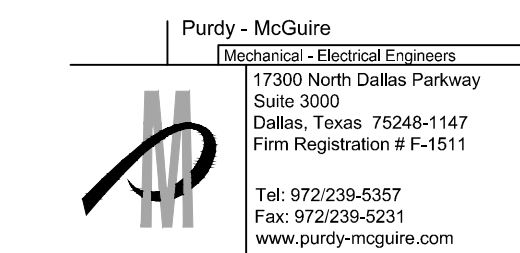


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CLIENT/LANDLORD ISSUE DATE: 03/26/2024
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DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING**SECTION 230500 - COMMON WORK RESULTS****PART 1 - GENERAL**

- 1.1 GENERAL NOTES AND SCOPE OF WORK
 - A. REFER TO SECTION 220500 FOR INFORMATION RELATED TO HVAC GENERAL CONDITIONS, MISCELLANEOUS EQUIPMENT AND MATERIALS, AND CONSTRUCTION REQUIREMENTS.
- 1.2 RELATED SECTIONS
 - A. SECTIONS 230523, 230529, 230553 AND 230700 ARE APPLICABLE BUT THEY DO NOT APPEAR IN THESE DIVISION 23 SPECIFICATIONS. REFER TO GENERAL NOTES.

PART 2 - PRODUCTS (NOT USED)**PART 3 - EXECUTION (NOT USED)****END OF SECTION****SECTION 230548 - VIBRATION CONTROLS****PART 1 - GENERAL**

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

- 2.1 EQUIPMENT PADS
 - A. PADS SHALL BE 3/4 INCH WATER RESISTANT NEOPRENE WITH WAFFLE PATTERN, MASON TYPE WSW, OR EQUAL.
- 2.2 ELASTOMERIC HANGERS
 - A. HANGER SHALL CONSIST OF RODS WITH STEEL BOX HOUSING NEOPRENE ISOLATION ELEMENT AND SPRING, MASON SERIES 30N, OR EQUAL.
- 2.3 RESTRAINED SPRING ISOLATORS
 - A. ISOLATORS SHALL UTILIZE A STEEL BASE WITH WAFFLED NEOPRENE PAD, WELDED STEEL ENCLOSURE WITH SPRING AND RESTRAINING BOLTS, MASON TYPE SLR, OR EQUAL.
- 2.4 ROOF CURB ISOLATORS
 - A. AS PART OF THE ROOF CURB, PROVIDE SPRING ISOLATORS WITH WATER-TIGHT DESIGN, RETRAINED SPRINGS AND NEOPRENE PADS, MASON TYPE RSC, OR EQUAL.
- 2.5 INERTIA BASES
 - A. PROVIDE STEEL POURING FORM FOR REINFORCED CONCRETE BLOCKS WITH FLOOR MOUNTED SPRINGS, MASON KSL, OR EQUAL.

PART 3 - EXECUTION

- 3.1 SCHEDULE
 - A. EQUIPMENT PADS - SMALL FLOOR MOUNTED EQUIPMENT OR PACKAGED EQUIPMENT WITH INTERNAL ISOLATION.
 - B. ELASTOMERIC HANGERS - SUSPENDED AIR HANDLING UNITS, EXHAUST FANS, TERMINAL UNITS, HEAT PUMPS, PUMPS, ETC.
 - C. RESTRAINED SPRING ISOLATORS - FLOOR MOUNTED FANS GREATER THAN ½ HP.
 - D. ROOF CURB ISOLATORS - FACTORY FABRICATED ROOFTOP UNITS.
 - E. INERTIA BASES - FLOOR MOUNTED PUMPS GREATER THAN ½ HP.
- 3.2 INSTALLATION
 - A. INSTALL VIBRATION CONTROLS PER THE MANUFACTURER'S INSTRUCTIONS.

END OF SECTION**SECTION 230553 - IDENTIFICATION****PART 1 - GENERAL**

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.
 - B. LABEL ALL NEW EQUIPMENT AND PIPING SYSTEMS.

PART 2 - PRODUCTS**2.1 PIPE LABELS**

- A. PRETENSION PIPE LABELS OF SEMI-RIGID PLASTIC FORMED TO COVER THE FULL CIRCUMFERENCE OF PIPE.
- B. IDENTIFY THE SERVICE AND DIRECTION OF FLOW. LABELS SHALL CONTAIN AT LEAST ½ INCH HIGH LETTERING AND BE PLACED SO THEY ARE EASY TO READ.

2.2 EQUIPMENT LABELS

- A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND HOLES FOR ATTACHMENT TO EQUIPMENT.

PART 3 - EXECUTION

- 3.1 PIPE LABELS
 - A. INSTALL PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE AN ACCESSIBLE CEILING AT MAXIMUM 20 FT. CENTERS.
- 3.2 VALVE TAGS
 - A. ATTACH TAGS TO VALVES USING CHAIN. PROVIDE A VALVE SCHEDULE FOR MOUNTING IN THE MECHANICAL ROOM.
- 3.3 EQUIPMENT LABELS
 - A. PERMANENTLY ATTACH LABELS TO EQUIPMENT. LOCATE WHERE LABEL CAN BE EASILY SEEN AND READ.

END OF SECTION.**SECTION 230593 - TESTING ADJUSTING AND BALANCING****PART 1 - GENERAL**

- 1.1 SCOPE OF WORK
 - A. THE WORK INCLUDED IN THIS SECTION CONSISTS OF FURNISHING ALL LABOR, MATERIALS, INSTRUMENTS, TOOLS, AND SERVICES REQUIRED IN CONNECTION WITH THE TESTING, ADJUSTING AND BALANCING (TAB) OF THE HEATING VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS AND/OR SHOWN ON THE MECHANICAL PLANS, OR REASONABLY IMPLIED THERE FROM.
 - B. THE TAB FIRM SHALL HAVE A LICENSED PROFESSIONAL ENGINEER SUPERVISING ALL WORK AND THE FIRM SHALL HOLD A CURRENT AABC OR NEHB CERTIFICATION.
 - C. REFER TO SECTION 230500.
- 1.2 START-UP, TEST AND ADJUST
 - A. PROVIDE ALL TESTS OF EQUIPMENT AND SYSTEMS REQUIRED TO PROVE COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. OWNER SHALL BE MADE COMPLETELY FAMILIAR WITH THE COMPLETE WORKING OF ALL THE MECHANICAL SYSTEMS.
 - B. THE TESTS SHALL DEMONSTRATE THE SPECIFIED CAPACITIES AND OPERATION OF ALL EQUIPMENT AND MATERIALS COMPRISING THE SYSTEMS. ALL DATA REQUIRED BY THESE SPECIFICATIONS SHALL BE PREPARED ON TYPED FORMS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. COMPLETE APPROVAL WILL BE NECESSARY BEFORE FINAL PAYMENT CAN BE MADE. THE CONTRACTOR SHALL THEN MAKE AVAILABLE SUCH INSTRUMENTS NECESSARY FOR SPOT CHECKS ON THE SYSTEM.

PART 2 - PRODUCTS (NOT USED)**PART 3 - EXECUTION****3.1 HVAC SYSTEM**

- A. THE HVAC CONTRACTOR SHALL WORK IN CONJUNCTION WITH THE TAB CONTRACTOR TO START-UP AND OPERATE ALL EQUIPMENT NECESSARY TO PROVIDE A COMPLETE AIR AND WATER TEST AND BALANCE REPORT.
- B. TAB CONTRACTOR SHALL MEASURE CFM AT ALL DIFFUSERS, REGISTERS AND GRILLES, AND HVAC UNITS, AS WELL AS WATER FLOWS AT COILS AND PUMPS, TO ASSURE THAT THEY MATCH THE QUANTITIES SHOWN ON THE PLANS (PLUS OR MINUS 5 PERCENT). CONFIRM ALL SEQUENCES OF OPERATION ARE PERFORMING CORRECTLY.
- C. TAB CONTRACTOR SHALL CALIBRATE ALL EQUIPMENT AND SENSORS TO WORK PROPERLY AND GIVE CORRECT INFORMATION TO THE BMS SYSTEM.

END OF SECTION**SECTION 230900 - CONTROLS****PART 1 - GENERAL**

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS**2.1 CONTROLS SYSTEM**

- A. PROVIDE NEW, MODIFY OR EXTEND AUTOMATIC TEMPERATURE CONTROLS TO ALL NEW EQUIPMENT SHOWN ON THE DRAWINGS.
- B. REFER TO THE DRAWINGS FOR ANY SPECIAL SEQUENCES OF CONTROL AND LOCATION OF EQUIPMENT.
- C. REMODEL PROJECTS SHALL UTILIZE EQUIPMENT BY THE SAME MANUFACTURER AS CURRENTLY EXISTS.

PART 3 - EXECUTION**3.1 DESIGN AND LAYOUT**

- A. THE CONTROL SYSTEM DESIGN AND LAYOUT SHALL BE PERFORMED BY A FACTORY AUTHORIZED AGENT OF THE MANUFACTURER USED.

3.2 SYSTEM OPERATION

- A. AT THE CONCLUSION OF WORK, ALL EQUIPMENT AND SYSTEMS SHALL BE PROVEN TO THE ENGINEER TO OPERATE IN ACCORDANCE WITH THE NEW OR EXISTING MAIN CONTROL PANEL AND NEW/EXISTING SEQUENCES OF OPERATION ON THE DRAWINGS.
- B. PROVIDE ALL WIRING REQUIRED TO CONNECT INPUT/OUTPUT DEVICES TO CONTROL PANELS.
- C. TEST AND ADJUST ALL DEVICES AND DOCUMENT CALIBRATION.
- D. PROVIDE NECESSARY INSTRUCTION TO THE OWNER'S PERSONNEL.

END OF SECTION**SECTION 232300 - REFRIGERANT PIPING****PART 1 - GENERAL**

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS**2.1 COPPER PIPE**

- A. PIPING SHALL BE COPPER TYPE ACR WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS.

PART 3 - EXECUTION**3.1 INSTALLATION**

- A. REFER TO SECTION 230529 FOR METHODS OF SUPPORTING ALL PIPING.

END OF SECTION**SECTION 233113 - DUCTWORK****PART 1 - GENERAL**

- 1.1 SCOPE OF WORK
 - A. REFER TO SECTION 230500.

PART 2 - PRODUCTS**2.1 GENERAL**

- A. CONCEALED DUCTWORK SHALL BE CONSTRUCTED OF NEW, PRIME GRADE, CONTINUOUS HOT-DIP MILL GALVANIZED, LOCK-FORMING, QUALITY STEEL. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- B. WHERE DUCTS EXPOSED TO VIEW PASS THROUGH WALLS, FLOORS OR CEILINGS, PROVIDE SHEET METAL COLLARS TO COVER VOIDS AROUND THE DUCTS.
- C. SQUARE AND ROUND ELBOWS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA STANDARDS. ELBOWS NOT CONSTRUCTED WITH A CENTERLINE RADIUS OF AT LEAST 50 PERCENT OF THE DUCT WIDTH OR DIAMETER SHALL BE PROVIDED WITH TURNING VANES IN ACCORDANCE WITH SMACNA STANDARDS.
- D. "FIBERGLASS" DUCTWORK WILL NOT BE ACCEPTED ON THIS PROJECT.

2.2 MEDIUM PRESSURE DUCT CONSTRUCTION

- A. UNLESS NOTED OTHERWISE, MEDIUM PRESSURE DUCTS SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF THREE (3) INCHES WG POSITIVE.
- B. ALL ROUND MEDIUM PRESSURE DUCTS SHALL BE SPIRAL TYPE.

2.3 LOW PRESSURE DUCT CONSTRUCTION

- A. LOW PRESSURE DUCTS CONNECTING SMALL AIR HANDLING EQUIPMENT, SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF TWO (2) INCHES WG, POSITIVE OR NEGATIVE AS APPROPRIATE. THESE LOW PRESSURE ROUND DUCTS SHALL BE SPIRAL TYPE.
- B. DUCTWORK DOWN STREAM OF AIR TERMINAL UNITS SHALL BE CONSTRUCTED TO A PRESSURE CLASSIFICATION OF ONE (1) INCHES WG POSITIVE. THESE LOW PRESSURE ROUND DUCTS MAY BE SPIRAL OR SNAP-LOCK TYPE.
- C. SHOP FABRICATED DUCTS SHALL BE CONSTRUCTED, BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA STANDARDS.

2.4 DUCT SEALING

- A. SEAL ALL DUCTWORK ON THE PROJECT TO SMACNA CLASSIFICATION A.

2.5 FLEXIBLE DUCTS

- A. FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX TYPE M-KE AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.
- B. FLEXIBLE DUCTS SHALL BE FACTORY INSULATED WITH A NOMINAL 1 INCH THICKNESS OF FIBERGLASS INSULATION, PRODUCING A THERMAL CONDUCTANCE (C") OF 0.23. DUCTS SHALL HAVE A POSITIVE INTERIOR AIR SEAL PERMANENTLY BONDED TO A COATED HIGH CARBON SPRING STEEL HELIX, ALL SHEATHED IN AN OUTER VAPOR BARRIER OF FIBERGLASS REINFORCED FILM LAMINATE.
- C. FLEXIBLE DUCTS SHALL BE RATED FOR OPERATING PRESSURE OF PLUS 6 INCHES WG THROUGH 10 INCH DIAMETER, PLUS 4 INCHES WG THROUGH 16 INCH DIAMETER AND - 2 INCHES WG FOR ALL SIZES.

- A. FLEXIBLE DUCTS TO DIFFUSERS AND GRILLES SHALL BE LIMITED TO 6 FOOT LENGTHS AND A MAXIMUM OF ONE (1) 90 DEGREE CHANGE IN DIRECTION. MEDIUM PRESSURE DUCTS SERVING TERMINAL UNITS SHALL BE LIMITED TO 2 FOOT LENGTHS WITH NO ELBOWS.

2.6 FLEXIBLE DUCT FABRIC

- A. PROVIDE VENTFABRICS "VENTGLAS", OR EQUAL, 30 OZ PER SQ YD, BETWEEN SHEET METAL DUCTS AND AIR HANDLING EQUIPMENT, INCLUDING ALL FANS, AND POWER TYPE VENTILATORS.

2.7 DAMPERS

- A. DAMPER AND SPLITTER HARDWARE FOR LOW PRESSURE DUCTS SHALL BE:
 - END BEARINGS - VENTLOK #607
 - REGULATOR FINISHED AREAS - VENTLOK #666, PLAIN COVER
 - REGULATOR UNFINISHED AREAS - VENTLOK #640, 3/8 INCH.

- B. VOLUME DAMPERS SHALL BE LOCATED AT BRANCH TAKE-OFFS AT MAIN TRUNK DUCT. NO DAMPERS (SPLITTER DAMPERS) SHALL BE LOCATED IN THE CENTER OF DUCTS.

PART 3 - EXECUTION**3.1 FABRICATION**

- A. DUCTWORK SHOWN ON THE DRAWINGS, SPECIFIED, OR REQUIRED FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL BE CONSTRUCTED AND ERECTED IN A FIRST CLASS MANNER.
- B. DUCTS SHALL BE REINFORCED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS TO PREVENT BUCKLING, BREATHING, VIBRATION AND UNNECESSARY NOISE.
- C. PROVIDE MANUALLY OPERATED VOLUME CONTROL DAMPERS IN DUCT BRANCHES, FOR PROPER BALANCING OF AIR DISTRIBUTION. DAMPERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.
- D. PROVIDE HINGED ACCESS DOORS IN DUCTWORK FOR ACCESS TO ALL SMOKE DETECTORS, SENSORS, AND OTHER CONTROL DEVICES, MANUAL DAMPERS, AND FOR CLEANING OPERATIONS. FACTORY FABRICATED DOORS SIMILAR AND EQUAL TO MILCOR AND MEETING THESE SPECIFICATIONS SHALL BE ACCEPTABLE.
- E. WHERE DUCTS CONNECT TO FANS, INCLUDING ROOF EXHAUSTERS PROVIDE FLEXIBLE DUCT FABRIC CONNECTIONS. PROVIDE A MINIMUM OF ½ INCH SLACK IN THE CONNECTIONS, AND A MINIMUM OF 2-1/2 INCH DISTANCE BETWEEN THE EDGES OF THE DUCTS, PLUS AN ADDITIONAL MINIMUM IF 1 INCH OF SLACK FOR EACH INCH OF STATIC PRESSURE ON THE FAN SYSTEM.
- F. PROVIDE SCREENS ON DUCTS, FANS AND OPENINGS WHICH LEAD TO, OR ARE OUTDOORS. SCREENS SHALL BE 16 GAUGE, ½ INCH MESH, IN REMOVABLE GALVANIZED STEEL FRAMES.
- G. FURNISH TEST OPENINGS WITH COVERS IN EACH DUCT FOR TAKING READINGS OF AIR VELOCITIES AND PRESSURES IN DUCTS. REFER TO THE APPROPRIATE SMACNA STANDARD FOR COVER CONSTRUCTION.

3.2 DUCT SUPPORTS

- A. HORIZONTAL AND VERTICAL SHEET METAL DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.
- B. HANGER DESIGN AND METHODS OF HANGING AND SUPPORTING SHALL BE COMPATIBLE WITH THE STRUCTURE.

END OF SECTION**SECTION 233713 - DIFFUSERS, REGISTERS AND GRILLES****PART 1 - GENERAL**

- 1.1 GENERAL NOTES
 - A. REFER TO SECTION 230500

PART 2 - PRODUCTS**2.1 AIR INLETS AND OUTLETS**

- A. GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE AS INDICATED ON THE DRAWING, AND SHALL BE PROVIDED WITH HEAVY DUTY SPONGE, OR SOFT FELT GASKETS. THE THROW SHALL BE SUCH THAT THE VELOCITY AT THE END OF THE THROW IN THE FIVE (5) FOOT OCCUPANCY ZONE WILL NOT BE MORE THAN 50 FPM NOT LESS THAN 25 FPM. NOISE LEVELS (NC CURVE) SHALL NOT EXCEED 40.
- B. IF PRODUCTS OF A MANUFACTURER OTHER THAN THE ONES INDICATED ON THE DRAWINGS ARE USED, THE SIZES SHOWN ON THE DRAWING SHALL BE CHECKED FOR PERFORMANCE, NOISE LEVEL, FACE VELOCITY, THROW AND PRESSURE DROP BEFORE THE SUBMITTAL IS MADE. SELECTIONS SHALL MEET THE MANUFACTURER'S OWN PUBLISHED DATA FOR THE ABOVE PERFORMANCE CRITERIA. SHOULD DEVICES OTHER THAN THOSE SCHEDULED BY NAME BE FURNISHED, THE MANUFACTURER SHALL DEMONSTRATE COMPLIANCE WITH NOISE CRITERIA, ON REQUEST, TO THE ARCHITECT'S SATISFACTION.
- C. WHERE CALLED FOR IN SCHEDULES, THE GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE PROVIDED WITH DEFLECTING DEVICES AND MANUAL DAMPERS. THESE SHALL BE STANDARD PRODUCTS OF THE MANUFACTURER, SUBJECT TO REVIEW BY THE ARCHITECT, AND SHALL BE SIMILAR AND EQUAL TO THOSE SCHEDULED.

PART 3 - EXECUTION**3.1 INSTALLATION**

- A. LOCATIONS OF OUTLETS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION WITH REFLECTED CEILING PLAN AND OTHER TRADES.
- B. VERIFY THE TYPE OF CEILING SYSTEM AND MATERIAL INTO EACH OF THE AIR INLETS AND OUTLETS IS TO BE INSTALLED, AND PROVIDE EQUIPMENT, WHICH PROPERLY "FITS" WHETHER SPECIFICALLY, SO INDICATED OR NOT ON THE DRAWINGS.

END OF SECTION

DIVISION 26 - ELECTRICAL

SECTION 260500 - COMMON WORK RESULTS

PART 1 - GENERAL

1.1 GENERAL NOTES

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 26.
B. THE CONTRACTOR FOR THIS DIVISION OF WORK IS REQUIRED TO OBTAIN A COMPLETE SET OF BID DOCUMENTS (DRAWINGS AND SPECIFICATIONS) AND FULLY REVIEW THEM. COORDINATE DIVISION 26 WORK WITH THAT OF ALL OTHER DIVISIONS OF WORK.
C. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. ANY LABOR OR MATERIAL CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY LABOR OR MATERIAL WHICH IS NEITHER SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY REQUIRED TO COMPLETE THE WORK, AND WHICH IS NORMALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS CONTRACT.
D. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE COMPLETION AND INSPECTION OF THIS WORK TO COMPLY WITH THE OWNER'S SCHEDULE AND PROJECT COMPLETION DATE.

1.2 SCOPE OF WORK

A. THE DESCRIPTION OF GENERAL CONDITION WORK IN THIS DIVISION SHALL ALSO APPLY TO DIVISION 28.
B. THIS CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE ELECTRICAL AND FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED BY JOB CONDITIONS. WORK IS TO BE COMPLETE IN EVERY RESPECT, WHETHER SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS OR NOT.
C. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER (BUILDING OWNER, LANDLORD OR TENANT), SHALL BE PROVIDED BY THIS CONTRACTOR.
D. THIS WORK, MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:
a. A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM INCLUDING THE INSTALLATION OF ELECTRICAL PANELBOARDS, TRANSFORMERS, SAFETY AND DISCONNECT SWITCHES, MOTOR STARTERS, VFD'S AND LIGHTING. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO INCLUDE IN HIS BID FOR PROVIDING SERVICE EQUIPMENT NECESSARY FOR TIE-IN TO OWNER'S DISTRIBUTION EQUIPMENT. REFER TO ELECTRICAL RISER DIAGRAM FOR ADDITIONAL INFORMATION.
b. CONTRACTOR MUST ALSO INCLUDE IN BID ALL NECESSARY MATERIALS REQUIRED TO COMPLETE THE SYSTEM INCLUDING, BUT NOT LIMITED TO, FEEDERS, BRANCH CIRCUITS, JUNCTION BOXES, OUTLET BOXES, WIRING DEVICES, COVER PLATES, CONDUITS, ETC.
c. METERING REQUIRED PER DRAWING AND/OR OWNER.
d. THE WIRING OF MECHANICAL EQUIPMENT SHALL BE AS OUTLINED ON THE BID SET DRAWINGS AND IN THE SPECIFICATIONS. WORK SHALL INCLUDE WIRING OF ALL STARTERS, DISCONNECTS, VFD'S, AND POWER WIRING OF MECHANICAL EQUIPMENT EXCEPT AS SPECIFICALLY NOTED OTHERWISE. ALL LOW VOLTAGE (24 VOLT) EMS TEMPERATURE CONTROL WIRING SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR UNLESS NOTED SPECIFICALLY ON DRAWING.
e. INSTALLATION OF LIGHT FIXTURES AND LAMPS AS SHOWN ON THE DRAWINGS INCLUDING ALL DEVICES, EQUIPMENT, ETC. REQUIRED FOR MOUNTING.
f. A COMPLETE CONDUIT SYSTEM FOR TELEPHONE/DATA INCLUDING BRANCH CONDUITS, OUTLET BOXES, PULL WIRES, GROUND CONDUCTORS, COVER PLATES, ETC. OR AS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.
g. A COMPLETE EMERGENCY AND EXIT LIGHTING SYSTEM AS SHOWN ON THE DRAWINGS.
h. TEMPORARY SERVICE AS REQUIRED FOR CONSTRUCTION, INCLUDING ITS REMOVAL.
i. SMOKE/FIRE ALARM WIRING, DEVICES AND CONDUIT, AS DESCRIBED ON DRAWINGS OR AS NECESSARY TO MEET OWNER, STATE, LOCAL, INSURANCE AND FIRE DEPARTMENT REQUIREMENTS.
j. INSTALLATION OF CONDUITS STUBBED TO ABOVE CEILING FOR HVAC CONTROLS AND FUTURE LOADS.

E. WORK NOT INCLUDED - THE FOLLOWING ITEMS OF ELECTRICAL CONSTRUCTION ARE NOT INCLUDED IN THIS CONTRACT:
a. TELEPHONE INSTRUMENTS AND WIRING UNLESS NOTED OTHERWISE.
b. DATA CABLE WIRING UNLESS NOTED OTHERWISE.

1.3 CODES

A. ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, STATE, COUNTY, CITY AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THIS CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS. THIS CONTRACTOR SHALL INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS AWARDED, CHANGE ORDERS FOR INCREASED COSTS DUE TO CODE ISSUES WILL NOT BE ACCEPTED UNLESS ALLOWANCES HAVE BEEN PREVIOUSLY AGREED UPON.
B. WHERE THE DRAWINGS AND SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODE OR THE OWNER'S CRITERIA, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS.
1.4 LICENSES, PERMITS, INSPECTION AND FEES
A. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS AND FEES REQUIRED OR RELATED TO THIS WORK. ALL COSTS ASSOCIATED WITH THESE SHALL BE PAID FOR BY THE CONTRACTOR AND INCLUDED AS PART OF THE BID.
B. FURNISH TO THE OWNER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT THE COMPLETION OF THE PROJECT.

1.5 GUARANTEE

A. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR PERIOD OF 1 YEAR FROM THE DATE OF ACCEPTANCE (OFFICIAL DATE IN WRITING) OF THE PROJECT. ALL WORK FOUND TO BE DEFECTIVE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
B. WHERE SPECIFIC EQUIPMENT IS NOTED TO HAVE EXTENDED WARRANTIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER REGISTRATION SO THE OWNER CAN MAKE ALL APPROPRIATE CLAIMS.

1.6 RECORD DRAWINGS

A. THIS CONTRACTOR SHALL MAINTAIN ONE SET OF DRAWINGS ON THE JOBSITE, UPDATED WEEKLY, TO RECORD ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS SUCH AS:
a. LOCATIONS OF CONCEALED CONDUITS
b. PANEL DESCRIPTIONS, CIRCUIT DIRECTORIES AND LABELS
c. REVISIONS, ADDENDUMS AND CHANGE ORDERS
d. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.
B. DELIVER RECORD DRAWINGS TO THE OWNER AT PROJECT COMPLETION.

1.7 DEMOLITION

A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY THE GENERAL CONTRACTOR. COORDINATE WITH THE GENERAL CONTRACTOR ALL EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT.
B. THIS CONTRACTOR SHALL INCLUDE, AND WILL BE RESPONSIBLE FOR, THE REMOVAL OF ALL EXISTING CONDUIT, FIRE ALARM SYSTEM, SWITCH GEAR, AND EQUIPMENT, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE. CONTRACTOR MUST VERIFY WITH THE OWNER ALL PRESUMED ABANDONED EQUIPMENT, CONDUIT AND SWITCH GEAR PRIOR TO REMOVAL. EXISTING ABANDONED CONDUIT OR EQUIPMENT IN THE FLOOR, EMBEDDED IN CONCRETE, OR OTHERWISE INACCESSIBLE, ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL. WHEN THEY ARE NOT TO BE REUSED IN THIS PROJECT, IF REQUIRED BY OWNER OR CODES, ABANDONED CONDUIT MUST BE REMOVED TO POINT OF ORIGIN. CONFIRM EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE PROPOSAL.
1.8 TEMPORARY LIGHT AND POWER
A. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY WIRING AND RELATED GROUND FAULT INTERRUPTION PROTECTION FOR LIGHT AND POWER FOR ALL CONTRACTORS DURING CONSTRUCTION AND IS RESPONSIBLE FOR ITS REMOVAL.

PART 2 - PRODUCTS

2.1 MATERIALS

A. MATERIALS UTILIZED IN THE CONSTRUCTION OF THIS PROJECT SHALL BE NEW AND CARRY ALL UL LABELS WHERE APPLICABLE, UNLESS APPROVED BY THE OWNER.
B. ANY USED EQUIPMENT OR MATERIALS USED SHALL STILL CARRY THE SPECIFIED 1 YEAR GUARANTEE AND APPROVAL OF THE USE OF THIS EQUIPMENT OR MATERIALS DOES NOT RELIEVE THE CONTRACTOR FROM ENSURING EVERYTHING IS OPERATIONAL.

2.2 MANUFACTURERS

A. WHERE TRADE NAMES OR MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE CONSIDERED THE BASIS OF DESIGN AND USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED, WILL BE SUBJECT TO APPROVAL IN WRITING BY THE ENGINEER THROUGH THE SHOP DRAWING SUBMITTAL PROCESS. FOR ACCEPTANCE PRIOR TO INSTALLATION, THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

2.3 SLEEVES

A. PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2 INCHES ABOVE THE FLOOR.
B. CONTRACTOR SHALL COORDINATE THROUGH THE GENERAL CONTRACTOR AND OWNER ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY WALLS OR CONCRETE FLOORS.
C. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND FLOORS SHALL BE FIRE SEALED. REFER TO "FIRE STOPPING".
D. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE MINIMUM NO. 22 USG GALVANIZED STEEL.

2.4 FLAME SPREAD PROPERTIES OF MATERIALS

A. MATERIALS USED ON THIS PROJECT SHALL EACH HAVE A FLAME SPREAD RATING OF 25 OR LESS, AND A SMOKE DEVELOPED RATING OF 50 OR LESS, AS DETERMINED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH NFPA-255.

2.5 FIRE STOPPING

A. PROVIDE FIRE STOPPING IN SEALING OF PENETRATIONS IN FIRE-RATED CONSTRUCTION, HORIZONTAL AND VERTICAL, INCLUDING THE FOLLOWING MATERIALS:
a. FOAM: DOW CORNING FIRESTOP SILICONE RTV FOAM, CAT #2001 LIQUID COMPONENT PART A (BLACK) AND LIQUID COMPONENT PART B (OFF-WHITE).
b. SEALANT: 3M 1000 NS AND 1003 SI. SILICONE ADHESIVE SEALANT.
c. DAMMING MATERIALS: MINERAL FIBERBOARD, AS SELECTED BY THE APPLICATOR.
B. MIXES SHALL CONFORM TO THE MANUFACTURER'S DIRECTIONS.

2.6 FLOOR, CEILING AND WALL PLATES

A. PROVIDE CHROME-PLATED, ONE-PIECE, ESCUTCHEONS ON CONDUITS AND HANGER RODS PENETRATING THE WALLS, FLOORS, AND CEILINGS IN FINISHED AREAS OF THE BUILDING. SPLIT RING ESCUTCHEONS ARE NOT ACCEPTABLE.

2.7 EQUIPMENT FOUNDATIONS AND SUPPORTS

A. PROVIDE FOUNDATIONS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AS REQUIRED. THESE SHALL INCLUDE REINFORCED CONCRETE HOUSEKEEPING PADS FOR ANY DISTRIBUTION EQUIPMENT INSTALLED INDOORS ON THE FLOOR. PADS SHALL EXTEND A MINIMUM OF 3 INCHES BEYOND EQUIPMENT IN ALL DIRECTIONS.

PART 3 - EXECUTION

3.1 SPACE AND EQUIPMENT ARRANGEMENT

A. EACH CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT THEIR PURCHASED EQUIPMENT WILL FIT THE SPACES AVAILABLE. IN CERTAIN INSTANCES HE WILL NOTE THAT THE EQUIPMENT IS MENTIONED BY NAME IN THE EQUIPMENT SCHEDULES. IN THESE CASES IT IS THAT EQUIPMENT WHOSE DIMENSIONS AND CONNECTION ARRANGEMENTS HAVE BEEN USED FOR THE PREPARATION OF THE LAYOUTS SHOWN ON THE WORKING DRAWINGS. SHOULD THE USE OF EQUIPMENT BY OTHER APPROVED MANUFACTURERS OR OF OTHER PHYSICAL SHAPE THAN THOSE SHOWN ON THE DRAWINGS BE PROPOSED, THE CONTRACTOR SHALL CONFIRM THE EQUIPMENT WILL FIT WITHIN THE ALLOTTED SPACE WITHOUT ARCHITECTURAL MODIFICATIONS OR IMPACT ON OTHER TRADES.
B. ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. PROVIDE SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.
C. BEFORE STARTING WORK, THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, FIRE PROTECTION, MECHANICAL, AND PLUMBING PLANS, SHOP DRAWINGS, AND SPECIFICATIONS TO SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF THE ELECTRICAL SYSTEM TO AVOID INTERFERENCES AND CONFLICTS.

3.2 MANUFACTURER'S DIRECTIONS

A. THE MANUFACTURER'S PUBLISHED DIRECTIONS SHALL BE FOLLOWED IN THE DELIVERY, STORAGE, PROTECTION, INSTALLATION, AND WIRING OF ALL EQUIPMENT AND MATERIAL. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY CONFLICT BETWEEN THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND THE MANUFACTURER'S DIRECTIONS, AND SHALL OBTAIN INSTRUCTIONS BEFORE PROCEEDING WITH THE WORK. SHOULD THE CONTRACTOR PERFORM ANY WORK BEFORE RECEIVING SUCH INSTRUCTIONS, HE SHALL BEAR ALL COSTS ARISING IN CONNECTIONS WITH THE DEFICIENCIES.

3.3 CONSTRUCTION REQUIREMENTS

A. THE DRAWINGS AND SPECIFICATIONS SHOW EQUIPMENT CONNECTIONS, CONDUIT, AND WIRE SIZE, GENERAL ROUTING AND LOCATION, AND DESCRIBE THE VARIOUS SYSTEMS. THESE DOCUMENTS DESCRIBE AND SIZE EQUIPMENT, ITS GENERAL LOCATION, USAGE, SUPPORT, AND AUXILIARY REQUIREMENTS, THEY DESCRIBE MOST, BUT NOT ALL OF THE MATERIALS AND THEIR USAGE FOR THIS PROJECT.
B. CONTRACT DOCUMENTS DO NOT DETAIL ALL JOB REQUIREMENTS, THEY DO NOT SHOW LAYOUTS, LOCATIONS, OR ELEVATIONS OF CONDUITS, HANGERS, SLEEVES, HANGERS, JUNCTION BOXES, OR ACCESS DOORS. THEY DO NOT SHOW FINAL PRECISE LOCATIONS OF EQUIPMENT BY DIMENSIONS IN ALL INSTANCES.
C. THE EXACT LOCATION OF EACH ITEM SHALL BE DETERMINED BY REFERENCE TO THE PROJECT CONTRACT DRAWINGS, AND TO DETAILS, EQUIPMENT DRAWINGS, AND ROUGH-IN DRAWINGS, BY MEASUREMENTS AT THE BUILDING, AND IN COOPERATION WITH THE VARIOUS TRADES. MINOR RELOCATION NECESSITATED BY THE CONDITIONS AT THE SITE OR DIRECTED BY THE OWNER SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, WHERE CONFLICTS OCCUR. WORK IN THE AREA INVOLVED.
3.4 EQUIPMENT FOUNDATIONS, HANGERS AND SUPPORTS
A. FOR FLOOR MOUNTED ELECTRICAL EQUIPMENT, PROVIDE CONCRETE HOUSEKEEPING PADS NOT LESS THAN 3-1/2 INCHES THICK REINFORCED WITH NO. 3 DOWELS AND NO. 3 BARS, 2 FEET-0 INCHES ON CENTER EACH WAY.
B. SUSPENDED EQUIPMENT SHALL HAVE SUPPORTS CONSISTING OF MANUFACTURED METAL FRAMING OR HANGERS CONFORMING TO SECTION 260529.
3.5 INSTRUCTIONS TO OWNER'S PERSONNEL
A. PROVIDE THE SERVICES OF COMPETENT ENGINEERS OR TECHNICIANS TO INSTRUCT REPRESENTATIVES OF THE OWNER IN COMPLETE AND DETAILED OPERATION AND MAINTENANCE OF EACH ITEM OF EQUIPMENT AND EACH SYSTEM.
B. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROPER MAINTENANCE OF EQUIPMENT AND SYSTEMS UNTIL THE INSTRUCTIONS HAVE BEEN GIVEN TO THE OWNER'S PERSONNEL AND THE LETTER OF RELEASE ACKNOWLEDGED.
C. PROVIDE OPERATION & MAINTENANCE MANUALS (3 COPIES), ALONG WITH AS-BUILT SET OF PRINTS PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT.

3.6 ELECTRICAL WIRING OF MOTORS

A. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL DISCONNECT SWITCHES AND MOTOR CONTROLS AS REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT, UNLESS SUCH EQUIPMENT IS SPECIFIED TO BE PROVIDED WITH FACTORY MOUNTED DISCONNECT SWITCHES, STARTERS, OR VFD'S. THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO EQUIPMENT AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.
B. THE MECHANICAL AND PLUMBING DESIGN AND DRAWINGS ARE BASED ON THE EQUIPMENT SCHEDULED AND SHOWN ON THE DRAWINGS. SHOULD ANY CONTRACTOR SUBMIT FOR APPROVAL EQUIPMENT REQUIRING CHANGES TO THE MECHANICAL AND PLUMBING DESIGN FOR WHICH THE MECHANICAL OR PLUMBING CONTRACTOR WILL REQUEST AN EXTRA, THIS EXTRA SHALL BE PAID BY THE CONTRACTOR PROVIDING THE ALTERNATE EQUIPMENT REQUIRING THE CHANGE.
C. ELECTRICAL CONTRACTOR SHALL REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL ELECTRICAL WORK TO BE INCLUDED IN HIS BID.
D. ELECTRICAL CONTRACTOR SHALL DO ALL POWER WIRING, LINE VOLTAGE WIRING, AND LINE VOLTAGE CONTROL WIRING INDICATED UNDER THE HEATING, VENTILATION AND AIR CONDITIONING, PLUMBING, AND FIRE PROTECTION SPECIFICATIONS AND DRAWINGS. THIS CONTRACTOR SHALL ALSO DO ALL INTERCONNECTING LINE VOLTAGE WIRING BETWEEN RELAYS AND SWITCHES AS REQUIRED.
E. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING CONDUIT FOR HVAC CONTROL WIRING WHERE REQUIRED BY CODE OR SHOWN ON PRINTS TO BE IN CONDUIT. REFER TO PLANS FOR REQUIREMENTS AND SIZES.
F. FIRE DAMPERS SHALL BE WIRED BY ELECTRICAL CONTRACTOR. COORDINATE WITH MECHANICAL CONTRACTOR FOR POWER REQUIREMENTS.
3.7 QUIET OPERATION
A. THIS WORK SHALL BE INSTALLED IN SUCH A MANNER THAT UNDER ALL CONDITIONS OF LOAD IT SHALL OPERATE WITHOUT SOUND OR VIBRATION, WHICH IS OBJECTIONABLE IN THE OCCUPIED SPACES IN THE OPINION OF THE OWNER. IN THE CASE OF MOVING MACHINERY, SOUND OR VIBRATION ANNOYINGLY NOTICEABLE INSIDE ITS OWN ROOM CAN BE CONSIDERED AS OBJECTIONABLE. IN ANY CASE, THE SITUATION SHALL BE REMEDIATED AT NO COST TO THE OWNER.

3.8 CUTTING AND PATCHING

A. PROVIDE ALL CUTTING, CHASING AND CHANNELING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL FROM ARCHITECT AND OWNER.
B. ALL PATCHING SHALL BE BY THE GENERAL CONTRACTOR AND SHALL MATCH THE SURROUNDING SURFACES.

3.9 TESTS

A. THE CONTRACTOR INSTALLING THE ELECTRICAL SYSTEMS SHALL FOLLOW ALL TESTS AS REQUIRED TO PROVE COMPLIANCE WITH ALL LOCAL CODES.

END OF SECTION.

SECTION 260519 - CONDUCTORS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 SINGLE CONDUCTORS

A. CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS SHALL BE COPPER AND THE AWG SIZE AND TYPE AS SHOWN ON DRAWINGS. MINIMUM WIRE SIZE #12 UNLESS NOTED OTHERWISE ON PLAN OR IN GENERAL NOTES FOR VOLTAGE DROP. THE CONDUCTORS SHALL BE 600 VOLT INSULATION, TYPE THW, THWN OR THHN
B. CONDUCTORS MAY BE STRANDED FOR SIZES #10 AWG AND LARGER. CONDUCTOR SIZE #12 SHALL BE SOLID (NOT STRANDED).
C. ALUMINUM CONDUCTORS ARE NOT PERMITTED. CONTRACTOR MUST OBTAIN WRITTEN PERMISSION FROM GENERAL CONTRACTOR AND ENGINEER WHEN USED.

2.2 MULTICONDUCTOR CABLES

A. PROVIDE TYPE MC MULTICONDUCTOR CABLE IN COMPLIANCE WITH NEMA WC 70, WITH METAL CLAD AND GROUND WIRE.
2.3 CONNECTORS
A. WIRE CONNECTORS SHALL BE EQUAL TO "SCOTCH LOCK" FOR #8 AWG WIRE AND SMALLER. USE T&B "LOCKTIGHT" FOR #6 AWG WIRE AND LARGER.

PART 3 - EXECUTION

3.1 APPLICATIONS AND INSTALLATION

A. ALL WIRING SHALL BE IN CONDUIT UNLESS NOTED OTHERWISE (IE-LOW VOLTAGE PLENUM RATED WIRE).
B. THE USE OF SHARED NEUTRALS IS REQUIRED FOR LIGHTING CIRCUITS AND ALLOWED PER DRAWING NOTES. IT

SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL CODES.
C. THE USE OF ROMEX, BX, ETC. IS NOT PERMITTED.
D. ALL WIRING TO BE COLOR-CODED AS FOLLOWS:
120/208 VOLT SYSTEM
NEUTRAL - WHITE
PHASE A OR L1 - BLACK
PHASE B OR L2 - RED
PHASE C OR L3 - BLUE
GROUND - GREEN
ISOLATED GROUND - GREEN WITH YELLOW TRACER

277/480 VOLT SYSTEM

NEUTRAL - GRAY
PHASE A OR L1 - BROWN
PHASE B OR L2 - ORANGE
PHASE C OR L3 - YELLOW
GROUND - GREEN WITH YELLOW TRACER
E. UNLESS NOTED OTHERWISE, MC CABLE IS ONLY ALLOWED WITHIN PARTITIONS OR MILL WORK AND LOCATIONS DESCRIBED IN SECTION 260533.

END OF SECTION.

SECTION 260526 - GROUNDING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND JUMPERS

A. ALL CONDUIT, INCLUDING FLEXIBLE CONDUIT, SHALL BE GROUNDED WITH A GREEN COPPER GROUNDING CONDUCTOR.
B. GROUNDING CONNECTIONS MADE TO THE WATER PIPING SYSTEM SHALL BE COORDINATED WITH THE PLUMBING CONTRACTOR AND A BONDING JUMPERS INSTALLED AROUND WATER METER PER CODES AND AS INDICATED ON DRAWING.
C. ALL DEVICES SHALL BE BONDED TO THE CONDUIT SYSTEM. USE A BONDING JUMPER BETWEEN THE OUTLET BOX AND THE DEVICE GROUNDING TERMINAL. METAL-TO-METAL CONTACT BETWEEN THE DEVICE YOKE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE MOUNTED BOXES OR FLUSH TYPE BOXES. ALL JUNCTION BOXES, OUTLET BOXES, AND PULL BOXES SHALL BE BONDED TO THE CONDUIT SYSTEM.

PART 3 - EXECUTION

3.1 INSTALLATION

A. RUN A SEPARATE ISOLATED GROUNDING CONDUCTOR, #12 AWG MINIMUM, IN EACH CONDUIT FEEDING ISOLATED GROUND RECEPTACLES AND OTHER COMPUTERIZED EQUIPMENT AS SHOWN ON DRAWINGS.
B. ALL ENCLOSURES AND NON-CURRENT CARRYING METAL PARTS ARE TO BE GROUNDED. CONDUIT SYSTEM IS TO BE ELECTRICALLY CONTINUOUS. ALL LOCKNUTS MUST CUT THROUGH ENAMELED OR PAINTED SURFACES ON CONDUIT SYSTEM. USE BONDING JUMPERS WITH APPROVED CLAMPS. ALL GROUND CLAMPS SHALL BE "PENN-UNION" OR EQUAL, SIMILAR TO "GPL" TYPE.

END OF SECTION.

SECTION 260529 - HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 STEEL SLOTTED SUPPORTS

A. HOT-DIP GALVANIZED AFTER FABRICATION OF DIMENSIONS REQUIRED FOR THE SIZE OF SUPPORTED ITEMS AND ANTICIPATED LOAD.
B. RACEWAY AND CABLE SUPPORTS AS DESCRIBED IN NECA 1 AND 101.
C. USE STEEL HANGERS, CLAMPS AND ASSOCIATED FITTINGS, DESIGNED FOR TYPES AND SIZES OF RACEWAYS TO BE SUPPORTED.

PART 3 - EXECUTION

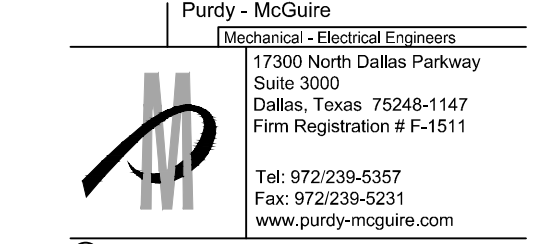
3.1 INSTALLATION

A. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.
B. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING, HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BAR JOIST. WHERE INTERFERENCES OCCUR, AND IN ORDER TO SUPPORT CONDUIT, THE CONTRACTOR MUST INSTALL TRAPEZOID TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO OTHER SYSTEMS AND EQUIPMENT. HANGER TYPES AND INSTALLATION METHODS ARE ALSO SUBJECT TO OWNER CRITERIA.
C. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED.

END OF SECTION.



ARCHITECT/ENGINEER



PMI JOB NO. 24006002
PROJECT MGR. TODD JOHNSON

THIS DRAWING SHALL NOT BE REPRODUCED FOR ANY PROJECT OTHER THAN THE PROJECT NOTED IN THE TITLE BLOCK, WITHOUT THE WRITTEN CONSENT OF PURDY-MCGUIRE, INC., DALLAS, TX

SEAL



PROJECT NUMBER: 555-012
DRAWN BY: LAC
CHECKED BY: MW
R.S.P.: 2,430



CYPRESS WATERS
BURDETTE
BECKMANN INC.

8840 CYPRESS WATERS BLVD., SUITE #180 DALLAS, TX 75019

NO.	REVISIONS:	DATE:

CLIENT/LANDLORD ISSUE DATE: 03/26/2024
BID ISSUE DATE: 03/26/2024
PERMIT ISSUE DATE: 03/26/2024
CONSTRUCTION ISSUE DATE: 03/26/2024

DRAWING TITLE:
ELECTRICAL SPECIFICATIONS 1 OF 2

DRAWING NUMBER:

E1.01

SECTION 260533 - RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.
- B. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS SERVING ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO LIGHTING, RECEPTACLES, HEATING, AIR CONDITIONING, PLUMBING EQUIPMENT, TELEPHONE, DATA, AUDIO/VISUAL, SECURITY, AND ELECTRICAL EQUIPMENT.

PART 2 - PRODUCTS

2.1 RACEWAYS

- A. ALL CONDUITS SHALL BE GALVANIZED IMC, EMT OR MC TYPE UNLESS OTHERWISE SPECIFIED IN SPECIFICATIONS OR ON DRAWINGS. ALL CONDUIT IS TO BE UL LABELED.
 - a. EMT CONNECTORS SHALL BE STEEL COMPRESSION TYPE.
 - b. CONDUIT UNDER SLAB ON GRADE SHALL BE RIGID STEEL OR SCHEDULE 40 PVC WITH RIGID STEEL ELLS WHERE PERMITTED BY OWNER OR CODE.
- B. MINIMUM SIZE OF CONDUIT SHALL BE:
 - a. 3/4 INCH FOR INDIVIDUAL LIGHTING FIXTURE CONNECTIONS OR TO INDIVIDUAL LIGHT SWITCHES AND 3/4 INCH FOR ALL OTHER LIGHTING AND POWER CIRCUITING.
 - b. IF HVAC CONTROL WIRING IS REQUIRED TO BE RUN IN CONDUIT, IT SHALL BE A MINIMUM OF 3/4 INCH, UNLESS NOTED OTHERWISE ON DRAWINGS.
- C. ALL UNDER FLOOR CONDUIT SHALL BE OF MINIMUM 1 INCH SIZE.
- 2.2 OUTLET BOXES
 - A. ALL OUTLET BOXES SHALL BE GALVANIZED PRESSED STEEL OF THE STANDARD KNOCKOUT TYPE. NO ROUND OUTLET BOXES SHALL BE PERMITTED UNLESS INDICATED AND FOR LIGHTING THAT REQUIRE SUCH CONFIGURATION. CONCEALED BOXES SHALL NOT BE LESS THAN 4 INCH SQUARE AND 1-1/2 INCH DEEP, WITH PLASTER RINGS.
 - B. ALL KNOCKOUT BOXES, UPON WHICH LIGHTING FIXTURES ARE TO BE INSTALLED, SHALL BE EQUIPPED WITH 3/8 INCH FIXTURE STUDS.
- 2.3 JUNCTION AND PULL BOXES
 - A. BOXES AND COVERS SHALL BE GALVANIZED STEEL OF CODE GAUGE AND SIZE.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. SUPPORT ALL CONDUIT IN ACCORDANCE WITH THE NEC AND LOCAL CODES.
- B. GENERALLY, ALL CONDUIT SHALL BE CONCEALED EXCEPT FOR UNFINISHED AREAS, SUCH AS EQUIPMENT ROOMS. EXPOSED CONDUIT SHALL BE ALLOWED ONLY AS NOTED ON PLAN AND AS APPROVED BY TENANT'S PROJECT MANAGER. PAINTING OF CONDUITS, NOTED ON DRAWINGS OR SPECIFICATIONS WILL BE BY GENERAL CONTRACTOR.
- C. FLEXIBLE METAL CONDUIT OR MC TYPE CABLE FLEXIBLE CONDUIT OR MC TYPE CABLE SHALL ONLY BE USED FOR THE FOLLOWING APPLICATIONS:
 - a. FINAL CONNECTIONS TO MOTORS
 - b. FINAL CONNECTIONS INTO AND OUT OF THE TRANSFORMER
 - c. FINAL CONNECTIONS TO VIBRATING EQUIPMENT
 - d. INTER-CONNECTIONS BETWEEN ALL LIGHT FIXTURES
 - e. FINAL CONNECTIONS WHERE RIGID CONDUIT IS NOT PRACTICAL.
 - f. IN WALLS (FOR LIGHT SWITCHES AND 120 VOLT POWER RECEPTACLES AND HVAC CONTROL EQUIPMENT).
- D. FLEXIBLE METAL CONDUIT MUST BE THE SAME SIZE AS THE IMC OR EMT CONDUIT TO WHICH IT IS CONNECTED. THE FLEXIBLE METAL CONDUIT AND ITS FITTINGS ARE TO BE LISTED FOR GROUNDING. A GREEN GROUNDING CONDUCTOR SHALL BE INSTALLED. ALL CONNECTORS ARE TO BE OF A NEMA APPROVED TYPE.
- E. THE USE OF ROMEX, BX, ETC. IS NOT PERMITTED.
- F. PROVIDE PULL-WIRE IN ALL EMPTY CONDUITS EXCEPT AS NOTED OTHERWISE ON DRAWINGS.
- G. HOME RUNS AND MAIN CONDUIT RUNS ARE TO BE HELD TIGHT TO STRUCTURE ABOVE OR AS REQUIRED TO ALLOW PROPER SERVICE ACCESS AND OTHER TRADES WORK. CONDUIT MUST BE TRAPEZED TO ALLOW 3 FEET MINIMUM CLEARANCE ABOVE CEILING.
- H. ALL CONDUITS MUST BE SIZED PER NEC AND LOCAL CODES.
- I. INSTALL BOXES RIGIDLY FROM BUILDING STRUCTURE AND SUPPORT INDEPENDENTLY OF THE CONDUIT SYSTEM. ALSO PROVIDE SUITABLE BOX EXTENSIONS TO EXTEND BOXES TO FINISHED FACES OF FLOORS, CEILINGS, WALLS, ETC. ALL OUTLET BOXES TO BE PROVIDED WITH CADDY "QUICK-MOUNT BOX SUPPORT" TO MINIMIZE THE DEFLECTION THAT OCCURS WHEN PLUGGING/UNPLUGGING INTO THESE DEVICES.
- J. UNLESS OTHERWISE NOTED ON DRAWINGS OR OTHERWISE REQUIRED BY THE NATIONAL ELECTRIC CODE, HANDICAP CODES OR LOCAL CODES, OUTLET HEIGHTS SHALL BE AS FOLLOWS:
 - a. SWITCH HEIGHT 48 INCHES FROM FINISHED FLOOR TO CENTERLINE OF OUTLET
 - b. CONVENIENCE OUTLETS: 18 INCHES FROM FINISHED FLOOR TO CENTERLINE OF OUTLET
 - c. TELEPHONE OUTLETS SHALL BE LOCATED AS NOTED ON DRAWINGS
- K. ARRANGE CIRCUITS TO AVOID THE USE OF JUNCTION BOXES IN INACCESSIBLE LOCATIONS. THE USE OF JUNCTION BOXES ABOVE DRYWALL CEILINGS SHOULD BE LIMITED TO LOCATIONS NEAR ACCESS FRAMES USED FOR DIFFUSERS AND RETURN AIR GRILLES OR ACCESS PANELS AS LOCATED ON PLANS.
- L. JUNCTION AND PULL BOXES MUST BE LABELED WITH CIRCUIT NUMBER IDENTIFICATION AND SYSTEM TYPE ON COVER.
- M. JUNCTION AND PULL BOXES MUST BE ACCESSIBLE ACCORDING TO NEC 314.29. REFER TO ARCHITECTURAL SPECIFICATIONS FOR ACCESS PANEL SPECIFICATION IF NEEDED.
- 3.2 TELEPHONE DATA AND COMPUTER SYSTEM
 - A. FURNISH AND INSTALL A SYSTEM OF CONDUIT RACEWAYS, OUTLET BOXES AND PULL WIRES AS SHOWN ON THE DRAWINGS UNLESS OTHERWISE NOTED ON PLANS. TELEPHONE SWITCHING APPARATUS, CONDUCTORS, INSTRUMENTS, MISCELLANEOUS EQUIPMENT AND APPURTENANCES ARE NOT PART OF THIS CONTRACT
 - B. OUTLET BOXES ARE TO BE 4 INCH SQUARE MINIMUM WITH SINGLE DEVICE COVER AND TELEPHONE PLATE
 - C. ALL PULL WIRES ARE TO BE LABELED FOR PURPOSE DESIGNATED.

END OF SECTION.

DIVISION 26 - ELECTRICAL

SECTION 260533 - IDENTIFICATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

- A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING, FOR ATTACHMENT TO EQUIPMENT.

2.2 CONDUCTORS

- A. REFER TO SECTION 260519
- B. PROVIDE SELF-ADHESIVE VINYL LABELS THAT ARE PREPRINTED.

PART 3 - EXECUTION

3.1 LABELING

- A. ALL EQUIPMENT (INCLUDING BUT NOT LIMITED TO PANELBOARDS, SWITCHBOARDS, DISTRIBUTION BOARDS, UPS'S, PDUS, MOTORS, TRANSFORMERS, DISCONNECT SWITCHES) SHALL BE LABELED INDICATING EQUIPMENT NAME AND FEEDER SIZE.
- B. ALL BRANCH CIRCUIT WIRING DEVICES SHALL BE LABELED WITH CIRCUIT NUMBER.
- C. ALL JUNCTION BOXES ABOVE CEILING AND BELOW RAISED FLOOR SHALL BE LABELED WITH CIRCUIT NUMBER.

END OF SECTION.

SECTION 260573 - OVERCURRENT PROTECTION DEVICE COORDINATION STUDY

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.
- B. UTILIZING A COMPUTER-BASED SOFTWARE PROGRAM, MODEL THE PROPOSED DISTRIBUTION SYSTEM, CALCULATE THE MAXIMUM AVAILABLE SHORT CIRCUIT THROUGHOUT AND COORDINATE THE SELECTION OF OVERCURRENT PROTECTION DEVICES TO MEET IEEE.
- C. SUBMIT A FULL REPORT FOR REVIEW AND APPROVAL.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION.

SECTION 262200 - TRANSFORMERS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 DRY TYPE TRANSFORMERS

- A. PROVIDE TRANSFORMERS OF K RATINGS SHOWN ON THE DRAWINGS, WITH COPPER WINDINGS, VENTILATED ENCLOSURE, AND ELECTROSTATIC SHIELDING.
- B. PROVIDE TWO, 2.5 PERCENT TAPS ABOVE AND TWO, 2.5 PERCENT TAPS BELOW FULL CAPACITY.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. TRANSFORMER SHALL BE PAD MOUNTED OR SHALL BE SECURELY MOUNTED FROM THE BUILDING STRUCTURE.

REINFORCED WALLS OR AS NOTED ON DRAWINGS. USE ADDITIONAL VIBRATION ISOLATORS AT POINTS OF MOUNTING TO CUT VIBRATION NOISES. USE FLEXIBLE METALLIC CONDUIT WITH GROUNDING BUSHING FOR PRIMARY AND SECONDARY CONNECTIONS TO TRANSFORMER. TRANSFORMERS SHALL BE LOCATED, SET, MOUNTED AND CONNECTED IN SUCH A MANNER AS TO KEEP NOISE LEVELS WITHIN THE SURROUNDING AMBIENT NOISE LEVELS AND MAINTAIN ALL CODE REQUIRED CLEARANCES.

END OF SECTION.

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 PANELBOARDS

- A. ALL PANELBOARDS SHALL BE FACTORY ASSEMBLED OF THE BOLTED CIRCUIT BREAKER TYPE WITH SOLID COPPER BUSSING, FULL SIZED COPPER NEUTRAL, 100 PERCENT GROUND BUSSING, AND OVERALL HINGED/LOCKABLE DOOR. ALL CIRCUIT BREAKERS SHALL BE OF THE QUICK-MAKE AND QUICK-BREAK DESIGN, THERMAL-MAGNETIC TYPE, TRIP FREE AND TRIP-INDICATING. ALL PANELS SHALL BE DEAD FRONT AND FLUSH OR SURFACE MOUNTED AS SHOWN.
- B. PANELBOARDS SHALL HAVE A MINIMUM SHORT CIRCUIT CURRENT RATING AND LUG CONNECTIONS AS REQUIRED BY A SHORT CIRCUIT STUDY.
- C. ALL LUG CONNECTIONS TO BE 75 DEGREE C RATED.
- D. PROVIDE ISOLATED GROUND BUS AND DOUBLE NEUTRAL BUS WHERE INDICATED ON THE DRAWINGS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. REFER TO DRAWINGS FOR FLUSH OR SURFACE MOUNTING.

END OF SECTION.

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 SWITCHES AND RECEPTACLES

- A. FURNISH AND INSTALL SWITCHES AND RECEPTACLES, UNLESS NOTED OTHERWISE, AS NECESSARY FOR A COMPLETE INSTALLATION. COLOR OF DEVICES AND PLATES SHALL BE SELECTED BY THE ARCHITECT.
- B. THE DEVICES SHALL BE OF THE TYPES AND RATINGS LISTED, OR EQUALS WITH PASS & SEYMOR, HUBBELL, OR LEVITON.
 - a. SINGLE POLE SWITCHES: 20AMP - 120-277V: LEVITON 'DECORA' #5621-X
 - b. THREE WAY SWITCHES: 20AMP - 120-277V: LEVITON 'DECORA' #5623-X
 - c. DUPLEX RECEPTACLES: 20AMP - 125V: LEVITON 'DECORA' #16352-X
 - d. ISOLATED GROUND RECEPTACLES: 20AMP - 125V: LEVITON 'DECORA' #16352-IG
 - e. GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES: 20AMP - 125V: LEVITON 'DECORA' #8899
- C. ALL DEVICE COVER PLATES SHALL BE LEVITON 'DECORA' NYLON STYLE.

2.2 WALL-BOX DIMMERS

- A. DIMMERS SHALL BE LEVITON 'MONET' OR LUTRON "NOVA-T-STAR".

2.3 OCCUPANCY CONTROLS

- A. WALL-SWITCH SENSORS SHALL BE OF THE PASSIVE INFARED TYPE DESCRIBED ON THE DRAWINGS WITH ADJUSTABLE TIME DELAY AND FIELD OF VIEW AND COVERAGE REQUIRED FOR THE INSTALLATION.
- B. REFER TO THE DRAWINGS FOR PASSIVE INFARED, ULTRASONIC AND DUAL TECHNOLOGY OCCUPANCY SENSORS REQUIRED FOR LARGER SPACES. PROVIDE A COMPLETE SYSTEM INCLUDING SENSORS, POWER PACKS/RELAYS AND WALL OVERRIDE SWITCHES.

2.4 FLOOR BOXES

- A. REFER TO THE DRAWINGS FOR DESCRIPTION OF REQUIRED FLOOR BOXES IN SLAB ON GRADE OR POKE-THRU INSTALLATIONS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. INSTALL DEVICES PER THE MANUFACTURER'S RECOMMENDATIONS.
- B. LABEL ALL RECEPTACLES INDICATING PANELBOARD AND CIRCUIT NUMBER. INSTALL CLEAR LABEL WITH BLACK TEXT ON THE FACE OF WALL PLATE.

END OF SECTION.

SECTION 262816 - ENCLOSED SWITCHES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 SAFETY SWITCHES

- A. SAFETY AND DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, QUICK-MAKE, QUICK-BREAK FUSED OR NON-FUSIBLE WITH RATINGS AND SIZES AS NOTED ON PLANS AND REQUIRED BY CODES.
- B. SWITCHES SHALL BE WEATHERPROOF IN OUTDOOR LOCATION OR AS REQUIRED BY LOCAL CODES.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. COORDINATE ALL CONTROL DEVICES WITH MECHANICAL CONTRACTOR. COMBINATION STARTER/DISCONNECT SWITCHES SHALL CONTAIN FUSIBLE SWITCHES AND ONLY USED WHERE INDICATED ON DRAWINGS.

END OF SECTION.

SECTION 264313 - SURGE SUPPRESSION DEVICE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.
- B. ALL SPD'S MUST COMPLY WITH UL 1449 3RD ADDITION.

PART 2 - PRODUCTS

2.1 SERVICE ENTRANCES

- A. PROVIDE CURRENT TECHNOLOGY "TRANSGUARD", OR EQUAL, WITH L-N, L-G, N-G, AND L-L PROTECTION. UNIT SHALL HAVE A SINGLE SURGE CURRENT CAPACITY PER MODE OF 200,000 AMPS, 400,000 AMPS PER PHASE, AND HAVE REPETITIVE SURGE CURRENT CAPACITY PER MODE OF 6,500 IMPULSES.
- B. PROVIDE SEPARATE NEMA 1 ENCLOSURES FOR SURFACE MOUNTING NEXT TO MAIN SERVICE EQUIPMENT.

2.2 PANELBOARD PROTECTION

- A. PROVIDE CURRENT TECHNOLOGY "TRANSGUARD", OR EQUAL, WITH L-N, L-G, N-G, AND L-L PROTECTION. UNIT SHALL HAVE A SINGLE SURGE CURRENT CAPACITY PER MODE OF 100,000 AMPS, 200,000 AMPS PER PHASE, AND HAVE REPETITIVE SURGE CURRENT CAPACITY PER MODE OF 4,500 IMPULSES.
- B. PROVIDE SEPARATE NEMA 1 ENCLOSURES FOR SURFACE OR FLUSH MOUNTING NEXT TO MAIN SERVICE EQUIPMENT.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. INSTALL TVSS PER THE MANUFACTURER'S RECOMMENDATIONS USING LEADS AS SHORT AS POSSIBLE.

END OF SECTION.

SECTION 265100 - LIGHTING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

2.1 LIGHT FIXTURES

- A. PROVIDE LIGHT FIXTURES, LAMPS AND DRIVERS AS SHOWN IN THE FIXTURE SCHEDULE ON THESE AND THE ARCHITECTURAL DRAWINGS.
- B. LED FIXTURES SHALL COMPLY WITH UL 1598.
- C. FIXTURES SHALL BE PAINTED AFTER FABRICATION.
- 2.2 DRIVERS FOR LED LUMEN PACKAGES/MODULES
 - ELECTRONIC, CONSTANT CURRENT, CLASS 1 DRIVER WITH THE FOLLOWING CHARACTERISTICS AND REQUIREMENTS:
 - A. NEMA SSL 1, UL 8759.
 - B. CLASS A SOUND RATING.
 - C. 85% MINIMUM EFFICIENCY AT FULL LOAD.
 - D. OUTPUT RATED CURRENT TO MATCH LED LUMEN PACKAGE/MODULE.
 - E. MINIMUM 0.95 POWER FACTOR AT MAX LOAD, OR 0.90 POWER FACTOR OVER FULL DIMMING RANGE
 - F. INTEGRAL SHORT CIRCUIT, OPEN CIRCUIT AND OVERLOAD PROTECTION
 - G. NO HIGHER THAN 20% TOTAL HARMONIC DISTORTION
 - H. COMPLY WITH FCC47 CFR PART 15
 - I. 0-10V DIMMABLE CONTROL, AS APPLICABLE

2.3 LED LUMEN PACKAGES/MODULES

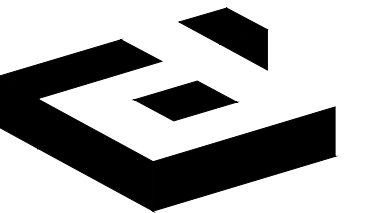
- LED LUMEN PACKAGES/MODULES SHALL HAVE THE FOLLOWING CHARACTERISTICS AND REQUIREMENTS:
 - A. 50,000 HOURS MINIMUM LIFE, USING AN L70 LUMEN MAINTENANCE VALUE, CALCULATED BY IES TM-21. IES LM-80 SPECIFIED DATA SHALL BE USED FOR THE MODULE DRIVER COMBINED SYSTEM.
 - B. THE MODULES SHALL BE INSTALLED AS PART OF A LUMINAIRE THAT IS TESTED TO IES LM-79 AND LM-80 STANDARDS.
 - C. MINIMUM CRI OF 80 AND APPROVED R9 REFERENCE SAMPLE.
 - D. CORRELATED COLOR TEMPERATURE AND LUMEN OUTPUT AS LISTED IN THE DRAWINGS' LIGHT FIXTURE SCHEDULES.
 - E. HIGH POWER, WHITE LIGHT OUTPUT UTILIZING PHOSPHOR CONVERSION PROCESS OR MIXED SYSTEM OF COLORED LEADS, TYPICALLY RED, GREEN AND BLUE.
 - F. COLOR CONSISTENCY UTILIZING A BINNING TOLERANCE WITH A 3-STEP McADAM ELLIPSE.

PART 3 - EXECUTION

3.1 INSTALLATION

- THIS CONTRACTOR SHALL FURNISH ADDITIONAL AUXILIARY SUPPORT STEEL HANGER WIRES ADEQUATELY SIZED TO SUPPORT THE WEIGHT OF THE FIXTURE FASTENED TO THE BUILDING STRUCTURE (MINIMUM TWO PER FIXTURE) FOR ALL FIXTURES IN LAY-IN CEILING AND OTHER FIXTURES AS REQUIRED BY THE OWNER AND LOCAL CODE OFFICIALS. FURNISH AND INSTALL APPLICABLE FIRE RATED DRYWALL BOXES OVER RECESSED FIXTURE IN FIRE RATED CEILINGS AS REQUIRED BY CODES. FIELD COORDINATE AS REQUIRED TO AVOID CONFLICTS.

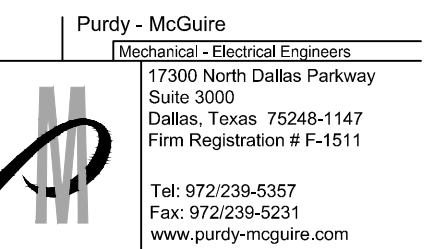
END OF SECTION.



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ARCHITECT/ENGINEER



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PMI JOB NO. 24006002
PROJECT MGR. TODD JOHNSON

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SEAL



PROJECT NUMBER: 555-012

DRAWN BY: LAC

CHECKED BY: MW

R.S.F.: 2,430

BILLINGSLEY
COMPANY

CYPRESS WATERS
BURDETTE
BECKMANN INC.

8840 CYPRESS WATERS
BLVD., SUITE #180
DALLAS, TX 75019

NO.	REVISIONS:	DATE:

CLIENT/LANDLORD ISSUE DATE: 03/26/2024
BID ISSUE DATE: 03/26/2024
PERMIT ISSUE DATE: 03/26/2024
CONSTRUCTION ISSUE DATE: 03/26/2024

DRAWING TITLE:

ELECTRICAL
SPECIFICATIONS 2 OF 2

DRAWING NUMBER:

E1.02

GENERAL NOTES:

- A. ALL WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, RULES, REGULATIONS AND REQUIREMENTS.
- B. ALL WORK SHALL COMPLY WITH THE BUILDING TENANT CONSTRUCTION GUIDE. COORDINATE WITH BUILDING MANAGEMENT/OWNER FOR ACCESS TO ANY TENANT LEASE SPACES THAT MIGHT BE REQUIRED FOR THE INSTALLATION. UNLESS DIRECTED BY LANDLORD ALL EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR 1 YEAR.
- C. EXISTING CONDITIONS ARE BASED ON INFORMATION PROVIDED BY SITE SURVEY HOWEVER, IT IS NOT INTENDED TO BE A TRUE REPRESENTATION OF ACTUAL CONDITIONS. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO ASCERTAIN EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO BID.
- D. PIPING LAYOUT IS SCHEMATIC, EXACT LOCATION OF PIPES TO BE COORDINATED WITH BUILDING STRUCTURE AND WORK OF OTHER CONTRACTORS.
- E. CONTRACTOR SHALL COORDINATE PLUMBING ROUGH-IN WITH ARCHITECTURAL DRAWINGS TO PROVIDE EXACT PLUMBING LOCATION FOR FIXTURES.
- F. COORDINATE EXACT LOCATION OF ALL WATER AND DRAIN CONNECTIONS FOR EQUIPMENT PROVIDED BY OTHERS.
- G. RUN ALL WATER LINES LEVEL.
- H. THIS CONTRACTOR IS TO PROVIDE ALL ADDITIONAL STEEL, HANGER MATERIALS, RODS AND CLAMPS AS REQUIRED FOR COORDINATION WITH WORK OF OTHER TRADES.
- I. SUPPORT CAST IRON SANITARY PIPING NOT IN EARTH, ON 5'-0" CENTERS, ALL STEEL PIPING ON 10'-0" CENTERS AND COPPER PIPING ON 8'-0" CENTERS.
- J. THIS CONTRACTOR IS RESPONSIBLE FOR FIRESTOPPING AT ALL PLUMBING RELATED PENETRATIONS OF FIRE AND SMOKE RATED STRUCTURES, FLOORS AND PARTITIONS. REFER TO ARCHITECTURAL FLOOR PLANS FOR LOCATIONS OF ALL RATED STRUCTURES.
- K. ALL FIXTURES TO BE EQUIPPED WITH STOP VALVES IN ACCESSIBLE LOCATION.
- L. CONTRACTOR SHALL PROVIDE SHUT-OFF VALVE AT EACH BRANCH LINE CONNECTING TO THE MAIN. PROVIDE BRASS VALVE TAGS WITH DOCUMENTATION IN CLOSEOUT DOCUMENTS.
- M. PROVIDE A SHUT-OFF VALVE ON THE TOP OF EVERY WATER DOWN-FED PIPE PER IPC 606.1
- N. MAIN WATER SHUT OFF VALVES SHALL BE ACCESSIBLE.
- O. PROVIDE ACCESSIBLE CLEANOUTS AT NOT MORE THAN 50 FEET APART IN HORIZONTAL SANITARY DRAINAGE LINES 4" SIZE OR LESS, AND NOT MORE THAN 100 FEET APART FOR LARGER PIPES.
- P. PROVIDE ACCESSIBLE CLEANOUTS AT BASE OF ALL SANITARY STACKS AND OTHER PLACES AS REQUIRED BY CODE.
- Q. WATER HEATER SHALL HAVE BOTH WATER AND ELECTRICAL SHUT-OFFS AT EASILY ACCESSIBLE LOCATIONS.
- R. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF ALL ABANDONED PLUMBING LINES.
- S. PLUMBING CONTRACTOR SHALL X-RAY SLAB PRIOR TO ANY CORE-DRILLING. COORDINATE WITH BUILDING MANAGEMENT FOR AFTER-HOURS ACCESS TO SPACE.
- T. REFER TO PLUMBING RISER DIAGRAMS FOR PIPING SIZES NOT SHOWN ON PLAN.
- U. IT IS THE INTENTION OF THESE DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION WHENEVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN "FURNISH AND INSTALL, COMPLETE AND READY TO USE".
- V. MATERIAL USED FOR INSULATION, ACOUSTICAL LININGS, ADHESIVES, JACKETS AND COATINGS, AND COMBINATIONS OF THESE MATERIALS, SHALL EACH HAVE A FLAME SPREAD RATING OF 25 OR LESS, AND A SMOKE DEVELOPED RATING OF 50 OR LESS, AS DETERMINED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH NFPA-255

FIRE PROTECTION PERFORMANCE SPECIFICATION:

- A. MODIFY THE EXISTING WET PIPE FIRE SPRINKLER SYSTEM AS REQUIRED FOR THE NEW TENANT LAYOUT INCLUDING RELOCATING PIPING TO CLEAR NEW DUCTWORK, ADDING NEW HEADS, RELOCATING EXISTING HEADS, AND LEAVING CERTAIN EXISTING HEADS IN PLACE. THE SPRINKLER DESIGN SHALL COMPLY WITH NFPA 13, THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION AND THE REQUIREMENTS OF THE OWNER'S INSURANCE COMPANY.
- B. EXISTING SPRINKLER HEADS TO BE RELOCATED, EXISTING PIPING WHICH IS REMOVED IN THE MODIFICATION WORK SHALL NOT BE REUSED. NEW SPRINKLER PIPING SHALL BE ROUTED AS REQUIRED TO CLEAR NEW DUCTWORK, EXISTING DUCTWORK TO REMAIN. LIGHT FIXTURES, STRUCTURAL INTERFERENCES, ETC.
- C. THE NEW SPRINKLER HEADS SHALL MATCH EXISTING SPRINKLER HEADS.
- D. ALL PIPING SHALL BE SCHEDULE 40 WITH USA FITTINGS.
- E. IN ALL GYP. BOARD CEILING AREA, PROVIDE CONCEALED SPRINKLER HEADS WITH CAPS TO BE FACTORY PAINTED TO MATCH CEILING. ALL SPRINKLER HEADS IN LAY-IN CEILING SHALL BE LOCATED IN CENTER OF TILE AND ALIGNED WITH LIGHT FIXTURES.
- F. SPRINKLER CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF CALCULATIONS AND SPRINKLER HEAD LOCATIONS FOR ARCHITECT TO REVIEW PRIOR TO ANY INSTALLATION. NO EXCEPTION TAKEN.
- G. ALL SPRINKLER HEADS IN EXPOSED CEILING SHALL BE TURNED TO THE UPRIGHT POSITION AND REPLACE HEADS IF REQUIRED.
- H. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL APPLICABLE CODES, REQUIREMENTS BY THE LOCAL AUTHORITY HAVING JURISDICTION, AND OWNER STANDARDS FOR CONSTRUCTION AND OPERATION OF FIRE SUPPRESSION SYSTEMS. ANY CHANGES TO THE FINAL INSTALLATION DUE TO THE CONTRACTOR NOT HAVING BEEN AWARE OF ANY OF THE ABOVE, SHALL BE MADE AT NO COST TO THE OWNER.

PLUMBING SYMBOLS

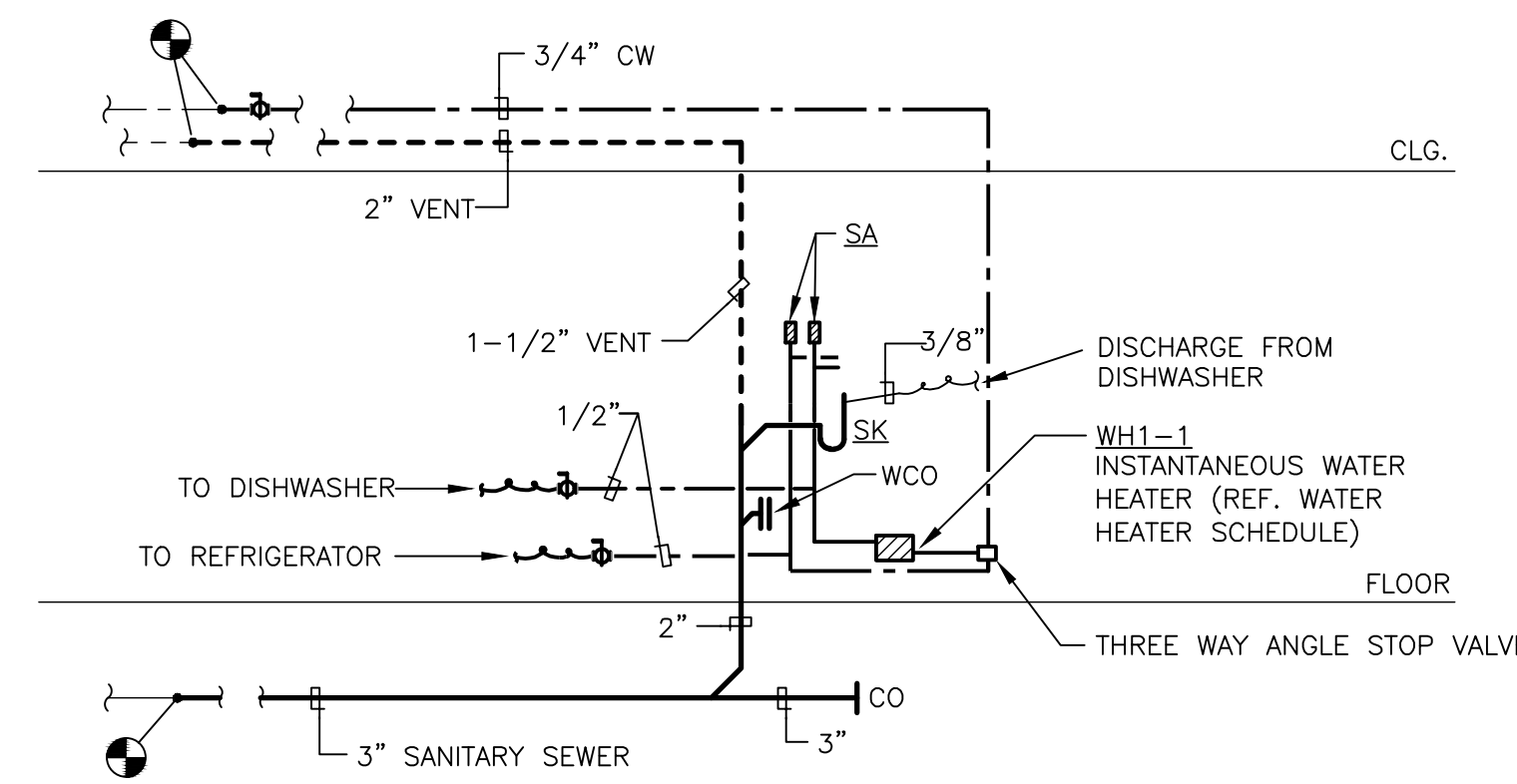
SYMBOL	DESCRIPTION
	SANITARY SEWER
	VENT
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DRAIN PIPING
	CLEAN OUT
	PIPING DOWN
	PIPING UP -OR- PIPING UP & DOWN
	CAP ON END OF PIPE
	DIRECTION OF FLOW
	ASME TEMPERATURE & PRESSURE RELIEF VALVE
	BALL VALVE
	UNION
	CONNECTION TO EXISTING

PLUMBING INSULATION SCHEDULE

APPLICATION	INSULATION		INSULATION FINISH (OR PIPE FINISH IF NO INSULATION PRESENT)		
	INSULATION TYPE	INSULATION THICKNESS	INDOOR CONCEALED	INDOOR EXPOSED (B)	OUTDOOR (E)
DOMESTIC COLD WATER PIPING (D)					
INDOOR: PIPE DIAMETER 1-1/4" & SMALLER	6i	1/2"	8F	5F	NA
INDOOR: PIPE DIAMETER 1-1/2" & LARGER	6i	1"	8F	5F	NA
DOMESTIC HOT WATER PIPING					
INDOOR: PIPE DIAMETER 1-1/4" & SMALLER	6i	1"	8F	5F	NA
COLD CONDENSATE DRAIN LINES					
INDOOR OR OUTDOOR: EXPOSED OR CONCEALED, ALL SIZES	6i (A)	1/2"	8F	5F	9F
VENT PIPING					
INDOOR: EXPOSED (B)(C), ALL SIZES	6i (A) (B)	1/2"	NA	5F (B)	NA

- NOTES:**
- A. CELLULAR FOAM MAY BE SUBSTITUTED
 - B. THIS INCLUDES BUT IS NOT LIMITED TO, PIPING EXPOSED IN MECHANICAL ROOMS, PIPING IN OPEN CEILING EXPOSED TO THE PUBLIC OR PRIVATE PERSONNEL, OR EXPOSED PIPING DOWN KITCHENS WALLS, ETC.
 - C. INSULATION ON INDOOR EXPOSED SANITARY PIPING IS FOR AESTHETIC APPEAL ONLY AND ONLY PROVIDED AT THE DIRECTION OF THE ARCHITECT IN VERY LIMITED LOCATIONS. THE CONTRACTOR SHALL ONLY PROVIDE THIS INSULATION WHERE IT IS SPECIFICALLY CALLED OUT ON THE PLUMBING FLOOR PLANS. IF NOT INDICATED ON THE PLUMBING FLOOR PLANS, THE CONTRACTOR SHALL TREAT INDOOR EXPOSED SANITARY PIPING THE SAME WAY INDOOR CONCEALED SANITARY PIPING IS TREATED IN THIS SCHEDULE. REFER TO THE PLUMBING FLOOR PLANS FOR LOCATIONS. REFER TO THE ARCHITECTURAL PLANS FOR COLOR SELECTIONS.
 - D. ALL PROCESS WATER PIPES SHALL BE INSULATED TO THE SAME LEVEL AS THE DOMESTIC COLD WATER LISTED IN THE SCHEDULE ABOVE. THIS INCLUDES, BUT IS NOT LIMITED TO, DEIONIZED (DI) WATER, FILTERED WATER, REVERSE OSMOSIS (RO) WATER, ETC. IF PRESENT.
 - E. OUTDOORS INCLUDES ANY UNHEATED AREAS. REFER TO THE HEAT TRACE DETAIL FOR MORE DETAIL DESCRIPTIONS OF LOCATIONS CONSIDERED OUTDOORS.

- INSULATION MATERIALS:**
- 6i. FIBERGLASS PIPE INSULATION - MAXIMUM K FACTOR AT 100 DEGREES F SHALL BE 0.24, MUST PASS ASTM C411 TO 850 DEGREES
- FINISH TYPES**
- 5F. 20-MIL PVC (25 FLAME SPREAD AND 50 SMOKE DEVELOPED.)
 - 8F. WHITE ALL-SERVICE JACKET (VAPOR BARRIER).
 - 9F. WATER BASED LATEX ENAMEL WEATHER RESISTANT AND UV RESISTANT FINISH EQUAL TO ARMAFLEX WB FINISH.



1 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE

PLUMBING FIXTURE SCHEDULE

DESIGNATION	FIXTURE	MANUFACTURER AND MODEL NO.	DESCRIPTION, TRIM AND NOTES
SK	SINK	ELKAY ELUHAD211555 WITH DELTA TRINSIC 9159-AR-DST FAUCET	SINGLE COMPARTMENT UNDERMOUNT LUSTERSTONE 18 GAUGE TYPE 304 STAINLESS STEEL, 5-3/8" DEEP SINK WITH PERFECT DRAIN ASSEMBLY. PROVIDE SINGLE HANDLE, SWIVEL PULL DOWN FAUCET/SPRAYER PROVIDING 1.8 GPM. PROVIDE CHROME PLATED CAST P-TRAP WITH CLEANOUT, CHROME PLATED FLEX SUPPLIES, WALL STOPS AND WALL ESCUTCHEONS. PROVIDE TRUEBRO INSULATION KIT IF NEEDED FOR ADA COMPLIANCE.
SA	SHOCK ARRESTOR	WATTS DRAINAGE SG SERIES	WROUGHT COPPER SHELL SIZE AND LOCATE IN ACCORDANCE WITH P.D.I. STANDARDS.

ELECTRICAL WATER HEATER SCHEDULE

WATER HEATER DESIGNATION	SERVES	INPUT	ELECTRICAL			STORAGE GALLONS	RECOVERY GPH/GPM	DEGREE °F RISE	WATER TEMP AVG °F	EQUAL TO MANUFACTURER	NOTES
			VOLTAGE	PHASE	FLA						
WH1-1	BREAK	11080 WATTS	277	1	40.0	NA	1 GPM	75	---	CHRONOMTE INSTA-FLOW MICRO CM-40L	NOTE 1

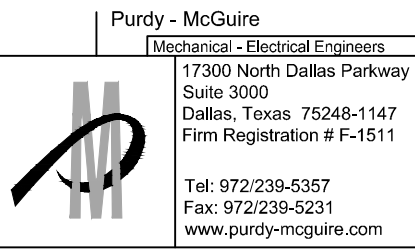
PLUMBING NOTES:

- SUPPLY SET POINT TEMPERATURE SHALL BE 110°F WHICH SHALL BE PRESET AT FACTORY.



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SEAL



PROJECT NUMBER: 555-012
DRAWN BY: LAC
CHECKED BY: MW
R.S.F.: 2,430



CYPRESS WATERS
BURDETTE
BECKMANN INC.

8840 CYPRESS WATERS BLVD., SUITE #180
DALLAS, TX 75019

NO.	REVISIONS:	DATE:

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 CONSTRUCTION ISSUE DATE: 03/26/2024

DRAWING TITLE:

PLUMBING NOTES & SYMBOLS

DRAWING NUMBER:

P0.01



ARCHITECT/ENGINEER

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Mechanical - Electrical Engineers

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PMI JOB NO: 24006002
PROJECT MGR: TODD JOHNSON

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CYPRESS WATERS
 BURDETTE
 BECKMANN INC.

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BLVD., SUITE #180
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DRAWING TITLE:
PLUMBING SPECIFICATIONS

DRAWING NUMBER:
P1.01

DIVISION 22 - PLUMBING

SECTION 220500 - COMMON WORK RESULTS

PART 1 - GENERAL

- 1.1 GENERAL NOTES
 - A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 22.
 - B. THE CONTRACTOR FOR THIS DIVISION OF WORK IS REQUIRED TO OBTAIN A COMPLETE SET OF BID DOCUMENTS (DRAWINGS AND SPECIFICATIONS) AND FULLY REVIEW THEM. COORDINATE DIVISION 22 WORK WITH THAT OF ALL OTHER DIVISIONS OF WORK.
 - C. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. ANY LABOR OR MATERIAL CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY LABOR OR MATERIAL WHICH IS NEITHER SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY REQUIRED TO COMPLETE THE WORK, AND WHICH IS NORMALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS CONTRACT.
 - D. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE COMPLETION AND INSPECTION OF THIS WORK TO COMPLY WITH THE OWNER'S SCHEDULE AND PROJECT COMPLETION DATE.
- 1.2 SCOPE OF WORK
 - A. THE DESCRIPTION OF GENERAL CONDITION WORK IN THIS DIVISION SHALL ALSO APPLY TO DIVISIONS 21 AND 23.
 - B. THIS CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE FIRE PROTECTION, PLUMBING AND HVAC SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED BY JOB CONDITIONS. WORK IS TO BE COMPLETE IN EVERY RESPECT, WHETHER SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS OR NOT.
 - C. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER (BUILDING OWNER, LANDLORD OR TENANT), SHALL BE PROVIDED BY THIS CONTRACTOR.
 - D. THIS WORK, MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:
 - a. FIRE PROTECTION MODIFICATIONS AND ADDITIONS INCLUDING, BUT LIMITED TO PIPING, SPRINKLER HEADS AND CONTROL VALVES
 - b. PLUMBING WORK INCLUDING, BUT NOT LIMITED TO WASTE AND VENT PIPING, DOMESTIC WATER SERVICE AND DISTRIBUTION, PLUMBING FIXTURES, WATER HEATERS AND ROUGH-IN CONNECTION TO EQUIPMENT FURNISHED BY THE OWNER OR OTHER SECTIONS OF THE SPECIFICATIONS.
 - c. HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS INCLUDING, BUT NOT LIMITED TO HEATING AND COOLING UNITS, VENTILATING SYSTEMS, COMPLETE DUCT SYSTEMS, GRILLES REGISTERS AND DIFFUSERS, INSULATION, ACCESSORIES AND TEMPERATURE CONTROL SYSTEMS.
- 1.3 CODES
 - A. ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, STATE, COUNTY, CITY AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THIS CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS. THIS CONTRACTOR SHALL INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS AWARDED, CHANGE ORDERS FOR INCREASED COSTS DUE TO CODE ISSUES WILL NOT BE ACCEPTED UNLESS ALLOWANCES HAVE BEEN PREVIOUSLY AGREED UPON.
 - B. WHERE THE DRAWINGS AND SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODE OR THE OWNER'S CRITERIA, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS.
- 1.4 LICENSES, PERMITS, INSPECTIONS AND FEES
 - A. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS AND FEES REQUIRED OR RELATED TO THIS WORK. ALL COSTS ASSOCIATED WITH THESE SHALL BE PAID FOR BY THE CONTRACTOR AND INCLUDED AS PART OF THE BID.
 - B. FURNISH TO THE OWNER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT THE COMPLETION OF THE PROJECT.
- 1.5 GUARANTEE
 - A. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF 1 YEAR FROM THE DATE OF ACCEPTANCE (OFFICIAL DATE IN WRITING) OF THIS PROJECT. ALL WORK FOUND TO BE DEFECTIVE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
 - B. WHERE SPECIFIC EQUIPMENT IS NOTED TO HAVE EXTENDED WARRANTIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER REGISTRATION SO THE OWNER CAN MAKE ALL APPROPRIATE CLAIMS.
- 1.6 RECORD DRAWINGS
 - A. THIS CONTRACTOR SHALL MAINTAIN ONE SET OF DRAWINGS ON THE JOBSITE, UPDATED WEEKLY, TO RECORD ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS SUCH AS:
 - a. LOCATIONS OF CONCEALED PIPING AND DUCTS
 - b. REVISIONS, ADDENDUMS AND CHANGE ORDERS
 - c. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.
 - B. DELIVER RECORD DRAWINGS TO THE OWNER AT PROJECT COMPLETION.
- 1.7 DEMOLITION
 - A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY THE GENERAL CONTRACTOR. COORDINATE WITH THE GENERAL CONTRACTOR ALL EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT.
 - B. THIS CONTRACTOR SHALL INCLUDE AND BE RESPONSIBLE FOR THE REMOVAL OF ALL FIRE PROTECTION, PLUMBING AND HVAC SYSTEMS NOTED ON THE DRAWINGS OR REQUIRED TO ACCOMPLISH THE STATED WORK.

PART 2 - PRODUCTS

- 2.1 MATERIALS
 - A. MATERIALS UTILIZED IN THE CONSTRUCTION OF THIS PROJECT SHALL BE NEW AND CARRY UL LABELS WHERE APPLICABLE, UNLESS APPROVED BY THE OWNER.
 - B. ANY USED EQUIPMENT OR MATERIALS USED SHALL STILL CARRY THE SPECIFIED 1 YEAR GUARANTEE AND APPROVAL OF THE USE OF THIS EQUIPMENT OR MATERIALS DOES NOT RELIEVE THE CONTRACTOR FROM ENSURING EVERYTHING IS OPERATIONAL.
- 2.2 MANUFACTURERS
 - A. WHERE TRADE NAMES OR MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE CONSIDERED THE BASIS OF DESIGN AND USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED, WILL BE SUBJECT TO APPROVAL IN WRITING BY THE ENGINEER THROUGH THE SHOP DRAWING SUBMITTAL PROCESS, FOR ACCEPTANCE PRIOR TO INSTALLATION. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- 2.3 SLEEVES
 - A. PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2 INCHES ABOVE THE FLOOR.
 - B. CONTRACTOR SHALL COORDINATE THROUGH THE GENERAL CONTRACTOR AND OWNER ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY WALLS OR CONCRETE FLOORS.
 - C. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND FLOORS SHALL BE FIRED SEALED. REFER TO "FIRE STOPPING"
 - D. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE MINIMUM NO. 22 USG GALVANIZED STEEL.
- 2.4 FLAME SPREAD PROPERTIES OF MATERIALS
 - A. MATERIALS USED ON THIS PROJECT SHALL EACH HAVE A FLAME SPREAD RATING OF 25 OR LESS, AND A SMOKE DEVELOPED RATING OF 50 OR LESS, AS DETERMINED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH NFPA-255.
- 2.5 FIRE STOPPING
 - A. PROVIDE FIRE STOPPING IN SEALING OF PENETRATIONS IN FIRE-RATED CONSTRUCTION, HORIZONTAL AND VERTICAL, INCLUDING THE FOLLOWING MATERIALS:
 - a. FOAM: DOW CORNING FIRESTOP SILICONE RTV FOAM, CAT #2001 LIQUID COMPONENT PART A (BLACK) AND LIQUID COMPONENT PART B (OFF-WHITE).
 - b. SEALANT: 3M 1000 NS AND 1003 SL SILICONE ADHESIVE SEALANT.
 - c. DAMMING MATERIALS: MINERAL FIBERBOARD, MINERAL FIBER MATTING, MINERAL FIBER PUTTY, PLYWOOD OR PARTICLE BOARD, AS SELECTED BY THE APPLICATOR.
 - B. MIXES SHALL CONFORM TO THE MANUFACTURER'S DIRECTIONS.
- 2.6 FLOOR, CEILING AND WALL PLATES
 - A. PROVIDE CHROME-PLATED, ONE-PIECE, ESCUTCHEONS ON PIPES AND HANGER RODS PENETRATING WALLS, FLOORS AND CEILINGS IN FINISHED AREAS OF THE BUILDING. SPLIT RING ESCUTCHEONS ARE NOT ACCEPTABLE.
- 2.7 DIELECTRIC CONNECTIONS
 - A. CONNECTIONS BETWEEN FERROUS AND NON-FERROUS PIPING SYSTEMS, AND BETWEEN FERROUS PIPING SYSTEMS AND NON-FERROUS CONNECTIONS TO EQUIPMENT SHALL BE MADE BY THE USE OF DIELECTRIC UNIONS, COUPLINGS OR FLANGES.
- 2.8 EQUIPMENT FOUNDATIONS AND SUPPORTS
 - A. PROVIDE FOUNDATIONS AND SUPPORTS FOR MECHANICAL EQUIPMENT AS REQUIRED. THESE SHALL INCLUDE REINFORCED CONCRETE HOUSEKEEPING PADS FOR ANY PUMPS OR AIR HANDLING UNITS INSTALLED INDOORS ON THE FLOOR. PADS SHALL EXCEED A MINIMUM OF 3 INCHES BEYOND EQUIPMENT IN ALL DIRECTIONS.

PART 3 - EXECUTION

- 3.1 SPACE AND EQUIPMENT ARRANGEMENT
 - A. EACH CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT THEIR PURCHASED EQUIPMENT WILL FIT THE SPACES AVAILABLE. IN CERTAIN INSTANCES NOTE THAT THE EQUIPMENT IS MENTIONED BY NAME IN THE EQUIPMENT SCHEDULES. IN THESE CASES IT IS THAT EQUIPMENT WHOSE DIMENSIONS AND CONNECTION ARRANGEMENTS HAVE BEEN USED FOR THE PREPARATION OF THE LAYOUTS SHOWN ON THE WORKING DRAWINGS. SHOULD THE USE OF EQUIPMENT BY OTHER APPROVED MANUFACTURERS OR OF OTHER PHYSICAL SHAPE THAN THOSE SHOWN ON THE DRAWINGS BE PROPOSED, THE CONTRACTOR SHALL CONFIRM THE EQUIPMENT WILL FIT WITHIN THE ALLOTTED SPACE WITHOUT ARCHITECTURAL, MODIFICATIONS OR IMPACT ON OTHER TRADES.
 - B. ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. PROVIDE SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.
 - C. BEFORE STARTING WORK THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, POWER, LIGHTING AND FIRE ALARM PLANS, SHOP DRAWINGS AND SPECIFICATIONS TO SEQUENCE, COORDINATE AND INTEGRATE THE VARIOUS ELEMENTS OF THE MECHANICAL SYSTEMS TO AVOID INTERFERENCES AND CONFLICTS.
- 3.2 MANUFACTURER'S DIRECTIONS
 - A. THE MANUFACTURER'S PUBLISHED DIRECTIONS SHALL BE FOLLOWED IN THE DELIVERY, STORAGE, PROTECTION, INSTALLATION, PIPING AND WIRING OF ALL EQUIPMENT AND MATERIAL. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY CONFLICT BETWEEN THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND THE MANUFACTURER'S DIRECTIONS, AND SHALL OBTAIN INSTRUCTIONS BEFORE PROCEEDING WITH THE WORK. SHOULD THE CONTRACTOR PERFORM ANY WORK BEFORE RECEIVING SUCH INSTRUCTIONS, HE SHALL BEAR ALL COSTS ARISING IN CONNECTION WITH THE DEFICIENCIES.
- 3.3 CONSTRUCTION REQUIREMENTS
 - A. THE DRAWINGS AND SPECIFICATIONS SHOW PIPE AND DUCT SIZES, GENERAL ROUTING AND LOCATION, AND DESCRIBE THE VARIOUS SYSTEMS. THESE DOCUMENTS DESCRIBE AND SIZE EQUIPMENT, ITS GENERAL LOCATION, USAGE, SUPPORT AND AUXILIARY REQUIREMENTS. THEY DESCRIBE MOST, BUT NOT ALL OF THE MATERIALS AND THEIR USAGE FOR THIS PROJECT.
 - B. CONTRACT DOCUMENTS DO NOT DETAIL ALL JOB REQUIREMENTS. THEY DO NOT SHOW LAYOUTS, LOCATIONS OR ELEVATIONS OF DUCTS, ANCHORS, SLEEVES, HANGERS, UNDERFLOOR DRAINS, OR ACCESS DOORS. THEY DO NOT SHOW FINAL PRECISE LOCATIONS OF EQUIPMENT BY DIMENSIONS IN ALL INSTANCES.
 - C. THE EXACT LOCATION OF EACH ITEM SHALL BE DETERMINED BY REFERENCE TO THE PROJECT CONTRACT DRAWINGS, AND TO DETAILS, EQUIPMENT DRAWINGS, AND ROUGH-IN DRAWINGS, BY MEASUREMENTS AT THE BUILDING, AND IN COOPERATION WITH THE VARIOUS TRADES. MINOR RELOCATION NECESSITATED BY THE CONDITIONS AT THE SITE OR DIRECTED BY THE OWNER SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. WHERE CONFLICTS OCCUR, WORK WITH ALL INVOLVED TRADES AND RESOLVE THE CONFLICT PRIOR TO ERECTION OF ANY WORK IN THE AREA INVOLVED.
- 3.4 FABRICATION OF PIPE
 - A. PIPING SHALL FOLLOW AS CLOSELY AS POSSIBLE THE ROUTES SHOWN ON THE DRAWINGS, TAKING INTO CONSIDERATION CONDITIONS TO BE MET AT THE SITE.
 - B. SHOULD ANY UNFORSEEN CONDITIONS ARISE, PIPING SHALL BE CHANGED OR REROUTED AS REQUIRED AFTER PROPER APPROVAL HAS BEEN OBTAINED BY OWNER.
 - C. PIPING SHALL BE CLEANED WHEN IT IS INSTALLED. BEFORE INSTALLATION IT SHALL BE CHECKED, UP ENDED, SWABBED IF NECESSARY, AND ANY RUST AND DIRT REMOVED.
- 3.5 EQUIPMENT FOUNDATIONS, HANGERS AND SUPPORTS
 - A. FOR FLOOR MOUNTED MECHANICAL EQUIPMENT, PROVIDE CONCRETE HOUSEKEEPING PADS NOT LESS THAN 3-1/2 INCH THICK REINFORCED WITH NO. 3 DOWELS AND NO. 3 BARS, 2 FEET-0 INCHES ON CENTER EACH WAY.
 - B. SUSPENDED EQUIPMENT SHALL HAVE SUPPORTS CONSISTING OF MANUFACTURED METAL FRAMING OR HANGERS CONFORMING TO SECTION 220529.
- 3.6 INSTRUCTIONS OF OWNER'S PERSONNEL
 - A. PROVIDE THE SERVICES OF COMPETENT ENGINEERS OR TECHNICIANS TO INSTRUCT REPRESENTATIVES OF THE OWNER IN COMPLETE AND DETAILED OPERATION AND MAINTENANCE OF EACH ITEM OF EQUIPMENT AND EACH SYSTEM.
 - B. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROPER MAINTENANCE OF EQUIPMENT AND SYSTEMS UNTIL THE INSTRUCTIONS HAVE BEEN GIVEN BY THE OWNER'S PERSONNEL AND THE LETTER OF RELEASE ACKNOWLEDGED.
 - C. PROVIDE OPERATION & MAINTENANCE MANUALS (3 COPIES), ALONG WITH AS-BUILT SET OF PRINTS PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT.
- 3.7 ELECTRIC WIRING OF MOTORS AND EQUIPMENT
 - A. LOW VOLTAGE HVAC CONTROL WIRING WILL BE INSTALLED BY THE HVAC CONTRACTOR WITH FINAL CONNECTION TO THE HVAC EQUIPMENT BY THE HVAC CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL DISCONNECT SWITCHES AS REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT UNLESS SUCH EQUIPMENT IS SPECIFIED TO BE PROVIDED WITH FACTORY MOUNTED DISCONNECT SWITCHES.
 - B. THE ELECTRICAL DESIGN AND DRAWINGS ARE BASED ON THE EQUIPMENT SCHEDULED AND SHOWN ON THE DRAWINGS, SHOULD ANY CONTRACTOR SUBMIT FOR APPROVAL EQUIPMENT REQUIRING CHANGES TO THE ELECTRICAL DESIGN FOR WHICH THE ELECTRICAL CONTRACTOR WILL REQUEST AN EXTRA, THIS EXTRA SHALL BE PAID BY THE CONTRACTOR PROVIDING THE ALTERNATE EQUIPMENT REQUIRING THE CHANGE.
- 3.8 QUIET OPERATION
 - A. THIS WORK SHALL BE INSTALLED IN SUCH A MANNER THAT UNDER ALL CONDITIONS OF LOAD IT SHALL OPERATE WITHOUT SOUND OR VIBRATION, WHICH IS OBJECTIONABLE IN THE OCCUPIED SPACES IN THE OPINION OF THE OWNER. IN THE CASE OF MOVING MACHINERY, SOUND OR VIBRATION ANNOYINGLY NOTICEABLE INSIDE ITS OWN ROOM CAN BE CONSIDERED AS OBJECTIONABLE. IN ANY CASE, SITUATION SHALL BE REMEDIATED AT NOT COST TO THE OWNER.
- 3.9 CUTTING AND PATCHING
 - A. PROVIDE ALL CUTTING, CHASING AND CHANNELING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL FROM ARCHITECT AND OWNER.
 - B. ALL PATCHING SHALL BE BY GENERAL CONTRACTOR AND SHALL MATCH THE SURROUNDING SURFACES.
- 3.10 TESTS
 - A. THE CONTRACTOR INSTALLING THE PLUMBING SYSTEMS SHALL FOLLOW ALL TESTS AS REQUIRED TO PROVE COMPLIANCE WITH ALL LOCAL CODES. TESTS PERFORMED SHALL BE EQUAL TO OR EXCEED THAT HEREINAFTER SPECIFIED. ALL PIPING SYSTEMS SHALL BE TESTED BEFORE THEY ARE COVERED OR MADE UNAVAILABLE FOR THE COMPLETE INSPECTION OF ALL JOINTS. IN ADDITION TO THE ABOVE, EACH AND EVERY SYSTEM TO BE INSULATED SHALL BE THOROUGHLY TESTED BEFORE THE INSTALLATION IS APPLIED.
 - B. DOMESTIC WATER PIPING SYSTEM: UPON COMPLETION OF A SECTION OF THE ENTIRE WATER SUPPLY SYSTEM, IT SHALL BE TESTED AND PROVED TIGHT UNDER A WATER PRESSURE OF 125 PSIG, BUT NOT LESS THAN 10 PERCENT IN EXCESS OF THE WORKING PRESSURE UNDER WHICH IT IS TO BE USED. THE WATER USED FOR TESTS SHALL BE OBTAINED FROM A POTABLE SOURCE OF SUPPLY.
 - C. SANITARY SYSTEMS: ALL SANITARY SEWER SYSTEMS SHALL BE TESTED EITHER IN SECTIONS OR IN THEIR ENTIRETY IN ACCORDANCE WITH ALL THE REQUIREMENTS OF THE LOCAL PLUMBING CODE AND TO THE SATISFACTION OF THE LOCAL PLUMBING INSPECTOR. THESE TESTS SHALL BE EXAMINED IF DESIRED BY THE ARCHITECT OR HIS REPRESENTATIVE DURING THE TEST PERIOD AND AMPLE NOTICE OF PERFORMANCE OF THESE TESTS SHALL BE GIVEN.

END OF SECTION.

SECTION 220523 - GENERAL DUTY VALVES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.

PART 2 - PRODUCTS

- 2.1 WATER SYSTEM VALVES
 - A. DOMESTIC, CHILLED, HOT, AND CONDENSER WATER SYSTEMS: PROVIDE VALVES, WHERE SHOWN ON THE DRAWINGS AND ELSEWHERE AS SPECIFIED OR REQUIRED, TO PROVIDE ISOLATION OF EQUIPMENT AND FIXTURES AND TO PROVIDE DRAINAGE OF LOW POINTS IN WATER LINES. VALVES SHALL BE IN ACCORDANCE WITH THE FOLLOWING DETAILED SPECIFICATIONS:
 - a. SIZES 2 INCH AND SMALLER: BALL VALVE: NIBCO 585-70, FULL PORT, BRONZE BODY WITH STAINLESS STEEL TRIM.
 - b. SIZES 2 INCH AND SMALLER: CHECK VALVE: NIBCO S-433 CLASS 150, BRONZE.
 - c. SIZES 2-1/2 INCH AND LARGER: BUTTERFLY VALVE: NIBCO LC2000 LUG STYLE, CAST IRON, 200 PSIG WITH STAINLESS STEEL TRIM AND EPDM SEAT.
 - d. SIZES 2-1/2 INCH AND LARGER: CHECK VALVE: NIBCO F-918-B CAST IRON, FLANGED, 200 PSIG WITH BRONZE TRIM.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. VALVES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND IN SUCH MANNER AS TO PERMIT DISASSEMBLY, REMOVAL, REASSEMBLY AND REPLACEMENT.

END OF SECTION.

SECTION 220529 - HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.

PART 2 - PRODUCTS

- 2.1 GENERAL
 - A. PIPE HANGERS AND SUPPORTS SHALL CONFORM TO THE RECOMMENDATIONS OF ASHRAE, ASPE, ANSI AND MSS.
 - B. PROVIDE FACTORY-FABRICATED PIPE HANGERS AND SUPPORTS IN WHICH MATERIALS, DESIGN AND MANUFACTURE COMPLY WITH ANS/MSS SP-58. SELECT AND APPLY PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH MSS SP-69, AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. FABRICATE AND INSTALL PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH MSS SP-89.
 - C. USE ONLY ONE TYPE OF HANGER AND SUPPORT, BY ONE MANUFACTURER, FOR EACH PIPING SERVICE.
 - D. PROVIDE COPPER-PLATED HANGERS AND SUPPORTS FOR COPPER PIPING SYSTEMS WHERE HANGERS ARE IN CONTACT WITH BARE PIPE.
 - E. PROVIDE PROTECTIVE COATINGS ON HANGERS AND SUPPORTS WHEN LOCATED IN OUTDOOR AND/OR CORROSIVE ENVIRONMENTS. PROTECTIVE COATINGS SHALL BE AS RECOMMENDED BY THE COATING MANUFACTURER'S REQUIREMENTS.
- 2.2 HORIZONTAL PIPING HANGERS AND SUPPORTS
 - A. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING, AND AROUND PIPING INSULATION WITH SADDLE OR SHIELD FOR INSULATED PIPING.
- 2.3 HANGER ROD ATTACHMENTS
 - A. SELECT SIZE OF HANGER ROD ATTACHMENTS TO SUIT HANGER RODS.
- 2.4 BUILDING ATTACHMENTS
 - A. SELECT SIZE AND TYPE OF BUILDING ATTACHMENTS TO SUIT HANGER RODS AND STRUCTURE.
- 2.5 PIPE INSULATION HANGER SHIELD INSERTS AND SHIELDS
 - A. THERMAL HANGER INSERTS SHALL BE DESIGNED TO PREVENT INSULATION FROM BEING CRUSHED BY THE WEIGHT OF THE PIPING AND CONTENTS.
 - B. SHIELDS SHALL BE FIELD OR FACTORY FABRICATED OF GALVANIZED SHEET METAL.

PART 3 - EXECUTION

3.1 PREPARATION

- A. PROCCEED WITH INSTALLATION OF HANGERS, SUPPORTS AND ANCHORS ONLY AFTER REQUIRED BUILDING STRUCTURAL WORK HAS BEEN COMPLETED IN AREAS WHERE THE WORK IS TO BE INSTALLED.
- 3.2 INSTALLATION OF BUILDING ATTACHMENTS
 - A. INSTALL BUILDING ATTACHMENTS AT REQUIRED LOCATIONS, ON STRUCTURE FOR PROPER SUPPORT. SPACE ATTACHMENTS WITHIN MAXIMUM PIPING SPAN LENGTH SPECIFIED IN THIS SECTION. INSTALL ADDITIONAL BUILDING ATTACHMENTS WHERE SUPPORT IS REQUIRED FOR ADDITIONAL CONCENTRATED LOADS, INCLUDING VALVES, FLANGES, GUIDES, STRAINERS AND EXPANSION JOINTS. ALSO PROVIDE ATTACHMENTS AT CHANGES IN DIRECTION OF PIPING AND WHERE REQUIRED BY A LIMITED CARRYING CAPACITY OF THE STRUCTURE.
- 3.3 INSTALLATION OF HANGERS AND SUPPORTS
 - A. INSTALL HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE IN COMPLIANCE WITH MSS SP-69. ARRANGE THE GROUPING OF PARALLEL RUNS OF HORIZONTAL PIPING TO BE SUPPORTED TOGETHER IN TRAPEZE-TYPE HANGERS WHERE POSSIBLE. WHERE PIPING OF VARIOUS SIZES ARE TO BE SUPPORTED TOGETHER BY TRAPEZE HANGERS, SPACE HANGERS FOR SMALLEST PIPE SIZE OR INSTALL INTERMEDIATE SUPPORTS FOR SMALL DIAMETER PIPE. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING, AND DO NOT SUPPORT PIPING FROM OTHER PIPING.
 - B. INSTALL HANGER AND SUPPORTS COMPLETE WITH NECESSARY BOLTS, RODS, NUT WASHERS AND OTHER ACCESSORIES. EXCEPT AS OTHERWISE INDICATED FOR EXPOSED CONTINUOUS PIPE RUNS, INSTALL HANGERS AND SUPPORTS OF SAME TYPE AND STYLE AS INSTALLED FOR ADJACENT SIMILAR PIPING.
 - C. SUPPORT FIRE PROTECTION WATER PIPING INDEPENDENTLY OF OTHER PIPING.
- 3.4 PROVISIONS FOR MOVEMENT
 - A. INSTALL HANGERS AND SUPPORTS TO ALLOW MOVEMENT OF PIPING SYSTEMS AND TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE, ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, OFFSETS, EXPANSION BENDS AND SIMILAR UNITS.
 - B. INSTALL HANGERS AND SUPPORTS SO THAT PIPING, LOADING, AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT
- 3.5 INSULATED PIPING REQUIREMENTS
 - A. HANGERS FOR INSULATED COLD PIPING SHALL BE PLACED AROUND THE OUTSIDE OF THE INSULATION AND VAPOR BARRIER.
 - a. PROVIDE A 180 DEGREE THERMAL INSERT ON THE BOTTOM OF THE PIPE. EXTEND VAPOR BARRIER ON TOP OF INSERT AND INSULATION AND PROVIDE INSULATION SHIELD BETWEEN INSERT AND HANGER.
 - B. HANGERS FOR OTHER INSULATED PIPING MAY BE PLACED DIRECTLY AGAINST THE PIPING WITH INSULATION CARRIED COMPLETELY OVER AND AROUND HANGER AND ROD.
- 3.6 HANGER SPACING AND ROD SIZES
 - A. HANGERS SHALL BE SPACED SO AS TO SUPPORT PIPING PROPERLY. CAST IRON SOIL PIPES SHALL BE SUPPORTED ON HANGERS SPACED NOT MORE THAN PIPE LENGTH BEING EMPLOYED. HANGERS FOR ALL OTHER COPPER OR STEEL PIPING SHALL BE SPACED ACCORDING TO THE FOLLOWING SCHEDULE:

PIPE SIZE	MAXIMUM HANGER SPACING	MINIMUM ROD SIZE
1 1/2 INCH	5 FEET	3/8 INCH
3/4 INCH	5 FEET	3/8 INCH
1 INCH	6 FEET	3/8 INCH
1-1/4 INCH	6 FEET	3/8 INCH
1-1/2 INCH	8 FEET	3/8 INCH
2 INCH AND LARGER	8 FEET	1/2 INCH
 - C. AT NO TIME SHALL ANY SECTION OF PIPE HAVE LESS THAN TWO SUPPORTS.

END OF SECTION.

SECTION 220543 - IDENTIFICATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.
- B. LABEL ALL NEW EQUIPMENT AND PIPING SYSTEMS.

PART 2 - PRODUCTS

2.1 PIPE LABELS

- A. PRETENSION PIPE LABELS OF SEMI-RIGID PLASTIC FORMED TO COVER THE FULL CIRCUMFERENCE OF PIPE.
 - B. IDENTIFY THE SERVICE AND DIRECTION OF FLOW. LABELS SHALL CONTAIN AT LEAST 1/2 INCH HIGH LETTERING AND BE PLACED SO THEY ARE EASY TO READ.
- 2.2 VALVE TAGS
 - A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND CHAIN FOR ATTACHMENT TO VALVE.
 - 2.3 EQUIPMENT LABELS
 - A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND HOLES FOR ATTACHMENT TO EQUIPMENT.

PART 3 - EXECUTION

3.1 PIPE LABELS

- A. INSTALL PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE AN ACCESSIBLE CEILING AT MAXIMUM 20 FT. CENTERS.
- 3.2 VALVE TAGS
 - A. ATTACH TAGS TO VALVES USING CHAIN. PROVIDE A VALVE SCHEDULE FOR MOUNTING IN THE MECHANICAL ROOM.
- 3.3 EQUIPMENT LABELS
 - A. PERMANENTLY ATTACH LABELS TO EQUIPMENT. LOCATE WHERE LABEL CAN BE EASILY SEEN AND READ.

END OF SECTION.

SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500

PART 2 - PRODUCTS

2.1 COPPER PIPING

- A. PROVIDE SOFT COPPER TUBE, TYPE "K", WITH SOLDER-JOINT FITTINGS FOR UNDER SLAB INSTALLATIONS.
- B. PROVIDE HARD COPPER TUBE, TYPE "L", WITH SOLDER JOINT FITTINGS FOR ALL ABOVE GRADE INSTALLATIONS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. CLEAN AND DISINFECT ALL NEW PIPING WITH WATER/CHLORINE SOLUTION.
- B. INSTALL WATER PIPING LEVEL AND PLUMB. PROVIDE DRAIN VALVES AT ALL LOW POINTS.
- C. PIPING BELOW SLAB SHALL BE INSTALLED WITHOUT JOINTS.

END OF SECTION.

SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500

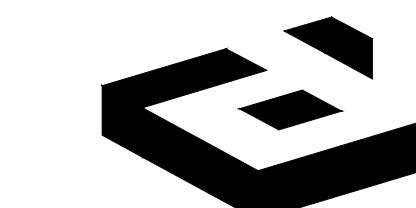
PART 2 - PRODUCTS

- 2.1 EXISTING CONDITIONS
 - A. PROVIDE PIPING MATERIALS TO MATCH EXISTING IN ALL CASES.
- 2.2 CAST IRON PIPING
 - A. PROVIDE NO-HUB DWV PIPING FOR ALL ABOVE GRADE INSTALLATIONS WITH STANDARD COUPLINGS.
 - B. PROVIDE BELL AND SPIGOT CAST IRON PIPING BELOW GRADE WHERE REQUIRED TO MATCH EXISTING CONDITIONS.
- 2.3 PVC PIPING
 - A. WHERE ALLOWED BY CODE AND THE OWNER'S CRITERIA, PROVIDE SCHEDULE 40 PVC PIPING ABOVE GRADE WITH SOLVENT-CEMENTED JOINTS.
 - B. BELOW GRADE, PROVIDE SCHEDULE 40 PVC PIPING WITH SOLVENT-CEMENTED JOINTS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. INSTALL WASTE PIPING AT 1/4 INCH PER FOOT SLOPE WHERE POSSIBLE. MINIMUM SLOPE SHALL BE 1/8 INCH PER FOOT.
- B. PROVIDE CLEANOUTS AS INDICATED ON THE DRAWINGS, OR AS REQUIRED BY CODE.



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PMI JOB NO. 24006002
PROJECT MGR. TODD JOHNSON

THIS DRAWING SHALL NOT BE REPRODUCED FOR ANY PROJECT OTHER THAN THE PROJECT NOTED IN THE TITLE BLOCK, WITHOUT THE WRITTEN CONSENT OF PURDY-MCGUIRE, INC. DALLAS, TX

SEAL



PROJECT NUMBER: 555-012
DRAWN BY: LAC
CHECKED BY: MW
R.S.F.: 2,430

BILLINGSLEY
COMPANY

CYPRESS WATERS
BURDETTE
BECKMANN INC.

8840 CYPRESS WATERS
BLVD., SUITE #180
DALLAS, TX 75019

NO.	REVISIONS:	DATE:

CLIENT/LANDLORD ISSUE DATE: 03/26/2024
BID ISSUE DATE: 03/26/2024
PERMIT ISSUE DATE: 03/26/2024
CONSTRUCTION ISSUE DATE: 03/26/2024

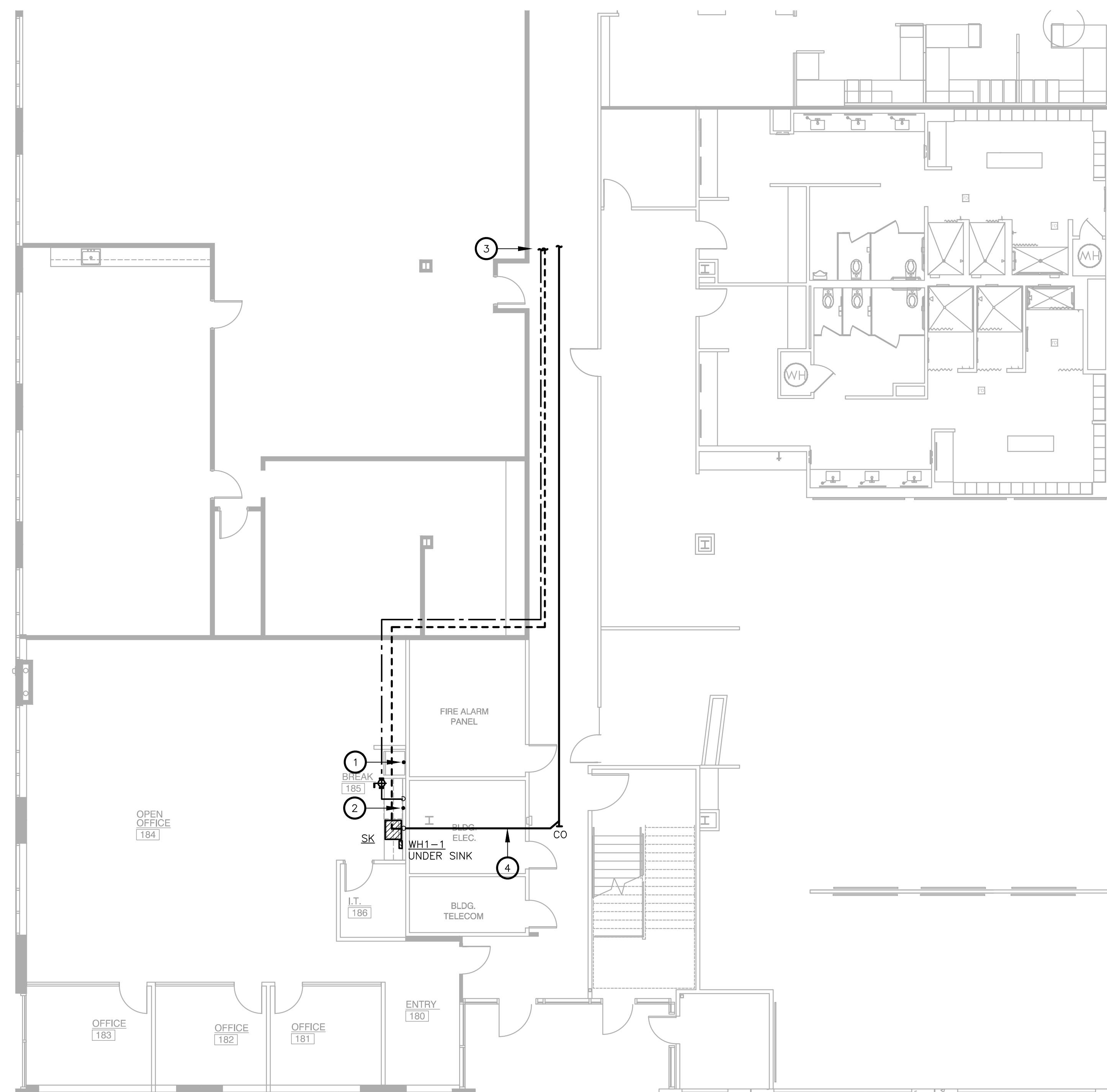
DRAWING TITLE:

**LEVEL 01 PLUMBING
PLAN**

DRAWING NUMBER:

P2.01

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NOTES BY SYMBOL (X):

1. PROVIDE COLD WATER WITH RECESSED VALVE AND EXTEND 1/4" COPPER TUBING TO REFRIGERATOR/ICE MAKER.
2. PROVIDE HOT WATER WITH VALVE TO ASSE 1022 COMPLIANT AND APPROVED BY AUTHORITY HAVING JURISDICTION BACKFLOW PREVENTER THEN TO DISHWASHER. EXTEND DISHWASHER DRAIN LINE AND CONNECT TO P-TRAP FITTING IN SINK WASTE.
3. EXTEND NEW PIPING TO EXISTING SANITARY, VENT AND DOMESTIC COLD WATER MAINS. VERIFY EXACT LOCATION AND ROUTING AT JOB SITE. ENSURE ROUTING AND CONNECTION OF SANITARY LINE HAS REQUIRED INVERT CONNECTION FOR PROPER SLOPE PRIOR TO ANY INSTALLATION.
4. CONTRACTOR TO CONFIRM ACCESS UNDER CRAWL SPACE UNDER THIS ROOM TO CONFIRM ACCEPTABLE SANITARY ROUTING.

1 LEVEL 01 PLUMBING PLAN
SCALE: 1/8"=1'-0"