

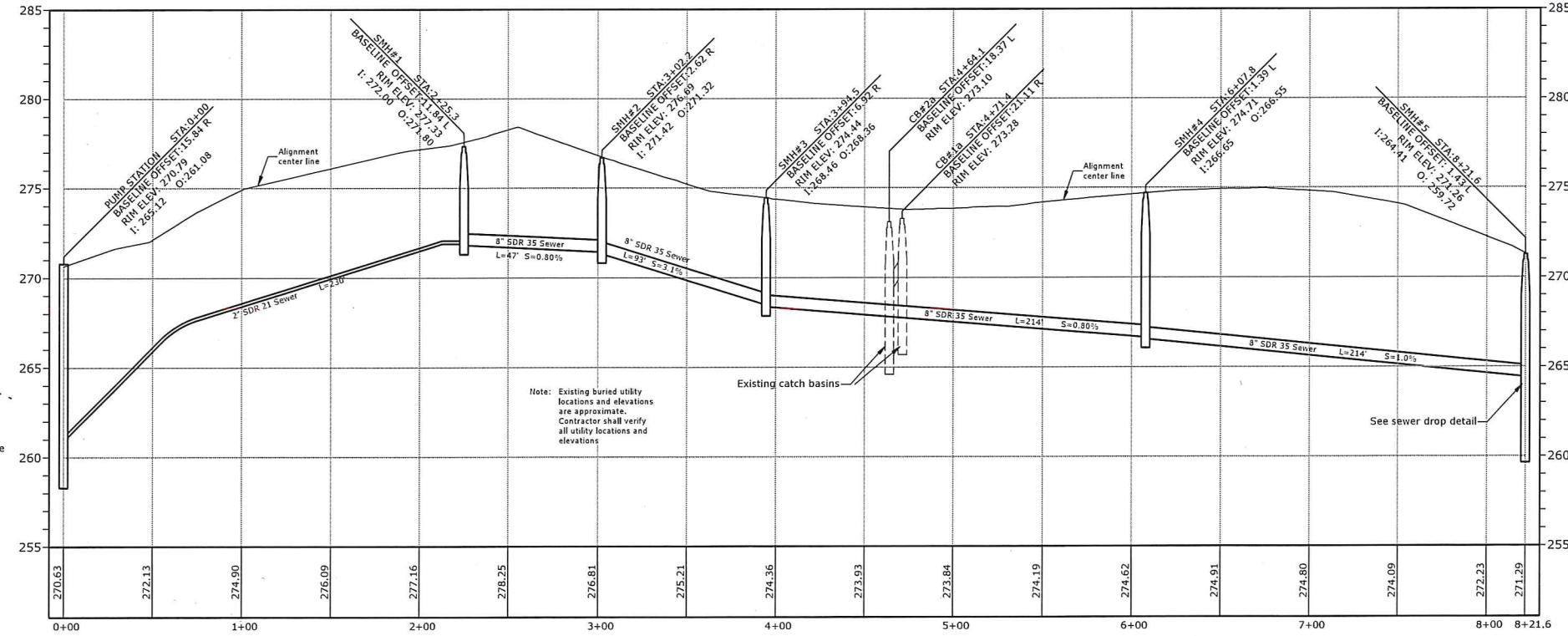
SEWER EXTENSION SCHEDULE

Structure	Rim Elevation	Invert In	Invert Out
Pump Station	270.79	265.07	261.08
SMH#1	277.33	272.00	271.80
SMH#2	276.69	271.42	271.32
SMH#3	274.44	268.46	268.36
SMH#4	274.71	266.65	266.55
SMH#5	271.26	264.41	259.72

- EROSION & SEDIMENT CONTROL NOTES**
- Sediment barriers are to be installed where shown on this plan. The contractor and the owner are responsible for the proper maintenance of the sediment barriers and to identify and correct all sources of erosion. Extra sediment barrier materials are to be stored on site in order to quickly repair erosion prone areas. Periodic maintenance of the erosion control structures is required in order to insure the proper protection of the resource areas.
 - Rough grading and pavement construction are to be confined to areas as shown on these plans. Any stockpiled material that is subject to erosion shall be protected at its base on the down-slope side with a silt fence.
 - Temporary stabilization of disturbed areas is required to limit erosion toward abutting properties and public ways. All graded slopes are to be stabilized on a daily basis with special care taken to avoid routing rainfall through gullies toward the resource areas. Areas of erosion are to be repaired on a daily basis.
 - The contractor is to use proper judgment relative to construction practices during adverse weather conditions or periods of high groundwater. No work is to be performed near the wetland areas during periods of heavy rainfall. Inspection is required after more than 1/2" of rainfall in 24 hours.
 - All graded areas are to be loamed and seeded as soon as possible in order to insure the rapid stabilization of the erosion prone areas. A grass seed mixture of 20% Red Top, 60% Chewings Fescue and 20% Kentucky Bluegrass is recommended. "Hydroseed" with high fiber content.
 - The Sediment barriers shall remain in place until all upgradient areas have been stabilized.
 - During periods of heavy rainfall, it will be expected to experience erosion of the unstabilized slopes. Immediate attention to the maintenance of these eroded areas will further insure the successful stabilization of the exposed slopes while limiting the impacts to nearby resource areas.
 - See the Construction Stormwater Pollution Prevention Plan for additional practices and controls.

- GENERAL NOTES**
- All elevations refer to NAVD 1988 datum.
 - Place 4" Loam and seed in all disturbed areas of the project not otherwise improved.
 - All trenches for utilities shall be backfilled with controlled density fill in 3' max lifts.
 - The pavement patch shall match the existing traveled way elevation at a minimum width of 8'.
 - The thickness of the pavement for the trench patch shall match the existing asphalt thickness on Grove Street. At a minimum the trench patch shall be installed in two lifts for a total thickness of 4".
 - All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc., These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and 811, "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
 - It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
 - All work shall conform to the Town of Franklin, Massachusetts construction standards, and TR-16, as applicable.
 - Where any utility installation detail conflicts with the Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation, the Town Standards shall govern.
 - All work is to be performed in accordance with O.S.H.A. requirements.
 - Contractor is responsible for all excavation to be performed in accordance with current O.S.H.A. standards, as well as additional provisions to assure stability of contiguous structures, as field conditions dictate.
 - No stumps or debris shall be buried on this site.
 - Contact the Franklin DPW and/or Town Engineer, as required, 48 hours prior to construction to coordinate inspections of the sewer connections prior to backfilling trenches.
 - The DPW must be notified when the space is occupied to determine if there is any process coming into the sewer system that should be permitted as an industry.
 - The wastewater line and pumps within the property will be the responsibility of the building owner.
 - See the Wastewater Division for Sewer Permits.
 - See the Operations Supervisor for the Street Opening permit requirements.
 - An as-built plan is required upon completion of work.
 - All catch basins within the R.O.W. and adjacent to construction activities shall be fitted with catch basin filter bags.

SEWER EXTENSION PROFILE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



Sewer Extension Plan

PROPOSED SANITARY SEWER PLAN VIEW

HENNEP CULTIVATION & PRODUCTION FACILITY

located at
160 GROVE STREET
Franklin, MA

Owned By
HENNEP PROPERTIES, LLC
200 Brookline Ave, #508
Boston, MA

Prepared for
HENNEP CULTIVATION, LLC
1330 Boylston St Unit 202
Boston, MA 02215

Scale: 1" = 40'

LEGEND

—○—○—	SW STONE WALL
○	IPF IRON PIN FOUND
⊙	DHF DRILL HOLE FOUND
⊠	BOUND TO BE SET
⊙	BOUND FOUND
⊙	DRAIN MANHOLE
⊙	CATCH BASIN
⊙	UTILITY POLE
—100—	EXISTING CONTOUR
—100—	PROPOSED SPOT GRADE
—581.5	LIGHT - WALL MOUNTED
—581.5	LIGHT - POLE MOUNTED
—	SIGN
—	ETC - ELECT., TEL. & CABLE
—W—	WATER LINE
—S—	SEWER LINE
—G—	GAS LINE
—OHW—	OVERHEAD WIRE
—	FENCE
—	GUARD RAIL
x WF-#	WETLAND FLAG

Norman G. Hill, PE
Date: 3/7/2023
PE #31887

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144
www.landplanninginc.com

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LEGEND

- STONE WALL
- IPF IRON PIN FOUND
- DHF DRILL HOLE FOUND
- BOUND TO BE SET
- BOUND FOUND
- DRAIN MANHOLE
- CATCH BASIN
- UTILITY POLE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- 581x5 PROPOSED SPOT GRADE
- ▲ LIGHT - WALL MOUNTED
- ▲ LIGHT - POLE MOUNTED
- ▲ SIGH
- ETC., TEL. & CABLE
- WATER LINE
- SEWER LINE
- GAS LINE
- OVERHEAD WIRE
- FENCE
- GUARD RAIL
- x WF-# WETLAND FLAG

Norman G. Hill, PE
Date: 3/12/2023
PE #31887

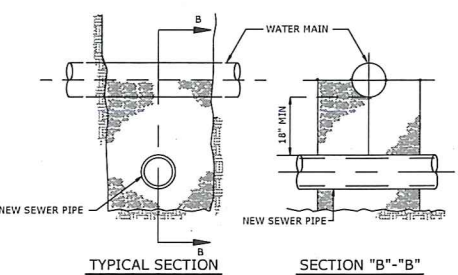
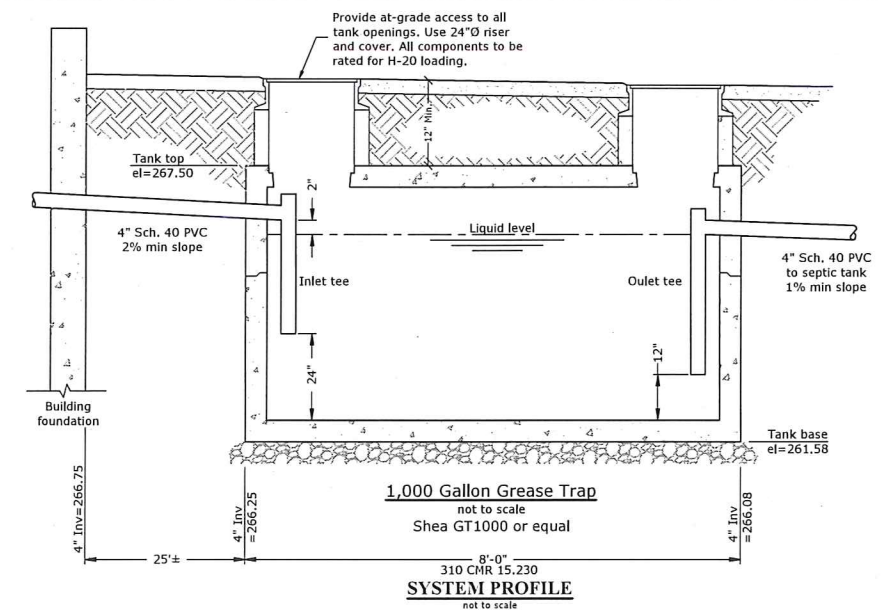
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Scale: 1" = 40'
Date: Jan. 12, 2023
Job No. B2661
Sheet No. 2



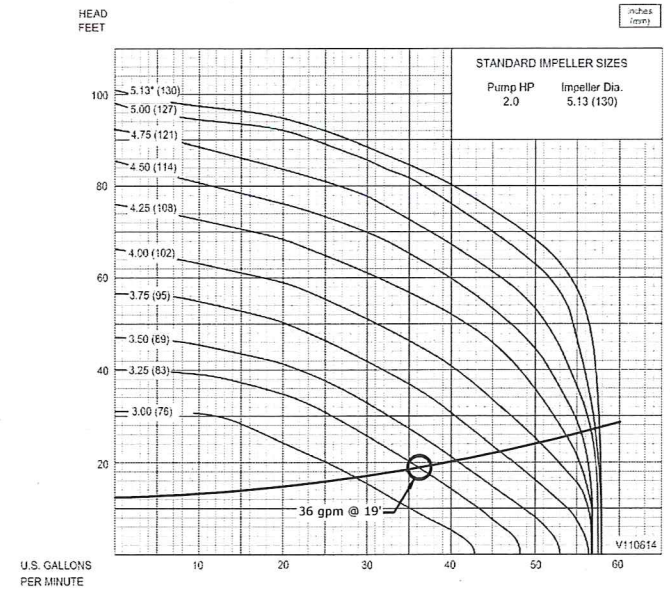
Design Flow Calculation:
Type of facility: Warehouse/Industrial
Number of employees: 65 Maximum
Daily flow rate: 15 gpd/employee
Domestic design flow: 975 gpd
Irrigation flow expected: *1,850 gpd
Irrigation design flow: **2,000 gpd
Kitchen flow: 500 gpd
Total flow: 3,475 gpd
Total design flow: 4,000 gpd
Peak flow factor: 3
Peak inflow: 4,000 gpd = 3 gpm
Peak flow design: (3 gpm)3 = 9 gpm

* Total irrigation flow rate as provided by Hennep Properties, LLC.
** Expected flow to municipal sewer system (±10%) as provided by Hennep Properties, LLC.

Pump Cycle Requirements:
Daily flow: 4,000 gpd
Pump chamber (vol./ft.): 94 gal/ft
Level control difference: 260.29 ft-259.62 ft= 0.67 ft
Gallons per cycle: (0.67 ft)(94 gal/ft)=63 gal/cycle
Average residence time: 63 gal/cycle = 0.01575 days = 22.7 min
4,000 gpd
Cycles per day: 4,000 gpd = 63 cycles/day
63 gal

Pump Station Reserve Capacity:
Storage depth: 265.12 - 261.12 = 4 ft
Storage capacity: (4 ft)(94 gal/ft) = 376 gal
Storage time: (376 gal) = 0.094 days = 2.3 hours
4,000 gpd

2.3 hours < 24 hours, standby power is required



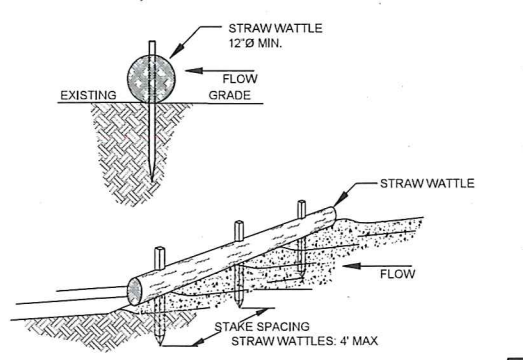
Pump Station Analysis
Location: 160 Grove Street, Franklin MA

Elevation Data		Pipe Data	
Gravity sewer inlet	265.12	Suction diameter	0
Force main discharge	272.00	Suction pipe length	0
Pump station slab	270.79	Eq. length of suction fittings	0
High water alarm	261.12	Total eq. suction length	0
High level on	260.62	Force main diameter	2
Low level on	260.29	Force main length	230
Pump off	259.62	Eq. length of main fittings	22
Center of pump	259.62	Total eq. main length	252
Base of wet well	258.79		

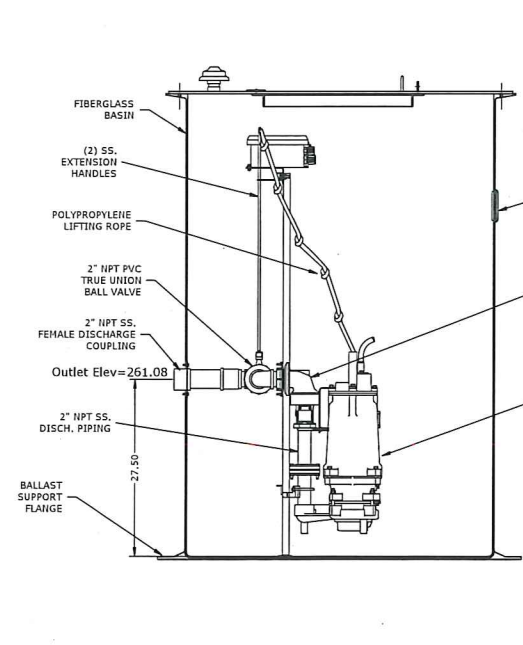
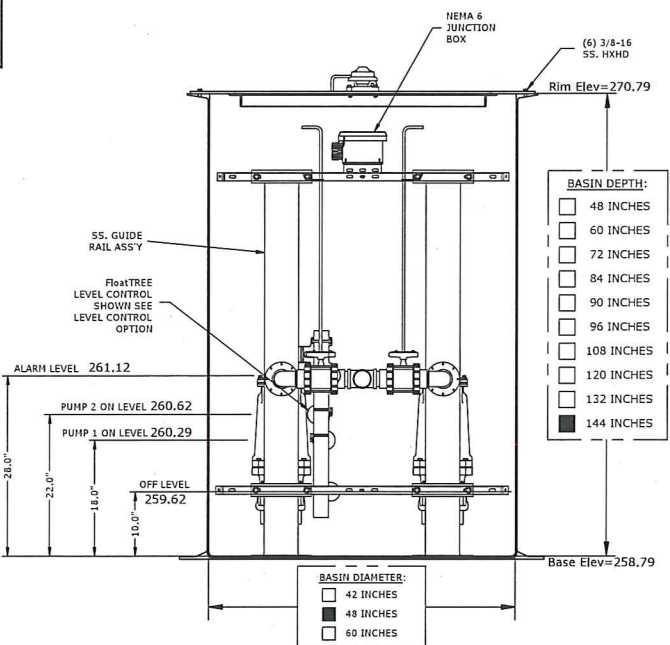
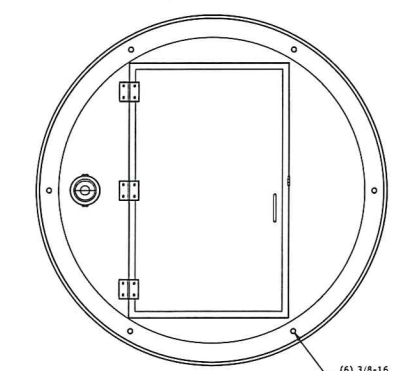
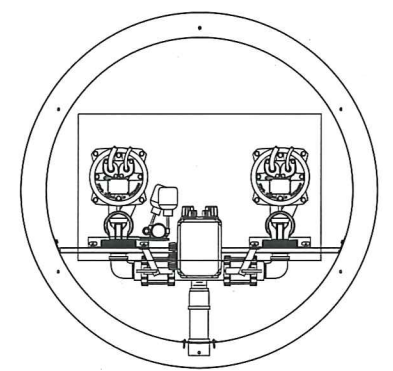
Calculations
Static suction lift = Center of pump - Pump off = 0.00 ft
Suction head loss at 36 gpm = 0.00 ft
Dynamic suction lift = Static suction lift + Suction head loss = 0.00 ft
Static discharge head = Force main discharge - Center of pump = 12.38 ft
Dynamic discharge head = Static discharge head + discharge head loss = 19.18 ft
Total Dynamic Head = Dynamic suction lift + Dynamic discharge head = 19.18 ft

Pump Requirements
Pump model Barnes SGV³
Impeller diameter 3.25 inches
Pump speed 3450 RPM
Motor 2 HP
Total dynamic head 19.18 ft
Pump discharge @ TDH 36 gal/min

Notes: Flooded suction - No suction head loss



NOTES:
1. INSPECT AND REPAIR STRAW WATTLE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SITE CONTRACTOR SHALL INSTALL A SILT FENCE ALONG THE DOWNHILL SIDE OF STRAW WATTLE AS FIELD CONDITIONS DICTATE.



- 4" PVC Sch. 40-80
- 4" PVC SDR-35
- 4" C.I. CAULK HUB
- 6" PVC Sch. 40-80
- 6" C.I. CAULK HUB
- 8" C.I. CAULK HUB

INLET PIPE FITTING SHIPPED LOOSE FOR FIELD INSTALLATION
6" PVC Inv=265.12 (Field verify)

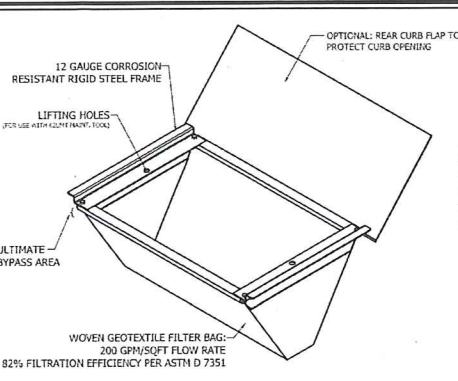
PUMP AND REMOVABLE DISCHARGE PIPING SHIPPED SEPARATE
3.5, 7.5 HP SGV SHOWN
Pumps to be Barnes SGV³ Model #SGVF2022L with 2 HP motor and 3.25" impeller. To be supplied by D.L. Thurrott, Inc.

- NOTES:
1) ALL DIMENSIONS TO BE ± 1/4" UNLESS OTHERWISE SPECIFIED.
2) INTERMEDIATE SUPPORT SUPPLIED FOR DEPTHS 12 FT. AND DEEPER.
3) CONSULT FACTORY FOR OTHER DEPTHS.

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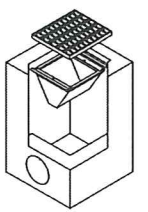
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WWW.BARNESPUMPS.COM SHEET 1 OF 1

TITLE: DUPLEX, JBOX, 3,5,7.5 HP SGV
CAGE NO: 96046
DWG NO: CD116911
REV: P1
CRANE PUMPS & SYSTEMS
BARNES PRESSURE SYSTEMS



FLEXSTORM CATCH-IT® LITE

- Installation Instructions:**
1. Remove grate from the drainage structure
 2. Clean stone and dirt from ledge (lip) of drainage structure
 3. Drop the FLEXSTORM inlet filter through the clear opening such that the hangers rest firmly on the lip of the structure.
 4. Replace the grate and confirm it is not elevated more than 1/8", the thickness of the steel hangers.

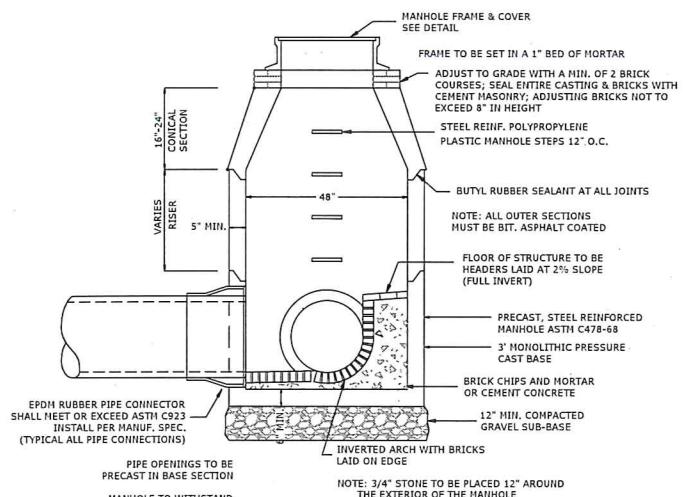


Meets ASTM D8057 standards

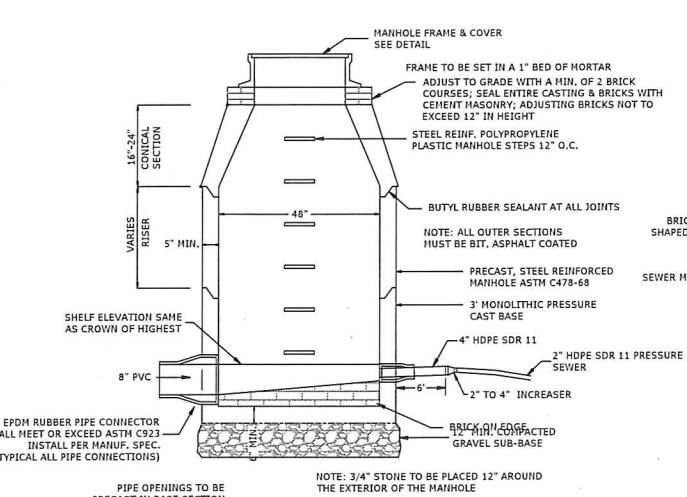
FLEXSTORM FX FABRIC SPECS

TEST METHOD	TEST VALUE	TEST METHOD	TEST VALUE
STRENGTH	100 LBS	TENSILE	250 LBS
TEAR RESISTANCE	10 LBS	PUNCTURE	150 LBS
PERMEABILITY	100 GPM	FLOW RATE	70 GAL/MIN/FT
PERMITTIVITY	1.2 1/SEC	UV RESISTANCE	70% STRENGTH @ 500 HOURS
APPARENT OPENING SIZE	0.15-0.18 MM	SEAM STRENGTH	90%

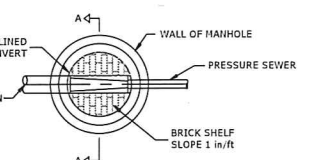
- Product Features:**
- Rigid frame and removable geosynthetic bag
 - Sized to meet treatment flow rate.
 - Bag maintains shape to be extracted when completely filled with sediment
 - Rigid frame capable of supporting full load of sediment without deforming.
 - Does not interfere or elevate grate by more than 1/8"
 - Bypass flow exceeds design flow of drainage location
 - Filter bag achieves +80% gross removal efficiency per ASTM D7351.



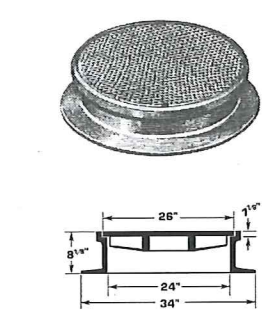
PRECAST CONC. SEWER MANHOLE DETAIL
(not to scale)



PRESSURE SEWER DISCHARGE MANHOLE DETAIL
(not to scale)



INVERT PLAN VIEW
(not to scale)



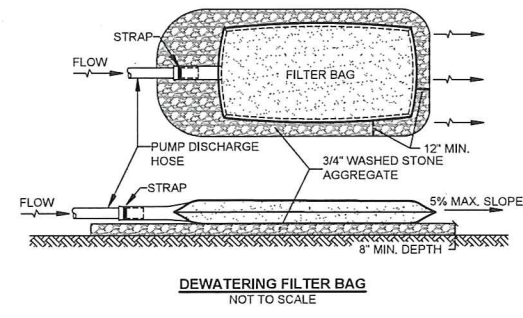
26" Manhole Frame & Cover

Massachusetts standard manhole frame and cover has a clear opening of 24". The manhole casting represented within page meets the requirements of the state in relation to the specifications of a Type A frame and cover.

- Features:**
- 3" locking
 - Non-slip cover
 - Covers available plain or marked SEWER, DRAIN, WATER or ELECTRIC
 - Diamond surface design

- Specifications:**
- Fully machined frame and cover
 - H-20 load rated
 - Gray cast iron meets ASTM A48 Class 30
 - Clear 24" opening
 - Weight:
 - Frame: 265 lbs.
 - Cover: 210 lbs.
 - Total: 475 lbs.

DESCRIPTION	QUANTITY	PRICE
26" x 26" MH Frame L26110	1	65.00
26" MH Cover Plain L26C2	1	65.00
26" MH Cover Plain L26C2	1	65.00
26" MH Cover Plain L26C2	1	65.00
26" MH Cover Plain L26C2	1	65.00



DEWATERING FILTER BAG
(NOT TO SCALE)

CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE LOCATED ON A LEVEL OR 5% MAX. SLOPING SURFACE.
3. DISCHARGE TO A STABILIZED AREA. EXTEND BASE 12" MIN. FROM EDGE OF FILTER BAG.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF CONSTRUCTION WORK DAY.
5. RESTORE THE SURFACE BENEATH THE BAG TO ORIGINAL CONDITIONS UPON REMOVAL OF DEVICE.
6. USE NON-WOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM AVERAGE ROLL VALUE (M.A.R.V.) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT	ASTM D-4491
PERMITTIVITY	1.2 1/SEC	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632
7. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS OR PUNCTURES DURING OPERATION.
8. KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT.
9. REPLACE BEDDING IF IT BECOMES DISPLACED.

Sanitary Sewer Testing

- A. Gravity Sewer Leakage Test; Low pressure air test as follows:**
1. Plug ends of section to be tested.
 2. Supply air slowly to the pipe to be tested until the air pressure inside the pipe is 4.0 psi greater than the average back pressure of any groundwater submerging the pipe.
 3. Disconnect air supply and allow a minimum of two minutes for stabilization of pressure.
 4. Following stabilization period, measure drop in pressure over the test period within the following times:

Pipe Size (inches)	Test Period (minutes)
4	4
6	4
8	6
10	6
12	7
15	8
5. Acceptable drop: Not more than 1.0 psi.
- B. Forcemain and Pressure Sewer Test; Hydrostatic test as follows:**
1. Fill section of pipe with water and expel all air.
 2. Pressurize to 1.5 times the normal operating pressure but not less than 60 psi.
 3. Measure leakage over a 2-hour test period.
 4. Acceptable leakage: Less than 10 gallons per day per inch diameter per mile of pipe tested.
- C. Deflection Test for Gravity Sewer Pipe:**
- Test pipe after final backfill has been in place at least 30 days for stabilization. Test with rigid ball or mandrel with a diameter of not less than 95% of the base inside diameter of the pipe as specified by ASTM. The test should be performed without mechanical pulling devices.
- D. Manhole (Including Wet Well) Leakage Test; Vacuum test as follows:**
1. The vacuum test shall be performed prior to backfilling the manhole, filling joints, and constructing the invert and benches. All pipe connections shall be made prior to the test.
 2. Plug pipe openings and securely brace the plugs and pipe.
 3. Set the tester onto the top section of the manhole and inflate the compression band to effect a seal between the structure and the vacuum base.
 4. Connect the vacuum pump to the outlet port, open the valve, start the motor and draw a vacuum of 10" mercury.
 5. Close the valve and monitor the vacuum gauge.
 6. The test shall pass if the vacuum holds at 10" mercury or drops no lower than 9" within the following times:

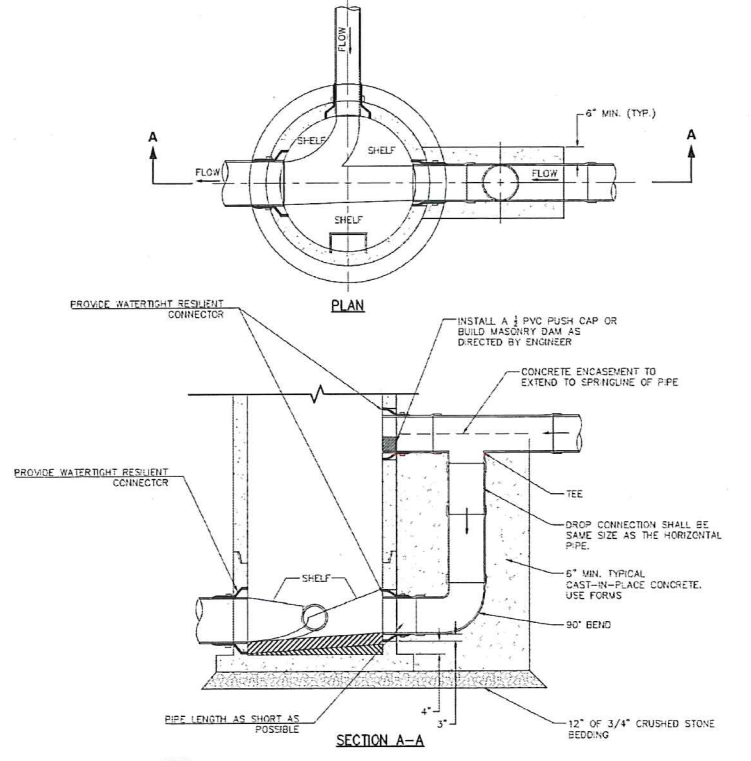
Manhole Depth (feet)	Time (minutes)
0-10	2
10-15	2.5
>15	3

Pressure Sewer Construction Notes:

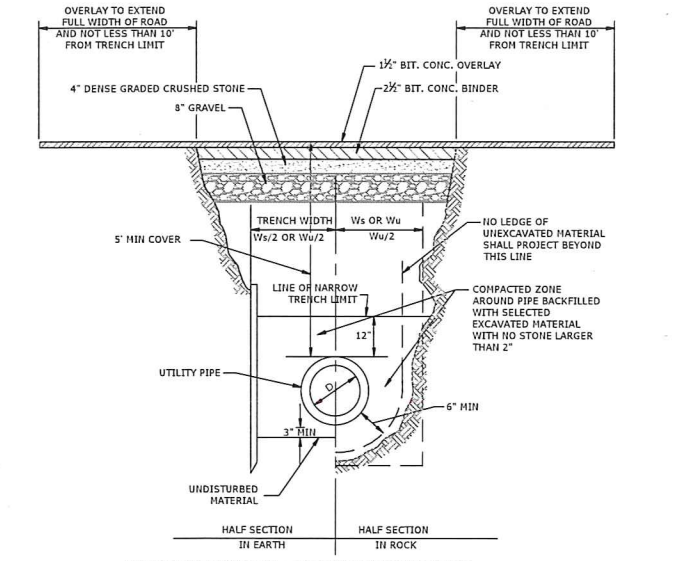
1. Pressure sewer to have a minimum of 48" of cover.
2. A 2 direction cleanout shall be installed at intervals not to exceed 500 feet along the length of the force main.
3. As far as possible, the force main should be installed to provide a constant upgrade profile. Otherwise, an automatic air relief valve should be placed at all high points in the force main.
4. Where pressure sewers cross water mains or services, the crown of the sewer shall be laid 18" below the invert of the water main. Where this requirement can not be met, the pressure sewer line shall be encased in concrete for 10 feet either side of the crossing where the required vertical separation can not be provided.
5. Pressure sewer pipe to be 2" HDPE SDR 11. Pipe joints shall be fused per ASTM D2675

Gravity Sewer Construction Notes:

1. Where feasible, sewers shall be separated a minimum of 10 feet, horizontally, from any existing or proposed water main.
2. Where a 10 foot lateral separation between sewer and water can not be maintained, the water main shall be located within a separate trench and the crown of the sewer shall be placed a minimum of 18" below the invert of the water main.
3. Where sewers cross water mains or services, the crown of the sewer shall be laid 18" below the invert of the water main. Where this requirement can not be met, the sewer line shall be encased in concrete for 10 feet either side of the crossing where the required vertical separation can not be provided.
4. All sewer piping and/or structures located within 100 feet of any wetland, surface water-body, or detention pond, shall be built using watertight construction methods and materials.
5. All sewers shall be constructed in accordance with "TR-16: Guides for the Design of Wastewater Treatment Works" and 314 CMR 7.00 "Sewer System Extension and Connection Permit Program" regulations.



SEWER DROP DETAIL
(not to scale)



UTILITY TRENCH DETAIL
(not to scale)

Sewer Extension Plan

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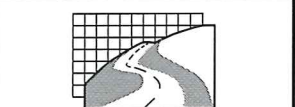
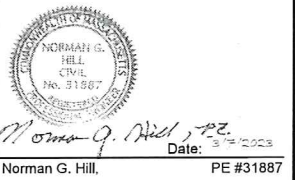
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BOUND FOUND	
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