COLORADO DEPARTMENT OF TRANSPORTATION

PRE-APPROVED PRODUCT EVALUATION REQUEST & SUMMARY

APL Reference No. 3037-10

Product Evaluation Coordinator
Colorado Department of Transportation
4670 North Holly Street, Unit A
Denver, Colorado 80216

Material code: 604.04.04.01

FOR INTERNAL CDOT USE

Material code description full name: Storm Water Separator, Regular Flow

PART 1

Product name: Downstream Defender, 10-ft Diameter

Product category: Drainage\Storm Water Separator\Regular Flow Hydrodynamic

Product representative (name & address):
Attn: John MacKinnon
Hydro International
94 Hutchins Drive
Portland, ME 04102
Phone: (207) 756-6200 FAX: (207) 756-6212
Web-site address: www.hydro-international.biz

Manufacturer (name & address):
Attn: John MacKinnon
Hydro International
94 Hutchins Drive
Portland, ME 04102
Phone: (207) 756-6200 FAX: (207) 756-6212
Web-site address: www.hydro-international.biz

Description of the product: (Include specific quantifiable details from tech data sheet. Advertising generalities are not appropriate.)
The 10-foot diameter Downstream Defender is an advanced hydrodynamic separator designed for the removal of sediment, oil, and floatables from stormwater runoff. Independently-verified laboratory testing of the 4-foot diameter model demonstrated 80% removal of TSS from a feed material with 125-micron mean particle size at a treatment flow rate of 583 gpm (1.3 cfs). Using a scaling factor derived from testing bench-scale models, the treatment flow rate for the 10-foot diameter model is 7,944 gpm (17.7 cfs). Because of the configuration of internal components which isolate the sediment storage area from turbulent flow, and confine floatables using a water-lock feature, it can operate at 15 cfs without resuspension of stored sediment or washout of stored floatables. The headloss is about 10 inches at 17.7 cfs. It has received Interim Certification from the New Jersey Department of Environmental Protection (NJDEP) and General Use Designation for Pretreatment (TSS) from Washington State Department of Ecology (Ecology).

Restrictions, (installation and/or use):

Use of the product, (be specific to CDOT highway activities only):
Highway sites where pollutant loading in stormwater runoff is expected to be high. Suitable where a pretreatment device is needed to reduce sediment.

Benefits to CDOT, (how will your product enhance quality, improve safety, save money, be a better value then other manufacturer's products):
By removing pollutants from stormwater runoff, CDOT will protect water resources located adjacent to highway facilities and meet standards contained in stormwater permits issued by regulatory agencies. There are no moving parts, no consumables, and no external power requirements. It consists of a standard cylindrical manhole with polypropylene internal components and a stainless steel support frame so installation is relatively easy and the materials are long-lasting. One port at ground level provides easy access for inspection and clean out of stored floatables and sediment. Confined space entry is not required when performing inspection and maintenance activities.

Specifications, (listing those applicable is required) **& Certificate of Compliance** (required to certify compliance with listed specifications):

- ☐ CDOT :
- ☐ ASTM :
- ☐ AASHTO :
- ☐ FHWA :
- ☐ other :

Product testing, (from national/independent laboratories or universities) **& Certified Test Report** (CTR required to validate all claims):

- ☐ NTPEP-AASHTO :
- ☐ FHWA :
- ☒ other : NJCAT Technology Verification (February 2005), OK-110 Sand SSC (TSS) Removal Confirmation Test (July 2002)
- ☐ other :

State DOT Approvals, (current documentation required):
North Carolina, Ohio, Oregon

Sample submitted: ☐ yes ☒ no ☐ n/a | Materials Safety Data Sheets (MSDS): ☐ yes ☐ no ☒ n/a

Notes/Additional Comments
There are three other sizes of Downstream Defender available for treating a range of flow rates. The 6-foot diameter unit treats up to 4.1 cfs, the 8-foot diameter unit treats up to 9.4 cfs, and the 10-foot diameter unit treats up to 17.7 cfs. To meet specific performance criteria or for larger flow applications, Hydro International offers custom-designed units up to 40 feet in diameter.