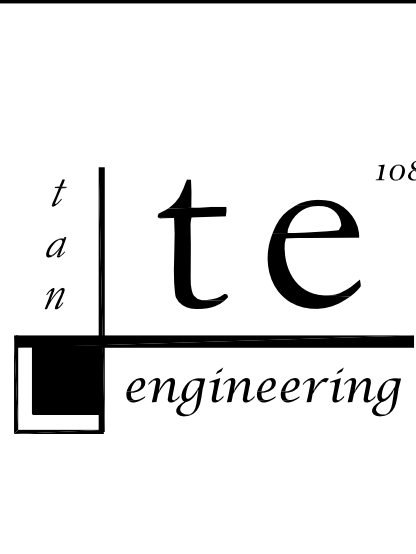


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PROJECT:
 New Crumbs Bakeshop @
 2838 N Clarendon Blvd.
 Arlington, Virginia 22201

CLIENT:
 Crumbs Bakeshop
 110 West 40th Street
 Suite 310
 New York, New York 10018

ISSUES:

No.	Date	Description
1	06.23.10	ISSUED FOR BID
2	06.23.10	ISSUED FOR BID

SCALE:

SEAL:

DRAWN BY:

RT

AS NOTED

SCALE:

DRAWING TITLE:
 Plumbing Specifications

DRAWING NO.
P-401.00

SHEET 4 OF 4

1. GENERAL
 - A. THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, THE DISTRICT BOARD OF ESTIMATION, THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
 - B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE LAWS AND REGULATIONS, OF ANY WORK OR MATERIAL, PRIOR TO SUBMITTING A PROPOSAL, OR ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
 - C. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED, WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTED SPACES. ASCERTAIN FROM BUILDING OWNER AND THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, WHAT THE SIZE AND WEIGHT OF EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
 - D. DRAWINGS ARE DIAGRAMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. THE ROUTING IS SHOWN AS APPROXIMATELY AND CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF PIPE TO AVOID OBSTRUCTIONS. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.
 - E. INSTALL WORK SO AS TO BE READY 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.
 - F. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL 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 IN MAKING UP THE WORK PROPOSAL.
 - G. 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 AND NO ADDITIONAL CHARGES AT TIMES NOT TO INTERFERE WITH THE OPERATION OF EXISTING SERVICES. THE CONTRACTOR SHALL OBTAIN WRITTEN CONSENT OF OWNER. 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.
 - H. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
 - I. 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.
 - J. THE LOCATIONS OF THE EXISTING SERVICES ARE BELIEVED TO BE AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF THESE SERVICES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING ANY WORK.
 - K. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH A UL-LISTED FIRESTOPPING ASSEMBLY MATCHED TO THE RATING OF THE PENETRATED ELEMENT.
 - L. PROVIDE ALL NECESSARY FLASHING AND COUNTERSINKING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPING AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AS REQUIRED.
 - M. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION PREFER TO BE REMOVED UNDER THIS CONTRACT SHALL BE DEMOLISHED BY THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROMPTLY DISPOSED OF BY THIS CONTRACTOR, OR AS DIRECTED BY THE OWNER.
 - N. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
 - O. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
 - P. THE CONTRACTORS PROPOSAL FOR ALL WORK SHALL BE REDUCED 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.
 - Q. 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.
 - R. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
 - 1) ALL MATERIAL AND EQUIPMENT ON SITE SHALL BE PROPERLY STORED SUCH THAT IT IS PROTECTED FROM DAMAGE AND EXPOSURE TO THE OUTSIDE ELEMENTS.
2. SCOPE OF WORK:
 - A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR MATERIALS, EQUIPMENT AND SUPPLIES FOR THE INSTALLATION OF THE NEW YORK CITY BUILDING CODE AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
 - 1) WORK TO BE DONE, BUT NOT LIMITED TO THE FOLLOWING:
 - 1) MODIFY AND EXTEND EXISTING BASE BUILDING SANITARY, VENT, GAS AND COLD WATER PIPING TO SERVE NEW PLUMBING FIXTURES AND EQUIPMENT.
 - 2) INSTALL DOMESTIC WATER METER ON COLD WATER SUPPLY AS INDICATED.
 - 3) INSTALL HOT WATER STORAGE HEATER AND RELATED HOT WATER HEATING EQUIPMENT, AS INDICATED.
 - 4) INSTALL APPROPRIATE FLOOR DRAINS AND COORDINATE EXACT LOCATIONS WITH ARCHITECT.
 - 5) FINISH AND INSTALL COMPLETE AND OPERATIONAL.
 - 6) INSTALL GREASE INTERCEPTOR.
 - 7) INSTALL PLUMBING FIXTURES IN TOILET ROOMS.
 - 2) THE BASE BUILDING 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, SUPPLEMENTED OR SPECIFIED HEREIN.
 - 3) THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROPERLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK.
 - B. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DISTRICT BOARD OF ESTIMATION AND PAY ALL FEES HEREBY. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK, IF SO REQUESTED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR AND FINISH TO THE OWNER ALL WORK UNDER THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK.
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 - D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DISTRICT BOARD OF ESTIMATION AND PAY ALL FEES HEREBY. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK, IF SO REQUESTED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR AND FINISH TO THE OWNER ALL WORK UNDER THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK.
3. SHOP DRAWINGS:
 - A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SIZES, THE CONTRACTOR SHALL SUBMIT WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
 - 1) PROJECT NAME AND LOCATION.
 - 2) NAME OF ARCHITECT AND ENGINEER.
 - 3) ITEM IDENTIFICATION.
 - 4) APPROVAL STAMP OF PRIME CONTRACTOR.
 - B. SUBMISSIONS:
 - 1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER. IF THE SUBMISSION IS LARGER THAN 11 IN. X 17 IN., THE CONTRACTOR SHALL SUBMIT TWO COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN BE COMPLETE).
 - 2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SERIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SERIA TO THE ENGINEER.
 - C. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
 - 1) PIPE AND FITTINGS.
 - 2) VALVES.
 - 3) PLUMBING FIXTURES AND TRIM.
 - 4) PIPING LAYOUTS.
 - 5) SUPPORTS, HANGERS AND GUIDES.
 - 6) INSULATION.
 - 7) PUMPS.
 - 8) WATER HEATERS.
 - D. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:
 - 1) UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND OPERATIONAL INSTRUCTIONS AND ALL EQUIPMENT AND APPARATUS FINISHED UNDER THE CONTRACT.
 - 2) THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2" N. X 11" IN. PAPER AND BOUND IN FREE-RING BINDERS WITH CLEAR PLASTIC COVERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL MATERIALS AND LABOR FOR THE REPAIRS TO THE WORK.
4. GENERAL PROVISIONS FOR PLUMBING WORK:
 - A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES, WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL PROVIDE", "FURNISH", "PROVIDE", "X", "THE", AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

- B. DEFINITIONS:
 - 1) "PROVIDE" TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND OPERATIONAL. SPECIFICATIONS FOR THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
 - 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) "CONCEAL": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN REAR SPACES, OR IN ENCLOSURES.
 - 6) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
 - 7) "SMALLER" OR "TOLERANCE": EQUAL IN MATERIALS, WEIGHT, SIZE DESIGN, PERFORMANCE AND EFFICIENCY OF SPECIFIED PRODUCT.
 - 8) "QUALITY ASSURANCE": QUALITY AND CARE OF MATERIALS, NEW BEST OF THEIR RESPECTIVE KINDS AND FREE FROM DEFECTS. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
 - 9) "GUARANTEE": ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.
 - 10) "PRODUCT DELIVERY, STORAGE AND HANDLING":
 - 1) MONITOR OF EQUIPMENT, WHERE NECESSARY, SHIP IN CARTONED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
 - 2) ACCESSIBILITY: FOR OPERATIONAL MAINTENANCE AND REPAIR, MINOR DEVIATIONS WILL BE PERMITTED. CHANGES OF MANUFACTURE OR INVOLVING EXTRA COST ARE NOT PERMITTED WITHOUT REVIEW.
 - 11) "BRUSH AND CLEAN WORK PRIOR TO CONCRETING, PAINTING AND ACCEPTANCE. PAINTED TO MATCH ADJOINING WORK BEFORE FINAL EQUIPMENT. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
 - 12) "FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE VERIFIED BY ARCHITECT PRIOR TO INSTALLATION.
 - 13) "PIPE AND FITTINGS":
 - A. SANITARY DRAINAGE AND VENT:
 - 1) ABOVE GROUND: HILBESS SERVICE WEIGHT CAST IRON, SOIL PIPE AND FITTINGS WITH ANCON FOUNDRY HUSKEY SERIES 4000 EXTRA WIDE, HEAVY DUTY GASKETED HILBESS JOINTS.
 - 2) BELOW GROUND: HUB AND SPOUT EXTRA-HEAVY WEIGHT CAST IRON PIPE AND FITTINGS WITH NEMPEPE GASKETED JOINTS.
 - B. DOMESTIC WATER:
 - 1) TYPE "L" HARD COPPER TUBING WITH CAST BRONZE OR WROUGHT COPPER FITTINGS AND LEAD-FREE SOLDER JOINTS.
 - 2) NATURAL GAS:
 - 1) SCHEDULE 40 BLACK STEEL PIPE WITH THREADED WELDABLE IRON FITTINGS AND WELDED JOINTS.
 - 2) PIPING 4 INCHES DIAMETER AND LARGER SHALL HAVE WELDED FITTINGS.
 - 3) ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.
 - 4) ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILINGS AND PARTITIONS SHALL BE PROVIDED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.
 - C. BALL VALVES:
 - 1) TWO-PIECE BRONZE END ENTRY, 600 PSI WMP, SIMILAR TO NIBCO 1-585-70 (THREADED), 585-70 (SWELT).
 - D. CHECK VALVES:
 - 1) BRONZE THREADED CAP TITAN DISC, SIMILAR TO NIBCO 1-433 (THREADED), 5-433 (SWELT).
 - E. INSULATION:
 - 1) ALL INSULATION (INCLUDING JACKET FLASHING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 723. NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
 - 2) PROVIDE PVC SHEETED PERIPLUS PIPERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
 12. TESTS:
 - A. ALL PLUMBING SYSTEMS SHALL BE TESTED FOR CONTINUITY AND PROPER OPERATION.
 - 1) DOMESTIC WATER PIPING:
 - 1) TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125 PSI. DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.
 - 2) DRAINAGE AND VENT PIPING:
 - 1) CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10 FEET ABOVE THE FLOOR.
 - 2) THE WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT THE TEST DURATION OF 2 HOURS.
 - B. NATURAL GAS PIPING:
 - 1) THE PIPING SHALL BE TESTED WITH AIR AT 1.5 TIMES THE WORKING PRESSURE OF THE SYSTEM FOR A DURATION OF 4 HOURS.
 - C. ARRANGE AND COORDINATE TESTS WITH OWNER 48 HOURS IN ADVANCE. NOTIFY ENGINEER AND ARCHITECT OF TEST DATE AND TIME.
 - D. DEFECTS DISCLOSED BY THE TESTS SHALL BE REPAIRED OR PROVEN SATISFACTORY.
 - E. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO THE BUILDING AND ITS CONTENTS AS A RESULT OF SUCH TESTS. REPAIR ANY DAMAGE CAUSED.
 10. PLUMBING FIXTURES:
 - A. PROVIDE ALL FIXTURES WITH STOP VALVES AND SUPPLIES AND FLOOR TRAPS AS REQUIRED.
 - B. ALL FIXTURES SHALL BE AS SCHEDULED ON THE DOCUMENTS.
 - C. REFER TO ARCHITECTURAL DOCUMENTS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES.
 - D. PIPING SUPPORTS:
 - 1) SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING METAL BRACKET, STEEL STRAP, STEEL STRAP HANGER, HANGERS AND ADJUSTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.
 - 2) PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.
 - 3) SUSPENDED HORIZONTAL PIPING:
 - 1) SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED HANGERS, SIMILAR TO GRINNELL CLEVIS NO. 260.
 - 2) PROVIDE ELECTROPLATED SOLID-BAND HANGERS SIMILAR TO AUTO-GRP, FOR TWO-INCH AND SMALLER PIPE.
 - 3) PROVIDE WALL BRACKETS FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.
 - 4) PROVIDE SUPPORTS WITH COPPER LINKING FOR UNSUPPORTED COPPER PIPING.
 - 5) SUSPEND PIPING FROM INSERTS, USING BEAM CLAMPS WITH RETAINING CLAMP OR LOCKNUT, STEEL FISH PLATES, CANTILEVER BRACKETS OR OTHER ACCEPTED MEANS. BEAM CLAMPS SHALL BE SIMILAR TO GRINNELL FIXTURES 61, 67, 151, OR 223.
 - 6) SUSPEND PIPING BY ROOF WITH DOUBLE NUTS.
 - 7) PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS.
 - 8) SUPPORT BRANCH FIXTURE WATER PIPING IN CHASES WITH COPPER-PLATED METAL BRACKETS, SECURED TO STUDS, SIMILAR TO HOLDRITE NOS. 102-18, 107-18, 102-26, OR 101-26.
 - 9) PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATION BLOCK IN INSULATION AT HANGERS.
 - 10) MAXIMUM HANGER SPACING AS INDICATED.
 - 1) PIPE 1 INCH AND SMALLER SHALL BE EVERY 8 FEET.
 - 2) PIPE 1-1/4 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - 3) COPPER TUBING 1-1/4 INCH AND SMALLER SHALL BE EVERY 6 FEET.
 - 4) COPPER TUBING 1-1/2 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - 5) CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.
 - 11) VERTICAL PIPING:
 - 1) PROVIDE EXTENSION PIPE CLAMPS BOLTED TO BARE PIPE ON EACH SIDE AND BEARING EQUALLY ON STRUCTURE OR WELDED TO BEAM. PROVIDE SPACING AS INDICATED:
 - A. THREADED PIPING SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET ON CENTERS.
 - B. CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON CENTERS. HILBESS PIPE IS THE EXCEPTION, REQUIRING A MAXIMUM OF 10 FEET ON CENTERS.
 - 2) TUBING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 10 FEET ON CENTERS.
 - 12) EXPANSION ANCHORS:
 - 1) PROVIDE SMOOTH WALL, NON-SELF-DRILLING INTERNAL PLUG ANCHORS WITH ANCON CONCRETE SPEC. OC-4-325 TYPE 1, CLASS 3, PLATED IN ACCORDANCE WITH FED. SPEC. OC-4-325 TYPE 1, CLASS 3.
 - 2) DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR WORKING LOADS.
 - 3) PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - 4) EXPANSION ANCHORS SHALL BE UL LISTED AND SIMILAR TO HILLI HIL.

5. GENERAL PROVISIONS FOR PLUMBING WORK:
 - A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES, WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL PROVIDE", "FURNISH", "PROVIDE", "X", "THE", AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
6. ELECTRICAL POWER REQUIREMENT: 208 VOLTS.
7. VALVES:
 - A. BALL VALVES:
 - 1) TWO-PIECE BRONZE END ENTRY, 600 PSI WMP, SIMILAR TO NIBCO 1-585-70 (THREADED), 585-70 (SWELT).
 - B. CHECK VALVES:
 - 1) BRONZE THREADED CAP TITAN DISC, SIMILAR TO NIBCO 1-433 (THREADED), 5-433 (SWELT).
 - C. INSULATION:
 - 1) ALL INSULATION (INCLUDING JACKET FLASHING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 723. NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
 - 2) PROVIDE PVC SHEETED PERIPLUS PIPERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
8. INSULATION:
 - A. ALL INSULATION (INCLUDING JACKET FLASHING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 723. NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
 - B. PROVIDE PVC SHEETED PERIPLUS PIPERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
 - C. PROVIDE 1/2 INCH THICK INSULATION WITH VAPOR BARRIER ON ALL COLD WATER PIPING.
 - D. PROVIDE 1 INCH THICK INSULATION ON ALL HOT WATER PIPING.
 - E. HOT WATER TEMPERATURE MAINTENANCE:
 - 1) WHERE INDICATED ON PLANS, PROVIDE REYNOLDS CORP. HWMT-62 (115 F) SELF-REGULATING TEMPERATURE MAINTENANCE CABLE SYSTEM INCLUDING THERMISTORS, THERMISTOR SCALES, PIPE LABELS AND GLOSS TAPE ON DOMESTIC HOT WATER PIPING.
 - 2) CABLE SHALL BE SECURED TO HOT WATER PIPING, UNDER INSULATION, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 - 3) PROVIDE A CONTROL BOX WITH A 24-HOUR TIME CLOCK FOR 7-DAY OPERATION OF EACH CIRCUIT.
9. HOT WATER TEMPERATURE MAINTENANCE:
 - A. WHERE INDICATED ON PLANS, PROVIDE REYNOLDS CORP. HWMT-62 (115 F) SELF-REGULATING TEMPERATURE MAINTENANCE CABLE SYSTEM INCLUDING THERMISTORS, THERMISTOR SCALES, PIPE LABELS AND GLOSS TAPE ON DOMESTIC HOT WATER PIPING.
 - B. CABLE SHALL BE SECURED TO HOT WATER PIPING, UNDER INSULATION, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 - C. PROVIDE A CONTROL BOX WITH A 24-HOUR TIME CLOCK FOR 7-DAY OPERATION OF EACH CIRCUIT.
 - D. ELECTRICAL POWER REQUIREMENT: 208 VOLTS.
10. PLUMBING FIXTURES:
 - A. PROVIDE ALL FIXTURES WITH STOP VALVES AND SUPPLIES AND FLOOR TRAPS AS REQUIRED.
 - B. ALL FIXTURES SHALL BE AS SCHEDULED ON THE DOCUMENTS.
 - C. REFER TO ARCHITECTURAL DOCUMENTS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES.
 - D. PIPING SUPPORTS:
 - 1) SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING METAL BRACKET, STEEL STRAP, STEEL STRAP HANGER, HANGERS AND ADJUSTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.
 - 2) PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.
 - 3) SUSPENDED HORIZONTAL PIPING:
 - 1) SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED HANGERS, SIMILAR TO GRINNELL CLEVIS NO. 260.
 - 2) PROVIDE ELECTROPLATED SOLID-BAND HANGERS SIMILAR TO AUTO-GRP, FOR TWO-INCH AND SMALLER PIPE.
 - 3) PROVIDE WALL BRACKETS FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.
 - 4) PROVIDE SUPPORTS WITH COPPER LINKING FOR UNSUPPORTED COPPER PIPING.
 - 5) SUSPEND PIPING FROM INSERTS, USING BEAM CLAMPS WITH RETAINING CLAMP OR LOCKNUT, STEEL FISH PLATES, CANTILEVER BRACKETS OR OTHER ACCEPTED MEANS. BEAM CLAMPS SHALL BE SIMILAR TO GRINNELL FIXTURES 61, 67, 151, OR 223.
 - 6) SUSPEND PIPING BY ROOF WITH DOUBLE NUTS.
 - 7) PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS.
 - 8) SUPPORT BRANCH FIXTURE WATER PIPING IN CHASES WITH COPPER-PLATED METAL BRACKETS, SECURED TO STUDS, SIMILAR TO HOLDRITE NOS. 102-18, 107-18, 102-26, OR 101-26.
 - 9) PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATION BLOCK IN INSULATION AT HANGERS.
 - 10) MAXIMUM HANGER SPACING AS INDICATED.
 - 1) PIPE 1 INCH AND SMALLER SHALL BE EVERY 8 FEET.
 - 2) PIPE 1-1/4 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - 3) COPPER TUBING 1-1/4 INCH AND SMALLER SHALL BE EVERY 6 FEET.
 - 4) COPPER TUBING 1-1/2 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - 5) CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.
 - 11) VERTICAL PIPING:
 - 1) PROVIDE EXTENSION PIPE CLAMPS BOLTED TO BARE PIPE ON EACH SIDE AND BEARING EQUALLY ON STRUCTURE OR WELDED TO BEAM. PROVIDE SPACING AS INDICATED:
 - A. THREADED PIPING SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET ON CENTERS.
 - B. CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON CENTERS. HILBESS PIPE IS THE EXCEPTION, REQUIRING A MAXIMUM OF 10 FEET ON CENTERS.
 - 2) TUBING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 10 FEET ON CENTERS.
 - 12) EXPANSION ANCHORS:
 - 1) PROVIDE SMOOTH WALL, NON-SELF-DRILLING INTERNAL PLUG ANCHORS WITH ANCON CONCRETE SPEC. OC-4-325 TYPE 1, CLASS 3, PLATED IN ACCORDANCE WITH FED. SPEC. OC-4-325 TYPE 1, CLASS 3.
 - 2) DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR WORKING LOADS.
 - 3) PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - 4) EXPANSION ANCHORS SHALL BE UL LISTED AND SIMILAR TO HILLI HIL.

11. PIPING SUPPORTS:
 - 1) SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING METAL BRACKET, STEEL STRAP, STEEL STRAP HANGER, HANGERS AND ADJUSTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW.
 - 2) PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.
 - 3) SUSPENDED HORIZONTAL PIPING:
 - 1) SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED HANGERS, SIMILAR TO GRINNELL CLEVIS NO. 260.
 - 2) PROVIDE ELECTROPLATED SOLID-BAND HANGERS SIMILAR TO AUTO-GRP, FOR TWO-INCH AND SMALLER PIPE.
 - 3) PROVIDE WALL BRACKETS FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.
 - 4) PROVIDE SUPPORTS WITH COPPER LINKING FOR UNSUPPORTED COPPER PIPING.
 - 5) SUSPEND PIPING FROM INSERTS, USING BEAM CLAMPS WITH RETAINING CLAMP OR LOCKNUT, STEEL FISH PLATES, CANTILEVER BRACKETS OR OTHER ACCEPTED MEANS. BEAM CLAMPS SHALL BE SIMILAR TO GRINNELL FIXTURES 61, 67, 151, OR 223.
 - 6) SUSPEND PIPING BY ROOF WITH DOUBLE NUTS.
 - 7) PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS.
 - 8) SUPPORT BRANCH FIXTURE WATER PIPING IN CHASES WITH COPPER-PLATED METAL BRACKETS, SECURED TO STUDS, SIMILAR TO HOLDRITE NOS. 102-18, 107-18, 102-26, OR 101-26.
 - 9) PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT INCOMPRESSIBLE INSULATION BLOCK IN INSULATION AT HANGERS.
 - 10) MAXIMUM HANGER SPACING AS INDICATED.
 - 1) PIPE 1 INCH AND SMALLER SHALL BE EVERY 8 FEET.
 - 2) PIPE 1-1/4 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - 3) COPPER TUBING 1-1/4 INCH AND SMALLER SHALL BE EVERY 6 FEET.
 - 4) COPPER TUBING 1-1/2 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - 5) CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.
 - 11) VERTICAL PIPING:
 - 1) PROVIDE EXTENSION PIPE CLAMPS BOLTED TO BARE PIPE ON EACH SIDE AND BEARING EQUALLY ON STRUCTURE OR WELDED TO BEAM. PROVIDE SPACING AS INDICATED:
 - A. THREADED PIPING SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET ON CENTERS.
 - B. CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON CENTERS. HILBESS PIPE IS THE EXCEPTION, REQUIRING A MAXIMUM OF 10 FEET ON CENTERS.
 - 2) TUBING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 10 FEET ON CENTERS.
 - 12) EXPANSION ANCHORS:
 - 1) PROVIDE SMOOTH WALL, NON-SELF-DRILLING INTERNAL PLUG ANCHORS WITH ANCON CONCRETE SPEC. OC-4-325 TYPE 1, CLASS 3, PLATED IN ACCORDANCE WITH FED. SPEC. OC-4-325 TYPE 1, CLASS 3.
 - 2) DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR WORKING LOADS.
 - 3) PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - 4) EXPANSION ANCHORS SHALL BE UL LISTED AND SIMILAR TO HILLI HIL.

12. EXPANSION ANCHORS:
 - 1) PROVIDE SMOOTH WALL, NON-SELF-DRILLING INTERNAL PLUG ANCHORS WITH ANCON CONCRETE SPEC. OC-4-325 TYPE 1, CLASS 3, PLATED IN ACCORDANCE WITH FED. SPEC. OC-4-325 TYPE 1, CLASS 3.
 - 2) DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR WORKING LOADS.
 - 3) PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - 4) EXPANSION ANCHORS SHALL BE UL LISTED AND SIMILAR TO HILLI HIL.

13. TESTS:
 - A. ALL PLUMBING SYSTEMS SHALL BE TESTED FOR CONTINUITY AND PROPER OPERATION.
 - 1) DOMESTIC WATER PIPING:
 - 1) TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125 PSI. DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.
 - 2) DRAINAGE AND VENT PIPING:
 - 1) CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10 FEET ABOVE THE FLOOR.
 - 2) THE WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT THE TEST DURATION OF 2 HOURS.
 - B. NATURAL GAS PIPING:
 - 1) THE PIPING SHALL BE TESTED WITH AIR AT 1.5 TIMES THE WORKING PRESSURE OF THE SYSTEM FOR A DURATION OF 4 HOURS.
 - C. ARRANGE AND COORDINATE TESTS WITH OWNER 48 HOURS IN ADVANCE. NOTIFY ENGINEER AND ARCHITECT OF TEST DATE AND TIME.
 - D. DEFECTS DISCLOSED BY THE TESTS SHALL BE REPAIRED OR PROVEN SATISFACTORY.
 - E. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO THE BUILDING AND ITS CONTENTS AS A RESULT OF SUCH TESTS. REPAIR ANY DAMAGE CAUSED.

14. ELECTRICAL POWER REQUIREMENT: 208 VOLTS.

15. GENERAL PROVISIONS FOR PLUMBING WORK:
 - A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES, WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL PROVIDE", "FURNISH", "PROVIDE", "X", "THE", AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

16. ELECTRICAL POWER REQUIREMENT: 208 VOLTS.

17. VALVES:
 - A. BALL VALVES:
 - 1) TWO-PIECE BRONZE END ENTRY, 600 PSI WMP, SIMILAR TO NIBCO 1-585-70 (THREADED), 585-70 (SWELT).
 - B. CHECK VALVES:
 - 1) BRONZE THREADED CAP TITAN DISC, SIMILAR TO NIBCO 1-433 (THREADED), 5-433 (SWELT).
 - C. INSULATION:
 - 1) ALL INSULATION (INCLUDING JACKET FLASHING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 723. NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
 - 2) PROVIDE PVC SHEETED PERIPLUS PIPERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
18. INSULATION:
 - A. ALL INSULATION (INCLUDING JACKET FLASHING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 723. NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
 - B. PROVIDE PVC SHEETED PERIPLUS PIPERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
 - C. PROVIDE 1/2 INCH THICK INSULATION WITH VAPOR BARRIER ON ALL COLD WATER PIPING