PLUMBING SPECIFICATION
DIVISION 15 – MECHANICAL
SECTION 15100 – PLUMBING

15100.01 GENERAL

A. PROVISIONS OF THE GENERAL CONDITIONS AND SUPPLEMENTARY GENERAL CONDITIONS FOR MECHANICAL AND ELECTRICAL CONTRACTS, WHETHER ATTACHED HERETO OR NOT, SHALL COVERN ALL WORK UNDER THIS SECTION.

15100.02 INTENT

A. THE DRAWINGS SHOW THE GENERAL ARRANGEMENT AND EXTENT OF THE WORK TO BE DONE. EXACT LOCATIONS AND ARRANGEMENT OF ALL PIPES SHALL BE DETERMINED AS THE WORK PROGRESSES.

B. PLANS ARE SUBJECT TO SUCH MODIFICATIONS AS MAY BE NECESSARY AT THE TIME OF INSTALLATION TO CONFORM TO ACTUAL CONDITIONS, AND ALTERATIONS SHALL BE MADE BY THE PLUMBING CONTRACTOR WITHOUT EXTRA CHARGE AFTER OBTAINING APPROVALS.

15100.03 SCOPE OF THE WORK

A. FURNISH, INSTALL, TEST AND WARRANTY A COMPLETELY OPERABLE PLUMBING SYSTEM AS INDICATED ON THE DRAWINGS, SPECIFIED HEREIN, OR AS OTHERWISE REQUIRED.

1. WATER.

A. CITY WATER SHALL BE BROUGHT TO THE SPACE WHERE SHOWN ON THE DRAWINGS. PROVIDE WATER METER IN ACCORDANCE WITH THE WATER DEPARTMENT'S RULES AND REGULATIONS.

PROVIDE AND INSTALL REDUCED PRESSURE ZONE REDUCER (RPZ) OR ANY OTHER BACKFLOW PREVENTION DEVICE IN ACCORDANCE WITH THE REQUIREMENTS/REGULATIONS OF THE LOCAL WATER AUTHORITY/COMPANY.

PROVIDE ALL NECESSARY INFORMATION AND OBTAIN APPROVALS AND PERMITS FOR THE INSTALLATION OF THE RPZ.

FOR CERTIFIED FLOW TEST AS PROVIDED BY SPRK 13, APPENDIX B TO DETERMINE THE NECESSITY OF WATER PRESSURE BOOSTER TO MEET CORRESPONDING WITH LOW RESIDUAL PRESSURE NO LOWER THAN THE DESIGN PRESSURE SPECIFIED IN DRAWINGS. PROVIDE ALTERNATE PUMP FOR PRESSURE BOOSTER SYSTEM IF REQUIRED.

B. PIPE SIZES AS INDICATED ON THE DRAWINGS ARE MINIMUM SIZES ACCEPTABLE.

C. SHOCK ABSORBERS AND SHUT-OFF VALVES ARE TO BE PROVIDED AT EACH FIXTURE OR GROUP OF FIXTURES.

D. VALVES SHALL BE INSTALLED AT EACH MAIN, LIGHT BRANCH TO EQUIPMENT, AT FIXTURES AND TO ISOLATE SECTIONS OF THE PLANT AS WHERE SHOWN ON DRAWINGS.

E. ALL COMPUTED WATER PIPING SHALL BE THOROUGHLY TREATED AND TEST WITH A 1,000 CHLORINE SOLUTION OF EXACT CHLORINE GAS PLACED IN THE UNIVERSE SIDE IN AMOUNTS TO GIVE A DOSAGE OF 100 PPM CHLORINE CALCULATED ON THE VOLUME OF WHICH THE PIPING ARE CONTAIN. THE SOLUTION BY THE LOCAL HEALTH AUTHORITY. A RESIDUAL OF 0.1 PPM SHALL BE PRESENT IN ALL PARTS OF THE LINE AFTER A PERIOD OF TWENTY FOUR HOURS. AFTER TREATMENT, FLUSH ALL LINES THOROUGHLY.

2. SANITARY, INDIRECT WASTE AND STORM SEWERS

A. SANITARY, INDIRECT WASTE AND STORM SEWERS SHALL BE PROVIDED AS SHOWN ON DRAWING.

B. VENTS AT ALL RISERS OF 3" & LARGE, GRADE UPWARDS (IN PROVIDED) AND VENTS LEAK KNOW TO END SUBMISSION. IF ANY LIGHT VENTS EXIST BETWEEN THE NEW TOILET PIPING PLUMBING SYSTEM AND SITE LEVEL SYSTEMS THEY SHALL BE BROUGHT TO THE ATTENTION OF A CONSULTANT REPRESENTATIVE AND THE ARCHITECT. PRIOR TO BID. PROVIDE ALTERNATE PRICE FOR NEW SEWER EJECTOR OR SUMP PUMP SYSTEM THAT MAY BE NECESSARY.

C. ALL SANITARY OR WASTE LINES BELOW FLOOR SHALL BE ST MINIMUM. SANITARY LINE LEAVING BUILDING SHALL BE AS INDICATED ON DRAWING. ALL UNDERGROUND PIPING AS INDICATED BELOW SHALL BE INSTALLED 18" BELOW FINISHED FLOOR (BFFL) OR BELOW.

PIPES EXPOSED TO FREEZING TEMPERATURES SHALL BE HEAT TRACED AND INSULATED ENTIRELY, AND TO A POINT 3'-0" WITHIN FLOOR.

D. PROVIDE A COMPLETE VENT SYSTEM AS SHOWN ON DRAWING. ALL VENTS THROUGH ROOF (VTR) SHALL BE 3" MINIMUM OR LARGER AS MAY BE REQUIRED BY LOCAL CODES. MAY SHALL TERMINATE 24" MINIMUM ABOVE ROOF LINE.

E. OFFSET VENTS, AS REQUIRED, SO VENTS A MINIMUM OF 4'-0" FROM EDGE OF BUILDING.

3. GAS

A. GAS MAIN SHALL BE BROUGHT TO TENANTS SPACE. UNLESS SHOWN ON DRAWING PROVIDE TEE FOR ALL MOUNTING AND MAKE FINAL CONNECTIONS. PROVIDE TWO LOCATIONS OF MAIN GAS SHUT-OFF VALVE.

B. THE ENTIRE GAS PIPING SYSTEM SHALL BE INSTALLED IN COMPLIANCE WITH NFPA 54 AND ALL LOCAL CODES AND ORDINANCES.

C. PROVIDE DRIP, TEE AND CAPS FOR MONITOR SERVICE. PROVIDE UNIONS AND FLANGED FLUE VALVES TO ALL EQUIPMENT USING GAS.

D. ALL GAS PIPING AT AND SAMPLER INSTALLED ON THE ROOF IN ROOF INSTALLATION IS ACCEPTABLE BY LOCAL AUTHORITIES SHALL BE GALVANIZED WELDED OR SEAMLESS STEEL PIPE (SCH 40, ASTM 120).

E. ALL CUSTOMARY HARDWARE AND DEVICES NECESSARY FOR PROPER AND CONVENIENT OPERATION OF THE VARIOUS SYSTEMS, WHETHER SPECIFICALLY VERIFIED OR NOT, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS WORK.

F. ALL ADDITIONAL PLUMBING WORK AS SPECIFIED IN THE FOLLOWING SECTIONS OR AS SHOWN ON THE DRAWINGS, INCLUDING BUT NOT LIMITED TO, HOOKING UP AND FINAL CONNECTIONS TO SINKS AND EQUIPMENT FURNISHED BY TENANT.

15100.04 WORK NOT INCLUDED

A. EXTERIOR STORM DRAINAGE SYSTEM, CATCH BASINS AND MANHOLES FARTHER THAN 5'-0" BEYOND BUILDING OR EDGE OF SIDEWALK.

B. EXTERIOR SANITARY SEWERS, MANHOLES, SEPTIC SYSTEMS AND GREASE INTERCEPTORS DESIGNED AS SITE WORK. SYSTEMS BY OWNER.

C. EXTERIOR WATER DESIGNATED AS SITE LEVEL WATER MAIN. BY OWNER.

D. EXTERIOR SPRINKLER MAIN, AND INTERIOR SPRINKLER HEADS AND BUILDING DISTRIBUTION SYSTEM.

E. TEMPORARY WATER AND DRAINAGE UNDER GENERAL CONDITIONS.

F. PAINTING, EXCEPT FOR GENERAL TOUCH-UP OF FACTORY FINISHED EQUIPMENT.

G. TOILET ROOM ACCESSORIES.

15100.05 PIPING, VALVES, HANGERS, AND SUPPORTS, AND SPECIALTIES

A. GENERAL

1. ALL PIPING IN FINISHED AREAS SHALL BE CONCEALED. PIPING SHALL BE ONLY WHERE ABSOLUTELY NECESSARY.

2. ALL PIPES AS HOUSE INDICATED, INSTALL ALL PIPING PARALLEL OR AT RIGHT ANGLES WITH BEAMS, WALLS, CEILINGS, OR TO MAX BUILDING LINES. PIPES SHALL BE STRAIGHT. WHEN ALTERATION IS UNE, INSTALL ALL LARGEST PIPE WITH AS CLOSE AS PRACTICAL TO WALLS, CEILINGS, CEILINGS OR INTERRUPTED CONSTRUCTION TO PROVIDE MAXIMUM HEADROOM. PIPE HOOK AND UNIFORM TOGETHERNESS WITH SMART BUILDING SPACE.

B. INSTALL ALL PIPING TO PERMIT EASY DRAINING. PROVIDE HANGERS AND SUPPORTS TO EQUIVALENT GAS POCKETS. PROVIDE HOSE END DRAIN VALVES AT ALL LOW POINTS TO PERMIT DRAINING OF THE ENTIRE DOMESTIC WATER SYSTEM.

C. INSTALL PIPING TO PERMIT EXPANSION AND CONTRACTION WITHOUT UNDUE STRESS, PARTICULARLY AT FLANGES AND COUPLINGS.

D. ALL CUTTER PIPE UNDER CONCRETE FLOOR SHALL BE CONTINUOUS AND SHALL BE COVERED WITH SAND SO THAT LINES WILL NOT BECOME EMBEDDED IN THE CONCRETE.

E. WASTE LINES 3" AND SMALLER SHALL HAVE NOT LESS THAN 1/4" TO THE FOOT. LARGER THAN SHALL HAVE NOT LESS THAN 1/8" TO THE FOOT. VENTS IN DIRECTION SHALL BE WITH EIGHT BENDS OR LARGE SWEEP COUPLING BENDS. HORIZONTAL VENT UNDERGROUND LINES TO BE 3" OR LARGER AS REQUIRED BY LOCAL CODES. RUN OTHER LINES EVEN UNLESS OTHERWISE NOTED.

F. A CLEANOUT SHALL BE INSTALLED AT THE BASE OF ALL STACKS AND AT EVERY CHANGE OF DIRECTION GREATER THAN 45 DEGREES. CLEANOUTS SHALL BE INSTALLED NOT MORE THAN FIFTY FEET (50') APART IN HORIZONTAL DRAINAGE LINES OF FOUR INCH (4") NOMINAL DIAMETER OR LESS AND NOT MORE THAN ONE HUNDRED FEET (100') APART FOR LARGER PIPES.

G. CLEANOUTS SHALL BE THE SAME SIZE AS THE PIPE THEY SERVE, EXCEPT THEY NEED NOT BE LARGER THAN SIX INCHES (6").

H. ALL PIPE PASSING THROUGH WALLS, FLOORS OR CEILING IN FINISHED ROOM SHALL BE FITTED WITH STEEL OR BRASS ESCUTCHEONS WITH SET SCREWS. WHEN SHRINKAGE OF THE INSERT IS KNOWN THE ESCUTCHEONS SHALL BE NICKEL OR CHROME PLATED. WHERE PIPING IS INSULATED, THE ESCUTCHEONS SHALL BE OMITTED THE INSULATION.

I. PROVIDE AND INSTALL PIPE SLEEVES AMONGSTEN FIRES PENETRATE MASONRY OR CONCRETE. CUT SLEEVES FROM STEEL PIPE WITH TUBE CONSISTING OF HARD INSULATED TYPE, AT LEAST TWO (2) SIZES LARGER THAN LINE SIZE. CLEAN OF BURRS AND FREE. EXTENDS SLEEVES COMPLETELY THROUGH WALLS OR FLOORS.

J. INCLUDE ALL NECESSARY ANCHORS, BRACES, SLEEVES, MISCELLANEOUS STEEL, WELD BRACKETS, SLEEVES COUPLING, REPAIR CLAMPS, CONCRETE, MORTAR, SOLDERS AND SERVICES REQUIRED FOR A PROPER INSTALLATION. REPAIR ALL WORK AT RISKS.

K. PROVIDE SUPPORT SLEEVES WHERE INSULATION IS CONTINUOUS THROUGH HANGERS. USE 16 GAUGE SHEET STEEL, 3 PIPE DIAMETERS LONG, TO COVERED SUPPORT.

L. DO NOT HANG OR SUPPORT PIPING FROM ROOF DECK.

M. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE PIPING INSULATION COMPLIES WITH THE SEISMIC RESTRAINT REQUIREMENTS IN ACCORDANCE WITH BOCA 1994 EDITION, BASED ON THE SEISMIC DESIGN ZONE. SEISMIC RESTRAINT DEVICES FOR MECHANICAL SYSTEMS AND STATE AND LOCAL CODES AND VERIFY ALL AND ALL WORK FREE PROTECTION SYSTEMS. IF NECESSARY, THE CONTRACTOR SHALL SEND SEISMIC OF A CHARTED AND LICENSED SEISMIC RESTRAINT ENGINEER. THE COST OF THE HYDRO SEISMIC RESTRAINT DESIGN AND INSTALLATION SHALL BE INCLUDED IN THE PLUMBING CONTRACT PRICE.

B. ALL PIPING SHALL BE FLAMMABLE (SEE FOLLOWING SCHEDULES)
(DETECTION: SMOKE FOR PIPING, VISUAL BELOW, SPRINKLER SYSTEM)
SERVICE SIZE PIPE: FITTINGS BRANCHES AT FLANGED JOINTS (UNDERGROUND SERVICE), SEAMS AND VENTS BEYOND INCLUDING TO 5'-0" OUTSIDE ST AND LENGTH BEYOND HEIGHT. USE FROM ASTM A74, ASTM A377, ASTM A888 AND ASTM A1053 (ABOVE GRADE). ALL SERVICE WITHIN PART, FROM ASTM A74, A1053 SCH DOMESTIC COLD WATER DUCTILE IRON PIPE (ABOVE GRADE) AND PIPE TUBE SEAMLESS TYPE "K" OR "L" SOFT TEMPER (0-1 BTS ASTM B88 ACTY, CAT A) ASTM B306 DISP BRONZE SOLDER (0-1 ASSEMBLY FITTINGS = DIVERSIFIED TYPE ASTM B16 ACTY, CAT A) FOR ALL PIPE DOMESTIC COLD WATER AND WATER HEATED AND DOMESTIC HOT WATER (ABOVE GRADE). AT A SMALLER COPPER TUBE SEAMLESS TYPE "K" TYPE SOFTER ASTM B-88 COPPER AND FITTINGS COST BRONZE ASTM B16 OR ASTM B687 CONNECT TO TREE, OR ASTM B16 ELECTRIC ASTM B687 EXCEPT EVEN UNDER ANTIMONY BRASS GROUND JOINT, FOR OTHER BRASS TUBE THREAD COUPLER (SEPTICS) FOR THIS 0.25 ASTM B-88.

DIS PIPING (ABOVE GRADE) AT AND UNDER HEAD STEEL DUN AND WITHIN OR CLEANTEST ASTM A53 GRADE A, TYPE F WHERE UNALLOWED, WELD SCREWED WITH FULL BUSHINGS PROVIDED BY LIGHT ASTM A53 GRADE A, TYPE F WHERE