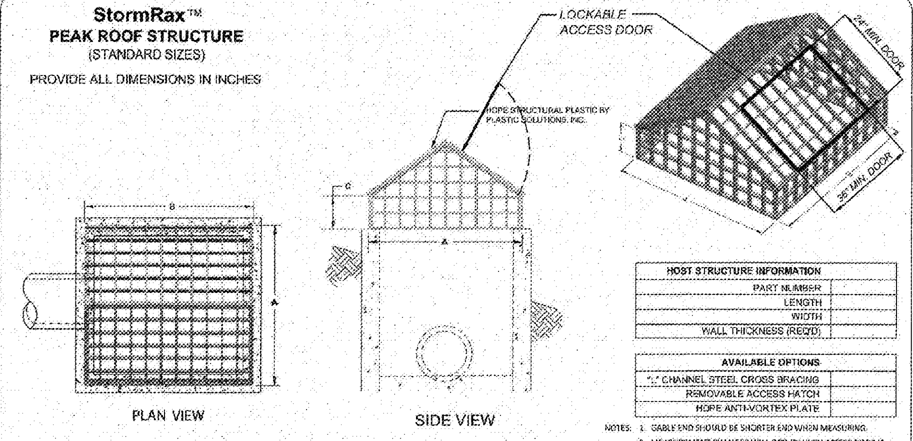
StormRax™ PEAK ROOF STRUCTURE
(STANDARD SIZES)

PROVIDE ALL DIMENSIONS IN INCHES



HOST STRUCTURE INFORMATION	
PART NUMBER	
LENGTH	
WIDTH	
WALL THICKNESS (REQ'D)	

AVAILABLE OPTIONS	
"L" CHANNEL STEEL CROSS BRACING	
REMOVABLE ACCESS HATCH	
HDPE ANTI-VORTEX PLATE	

NOTES: 1. GABLE END SHOULD BE SHORTER END WHEN MEASURING.
2. MEASUREMENT CHANGES WILL OCCUR WHEN ACCESS DOOR IS NEEDED AND LADDER PLACEMENT IS DETERMINED.

WIDTH A	29 1/8	36 13/16	45 13/16	54 11/16	68 7/16	72 9/16	81 9/16	90 9/16	99 1/2	108 3/8
CODE	[illegible]	04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
LENGTH B	32 7/8	38 1/4	43 5/8	49	54 3/8	59 3/4	65 1/8	70 1/2	76 1/2	81 7/8
CODE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HEIGHT C	11 5/16	16 7/8								
CODE	[illegible]	[illegible]								
	2 Grids High	3 Grids High								

Peak Roof: 54-11/16 " Width A; 54-3/8 " Length B; 11-5/16 " Height C

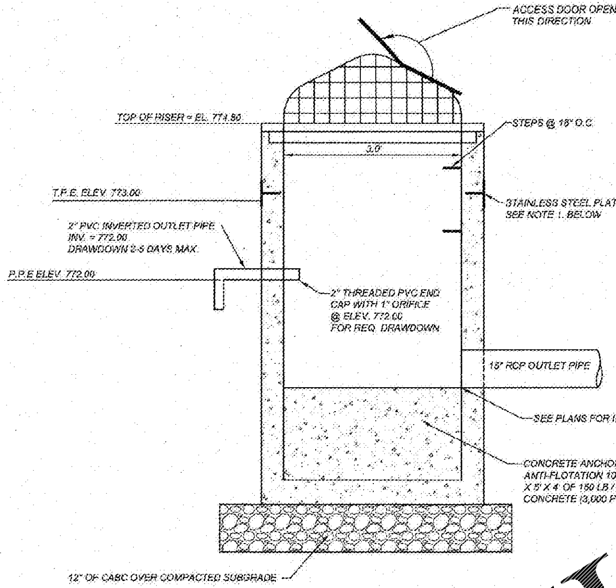
Plastic Solutions, Inc.
PO Box 4386, Winchester, VA 22604
238 McGhee Rd, Winchester, VA 22603
(877) 877-5727 phone
(540) 722-2219 fax
http://www.plastic-solution.com

CUSTOMER: | DATE: | DRAWN BY:
PROJECT: | APPD BY: | DETAIL:

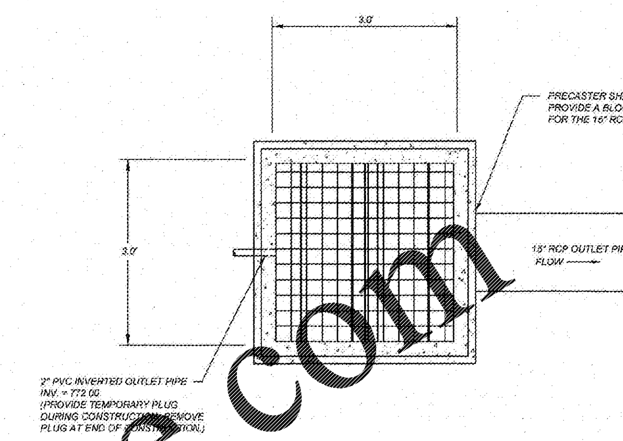
HDPE TRASH RACK WITH ACCESS HATCH

NOTES:

1. A BLACK TRASHRACK IS PREFERRED. CONTRACTOR TO REQUEST BLACK COLORING BE ADDED TO HDPE MATERIAL DURING INJECTION MOLDING PROCESS.
2. CONTRACTOR TO COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. CONTRACTOR TO COORDINATE WITH PLASTIC SOLUTIONS, INC TO PROVIDE HINGES AND PADLOCK FOR 2' X 3' ACCESS HATCH.
4. ACCESS DOOR SHALL BE LOCATED ON SAME SIDE OF RISER AS RISER STEPS.



FRONT VIEW



PLAN VIEW

NOTES:

1. TO PREVENT FLOTATION, BOLT A STAINLESS STEEL PLATE ACROSS EACH RISER JOINT IN 4 LOCATIONS AROUND THE GASKETED JOINTS. PLATES SHALL BE 4"W X 8"L X 1/4" TH. USE (4) 1/2" X 5" STAINLESS STEEL BOLTS @ EACH PLATE. USE WATERTIGHT JOINTS CONFORMING TO ASTM C1433.
2. ALL PIPE CONNECTIONS TO THE RISER SHALL BE WATER-TIGHT. USE THE WATERTIGHT JOINTS CONFORMING TO ASTM C1433. SEAL WITH EPOXY, MASTIC, AND/OR POLYURETHANE GASKETED O-RINGS AS NEEDED.
3. THE PRINCIPLE SPILLWAY PIPE IS TO BE REINFORCED CONCRETE AND MEET THE ASTM C-76, CLASS III MINIMUM STRENGTH REQUIREMENT WITH O-RING GASKETED JOINTS.

MDC 11: VEGETATION. The following criteria apply to vegetation and around the wet pond: (a) The dam structure, including front and back embandment slopes, of the pond shall be vegetated with non-clumping turf grass; trees and woody shrubs shall not be allowed; and (b) The vegetated shelf shall be planted with a minimum of three diverse species of herbaceous, native vegetaion at a minimum density of 50 plants per 200 square feet of shelf area. See Sheet C-8 for Details)

PERMANENT OUTLET STRUCTURE
N.T.S.

STORMWATER WET POND CONSTRUCTION SPECIFICATIONS

GENARAL NOTES

1. PRIOR TO CONSTRUCTION, THE ONSITE GEOTECHNICAL ENGINEER SHALL VERIFY THE SUITABILITY OF THE PROPOSED FILL FOR USE IN THE BERM EMBANKMENT AND KEY TRENCH.
2. THE CONTRACTOR SHALL REFER TO THE LANDSCAPE PLAN FOR THE PERMANENT PLANTING PLAN/SCHEDULE. PLEASE NOTE THAT NO TREES/SHRUBS OF ANY TYPE MAY BE PLANTED ON THE PROPOSED BERM EMBANKMENT (FILL AREAS).
3. DURING THE INITIAL STAGES OF CONSTRUCTION, THE WET POND MAY BE USED AS A SEDIMENT BASIN FOR EROSION CONTROL PURPOSES. THE CONTRACTOR SHALL FOLLOW THE GENERAL CONTRUCTION SEQUENCE BELOW:

A. THE CONTRACTOR SHALL CONSTRUCT THE ENTIRE FACILITY (PERMANENT OUTLET STRUCTURE, BERM, KEY TRENCH, ETC.) WITH THE EXCEPTION OF THE INTERIOR WETLAND GRADING. THE INTERIOR GRADING WILL BE CONSTRUCTED ONCE THE EROSION CONTROL PHASE IS COMPLETE.

B. THE RISER AND OUTLET PIPE SHALL BE CONSTRUCTED.

C. ONCE THE UPSTREAM DRAINAGE AREA IS STABILIZED AND THE EROSION CONTROL INSPECTOR APPROVES THE REMOVAL OF THE SEDIMENT BASIN, THE CONTRACTOR SHALL CLEAN OUT THE BASIN. ALL SEDIMENT, TRASH, ETC. SHALL BE DISPOSED OF PROPERLY (I.E. - PLACED IN A LANDFILL) AND NOT STOCKPILED IN AN AREA WHERE WATER QUALITY COULD BE ADVERSELY AFFECTED.

D. ONCE THE BASIN IS CLEANED OUT, THE CONTRACTOR SHALL CONSTRUCT THE INTERIOR WET POND GRADING SHOWN ON THE GRADING PLAN.

E. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ONSITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE WETLAND PLANTS. IF THE CONTRACTOR PLANTS THE PROPOSED VEGETATION PRIOR TO AN AS-BUILT SURVEY (AND SUBSEQUENT APPROVAL), ANY CHANGES TO THE GRADING / RE-PLANTING OF PLANTS WILL BE AT THE CONTRACTOR'S EXPENSE.

F. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED WETLAND PLANTS SHOWN ON THE LANDSCAPE PLAN FOR THIS FACILITY.

G. AFTER COMPLETION OF THE PLANTING, THE LANDSCAPE CONTRACTOR SHALL PROVIDE A LETTER TO THE ENGINEER CERTIFYING THAT THE PLANTS HAVE BEEN INSTALLED PER THE APPROVED WET POND PLANTING PLAN.

4. IF THE INFILTRATION RATE AT THE BOTTOM OF THE FACILITY IS GREATER THAN 0.01 IN/HR, IN ORDER TO HELP MAINTAIN A PERMANENT POOL, THE CONTRACTOR MAY NEED TO INSTALL A CLAY LAYER OR A PERMANENT GEOSYNTHETIC CLAY LINER A MINIMUM OF 1-FOOT BELOW THE LOWEST GRADE OR 1-FOOT BELOW THE BOTTOM ELEVATION OF THE ROOT BALL FOR THE PROPOSED PLANTINGS (WHICHEVER IS GREATER). IF A GEOSYNTHETIC LINER IS CHOSEN, THE LINER SHALL BE BENTOMAT CLAY CETCO LINING TECHNOLOGIES OR ENGINEER APPROVED EQUIVALENT.
5. THE GRADES SHOWN ON THE GRADING PLAN ARE FINISHED GRADES. IF THE EXISTING SOIL LAYERS IN THE PROPOSED WETLAND (AFTER EXCAVATION) ARE NOT DETERMINED SUITABLE BY A LANDSCAPE PROFESSIONAL FOR THE FUTURE WETLAND PLANTINGS, THE CONTRACTOR SHALL OVEREXCAVATE THE INTERIOR PORTIONS OF THE WET POND (FROM THE NORMAL WATER SURFACE ELEVATION TO THE BOTTOM) BY 1-FOOT. THE CONTRACTOR SHALL THEN BRING THE WETLAND AREA TO THE FINISHED GRADES USING THE TOPSOIL STOCKPILED ONSITE (AMENDED AS DIRECTED BY THE LANDSCAPE PROFESSIONAL). THE OVER EXCAVATION WILL ALLOW FOR BETTER PLANTING CONDITIONS FOR THE PROPOSED WETLAND PLANTS.
6. ANY REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) ON THE BERM EMBANKMENT ONCE FINAL GRADES (AS SHOWN ON THE GRADING PLAN) HAVE BEEN ESTABLISHED WITH COMPACTED FILL. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE THE TOP 2"-3" OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3"-4" ON THE BERM EMBANKMENT.
7. AT COMPLETION, CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM FOREBAY AND STORM PIPES, JET OUT STORM PIPES.
8. CLEAN OUT BASIN PRIOR TO CONVERTING TO SCM.

BERM AND SOIL COMPACTION SPECIFICATIONS

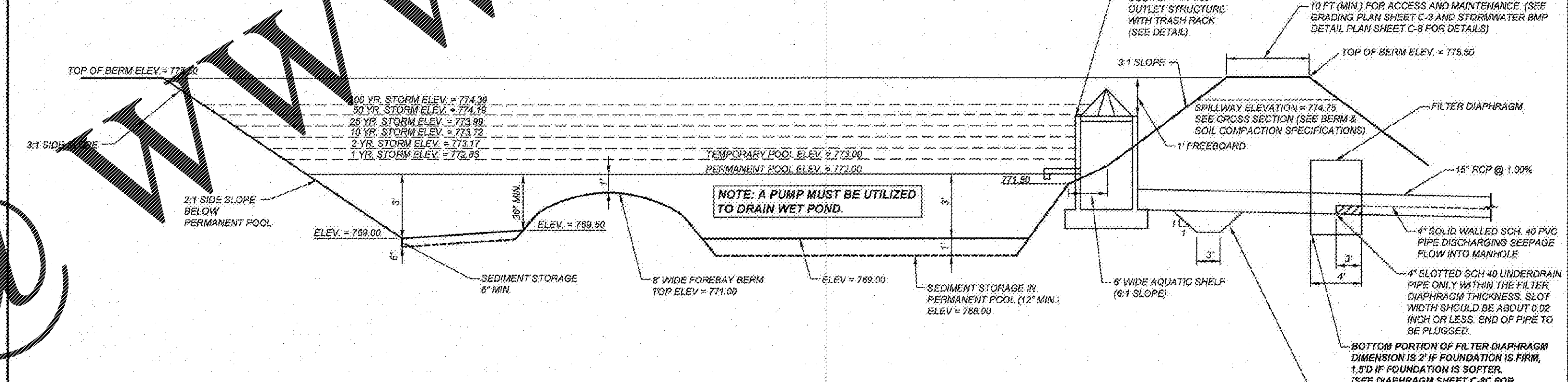
1. ALL FILL MATERIALS TO BE USED FOR THE BERM EMBANKMENT SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6", AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE BERM EMBANKMENT AND KEY TRENCH: ML AND CL. IF OTHER SOIL TYPES ARE DETERMINED TO BE SUITABLE BY THE ONSITE GEOTECHNICAL ENGINEER, DOCUMENTATION SHALL BE RETAINED FOR FUTURE AS-BUILT SUBMITTALS.
2. FILL PLACEMENT SHALL NOT EXCEED A MAXIMUM 8" LIFT (UNCOMPACTED). EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT.
3. ALL FILL SOILS USED IN THE EMBANKMENT / KEY TRENCH CONSTRUCTION SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM-698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF ITS OPTIMUM MOISTURE CONTENT. COMPACTION TESTS SHALL BE PERFORMED BY THE ONSITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT BERMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH REPORTS TO VERIFY THAT THE BERM EMBANKMENT MEETS THE SPECIFIED COMPACTION REQUIREMENTS. COMPACTION REPORTS WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS STORMWATER FACILITY. THEREFORE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE COMPACTION TESTING AND TO ENSURE COMPACTION TESTS ARE PROPERLY PERFORMED DURING CONSTRUCTION.
5. TESTING OF THE NEW FILL MATERIALS SHALL BE PERFORMED TO VERIFY THAT THE RECOMMENDED LEVEL OF COMPACTION IS ACHIEVED DURING CONSTRUCTION. THEREFORE, ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FEET OF AREA FOR EVERY LIFT OF FILL OR AS DIRECTED BY THE ONSITE GEOTECHNICAL ENGINEER.
6. TESTING WILL BE REQUIRED ALONG THE 15" OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FOOT OF FILL OR AS DIRECTED BY THE ONSITE GEOTECHNICAL ENGINEER.

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

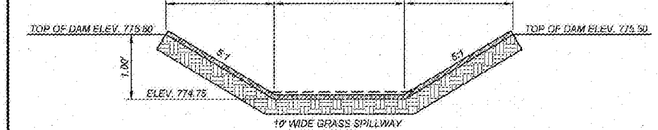
1. THE OUTLET BARREL SHALL BE CLASS III RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE CONFINED O-RING RUBBER GASKET JOINTS MEETING ASTM C443-LATEST. THE PIPE JOINTS SHALL BE TYPE R-4.
2. THE STRUCTURAL DESIGN FOR THE RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS.
3. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16" ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO OUTLET STRUCTURE DETAIL FOR LOCATION OF THE RISER STEPS.
4. CONSTRUCT CONCRETE ANTIFLOTATION ANCHOR PER RISER DETAIL.
5. STEEL REINFORCEMENT

THE RISER BOX JOINT DESIGN SHALL CONFORM TO ASTM C-478. THE JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-990. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT..

6. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED WITHIN THE TRASH RACK (SEE DETAIL FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. CONTRACTOR SHALL ALSO PROVIDE A CHAIN AND LOCK FOR SECURING THE ACCESS HATCH.
7. ALL POURED CONCRETE SHALL BE MINIMUM 3000 PSI (28 DAY) UNLESS OTHERWISE NOTED.
8. GEOTEXTILE FABRIC FOR THE OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC)



WET POND
N.T.S.



PERMANENT STORMWATER POND EMERGENCY SPILLWAY CROSS SECTION
N.T.S.

MDC 5D (MINIMUM DESIGN CRITERIA) -
IF SEDIMENT ACCUMULATES IN THE FOREBAY IN A MANNER THAT REDUCES ITS DEPTH TO LESS THAN 75% OF ITS ORIGINAL DESIGN DEPTH, THEN THE FOREBAY SHALL BE CLEANED OUT AND RETURNED TO THE ORIGINAL DESIGN CONDITION.

MDC 5: FOREBAY. A forebay that meets the following specifications shall be included: (a) Forebay volume shall be 15 to 20 percent of the volume in the main pool; (b) The forebay entrance shall be deeper than the forebay exit; (c) The water flowing over or through the structure that separates the forebay from the main pool shall flow at a nonerosive velocity; and (d) if sediment accumulates in the forebay in a manner that reduces its depth to less than 75 percent of its design depth, then the forebay shall be cleaned out and returned to its design state.

MDC 6: VEGETATED SHELF. The main pool shall be equipped with a vegetative shelf around its perimeter. The minimum width of the vegetated shelf shall be six feet and the slope shall be no steeper than 6:1 (horizontal to vertical).

COMMERCIAL SITE DESIGN, PLLC REGISTERED CORPORATION P-0266 RALEIGH, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25411 JEREMY J. BECKET 05/14/19

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(919) 848-6121, FAX: (919) 848-3741
WWW.CSITEDESIGN.COM

CLIENT:
GEMCAP DEVELOPMENT
210 WEST FOURTH STREET
SUITE 200
WINSTON-SALEM, NC 27101

RETAIL DEVELOPMENT
4809 COUNTRY CLUB ROAD
WINSTON-SALEM, NORTH CAROLINA

STORM WATER BMP DETAILS

PROJECT NO.	GEM-1808
FILENAME:	DTL5
DRAWN BY:	RCN
SCALE:	1" = 20'
DATE:	01-17-19
SHEET NO.	C-9

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