## PLUMBING SPECIFICATIONS

#### RT 1 GENERAL 1.01 GENERAL REQUIREMENTS

- A. THE LATEST EDITION OF AIA DOCUMENTS A201 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, OR AS REQUIRED BY THE ARCHITECTURAL DOCUMENTS AND/OR THE STRUCTURAL ENGINEERS DOCUMENTS ARE PART OF THE CONTRACT
- B. PROVIDE ALL PLUMBING WORK SHOWN ON THE CONTRACT DOCUMENTS. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE 2015 INTERNATIONAL BUILDING CODE, 2015 INTERNATIONAL PLUMBING CODE, AND 2015 INTERNATIONAL FUEL GAS CODE, ALL AS ADOPTED BY NEW YORK STATE, LANDLORD'S BUILDING STANDARDS, AND ALL AUTHORITIES HAVING JURISDICTION (AHJ). APPLICABLE NATIONAL, STATE AND LOCAL CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS. C. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE
- DEFINED AS THE TIME AT WHICH THE PLUMBING WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE ENT FOR THE PROPER STARTUP, OPERATION AND TRAINING OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE EQUIPMENT D. BIDDERS SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT
- WILL AFFECT THE EXECUTION OF THIS WORK BEFORE SUBMITTING PROPOSALS. EXAMINE THE CONTRACT DOCUMENTS OF THIS TRADE AND ALL OTHER TRADES FOR THIS PROJECT. VERIFY ALL EXISTING CONDITIONS AT THE SITE AND BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK IN THE BUILDING. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOONIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. ANY DISCREPANCIES SHA BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BID. IF DISCREPANCIES ARE NOT RESOLVED TO CONTRACTORS SATISFACTION THEY SHALL BE QUALIFIED IN THEIR BID
- E. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN CONTRACT. IT IS NOT INTENDED TO SPECIFY OR TO SHOW EVERY OFFSET, FITTING, OR COMPONENT. HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFIED AS NECESSARY TO MAKE THE INSTALLATION COMPLETE AND OPERATIONAL. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT. THE CONTRACTOR SHALL, WITHOU
- EXTRA COST TO THE OWNER, MAKE ALL REASONABLE MODIFICATIONS IN THE WORK AS MAY BE REQUIRED TO PREVENT CONFLICT WITH THE WORK OF OTHER TRADES, OR FOR THE PROPER INSTALLATION OF THE WORK.
- F. INTERRUPTION OF EXISTING BUILDING SERVICES IN ORDER TO CONNECT NEW PIPING TO EXISTING SHALL BE MADE AT SUCH TIME AS TO CAUSE THE LEAST INTERFERENCE WITH ESTABLISHED BUILDING OPERATING PROCEDURE, ALL EXISTING SERVICE SHUTDOWNS SHALL BE SUPERVISED AND DIRECTED BY BUILDING MANAGEMENT. THE CONTRACTOR SHALL GIVE NOTICE 48 HOURS PRIOR TO ANY SHUTDOWN.
- G. ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, ANY EQUIPMENT, MATERIALS, ACCESSORIES, OR LABOR REQUIRED FOR A CODE COMPLIANT AND COMPLETE INSTALLATION OF THE PLUMBING WORK SHALL BE FURNISHED AND INSTALLED AS PART OF THE ORIGINAL BID.
- H. PATCH AND/OR REPLACE DAMAGED ARCHITECTURAL COMPONENTS AS A RESULT OF PLUMBING SYSTEMS INSTALLATION. CLEAN UP THE CONSTRUCTION SITE DAILY DURING CONSTRUCTION SO AS NOT TO INTERFERE WITH THE WORK OF OTHER TRADES, AND AFTER THE COMPLETION OF INSTALLATION AND TESTING.
- ALL NECESSARY CUTTING AND PATCHING IN FLOOR SLABS, ROOF SLABS, WALLS, AND CEILINGS FOR THE PLUMBING WORK SHALL BE PERFORMED BY THIS CONTRACTOR. RESTORE TO MATCH EXISTING CONDITIONS.
- REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON
- EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK. K. ALL EQUIPMENT INSTALLED OR CONNECTED INTO THE BUILDING STACKS, RISERS, PLUMBING SYSTEMS AND INFRASTRUCTURE SHALL BE APPROVED IN ADVANCE BY THE BUILDING PRIOR TO INSTALLATION. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING PIPING TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION
- OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING MANAGEMEN . GUARANTEE: THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE UNSTALLETION. THE CONTRACTOR SHALL DURING THE PERIOD OF THE GUARANTEE, REPLACE OR REPAR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE DWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR OR REPLACEMEN OF DEFECTIVE EQUIPMENT. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS DEMONSTRATED THAT HIS WORK FULFILLS THE REQUIREMENTS OF THE

#### DRAWINGS AND SPECIFICATION AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVALS. 1.02 SCOPE OF WORK

- A. THE CONTRACTOR SHALL FURNISH AND INSTALL PLUMBING WORK COMPLETE WITH ALL EQUIPMENT, FIXTURES, PIPING, VALVES, AND ACCESSORIES AND ASSOCIATED WORK IN DRDANCE ALL NATIONAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION, BUILDING MANAGEMENT, DESIGN DRAWINGS AND THIS SPECIFICATION. THE SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
- 1. FURNISH AND INSTALL NEW FIXTURES, PIPING, VALVES, SUPPORTS, SEISMIC BRACING AND RELATED EQUIPMENT. MAKE ALL REQUIRED PLUMBING CONNECTIONS TO APPLIANCES OR EQUIPMENT FURNISHED BY OTHER 2. PREPARE AND SUBMIT 'AS-BUILT' DRAWINGS INDICATING ACTUAL LOCATIONS OF EQUIPMENT, PIPING, AND VALVES, 'AS-BUILT' DRAWINGS SHALL BE SUBMITTED TO THE
- WNER UPON COMPLETION OF INSTALLATION AND TESTING. SUBMIT DIGITAL COPIES IN PDF FORMAT AND .DWG AUTOCAD FOR
- 3. PERFORM CUTTING, CORING, AND ROUGH PATCHING REQUIRED TO ACCOMMODATE PLUMBING INSTALLATION. 4. PERFORM MAINTENANCE AND PROPER OPERATION OF EXISTING BASE BUILDING SYSTEMS WITHIN THE CONTRACT AREA IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING MANAGEMENT
- 5. PROVIDE INSULATION OF PIPING, FITTINGS, VALVES. PROVIDE PIPING SYSTEMS IDENTIFICATION. PROVIDE VALVE TAGS AND CHART.
- 6. COORDINATION WITH WORK OF OTHER TRADES
- 7. SCAFFOLDING AND RIGGING.
- 8. TESTING AS REQUIRED BY APPLICABLE CODES AND STANDARDS 9. SECURING OF ALL PERMITS AND APPROVALS AND PAYMENT OF FEES.

### 1.03 SHOP DRAWINGS, EQUIPMENT SUBMISSION, MAINTENANCE MANUALS

A. SUBMIT ONE (1) PRINT OF THE PLUMBING PIPING LAYOUT, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT MANUFACTURER'S CATALOG CUTS OF THE FOLLOWING:

- 1. PIPING AND FITTINGS INSULATION
- 3. FIXTURES, SUPPORTS, TRIN
- 4. VALVES
- 5. VALVE TAGS AND CHART
- 6. BACKFLOW PREVENTION DEVICES
- 7. HANGERS AND SUPPORTS 8. FLOOR DRAINS, FLOOR SINKS, FUNNEL DRAINS, CLEANOUTS
- 9. ROOF DRAINS, OVERFLOW ROOF DRAINS
- 10 HOSE BIBBS NON-ERFEZE WALL HYDRANTS
- 11. ESCUTCHEONS AND SLEEVES
- 12. WATER HEATER(S)
- 13. LEAK DETECTION SYSTEM
- 14. WATER METERS
- 15. HOT WATER TEMPERATURE MAINTENANCE CABLE 16. FUEL GAS PRESSURE BOOSTER
- 17. OPERATION AND MAINTENANCE MANUALS
- 18. MANUFACTURER'S CATALOG CUTS OF ALL EQUIPMENT

#### B. UPON REQUEST, THE ENGINEER MAY FURNISH DESIGN DRAWINGS TO THE CONTRACTOR TO AID IN DEVELOPMENT OF PIPING SHOP DRAWINGS. THESE SHALL BE FURNISHED IN THE SAME FORMAT FOR WHICH THE DESIGN DRAWINGS WERE CREATED.

- 1.04 SUBSTITUTIONS A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL A IN 3005 THO TE WINTERNE ON WARRANDERLO FERDINATION STARLE BE FEMALE TO WITHOUT A FORMAL WAITEN SOBILT TO THE ENGINEER WHICH INCLUES ALL DIMENSIONAL, PERFORMANCE AND MARFALL SPECIFICATIONS. ANY CHANGES IN LAVOUT, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHAL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM
- SUBSTITUTION, ALL ITEMS SHALL BE SUBMITTED FOR REVIEW IN CONJUNCTION WITH THE SUBMITTAL OF THE ALTERNATE. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE B' LINE BASIS. IF THE SUBSTITUTION IS BEING UTILIZED FOR FINANCIAL REASONS, THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED.
- B. ALL SUBSTITUTED MATERIAL SHALL CONFORM TO SPACE REQUIREMENTS AND PERFORMANCE REQUIREMENTS SHOWN ON CONTRACT DOCUMENTS.
- C. CONTRACTOR SHALL SUBMIT HIS BID BASED ON THE SPECIFIED ITEMS AND SHALL SUPPLY AS AN ADD OR DEDUCT ALTERNATE PRICE FOR ANY SUBSTITUTIONS.
- 1.05 QUALITY ASSURANCE
- A. ALL PIPES SHALL BE MARKED TO INDICATE MANUFACTURER AND ASTM STANDARD. EACH FULL PIPE LENGTH SHALL HAVE THE MANUFACTURER'S NAME CAST, STAMPED OR
- B. EACH FITTING SHALL HAVE THE MANUFACTURER'S SYMBOL & PRESSURE RATING CAST, STAMPED OR ROLLED ON.
- C. ALL NEW COMPONENTS OF THE PLUMBING SYSTEM MUST CONFORM TO LOCAL AND STATE BUILDING AND PLUMBING CODES AND BUILDING STANDARDS. 1.06 COORDINATION WITH BUILDING MANAGEMENT
- A. THE PLUMBING CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS FOR TENANT AI TERATIONS PRIOR TO BID SUBMISSION IN ORDER TO DETERMINE HE BUILDING MANAGEMENTS MINIMUM MATERIAL REQUIREMENTS AND THE EXTENT OF WORK REQUIRED TO BE PERFORMED ON PREMIUM TIME, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
- 1. SHUT-DOWNS OF BUILDING SERVICES
- 2. NOISY WORK, INCLUDING CORE DRILLING 3. WORK IN OTHER TENANTS SPACES
- B. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ADHERING TO THE BUILDING OWNER'S RULES AND REGULATIONS, ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE BUILDING'S RULES AND REGULATIONS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER WITH THE BID FOR REVIEW.
- C. PRIOR TO THE START OF ANY BUILDING PLUMBING SYSTEM MODIFICATIONS, THE PROPERTY MANAGER SHALL BE PROVIDED WITH A MINIMUM OF 24-HOURS NOTICE INTERRUPTION OF EXISTING BUILDING SERVICES IN ORDER TO CONNECT NEW PIPING TO EXISTING SHALL BE MADE AT SUCH TIME AS TO CAUSE THE LEAST INTERFE
- FERENCE WITH ESTABLISHED BUILDING OPERATING PROCEDURE. THE CONTRACTOR SHALL NOT INTERRUPT THE SERVICE WITHOUT WRITTEN PERMISSION OF BUILDING MANAGEMENT
- D. DURING THE PROJECT DURATION, THE BUILDING MANAGEMENT OFFICE AND ITS DESIGNATED REPRESENTATIVE SHALL BE ABLE TO INSPECT THE WORK IN PROGRESS. ANY WORK WHICH THE BUILDING MANAGEMENT DEEMS UNACCEPTABLE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF CONTRACTOR/TENANT.
- 1.07 AS-BUILT DRAWINGS:
- A. CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS. B. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE AS-BUILT DRAWINGS OF THE INSTALLATION, IN AUTO-CAD 2014 OR NEWER. AN ELECTRONIC COPY
- (AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBING CONTRACTOR BY THE CONSULTANT AT NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBING CONTRACTOR BY THE CONSULTANT AT NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBING CONTRACTOR BY THE CONSULTANT AT NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBING CONTRACTOR BY THE CONSULTANT AT NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBING CONTRACTOR BY THE CONSULTANT AT NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT) OF ALL PLUMBING DRAWINGS WILL BE PROVIDED TO THE PLUMBING CONTRACTOR BY THE CONSULTANT AT NO COST. (ARCHITECTURAL DRAWINGS IN AUTOCAD FORMAT MUST BE OBTAINED FROM THE ARCHITECT). THE DRAWINGS WILL REFLECT THE BID AND/OR CONSTRUCTION SET OF DRAWINGS. SHOULD THE CONTRACTOR REQUIRE ADDITIONAL ELECTRONIC COPIES DURING CONSTRUCTION, A COST OF \$250.00 PER DRAWING WILL BE CHARGED BY THE CONSULTANT.
- C. CLEARLY INDICATE THE WORDS "AS-BUILT" IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE PLUMBING CONTRACTOR'S NAME AND ADDRESS. D. SUBMIT A SINGLE PRINT TO CONSULTANT FOR REVIEW. WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE SETS OF PRINTS TOGETHER WITH THE CAD DISK FOR PRESENTATION TO THE LANDLORD AND TENANT
- 1.08 OPERATION AND MAINTENANCE MANUALS:
- A. PROVIDE TWO) SETS OF OPERATION AND MAINTENANCE MANUALS OF ALL PLUMBING EQUIPMENT SUBMITTED IN HARD COVER 3-RING BINDERS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:
- 1. NAMES AND ADDRESS OF LOCAL SUPPLIERS FOR THE ITEMS INCLUDED.
- 2. TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
- 3. THE CONSULTANTS REVIEWED SHOP DRAWINGS
- 4. CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT. B. REVIEW INFORMATION PROVIDED IN THE MAINTENANCE INSTRUCTIONS AND MANUALS WITH THE TENANT'S OPERATING PERSONNEL AND LANDLORD'S OPERATING PERSONNEL WHERE BASE BUILDING SYSTEMS ARE REVISED, TO ENSURE A COMPLETE UNDERSTANDING OF THE ELECTRICAL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.

## 1.09 MATERIALS AND EQUIPMEN

- A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND MANUFACTURED TO THE STANDARDS SPECIFIED. 1.10 INSURANCE
- A. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID FOR AN AMOUNT ACCEPTABLE TO LANDLORD AND TENANT.
- 1.11 CONTRACT DOCUMENTS A. THE DRAWINGS FOR THE PLUMBING WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL
- ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF PLUMBING AND EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DES MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. CONTRACTOR IS TO BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.

- B. DO NOT SCALE OR MEASURE DRAWINGS BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM THE DIMENSIONS SHOWN ON THE DESIGN CONSULTANT/ARCHITECT'S DRAWINGS, OR BY SITE MEASUREMENTS.
- C. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS, MUST BE REFERRED TO THE DESIGN CONSULTANT/ARCHITECT BEFORE ANY WORK AFFECTED IS BEGUN.
- D. COOPERATE AND COORDINATE WITH OTHER CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH THE WORK OF OTHER CONTRACTORS. CARRY OUT WORK PROMPTLY AS PER CONSTRUCTION SCHEDULE AND COORDINATE WITH WORK OF OTHER CONTRACTORS. E. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)
- 1.12 INTENT A. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR IS TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS. B. ANY MISCELLANEOUS ITEMS, VALVES, FITTINGS, GAUGES, HARDWARE, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE PLUMBING SYSTEMS,
- MUST BE PROVIDED AND INCLUDED AS PART OF THE BID. 1.13 ACCESS DOORS A. WHEREVER ANY BASE BUILDING EQUIPMENT OR NEW EQUIPMENT, VALVES, ETC. REQUIRES ACCESSIBILITY, MAINTENANCE OR ADJUSTMENT, PROVIDE ACCESS DOORS
- APPROVED BY DESIGN CONSULTANT/ARCHITECT AND LANDLORD. ARRANGE FOR ACCESS DOOR INSTALLATION BY THE DIVISION IN WHOSE WORK IT OCCUR B. PROVIDE ACCESS PANELS, MINIMUM 18" X 18", FOR ALL NEW AND EXISTING VALVES, EQUIPMENT, ETC. AS REQUIRED. 1.14 CORE DRILLING
- A. BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, X-RAY SLABS OR WALLS AND HAVE THE LOCATIONS APPROVED BY THE LANDLORD IN WRITING. B. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING SHALL BE REPAIRED IMMEDIATELY AT NO COST TO LANDLORD OR TENANT. C. FLOOR DRILLING TO BE PERFORMED AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID
- PRICE SUBMITTED. 1.15 INTERRUPTION OF SERVICES A. INTERRUPTION OF EXISTING PLUMBING SERVICES TO ANY PART OF THE BUILDING SHALL OCCUR ONLY BY PRE-ARRANGEMENT WITH AND AT TIMES SUITABLE TO THE LANDLORD.
- B. INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS; ALL ALLOWANCES FOR THIS SHALL BE INCLUDED IN THE PRICE SUBMITTED. 1.16 VALUATION OF CHANGE
- A. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING QUOTATIONS FOR CHANGE ORDERS ON THIS PROJECT B. THE HOURLY LABOR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOR FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS WARRANTIES, STORAGE, RENTALS, ADDITIONAL BONDING, PARKING, CLEAN-UP, AS-BUILT DRAWINGS, HOISTING, FREIGHT AND DELIVERY, BUT EXCLUSIVE OF OVERHEAD AND
- 1.17 COMPLETION OF CONTRACT
- A. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY THE CONSULTANT. B. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE REPAIRED OR REPLACED, AT NO COST.
- 1.18 DEMOLITION A. VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING AND REROUTING OF
- PLUMBING EQUIPMENT AND PIPING AS NECESSARY FOR THE COMPLETION OF THE PROJECT. B. REVIEW AND CONFIRM WITH THE ARCHITECT/DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.
- C. ENSURE THAT ALL EXISTING PLUMBING PIPING OR SYSTEMS, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO
- D. RELOCATE ANY PLUMBING PIPING OR EQUIPMENT THAT IS REQUIRED TO REMAIN IN SERVICE. THAT IS SECURED TO EXISTING WALLS. FLOORS OR CEILINGS TO BE DEMOLISHED. E. ALL EXISTING PLUMBING EQUIPMENT OR PIPING WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.
- F. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT. G. CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.
- 1.19 UNIT PRICES
- A. SUBMIT THE FOLLOWING LIST OF UNIT PRICES (FURNISH AND INSTALL): 1. FIXTURES - \$ FOR EACH TYPE IN THE DOCUMENTS (INCLUDE ROUGHING)

PLATED BRASS ESCUTCHEONS HELD IN PLACE WITH SET SCREWS.

PRESSURE ABOVE 1/2 PSIG SHALL BE WELDED.

AND HEAT-SHRINK PE SLEEVES.

D. SUMP PUMP DISCHARGE PIPING

INSTALLING ON INSULATED PIPE.

2.02 VALVES - DOMESTIC WATER

2.03 VALVES - FUEL GAS

2.04 VALVE TAGS AND CHART

2.05 HANGERS AND SUPPORT

C. ALL ANCHORS SHALL HAVE AN ICC-ES LISTING.

PRE-GALVANIZED STANDARD CLEVIS HANGER.

I. C-CLAMPS MUST BE INSTALLED WITH RETAINING STRAPS.

K. INTERVALS OF SUPPORTS

PERFORATED BARS OR WIRE HANGERS SHALL NOT BE PERMITTED.

1. PIPING: ASTM A 53/A 53M. BLACK STEEL, SCHEDULE 40, TYPE E OR S. GRADE B.

THE AREA OF PIPING WHERE THE GALVANIZATION HAS BEEN REMOVED.

GROOVED-JOINT SYSTEM FITTINGS AND COUPLINGS, AND GROOVED JOINTS.

3. INSTALL SPRING LOADED, SILENT CHECK VALVE BETWEEN PUMP AND SHUTOFF VALVE ON EACH PUMP DISCHARGE.

MEANS OF BRASS S-HOOK OR BRASS CHAIN. EACH SYSTEM TO HAVE A LETTER DESIGNATION AS WELL.

ANGERS OR SWIVEL HANGERS COOPER B-LINE FIG. B3154 PRE-GALVANIZED INSULATION SHIELDS MAY BE USED.

H. RODS FOR PIPE HANGERS SHALL BE CONTINUOUS THREADED ROD, GALVANIZED STEEL SIZED FOR THE LOAD REQUIRED.

A. ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES.

2. INSTALL CHECK VALVE AND GATE VALVE ON EACH PUMP DISCHARGE.

2. PIPING - \$/LF FOR EACH SIZE AND TYPE REQUIRED (INCLUDE HANGERS & INSULATION WHERE APPLICABLE)

#### PART 2 MATERIALS 2.01 PIPING AND FITTINGS

- A. SANITARY DRAINAGE AND VENT PIPING, STORM DRAINAGE ABOVEGROUND - CAST IRON HUBLESS PIPE AND FITTINGS COMPLYING WITH CAST IRON SOIL PIPE (CISPI) STANDARD 301 AND/OR ASTM A-888 AND SHALL BE MADE IN THE AND MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND LISTED BY NSF INTERNATIONAL. ALL PIPE AND FITTINGS SHALL BE BY THE SAME MANUFACTURER. JOIN HUBLESS CAST-IRON SOIL PIPING ACCORDING TO CISPI 310 AND CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK" FOR HUBLESS-COUPLING JOINTS. USE HEAVY
- TY SHIELDED COUPLINGS HAVING NEOPRENE GASKET CONFORMING TO ASTM C 1540 WITH 3" WIDE 304 STAINLESS STEEL CORRUGATED SHIELD AND FOUR EL BANDS FOR SIZES 1-1/2" THROUGH 4" (SIX STAINLESS STEEL BANDS FOR SIZES 5" AND LARGER). ALL COUPLINGS SHALL BE ANACO-HUSKY SERIES HD 2000 HEAVY DUTY OR APPROVED EQUAL. HORIZONTAL PIPE AND FITTINGS 5" DIA. AND LARGER MUST BE SUITABLY BRACED TO PREVENT HORIZONTAL MOVEMENT. THIS MUST BE DONE AT EVERY BRANCH OPENING OR
- CHANGE OF DIRECTION BY THE USE OF BRACES, BLOCKS, RODDING, OR OTHER SUITABLE METHOD, IN ORDER TO PREVENT MOVEMENT OR JOINT SEPARATION PER CHAPTER IV OF THE CISPI HANDBOOK. UNDERGROUND - CAST IRON HUB AND SPIGOT SERVICE WEIGHT PIPE AND FITTINGS COMPLYING WITH CISPI STANDARD HS-67 AND/OR ASTM A-74-66 AND SHALL BE MADE IN THE UNITED STATES AND MARKED WITH THE COLLECTIVE TRADEMARY OF THE CAST IRON ONL DISC MARKED WITH THE COLLECTIVE ES AND MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND LISTED BY NSF INTERNATIONAL. ALL PIPE AND FITTINGS SHALL BE BY THE SAME MANUFACTURER.

3. SOLDER FILLER METALS: ALLOY SN95 OR ALLOY SN94: TIN (SN) APPROXIMATELY 95%, AND SILVER (AG) APPROXIMATELY 5%, HAVING 0.10% MAXIMUM LEAD (PB) CONTENT.

4. SOLDERING FLUX: APPLY ASTM B 813, WATER-FLUSHABLE FLUX TO END OF TUBE. JOIN COPPER TUBE AND FITTINGS ACCORDING TO ASTM B 828 OR CDA'S "COPPER TUBE

5. ALL EXPOSED PIPING SHALL BE CHROME PLATED BRASS. ALL PIPE PASSING THROUGH WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE PROVIDED WITH CHROME

3. WROUGHT-STEEL WELDING FITTINGS: STM A 234/A 234M FOR BUTT WELDING AND SOCKET WELDING. COMPLY WITH AWS D10.12/D10.12M FOR WELDING MATERIALS

5. WHERE PIPING IS EXPOSED TO EXTERIOR, PROVIDE WITH FACTORY APPLIED PROTECTIVE COATING OR USE SCH. 40 GALVANIZED STEEL PIPE AND FITTINGS. AFTER

. SCHEDULE 40 GALVANIZED STEEL PIPE ASTM A 53, GALVANIZED CAST IRON DRAINAGE FITTINGS ASME B 16.2, AND THREADED JOINTS OR GROOVED-END STEEL PIPE,

A. SHUT-OFF VALVES - 3" AND SMALLER: TWO PIECE, FULL PORT, LEAD-FREE BRONZE BALL VALVES, 600 PSI NON-SHOCK CWP, NSF/ANSI-61-8 WITH THE CAPABILITY OF ACCEPTING EXTENDED OPERATING HANDLES. MILWAUKEE MODEL UPBA100S FOR THREADED ENDS OR UPBA150SF FOR SOLDERED ENDS.PROVIDE EXTENDED OPERATING HANDLE WHEN

C. CHECK VALVES - 2' AND SMALLER: LEAD-FREE BRONZE, Y-PATTERN, HORIZONTAL SWING, WITH RENEWABLE SEAT AND DISC. 200 PSI CWP NON-SHOCK, NSF/ANSI-61-8. NIBCO T-413-Y-LF FOR THREADED ENDS OR S-413-Y-LF FOR SOLDER ENDS.

E. CHECK VALVES ON PUMP DISCHARGE: SILENT CECK VALVE, FLANGED, CLASS 125, STAINLESS STEEL SPRING & SCREWS, CAST IRON BODY, MILWAUKEE MODEL 1800.

D. CHECK VALVES - 2-1/2" & 3": LOW LEAD, BRONZE BODY, SWING CHECK VALVE, 200 PSIG, NON-SHOCK, ASME B16.1, MILWAUKEE UP967 FOR THREADED ENDS, UP968 FOR SOLDERED

F. SOLENOID VALVE - DE-ENERGIZED CLOSED, ASCO MODEL #8210 SERIES, 120V OR 24V VALVES SIZES 3/4" TO 1" SHALL HAVE LEAD FREE BRASS BODIES AND VALVES SIZES 1 1/4" AND 2" SHALL HAVE STAINLESS STEEL BODIES.

G. PRESSURE REDUCING VALVE - 1/2" TO 2"; LEAD FREE, ASSE 1003 LISTED, DIRECT ACTING PRESSURE REDUCING VALVE WITH STRAINER. VALVE SHALL BE WATTS SERIES LF223S.

A. SHUT-OFF VALVES - 1" AND SMALLER: GAS BALL VALVE FOR APPLIANCE CONNECTIONS - CERTIFIED TO ½ PSI FOR APPLIANCE CONNECTIONS PER ANSI Z21.15, 5 PSI FOR INDOOR SHUT-OFF PER CGA CR91-002 AND ASME B16.44, 600 PSI CWP RATED. FORGED BRASS BODY, CHROME PLATED BRASS BALL, LEVER HANDLE, THREADED ENDS. NIBCO GB1A.

B. SHUT-OFF VALVES - 1-1/4" AND LARGER: ASME B16.16.1 AND B16.10CAST-IRON, LUBRICATED PLUG VALVES, WITH 125-PSIG PRESSURE RATING. NORDSTROM FIG. 142 - THREADED ENDS 4" AND LARGER.

C. <u>LINE PRESSURE REGULATOR - FOR PIPE SIZES ½" TO 4"</u> - (INLET PRESSURE RANGE 3" W.C. TO 2 PSIG - OUTLET PRESSURE RANGE 2" W.C. TO 14" W.C.) PIETRO-FIORENTINO STANDARD MODEL WITH INTEGRAL VENT LIMITER, EXTERNAL VENT LIMITER (AS APPROVED BY LOCAL CODES), POSITIVE DEAD-END LOCKUP, INLET AND OUTLET TEST PORTS.

A. PROVIDE FOR EACH VALVE, EXCEPT STOP VALVES AT FIXTURES, A 2 INCH DIAMTER BRASS TAG WITH 1 INCH HIGH NUMERAL STAMPED THEREON, SECURED TO THE VALVE BY

B. EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY FABRICATED HANGERS, CLAMPS, RODS, BUILDING ATTACHMENTS, INSULATION SADDLES AND INSULATION SHIELDS SHALL

BE UL ISTED FM GLOBAL APPROVED AND COMPLYING WITH ANSI MSS-SP-58. CONTRACTOR SHALL SELECT AND APPLY HANGERS AND SUPPORTS IN ACCORDANCE WITH

D. ALL INSULATED HORIZONTAL PIPING LARGER THAN 1° DIAMETER SHALL BE HUNG WITH ADJUSTABLE GALVANIZED STEEL CLEVIS HANGERS, COOPER B-LINE FIG. B3100. ALL

E. FOR ALL INSULATED HORIZONTAL PIPING PROVIDE CRUSH RESISTANT INSULATION INSERTS AT ALL PIPE SUPPORT POINTS (WHETHER HANGERS OR STRUTS). INSULATION INSERT

SHALL BE COOPER B-LINE FIG. B338, 360 DEG. CALCIUM SILICATE SHIELD. HANGERS SHALL NOT PENETRATE INSULATION. WHERE INSULATED PIPING IS SUPPORTED WITH CLEVIS

GALVANIZED BLACK STEEL CLAMPS OR FOUR BOLT, EXTRA HEAVY GALVANIZED STEEL RISER CLAMPS. FOR COPPER TUBING USE CARBON STEEL COPPER PLATED RISER CLAMP.

INSULATED COPPER PIPING 3/\* DIAMETER OR SMALLER SHALL BE HUNG WITH ADJUSTABLE SWIVEL HANGER FOR COPPER TUBING, COOPER B-LINE B3170CT.

F. ALL HORIZONTAL CAST IRON OR UNINSULATED STEEL PIPING SHALL BE HUNG WITH ADJUSTABLE GALVANIZED STEEL CLEVIS HANGERS, COOPER B-LINE FIG. B3100

G. VERTICAL PIPING SHALL BE SUPPORTED BY MEANS OF RISER CLAMPS. RISER CLAMPS SHALL FIT EXACT PIPE SIZE FOR BARE PIPES. FOR CAST IRON PIPES USE TWO BOLT,

J. ATTACH HANGER RODS TO THE BUILDING ONLY IN A MANNER APPROVED BY THE ARCHITECT. DO NOT HANG PIPING FROM DUCTWORK OR OTHER PIPING. CHAIN STRAPS,

. ALL HORIZONTAL CAST IRON PIPING SHALL BE SUPPORTED ON FIVE FOOT CENTERS AND AT ALL JOINTS. IN ADDITION, ALL CAST IRON 'NO-HUB' PIPING AND FITTINGS 5" DIA

BRACES, BLOCKS, RODDING, OR OTHER SUITABLE METHOD, TO PREVENT MOVEMENT OR JOINT SEPARATION PER CHAPTER IV OF THE CAST IRON SOIL PIPE INSTITUTE

AND LARGER MUST BE SUITABLY BRACED TO PREVENT HORIZONTAL MOVEMENT. THIS MUST BE DONE AT EVERY BRANCH OPENING OR CHANGE OF DIRECTION BY THE USE OF

B. FURNISH AN APPROVED, NEATLY DRAWN VALVE CHART, PROPERLY FRAMED, SHOWING THE USE AND LOCATION OF EACH VALVE THAT IS TAGGED.

D. SOLENOID VALVE - FOR SIZES ½" TO 3", ASCO 8214G SERIES 2 WAY NORMALLY CLOSED VALVE, ALUMINUM BODY. VALVED SHALL BE INTERLOCKED WITH THE KITCHEN HOOD FIRE

H. PRESSURE REDUCING VALVE - 21/2" AND 3": LEAD FREE, ASSE 1003 LISTED, DIRECT ACTING PRESSURE REDUCING VALVE WITH STRAINER. VALVE SHALL BE WATTS SERIES

B. <u>SHUT-OFF VALVES - 3" AND LARGER:</u> LEAD-FREE BRONZE GATE VALVE, NON-RISING STEM, SOLID WEDGE, 300 PSI NON-SHOCK CWP, NSF/ANSI-61-8. NIBCO T-113-LF FOR THREADED ENDS OR S-113-LF FOR SOLDER ENDS.

APPROPRIATE FOR WALL THICKNESS AND CHEMICAL ANALYSIS OF STEEL PIPE BEING WELDED. PIPING 4" AND LARGER AT ANY PRESSURE AND ANY SIZE PIPING WITH GAS

8. PROTECTIVE COATING FOR UNDERGROUND PIPING: FACTORY-APPLIED, THREE-LAYER COATING OF EPOXY, ADHESIVE, AND PE. JOINT COVER KITS: EPOXY PAINT, ADHESIVE,

SALVANIZED PIPING THREADS HAVE BEEN CUT AND FITTINGS CONNECTED PAINT THE EXPOSED THREADS AND PIPING WITH AN EXTERIOR, NON-RUSTING PAINT TO PROTECT

- JOIN HUB-AND-SPIGOT, CAST-IRON SOIL PIPING WITH GASKETED JOINTS ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK" FOR COMPRESSION JOINTS.
- JOINTS SHALL BE MADE WITH PUSH-ON NEOPRENE RUBBER COMPRESSION GASKET CONFORMING TO CISPI STANDARD HSN-76. B. DOMESTIC HOT AND COLD WATER PIPING, INDIRECT WASTE PIPING
- 1. PIPING (SOLDERED JOINTS): TYPE L HARD COPPER TUBE, DRAWN TEMPER, COMPLYING WITH ASTM B 88 AND NSF 61. 2. FITTINGS (SOLDERED JOINTS): WROUGHT COPPER SOLDER JOINT PRESSURE TYPE FITTINGS COMPLYING WITH ASME B.16.22.

2. MALLEABLE-IRON THREADED FITTINGS: ASME B16.3, CLASS 150, STANDARD PATTERN. PIPING UP TO 4" DIAMETER AND BELOW ½ PSIG.

# D. EACH FIXTURE SUPPLY CONNECTION SHALL BE PROVIDED WITH INDIVIDUAL SHUT-OFF OR STOP VALVES. ESCUTCHEONS WITH SET SCREWS FOR PIPES PENETRATING THE WALL.

2. ALL HORIZONTAL STEEL SCREWED PIPING SHALL BE SUPPORTED ON TEN FOOT CENTERS.

A. DOMESTIC COLD WATER, HOT WATER, HOT WATER RECIRC, PIPING, HORIZONTAL STORM PIPING:

3. PROVIDE 1" THICK INSULATION FOR DOMESTIC WATER PIPING AND HORIZONTAL STORM PIPING.

B. SLEEVES THROUGH WALLS, AND WHERE SERVING EXPOSED PIPE PENETRATING FLOORS SHALL BE SCHEDULE 40.

A. PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH FLOORS, WALLS AND PARTITIONS.

FLAME SPREAD OF 25 OR SMOKE DEVELOPMENT OF 50.

TUBING 1-1/2" AND LARGER.

B. HEAT TRACED PIPING (EXTERIOR)

2.07 SLEEVES AND FIRE STOPPING

FIRE RESISTANCE

B. ESCUTCHEON APPLICATION SCHEDULE

IDENTIFICATION DEVICES FOR PIPING

FOR THE LOCATION OF ALL NEW FIXTURES.

2.10 PLUMBING FIXTURES AND TRIM

1. FINISHED SPACES SHALL BE POLISHED BRASS

2. UNFINISHED SPACES SHALL BE PLAIN BRASS OR CAST IRON.

TWENTY FEET ON EACH PIPE AND AT A MINIMUM OF ONCE IN EACH ROOM.

B. REFER TO ARCHITECT'S DRAWINGS FOR SPECIFICATIONS OF FIXTURES AND FAUCETS.

2.08 ESCUTCHEONS

2.09 PIPE IDENTIFICATION

2.06 INSULATION

3. ALL HORIZONTAL COPPER TUBING SHALL BE SUPPORTED BY HANGERS NOT OVER SIX FEET APART FOR TUBING 1-1/4" DIA. AND SMALLER AND NOT OVER TEN FEET APART FOR

. JOHNS MANVILLE MICRO-LOK HP FIBER GLASS PIPE INSULATION WITH FACTORY APPLIED ALL SERVICE VAPOR-RETARDER JACKET WITH SELF-SEALING CLOSURE LAP

2. FITTINGS AND VALVES TO BE COVERED WITH JOHNS MANVILLE ZESTON 2000 SERIES STANDARD GAUGE PVC FITTING COVERS WITH HI-LO TEMPERATURE FIBER GLASS

1. COVER EXTERIOR INSULATED PIPING WITH 'ITW INSULATION SYSTEMS' ALUMINUM ROLL JACKETING COMPLYING WITH ASTM B209. JACKET TO BE .016" THICK PAINTED

C. INSULATE ALL EXPOSED DRAINAGE PIPING INCLUDING HOT. COLD AND TEMPERED WATER SUPPLIES UNDER LAVATORIES OR SINKS. INSTALLED COVER SHALL MEET ADA 4.19.4.

D. ALL SLEEVES THROUGH RATED WALLS OR PARTITIONS SHALL FORM A U.L. CLASSIFIED FIRESTOP CAPABLE OF RETURNING THE WALL OR PARTITION BACK TO ITS UNPENETRATED

A. INSTALL ESCUTCHEONS ON BOTH SIDES OF CONSTRUCTION WHEREVER PIPES PASS THROUGH WALLS, FLOORS, PARTITIONS OR CEILINGS. ESCUTCHEONS SHALL BE HELD IN

A. INSTALL MANUFACTURED PIPE MARKERS ON EACH PIPING SYSTEM. INSTALL WITH FLOW INDICATION ARROWS SHOWING DIRECTION OF FLOW. LOCATE PIPE MARKERS EVERY

A. FURNISH AND INSTALL NEW PLUMBING FIXTURES AND TRIM WHERE SHOWN ON THE CONTRACT DRAWINGS. THE ARCHITECT'S INTERIOR FINISH DRAWINGS SHALL BE FOLLOWED

C. FIXTURES SHALL COMPLY WITH ANSI STANDARDS AND ADA REQUIREMENTS AND SHALL HAVE MAXIMUM FLOW RATES AS REQUIRED BY LOCAL AND STATE WATER CONSERVATION

B. COMPLY WITH ASME A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' FOR LETTER SIZE, LENGTH OF COLOR FIELD, COLORS, AND VIEWING ANGLES OF

AG 606.5, ICC/ANSI A117.1 606.6, OR GSA & DOD'S ABA 606.5. REQUIREMENT TO "PROTECT AGAINST CONTACT - NO SHARP OR ABRASIVE SURFACES". PIPE COVER MATERIAL TO

ALUMINUM, SMOOTH WITH Z-SHAPED LOCKING SEAM. INSTALL PAINTED ALUMINUM JACKET OVER INSULATION MATERIAL AND HEAT TRACING

BE 1/8" THICK PVC WITH ANTIMICROBIAL, ANTIFUNGAL AND U/V INHIBITED PROPERTIES. PLUMBEREX PRO-EXTREME OR APPROVED EQUAL.

C. SLEEVES WITHIN FURRED OUT ENCLOSURE, GYPSUM BOARD PARTITIONS AND BLOCK WALLS SHALL BE 18 GAUGE GALVANIZED SHEET METAL.

E. FIRESTOPPING CAULK SHALL BE SIMILAR TO 3M CP 25WB + CAULK. FIRESTOPPING WRAP SHALL BE SIMILAR TO 3M FS-195 + WRAP/STRIP.

PLACE WITH SET SCREWS. TAKE SPECIAL CARE TO PROTECT THE ESCUTCHEONS DURING THE COURSE OF CONSTRUCTION.

COMPLYING WITH ASTM C547, ASTM C585, ASTM C1136 AND ASTM E84, COMPOSITE FHC 25/50 LISTED AND LABELED. FIRE AND SMOKE HAZARD RATING NOT TO EXCEED A

- E. ALL TRIM, FITTINGS, TRAPS, ETC EXPOSED TO VIEW AT FIXTURES SHALL BE HEAVY CHROME PLATED FINISH. PROVIDE ONE PIECE CAST BRASS CHROMIUM-PLATED
- F. PROVIDE NECESSARY SUPPORTS, CARRIERS, BRACKETS, PLATES ETC. FOR SECURING FIXTURES RIGIDLY IN PLACE.
- G. PRIOR TO FINAL ACCEPTANCE BY THE TENANT/OWNER ADJUST ALL FAUCETS AND FLUSH VALVES FOR PROPER FLOW IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS AND RECOMMENDATIONS.
- H. PLUMBING CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL PLUMBING FIXTURES FROM DAMAGE.
- I. INSULATE ALL EXPOSED DRAINAGE PIPING INCLUDING HOT, COLD AND TEMPERED WATER SUPPLIES UNDER LAVATORIES OR SINKS TO COMPLY WITH ADA REQUIREMENTS. SEE INSULATION SECTION FOR SPECIFICATION OF MATERIAL.
- J. WATER CLOSETS FOR WALL HUNG FIXTURE PROVIDE APPROPRIATE CARRIER, JAY R. SMITH OR EQUAL

## 2.11 WATER FILTER

A. AQUA PURE WATER FILTER BY CUNO MODEL AP200, 1/2" NPT, COMPACT A. DUAL ACTION WATER FILTER WITH DUAL ACTION FILTERING PROCESS, PROVIDE 3 ADDITIONAL

- A. FLOOR DRAIN TOILET ROOMS, SHOWER DRAINS, KITCHEN AREAS FOR GENERAL CLEANING JAY R. SMITH MFG. CO. FIG. 2005Y-NB, ADJUSTABLE ROUND OR SQUARE NICKEL BRONZE (OR CHROME PLATED-CP OR POLISHED BRONZE-PB) STRAINER, DUCO CAST IRON BODY, NO-HUB OUTLET, MEMBRANE CLAMP.
- B. FLOOR DRAIN MECHANICAL ROOMS JAY R. SMITH MFG CO. FIG. 2230Y-NB, DUCO CAST IRON BODY AND FLASHING COLLAR, ROUND OR SQUARE CAST IRON ADA GRATE, NO-HUB OUTLET, SLOTTED SEDIMENT BUCKET. PROVIDE DRAIN WITH FIG. 9703 OR 9704 FUNNEL WHEN INDIRECT WASTE RECEPTOR IS REQUIRED.
- C. FUNNEL DRAIN JAY R. SMITH FIG 3831T INCLUDING P-TRAP WITH FRONT CLEANO
- D. AREA DRAIN PARKING GARAGE JAY R. SMITH MFG CO. FIG. 2233, DUCO CAST IRON BODY AND FLASHING COLLAR, CAST IRON TRACTOR GRATE AND, NO-HUB OUTLET, SLOTTED SEDIMENT BUCKET E. ROOF DRAIN - JAY R. SMITH MFG. CO. FIG. 1010Y-R-C-CID, DUCO CAST IRON BODY WITH COMBINED FLASHING CLAMP AND GRAVEL STOP WITH CAST IRON DOME
- F. ROOF DRAIN (EMERGENCY OVERFLOW) JAY R. SMITH MFG. CO. FIG. 1080Y-R-C-CID, DUCO CAST IRON BODY WITH COMBINED FLASHING CLAMP AND GRAVEL STOP WITH CAST IRON DOME, WITH 2" HIGH EXTERIOR WATER DAM.
- 2.13 HOSE BIBS
- A. MIFAB MANUFACTURING INC. NO. MHY-90 POLISHED CHROME, CAST IRON WHEEL HANDLE AND HOSE END VACUUM BREAKEF

# 2.14 NON-FREEZE WALL HYDRANT

- A. JAY R. SMITH MFG. CO. FIG. 5509QT NON-FREEZE STAINLESS STEEL RECESSED WALL HYDRANT BOX WITH INTEGRAL VACUUM BREAKER. WATER' STAMPED ON COVER. ( 2.15 BACKFLOW PREVENTERS
- B. BOILER WATER MAKE-UP (WITHOUT CHEMICAL TREATMENT) ZURN MODEL 760 DUAL CHECK WITH INTERMEDIATE ATMOSPHERIC VENT, COMPLYING WITH ASSE 1012 C. BOILER WATER MAKE-UP (WITH CHEMICAL TREATMENT) - ZURN MODEL 975XL REDUCED PRESSURE PRINCIPAL ASSEMBLY WITH FULL PORT BAKLL VALVES, COMPLYING WITH ASSE

# 2.16 WATER HAMMER ARRESTOR

- A. SIOUX CHIEF 'HYDRARESTOR' SERIES 650. ANSI/ASSE 1010-2004 CERTIFIED, MAINTENANCE FREE (NO ACCESS REQUIRED), PROVIDE SIZES PER MANUFACTURER'S
- RECOMMENDATIONS. INSTALL PRIOR TO ALL QUICK CLOSING VALVES AND WHERE INDICATED ON DRAWINGS 2.17 TRAP SEAL PRIMER

#### A. PRESSURE DROP ACTIVATED - MIFAB M-500-NPB SERIES TRAP SEAL PRIMER. UP TO THREE FLOOR DRAINS USE #M2-500-NPB, UP TO SIX FLOOR DRAINS USE MR-500-NPB, UP TO 10 FLOOR DRAINS USE M1-500-NPB\_INSTALL UNION CONNECTION ABOVE TRAP SEAL PRIMERS, MOUNT TRAP SEAL PRIMERS IN A VERTICAL POSITION 1 FOOT ABOVE FINISHED FLOOR FOR EVERY 20 FEET OF FLOOR DRAIN TRAP MAKE-UP WATER LINE. FLUSH WATER LINES BEFORE INSTALLING TRAP SEAL PRIMERS. INSTALL TRAP SEAL PRIMERS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

- 2.19 WATER HEATER A. SEE FLOOR PLANS FOR WATER HEATER SPECIFICATIONS.
- B. PROVIDE 2" DEEP GALVANIZED SHEET METAL DRIP PAN WITH LEAK DETECTION SYSTEM.

C. SERVICE WATER HEATER IS TO BE PROVIDED WITH CONTROLS TO ALLOW A SET POINT OF 90 DEG. F. THE OUTLET TEMPERATURE SHALL BE LIMITED TO 110 DEG. F. D. PROVIDE OWNER WITH OPERATING AND MAINTENANCE MANUALS FOR THE SERVICE WATER HEATING EQUIPMENT

# 2.20 LEAK DETECTION

- A FURNISH AND INSTALL A COMPLETE SYSTEM, INCLUDING INTEGRATED UI 508 CONTROL PANEL WITH LOCAL AND REMOTE ALARMS, EMERGENCY SHUT-OFF VALVE RCONNECTING CABLES AND AUXILIARY EQUIPMENT THAT DETECTS THE PRESENCE OF WATER THE KIT SHALL INCLUDE ALL SYSTEM COMPONENTS FOR A TYPICAL
- INSTALLATION.
- B. THE SYSTEM SHALL SENSE THE PRESENCE OF A LEAK, SOUND AN AUDIBLE ALARM AND ACTIVATE A COMMON ALARM OUTPUT CONTACT. THE SYSTEM SHALL BE SUPERVISED AND SELF-DIAGNOSTIC IN DESIGN. THE SYSTEM SHALL DIFFERENTIATE BETWEEN LEAK AND SUPERVISORY ALARM STATUS. C. THE SYSTEM SHALL BE TRACETEK TTC-ENC-XXE-YYESV MANUFACTURED BY RAYCHEM CORPORATION IN MENLO PARK, CALIFORNIA AND G.A. FLEET ASSOCIATES IN HARRISON,

# D. CONTROL PANEL

- 1. THE CONTROL PANEL SHALL OPERATE ON 120V. THE ENCLOSURE SHALL BE TYPE, NEMA 1. A WINDOW IN THE PANEL DOOR SHALL PERMIT INSPECTION OF THE TTC-1 ALARM AND DIAGNOSTIC LEDS. THE ENCLOSURE SHALL BE PREWIRED TO A TERMINAL STRIP AND INCLUDE THE FOLLOWING (a) TTC-1 CABLE DRIVER MODULE(S)
- (b) CONTROL TRANSFORMER
- (c) FUSES AND CIRCUIT PROTECTION
- (d) COMMON ALARM OUTPUT RELAY (1 SPDT RATED 10A @ 120V/5A @ 240V)
- (e) DEDICATED 24V CONTROL POWER, PREWIRED TO THE FIELD CONNECTION TERMINAL STRIP FOR THE APPROPRIATE NUMBER OF SHUTOFF VALVES 2. EACH MODULE (TTC) SHALL BE ABLE TO MONITOR ONE SENSOR (ANY TYPE). THE MODULE(S) SHALL BE UTILIZED FOR POINT DETECTIONAS INDICATED ON THE CONTRACT
- 3. THE MODULE(S) SHALL INDICATE THAT WATER HAS CONTACTED THE SENSING CABLE BY ACTIVATING A "LEAK" LED AND ACTUATING THE "LEAK" OUTPUT RELAY. THE "LEAK" REMAIN ON AS LONG AS THE SENSING CABLE IS WET. THE MODULE SHALL BE FIELD PRO OR EITHER AUTOMATIC OR MANUAL RESET AS REQUIRED BY THE FACILITIES ENGINEER. EACH MODULE SHALL PROVIDE FIELD ADJUSTABLE TIME DELAY AND SENSITIVITY CONTROLS.
- 4. THE MODULE(S) SHALL CONTINUOUSLY MONITOR THE SENSING CABLES AND INTERCONNECTING CABLES FOR CONTINUITY. ANY BREAK IN A CABLE SHALL RESULT IN A ILLUMINATION OF A "CABLE BREAK" LED ON THE FACE OF THE APPROPRIATE MODULE. 5. LOSS OF POWER SHALL RESULT IN A CHANGE OF STATE OF THE ALARM RELAY.
- E. TT-PROBE-AQ WATER DETECTOR PROBE SHALL BE LOW PROFILE, COATED, CORROSION RESISTANT ALUMINUM WITH STAINLESS STEEL PROBES. AND WILL BE LOCATED APPROXIMATELY 1-2" ABOVE THE FLOOR SURFACE AFTER INSTALLATION. THE ASSEMBLY SHALL BE SUITABLE FOR WALL OR FLOOR MOUNTING WITH HEIGHT ADJUSTABLE DETENDED FOR THE OPD FOR THE FLOOR SURFACE AFTER INSTALLATION. THE ASSEMBLY SHALL BE SUITABLE FOR WALL OR FLOOR MOUNTING WITH HEIGHT ADJUSTABLE
- SETSCREWS FOR THE PROBES. WATER SENSING CABLE - WATER SENSING CABLE (TT\_1000) SHALL DETECT THE PRESENCE OF WATER. THE CABLE SHALL CONSIST OF FOUR WIRES: TWO SENSOR WIRES, A CONTINUITY WIRE, AND A RETURN WIRE. ALL FOUR WIRES SHALL BE COATED OR INSULATED WITH FLUOROPOLYMER AND WOUND HELICALLY AROUND A CENTRAL FLUOROPOLYMER CORE. THE ENTIRE CABLE ASSEMBLY SHALL BE RESISTANT TO ACIDS, BASES, AND MOST SOLVENTS, AND EXPOSURE TESTED PER ASTM D-543 @25 DEG C FOR 7 DAYS. CABLES USING EXPOSED METAL OR NON\_FLUOROPOLYMER CONSTRUCTIONS SHALL NOT BE ACCEPTABLE. THE CABLE SHALL HAVE A BREAKING STRENGTH INCLUDING CONNECTORS OF AT LEAST 70 POUNDS PER ASTM D\_638. THE CABLE SHALL HAVE AN ABRASION RESISTANCE OF >65 CYCLES PER UL 719.
- THE SENSING CABLE SHALL OFFER DISTRIBUTED SENSING WITH THE ABILITY TO DETECT THE LOCATION OF AN WATER AT ANY POINT ALONG THE LENGTH OF THE CABLE. TH CABLE SHALL BE FLEXIBLE, AND CARRY LESS THAN 24 YOU UNDER NORMAL OPERATING CONDITIONS. THE SENSING CABLE SHALL BE AVAILABLE IN MODULAR LENGTHS OF UP TO 200 FEET WITH FACTORY INSTALLED MALE/FEMALE CONNECTORS, OR IN BULK WITH MALE/FEMALE CONNECTORS INSTALLED IN THE FIELD. THE SENSOR CABLE SHALL BE PLENUM RATED, AND INTRINSICALLY SAFE. THE CABLE SHALL BE APPROVED FOR USE IN HAZARDOUS AREAS, CLASS 1, DIVISION 1 AND 2.
- G. EMERGENCY SHUTOFF VALVES WITH BYPASS ASSEMBLY
- 1. QUANTITY AND SIZE OF VALVES SHALL MATCH THE PIPING LINE SIZE AS INDICATED THE CONTRACT DOCUMENTS.
- 2. ALL BRONZE VALVE CONSTRUCTION SHALL BE SUITABLE FOR HOT WATER UP TO 180 DEG F AND SHALL BE RATED OPERATE RELIABLY WITH DIFFERENTIAL PRESSURE UP TO 3. ACTUATOR SHALL BE NEMA-4 CONSTRUCTION, OPERATE AT 24VAC, AND SHALL BE A NORMALLY CLOSED VALVE.
- 4. SOLENOID VALVE SHALL BE PROVIDED AS A PREPIPED ASSEMBLY WITH FULL PORT BYPASS AND ISOLATION VALVES FOR SERVICE.
- H. ACCESSORIES 1. STANDARD ACCESSORIES TO INCLUDE MODULAR END TERMINATIONS (TT\_MET), MODULAR LEADER CABLES (TT\_MLC), CAUTION TAGS (TT\_TAG), AND HOLD DOWN CLIPS
- (TT\_HDC).
- 2. INTERCONNECTING JUMPER CABLE (TT-JC) TO CONNECT THE SENSOR TO THE CONTROL PANEL 3. INTERCONNECTING VALVE CONTROL AND SIGNAL WIRE (TT-VCC) TO CONNECT THE EMERGENCY SHUT-OFF VALVE(S) TO THE CONTROL PANEL.
- 4. REMOTE ANNUNCIATOR PANEL, IF REQUIRED AND AS INDICATED ON CONTRACT DRAWINGS SHALL INCLUDE AN AUDIBLE ALARM, SILENCE BUTTON, AND ALARM LIGHT. PANEL ENCLOSURE SHALL BE NEMA 1 INSTALLATION

- BY TRACETEK GROUP. 2. THE SENSORS(S) SHALL BE INSTALLED AFTER ALL PIPING AND OTHER PLUMBING WORK IS COMPLETED. THE FLOOR SHALL BE CLEANED PRIOR TO INSTALLING THE PROBE. CARE SHALL BE TAKEN DURING INSTALLATION OF THE PROBE TO AVOID CONTACT WITH POTENTIAL CONTAMINANTS, SUCH AS PUDDLES OR SOLDER FLUX. THE PROBE SHALL BE FASTENED SECURELY TO THE WALL OR FLOOR AS PER MANUFACTURERS RECOMMENDATIONS.
- 3. WHEN SPECIFIED FOR USE, THE SHUTOFF VALVE(S) SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURERS PRINTED INSTRUCTIONS. VERIFY VALVE OPENS AND CLOSES WHEN THE TRACETEK SYSTEM IS POWERED/DEPOWERED, AND WHEN A LEAK IS DETECTED (SEE TRACETEK INSTALLATION AND TESTING INSTRUCTION MANUA /ERIFY MANUAL OPERATOR OPERATION.

. ALL TRACETEK SYSTEM COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE INSTALLER SHALL BE RESPONSIBLE

OR PROVIDING A CLEAN AND FUNCTIONAL SYSTEM. SUPERVISION AND TRAINING SHALL BE AVAILABLE FROM A TRACETEK DISTRIBUTOR OR OTHER PERSONNEL AUTHORIZED

- 2.21 TEMPERATURE MAINTENANCE CABLE
- A. TRACE ALL HOT WATER PIPING, INCLUDING DROPS TO FIXTURES, WITH RAYCHEM / TYCO THERMAL CONTROLS SELF-REGULATING HEAT TRACE CABLE HWAT-R2 TO MAINTAIN A
- FIELD ADJUSTABLE NOMINAL TEMPERATURE OF RANGE OF 105 TO 140°F. WITH AN AMBIENT TEMPERATURE RANGE OF 60 TO 80°F. POWER THE CABLE THROUGH AN ELECTRONIC ERATURE CONTROLLER, HWAT-ECO, 208 TO 240 VOLT, SINGLE PHASE, ELECTRICAL CONTRACTOR TO PROVIDE GROUND FAULT CIRCUIT BREAKER
- A 30 MILLIAMPERE TRIP. COMPONENTS SHALL BE RAYCHEM RAYCLIC QUICK CONNECT TYPE RATED FOR RATED 30 AMPS, NEMA 4X ENCLOSURES: POWER CONNECTIONS (WITH 10 OF FACTORY INSTALLED COLD LEADS), TEES AND SPLICES; END SEALS (SILICONE GEL TYPE); FIBERGLASS TAPE AND ELECTRIC TRACED LABELS; AS REQUIRED. LIGHTED END
- ALS SHALL BE INSTALLED FOR CRITICAL END OF LINE POWER VERIFICATION WHERE INDICATED. RAYCLIC'S CONNECTIONS (NOT GEL TYPE END SEALS) SHALL HAVE POWER ST POINTS. ALL COMPONENTS, EXCEPT THE POWER CONNECTIONS AND ANY LIGHTED END SEALS, SHALL BE INSTALLED UNDER THE THERMAL INSULATION. ELECTRICAL ONTRACTOR TO TEST IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION, INCLUDING: RESISTANCE TESTING WITH A 2500 VDC MEGOHMMETER (MEGGER) AND
- CAPACITANCE TESTING. B. INSULATE ALL HOT WATER PIPING, WHETHER HEAT TRACED OR NOT. DO NOT USE STAPLES TO SECURE THE INSULATION. FOR PROPER TEMPERATURE MAINTENANCE, INSULATION MUST BE PROPERLY SIZED. COMPLETE AND SEALED. PIPE HANGERS SHALL BE OUTSIDE OF THE INSULATION. INSULATE THROUGH FLOOR PENETRATIONS OR
- OTHERWISE PROTECT THE CABLE FORM DAMAGE. INSULATE OVER ALL TEES, SPILCES AND END SALS, AFTER SYSTEM TESTING, MARK THEIR LOCATION ON THE INSULATION AND INSTALL "ELECTRIC TRACED" LABELS EVERY TEN FEET. THE INSULATION SCHEDULE SHALL BE AS FOLLOWS:
- PIPE SIZEFIBERGLASS INSULATION THICKNESS 1/2" 1/2" 3⁄4" - 1"
- 1 1⁄4" 1 1⁄2"
- \*FOR PIPE SIZES 1 1/2" AND SMALLER, USE INSULATION FOR A 1/2" LARGER PIPE DIAMETER THAN ACTUAL PIPE SIZE TO ALLOW SPACE FOR THE HEATER CABLE.
- THIS SCHEDULE SUPERSEDES THE INSULATION SCHEDULE FOR HOT WATER PIPING SHOWN IN ANY OTHER SECTION OF THE CONTRACT DOCUMENTS.
- C. PROVIDE AS-BUILT DIAGRAMS OF THE TRACING INSTALLATION INCLUDING LOCATIONS OF ALL ECO CONTROLLERS, POWER CONNECTIONS, TEE'S, SPLICES, STANDARD AND LIGHTED END TERMINATIONS AND CIRCUIT IDENTIFICATION OF BREAKERS WITH THEIR CORRESPONDING PIPING. D. THE PLUMBING CONTRACTOR SHALL COORDINATE FINAL SYSTEM START-UP / TESTING OF COMPLETED SYSTEM SECTIONS WITH THE CONSTRUCTION MANAGE MANUFACTURER'S REPRESENTATIVE AND THE ELECTRICAL CONTRACTOR. FINAL TESTING SHALL BE WITNESSED BY THE CONSTRUCTION MANAGER AND MANUFACTURER'S
- REPRESENTATIVE. E. THE PLUMBING CONTRACTOR IS RESPONSIBLE TO OBTAIN THE SERVICES OF AN ELECTRICAL CONTRACTOR TO PERFORM THE FOLLOWIN
- 1. THE ELECTRICAL CONTRACTOR IS TO FURNISH AND INSTALL ALL POWER WIRING, CIRCUIT BREAKERS AND J-BOXES NECESSARY FOR CONNECTION TO THE HOT WATER TEMPERATURE MAINTENANCE SYSTEM, RAYCHEM HWAT, AS MANUFACTURED BY TYCO THERMAL CONTROLS. THE CABLE AND CABLE CONNECTION COMPONENTS (POWER CONNECTIONS, TEE'S AND SPLICES) ARE BEING PROVIDED UNDER THE PLUMBING CONTRACT. THE POWER SUPPLY SHALL BE 208 TO 240 VOLTS, SINGLE PHASE.
- 2. CIRCUIT BREAKERS SHALL BE OF THE GLCB GROUND FAULT PROTECTION TYPE DESIGNED TO TRIP IF CURRENT IMBALANCE EXCEEDS 30 MILLIAMPS, SIMILAR TO SQUARE D QO-EPD OR WESTINGHOUSE GFEPI
- 3. ELECTRICAL CONTRACTOR SHALL COOPERATE WITH THE PLUMBING CONTRACTOR TO COORDINATE THE INSTALLATION AND TESTING OF THE SYSTEM 4. ELECTRICAL CONTRACTOR SHALL BE AVAILABLE DURING THE TESTING OF THE HOT WATER TEMPERATURE MAINTENANCE SYSTEM. TESTING SHALL BE PERFORMED BY THE
- INSTALLING CONTRACTOR 5. ELECTRICAL CONTRACTOR SHALL BE AVAILABLE DURING THE TESTING OF THE HOT WATER TEMPERATURE MAINTENANCE SYSTEM. TESTING SHALL BE PERFORMED BY THE
- INSTALLING CONTRACTOR. 6. ELECTRICAL CONTRACTOR IS TO PROVIDE AS-BUILT DIAGRAMS OF THE TRACING INSTALLATION, WHICH INCLUDE TYPE AND TEMPERATURE OF CABLE, LOCATIONS OF THE
- UNCTION BOXES AND CIRCUIT IDENTIFICATION OF BREAKERS. 2.22 CENTRIFUGAL GAS BOOSTER SYSTEM
- A. THE THE CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE U.L. LISTED, FACTORY BUILT, SIMPLEX GAS BOOSTER SYSTEM WHICH SHALL BE

### BLE OF DELIVERING A VARIABLE VOLUME OF NATURAL GAS TO A MAXIMUM OF 12,500 CFH WHILE PROVIDING A CONSTANT ELEVATED DIFFERENTIAL GAS PRESSURE OF 7" W.C.\* B. SYSTEM SHALL CONTAIN ALL THE NECESSARY COMPONENTS INCLUDING A HERMETICALLY SEALED GAS BOOSTER PUMP, UL APPROVED CHECK VALVE, ISOLATING VALVES, PRESSURE SWITCHES AND FULLY INTEGRATED CONTROL SYSTEM REQUIRED TO PROVIDE A COMPLETELY AUTOMATIC

- OPERATING SYSTEM IN FULL ACCORDANCE WITH THE LATEST UTILITY REQUIREMENTS. THE GAS BOOSTER SHALL BE U.L. LISTED AND BE OF THE HERMETICALLY SEALED, SINGLE STAGE, CENTRIFUGAL TYPE WHICH SHALL INCLUDE A CLASS 1, GROUP D, 3450 RPM EXPLOSION PROOF MOTOR, CAPABLE OF OPERATING ON 208/3/60 POWER C. PIPING MANIFOLD
- 1. THE COMPLETE PACKAGED GAS BOOSTER SYSTEM SHALL BE PRE-PIPED, ASSEMBLED, PAINTED AND SHALL INCLUDE FACTORY-BUILT PIPING FOR THE INLET AND DISCHARGE OF THE BOOSTER. THE PIPING SHALL BE PROPERLY PRESSURE TESTED AND SHALL INCLUDE ALL APPROPRIATELY SIZED SYSTEM COMPONENT
- 2. A LOCKUP TYPE GAS PRESSURE REGULATOR, COMPLETE WITH AN INSTALLED DOWNSTREAM PRESSURE-TEST GAUGE SHALL BE PROVIDED, TO LIMIT THE OUTPUT TO 14" W.C. (ARBITRARY & ADJUSTABLE)
- D. GAS BOOSTER CONTROL SYSTEM

D. DO NOT INSTALL PIPES OR OTHER APPARATUS IN A MANNER WHICH MAY INTERFERE WITH THE FULL SWING OF ANY DOOR.

COMPLETE THE INSTALLATION ACCORDING TO THE REQUIREMENTS OF LOCAL AND STATE PLUMBING AND BUILDING CODES.

- 1. THE GAS BOOSTER SYSTEM SHALL INCLUDE A NEMA RATED, MICROPROCESSOR-BASED CONTROL SYSTEM WHICH SHALL BE DESIGNED TO AUTOMATICALLY OPERATE THE GAS BOOSTER ON A SYSTEM FLOW BY THE FCM.
- 2. THE CONTROL SYSTEM SHALL INCLUDE A NEMA 4 ENCLOSURE WITH REQUIRED FUSIBLE DISCONNECT SWITCH, MOTOR CONTACTOR, ON/OFF SELECTOR SWITCH, INDICATING LIGHTS, ALARM BELL WITH SILENCING SWITCH AND GAS PRESSURE SWITCH FOR PROPER OPERATION. THE CONTROL SYSTEM SHALL BE SIMILAR TO MODEL HBP-1/2-FCM-N4

#### PART 3 EXECUTION 3.01 GENERAL

INTERFERENCE WITH OTHER INSTALLATIONS.

3.03 BUILDING DEPARTMENT PERMITS AND CERTIFICATES

SECTION OF THE SPECIFICATIONS

CURRENT WORK AND ASSOCIATED COSTS

E. SUBMIT ALL TESTING RESULTS TO THE OWNER.

1. CHEMICAL CLEANING AND PRETREATMENT

MATERIALS. SEAL ENDS AFTER CLEANING.

9. SATISFY WHEN TO FLUSH THE SYSTEM.

WITHIN 0.5 OF FRESH INCOMING WATER.

8. CHECK THAT THE CLEANING SOLUTION IS ACTUALLY IN EACH SYSTEM.

6. THE CONTRACTOR SHALL:

F. FLUSHING AND DISINFECTION OF DOMESTIC WATER PIPING

WITNESS THE TESTS.

THIS CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER.

CONSTRUCTION, TO PREVENT ENTRY OF MOISTURE OR OBSTRUCTING MATERIALS.

D. ANY DAMAGE RESULTING FROM TESTING SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER.

2. CLEANING OF PIPING SHALL BE PERFORMED IN THE PRESENCE OF A BUILDING REPRESENTATIVE.

EQUIPMENT SUCH AS CHILLERS, COILS, HEAT EXCHANGERS, ETC. FROM THE CLEANING PROCESS.

LOW POINTS WITH STEAM AFTER CLEANING AND BEFORE TRAPS ARE INSTALLED. DRAIN ENTIRE SYSTEM.

4. ALL CHEMICALS TO BE USED FOR PIPE CLEANING SHALL BE APPROVED BY THE BASE BUILDING CHEMICAL TREATMENT COMPANY.

7. SATISFY EACH CHEMICAL HAS THE PROPER FEED RATES FOR CLEANING AND PRETREATMENT OF EACH SYSTEM AND RECORD.

TO INSTALLATION.

3.04 CUTTING AND PATCHING

3.05 PROTECTION

3.06 TESTING

- F. PERFORM THE WORK AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCE WITH THE BUILDING'S NORMAL OPERATION. NOTIFY BUILDING MANAGEMENT REPRESENTATIVES IN ADVANCE EACH TIME AN INTERRUPTION WILL BE REQUIRED FOR THE PERFORMANCE OF SOME PHASE OF THE WORK. SCHEDULE SUCH SERVICE OUTAGE
- TERRUPTION, ONLY AFTER HAVING RECEIVED APPROVAL OF DATE, HOUR, AND TIME INTERVAL REQUIRED THEREOF. SCHEDULE OF WORK AS DIRECTED SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE.
- 5. OPENINGS AROUND PIPING PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS SEALANT SHALL BE RATED FOR 3 HOURS.
- H. PRIOR TO ANY CHASING, CHOPPING, OR CORE DRILLING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH A APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECTED ANY EXISTING BUILDING SYSTEMS. X-RAY SLABS IF JILDING SYSTEMS. X-RAY SLABS IF REQUIRED. THIS WORK MUST BE APPROVED BY BUILDING MANAGEMENT PRIOR TO PROCEEDING, ALL CORING/CHASING WILL BE DONE ON OVERTIME.
- THE CONTRACTOR SHALL TAKE STATIC AND RESIDUAL PRESSURE READINGS AT ALL NEW POINTS OF CONNECTION TO THE BASE BUILDING DOMESTIC WATER SYSTEM. THE RESIDUAL PRESSURE READING SHALL BE TAKEN WITH THE BASE BUILDING SHUT-OFF VALVE IN THE FULL OPEN POSITION. ALL RESULTING PRESSURES AND FLOWS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. PROCUREMENT AND INSTALLATION OF PLUMBING FIXTURES AND APPLIANCES SHALL OCCUR ONLY AFTER THE FLOW TEST RESULTS
- AND ANY PRESSURE/OPERATIONAL CONCERNS HAVE BEEN REVIEWED BY THE ENGINEER. 3.02 GENERAL INSTALLATION REQUIREMENTS A. RUN AND ARRANGE PIPING APPROXIMATELY AS INDICATED ON THE DRAWINGS AND AS DIRECTED DURING INSTALLATION, AS STRAIGHT AND DIRECT AS POSSIBLE, FORMING
- RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS AND OTHER PIPES, AND NEATLY SPACED. PIPING SHALL BE INSTALLED SO THAT EVERY PORTION OF THE SYSTEM CAN B. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.

C. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM

E. THE ARRANGEMENT, POSITION AND CONNECTION OF PIPES INDICATED ON THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE, BUT THE RIGHT IS RESERVED BY THE

F. REAM ALL PIPE SMOOTH BEFORE INSTALLATION. DO NOT BEND, SPLIT, FLATTEN OR DAMAGEE PIPE IN ANY WAY, ANY PIPE CUT, DENTED OR DAMAGED SHALL BE REPLACED BY

A. THE PLUMBING CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS WITH THE LOCAL BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FNAL APPROVALS WITH ALL

AUTHORITIES HAVING JURISDICTION. PROVIDE A COPY OF ALL REQUIRED APPLICATIONS AND PERMITS TO THE PROPERTY MANAGER AND LANDLORD FOR THEIR RECORDS.

ARGE OPENINGS. CUTTING OF BEAMS, JOISTS, FLOORS OR WALLS OF THE BUILDING WILL NOT BE PERMITTED EXCEPT AFTER RECEIVING APPROVAL OF THE BUILDING MANAGER.

A. DO ALL CUTTING NECESSARY FOR THE INSTALLATION OF PLUMBING WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED, SO AS TO AVOID UNNECESSARY

B. ROUGH PATCHING WILL BE DONE BY THIS CONTRACTOR IN A MANNER TO ACCOMMODATE FINISHED PATCHING WORK. FINISHED PATCHING WILL BE DONE "UNDER ANOTHER

A. CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED AND ACCEPTED. MATERIALS AND EQUIPMENT SHALL BE CAREFULLY

A. PROVIDE ALL LABOR AND MATERIAL TO PERFORM ALL REQUIRED TESTS IN ACCORDANCE WITH THE LOCAL AND STATE PLUMBING CODES. TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

B. NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 48 HOURS IN ADVANCE OF PERFORMING THE TESTING, IN ORDER THAT ARRANGEMENTS CAN BE MADE FOR THEIR TO

3. PROVIDE ALL DISPERSANTS, SCALE INHIBITORS AND CORROSION INHIBITORS AS REQUIRED FOR CLEANING AND TREATING ALL PIPING SYSTEMS. CHROMATES SHALL NOT BE

5. FLUSH PIPING SYSTEMS WITH THE APPROVED CLEANING CHEMICAL TO REMOVE PIPE DOPE, SLUSHING COMPOUNDS, CUTTING OILS AND OTHER LOOSE EXTRANEOUS

10. CHECK EACH SYSTEM FOLLOWING FLUSHING TO ENSURE CLEANING CHEMICALS HAVE BEEN REMOVED FROM EACH SYSTEM AND TEST TO ENSURE PH OF NEW SYSTEM IS

11. BLOCK MODULATING VALVES, ZONE VALVES AND OTHER SYSTEM RESTRICTIONS. PROVIDE BY PASS PIPING AND VALVING TO ISOLATE NEW AND EXISTING TO BE RE-USED

12. PROVIDE PORTABLE PUMPS TO CIRCULATE WATER FOR CLEANING PURPOSES AT RESPECTIVE FLOWS FOR FOUR (4) HOURS. REMOVE AND CLEAN STRAINERS. BLOW OFF

13. CHEMICAL USED FOR CLEANING OF SYSTEMS SHALL COMPLY WITH THE RECOMMENDATIONS OF THE MANUFACTURERS OF THE MAJOR COMPONENTS IN THE SYSTEM AND

C. ALL DEFECTIVE WORK SHALL BE PROMPTLY REPAIRED OR REPLACED, AND THE TESTS REPEATED UNTIL ACCEPTABLE PASSING RESULTS HAVE BEEN ACHIEVED.

STORED, WHICH ARE NOT IMMEDIATELY INSTALLED, AFTER DELIVERY TO SITE. CLOSE EXPOSED PARTS OF THE WORK WITH TEMPORARY COVERS, OR PLUGS DURING

B. PROTECT THE WORK AND MATERIAL OF OTHERS FROM DAMAGE INSTALLED AS PART OF THIS CONTRACT. RESTORE ANY WORK DAMAGED AND BE RESPONSIBLE FOR ALL

G. THE DRAWINGS ARE GIVEN AS A GUIDE ONLY, AND THEREFORE, DO NOT RELIEVE THIS CONTRACTOR FROM PROVIDING AND INSTALLING ALL EQUIPMENT NECESSARY TO

COMPENSATION TO THE CONTRACTOR FOR SUCH CHANGES, PROVIDED THAT NO ADDITIONAL EQUIPMENT OR FIXTURES ARE REQUIRED AND CHANGES ARE REQUESTED PRIOR

IS AND ELEVATIONS TO ACCOMMODATE CONDITIONS WHICH MAY ARISE DURING THE PROGRESS OF THE WORK, WITHOUT AD

	Architecture Landscape Architecture Planning	
	Planning	
	27/2 Crossont Street 2rd Fleer	
	3743 Crescent Street, 3rd Floor Long Island City, New York 11101 Tel 212-337-0400	
	Fax 212-337-0400	
ROVED FOR USE.	CIVIL PLANNING ENGINEER	
ILL (FOLLOWING SYSTEM FLUSHING) THE APPROVED CHEMICALS WHICH PROVIDE A PROTECTIVE COATING TO PREVENT OXIDATION OF THE CLEANED SYSTEM ED.	JMC Planning Engineering Landscape Architecture & Land Surveying, PLLC	
OST INSTALLED ANCHORS IN CONCRETE AND IN MASONRY SHALL BE IN ACCORDANCE WITH ACI 318, AC01, AC58, AND/OR AC106 STANDARDS AND LOCAL L ANCHORS IN MASONRY NOT HAVING AN ICC-ES LISTING SHALL BE PULL TESTED. THE MINIMUM NUMBER OF ANCHORS TESTED SHALL BE THE GREATER OF OR THREE.	120 Bedford Road Armonk, New York 10504	
PING LL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE FUEL GAS CODE AND AS REQUIRED BY THE LOCAL UTILITY.	Tel 914-273-5225 Fax 914-273-2102	
JTION PRESSURES UP TO ½ PSIG SHALL BE TESTED AT 3 PSIG FOR A MINIMUM OF 30 MINUTESDISTRIBUTION PRESSURES OVER ½ PSIG THROUGH 5 PSIG SHALL 0 PSIG FOR A MINIMUM OF 20 MINUTES GAS PIPING SHALL BE TESTED AT 1½ TIMES THE PROPOSED MAXIMUM WORKING PRESSURE, BUT NOT LESS THAN 3PSIG FOR A DURATION OF NOT LESS THAN	MEP ENGINEER	
CH PORTION OF 500 CUBIC FEET OF SYSTEM VOLUME. WHERE THE TEST PRESSURE EXCEEDS 125PSIG, THE TEST PRESURE SHALL NOT EXCEED A VALUE S A HOOP STRESS IN THE PIPING GREATER THAN 50 PERCENT OF THE SPECIFIED MINIMUM YIELD STRENGTH OF THE PIPE. MESTIC HOT WATER RETURN SYSTEMS		
HOT WATER RETURN SYSTEM SHALL BE PROPERLY BALANCED UNDER NO FLOW CONDITIONS. ETED BALANCING REPORT TO THE ENGINEER FOR REVIEW.	BURNS ENGINEERING, PC. 1261 Broadway, Suite 708 New York, New York 10001	
	Tel 212-962-3503	
	STRUCTURAL ENGINEER	
	GEI50 1385 Broadway, 20th FL	
	CFI New York, New York 10018 Tel 212-687-8282	
	Consultants	
	BEER DISTRIBUTORS	
	MANHATTAN BEER DISTRIBUTOF 20 DUNNIGAN DRIVE	ζς
	SUFFERN, NEW YORK	
	KEY PLAN	
	REV DESCRIPTION DA	TE
	ISSUED FOR DOB SUBMISSION 09/1	0/202
	ISSUED FOR DOB SUBMISSION 09/1	0/202
	ISSUED FOR DOB SUBMISSION 09/1	0/202
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1	0/202 5/202
	DRAWN BY : M.ESPIN	0/202 5/202
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1	0/202 5/202
	DRAWN BY : M.ESPIN	0/202 5/202
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1	0/202 5/202 NAL .RK AHI
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1	0/202 5/202 NAL RK AHI 6/21
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1 DRAWN BY : M.ESPIN CHECKED BY : J.CLA APPROVED BY : J.MIZR DATE : 04/10 SCALE : NOT TO SC/	0/202 5/202 NAL RK AHI 6/21
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1	0/202 5/202 NAL RK AHI 6/21
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1 DRAWN BY : M.ESPIN CHECKED BY : J.CLA APPROVED BY : J.MIZR DATE : 04/10 SCALE : NOT TO SC/	0/202 5/202 JAL JAL AHI 5/21
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1 DRAWN BY : M.ESPIN CHECKED BY : J.CLA APPROVED BY : J.MIZR DATE : 04/10 SCALE : NOT TO SCA	0/202 5/202 JAL JAL AHI 5/21
	ISSUED FOR DOB SUBMISSION 09/1 ISSUED FOR BID 10/1 DRAWN BY : M.ESPIN CHECKED BY : J.CLA APPROVED BY : J.MIZR DATE : 04/10 SCALE : NOT TO SCA DRAWING TITLE : PLUMBING SPECIFICATION	0/202 5/202 JAL JAL AHI 5/21

ARCHITECT

SHALL BE APPROVED FOR USE. 14. UPON INITIAL FILL (FOLLOWING SYSTEM FLUSHING) THE APPROVED CHEMI SHALL BE ADDED

G. INSTALLATION OF POST INSTALLED ANCHORS IN CONCRETE AND IN MASON BUILDING CODE. ALL ANCHORS IN MASONRY NOT HAVING AN ICC-ES LISTING

20% OF THE TOTAL OR THREE. H. TESTING OF GAS PIPING

- 1. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENT
- 2. \*\*NYC\*\*DISTRIBUTION PRESSURES UP TO ½ PSIG SHALL BE TESTED AT 3 BE TESTED AT 50 PSIG FOR A MINIMUM OF 20 MINUTES
- \*\*NJ AND NYS\*\* GAS PIPING SHALL BE TESTED AT 1½ TIMES THE PROPOSE ½ HOUR FOR EACH PORTION OF 500 CUBIC FEET OF SYSTEM VOLUME. WI THAT PRODUCES A HOOP STRESS IN THE PIPING GREATER THAN 50 PERC
- I. BALANCING OF DOMESTIC HOT WATER RETURN SYSTEMS 1. THE DOMESTIC HOT WATER RETURN SYSTEM SHALL BE PROPERLY BALA
- 2. SUBMIT COMPLETED BALANCING REPORT TO THE ENGINEER FOR REVIEW