Initial Anchoring of Chambers – Embedment Stone

Backfill of Chambers – Embedment Stone

UNEVEN BACKFILL

Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

Backfill chambers evenly. Stone column height should never differ by more than 12" (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

EVEN BACKFILL

Care should be taken when backfilling not to damage the chambers. Please refer to the allowable construction vehicle loads on page 6.

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

PERIMETER NOT BACKFILLED PERIMETER FULLY BACKFILLED

Call StormTech at 888.892.2694 for technical and product information or visit www.stormtech.com

Manifold, Scour Fabric and Chamber Assembly

Install manifolds and lay out woven scour geotextile at inlet rows [min. 12.5 ft (3.8 m)] at each inlet end cap. Place a continuous piece (no seams, double layer) along entire length of Isolator® Row(s).

Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction – Upper Joint". Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. No spacing is required between chambers.

Attaching the End Caps Prefabricated End Caps Isolator Row

Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber’s end corrugation.

SC-160LP end caps can accept 8"(200mm) or 6"(150mm) manifold inlets. End caps can be ordered as an 8"(200mm) open hole or can be cored in the field.

Place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet.

Requirements for System Installation

Excavate bed and prepare subgrade per engineer’s plans.

Place non-woven geotextile over prepared soils and up excavation walls. Install underdrains if required.

Place clean, crushed, angular stone foundation 6” (150 mm) or 4” (100 mm) with a single layer of Geogrid BX124GG. See plans for foundation stone design. Compact to achieve a flat surface.

REQUISITED MATERIALS AND EQUIPMENT LIST

- Acceptable fill materials per Table 1
- Woven and non-woven geotextiles
- StormTech solid end caps and pre-cored end caps
- StormTech chambers
- StormTech manifolds and fittings

IMPORTANT NOTES:

A. This installation guide provides the minimum requirements for proper installation of chambers. Non-adherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Care should be taken in the handling of chambers and end caps. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.
Manifold, Scour Fabric and Chamber Assembly

Install manifolds and lay out woven scour geotextile at inlet rows [min. 12.5 ft (3.8 m)] at each inlet end cap. Place a continuous piece (no seams, double layer) along entire length of Isolator® Row(s).

Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled “Lower Joint – Overlap Here” and “Build this direction – Upper Joint”. Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. No spacing is required between chambers.

Attaching the End Caps

Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber’s end corrugation.

Prefabricated End Caps

SC-160LP end caps can accept 8”(200mm) or 6”(150mm) manifold inlets. End caps can be ordered as an 8”(200mm) open hole or can be cored in the field.

Isolator Row

Place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet.
Initial Anchoring of Chambers – Embedment Stone

Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

Care should be taken when backfilling not to damage the chambers. Please refer to the allowable construction vehicle loads on page 6.

Backfill of Chambers – Embedment Stone

Backfill chambers evenly. Stone column height should never differ by more than 12” (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Call StormTech at 888.892.2694 for technical and product information or visit www.stormtech.com

Maximum Allowable Wheel Loads

Maximum Allowable Track Loads

Maximum Allowable Roller Loads
Backfill - Embedment Stone & Cover Stone

Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls.

Final Backfill of Chambers – Fill Material

Small dozers and skid loaders may be used to finish grading stone backfill in accordance with ground pressure limits in Table 2. They must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends that the contractor inspect chambers before placing final backfill. Any chambers damaged by construction shall be removed and replaced.

Final Backfill of Chambers – Fill Material

Install non-woven geotextile over stone. Geotextile must overlap 24” (600 mm) min. where edges meet. Compact each lift of backfill as specified in the site design engineer’s drawings. Roller to travel parallel with rows.

StormTech Isolator Row Detail

NOTES:

1. 36” (900 mm) of stabilized cover materials over the chambers is required.
2. StormTech compaction requirements are met for ‘A’ location materials when placed and compacted in 6” (150 mm) or processed aggregate. Most aggregate mixtures, <35% fines are divided by total ground contact area for both tracks. Excavators requirements have been met, and that a minimum of 14” (350 mm) of stone over the chambers and are limited by the designs, contact StormTech for compaction requirements.
3. Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load examples, a specification for #4 stone would state: “clean, crushed, angular no. 4 (AASHTO M43) stone”.

*Percent by weight.**
Table 1 - Acceptable Fill Materials

<table>
<thead>
<tr>
<th>Material Location</th>
<th>Description</th>
<th>AASHTO M43 Designation1</th>
<th>Compaction/Density Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Fill</td>
<td>Fill Material for layer ‘C’ starts from the top of the ‘C’ layer to the bottom of the embedment stone (‘S’ layer) to 18” (450 mm) above the top of the chamber. Note that the pavement subbase may be part of the ‘D’ layer.</td>
<td>AASHTO M43 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10</td>
<td>No compaction required.</td>
</tr>
<tr>
<td>Embedment Stone</td>
<td>Embedment Stone surrounding chambers from the foundation stone to the ‘C’ layer above.</td>
<td>AASHTO M43 3, 357, 4, 467, 5, 56, 57</td>
<td>Place and compact in 6” (150 mm) lift using two full coverages with a vibratory compactor.2 3</td>
</tr>
<tr>
<td>Foundation Stone</td>
<td>Foundation Stone below the chambers from the subgrade up to the foot (bottom) of the chamber.</td>
<td>AASHTO M43 3, 357, 4, 467, 5, 56, 57</td>
<td>Place and compact in 6” (150 mm) lift using two full coverages with a vibratory compactor.2 3</td>
</tr>
</tbody>
</table>

1. The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: “clean, crushed, angular no. 4 (AASHTO M43) stone”.
2. StormTech compaction requirements are met for ‘A’ location materials when placed and compacted in 6” (150 mm) (max) lifts using two full coverages with a vibratory compactor.
3. Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.

Figure 1 - Inspection Port Detail

Figure 2 - Fill Material Locations
NOTES:
1. 36” (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.
2. During paving operations, dump truck axle loads on 14” (350 mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 14” (350 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.
3. Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.
4. Mini-excavators (< 8,000lbs/3,628 kg) can be used with at least 12” (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.
5. Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.
6. Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.

Table 2 - Maximum Allowable Construction Vehicle Loads

<table>
<thead>
<tr>
<th>Material Location</th>
<th>Fill Depth over Chambers in. [mm]</th>
<th>Maximum Allowable Wheel Loads</th>
<th>Maximum Allowable Track Loads</th>
<th>Maximum Allowable Roller Loads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Max Axle Load for Trucks lbs [kN]</td>
<td>Max Wheel Load for Loaders lbs [kN]</td>
<td>Track Width in. [mm]</td>
</tr>
</tbody>
</table>

Table 3 - Placement Methods and Descriptions

<table>
<thead>
<tr>
<th>Material Location</th>
<th>Placement Methods/ Restrictions</th>
<th>Wheel Load Restrictions</th>
<th>Track Load Restrictions</th>
<th>Roller Load Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Fill Material</td>
<td>A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.</td>
<td>36” [900 mm] minimum cover required for dump trucks to dump over chambers.</td>
<td>Dozers to push parallel to rows until 36” [900 mm] compacted cover is reached.</td>
<td>Roller travel parallel to rows only until 36” [900 mm] compacted cover is reached.</td>
</tr>
<tr>
<td>Initial Fill Material</td>
<td>Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.</td>
<td>Asphalt can be dumped into paver when compacted pavement subbase reaches 18” [450 mm] above top of chambers.</td>
<td>Small LGP track dozers &amp; skid loaders allowed to grade cover stone with at least 6” [150 mm] stone under tracks at all times. Equipment must push parallel to rows at all times.</td>
<td>Use dynamic force of roller only after compacted fill depth reaches 12” [300 mm] over chambers. Roller travel parallel to chamber rows only.</td>
</tr>
<tr>
<td>Embedment Stone</td>
<td>No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.</td>
<td>No wheel loads allowed. Material must be placed outside the limits of the chamber bed.</td>
<td>No tracked equipment is allowed on chambers until a min. 6” [150 mm] cover stone is in place.</td>
<td>No rollers allowed.</td>
</tr>
<tr>
<td>Foundation Stone</td>
<td>No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.</td>
<td>See Table 2 for Maximum Construction Loads</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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