





**DIVISION 32: UTILITIES**

**SECTION 33 30 00 - SANITARY SEWERAGE UTILITIES**

PART 1 - GENERAL

1.01 SUBMITTALS

- A. PRODUCT DATA: MANUFACTURER'S SPECIFICATIONS AND TECHNICAL DATA INCLUDING PERFORMANCE, CONSTRUCTION, FABRICATION, AND INSTALLATION INFORMATION.
  - 1. SUBMIT FOR: PIPE, FITTINGS, AND CLEANOUT COVERS.
- B. FIELD QUALITY CONTROL SUBMITTALS AS SPECIFIED IN PART 3 OF THIS SECTION:
  - 1. FIELD TESTS
  - 2. SPECIAL INSPECTIONS FOR CODE COMPLIANCE

1.02 QUALITY ASSURANCE

- A. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.
- B. INSTALLER'S QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. PACKING AND SHIPPING: DELIVER PRODUCTS IN ORIGINAL, UNOPENED PACKAGING WITH LEGIBLE MANUFACTURER'S IDENTIFICATION.
- B. STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
  - 1. PROTECT FROM DAMAGE BY THE ELEMENTS AND CONSTRUCTION PROCEDURES.

1.04 ADVANCE NOTICE

- A. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE STARTING WORK OF THIS SECTION.

PART 2 - PRODUCTS

2.01 SANITARY SEWER PIPE AND FITTINGS (8 INCH AND LARGER)

- A. SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE WITH RUBBER GASKET JOINTS. MANUFACTURING STANDARD: ASTM D-3034 (LATEST REVISION) SDR 35 FOR PIPE SIZES 8"-15" AND ASTM F679 (LATEST REVISION) FOR PIPE SIZES 18"-24". PROVIDE WITH MANUFACTURED FITTINGS UNLESS OTHERWISE NOTED ON DRAWINGS.

2.02 SANITARY SEWER PIPE AND FITTINGS (6 INCH AND SMALLER)

- A. SHALL BE SCHEDULE 40 ABS (DWV), ASTM D2661 (LATEST REVISION), WITH SOLVENT CEMENT JOINTS.
- B. PROVIDE WITH MANUFACTURED FITTINGS UNLESS OTHERWISE NOTED ON DRAWINGS.

2.03 CLEANOUTS

- A. SHALL BE CONSTRUCTED FROM SOLID WALL PIPE AND FITTINGS SPECIFIED ABOVE WITH LOCKING TRAFFIC GRADE FRAME AND COVER. FRAME AND COVER SHALL BE H20 RATED CAST IRON VALVE BOX AS DETAILED ON DRAWINGS WITH "SEWER" MARKING. OLYMPIC FOUNDRY 910.

2.04 CONCRETE

- A. CONCRETE SHALL BE READY-MIXED CONFORMING TO SECTION 03 30 00, CAST-IN-PLACE CONCRETE, AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. MAXIMUM SIZE OF AGGREGATE SHALL BE 1-1/2 INCHES.

2.05 OTHER MATERIALS

- A. RECOMMENDED BY MANUFACTURER AND SUBJECT TO ENGINEER'S REVIEW AND ACCEPTANCE. PROVIDE ALL MATERIALS REQUIRED TO COMPLETE AND MAKE DRAINAGE SYSTEM OPERATIONAL.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

- A. PRIOR TO STARTING WORK OF THIS SECTION, CAREFULLY INSPECT TRENCH, EXCAVATIONS, AND PIPE BEDDING TO VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
- B. DO NOT INSTALL WORK OF THIS SECTION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.
- C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

3.02 TRENCHING AND BACKFILL

- A. TRENCHING AND BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 31 23 33, TRENCHING AND BACKFILL.

3.03 PIPE INSTALLATION

- A. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. ALL PIPE ENDS AND INTERIORS SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER AND SHALL BE KEPT CLEAN DURING INSTALLATION. WHEN WORK IS NOT IN PROGRESS, ALL OPEN ENDS OF PIPE AND FITTINGS SHALL BE SECURELY CLOSED SO THAT NO WATER, EARTH, ANIMAL LIFE, OR OTHER SUBSTANCE MAY ENTER.
- B. CUTTING PIPE SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER BY METHOD WHICH WILL NOT DAMAGE PIPE AND AS RECOMMENDED BY MANUFACTURER.
- C. INSTALL PIPING WITHIN 0.02 FOOT OF INDICATED GRADE AND LOCATION.
- D. ALL DUCTILE IRON PIPE JOINTS AND FITTING JOINTS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING SHALL BE FULLY COVERED WITH ASPHALTIC COATING. WRAP DUCTILE IRON PIPE AND FITTINGS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING WITH POLYWRAP.

3.04 CLEANOUTS

- A. CONSTRUCT ON COMPACTED 4" MINIMUM DEPTH 3/4" - 0 CRUSHED ROCK BASE LEVEL, PLUMB, AND SQUARE WITH ADJACENT SURFACES. SET RIM FLUSH WITH ADJACENT FINISHED SURFACES UNLESS OTHERWISE NOTED.

3.05 FIELD QUALITY CONTROL

- A. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO WORK OF THIS SECTION.
- B. SPECIAL INSPECTIONS FOR CODE COMPLIANCE:
  - 1. PROVIDE HYDROSTATIC TEST OR AIR TEST PER STATE OF OREGON PLUMBING SPECIALTY CODE.
  - 2. OBTAIN PLUMBING INSPECTOR APPROVALS AND SUBMIT TO ENGINEER.

3.06 CLEANING

- A. PRIOR TO FINAL ACCEPTANCE, CONTRACTOR SHALL FLUSH AND CLEAN ALL ELEMENTS OF THE COMPLETED SYSTEM. ALL PIPE AND STRUCTURES SHALL BE CLEAN AND FREE OF ALL CONSTRUCTION DEBRIS, ROCKS, GRAVEL, MUD, SAND, SILT, AND OTHER FOREIGN MATERIAL, AND AS DIRECTED BY THE ENGINEER.
- B. UPON COMPLETION OF WORK OF THIS SECTION PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

3.07 PROTECTION

- A. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.
- B. REPLACE AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION

**SECTION 33 40 00 - STORM DRAINAGE UTILITIES**

PART 1 - GENERAL

1.01 SUBMITTALS

- A. PRODUCT DATA: MANUFACTURER'S SPECIFICATIONS AND TECHNICAL DATA INCLUDING PERFORMANCE, CONSTRUCTION, FABRICATION, AND INSTALLATION INFORMATION.
  - 1. SUBMIT FOR: PIPE AND FITTINGS AND CLEANOUT COVERS.
- B. FIELD QUALITY CONTROL SUBMITTALS AS SPECIFIED IN PART 3 OF THIS SECTION:
  - 1. FIELD TESTS
  - 2. SPECIAL INSPECTIONS FOR CODE COMPLIANCE

1.02 QUALITY ASSURANCE

- A. MANUFACTURER'S QUALIFICATIONS: NOT LESS THAN 5 YEARS OF EXPERIENCE IN THE ACTUAL PRODUCTION OF SPECIFIED PRODUCTS.
- B. INSTALLER'S QUALIFICATIONS: FIRM WITH NOT LESS THAN 5 YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS SIMILAR IN COMPLEXITY TO THOSE REQUIRED FOR THIS PROJECT.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. PACKING AND SHIPPING: DELIVER PRODUCTS IN ORIGINAL, UNOPENED PACKING WITH LEGIBLE MANUFACTURER'S IDENTIFICATION.
- B. STORAGE AND PROTECTION: COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
  - 1. PROTECT FROM DAMAGE BY THE ELEMENTS AND CONSTRUCTION PROCEDURES.

1.04 ADVANCE NOTICES

- A. NOTIFY ENGINEER AT LEAST 48 HOURS BEFORE STARTING WORK OF THIS SECTION.

PART 2 - PRODUCTS

2.01 STORM PIPE AND FITTINGS (UNLESS OTHERWISE NOTED)

- A. EITHER OF THE FOLLOWING PIPE MATERIALS MAY BE USED.
  - 1. PVC SOLID WALL: SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE WITH RUBBER GASKET JOINTS. MANUFACTURING STANDARD: ASTM D3034 (LATEST REVISION) SDR 35 FOR PIPE SIZES 4"-15", T-1 WALL THICKNESS. PROVIDE WITH MANUFACTURED FITTINGS UNLESS OTHERWISE NOTED ON DRAWINGS.
  - 2. POLYETHYLENE PIPE: CORRUGATED POLYETHYLENE MEETING THE REQUIREMENTS OF AASHTO M252 TYPE S (PIPE SIZES 3" - 10"). JOINT SHALL BE WATERTIGHT ACCORDING TO THE REQUIREMENTS OF ASTM D3212 (LATEST REVISION). GASKETS SHALL BE MADE OF POLYISOPRENE MEETING THE REQUIREMENTS OF ASTM F477 (LATEST REVISION) WITH THE ADDITION THAT THE GASKETS SHALL NOT HAVE ANY VISIBLE CRACKING WHEN TESTED ACCORDING TO ASTM D1149 (LATEST REVISION) AFTER 72 HOUR EXPOSURE IN 50 PPHM OZONE AT 104 F. GASKETS SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. JOINTS SHALL REMAIN WATERTIGHT WHEN SUBJECTED TO A 1.5 AXIAL MISALIGNMENT. A JOINT LUBRICANT SUPPLIED BY THE MANUFACTURER SHALL BE USED ON THE GASKET AND BELL DURING ASSEMBLY. FITTINGS SHALL CONFORM TO AASHTO M252 OR AASHTO M294. FABRICATED FITTINGS SHALL BE WELDED TO THE INTERIOR AND EXTERIOR AT ALL JUNCTIONS. HANCOR OR ADS.

2.02 FLEX-TRANSITION COUPLER

- A. SHALL BE FERNO, 1000 SERIES. USE FITTINGS MANUFACTURED FOR THE SPECIFIC PIPE SIZE AND MATERIAL TYPES BEING CONNECTED.

2.03 CLEANOUTS

- A. SHALL BE CONSTRUCTED FROM SOLID WALL PIPE AND FITTINGS SPECIFIED ABOVE WITH TRAFFIC GRADE FRAME AND COVER. FRAME AND COVER SHALL BE H20 RATED CAST IRON VALVE BOX WITH FLANGE TOP AS DETAILED ON DRAWINGS WITH "STORM" MARKING. VARICAST V9910 RICH VALVE BOX.

2.04 RIGID TRANSITION COUPLINGS

- A. DUCTILE IRON TO PVC PIPE CONNECTIONS TO BE "501-H" COUPLING BY ROMAC INDUSTRIES, INC..

2.05 CONCRETE

- A. CONCRETE SHALL BE READY-MIXED CONFORMING TO SECTION 03 30 00, CAST-IN-PLACE CONCRETE, AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. MAXIMUM SIZE OF AGGREGATE SHALL BE 1 1/2 INCHES.

2.06 OTHER MATERIALS

- A. RECOMMENDED BY MANUFACTURER AND SUBJECT TO ENGINEER'S REVIEW AND ACCEPTANCE. PROVIDE ALL MATERIALS REQUIRED TO COMPLETE AND MAKE DRAINAGE SYSTEM OPERATIONAL.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

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- B. DO NOT INSTALL WORK OF THIS SECTION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. COMMENCING WORK IMPLIES ACCEPTANCE OF EXISTING CONDITIONS.
- C. IF FIELD MEASUREMENTS DIFFER SLIGHTLY FROM DRAWING DIMENSIONS, MODIFY WORK AS REQUIRED FOR ACCURATE FIT. IF MEASUREMENTS DIFFER SUBSTANTIALLY, NOTIFY ENGINEER PRIOR TO STARTING WORK OF THIS SECTION.

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- B. CUTTING PIPE SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER BY METHOD WHICH WILL NOT DAMAGE PIPE AND AS RECOMMENDED BY MANUFACTURER.
- C. INSTALL PIPING WITHIN 0.02 FOOT OF INDICATED GRADE AND LOCATION.
- D. ALL DUCTILE IRON PIPE JOINTS AND FITTING JOINTS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING SHALL BE FULLY COVERED WITH ASPHALTIC COATING. WRAP DUCTILE IRON PIPE AND FITTINGS WITHIN 5 FEET OF BUILDING AND BENEATH BUILDING WITH POLYWRAP.

3.04 CLEANOUTS

- A. CONSTRUCT ON COMPACTED 4" MINIMUM DEPTH 3/4" - 0 CRUSHED ROCK BASE LEVEL, PLUMB, AND SQUARE WITH ADJACENT SURFACES. SET RIM FLUSH WITH ADJACENT FINISHED SURFACES UNLESS OTHERWISE NOTED.

3.05 FIELD QUALITY CONTROL

- A. FIELD INSPECTIONS: NOTIFY ENGINEER PRIOR TO WORK OF THIS SECTION.
- B. SPECIAL INSPECTIONS FOR CODE COMPLIANCE: OBTAIN PLUMBING INSPECTOR APPROVALS.

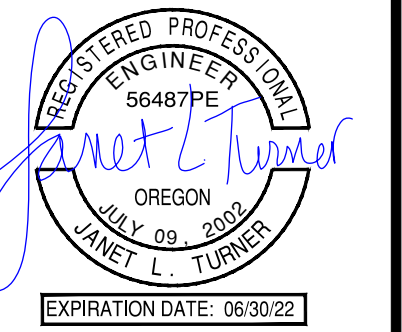
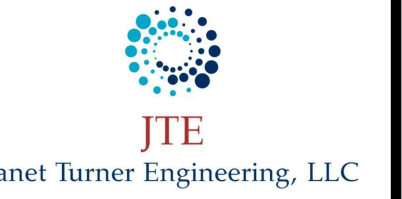
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- B. UPON COMPLETION OF WORK OF THIS SECTION PROMPTLY REMOVE FROM THE WORKING AREA ALL SCRAPS, DEBRIS, AND SURPLUS MATERIAL.

3.07 PROTECTION

- A. PROTECT ALL WORK INSTALLED UNDER THIS SECTION.
- B. REPLACE, AT NO ADDITIONAL COST TO OWNER, ANY DAMAGED WORK OF THIS SECTION.

END OF SECTION



**RALEIGH PARK ES  
3670 SW 78TH AVE  
PORTLAND OR, 97225**

NO.	DATE	DESCRIPTION
DATE	07-15-2021	
DESIGNED	JLT	
DRAWN	JR	
CHECKED	JLT	

**SPECIFICATIONS**

**C3.2**