

STORMWATER MANAGEMENT FACILITY OPERATIONS & MAINTENANCE MANUAL

FOR

ACCESS SELF STORAGE FACILITY

BLOCK 502.01, LOTS 45.01 & 46.01
297 DAVIDSON AVENUE
TOWNSHIP OF FRANKLIN
SOMERSET COUNTY, NEW JERSEY

Prepared for:

Franklin Storage, LLC
208 Gates Road
Little Ferry, NJ 07643

AUGUST 2021

Revised October 2021

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Prepared By:

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MAP POCKET - STORMWATER MAINTENANCE FACILITY PLAN

I. INTRODUCTION

Franklin Storage, LLC is proposing to construct an Access Self Storage Facility at 297 & 305 Davidson Avenue in Franklin Township, Somerset County. In conjunction with this proposal, stormwater management measures will be constructed to address the impact of stormwater runoff. These measures include the following:

- The stormwater runoff conveyance system, located throughout the site, which consists of pipes, inlets, storm manholes and swales.
- A bioretention basin that also provides extended detention located behind the 3-story storage facility.

In order for these stormwater management measures to function adequately, regular maintenance must be performed. This Stormwater Management Facility Operations & Maintenance Manual outlines the proper inspection and maintenance procedures for each component of the stormwater management system. A Stormwater Management Facility Plan showing the location of the stormwater management components on the site is located in the map pocket at the end of this report.

This document and any future revisions to this document shall be recorded upon the deed of record for this property. The entity responsible for maintenance of the stormwater management elements designed for the project and outlined in detail below is as follows:

Franklin Storage, LLC
208 Gates Road - Little Ferry, NJ 07643
Phone: (973) 534-3108
Attn.: Jake Davidson (email: jake@murraycontracting.net)

The responsible party shall maintain a detailed log of the preventative and corrective maintenance for the stormwater management elements, including a record of all inspection and maintenance procedures (See Appendix A for Maintenance Logs). The effectiveness of the maintenance plan shall be evaluated by the responsible party at least once a year and the plan shall be adjusted as needed. Written maintenance records for all stormwater management elements shall be maintained by the responsible party for at least five years and shall be provided to the municipality upon request.

II. STORMWATER CONVEYANCE SYSTEM

This element is comprised of the series of pipes, structures, and vegetated swales designed to convey runoff to and from the bioretention basin.

Normal maintenance of the storm sewer system requires inlets to be inspected semi-annually on or about April 1st and October 1st of each year. Any sediment or debris on the grate or within the inlets and vegetated swales shall be removed at that time.

Stormwater Conveyance System Maintenance Schedule			
Maintenance Item	Schedule	Inspection Requirement	Maintenance Requirement
Visual Inspection	Semi-Annually - April 1 +/- October 1 +/-	Inspect all grates and inlets for buildup of sediment/trash/debris.	Removed excess sediment/trash/debris from grates and/or within inlets.

III. BIORETENTION BASIN

This element is comprised of a normally dry extended detention basin with a planted bottom consisting of a 24" thick soil bed layer and an underdrain system. The purpose of the bioretention basin is to control the quantity and enhance the quality of the stormwater runoff leaving the site. Runoff from the building roof, driveway and parking areas is piped to the basin. The stormwater runoff stored below the lowest opening in the outlet structure filters through the soil bed, which provides 80% TSS removal, and is then conveyed through the underdrain system to the outlet control structure. The upper stage orifice and weir provide control for larger storm events which attenuates peak discharge from the developed portion of the site.

A. General Maintenance

The bottom of the bioretention basin shall be inspected at least monthly and all other components designed to catch debris and sediment must be inspected for clogging and excessive accumulation of material at least four (4) times annually, as well as after every storm exceeding one (1) inch of rainfall. These components include the planted soil bed bottom, inflow points, outlet structures, trash racks and rip-rap aprons. Sediment removal shall be performed when basin is thoroughly dry. Debris, trash, sediment, and other waste material removed from the bioretention basin, shall be disposed of at a suitable disposal site in accordance with all applicable regulations. The planted bottom shall be maintained by hand, including raking of the soil bed between plantings as needed to promote infiltration. The underdrain system should be inspected and jet-vacuumed as needed if there is evidence of clogging.

B. Vegetated Areas

Mowing/trimming of vegetation shall be conducted on a regular schedule based on specific site condition. Grassed side slopes shall be mowed at least once monthly during the growing season. Planted bottom shall only be trimmed as needed, by hand, to maintain healthy growth. Vegetated areas shall be inspected at least once annually for erosion and scour. In addition, during the inspection, unwanted growth will be identified and removed with minimum disruption to remaining vegetation.

During establishment or restoration of vegetation, biweekly inspections shall be performed during the first growing season or until vegetation becomes established to determine health of planted material. Once established, inspection for health, vigor, density, and diversity shall be performed during the growing and non-growing season at least twice annually. Vegetative cover shall be maintained at 85 percent. Areas of the basin with greater than 50 percent non-growth or damage shall be re-established in accordance with the original specifications. Use of fertilizers, mechanical treatments, pesticides, and other measures to assure optimum vegetative cover shall not compromise the intended purpose of the basin. To the extent possible, all vegetative deficiencies should be corrected without the use of fertilizers or other chemicals.

C. Structural Components

All structural components, such as outlet structure and inflow structures shall be inspected for cracking, subsidence, spalling, erosion, and general deterioration at least once annually. Structural damage to outlet and inlet structures, trash racks, headwalls and flared end sections (FES) from vandalism, flood events, or other causes must be repaired promptly. Analysis of structural damage and the design of structural repairs shall only be undertaken by qualified personnel.

D. Embankment

The embankment around the detention basin shall be visually inspected periodically (April 1st and October 1st) for signs of damage. Problems such as settlement, scouring or seepage shall be analyzed by qualified personnel. The stability of the embankment can be impaired by large roots

and animal burrows. Trees and brush with extensive root systems should be completely removed from dams to prevent their destabilization and creation of seepage routes. Root voids and animal burrows should be plugged by filling with material similar to the existing material and capped just below grade with stone, concrete or other material. If plugging of burrows does not discourage animals from returning, further measures should be taken to remove the animal population.

E. Other Maintenance Criteria

The volume of stormwater storage below the circular orifice in the outlet control structure will be filtrated through the planted soil bed and then conveyed to the outlet control structure through the underdrain system (4" diameter pvc pipe set in a 12" thick stone bed.) The time necessary to drain the water quality design storm runoff volume is approximately 15 hours. For a short duration rainfall event, if the water does not drain within 20 hours, the basin shall be reevaluated by a qualified civil or geotechnical engineer. For long duration storms with a significant amount of rainfall, if the basin does not drain within 72 hours, the basin should be reassessed by a qualified civil or geotechnical engineer. Testing of the permeability of the soil bed may be required. If soil bed has become clogged with debris, it may need to be replaced.

Refer to the following table for schedule of maintenance and inspection:

Bioretention Basin Maintenance Schedule			
Maintenance Item	Schedule	Inspection Requirement	Maintenance Requirement
Establish Vegetation	Bi-weekly	During first growing season or until vegetation becomes established	Re-plant areas as required.
85 Percent Coverage	Twice Yearly	During both growing and non-growing season : April-May October/November	Re-plant areas exhibiting areas damaged in excess of 50 percent Re-plant areas exhibiting less that the required 85 percent coverage.
General Maintenance – Visual Inspection	Monthly (Bottom Soil Bed); Four (4) Times Annually for other components, or After Every Rainfall Exceeding One Inch	Inspect all visual components of the system for scour (planted soil bed bottom and rip-rap aprons), clogging (underdrain, etc.), excessive debris, and sediment accumulation.	Remediate scour and clogging; Removal all trash, debris, sediment and dispose of in accordance with all applicable regulation. Rake soil bed as needed.
Structural Components – Visual Inspection	Once Annually	Inspect all structural components i.e., outlet structures, flared-end-sections, headwalls, etc. for cracking, subsidence, spalling, erosion, and general deterioration.	Repair structural components as required.
System Function		Evaluate drawdown time of basins compared to design criteria. 1.25" Storm: 15 hours Large Storms: less than 72 hrs	Function of the bioretention basin shall be assessed by a qualified Civil or Geotechnical Engineer – Recommendations will be made at this time and shall be implemented by owner.

V. MAINTENANCE RECORDS AND REPORTING

All inspections (as required above), regular maintenance, and required repairs shall be documented. Written maintenance and repair records for all stormwater management elements shall be maintained for at least five years by the responsible party and shall be provided to the municipality upon request. See Appendix for Maintenance Logs.

VI. EQUIPMENT AND MATERIALS

The following is a list of maintenance equipment and materials that would be required for the general maintenance of the Stormwater Management Facilities. It will be at the discretion of the owner to decide whether to perform the work (by the Department of Public Works) or to hire a maintenance service to maintain the above facilities. Should the Owner decide to hire a service to maintain the Stormwater Facilities, the responsibility of inspecting the facilities per the above report will still be the job of the Owner. The following equipment list has been separated into the various Stormwater Components. The equipment may be rented for a particular task or stored on-site as part of the maintenance program. Confined space entry shall be enforced at all times.

- | | |
|-----------------------------|---|
| a. Riding Mower | i. Loader/Backhoe |
| b. Power Trimmer | j. Dewatering pump |
| c. Power Edger | k. Combination vacuum truck and sewer jet |
| d. Seed Spreader | l. Concrete Repair Material |
| e. De-thatching Equipment | m. Tilling machine |
| f. Grass Clipping Equipment | n. Sand |
| g. Shovels & Rakes | o. Grass Seed |
| h. Wheel Barrow | |

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APPENDIX A

INSPECTION AND MAINTENANCE LOGS

Stormwater Conveyance System

20__ Inspection Checklist for Stormwater Management Facilities

Name of Facility: Conveyance Pipes, Structures, Swales

Location/Address: 297 & 305 Davidson Ave, Franklin Twp.
Block 502.01 - Lot 45.02

Franklin ID #: _____

Submission for: (Select One)

- 1st Quarter
 2nd Quarter
 3rd Quarter
 4th Quarter

STORMWATER CONVEYANCE SYSTEM

Date:				
Facility Item:	O.K. ¹	Routine ²	Urgent ³	Comments ⁴

Inspection Checklist		(X):Completed			
Inlet Grates & Manhole Covers					
	Condition of Castings				
	Trash & Debris				
Structures - Inlets & Manholes					
	Condition of Structure				
	Sediment				
	Trash & Debris				
	Standing Water				
	Settlement				
Pipe System					
	Surcharge/Clogging				
	Seepage				
	Settlement				
Vegetated Swale:					
	Grass coverage				
	Scour				
	Debris				
Miscellaneous:					

¹The item checked is in good condition, and the maintenance program is adequate.
²The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.
³The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.
⁴Provide explanation and details if columns 2 or 3 are checked.

Comments:
 (Additional comments not listed above)

Inspection reports can be mailed, faxed to (732) 873-5391, or emailed to stormwater@twp.franklin.nj.us

STORMWATER CONVEYANCE SYSTEM

20__ Maintenance Log for Stormwater Management Facilities

Name of Facility: Conveyance Pipes, Structures, Swales

297 & 305 Davidson Ave, Franklin Twp.

Location/Address: Block 502.01 - Lot 45.02

Franklin ID #: _____

Submission for: (select 1)

- 1st Quarter
- 2nd Quarter
- 3rd Quarter
- 4th Quarter

STORMWATER CONVEYANCE SYSTEM

Date:

Preventative Maintenance

(X):Completed

Trash and Debris removal:

Inlets & Manholes
Pipes
Riprap Aprons
Vegetated Swale

Sediment Removal:

Inlets & Manholes
Pipes
Riprap Aprons
Vegetated Swale

Corrective Maintenance

Structural Repair

Erosion Repair

Other

Comments:

(indicate any repairs which were completed)

Maintenance reports can be mailed, faxed to (732) 873-5391, or emailed to stormwater@twp.franklin.nj.us

BIORETENTION BASIN w/ EXTENDED DETENTION

20__ Inspection Checklist for Stormwater Management Facilities

Name of Facility: Bioretention/Extended Detention Basin

Location/Address: 297 & 305 Davidson Ave, Franklin Twp.
Block 502.01 - Lot 45.02

Franklin ID #: _____

Submission for: (Select 1)

- 1st Quarter
- 2nd Quarter
- 3rd Quarter
- 4th Quarter

BIORETENTION BASIN WITH EXTENDED DETENTION

Date:				
Facility Item:	O.K. ¹	Routine ²	Urgent ³	Comments ⁴

Inspection Checklist (X):Completed

Planted Bottom				
	Debris/Sediment			
	Vegetation			
	Scour/Settlement			
	Standing Water			
Outlet Structure				
	Condition of Structure			
	Trash/Debris			
	Trash Racks			
In/Out Pipes & Structures				
	Condition of Structure			
	Trash/Debris			
	Sediment			
	Settlement			
	Rip Rap Stability			
Embankment/Side Slopes				
	Vegetation			
	Erosion/Sloughing			
	Settlement			
	Unwanted trees			
	Animal Burrows			
	Trash and Debris			
	Seepage			
	Emergency Spillway			
Other				

¹The item checked is in good condition, and the maintenance program is adequate.

²The item checked requires attention, but does not present an immediate threat to the facility function or other facility components.

³The item checked requires immediate attention to keep the facility operational or to prevent damage to other facility components.

⁴Provide explanation and details if columns 2 or 3 are checked.

Comments:
 (Additional comments not listed above)

BIORETENTION BASIN w/ EXTENDED DETENTION

20__ Maintenance Log for Stormwater Management Facilities

Name of Facility: Bioretention/Extended Detention Basin
 Location/Address: 297 & 305 Davidson Avenue, Franklin
 Franklin ID #: _____

Submission for: (Select One)

- 1st Quarter
- 2nd Quarter
- 3rd Quarter
- 4th Quarter

BIORETENTION BASIN WITH EXTENDED DETENTION

Date: _____

Preventative Maintenance (X):Completed

Lawn/Vegetative Area:

Cutting (except bottom)																				
Maintenance																				
Pest Control																				
Planted Bottom																				

Trash and Debris removal:

Trash rack/outlets																				
Underdrains																				
Inlets																				
Slopes/Ramps																				
Rip-Rap																				

Sediment Removal:

Trash rack/Outlets																				
Underdrains																				
Inlets																				
Slopes/Ramps																				
Rip Rap																				

Mechanical Components:

Fence (if applicable)																				
Other:																				

Corrective Maintenance

Structural Repair																				
Fence Repair																				
Erosion Repair																				
Other																				

Comments:
 (indicate any repairs which were completed)

Inspection reports can be mailed, faxed to (732) 873-5391, or emailed to stormwater@twp.franklin.nj.us

revisions		
no.	date	description
1	10/12/21	PER SCD & TWP COMMENTS/NUDEP PERMIT PLAN
2	01/17/22	PER DEP, DRCC & COUNTY COMMENTS

- LEGEND**
- ⊕ GAS VALVE
 - ⊕ GAS METER
 - ⊕ WATER VALVE
 - ⊕ HYDRANT
 - ⊕ WATER METER
 - ⊕ CURB STOP
 - ⊕ FIRE DEPT. CONNECTION
 - ⊕ DRAINAGE MH
 - ⊕ CURB INLET
 - ⊕ LAWN INLET
 - ⊕ SANITARY MH
 - ⊕ CLEANOUT
 - ⊕ BOLLARD
 - ⊕ SIGN
 - ⊕ LIGHT
 - ⊕ MAIL BOX
 - ⊕ GUY WIRE
 - ⊕ UTILITY POLE
 - ⊕ ELECTRIC MH
 - ⊕ CONIFEROUS TREE
 - ⊕ DECIDUOUS TREE
 - FENCE
 - RAILING
 - WALL
 - ⊕ GATE POST
 - W WATER LINE
 - G GAS LINE
 - E ELECTRIC LINE
 - S SANITARY LINE
 - OH OVERHEAD WIRES



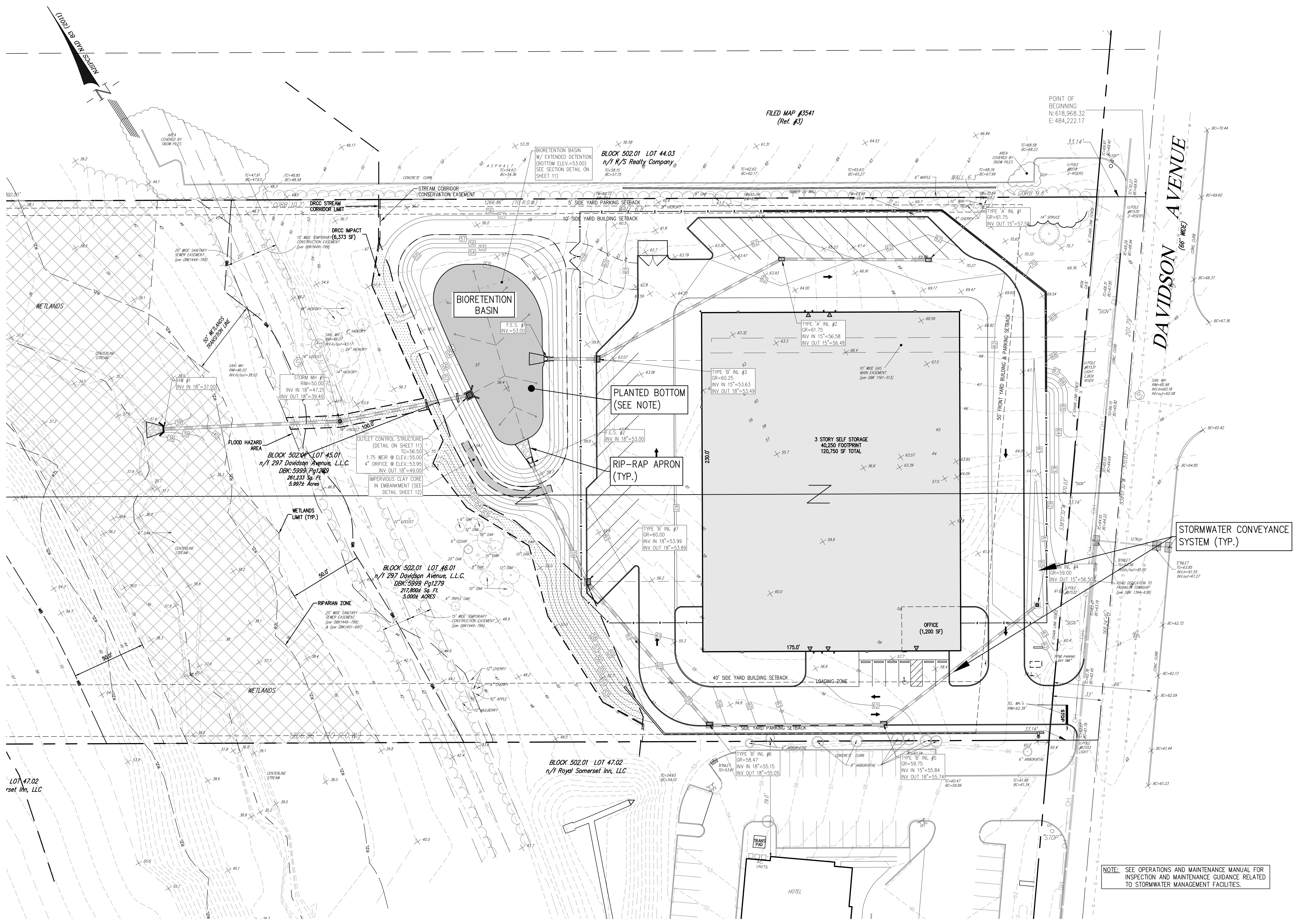
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 State of New Jersey
 Certificate of Authorization
 Number 24CA27969200
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 Jeffrey D. Reynolds, P.L.A.

F. Mitchel Ardmán
F. MITCHEL ARDMAN
 N.J. PROFESSIONAL ENGINEER LIC. NO. 34317

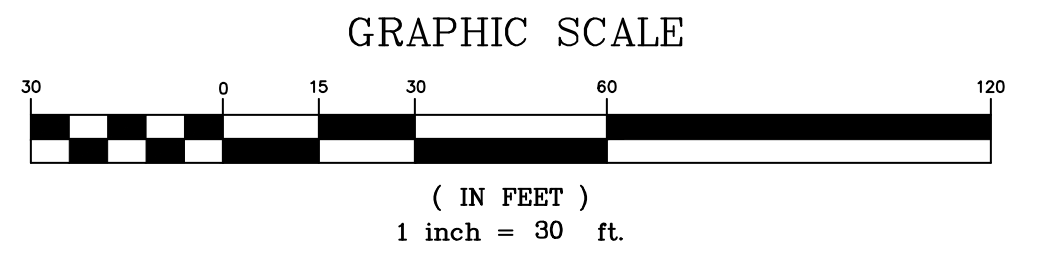
project
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drawing title
**STORMWATER
 MANAGEMENT FACILITY
 PLAN**

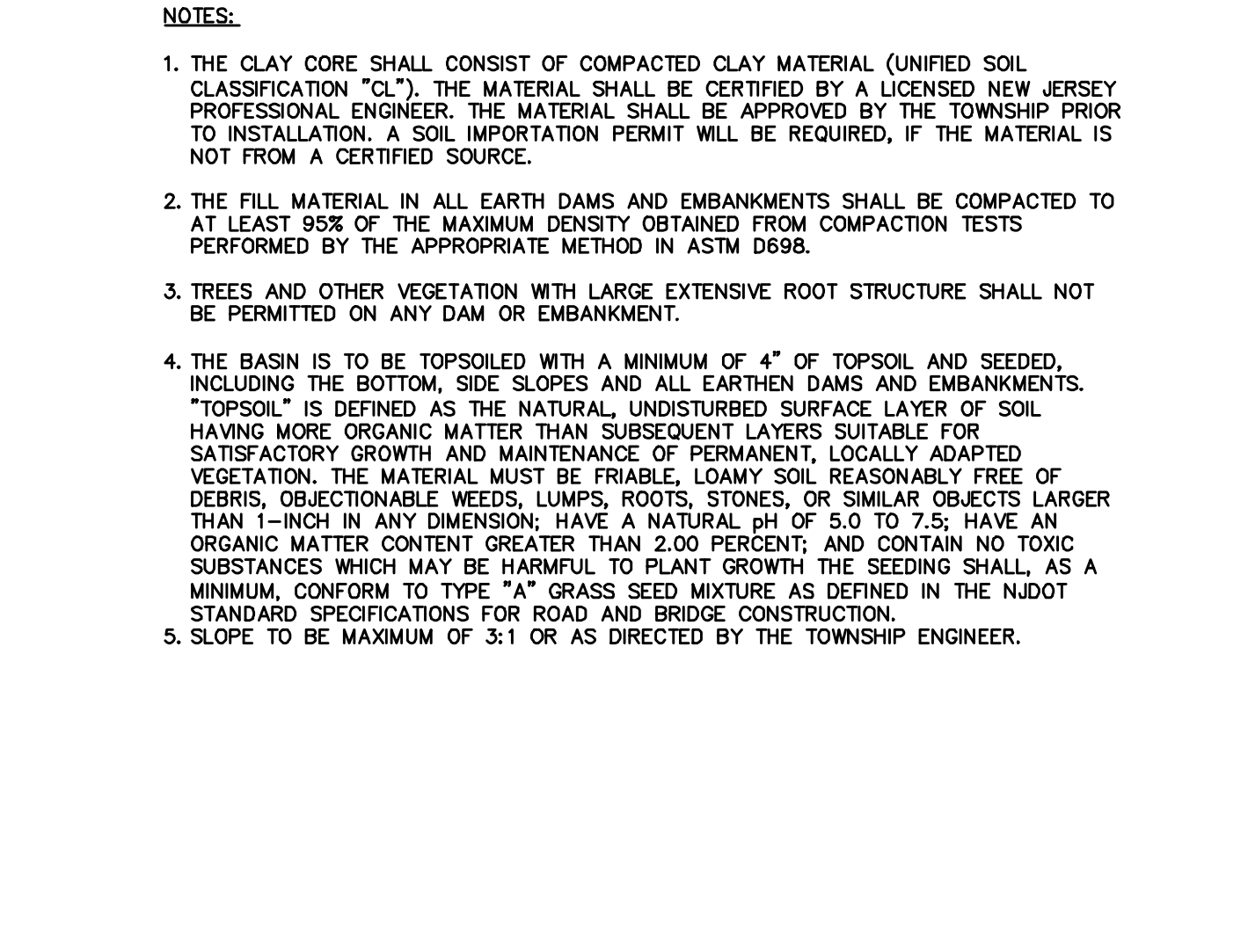
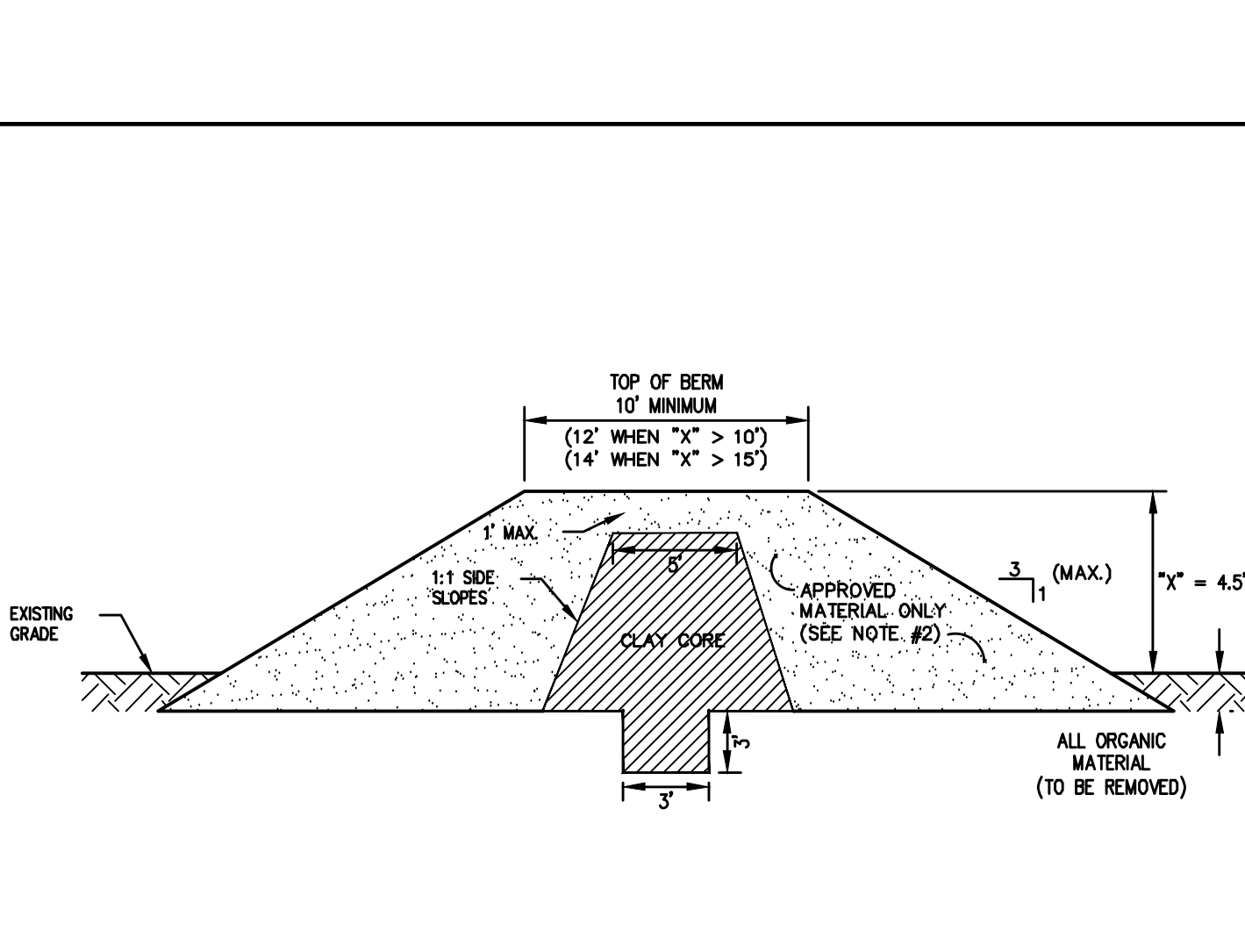
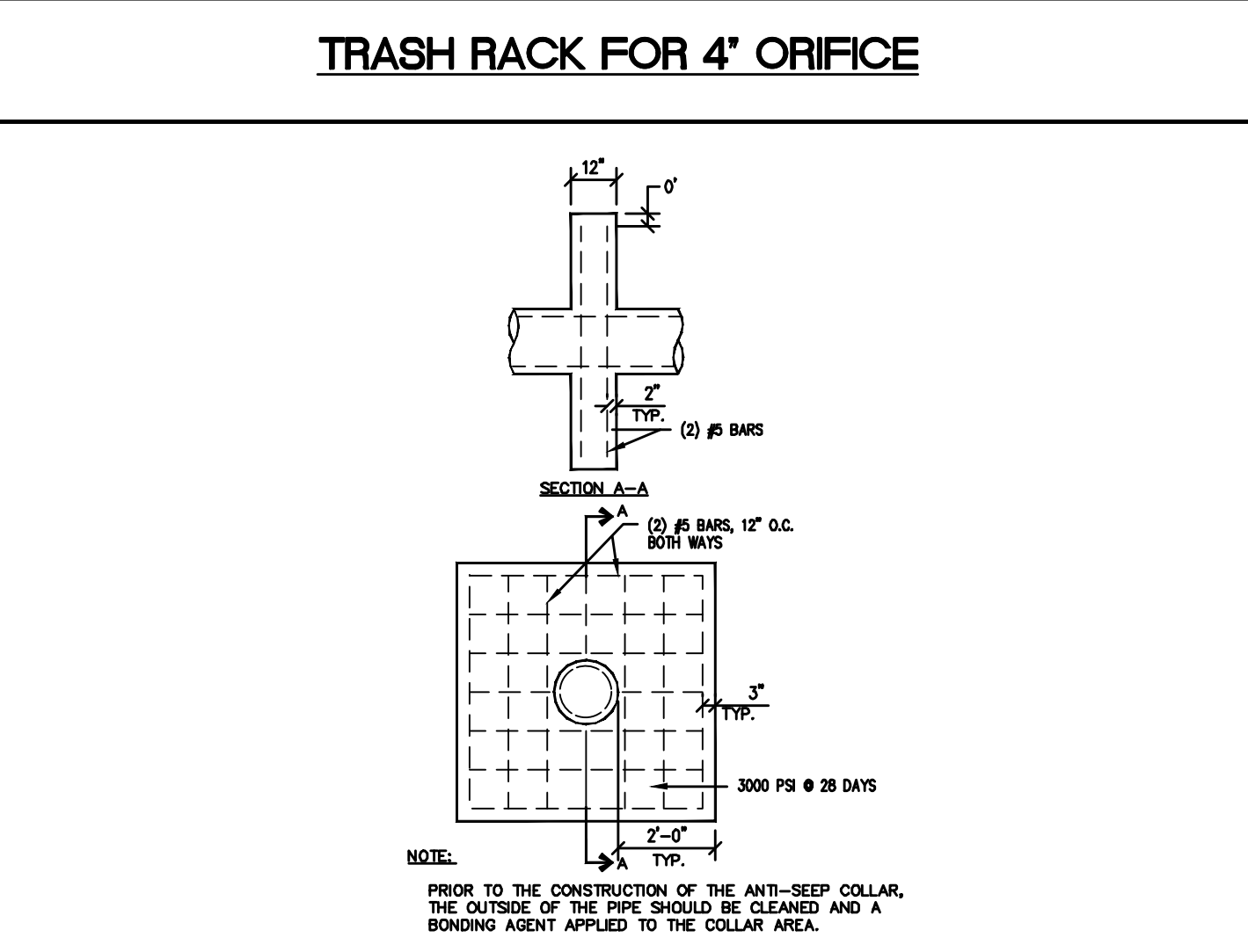
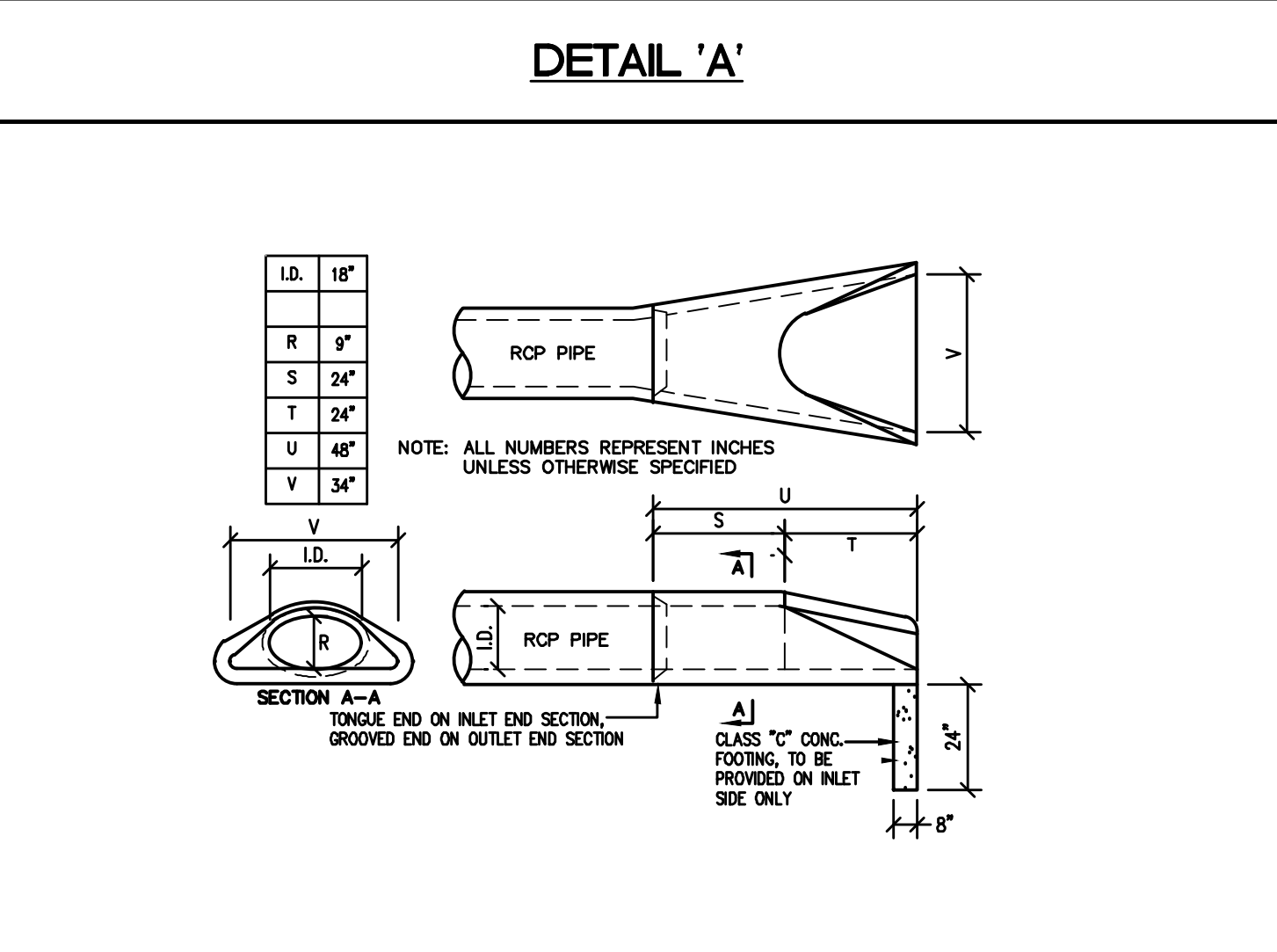
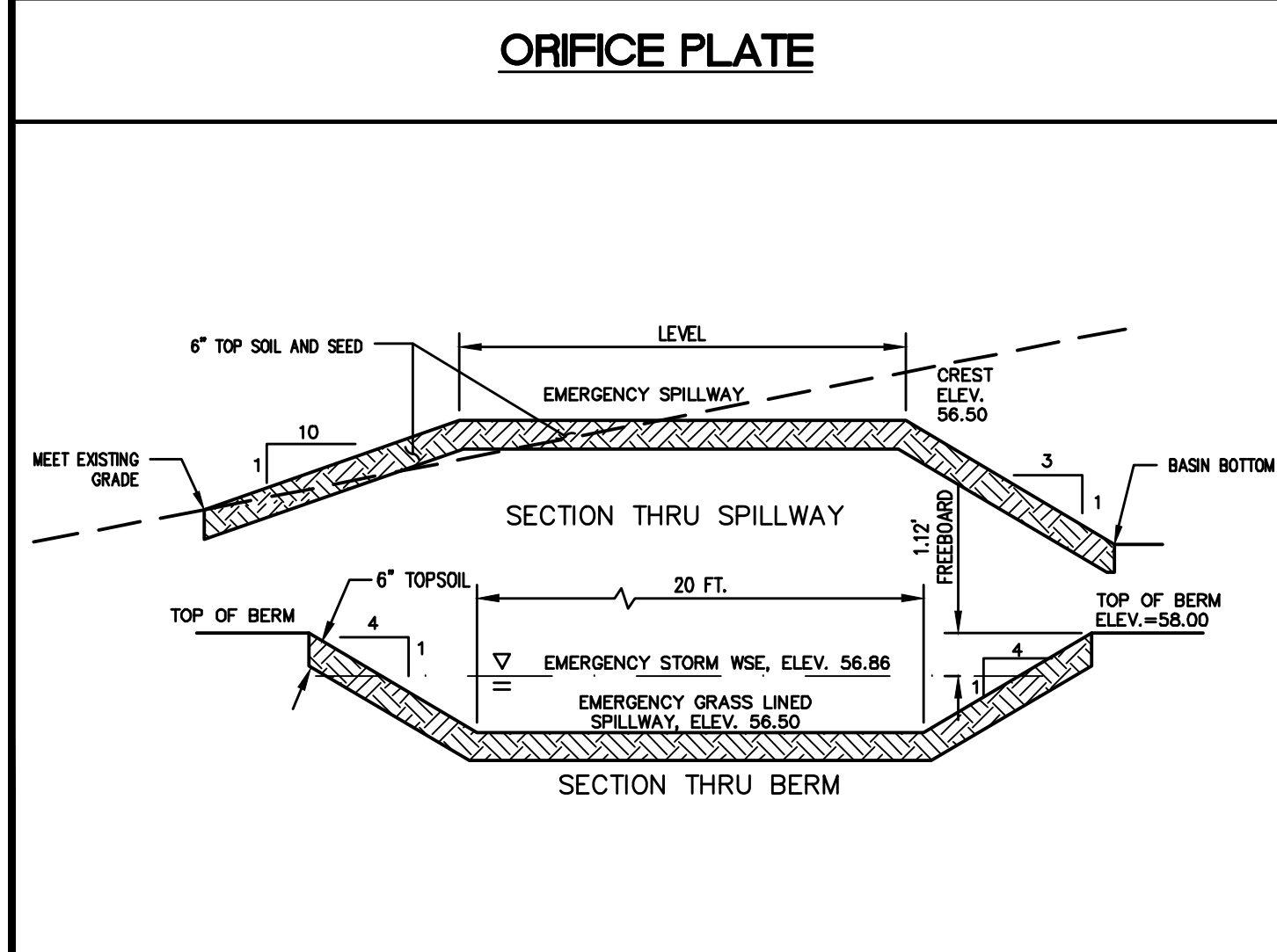
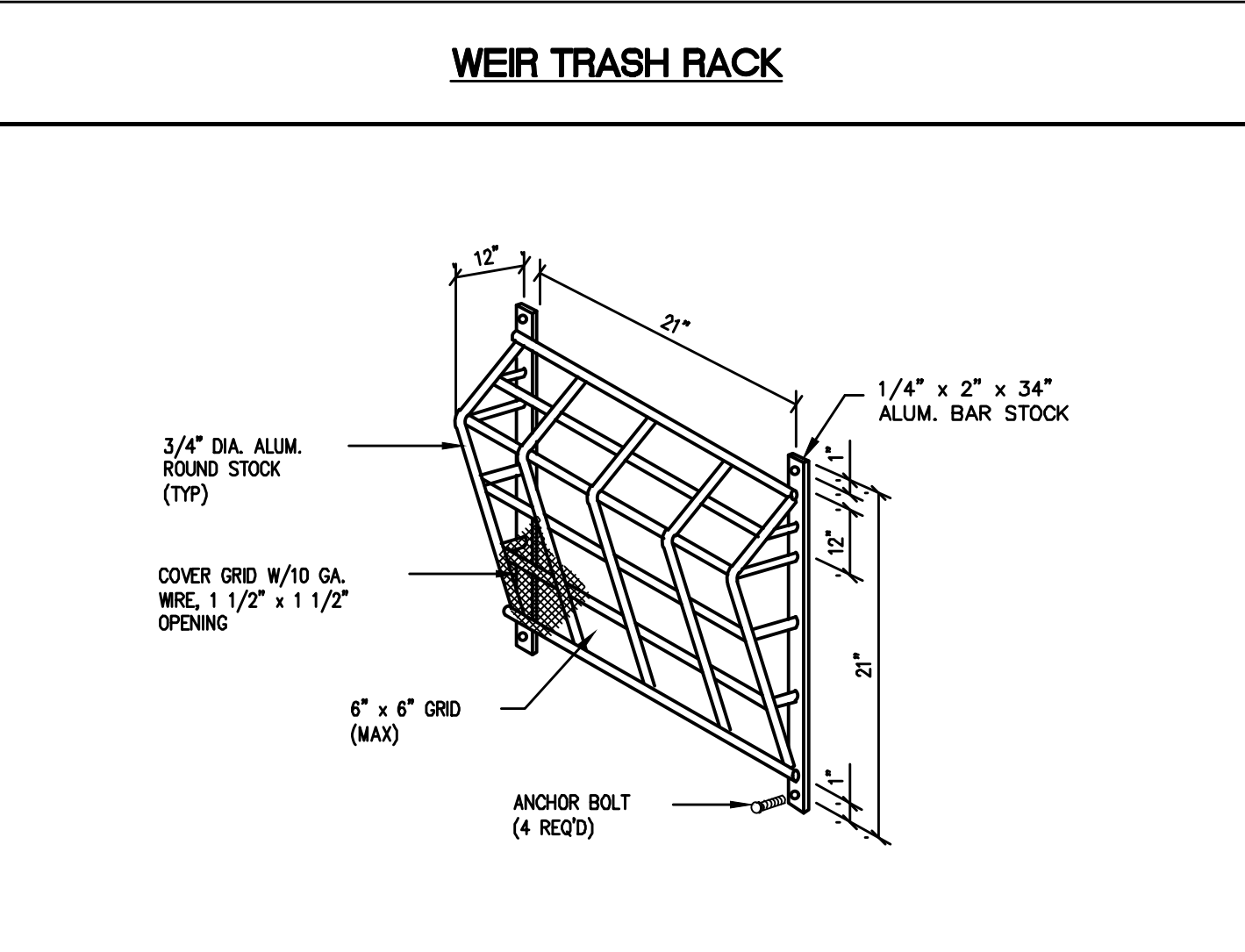
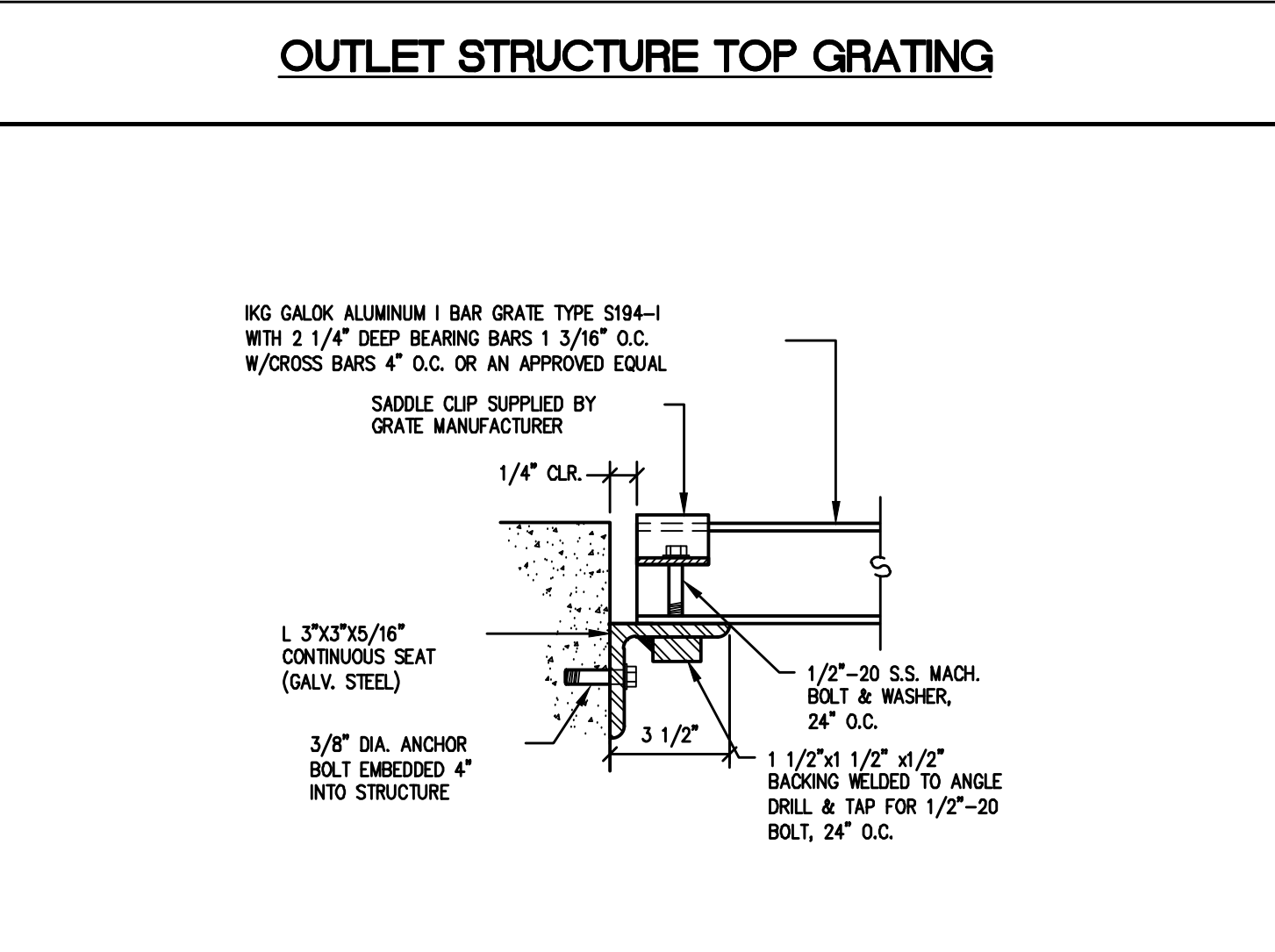
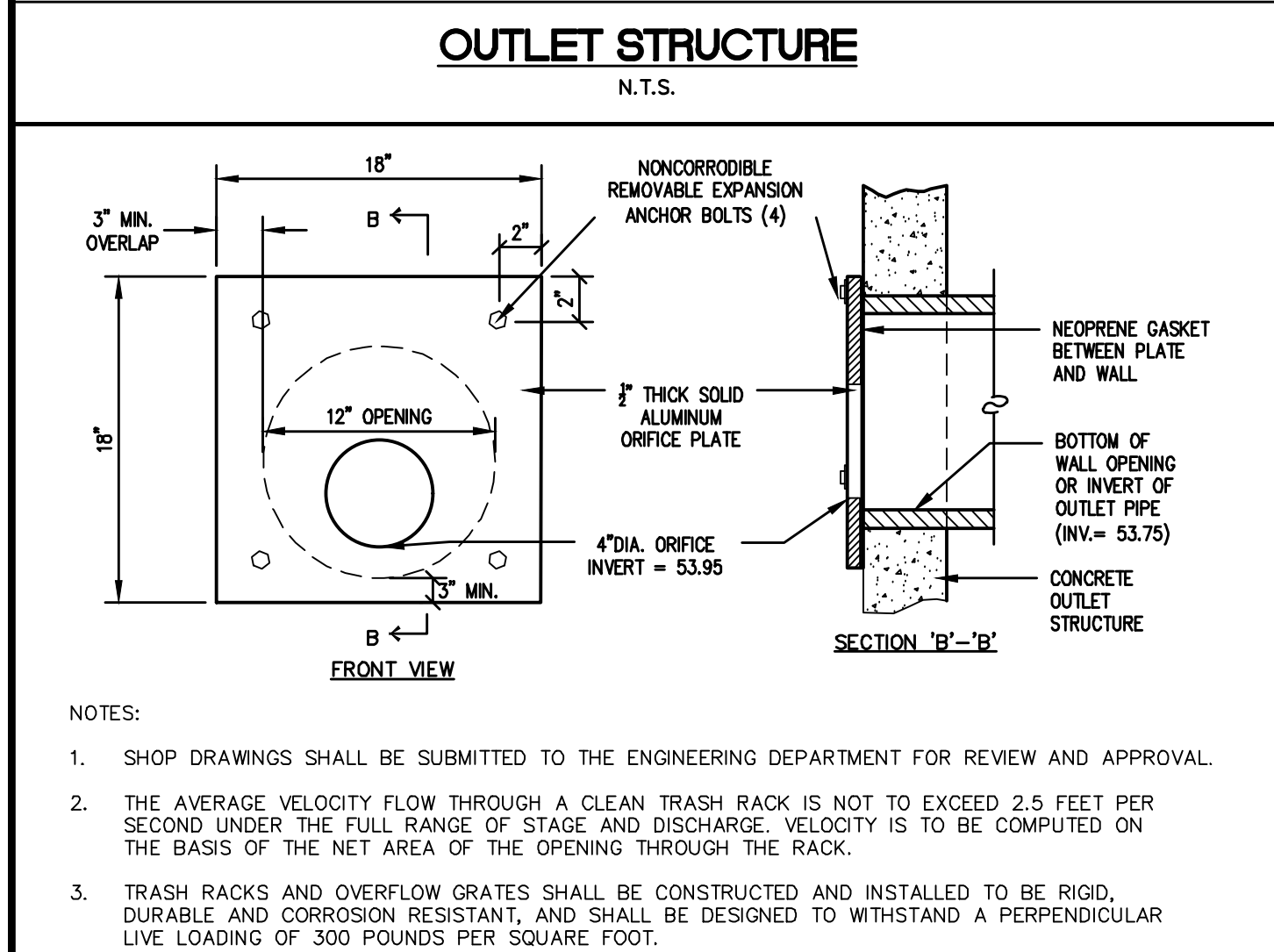
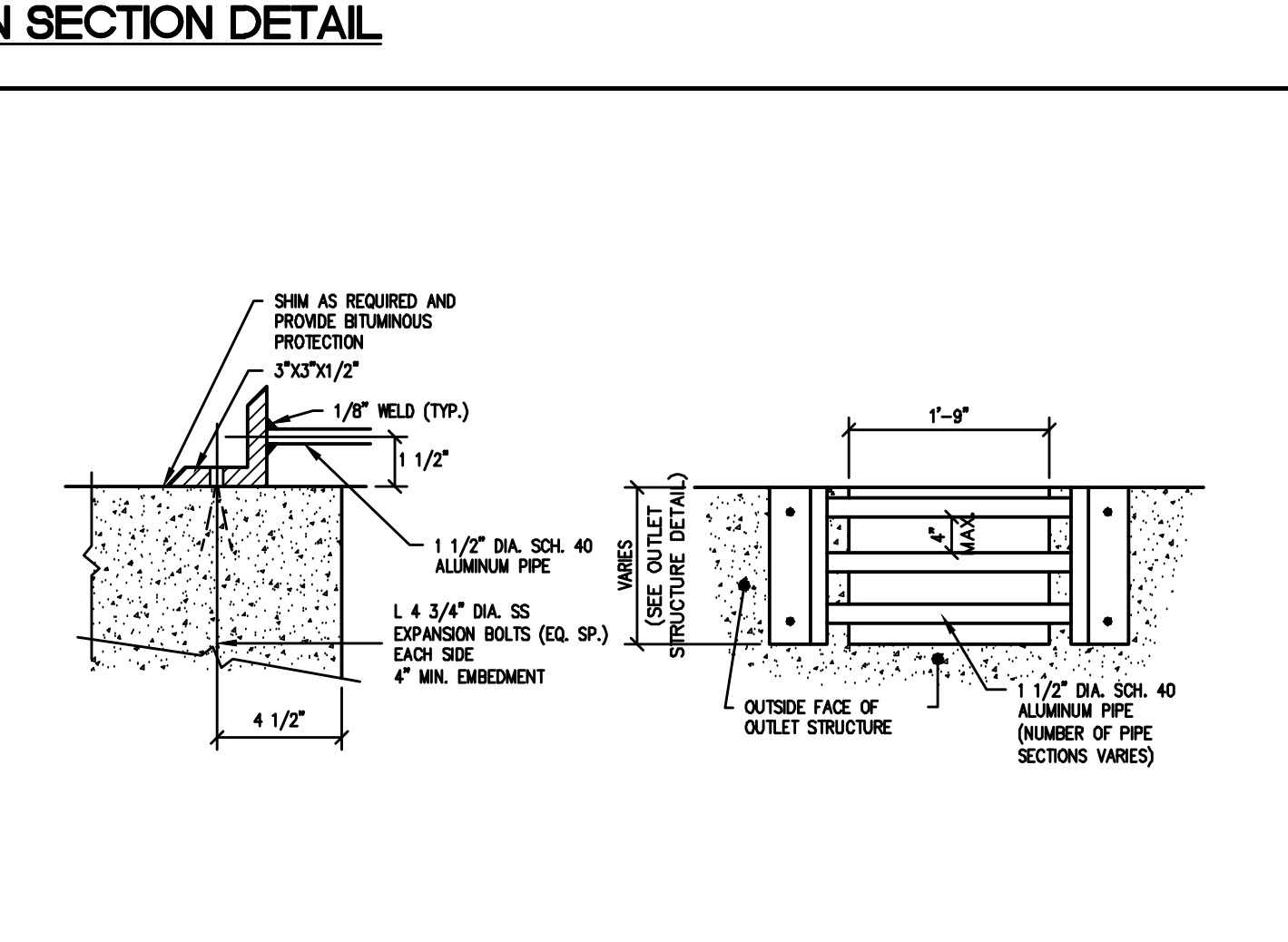
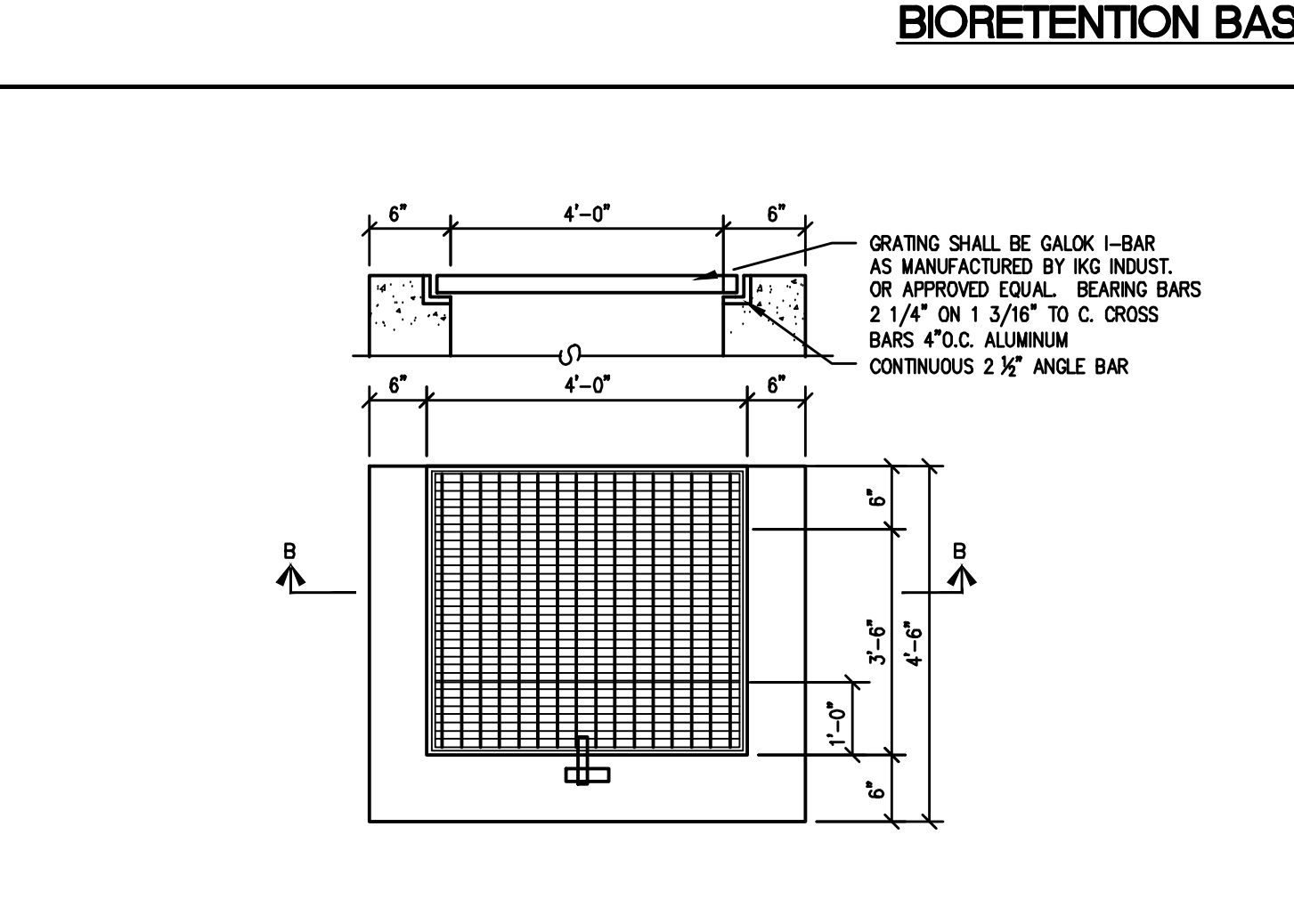
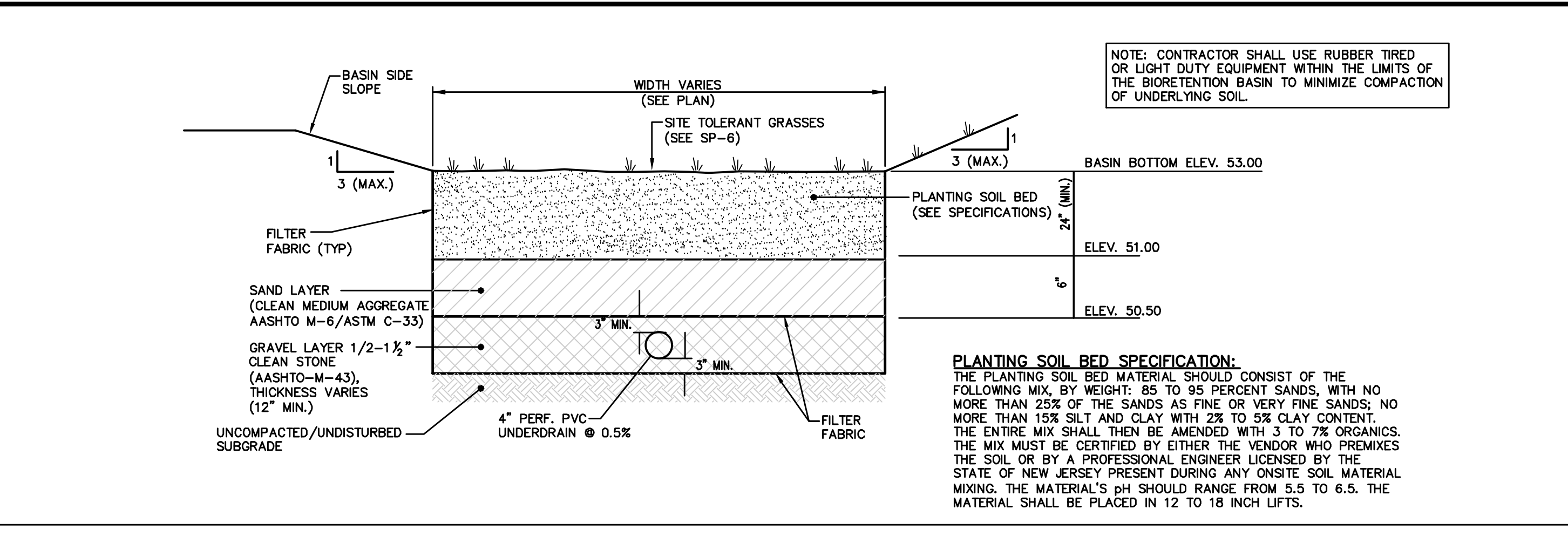
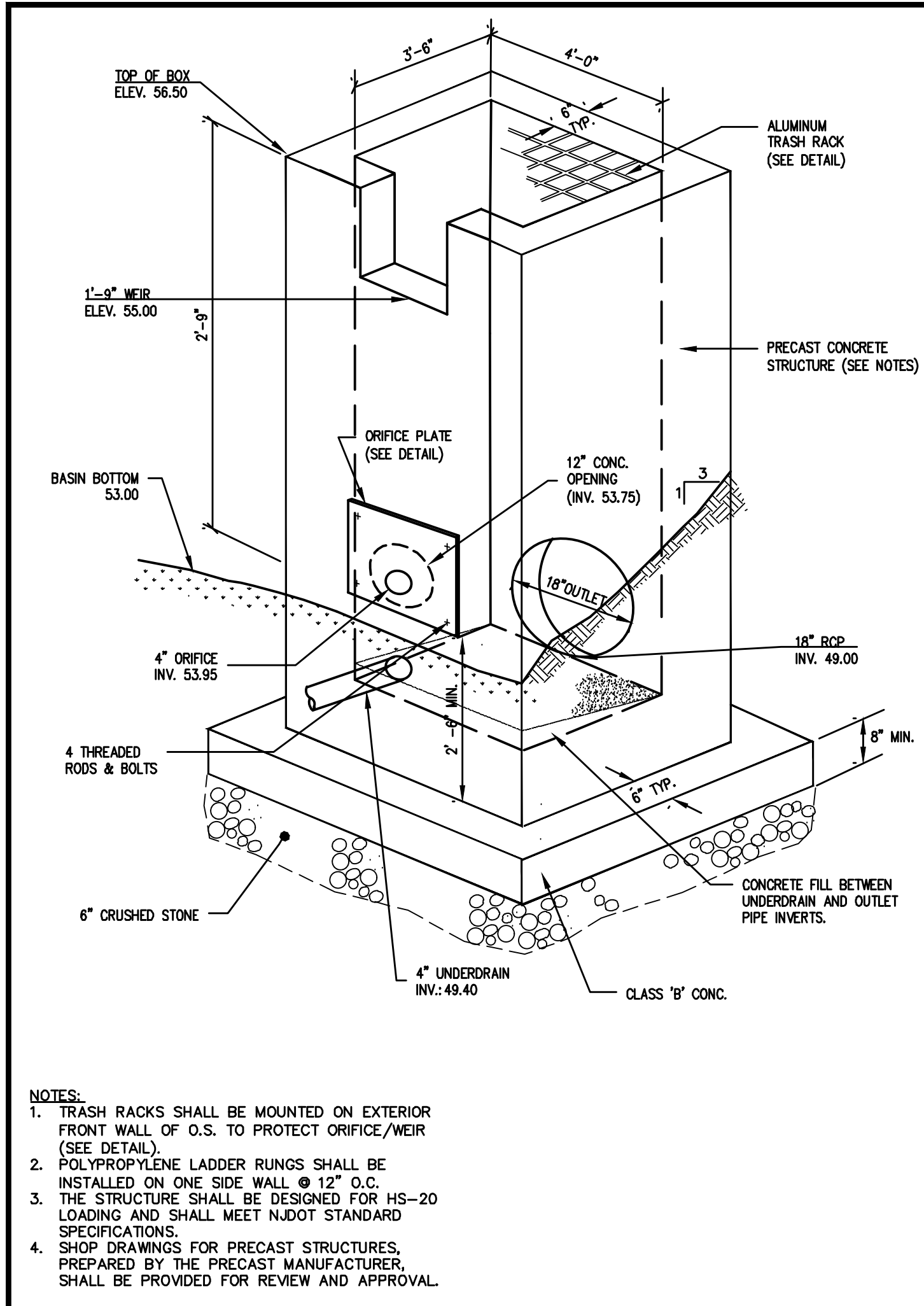
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BIORETENTION BASIN PLANTED BOTTOM:
 BOTTOM OF BASIN SHALL BE PLANTED AND MAINTAINED WITH SITE TOLERANT GRASSES THAT ARE SUITABLE FOR BARN GARDENS. RE-SEED AS NECESSARY USING PINELANDS NURSERY RAIN GARDEN MIX OR EQUIVALENT.



NOTE: SEE OPERATIONS AND MAINTENANCE MANUAL FOR INSPECTION AND MAINTENANCE GUIDANCE RELATED TO STORMWATER MANAGEMENT FACILITIES.



revisions		
no.	date	description
1	10/12/21	PER SCD & TMP COMMENTS/NUDEP PERMIT PLAN
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⊕	SGN
⊕	LIGHT
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⊕	DECIDUOUS TREE
—	FENCE
—	RAILING
—	WALL
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—	WATER LINE
—	GAS LINE
—	ELECTRIC LINE
—	SANITARY LINE
—	OVERHEAD WIRES

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