

MECHANICAL SYMBOLS LIST	
	EQUIPMENT TAG
	RISER SYMBOL
AIR DEVICES	
	CEILING DIFFUSER SUPPLY
	RETURN GRILLE
	EXHAUST GRILLE
DUCT ACCESSORIES	
	GRAVITY BACKDRAFT DAMPER
	VOLUME DAMPER W/ ACCESS DOOR
	MOTORIZED DAMPER
CONTROLS AND SENSORS	
	THERMOSTAT
	TEMPERATURE SENSOR
	FAN CONTROLLER
DUCTWORK	
	NEW SHEET METAL DUCTWORK
	SUPPLY OR OUTSIDE AIR DUCT CROSS SECTION
	RETURN AIR DUCT CROSS SECTION
	DUCTWORK TRANSITION
	SUPPLY DUCT ELBOW UP OR DOWN
	RETURN DUCT ELBOW UP OR DOWN
	DUCT ELBOW WITH FIXED TURNING VANES
	DUCT BRANCH TAKE-OFF
	FLEXIBLE DUCTWORK
	AIR DUCT W/ 1.5" ACOUSTICAL LINING
	FLEXIBLE DUCT
	FLEXIBLE CONNECTION
	ROUND DUCT CROSS SECTION

MECHANICAL DRAWING LIST	
SHEET NUMBER	SHEET NAME
M0.1	MECHANICAL COVER SHEET
M0.2	MECHANICAL SPECIFICATIONS & ENERGY COMPLIANCE
M1.0	MECHANICAL PLAN - LOWER LEVEL
M1.1	MECHANICAL PLAN - UPPER LEVEL
M2.0	MECHANICAL SCHEDULES
M3.0	MECHANICAL DETAILS (1 OF 3)
M3.1	MECHANICAL DETAILS (2 OF 3)
M3.2	MECHANICAL DETAILS (3 OF 3)

APPLICABLE CODES
<ul style="list-style-type: none"> <li>2021 NEW MEXICO COMMERCIAL BUILDING CODE</li> <li>2021 NEW MEXICO MECHANICAL CODE</li> <li>2021 NEW MEXICO PLUMBING CODE</li> <li>2021 NEW MEXICO ENERGY CODE</li> <li>2020 NEW MEXICO ELECTRICAL CODE</li> </ul>

ENERGY CODE COMPLIANCE
TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATION ARE IN COMPLIANCE WITH THE NEW MEXICO ENERGY CODE 2021(IECC 2021).

MECHANICAL ABBREVIATIONS	
AC	AIR CURTAIN
AFF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
GD	GRAVITY DAMPER
CDS	CEILING DIFFUSER SUPPLY
CDR	CEILING DIFFUSER RETURN
CFM	CUBIC FEET OF AIR PER MINUTE
CU	CONDENSING UNIT
COP	COEFFICIENT OF PERFORMANCE
CP	CONDENSATE PUMP
CD	CONDENSATE DRAIN PIPE
DN	DOWN
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
FC	FAN COIL UNIT
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
HWHT	HOT WATER HEATER
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
MD	MOTORIZED DAMPER
RH	RADIANT HEATER
RG	RETURN GRILLE
SAR	SUPPLY AIR REGISTER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SUPPLY GRILLE
VD	VOLUME DAMPER
W.M.S.	WIRE MESH SCREEN

#### NEW MEXICO BUILDING DEPARTMENT NOTES

- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE 2021 INTERNATIONAL BUILDING CODE (IBC) AND 2021 NEW MEXICO MECHANICAL CODE, AS ADOPTED WITH AMENDS BY UNIFORM MECHANICAL CODE (UMC-2021). ALL OTHER RELEVANT STATE AND LOCAL CODES SHALL ALSO APPLY.
- TESTING OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NEW MEXICO MECHANICAL CODE 2021, ADOPTS WITH AMNEDMENTS UMC 2021
  - VENTILATION SYSTEM BALANCING – MECHANICAL CODE SECTION 403
- THE FOLLOWING COMPONENTS AND SYSTEMS SHALL CONFORM TO THE REFERENCED CODE SECTIONS OR APPLICABLE STANDARDS:
  - STANDARDS OF HEATING – MECHANICAL CODE SECTION 311
  - DUCT CONSTRUCTION AND INSTALLATION – MECHANICAL CODE SECTION 603
  - AIR INTAKES AND EXHAUST OPENINGS – MECHANICAL CODE SECTION 402.4
  - AIR FILTERS – MECHANICAL CODE SECTION 605
  - PIPING AND INSULATION – MECHANICAL CODE CHAPTER 12
- THE MINIMUM TEMPERATURE MAINTAINED IN OCCUPIED SPACES DURING THE HEATING SEASON SHALL BE 68°F (20°C), AS REQUIRED BY MECHANICAL CODE SECTION 309.1.
- VENTILATION FOR ALL SPACES SHALL COMPLY WITH MECHANICAL CODE CHAPTER 4.
- A STATEMENT SHALL BE PROVIDED BY THE OWNER OR RESPONSIBLE PARTY CONFIRMING THAT THE VENTILATION SYSTEM WILL BE MAINTAINED IN CONTINUOUS OPERATION DURING OCCUPANCY, AS REQUIRED BY MECHANICAL CODE SECTION 402.1
- REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND TYPES OF REQUIRED FIRE-RATED WALLS AND SMOKE PARTITIONS.
- THESE PLANS ARE APPROVED ONLY FOR THE SCOPE OF WORK INDICATED ON THE PERMIT APPLICATION. ALL OTHER CONDITIONS, ELEMENTS, OR SYSTEMS NOT COVERED IN THIS REVIEW ARE SUBJECT TO FIELD INSPECTION AND VERIFICATION FOR CODE COMPLIANCE.

#### GENERAL NOTES

- ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED, AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
- ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE-STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL RTU AND AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH RTU AND AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
- ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
- TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH AABC STANDARDS.

- MATERIAL COST: (I.E. EQUIPMENT, SHEET METAL PER POUND AND PIPING PER LINEAL FOOT/FITTING)
- LABOR COST: (NUMBER OF HOURS AT CURRENT LABOR RATE PER HOUR) OVERHEAD & PROFIT:(INDICATING PERCENTAGES)
- TOTAL CHANGE ORDER PRICE: (MATERIAL + LABOR + O&P)
- PRICING FOR ALL ITEMS OF WORK WHICH ARE TO BE CREDITED TO THE PROJECT SHALL BE BROKEN DOWN IN A SIMILAR MANNER TO THE ADDED COSTS.

- ALL CUTTING AND PATCHING THAT IS REQUIRED TO COMPLETE THE WORK SHALL BE THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR.
- PROVIDE ALL LINTELS, SUPPORT STEEL AND FRAMING THAT IS REQUIRED TO COMPLETE THE WORK.
- PROVIDE SLEEVES IN BEAMS, FLOORS, AND COLUMNS AND WALLS AS SHOWN ON DRAWINGS, AS REQUIRED BY JOB SITE CONDITIONS, AND/OR SPECIFIED.
- PROVIDE ALL COORDINATION AND MISCELLANEOUS STEEL NECESSARY FOR SUITABLE ANCHORAGE OF HVAC ITEMS AND EQUIPMENT.
- MECHANICAL EQUIPMENT & APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR THE LABELED EQUIPMENT. CONNECTIONS TO THE MECHANICAL EQUIPMENT AND APPLIANCES, SUCH AS FUEL SUPPLY, CHIMNEY & DUCTS, SHALL CONFORM TO THE REQUIREMENTS OF THESE DOCUMENTS. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT ALL TIMES FOR INSPECTION.

- THE DRAWINGS, SCHEDULES, & SPECIFICATIONS HAVE BEEN PREPARED USING ONE MANUFACTURER FOR EACH TYPE OF EQUIPMENT AS THE BASIS FOR DIMENSIONAL & MECHANICAL DESIGN. SUBSTITUTIONS FOR PRODUCTS WILL ONLY BE CONSIDERED IF SUBMITTED ONLY FOR PRODUCTS EQUAL OR BETTER THAN THAT SPECIFIED. MINOR DEVIATIONS IN DIMENSIONS WILL BE PERMITTED, PROVIDED THE RATINGS MEET THOSE SHOWN ON THE DRAWINGS AND EQUIPMENT WILL PHYSICALLY FIT INTO THE SPACE ALLOCATED WITH SUITABLE ACCESS AROUND EQUIPMENT FOR OPERATION & MAINTENANCE ON THE EQUIPMENT.
- THE MECHANICAL EQUIPMENT HAS BEEN COORDINATED WITH THE ELECTRICAL DESIGN DRAWINGS BASED ON THE ELECTRICAL CHARACTERISTICS OF THE EQUIPMENT SPECIFIED.

- MECHANICAL EQUIPMENT SHALL VERIFY THAT THE CHARACTERISTICS OF THE EQUIPMENT THEY SUBMIT FOR REVIEW MEETS THE CAPACITY AND DUTY SPECIFIED.

#### GENERAL HVAC NOTES

- PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- LOCATE ALL TEMPERATURE AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UPSTREAM AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
- PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUIVALENT FIRE-RATED CAPACITY (1 HR, 2 HR, ETC.) AS THE WALL.
- MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.

#### THERMOSTATIC CONTROLS (IECC 2021):

- 403.4.1 THERMOSTATIC CONTROLS  
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

- EXCEPTION:  
INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:
- THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ±45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
  - THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

- 403.4.1.2 DEADBAND  
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

- EXCEPTIONS:
- THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
  - OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

- 403.4.1.3 SETPOINT OVERLAP RESTRICTION  
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION 403.4.1.2.

- 403.4.2 OFF-HOUR CONTROLS  
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

- EXCEPTIONS:
- ZONES THAT WILL BE OPERATED CONTINUOUSLY.
  - ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

- 403.4.2.1 THERMOSTATIC SETBACK  
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

- 403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN  
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTINGS DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

- 403.4.2.3 AUTOMATIC START AND STOP  
AUTOMATIC START AND STOP CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE AUTOMATIC START CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. AUTOMATIC STOP CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM WITH DIRECT DIGITAL CONTROL OF INDIVIDUAL ZONES. THE AUTOMATIC STOP CONTROLS SHALL BE CONFIGURED TO REDUCE THE HVAC SYSTEM'S HEATING TEMPERATURE SETPOINT AND INCREASE THE COOLING TEMPERATURE SETPOINT BY NOT LESS THAN 2°F (1.1°C) BEFORE SCHEDULED UNOCCUPIED PERIODS BASED ON THE THERMAL LAG AND ACCEPTABLE DRIFT IN SPACE TEMPERATURE THAT IS WITHIN COMFORT LIMITS.

#### HVAC DUCTWORK - SHEET METAL

- PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.
- SUPPLY AND RETURN DUCTWORK 10" FROM ALL AC UNITS SHALL BE LINED WITH 1" ACOUSTICAL LINING.
- SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WITH INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH REFLECTED CEILING PLAN.
- UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS 4'-0" (CENTER LINE) ABOVE THE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
- ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS, AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.
- PROVIDE ALL 90-DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. ELBOWS IN KITCHEN EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.
- COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
- ALL RTU AND AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.
- LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.
- PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
- UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.
- RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.
- ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, COALS, AND OTHER ITEMS LOCATED IN THE DUCTWORK THAT REQUIRE SERVICE AND/OR INSPECTION.
- PROVIDE ACCESS DOORS IN FOR THE OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
- ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT.
- SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.

#### SECTION 0101 - QUALITY OF WORK

- 1.1 CODE COMPLIANCE  
A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.

END OF SECTION 0101

#### SECTION 0102 - REQUIRED DOCUMENTS

- 1.1 SHOP DRAWINGS  
A. A SET OF PRINTS FOR ANY MECHANICAL WORK, INCLUDING BUT NOT LIMITED TO DUCTWORK AND PIPING LAYOUT, SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.

- 1.2 SUBMITTALS  
A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT, INCLUDING ALL ACCESSORIES, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES, AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED, OR OTHERWISE INDICATED ON THE SUBMITTALS.

- 1.3 RECORD DRAWINGS  
A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS, AND/OR CORRECTIONS TO THE CONTRACT DRAWINGS AND/OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.

- 1.4 EQUIPMENT OPERATING INSTRUCTIONS  
A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS, AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.  
B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.  
C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS, AND PHONE NUMBER OF THE PROJECT ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR, AND SUBCONTRACTORS.

END OF SECTION 0102

#### SECTION 078413 - PENETRATION FIRE-STOPPING

- 1.1 QUALITY ASSURANCE  
A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.  
B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL INTERTEK ETL SEMKO, OR FM GLOBAL.

- 1.2 PENETRATION FIRESTOPPING  
A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E814 OR UL 1479.  
B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E814 OR UL 1479.  
C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.  
D. W-RATINGS: PER UL 1479.

#### 1.3 INSTALLATION

- IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
- FIELD QUALITY CONTROL  
A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E2174.

- 1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE  
WHERE UL-Classified SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

- FOR THE FOLLOWING SYSTEMS:
- METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING
  - ELECTRICAL CABLES
  - CABLE TRAYS WITH ELECTRICAL CABLES
  - MISCELLANEOUS ELECTRICAL PENETRANTS
  - INSULATED PIPES
  - GROUPINGS OF PENETRANTS

- USE ONE OR MORE OF THE FOLLOWING MATERIALS:
- LATEX SEALANT
  - SILICONE SEALANT
  - INTUMESCENT PUTTY
  - MORTAR
  - SILICONE FOAM
  - PILLOWS/BAGS
  - INTUMESCENT WRAP STRIPS
  - INTUMESCENT COMPOSITE SHEET

- 1.6 MANUFACTURERS  
1. HILTI CONSTRUCTION CHEMICAL, INC.  
2. TREMCO INC.  
3. 3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

VALVOLINE INSTANT OIL CHANGE

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: MECHANICAL COVER SHEET

M0.1

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE SEAL SYSTEMS

A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNUAL SPACE BETWEEN PIPING AND SLEEVE.

- 1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.

B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

- 1. ADVANCE PRODUCTS & SYSTEMS, INC.
2. CALPICO, INC.
3. METRAFLEX COMPANY (THE)
4. PIPELINE SEAL AND INSULATOR, INC.
5. PROCO PRODUCTS, INC.

1.2 SLEEVE-SEAL FITTINGS
A. MANUFACTURED PLASTIC, SLEEVE-TYPE, PLASTIC OR RUBBER WATER-STOP ASSEMBLY MADE FOR EMBEDDING IN CONCRETE SLAB OR WALL.

1.3 GROUT
A. NON-SHRINK, FACTORY-PACKAGED.

1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE
A. USE SLEEVES AND SLEEVE SEALS FOR THE FOLLOWING PIPING-PENETRATION APPLICATIONS:

- 1. INTERIOR PARTITIONS:
A. PIPING SMALLER THAN NPS 6 (DN 150): GALVANIZED-STEEL-PIPE SLEEVES, PVC-PIPE SLEEVES.
B. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

END OF SECTION 230517

SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

- A. ONE-PIECE, CAST-BRASS TYPE: WITH POLISHED, CHROME-PLATED AND ROUGH-BRASS FINISH AND SETSCREW FASTENER.
B. ONE-PIECE, DEEP-PATTERN TYPE: DEEP-DRAWN, BOX-SHAPED BRASS WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.
C. ONE-PIECE, STAMPED-STEEL TYPE: WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

2.2 FLOOR PLATES

- A. ONE-PIECE FLOOR PLATES: CAST-IRON FLANGE WITH HOLES FOR FASTENERS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.
B. INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY COVERS OPENING.

1. ESCUTCHEONS FOR NEW PIPING:

- a. PIPING WITH FITTING OR SLEEVE PROTRUDING FROM WALL: ONE-PIECE, DEEP-PATTERN TYPE.
b. INSULATED PIPING: ONE-PIECE, STAMPED-STEEL TYPE.
c. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.
d. BARE PIPING AT CEILING PENETRATIONS IN FINISHED SPACES: ONE-PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR STAMPED-STEEL TYPE.

3.2 FIELD QUALITY CONTROL

A. REPLACE BROKEN AND DAMAGED ESCUTCHEONS AND FLOOR PLATES USING NEW MATERIALS.

END OF SECTION 230518

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

1. PERFORMANCE REQUIREMENTS

A. DELEGATED DESIGN: DESIGN TRADE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.

2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS.

3. DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

1.2 SUBMITTALS

A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.

1.3 QUALITY ASSURANCE

A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL."

1.4 COMPONENTS

- A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL.
B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL.
C. FIBERGLASS PIPE HANGERS: CLEVIS, CENTURY COMPOSITES, COOPER B-LINE.
D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER.
E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE.
F. THERMAL-HANGER SHIELD INSERTS.
G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS.
H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE; HIGH TYPE, SINGLE PIPE; HIGH TYPE, MULTIPLE PIPES; CURB-MOUNTED TYPE.
I. EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 COMPONENTS

- A. VIBRATION ISOLATORS:
1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS.
2. MOUNTS: DOUBLE-DEFLECTION TYPE.
3. RESTRAINED MOUNTS: ALL-DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT, CAST-DUCTILE-IRON HOUSING.
4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
10. PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
11. RESILIENT PIPE GUIDES.

1.2 FIELD QUALITY CONTROL

A. TESTING: BY EITHER OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.

PART 2 - PRODUCTS

2.1 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

- B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWINGS:
1. ACE MOUNTINGS CO., INC.
2. AMBER/BOOTH COMPANY, INC.
3. CALIFORNIA DYNAMICS CORPORATION.
4. HILTI, INC.
5. ISOLATION TECHNOLOGY, INC.
6. KINETICS NOISE CONTROL.
7. LOOS & CO., CABLEWARE DIVISION.
8. MASON INDUSTRIES.
9. TOLCO INCORPORATED, A BRAND OF NIBCO INC.
10. UNISTRUT, TYCO INTERNATIONAL, LTD.

END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
1. AIR SYSTEMS: CONSTANT-VOLUME SYSTEMS.
2. EXISTING SYSTEMS.

1.2 QUALITY ASSURANCE

A. PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB, OR TABB CERTIFIED.

END OF SECTION 230593

1.3 EXECUTION

A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE START OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES, SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES, SHALL BE SUBMITTED FOR OWNER REVIEW.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM SHOWING THE LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

D. PRIOR TO THE FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

E. FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES, AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE STRICTLY TO THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

F. COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

A. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

1.1 QUALITY ASSURANCE

SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE A COMPOSITE INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE TO THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD INDEX OF 25, AND SMOKE-DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOORS. 75, AND SMOKE-DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTM E84.

1.2 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE:

A. CONCEALED, RECTANGULAR, ROUND, AND FLAT-OVAL, SUPPLY RETURN, OUTDOOR, AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION.

B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD, OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

- UNCONDITIONED SPACES WITHIN THE BUILDING: R-6
• WITHIN BUILDING ENVELOPE ASSEMBLY: R-8
• OUTSIDE OF BUILDING: R-8

1.4 ITEMS NOT INSULATED:

- 1. FIBROUS-GLASS DUCTS.
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1.
3. FACTORY-INSULATED FLEXIBLE DUCTS.
4. FACTORY-INSULATED PLENUMS AND CASINGS.
5. FLEXIBLE CONNECTORS.
6. VIBRATION-CONTROL DEVICES.
7. FACTORY-INSULATED ACCESS PANELS AND DOORS.
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

1.5 PRODUCTS

A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

- 1. JOHNS-MANVILLE
2. OWENS-CORNING

1.6 ACOUSTICAL TREATMENT

WHERE SHOWN ON THE DRAWINGS, LOW-PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R46 AS MANUFACTURED BY DUCTMATE, 1-1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER, LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED.

1.7 SEALANT MATERIALS

- 1. TWO-PART TAPE SEALING SYSTEM.
2. WATER-BASED JOINT AND SEAM SEALANT.
3. SOLVENT-BASED JOINT AND SEAM SEALANT.
4. FLANGED JOINT SEALANT.
5. FLANGE GASKETS.

END OF SECTION 230713

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PIPING INSULATION

A. INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

PIPING INSULATION SCHEDULE

Table with 4 columns: SERVICE, SIZE (OPERATING TEMP.), THICKNESS, FINISH. Rows include CONDENSATE PIPING (105-140°F) and REFRIGERANT PIPING (141-200°F).

SECTION 233113 - METAL DUCTS

1.1 CONSTRUCTION

A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 2-1/2 INCH WG PRESSURE CLASS IS THE BASIS OF COMPLIANCE WITH THESE STANDARDS, REGARDLESS OF THE VELOCITY IN THE DUCT.

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 2" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. DUCTWORK SHALL BE TRANSVERSELY JOINTED BY CONNECTING SEAMS OF COMPANION ANGLES, FORMED FROM 1-1/2" X 1-1/2" X 1/8" GALVANIZED ANGLES, TACK-WELDED OR RIVETED TO THE DUCT. THE ANGLE FRAME SHALL BE CONTINUOUSLY FLANGED UP INTO THE UPRIGHT OF THE ANGLE AND EACH CORNER SHALL BE FILLED IN AND GROUND SMOOTH. JOINTS SHALL BE GASKETED WITH 1/8" THICK REINFORCED GASKET, OVERLAPPED AT CORNERS, GASKET SIMILAR TO 3M-1202 OR APPROVED EQUAL.

2. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL-WELDED CONSTRUCTION.

3. HORIZONTAL DUCTS SHALL BE SUPPORTED ON NOT MORE THAN 6' CENTERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR.

4. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30-03 INSERTED INTO THE SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30-02 AND COVERED WITH APPROVED SEALING TAPE.

5. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.

6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., SHALL BE NO. 20 GAUGE ZINC-COATED STEEL. ELBOWS SHALL BE OF FIVE (5) PIECE WELDED AIRTIGHT CONSTRUCTION.

C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

ERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

USG MAX. SIDE TRANSVERSE JOINTS AND BRACING

Table with 3 columns: USG, MAX. SIDE INCHES, TRANSVERSE JOINTS AND BRACING. Rows include UP TO 12, 13 TO 24, and 25 TO 35.

A. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:

- 1. UPSTREAM OF EACH REHEATING COIL AND VAV BOX.
2. DOWNSTREAM OF EACH REHEATING COIL AND VAV BOX.

B. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU OF RECTANGULAR DUCTWORK, WITH THE REINFORCEMENT FOR FLAT SIDES THE SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3-6 AND AS SHOWN IN FIG. 3-1 AND 3-2 FOR ROUND DUCTWORK.

C. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEET SMACNA CLASS 6 FOR RECTANGULAR DUCTS AND CLASS 3 FOR ROUND DUCTS.

1.2 MATERIALS

- A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.
B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.
C. SHEET METAL MATERIALS.

- 1. GALVANIZED SHEET STEEL.
2. STAINLESS-STEEL SHEETS.
3. ALUMINUM SHEETS.
4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

D. DUCT LINER:

- 1. FIBROUS GLASS, TYPE I, FLEXIBLE, WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.
2. FLEXIBLE ELASTOMERIC.
3. NATURAL FIBER.

E. SEALANT MATERIALS:

- 1. TWO-PART TAPE SEALING SYSTEM.
2. WATER-BASED JOINT AND SEAM SEALANT.
3. SOLVENT-BASED JOINT AND SEAM SEALANT.
4. FLANGED JOINT SEALANT.
5. FLANGE GASKETS.
6. ROUND DUCT JOINT O-RING SEALS.

1.3 DUCT CLEANING

A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.

B. CLEAN THE FOLLOWING ITEMS:

- 1. AIR OUTLETS AND INLETS.
2. SUPPLY, RETURN, AND EXHAUST FANS.
3. AIR-HANDLING UNITS.
4. COILS AND RELATED COMPONENTS.
5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
7. DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.

1.4 DUCT SCHEDULE

A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:

1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SECTION 233713 - DIFFUSERS, REGISTERS, GRILLES AND AIR BALANCING

1.1 PRODUCTS

A. DIFFUSERS, REGISTERS, AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME-COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.

B. MANUFACTURERS: TITUS
1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:

- A. CARNES.
B. HART & COOLEY INC.
C. KRUEGER.
D. METALAIR, INC.
E. NALOR INDUSTRIES INC.

C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

1.2 AIR BALANCING
PROVIDE BOTH DESIGN AND ACTUAL CONDITIONS FOR EACH ITEM LISTED. REPORTS ARE REQUIRED FOR EACH AIR HANDLING SUPPLY, EXHAUST/SPILL, AND RECIRCULATION AND WATER SYSTEM. INCLUDE AS A MINIMUM THE FOLLOWING DATA.

- 1. SUPPLY SYSTEMS:
A. DATE.
B. SYSTEM NO AND LOCATION
C. COMPRESSOR AMPERAGE.
D. RATED MOTOR AMPERAGE, STARTER HEATER NUMBER AND AMPERE RATING.
2. EXHAUST AND RECIRCULATION SYSTEMS:
A. DATE.
B. FAN MODEL ARRANGEMENT AND CLASS.
C. SYSTEM NUMBER AND LOCATION (CORRESPONDING SUPPLY FAN SYSTEM).
D. ROOM'S OR AREA SERVED.
E. FAN MOTOR RPM.
F. MOTOR AMPERAGE AND STARTER HEATER NUMBER AND AMPERAGE RATING.
G. RATED MOTOR AMPERAGE
H. FAN INLET STATIC PRESSURE AND TEMPERATURE (DB & WB).
I. FAN OUTLET STATIC PRESSURE AND TEMPERATURE (DB & WB).
J. FINAL ADJUSTED PERCENTAGE OF DESIGN
3. ROOM DATA:
A. ROOM NUMBER.
B. EXHAUST SYSTEM NUMBER.
C. EXHAUST AT EACH REGISTER OR GRILLE.
D. AIR OPENING SIZES AND AREA FACTORS.
E. FINAL ADJUSTED PERCENTAGES OF EACH OPENING.



COMcheck Software Version COMcheckWeb Mechanical Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Carlsbad, NM
Location: Carlsbad, New Mexico
Climate Zone: 3b
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Mechanical Systems List

Quantity System Type & Description

- 1 CU-1 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 25 kBtu/h, Proposed Efficiency = 9.40 HSPF2, Required Efficiency = 7.50 HSPF2 Cooling Mode: Capacity = 22 kBtu/h, Proposed Efficiency = 19.50 SEER2, Required Efficiency = 14.30 SEER2 Proposed Part Load Efficiency = 0.00, Required Part Load Efficiency = 0.00
1 CU-2 (Single Zone): Cooling: 1 each - Split System, Capacity = 22 kBtu/h, Air-Cooled Condenser, Unknown Economizer Proposed Efficiency = 21.50 SEER2, Required Efficiency = 13.40 SEER2 Proposed Part Load Efficiency = 0.00, Required Part Load Efficiency = 0.00
1 EDH-1 (Single Zone w/ Perimeter System): Heating: 1 each - Duct Furnace, Electric, Capacity = 34 kBtu/h No minimum efficiency requirement applies
3 RH-1,RH-2,RH-3 (Single Zone w/ Perimeter System): Heating: 1 each - Radiant Heater, Electric, Capacity = 30 kBtu/h No minimum efficiency requirement applies
1 P8: Electric Storage Water Heater, Capacity: 10 gallons w/ Circulation Pump No minimum efficiency requirement applies
1 P20: Electric Instantaneous Water Heater, Capacity: 0 gallons No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

CLAYTON LUCAS 09/04/25
Name - Title Date

Project Title: Carlsbad, NM Report date: 06/06/25
Data filename: Date

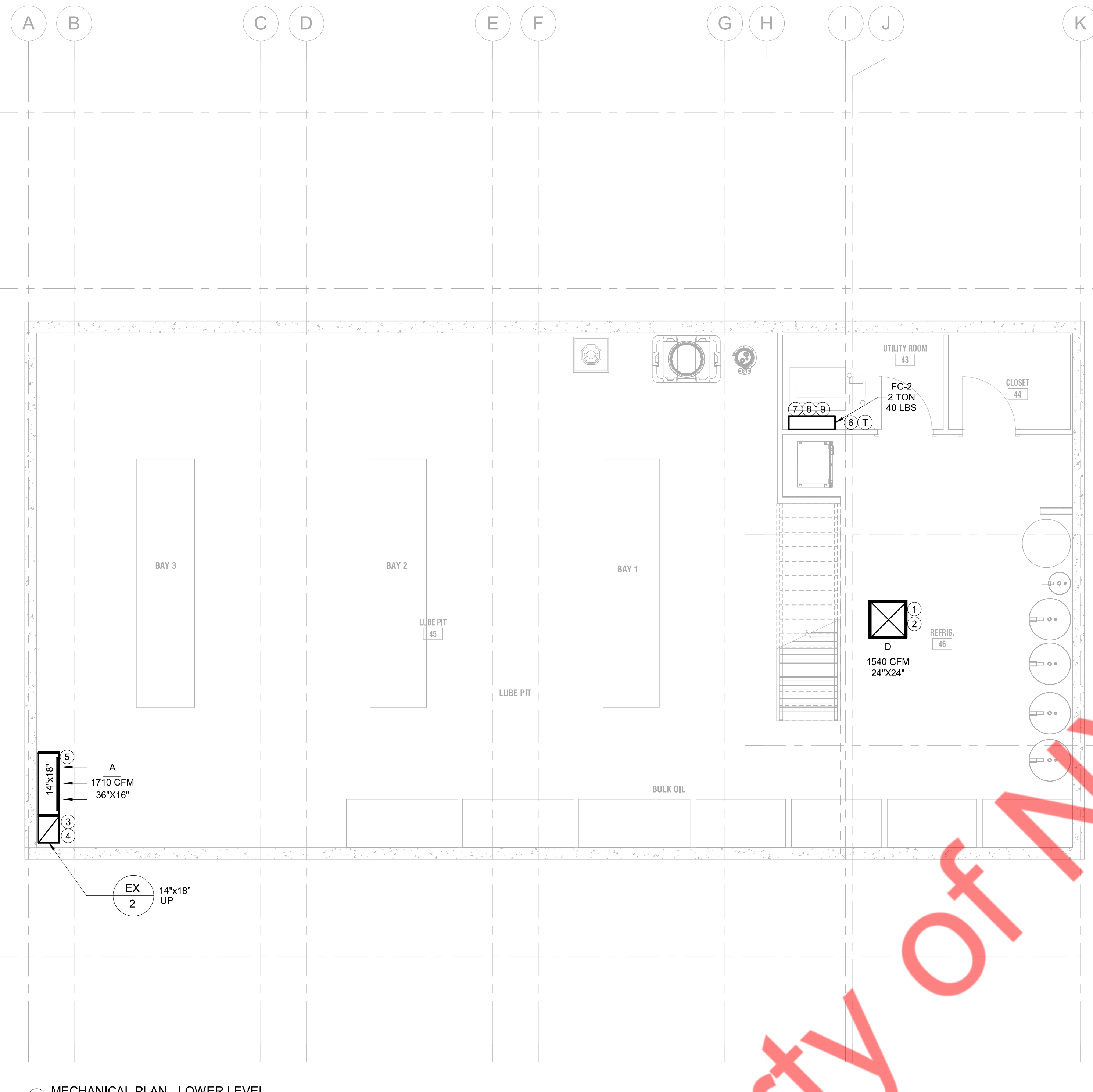
VALVOLINE INSTANT OIL CHANGE

CONTROL NO:

JOB NUMBER:

DATE: 2025-05-16

CONTENTS: MECHANICAL SPECIFICATIONS & ENERGY COMPLIANCE MO.2



**MECHANICAL GENERAL NOTES ( LOWER LEVEL ) :**

1. BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
2. COORDINATE ALL MECHANICAL WORK WITH ALL OTHER TRADES. NEW DUCTWORK SHOWN ON PLAN IS SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED, PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
3. COORDINATE LOCATIONS AND SIZES OF FLOOR/SLAB OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
4. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED AND VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING, ETC.
5. COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
6. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO OWNER.
7. COORDINATE ALL EQUIPMENT AND SUPPORT LOCATIONS WITH THE STRUCTURAL ENGINEER.
8. PROVIDE FIRE OR FIRE/SMOKE DAMPERS WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATING OF THE WALLS.
9. OR SUPPLY AND RETURN AIR DUCTS, PROVIDE ACOUSTICAL LINING WITH R-6 INSULATION RATING UP TO 10' OF DUCT RUN FROM AC UNIT. PROVIDE R-6 THERMAL INSULATION AFTER 10' OF DUCT RUN FROM RTU UNIT.
10. ALL DUCT SIZES SHOWN ON MECHANICAL FLOOR PLANS ARE CLEAR INSIDE. INTERNAL AND EXTERNAL INSULATION THICKNESS OF DUCTS SHALL BE CONSIDERED SEPARATELY.
11. PROVIDE OPPOSED BLADE VOLUME DAMPERS AT FACE OF ALL CEILING SUPPLY DIFFUSERS, RETURN, AND EXHAUST GRILLES.
12. ALL DUCT ELBOWS SHALL BE MITERED WITH SINGLE THICKNESS TURNING VANES UNLESS INSTRUCTED OTHERWISE ON DRAWINGS. PROVIDE 45 DEGREE ENTRY FITTINGS AT BRANCH DUCT CONNECTIONS TO DUCT MAINS. FLEXIBLE DUCTS SHALL BE INSTALLED TO MAINTAIN FULL CROSS-SECTIONAL FREE AREA. PROVIDE RIGID SHEET METAL ELBOWS OR LINED PLENUM BOXES AT AIR DEVICES WHEN REQUIRED.
13. COORDINATE EXACT LOCATION OF ALL AIR DEVICES WITH ARCHITECT.
14. ROUTE REFRIGERANT PIPING BETWEEN FAN COIL UNITS AND CONDENSING UNIT CONCEALED IN FINISHED SPACES. SEAL ALL WALL PENETRATIONS WEATHERTIGHT. PROVIDE PVC PIPE SLEEVE FOR UNDERGROUND REFRIGERANT PIPING. REFRIGERANT PIPING SIZES SHALL BE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS (BASED ON THE ACTUAL LOCATIONS AND ELEVATIONS OF EQUIPMENT).
15. ALL LOW VOLTAGE CONTROL WIRING AND ITS INSTALLATION TO BE BY MECHANICAL CONTRACTOR. INSTALL PER ELECTRICAL SPECIFICATIONS. RUN CONTROL WIRING FROM TEMPERATURE SENSOR TO THE CORRESPONDING THERMOSTAT. MOUNTING HEIGHT OF THERMOSTATS SHALL BE PER ADA REQUIREMENTS.
16. COORDINATE WITH PLUMBING FOR ALL CONDENSATE DRAIN LINE LOCATIONS.
17. MECHANICAL CONTRACTOR SHALL REVIEW ALL ELECTRICAL DRAWINGS BEFORE PURCHASING EQUIPMENT TO ENSURE THAT PROPER ELECTRICAL SERVICE IS TO BE PROVIDED FOR ALL NEW EQUIPMENT.

**LOWER LEVEL KEY NOTES:**

1. EXTEND 24"x24" SUPPLY DUCT FROM FLOOR ABOVE.
2. SUPPLY GRILLE TO BE INSTALLED LEVEL WITH THE BOTTOM OF STRUCTURE.
3. PROVIDE AIRFLOW SWITCH IN PIT EXHAUST DUCTWORK IN AN ACCESSIBLE LOCATION. COORDINATE WITH ELECTRICAL DRAWINGS FOR CONTROL DIAGRAM AND SEQUENCE OF OPERATIONS. AIRFLOW SWITCH SHALL BE CLEVELAND CONTROLS MODEL AFS-222 OR APPROVED EQUAL.
4. 18"x14" EXHAUST DUCT UP IN CHASE TO UPPER LEVEL.
5. TERMINATE EXHAUST DUCTWORK WITH DUCT MOUNTED 36"x14" EXHAUST AIR GRILLE LOCATED WITHIN 12" A.F.F.
6. PROVIDE WIRED CONTROLLER FOR FC-2. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
7. COORDINATE FINAL LOCATION OF EQUIPMENT WITH ARCHITECT/OWNER.
8. CONNECT 3/4" CD SLOPE AT 1/8" PER FT TO BATHROOM SANITARY UNDER LAVATORY (OR FLOOR DRAIN) W/ AIR GAP FITTING. COORDINATE WITH PLUMBING DRAWING SHEET P1.1.
9. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNITS AS PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE INSULATION TO REFRIGERANT PIPING AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE. COORDINATE REFRIGERANT PIPE ROUTING WITH ARCHITECT/OWNER.

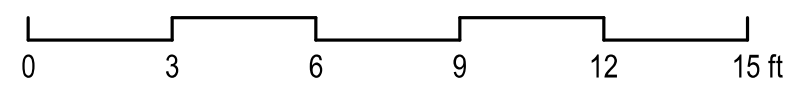
1 MECHANICAL PLAN - LOWER LEVEL  
1/4" = 1'-0"

**LOWER LEVEL (PIT) EXHAUST CALCULATIONS:**

1. NEC 511.3(B) COMPLIANCE:  
TO MEET THE NATIONAL ELECTRICAL CODE (NEC) REQUIREMENT OF SIX (6) AIR CHANGES PER HOUR, THE FOLLOWING CALCULATION IS PERFORMED:  
1710 SF x 8.5 FT (CEILING HEIGHT) x 6 = 1,453.5 CFM REQUIRED.

2. NFPA 30A COMPLIANCE  
PER NFPA 30A, A MORE STRINGENT REQUIREMENT OF 1 CFM PER SQUARE FOOT APPLIES:  
1710 SF x 1 CFM/SF = 1,710 CFM REQUIRED.

**DESIGN BASIS:**  
SINCE NFPA 30A IS THE MORE SPECIFIC AND STRINGENT CODE, THE VENTILATION SYSTEM SHALL BE DESIGNED TO PROVIDE 1,710 CFM OF EXHAUST AIR FOR THE LOWER LEVEL.



VALVOLINE INSTANT OIL CHANGE

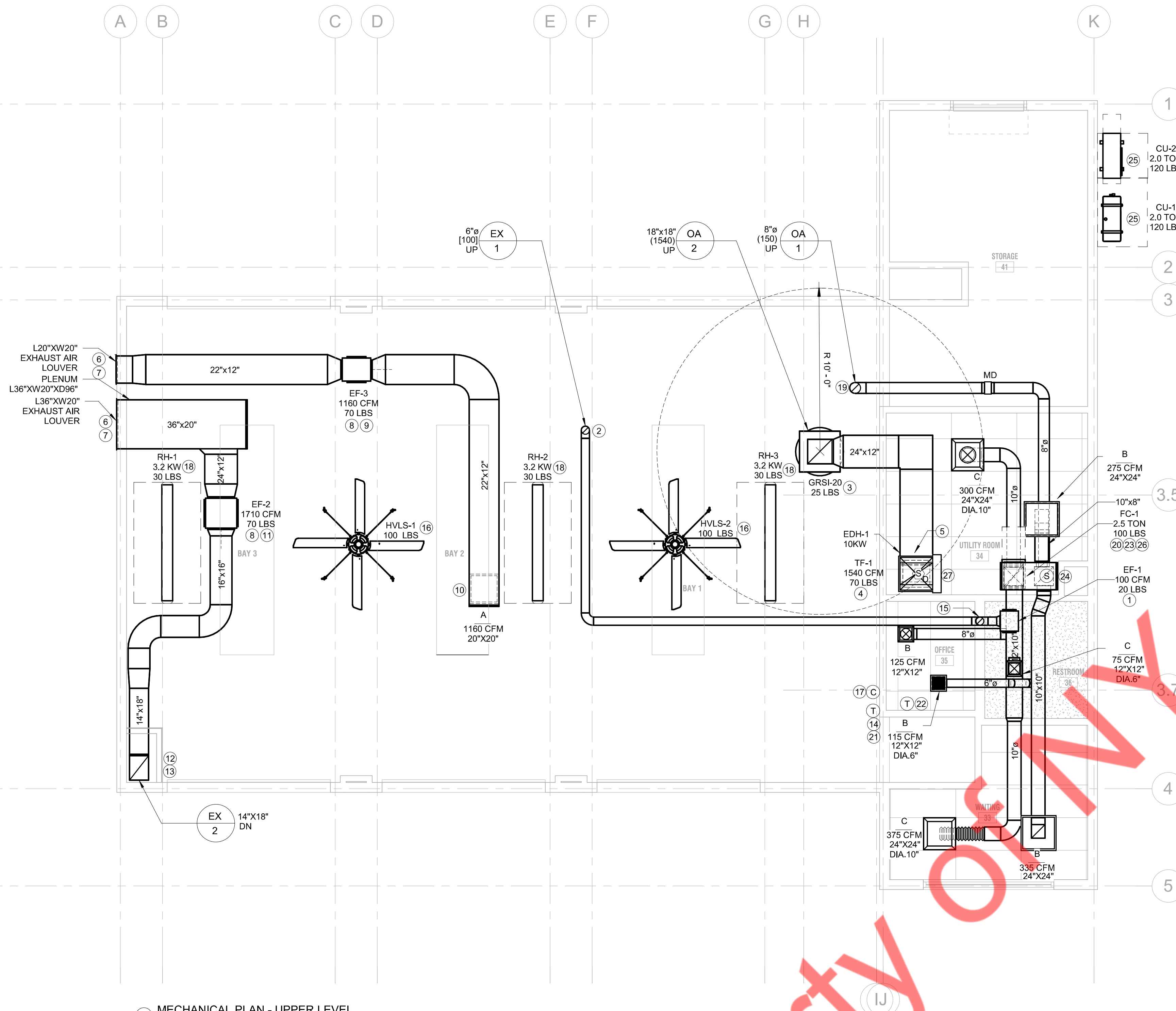
CONTROL NO:

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CONTENTS: MECHANICAL PLAN - LOWER LEVEL

M1.0



1 MECHANICAL PLAN - UPPER LEVEL  
1/4" = 1'-0"

**GENERAL MECHANICAL NOTES ( UPPER LEVEL ) :**

- BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- COORDINATE ALL MECHANICAL WORK WITH ALL OTHER TRADES. NEW DUCTWORK SHOWN ON PLAN IS SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING. DUCTWORK INSIDE THE STRUCTURE IF REQUIRED, PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
- COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED AND VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING, ETC.
- COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- MOUNT DUCTWORK AS HIGH AS POSSIBLE.
- TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO OWNER.
- COORDINATE ALL EQUIPMENT AND SUPPORT LOCATIONS WITH THE STRUCTURAL ENGINEER.
- PROVIDE FIRE OR FIRE/SMOKE DAMPERS WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATING OF THE WALLS.
- FOR SUPPLY AND RETURN AIR DUCTS, PROVIDE ACOUSTICAL LINING WITH R-6 INSULATION RATING UP TO 10' OF DUCT RUN FROM RTU UNIT. PROVIDE R-6 THERMAL INSULATION AFTER 10' OF DUCT RUN FROM RTU UNIT.
- ALL DUCT SIZES SHOWN ON MECHANICAL FLOOR PLANS ARE CLEAR INSIDE. INTERNAL AND EXTERNAL INSULATION THICKNESS OF DUCTS SHALL BE CONSIDERED SEPARATELY.
- PROVIDE OPPOSED BLADE VOLUME DAMPERS AT FACE OF ALL CEILING SUPPLY DIFFUSERS, RETURN, AND EXHAUST GRILLES.
- GRAVITY (NON-MOTORIZED) DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 40 CFM/FT<sup>2</sup> WHERE LESS THAN 24 INCHES IN EITHER DIMENSION. THE RATE OF AIR LEAKAGE SHALL BE DETERMINED AT 1.0 INCH WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA 500D FOR SUCH PURPOSE. THE DAMPERS SHALL BE LABELED BY AN APPROVED AGENCY.
- FLEXIBLE DUCTS SHALL BE AS PER NFPA 90A. FLEXIBLE DUCT LENGTH SHALL NOT EXCEED 5 FEET.
- ALL DUCT ELBOWS SHALL BE MITERED WITH SINGLE THICKNESS TURNING VANES UNLESS INSTRUCTED OTHERWISE ON DRAWINGS. PROVIDE 45 DEGREE ENTRY FITTINGS AT BRANCH DUCT CONNECTIONS TO DUCT MAINS. FLEXIBLE DUCTS SHALL BE INSTALLED TO MAINTAIN FULL CROSS-SECTIONAL FREE AREA. PROVIDE RIGID SHEET METAL ELBOWS OR LINED PLENUM BOXES AT AIR DEVICES WHEN REQUIRED.
- COORDINATE EXACT LOCATION OF ALL AIR DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN.
- SUPPORT CONDENSING UNITS ON THE ROOF WITH VIBRATION ISOLATORS. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER. EXACT LOCATION SHALL ENSURE ADEQUATE CLEARANCE FOR SERVICING AND FOR AIR CIRCULATION.
- ROUTE REFRIGERANT PIPING BETWEEN FAN COIL UNIT & CONDENSING UNIT CONCEALED IN FINISHED SPACES. SEAL ALL WALL PENETRATIONS WEATHERTIGHT. PROVIDE PVC PIPE SLEEVE FOR UNDERGROUND REFRIGERANT PIPING. REFRIGERANT PIPING SIZES SHALL BE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS (BASED ON THE ACTUAL LOCATIONS AND ELEVATIONS OF EQUIPMENT).
- ROUTE DUCTS FROM TOILET EXHAUST FANS TO ROOF CAPS. CONCEAL DUCTWORK. ROOF CAPS SHALL BE FLASHED WEATHERTIGHT. OFFSET EXHAUST DISCHARGE AS REQUIRED ENSURING A MINIMUM 10'-0" CLEARANCE FROM ALL OUTSIDE AIR INTAKES.
- ALL LOW VOLTAGE CONTROL WIRING AND ITS INSTALLATION TO BE BY MECHANICAL CONTRACTOR. INSTALL PER ELECTRICAL SPECIFICATIONS. RUN CONTROL WIRING FROM TEMPERATURE SENSOR TO THE CORRESPONDING THERMOSTAT. MOUNTING HEIGHT OF THERMOSTATS SHALL BE PER ADA REQUIREMENTS.
- COORDINATE WITH PLUMBING FOR ALL CONDENSATE DRAIN LINE LOCATION.
- MECHANICAL CONTRACTOR SHALL REVIEW ALL ELECTRICAL DRAWINGS BEFORE PURCHASING EQUIPMENT TO ENSURE THAT PROPER ELECTRICAL SERVICE IS TO BE PROVIDED FOR ALL NEW EQUIPMENT.

**MECHANICAL UPPER LEVEL KEY NOTES:**

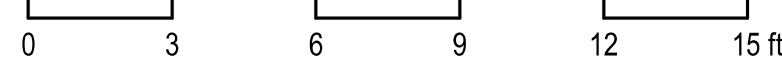
- EF-1 IN CEILING. PROVIDE FLEXIBLE CONNECTION AT FAN. FAN SHALL BE INTERLOCKED WITH RESTROOM LIGHTS. INTERLOCK BY ELECTRICAL CONTRACTOR (E.C.).
- EXTEND DIA. 6" EXHAUST AIR DUCT UP THROUGH ROOF TO VENT CAP. MAINTAIN 10'-0" MINIMUM TO OUTSIDE AIR INTAKE.
- 18"x18" DUCT UP TO ROOFTOP INTAKE VENTILATOR MOUNTED ON ROOF CURB. GREENHECK MODEL GRSI-20 OR EQUAL. INTAKE: 1540 CFM. PROVIDE 18"x18" DUCT TRANSITION TO FRESH AIR DUCT CONNECTION. PROVIDE FLEXIBLE CONNECTION TO FAN. INSTALL TURNING VANES AT ELBOWS. PROVIDE AND INSTALL MOTORIZED DAMPER.
- TRANSFER FAN TF-1. HANG FROM STRUCTURE ABOVE WITH UNISTRUT. THREADED RODS AND VIBRATION ISOLATION PROTECTION. PROVIDE FLEXIBLE CONNECTORS. TF-1 SHALL BE INTERLOCKED WITH EF-2. SEE ELECTRICAL DRAWINGS FOR CONTROL DIAGRAM AND SEQUENCE OF OPERATIONS. INTERLOCK BY ELECTRICAL CONTRACTOR (E.C.).
- 16"x16" SUPPLY AIR DUCT DOWN THROUGH CHASE TO LOWER LEVEL BELOW.
- 16"x16" DUCT UP TO ROOFTOP EXHAUST VENTILATOR MOUNTED ON ROOF CURB. VENTILATOR SHALL BE GREENHECK MODEL GRSR-15 OR EQUAL. MAINTAIN 10'-0" MINIMUM TO OUTSIDE AIR INTAKE. PROVIDE AND INSTALL GRAVITY BACKDRAFT DAMPER.
- 18"x18" DUCT UP TO ROOFTOP EXHAUST VENTILATOR MOUNTED ON ROOF CURB. VENTILATOR SHALL BE GREENHECK MODEL GRSR-18 OR EQUAL. MAINTAIN 10'-0" MINIMUM TO OUTSIDE AIR INTAKE. PROVIDE AND INSTALL GRAVITY BACKDRAFT DAMPER.
- INLINE FAN MOUNTED IN TRUSS SPACE PER MANUFACTURER'S INSTRUCTIONS. PROVIDE FLEXIBLE CONNECTORS AT DUCT CONNECTIONS. INLINE FAN SHALL BE HUNG FROM STRUCTURE WITH UNISTRUT AND THREADED RODS WITH VIBRATION ISOLATORS.
- UPPER LEVEL EXHAUST FAN EF-3 SHALL BE INTERLOCKED WITH LOWER LEVEL EXHAUST FAN EF-2 TO RUN DURING OCCUPIED HOURS. SEE ELECTRICAL DRAWINGS FOR CONTROL DIAGRAM AND SEQUENCE OF OPERATIONS. INTERLOCK BY ELECTRICAL CONTRACTOR (E.C.).
- TERMINATE EXHAUST DUCTWORK WITH 20"x20" (A) EXHAUST GRILLE IN CEILING.
- EF-2 FAN MOTOR SHALL BE INTERLOCKED WITH PIT LIGHTING SWITCH. SEE ELECTRICAL DRAWINGS FOR CONTROL DIAGRAM AND SEQUENCE OF OPERATIONS. INTERLOCK BY ELECTRICAL CONTRACTOR (E.C.).
- 14"x18" EXHAUST DUCT DOWN TO LOWER LEVEL THROUGH CHASE.
- PROVIDE AIRFLOW SWITCH IN PIT EXHAUST DUCTWORK OF EF-2 IN ACCESSIBLE LOCATION. SEE ELECTRICAL DRAWINGS FOR CONTROL DIAGRAM AND SEQUENCE OF OPERATIONS. AIRFLOW SWITCH TO BE CLEVELAND CONTROLS MODEL AFS-222 OR EQUAL.
- THERMOSTAT WIRING IN 1/2" CONDUIT. CONDUIT BY ELECTRICAL CONTRACTOR (E.C.). ALL THERMOSTATS TO BE LOW-VOLTAGE, PROGRAMMABLE STATS MOUNTED AT 48" A.F.F., TYPICAL.
- ROUTE EXHAUST DUCT UP, THEN ROUTE HORIZONTALLY ABOVE SERVICE BAY CEILING.
- HIGH-VOLUME, LOW-SPEED (HVLS) FAN EQUAL TO HUNTER ECO. PROVIDE VFD WITH DIRECT EXACT. 156 RPM, 6.5 AMPS, 208/1/60, 100 LBS. SECURE TO STRUCTURE PER MANUFACTURER'S REQUIREMENTS. PROVIDE 350 SERIES HVLS FAN CONTROLLER TO CONTROL BOTH FANS.
- HVLS FAN CONTROLLER EQUAL TO HUNTER 350 SERIES.
- RADIANT HEATER MOUNT TO ROOF STRUCTURE. ENSURE PROPER CLEARANCE FROM GARAGE DOORS, HVLS FANS, AND COMBUSTIBLE MATERIALS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. RH-1 SHALL BE TILTED TOWARD PIT OPENING. RH-2 AND RH-3 SHALL BE LEVEL.
- 8" OA INTAKE UP TO GOOSENECK ON ROOF WITH BIRD/RODENT SCREEN; 150 CFM. ROUTE TO REAR ROOF SLOPE. REFER TO ARCHITECTURAL ROOF PLAN. PROVIDE MOTORIZED DAMPER AND INTERLOCK WITH FC-1. INTERLOCK BY ELECTRICAL CONTRACTOR (E.C.).
- FLOOR-MOUNT FAN COIL FC-1 ON ANGLE IRON STAND. SEE DETAIL 2/M3.2.
- PROVIDE ONE THERMOSTAT TO CONTROL RH-1, RH-2, AND RH-3.
- LOCATION OF DIGITAL THERMOSTAT CONTROL. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT FOR FC-1. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
- CONNECT 3/4" CONDENSATE DRAIN (CD), SLOPED AT 1/8" PER FOOT, TO BATHROOM SANITARY UNDER LAVATORY OR FLOOR DRAIN WITH AIR GAP FITTING. COORDINATE WITH PLUMBING DRAWINGS.
- PROVIDE NEW REMOTE TEMPERATURE/HUMIDITY SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO THERMOSTAT.
- INSTALL THE CONDENSING UNIT ON SIDEWALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. VERIFY THE FINAL LOCATION WITH THE ARCHITECT AND OWNER. REFER TO DETAIL #5/M3.2.
- INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNITS AS PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE INSULATION TO REFRIGERANT PIPING AS PER 2021 NEW MEXICO ENERGY CODE. COORDINATE REFRIGERANT PIPE ROUTING WITH ARCHITECT/OWNER.
- PROVIDE A DUCT SMOKE DETECTOR DOWNSTREAM OF TF-1. DETECTOR SHALL SHUT DOWN FAN AND CLOSE THE OUTSIDE AIR MOTORIZED DAMPER IN CASE OF SMOKE DETECTION. SMOKE DETECTOR SHALL BE FURNISHED/INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL. SMOKE DETECTOR SHALL MEET UL268A

**SEQUENCE OF OPERATION:**

- THE PIT EXHAUST FAN (EF-2), GARAGE EXHAUST FAN (EF-3), AND TRANSFER FAN (TF-1) SHALL BE INTERLOCKED TO OPERATE SIMULTANEOUSLY DURING OCCUPIED HOURS OR WHEN THE PIT LIGHTING CIRCUIT IS ENERGIZED.
- AN AIRFLOW SWITCH SHALL BE INSTALLED IN THE EF-2 EXHAUST DUCTWORK, LOCATED IN AN ACCESSIBLE LOCATION. THE AIRFLOW SWITCH SHALL BE CLEVELAND CONTROLS MODEL AFS-222 OR APPROVED EQUAL.
- FAN CONTACTORS FOR EF-2, EF-3, AND TF-1 SHALL BE CONTROLLED IN COORDINATION WITH THE AIRFLOW SWITCH. UPON FAILURE OF EF-2 (PIT EXHAUST FAN) TO PRODUCE AIRFLOW, THE SWITCH SHALL INTERRUPT POWER TO THE PIT LIGHTING CIRCUIT.
- LOSS OF AIRFLOW IN THE PIT SHALL RESULT IN AUTOMATIC SHUTDOWN OF PIT LIGHTING SERVING AS A SAFETY SIGNAL TO EVACUATE THE PIT AREA AND EMERGENCY LIGHTS TURNED ON.
- COORDINATE FAN CONTROL AND INTERLOCK LOGIC WITH ELECTRICAL DRAWINGS AND SEQUENCE OF OPERATIONS.

**UPPER LEVEL (GARAGE) EXHAUST CALCULATIONS:**

IMC 403.3 COMPLIANCE:  
TO MEET THE INTERNATIONAL MECHANICAL CODE (IMC) SECTION 403.3 REQUIREMENT FOR REPAIR GARAGES AT A VENTILATION RATE OF 0.75 CFM PER SQUARE FOOT, THE FOLLOWING CALCULATION IS PERFORMED:  
 $1543 \text{ SF} \times 0.75 \text{ CFM/SF} = 1,157.25 \text{ CFM}$  REQUIRED.  
**DESIGN BASIS:**  
THE VENTILATION SYSTEM SHALL BE DESIGNED TO PROVIDE **1,160 CFM** OF EXHAUST AIR FOR THE UPPER LEVEL.



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M1.1

INDOOR DX SPLIT UNIT SCHEDULE											BASIS OF DESIGN: MITSUBISHI ELECTRIC OR EQUAL			
UNIT TAG	MATCHING ODU	REF MODEL NO.	TYPE	CAP. (TON)	RATED COOLING MBH	RATED HEATING MBH	TOTAL CFM (MAX.)	MAX. ESP. (IN. WG)	OUTSIDE AIR (CFM)	MAX. SOUND PRESS. (DBA)	ELECTRICAL DATA PH/VOLT/Hz	DIMENSIONS (WXDXH) (IN.) UNIT	WEIGHT (LBS.)	NOTES
FC-1	CU-1	SUZ-AA24NL	MULTIPOSITION AHU	2.0	22.8	28	700	0.8	135	45	1/208/60	17X22X40	100	1-10
FC-2	CU-2	MSY-GX24NL	HI-WALL UNIT	2.0	22.4	-	765	-	-	53	1/208/60	44X11X13	40	5-12

NOTES:

- FAN COIL UNIT SHALL HAVE SINGLE POINT POWER CONNECTION.
- PROVIDE MERV-8 FILTER ON RETURNS TO UNIT.
- PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH LOCKABLE COVER.
- PROVIDE SPRING MOUNTED VIBRATION ISOLATORS FOR UNITS.
- PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.
- PROVIDE ALL NECESSARY INTERCONNECTING PIPING (& REFRIGERANT ACCESSORIES) & CONTROL WIRING BETWEEN FAN COIL UNIT & MATCHING CONDENSING UNIT.
- REFRIGERANT R-454B OR R-32 SHALL BE PROVIDED.
- CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
- SCHEDULE CAPACITY SHALL BE FOR 3250 FT. ELEVATION.
- INDOOR UNIT POWERED FROM MATCHING OUTDOOR UNIT.
- PROVIDE WIRED CONTROLLER.
- PROVIDE CONDENSATE PUMP.

DX SPLIT OUTDOOR UNIT SCHEDULE													BASIS OF DESIGN: MITSUBISHI ELECTRIC OR EQUAL			
UNIT TAG	TYPE	INDOOR UNITS SERVED	CAP.TR	UNIT DIMENSIONS IN.(WXDXH)	WEIGHT (LBS)	PIPING DIMENSION		ELECTRICAL			SOUND LEVEL (DBA)	EER2	SEER2	HSPF2	MODEL NO.	NOTES
						LIQUID HI PRESSURE	GAS LOW PRESSURE	(V/Hz/Ph)	MCA	MOP						
CU-1	HEAT PUMP	FC-1	2.0	34X13X35	120	1/4"	5/8"	208/60/1	24	40	55	11.8	19.5	9.4	SUZ-AA24NL	1-8
CU-2	COOLING ONLY	FC-2	2.0	34X13X35	120	1/4"	5/8"	208/60/1	23	40	55	13	21.5	-	MUY-GX24NL	1-8

NOTES:

- UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
- PROVIDE PROVIDE ALL FEATURES STANDARD TO THE UNIT SCHEDULED. FAN RELAY, LIQUID LINE FILTER DRIER, ANTI-RECYCLING CONTROL (TO PREVENT RAPID COMPRESSOR RECYCLING) & START RELAY/CAPACITOR KIT (FOR EASY STARTING).
- PROVIDE LOW AMBIENT CONTROL TO 30°F.
- CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
- PROVIDE COMPRESSOR THERMAL PROTECTION , COMPRESSOR OVERCURRENT DETECTION AND FAN MOTOR OVERHEATING/VOLTAGE PROTECTION.
- MOUNT ON DOUBLE DEFLECTION RIS ISOLATORS EQUAL OF MASON ND.
- PROVIDE LOCKING ACCESS PORT CAPS.
- REFRIGERANT R-454B OR R-32 SHALL BE PROVIDED.

FAN SCHEDULE													
TAG	MANUFACTURER	MODEL	AREA SERVED	TYPE	FAN PERFORMANCE			MOTOR DATA				WEIGHT LBS	NOTES
					CFM	ESP	FAN RPM	MCA	MOP	VOLTS	PHASE		
EF-1	GREENHECK OR EQUAL	SP-LP0810W	TOILET ROOM	CEILING MOUNT	100	0.5	895	0.4	15	115	1	20	1,3,4,5,9
EF-2	GREENHECK OR EQUAL	SQ-140-VG	PIT LEVEL	INLINE	1710	0.5	1180	12.5	20	115	1	70	2,6,7,8,9
EF-3	GREENHECK OR EQUAL	SQ-100-VG	SERVICE LEVEL	INLINE	1160	0.5	1684	4.8	15	115	1	70	2,6,7,8,9
TF-1	GREENHECK OR EQUAL	SQ-120-VG	PIT LEVEL	INLINE	1540	0.5	1626	8.2	15	115	1	70	2,6,7,8,9

NOTES:

- BACKDRAFT DAMPER
- FAN SPEED CONTROLLER
- TIME DELAY SWITCH
- TERMINATE WITH ROOF CAP
- RC-75 SET(4)-ISOLATORS
- EC MOTOR
- INLET & OUTLET FLEXIBLE CONNECTIONS
- HANGING SPRING ISOLATORS
- ALL FANS SHALL HAVE DISCONNECT SWITCH

VENTILATION CALCULATION AS PER UMC 2021 & NFPA30A												
ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000 SQ.FT. AS PER UMC 2021	NUMBER OF PEOPLE AS PER UMC 2021	FINAL OCCUPANCY	MIN OUTSIDE AIR AS PER UMC 2021		REQ. OA (CFM)	EFFECTIVENESS 80%	PROVIDED OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT OR /FIXT.)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
					CFM/PEOPLE	CFM/SQ.FT						
WAITING	95	10	1	2	5	0.06	36	45	135	-	-	-
OFFICE	36	5	1	1	5	0.06	32	40	-	-	-	-
UTILITY	135	2	1	0	5	0.06	38	48	-	-	-	-
RESTROOM	44	0	0	0	0	0	0	0	-	70	70	100
GARAGE UPPERLEVEL +STORAGE	1543	0	0	0	0	0	0	0	-	0.75	1157	1160
PIT-LOWER LEVEL	1710	0	0	0	0	0	0	0	1540	1	1710	1710
<b>TOTAL</b>	<b>3563</b>	-	-	-	-	-	-	<b>106</b>	<b>132</b>	<b>1675</b>	-	<b>2970</b>

AIR TERMINAL SCHEDULE						
TAG	MANUFACTURER	MODEL REFERENCE	SERVICE	PATTERN	MATERIAL/FINISH	NOTES
A	TITUS	55FL	EXHAUST	SINGLE DEFLECTION	ALUMINIUM/ WHITE	1,2,3
B		50F	RETURN	EGGCRATE	ALUMINIUM/ WHITE	1,3
C		OMNI-AA	SUPPLY	4-WAY	ALUMINIUM/ WHITE	1,2,3,4
D		272FL	SUPPLY	DOUBLE DEFLECTION	ALUMINIUM/ WHITE	1,2,3

NOTES:

- ALL DIFFUSERS : CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL CEILING PLANS PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION. REFER ARCHITECTURAL DRAWINGS FOR CEILING TYPE.
- PROVIDE OPPOSED BLADE DAMPER.
- COORDINATE FINAL COLOR/FINISH WITH ARCHITECT.
- PROVIDE SQUARE TO ROUND ADAPTORS WHEN REQUIRED.
- SUPPLY DUCTWORK SIZE AND AIR OUTLET NECK SIZE SHALL MATCH.

ELECTRIC DUCT HEATER SCHEDULE								
TAG	MAKE	MODEL	AREA SERVED	KW	STAGES	DUCT SIZE	V/PH/Hz	NOTES
EDH-1	INDEECO	QUA	PIT	10	2	24"X24"	208/3/60	1-3

NOTES / ACCESSORIES:

- PROVIDE MANUFACTURER RECOMMENDED ACCESSORIES.
- COORDINATE WITH ELECTRICAL CONTRACTOR FOR EXACT POWER REQUIREMENT.
- PROVIDE THERMOSTAT & CONTROL OPTION G.
- FURNISH UNIT WITH DISCHARGE AIR TEMPERATURE CONTROLLER AND OUTDOOR THERMOSTAT. SET LEAVING AIR TEMPERATURE THERMOSTAT AT 50°F. SET OUTDOOR THERMOSTAT TO TURN OFF HEATER WHEN AMBIENT TEMPERATURE IS ABOVE 50°F.
- PROVIDE DUCT HEATERS WITH 24V CONTROL TRANSFORMER, AIRFLOW SWITCH, THERMAL CUTOUPS, DISCONNECT SWITCH.

RADIANT HEATER SCHEDULE									
TAG	MAKE	MODEL	SOURCE	KW	V/PH/Hz	AMPS	MAX. WEIGHT	NOTES	
RH-1,RH-2,RH-3	SRP OR EQUAL	EW32L24	ELECTRIC	3.2	240/1/60	13.3	30	1-4	

NOTES / ACCESSORIES:

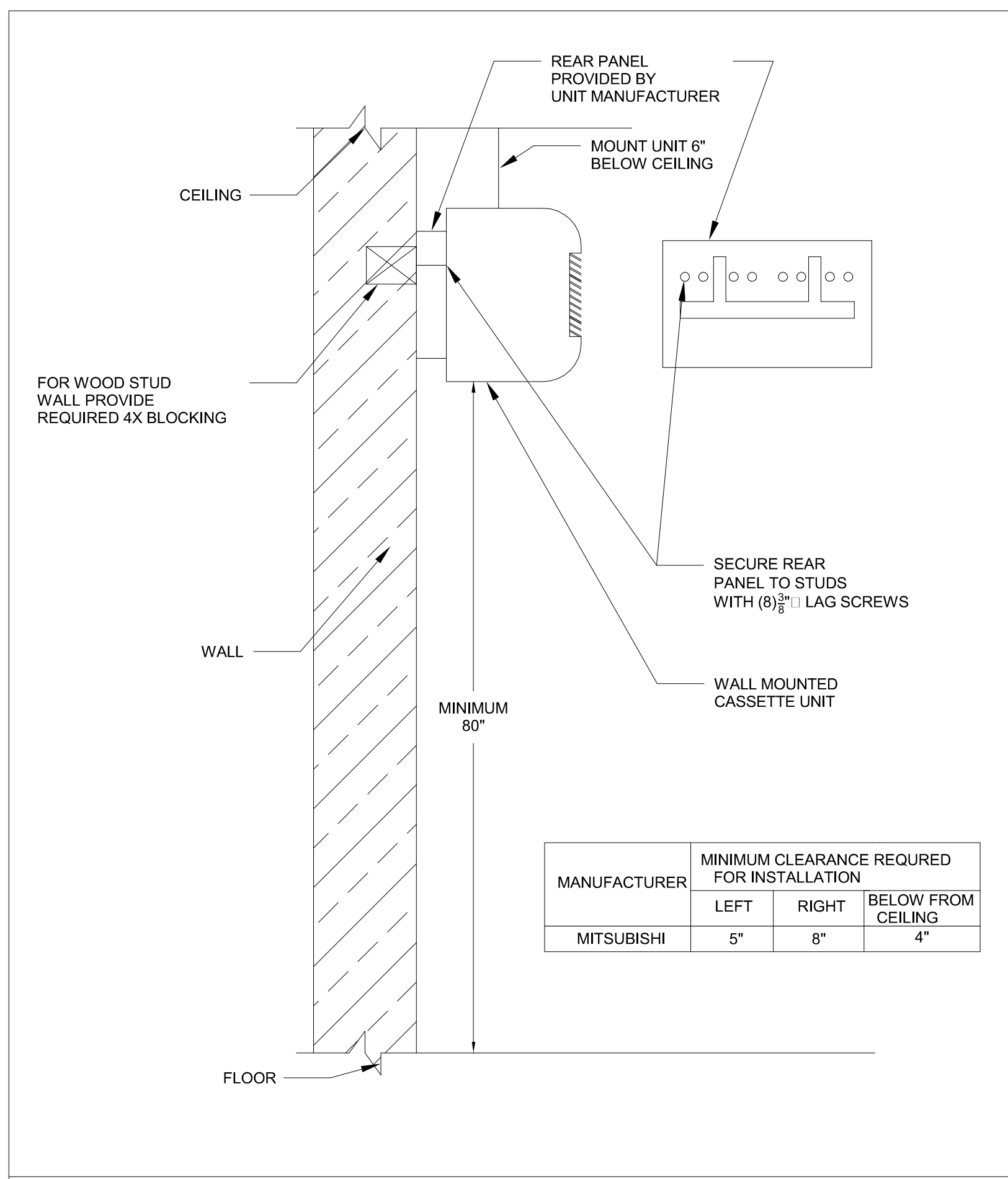
- UNIT HEATER PROVIDED SHALL BE UL LISTED.
- PROVIDE CEILING MOUNT BRACKET.
- INSTALL UNIT HEATERS AS PER MANUFACTURER'S INSTRUCTIONS.
- UNIT HEATERS TO BE CONTROLLED BY ONE THERMOSTAT, COORDINATE WITH ELECTRICAL.

VALVOLINE INSTANT OIL CHANGE

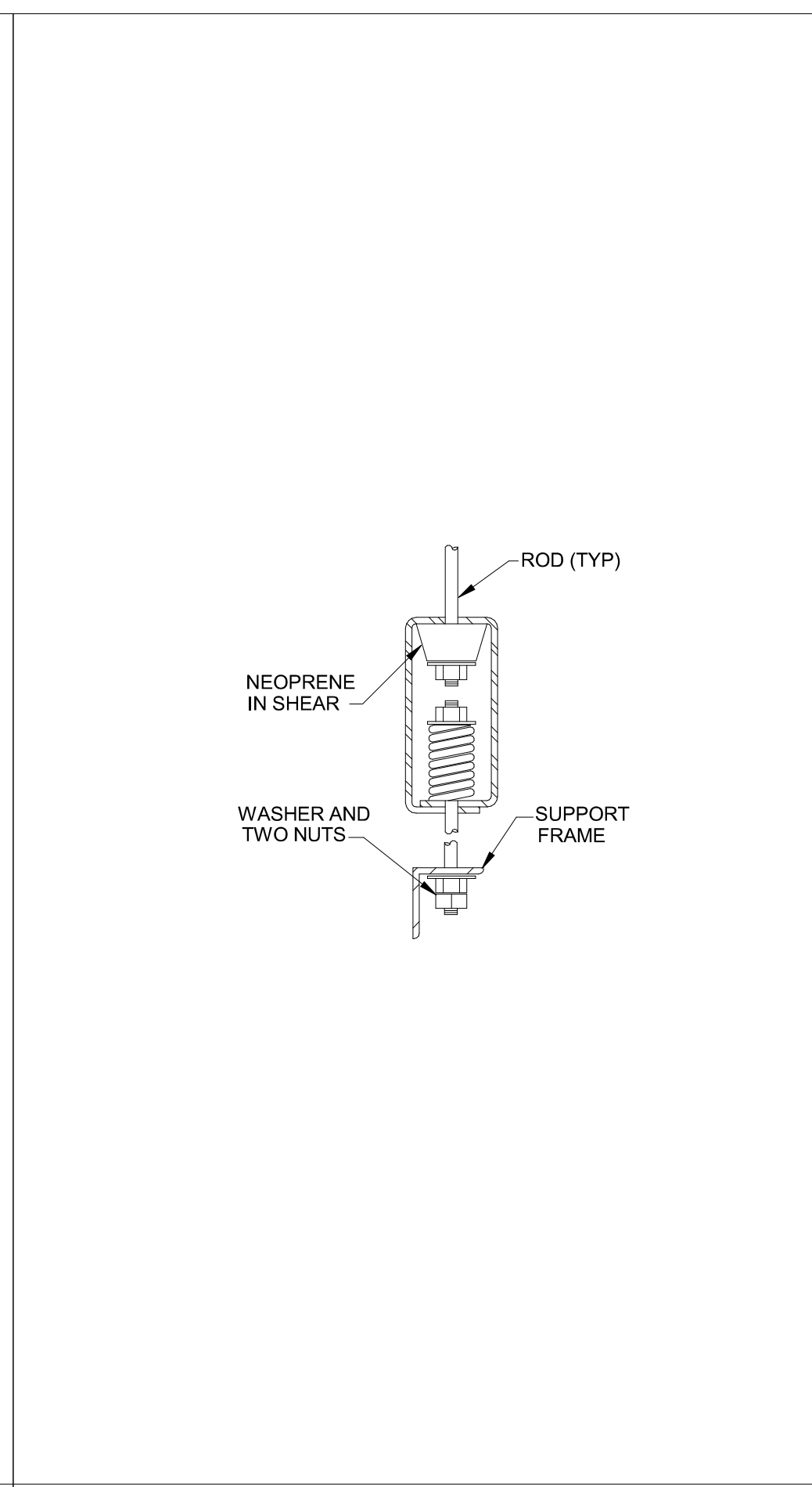
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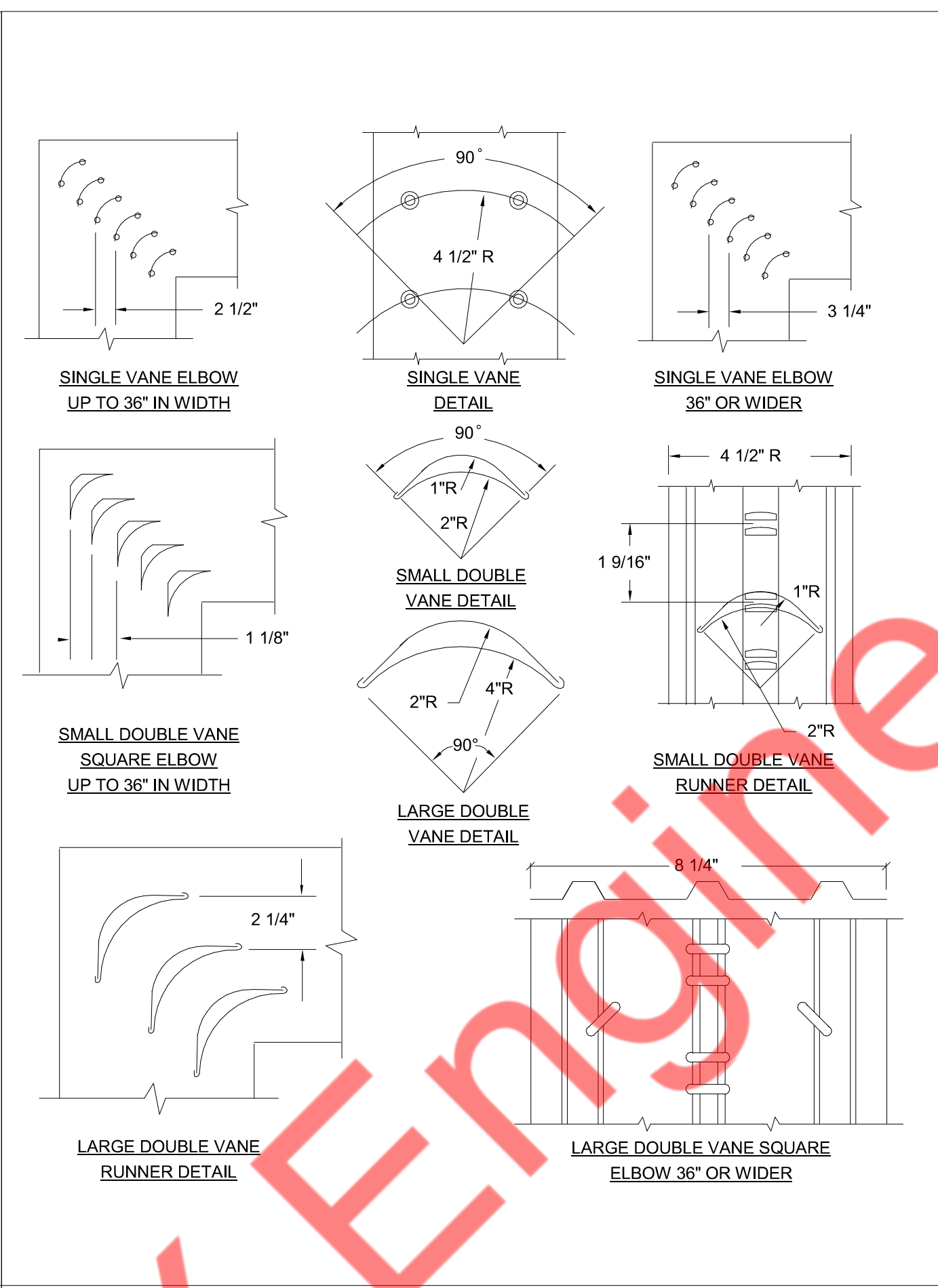
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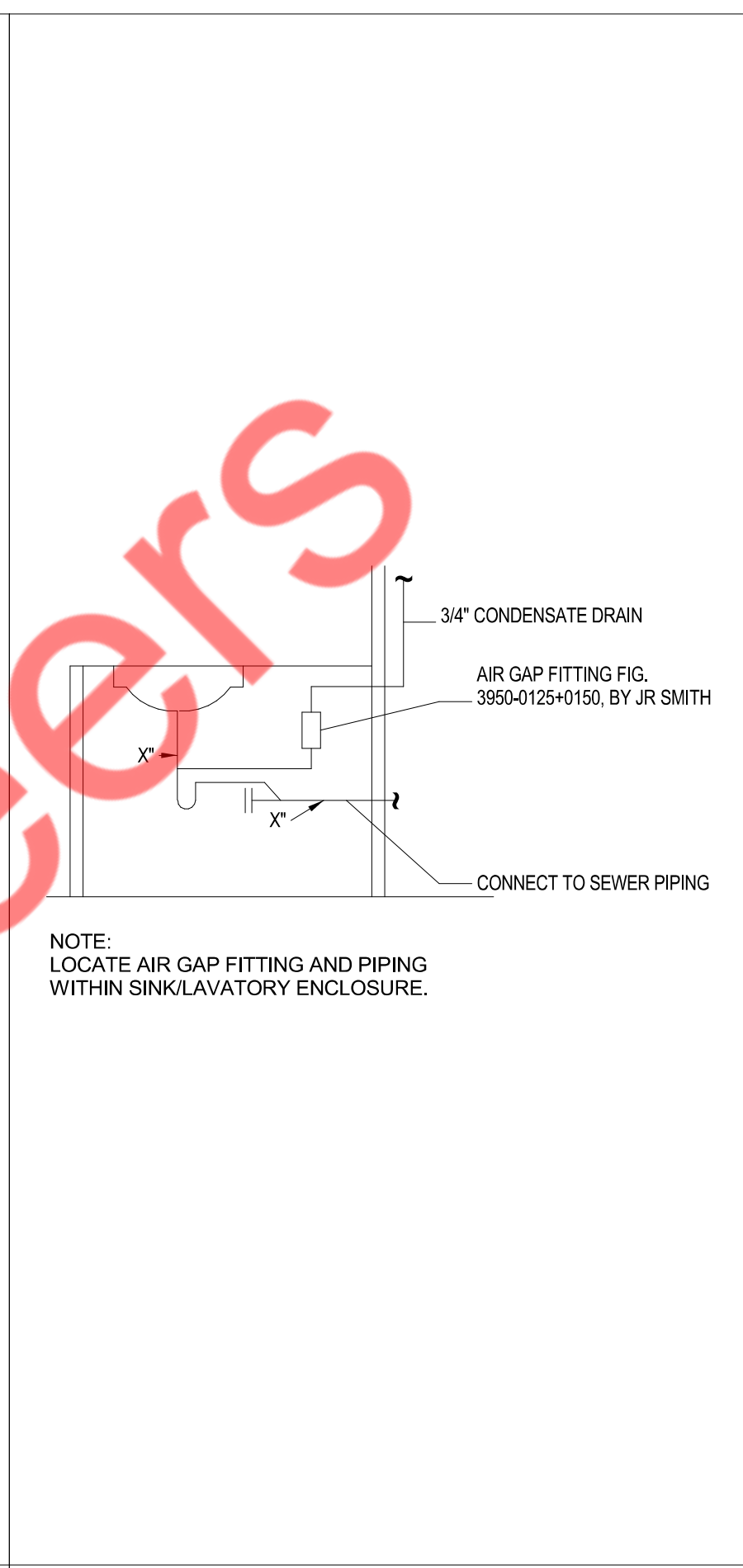
1 WALL MOUNTED UNIT DETAIL  
M3.0 N.T.S



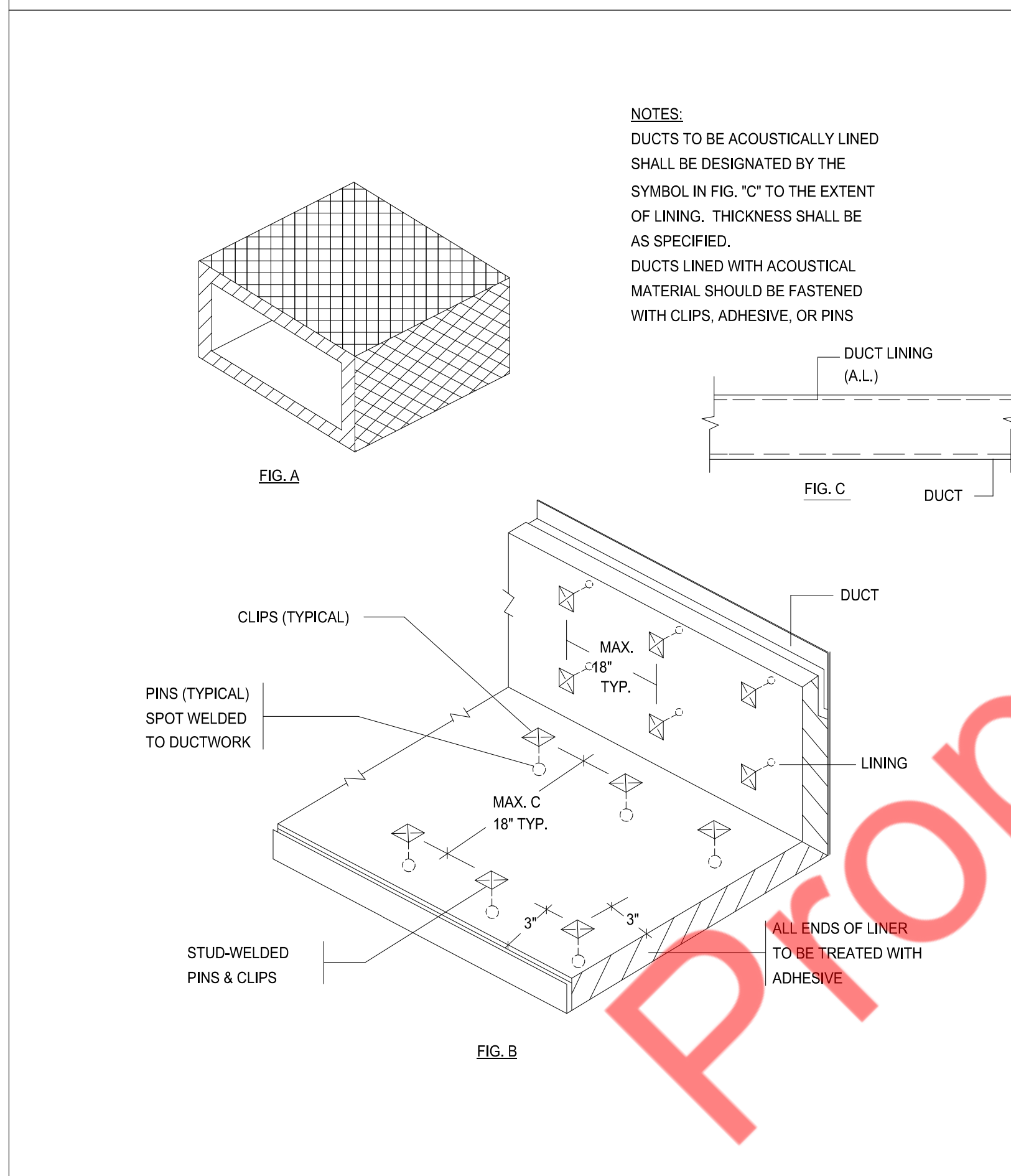
2 VIBRATION ISOLATOR DETAIL  
M3.0 N.T.S



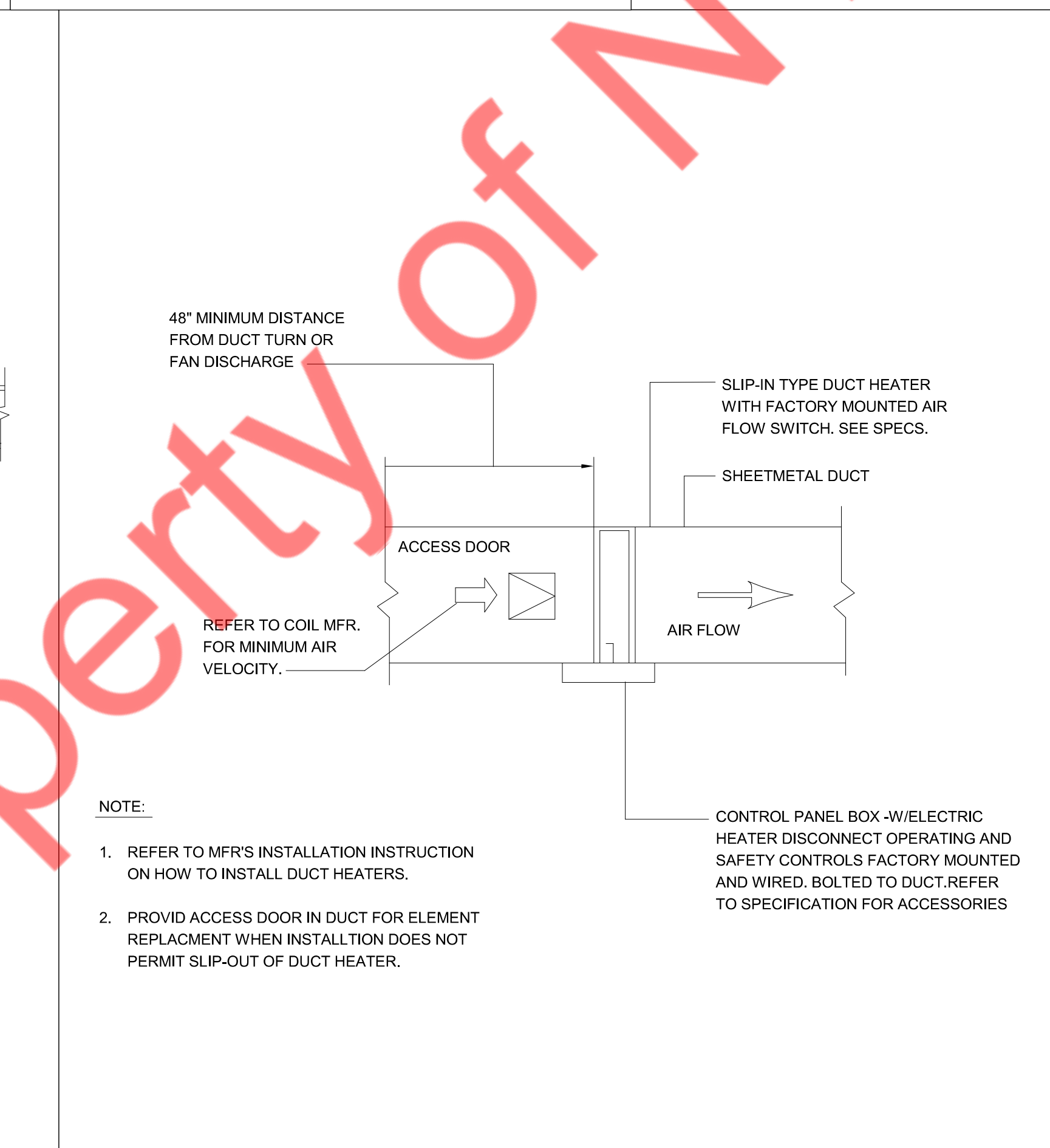
3 LOW VELOCITY DUCTWORK ELBOWS  
M3.0 N.T.S



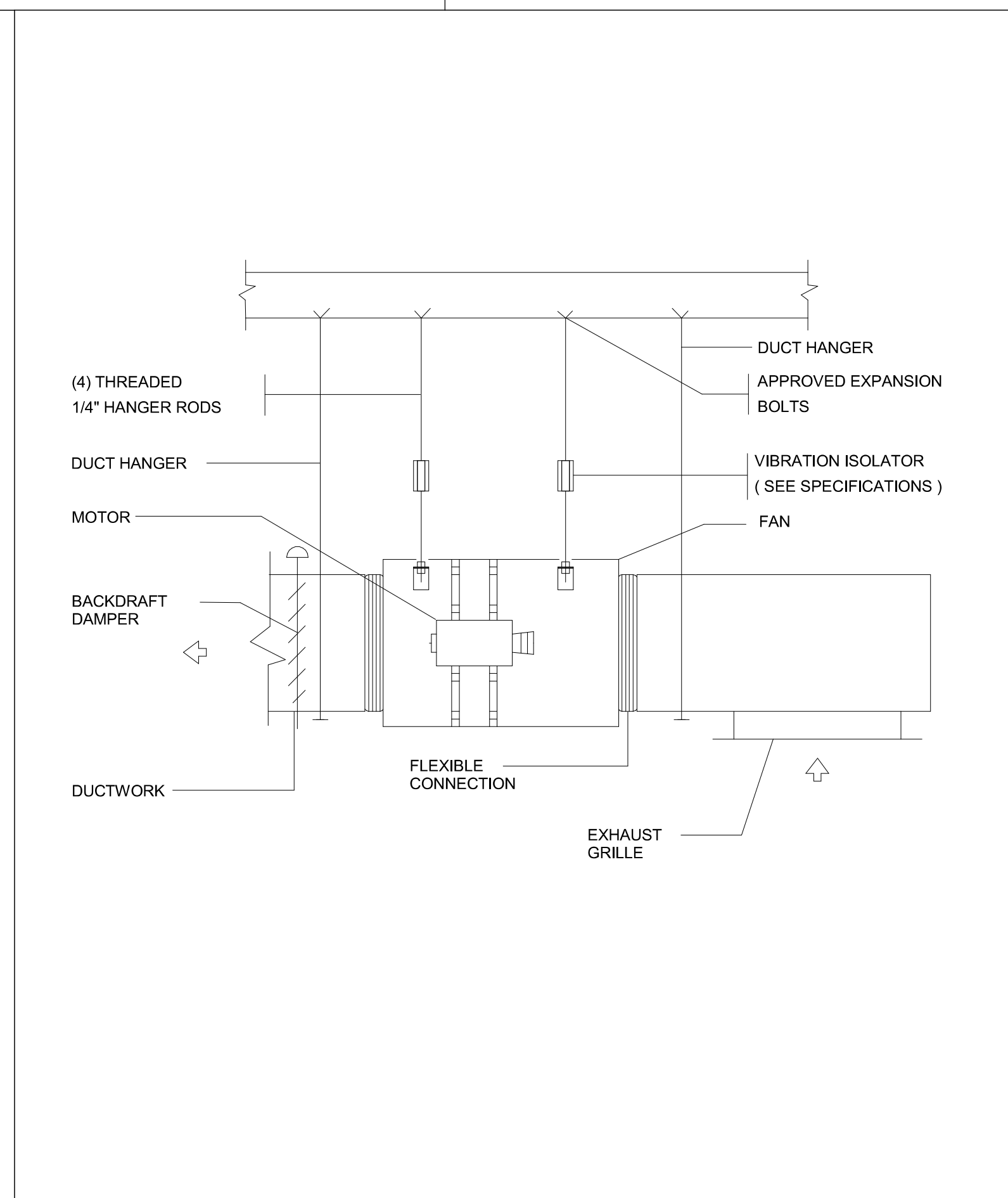
4 AIR GAP FITTING DETAIL  
M3.0 N.T.S



5 ACOUSTICAL TREATMENT DUCT LINING  
M3.0 N.T.S



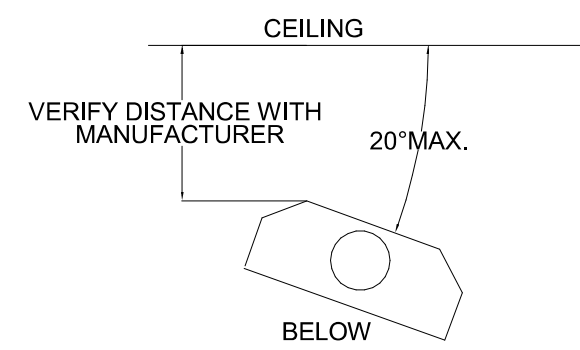
6 ELECTRIC DUCT HEATER  
M3.0 N.T.S



7 INLINE FAN HANGING SUPPORT DETAIL  
M3.0 N.T.S

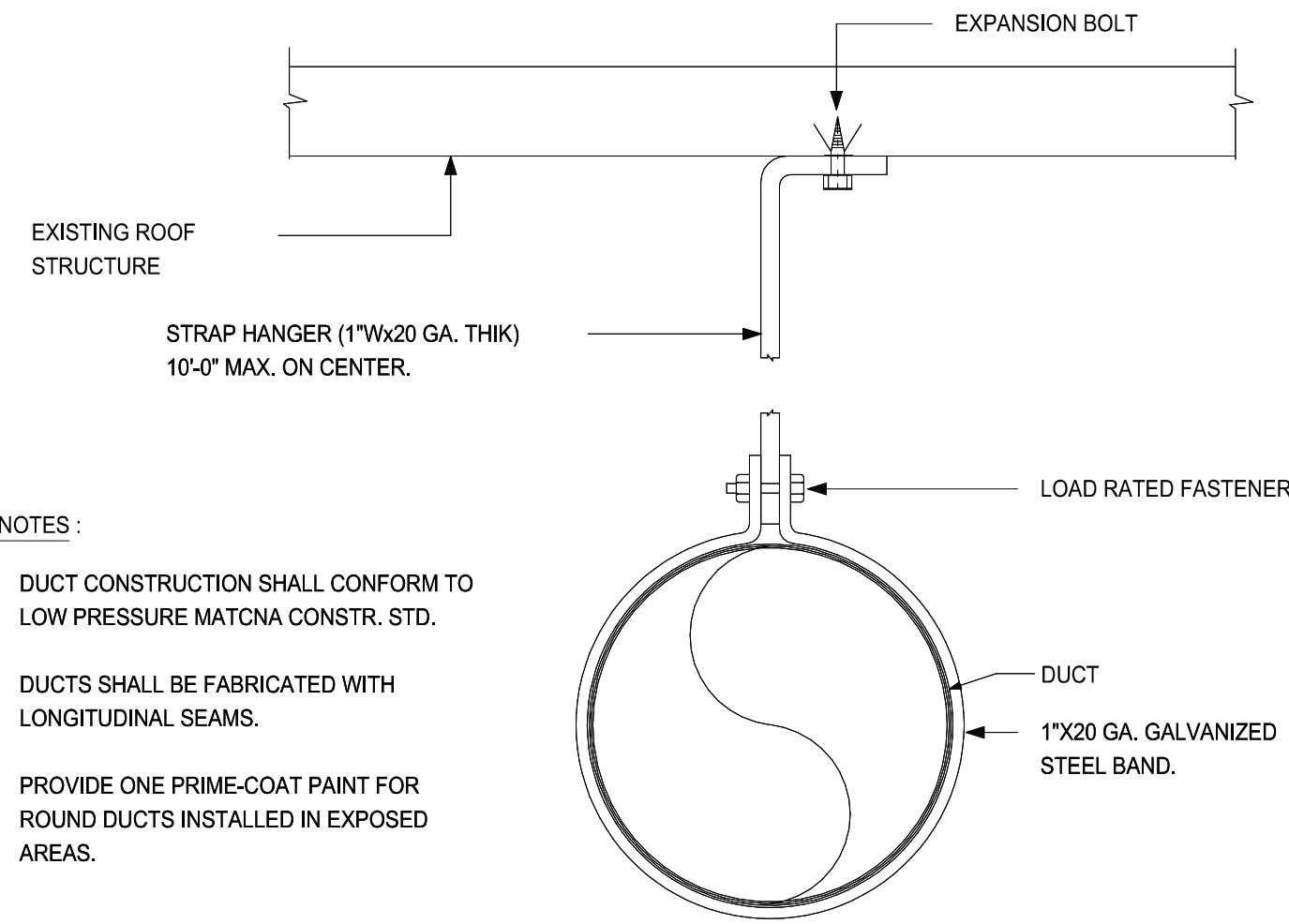
VALVOLINE INSTANT OIL CHANGE

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CONTENTS: MECHANICAL DETAILS (1 OF 3)



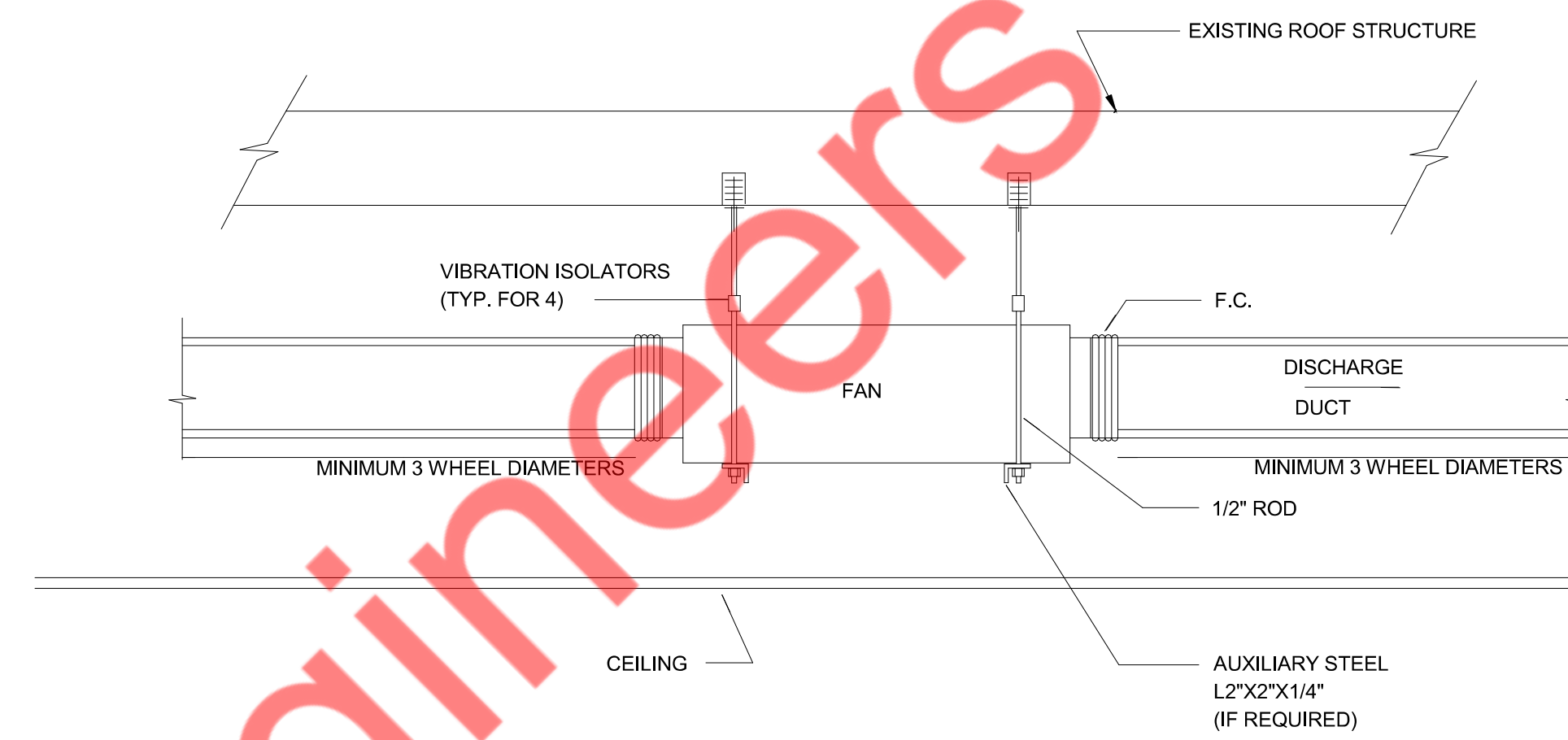
- NOTES:
1. RADIANT HEATERS RH-2 AND RH-3 SHALL BE MOUNTED LEVEL. RH-1 SHALL BE MOUNTED TO TILT TOWARDS THE SERVICE BAY.
  2. HEATERS SHALL BE MOUNTED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
  3. HEATERS SHALL BE CYCLED FROM THERMOSTAT AS SHOWN ON PLAN.

1 RADIANT HEATER DETAIL  
M3.1 N.T.S



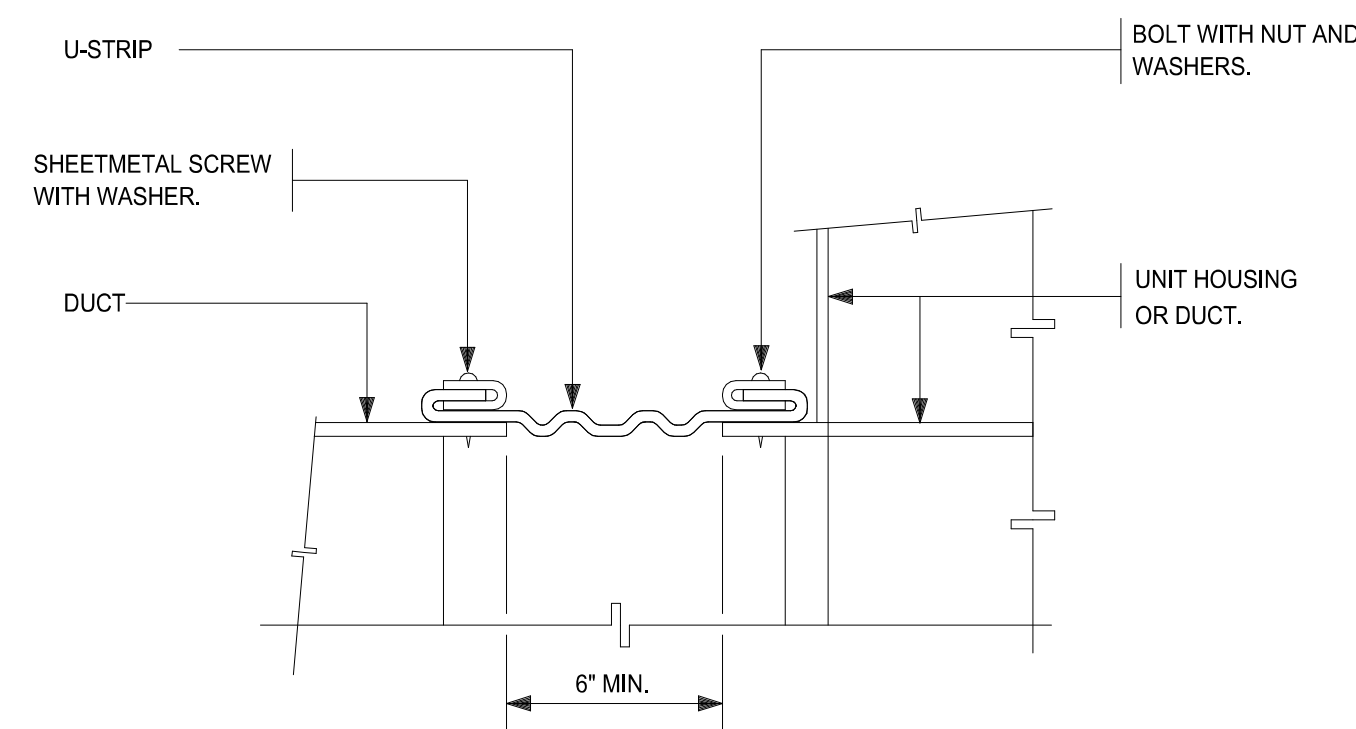
- NOTES:
1. DUCT CONSTRUCTION SHALL CONFORM TO LOW PRESSURE MATCNA CONSTR. STD.
  2. DUCTS SHALL BE FABRICATED WITH LONGITUDINAL SEAMS.
  3. PROVIDE ONE PRIME-COAT PAINT FOR ROUND DUCTS INSTALLED IN EXPOSED AREAS.

2 METHOD OF HANGING DUCTWORK  
M3.1 N.T.S

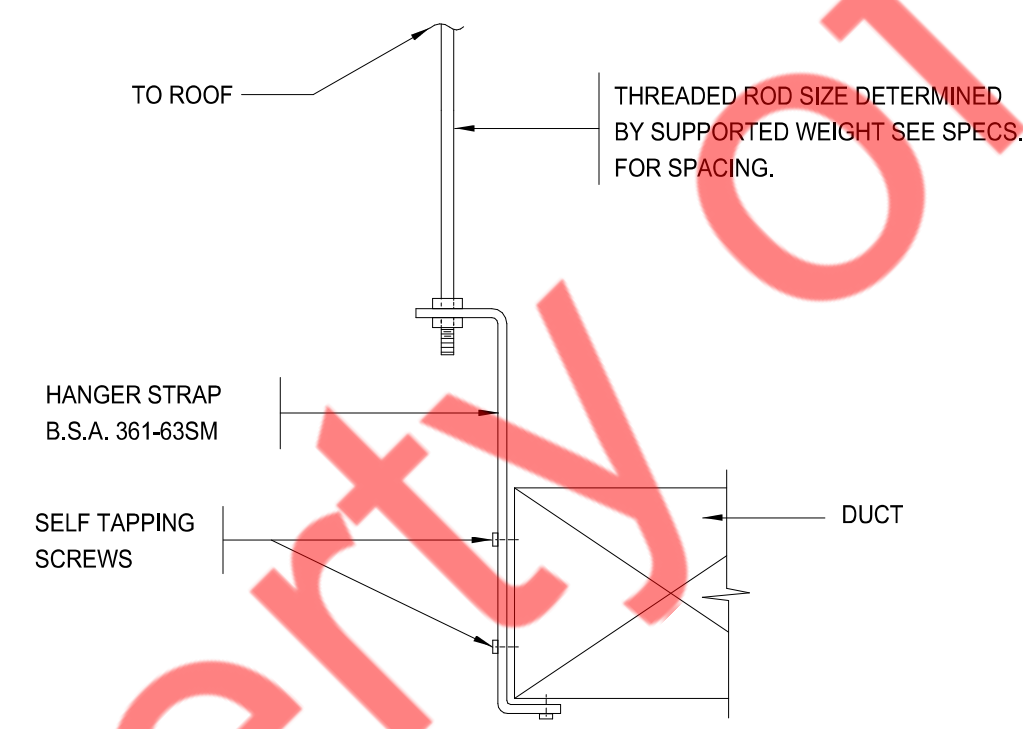


- NOTE:
1. DUCT LENGTH TO BE MINIMUM THREE WHEEL DIAMETER ON DISCHARGE AND INLET.

3 INLINE FAN SUPPORT DETAIL  
M3.1 N.T.S

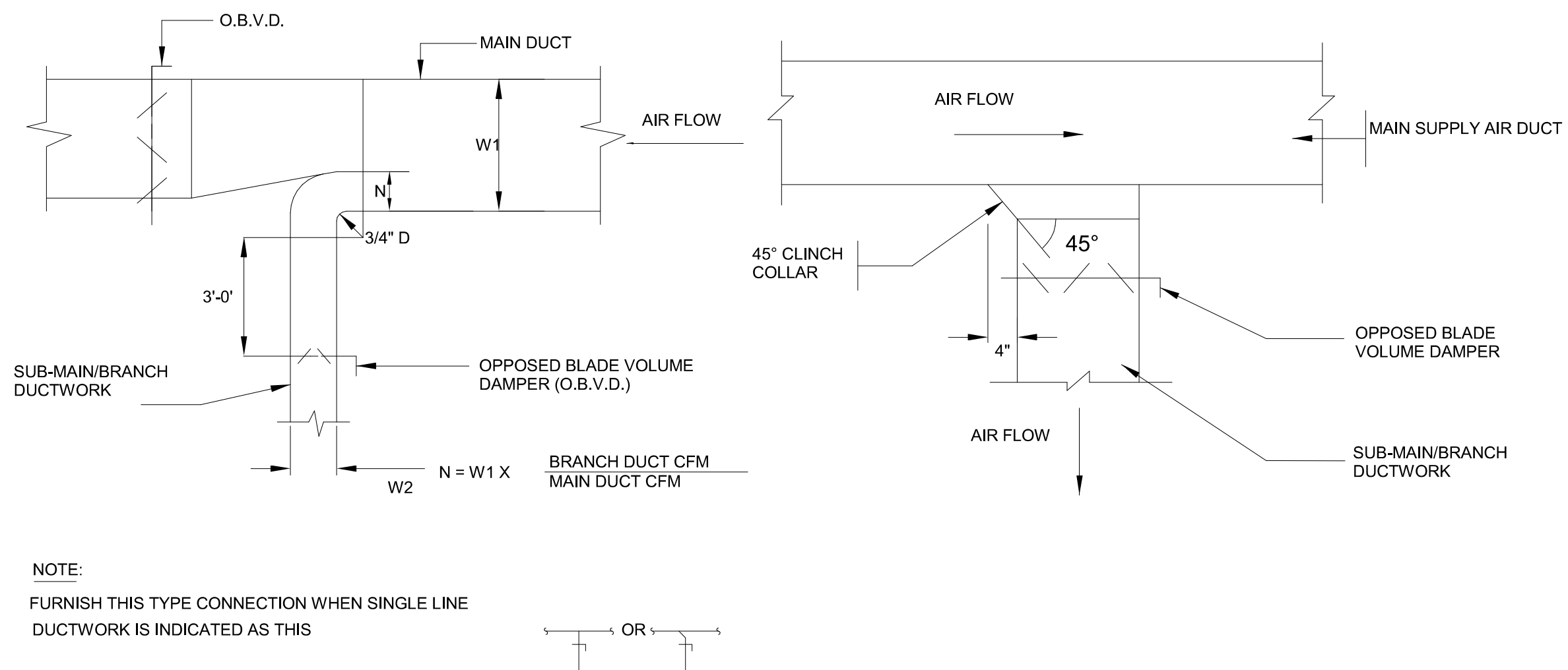


4 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)  
M3.1 N.T.S



- NOTES:
1. DUCTS SHALL NOT BE HUNG FROM OR SUPPORTED BY HUNG CEILING.
  2. FOR DUCTS NOT EXCEEDING 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1/16\".
  3. FOR DUCTS LARGER THAN 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1\" BY 1/8\".
  4. FOR ALL DUCTS, HANGERS SHALL BE TURNED UNDER AND FASTENED TO THE BOTTOM OF DUCT AS SHOWN ABOVE.
  5. WHERE CROSS-SECTIONAL AREA OF DUCT EXCEEDS 8 SQ. FT., HANGERS SHALL BE NOT MORE THAN 4 FT. ON CENTER.

5 METHOD OF HANGING DUCTWORK  
M3.1 N.T.S



- NOTE:
- FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

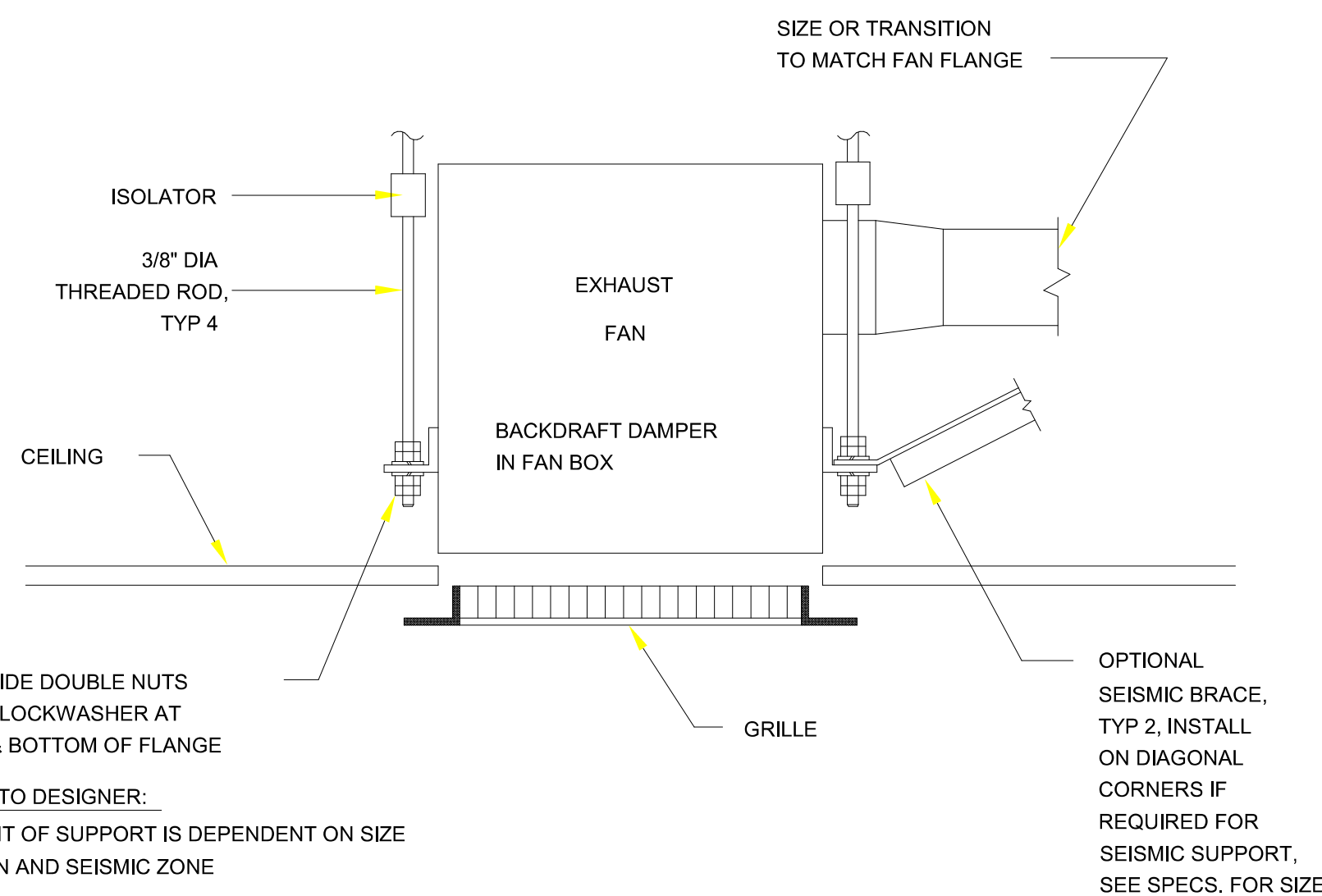
6 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION  
M3.1 N.T.S

VALVOLINE INSTANT OIL CHANGE

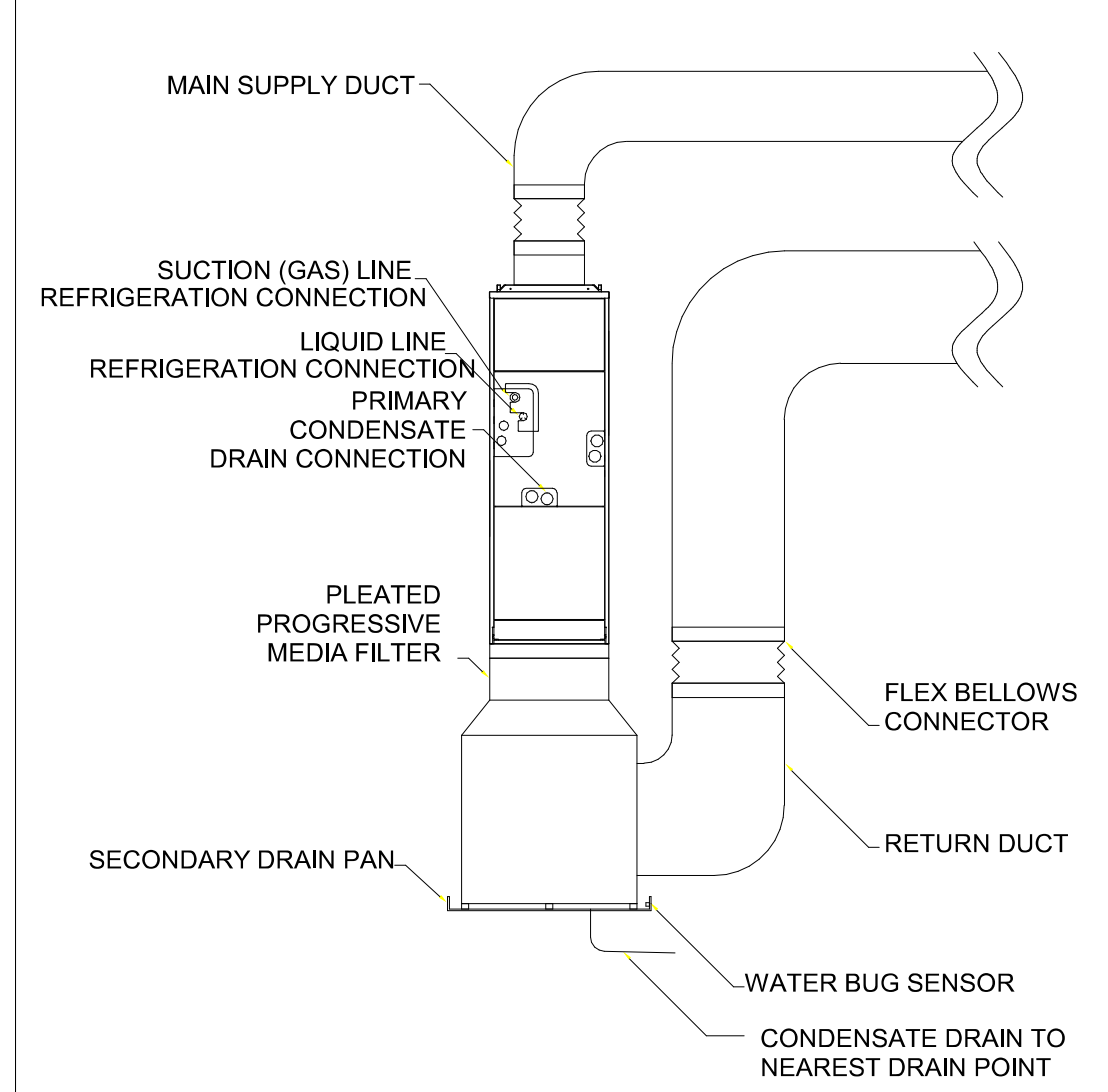
CONTROL NO:

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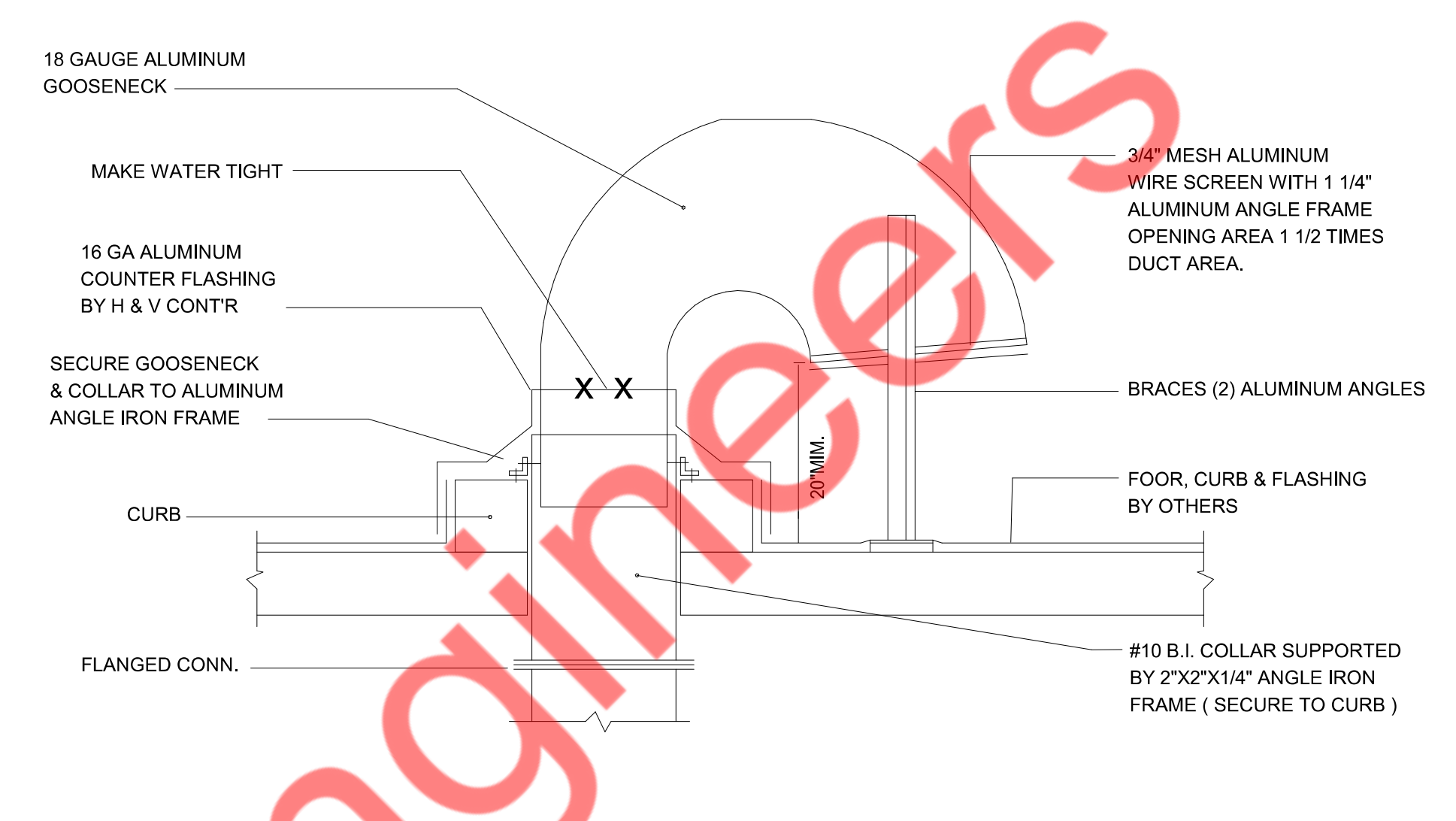
M3.1



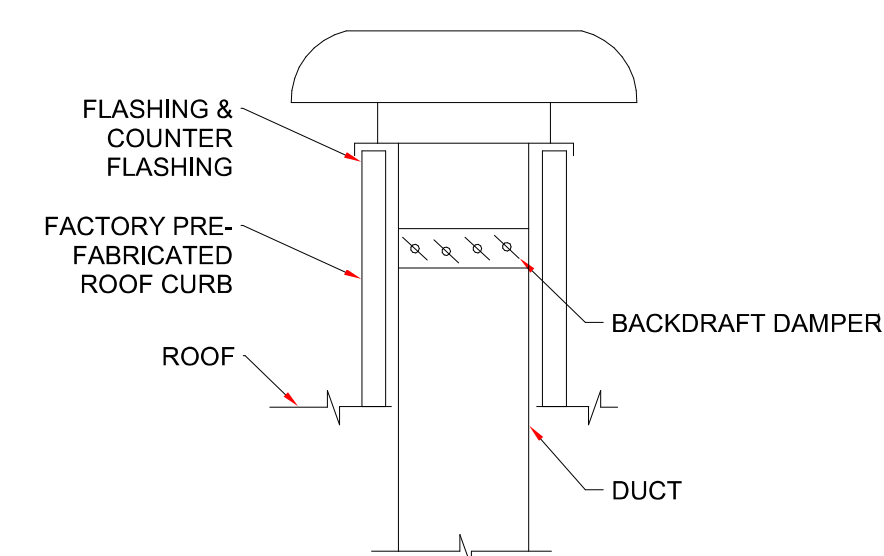
1 CEILING EXHAUST FAN  
M3.2 N.T.S



2 VERTICAL AHU MOUNT DETAIL  
M3.2 N.T.S

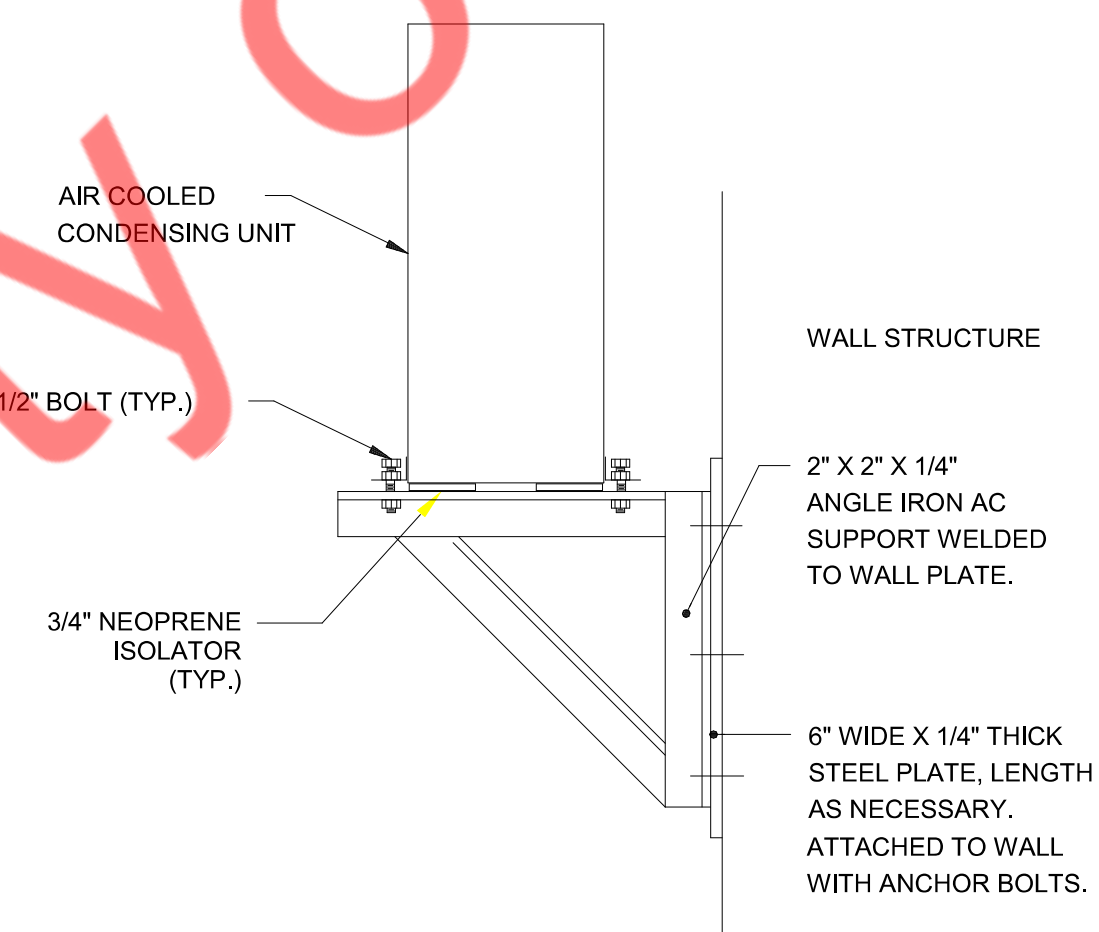


3 TYPICAL DETAIL OF ROOF GOOSENECK  
M3.2 N.T.S



- NOTES:
1. SECURE TO ROOF CURB USING LAG BOLTS, MINIMUM TWO PER SIDE, MAXIMUM 8" ON CENTER.
  2. WHERE THERE IS INSULATION ABOVE ROOF, USE ROOF CURB DESIGNED TO ACCEPT INSULATION. MOUNT CURB ON ROOF SURFACE, NOT ON TOP OF INSULATION.
  3. FOR PITCHED ROOFS, THE PRE-FABRICATED ROOF CURB SHALL BE DESIGNED SO THAT THE HOOD IS MOUNTED LEVEL.

4 ROOF MOUNTED WEATHERHOOD DETAIL  
M3.2 N.T.S



5 AIR COOLED CONDENSING UNIT SUPPORT DETAIL  
M3.2 N.T.S

VALVOLINE INSTANT OIL CHANGE

CONTROL NO:  
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ELECTRICAL SYMBOLS LIST

LIGHTING	
	LUMINAIRE TYPE : INDICATE BY UPPERCASE LETTER SEE LIGHTING FIXTURE SCHEDULE. CIRCUIT NUMBER : INDICATED BY NUMBER SWITCHING INDICATED BY LOWER CASE LETTERS. DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.
	WALL MOUNTED EXTERIOR LIGHT FIXTURE
	8' LONG STRIP LIGHT FIXTURE
	4' LONG FIXTURE
	1x4' LIGHT FIXTURE
	2x4' LIGHT FIXTURE
	SURFACE RECESSED, LIGHT FIXTURE
	CEILING/WALL MOUNTED EXIT SIGN WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S).
	EMERGENCY BATTERY PACK WITH BUG-EYE LAMPS
SWITCHES AND CONTROLS	
	THREE WAY DIMMER SWITCH
	CEILING MOUNTED OCCUPANCY SENSOR: PROGRAM FOR AUTO OFF AFTER 20 MINUTES OF VACANCY.
	DUAL TECHNOLOGY OCCUPANCY SENSING DIMMER (ON/OFF) PROGRAMMED FOR AUTO ON/AUTO OFF AFTER 20 MINUTES OF VACANCY.
	SINGLE POLE SWITCH WITH MANUAL DIMMING, MOUNT @ 42" AFF TO BOTTON OF BOX, UNO
	EXTERIOR PHOTO CELL
WIRING SYSTEMS	
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER, IT SHALL CONSISTS OF 1 POLE IS 1 HOT WIRE, 1 NEUTRAL AND 1 GROUND IN 3/4"C, UNLESS OTHERWISE NOTED.
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER, IT SHALL CONSISTS OF 2 POLE IS 2 HOT WIRES, 1 NEUTRAL AND 1GROUND IN 3/4"C, UNLESS OTHERWISE NOTED.
	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER, IT SHALL CONSISTS OF 3 PHASE IS 3 HOT WIRES, 1 NEUTRAL AND 1 GROUND IN 3/4"C, UNLESS OTHERWISE NOTED.
	CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.
	CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.
	CONDUIT AND WIRE TO BUILDING GROUND.
	EXISTING
	NEW
ELECTRICAL DRAWING LIST	
E0.1	ELECTRICAL SYMBOLS AND GENERAL NOTES
E0.2	ELECTRICAL NOTES AND ENERGY ANALYSIS
E1.0	LIGHTING PLAN - LOWER LEVEL
E1.1	LIGHTING PLAN - UPPER LEVEL
E1.2	LIGHTING FIXTURE CUT SHEET (1 OF 2)
E1.3	LIGHTING FIXTURE CUT SHEET (2 OF 2)
E2.0	POWER PLAN - LOWER LEVEL
E2.1	POWER PLAN - UPPER LEVEL
E3.0	ELECTRICAL RISER AND SCHEDULES
E4.0	ELECTRICAL DETAILS

POWER AND TELECOMMUNICATION	
	JUNCTION BOX SIZE AND INSTALL PER NEC 314.
	DEDICATED GFCI RECEPTACLE
	WALL MOUNTED, 125V, 15 OR 20 AMP DUPLEX RECEPTACLE GE 5252 OR EQUAL, MOUNT @ 18" AFF, UNO.
	DOUBLE DUPLEX RECEPTACLE.
	42" AFF OR ABOVE COUNTER, OR UNO.
	42" AFF OR ABOVE COUNTER, OR UNO.
	FAN CONTROLLER
	THERMOSTAT, PROVIDE 3/4" CONDUIT TO ASSOCIATED MECHANICAL PANEL
	WALL MOUNTED TELE/DATA OUTLET, MOUNT @18" AFF UNO PROVIDE SINGLE GANG 4" SQUARE BOX WITH QUAD MUD RING, AND PLASTIC BUSHING, RUN 1-1/4" STUB WITH PULL STRING TO ACCESSIBLE CEILING SPACE.
	CIRCUIT BREAKER
	GROUND
	AUDIO VISUAL NOTIFICATION DEVICE
MOTORS AND CONTROLS	
	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
	DISCONNECT SWITCH
	SERVICE DISCONNECT (FUSED) SWITCH
	CT METER

ANNOTATION	
	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
	KEYED NOTE REFERENCE

POWER DISTRIBUTION	
	BRANCH PANELBOARD, SIZE AS NOTED.
	MAIN DISTRIBUTION PANELBOARD, SIZE AS NOTED.

ELECTRICAL ABBREVIATIONS			
A	AMPERES	E	EXISTING
A/C, AC	AIR CONDITIONING UNIT	EA	EACH
AF	AMPERE FRAME/AMP FUSE	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AFF	ABOVE FINISHED FLOOR	EF	EXHAUST FAN
AFG	ABOVE FINISHED GRADE	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AL	ALUMINIUM	ER	EXISTING TO BE RELOCATED
AT	AMP TRIP	ETR	EXISTING TO REMAIN
ATS	AUTOMATIC TRANSFER SWITCH	EWf	ELECTRIFIED WORKSTATION FURNITURE
AUTO	AUTOMATIC	EWH	ELECTRIC WATER HEATER
AWG	AMERICAN WIRE GAUGE	FA	FIRE ALARM
C	CONDUIT	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
C/B,CB	CIRCUIT BREAKER	FDR	FEEDER
CKT	CIRCUIT	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
CLG	CEILING	FIXT	FIXTURE
COMM	COMMUNICATION	FL	FLOOR
CT	CURRENT TRANSFORMR	FLUOR	FLUORESCENT
CU	COPPER	G	GROUND
°C	DEGREE CELSIUS	GFI	GROUND FAULT INTERRUPTER
°F	DEGREE FAHRENHEIT	GP	GENERAL PURPOSE
DIA	DIAMETER	HC	HUNG CEILING
DISC	DISCONNECT	HP	HORSEPOWER
D	DEDICATED	HWH	HOT WATER HEATER
DP	DISTRIBUTION PANEL	HZ	HERTZ
DWG	DRAWING	IC	INTERRUPTING CAPACITY
JB	JUNCTION BOX	PP	POWER PANEL
KCMIL	ONE THOUSAND CIRCULAR MILS	PVC	POLYVINYL CHLORIDE
KV	KILOVOLT	PWR	POWER
KVA	KILOVOLT-AMPERES	R	REMOVE
KW	KILOWATTS	RE	RELOCATED EXISTING
LP	LIGHTING PANEL	REC	RECEPTACLE
LTG	LIGHTING	RGS	RIGID GALVANIZED STEEL
MAX	MAXIMUM	RR	REMOVE & RELOCATE
MC	MOTOR CONTROLLER	SECT	SECTION
MCB	MAIN CIRCUIT BREAKER	SPD	SURGE PROTECTION DEVICE
MDP	MAIN DISTRIBUTION PANEL	SPDT	SINGLE POLE DOUBLE THROW
MER	MECHANICAL EQUIPMENT ROOM	SPST	SINGLE POLE SINGLE THROW
MIN	MINIMUM	SPEC	SPECIFICATION
MLO	MAIN LUGS ONLY	SW	SWITCH
MTD	MOUNTED	SWBD	SWITCHBOARD
MTG	MOUNTING	SYM	SYMMETRICAL
MTS	MANUAL TRANSFER SWITCH	SYS	SYSTEMS
N	NEUTRAL	TC	TIME CLOCK
NE	NEW DEVICE TO REPLACE EXISTING	TELE	TELEPHONE
NEC	NATIONAL ELECTRIC CODE	TEMP	TEMPERATURE
NIC	NOT IN CONTRACT	TXF	TOILET EXHAUST FAN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	TYP	TYPICAL
NL	NIGHT LIGHT	TP	TAMPER PROOF
NTS	NOT TO SCALE	UL	UNDERWRITERS LABORATORY
OC	ON CENTER	U.O.N.	UNLESS OTHERWISE NOTED
P	POLES	V	VOLT/VOLTAGE
PB	PULLBOX	VA	VOLT AMPERE
PC	PHOTO CELL	VAV	VARIABLE AIR VOLUME
∅	PHASE	VFD	VARIABLE FREQUENCY DRIVE
PNL	PANEL	D, GFCI	GROUND FAULT CURRENT INTERRUPTER BREAKER
W	WATT	WP	WEATHERPROOF
WH	WALL HEATER	XFMR	TRANSFORMER
IG	ISOLATED GROUND	GFCI	GROUND FAULT CURRENT INTERRUPTER

DEVICE MOUNTING HEIGHTS	
HEIGHTS ARE AFF AND CENTERLINE OF THIS INSTALLED DEVICE, UNO. ADJUST JB MTG HEIGHT ACCORDINGLY, COORDINATE WITH ARCHITECTURAL PRIOR TO ROUGH-IN.	
RECEPTACLES, TELE/DATA - GENERAL PURPOSE	+18" AFF
SWITCHES, DIMMERS, OTHER CONTROLS	+46" AFF
RECEPTACLES - TTB OT DTB	+46" AFF
RECEPTACLES - TELE/DATA - ABOVE COUNTER	+42" AFF
TIME SWITCHES	+80" AFF

APPLICABLE CODES	
<ul style="list-style-type: none"> <li>2021 NEW MEXICO COMMERCIAL BUILDING CODE.</li> <li>2021 NEW MEXICO MECHANICAL CODE.</li> <li>2021 NEW MEXICO ENERGY CONSERVATION CODE.</li> <li>2020 NEW MEXICO ELECTRICAL CODE.</li> </ul>	

VALVOLINE INSTANT OIL CHANGE

DATE	REVISION
2025-05-16	ISSUE FOR PERMIT
2025-09-04	BD COMMENTS

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: ELECTRICAL LEGENDS & GENERAL NOTES

E0.1

**ELECTRICAL SPECIFICATIONS**

- COMPLY WITH OR EXCEED THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND APPLICABLE LOCAL, STATE, AND FEDERAL ORDINANCES, OBTAIN ALL REQUIRED STATE AND LOCAL PERMITS AND ASSOCIATED FEES.
- COMPLY WITH ARIZONA REVISED STATUTES TITLE 44 CHAPTER 9, AS AMENDED BY ARTICLE 19.
- VERIFY CEILING SYSTEM COMPATIBILITY WITH LIGHTING FIXTURES BEFORE RELEASING FIXTURE ORDER.
- FLUSHMOUNT WIRING DEVICES, SWITCHES, RECEPTACLES, ETC. UNO.
- COVER PLATES SHALL BE STAINLESS STEEL.
- ILLUMINATED EXIT SIGNS SHALL HAVE AN INPUT POWER DEMAND OF FIVE WATTS OR LESS PER ILLUMINATED FACE AND SHALL EITHER HAVE A POWER FACTOR OF AT LEAST 0.70 OR MEET THE POWER FACTOR PRODUCT SPECIFICATION OF THE ENERGY STAR PROGRAM REQUIREMENTS, WHICHEVER IS HIGHER.
- COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS AND TO VERIFY EQUIPMENT CONNECTIONS, AND FOR COMPLETE INSTALLATION AND CONNECTION.
- INSTALL A COMPLETE ELECTRICAL SYSTEM PER CONTRACT DRAWINGS AND ENSURE THAT THE SYSTEM IS OPERATIONAL UPON JOB COMPLETION.
- COORDINATE ALL WIRING DEVICE LOCATIONS AND ELEVATIONS INDICATED ON PLANS WITH THE OWNER, ARCHITECT AND FINAL FURNITURE/EQUIPMENT LAYOUT.
  - FURNISH AND INSTALL ALL BRANCH CIRCUIT WIRING IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THIS DRAWING.
    - MAXIMUM LOAD PER 20A/1P CIRCUIT: 1920 WATTS (120V).
    - VOLTAGE DROP SHALL BE LIMITED TO 3% ON ALL BRANCH CIRCUITS.
- INSTALL CONDUIT WITH SIZES AS INDICATED OR REQUIRED RIGIDLY SECURED IN PLACE WITH NOT LESS THAN ONE MALLEABLE, CORROSION PROOF, ALLOY STRAP OR HANGER PER EIGHT FEET OF CONDUIT. PERFORATED STRAPPING IS NOT ACCEPTABLE.
  - SUPPORT CONDUITS FROM STRUCTURAL SLABS, WALLS, STRUCTURAL MEMBERS AND ROOF JOISTS. DO NOT SUPPORT CONDUITS FROM CEILING WIRES, DUCTWORK, PIPING OR OTHER NONSTRUCTURAL MEMBERS.
- INDEPENDENTLY AND SECURELY MOUNT WALL AND CEILING FIXTURES SO THAT THEY ARE NOT DEPENDENT ON CEILING FINISH FOR SUPPORT AND CANNOT BE ROTATED OR DISPLACED.
  - FIXTURES AND DEVICES MOUNTED IN SUSPENDED ACOUSTICAL TILE SHALL HAVE CHANNEL SUPPORTS ACROSS THE MAIN GRID RUNNERS OR GRID SUPPORTS, SECURELY TIED DOWN OR ANCHORED SO AS NOT TO CAUSE TILE TO SAG AND SO THAT FIXTURE OR DEVICE CANNOT BE LIFTED, ROTATED OR DISPLACED. MINIMUM SUPPORTS SHALL INCLUDE 2 CHAINS AT DIAGONALLY OPPOSITE CORNERS.
  - PROVIDE AND INSTALL GRID TROFFER SUPPORT CLIPS.
- PANELBOARDS: COPPER BUS
  - PROVIDE BREAKERS BOLTED IN PLACE. BREAKERS TO HAVE MINIMUM 10,000 AIC RATING MULTIPOLAR BREAKERS WITH COMMON TRIP SHALL BE FURNISHED WITH 4 BREAKER LOCK-ONE FOR EACH BRANCH CIRCUIT PANEL BOARD.
  - BALANCE PANEL FEEDERS WITHIN 5% UNDER FULL LOAD CONDITIONS.
  - VERIFY ELECTRICAL REQUIREMENTS FOR MOTORS AND EQUIPMENT PRIOR TO ORDERING BREAKERS FOR PANELBOARDS.
  - PROPERLY FILL IN CIRCUIT DIRECTIONS WITH A COMPUTER PRINTED SCHEDULE AT THE COMPLETION OF THE JOB, WITH DESIGNATIONS AS DETERMINED BY ARCHITECT.
- MOUNT OUTLET BOXES FLUSH AND CONCEAL CONDUIT UNO ROUTING AND METHODS USED TO ACHIEVE CONCEALED AND FLUSH EQUIPMENT INSTALLATION ARE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE WITH OTHER AFFECTED TRADES, SEE SPECIFICATIONS FOR CUTTING AND PATCHING.
- DEFINITION: FURNISH - OBTAIN, PAY FOR AND DELIVER TO THE WORK SITE.
  - INSTALL-TRANSPORT, CONNECT, TEST AND PLACE IN OPERATION.
  - PROVIDE - FURNISH AND INSTALL INDICATED-PORTRAYED BY PRINTED OR GRAPHIC MEANS.
- PROVIDE PULL STRING IN ALL SPARE/EMPTY CONDUITS (TYPICAL).

**ELECTRICAL NOTES**

- THE DRAWINGS AND SPECIFICATIONS ARE COOPERATIVE AND SUPPLEMENTARY, AND IT IS THE INTENT OF BOTH DRAWINGS AND SPECIFICATIONS TO COVER THE ELECTRICAL REQUIREMENTS AS NEARLY AS POSSIBLE. CLOSELY CHECK THE DRAWINGS AND SPECIFICATIONS FOR ANY OBVIOUS CONFLICTS, ERRORS OR OMISSION AND NOTIFY THE ENGINEER OF ANY PRIOR TO THE RECEIPT OF BIDS. PROPERLY ADJUST THE VARIOUS ELECTRICAL DEVICES BALANCE PHASES MAKE THE REQUIRED TESTS, ETC. UNTIL THE ENTIRE ELECTRICAL INSTALLATION FUNCTIONS PROPERLY IN EVERY DETAIL.
- RACEWAYS - PROVIDE CONDUIT OF TYPES AND SIZES INDICATED WITH FITTINGS AND ACCESSORIES FOR A COMPLETE SYSTEM. USE 3M TRADE SIZE MIN AND SECURITY SUPPORT USING BOLTED CLAMP TYPE HANGERS, LIKE MINERALLAC OR CHANNEL TYPE LIKE BLINE. GALVANIZED RIGID STEEL CONDUIT FOR: PANEL FEEDERS, WET LOCATIONS, WHERE SUBJECT TO ABUSE, WHERE 2-1/2" TRADE SIZE OR LARGER IS INDICATED.
- ELECTRICAL METALLIC TUBING (EMT) - FOR PROTECTED, DRY LOCATIONS, BRANCH CIRCUITS AND COMMUNICATION RACEWAY UP TO 2 TRADE SIZE. USE STEEL BODY COMPRESSION TYPE COUPLINGS AND CONNECTORS (SET SCREW AND DIE CAST ARE NOT ACCEPTABLE) NON METALLIC CONDUIT (SCHEDULE 40 PVC) BELOW GRADE, EXTERIOR OF BUILDING ONLY.
- WIRE AND CABLE - PROVIDE COPPER CONDUCTOR OF INDICATED TYPE SIZE, RUN ALL WIRE IN CONDUIT UNLESS OTHERWISE NOTED. MIN TYPE THIN THWN FOR #6 AWG AND SMALLER EXCEPT FOR WIRE BELOW GRADE, TYPE XHHW FOR LARGER THAN #6 AWG AND FOR ALL WIRE BELOW GRADE.
- BOXES AND FITTINGS - PROVIDE BOXES AND FITTINGS OF APPROPRIATE TYPE FOR EACH APPLICATION USE APLETON, C/Z/GEDNEY, HUBBELL EXTERIOR (WEATHERPROOF) BOXES CAST METAL CORROSION RESISTANT, THREADED CONDUIT ENTRY, WITH MATING COVERS AND GASKETS, FOR EXTERIOR USE HUBBELL #5221 FIBERGLASS PLASTIC COVER FOR DUPLEX RECEPTACLE. INTERIOR BOXES SHALL BE 4 MIN SQUARE FITTED WITH SQUARE CUT DEVICE RING OR SINGLE PIECE MASONARY TYPE NON GANGABLE AND SET FLUSH WITH FINISHED SURFACE. JUNCTION AND PULL BOXES PROVIDE CODE GAGE GALVANIZED SHEET STEEL APPROPRIATE FOR EACH APPLICATION CONSTRUCT WITH WELDED BEAMS AND SCREW COVERS ATTACHED WITH STAINLESS STEEL FASTENERS.
- WIRING DEVICES - PROVIDE WHERE INDICATED WHITE WIRING DEVICES OF CONFIGURATION RATING AND TYPE. USE GE, LEVITON OR HUBBELL, DUPLEX RECEPTACLE-VAL, LISTED AS FED SPEC COMPLIANT, 20-AMP, 125V, 3-WIRE, 2-POLE WITH GROUND, WITH METAL PLASTER EARS, SPRING LOADED, SCREW ACTIVATED PRESSURE PLATE TERMINALS, BACK AND SIDE WIRED WITH GROUND TERMINAL BONDED TO MOUNTING YOKE, MOUNT WITH GROUND TERMINAL UP.
- GROUND FAULT CIRCUIT INTERRUPTER (GFCI) - 20 AMP GFCI NON FEED THRU 120 VOLT, SOLID STATE 5 MILLIAMP TRIP LEVEL HUBBELL #GF5282 OR EQUAL.
- MOTOR AND CIRCUIT DISCONNECTS - PROVIDE PROPER HP VOLTAGE AND CURRENT RATING & NEMA TYPE DISCONNECT, FURNISH WITH OVERCURRENT PROTECTION AND OTHER ACCESSORIES AS INDICATED, USE NEMA 3R ENCLOSURE IN WET LOCATIONS, USE SQUARE D OR GE, SWITCH TYPE-HEAVY DUTY SHEET STEEL ENCLOSED 2, 3 OR 4 POLE QUICK-BREAK, VIBBLE BLADE INTERLOCKED DOOR, PAD LOCK LOOKOUT PROVISION HIGH CONDUCTIVITY COPPER CURRENT CARRYING PARTS, SILVER TUNGSTEN CONTACTS POSITIVE PRESSURE/SPRING ASSISTED FUSE CLIPS (FUSED TYPES).
- FUSES - PROVIDE PROPER SELECTION OF FUSE(S) FOR EACH APPLICATION INDICATED AND WITH RESPECT TO VOLTAGE, CURRENT LIMIT, TIME CURRENT CHARACTERISTICS, AND AVAILABLE FAULT CURRENT. FURNISH PRODUCTS OF ONE OF THE FOLLOWING BUSSMAN, GOULD OR LITTLEFUSE. UL CLASS RK1-250 OR 600 VOLT RATING 0-600 AMPERES USE FOR PROTECTION OF CIRCUIT BREAKER PANELBOARDS.
- INSTALLATION - INSTALL COMPLETE RACEWAY SYSTEM IN PROGRESS WITH OTHER TRADES AND PRIOR TO PULLING WIRE CABLE, FOLLOW NECA GUIDELINES FOR NEAT FIRST CLASS WORKMANSHIP, SELECT PROPER SUPPORTS AND ANCHORS AND ALLOW AIR SPACE WHEN MOUNTING TO MASONRY OR CONCRETE SURFACES, WIRE LANDED ON BACK-WIRED DEVICES AND CLAMP TYPE TERMINAL BLOCKS DO NOT REQUIRE CRIMPED LUGS, MOUNT WITH TOP AT 66. SELECT FUSES BASED ON NAME PLATE RATING OR OTHER MANUFACTURERS RECOMMENDATION WHEN AVAILABLE AND INSTALL IN EACH FUSIBLE DEVICE PLACE INTUMESCENT FILL MATERIAL IN PENETRATIONS OF FIRE RATED ASSEMBLIES. MARK PANELBOARDS WITH ACRYLIC ENGRAVED NAMEPLATES, PANEL DESIGNATION ABOVE DOOR AND INSIDE OF DOOR WITH PANEL DESIGNATION, VOLTAGE AND FEEDER DESIGNATION, MARK STARTERS, DISCONNECTS, ETC. WITH UNIT DESIGNATION EQUIPMENT SERVED, VOLTAGE AND FEED CIRCUIT. APPLY FOLLOWING FINISH PAINTINGS AS APPLICABLE BLUNT SCREW POINTS AFTER INSTALLATION TO PREVENT INJURY.
- GROUND THE ELECTRICAL SYSTEM, PROVIDE WIRE, CABLE, LUGS, CLAMPS, SURGE ARRESTORS AND RELATED PRODUCTS AS REQUIRED FOR A COMPLETE GROUNDING SYSTEM. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS, SIZE WIRE ACCORDING TO THE NEC.

**VALVOLINE ELECTRICAL NOTES**

- GUARANTEE COMPLETE SYSTEM FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE BY OWNER, ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.
- VERIFY POWER AND TELEPHONE REQUIREMENTS FROM PROPERTY LINE OR POINT OF SERVICE TO BUILDING WITH RESPECTIVE UTILITY COMPANIES, INCLUDE COSTS TO FURNISH A COMPLETE POWER AND TELEPHONE SYSTEM.
- PROVIDE LABOR AND MATERIAL REQUIRED TO INSTALL UNDERGROUND ELECTRICAL SERVICE TO MAIN SWITCH AT METER BASE, PAY FOR ALL COSTS INCURRED IN SUPPLYING NEW ELECTRICAL SERVICE TO BUILDING INCLUDING ALL FEES, PERMITS AND WORK TO BE PERFORMED BY UTILITY COMPANY.
- PROVIDE ALL POWER AND CONTROL WIRES, PRIMARY & SECONDARY CONDUITS, CONDUCTORS TRENCHING, BACKFILL CONCRETE PADS, OUTLETS, ETC. REQUIRED BY SERVING UTILITY COMPANIES. VERIFY LOCATION ROUTE AND TERMINATION REQUIREMENTS WITH UTILITY COMPANIES AND THEIR REQUIREMENTS SHALL BE DEEMED PART OF THE CONTRACTORS BID.
- PROVIDE MATERIALS AND LABOR REQUIRED TO RENDER MECHANICAL AND OTHER EQUIPMENT COMPLETE AND OPERATIVE VERIFY REQUIREMENTS AND LOCATION OF EQUIPMENT AND CONTROLS FOR EACH PIECE OF EQUIPMENT PRIOR TO ROUGH IN IF SEQUENCE OF CONTROLS IS CHANGED FROM DESIGN, COORDINATE WITH OTHER TRADES FOR ADDITIONS AND DELETIONS.
- BUILDING TO BE PROVIDED WITH STRUCTURED CABLING SYSTEM TO SUPPORT VOICE OVER IP (VOIP) AND DATA SERVICES. INSTALL CATEGORY 6 (CAT6) UTP CABLE FROM TELECOM ROOM (IDF/MDF) TO EACH TELEPHONE/DATA OUTLET LOCATION TERMINATING AT RJ-45 JACKS. PROVIDE PATCH PANELS, CABLE MANAGEMENT, AND LABELING AS REQUIRED. TELEPHONE HANDSETS AND NETWORK EQUIPMENT TO BE PROVIDED BY OWNER. COORDINATE WITH TELECOM SERVICE PROVIDER FOR INTERNET SERVICE AND VOIP CONFIGURATION. ALL COSTS ASSOCIATED WITH SERVICE ACTIVATION, FEES, AND PERMITS TO BE PAID BY OWNER OR TENANT.
- MATERIALS AND EQUIPMENT SHALL BE NEW, FREE FROM DEFECTS AND THE BEST GRADE AND MANUFACTURE THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT, AND LISTED BY UNDERWRITERS LABORATORY AND BEAR THE INSPECTION LABEL WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH THE APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NSFU.
- FURNISH AND INSTALL AS SHOWN ON DRAWINGS EQUAL TO PANELBOARDS SQUARE D TYPE NO/00 WITH FULL SIZED BOLT ON TYPE BREAKERS AND COPPER BUSSING, TANDEM OR PIGGY BACK BREAKERS NOT ALLOWED.
- MOUNTING HEIGHTS GIVEN ARE FROM FINISHED FLOOR TO CENTERLINE OF OUTLET.
- EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
- FURNISH AND INSTALL LIGHT FIXTURES COMPLETE WITH INTERGRAL LED, DIFFUSERS, WIRE GUARDS, OR OTHER ACCESSORIES AS INDICATED ON DRAWINGS, FIXTURES SHALL BE SUBSTANTIALLY SUPPORTED FROM STRUCTURE ABOVE AND SHALL BE PROVIDED WITH ALL NECESSARY HANGER, SUPPORT, AND ACCESSORY DEVICES REQUIRED.
- TIME SWITCH SHALL BE DIGITAL/ELECTRONIC 365 DAYS WITH HOLIDAYS SCHEDULE FOR BUILDING LIGHTING, SIGNAGE AND SITE LIGHTING.
- LOCATE THERMOSTATS AS PER MECHANICAL PLAN IN OFFICE AREA, FURNISH AND WIRE BYPASS TIMER AND TIME SWITCH PER MECHANICAL PLANS.
- INSTALL GROUND WIRE IN BRANCH CIRCUITS, CONNECT SERVICE GROUND AT MAIN SERVICE PANEL TO BUILDING STEEL, TO MAIN COLD WATER METAL PIPE AND TO 5/8" X 8 COPPERWELD GROUND WELD.
- POWER AND CONTROL WIRING FOR THE BAY DOORS SHALL BE PROVIDED AND INSTALLED.

**ELECTRICAL COMCHECK**

**COMcheck Software Version COMcheckWeb**  
**Interior Lighting Compliance Certificate**

**Project Information**

Energy Code: 2021 IECC  
Project Title: Valvoline\_Carlsbad, NM  
Project Type: New Construction

Construction Site: Valvoline Instant Oil Change, Modular Building, Carlsbad, New Mexico  
Owner/Agent:  
Designer/Contractor:

**Additional Efficiency Package(s)**

Credits: 10.0 Required 0.0 Proposed

**Allowed Interior Lighting Power**

A Area Category	B Floor Area (ft <sup>2</sup> )	C Allowed Watts / ft <sup>2</sup>	D Allowed Watts
1-Automotive Facility	3911	0.75	2933
Total Allowed Watts =			2933

**Proposed Interior Lighting Power**

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
1-Automotive Facility				
LED1: A: Other:	1	6	51	306
LED2: A1: Other:	1	14	49	686
LED3: A1E: Other:	1	7	49	343
LED4: B: Other:	1	9	68	612
LED5: BE: Other:	1	5	68	340
LED6: C: Other:	1	6	33	198
LED8: F: Other:	1	1	57	57
LED9: G: Other:	1	4	13	52
Total Proposed Watts =			2594	

Interior Lighting PASSES: Design 12% better than code

**Interior Lighting Compliance Statement**  
Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

CLAYTON LUCAS  
Name - Title  
09/04/25  
Date

Project Title: Valvoline\_Carlsbad, NM  
Report date: 05/30/25  
Page 1 of 6

**COMcheck Software Version COMcheckWeb**  
**Exterior Lighting Compliance Certificate**

**Project Information**

Energy Code: 2021 IECC  
Project Title: Valvoline\_Carlsbad, NM  
Project Type: New Construction  
Exterior Lighting Zone: 3 (Other (LZ3))

Construction Site: Valvoline Instant Oil Change, Modular Building, Carlsbad, New Mexico  
Owner/Agent:  
Designer/Contractor:

**Allowed Exterior Lighting Power**

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Walkway < 10 feet wide	300 ft of	0.6	Yes	180
Total Tradable Watts (a) =				180
Total Allowed Watts =				180
Total Allowed Supplemental Watts (b) =				500

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.  
(b) A supplemental allowance equal to 500 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

**Proposed Exterior Lighting Power**

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Walkway < 10 feet wide (300 ft. of walkway length): Tradable Wattage				
LED1: D: Other:	1	6	35	210
Total Tradable Proposed Watts =				210

Exterior Lighting PASSES: Design 69% better than code

**Exterior Lighting Compliance Statement**  
Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

CLAYTON LUCAS  
Name - Title  
09/04/25  
Date

Project Title: Valvoline\_Carlsbad, NM  
Data filename:  
Report date: 05/30/25  
Page 2 of 6

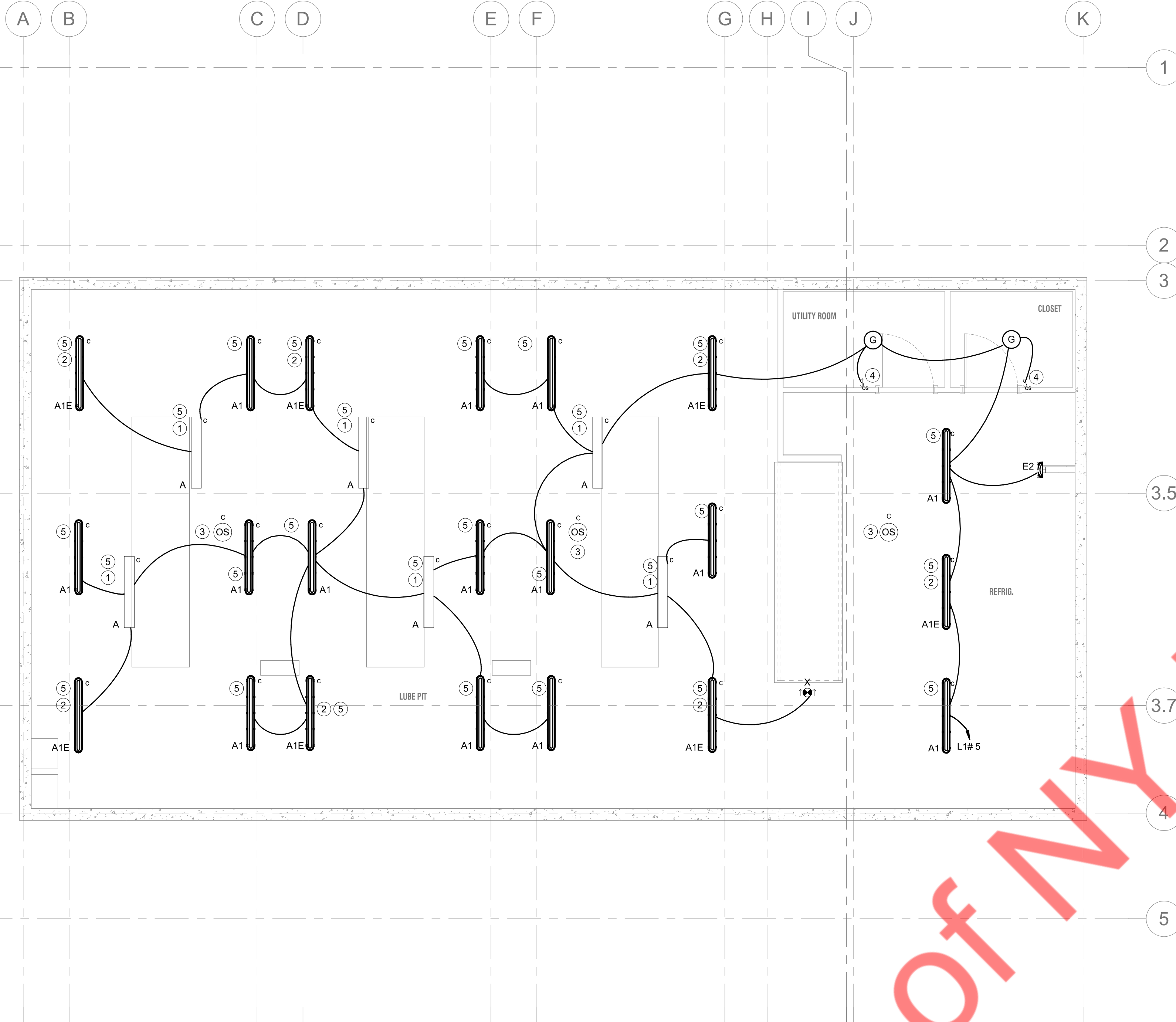
VALVOLINE INSTANT OIL CHANGE

#	DATE	REVISION
1	2025-05-16	ISSUE FOR PERMIT
2	2025-09-04	BD COMMENTS

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: ELECTRICAL NOTES AND ENERGY ANALYSIS

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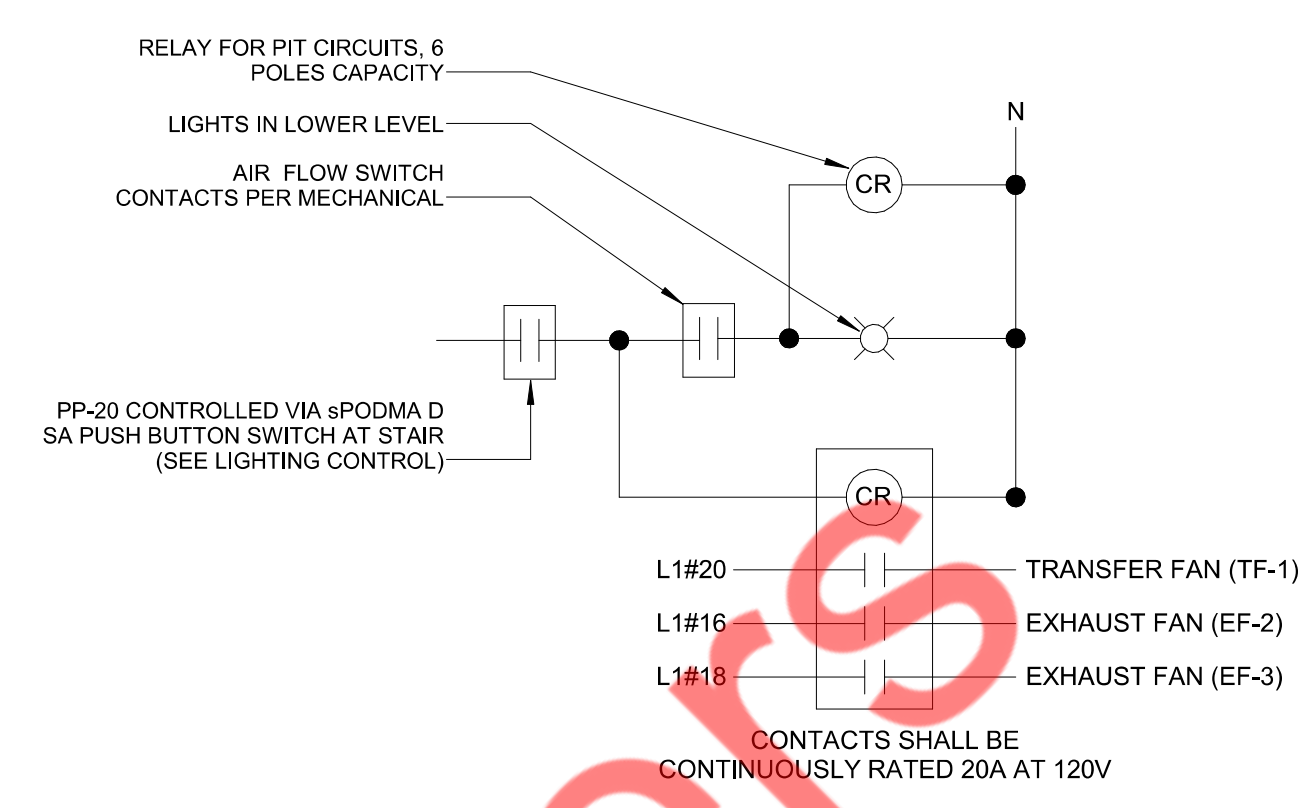
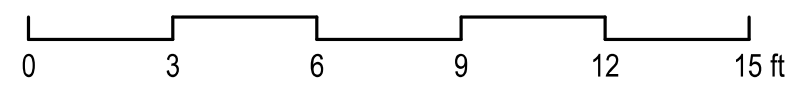


1 LOWER LEVEL LIGHTING PLAN  
1/4" = 1'-0"

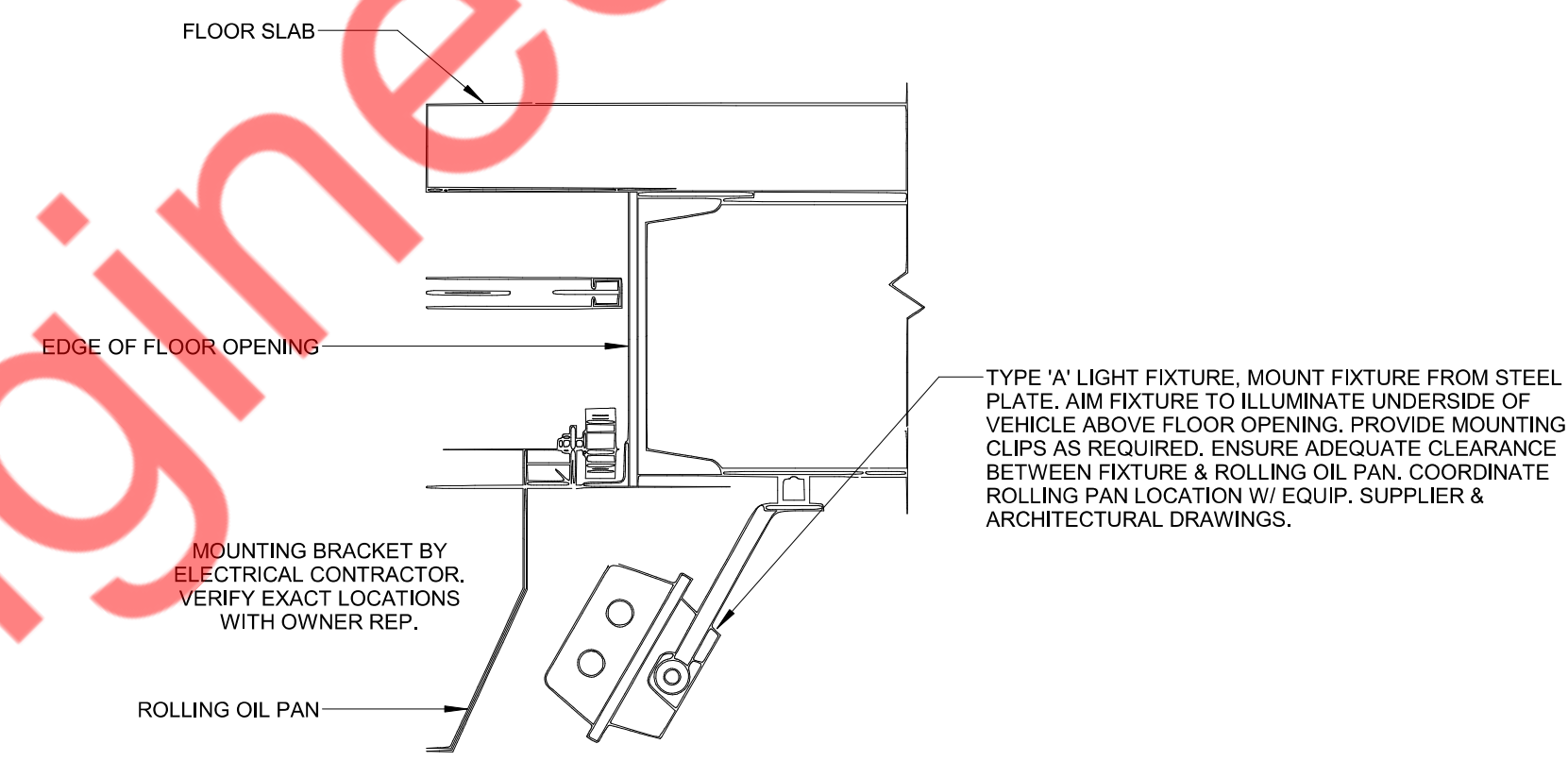
- LIGHTING GENERAL NOTES:**
- REFER TO ARCHITECTURAL PLANS FOR MOUNTING HEIGHTS AND FINAL LOCATIONS OF LIGHTING FIXTURES. COORDINATE FIXTURE MOUNTING WITH STRUCTURAL FRAMING PRIOR TO ORDERING.
  - COORDINATE THE EXACT MOUNTING OF ALL EXIT SIGNS WITH ARCHITECT PRIOR TO ORDERING. COORDINATE LOCATIONS WITH DOOR SWINGS, SOFFITS, OBSTRUCTIONS, ETC TO AVOID CONFLICTS. PROVIDE PENDANTS AS REQUIRED. PROVIDE DUAL FACES AND DIRECTIONAL ARROWS AS REQUIRED. ALL EGRESS LIGHTS SHALL BE PROVIDED WITH DUAL LAMPS.
  - ADJUST THE EMERGENCY AND EXIT LIGHTING QUANTITIES AND LOCATION AS REQUIRED TO MEET THE LOCAL AHJ REQUIREMENTS. LOCATE EXIT SIGNS AND DOWNLIGHTS IN THE CENTER OF CEILING TILES WHERE POSSIBLE.
  - PROVIDE AN UN-SWITCHED HOT LEG TO ALL EMERGENCY AND EXIT FIXTURES. BATTERY EMERGENCY LIGHTING SHALL BE CONNECTED TO THE ROOM LIGHTING CIRCUIT, AHEAD OF ANY SWITCH OR CONTROL FOR CONTINUOUS OPERATION. EXIT SIGNS SHALL BE CONNECTED TO A DEDICATED LOCK ON CIRCUIT AND SHALL BE PROVIDED WITH A DEDICATED FEEDER AND HOMERUN. CONNECT SWITCHING IN COMPLIANCE WITH NEC 700.12 (F).
  - MAXIMUM VOLTAGE DROP FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS COMBINED, SHALL NOT EXCEED A 5% VOLTAGE DROP.
  - LIGHTING FIXTURES WHICH ARE CONTROLLED BY A DIMMER SWITCH SHALL BE WIRED TO A CIRCUIT HAVING DEDICATED NEUTRAL WIRE.
  - COORDINATE FINAL LOCATION & MOUNTING HEIGHT OF THE LIGHTING SWITCHES WITH ARCHITECT/OWNER IN FIELD. LOCATE WALL SWITCHES SUCH THAT EDGE OF COVERPLATE IS 4" MAX FROM ADJACENT DOOR JAMB.
  - MANUFACTURER OF SUBMITTED/APPROVED CEILING AND WALL MOUNTED OCCUPANCY SENSORS TO VERIFY PLACEMENT FOR PROPER COVERAGE AND FUNCTIONALITY OF DEVICES.
  - COORDINATE CEILING MOUNTED DEVICES AND ELECTRICAL CONDUIT ROUTING WITH PROCESS PIPING INSTALLER PRIOR TO ROUGH-IN. NO CONDUITS TO BE ABOVE OIL TANKS.
  - MOUNT PHOTOCELL IN AN UNOBSTRUCTED OUTDOOR LOCATION EXPOSED TO NATURAL DAYLIGHT, ORIENTED TO PREVENT ARTIFICIAL LIGHT INTERFERENCE. AVOID SHADED AREAS SUCH AS UNDER EAVES OR NORTH-FACING WALLS.

- LIGHTING KEY NOTES:**
- REFER TO DETAIL-3 FOR MOUNTING INFORMATION ON THIS SHEET.
  - NIGHT LIGHT, FIXTURE TO REMAIN UNSWITCHED.
  - LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSOR WITH MANUAL DIMMING. PROVIDE ACUITY BRANDS#CM-PDT-10 FOR LOWER LEVEL. PROVIDE FULLY OPERATIONAL SYSTEM & TRAINING AS REQUIRED. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION.
  - OCCUPANCY SENSOR, EQUAL TO SENSOR SWITCH #WSX, PASSIVE INFRARED (PIR) SENSOR (LINE VOLTAGE), WALL MOUNTED, VERIFY COLOR W/OWNER.
  - COORDINATE LIGHT FIXTURE LAYOUT WITH PRODUCT PROCESS & PLUMBING PIPING. PIPING/PRODUCT LINES TAKE PRECEDENCE OVER LIGHT LOCATIONS WHERE NECESSARY. COORDINATE IN FIELD, W/OWNER'S REP.

- SEQUENCE OF OPERATIONS:**
- MANUAL SWITCH AT STAIR TO CONTROL PIT LIGHTING.
  - OCCUPANCY SENSORS DOWNSTREAM OF SWITCH SHALL CONTROL LIGHTING.
  - ROUTE PIT LIGHTING CIRCUIT THROUGH AIR FLOW SWITCH CONTACTS AND RELAYS.
  - EXHAUST FAN(S) (EF-2, EF-3) AND TRANSFER FAN (TF-1) CONTACTORS SHALL BE CONNECTED TO AIR FLOW SWITCH CONTACT. IN THE EVENT THAT EITHER FAN STOPS OPERATING, THE RESPECTIVE FAN CONTACT SHALL SEND A SIGNAL TO THE AIR FLOW SWITCH CONTACT TO CUT POWER TO THE PIT LIGHTING CIRCUIT. THIS IS TO NOTIFY OCCUPANTS THAT AIR FLOW HAS STOPPED AND THEY ARE TO EXIT THE PIT AREA.

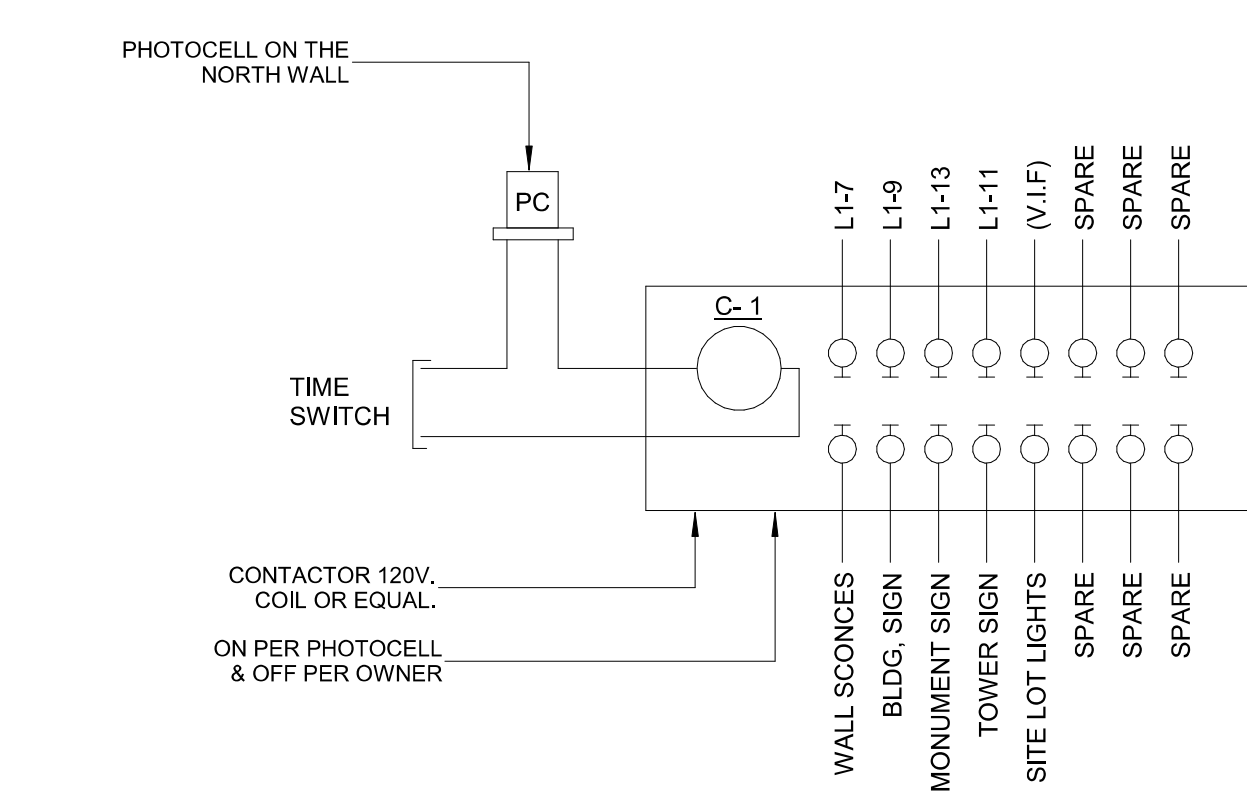


2 LUBE PIT LIGHT SWITCH DETAIL  
NO SCALE

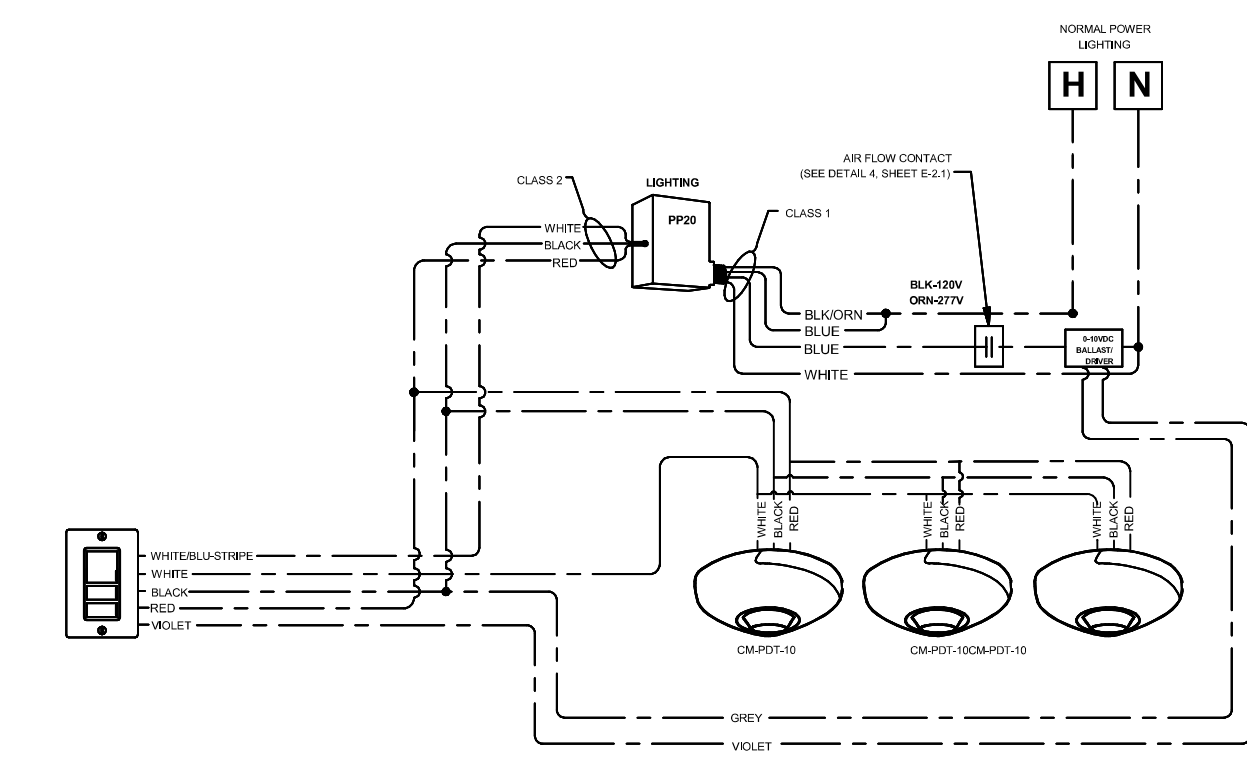


3 'A' FIXTURE MOUNTING DETAIL  
NO SCALE

- NOTES: LIGHTING CONTACTOR CONTROL DIAGRAMS**
- AUTOMATIC CONTROL, INCLUDE EXTERIOR BUILDING SIGNS AND EXTERIOR LOT LIGHTS.
  - TIME SWITCH: TO BE INTERMATIC ET2145C SERIES. ELECTRONIC, 120V, 365 DAYS WITH HOLIDAY SCHEDULES PROGRAMMABLE.
  - LIGHTING CONTACTORS: TO BE ELECTRICALLY HELD TYPE, 120V COIL CONTROL WITH NEMA 1 ENCLOSURES, SILVER ALLOY DOUBLE BREAK 250VOLT RATED CONTACTS, HEAVY-DUTY AND U.L. LISTED.



4 EXTERIOR LIGHTING CONTROL DIAGRAM  
NO SCALE



5 LIGHTING CONTROL DIAGRAM-LOWER LEVEL  
NO SCALE

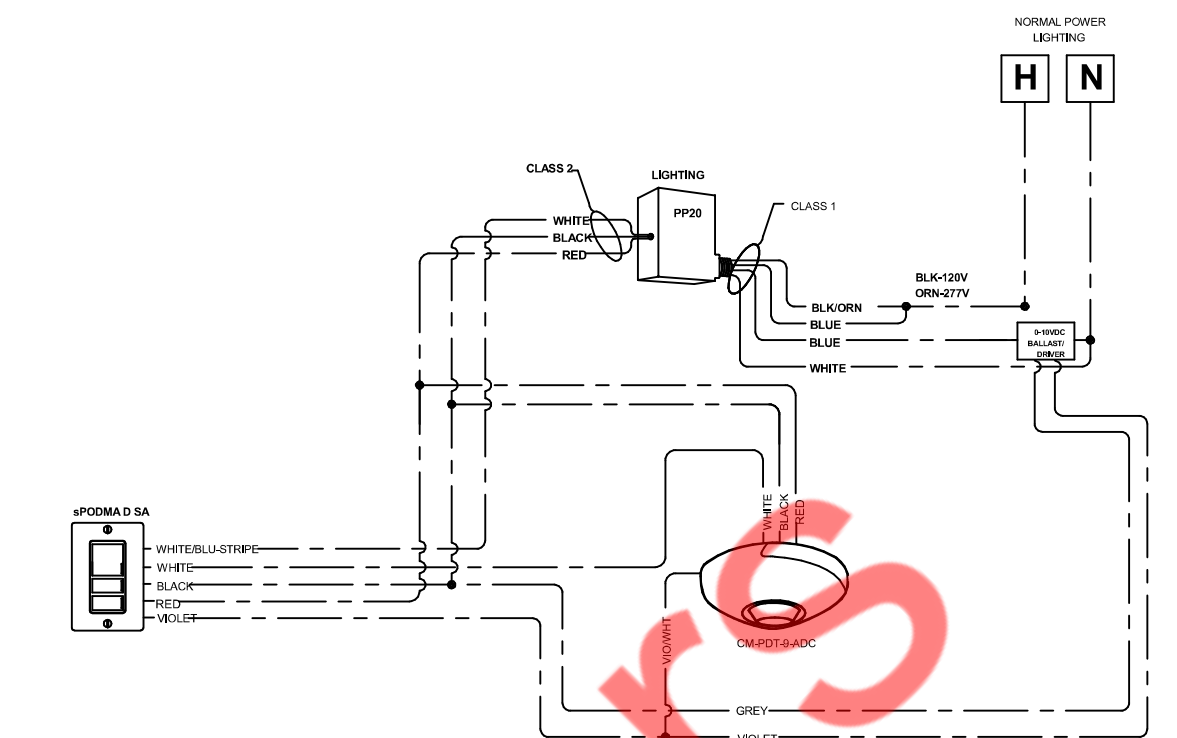
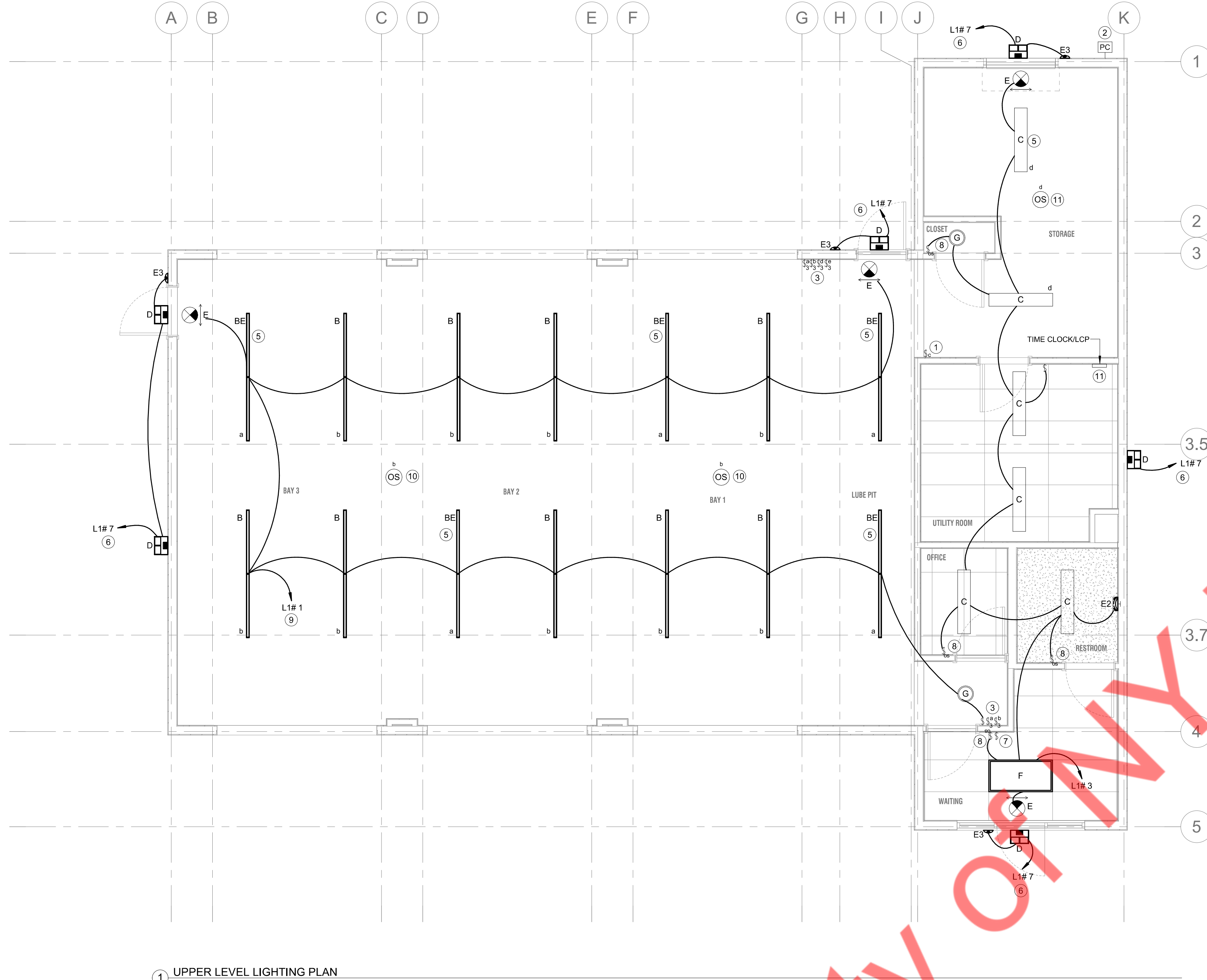
VALVOLINE INSTANT OIL CHANGE

DATE	REVISION
2025-05-16	ISSUE FOR PERMIT
2025-09-04	BD COMMENTS

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: LIGHTING PLAN - LOWER LEVEL

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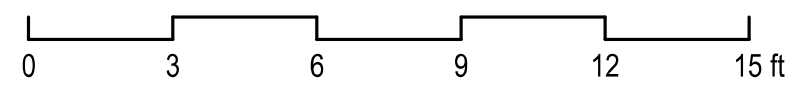


2 LIGHTING CONTROL DIAGRAM-UPPER LEVEL  
NO SCALE

1 UPPER LEVEL LIGHTING PLAN  
1/4" = 1'-0"

**LIGHTING GENERAL NOTES:**

- REFER TO ARCHITECTURAL PLANS FOR MOUNTING HEIGHTS AND FINAL LOCATIONS OF LIGHTING FIXTURES. COORDINATE FIXTURE MOUNTING WITH STRUCTURAL FRAMING PRIOR TO ORDERING.
- COORDINATE THE EXACT MOUNTING OF ALL EXIT SIGNS WITH ARCHITECT PRIOR TO ORDERING. COORDINATE LOCATIONS WITH DOOR SWINGS, SOFFITS, OBSTRUCTIONS, ETC TO AVOID CONFLICTS. PROVIDE PENDANTS AS REQUIRED. PROVIDE DUAL FACES AND DIRECTIONAL ARROWS AS REQUIRED. ALL EGRESS LIGHTS SHALL BE PROVIDED WITH DUAL LAMPS.
- ADJUST THE EMERGENCY AND EXIT LIGHTING QUANTITIES AND LOCATION AS REQUIRED TO MEET THE LOCAL AHJ REQUIREMENTS. LOCATE EXIT SIGNS AND DOWNLIGHTS IN THE CENTER OF CEILING TILES WHERE POSSIBLE.
- PROVIDE AN UN-SWITCHED HOT LEG TO ALL EMERGENCY AND EXIT FIXTURES. BATTERY EMERGENCY LIGHTING SHALL BE CONNECTED TO THE ROOM LIGHTING CIRCUIT, AHEAD OF ANY SWITCH OR CONTROL FOR CONTINUOUS OPERATION. EXIT SIGNS SHALL BE CONNECTED TO A DEDICATED LOCK ON CIRCUIT AND SHALL BE PROVIDED WITH A DEDICATED FEEDER AND HOMERUN. CONNECT SWITCHING IN COMPLIANCE WITH NEC 700.12 (F).
- MAXIMUM VOLTAGE DROP FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS COMBINED, SHALL NOT EXCEED A 5% VOLTAGE DROP.
- LIGHTING FIXTURES WHICH ARE CONTROLLED BY A DIMMER SWITCH SHALL BE WIRED TO A CIRCUIT HAVING DEDICATED NEUTRAL WIRE.
- COORDINATE FINAL LOCATION & MOUNTING HEIGHT OF THE LIGHTING SWITCHES WITH ARCHITECT/OWNER IN FIELD. LOCATE WALL SWITCHES SUCH THAT EDGE OF COVERPLATE IS 4" MAX FROM ADJACENT DOOR JAMB.
- MANUFACTURER OF SUBMITTED/APPROVED CEILING AND WALL MOUNTED OCCUPANCY SENSORS TO VERIFY PLACEMENT FOR PROPER COVERAGE AND FUNCTIONALITY OF DEVICES.
- COORDINATE CEILING MOUNTED DEVICES AND ELECTRICAL CONDUIT ROUTING WITH PROCESS PIPING INSTALLER PRIOR TO ROUGH-IN. NO CONDUITS TO BE ABOVE OIL TANKS.
- MOUNT PHOTOCELL IN AN UNOBSTRUCTED OUTDOOR LOCATION EXPOSED TO NATURAL DAYLIGHT, ORIENTED TO PREVENT ARTIFICIAL LIGHT INTERFERENCE. AVOID SHADED AREAS SUCH AS UNDER EAVES OR NORTH-FACING WALLS.



**LIGHTING KEY NOTES:**

- CONNECT LOW VOLTAGE PUSHBUTTON WALLPOD TO LOWER LEVEL TYPE 'A' FIXTURES AND CONTACTOR CONTROLLING EF-2 AND TF-1. PROVIDE ACUTY BRANDS #SPODMA-D-SA. REFER TO DETAIL 4 ON THIS SHEET FOR ADDITIONAL INFORMATION.
- PHOTOCELL SHALL MOUNT HIGH ON WALL FACING NORTH.
- LOW VOLTAGE PUSHBUTTON WALLPOD. PROVIDE ACUTY BRANDS #SPODMA-D-SA. REFER TO LIGHTING CONTROL DETAIL FOR ADDITIONAL INFORMATION.
- NOT USED.
- NIGHT LIGHT, FIXTURE TO REMAIN UNSWITCHED.
- WIRE VIA LIGHTING CONTROLS SYSTEM.
- PROVIDE SWITCH TO CONTROL RECEPTACLES MOUNTED AT CEILING. FOR OWNER SIGNAGE.
- OCCUPANCY SENSOR, EQUAL TO SENSOR SWITCH #WSX. PASSIVE INFRARED (PIR) SENSOR (LINE VOLTAGE). WALL MOUNTED. VERIFY COLOR W/OOWNER.
- CIRCUIT TO BE CONTROLLED VIA DEDICATED DAYLIGHT PHOTOCONTROL SENSORS.
- LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSOR WITH MANUAL DIMMING. UPPER LEVEL SENSORS TO INCLUDE DAYLIGHT SENSING CONTROL AND AUTO DIMMING. PROVIDE ACUTY BRANDS#CM-PDT-9-ADC FOR UPPER LEVEL. PROVIDE FULLY OPERATIONAL SYSTEM & TRAINING AS REQUIRED. REFER TO LIGHTING CONTROL DETAILS.
- PROVIDE LIGHTING CONTROL PANEL. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.

**SEQUENCE OF OPERATIONS:**

- MANUAL SWITCH AT STAIR TO CONTROL PIT LIGHTING.
- OCCUPANCY SENSORS DOWNSTREAM OF SWITCH SHALL CONTROL LIGHTING.
- ROUTE PIT LIGHTING CIRCUIT THROUGH AIR FLOW SWITCH CONTACTS AND RELAYS.
- EXHAUST FAN(S) (EF-2, EF-3) AND TRANSFER FAN (TF-1) CONTACTORS SHALL BE CONNECTED TO AIR FLOW SWITCH CONTACT. IN THE EVENT THAT EITHER FAN STOPS OPERATING, THE RESPECTIVE FAN CONTACT SHALL SEND A SIGNAL TO THE AIR FLOW SWITCH CONTACT TO CUT POWER TO THE PIT LIGHTING CIRCUIT. THIS IS TO NOTIFY OCCUPANTS THAT AIR FLOW HAS STOPPED AND THEY ARE TO EXIT THE PIT AREA.

**LIGHTING FIXTURE SCHEDULE**

TAG	MANUFACTURERS & CATALOGUE NUMBER	MOUNT	LED LAMPING	LUMENS	QUANTITY	CRI	COLOR TEMP	VOLTAGE	COLOR OR FINISH	DIMMING	FCO	WL LISTED	OPTIONS & REMARKS
A	LITHONIA#FEM	SURFACE	51W	8000	6	80	4000K	MVOLT	WHITE	10% 0-10V		YES	PROVIDE (2) SURFACE MOUNT BRACKETS; STAINLESS STEEL LATCHES
A1	LITHONIA#CSV	SURFACE	49W	6000	14	80	4000K	MVOLT	WHITE	10% 0-10V		YES	STAINLESS STEEL LATCHES
A1E	SAME AS A1 EXCEPT AS NOTED	SURFACE	49W	6000	7	80	4000K	MVOLT	WHITE	10% 0-10V		YES	7W TITLE 20 COMPLIANT BATTERY; STAINLESS STEEL LATCHES
B	LITHONIA #TZL1N	SURFACE	68W	10000	9	80	4000K	MVOLT	WHITE	10% 0-10V			
BE	SAME AS B EXCEPT AS NOTED	SURFACE	68W	10000	5	80	4000K	MVOLT	WHITE	10% 0-10V			10W CA TITLE 20 COMPLIANT BATTERY; STAINLESS STEEL LATCHES
C	LITHONIA #LBL4	SURFACE	33W	4000	6	80	4000K	MVOLT	WHITE	10% 0-10V			
D	LITHONIA #DSXW1	WALL +13'0"	35W	4066	6	70	3000K	MVOLT	DARK BRONZE		YES	YES	
E	LITHONIA #LHQM	WALL	2x1.5W RED		4			MVOLT	WHITE				WITH HIGH OUTPUT NICAD BATTERY PACK & REMOTE HEAD CAPACITY
E2	LITHONIA#ELM2	WALL	3W	220	2			MVOLT	WHITE				WITH BATTERY PACK
E3	LITHONIA #ELA Q	WALL	2W	220	4			MVOLT	BLACK				
F	LITHONIA #CXP	SURFACE	57W	7200	1	80	4000K	MVOLT	WHITE	10% 0-10V			SURFACE MOUNT KIT
G	NUVO #62-1680	SURFACE	13W	1000	4	90	4000K	120V	WHITE				INTEGRAL OCC SENSOR
X	APX7R BY SURELITES	SURFACE			1			120V					

**LIGHTING SCHEDULE NOTE:**

COORDINATE WITH ARCHITECT/OWNER FOR FINAL LIGHTING CONTROL REQUIREMENTS AND PROVIDE ALL LIGHTING CONTROLS IN COMPLIANCE WITH LATEST IECC AND ACCORDINGLY PROVIDE REQUIRED DEVICES, ACCESSORIES, WIRING WITH NO ADDITIONAL COST FOR PROPER FUNCTIONING AND OPERATION OF LIGHTING SYSTEM.

VALVOLINE INSTANT OIL CHANGE

DATE	REVISION
2025-05-16	ISSUE FOR PERMIT
2025-09-04	BD COMMENTS

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: LIGHTING PLAN - UPPER LEVEL





### FEATURES & SPECIFICATIONS

**INTENDED USE** — Provides a minimum of 90 minutes illumination for the rated wattage upon loss of AC power to meet and exceed code required emergency lighting. Ideal for applications requiring attractive LED unit equipment with quick installation and superior performance for lower mounting heights. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** Click here for Acrylic/Polycarbonate Compatibility table for suitable uses.

**CONSTRUCTION** — The housing is standard white (black optional) thermoplastic with a compact and low profile contemporary design. It is VSM flame rated, impact resistant, scratch resistant and corrosion proof. The UV-stable resin resists discoloration from natural and man-made light sources. There is a low profile, integrated and back lit test switch with an easily visible multi-color LED status indicator. The back plate contains a universal (low mounting) pattern to facilitate ease of installation on a wide variety of joists and the front housing allows tool-less access for ease of maintenance.

**ELM2L1** Fixed lamp head arrangement for ease of installation and maximum path of egress aiming coverage with no aiming required for wall mount applications.

**ELM2L2** Unique track and swivel arrangement permits full range of direction for lamp head adjustment.

**OPTICS** — Both the **ELM2L1** and **ELM2L2** feature **high performance LEDs** with acrylic lens rated **+1.2** optical density and delivers a total **4,230 lumens** in a linear pattern (2,115). The typical life of an LED is 10 years. The LED light sources typically never need to be replaced under normal conditions for normal applications, CCT: 3000K.

**ELECTRICAL** — Operable in multiple voltages (see ordering tree for specific voltages). Current limiting charger maximizes battery life and minimizes energy consumption and provides low operating costs. Small battery charges Certified in the CA Title 20 Appliance Efficiency Database.

Short-circuit protection — current limiting charger circuitry protects printed circuit board from shorts. Regulated charge voltage maintains constant charge voltage over a wide range of line voltages.

Prevents over/undercharging that shortens battery life and reduces capacity. Filtered charger input minimizes charge voltage ripple and extends battery life.

**BATTERY** Sealed, maintenance-free nickel-cadmium or Lithium Iron Phosphate.

Lithium Iron Phosphate battery powers both on board LEDs up to 2.1W additional LED remote lamp heads simultaneously or offers extended run-time up to 3 hours.

**Automatic 24-hour recharge after a 90-minute discharge.**

Advanced electrical design provides consistent light output throughout the entire discharge period. Built-in protection is automatically switched to emergency mode when supply voltage drops below approximately 80 percent nominal (120, 220, 277 or 347). Other input voltages may vary.

AC/UVI reset allows battery connection before AC power is applied and prevents battery damage from deep discharge.

**SELF-DIAGNOSTICS and REMOTE TEST (SDBT) and AEL options:** Self-Diagnostics: Continuously monitors AC functionality, test switch and remote tester (RTMT) accessory provide manual activation of 30-second diagnostic testing for on-demand visual inspection, status and emergency monitoring will indicate disconnected battery, charger failure and displays green flashing indicator light while in emergency mode. Single multi-chromatic LED indicator to display two-state charging test activation and three-state self-diagnostics.

Self-diagnostic testing: Five minutes every 30 days and 90 minutes annually. Diagnostic evaluation of lamps, AC to DC transfer, battery charging and condition of microprocessor. Automatic test is easily postponed for eight hours by actuating manual test switch or use of remote tester (RTMT) accessory.

**AEL option:** SDBT (Self-Testing Automated Reporting) radio transmits monthly and annual test results and diagnostic information for automated reporting requirements.

For more information visit [www.lithonia.com/ELM](http://www.lithonia.com/ELM)

**INSTALLATION** — Wall mount and ceiling mount standard for ELM2L1. Wall mount only for ELM2L2. Blind-mount connector ensures easy installation and safe maintenance. 7/8" entrance provision at top of unit for standard 1/2" conduit entry. Tool-less removal of front cover from back plate for ease of installation and maintenance.

**LISTINGS** — UL damp location listed standard and wet location listed when used with the WPV5 accessories, all SA 5047 (10-00°C). Meets or exceeds all applicable requirements for UL 204, NFPA 101 (Current Life Safety Code), NFPA 70 (NEC), NOM (Norma Oficial Mexicana), California Energy Commission Title 20 section 1605.3 (WV) (4), FCC Title 47, Part 15, Subpart B and OSHA, and labeled to comply with Canadian Standards C22.38, 101-10.

**GOVERNMENT PROCUREMENT** — BAA — Product with the BAA option qualifies as a domestic end-product under the Buy American Act as implemented in the FAR and DFARS. Product with the BAA option also qualifies as manufactured in the United States under DOT Buy America regulations.

BABA — Build America Buy America. Product with the BAA option also qualifies as produced in the United States under the definition of the Build America, Buy America Act.

Please refer to [www.acuitybrands.com/buy-america](http://www.acuitybrands.com/buy-america) for additional information.

**WARRANTY** — 5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at [www.acuitybrands.com/support/technical/terms-and-conditions](http://www.acuitybrands.com/support/technical/terms-and-conditions)

**NOTE:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25°C.

Specifications subject to change without notice.

1 Small Battery Charges Certified in the CA Title 20 Appliance Efficiency Database.



Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit [www.acuitybrands.com/designselect](http://www.acuitybrands.com/designselect). \*See ordering tree for details

EMERGENCY

ELM2L1, ELM2L2 Pg. 1 of 4

EMERGENCY

EMERGENCY

EMERGENCY

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### TYPE E2

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### FEATURES & SPECIFICATIONS

**INTENDED USE** — To be powered by Quantum™ LED series unit or combo with high-output option as part of an emergency lighting system providing light for the path of egress. Remote lamp head matches the appearance of the Quantum LED series family units. **Certain airborne contaminants can diminish integrity of acrylic and/or polycarbonate.** Click here for Acrylic/Polycarbonate Compatibility table for suitable uses.

**CONSTRUCTION** — Single or twin heads available. Fully adjustable lamp heads to meet all aiming requirements. Strong, compact and corrosion-resistant with a UL94V-0 flame rating. Constructed of UV-stabilized thermoplastic that resists discoloration by natural or artificial sunlight.

Outdoor remote (DR99) uses standard cast aluminum, sealed and gasketed. For use in damp and wet location areas.

Lamp housing snaps off for easy lamp replacement.

**OPTICS** — Lamp: 12 zones parallel, 1.5W white LEDs per head. The typical life of the LED lamp is 10 years.

**INSTALLATION** — Mounting base for use with single- or twin-head applications. Mounts to a single-gang switch box.

**LISTINGS** — UL listed. Damp location listed (ELA Q) 50° to 104°F (10°C to 40°C). Wet location listed (ELA QWP) 14°F to 122°F (-10°C to 50°C).

**WARRANTY** — 5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at [www.acuitybrands.com/support/technical/terms-and-conditions](http://www.acuitybrands.com/support/technical/terms-and-conditions)

**NOTE:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25°C.

Specifications subject to change without notice.

Specifications

Q single: 6-3/8" W x 4-3/4" H

Q twin: 8-1/4" W x 4-1/4" H

QWP single: 4-1/2" W x 3-3/4" H

QWP twin: 8-1/2" W x 3-3/4" H

QWP twin: 8-1/2" W x 3-3/4" H

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### TYPE E3

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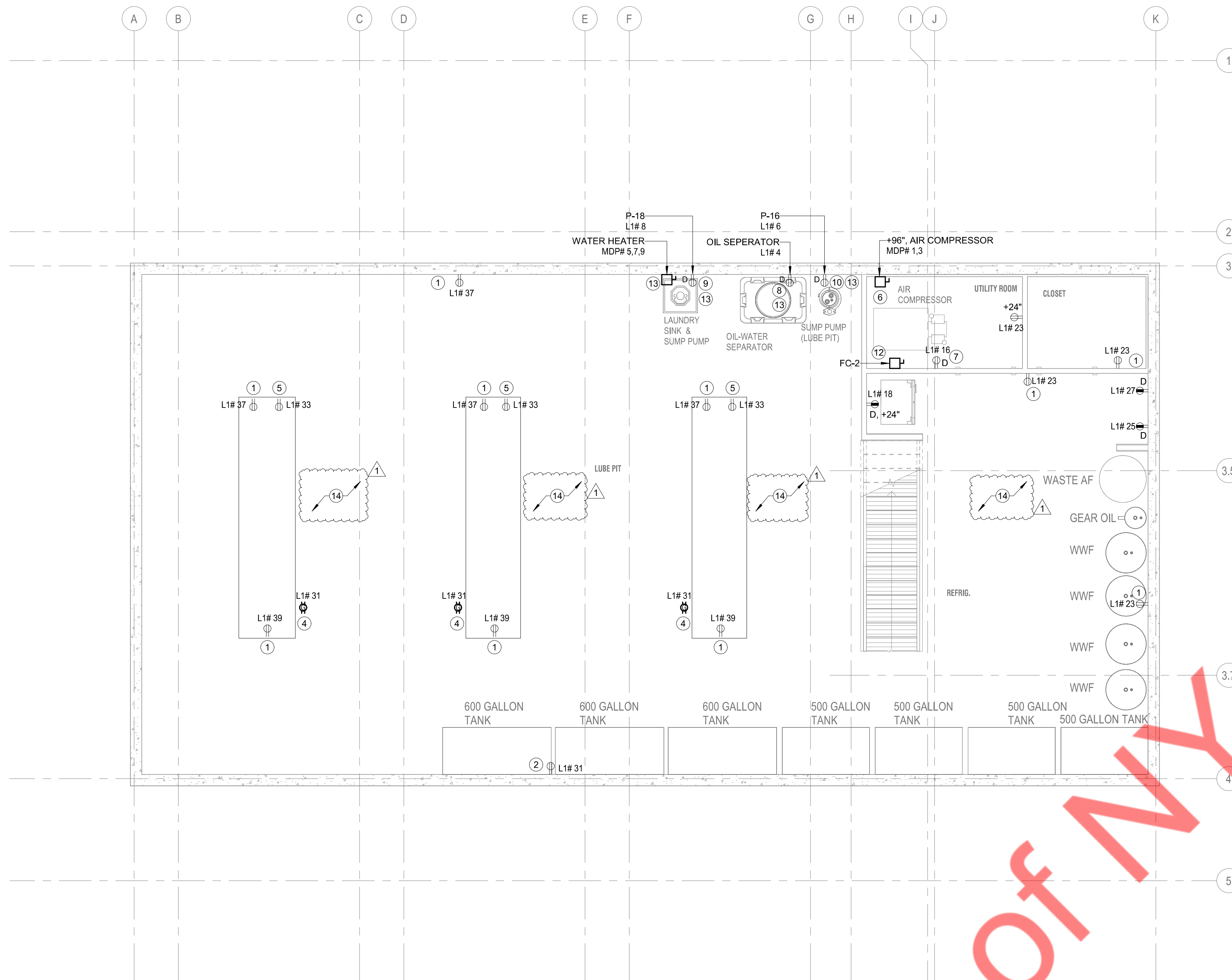
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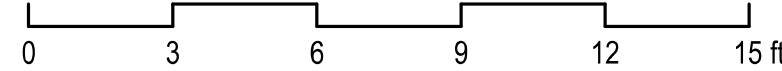
1 LOWER LEVEL POWER PLAN  
1/4" = 1'-0"

**POWER PLAN GENERAL NOTES:**

1. MAXIMUM VOLTAGE DROP FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS COMBINED, SHALL NOT EXCEED A 5% VOLTAGE DROP.
2. PROVIDE SERVICE EQUIPMENT AIC MARKING PER NEC 110.24(A) AND 110.24 (B) FOR MODIFICATIONS IF REQUIRED.
3. ALL BRANCH CIRCUIT HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO THE PANEL & CIRCUIT NUMBER AS INDICATED.
4. REFER TO E0.1 FOR ELECTRICAL SYMBOLS, GENERAL NOTES & ABBREVIATIONS. E0.2 FOR ELECTRICAL SPECIFICATIONS.
5. ALL 125-VOLT THROUGH 250-VOLT RECEPTACLES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS, INSTALLED IN THE LOCATIONS SPECIFIED IN 210.8(B) SHALL BE WITH GFCI PROTECTION.
6. SEE ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF DEVICES.
7. REFER TO ARCHITECTURAL PLAN & SCHEDULE. E.C. SHALL VERIFY THE BREAKER, CABLE, ELECTRICAL LOAD AND CONDUIT REQUIREMENT, SIZES, RATINGS FOR ALL KITCHEN EQUIPMENTS/MECHANICAL EQUIPMENTS WITH EQUIPMENT SUPPLIER/MANUFACTURER AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY. BASE BID ACCORDINGLY. INFORM ENGINEER PRIOR TO ORDER/INSTALLATION IN CASE FOUND ANY DISCREPANCY.
8. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ROOF WITH MECHANICAL CONTRACTOR/ARCHITECT.
9. REVIEW ALL EQUIPMENT SPECIFICATIONS PRIOR TO THE ROUGH-IN OF ANY ELECTRICAL DEVICES. COORDINATE EQUIPMENT REQUIREMENTS AND ELEVATIONS PRIOR TO ROUGH-IN.
10. DUPLEX RECEPTACLES SHALL BE MOUNTED AT 18" AFF UNLESS NOTED OTHERWISE ON DRAWINGS OR SCHEDULES.
11. ALL EXTERIOR WEATHERPROOF OUTLETS SHALL COMPLY WITH NEC ARTICLE 406.4(D)(6) FOR WEATHER-RESISTANT RECEPTACLES.

**POWER PLAN KEY NOTES:**

- 1 GENERAL SERVICE GFCI RECEPTACLE. COORDINATE MOUNTING LOCATION WITH ALL TRADES PRIOR TO ROUGH-IN. MOUNT +24" AFF MIN TO BOTTOM OF BOX IN SERVICE BAYS.
- 2 COORDINATE MOUNTING HEIGHT WITH BULK TANKS. MOUNT AT 7'-0" AFF.
- 3 COORDINATE MOUNTING HEIGHT WITH SHELVING. MOUNT 48" AFF +.
- 4 E.C. SHALL PROVIDE GFCI BREAKER IN PANEL FOR THIS CIRCUIT.
- 5 20A DUPLEX RECEPTACLE (GFCI) MOUNTED AT UNDERSIDE OF THE FLOOR FOR INSTALLATION OF CEILING OR CATWALK MOUNTED AIR CIRCULATION FANS.
- 6 AIR COMPRESSOR FUSED DISCONNECT LOCATED ON/AT UNIT.
- 7 RECEPTACLE FOR AIR DRYER #401.
- 8 OIL/WATER SEPARATOR. PROVIDE 120V POWER FOR OIL/WATER SEPARATOR SUMP PUMP ALARM. PROVIDE LOW VOLTAGE WIRING IN 3/4" CONDUIT TO REMOTE PUMP ALARM. COORDINATE WITH PLUMBING CONTRACTOR.
- 9 P18-SUMP PUMP FOR SINK. PROVIDE NEMA 6 RECEPTACLE.
- 10 P16 - SANITARY SUMP PUMP, PROVIDE NEMA 6 RECEPTACLE.
- 11 P13- FOUNDATION SUMP PUMP (120V, 1/2 HP) ENCLOSURE - SEE PLUMBING & CIVIL DRAWINGS FOR DETAIL AND EXACT LOCATION. PROVIDE DUPLEX RECEPTACLE WITH WET LOCATION IN-USE COVER INSIDE ENCLOSURE APPROXIMATELY 6" FROM TOP. PROVIDE 3/4" CONDUIT INTO ENCLOSURE FOR WIRING OF REMOTE PUMP ALARM. COORDINATE WITH P.C.
- 12 FC-2 TO BE POWERED BY CU-2. COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIRMENTS WITH MECHANICAL CONTRACTOR. PROVIDE ELECTRICAL CONNECTION AS PER FINAL MECHANICAL EQUIPMENTS REQUIRMENTS IN FIELD PER MANUFACTURER RECOMMENDATION.
- 13 COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIRMENTS OF PLUMBING EQUIPMENTS WITH PLUMBING CONTRACTOR. PROVIDE THE ELECTRICAL CONNECTION AS PER MANUFACTURER RECOMMENDATION.
- 14 ALL WIRING AND INSTALLATION IN THE LOWER LEVEL SHALL COMPLY WITH NEC ARTICLE 500.501 & 511. ELECTRICAL CONTRACTOR HAS TO VERIFY WITH LOCAL AHJ TO CONFIRM IN CASE ANY SPECIFIC REQUIREMENT TO BE COMPLY IN LOWER LEVEL WIRING & INSTALLATION.



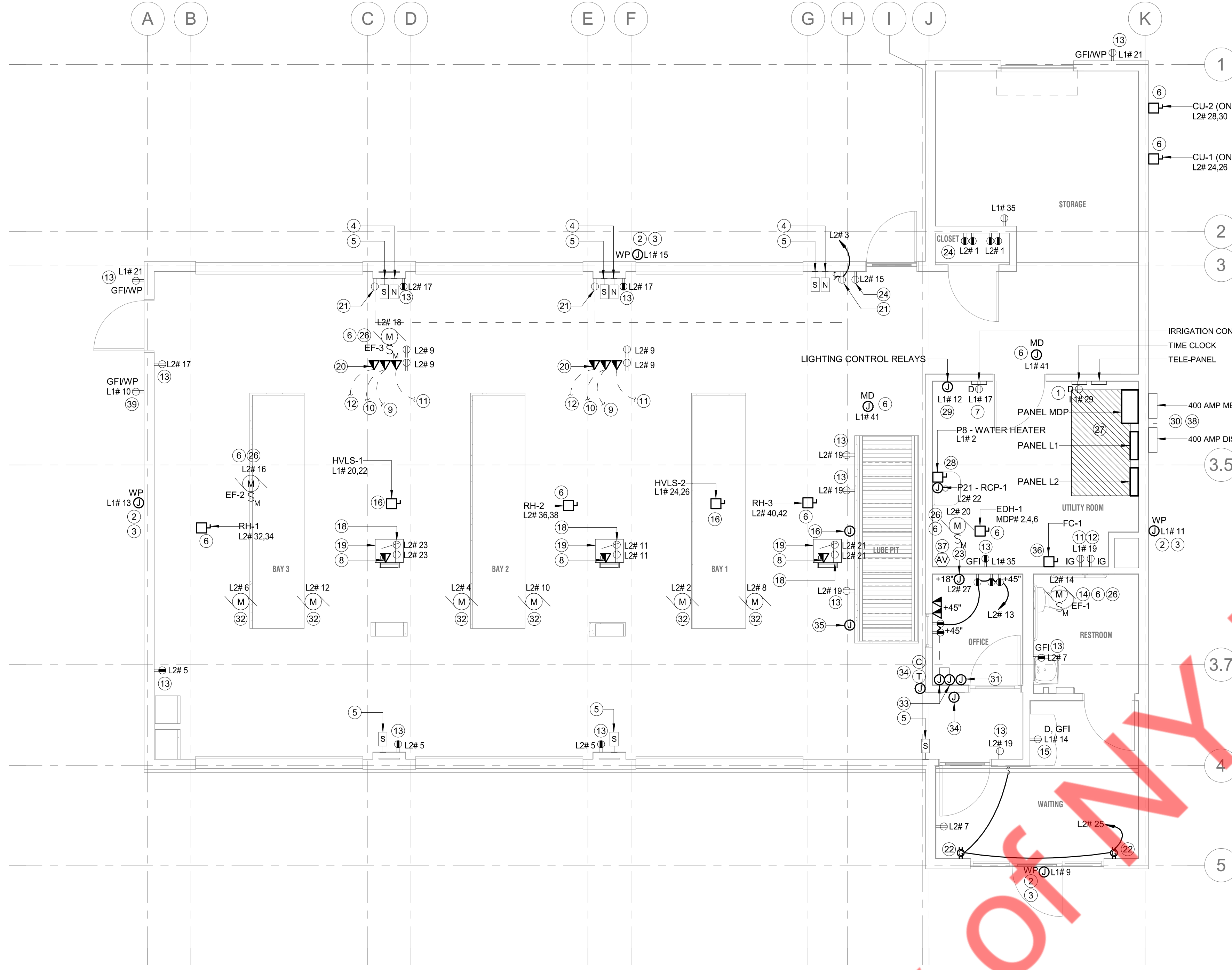
VALVOLINE INSTANT OIL CHANGE

#	DATE	REVISION
1	2025-05-16	ISSUE FOR PERMIT
2	2025-09-04	BD COMMENTS

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: POWER PLAN - LOWER LEVEL

E2.0



1 UPPER LEVEL POWER PLAN  
1/4" = 1'-0"

**POWER PLAN GENERAL NOTES:**

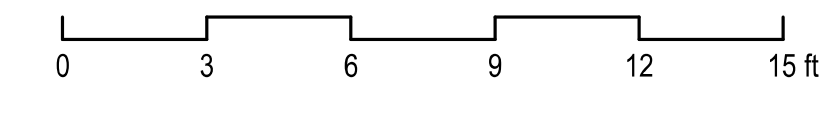
1. MAXIMUM VOLTAGE DROP FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS COMBINED, SHALL NOT EXCEED A 5% VOLTAGE DROP.
2. PROVIDE SERVICE EQUIPMENT AIC MARKING PER NEC 110.24(A) AND 110.24 (B) FOR MODIFICATIONS IF REQUIRED.
3. ALL BRANCH CIRCUIT HOMERUNS ASSIGN INDICATED ON THIS PLAN SHALL BE CIRCUITED TO THE PANEL & CIRCUIT NUMBER AS INDICATED.
4. REFER TO E0.1 FOR ELECTRICAL SYMBOLS, GENERAL NOTES & ABBREVIATIONS. E0.2 FOR ELECTRICAL SPECIFICATIONS.
5. ALL 125-VOLT THROUGH 250-VOLT RECEPTACLES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS, INSTALLED IN THE LOCATIONS SPECIFIED IN 210.8(B) SHALL BE WITH GFCI PROTECTION.
6. SEE ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF DEVICES.
7. REFER TO ARCHITECTURAL SET FOR EQUIPMENT PLAN & SCHEDULE. E.C. SHALL VERIFY THE BREAKER, CABLE, ELECTRICAL LOAD AND CONDUIT REQUIREMENT, SIZES, RATINGS FOR ALL KITCHEN EQUIPMENTS/MECHANICAL EQUIPMENTS WITH EQUIPMENT SUPPLIER/MANUFACTURER AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY. BASE BID ACCORDINGLY. INFORM ENGINEER PRIOR TO ORDER/INSTALLATION IN CASE FOUND ANY DISCREPANCY.
8. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ROOF WITH MECHANICAL CONTRACTOR/ARCHITECT.
9. REVIEW ALL EQUIPMENT SPECIFICATIONS PRIOR TO THE ROUGH-IN OF ANY ELECTRICAL DEVICES. COORDINATE EQUIPMENT REQUIREMENTS AND ELEVATIONS PRIOR TO ROUGH-IN.
10. DUPLEX RECEPTACLES SHALL BE MOUNTED AT 18" AFF UNLESS NOTED OTHERWISE ON DRAWINGS OR SCHEDULES.
11. ALL EXTERIOR WEATHERPROOF OUTLETS SHALL COMPLY WITH NEC ARTICLE 406.4(D)(6) FOR WEATHER-RESISTANT RECEPTACLES.

**POWER PLAN KEY NOTES:**

1. TIME CLOCK/LIGHTING CONTACTOR. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER IN FIELD.
2. ROUTE THROUGH TIME CLOCK FOR CONTROL OF LIGHTS SIGNS.
3. MAKE CONNECTION TO BOX SIGN(S) PROVIDED BY OWNER. INSTALL J-BOX(ES) VERIFY MOUNTING HEIGHT AND EXACT LOCATION W/SIGN SUPPLIER.
4. DOOR OPERATOR NORTH: PROVIDE 3/4" CONDUIT TO EACH DOOR OPERATOR PUSH BUTTONS AND PHOTO EYE. SHARE A SINGLE JUNCTION BOX FOR EXIT/ENTRANCE DOORS AT CORRESPONDING BAY. VERIFY HEIGHT WITH ARCHITECTURAL DRAWINGS. CIRCUIT DOOR MOTOR AS NOTED (KEYNOTE 32).
5. DOOR OPERATOR SOUTH: BAY DOOR. PROVIDE 3/4" CONDUIT TO EACH DOOR OPERATOR PUSH BUTTONS AND PHOTO EYE. SHARE A SINGLE JUNCTION BOX FOR EXIT/ENTRANCE DOORS AT CORRESPONDING BAY. VERIFY HEIGHT WITH ARCHITECTURAL DRAWINGS. CIRCUIT DOOR MOTOR AS NOTED (KEYNOTE 32).
6. COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR. PROVIDE THE ELECTRICAL CONNECTION AS PER FINAL MECHANICAL EQUIPMENTS REQUIREMENTS IN FIELD.
7. IRRIGATION CONTROL, FOR REFERENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHT AND DETAILS.
8. PROVIDE CAT6 CABLE TO MONITOR AND CREDIT CARD MACHINE. REFER TO RISER DIAGRAM.
9. DATA LINE: CAT6 8 CONDUCTOR TWISTED PAIR CABLE. CABLE IS RUN PIN TO PIN, 3'-0" PIGTAIL TERMINATED WITH RJ11 CONNECTORS AT BOTH ENDS. PROVIDE COMMUNICATION CONDUIT BETWEEN PODIUMS AND COMPUTER CONSOLE. REFER TO RISER DIAGRAM.
10. PROVIDE CAT6 DATA LINE 8 CONDUCTOR TWISTED PAIR CABLE TO CENTRAL COMPUTER IN OFFICE. REFER TO RISER DIAGRAM.
11. SINGLE PAIR TELEPHONE CABLE TO TELEPHONE PANEL. REFER TO RISER DIAGRAM.
12. PROVIDE CAT6 CABLE TO TELEPHONE PANEL. REFER TO RISER DIAGRAM.
13. GENERAL SERVICE GFCI RECEPTACLE. COORDINATE MOUNTING LOCATION WITH ALL TRADES PRIOR TO ROUGH-IN. MOUNT +24" AFF MIN TO BOTTOM OF BOX IN SERVICE BAYS.
14. EF-1 TO BE INTERLINK WITH FC-1 AND CONTROLLED VIA TIME CLOCK. COORDINATE WITH MECHANICAL CONTRACTOR FOR THE EXACT REQUIREMENTS.

15. EWC. PROVIDE DEDICATED 120V GFCI RECEPTACLE. LOCATE GFCI IN READILY ACCESSIBLE LOCATION TO COMPLY WITH NEC 422.5(B).
16. PROVIDE 1/2" C. FOR HVLS FAN CONTROLLER. PROVIDE BACKBOX +48" AFF. HVLS FAN SHALL BE INTERLOCKED WITH THE FIRE ALARM SYSTEM. COORDINATE EXACT REQUIREMENTS WITH ARCHITECT/OWNER.
17. PROVIDE 3/4" CONDUIT WITH PULLWIRE FROM THIS LOCATION TO UTILITY ROOM FOR LOW VOLTAGE WIRING. COORDINATE EXACT REQUIREMENTS IN FIELD WITH OWNER.
18. MOUNT RECEPTACLE IN POS PODIUM.
19. POINT OF SALE PODIUM - PROVIDE (3) 3/4" CONDUITS (POWER, DATA, SECURITY) UP FROM FLOOR BELOW THROUGH 4" PODIUM BASE.
20. GREETER STATION - PROVIDE (4) 1" CONDUITS (POWER, DATA, SECURITY) UP FROM FLOOR BELOW AND INTO ENCLOSURE. MOUNT BOXES FOR POWER AND DATA OUTLETS ON INSIDE OF ENCLOSURE. COORDINATE STUB UP LOCATION IN FIELD WITH OWNER.
21. 20A DUPLEX RECEPTACLE (GFCI) MOUNTED AT 12" BELOW CEILING FOR INSTALLATION OF WALL MOUNTED AIR CIRCULATION FANS. CONTROL THRU WALL SWITCH AS INDICATED.
22. RECEPTACLE MOUNTED AT CEILING. PROVIDE SWITCH TO CONTROL RECEPTACLES ONLY FOR OWNER SIGNAGE.
23. PROVIDE CONNECTION TO SECURITY CABINET AS RECOMMENDED BY INSTALLER.
24. (2) QUAD RECEPTACLES AT +60" AFF FOR TOOL BATTERY CHARGERS.
25. RECEPTACLE AT 24" AFF FOR BELL RINGER. RUN CONDUIT THROUGH WALL & UNDER SIDEWALK THROUGH CURB IN CUE LANE APPROXIMATELY 50' FROM BUILDING. REFER TO SERVICE BELL DETAIL ON CIVIL DRAWINGS AND COORDINATE ROUTING WITH VIOC CONSTRUCTION MANAGER.
26. EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR SWITCHING & CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED.
27. COORDINATE EXACT LOCATION OF ELECTRICAL PANEL WITH ARCHITECT/OWNER IN FIELD. E.C. SHALL MAINTAIN CLEARANCE FOR ELECTRICAL PANELS PER NEC 110.26 (A) (1).
28. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH PLUMBING CONTRACTOR/MANUFACTURER FOR THE WATER HEATER IN FIELD.

29. J-BOXES IN ACCESSIBLE LOCATION FOR CONTROL RELAYS. CONNECTION TO EF-2, TF-1 & LOWER LEVEL LIGHTS.
30. LOCATION OF UTILITY CT METER & SERVICE DISCONNECT IN NEMA 3R ENCLOSURE. COORDINATE EXACT LOCATION & MOUNTING HEIGHT IN FIELD.
31. PROVIDE SEPARATE 120V POWER FOR OIL/WATER SEPARATOR SUMP PUMP ALARM. PROVIDE LOW VOLTAGE WIRING TO SUMP ENCLOSURES. COORDINATE WITH PLUMBING CONTRACTOR.
32. DOOR OPENER MOTOR. CONNECT TO DOOR PUSH-BUTTON.
33. PROVIDE RATE 120V POWER FOR EACH FOUNDATION SUMP PUMP ALARM EQUIPMENT. PROVIDE LOW VOLTAGE WIRING TO BOTH OUTDOOR SUMP ENCLOSURES. COORDINATE WITH PLUMBING CONTRACTOR.
34. T-STAT FOR RADIANT HEATERS. PROVIDE J-BOX & CONDUIT TO RESPECTIVE T-STAT. T-STAT SHALL BE LOW VOLTAGE PROGRAMMABLE. PROVIDE 1/2" C. FOR THERMOSTAT. PROVIDE BACKBOX +48" AFF. ONE THERMOSTAT TO CONTROL ALL THREE RADIANT HEATERS AS INDICATED ON MECHANICAL DRAWINGS.
35. PROVIDE 3/4" CONDUIT WITH PULLWIRE FROM THIS LOCATION TO UTILITY ROOM FOR LOW VOLTAGE WIRING. COORDINATE EXACT REQUIREMENTS IN FIELD WITH OWNER.
36. FC-1 TO BE POWERED BY CU-1. COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH MECHANICAL CONTRACTOR. PROVIDE ELECTRICAL CONNECTION AS PER FINAL MECHANICAL EQUIPMENTS REQUIREMENTS IN FIELD PER MANUFACTURER RECOMMENDATION.
37. PROVIDE AV NOTIFICATIONS DEVICE AND ELECTRICAL CONNECTION AS REQUIRED PER FIELD COORDINATION.
38. PROPOSED LOCATION OF EXTERIOR ELECTRICAL EQUIPMENTS. COORDINATE FINAL LOCATION PRIOR TO INSTALLATION WITH ARCHITECT/OWNER AND FIELD CONDITION.
39. COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS WITH MANUFACTURER/CONTRACTOR IN FIELD. PROVIDE THE ELECTRICAL CONNECTION AS PER MANUFACTURER RECOMMENDATION.



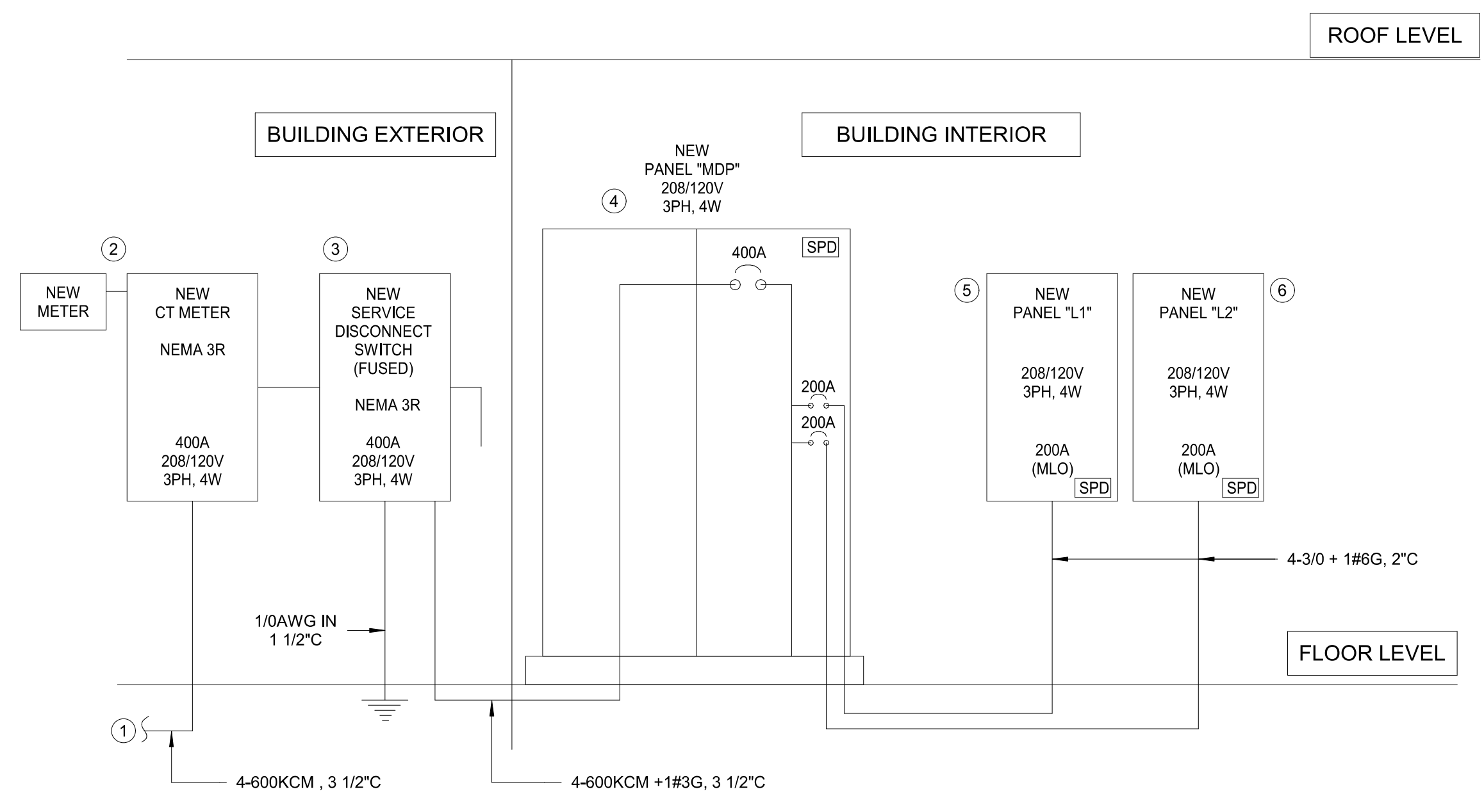
VALVOLINE INSTANT OIL CHANGE

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CONTENTS: POWER PLAN - UPPER LEVEL

E2.1



1 ELECTRICAL RISER DIAGRAM  
1/8" = 1'-0"

**RISER DIAGRAM KEY NOTES:**

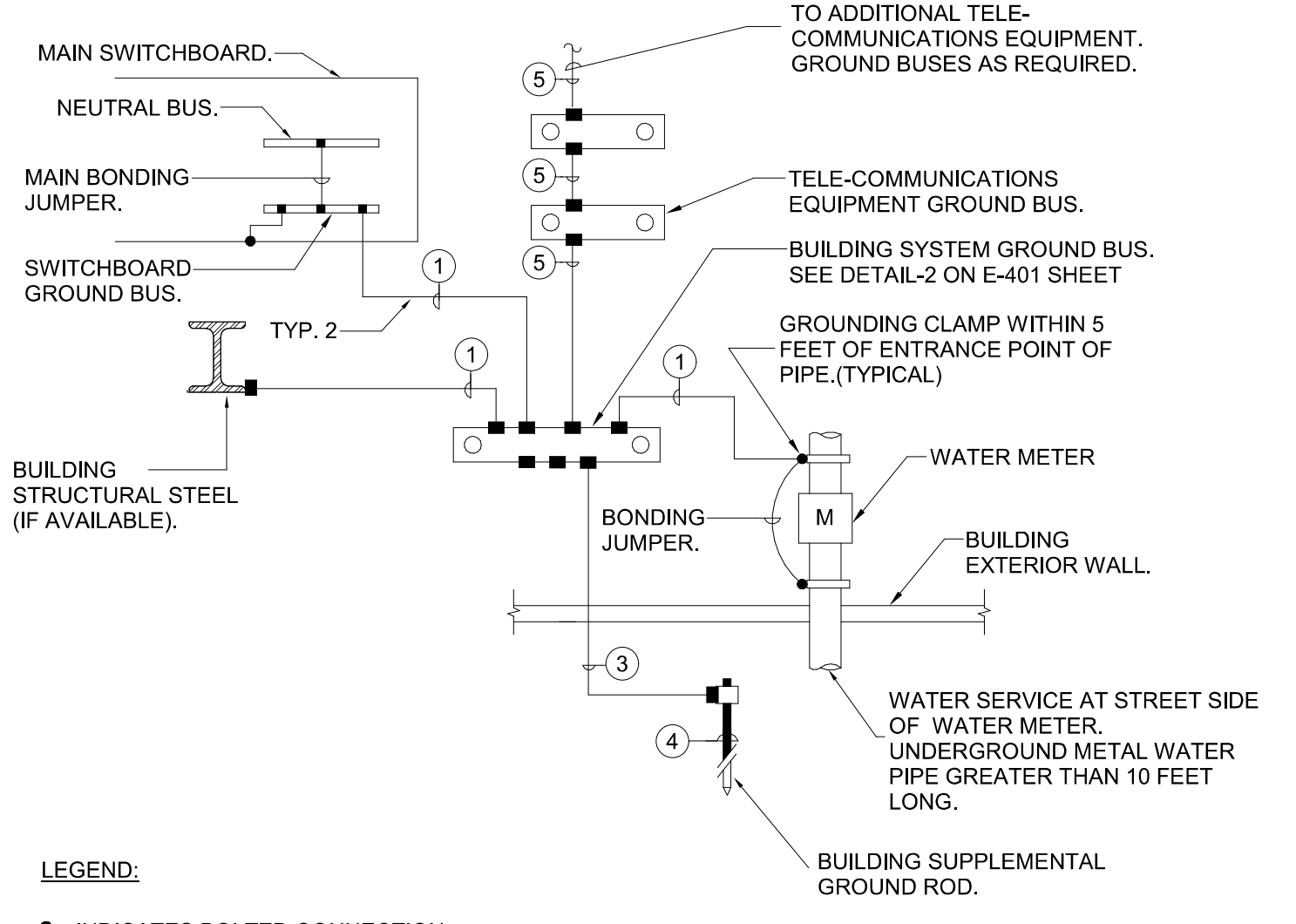
- NEW 400AMP, 208/120V, 3-PHASE ELECTRICAL SERVICE FOR THE PROJECT SPACE. VERIFY THE EXACT LOCATION IN FIELD WITH UTILITY PROVIDER/LANDLORD.
- NEW 400AMP, 208/120V, 3-PHASE ELECTRICAL CT METER & CABINET FOR THE PROJECT SPACE. VERIFY THE EXACT LOCATION IN FIELD WITH UTILITY PROVIDER/LANDLORD. VERIFY THE CT REQUIREMENTS WITH THE UTILITY PROVIDER AND LOCAL A.H.J. BASE BID ACCORDINGLY.
- NEW 400AMP, 208/120V, 3-PHASE ELECTRICAL SERVICE DISCONNECT SWITCH (FUSED) FOR THE PROJECT SPACE. VERIFY THE EXACT LOCATION IN FIELD WITH UTILITY PROVIDER/LANDLORD.
- NEW 400AMP, 208/120V, 3-PHASE ELECTRICAL SERVICE MAIN DISTRIBUTION PANEL "MDP" FULL HEIGHT BUS IN DISTRIBUTION SECTION FOR THE PROJECT SPACE. VERIFY THE EXACT LOCATION IN FIELD WITH UTILITY PROVIDER/LANDLORD.
- NEW 200AMP, 208/120V, 3-PHASE ELECTRICAL PANEL "L1" FOR THE PROJECT. VERIFY THE EXACT LOCATION IN FIELD.
- NEW 200AMP, 208/120V, 3-PHASE ELECTRICAL PANEL "L2" FOR THE PROJECT. VERIFY THE EXACT LOCATION IN FIELD.

**RISER DIAGRAM GENERAL NOTES:**

- VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
- SERVICE EQUIPMENT SHALL BE MARKED TO INDICATE THE MAXIMUM AVAILABLE FAULT CURRENT AS REQUIRED BY NEC SECTION 110.24. THE FIELD MARKINGS SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. REQUEST A DATED LETTER WITH FAULT CURRENT INFORMATION FROM THE LOCAL UTILITY.
- INFORMATION SHOWN IS DIAGRAMMATIC AND IS NOT INTENDED TO REPRESENT PHYSICAL ARRANGEMENTS, LOCATIONS, ROUTING OR CONNECTIONS. PHYSICAL LAYOUTS ARE TO BE PER FIELD CONDITIONS. INFORM ENGINEER FOR ANY DISCREPANCY FOUND.
- LABEL ALL DISTRIBUTION EQUIPMENT PRIOR TO FINAL OBSERVATION WALK THROUGH.
- PROVIDE ARC-FLASH HAZARD WARNING FIELD LABELING TO ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC 110.16.
- ALL EXTERIOR ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH A NEMA-3R ENCLOSURE.
- ALL NEW ELECTRICAL EQUIPMENT SHALL BE UL LISTED OR LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL). TESTING AND FIELD VERIFICATION SHALL BE PERFORMED BY LICENSED ELECTRICAL CONTRACTORS IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.
- THE CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS COMBINED SHALL BE SIZED FOR A MAXIMUM OF 5 PERCENT VOLTAGE DROP TOTAL, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. CALCULATIONS SHALL BE COMPLETED BY THE ELECTRICAL CONTRACTOR BASED ON ACTUAL FIELD INSTALLATIONS AND DISTANCES PRIOR TO ROUGH-IN.
- PROVIDE BONDING BAR NEAR THE GROUNDING ELECTRODE CONDUCTOR PER NEC 250.94. THE BONDING BAR SHALL BE CONNECTED TO THE GROUNDING ELECTRODE CONDUCTOR.
- INCOMING ELECTRICAL SERVICE CONDUIT SHALL NOT PENETRATE OR PASS THROUGH THE BUILDING FOUNDATION OR FOOTING. ALL BELOW-GRADE SERVICE CONDUITS SHALL BE ROUTED TO ENTER ABOVE THE SLAB OR VIA WALL SLEEVE OUTSIDE THE FOUNDATION ENVELOPE, PER UTILITY AND STRUCTURAL COORDINATION.

**PANEL SCHEDULE GENERAL NOTES:**

- ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY CIRCUITING OF THE EXISTING DEVICES IN FIELD AND INFORM ENGINEER FOR DISCREPANCIES.
- VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.
- COORDINATE WITH THE MANUFACTURER OF EQUIPMENT FOR THE WIRE SIZE & RATING OF MOCB BEFORE THE COMMENCEMENT OF WORK.
- VERIFY THE EXACT CIRCUIT, CIRCUIT NUMBER IN FIELD & ADJUST / MODIFY CIRCUITING AS REQUIRED.
- ALL 125-VOLT THROUGH 250-VOLT RECEPTACLES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS, INSTALLED IN THE LOCATIONS SPECIFIED IN 210.8(B) SHALL BE WITH GFCI PROTECTION.
- REFER TO ARCHITECTURAL SHEET FOR EQUIPMENT PLAN & SCHEDULE. VERIFY THE BREAKER, CABLE, ELECTRICAL LOAD AND CONDUIT REQUIREMENT/SIZES/RATINGS FOR ALL EQUIPMENTS/MECHANICAL EQUIPMENTS WITH EQUIPMENT SUPPLIER/MANUFACTURER AND PROVIDE THE ELECTRICAL CONNECTION ACCORDINGLY. INFORM ENGINEER PRIOR TO ORDER/INSTALLATION IN CASE FOUND ANY DISCREPANCY.



- LEGEND:**
- INDICATES BOLTED CONNECTION.
  - INDICATED EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIAL BEING JOINED.
- INSULATED COPPER GROUNDING ELECTRODE CONDUCTOR IN CONDUIT SIZED AS PER NEC ARTICLE 250.66.
  - INSULATED COPPER GROUNDING ELECTRODE CONDUCTOR ENCASED IN CONCRETE SIZED AS PER NEC ARTICLE 250.66.
  - 1/0 AWG BARE COPPER CONDUCTOR.
  - 3/4" x 10'-0" LONG COPPER-CLAD GROUND ROD DRIVEN WITH TOP 12" BELOW GRADE. PROVIDE CONCRETE-ENCASED ELECTRODE (UFER GROUND) IN ACCORDANCE WITH NEC 250.52(A)(3), CONSISTING OF MINIMUM 20' OF #4 AWG BARE COPPER OR REBAR IN DIRECT CONTACT WITH CONCRETE FOOTING. GROUNDING ELECTRODE SYSTEM SHALL ALSO BOND TO METALLIC WATER SERVICE (IF PRESENT) AND SUPPLEMENTAL GROUND ROD PER NEC 250.50-250.53.
  - 2 AWG INSULATED COPPER GROUND CONDUCTOR IN 30MM CONDUIT.

2 GROUNDING DETAILS  
1/8" = 1'-0"

ELECTRICAL LOAD SUMMARY					
DESCRIPTION	CONNECTED KVA	VOLT	PHASE	DEMAND FACTOR	DEMAND KVA
LIGHTING	8.9	120	1	1.25	11.1
RECEPTACLES	14.3	120	1	>10KW=10+[0.5*(KW-10)]	12.2
HVAC	29.6	208	3	1.00	29.6
MOTOR	19.7	120	1	1.00	19.7
EQUIPMENTS	2.6	208	3	1.00	2.6
OTHERS/MISCELLANEOUS	20.3	208	3	1.00	20.3
<b>TOTAL</b>	<b>95.3</b>				<b>95.3</b>

**NOTES:**

- \* USE GREATER VALUE OF THE TWO CATEGORIES.
- \*\* 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.
- \*\*\* N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW) MINUS ACTUAL SHOW WINDOW LIGHTING KVA.

N.E.C. DEMAND KVA x 1,000	MINIMUM FEEDER AMPERAGE
95.3	264.6 AMPS
208	USE (NEW) 400AMP SERVICE

**PANEL: MDP**

VOLTAGE: 120/208 Wye		PHASE: 3		WIRE: 4		MAINS TYPE MCB MAINS RATING: 400 A BUS: 400 A			MOUNTING: SURFACE PANEL LOCATION: UTILITY ROOM SUPPLY FROM: 400 AMP SERVICE DISCONNECT					
CKT. NO.	TRIP AMP	POLE	CIRCUIT DESCRIPTION	LOAD TYPE	WIRE SIZE	A	B	C	WIRE SIZE	LOAD TYPE	CIRCUIT DESCRIPTION	POLE	TRIP AMP	CKT. NO.
1	60	2	AIR COMPRESSOR	M	2#6, #10G, 3/4"	3.20	3.33				3#8, #10G, 3/4"	H	EDH-1	3 40 2
3	--	--					3.20	3.33					--	4
5	50	3	P20 WATER HEATER (LOW LEVEL)	O	3#8, #10G, 3/4"			4.67	3.33				--	6
7	--	--				4.67	10.08						--	8
9	--	--						4.67	10.08				--	10
11	20	1	Spare										--	12
13	20	1	Spare			0.00	12.28						3	200 14
15	20	1	Spare					0.00	12.28				--	16
17	20	1	Spare										--	18
<b>TOTAL CONNECTED LOAD (KVA):</b>						<b>33.56</b>	<b>33.56</b>	<b>30.36</b>						
<b>TOTAL CONNECTED AMPS:</b>						<b>283.77</b>	<b>283.77</b>	<b>253.00</b>						

LOAD TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTAL LOAD SUMMARY		
LIGHTING	L	0 VA	0.00%	0 VA	<b>TOTAL CONNECTED LOAD: 97.48 kVA</b>		
RECEPTACLE	R	0 VA	0.00%	0 VA	<b>TOTAL ESTIMATED DEMAND LOAD: 97.48 kVA</b>		
HVAC	H	10000 VA	100.00%	10000 VA	<b>TOTAL CONNECTED CURRENT: 270.58 A</b>		
MOTOR	M	6400 VA	100.00%	6400 VA	<b>TOTAL ESTIMATED DEMAND CURRENT: 270.58 A</b>		
KITCHEN/EQUIPMENTS	E	0 VA	0.00%	0 VA			
OTHER	O	81080 VA	100.00%	81080 VA			

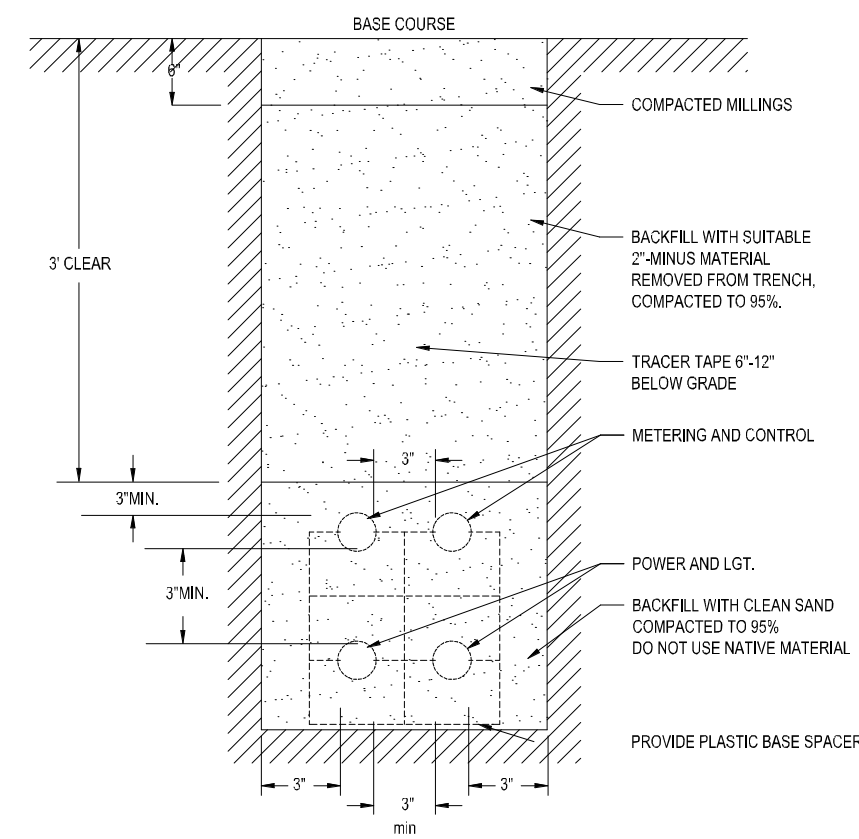
**PANEL: L1**

VOLTAGE: 120/208 Wye		PHASE: 3		WIRE: 4		MAINS TYPE MCB MAINS RATING: 200 A BUS: 200 A			MOUNTING: SURFACE PANEL LOCATION: UTILITY ROOM SUPPLY FROM: 400 AMP SERVICE DISCONNECT					
CKT. NO.	TRIP AMP	POLE	CIRCUIT DESCRIPTION	LOAD TYPE	WIRE SIZE	A	B	C	WIRE SIZE	LOAD TYPE	CIRCUIT DESCRIPTION	POLE	TRIP AMP	CKT. NO.
1	20	1	UPPER LEVEL LIGHTING	L	2#12, #12G, 3/4"	0.98	1.65				2#12, #12G, 3/4"	O	P8 WATER HEATER (UPPER LEVEL)	1 20 2
3	20	1	UPPER LEVEL LIGHTING	L	2#12, #12G, 3/4"			0.29	0.50		2#12, #12G, 3/4"	O	P15 OIL SEPARATOR PUMP ALARM	1 20 4
5	20	1	LOWER LEVEL LIGHTING	L	2#12, #12G, 3/4"						2#12, #12G, 3/4"	O	P16 LUBE PIT SUMP PUMP (LOW LEVEL)	1 20 6
7	20	1	EXTERIOR LIGHTING	L	2#12, #12G, 3/4"	0.22	0.90				2#12, #12G, 3/4"	O	P18 SUMP PUMP (LOW LEVEL)	1 20 8
9	20	1	BUILDING SIGNAGE	L	2#12, #12G, 3/4"			1.50	1.20		2#12, #12G, 3/4"	O	FOUND SUMP PUMP (LOW LEVEL)	1 20 10
11	20	1	TOWER SIGNAGE	L	2#12, #12G, 3/4"				1.50	0.50	2#12, #12G, 3/4"	O	LIGHTING CONTROL RELAYS	1 20 12
13	20	1	MONUMENT SIGNAGE	L	2#12, #12G, 3/4"	1.50	0.72				2#12, #12G, 3/4"	E	DRINKING FOUNTAIN	1 20 14
15	20	1	EXTERIOR CAMERAS	L	2#12, #12G, 3/4"			1.50	0.40		2#12, #12G, 3/4"	E	AIR DRYER (LOW LEVEL)	1 20 16
17	20	1	IRRIGATION CONTROL	R	2#12, #12G, 3/4"				0.50	1.50	2#12, #12G, 3/4"	E	REFRIGERATOR (LOW LEVEL)	1 20 18
19	20	1	TELESECURITY RECEPTACLES (IG)	R	2#12, #12G, 3/4"	0.36	0.70				2#12, #12G, 3/4"	M	HVLS-1 (FAN)	2 20 20
21	20	1	EXTERIOR WEATHER PROOF	R	2#12, #12G, 3/4"			0.36	0.70				--	22
23	20	1	CONVENIENCE RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"				0.72	0.70	2#12, #12G, 3/4"	M	HVLS-2 (FAN)	2 20 24
25	20	1	COUNTER RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"	1.50	0.70						--	26
27	20	1	COUNTER RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"			1.50					--	28
29	20	1	TIME CLOCK RECEPTACLE	R	2#12, #12G, 3/4"				0.18	0.00			1	20 30
31	20	1	CONVENIENCE RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"	0.72	0.00						--	32
33	20	1	CONVENIENCE RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"			0.54	0.00				--	34
35	20	1	UTILITY RECEPTACLE (UP LEVEL)	R	2#12, #12G, 3/4"				0.36	0.00			1	20 36
37	20	1	CONVENIENCE RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"	0.72	0.00						--	38
39	20	1	CONVENIENCE RECEPTACLE (LOW LEVEL)	R	2#12, #12G, 3/4"			0.54	0.00				--	40
41	20	1	MOTORIZED DAMPER	O	2#12, #12G, 3/4"				0.10	0.00			1	20 42
<b>TOTAL CONNECTED LOAD (KVA):</b>						<b>10.66</b>	<b>9.03</b>	<b>8.33</b>						
<b>TOTAL CONNECTED AMPS:</b>						<b>89.75</b>	<b>76.14</b>	<b>69.44</b>						

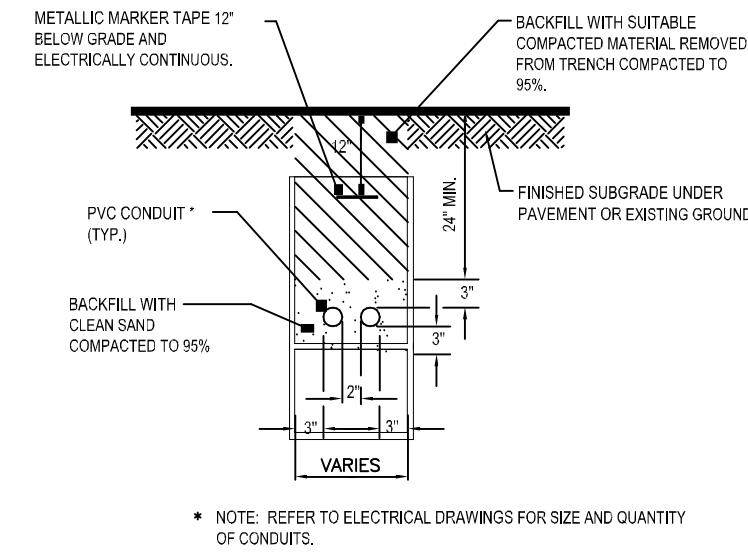
LOAD TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTAL LOAD SUMMARY		
LIGHTING	L	8856 VA	125.00%	11070 VA	<b>TOTAL CONNECTED LOAD: 28.03 kVA</b>		
RECEPTACLE	R	8000 VA	100.00%	8000 VA	<b>TOTAL ESTIMATED DEMAND LOAD: 30.24 kVA</b>		
HVAC	H	0 VA	0.00%	0 VA	<b>TOTAL CONNECTED CURRENT: 77.79 A</b>		
MOTOR	M	2800 VA	100.00%	2800 VA	<b>TOTAL ESTIMATED DEMAND CURRENT: 83.94 A</b>		
KITCHEN/EQUIPMENTS	E	2620 VA	100.00%	2620 VA			
OTHER	O	5750 VA	100.00%	5750 VA			

**PANEL: L2**

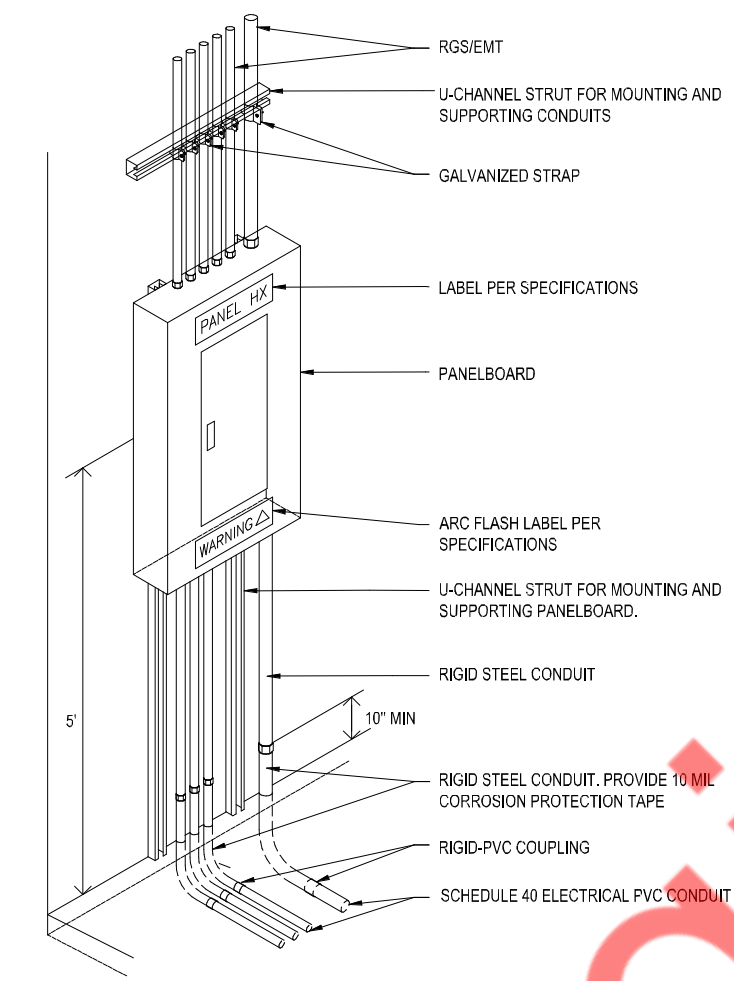
VOLTAGE: 120/208 Wye		PHASE: 3		WIRE: 4		MAINS TYPE MCB MAINS RATING: 200 A BUS: 200 A			MOUNTING: SURFACE PANEL LOCATION: UTILITY ROOM SUPPLY FROM: 400 AMP SERVICE DISCONNECT					
CKT. NO.	TRIP AMP	POLE	CIRCUIT DESCRIPTION	LOAD TYPE	WIRE SIZE	A	B	C	WIRE SIZE	LOAD TYPE	CIRCUIT DESCRIPTION	POLE	TRIP AMP	CKT. NO.
1	20	1	TOOL CHARGER	R	2#12, #12G, 3/4"	0.72	1.20				2#12, #12G, 3/4"	M	BAY-1 DOOR OPENER	1 20 2
3	20	1	UPPER WALL FANS	R	2#12, #12G, 3/4"			0.18	1.20				1	20 4
5	20	1	SERVICE BAY RECEPTACLE	R	2#12, #12G, 3/4"				0.54	1.20	2#12, #12G, 3/4"	M	BAY-2 DOOR OPENER	1 20 6
7	20	1	RESTROOM + WAITING RECEPTACLE	R	2#12, #12G, 3/4"	0.36	1.20				2#12, #12G, 3/4"	M	BAY-1 DOOR OPENER	1 20 8
9	20	1	GREETER STATION RECEPTACLE	R	2#12, #12G, 3/4"			0.72	1.20		2#12, #12G, 3/4"	M	BAY-2 DOOR OPENER	1 20 10
11	20	1	POINT OF SALE RECEPTACLES (IG)	R	2#12, #12G, 3/4"				0.36	1.20	2#12, #12G, 3/4"	M	BAY-3 DOOR OPENER	1 20 12
13	20	1	OFFICE RECEPTACLES (IG)	R	2#12, #12G, 3/4"	0.90	0.05				2#12, #12G, 3/4"	M	EF-1	1 15 14
15	20	1	BELL RINGER RECEPTACLE	R	2#12, #12G, 3/4"			0.18	1.50		2#12, #12G, 3/4"	M	EF-2	1 20 16
17	20	1	SERVICE BAY RECEPTACLE	R	2#12, #12G, 3/4"				0.54	0.55	2#12, #12G, 3/4"	M	EF-3	1 15 18
19	20	1	SERVICE BAY RECEPTACLE	R	2#12, #12G, 3/4"	0.72	0.95				2#12, #12G, 3/4"	M	TF-1	1 15 20
21	20	1	POINT OF SALE RECEPTACLES (IG)	R	2#12, #12G, 3/4"			0.36	0.20		2#12, #12G, 3/4"	M	P21_RECIRCULATION PUMP (RCP)	1 20 22
23	20	1	POINT OF SALE RECEPTACLES (IG)	R	2#12, #12G, 3/4"				0.36	2.40	2#8, #10G, 3/4"	H	CU-1	2 40 24
25	20	1	WAITING ROOM SIGNS	R	2#12, #12G, 3/4"	0.36	2.40						--	26
27	20	1	SECURITY CABINET	O	2#12, #12G, 3/4"			0.50	2.60		2#8, #10G, 3/4"	H	CU-2 + FC-2	2 40 28
29	20	1	Spare						0.00	2.60			--	30
31	20	1	Spare			0.00	1.60				2#12, #12G, 3/4"	H	RH-1	2 20 32
33	20	1	Spare					0.00	1.60				--	34
35	20	1	Spare					0.00	1.60		2#12, #12G, 3/4"	H	RH-2	2 20 36
37	20	1	Spare			0.00	1.60						--	38
39	20	1	Spare					0.00	1.60		2#12, #12G, 3/4"	H	RH-3	2 20 40
41	20	1	Spare										--	42
<b>TOTAL CONNECTED LOAD (KVA):</b>						<b>12.06</b>	<b>11.84</b>	<b>12.95</b>						



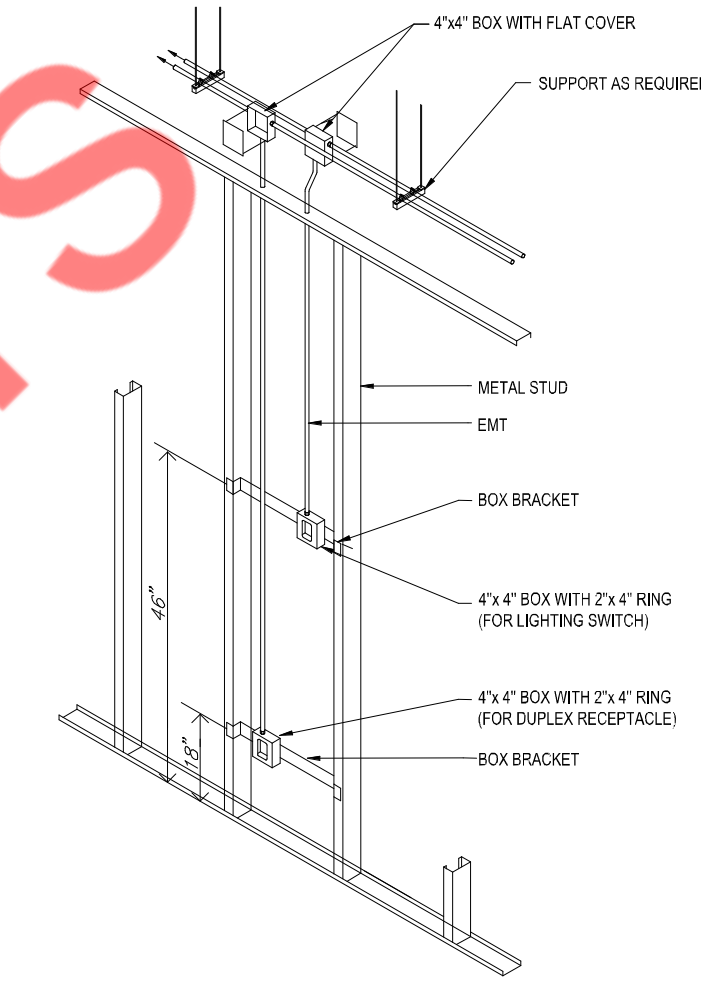
1 TYPICAL TRENCH SECTION DETAIL  
NO SCALE



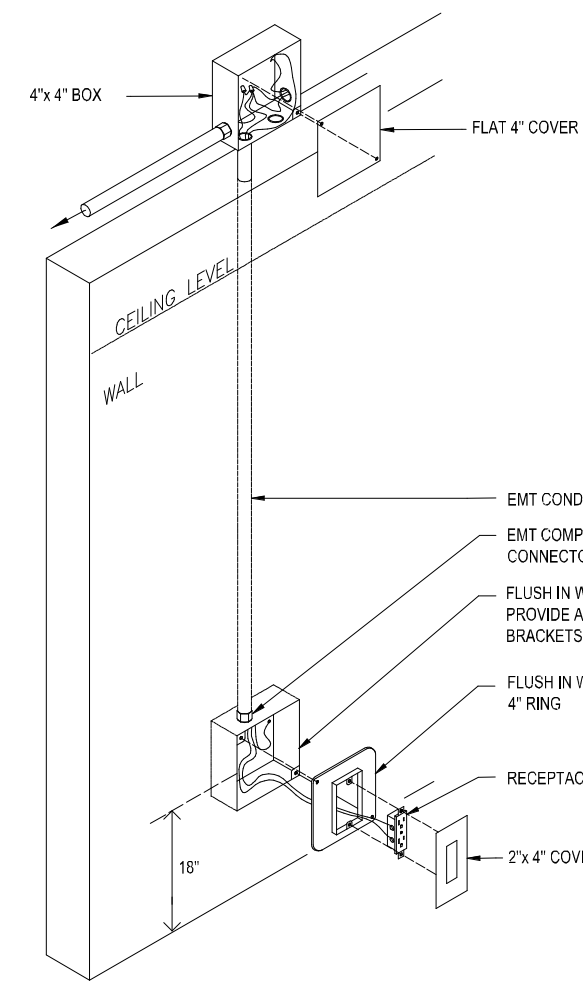
2 TYPICAL TRENCH DETAIL  
NO SCALE



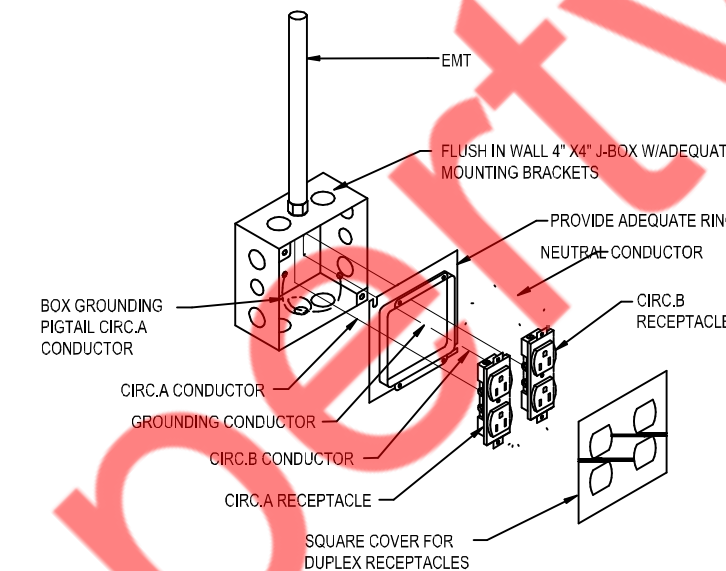
3 PANEL INSTALLATION DETAIL  
NO SCALE



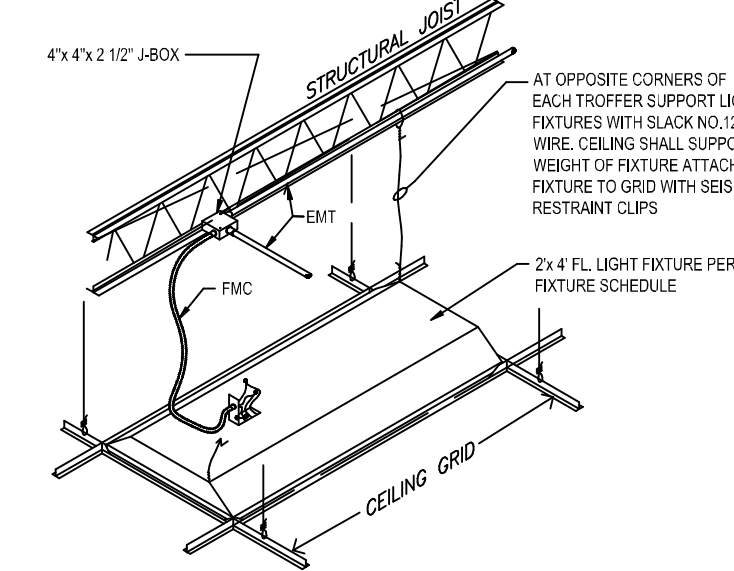
4 FLUSH IN WALL J-BOX INST. DETAIL  
NO SCALE



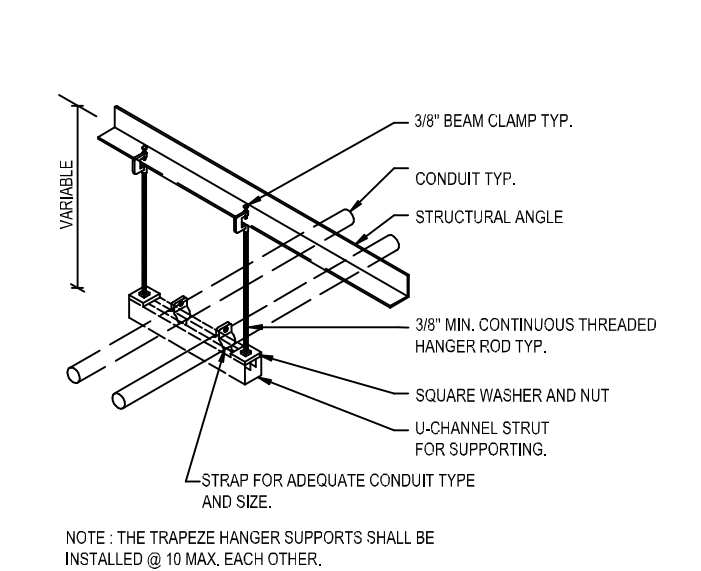
5 RECEPTACLE INSTALLATION DETAIL  
NO SCALE



6 QUAD RECEPTACLE INST. DETAIL  
NO SCALE



7 2x4 LIGHTING FIXTURE INST. DETAIL  
NO SCALE



8 TRAPEZE HANGER DETAIL  
NO SCALE

VALVOLINE INSTANT OIL CHANGE

#	DATE	REVISION
1	2025-05-16	ISSUE FOR PERMIT
2	2025-09-04	BD COMMENTS

CONTROL NO:

JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: ELECTRICAL DETAILS

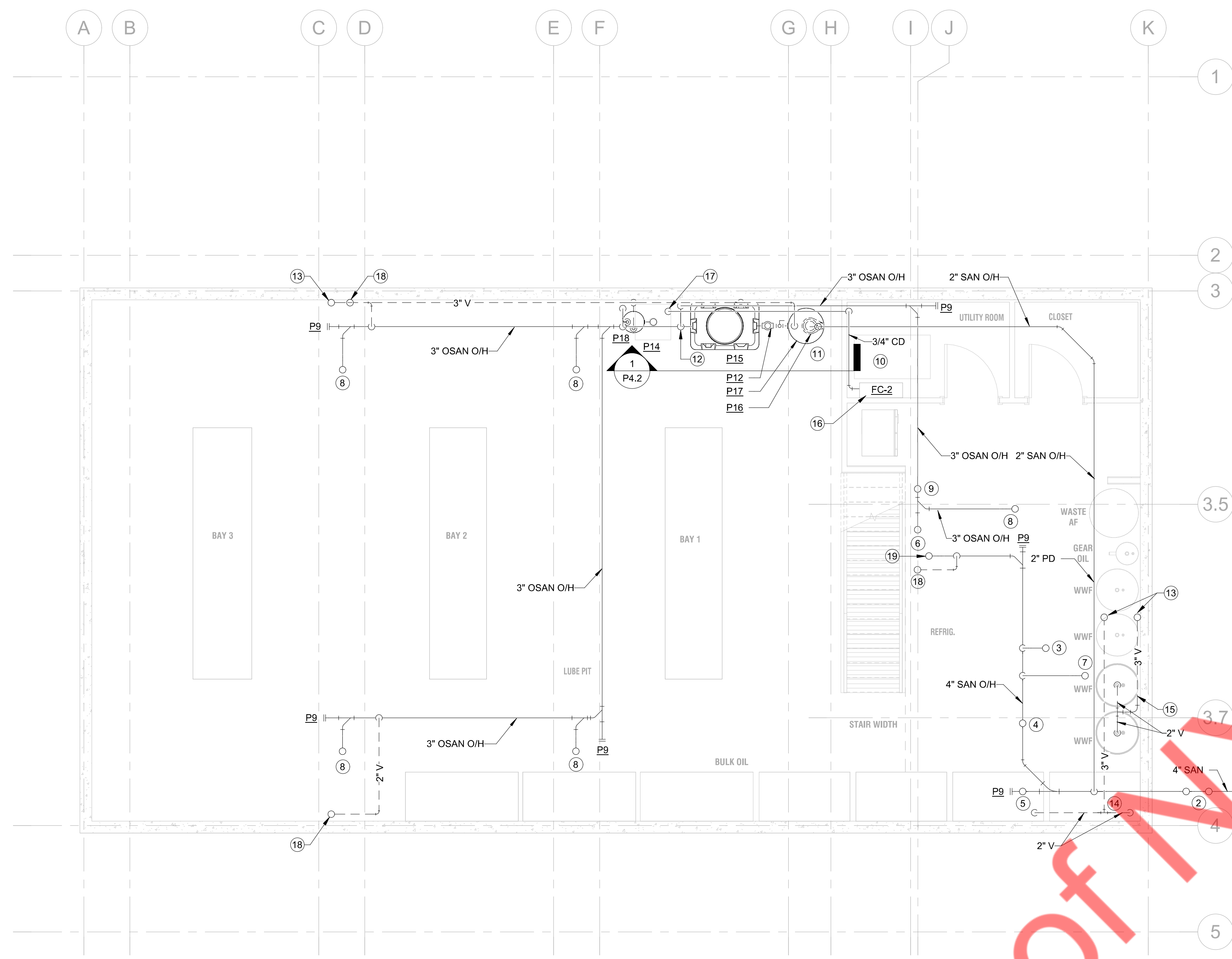
E4.0

PLUMBING LEGEND		PLUMBING ABBREVIATIONS				PLUMBING SPECIFICATIONS	
<u>SYMBOL</u>	<u>DESCRIPTION</u>	AAV	AIR ADMITTANCE VALVE	KW	KILOWATT	PIPING: SANITARY SOIL AND VENT PIPING SHALL SCHEDULE 40 SOLID CORE PVC PIPING WITH DWV FITTINGS (ASTM D1784, D1785 OR D2665) AND LOW VOC SOLVENT JOINTS WHERE APPROVED BY CODE AGENCIES AND NOT EXPOSED TO PHYSICAL DAMAGE. CELLULAR OR FOAM CORE PVC PIPING WILL NOT BE ACCEPTED. WHERE INSTALLED IN A RETURN AIR PLENUM, CAST IRON PIPING SHALL BE USED.	
—	SANITARY PIPING (SAN)	AFB	ABOVE FINISH FLOOR	MAX	MAXIMUM	RAINWATER PIPING SHALL BE SERVICE WEIGHT HUBLESS CAST IRON PIPE (ASTM A74/CISPI RATED) AND FITTINGS (ASTM A888/CISPI RATED) WITH STAINLESS STEEL COUPLINGS EQUAL TO HUSKY 2000 (ASTM C1277/CISPI 310 RATED) ABOVE GRADE AND HUSKY 4000 (ASTM C 564 OR CISPI/CISPI RATED) BELOW GRADE OR SCHEDULE 40 SOLID CORE PVC PIPING WITH DWV FITTINGS (ASTM D1784, D1785 OR D2665) AND LOW VOC SOLVENT JOINTS WHERE APPROVED BY CODE AGENCIES AND NOT EXPOSED TO PHYSICAL DAMAGE. CELLULAR OR FOAM CORE PVC PIPING WILL NOT BE ACCEPTED. WHERE INSTALLED IN A RETURN AIR PLENUM, CAST IRON PIPING SHALL BE USED.	
----	VENT PIPING (V)	APPD	APPROVED	MECH	MECHANICAL	DOMESTIC WATER PIPING ABOVE GRADE SHALL BE TYPE "L" HARD TEMPER COPPER PIPE WITH WROUGHT FITTINGS AND 95.5 LEAD FREE SOLDER JOINTS.	
—OSAN—	OIL LADEN SANITARY	A/C	ABOVE CEILING	MIN	MINIMUM	DOMESTIC WATER PIPING BELOW GRADE FROM WATER METER TO 5'-0" FROM BUILDING SHALL BE TYPE "L" HARD TEMPER COPPER WITH WROUGHT COPPER FITTINGS AND SILVER SOLDERED JOINTS, OR SCHEDULE 40 PVC PIPING AND FITTINGS WITH SOLVENT JOINTS.	
----	PERFORATED FOUNDATION DRAIN	A/G	ABOVE GRADE	M.C.	MECHANICAL CONTRACTOR	DOMESTIC WATER PIPING BELOW SLAB SHALL BE TYPE "K" SOFT TEMPER COPPER PIPE WITH NO JOINTS WHERE POSSIBLE OR WROUGHT COPPER FITTINGS AND SILVER BRAZED JOINTS.	
----	COLD WATER PIPING (CW)	BLDG	BUILDING	OC	ON CENTER	CROSS-LINKED POLYETHYLENE (PEX) TUBING: ASTM F876 & ASTM F877, STANDARD GRADE HYDROSTATIC DESIGN AND PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE (PPI). JOINTS / FITTINGS: ASTM F960, COLD EXPANSION FITTINGS, MANIFOLDS: TYPE L COPPER WITH UNS 36000 SERIES BRASS OR ENGINEERED PLASTIC BODY WITH PEX OUTLET CONNECTION. ACCESSORIES: ANGLE & STRAIGHT STOPS COMPATIBLE WITH PEX TUBING, BEND SUPPORTS DESIGNED FOR MAINTAINING TIGHT RADIUS BENDS SUPPLIED BY PEX TUBING MANUFACTURER.	
----	HOT WATER PIPING (HW)	B/G	BELOW GRADE	O/H	OVERHEAD	CONDENSATE DRAIN PIPING SHALL BE TYPE M, HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS. AT CONNECTION TO EACH UNIT PROVIDE DIELECTRIC UNION, TRAP AND OPEN BREATHER TEE ON DISCHARGE SIDE OF TRAP. INSULATE ALL CONDENSATE DRAIN LINES ABOVE CEILINGS AND IN STUD SPACES WITH 1/2" THICK ARMSTRONG "ARMAFLEX" INSULATION OR EQUAL.	
----	HOT WATER RETURN PIPING (HWR)	BFF	BELOW FINISH FLOOR	OPD	OVERPRESSURE DEVICE	FLASHING: FLASH ALL VENTS THROUGH ROOF WITH 4 LB. LEAD SHEET EXTENDING NOT LESS THAN 8" AWAY AND TURNED DOWN INTO THE VENT, 1" MINIMUM.	
—∞—	P-TRAP	BFP	BACKFLOW PREVENTER	OSAN	OIL LADEN SANITARY	INSULATION: INSULATE ALL DOMESTIC HOT WATER SUPPLY AND HOT WATER RETURN PIPING UP TO 140F OPERATING TEMPERATURE, 1-1/4" DIAMETER & SMALLER, WITH 1" THICK GLASS FIBER SECTIONAL PIPE INSULATION WITH ALL SERVICE JACKET OR EQUIVALENT ARMAFLEX FOAM. PIPING 1-1/2" DIAMETER AND LARGER SHALL BE PROVIDED WITH 1-1/2" INSULATION, NON-RECIRCULATED HOT WATER SUPPLY BRANCHES MAY BE INSULATED WITH 1" THICK INSULATION. INSTALL INSULATION IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS. PROVIDE SHEET METAL SADDLES AT HANGER LOCATIONS. INSULATION SHALL BE INSTALLED CONTINUOUSLY WITHOUT INTERRUPTIONS AT WALL PENETRATIONS, VALVES, PUMPS, STRAINERS, UNIONS, ETC., ON 1" AND LARGER PIPING SHALL BE FULLY INSULATED. ALL PIPING SYSTEMS SHALL BE TESTED PRIOR TO THE APPLICATION OF INSULATION. PIPES EXPOSED TO WEATHER SHALL BE PROVIDED WITH A 0.16" THICK CORRUGATED ALUMINUM JACKET. ALL JOINTS AND SEAMS IN ALUMINUM JACKETING SHALL BE SEALED.	
—○—	PIPE UP	BTU	BRITISH THERMAL UNIT	PLBG	PLUMBING	PIPING SPECIALTIES: CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS OR FLANGES AT ALL LOCATIONS WHERE COPPER OR BRASS PIPING CONNECTS TO FERROUS PIPE, FITTINGS, VALVES OR EQUIPMENT CONNECTIONS (EQUAL TO J.R. SMITH SERIES #4005 WITH INSULATING COUPLINGS (EQUAL TO J.R. SMITH SERIES #4760) WHERE SHOWN ON PLAN).	
—○—	PIPE DROP	CD	CONDENSATE DRAIN	PRV	PRESSURE REDUCING VALVE	PLUMBING CONTRACTOR SHALL PROVIDE A BACKWATER VALVE ON THE SEWER LINE LEAVING THE BUILDING IF THE FINISH FLOOR ELEVATION IS LESS THAN 1'-0" ABOVE THE NEAREST UPSTREAM MANHOLE OR CLEANOUT RIM ELEVATION.	
—  —	PLUGGED OUTLET/CLEANOUT	CFH	CUBIC FEET PER HOUR	PSI	POUNDS PER SQUARE INCH	VALVES: VALVES FOR DOMESTIC HOT AND COLD WATER SHALL BE LEAD-FREE AND AS MANUFACTURED BY KITZ, STOCKHAM, NIBCO, APOLO, MILWAUKEE OR JENKINS.	
	SHUT-OFF VALVE	CO	CLEANOUT	PVC	POLYVINYL CHLORIDE	BALL VALVES SHALL BE BRONZE, TWO PIECE BODY, FULL PORT FORGED BRASS BALL, SILICON BRONZE STEM, PTFE OR HDPE SEAT, PACKING AND GASKET; THREADED OR SOLDERED ENDS. VALVES SHALL CONFORM TO MSS SP-110	
	CHECK VALVE	CONN	CONNECTION	P.C.	PLUMBING CONTRACTOR	CHECK VALVES SHALL BE CLASS 125, BRONZE BODY, BRONZE DISC, Y-PATTERN, SWING CHECK DESIGN, THREADED OR SOLDERED ENDS. VALVES SHALL CONFORM TO MSS SP-80	
	SLEEVE	CPVC	CHLORINATED PVC	PD	PRESSURE DRAIN	WHERE VALVE INSTALLATION IS CONCEALED: PROVIDE J.R. SMITH SERIES 4760 OR APPROVED EQUAL ACCESS DOORS WITH CONCEALED HINGE AND KEY OPERATED LOCKS. DOORS SHALL BE LARGE ENOUGH TO SERVICE VALVES AND SHALL BE INSTALLED FLUSH WITH FINISHED WALLS OR CEILINGS.	
	VACUUM BREAKER	CW	COLD WATER	RD	ROOF DRAIN	PLUMBING FIXTURES: FURNISH ALL STANDARD PRODUCTS OF AMERICAN STANDARD, KOHLER, CRANE, TOTO, DELTA, MOEN, CHICAGO, T&S BRASS, MIFAB, SLOAN, DELANY, ELKAY, HAWS OR APPROVED EQUAL. ALL FIXTURES SHALL BE WHITE UNLESS OTHERWISE NOTED. REFER TO SCHEDULE FOR SPECIFIC REQUIREMENTS. PROVIDE STOPS AT HOT AND COLD WATER CONNECTIONS TO EACH FIXTURE.	
	WATER HAMMER ARRESTOR	DEPT	DEPARTMENT	REQ'D	REQUIRED	WATER HEATERS: CAPACITIES AND ACCESSORIES TO BE AS SCHEDULED ON THE DRAWINGS AND BE MANUFACTURED BY STATE, A.O. SMITH, RHEEM, BRADFORD WHITE, CHRONOMITE, EEMAX OR APPROVED EQUAL.	
	AIR RELEASE VALVE	DFU	DRAINAGE FIXTURE UNIT	RH	RADIANT HEATER	EXECUTION: SLOPE DRAINAGE PIPING INSIDE AND OUTSIDE OF BUILDING IN ACCORDANCE WITH REQUIREMENTS OF THE GOVERNING PLUMBING CODES.	
	SHOCK ABSORBER	DN	DOWN	RL	RAIN LEADER	ESTABLISH GRADE LINES WITH SURVEYOR'S LEVEL. VERIFY LOCATION OF SEWER TAPS BEFORE START OF WORK AND MAKE NECESSARY GRADE ADJUSTMENTS. DRAIN VENT LINES BACK TO SOIL LINES.	
	BALANCING VALVE	DOM	DOMESTIC	RPZ	REDUCED PRESSURE ZONE DEVICE	LOCATE CLEANOUTS AT EACH CHANGE OF LINE DIRECTION OF MORE THAN 45 DEG. WHERE MORE THAN ONE CHANGE OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FT. INTERVAL.	
	PRESSURE RELIEF VALVE	DWG	DRAWING	RTU	ROOF TOP UNIT	BRING EXTERIOR CLEANOUTS UP TO GRADE AND INSTALL IN 18" x 18" CUBE OF CONCRETE. PROVIDE A CAST IRON COVER OVER EACH EXTERIOR CLEANOUT.	
	PIPE DOWN	ECO	EXTERIOR CLEAN OUT	SAN	SANITARY	INSTALL WATER PIPING TO AVOID CONTACT WITH STRUCTURE WHEN POSSIBLE TO PREVENT EXCESSIVE WATER HAMMER NOISE TRANSMISSION.	
	PIPE UP	E.C.	ELECTRICAL CONTRACT	SCH	SCHEDULE	ALL PIPING SHALL BE INSTALLED AT RIGHT ANGLES TO THE BUILDING LINES AND PLUMB.	
		ELEC	ELECTRICAL	SF	SQUARE FEET	WRAP METALLIC PIPE IN CONTACT WITH CONCRETE BLOCK, SLABS OR STUCCO WITH 10 MIL THICK PVC TAPE TO PREVENT CORROSION.	
		EQPM	EQUIPMENT	SOV	SHUT-OFF VALVE	FLUSH PIPING CLEAN WITH WATER AFTER INSTALLATION. DISINFECT POTABLE WATER SYSTEM PER CODE, AWWA C651, OR AWWA C652 AND SUBMIT TEST RESULTS.	
		ETR	EXISTING TO REMAIN	ST	STORM SEWER	TEST ALL PIPING PRIOR TO COVERING OR BACKFILLING.	
		EWH	ELECTRIC WATER HEAT	ST	STORM SEWER	TEST WATER PIPING AT 100 PSIG FOR A CONTINUOUS PERIOD OF NOT LESS THAN FOUR (4) HOURS. DURING THIS TIME, CAREFULLY INSPECT THE SYSTEM FOR LEAKS. CONTRACTOR SHALL REPAIR ALL LEAKS IF NECESSARY AND TEST AGAIN UNTIL NO LEAKAGE IS DETECTED.	
		FCO	FLOOR CLEANOUT	SQ	SQUARE	TEST SOIL, WASTE AND VENT SYSTEMS BY PLUGGING LINES AND FILLING SYSTEMS WITH WATER TO A STATIC HEAD OF 10 FEET OF WATER. OBSERVE WATER LEVEL FOR A TWO (2) HOUR PERIOD. IF LEVEL IS LOWERED, INDICATING LEAKAGE, REPAIR LEAKS AND TEST AGAIN UNTIL NO FURTHER LEAKAGE IS DETECTED.	
		FD	FLOOR DRAIN	T&P	TEMPERATURE & PRESSURE		
		FDC	FIRE DEPT. CONN. FT FEET	TMV	THERMOSTATIC MIXING VALVE		
		FP	FIRE PROTECTION	TP	TRAP PRIMER		
		G	NATURAL GAS	TYP	TYPICAL		
		G.C.	GENERAL CONTRACTOR	UNO	UNLESS NOTED OTHERWISE		
		GCO	GRADE CLEANOUT	U/G	UNDERGROUND		
		GPM	GALLONS PER MINUTE	V	VENT		
		GPR	GAS PRESSURE REGULATOR	V.I.F	VERIFY IN FIELD		
		HB	HOSE BIBB	VTR	VENT THRU ROOF		
		HR	HOUR	W/	WITH		
		HW	HOT WATER	W.C.	WATER COLUMN		
		I.A.W.	IN ACCORDANCE WITH	WCO	WALL CLEANOUT		
		IE	INVERT ELEVATION	WH	WALL HYDRANT		
		IN	INCH	WHA	WATER HAMMER ARRESTOR		
		IW	INDIRECT WASTE				
		<b>PLUMBING SHEET INDEX</b>					
		SHEET NUMBER		SHEET NAME			
		P0.1		PLUMBING LEGEND ABBREVIATIONS AND SPECIFICATIONS			
		P1.1		PLUMBING WASTE AND VENT PLAN - LOWER LEVEL			
		P1.2		PLUMBING WASTE AND VENT PLAN - UPPER LEVEL			
		P1.3		PLUMBING FOUNDATION DRAIN PLAN			
		P2.1		PLUMBING WATER PLAN - LOWER LEVEL			
		P2.2		PLUMBING WATER PLAN - UPPER LEVEL			
		P3.1		PLUMBING RISER DIAGRAMS			
		P4.1		PLUMBING SCHEDULES			
		P4.2		PLUMBING DETAILS			
		<b>APPLICABLE CODES</b>					
		<ul style="list-style-type: none"> <li>2021 NEW MEXICO COMMERCIAL BUILDING CODE</li> <li>2021 NEW MEXICO PLUMBING CODE</li> <li>2021 NEW MEXICO FIRE CODE</li> <li>2021 NEW MEXICO ENERGY CONSERVATION CODE</li> <li>2021 NEW MEXICO MECHANICAL CODE</li> <li>2020 NEW MEXICO ELECTRICAL CODE</li> </ul>					

VALVOLINE INSTANT OIL CHANGE

CONTROL NO:

JOB NUMBER:  
 DATE: 2025-05-16  
 CONTENTS: PLUMBING LEGEND ABBREVIATIONS AND SPECIFICATIONS  
**P0.1**



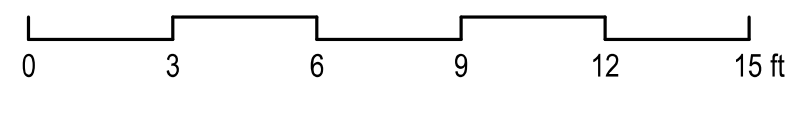
**GENERAL NOTE:**

1. REFER RISER DIAGRAMS AND PLUMBING FIXTURE SCHEDULE FOR ALL PIPE SIZES.
2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE 3" AND ABOVE, 1/4" PER FOOT OF RUN FOR PIPE LESS THAN 3". VENT PIPING SHALL BE PITCHED TO DRAIN.

**# SANITARY DRAINAGE PLUMBING KEY NOTES:**

- ① 4" SAN TO SEWER LINE. COORDINATE WITH CIVIL PLANS FOR CONTINUATION.
- ② 4" SAN W/TWO-WAY ECO, 34" INVERT ELEVATION BELOW FINISH FLOOR SEE DETAIL ON SHEET P-4.2
- ③ 4" SAN PIPE FROM UPPER LEVEL P1.
- ④ 2" SAN PIPE FROM UPPER LEVEL P2.
- ⑤ 2" SAN PIPE FROM UPPER LEVEL P3.
- ⑥ 3" OSAN PIPE FROM UPPER LEVEL P4.
- ⑦ 3" SAN PIPE FROM UPPER LEVEL P5.
- ⑧ 3" OSAN PIPE FROM UPPER LEVEL P6.
- ⑨ 2" OSAN FROM UPPER LEVEL P11.
- ⑩ AIR COMPRESSOR.
- ⑪ SUMP PIT. REFER TO DETAIL ON SHEET P-4.2 DISCHARGE FROM LUBE PIT SUMP PUMP.
- ⑫ ROUTE OSAN DOWN TO OIL WATER SEPARATOR. SEE DETAIL ON SHEET P-4.2
- ⑬ 3" VENT PIPING UP.
- ⑭ 3" VENT FROM OIL TANK.
- ⑮ 3" VENT FROM WINDOW WASHER TANK.
- ⑯ 3/4" CD FROM WALL MOUNTED FAN COIL.
- ⑰ 3/4" CD DISCHARGE INTO LAUNDRY SINK.
- ⑱ 2" VENT PIPING UP.
- ⑲ 3" SAN PIPE FROM UPPER LEVEL P22.

① PLUMBING WASTE AND VENT PLAN - LOWER LEVEL  
1/4" = 1'-0"



VALVOLINE INSTANT OIL CHANGE

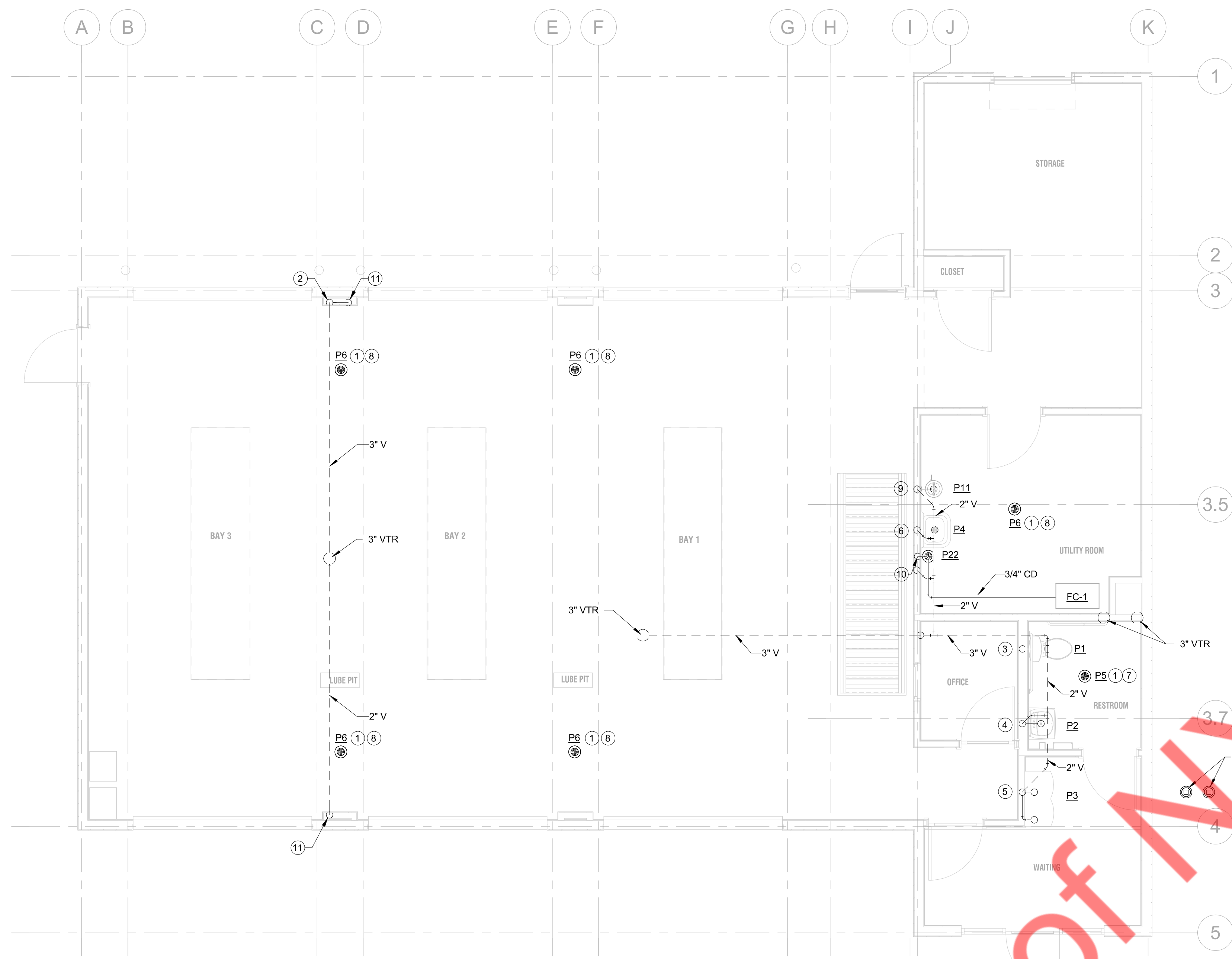
CONTROL NO:

JOB NUMBER:

DATE: 2025-05-16

CONTENTS: PLUMBING WASTE AND VENT PLAN - LOWER LEVEL

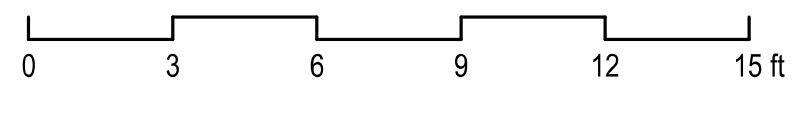
**P1.1**



**GENERAL NOTE:**  
 1. REFER RISER DIAGRAMS AND PLUMBING FIXTURE SCHEDULE FOR ALL PIPE SIZES.

- # SANITARY DRAINAGE PLUMBING KEY NOTES:**
- ① PROVIDE WATERLESS SURESEAL TRAP SEALER FOR FLOOR DRAIN AND HUB DRAIN.
  - ② 3" VENT FROM LOWER LEVEL.
  - ③ 4" SAN DN TO LOWER LEVEL & 2" VENT UP.
  - ④ 2" SAN DN TO LOWER LEVEL & 1-1/2" VENT UP.
  - ⑤ 2" SAN DN TO LOWER LEVEL & 1-1/2" VENT UP.
  - ⑥ 3" OSAN DN TO LOWER LEVEL & 2" VENT UP.
  - ⑦ 3" SAN DN TO LOWER LEVEL.
  - ⑧ 3" OSAN DN TO LOWER LEVEL.
  - ⑨ 2" OSAN DN TO LOWER LEVEL & 1-1/2" VENT UP.
  - ⑩ 3/4" CD DISCHARGE INTO HUB DRAIN.
  - ⑪ 2" VENT FROM LOWER LEVEL.

① PLUMBING WASTE AND VENT PLAN - UPPER LEVEL  
 1/4" = 1'-0"

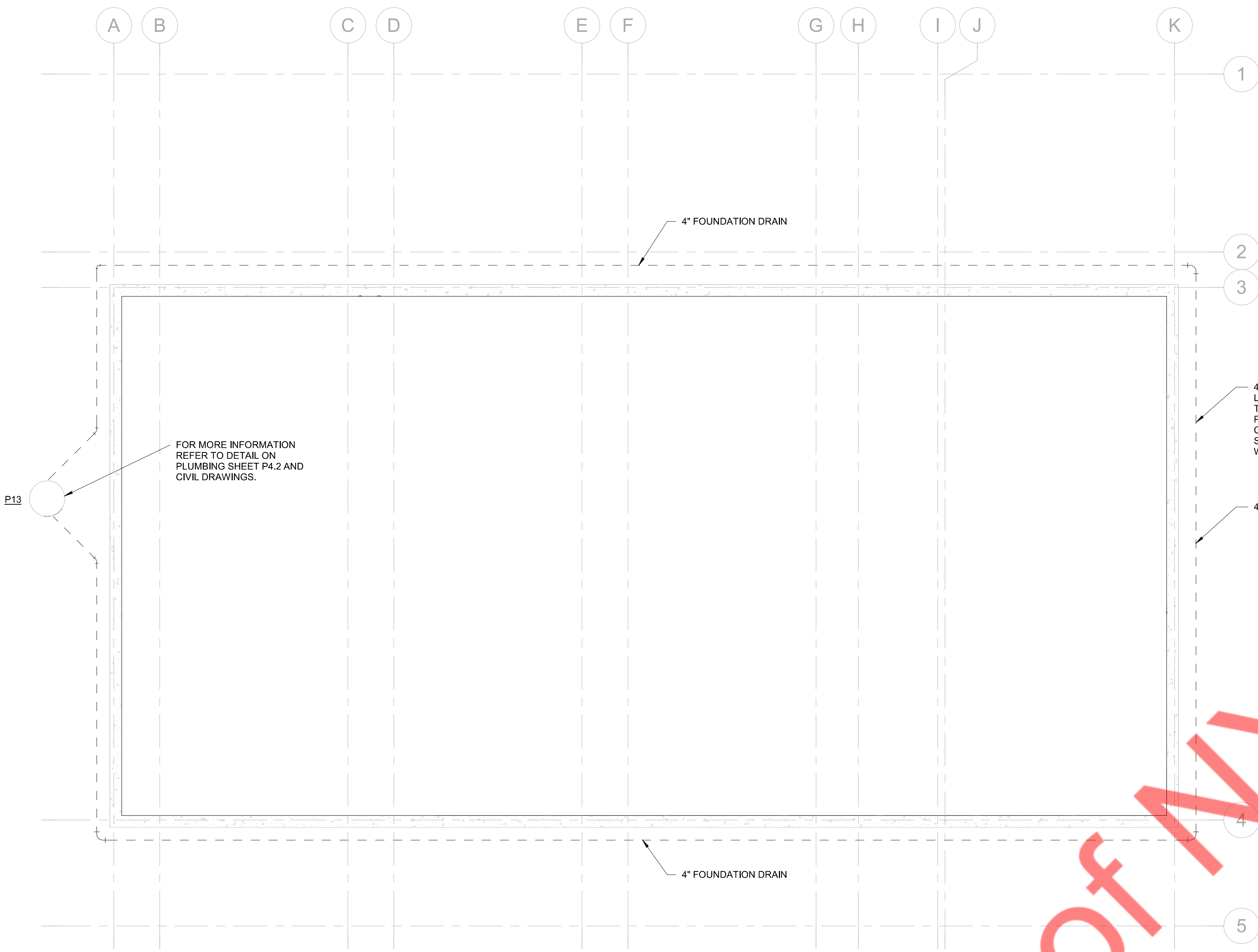


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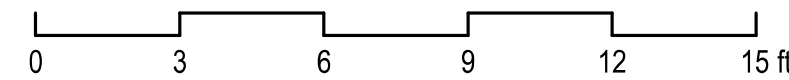
VALVOLINE INSTANT OIL CHANGE

CONTROL NO:  
 JOB NUMBER:  
 DATE: 2025-05-16  
 CONTENTS: PLUMBING WASTE AND VENT PLAN - UPPER LEVEL

**P1.2**



① PLUMBING FOUNDATION DRAIN PLAN  
1/4" = 1'-0"



Property of MY Engineers

VALVOLINE INSTANT OIL CHANGE

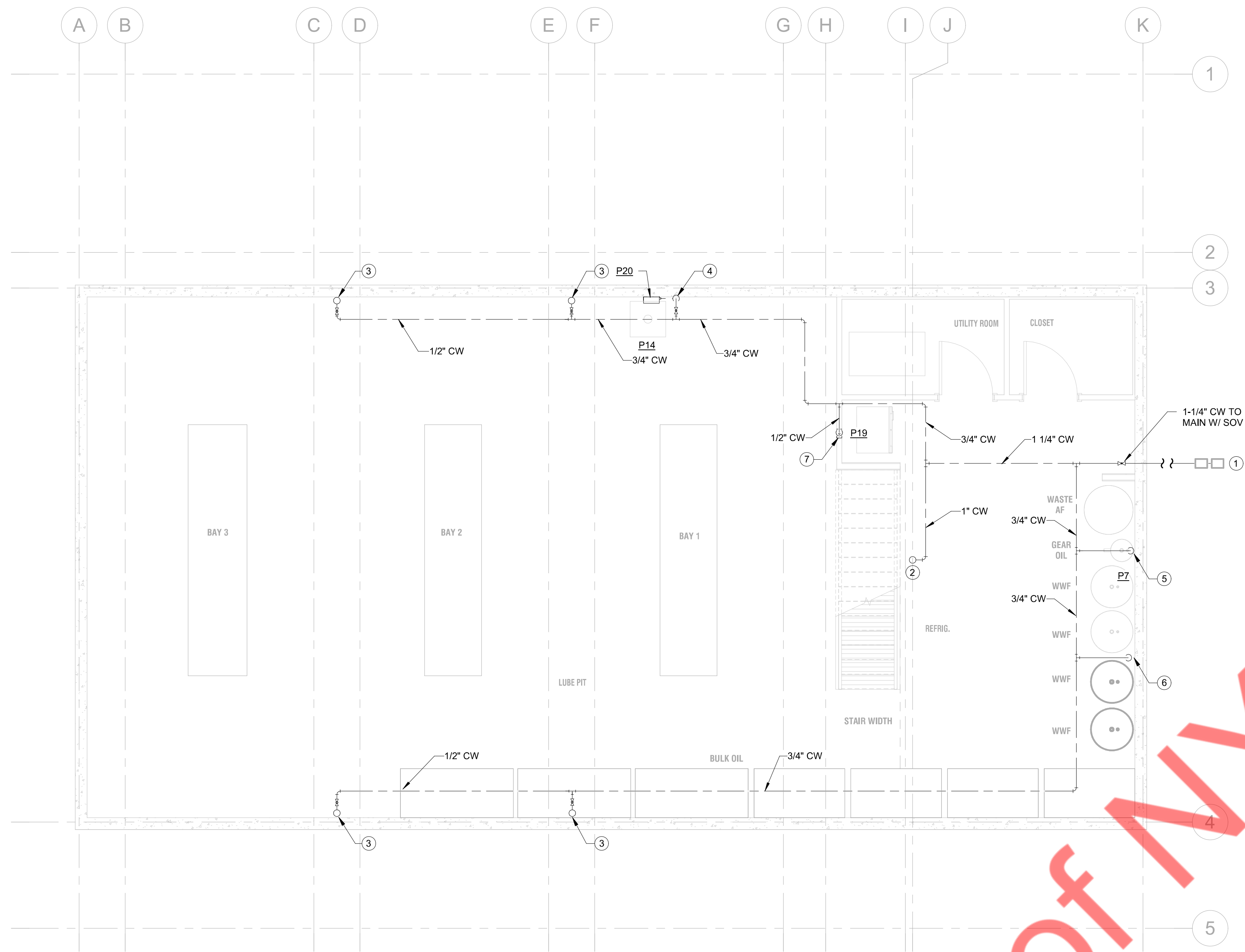
CONTROL NO:

JOB NUMBER:

DATE: 2025-05-16

CONTENTS: PLUMBING FOUNDATION DRAIN PLAN

P1.3



1 LOWER LEVEL WATER PLAN  
1/4" = 1'-0"

**GENERAL NOTE:**

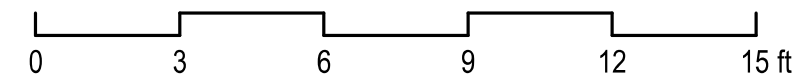
1. CW/ HW PIPING TO BE PROVIDED WITH INSULATION AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2021.
2. REFER RISER DIAGRAMS AND PLUMBING FIXTURE SCHEDULE FOR ALL PIPE SIZES.
3. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
4. PROVIDE THERMOSTATIC MIXING VALVE AT ALL LAVATORIES AT TEMP 110 DEG F.
5. PROVIDE WATER HAMMER ARRESTOR AT EVERY QUICK CLOSING VALVE OF PLUMBING FIXTURES.
6. ALL PIPES ARE RUNNING IN THE CEILING.
7. REFERS TO FIXTURE & EQUIPMENT DESIGNATION. SEE CORRESPONDING SPECIFICATION AND EQUIPMENT SCHEDULE FOR FURTHER INFORMATION.

**# DOMESTIC WATER PLUMBING KEY NOTES:**

- 1 1" WATER METER WITH 1-1/4" BACKFLOW PREVENTOR IN SOLID INSULATED, LOCKABLE ENCLOSURE. COORDINATE WITH G.C. AND UTILITY COMPANY.
- 2 1" CW UP TO UPPER LEVEL. COORDINATE PIPING WITH LOCKERS.
- 3 1/2" CW UP TO HOSE BIBB ON UPPER LEVEL.
- 4 3/4" CW DN TO INSTANTANEOUS WATER HEATER AND LAUNDRY SINK.
- 5 1/2" CW DN TO HOSE BIBB AT 60" AFF.
- 6 3/4" CW DN TO WASHER FLUID PROVIDE RPZ BACKFLOW PREVENTOR OR AIR GAP FITTING.
- 7 1/2" CW DN TO ICEMAKER BOX.

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VALVOLINE INSTANT OIL CHANGE



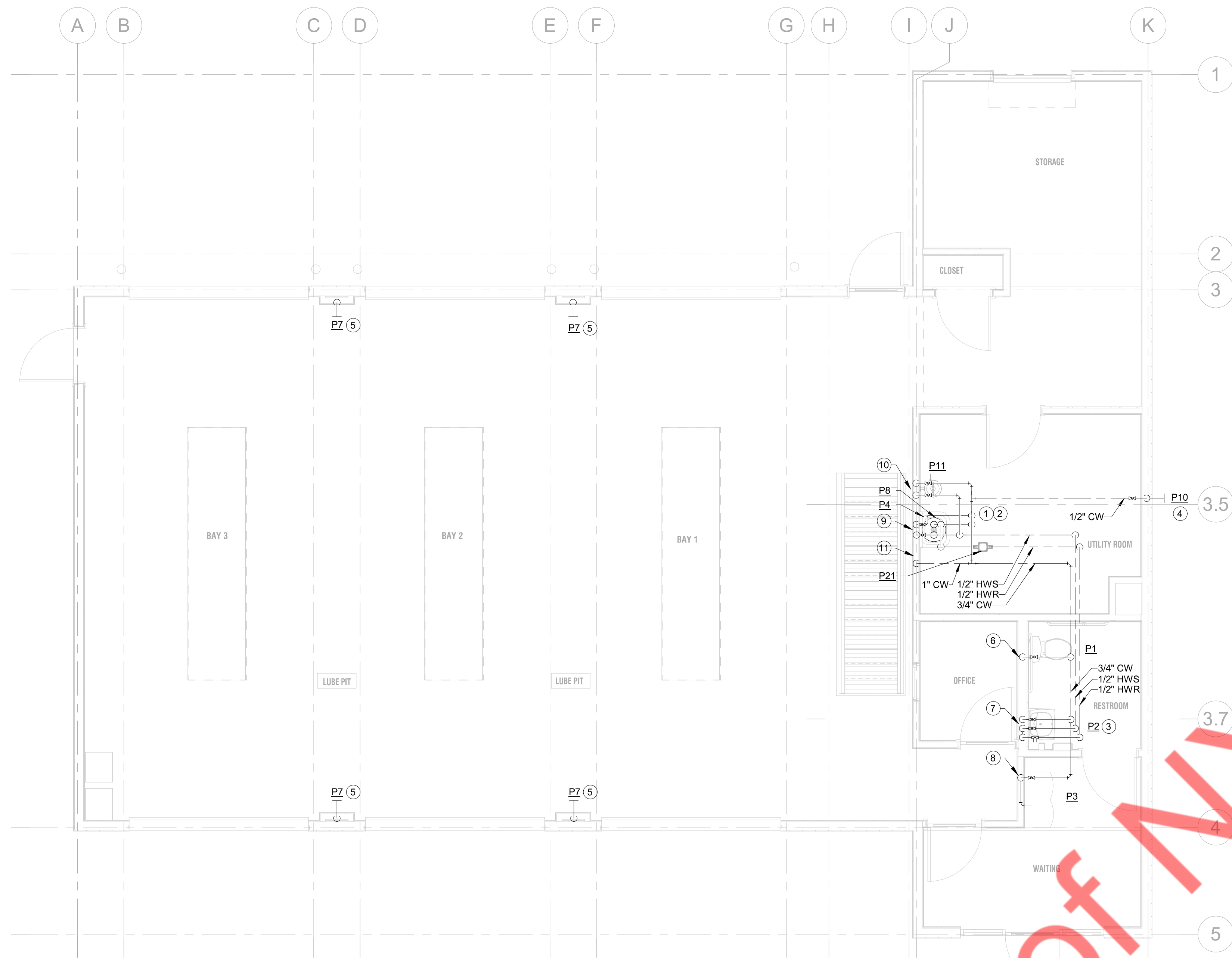
CONTROL NO:

JOB NUMBER:

DATE: 2025-05-16

CONTENTS: PLUMBING WATER PLAN - LOWER LEVEL

**P2.1**



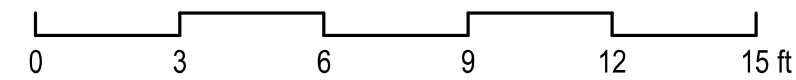
**GENERAL NOTE:**

1. CW/ HW PIPING TO BE PROVIDED WITH INSULATION AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2021.
2. REFER RISER DIAGRAMS AND PLUMBING FIXTURE SCHEDULE FOR ALL PIPE SIZES.
3. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
4. PROVIDE THERMOSTATIC MIXING VALVE AT ALL LAVATORIES AT TEMP 110 DEG F.
5. PROVIDE WATER HAMMER ARRESTOR AT EVERY QUICK CLOSING VALVE OF PLUMBING FIXTURES.
6. ALL PIPES ARE RUNNING IN THE CEILING.
7. REFERS TO FIXTURE & EQUIPMENT DESIGNATION. SEE CORRESPONDING SPECIFICATION AND EQUIPMENT SCHEDULE FOR FURTHER INFORMATION.

**# DOMESTIC WATER PLUMBING KEY NOTES:**

- ① ROUTE WATER HEATER DRAIN PAN DISCHARGE LINE AND COPPER T&P RELIEF VALVE DISCHARGE LINE, SEPARATELY, DOWN TO HUB DRAIN. DISCHARGE THROUGH AIR GAP.
- ② PROVIDE AMTROL ST-5 EXPANSION TANK ON SUPPLY TO WATER HEATER DOWNSTREAM OF ANY VALVES PER MANUFACTURER REQUIREMENTS. SEE DETAIL ON SHEET P-4.2.
- ③ SYMMONS MAXLINE MODEL 5-210-CK TEMPERING VALVE (OR EQUAL) FOR SINK. VALVE SHALL BE ASSE 1070 COMPLIANT.
- ④ NON-FREEZE WALL HYDRANT AT 24" AFG.
- ⑤ PROVIDE HOSE BIBB AT 24" AFG, WITH 1/2" CW SUPPLY LINE ROUTED UP FROM THE LOWER LEVEL.
- ⑥ 1/2" CW TO DN TO P1.
- ⑦ 1/2" CW/HW DN TO P2.
- ⑧ 1/2" CW TO DN TO P3.
- ⑨ 3/4" CW/HW DN TO P4.
- ⑩ 1/2" CW/HW DN TO P11.
- ⑪ 1" CW UP FROM LOWER LEVEL.

① UPPER LEVEL WATER PLAN  
1/4" = 1'-0"



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VALVOLINE INSTANT OIL CHANGE

CONTROL NO:

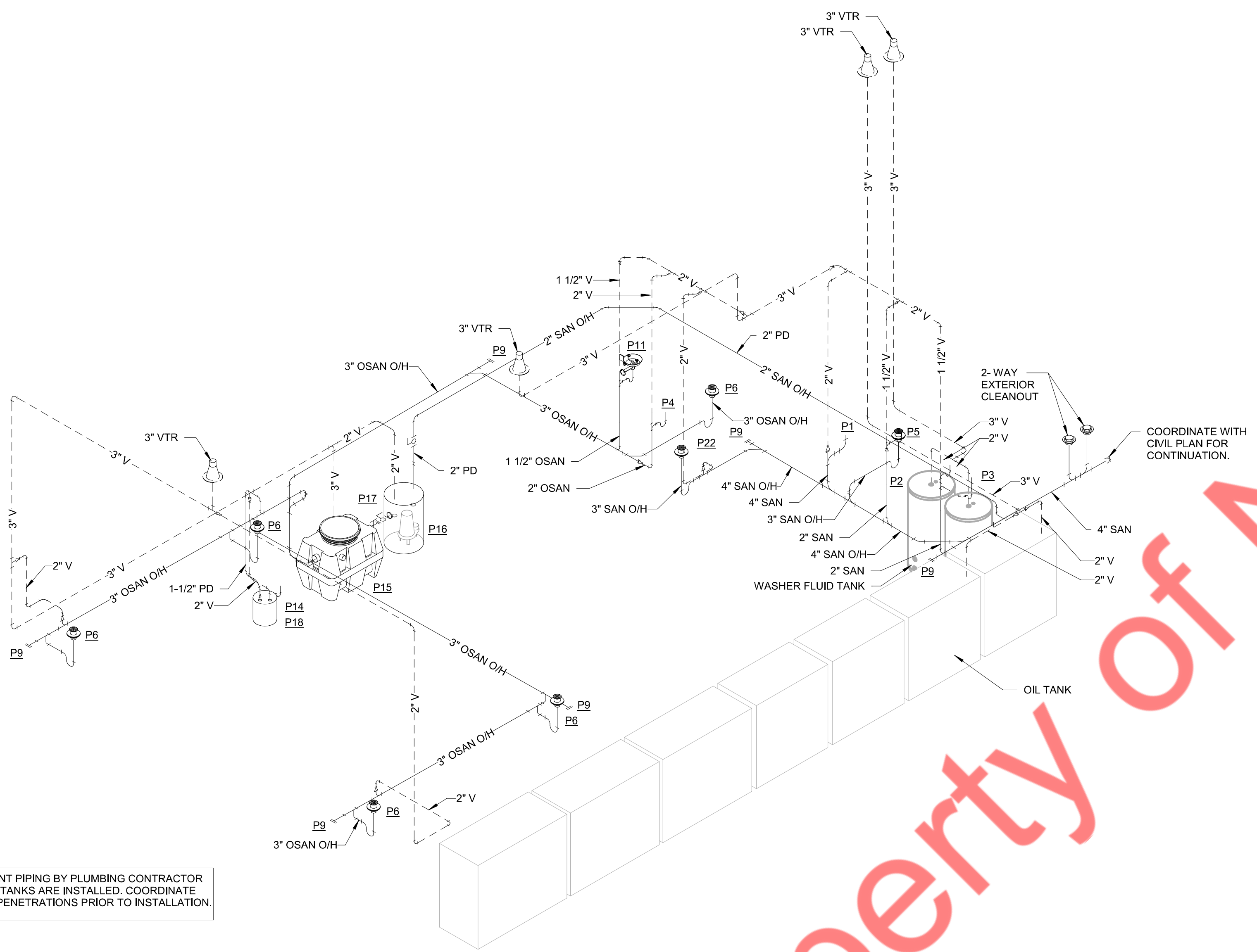
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DATE: 2025-05-16

CONTENTS: PLUMBING WATER PLAN - UPPER LEVEL

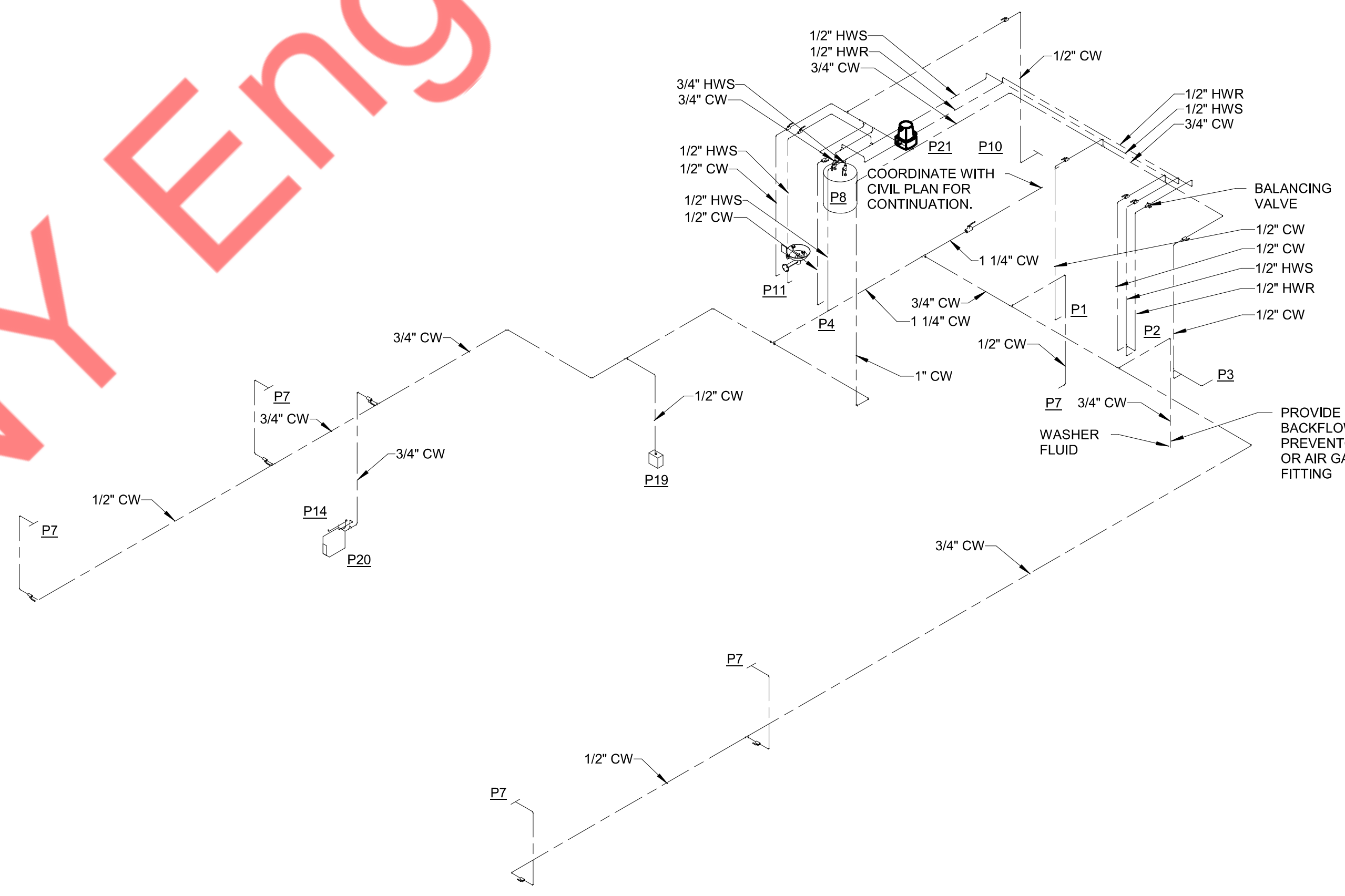
**P2.2**

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ALL VENT PIPING BY PLUMBING CONTRACTOR AFTER TANKS ARE INSTALLED. COORDINATE ROOF PENETRATIONS PRIOR TO INSTALLATION.

2 SANITARY RISER DIAGRAM  
NO SCALE



1 DOMESTIC WATER RISER DIAGRAM  
NO SCALE

VALVOLINE INSTANT OIL CHANGE

CONTROL NO:  
JOB NUMBER:  
DATE: 2025-05-16  
CONTENTS: PLUMBING RISER DIAGRAMS

**PLUMBING FIXTURE / EQUIPMENT SCHEDULE**

TAG	TYPE	CONNECTION SIZE				DESCRIPTION
		CW	HW	SAN	VENT	
P1	WATER CLOSET	1/2"	--	4"	2"	AMERICAN STANDARD, KOHLER, OR CRANE. ADA COMPLIANT, 1.1 GPF PRESSURE ASSISTED SIPHON JET FLUSH TANK WASTER CLOSET. FLOOR MOUNTED, BACK OUTLET, ELONGATED BOWL, W/ 3/8" ANGLE SUPPLY W/ STOP, CHINA BOLT CAPS AND WHITE OPEN FRONT PLASTIC SEAT. MOUNT TOP OF SEAT A MAXIMUM OF 19" ABOVE FINISHED FLOOR.
P2	LAVATORY	1/2"	1/2"	1-1/4"	1-1/4"	KOHLER "KINGSTON" #K-2005, VIT. CHINA WALL HUNG LAVATORY. PROVIDE "CHICAGO" #802-VE2805-665CP FAUCET (0.5 GPM @ 2.25 GAL/S. MAX PER CYCLE) & #327 DRAIN, CAST BRASS "P" TRAP. MCGUIRE CHROME PLATED LOOSE KEY ANGLE STOPS & SUPPLIES AND FLOOR MOUNTED WALL HANGER. PROVIDE ASSE 1070 CERTIFIED THERMOSTATIC MIXING VALVE EQUAL OF WATTS MODEL#LFUSG-B W/ 3/8" FITTINGS
P3	WATER COOLER	1/2"	--	1-1/2"	1-1/2"	ELKAY #LZSTL8WSLK TWO STATION W/ BOTTLE FILLER, BARRIER FREE WATER COOLER WITH WATERSENTRY VII FILTER SYSTEM, 8.0 GPH CAPACITY OF 50 DEG. WATER AT 90 DEG. AMBIENT TEMPERATURE, 6.0 FLA, 120/160. PROVIDE "P" TRAP AND MCGUIRE CHROME PLATED LOOSE KEY ANGLE STOP & SUPPLY, & IN WALL CARRIER.
P4	HAND SINK	1/2"	1/2"	2"	1-1/2"	REGENCY 17" X 15" WALL-MOUNTED STAINLESS STEEL HAND SINK WITH 8" GOOSENECK FAUCET AND SIDE SPLASHES. FABRICATED FROM 20-GAUGE TYPE 304 STAINLESS STEEL WITH 18-GAUGE SIDE SPLASHES. SINGLE BOWL (14" X 10" X 5-1/2" DEEP) WITH 8" BACKSPASH. FAUCET CENTERS 4". INCLUDES STRAINER BASKET, WALL-MOUNTING CLIP, FLOW RATE 2 GPM.
P5	FLOOR DRAIN	--	--	3"	1-1/2"	JAY R. SMITH 2005-A-PB-U, 6"DIA. ADJUSTABLE FOR VARYING HTS, POLISHED BRONZE STRAINER, TRAP PROTECTION DEVICE.
P6	FLOOR DRAIN	--	--	3"	1-1/2"	JAY R. SMITH 2005-A-B-PB-U, 8" DIA., POLISHED BRONZE STRAINER, VANDAL PROOF SCREWS.
P7	HOSE BIBB	1/2"	--	--	--	WOODFORD MODEL 24C ANTI-SIPHON PROTECTED WALL FAUCET.
P8	WATER HEATER	3/4"	3/4"	--	--	LOCHINVAR ELECTRIC WATER HEATER JUNIOR MODEL JRC020DS 1.65 KW, 20 GALLON STORAGE, 13.75 AMP, 120 VOLT, SINGLE PHASE, SET TEMP. AT 110°F. PROVIDE WITH DRAIN PAN MINIMUM 4" LARGER THAN OVERALL DIAMETER OF WATER HEATER. RUN PAN OVERFLOW LINE TO SINK BELOW. PROVIDE RECIRC PUMP.
P9	CLEANOUT	--	--	LINE SIZE	--	PVC END CAP
P10	HYDRANT	1/2"	--	--	--	PRIER MODEL C-534D10, DOUBLE CHECK VALVE AND ANTI-SIPHON VACUUM BREAKER.
P11	EMERGENCY EYEWASH	1/2" TW	--	1-1/4"	1-1/4"	GUARDIAN G1814 - HS - TMV WALL-MOUNTED EYEWASH WITH DUST COVER, INTERNAL FLOW CONTROL AND FILTER, 1/2" IPS FEMALE INLET, 1-1/4" WASTE; ANSI COMPLIANT IDENTIFICATION SIGN AND AUXILIARY HAND-HELD DRENCH HOSE FOR RINSING EYES, FACE OR BODY. INCLUDES G3600 THERMOSTATIC MIXING VALVE TO DELIVER WARM (TEPID) WATER AS REQUIRED BY ANSI Z358.1-2009.
P12	BACKWATER VALVE	--	--	4"	--	SPEARS SML-4XP-A 4" PVC UTILITY BACKWATER VALVE SOC EPDM.
P13	SUMP PUMP (FOUNDATION DRAINS)	--	--	2"	--	ONE (1) ZOELLER M267, PACO, OR PEERLESS: 115 VOLT, SINGLE PHASE, SUBMERSIBLE SUMP PUMP, AUTOMATIC, W/ 2" VERTICAL DISCHARGE, 1/2 HP, VORTEX IMPELLER, CAPABLE OF DISCHARGING 2" SOLIDS, CAST IRON CHECK VALVE, 3" VENT OPENING IN LID, W/ VENT FLANGE, PROVIDE AUDIBLE/VISUAL ALARM LOCATED IN OFFICE TO NOTIFY OWNER IN THE EVENT OF PUMP FAILURE.
P14	LAUNDRY SINK	1/2"	1/2"	1-1/2"	--	FIAT SF-1-F SINGLE COMPARTMENT FIBERGLASS FLOOR MOUNTED LAUNDRY TUB WITH WHITE BAKED ENAMEL LEGS WITH LEVELING FEET, PROVIDE DECK TYPE FAUCET, 4" CENTERS WITH 6" THREADED SPOUT, CAPACITY OF 20 GALLONS, SIZE 23"X22". PROVIDE WITH CHROME SUPPLIES, STOPS, TAILPIECE, P-TRAP, DRAIN AND ESCUTCHEONS. PROVIDE COMPLETE WITH GUARDIAN MODEL G1100 'EYESAFE' FAUCET MOUNTED EYEWASH WITH ADJUSTABLE AERATED OUTLET HEADS.
P15	OIL-WATER SEPARATOR	--	--	4"	3"	STRIEM OS-75 OIL WATER SEPARATOR. 110 GALLON CAPACITY, 75GPM FLOW RATE, FLOOR MOUNTED.
P16	SUMP PUMP (LUBE PIT)	--	--	--	--	WEIL PUMP 1408 SUBMERSIBLE SUMP PUMP, 1-1/4" DISCHARGE, 1/3 HP, 120V, 1Ø, 10 GPM AT 25 FT TOTAL HEAD. WEIL TETHERED FLOAT MODEL 8245.
P17	LUBE PIT SUMP / CROCK BASIN	--	--	--	--	AK INDUSTRIES INC. - FIBERGLASS BASIN, BASIN PART GB-24-100, AND 1/4" STEEL COVER #LB-2401. PROVIDE GEL-COAT EXTERIOR FINISH FOR ABOVE GRADE INSTALLATION. FURNISH WITH AKP10185 4" PVC HUB TO ALLOW FOR 1/8" / 12" SLOPING FROM STRIEM OS-75 OUTPUT.
P18	SUMP PUMP (UNDER LAUNDRY SINK)	--	--	1-1/2"	2"	LITTLE GIANT MODEL WRSC-6, CAST IRON HOUSING WITH PROTECTIVE EPOXY COATING, 1/3 HP, 115V, 12 GPM AT 15 FT HEAD, AUTOMATIC DIAPHRAGM PRESSURE SWITCH, 3.5 GALLON POLYPROPYLENE BASIN, DISCHARGE SIZE 1-1/2", INTAKE SIZE 1-1/2", VENT SIZE 2".
P19	ICE MAKER BOX	1/2"	--	--	--	OATEY 38823 OR EQUAL.
P20	WATER HEATER - INSTANTANEOUS	3/4"	3/4"	--	--	CHRONOMITE R-68L / 208, 14KW, 208V/1-PHASE, 68 A, 64°F RISER AT 1.5GPM. INSTALL WATER HEATER ON WALL BENEATH LAUNDRY SINK.
P21	RECIRCULATING PUMP	--	1/2" (HWR)	--	--	ASTRO 30-B RECIRCULATING PUMP -- 3 GPM, 10 FT HEAD, 3/4" NPT FLANGE, 70W, 115V, 1 PHASE, 60HZ, 0.68A, 7 LBS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
P22	HUB DRAIN	--	--	3"	2"	ZURN Z415 OR SIMILAR

**PLUMBING FIXTURE DEMAND TABULATION**

FIXTURE TAG	DESCRIPTION	OCCUPANCY	QTY.	DRAINAGE FIXTURE UNITS	SUB-TOTAL	LOAD VALUES IN WATER (EACH) SUPPLY FIXTURE UNITS (WSFU)			LOAD VALUES IN WATER (TOTAL) SUPPLY FIXTURE UNITS (WSFU)			
						COLD	HOT	TOTAL	COLD	HOT	TOTAL	
P-1	WATER CLOSET	PUBLIC	1	4	4	2.5	--	2.5	2.5	--	2.5	
P-2	LAVATORY	PUBLIC	1	1	1	0.8	0.8	1.0	0.8	0.8	1.0	
P-3	ELECTRIC WATER COOLER	PUBLIC	1	0.5	0.5	0.5	--	0.5	0.5	--	0.5	
P-4	HAND SINK	PUBLIC	1	1	1	0.8	0.8	1.0	0.8	0.8	1.0	
P-5	FLOOR DRAIN	PUBLIC	1	6	6	0	0	0	0	0	0	
P-6	FLOOR DRAIN	PUBLIC	5	6	30	0	0	0	0	0	0	
P-22	HUB DRAIN	PUBLIC	1	6	6	0	0	0	0	0	0	
P-7	HOSE BIBB	PUBLIC	5	--	--	2.5/1.0	--	2.5/1.0	6.5	--	6.5	
P-10	HYDRANT	PUBLIC	1	--	--	1	--	1.0	1	--	1.0	
P-11	EMERGENCY EYEWASH	PUBLIC	1	2	2	1.5	1.5	2.0	1.5	1.5	2.0	
P-14	LAUNDRY SINK	PUBLIC	1	2	2	1.2	1.2	1.5	1.2	1.2	1.5	
P-19	ICE MAKER BOX	PUBLIC	1	--	--	0.5	--	--	0.5	--	0.5	
TOTALS					52.5	DFU			15.3	4.3	16.5	WSFU
DFU = DRAINAGE FIXTURE UNITS					EIGHTH	INCH SLOPE PER FOOT			18.0	9.0	18.2	GPM
WSFU = WATER SUPPLY FIXTURE UNITS					4"	DIAMETER OF PIPE (INCHES)			1"	3/4"	1-1/4"	INCHES REQD.

NOTE: WATER PIPE SIZING IS DONE IN ACCORDANCE WITH THE NEW MEXICO PLUMBING CODE 2021 (UPC 2021), CHAPTER 6 USING TABLES 610.3 AND TABLE 610.4.

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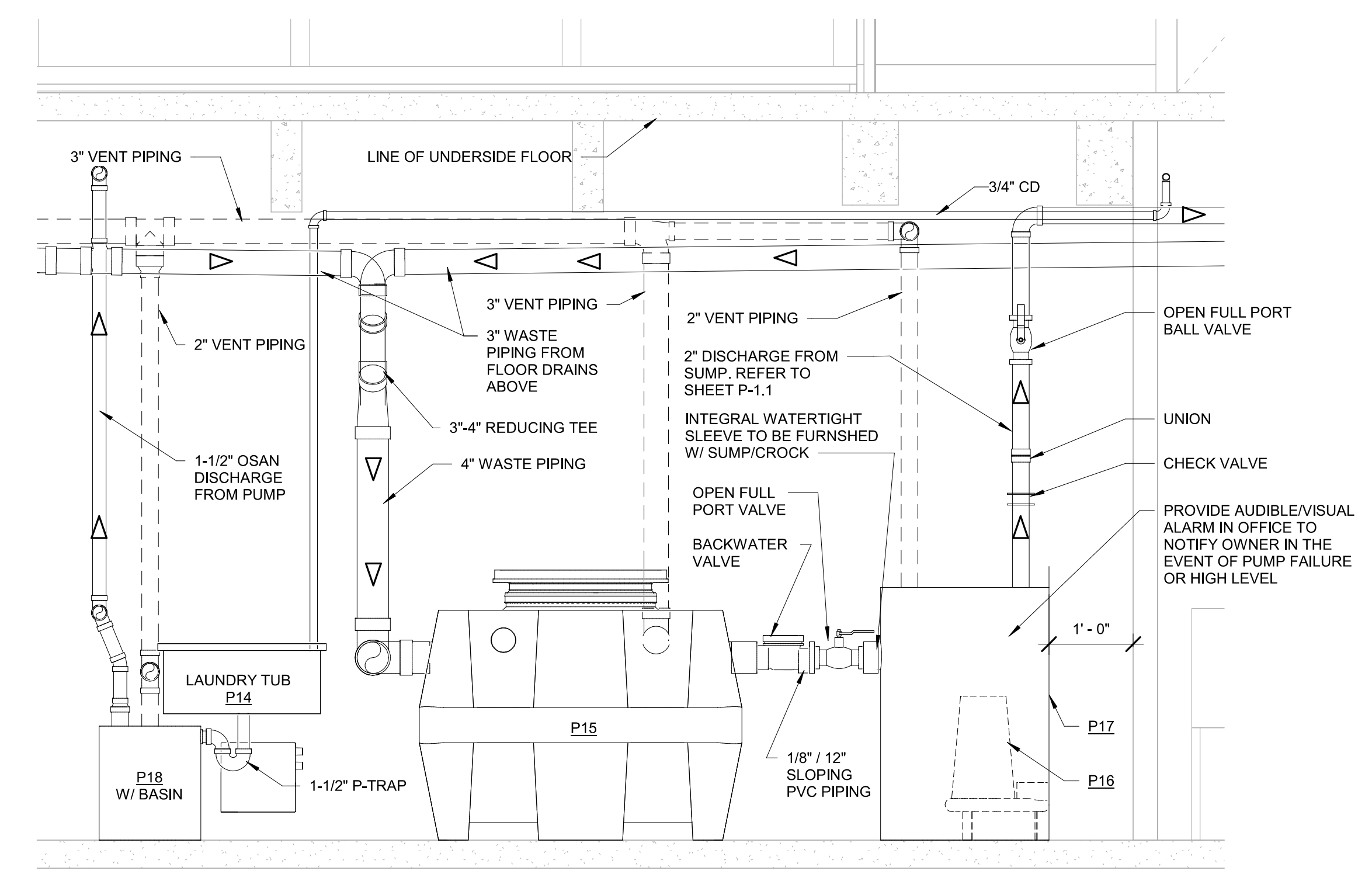
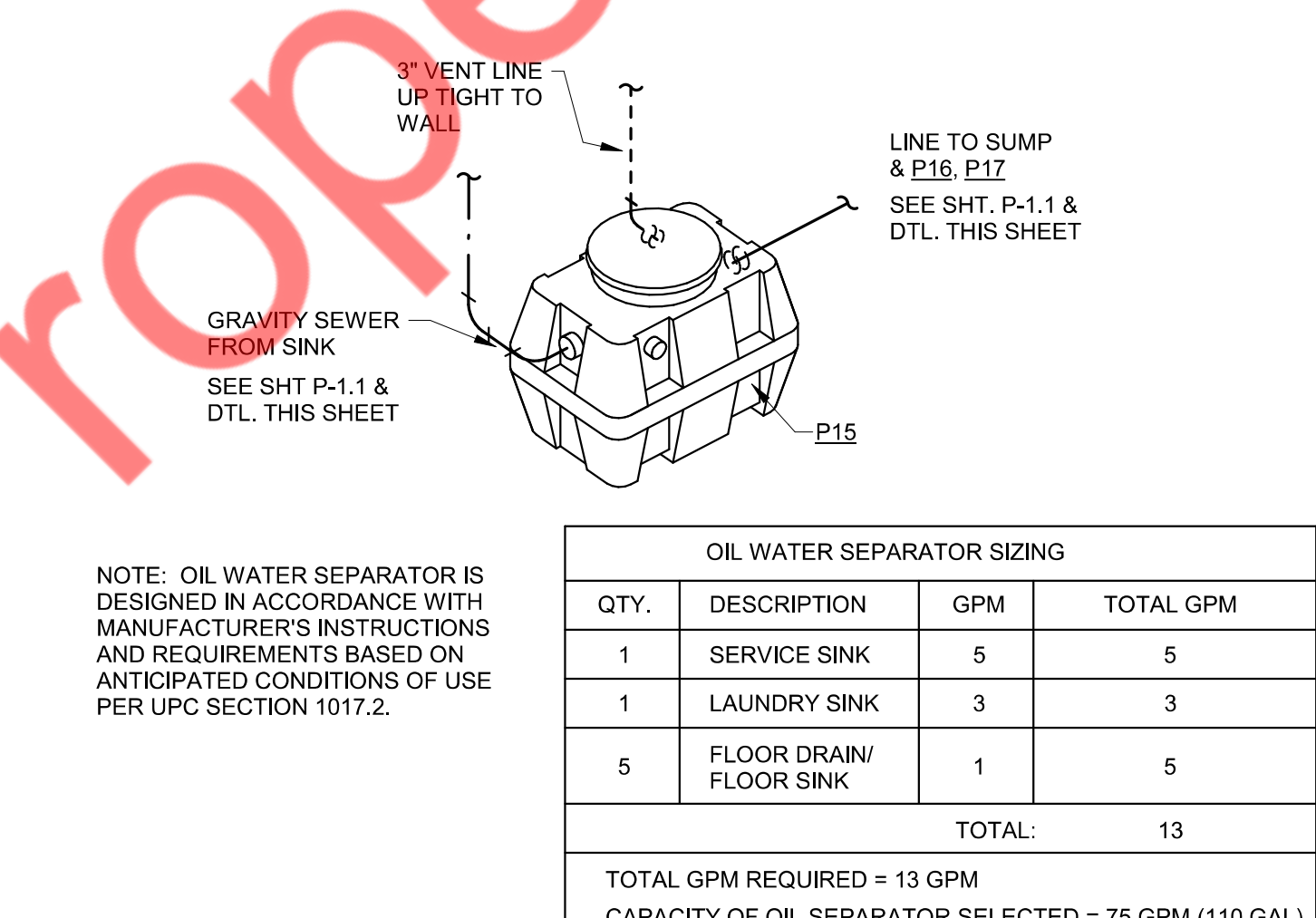
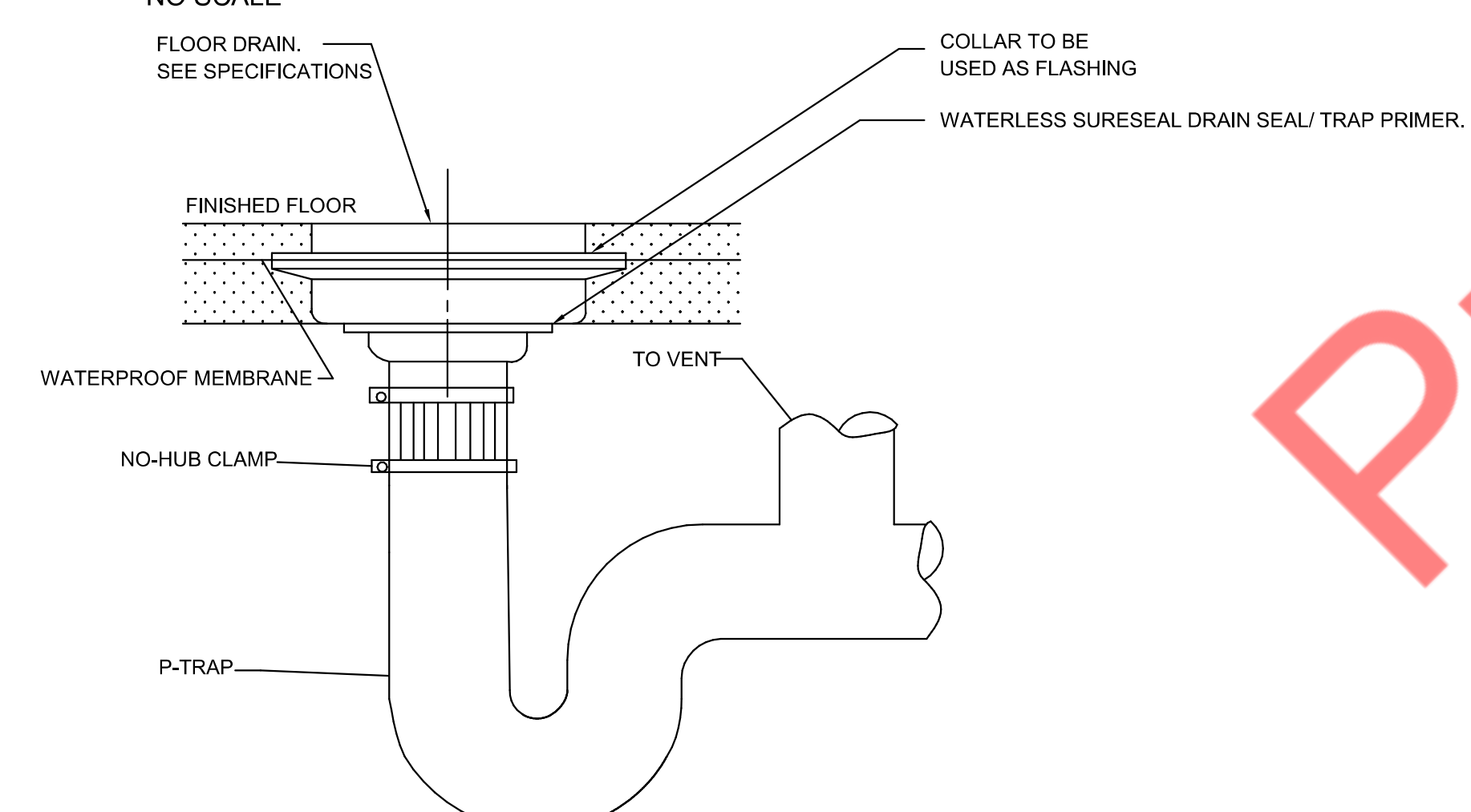
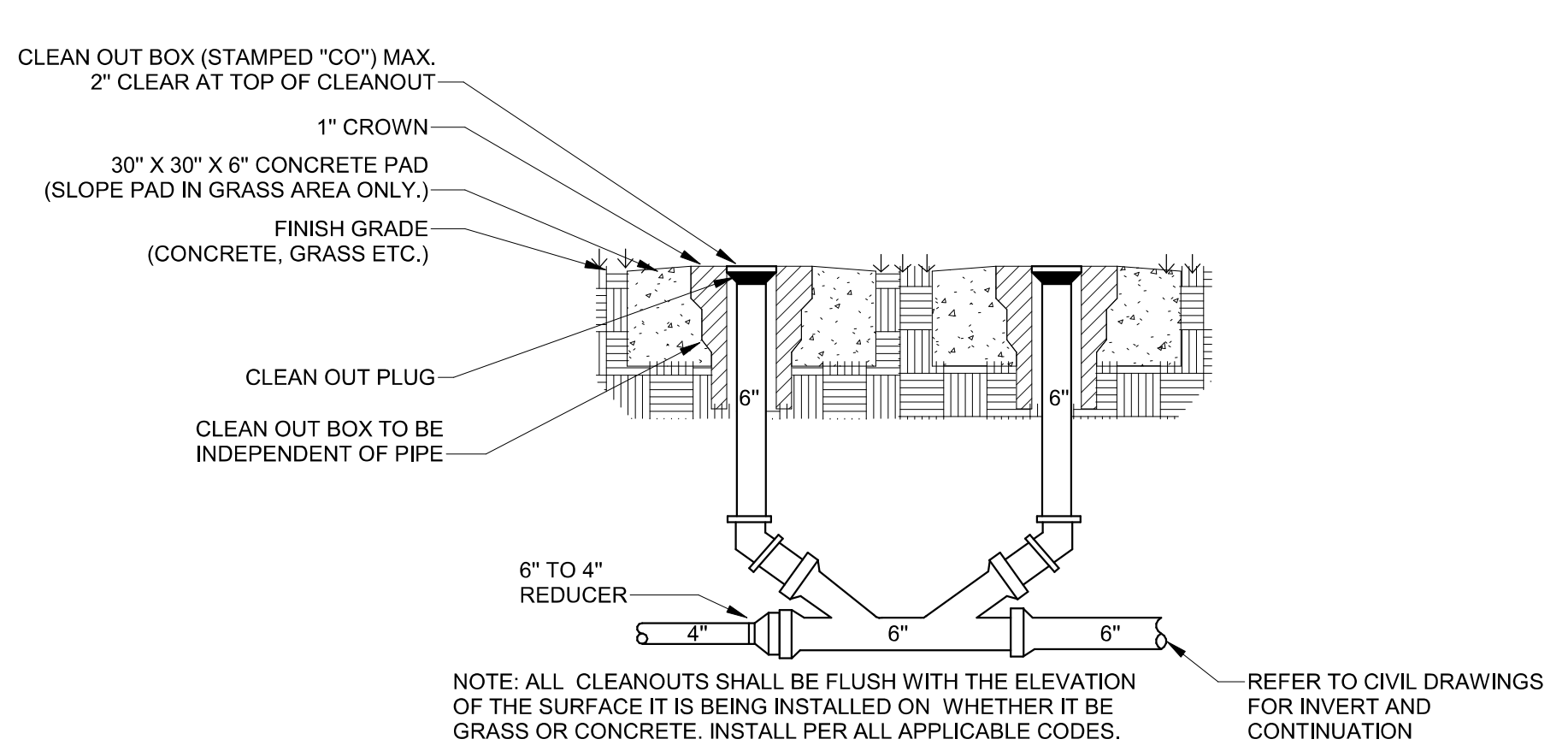
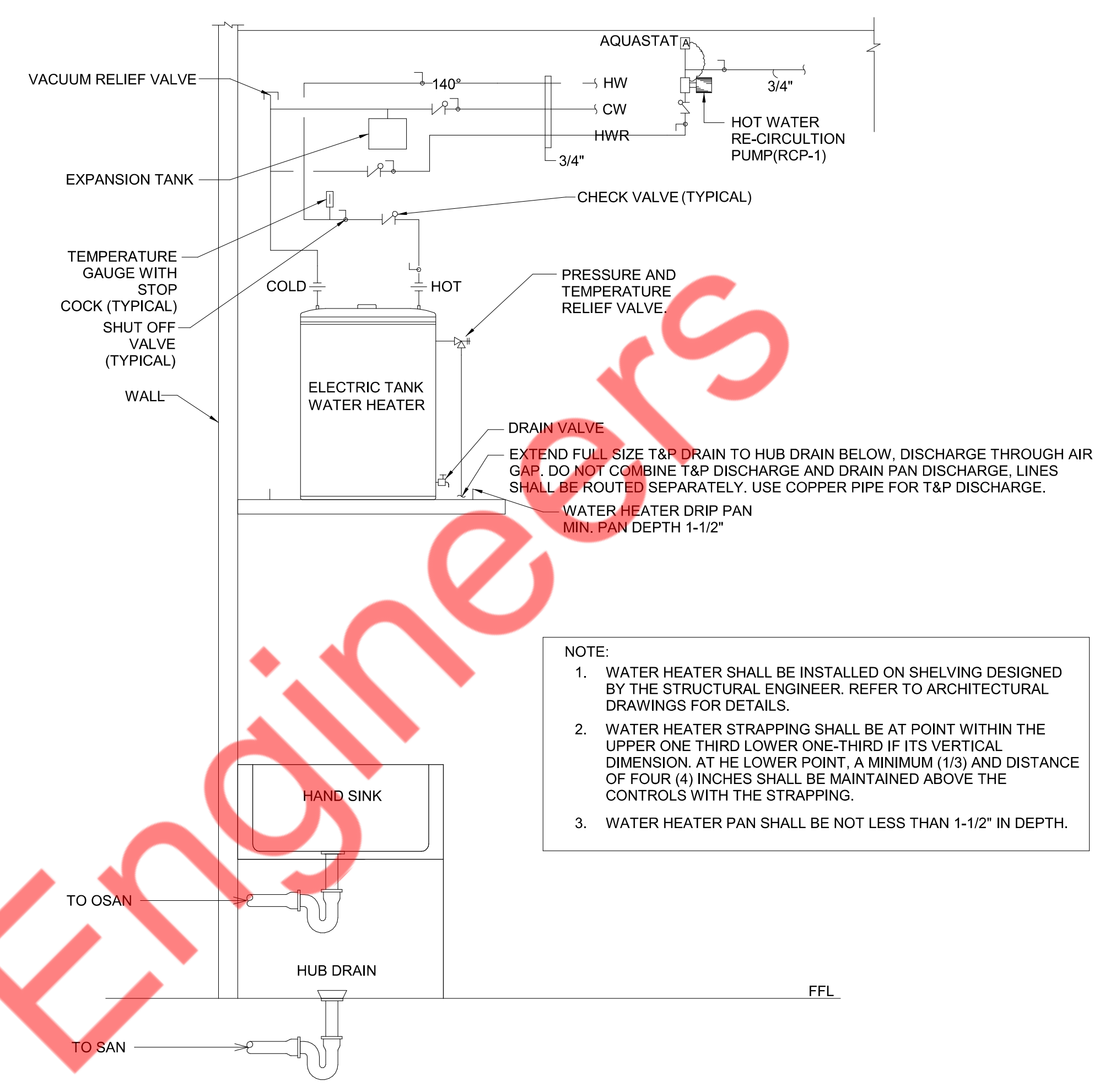
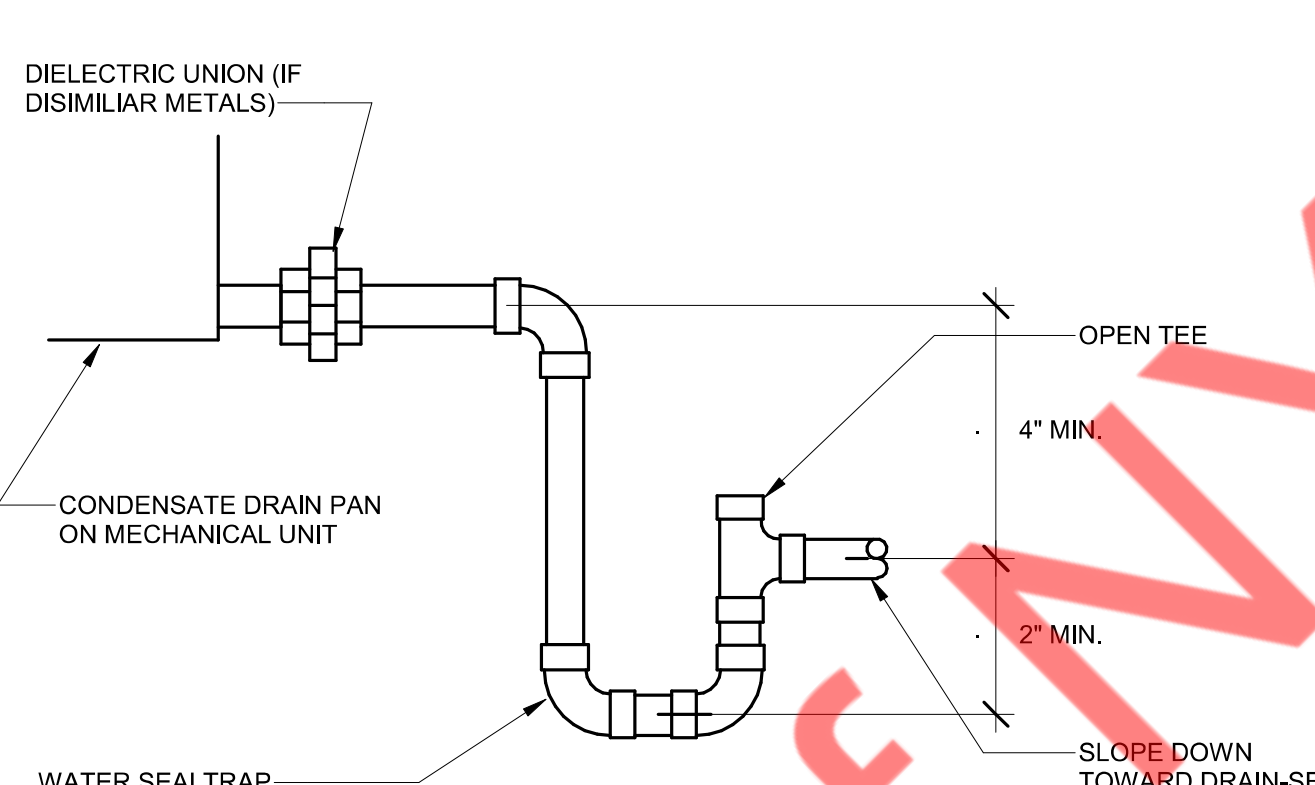
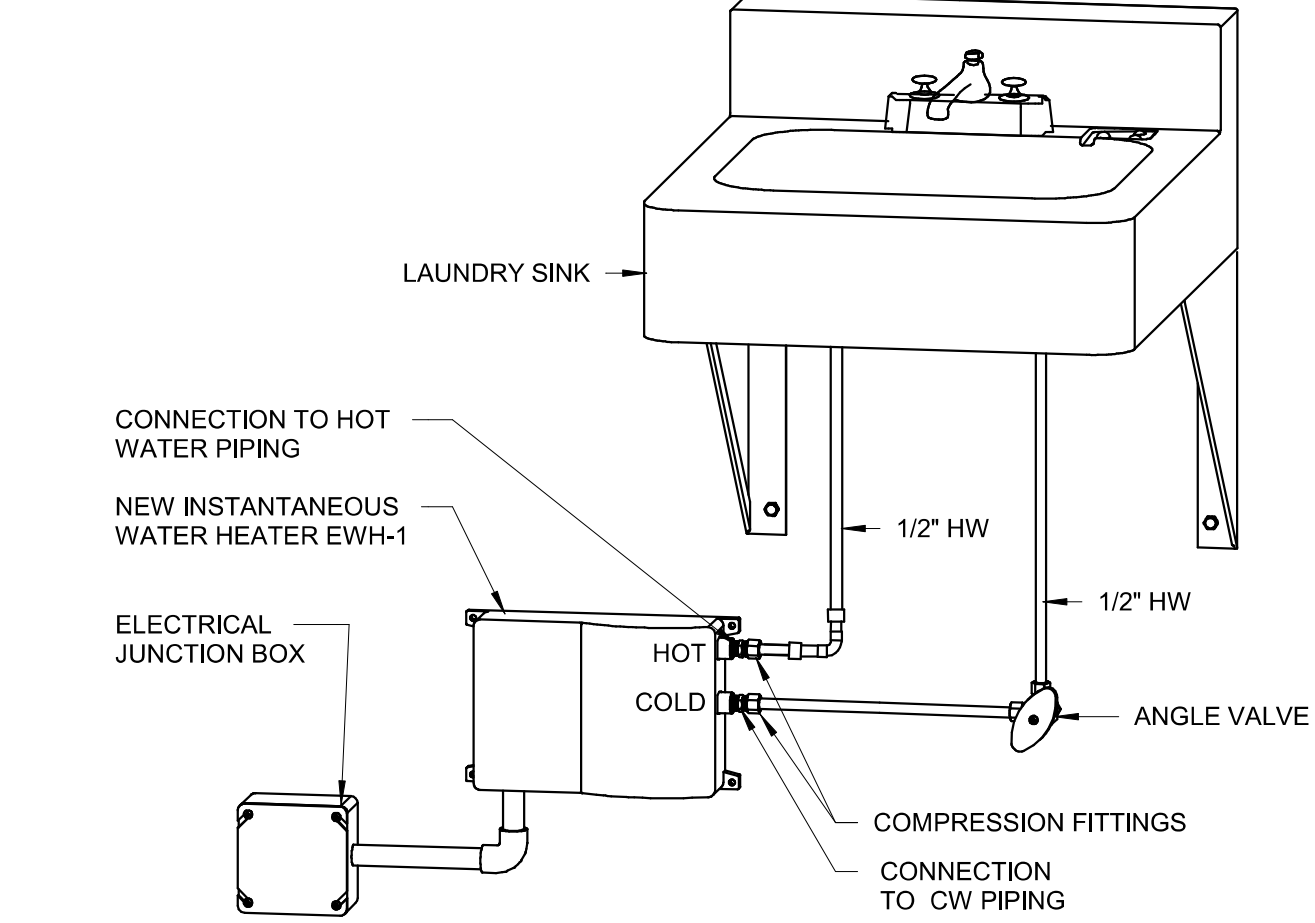
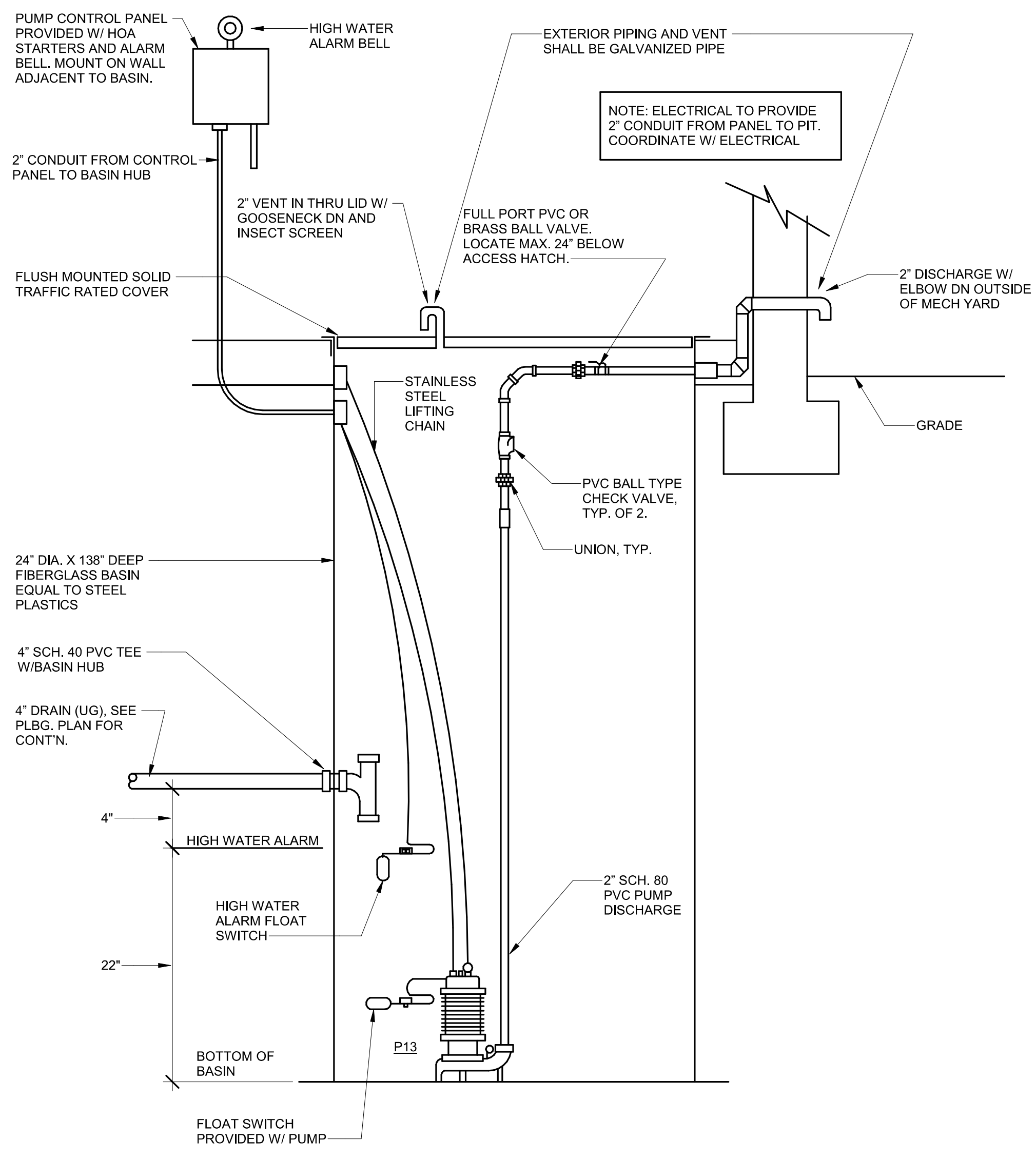
VALVOLINE INSTANT OIL CHANGE

CONTROL NO:

JOB NUMBER:

DATE: 2025-05-16

CONTENTS: PLUMBING SCHEDULES



VALVOLINE INSTANT OIL CHANGE

CONTROL NO:

JOB NUMBER:

DATE: 2025-05-16

CONTENTS: PLUMBING DETAILS