

Technical Note

TN 1.18 AquaLux™ - NJDEP Certified for 80% TSS Removal Efficiency

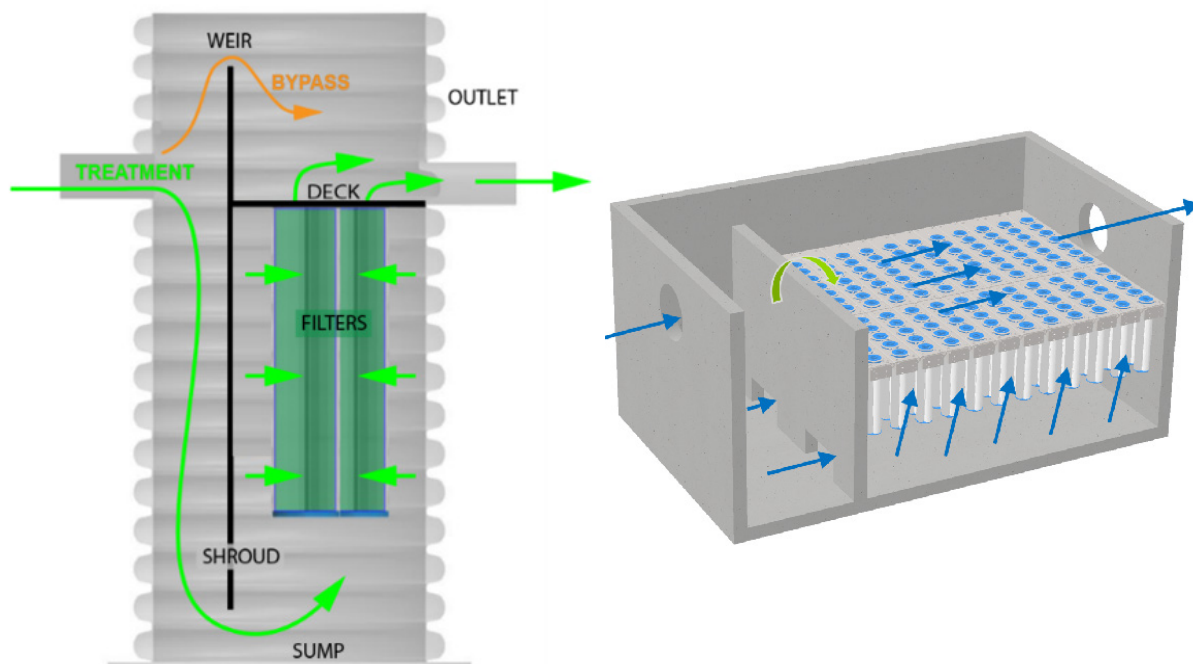
Overview

The AquaLux Filtration System is a manufactured water quality treatment device intended for removal of Total Suspended Solids (TSS) from stormwater runoff. The system relies on gravitational settling and filtration to remove sediments and other contaminants such as heavy metals, particulate nitrogen and phosphorus, trash, oil and grease. Based on laboratory results, the AquaLux achieved a cumulative sediment removal efficiency of 90.6%.

Technology

The AquaLux internal components can be installed in either a polypropylene manhole or a precast concrete structure. Stormwater runoff enters the AquaLux system through either a pipe inlet or curb inlet and is conveyed into the influent chamber. This chamber provides pretreatment by capturing coarse sediments, trash, and debris. A baffle wall promotes the separation of floatable and settleable solids by allowing floatable to rise and coarse sediments to settle into the sump before the water flows upward into the filtration chamber. In the filtration chamber, flow passes through an array of membrane filter elements where fine sediments and particulate-bound pollutants are removed through membrane filtration. Following treatment, water enters the effluent chamber above the deck and discharges through the outlet pipe. During high-flow conditions, excess runoff overtops the internal weir wall and is discharged with the treated effluent. The optional external high flow bypass may be incorporated with any of these configurations.

Figure 1: System Components and Flow Path



Design Summary Table

Model	Number of Filters	Manhole/Vault Dimension ¹ ft (m)	Max Treatment Flow Rate MTFR ² ft ² (m ²)	Maximum Allowable Drainage Area ³ Acres
AquaLux7M	7	3 (0.9)	0.312 (0.02)	0.223
AquaLux12M	12	4 (1.2)	0.535 (0.04)	0.383
AquaLux19M	19	5 (1.5)	0.847 (0.07)	0.606
AquaLux27M	27	6 (1.8)	1.203 (0.11)	0.861
AquaLux48M	48	8 (2.4)	2.139 (0.19)	1.531
AquaLux75M	75	10 (3.0)	3.342 (0.31)	2.392
AquaLux10	10	4 x 4 (1.2 x 1.2)	0.446 (0.04)	0.319
AquaLux20	20	4 x 6 (1.2 x 1.8)	0.891 (0.08)	0.638
AquaLux30	30	4 x 8 (1.2 x 2.4)	1.337 (0.12)	0.957
AquaLux35	35	4 x 10 (1.2 x 3.0)	1.560 (0.14)	1.116
AquaLux28	28	6 x 6 (1.8 x 1.8)	1.248 (0.11)	0.893
AquaLux42	42	6 x 8 (1.8 x 2.4)	1.872 (0.72)	1.339
AquaLux49	49	6 x 9 (1.8 x 2.7)	2.184 (0.20)	1.563
AquaLux56	56	6 x 10 (1.8 x 3.0)	2.496 (0.23)	1.786
AquaLux40	40	8 x 6 (2.4 x 1.8)	1.783 (0.16)	1.276
AquaLux60	60	8 x 8 (2.4 x 2.4)	2.674 (0.24)	1.914
AquaLux70	70	8 x 10 (2.4 x 3.0)	3.120 (0.28)	2.232
AquaLux90	90	8 x 12 (2.4 x 3.6)	4.011 (0.37)	2.870
AquaLux100	100	8 x 14 (2.4 x 4.2)	4.456 (0.41)	3.189
AquaLux120	120	8 x 16 (2.4 x 4.8)	5.348 (0.49)	3.827
AquaLux150	150	8 x 20 (2.4 x 6.0)	6.685 (0.62)	4.784
AquaLux108	108	10 x 12 (3.0 x 3.6)	4.813 (0.44)	3.444
AquaLux132	132	10 x 14 (3.0 x 4.2)	5.883 (0.54)	4.210
AquaLux168	168	10 x 18 (3.0 x 5.4)	7.487 (0.69)	5.358
AquaLux192	192	10 x 20 (3.0 x 6.0)	8.556 (0.79)	6.123
AquaLux126	126	12 x 12 (3.6 x 3.6)	5.615 (0.52)	4.018
AquaLux154	154	12 x 14 (3.6 x 4.2)	6.863 (0.63)	4.911
AquaLux182	182	12 x 16 (3.6 x 4.8)	8.111 (0.75)	5.804
AquaLux210	210	12 x 18 (3.6 x 5.4)	9.359 (0.86)	6.697
AquaLux224	224	12 x 20 (3.6 x 6.0)	9.983 (0.92)	7.144

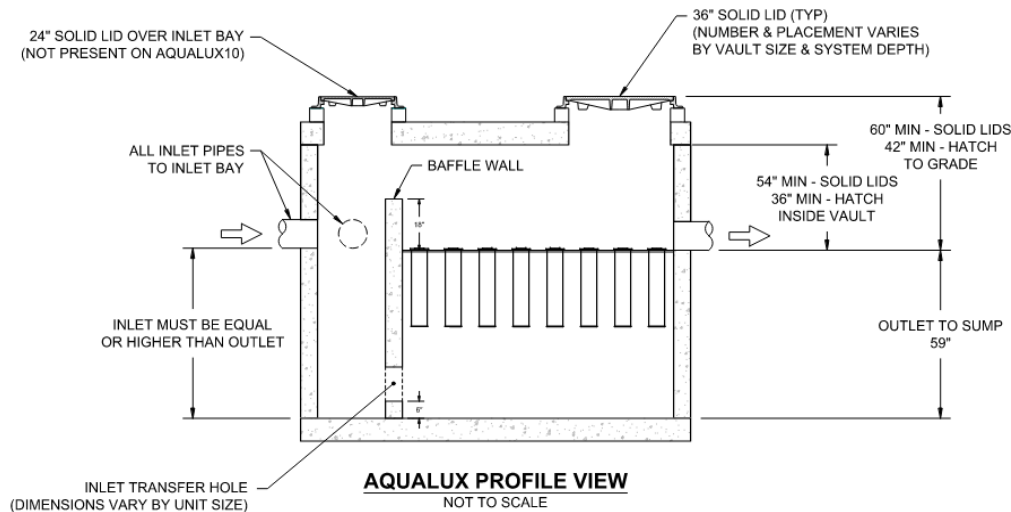
1. Minimum manhole/vault dimensions required to meet filtration ratio of 0.0073.
2. MTFR is based on 0.146 gpm/ft² (0.0003253 cfs/ft²) of effective filtration treatment area.
3. Drainage area is calculated based on 600 lbs. of mass contributed per acre of drainage area annually.

Overview

In addition to ensuring that the correct AquaLux model is selected for the project based on the above design table, there are other factors to consider.

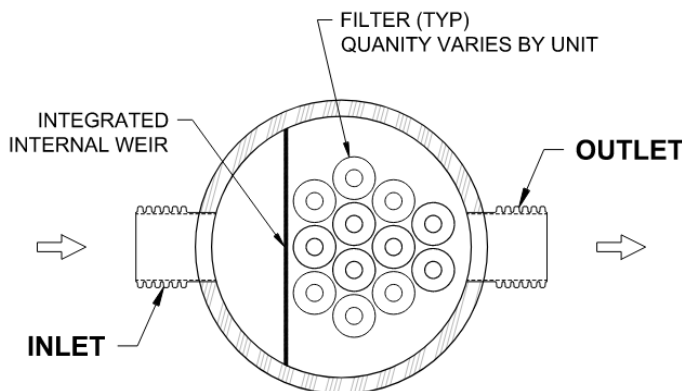
Inlet Pipe: Influent runoff should enter the system at or above the outlet invert elevation.

Standard & Minimum Cover: Standard 66" (1,650 mm) or more from RIM to outlet elevation is required to access the cartridges via a round solid casting. Hatches are required to be used when RIM to outlet depth ranges from 48" (1,200 mm) up to 65" (1,625 mm). This allows easy access inside the system for maintenance.

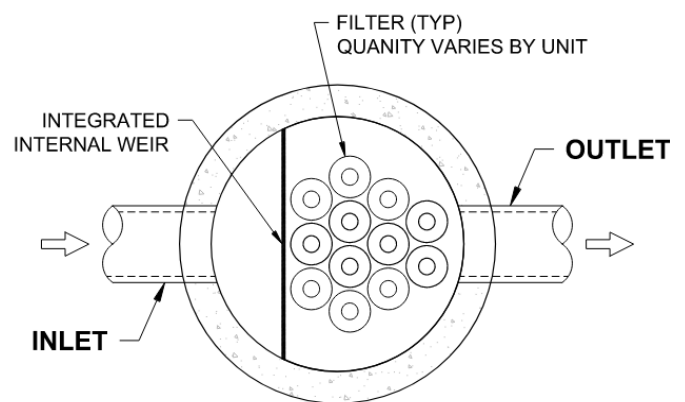


Configuration: Four configurations are available based on the structure in housing the internals: HP & concrete manholes; 2-bay & 3-bay concrete vaults.

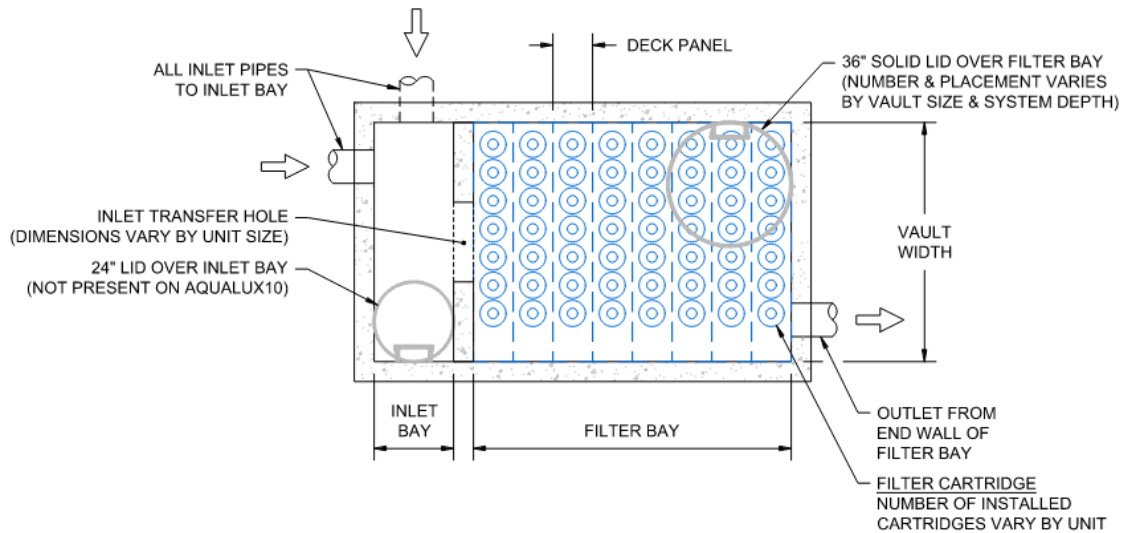
HP Manhole



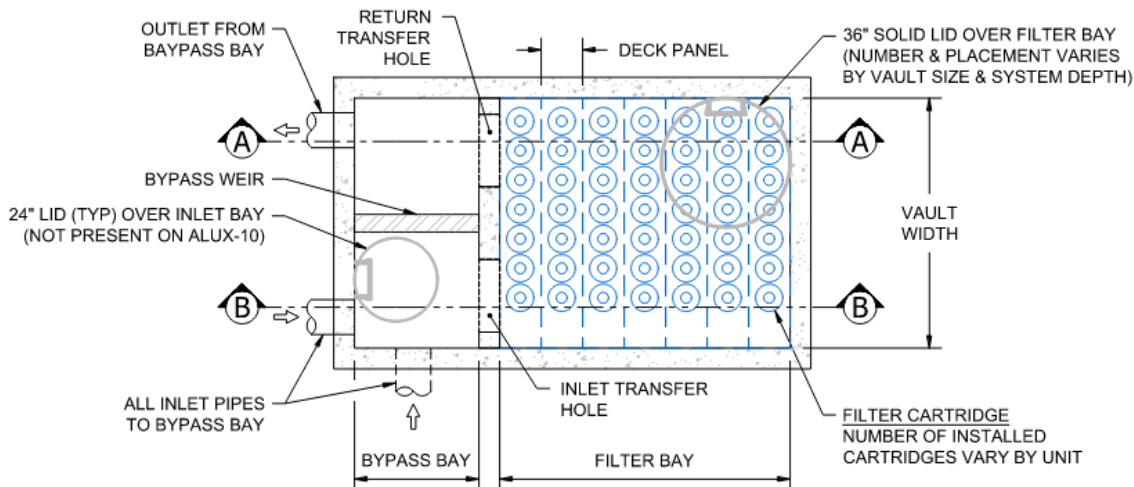
Concrete Manhole



2-Bay Vault



3-Bay Vault



Structural Load Limitations: Most standard structures are designed to handle H-20 traffic loads. For deeper installations or installations requiring a greater load capacity, the system will be designed and manufactured to meet those requirements. ADS provides full-service technical design support throughout the life of a project and can help ensure the system is designed for the appropriate structural load requirements.

