. FITTINGS SHALL BE PIPE THREADED, MALLEABLE IRON. CONNECTORS SHALL BE INSULATED THROAT TYPE.

CONDUIT, PVC: POLYVINYLCHLORIDE SCHEDULE 40 PIPE SPECIFICALLY MANUFACTURED AND LABELED (UL STANDARD 651) FOR USE AS ELECTRICAL CONDUIT. FITTINGS SHALL BE EITHER SOCKET WELDED TYPE OR PIPE THREADED WITH INSULATED THROAT.

CONDUIT, FLEXIBLE METALLIC: GALVANIZED, INTERLOCKED SPIRALLY WOUND STEEL STRIP WITH GALVANIZED OR SHERADIZED FITTINGS, LISTED PER UL-L. FITTINGS SHALL BE OF THE SQUEEZE TYPE WITH INSULATED THROATS.

CONDUIT, LIQUIDTIGHT FLEXIBLE METALLIC: GALVANIZED, INTERLOCKED SPIRALLY WOUND STEEL STRIP WITH OVERALL JACKET OF LIQUID TIGHT PVC, UL LISTED. FITTINGS SHALL BE STEEL, OR MALLEABLE IRON INSULATED THROAT, WATER TIGHT.

ELECTRIC METALLIC TUBING: GALVANIZED OR SHERADIZED AND MANUFACTURED IN ACCORDANCE WITH ANSI STANDARD C80.1. FITTINGS 1/2 INCH THROUGH 2 INCH TRADE SIZE SHALL BE COMPRESSED TYPE, MANUFACTURED FROM MALLEABLE IRON OR STEEL, AND RAIN AND/OR CONCRETE-TIGHT AS REQUIRED BY INSTALLATION. POT METAL OR DIE CAST TYPE FITTINGS ARE PROHIBITED. CONNECTORS SHALL BE INSULATED THROAT TYPE.

CONDUCTORS AND CABLES

GENERAL: SERVICE (LATERALS AND) PANELBOARD FEEDERS SHALL BE OF ANNEALED (SOFT) COPPER COMPLYING WITH ICSA S-95-658NEMA WC70; SOLID CONDUCTOR FOR NO. 10 AWG AND SMALLER, CONCENTRIC, COMPRESSED STRANDED FOR NO. 8 AWG AND LARGER. ALL BRANCH CIRCUIT CONDUCTORS NO 8 AWG AND LARGER, STRANDED, TYPE THWN-2 OR XHHW-2 INSULATION. ALL CONDUCTORS, NO 10 AWG AND SMALLER, USED FOR POWER AND LIGHTING CIRCUITS, SOLID COPPER, TYPE THWN-2.

INSULATION (WET OR DAMP LOCATIONS, OR IN CONDUIT BELOW GRADE OR SLAB) TYPE THHN INSULATION (DRY LOCATIONS ONLY ABOVE GRADE), OR DUAL RATED TYPE THHN/THWN-2. ALL BRANCH CIRCUIT WIRING SHALL NOT BE SMALLER THAN NO 12 AWG. IF NO CONDUCTOR SIZE IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE (CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICE) IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE THREE NO 12 AWG CONDUCTORS IN 3/4" RACEWAY, AND A 20A SINGLE POLE CIRCUIT BREAKER.

CONDUCTOR INSULATION TYPES: 90-DEGREE C-RATED, TYPE THHN/THWN-2 OR XHHW-2 COMPLYING WITH ICSA S-95-658NEMA WC70.

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PRODUCTS GENERAL ALL EQUIPMENT OF A PARTICULAR KIND, SUCH AS WIRING DEVICES AND PANELBOARDS AND ALL LIGHTING FIXTURES OF THE SAME TYPE, SHALL BE THE PRODUCT OF THE SAME MANUFACTURER.

N.E.C. REQUIREMENTS. FINISH IN STANDARD GRAY ENAMEL, WITH SIDES AND BACK SPOT-WELDED IN POSITION AND THE REMOVABLE SCREW COVER MOUNTED WITH BRASS MACHINE SCREWS.

WIRING DEVICES

SWITCHES: HEAVY DUTY AC, RATED 20 AMPERES, 120/277 VOLTS, SINGLE-POLE, DOUBLE-POLE, THREE-POLE, OR FOUR-WAY AS NOTED ON DRAWINGS OR AS REQUIRED FOR THE SWITCHING ARRANGEMENTS IN EACH SPACE. HUBBELL #HBL122" OR EQUAL. COORDINATE SWITCH COLORS WITH COVERPLATES AS DESCRIBED BELOW UNDER PLATES". SINGLE RECEPTACLE, 20 AMPERE, 120 VOLT, SPECIFICATION GRADE, HUBBELL #5382" OR EQUAL.

SWITCHES, SPECIAL PURPOSE: KEY OPERATED, HEAVY-DUTY AC, RATED 20 AMPERES, 120/277 VOLTS, SINGLE OR MULTI-POLE AS NOTED OR AS REQUIRED, HUBBELL #HBL122" OR EQUAL.

RECEPTACLES: THREE WIRE GROUNDING TYPE, 120 VOLT, RATED, SPECIFICATION GRADE 20 AMPERES DUPLEX (UNLESS NOTED OTHERWISE ON DRAWINGS, HUBBELL #5382" OR EQUAL. COORDINATE RECEPTACLE COLOR WITH COVERPLATE AS DESCRIBED BELOW UNDER PLATES". SINGLE RECEPTACLE, 20 AMPERE, 120 VOLT, SPECIFICATION GRADE, HUBBELL #5381" OR EQUAL.

DUST AND MOISTURE RESISTANT, MELAMINE BODY, GRAY NYLON FACE BACKED BY FABRIC REINFORCED NEOPRENE GASKET SLIT TO PROVIDE WIPING ACTION ON CAP BLADES. PASS & SEYMOUR #5307 OR APPROVED EQUAL. GROUND FAULT CIRCUIT INTERRUPTER, NYLON FACE CLASS A, NEMA 5-20R, SPECIFICATION GRADE, HUBBELL #GF-5382" OR EQUAL.

CORROSION RESISTANT, SIMILAR AND APPROVED EQUAL, TO STANDARD RECEPTACLE, EXCEPT FABRICATED FROM YELLOW MELAMINE PLASTIC WITH YELLOW NYLON FACE AND EXPOSED METAL PARTS FINISHED TO RESIST CORROSION, (NEMA 5-15R - HUBBELL #520M).

ISOLATED GROUND, DUPLEX OR SIMPLEX THREE WIRE GROUNDING TYPE, SPECIFICATION GRADE, ORANGE FACE, GROUND CONTACT FULLY ISOLATED FROM STRAP AND EQUIPPED WITH SCREW TERMINAL. HUBBELL #IG-5382" OR EQUAL.

RECEPTABLES, SPECIAL PURPOSE: SPECIAL PURPOSE OUTLETS SHALL BE AS SCHEDULED ON DRAWINGS.

PLATES: PROVIDE PLATES FOR ALL OUTLET BOXES. PLATES SHALL BE OF SUITABLE CONFIGURATION FOR THE NUMBER AND TYPE OF DEVICES SERVED, SHALL BE ONE PIECE, SHALL OVERLAP OUTLET BOX EDGE AND ROOM SURFACES, AND SHALL BE SMOOTH FINISH NYLON TYPE OF SAME MANUFACTURER AS THE WIRING DEVICES. VERIFY DESIRED MATERIALS AND COLORS WITH ARCHITECT PRIOR TO INSTALLATION.

STANDARD INTERIOR, IVORY FINISHED ON LIGHT COLORED WALLS - COORDINATE ALL COLORS WITH ARCHITECT

INTERIOR DAMP LOCATIONS: STAINLESS STEEL.

EXTERIOR LOCATIONS, FOR UNATTENDED WET LOCATIONS, PROVIDE IN-USE NEMA 3R, UL LABELED PLATES MOLDED FROM A CLEAR HIGH IMPACT ULTRAVIOLET STABILIZED POLYCARBONATE MATERIAL FOR EASY VERIFICATION THAT COROS ARE PLUGGED IN AND THAT THE GFCI IS FUNCTIONING. COVER PLATES SHALL BE BY THE SAME MANUFACTURER AS THE WIRING DEVICES, COMPLYING WITH NFPA 70 408.4 (A) OR (B) REQUIREMENTS FOR ATTENDED OR UNATTENDED USE AS APPLICABLE.

ACCEPTABLE MANUFACTURERS: HUBBELL, PASS & SEYMOUR, LEVITON AND COOPER.

CABINETS AND ENCLOSURES

FURNISH AND INSTALL FLUSH CABINETS AND ENCLOSURES AS SHOWN ON THE PLANS AND AS HEREIN SPECIFIED. UNIT SHALL BE PROVIDED WITH DEAD FRONT SUB PANEL, RECESSED AS REQUIRED, TO HOUSE CONTROLS. DOOR SHALL BE PROVIDED WITH CONCEALED HINGES AND FLUSH KEY OPERATED LOCK. DOOR AND TRIM SHALL BE PRIME PAINTED FOR FIELD PAINTING TO MATCH WALL FINISHES. PROVIDE KNOCK-OUTS, LOUVERS AND IDENTIFICATION ENGRAVING AS REQUIRED TO MEET FIELD CONDITIONS. EXACT BACKBOX SIZE TO BE COORDINATED WITH EQUIPMENT SUPPLIER.

CIRCUIT DISCONNECTS

SAFETY SWITCHES: SAFETY SWITCHES SHALL CONSIST OF A BOX, FRONT COVER, AND CIRCUIT PROTECTOR DEVICE ALL MANUFACTURED AND ASSEMBLED IN ACCORDANCE WITH NEMA STANDARDS

THE BOX SHALL BE FABRICATED FROM CODE GAUGE GALVANIZED SHEET STEEL IN ACCORDANCE WITH UL LISTING AND LABEL. THE CIRCUIT PROTECTOR DEVICE SHALL BE HEAVY DUTY, QUICK-MAKE, QUICK-BREAK FUSED OR UNFUSED SWITCH RATED FOR MOTOR CIRCUITS AND/OR SERVICE ENTRANCE DUTY. IF REQUIRED, UNITS SHALL BE FURNISHED FOR SURFACE OR FLUSH MOUNTING WITH EITHER GENERAL PURPOSE OR RAINIGHT ENCLOSURES, AS REQUIRED. FUSED UNITS SHALL BE FURNISHED COMPLETE WITH PROPER FUSES.

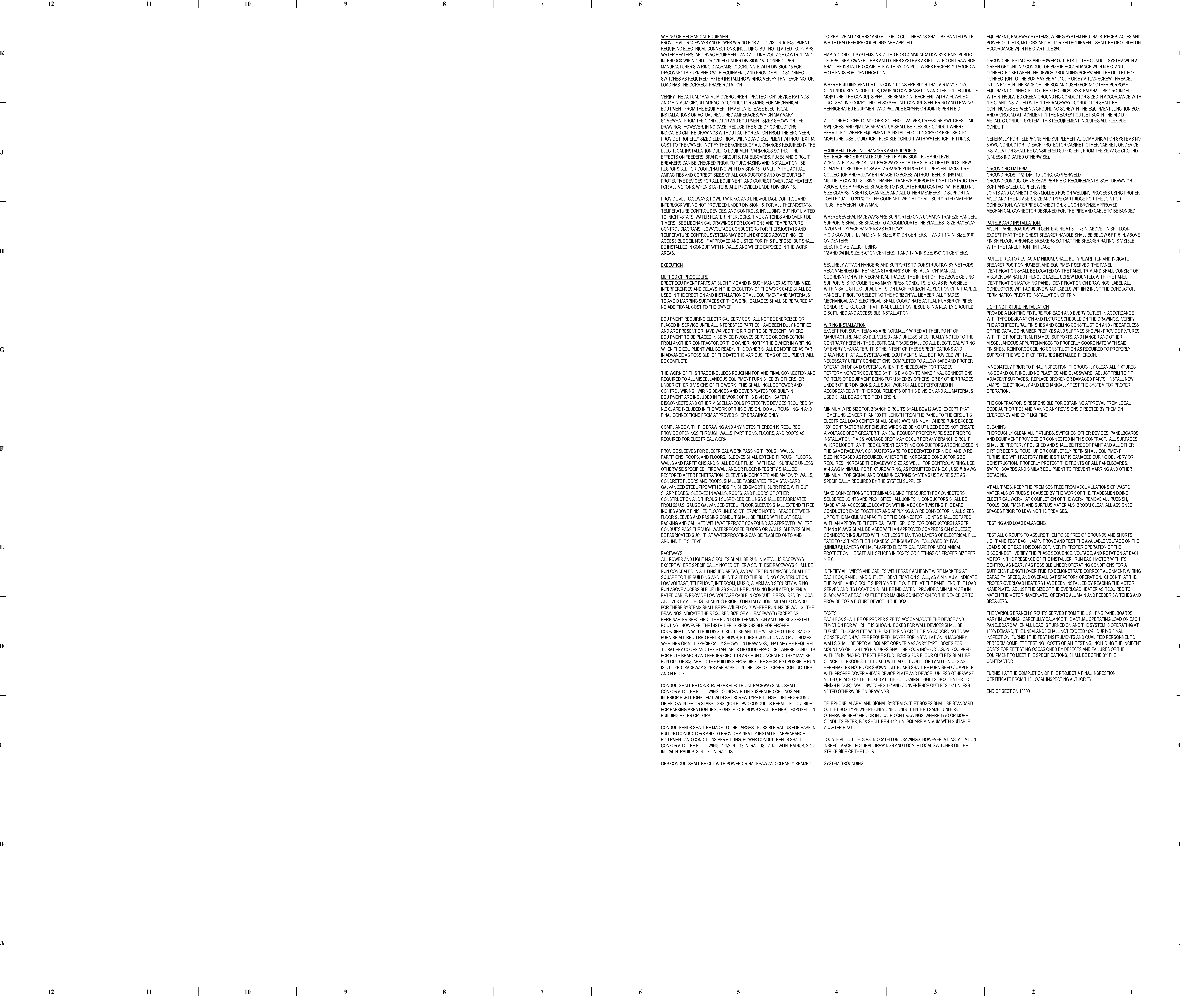
PANELBOARDS

SHALL CONSIST OF BOX, INTERIOR, FRONT, AND CIRCUIT PROTECTIVE DEVICES. THE ASSEMBLY SHALL BE UL LISTED AND BE LISTED FOR SERVICE. THE ASSEMBLY SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH NEMA STANDARD PB-1. THE LATEST UL STANDARD (UL-50) AND SHALL HAVE A TURNED EDGE AROUND THE FRONT FOR RIGIDITY AND FOR CLAMPING ON FRONT. PROVIDE STANDARD KNOCKOUTS ON REMOVABLE BOX ENDS. FABRICATE FROM SHEET STEEL, AND FINISH WITH BASED ON GRAY ENAMEL OVER ULST INHIBITOR. EACH FRONT SHALL HAVE A DOOR MOUNTED ON SEMI-CONCEALED HINGES WITH A CYLINDER LOCK, INDEX CARD CIRCUIT DIRECTORY MOUNTED BEHIND CLEAR PLASTIC AND HELD IN A METAL FRAME, AND CONCEALED TRIM CLAMPS FOR MOUNTING TO THE BOX. ALL LOCKS SHALL BE MASTER KEYED AND ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

ALL INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED. THE DESIGN OF THE INTERIOR SHALL PERMIT REPLACEMENT OF INDIVIDUAL BRANCH BREAKERS WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT MACHINE DRILLING OR TAPPING. BUS BARS FOR PANELS RATED 600 AMPERES OR MORE SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OR TIN FINISH ALUMINUM (57% CONDUCTIVITY) OF RECTANGULAR CROSS-SECTION. BUS BARS FOR PANELS RATED LESS THAN 600 AMPERES SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OR RECTANGULAR CROSS-SECTION. BUS BAR CONNECTIONS TO BRANCH CIRCUIT BREAKERS SHALL BE THE PHASE SEQUENCE TYPE AND ACCEPT BOLT-ON TYPE BREAKERS ONLY. PANELBOARD BUS STRUCTURE AND MAIN BREAKER OR MAIN LUGS SHALL BE RATED AS SCHEDULED ON DRAWING. SUCH RATINGS SHALL BE ESTABLISHED BASED ON HEAT RISE TESTS IN ACCORDANCE WITH UL STANDARDS. GROUP INCOMING CABLE LUGS AT ONE END FOR SEPARATION FROM LOAD SIDE CABLES. EQUIPMENT NEUTRAL BUSSING WITH A LUG FOR EACH BRANCH BREAKER POSITION. INTERIOR SHALL MOUNT TO BOX WITHOUT TOOLS.

BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK, BOLT-ON THERMAL-MAGNETIC MOLDED CASE CIRCUIT BREAKERS ONE, TWO OR THREE POLE WITH INTEGRAL CROSSBAR FOR MULTI-POLE UNITS. EQUIPPED WITH AN OVERCENTER, TRIP-FREE, TOGGLE TYPE OPERATING ACTION AND POSITIVE HANDLE INDICATION OF BREAKER STATUS. CIRCUIT BREAKERS SHALL BE UL LISTED IN ACCORDANCE WITH UL STANDARDS.

EACH PANELBOARD, AS A COMPLETE UNIT, SHALL HAVE A SHORT CIRCUIT RATING EQUAL TO OR GREATER THAN THE INTEGRATED EQUIPMENT RATING SHOWN ON DRAWINGS. THE RATING SHALL BE ESTABLISHED BY TESTING WITH THE OVERCURRENT DE



WIRING OF MECHANICAL EQUIPMENT  
PROVIDE ALL RACEWAYS AND POWER WIRING FOR ALL DIVISION 15 EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS, INCLUDING, BUT NOT LIMITED TO, PUMPS, WATER HEATERS, AND HVAC EQUIPMENT, AND ALL LINE-VOLTAGE CONTROL AND INTERLOCK WIRING NOT PROVIDED UNDER DIVISION 15. CONNECT PER MANUFACTURER'S WIRING DIAGRAMS. COORDINATE WITH DIVISION 15 FOR DISCONNECTS FURNISHED WITH EQUIPMENT, AND PROVIDE ALL DISCONNECT SWITCHES AS REQUIRED. AFTER INSTALLING WIRING, VERIFY THAT EACH MOTOR LOAD HAS THE CORRECT PHASE ROTATION.

VERIFY THE ACTUAL "MAXIMUM OVERCURRENT PROTECTION" DEVICE RATINGS AND "MINIMUM CIRCUIT AMPACITY" CONDUCTOR SIZING FOR MECHANICAL EQUIPMENT FROM THE EQUIPMENT NAMEPLATE. BASE ELECTRICAL INSTALLATIONS ON ACTUAL REQUIRED AMPERAGES, WHICH MAY VARY SOMEWHAT FROM THE CONDUCTOR AND EQUIPMENT SIZES SHOWN ON THE DRAWINGS; HOWEVER, IN NO CASE, REDUCE THE SIZE OF CONDUCTORS INDICATED ON THE DRAWINGS WITHOUT AUTHORIZATION FROM THE ENGINEER. PROVIDE PROPERLY SIZED ELECTRICAL WIRING AND EQUIPMENT WITHOUT EXTRA COST TO THE OWNER. NOTIFY THE ENGINEER OF ALL CHANGES REQUIRED IN THE ELECTRICAL INSTALLATION DUE TO EQUIPMENT VARIANCES SO THAT THE EFFECTS ON FEEDERS, BRANCH CIRCUITS, PANELBOARDS, FUSES AND CIRCUIT BREAKERS CAN BE CHECKED PRIOR TO PURCHASING AND INSTALLATION. BE RESPONSIBLE FOR COORDINATING WITH DIVISION 15 TO VERIFY THE ACTUAL AMPACITIES AND CORRECT SIZES OF ALL CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICES FOR ALL EQUIPMENT, AND CORRECT OVERLOAD HEATERS FOR ALL MOTORS, WHEN STARTERS ARE PROVIDED UNDER DIVISION 16.

PROVIDE ALL RACEWAYS, POWER WIRING, AND LINE-VOLTAGE CONTROL AND INTERLOCK WIRING NOT PROVIDED UNDER DIVISION 15, FOR ALL THERMOSTATS, TEMPERATURE CONTROL DEVICES, AND CONTROLS, INCLUDING, BUT NOT LIMITED TO, NIGHT-STATS, WATER HEATER INTERLOCKS, TIME SWITCHES AND OVERHIDE TIMERS. SEE MECHANICAL DRAWINGS FOR LOCATIONS AND TEMPERATURE CONTROL DIAGRAM. LOW-VOLTAGE CONDUCTORS FOR THERMOSTATS AND TEMPERATURE CONTROL SYSTEMS MAY BE RUN EXPOSED ABOVE FINISHED ACCESSIBLE CEILINGS, IF APPROVED AND LISTED FOR THIS PURPOSE, BUT SHALL BE INSTALLED IN CONDUIT WITHIN WALLS AND WHERE EXPOSED IN THE WORK AREAS.

**EXECUTION**

**METHOD OF PROCEDURE**  
ERECT EQUIPMENT PARTS AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCES AND DELAYS IN THE EXECUTION OF THE WORK CARE SHALL BE USED IN THE ERECTION AND INSTALLATION OF ALL EQUIPMENT AND MATERIALS TO AVOID MARRING SURFACES OF THE WORK. DAMAGES SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

EQUIPMENT REQUIRING ELECTRICAL SERVICE SHALL NOT BE ENERGIZED OR PLACED IN SERVICE UNTIL ALL INTERESTED PARTIES HAVE BEEN DULY NOTIFIED AND ARE PRESENT OR HAVE WAIVED THEIR RIGHT TO BE PRESENT. WHERE EQUIPMENT TO BE PLACED IN SERVICE INVOLVES SERVICE OR CONNECTION FROM ANOTHER CONTRACTOR OR THE OWNER, NOTIFY THE OWNER IN WRITING WHEN THE EQUIPMENT WILL BE READY. THE OWNER SHALL BE NOTIFIED AS FAR IN ADVANCE AS POSSIBLE, OF THE DATE THE VARIOUS ITEMS OF EQUIPMENT WILL BE COMPLETE.

THE WORK OF THIS TRADE INCLUDES ROUGH-IN FOR AND FINAL CONNECTION AND REQUIRED TO ALL MISCELLANEOUS EQUIPMENT FURNISHED BY OTHERS, OR UNDER OTHER DIVISIONS OF THE WORK. THIS SHALL INCLUDE POWER AND CONTROL WIRING. WIRING DEVICES AND COVER-PLATES FOR BUILT-IN EQUIPMENT ARE INCLUDED IN THE WORK OF THIS DIVISION. SAFETY DISCONNECTS AND OTHER MISCELLANEOUS PROTECTIVE DEVICES REQUIRED BY N.E.C. ARE INCLUDED IN THE WORK OF THIS DIVISION. DO ALL ROUGHING-IN AND FINAL CONNECTIONS FROM APPROVED SHOP DRAWINGS ONLY.

COMPLIANCE WITH THE DRAWING AND ANY NOTES THEREON IS REQUIRED. PROVIDE OPENINGS THROUGH WALLS, PARTITIONS, FLOORS, AND ROOFS AS REQUIRED FOR ELECTRICAL WORK.

PROVIDE SLEEVES FOR ELECTRICAL WORK PASSING THROUGH WALLS, PARTITIONS, ROOFS, AND FLOORS. SLEEVES SHALL EXTEND THROUGH FLOORS, WALLS AND PARTITIONS AND SHALL BE CUT FLUSH WITH EACH SURFACE UNLESS OTHERWISE SPECIFIED. FIRE WALL AND/OR FLOOR INTEGRITY SHALL BE RESTORED AFTER PENETRATION. SLEEVES IN CONCRETE AND MASONRY WALLS, CONCRETE FLOORS AND ROOFS, SHALL BE FABRICATED FROM STANDARD GALVANIZED STEEL PIPE WITH ENDS FINISHED SMOOTH, BURR FREE, WITHOUT SHARP EDGES. SLEEVES IN WALLS, ROOFS, AND FLOORS OF OTHER CONSTRUCTION AND THROUGH SUSPENDED CEILINGS SHALL BE FABRICATED FROM 22 U.S. GAUGE GALVANIZED STEEL. FLOOR SLEEVES SHALL EXTEND THREE INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. SPACE BETWEEN FLOOR SLEEVES AND PASSING CONDUIT SHALL BE FILLED WITH DUCT SEAL PACKING AND CAULKED WITH WATERPROOF COMPOUND AS APPROVED. WHERE CONDUITS PASS THROUGH WATERPROOFED FLOORS OR WALLS, SLEEVES SHALL BE FABRICATED SUCH THAT WATERPROOFING CAN BE FLASHED ONTO AND AROUND THE SLEEVE.

**RACEWAYS**  
ALL POWER AND LIGHTING CIRCUITS SHALL BE RUN IN METALLIC RACEWAYS EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE. THESE RACEWAYS SHALL BE RUN CONCEALED IN ALL FINISHED AREAS, AND WHERE RUN EXPOSED SHALL BE SQUARE TO THE BUILDING AND HELD TIGHT TO THE BUILDING CONSTRUCTION. LOW VOLTAGE, TELEPHONE, INTERCOM, MUSIC, ALARM AND SECURITY WIRING RUN ABOVE ACCESSIBLE CEILINGS SHALL BE RUN USING INSULATED, PLENUM RATED CABLE. PROVIDE LOW VOLTAGE CABLE IN CONDUIT IF REQUIRED BY LOCAL AHJ. VERIFY ALL REQUIREMENTS PRIOR TO INSTALLATION. METALLIC CONDUIT FOR THESE SYSTEMS SHALL BE PROVIDED ONLY WHERE RUN INSIDE WALLS. THE DRAWINGS INDICATE THE REQUIRED SIZE OF ALL RACEWAYS EXCEPT AS HEREINAFTER SPECIFIED, THE POINTS OF TERMINATION AND THE SUGGESTED ROUTING. HOWEVER, THE INSTALLER IS RESPONSIBLE FOR PROPER COORDINATION WITH BUILDING STRUCTURE AND THE WORK OF OTHER TRADES. FURNISH ALL REQUIRED BENDS, ELBOWS, FITTINGS, JUNCTION AND PULL BOXES, WHETHER OR NOT SPECIFICALLY SHOWN ON DRAWINGS, THAT MAY BE REQUIRED TO SATISFY CODES AND THE STANDARDS OF GOOD PRACTICE. WHERE CONDUITS FOR BOTH BRANCH AND FEEDER CIRCUITS ARE RUN CONCEALED, THEY MAY BE RUN OUT OF SQUARE TO THE BUILDING PROVIDING THE SHORTEST POSSIBLE RUN IS UTILIZED. RACEWAY SIZES ARE BASED ON THE USE OF COPPER CONDUCTORS AND N.E.C. FILL.

CONDUIT SHALL BE CONSTRUED AS ELECTRICAL RACEWAYS AND SHALL CONFORM TO THE FOLLOWING: CONCEALED IN SUSPENDED CEILINGS AND INTERIOR PARTITIONS - EMT WITH SET SCREW TYPE FITTINGS. UNDERGROUND OR BELOW INTERIOR SLABS - GRS. (NOTE: PVC CONDUIT IS PERMITTED OUTSIDE FOR PARKING AREA LIGHTING, SIGNS, ETC. ELBOWS SHALL BE GRS). EXPOSED ON BUILDING EXTERIOR - GRS.

CONDUIT BENDS SHALL BE MADE TO THE LARGEST POSSIBLE RADIUS FOR EASE IN PULLING CONDUCTORS AND TO PROVIDE A NEATLY INSTALLED APPEARANCE. EQUIPMENT AND CONDITIONS PERMITTING. POWER CONDUIT BENDS SHALL CONFORM TO THE FOLLOWING: 1-1/2 IN. - 18 IN. RADIUS, 2 IN. - 24 IN. RADIUS, 2-1/2 IN. - 24 IN. RADIUS, 3 IN. - 36 IN. RADIUS.

GRS CONDUIT SHALL BE CUT WITH POWER OR HACKSAW AND CLEANLY REAMED

TO REMOVE ALL "BURRS" AND ALL FIELD CUT THREADS SHALL BE PAINTED WITH WHITE LEAD BEFORE COUPLINGS ARE APPLIED.

EMPTY CONDUIT SYSTEMS INSTALLED FOR COMMUNICATION SYSTEMS, PUBLIC TELEPHONES, OWNER ITEMS AND OTHER SYSTEMS AS INDICATED ON DRAWINGS SHALL BE INSTALLED COMPLETE WITH NYLON PULL WIRES PROPERLY TAGGED AT BOTH ENDS FOR IDENTIFICATION.

WHERE BUILDING VENTILATION CONDITIONS ARE SUCH THAT AIR MAY FLOW CONTINUOUSLY IN CONDUITS, CAUSING CONDENSATION AND THE COLLECTION OF MOISTURE, THE CONDUITS SHALL BE SEALED AT EACH END WITH A PLIABLE X DUCT SEALING COMPOUND. ALSO SEAL ALL CONDUITS ENTERING AND LEAVING REFRIGERATED EQUIPMENT AND PROVIDE EXPANSION JOINTS PER N.E.C.

ALL CONNECTIONS TO MOTORS, SOLENOID VALVES, PRESSURE SWITCHES, LIMIT SWITCHES, AND SIMILAR APPARATUS SHALL BE FLEXIBLE CONDUIT WHERE PERMITTED. WHERE EQUIPMENT IS INSTALLED OUTDOORS OR EXPOSED TO MOISTURE, USE LIQUIDTIGHT FLEXIBLE CONDUIT WITH WATERTIGHT FITTINGS.

**EQUIPMENT LEVELING, HANGERS AND SUPPORTS**  
SET EACH PIECE INSTALLED UNDER THIS DIVISION TRUE AND LEVEL. ADEQUATELY SUPPORT ALL RACEWAYS FROM THE STRUCTURE USING SCREW CLAMPS TO SECURE TO SAME. ARRANGE SUPPORTS TO PREVENT MOISTURE COLLECTION AND ALLOW ENTRANCE TO BOXES WITHOUT BENDS. INSTALL MULTIPLE CONDUITS USING CHANNEL TRAPEZE SUPPORTS TIGHT TO STRUCTURE ABOVE. USE APPROVED SPACERS TO INSULATE FROM CONTACT WITH BUILDING. SIZE CLAMPS, INSERTS, CHANNELS AND ALL OTHER MEMBERS TO SUPPORT A LOAD EQUAL TO 200% OF THE COMBINED WEIGHT OF ALL SUPPORTED MATERIAL PLUS THE WEIGHT OF A MAN.

WHERE SEVERAL RACEWAYS ARE SUPPORTED ON A COMMON TRAPEZE HANGER, SUPPORTS SHALL BE SPACED TO ACCOMMODATE THE SMALLEST SIZE RACEWAY INVOLVED. SPACE HANGERS AS FOLLOWS:  
RIGID CONDUIT: 1/2 AND 3/4 IN. SIZE: 6'-0" ON CENTERS; 1 AND 1-1/4 IN. SIZE: 9'-0" ON CENTERS  
ELECTRIC METALLIC TUBING: 1/2 AND 3/4 IN. SIZE: 5'-0" ON CENTERS; 1 AND 1-1/4 IN. SIZE: 6'-0" ON CENTERS.

SECURELY ATTACH HANGERS AND SUPPORTS TO CONSTRUCTION BY METHODS RECOMMENDED IN THE N.E.C. STANDARDS OF INSTALLATION MANUAL. COORDINATION WITH MECHANICAL TRADES: THE INTENT OF THE ABOVE CEILING SUPPORTS IS TO COMBINE AS MANY PIPES, CONDUITS, ETC., AS IS POSSIBLE WITHIN SAFE STRUCTURAL LIMITS, ON EACH HORIZONTAL SECTION OF A TRAPEZE HANGER. PRIOR TO SELECTING THE HORIZONTAL MEMBER, ALL TRADES, MECHANICAL AND ELECTRICAL, SHALL COORDINATE ACTUAL NUMBER OF PIPES, CONDUITS, ETC., SUCH THAT FINAL SELECTION RESULTS IN A NEATLY GROUPED, DISCIPLINED AND ACCESSIBLE INSTALLATION.

**WIRING INSTALLATION**  
EXCEPT FOR SUCH ITEMS AS ARE NORMALLY WIRED AT THEIR POINT OF MANUFACTURE AND SO DELIVERED - AND UNLESS SPECIFICALLY NOTED TO THE CONTRARY HEREIN - THE ELECTRICAL TRADE SHALL DO ALL ELECTRICAL WIRING OF EVERY CHARACTER. IT IS THE INTENT OF THESE SPECIFICATIONS AND DRAWINGS THAT ALL SYSTEMS AND EQUIPMENT SHALL BE PROVIDED WITH ALL NECESSARY UTILITY CONNECTIONS, COMPLETED TO ALLOW SAFE AND PROPER OPERATION OF SAID SYSTEMS, WHEN IT IS NECESSARY FOR TRADES PERFORMING WORK COVERED BY THIS DIVISION TO MAKE FINAL CONNECTIONS TO ITEMS OF EQUIPMENT BEING FURNISHED BY OTHERS, OR BY OTHER TRADES UNDER OTHER DIVISIONS. ALL SUCH WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS DIVISION AND ALL MATERIALS USED SHALL BE AS SPECIFIED HEREIN.

MINIMUM WIRE SIZE FOR BRANCH CIRCUITS SHALL BE #12 AWG, EXCEPT THAT HOMERUNS LONGER THAN 100 FT. LENGTH FROM THE PANEL TO THE CIRCUITS ELECTRICAL LOAD CENTER SHALL BE #10 AWG MINIMUM. WHERE RUNS EXCEED 150', CONTRACTOR MUST ENSURE WIRE SIZE BEING UTILIZED DOES NOT CREATE A VOLTAGE DROP GREATER THAN 3%. REQUEST PROPER WIRE SIZE PRIOR TO INSTALLATION IF A 3% VOLTAGE DROP MAY OCCUR FOR ANY BRANCH CIRCUIT. WHERE MORE THAN THREE CURRENT CARRYING CONDUCTORS ARE ENCLOSED IN THE SAME RACEWAY, CONDUCTORS ARE TO BE DERATED PER N.E.C. AND WIRE SIZE INCREASED AS REQUIRED. WHERE THE INCREASED CONDUCTOR SIZE REQUIRES INCREASE THE RACEWAY SIZE AS WELL. FOR CONTROL WIRING, USE #14 AWG MINIMUM. FOR FIXTURE WIRING, AS PERMITTED BY N.E.C., USE #18 AWG MINIMUM. FOR SIGNAL AND COMMUNICATIONS SYSTEMS USE WIRE SIZE AS SPECIFICALLY REQUIRED BY THE SYSTEM SUPPLIER.

MAKE CONNECTIONS TO TERMINALS USING PRESSURE TYPE CONNECTORS. SOLDERED JOINTS ARE PROHIBITED. ALL JOINTS IN CONDUCTORS SHALL BE MADE AT AN ACCESSIBLE LOCATION WITHIN A BOX BY TWISTING THE BARE CONDUCTOR ENDS TOGETHER AND APPLYING A WIRE CONNECTOR IN ALL SIZES UP TO THE MAXIMUM CAPACITY OF THE CONNECTOR. JOINTS SHALL BE TAPED WITH AN APPROVED ELECTRICAL TAPE. SPLICES FOR CONDUCTORS LARGER THAN #10 AWG SHALL BE MADE WITH AN APPROVED COMPRESSION (SQUEEZE) CONNECTOR INSULATED WITH NOT LESS THAN TWO LAYERS OF ELECTRICAL FILL TAPE TO 1.5 TIMES THE THICKNESS OF INSULATION, FOLLOWED BY TWO (MINIMUM) LAYERS OF HALF-LAPPED ELECTRICAL TAPE FOR MECHANICAL PROTECTION. LOCATE ALL SPLICES IN BOXES OR FITTINGS OF PROPER SIZE PER N.E.C.

IDENTIFY ALL WIRES AND CABLES WITH BRADY ADHESIVE WIRE MARKERS AT EACH BOX, PANEL AND OUTLET. IDENTIFICATION SHALL, AS A MINIMUM, INDICATE THE PANEL AND CIRCUIT SUPPLYING THE OUTLET. AT THE PANEL END, THE LOAD SERVED AND ITS LOCATION SHALL BE INDICATED. PROVIDE A MINIMUM OF 6 IN. SLACK WIRE AT EACH OUTLET FOR MAKING CONNECTION TO THE DEVICE OR TO PROVIDE FOR A FUTURE DEVICE IN THE BOX.

**BOXES**  
EACH BOX SHALL BE OF PROPER SIZE TO ACCOMMODATE THE DEVICE AND FUNCTION FOR WHICH IT IS SHOWN. BOXES FOR WALL DEVICES SHALL BE FURNISHED COMPLETE WITH PLASTER RING OR TILE RING ACCORDING TO WALL CONSTRUCTION WHERE REQUIRED. BOXES FOR INSTALLATION IN MASONRY WALLS SHALL BE SPECIAL SQUARE CORNER MASONRY TYPE. BOXES FOR MOUNTING OF LIGHTING FIXTURES SHALL BE FOUR INCH OCTAGON, EQUIPPED WITH 3/8 IN. "NO-BOLT" FIXTURE STUD. BOXES FOR FLOOR OUTLETS SHALL BE CONCRETE PROOF STEEL BOXES WITH ADJUSTABLE TOPS AND DEVICES AS HEREINAFTER NOTED OR SHOWN. ALL BOXES SHALL BE FURNISHED COMPLETE WITH PROPER COVER AND/OR DEVICE PLATE AND DEVICE. UNLESS OTHERWISE NOTED, PLACE OUTLET BOXES AT THE FOLLOWING HEIGHTS (BOX CENTER TO FINISH FLOOR): WALL SWITCHES 48" AND CONVENIENCE OUTLETS 18" UNLESS NOTED OTHERWISE ON DRAWINGS.

TELEPHONE, ALARM, AND SIGNAL SYSTEM OUTLET BOXES SHALL BE STANDARD OUTLET BOX TYPE WHERE ONLY ONE CONDUIT ENTERS SAME. UNLESS OTHERWISE SPECIFIED OR INDICATED ON DRAWINGS, WHERE TWO OR MORE CONDUITS ENTER, BOX SHALL BE 4-11/16 IN. SQUARE MINIMUM WITH SUITABLE ADAPTER RING.

LOCATE ALL OUTLETS AS INDICATED ON DRAWINGS, HOWEVER, AT INSTALLATION INSPECT ARCHITECTURAL DRAWINGS AND LOCATE LOCAL SWITCHES ON THE STRIKE SIDE OF THE DOOR.

**SYSTEM GROUNDING**

EQUIPMENT, RACEWAY SYSTEMS, WIRING SYSTEM NEUTRALS, RECEPTACLES AND POWER OUTLETS, MOTORS AND MOTORIZED EQUIPMENT, SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. ARTICLE 250.

GROUND RECEPTACLES AND POWER OUTLETS TO THE CONDUIT SYSTEM WITH A GREEN GROUNDING CONDUCTOR SIZE IN ACCORDANCE WITH N.E.C. AND CONNECTED BETWEEN THE DEVICE GROUNDING SCREW AND THE OUTLET BOX. CONNECTION TO THE BOX MAY BE A "G" CLIP OR BY A 10/24 SCREW THREADED INTO A HOLE IN THE BACK OF THE BOX AND USED FOR NO OTHER PURPOSE. EQUIPMENT CONNECTED TO THE ELECTRICAL SYSTEM SHALL BE GROUNDED WITHIN INSULATED GREEN GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH N.E.C. AND INSTALLED WITHIN THE RACEWAY. CONDUCTOR SHALL BE CONTINUOUS BETWEEN A GROUNDING SCREW IN THE EQUIPMENT JUNCTION BOX AND A GROUND ATTACHMENT IN THE NEAREST OUTLET BOX IN THE RIGID METALLIC CONDUIT SYSTEM. THIS REQUIREMENT INCLUDES ALL FLEXIBLE CONDUIT.

GENERALLY FOR TELEPHONE AND SUPPLEMENTAL COMMUNICATION SYSTEMS NO 6 AWG CONDUCTOR TO EACH PROTECTOR CABINET, OTHER CABINET, OR DEVICE INSTALLATION SHALL BE CONSIDERED SUFFICIENT, FROM THE SERVICE GROUND (UNLESS INDICATED OTHERWISE).

**GROUNDING MATERIAL:**  
GROUND-RODS - 1/2" DIA., 10' LONG, COPPERWELD  
GROUND CONDUCTOR - SIZE AS PER N.E.C. REQUIREMENTS, SOFT DRAWN OR SOFT ANNEALED, COPPER WIRE  
JOINTS AND CONNECTIONS - MOLDED FUSION WELDING PROCESS USING PROPER MOLD AND THE NUMBER, SIZE AND TYPE CARTRIDGE FOR THE JOINT OR CONNECTION. WATERPIPE CONNECTION, SILICON BRONZE APPROVED MECHANICAL CONNECTOR DESIGNED FOR THE PIPE AND CABLE TO BE BONDED.

**PANELBOARD INSTALLATION:**  
MOUNT PANELBOARDS WITH CENTERLINE AT 5 FT -6IN. ABOVE FINISH FLOOR, EXCEPT THAT THE HIGHEST BREAKER HANDLE SHALL BE BELOW 6 FT -5 IN. ABOVE FINISH FLOOR. ARRANGE BREAKERS SO THAT THE BREAKER RATING IS VISIBLE WITH THE PANEL FRONT IN PLACE.

PANEL DIRECTORIES, AS A MINIMUM, SHALL BE TYPEWRITTEN AND INDICATE BREAKER POSITION NUMBER AND EQUIPMENT SERVED, THE PANEL IDENTIFICATION SHALL BE LOCATED ON THE PANEL TRIM AND SHALL CONSIST OF A BLACK LAMINATED PHENOLIC LABEL, SCREW MOUNTED, WITH THE PANEL IDENTIFICATION MATCHING PANEL IDENTIFICATION ON DRAWINGS. LABEL ALL CONDUCTORS WITH ADHESIVE WRAP LABELS WITHIN 2 IN. OF THE CONDUCTOR TERMINATION PRIOR TO INSTALLATION OF TRIM.

**LIGHTING FIXTURE INSTALLATION**  
PROVIDE A LIGHTING FIXTURE FOR EACH AND EVERY OUTLET IN ACCORDANCE WITH TYPE DESIGNATION AND FIXTURE SCHEDULE ON THE DRAWINGS. VERIFY THE ARCHITECTURAL FINISHES AND CEILING CONSTRUCTION AND, REGARDLESS OF THE CATALOG NUMBER PREFIXES AND SUFFIXES SHOWN, PROVIDE FIXTURES WITH THE PROPER TRIM, FRAMES, SUPPORTS, AND HANGER AND OTHER MISCELLANEOUS APPURTENANCES TO PROPERLY COORDINATE WITH SAID FINISHES. REINFORCE CEILING CONSTRUCTION AS REQUIRED TO PROPERLY SUPPORT THE WEIGHT OF FIXTURES INSTALLED THEREON.

IMMEDIATELY PRIOR TO FINAL INSPECTION, THOROUGHLY CLEAN ALL FIXTURES INSIDE AND OUT, INCLUDING PLASTICS AND GLASSWARE. ADJUST TRIM TO FIT ADJACENT SURFACES. REPLACE BROKEN OR DAMAGED PARTS. INSTALL NEW LAMPS. ELECTRICALLY AND MECHANICALLY TEST THE SYSTEM FOR PROPER OPERATION.

THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVAL FROM LOCAL CODE AUTHORITIES AND MAKING ANY REVISIONS DIRECTED BY THEM ON EMERGENCY AND EXIT LIGHTING.

**CLEANING**  
THOROUGHLY CLEAN ALL FIXTURES, SWITCHES, OTHER DEVICES, PANELBOARDS, AND EQUIPMENT PROVIDED OR CONNECTED IN THIS CONTRACT. ALL SURFACES SHALL BE PROPERLY POLISHED AND SHALL BE FREE OF PAINT AND ALL OTHER DIRT OR DEBRIS. TOUCHUP OR COMPLETELY REFINISH ALL EQUIPMENT FURNISHED WITH FACTORY FINISHES THAT IS DAMAGED DURING DELIVERY OR CONSTRUCTION. PROPERLY PROTECT THE FRONTS OF ALL PANELBOARDS, SWITCHBOARDS AND SIMILAR EQUIPMENT TO PREVENT MARRING AND OTHER DEFACING.

AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY THE WORK OF THE TRADESMEN DOING ELECTRICAL WORK. AT COMPLETION OF THE WORK, REMOVE ALL RUBBISH, TOOLS, EQUIPMENT, AND SURPLUS MATERIALS. BROOM CLEAN ALL ASSIGNED SPACES PRIOR TO LEAVING THE PREMISES.

**TESTING AND LOAD BALANCING**

TEST ALL CIRCUITS TO ASSURE THEM TO BE FREE OF GROUNDS AND SHORTS. LIGHT AND TEST EACH LAMP. PROVE AND TEST THE AVAILABLE VOLTAGE ON THE LOAD SIDE OF EACH DISCONNECT. VERIFY PROPER OPERATION OF THE DISCONNECT. VERIFY THE PHASE SEQUENCE, VOLTAGE, AND ROTATION AT EACH MOTOR IN THE PRESENCE OF THE INSTALLER. RUN EACH MOTOR WITH ITS CONTROL AS NEARLY AS POSSIBLE UNDER OPERATING CONDITIONS FOR A SUFFICIENT LENGTH OVER TIME TO DEMONSTRATE CORRECT ALIGNMENT, WIRING CAPACITY, SPEED, AND OVERALL SATISFACTORY OPERATION. CHECK THAT THE PROPER OVERLOAD HEATERS HAVE BEEN INSTALLED BY READING THE MOTOR NAMEPLATE. ADJUST THE SIZE OF THE OVERLOAD HEATER AS REQUIRED TO MATCH THE MOTOR NAMEPLATE. OPERATE ALL MAIN AND FEEDER SWITCHES AND BREAKERS.

THE VARIOUS BRANCH CIRCUITS SERVED FROM THE LIGHTING PANELBOARDS VARY IN LOADING. CAREFULLY BALANCE THE ACTUAL OPERATING LOAD ON EACH PANELBOARD WHEN ALL LOAD IS TURNED ON AND THE SYSTEM IS OPERATING AT 100% DEMAND, THE UNBALANCE SHALL NOT EXCEED 10%. DURING FINAL INSPECTION, FURNISH THE TEST INSTRUMENTS AND QUALIFIED PERSONNEL TO PERFORM COMPLETE TESTING. COSTS OF ALL TESTING, INCLUDING THE INCIDENT COSTS FOR RETESTING OCCASIONED BY DEFECTS AND FAILURES OF THE EQUIPMENT TO MEET THE SPECIFICATIONS, SHALL BE BORNE BY THE CONTRACTOR.

FURNISH AT THE COMPLETION OF THE PROJECT A FINAL INSPECTION CERTIFICATE FROM THE LOCAL INSPECTING AUTHORITY.

END OF SECTION 16000

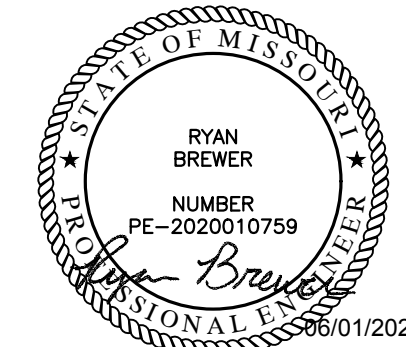


307B SW Market St., Lee's Summit, Missouri 64083 | 816.249.2270 | www.collinswebbarchitect.com

REECE NICHOLS TENANT IMPROVEMENTS

230 SW MAIN ST.  
LEE'S SUMMIT, MO 64063

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ELECTRICAL  
SPECIFICATIONS