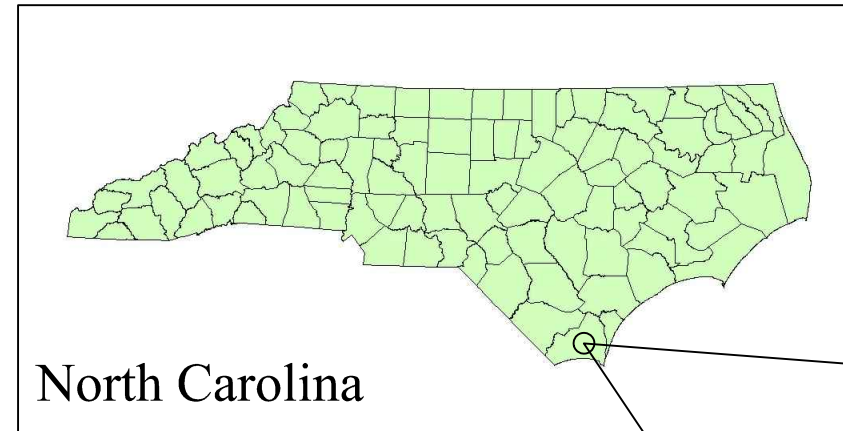


TIDAL CREEK BIORETENTION CELL RETROFIT

5329 Oleander Drive Wilmington, NC
28403

PREPARED BY:
Matt Braswell
Matt Daniels
Michael House
Caitlin McCombs
Alex Rosa



North Carolina



Sheet Index:

- Sheet 1: Cover and Sheet Index
- Sheet 2: Existing Site Conditions
- Sheet 3: Design 1
- Sheet 4: Design 2
- Sheet 5: Construction Details
- Sheet 6: Outlet and Erosion Control Details
- Sheet 7: Materials and Construction Notes



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COVER/SHEET INDEX

BAE SENIOR DESIGN
Reviewed By: JLP

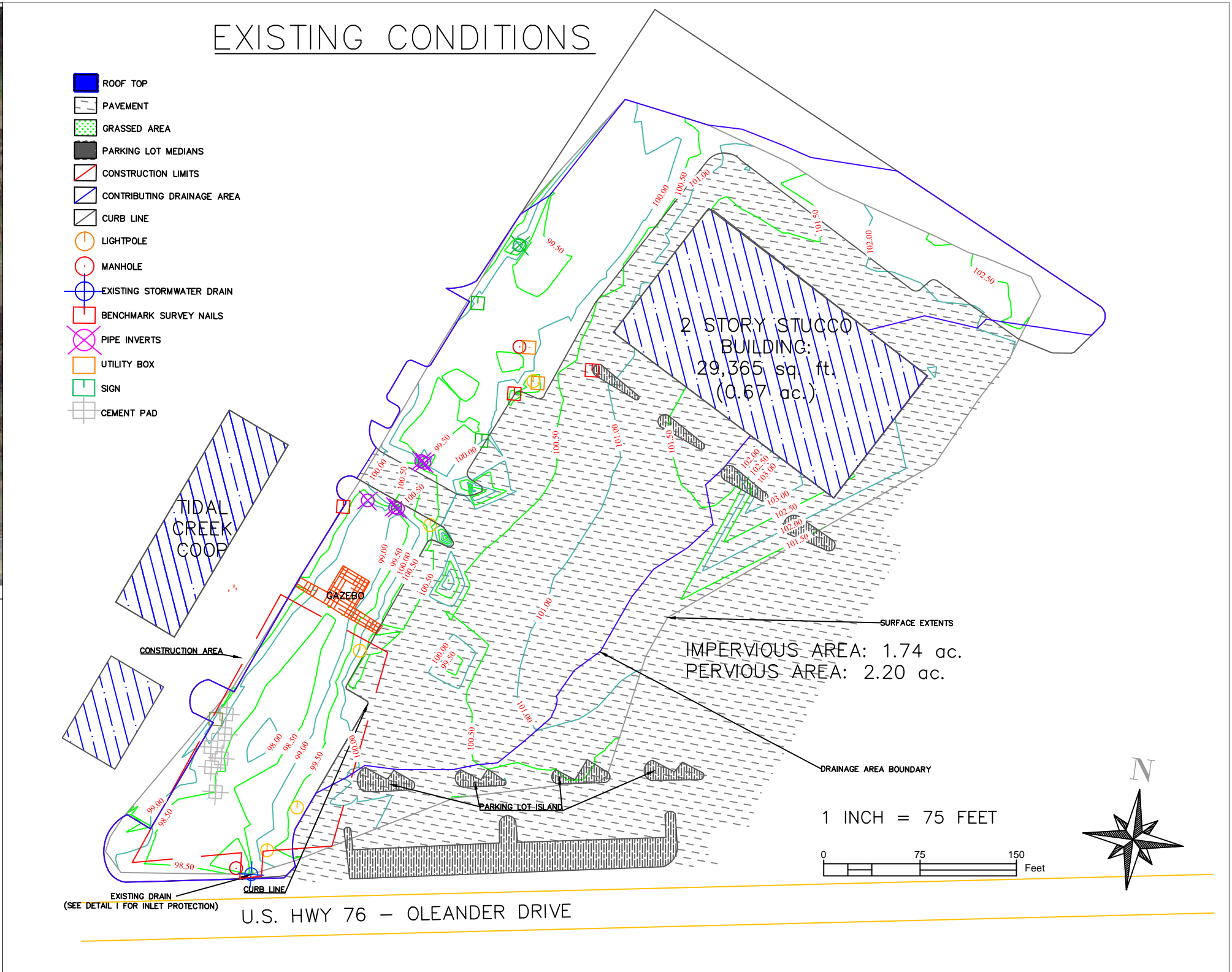
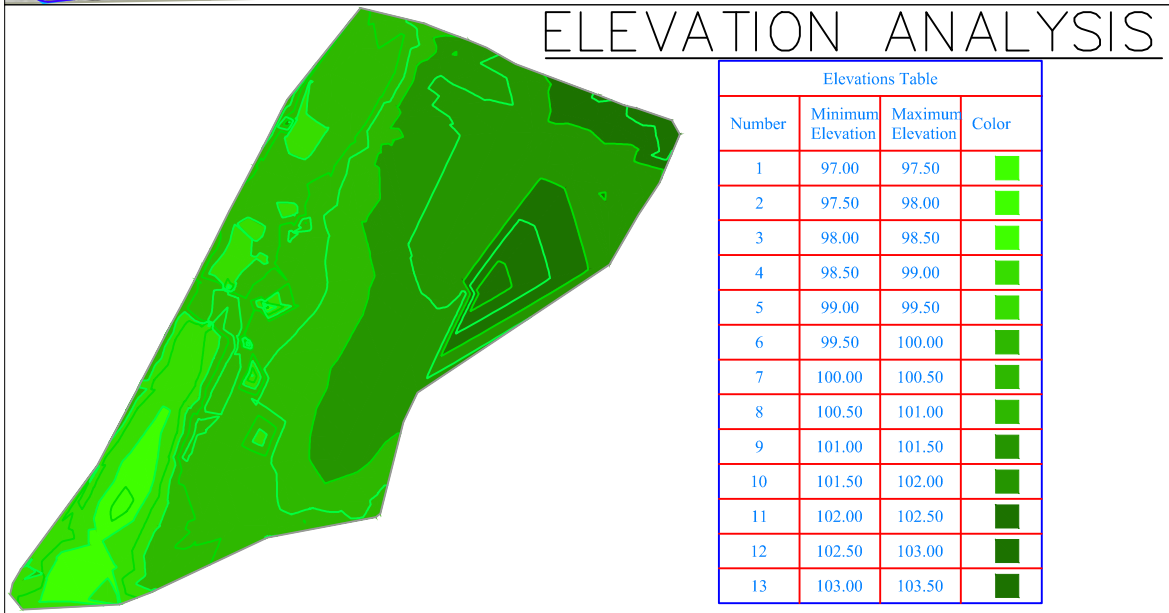
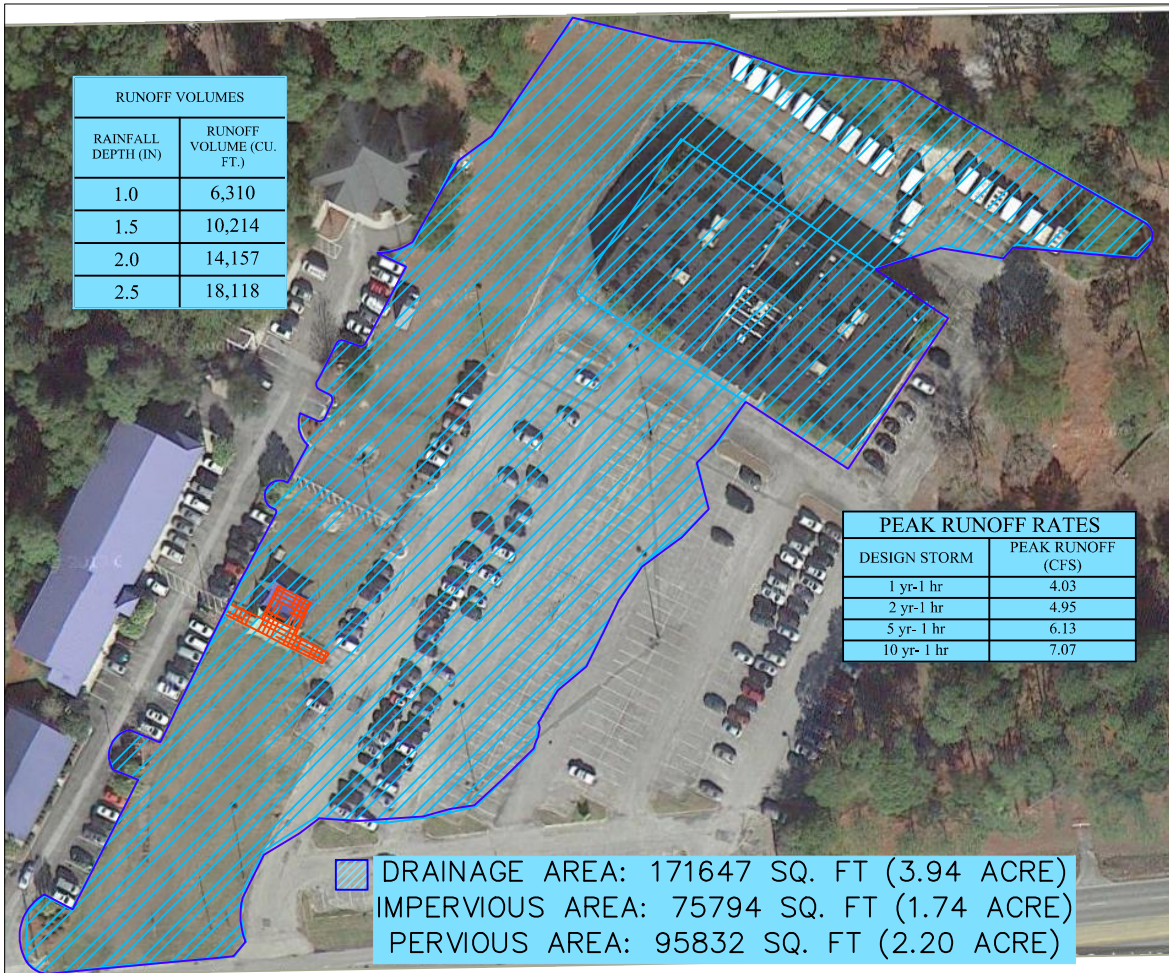
Date:
December 2, 2013

Scale:
AS NOTED

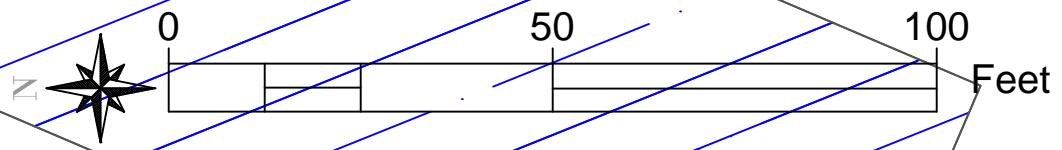
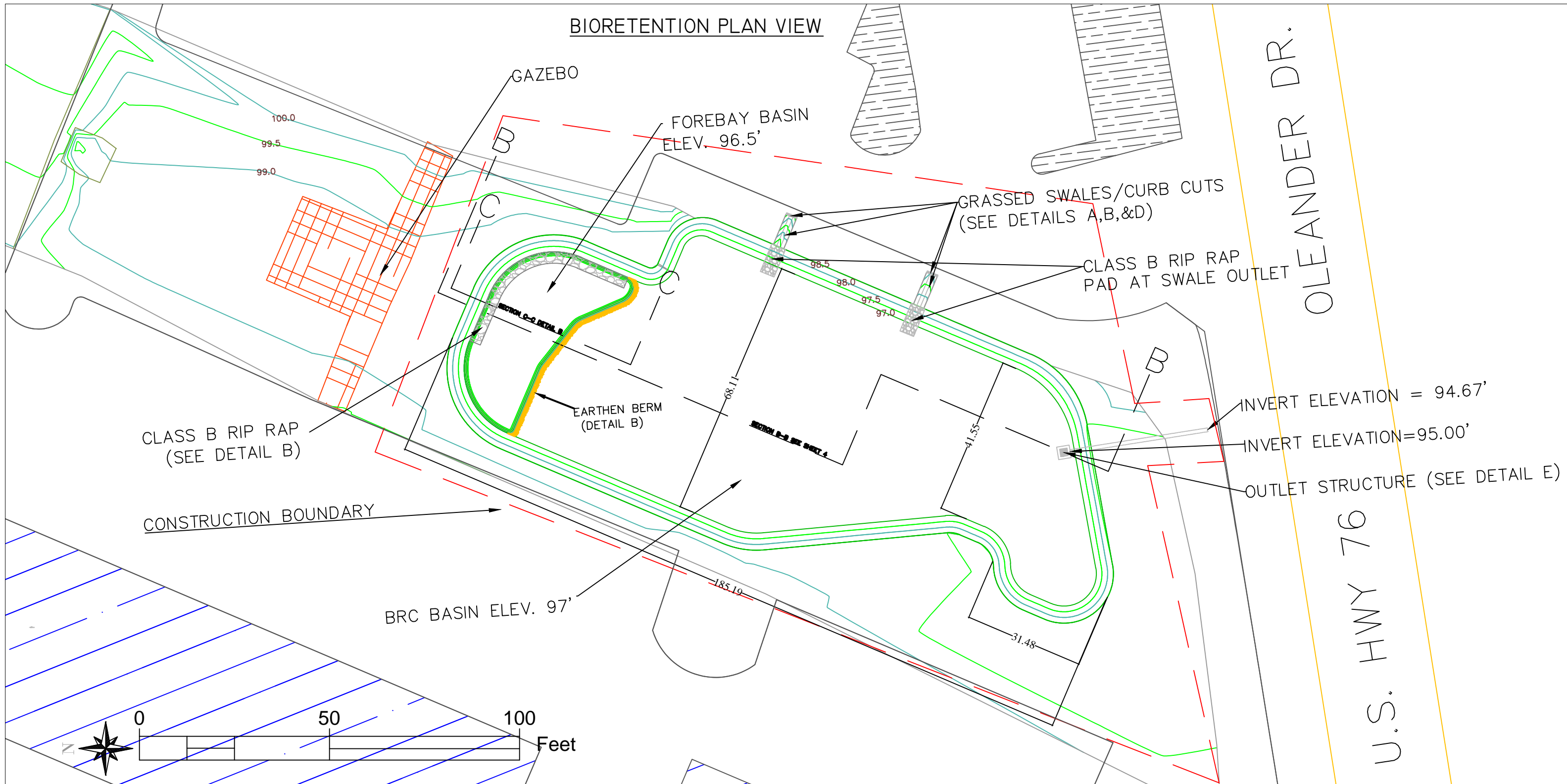
TIDAL CREEK BIORETENTION CELL RETROFIT

5329 Oleander Dr.
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Page
1 of 7



BIORETENTION PLAN VIEW



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BRC PLAN VIEW

BAE SENIOR DESIGN
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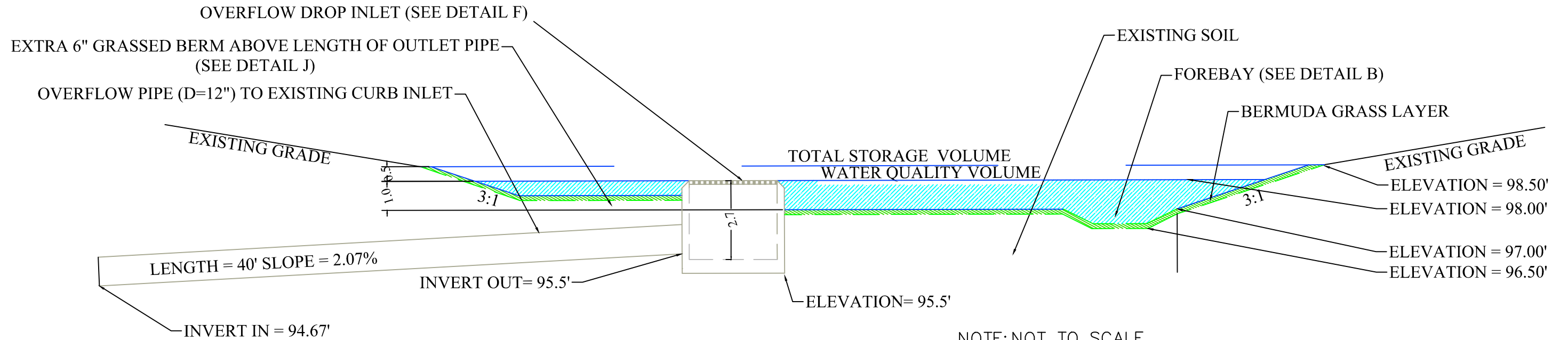
Date:
 December 2, 2013

Scale:
 AS NOTED

TIDAL CREEK BIORETENTION CELL RETROFIT

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SECTION B - B



BRC STAGE-STORAGE

ELEVATION CONTOUR (FT.)	SURFACE AREA (SQ. FT.)
96.5	918.25
97 (TOP FOREBAY)	1,056.26
97 (BOTTOM OF CELL)	9,018.93
97.5	9,704.58
98	10,405.75
98.5	11,147.82

BRC DESIGN SUMMARY

CONTRIBUTING DRAINAGE AREA	171,626 SF
SURFACE AREA	11,148 SF
SURFACE STORAGE	15590.5 CF
DESIGN RAINFALL EVENT	1.5 IN
EARTHWORK CUT VOLUME	633 CU. YD.
EARTHWORK FILL VOLUME	5 CU. YD.
EARTHWORK NET VOLUME	628 CU. YD.

WATER QUALITY VOLUME	10,202 CU. FT.
TOTAL STORAGE VOLUME	15,590 CU. FT.

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BRC PROFILE VIEW

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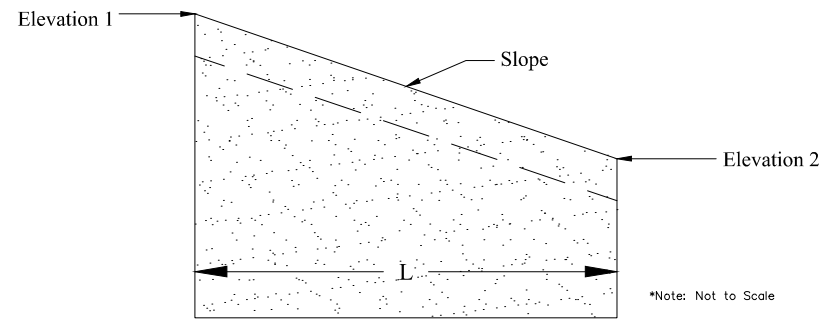
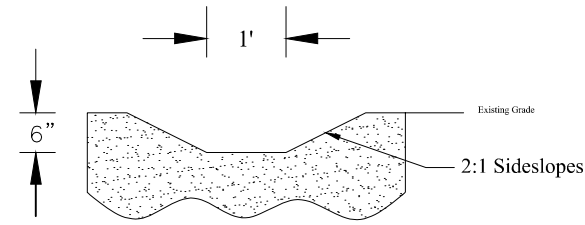
TIDAL CREEK BIORETENTION CELL RETROFIT

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DETAIL A

Swale Profile Views

Swale Cross Sections

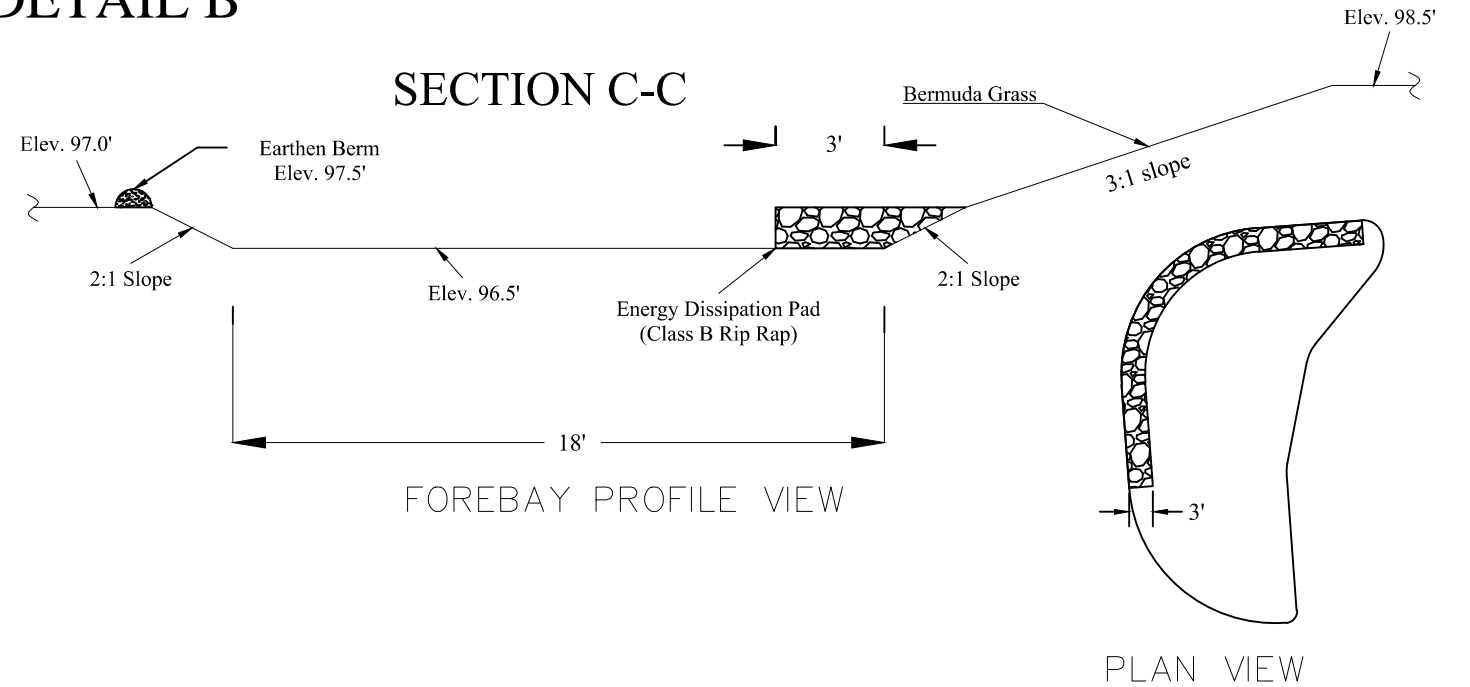


Swale Dimensions

Swale Description	Elevation 1 (ft)	Elevation 2 (ft)	L (ft)	Slope (%)
North Swale	100.7	98.5	8.8	25
South Swale	100.5	98.5	9	22

DETAIL B

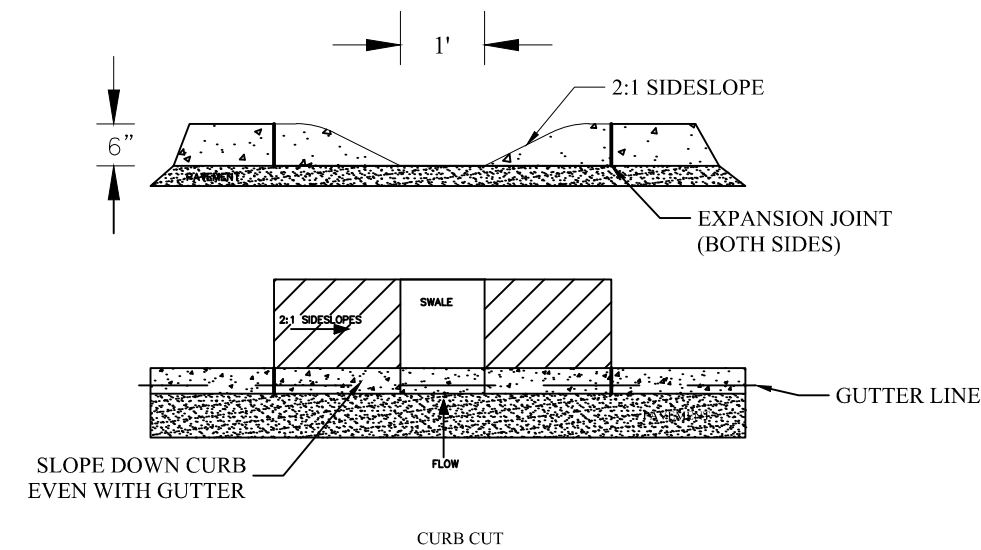
SECTION C-C



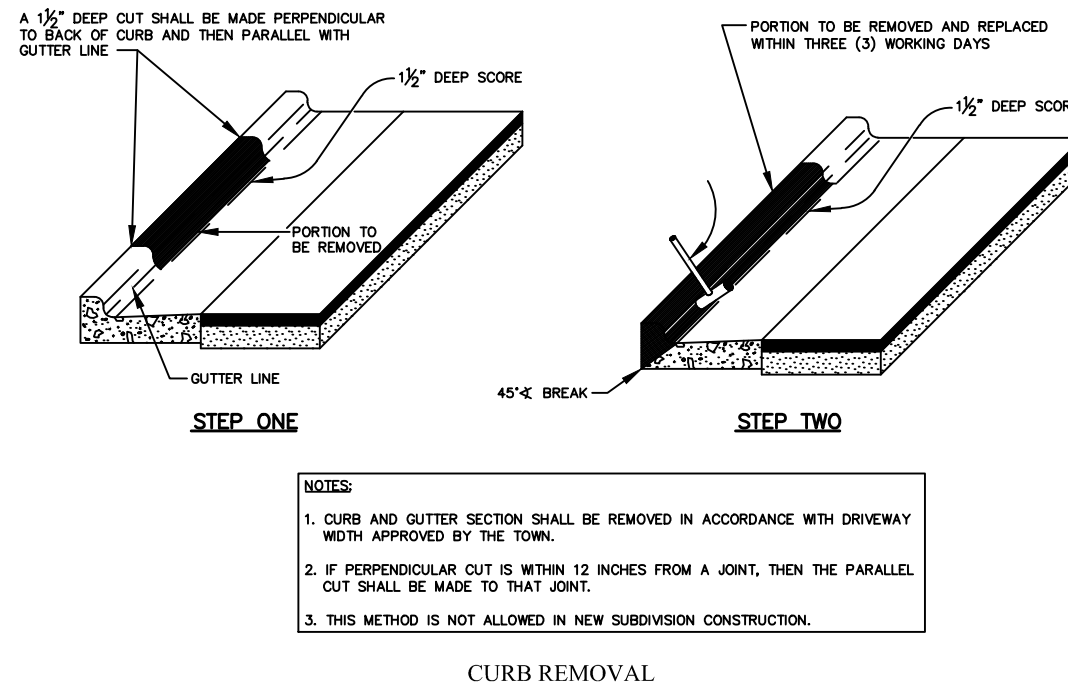
FOREBAY PROFILE VIEW

PLAN VIEW

DETAIL C



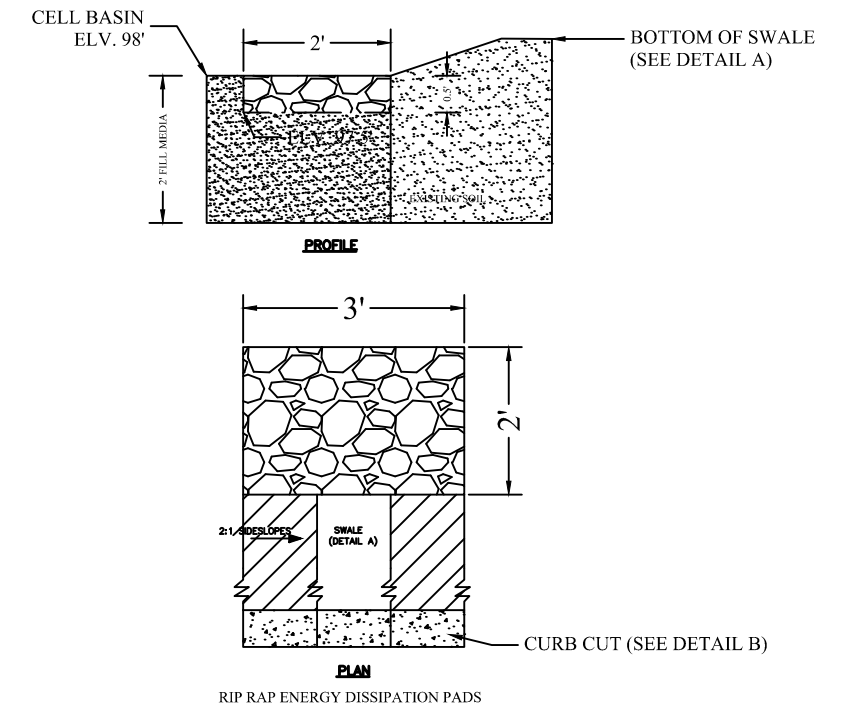
DETAIL D



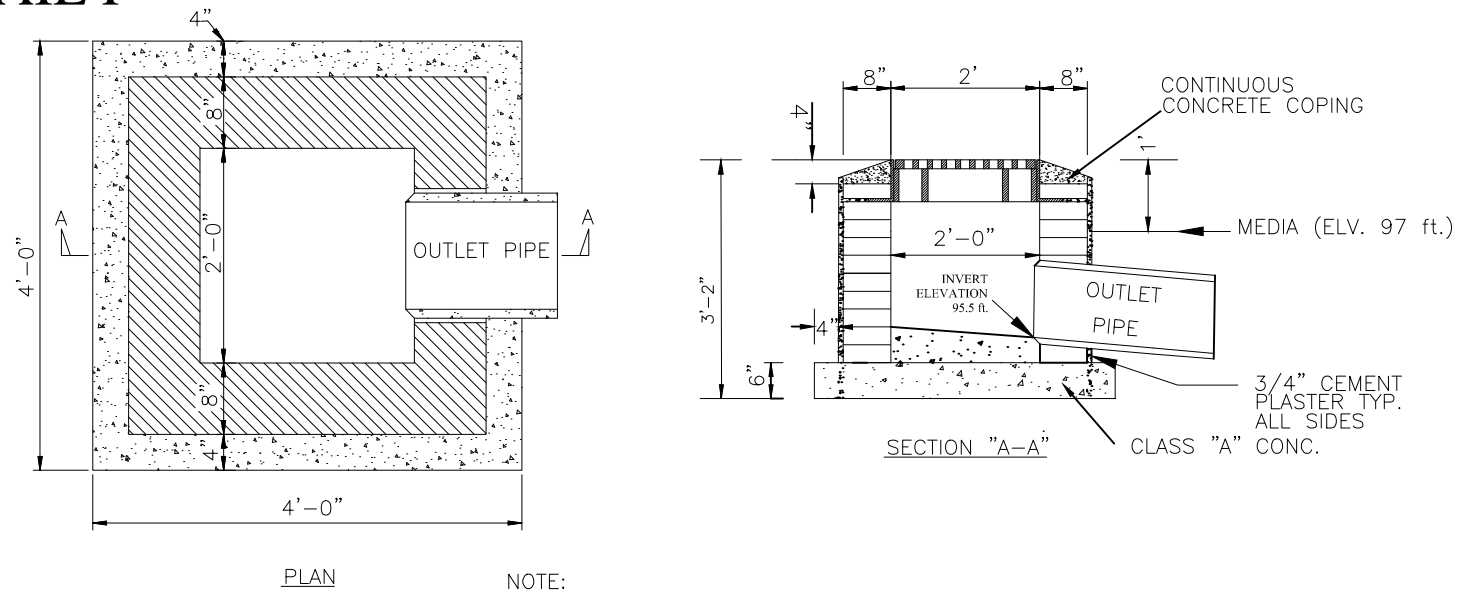
NOTES:

1. CURB AND GUTTER SECTION SHALL BE REMOVED IN ACCORDANCE WITH DRIVEWAY WIDTH APPROVED BY THE TOWN.
2. IF PERPENDICULAR CUT IS WITHIN 12 INCHES FROM A JOINT, THEN THE PARALLEL CUT SHALL BE MADE TO THAT JOINT.
3. THIS METHOD IS NOT ALLOWED IN NEW SUBDIVISION CONSTRUCTION.

DETAIL E



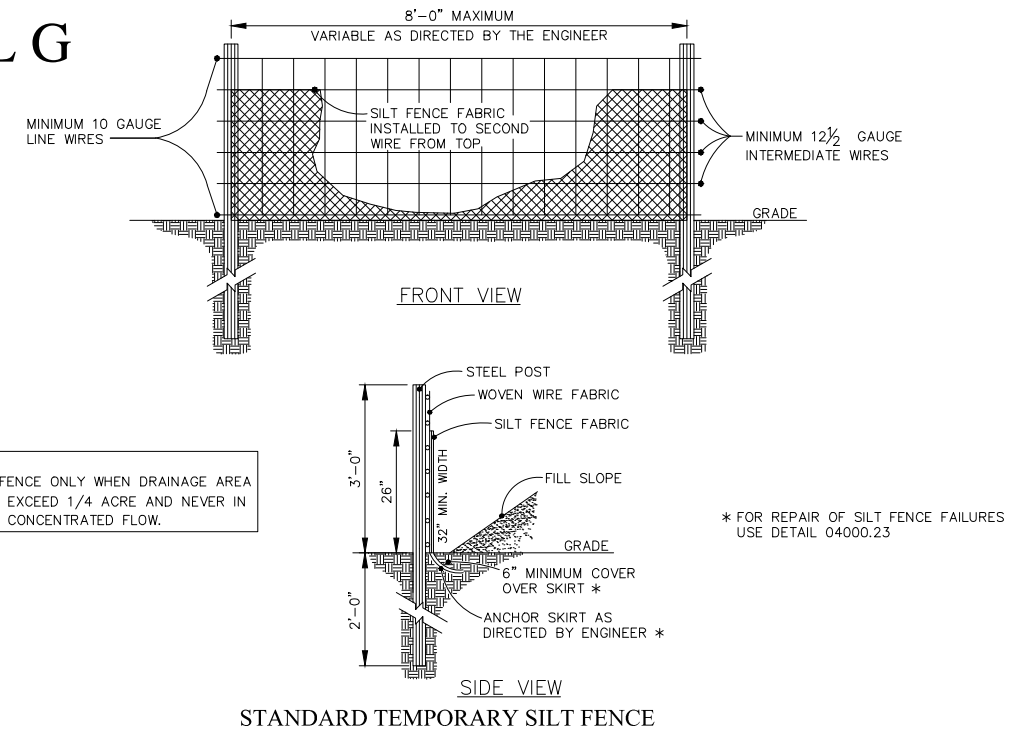
DETAIL F



NOTE:
FRAME AND GRATE TO BE STANDARD CITY OF WILMINGTON CAST IRON FRAME AND GRATE PER SD 14-04

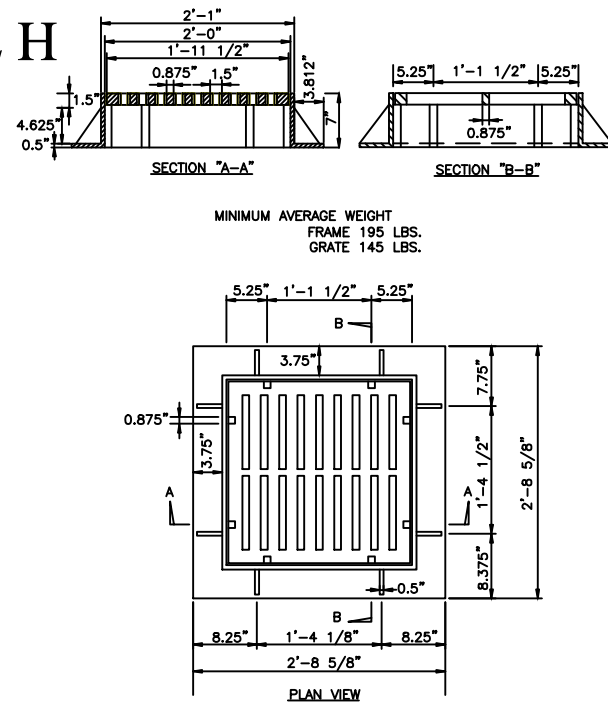
OUTLET STRUCTURE

DETAIL G



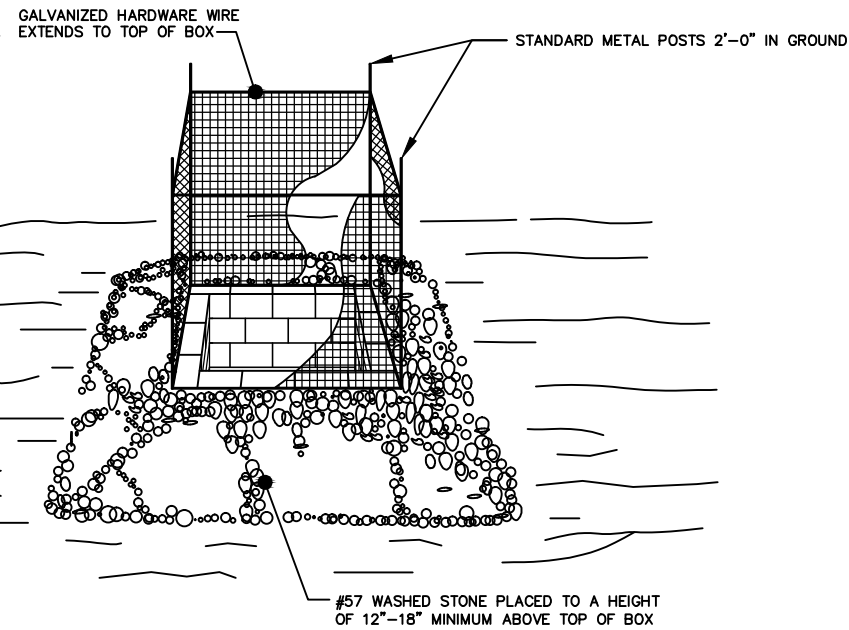
STANDARD TEMPORARY SILT FENCE

DETAIL H



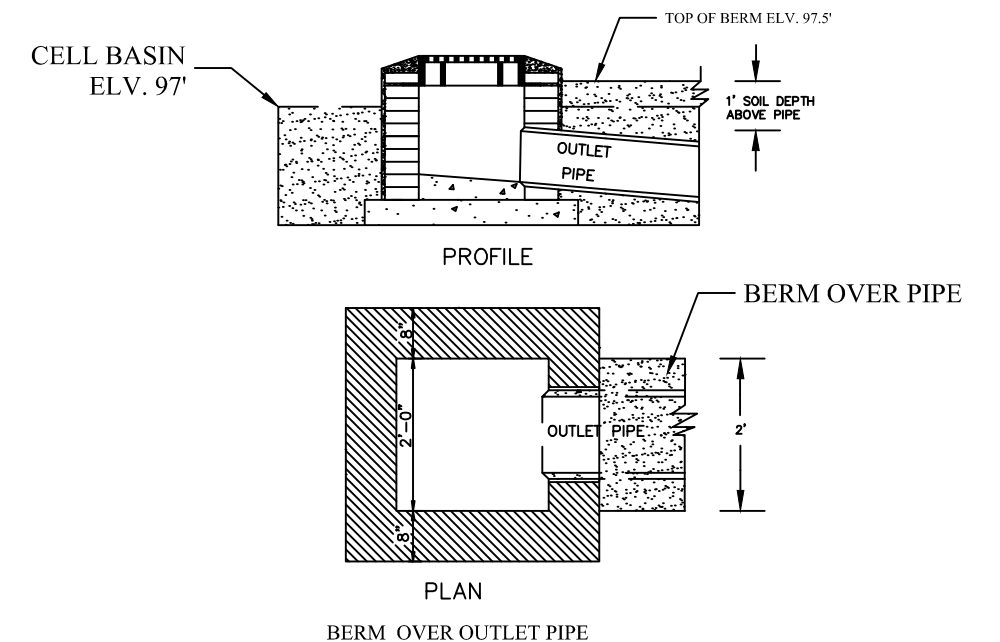
THE CITY OF WILMINGTON SD 14-04 GRILL BASIN CASTING

DETAIL I



STANDARD CATCH BASIN/YARD INLET PROTECTION

DETAIL J



BERM OVER OUTLET PIPE

MATERIALS AND COST ESTIMATE

ITEM	UNIT COST	UNIT	QUANTITY	COST	SOURCE
CLASS B RIP-RAP	\$42 / TON	1 TON = 30 SQ. FT.	3.5	\$147.00	WADE MOORE EQUIPMENT COMPANY LOCATION: 934 E. RIVER RD, LOUISBURG, NC 27549 PHONE: (919) 496-3794
SOD	\$90 / PALLET	1 Pallet = 500 SQ. FT.	24	\$2,560.00	OAKLAND PLANTATION LOCATION: 120 BERMUDA DRIVE, COUNCIL, NC 28434 PHONE: 910-669-2991
GROUND STAPLES	\$10.70 / PACK	10 STAPLES	BASIN SLOPES=2219	\$246.10	HOME DEPOT LOCATION: 210 EASTWOOD RD, WILMINGTON, NC 28403 PHONE: 910-790-3770
FRAME & GRATE	\$171	1 GRATE	1	\$171.00	EAST JORDAN IRON WORKS, INC LOCATION: 1006 INVESTMENT BLVD, APEX, NC 27502 PHONE: 919-362-7744
OUTLET STRUCTURE	\$1,000	--	1	\$1,000.00	LINDSAY CONCRETE LOCATION: 2675 CAPITAL BLVD, RALEIGH, NC 27604 PHONE: 919-494-7600
PVC	\$9.00	1 lin. ft.	40	\$360.00	N PRODUCTS HRH CONSTRUCTION LOCATION: 475 CARVER DR, WILMINGTON, NC 28403 PHONE: 910-762-6515
TOTAL ESTIMATED:				\$4,484.10	

CONSTRUCTION NOTES:

GENERAL:

1. THE CONTRACTOR SHOULD CALL FOR A UTILITY LOCATE BEFORE BEGINNING ANY DIGGING. THE CONTRACTOR SHOULD NOT ASSUME THAT UTILITIES ARE LOCATED WHERE SPECIFIED IN THESE DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES THAT OCCUR DUE TO UNDERGROUND AND ABOVEGROUND UTILITIES
2. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR ALL LEGAL AND SAFETY REQUIREMENTS REGARDING OVERHEAD ELECTRICAL LINES.
3. SILT FENCING MUST BE PLACED AS SHOWN IN DETAIL G.
4. GRATES AND DRAINAGE INLETS SERVICING THE CATCHMENTS WHERE EXCAVATION IS OCCURRING MUST BE PROTECTED AS SHOWN IN DETAILS I.
5. ALL EQUIPMENT USED IN THE CONSTRUCTION MUST NOT DAMAGE THE EXISTING ROAD SURFACE AND SIDEWALKS EXCEPT FOR THE PROPOSED CURB CUTS (SEE DETAILS C AND D). THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL EXCESS EXCAVATED MATERIAL.
6. CURB CUTS ARE TO BE MADE AS INDICATED IN DETAILS C AND D. ANY EXTRA CURB DAMAGE DURING THE CURB CUTTING PROCESS IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL EXCAVATED MATERIAL.
8. THE CONTRACTOR IS RESPONSIBLE FOR PLACING BERMUDA SOD ON ANY DISTURBED AREAS THAT WERE PREVIOUSLY COVERED WITH TURF GRASS INCLUDING THE INTERIOR OF THE BIORETENTION AREA ITSELF.
9. THE BIORETENTION CROSS-SECTION IS TO BE CONSTRUCTED AS IN SECTIONS A-A and B-B. PARTICLE SIZE DENSITY TESTS AND EXTERNAL SOIL TESTS HAVE DETERMINED THE IN-SITU SOIL INFILTRATION RATE TO BE AROUND 5 INCHES/HOUR. THIS IS SUFFICIENT FOR THE CELL AND NO SUPPLEMENTAL MEDIA IS REQUIRED.
10. A 2' X 3' CLASS B RIP RAP SPLASH PAD IS TO BE CONSTRUCTED AT THE ENTRANCE OF EACH SWALE INTO THE BIORETENTION AREA (SEE DETAIL E).
11. THE UNIVERSITY OF NORTH CAROLINA AT WILMINGTON AND THE CITY OF WILMINGTON ARE RESPONSIBLE FOR PROCUREMENT OF THE PLANTS.
12. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL SEDIMENT AND EROSION CONTROL MEASURES USED DURING CONSTRUCTION (SEE DETAILS G AND I).
13. SWALE CUTS ARE TO BE RE-SEEDED WITH BERMUDA SOD AND DONE AS PER DETAIL A.
14. FOREBAY IS TO CONTAIN CLASS B RIP RAP AND SHOULD BE CONSTRUCTED AS SHOWN IN DETAIL B.
15. SOIL IS TO BE BERMED 6" ABOVE THE OUTLET PIPE TO PROVIDE 1' OF SOIL ABOVE THE PIPE WITHIN THE CELL LIMITS AS INDICATED IN DETAIL J.
16. AN EARTHEN BERM SHOULD BE CONSTRUCTED ALONG THE LENGTH OF THE BASIN/FOREBAY INTERFACE AS PER DETAIL B.
17. A 6" DEEP EARTHEN BERM SHOULD BE CONSTRUCTED ABOVE THE OUTLET PIPE BETWEEN THE OUTLET STRUCTURE AND THE EDGE OF THE BIORETENTION CELL TO MAINTAIN MINIMUM OVERHEAD SOIL COVERAGE(SEE DETAIL J).
18. ANY EXCAVATED SOIL THAT MAY BE STOCK PILED AND STORED ON SITE MUST BE ENCLOSED WITH SILT FENCING (DETAIL G).
19. IF ANY CLAY IS ENCOUNTERED DURING EXCAVATION, IT IS TO BE REMOVED AND REPLACED WITH SANDY TOPSOIL (DETAIL SOILPRO)
20. THE EXCAVATION AREA WILL BE STAKED OUT FOR THE CONTRACTOR BY NORTH CAROLINA STATE UNIVERSITY.

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MATERIALS AND CONSTRUCTION NOTES

BAE SENIOR DESIGN
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Date:
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Scale:
AS NOTED

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