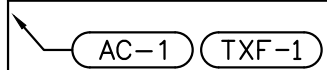

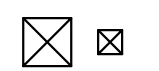

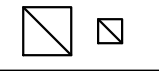







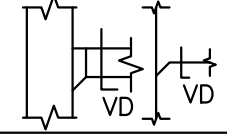

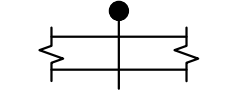

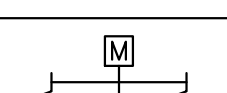











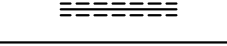

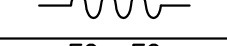

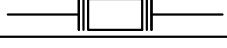

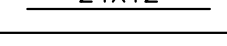

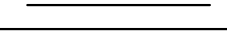



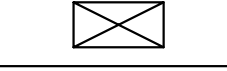





MECHANICAL SYMBOLS LIST		
		EQUIPMENT SYMBOL
AIR DEVICES		
		CEILING DIFFUSER SUPPLY
		CEILING DIFFUSER RETURN
		CEILING DIFFUSER EXHAUST
		SIDEWALL/DUCT MOUNTED GRILLE--SUPPLY
		SIDEWALL/DUCT MOUNTED GRILLE--RETURN
DUCT ACCESSORIES		
		VOLUME DAMPER W/ ACCESS DOOR
		FIRE DAMPER W/ ACCESS DOOR
		MOTORIZED DAMPER W/ ACCESS DOOR
CONTROLS & SENSORS		
		CEILING DIFFUSER SUPPLY
		MANUAL ON/OFF SWITCH
		DUCT SMOKE DETECTOR
		CO2 DETECTOR
		TEMPERATURE SENSOR
DUCTWORK		
		AIR DUCT W/ 1.5" ACOUSTICAL LINING
		FLEXIBLE DUCT
		FLEXIBLE CONNECTION
		RECTANGULAR DUCT (WIDTH X DEPTH)
		ROUND DUCT (DIAMETER)
		ROUND DUCT CROSS SECTION
		SUPPLY AIR RECTANGULAR DUCT CROSS SECTION
		RETURN AIR RECTANGULAR DUCT CROSS SECTION

MECHANICAL ABBREVIATIONS	
AL	ACOUSTIC LINING
CDS	CEILING DIFFUSER SUPPLY
CDR	CEILING DIFFUSER RETURN
CFM	CUBIC FEET OF AIR PER MINUTE
COD	CORD OPERATED DAMPER
DN	DOWN
EA	EXHAUST AIR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
FD/AD	FIRE DAMPER W/ACCESS DOOR
EG	EXHAUST GRILLE
MD	MOTORIZED DAMPER
RTU	ROOF TOP UNIT
RG	RETURN GRILLE
RA	RETURN AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SUPPLY GRILL
SA	SUPPLY AIR
VD	VOLUME DAMPER
TEF	TOILET EXHAUST FAN
W.M.S	WIRE MESH

MECHANICAL DRAWING LIST	
M001	MECHANICAL GENERAL NOTES, ABBREVIATIONS & SYMBOLS LIST
M002	MECHANICAL SPECIFICATIONS
M101	MECHANICAL GROUND FLOOR AND ROOF PART PLAN
M501	MECHANICAL DETAILS (1 OF 2)
M502	MECHANICAL DETAILS (2 OF 2)
M601	MECHANICAL SCHEDULE

CITY OF WACO, TEXAS BUILDING DEPARTMENT NOTES	
ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2018-IBC AND RULES AND REGULATIONS OF THE CITY OF WACO, TEXAS BUILDING DEPARTMENT TO DATE.	
1. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.	
2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2018 INTERNATIONAL BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].	
3. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:	
a. STANDARDS OF HEATING – 2018 IMC 309.1	
b. DUCT CONSTRUCTION AND INSTALLATION– 2018 IMC 603	
c. AIR INTAKES, EXHAUSTS AND RELIEFS – 2018 IMC 401.4	
d. AIR FILTERS – 2018 IMC 605	
4. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.	
5. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 IMC 401.	
6. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2018 IMC 403.3	
7. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.	
8. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.	
9. MECHANICAL SYSTEM SHALL BE COMMISSIONED PER 2018 IECC SECTION C408.2. FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY PER 2018 IECC SECTION C408.2.5.	
10. A COMMISSIONING PLAN SHALL BE DEVELOPED BY A LICENSED DESIGN PROFESSIONAL, MECHANICAL ENGINEER OR APPROVED AGENCY.	
11. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE LICENSED DESIGN PROFESSIONAL, ELECTRICAL ENGINEER, MECHANICAL ENGINEER OR APPROVED AGENCY AND PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT AS PER 2018 IECC.	
12. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH THE SECTION 2018 IECC SECTION C408.2.2.	
13. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.	
14. SMOKE DETECTOR SHALL MEET UL268A.	
SCOPE OF WORK	
1. INSTALL A NEW 4 TR & 3 TR HEAT PUMP SPLIT UNITS ALONG WITH DUCTWORK AS SHOWN ON THE PLAN.	
2. INSTALL ONE 75 CFM TOILET EXHAUST FAN TO KEEP THE TOILET VENTILATED.	
3. INSTALL ONE 420 CFM CEILING MOUNTED INLINE FAN ABOVE EXHAUST HOOD.	
4. INSTALL AIR CURTAIN AS SHOWN IN THE PLAN.	
NOTE TO CONTRACTOR	
1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFI'S, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.	
2. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.	
3. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.	

GENERAL NOTES	
1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.	
2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.	
3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.	
4. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.	
5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.	
6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.	
7. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.	
8. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.	
9. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ARCHITECT.	
10. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN TIME.	
11. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.	
12. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.	
13. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.	
14. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.	
15. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.	
16. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.	
17. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.	
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPAIR ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.	
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.	
20. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.	
21. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.	

GENERAL HVAC NOTES	
1. 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.	
2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.	
3. 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.	
4. WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.	
5. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.	
6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.	
7. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.	
8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSLATIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.	
9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.	
10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.	
11. LOCATE ALL TEMPERATURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP, AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.	
12. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.	
13. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.	
14. 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 EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.	
15. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.	
16. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.	
17. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. 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.	
18. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.	
19. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.	
20. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.	
21. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.	
22. 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 THE AABC STANDARDS.	

THERMOSTATIC CONTROLS	
C403.4.1 THERMOSTATIC CONTROLS (MANDATORY) 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:  1. 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). 2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.  C403.4.1.2 DEADBAND (MANDATORY) 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: 1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES. 2. OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.  C403.4.1.3 SETPOINT OVERLAP RESTRICTION (MANDATORY) 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 C403.4.1.2.  C403.4.2 OFF-HOUR CONTROLS (MANDATORY) EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.  EXCEPTIONS: 1. ZONES THAT WILL BE OPERATED CONTINUOUSLY. 2. 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.  C403.4.2.1 THERMOSTATIC SETBACK (MANDATORY) 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).  C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN (MANDATORY) 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 SETTING 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.  C403.4.2.3 AUTOMATIC START (MANDATORY) AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE 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.	

CODE COMPLIANCE	
ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:	
a. TEXAS STATE MINIMUM STANDARD BUILDING CODE (IBC 2018 AMENDED)	
b. TEXAS STATE MINIMUM STANDARD MECHANICAL CODE (IMC 2018 AMENDED)	
c. TEXAS STATE MINIMUM STANDARD PLUMBING CODE (IPC 2018 AMENDED)	
d. TEXAS STATE MINIMUM STANDARD GAS CODE (IFGC 2018 AMENDED)	
e. TEXAS STATE MINIMUM STANDARD ENERGY CODE (IECC 2018 AMENDED)	
f. TEXAS STATE MINIMUM STANDARD ELECTRICAL CODE (NEC 2020 AMENDED)	

**NY ENGINEERS**  
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STREET SUITE 49674, MIAMI,  
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12.08.24	ISSUED FOR CONSTRUCTION
2 11.30.24	PERMIT COMMENTS
1 10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	SOF: OWNER REVIEW SET
NO DATE	REMARKS

REVISIONS

**Kilwins**

PROJECT NO: 2023.0723  
DATE:

**M001**  
MECHANICAL GENERAL  
NOTES, ABBREVIATIONS  
& SYMBOLS LIST  
CHECKED: DRAWN:

SECTION 0101 – QUALITY OF WORK

- 1.1 WORKMANSHIP
- A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
- B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
- C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
- 1.2 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 E 814 OR UL 1479.
- B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F– AND T–RATINGS PER ASTM E 814 OR UL 1479:
- C. PENETRATIONS IN SMOKE BARRIERS: L–RATINGS PER UL 1479.
- D. W–RATINGS: PER UL 1479.
- 1.3 INSTALLATION
- A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
- 1.4 FIELD QUALITY CONTROL
- A. INSPECTION OF INSTALLED FIRE–STOPPING: BY OWNER–ENGAGED AGENCY ACCORDING TO ASTM E 2174.
- 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 ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:
- a. LATEX SEALANT
- b. SILICONE SEALANT
- c. INTUMESCENT PUTTY
- d. MORTAR
- h. SILICONE FOAM
- i. PILLOWS/BAGS
- j. INTUMESCENT WRAP STRIPS
- k. INTUMESCENT COMPOSITE SHEET

1.6 MANUFACTURERS

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

END OF SECTION 078413

- 1.2 SLEEVE–SEAL FITTINGS
- A. MANUFACTURED PLASTIC, SLEEVE–TYPE, PLASTIC OR RUBBER WATER–STOP ASSEMBLY MADE FOR IMBEDDING 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.
- 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

- 1.1 PERFORMANCE REQUIREMENTS
- A. DELEGATED DESIGN: DESIGN TRAPEZE 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.

DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND 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. FIBERGLASS PIPE HANGERS: –OLEVIS, 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

B. AIR–MOUNTING SYSTEMS:

1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED–AIR BELLOWES.
2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED–AIR BELLOWES.
- C. RESTRAINED VIBRATION ISOLATION ROOF–CURB RAILS: FACTORY–ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR– AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.
- D. VIBRATION ISOLATION EQUIPMENT BASES:
1. STEEL BASE: FACTORY–FABRICATED, WELDED, STRUCTURAL–STEEL BASES AND RAILS.
2. INERTIA BASE: FACTORY–FABRICATED, WELDED, STRUCTURAL–STEEL BASES AND RAILS READY FOR FIELD–APPLIED, CAST–IN–PLACE CONCRETE.

1.2 FIELD QUALITY CONTROL

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

PART–2 PRODUCTS

1.1 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 FOLLOWING:
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 AND VARIABLE VOLUME SYSTEMS.
2. MOTORS.

1.2 QUALITY ASSURANCE

- A. THE CONTRACTOR SHALL 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.

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 STARTING 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 INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
- D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
- E. THE CONTRACTOR SHALL HAVE 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 IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST 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.
- J. 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 COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME–SPREAD INDEX OF 25; AND SMOKE–DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE–DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTM E 84.

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:

	SUPPLY	RETURN
UNCONDITIONED SPACES WITHIN BUILDING:	R–6	R–6
WITHIN BUILDING ENVELOPE ASSEMBLY:	R–8	R–8
OUTSIDE OF BUILDING:	R–8	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

1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R–6 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

SECTION 233713 – DIFFUSERS, REGISTERS, AND GRILLES

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. METALAIRE, INC.
- e. NAILOR INDUSTRIES INC.
- f. RUSKIN

- 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.

END OF SECTION 233713

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12.09.24 ISSUED FOR CONSTRUCTION  
2 11.20.24 PERMIT COMMENTS  
3 10.07.24 PERMIT COMMENTS  
08.28.24 PERMIT SUBMIT  
08.22.24 OWNER REVIEW SET  
08.07.24 SOT: OWNER REVIEW SET

NO DATE REMARKS

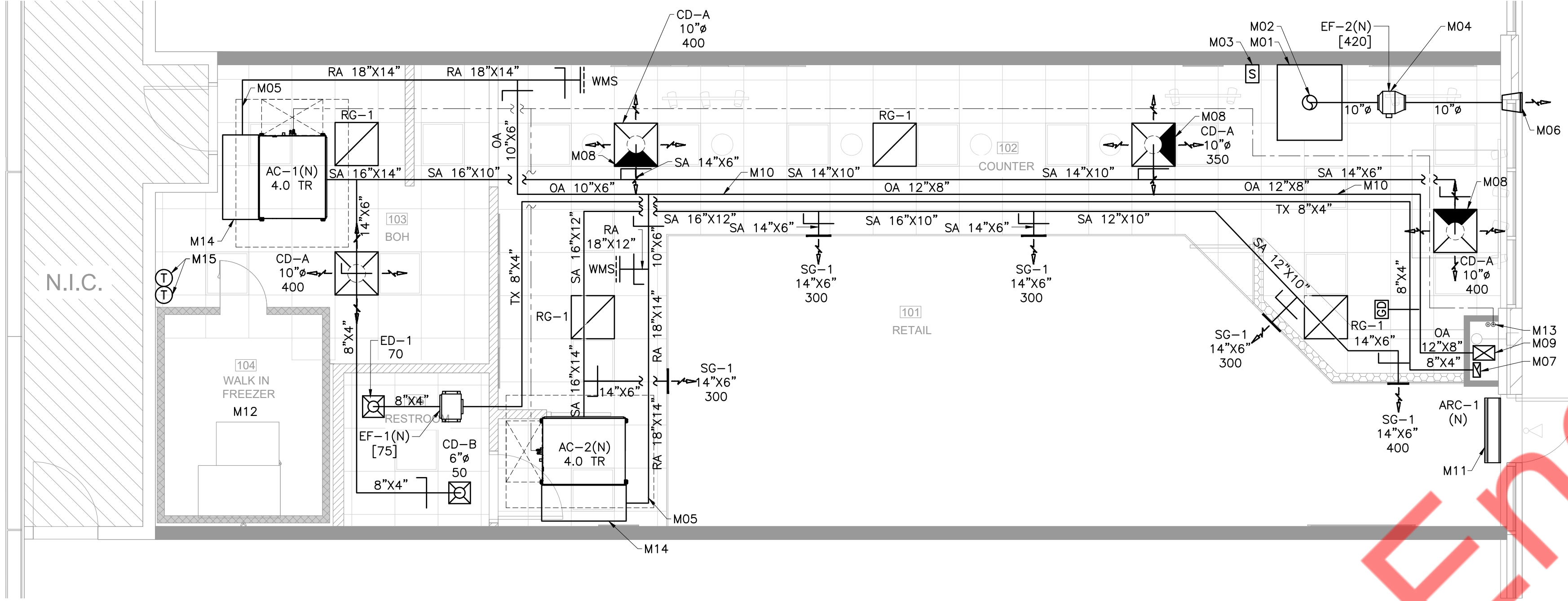
REVISIONS

**Kilwins**

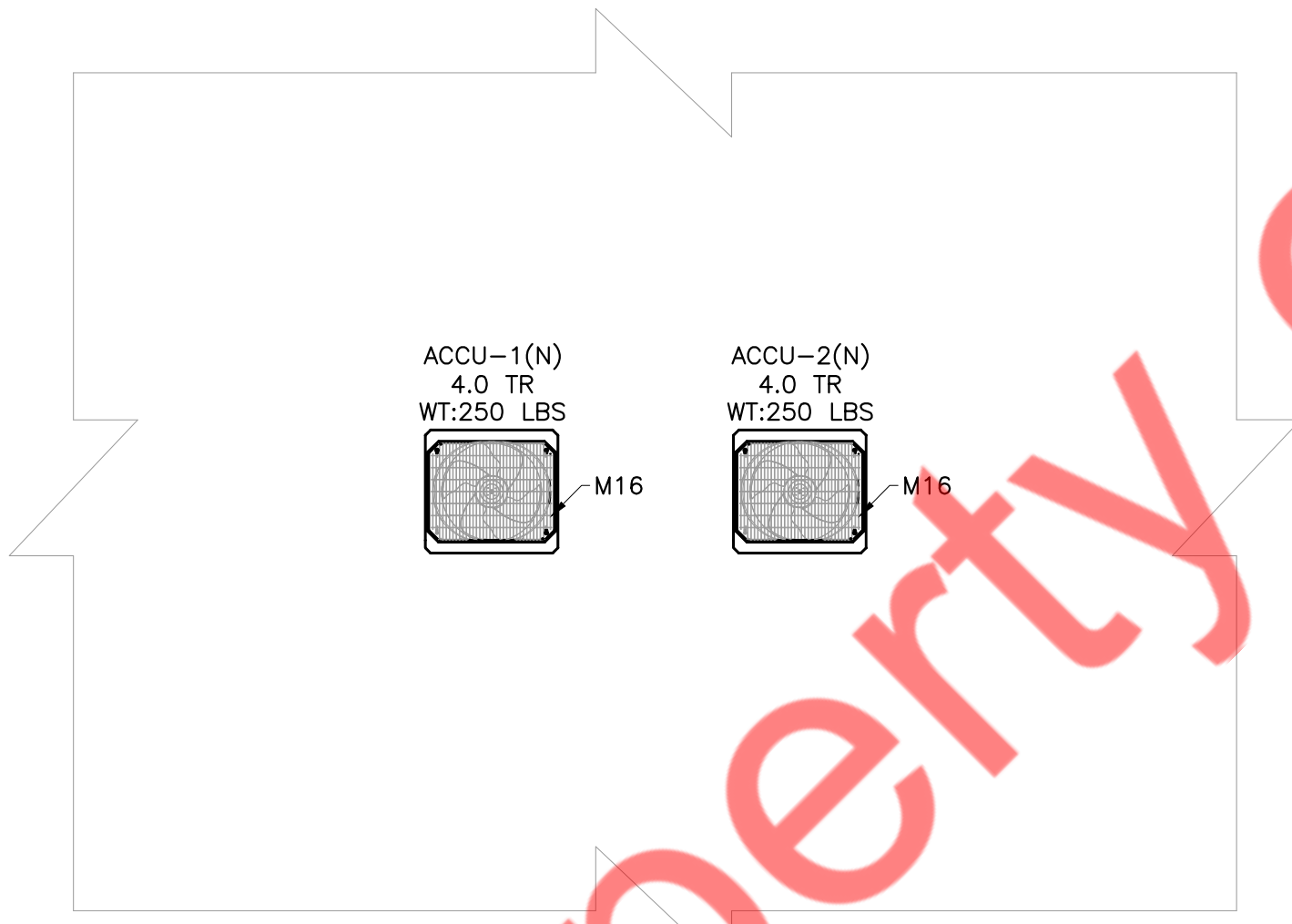
PROJECT NO: 2023.0723  
DATE:

**M002**  
MECHANICAL  
SPECIFICATIONS

CHECKED: DRAWN:



1 MECHANICAL GROUND FLOOR PLAN  
1/4" = 1'-0"



2 MECHANICAL PART ROOF PLAN  
1/4" = 1'-0"

KEY NOTES:

- M01 INSTALL TYPE II CANOPY EXHAUST HOOD AT THIS LOCATION ABOVE THE FUDGE POT, SEE ARCHITECTURAL PLANS FOR EXACT LOCATION. SUSPEND FROM STRUCTURE ABOVE WITH ALL-THREAD HANGERS. MOUNT BOTTOM OF HOOD AT 6'-3" AFF (AS PER STANDARD 2006 IMC 507.12).
- M02 ROUTE EXHAUST DUCT UP TO ABOVE CEILING AT THIS LOCATION. COVER DUCT WITH STAINLESS STEEL WRAP OR SHROUD TO MATCH HOOD FINISH. SHROUD TO HAVE HIDDEN FASTENERS FOR A PROFESSIONAL CLEAN FINISH WITH NO EXPOSED SEALANT BELOW THE CEILING.
- M03 MOUNT WALL FAN SPEED SWITCH ADJACENT TO FUDGE POT TO TURN ON HOOD EXHAUST FAN.
- M04 INSTALL FANTECH MODEL FKD 8XL INLINE FAN AT THIS LOCATION ABOVE THE CEILING. PROVIDE DISCONNECT SWITCH ON FAN. FAN SHALL BE RATED AT 420 CFM EXHAUST AIRFLOW RATE.
- M05 CONNECT FRESH AIR DUCT TO THE RETURN AIR PLENUM AND BALANCE TO THE AIRFLOW SHOWN ON THE SCHEDULE.
- M06 HOOD EXHAUST TO BE TERMINATED THROUGH WALL CAP. EXHAUST TO BE TERMINATED 3" FROM PROPERTY LINE, 3' FROM OPERABLE OPENING INTO BUILDINGS AND 10' FROM MECHANICAL AIR INTAKE. AS PER STANDARD 2006 IMC 506.3.12.3, EXHAUST OUTLETS TERMINATION SHALL BE LOCATED NOT LESS THAN 10 FEET ABOVE THE ADJOINING GRADE LEVEL.
- M07 ROUTE THE TOILET EXHAUST AIR DUCTWORK UP TO THE ROOF. THE GENERAL CONTRACTOR (GC) SHOULD COORDINATE ON-SITE TO DETERMINE THE BEST POSSIBLE LOCATION FOR RUNNING THE DUCT TO THE ROOF. TERMINATE ON ROOF WITH MUSHROOM CAP AIR RELIEF VENT WITH BIRD SCREEN. EXHAUST SHALL TERMINATE 3 FEET FROM PROPERTY LINE, 3 FEET FROM OPERABLE OPENING INTO THE BUILDING AND 10 FEET FROM THE OUTSIDE AIR INTAKE.
- M08 DIFFUSERS IN SPACE TO HAVE BLANK OFF PANELS TO PREVENT AIR FROM BLOWING ON ICE CREAM CASES, FUDGE TABLE AND DISPLAY FREEZER. TYPICAL OF ALL IN THIS SPACE.
- M09 ROUTE THE OUTSIDE AIR INTAKE DUCTWORK UP TO THE ROOF. THE GENERAL CONTRACTOR (GC) SHOULD COORDINATE ON-SITE TO DETERMINE THE BEST POSSIBLE LOCATION FOR RUNNING THE DUCT TO THE ROOF. TERMINATE OA DUCT WITH WIREMESH AND GOOSENECK AT 10 FEET AWAY FROM PROPERTY LINE AND ANY EXHAUST.
- M10 OFFSET INSULATED FRESH AIR DUCT UP AND ROUTE TO FAN COIL AS SHOWN. INSULATE ALL DUCT PER SPECIFICATIONS.
- M11 INSTALL THE AIR CURTAIN ABOVE DOOR PER MANUFACTURERS REQUIREMENTS. AIR CURTAIN SHALL BE MARS LOPRO2 (LPV2) MODEL PV236-1UA-OB. UNIT IS UNHEATED MODEL WITH MOUNTING BRACKETS, DOOR SWITCH AND DISCONNECT.
- M12 SELF CONTAINED FREEZER UNIT WILL BE PROVIDED BY OTHERS AND INSTALLATION BY GC.
- M13 ROUTE REFRIGERANT PIPING FROM FAN COIL UNITS TO CONDENSING UNIT LOCATED AT ROOF. ROUTE REFRIGERANT PIPING FROM INDOOR TO OUTDOOR UP TO THE ROOF. THE GENERAL CONTRACTOR (GC) SHOULD COORDINATE ON-SITE TO DETERMINE THE BEST POSSIBLE LOCATION FOR RUNNING THE REFRIGERANT PIPE TO THE ROOF.
- M14 INSTALL FAN COIL UNIT FROM STRUCTURE ABOVE. CONNECT REFRIGERANT PIPING TO UNITS. ROUTE CONDENSATE FROM DRAIN PAN ABOVE CEILING AND DROP ALONG WALL INTO MOP SINK. INSTALL IN STRICT COMPLIANCE WITH MANUFACTURERS REQUIREMENTS.
- M15 INSTALL THERMOSTAT TO THIS LOCATION MOUNT 48" ABOVE FINISHED FLOOR.
- M16 INSTALL OUTDOOR CONDENSING UNITS AT ROOF. MOUNT ON 24" TALL FABRICATED EQUIPMENT RACK. FABRICATE RACK FROM GALVANIZED STEEL. INSULATE PIPING PER SPECIFICATIONS AND PAINT EXTERIOR OF INSULATION WITH (2) COATS OF GRAY ENAMEL PAINT. CONTRACTOR TO PROVIDE REFRIGERANT TO CHARGE THE SYSTEM. FINAL LOCATION TO BE COORDINATED ARCHITECT/LANDLORD.

GENERAL FLOOR PLAN NOTES:

- ALL WORK SHALL COMPLY WITH STATE CODES AND AUTHORITIES HAVING JURISDICTION.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND ARRANGE ALL REQUIRED INSPECTIONS.
- CONTRACTOR TO FIELD VERIFY EXISTING RIGID ROUND METAL DUCT DUCT CONDITION. IF IN GOOD CONDITION THEN REUSE WHEREVER POSSIBLE.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS AND TRADES.
- THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. ALL EQUIPMENT SHALL BE UL LISTED. VERIFY LOCATION AND DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND / OR INSTALLATION.
- DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- ALL METAL DUCT AND AIR DISTRIBUTION DEVICES SHALL BE INSULATED WITH R-6, 75 DENSITY FOIL-BACKED INSULATION WITH FIRE AND SMOKE RATING 25-50.
- ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT MANUAL.
- THE CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS ON SITE WITH THE MOST RECENT REFLECTED CEILING PLAN.
- THE CONTRACTOR IS TO MAKE ALL LOW-VOLTAGE WIRING CONNECTIONS FOR ALL HVAC EQUIPMENT INCLUDING TEMPERATURE CONTROLS, ROOF TOP UNITS, SMOKE DETECTORS AND CONTACTOR PANEL.
- THE ENTIRE INSTALLATION SHALL BE GUARANTEED FREE OF DEFECTS AND CONTRACTOR SHALL REPAIR AND / OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO COST TO THE OWNER FOR A MINIMUM PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY ARCHITECT OR ENGINEER.
- ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT. PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.
- LISTING AND LABELING OF MECHANICAL EQUIPMENT AND APPLIANCES USED FOR REFRIGERATION SHALL BE IN ACCORDANCE WITH 2018 IMC SECTION OF 301.7

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STREET SUITE 49674, MIAMI,  
FL 33179 PH- 786.788.0295

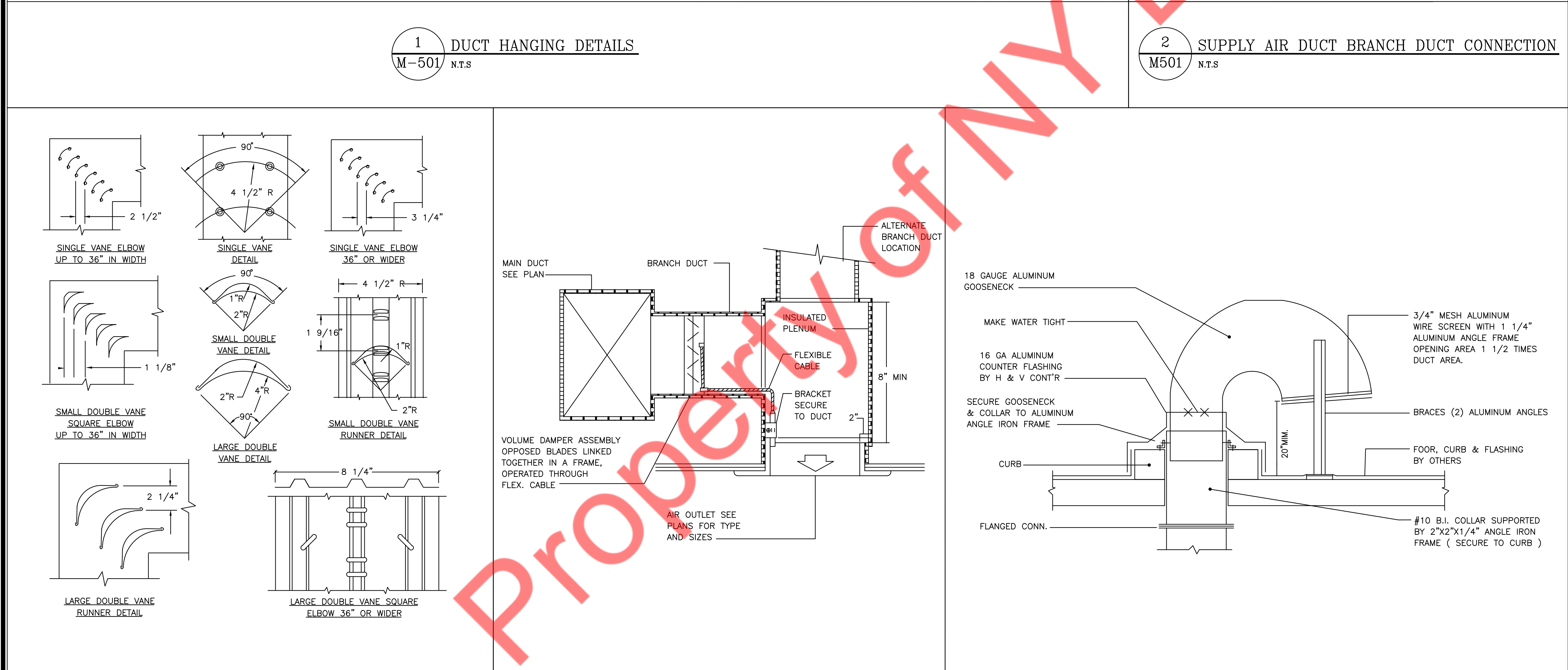
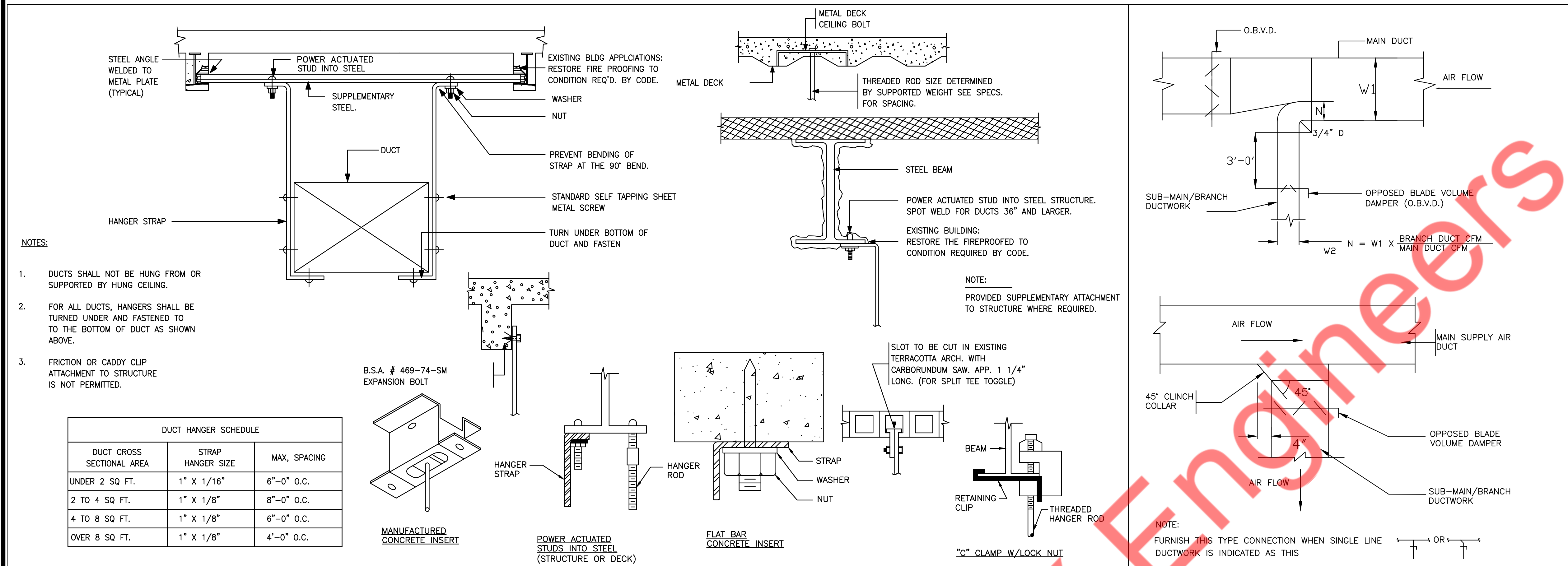
NO	DATE	REVISIONS
1	12.08.24	ISSUED FOR CONSTRUCTION
2	11.20.24	PERMIT COMMENTS
3	10.07.24	PERMIT COMMENTS
4	08.28.24	PERMIT SUBMIT
5	08.22.24	OWNER REVIEW SET
6	08.07.24	SOC. OWNER REVIEW SET
7	NO DATE	REMARKS

Kilwins

PROJECT NO: 2023.0723  
DATE:

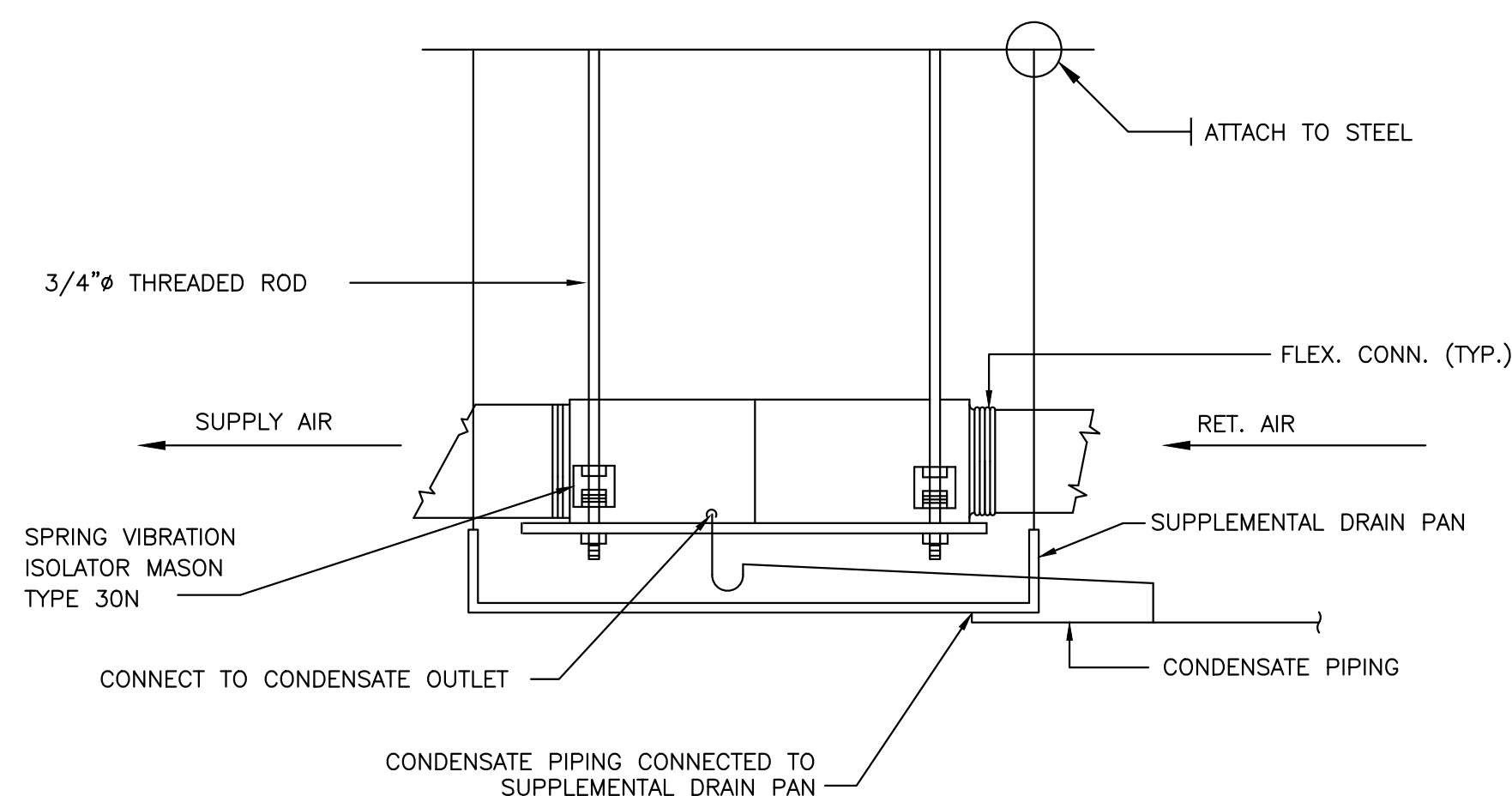
M101  
MECHANICAL GROUND  
FLOOR & PART ROOF  
PLAN

CHECKED: DRAWN:

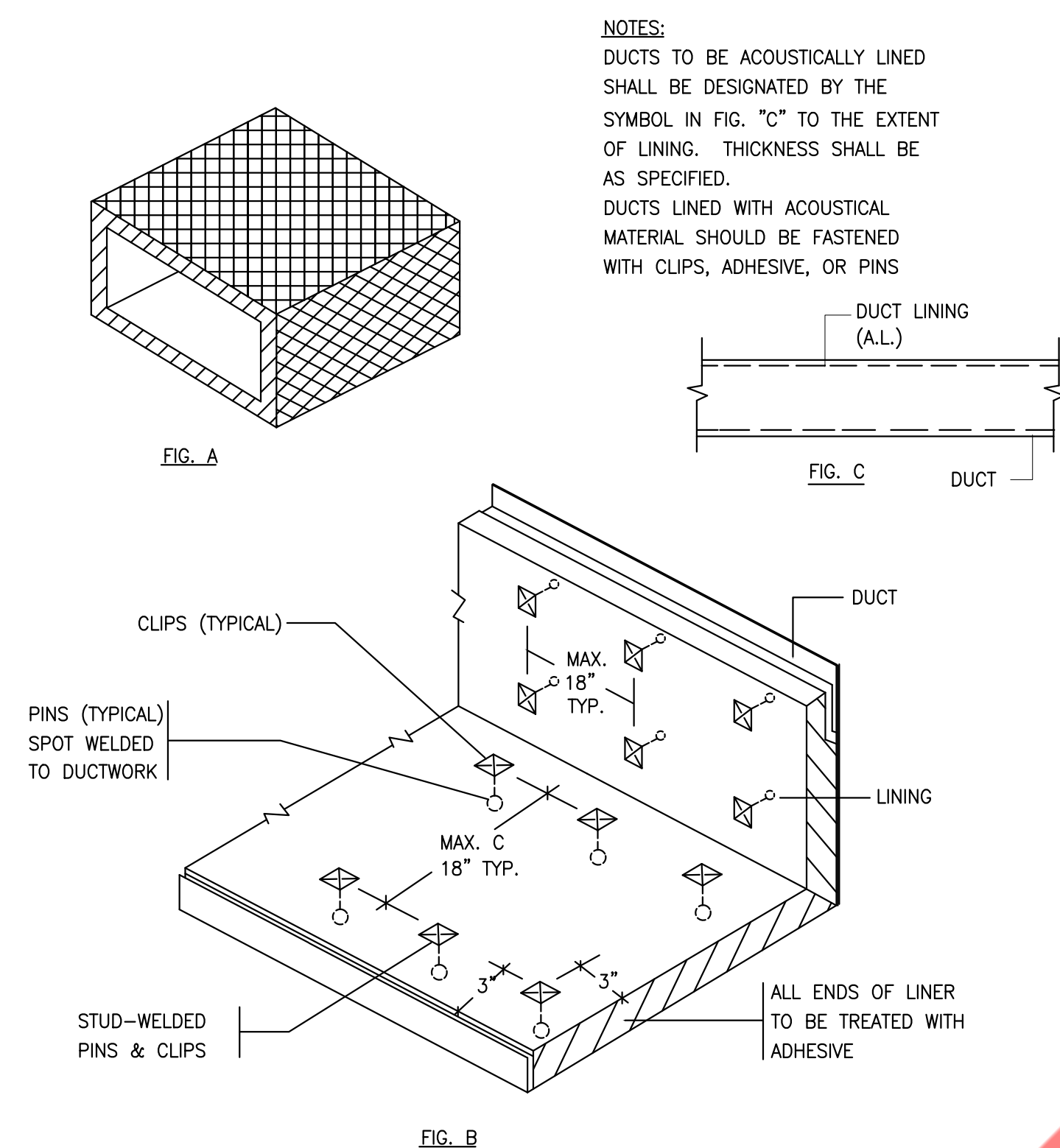


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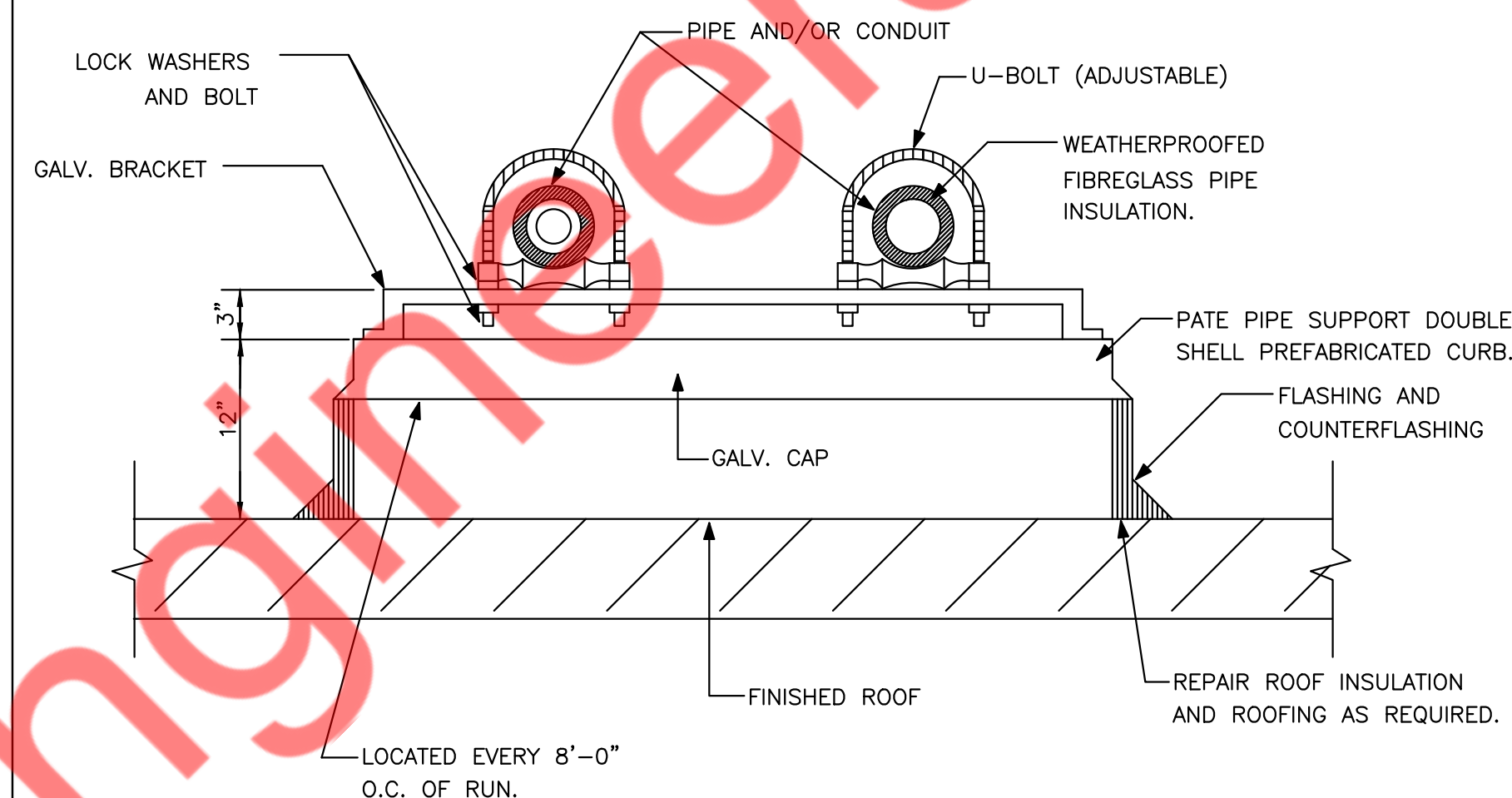
12.09.24	ISSUED FOR CONSTRUCTION
11.23.24	PERMIT COMMENTS
10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	SOF. OWNER REVIEW SET
NO DATE	REMARKS
REVISIONS	



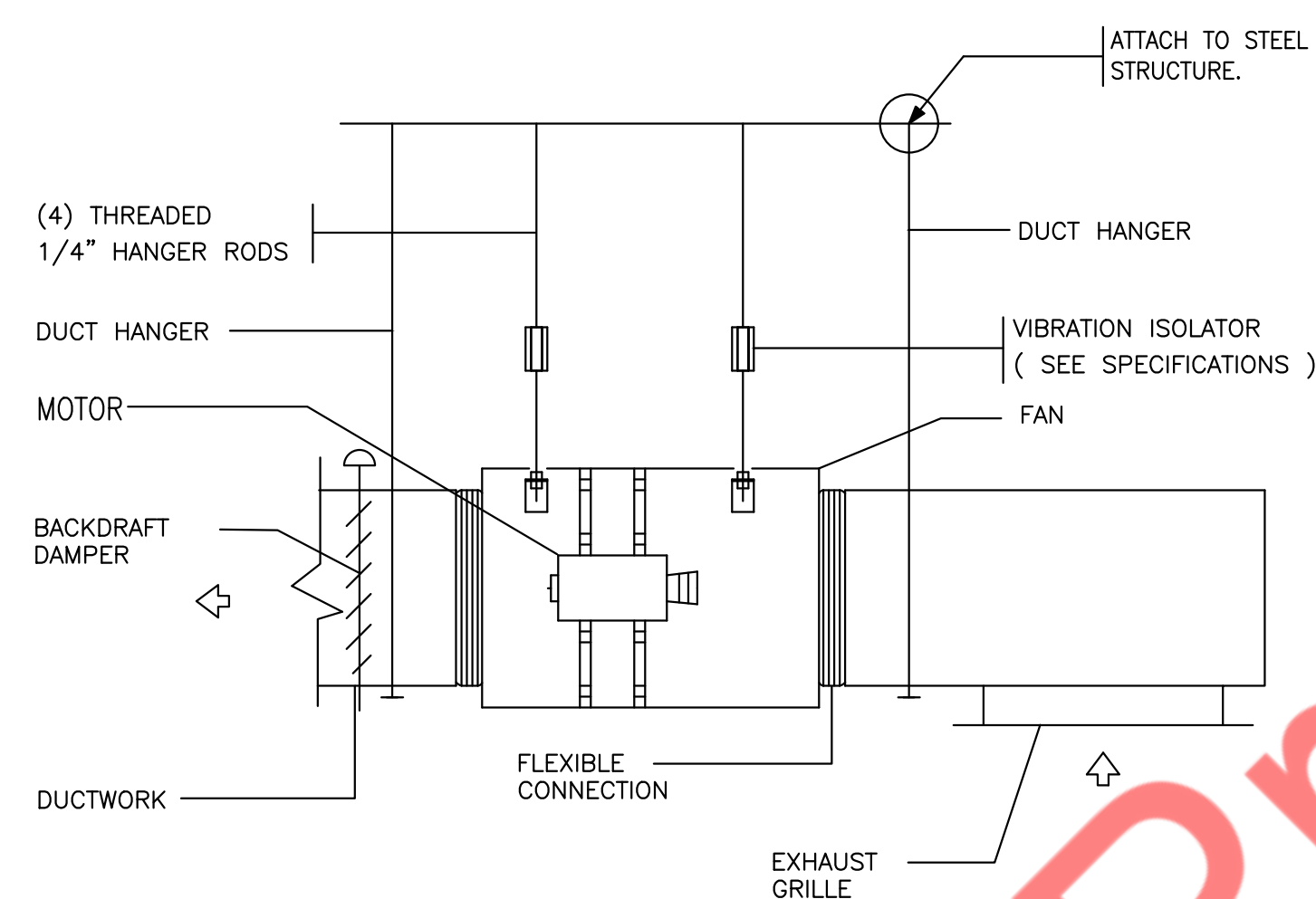
1  
M502 A.C. UNIT INSTALLATION DETAIL  
N.T.S



2  
M502 ACOUSTICAL TREATMENT DUCT LINING  
N.T.S



3  
M502 ROOF MOUNTED PIPE SUPPORT DETAIL  
N.T.S



4  
M502 INLINE FAN SUPPORT DETAIL  
N.T.S

OUTDOOR CONDENSING UNIT SCHEDULE (NEW)																	MAKE: TRANE
UNIT TAG	LOCATION	INDOOR UNITS SERVED	CAP.TR	COOLING (MBH)	HEATING (MBH)	COMPRESSOR TYPE	UNIT DIMENSIONS IN. (HXWXD)	PIPING DIMENSION			ELECTRICAL			SOUND LEVEL (Dba)	DUCTED INDOOR UNIT		MODEL NO.
								WEIGHT (LBS)	LIQUID-HI PRESSURE	GAS HIGH-PRESSURE	(V/Hz/Ph)	MCA	MOP		EER	SEER	
ACCU-1(N)	SEE PLAN	AC-1(N)	4.0	45.0	45.0	SCROLL	51 X 35.1 X 38.7	300	3/8"	7/8"	208/230/1/60	26.0	40.0	72	11.7	14.3	4TWR4048N1000A
ACCU-2(N)	SEE PLAN	AC-2(N)	4.0	45.0	45.0	SCROLL	51 X 35.1 X 38.7	300	3/8"	7/8"	208/230/1/60	26.0	40.0	72	11.7	14.3	4TWR4048N1000A
NOTES: OUTDOOR UNIT																	
1. 5 YEAR COMPRESSOR WARRANTY.																	
2. ANTI-RECYCLE TIMERS.																	
3. LOW AMBIENT OPERATION FOR COOLING																	
4. EXTERNAL CRANKCASE HEATERS																	
5. LOW PRESSURE SWITCH																	
6. SERVICE VALVES																	
7. HEAT PUMP REVERSING VALVE																	

AIR CONDITIONER SCHEDULE (NEW)															MAKE: TRANE		
UNIT TAG	AREA SERVED	TYPE	CAP. (TON)	COOLING (MBH)	HEATING (MBH)	TOTAL CFM (MAX.)	OA CFM	MAX. ESP. (IN. WG)	RATED Amps (A)	ELECTRICAL DATA	ELECTRIC COIL	DIMENTIONS (HXWxD) (IN.)	PIPE SIZE			WEIGHT (LBS.)	MODEL NO.
										PH/VOLT/HZ	KW	UNIT	LIQ.	SUCTION	DRAIN (ID)		
AC-1(N)	SEE PLAN	BLOWER COIL AIR HANDLER UNIT	4.0	45.0	45.0	1600	250	1.50	7.6	1/208-230/60	5.0	18 X 46 X 36 7/8	3/8"	7/8"	1"	127	BCHE048E
AC-2(N)	SEE PLAN	BLOWER COIL AIR HANDLER UNIT	4.0	45.0	45.0	1600	250	1.50	7.6	1/208-230/60	5.0	18 X 46 X 36 7/8	3/8"	7/8"	1"	127	BCHE048E
NOTES FOR INDOOR UNITS:																	
1. CONDENSATE OVERFLOW SWITCH TO SHUTDOWN THE UNIT																	
2. UC400-B CONTROLLER WITH WIRELESS ZONE SENSOR AND HUMIDISTAT																	
3. RUBBER ISOLATOR HANGERS																	
4. DEHUMIDIFICATION CONTROL FUNCTION WITH REMOTE HUMIDISTAT IN SPACE																	
5. 2-STAGE ELECTRIC HEAT COIL IN REHEAT POSITION																	
6. NON FUSED DISCONNECT																	
7. DISCHARGE AIR SENSOR																	
8. ECM FAN MOTOR																	

FAN SCHEDULE																
UNIT ID	MANUFACTURER	MODEL	CFM	TYPE	DRIVE	FAN RPM	WEIGHT (LBS)	E.S.P. (IN. W.G.)	FLA AMPS	MCA AMPS	MOP AMPS	INPUT POWER WATTS	VOLTS	PHASE	SERVICE	NOTES / ACCESSORIES
EF-1(N)	GREENHECK	CSP-A390-VG	75	CEILING MOUNTED	DIRECT	1485	24	0.75	1.5	1.9	15	35	115	1	SEE PLAN	1,2,3,4
EF-2(N)	FANTECH	FKD 8XL	420	INLINE	DIRECT	2618	15.1	1.2	-	-	-	312	115	1	SEE PLAN	1,2,4,5,6
NOTES / ACCESSORIES:																
1. DISCONNECT SWITCH																
2. VIBRATION ISOLATOR (NEOPRENE)																
3. CONTROL WITH LIGHT																
4. AUTOMATIC BACKDRAFT DAMPER																
5. CONTROL WITH WALL SWITCH																
6. FAN SPEED CONTROLLER																

AIR CURTAIN SCHEDULE												
TAG	MANUFACTURER	MODEL	AIR FLOW	ELECTRIC DATA			MOTOR	MOTOR	AMPS	FINISH	NOTES	
			CFM	VOLT	PHASE	HZ	QTY	HP				
ARC-1(N)	MARS	LPV236-1UA-OB	900	115	1	60	1	1/6	2.4	OBSIDISN BLACK	1,2,3,4 & 5	
NOTES:-												
1. PROVIDE DISCONNECT SWITCH.												
2. PROVIDE MICRO-SWITCH.												
3. PROVIDE WITH FILTER.												
4. PROVIDE MOUNTING HARDWARE REQUIRED BY MANUFACTURER FOR COMPLETE INSTALLATION.												

AIR BALANCE					
UNIT	AREA SERVED	SUPPLY AIR	OUTSIDE AIR	RETURN AIR	EXHAUST AIR
AC-1	SEE PLAN	1600	250	1350	
AC-2	SEE PLAN	1600	250	1350	
EF-1	SEE PLAN	-			70
EF-2	SEE PLAN	-			420
TOTAL CFM:		3200	500	2700	490
BUILDING PRESSURE:		.....		10 CFM	POSITIVE

ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft	NUMBER OF PEOPLE AS PER AS	NUMBER OF PEOPLE AS PER	FINAL PEOPLE	MIN OUTSIDE AIR AS PER AS PER CFM/PEOPLE	CFM/SQ.FT	REQ. OSA	PROVIDED OSA	REQ. EXHAUST	PROVIDED EXHAUST
101 RETAIL	485	15	8	0	5	7.5	0.12	96	250		
102 COUNTER	530	20	11	0	7	7.5	0.12	116	150	420	420
103 BOH	155		0	0	2	0	0.12	19	100		
105 REST ROOM	50	0	0	0	0	0	0	0	0	70	70
TOTAL	1220		19	0	14			230	500	490	490

MECHANICAL AIR TERMINAL DEVICES SCHEDULE							
TAG	SIZE	DESCRIPTION	CONSTRUCTION	FINISH	BASIS OF DESIGN		ACCESSORIES
					MANUFACTURER	MODEL	
CD-A	24"X24"	SUPPLY AIR DIFFUSER	ALUMINUM	WHITE	TITUS	TDC-AA	VOLUME DAMPER
CD-B	12"X12"	SUPPLY AIR DIFFUSER	ALUMINUM	WHITE	TITUS	TDC-AA	VOLUME DAMPER
RG-1	24"X24"	RETURN AIR GRILLE	ALUMINUM	WHITE	TITUS	350RL	VOLUME DAMPER
SG-1	14"X6"	SUPPLY AIR GRILLE	ALUMINUM	WHITE	TITUS	300FL	VOLUME DAMPER
ED-1	12"X12"	EXHAUST AIR DIFFUSER	ALUMINUM	WHITE	TITUS	TDC-AA	VOLUME DAMPER
NOTES:							
1. MAX. NC LEVEL 30 OR LESS.							
2. COORDINATE WITH ARCHITECT/OWNER FOR FINAL MOUNTING, FRAME TYPE, PAINT AND FINISH.							
3. PROVIDE INSULATED BACKS ON ALL DIFFUSERS/GRILLE.							
FOR ROUND NECK DIFFUSERS:							
6" DIA: 0-120 CFM							
8" DIA: 125-220CFM							
10" DIA: 225-380 CFM							

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12.09.24	ISSUED FOR CONSTRUCTION
11.20.24	PERMIT COMMENTS
10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	50% OWNER REVIEW SET
NO DATE	REMARKS


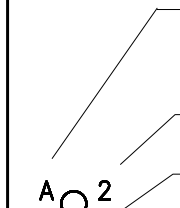
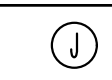
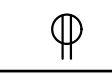
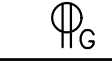






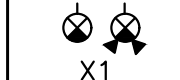

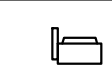

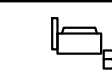
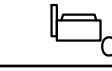

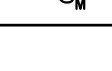

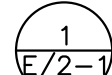

REVISIONS

Kilwins®

PROJECT NO: 2023.0723  
DATE:

M601  
MECHANICAL SCHEDULE

CHECKED:      DRAWN:

ELECTRICAL SYMBOLS LIST				GENERAL NOTES			
LIGHTING		POWER AND TELECOMMUNICATION		ELECTRICAL ABBREVIATIONS			
  A O 2 a	LED LIGHTING FIXTURE AND OUTLET BOX. HALF SHADED FIXTURE OR "EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY SERVICE, U.O.N.	 J	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..	A	AMPERES	EA	EACH
	LUMINAIRE TYPE : INDICATE BY UPPERCASE LETTER SEE LIGHTING EXTURE SCHEDULE.	 P	DUPLEX CONVENIENCE RECEPTACLE.	A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
		 G	GFI DUPLEX RECEPTACLE.	AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
		 CL	DUPLEX RECEPTACLE – 20A–1P, 125V, NEMA 5–20R MOUNTED FLUSH IN CELING.	AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
	CIRCUIT NUMBER : INDICATED BY NUMBER	 S	SPECIAL RECEPTACLE AS PER REQUIREMENT SPECIFICATION	AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
SWITCHING INDICATED BY LOWER CASE LETTERS.	 D	DOUBLE DUPLEX RECEPTACLE – 20A–1P, 125V, NEMA 5–20R.	AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT	
 EM	DENOTES LUMINAIRE WITH EMERGENCY BATTERY BACKUP AS REQUIRED PER CODE.	 D	DATA OUTLET – (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4" DIAMETER GROMMETED OPENING.	AT	AMP TRIP	ER	EXISTING TO BE RELOCATED
 NL	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.			ATS	AUTOMATIC TRANSFER SWITCH	ETR	EXISTING TO REMAIN
 X1	CEILING/WALL MOUNTED EXIT LIGHT FIXTURE WITH BATTERY BACKUP AS REQUIRED PER CODE	AUTO		AUTOMATIC	EWf	ELECTRIFIED WORKSTATION FURNITURE	
					AWG	AMERICAN WIRE GAUGE	EWL
		MOTORS AND CONTROLS		C	CONDUIT	FA	FIRE ALARM
		 M	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.	C/B,CB	CIRCUIT BREAKER	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
		 F	FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.	CKT	CIRCUIT	FDR	FEEDER
		 A	30A/240V NON FUSED DISCONNECT SWITCH	CLG	CEILING	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
		 B	60A/240V NON FUSED DISCONNECT SWITCH	COMM	COMMUNICATION	FIXT	FIXTURE
		 C	100A/240V NON FUSED DISCONNECT SWITCH	CT	CURRENT TRANSFORMER	FL	FLOOR
		 D	200A/240V NON FUSED DISCONNECT SWITCH	CU	COPPER	FLUOR	FLUORESCENT
		 S	MANUAL MOTOR SWITCH	°C	DEGREE CELSIUS	G	GROUND
		ANNOTATIONS		°F	DEGREE FAHRENHEIT	GFI	GROUND FAULT INTERRUPTER
		+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.	DIA	DIAMETER	GP	GENERAL PURPOSE
		 1	KEYED NOTE REFERENCE	DISC	DISCONNECT	HC	HUNG CEILING
		 1	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM	DN	DOWN	HP	HORSEPOWER
		POWER DISTRIBUTION		DP	DISTRIBUTION PANEL	HWH	HOW WATER HEATER
		 P	DISTRIBUTION PANELBOARD, 208Y/120V–SURFACE OR FLUSH MOUNTED.	DWH	DOMESTIC WATER HEATER	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	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
				MTS	MANUAL TRANSFER SWITCH	SYM	SYMMETRICAL
				N	NEUTRAL	SYS	SYSTEMS
				NE	NEW DEVICE TO REPLACE EXISTING	TELE	TELEPHONE
				NIC	NOT IN CONTRACT	TEMP	TEMPERATURE
				NL	NIGHT LIGHT	TXF	TOILET EXHAUST FAN
				NTS	NOT TO SCALE	TYP	TYPICAL
				OC	ON CENTER	UON	UNLESS OTHERWISE NOTED
				P	POLES	V	VOLT/VOLTAGE
				PB	PULLBOX	VA	VOLT AMPERE
				PC	PERSONAL COMPUTER	VAV	VARIABLE AIR VOLUME
				ø	PHASE	VFD	VARIABLE FREQUENCY DRIVE
				PNL	PANEL	VP	VAPORPROOF
				W	WATT	WP	WEATHER PROOF
				W	WIRE	XFMR	TRANSFORMER
				WH	WALL HEATER	ZRT	ZONE REGISTER TERMINALS
				E	EXISTING	IG	ISOLATED GROUND

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NATIONAL ELECTRICAL CODE AND INTERNATIONAL ENERGY CONSERVATION CODE, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.

2. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.

3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.

4. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.

5. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRIPS (METAL DECK). NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.

6. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.

7. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.

8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.

9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.

10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.

11. MINIMUM SIZE OF CONDUIT SHALL BE ¾", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.

12. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.

13. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CANCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.

14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.

15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.

16. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAIN TIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.

17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

18. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.

19. ALL CONDUITS AND EQUIPMENT TO BE CONCEAL ED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.

20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.

21. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE–RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE–RATED BOXES OR PUTTY PADS ARE UTILIZED.

22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITHR THE ENGINEER AND OWNER BEFORE INSTALLATION.

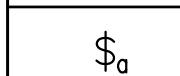
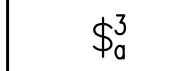
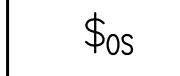
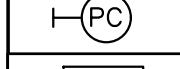
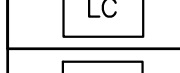
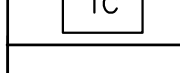
23. COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.

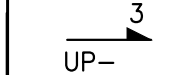
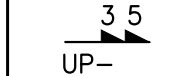
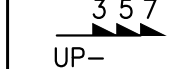
24. REFER TO ARCHITECTURAL PLANS FOR FINAL LOACTIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.

25. REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.

26. LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.

27. NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.

SWITCHES AND CONTROLS	
 a	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
 3a	20A 3–WAY TOGGLE SWITCH U.N.O. "a" DENOTES LIGHTING FIXTURE CONTROLLED
 os	WALL MOUNTED OCCUPANCY SENSOR.
 PC	PHOTOCELL IN NEMA 3R ENCLOSURE.
 LC	LIGHTING CONTACTOR
 TC	TIME CLOCK

WIRING SYSTEMS	
 3 UP	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
 3 5 UP	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
 3 5 7 UP	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.
-----	EXISTING
=====	NEW

ELECTRICAL DRAWING LIST	
E001	ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES
E002	ELECTRICAL SPECIFICATIONS SHEET 1 OF 2
E003	ELECTRICAL SPECIFICATIONS SHEET 2 OF 2
E100	ELECTRICAL LIGHTING PLAN
E200	ELECTRICAL POWER PLAN
E400	ELECTRICAL DETAILS
E500	ELECTRICAL RISER AND PANEL SCHEDULE
E600	ELECTRICAL SHORT CIRCUIT CALCULATIONS

CODE COMPLIANCE

ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT:

a.	INTERNATIONAL BUILDING CODE 2018
b.	INTERNATIONAL MECHANICAL CODE 2018
c.	INTERNATIONAL PLUMBING CODE 2018
d.	INTERNATIONAL FUEL GAS CODE 2018
e.	INTERNATIONAL ENERGY CONSERVATION CODE 2018
f.	NATIONAL ELECTRICAL CODE 2020

NY ENGINEERS  
NEARBY ENGINEERS, 382 NE 191ST  
STREET SUITE 49674, MIAMI,  
FL 33179 PH- 786.788.0295

12.08.24	ISSUED FOR CONSTRUCTION
2 11.30.24	PERMIT COMMENTS
1 10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	SOC OWNER REVIEW SET
NO DATE	REMARKS
REVISIONS	

Kilwins

PROJECT NO: 2023.0723  
DATE:

E001  
ELECTRICAL SYMBOL  
LIST, ABBREVIATIONS  
& GENERAL NOTES

CHECKED: DRAWN:

ELECTRICAL SPECIFICATIONS

1.	GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.	2.	TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.	3.	FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER, DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR	4.	SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.	5.	MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.
B.	DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.								
C.	BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.	QUALITY ASSURANCE	1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.	2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.	3) CURRENT CHARACTERISTICS:				
D.	INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.		a. SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.	b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.	4) HEIGHTS OF OUTLETS:				
E.	REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.		a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:						
F.	CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.		- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.	- WALL SWITCHES: 4 FT-0 IN.	- WALL FIXTURES: 7 FT-0 IN.	- MOTOR CONTROLLERS: 5 FT-0 IN.	- CLOCKS: 7 FT 6 IN		
G.	DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.		b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.						
H.	THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.	D. PRODUCT DELIVERY, STORAGE AND HANDLING	1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.	2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.					
I.	SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.	E. MATERIALS	1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.	2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.	3) INSERTS AND SUPPORTS:				
J.	PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.		a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.						
K.	ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT ND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.		- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.	- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.	- CLIP FORM NAILS FLUSH WITH INSERTS.	- MAXIMUM LOADING 75 PERCENT OF RATING.			
L.	THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.		b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPATES (IN CONCRETE FLIT ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.						
M.	UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.		c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.	d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.					
N.	ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.	F.	PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARKED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.						
O.	INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.	G.	BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.	H.	FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.	I.	ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.		
P.	THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.	3. SCOPE OF WORK:	A.	SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE 2008 NATIONAL ELECTRICAL CODE (NEC) NYC AMENDMENTS, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.					
A.	DEFINITIONS:		B.	ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.					
	1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.		C.	THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF					
	2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.								
	3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.								
	4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.								
	5) "WIRING": RACEWAY. FITTINGS, WIRE, BOXES, AND RELATED ITEMS.								
	6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.								
	7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.								
	8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.								
		</							

ELECTRICAL SPECIFICATIONS (CONT.)

C. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY. EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK. MACHINE SCREWS ON METAL. BEAM CLAMPS ON FRAMEWORK. WOOD SCREWS ON WOOD. AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES.

EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY.

MAINTAIN GROUNDING CONTINUITY OF INTERRUPTED METALLIC RACEWAYS WITH GROUND CONDUCTOR, AND IN FLEXIBLE CONDUIT FOR FEEDERS AND MOTOR TERMINAL CONNECTIONS.

EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE, GALVANIZED OR NYLON ROPE.

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS. CRC-COLD GALVANIZED. EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS. FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

ALL COUPLINGS SHALL BE COMPRESSION TYPE. NO SET SCREW FITTINGS.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED. EXPANSION JOINTS PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT.

D. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

E. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

N. PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

O. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITIONS ROOMS.

P. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

10. WIRE AND CABLE:

A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST

CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPECA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).

E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE 'BX'.

F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM:  
BLACK FOR A PHASE  
RED FOR B PHASE  
BLUE FOR C PHASE

1) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

2) WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

G. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS.

H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

11. WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.

B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC. SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).

C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.

1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT)

2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT,

D. INSERTION RECEPTACLES SHALL BE HOSPITAL GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT. GROUNDED, EXCEPT AS NOTED.

1) HEALTH CARE FACILITIES:

a) DUPLEX, 20 AMP, 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT: SIMILAR TO HUBBELL NO. 8300 HOSPITAL GRADE.

b) SINGLE, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE, U GROUND SLOT: SIMILAR TO HUBBELL NO. 8310 HOSPITAL GRADE.

2) GROUND FAULT INTERRUPTER RECEPTACLES:

a. 20 AMP DUPLEX FEED-THROUGH TYPE. SIMILAR TO NO. GF8300.

E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

F. COLORS: COORDINATE COLORS WITH ARCHITECT.

G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.

B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.

C. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.

D. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.

E. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924. AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

C. OUTLETS SHALL BE:

1) WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE.

D. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG.

E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.

F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

14. GROUNDING AND BONDING:

A. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH (2020 NATIONAL ELECTRICAL CODE WITH AMENDMENTS), AND THESE SPECIFICATIONS. THE WIRING SYSTEM SHALL BE INSTALLED AS REQUIRED TO PROVIDE A CONTINUOUSLY GROUNDED SYSTEM. WHERE FLEXIBLE CONDUIT IS USED FOR PART OF A CONDUIT RUN, EXCEPT LIGHTING BRANCH CIRCUITS, AN INSULATED GROUNDING CONDUCTOR SHALL BE PROVIDED IN THE CONDUIT AND CONNECTED TO GROUNDING BUSHINGS AT EACH END OF THE RUN.

B. USE EXOTHERMIC WELDING PROCESS FOR INACCESSIBLE CONNECTIONS.

C. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL THE ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.

D. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.

E. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:

1) CIRCUITS SERVING ANY WALL BOX DIMMER.

2) CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES. TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF THE SOURCE AT THE SOURCE , OR AS OTHER WISE NOTED ON DRAWINGS.

3) CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER RECEPTACLES

4) ANY CIRCUIT SERVED VIA AN ISOLATION TRANSFORMER OR COMPUTER POWER DISTRIBUTION UNIT.

15. PANELBOARDS:

A. PANELBOARDS SHALL BE OF THE DEAD FRONT TYPE MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE.

B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4" SIDES, TOP AND BOTTOM. INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.

D. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. DOORS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.

F. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

G. ALL STANDARD PANELBOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.

H. FURNISH ALL PANELBOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

I. ALL NEW PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED WHITE CORE LAMACOID NAMEPLATE, WITH 3/4 IN. WHITE LETTERING ON A BLACK BACKGROUND, WITH DESIGNATION LISTED (PANELBOARD NAME), FASTENED WITH EPOXY CEMENT OR OVAL HEAD CHROME PLATED MACHINE SCREWS.

J. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.

K. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.

L. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.

M. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM AND 14,000 AMPERES R.M.S. SYMMETRICAL FOR 480Y/277 VOLT SYSTEM. SERIES RATED PANELBOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

NY ENGINEERS  
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STREET SUITE 49674, MIAMI,  
FL 33179 PH- 786.788.0295

12.08.24	ISSUED FOR CONSTRUCTION
2 11.03.24	PERMIT COMMENTS
1 10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	SOC. OWNER REVIEW SET
NO DATE	REMARKS

REVISIONS

Kilwins

PROJECT NO: 2023.0723  
DATE:

E003

ELECTRICAL  
SPECIFICATIONS  
SHEET.  
2 OF 2  
CHECKED: DRAWN:

LIGHTING FIXTURE SCHEDULE								
Fixture Type	DISCRPTION	COLOUR/NOTES	MANUFACTURER	MODEL NUMBER	BULB TYPE	QUANTITY	WATTAGE	HEIGHT
L1	LITHONIA LIGHTING SERIES: EPANL 2'X2' LED FLAT PANEL FIXTURE LUMENS: 3400LM	GRID OR CEILING MOUNT-4000K TEMPERATURE	LITHONIA	EPANL 2X2 3400LM 80CRI 4000K MINI10 MVOLT	LED	11	30.2W	-
L1 EM	LITHONIA LIGHTING SERIES: EPANL 2'X2' LED FLAT PANEL FIXTURE LUMENS: 3400LM EMERGENCY	GRID OR CEILING MOUNT-4000K TEMPERATURE	LITHONIA	EPANL 2X2 3400LM 80CRI 4000K MINI10 MVOLT E10WCP	LED	6	30.2W	-
L3	TRACK LIGHTING - JUNO T313 BLB BL-PAR20	BLACK WITH BLACK BAFFLE, LED BULB - 4000K TEMPERATURE	JUNO	T313 BLB BL-PAR20	LED	34	50W	SUSPENDED FROM CEILING BOTTOM OF CEILING 9'-0"A.F.F
L1.1	LITHONIA LIGHTING SERIES: EPANL 2'X2' LED FLAT PANEL FIXTURE LUMENS: 3400LM	CABLE SUSPENDED-4000K TEMPERATURE	LITHONIA	EPANL 2X2 3400LM 80CRI 4000K MINI10 MVOLT	LED	2	30.2W	10'-0"
L1.1 EM	LITHONIA LIGHTING SERIES: EPANL 2'X2' LED FLAT PANEL FIXTURE LUMENS: 3400LM EMERGENCY	CABLE SUSPENDED-4000K TEMPERATURE	LITHONIA	EPANL 2X2 3400LM 80CRI 4000K MINI10 MVOLT E10WCP	LED	2	30.2W	10'-0"
L4	MODEL # 282 12" ACRYLIC GLOBE SINGLE LIGHT PENDANT WITH CONTOURED HOLDER	GLOBE, PENDANT & CANOPY FINISH: WHITE PENDANT TYPE: WHITE CORD INSIDE/SEMI-EXPOSED USE: INSIDE STANDARD SOCKET NO BULB	LOVE IT LIGHTING	#282	LED	5	60W	SUSPENDED FROM CEILING WITH BOTTOM OF GLOBE 8'-0"A.F.F
L5	WALL SCONCE	GOONSNECK - WALL SCONCE	LSI LIGHTING	ABOLITE	LED	2	60W	BOTTOM OF HEAD 9'-0"A.F.F
X1	SELF CONTAINED EXIT COMBO LIGHT, DUAL LED HEAD WITH HIGH 90 MINUTE EMERGENCY BATTERY BACK-UP	DECORATIVE,LOW-PROFILE,DIE CAST ALUMINUM HOUSING.DURABLE POWDER COAT FINISHES IN WHITE, BLACK AND BRONZE.	LITHONIA	LHQM-LED-R	LED	2	3W	-
CFB	MONTE CARLO 5HVO52BKD 52" HAVEN OUTDOOR LED - MATTE BLACK-FAN	COLOR - BLACK, LED BULB, 4000K	MONTE CARLO	5HVO52BKD 52" Haven Outdoor LED	LED	1	58.7W	BOTTOM OF BLADES 9'-0"A.F.F
R1	REMOTE EMERGENCY LIGHT, DUAL HEAD	COLOR - WHITE, LED BULB, 3800K	SURE-LIGHTS	6-7-8W-WMH-WH	LED	1	1.5W	-

- ELECTRICAL LIGHTING PLAN KEY NOTES:
- 1

CONNECT ALL EMERGENCY EGRESS LIGHTING AND EMERGENCY FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.
- 2

ALL LIGHTING CIRCUITS ARE CONTROLLED THROUGH LIGHTING CONTACTOR VIA TIME-CLOCK. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF SWITCH BANK WITH OWNER/ARCHITECT. BASE BID ACCORDINGLY.
- 3

E.C TO COORDINATE THE BUILDING SIGNAGE CONNECTION REQUIREMENTS WITH SIGN VENDOR. BASE BID ACCORDINGLY.
- 4

COORDINATE LOCATION OF TRACK LIGHTING IN FIELD TO AVOID CONFLICTS WITH HVAC DUCTS.
- 5

ELECTRICAL CONTRACTOR TO COORDINATE WITH VENDOR FOR FREEZER INTERNAL LIGHTING AND PROVIDE POWER CONNECTIONS. VERIFY THE MANUFACTURER INFORMATION BEFORE INSTALLATION. BASE BID ACCORDINGLY.
- 6

E.C SHALL COORDINATE THE EXACT LOCATION OF LIGHTING CONTACTOR, TIME CLOCK AND PHOTO CELL AS PER SITE REQUIREMENT, PROVIDE CONTACTOR CIRCUITS AS REQUIRED PER SITE CONDITION. BASE BID ACCORDINGLY.

ELECTRICAL LIGHTING PLAN GENERAL NOTES:

1.

VERIFY ALL LUMINARIE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION PF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS.

2.

PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.

3.

VERIFY FINAL LUMINARIE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENTS SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.

4.

VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH-IN.

5.

CURRENT LIMITERS REQUIRED FOR THE TRACK LIGHTING SHALL BE COORDINATED WITH THE LIGHTING VENDOR SPACE.BASE BID ACCORDINGLY.

6.

E.C. TO COORDINATE EXACT LOCATION WITH ARCHITECT FOR LIGHTING DETAILS.

7.

OCCUPANCY SENSORS SHALL BE PROVIDED AS SHOWN AND ALSO CONSIDER POWER PACKS AS REQUIRED IN COORDINATION WITH LIGHTING VENDOR.

8.

THE SCOPE OF THE WORK COVERED BY THESE DRAWINGS AND SPECIFICATIONS INCLUDES LABOR, EQUIPMENT, AND MATERIALS FOR THE COMPLETE ELECTRICAL SYSTEM.

9.

THE ENTIRE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE NEC AND ALL STATE AND LOCAL CODES.

10.

THE ENTIRE ELECTRICAL SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

11.

EACH CONDUIT RUN SHALL HAVE A SEPARATE GROUND WIRE.

12.

ALL BRANCH CIRCUITS SHALL HAVE SEPARATE NEUTRAL CONDUCTORS. SHARING OF NEUTRAL WIRES IS NOT ACCEPTABLE.

13.

COORDINATE WITH VENDOR DRAWINGS FOR ADDITIONAL LOW VOLTAGE DEVICES, LOCATIONS OF ALL DEVICES INCLUDING TVS. PROVIDE POWER AS REQUIRED, NOT SHOWN ON ELECTRICAL DRAWINGS.

14.

PROVIDE TYPED CIRCUIT DIRECTORY WITH CLEAR PROTECTIVE COVER/HOLDER INSIDE DOOR OF EVERY PANEL BOARD.

15.

MC TYPE CABLE ONLY ALLOWED IN CONCEALED HORIZONTAL RUNS, INSTALLED CONCEALED IN STUD WALLS BETWEEN OUTLET DEVICES, CONNECTIONS TO MOVING OR VIBRATING EQUIPMENT , AND FOR FINAL CONNECTION TO LIGHT FIXTURES (6FT. MAX)

16.

USE BOLTED CLAMP TYPE HANGERS FOR SUPPORTING CONDUITS ONE HOLE STRAP AND SPRING TYPE CONDUIT HANGERS ARE NOT ACCEPTABLE.

17.

WALLBOX TYPE SENSORS SHALL HAVE INTEGRAL ON/OFF OVERRIDE SWITCH, ADJUSTABLE TIME DELAY, AND PROGRAMMABLE MODES OF OPERATION (MANUAL ON/AUTO OFF, AUTO ON/AUTO OFF, ETC). SENSORS SHALL BE CAPABLE OF BEING MASKED OFF TO PREVENT FALSE ON SIGNAL FROM CERTAIN AREAS OF COVERAGE.

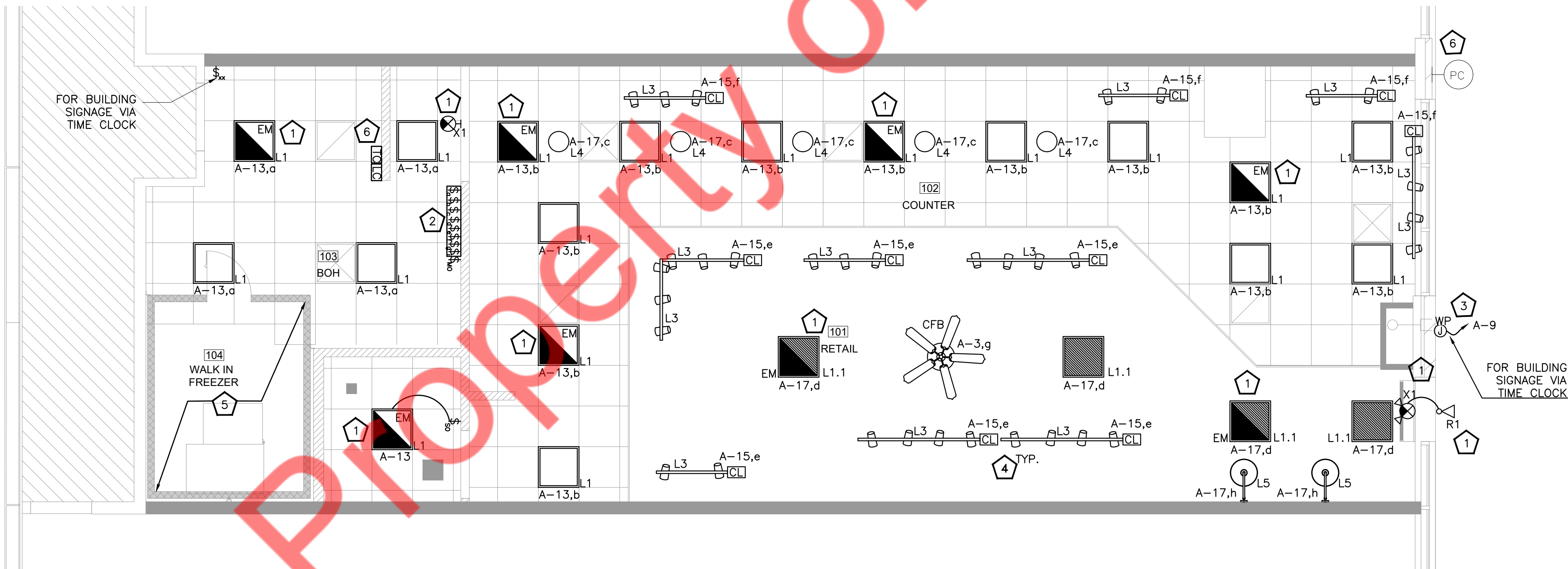
18.

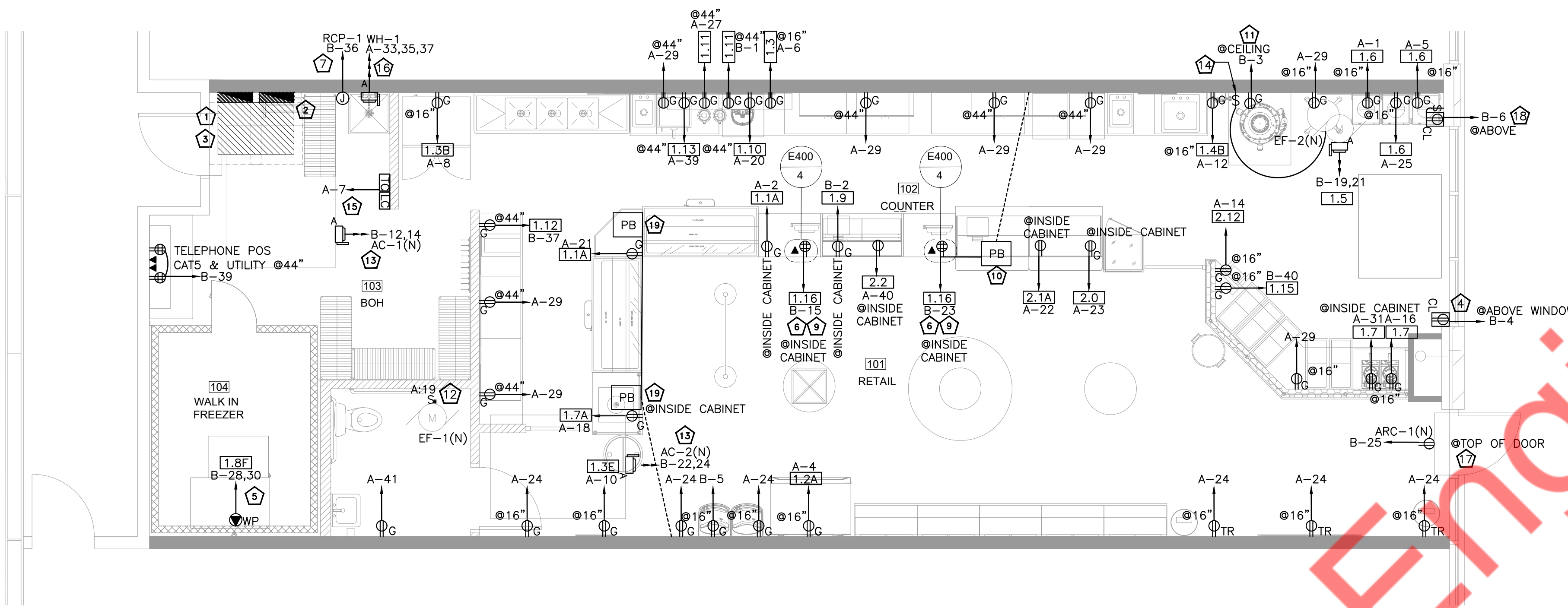
FIXTURES LABELED AS EMERGENCY (EM) SHALL HAVE EMERGENCY BATTERY PACK LOCATED IN DRIVER COMPARTMENT OF FIXTURE AND IS WIRED UNSWITCHED DIRECTLY TO CIRCUIT. WHERE FIXTURE IS ALSO SHOWN TO BE SWITCHED, PROVIDE ADDITIONAL UNSWITCHED LEAD TO BATTERY PACK TO SENSE POWER LOSS AND TRANSFER POWER.

19.

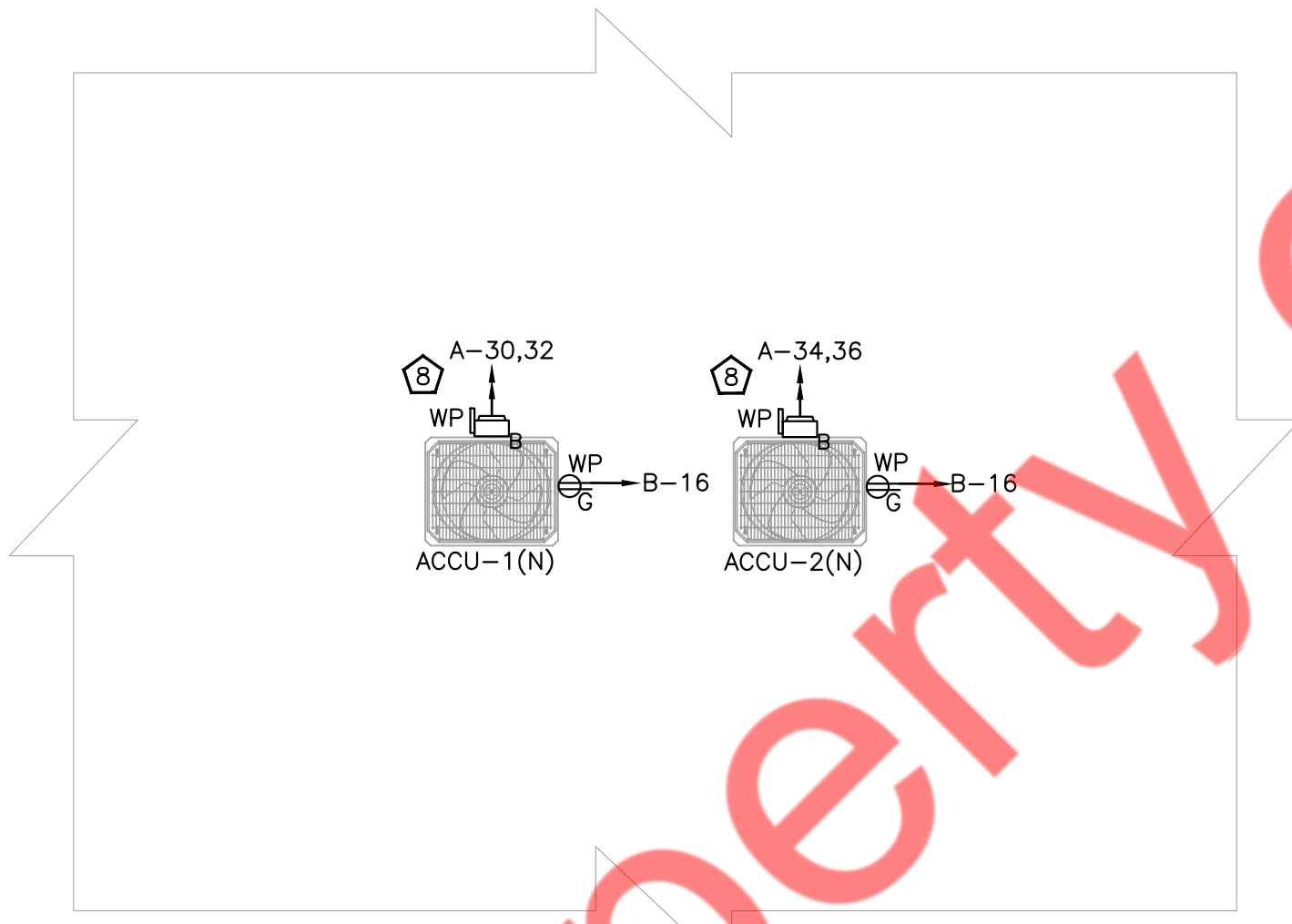
LIGHT FIXTURES INCLUDING ALL DECORATIVE LIGHT FIXTURES IN AREAS WHERE FOOD IS PREPARED, OPEN FOOD IS STORED OR DISPLAYED OR UTENSILS ARE CLEANED SHALL BE OF SHATTER PROOF CONSTRUCTION OR SHALL BE PROTECTED WITH SHATTERPROOF SHIELDS.

20.

A SEPARATE PERMIT SHALL BE SUBMITTED FOR ALL BUILDING OR SITE SIGNAGE THROUGH PLANNING SERVICES.



1 ELECTRICAL POWER PLAN  
SCALE: 1/4" = 1'-0"



2 ELECTRICAL ROOF PLAN  
SCALE: 1/4" = 1'-0"

- ELECTRICAL POWER PLAN KEYED WORK NOTES:
- NEW 200A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" AS SHOWN. E.C. SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
  - NEW 100A(MLO), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" AS SHOWN. E.C. SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
  - E.C. SHALL VERIFY THAT THE PANEL AREA IS UNOBSRUCTED AND SHALL HAVE CLEARANCE AS PER 110.26(A)&(B)
  - PROVIDE SHOW WINDOW RECEPTACLE AS PER NEC 210.62. VERIFY EXACT LOCATION WITH ARCHITECT/OWNER.
  - 20/2P CIRCUIT FOR WALK-IN FREEZER. E.C SHALL COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENT WITH EQUIPMENT MANUFACTURER
  - E.C. SHALL PROVIDE FOUR CAT 5e/6 CABLING FOR POS EQUIPMENT. PROVIDE AN ADDITIONAL 6 FEET OF CABLING AT EITHER END OF CONNECTION WITH LABELING PROVIDE RJ45 MALE COONNECTOR AND T-568B WIRING CONFIGURATION AT EACH END. E.C. SHALL COORDINATE WITH IT DRAWINGS/SPECIALIST FOR EXACT LOCATION, POWER REQUIREMENTS AND MAKE PROVISIONS ACCORDINGLY. BASE BID ACCORDINGLY.
  - ELECTRICAL SUPPLY PROVISION FOR THE RECIRCULATION PUMP(RCP-1). E.C. SHALL COORDINATE WITH THE PLUMBING CONTRACTOR FOR THE EXACT POWER REQUIREMENTS PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.
  - E.C SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR THE HVAC EQUIPMENT ON THE ROOF AND SHALL PROVIDE THE DISCONNECT AND ALL NECESSARY WIRING REQUIRED. BASE BID ACCORDINGLY.
  - E.C SHALL PROVIDE DATA AND POWER REQUIREMENTS FOR SCREENS,POS AS REQUIRED IN COORDINATION WITH ARCHITECT/EQUIPMENT MANUFACTURER BASE BID ACCORDINGLY.
  - ELECTRICAL CONTRACTOR SHALL STUB ALL THE ELECTRICAL AND DATA CABLES UNDER THE POS CABINET AND PULL TO REQUIRED LOCATIONS THROUGH PRE-CUT CHASES IN CABINETRY. BASE BID ACCORDINGLY.
  - E.C SHALL COORDINATE WITH EQUIPMENT MANUFACTURER AND PROVIDE RECEPTACLE/JUNCTION BOX FOR DETECTORS.
  - EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE FOR SWITCHING AND CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED.
  - E.C SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR THE HVAC EQUIPMENT. E.C. SHALL COORDINATE FOR THE LOCATION OF SWITCHING CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED. BASE BID ACCORDINGLY
  - E.C SHALL PROVIDE SWITCH FOR EXHAUST FAN IN COORDINATION WITH MECHANICAL CONTRACTOR.
  - E.C SHALL COORDINATE WITH THE LIGHTING VENDOR FOR TIME CLOCK AND LIGHTING CONTRACTOR AS PER LIGHTING PLAN. E.C. SHALL COORDINATE FOR THE LOCATION WITH ARCHITECT/OWNER. E.C SHALL PROVIDE ALL NECESSARY WIRING REQUIRED. BASE BID ACCORDINGLY
  - E.C SHALL COORDINATE WITH PLUMBING CONTRACTOR AND PROVIDE POWER CONNECTIONS FOR WATER HEATER. BASE BID ACCORDINGLY.
  - AIR CURTAINS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE FOR THE LOCATION OF SWITCHING CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED.
  - PROVIDE OPEN/CLOSE SIGN POWER. VERIFY EXACT LOCATION WITH ARCHITECT/OWNER.
  - ELECTRICAL CONTRACTOR SHALL STUB ALL THE ELECTRICAL CABLES UNDER THE CABINET AND PULL TO REQUIRED LOCATIONS THROUGH PRE-CUT CHASES IN CABINETRY. BASE BID ACCORDINGLY.

- ELECTRICAL POWER PLAN GENERAL NOTES:
- E.C. SHALL COORDINATE WITH OTHER TRADE CONTRACTORS FOR EXACT LOCATION AND POWER REQUIREMENT OF THE EQUIPMENT FROM OTHER TRADES. PROVIDE WIRING AND CONTROLS AS REQUIRED (IF NOT PROVIDED BY THEM), PRIOR TO BID. BASE BID ACCORDINGLY.
  - THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE UTILITY/ARCHITECT/OWNER FOR EXACT LOCATION OF THE LANDLORD PROVIDED NEW SERVICE METER AND OTHER ELECTRICAL DEVICES. PRIOR TO BID. BASE BID ACCORDINGLY.
  - ALL THE CIRCUITS SUPPLYING KITCHEN EQUIPMENT AND SHOWN "GFI" ON POWER PLAN SHALL BE PROTECTED EITHER AT A PANEL WITH GFI RATED BREAKER OR RECEPTACLE WITH GFI AS PER NEC 210.8. IF GFI RECEPTACLES ARE USED, CONTRACTOR SHALL LOCATE THE GFI RECEPTACLES SUCH THAT THESE ARE READILY ACCESSIBLE PER CODE.
  - E.C. SHALL FOLLOW GROUNDING/BONDING AS PER NEC ARTICLE 250.
  - ALL THE RECEPTACLES SHALL BE RATED PER CIRCUIT. E.C. SHALL VERIFY AND MAKE FINAL CONNECTIONS ACCORDINGLY.
  - ELECTRICAL CONTRACTOR SHALL PROVIDE GFCI PROTECTION FOR ALL THE FLOOR OUTLETS AS PER NEC ARTICLE 406.4(g).
  - ELECTRICAL CONTRACTOR SHALL PROVIDE TYPED PANEL DIRECTORY FOR ALL THE ELECTRICAL PANELS AS PER NEC 408.4(A).
  - THE SCOPE OF THE WORK COVERED BY THESE DRAWINGS AND SPECIFICATIONS INCLUDES LABOR, EQUIPMENT, AND MATERIALS FOR THE COMPLETE ELECTRICAL SYSTEM.
  - THE ENTIRE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE NEC AND ALL STATE AND LOCAL CODES.
  - ALL BRANCH CIRCUITS SHALL HAVE SEPARATE NEUTRAL CONDUCTORS. SHARING OF NEUTRAL WIRES IS NOT ACCEPTABLE.
  - COORDINATE WITH VENDOR DRAWINGS FOR ADDITIONAL LOW VOLTAGE DEVICES, LOCATIONS OF ALL DEVICES INCLUDING TVS.PROVIDE POWER AS REQUIRED, NOT SHOWN ON ELECTRICAL DRAWINGS.
  - MC TYPE CABLE ONLY ALLOWED IN CONCEALED HORIZONTAL RUNS, INSTALLED CONCEALED IN STUD WALLS BETWEEN OUTLET DEVICES, CONNECTIONS TO MOVING OR VIBRATING EQUIPMENT , AND FOR FINAL CONNECTION TO LIGHT FIXTURES (6FT. MAX)
  - USE BOLTED CLAMP TYPE HANGERS FOR SUPPORTING CONDUITS ONE HOLE STRAP AND SPRING TYPE CONDUIT HANGERS ARE NOT ACCEPTABLE.
  - FREEZER CONDENSATION UNIT TO BE COORDINATED WITH THE SUPPLIER AND NECESSARY POWER PROVISIONS TO BE DONE AT THE SITE.

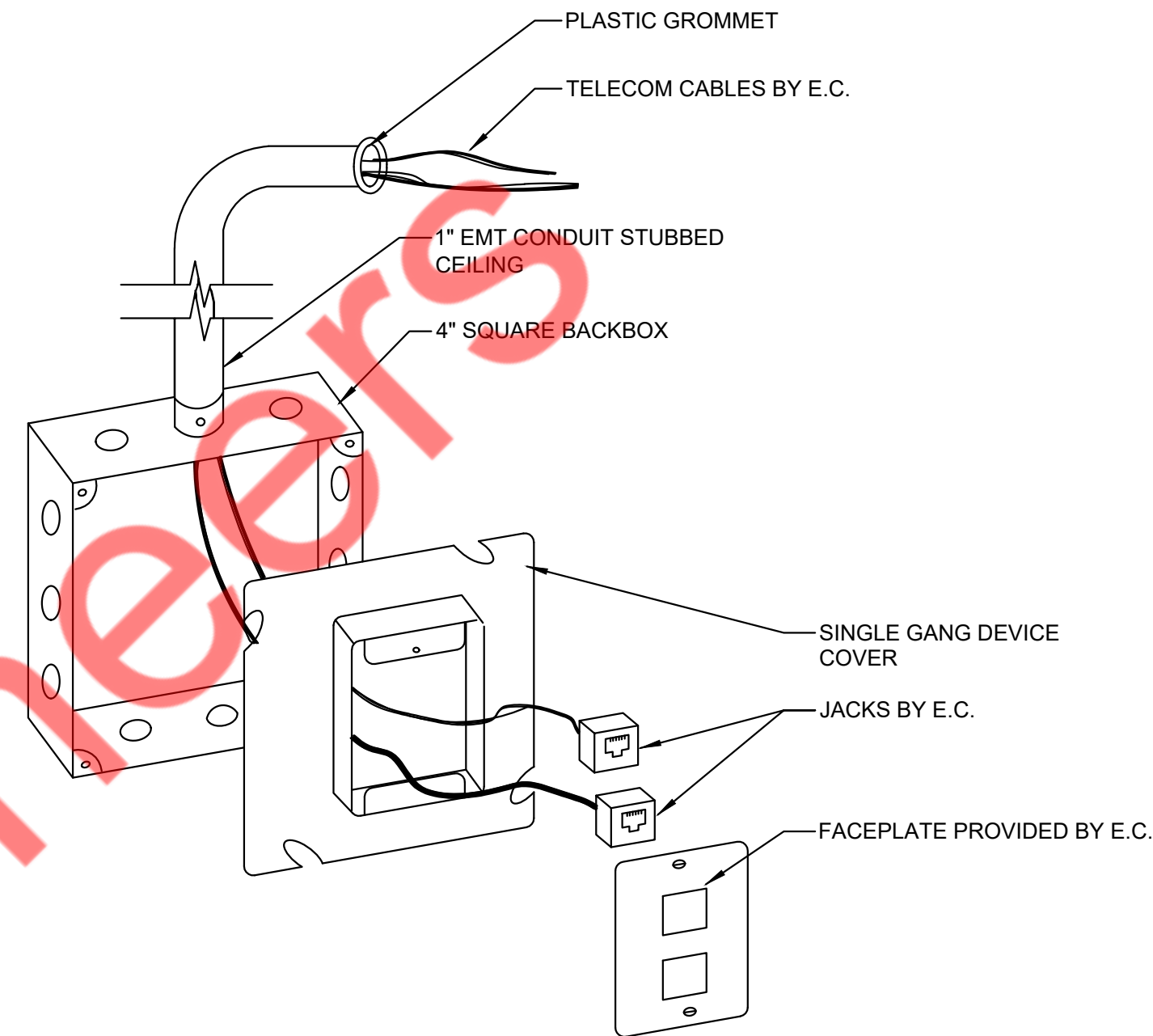
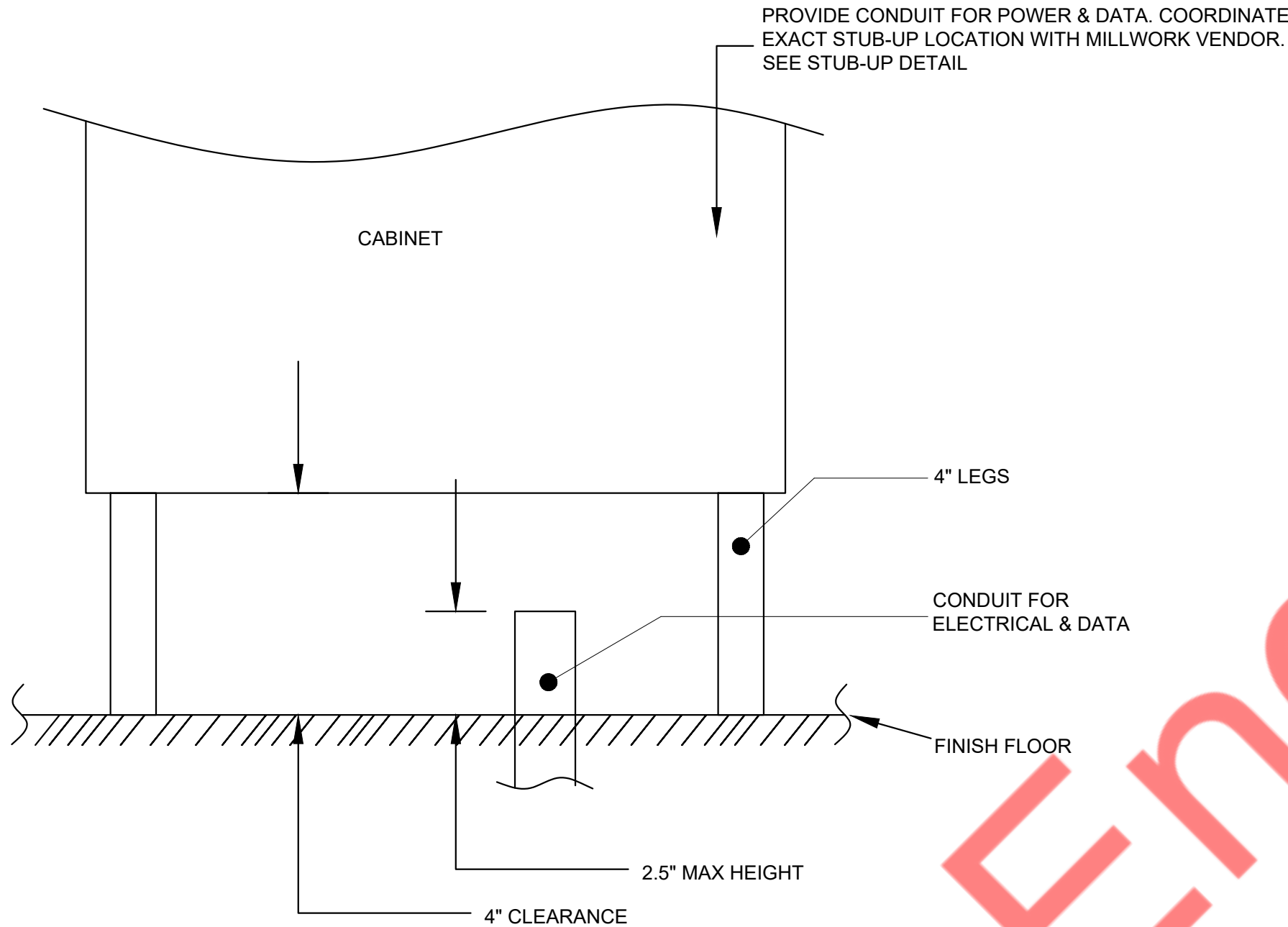
NY ENGINEERS  
NEARBY ENGINEERS, 382 NE 191ST  
STREET SUITE 49674, MIAMI,  
FL 33179 PH- 786.788.0295

NO	DATE	REVISIONS
1	12.08.24	ISSUED FOR CONSTRUCTION
2	11.20.24	PERMIT COMMENTS
1	10.07.24	PERMIT COMMENTS
	08.28.24	PERMIT SUBMIT
	08.22.24	OWNER REVIEW SET
	08.07.24	SOF. OWNER REVIEW SET
		REMARKS

Kilwins®

ELECTRICAL AND DATA:

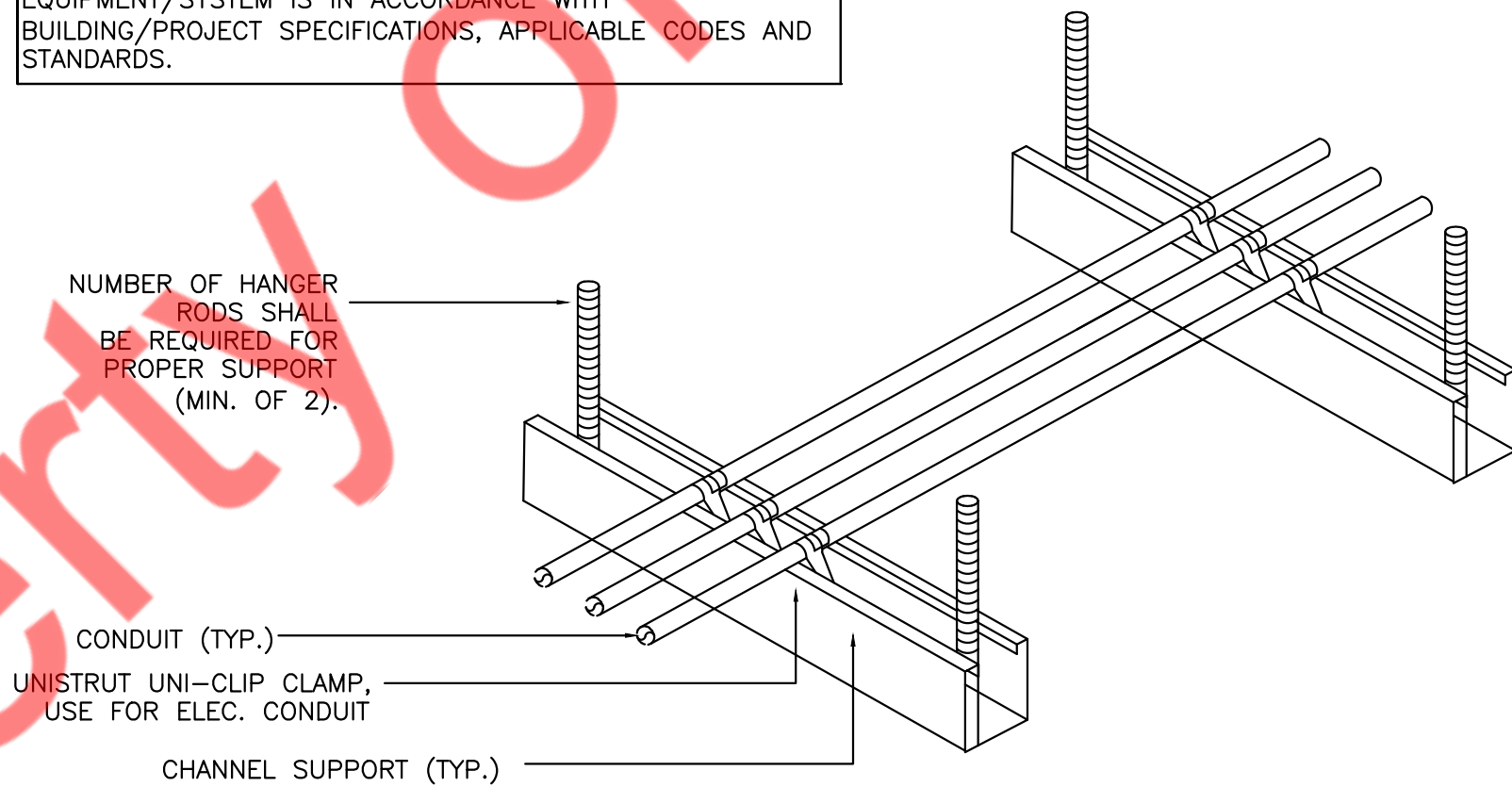
THE CONDUIT FOR THE STUB-UP SHOULD NOT EXTEND MORE THAN 2.5" ABOVE THE FINISH FLOOR, AS THE BOTTOM OF OUR CABINETS ARE 4" AFF. THERE WILL BE HOLES PRE-CUT IN THE BOTTOMS OF THE CABINETS ABOVE ANY STUB-UPS. FROM THERE THE POWER AND DATA LINES WILL BE RUN THROUGH PRE-CUT CHASES IN THE ADJACENT CABINETS TO SERVICE EVERYTHING NEEDED IN THE FUDGE AND CANDY CASE CABINETS. ALL INTERNAL LED LIGHTING FOR THOSE CABINETS WILL COME PRE-INSTALLED WITH CORD AND STANDARD PLUG.



4 CONDUIT FOR POS  
E400 N.T.S

2 TELECOMMUNICATIONS OUTLET DETAILS  
E400 N.T.S

NOTE:  
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



- NOTES:
1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
  2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
  3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
  4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.

3 CONDUIT SUPPORT DETAIL  
E400 N.T.S

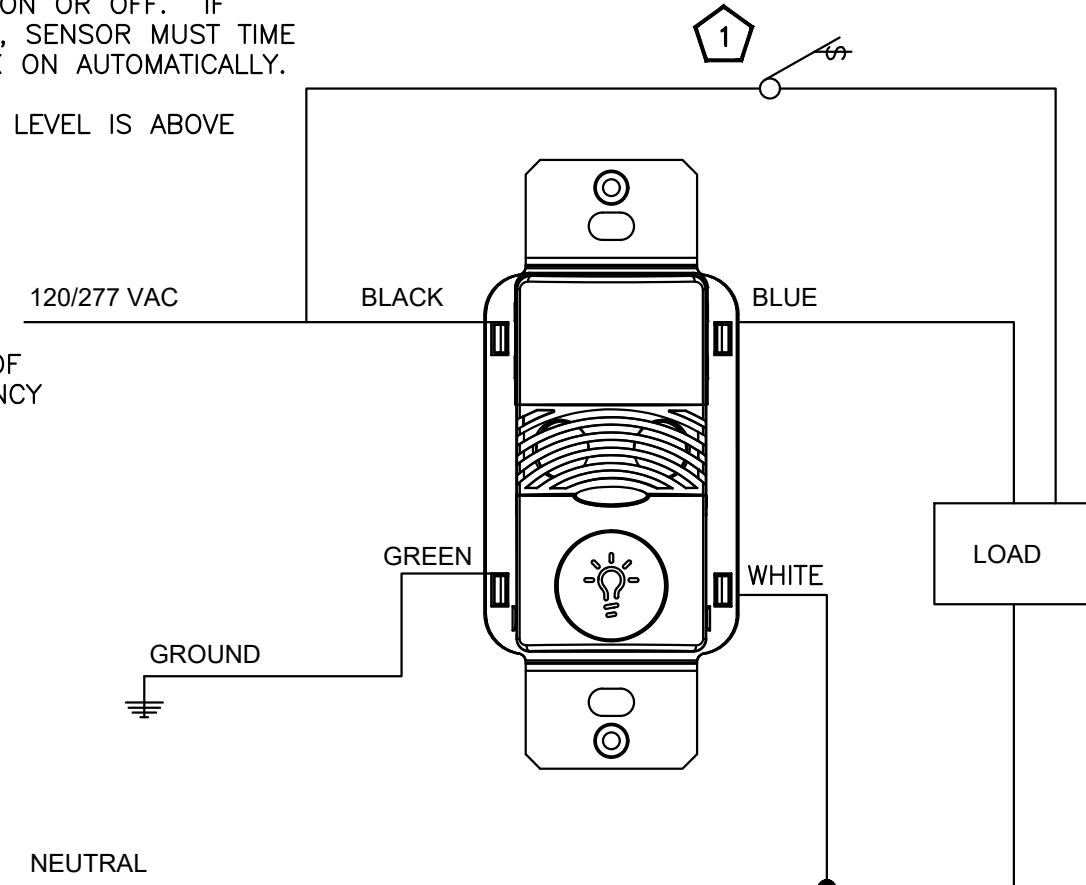
MANUAL MODE OPERATION:

1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

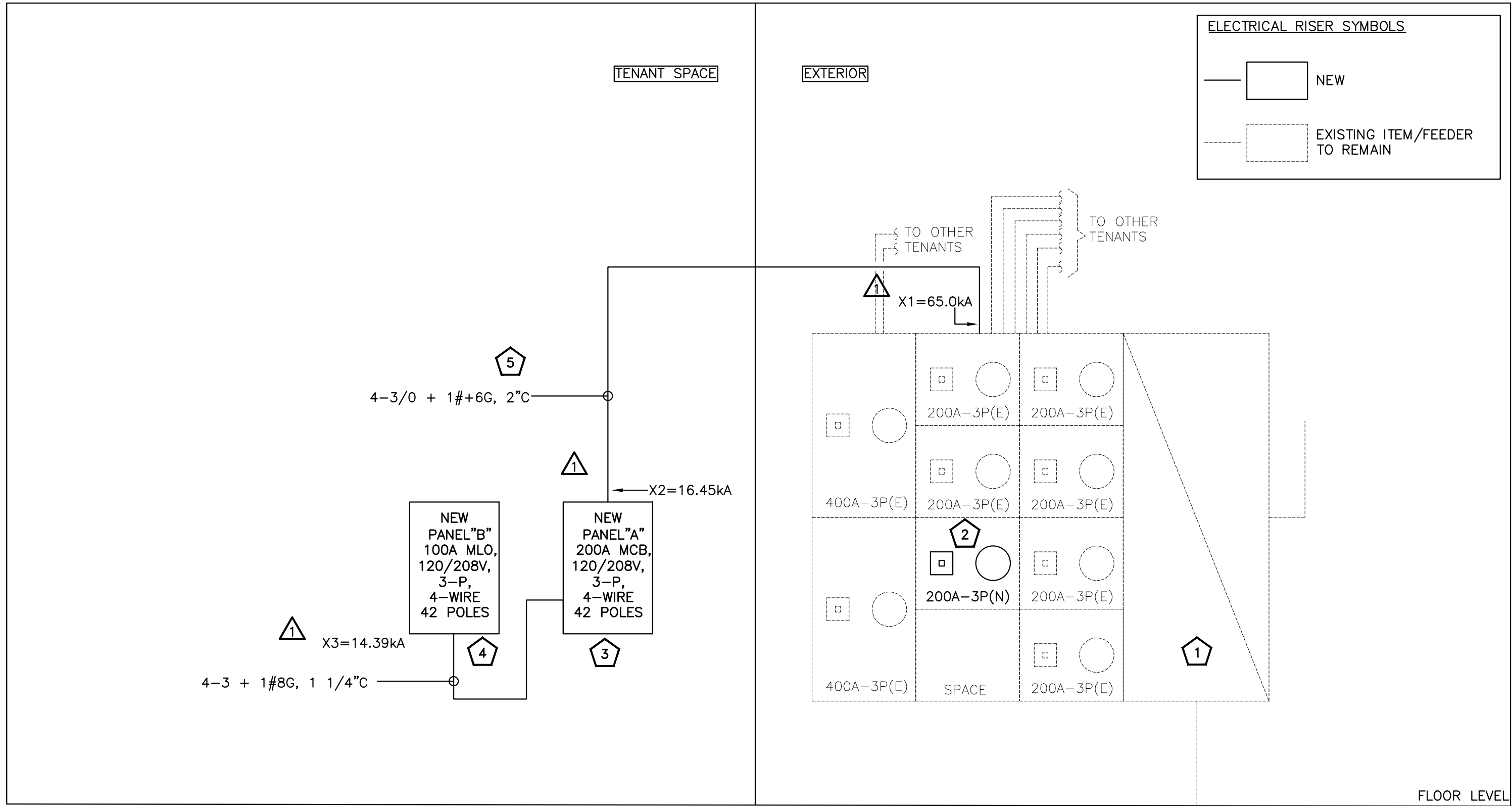
AUTOMATIC MODE OPERATION:

1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

1 PROVIDE SENSING CONDUCTOR TAPPED AHEAD OF ANY SWITCHES WHERE SWITCH SERVES EMERGENCY FIXTURES.



1 OCCUPANCY/VACANCY-SINGLE LEVEL WIRING DIAGRAM-  
LOW VOLTAGE WALL SWITCH SENSOR(NEUTRAL CONNECTION)  
E400 N.T.S



1 ELECTRICAL RISER DIAGRAM  
SCALE: NTS

PANEL: A(NEW)				KAIC RATING: 22kA										MOUNTING: RECESSED			
208Y/120		VOLTS,		3 PHASE,		4		WIRE		PANEL LOCATION: BOH							
MAIN CB: 200A		MLO:		BUS: 225A		MIN,		FED FROM: 200 A DISCONNECT (NEW)									
NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, E : KITCHEN EQUIPMENT, O : OTHER/MISC. (TYPICAL)																	
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.			
						A	B	C									
1	20	1.6-CHOCOLATE MELTER	E	0.48	2#12, #12G, 3/4"	1.92			2#12, #12G, 3/4"	1.44	E	1.1A-ICE CREAM DIPPING CASE	20	2			
3	20	RETAIL AREA FAN	O	0.50	2#12, #12G, 3/4"		1.00		2#12, #12G, 3/4"	0.86	E	1.2A-DISPLAY FREEZER	20	4			
5	20	1.6-CHOCOLATE MELTER	E	0.48	2#12, #12G, 3/4"			0.77	2#12, #12G, 3/4"	0.29	E	1.3-REFRIGERATOR U/C	20	6			
7	20	TIME CLOCK-1	L	0.50	2#12, #12G, 3/4"	1.14			2#12, #12G, 3/4"	0.64	E	1.3B-REFRIGERATOR UPRIGHT DOUBLE DOOR	20	8			
9	20	BUILDING SIGNAGE	L	0.50	2#12, #12G, 3/4"		0.66		2#12, #12G, 3/4"	0.16	E	1.3E-BEVERAGE COOLER	20	10			
11	20	SPARE					0.12		2#12, #12G, 3/4"	0.12	E	1.4B-DIGITAL THERMOMETER	20	12			
13	20	BOH LIGHTING & COUNTER LIGHTING	L	1.00	2#12, #12G, 3/4"	1.18			2#12, #12G, 3/4"	0.18	E	2.12-INGREDIENT BATCHING STATION	20	14			
15	20	TRACK LIGHTING	L	1.00	2#12, #12G, 3/4"		2.73		2#12, #12G, 3/4"	1.73	E	1.7-WAFFLE CONE BAKER	30	16			
17	20	RETAIL & COUNTER LIGHTING	L	1.00	2#12, #12G, 3/4"			3.30	2#12, #12G, 3/4"	2.30	E	1.7A-CHOCOLATE ON THE INSIDE MACHINE	20	18			
19	20	EF-1	H	0.22	2#12, #12G, 3/4"	1.12			2#12, #12G, 3/4"	0.90	E	1.10-SHAKE MIXER	20	20			
21	20	1.1A-ICE CREAM DIPPING CASE	E	1.44	2#12, #12G, 3/4"		1.62		2#12, #12G, 3/4"	0.18	E	2.1A DISPLAY FIXTURE	20	22			
23	20	2.0-APPLE DISPLAY CASE	E	0.18	2#12, #12G, 3/4"			1.26	2#12, #12G, 3/4"	1.08	R	UTILITY RECEPTACLE	20	24			
25	20	1.6-CHOCOLATE MELTER	E	0.48	2#12, #12G, 3/4"	5.12				4.64	O		20	26			
27	20	1.11 -HOT FUDGE WAMER	E	0.50	2#12, #12G, 3/4"		5.14		4#3, #8G, 1 1/4"	4.64	O	PANEL-B	100/3P	28			
29	20	UTILITY RECEPTACLE	R	1.08	2#12, #12G, 3/4"			5.72		4.64	O		30	30			
31	20	1.7-WAFFLE CONE BAKER	E	1.73	2#12, #12G, 3/4"	3.53				1.80	H	ACCU-1	40/2P	32			
33			O	1.67			3.47		2#8, #10G, 3/4"	1.80	H		34	34			
35	20/3P	WH-1(N)	O	1.67	3#12, #12G, 3/4"			3.47		1.80	H	ACCU-2	40/2P	36			
37			O	1.67			3.47		2#8, #10G, 3/4"	1.80	H		38	38			
39	20	1.13-ESPRESSO MACHINE	E	2.20	2#12, #12G, 3/4"		2.38		2#12, #12G, 3/4"	0.18	E	2.2-CHOCOLATE DISPLAY CASE	20	40			
41	20	REST ROOM RECEPTACLE	R	0.18	2#12, #12G, 3/4"			0.18			E	SPARE	20	42			
TOTAL CONNECTED LOAD (KVA)					17.47	16.99	14.81										

2 ELECTRICAL PANEL SCHEDULE  
SCALE: NTS

ELECTRICAL RISER DIAGRAM GENERAL NOTES:

- CONTRACTOR SHALL VERIFY THE EXISTING BASE BUILDING DISTRIBUTION AND DISCUSS THE SCOPE OF WORK WITH LANDLORD/ OWNER / UTILITY COMPANY PRIOR TO BID.
- ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSE ONLY. E.C TO VERIFY EXACT POWER DISTRIBUTION & OPERABLE CONDITION OF EXISTING BASE BUILDING SWITCHGEAR AND LANDLORD PROVIDED NEW METER & BREAKER. INFORM ENGINEER FOR ANY DISCREPANCY.
- E.C. TO COORDINATE FAULT CURRENT (ISC) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
- PROVIDE TYPED CIRCUIT DIRECTORY WITH CLEAR PROTECTIVE COVER/HOLDER INSIDE DOOR OF EVERY PANEL BOARD.
- E.C. SHALL CLEARLY LABEL BOTH PANEL CIRCUITS & CORRESPONDING OUTLETS. REFER PANEL SCHEDULE FOR LABELING. BASE BID ACCORDINGLY.
- FOR SHORT CIRCUIT CALCULATIONS REFER TO SHEET E600.
- E.C. SHALL PROVIDE THE FAULT CURRENT RATINGS OF THE SWITCHGEAR AS PER NEC-110.9 & 110.10.
- FAULT CURRENT FOR THE MAIN SWITCH GEAR SHALL BE MARKED AS PER NEC 110.24

ELECTRICAL RISER KEYED NOTES:

- EXISTING NEMA 3R 1600A, 208Y/120V, 3-PHASE, 4-WIRE, METER CENTER WITH 1600AS/1600AF FUSED SERVICE ENTRANCE DISCONNECT SWITCH FOR THE BASE BUILDING. E.C. TO COORDINATE WITH OWNER/UTILITY COMPANY/LANDLORD FOR EXACT POWER DISTRIBUTION. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES.
- NEW 200A, 208Y/120V, 3-PHASE, 4-WIRE ELECTRICAL METER AND BREAKER SHALL BE PROVIDED BY THE LANDLORD IN THE EXISTING SPACE OF THE METER CENTER. COORDINATE WITH THE LANDLORD/UTILITY COMPANY FOR THE SCOPE OF WORK PRIOR TO BID. BASE BID ACCORDINGLY.
- NEW 200A (MCB), 208Y/120V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" FOR THE PROPOSED TENANT SPACE. E.C. SHALL COORDINATE THE EXACT LOCATION OF ELECTRICAL PANEL WITH LANDLORD/OWNER IN FIELD.
- NEW 100A (MLO), 208Y/120V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROPOSED TENANT PROJECT SPACE. E.C. SHALL COORDINATE THE EXACT LOCATION OF ELECTRICAL PANEL WITH LANDLORD/OWNER IN FIELD.
- E.C. SHALL PULL THE NEW FEEDER AS SHOWN FROM THE EXISTING 2" CONDUIT. VERIFY THE OPERABLE CONDITION OF EXISTING CONDUIT AND PROVIDE NEW IF EXISTING CONDUIT IS IN-OPERABLE. BASE BID ACCORDINGLY.

PANEL: B(NEW)				KAIC RATING: 22kA							MOUNTING: RECESSED			
208Y/120		VOLTS,	3	PHASE,		4	WIRE		PANEL LOCATION: BOH					
MAIN CB:		MLO: 100A		BUS: 125A		MIN		FED FROM: PANEL - A						
NOTE: L : LIGHTING, H : HVAC LOAD, M : MOTOR LOAD, R : RECEPTACLES, E : KITCHEN EQUIPMENT, O : OTHER/MISC. (TYPICAL)														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	1.11 -HOT FUDGE WAMER	E	0.50	2#12, #12G, 3/4"	0.68			2#12, #12G, 3/4"	0.18	R	1.9-SCALE	20	2
3	20	CARBONMONOXIDE DETECTOR	R	0.72	2#12, #12G, 3/4"		1.00		2#12, #12G, 3/4"	1.60	L	SHOW WINDOW RECEPTACLE	20	4
5	20	WATER FOUNTAIN	E	0.50	2#12, #12G, 3/4"			1.50	2#12, #12G, 3/4"	1.00	L	OPEN/CLOSE SIGN REC	20	6
7	20	SPARE				0.00						SPARE	20	8
9	20	SPARE					2.15					SPARE	20	10
11	20	SPARE						2.94	2#12, #12G, 3/4"	0.79	E	AC-1	20-2P	12
13	20	SPARE				2.94			2#12, #12G, 3/4"	0.79	E		14	14
15	20	1.16- POS EQUIPMENT	R	0.72	2#12, #12G, 3/4"		0.90		2#12, #12G, 3/4"	0.18	R	ROOF RECEPTACLE	20	16
17	20	SPARE						0.00				SPARE	20	18
19	20	EF-2	M	0.26	2#12, #12G, 3/4"	0.26						SPARE	20	20
21	20	SPARE					0.79		2#12, #12G, 3/4"	0.79	E	AC-2	20-2P	22
23	20	1.16- POS EQUIPMENT	R	0.72	2#12, #12G, 3/4"			1.51	2#12, #12G, 3/4"	0.79	E		24	24
25	20	ARC-1	H	0.28	2#12, #12G, 3/4"	0.28						SPARE	20	26
27	20	SPARE					1.56		2#12, #12G, 3/4"	1.56	R	1.8F-WALK-IN FREEZER	20-2P	28
29	20	SPARE						1.56		1.56	R		30	30
31	20	SPARE				0.00						SPARE	20	32
33	20	SPARE					0.00					SPARE	20	34
35	20	SPARE						0.50	2#12, #12G, 3/4"	0.50	M	RCP-1	20	36
37	20	1.12-HEATLAMP	E	0.50	2#12, #12G, 3/4"	0.50						SPARE	20	38
39	20	4.4-DESK POS EQUIPMENT	R	0.72	2#12, #12G, 3/4"		1.07		2#12, #12G, 3/4"	0.35	E	1.15-HEAT SEALER	20	40
41	20	SPARE						0.00				SPARE	20	42
TOTAL CONNECTED LOAD (KVA)						4.67	7.47	8.01						

ELECTRICAL LOAD SUMMARY

PROJECT NAME : KILWINS 323 S. 6TH ST, WACO, TX

VOLTAGE: 208Y/120, 3-PHASE, 4W

SR. NO.	LOAD TYPE	CONNCTED LOAD (KVA)		DEMAND FACTOR	DEMAND LOAD (KVA)
1	LIGHTING	6.60	X	1.25	8.25
2	RECEPTACLE <= 10 KVA	8.70	X	1.00	8.70
3	RECEPTACLE >= 10 KVA	0.00	X	0.50	0.00
4	KITCHEN EQUIPMENTS	21.48	X	0.65	13.96
5	NEW HVAC LOAD	7.71	X	1.00	7.71
6	OTHER/MISCILLANEOUS	6.26	X	1.00	6.26
TOTAL LOAD (KVA)		50.74			44.88
TOTAL CONNECTED LOAD :		50.74			KVA
TOTAL CONNECTED CURRENT:		140.86			AMP
TOTAL DEMAND LOAD:		44.88			KVA
TOTAL DEMAND CURRENT:		124.57			AMP
REQUIRED ELECTRICAL SERVICE (3-PHASE) = 200 AMPS @ 208Y/120, 3-PHASE, 4-WIRE					

NY ENGINEERS  
NEARBY ENGINEERS, 382 NE 191ST  
STREET SUITE 49674, MIAMI,  
FL 33179 PH- 786.788.0295

12.08.24 ISSUED FOR CONSTRUCTION  
11.20.24 PERMIT COMMENTS  
10.07.24 PERMIT COMMENTS  
08.28.24 PERMIT SUBMIT  
08.22.24 OWNER REVIEW SET  
08.07.24 50% OWNER REVIEW SET  
NO DATE REMARKS

REVISIONS

Kilwins

PROJECT NO: 2023.0723

DATE:

E500

ELECTRICAL  
RISER & PANEL  
SCHEDULE

CHECKED: DRAWN:

Your System Details

Project Name:   
System Type: Three-Phase  
Creator Name:   
Creator Email:   
Creator Company/Organization: NY Engineers  
Creator Title/Position: Electrical Engineer  
Creation Date: Oct 7, 2024 @ 6:24am



FAULT - X1

$I_{total\ s.c.\ (L-L)}$  65,000 AMPS  
Voltage (L-L) 208 V



CONDUCTOR RUN - C1

LENGTH 70 FT  
SIZE 3/0  
QTY 1  
(per phase)  
TYPE Three Single Conductors  
CONDUIT Steel  
WIRE Cu, 600 V



FAULT - X2

$I_{total\ s.c.\ (L-L)}$  16,458 AMPS  
Voltage (L-L) 208 V



CONDUCTOR RUN - C2

LENGTH 5 FT  
SIZE 3  
QTY 1  
(per phase)  
TYPE Three Single Conductors  
CONDUIT Steel  
WIRE Cu, 600 V

FAULT - X3

$I_{total\ s.c.\ (L-L)}$  14,393 AMPS  
Voltage (L-L) 208 V

PLUMBING LEGEND	
SYMBOL	DESCRIPTION
—SS—	SANITARY WASTE (ABOVE FLOOR)
—SS+—	SANITARY SEWER (UNDER FLOOR)
—GS—	GREASE SANITARY PIPING (UNDER FLOOR)
-----	VENT PIPING
—G—	GAS PIPING
—G—	EXISTING GAS PIPING
-----	COLD WATER
-----	HOT WATER
-----	HOT WATER RETURN
—P—	P-TRAP
—D—	PIPE DROP
—U—	PIPE UP
—B—	BALANCING VALVE
—S—	SHUT-OFF VALVE
—P—	GAS PLUG VALVE
—C—	POINT OF NEW CONNECTION

PLUMBING ABBREVIATIONS	
CO	CLEANOUT
CODP	CLEAN OUT DECK PLATE
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
GSAN	GREASE SANITARY WASTE
S	SOIL
W	WASTE
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
EXIST.	EXISTING
AFF	ABOVE FINISH FLOOR
FD	FLOOR DRAIN
BFP	BACK FLOW PREVENTER
WH	HOT WATER HEATER
SV	SHUTOFF VALVE
RCP	RECIRCULATION PUMP
ET	EXPANSION TANK
HB	HOSE BIBB
MS	MOP SINK
HD	HUB DRAIN

PLUMBING DRAWING LIST	
P001	PLUMBING SYMBOLS, ABBREVIATIONS, NOTES & SPECIFICATIONS
P002	PLUMBING SPECIFICATIONS
P101	PLUMBING SANITARY, WATER SUPPLY & GAS PIPING PLAN
P501	PLUMBING DETAILS (1 OF 2)
P502	PLUMBING DETAILS (2 OF 2)
P601	PLUMBING SCHEDULES
P602	PLUMBING RISERS

CODE COMPLIANCE	
ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING IN THESE DRAWINGS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THESE PROJECT.	
a.	INTERNATIONAL BUILDING CODE 2018
b.	INTERNATIONAL MECHANICAL CODE 2018
c.	INTERNATIONAL PLUMBING CODE 2018
d.	INTERNATIONAL FUEL GAS CODE 2018
e.	INTERNATIONAL ENERGY CONSERVATION CODE 2018
f.	NATIONAL ELECTRICAL CODE 2020

## BUILDING DEPARTMENT PLUMBING NOTES

- ALL PLUMBING SYSTEMS (SANITARY, GREASE WASTE, VENT, WATER, FUEL GAS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE LOCAL AMENDMENTS TO REQUIREMENTS OF 2018 INTERNATIONAL PLUMBING CODE, 2018 INTERNATIONAL FUEL GAS CODE & 2018 INTERNATIONAL ENERGY CONSERVATION CODE.
- INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 702.2, IPC 2018.
- PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION 305, IPC 2018.
- MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1 PC 303, PC 402, PC 605, PC 702, PC 802.2, PC 902 & PC 1004.
- EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 4, 5, 6, 7, AND 9.
- DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER SECTION PC 1002 AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENT OF SECTION PC 708.
- GREASE INTERCEPTOR SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 1003.
- VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 308.
- WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION PC 601-603, 604, 606, 607, 608, 610.
- THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION PC 701 THROUGH PC 711.
- VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTION PC 901 THROUGH PC 912.
- INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF SECTION PC 312.
- GAS PIPING INSTALLATION SHALL BE IN ACCORDANCE WITH 2018 INTERNATIONAL FUEL GAS CODE CHAPTER 4.

## PLUMBING SPECIFICATIONS:

### 1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

#### 1.01 SCOPE

- PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
- OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
- THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.

- N ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.

- ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.

- COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.

- MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.

- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.

- THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

#### 1.02 SUBMITTALS

- SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.

- PIPE AND FITTINGS
- VALVES
- HANGERS AND SUPPORTS
- PLUMBING PIPING LAYOUT
- TESTS
- PLUMBING FIXTURES
- WATER HEATERS & ACCESSORIES
- FLOOR DRAINS
- MIXING VALVES
- ALL SCHEDULED PLUMBING EQUIPMENT

- SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.

- THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

- SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

- SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

- FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

- RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

#### 1.03 SUBSTITUTIONS

- ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

- THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

#### 1.04 DEFINITIONS

- FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.

- INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.

- PROVIDE: TO FURNISH AND INSTALL.

- PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.

- REFER TO THE 2018 INTERNATIONAL PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

#### 1.04 DRAWINGS

- THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.

- PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

- REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.

- REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.

- VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

- LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

#### 1.05 PRODUCTS

##### A. SANITARY AND VENT PIPING:

- ABOVE GRADE/ UNDERGROUND PIPING SHALL BE CAST IRON PIPE WHICH SHOULD COMPLY WITH ASTM A 74 STANDARD/CISPI 301.
- SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.).
- PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.
- ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

##### B. DOMESTIC WATER PIPING:

- ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
- FITTINGS IN DOMESTIC WATER PIPING SHALL BE COPPER OR COPPER ALLOY.
- JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
- THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
- COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
- ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH 2018 INTERNATIONAL ENERGY CONSERVATION CODE. REFER BELOW TABLE C403.11.3 FOR MINIMUM PIPE INSULATION THICKNESS.

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	MINIMUM PIPE INSULATION THICKNESS		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU-IN./ (H·FT²·°F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	>8
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

- AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE., C404.6 WATER DISTRIBUTION SYSTEM HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM.PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:

- THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE.
- THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F(40°C).
- HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018 C404.5.1, THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

- AS PER IECC 2018, C404.6.1, CONTROLS ARE INSTALLED THAT LIMIT OPERATION OF A RECIRCULATION PUMP INSTALLED TO MAINTAIN TEMPERATURE OF A STORAGE TANK. SYSTEM RETURN PIPE IS A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. AUTOMATIC TIME SWITCHES INSTALLED TO AUTOMATICALLY SWITCH OFF THE RE-CIRCULATING HOT HOT WATER SYSTEM OR HEAT TRACE.

- ELECTRIC WATER HEATER

- ONE STORAGE TYPE ELECTRICAL WATER HEATER SHALL 48 GALLON CAPACITY AND SHALL HAVE 150 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.
- ALL INTERNAL SURFACES OF THE HEATER EXPOSED TO WATER SHALL BE GLASS-LINED WITH AN ALKALINE BORO SILICATE COMPOSITION THAT HAS BEEN FUSED-TO-STEEL BY FIRING AT A TEMPERATURE RANGE OF 1400°F TO 1600°F.
- ELECTRIC HEATING ELEMENTS SHALL BE LOW WATT DENSITY GOLDENROD 1" SCREW-IN TYPE.
- EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

- GAS PIPING

- PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS FIRED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON DRAWINGS AS PER 2018 INTERNATIONAL FUEL GAS CODE.

- NATURAL GAS PIPING SHALL BE AS FOLLOWS:

- ASTM A-53 SCHEDULE 40 STEEL PIPE PAINTED WITH YELLOW ANTI-CORROSIVE PAINT, SCREWED OR WELDED IN ACCORDANCE WITH CODE REQUIREMENT (FITTINGS FOR LINES LARGER THAN 2" SHALL BE WELDED STEEL FITTINGS FOR LINES 2" AND SMALLER, EXCEPT WHEN LOCATED IN AIR PLENUMS, SHALL BE SCREWED STANDARD WEIGHT BLACK MALLEABLE).

- PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION..

- PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

- PAINT ALL GAS PIPING EXPOSED TO WEATHER WITH ONE COAT OF PRIMER, AND TWO COATS OF RUST-PROOF PAINT. COLOR OF PIPE ON ROOF SHALL BE YELLOW. COORDINATE COLOR OF PIPE ON EXTERIOR OF BUILDING WITH GC TO MATCH BUILDING COLORS.

- GAS COCKS 1-1/2" AND SMALLER SHALL BE ALL BRONZE, SCREWED, FLAT HEAD, BRASS PLUG AND WASHER 200 LB NOG PROVIDE LINE SIZE 6" LONG DIRT LEG DOWN STREAM OF GAS COCK AT ALL EQUIPMENT CONNECTIONS.

- NO VALVES ARE TO BE LOCATED IN AIR PLENUMS.

- PROVIDE GAS PIPE SUPPORTS IN ACCORDANCE WITH 2018 IFGC GAS REQUIREMENTS.

- MIXING VALVES

- VALVE BODY SHALL BE MADE OF CAST BRASS. THE INTERNAL COMPONENTS SHALL BE MADE OF BRASS OR STAINLESS STEEL.

- TYPES A, C & D VALVES: VALVE SHUTS OFF IN FULL COLD POSITION AND MUST PASS THROUGH COLD RANGE BEFORE DELIVERING WARM, AND/OR HOT WATER. TEMPERATURE LIMIT SET AT 105°F MAXIMUM DELIVERY TEMPERATURE. IF ONE SUPPLY SHOULD FAIL, THE OTHER WILL AUTOMATICALLY AND INSTANTLY SHUT DOWN. DELIVERY CAPACITY IS 5GPM @ 45 PSIG DIFFERENTIAL.

- TYPES OF VALVES: TYPE A- THERMOSTATICALLY OPERATED BY MEANS OF BI-METALLIC STRIP, OR EXPANSION BELLOW; TYPE B- SINGLE HANDLE MECHANICAL MIXER, OR INDIVIDUAL HOT AND COLD CONTROL VALVES; TYPE C- PRESSURE BALANCING SHOWER VALVE/PISTON OPERATED MIXING VALVE; TYPE D- BALANCED PRESSURE OPERATION, WITH INTEGRAL DIAL THERMOMETER INDICATING DELIVERED WATER TEMPERATURE.

- EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

- HANGERS AND SUPPORTS:

- HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
- SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.

- ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS..

- SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

- VALVES:

- PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.

- ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.

- ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.

- ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.

- ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.

- PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

- SLEEVES AND ESCUTCHEONS:

- SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAUGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.
- PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 20 GAUGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.

- DRAINAGE ACCESSORIES

- GENERAL:

- INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.

- SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.

- DEVICES:

- CLEANOUT & CLEANOUT PLUG

- THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG

- PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.

- LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.

- CLEANOUT WALL PLATE

- IT SHOULD BE ROUND, STAINLESS STEEL OR POLISHED CHROME PLATED BRONZE COVER PLATE WITH STAINLESS STEEL VANDAL RESISTANT FASTENER TO SECURE TO CLEANOUT PLUG.

- CLEANOUT DECK PLATE

- IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUND, POLISHED NICKEL BRONZE SCORIATED TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.

## REVISIONS

- J. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- K. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
- L. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.
- M. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.
- N. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.
- O. ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.
- P. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- Q. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL. REMOVE PROTECTIVE COATINGS PRIOR TO INSTALLATION.
- R. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
- S. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.
- T. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.
- U. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.
- V. ALL PIPING INSTALLED ON THE ROOF SHALL BE SUPPORTED BY "PILLOW BLOCK" PIPE STANDS AS MANUFACTURED BY MIRO INDUSTRIES, OR APPROVED EQUAL. WOOD PIPE SUPPORTS SHALL NOT BE ACCEPTABLE. PROVIDE TRAFFIC/WALK PADS BELOW ALL PIPE STANDS.
- W. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS, WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.
- X. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK-CLOSING VALVES.
- Y. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.
- Z. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.
- AA. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.

2. INSTALLATION

2.01 GENERAL

- A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
- B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
- C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
- D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
- E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.
- F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
- G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.
- H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
- I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.
- J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.
- K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

- L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

- A. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.
- B. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.
- C. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1½" AND 1½" THICK FOR PIPE SIZE GREATER THAN 1½". INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL PIPE INSULATION SHALL COMPLY WITH INTERNATIONAL ENERGY CONSERVATION CODE 2018 EDITION.

3. TESTING

- A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.
- B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.
- C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.
- D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.
- E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.
- F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.
- G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.
- H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.
- I. ALL EQUIPMENT WILL BE FACTORY TESTED.
- J. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.
- L. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

M. TESTING REQUIREMENTS

- a. ALL TESTS SHALL BE PERFORMED AS PER IPC 2018 SECTION 312 TESTS AND INSPECTION.
- b. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
- c. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT TENANT OR ESB SPACES.

N. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

- O. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

4. WARRANTY

- A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL.
- B. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

**NY ENGINEERS**  
NEARBY ENGINEERS, 382 NE 191ST  
STREET SUITE 49674, MIAMI,  
FL 33179 PH- 786.788.0295

12.09.24	ISSUED FOR CONSTRUCTION
11.03.24	PERMIT COMMENTS
10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	50% OWNER REVIEW SET
NO DATE	REMARKS

REVISIONS

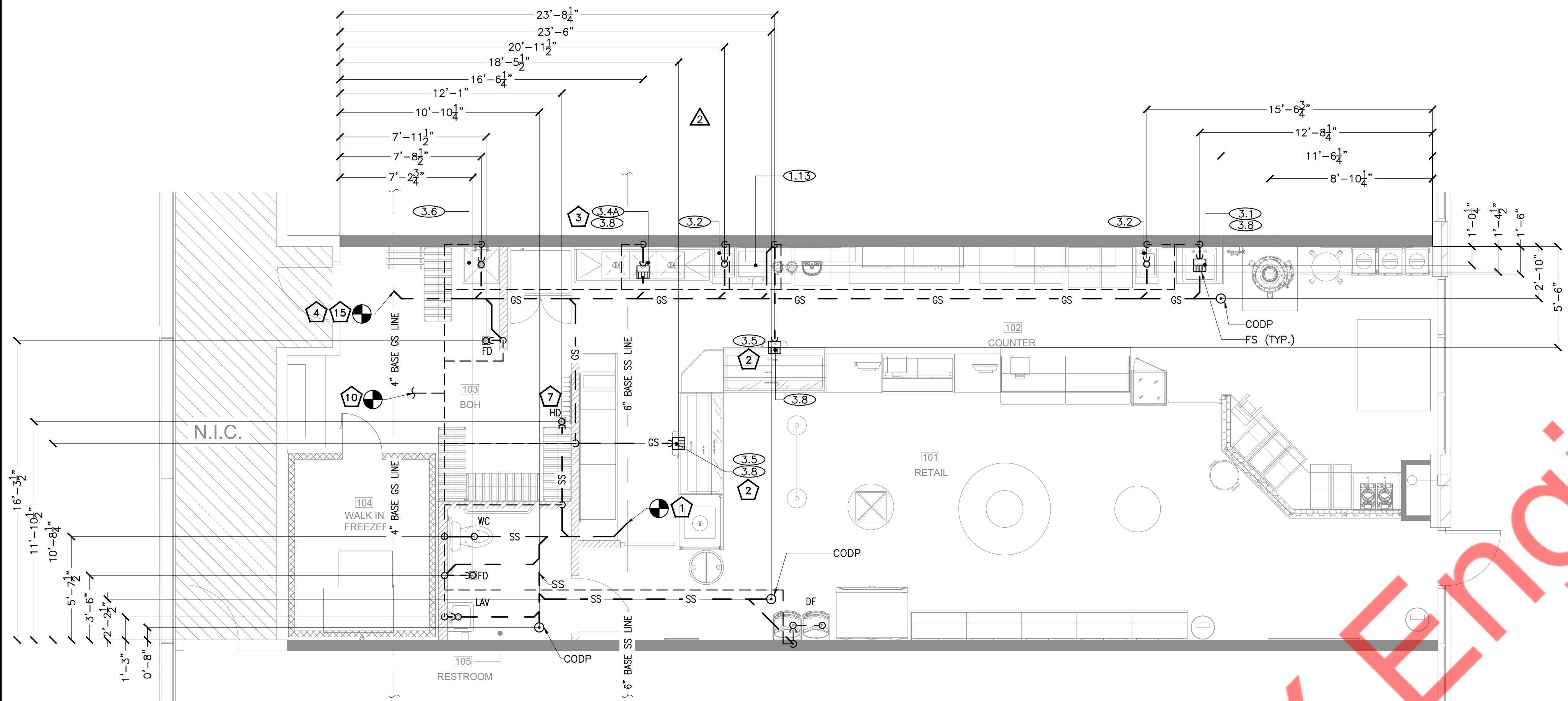
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PROJECT NO: 2023.0723  
DATE:

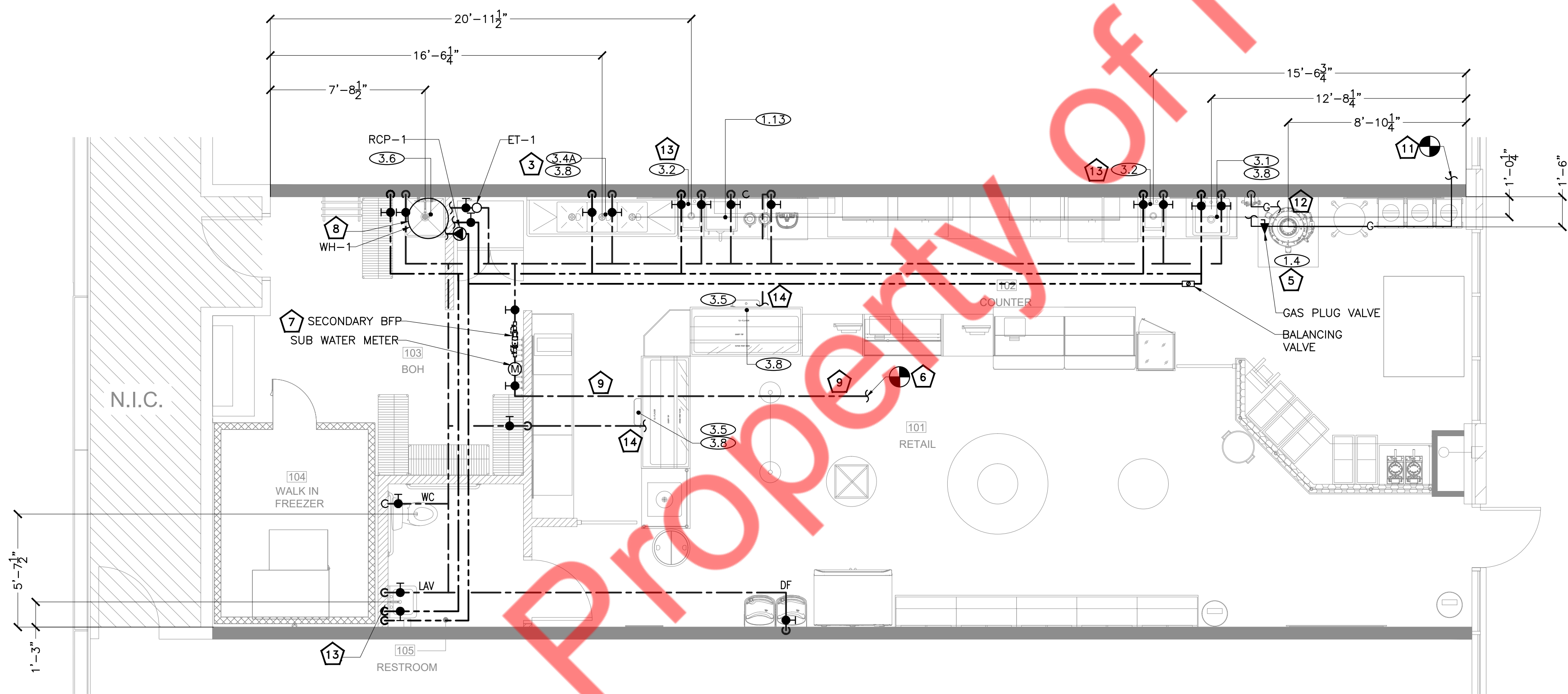
P002

PLUMBING SPECIFICATION

CHECKED: DRAWN:



1 PLUMBING SANITARY PLAN  
SCALE: 1/4" = 1'-0"



2 PLUMBING WATER SUPPLY & GAS PLAN  
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. CW/HW PIPING TO BE PROVIDED WITH INSULATION AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018
2. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
3. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
4. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
5. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
6. ANY ROOF PENETRATION SHALL BE PERFORMED BY LANDLORD'S ROOFERS AT LANDLORD OPTION, A BONDED ROOFER APPROVED IN ADVANCE BY LANDLORD.
7. PROVIDE TRAP PRIMER/ SEAL ON FLOOR DRAIN AS PER LOCAL JURISDICTION.
8. ALL PLUMBING FIXTURE & FITTINGS MODEL AND MATERIAL FINISH SHOULD BE COORDINATED WITH THE ARCHITECT.

PLUMBING KEYED NOTES:

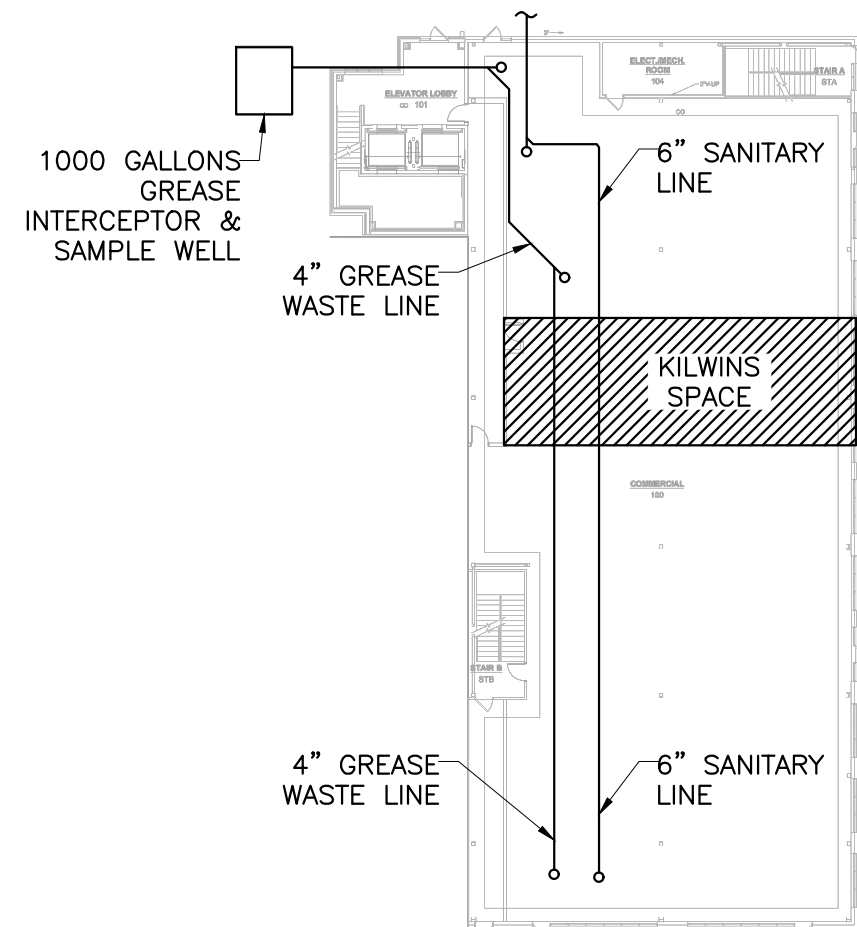
1. CONNECT NEW 4" SANITARY LINE TO PROPOSED 6" SANITARY WASTE LINE IN SPACE PROVIDED AS PER BASE BUILDING UTILITY PLAN. CONTRACTOR TO FIELD VERIFY PROPOSED SANITARY LINE LOCATION, ROUTING AND INVERT PRIOR TO BID. RE-ROUTE SANITARY AS PER SITE CONDITION IF REQUIRED. REFER BASE BUILDING UTILITY PLAN FOR MORE DETAILS.
2. ROUTE INDIRECT WASTE FROM DIPPER WELL TO FLOOR SINK WITH APPROVED AIR GAP
3. ROUTE INDIRECT WASTE FROM 3 COMP SINK, ESPRESSO MACHINE TO FLOOR SINK WITH APPROVED AIR GAP
4. CONNECT NEW 4" GREASE WASTE LINE TO PROPOSED 4" GREASE WASTE LINE IN SPACE ULTIMATELY CONNECTING TO 1000 GALLONS GREASE INTERCEPTOR PROVIDED AS PER BASE BUILDING UTILITY PLAN. CONTRACTOR TO FIELD VERIFY LOCATION AND INVERT ON SITE. RE-ROUT PIPE IF REQUIRED. REFER BASE BUILDING UTILITY PLAN FOR MORE DETAILS.
5. FUDGE STOVE TO BE SET UP, STARTED / TESTED BY CONTRACTOR. INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATION.
6. CONNECT NEW 1/2" CW PIPING TO THE PROPOSED 2" WATER LINE IN SPACE PROVIDED AS PER BASE BUILDING UTILITY PLANS. INSTALL NEW SUB WATER METER AND NEW APPROVED SECONDARY BACKFLOW PREVENTION DEVICE ON DOMESTIC WATER SERVICE AS PER LOCAL CODE AND STATE AUTHORITIES. CONTRACTOR FILED VERIFY ROUTING, LOCATION & AVAILABLE WATER PRESSURE AT REQUIRED FLOW. PRESSURE SHOULD NOT BE LESS THAN 65 PSI. NOTIFY ENGINEER IF CONDITION DIFFERS.
7. ROUTE INDIRECT DRAIN FROM SECONDARY BFP TO NEAREST HUB DRAIN WITH APPROVED AIR GAP. CONTRACTOR TO COORDINATE AND VERIFY LOCATION WITH ARCHITECT.
8. NEW CEILING SUSPENDED WATER HEATER (WH-1) WITH EXPANSION TANK (ET-1), CIRCULATION PUMP (RCP-1), AND PROVIDE DRAIN PAN (REFER SCHEDULE ON #P601). TERMINATE T&P RELIEF DRAIN PIPING WASTE SPILL INTO MOP SINK.
9. NO TAP OFF TO BE TAKEN BEFORE BFP.
10. CONNECT NEW 3" VENT PIPE TO PROPOSED VENT PIPE ULTIMATELY CONNECTING TO VTR. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE OF PROPOSED VENT PIPE. ADD ALTERNATE 3" VENT PIPE CONNECTION TILL VTR AND 4" VTR IF REQUIRED.
11. CONNECT NEW 1-1/4" GAS PIPING WITH NEW GAS METER AND PRESSURE REGULATOR SET AT 14" WC FOR 110MBH GAS LOAD. CONTRACTOR TO COORDINATE WITH GAS SERVICE PROVIDER TO VERIFY LOCATION AND SIZE OF GAS SERVICE.
12. CONTRACTOR SHALL DROP 1-1/4" GAS LINE INSIDE WALL TO SERVE FUDGE STOVE (ITEM #1.4). COMPLETE WITH DIRT LEG, EXTEND GAS LINE THROUGH WALL AT 16" ABOVE FINISHED FLOOR COMPLETE WITH SHUT-OFF VALVE, PRESSURE REGULATOR AND 1-1/4" TO 3/4" REDUCER. REFER TO QUICK DISCONNECT DETAIL ON DRAWING P502 #1 FOR MORE INFORMATION.
13. INSTALL ASSE 1070 OR SIMILAR THERMOSTATIC MIXING VALVE MW-1 BELOW FIXTURE. CONNECT TO SUPPLY PIPING AT FIXTURE, SET WATER TEMP. @ 110° F. SEE DETAIL ON DRAWING P501 #3 FOR MORE INFORMATION.
14. PROVIDE ASSE 1022 APPROVED BACKFLOW PREVENTER ON DOMESTIC WATER LINE OF DIPPER WELL FOR BACKFLOW PREVENTION. INSTALL BFP AN ACCESSIBLE LOCATION.
15. CONTRACTOR TO COORDINATE WITH BASE BUILDING MANAGEMENT AND MAKE SURE THE PROPOSED 1000 GALLON GREASE INTERCEPTOR AT THE BASE BUILDING SHALL ACCOMMODATE ALL THE GREASE WASTE GENERATED FROM THE KILWINS SPACE. REFER TO GREASE INTERCEPTOR CALCULATION ON SHEET P-601 FOR THE MINIMUM CAPACITY REQUIREMENT. NOTIFY ARCHITECT/ OWNER IF CONDITION DIFFERS.

NATURAL GAS PIPING SYSTEM

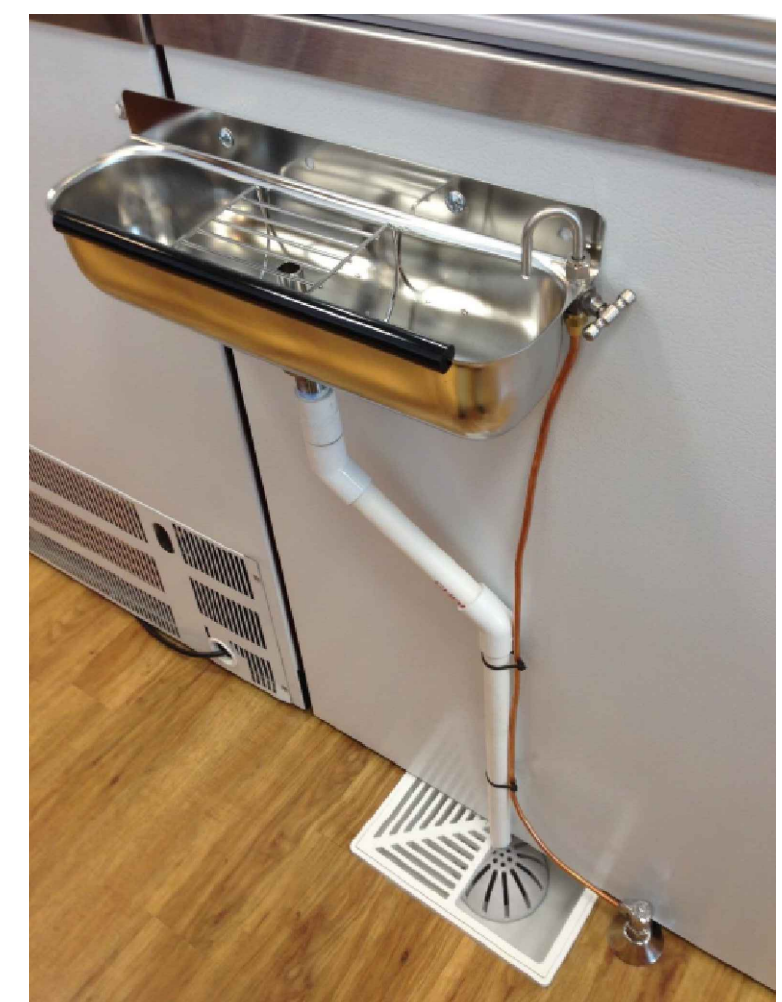
PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY INTERNATIONAL FUEL GAS CODE 2018 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

NOTES:

1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWED FITTINGS.
2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
3. VERIFY ALL EQUIPMENT BTUS'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING TO INTERNATIONAL FUEL GAS CODE 2018, TABLE 402.4(2).
4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF PROPOSED GAS METER LOCATION AS PER BASE BUILDING UTILITY PLAN. AND ALSO VERIFY THE PRESSURE AND CAPACITY. UPGRADE IF REQUIRED.
5. CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN FROM METER TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN.



3 OVERALL PLUMBING SHELL PLAN  
SCALE: NTS



PLUMBING FOR ICE CREAM DIPPING CASE:-  
THE FLOOR SINK DRAIN FOR THE DIPPING WELLS SHOULD BE FLUSH WITH THE FINISHED FLOOR SURFACE, CENTERED ALONGSIDE THE ICE CREAM CASE SO THAT ROUGHLY HALF OF IT IS UNDER THE CASE AND HALF IS OUTSIDE THE CASE. THE COLD WATER LINE FOR THE DIPPING WELL SHOULD COME THROUGH THE FLOOR JUST OUTSIDE THE ICE CREAM CASE, BUT NOT TOO FAR INTO THE WALKWAY. SEE PHOTO BELOW FOR AN EXAMPLE OF THE FLOOR SINK AND WATER LINE PLACEMENT. THIS MAKES FOR A NICE CLEAN SET UP WITHOUT TRIPPING HAZARDS.

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12.08.24	ISSUED FOR CONSTRUCTION
11.20.24	PERMIT COMMENTS
10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	SOF, OWNER REVIEW SET
NO DATE	REMARKS
REVISIONS	

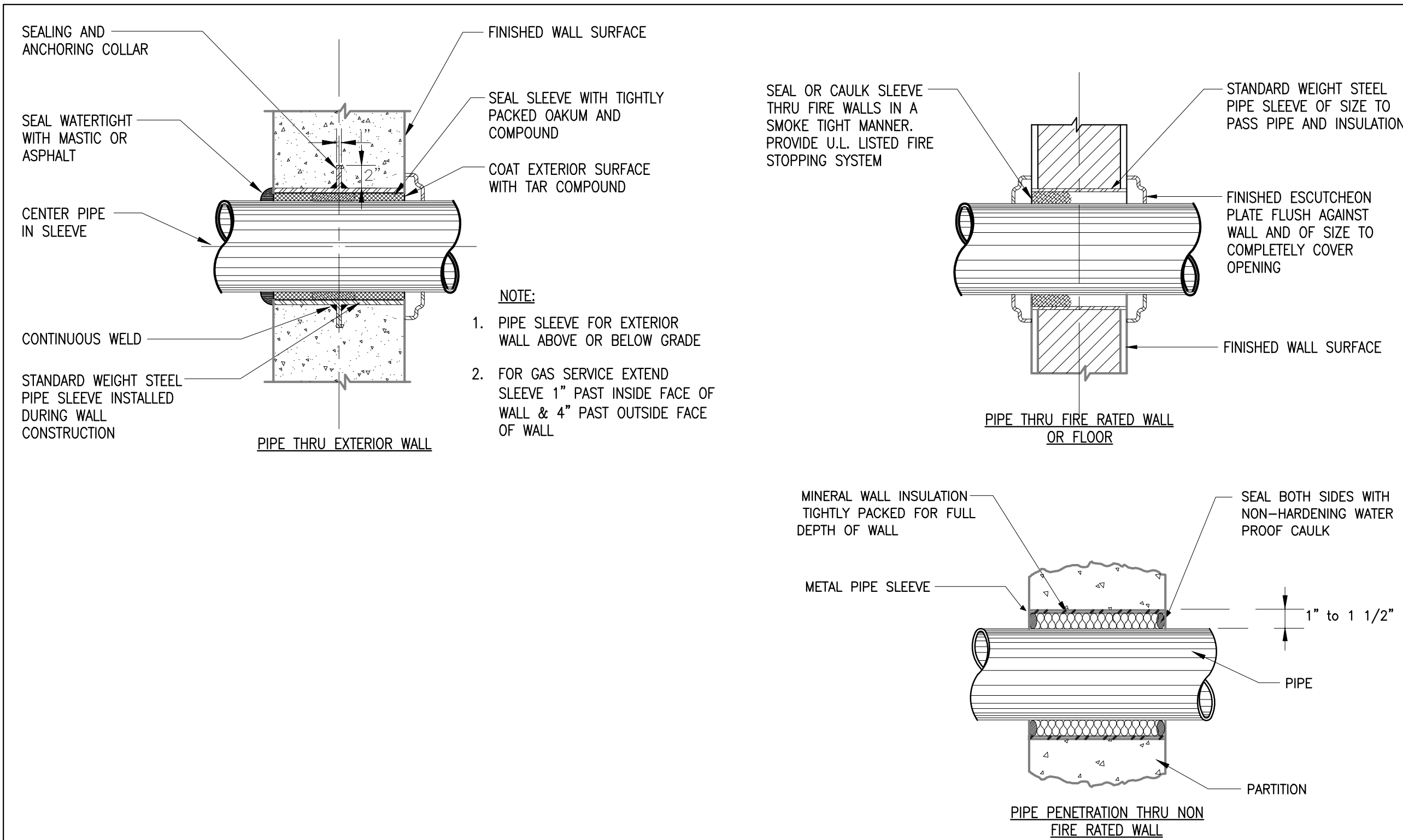
Kilwins

PROJECT NO: 2023.0723  
DATE:

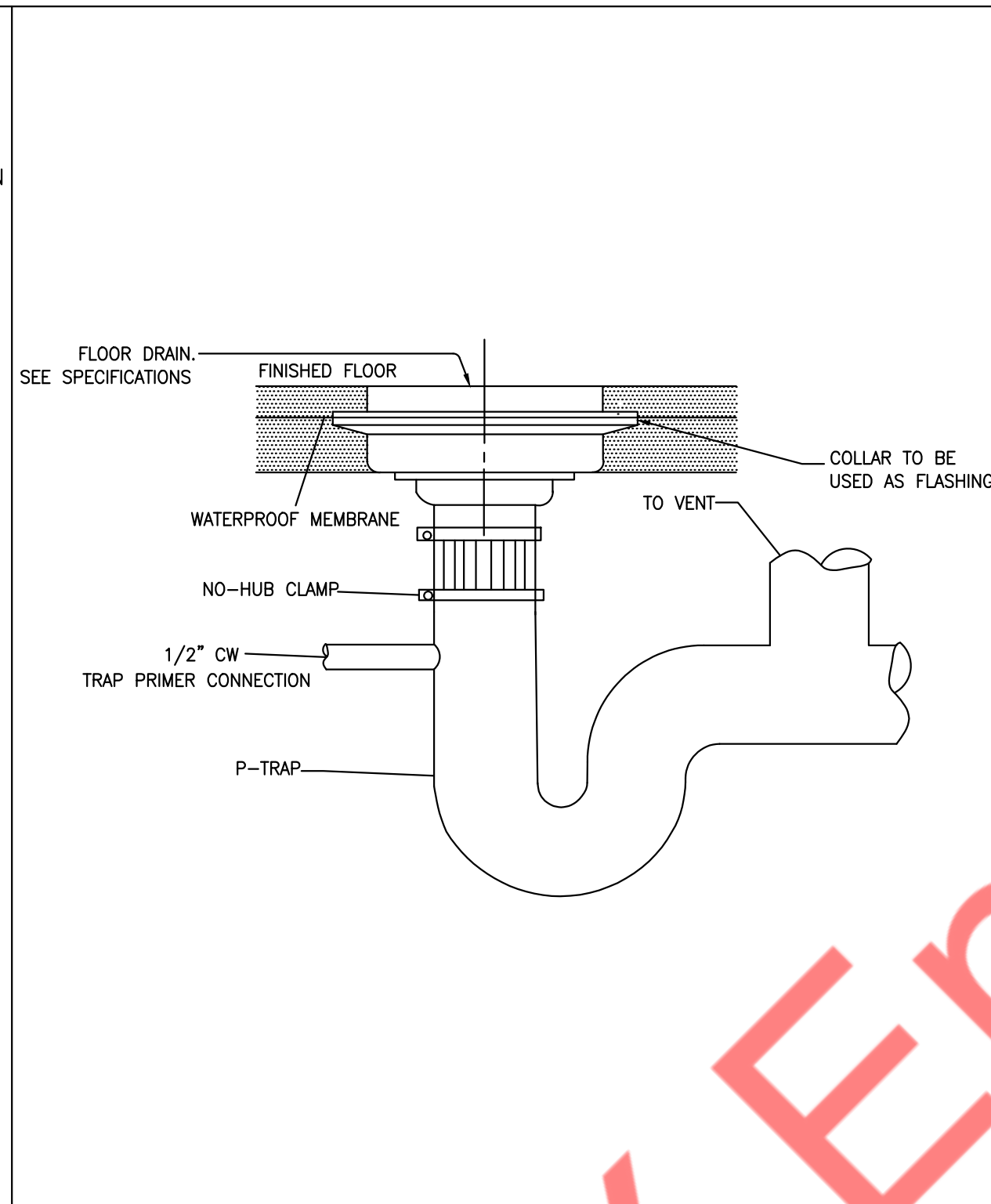
P101

PLUMBING SANITARY,  
WATER SUPPLY & GAS  
PIPING PLAN

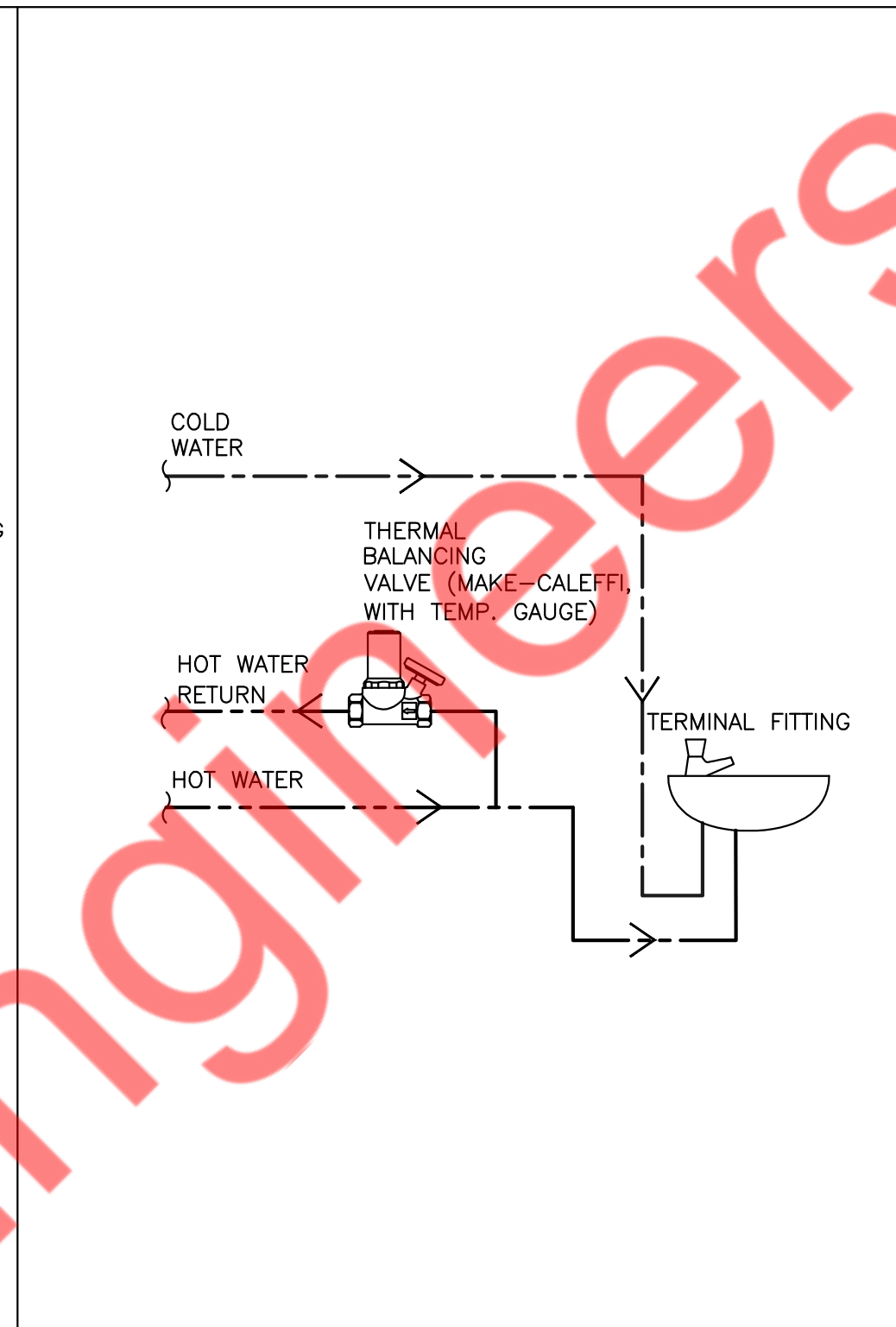
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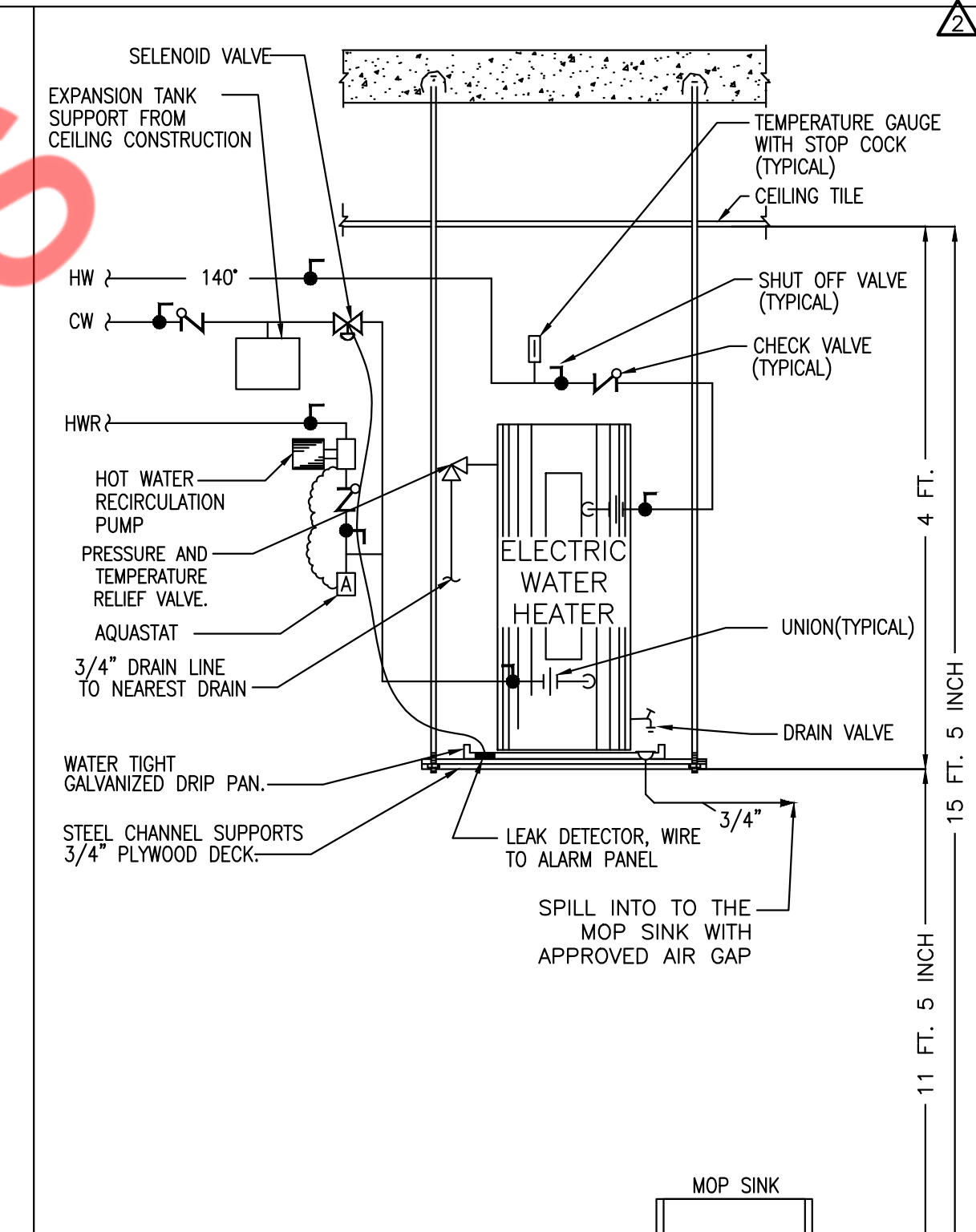
1 PIPE SLEEVE THRU WALL SECTION  
N.T.S.



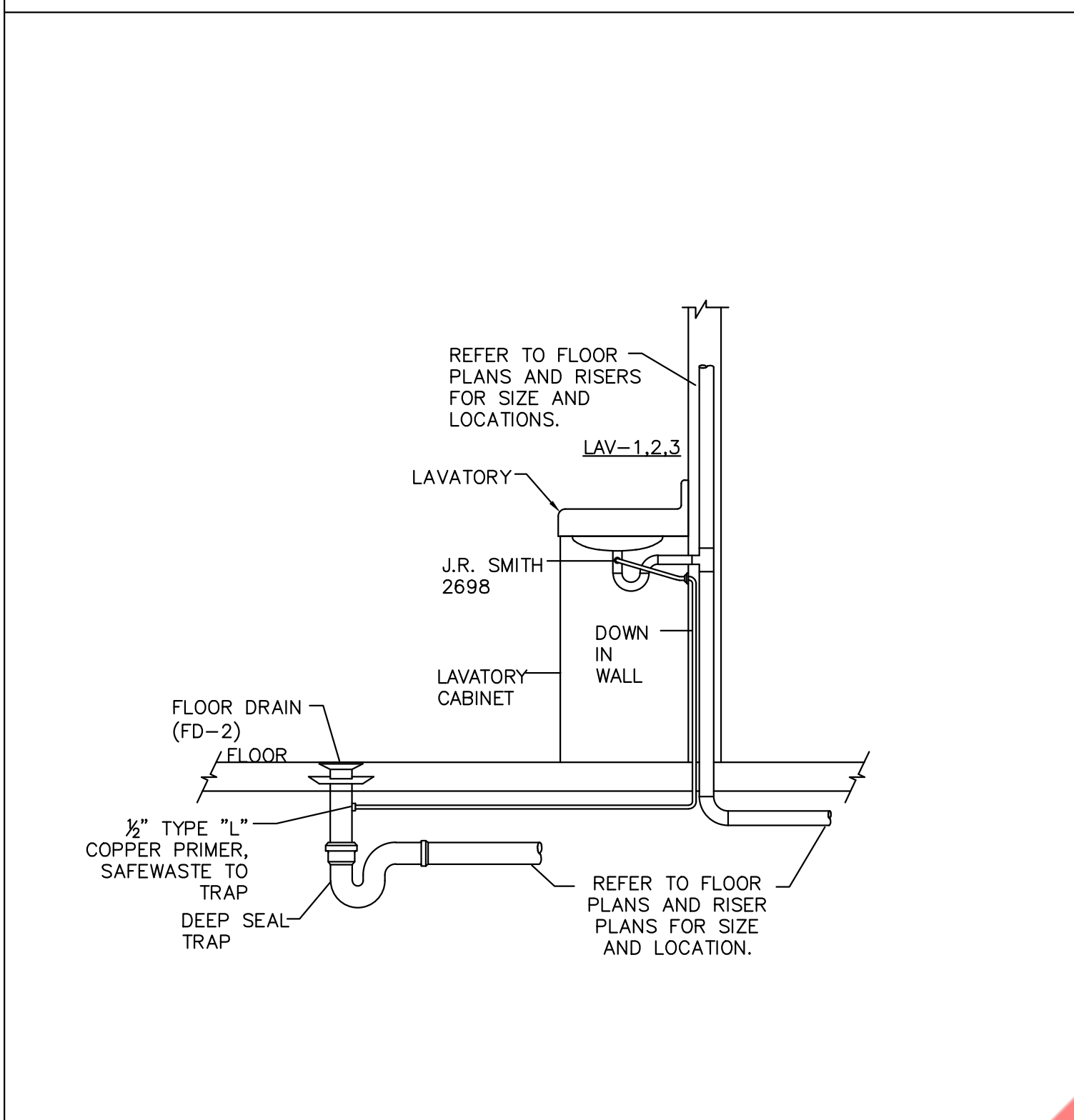
2 FLOOR DRAIN DETAILS  
N.T.S.



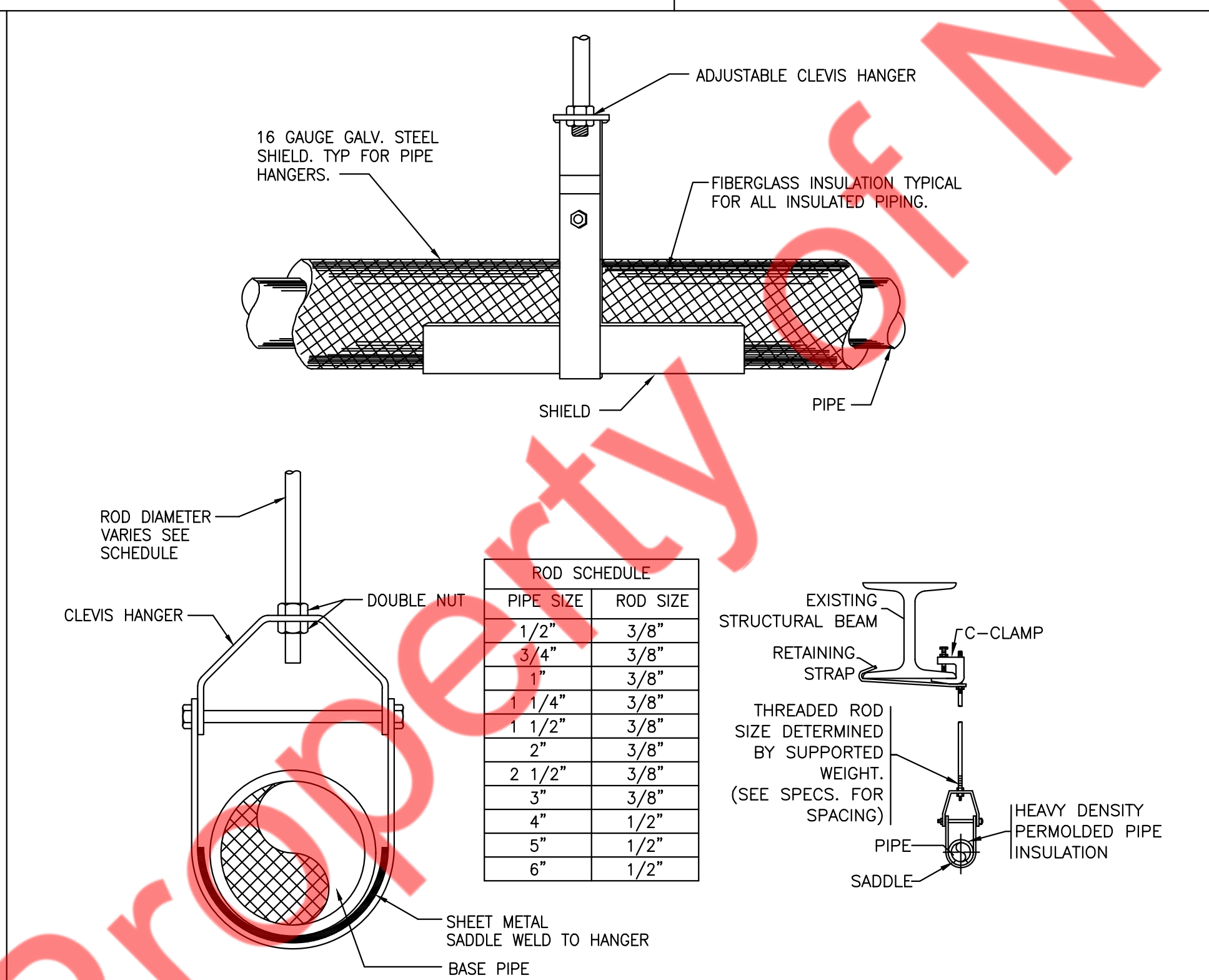
3 HOT WATER HEATER BALANCING VALVE PIPING DETAIL  
N.T.S.



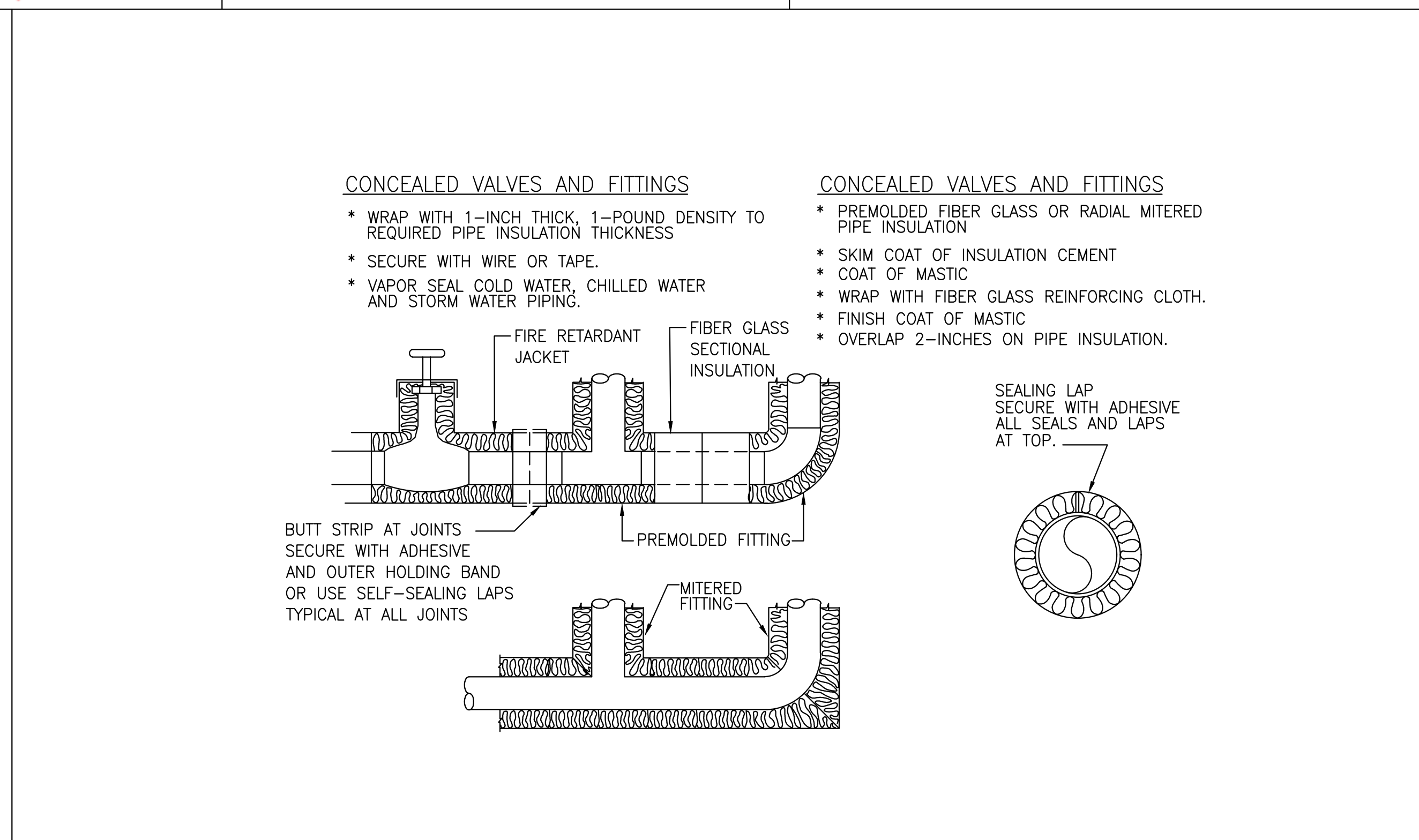
7 HOT WATER HEATER INSTALLATION CEILING SUSPENDED DETAIL  
N.T.S.



4 FLOOR DRAIN TRAP PRIMER DETAIL  
N.T.S.



5 HANGER DETAIL  
N.T.S.



6 INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS  
N.T.S.

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11.20.24 PERMIT COMMENTS  
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08.28.24 PERMIT SUBMIT  
08.22.24 OWNER REVIEW SET  
08.07.24 50% OWNER REVIEW SET  
NO DATE REMARKS

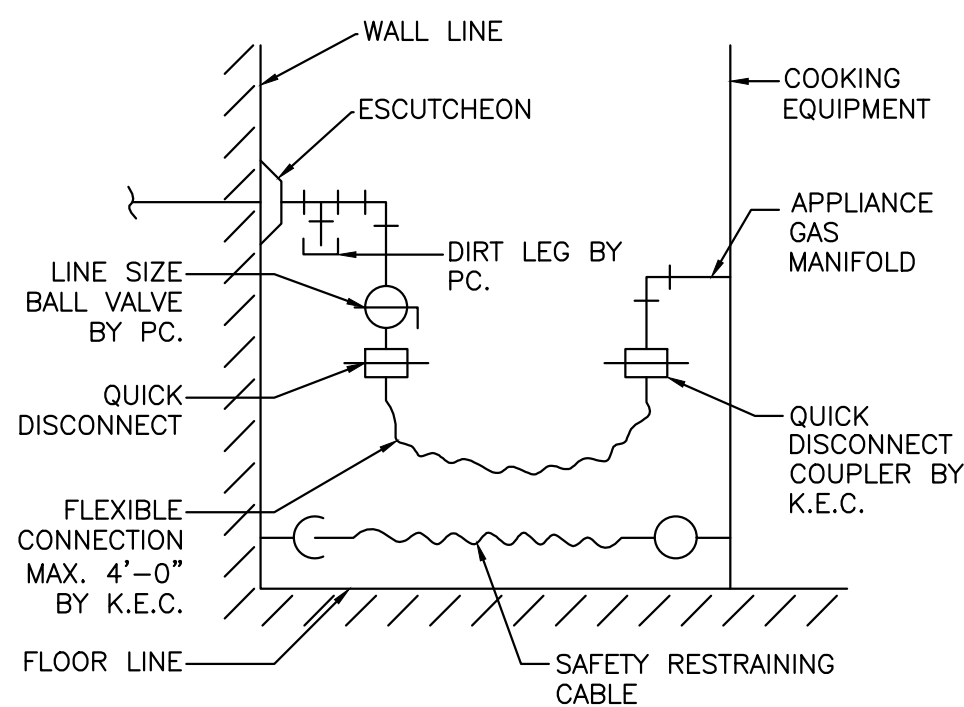
REVISIONS

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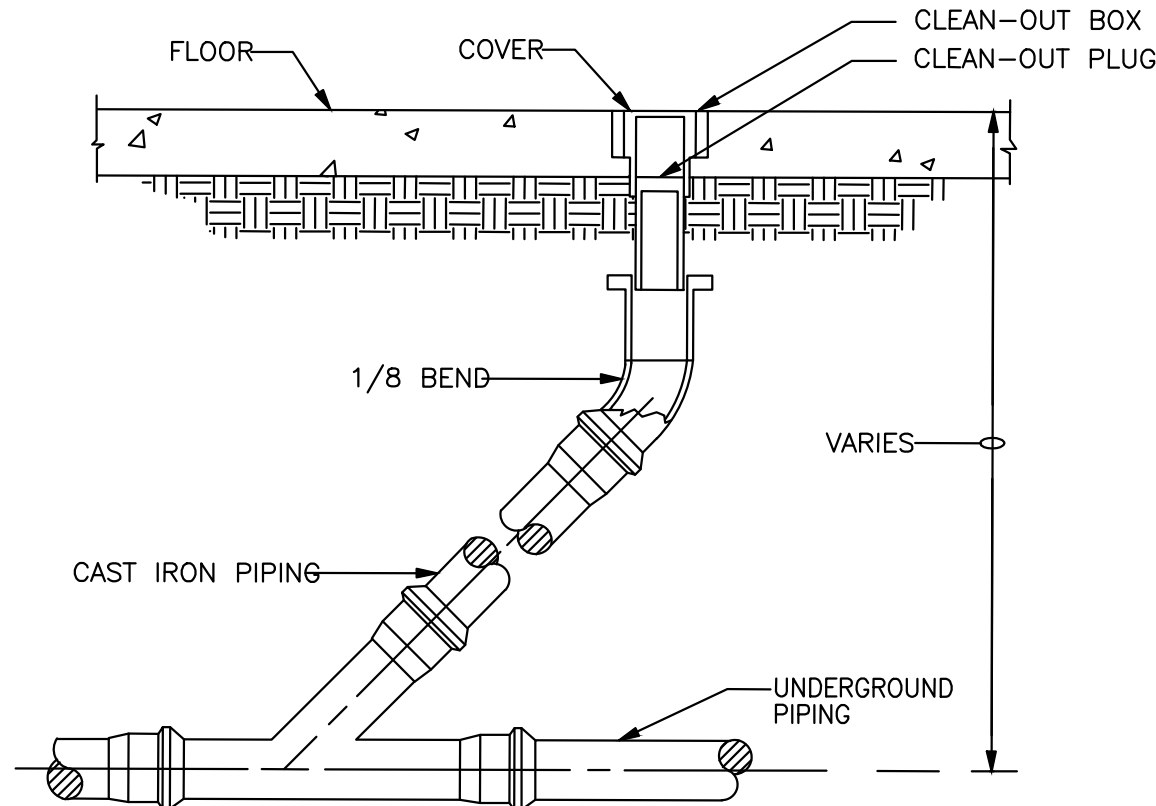
PROJECT NO: 2023.0723  
DATE:

P501  
PLUMBING DETAILS (1 OF 2)

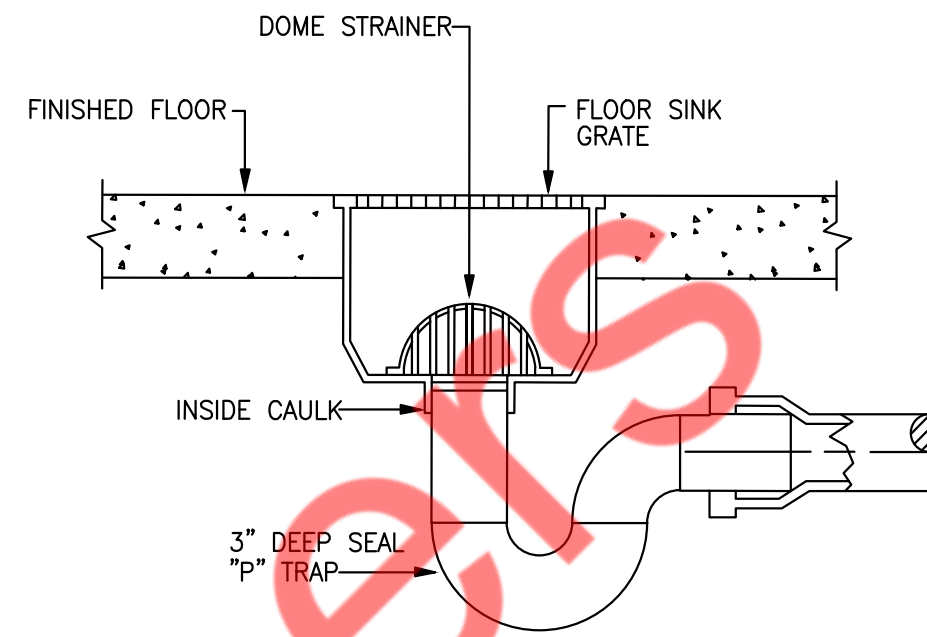
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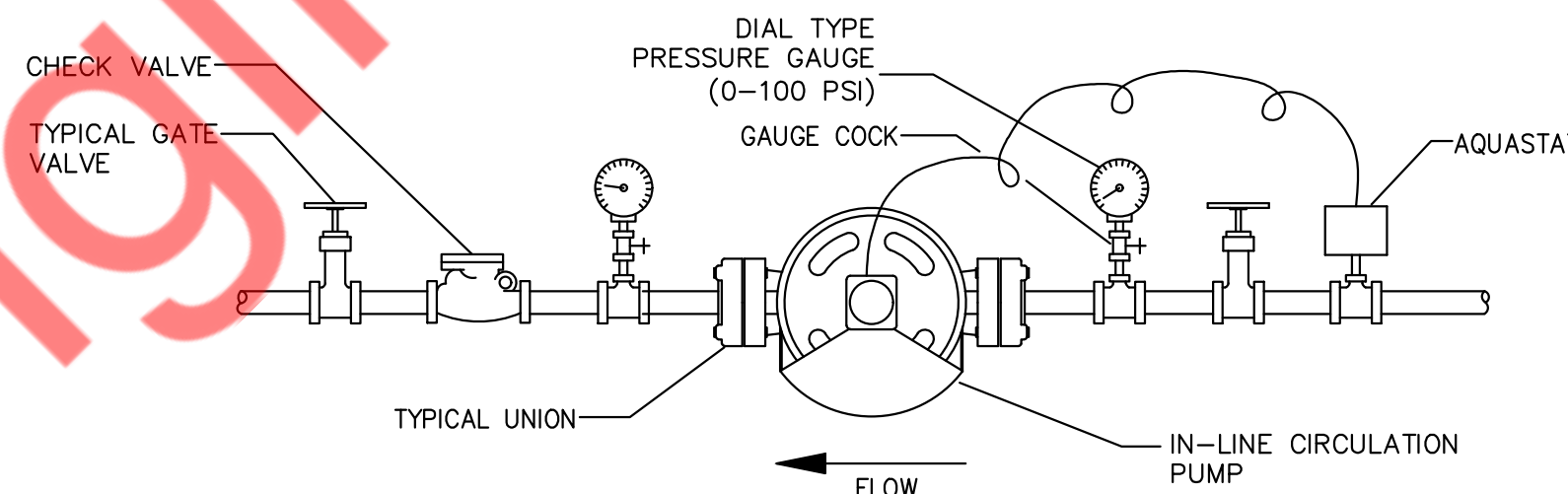
1 QUICK DISCONNECT DETAIL  
N.T.S



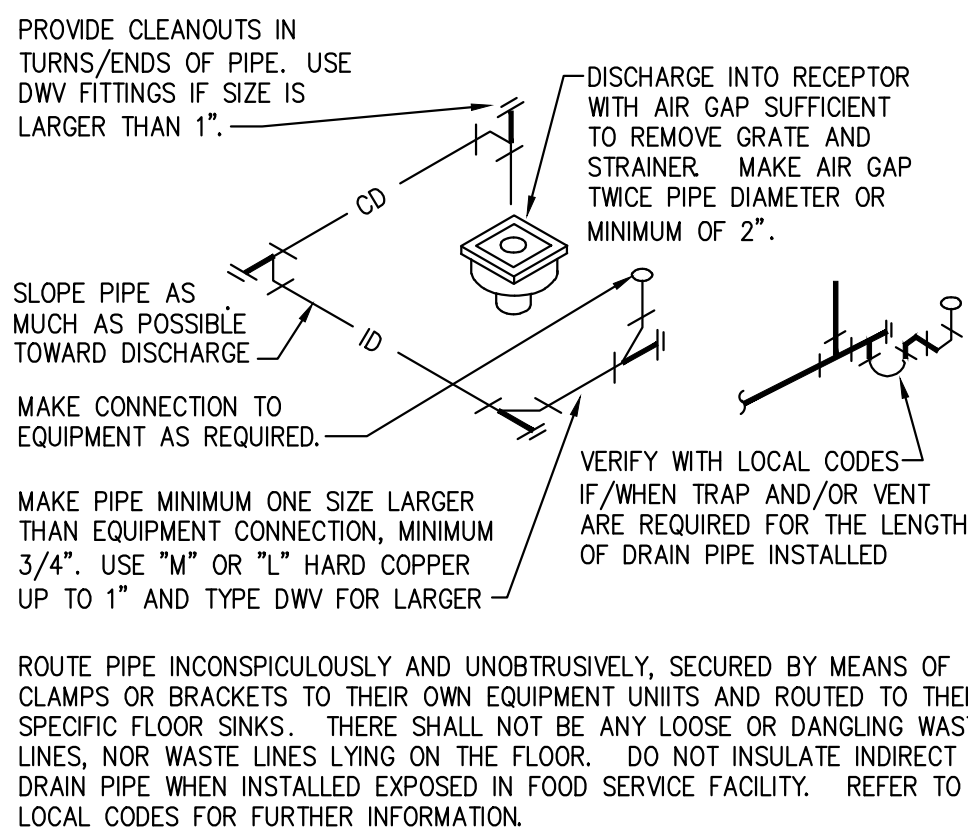
2 FLOOR CLEANOUT DETAIL  
N.T.S



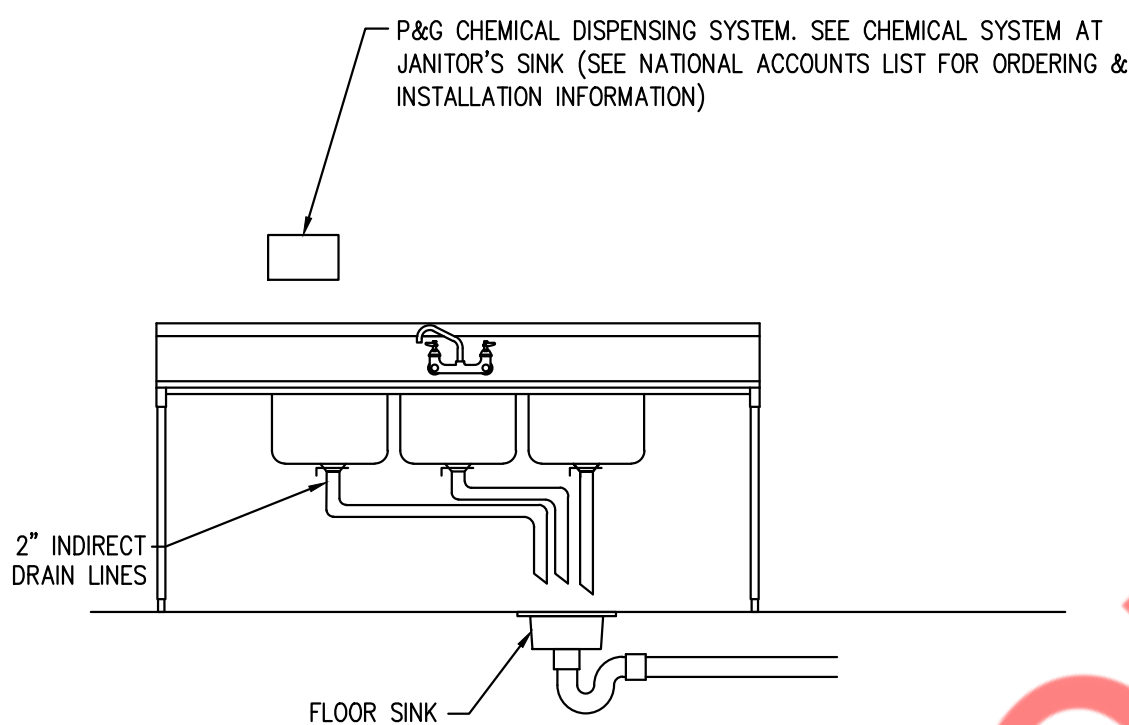
3 FLOOR SINK DETAILS  
N.T.S



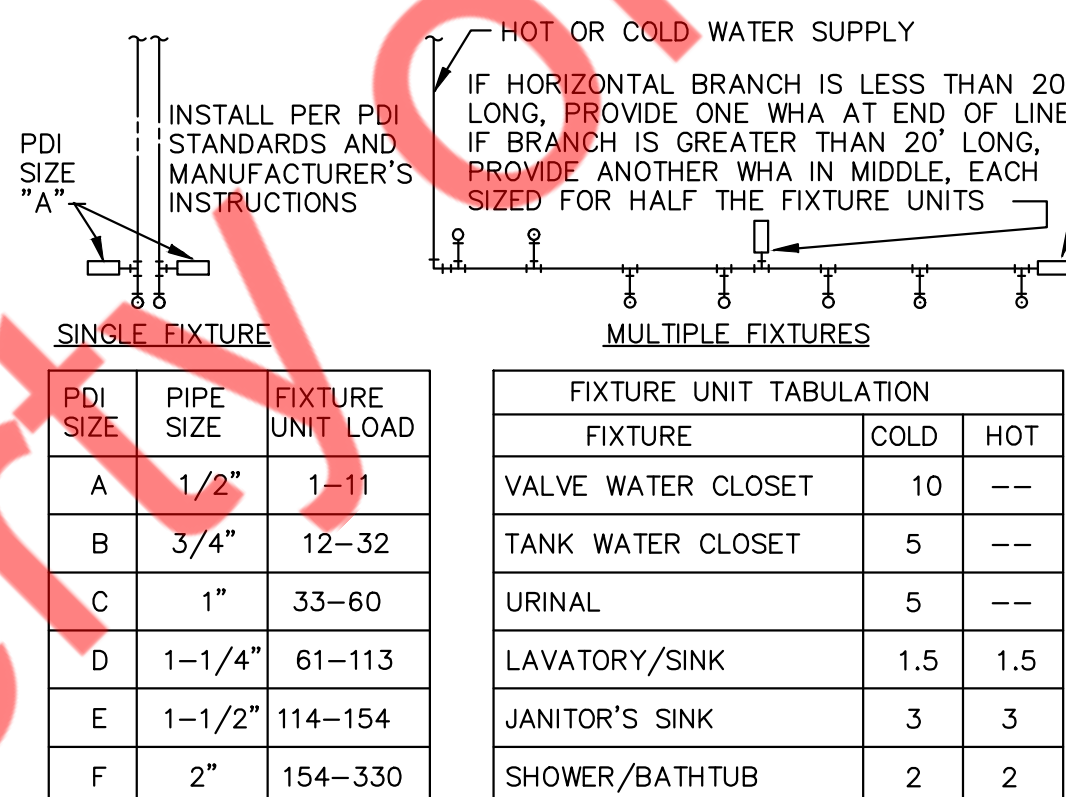
4 INLINE RECIRCULATING PUMP DETAIL  
N.T.S



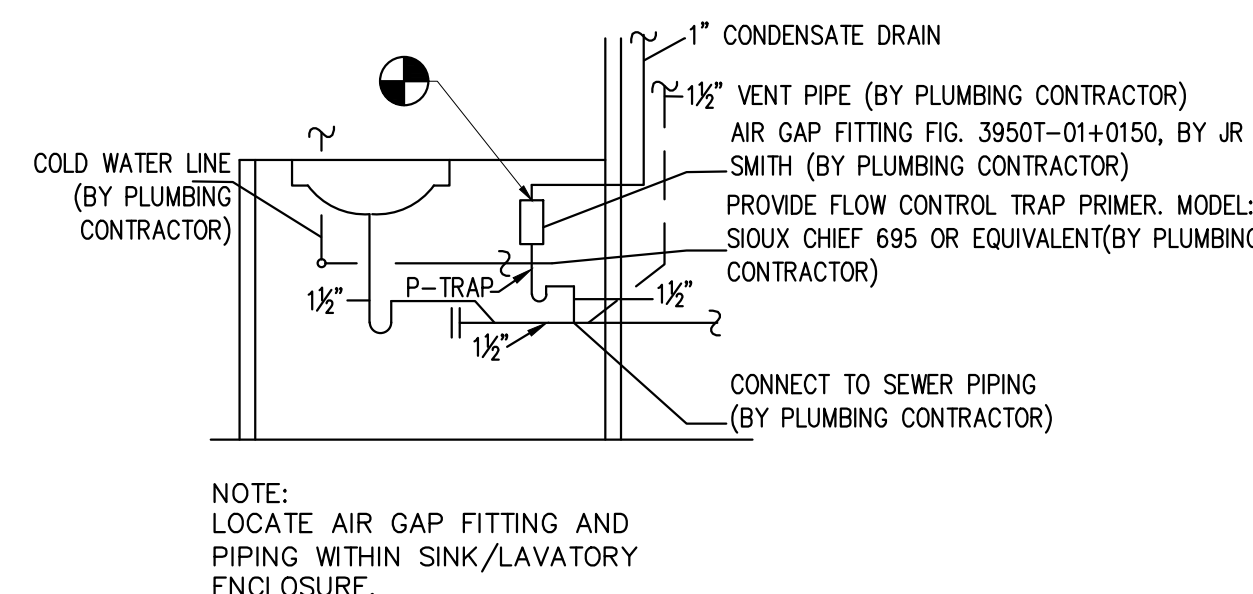
5 INDIRECT/CONDENSATE DRAIN  
N.T.S



6 3 COMPARTMENT SINK DETAILS  
N.T.S



7 WATER HAMMER ARRESTORS  
N.T.S



8 AIR GAP FITTING DETAIL  
N.T.S

FOOD SERVICE PLUMBING EQUIPMENT SCHEDULE											
TAG NO.	DESCRIPTION	WASTE		VENT	CW	HW		FW	GAS	QTY	REMARKS
		DIRECT	INDIRECT			110 °F	140 °F				
1.4	FUDGE STOVE	—	—	—	—	—	—	—	1/2"	1 UNIT	PC TO INSTALL QUICK DISCONNET DEVICE AND RESTRAINING ASSEMBLY PROVIDED W/EQUIPMENT
1.13	ESPRESSO MACHINE — ASTRA M1-011-1	—	3/4"	—	1/2"	—	—	—	—	1 UNIT	—
3.1	PREP SINK	—	2"	—	1/2"	—	1/2"	—	—	1 UNIT	—
3.2	HAND SINK-DROP IN	1-1/2"	—	1-1/2"	1/2"	1/2"	—	—	—	2 UNITS	—
3.4A	3-COMPARTMENT SINK	—	2"	—	—	—	—	—	—	1 UNIT	—
3.4D	FAUCET-PRE-RINSE (3-COMP SINK)	—	—	—	1/2"	—	1/2"	—	—	1 UNIT	1-15GPM WALL MOUNTED PRE-RINSE FAUCET PC TO INSTALL
3.5	DIP WELL	—	1"	—	1/4"	—	—	—	—	2 UNIT	—
3.6	MOP SINK	3"	—	2"	1/2"	—	1/2"	—	—	1 UNIT	—
3.8	FLOOR SINK	3"	—	2"	—	—	—	—	—	5 UNIT	JAY R SMITH 305-12 PVC WITH 1/2 GRATE
DF	DRINKING FOUNTAIN	1-1/2"	—	1-1/2"	1/2"	—	—	—	—	1 UNIT	—
PLUMBING EQUIPMENT NOTES: 1. IT SHALL BE THE PLUMBING CONTRACTORS RESPONSIBILITY TO MAKE ALL FINAL CONNECTIONS FROM KITCHEN EQUIPMENT TO THE PLUMBING MAINS SHOWN ON PLAN. 2. THE PLUMBING CONNECTION SCHEDULE ON THIS PLAN RELATES REQUIRED CONNECTIONS TO INDIVIDUAL EQUIPMENT ONLY. 3. PLUMBING CONTRACTOR SHALL REFER TO "KITCHEN EQUIPMENT COMPANY" CUT SHEETS FOR ALL ROUTING OF FINAL CONNECTION TO EQUIPMENT AND EXACT ROUGH-IN LOCATION. 4. PLUMBING CONTRACTOR SHALL MOUNT ALL FLOOR SINKS FLUSH WITH FINISHED FLOOR ELEVATION AND A MINIMUM OF 16" OFF THE FINISH FACE OF THE WALL. 5. INSTALL SECONDARY BFP ASSE 1056 IF CHEMICAL DISPENSER USED WITH MOP SINK. 6. REFER TO ARCHITECTURAL SHEET FOR ADDITIONAL PLUMBING FIXTURES.											

ELECTRIC WATER HEATER																	
UNIT	MANUFACTURER & MODEL NUMBER	NO. OF UNITS	LOCATION	UNIT CAPACITY			SYSTEM OUTLET TEMP (°F)	ELECTRICAL DATA							DIMENSIONS		
				STORAGE (GAL)	RECOVERY (GPH)	DEGREE RISE (°F)		NUMBER OF ELEMENTS	KW PER ELEMENT	SIMULTANEOUS / NON-SIMULTANEOUS	POWER (KW)	V	PH	HZ	HEIGHT (INCH)	DIAMETER (INCH)	SHIPPING WEIGHT (LB)
WH-1	A.O. SMITH (DEL-50)	1	AS PER PLAN	48	51	80	140	2	5	SIMULTANEOUS	10	208	3	60	36"	26-½"	78

PUMP SCHEDULE											
TAG	DESCRIPTION	TYPE	CAPACITY		ELECTRICAL DATA				SELECTION BASED ON		REMARKS/OPTIONS
			GPM	HEAD (ft.)	HP	V	PH	HZ	MANUFACTURER	MODEL NUMBER	
RCP-1	HOT WATER RECIRC. PUMP	IN-LINE	2.0	9	1/12	120	1	60	BELL & GOSSETT	PL-30-B	NOTE 1,2
OPTIONS (ALL RCP UNIS) • AQUA-STAT & NIGHT TIMER • BALANCING VALVE & CHECK VALVE • FLANGED PUMP • MAINTENANCE BALL VALVES ON BOTH SIDES OF PUMP											
NOTES: 1. SET AQUA-STAT WITH SET POINT 10 DEGREES BELOW SYSTEM SUPPLY TEMP. 2. INSTALL RECIRCULATION PUMP PER MANUFACTURERS REQUIREMENTS.											

EXPANSION TANKS									
UNIT	NUMBER	MANUFACTURER & MODEL NUMBER	SERVICE	TANK VOLUME (GAL)	MAX. ACCEPTANCE VOLUME (GAL)	PRESSURE RATING (PSI)	DIMENSIONS		NOTES
							DIAMETER (INCH)	HEIGHT (INCH)	
ET-1	1	AMTROL	ST-12C-DD	6.4	3.2	150	12	18	1, 2
GENERAL NOTES: 1. SET THE TANK PRESSURE TO EQUAL THE SYSTEM OPERATING PRESSURE. TANK MUST BE DRAINED BEFORE ADJUSTING SET PRESSURE. 2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS ON INCOMING COLD WATER LINE.									

PLUMBING FIXTURE SCHEDULE						
SYMBOL	DESCRIPTION	C.W.	H.W.	SAN		VENT
				DIRECT	INDIRECT	
WC	WATER CLOSET	1/2"	—	4"	—	2"
LAV	LAVATORY	1/2"	1/2"	2"	—	1-1/2"
FD	FLOOR DRAIN	—	—	3"	—	2"
HD	HUB DRAIN	—	—	3"	—	2"
NOTES 1. PROVIDE SHUT OFF VALVES FOR ALL WATER LINES AT PLUMBING FIXTURES AND EQUIPMENT CONNECTIONS. 2. MAXIMUM FLOW FROM A SINK FAUCET SHALL NOT EXCEED 2.2 GAL. OF WATER/MIN & LAV. FAUCET SHALL NOT EXCEED 0.5 GAL. OF WATER/MIN AT 60PSI PRESSURE. 3. INSTALL TRAP PRIMER THAT SERVE THE RESTROOM & WATER HEATER. 4. PROVIDE ELECTRONIC TRAP PRIMER FOR MECHANICAL/TRASH ROOM FLOOR DRAINS & FUNNEL DRAIN. PROVIDE FLOW CONTROL TRAP PRIMER FOR ALL OTHER ROOM FLOOR DRAINS. 5. THE TOP OF ALL FLOOR DRAINS SHALL BE FLUSH WITH THE ADJACENT FINISHED FLOOR. 6. ALL FLOOR DRAINS IN FINISHED AREAS AND ALL ROOF DRAINS SHALL BE LOCATED AS PER THE ARCHITECTURAL DRAWINGS. 7. REFER TO ARCHITECTURAL SHEET FOR ADDITIONAL PLUMBING FIXTURES.						

GRAVITY GREASE INTERCEPTOR CALCULATION			
FIXTURE	QUANTITY	DRAINAGE FIXTURE UNIT (DFU)	TOTAL DFU
3 COMP. SINK	1	5	5
1 COMP. SINK	1	5	5
DIPPER WELL	2	5	10
MOP SINK	1	5	5
HAND SINK	2	2	4
FLOOR DRAIN	1	4	4
TOTAL DRAINAGE FIXTURE UNIT (DFU)			33
RETENTION TIME (MINUTES)			30
GREASE INTERCEPTOR TOTAL VOLUME IN (GALLONS)			990
NOTE: 1. PROPOSED COMMON GREASE INTERCEPTOR SHALL ACCOMMODATE MINIMUM 990 GALLONS GREASE WASTE VOLUME FROM THE SCOPE AREA FOR 30 MINUTES RETENTION TIME. 2. THE PROPOSED GREASE TRAP CAPACITY SHALL BE AT LEAST 1000 GALLONS. 1) GREASE INTERCEPTOR CALCULATIONS AS PER 2018 INTERNATIONAL PLUMBING CODE SECTION 1003.3 & AS PER THE GUIDELINES OF CITY OF WACO, TX. 2) DRAINAGE FIXTURE UNITS AS PER SECTION 709.1 & 709.2			

**NY ENGINEERS**  
NEARBY ENGINEERS, 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH- 786.788.0295

12.08.24	ISSUED FOR CONSTRUCTION
11.30.24	PERMIT COMMENTS
10.07.24	PERMIT COMMENTS
08.28.24	PERMIT SUBMIT
08.22.24	OWNER REVIEW SET
08.07.24	SOF. OWNER REVIEW SET
NO DATE	REMARKS

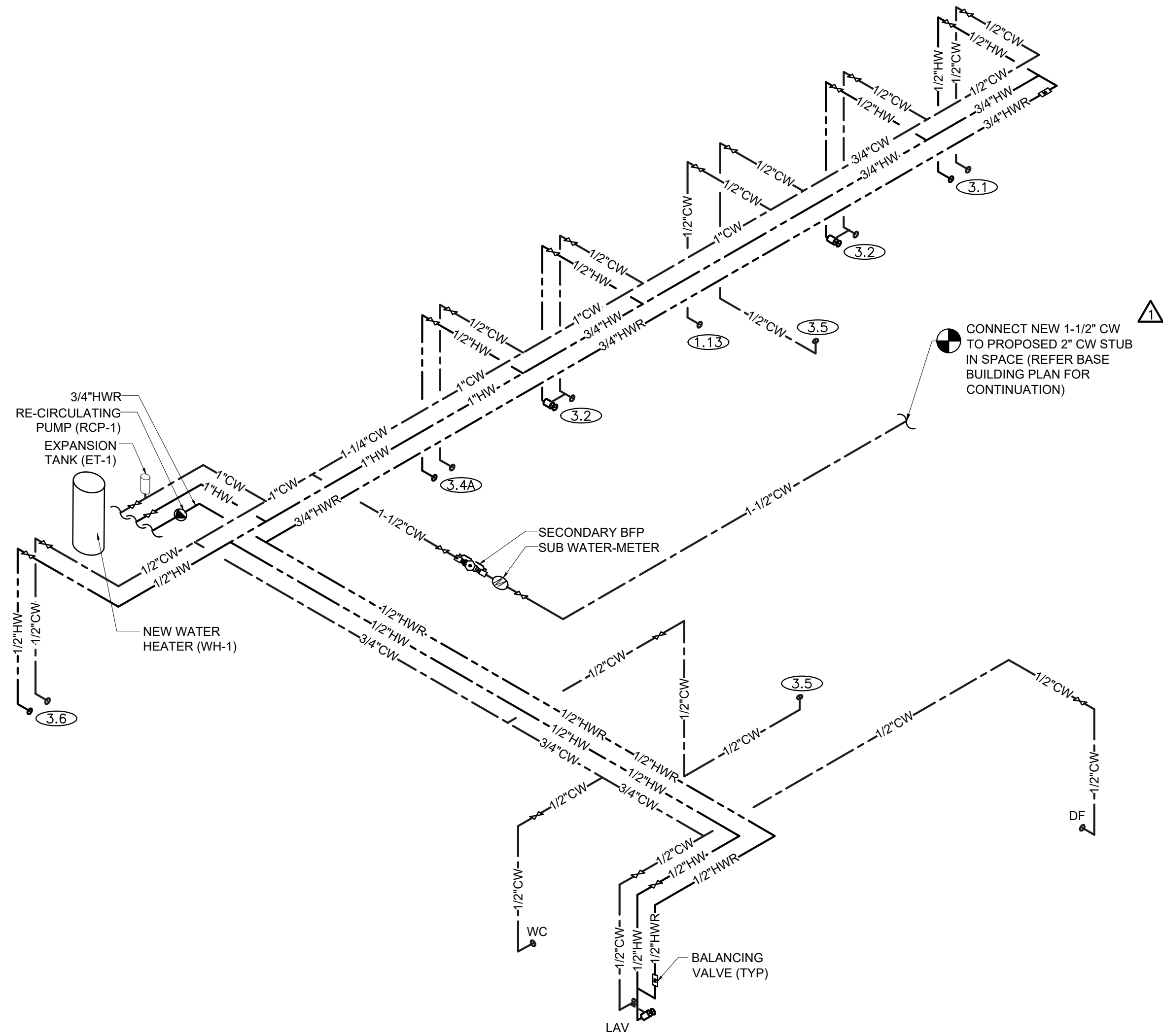
REVISIONS

Kilwins

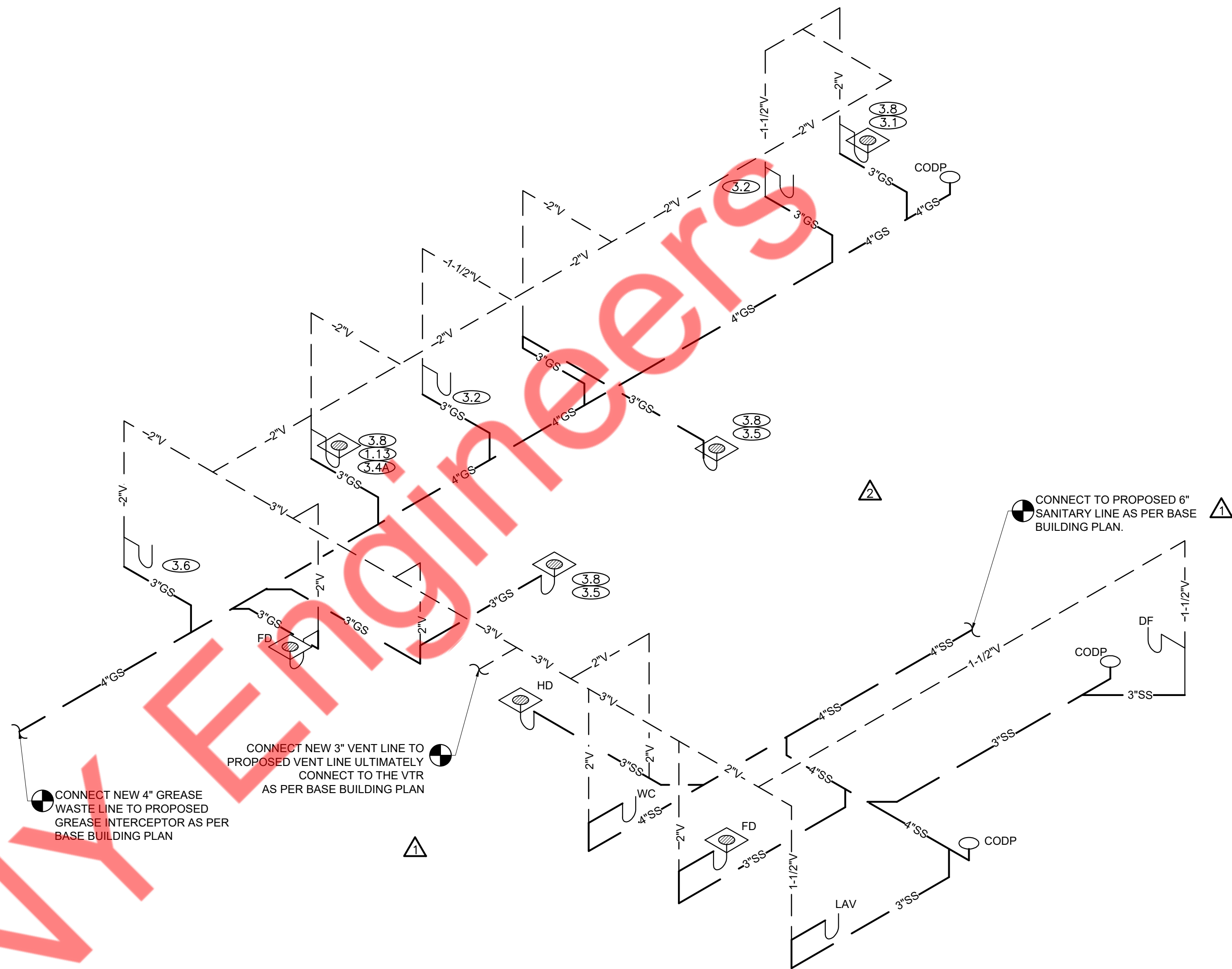
PROJECT NO: 2023.0723  
DATE:

P601  
PLUMBING SCHEDULES

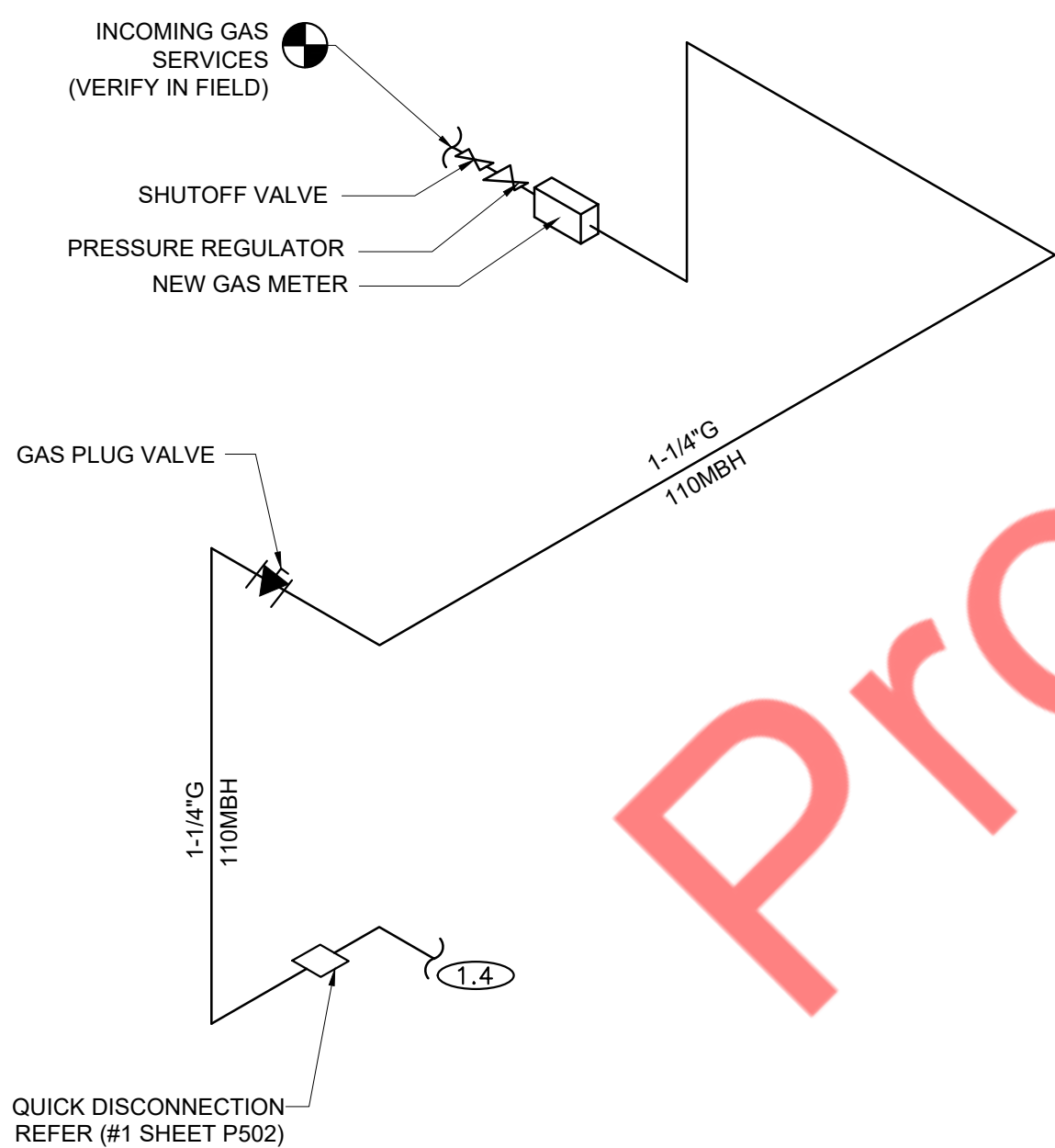
CHECKED: DRAWN:



1 DOMESTIC WATER RISER DIAGRAM  
SCALE: NTS



2 SANITARY RISER DIAGRAM  
SCALE: NTS



3 NATURAL GAS RISER DIAGRAM  
SCALE: NTS

NATURAL GAS SCHEDULE				
MARK	FIXTURE/EQUIPMENT	QTY	UNIT DEMAND BUTH	TOTAL CFH
1.4	FUDGE STOVE	1	110,000	110
TOTAL NATURAL GAS LOAD (CFH):				110
1-1/4" GAS LINE REQUIRED BASED ON 125'-0" TOTAL LENGTH OF PIPE AT LESS THAN 2 PSI.				
GAS LOAD BASED ON INTERNATIONAL FUEL GAS CODE 2018, SECTION 402 PIPE SIZING, 402.2 MAXIMUM GAS DEMAND, TABLE 402.4(2) SCHEDULE 40 METALLIC PIPE.				
SIZE		GAS LOAD (CFH)		
3/4"		92		
1"		173		
1-1/4"		355		
1-1/2"		532		
NOTE: CONTRACTOR TO FIELD VERIFY TOTAL LENGTH OF GAS PIPE AND NOTIFY ENGINEER IF DESIGN CONDITIONS DIFFER.				