

PLUMBING SPECIFICATIONS

DIVISION 15 - MECHANICAL / PLUMBING

TABLE OF CONTENTS

Table with 2 columns: SECTION, SPECIAL REQUIREMENTS FOR MECHANICAL PLUMBING. Rows include 15010 PLUMBING, 15400 PLUMBING PIPING, 15410 PLUMBING FIXTURES, 15440 PLUMBING FIXTURES.

SECTION 15010 - SPECIAL REQUIREMENTS FOR MECHANICAL PLUMBING

PART 1.00 - GENERAL

1.01 REFERENCES:

- A. THE GENERAL CONDITIONS AND SPECIAL CONDITIONS ARE A PART OF THIS SECTION.
B. WHERE ITEMS OF THE GENERAL CONDITIONS AND SPECIAL CONDITIONS ARE REPEATED IN THIS SECTION OF THE SPECIFICATIONS, IT IS MERELY INTENDED TO QUALIFY OR TO CALL ATTENTION TO THEM. IT IS NOT INTENDED THAT ANY OTHER PART OF THE GENERAL CONDITIONS SHALL BE ASSUMED TO BE OMITTED IF NOT REPEATED HEREIN.
C. THIS SECTION APPLIES EQUALLY AND SPECIFICALLY TO ALL CONTRACTORS SUPPLYING LABOR AND/OR EQUIPMENT AND/OR MATERIALS AS REQUIRED UNDER EACH SECTION OF THIS DIVISION.

1.02 INTENT:

- A. IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THE SPECIFICATIONS OR VICE-VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECT AND READY FOR OPERATION, EVEN IF NOT PARTIALLY SPECIFIED, SHALL BE FINISHED, DELIVERED AND INSTALLED UNDER THEIR RESPECTIVE DIVISION WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
B. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER INSTALLATION AND OPERATION, SHALL BE INCLUDED IN THE WORK AS THOUGH THEY ARE HEREINAFTER SPECIFIED OR GIVEN.
C. WORK UNDER EACH SECTION SHALL INCLUDE WRITING NOTICE TO THE OWNER OF ANY MATERIALS OR APPARATUS BELIEVED INADEQUATE OR UNSUITABLE, IN VIOLATION OF LAWS, ORDINANCES, RULES OR REGULATIONS OF AUTHORITIES HAVING JURISDICTION, AND NECESSARY ITEMS OF NOTICE, IT IS MUTUALLY AGREED THAT WORK UNDER EACH DIVISION HAS INCLUDED THE COST OF ALL REQUIRED ITEMS FOR THE APPROVED SATISFACTORY FUNCTIONING OF THE ENTIRE SYSTEM WITHOUT EXTRA COMPENSATION.

1.03 DRAWINGS:

- A. DRAWINGS ARE DIAGRAMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. DO NOT SCALE THE DRAWINGS. CONSULT THE DESIGNER DRAWINGS AND DETAILS EXACT LOCATION OF FIXTURES AND EQUIPMENT, WHERE SAME ARE NOT DEFINITELY LOCATED, OBTAIN THIS INFORMATION FROM THE DESIGNER.
B. WORK UNDER EACH SECTION SHALL CLOSELY FOLLOW DRAWINGS IN LAYOUT OF WORK AND CHECK DRAWINGS OF OTHER DIVISIONS TO VERIFY SPACES IN WHICH WORK WILL BE INSTALLED. MAINTAIN MAXIMUM HEADROOM AND WHERE SPACE CONDITIONS APPEAR INADEQUATE, ENGINEER SHALL BE NOTIFIED BEFORE PROCEEDING WITH INSTALLATIONS.
C. ENGINEER MAY, WITHOUT EXTRA CHARGE, MAKE REASONABLE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK.
D. WHERE VARIANCES OCCUR BETWEEN THE DRAWINGS AND SPECIFICATIONS OR WITHIN EITHER OF THE DOCUMENTS, THE ITEM OR ARRANGEMENT OF BETTER QUALITY, OR HIGHER COST, SHALL BE INCLUDED IN THE CONTRACT PRICE. THE ENGINEER SHALL DECIDE ON THE ITEM AND THE MANNER IN WHICH THE WORK SHALL BE INSTALLED.

1.04 SURVEYS AND MEASUREMENTS:

- A. BEFORE SUBMITTING TO HIS BID, THE CONTRACTOR SHALL VISIT THE SITE, AND THE EXISTING BUILDING AND SHALL BECOME THOROUGHLY FAMILIAR WITH ALL CONDITIONS UNDER WHICH HIS WORK WILL BE INSTALLED, AS HE WILL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS HE MAKES OR ANY OMISSIONS OR ERRORS HE MAKES AS A RESULT OF HIS FAILURE TO BECOME FAMILIAR WITH THE SITE, THE EXISTING BUILDING AND THE CONTRACT DOCUMENTS.
B. THE CONTRACTOR SHALL BASE ALL MEASUREMENTS, BOTH HORIZONTAL AND VERTICAL FROM ESTABLISHED MARKS. ALL WORK SHALL AGREE WITH THESE ESTABLISHED LINES AND LEVELS. VERIFY ALL MEASUREMENTS AT SITE AND CHECK THE CORRECTNESS OF SAME AS RELATED TO THE WORK.
C. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCY BETWEEN ACTUAL MEASUREMENTS AND THOSE INDICATED, WHICH PREVENTS FOLLOWING GOOD PRACTICE OR THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, HE SHALL NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH HIS WORK UNTIL HE HAS RECEIVED INSTRUCTIONS FROM THE ENGINEER.

1.05 CODES AND STANDARDS:

- A. THE STANDARDS AND CODES LISTED BELOW SHALL APPLY TO ALL MECHANICAL WORK, WHERE STANDARDS OR CODES ARE MENTIONED IN THESE SPECIFICATIONS, THE LATEST EDITION OR REVISION SHALL BE FOLLOWED.
1. ANSI A13.1 - SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEM
2. ANSI A40.8 - NATIONAL PLUMBING CODES
3. ANSI C 11 - NATIONAL ELECTRIC CODE (NFPA 70)
4. ANSI C50 - ROTATING ELECTRICAL MACHINERY
5. ANSI C51.1 - CONSTRUCTION AND GUIDE FOR SELECTION, INSTALLATION F
6. ANSI C52.1 - MOTORS AND GENERATORS (NEMA MG 1 )
B. STATE AND LOCAL CODES SHALL APPLY AS LIST ON COVER SHEET.
C. THE FOLLOWING ABBREVIATIONS ARE USED WITHIN THIS SECTION OF THE SPECIFICATIONS:

- ACPA - AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
AMCA - AIR MOVING AND CONDITIONING ASSOCIATION
ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE
API - AMERICAN PETROLEUM INSTITUTE
ARI - AIR CONDITIONING AND REFRIGERATION INSTITUTE
ASHRAE - AMERICAN SOCIETY OF HEATING REFRIGERATION AND AIR CONDITIONING ENGINEERS
ASME - AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM - AMERICAN SOCIETY OF TESTING AND MATERIALS
AWS - AMERICAN WELDING SOCIETY
AWWA - AMERICAN WATER WORKS ASSOCIATION
BOCA - BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL, INC.
CGA - COMPRESSED GAS ASSOCIATION
CISPI - CAST IRON SOIL PIPE INSTITUTE
EJMA - EXPANSION JOINT MANUFACTURERS ASSOCIATION
EPA - ENVIRONMENTAL PROTECTION AGENCY
FSSC - FEDERAL SPECIFICATION
IBR - INSTITUTE OF BOILER AND RADIATOR MANUFACTURERS
IEE - INSTITUTE OF ELECTRICAL AND ELECTRICAL ENGINEERS
NEMA - NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
NOFI - NATIONAL OIL FUEL INSTITUTE
NSPC - NATIONAL STANDARD PLUMBING CODE
OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PDI - PLUMBING AND DRAINAGE INSTITUTE
SMACNA - SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
UL - UNDERWRITERS' LABORATORIES

1.06 PERMITS AND FEES:

- A. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL GOVERNMENT SALES TAXES AND FEES WHERE APPLICABLE, AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS, IN CONNECTION WITH HIS WORK. FILE ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK AND DELIVER A COPY TO THE ENGINEER BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.
B. THE CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST TO THE OWNER, ANY LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS, IN ORDER TO COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS, WHETHER OR NOT SHOWN ON DRAWINGS AND/OR SPECIFIED.
C. ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH RULES AND RECOMMENDATIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION, WITH THE REQUIREMENTS OF THE LOCAL UTILITY COMPANIES, WITH THE RECOMMENDATIONS OF THE INSURING AUTHORITY, AND WITH THE REQUIREMENTS OF ALL GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION.

1.07 COORDINATION WITH OTHER DIVISIONS:

- A. ALL WORK SHALL BE CARRIED OUT IN CONJUNCTION WITH OTHER TRADES AND FULL COOPERATION SHALL BE IN ORDER THAT ALL WORK MAY PROCEED WITH A MINIMUM OF DELAY AND INTERFERENCE. PARTICULAR EMPHASIS PLACED ON TIMELY INSTALLATION OF MAJOR APPARATUS AND FURNISHING OTHER CONTRACTORS, ESPECIALLY THE GENERAL CONTRACTOR, WITH INFORMATION AS TO OPENINGS, CHASES, EQUIPMENT LOCATIONS, PANELS WIRING REQUIRED BY OTHER TRADES.
B. THE CONTRACTOR IS REQUIRED TO EXAMINE ALL OF THE PROJECT DRAWING AND MUTUALLY ARRANGE WORK SO AS TO AVOID INTERFERENCE. DUCTWORK, HEATING PIPES AND DRAINAGE LINES TAKE PRECEDENCE OVER WATER, GAS AND ELECTRICAL CONDUITS.
C. WHERE THE WORK OF THE CONTRACTOR WILL BE INSTALLED IN CLOSE PROXIMITY TO, OR WILL INTERFERE WITH WORK OF OTHER TRADES, HE SHALL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE A SATISFACTORY ADJUSTMENT. IF SO DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PREPARE COMPOSITE WORKING DRAWINGS AND SECTIONS AT A SCALE NOT LESS THAN 3/8" = 1' - 0", CLEARLY SHOWING HOW HIS WORK IS TO BE INSTALLED IN RELATION TO THE WORK OF OTHER TRADES. IF THE CONTRACTOR INSTALLS HIS WORK BEFORE COORDINATING WITH OTHER TRADES, HE SHALL MAKE NECESSARY CHANGES IN HIS WORK TO CORRECT THE CONDITION WITHOUT EXTRA CHARGE. CONTRACTORS SHALL COORDINATE RADIATION COVERS WITH CONVENIENCE OUTLETS TO AVOID CONFLICTS.

1.08 APPROVALS:

- A. THE MATERIALS, WORKMANSHIP, DESIGN AND ARRANGEMENT OF ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
B. WITHIN THIRTY (30) DAYS AFTER THE ACCEPTANCE OF BIDS, THE MECHANICAL CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF MANUFACTURERS OF EQUIPMENT PROPOSED FOR THE WORK UNDER THE MECHANICAL SECTION. THE INTENT TO USE THE EXACT MAKES SPECIFIED DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF SUBMITTING SUCH A LIST.
C. WHERE ANY SPECIFIC MATERIAL, PROCESS OR METHOD OF CONSTRUCTION, OR MANUFACTURED ARTICLE IS SPECIFIED BY NAME OR BY REFERENCE TO THE CATALOGUE NUMBER OF A MANUFACTURER, THE SPECIFICATIONS ARE TO BE USED AS A GUIDE AND ARE NOT INTENDED TO TAKE PRECEDENCE OVER THE BASIC DUTY AND PERFORMANCE SPECIFIED WITH THE SPECIFIC CHARACTERISTICS OF THE EQUIPMENT OFFERED FOR APPROVAL. EQUIPMENT CHARACTERISTICS ARE TO BE USED AS MANDATORY REQUIREMENTS WHERE CONTRACTOR PROPOSES TO USE AN APPROVED EQUAL.
D. ALL COMPONENT PARTS OF EACH ITEM OF EQUIPMENT OR DEVICE SHALL BEAR THE MANUFACTURER'S NAMEPLATE, GIVING NAME OF MANUFACTURER, DESCRIPTION, SIZE, TYPE, SERIAL OR MODEL NUMBER, ELECTRICAL CHARACTERISTICS, ETC., IN ORDER TO FACILITATE MAINTENANCE OR REPLACEMENT. THE NAMEPLATE OF SUBCONTRACTOR OR DISTRIBUTOR WILL NOT BE ACCEPTABLE.
E. IF MATERIAL OR EQUIPMENT IS INSTALLED BEFORE IT IS APPROVED, THE CONTRACTOR SHALL BE LIABLE FOR ITS REMOVAL AND REPLACEMENT AT NO EXTRA CHARGE TO THE OWNER IF, IN THE OPINION OF THE ENGINEER, THE MATERIAL OR EQUIPMENT DOES NOT MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS.

1.09 EQUIPMENT DEVIATIONS:

- A. BIDS SHALL BE BASED ON MATERIAL AND EQUIPMENT SPECIFIED, WHERE MORE THAN ONE MANUFACTURER IS NAMED IN THE PLANS OR SPECIFICATIONS, EQUIPMENT OR MATERIALS SHALL BE EQUAL TO THE MODEL OR TYPE SPECIFIED, BUT MAY BE THE PRODUCT OF ANY OF THE MANUFACTURERS LISTED FOR THE PARTICULAR ITEM. IF IT IS DESIRED TO SUBSTITUTE THE PRODUCT OF ANOTHER MANUFACTURER FOR A PARTICULAR ITEM, THE MANUFACTURER AND ITEM TO BE SUBSTITUTED SHALL BE NAMED ON THE BID FORM TOGETHER WITH THE ADDITION OR DEDUCTION OF THE BASE BID. BASE BID SHALL BE BASED ON USING MANUFACTURER'S EQUIPMENT AS SPECIFIED.
B. IN THESE SPECIFICATIONS AND ON THE ACCOMPANYING DRAWINGS, ONE OR MORE MAKES OF MATERIALS, APPARATUS OR APPLIANCE HAVE BEEN SPECIFIED FOR USE IN THIS INSTALLATION. THIS HAS BEEN DONE FOR CONFORMANCE IN FIXING THE STANDARD OF WORKMANSHIP, FINISH AND DESIGN REQUIRED FOR THIS WORKMANSHIP, FINISH AND DESIGN AND THE GUARANTEED PERFORMANCE OF ANY MATERIALS, APPARATUS OR APPLIANCE WHICH THE CONTRACTOR DESIRES TO SUBSTITUTE FOR THOSE MENTIONED STANDARDS. WHERE NO SPECIFIC MAKE OF MATERIAL, APPARATUS OR APPLIANCE IS MENTIONED, ANY FIRST CLASS PRODUCT MADE BY REPUTABLE MANUFACTURER MAY BE USED PROVIDED IT CONFORMS TO THE REQUIREMENTS OF THESE SPECIFICATIONS, IN THE OPINION OF AND MEETS THE APPROVAL OF THE ENGINEER. WHERE TWO OR MORE NAMES ARE GIVEN AS EQUALS, THE CONTRACTOR MUST USE ONE OF THE NAMED EQUALS. WHERE ONE NAME ONLY IS USED AND IS FOLLOWED BY THE WORD "OR APPROVED EQUAL" THE CONTRACTOR MUST USE THE ITEM NAMED, BUT HE MAY APPLY FOR SUBSTITUTION THROUGH THE PRESCRIBED MANNER.
C. WHERE THE CONTRACTOR PROPOSES TO USE AN ITEM OF EQUIPMENT OTHER THAN SPECIFIED OF DETAILED ON THE DRAWING WHICH REQUIRES ANY REDESIGN OF THE STRUCTURE, PARTITIONS, FOUNDATIONS WIRING, OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL OR DESIGNER/LAYOUT, ALL SUCH REDESIGN AND ALL NEW DRAWINGS AND DETAILING REQUIRED THEREOF SHALL WITH THE APPROVAL OF THE ENGINEER, BE PREPARED UNDER WORK OF THE RESPECTIVE SECTION AT NO COST TO THE OWNER.
D. WHERE SUCH APPROVED DEVIATION REQUIRES A DIFFERENT QUANTITY AND ARRANGEMENT OF DUCTWORK, PIPING, WIRING, CONDUIT AND EQUIPMENT FROM THAT SPECIFIED OR INDICATED ON THE DRAWINGS, WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR SHALL FURNISH AND INSTALL ANY SUCH DUCTWORK, PIPING, STRUCTURAL SUPPORTS, INSULATION, CONTROLLERS, MOTORS, STARTERS, AND ANY OTHER ADDITIONAL EQUIPMENT REQUIRED BY THE SYSTEM AT NO ADDITIONAL COST TO THE OWNER.

1.10 MANUFACTURER'S IDENTIFICATION:

- A. MANUFACTURER'S NAMEPLATE, NAME OR TRADEMARK AND ADDRESS SHALL BE ATTACHED PERMANENTLY TO ALL EQUIPMENT AND MATERIAL FURNISHED UNDER THIS DIVISION. THE NAMEPLATE OF A CONTRACTOR OR DISTRIBUTOR SHALL NOT BE ACCEPTABLE.
B. SHOP DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH THE REQUIREMENT OUTLINED IN THE GENERAL CONDITIONS OF THESE SPECIFICATIONS.
C. FAILURE OF THE CONTRACTOR TO SUBMIT SHOP DRAWINGS IN AMPLE TIME SHALL NOT ENTITLE HIM TO AN EXTENSION OF CONTRACT TIME AND NO CLAIM FOR ADDITIONAL PAYMENT BY REASON OF SUCH DEFAULT TO BE ALLOWED.
D. CATALOGUES, PAMPHLETS OR OTHER DOCUMENTS SUBMITTED TO DESCRIBE ITEMS ON WHICH APPROVAL IS REQUESTED, SHALL BE SPECIFIC AND IDENTIFICATION IN CATALOGUE, PAMPHLET, ETC. OF ITEM SUBMITTED SHALL BE CLEARLY MADE IN INK. DATA OF GENERAL NATURE WILL NOT BE ACCEPTED.
E. THE CONTRACTOR SHALL FURNISH ALL NECESSARY TEMPLATES, PATTERNS, ETC. FOR INSTALLATION WORK AND FOR THE PURPOSE OF MAKING CONNECTIONS TO CONFORM, FURNISH SETTING PLANS AND SHOP DETAILS TO OTHER TRADES AS REQUIRED.

1.11 SHOP DRAWINGS:

- A. CONTRACTOR SHALL SUBMIT FOR REVIEW, DETAILED SHOP DRAWINGS OF ALL EQUIPMENT AND ALL MATERIAL REQUIRED TO COMPLETE THE PROJECT. NO MATERIAL OR EQUIPMENT MAY BE DELIVERED TO THE SITE OR INSTALLED UNTIL THE CONTRACTOR HAS IN HIS POSSESSION AN APPROVED SHOP DRAWING FOR THE PARTICULAR MATERIAL OR EQUIPMENT.
B. SHOP DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH THE REQUIREMENT OUTLINED IN THE GENERAL CONDITIONS OF THESE SPECIFICATIONS.
C. FAILURE OF THE CONTRACTOR TO SUBMIT SHOP DRAWINGS IN AMPLE TIME SHALL NOT ENTITLE HIM TO AN EXTENSION OF CONTRACT TIME AND NO CLAIM FOR ADDITIONAL PAYMENT BY REASON OF SUCH DEFAULT TO BE ALLOWED.
D. CATALOGUES, PAMPHLETS OR OTHER DOCUMENTS SUBMITTED TO DESCRIBE ITEMS ON WHICH APPROVAL IS REQUESTED, SHALL BE SPECIFIC AND IDENTIFICATION IN CATALOGUE, PAMPHLET, ETC. OF ITEM SUBMITTED SHALL BE CLEARLY MADE IN INK. DATA OF GENERAL NATURE WILL NOT BE ACCEPTED.
E. THE CONTRACTOR SHALL FURNISH ALL NECESSARY TEMPLATES, PATTERNS, ETC. FOR INSTALLATION WORK AND FOR THE PURPOSE OF MAKING CONNECTIONS TO CONFORM, FURNISH SETTING PLANS AND SHOP DETAILS TO OTHER TRADES AS REQUIRED.

- F. APPROVAL RENDERED ON SHOP DRAWINGS SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR BUILDING CONDITIONS. WHERE DRAWINGS ARE DETAIL, APPROVAL DOES NOT MEAN THAT DRAWINGS HAVE BEEN CHECKED IN DETAIL; SAID APPROVAL DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY, OR NECESSITY IF FURNISHING MATERIAL OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS. VERIFY AVAILABLE SPACE PRIOR TO SUBMITTING SHOP DRAWINGS.
G. APPROVAL OF SHOP DRAWINGS SHALL NOT APPLY TO QUANTITY NOR RELIEVE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLY WITH INTENT OF DRAWINGS AND SPECIFICATIONS. APPROVAL OF SHOP DRAWINGS ARE FINAL AND NO FURTHER CHANGES WILL BE ALLOWED WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.

1.12 MATERIAL AND WORKMANSHIP:

- A. ALL MATERIALS AND APPARATUS REQUIRED FOR THE WORK, EXCEPT AS SPECIFIED OTHERWISE, SHALL BE NEW, OF FIRST CLASS QUALITY AND SHALL BE FURNISHED, DELIVERED, CONNECTED AND FINISHED IN EVERY DETAIL AND SHALL BE SO SELECTED AND ARRANGED TO FIT PROPERLY INTO THE BUILDING SPACE. WHERE NO SPECIFIC KIND OF QUALITY OR MATERIAL IS GIVEN, A FIRST-CLASS STANDARD ARTICLE AS ACCEPTED BY THE ENGINEER, SHALL BE FURNISHED.
B. THE CONTRACTOR SHALL FURNISH THE SERVICES OF AN EXPERIENCED SUPERINTENDENT WHO SHALL BE CONSTANTLY IN CHARGE OF THE INSTALLATION OF THE WORK, TOGETHER WITH ALL SKILLED WORKMEN, FITTERS, METAL WORKERS, WELDERS, HELPERS, AND LABOR REQUIRED TO UNLOAD, TRANSFER, ERECT, CONNECT-UP, ADJUST, START, OPERATE AND TEST EACH SYSTEM.
C. UNLESS OTHERWISE SPECIFICALLY INDICATED ON THE PLANS OR SPECIFICATIONS, ALL EQUIPMENT AND MATERIALS SHALL BE INSTALLED WITH THE ACCEPTANCE OF THE ENGINEER IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER. THIS INCLUDES THE PERFORMANCE OF SUCH TESTS AS THE MANUFACTURER RECOMMENDS.

1.13 PROTECTION:

- A. WORK UNDER THIS SECTION SHALL INCLUDE PROTECTING THE WORK AND MATERIALS OF ALL OTHER SECTIONS FROM DAMAGE BY WORK OR WORKMEN, AND SHALL INCLUDE MAKING GOOD ALL DAMAGE US CAUSED.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED AND ACCEPTED; PROTECT WORK AGAINST THEFT, INJURY OR DAMAGE; AND CAREFULLY STORE MATERIAL AND EQUIPMENT RECEIVED ON SITE WHICH ARE NOT IMMEDIATELY INSTALLED. CLOSE OPEN ENDS OF WORK WITH TEMPORARY COVERS OR PLUGS DURING CONSTRUCTION TO PREVENT ENTRY OF OBSTRUCTING MATERIAL.
C. WORK UNDER THIS SECTION, INCLUDES RECEIVING, UNLOADING, UNCRATING, STORING, PROTECTING, SETTING IN PLACE AND CONNECTING UP COMPLETELY OF EQUIPMENT SUPPLIED UNDER THIS SECTION. WORK UNDER THIS SECTION SHALL ALSO INCLUDE EXERCISING SPECIAL CARE IN HANDLING AND PROTECTING EQUIPMENT AND FIXTURES AND SHALL INCLUDE THE COST OF REPLACING ANY OF THE ABOVE EQUIPMENT AND FIXTURES WHICH MISSING OR DAMAGED BY REASON OF MISHANDLING OR FAILURE TO PROTECT ON THE PART OF THE CONTRACTOR.

1.14 SLEEVES, INSERTS AND ANCHOR BOLTS:

- A. THE CONTRACTOR SHALL PROVIDE, SET IN PLACE AND BE HELD RESPONSIBLE FOR THE LOCATION OF ALL SLEEVES, INSERTS, AND ANCHOR BOLTS REQUIRED FOR THEIR WORK. IN THE EVENT THAT FAILURE TO DO SO REQUIRES CUTTING AND PATCHING OF FINISHED WORK, IT SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.
B. ALL PIPES AND CONDUITS PASSING THROUGH FLOORS, WALLS, OR PARTITIONS, SHALL BE PROVIDED WITH SLEEVES HAVING AN INTERNAL DIAMETER 1 INCH LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE, CONDUIT OR INSULATION, ENCLOSED PIPE OR CONDUIT.
C. SLEEVES THROUGH OUTSIDE WALLS SHALL BE CAST IRON SLEEVES WITH IMMEDIATE INTEGRAL FLANGE. SLEEVES SHALL BE SET WITH ENDS FLUSH WITH EACH FACE OF WALL. THE SPACE BETWEEN SLEEVE AND PIPE SHALL BE PACKED WITH OAKUM TO WITH TWO (2) INCHES OF EACH FACE OF WALL. THE REMAINING SPACE SHALL BE PACKED AND MADE WATERPROOF WITH A WATERPROOF COMPOUND.
D. SLEEVES THROUGH CONCRETE FLOORS OR INTERIOR MASONRY WALLS SHALL BE SCHEDULE 40 BLACK STEEL PIPE, SET FLUSH WITH FINISHED FLOOR OR CEILING SURFACES, BUT EXTENDING TWO (2) INCHES ABOVE FINISHED FLOORS.
E. SLEEVES THROUGH INTERIOR PARTITIONS SHALL BE 22 GAUGE GALVANIZED SHEET STEEL, SET FLUSH WITH FINISHED SURFACES OF PARTITIONS.
F. INSERTS SHALL BE INDIVIDUAL OR STRIP TYPE OR PRESTRESSED STEEL CONSTRUCTION WITH ACCOMMODATION FOR REMOVAL NUTS AND THREADED RODS UP TO 3/4" DIAMETER, PERMITTING LATERAL ADJUSTMENT. INDIVIDUAL INSERTS SHALL HAVE AN OPENING AT THE TOP TO ALLOW REINFORCING RODS UP TO 3/8" DIAMETER TO BE PASSED THROUGH THE INSERT BODY. STRIP INSERTS SHALL HAVE ATTACHED RODS HAVING HOOKED ENDS TO ALLOW FASTENING TO REINFORCING RODS. INSERTS SHALL BE AS MANUFACTURED BY CARPENTER AND PATTERSON, INC., GRINNEL CO., INC. OR APPROVED EQUAL.

1.15 NOT USED

1.33 RECORD DRAWINGS:

- A. MAINTAIN AT THE JOB SITE A RECORD SET OF MECHANICAL DRAWINGS ON WHICH CHANGES IN LOCATION OF EQUIPMENT, PIPING, DUCTS, VALVES, CLEANOUTS, PANELS AND MAJOR CONDUITS SHALL BE RECORDED THESE SHALL BE CLEARLY MARKED ON A CLEAN SET OF SEPA AT THE COMPLETION OF WORK AND TURN OVER TO THE ENGINEER.

END OF SECTION 15010

DIVISION 15 - MECHANICAL PLUMBING

SECTION 15400 - PLUMBING

PART 1.00 - GENERAL PROMISION

1.01 THE CONTRACTOR FOR WORK UNDER THIS SECTION IF REFERRED TO THE:

- CONTRACT DRAWINGS, GENERAL CONDITIONS, CONTRACT SPECIFICATIONS, ALL OF WHICH ARE HEREBY MADE A PART OF THIS SECTION.

- 1.02 THE CONTRACTOR'S PARTICULAR ATTENTION IS DIRECTED TO THE "GENERAL NOTES", AND THE REQUIREMENT TO STRICTLY COMPLY WITH ALL THE PROVISIONS OF SAME.

1.03 WORK INCLUDED:

- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, ETC., NECESSARY OR REQUIRED FOR THE WORK OF THIS SECTION, AS INDICATED ON THE DRAWINGS, HEREIN SPECIFIED, AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. ITEMS OF WORK SHALL CONSIST GENERALLY OF, BUT NOT BE LIMITED TO THE FOLLOWING:
1. SANITARY PIPING ABOVE AND BELOW GRADE.
2. SANITARY VENT PIPING.
3. DOMESTIC HOT AND COLD WATER PIPING.
4. NATURAL GAS PIPING (IF REQUIRED).
5. ALL VALVES, FITTINGS AND DEVICES ASSOCIATED WITH PIPING SYSTEMS.
6. PIPE INSULATION.
7. WATER HEATER
8. BACKFLOW PREVENTER.
9. PLUMBING FIXTURES AND FAUCETS.
10. STOP VALVES.
11. FLOOR DRAINS.
12. ROOF DRAINS (IF REQUIRED)
13. DOMESTIC WATER SERVICE.
14. CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS.
15. CONDENSATE DRAINS.
16. INDIRECT WASTE DRAINS.
17. TESTING.
18. FURNISHING AND SETTING OF ALL SLEEVES THROUGH THE FLOORS, ROOF AND WALL, WHERE REQUIRED INCLUDING WATERPROOFING AND FIREPROOF SEALING AND CAP FLASHING.
19. NOT USED.
20. HARDWARE, SUCH AS INSERTS, BOLTS, ETC., ASSOCIATED WITH CONCRETE PAOS.
21. CUTTING ASSOCIATED WITH PLUMBING.
22. PRIME PAINTING, WHERE REQUIRED FOR PLUMBING EQUIPMENT AND INSTALLATION.

1.04 RELATED WORK OF OTHER SECTIONS:

- A. THE CONTRACTOR WILL BE REQUIRED TO COORDINATE THE RELATED WORK SECTIONS WITH THE WORK OF THIS SECTION AND BE RESPONSIBLE FOR THE TIMELY AND EXPEDITIOUS PERFORMANCE OF SAME. RELATED WORK SHALL INCLUDE BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING:
1. FINISHED PAINTING EXCEPT AS NOTED.
2. ELECTRICAL POWER WIRING AND SETTING OF STARTERS.
3. GAS VENTS BY MECHANICAL CONTRACTOR.

1.05 VERIFYING CONDITIONS:

- A. EXAMINE ALL DRAWINGS COVERING THE WORK OF THIS SECTION AND REFER TO ALL OTHER DRAWINGS, INCLUDING DESIGNER/LA, MECHANICAL AND ELECTRICAL DRAWINGS, WHICH MAY AFFECT THE WORK OF THE SECTION OR REQUIRE COORDINATING WITH SAME.
B. REPORT IN WRITING TO THE DESIGNER ANY AND ALL CONDITIONS WHICH MAY INTERFERE OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION AND COMPLETION OF THE WORK.

1.06 SUBMITTALS:

- A. SHOP DRAWINGS:
1. PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIALS, A LIST OF THEIR MANUFACTURERS SHALL BE SUBMITTED FOR APPROVAL.
2. PRIOR TO ASSEMBLING OR INSTALLING THE WORK, THE FOLLOWING SHALL BE SUBMITTED FOR APPROVAL:
a. PLUMBING FIXTURES & TRIM.
b. PIPE INSULATION.
c. FLOOR DRAINS
d. GAS VENT MATERIALS.
e. FLOOR SINKS
f. CLEANOUTS
3. DOCUMENTS WILL NOT BE ACCEPTED FOR APPROVAL UNLESS:
a. FIVE COPIES OF EACH ARE SUBMITTED.
b. ALL REQUIRED CERTIFICATES ARE SUBMITTED WITH APPROVAL.
c. ALL SUBMITTALS CLEARLY MARKED.

1.08 FEES, PERMITS AND CERTIFICATES:

- A. ALL FEES, PERMITS, TAXES OR CERTIFICATES REQUIRED BY GOVERNING BODIES OR ANY OTHER AGENCY AFFECTING THE WORK AS SPECIFIED HEREIN, OR REQUIRED FOR THE CERTIFICATE OF OCCUPANCY, SHALL BE OBTAINED AND PAID FOR BY THIS CONTRACTOR AS PART OF THE BASIC CONTRACT.

1.09 REMOVAL OF DEBRIS:

- A. THE CONTRACTOR SHALL REMOVE FROM THE BUILDING ALL SURPLUS MATERIALS AND ALL DEBRIS CREATED BY HIM AND SHALL LEAVE THE WORK AREA IN A CLEAN CONDITION.

1.10 CUTTING AND PATCHING:

- A. CUTTING AND DRILLING: CONTRACTOR SHALL DO ALL CUTTING AND DRILLING OF WALLS, PARTITIONS, CEILING, FLOORS, ETC., AS NECESSARY FOR INSTALLATION OF THE NEW WORK, INCLUDING CUTTING OF HOLES AND OTHER OPENINGS FOR NEW WORK. CUTTING SHALL BE PERFORMED BY HAND OR SMALL POWER TOOLS; HOLES AND SLOTS CUT NEAT AND TO SIZE REQUIRED, WITH MINIMUM DISTURBANCE OF ADJACENT WORK; CUT HOLES IN CONCRETE SLABS FOR PIPES WITH CORE DRILLS OF PROPER SIZES. WHERE HOLES ARE CUT IN FLOORS, THE UNDERSIDE SHALL BE DUSTPROOFED TO CATCH ANY DEBRIS AND DUST WHICH MAY RESULT FROM THESE OPERATIONS AND TO PROTECT PERSONS FROM DAMAGES OR INJURIES. OPENINGS SHALL BE COVERED TEMPORARILY WHEN NOT IN USE AND PATCHED AS SOON AS WORK IS INSTALLED.
B. PATCHING AND REPAIRS:
1. SURFACE PATCHING BY PATCHING AND REPAIRING WORK SHALL BE RESTORED TO MATCH EXISTING ADJACENT SURFACES. WHERE WATERPROOF FLOORS ARE CUT, THIS CONTRACTOR SHALL PATCH AND REPAIR FLOORS IN SUCH A MANNER AS TO RESTORE THE ORIGINAL WATERPROOF CONDITION, AS AND DIRECTED BY THE DESIGNER.
C. RE-EXAMINATION AND COVERING UP OF WORK:
1. RE-EXAMINATION OF QUESTIONED WORK MAY BE ORDERED BY THE DESIGNER, AND IF SO ORDERED, SUCH PART OF THE WORK MUST BE UNCOVERED BY THE CONTRACTOR. IF SUCH PART OF THE WORK BE FOUND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE OWNER SHALL PAY THE COST OF RE-EXAMINATION AND REPLACEMENT IF SUCH PART OF THE WORK BE FOUND NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PAY SUCH COST AND ALSO THE COST OF RESTORING THE WORK OF ANY OTHER CONTRACTOR DAMAGED OR REMOVED IF ANY PART OF THE WORK OF THE CONTRACTOR OR OF HIS SUBCONTRACTORS BE COVERED UP BY THE DESIGNER WITHOUT APPROVAL OR CONSENT OF THE ENGINEER, SUCH WORK MUST, UPON REQUEST OF THE DESIGNER BE UNCOVERED AND RESTORED TO THE SATISFACTION OF THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

1.11 VISITING THE PREMISES:

- A. THIS CONTRACTOR, BEFORE SUBMITTING HIS BID ON THE WORK, MUST VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL VISIBLE EXISTING CONDITIONS. AS A RESULT OF HAVING VISITED PREMISES, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF THE WORK AS IT RELATES TO SUCH VISIBLE EXISTING CONDITIONS.
END OF SECTION 15400
DIVISION 15 - MECHANICAL / PLUMBING
SECTION 15410 - PLUMBING PIPING
PART 1.00 - GENERAL
1.01 RELATED DOCUMENTS:
A. THIS SECTION COORDINATES WITH AND IS COMPLEMENTARY TO THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS AND THE GENERAL REQUIREMENTS, WHERE APPLICABLE, OF THE CONTRACTOR OR OF HIS SUBCONTRACTORS BE COVERED UP BY THE DESIGNER WITHOUT APPROVAL OR CONSENT OF THE ENGINEER, SUCH WORK MUST, UPON REQUEST OF THE DESIGNER BE UNCOVERED AND RESTORED TO THE SATISFACTION OF THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

HANGER RODS SHALL BE OF THE FOLLOWING DIAMETERS AND SPACING:

Table with 3 columns: PIPE SIZE, ROD DIAMETER, MAX. SPACING. Rows include 1-1/4" AND BELOW (3/8" rod, 7'-0" spacing), 1-1/2" AND 2" (3/8" rod, 9'-0" spacing), 2-1/2" AND 3 (1/2" rod, 11'-0" spacing), 4" (1/2" rod, 14'-0" spacing).

- 1.02 DESCRIPTION OF WORK
A. THE WORK INCLUDES THE PROVIDING OF ALL LABOR, MATERIALS, EQUIPMENT, ACCESSORIES, SERVICES AND TESTS NECESSARY TO COMPLETE AND MAKE READY FOR OPERATION BY THE OWNER, PLUMBING PIPING IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
1.03 QUALITY ASSURANCE:
A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN THE MANUFACTURE OF EQUIPMENT OF THE TYPES AND CAPACITIES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
B. THE EQUIPMENT SHALL BE DESIGNED, ASSEMBLED AND TESTED IN ACCORDANCE WITH APPLICABLE STANDARDS AS INDICATED IN SECTION 15010 AND SHALL BE LISTED AND LABELED BY UNDERWRITERS LABORATORIES.
C. PROVIDE EQUIPMENT PRODUCED BY A MANUFACTURER LISTED AS AN APPROVED MANUFACTURER IN THIS SECTION OR ON THE DRAWING SCHEDULES.
D. PROVIDE EQUIPMENT WHOSE PERFORMANCE UNDER SPECIFIED CONDITION, IS CERTIFIED BY THE MANUFACTURER.

- 1.04 GUARANTEE:
A. REFER TO SECTION 15010 - SPECIAL REQUIREMENTS FOR MECHANICAL WORK.
PART 2.00 - PRODUCTS
2.01 GENERAL:
A. ALL PIPE SHALL BE NEW, FREE FROM SCALE OR RUST, AND OF THE MATERIAL AND GRADE SPECIFIED UNDER THE VARIOUS SERVICES. EACH LENGTH OF PIPE SHALL BE PROPERLY MARKED AT THE MILL FOR PROPER IDENTIFICATION WITH NAME OR SYMBOL OF MANUFACTURER.
2.02 SANITARY & STORM DRAINAGE:
A. ABOVE GROUND SANITARY WASTE, VENT AND ROOF DRAIN PIPING SHALL SERVICE WEIGHT CAST IRON, NO-HUB TYPE. UNDERGROUND SANITARY AND DRAIN PIPING EXTRA HEAVY SHALL BE CAST IRON HUB AND SPOOT TYPE WITH NEOPRENE JOINTS WITH RESTRICTOR.
B. CLEANOUTS FOR SANITARY AND STORM DRAINAGE SYSTEMS SHALL BE LOCATED IN ACCORDANCE WITH THE PLUMBING CODE REFERENCED IN PARAGRAPH 1.05 OF SECTION 15010.
C. PROVIDE TAP IN FLOOR DRAIN TRAPS TO RECEIVE TRAP PRIMER DISCHARGE.
D. ALL VENT PENETRATIONS THROUGH BUILDING ROOF SHALL BE MADE WATERPROOF BY THE USE OF PROPER FLASHING MATERIALS. SUBMIT FLASHING DETAILS FOR APPROVAL BY THE DESIGNER.

- END OF SECTION 15410
DIVISION 15 - MECHANICAL / PLUMBING
SECTION 15440 - PLUMBING FIXTURES

- 1.02 DESCRIPTION OF WORK
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DIVISION 15 - MECHANICAL / PLUMBING
SECTION 15440 - PLUMBING FIXTURES

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- END OF SECTION 15410
DIVISION 15 - MECHANICAL / PLUMBING
SECTION 15440 - PLUMBING FIXTURES

END OF SECTION 15440

Table with 2 columns: ISSUED / REVISIONS: (Empty table for tracking changes)

- E. CONTRACTOR MAY SUBMIT DEDUCT ALTERNATE FOR INSTALLATION OF SANITARY WASTE PIPING, ONLY, IN SCHEDULE 40 PVC, FOR BELOW SLAB AND ABOVE SLAB, TO CEILING HEIGHT ONLY.

\*NO PVC PIPING SHALL BE ALLOWED IN RETURN AIR PLENUM\*

2.03 DOMESTIC WATER:

- A. DOMESTIC COLD AND HOT WATER PIPING SHALL BE TYPE "L" COPPER. FITTINGS SHALL BE WROUGHT COPPER, 95%-5% ANTIMONY/TIN SOLDER SHALL BE USED.
B. ALL POTABLE WATER PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH LOCAL PLUMBING CODE INDICATED IN PARAGRAPH 1.05 OF SECTION 15010 AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL HEALTH DEPARTMENT.
C. PROVIDE STOP VALVES FOR ALL DOMESTIC WATER CONNECTIONS TO FIXTURES EXCEPT WHERE INTEGRAL STOPS ARE PROVIDED, OR GATE VALVES ARE INDICATED ON THE DRAWINGS.
D. ALL HOSE BIBS AND HYDRANTS SHALL BE PROVIDED WITH APPROVED WATER BREAKERS.
E. PROVIDE CHROME PLATED, BRASS ANGLED STOP VALVES FOR ALL LAVATORIES, SINKS, ETC.
F. DISCHARGE OF ALL RELIEF VALVES SHALL BE PIPED TO WITHIN 6" OF THE FLOOR TO PREVENT ACCIDENTAL SCALDING.

2.04 NATURAL GAS:

- A. COORDINATE THE LOCATION OF GAS METER (S) WITH THE LOCAL GAS COMPANY.
B. GAS SYSTEM SHALL BE SCHEDULE 40 BLACK STEEL WITH WALLABLE IRON FITTINGS. VALVE SHALL TYPE