

January 2, 2019



Mr. Joseph Marwil, PLA, MLA  
Bell Engineering  
2480 Fortune Dr, Suite 350  
Lexington, Ky 40509

**RE: Project 2490.0 Expand/Construct Orange Parking Lot, Phase 4**

**RE: Project Warranty**

**Dear Mr. Marwil,**

**This letter will serve to certify that all work performed by L-M Asphalt Partners, Ltd. Dba ATS Construction for the project known as Expand/Construct Orange Parking Lot, Phase 4 on Alumni Dr in Lexington, Kentucky, has been constructed in accordance with the drawings and specification and that the work performed and completed will fulfill the requirements of those specifications. We agree to repair or replace any and all work which may prove to be defective in workmanship or materials within a period of One (1) year beginning on August 15, 2018. Ordinary wear and tear and unusual abuse or neglect is excepted.**

Mr. Joseph Marwil  
Bell Engineering  
January 2, 2019  
Page 2 of 2

RE: Project 2490.0 Expand/Construct Orange Parking Lot, Phase 4

RE: Project Warranty

Subcontractor: L-M Asphalt Partners, Ltd. Dba ATS Construction

By: Dylan C. Murphy P.E. Date: 1/2/19

Title: Dylan C. Murphy, P.E.

THE STATE OF KENTUCKY

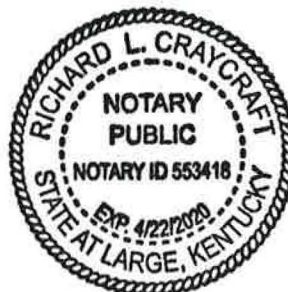
COUNTY OF FAYETTE

BEFORE ME, the undersigned authority, on January 2, 2019, personally appeared, Brian R. Billings, known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 2nd Day of January 2019.

Richard L. Craycraft  
NOTARY PUBLIC  
Richard L. Craycraft

My Commision expires: April 22, 2020



# Operation and Maintenance Manual

## Project 2490.0 UK Orange Lot Expansion Phase 4 University of Kentucky

Lexington, KY

**Consultants:**

Bell Engineering  
2480 Fortune Drive,  
Suite 350  
Lexington, KY 40509  
Phone: (859) 278-5412

Staggs & Fisher Consulting Engineers, Inc.  
3264 Lochness Drive  
Lexington, KY 40517  
Phone: (859) 271-3246

**Contractor:**

ATS Construction  
3009 Atkinson Ave, Suite 400  
Lexington, KY 40509  
Phone: (859) 223-7001

**Subcontractors:**

Fox Enterprises  
408 Jason Dr.  
Richmond, KY 40475  
Phone: (859) 623-9963

Arrow Electric Contractors  
2321 Maggard Dr  
Lexington, KY 40511  
Phone: (859) 259-1647

C & R Asphalt, LLC.  
415 Rebmam Ln  
Lexington, KY 40504  
Phone: (859) 255-0077

# Table of Contents

## **Spec Section 02721 Underground Detention System**

- Product Data.....Section 1
- Installation Guide & Maintenance.....Section 2
- Shop Drawings & Calculations.....Section 3

**Section 1**  
**Product Data**

Storm Sewer Underground Detention System  
Spec Section 02721

# STORMTECH MC-3500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

## STORMTECH MC-3500 CHAMBER (not to scale)

### Nominal Chamber Specifications

**Size (L x W x H)**  
90" x 77" x 45"  
2,286 mm x 1,956 mm x 1,143 mm

**Chamber Storage**  
109.9 ft<sup>3</sup> (3.11 m<sup>3</sup>)

**Min. Installed Storage\***  
178.9 ft<sup>3</sup> (5.06 m<sup>3</sup>)

**Weight**  
134 lbs (60.8 kg)

**Shipping**  
15 chambers/pallet  
7 end caps/pallet  
7 pallets/truck

\*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.

## STORMTECH MC-3500 END CAP (not to scale)

### Nominal End Cap Specifications

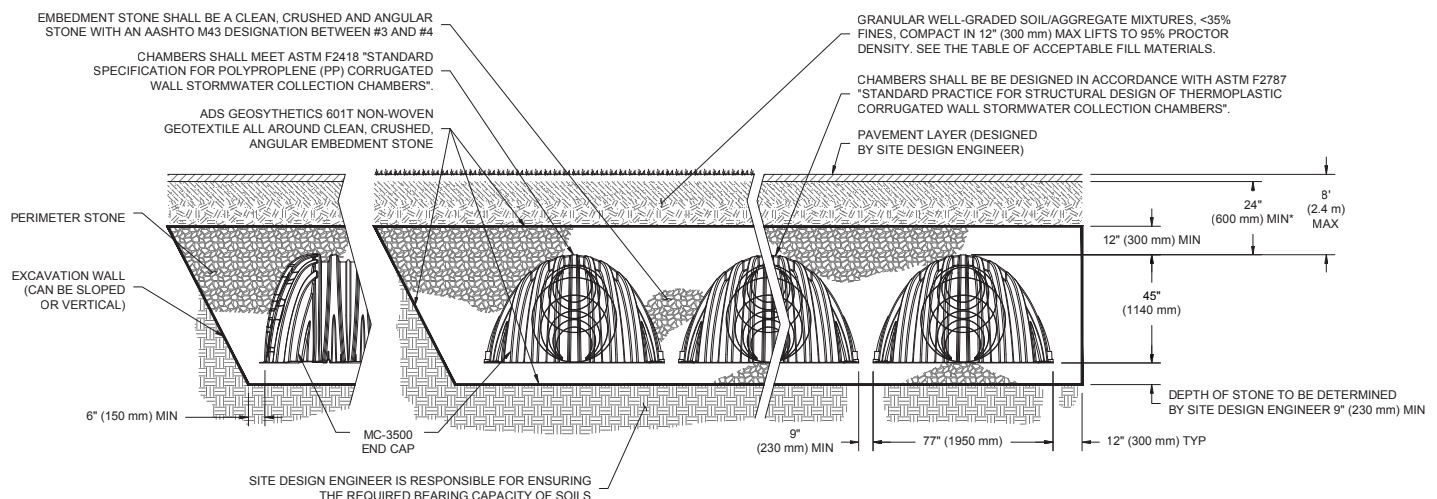
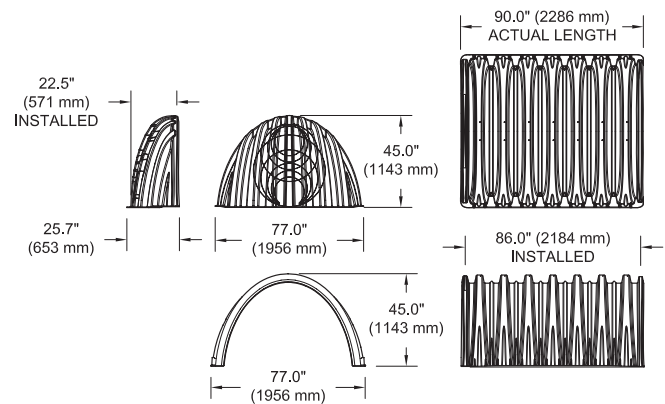
**Size (L x W x H)**  
26.5" x 71" x 45.1"  
673 mm x 1,803 mm x 1,145 mm

**End Cap Storage**  
14.9 ft<sup>3</sup> (1.30 m<sup>3</sup>)

**Min. Installed Storage\***  
46.0 ft<sup>3</sup> (1.30 m<sup>3</sup>)

**Weight**  
49 lbs (22.2 kg)

\*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.



\*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

## MC-3500 CHAMBER SPECIFICATION

### STORAGE VOLUME PER CHAMBER FT<sup>3</sup> (M<sup>3</sup>)

	Bare Chamber Storage ft <sup>3</sup> (m <sup>3</sup> )	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-3500 Chamber	109.9 (3.11)	178.9 (5.06)	184.0 (5.21)	189.2 (5.36)	194.3 (5.5)
MC-3500 End Cap	14.9 (.42)	46.0 (1.33)	47.7 (1.35)	49.4 (1.40)	51.1 (1.45)

**Note:** Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

### AMOUNT OF STONE PER CHAMBER

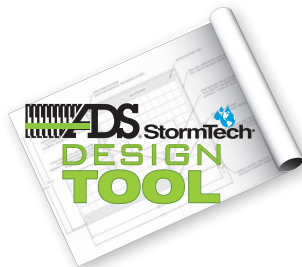
ENGLISH TONS (yds <sup>3</sup> )	Stone Foundation Depth			
	9"	12"	15"	18"
MC-3500 Chamber	9.1 (6.4)	9.7 (6.9)	10.4 (7.3)	11.1 (7.8)
MC-3500 End Cap	4.1 (2.9)	4.3 (3.0)	4.5 (3.2)	4.5 (3.2)
METRIC KILOGRAMS (m <sup>3</sup> )	230 mm	300 mm	375 mm	450 mm
MC-3500 Chamber	8,220 (4.9)	8,831 (5.3)	9,443 (5.6)	10,054 (6.0)
MC-3500 End Cap	3,699 (2.2)	3,900 (2.3)	4,100 (2.5)	4,301 (2.6)

**Note:** Assumes 12" (300 mm) of stone above and 9" (230 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

### VOLUME EXCAVATION PER CHAMBER YD<sup>3</sup> (M<sup>3</sup>)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-3500 Chamber	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)	13.8 (10.5)
MC-3500 End Cap	4.1 (3.1)	4.2 (3.2)	4.4 (3.3)	4.5 (3.5)

**Note:** Assumes 9" (230 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.



**Working on a project?**  
 Visit us at [www.stormtech.com](http://www.stormtech.com)  
 and utilize the StormTech Design Tool

For more information on the StormTech MC-3500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

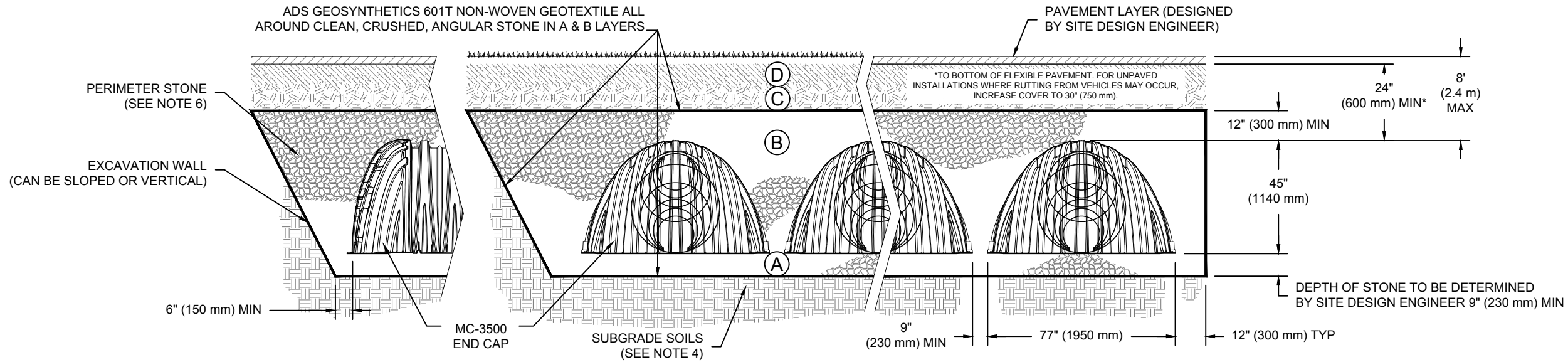
Advanced Drainage Systems, Inc.  
 4640 Trueman Blvd., Hilliard, OH 43026  
 1-800-821-6710 [www.ads-pipe.com](http://www.ads-pipe.com)

## ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	<b>FINAL FILL:</b> FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	<b>INITIAL FILL:</b> FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 <sup>1</sup> A-1, A-2-4, A-3  OR AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	<b>EMBEDMENT STONE:</b> FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 <sup>1</sup> 3, 4	NO COMPACTION REQUIRED.
A	<b>FOUNDATION STONE:</b> FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 <sup>1</sup> 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

**PLEASE NOTE:**

- 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".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR 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.



\*FOR COVER DEPTHS GREATER THAN 8.0' (2.4 m) PLEASE CONTACT STORMTECH

**NOTES:**

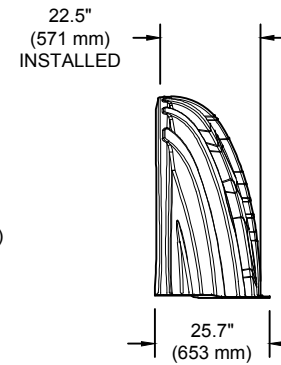
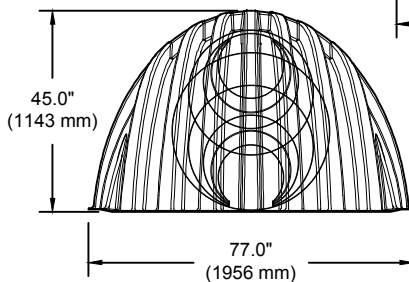
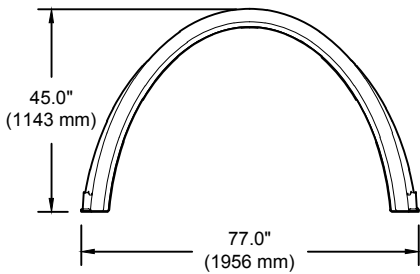
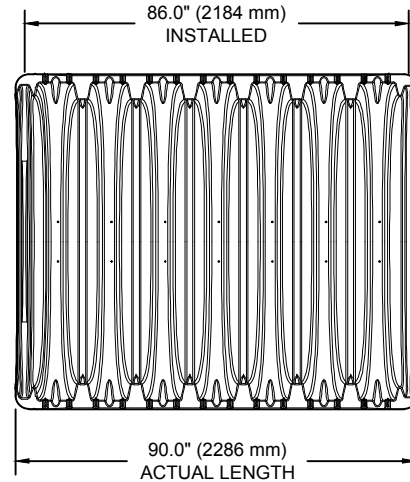
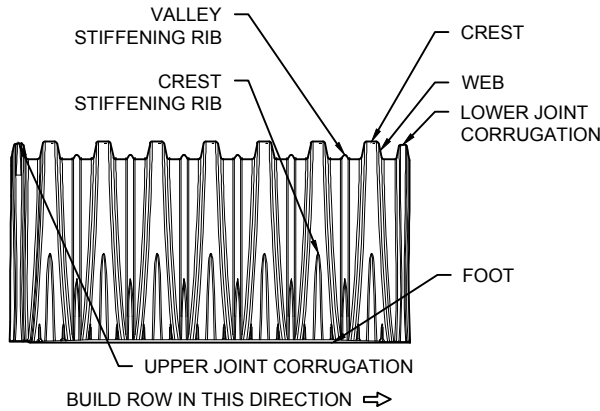
- MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

<b>MC-3500</b>	<b>STANDARD CROSS SECTION</b>	DATE: 11/18/14	DRAWN: JLM
DESCRIPTION	CHK	DATE	PROJECT #:
01/19/16	JLM		
<b>StormTech</b> <small>Retention/Retention/Water Quality</small>			
70 INWOOD ROAD, SUITE 3   ROCKY HILL   CT   06067 860-525-8188   888-892-2694   WWW.STORMTECH.COM			
4640 TRUEMAN BLVD HILLIARD, OH 43026 1-800-733-7473			
THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.			
SHEET			
1 OF 1			



# MC-3500 TECHNICAL SPECIFICATION

NTS



## NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m <sup>3</sup> )
MINIMUM INSTALLED STORAGE*	178.9 CUBIC FEET	(5.06 m <sup>3</sup> )
WEIGHT	135.0 lbs.	(61.2 kg)

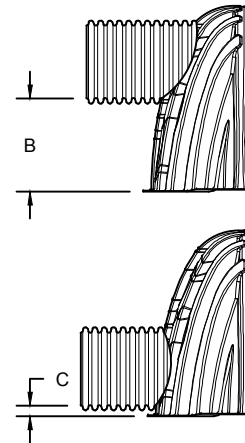
## NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 22.5"	(1956 mm X 1143 mm X 571 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m <sup>3</sup> )
MINIMUM INSTALLED STORAGE*	46.0 CUBIC FEET	(1.30 m <sup>3</sup> )
WEIGHT	50.0 lbs.	(22.7 kg)

\*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

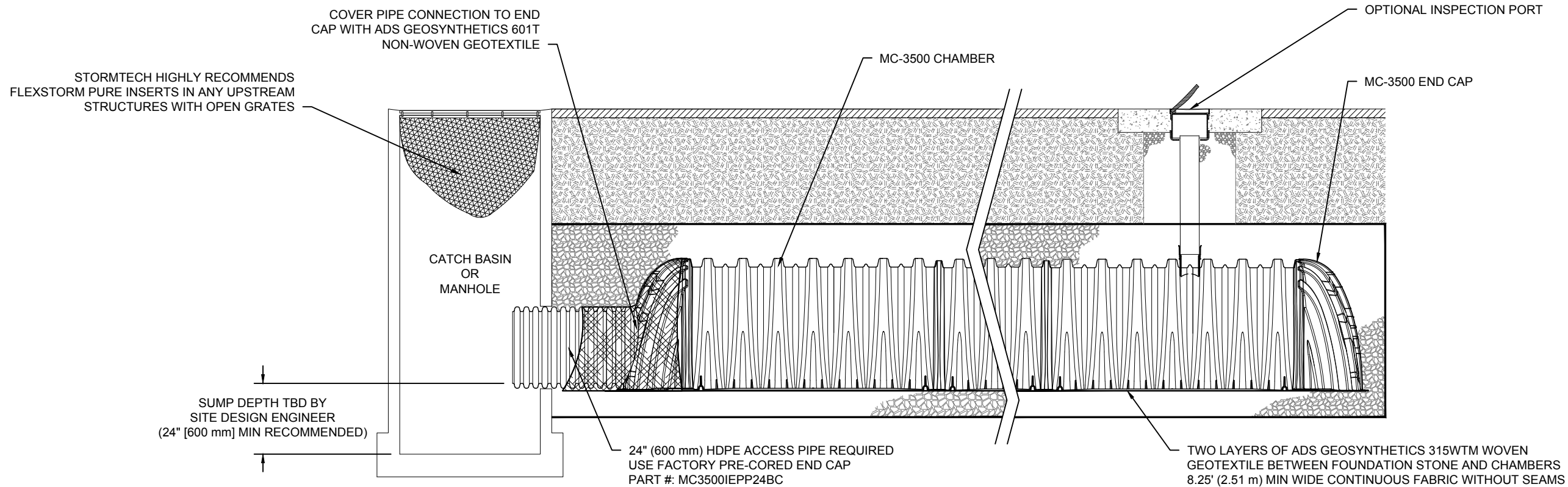
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
 END CAPS WITH A WELDED CROWN PLATE END WITH "C"  
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW		---	1.77" (45 mm)
MC3500IEPP18BC		---	---
MC3500IEPP18BW		---	---
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW		---	---
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW		---	---
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

NOTE: ALL DIMENSIONS ARE NOMINAL



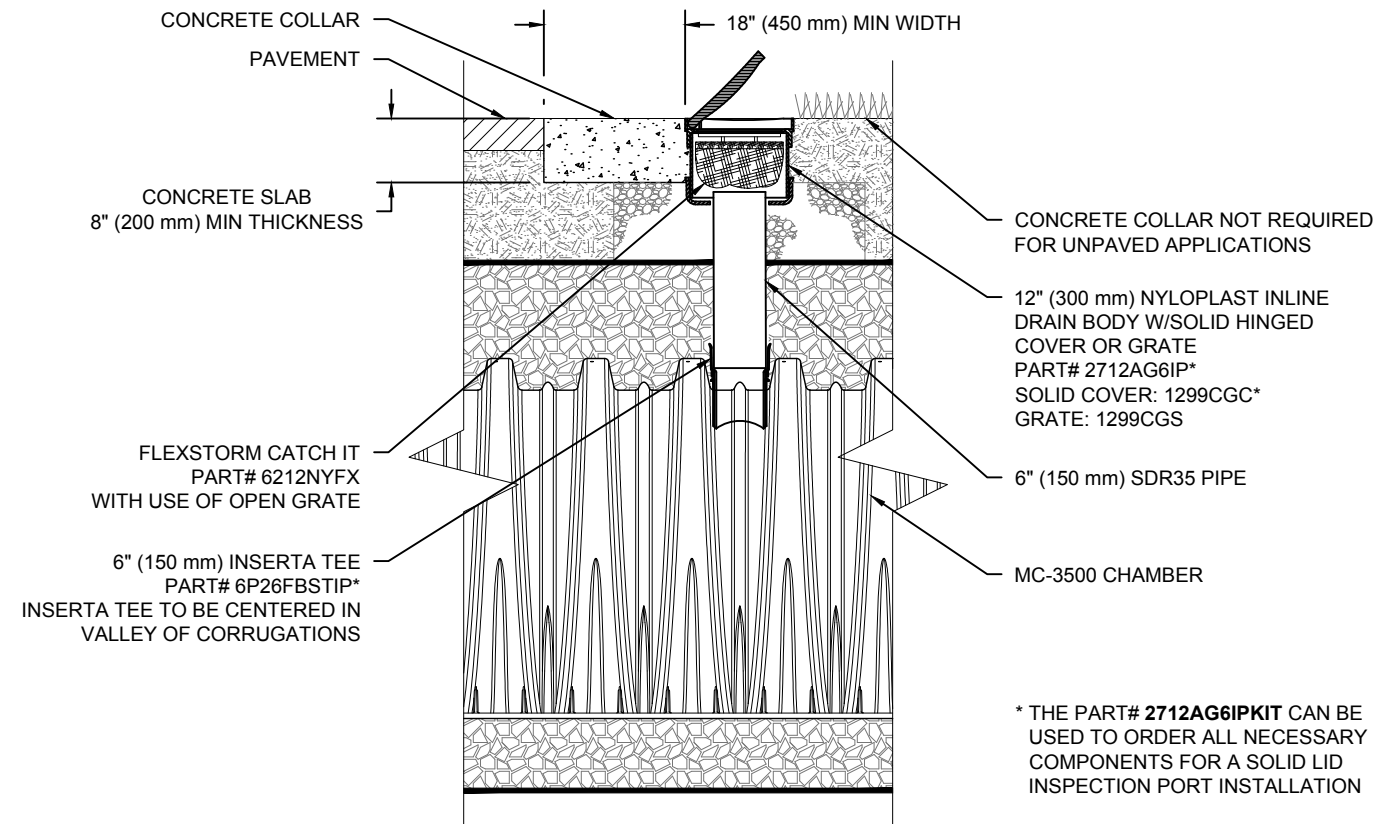
**MC-3500 ISOLATOR ROW DETAIL**  
NTS

**INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
    - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
    - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
    - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
    - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
    - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
  - B. ALL ISOLATOR ROWS
    - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
    - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
      - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
      - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
    - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
  - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

**NOTES**

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



**MC-3500 6" INSPECTION PORT DETAIL**  
NTS

ISOLATOR ROW DETAILS		MC-3500	DATE: 03/08/17	DRAWN: JLM	CHECKED:
REV	DRW	CHK	DESCRIPTION	PROJECT #:	

**StormTech**  
 Definition • Retention • Water Quality  
 70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067  
 860-525-8188 | 888-892-2694 | WWW.STORMTECH.COM

**ADS**  
 ADVANCED DRAINAGE SYSTEMS, INC.  
 4640 TRUEMAN BLVD  
 HILLIARD, OH 43026  
 1-800-733-7473

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

## **Section 2**

### **Installation Guide & Maintenance**

Storm Sewer Underground Detention System

Spec Section 02721

# Isolator<sup>®</sup> Row O&M Manual



## THE ISOLATOR<sup>®</sup> ROW

### INTRODUCTION

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

### THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 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 (SC-310, SC-310-3 and SC-740 models) 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 non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

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 overflow 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.

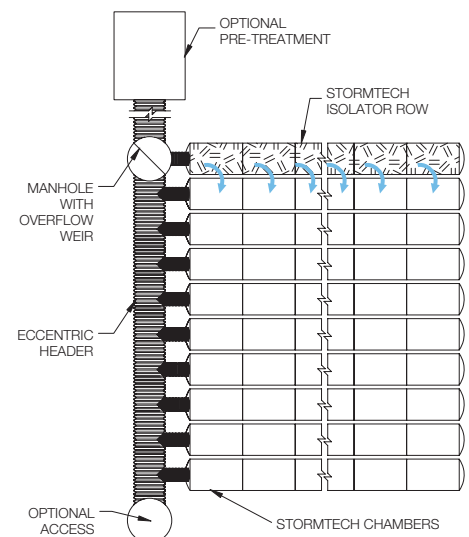
*Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*



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



StormTech Isolator Row with Overflow Spillway (not to scale)





## ISOLATOR ROW INSPECTION/MAINTENANCE

### 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.

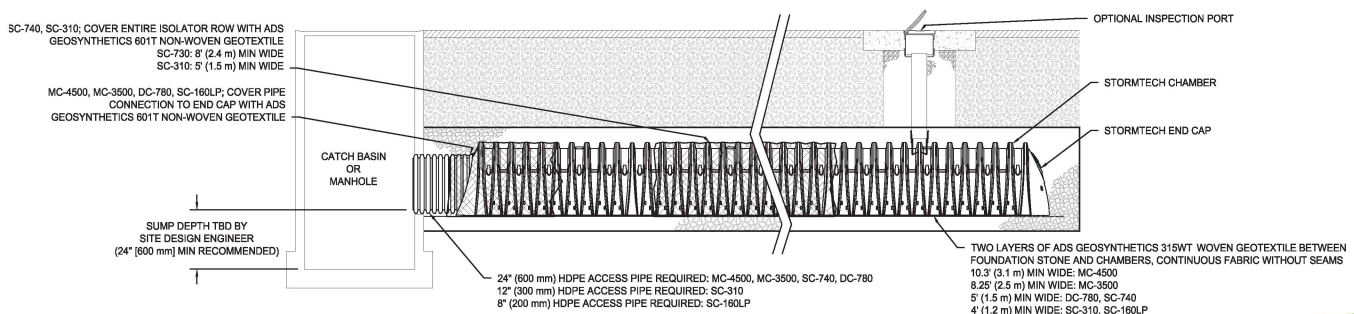
### MAINTENANCE

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.

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)

*Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.*



# 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.

## STEP 2

Clean out Isolator Row using the JetVac process.

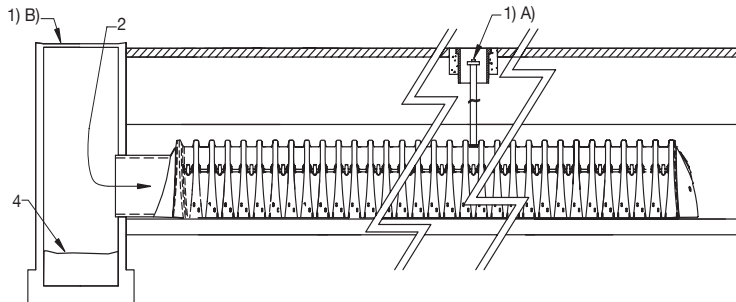
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

## 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)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

# StormTech Construction Guide

## REQUIRED MATERIALS AND EQUIPMENT LIST

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

NOTE: MC-3500 chamber pallets are 77" x 90" (2.0 m x 2.3 m) and weigh about 2010 lbs. (912 kg) and MC-4500 pallets are 100" x 52" (2.5 m x 1.3 m) and weigh about 840 lbs. (381 kg). Unloading chambers requires 72" (1.8 m) (min.) forks and/or tie downs (straps, chains, etc).

### IMPORTANT NOTES:

- This installation guide provides the minimum requirements for proper installation of chambers. Nonadherence 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.
- Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.
- Care should be taken in the handling of chambers and end caps. End caps must be stored standing upright. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

## Requirements for System Installation



Excavate bed and prepare subgrade per engineer's plans.



Place non-woven geotextile over prepared soils and up excavation walls.



Place clean, crushed, angular stone foundation 9" (230 mm) min. Install underdrains if required. Compact to achieve a flat surface.

1

## Manifold, Scour Fabric and Chamber Assembly



Install manifolds and lay out woven scour geotextile at inlet rows [min. 17.5 ft (5.33 m)] at each inlet end cap. Place a continuous piece (no seams) along entire length of Isolator® Row(s) in two layers.

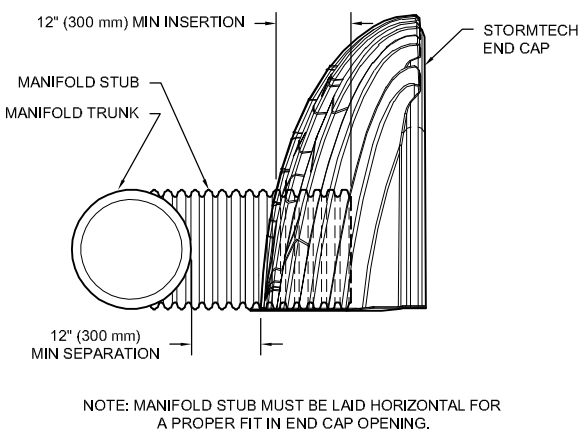


Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.



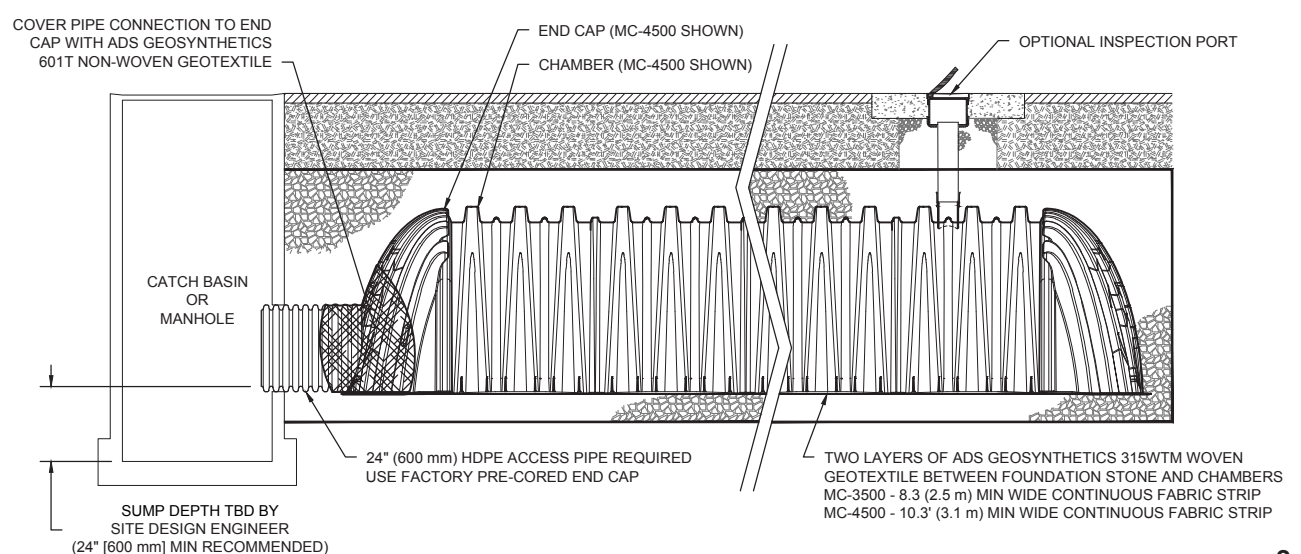
Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction – Upper Joint". Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 9" (300 mm) spacing between rows. For the 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.

## Manifold Insertion



Insert inlet and outlet manifolds a minimum 12" (300 mm) into chamber end caps. Manifold header should be a minimum 12" (300 mm) from base of end cap.

## StormTech Isolator Row Detail

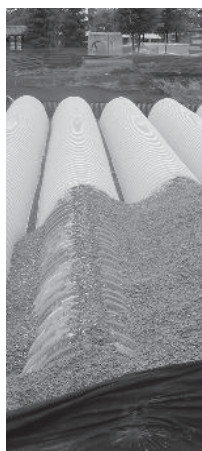


2

## Initial Anchoring of Chambers – Embedment Stone



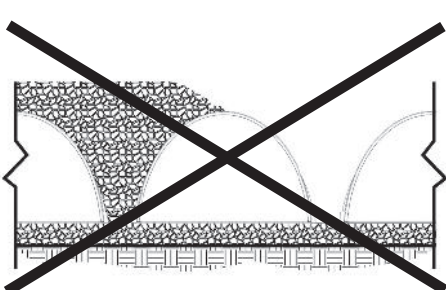
Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.



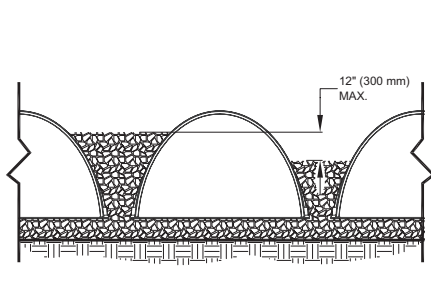
No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.



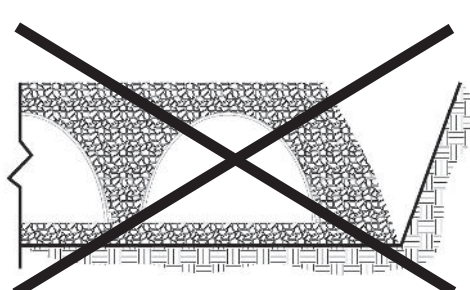
## Backfill of Chambers – Embedment Stone



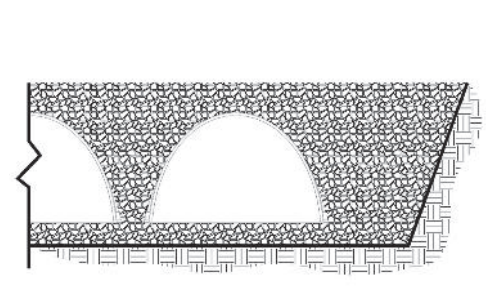
UNEVEN BACKFILL



EVEN BACKFILL



PERIMETER NOT BACKFILLED



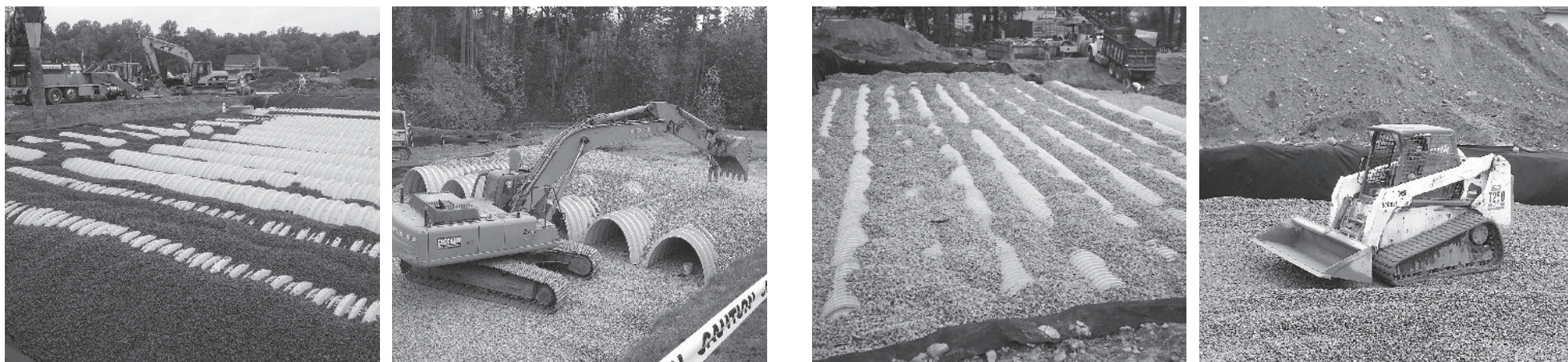
PERIMETER FULLY BACKFILLED

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.



# Backfill of Chambers – Embedment Stone and Cover Stone



Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers and a minimum 12" (300 mm) of cover stone is in place. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. The recommended backfill methods are with a stone conveyor outside of the bed or build as you go with an excavator inside the bed reaching along the rows. Backfilling while assembling chambers rows as shown in the picture will help to ensure that equipment reach is not exceeded.

Only after chambers have been backfilled to top of chamber and with a minimum 12" (300 mm) of cover stone on top of chambers can skid loaders and small LGP dozers be used to final grade cover stone and backfill material in accordance with ground pressure limits in Table 2. Equipment must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends the contractor inspect chamber rows before placing final backfill. Any chambers damaged by construction equipment shall be removed and replaced.

## Final Backfill of Chambers – Fill Material



Install non-woven geotextile over stone. Geotextile must overlap 24" (600 mm) in. where edges meet. Compact at 24" (600 mm) of fill. Roller travel parallel with rows.

## Inserta Tee Detail

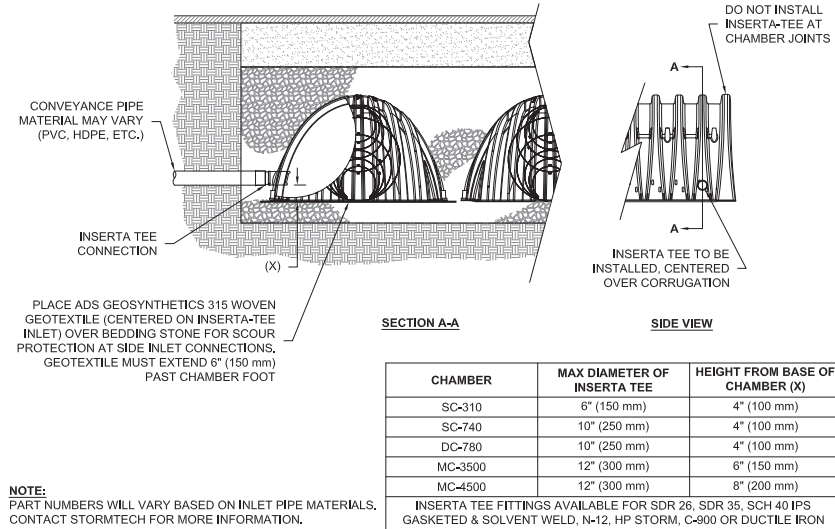
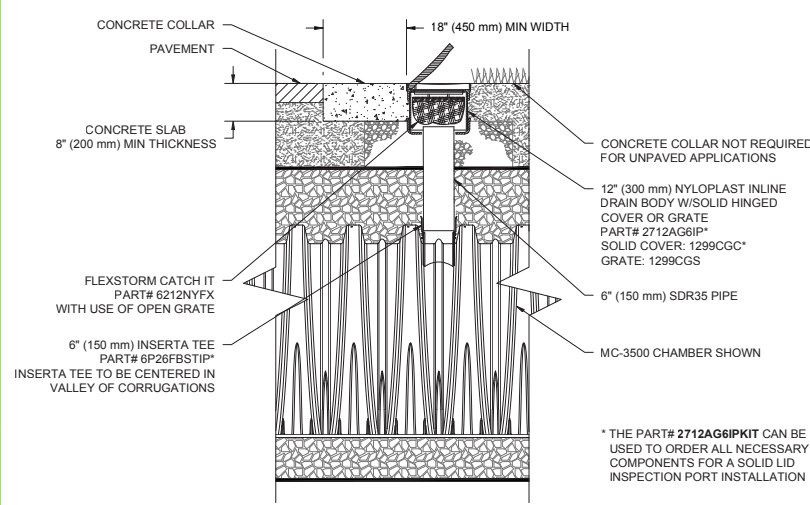


Table 1 - Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation <sup>1</sup>	Compaction/Density Requirement
<b>D) Final Fill:</b> Fill Material for layer 'D' starts from the top of the 'C' layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the 'D' layer.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer's plans. Paved installations may have stringent material and preparation requirements.
<b>C) Initial Fill:</b> Fill Material for layer 'C' starts from the top of the embedment stone ('B' layer) to 24" (600 mm) above the top of the chamber. Note that pavement subbase materials can be used in lieu of this layer.	Granular well-graded soil/aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M145 A-1, A-2-4, A-3 or AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 24" (600 mm) of material over the chambers is reached. Compact additional layers in 12" (300 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials.
<b>B) Embedment Stone:</b> Fill the surrounding chambers from the foundation stone ('A' layer) to the 'C' layer above.	Clean, crushed, angular stone	AASHTO M43 <sup>1</sup> 3, 357, 4	No compaction required.
<b>A) Foundation Stone:</b> Fill below chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone,	AASHTO M43 <sup>1</sup> 3, 357, 4	Place and compact in 9" (230 mm) max lifts using two full coverages with a vibratory compactor. <sup>2,3</sup>

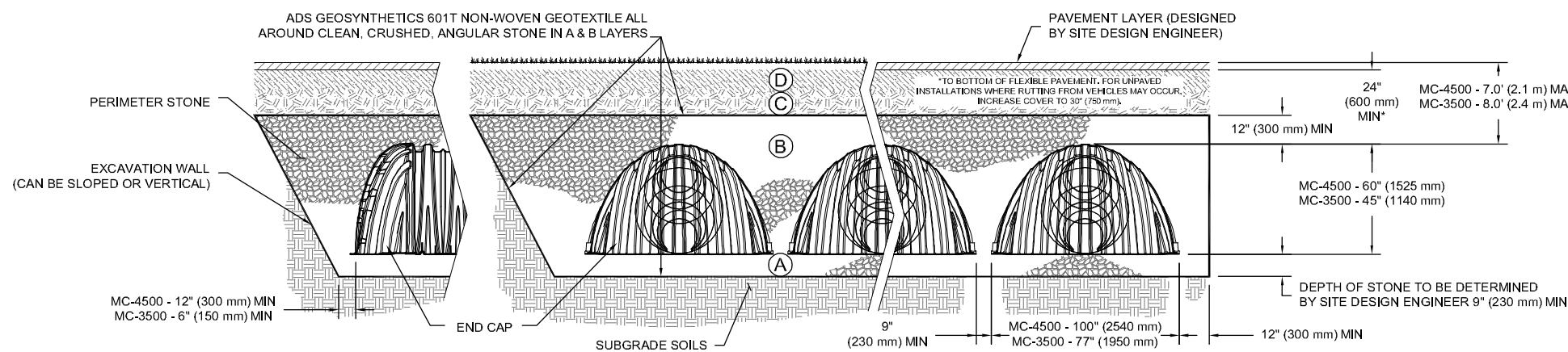
Figure 1 - Inspection Port Detail



### PLEASE NOTE:

- 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".
- StormTech compaction requirements are met for 'A' location materials when placed and compacted in 9" (230 mm) (max) lifts using two full coverages with a vibratory compactor.
- 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 2 - Fill Material Locations



### NOTES:

- 36" (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.
- During paving operations, dump truck axle loads on 24" (600mm) 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 24" (600 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.
- 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.
- 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.
- StormTech does not require compaction of initial fill at 18" (450 mm) of cover. However, requirements by others for 6" (150 mm) lifts may necessitate the use of small compactors at 18" (450 mm) of cover.
- 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.
- 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. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.

ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com. Advanced Drainage Systems, the ADS logo, and the green stripe are registered trademarks of Advanced Drainage Systems, Inc. StormTech® and the Isolator® Row are registered trademarks of StormTech, Inc. #10816 07/17 CS

©2017 Advanced Drainage Systems, Inc.

Table 2 - Maximum Allowable Construction Vehicle Loads<sup>6</sup>

Material Location	Fill Depth over Chambers in. [mm]	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads <sup>6</sup>		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs [kN]	Max Wheel Load for Loaders lbs [kN]	Track Width in. [mm]	Max Ground Pressure psf [kPa]	Max Drum Weight or Dynamic Force lbs [kN]
<b>D) Final Fill Material</b>	36" [900] Compacted	32,000 [142]	16,000 [71]	12" [305]	3420 [164]	38,000 [169]
				18" [457]	2350 [113]	
				24" [610]	1850 [89]	
				30" [762]	1510 [72]	
				36" [914]	1310 [63]	
<b>C) Initial Fill Material</b>	24" [600] Compacted	32,000 [142]	16,000 [71]	12" [305]	2480 [119]	20,000 [89]
				18" [457]	1770 [85]	
				24" [610]	1430 [68]	
				30" [762]	1210 [58]	
				36" [914]	1070 [51]	
	24" [600] Loose/Dumped	24,000 [107]	12,000 [53]	12" [305]	2245 [107]	16,000 [71]
				18" [457]	1625 [78]	
				24" [610]	1325 [63]	
				30" [762]	1135 [54]	
				36" [914]	1010 [48]	
<b>B) Embedment Stone</b>	12" [300]	NOT ALLOWED	NOT ALLOWED	12" [305]	1100 [53]	NOT ALLOWED
				18" [457]	715 [34]	
				24" [610]	660 [32]	
				30" [762]	580 [28]	
				36" [914]	580 [28]	
<b>A) Foundation Stone</b>	6" [150]	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
<b>D) Final Fill Material</b>	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum dump cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows. <sup>4</sup>	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
<b>C) Initial Fill Material</b>	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 24" (600 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 12" (300 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 24" (600 mm) over chambers. Roller travel parallel to chamber rows only.
<b>B) Embedment Stone</b>	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.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 12" (300 mm) cover stone is in place.	No rollers allowed.
<b>A) Foundation Stone</b>	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

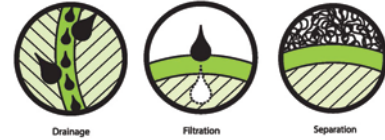
### STANDARD LIMITED WARRANTY OF STORMTECH LLC ("STORMTECH"): PRODUCTS

- (A) This Limited Warranty applies solely to the StormTech chambers and end plates manufactured by StormTech and sold to the original purchaser (the "Purchaser"). The chambers and end plates are collectively referred to as the "Products."
- (B) The structural integrity of the Products, when installed strictly in accordance with StormTech's written installation instructions at the time of installation, are warranted to the Purchaser against defective materials and workmanship for one (1) year from the date of purchase. Should a defect appear in the Limited Warranty period, the Purchaser shall provide StormTech with written notice of the alleged defect at StormTech's corporate headquarters within ten (10) days of the discovery of the defect. The notice shall describe the alleged defect in reasonable detail. StormTech agrees to supply replacements for those Products determined by StormTech to be defective and covered by this Limited Warranty. The supply of replacement products is the sole remedy of the Purchaser for breaches of this Limited Warranty. StormTech's liability specifically excludes the cost of removal and/or installation of the Products.
- (C) THIS LIMITED WARRANTY IS EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.
- (D) This Limited Warranty only applies to the Products when the Products are installed in a single layer. UNDER NO CIRCUMSTANCES, SHALL THE PRODUCTS BE INSTALLED IN A MULTI-LAYER CONFIGURATION.
- (E) No representative of StormTech has the authority to change this Limited Warranty in any manner or to extend this Limited Warranty. This Limited Warranty does not apply to any person other than to the Purchaser.
- (F) Under no circumstances shall StormTech be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the Products, or the cost of other goods or services related to the purchase and installation of the Products. For this Limited Warranty to apply, the Products must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and StormTech's written installation instructions.
- (G) THE LIMITED WARRANTY DOES NOT EXTEND TO INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES. STORMTECH SHALL NOT BE LIABLE FOR PENALTIES OR LIQUIDATED DAMAGES, INCLUDING LOSS OF PRODUCTION AND PROFITS; LABOR AND MATERIALS; OVERHEAD COSTS; OR OTHER LOSS OR EXPENSE INCURRED BY THE PURCHASER OR ANY THIRD PARTY. SPECIFICALLY EXCLUDED FROM LIMITED WARRANTY COVERAGE ARE DAMAGE TO THE PRODUCTS ARISING FROM ORDINARY WEAR AND TEAR; ALTERATION, ACCIDENT, MISUSE, ABUSE OR NEGLIGENCE; THE PRODUCTS BEING SUBJECTED TO VEHICLE TRAFFIC OR OTHER CONDITIONS WHICH ARE NOT PERMITTED BY STORMTECH'S WRITTEN SPECIFICATIONS OR INSTALLATION INSTRUCTIONS; FAILURE TO MAINTAIN THE MINIMUM GROUND COVERS SET FORTH IN THE INSTALLATION INSTRUCTIONS; THE PLACEMENT OF IMPROPER MATERIALS INTO THE PRODUCTS; FAILURE OF THE PRODUCTS DUE TO IMPROPER SITING OR IMPROPER SIZING; OR ANY OTHER EVENT NOT CAUSED BY STORMTECH. THIS LIMITED WARRANTY REPRESENTS STORMTECH'S SOLE LIABILITY TO THE PURCHASER FOR CLAIMS RELATED TO THE PRODUCTS, WHETHER THE CLAIM IS BASED UPON CONTRACT, TORT, OR OTHER LEGAL THEORY.



70 Inwood Road Suite 3 | Rocky Hill | Connecticut | 06067  
888-892-2694

[www.stormtech.com](http://www.stormtech.com)



## ADS GEOSYNTHETICS 0601T NONWOVEN GEOTEXTILE

### Scope

This specification describes ADS Geosynthetics 6.0 oz (0601T) nonwoven geotextile.

### Filter Fabric Requirements

ADS Geosynthetics 6.0 oz (0601T) is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. ADS Geosynthetics 6.0 oz (0601T) resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. ADS Geosynthetics 6.0 oz (0601T) conforms to the physical property values listed below:

### Filter Fabric Properties

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Grab Tensile	ASTM D 4632	lbs (kN)	160 (0.711)
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs (kN)	60 (0.267)
CBR Puncture Resistance	ASTM D 6241	lbs (kN)	410 (1.82)
Permittivity*	ASTM D 4491	sec <sup>-1</sup>	1.5
Water Flow*	ASTM D 4491	gpm/ft <sup>2</sup> (l/min/m <sup>2</sup> )	110 (4480)
AOS*	ASTM D 4751	US Sieve (mm)	70 (0.212)
UV Resistance	ASTM D 4355	%/hrs	70/500

PACKAGING	
Roll Dimensions (W x L) – ft	3.0/5.0/6.25/7.5/9.0/12.5 x 360 / 15 x 300
Square Yards Per Roll	120/200/250/300/360/500 / 500
Estimated Roll Weight – lbs	44/65/97.5/102/141/195 / 195

\* At the time of manufacturing. Handling may change these properties.



## ADS GEOSYNTHETICS 315W WOVEN GEOTEXTILE

### Scope

This specification describes ADS Geosynthetics 315W woven geotextile.

### Filter Fabric Requirements

ADS Geosynthetics 315W is manufactured using high tenacity polypropylene yarns that are woven to form a dimensionally stable network, which allows the yarns to maintain their relative position. ADS Geosynthetics 315W resists ultraviolet deterioration, rotting and biological degradation and is inert to commonly encountered soil chemicals. ADS Geosynthetics 315W conforms to the physical property values listed below:

### Filter Fabric Properties

PROPERTY	TEST METHOD	ENGLISH M.A.R.V. (Minimum Average Roll Value)	METRIC M.A.R.V. (Minimum Average Roll Value)
Tensile Strength (Grab)	ASTM D-4632	315 lbs	1400 N
Elongation	ASTM D-4632	15%	15%
CBR Puncture	ASTM D-6241	900 lbs	4005 N
Puncture	ASTM D-4833	150 lbs	667 N
Mullen Burst	ASTM D-3786	600 psi	4134 kPa
Trapezoidal Tear	ASTM D-4533	120 lbs	533 N
UV Resistance (at 500 hrs)	ASTM D-4355	70%	70%
Apparent Opening Size (AOS)*	ASTM D-4751	40 US Std. Sieve	0.425 mm
Permittivity	ASTM D-4491	.05 sec <sup>-1</sup>	.05 sec <sup>-1</sup>
Water Flow Rate	ASTM D-4491	4 gpm/ft <sup>2</sup>	163 l/min/m <sup>2</sup>
Roll Sizes		12.5' x 360' 15.0' x 300' 17.5' x 258'	3.81 m x 109.8 m 4.57 m x 91.5 m 5.33 m x 78.6 m

\*Maximum average roll value.

# **Section 3**

## **Shop Drawings & Calculations**

Storm Sewer Underground Detention System

Spec Section 02721

# SUBMITTAL

Job: CCK-2308-18 Expand Orange Lot Phase 4

Spec Section No: 02721

Submittal No: 005

Revision No:

Sent Date: 5/15/18

Spec Section Title: 02721 - STORM SEWER UNDERGROUND DETENTION SYSTEM

Submittal Title: SCHEDULE OF VALUES

**Contractor:**

ATS Construction  
3009 Atkinson Ave  
Suite 400  
Lexington, KY 40509

ATS Construction
Job: 618005
By: Dylan Murphy
The data contained hereon & here within is for inspection only and is not for construction unless stamped "Approved" by the architect and/or engineer
<u>Comments:</u>

**Engineer:**

Bell Engineering  
2480 Fortune Drive  
Suite 350  
Lexington, KY 40509

SHOP DRAWING REVIEW	
BELL ENGINEERING	
P.O. BOX 661, HOPKINSVILLE, KY 42241	
ENGINEER'S REVIEW IS FOR GENERAL CONFORMANCE WITH THE PROJECT'S DESIGN CONCEPT AND INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR, AND THIS REVIEW DOES NOT INCLUDE: CONFIRMING AND CORRELATING QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING WORK WITH OTHER TRADES; AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER. CORRECTIONS OR COMMENTS MADE BY THE ARCHITECT DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH AND REQUIREMENTS OF THE CONTRACT OR WITH RESPONSIBILITIES LISTED ABOVE.	
APPROVED	
MAKE CORRECTIONS NOTED	X
AMEND AND RESUBMIT	
REJECTED-SEE REMARKS	
Date 5/22/18	By <i>[Signature]</i>

Order #  
Form Created: 4/20/2018 01:47:16 PM  
Basin WebID: 80389-1524246201  
Customer approval

Project Name: U of K Orange Parking Lot Ph IV    Dia. 30    Structure No. STORMTECH SYSTEM BASIN    Qty. 1

Prepared By: Nathan Tullis  
ADS/Nyloplast  
678-745-6038  
Nathan.Tullis@ads-pipe.com

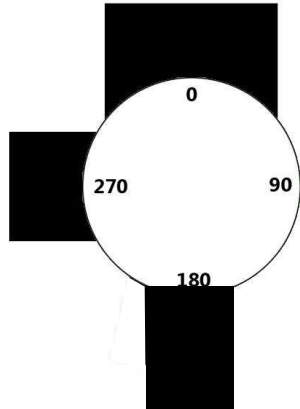
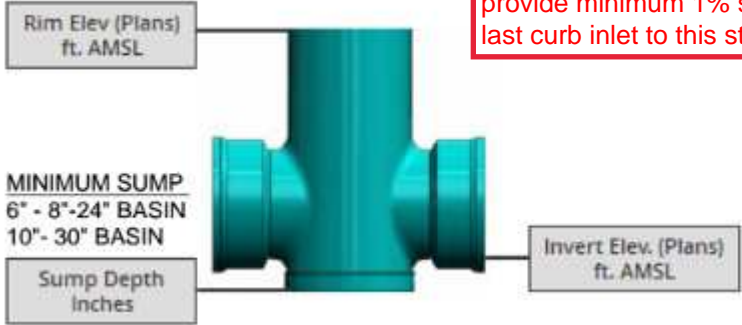
Grate: 30; Solid;

Accessories:

Rim Elev. 987.65 ft.    Basin Height 103.56 in.    Sump Depth 24.00 in.

	Stub size	Angle	Pipe Type	Invert Elev. ft. AMSL	Production Depth inches
Branch #1	24 in.	0 °	HDPE	981.02 ft.	79.56 in.
Branch #2	12 in.	<del>192 °</del> 180	HDPE	981.90 ft.	69.00 in.
Branch #3	15 in.	270 °	HDPE	982.80 ft.	58.20 in.
Branch #4					
Branch #5					
Branch #6					

The curb inlet upline from this structure has an invert of 981.9' resulting in a length of pipe at 0% slope. Revise this invert to provide minimum 1% slope from last curb inlet to this structure.



**CUSTOMER NOTES**

**PRODUCTION NOTES** For Nyloplast use only

VERIFY INVERT OF STUB #2 / VERIFY RIM

**NOTE: Drawings need to be Complete. This product is made to order and non-Refundable**  
 NYLOPLAST: 3130 Verona Ave. Buford, GA 30518. (866) 888-8479  
**Nyloplast® is a registered trademarks of Advanced Drainage Systems®**

**Production Order Forms are based on interpretations of provided details. Customer is responsible for confirmation of information and final approval of order form..**

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	JASON BATES 859-300-9778 JASON.BATES@ADS-PIPE.COM
ADS SALES REP:	LOGAN BUNCH 859-556-5598 LOGAN.BUNCH@ADS-PIPE.COM
PROJECT NO:	S079841



ADVANCED DRAINAGE SYSTEMS, INC.



# U OF K ORANGE PARKING LOT PHASE 4

## LEXINGTON, KY

### STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE MADE FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
  - a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
  - b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
  - c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

### IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

### NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

**USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.**

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



**PROPOSED LAYOUT**

62	STORMTECH MC-3500 CHAMBERS
18	STORMTECH MC-3500 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
<b>13,329</b>	<b>INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)</b>
4,126	SYSTEM AREA (ft <sup>2</sup> )
257	SYSTEM PERIMETER (ft)

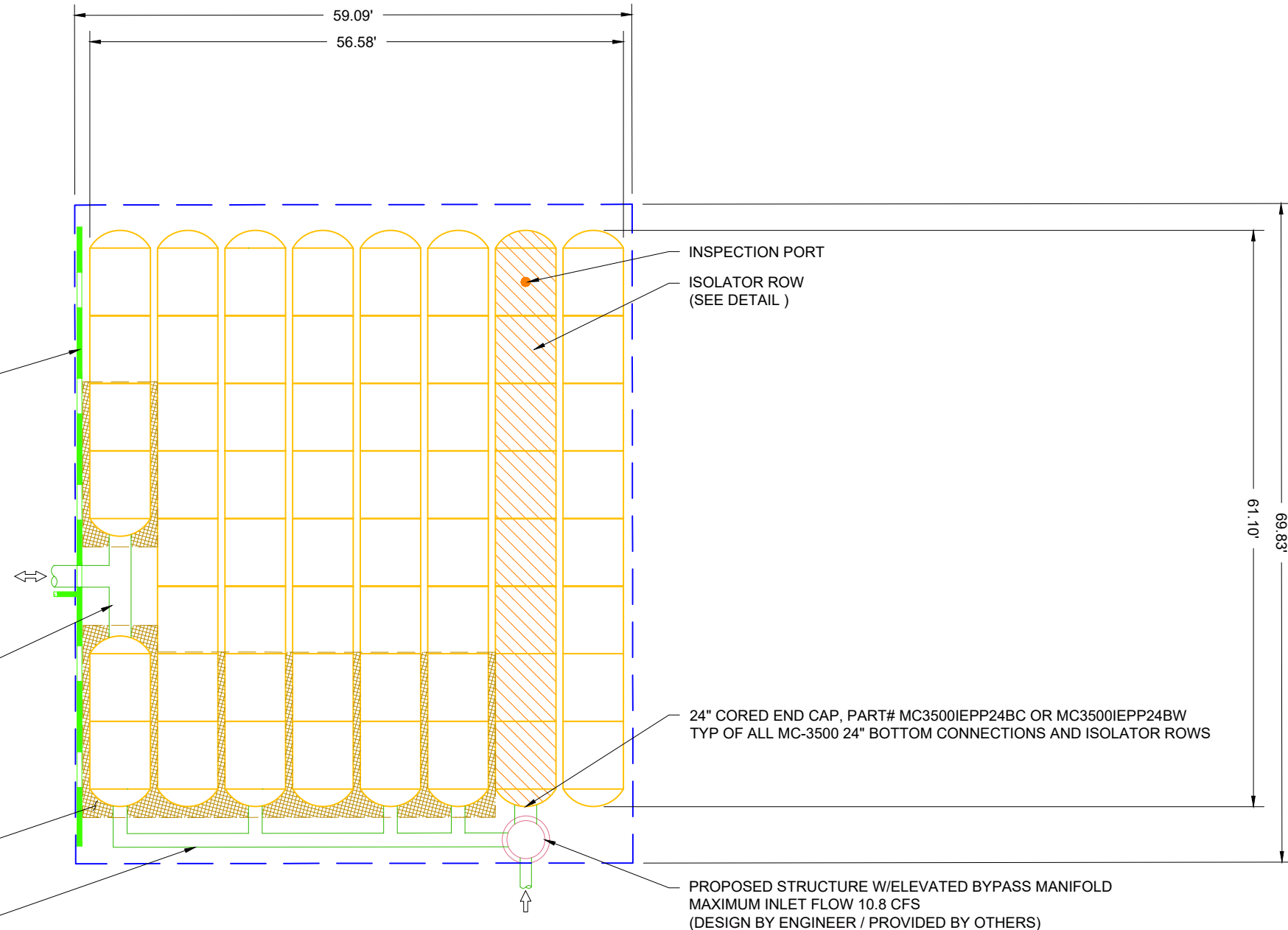
**NOTES**

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

**PROPOSED ELEVATIONS**

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	992.60
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	987.10
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	986.60
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	986.60
MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):	986.60
TOP OF STONE:	985.60
TOP OF MC-3500 CHAMBER:	984.60
15" TOP MANIFOLD INVERT:	982.80
24" ISOLATOR ROW INVERT:	981.02
24" BOTTOM MANIFOLD INVERT:	981.02
BOTTOM OF MC-3500 CHAMBER:	980.85
UNDERDRAIN INVERT:	980.10
BOTTOM OF STONE:	980.10

All of these elevations were raised by 5" or 0.42' due to the tie in elevation of the existing manifold



U OF K ORANGE PARKING LOT PHASE 4	
LEXINGTON, KY	
DATE: 04-18-18	DRAWN: KR
PROJECT #: S079841	CHECKED: DAF

REV	DWN	CKD	DESCRIPTION
05-14-18	MSW	N/A	SHIFTED ISO ROW OVER
05/18/18	MSW	RD	REVISED OUTLET SIZE / LOCATION

**StormTech**  
*Determination Retention Water Quality*  
 70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067  
 860-525-8188 | 888-892-2694 | WWW.STORMTECH.COM

**ADS**  
 ADVANCED DRAINAGE SYSTEMS, INC.  
 4640 TRUEMAN BLVD  
 HILLIARD, OH 43026

0 15' 30'

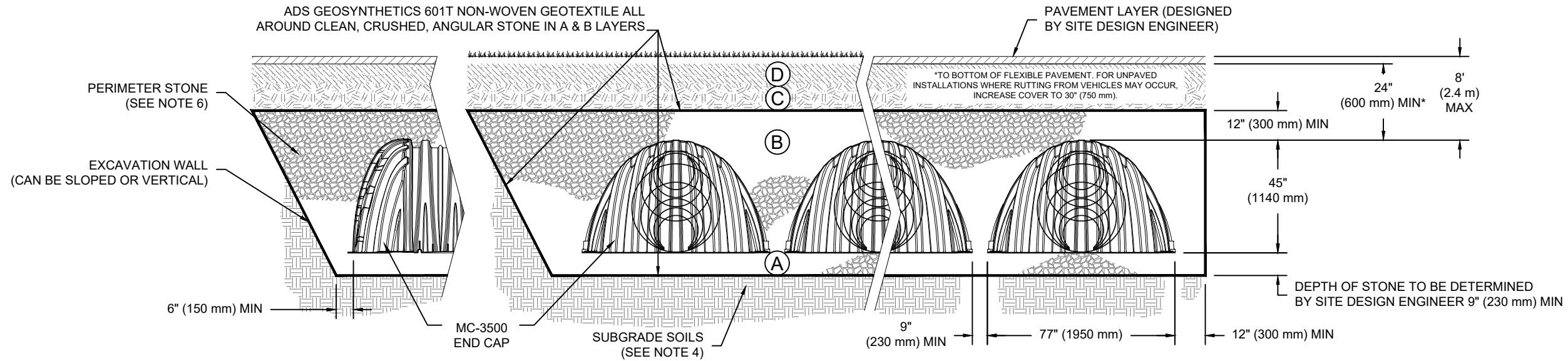
THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

## ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	<b>FINAL FILL:</b> FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	<b>INITIAL FILL:</b> FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 <sup>1</sup> A-1, A-2-4, A-3  OR AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	<b>EMBEDMENT STONE:</b> FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 <sup>1</sup> 3, 4	NO COMPACTION REQUIRED.
A	<b>FOUNDATION STONE:</b> FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 <sup>1</sup> 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

**PLEASE NOTE:**

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 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR 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.



**NOTES:**

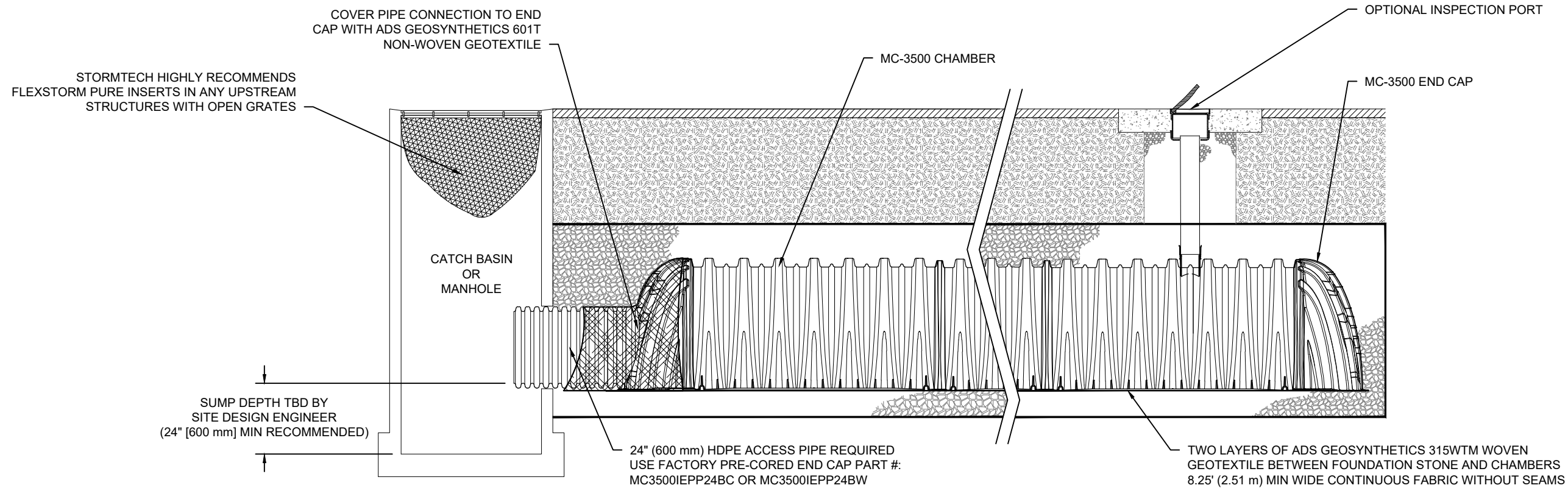
1. MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

U OF K ORANGE PARKING LOT PHASE 4  
 LEXINGTON, KY  
 DATE: 04-18-18  
 DRAWN: KR  
 PROJECT #: S079841  
 CHECKED: DAF

REV	DWN	MSW	CKD	DESCRIPTION
05-14-18		MSW	N/A	SHIFTED ISO ROW OVER
05/18/18		MSW	RD	REVISED OUTLET SIZE / LOCATION

**StormTech**  
Determination Retention Water Quality  
 70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067  
 860-525-8188 | 888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD  
 HILLIARD, OH 43026  
  
 ADVANCED DRAINAGE SYSTEMS, INC.



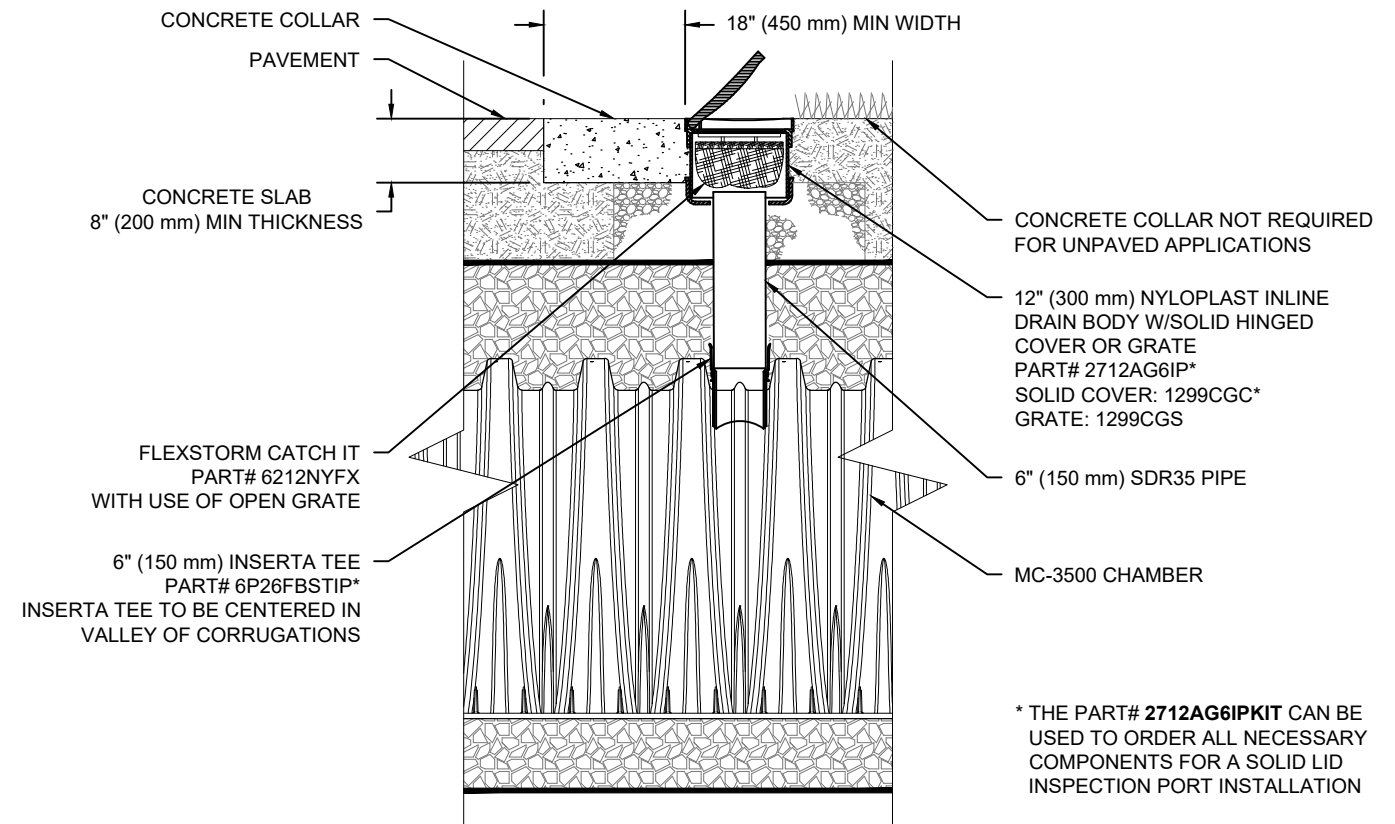
**MC-3500 ISOLATOR ROW DETAIL**  
NTS

**INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
    - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
    - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
    - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
    - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
    - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
  - B. ALL ISOLATOR ROWS
    - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
    - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
      - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
      - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
    - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
  - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

**NOTES**

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



**MC-3500 6" INSPECTION PORT DETAIL**  
NTS

U OF K ORANGE PARKING LOT PHASE 4  
LEXINGTON, KY  
DATE: 04-18-18 DRAWN: KR  
PROJECT #: S079841 CHECKED: DAF

REV	DWN	MSW	MSW	CKD	DESCRIPTION
05-14-18		MSW	N/A		SHIFTED ISO ROW OVER
05/18/18		MSW	RD		REVISED OUTLET SIZE / LOCATION

**StormTech**  
Determination Retention Water Quality  
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067  
860-525-8188 | 888-892-2694 | WWW.STORMTECH.COM

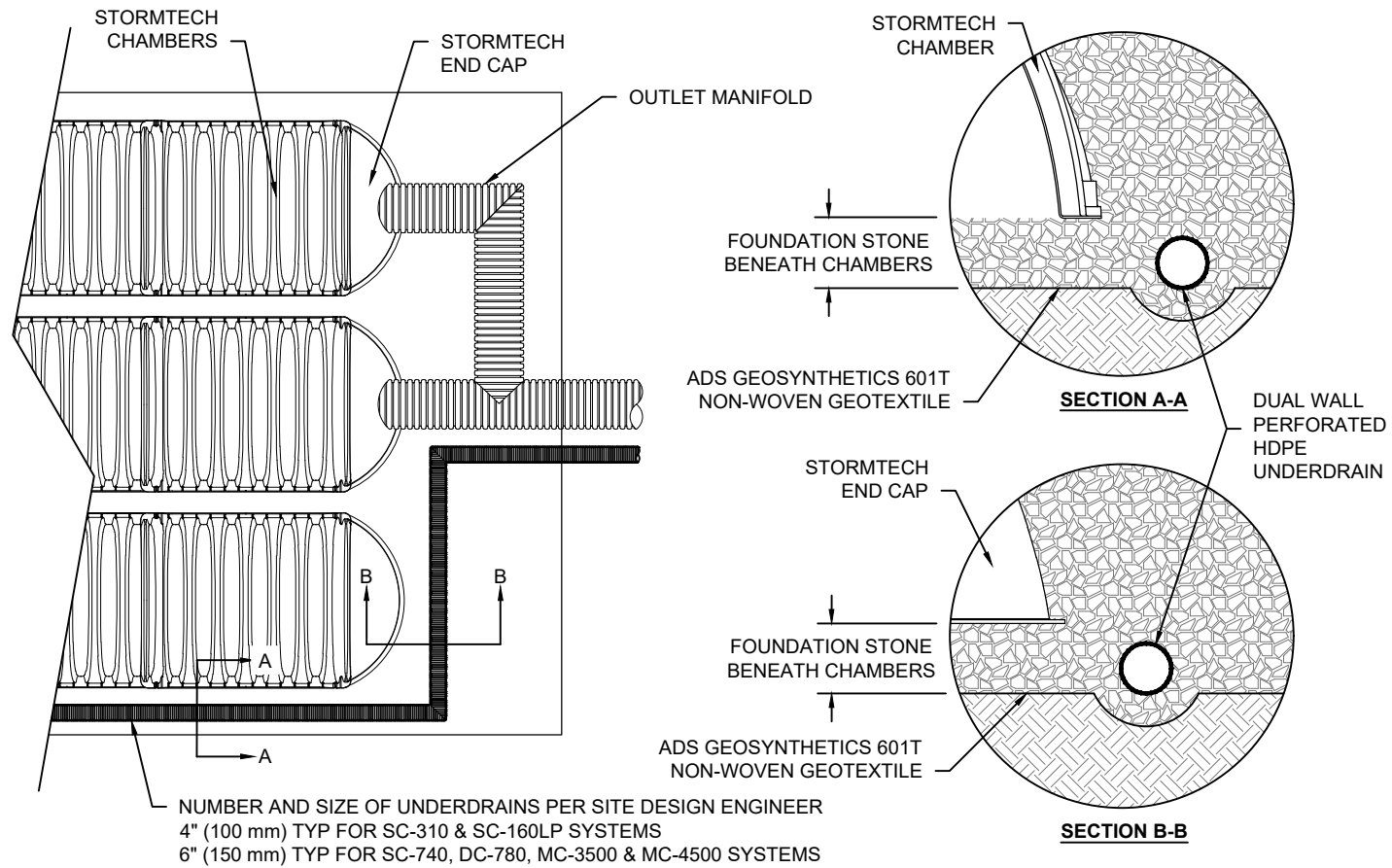
4640 TRUEMAN BLVD  
HILLIARD, OH 43026

**ADS**  
ADVANCED DRAINAGE SYSTEMS, INC.

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

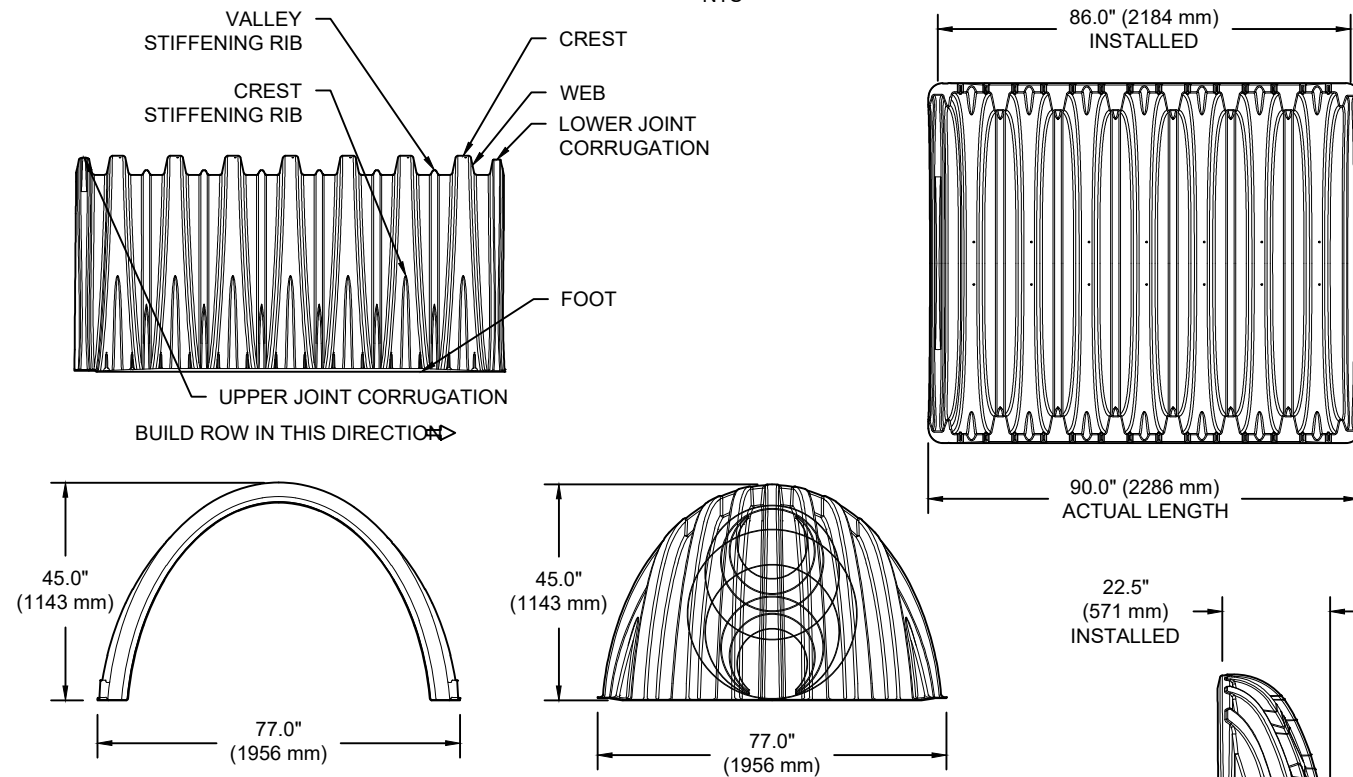
**UNDERDRAIN DETAIL**

NTS



**MC-3500 TECHNICAL SPECIFICATION**

NTS



**NOMINAL CHAMBER SPECIFICATIONS**

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m <sup>3</sup> )
MINIMUM INSTALLED STORAGE*	178.9 CUBIC FEET	(5.06 m <sup>3</sup> )
WEIGHT	135.0 lbs.	(61.2 kg)

**NOMINAL END CAP SPECIFICATIONS**

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 22.5"	(1956 mm X 1143 mm X 571 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m <sup>3</sup> )
MINIMUM INSTALLED STORAGE*	46.0 CUBIC FEET	(1.30 m <sup>3</sup> )
WEIGHT	50.0 lbs.	(22.7 kg)

\*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

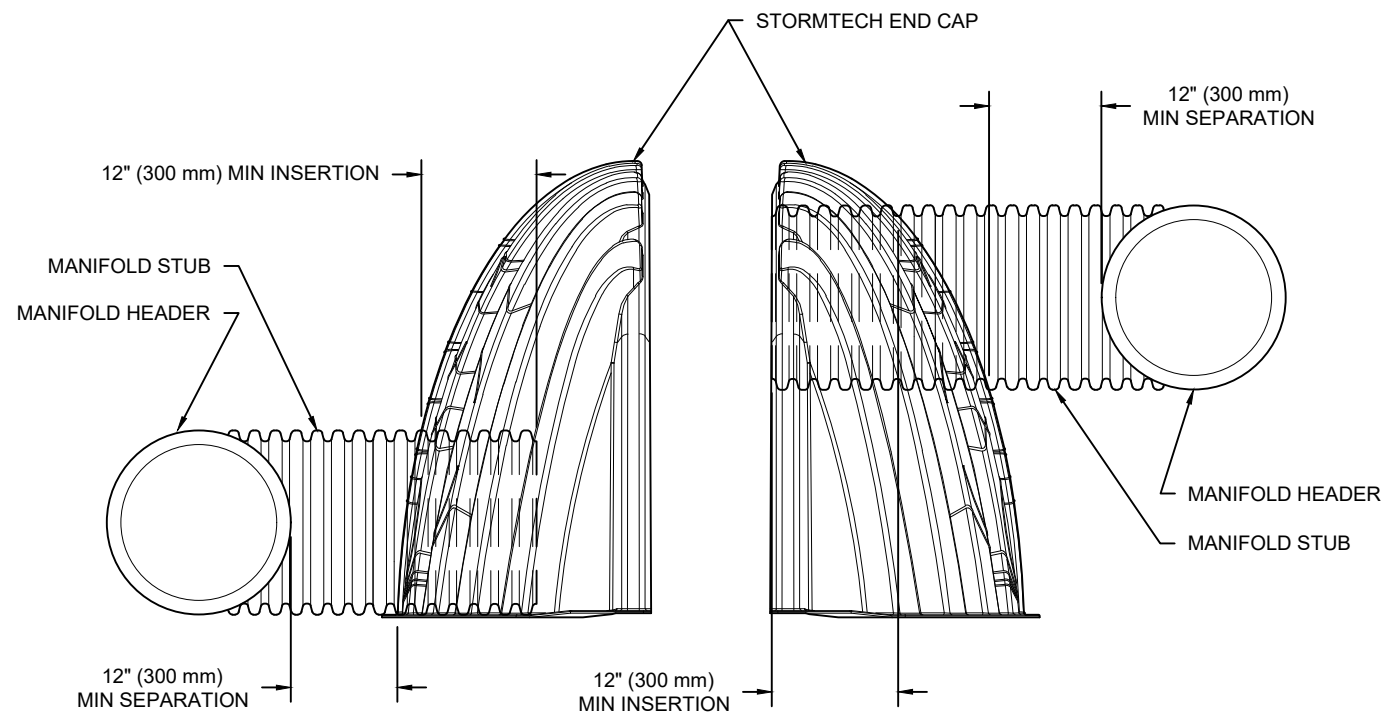
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
 END CAPS WITH A WELDED CROWN PLATE END WITH "C"  
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			---
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW		---	---
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			---
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW		---	---
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

**MC-SERIES END CAP INSERTION DETAIL**

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

U OF K ORANGE PARKING LOT PHASE 4  
 LEXINGTON, KY  
 DATE: 04-18-18  
 PROJECT #: S079841  
 DRAWN: KR  
 CHECKED: DAF

REV	DWN	MSW	MSW	MSW	RD	DESCRIPTION
05-14-18						SHIFTED ISO ROW OVER
05/18/18						REVISED OUTLET SIZE / LOCATION

**StormTech**  
 Generation Reformation Water Quality  
 70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067  
 860-525-8188 | 888-892-2694 | WWW.STORMTECH.COM

**ADS**  
 ADVANCED DRAINAGE SYSTEMS, INC.  
 4640 TRUEMAN BLVD  
 HILLIARD, OH 43026

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.



DETAIL LEGEND	
NAME	
(Symbol)	CURB INLET (SINGLE) DROP BOX INLET TYPE 11 CONCRETE HEADWALL CURB AT EXISTING INLET

EROSION CONTROL	
SYMBOLS	DESCRIPTION
(OP)	OUTLET PROTECTION
(IP)	INLET PROTECTION

# **Table of Contents**

## **Specification Section 165600 Exterior Lighting**

- Product Data.....Section 1
- Shop Drawing.....Section 2
- Inspections.....Section 3

**Section 1**  
**Product Data**

Exterior Lighting  
Spec Section 165600



**Staggs and Fisher**  
Consulting Engineers, Inc

3264 Loch Ness Drive  
Lexington, Kentucky 40517  
Phone 859-271-3246  
Fax 859-271-3246  
Email [info@sfengineering.com](mailto:info@sfengineering.com)

Gregory G. Carter, P.E.  
Daniel H. Bransom, P.E.  
A. Taggart Foster, P.E.  
Christopher C. Keath, P.E.  
John R. Mason, P.E.  
William P. Wilson, P.E.  
Greg W. Kraeszig, P.E.  
Wayne A. Thomas, P.E.  
Jenny L. Leitch, P.E.

Member of the Consulting  
Engineers Council

**The following comments are in response to Staggs and Fisher's review of the attached shop drawing submittal.**

Description of Submittal: Exterior Lighting Fixtures

Job Name: CCK-2308-18 Expand Orange Lot Phase 4

Job No: 18303

Date: 5/11/18


Reviewed By: Bill Wilson

Remarks (if applicable):

Provide luminaire head with 6 LED's in lieu of the 5 indicated.

REVIEWED	<input checked="" type="checkbox"/> FURNISH AS CORRECTED
REJECTED	<input type="checkbox"/> REVISE AND RESUBMIT

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the drawings and specification. Contractor is responsible for : Quantities, dimensions which shall be confirmed and correlated at the job site, and fabrication processes and techniques of construction.

 **Staggs and Fisher**  
Consulting Engineers, Inc.  
3264 Lochness Drive  
Lexington, Kentucky 40517  
(859) 271-3246

BY: William P. Wilson

DATE: 5/11/18



# SUBMITTAL

Job: CCK-2308-18 Expand Orange Lot Phase 4

Spec Section No: 165600

Submittal No: 001

Revision No:

Sent Date: 5/10/18

Spec Section Title: 0165600 - EXTERIOR LIGHTING

Submittal Title: Exterior Lighting Submittals

Contractor:

ATS Construction  
3009 Atkinson Ave  
Suite 400  
Lexington, KY 40509

ATS Construction
Job: 618005 By: Dylan Murphy
The data contained hereon & here within is for inspection only and is not for construction unless stamped "Approved" by the architect and/or engineer
<b><u>Comments:</u></b>

Engineer:

Bell Engineering  
2480 Fortune Drive  
Suite 350  
Lexington, KY 40509

Engineer's Stamp
------------------



**University Of Kentucky**  
Expand/Construct Orange Parking Lot  
Phase 4  
CCK-2308-18  
Project 2490.0  
Lexington, KY

**Submittals:**  
LED Luminaire  
Light Pole

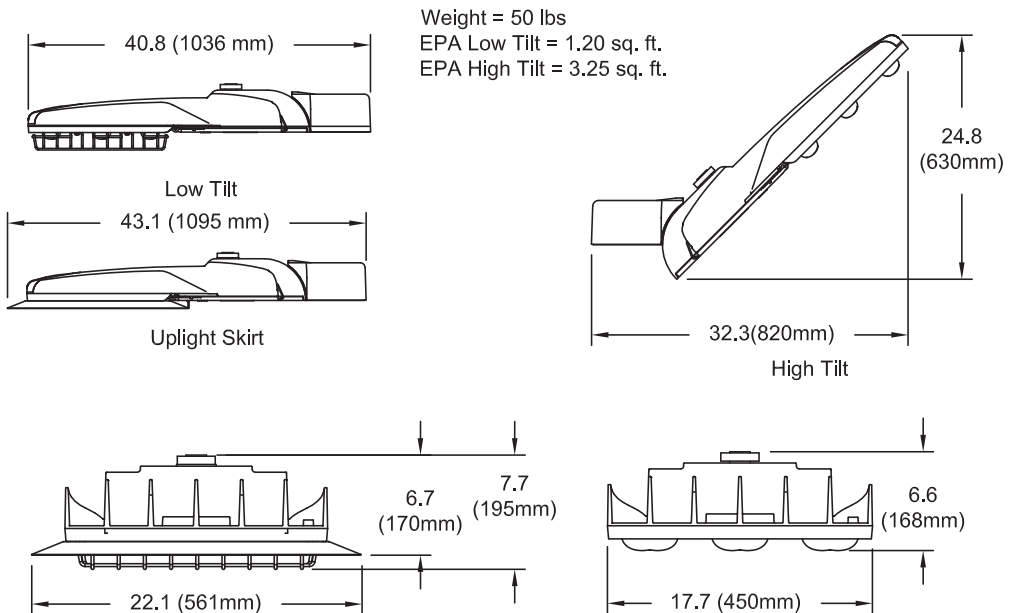
*Please return (1) copy of submittals signed or stamped "APPROVED"*



## **Project: U of K Expand Orange Parking Lot Phase 4**

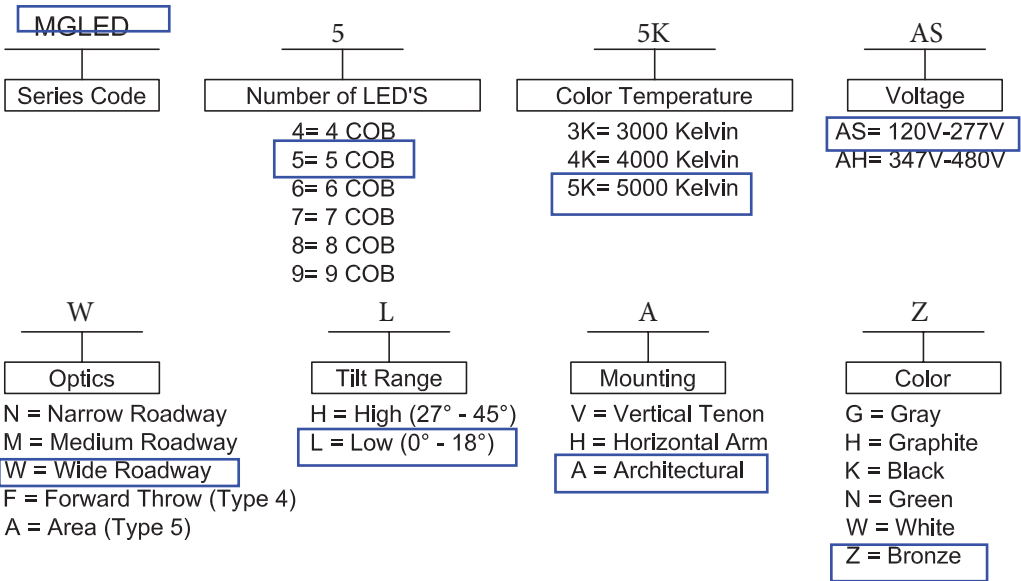
Contents - May 7, 2018

Type	Factory	Description
OLF-1	HOLO	MGLED 5 5K AS W L A Z US
OLF-1	HOLO	09237-1-BZ
OLF-1	HAPC	RTA40D8B4-BM

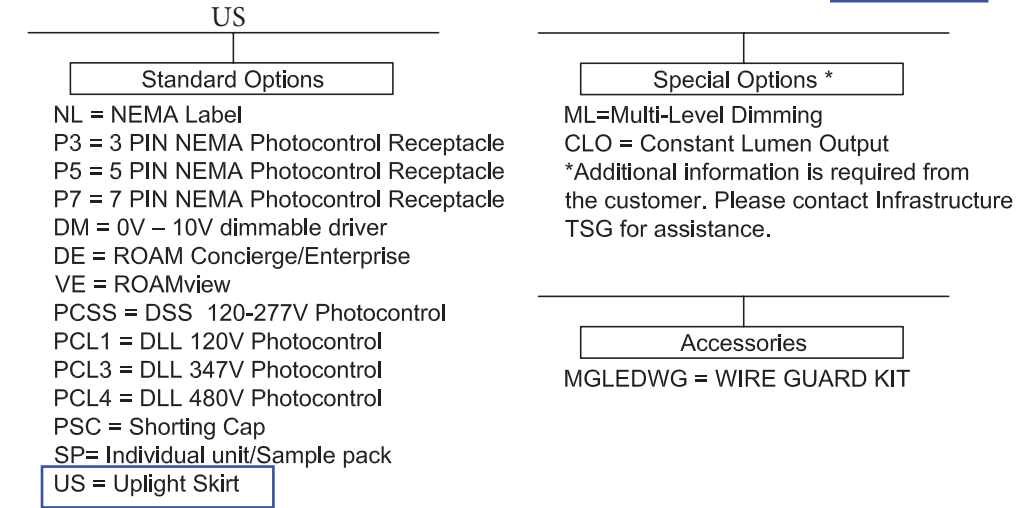


**MONGOOSE LED™**  
**LED Roadway Lighting**

**Infrastructure**  
**Outdoor**



**ORDERING INFORMATION:**

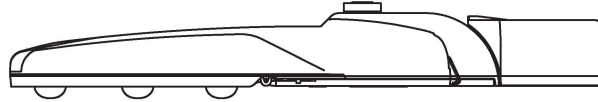


THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUBSTITUTED FOR THE UNIT ORDERED WITHOUT NOTICE. THIS PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED. THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED TO YOU FOR YOUR CONVENIENCE. IT IS NOT TO BE REPRODUCED OR USED IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

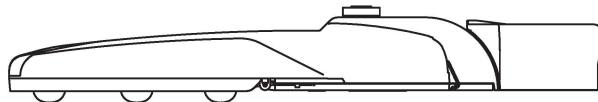
ORDER #:	
TYPE:	
DRAWN:	BGW
DATE:	9-29-16
DWG #:	MONGOOSE LED



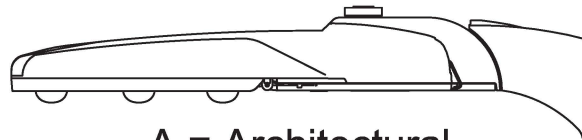
Mounting



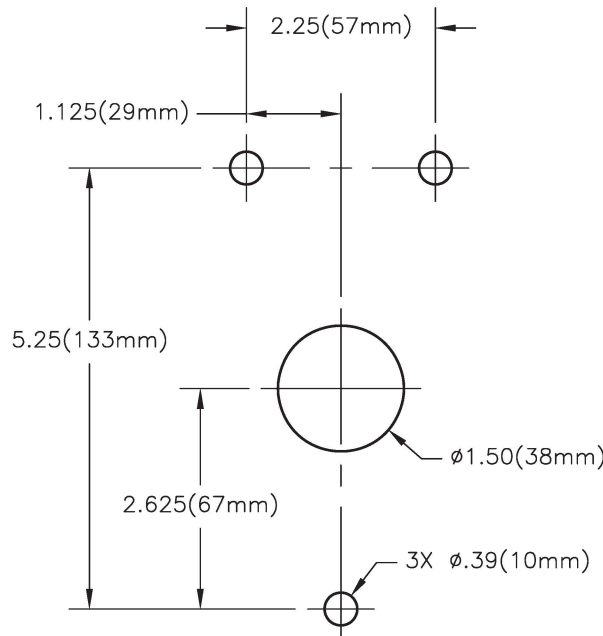
V = Vertical Tenon  
Attaches to 2" Vertical Tenon



H = Horizontal Arm  
Attaches to 2" Horizontal Arm



A = Architectural  
Attaches to Square Pole or Tenon  
Adaptor (See Pole Pattern Below)



**MONGOOSE LED™**  
**LED Roadway Lighting**

**Infrastructure  
Outdoor**



THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUBSTITUTED ON THE ORDER AT THE DISCRETION OF HOLOPHANE. THIS PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED. THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED TO YOU FOR YOUR CONVENIENCE ONLY. IT IS TO BE USED UNDER THE CONDITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

ORDER #:	
TYPE:	
DRAWN:	BGW
DATE:	9-29-16
DWG #:	MONGOOSE LED



LED Count	Distribution	Std. Unit - 4000K CCT		US Option - 4000K CCT		LLD @ 25°C			
		Lumens	LPW	Lumens	LPW	Input Watts	50K Hours	75K Hours	100K Hours
9 Chip	Narrow	48283	128	48032	128	376	0.89	0.86	0.83
	Medium	47185	125	46683	124				
	Wide	46416	123	46302	123				
	Forward Throw	45483	121	45533	121				
	Area	50214	134	48895	130				
8 Chip	Narrow	43,083	128	42411	126	336	0.89	0.86	0.83
	Medium	42,142	125	41285	123				
	Wide	41,385	123	40743	121				
	Forward Throw	40,584	121	40170	120				
	Area	44,806	133	43177	129				
7 Chip	Narrow	38,021	128	37266	126	296	0.89	0.86	0.83
	Medium	37,205	126	36278	123				
	Wide	36,461	123	35805	121				
	Forward Throw	35816	121	35340	119				
	Area	39,542	134	37972	128				
6 Chip	Narrow	32,525	128	32147	126	255	0.89	0.86	0.83
	Medium	31,953	125	31454	123				
	Wide	31,321	123	31006	122				
	Forward Throw	30,639	120	30484	120				
	Area	33,826	133	32797	129				
5 Chip	Narrow	26,785	128	26462	126	210	0.89	0.86	0.83
	Medium	26,314	125	25877	123				
	Wide	25,794	123	25496	121				
	Forward Throw	25,232	120	25135	120				
	Area	27,857	133	27017	129				
4 Chip	Narrow	21,428	128	21199	126	168	0.89	0.86	0.83
	Medium	21,051	125	20718	123				
	Wide	20,635	123	20433	122				
	Forward Throw	20,185	120	20182	120				
	Area	22,285	133	21635	129				

5000K CCT lumens are equal to 4000K CCT lumens  
3000K CCT lumens are equal to 4000K CCT lumens multiplied by .93.

## Specifications

### Optical

Performance is comparable to 150 - 400 watt HID  
IP66 rated borosilicate glass optics ensure longevity and minimize dirt depreciation  
4,000K CCT, 70 CRI Min. or optional 5,000K CCT, 70 CRI Min.  
Available with Narrow roadway, Medium Roadway, Wide Roadway, Forward Throw, and Area Type lighting distributions

### Electrical

Electronic driver has an expected life of 100,000 hours at 25°C  
LED light engines are rated > 100,000 at 25°C, L70  
Robust ANSI/IEEE 62.41 Category C 10kV/5kA surge protection.

### Mechanical

Rugged low copper diecast aluminum coupled with a rigorous 5-stage pretreatment, epoxy basecoat and polyester topcoat yield a finish that achieves a scribe creepage rating of 8 after 5,000 hours of salt spray.  
Removable "power door" facilitates product installation and maintenance  
Corrosion resistant stainless steel latches ensure secure closure over the long fixture life  
Multiple mounting configurations allow for attachment to horizontal mast arms, pole top tenons, and direct mounting to square poles. All Mountings are 3G vibration rated per ANSI C136  
Adjustable fixture tilt from 0 - 45 degrees provides flexibility to optimize lighting performance

### Controls

Premium solid state locking-style photocontrol - PCSS (10 year rated life)  
Extreme long life solid state locking-style photocontrol - PCLL (20 year rated life)  
Multi-level dimming  
DE and VE options allow the fixture to be dimmed using the ROAM control system

### Warranty & Standards

5 Year limited warranty. Full warranty terms located at  
[http://www.acuitybrands.com/CustomerResources/Terms\\_and\\_conditions.aspx](http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx)  
Rated for -40C to 40C ambient  
CSA Certified to US and Canadian standards

**MONGOOSE LED™**  
**LED Roadway Lighting**

**Infrastructure**  
**Outdoor**



THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUBSTITUTED FOR THE UNIT ORDERED WITHOUT NOTICE. HOLOPHANE WILL BE RESPONSIBLE FOR ORDERING AN ANCHOR BOLT FROM THE PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED. THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS TO BE RETURNED TO HOLOPHANE UPON COMPLETION OF THE PROJECT. ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

ORDER #:	
TYPE:	
DRAWN:	BGW
DATE:	9-29-16
DWG #:	MONGOOSE LED

Submitting Agency:



LHI Lighting Sales, Inc  
502-964-9661

Description: **09237-1-BZ**

Project: U of K Expand Orange Parking Lot Phase 4

Notes: **VERIFY FINISH BEFORE ORDERING**

Type:

**OLF-1**



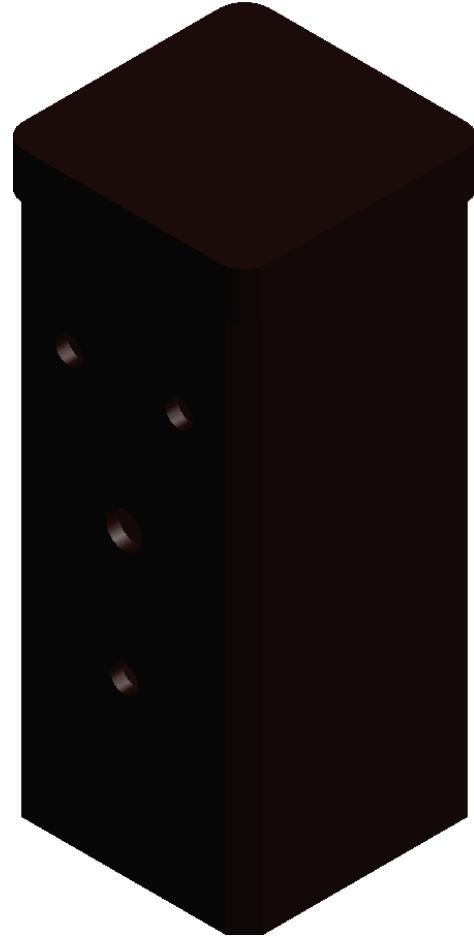
Catalog Number		09237-1 BZ; 09237-2 BZ
Type	Notes	
OLF1 and OLF2		

# 09237 POST-ARM

Aluminum Arm (09237)

### SPECIFICATIONS

Prefix: 09237-1 Aluminum Arm 1 Unit  
 09237-2 Aluminum Arm (2 @ 180)  
 Finish: Bronze



Customer Approval:

signature

date

Job Name: Product Basket

Client Name:

Created By: Michael McGuire

Date: 20-Dec-13

Submitting Agency:

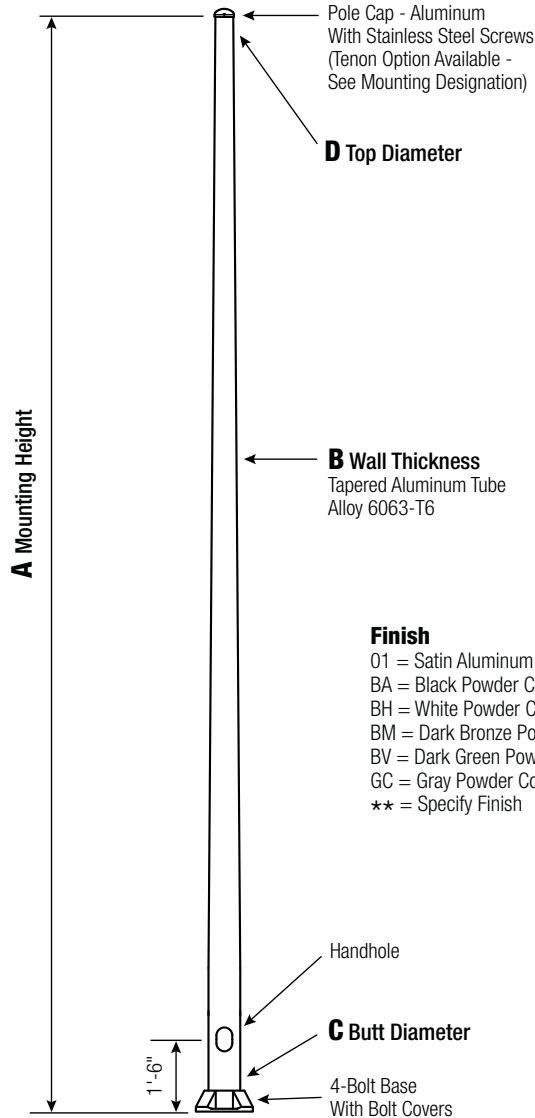


LHI Lighting Sales, Inc  
502-964-9661

Description: **RTA40D8B4-BM**  
Project: **U of K Expand Orange Parking Lot Phase 4**  
Notes: To have tenon(2-3/8" x 4" tall) top.  
**VERIFY FINISH BEFORE ORDERING**

Type:  
**OLF-1**

**RTA** Round Tapered Aluminum Pole  
No Arm — 4-Bolt Base



- Finish**  
01 = Satin Aluminum  
BA = Black Powder Coat  
BH = White Powder Coat  
BM = Dark Bronze Powder Coat  
BV = Dark Green Powder Coat  
GC = Gray Powder Coat  
\*\* = Specify Finish

**WARNING:** Do not install light pole without luminaire. *Satin Aluminum or Powder Coated Finish per Customer Specification.*

A Mtg. Hgt.	B Wall Thickness	C Butt Diameter	Total Lum. Weight	MAXIMUM EPA					Old Cat. Number	Catalog Number
				90	100	110	120	130		
40	0.188"	8	40	7.8	5.2	4.6	3.2	2.4	51-247	RTA40D8B4-**

C Butt Dia.	D Top Dia.	F Bolt Cir. Dia.	G Base Sq.	H Bolt Proj.	I Bolt Size
8	4.5	11-12	11.25	2.75	1 x 36 x 4

Dimensions in Inches

**CUSTOMER NAME:**

**PROJECT:** \_\_\_\_\_ **LOCATION:** \_\_\_\_\_

**NOTES:** \_\_\_\_\_ **QUANTITY:** \_\_\_\_\_

**RTA40D8B4** - BM  
CATALOG NUMBER FINISH

**Pole**  
The pole shaft will be constructed of seamless extruded tube of 6063 Aluminum Alloy per the requirements of ASTM B221. The shaft assembly shall be full-length heat treated after base weld to produce a T6 temper.

**Base Style**  
4-Bolt Cast Aluminum Base Flange of Alloy 356-T6 with Aluminum Bolt Covers (Alloy 356-F) and Stainless Steel Hex Head Attaching Screws.

**Handhole**  
Reinforced, 4" x 6" curved Cast Aluminum Frame (Alloy 356-T6) with Aluminum Door and two (2) SS Hex Head Screws. Reinforced Frame will contain a tapped 3/8"-16NC Grounding Provision.

**Anchorage**  
Anchorage Kit will include four (4) L-shaped Steel Anchor Bolts conforming to AASHTO M314-90 Grade 55. Ten inches (10") of threaded end will be galvanized per ASTM A153. Kits will contain four (4) Hex Nuts, four (4) Lock Washers, and four (4) Flat Washers (all components Galvanized Steel). A bolt circle template will be provided.

**Vibration Damper**  
When determined necessary by Hapco, a Vibration Damper will be factory-installed inside the pole shaft. Customer specification of the damper is available.

**Mounting Designation**  
**Side Drill Mount** - For Side Drill Mount applications specify luminaire type, quantity and orientation. A luminaire drilling template must be supplied at time of order.

**Tenon Mount - Welded or Spun**  
For Tenon Mount applications specify both Tenon diameter (2.375", 2.875", 3.5", etc.) and length (3", 4", etc.). Tenon style is factory option. Welded Tenon can be specified.

**EPA Notes:** Effective Projected Area (EPA) in square feet. EPA's calculated using wind velocity (mph) indicated in accordance with 2009 AASHTO LTS-5 using a 25 year design life. Maximum EPA is based on the luminaire weight shown. Increased luminaire weight may reduce the maximum EPA. If weight is exceeded, or if other design life or code is required, please consult the factory.

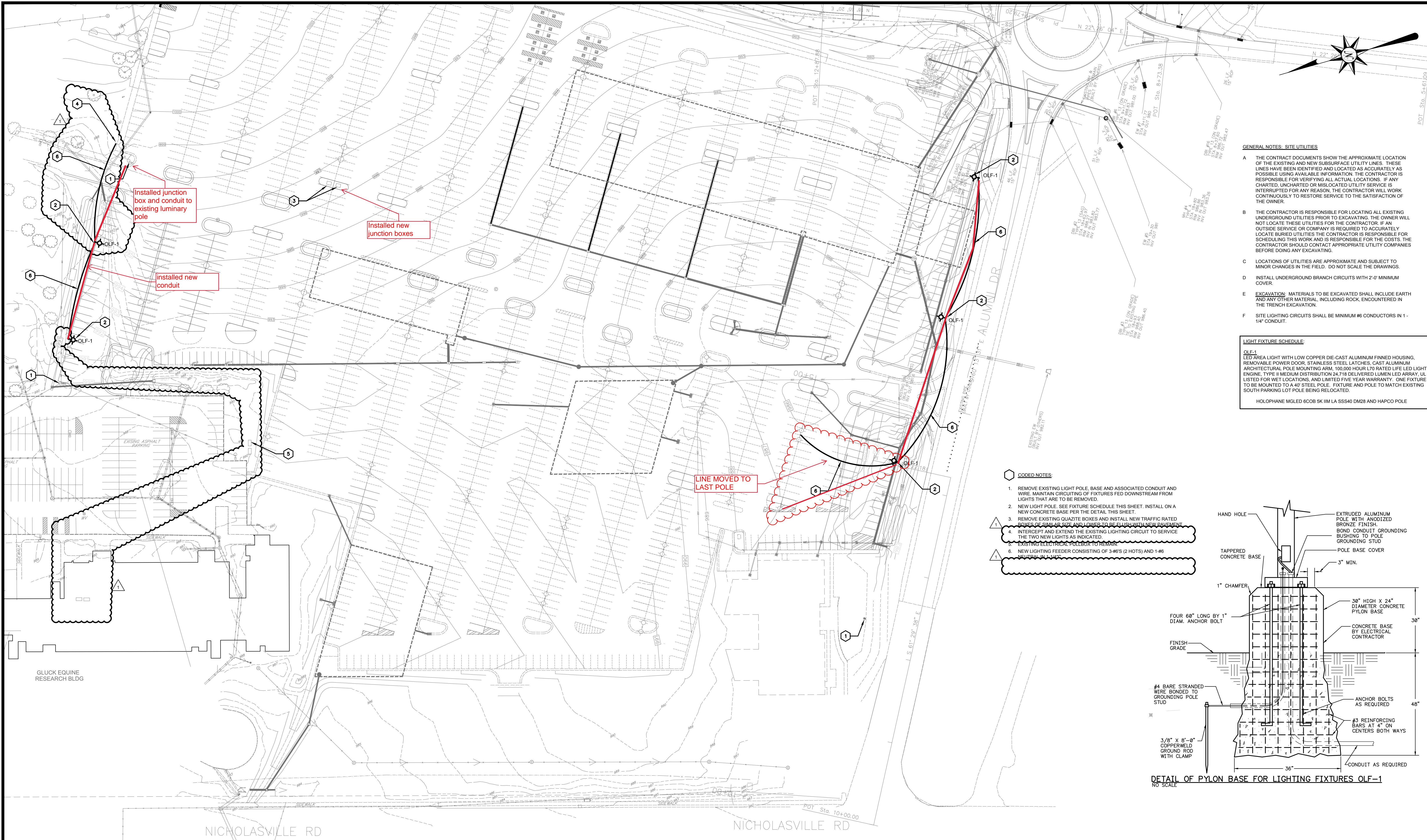
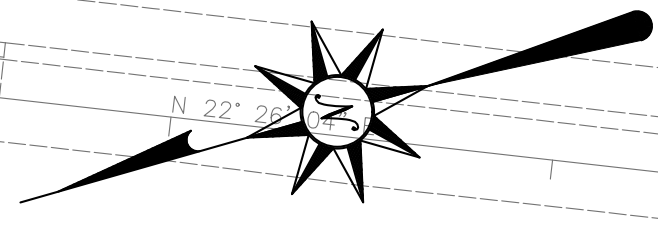


26252 Hillman Highway  
Abingdon, VA 24210  
800.368.7171  
www.hapco.com



**Section 2**  
**Shop Drawing**

Exterior Lighting  
Spec Section 165600



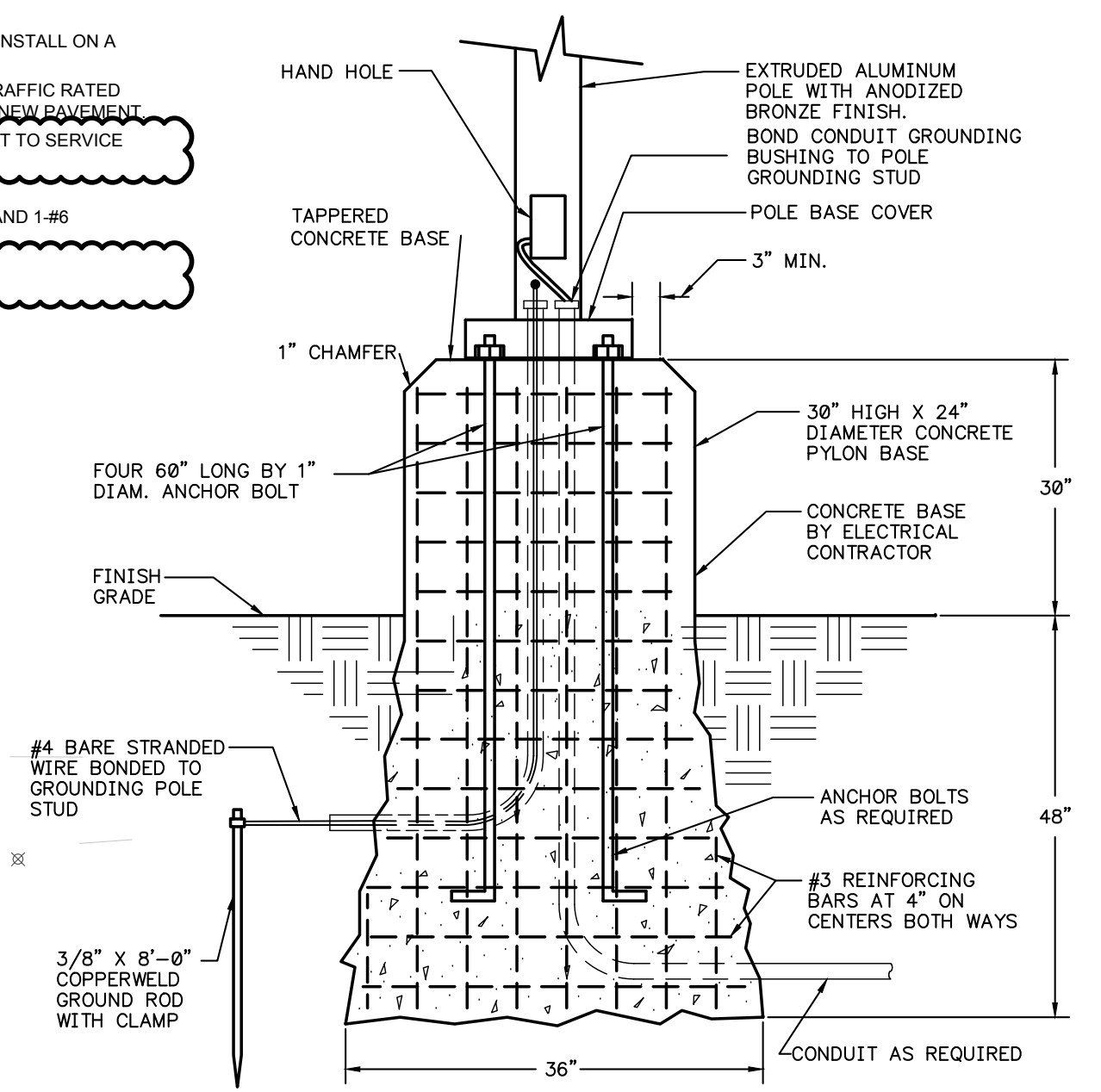
- GENERAL NOTES: SITE UTILITIES**
- A THE CONTRACT DOCUMENTS SHOW THE APPROXIMATE LOCATION OF THE EXISTING AND NEW SUBSURFACE UTILITY LINES. THESE LINES HAVE BEEN IDENTIFIED AND LOCATED AS ACCURATELY AS POSSIBLE USING AVAILABLE INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL ACTUAL LOCATIONS. IF ANY CHARTED, UNCHARTED OR MISLOCATED UTILITY SERVICE IS INTERRUPTED FOR ANY REASON, THE CONTRACTOR WILL WORK CONTINUOUSLY TO RESTORE SERVICE TO THE SATISFACTION OF THE OWNER.
  - B THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING. THE OWNER WILL NOT LOCATE THESE UTILITIES FOR THE CONTRACTOR. IF AN OUTSIDE SERVICE OR COMPANY IS REQUIRED TO ACCURATELY LOCATE BURIED UTILITIES THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THIS WORK AND IS RESPONSIBLE FOR THE COSTS. THE CONTRACTOR SHOULD CONTACT APPROPRIATE UTILITY COMPANIES BEFORE DOING ANY EXCAVATING.
  - C LOCATIONS OF UTILITIES ARE APPROXIMATE AND SUBJECT TO MINOR CHANGES IN THE FIELD. DO NOT SCALE THE DRAWINGS.
  - D INSTALL UNDERGROUND BRANCH CIRCUITS WITH 2'-0" MINIMUM COVER.
  - E EXCAVATION: MATERIALS TO BE EXCAVATED SHALL INCLUDE EARTH AND ANY OTHER MATERIAL, INCLUDING ROCK, ENCOUNTERED IN THE TRENCH EXCAVATION.
  - F SITE LIGHTING CIRCUITS SHALL BE MINIMUM #6 CONDUCTORS IN 1-1/4" CONDUIT.

**LIGHT FIXTURE SCHEDULE:**

**OLF-1**  
LED AREA LIGHT WITH LOW COPPER DIE-CAST ALUMINUM FINNED HOUSING, REMOVABLE POWER DOOR, STAINLESS STEEL LATCHES, CAST ALUMINUM ARCHITECTURAL POLE MOUNTING ARM, 100,000 HOUR L70 RATED LIFE LED LIGHT ENGINE, TYPE II MEDIUM DISTRIBUTION 24 7/16 DELIVERED LUMEN LED ARRAY, UL LISTED FOR WET LOCATIONS, AND LIMITED FIVE YEAR WARRANTY. ONE FIXTURE TO BE MOUNTED TO A 40' STEEL POLE. FIXTURE AND POLE TO MATCH EXISTING SOUTH PARKING LOT POLE BEING RELOCATED.

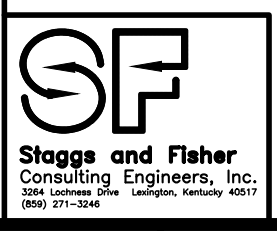
HOLOPHANE MGLED 6C08 5K IIM LA SSS40 DM28 AND HAPCO POLE

- CODED NOTES:**
1. REMOVE EXISTING LIGHT POLE, BASE AND ASSOCIATED CONDUIT AND WIRE. MAINTAIN CIRCUITING OF FIXTURES FED DOWNSTREAM FROM LIGHTS THAT ARE TO BE REMOVED.
  2. NEW LIGHT POLE. SEE FIXTURE SCHEDULE THIS SHEET. INSTALL ON A NEW CONCRETE BASE PER THE DETAIL THIS SHEET.
  3. REMOVE EXISTING QUARTZITE BOXES AND INSTALL NEW TRAFFIC RATED BOXES OF SIMILAR SIZE AND QUALITY TO BE CLASSIFIED NEW PAVEMENT.
  4. INTERCEPT AND EXTEND THE EXISTING LIGHTING CIRCUIT TO SERVICE THE TWO NEW LIGHTS AS INDICATED.
  5. EXISTING ELECTRICAL PULLBOX TO REMAIN.
  6. NEW LIGHTING FEEDER CONSISTING OF 3-#6'S (2 HOTS) AND 1-#6 NEUTRAL IN 1-1/4" CONDUIT.



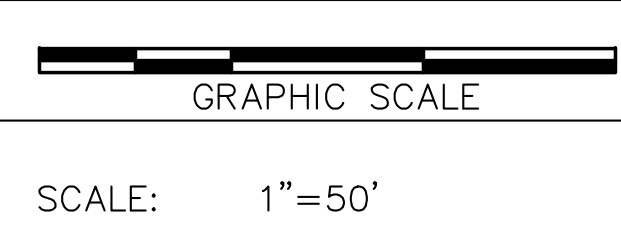
**DETAIL OF PYLON BASE FOR LIGHTING FIXTURES OLF-1**  
NO SCALE

**NOTE:**  
IT IS NOT INTENDED THAT THE PLANS SHOW ALL OFFSETS IN PIPES, CONDUITS, AND DUCTS REQUIRED FOR INSTALLATION OF THE WORK. DETAILS AND SECTIONS ARE INCLUDED FOR SOME AREAS TO SHOW INTENDED RELATIONSHIP OF THE WORK OF VARIOUS TRADES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SUB-CONTRACTORS TO COORDINATE INSTALLATION OF THE WORK AND TO PROVIDE THE NECESSARY OFFSETS, TRANSFORMATIONS AND FITTINGS REQUIRED. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CORRECTING CONFLICTS BETWEEN THE WORK OF VARIOUS TRADES. DETAILS AND SECTIONS ARE SHOWN FOR THE CONTRACTORS CONVENIENCE AND SHALL NOT BE CONSIDERED COMPLETE IN EVERY DETAIL.

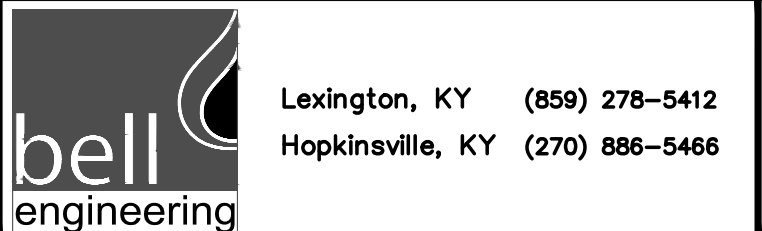
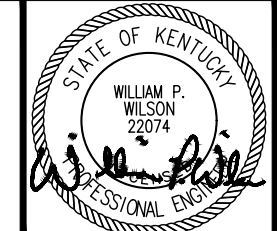


**Stoggs and Fisher**  
Consulting Engineers, Inc.  
2000 University Blvd., Lexington, Kentucky 40502  
(606) 253-1100

DESIGNER	DESIGNER	DATE	BY	REVISION
DRAWN	DRAWN	04/17/2018	WFW	ADDENDUM
CHECKED	CHECKED?			
APPROVED	APPROVED			



ALL RIGHTS RESERVED  
THIS DOCUMENT IS THE PROPERTY OF BELL ENGINEERING AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART OR USED FOR CONSTRUCTION OF OTHER THAN THIS SPECIFIC PROJECT WITHOUT THE WRITTEN PERMISSION OF BELL ENGINEERING. FACSIMILES OF LICENSED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR SEALS, IF AFFIXED TO THIS DOCUMENT, SHALL BE CONSIDERED LEGITIMATE ONLY IF SIGNED AND DATED BY THE REGISTRANT.



Lexington, KY (859) 278-5412  
Hopkinsville, KY (270) 886-5466

2490.0 EXPAND ORANGE PARKING LOT  
CAPITAL PROJECT MANAGEMENT DIVISION  
UNIVERSITY OF KENTUCKY  
LEXINGTON, KENTUCKY

ELECTRICAL SITE UTILITY PLAN	
DIVISION	GENERAL
CONTRACT NO.	600-090
DATE	APRIL 2018
SHEET NO.	U1

# **Section 3**

## **Inspections**

Exterior Lighting

Spec Section 165600