SPECIFICATIONS - PLUMBING (CONTINUED)

3.3 PIPING SCHEDULE

A. ABOVEGROUND DISTRIBUTION PIPING: TYPE L HARD COPPER TUBING, CPVC PLASTIC PIPING OR PEX PIPING.

B. BELOWGROUND DISTRIBUTION PIPING: TYPE K SOFT COPPER TUBING OR PEX PIPING INSTALLED IN PROTECTIVE PVC CONDUIT.

3.4 VALVE SCHEDULE

A. DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:

1. SHUTOFF DUTY: USE BRONZE BALL VALVES FOR PIPING NPS 2 AND SMALLER.
2. THROTTLING DUTY: USE BRONZE BALL VALVES FOR PIPING NPS 2 AND SMALLER.
3. HOT-WATER-PIPING, BALANCING DUTY: MEMORY-STOP BALANCING VALVES.
4. DRAIN DUTY: HOSE-END DRAIN VALVES.

B. INSTALL BALL VALVES CLOSE TO MAIN ON EACH BRANCH AND RISER SERVING TWO OR MORE PLUMBING FIXTURES OR EQUIPMENT CONNECTIONS AND WHERE INDICATED.

C. INSTALL BALL VALVES ON INLET TO EACH PLUMBING EQUIPMENT ITEM, ON EACH SUPPLY TO EACH PLUMBING FIXTURE NOT HAVING STOPS ON SUPPLIES, AND ELSEWHERE AS INDICATED.

D. INSTALL DRAIN VALVE AT BASE OF EACH RISER, AT LOW POINTS OF HORIZONTAL RUNS, AND WHERE REQUIRED TO DRAIN WATER DISTRIBUTION PIPING SYSTEM.

E. INSTALL SWING CHECK VALVE ON DISCHARGE SIDE OF EACH PUMP AND ELSEWHERE AS INDICATED.

F. INSTALL BALL VALVES IN EACH HOT-WATER CIRCULATING LOOP AND DISCHARGE SIDE OF EACH PUMP.

END OF SECTION

SECTION 221119 - DOMESTIC WATER PIPING SPECIALTIES

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. POTABLE-WATER PIPING AND COMPONENTS SHALL COMPLY WITH NSF 61AND NSF 14.

2.2 PERFORMANCE REQUIREMENTS

A. MINIMUM WORKING PRESSURE FOR DOMESTIC WATER PIPING SPECIALTIES: 125 PSIG UNLESS OTHERWISE INDICATED.

2.3 MANUFACTURED UNITS

A. PIPE-APPLIED, ATMOSPHERIC-TYPE VACUUM BREAKERS:

1. STANDARD: ASSE 1001.
2. SIZE: NPS 1/4 TO NPS 3, AS REQUIRED TO MATCH CONNECTED PIPING.
3. BODY: BRONZE.
4. INLET AND OUTLET CONNECTIONS: THREADED.
5. FINISH: CHROME PLATED.

B. HOSE-CONNECTION VACUUM BREAKERS:

1. STANDARD: ASSE 1011.
2. BODY: BRONZE, NONREMOVABLE, WITH MANUAL DRAIN.
3. OUTLET CONNECTION: GARDEN-HOSE THREADED COMPLYING WITH ASME B1.20.7.
4. FINISH: CHROME OR NICKEL PLATED BRONZE.

C. REDUCED-PRESSURE-PRINCIPLE BACKFLOW PREVENTERS:

1. STANDARD: ASSE 1013.
2. OPERATION: CONTINUOUS-PRESSURE APPLICATIONS.
3. PRESSURE LOSS: 12 PSIG MAXIMUM, THROUGH MIDDLE THIRD OF FLOW RANGE.
4. BODY: LEAD FREE BRONZE OR STAINLESS STEEL FOR NPS 2 AND SMALLER.
5. END CONNECTIONS: THREADED FOR NPS 2 AND SMALLER.
6. CONFIGURATION: DESIGNED FOR HORIZONTAL, STRAIGHT-THROUGH FLOW.
7. ACCESSORIES:
   a. VALVES NPS 2 AND SMALLER: BALL TYPE WITH THREADED ENDS ON INLET AND OUTLET.
   b. AIR-GAP FITTING: ASME A112.1.2, MATCHING BACKFLOW-PREVENTER CONNECTION.

D. WATER REGULATORS:

1. STANDARD: ASSE 1003.
2. PRESSURE RATING: INITIAL WORKING PRESSURE OF 150 PSIG.
3. DESIGN OUTLET PRESSURE SETTING: 60 PSIG.
4. BODY: LEAD FREE BRONZE WITH CHROME-PLATED FINISH FOR NPS 2 AND SMALLER.
5. END CONNECTIONS: THREADED FOR NPS 2 AND SMALLER.

E. MEMORY-STOP BALANCING VALVES:

1. STANDARD: MSS SP-110 FOR TWO-PIECE, COPPER-ALLOY BALL VALVES.
2. PRESSURE RATING: 400-PSIG MINIMUM CWP.
3. SIZE: NPS 2 OR SMALLER.
4. BODY: LEAD FREE COPPER ALLOY.
5. PORT: FULL PORT.
6. BALL: CHROME-PLATED BRASS.
7. SEATS AND SEALS: REPLACEABLE.
8. END CONNECTIONS: SOLDER JOINT OR THREADED.
9. HANDLE: VINYL-COVERED STEEL WITH MEMORY-SETTING DEVICE.

F. THERMOSTATIC, WATER MIXING VALVES:

1. STANDARD: ASSE 1017.
2. PRESSURE RATING: 125 PSIG MINIMUM UNLESS OTHERWISE INDICATED.
3. TYPE: EXPOSED-MOUNTED, THERMOSTATICALLY CONTROLLED, WATER MIXING VALVE.
4. MATERIAL: LEAD FREE BRONZE BODY WITH CORROSION-RESISTANT INTERIOR COMPONENTS.
5. CONNECTIONS: THREADED OR UNION INLETS AND OUTLET.
6. ACCESSORIES: MANUAL TEMPERATURE CONTROL, CHECK STOPS ON HOT- AND COLD-WATER SUPPLIES, AND ADJUSTABLE, TEMPERATURE-CONTROL HANDLE.
7. TEMPERED-WATER SETTING: AS SPECIFIED ON DRAWINGS.
8. PRESSURE DROP AT DESIGN FLOW RATE: NOT EXCEED 15 PSIG.
9. VALVE FINISH: CHROME PLATED.
10. PIPING FINISH: CHROME PLATED.

G. Y-PATTERN STRAINERS:

1. PRESSURE RATING: 125 PSIG MINIMUM UNLESS OTHERWISE INDICATED.
2. BODY: LEAD FREE BRONZE FOR NPS 2 AND SMALLER.
3. END CONNECTIONS: THREADED FOR NPS 2 AND SMALLER.
4. SCREEN: STAINLESS STEEL WITH ROUND PERFORATIONS UNLESS OTHERWISE INDICATED.
5. PERFORATION SIZE:
   a. STRAINERS NPS 2 AND SMALLER: 0.020 INCH.
6. DRAIN: PIPE PLUG.

H. HOSE BIBBS:

1. STANDARD: ASME A112.18.1 FOR SEDIMENT FAUCETS.
2. BODY MATERIAL: BRONZE.
3. SEAT: BRONZE, REPLACEABLE.
4. SUPPLY CONNECTIONS: NPS 3/4 THREADED OR SOLDER-JOINT INLET.
5. OUTLET CONNECTION: GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7.
6. PRESSURE RATING: 125 PSIG.
7. VACUUM BREAKER: INTEGRAL, NONREMOVABLE, DRAINABLE, HOSE-CONNECTION VACUUM BREAKER COMPLYING WITH ASSE 1011.
8. FINISH FOR EQUIPMENT ROOMS: ROUGH BRONZE, OR CHROME OR NICKEL PLATED.
9. FINISH FOR SERVICE AREAS: CHROME OR NICKEL PLATED.
10. FINISH FOR FINISHED ROOMS: CHROME OR NICKEL PLATED.
11. OPERATION FOR EQUIPMENT ROOMS: WHEEL HANDLE OR OPERATING KEY.
12. OPERATION FOR SERVICE AREAS: OPERATING KEY.
13. OPERATION FOR FINISHED ROOMS: OPERATING KEY.
14. INCLUDE OPERATING KEY WITH EACH OPERATING-KEY HOSE BIBB.
15. INCLUDE INTEGRAL WALL FLANGE WITH EACH CHROME- OR NICKEL-PLATED HOSE BIBB.

I. NONFREEZE WALL HYDRANTS:

1. STANDARD: ASME A112.21.3M FOR CONCEALED OR EXPOSED-OUTLET, SELF-DRAINING WALL HYDRANTS.
2. PRESSURE RATING: 125 PSIG.
3. OPERATION: LOOSE KEY.
4. CASING AND OPERATING ROD: OF LENGTH REQUIRED TO MATCH WALL THICKNESS. INCLUDE WALL CLAMP.
5. INLET: NPS 3/4.
6. OUTLET: CONCEALED, WITH INTEGRAL VACUUM BREAKER AND GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7.
7. BOX: DEEP, FLUSH MOUNTED WITH COVER.
8. BOX AND COVER FINISH: CHROME PLATED.
9. OUTLET: EXPOSED, WITH INTEGRAL VACUUM BREAKER AND GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7.
10. NOZZLE AND WALL-PLATE FINISH: POLISHED NICKEL BRONZE.
11. OPERATING KEYS: ONE WITH EACH WALL HYDRANT.

J. BALL-VALVE-TYPE, HOSE-END DRAIN VALVES:

1. STANDARD: MSS SP-110 FOR STANDARD-PORT, TWO-PIECE BALL VALVES.
2. PRESSURE RATING: 400-PSIG MINIMUM CWP.
3. SIZE: NPS 3/4.
4. BODY: COPPER ALLOY.
5. BALL: CHROME-PLATED BRASS.
6. SEATS AND SEALS: REPLACEABLE.
7. HANDLE: VINYL-COVERED STEEL.
8. INLET: THREADED OR SOLDER JOINT.
9. OUTLET: THREADED, SHORT NIPPLE WITH GARDEN-HOSE THREAD COMPLYING WITH ASME B1.20.7 AND CAP WITH BRASS CHAIN.

K. WATER-HAMMER ARRESTERS:

1. STANDARD: ASSE 1010 OR PDI-WH 201.
2. TYPE: COPPER TUBE WITH PISTON.
3. SIZE: ASSE 1010, SIZES AA AND A THROUGH F, OR PDI-WH 201, SIZES A THROUGH F.

L. SUPPLY-TYPE, TRAP-SEAL PRIMER DEVICE:

1. STANDARD: ASSE 1018
2. PRESSURE RATING: 125 PSIG MINIMUM.
3. BODY: BRONZE.
4. INLET AND OUTLET CONNECTIONS: NPS 1/2 THREADED, UNION, OR SOLDER JOINT.
5. GRAVITY DRAIN OUTLET CONNECTION: NPS 1/2 THREADED OR SOLDER JOINT.
6. FINISH: CHROME PLATED, OR ROUGH BRONZE FOR UNITS USED WITH PIPE OR TUBE THAT IS NOT CHROME FINISHED.

M. WATER FILTERS: CARTRIDGE TYPE, INCLUDING HOUSING, FITTINGS, FILTER CARTRIDGES, AND CARTRIDGE END CAPS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INSTALL BACKFLOW PREVENTERS IN EACH WATER SUPPLY TO MECHANICAL EQUIPMENT AND SYSTEMS AND TO OTHER EQUIPMENT AND WATER SYSTEMS THAT MAY BE SOURCES OF CONTAMINATION. COMPLY WITH AUTHORITIES HAVING JURISDICTION.

B. INSTALL WATER REGULATORS WITH INLET AND OUTLET SHUTOFF VALVES. INSTALL PRESSURE GAGES ON INLET AND OUTLET.

C. INSTALL BALANCING VALVES IN LOCATIONS WHERE THEY CAN EASILY BE ADJUSTED.

D. INSTALL TEMPERATURE-ACTUATED, WATER MIXING VALVES WITH CHECK STOPS OR SHUTOFF VALVES ON INLETS AND WITH SHUTOFF VALVE ON OUTLET.

E. INSTALL Y-PATTERN STRAINERS FOR WATER ON SUPPLY SIDE OF EACH CONTROL VALVE, WATER PRESSURE-REDUCING VALVE, SOLENOID VALVE AND PUMP.

F. INSTALL WATER-HAMMER ARRESTERS IN WATER PIPING ACCORDING TO PDI-WH 201.

G. INSTALL SUPPLY-TYPE, TRAP-SEAL PRIMER VALVES WITH OUTLET PIPING PITCHED DOWN TOWARD DRAIN TRAP A MINIMUM OF 1 PERCENT, AND CONNECT TO FLOOR-DRAIN BODY, TRAP, OR INLET FITTING. ADJUST VALVE FOR PROPER FLOW.

3.2 FIELD QUALITY CONTROL

A. PERFORM THE FOLLOWING TESTS AND INSPECTIONS:

1. TEST EACH PRESSURE VACUUM BREAKER, REDUCED-PRESSURE-PRINCIPLE BACKFLOW PREVENTER, AND DOUBLE-CHECK BACKFLOW-PREVENTION ASSEMBLY ACCORDING TO AUTHORITIES HAVING JURISDICTION AND THE DEVICE'S REFERENCE STANDARD.
2. DOMESTIC WATER PIPING SPECIALTIES WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
3. PREPARE TEST AND INSPECTION REPORTS.

END OF SECTION 221119

SECTION 221123 - DOMESTIC WATER PUMPS

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIRMENTS

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

B. COMPLY WITH UL 778 FOR MOTOR-OPERATED WATER PUMPS.

2.2 DOMESTIC WATER PUMPS

A. HOT WATER CIRCULATOR PUMP, RP-1:

1. BASIS-OF-DESIGN PRODUCT: GRUNDFOS ALPHA 15-55SF, AS INDICATED ON DRAWINGS.
2. CASING: STAINLESS STEEL WITH COMPANION-FLANGE CONNECTIONS.
3. MOTOR: AUTOMATIC ADJUSTABLE, WET-ROTOR, PERMANENT MAGNET.

2.3 MOTORS

A. COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS FOR MOTORS.

B. MOTOR SIZES: MINIMUM SIZE AS INDICATED. IF NOT INDICATED, LARGE ENOUGH SO DRIVEN LOAD WILL NOT REQUIRE MOTOR TO OPERATE IN SERVICE FACTOR RANGE ABOVE 1.0.

2.4 CONTROLS

A. TIMERS: ELECTRIC, FOR CONTROL OF HOT-WATER CIRCULATION PUMP.

1. TYPE: PROGRAMMABLE, SEVEN-DAY CLOCK WITH MANUAL OVERRIDE ON-OFF SWITCH.
2. PROGRAMMABLE SEQUENCE OF OPERATION: UP TO TWO ON-OFF CYCLES EACH DAY FOR SEVEN DAYS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INSTALL PUMPS WITH ACCESS FOR PERIODIC MAINTENANCE, INCLUDING REMOVAL OF MOTORS, IMPELLERS, COUPLINGS, AND ACCESSORIES.

B. SUPPORT PUMPS AND PIPING SO WEIGHT OF PIPING IS NOT SUPPORTED BY PUMP VOLUTE.

C. INSTALL ELECTRICAL CONNECTIONS FOR POWER, CONTROLS, AND DEVICES.

D. SUSPEND IN-LINE PUMPS INDEPENDENT FROM PIPING. USE CONTINUOUS-THREAD HANGER RODS AND VIBRATION ISOLATION HANGERS. FABRICATE BRACKETS OR SUPPORTS AS REQUIRED FOR PUMPS.

E. CONNECT PIPING WITH VALVES THAT ARE AT LEAST THE SAME SIZE AS PIPING CONNECTING TO PUMPS.

F. INSTALL SUCTION AND DISCHARGE PIPE SIZES EQUAL TO OR GREATER THAN DIAMETER OF PUMP NOZZLES.

G. INSTALL SHUTOFF VALVE AND STRAINER ON SUCTION SIDE OF PUMPS.

H. INSTALL NONSLAM CHECK VALVE AND THROTTLING VALVE ON DISCHARGE SIDE OF PUMPS.

I. INSTALL THERMOSTATS IN HOT-WATER RETURN PIPING.

J. INSTALL TEST PLUGS ON SUCTION AND DISCHARGE OF EACH PUMP. INSTALL AT INTEGRAL PRESSURE GAGE TAPPINGS WHERE PROVIDED.

END OF SECTION 221123

SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. COMPONENTS AND INSTALLATION SHALL BE CAPABLE OF WITHSTANDING THE FOLLOWING MINIMUM WORKING PRESSURE UNLESS OTHERWISE INDICATED:

1. SOIL, WASTE, AND VENT PIPING: 10-FOOT HEAD OF WATER.

B. PIPING MATERIALS SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.

C. COMPLY WITH NSF/ANSI 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS.

2.2 PIPES AND FITTINGS

A. PVC PLASTIC, DWV PIPE AND FITTINGS: ASTM D 2665, SCHEDULE 40, PLAIN ENDS WITH PVC SOCKET-TYPE, DWV PIPE FITTINGS.

1. ADHESIVE PRIMER: ASTM F 656.
   a. ADHESIVE PRIMER SHALL HAVE A VOC CONTENT OF 550 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
2. SOLVENT CEMENT: ASTM D 2564.
   a. PVC SOLVENT CEMENT SHALL HAVE A VOC CONTENT OF 510 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. INSTALL WALL PENETRATION SYSTEM AT EACH PIPE PENETRATION THROUGH FOUNDATION WALL. MAKE INSTALLATION WATERTIGHT. COMPLY WITH REQUIREMENTS IN SECTION 220513 "COMMON WORK RESULTS FOR PLUMBING" FOR WALL PENETRATION SYSTEMS.

B. MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-SWEEP BENDS. SANITARY TEES AND SHORT-SWEEP 1/4 BENDS MAY BE USED ON VERTICAL STACKS IF CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. USE LONG-TURN, DOUBLE Y-BRANCH AND 1/8-BEND FITTINGS IF TWO FIXTURES ARE INSTALLED BACK TO BACK OR SIDE BY SIDE WITH COMMON DRAIN PIPE. STRAIGHT TEES, ELBOWS, AND CROSSES MAY BE USED ON VENT LINES. DO NOT CHANGE DIRECTION OF FLOW MORE THAN 90 DEGREES. USE PROPER SIZE OF STANDARD INCREASERS AND REDUCERS IF PIPES OF DIFFERENT SIZES ARE CONNECTED. REDUCING SIZE OF DRAINAGE PIPING IN DIRECTION OF FLOW IS PROHIBITED.

C. LAY BURIED BUILDING DRAINAGE PIPING BEGINNING AT LOW POINT OF EACH SYSTEM. INSTALL TRUE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT. PLACE HUB ENDS OF PIPING UPSTREAM. INSTALL REQUIRED GASKETS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SWAB IN PIPING AND PULL PAST EACH JOINT AS COMPLETED.

D. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES, UNLESS OTHERWISE INDICATED:

1. HORIZONTAL SANITARY DRAINAGE PIPING: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 2-1/2 AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 AND LARGER.
2. VENT PIPING: ALL VENT AND BRANCH VENT PIPING SHALL BE GRADED AND CONNECTED TO DRAIN BACK TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.

G. INSTALL PVC SOIL AND WASTE DRAINAGE AND VENT PIPING ACCORDING TO ASTM D 2665.

H. INSTALL UNDERGROUND PVC SOIL AND WASTE DRAINAGE PIPING ACCORDING TO ASTM D 2321.

I. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.

J. COMPLY WITH REQUIREMENTS IN SECTION 220513 "COMMON WORK RESULTS FOR PLUMBING" FOR BASIC PIPING JOINT CONSTRUCTION.

K. COMPLY WITH REQUIREMENTS IN SECTION 220513 "COMMON WORK RESULTS FOR PLUMBING" FOR PIPE HANGER AND SUPPORT DEVICES.

3.2 PIPE SCHEDULE

A. ABOVEGROUND APPLICATIONS: PVC PLASTIC, DWV PIPE AND FITTINGS WITH SOLVENT-CEMENTED JOINTS, COPPER DRAINAGE TUBE AND FITTINGS WITH SOLDERED JOINTS. PVC PLASTIC PIPE AND FITTINGS SHALL NOT BE PERMITTED FOR INSTALLATION IN RETURN AIR PLENUMS OR LOCATIONS EXPOSED TO RETURN AIR PLENUMS.

B. BELOWGROUND APPLICATIONS: PVC PLASTIC, DWV PIPE AND DRAINAGE-PATTERN FITTINGS WITH CEMENTED JOINTS.

END OF SECTION

SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. SUBMITTALS:

1. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.
   a. INCLUDE RATED CAPACITIES, OPERATING CHARACTERISTICS, AND ACCESSORIES FOR GREASE INTERCEPTORS.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. DRAINAGE PIPING SPECIALTIES SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.

2.2 MANUFACTURED UNITS - AS INDICATED ON DRAWINGS

A. FLOOR CLEANOUTS: PER STANDARD ASME A112.36.2M-2002.

B. WALL CLEANOUTS:

C. FLOOR DRAINS: PER STANDARD ASME A112.6.3-2001.

D. CAST IRON FLOOR SINKS: PER STANDARD ASME A112.6.7-2001.

E. PVC PLASTIC FLOOR SINKS: PER STANDARD ASME A112.6.7-2001.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INSTALL CLEANOUTS AT GRADE AND EXTEND TO WHERE BUILDING SANITARY DRAINS CONNECT TO BUILDING SANITARY SEWERS.

B. INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS TO BE DRAINED. SET GRATES OF DRAINS FLUSH WITH FINISHED FLOOR UNLESS OTHERWISE INDICATED.

1. INSTALL FLOOR-DRAIN FLASHING COLLAR OR FLANGE SO NO LEAKAGE OCCURS BETWEEN DRAIN AND ADJOINING FLOORING. MAINTAIN INTEGRITY OF WATERPROOF MEMBRANES WHERE PENETRATED.
2. INSTALL INDIVIDUAL TRAPS FOR FLOOR DRAINS CONNECTED TO SANITARY BUILDING DRAIN, UNLESS OTHERWISE INDICATED.

C. PROVIDE A 2" MINIMUM AIR-GAP OR 2 TIMES THE PIPE DIAMETER (WHICHEVER IS GREATER) ON INDIRECT-WASTE PIPING DISCHARGE INTO SANITARY DRAINAGE SYSTEM.

END OF SECTION

SECTION 22 34 00 - FUEL-FIRED, DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

1. COMMERCIAL, GAS-FIRED, TANKLESS, DOMESTIC-WATER HEATERS.
2. DOMESTIC-WATER HEATER ACCESSORIES.

1.2 QUALITY ASSURANCE

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

B. NSF COMPLIANCE: FABRICATE AND LABEL EQUIPMENT COMPONENTS THAT WILL BE IN CONTACT WITH POTABLE WATER TO COMPLY WITH NSF 61, "DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS."

1.3 WARRANTY

A. SPECIAL WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF FUEL-FIRED, DOMESTIC-WATER HEATERS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD.

1. FAILURES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   a. STRUCTURAL FAILURES INCLUDING STORAGE TANK AND SUPPORTS.
   b. FAULTY OPERATION OF CONTROLS.
   c. DETERIORATION OF METALS, METAL FINISHES, AND OTHER MATERIALS BEYOND NORMAL USE.
2. WARRANTY PERIODS: FROM DATE OF SUBSTANTIAL COMPLETION.
   a. GAS-FIRED, TANKLESS, DOMESTIC-WATER HEATERS:
      1) HEAT EXCHANGER: TEN YEARS.
      2) CONTROLS AND OTHER COMPONENTS: FIVE YEARS.
      3) THERMAL EXPANSION TANK: FIVE YEARS.

PART 2 - PRODUCTS

A. COMMERCIAL, GAS-FIRED, TANKLESS, DOMESTIC-WATER HEATER, DWH-1 & DWH-2:

1. BASIS-OF-DESIGN PRODUCT: RINNAI MODEL NO. R75LSI, PROVIDE AS INDICATED ON DRAWINGS.
2. STANDARD: ANSI Z21.10.3/CSA 4.3 FOR GAS-FIRED, INSTANTANEOUS, DOMESTIC WATER HEATERS FOR INDOOR APPLICATIONS.
3. FORCED DRAFT DIRECT VENT SYSTEM.

B. DOMESTIC WATER COMPRESSION TANKS:

1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: RETAIN OPTION IN FIRST SUBPARAGRAPH BELOW IF MANUFACTURER'S NAME AND MODEL NUMBER ARE INDICATED IN SCHEDULES OR PLANS ON DRAWINGS; DELETE OPTION AND INSERT MANUFACTURER'S NAME AND MODEL NUMBER IF NOT INCLUDED ON DRAWINGS.
   a. AMTROL INC.
   b. RHEEM-RUUD.
   c. WATTS WATER TECHNOLOGIES, CO.
   d. WESSELS TANK CO.
2. DESCRIPTION: STEEL, PRESSURE-RATED TANK CONSTRUCTED WITH WELDED JOINTS AND FACTORY-INSTALLED BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.
3. CONSTRUCTION:
   a. TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING. INCLUDE ASME B1.20.1 PIPE THREAD.
   b. INTERIOR FINISH: COMPLY WITH NSF 61 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.
   c. AIR-CHARGING VALVE: FACTORY INSTALLED.

C. GAS SHUTOFF VALVES: ANSI Z21.15/CSA 9.1-M, MANUALLY OPERATED. FURNISH FOR INSTALLATION IN PIPING.

D. GAS PRESSURE REGULATORS: ANSI Z21.18/CSA 6.3, APPLIANCE TYPE. INCLUDE 1/2-PSIG PRESSURE RATING AS REQUIRED TO MATCH GAS SUPPLY.

E. AUTOMATIC GAS VALVES: ANSI Z21.21/CSA 6.5, APPLIANCE, ELECTRICALLY OPERATED, ON-OFF AUTOMATIC VALVE.

F. SOURCE QUALITY CONTROL

1. HYDROSTATICALLY TEST COMMERCIAL DOMESTIC-WATER HEATERS TO MINIMUM OF ONE AND ONE-HALF TIMES PRESSURE RATING BEFORE SHIPMENT.
2. DOMESTIC-WATER HEATERS WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.
3. PREPARE TEST AND INSPECTION REPORTS.

CONTINUED ON SHEET P9

REVISIONS	BY

OLIVERI ARCHITECTS

MDCI FLORIDA, INC.

Case No. 18-0000002
New Building for
ARBY'S
Store #8149
1058 Dunlawton Ave.
Port Orange, Florida

Date: 08. 24. 18

Project Mgr: DM

Drawn: BMD

Job: 18-082

Sheet

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