

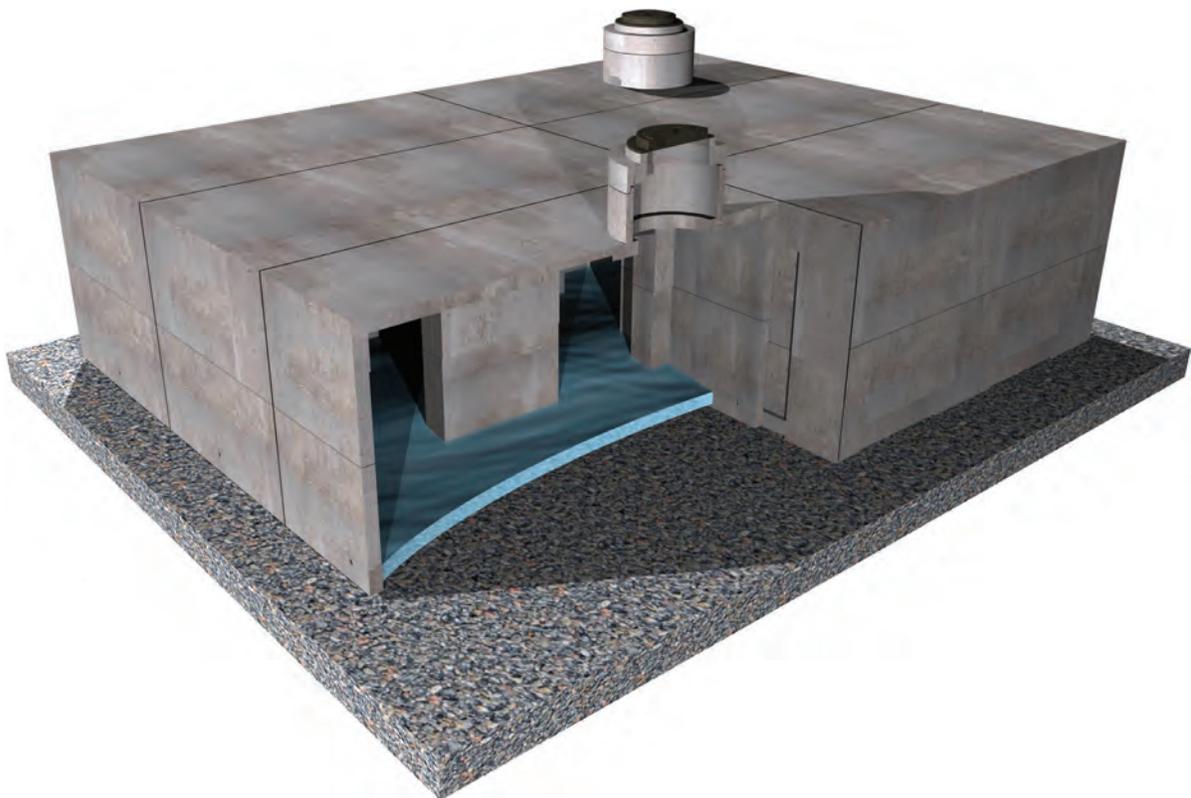


# STORMCAPTURE®

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## Installation Manual

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INTRODUCTION

SITE PREPARATION

DELIVERY & INSTALLATION

LINKSLABS

BACKFILL

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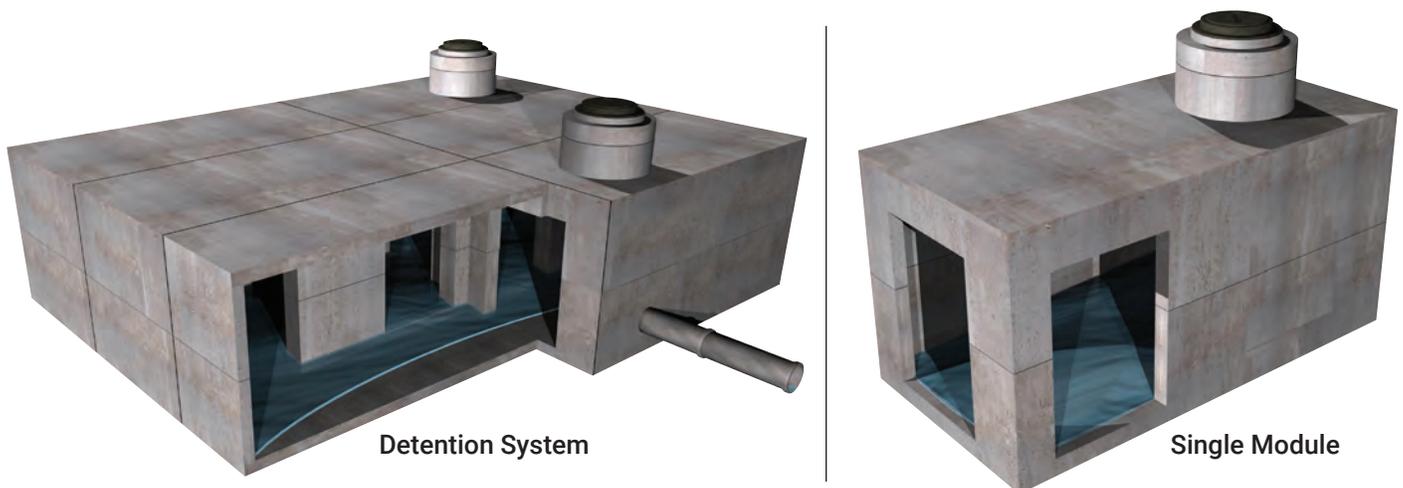
# INTRODUCTION

StormCapture (shown in **Figure 1**) is a total stormwater management system. The highly-configurable module has many solutions for detention, retention, infiltration, treatment and harvesting. Multiple modules can be arranged into endless formations to meet the needs of even the most challenging sites. The rectangular design facilitates rapid and easy installation, plus stress-free maintenance. The precast concrete provides long-term reliability and low lifecycle costs.

The engineer of record is responsible for reviewing and approving the system design, storage volume, required depth of cover, vehicular loading, water table elevation, backfill material and soil bearing capacity. Any variations found during construction to those stated on the plans must be reported to the engineer and Oldcastle Infrastructure.

*This manual is not intended to be all-inclusive and is a reference guide only.*

**FIGURE 1**



**FIGURE 2**

StormCapture System During Installation Process



# SITE PREPARATION

## TIMING

- Excavation and subgrade shall be completed prior to StormCapture delivery.

## EXCAVATION - See *Figures 3 & 4*

- Depth
  - Concrete invert: Depth of fill\* + Module outside height + 2" subgrade depth
  - Open bottom: Depth of fill\* + Module outside height + subgrade depth\*\*
    - \* 6" minimum, 5' maximum, unless otherwise noted
    - \*\* Subgrade depth determined in accordance with StormCapture Tech Note SC-01
- Excavation shall be large enough to allow access around structure for backfilling and compaction equipment.
- Trench sloping shall follow OSHA requirements.
- To prevent excessive water pressure build up on the outside of the modules, the site must be prepared and graded for proper drainage around the StormCapture system.
- Dewatering is required when water level is above bottom of subgrade.

## SUBGRADE - See *Figures 3 & 4*

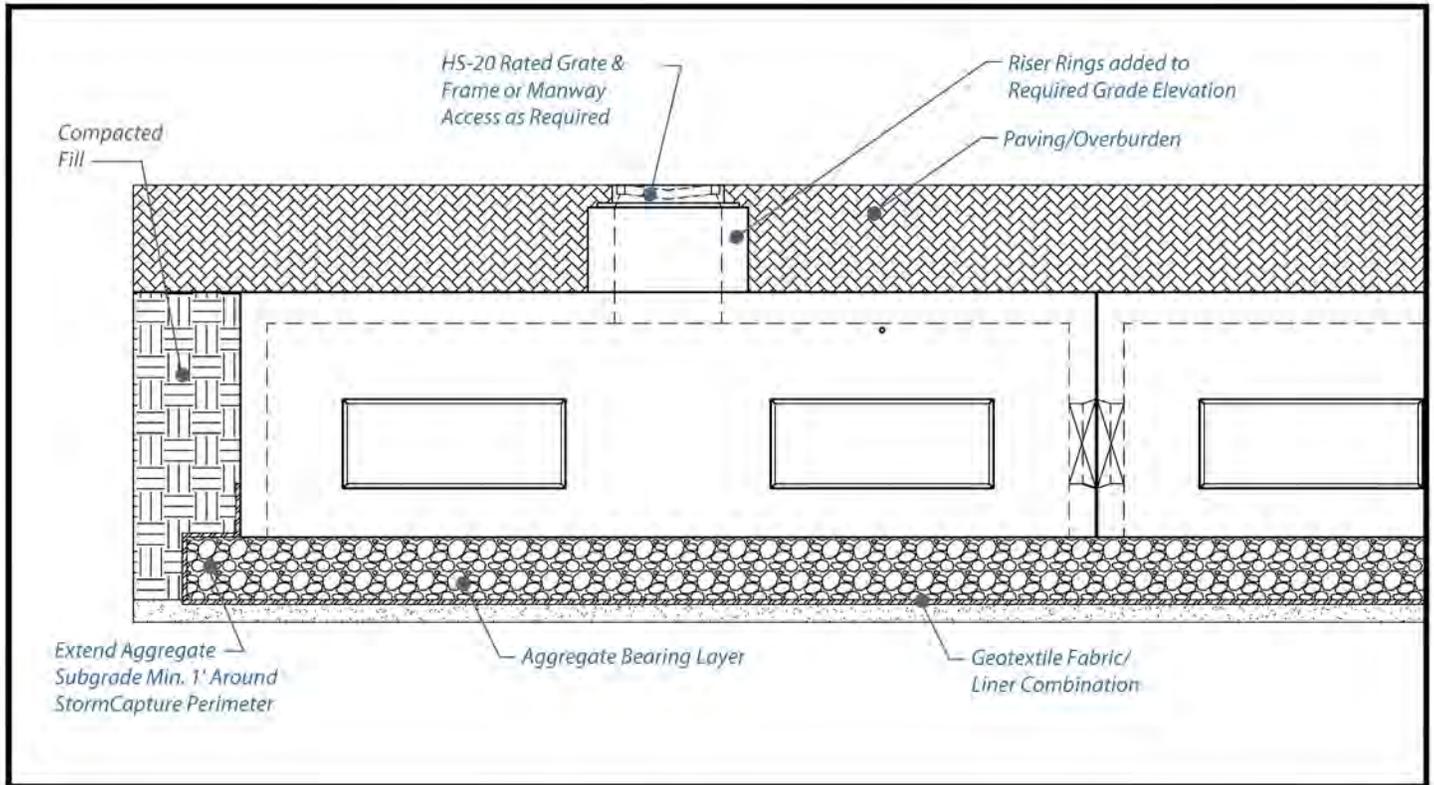
1. Native soil shall be level and compacted adequately to allow for required bearing capacity on design documents.
2. Add 2" of sand for leveling purposes.
3. Geotextile fabric and containment membrane liner.
  - An 8 oz. non-woven geotextile fabric must be used as a separation layer around the StormCapture system.
  - When the project requires a containment membrane liner, a layer of 8 oz. non-woven geotextile fabric must be used on both the inside and outside face of the liner.
  - Install containment membrane liner per manufacturer's recommendations.
4. Aggregate bearing layer - See *Figure 3*
  - Open-bottom modules only are required to be placed on a crushed aggregate bearing layer to a depth in accordance with StormCapture Tech Note SC-01. Material shall be clean, durable crushed aggregate compacted as directed by the engineer of record. Oldcastle recommends size 5, 56 or 57 (per ASTM C33).
  - Extend aggregate bearing layer a minimum of 1' around the system perimeter.
  - Aggregate bearing layer must be level and compacted prior to module placement.
  - An 8 oz. non-woven geotextile fabric must be used as a separation layer around the aggregate material and StormCapture system.

**Note:** Further investigation by a geotechnical engineer may be required where there are concerns with seasonally high water table, and/or poor soil conditions such as low allowable bearing capacity, permafrost and seasonal freeze/thaw cycles.

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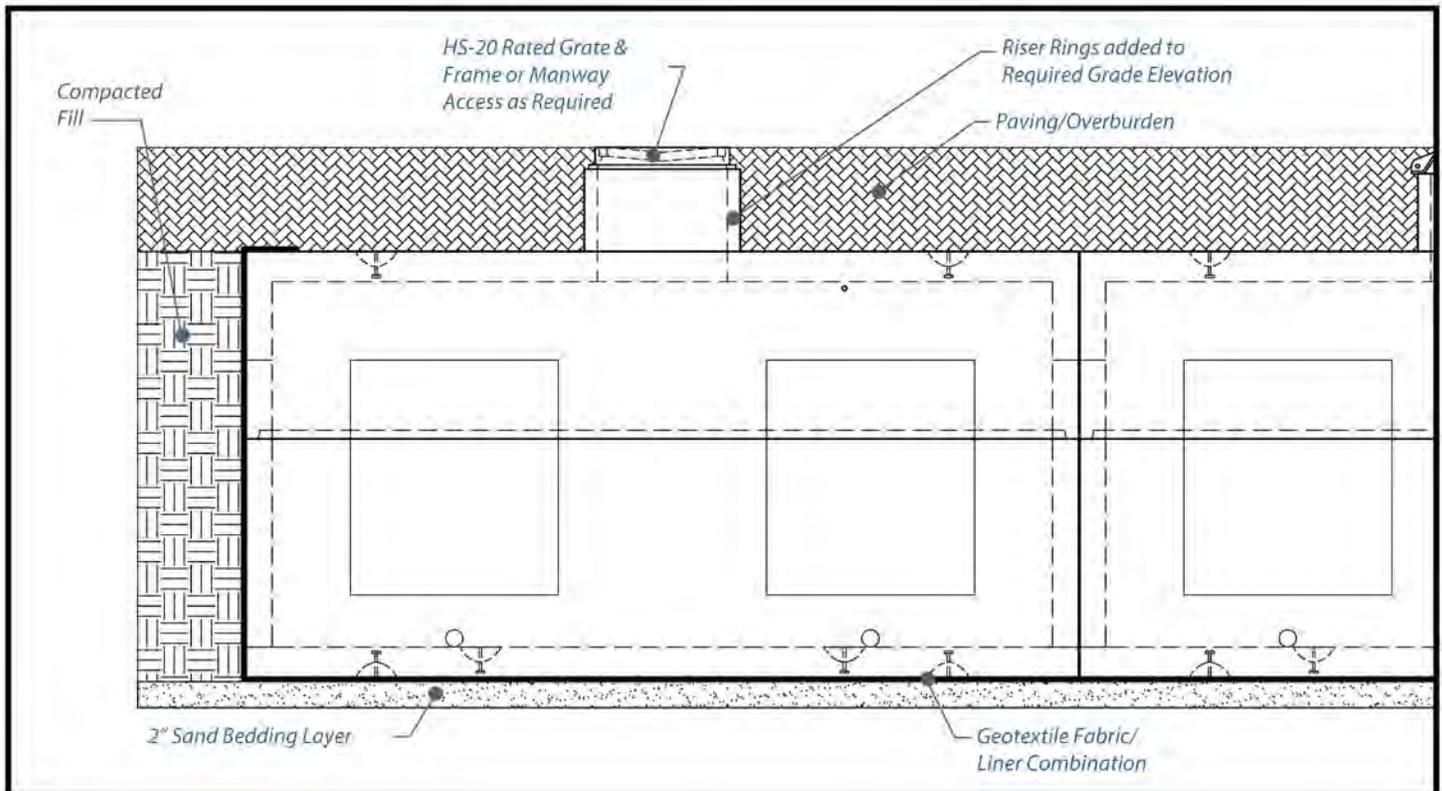
**FIGURE 3**

**1-Piece Module - With Liner**



**FIGURE 4**

**2-Piece Module - With Liner**



# DELIVERY & INSTALLATION

StormCapture modules are to be installed in accordance with ASTM C891-90, Installation of Underground Precast Utility Structures. Project plan and specifications must be followed along with any applicable regulations.

## TIMING

- Plan for first delivery of StormCapture modules after site preparation is completed.
- Individual pieces can be installed in as little as 10 minutes.

## DELIVERY

- Verify that equipment can handle module weights as noted on construction documents prior to delivery.
- StormCapture modules will be delivered on flatbed trucks.

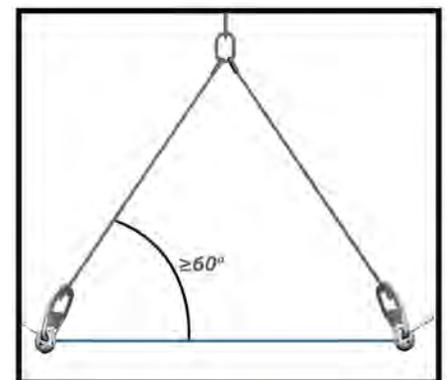
## HANDLING

- StormCapture modules are lifted by the designed embedded lifters at points provided by Oldcastle (**Figure 5**).
- Designed embedded lifters must be used. Use proper rigging to assure all lifters are equally engaged with a minimum 60° angle on slings (**Figure 6**).
- Special lifting clutches are required and shall be coordinated with the producing plant.
- Always follow safety protocols for handling StormCapture modules during installation as illustrated on this page.
- Never stand under load (**Figure 7**).
- Never place hands in the lift gear (**Figure 8**).
- Never place hands under load (**Figure 9**).

## PLACEMENT

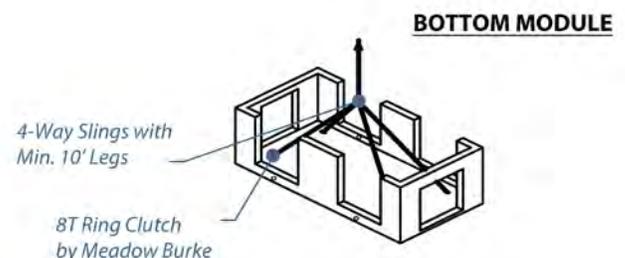
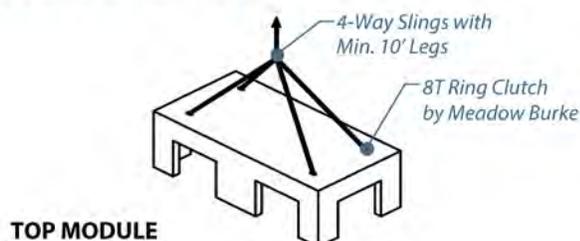
- Use the plan line, grade and elevations shown on the construction documents to install the modules. The sand bedding or aggregate bearing layer must be level.
- Modules must be placed as close together as possible with gaps no greater than 3/4".
- All vertical & top joints shall be covered with an 8" minimum width self-adhesive joint wrap as shown in **Figure 10**.
- Horizontal joints between modules or slabs shall be sealed with Conseal CS-102 butyl rubber sealant as shown in **Figure 11**.
- Seal pipe penetrations to containment membrane liner with pipe boots per liner manufacturer's recommendations.

**FIGURE 6**



**FIGURE 5**

### EMBEDDED LIFTERS



**FIGURE 7**



**FIGURE 8**



**FIGURE 9**



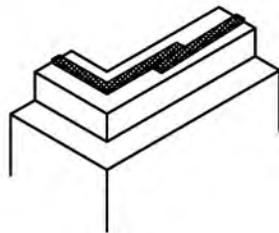
**FIGURE 10**

Sealed Joints Between Modules

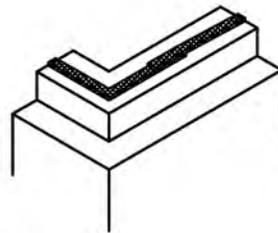


**FIGURE 11**

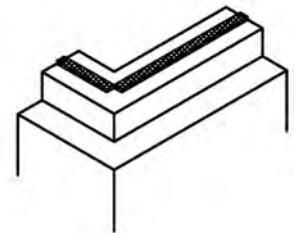
Keyways must be free of dirt, rocks and water. Rocks and dirt prevent the vault sections from seating and sealing properly. Remove all protective paper from rubber sealant material. Splice rubber sealant material with a “side by side” joint, away from corners. Corner splicing will not seal properly.



*CORRECT - Install rubber sealant material at the outer edge of the keyway. Rubber sealant should be continuous around corners.*



*INCORRECT - Do not overlap the rubber sealant material at splice.*



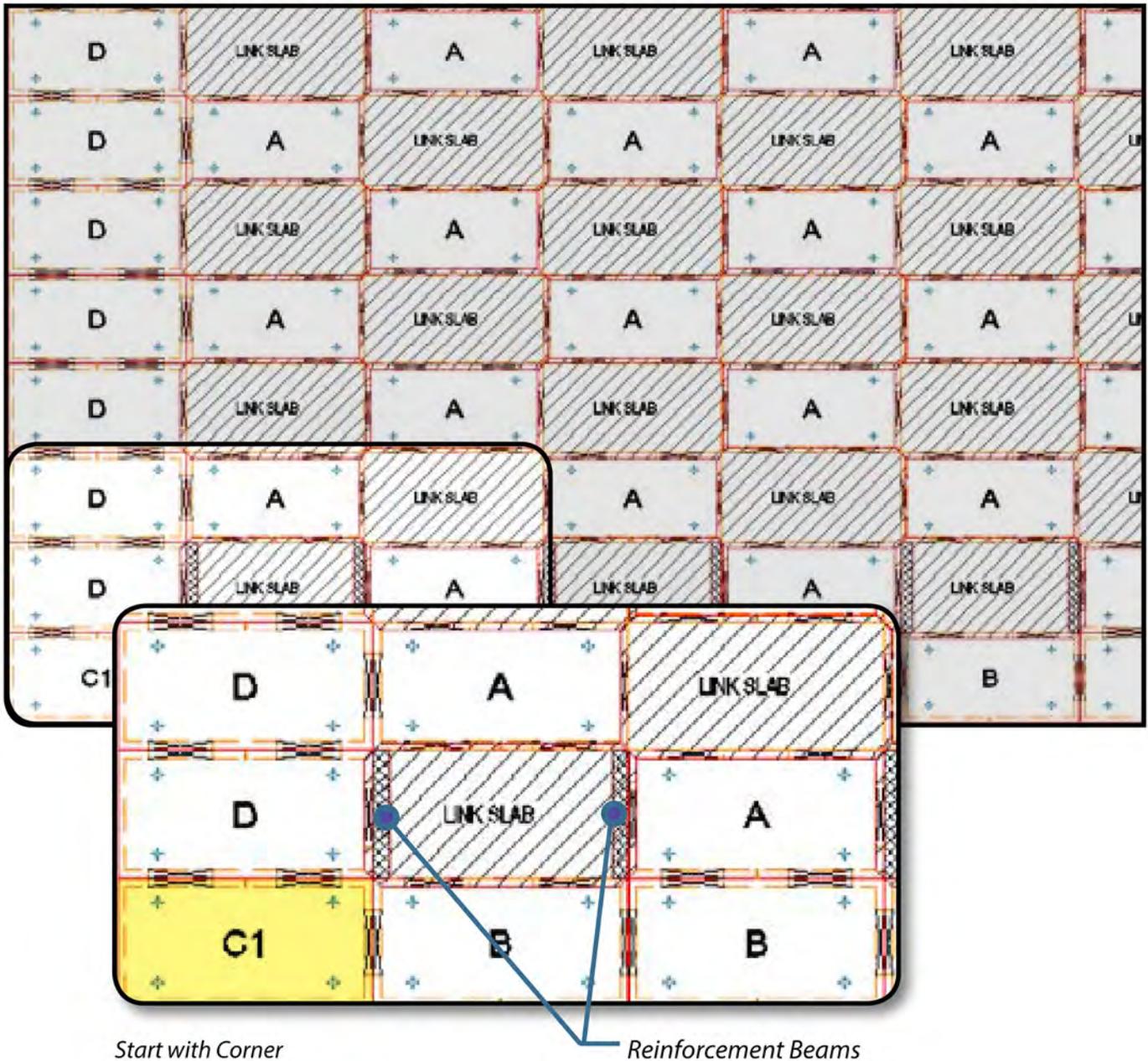
*INCORRECT - Do not overlap the rubber sealant material at a corner. Rubber sealant should be continuous around corners.*

# LINKSLAB® PROCEDURE

These procedures reference the diagram below. This diagram is not indicative of all site layouts. Refer to the site plan for the project specific configuration.

**FIGURE 12**

Example Layout



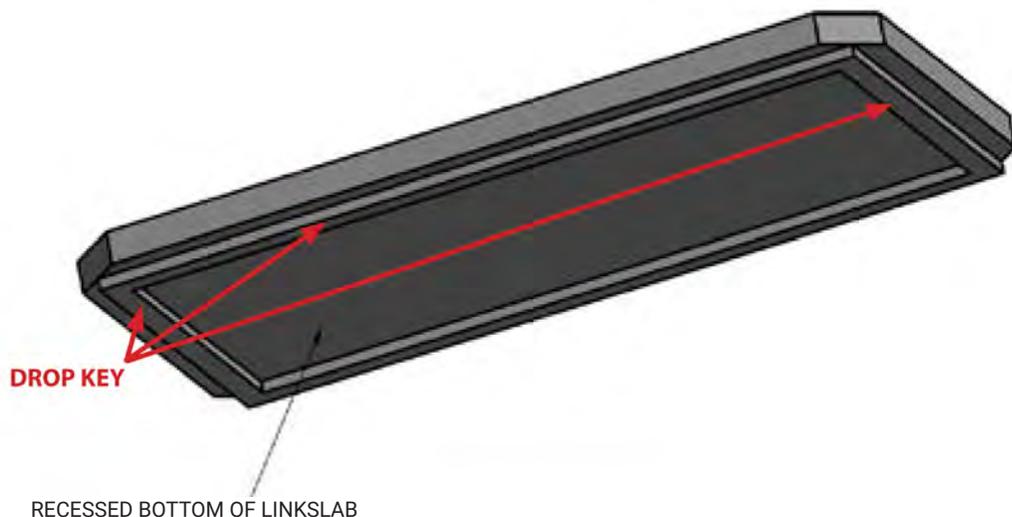
## LINKSLAB PROCEDURE

Maintaining proper line and grade is critical to installation. A qualified surveyor on the site with proper equipment is recommended to ensure a square, level and straight layout. Subgrade must be compacted.

1. Start in the corner of the layout and place the first bottom module C1.
2. Place adjacent bottom modules B, B, D, D. Be sure to set the corners square and straight (from C1 up with D modules, and from C1 right with B modules).
3. Where called out on plans, place reinforcement beams between the modules where the LinkSlab will sit (between B and A). Reinforcement beams may not be required at all locations, so refer to the project specific configuration.
4. Place interior modules A, A.
  - Check the distance between pieces when there is a gap for a LinkSlab. Both bottom corners should be between 8' and 8'-1 ¼".
5. Place Conseal CS-102 at the horizontal joints.
6. Place top modules (C1, B, B, D, D, A, A).
  - Check the distance between pieces when there is a gap for a LinkSlab. Both top corners should be 8' and 8'-1 ¼".
7. Place Conseal CS-102 for the horizontal LinkSlab joints at D, A, A and B.
8. Place the LinkSlab. Ensure that it fits tightly between all adjacent modules. The drop key should fit inside the adjacent modules. Do not allow the LinkSlab to rest on the drop key.
  - Ensure surface contact with the bottom of the LinkSlab and the top of the adjacent modules. Reset adjacent modules as necessary to correct the problem.
9. Continue placing adjacent modules and LinkSlabs.
  - Oldcastle Infrastructure recommends placing each LinkSlab as soon as the supporting modules are in place to ensure proper fit.
10. Continue installation procedure as recommended in the StormCapture Installation Manual.

**FIGURE 13**

LinkSlab Isometric View



# BACKFILL

Once all modules are in place with joints sealed and geotextile fabric wrapped, the StormCapture system shall be inspected by the engineer of record or an accepted representative. Upon approval, backfilling can begin.

- Do not compact within 6" of module to avoid damaging the system. Care shall be taken during placement of backfill not to displace modules, joint wrap, containment membrane liner or geotextile fabric.
- Backfilling shall be in 1' lifts with proper compaction between lifts. Typical backfill shall be compacted to 95% standard proctor density or as specified.
- Expansive soil material shall not be used as backfill around the structure.
- Compaction shall be adequate to support expected loads on top of the system and surrounding area. Consult with geotechnical engineer for the project.
- Once installed, StormCapture modules are ready for paving or overburden material (**Figure 14**).
- Finished grading, paving and landscaping shall be per construction documents.
- Construction equipment exceeding design loading shall not be allowed on structure. Consult Oldcastle Infrastructure if unsure.
- Contact Oldcastle Infrastructure and the engineer of record if the live loads are greater than HS-20.
- Track vehicles including D-4 type dozers or lighter are permitted.

**FIGURE 14**

Backfill



## INSTALLATION IS NOW COMPLETE

*Project specific conditions may apply. Please refer to design documents for any special circumstances regarding installation or infiltration. **Oldcastle Infrastructure is not liable for installation.***

# PRECONSTRUCTION MEETING CHECKLIST

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Installer Name: \_\_\_\_\_ Address: \_\_\_\_\_

Oldcastle Rep: \_\_\_\_\_

- Cover the installation manual
- Installer has the **approved** drawings
- Crane sizing and proper rigging
- Coordinate with installer to borrow lifting clutches for installation
  - Recommend \$1,600 deposit (paid to plant from contractor), with money to be repaid upon return of undamaged clutches.
- Hole sizing
  - Extra space for liner weld if needed
- Hole prep (base prep)
- Liner (if applicable)
  - Extra hands for unrolling liner needed
- Project date of install: \_\_\_\_\_
- Delivery truck access to the site
  - Will a truck with a sleeper cab fit?
  - Do construction site items need to be moved for access?
- Timing of trucks
  - Splash pads first
  - Order of modules to install with ease
  - Assume 10-15 minutes per piece
- Installing of modules
- Joint Wrap
- Other: \_\_\_\_\_

## SIGNATURES:

Project Superintendent: \_\_\_\_\_ Other: \_\_\_\_\_

Project Foreman: \_\_\_\_\_ Other: \_\_\_\_\_

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# STORMCAPTURE®

## Installation Manual

### OUR MARKETS



**BUILDING  
STRUCTURES**



**COMMUNICATIONS**



**WATER**



**ENERGY**



**TRANSPORTATION**