

PART 1 - GENERAL

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| <u>1.1 RELATED REQUIREMENTS</u>              | .1 | Section 33 05 16 - Maintenance Holes and Catch Basin Structures.   |
| <u>1.2 DESCRIPTION</u>                       | .1 | This section covers the supply and installation of Storm Water Treatment Units (SWTU).   |
| <u>1.3 ACTION AND INFORMATION SUBMITTALS</u> | .1 | Submit in accordance with Section 01 33 00 - Submittal Procedures.   |
|  | .2 | Product Data: <ul style="list-style-type: none"><li>.1 Submit manufacturer's instructions, printed product literature and data sheets for SWTU structures and include product characteristics, performance criteria, physical size, finish and limitations.</li></ul>  |
|  | .3 | Shop Drawings: <ul style="list-style-type: none"><li>.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.</li><li>.2 Include all drawings, calculations, sizing, documentations and fabrication drawings for review.</li></ul>  |
|  | .4 | Sustainable Design Submittals: <ul style="list-style-type: none"><li>.1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.</li><li>.2 Construction Waste Management:<ul style="list-style-type: none"><li>.1 Submit project Waste Management Plan highlighting recycling and salvage requirements.</li><li>.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.</li></ul></li><li>.3 Recycled Content:<ul style="list-style-type: none"><li>.1 Submit listing of recycled content products used, including details of required percentages or recycled content</li></ul></li></ul> |
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| 1.3 ACTION AND<br>INFORMATION<br>SUBMITTALS<br>(Cont'd) | .4 Sustainable Design Submittals:(Cont'd)<br>.3 Recycled Content:(Cont'd)<br>.1 (Cont'd)<br>materials and products, showing their<br>costs and percentages of post-consumer<br>and post-industrial content, and total<br>cost of materials for project.<br>.4 Regional Materials: submit evidence that<br>project incorporates required percentage 20%<br>of regional materials and products, showing<br>their cost, distance from project to furthest<br>site of extraction or manufacture, and total<br>cost of materials for project. |
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| 1.4 QUALITY<br>ASSURANCE | .1 Submit in accordance with Section 01 45 00 -<br>Quality Control.<br>.2 Certifications:<br>.1 Submit manufacturer's test data and<br>certification at least 4 weeks prior to<br>beginning Work. Include manufacturer's<br>drawings, information and shop drawings where<br>pertinent.<br>.2 Certificates: submit certificates signed<br>by manufacturer certifying that materials<br>comply with specified performance<br>characteristics and physical properties.<br>.3 Manufacturer's Instructions: submit<br>manufacturer's installation instructions and<br>special handling criteria, installation<br>sequence, cleaning procedures. |
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| 1.5 DELIVERY,<br>STORAGE AND HANDLING | .1 Deliver, store and handle materials in<br>accordance with Section 01 61 00 - Common<br>Product Requirements and with manufacturer's<br>written instructions.<br>.2 Delivery and Acceptance Requirements: deliver<br>materials to site in original factory<br>packaging, labelled with manufacturer's name<br>and address.<br>.3 Storage and Handling Requirements:<br>.1 Store materials and in accordance with<br>manufacturer's recommendations in clean, dry,<br>well-ventilated area. |
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- 1.5 DELIVERY,  
STORAGE AND HANDLING  
(Cont'd)
- .3 Storage and Handling Requirements: (Cont'd)
    - .2 Store and protect SWTU structures from nicks, scratches, and blemishes.
    - .3 Replace defective or damaged materials with new.
  - .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
  - .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

## PART 2 - PRODUCTS

- 2.1 GENERAL
- .1 The SWTU shall be constructed from pre-cast concrete components conforming to the requirements of Section 33 05 16 - Maintenance Holes and Catch Basin Structures.
  - .2 The SWTUs shall meet the following requirements and the following treatment capacities:
    - .1 SWTU 1: peak treatment capacity is 9.37 L/s from a combined area of 10,960sq. m.
    - .2 Removes 80% of annual TSS loading.
    - .3 Removes free oil.
    - .4 Shall retain floatables and trapped sediment up to, and including, peak treatment capacity.
    - .5 Shall be contained in one structure.
    - .6 Shall be capable of transmitting all flows delivered by the upstream pipes.
    - .7 Shall be capable of treating storm water in submerged condition.
    - .8 Shall be capable of withstanding buoyancy forces with groundwater assumed at finish grade and the storm water treatment unit empty.
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- 2.1 GENERAL (Cont'd)
- .2 (Cont'd)
- .9 The SWTU supplier shall submit calculations illustrating their system conformance to the requirements listed, and shall also supply documentation required by LEED 2009.
- 2.2 FRAME AND COVER
- .1 The frame and cover shall include an indented top design with lettering of the unit's name cast into the cover to allow for easy identification in the field. All manhole frame and covers to comply with Section 33 05 16 - Maintenance Holes and Catch Basin Structures.
- 2.3 PERFORMANCE
- .1 TSS removal efficiency for the SWTUs shall be based on a wide grain size distribution of the New Jersey Department of Environmental Protection protocol. If an alternate industry standard is to be used, the supplier must provide:
- .1 Certified documentation (sealed memorandum or letter from a professional engineer) confirming that the alternate standard is appropriate for the project site.
- .2 Documentation that demonstrates performance achieved and the standard of testing used.
- .2 The separator shall be capable of removing 95% of the floatable free oil.
- .3 The separator shall be capable of trapping fine sand, silt, clay and organic particles in addition to larger sand, gravel particles and small floatables.
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PART 3 - EXECUTION

- 3.1 INSPECTION .1 All precast concrete sections shall be inspected to ensure that dimensions, appearance and quality of the product meet the Specifications.
- 3.2 INSTALLATION .1 Installation of the pre-cast concrete stormwater treatment unit shall conform to the manufacturer's installation instructions, specifications and recommendations.
- 3.3 EXCAVATION .1 Excavation for the installation of the stormwater treatment unit shall conform to the requirements of Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- 3.4 BACKFILLING .1 Backfilling material shall conform to the requirements of Sections 31 23 33.01 - Excavating, Trenching and
- 3.5 INLET AND OUTLET PIPES .1 Inlet and outlet pipes shall be securely set into the SWTU using approved pipe seals providing a water tight connection.
- 3.6 FRAME AND COVER OR FRAME AND GRATE INSTALLATION .1 The grade adjustment units shall be laid in full bed of mortar with successive units being joined using sealant recommended by the manufacturer. Frames for the cover shall be set in a full bed of mortar at the elevation specified in the Contract Documents.