

WEST NAVARRE INTERMEDIATE SCHOOL
5 CLASSROOM ADDITION

SECTION 15150 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:

- 1. PIPE, TUBE, AND FITTINGS.**
- 2. SPECIALTY PIPE FITTINGS.**

1.2 QUALITY ASSURANCE

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

B. COMPLY WITH NSF/ANSI 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DWV" FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. COMPLY WITH REQUIREMENTS IN "PIPING SCHEDULE" ARTICLE FOR APPLICATIONS OF PIPE, TUBE, FITTING MATERIALS, AND JOINING METHODS FOR SPECIFIC SERVICES, SERVICE LOCATIONS, AND PIPE SIZES.

2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. PIPE AND FITTINGS: ASTM A 74, SERVICE CLASS.

B. GASKETS: ASTM C 564, RUBBER.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. PIPE AND FITTINGS: ASTM A 888 OR CISPI 301.

B. CISPI, HUBLESS-PIPING COUPLINGS:

- 1. STANDARDS: ASTM C 1277 AND CISPI 310.**
- 2. DESCRIPTION: STAINLESS-STEEL CORRUGATED SHIELD WITH STAINLESS-STEEL BANDS AND TIGHTENING DEVICES; AND ASTM C 564, RUBBER SLEEVE WITH INTEGRAL, CENTER PIPE STOP.**

C. HEAVY-DUTY, HUBLESS-PIPING COUPLINGS:

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1. STANDARDS: ASTM C 1277 AND ASTM C 1540.
2. DESCRIPTION: STAINLESS-STEEL SHIELD WITH STAINLESS-STEEL BANDS AND TIGHTENING DEVICES; AND ASTM C 564, RUBBER SLEEVE WITH INTEGRAL, CENTER PIPE STOP.

2.4 PVC PIPE AND FITTINGS

- A. SOLID-WALL PVC PIPE: ASTM D 2665, DRAIN, WASTE, AND VENT.
- B. PVC SOCKET FITTINGS: ASTM D 2665, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE.
- C. ADHESIVE PRIMER: ASTM F 656.
- D. SOLVENT CEMENT: ASTM D 2564.

2.5 SPECIALTY PIPE FITTINGS

- A. TRANSITION COUPLINGS:
 1. GENERAL REQUIREMENTS: FITTING OR DEVICE FOR JOINING PIPING WITH SMALL DIFFERENCES IN OD'S OR OF DIFFERENT MATERIALS. INCLUDE END CONNECTIONS SAME SIZE AS AND COMPATIBLE WITH PIPES TO BE JOINED.
 2. FITTING-TYPE TRANSITION COUPLINGS: MANUFACTURED PIPING COUPLING OR SPECIFIED PIPING SYSTEM FITTING.
 3. UNSHIELDED, NONPRESSURE TRANSITION COUPLINGS:
 - A. STANDARD: ASTM C 1173.
 - B. DESCRIPTION: ELASTOMERIC, SLEEVE-TYPE, REDUCING OR TRANSITION PATTERN. INCLUDE SHEAR RING AND CORROSION-RESISTANT-METAL TENSION BAND AND TIGHTENING MECHANISM ON EACH END.
 - C. SLEEVE MATERIALS:
 - 1) FOR CAST-IRON SOIL PIPES: ASTM C 564, RUBBER.
 - 2) FOR PLASTIC PIPES: ASTM F 477, ELASTOMERIC SEAL OR ASTM D 5926, PVC.
 - 3) FOR DISSIMILAR PIPES: ASTM D 5926, PVC OR OTHER MATERIAL COMPATIBLE WITH PIPE MATERIALS BEING JOINED.
 4. SHIELDED, NONPRESSURE TRANSITION COUPLINGS:
 - A. STANDARD: ASTM C 1460.
 - B. DESCRIPTION: ELASTOMERIC OR RUBBER SLEEVE WITH FULL-LENGTH, CORROSION-RESISTANT OUTER SHIELD AND CORROSION-RESISTANT-METAL TENSION BAND AND TIGHTENING MECHANISM ON EACH END.

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PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING SYSTEMS. INDICATED LOCATIONS AND ARRANGEMENTS WERE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- B. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
- C. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- D. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.
- E. INSTALL PIPING AT INDICATED SLOPES.
- F. INSTALL PIPING FREE OF SAGS AND BENDS.
- G. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
- H. 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.
- I. 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.
- J. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:
 - 1. BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 AND LARGER.
 - 2. HORIZONTAL SANITARY DRAINAGE PIPING: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW.
 - 3. VENT PIPING: 1 PERCENT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.

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- K. INSTALL CAST-IRON SOIL PIPING ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK," CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."
- L. INSTALL ABOVEGROUND PVC PIPING ACCORDING TO ASTM D 2665.
- M. INSTALL UNDERGROUND PVC PIPING ACCORDING TO ASTM D 2321.
- N. PLUMBING SPECIALTIES:
 - 1. INSTALL CLEANOUTS AT GRADE AND EXTEND TO WHERE BUILDING SANITARY DRAINS CONNECT TO BUILDING SANITARY SEWERS IN SANITARY DRAINAGE GRAVITY-FLOW PIPING. COMPLY WITH REQUIREMENTS FOR CLEANOUTS SPECIFIED IN SECTION 15155 "SANITARY WASTE PIPING SPECIALTIES."
 - 2. INSTALL DRAINS IN SANITARY DRAINAGE GRAVITY-FLOW PIPING. COMPLY WITH REQUIREMENTS FOR DRAINS SPECIFIED IN SECTION 15155 "SANITARY WASTE PIPING SPECIALTIES."
- O. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
- P. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- Q. INSTALL SLEEVE SEALS FOR PIPING PENETRATIONS OF CONCRETE WALLS AND SLABS.
- R. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS. COMPLY WITH REQUIREMENTS FOR ESCUTCHEONS SPECIFIED IN SECTION 15097 "ESCUTCHEONS FOR PLUMBING PIPING."

3.2 JOINT CONSTRUCTION

- A. JOIN HUB-AND-SPIGOT, CAST-IRON SOIL PIPING WITH GASKET JOINTS ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK" FOR COMPRESSION JOINTS.
- B. JOIN HUBLESS, CAST-IRON SOIL PIPING ACCORDING TO CISPI 310 AND CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK" FOR HUBLESS-PIPING COUPLING JOINTS.
- C. PLASTIC, NONPRESSURE-PIPING, SOLVENT-CEMENT JOINTS: CLEAN AND DRY JOINING SURFACES. JOIN PIPE AND FITTINGS ACCORDING TO THE FOLLOWING:
 - 1. COMPLY WITH ASTM F 402 FOR SAFE-HANDLING PRACTICE OF CLEANERS, PRIMERS, AND SOLVENT CEMENTS.
 - 2. PVC PIPING: JOIN ACCORDING TO ASTM D 2855 AND ASTM D 2665 APPENDIXES.

3.3 SPECIALTY PIPE FITTING INSTALLATION

- A. TRANSITION COUPLINGS:
 - 1. INSTALL TRANSITION COUPLINGS AT JOINTS OF PIPING WITH SMALL DIFFERENCES IN OD'S.
 - 2. IN DRAINAGE PIPING: SHIELDED, NONPRESSURE TRANSITION COUPLINGS.

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3.4 HANGER AND SUPPORT INSTALLATION

- A. COMPLY WITH REQUIREMENTS FOR PIPE HANGER AND SUPPORT DEVICES AND INSTALLATION SPECIFIED IN SECTION 15061 "HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT."
 - 1. INSTALL CARBON-STEEL PIPE HANGERS FOR HORIZONTAL PIPING IN NONCORROSIVE ENVIRONMENTS.
 - 2. INSTALL STAINLESS-STEEL PIPE HANGERS FOR HORIZONTAL PIPING IN CORROSIVE ENVIRONMENTS.
 - 3. INSTALL CARBON-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN NONCORROSIVE ENVIRONMENTS.
 - 4. INSTALL STAINLESS-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN CORROSIVE ENVIRONMENTS.
 - 5. VERTICAL PIPING: MSS TYPE 8 OR TYPE 42, CLAMPS.
 - 6. INSTALL INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS:
 - A. 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS.
 - B. LONGER THAN 100 FEET: MSS TYPE 43, ADJUSTABLE ROLLER HANGERS.
 - C. LONGER THAN 100 FEET IF INDICATED: MSS TYPE 49, SPRING CUSHION ROLLS.
 - 7. MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET OR LONGER: MSS TYPE 44, PIPE ROLLS. SUPPORT PIPE ROLLS ON TRAPEZE.
 - 8. BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.
- B. SUPPORT HORIZONTAL PIPING AND TUBING WITHIN 12 INCHES OF EACH FITTING AND COUPLING.
- C. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
- D. ROD DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROD HANGERS, WITH 3/8-INCH MINIMUM RODS.
- E. INSTALL HANGERS FOR CAST-IRON SOIL PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
 - 1. NPS 1-1/2 AND NPS 2: 60 INCHES WITH 3/8-INCH ROD.
 - 2. NPS 3: 60 INCHES WITH 1/2-INCH ROD.
 - 3. NPS 4 AND NPS 5: 60 INCHES WITH 5/8-INCH ROD.
 - 4. NPS 6 AND NPS 8: 60 INCHES WITH 3/4-INCH ROD.
 - 5. SPACING FOR 10-FOOT LENGTHS MAY BE INCREASED TO 10 FEET. SPACING FOR FITTINGS IS LIMITED TO 60 INCHES.
- F. INSTALL SUPPORTS FOR VERTICAL CAST-IRON SOIL PIPING EVERY 15 FEET.
- G. INSTALL HANGERS FOR PVC PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
 - 1. NPS 1-1/2 AND NPS 2: 48 INCHES WITH 3/8-INCH ROD.
 - 2. NPS 3: 48 INCHES WITH 1/2-INCH ROD.
 - 3. NPS 4 AND NPS 5: 48 INCHES WITH 5/8-INCH ROD.
 - 4. NPS 6 AND NPS 8: 48 INCHES WITH 3/4-INCH ROD.
- H. INSTALL SUPPORTS FOR VERTICAL PVC PIPING EVERY 48 INCHES.

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- I. SUPPORT PIPING AND TUBING NOT LISTED ABOVE ACCORDING TO MSS SP-69 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

3.5 CONNECTIONS

- A. DRAWINGS INDICATE GENERAL ARRANGEMENT OF PIPING, FITTINGS, AND SPECIALTIES.
- B. CONNECT SOIL AND WASTE PIPING TO EXTERIOR SANITARY SEWERAGE PIPING. USE TRANSITION FITTING TO JOIN DISSIMILAR PIPING MATERIALS.
- C. CONNECT DRAINAGE AND VENT PIPING TO THE FOLLOWING:
 - 1. PLUMBING FIXTURES: CONNECT DRAINAGE PIPING IN SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY PLUMBING CODE.
 - 2. PLUMBING FIXTURES AND EQUIPMENT: CONNECT ATMOSPHERIC VENT PIPING IN SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY AUTHORITIES HAVING JURISDICTION.
 - 3. PLUMBING SPECIALTIES: CONNECT DRAINAGE AND VENT PIPING IN SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY PLUMBING CODE.
 - 4. INSTALL TEST TEES (WALL CLEANOUTS) IN CONDUCTORS NEAR FLOOR AND FLOOR CLEANOUTS WITH COVER FLUSH WITH FLOOR.
 - 5. COMPLY WITH REQUIREMENTS FOR CLEANOUTS AND DRAINS SPECIFIED IN SECTION 15155 "SANITARY WASTE PIPING SPECIALTIES."
 - 6. EQUIPMENT: CONNECT DRAINAGE PIPING AS INDICATED. PROVIDE SHUTOFF VALVE IF INDICATED AND UNION FOR EACH CONNECTION. USE FLANGES INSTEAD OF UNIONS FOR CONNECTIONS NPS 2-1/2 AND LARGER.
- D. WHERE INSTALLING PIPING ADJACENT TO EQUIPMENT, ALLOW SPACE FOR SERVICE AND MAINTENANCE OF EQUIPMENT.
- E. MAKE CONNECTIONS ACCORDING TO THE FOLLOWING UNLESS OTHERWISE INDICATED:
 - 1. INSTALL UNIONS, IN PIPING NPS 2 AND SMALLER, ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.
 - 2. INSTALL FLANGES, IN PIPING NPS 2-1/2 AND LARGER, ADJACENT TO FLANGED VALVES AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.

3.6 IDENTIFICATION

- A. IDENTIFY EXPOSED SANITARY WASTE AND VENT PIPING. COMPLY WITH REQUIREMENTS FOR IDENTIFICATION SPECIFIED IN SECTION 15076 "IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT."

3.7 FIELD QUALITY CONTROL

- A. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
 - 1. ROUGHING-IN INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCEALING OR CLOSING-IN AFTER ROUGHING-IN AND BEFORE SETTING FIXTURES.

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2. FINAL INSPECTION: ARRANGE FOR FINAL INSPECTION BY AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
 - B. REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TEST OR INSPECTION, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
 - C. REPORTS: PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
 - D. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION OR, IN ABSENCE OF PUBLISHED PROCEDURES, AS FOLLOWS:
 1. TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
 2. LEAVE UNCOVERED AND UNCONCEALED NEW, ALTERED, EXTENDED, OR REPLACED DRAINAGE AND VENT PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
 3. ROUGHING-IN PLUMBING TEST PROCEDURE: TEST DRAINAGE AND VENT PIPING EXCEPT OUTSIDE LEADERS ON COMPLETION OF ROUGHING-IN. CLOSE OPENINGS IN PIPING SYSTEM AND FILL WITH WATER TO POINT OF OVERFLOW, BUT NOT LESS THAN 10-FOOT HEAD OF WATER. FROM 15 MINUTES BEFORE INSPECTION STARTS TO COMPLETION OF INSPECTION, WATER LEVEL MUST NOT DROP. INSPECT JOINTS FOR LEAKS.
 4. FINISHED PLUMBING TEST PROCEDURE: AFTER PLUMBING FIXTURES HAVE BEEN SET AND TRAPS FILLED WITH WATER, TEST CONNECTIONS AND PROVE THEY ARE GASTIGHT AND WATERTIGHT. PLUG VENT-STACK OPENINGS ON ROOF AND BUILDING DRAINS WHERE THEY LEAVE BUILDING. INTRODUCE AIR INTO PIPING SYSTEM EQUAL TO PRESSURE OF 1-INCH WG. USE U-TUBE OR MANOMETER INSERTED IN TRAP OF WATER CLOSET TO MEASURE THIS PRESSURE. AIR PRESSURE MUST REMAIN CONSTANT WITHOUT INTRODUCING ADDITIONAL AIR THROUGHOUT PERIOD OF INSPECTION. INSPECT PLUMBING FIXTURE CONNECTIONS FOR GAS AND WATER LEAKS.
 5. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
 6. PREPARE REPORTS FOR TESTS AND REQUIRED CORRECTIVE ACTION.
- 3.8 CLEANING AND PROTECTION
- A. CLEAN INTERIOR OF PIPING. REMOVE DIRT AND DEBRIS AS WORK PROGRESSES.
 - B. PROTECT DRAINS DURING REMAINDER OF CONSTRUCTION PERIOD TO AVOID CLOGGING WITH DIRT AND DEBRIS AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.
 - C. PLACE PLUGS IN ENDS OF UNCOMPLETED PIPING AT END OF DAY AND WHEN WORK STOPS.

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- D. EXPOSED PVC PIPING: PROTECT PLUMBING VENTS EXPOSED TO SUNLIGHT WITH TWO COATS OF WATER-BASED LATEX PAINT.

3.9 PIPING SCHEDULE

- A. FLANGES AND UNIONS MAY BE USED ON ABOVEGROUND PRESSURE PIPING UNLESS OTHERWISE INDICATED.
- B. ABOVEGROUND, SOIL AND WASTE PIPING SHALL BE ANY OF THE FOLLOWING:
1. SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS; AND GASKETED JOINTS.
 2. HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS; HEAVY-DUTY HUBLESS-PIPING COUPLINGS; AND COUPLED JOINTS.
 3. SOLID-WALL PVC PIPE, PVC SOCKET FITTINGS, AND SOLVENT-CEMENTED JOINTS.
 4. DISSIMILAR PIPE-MATERIAL COUPLINGS: SHIELDED, NONPRESSURE TRANSITION COUPLINGS.
- C. ABOVEGROUND, VENT PIPING SHALL BE ANY OF THE FOLLOWING:
1. SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS; AND GASKETED JOINTS.
 2. HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS; HEAVY-DUTY HUBLESS-PIPING COUPLINGS; AND COUPLED JOINTS.
 3. SOLID-WALL PVC PIPE, PVC SOCKET FITTINGS, AND SOLVENT-CEMENTED JOINTS.
 4. DISSIMILAR PIPE-MATERIAL COUPLINGS: SHIELDED, NONPRESSURE TRANSITION COUPLINGS.
- D. UNDERGROUND, SOIL, WASTE, AND VENT PIPING SHALL BE ANY OF THE FOLLOWING:
1. SERVICE CLASS, CAST-IRON SOIL PIPING; GASKETS; AND GASKETED JOINTS.
 2. HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS; HEAVY-DUTY HUBLESS-PIPING COUPLINGS; AND COUPLED JOINTS.
 3. SOLID WALL PVC PIPE, PVC SOCKET FITTINGS, AND SOLVENT-CEMENTED JOINTS.
 4. DISSIMILAR PIPE-MATERIAL COUPLINGS: SHIELDED, NONPRESSURE TRANSITION COUPLINGS.

END OF SECTION 15150