

ACO StormBrixx®



Online Project Configuration

Project Details

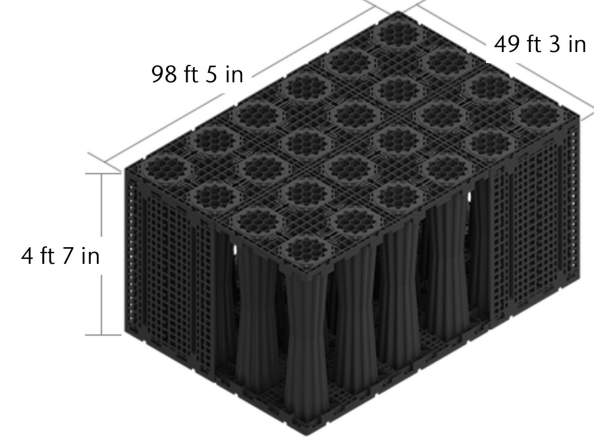
Description : ACD PH 3 (2)
Date : 03-20-2026
City : Detroit
State : MI
Zip Code : 48216
Country : USA

Customer Details

Contact : Luciano Cistaro
Email : lcistaro@callenengineering.com

Tank Configuration

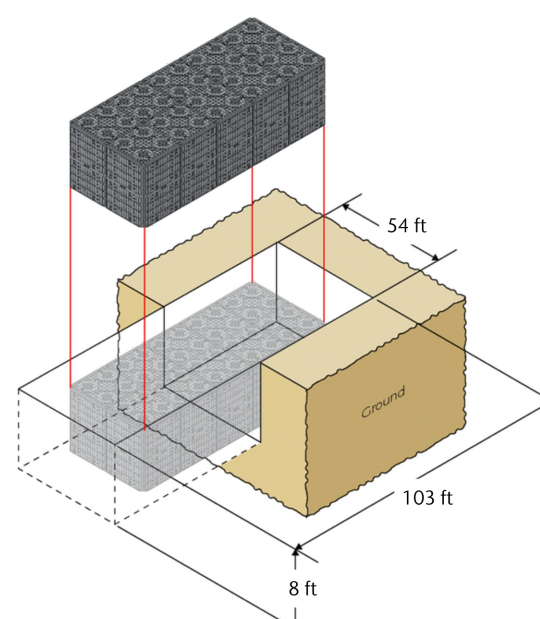
Tank Function	Detention/Retention
Product	Standard Duty (900SD)
Number of Layers	1.5
Total Net Volume (ft³)	21,269 ft³
Total Gross Volume (ft³)	22,131 ft³
Length of Tank (ft/in)	98 ft 5 in
Width of Tank (ft/in)	49 ft 3 in
Depth of Tank (ft/in)	4 ft 7 in



Cavity & Excavation Details

Length of Cavity (ft/in)	102 ft 5 in
Width of Cavity (ft/in)	53 ft 3 in
Depth of Cavity (ft/in)	7 ft 0 in
Volume of Material to be Excavated (ft³)	38,345 ft³
*Membrane Quantity (ft²)	12,691.4 ft²
Cover Dimension (ft/in)	2 ft 0 in
**Backfill Material (ft³)	16,214 ft³

* Calculation includes a 15% overlap
** Pavement not accounted for



* Diagram shows cavity size rounded to nearest foot

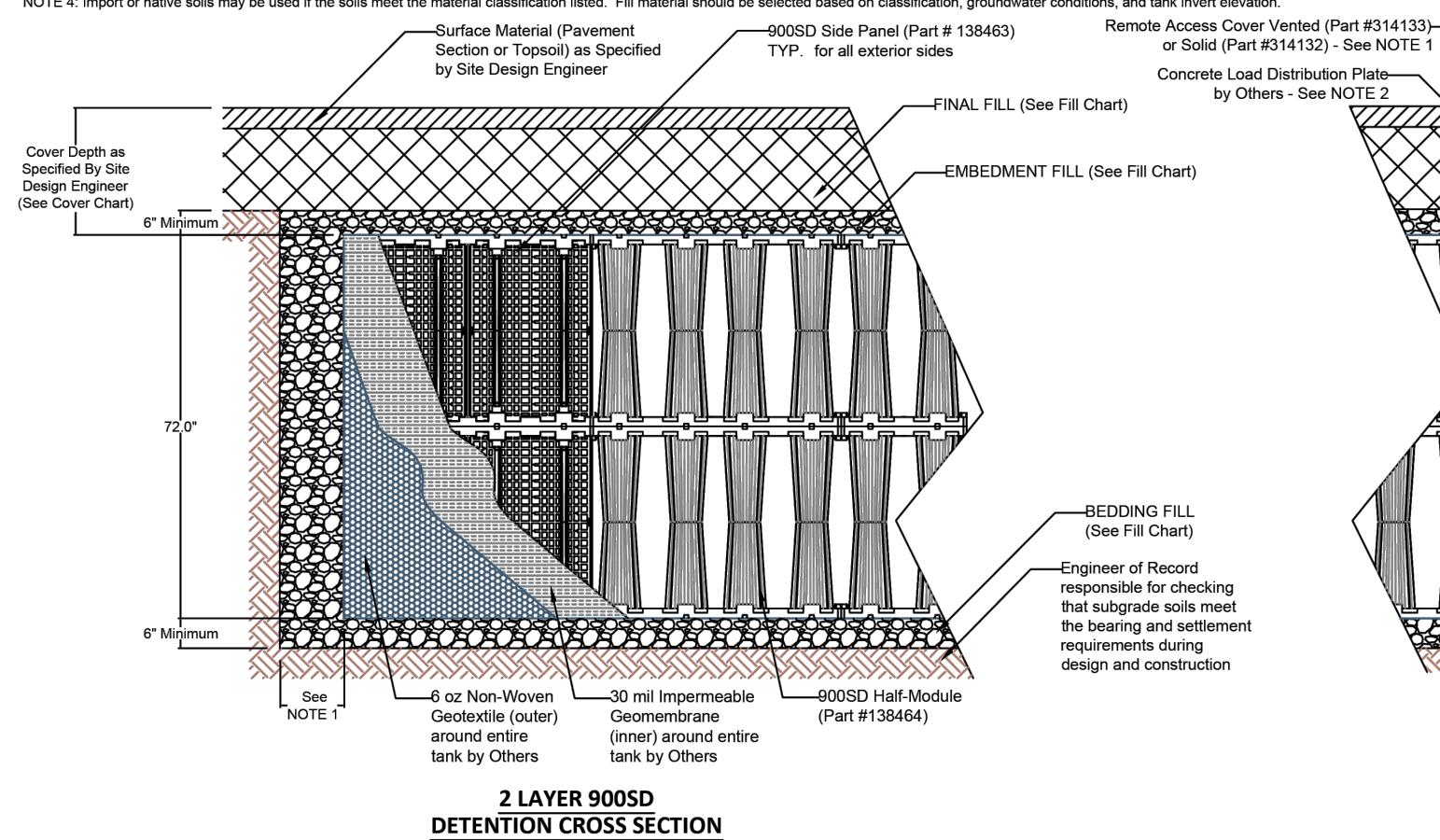
© ACO, Inc.

825 W. Beechcraft Street
Casa Grande, AZ 85122
Tel : (888) 490-9552
info@acousa.com

FILL CHART

Material Location	Description	Material Classification	Compaction/Density Requirement (NOTE 3)
FINAL FILL Fill starting from the top of the embedment fill layer. (NOTE 1 and 2)	Suitable Fill Materials as noted in the Project Geotechnical Report and noted on the Site Design Engineer's Plans	See Project Geotechnical Report and Site Design Engineer's Plans	Plate Compact or Static Roll loose lifts to densify fill. Use at least two full passes of the equipment to level the layer. Continue until 24 inches of total fill thickness has been placed above the tank. For AASHTO M145 soils, a minimum of 95% of the Standard Proctor Maximum Dry Density is recommended.
EMBEDMENT FILL Fill Immediately Surrounding the sides and top of tank (NOTE 4)	Sand-Gravel Mixtures or Open-Graded Crushed Aggregate Blends	AASHTO M145 A-1, A-2-4, A-9 or AASHTO M43 3, 3S7, 4, 4S7, 5, 5S, 5S7	Plate Compact or Static Roll loose lifts to densify fill. Use at least two full passes of the equipment to level the layer. For AASHTO M145 soils, a minimum of 95% of the Standard Proctor Maximum Dry Density is recommended.
BEDDING FILL Fill Immediately below the tank (NOTE 4)			

NOTE 1: This layer can include pavement subbase.
NOTE 2: If open-graded aggregates are used for embedment fill, free migration from the final to embedment fill layer may be reduced by installing a layer of 6 oz non-woven geotextile fabric at the final and embedment fill interface.
NOTE 3: See Construction Equipment Table for more information for construction equipment limitations.
NOTE 4: Import or native soils may be used if the soils meet the material classification listed. Fill material should be selected based on classification, groundwater conditions, and tank invert elevation.

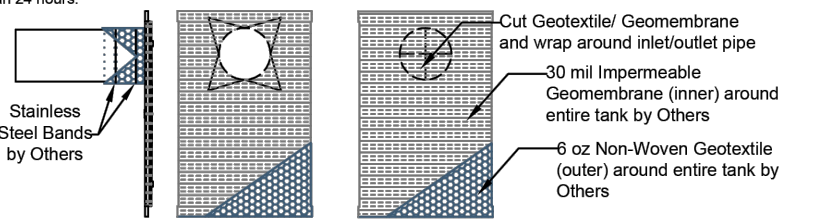


NOTE 1: The minimum width of sidewall backfill is 12" or large enough to accommodate selected compaction equipment, whichever is greater.

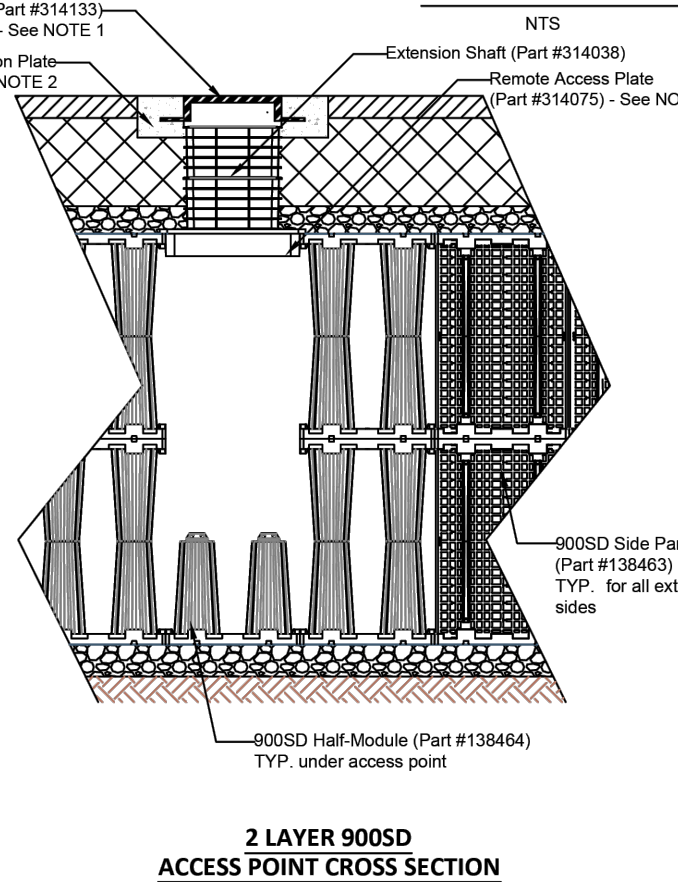
CONSTRUCTION EQUIPMENT CHART

Equipment Make (NOTE 1)	Maximum Gross Vehicle Weight (lbs)	Minimum Fill Depth over Tank (in)
Plate Compactor	1,500	6
Compact Truck Loader (NOTE 2)	2,500	6
Rubber-Tired Solid Steer (NOTE 3)	7,500	14
Low Ground Pressure Tracked Vehicles (NOTE 4)	20,000	14
Roller - Static Mode	12,000	18
Roller - Vibratory Mode	12,000	24
Dump Trucks and Pans	NOTE 5	

NOTE 1: Vehicles shall make straight runs only across tank footprints.
NOTE 2: Maximum ground pressure = 5 psi
NOTE 3: Maximum axle load = 5,200 lbs
NOTE 4: Maximum ground pressure = 7 psi
NOTE 5: Contact ACO for more information regarding dump truck and pan traffic during construction.
NOTE 6: Backfill material may be temporarily unloaded near the excavation. Material shall not be stockpiled near the excavation for longer than 24 hours.



DETAIL A - PIPE WRAP



NOTE 1: Ventilation may be crucial to reducing the pressure build up within the system. If solid access covers are used, alternative methods of ventilation are recommended.
NOTE 2: Concrete Load Plate not required for unpaved applications. Consult Engineer of Record for requirements.
NOTE 3: The Remote Access Plate is approximately the size of half of a half-module. The half-module at the top of the tank must be cut in half to accommodate the Remote Access Plate.

COVER CHART

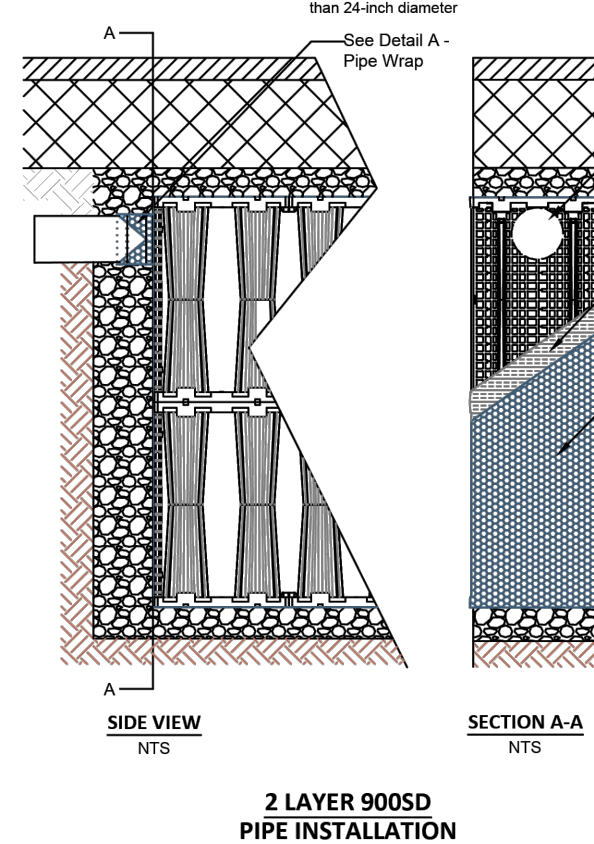
Live Loading Condition	Cover Thickness (Inches)	
	Minimum	Maximum
Non-Trafficked Areas (i.e. Landscaping)	11	72
Passenger Vehicle Parking Lot (i.e. Gross Vehicle Weight <15,000 lbs)	18	72
Passenger Vehicle Parking Lot with one weekly AASHTO HS-20 vehicle	24	72
Frequent AASHTO HS-20 Traffic	26	72

NOTE 1: Minimum Cover Thickness in non-trafficked areas is based on landscape surface with a 40 degree load distribution. In trafficked areas, Minimum Cover Thicknesses are based on an asphalt-surfaced pavement with a 30 degree load distribution.
NOTE 2: Calculations assume backfill with a minimum 32-degree angle of internal friction and a maximum density of 130 lbs per cubic foot, and a seasonal groundwater elevation at least 2 feet below the invert of the tank.

SIDE PANEL PIPE DIAMETER CHART

Inlet/Outlet Pipe Diameter	Minimum	Maximum
4 inches	24 inches (Note 2)	

NOTE 1: Cut Inlet / outlet pipe hole prior to side panel installation.
NOTE 2: Pipe holes should be aligned with the vertical centerline of the side panel. For pipes larger than 18 inches, center the pipe hole along the seam of two side panels.
NOTE 3: Contact ACO for guidance for inlet / outlet pipes larger than 24-inch diameter.



SECTION A-A

N.T.S.

DRAWN BY

A Frye

DATE

12/23/2024

CHECKED BY

J Jonke

REV.

3

STORMBRIXX STANDARD DETAILS

900SD SYSTEM - 2 LAYER - DETENTION



ACO, INC.

WEST SALES OFFICE
825 W BEECHCRAFT ST.
CASA GRANDE, AZ 85122
Tel: (888) 490-9552
Fax: (520) 421-9889

EAST SALES OFFICE
9470 PRIMEONE DRIVE
MONTROSE, OH 44060
Tel: (800) 943-4764
Fax: (440) 638-7235

SOUTHEAST SALES OFFICE
481 MUNN RD. SUITE #225
FORT MILL, SC 29715
Tel: (440) 638-7230
Fax: (803) 882-1083

www.acoswm.com

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW, IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE. THE UNIT SHALL BE INSTALLED OFFLINE.
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 mg/L INFLUENT CONCENTRATION. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.
- OR - THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH d50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.
- OR - THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS PER PREVIOUS 2013 NJDEP/NJCAT HDS PROTOCOL.

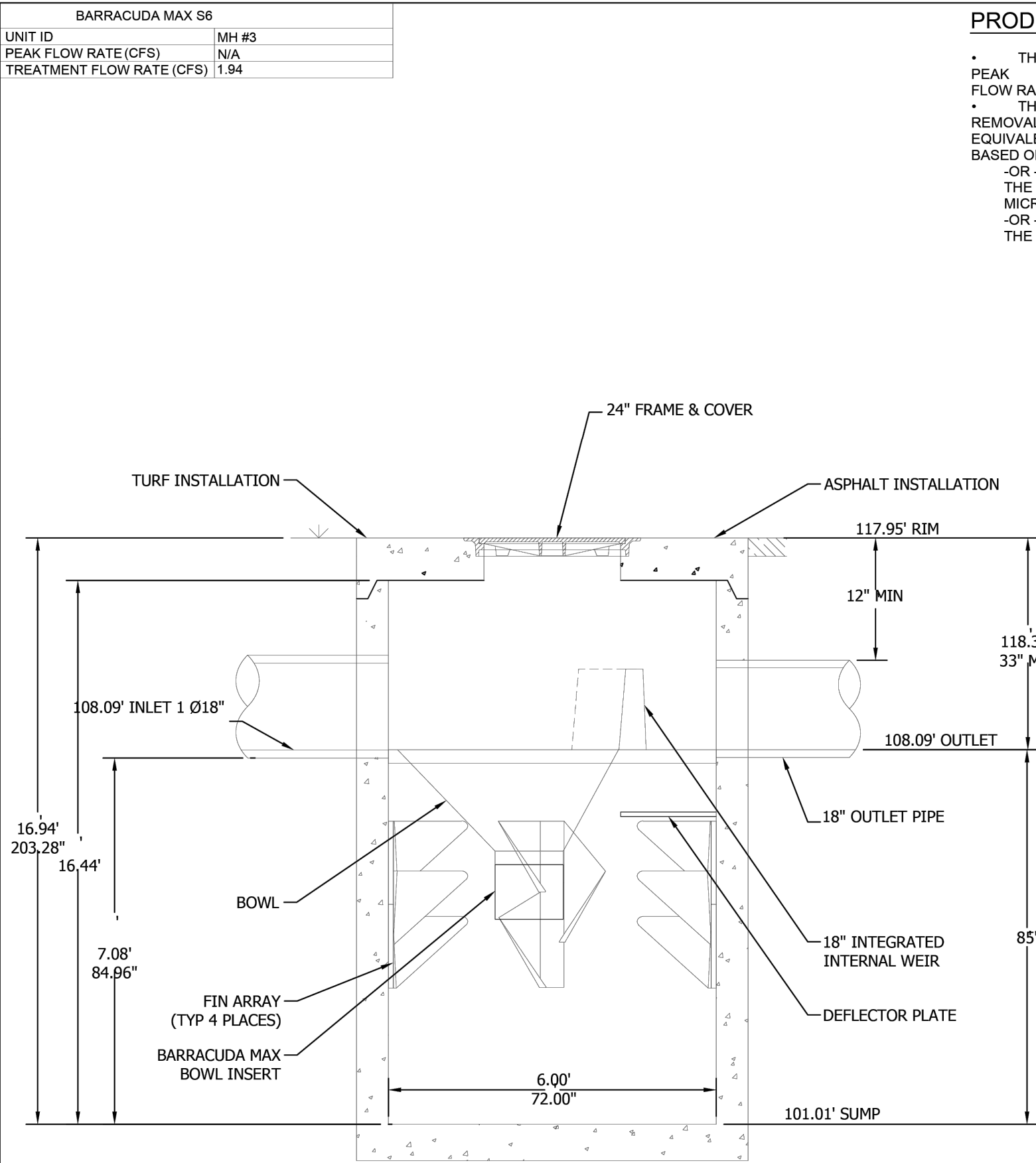
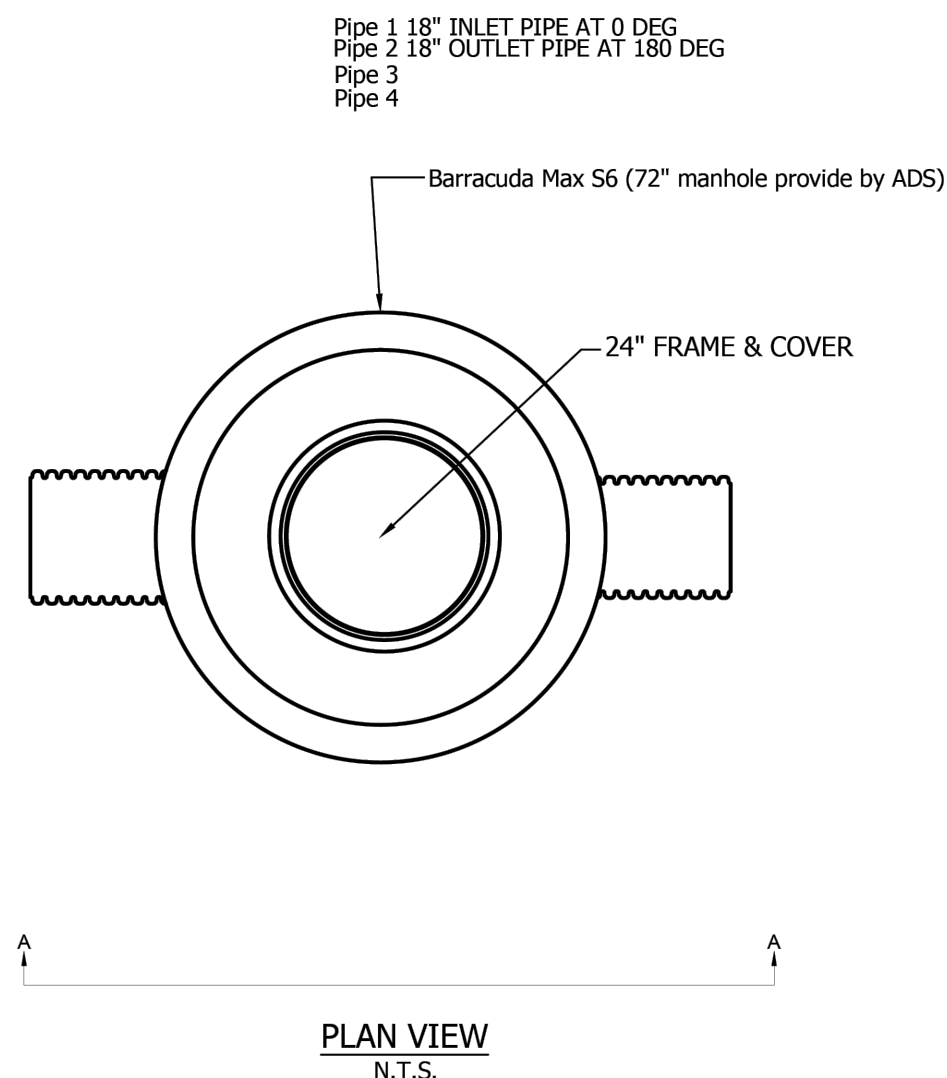
ACD KCG PH2	DRAWN: XX
DETROIT-MI	CHECKED: XX
DATE: 4/2/26	PROJECT #:

DESCRIPTION	DATE	DRAWN	CHECKED
Barracuda Max Stormwater Separator	4/2/26	XX	XX

ADDITIONAL NOTES	REVISIONS
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 SPECIFIED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.	

ADDITIONAL NOTES	REVISIONS
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 SPECIFIED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.	

SHEET	2 OF 2
-------	--------

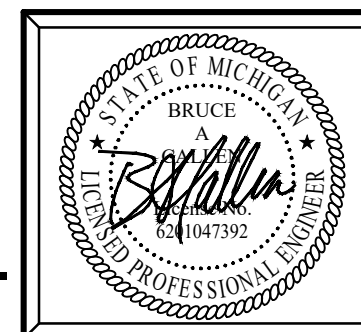
SECTION VIEW A-A
N.T.S.PLAN VIEW
N.T.S.

CK GARDENS - PHASE 2

Runoff "C" value	0.72	Existing Conditions	
Drainage Area (acres)	2.41	Bldg:	11,788 sft
		Pavement Area:	28,321 sft
		Sidewalks and Concrete	8,775 sft
Maximum Allowable Outflow (cfs/acre)	0.15	Gravel Areas	sft
Maximum Allowable Outflow (cfs)	0.36	Pond Area	sft
Storm Recurrence Interval (yrs)	100	Lawn/Natural:	56,218 sft
		Total Area:	105,102 sft
Flood Control			
$D_{100} = 50 * (Q_R / C)^{0.984}$	233.46 min.	$C_w = (0.27(.95) + 0.65(0.95) + 0.20(0.95) + 0.0(0.70) + 0.0(1.00) + 1.29(0.17)) / 2.41 = 0.53$	
$I = (38.41647 * T^{0.2082}) / (12.3258 * D_{100})^{0.8406}$	0.98 in/hr	$C_w = 0.53$	
$V_n = (60.5 * D_{100} * C^* A^*) - (60 * D_{100} * Q_c^* A^*)$	18938.82 cft	Proposed Conditions	
		Bldg:	32,611 sft
		Pavement Area:	28,161 sft
		Sidewalks and Concrete	13,090 sft
		Gravel Areas	0 sft
		Pond Area	0 sft
		Lawn/Natural:	31,240 sft
		Total Area:	105,102 sft
Infrastructure / Channel Protection			
$I_{2-yr, 24hr}$	0.10 in/hr		
2yr, 24 hr pre-dev Peak flow rate	0.125 cfs		
2yr, 24 hr post-dev Peak Flow Rate	0.110 cfs		
$V_{2-yr} = 6.897 * \Delta C^* A^*$	3084.78 cft		
Extended Detention/CP Volume			
$V_{ED} = 6.897 * C^* A^*$	11951.0 cft	$C_w = (0.75(.95) + 0.65(0.95) + 0.30(0.95) + 0.0(0.70) + 0.0(1.00) + 0.72(0.17)) / 2.41 = 0.72$	
		$C_w = 0.72$	
VED Volume < Flood Control Volume.			
Therefore use Flood Control Volume for Total Detention Volume			
Water Quality Volume			
$WQ = 65752 * (1/12)$	8758.5 cft	Achieved via extended detention	
Drain Time	48.00 Hrs		
STORMWATER STORAGE PROVIDED	22131 cft	See ADS Cut Sheets On Sheet C4.3	



Know what's
Call before you dig.



Plan Prepared By:

Bruce A. Callen, PE
Callen Engineering, Inc.
108 E. Savidge St.
Spring Lake, Michigan 49456

Tel: 616-414-5260
email: bcallen@callenengineering.com

CLEMENT KERN GARDENS - PHASE 2

A MIXED USE DEVELOPMENT
CITY OF DETROIT, MI 48216
WAYNE COUNTY, MICHIGAN

X-SECTIONS, NOTES, AND DETAILS

DRAWN BY	DATE	APR	'26
ENGINEER	DATE	APR	'26
EDIT	DATE	JUN	'26
SCALE	DRAWING	SCALE	SCALE
AS NOTED	AS NOTED	1:1	1:1
PROJECT	024 CLEMENT KERN PHASE 2		
SHEET NO.	C4.3		

DATE OF PLAN: 06-25-26

Callen Engineering, Inc.
108 East Savidge Street
Spring Lake, MI 49456
T. 616.414.5260
www.callenengineering.com

callen
civil engineers

AMERICAN COMMUNITY DEVELOPERS, INC.
20250 HARPER AVENUE
DETROIT, MI 48225
313-881-8150

NO.	DATE	BY	REVISION	ISSUANCE	REVISION
1	06-25-26	B.A.C.	REVIEW		

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS