PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

The work includes the requirements for furnishing Stormwater Treatment Vaults and associated components, as as follows:

A. The Contractor shall furnish treatment vault systems, complete and operable as shown and as specified herein, in accordance with the requirements of the plans and contract documents.

B. Treatment vault systems shall consist of a precast concrete vault with internal baffle walls, access lids and drainage grate, and wall perforations as shown on plan.

C. Baffle walls shall create a primary sediment removal chamber, secondary sediment removal chamber, treatment chamber and discharge chamber.

1.02 QUALITY ASSURANCE

A. Except as otherwise specified, the Port of Tacoma will provide testing and inspection service to the satisfaction of the Engineer. The Contractor may obtain test results from the Engineer at no cost. Tests conducted for the sole benefit of the Contractor, or before a product is approved, shall be at the Contractor's expense.

1. Qualification of Workmen: Employ at least one person who shall be present at all times during manufacture and fabrication and who shall have all portions of the Drawings and Specifications, shall be thoroughly familiar with the type of materials being utilized in fabrication and the best methods for their fabrication, and shall direct all work performed under this Section.

2. Codes and Standards: The Contractor shall comply with the applicable provisions of all pertinent codes and regulations. References made herein for manufactured materials such as pipes, fittings, and specialties refer to designations for the latest edition of materials published by the American Association of State Highway and Transportation Officials (AASHTO), the American Society for Testing Materials (ASTM), and the Standard Specifications and Standard Plans for Road, Bridge, and Municipal Construction prepared jointly by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA).

3. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection by the Engineer. Such inspection may be made at the place of manufacture, or on the work site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once.

4. All sections shall be inspected for general appearance, dimensions, soundness, etc. The surface shall be dense, close-textured and free of blisters, cracks, roughness and exposure of reinforcement.

1.03 SUBMITTALS

A. Within 14 days of an executed purchase order, submit the following in accordance with Section 01 33 00 - Submittal Procedures for the following products:

1. Shop and installation drawings shall include all dimensions for all precast elements and location of piping, walls, penetrations, access lids and grates.

2. Material cut sheets for sealants, access lids, grates and all other appurtenances.

3. Mix design for concrete to be used in fabrication of precast concrete elements. Mix design shall included mix proportions per cubic yard, proposed material sources, the average 28-day compressive strength for which the mix is designed, the fineness modulus, and the water-cement ratio. The mix design submittal shall also include test results no older than one year showing that the aggregates do not contain deleterious substances. Concrete placeability, workability and strength shall be the responsibility of the Contractor. The Contractor shall notify the Engineer in writing of any mix design modifications.

B. Contractor shall not being manufacture or fabrication of vaults until all submittals have been approved by the Engineer.

C. Bill of Materials: Upon delivery, submit a complete bill of materials for all supplied vaults.

1.03 DELIVERY, STORAGE, AND HANDLING

A. The Contractor shall notify the Engineer five (5) business days in advance of all material delivery.

1. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection by the Engineer. Such inspection may be made at the place of manufacture, or on the work site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture.

2. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. All sections that have been damaged beyond repair during delivery will be rejected and reimbursed entirely at the manufacturer's expense.

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE STORMWATER TREATMENT VAULTS

A. Concrete for the precast concrete vault shall conform to WSDOT Standard Specifications Section 6-02.3 for Class 4000 concrete, ASTM C 857 and C 858, and meet the following additional requirements:

1. Sections shall have tongue-and-groove joints or shiplap joints and be sealed with a butyl mastic sealant designed to be resistant to fuel and oil such as ConSeal™ Brand CS-440 or approved equal.

2. Cement shall be Type II Portland cement, or approved equal, conforming to ASTM C 150.

3. All precast concrete sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi or until 5 days after fabrication and/or repair, whichever is longer.

B. Polyurethane elastomeric sealant shall comply with ASTM 0-412 and GSA Specification TT-S-00230C, Type II, Class A and ASTM C-920, Type S, Grade NS.

C. Baffle walls shall be sealed to the interior vault walls and floor with a polyurethane construction sealant rated for use below the waterline, SikaFlex 1a or equal.

D. Metal frame and cover for access lids shall be ductile iron of the size and

style indicated on the Drawings and capable of supporting the maximum loading criteria listed in Paragraph 2.01 G.

E. Surface water collection grate shall be galvanized steel of the size and style indicated on the Drawings and capable of supporting the maximum loading criteria listed in Paragraph 2.01 G.

F. Rebar shall conform to ASTM A 615.

G. Vaults shall be designed and constructed for necessary dead load, including earth cover, lateral earth pressures, and live load AASHTO HS20-44.

H. Vaults shall be labeled in accordance with the labels provided on the Drawing. Labels shall be provided in a manner so that they are maintained upon delivery to the site.

I. All treatment vaults shall be free of any foreign materials including concrete and excess sealant.

2.02 MANUFACTURER

A. The manufacturer of the stormwater treatment vaults shall have been regularly engaged in the engineering design and production of similar systems for the physical treatment of stormwater runoff for a minimum of 5 years.

END OF SECTION