

Faircloth Skimmer

Basis of Design

Surface Withdrawal Outlet Control for Post-Construction Stormwater Control Measures (SCMs)

Design Intent

The stormwater control measure (SCM) outlet is designed to regulate discharge rates while maintaining long-term hydraulic performance, water quality function, and maintainability. Traditional submerged orifice outlets are susceptible to clogging, restricted access, and delayed detection of performance issues.

To address these concerns, a surface withdrawal outlet control device (SCM skimmer) has been incorporated into the outlet structure to protect the controlling orifice, simplify maintenance, and improve long-term SCM performance.

Outlet Control Concept

The SCM skimmer is a floating outlet control device that draws water from the surface of the SCM and connects to the outlet pipe. The device shields the controlling orifice from debris and sediment accumulation while maintaining the design discharge rate and improving accessibility for inspection and maintenance.

Hydraulic Performance

The SCM skimmer is sized to meet the required discharge rates for the applicable design storm events. Flow control is achieved through a fixed or adjustable orifice integrated into the skimmer assembly. Design flow rates and drawdown times are based on manufacturer-provided testing data and calculations.

Final orifice sizing and settings shall be verified using manufacturer-provided flow testing results and calculation tools applicable to the selected device.

Maintenance and Access Considerations

The SCM skimmer is designed to improve long-term maintainability by allowing visual inspection from the SCM surface and enabling removal of the device for cleaning without confined-space entry or basin dewatering. Routine maintenance may be performed by temporarily securing the skimmer to the side of the basin, cleaning debris from the orifice or screen, and returning the device to service.

Water Quality Considerations

Surface withdrawal promotes improved water quality performance by discharging water from the upper water column where suspended solids concentrations are typically lower. This approach reduces resuspension of settled sediments and supports overall total suspended solids (TSS) reduction within the SCM.

Questions? Need assistance?

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Vegetation and Ecological Considerations

Proper outlet function is critical to maintaining intended water surface elevations and drawdown durations. By protecting the controlling orifice from clogging, the SCM skimmer helps maintain design water levels, reduce prolonged inundation of vegetated shelves and littoral zones, and support long-term plant health and ecological function.

Applicability

Surface withdrawal outlet control using an SCM skimmer may be appropriate for dry detention basins, wet detention ponds, retention ponds, underground detention systems, and retrofit applications where outlet maintenance or clogging has been a recurring concern. Final applicability shall be determined by the design engineer based on site-specific conditions and regulatory requirements.

Installation and Coordination

The SCM skimmer shall be installed in accordance with manufacturer recommendations and project details. Coordination with outlet pipe size, configuration, and structural components is required. The contractor shall ensure that the installed device matches the product used as the basis of design.

Design Responsibility

The SCM skimmer is incorporated as part of the overall outlet control strategy. Final sizing, configuration, and acceptance of the device remain the responsibility of the design engineer of record.

Material Selection for Permanent SCM Skimmers

Permanent SCM skimmers shall be fabricated using CPVC and HDPE components suitable for long-term, post-construction stormwater applications and continuous environmental exposure.

- **UV Resistance:** CPVC and UV-stabilized HDPE shall maintain structural integrity and performance under prolonged ultraviolet exposure in open, surface-exposed SCM installations.
- **Chemical and Corrosion Resistance:** Both materials shall resist degradation from stormwater constituents, sediment-laden flows, and variable water quality conditions without corrosion or loss of function.
- **Strength and Durability:** CPVC shall provide rigidity and dimensional stability for hydraulic control components, while HDPE shall provide impact resistance and flexibility to accommodate hydraulic forces, minor settlement, and maintenance activities.
- **Long Lifecycle Performance:** CPVC and HDPE components shall be suitable for permanent infrastructure installations with typical service life expectations of **50 years or greater**, minimizing lifecycle risk and long-term maintenance requirements.