Drainage Proposals

and

Standard Construction Details

for

Proposed Green Keepers Building Extension

at

Edmondstown Golf Club

for

Edmondstown Golf Club CLG

August 2021

ALAN CLARKE & ASSOCIATES
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PROJECT MANAGERS

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Proposed Green Keepers Building Extension at Edmondstown Golf Club

Proposed Alterations

The proposed works to the existing Green Keepers building will consist of an extension and alterations to the existing building with replacement facades, internal layout changes and associated site works.

The existing building will be extended with a new steel framed structure to the northern side. The existing external yard including surface water drainage will be retained unaltered.

The existing surface water drainage, serving the existing yard and roof areas which is located below the footprint of the proposed new extension, will be replaced with a new surface water drainage system.

Surface Water Sewer

It is proposed to dispose of the surface water run-off from the existing and extended portion of the building via soakaways located below the existing paved yard and to the south of the proposed toilet block extension. The location and layout of the soakaways are as indicated on the drainage drawing. The exact size of the soakaways will be determined following infiltration testing carried out on site at the commencement of the development.

The soakaways will be formed using Microstrain StormTech retention chambers installed below ground on a stone bed and surrounded and covered in single sized stone in order to maximise the available storage and infiltration capacity. Product details for the StormTech chambers are appended to this report. An inspection manhole will be located at the end of each soakaway to allow for inspection and maintenance and to ensure their long-term viability and durability. A summary of the recommended inspection and cleaning procedures are also appended to this report.

Water Quality Criteria

The soakaways will provide for storage and disposal of the surface water to ground. The soakaways will prevent discharge of sediment etc from the first flush rainfall to the existing public sewer and a manhole will be provided at the end of each soakaway to allow for inspection and maintenance of the soakaways to ensure their long-term functionality as noted above. The soakaways will be wrapped in a non-woven geotextile and which will prevent the ingress of silt from the ground but allow for percolation of the run-off to the ground.

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Surface Water Pipe Size Calculation – New Pipes

The verification of the pipe size and gradient for the areas that will discharge to the soakaways is as follows (assume rainfall intensity 75mm/hour, i.e. 0.075m/hr);

(i) Maximum area discharging to 1No. soakaway Total Site Area = 461m²

$$\text{Total Run-off} \quad \frac{461m^2 \times 0.85 \times 0.075m/hr \times 1000}{3600}$$

$$= 8.16 \text{ l/sec}$$

Using 150mm dia uPVC pipe at min gradient 1:120 Capacity 19.9 l/sec => OK

Foul Sewer

The foul sewer network within the site currently connects to an existing 100mm dia foul sewer pipe serving this site. A portion of this existing 150mm dia. uPVC pipe located within the site will be replaced and extended to service the new toilet block extension. The existing 100mm dia. foul sewer pipe will be upgraded to a 150mm dia. uPVC pipe as part of the proposed works.

The existing sanitary facilities within the building will be rearranged and new toilets and staff facilitates provided as indicated on the architects drawings. The discharge from these sanitary facilities will discharge via a new 150mm dia. uPVC pipe to the existing foul sewer line traversing the site.

Foul Sewer Calculations

Peak discharge to Foul Sewer Pipe

Using Table 2 of IS EN 12056-2 to find discharge units for appliances

Total no of sinks	= 1 No. @ 0.8 l/s	= 0.8 units
Total no of Washbasins	= 1 No. @ 0.5 /s	= 0.5 units
Total no of WC's	= 5 No. @ 2.0 l/s	= 10.0 units
Total no of Urinals	= 4 No. @ 0.2 l/s	= 0.8 units
Total no of Showers	= 1 No. @ 0.6 l/s	= 0.6 units

Total number of discharge units entering drainage system = 12.7 units

From IS EN 12056-2-6.3, expected flow rate

$Q_{ww} = K\sqrt{(\sum DU)}$

Where K = 0.5 for intermittent use (from Table 3, IS EN 12506-2)

Q_{ww} = 1.78 l/s

Total flow rate to external drainage = 1.78 l/s

A 150mm dia uPVC pipe at min gradient 1:100; Capacity 22 l/sec => OK

Appendix 1

Technical Details for Proposed Stormtech Underground Attenuation Chambers

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Product Catalog

Underground Stormwater Chambers

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Detention • Retention • Recharge

Subsurface Stormwater Management

StormTech® Subsurface Stormwater Management

The advanced design of StormTech's chambers allows stormwater professionals to create more profitable, environmentally sound installations. Compared with other subsurface systems, StormTech's innovative chambers offer lower overall installed costs, superior design flexibility and enhanced long-term performance.

Superior Design Flexibility for Optimal Land Use

StormTech chambers are ideal for commercial, municipal and residential applications. One of the key advantages of the StormTech chamber system is design flexibility. StormTech chambers can be configured into beds or trenches, in centralized or decentralized layouts to fit on nearly any site.

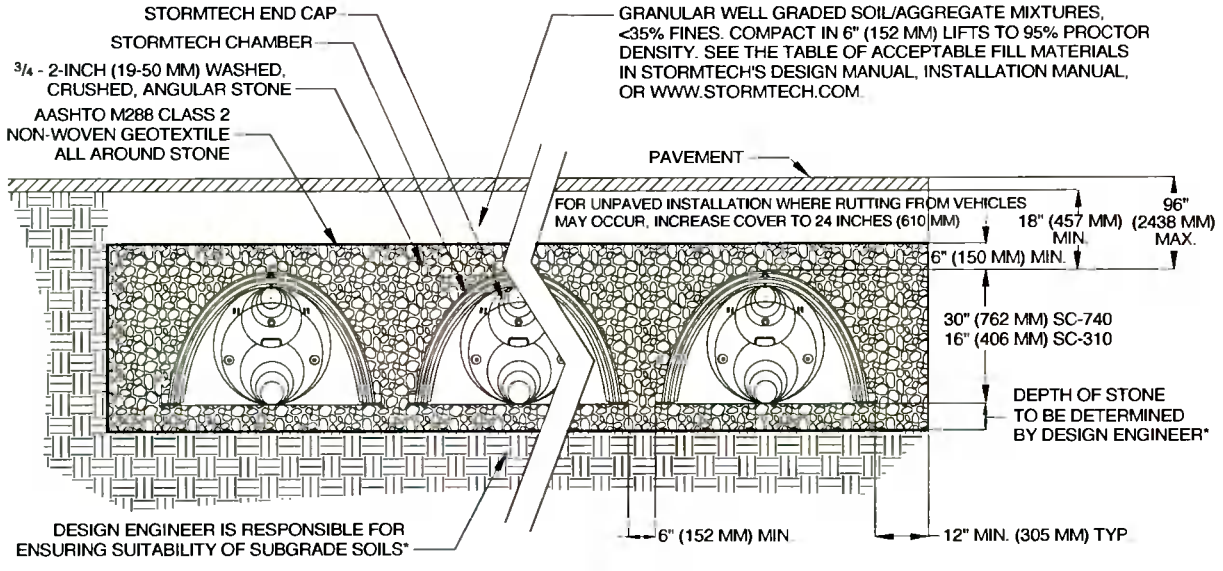
L to R: SC-310 chamber and SC-740 chamber

Product Features and Benefits

The advanced features and innovative technology of StormTech chambers streamline installations while lowering overall installed costs. StormTech chambers offer these unique advantages:

- Lightweight, two people can install chambers quickly and easily, saving time and money
- Extensive product research & development and rigorous testing ensure long term reliability and performance
- Versatile product design accommodates a wide range of site constraints with cost-effective system designs
- The chamber length can be cut in 6.5" (165 mm) increments – reducing waste and optimizing the use of available space
- Injection molded polypropylene ensures precise control of wall thickness and product consistency
- Isolator Row – a patent pending technique to inexpensively enhance total suspended solids (TSS) removal and provide easy access for inspection and maintenance
- Corrugated Arch Design – a proven geometry for structural integrity under H-20 live loads and deep burial loads, also provides high storage capacity

Typical Cross Section Detail (not to scale)



Detention-Retention-Recharge

The StormTech SC-740 chamber optimizes storage volumes in relatively small footprints by providing 2.2 ft³/ft² (0.67 m³/m²) (minimum) of storage. This can decrease excavation, backfill and associated costs. The StormTech SC-310 chamber is ideal for systems requiring low-rise and wide-span solutions. The chamber allows the storage of large volumes, 1.3 ft³/ft² (0.4 m³/m²) (minimum), at minimum depths.

StormTech SC-740 Chamber
(not to scale)

Nominal Chamber Specifications

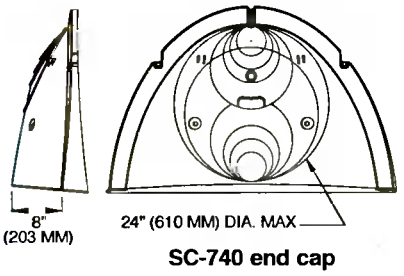
Size (L x W x H)
85.4" x 51.0" x 30.0"
(2169 x 1295 x 762 mm)

Chamber Storage
45.9 ft³ (1.30 m³)

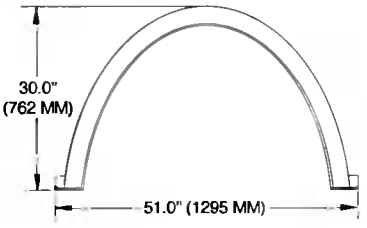
Minimum Installed Storage*
74.9 ft³ (2.12 m³)

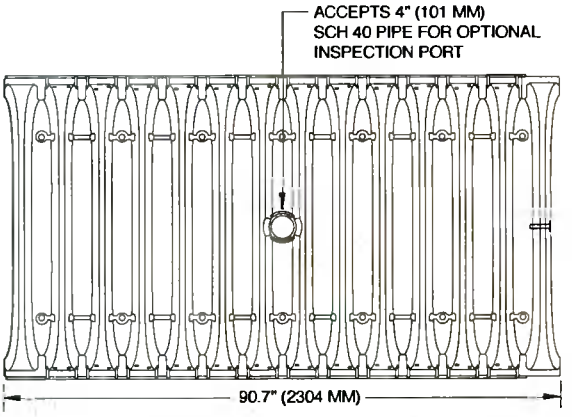
Weight
74.0 lbs (33.6 kg)

Shipping
30 chambers/pallet
60 end caps/pallet
12 pallets/truck



SC-740 end cap





SC-740 chamber

StormTech SC-310 Chamber
(not to scale)

Nominal Chamber Specifications

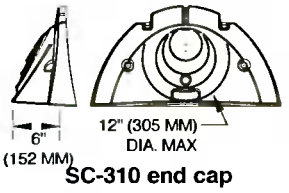
Size (L x W x H)
85.4" x 34.0" x 16.0"
(2169 x 864 x 406 mm)

Chamber Storage
14.7 ft³ (0.42 m³)

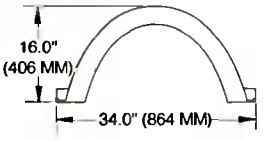
Minimum Installed Storage*
31.0 ft³ (0.88 m³)

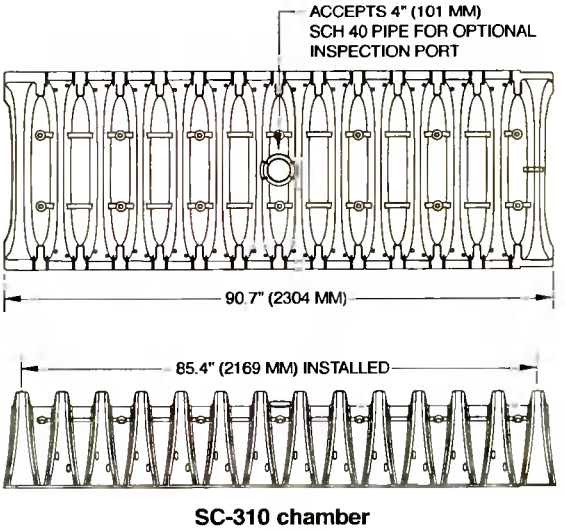
Weight
37.0 lbs (16.8 kg)

Shipping
41 chambers/pallet
108 end caps/pallet
18 pallets/truck



SC-310 end cap





SC-310 chamber

*This assumes a minimum of 6 inches (152 mm) of stone below, above and between chamber rows.

Advanced Structural Performance for Greater Long-Term Reliability

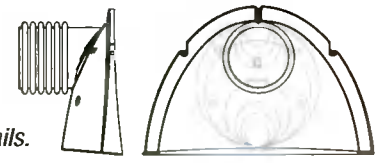
StormTech developed a state of the art chamber design through:

- Collaboration with world-renowned experts of buried drainage structures to develop and evaluate the structural testing program and product design
- Designing chambers to exceed AASHTO LRFD design specifications for HS-20 live loads and deep burial earth loads
- Subjecting the chambers to rigorous full scale testing, under severe loading conditions to verify the AASHTO safety factors for live load and deep burial applications

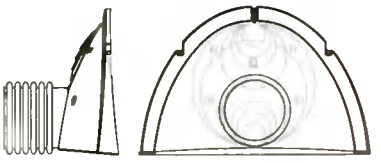
StormTech continues to conduct research and consult with outside experts to meet customer needs for alternative backfill materials, designs for special loadings and other technical solutions.

Technical Assistance

StormTech's technical support staff is available to provide assistance to engineers, contractors and developers. Please contact one of our engineers or product managers to discuss your particular application. A wide variety of technical support material is available in print, electronic media or from our website at www.stormtech.com. For any questions, please call StormTech at 888-892-2694.



Fabricated End Caps
Contact StormTech for details.



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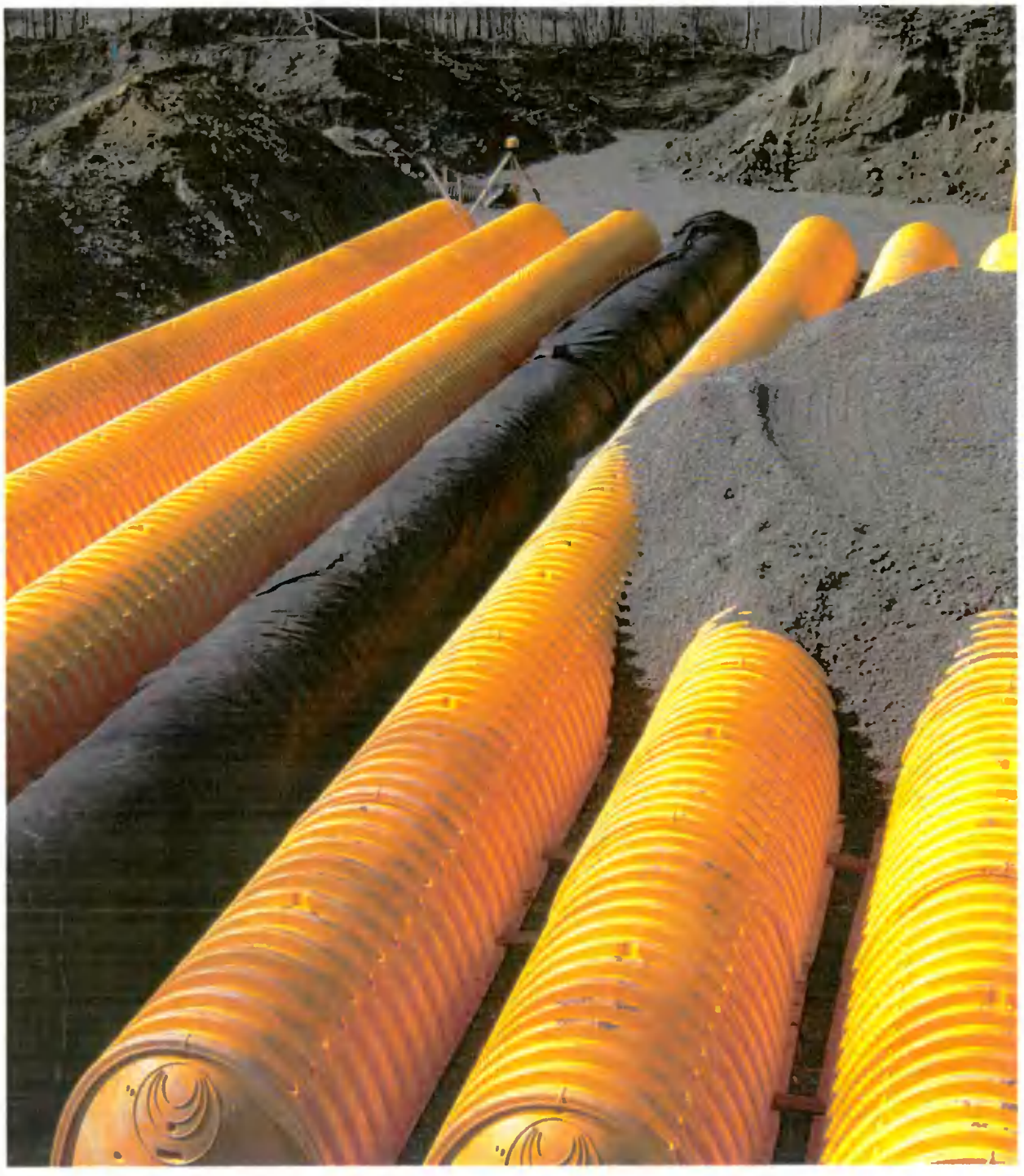


Isolator™ Row O&M Manual

StormTech® Chamber System for Stormwater Management

1.0 The Isolator™ Row

1.1 INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a patent pending technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

1.2 THE ISOLATOR™ ROW

The Isolator Row is a row of StormTech chambers, either SC-740 or SC-310 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

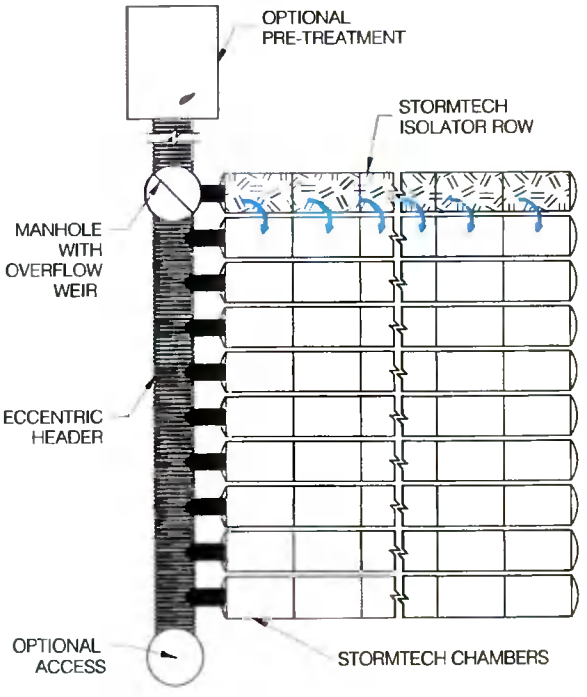
Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber.

The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

StormTech Isolator Row with Overflow Spillway
(not to scale)



2.0 Isolator Row Inspection/Maintenance

2.1 INSPECTION

The frequency of Inspection and Maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

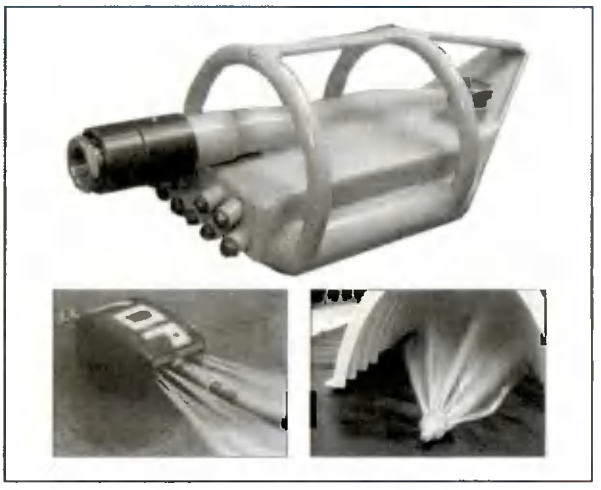
At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

2.2 MAINTENANCE

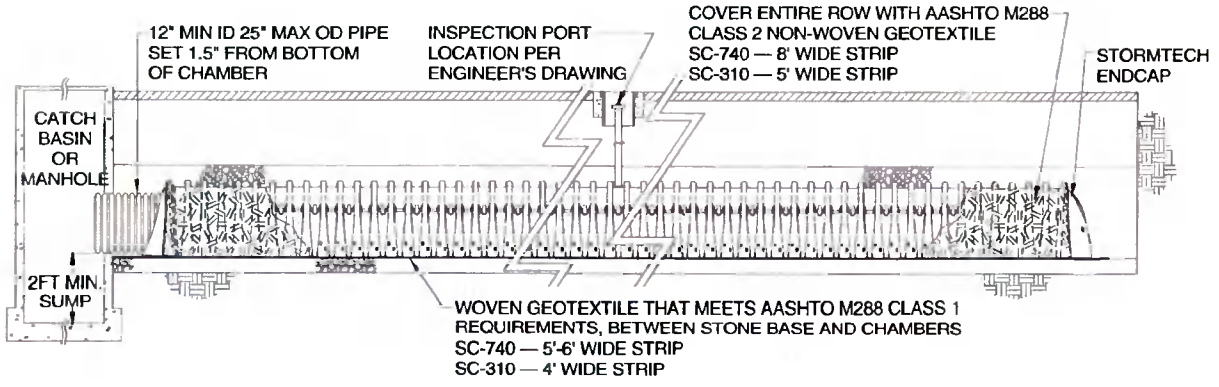
The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.



Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products.)

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row 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. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)



3.0 Isolator Row Step By Step Maintenance Procedures

Step 1) Inspect Isolator Row for sediment

A) Inspection ports (if present)

i. Remove lid from floor box frame

ii. Remove cap from inspection riser

iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.

iv. If sediment is at, or above, 3 inch depth proceed to Step 2. If not proceed to step 3.

B) All Isolator Rows

i. Remove cover from manhole at upstream end of Isolator Row

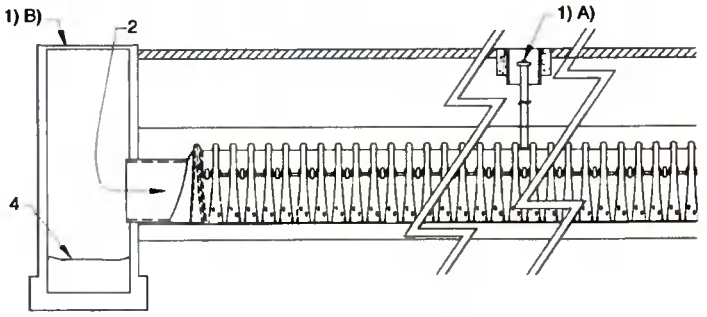
ii. Using a flashlight, inspect down Isolator Row through outlet pipe

1. Mirrors on poles or cameras may be used to avoid a confined space entry

2. Follow OSHA regulations for confined space entry if entering manhole

iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches) proceed to Step 2. If not proceed to Step 3.

StormTech Isolator Row (not to scale)



Step 2) Clean out Isolator Row 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 caps, lids and covers, record observations and actions

Step 4) Inspect & clean catch basins and manholes upstream of the StormTech system

Sample Maintenance Log

Date	Stadia Rod Readings		Sediment Depth (1) - (2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/01	6.3 ft.	none		New installation. Fixed point is CI frame at grade	djm
9/24/01		6.2	0.1 ft.	Some grit felt	sm
6/20/03		5.8	0.5 ft.	Mucky feel, debris visible in manhole and in Isolator row, maintenance due	rv
7/7/03	6.3 ft.		0	System jetted and vacuumed	djm

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Appendix 2

Details of Isolator Row incorporated into Stormtech Attenuation Chambers

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6.0 Inlets for Chambers

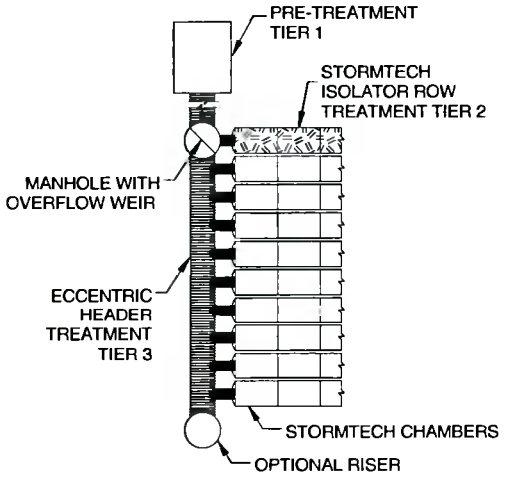
The design flexibility of a Stormtech chamber system includes many inletting possibilities. Contact StormTech's technical service department for guidance on designing an inlet system to meet specific site goals.

6.1 TREATMENT TRAIN

A properly designed inlet system can ensure good water quality, easy inspection and maintenance, and a long system service life. StormTech recommends a treatment train approach for inletting an underground stormwater management system under a typical commercial parking area. *Treatment train* is an industry term for a multi-tiered water quality network. As shown in **Figure 6**, a StormTech recommended inlet system can inexpensively have up to 3 tiers of treatment upstream of the StormTech chambers:

Tier 1 – Pre-treatment (BMP)
Tier 2 - StormTech Isolator Row
Tier 3 - Eccentric Pipe Header-Manifold

Figure 6 – Typical StormTech Treatment Train Inlet System



6.2 PRE-TREATMENT (BMP) – TREATMENT TIER 1

Typically, some level of pre-treatment of the stormwater is required prior to entry into a stormwater system. By treating the stormwater prior to entry into the system, the service life of the system can be extended, pollutants such as hydrocarbons may be captured, and local regulations met. Pre-treatment options are often described as a Best Management Practice or simply a BMP.

Pre-treatment devices differ greatly in complexity, design and effectiveness. Depending on a site's characteristics and treatment goals, the simple, least expensive pre-treatment solutions can sometimes be just as effective as the complex systems. Options include a simple deep sumped manhole with a 90° bend on its outlet, baffle boxes, swirl concentrators, sophisticated filtration devices, and devices that combine these processes. Some of the most effective pre-treatment options combine engineered site grading with vegetation such as bio-swales or grassy strips.

The type of pretreatment device specified as the first level of treatment up-stream of a StormTech chamber system can vary greatly throughout the country and from site-to-site. It is the responsibility of the design engineer to understand the water quality issues and design a stormwater treatment system that will satisfy local regulators and follow applicable laws. A design engineer should apply their understanding of local weather conditions, site topography, local maintenance requirements, expected service life, etc...to select an appropriate stormwater pre-treatment system.

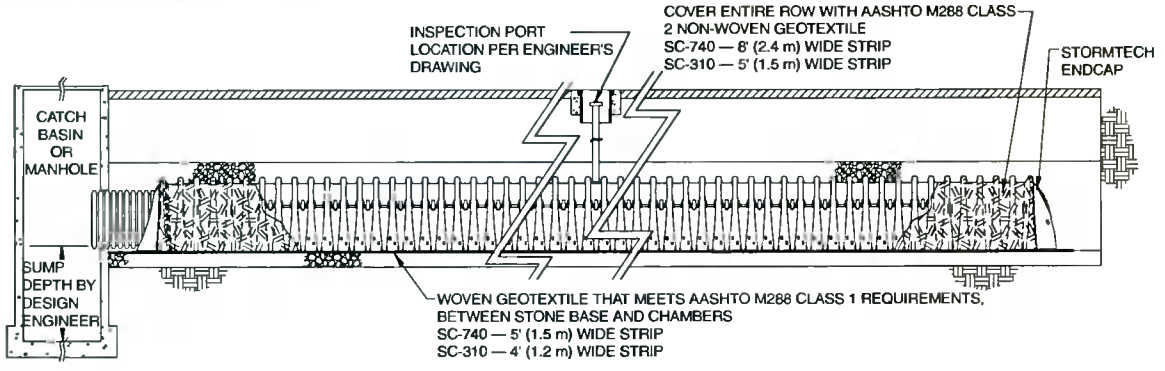
6.3 STORMTECH ISOLATOR™ ROW – TREATMENT TIER 2

StormTech has a patent pending technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance. The StormTech Isolator Row is a row of standard StormTech chambers surrounded with appropriate filter fabrics and connected to a manhole for easy access. This application basically creates a filter/detention basin that allows water to egress through the surrounding filter fabric while sediment is trapped within. It may be best to think of the Isolator Row as a first-flush treatment device. *First-Flush* is a term typically used to describe the first ½" to 1" (13-25 mm) of rainfall or runoff on a site. The majority of stormwater pollutants are carried in the sediments of the first-flush, therefore the Isolator Row can be an effective component of a treatment train.

The StormTech Isolator Row should be designed with a manhole with an overflow weir at its upstream end. The manhole is connected to the Isolator Row with a short length of 12" (305 mm) ID through 24" (610 mm) OD pipe set near the bottom of the StormTech SC-740 end cap. The diversion manhole is multi-purposed. It can provide access to the StormTech Isolator row for both inspection and maintenance. The overflow weir with its crest set even with the top of chambers allows stormwater in excess of the Isolator Row's storage/ conveyance capacity to bypass into the chamber system through the downstream Eccentric header/manifold system.

Specifying and installing proper geotextiles is essential for efficient operation and to prevent damage to the system during the JetVac maintenance process. A strip of woven geotextile that meets AASHTO M288 Class 1 requirements is required between the chambers and their stone foundation. This strong filter fabric traps sediments and protects the stone base during maintenance. A strip of non-woven AASHTO M288 Class 2 geotextile is draped over the Isolator chamber row. This 6-8 oz. (217-278 g/m²) non-woven filter fabric prevents sediments from migrating

Figure 7 – StormTech Isolator™ Row Detail



out of the chambers' perforations while allowing modest amounts of water to flow out of the Isolator Row. **Figure 7** is a detail of the Isolator Row that shows proper application of the geotextiles.

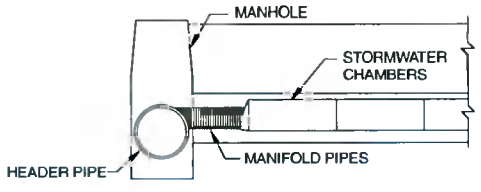
Inspection is easily accomplished through the upstream manhole or optional inspection ports. If specified, inspection ports should be located approximately every tenth chamber along the Isolator row or where practical to facilitate inspection. Maintenance of an Isolator Row is fast and easy using the JetVac process through the upstream manhole. Section 13.0 explains the Inspection and Maintenance process in more detail.

Each SC-740 chamber in an Isolator row will store 45.9 ft.^{3} (1.3 m^3) of first-flush stormwater. During and between storm events an Isolator Row will allow stormwater to egress at a rate of 0.25 cfs (7.1 l/s) or less per chamber. A bed of StormTech chambers may have multiple Isolator rows to accommodate required first-flush volumes.

6.4 ECCENTRIC HEADER SYSTEM – TREATMENT TIER 3

The third tier of the treatment train is the eccentric header system. This is much like a typical header system except that the inlet pipes are smaller and located at a higher invert than the header pipe. This is accomplished by building the header system with reducer tees installed upside down so a sump is created within the large diameter header pipe as shown in **Figure 8.** A typical eccentric header system might have a 48" (1220 mm) header pipe with 18" (460 mm)manifolds creating a 30" (760 mm) header sump.

Figure 8 – Typical Eccentric Header System



The upstream end of the eccentric header system will typically be connected directly to the downstream side of the Isolator Row's weired manhole as shown in **Figure 6**. The downstream end of the header pipe may have a riser or manhole to facilitate inspection and maintenance. Pipe companies can provide more detailed information on designing a header system optimized for trapping TSS.

6.5 TREATMENT TRAIN CONCLUSION

The treatment train is a highly effective water-quality approach that does not add significant cost to a StormTech system being installed under commercial parking areas. Some type of pre-treatment device, perhaps as simple as a catchbasin or manhole, is usually required on all stormwater systems. The StormTech Isolator Row adds a significant level of treatment, easy inspection and maintenance. while maintaining storage volume credit for the cost of a modest amount geotextiles. Finally, a pipe header-manifold system is a well recognized component of a chamber inlet system. Inverting the reducer tees creates an eccentric header system that can be easily inspected and maintained. This treatment train concept provides three levels of treatment, inspection and maintenance upstream of the StormTech detention/ retention bed with little additional expense.

6.6 OTHER INLET OPTIONS

While the three-tiered treatment train approach is the recommended method of inletting StormTech chambers for typical under-commercial parking application, there are other effective inlet methods that may be considered. For instance, Isolator Rows, while adding an inexpensive level of confidence, are not always necessary. A header system with fewer inlets can be designed to further minimize the cost of a StormTech system. There may be applications where stormwater pre-treatment may not be necessary at all and the system can be inlet directly from the source. In other cases it may make sense to design a system with a treatment device downstream of

Appendix 3

Standard Construction Details

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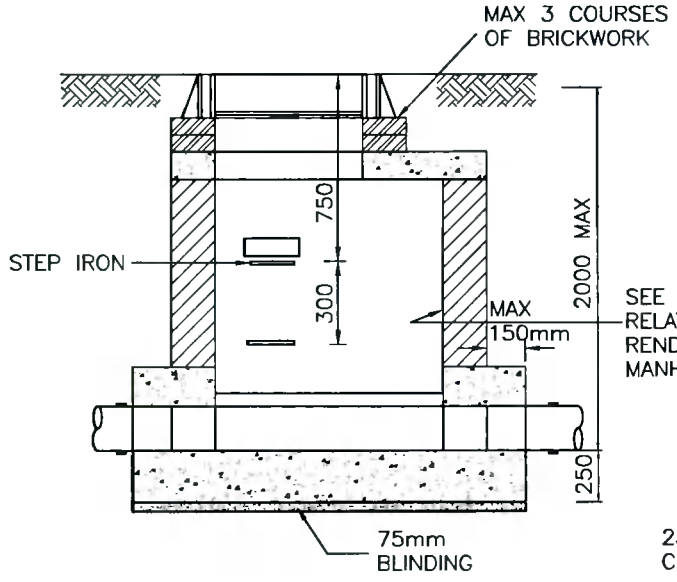
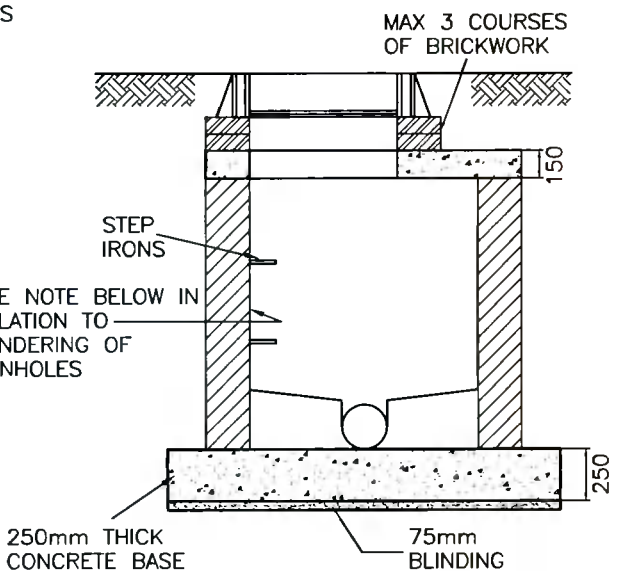
project GREEN KEEPERS BUILDING EXTENSION

title BLOCKWORK MANHOLE

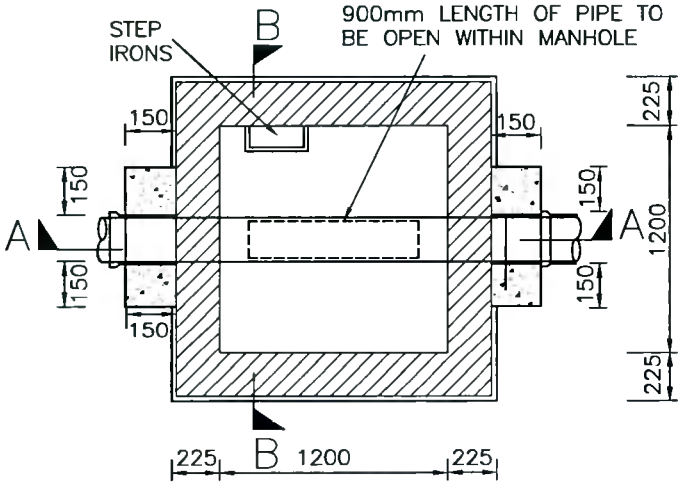
scale	drawing no	rev	date
NTS	21158–SK01	–	AUG21



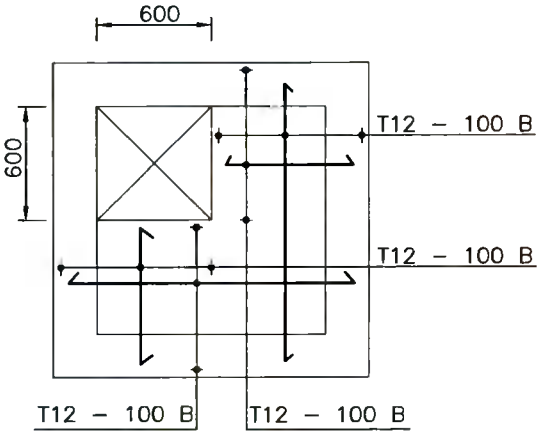
SECTION A–A



SECTION B–B



SECTION PLAN



ROOF PLAN

NOTES:

MANHOLE CONSTRUCTION

MANHOLES TO BE CONSTRUCTED IN SOLID CONCRETE BLOCKWORK TO I.S. 20 (TYPE A 10.5N/mm²) AND CEMENT MORTAR BLOCKWORK TO BE MIN 225mm THICK FOR DEPTHS OF UP TO 2m. PIPES 225mm DIAMETER AND OVER SHALL HAVE AN R.C. LINTEL OVER THE PIPE TO THE FULL THICKNESS OF THE BLOCKWORK AND THE FULL LENGTH OF THE WALL.

COVERS

MANHOLE COVERS AND FRAMES TO BE DUCTILE IRON, NON–ROCK, GRADE C250 E.N. 24 WITH A 600mm SQUARE OR 600mm DIAMETER CLEAR OPENING – REXEL BY CAVANAGH FOUNDARIES OF NOROC BY PAM

BENCHING

BENCHING IS TO BE FORMED IN C28/35 CONCRETE AND SHOULD RISE UP UNIFORMLY FROM THE TOP EDGE OF THE CHANNEL TO A HEIGHT NOT LESS THAN THAT OF THE SOFFIT OF THE OUTLET AND SLOPE UPWARDS TO MEET THE WALL OF THE MANHOLE AT A GRADIENT OF 1:10 (MIN RISE 25mm). IT SHOULD BE FLOATED WITH A STEEL FLOAT TO A SMOOTH HARD SURFACE WITH A 25mm THICK COAT OF 1:1 CEMENT MORTAR LAID WHILE THE BENCHING CONCRETE IS STILL GREEN.

RENDERING

SURFACE WATER MANHOLES SHALL BE RENDERED INTERNALLY IN 1:3 CEMENT MORTAR 25mm THICK AND FINISHED WITH A STEEL TROWEL. FOUL MANHOLES SHALL BE RENDERED INTERNALLY AND EXTERNALLY IN 1:3 CEMENT MORTAR.

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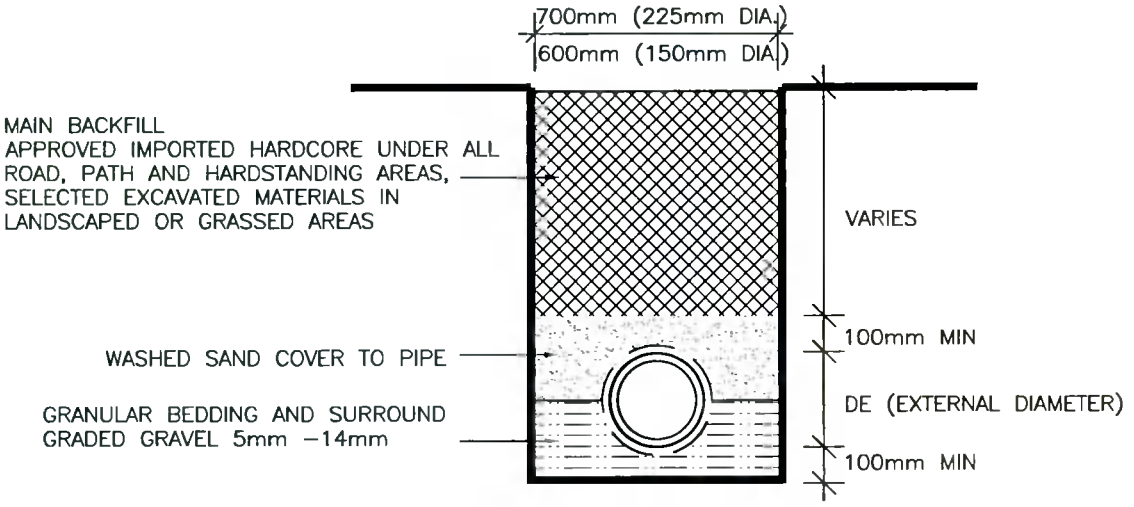
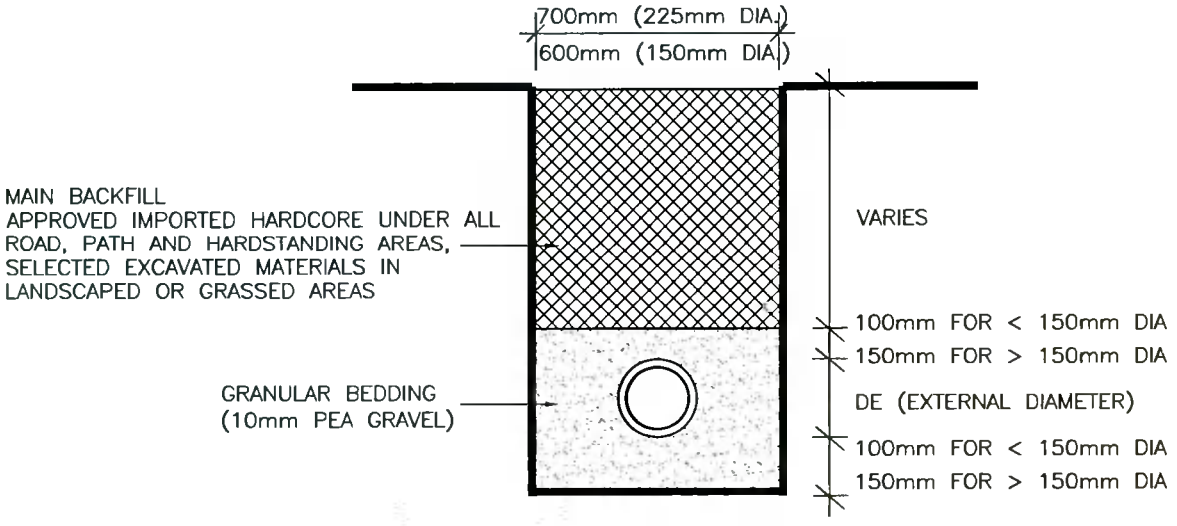
project GREEN KEEPERS BUILDING EXTENSION

title SEWER BEDDING DETAILS

scale	drawing no	rev	date
NTS	21158–SK02	–	AUG21



GRANULAR BEDDING FOR CONCRETE PIPES



GRANULAR BEDDING FOR uP.V.C. FLEXIBLE PIPES

NOTE:

(A) IN TRENCHES IN ROADS, MAIN BACKFILL SHALL BE GRANULAR MATERIAL TO CLAUSE 804 M.O.T. SPECIFICATION AND SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 500mm LOOSE DEPTH.

(B) WHERE COVER IS LESS THAN ALLOWABLE, I.E. 1.20m IN ROADS AND 0.9m ELSEWHERE. A 150mm (20N MIX) CONCRETE SURROUND IS TO BE PLACED AROUND PIPE.
THE CONCRETE SURROUND SHALL HAVE 25mm BREAKS EVERY 6.0m (uPVC ONLY.
THE BREAKS ARE TO BE FILLED WITH A COMPRESSIBLE MATERIAL.

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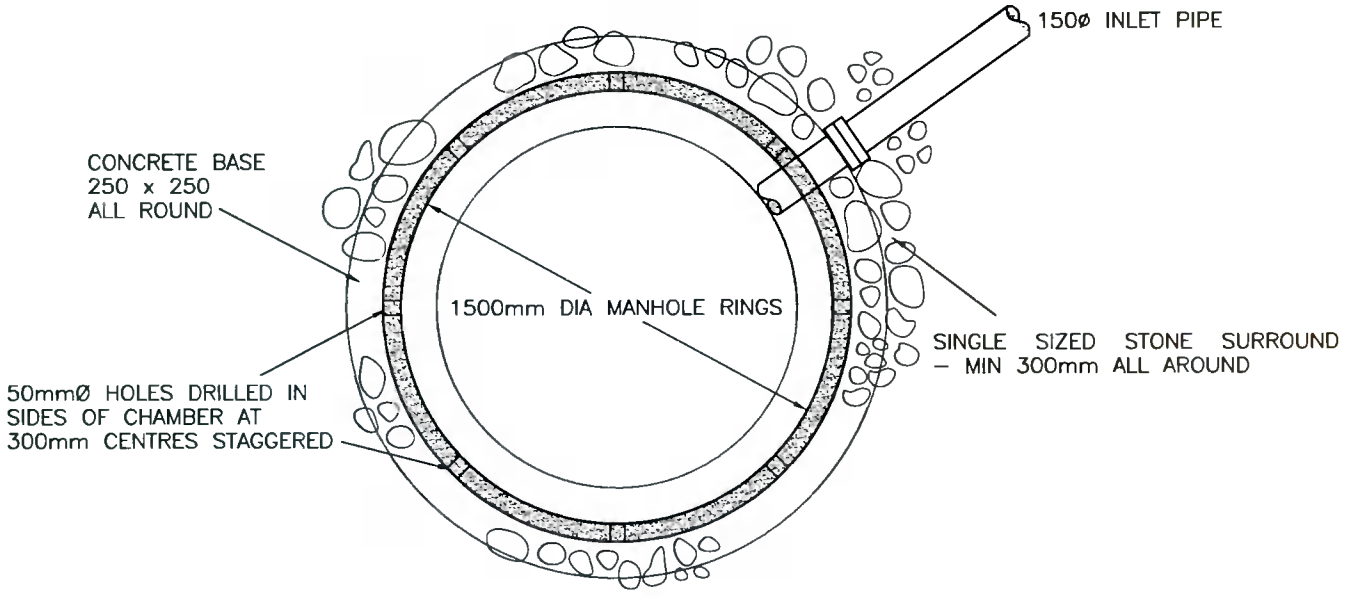
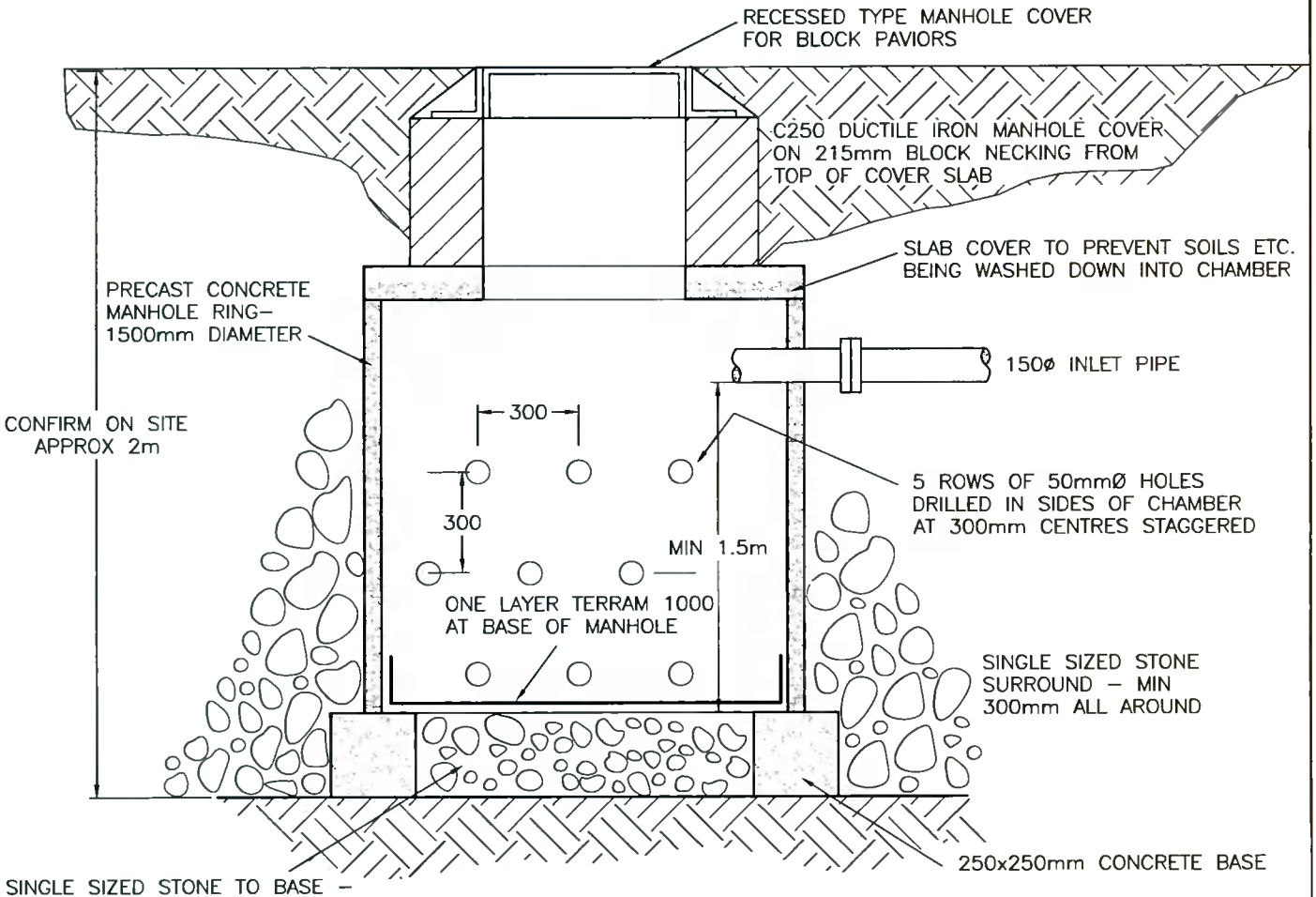
project GREEN KEEPERS BUILDING EXTENSION

title SURFACE WATER SOAKAWAY

scale	drawing no	rev	date
NTS	21158–SK03	–	AUG21



PLAN – SOAKAWAY



SECTION–SOAKAWAY