Proposed Self-Storage Facility

100 N.J.S.H. Route 17 North
Borough of Upper Saddle River
Bergen County, NJ

Stormwater Management Maintenance Manual

March 16, 2020
Revised May 1, 2020
Revised August 12, 2020
Revised October 1, 2020

Prepared for:

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60 Grand Avenue
Englewood, NJ 07631

Proposed Self-Storage Facility
STORMWATER MANAGEMENT MAINTENANCE PLAN

I. PURPOSE

In accordance with the New Jersey Stormwater Best Management Practices Manual (February 2004), this Stormwater Management Maintenance Plan is intended to establish an inspection protocol and to identify specific preventive and corrective maintenance procedures, schedules, and responsible parties for the care of the stormwater collection and detention system at the proposed self-storage facility, located at 100 NJSH Route 17 North (Block 1304, Lot 7.01) in the Borough of Upper Saddle River, Bergen County, New Jersey.

Regular and thorough maintenance is necessary for stormwater management measures to perform effectively and reliably. Failure to perform such maintenance can lead to diminished performance, deterioration and failure, in addition to a range of health and safety problems including mosquito breeding, vermin, and the potential for drowning. The potential for such problems to develop is accentuated by many of the very features and characteristics that allow stormwater management measures to do their job, including standing or slow-moving water, dense vegetation, sumps, trash racks and the need to continually function in all types of weather.

II. RESPONSIBLE PARTIES:

The responsible party for the execution of all inspections, and preventive and corrective maintenance of all stormwater management systems to ensure proper functionality shall be:

PSI Atlantic USR NJ, LLC
Attn: James G. Williams (President)
530 Oak Court Drive
Memphis, TN 38117
Phone: 901-290-0184

The responsible party shall maintain detailed logs of the inspection and maintenance forms located herein.

III. STORMWATER MANAGEMENT SYSTEMS OVERVIEW

<u>Subsurface Detention Basin - 1</u>

Basin centroid:	Northing: 806,232; Easting: 598,420
OCS-1 End of pipe location:	Northing: 806,232; Easting: 598,420

Subsurface Detention Basin - 1 (INLET) is constructed beneath the asphalt parking lot behind the self-storage facility located in the eastern portion of the site and accepts runoff from Proposed Conditions Drainage Area 1A (PR-DA-1A). The underground system consists of 3.5' deep StormTrap Single Trap concrete vaults with a concrete base (no stone void storage below invert). The basin detains flow before discharging to the existing inlet located within the right-of-way of the property to the north. As shown in the attached analysis, the system has the capacity to store up to approximately 17,326 cubic feet of runoff. Two circular orifices of 2.5" and 6" and a 1.0' rectangular weir allow flow to discharge from the system at a controlled rate. As depicted within the graphical and numerical outflow analysis (refer to appendix of this report), the detention basin fully drains the maximum design storm (100-year storm) within approximately 41-44 hours.

See Appendix A for maintenance protocol/ procedures of the one (1) subsurface detention basins. A location map (SK-01 Basin Location Map) and details of the detention basins is included in Appendix E of this manual.

IV. STORMWATER MANAGEMENT MAINTENANCE PLAN OVERVIEW

This Stormwater Management Maintenance Plan has three primary components:

1. Inspecting Stormwater Management Facilities
2. Corrective Maintenance of Stormwater Management Facilities
3. Preventive Measures to Reduce Maintenance

Discussions of each component are contained within the text of this plan. Sample forms, to be completed by a qualified inspector, are also contained in this plan. These forms are meant to be a guide with the minimum amount of information to be reported during regular inspection and maintenance occurrences.

Bi-annually, the responsible party shall review this maintenance plan and evaluate, in writing, the effectiveness of the plan. Specifically, the following items should be addressed:

- Measures employed to educate users of the facility on the maintenance plan components.

- Ensure property maintenance contracts include corrective and preventive maintenance measures discussed in Section VIII and IX below.

- Evaluate the frequency of inspections, corrective and preventive maintenance and ensure accurate records are being kept.

Copies of the written plan evaluations shall be kept at the facility and shall be provided to Borough of Upper Saddle River Engineering Department upon request.

V. SAFETY

Many of the stormwater systems appurtenances are defined as "confined spaces" by the United States Occupational Safety & Health Administration (OSHA) and the New Jersey Public Employee Occupational Safety and Health Program (PEOSH). Never enter a confined space without proper training, equipment and a permit (if applicable). A confined space should never be entered without at least one additional person present.

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Police Department at 911. Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Police Department immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

A. Training Plan

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

1. Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable

2. Content of Training

- Stormwater Management Basic Training
  - Purposes and Functions of BMPs
    - *Example training material*
      - *NJDEP Stormwater BMP Manual, Chapter Nine: Structural Stormwater Management Measures*
      - *More training information is available at NJ Stormwater.org (http://www.nj.gov/dep/stormwater/training.htm)*

- Vegetation Care
  - *Example Training Material:*
    - *NJDEP Stormwater BMP, Chapter Seven: Landscaping (provides information on vegetation and landscaping for stormwater management measures)*
    - *Other*

- Field Manual Usage Training
  - *Example Training Material:*
    - *Field Manuals attached to this Maintenance Plan*
    - *Other*

- Equipment and Tools Operation Training
  - *Example Training Material:*
    - *Equipment or tool manufacturer's Operation & Maintenance Manual*
    - *Other*

- Occupation Safety Training
  - *Example Training Material:*
    - *OSHA Training*
    - *Equipment or tool manufacturer's Operation & Maintenance Manual*
    - *Other*

3. <u>Training Records</u>

   Training attendance sheets should be attached by the responsible party after each training.

VI. FIELD INSPECTION EQUIPMENT

It is imperative that the appropriate equipment is taken to the field with the inspector(s) and/or maintenance personnel. This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment)
- Communication equipment
- Clipboard
- Stormwater Management System Inspection Report Forms
- Manhole Lid Remover
- Shovel
- Flashlight
- Measuring device (stadia rod, tape measure, etc.)
- Camera

Some of the items identified above need not be carried by the inspector. However, this equipment should be available in the vehicle driven to the site.

VII. INSPECTING STORMWATER MANAGEMENT FACILITIES

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent Best Management Practices (BMPs). Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual four (4) times per year and following a storm exceeding one (1) inch of rainfall.

B. Inspection Report

The person(s) conducting the inspection activities shall complete a Stormwater Management System Inspection Report Form. Sample Inspection Report Forms are located in this plan. Inspection Report Forms shall be completed by the contractor completing the required inspections. The form shall then be reviewed by the property owner and retained indefinitely. A copy of the Inspection Report Form shall be provided to the Borough of Upper Saddle River Engineering Department upon request.

The following information explains how to fill out the Inspection Forms:

1. General Information

   This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected four (4) times annually, and after every storm exceeding one (1) inch of rainfall to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff.

2. Inspection Scoring

   For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

   0 = No deficiencies identified.

   1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.

2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program. This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature, significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

3. Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

4. Overall Facility Rating

An overall rating must be given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

TABLE 1
Summary of Preventative Maintenance Procedures and Inspection Activities
Subsurface Detention Basins

Inspection Activity	Minimum Frequency	Look for:	Action
1. Trash/Debris Removal	Quarterly, and after every storm exceeding 1 inch of rainfall	Trash & debris within inlet filters and at storm/outlet structures	Schedule Corrective Maintenance
2. Sediment Removal	Quarterly, and after every storm exceeding one (1) inch of rainfall in one (1) hour	Accumulation of sediment in basin, typically near inflow pipes & storm/outlet structures	Schedule Corrective Maintenance
3. Condition of Drainage Systems	Quarterly, and after every storm exceeding one (1) inch of rainfall in one (1) hour	Damage and wear at inlet filters; structural integrity of vault system; condition of storm/outlet structures, trash racks and FloGard inserts	Schedule Corrective Maintenance
4. Preventive Maintenance Opportunities	Quarterly, and after every storm exceeding one (1) inch of rainfall in one (1) hour	Sources of potential pollutants, proper lawn maintenance, areas of erosion	Schedule Corrective Maintenance

VIII. CORRECTIVE MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained. Corrective maintenance should also be conducted following a major storm event to the extent possible.

A. Maintenance Categories

Stormwater management facility corrective maintenance is separated into three broad categories of work. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

1. Routine Work

   The majority of this work consists of scheduled mowings and trash and debris pickups for stormwater management facilities during the growing season. This may include items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. Table 2 below provides a summary of recommended routine maintenance activities.

2. Restoration Work

   This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment. Restoration work includes the removal of accumulated sediment from the basin, typically near the outlet structure(s). Sediment should be removed often enough that the majority of the work can be performed by hand, by a small crew. However, use of a small excavator may be necessary to remove sediment and return the basin to its original condition, as designed. Dispose debris and sediment in a licensed disposal facility in in the Borough of Upper Saddle River or Bergen County. For a list of licensed disposal facilities contact a licensed disposal contractor or the Borough of Upper Saddle River DPW at (201) 327-2700.

3. Rehabilitation Work

   This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. Should rehabilitation work be required, contact the site engineer of record:

   Michael E. Dipple, PE
   L2A Land Design, LLC
   60 Grand Avenue
   Englewood, NJ 07631

201-227-0300

B. Maintenance Personnel

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

C. Maintenance Forms

The Stormwater Management System Maintenance Activity Form provides a record of maintenance activities. Sample Maintenance Activity Forms for each facility type are provided in this Plan. Maintenance Activity Forms shall be completed by the contractor completing the required maintenance items. The form shall then be reviewed by the property owner and retained indefinitely. A copy of the Maintenance Activity Form shall be provided to the Borough of Upper Saddle River Engineering Department upon request.

TABLE 2
Summary of Corrective Maintenance Activities
Subsurface Detention Basin

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Trash/Debris Removal	Quarterly (4 times annually min.) and after every storm exceeding 1 inch of rainfall	Trash & debris at structures	Remove and dispose of trash and debris*
Sediment Removal	Quarterly (4 times annually min.) and after every storm exceeding 1 inch of rainfall	Accumulation of sediment in basin within Isolator Row	Remove and dispose of sediment*
Drain Time Verification	After every storm exceeding 1 inch of rainfall	Stagnant or high-water levels within system for more than 72 hours	Remove and dispose of sediment, JetVac (See appendix A)
Condition of Drainage Systems	Quarterly, and after every storm exceeding 1 inch of rainfall	Damage and wear at inlets; structural integrity of vault system; condition FloGard inserts and outlets/ outlet structures	Perform required system maintenance
Preventive Maintenance Opportunities	Quarterly, and after every storm exceeding 1 inch of rainfall	Sources of potential pollutants, proper lawn maintenance, areas of erosion	Perform required preventive maintenance

*Inspected in accordance with Table 1 above
**Dispose debris and sediment in a licensed disposal facility in New Jersey. For a list of licensed disposal facilities contact a licensed disposal contractor or the Borough of Upper Saddle River DPW at (201) 327-2700.

IX. PREVENTIVE MEASURES TO REDUCE MAINTENANCE

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

1. Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
2. Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
3. Ensure the proper disposal of hazardous wastes and chemicals.
4. Plan lawn care to minimize the use of chemicals and pesticides.
5. Sweep paved surfaces and put the sweepings back on the lawn.
6. Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
7. Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
8. Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
9. Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

X. CORRECTIVE RESPONSE TO EMERGENCY CONDITIONS

The parties responsible for the stormwater management facilities should be well prepared to respond to emergencies and take necessary corrective action to prevent emergencies from happening. The following is a discussion of emergency response and emergency prevention.

Emergency Response

Below is a list of potential emergency conditions related to the detention basins and their appurtenances. In the case of any emergency, dial 911 immediately.

- Accidental or Intentional Vehicular or Pedestrian Entry – The initial response to any emergency is to call 911. Be prepared to give the exact location, by street address, of the emergency location. Flow in a detention basin can be very strong especially in the vicinity of the outlet structure. Only trained personnel should enter a full detention basin to attempt a rescue.

- Hazardous Waste Spill - The initial response to any emergency is to call 911. Inform the dispatcher that the emergency involves a hazardous waste spill. The dispatcher will contact the Bergen County Hazardous Materials Response Team (HazMat) at (201) 785-5757 or the Bergen County Utilities Authority Hazardous at (201) 641-2552. Follow the directions of the emergency responders upon their arrival. Do not go near the detention basin nor allow anyone to go near the detention basin or spill area. A hazardous spill of liquid chemicals that occurs within the property will likely drain to the detention basins onsite.

- Flooding – If a detention basin appears to be approaching a condition of flooding or overflow, contact the police by dialing 911. Do not attempt to unclog a blockage in the system to remedy the problem. Follow the directions of the emergency responders upon their arrival.

- Downed Power Lines - The initial response to any emergency is to call 911. Be prepared to give the exact location, by street address, of the emergency location. Keep a safe distance from any standing water. At a safe distance, stop vehicular and pedestrian traffic from approaching the area of the downed power line. Contact local utility provider immediately.

Emergency Prevention

Below is a list of measures that can be taken to help to prevent emergency situation from happening at the onsite detention basins.

- Outlet Works Cleaning – Flooding at the detention basins is typically caused by clogging at the inlets and/or outlet structures. The outlet structures should be maintained in accordance with the schedule above.

- Tree Pruning – Periodically inspect tree branches that could impact power lines. Contact local utility provider for tree pruning in the vicinity of power lines.

XI. Annual Evaluation of the Effectiveness of the Plan

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

APPENDIX A

Subsurface Detention Basin
Maintenance Protocol

The underground stormwater detention system design provides easy access for inspection and maintenance as follows:

Inspection

Quarterly inspections, at least four (4) times annually, of the underground stormwater management systems and following every storm event exceeding 1 inch of rainfall are recommended. The detention system includes an Isolator Row to trap any sediment in a single row for easy cleaning and maintenance. If upon visual inspection it is found that the average depth of sediment in the Isolator Row exceeds **3 inches**, clean-out should be performed. The system is also equipped with inspection ports at the ends of each row. A review of the drain time for the system shall be observed to ensure that the functionality of the system is in accordance with the NJDEP BMP Manual. A stadia rod can be inserted at each inspection port to determine if the stormwater detention basin is not performing properly.

Maintenance

If inspection indicates the potential need for maintenance, access is provided standard manholes located at each of the four corners for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high-pressure water nozzle to propel itself through the system while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best.

Step 1) Inspect detention system for sediment:

A) Remove all manhole cover at all components of the detention system.
B) Using a flashlight, inspect the detention system through the outlet pipe.
    a. Mirrors on poles or cameras may be used to avoid a confined space entry.
    b. Follow OSHA regulations for confined space entry if entering manhole.
C) If the average sediment level is approximately 3 inches in depth, proceed to Step 2. If not, proceed to Step 3.

Step 2) Clean out detention system using the JetVac process:

A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable.
B) Apply multiple passes of JetVac until backflush water is clean.
C) Vacuum manhole sump as required.

Step 3) Replace all lids and covers. Record observations and actions.
Step 4) Inspect & clean catch basins and manholes upstream of the detention system.

APPENDIX B
Maintenance Cost Estimate

Proposed Self-Storage Facility
Upper Saddle River, NJ

ANNUAL STORMWATER MANAGEMENT SYSTEM
CORRECTIVE and PREVENTIVE MAINTENANCE COST ESTIMATE

ITEM	UNITS	FREQUENCY	UNIT PRICE	TOTAL
Corrective Maintenance Activities				
1A. Trash/debris removal from site	1	4*	$200	$800
1B. Trash/debris removal site from inlets	18	4*	$50	$3,600
2. Sediment removal from basin (Jet-Vac)	1	2*	$1,000	$4,000
3.FloGard + Plus cleaning	2	3*	$25	$150
4. FloGard + Plus filter medium replacement	2	1 (each year)	$250	$500
Preventive Maintenance Activities				
1. Educate proprty owners	1	1	$1,000	$1,000
2. Keep property, streets and gutters, and parking lots free of trash, debris and lawn clippings	1	12	$100	$1,200
3. Ensure proper disposal of hazardous wastes and chemicals (provide proper containers)	1	1	$100	$100
4. Plan lawn care to minimize chemicals and pesticides	1	1	$0	$0
5. Sweep paved surfaces	1	12	$100	$1,200
6. Keep supply of absorbents on site in case of fluid leaks from automobiles	1	1	$50	$50
7. Revegetate bare surfaces	1	2	$100	$200
8. Avoid material storage outdoors	1	1	$0	$0
			TOTAL	**$12,800**

* Shall be performed quarterly and after every storm event exceeding 1" of rainfall in 1hr.
Note: In the first year of operation, the isolater row should be inspected twice. For subesquent years, the inspection should be adjusted based upon previous observation of sediemnt deposition.

APPENDIX C
Product Literature

StormTrap®

MODULAR CONCRETE
STORMWATER MANAGEMENT

STORMWATER MANAGEMENT SOLUTIONS

StormTrap offers the industry's best solutions for managing runoff, protecting waterways and improving the use of your property. Whether you are concerned about detention, retention, water quality or water harvesting, StormTrap has a design that will reduce your footprint, accommodate any site constraints, lower overall costs and meet your specific project needs.

SingleTrap®

A durable stormwater management system customized to your site's exact requirements, ideal for working in an extremely limited space while preserving land above for parks, buildings or parking lots.

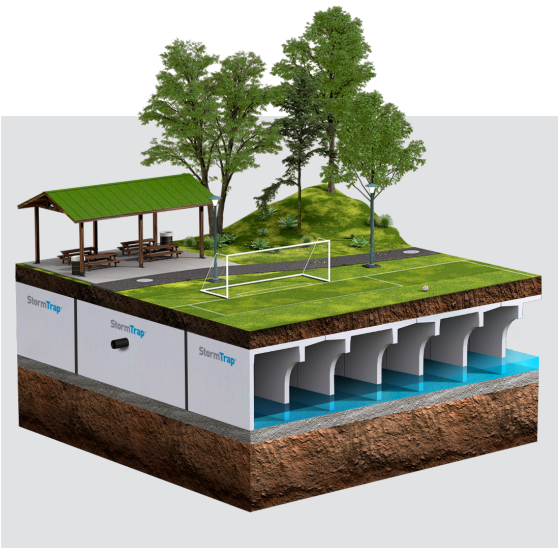
DoubleTrap®

The stormwater management solution you need to control runoff volume and discharge timing. Its modular design maximizes storage volume while minimizing footprint and installation cost.

STORMWATER APPLICATIONS

Detention

StormTrap underground stormwater detention systems temporarily store runoff in large underground chambers before releasing it at a controlled rate. This mitigates erosion, flooding and many of the other harmful effects of high volumes of stormwater runoff.



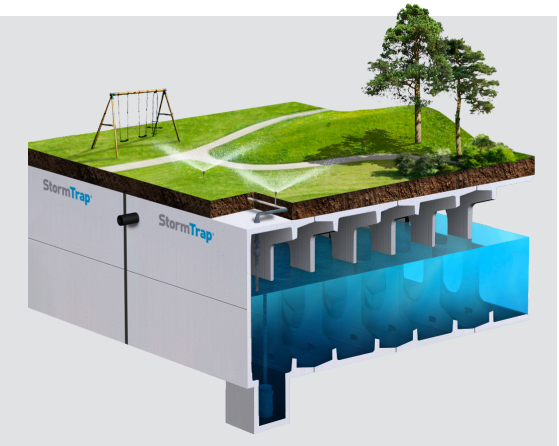
Infiltration

The StormTrap infiltration system provides a large infiltrative surface area that allows water to recharge into the native soil. The system can also help meet low impact development (LID) goals by reducing the volume of stormwater runoff discharged from a site.

Treatment

StormTrap is committed to improving stormwater quality by deploying our range of treatment products that target your pollutant issues with integrated or stand-alone solutions.

- **Filtration:** Sandfilters use various media to remove pollutants such as nutrients and heavy metals
- **Sedimentation:** Remove suspended solids with systems customized for your particle size and flow rate
- **Oil/Water Separation:** Baffle chambers eliminate hydrocarbons from runoff
- **Litter, Trash and Debris Removal:** Disposable mesh nets efficiently capture and remove trash and floatables from Stormwater and CSO discharges



Reuse and Harvesting

StormTrap offers rainwater harvesting applications that collect stormwater on site for use in irrigation or as greywater inside buildings.

These sustainable stormwater management practices adhere to low impact development (LID) principles for runoff reduction and also contribute to LEED (Leadership in Energy and Environmental Design) design credits for Sustainable Sites and Water Efficiency.

SIGNIFICANT ADVANTAGES

Increase Options

Sizes ranging from 1'1" to 11'4" in 1" increments

Designed to exceed HS-20 loading with minimum of 6" cover

Locally manufactured in a NPCA (National Precast Concrete Association) certified facility

Modular design maximizes storage volume while minimizes footprint and cost

Lower Costs

Installed savings compared to traditional systems

Innovative design allows quick and efficient installation

Reduced labor and excavation costs

Meets water quantity requirements without compromising land use

Minimize Maintenance

Total accessible void storage for easy maintenance

Reclaim 100% of original storage volume

High-strength precast concrete provides up to 100 years of service life

Streamline Design and Installation

Structural stamp on each project

Budget estimate for system and installation

Complete set of drawings

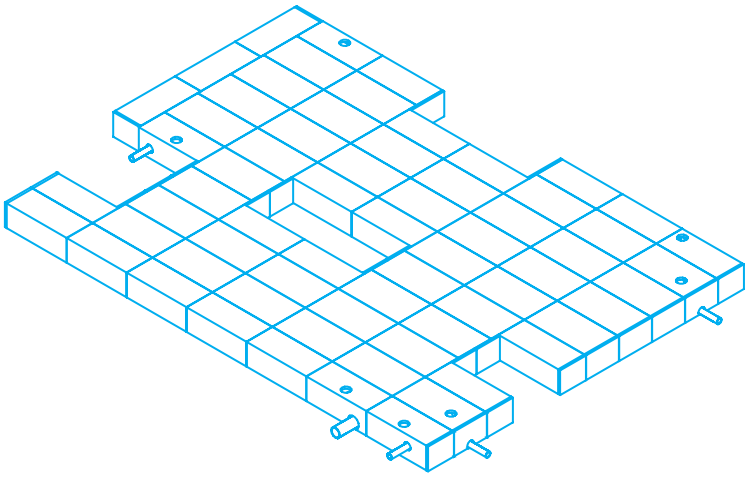
Pre-construction meeting

Representative on site during installation

FLEXIBLE AND ADAPTABLE DESIGNS

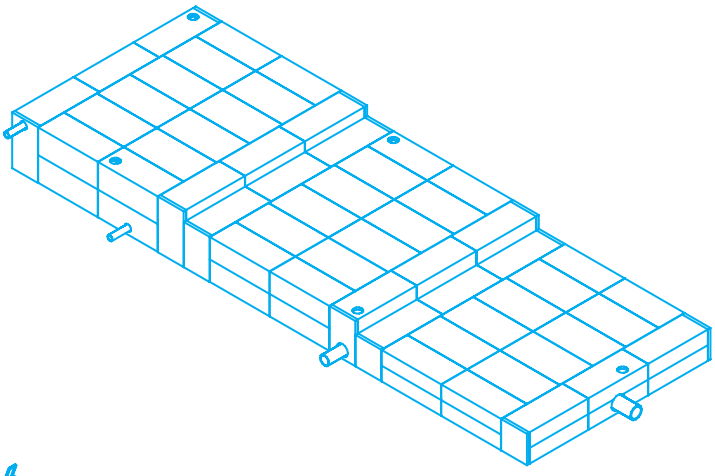
Unique Configurations

Flexible, modular design easily accommodates existing utilities, light pole foundations, trees and other job site constraints



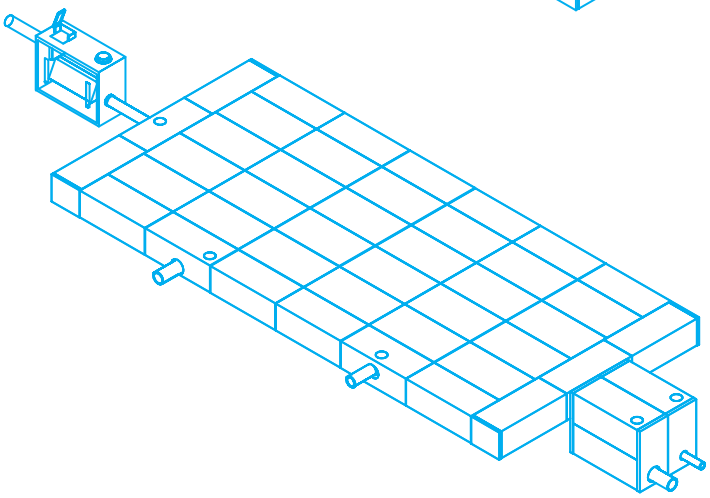
Varying Heights

Made of reinforced, high strength concrete available in sizes ranging from 1'1" to 11'4" in 1" increments



Integrated Applications

Integrated solutions, such as the SiteSaver water quality device or outlet control structures



PHONE 877 867 6872
WEB stormtrap.com

Schedule a lunch and learn, download product specifications, or request a free Design & Budget estimate to get your project started!

STORMTRAP MAINTENANCE MANUAL

1. Introduction

Regular inspections are recommended to ensure that the system is functioning as designed. Please call your Authorized StormTrap Representative if you have questions in regards to the inspection and maintenance of the StormTrap system. Prior to entry into any underground storm sewer or underground detention systems, appropriate OSHA and local safety regulations and guidelines should be followed.

2. Inspection Schedules for Municipalities

StormTrap Stormwater Management Systems are recommended for inspection whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. This will economize the cost of the inspection if it is done at the same time the Municipal crews are visiting the area.

3. Inspection Schedules for Private Development

StormTrap Stormwater Mangement Systems, for a private development, are recommended for inspection after each major storm water event. At a minimum, until a cleaning schedule can be established, an annual inspection is recommended. If inspected on an annual basis, the inspection should be conducted before the stormwater season begins to be sure that everything is functioning properly for the upcoming storm season.

4. Inspection Process

Inspections should be done such that at least 2-3 days has lapsed since the most recent rain event to allow for draining. Visually inspect the system at all manhole locations. Utilizing a sediment pole, measure and document the amount of silt at each manhole location (Figure 1). Inspect each pipe opening to ensure that the silt level or any foreign objects are not blocking the pipes. Be sure to inspect the outlet pipe(s) because this is typically the smallest

pipe in the system. It is common that most of the larger materials will be collected upstream of the system in catch basins, and it is therefore important at time of inspections to check these structures for large trash or blockages.

Remove any blockages if you can during the inspection process only if you can do so safely from the top of the system without entering into the system**. Do not go into the system under any circumstances** without proper ventilation equipment and training. Pass any information requiring action onto the appropriate maintenance personnel if you cannot remove the blockages from above during the inspection process. Be sure to describe the location of each manhole and the type of material that needs to be removed.

The sediment level of the system should also be measured and recorded during the inspection process. Recording the sediment level at each manhole is very important in order get a history of sediment that can be graphed over time (i.e. years) in order to estimate when the system will need to be maintained next. It is also important to keep these records to verify that the inspection process was actually performed if anyone asks for your records in the future.

The sediment level in the underground detention system can be determined from the outside of the system by opening up all the manholes and using a sediment pole to measure the amount of sediment at each location. Force the stick to the bottom of the system and then remove it and measure the amount of sediment at that location. Again, do not go into the system under any circumstances without proper ventilation equipment and training.

5. When to Clean the System

Any blockages should be safely removed as soon as practical so that the Stormwater detention system will fill and drain properly before the next stormwater event.

The Dry Detention System should be completely cleaned whenever the sediment occupies more than 10% to 15% of the originally designed system's volume. The Wet Detention System should be cleaned when the sediment occupies more than 30% or 1/3rd of the originally designed system's volume. NOTE: Check with your municipality in regards to

cleaning criteria, as the allowable sediment before cleaning may be more or less then described above.

6. How to Clean the StormTrap

The system should be completely cleaned back to 100% of the originally designed storage volume whenever the above sediment levels have been reached. Be sure to wait at least 3 days after a stormwater event to be sure that the system is completely drained (if it is a Dry Detention System), and all of the sediments have settled to the bottom of the system (if it is a Wet Detention System).

Do not enter the System unless you are properly trained, equipped, and qualified to enter a confined space as identified by local occupational safety and health regulations.

There are many maintenance companies that are in business to help you clean your underground stormwater detention systems and water quality units. Please call your StormTrap representative for referrals in your area.

A. Dry Detention System Cleaning

Maintenance is typically performed using a vacuum truck. Sediment should be flushed towards a vacuum hose for thorough removal. For a Dry Detention System, remove the manhole cover at the top of the system and lower a vacuum hose into one of the rows of the StormTrap system. Open up the manhole at the opposite end of the StormTrap and use sewer jetting equipment to force water in the same row from one end of the StormTrap row to the opposite side. The rows of the StormTrap are completely open in one contiguous channel from one end to the other for easy cleaning.

Place the vacuum hose and the sewer jetting equipment in the next row and repeat the process until all of the rows have been cleaned.

When finished, replace all covers that were removed and dispose of the collected material properly.

B. Wet Detention System Cleaning

If the system was designed to maintain a permanent pool of water, floatables and any oil should be removed in a separate procedure prior to the removal of all sediment.

The floatable trash is removed first by using a bucket strainer to capture and remove any floating debris.

The floatable oils are then removed off the top of the water by using the vacuum truck to suck off any floatable fluids and liquids.

The next step is to use the vacuum truck to gently remove the clarified water above the sediment layer.

The final step is to clean the sediment for each row as described above in the paragraph "A. Dry Detention System Cleaning". For smaller systems, the vacuum truck can remove all of the sediment in the basin without using the sewer jetting equipment because of the smaller space.

7. Inspection Reports

Proof of these inspections is the responsibility of the property owner. All inspection reports and data should be kept on site or at a location where they will be accessible for years in the future. Some municipalities require these inspection and cleaning reports to be forwarded to the proper governmental permitting agency on an annual basis.

Refer to your local and national regulations for any additional maintenance requirements and schedules not contained herein. Inspections should be a part of your standard operating procedure.

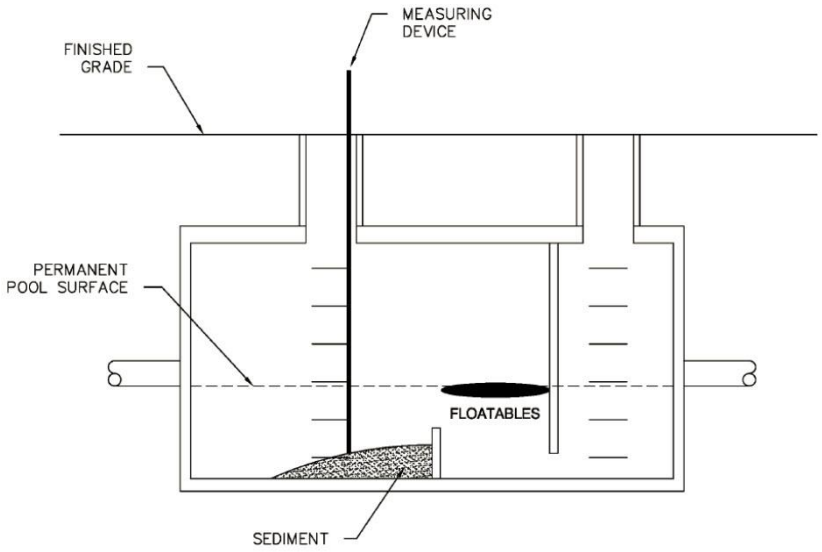


Figure 1. During inspection, measure the distance from finished grade to the top of the sediment inside the system.

Sample inspection and maintenance log

Date	Depth of Sediment	Accumulated Trash	Maintenance Performed	Maintenance Personnel	Comments
2/5/2012	3”	None	Sediment Removal/Vac	B. Johnson	

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EMAIL info@stormtrap.com
1287 Windham Parkway
Romeoville, Illinois 60446

HP Storm

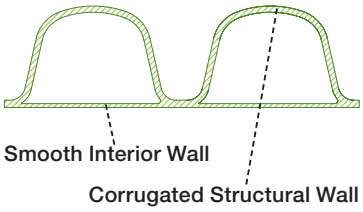
HIGH PERFORMANCE

HP Storm Pipe 12”–60”

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

HP STORM PIPE 12”–60” FOR STORM APPLICATIONS



Overview

An addition to our proven line of pipe products, HP Storm is a high-performance polypropylene (PP) pipe for gravity-flow storm drainage applications. HP Storm is the perfect choice when premium joint performance and/or greater pipe stiffness is required. HP Storm couples advanced polypropylene resin technology with a proven, dual-wall profile design for superior performance and durability.

Specify HP Storm with confidence based on national standards and approvals. This innovative product meets or exceeds ASTM F2881 and AASHTO M330. From a federal perspective, polypropylene pipe is approved for use by the Army Corps of Engineers for storm drainage applications under Section 33 40 00 (Unified Facilities Guide Specifications). The Federal Aviation Authority (FAA) permits polypropylene pipe under airfield pavements per Item D-701, Pipe for Storm Drains and Culverts in AC 150/5370-10G (Standards for Specifying Construction of Airports). Additionally, the American Railway Engineering and Maintence-of-Way Association (AREMA) approves polypropylene pipe in storm drainage applications under railroads.

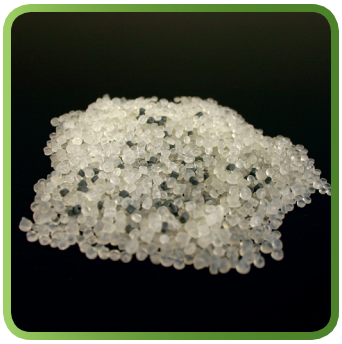
Interior View

Advanced Dual Wall Profile Construction

12”-60” (300 - 1500 mm) diameter HP Storm pipe utilizes an enhanced dual wall construction, providing increased pipe stiffness. The additional stiffness and beam strength enhances jobsite performance in stringent line and grade requirements. The pipe profile is completed with a smooth interior which provides additional strength and excellent flow characteristics.

Superior Polypropylene Material

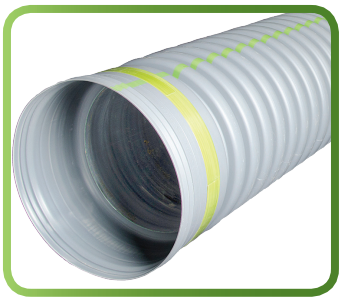
Made from an engineered impact modified co-polymer compound, the superior strength and material properties of polypropylene offer robust pipe stiffness, excellent handling characteristics, and long service life when compared to traditional storm sewer products. It is highly resistant to chemical attack and is unaffected by soils or effluents with PH ranges 1.5 to 14. The unique light grey resin color provides immediate jobsite recognition as well as improving the pipe’s interior visibility during post-installation inspection.



Polypropylene Resin

Superior Joint Performance

HP Storm pipe has an extended bell that adds an additional factor of safety within each joint. The joint performance meets or exceeds the 10.8 psi laboratory performance standards per ASTM D3212 requirements. Third party certification of joint performance is available upon request.



Extended Bell

In the field, each section of HP Storm may be tested by a low pressure air test, according to ASTM F1417, which is a commonly used standard and specifies that 3.5 psi air pressure be held for a specified length of time based upon pipe diameter and length of run.

Where an infiltration/exfiltration test is preferred, ASTM F2487 specifies a simplistic method of verifying proper joint performance.

Fittings

Both standard and custom fittings are available for the HP Storm product line. A complete line of standard Nyloplast PVC molded fittings are available in the 12”–30” (300-750mm) mainline sizes. Standard branch laterals are designed to accept SDR-35 or SDR-26 pipe.

Fabricated Wye Fitting

Diameter Range

HP Storm is currently manufactured in the 12”–60” (300-1500mm) size range and in 20-foot (6m) lengths. The 20-foot (6m) lengths aid in speed of installation and reduce the total number of joints.

DIAMETER	PROFILE TYPE	LENGTH	INSIDE DIAMETER	OUTSIDE DIAMETER	TRUCKLOAD FOOTAGE
12 in. (300 mm)	Dual Wall	20 ft. (6 m)	12.2 in. (310 mm)	14.5 in. (368 mm)	2400 ft. (731.5 m)
15 in. (375 mm)	Dual Wall	20 ft. (6 m)	15.1 in. (384 mm)	17.7 in. (450 mm)	1600 ft. (487.7 m)
18 in. (450 mm)	Dual Wall	20 ft. (6 m)	18.2 in. (462 mm)	21.4 in. (544 mm)	1120 ft. (341.4 m)
24 in. (600 mm)	Dual Wall	20 ft. (6 m)	24.1 in. (612 mm)	28.0 in. (711 mm)	600 ft. (182.9 m)
30 in. (750 mm)	Dual Wall	20 ft. (6 m)	30.2 in. (767 mm)	35.5 in. (902 mm)	360 ft. (109.7 m)
36 in. (900 mm)	Dual Wall	20 ft. (6 m)	36.0 in. (914 mm)	41.5 in. (1054 mm)	240 ft. (73.2 m)
42 in. (1050 mm)	Dual Wall	20 ft. (6 m)	42.0 in. (1067 mm)	47.4 in. (1204 mm)	160 ft. (48.8 m)
48 in. (1200 mm)	Dual Wall	20 ft. (6 m)	47.9 in. (1217 mm)	54.1 in. (1374 mm)	120 ft. (36.6 m)
60 in. (1500 mm)	Dual Wall	20 ft. (6 m)	59.9 in. (1521 mm)	67.1 in. (1704 mm)	80 ft. (24.4 m)

Fittings Available in PVC or PP

Tap Connections

A standard tapping product, such as INSERTA TEE®, is compatible with HP Storm.

Typical INSERTA TEE Tap

Repair Couplers

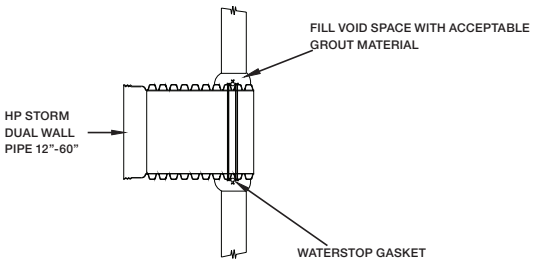
Depending on local requirements, ADS offers a full range of repair coupling options. For soil-tight performance, split couplers and Mar Mac® repair bands are offered. Testable repair couplers are also available, which include stainless steel restraint bands and Nyloplast® PVC repair sleeves.

Repair Coupler

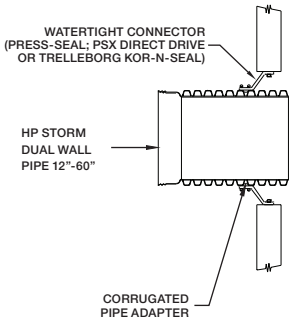
12”–60” Structure Connections

Storm sewer structure connection requirements vary greatly by region. For soil-tight performance, HP Storm exterior corrugations provide an effective profile for grouted connections. For watertight performance, ADS offers a wide selection of connection options utilizing some of the most widely used manhole connectors on the market today from companies such as A-Lok®, Trelleborg® and Press Seal® Gasket Corporation.

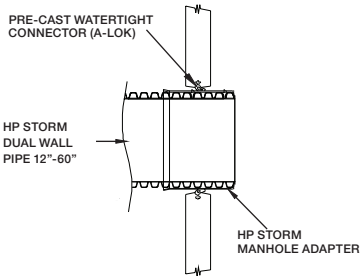
Grouted Waterstop Manhole Connection



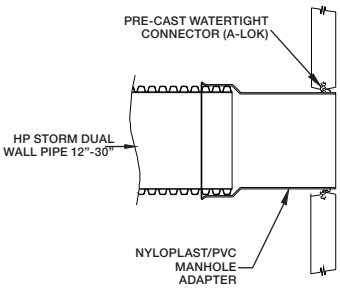
Flexible Boot Connection



Pre-Cast Compression Gasket Connection



Pre-Cast Compression Gasket Connection



Manole Compression Gasket Connection with Corrugated Pipe Adapter

ADS HP STORM 12”–60” PIPE SPECIFICATION

SCOPE

This specification describes 12– through 60–inch (300 to 1500 mm) ADS HP Storm pipe for use in gravity-flow storm drainage applications.

PIPE REQUIREMENTS

- 12– through 60-inch (300 to 1500 mm) pipe shall have a smooth interior and annular exterior corrugations and meet or exceed ASTM F2881 and AASHTO M330.
- Manning’s “n” value for use in design shall be 0.012.

JOINT PERFORMANCE

Pipe shall be joined with a gasketed integral bell & spigot joint meeting the requirements of ASTM F2881.

12– through 60–inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during joint assembly.

12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

FITTINGS

Fittings shall conform to ASTM F2881 and AASHTO M330. Bell and spigot connections shall utilize a spun–on, welded or integral bell and spigots with gaskets meeting ASTM F477. Bell & spigot fittings joint shall meet the watertight joint performance requirements of ASTM D3212. Corrugated couplings shall be split collar, engaging at least 2 full corrugations.

FIELD PIPE AND JOINT PERFORMANCE

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or F2487. Appropriate safety precautions must be used when field testing any pipe material. Contact the manufacturer for recommended leakage rates.

MATERIAL PROPERTIES

Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1.

INSTALLATION

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12– through 48–inch (300 to 1200 mm) diameters shall be one foot (0.3 m) and for 60–inch (1500 mm) diameters, the minimum cover shall be 2 feet (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.04. Contact your local ADS representative or visit our website at www.ads–pipe.com for a copy of the latest installation guidelines.

PIPE DIMENSIONS

Nominal Diameter in. (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Average Pipe I.D. in. (mm)	12.2 (310)	15.1 (384)	18.2 (462)	24.1 (612)	30.2 (767)	36.0 (914)	42.0 (1067)	47.9 (1217)	59.9 (1521)
Average Pipe O.D. in. (mm)	14.5 (368)	17.7 (450)	21.4 (544)	28.0 (711)	35.5 (902)	41.5 (1054)	47.4 (1204)	54.1 (1374)	67.1 (1704)
Minimum Pipe Stiffness at 5% Deflection* #/in/in. (kN/m^2)	75 (517)	60 (414)	56 (386)	50 (345)	46 (317)	40 (276)	35 (241)	35 (241)	30 (207)

*Minimum pipe stiffness values listed; contact a representative for maximum values.

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THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

Oldcastle Infrastructure™
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FLOGARD® LOPRO TRENCH DRAIN FILTER

Inspection and Maintenance Guide

DRAINAGE PROTECTION SYSTEMS
DPS
A division of Oldcastle Infrastructure

Water

SCOPE:

Federal, State and Local Clean Water Act regulations and those of insurance carriers require that stormwater filtration systems be maintained and serviced on a recurring basis. The intent of the regulations is to ensure that the systems, on a continuing basis, efficiently remove pollutants from stormwater runoff thereby preventing pollution of the nation's water resources. These specifications apply to the FloGard® LoPro Trench Drain Filter.

RECOMMENDED FREQUENCY OF SERVICE:

Drainage Protection Systems (DPS) recommends that installed FloGard LoPro Trench Drain Filters be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff, pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year, with a change of filter medium once per year. DPS technicians are available to do an on-site evaluation, upon request.

RECOMMENDED TIMING OF SERVICE:

DPS guidelines for the timing of service are as follows:

1. For areas with a definite rainy season: Prior to, during and following the rainy season.
2. For areas subject to year-round rainfall: On a recurring basis (at least three times per year).
3. For areas with winter snow and summer rain: Prior to and just after the snow season and during the summer rain season.
4. For installed devices not subject to the elements (washracks, parking garages, etc.): On a recurring basis (no less than three times per year).

SERVICE PROCEDURES:

1. The trench drain grate(s) shall be removed and set to one side.
2. The service shall commence with collection and removal of sediment and debris (litter, leaves, papers, cans, etc.).
3. The trench drain shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable.
4. Using an industrial vacuum, the collected materials shall be removed from the filter liner. (Note: DPS uses a truck-mounted vacuum for servicing FloGard LoPro Trench Drain Filters.)
5. When all of the collected materials have been removed, the filter assembly shall be removed from the drainage inlet. The outer filter liner shall be removed from the filter assembly and filter medium pouches shall be removed by unsnapping the tether from the interior ring and sent to one side.
   The filter liner, PVC body and fittings shall be inspected for continued serviceability. Minor damage or defects found shall be corrected on the spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and a quote submitted to the representative along with the Maintenance Record.
6. The filter liner and filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the PVC body interior ring.
7. The grate(s) shall be replaced.

REPLACEMENT AND DISPOSAL OF EXPOSED FILTER MEDIUM AND COLLECTED DEBRIS

The frequency of filter medium exchange will be in accordance with the existing DPS-Customer Maintenance Contract. DPS recommends that the medium be changed at least once per year. During the appropriate service, or if so determined by the service technician during a non-scheduled service, the filter medium pouches will be replaced. Once the exposed pouches and debris have been removed, DPS has possession and must dispose of it in accordance with local, state and federal agency requirements.

DPS also has the capability of servicing all manner of storm drain filters, catch basin inserts and catch basins without inserts, underground oil/water separators, stormwater interceptors and other such devices. All DPS personnel are highly qualified technicians and are confined-space trained and certified. Call us at (888) 950-8826 for further information and assistance.

FLOGARD® LOPRO TRENCH DRAIN FILTER

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Water

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STORM WATER

FLOGARD®
Trench Drain Filter

A Modular Filter Designed for Narrow and Constricted Areas

The FloGard Trench Drain Filter is a modular filter designed to collect sediment, debris and petroleum hydrocarbons from stormwater runoff into trench drain systems. It includes a UV-resistant woven geo-textile wrapped around a perforated core encapsulating a sorbent material which is easily replaced, providing for flexibility, ease of maintenance and economy.

For narrow and constricted areas often found in trench drains, the FloGard Trench Drain Filter provides an effective solution to comply with stormwater runoff issues. The units perform as an effective filtering device at low ("first flush") flows, and because of the built-in high-flow bypass, they will not impede the drainage system's maximum design flow.

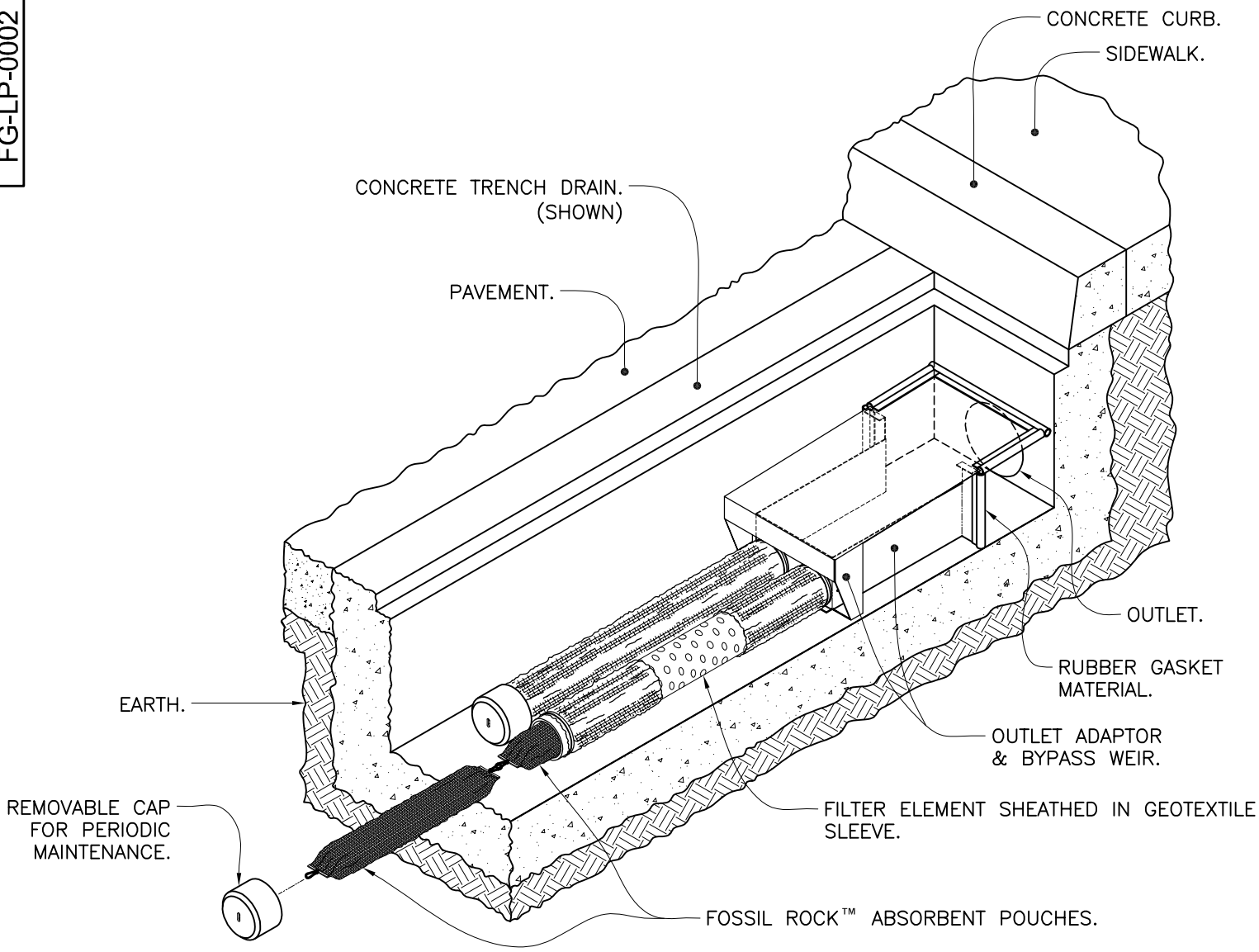
FloGard Trench Drain Filters are available in sizes to fit most common trench drains. Contact Oldcastle Infrastructure for additional sizes and project specific details.

SPECIFICATIONS

MODEL	FILTER TYPE	TRENCH WIDTH "ID" (CLEAR OPENING) (in)	MINIMUM TRENCH DEPTH (FROM BOTTOM OF GRATE) (in)	SOLIDS STORAGE CAPACITY (cu ft)**	FILTERED FLOW (cfs)**	TOTAL BYPASS CAPACITY (cfs)
FG-TDOF3	PIPE*	3.0	6.5	0.1	0.5	0.1
FG-TDOF4	PIPE*	4.0	6.5	0.2	0.5	0.1
FG-TDOF6	PIPE	6.0	6.5	0.4	0.5	0.2
FG-TDOF8	PIPE	8.0	6.5	0.7	0.5	0.3
FG-TDOF10	PIPE	10.0	6.5	0.9	0.5	0.5
FG-TDOF12	PIPE	12.0	6.5	0.9	1.0	0.6
FG-TDOF18	PIPE	18.0	6.5	1.3	1.5	1.1
FG-TDOF24	PIPE	24.0	6.5	1.8	2.0	1.5
FG-TDOA6	PANEL	6.0	4.5	0.4	0.2	0.2
FG-TDOA8	PANEL	8.0	4.5	0.7	0.2	0.3
FG-TDOA10	PANEL	10.0	4.5	0.8	0.3	0.5
FG-TDOA12	PANEL	12.0	4.5	1.0	0.4	0.6
FG-TDOA18	PANEL	18.0	4.5	1.4	0.8	1.1

*ALTERNATIVE ADAPTER CONFIGURATION.
**CAPACITY PER 5-FT SEGMENT USED.

FG-LP-0002



NOTES:

1. Filter insert shall have a high flow bypass feature.

2. Filter outlet adapter shall be constructed from stainless steel Type 304.
   Alternate outlet adaptor for shallow installations shall be PVC SCH-40. See detail B, sheet 2 of 2.

3. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.

4. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.

5. For alternate outlet adapter configurations used for extremely shallow trench drains contact Oldcastle Stormwater Solutions for engineering assistance.

6. Filter element should be a minimum of one half the length of trench. Confirm flow rate upon order.

Inlet Filtration

FloGard®

Catch Basin Insert Filter

Trench Drain Style

Oldcastle® Stormwater Solutions

7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

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DRAWING NO.	REV	ECO	DATE	
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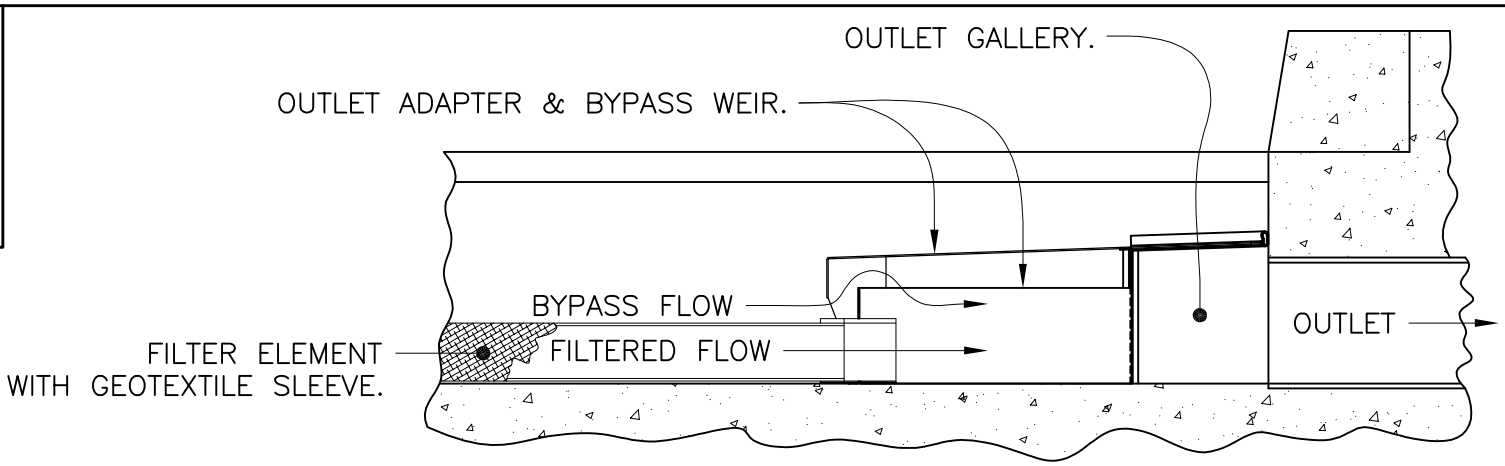
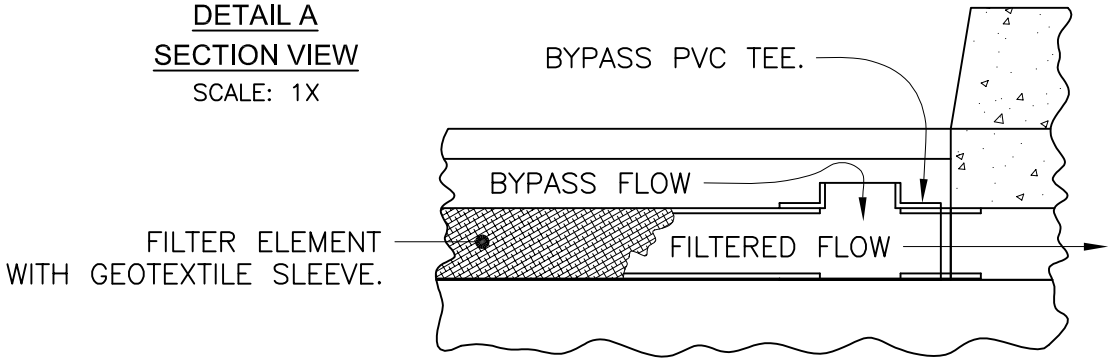
FG-LP-0002



DETAIL A
SECTION VIEW
SCALE: 1X



DETAIL B
SECTION VIEW
ALTERNATE ADAPTER CONFIGURATION
SCALE: 1X

SPECIFIER CHART

MODEL	FILTER TYPE	TRENCH WIDTH "ID" (CLEAR OPENING)	MINIMUM TRENCH DEPTH (FROM BOTTOM OF GRATE)	SOLIDS STORAGE CAPACITY CUBIC FEET **	FILTERED FLOW CUBIC FEET / SECOND **	TOTAL BYPASS CAPACITY CUBIC FEET /SECOND
FG-TDOF3	PIPE *	3.0	6.5	0.1	0.5	0.1
FG-TDOF4	PIPE *	4.0	6.5	0.2	0.5	0.1
FG-TDOF6	PIPE	6.0	6.5	0.4	0.5	0.2
FG-TDOF8	PIPE	8.0	6.5	0.7	0.5	0.3
FG-TDOF10	PIPE	10.0	6.5	0.9	0.5	0.5
FG-TDOF12	PIPE	12.0	6.5	0.9	1.0	0.6
FG-TDOF18	PIPE	18.0	6.5	1.3	1.5	1.1
FG-TDOF24	PIPE	24.0	6.5	1.8	2.0	1.5
FG-TDOA6	PANEL	6.0	4.5	0.4	0.2	0.2
FG-TDOA8	PANEL	8.0	4.5	0.7	0.2	0.3
FG-TDOA10	PANEL	10.0	4.5	0.8	0.3	0.5
FG-TDOA12	PANEL	12.0	4.5	1.0	0.4	0.6
FG-TDOA18	PANEL	18.0	4.5	1.4	0.8	1.1
FG-TDOA24	PANEL	24.0	4.5	1.8	1.1	1.5

* ALTERNATE ADAPTER CONFIGURATION. SEE DETAIL B.
**CAPACITY PER 5-FT. SEGMENT USED.

Inlet Filtration

FloGard®

Catch Basin Insert Filter

Trench Drain Style

Oldcastle® Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

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DRAWING NO.	REV	ECO	DATE	
FG-LP-0002	H	ECO-0142 JPR 7/13/16	JPR 2/21/07	SHEET 2 OF 2

APPENDIX D
Maintenance and Inspection Forms

STORMWATER MANAGEMENT SYSTEM
MAINTENANCE ACTIVITY FORM

Date:

Development Name: Proposed Self-Storage Facility

Address: 100 N.J.S.H. Route 17 North, Upper Saddle River, NJ Inspector:

Weather:

Date of Last Rainfall: Amount: Inches

Detention Basin Location:_____

Maintenance Category: Routine Restoration Rehabilitation
(Circle All That Apply)

MAINTENANCE ACTIVITIES PERFORMED

ROUTINE WORK

____ Trash/Debris Removal
____ Accumulated Sediment Removal
____ Accumulated Sediment Jet-Vac
____ FloGard + Plus Filter Insert Cleaning
____ Other (describe below)

Describe Restoration and Rehabilitation Work

Estimated Manhours:

Equipment/Material Used:

Comments:

This Maintenance Activity Form shall be kept indefinitely and made available to the Borough of Upper Saddle River Engineering Department upon request.

STORMWATER MANAGEMENT SYSTEM
INSPECTION REPORT FORM
(Underground Detention Basins and Storm Sewers)

Date:_____

Development Name: Proposed Self-Storage Facility

Address: 100 N.J.S.H. Route 17 North, Upper Saddle River, NJ Inspector:

Weather:

Date of Last Rainfall: Amount: Inches:

Detention Basin Location: _____

Reason for Inspection: Routine Complaint After Significant Rainfall Event
(Circle One)

INSPECTION SCORING - For each facility inspection item, insert one of the following scores:

0 = No deficiencies identified
2 = Routine maintenance required
1 = Monitor (potential for future problem)
3 =Immediate repair necessary
N/A = Not applicable

FEATURES

1.) Catch Basins

____Sediment/Debris Accumulation
____Condition of Casting
____Condition of Concrete Box
____Condition of Pipe Penetrations
____Other (Explain Below)

2.) Inlet Filters

____Sediment/Debris Accumulation
____Condition of Frame
____Condition of Filter Membrane
____Other (Explain Below)

3.) Storm Sewers

____Sediment/Debris Accumulation
____Cracking of Pipe
____Deformation
____Asphalt Settlement Above
____Other (Explain Below)

4.) Basin Inspection Ports

____Sediment/Debris Accumulation
____Condition Port
____Other (Explain Below)

5.) Basin Control Structure

____Sediment/Debris Accumulation
____Condition of Casting
____Condition of Concrete Box
____Condition of Pipe Penetrations
____Other (Explain Below)

6.) FloGard + Plus Catch Basin Inserts

____Sediment/Debris Accumulation
____Condition of Filters
____Other (Explain Below)

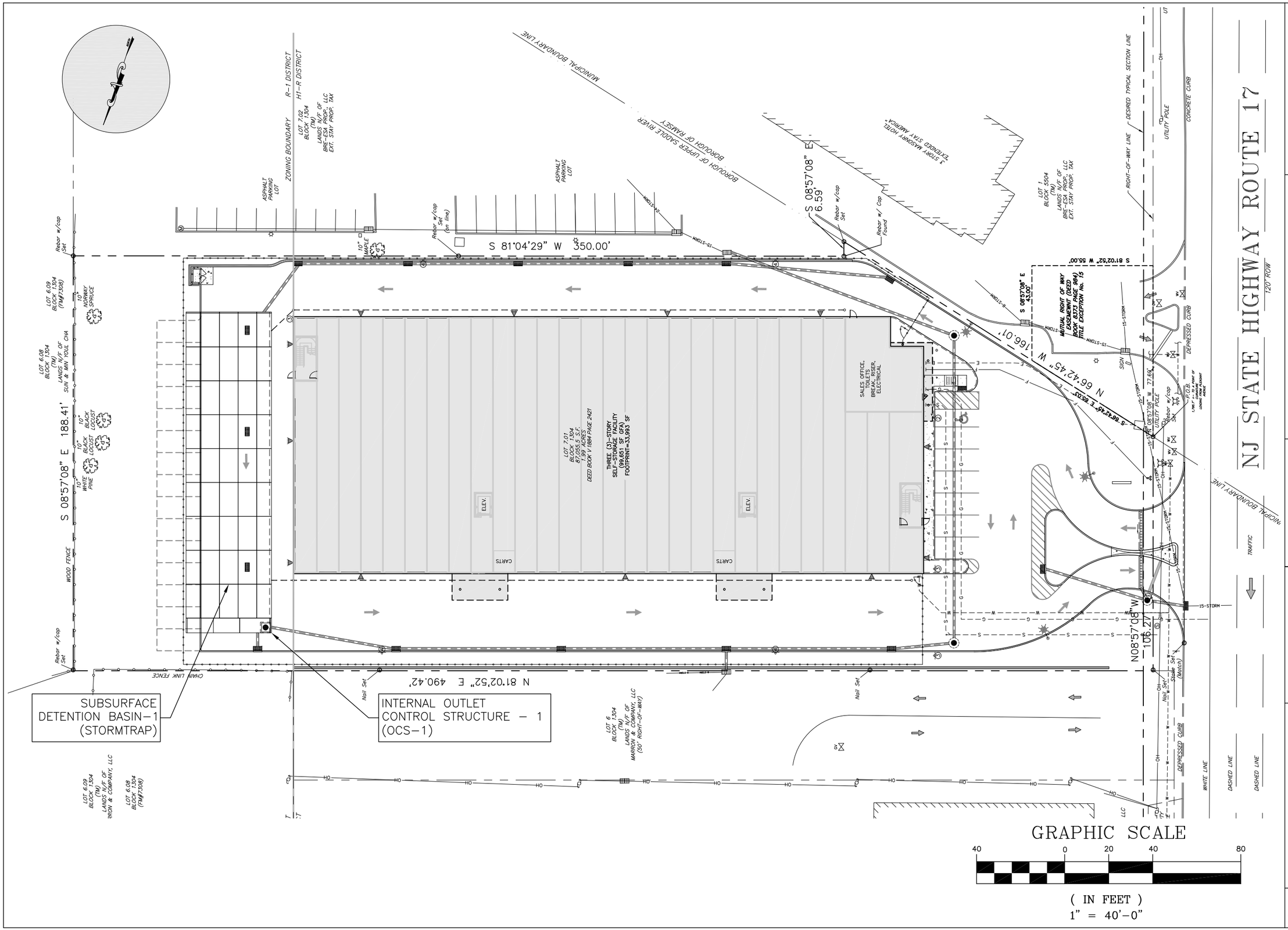
Inspection Summary / Additional Comments:

OVERALL FACILITY RATING (Circle One)

0 = No Deficiencies Identified
2 = Routine Maintenance Required
1 = Monitor (potential for future problem exists)
3 = Immediate Repair Necessary

This inspection form shall be kept indefinitely and made available to the Borough of Upper Saddle River Engineering Department upon request.

APPENDIX E
Basin Location Map and Details



L2A LAND DESIGN LLC
60 GRAND AVENUE
ENGLEWOOD, NJ 07631
201.227.0300 • 201.227.0001 (Fax)
www.L2Alanddesign.com
New Jersey Certificate of Authorization No. 24GA28130900

10/1/2020

Michael E. Dipple, P.E. DATE

NJ Professional Engineer #24GE04081200

WARNING: *COPIES OF THIS PLAN NOT BEARING THE ENGINEER'S INKED SEAL OVER THE PROFESSIONAL SIGNATURE IS NOT AN AUTHORIZED OFFICIAL COPY*

PROJECT:

PROPOSED SELF-STORAGE FACILITY
100 N.J.S.H. ROUTE 17 NORTH
BOROUGH OF UPPER SADDLE RIVER, BERGEN COUNTY, NJ

BLOCK: 1304; LOT: 7.01
TAX MAP: 13

DRAWING TITLE:

BASIN LOCATION MAP

SCALE:	REFER TO PLAN
DATE	1/17/2020
DESIGNED:	TEC
APPROVED:	MED
L2A PROJ. No.:	1901.161
DRAWING No.:	SK-01

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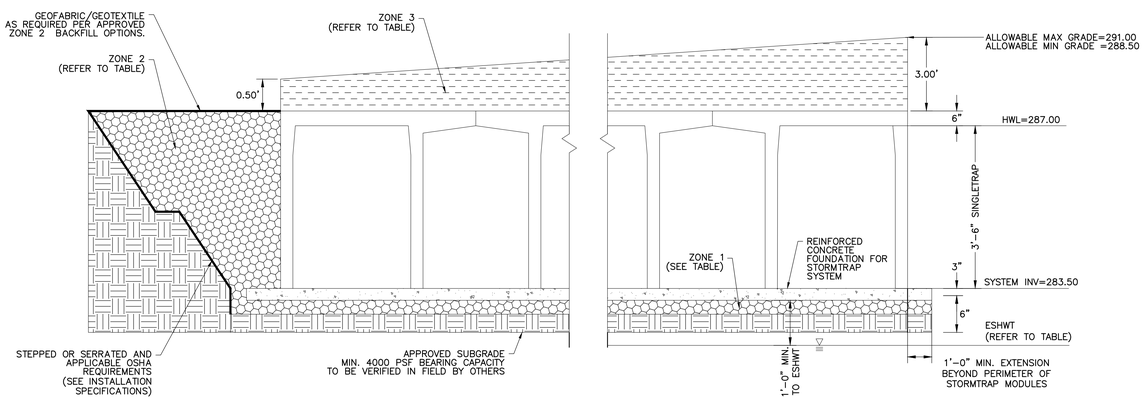


SECTION
(STORMTRAP SINGLETRAP 3'-6")

DESIGN CRITERIA:
ALLOWABLE MAX GRADE = 291.00
ALLOWABLE MIN GRADE = 288.5
SYSTEM INVERT = 283.50
STORMTRAP VOLUME = 17,326 CF

SITE SPECIFIC DESIGN CRITERIA:
1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN.=0.50' & MAX.=3.00'; CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.

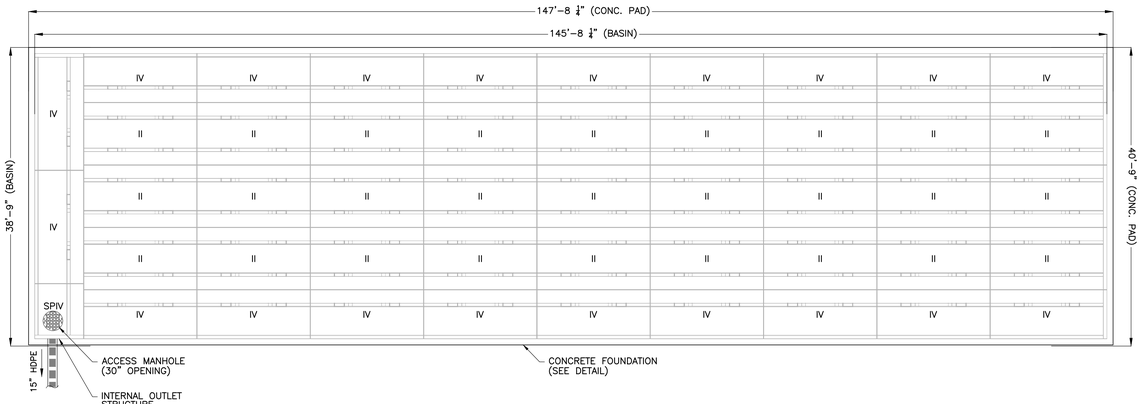
NOTES:
1. FIGURE NOT TO SCALE.
2. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
3. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
4. REFER TO MANUFACTURER'S INSTALLATION SPECIFICATIONS.
5. SP – INDICATES A MODULE WITH MODIFICATIONS.
6. P – INDICATES A MODULE WITH A PANEL ATTACHMENT.

LOADING DISCLAIMER:
STORMTRAP IS NOT DESIGNED TO ACCEPT ANY ADDITIONAL LOADINGS FROM NEARBY STRUCTURES NEXT TO OR OVER THE TOP OF STORMTRAP. IF ADDITIONAL LOADING CONSIDERATIONS ARE REQUIRED FOR STRUCTURAL DESIGN OF STORMTRAP, PLEASE CONTACT STORMTRAP IMMEDIATELY.

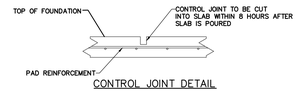
SUBSURFACE DETENTION BASIN - 1 CROSS SECTION (STORMTRAP SINGLETRAP)

	TYPE OF CHAMBER	TOP OF PAVEMENT	INVERT	CHAMBER HEIGHT	TOP OF CHAMBER	ESHWT [1]	HEIGHT ABOVE ESHWT	COMMENTS
NORTHERN (LOWER)	STORMTRAP	ELEV=291.00(MAX.) ELEV=288.50(MIN)	ELEV=283.50	3'-6"	ELEV=287.00	ELEV=280.50	3.00'	N/A
SOUTHERN (UPPER)			ELEV=284.23		ELEV=287.73	ELEV=283.00	1.00'	N/A

1. TEST PIT DATA BASED ON L2A LAND DESIGN, LLC FIELD OBSERVATIONS ON 3/21/16. THE OBSERVATIONS WERE REVIEWED IN THE FIELD BY A REPRESENTATIVE OF JOHNSON SOILS COMPANY. REFER TO L2A LAND DESIGN, LLC MEMORANDUM, DATED 3/22/16. REFER TO THE APPENDIX OF THE STORMWATER MANAGEMENT REPORT.



NOTES:
1. CONCRETE STRENGTH @ 28 DAYS, 5%-8% ENTRAINED AIR, 4" MAX. SLUMP.
2. NET ALLOWABLE SOIL PRESSURE AS INDICATED ON SHEET 1.0.
3. SOIL CONDITIONS TO BE VERIFIED ON SITE BY OTHERS.
4. REBAR: ASTM A-615 GRADE 60, BLACK BAR.
5. DIMENSION OF FOUNDATION MUST HAVE 1'-0" OVERHANG BEYOND EXTERNAL FACE OF MODULE.
6. DIMENSION OF STORMTRAP SYSTEM ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
7. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
8. THE CONTROL JOINTS SHALL BE BETWEEN (IF REQUIRED BY ENGINEER OF RECORD) 16'-0" TO 24'-0" MAX APART.
9. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.



CONTROL JOINT DETAIL

STORMTRAP FOUNDATION DETAIL

MAXIMUM SYSTEM COVER	SLAB THICKNESS	CONCRETE STRENGTH	REINFORCEMENT (BOTH DIRECTIONS)	"A" CLEAR COVER
8" – 12"	0'-8"	4000 PSI	#4 @ 18" O.C.	3.5"
>1'-0" – 2'-0"	0'-8"	4000 PSI	#4 @ 16" O.C.	3.5"
>2'-0" – 3'-0"	0'-8"	4000 PSI	#4 @ 12" O.C.	3.5"
>3'-0" – 4'-0"	0'-8"	4000 PSI	#4 @ 12" O.C.	3.5"
>4'-0" – 5'-0"	0'-8"	4000 PSI	#5 @ 18" O.C.	3.375"
>5'-0" – 6'-0"	0'-8"	4000 PSI	#5 @ 16" O.C.	3.375"
>6'-0" – 7'-0"	0'-8"	4000 PSI	#5 @ 16" O.C.	3.375"
>7'-0" – 8'-0"	0'-9"	4000 PSI	#5 @ 12" O.C.	3.875"
>8'-0" – 9'-0"	0'-10"	4000 PSI	#5 @ 12" O.C.	4.375"
>9'-0" – 10'-0"	0'-10"	4500 PSI	#5 @ 12" O.C.	4.375"

SUBSURFACE DETENTION BASIN - 1 PLAN VIEW (STORMTRAP SINGLETRAP)

FILL DEPTH	TRACK WIDTH	MAX VEHICLE WEIGHT (KIPS)	MAX GROUND PRESSURE
12"	12"	51.8	1690 psf
	18"	56.1	1219 psf
	24"	68.1	1111 psf
	30"	76.7	1000 psf
	36"	85.0	924 psf

NOTE:
TRACK LENGTH NOT TO EXCEED 15'-4".
ONLY TWO TRACKS PER VEHICLE.

ZONE CHART

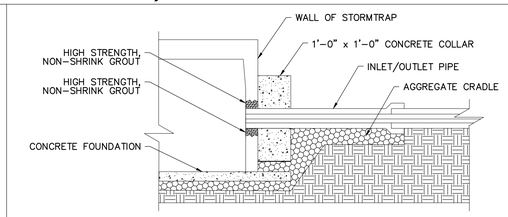
ZONES	ZONE DESCRIPTIONS	REMARKS
ZONE 1	FOUNDATION AGGREGATE	#5 (3/4") STONE AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
ZONE 2	BACKFILL	UNIFIED SOILS CLASSIFICATION (GW, GP, SW, SP) OR SEE BELOW FOR APPROVED BACKFILL OPTIONS
ZONE 3	FINAL COVER OVERTOP	MATERIALS NOT TO EXCEED 120 PCF

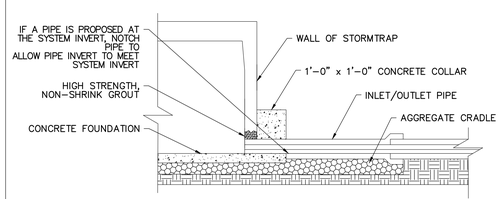
APPROVED ZONE 2 BACKFILL OPTIONS

OPTION	REMARKS
3/4" STONE AGGREGATE	THE STONE AGGREGATE SHALL CONSIST OF CLEAN AND FREE DRAINING ANGULAR MATERIAL. THE SIZE OF THIS MATERIAL SHALL HAVE 100% PASSING THE 1" SIEVE WITH 0% TO 5% PASSING THE #8 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE BACKFILL (ASTM SIZE #57) AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
SAND	IMPORTED PURE SAND IS PERMITTED TO BE USED AS BACKFILL IF IT IS CLEAN AND FREE DRAINING. THE SAND USED FOR BACKFILLING SHALL HAVE LESS THAN 40% PASSING #40 SIEVE AND LESS THAN 5% PASSING #200 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE SAND BACKFILL.
CRUSHED CONCRETE AGGREGATE	CLEAN, FREE DRAINING CRUSHED CONCRETE AGGREGATE MATERIAL CAN BE USED AS BACKFILL FOR STORMTRAP'S MODULES. THE SIZE OF THIS MATERIAL SHALL HAVE 100% PASSING THE 1" SIEVE WITH 0% TO 5% PASSING THE #8 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE BACKFILL.
ROAD PACK	STONE AGGREGATE 100% PASSING THE 1-1/2" SIEVE WITH LESS THAN 12% PASSING THE #200 SIEVE (ASTM SIZE #467). GEOFABRIC AS PER GEOTECHNICAL ENGINEER RECOMMENDATION.

STORMTRAP ZONE INSTALLATION SPECIFICATIONS/PROCEDURES
1. THE FILL PLACED AROUND THE STORMTRAP MODULES MUST DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTER LOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MUST BE FREE-DRAINING MATERIAL. SEE ZONE 2 BACKFILL CHART ON THIS PAGE FOR APPROVED BACKFILL OPTIONS. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFIRM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED (PROVIDED BY OTHERS).
2. DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.
3. THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN HS-20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER NOT TO EXCEED THE ALLOTTED DESIGN LOADING. SEE CHART FOR TRACKED VEHICLE WIDTH AND ALLOWABLE MAXIMUM PRESSURE PER TRACK.
4. STONE AGGREGATE FOUNDATION IN ZONE 1 IS RECOMMENDED FOR LEVELING PURPOSES ONLY (OPTIONAL).

STORMTRAP BACKFILLING NOTES





RECOMMENDED ACCESS OPENING SPECIFICATION
1. A TYPICAL ACCESS OPENING FOR THE STORMTRAP SYSTEM ARE 2'-0" IN DIAMETER. ACCESS OPENINGS LARGER THAN 3'-0" IN DIAMETER NEED TO BE APPROVED BY STORMTRAP. ALL OPENINGS MUST RETAIN AT LEAST 1'-0" OF CLEARANCE FROM THE END OF THE STORMTRAP MODULE UNLESS NOTED OTHERWISE. ALL ACCESS OPENINGS TO BE LOCATED ON INSIDE LEG UNLESS OTHERWISE SPECIFIED.
2. PLASTIC COATED STEEL STEPS PRODUCED BY M.A. INDUSTRIES PART #PS3-PFC OR APPROVED EQUAL (SEE STEP DETAIL) ARE PROVIDED INSIDE ANY MODULE WHERE DEEMED NECESSARY. THE HIGHEST STEP IN THE MODULE IS TO BE PLACED A DISTANCE OF 1'-0" FROM THE INSIDE EDGE OF THE STORMTRAP MODULES. ALL ENSUING STEPS SHALL BE PLACED AT A DISTANCE BETWEEN 10" MIN AND 14" MAX BETWEEN THEM. STEPS MAY BE MOVED OR ALTERED TO AVOID OPENINGS OR OTHER IRREGULARITIES IN THE MODULE.
3. STORMTRAP LIFTING INSERTS MAY BE RELOCATED TO AVOID INTERFERENCE WITH ACCESS OPENINGS OR THE CENTER OF GRAVITY OF THE MODULE AS NEEDED.
4. STORMTRAP ACCESS OPENINGS MAY BE RELOCATED TO AVOID INTERFERENCE WITH INLET AND/OR OUTLET PIPE OPENINGS SO PLACEMENT OF STEPS IS ATTAINABLE.
5. ACCESS OPENINGS SHOULD BE LOCATED IN ORDER TO MEET THE APPROPRIATE MUNICIPAL REQUIREMENTS. STORMTRAP RECOMMENDS AT LEAST TWO ACCESS OPENINGS PER SYSTEM FOR ACCESS AND INSPECTION.
6. USE PRECAST ADJUSTING RINGS AS NEEDED TO MEET GRADE. STORMTRAP RECOMMENDS FOR COVER OVER 2' TO USE PRECAST BARREL OR CONE SECTIONS. (PROVIDED BY OTHERS)

RECOMMENDED PIPE OPENING SPECIFICATION
1. MINIMUM EDGE DISTANCE FOR AN OPENING ON THE OUTSIDE WALL SHALL BE NO LESS THAN 1'-0".
2. MAXIMUM OPENING SIZE TO BE DETERMINED BY THE MODULE HEIGHT. PREFERRED OPENING SIZE Ø 36" OR LESS. ANY OPENING NEEDED THAT DOES NOT FIT THIS CRITERIA SHALL BE BROUGHT TO THE ATTENTION OF STORMTRAP FOR REVIEW.
3. CONNECTING PIPES SHALL BE INSTALLED WITH A 1'-0" CONCRETE COLLAR, AND AN AGGREGATE CRADLE FOR AT LEAST ONE PIPE LENGTH (SEE PIPE CONNECTION DETAIL). A STRUCTURAL GRADE CONCRETE OR HIGH STRENGTH, NON-SHRINK GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI SHALL BE USED.
4. THE ANNULAR SPACE BETWEEN THE PIPE AND THE HOLE SHALL BE FILLED WITH HIGH STRENGTH NON-SHRINK GROUT.

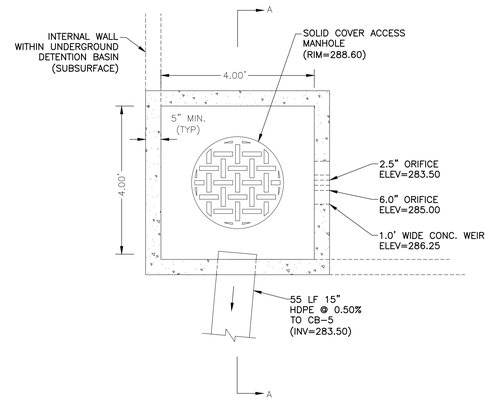
RECOMMENDED PIPE INSTALLATION INSTRUCTIONS
1. CLEAN AND LIGHTLY LUBRICATE ALL OF THE PIPE TO BE INSERTED INTO STORMTRAP.
2. IF PIPE IS CUT, CARE SHOULD BE TAKEN TO ALLOW NO SHARP EDGES. BEVEL AND LUBRICATE LEAD END OF PIPE.
3. ALIGN CENTER OF PIPE TO CORRECT ELEVATION AND INSERT INTO OPENING.

NOTE: ALL ANCILLARY PRODUCTS/SPECIFICATIONS RECOMMENDED AND SHOWN ON THIS SHEET ARE RECOMMENDATIONS ONLY AND SUBJECT TO CHANGE PER THE INSTALLING CONTRACTOR AND/OR PER LOCAL MUNICIPAL CODE/REQUIREMENTS.

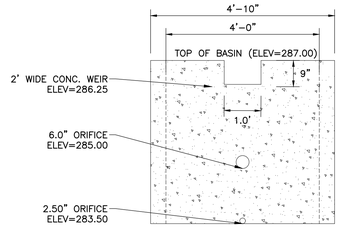
STORMTRAP PIPE CONNECTION DETAIL

1. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
2. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
3. THE AGGREGATE FOUNDATION HAS BEEN DESIGNED BASED ON THE FOLLOWING ASSUMPTIONS. THESE ASSUMPTIONS WILL NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER WHICH WILL NEED TO BE EMPLOYED BY THE OWNER. REFER TO STORMTRAP'S BACKFILL DETAILS, SPECIFICATIONS & INSTALLATION PROCEDURES.
3.1. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS BELOW THE PROPOSED ENGINEERED STONE FOUNDATION. IF A STONE FOUNDATION DESIGN IS TO BE USED, THE BEARING PRESSURE OF THE SOILS BELOW THE STONE WILL NEED TO MEET OR EXCEED ALLOWABLE CAPACITY. IF THIS IS NOT POSSIBLE, THE STONE FOUNDATION MAY NOT BE AN OPTION FOR THIS LOCATION.
3.2. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO EVALUATE A SOURCE OF STONE AGGREGATES THAT WILL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS). THE AGGREGATE BASE COURSE FOR WHICH THE STORMTRAP SYSTEM WILL BEAR DIRECTLY ON SHALL CONSIST OF A 3" THICK BED OF 3/4" DIAMETER ANGULAR STONE, WELL COMPACTED AND SEATED, WITH NO FINES. AND A 15" THICK BED OF 3" DIAMETER STONE AGGREGATE (SEE SHEET 4.0 FOR FURTHER DESCRIPTION/EXPLANATION). PLEASE NOTE THAT THESE ARE ONLY MINIMUM RECOMMENDATIONS AND A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE USED TO DETERMINE THE EXACT REQUIREMENTS FOR THE LOCATIONS THAT THE STORMTRAP SYSTEM IS TO BE LOCATED.
3.3. THE CONTRACTOR SHALL REMOVE ANY AND ALL EXPANDABLE OR COLLAPSIBLE SOILS AT THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER.
3.4. THE AGGREGATE FOUNDATION SHALL BE INSTALLED SUCH THAT THE AGGREGATE EXTENDS A MINIMUM OF 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1).
3.5. THE 3/4" AGGREGATE SHALL BE COMPACTED USING A VIBRATING ROLLER WITH ITS' FULL DYNAMIC FORCE APPLIED TO ACHIEVE A FLAT SURFACE.
3.6. DISK, DRY AND COMPACT THE TOP 8" OF THE SUBGRADE SOILS TO 95% OF THE STANDARD DRY DENSITY AND 110% OPTIMUM MOISTURE CONTENT.
3.7. AGGREGATE SHALL BE GRADED WITHIN +/- 3/4" OF THE GRADE SHOWN ON THE PLANS.
3.8. MINIMUM SOIL BEARING CAPACITY LISTED ON SHEET 1.0 SHALL BE VERIFIED IN FIELD BY OTHERS.
4. THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED 3/4" (SEE DETAIL 2). IF THE SPACE EXCEEDS 3/4", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
5. STORMTRAP MODULES ARE NOT WATERTIGHT. IF A WATERTIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATERTIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATERTIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.
6. ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN , HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C891 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 3 & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
6.1. USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE THE JOINT WRAP IS TO BE APPLIED.
6.2. A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
7. IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
8. IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP, MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP, IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
9. STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.

STORMTRAP INSTALLATION SPECIFICATIONS



PLAN



SECTION A-A

(FIGURES NOT TO SCALE)

INTERNAL OUTLET STRUCTURE (OCS-1)

L2A LAND DESIGN, LLC
60 GRAND AVENUE
ENGLEWOOD, NJ 07631
201.227.0300 • 201.227.0001 (Fax)
www.L2Alanddesign.com
New Jersey Certificate of Authorization No. 24GA28139600

10/1/2020
Michael E. Dipple, P.E. Date
New Jersey Professional Engineer #24GE04081200
WARNING: IF THIS PLAN DOES NOT CONTAIN A RAISED IMPRESSION SEAL OVER THE PROFESSIONAL SIGNATURE IT IS NOT AN AUTHORIZED OFFICIAL COPY

APPLICANT:
PSI ATLANTIC USR NJ, LLC
530 OAK COURT DRIVE, SUITE 185
MEMPHIS, TN 38117
901.290.0184 (PHONE)

OWNER:
KRISJDEN REALTY, L.P.
A NEW JERSEY LIMITED PARTNERSHIP
7 INDUSTRIAL AVENUE
MAHWAH, NJ 07430
201.525.6292 (PHONE)

ARCHITECT:
PARKER STUDIOS
1300 MINT STREET, SUITE 110
CHARLOTTE, NC 28203
980.819.0416 (PHONE)

SURVEYOR:
LAKELAND SURVEYING, INC.
4 WEST MAIN STREET
ROCKAWAY, NJ 07866
973.625.5670 (PHONE)
973.625.4121 (FAX)

NO.	REVISION	DATE
1	REVISED PER COMPLETENESS REVIEW	5/17/2020
2	REVISED DRAINAGE PER NJDOT COMMENTS, DATED 7/31/2020	8/17/2020
3	REVISED PER PLANNING BOARD RESUBMISSION	10/1/2020

Previous Editions Obsolete

PROJECT LOCATION:
PROPOSED SELF-STORAGE FACILITY
100 N.J.S.H. ROUTE 17 NORTH
BOROUGH OF UPPER SADDLE RIVER,
BERGEN COUNTY, NJ

BLOCK: 1304; LOT: 7.01
TAX MAP: 13

DRAWING TITLE:
DETAILS - 5

SCALE:	REFER TO PLAN
DATE	1/17/2020
DESIGNED:	TEC
APPROVED:	MED
L2A PROJ. No.:	1901.161
DRAWING No.:	C-13

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