

Subsurface Retention Success in Low-Elevation & High-Priced Areas



Eric A. Gonzalez, P.E.
Engineered Products Manager – South Florida



MC-4500

MC-3500

DC-780

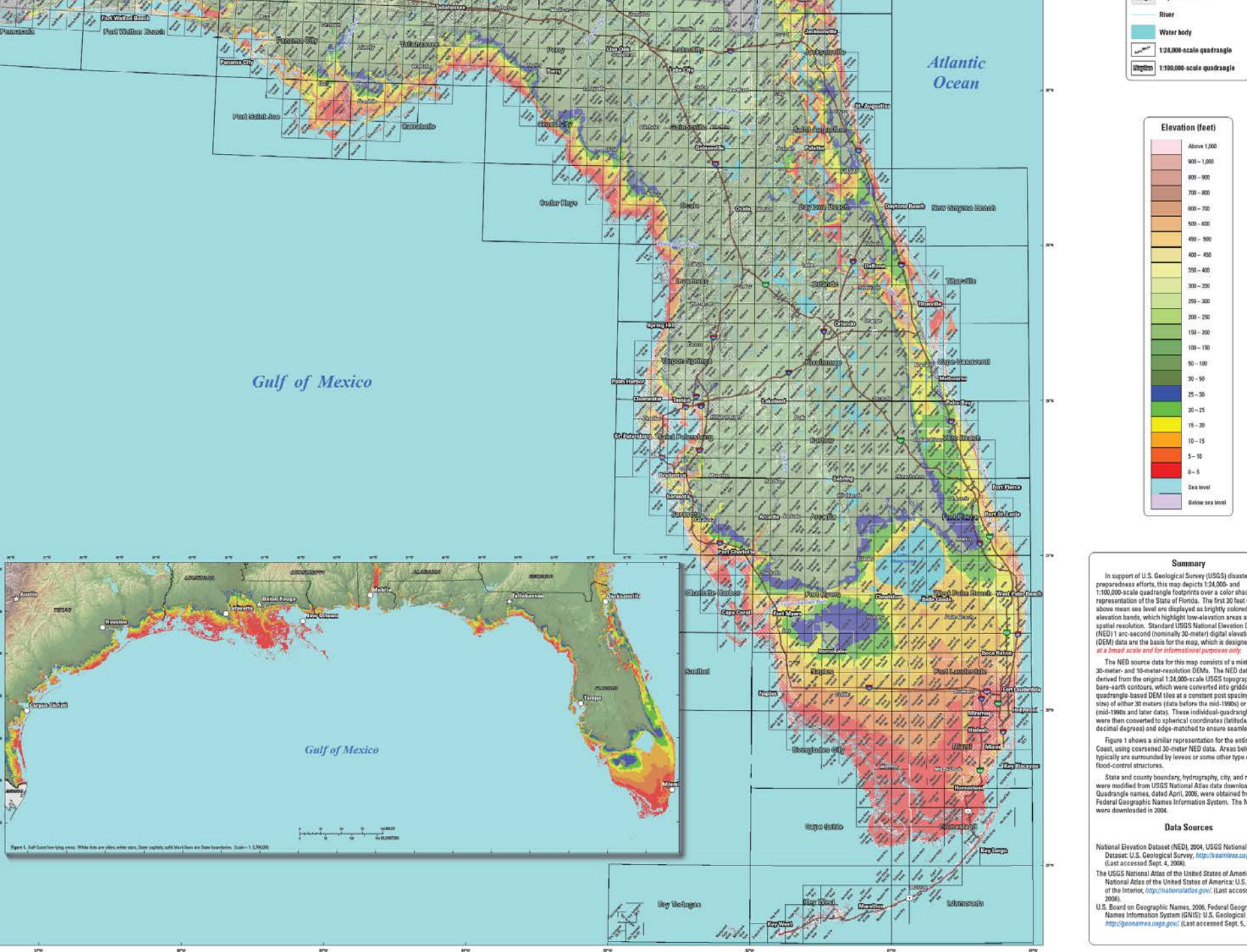
SC-740

SC-310

SC-160







Summary

In support of U.S. Geological Survey (USGS) disaster preparedness efforts, this map depicts 1:24,000- and 1:100,000-scale quadrangle footprints over a color shaded relief representation of the State of Florida. The first 30 feet of relief above mean sea level are displayed as brightly colored 5-foot elevation bands, which highlight low-elevation areas at a coarse spatial resolution. Standard USGS National Elevation Dataset (NED) 1 arc-second (nominally 30-meter) digital elevation model (DEM) data are the basis for the map, which is designed to be at a broad scale and for informational purposes only.

The NED source data for this map consists of a mixture of 30-meter- and 10-meter-resolution DEMs. The NED data were derived from the original 1:24,000-scale USGS topographic map bare-earth contours, which were converted into gridded quadrangle-based DEM tiles at a constant post spacing (grid or size) of either 30 meters (data before the mid-1990s) or 10 meters (mid-1990s and later data). These individual-quadrangle DEMs were then converted to spherical coordinates (latitude/longitude decimal degrees) and edge-matched to ensure seamlessness.

Figure 1 shows a similar representation for the entire U.S. Gulf Coast, using coarsened 30-meter NED data. Areas below sea level typically are surrounded by levees or some other type of flood-control structures.

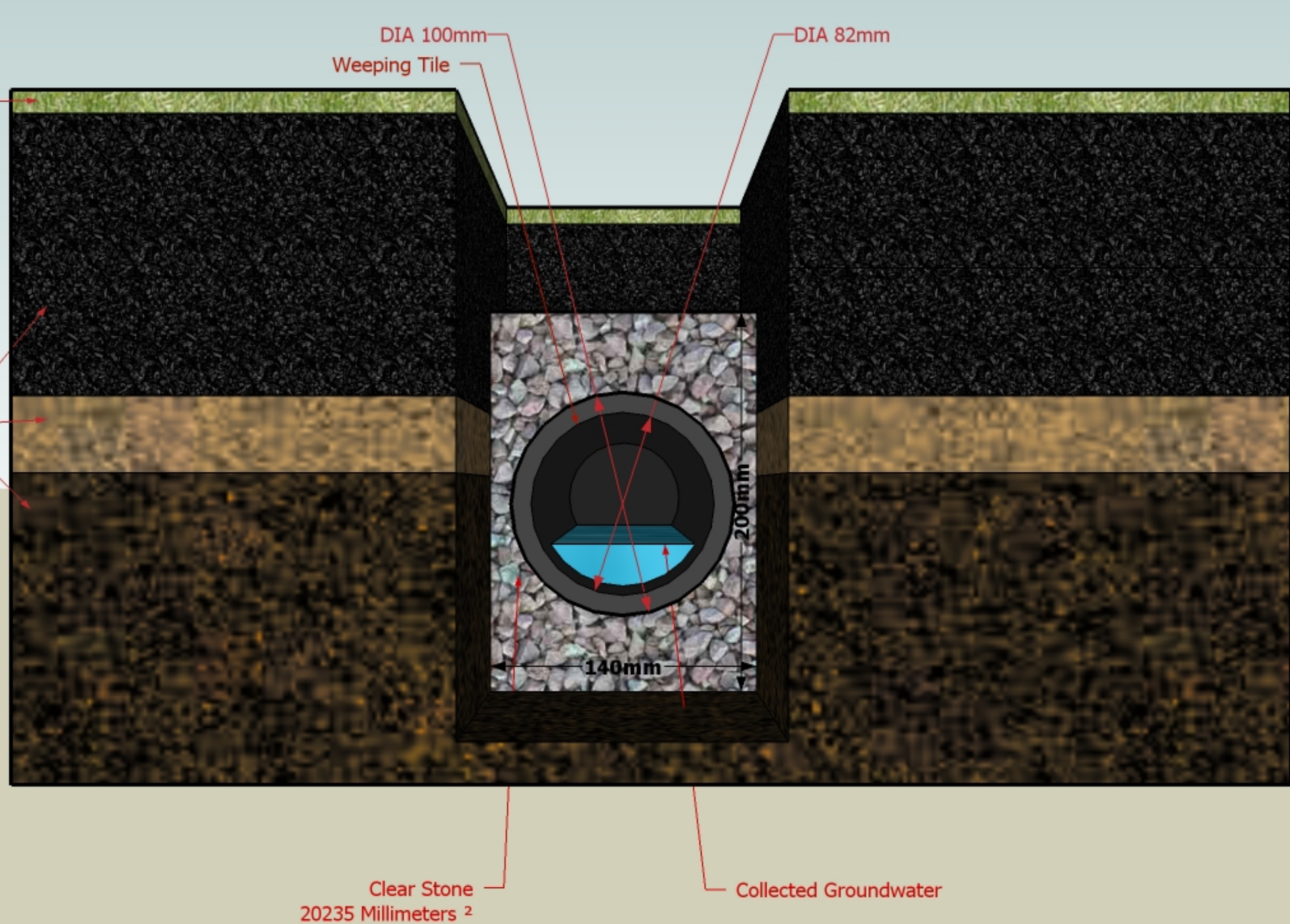
State and county boundary, hydrography, city, and road layer were modified from USGS National Atlas data downloaded in 2004. Quadrangle names, dated April, 2005, were obtained from the Federal Geographic Names Information System. The NED data were downloaded in 2004.

Data Sources

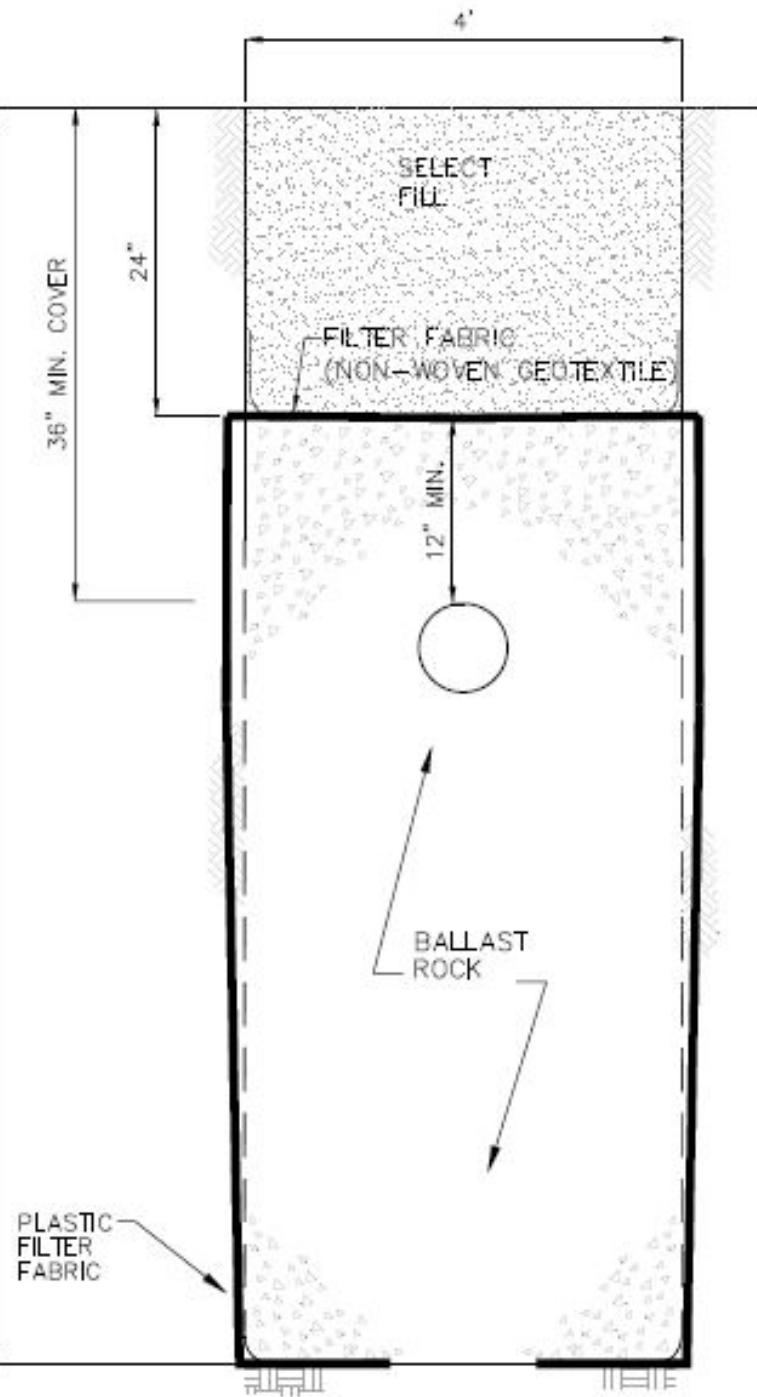
National Elevation Dataset (NED), 2004, USGS National Elevation Dataset: U.S. Geological Survey, <http://seamless.usgs.gov/>. (Last accessed Sept. 4, 2008).

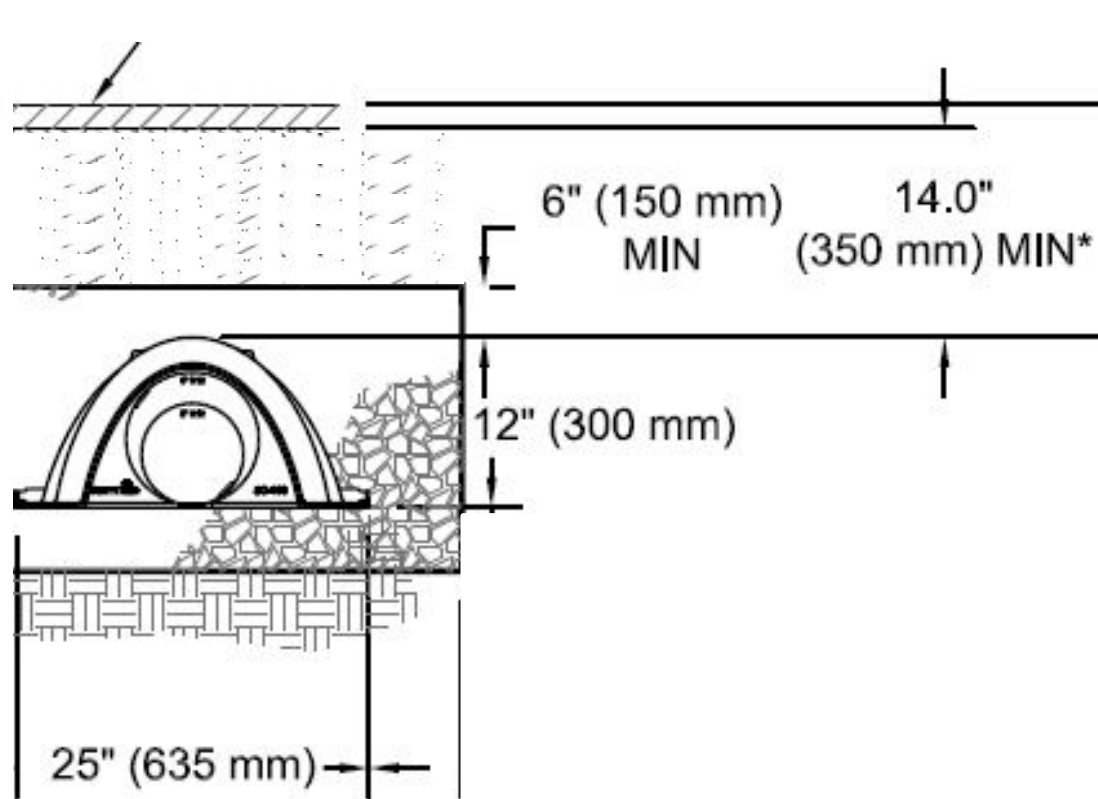
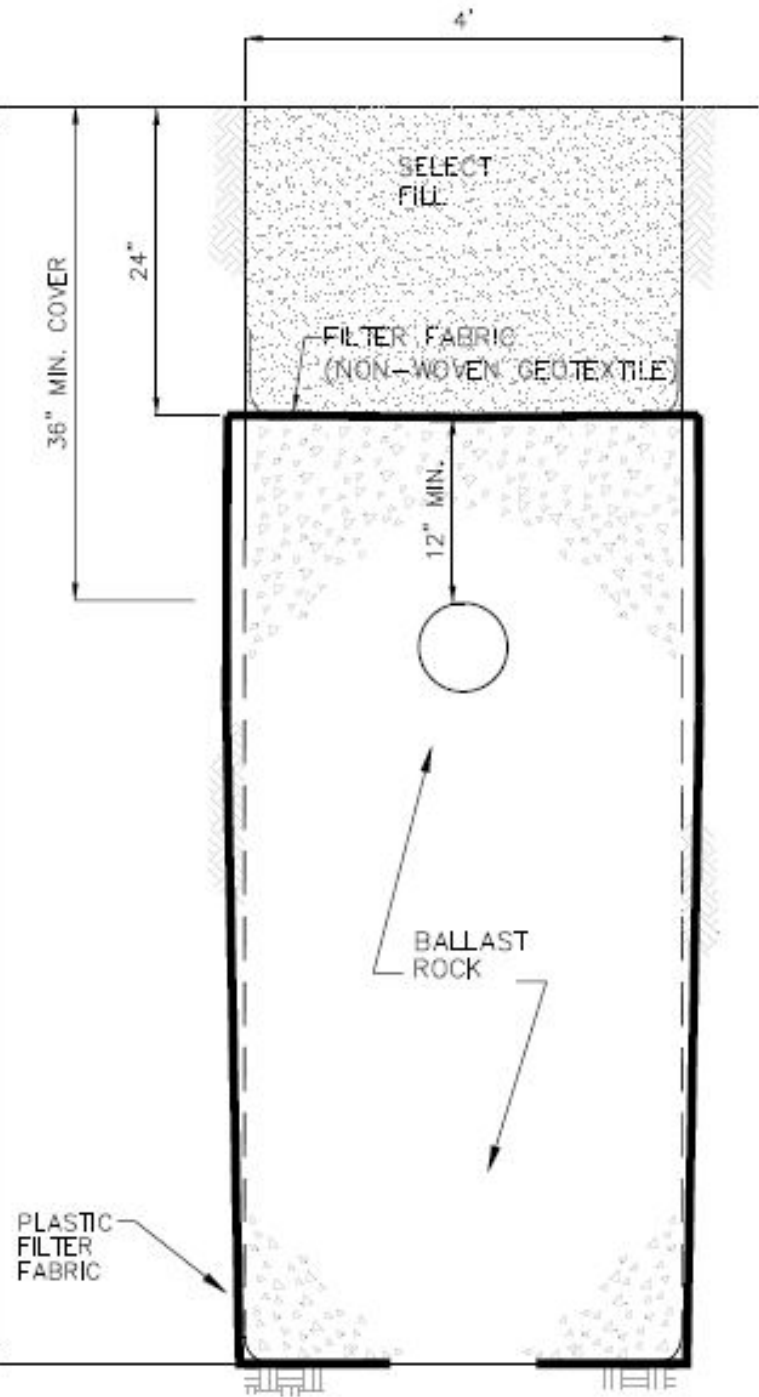
The USGS National Atlas of the United States of America, 2003, National Atlas of the United States of America: U.S. Department of the Interior, <http://nationalatlas.gov/>. (Last accessed Sept. 2008).

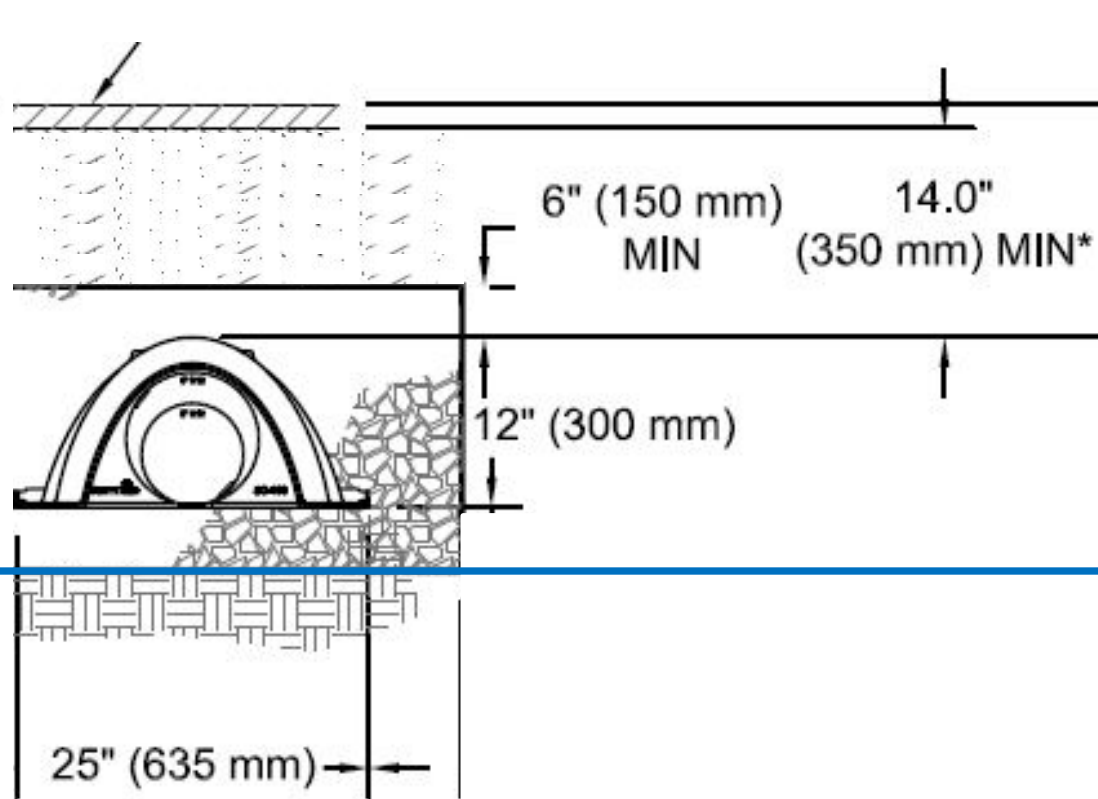
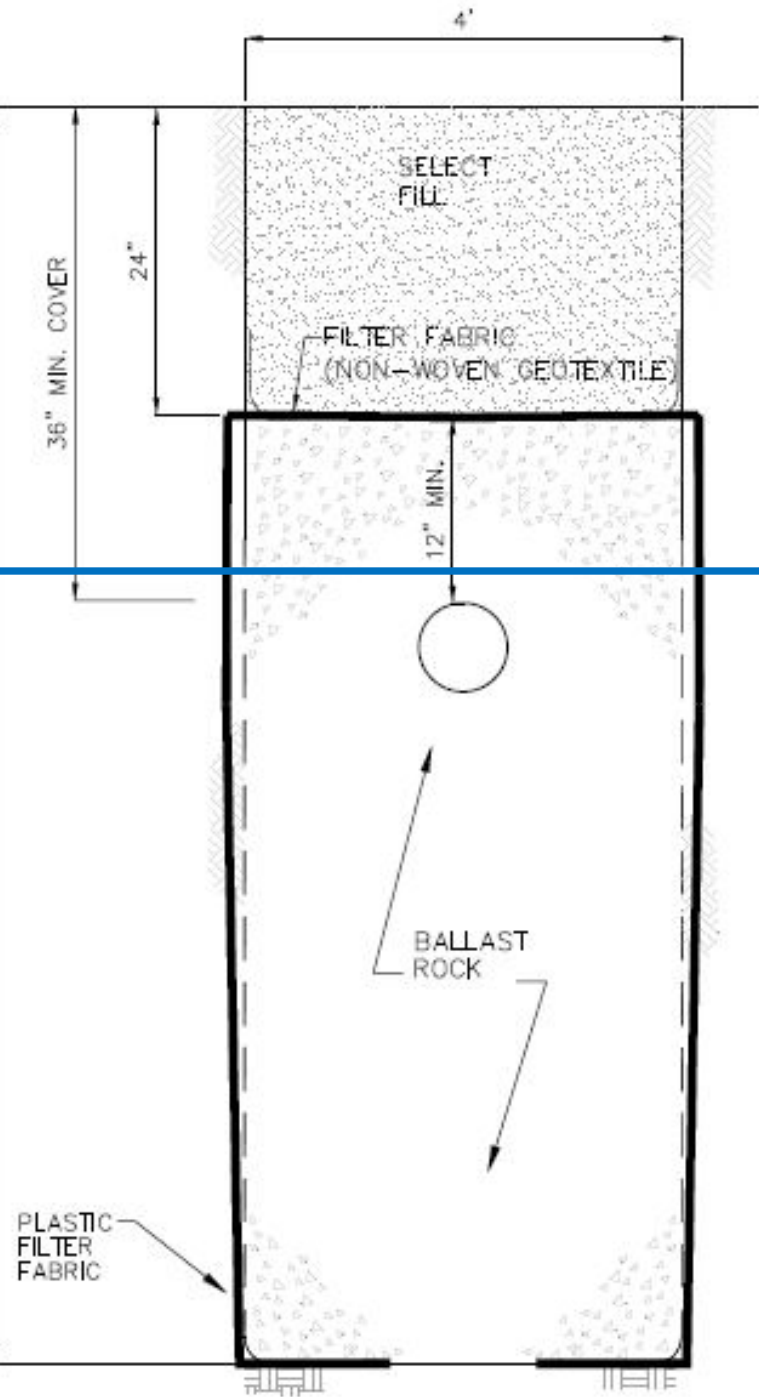
U.S. Board on Geographic Names, 2006, Federal Geographic Names Information System (GNIS): U.S. Geological Survey, <http://geonames.usgs.gov/>. (Last accessed Sept. 5, 2008).

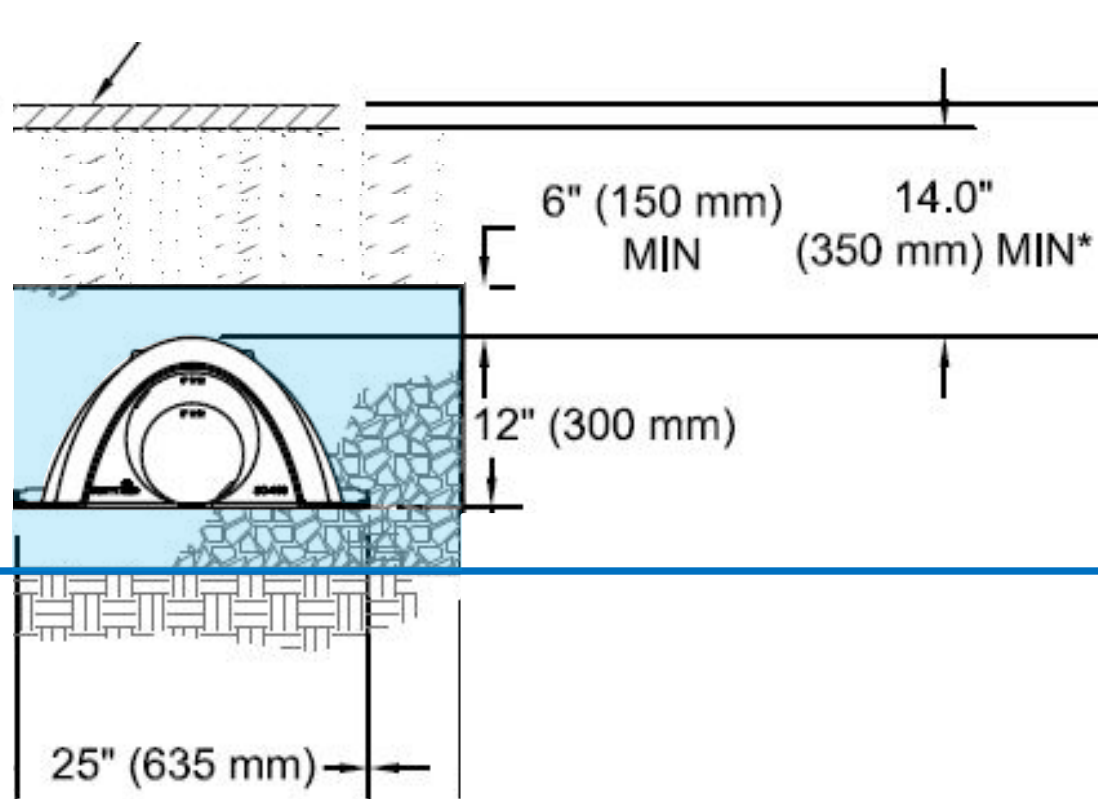
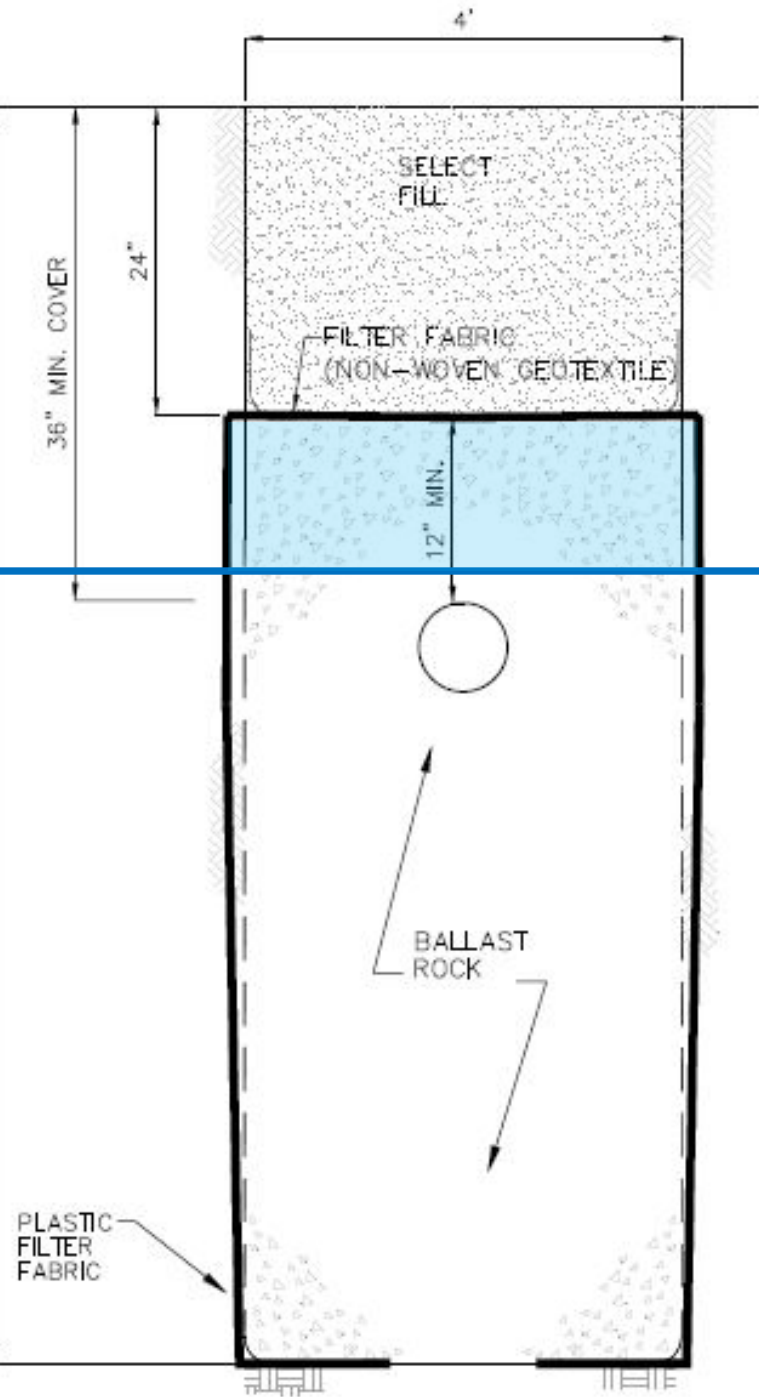


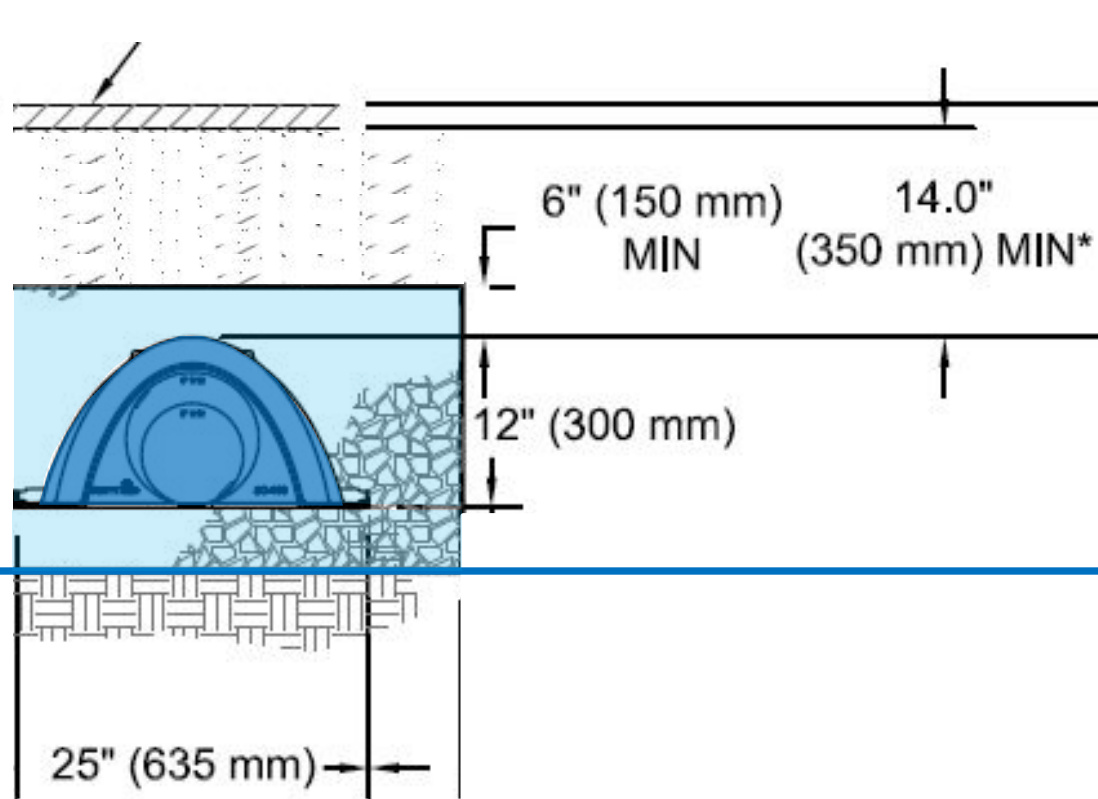
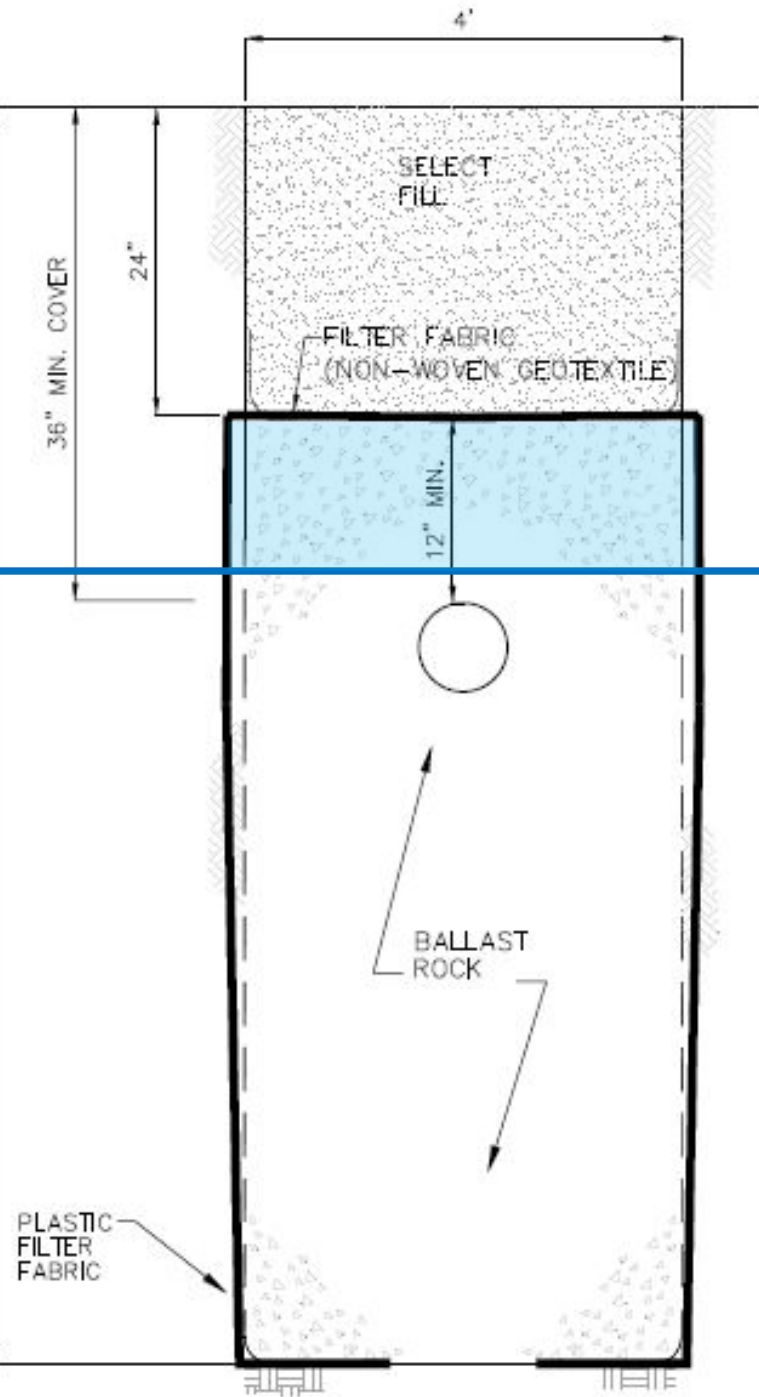


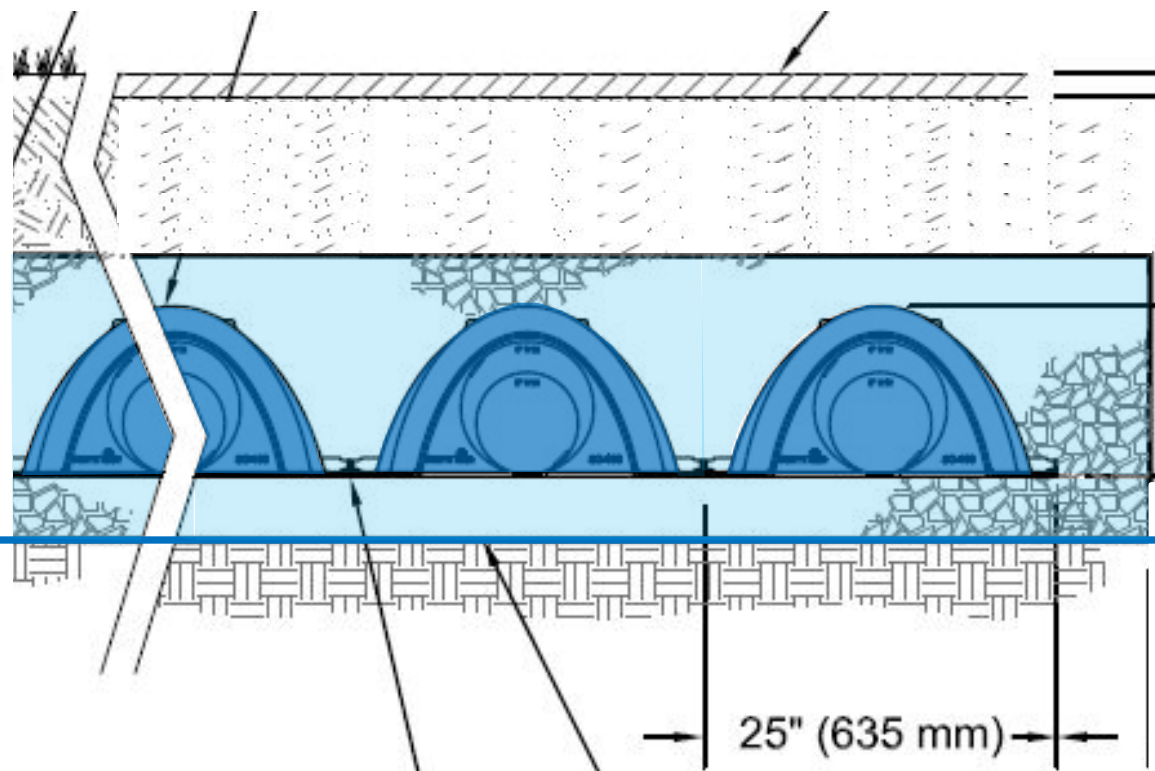
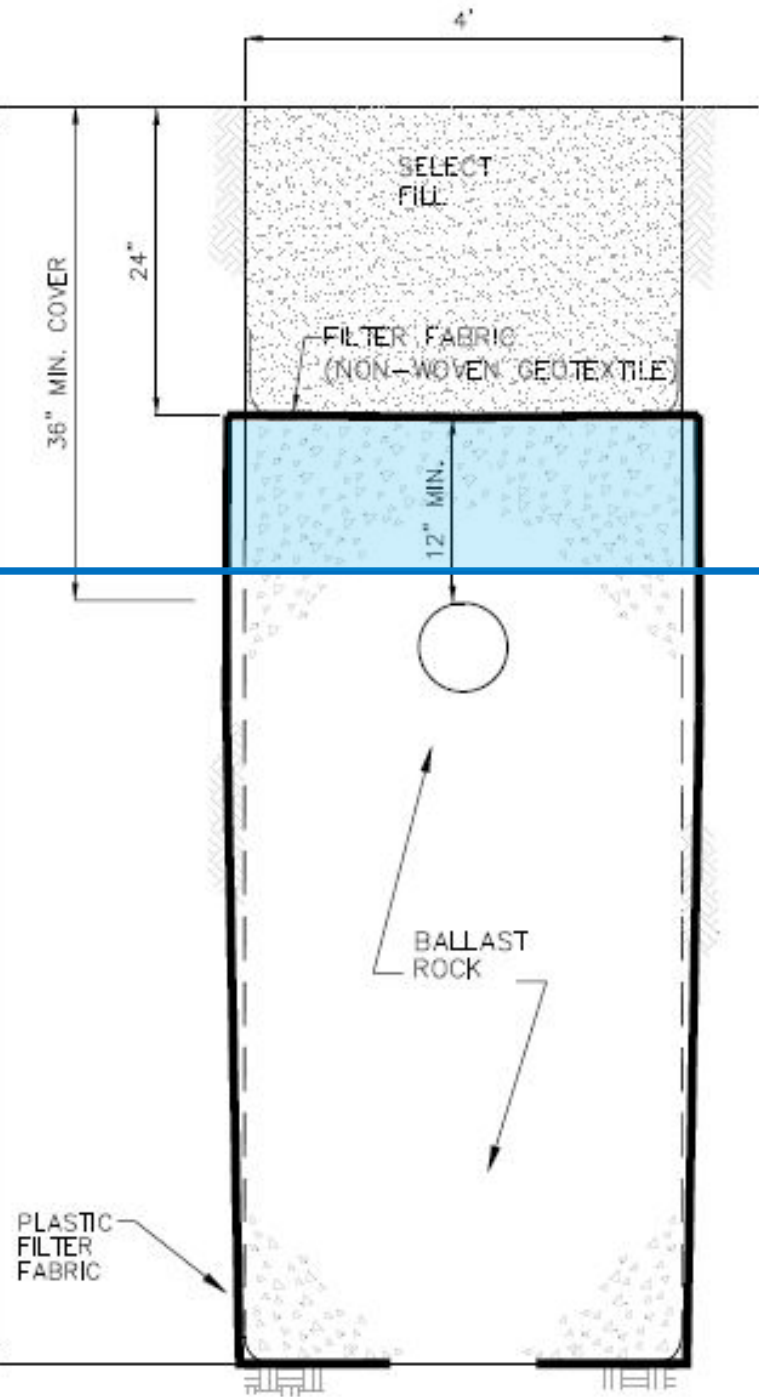


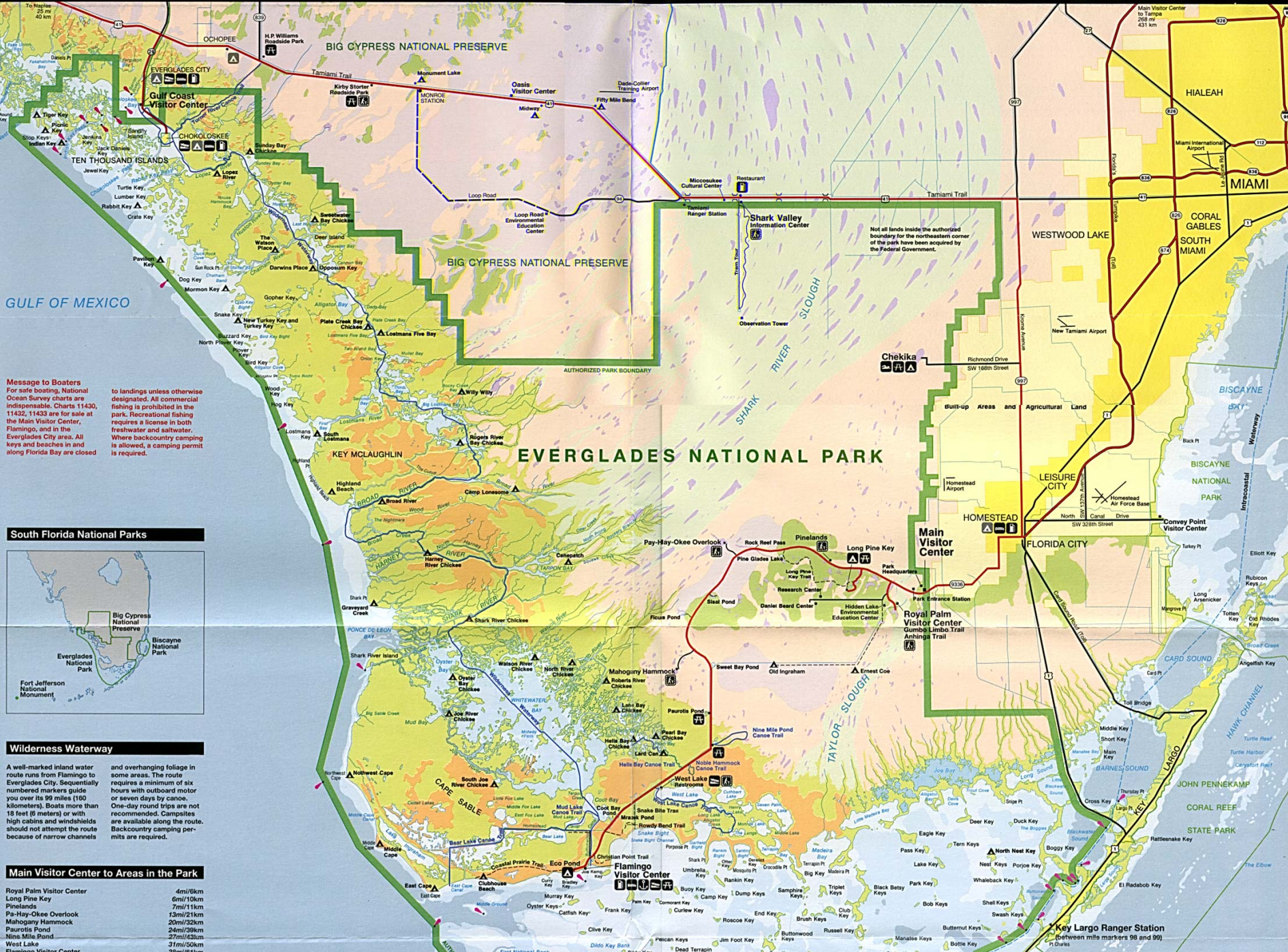














		4640 TRUJMAN BLVD HILLIARD OH 43026 1-800-733-7473				76 INCHES ROAD BATES / ROOF/HILL CT / 18007 600-524-9101 / 1-888-892-2041 / WWW.STOMILTECH.COM		REV DRW CHK DESCRIPTION		TEXAS ROADHOUSE BOYNTON BEACH, FL	
								DATE: 01-05-15 DRAWN: GMI PROJECT #: 02114 CHECKED: KS			
SHEET 2 OF 5											

[illegible]

PROPOSED LAYOUT

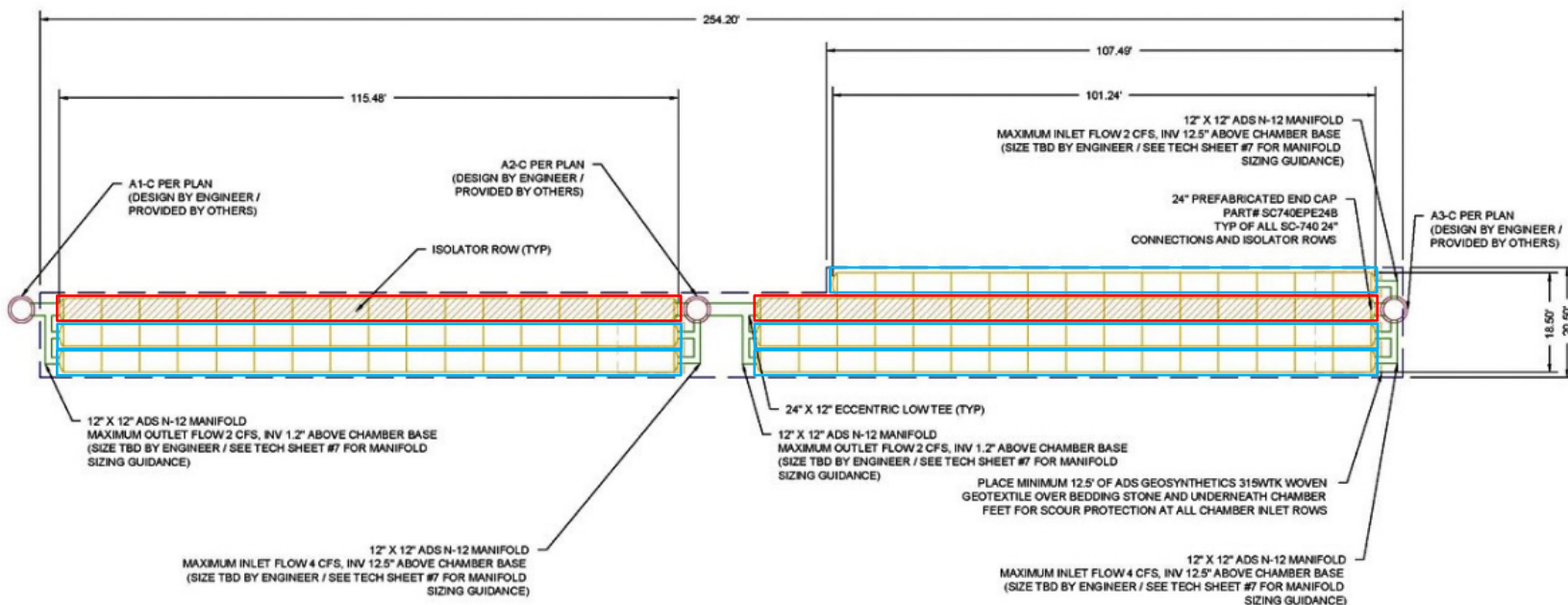
(110) STORMTECH SC-740 CHAMBERS
(14) STORMTECH SC-740 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 9,352 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM: 4,514 FT²
PERIMETER OF SYSTEM: 549 FT

PROPOSED ELEVATIONS

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	19.00
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	13.00
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	12.50
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	12.50
MINIMUM ALLOWABLE GRADE (TOP OF REINFORCED CONCRETE PAVEMENT):	12.50
TOP OF STONE:	11.50
TOP OF CHAMBER:	11.00
12" TOP MANIFOLD INVERT:	9.54
12" BOTTOM MANIFOLD INVERT:	8.80
24" ISOLATOR ROW INVERT:	8.50
BOTTOM OF CHAMBER:	8.50
BOTTOM OF STONE:	8.00

NOTES

- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.



TEXAS ROADHOUSE BOYNTON BEACH, FL		REV	DRW	CHK	DESCRIPTION
DATE: 01-05-15					
PROJECT # 82214					
DRAWN: GM					
CHECKED: KS					
StormTech StormTech Inc. 1000 N. 11th St. Ft. Lauderdale, FL 33304 754-550-0000 1-800-850-2096 www.stormtech.com					
ADS Advanced Drainage Systems, Inc. 4640 TRUEMAN BLVD HILLIARD, OH 43026 1-800-733-7473					
SHEET 2 OF 5					

PROPOSED LAYOUT

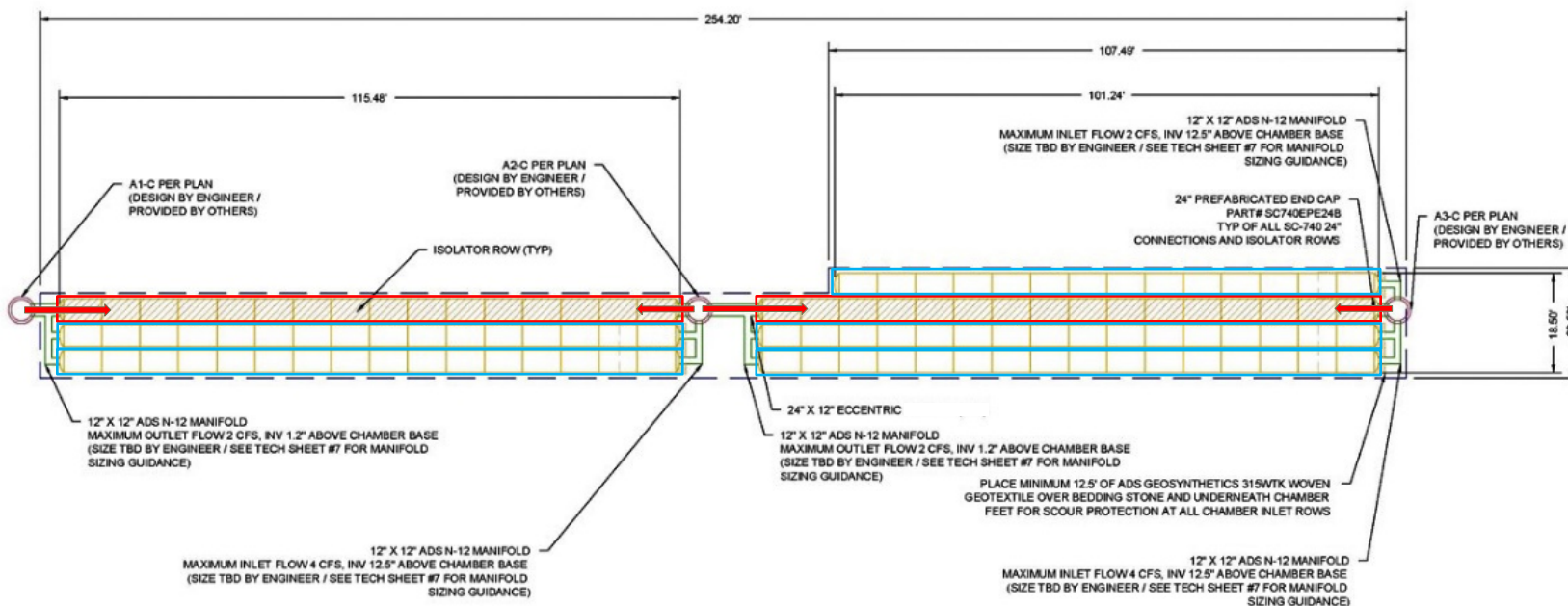
(110) STORMTECH SC-740 CHAMBERS
(14) STORMTECH SC-740 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 9,352 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM: 4,514 FT²
PERIMETER OF SYSTEM: 549 FT

PROPOSED ELEVATIONS

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DATE: 01-05-15					
PROJECT # 82214					
DRAWN: GM					
CHECKED: KS					
StormTech StormTech Inc. 7910000 DALLAS, TEXAS 75241-1000 7910000 DALLAS, TEXAS 75241-1000 7910000 DALLAS, TEXAS 75241-1000 7910000 DALLAS, TEXAS 75241-1000					
ADS 4640 TRUEJMAN BLVD HILLIARD, OH 43026 1-800-733-7473					
SHEET 2 OF 5					

PROPOSED LAYOUT

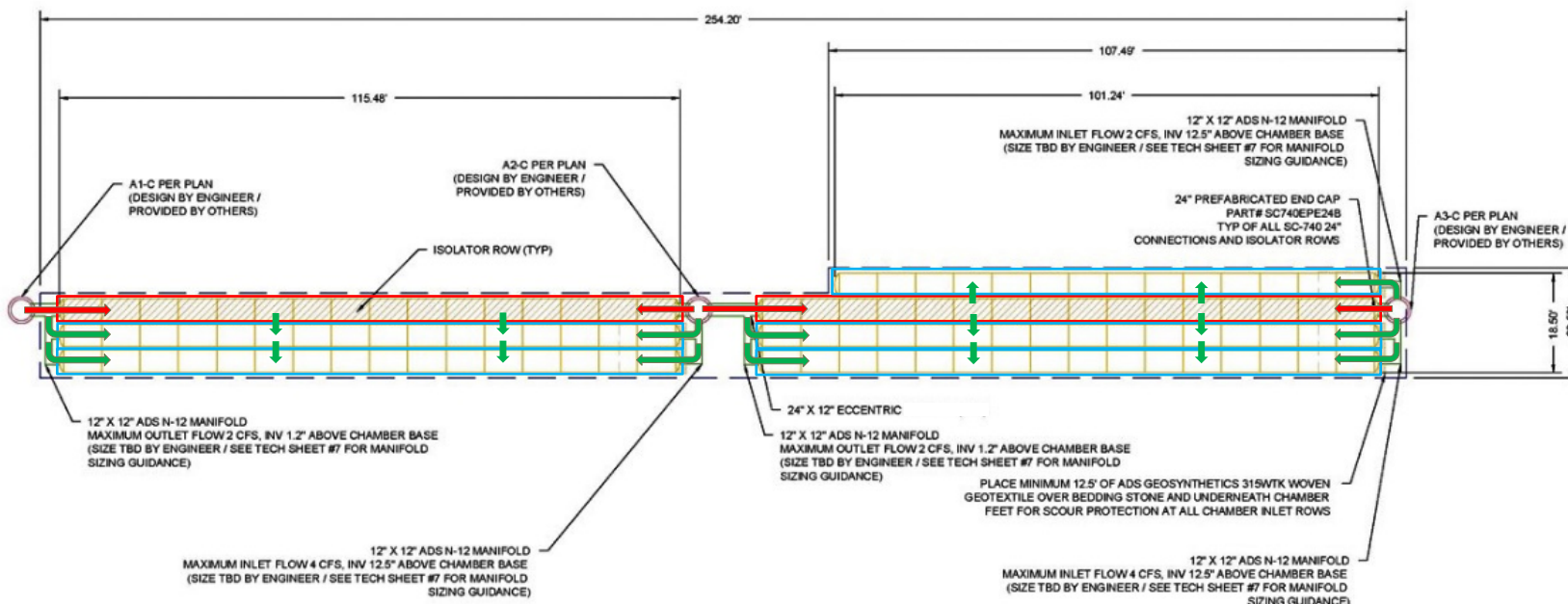
(110) STORMTECH SC-740 CHAMBERS
(14) STORMTECH SC-740 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 9,352 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM: 4,514 FT²
PERIMETER OF SYSTEM: 549 FT

PROPOSED ELEVATIONS

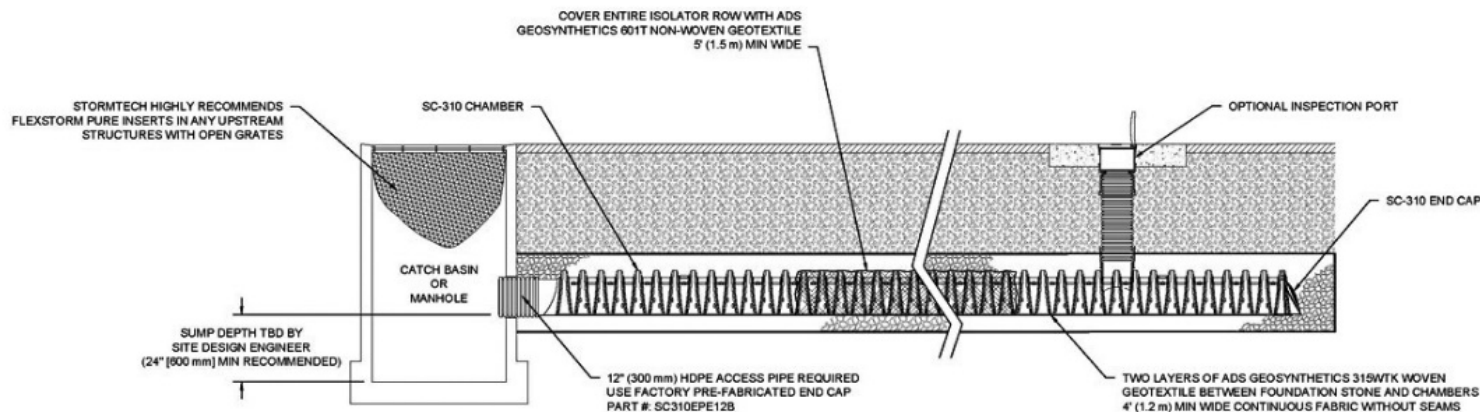
MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	19.00
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	13.00
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	12.50
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TEXAS ROADHOUSE BOYNTON BEACH, FL	
DATE: 01-05-15	DRAWN: GM
PROJECT #: 2214	CHECKED: KS
REV	DRW/CHK
DESCRIPTION	
78 HINDOCK ROAD, SUITE 2 10000 N. HILL CT 06037 860-524-1188 888-852-2096 WWW.STORMTECH.COM	
4640 TRUELEMAN BLVD HILLIARD, OH 43026 1-800-733-7473	
SHEET 2 OF 5	



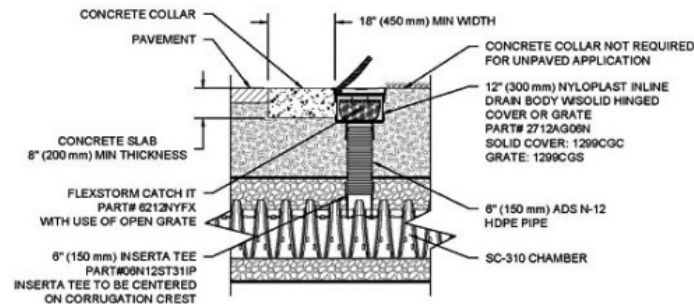
SC-310 ISOLATOR ROW DETAIL
NTS

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.



SC-310 6" INSPECTION PORT DETAIL
NTS

 4640 TRULIEMAN BLVD HILLIARD, OH 43026 1-800-733-7473		BAY CLUB NAPLES, FL		DATE: 6/23/15		DRAWN: AEC		PROJECT #: 100911		CHECKED: KMS	
 THE MODERN ROAD. THE NEW. 1 MOORE HILL, CT 06455 860-526-1581 888-892-2094 WWW.STORMTECH.COM		REV	DRW	CHK	DESCRIPTION						
 4640 TRULIEMAN 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 PRODUCTS SHOWN ARE THE APPROPRIATE SIZE, TYPE, AND MANUFACTURE.									
		SHEET									
		4 OF 5									



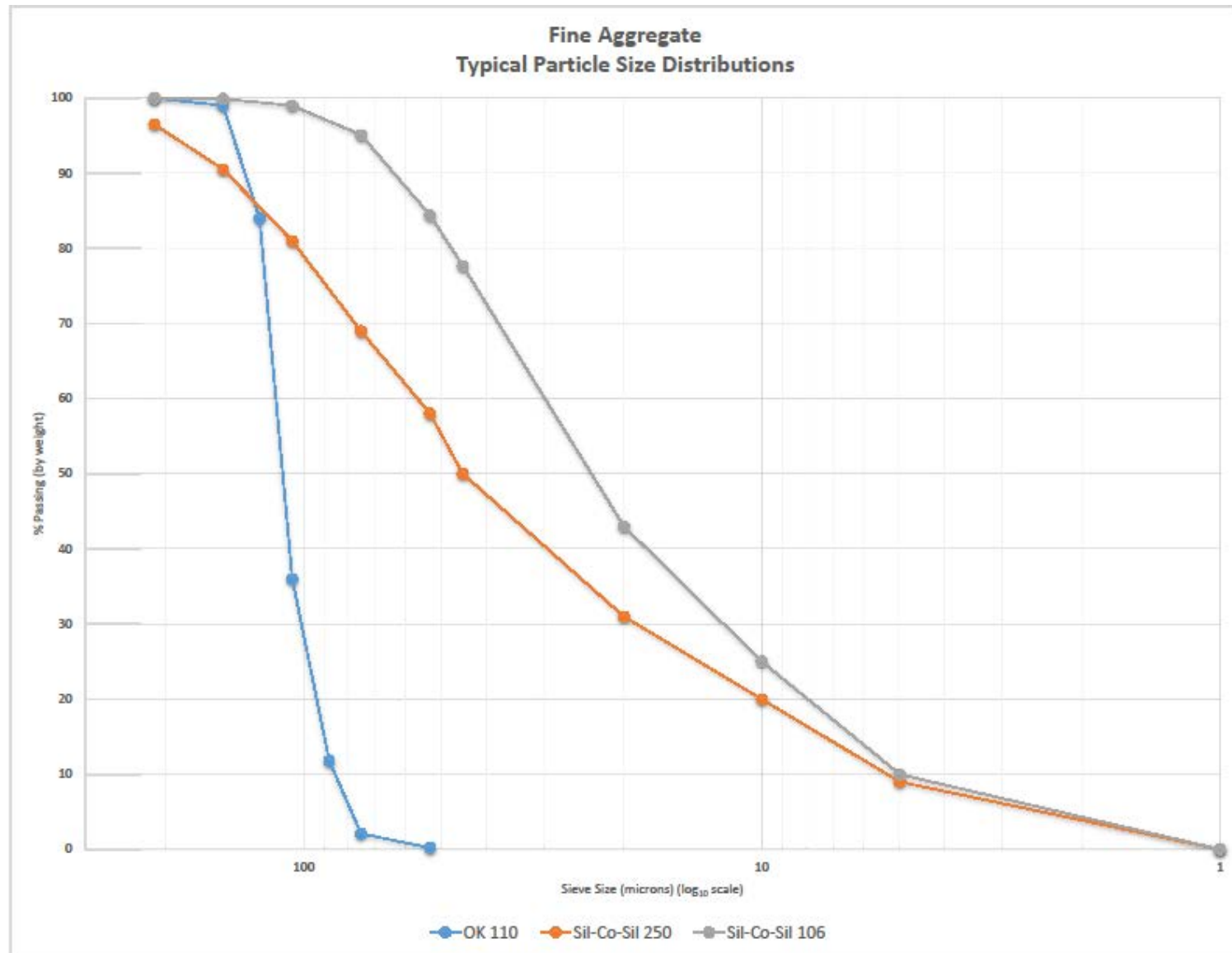
**Jet-Vac
Operation**



Just Prior to Jet-Vac

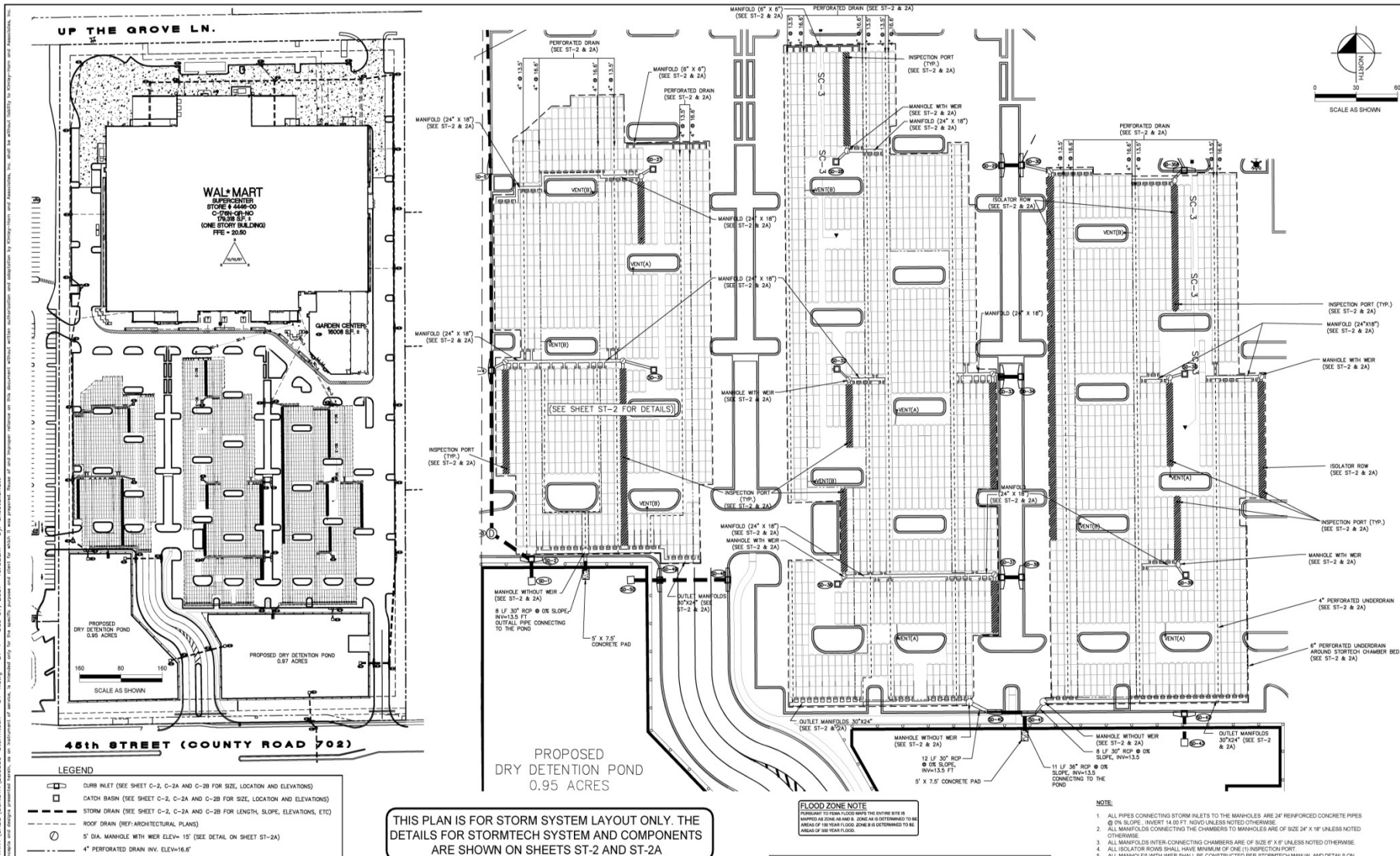


Post Jet-Vac





Wal-Mart – West Palm Beach, Florida



A TOTAL OF 3,500 STORM CHAMBERS (TYPE SC-740) WHICH CAN HOLD 6.1 ACRE FEET OF RUNOFF ARE REQUIRED. IF ANY MANUFACTURER SUBSTITUTIONS ARE REQUIRED KIMLEY-HORN AND ASSOCIATES WILL NEED TO REVIEW AND APPROVE. IT WILL BE NECESSARY TO OBTAIN PERMIT MODIFICATIONS FROM THE CITY OF



Estadio Paquito Montaner Baseball Park - Ponce, Puerto Rico



Miami Dolphins Practice Facility - Miami, Florida



Puerto Azul Project – Puerto Rico

Questions

