

Seaside Rehabilitation and Healthcare Center
Portland, Maine

SECTION 02720 - STORM DRAINAGE SYSTEMS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS:

- A. The CONDITIONS OF THE CONTRACT and all Sections of Division 1 are hereby made a part of this Section.
- B. Coordinate Work with that of other trades affecting or affected by Work of this Section. Cooperate with such trades to assure the steady progress of the Work.
- C. The "*Standard Specifications*" referred to herein is the book entitled "*Standard Specifications, Highways and Bridges*" published by the State of Maine Department of Transportation (latest date), and Supplemental Specifications in Force, excluding the following portions thereof:

Division 100, Sections 102 through 109; numerical index of payment items included in each section.

Those Sections of the aforementioned *Standard Specifications* which are cited herein are applicable to the Work of this Contract as they may be modified, amplified, or added to by this Section.

- D. Reference is made to the Erosion Control Report and Drawings included for this project. Strict adherence to this report and Drawings must be followed in order to prevent adverse downstream impacts from erosion and sedimentation, originating from on-site construction activity.
- E. All sections of Division 2 of these Specifications and all Drawings prepared by Stantec not marked or issued for construction are Preliminary and are subject to change and shall not be relied upon for final Contract Pricing.

1.02 DESCRIPTION OF WORK:

- A. Provide labor, materials, equipment and services necessary for proper and complete installation of the storm drainage system as indicated on the Drawings and as herein specified.
 - 1. Additions and alterations to the existing storm drainage system including culverts, drain piping, inlets, outlets, catch basins, manholes, area drains, control structures and related appurtenances.

1.03 QUALITY CONTROL; SUBMITTALS:

- A. General: Comply with requirements of Division 1 Sections for Submittals and Quality Control.
- B. Shop Drawings: Submit product specification literature and/or shop drawings for:
 - 1. Precast concrete structures (manholes, catch basins, outlet control structures, etc.).
 - 2. Cast iron frames, grates and covers for structures.

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3. HDPE Pipe.

4. PVC pipe.

1.04 AS-BUILT DRAWINGS:

- A. As-built scale Drawings, accurately showing actual installed locations and inverts of new and relocated underground and surface drainage lines and structures, shall be produced by the Contractor and turned over to the Architect/Engineer at the completion of the project.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Storm Drain Pipe and Culverts: Storm drain pipe and culverts shall be as indicated on the Drawings, and in accordance with the following:
1. Polyethylene Pipe: shall be smooth bore conforming to AASHTO M294 Type S, Dual Wall and MDOT *Standard Specifications* 706.06 (ADS N-12).
 2. Corrugated Polyethylene Pipe for Underdrain: Shall conform to AASHTO M252 (small diameter) and M294 (large diameter) and MDOT *Standard Specifications* 706.06, ADS.
- B. Bedding Material: ¾ in. crushed stone, as specified in Section 02220-Excavation, Backfill and Compaction, (SS 2.01. D).
- C. Granular Backfill: Well-graded sand or gravel, as specified in Section 02220-Excavation, Backfill and Compaction (SS 2.01. C).
- D. Precast Concrete Sections for Storm Structures and Outlet control Structures: ASTM C478, MDOT *Standard Specifications*, Section 712.06. Structures and top pieces shall provide H-20 load bearing capacity. Butyl rubber gaskets shall be installed at all joints between manhole Sections.
- E. Brick: ASTM C32-69, Grade MS, except Grade SS for drainage manhole inverts; MDOT *Standard Specifications*, Section 704.01.
- F. Concrete Block: ASTM C-139; MDOT *Standard Specifications*, Section 704.03.
- G. Mortar: One part Portland Cement, Type IIA, two parts mortar sand, and clean water as required: MDOT *Standard Specifications*, Section 705.02.
- H. Cast Iron Frames, Grates and Covers: ASTM A48, Class 35, MDOT *Standard Specifications*, Section 712.07. Grates in paved areas shall be "bicycle safe". Covers shall have the word "Drain" cast thereon.
1. Drain Manholes: Standard Solid Cover – 24 in. round opening; E245S, manufactured by Etheridge Foundry Co., except M248S (heavy-duty) in paved areas.

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2. Catch Basins: Standard 24 in. round opening; E 245G, manufactured by Etheridge Foundry Co., except M248G (heavy-duty) in paved areas.
 3. Field Inlet: Standard 24 in. square opening; Etheridge S24G.
- I. Manhole Steps: Steps shall be Polypropylene Plastic with steel reinforcement, or aluminum conforming to ASTM B221, alloy 6061-T6, a minimum of 14 in. wide and cast into the Sections.
 - J. Casco Trap: As manufactured by Etheridge Foundry Co., and meeting City of Portland Standards.
 - K. Rip-Rap: Shall conform to Section 02070-Erosion Controls and Slope Protection, (SS 2.01.G) in sizes shown on the Plans.
 - L. Geotextile: Erosion control fabric Marafi 700X.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Notify "Dig-Safe" (811 or 1-888-DIG-SAFE) at least 3 days prior to beginning any excavation Work.
- B. Accurately locate any existing utilities before beginning excavation; contact local utility companies.
- C. Check for conflict with underground utilities or structures. Notify the Architect/Engineer immediately of all discrepancies before proceeding with the Work.
- D. Fully coordinate with utility companies to insure timely Work by others so as not to hold up construction.

3.02 STRUCTURES:

- A. All structures to be located in pavement or driveway areas shall be built or manufactured to provide H-20 load bearing capacity. Construct all catch basins, manholes and other structures to lines, grades and dimensions shown on Drawings.
- B. Structure walls: 5 in. thick for precast up to 10 ft. depth; 8 in. thick for precast below that depth.
- C. Brick inverts for drainage manholes shall be built to the crown of the pipe for sizes up to eighteen (18) inches, and to the spring line for larger pipes.
- D. Cut inlet or outlet pipes flush with inside wall unless otherwise indicated.
- E. Set metal or polypropylene fittings, including rungs and frames, in full mortar beds.
- F. Install Casco Traps in all catch basin and field inlet outlet pipes as indicated on Details and Drawings.

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G. Remove existing drainage control structures, where required, as shown on Drawings.

3.03 DRAIN LINES:

- A. Excavate in locations and to depths indicated on the Drawings to install drain lines.
- B. Shape stone at bottom of trench to receive barrel of pipe. Lay pipe at uniform slope between points where changes in grade occur.
- C. Drain lines shall be laid to the lines and grades shown on the Drawings. Contractor shall use laser instrument in setting the grade lines of all drain lines. Accurately verify pipe grades with Engineers level within 50 ft. beyond each structure, and at no more than 100 ft. intervals thereafter. Fine-tune laser azimuth adjustment as necessary to maintain true design slope of pipe.
- D. Joints shall be made as recommended by the manufacturer of the pipe.
- E. Bedding and pipe cover: As specified in Section 02220-Excavation, Backfill and Compaction, SS 3.04.
- F. Backfill: As specified in Section 02220-Excavation, Backfill and Compaction, SS 3.04.
- G. After all site Work is completed, including spreading of topsoil and seeding, clean silt, stones and debris from all structures and lines.

END OF SECTION