

8. PLUMBING FIXTURES:
- REMOVE ALL FIXTURES WITH STOP VALVES AND SUPPLIES AND FIXTURE TRAPS AS REQUIRED.
 - REFER TO ARCHITECTURAL DOCUMENTS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES.
10. PIPING SUPPORTS:
- SUPPORT ALL PIPING FROM BUILDING CONSTRUCTION BY PROVIDING INSERTS, BEAM BRACKETS, HANGERS, AND BRACKETS WHERE FULL UNITS, AND ACCEPTABLE BRACKETS, SUPPORT ALL METHODS FOR REVIEW.
 - PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR GROUPED LINES AND SERVICES.
 - PROVIDE ADDITIONAL FRAMING WHERE BUILDING CONSTRUCTION IS INADEQUATE. SUBMIT FOR REVIEW.
 - SUSPENDED HORIZONTAL PIPING:
 - SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED TYPE HANGERS, SIMILAR TO GRINNELL CLEVIS NO. 260.
 - PROVIDE ELECTROLYTIC SOLID-BAND HANGERS SIMILAR TO AUTO-Grip, FOR TWO-INCH AND SMALLER PIPE.
 - PROVIDE WALL BRACKET FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.
 - PROVIDE SUPPORTS WITH COPPER LINING FOR UNINSULATED COPPER PIPING.
 - SUSPEND PIPING BY RODS WITH DOUBLE NUTS.
 - SUSPEND ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS.
 - SUPPORT BRANCH FITTURE WATER PIPING IN CHASIS WITH COPPER-PLATED METAL. 102-26, OR 101-26, STUDS, SIMILAR TO ILLICUTE NOS. 102-16, 101-16, 102-26, OR 101-26.
 - PROVIDE 180 DEGREE ARC GALVANIZED METAL COVERING SHIELDS ON HANGERS FOR INSULATED PIPING WITHOUT NONCOMPRESSIBLE INSULATING BLOCK IN INSULATION AT HANGERS.
11. MAXIMUM HANGER SPACING AS INDICATED.
- PIPE 1 INCH AND SMALLER SHALL BE EVERY 8 FEET.
 - PIPE 1-1/4 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - COPPER TUBING 1-1/4 INCH AND SMALLER SHALL BE EVERY 6 FEET.
 - COPPER TUBING 1-1/2 INCH AND LARGER SHALL BE EVERY 10 FEET.
 - CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.
12. VERTICAL PIPING:
- PROVIDE EXTENSION PIPE CLAMPS BOLTED TO BASE PIPE ON EACH SIDE AND BEARING EQUALLY ON STRUCTURE OR WELDED TO BEAM.
 - PROVIDE SPACING AS INDICATED:
 - FEET AND INCHES SHALL BE EVERY OTHER FLOOR LEVEL, AT A MAXIMUM OF 25 FEET.
 - CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL, MAXIMUM 20 FEET ON FEEL ON CENTERS.
 - TUBING SHALL BE EVERY FLOOR LEVEL MAXIMUM 10 FEET ON CENTERS.
13. EXPANSION ANCHORS:
- PROVIDE ANCHORS WITH NON-SELF-PENETRATING INTERNAL PLUG EXPANSION TYPE ANCHORS CONSTRUCTED OF A307 1/2" DIA STEEL AND ZINC PLATED IN ACCORDANCE WITH FED. SPEC. CO-4-325 TYPE 1, CLASS 3.
 - DO NOT EXCEED 1/4 OF AVERAGE VALVES FOR A SPECIFIC ANCHOR SIZE USING 2000 PSI (13,800 KPA) CONCRETE ONLY, FOR MAXIMUM WORKING LOADS.
 - PROVIDE SPACING AND INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - EXPANSION ANCHORS SHALL BE UL LISTED AND SIMILAR TO HULTI HD.

14. TESTS:
- ALL PLUMBING SYSTEMS SHALL BE TESTED FOR CONTINUITY AND PROPER OPERATION.
 - DOMESTIC WATER PIPING:
 - TEST PIPING HYDROSTATICALLY AT A PRESSURE OF 125 PSI.
 - DURATION OF TEST SHALL BE 2 HOURS WITHOUT A LOSS IN PRESSURE.
 - DRAINAGE AND VENT PIPING:
 - CAP ALL OUTLETS AND FILL PIPING SYSTEM TO OVERFLOWING FROM A POINT AT LEAST 10 FEET ABOVE THE FLOOR.
 - THE WATER LEVEL SHALL REMAIN CONSTANT THROUGHOUT THE TEST DURATION OF 2 HOURS.
 - NATURAL GAS PIPING:
 - THE SYSTEM SHALL BE TESTED WITH AIR AT 1.5 TIMES THE WORKING PRESSURE OF THE SYSTEM FOR A DURATION OF 4 HOURS.
 - TESTING SHALL BE CONDUCTED UNDER 48 HOURS IN ADVANCE. NOTIFY ENGINEER AND ACCURATELY OF TEST DATE AND TIME.
 - DEFECTS DISCOVERED BY THE TESTS SHALL BE REPAIRED OR REPEATED. TESTS SHALL BE REPEATED AS DIRECTED UNTIL ALL WORK IS PROVEN SATISFACTORY.
 - TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO THE BUILDING AND ITS CONTENTS AS A RESULT OF SUCH TESTS. REPAIR ANY DAMAGE CAUSED.
 - FLUSHING AND DISINFECTING POTABLE WATER SYSTEMS:
 - FLUSHING:
 - THE WATER DISTRIBUTION PIPING TO ALL FIXTURES AND OUTLETS SHALL BE FLUSHED AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 25, AND UL 225; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 25.
 - DISINFECTING:
 - THE HOT AND COLD WATER DISTRIBUTION PIPING IN NEW OR RENOVATED POTABLE WATER SYSTEMS SHALL BE DISINFECTED AFTER FLUSHING AND PRIOR TO USE. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING FOR COLIFORM BACTERIA. ONE SAMPLE EACH OF COLD WATER AND HOT WATER SHALL BE TESTED AND SENT TO THE PLUMBING INSPECTOR. TEST SHALL BE AT FURTHEST FAILURE.

15. GENERAL PROVISIONS FOR PLUMBING WORK:
- REFER TO ALL SPECIFICATIONS FOR MATERIALS, MANUFACTURE, FINISHES, WORKS, OR PHASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
 - DEFINITIONS:
 - "INSTALL" TO MEAN: INSTALL AND HANGERS OR SUPPORTS AND BRACKETS FOR USE OTHERWISE NOTED.
 - "INSTALL" TO MEAN: MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
 - "INSTALL" TO MEAN: PURCHASE, PROVIDE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
 - "INSTALL" TO MEAN: PURCHASE, PROVIDE, ACQUIRE, CONTROL, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
 - "FURNISH" TO MEAN: FURNISH OR OTHER MANUFACTURER, INSTALLED IN TUBED SPACES WITH DOUBLE PARTITIONS OR HUNG CEILING, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
 - "EXPOSED" TO MEAN: EXPOSED TO MATERIALS, WEAR, SIZE, DESIGN, PERFORMANCE AND EFFICIENCY OF SPECIFIED PRODUCT.
 - "WORK" TO MEAN: WORK, WIRE, BOXES AND RELATED ITEMS.
 - "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND RELATED ITEMS.
 - QUALITY ASSURANCE:
 - QUALITY AND GAUGE 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.
 - PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.
 - PRODUCT DELIVERY, STORAGE AND HANDLING:
 - MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTON SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
 - ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMISSIBLE WITHOUT REVIEW.
 - PART SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS. MATERIALS SHALL BE KEPT IN ORIGINAL CONTAINERS UNTIL USED. AFTER FABRICATION, UTILIZE NOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE PASTE LEAD OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR BRASS. BRASS OR COPPER SHALL BE UTILIZED FOR STEEL OR IRON WORK.
 - BRASS AND CLEAN WORK PIPING TO CORROSION-RESISTANT AND ACCEPTABLE. PAINTED EXPOSED WORK THAT IS SOILED OR DAMAGED, CLEAN AND REPAIR TO MATCH ADJOINING MATERIAL AND EQUIPMENT.
 - FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE REVIEWED BY ARCHITECT.
 - ALL ACCESS ROAD LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
16. PIPE AND FITTINGS:
- SANITARY DRAINAGE AND VENT:
 - HUBS AND CAST IRON PIPE AND FITTINGS WITH WAGON FANDED HUBSIE SERIES 4000 EXTRA WIDE HEAVY DUTY GASKETED HUBLESS COUPLINGS.
 - HUB AND SPIGOT CAST IRON PIPE AND FITTINGS WITH NEPRENE GASKETED JOINTS.
 - NON-DOMESTIC WATER:
 - TYPE "C" HARD COPPER TUBING WITH CAST BRONZE OR WROUGHT COPPER FITTINGS AND LEAD-FREE SOLDER JOINTS.
 - STANDARD WEIGHT RED BRASS PIPE WITH STANDARD WEIGHT CAST BRONZE THREADED FITTINGS.
 - NATURAL GAS:
 - SCHEDULE 40 BLACK STEEL PIPE WITH THREADED MALLEABLE IRON FITTINGS FOR PRESSURE BELOW 2 PSI.
 - PIPE 4 INCHES IN DIAMETER AND LARGER SHALL HAVE WELDED JOINTS.
 - JOINT MATERIALS:
 - SOLDER FILLER METALS: ASTM B-32, LEAD FREE ALLOYS. INCLUDE WATER FLUSHABLE FLUX ACCORDING TO ASTM B-813.
 - COUPLINGS: ASSEMBLES WITH COMBINATION OF CLAMPS, GASKETS, SLEEVES, AND THREADED OR FLANGED PARTS, COMPATIBLE WITH PIPING AND SYSTEM LIQUID, AND MADE BY PIPING MANUFACTURER FOR JOINTING SYSTEM PIPING.
 - ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.
 - ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILING, AND PARTITIONS SHALL BE COVERED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.
17. VALVES:
- DATE VALVES:
 - BRONZE RISING STEM, 300 PSI SIMILAR TO NIBCO T-111 (THREADED), S-111 (SWIFT)
 - BALL VALVES:
 - 2-1/2" SIZE, BRONZE, 600 PSI WMP, SIMILAR TO NIBCO T-385-70 (THREADED), S-385-70 (SWIFT).
 - CHECK VALVES:
 - BRONZE, THREADED CAP, TEFLON DISC, SIMILAR TO NIBCO T-433 (THREADED), S-433 (SWIFT).
18. INSULATION:
- ALL INSULATION (INCLUDING JACKET, FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 25, AND UL 225; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 25.
 - PROVIDE RIGID SHIELDED FIBERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
 - PROVIDE VAPOR BARRIER ON ALL COLD WATER VALVES AND FITTINGS.
 - PIPE INSULATION SHALL BE SECTIONAL COVERED FIBERGLASS SECURED IN PLACE WITH ADHESIVE TIE BRASS 1 INCH WIDE.
 - INSULATION SHALL NOT BE SECURED WITH STAPLES.
 - PROVIDE 1 INCH THICK INSULATION WITH VAPOR BARRIER ON ALL COLD WATER PIPING.
 - PROVIDE 1 INCH THICK INSULATION ON ALL HOT WATER PIPING.

19. SUBMITTALS:
- THE CONTRACTOR SHALL PREPARE FULL COMPLETED CONTRACT DRAWINGS FOR THE MECHANICAL, ELECTRICAL AND FIRE PROTECTION TRADES. THE CONTRACTOR SHALL OVERLAY EACH TRADE'S WORK ON REPRODUCIBLE SET OF SHEETMETAL. THE CONTRACTOR SHALL PROVIDE THE SHEETMETAL DRAWINGS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO CONFLICTS WITH LIGHTS, EQUIPMENT, PIPING, DUCTWORK AND SUPPORTS OF OTHER TRADES, AS WELL AS CONFLICTS WITH MECHANICAL AND STRUCTURAL WALLS, CEILING, AND FLOORS.
 - PRIOR TO THE INSTALLATION OF ANY WORK AND PRIOR TO THE START OF EQUIPMENT, PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INCLUDING CHARACTERISTICS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
 - INDICATE ON EACH SHOP DRAWING SUBMITTED:
 - PROJECT NAME AND LOCATION.
 - NAME OF ARCHITECT AND ENGINEER.
 - DATE OF SUBMISSION.
 - APPROVAL STAMP OF PRIME CONTRACTOR.
 - SUBMISSIONS:
 - SUBMISSIONS 1 1/2 IN. X 17 IN. OR SMALLER: THE SUBMISSION IS A CATALOG ORIGINAL, AND ONE COPY (TWO COPIES WHEN ORIGINAL IS RETURNED) TO THE ARCHITECT. ALL CATALOGS SHALL BE COMPLETE.
 - SUBMISSIONS LARGER THAN 1 1/2 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPA TO THE ENGINEER.
 - SHOP DRAWINGS:
 - PREPARE AND SUBMIT DETAILED SHOP DRAWINGS FOR PIPING WORK AND OTHER DISTURBING SERVICES INCLUDING EQUIPMENT AND SETS OF ALL OPENINGS IN FLOOR WALLS AND ROOFS.
 - THE WORK DESCRIBED IN ANY SHOP DRAWING SUBMISSION SHALL BE CAREFULLY CHECKED FOR ALL CLEARANCES INCLUDING THOSE REQUIRED FOR MAINTENANCE AND SERVICING, FIELD CONDITIONS, MAINTENANCE OF ARCHITECTURAL CONDITIONS AND PROPER COORDINATION WITH ALL TRADES ON THE JOB.
 - EACH SUBMITTED SHOP DRAWING TO INCLUDE A CERTIFICATION THAT ALL RELATED JOBS CONTIGUOUS HAVE BEEN CHECKED AND THAT NO CONFLICT EXISTS.
 - ALL DRAWINGS TO BE SUBMITTED SUFFICIENTLY IN ADVANCE OF FIELD REQUIREMENTS TO ALLOW FOR REVIEW AND REVISIONS. SHOP DRAWINGS SHALL BE SUBMITTED WITH MULTIPLE PARTS SHALL BE SUBMITTED AS A PACKAGE.
 - IF SUBMITTALS DIFFER FROM THE CONTRACT DOCUMENT REQUIREMENTS, MAKE REQUEST FOR SUBSTITUTION, REVISIONS WITH REASONS FOR SAME.
 - REVISIONS TO SUBMITTED SHOP DRAWINGS SHALL BE SUBMITTED WITH REASONS FOR APPROVALS. DRAWING ARRANGEMENT AND LAYOUT SHALL NOT REFLECT CONTRACTOR REQUIREMENTS. REVISIONS SHALL BE PROVIDED WITH DIMENSIONS AND WEIRTS. FERRON THE REQUIREMENTS AND INTENT OF THE WORK. SUCH REVISIONS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS OR INADEQUACIES OF ANY SORT ON SUBMITTED DATA ON SHOP DRAWINGS.
 - EACH SHOP DRAWING TO CONTAIN JOB TITLE CONTRACTOR AND SUBCONTRACTOR INFORMATION AND TO BE REFERRED TO THE APPLICABLE DESIGN DRAWING OR SPECIFICATION ARTICLE, DATE AND SCALE.
 - UPON AWARD OF CONTRACT, CONTRACTOR SHALL SUBMIT LIST OF DRAWINGS THAT THEY WILL REQUIRE. AFW WILL PROVIDE DRAWINGS IN (PDF) FORMAT ONLY. SHOULD CONTRACTOR REQUIRE (JPG) FORMAT, ADDITIONAL DRAWING SUPPLIED PLUS REVISIONS. CONTRACTOR SHALL SUBMIT ALL DRAWINGS AND REVISIONS TO THE ARCHITECT FOR REVIEW AND APPROVAL. THE ARCHITECT MUST FIRST BE OBTAINED FOR ANY TO INCLUDE THE ARCHITECTURAL BACKGROUND AS REFERENCE.
 - THESE FILES ARE BEING ISSUED FOR THE CONVENIENCE OF THE CONTRACTOR AND THE CONTRACTOR REMAINS RESPONSIBLE FOR ALL CONTRACT REQUIREMENTS RELATED TO THE NORMAL SHOP DRAWING PREPARATION PROCESS.
 - WITHIN 15 DAYS AFTER AWARD OF CONTRACT, SUBMIT FOR REVIEW A LIST OF ALL SHOP DRAWINGS TO BE SUBMITTED TO THE ARCHITECT AND ENGINEER, AS WELL AS NAMES OF ALL SUBCONTRACTORS WHOM THIS TRADE PROPOSES TO EMPLOY.
 - RECORD DRAWINGS:
 - THE CONTRACTOR SHALL MAINTAIN ON A DAILY BASIS AT THE PROJECT SITE A COMPLETE SET OF RECORD DRAWINGS, REFLECTING AN ACCURATE DIMENSIONAL RECORD OF THE FINISHED WORK. CONTRACTORS SHALL BE RESPONSIBLE FOR THE PREPARATION OF THE FINAL SET OF RECORD DRAWINGS. CONTRACTORS SHALL REPAIR OR REPLACE ANY RECORD DRAWINGS THAT ARE DAMAGED, LOST, OR CONCEALED OR EMERGED PIPING AND VALVES AND ALL CHANGES AND DEVIATIONS IN THE MECHANICAL WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS. THIS SHALL BE DONE IMMEDIATELY UPON IDENTIFICATION OF SUCH CHANGES. THE CONTRACTOR SHALL MAKE CHANGES IN THE LAYOUT OR WORK WITHOUT WRITTEN DEFINITE INSTRUCTIONS FROM THE ARCHITECT OR ENGINEER. THE DAILY RECORD DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL. DIVISION WITH THE ENGINEER'S SEAL AND ENGINEER'S FIRM NAME REMOVED OR BLACKED OUT. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL PURCHASE AND MAINTAIN A SET OF 8 1/2" X 11" PAPER COPIES. ONE COPY OF THE RECORD DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL. A SET OF 8 1/2" X 11" PAPER COPIES SHALL BE MAINTAINED AT THE PROJECT SITE THROUGHOUT THE PROJECT.
 - PRIOR TO FINAL ACCEPTANCE OF THE WORK OF THIS DIVISION, THE CONTRACTOR SHALL SUBMIT PROPERLY IDENTIFIED RECORD DRAWINGS TO THE ARCHITECT AND ENGINEER FOR REVIEW. THE RECORD DRAWINGS SHALL BE DELIVERED TO THE OWNER.
 - DELIVERABLES BY THE CONTRACTOR TO THE OWNER SHALL INCLUDE ONE SET OF THREE SETS OF BLACK LINE COPIES, ONE COPY OF THE RECORD DRAWINGS, AND ONE SET OF 8 1/2" X 11" PAPER COPIES WITH ALL DRAWINGS FILED IN AUTO CAD 2004 FORMAT.
 - SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
 - PIPE AND FITTINGS
 - VALVES
 - PIPING LAYOUTS
 - SUPPORTS, HANGERS AND GUIDES
 - PLUMBING EQUIPMENT AND TRIM
 - WATER HEATER
 - AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:
 - UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
 - THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2" X 11" PAPER AND BOUND IN A COVER. THE INSTRUCTIONS SHALL BE SUBMITTED TO THE OWNER AND ONE COPY TO THE ARCHITECT AND ENGINEER. THE INSTRUCTIONS SHALL BE SUBMITTED TO THE OWNER AND ONE COPY TO THE ARCHITECT AND ENGINEER.
 - THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
 - REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF INSTALLATION.

20. PLUMBING SPECIFICATIONS:
- GENERAL:
 - VERIFY CONDITIONS OF THE CONTRACT FOR CONFLICTS WITH ANY DRAWINGS, AS NOTED. THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
 - REFER TO ALL SPECIFICATIONS FOR MATERIALS, MANUFACTURE, FINISHES, WORKS, OR PHASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
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 - "WORK" TO MEAN: WORK, WIRE, BOXES AND RELATED ITEMS.
 - "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND RELATED ITEMS.
 - QUALITY ASSURANCE:
 - QUALITY AND GAUGE 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.
 - PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.
 - PRODUCT DELIVERY, STORAGE AND HANDLING:
 - MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTON SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
 - ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMISSIBLE WITHOUT REVIEW.
 - PART SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS. MATERIALS SHALL BE KEPT IN ORIGINAL CONTAINERS UNTIL USED. AFTER FABRICATION, UTILIZE NOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE PASTE LEAD OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR BRASS. BRASS OR COPPER SHALL BE UTILIZED FOR STEEL OR IRON WORK.
 - BRASS AND CLEAN WORK PIPING TO CORROSION-RESISTANT AND ACCEPTABLE. PAINTED EXPOSED WORK THAT IS SOILED OR DAMAGED, CLEAN AND REPAIR TO MATCH ADJOINING MATERIAL AND EQUIPMENT.
 - FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE REVIEWED BY ARCHITECT.
 - ALL ACCESS ROAD LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
 - PIPE AND FITTINGS:
 - SANITARY DRAINAGE AND VENT:
 - HUBS AND CAST IRON PIPE AND FITTINGS WITH WAGON FANDED HUBSIE SERIES 4000 EXTRA WIDE HEAVY DUTY GASKETED HUBLESS COUPLINGS.
 - HUB AND SPIGOT CAST IRON PIPE AND FITTINGS WITH NEPRENE GASKETED JOINTS.
 - NON-DOMESTIC WATER:
 - TYPE "C" HARD COPPER TUBING WITH CAST BRONZE OR WROUGHT COPPER FITTINGS AND LEAD-FREE SOLDER JOINTS.
 - STANDARD WEIGHT RED BRASS PIPE WITH STANDARD WEIGHT CAST BRONZE THREADED FITTINGS.
 - NATURAL GAS:
 - SCHEDULE 40 BLACK STEEL PIPE WITH THREADED MALLEABLE IRON FITTINGS FOR PRESSURE BELOW 2 PSI.
 - PIPE 4 INCHES IN DIAMETER AND LARGER SHALL HAVE WELDED JOINTS.
 - JOINT MATERIALS:
 - SOLDER FILLER METALS: ASTM B-32, LEAD FREE ALLOYS. INCLUDE WATER FLUSHABLE FLUX ACCORDING TO ASTM B-813.
 - COUPLINGS: ASSEMBLES WITH COMBINATION OF CLAMPS, GASKETS, SLEEVES, AND THREADED OR FLANGED PARTS, COMPATIBLE WITH PIPING AND SYSTEM LIQUID, AND MADE BY PIPING MANUFACTURER FOR JOINTING SYSTEM PIPING.
 - ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.
 - ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILING, AND PARTITIONS SHALL BE COVERED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.
 - VALVES:
 - DATE VALVES:
 - BRONZE RISING STEM, 300 PSI SIMILAR TO NIBCO T-111 (THREADED), S-111 (SWIFT)
 - BALL VALVES:
 - 2-1/2" SIZE, BRONZE, 600 PSI WMP, SIMILAR TO NIBCO T-385-70 (THREADED), S-385-70 (SWIFT).
 - CHECK VALVES:
 - BRONZE, THREADED CAP, TEFLO N DISC, SIMILAR TO NIBCO T-433 (THREADED), S-433 (SWIFT).
 - INSULATION:
 - ALL INSULATION (INCLUDING JACKET, FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 25, AND UL 225; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 25.
 - PROVIDE RIGID SHIELDED FIBERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
 - PROVIDE VAPOR BARRIER ON ALL COLD WATER VALVES AND FITTINGS.
 - PIPE INSULATION SHALL BE SECTIONAL COVERED FIBERGLASS SECURED IN PLACE WITH ADHESIVE TIE BRASS 1 INCH WIDE.
 - INSULATION SHALL NOT BE SECURED WITH STAPLES.
 - PROVIDE 1 INCH THICK INSULATION WITH VAPOR BARRIER ON ALL COLD WATER PIPING.
 - PROVIDE 1 INCH THICK INSULATION ON ALL HOT WATER PIPING.

21. SUBMITTALS:
- THE CONTRACTOR SHALL PREPARE FULL COMPLETED CONTRACT DRAWINGS FOR THE MECHANICAL, ELECTRICAL AND FIRE PROTECTION TRADES. THE CONTRACTOR SHALL OVERLAY EACH TRADE'S WORK ON REPRODUCIBLE SET OF SHEETMETAL. THE CONTRACTOR SHALL PROVIDE THE SHEETMETAL DRAWINGS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO CONFLICTS WITH LIGHTS, EQUIPMENT, PIPING, DUCTWORK AND SUPPORTS OF OTHER TRADES, AS WELL AS CONFLICTS WITH MECHANICAL AND STRUCTURAL WALLS, CEILING, AND FLOORS.
 - PRIOR TO THE INSTALLATION OF ANY WORK AND PRIOR TO THE START OF EQUIPMENT, PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INCLUDING CHARACTERISTICS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
 - INDICATE ON EACH SHOP DRAWING SUBMITTED:
 - PROJECT NAME AND LOCATION.
 - NAME OF ARCHITECT AND ENGINEER.
 - DATE OF SUBMISSION.
 - APPROVAL STAMP OF PRIME CONTRACTOR.
 - SUBMISSIONS:
 - SUBMISSIONS 1 1/2 IN. X 17 IN. OR SMALLER: THE SUBMISSION IS A CATALOG ORIGINAL, AND ONE COPY (TWO COPIES WHEN ORIGINAL IS RETURNED) TO THE ARCHITECT. ALL CATALOGS SHALL BE COMPLETE.
 - SUBMISSIONS LARGER THAN 1 1/2 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPA TO THE ENGINEER.
 - SHOP DRAWINGS:
 - PREPARE AND SUBMIT DETAILED SHOP DRAWINGS FOR PIPING WORK AND OTHER DISTURBING SERVICES INCLUDING EQUIPMENT AND SETS OF ALL OPENINGS IN FLOOR WALLS AND ROOFS.
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 - IF SUBMITTALS DIFFER FROM THE CONTRACT DOCUMENT REQUIREMENTS, MAKE REQUEST FOR SUBSTITUTION, REVISIONS WITH REASONS FOR SAME.
 - REVISIONS TO SUBMITTED SHOP DRAWINGS SHALL BE SUBMITTED WITH REASONS FOR APPROVALS. DRAWING ARRANGEMENT AND LAYOUT SHALL NOT REFLECT CONTRACTOR REQUIREMENTS. REVISIONS SHALL BE PROVIDED WITH DIMENSIONS AND WEIRTS. FERRON THE REQUIREMENTS AND INTENT OF THE WORK. SUCH REVISIONS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS OR INADEQUACIES OF ANY SORT ON SUBMITTED DATA ON SHOP DRAWINGS.
 - EACH SHOP DRAWING TO CONTAIN JOB TITLE CONTRACTOR AND SUBCONTRACTOR INFORMATION AND TO BE REFERRED TO THE APPLICABLE DESIGN DRAWING OR SPECIFICATION ARTICLE, DATE AND SCALE.
 - UPON AWARD OF CONTRACT, CONTRACTOR SHALL SUBMIT LIST OF DRAWINGS THAT THEY WILL REQUIRE. AFW WILL PROVIDE DRAWINGS IN (PDF) FORMAT ONLY. SHOULD CONTRACTOR REQUIRE (JPG) FORMAT, ADDITIONAL DRAWING SUPPLIED PLUS REVISIONS. CONTRACTOR SHALL SUBMIT ALL DRAWINGS AND REVISIONS TO THE ARCHITECT FOR REVIEW AND APPROVAL. THE ARCHITECT MUST FIRST BE OBTAINED FOR ANY TO INCLUDE THE ARCHITECTURAL BACKGROUND AS REFERENCE.
 - THESE FILES ARE BEING ISSUED FOR THE CONVENIENCE OF THE CONTRACTOR AND THE CONTRACTOR REMAINS RESPONSIBLE FOR ALL CONTRACT REQUIREMENTS RELATED TO THE NORMAL SHOP DRAWING PREPARATION PROCESS.
 - WITHIN 15 DAYS AFTER AWARD OF CONTRACT, SUBMIT FOR REVIEW A LIST OF ALL SHOP DRAWINGS TO BE SUBMITTED TO THE ARCHITECT AND ENGINEER, AS WELL AS NAMES OF ALL SUBCONTRACTORS WHOM THIS TRADE PROPOSES TO EMPLOY.
 - RECORD DRAWINGS:
 - THE CONTRACTOR SHALL MAINTAIN ON A DAILY BASIS AT THE PROJECT SITE A COMPLETE SET OF RECORD DRAWINGS, REFLECTING AN ACCURATE DIMENSIONAL RECORD OF THE FINISHED WORK. CONTRACTORS SHALL BE RESPONSIBLE FOR THE PREPARATION OF THE FINAL SET OF RECORD DRAWINGS. CONTRACTORS SHALL REPAIR OR REPLACE ANY RECORD DRAWINGS THAT ARE DAMAGED, LOST, OR CONCEALED OR EMERGED PIPING AND VALVES AND ALL CHANGES AND DEVIATIONS IN THE MECHANICAL WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS. THIS SHALL BE DONE IMMEDIATELY UPON IDENTIFICATION OF SUCH CHANGES. THE CONTRACTOR SHALL MAKE CHANGES IN THE LAYOUT OR WORK WITHOUT WRITTEN DEFINITE INSTRUCTIONS FROM THE ARCHITECT OR ENGINEER. THE DAILY RECORD DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL. DIVISION WITH THE ENGINEER'S SEAL AND ENGINEER'S FIRM NAME REMOVED OR BLACKED OUT. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL PURCHASE AND MAINTAIN A SET OF 8 1/2" X 11" PAPER COPIES. ONE COPY OF THE RECORD DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL. A SET OF 8 1/2" X 11" PAPER COPIES SHALL BE MAINTAINED AT THE PROJECT SITE THROUGHOUT THE PROJECT.
 - PRIOR TO FINAL ACCEPTANCE OF THE WORK OF THIS DIVISION, THE CONTRACTOR SHALL SUBMIT PROPERLY IDENTIFIED RECORD DRAWINGS TO THE ARCHITECT AND ENGINEER FOR REVIEW. THE RECORD DRAWINGS SHALL BE DELIVERED TO THE OWNER.
 - DELIVERABLES BY THE CONTRACTOR TO THE OWNER SHALL INCLUDE ONE SET OF THREE SETS OF BLACK LINE COPIES, ONE COPY OF THE RECORD DRAWINGS, AND ONE SET OF 8 1/2" X 11" PAPER COPIES WITH ALL DRAWINGS FILED IN AUTO CAD 2004 FORMAT.
 - SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
 - PIPE AND FITTINGS
 - VALVES
 - PIPING LAYOUTS
 - SUPPORTS, HANGERS AND GUIDES
 - PLUMBING EQUIPMENT AND TRIM
 - WATER HEATER
 - AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:
 - UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
 - THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2" X 11" PAPER AND BOUND IN A COVER. THE INSTRUCTIONS SHALL BE SUBMITTED TO THE OWNER AND ONE COPY TO THE ARCHITECT AND ENGINEER. THE INSTRUCTIONS SHALL BE SUBMITTED TO THE OWNER AND ONE COPY TO THE ARCHITECT AND ENGINEER.
 - THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
 - REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF INSTALLATION.

22. PLUMBING SPECIFICATIONS:
- GENERAL:
 - VERIFY CONDITIONS OF THE CONTRACT FOR CONFLICTS WITH ANY DRAWINGS, AS NOTED. THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
 - REFER TO ALL SPECIFICATIONS FOR MATERIALS, MANUFACTURE, FINISHES, WORKS, OR PHASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
 - DEFINITIONS:
 - "INSTALL" TO MEAN: INSTALL AND HANGERS OR SUPPORTS AND BRACKETS FOR USE OTHERWISE NOTED.
 - "INSTALL" TO MEAN: MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
 - "INSTALL" TO MEAN: PURCHASE, PROVIDE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
 - "INSTALL" TO MEAN: PURCHASE, PROVIDE, ACQUIRE, CONTROL, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
 - "FURNISH" TO MEAN: FURNISH OR OTHER MANUFACTURER, INSTALLED IN TUBED SPACES WITH DOUBLE PARTITIONS OR HUNG CEILING, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
 - "EXPOSED" TO MEAN: EXPOSED TO MATERIALS, WEAR, SIZE, DESIGN, PERFORMANCE AND EFFICIENCY OF SPECIFIED PRODUCT.
 - "WORK" TO MEAN: WORK, WIRE, BOXES AND RELATED ITEMS.
 - "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND RELATED ITEMS.
 - QUALITY ASSURANCE:
 - QUALITY AND GAUGE 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.
 - PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.
 - PRODUCT DELIVERY, STORAGE AND HANDLING:
 - MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTON SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
 - ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMISSIBLE WITHOUT REVIEW.
 - PART SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS. MATERIALS SHALL BE KEPT IN ORIGINAL CONTAINERS UNTIL USED. AFTER FABRICATION, UTILIZE NOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE PASTE LEAD OR ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR BRASS. BRASS OR COPPER SHALL BE UTILIZED FOR STEEL OR IRON WORK.
 - BRASS AND CLEAN WORK PIPING TO CORROSION-RESISTANT AND ACCEPTABLE. PAINTED EXPOSED WORK THAT IS SOILED OR DAMAGED, CLEAN AND REPAIR TO MATCH ADJOINING MATERIAL AND EQUIPMENT.
 - FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL PLUMBING FIXTURES SHALL BE REVIEWED BY ARCHITECT.
 - ALL ACCESS ROAD LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
 - PIPE AND FITTINGS:
 - SANITARY DRAINAGE AND VENT:
 - HUBS AND CAST IRON PIPE AND FITTINGS WITH WAGON FANDED HUBSIE SERIES 4000 EXTRA WIDE HEAVY DUTY GASKETED HUBLESS COUPLINGS.
 - HUB AND SPIGOT CAST IRON PIPE AND FITTINGS WITH NEPRENE GASKETED JOINTS.
 - NON-DOMESTIC WATER:
 - TYPE "C" HARD COPPER TUBING WITH CAST BRONZE OR WROUGHT COPPER FITTINGS AND LEAD-FREE SOLDER JOINTS.
 - STANDARD WEIGHT RED BRASS PIPE WITH STANDARD WEIGHT CAST BRONZE THREADED FITTINGS.
 - NATURAL GAS:
 - SCHEDULE 40 BLACK STEEL PIPE WITH THREADED MALLEABLE IRON FITTINGS FOR PRESSURE BELOW 2 PSI.
 - PIPE 4 INCHES IN DIAMETER AND LARGER SHALL HAVE WELDED JOINTS.
 - JOINT MATERIALS:
 - SOLDER FILLER METALS: ASTM B-32, LEAD FREE ALLOYS. INCLUDE WATER FLUSHABLE FLUX ACCORDING TO ASTM B-813.
 - COUPLINGS: ASSEMBLES WITH COMBINATION OF CLAMPS, GASKETS, SLEEVES, AND THREADED OR FLANGED PARTS, COMPATIBLE WITH PIPING AND SYSTEM LIQUID, AND MADE BY PIPING MANUFACTURER FOR JOINTING SYSTEM PIPING.
 - ALL EXPOSED PIPE AND FITTINGS SHALL BE CHROME PLATED BRASS.
 - ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, CEILING, AND PARTITIONS SHALL BE COVERED WITH CHROME PLATED CAST BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.
 - VALVES:
 - DATE VALVES:
 - BRONZE RISING STEM, 300 PSI SIMILAR TO NIBCO T-111 (THREADED), S-111 (SWIFT)
 - BALL VALVES:
 - 2-1/2" SIZE, BRONZE, 600 PSI WMP, SIMILAR TO NIBCO T-385-70 (THREADED), S-385-70 (SWIFT).
 - CHECK VALVES:
 - BRONZE, THREADED CAP, TEFLO N DISC, SIMILAR TO NIBCO T-433 (THREADED), S-433 (SWIFT).
 - INSULATION:
 - ALL INSULATION (INCLUDING JACKET, FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 25, AND UL 225; NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 25.
 - PROVIDE RIGID SHIELDED FIBERGLASS INSULATION FITTINGS ON ALL VALVES AND PIPE FITTINGS.
 - PROVIDE VAPOR BARRIER ON ALL COLD WATER VALVES AND FITTINGS.
 - PIPE INSULATION SHALL BE SECTIONAL COVERED FIBERGLASS SECURED IN PLACE WITH ADHESIVE TIE BRASS 1 INCH WIDE.
 - INSULATION SHALL NOT BE SECURED WITH STAPLES.
 - PROVIDE 1 INCH THICK INSULATION WITH VAPOR BARRIER ON ALL COLD WATER PIPING.
 - PROVIDE 1 INCH THICK INSULATION ON ALL HOT WATER PIPING.

23. SUBMITTALS:
- THE CONTRACTOR SHALL PREPARE FULL COMPLETED CONTRACT DRAWINGS FOR THE MECHANICAL, ELECTRICAL AND FIRE PROTECTION TRADES. THE CONTRACTOR SHALL OVERLAY EACH TRADE'S WORK ON REPRODUCIBLE SET OF SHEETMETAL. THE CONTRACTOR SHALL PROVIDE THE SHEETMETAL DRAWINGS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO CONFLICTS WITH LIGHTS, EQUIPMENT, PIPING, DUCTWORK AND SUPPORTS OF OTHER TRADES, AS WELL AS CONFLICTS WITH MECHANICAL AND STRUCTURAL WALLS, CEILING, AND FLOORS.
 - PRIOR TO THE INSTALLATION OF ANY WORK AND PRIOR TO THE START OF EQUIPMENT, PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INCLUDING CHARACTERISTICS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
 - INDICATE ON EACH SHOP DRAWING SUBMITTED:
 - PROJECT NAME AND LOCATION.
 - NAME OF ARCHITECT AND ENGINEER.
 - DATE OF SUBMISSION.
 - APPROVAL STAMP OF PRIME CONTRACTOR.
 - SUBMISSIONS:
 - SUBMISSIONS 1 1/2 IN. X 17 IN. OR SMALLER: THE SUBMISSION IS A CATALOG ORIGINAL,