PLUMBING SPECIFICATIONS

1. ALL WORK AND EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, ETC., OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO : THE INTERNATIONAL PLUMBING CODE, THE LOCAL FIRE MARSHAL, UNDERWRITERS LABORATORY (UL), IRI, FM, OSHA, AND THE NATIONAL ELECTRICAL CODE (NEC). WHERE CONTRACT DOCUMENT REQUIREMENTS ARE IN EXCESS OF CODE REQUIREMENTS, THE CONTRACT DOCUMENT SHALL GOVERN. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. MODIFICATIONS REQUIRED BY THE ABOVE SAID AUTHORITIES TO BRING THE SPACE UNDER CONTRACT UP TO CODE SHALL BE MADE WITHOUT ADDITIONAL CHARGE. CONTRACTOR IS RESPONSIBLE FOR ALL ROUGH-IN, FINAL CONNECTIONS, AND PROPER INSTALLATION OF FIXTURES AND ASSOCIATED PIPING MOUNT FAUCETS, AND TO SUPPLY ANY TRAPS, VALVE FITTINGS, VACUUM BREAKERS, PRESSURE GAGES, OR PRESSURE REGULATORS REQUIRED FOR A COMPLETE INSTALLATION THAT MEETS CODE.

2. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.

3. ALL PIPING SHALL RUN CONCEALED ABOVE CEILING OR IN WALL CHASE, UNLESS OTHERWISE NOTED. EXPOSED PIPING SHALL BE 3/4 INCH MINIMUM FROM ANY WALL SURFACE. EXCEPT WHERE OTHERWISE INDICATED ON THE DRAWINGS, PIPING IS SHOWN ON THE FLOOR WHERE IT ACTUALLY OCCURS IN THE BUILDING.

4. CONTRACTOR SHALL VERIFY ALL POINTS OF CONNECTION BEFORE COMMENCING WORK. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES. CONTRACTOR SHALL REMOVE ALL WASTE MATERIALS, DEBRIS, AND RUBBISH FROM SITE AND LEGALLY DISPOSE OF IT. ALL UNUSED EQUIPMENT SERVING THIS AREA SHALL BE REMOVED AND RETURNED TO THE OWNER.

5. CONTRACTOR SHALL COORDINATE, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR THEIR APPROVAL. SHOP DRAWINGS TO BE SUBMITTED INCLUDE: FIXTURES, VALVES, PUMPS, WATER HEATERS AND ALL EQUIPMENT.

6. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE GENERAL CONTRACTOR'S OFFICE AT THE JOB SITE. ACTUAL LOCATIONS OF ALL EQUIPMENT, PIPING, DUCTWORK, ETC., AND ALL DEVIATIONS OF THE WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS SHALL BE MARKED ON THE RECORD/COORDINATION DRAWINGS. EACH TRADE SHALL REVIEW THE COORDINATION DRAWINGS AND RESOLVE ANY POTENTIAL CONFLICTS WITH OTHER TRADES PRIOR TO INSTALLING ANY PORTION OF THEIR WORK. CONTRACTOR SHALL NOT CORE, DRILL, OR CUT CONCRETE SLABS FOR ANY REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE STRUCTURAL ENGINEER AND THE OWNER.

7. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY.

8. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTOR'S PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.

9. WHEREVER FIRE RATED PARTITIONS ARE PENETRATED FOR WIRE, DUCT, OR PIPE PASSAGE, SEAL PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE.

10. ALL CUTTING, DRILLING, AND PATCHING OF WALLS, FLOORS, AND/OR STRUCTURAL MEMBERS FOR THE INSTALLATION OF THE PLUMBING SYSTEMS SHALL BE PROVIDED. STRUCTURAL COMPONENTS SHALL NOT BE CUT, DRILLED, OR MODIFIED IN ANY WAY WITHOUT THE STRUCTURAL ENGINEER'S REVIEW AND APPROVAL PRIOR.

11. SUPPORT ALL PIPING FROM STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING, AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH ANSI B31.1 AND MSS SP-69.

12. CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS SHALL BE MADE WITH SUITABLE DIELECTRIC INSULATING UNIONS. ISOLATE COPPER PIPING FROM DISSIMILAR METALS, SUCH AS METAL STUDS AND VENT PIPING.

13. ALL PRODUCTS LOCATED WITHIN PLENUM AREAS, INCLUDING BUT NOT LIMITED TO INSULATION AND ADHESIVE SYSTEMS, SHALL HAVE A COMPOSITE FIRE HAZARD RATING NOT TO EXCEED 25 FLAME SPREAD AND 50 SMOKE DEVELOPED AS DETERMINED BY THE APPLICABLE UL OR ASTM STANDARD.

14. ALL NEW DOMESTIC WATER PIPING SHALL BE TYPE L HARD DRAWN SEAMLESS COPPER WATER TUBE, POLYBUTYLENE (PE) PIPE WITH FUSE WELDED FITTINGS, OR CPVC PIPE (ASTM D2846) WITH CPVC FITTINGS AND SOLVENT WELD JOINTS. COPPER TUBE FITTINGS SHALL BE WROUGHT COPPER JOINT FITTINGS CONFORMING TO ANSI 316.22. SOLDERED COPPER JOINTS SHALL BE SOLDERED WITH LEAD FREE ASTM B32 GRADE 95T TIN-ANTIMONY SOLDER.

15. PIPING SYSTEM SHALL BE INSULATED WITH 1/2 INCH THICK HEAVY-DUTY FIBERGLASS MATERIAL WITH ALL PURPOSE NONCOMBUSTIBLE VAPOR BARRIER JACKET. INSULATION SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY FACTOR (K) OF 0.23 BTU"IN/HR"FT2""F AT 75°F. ADHESIVE SYSTEMS THAT EMPLOY RELEASE PAPER WILL NOT BE ACCEPTABLE. AS AN ACCEPTABLE ALTERNATE TO THE ABOVE INSULATION, THE CONTRACTOR MAY PROVIDE OWENS-CORNING "SSL-II" DOUBLESURE PIPE INSULATION.

16. ALL NEW DOMESTIC WATER PIPING PIPING SHALL HAVE THE OPTION TO BE INSULATED WITH 3/4 INCH THICK ARMSTRONG FLEXIBLE ELASTOMERIC CLOSED CELL PIPE INSULATION OR APPROVED EQUAL. THE INSULATION SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY FACTOR (K) OF 0.28 BTU"IN/HR"FT2""F AT 75°F AND A MAXIMUM WATER PERMEABILITY OF 0.15 PERM-INCH. THE PIPE INSULATION BUTT JOINTS AND LONGITUDINAL JOINTS SHALL BE SEALED WITH ARMSTRONG 520 ADHESIVE AND THE ENTIRE INSULATION INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ADHESIVE SYSTEMS THAT EMPLOY RELEASE PAPER WILL NOT BE ACCEPTABLE.

17. FITTINGS, VALVES, AND FLANGES SHALL BE INSULATED WITH THE SAME MATERIALS AND OF THE SAME THICKNESS AS THE ADJOINING PIPE.

18. REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SHALL BE WATTS NO. 909-S SERIES OR APPROVED EQUAL. IF IT COMPLIES WITH THESE SPECIFICATIONS EQUIPMENT MANUFACTURED BY CLA-VAL COMPANY, FEBCO, HERSEY PRODUCTS, INC., OR WATTS REGULATION COMPANY WILL BE ACCEPTABLE. ASSEMBLY SHALL BE COMPLETE WITH STRAINER, DRAIN LINES, INLET AND OUTLET SHUT-OFF VALVES AND WATTS SERIES 'AG' AIR GAP. THE PRESSURE LOSS OVER THE ENTIRE ASSEMBLY SHALL NOT EXCEED 10 PSI AT THE DESIGN FLOW. THE SIZE OF THE ASSEMBLY SHALL NOT BE SMALLER THAN THE LINE SIZE IN WHICH IT IS INSTALLED. BACKFLOW PREVENTER ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION. PIPE RELIEF OUTLET DISCHARGE TO NEAREST FLOOR DRAIN. DO NOT INSTALL ABOVE FINISHED CEILINGS, UNLESS NOTED OR INDICATED OTHERWISE.

19. DOMESTIC WATER GATE VALVES FOR COPPER PIPING UP TO AND INCLUDING 2-1/2 INCHES SHALL BE NIBCO NO. S-111 OR APPROVED EQUAL, CLASS 125, 200 PSIG WOG, BRONZE BODY WITH SOLDERED ENDS, RISING STEM, SOLID WEDGE AND SCREWED BONNET. DOMESTIC WATER GATE VALVES FOR COPPER PIPING 3 INCHES AND 4 INCHES SHALL BE CRANE NO. 465-1/2 OR APPROVED EQUAL, 200# WOG CAST IRON OS&Y VALVE WITH CLASS 125 ANSI B16.1 FLAT FACED FLANGED ENDS AND BRONZE TRIM: STEMS, DISC FACES, SEAT FACES, SEAT RINGS AND BONNET BUSHINGS CONSTRUCTED OF BRONZE. ALL OF THE ABOVE GATE VALVES SHALL BE USED FOR STOP OR ISOLATION VALVE APPLICATIONS. IN LIEU OF GATE VALVES FOR PIPING 2-1/2 INCHES AND SMALLER, NIBCO 585-70 BALL VALVES MAY BE USED.

20. GLOBE VALVES FOR COPPER PIPING UP TO AND INCLUDING 2-1/2 INCHES SHALL BE NIBCO NO. S-235 OR APPROVED EQUAL, CLASS 150, 300# WOG, BRONZE BODY, BRONZE RISING STEM, UNION BONNET, RENEWABLE SEAT AND SOLDERED ENDS. DOMESTIC WATER GLOBE VALVES FOR COPPER PIPING 3 INCHES AND 4 INCHES SHALL BE CRANE NO. 351 OR APPROVED EQUAL, CLASS 125, 200# WOG CAST IRON OS&Y VALVES WITH ANSI B16.1 FLANGED ENDS, YOKE BONNET, RENEWABLE SEAT AND BRONZE TRIM: STEMS, DISC FACES, SEAT FACES AND BUSHINGS CONSTRUCTED OF BRONZE. ALL OF THE ABOVE GLOBE VALVES SHALL BE USED FOR BALANCING OR THROTTLING VALVE APPLICATIONS.

21. DOMESTIC WATER SHUT-OFF VALVES SHALL BE THREE PIECE, FULL PORT, TRUE UNION TYPE, WITH PLASTIC BODY, BLOW-OUT PROOF STEM DESIGN AND O-RING STEM SEAL. PLASTIC PARTS SHALL BE CPVC. VALVES SHALL BE NIBCO DUO-BLOC, OR EQUAL.

22. DOMESTIC WATER PRESSURE REDUCING VALVE ASSEMBLIES SHALL BE SELECTED TO PROVIDE STABLE FLOW CONDITIONS WITHOUT CAVITATION OR VALVE CHATTER.

23. PROVIDE STOP VALVES AT ALL FIXTURE AND EQUIPMENT SUPPLIES. ALL EXPOSED FIXTURE CONNECTIONS SHALL BE CHROME PLATED, STAINLESS STEEL OR FITTED WITH CHROME PLATED SLEEVES. PROVIDE VACUUM BREAKERS WHERE REQUIRED BY CODE.

24. ALL DOMESTIC WATER PIPING SYSTEMS SHALL BE DISINFECTED IN ACCORDANCE WITH THE APPLICABLE CODES AND AWWA C651.

25. HYDRAULICALLY PRESSURE TEST ALL PIPING AT THE FULL WORKING PRESSURE FOR A MINIMUM PERIOD OF 24-HOURS. STOP-LEAK COMPOUNDS WILL NOT BE ALLOWED. ALL PRESSURIZED WATER PIPING SYSTEMS SHALL BE RATED FOR 150 PSI WORKING PRESSURE. REPAIR ANY LEAKS AND RETEST TO DEMONSTRATE TIGHTNESS.

26. ALL NEW SANITARY, SOIL, WASTE, VENT AND STORM WATER PIPING SHALL BE SERVICE WEIGHT CAST IRON, BELL AND SPIGOT, PIPE AND FITTINGS, ANSI A.112.5.1 AS MANUFACTURED BY TYLER PIPE AND FOUNDRY CO., U.S. PIPE AND FOUNDRY CO., CENTRAL FOUNDRY OR APPROVED EQUAL. TYLER "TY-SEAL" OR APPROVED EQUAL, NEOPRENE POSITIVE SEAL ELASTOMERIC COMPRESSION TYPE GASKETS SHALL BE USED AT ALL JOINTS. AS AN OPTION, ALL NEW SANITARY, SOIL, WASTE, VENT AND STORM WATER PIPING 4 INCHES AND SMALLER MAY USE HUBLESS SERVICE WEIGHT CAST IRON PIPE, FITTINGS AND JOINTS WITH TYLER "NO-HUB" STAINLESS STEEL CONNECTORS. IN ADDITION, ALL VENT PIPING MAY BE DWV COPPER PIPE AND FITTINGS WITH SOLDERED JOINTS. GASKETS, JOINTS, CONNECTORS, SPECIALTIES AND PIPE SHALL BE MANUFACTURED AND PROVIDED BY THE SAME MANUFACTURER. ALL STORM PIPING AND WASTE LINES FROM DRINKING WATER FOUNTAINS SHALL BE INSULATED WITH 1/2 INCH THICK HEAVY DUTY FIBERGLASS MATERIAL WITH ALL PURPOSE NONCOMBUSTIBLE VAPOR BARRIER JACKET. INSULATION SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY (K) OF 0.23 BTU"IN/HR"FT2""F AT 75°F. ADHESIVE SYSTEMS THAT EMPLOY RELEASE PAPER WILL NOT BE ACCEPTABLE. ALL DRAINAGE PIPE SHALL BE SUPPORTED DIRECTLY ON EACH SIDE OF A JOINT. ALL PIPING SUPPORTS AND RESTRAINTS SHALL BE IN STRICT ACCORDANCE WITH THE DRAINAGE PIPE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDELINES.

27. (OPTION) ALL NEW SANITARY, SOIL, WASTE, VENT, AND STORM PIPING SHALL BE ABS OR PVC, DWV SCHEDULE 40 OR HEAVIER. PLASTIC SANITARY SEWER PIPING BELOW GRADE SHALL BE PVC PIPE, ASTM D3034, SDR 35 OR HEAVIER, WITH ELASTOMERIC GASKETS. SANITARY SEWER PIPING ABOVE GRADE SHALL BE ABS PIPE, ASTM D2680 OR D2151 WITH SOLVENT WELD JOINTS, OR PVC PIPE, ASTM D2665 WITH SOLVENT WELD JOINTS. STORM WATER PIPING ABOVE GRADE SHALL BE ABS PIPE, ASTM D2680 OR D2151 WITH SOLVENT WELD JOINTS OR PVC PIPE. ALL STORM PIPING AND WASTE LINES FROM DRINKING WATER FOUNTAINS SHALL BE INSULATED WITH 1/2 INCH THICK HEAVY-DUTY FIBERGLASS MATERIAL WITH ALL PURPOSE NONCOMBUSTIBLE VAPOR BARRIER JACKET. INSULATION SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY FACTOR (K) OF 0.23 BTU"IN/HR8FT2""F AT 75°F. ADHESIVE SYSTEMS THAT EMPLOY RELEASE PAPER WILL NOT BE ACCEPTABLE. ALL DRAINAGE PIPE SHALL BE SUPPORTED DIRECTLY ON EACH SIDE OF A JOINT. ALL PIPING SUPPORTS AND RESTRAINTS SHALL BE IN STRICT ACCORDANCE WITH THE DRAINAGE PIPE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDELINES.

28. EXCEPT WHERE OTHERWISE INDICATED, HORIZONTAL SANITARY, SEWAGE AND WASTE PIPING SHALL SLOPE AT 1/4 INCH PER FOOT FOR PIPES 2 INCHES AND SMALLER, PIPES 3 INCHES AND LARGER SHALL SLOPE AT 1/8 INCH PER FOOT. ALL VERTICAL SANITARY SEWER AND STORM WATER PIPING, WHICH TURN 90° AFTER PASSING THROUGH A FLOOR, SHALL BE INSTALLED AS TIGHT AS POSSIBLE TO THE UNDERSIDE OF THE STRUCTURE.

29. CLEAN-OUTS SHALL BE PROVIDED IN PIPING AT EACH CHANGE IN DIRECTION, IN ALL HORIZONTAL STRAIGHT RUNS MORE THAN 50 FEET LONG, AND AT ALL OTHER LOCATIONS AS NOTED ON THE DRAWINGS. ALL CLEAN-OUTS SHALL BE THE SAME SIZE AS THE PIPE DIAMETER UP TO AND INCLUDING PIPE 4 INCHES IN DIAMETER. FOUR INCH CLEAN-OUTS SHALL BE USED FOR ALL PIPE LARGER THAN 4 INCHES, UNLESS NOTED OTHERWISE. ALL CLEAN-OUT LOCATIONS SHALL BE NO MORE THAN 5 FEET ABOVE THE BASE OF THE HORIZONTAL OFFSET AND BE APPROVED BY THE ARCHITECT. FOR CARPETED AREAS, PROVIDE A PERMANENT IDENTIFYING MARK IN THE CARPET DIRECTLY ABOVE THE CLEAN-OUT. THE CLEAN-OUT SHALL HAVE A SMOOTH POLISHED BRONZE FINISH WITH THE LETTERS "C.O." CAST IN THE COVER. FOR WALLS, PROVIDE AN ACCESS PANEL WITH CLEARANCE FOR RODDING. THE FLOOR CLEAN-OUTS SHALL BE ZURN MODEL ZN-1400-T OR APPROVED EQUAL WITH BRONZE PLUG, SQUARE NICKEL BRONZE FRAME AND COVER. THE WALL CLEAN-OUTS SHALL BE ZURN MODEL ZN-1443-BP OR APPROVED EQUAL WITH BRONZE PLUG AND 7 INCHES X 7 INCHES NICKEL BRONZE COVER. NO SANITARY, SOIL OR WASTE PIPE SHALL EXTEND GREATER THAN 2'-0" TO A DEAD-END.

30. PROVIDE ONE TRAP PRIMER VALVE FOR EACH FLOOR DRAIN WITHOUT A CONSTANT SOURCE OF WATER SUPPLY TO MAINTAIN TRAP SEAL. PRIMER VALVE SHALL BE LOCATED IN AN ACCESSIBLE AREA AND CONNECTED TO THE NEAREST 3/4 INCH COLD WATER LINE SERVING A FIXTURE. PROVIDE FLOAT TYPE BACKWATER VALVE (SIZED FOR ANTICIPATED FLOW RATE) IN ALL OPEN SITE DRAINS AND FLOOR RECEPTORS RECEIVING A/C UNIT CONDENSATE, AND/OR CLEAR WATER WASTE, SUCH AS SPRINKLER FLOW TESTING. ALL HORIZONTAL DRAINAGE PIPING AND TRAPS FROM AN OPEN SITE DRAINER RECEPTORS RECEIVING A/C UNIT CONDENSATE SHALL BE INSULATED.

31. ALL PIPING SYSTEMS, VALVES, AND EQUIPMENT SHALL BE PROPERLY IDENTIFIED. ALL VALVES SHALL HAVE THEIR NORMAL (IN OPERATION) POSITION IDENTIFIED, SUCH AS "NORMALLY OPEN" OR "NORMALLY CLOSED".

32. ALL PACKAGED EQUIPMENT SHALL BE INDEPENDENTLY THIRD PARTY LABELED AS A SYSTEM FOR ITS INTENDED USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399, AS WELL AS NFPA PAMPHLET NO. 70, NATIONAL ELECTRIC CODE (NEC), ARTICLE 90-7.

33. THE CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT AND FIXTURE CONNECTIONS AND PROVIDE THE NECESSARY ADAPTERS, FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE VALVES AND UNIONS WHERE NEEDED TO PERMIT DISCONNECTIONS OF EACH PIECE OF EQUIPMENT FOR REPAIRS. PLUMBING CONNECTIONS SHOWN ARE NOMINAL. VERIFY EXACT CONNECTION SIZE WITH EACH PIECE OF EQUIPMENT SUPPLIED. FOLLOW FIXTURE MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS, AND ROUGH-IN DIMENSIONS. REFER TO CONSULTANT AND ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION. COORDINATE WITH THE EQUIPMENT SUPPLIER FOR ADDITIONAL INFORMATION.

34. WATER STORAGE TANK, HOT WATER HEATER, EXPANSION TANK, HYDROPNEUMATIC TANK SHALL BE ANCHORED IN ACCORDANCE WITH THE INTERNATION BUILDING CODE AND LOCAL REGULATIONS.

SPRINKLER SPECIFICATIONS

1. THE CONTRACTOR SHALL PROVIDE THE DESIGN, MATERIALS, AND INSTALLATION OF A HYDRAULICALLY CALCULATED WET/DRY SPRINKLER AND WET STANDPIPE SYSTEM IN CONFORMANCE WITH THE REQUIREMENTS OF NFPA STANDARD NOS. 13, AND LOCAL CODES. THE CONTRACTOR SHALL PREPARE FIRE PROTECTION SYSTEMPLANS. FIRE PROTECTION SYSTEM PLANS ARE TO INCLUDE THE FIRE PROTECTION PLUMBING EQUIPMENT, CONTROL SYSTEM, PUMP STATION ENCLOSURE, FIRE PROTECTION SUPPLY PIPING, PIPE ROUTING AND ALIGNMENT FROM THE POND (WATER SOURCE) TO THE BUILDING STANDPIPE AND THE SPRINKLER DISTRIBUTION SYSTEM WITHIN THE BUILDING. THE CONTRACTOR SHALL PREPARE FIRE PROTECTION SYSTEM SHOP DRAWINGS FOR SUBMISSION TO AND APPROVAL BY THE PROJECT ENGINEER, LOCAL AUTHORITIES, AND THE FIRE MARSHAL. ALL HYDRAULIC CALCULATIONS AND SPRINKLER SYSTEM DESIGN SHALL BE BASED ON THE AVAILABLE WATER PRESSURE. THE CONTRACTOR SHALL PERFORM THE REQUIRED WATER FLOW TESTS BEFORE PROCEEDING WITH DESIGN. SPRINKER CONTRACTOR SHALL EMPLOY A NICET LEVEL III OR GREATER SPRINKLER DESIGNER TO LAYOUT AND SIZE SYSTEM AND CERTIFY DRAWINGS.

2. SPRINKLER HEAD LAYOUTS SHALL BE SYMMETRICAL. SPRINKLER CONTRACTOR SHALL COORDINATE LOCATIONS OF SPRINKLER HEADS WITH LIGHT FIXTURES, DIFFUSERS, AND CEILING ELEVATIONS FOR PROPER COVERAGE, STRUCTURAL ELEMENTS, CEILING ELEVATIONS, DUCTWORK, AND PIPING. SPRINKLER PIPING WILL NOT BE ALLOWED TO COMPROMISE LIGHTING, HVAC, OR ARCHITECTURAL ELEMENTS AND/OR THEIR LOCATIONS. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWNGS FOR PROPOSED SPRINKLER HEAD LOCATIONS WHERE APPLICABLE. ALL SPRINKLER HEADS MOUNTED IN REMOVABLE ACCESSIBLE CEILINGS SHALL BE LOCATED AT THE CENTER (+1") OF THE CEILING TILE.

3. SPRINKLER HEADS SHALL BE RATED AND UL LISTED FOR THE INTENDED TEMPERATURE CLASSIFICATION. SPRINKLERS IN AREAS REQUIRING TEMPERATURE CLASSIFICATIONS OF INTERMEDIATE AND GREATER SHALL REQUIRE THE USE OF A TEMPERATURE MEASURING DEVICE TO DETERMINE THE APPROPRIATE TEMPERATURE CLASSIFICATION.

4. UNLESS OTHERWISE NOTED, SPRINKLER HEADS SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS OR AS OTHERWISE SPECIFIED BY THE ARCHITECT. WHERE NO STANDARD IS SPECIFIED, THE SPRINKLER HEADS SHALL BE CHROME PLATED SEMI-RECESSED TYPE IN AREAS WITH CEILING AND CHROME PLATED UPRIGHT TYPE IN OTHER AREAS. SPRINKLER HEADS, VALVES, ALARMS, ETC. SHALL BE MANUFACTURED BY VIKING, GRINNELL, CENTRAL, STAR, OR RELIABLE.

5. SUPPORT ALL PIPING STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH NFPA STANDARDS, ANSI B31.1 AND MSS SP-69.

6. ALL TRAPPED PIPING SHALL BE PROVIDED WITH ACCESSIBLE DRAIN VALVES, NIPPLE, AND CAP.

7. ALL NEW FIRE PROTECTION PIPING BELOW GRADE SHALL BE DUCTILE IRON, THICKNESS CLASS 52, LINED, CONFORMING TO ANSI/AWWA C151/A2151. PIPE FITTINGS SHALL BE EITHER DUCTILE CAST IRON, PRESSURE CLASS 350, BELL & SPIGOT CONFIGURATION WITHOUT BEAD, LINED, WITH BELL ENDS FORMED FOR RUBBER GASKETS; OR MECHANICAL JOINT CONFIGURATION, LINED, CONFORMING TO ANSI/AWWA C110/A21.10.

8. FIRE PROTECTION PIPING MATERIAL AT AND UPSTREAM OF THE MAIN CONTROL VALVES SHALL BE ASTM 120 OR A-53, SCHEDULE 40, BLACK STEEL OR DUCTILE IRON, IN ACCORDANCE WITH NFPA STANDARD NO. 13.

9. PIPING MATERIALS AND CONNECTIONS DOWNSTREAM OF MAIN CONTROL VALVES SHALL BE IN COMPLIANCE WITH NFPA STANDARD NO. 13, AND SHALL BE LISTED AND LABELED AS SUCH. PIPING SHALL BE EITHER ASTM 120, A-53, SCHEDULE 40, BLACK STEEL, TYPE L HARD DRAWN, SEAMLESS COPPER, SCHEDULE 10 (LARGER THAN 2 INCHES), OR THREADABLE THIN WALL STEEL (2 INCHES AND SMALLER). FITTINGS SHALL BE CAST FITTINGS. PLASTIC FIRE PROTECTION PIPING WITHIN PLENUM SPACES IS ONLY ALLOWABLE WITH WET SYSTEMS. PIPING SHALL HAVE A MAXIMUM PEAK OPTICAL DENSITY OF 0.50, A MAXIMUM AVERAGE OPTICAL DENSITY OF 0.15, AND A FLAME SPREAD NOT GREATER THAN 5 FEET WHEN TESTED IN ACCORDANCE WITH UL 1887.

10. ALL NEW FIRE PROTECTION PIPING SHALL HAVE THE OPTION TO BE U.L. LISTED AND FACTORY MUTUAL APPROVED PAINTED DUCTILE IRON VICTAULIC STYLE 77 OR 75 COUPLINGS ON BRANCH LINES AND VICTAULIC STYLE 07 "ZERO FLEX" COUPLINGS ON THE RISER AND MAINS, AND VICTAULIC FULL FLOW FITTINGS. VICTAULIC FLANGES, REDUCING COUPLINGS AND OUTLET COUPLINGS SHALL NOT BE ALLOWED. VICTAULIC GASKETS SHALL BE U.L. LISTED AND FACTORY MUTUAL APPROVED FOR THE SERVICE AND WORKING PRESSURE OF THE SYSTEM. GROOVE CUTTING OR ROLLING AND INSTALLATION OF GASKETS AND COUPLINGS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS.

11. FIRE PROTECTION PIPING GATE VALVES UP TO AND INCLUDING 2 INCHES SHALL BE KENNEDY FIGURE 66 OR APPROVED EQUAL, RATED FOR 175 PSIG WORKING PRESSURE, UL LISTED AND APPROVED, AND HAVE A BRONZE BODY, BRONZE TRIM, SINGLE DISC, OUTSIDE SCREW AND YOKE, SCREWED BONNET VALVES WITH SEATS OF BRONZE AND SCREWED ENDS. GATE VALVES 2-1/2" AND ABOVE SHALL BE KENNEDY FIGURE 68 OR APPROVED EQUAL, RATED FOR 175 PSIG WORKING PRESSURE, UL LISTED AND APPROVED, AND HAVE A IRON BODY, OUTSIDE SCREW AND YOKE BOLTED BONNET VALVES WITH DOUBLE OR SINGLE DISC, CLASS 125 ANSI B16.1 FLANGED ENDS, BRONZE TRIM AND BRONZE SEATS.

12. FIRE PROTECTION PIPING SWING CHECK VALVES SHALL BE UL LISTED AND APPROVED, RATED FOR 175 PSIG WORKING PRESSURE, AND HAVE A IRON BODY, BRONZE TRIM, CAST IRON OR BRONZE DISC, BOLTED COVER AND SCREWED OR FLANGED ENDS. SWING CHECK VALVES SHALL BE INSTALLED IN HORIZONTAL PIPING ONLY. VALVES MANUFACTURED BY KENNEDY, CRANE, JENKINS, GRINNELL, STOCKHAM OR NIBCO-SCOTT WILL BE ACCEPTABLE IF THEY COMPLY WITH THESE SPECIFICATIONS.

13. FLOW AND TAMPER SWITCH ALARM ANNUNCIATION SHALL BE INTERLOCKED WITH THE CORRESPONDING ALARM SYSTEMS FOR PROPER ANNUNCIATION. WATER FLOW SWITCHES SHALL BE SIMILAR TO AUTOCALL WF-4. COORDINATE ALL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR. IF THEY COMPLY WITH THESE SPECIFICATIONS, WATER FLOW SWITCHES MANUFACTURED BY AUTOCALL, POTTER ELECTRIC SIGNAL COMPANY, GRINNELL, OR STAR SPRINKLER CORPORATIOIN WILL BE ACCEPTABLE. SUPERVISORY (TAMPER) SWITCHES SHALL BE SINGLE POLE, DOUBLE THROW TYPE WITH CAST ALUMINUM HOUSING AND TAMPER-PROOF COVER. SWITCH RATING SHALL BE AT LEAST 7 AMPERS AT 125/250 VOLTS. SWITCHES SHALL BE POTTER ELECTRIC SIGNAL CO. MODEL OSYS-B, STAR SPRINKLER CORP. SERIES NGV, OR APPROVED EQUAL.

14. DRY SYSTEMS SHALL BE INSTALLED IN ANY UNCONDITIONED SPACES. DRY PIPE AIR COMPRESSORS FOR DRY PIPE SPRINKLERS SYSTEM SHALL BE WITH BRACKET FOR MOUNTING. EACH COMPRESSOR SHALL BE AUTOMATICALLY CONTROLLED BY A FACTORY-MOUNTED PRESSURE SWITCH. IN ADDITION, FOR EACH COMPRESSOR PROVIDE A HIGH/LOW PRESSURE SWITCH WITH SET POINTS HIGHER AND LOWER OPERATING SWITCH, TO PROVIDE A SUPERVISORY SIGNAL TO AN ALARM ANNUNCIATOR PANEL. DRY PIPE AIR COMPRESSOR SHALL BE UL LISTED FOR THE INTENDED SERVICE. STORAGE TANKS, IF REQUIRED, SHALL BE ASME LISTED.

15. ALL PACKAGED EQUIPMENT SHALL BE INDEPENDENTLY THIRD PARTY LABELED AS A SYSTEM FOR ITS INTENDED USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399, AS WELL AS NFPA PAMPHLET NO. 70, THE NATIONAL ELECTRICAL CODE (NEC) ARTICLE 90-7.

16. FIRE PROTECTION SUPPLY PUMPS SHALL BE VERTICAL TURBINE FIRE PUMPS, 750 GPM CAPACITY EACH. TWO FIRE PROTECTION SUPPLY PUMPS SHALL BE PROVIDED. FIRE PROTECTION SUPPLY PUMPS AND PUMPING STATION SHALL BE CONFIGURED AS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE FIRE PROTECTION SYSTEM FOR THE REVIEW BY THE OWNER, ENGINEER AND FIRE MARSHAL. FIRE PROTECTION SYSTEM SHALL BE CERTIFIED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER OR NICET LEVEL 3 FIRE PROTECTION DESIGNER RETAINED BY A LICENSED FIRE PROTECTION DESIGN/CONSTRUCTION FIRM.

PLUMBING FIXTURE SCHEDULE

DESIGNATION	FIXTURE TYPE	C.W.	H.W.	WASTE	VENT	MANUFACTURER	MODEL NO.	TRIM	WASTE	TRAP	SUPPLY	ACCESSORIES
W-1	WATER CLOSET	1/2"	-	3"	2"	KOHLER	K-3544					K-4650
SH-1	SHOWER	1/2"	1/2"	2"	1 1/2"	BY OTHERS						
L-1	LAVATORY	1/2"	1/2"	1 1/2"	1 1/2"	KOHLER	K-2054	K-7305-K / K-16050-5		K-8998	K-7605-P	INSTALL W/ K-13885 OFFSET DRAIN
S-1	SINK	1/2"	1/2"	1 1/2"	1 1/2"							
MS-1	MOP SINK	1/2"	1/2"	3"	2"	FIAT	MSB2424	830-AA				832AA HOSE BRACKET & 889-CC MOP HANGER

REMARKS:

1. PROVIDE ALL REQUIRED COIMPONENTS FOR COMPLETE FIXTURE ROUGH-IN, I.E., SUPPLIES, STOPS, TRAPS, CARRIERS, GRID DRAINS, TAILPIECES, ETC. NOT ALL REQUIRED COMPONENTS ARE SPECIFIED ABOVE.
2. FIXTURES SHALL BE ADA COMPLIANT. PROVIDED WITH ADA COMPLIANT ACCESSORIES. MOUNT ADA COMPLIANT. SEE ARCHITECTURAL PLAN FOR ELEVATIONS.
3. PROVIDE SKAL + GUARD INSULATING DEVICES ON EXPOSED UNDERCOUNTER PLUMBING.
4. COORDINATE VALVE INSTALLATION WITH ADA GRAB BAR. VALVE SHALL BE LOCATED SO THAT GRAB BAR DOES NOT INTERFERE WITH USE OF VALVE. PROVIDE EXTENSION AS REQUIRED.
5. PROVIDE GOOSENECK FAUCETS WITH ADA WRIST BLADE HANDLES.

PLUMBING LEGEND

SYMBOL	ABRV.	DESCRIPTION
	SAN., W.	SANITARY PIPING
	V	VENT PIPING
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
		HEAT TRACING
PD	PD	PUMP DISCHARGE
		PIPE UP
		PIPE DOWN
		PIPE TEE DOWN
	CO	CLEAN OUT, FLOOR
	CO	CLEAN OUT, EXPOSED
		CAPPED PIPE
		PIPE UNION
	PG	PRESSURE GAUGE
		THERMOMETER
	BFP	BACK FLOW PREVENTER
		BALL VALVE OR SHUTOFF VALVE
	P&TRV	PRESSURE AND/OR TEMPERATURE RELIEF VALVE
		MIXING VALVE
		PRESSURE REDUCING VALVE
	CV	CHECK VALVE
		CHECK VALVE WITH AUTO DRIP VALVE
		GATE VALVE
		DRY PIPE SPRINKLER VALVE
	OS&Y	OS&Y VALVE
	T.S.	OS&Y VALVE WITH TAMPER SWITCH
		FIRE DEPARTMENT SIAMESE CONNECTION
		FIRE PUMP TEST MANIFOLD
		HOSE BIB
		OPEN SITE DRAIN
		FLOOR DRAIN
		HOSE BIB EXTERNAL
		FLOW ALARM
CP		ELECTRICAL CONTROL PANEL

PLUMBING EQUIPMENT

1. ELECTRIC WATER HEATER (WH-1): A.O. SMITH MODEL # DVE 200, 60KW, TOTAL 4 ELEMENTS @ 15KW EACH, 12 STAGES OF CONTROL, 200 GAL. CAPACITY W. 246 GPH RECOVERY 100 DEGREE RISE.
2. EMERGENCY EYE WASH: BRADLEY #S19-220T
3. SEWAGE CUTTER PUMP: SHALL BE A DUPLEX STATION, WITH REMOTE MOUNTED CONTROL PANEL. SERVICE & REMOVAL RAILS & 4'-0" DIA. X 6'-0" DEEP SUMP. 2 PUMPS @ 100 GPM @ 25' TDH 2 HP 460V, 3 DIA., 60HZ.
4. WATER STORAGE TANK: 1500 GAL. 6'-0" DIA X 7'-6" LONG
5. BOOSTER PUMP PACKAGE: TIGERFLOW PACKAGE VMS 4000-2 AURORA 390 SERIES, 24 GPM @ 150' TOH 5 HP W/ HYDROPNEUMATIC TANK 132 GAL. RATED AT 125 PSI.
6. SHOWER MIXING VALVE: (MV-1) BRADLEY NAVIGATOR # S59-2006
7. MIXING VALVE: (EYE/FACE WASH MV-2) LAWLER #91/E/T
8. FLOOR DRAINS (FD-1): JOSAM SERIES 30000-A
9. TRAP PRIMER (TP): J.R. SMITH #2699
10. BACKFLOW PREVENTER ASSEMBLY:
11. HOSE BIB (HB): WOODFORD MODEL #24
12. EXTERIOR WALL HYDRANT (EWH-1): WOODFORD MODEL B-65 SERIES

STATE OF MARYLAND · GEOFFREY A. TIZARD · NO. 15453 · REGISTERED PROFESSIONAL ENGINEER

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REVISIONS			
NO.	DATE	BY	DESCRIPTION

SEAL

STATE OF MARYLAND · PROFESSIONAL ENGINEER · 5/31/02

CENTRAL LANDFILL FACILITY SITE
MUNICIPAL SOLID WASTE RECOVERY FACILITY
WORCESTER COUNTY, MARYLAND

PLUMBING SPECIFICATIONS AND LEGEND

EA ENGINEERING, SCIENCE, AND TECHNOLOGY
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