STORMCAPTURE®
Design Summary
##### PROJECT INFORMATION

**PROJECT NAME:** 95 SW 5th Ave  
**PROJECT CITY:** Delray Beach  
**PROJECT STATE:** FL  
**COMPANY:** Miller Legg  
**SITE TYPE:** Commercial

##### SYSTEM DESIGN

- **System Type:** Detention  
- **Module Construction Type:** Base with Top Slab  
- **Storage Volume Required (cf):** 2000  
- **Configured Storage Volume (cf):** 2245  
- **System Internal Height (ft):** 3  
- **Nominal Module Capacity (cf):** 315  
- **Required Number of Modules:** 7  
- **Module Designation:** SC1 0-3

##### SITE DESIGN

- **System Invert Elevation (ft):** 9.25  
- **Top of Module Elevation (ft):** 12.85  
- **Maximum Rim Elevation (ft):** 14.50  
- **Depth of Cover (ft):** 1.65  
- **Minimum Inlet Elevation (ft):** 0.00  
- **Maximum Inlet Elevation (ft):** 0.00  
- **Minimum Outlet Elevation (ft):** 8.00  
- **Maximum Outlet Elevation (ft):** 8.00
NOTES TO REVIEWING ENGINEER:

1. THIS SYSTEM IS DESIGNED TO THE PARAMETERS NOTED. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD AND FILL RANGE). IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND RE-PRICING.

2. ENGINEER OF RECORD TO CONFIRM ALL PIPE PENETRATION LOCATIONS, SIZES, AND INVERTS.

3. ENGINEER OF RECORD TO CONFIRM ALL MANWAY ACCESS LOCATIONS AND RIM ELEVATIONS.

4. UNLESS OTHERWISE NOTED, ALL PIPE SUPPLIED AND INSTALLED BY OTHERS.

5. THIS SYSTEM IS DESIGNED FOR A GROUNDWATER TABLE BELOW SYSTEM INVERT. ENGINEER OF RECORD TO VERIFY THAT THE DESIGN GROUNDWATER TABLE IS BELOW INVERT OF PRECAST. IF DESIGN PARAMETERS ARE INCORRECT NOTIFY OLDCASTLE IMMEDIATELY FOR REDESIGN AND REVISED PRICING.

6. THIS SYSTEM IS DESIGNED WITHOUT A CONTAINMENT MEMBRANE LINER. IF A LINER IS NEEDED PLEASE CONTACT OLDCASTLE TO PROVIDE THIS OPTION IN THE FINAL DESIGN.

DESIGN NOTES:

1. DESIGN LOADINGS:
   A. AASHTO HS-20/44 W/ IMPACT.
   B. DEPTH OF COVER = 8'- 6" - 5'-0" (120 PCF ASSUMED).
   C. ASSUMED WATER TABLE = BELOW BOTTOM OF PRECAST.
   D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
   E. LATERAL LIVE LOAD SURCHARGE = 45 LSF (APPLIED TO 8' BELOW GRADE).
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALL PIERS, OR FOUNDATIONS.

2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.


5. CEMENT: ASTM C-150 SPECIFICATION.

6. STORMCAPTURE® MODULE TYPE = DETENTION.

7. REQUIRED BASE LAYER DEPTH = NOT APPLICABLE.

8. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF. NATIVE SOIL SHOULD BE LEVEL/SCREEDED AND COMPACTED ADEQUATELY TO ALLOW FOR REQUIRED BEARING CAPACITY.

9. REFERENCE STANDARDS:
   A. ASTM C 860
   B. ASTM C 891
   C. ASTM C 913

10. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE. ANY DESIGN CONSTRAINT DIFFERENT FROM ABOVE REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER SUBGRADE AND REVISED PRICING.
COMPACTED FILL SEE INSTALLATION NOTE BY CONTRACTOR
PAVING/VERMURER BY CONTRACTOR SEE DESIGN NOTE 10

STORMCAPTURE MODULES BY OLDCASTLE INFRASTRUCTURE

30" DIA. HIGH-RATED FRAME AND COVER WITH SPILL-BRIDGE IN STEPS LADDER AND TAPERED GRADE RINGS AS REQUIRED TO GRADE

1" DIA. VENT HOLE ONE PER MODULE ONLY

GEOTEXTILE FABRIC TO EXTEND 1' MINIMUM UP SIDES OF SYSTEM
GEOTEXTILE FABRIC SEE INSTALLATION GUIDE

CONTRACTOR TO ENSURE ADEQUATE BEARING SURFACE PROVIDED IN ACCORDANCE WITH PROJECT SPECIFICATIONS SEE DESIGN NOTES 7 AND 8

4" DIA. TERRADUCT, TYPICAL

NOTE:
TERRADUCT INSERTS TO BE KNOCKED OUT AT SPECIFIED LOCATIONS ONLY (BY OTHERS)

TYPICAL ELEVATION
SCALE: 3/8" = 1'-0"
INTRODUCTION

StormCapture (shown in Figure 1) is a total storm water 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

- Detention System
- Single Module

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.
   - 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.

FIGURE 3
1. 1-Piece Module - With Liner

FIGURE 4
1. 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 lifers at points provided by Oldcastle (Figure 5).
- Designed embedded lifers must be used. Use proper rigging to assure all lifers 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 5

EMBEDDED LIFTERS

| TOP MODULE |
| 4-Way Slings with Min. 10' Legs |
| 8T Ring Clutch by Meadow Burke |

| BOTTOM MODULE |
| 4-Way Slings with Min. 10' Legs |
| 8T Ring Clutch by Meadow Burke |

FIGURE 7

NEVER UNDER LOAD

FIGURE 8

NO HAND IN LIFT GEAR

FIGURE 9

NO HAND UNDER LOAD

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 - splice 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 a corner. Rubber sealant should be continuous around corners.

INCORRECT - do not overlap the rubber sealant material at a corner. Rubber sealant should be continuous around corners.
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.
5. Check the distance between pieces when there is a gap for a LinkSlab. Both bottom corners should be between 8’ and 8’-1 ¼”.
6. Place Conseal CS-102 at the horizontal joints.
7. Place top modules (C1, B, B, D, D, A, A).
8. Check the distance between pieces when there is a gap for a LinkSlab. Both top corners should be 8’ and 8’-1 ¼”.
9. Place Conseal CS-102 for the horizontal LinkSlab joints at D, A, and B.
10. 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.
11. 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.
12. Continue placing adjacent modules and LinkSlabs.
13. Oldcastle Precast recommends placing each LinkSlab as soon as the supporting modules are in place to ensure proper fit.

**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.
- Track vehicles including D-4 type dozers or lighter are permitted.

**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.

**FIGURE 14**

Backfill

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**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: ________________________________
OUR MARKETS

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