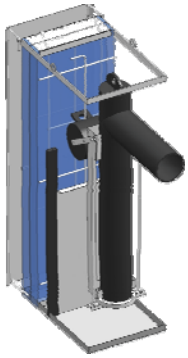
Royal ENVIRONMENTAL SYSTEMS, Inc.
A Division of Royal Enterprises America

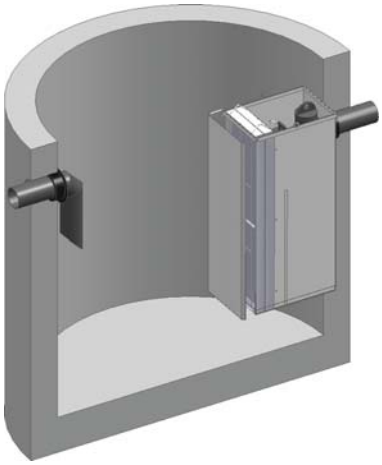
ecoLine-b

ecoLine-b Operation & Maintenance Guide

Working Principle



The ecoLine-b oil/water separator is designed to separate non-emulsified light liquids with a specific gravity below 0.95, from effluent discharge. Using a two-step separation process, gravity separation and removal of small oil particles through a coalescing media, produces high removal efficiencies.



Purification Step 1: Gravity Separation
Systems are designed with both one and two chambers. A two-chamber system utilizes an upstream grit chamber, which removes solids from the influent, thus ensuring unimpeded functioning of the oil separator. The grit chamber also compensates for influent temperature fluctuations, influent oil concentrations influxes and initializes the separation of light fluids.

Purification Step 2: Coalescing Media
In the coalescing media, which is made of durable reticular (i.e. "net-like") soft polyurethane foam, fine droplets that are too small to be separated by gravity alone are accumulated into larger droplets within the media, and then rise to the surface. The separated water that leaves the ecoLine-b has a residual oil content of less than 5 ppm of free oils.

Spill Control
The automatic shut-off valve closes the outlet pipe when the maximum oil storage capacity (9 inches oil depth) is reached.

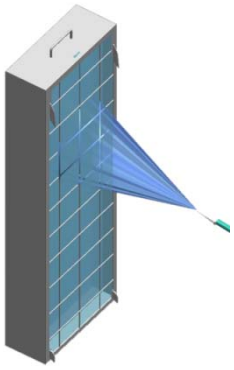
Placing into Service

Before the ecoLine-b is operational, the system MUST be filled with clean water. Remove all foreign debris from installation, such as soil and mortar prior to filling with clean water.

IMPORTANT: Fill the separator via the grit chamber until the separation chamber is full and water leaves the separator through the outlet structure. Make sure that the spill control valve is secured in an open position. The separator is now ready for operation.

Maintenance

Maintenance of your ecoLine-b will strongly depend on the particular application. We recommend a visual inspection of the system on a weekly basis for the first month of use and increase or decrease maintenance intervals according to the site conditions.

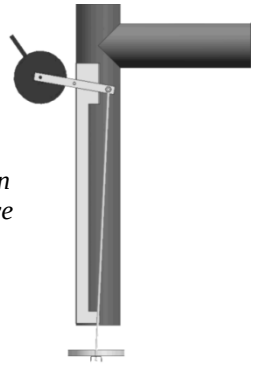


Grit Chamber Maintenance – Remove sludge and oil from the system periodically.

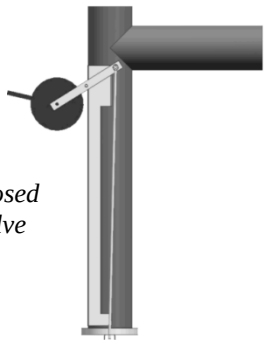
Separation Chamber Maintenance – Remove accumulated oil on a regular basis. Visual inspection of the separate oil should be removed when the oil loading has created a uniform layer of light liquids (≤ 1/2" depth).

Coalescing Media Maintenance – The coalescing media cartridge needs periodic cleaning, and maintenance intervals depend on the site loadings, so check the condition of the media weekly during the first 60 days of operation. The media can be cleaned/rinsed with a garden hose or a power washer set to fan spray. Ideally a filter fabric should be placed over the drain that discharges to the ecoLine. The coalescing media is placed on the filter fabric and back flushed. This greatly reduces the amount of debris being discharge back to the system.

Spill Control



Open Valve



Closed Valve

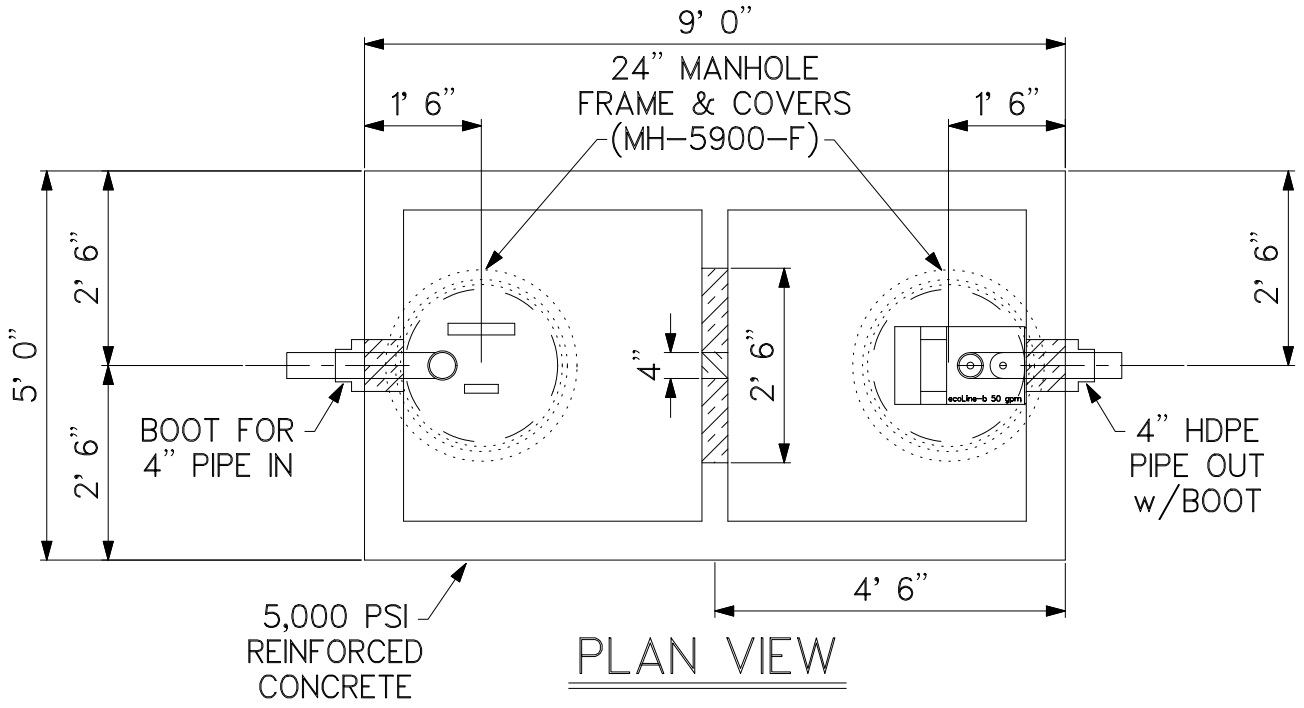
ecoLine-b separators are equipped with a spill control mechanism in the outlet pipe. The calibrated float will lose buoyancy in the accumulated oil, hence closing off the outlet pipe of the separator. The valve will completely close in a spill event that creates an oil layer of ± 9 inches (specific gravity dependent).

In the event of a spill, remove the accumulated oil from the system and fill the unit with clean water.

To reset the valve, pull the stainless steel string of the valve.

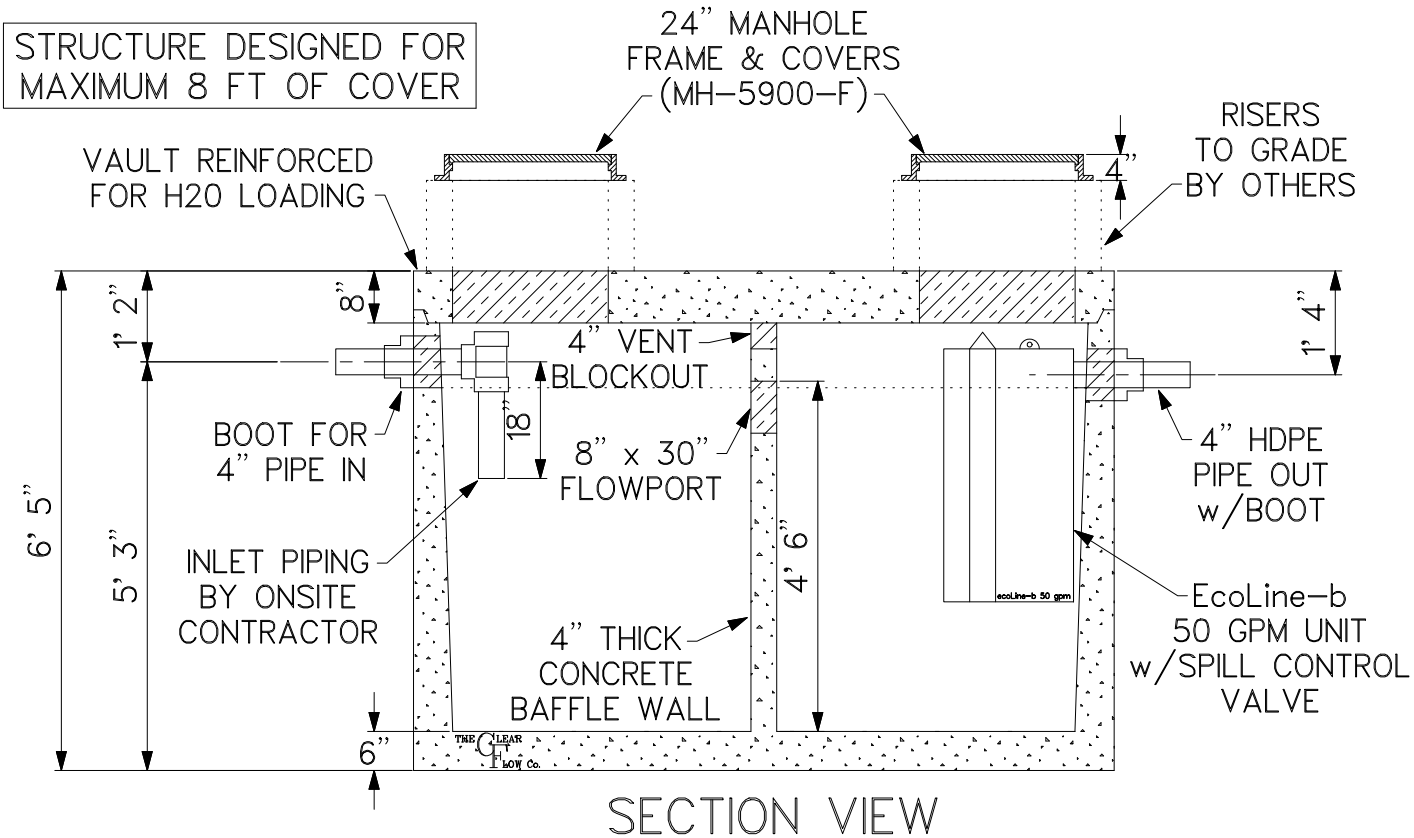
Optional Equipment

Oil Level Sensors – ecoLine-b separators can be equipped with an optional oil level sensor, which activates an alarm once the maximum oil storage capacity of the system is reached.



PLAN VIEW

STRUCTURE DESIGNED FOR
MAXIMUM 8 FT OF COVER



SECTION VIEW

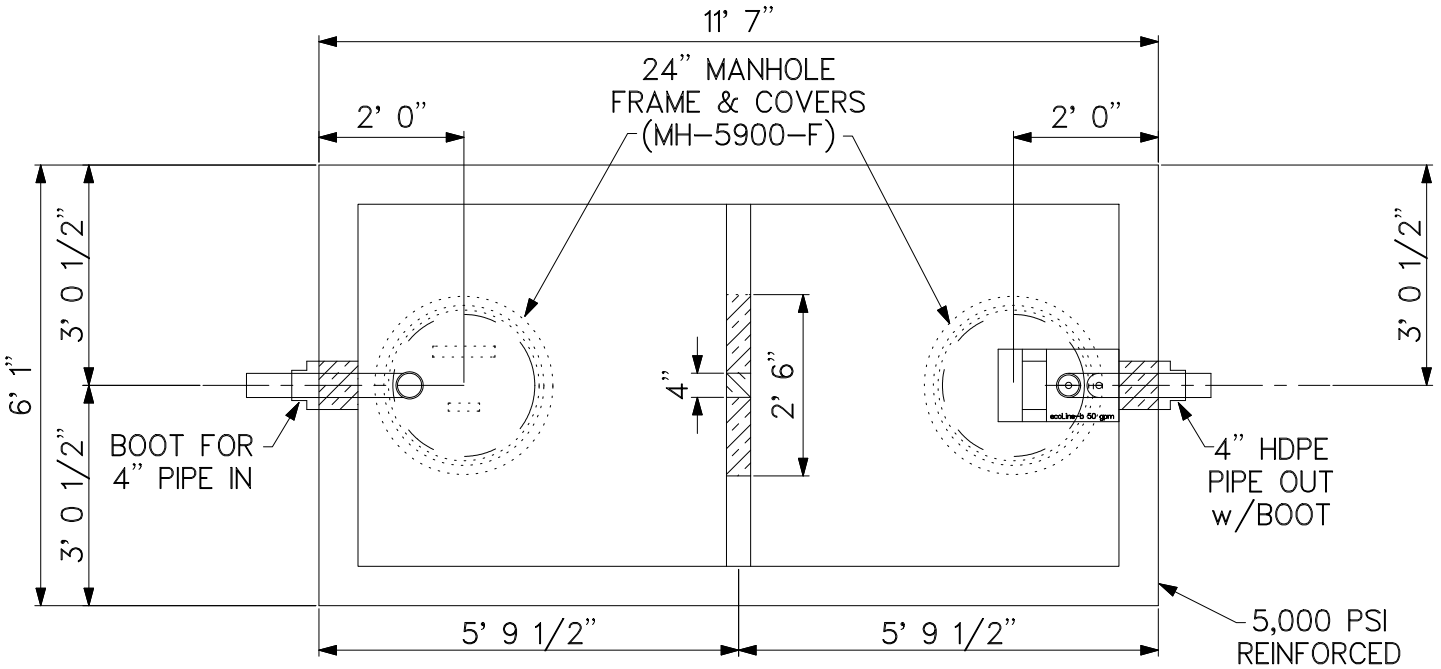
NOTES:

1. VAULT SHIPPED IN ONE PIECE WEIGHING APPROX. 19,000 LBS.
2. RISERS TO GRADE NOT INCLUDED
3. MANHOLE FRAME & COVERS SHIPPED LOOSE FOR INSTALLATION BY THE CONTRACTOR
4. INLET TEE BAFFLE PROVIDED & INSTALLED BY THE CONTRACTOR

CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
(800) 648 - 2678

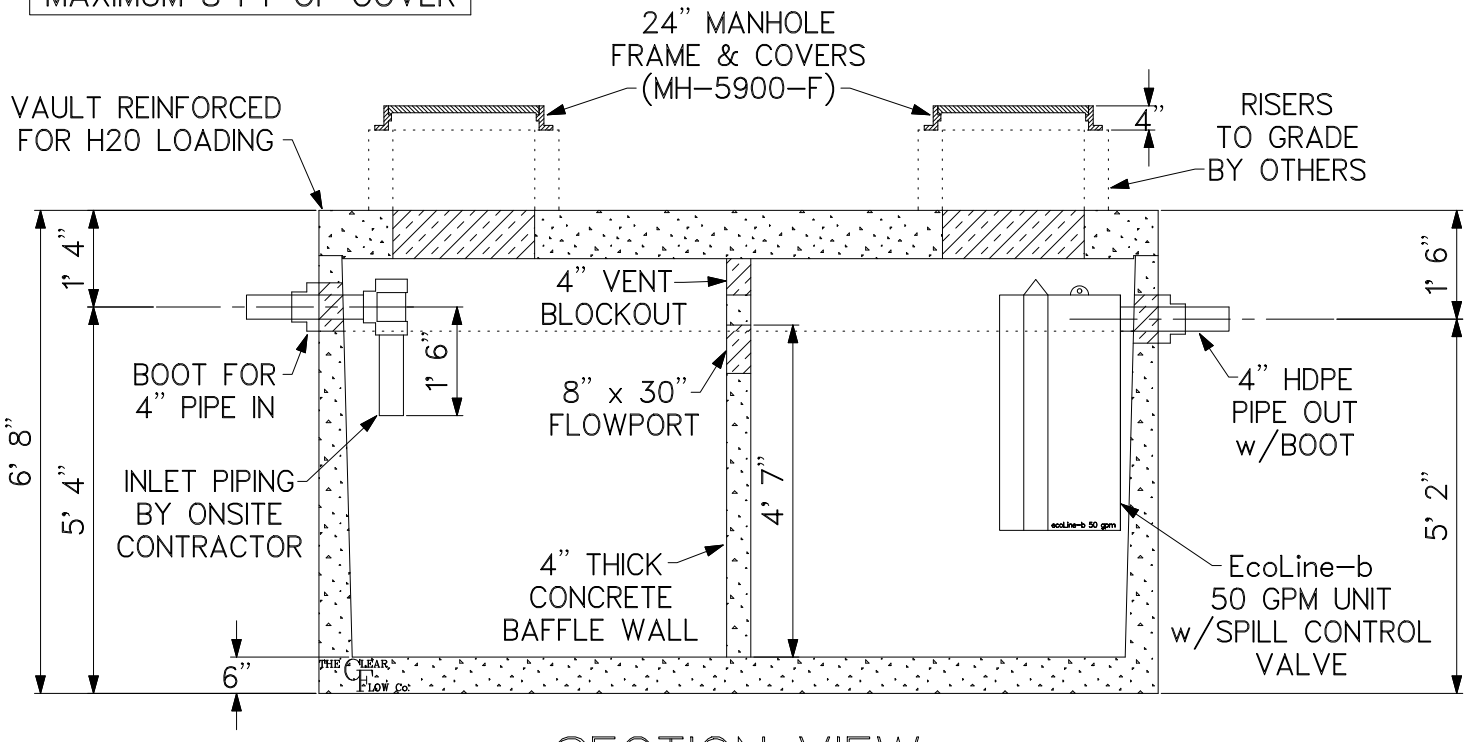
SCALE: NONE	DATE: 2010	DWG: OWS-50 GPM TJ-1000

50 GPM OIL/WATER SEPARATOR w/SPILL CONTROL VALVE (TJ-1000)



PLAN VIEW

STRUCTURE DESIGNED FOR
MAXIMUM 8 FT OF COVER



SECTION VIEW

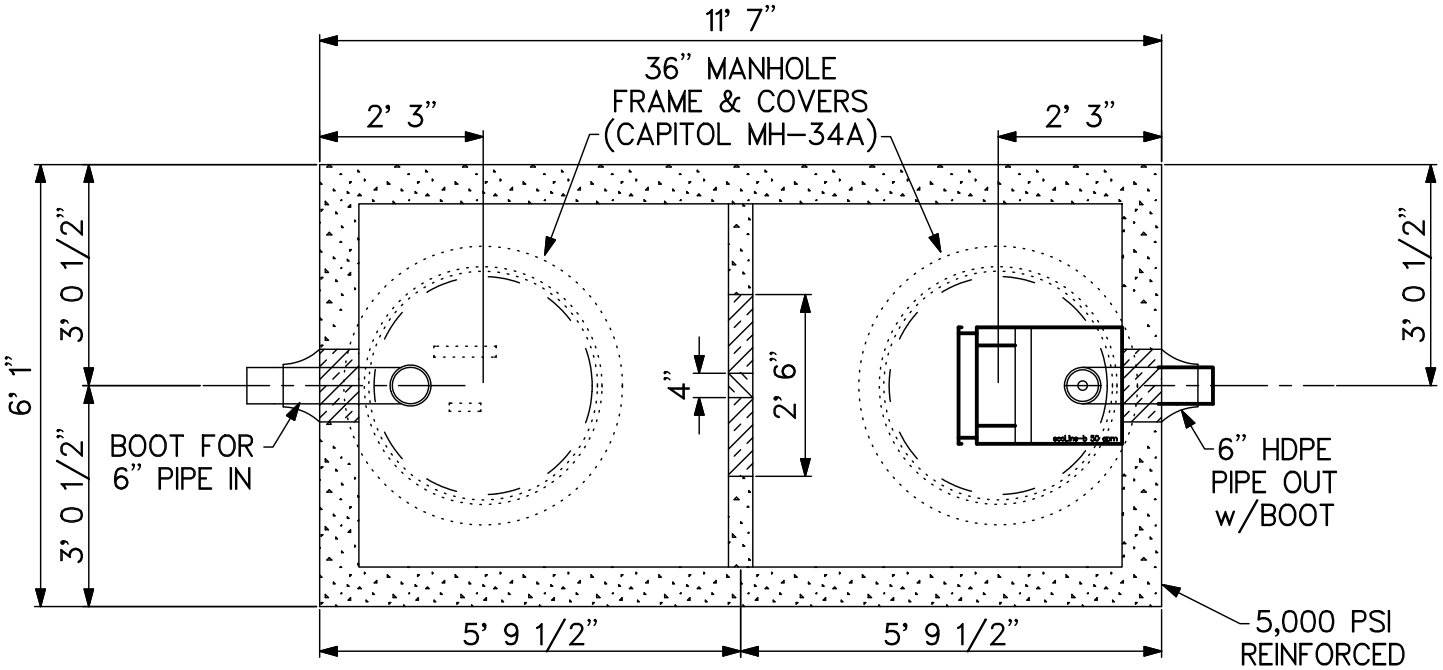
NOTES:

1. VAULT SHIPPED IN ONE PIECE WEIGHING APPROXIMATELY 26,000 LBS.
2. RISERS TO GRADE NOT INCLUDED
3. MANHOLE FRAME & COVERS SHIPPED LOOSE FOR INSTALLATION BY THE CONTRACTOR
4. INLET TEE BAFFLE PROVIDED & INSTALLED BY THE CONTRACTOR

CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
(800) 648 - 2678

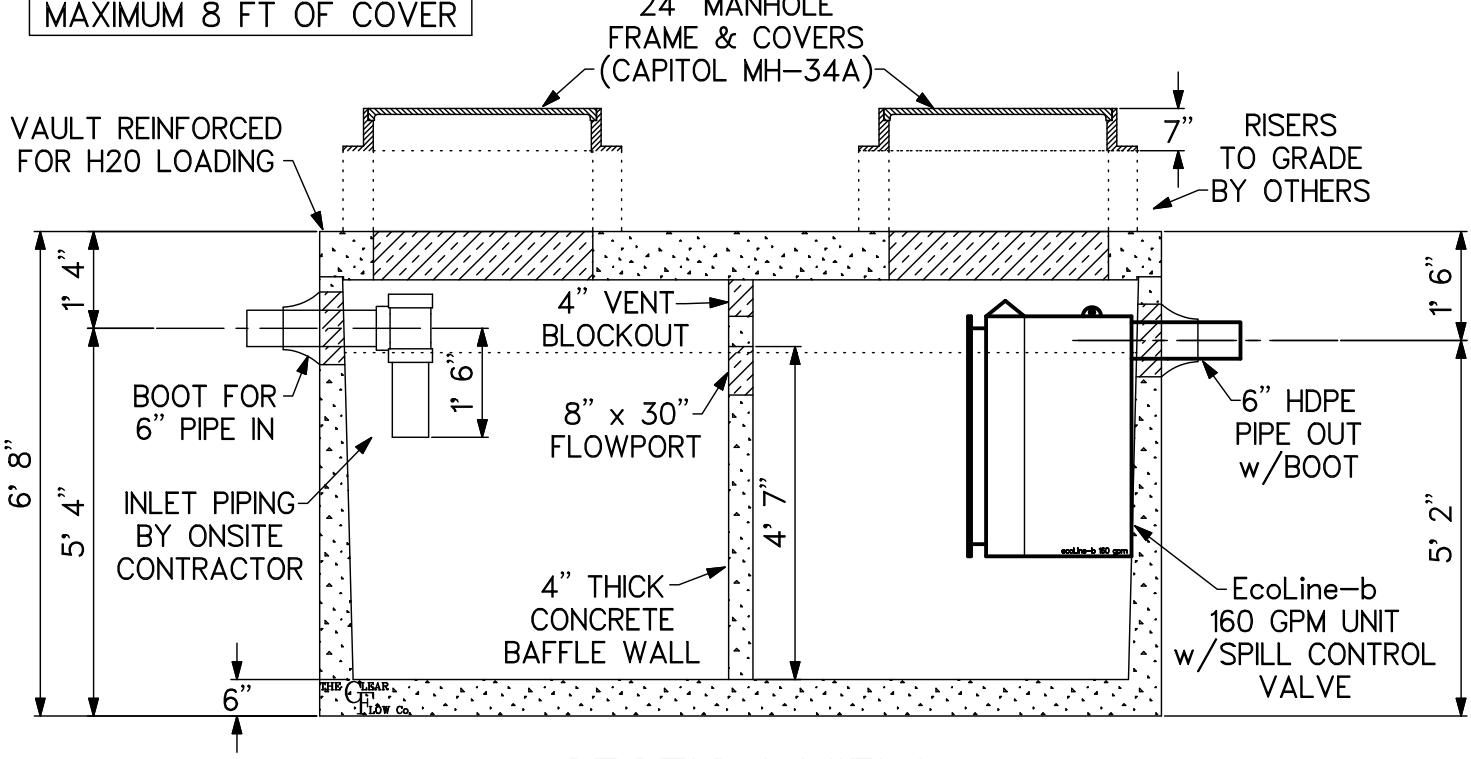
SCALE: NONE	DATE: 2010	DWG: OWS-50 GPM TJ-2000

50 GPM OIL/WATER SEPARATOR w/SPILL CONTROL VALVE (TJ-2000)



PLAN VIEW

STRUCTURE DESIGNED FOR
MAXIMUM 8 FT OF COVER



SECTION VIEW

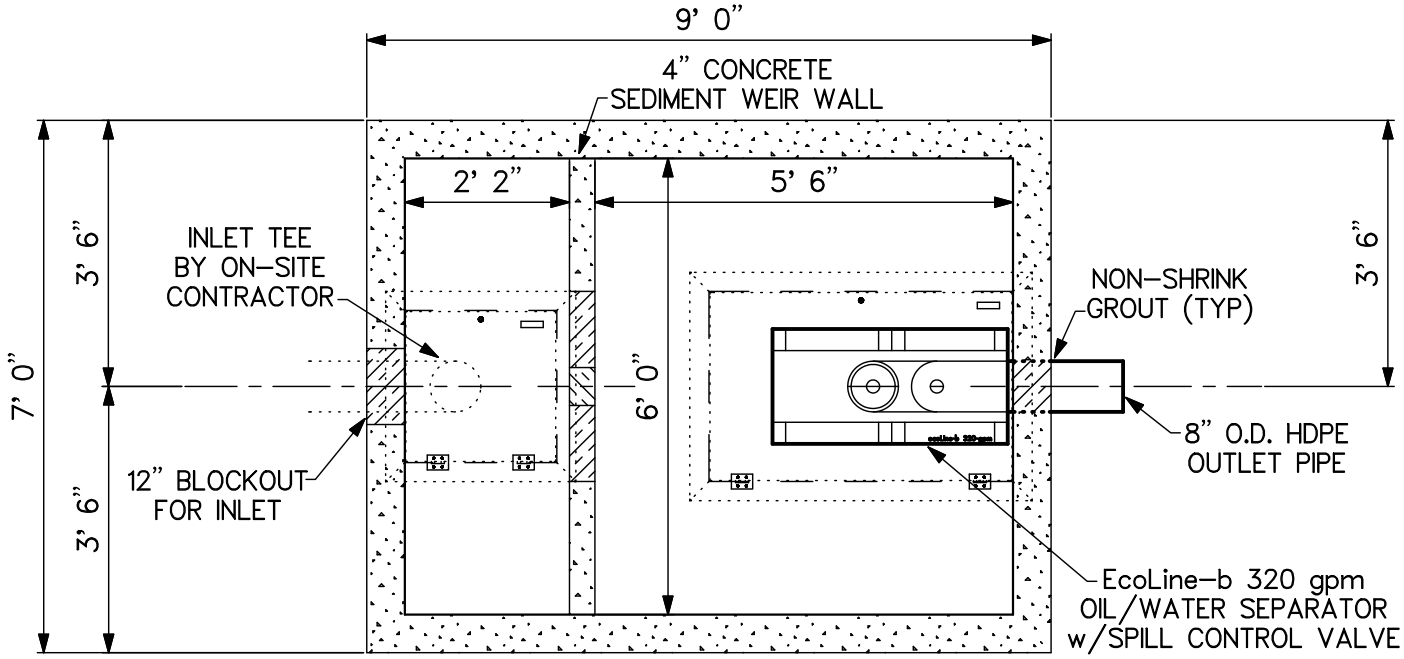
NOTES:

1. VAULT SHIPPED IN ONE PIECE WEIGHING APPROXIMATELY 26,000 LBS.
2. RISERS TO GRADE NOT INCLUDED
3. MANHOLE FRAME & COVERS SHIPPED LOOSE FOR INSTALLATION BY THE CONTRACTOR
4. INLET TEE BAFFLE PROVIDED & INSTALLED BY THE CONTRACTOR

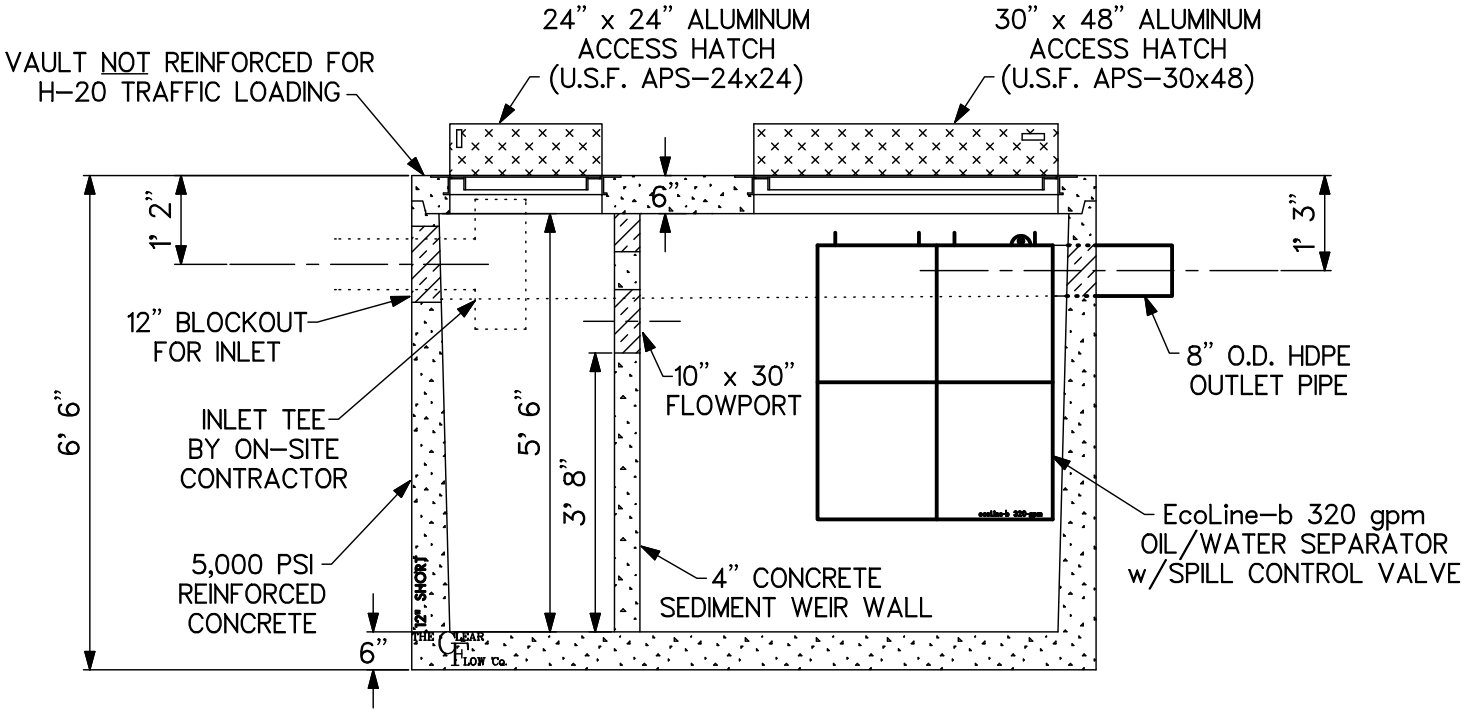
CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
(800) 648 - 2678

SCALE: NONE	DATE: 2012	DWG: OWS-160 GPM TJ-2000

160 GPM OIL/WATER SEPARATOR w/SPILL CONTROL VALVE (TJ-2000)



PLAN VIEW



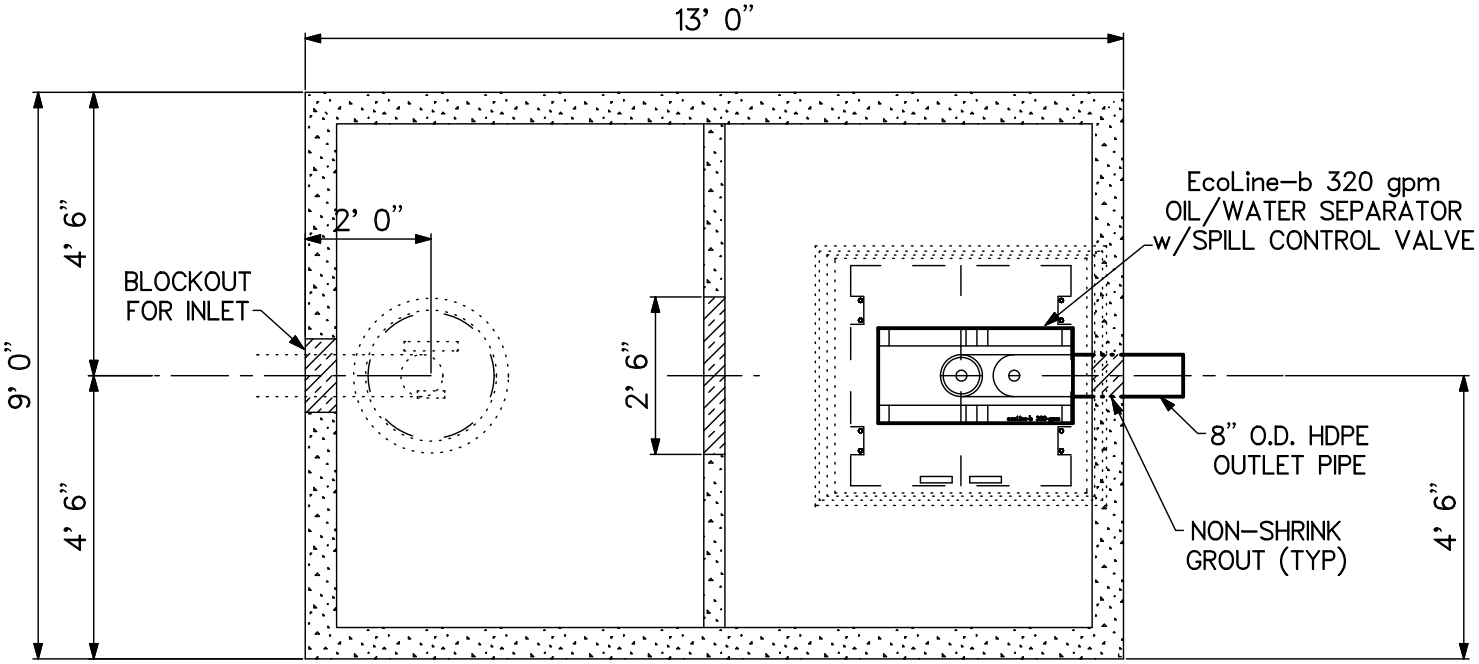
SECTION VIEW

NOTES:
1. CLEAR FLOW OIL/WATER SEPARATOR SHIPPED ASSEMBLED WEIGHTING APPROX. 25,000 LBS.
2. EcoLine-b 320 gpm COALESCING OIL/WATER SEPARATOR w/SPILL CONTROL VALVE ANCHORED TO WALL w/S.S. EXPANSION ANCHORS
3. INLET PIPING BY THE CONTRACTOR

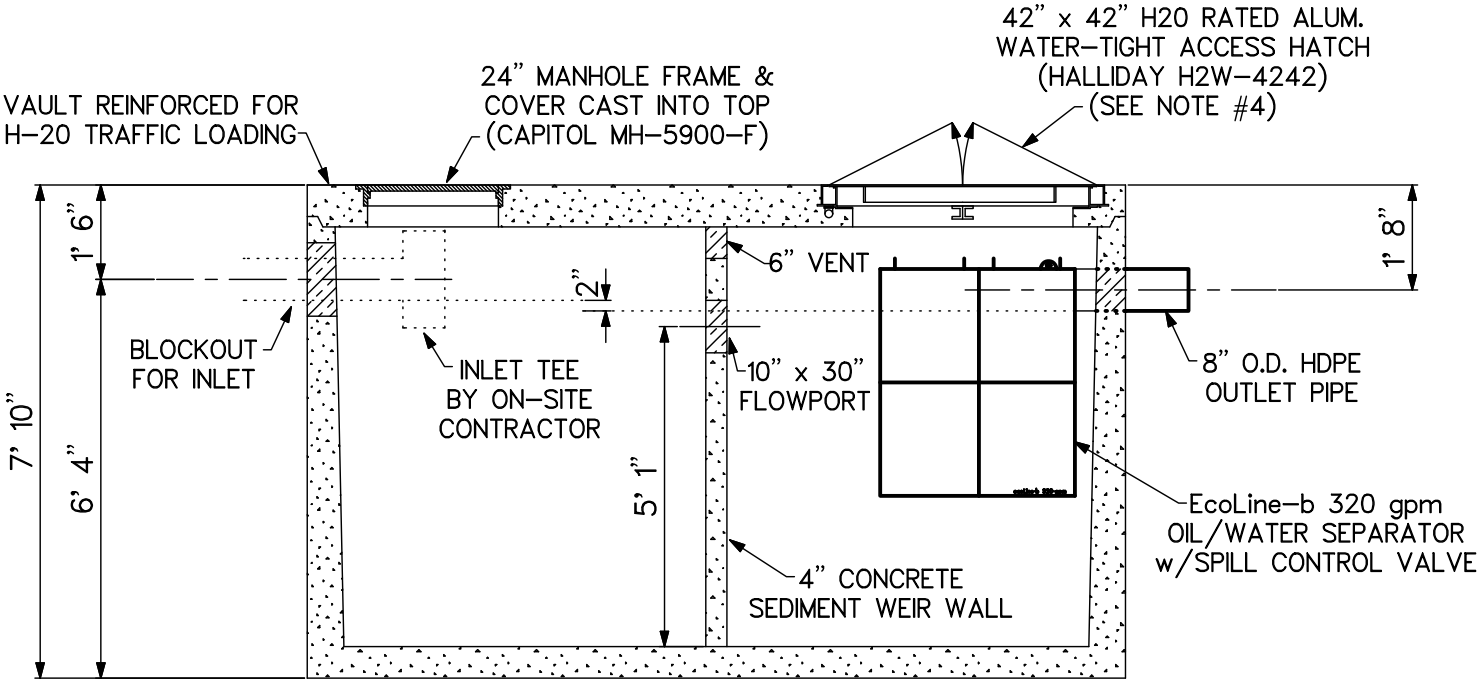
CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
(800) 648 - 2678

SCALE: NONE	DATE: 2/18/10	DWG: OWS-320 GPM TJ-6x8

320 GPM OIL/WATER SEPARATOR w/SPILL CONTROL VALVE (TJ-6x8 VAULT)



PLAN VIEW



SECTION VIEW

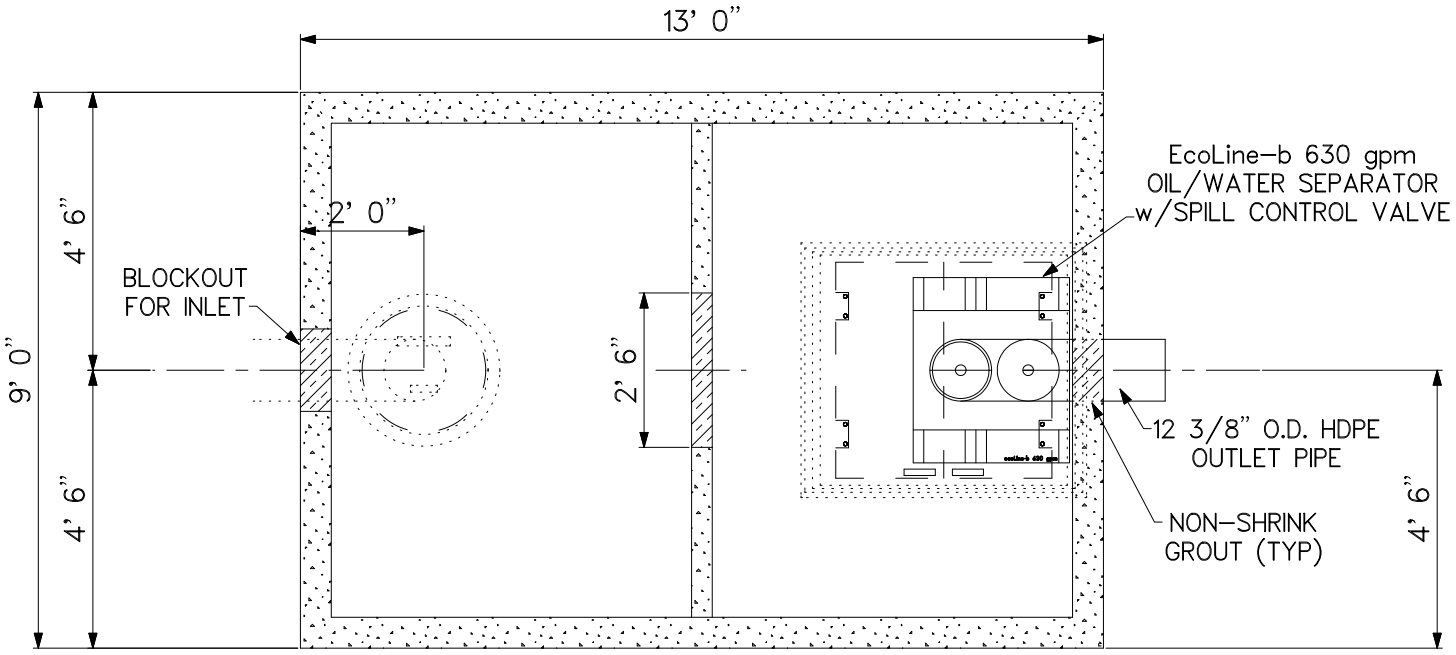
NOTES:

1. CLEAR FLOW VAULT SHIPPED WITH TOP LID LOOSE FOR INSTALLATION BY THE CONTRACTOR. HEAVIEST LIFT APPROXIMATELY 38,000 LBS.
2. EcoLine-b 320 gpm COALESCING OIL/WATER SEPARATOR w/SPILL CONTROL VALVE
3. INLET PIPING BY THE CONTRACTOR
4. TRAFFIC RATED ALUMINUM ACCESS HATCHES ARE DESIGNED FOR OFF-STREET USE IN LOW-DENSITY TRAFFIC AREAS ONLY

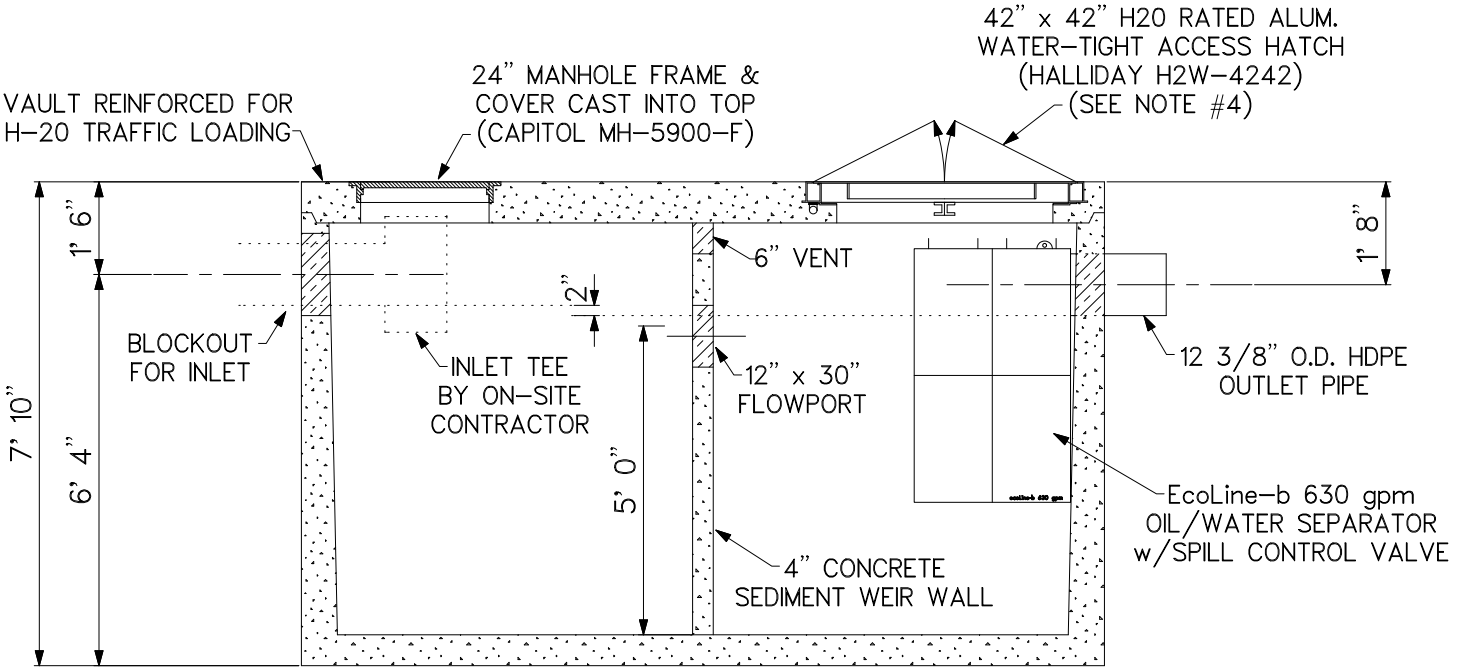
CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
(800) 648 - 2678

SCALE: NONE	DATE: 10/30/09	DWG: OWS-320 GPM TJ-4000

320 GPM OIL/WATER SEPARATOR w/SPILL CONTROL VALVE (TJ-4000)



PLAN VIEW



SECTION VIEW

NOTES:

1. CLEAR FLOW VAULT SHIPPED WITH TOP LID LOOSE FOR INSTALLATION BY THE CONTRACTOR. HEAVIEST LIFT APPROXIMATELY 38,000 LBS.
2. EcoLine-b 630 gpm COALESCING OIL/WATER SEPARATOR w/SPILL CONTROL VALVE
3. INLET PIPING BY THE CONTRACTOR
4. TRAFFIC RATED ALUMINUM ACCESS HATCHES ARE DESIGNED FOR OFF-STREET USE IN LOW-DENSITY TRAFFIC AREAS ONLY

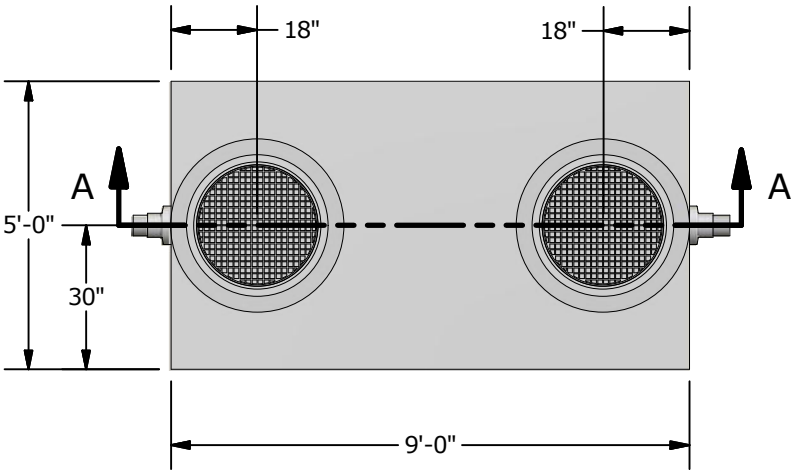
CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
(800) 648 - 2678

SCALE: NONE	DATE: 10/09/12	DWG: OWS-630 GPM TJ-4000

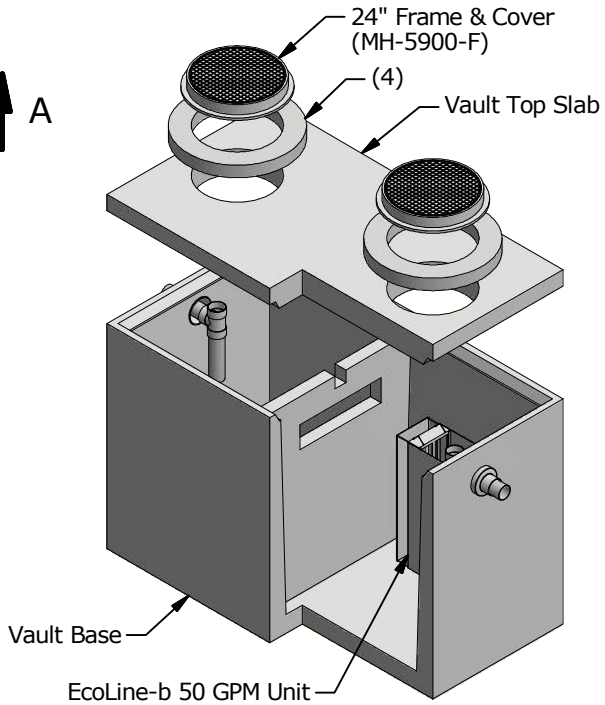
630 GPM OIL/WATER SEPARATOR w/SPILL CONTROL VALVE (TJ-4000)

CLEAR FLOW Oil/Water Separators
Harrisonburg, VA.

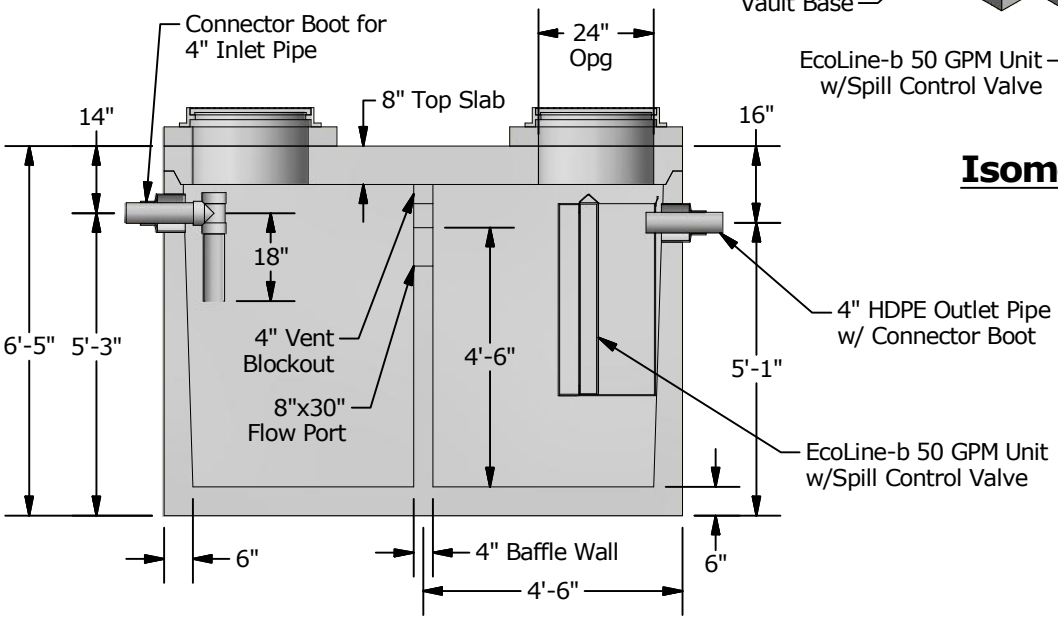
20170922TED01



Plan View



Isometric View



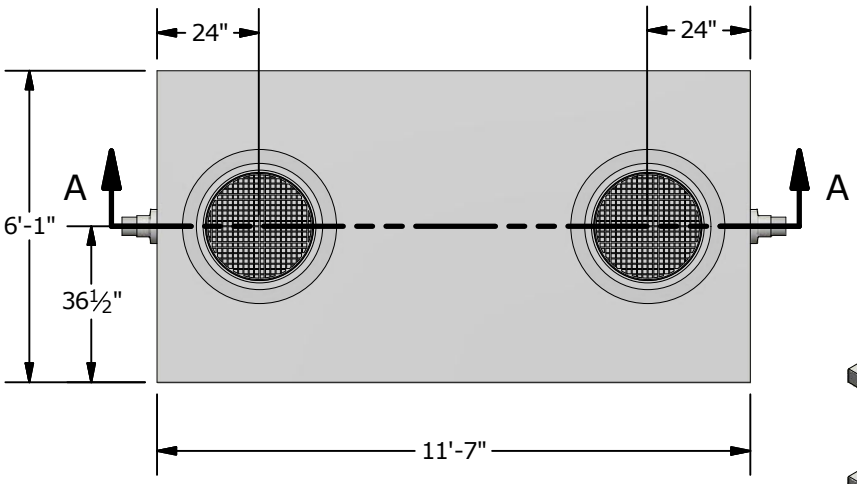
Section View A-A

Notes
1) Concrete compressive strength 5,000 psi.
2) Steel reinforcing design shall utilize grade 60 re-bar conforming to the requirements of ASTM A615 or WWR conforming to the requirements of ASTM A185 or both.
3) Weight approximately: Vault 19,000 lbs.
4) Contractor to adjust to grade as required.
5) Frame and cover supplied by CP&P, installed by contractor.
6) All interior piping and stainless steel supports provided and installed by contractor.
7) Structure designed for 8'-0" maximum cover.
8) Designed for H20 loading.

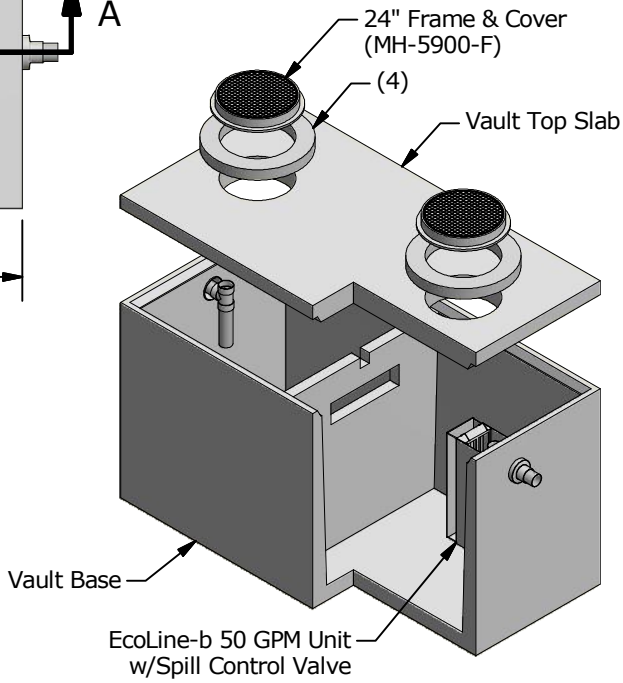
TITLE	DATE	
CLEAR FLOW 50 GPM Oil Water Separator with Spill Control Valve (TJ-1000)	09-22-17	CP&P CONCRETE PIPE & PRECAST, LLC

CLEAR FLOW Oil/Water Separators
Harrisonburg, VA.

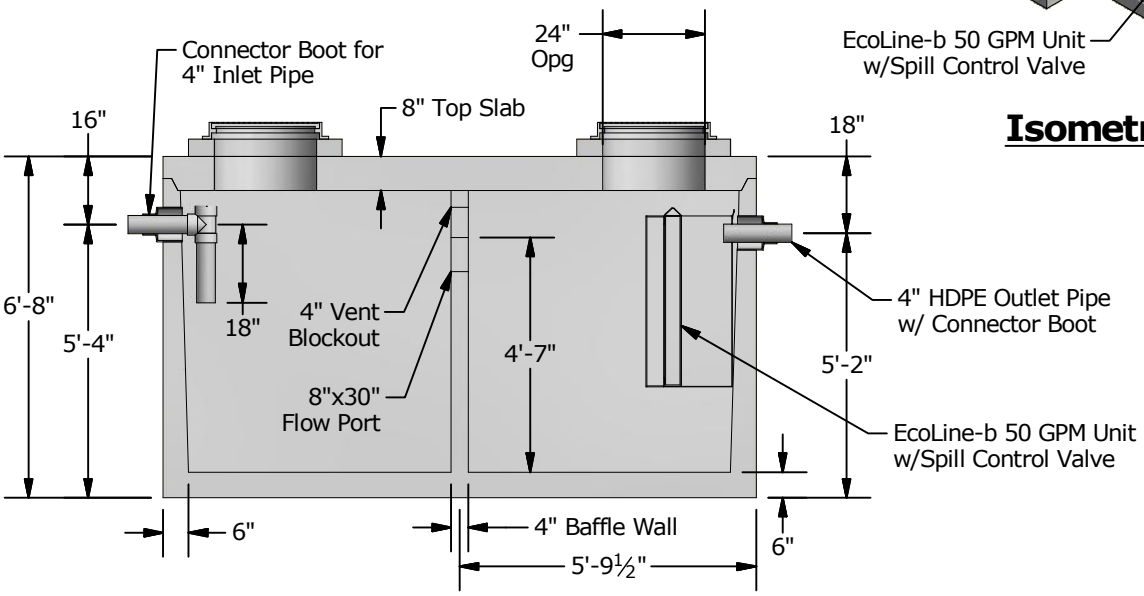
20170922TED02



Plan View



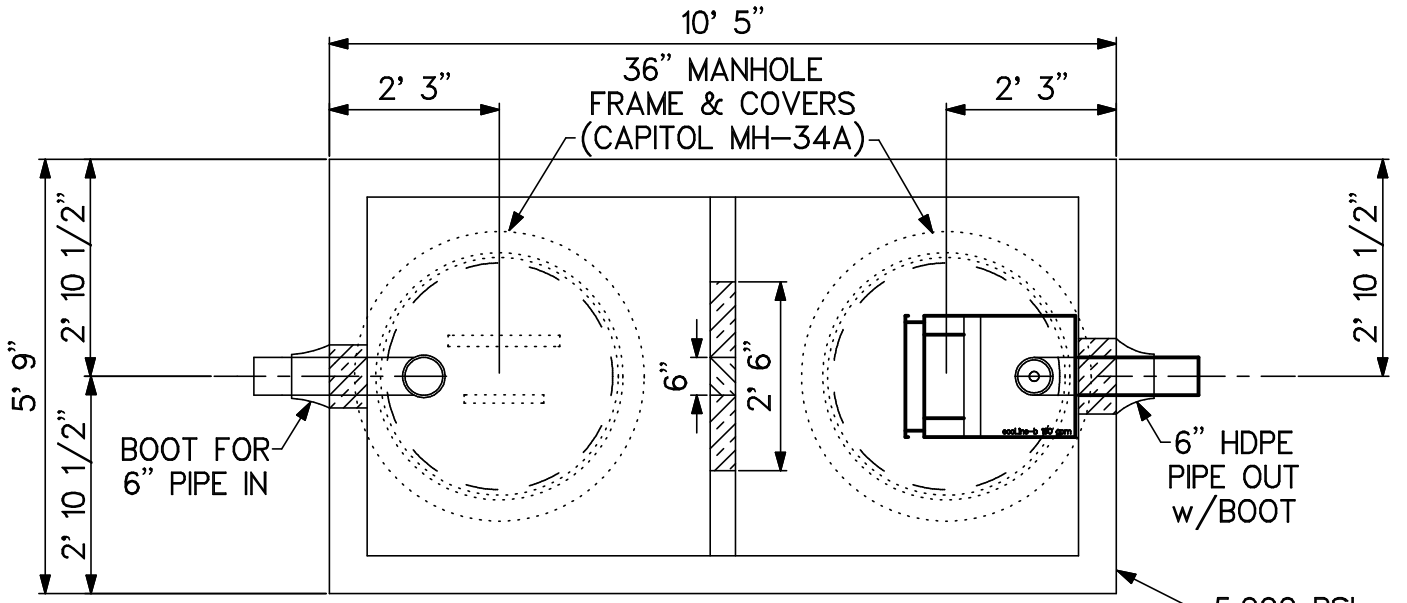
Isometric View



Section View A-A

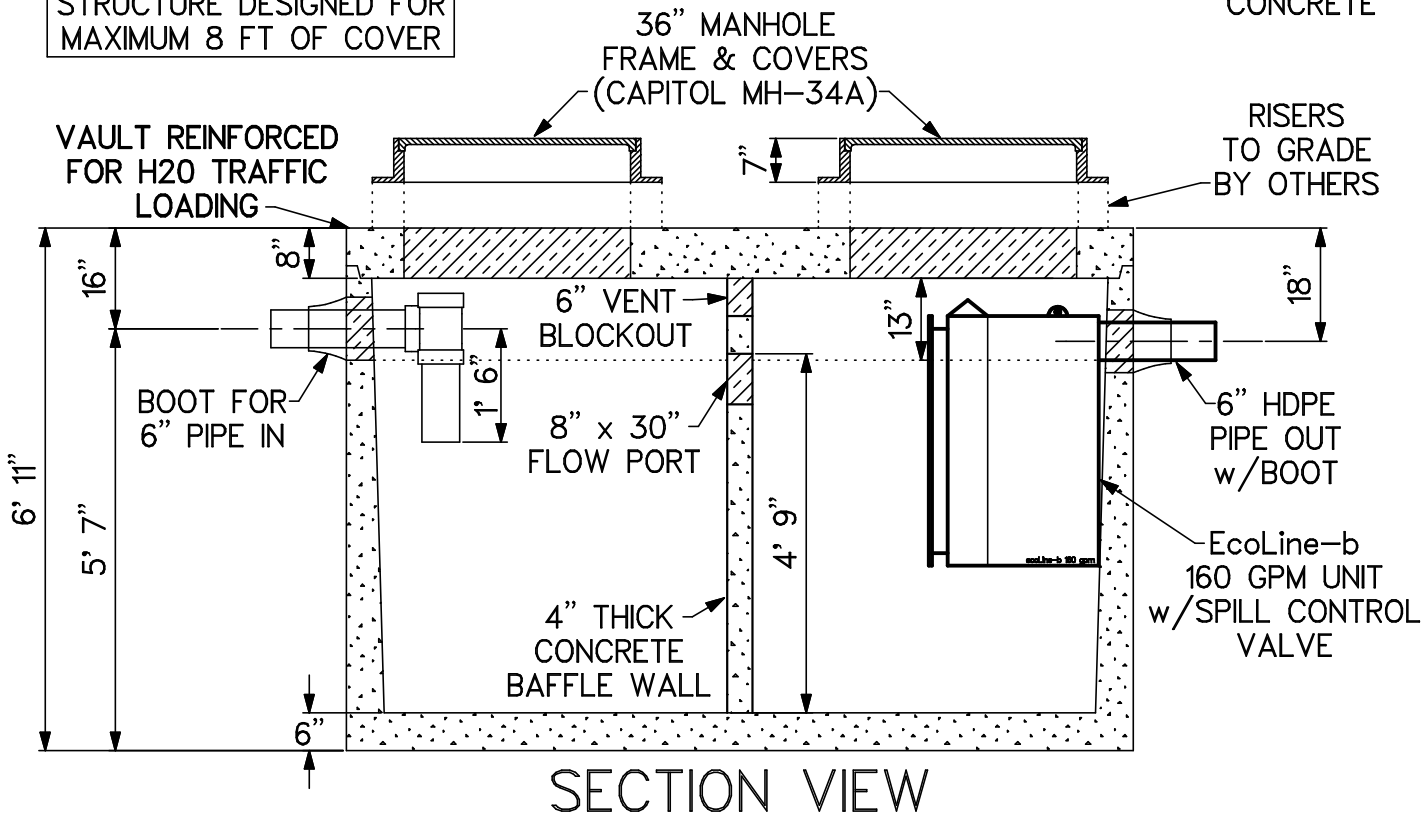
Notes
1) Concrete compressive strength 5,000 psi.
2) Steel reinforcing design shall utilize grade 60 re-bar conforming to the requirements of ASTM A615 or WWR conforming to the requirements of ASTM A185 or both.
3) Weight approximately: Vault 26,000 lbs.
4) Contractor to adjust to grade as required.
5) Frame and cover supplied by CP&P, installed by contractor.
6) All interior piping and stainless steel supports provided and installed by contractor.
7) Structure designed for 8'-0" maximum cover.
8) Designed for H20 loading.

TITLE	DATE	
CLEAR FLOW 50 GPM Oil Water Separator with Spill Control Valve (TJ-2000)	09-22-17	CP&P CONCRETE PIPE & PRECAST, LLC



PLAN VIEW

STRUCTURE DESIGNED FOR
MAXIMUM 8 FT OF COVER



SECTION VIEW

NOTES:

1. VAULT SHIPPED IN ONE PIECE WEIGHING APPROXIMATELY 25,000 LBS.
2. RISERS TO GRADE NOT INCLUDED
3. MANHOLE FRAME & COVERS SHIPPED LOOSE FOR INSTALLATION BY THE CONTRACTOR
4. INLET TEE BAFFLE PROVIDED & INSTALLED BY THE CONTRACTOR

DESIGN		6/18/14
DRAWN	STEVEN L. GORDON	
REVISIONS		DATE

CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
210 STONE SPRING ROAD
HARRISONBURG, VA 22801
(540) 434 - 6979

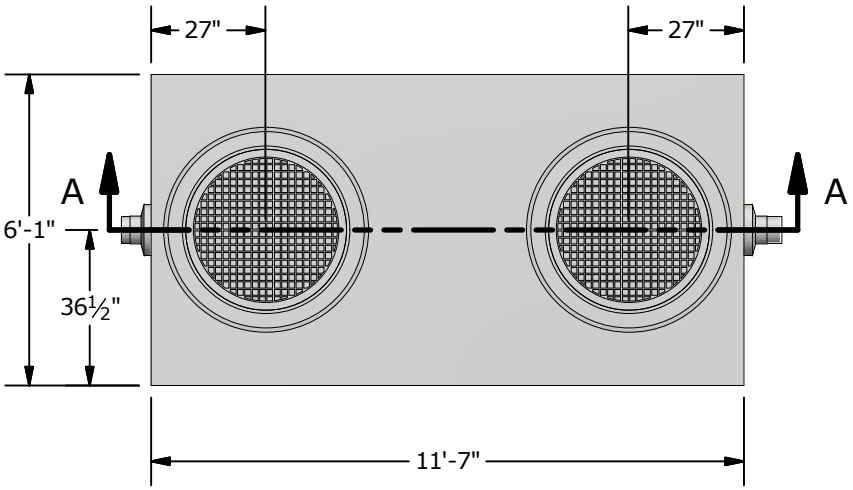
160 GPM COALESCING
OIL/WATER SEPARATOR
w/SPILL CONTROL VALVE
(1,600 GALLON STRUCTURE)

* PRINTOUT NOT TO ANY SCALE *

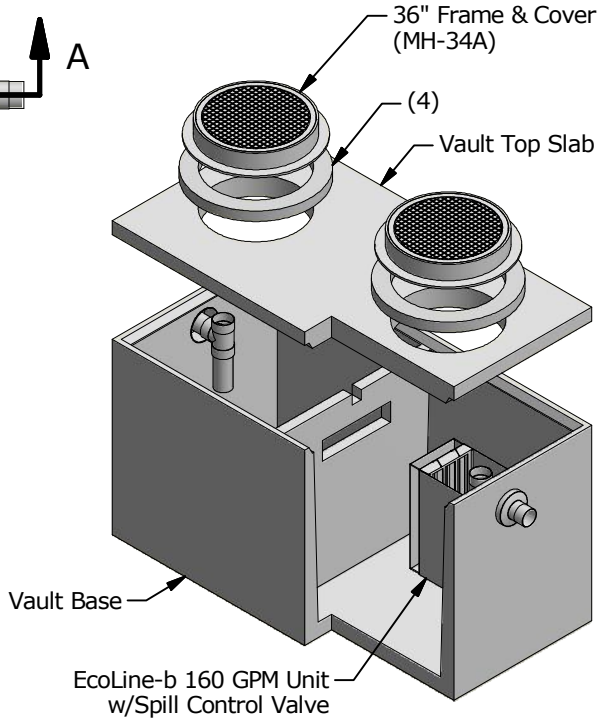
REF. NO. OWS-160 TJ-1600

CLEAR FLOW Oil/Water Separators
Harrisonburg, VA.

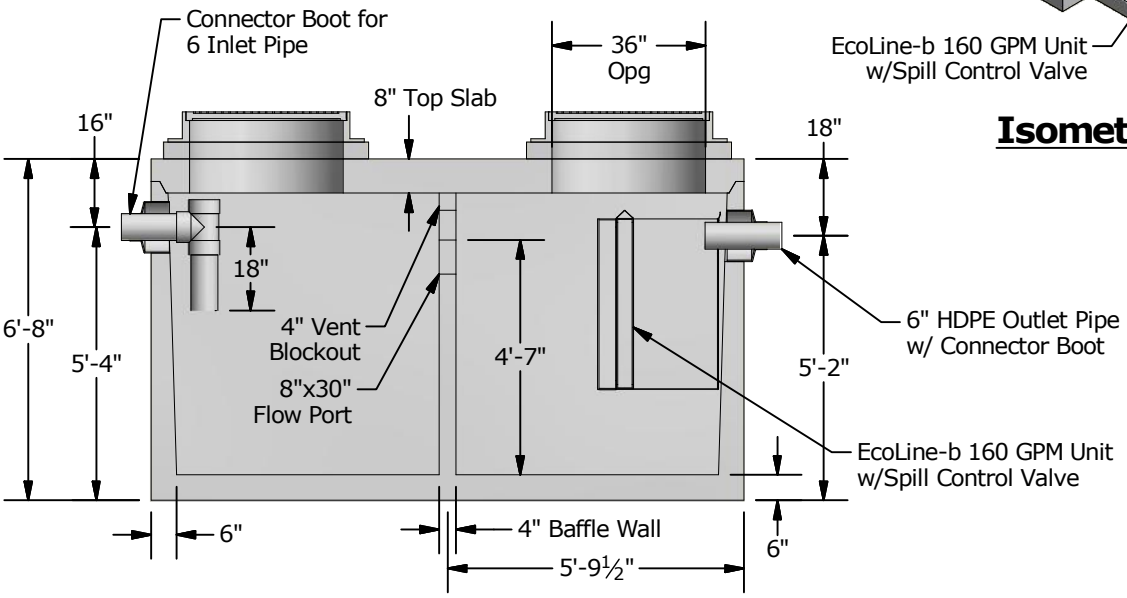
20170925TED02



Plan View



Isometric View



Section View A-A

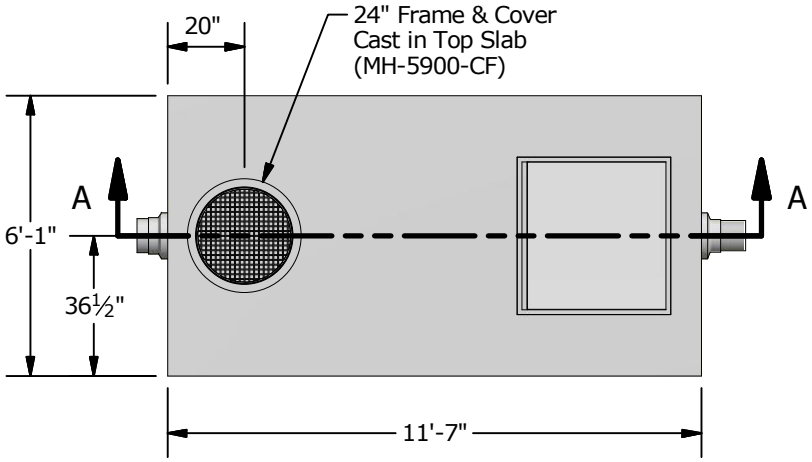
Notes

1) Concrete compressive strength 5,000 psi.
2) Steel reinforcing design shall utilize grade 60 re-bar conforming to the requirements of ASTM A615 or WWR conforming to the requirements of ASTM A185 or both.
3) Weight approximately: Vault 26,000 lbs.
4) Contractor to adjust to grade as required.
5) Frame and cover supplied by CP&P, installed by contractor.
6) All interior piping and stainless steel supports provided and installed by contractor.
7) Structure designed for 8'-0" maximum cover.
8) Designed for H20 loading.

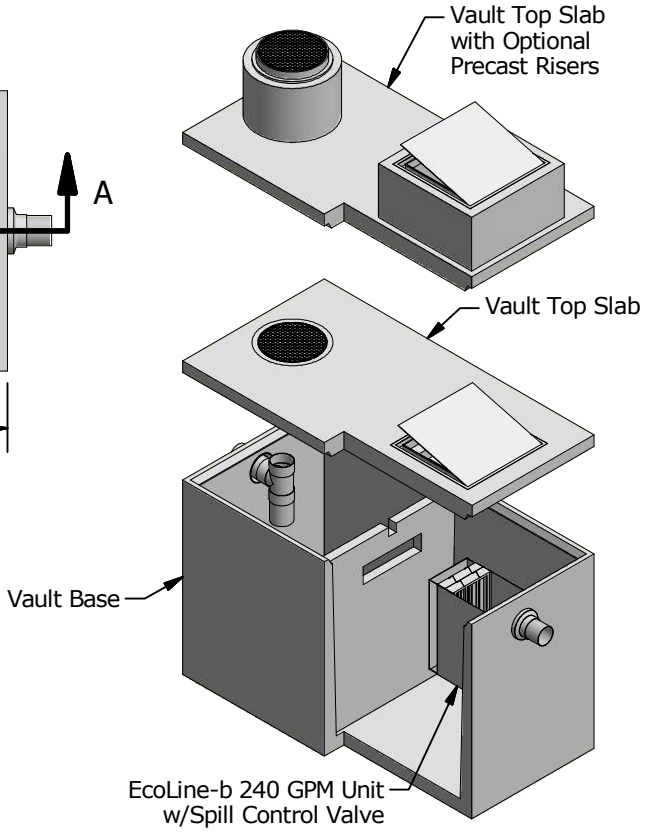
TITLE	DATE	
CLEAR FLOW 160 GPM Oil Water Separator with Spill Control Valve (TJ-2000)	09-25-17	CP&P CONCRETE PIPE & PRECAST, LLC

CLEAR FLOW Oil/Water Separators
Harrisonburg, VA.

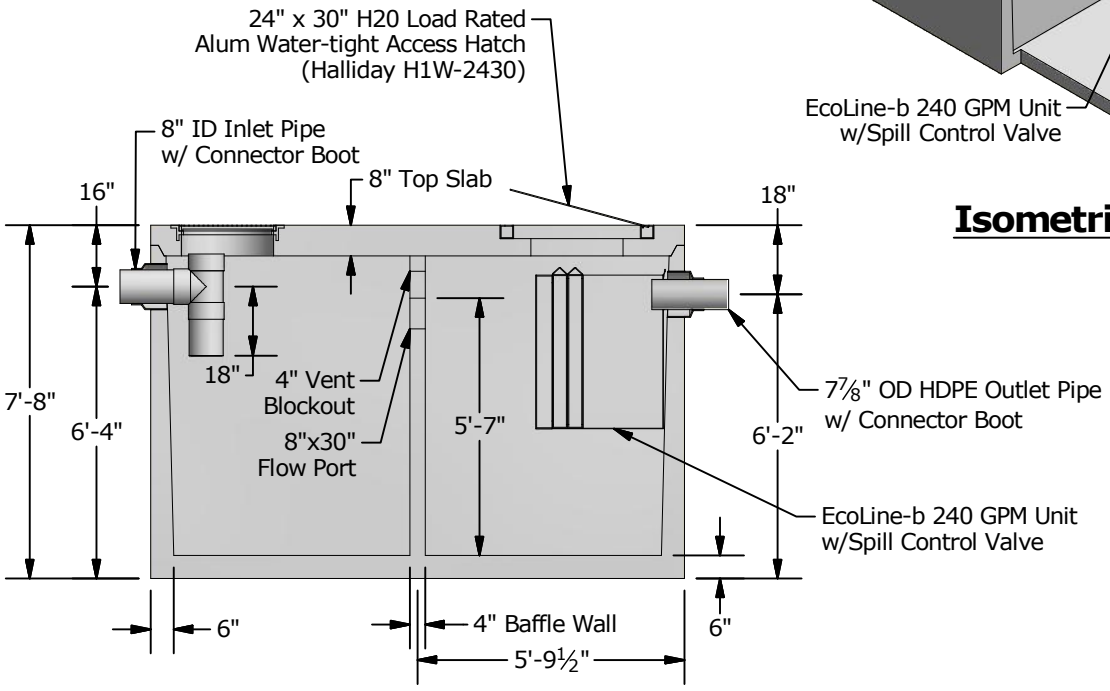
20171106TED01



Plan View



Isometric View



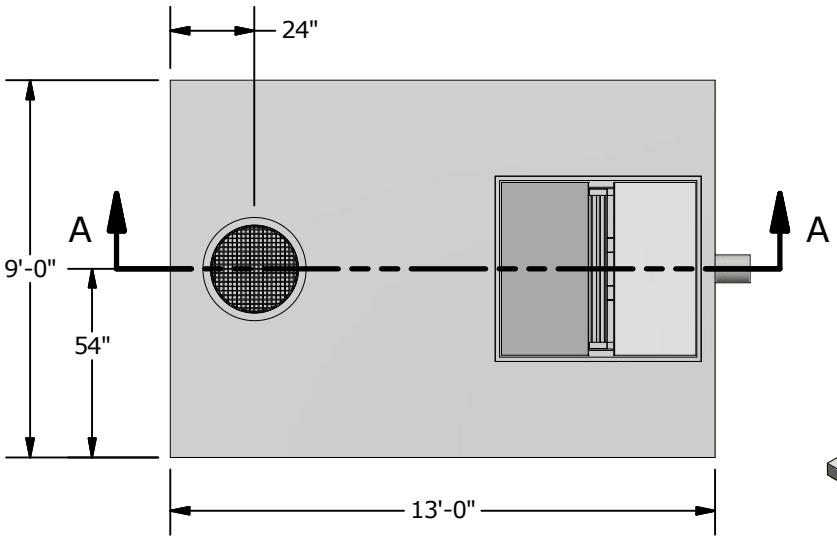
Section View A-A

Notes
1) Concrete compressive strength 5,000 psi.
2) Steel reinforcing design shall utilize grade 60 re-bar conforming to the requirements of ASTM A615 or WWR conforming to the requirements of ASTM A185 or both.
3) Weight approximately: Vault 28,000 lbs.
4) Contractor to adjust to grade as required.
5) Frame, cover and Access hatch supplied by CP&P.
6) All interior piping and stainless steel supports provided and installed by contractor.
7) Structure designed for 8'-0" maximum cover.
8) Designed for H20 loading.

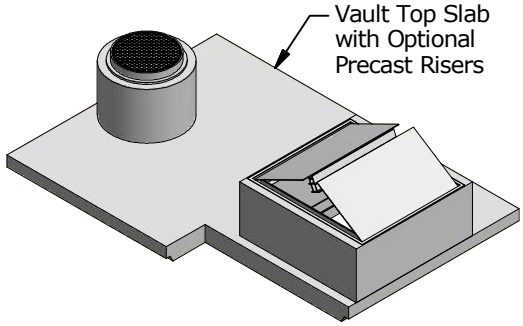
TITLE	DATE	
CLEAR FLOW 240 GPM Oil Water Separator with Spill Control Valve (TJ-2500)	11-06-17	CP&P CONCRETE PIPE & PRECAST, LLC

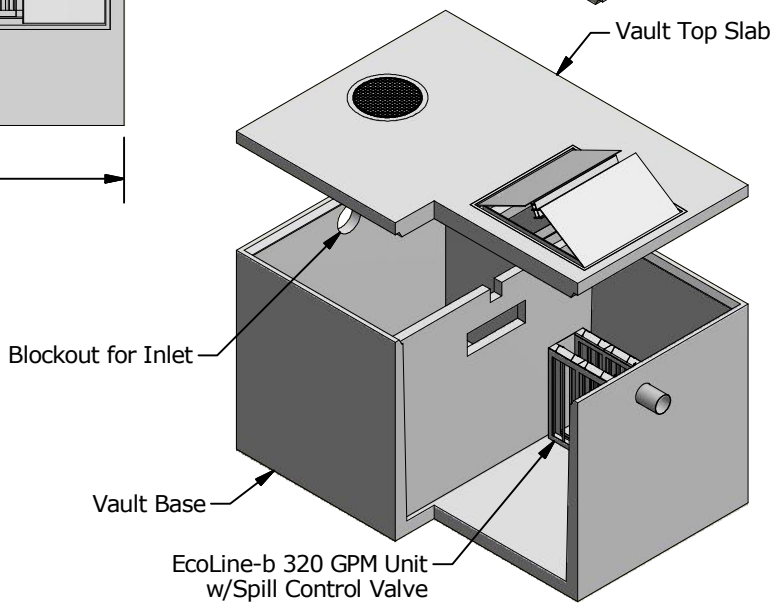
CLEAR FLOW Oil/Water Separators
Harrisonburg, VA.

20171023TED01

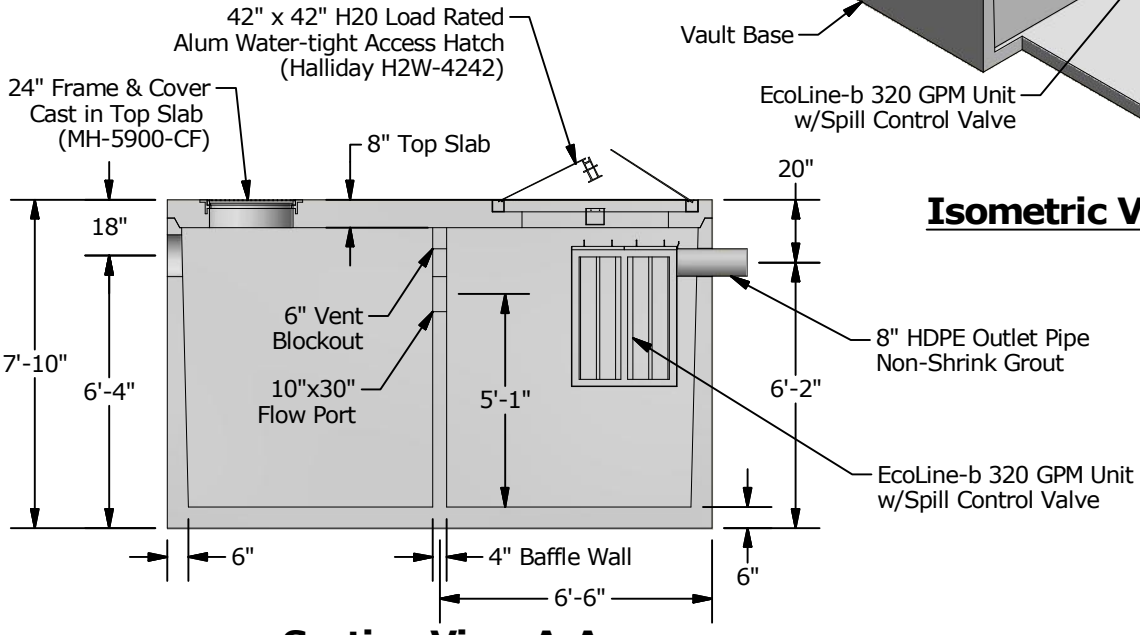


Plan View





Isometric View



Section View A-A

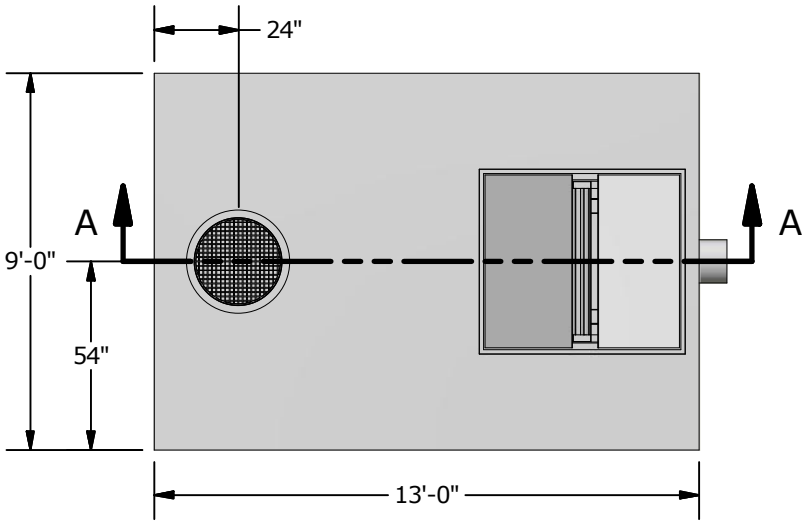
Notes

1) Concrete compressive strength 5,000 psi.
2) Steel reinforcing design shall utilize grade 60 re-bar conforming to the requirements of ASTM A615 or WWR conforming to the requirements of ASTM A185 or both.
3) Weight approximately: Vault 38,000 lbs.
4) Contractor to adjust to grade as required.
5) Frame, cover and Access hatch supplied by CP&P.
6) All interior piping and stainless steel supports provided and installed by contractor.
7) Vault Designed for H20 loading.
8) Traffic rated aluminum hatches are designed for off-street use in low-density traffic areas only.

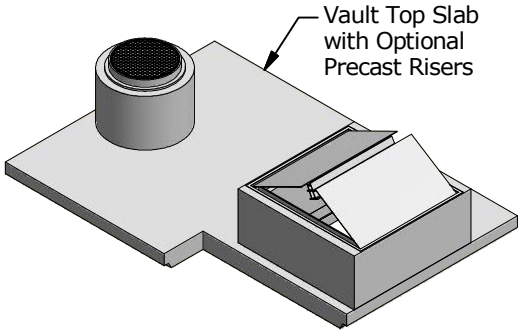
TITLE	DATE	
CLEAR FLOW 320 GPM Oil Water Separator with Spill Control Valve (TJ-4000)	09-26-17	CP&P CONCRETE PIPE & PRECAST, LLC

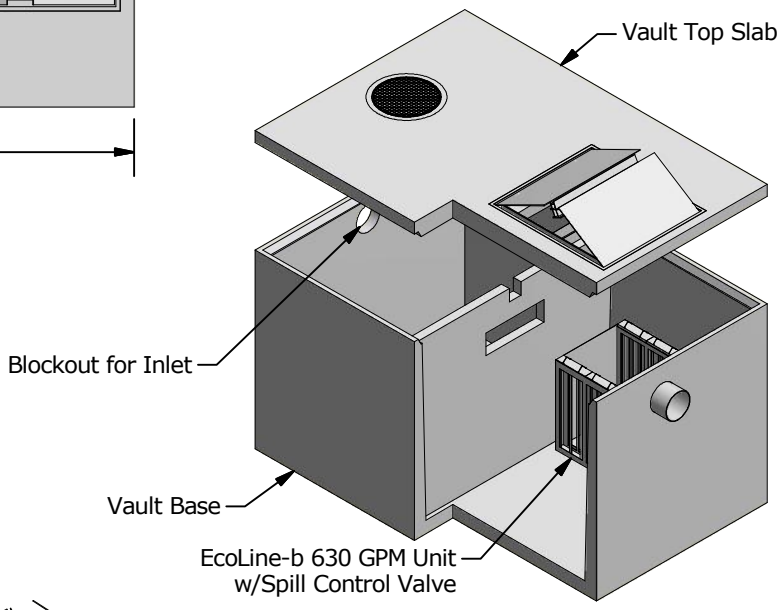
CLEAR FLOW Oil/Water Separators
Harrisonburg, VA.

20171023TED02

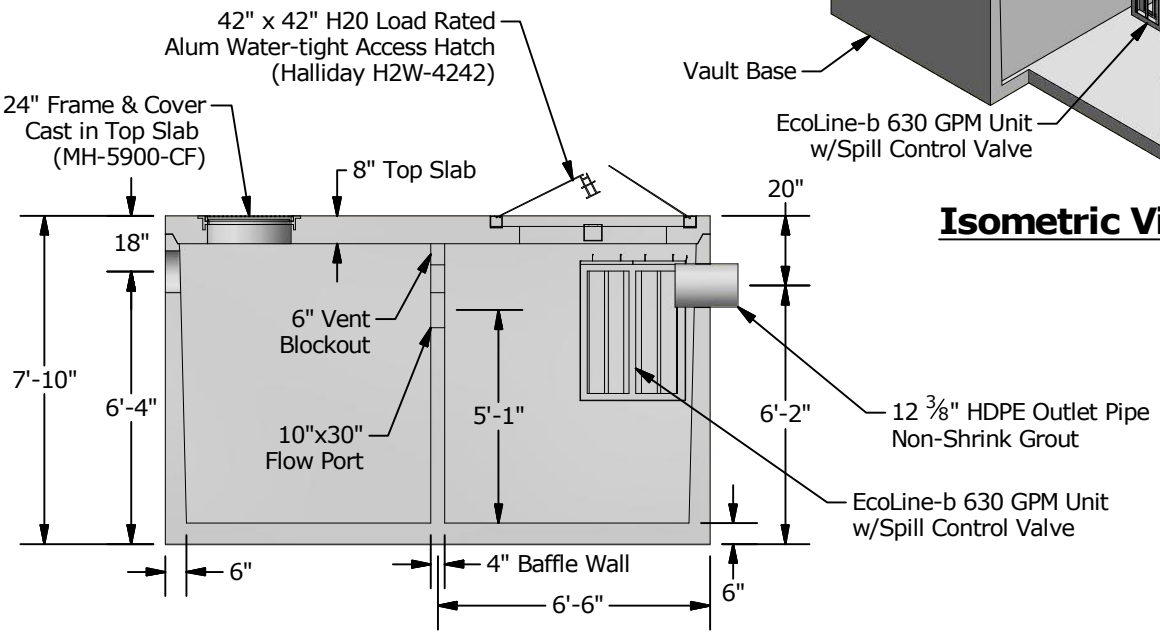


Plan View





Isometric View

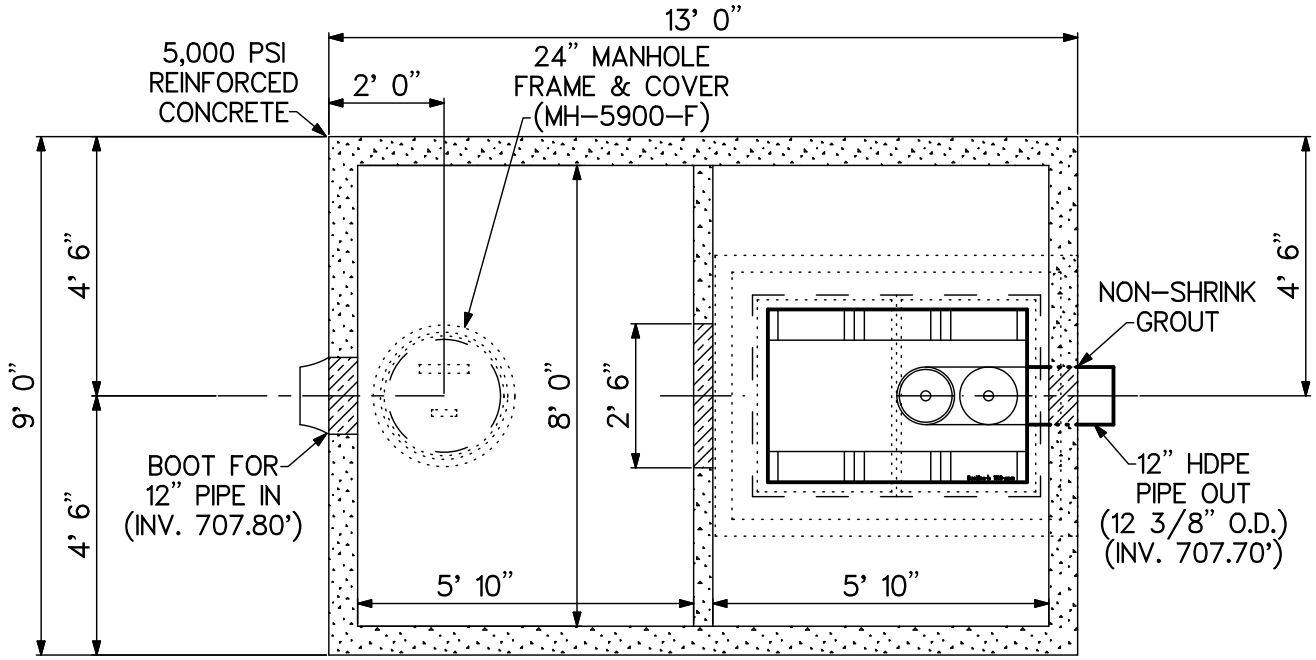


Section View A-A

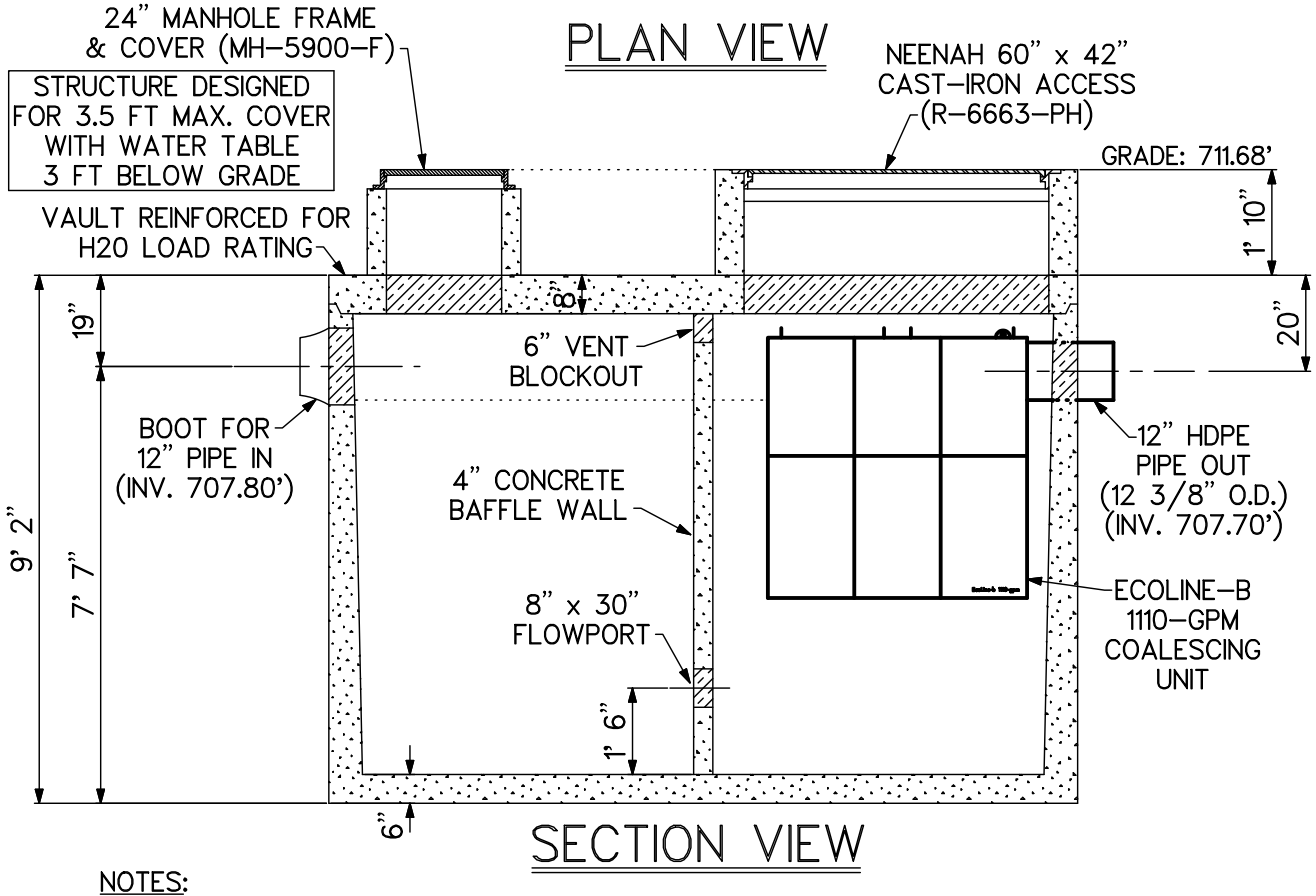
Notes

1) Concrete compressive strength 5,000 psi.
2) Steel reinforcing design shall utilize grade 60 re-bar conforming to the requirements of ASTM A615 or WWR conforming to the requirements of ASTM A185 or both.
3) Weight approximately: Vault 38,000 lbs.
4) Contractor to adjust to grade as required.
5) Frame, cover and Access hatch supplied by CP&P.
6) All interior piping and stainless steel supports provided and installed by contractor.
7) Vault Designed for H20 loading.
8) Traffic rated aluminum hatches are designed for off-street use in low-density traffic areas only.

TITLE	DATE	
CLEAR FLOW 630 GPM Oil Water Separator with Spill Control Valve (TJ-4000)	09-26-17	CP&P CONCRETE PIPE & PRECAST, LLC



PLAN VIEW



SECTION VIEW

NOTES:

1. CLEAR FLOW VAULT SHIPPED IN SECTIONS TO BE ASSEMBLED BY THE CONTRACTOR. HEAVIEST LIFT WEIGHING APPROXIMATELY 48,000 LBS.
2. MANHOLE FRAME & COVER SHIPPED LOOSE FOR INSTALLATION BY THE CONTRACTOR

DESIGN		
DRAWN	VITALIY S. KIRILYUK	
REVISIONS		DATE

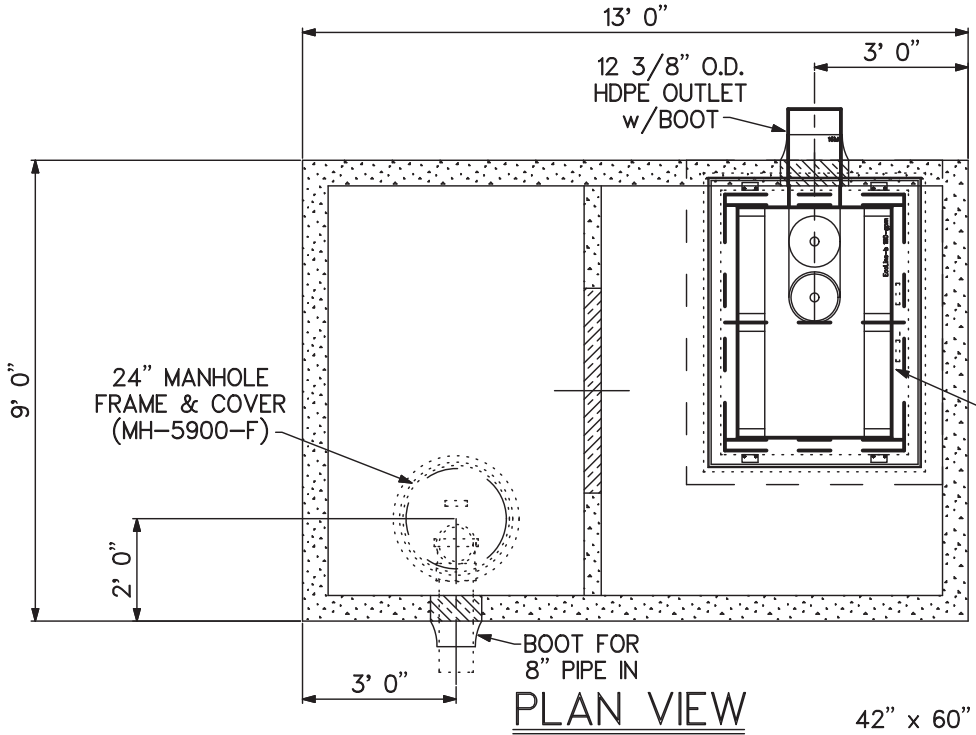
* PRINTOUT NOT TO ANY SCALE *

CLEAR FLOW

BY CP&P

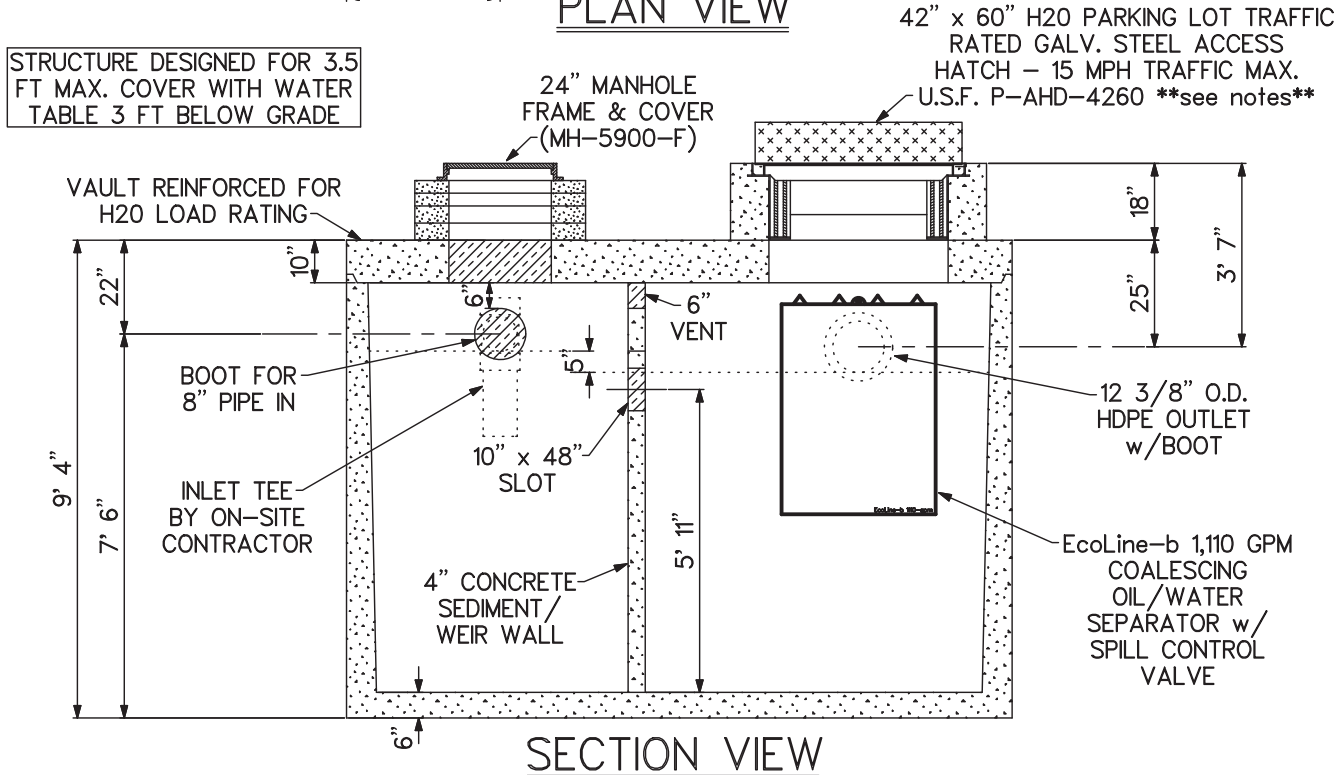
CONCRETE PIPE & PRECAST, LLC
210 STONE SPRING ROAD
HARRISONBURG, VA 22801
(540) 434 - 6979

REF. NO. OWS-1100GPM



PLAN VIEW

STRUCTURE DESIGNED FOR 3.5 FT MAX. COVER WITH WATER TABLE 3 FT BELOW GRADE



SECTION VIEW

NOTES:

1. VAULT SHIPPED WITH LID LOOSE FOR INSTALLATION BY THE CONTRACTOR. HEAVIEST LIFT APPROX. 48,000 LBS.
2. EcoLine-b 1,110 gpm COALESCING OIL/WATER SEPARATOR w/SPILL CONTROL VALVE
3. INLET PIPING BY THE CONTRACTOR
4. ACCESS HATCH IS RATED FOR H-20 TRAFFIC LOADING IN A PARKING LOT SETTING WHERE POSTED SPEED LIMIT IS 15 MPH OR LESS. HATCH HAS (4) FOUR BOLTS PER DOOR. ALL BOLTS MUST BE IN PLACE WHEN HATCH IS EXPOSED TO TRAFFIC

DESIGN	[redacted]	
DRAWN	STEVEN L. GORDON	
REVISIONS		DATE

* PRINTOUT NOT TO ANY SCALE *

CLEAR FLOW
BY CP&P
CONCRETE PIPE & PRECAST, LLC
210 STONE SPRING ROAD
HARRISONBURG, VA 22801
(540) 434 - 6979

REF. NO. P-123957-S

LOUDOUN COUNTY, VIRGINIA

BRAMBLETON BRANDT COMM. CENTER PH. II 1,110 GPM OIL/ WATER SEPARATOR

TOTAL DEVELOPMENT SOLUTIONS