

SECTION 334100 – STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings.

1.03 DEFINITIONS

- A. Drainage Piping: System of culvert pipe, fittings, and appurtenances for gravity flow of storm drainage.

1.04 BUY AMERICAN REQUIREMENTS

- A. Provide certificates to show that all products meet the following requirements.
 - 1. American Iron and Steel (AIS)
 - 2. Build America, Buy America Act
- B. See Supplementary Conditions for details.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.06 INFORMATIONAL SUBMITTALS

- A. Record Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between piping and other structures.
- B. Field quality-control reports.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect pipe, pipe fittings, and seals from dirt and damage.

1.08 PROJECT CONDITIONS

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by CBY or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify private land owners and the CBY no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of service without CBY's written permission.

PART 2 - PRODUCTS

2.01 PIPES AND PIPE FITTINGS

- A. Culvert: Corrugated steel pipe (CSP), ASTM A 760/A 760M, Type I, made from ASTM A 444/A 444M, zinc-coated steel sheet for banded joints. All seams on pipes manufactured with helical corrugations shall have a continuous weld extending from end to end of each length of pipe in conformance with AASHTO M 36.
 - 1. Corrugated steel pipe, coupling bands, and flared end sections shall conform to AASHTO M-26 and AASHTO M-218. All culvert pipe shall be 16-gauge, minimum.
 - 2. Fittings: Fabricated to types indicated and according to same standards as pipe.
 - 3. Connecting Bands: Standard couplings made for corrugated-steel pipe to form soiltight joints.
 - a. Coupling bands shall be one piece recorrugated to annular two valleys minimum per end.
 - b. Band angles shall be 2 inches by 2 inches by 12 GA minimum. Band material and fabrication shall be per AASHTO M 36 and AASHTO M 218. Band material shall be equal to, or one standard gauge size less than, the gauge of the corrugated pipe being banded.
 - c. Dimpled type connecting bands shall be allowed only where fittings are used for repairs to damaged CSP and for extensions to CSP without annular ends.
 - 4. Metal End Sections: Metal end section shall conform to Alaska Department of Transportation Standard Detail Drawing D-06.01 included with this Section. Metal end sections shall be installed to match what is existing.
 - 5. Marker Posts: Marker Posts shall conform to Alaska Department of Transportation Standard Detail Drawing D-09.00.
- B. Corrugated polyethylene pipe (CPP) shall conform to AASHTO M 294, Type S.
 - 1. Polyethylene pipe couplings shall be corrugated to match the pipe corrugations, and their width shall be no less than one-half of the nominal pipe diameter.

PART 3 - EXECUTION

3.01 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.02 INSTALLATION, GENERAL

- A. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

- B. Handling: All pipe and materials shall be delivered and distributed at the site by the Contractor. Pipe, fittings, specials and accessories shall be loaded and unloaded by lifting with hoists and pipe slings or skidded to avoid shock or damage. Pipe shall not be handled by inserting an object into the barrel and lifting. In no case shall materials be dropped. Pipe handled on skids shall not be skidded or rolled against pipe already on the ground.
 - 1. Pipe and accessories shall be handled so that coatings and linings will not be damaged. If, however, any part of the coating or lining is damaged, it shall be repaired by the contractor, at no additional expense to the Developer, and to the satisfaction of the Engineer of Record.
- C. Lay piping true to grades and alignment indicated.
 - 1. Placing Pipe: Contour compacted bedding to accept pipe barrel, hand tamp the bedding around the pipe to achieve good support.
 - 2. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's recommendations.
 - 3. Cleaning Pipe: Clear interior of piping of dirt and other superfluous material as work progresses.
 - 4. Final accuracy of all installed piping shall be within 0.01 foot vertically and 0.10 foot horizontally of the exact location taken from the plans. In no case will a reverse grade be allowed. Pipe which exceeds the above limits of variation shall be adjusted immediately.
- D. Culvert Marker Posts.
 - 1. Install culvert marker posts at all impacted culverts crossing ADOT & PF within project limits.

3.03 PIPE JOINT CONSTRUCTION AND INSTALLATION

- A. Corrugated Steel Pipe: Join and install according to ASTM A 798.
- B. Corrugated Polyethylene Pipe: Install on the water main with joints centered on the sanitary sewer main at the crossing.

3.04 BACKFILLING IS SPECIFIED IN SECTION 312000, EARTH MOVING.

- A. General: Conduct backfilling operations of open-cut trenches closely following laying and joining, and after initial inspection is completed.
 - 1. See traffic control plan "Project Specific Notes" for additional restrictions.

3.05 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 12 inches of backfill is in place, and again at completion of the Project.
 - 1. Defects requiring correction include crushed, broken, cracked, or otherwise damaged piping.

3.06 DRAINAGE SYSTEM ACCEPTANCE

- A. Field Quality Control: Field densities shall be taken on each culvert installation; one density at the spring line of pipe and one per each foot of trench backfill above the top of pipe.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Corrugated Steel Pipe: Corrugated Steel Pipe shall be measured along the horizontal projection of the pipe from end to end of the culvert.
- B. Metal End Section: End sections shall be measured on a per each basis in place.
- C. Culvert Marker Post: Culvert Marker Posts shall be measured on a per each basis in place.
- D. Corrugated Polyethylene Pipe: Corrugated Polyethylene Pipe (Casing) shall be measured by the installed length in the field and shall include all joints and other such items necessary for joining.

4.02 BASIS OF PAYMENT

- A. Payment for storm drainage by the Contractor shall include furnishing all necessary personnel, equipment, transportation and supplies to perform the work as shown and specified.
- B. Payment for culverts, fittings, and casings installed, trench excavation, or work, will not be paid until backfill and all testing are finished and the work is complete in place.

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
334100-1	18" Corrugated Steel Pipe	Linear Foot
334100-2	18" Culvert End Section	Each
334100-3	24" Corrugated Steel Pipe	Linear Foot
334100-4	24" Culvert End Section	Each
334100-5	36" Corrugated Steel Pipe	Linear Foot
334100-6	36" Culvert End Section	Each
334100-7	60" Corrugated Steel Pipe	Linear Foot
334100-8	60" Culvert End Section	Each
334100-9	Culvert Marker Post	Each
334100-10	18" Corrugated Polyethylene Pipe	Linear Foot

END OF SECTION