OFF-LINE PARTICLE SEPARATOR

**From Barre City FEGC F 026-1(34) C/2

xx. DESCRIPTION. This work shall consist of furnishing and installing precast off-line particle separator(s) at the locations indicated in the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Sections 540, 541, 601, and 604 of the Standard Specifications.

xx. MATERIALS.

(a) Concrete. Concrete shall conform to the requirements of Section 541 for Concrete, Class A.

(b) Masonry.

(1) Brick Masonry. Brick masonry shall conform to the requirements of Subsection 707.02.

(2) Masonry Cement. Masonry cement shall conform to the requirements of Subsection 707.301.

(c) Mortar. Mortar shall conform to the requirements of Subsection 707.02.

(d) Premixed Materials. Premixed materials shall conform to the requirements of Subsection 725.02.

(f) Frames and Covers. Drainage manhole frames and covers shall conform to the requirements of Section 604 for Cast Iron Cover with Frame.

(g) Bedding Material. Bedding material shall consist of crushed gravel conforming to the requirements of Section 301 for Subbase of Dense Graded Crushed Stone.

(h) Grade Rings. Grade rings for manhole grade adjustment shall be precast concrete.

(i) Grout. Concrete grout shall be premixed, prepackaged non-shrink cement based grout conforming to the requirements of Subsection 707.03.

xx. SUBMITTALS. Prior to commencement of the work, the Contractor shall submit Fabrication Drawings to the Engineer showing details of construction, reinforcing, joints, embedded appurtenances, method of sealing pipe penetrations, and pertinent dimensions.

The Fabrication Drawings and pertinent calculations shall be signed and stamped by a Professional Engineer licensed in the State of Vermont.

xx. DESIGN CRITERIA.

(a) Design of precast structures and components shall conform to Section 540.

(b) Precast structure shall be capable of withstanding H-20 loading without failure.

(c) The base section may be monolithic to a point at least 150 mm (6 inches) above the openings cast to receive the storm sewer lines. Any opening shall be a minimum of 6 inches from any joint. The base shall be a minimum of 200 mm (8 inches) thick and walls shall be a minimum of 125 mm (5 inches) thick.

(d) The minimum compressive strength of concrete shall be 30 MPa (4000 psi) at 28 days.

(e) Buoyancy calculations shall be performed and ballast added to the precast structure if necessary to prevent floating of the structure.

xx. QUALITY CONTROL. Concrete shall be tested in accordance with Section 540.

Retain plant records and quality control program used during production of precast concrete sections and make such records and test results available to the Engineer, if requested.

All precast concrete sections shall have the date of manufacture and name or trademark of the manufacturer indelibly marked on the inside of the wall.

xx. INSPECTION AND REPAIRS. The quality of all 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, and/or on the project site after delivery.

Sections shall be subject to rejection due to failure 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 project site shall be marked for identification and shall be removed from the project site immediately.

All sections which have been damaged after delivery will be rejected, or if already installed, shall be repaired or removed and replaced entirely at the Contractor’s expense as directed by the Engineer.

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 exposed reinforcement.

Imperfections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final acceptance. Concrete grout shall be used for repair. Epoxy grout may be used for repair, subject to the approval of the Engineer.

xx. DELIVERY, STORAGE, AND HANDLING. Precast sections shall not be shipped until the concrete has attained a compressive strength of 21 Mpa (3000

psi) or until 5 days after fabrication and/or repair, whichever time is longer.

The Contractor shall follow the manufacturer's instructions for delivery and handling, and shall protect edges to prevent chipping or spalling.

The Contractor shall lift and support the structure sections from lifting points using lifting or handling devices.

xx. JOINTS AND PIPE SEALS. Horizontal joints between precast sections shall be tongue and groove and shall have a butyl rubber joint gasket (O-ring) conforming to Subsection 707.06. All horizontal joints shall be watertight.

Pipe to structures joints shall be sealed with non-shrinking mortar or concrete grout. Pipe to structures connections and joints shall be watertight.

xx. INSTALLATION. Precast bases shall be placed on a layer of compacted bedding material. The excavation shall be properly dewatered to allow placing of bedding material. Intermediate sections and top slab shall then be placed, using manufacturer's recommended Procedure for sealing the horizontal joints. All joints shall be pointed.

Inlet and outlet pipes shall be connected and sealed in accordance with the manufacturer's recommended procedure, and as shown on the Fabrication Drawings.

Holes in the concrete sections and around pipe entrances shall be plugged with concrete grout.

The frame and cover shall be placed on the top of the access holes, or some other means shall be provided to prevent accidental/unauthorized entry until the Contractor is ready to make final adjustment to grade.

Mortar shall be mixed in accordance with Subsection 707.02 or in accordance with the recommendations of the manufacturer.

Only clean bricks and concrete barrel blocks shall be used for grade adjustment. The brick shall be moistened until in a surface-dry, saturated condition.

Brick masonry shall be protected from drying too rapidly. Use an approved cover and protect from the weather and frost.

All masonry joints which are exposed to view shall be examined to locate cracks, and shall be pointed up and filled with mortar if required. Where necessary, in the opinion of the Engineer, the joints shall be cut out and re-pointed with mortar.

The Contractor shall be responsible for dewatering if necessary to install the basin, and shall fill the installed basin with water to counteract the potential effects of buoyancy.

xx. SETTING FRAMES AND COVERS. Frames shall be set with the tops conforming accurately to the grade of the pavement or finished ground

surface, or as indicated on the Plans. Frames shall be set concentric with the opening in the masonry and in a full bed of mortar so that the space between the top of the brick masonry or grade ring and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

Covers shall be left in place in the frames on completion of other work at the structure.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Off-Line Particle Separator) to be measured for payment will be the number of each complete particle separator units installed in the complete and accepted work.

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Off-Line Particle Separator) will be paid for at the Contract unit price for each. Payment will be full compensation for furnishing, transporting, handling, and placing the materials specified, including bedding material, risers, frames, and covers; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Excavation for Special Provision (Off-Line Particle Separator) will be paid for as Trench Excavation of Earth or Trench Excavation of Rock, as appropriate. Dewatering, if necessary, will be considered incidental to the excavation.

Payment will be made under:

Pay Item		Pay Unit
900.620	Special Provision (Off-Line Particle Separator)	Each