

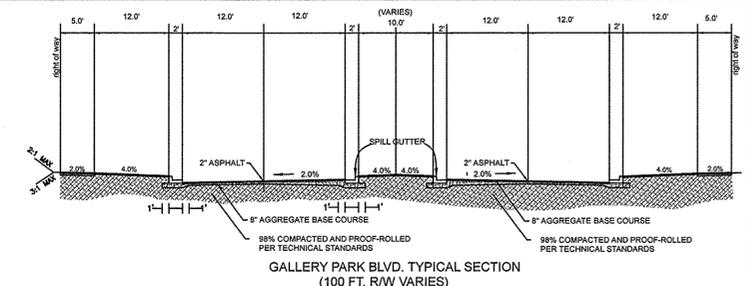
For each open utility cut out of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN

APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan

Name	Date
Planning _____	
Traffic _____	
Fire _____	



STATION 0+00 THROUGH 16+50 GALLERY PARK BLVD.

REV. NO.	REVISIONS	DATE
2	REVISED AS PER CITY COMMENTS	3-12-15
1	Major Revision	1-30-15

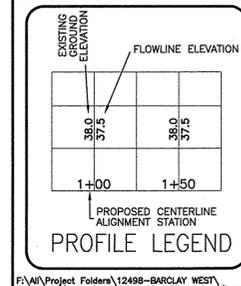
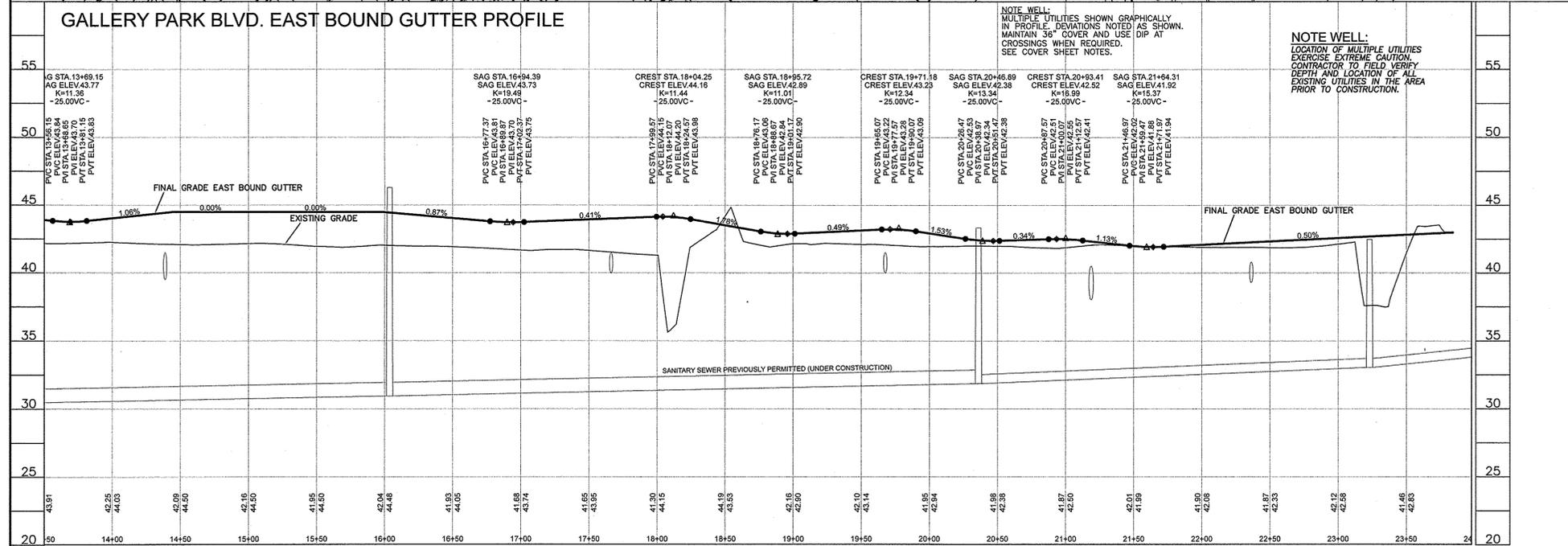
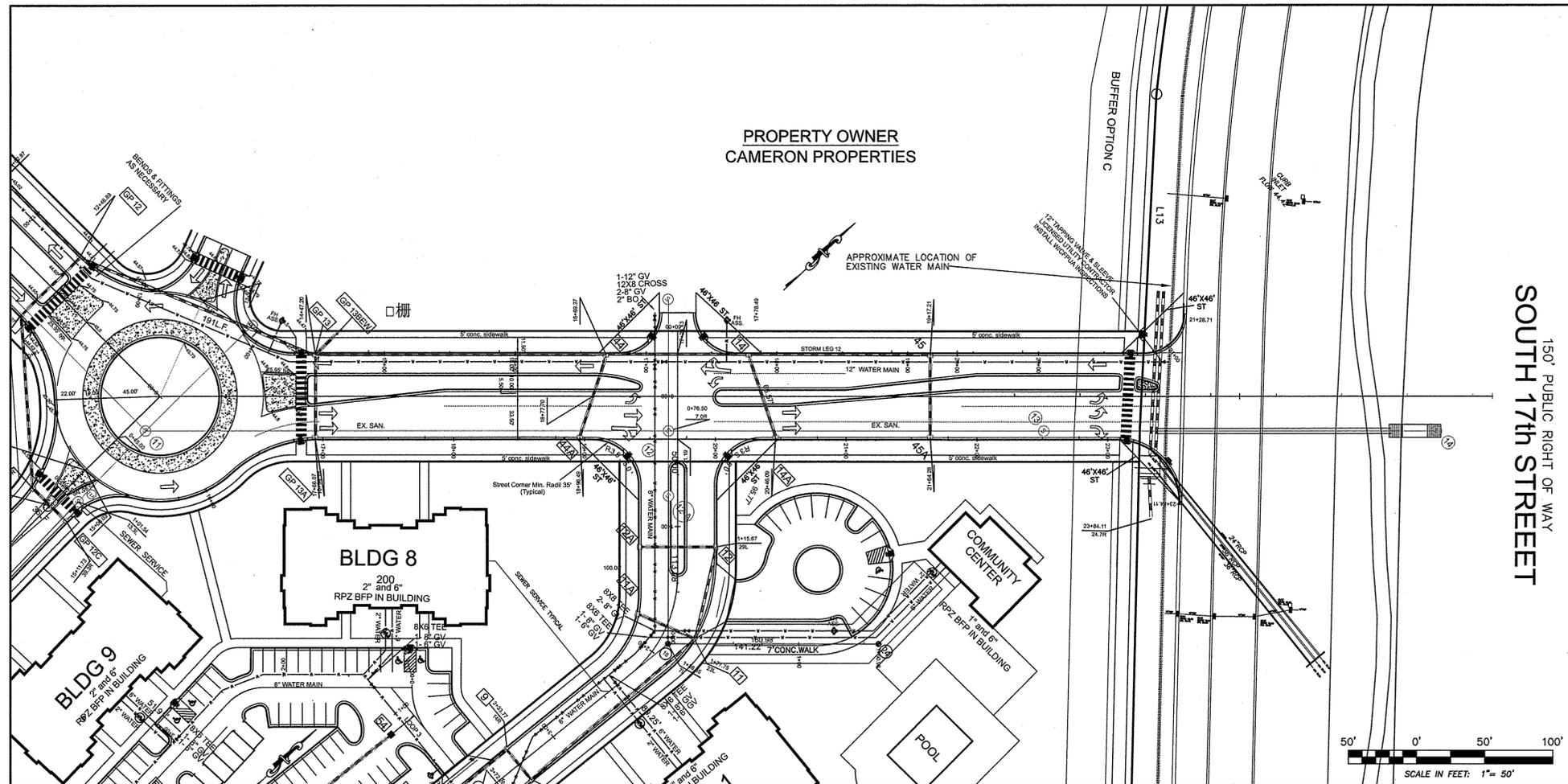
PLANS & PROFILES
BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002
License # C-0597

Date: 10-3-14
Scale: HORIZ: 1" = 50'
VERT: 1" = 5'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 2
Of: 10

F:\AN\Project_Folders\12498-BARCLAY WEST\Engineering\12498_BASL.dwg 01-23-14.dwg (Layout PP-3)



***NOTE WELL:
1. EQUIPMENT CLEARANCE MINIMUM 16' FROM TRANSMISSION LINES TO BE MAINTAINED AT ALL TIMES. (REFERENCE: OSHA 1910.269)

NOTE WELL:
CONTRACTOR TO COORDINATE MATERIALS AND CONSTRUCTION METHODOLOGIES WITH THE CAPE FEAR PUBLIC UTILITY AUTHORITY PRIOR TO COMMENCING.
PLEASE CONTACT C.F.P.U.A. AT (910) 332-6550
DEVELOPER'S INSPECTOR TO BE NOTIFIED PRIOR TO INSTALLATION AND TESTING.

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN APPROVED CITY OF WILMINGTON ENGINEERING DEPARTMENT DATE PERMIT # SIGNED

Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

NOTE:
404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SAW-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.

STATION 15+00 THROUGH 26+00
GALLERY PARK BLVD.

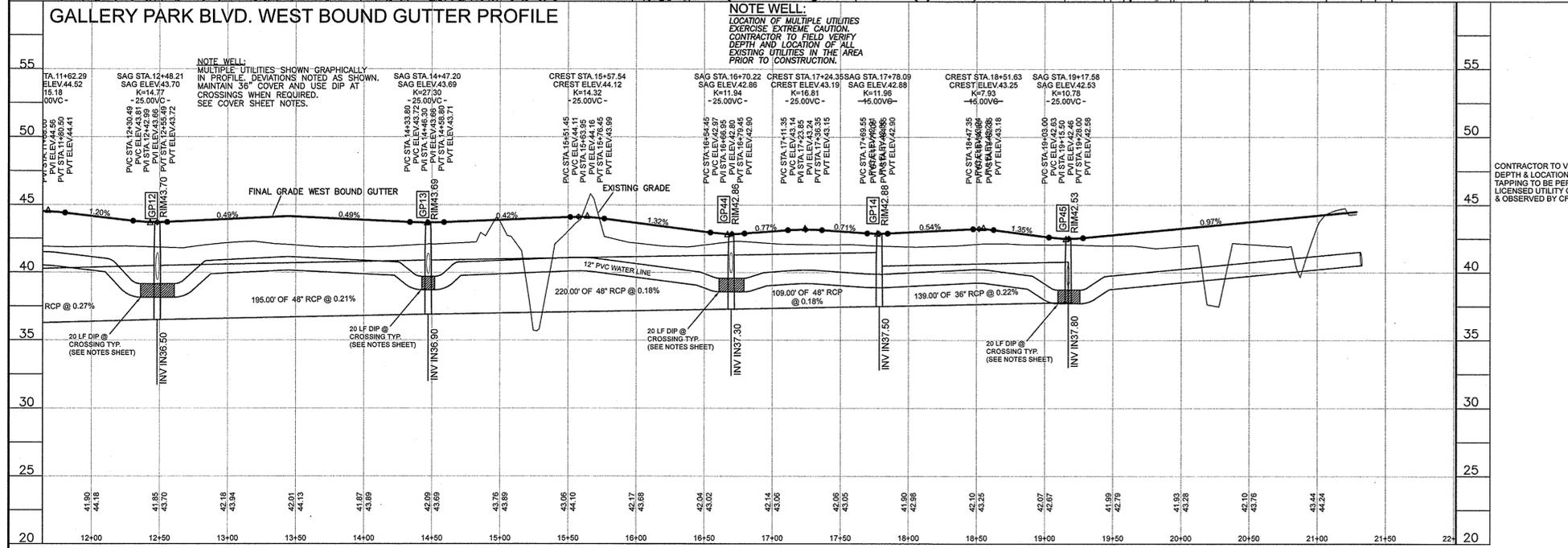
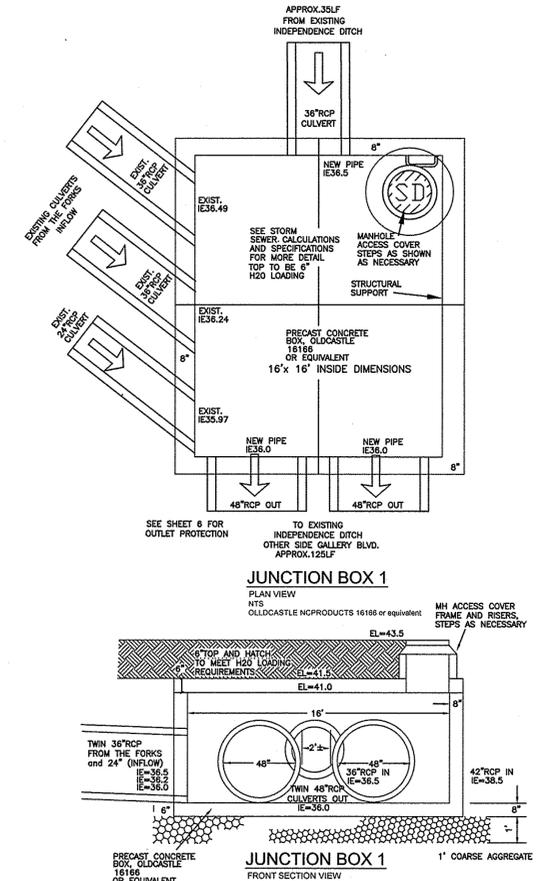
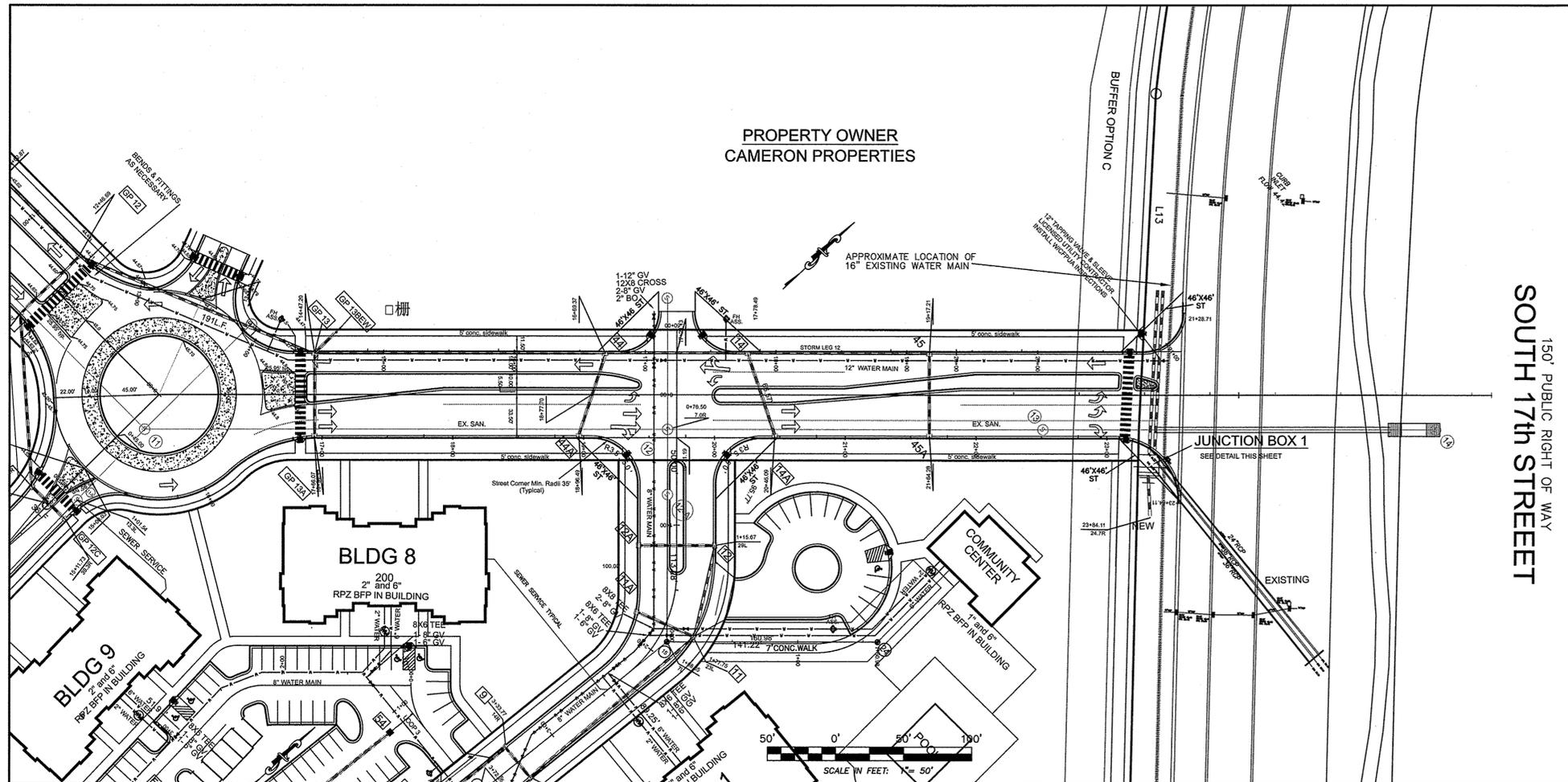
REV. NO.	REVISIONS	DATE
3	REVISED AS PER CITY COMMENTS	3-12-15
2	Major Revision	1-30-15
1	REVISED AS PER CITY COMMENTS	12-3-14

PLANS & PROFILES
BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

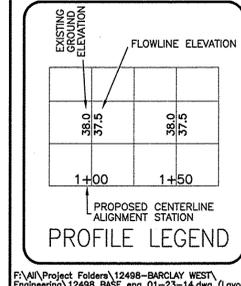
OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002
License # C-0587

DATE: 10-3-14
Scale: HORIZ: 1"=50'
VERT: 1"=2'
Drawn: CW
Checked: DH
Project No: 12498
Sheet No: 4
of: 10



FINAL DESIGN NOT RELEASED FOR CONSTRUCTION



NOTE WELL:
1. EQUIPMENT CLEARANCE MINIMUM 16' FROM
TRANSMISSION LINES TO BE MAINTAINED
AT ALL TIMES. (REFERENCE: OSHA 1910.269)

NOTE WELL:
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AND CONSTRUCTION METHODOLOGIES
WITH THE CAPE FEAR PUBLIC UTILITY AUTHORITY
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PLEASE CONTACT C.F.P.U.A.
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DEVELOPER'S INSPECTOR TO BE
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STORMWATER MANAGEMENT
PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan

Name	Date
Planning _____	_____
Traffic _____	_____
Fire _____	_____

NOTE:
404 WETLANDS DO NOT EXIST ON SITE PER U.S.
CORPS OF ENGINEERS DETERMINATION. SEE
ACTION SAW-2012-01938. DETERMINATION
EXPIRATION DATE 01-18-2018.

STATION 12+50 THROUGH 22+00
GALLERY PARK BLVD.

REV. NO.	REVISIONS	DATE
3	REVISED AS PER CITY COMMENTS	3-12-15
2	Major Revision	1-30-15
1	REVISED AS PER CITY COMMENTS	12-3-14

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PLANS & PROFILES
BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA

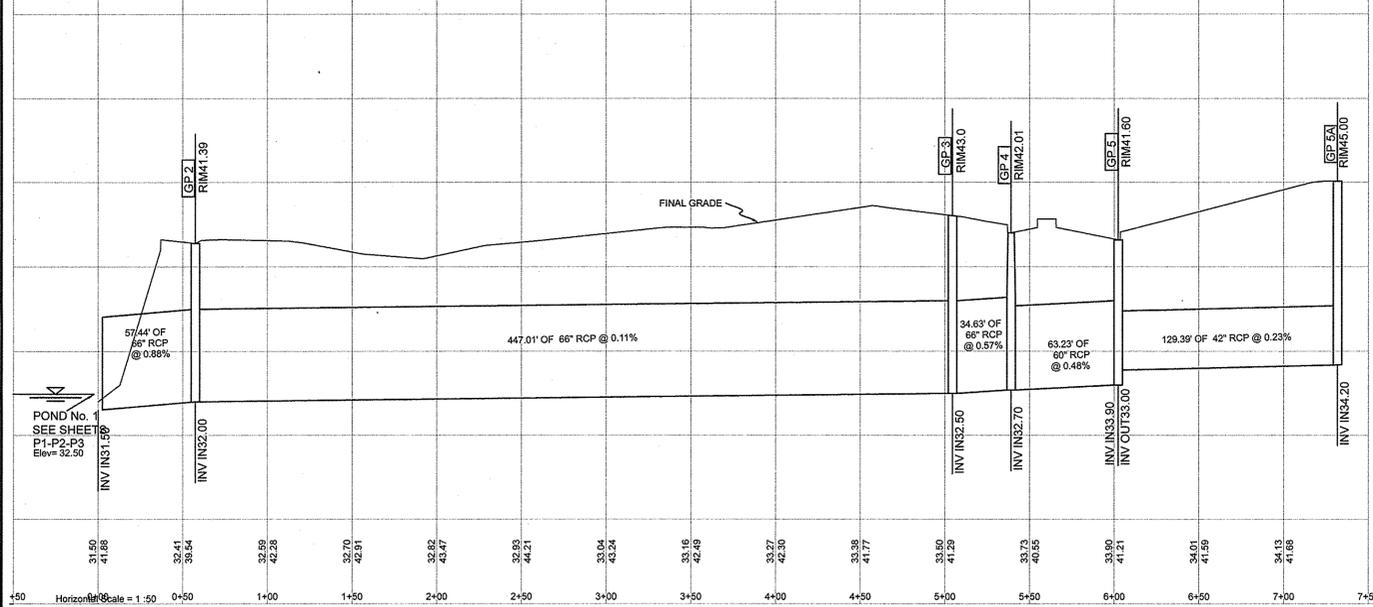
OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
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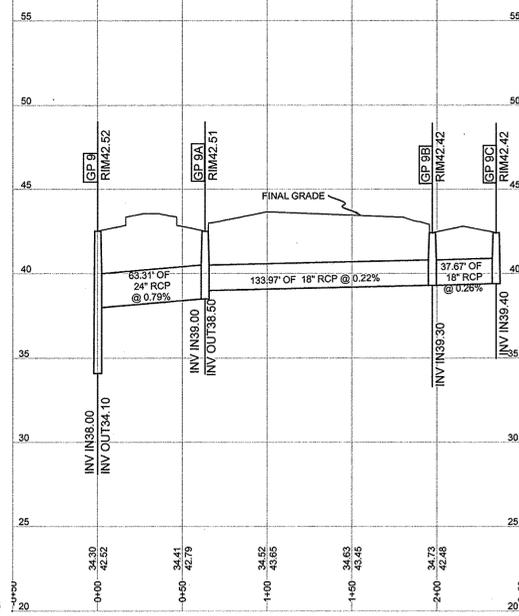
North Carolina Professional Engineer Seal 20007
David S. Hollis

Date: 10-3-14
Scale: HORIZ. 1" = 50'
VERT. 1" = 2'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 5
of: 10

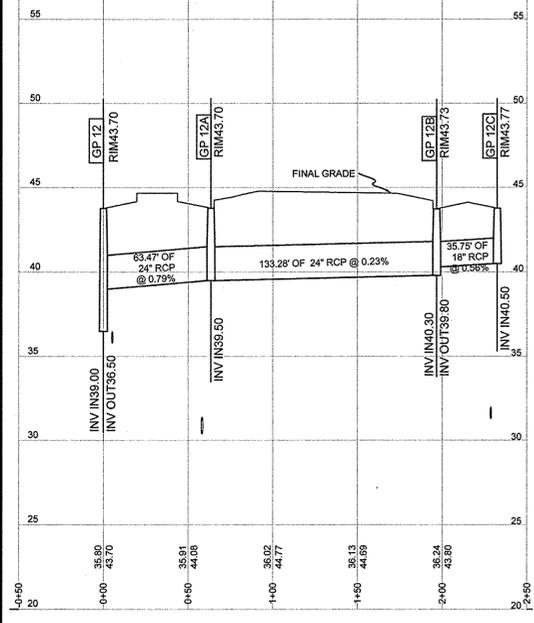
GP STORM LEG 1 (OUTFALL PIPE 1)



GP STORM LEG 3



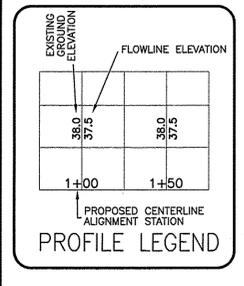
GP STORM LEG 5



STORM SEWER SUMMARY
Forebay No.1

Line No.	To Line	Length (ft)	Incr Area (ac)	Total Area (ac)	Incr Cx (C)	Total Cx (C)	Inlet Time (min)	Rain Syst (min)	Total Runoff (in/hr)	Total Flow (cfs)	Capac. Full (cfs)	Velocity (fps)	Pipe Size (in)	Pipe Slope (%)	Inv Up (ft)	Inv Dn (ft)	HGL Up (ft)	HGL Dn (ft)	Gr/Rim (ft)	Gr/Rim (ft)	Line ID
1	End	57.0	0.00	42.46	0.60	0.00	33.97	0.0	41.5	3.6	122.57	180.10	340.77	7.73	66	0.88	32.00	31.50	37.06	37.00	1 TO 2
2	1	447.0	0.00	42.46	0.60	0.00	33.97	0.0	39.0	3.7	126.66	180.10	121.69	7.58	66	0.11	32.50	32.00	38.60	37.50	2 TO 3
3	2	35.0	0.60	42.46	0.80	0.48	33.97	5.0	38.8	3.7	127.00	180.10	275.04	7.58	66	0.57	32.70	32.50	38.77	38.69	3 TO 4
4	3	63.0	0.68	41.86	0.80	0.54	33.49	5.0	38.4	3.8	125.80	176.63	194.72	9.00	60	0.48	33.00	32.70	39.11	38.86	4 TO 5
5	4	252.0	0.57	24.99	0.80	0.46	19.99	5.0	37.0	3.8	76.56	117.66	112.42	5.99	60	0.16	33.40	33.00	39.23	39.23	5 TO 6
6	5	85.0	0.22	23.43	0.80	0.18	18.74	5.0	36.6	3.9	72.26	108.64	167.64	5.53	60	0.35	33.70	33.40	39.85	39.73	6 TO 7
7	6	38.0	0.28	23.21	0.80	0.22	18.57	5.0	36.3	3.9	71.79	107.36	144.75	5.47	60	0.26	33.80	33.70	39.96	39.90	7 TO 8
8	7	105.0	0.49	22.93	0.80	0.39	18.34	5.0	35.8	3.9	71.52	105.74	150.83	5.39	60	0.29	34.10	33.80	40.15	40.00	8 TO 9
9	8	192.0	0.52	21.18	0.80	0.42	16.94	5.0	34.7	4.0	67.08	95.63	97.24	6.01	54	0.21	35.00	34.60	40.58	40.20	9 TO 10
10	9	326.0	0.58	19.15	0.80	0.46	15.32	5.0	32.9	4.1	62.29	84.78	83.44	5.33	54	0.15	35.50	35.00	41.18	40.66	10 TO 11
11	10	184.0	0.66	17.36	0.80	0.53	13.89	5.0	31.9	4.1	57.34	75.32	81.12	5.99	48	0.27	36.50	36.00	41.65	41.22	11 TO 12
12	11	195.0	0.72	14.83	0.80	0.58	11.86	5.0	30.8	4.2	49.81	60.69	70.48	4.83	48	0.21	36.90	36.50	42.01	41.71	12 TO 13
13	4	129.0	16.19	16.19	0.80	12.95	12.95	30.0	30.0	4.3	55.05	55.05	52.56	5.72	42	0.23	34.20	33.90	39.56	39.23	5 TO 5A
14	5	63.0	0.99	0.99	0.80	0.79	0.79	5.0	5.0	7.2	5.72	5.72	10.13	3.32	18	0.79	38.50	38.00	39.86	39.73	6 TO 6A
15	8	63.0	0.52	1.26	0.80	0.42	1.01	5.0	6.0	7.0	7.09	7.29	21.83	2.42	24	0.79	38.50	38.00	40.24	40.20	9 TO 9A
16	15	134.0	0.40	0.74	0.80	0.32	0.59	5.0	5.2	7.2	4.25	4.28	5.38	2.47	18	0.22	39.30	39.00	40.67	40.50	9A TO 9B
17	16	38.0	0.34	0.34	0.80	0.27	0.27	5.0	5.0	7.2	1.97	1.97	5.84	1.13	18	0.26	39.40	39.30	40.81	40.80	9B TO 9C
18	9	24.0	0.69	0.69	0.80	0.55	0.55	15.0	15.0	5.6	3.10	3.10	12.72	1.76	18	1.25	39.30	39.00	40.68	40.66	10 TO 10AEW
19	9	63.0	0.82	0.82	0.80	0.66	0.66	5.0	5.0	7.2	4.74	4.74	10.13	3.15	18	0.79	40.00	39.50	41.04	41.00	10 TO 10C
20	10	63.0	1.21	1.21	0.80	0.97	0.97	10.0	10.0	6.3	6.10	6.10	10.13	3.52	18	0.79	40.00	39.50	41.38	41.22	11 TO 11A
21	11	63.0	0.53	1.87	0.80	0.42	1.50	5.0	5.9	7.0	10.52	10.81	21.83	3.44	24	0.79	39.50	39.00	41.83	41.71	12 TO 12A
22	21	133.0	0.76	1.34	0.80	0.61	1.07	5.0	5.2	7.2	7.70	7.75	11.64	2.47	24	0.23	39.80	39.50	41.98	41.85	12A TO 12B
23	22	36.0	0.58	0.58	0.80	0.46	0.46	5.0	5.0	7.2	3.35	3.35	8.48	1.90	18	0.56	40.50	40.30	42.00	41.99	12B TO 12C
24	12	63.0	0.77	0.77	0.80	0.62	0.62	5.0	5.0	7.2	4.45	4.45	10.13	2.52	18	0.79	40.50	40.00	42.14	42.04	13 TO 13A
25	12	24.0	10.06	10.06	0.80	8.05	8.05	30.0	30.0	4.3	34.20	34.20	104.3	4.84	36	2.08	37.50	37.00	42.10	42.04	13 TO 13BEW
26	12	220.0	0.58	3.28	0.80	0.46	2.62	10.0	11.4	6.1	16.00	17.87	66.36	1.42	48	0.18	37.30	36.90	42.07	42.04	13 TO 44
27	26	109.0	0.43	2.54	0.80	0.34	2.03	5.0	10.8	6.2	12.57	14.02	66.66	1.12	48	0.18	37.50	37.30	42.08	42.08	44 TO 14
28	27	139.0	0.90	1.39	0.80	0.72	1.11	10.0	10.0	6.3	7.01	7.37	33.57	1.04	36	0.22	37.80	37.50	42.10	42.09	14 TO 45
29	28	63.0	0.49	0.49	0.80	0.39	0.39	5.0	5.0	7.2	2.83	2.83	7.85	1.60	18	0.48	38.70	38.40	42.14	42.10	45 TO 45A
30	27	67.0	0.72	0.72	0.80	0.58	0.58	5.0	5.0	7.2	4.16	4.16	9.83	2.36	18	0.75	40.00	39.50	42.18	42.09	14 TO 14A
31	26	66.0	0.16	0.16	0.80	0.13	0.13	5.0	5.0	7.2	0.93	0.93	9.90	0.52	18	0.76	40.00	39.50	42.08	42.08	44 TO 44A

Return period = 10 Yrs.



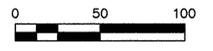
NOTE WELL:
1. EQUIPMENT CLEARANCE MINIMUM 16' FROM TRANSMISSION LINES TO BE MAINTAINED AT ALL TIMES. (REFERENCE OSHA 1910.269)

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____

NOTE:
404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SAW-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.



ADDITIONAL PROFILES

REV. NO.	REVISIONS	DATE
2	REVISED AS PER CITY COMMENTS	3-12-15
1	Major Revision	1-30-15

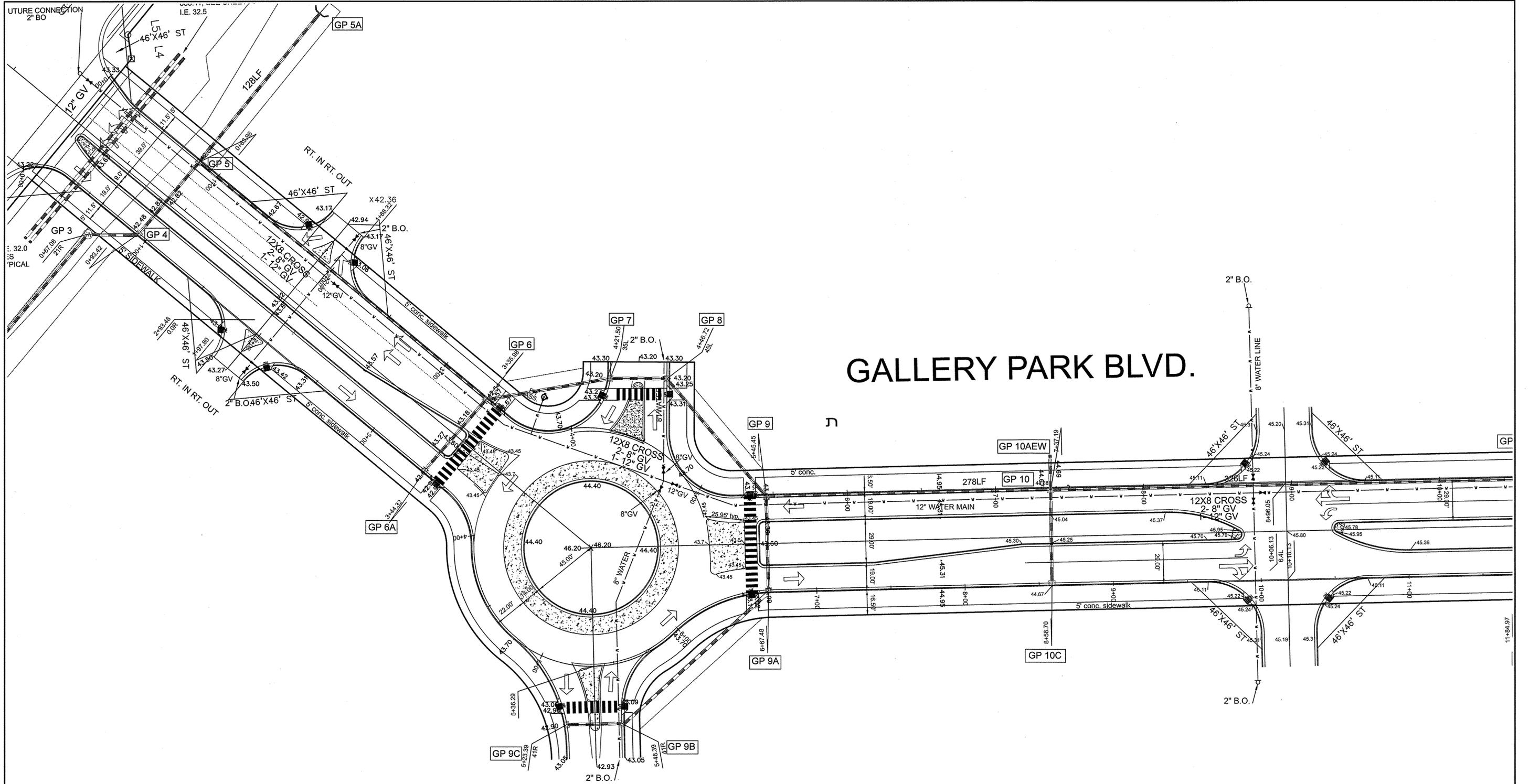
FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

PLAN
BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
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WILMINGTON, N.C. 28403
PHONE: 910-343-8002
License # C-0597

DATE: 10-3-14
Scale: HORIZ: 1"=50'
VERT: 1"=2'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 7
10



GALLERY PARK BLVD.

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NOTE WELL: ALL SPOT ELEVATIONS AS SHOWN ARE PROPOSED BACK OF CURB.



STORMWATER MANAGEMENT PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____

LAY-OUT SHEET

REV. NO.	REVISIONS	DATE
1	Major Revision	1-30-15

BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA



OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

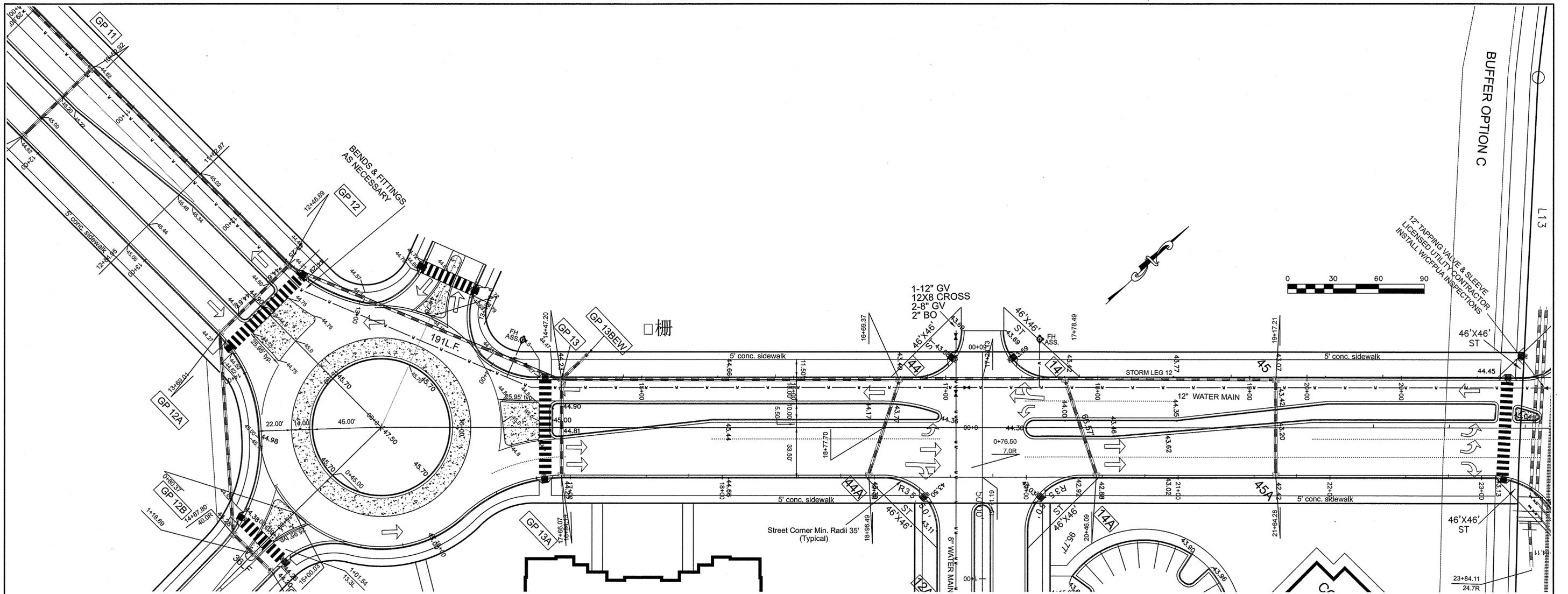
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1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE (910) 343-8002
License # C-0597

Date: 10-3-14
Scale: HORZ.: 1" = 30'
Drawn: GW
Checked: DH
Project No: 1249B

Sheet No: 8
10

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

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STORMWATER MANAGEMENT PLAN
 APPROVED
 CITY OF WILMINGTON
 ENGINEERING DEPARTMENT
 DATE _____
 PERMIT # _____
 SIGNED _____

Approved Construction Plan
 Name _____ Date _____
 Planning _____
 Traffic _____
 Fire _____

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

NOTE WELL: ALL SPOT ELEVATIONS AS SHOWN ARE PROPOSED BACK OF CURB.

LAY-OUT SHEET

REV. NO.	REVISIONS	DATE
2	Major Revision	1-30-15
1	REVISED AS PER CITY COMMENTS	12-3-14

BARCLAY WEST
 PHASE 1 INFRASTRUCTURE
 LOCATED IN THE CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA

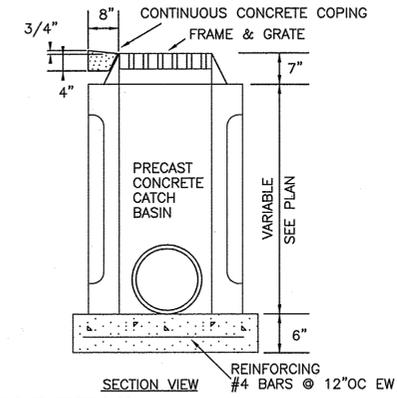
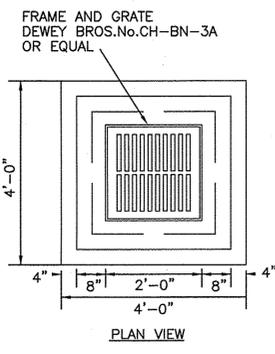


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 WILMINGTON, N.C. 28406 PH 910-762-2676

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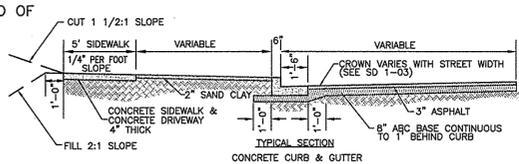
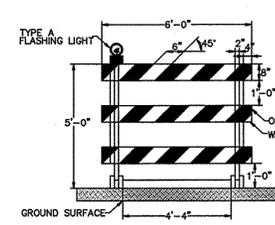
Date: 10-3-14
 Scale: HORIZ.: 1" = 30'
 Drawn: GW
 Checked: DH
 Project No: 12498

Sheet No: 9
 10
 Of: 10

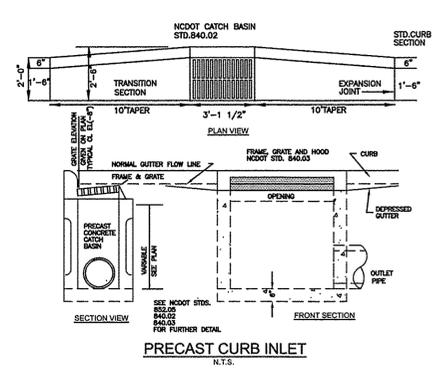


CATCH BASIN DETAIL

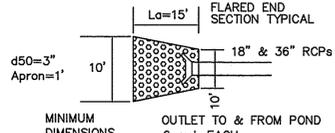
NOTE:
PRECAST CONCRETE CATCH BASIN TO BE SIZED AS NECESSARY,
OR MAY BE CONSTRUCTED OF BLOCK OR BRICK



NOTES:
*COMBINED CONCRETE CURB & GUTTER, CONCRETE SIDEWALK AND DRIVEWAYS TO BE 3000 POUNDS STRENGTH CONCRETE.
*SCORE JOINTS TO BE PLACED EVERY 5' ACROSS SIDEWALK, IN SIDEWALK AREA OF DRIVEWAYS.
*EXPANSION JOINTS TO BE PLACED ACROSS SIDEWALK EVERY 30'.
*EXPANSION JOINTS TO BE PLACED BETWEEN SIDEWALK AND CURB, SIDEWALK AND DRIVEWAY, AND DRIVEWAY AND CURB RETURN WHERE THEY ADJOIN.

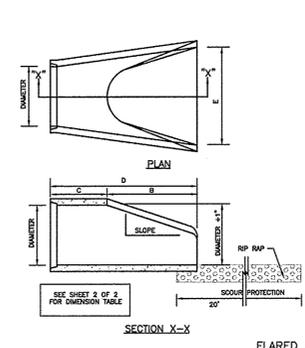


NOTE WELL:
1) OUTLET PROTECTION & ROCK STABILIZATION APRONS REQUIRED AS SHOWN ON PLAN.
2) SLOPE IS FLAT (0%) FOR A MINIMUM OF 2LF 2' MIN. BOTTOM WIDTH.



MINIMUM DIMENSIONS
OUTLET TO & FROM POND
6 cys EACH

OUTLET PROTECTION and ROCK STABILIZATION APRON

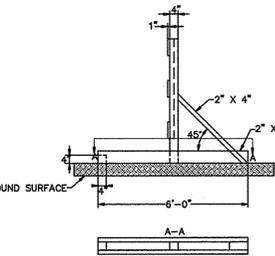
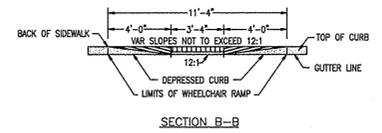


SEE SHEET P2 FOR OUTLET PROTECTION

NOTE:
1. STRUCTURAL DESIGN OF END SECTION SHALL CONFORM WITH THAT OF STANDARD REINFORCED CONCRETE.

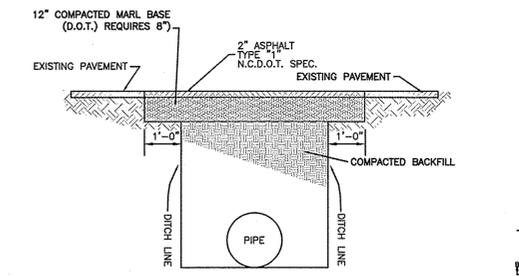
PIPE DIAMETER	WALL THICKNESS	SLOPE	B	C	D	E	UNIT WEIGHT
12	2 1/4	3:1	24	49	73	24	730
15	2 1/4	3:1	27	46	73	30	910
18	2 1/2	3:1	27	46	73	36	1190
21	2 3/4	3:1	36	37	73	42	1370
24	3	3:1	42	31	73	48	1770
27	3 1/4	3:1	48	25	73	54	2130
30	3 1/2	3:1	54	19	73	60	2380
33	3 3/4	3:1	60	36	96	66	3870
36	4	3:1	63	34	97	72	5320
42	4 1/2	3:1	63	35	98	78	5920
48	5	3:1	72	28	98	84	7470
54	5 1/2	2-4:1	66	34	100	90	9810
60	6	2:1	60	39	99	99	11180
72	7	2:1	78	21	99	108	13980

DIMENSIONS IN INCHES WEIGHTS IN POUNDS



TYPE III BARRICADE

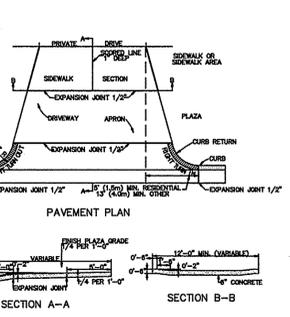
SD 15-07
NOT TO SCALE



NOTES:
* BACKFILL TO BE INSTALLED IN 6" LIFTS (MAXIMUM) AND COMPACTED TO MINIMUM DENSITY OF 95% AS DETERMINED BY THE MODIFIED A.A.S.H.T.O. STANDARD METHOD T-99
* CUT - BACK TO BE PREPARED AFTER TRENCH BACKFILLING AND COMPACTION

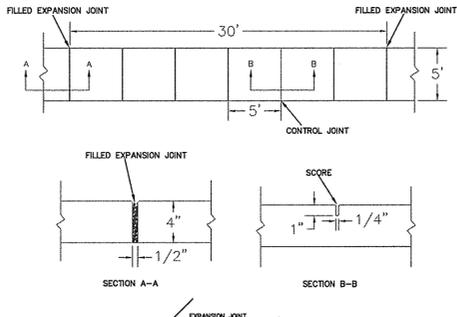
STANDARD SHOWING METHOD MAKING PAVEMENT REPAIRS WHERE PIPE IS INSTALLED

PAVEMENT REPAIRS
SD 1-05



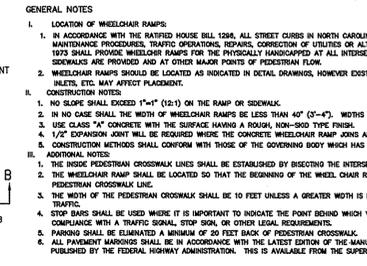
STANDARD DRIVEWAY DETAIL

SD 8-02
NOT TO SCALE



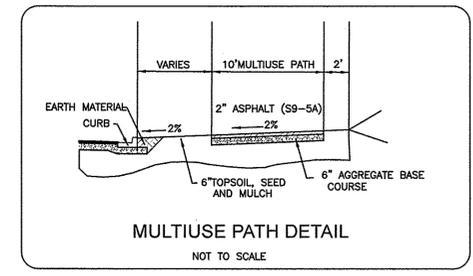
GUIDELINES FOR WHEELCHAIR RAMPS

SD 8-10
NOT TO SCALE



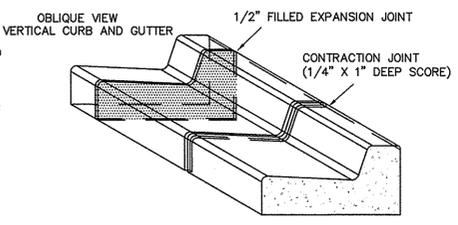
GUIDELINES FOR WHEELCHAIR RAMPS & DEPRESSED CURBS

SD 8-10
NOT TO SCALE



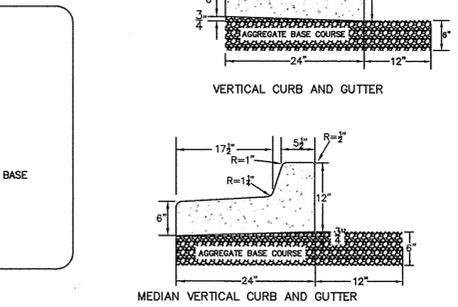
MULTIUSE PATH DETAIL

NOT TO SCALE



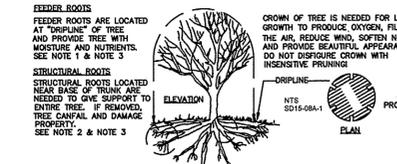
OBLIQUE VIEW and VERTICAL CURB AND GUTTER

SD 13-02
NOT TO SCALE



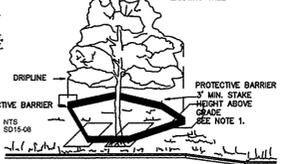
VERTICAL CURB AND GUTTER

SD 13-02
NOT TO SCALE



FEEDER ROOTS
FEEDER ROOTS ARE LOCATED AT "DRIFLINE" OF TREE AND PROVIDE TREES WITH MOISTURE AND NUTRIENTS. SEE NOTE 1 & NOTE 3

STRUCTURAL ROOTS
STRUCTURAL ROOTS LOCATED NEAR BASE OF TRUNK ARE NEEDED TO GIVE SUPPORT TO ENTIRE TREE. IF REMOVED, TREE CANAL AND DAMAGE PROPERTY. SEE NOTE 2 & NOTE 3



TREES TO BE SAVED WILL BE CLEARLY MARKED PRIOR TO CONSTRUCTION AND A PROTECTIVE BARRIER IS TO BE INSTALLED AT THE DRIFLINE. DRIF LINE - THE AREA OF SOIL DIRECTLY BENEATH THE TREE EXTENDING OUT TO THE TIPS OF THE OUTERMOST BRANCHES.

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

GUIDELINES FOR Sidewalks

1. JOINT MATERIAL TO COMPLY WITH CURRENT NCDOT STANDARDS.
2. SANITARY SEWER CLEAN-OUTS, WATER METERS, MANHOLES, AND VALVE LIDS TO BE LOCATED OUTSIDE SIDEWALK WHERE FEASIBLE.
3. MINIMUM SIDEWALK WIDTH TO BE 6' MINIMUM IF PLACED AT BACK OF CURB.
4. CONCRETE FOR ALL SIDEWALKS (EXCEPT ANY PORTION CONTAIN WITHIN A DRIVEWAY APRON) SHALL BE CLASS "A" - 3,000 PSI.
5. MINIMUM REPLACEMENT FOR REPAIRS IS A 5' X 5' PANEL.
6. 4" STONE BASE MAY BE REQUIRED FOR POOR SOIL CONDITIONS.
7. MINIMUM DEPTH FOR TUNNELING BELOW SIDEWALK IS 12"
8. MAX ADJACENT GROUND SLOPE WITHOUT RAILING IS 2:1
9. MIN GRADE FOR PROPER DRAINAGE IS 1% IN AT LEAST 1 DIRECTION. MAX CROSS SLOPE IS 2%. MAX LONGITUDINAL SLOPE IS 8.3%, 10% IF LIMITED BY EXISTING CONDITIONS, OR NO GREATER THAN THE SLOPE OF THE EXISTING ADJACENT ROAD.

TYPICAL DETAILS

REV. NO.	REVISIONS	DATE
3	REVISED AS PER CITY COMMENTS	3-12-15
2	Major Revision	1-30-15
1	REVISED AS PER CITY COMMENTS	12-3-14

BARCLAY WEST
LOCATED IN THE CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: BARCLAY WEST APARTMENTS, LLC
P.O. BOX 2562
MOUNT PLEASANT, SC 29465 PH 843-324-5424

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORENCE PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002

Date: 10-3-14
Scale: N/A
Drawn:
Checked:
Project No:
Sheet No: 10
Of: 10

BARCLAY WEST GALLERY PARK BOULEVARD

Modification to Erosion & Sediment Control and Water Quality Plan

LOCATED IN THE CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA
DATE: October 2014
SCALE: 1"=200'

OWNER / DEVELOPER:
CAMERON PROPERTIES
P.O. BOX 3649
Wilmington, NC 28406
910-762-2676

LIMITS OF DISTURBANCE:
CAMERON PROPERTIES LAND COMPANY, LLC
68.07 Acres

SITE DATA TABLE:

PARCEL IDENTIFICATION:
R06500-003-004-000
DB 5427 PG 622

STANDARD NOTES:

- INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT ELEVATIONS AND LOCATIONS OF ALL EXISTING UTILITIES AT ALL CROSSINGS PRIOR TO COMMENCING TRENCH EXCAVATION. IF ACTUAL CLEARANCES ARE LESS THAN INDICATED ON PLAN, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ANY CONDITION DISCOVERED OR EXISTING THAT WOULD NECESSITATE A MODIFICATION OF THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.
- NO CONSTRUCTION IS TO BEGIN BEFORE LOCATION OF EXISTING UTILITIES HAS BEEN DETERMINED. CALL "NO-CALL" AT LEAST 48 HOURS BEFORE COMMENCING CONSTRUCTION.
- ALL TREES WHICH ARE NOT REQUIRED TO BE CLEARED FOR CONSTRUCTION SHALL BE PRESERVED WHEREVER POSSIBLE UNLESS OTHERWISE DIRECTED.
- CONTRACTOR SHALL ADJUST ALL MANHOLES, VALVE AND CURB BOXES TO THE FINAL GRADE UPON COMPLETION OF ALL CONSTRUCTION. ANY BOXES DAMAGED OR OTHERWISE DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
- THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST AND EROSION DURING CONSTRUCTION AT HIS EXPENSE. ROADS SHALL BE WATERED TO CONTROL DUST WHEN ORDERED BY THE ENGINEER.
- NO GEOTECHNICAL TESTING HAS BEEN PERFORMED ON SITE. NO WARRANTY IS MADE FOR SUITABILITY OF SUBGRADE, AND UNDERCUT AND ANY REQUIRED REPLACEMENT WITH SUITABLE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- EXTREME CARE SHALL BE TAKEN TO ENSURE MINIMUM SEPARATIONS AT ALL UTILITY CROSSINGS.
- CONTRACTOR TO ENSURE THAT PAVEMENT IS PLACED SO AS TO DRAIN POSITIVELY TO THE CURB OUTLETS AND CATCH BASINS. ALL ROOF DRAIN DOWNSPOUTS TO BE DIRECTED TO THE STORM SEWER SYSTEM.
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS. THIS PLAN IS FOR SITE GRADING, ROADWORK & SEWER INSTALLATION ONLY.
- NO ENCUMBRANCES IN RW EXCEPT AS SHOWN.
- AFFECTED NON-MUNICIPAL UTILITIES SHALL BE CONTACTED AND PROVIDED WITH PLANS AND OTHER PERTINENT INFORMATION, WHEN FEASIBLE, TO COORDINATE APPROPRIATE SCHEDULING AND PLACEMENT. AT THE MINIMUM THIS SHOULD INCLUDE BELL SOUTH AND DUKE ENERGY.
- PROJECT AREA = XXX.XX ACRES.
- THIS PROPERTY IS ZONED RB, MF-M & O&1.
- SEWER AND WATER TO BE PROVIDED BY CPFWA.
- SITE WILL MEET ALL ZONING REQUIREMENTS.
- ANY REGULATED TREES ON SITE TO BE PRESERVED AS SHOWN.
- STRIPING AND LANES TO CITY STANDARDS (THERMOPLASTIC).
- NO VEHICULAR ACCESS TO SITE EXCEPT AS SHOWN.
- ALL UTILITIES UNDERGROUND.
- LANDSCAPING PLAN BY OTHERS.

VEGETATIVE PLAN -

- Permanent vegetation to be established in accordance with "North Carolina Erosion and Sediment Control Planning and Design Manual", Section 6.11, latest version. See next sheet.

LEGEND

- IRON IN EXIST. CONC. MON.
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING WATERLINE
- E.I.P. = EXISTING IRON PIPE
- E.I.R. = EXISTING IRON REBAR
- E.C.M. = EXISTING CONCRETE MONUMENT
- I.S. = IRON SET
- W/V = WATER VALVE
- W/M = WATER METER
- F/H = FIRE HYDRANT
- P/P = POWER POLE
- C.P. = COMPUTED POINT
- X 49.0 INDICATES SPOT ELEVATION
- WETLANDS
- CE CONSTRUCTION ENTRANCE (TYPICAL)
- SF SILT FENCE (NEW) (TYPICAL)
- IP INLET PROTECTION (TYPICAL)
- OP OUTLET PROTECTION (TYPICAL)
- LIMITS OF DISTURBANCE (PROPOSED)
- PSC PERMANENT STREAM CROSSING
- SB SEDIMENT BASIN

SEE POND PLANS FOR ADDITIONAL MEASURES

SURVEY NOTES:

- AREA COMPUTED BY COORDINATE METHOD.
- ALL DISTANCES ARE HORIZONTAL GROUND.
- PROPERTY SUBJECT TO ALL EASEMENTS OF RECORD.
- THE UNDERGROUND UTILITIES SHOWN ON THIS SURVEY ARE LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING AS-BUILT DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THE UTILITIES ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
- THIS MAP IS NOT FOR CONVEYANCE, RECORDATION, OR SALES.
- PORTIONS OF THIS PROPERTY ARE LOCATED WITHIN A 100 YEAR FLOOD HAZARD AREA ACCORDING TO FLOOD INSURANCE RATE MAP COMMUNITY ID#8720312500J, DATED APRIL 3, 2006, PANEL 3125J
- THIS PROPERTY IS ZONED RB, MF-M & O&1.
- SURVEYED IN 2013, and 2014.
- COMBINED GRID FACTOR = 1.00000.

STABILIZATION TIME FRAMES:

SITE AREA DESCRIPTION	STABILIZATION
Perimeter dikes, swales, ditches and slopes	7 DAYS
High Quality Water (HQW) Zones	7 DAYS
Slopes steeper than 3:1	7 DAYS
Slopes 3:1 or flatter	14 DAYS
All other areas with slopes flatter than 4:1	14 DAYS

NOTE WELL:

ANY AREAS ON-SITE WITHOUT ACTIVITY SHALL BE STABILIZED WITHIN 15 WORKING DAYS AND AS ABOVE. ALL SLOPES MUST BE STABILIZED WITHIN 21 CALENDAR DAYS OF CEASE OF ANY ACTIVITY.

DETAILS SHOWN ARE TYPICAL OF INSTALLATIONS REQUIRED BY CITY AND COUNTY. THIS SHEET DOES NOT PURPORT TO SHOW ALL REQUIRED CONSTRUCTION DETAILS, BUT RATHER SERVES AS A GUIDE. THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL CITY, COUNTY AND STATE CODES AND CONSTRUCTION STANDARDS. No geotechnical testing has been performed on site. No warranty is made for suitability of subgrade, and undercut and any required replacement with suitable material shall be the responsibility of the contractor.

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan

Name _____ Date _____
Planning _____
Traffic _____
Fire _____

STABILIZATION TIME FRAMES:

SITE AREA DESCRIPTION	STABILIZATION
Perimeter dikes, swales, ditches and slopes	7 DAYS
High Quality Water (HQW) Zones	7 DAYS
Slopes steeper than 3:1	7 DAYS
Slopes 3:1 or flatter	14 DAYS
All other areas with slopes flatter than 4:1	14 DAYS



GENERAL NOTES:

- PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
- ANY TREES AND /OR AREAS DESIGNATED TO BE PROTECTED MUST BE PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING, GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS.
- NO EQUIPMENT IS ALLOWED ON SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING IS INSTALLED AND APPROVED. PROTECTIVE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AND CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION METHODS.
- ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVERS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NC DOT STANDARDS.
- ONCE STREETS ARE OPEN TO TRAFFIC, CONTACT TRAFFIC ENGINEERING TO REQUEST INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
- CONTACT TRAFFIC ENGINEERING AT 341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
- CALL TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.
- TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING PRIOR TO ACTUAL STRIPING.
- ALL PARKING STALL MARKINGS & LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE MAINTAINED BY THE OWNER.
- ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE OWNER.
- STOP SIGNS AND STREET SIGNS TO REMAIN IN PLACE DURING CONSTRUCTION.
- TACTILE WARNING MATS WILL BE INSTALLED ON ALL WHEELCHAIR RAMPS.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET.
- ANY BROKEN OR MISSING SIDEWALK PANELS OR CURBING WILL BE REPLACED.
- CONTACT THE CITY AT 341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
- WATER AND SEWER SERVICE SHALL MEET CAPE FEAR PUBLIC UTILITY AUTHORITY (CPFWA) DETAILS AND SPECIFICATIONS.
- PROJECT SHALL COMPLY WITH CAPE FEAR PUBLIC UTILITY AUTHORITY CROSS CONNECTION CONTROL REQUIREMENTS. WATER METERS CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL. CALL 343-3910 FOR INFORMATION.
- IF THE CONTRACTOR DESIRES CPFWA WATER FOR CONSTRUCTION HE SHALL APPLY IN ADVANCE FOR THIS SERVICE AND MUST PROVIDE A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTION DEVICE ON THE DEVELOPER'S SIDE OF THE WATER METER BOX.
- ANY IRRIGATION SYSTEM SUPPLIED BY CPFWA WATER SHALL COMPLY WITH CPFWA CROSS CONNECTION CONTROL REGULATIONS. CALL 343-3910 FOR INFORMATION.
- ANY IRRIGATION SYSTEM SHALL BE EQUIPPED WITH A RAIN AND FREEZER SENSOR.
- ANY BACKFLOW PREVENTION DEVICES REQUIRED BY CPFWA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USCCC OR AS PER 15A-0406.
- CONTRACTOR TO FIELD VERIFY EXISTING WATER AND SEWER SERVICE LOCATIONS, SIZES AND MATERIALS PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED OF ANY CONFLICTS.
- CONTRACTOR SHALL MAINTAIN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
- UNDERGROUND FIRE LINES MUST BE PERMITTED AND INSPECTED BY THE WILMINGTON FIRE DEPARTMENT FROM THE PUBLIC RIGHT-OF-WAY TO THE BUILDING. CONTACT THE WILMINGTON FIRE DEPARTMENT DIVISION OF FIRE AND LIFE SAFETY AT 341-5466.
- NO OBSTRUCTIONS ARE PERMITTED IN THE SPACE BETWEEN THIRTY (30) INCHES AND TEN (10) FEET ABOVE THE GROUND WITHIN THE TRIANGULAR SIGHT DISTANCE.
- CONTACT THE NORTH CAROLINA ONE CALL CENTER AT 1-800-632-4949 PRIOR TO ANY DIGGING, CLEARING OR GRADING.
- ANY PVC MAINS ARE TO BE MARKED WITH NO. 10 INSULATED COPPER WIRE INSTALLED THE ENTIRE LENGTH AND STAPPED TO THE PIPE WITH DUCT TAPE, AND STRIPPED TO BARE WIRE AND SECURED TO ALL VALVES AND FITTINGS, ACCESSIBLE IN ALL VALVE AND METER BOXES. ALL WATER MAINS ARE TO HAVE A MINIMUM OF 3' COVER.

MORE GENERAL NOTES:

- CLEARING AND GRUBBING OF SITE TO INCLUDE REMOVAL OF EXISTING CURBS, ASPHALT, INLETS, AND ANY OTHER STRUCTURES INCLUDING TREES, STUMPS AND DEBRIS EXISTING ON SITE. TREES NOT REQUIRED TO BE CLEARED FOR CONSTRUCTION SHALL REMAIN UNLESS OTHERWISE DIRECTED. ANY REGULATED TREES TO BE REMOVED ARE FOR ESSENTIAL SITE IMPROVEMENTS.
- MINIMUM UTILITIES SEPARATION SHALL BE MAINTAINED AS FOLLOWS:
 - HORIZONTAL CLEARANCE OF 10 FEET BETWEEN SANITARY SEWER OR STORM SEWERS AND ATER MAINS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10' LATERAL SEPARATION, IN WHICH CASE:
 - THE WATER MAIN IS LAID IN A SEPARATE TRENCH WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, OR
 - THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, OR
 - WHERE VERTICAL CLEARANCE IS LESS THAN 18" BETWEEN SANITARY SEWER AND WATER OR WHERE SEWER LINE CROSSES ABOVE WATER MAIN, BOTH PIPES SHALL BE DUCTILE IRON PIPE FOR A MINIMUM OF 10' EITHER SIDE OF CROSSING.
 - WHERE VERTICAL CLEARANCE IS LESS THAN 24" BETWEEN SANITARY SEWER AND STORM DRAIN, SANITARY SEWER SHALL BE DUCTILE IRON PIPE FOR A MINIMUM OF 10' EITHER SIDE OF CROSSING.
 - WHERE VERTICAL CLEARANCE IS LESS THAN 12" BETWEEN WATER MAIN AND STORM DRAIN, WATER MAIN SHALL BE DUCTILE IRON PIPE FOR A MINIMUM OF 10' EITHER SIDE OF CROSSING.
- SEE DETAIL SHEETS FOR TYPICAL UTILITIES HOOKUPS.
- CONTRACTOR TO COORDINATE STAGING OF CONSTRUCTION ACTIVITIES WITH THE OWNER & ARCHITECT TO FACILITATE ONGOING ADJOINING BUSINESS ACTIVITIES.
- CONTRACTOR TO COORDINATE REMOVAL & RELOCATION OF LIGHTING & OTHER NON-MUNICIPAL UTILITIES SUCH AS ELECTRICAL & TELEPHONE CONNECTIONS WITH THE AFFECTED AGENCIES AND THE OWNER AND ARCHITECT.

LINE	BEARING	DISTANCE
L1	N 44°55'01" E	120.61
L2	N 39°14'39" E	108.50
L3	N 39°14'39" E	138.50
L4	N 08°15'42" W	11.22
L5	N 08°15'42" W	5.22
L6	N 44°54'38" E	120.57
L7	N 39°14'56" E	230.01
L8	N 10°53'27" W	15.61
L9	N 49°15'35" E	220.01
L10	N 49°22'09" E	89.82
L11	S 75°08'29" E	56.86
L12	S 06°14'13" E	201.77
L13	S 43°48'23" E	182.20
L14	S 43°48'23" E	73.89
L15	S 45°21'24" E	40.22
L16	N 49°39'17" W	33.63
L17	N 49°20'43" E	207.19
L18	N 51°18'19" E	101.11
L19	N 43°20'43" E	98.81

CURVE	RADIUS	ARC	CHORD	CHORD BEARING	DELTA ANGLE
C1	17192.38'	82.91'	82.91'	N 39°06'21" E	0°16'34"
C2	1602.79'	888.28'	877.50'	S 24°46'05" E	1°14'20"
C3	633.81'	180.03'	179.18'	S 34°59'00" W	1°19'23"

NOTE: THIS PLAN TO BE UTILIZED AND REVIEWED ONLY IN CONJUNCTION WITH THE WRITTEN NARRATIVE WHICH IS AN INTEGRAL PART OF THIS EROSION AND SEDIMENT CONTROL PLAN.

BENCHMARK LOCATIONS AND ELEVATIONS

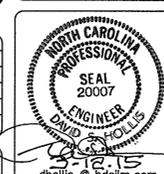
LOCATION:	ELEVATION
EX. CONCRETE MONUMENT AT INTERSECTION OF S. 17th STREET & MUSEUM DRIVE..	42.58

SHEET No.	DESCRIPTION	DRAWING No.
1 OF 5	COVER SHEET AND GENERAL NOTES	12498-SHT1
2 OF 5	Erosion Control Plans	12498-SHT2
3 OF 5	Erosion Control Plans	12498-SHT3
4 OF 5	Erosion Control Plans	12498-SHT4
5 OF 5	Erosion Control Notes & Additional Details	12498-SHT5

REV. NO.	REVISIONS	DATE
5	REVISED AS PER CITY COMMENTS	3/12/15
4	ADDED SKIMMER AND ADDITIONAL CULVERT DETAILS AS PER NHC	3/5/15
3	MAJOR REVISION TO GALLERY PARK BOULEVARD	2/26/15
2	REVISED NEW HANOVER COUNTY COMMENTS	2/16/15
1	REVISED NEW HANOVER COUNTY COMMENTS	11/19/14

GP# 20-14

Modified Erosion Control Plan Cover Sheet and General Notes
BARCLAY WEST
GALLERY PARK BOULEVARD
LOCATED IN THE CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA



OWNER: CAMERON PROPERTIES
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORA PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-0002
License # C-0597

Date: 10-6-14
Scale: 1"=200'
Drawn: WNP
Checked: DSH
Project No: 12498 P1
Sheet No: 1
Of: 5



REFER TO PREVIOUSLY PERMITTED SANITARY SEWER PLANS

RESTORE PAVING & SIDEWALK TO "AS NEW" CONDITION.

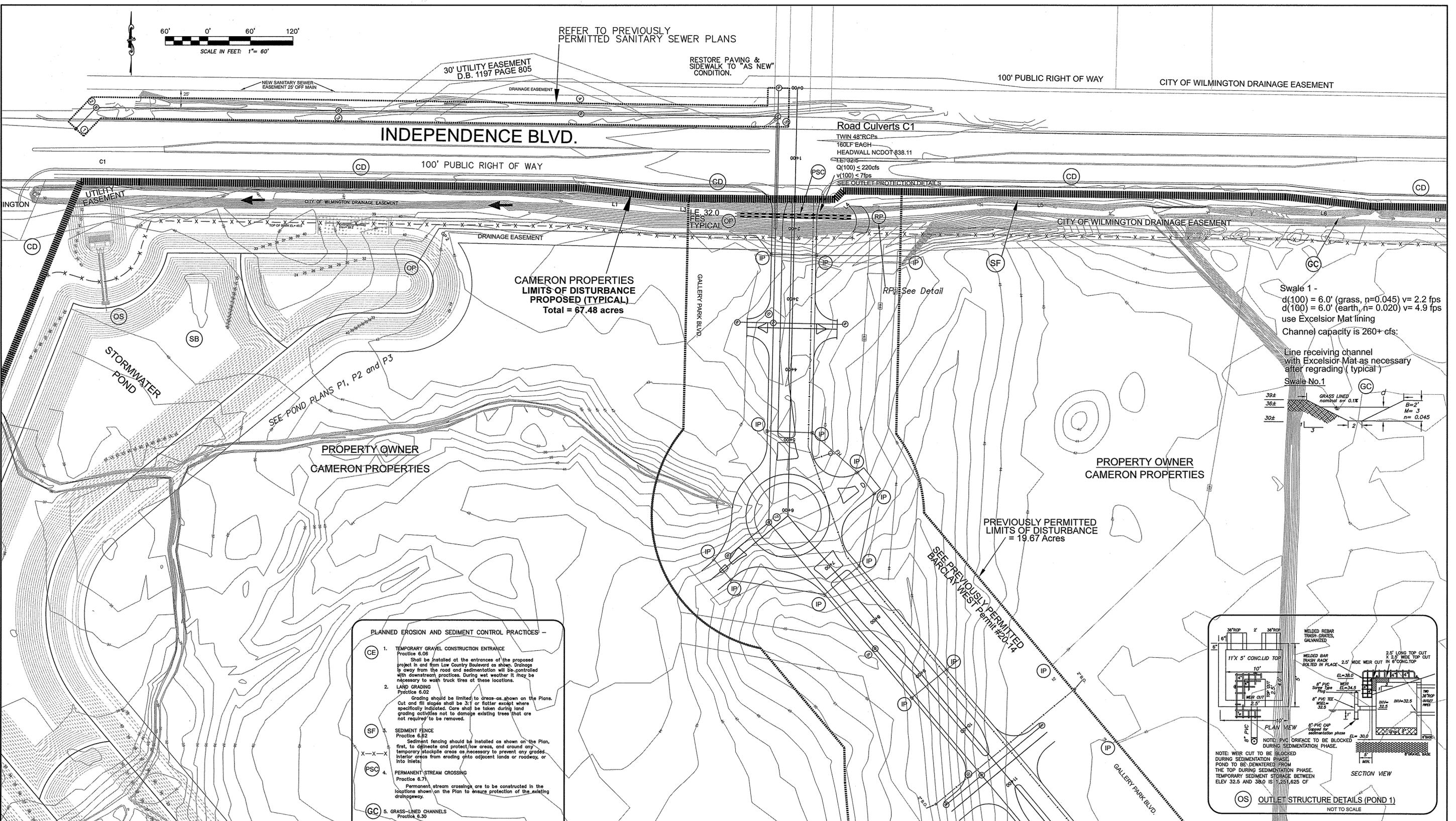
100' PUBLIC RIGHT OF WAY

CITY OF WILMINGTON DRAINAGE EASEMENT

INDEPENDENCE BLVD.

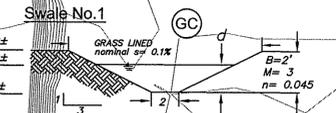
Road Culverts C1

TWIN 48" RCPs
160LF EACH
HEADWALL NCDOT #38.11
I.E. 32.5
Q(100) ≤ 220cfs
v(100) ≤ 7fps
SEE OUTLET PROTECTION DETAILS



Swale 1 -
d(100) = 6.0' (grass, n=0.045) v= 2.2 fps
d(100) = 6.0' (earth, n= 0.020) v= 4.9 fps
use Excelsior Mat lining
Channel capacity is 260+ cfs:

Line receiving channel with Excelsior Mat as necessary after regrading (typical)



PROPERTY OWNER
CAMERON PROPERTIES

PREVIOUSLY PERMITTED LIMITS OF DISTURBANCE = 19.67 Acres

PLANNED EROSION AND SEDIMENT CONTROL PRACTICES -

- CE** 1. TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
Practice 6.06
Shall be installed at the entrances of the proposed project in and from Low Country Boulevard as shown. Discharge is away from the road and sedimentation will be controlled with downstream practices. During wet weather it may be necessary to wash truck tires at these locations.
- 2.** LAND GRADING
Practice 6.02
Grading should be limited to areas as shown on the Plans. Cut and fill slopes shall be 3:1 or flatter except where specifically indicated. Care shall be taken during land grading activities not to damage existing trees that are not required to be removed.
- SF** 3. SEDIMENT FENCE
Practice 6.02
Sediment fencing should be installed as shown on the Plan, first, to delineate and protect low areas, and around any temporary stockpile areas or necessary to prevent any graded interior areas from eroding into adjacent lands or roadway, or into inlets.
- PSC** 4. PERMANENT STREAM CROSSING
Practice 6.71
Permanent stream crossings are to be constructed in the locations shown on the Plan to ensure protection of the existing drainageway.
- GC** 5. GRASS-LINED CHANNELS
Practice 6.30
All collection ditches to be graded to design configuration, seeded, and stabilized if necessary with temporary straw-net liners to collect and convey site water as shown on Plan. After final project stabilization, ditches to be re-graded and cleaned of siltation as needed to establish original contours for stormwater conveyance.
- CD** 6. CHECK-DAM
Practice 6.83
Check dams are to be installed as indicated on plan (approximately every 500 feet) to reduce flow in an open channel, serving as a temporary measure to limit erosion.
- SB** 7. SEDIMENT BASIN
Practice 6.81
The Sediment Basins are to be constructed (see Construction Schedule) as the primary Practice to prevent sediment from leaving the site. Detailed design and spillway configurations are specified in the details as shown on this Plan and the Narrative. The PIV outlet is to be attached to the skimmer during the sedimentation function until entire watershed is permanently stabilized and pond is converted to permanent stormwater management detention / retention function. The Contractor will then install the control orifice to specifications as shown on Sheet 5 and in the calculations.

NOTE:
THIS PLAN TO BE UTILIZED AND REVIEWED ONLY IN CONJUNCTION WITH THE WRITTEN NARRATIVE, WHICH IS AN INTEGRAL PART OF THIS EROSION AND SEDIMENT CONTROL PLAN.

NOTE:
404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SAW-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.

*****NOTE WELL:**
1. EQUIPMENT CLEARANCE MINIMUM 16' FROM TRANSMISSION LINES TO BE MAINTAINED AT ALL TIMES. (REFERENCE: OSHA 1910.269)

STATION 0+00 THROUGH 10+50 INDEPENDENCE BLVD.

REV. NO.	REVISIONS	DATE
5	REVISED AS PER CITY COMMENTS	3/12/15
4	ADDED SKIMMER AND ADDITIONAL CULVERT DETAILS AS PER NHC	3/5/15
3	MAJOR REVISION TO GALLERY PARK BOULEVARD	2/26/15
2	REVISED NEW HANOVER COUNTY COMMENTS	2/16/15
1	REVISED NEW HANOVER COUNTY COMMENTS	11/19/14

GP# 20-14
Modification to Erosion & Sediment Control and Water Quality Plan

BARCLAY WEST
GALLERY PARK BOULEVARD
LOCATED IN THE CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA



OWNER: CAMERON PROPERTIES
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002
License # C-0597

Date: 10-6-14
Scale: HORIZ: 1"= 60'
Drawn: WNP
Checked: DSH
Project No: 12488 P2
Sheet No: 2
5

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____

Road Culverts C1

TWIN 48" RCPs
 160LF EACH
 HEADWALL NCDOT #38.11
 Q(100) ≤ 220cfs
 V(100) ≤ 7fps
 SEE OUTLET PROTECTION DETAILS

MEDIAN

MEDIAN

CITY OF WILMINGTON DRAINAGE EASEMENT

EXCELSIOR LINED

CITY OF WILMINGTON DRAINAGE EASEMENT

Swale 1 - GC #1
 d(100) = 6.0' (grass, n=0.045) v= 2.2 fps
 d(100) = 6.0' (earth, n= 0.020) v= 4.9 fps
 use Excelsior Mat lining
 Channel capacity is 260+ cfs:

DISTURBED AREA TO RP
 RP= 2600' LF DITCH
 x 50' WIDE
 = 3.0 /ACRES

Line receiving channel
 with Excelsior Mat as necessary
 after regrading (typical)

Swale No.1



Earthen Plug to fill
 ditch with rock
 Note:
 Ditches must be immediately filled
 once plugged prior to any rain event.

**CAMERON PROPERTIES
 LIMITS OF DISTURBANCE
 PROPOSED (TYPICAL)**
 Total = 68.07 acres

PARK AREA
 1.80 Acres

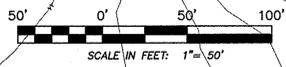
PROPERTY OWNER
 CAMERON PROPERTIES

PREVIOUSLY PERMITTED
 LIMITS OF DISTURBANCE
 = 19.67 Acres

DITCHES TO BE
 FILLED

INDEPENDENCE BLVD.
 100' PUBLIC RIGHT OF WAY

RESTORE PAVING &
 SIDEWALK TO "AS NEW"
 CONDITION.



For each open utility cut of
 City streets, a \$325 permit
 shall be required from the
 City prior to occupancy
 and/or project acceptance.

***NOTE WELL:
 1. EQUIPMENT CLEARANCE MINIMUM 16' FROM
 TRANSMISSION LINES TO BE MAINTAINED
 AT ALL TIMES. (REFERENCE: OSHA 1910.269)

***NOTE WELL:
 1. ALL WORK AND INSTALLATION OF THE
 LINER MUST BE COMPLETED PRIOR TO ANY RAIN
 EVENT OR DESIGN OTHER EROSION CONTROL
 FOR THIS ACTIVITY.

NOTE:
 404 WETLANDS DO NOT EXIST ON SITE PER U.S.
 CORPS OF ENGINEERS DETERMINATION. SEE
 ACTION SAW-2012-01938. DETERMINATION
 EXPIRATION DATE 01-18-2018.

STATION 0+00 THROUGH 10+50
 INDEPENDENCE BLVD.

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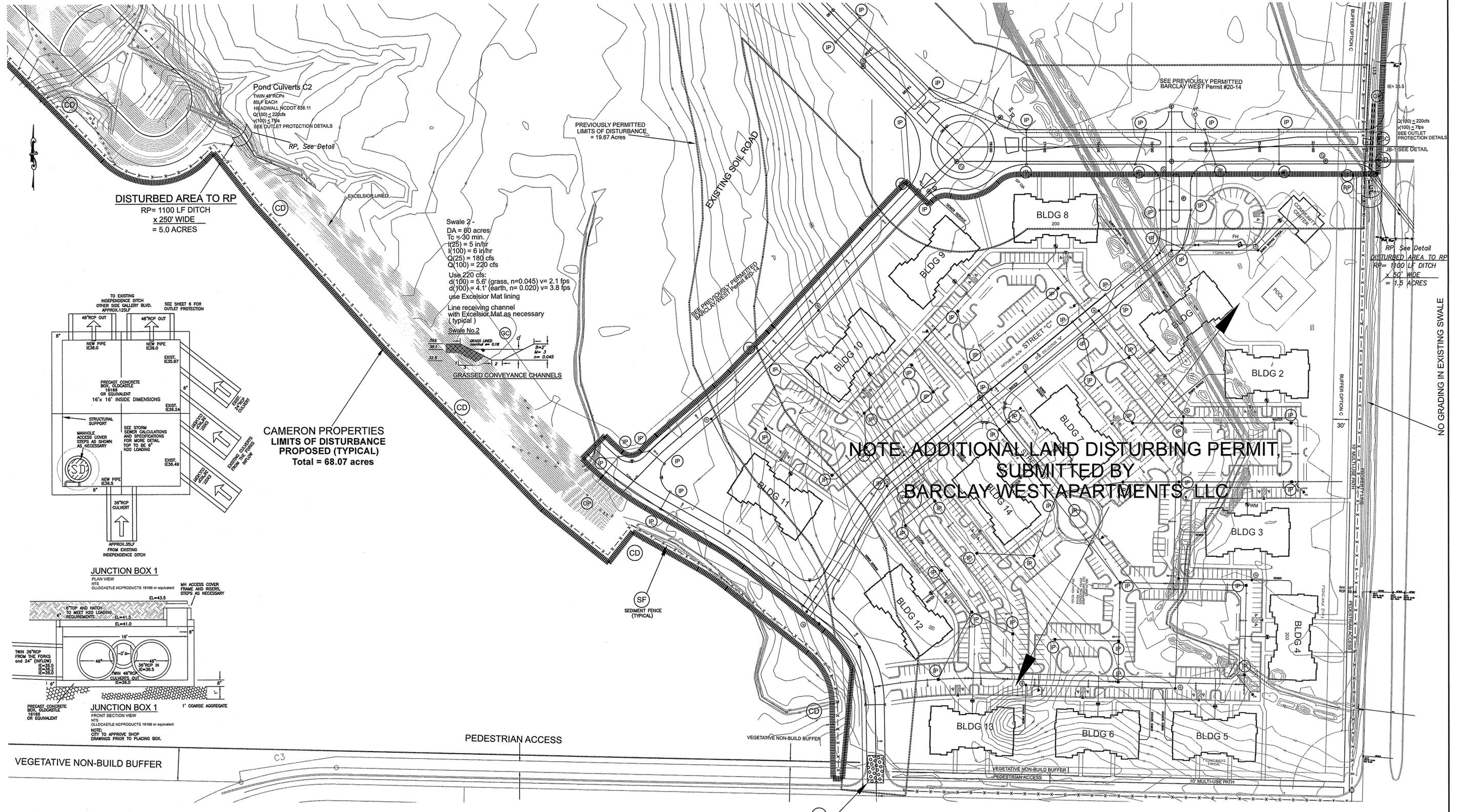
1123 FLORAL PARKWAY
 WILMINGTON, N.C. 28403
 PHONE: (910) 343-8002
 License # C-0587

Date: 10-6-14
 Scale: HORZ: 1" = 60'
 Drawn: WNP
 Checked: DSH
 Project No: 12498 P3
 Sheet No: 3
 of: 5

STORMWATER MANAGEMENT
 PLAN
 APPROVED
 CITY OF WILMINGTON
 ENGINEERING DEPARTMENT
 DATE _____
 PERMIT # _____
 SIGNED _____

Approved Construction Plan

Name	Date
Planning _____	_____
Traffic _____	_____
Fire _____	_____



DISTURBED AREA TO RP
 RP= 1100 LF DITCH
 x 250' WIDE
 = 5.0 ACRES

PREVIOUSLY PERMITTED
 LIMITS OF DISTURBANCE
 = 19.67 ACRES

Swale 2 -
 DA = 60 acres
 Tc = 30 min.
 I(25) = 5 in/hr
 I(100) = 6 in/hr
 Q(25) = 180 cfs
 Q(100) = 220 cfs
 Use 220 cfs
 d(100) = 5.6' (grass, n=0.045) v= 2.1 fps
 d(700) = 4.1' (earth, n= 0.020) v= 3.8 fps
 use Excelsior Mat lining
 Line receiving channel
 with Excelsior Mat as necessary
 (typical)
 Swale No.2

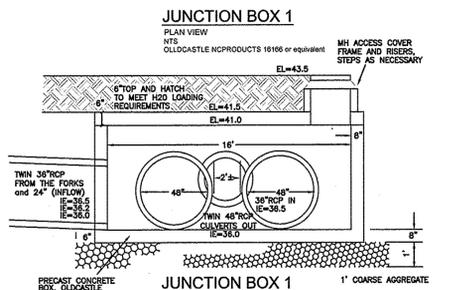
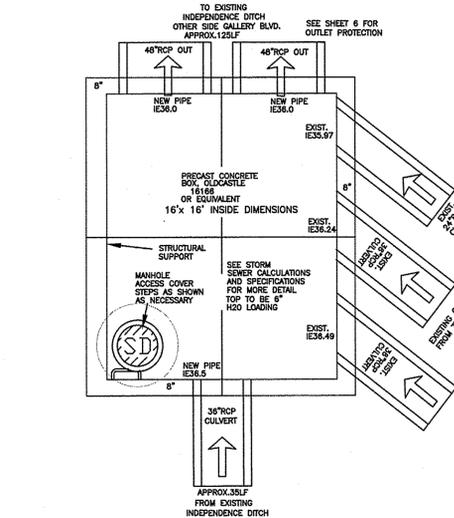


CAMERON PROPERTIES
 LIMITS OF DISTURBANCE
 PROPOSED (TYPICAL)
 Total = 68.07 acres

NOTE ADDITIONAL LAND DISTURBING PERMIT
 SUBMITTED BY
BARCLAY WEST APARTMENTS, LLC

RP See Detail
 DISTURBED AREA TO RP
 RP= 1100 LF DITCH
 x 50' WIDE
 = 1.5 ACRES

NO GRADING IN EXISTING SWALE



VEGETATIVE NON-BUILD BUFFER

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 and/or project acceptance.

STORMWATER MANAGEMENT
 PLAN
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 Planning _____
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 Fire _____



STATION 0+00 THROUGH 10+50
 INDEPENDENCE BLVD.

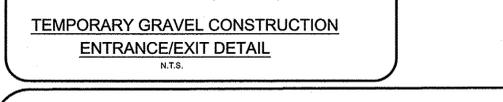
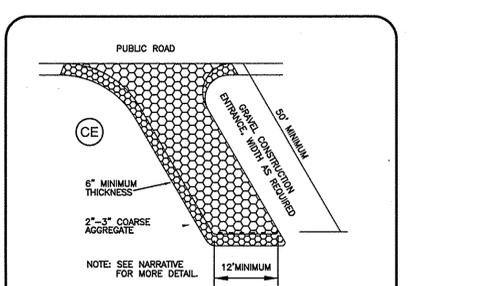
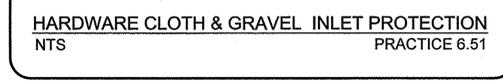
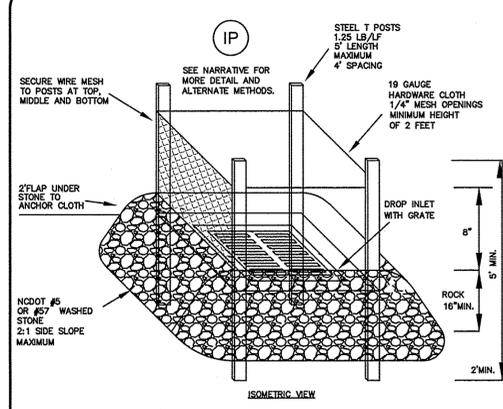
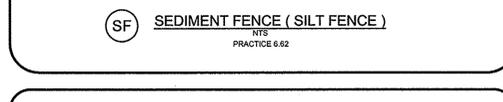
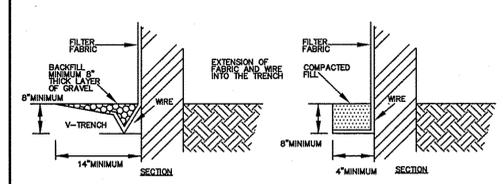
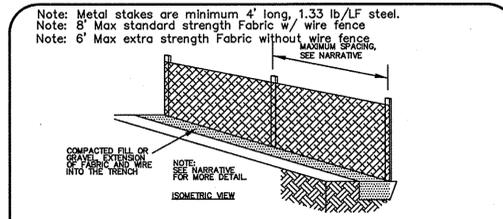
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Scale: 1" = 80'
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 Checked: DSH
 Project No: 12498 P4
 Sheet No: 4
 of 5



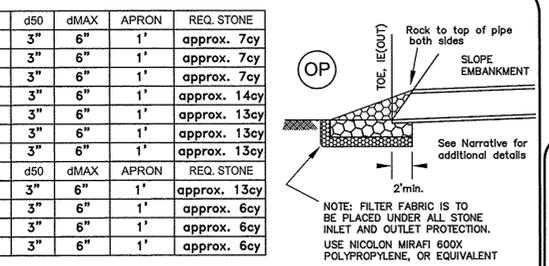
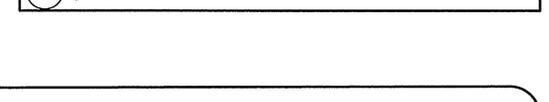
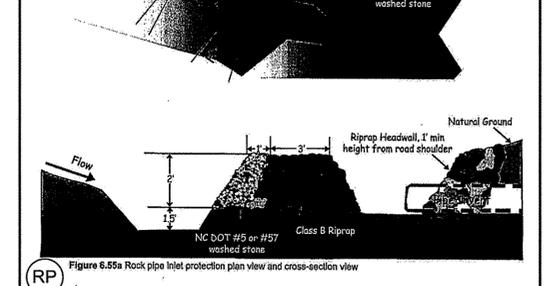
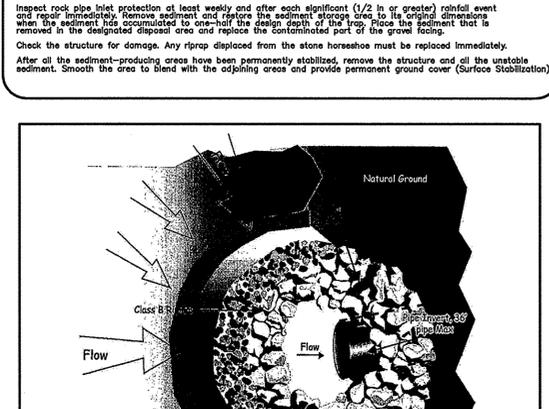
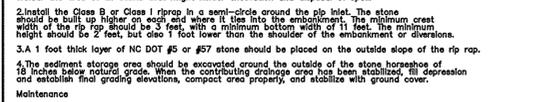
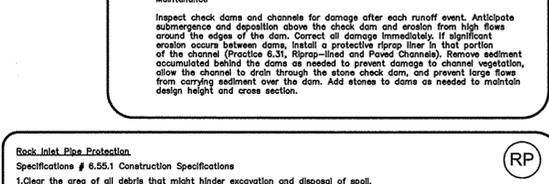
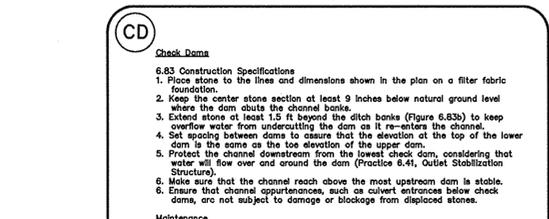
RCP DIAMETER	La	W	d50	dMAX	APRON	REQ. STONE
ALL 18"	15'	15'	3"	6"	1'	approx. 7cy
ALL 24"	15'	15'	3"	6"	1'	approx. 7cy
ALL 30"	15'	15'	3"	6"	1'	approx. 7cy
ALL 36"	30'	15'	3"	6"	1'	approx. 14cy
ALL 48"	20'	20'	3"	6"	1'	approx. 13cy
ALL 54"	20'	20'	3"	6"	1'	approx. 13cy
ALL 60-66"	20'	20'	3"	6"	1'	approx. 13cy
TWIN 48"	20'	20'	3"	6"	1'	approx. 13cy
TWIN 36"	10'	15'	3"	6"	1'	approx. 6cy
TWIN 24"	10'	15'	3"	6"	1'	approx. 6cy
TWIN 18"	10'	15'	3"	6"	1'	approx. 6cy

NOTE: WELL: 1) OUTLET PROTECTION & ROCK STABILIZATION APRONS REQUIRED AS SHOWN ON PLAN. 2) SLOPE IS FLAT (0%) FOR A MINIMUM OF 2LF 2' MIN. BOTTOM WIDTH.

MORE GENERAL NOTES:

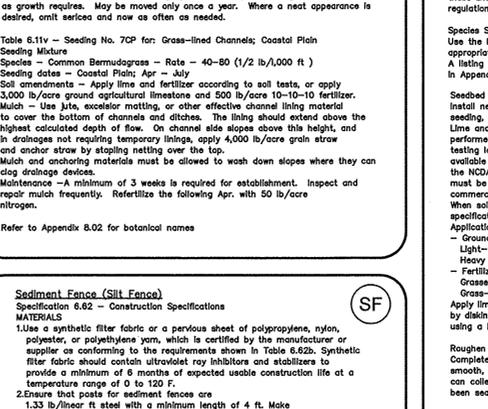
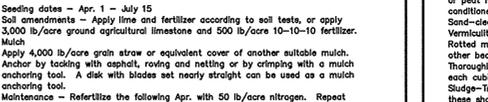
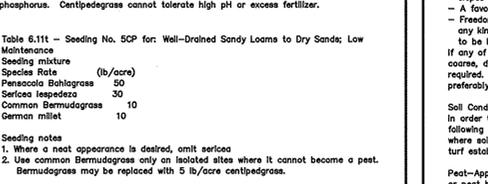
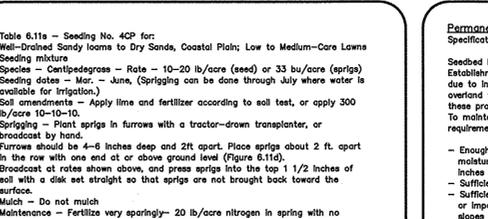
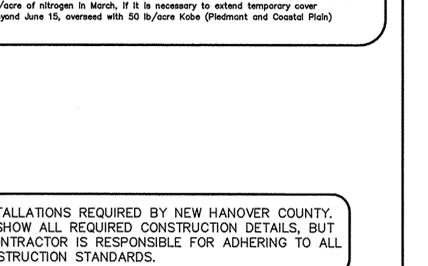
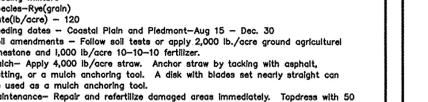
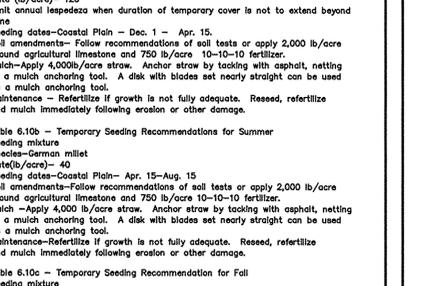
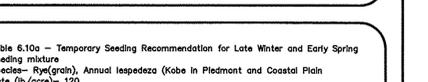
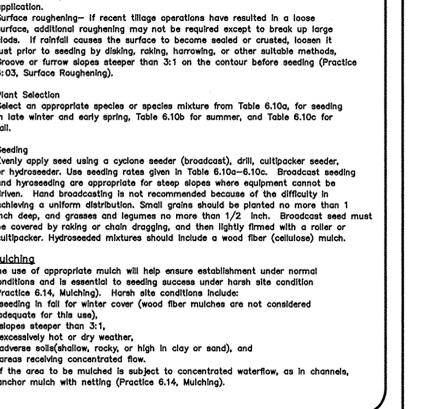
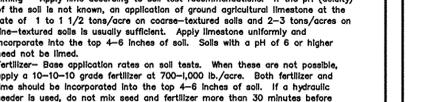
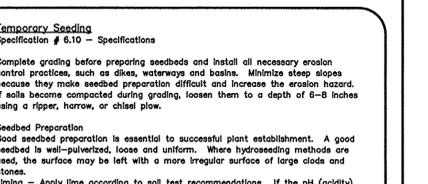
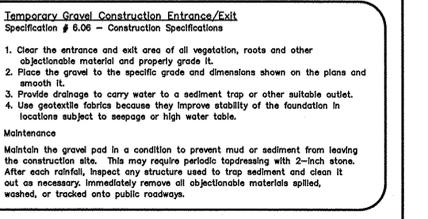
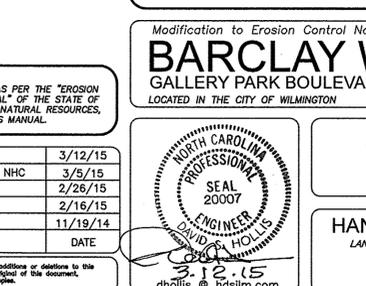
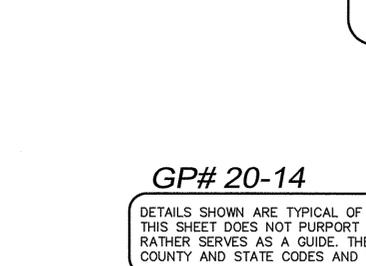
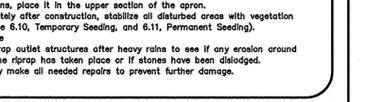
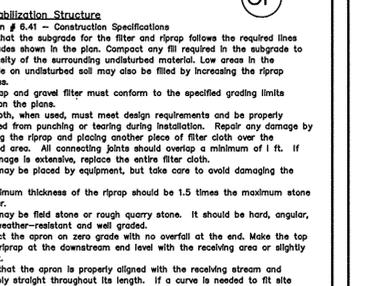
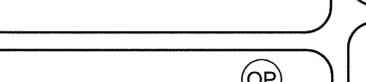
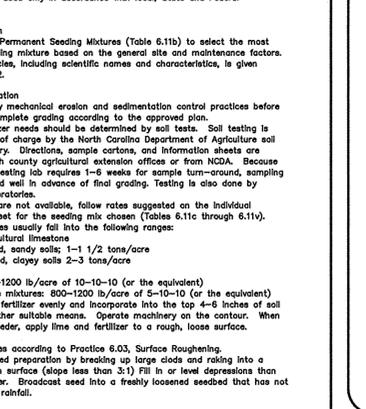
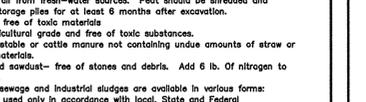
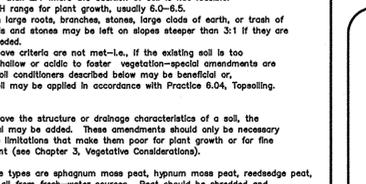
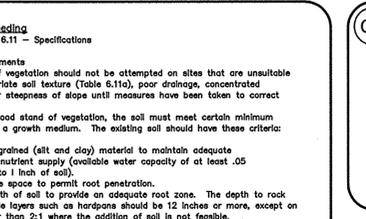
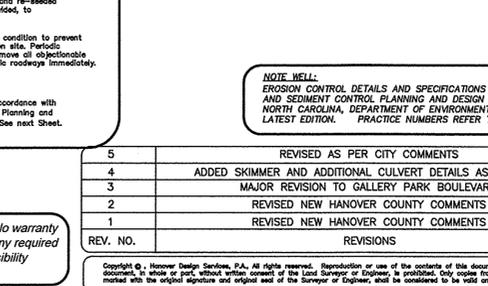
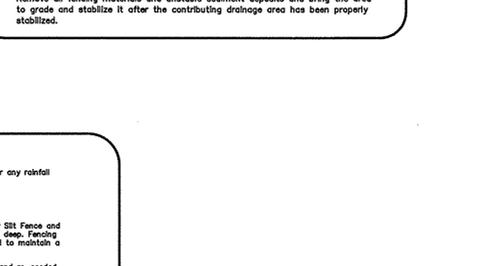
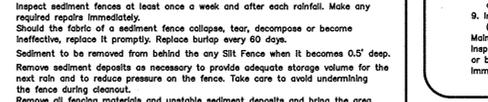
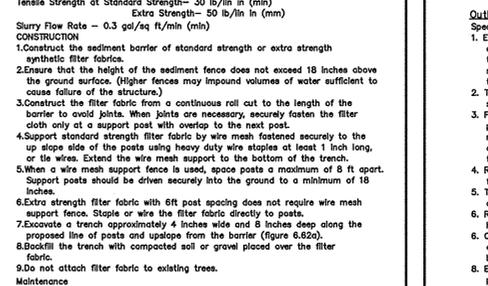
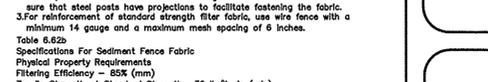
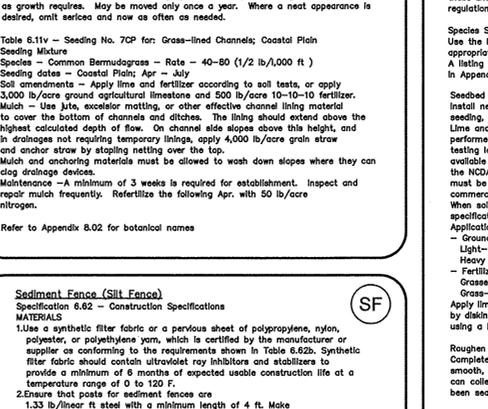
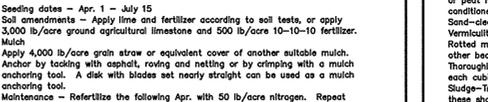
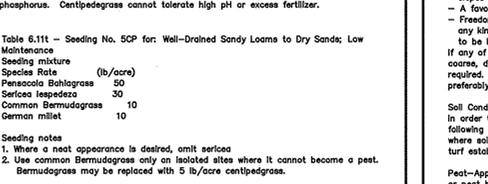
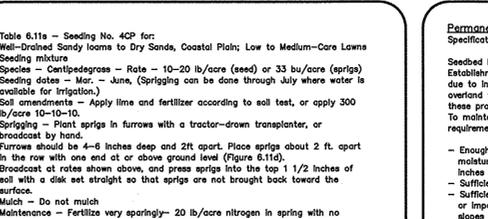
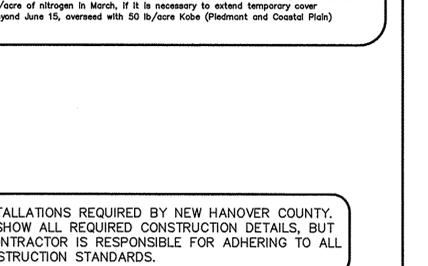
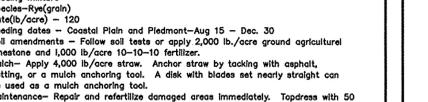
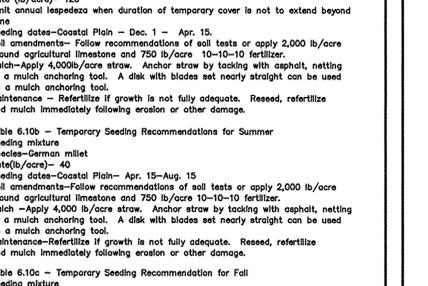
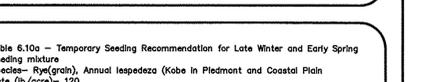
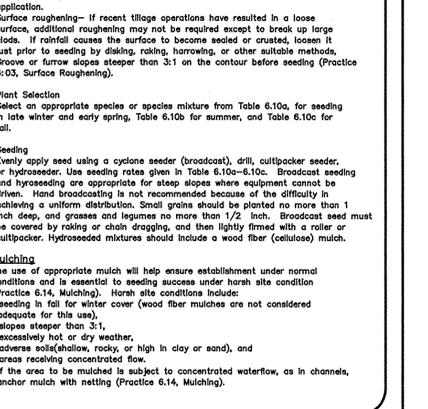
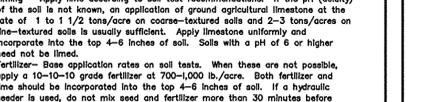
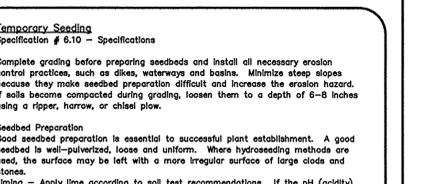
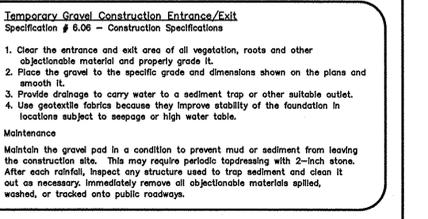
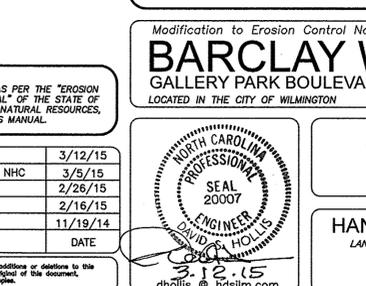
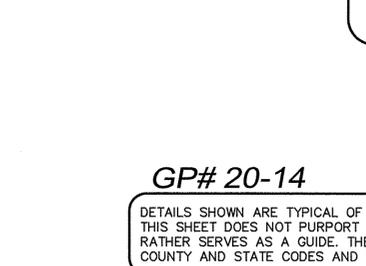
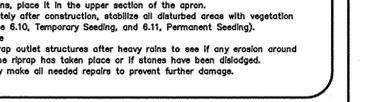
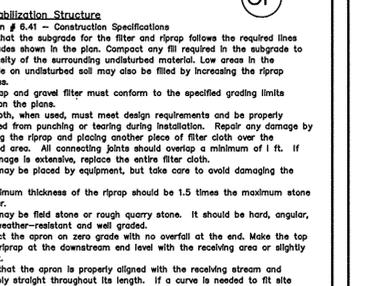
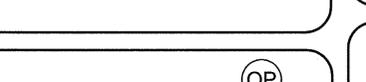
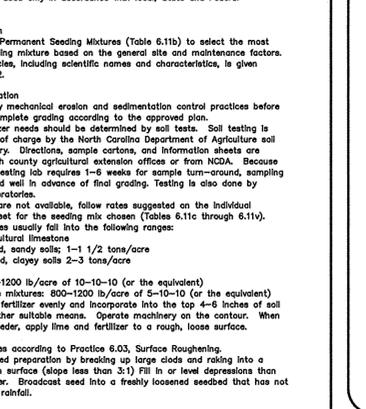
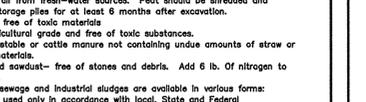
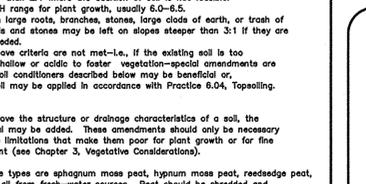
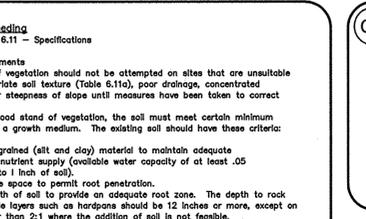
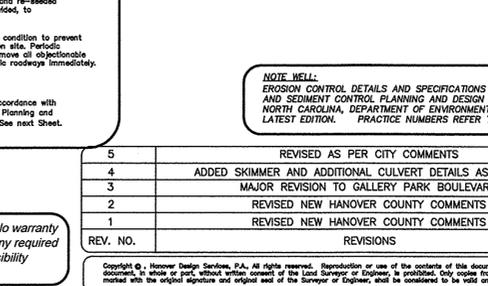
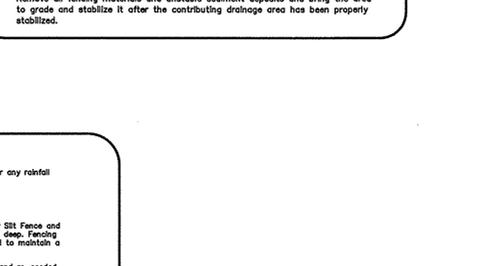
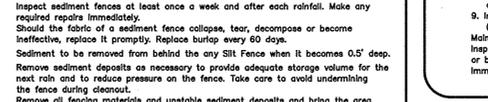
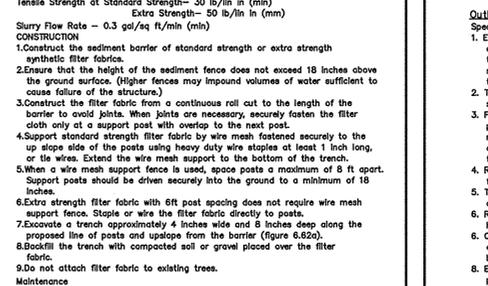
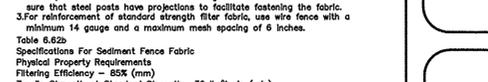
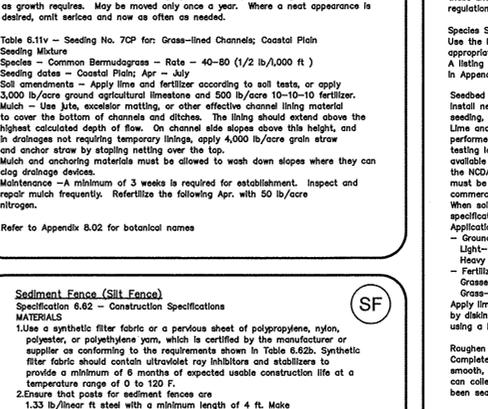
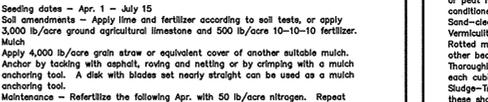
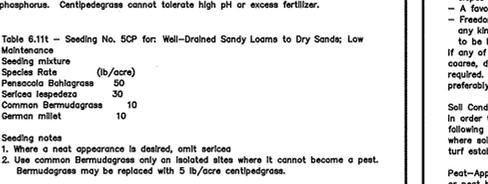
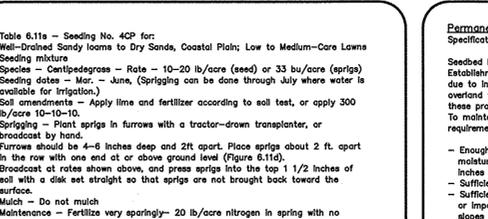
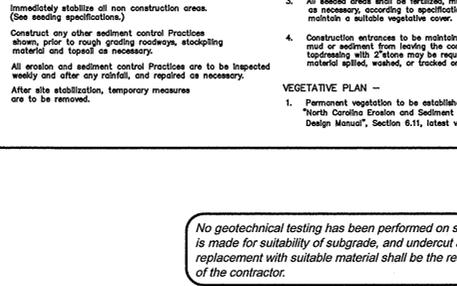
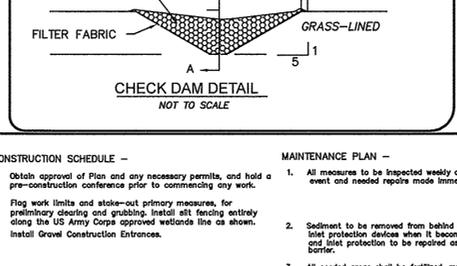
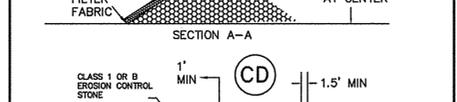
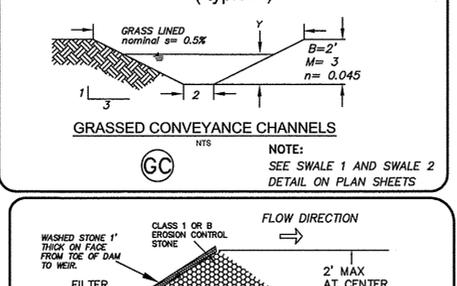
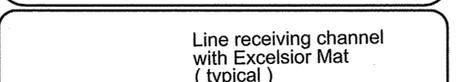
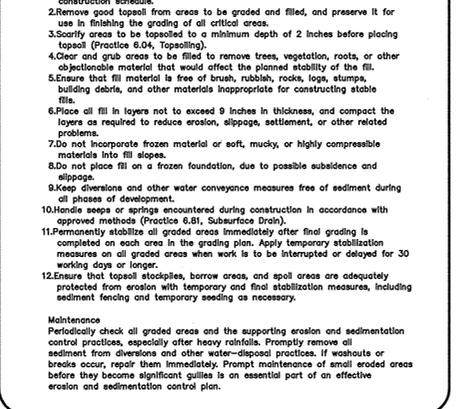
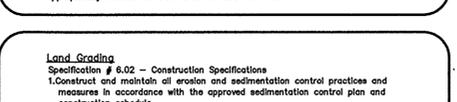
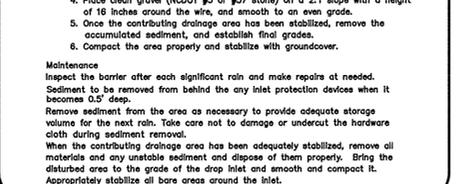
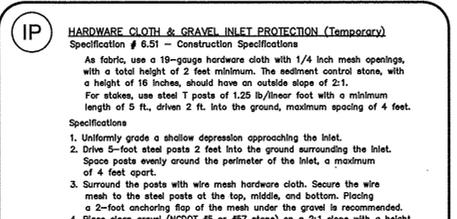
- ALL CONSTRUCTION TO APPLICABLE STATE AND LOCAL CODES.
- CONTRACTOR TO COORDINATE ANY REQUIRED TRAFFIC CONTROL WITH NCDOT & THE CITY OF WILMINGTON WHERE APPLICABLE.
- CARE SHALL BE TAKEN DURING FINAL GRADING TO ENSURE PROPER DRAINAGE TO DRAINAGE SWALES AND RECEIVING STRUCTURES.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ANY RELOCATIONS, RE-ALIGNMENTS, DISCONTINUATIONS OR CONNECTIONS OF EXISTING UTILITIES WITH APPLICABLE AUTHORITIES, AND ANY REQUIRED PERMITS, CLEARING AND GRUBBING OF SITE TO INCLUDE REMOVAL OF EXISTING CURBS, ASPHALT INLETS, AND ANY OTHER STRUCTURES INCLUDING TREES, STUMPS AND DEBRIS EXISTING ON SITE. TREES NOT REQUIRED TO BE CLEARED FOR CONSTRUCTION SHALL REMAIN UNLESS OTHERWISE DIRECTED.

NOTE: THIS PLAN TO BE UTILIZED AND REVIEWED ONLY IN CONJUNCTION WITH THE WRITTEN NARRATIVE, WHICH IS AN INTEGRAL PART OF THIS EROSION AND SEDIMENT CONTROL PLAN.



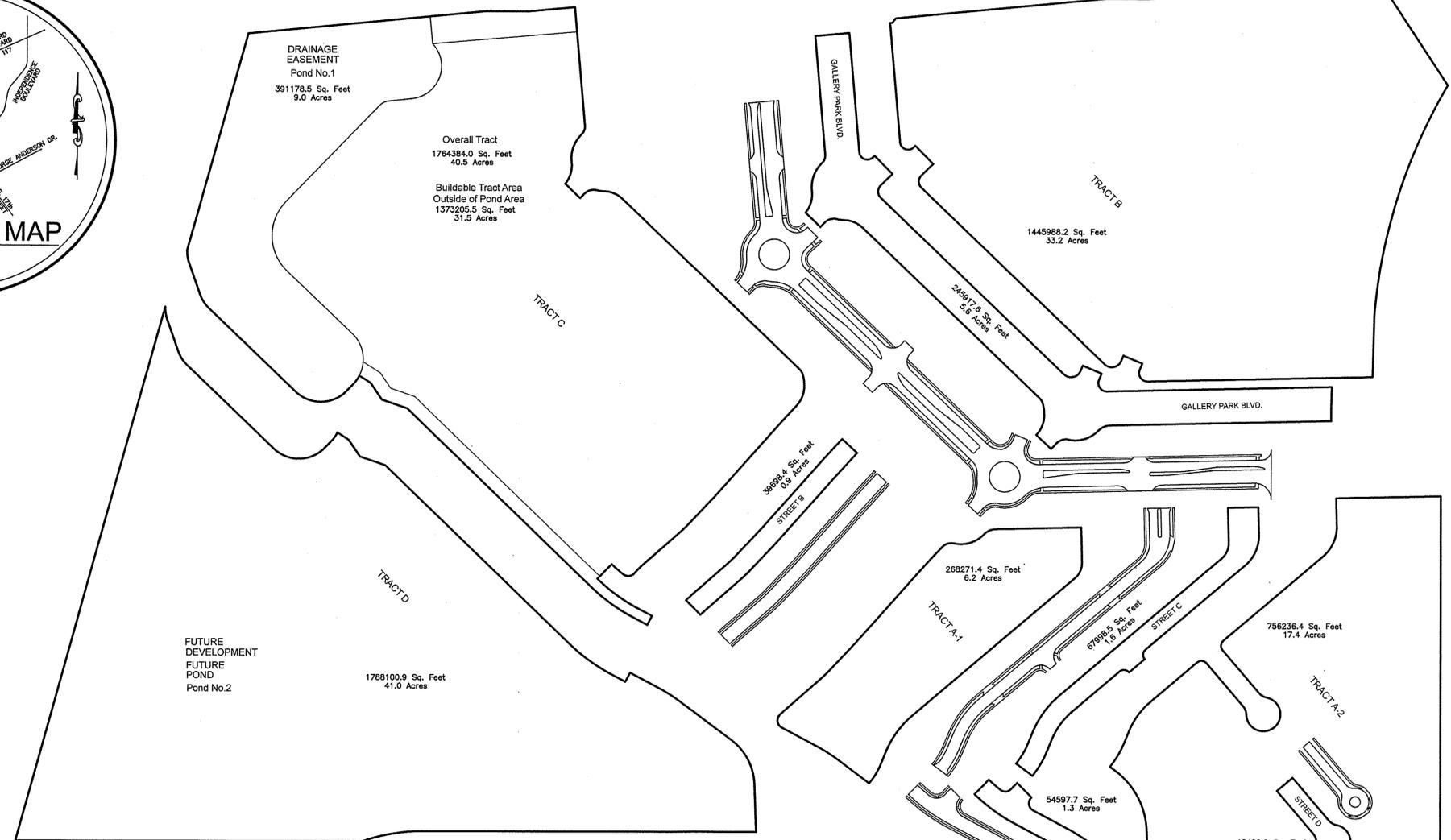
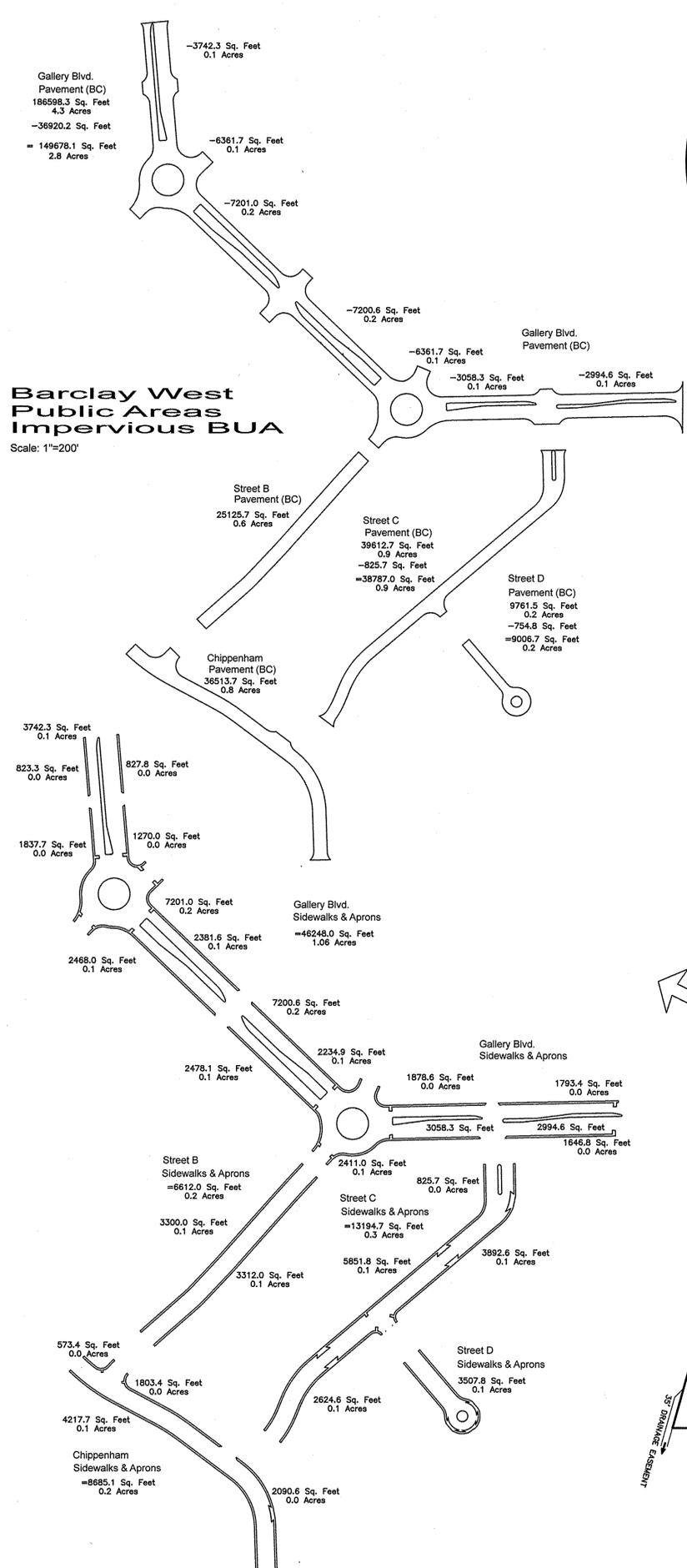
STABILIZATION TIME FRAMES:

SITE AREA DESCRIPTION	STABILIZATION
Perimeter dikes, swales, ditches and slopes	7 DAYS
High Quality Water (HQW) Zones	7 DAYS
Slopes steeper than 3:1	7 DAYS
Slopes 3:1 or flatter	14 DAYS
All other areas with slopes flatter than 4:1	14 DAYS

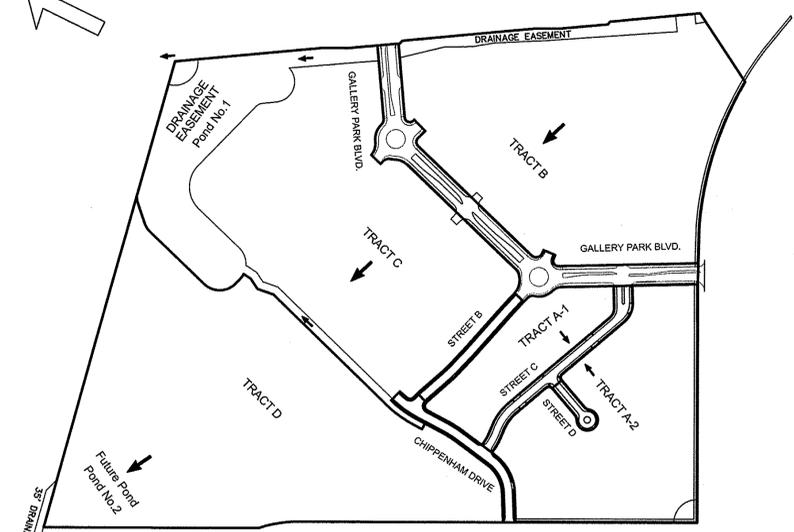




Barclay West Public Areas Impervious BUA
Scale: 1"=200'



Barclay West Tract Areas
Scale: 1"=200'



Barclay West Tract Identifier Map
Scale: 1"=400'

Barclay West - Pond No.1 Areas

Tract	Area sf	Impervious (BUA) sf (@75%)	Forebay No.	Street	Area Pvmt (BC) sf	SW, Islands sf	Street BUA sf	Forebay No.
A-1	268,271	201,203	2					
A-2	756,236	567,177	2	Gallery Blvd	245,916	149,678	46,248	195,926
B	1,445,988	1,084,491	1	Street B	39,698	25,126	6,612	31,738
overall C	1,764,384	NA	NA	Street C	67,999	38,787	13,195	51,982
(-) DE	391,179	NA	NA	Street D	18,400	9,007	3,508	12,515
net C	1,373,205	1,029,904	2	Chippenham	54,598	36,514	8,685	45,199
D	1,788,101	FUTURE POND						
Totals Tracts	3,843,700	2,882,775		Total Streets	426,613	259,112	78,248	337,360
Total DA	4,661,492			Total Impervious	3,220,135			Total BUA %
	107.01	acres						69%
Area into Forebay 1		1,691,906	40%					
Area into Forebay 2		2,578,407	60%					
Stormwater Management:								
Pre-developed CN		55		4,661,492				
Post-developed CN grass		61		1,441,357				
Post-developed CN BUA		96		3,220,135				
Composite Post-developed CN		86		4,661,492				

Barclay West Tract Areas Summary Spreadsheet
Scale: NTS

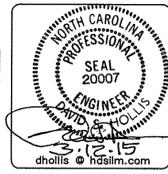
REV. NO.	REVISIONS	DATE
1	MAJOR REVISION TO GALLERY PARK BOULEVARD	1-30-15

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____

Water Quality Pond Plans - Drainage and BUA Areas
Barclay West
Regional Pond No.1 Plans & Profiles and Details
CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA



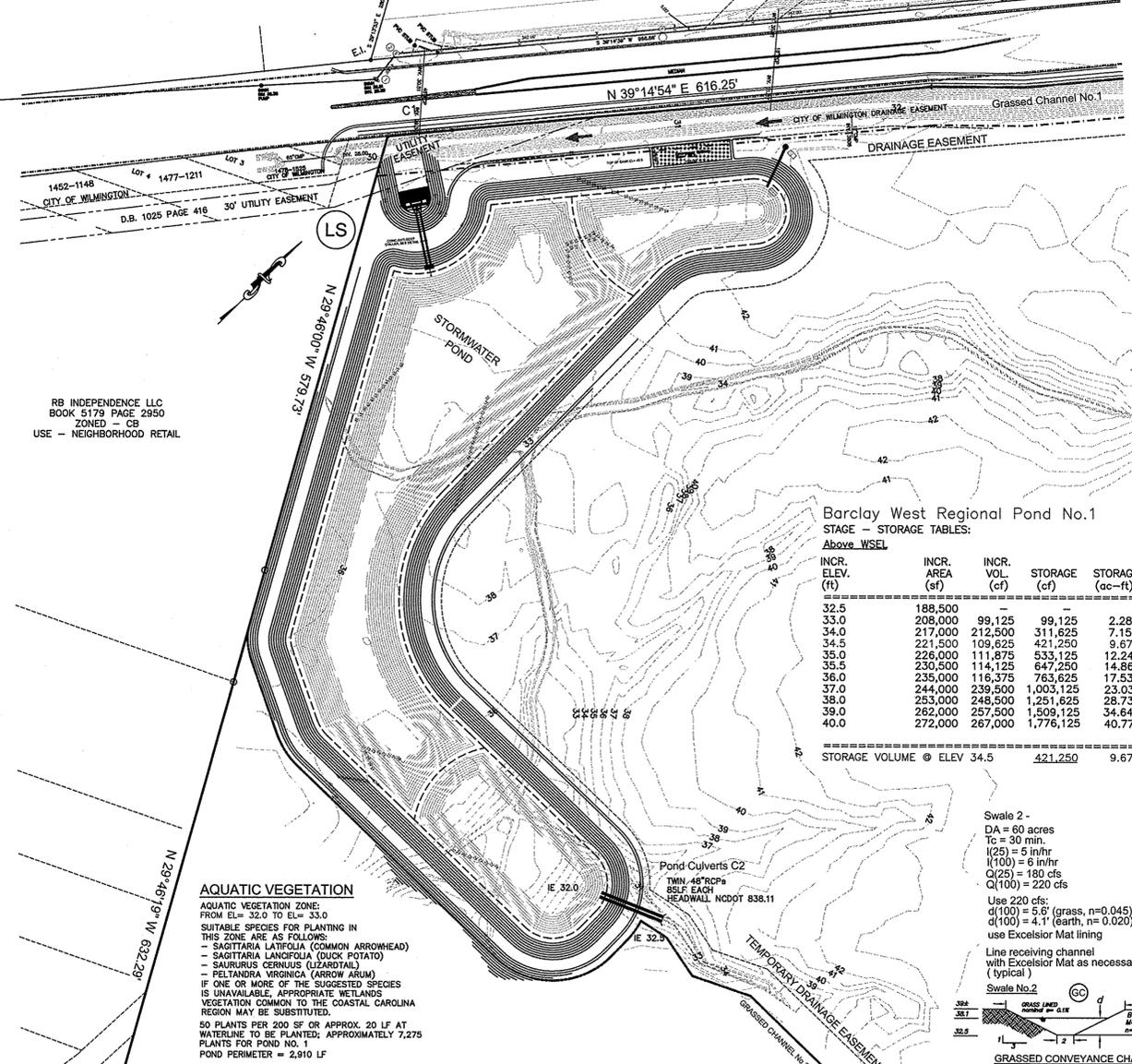
OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
1201 GLEN MEADE ROAD
WILMINGTON, NC 28403
910-762-2676

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002 LICENSE No.: C-0582

Date: 10-6-14
Scale: AS SHOWN
Drawn: DSH
Checked: GAW
Project No: 12498
Sheet No: P1
3

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NOTE:
404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SAW-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.

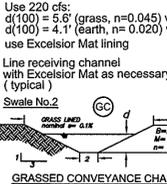


RB INDEPENDENCE LLC
BOOK 5179 PAGE 2950
ZONED - CB
USE - NEIGHBORHOOD RETAIL

Barclay West Regional Pond No. 1
STAGE - STORAGE TABLES:
Above WSEL

INCR. ELEV. (ft)	INCR. AREA (sf)	INCR. VOL. (cf)	STORAGE (cf)	STORAGE (ac-ft)
32.5	188,500			
33.0	208,000	99,125	99,125	2.28
34.0	217,000	212,500	311,625	7.15
34.5	221,500	109,825	421,250	9.67
35.0	226,000	111,875	533,125	12.24
35.5	230,500	114,125	647,250	14.86
36.0	235,000	116,375	763,625	17.53
37.0	244,000	239,500	1,003,125	23.03
38.0	248,500	1,251,825	28,750	28.73
39.0	262,000	257,500	1,509,125	34.64
40.0	272,000	267,000	1,776,125	40.77
STORAGE VOLUME @ ELEV 34.5			421,250	9.67

Swale 2 -
DA = 60 acres
T = 30 min.
Q(25) = 5 in/hr
Q(100) = 6 in/hr
Q(25) = 180 cfs
Q(100) = 220 cfs
Use 220 cfs:
d(100) = 5.6' (grass, n=0.045) v = 2.1 fps
d(100) = 4.1' (earth, n=0.020) v = 3.8 fps
use Excelsior Mat lining
Line receiving channel with Excelsior Mat as necessary (typical)
Swale No. 2



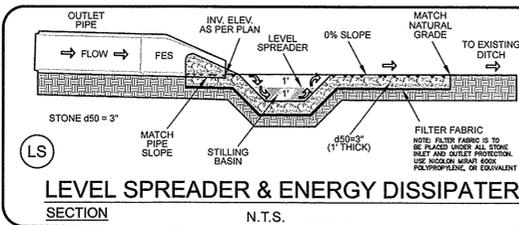
Swale 1 -
d(100) = 6.0' (grass, n=0.045) v = 2.2 fps
d(100) = 6.0' (earth, n=0.020) v = 4.9 fps
use Excelsior Mat lining
Channel capacity is 260+ cfs:
Line receiving channel with Excelsior Mat as necessary after regrading (typical)
Swale No. 1



Sediment Basin
Specifications # 6.61 - Construction Specifications

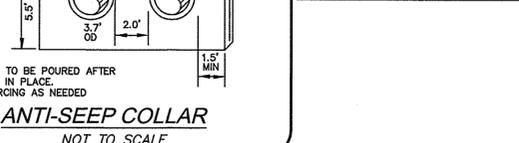
1. Site preparation - Clear, grub and strip topsoil from areas under the embankment to remove trees, vegetation, roots and other objectionable material. Delay clearing the pool area until the dam is complete and then remove brush, trees and other objectionable materials to facilitate sediment removal. Stockpile all topsoil or soil containing organic matter for use on the outer edge of the embankment to facilitate vegetative establishment. Place temporary sediment control measures below the basin as needed.
2. Out-of-trench - Excavate a cut-off trench along the centerline of the earth fill embankment. Cut the trench to stable soil material, but in no case make it less than 2 ft. deep. The cut-off trench must extend into both abutments to at least the elevation of the riser crest. Make the minimum bottom width wide enough to permit operation of excavation and compaction equipment but in no case less than 2 ft. Make side slopes of the trench no steeper than 1:1. Compaction requirements are the same as those for the embankment. Keep the trench dry during backfilling and compaction operations.
3. Embankment - Take fill material from the approved cross shown on the plans. It should be clean mineral soil, free of roots, woody vegetation, rocks and other objectionable material. Scarify areas on which fill is placed before placing fill. The fill material must contain sufficient moisture so it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Place fill material in 8 to 8-inch continuous layers over the entire length of the fill area and then compact it. Compaction may be obtained by routing the construction hauling equipment over the fill so that the entire surface of each layer is traversed by at least one wheel or tread track of the heavy equipment, or a compactor may be used. Construct the embankment to an elevation 10% higher than the design height to allow for settling.
4. Conduit spillway - Securely attach the riser to the barrel or barrel stub to make a watertight structural connection. Secure all connections between barrel sections by approved watertight assemblies. Place the barrel and riser on a firm, smooth foundation of impervious soil. Do not use pervious material such as sand, gravel, or crushed stone as backfill around the pipe or anti-seep collars. Place the fill material around the pipe spillway in 4-inch layers and compact it under and around the pipe to at least the same density as the adjacent embankment. Care must be taken not to raise the pipe from firm contact with its foundation when compacting under the pipe haunches.
5. Achievement of planned elevations, grades, design width, and entrance and exit channel slopes are critical to the successful operation of emergency spillway.
6. Intake - Discharge water into the basin in a manner to prevent erosion. Use diversions with outlet protection to divert sediment-laden water to the upper end of the pool area to improve basin trap efficiency (Reference: Runoff Control Measures and Outlet Protection).
7. Erosion control - Construct the structure so that the disturbed area is minimized. Divert surface water away from core areas. Complete the embankment before the area is cleared. Stabilize the emergency spillway embankment and all other disturbed areas above the crest of the principal spillway immediately after construction (Reference: Surface Stabilization).
8. Safety - Sediment basins may attract children and can be dangerous. Avoid steep side slopes, and fence and mark basins with warning signs if trespassing is likely. Follow all state and local requirements.
Maintenance
Check sediment basins after periods of significant runoff. Remove sediment and restore the basin to its original dimensions when sediment accumulates to one-half the design depth.
Check the embankment, spillways, and outlet for erosion damage, and inspect the embankment for piping and settlement. Make all necessary repairs immediately. Remove all trash and other debris from the riser and pool area.

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

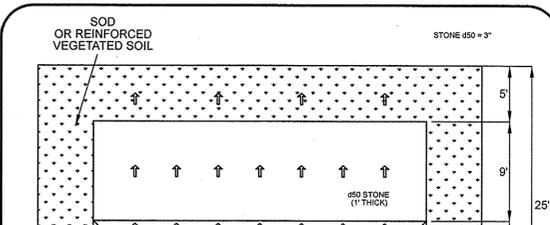


LEVEL SPREADER & ENERGY DISSIPATER SECTION N.T.S.

LEVEL SPREADER RCP DIAMETER	DESIGN MAXIMUM CFS	FPS	PROPOSED POND 1 CFS	FPS
TWIN 36"	120	10	82	6.2
36"	65	10	-	-
30"	45	10	-	-
24"	30	10	-	-
18"	18	10	-	-



ANTI-SEEP COLLAR NOT TO SCALE

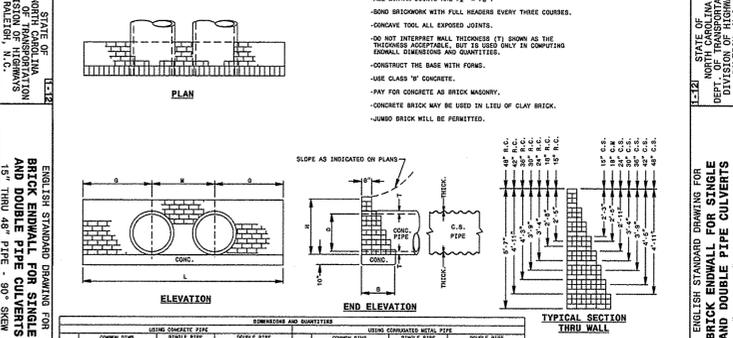


LEVEL SPREADER & ENERGY DISSIPATER PLAN N.T.S.

Outlet Stabilization Structure
Specification # 6.41 - Construction Specifications

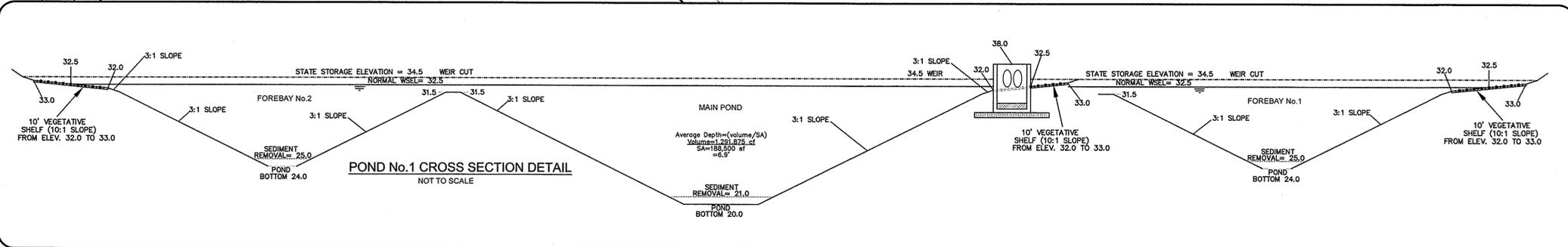
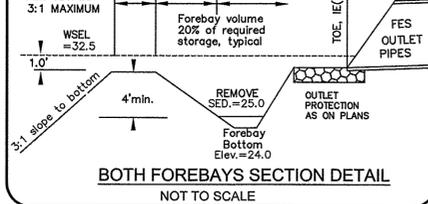
1. Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
2. The riprap and gravel filter must conform to the specified grading limits shown on the plans.
3. Filter cloth, when used, must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of filter cloth over the damaged area. All connecting joints should overlap a minimum of 1 ft. If the damage is extensive, replace the entire filter cloth.
4. Riprap may be placed by equipment, but take care to avoid damaging the filter.
5. The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.
6. Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
7. Construct the apron on zero grade with no overfall at the end. Make the top of the riprap at the downstream end level with the existing apron or slightly below it.
8. Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron.
9. Immediately after construction, stabilize all disturbed areas with vegetation (Practice 6.10, Temporary Seeding, and 6.11, Permanent Seeding).
Maintenance
Inspect riprap outlet structures after heavy rains to see if any erosion around or below the riprap has taken place or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS



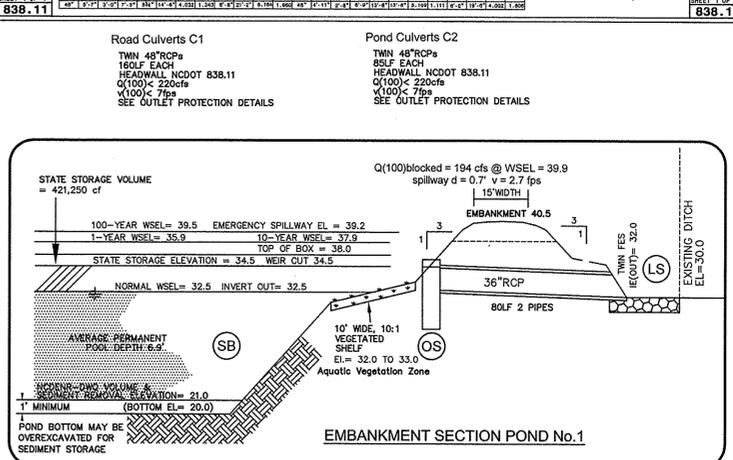
BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS

BOTH FOREBAYS SECTION DETAIL
NOT TO SCALE



POND No. 1 CROSS SECTION DETAIL NOT TO SCALE

EMBANKMENT SECTION POND No. 1



EMBANKMENT SECTION POND No. 1

RCP DIAMETER	La	W	d50	dMAX	APRON	REQ. STONE
ALL 18"	15'	15'	3"	6"	1'	approx. 7cy
ALL 24"	15'	15'	3"	6"	1'	approx. 7cy
ALL 30"	15'	15'	3"	6"	1'	approx. 7cy
ALL 36"	30'	15'	3"	6"	1'	approx. 14cy
ALL 48"	20'	20'	3"	6"	1'	approx. 13cy
ALL 54"	20'	20'	3"	6"	1'	approx. 13cy
ALL 60"-66"	20'	20'	3"	6"	1'	approx. 13cy
ROCK STABILIZING APRON						
TWIN 48"	20'	20'	3"	6"	1'	approx. 13cy
TWIN 36"	10'	15'	3"	6"	1'	approx. 8cy
TWIN 24"	10'	15'	3"	6"	1'	approx. 8cy
TWIN 18"	10'	15'	3"	6"	1'	approx. 8cy

PEAK DISCHARGE SUMMARY -

Q(1) pre-developed = 11.2 cfs
Q(10) pre-developed = 54.0 cfs
Q(25) pre-developed = 81.1 cfs
Q(50) pre-developed = 104.2 cfs
Q(1) post-developed = 8.7 cfs @ WSEL = 35.9
Q(10) post-developed = 43.3 cfs @ WSEL = 37.9
Q(25) post-developed = 81.5 cfs @ WSEL = 36.7
Q(50) post-developed = 117.8 cfs @ WSEL = 39.2
Q(100) post-developed = 185.3 cfs @ WSEL = 39.5
Q(100) post-BLOCKED = 194.2 cfs @ WSEL = 39.9
SA REQUIRED: 3220135 / 4661492 = 0.69, or 69%
Surface Area required = 158,500 sf
Surface Area provided = 188,500 sf @ WSEL 32.5
Storage Volume required = 389,600 cf
Storage Volume provided = 421,250 cf @ WSEL 34.5
Storage Volume Drawdown Time = 3.5 days
SEDIMENTATION POND CONSIDERATIONS -
Storage required = 107.1 X 3600 = 385,500 cf
Storage provided = 1,713,000 cf ±
FOREBAY CALCULATION:
Forebay Volume = 264,750 cf (20%)

Barclay West Regional Pond No. 1
Wet detention/retention pond
Additional Calculation Summary for City of Wilmington:

WATER QUALITY CONSIDERATIONS -
Impervious area calculations: See Project Data Sheet
TOTAL IMPERVIOUS = 3,220,135 sf
TOTAL AREA DRAINING TO POND = 4,661,492 sf (107.01 acres)
SA REQUIRED: 3220135 / 4661492 = 0.69, or 69%
At 6.5' average depth, 90% TSS removal, from chart - SA/DA factor = 3.4
54,661,492 x 0.01 x 3.4 = 188,500 sf SA REQUIRED
At Elev. = 347.5 = 188,500 sf SA PROVIDED
VOLUME REQUIRED: $R = [(P)(R)/(12)(A)]$
SEE PAGES A.1 AND A.2, "Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs"
(P) = 1.5'
(R) = 0.9
(A) = 0.05 + 0.9(3220135/4661492) = 0.67
(A) = 4,661,492 sf
R = $[(1.5)(0.9)/(12)(0.67)] = 0.089$ acre feet
= 389,600 cf OF REQUIRED STORAGE
= 421,250 cf PROVIDED STORAGE @ ELEV. = 34.5
DRAWDOWN:
Average head from storage elevation to orifice = 34.5 - 32.5 / 3 = 0.67'
8" PVC drain to draw-down pond:
Orifice equation: $Q = C_d A \sqrt{2gh}$
T = 3.5 days

Approved Construction Plan

REV. NO.	REVISIONS	DATE
2	ADDED SKIMMER AND ADDITIONAL CULVERT DETAILS AS PER NHC	3-05-15
1	REVISED AS PER CITY COMMENTS	12-02-14

STORMWATER MANAGEMENT PLAN APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

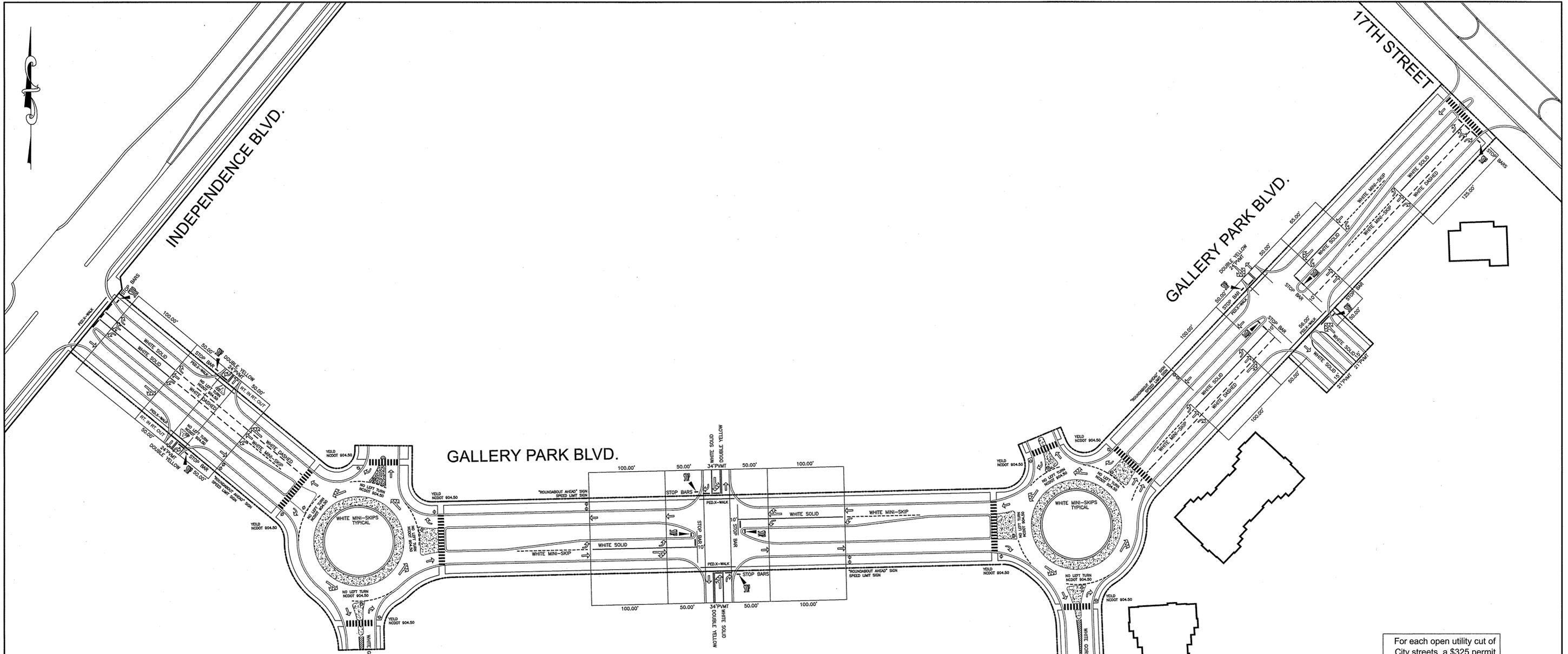
Barclay West
Regional Pond No. 1 Plans & Profiles and Details
CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
1201 GLEN MEADE ROAD
WILMINGTON, NC 28403
PHONE: (910) 343-9002 LICENSE No.: C-0887

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-9002 LICENSE No.: C-0887

Professional Engineer Seal: North Carolina, 2007, David B. Hollis

Scale: 1" = 100'
Date: 10-6-14
Project No: 12498
Sheet No: P2 of 3



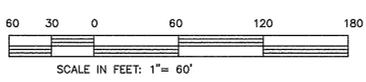
Barclay West Gallery Park Boulevard

Striping Plan
SCALE: 1" = 60'

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT
PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____



REV. NO.	REVISIONS	DATE

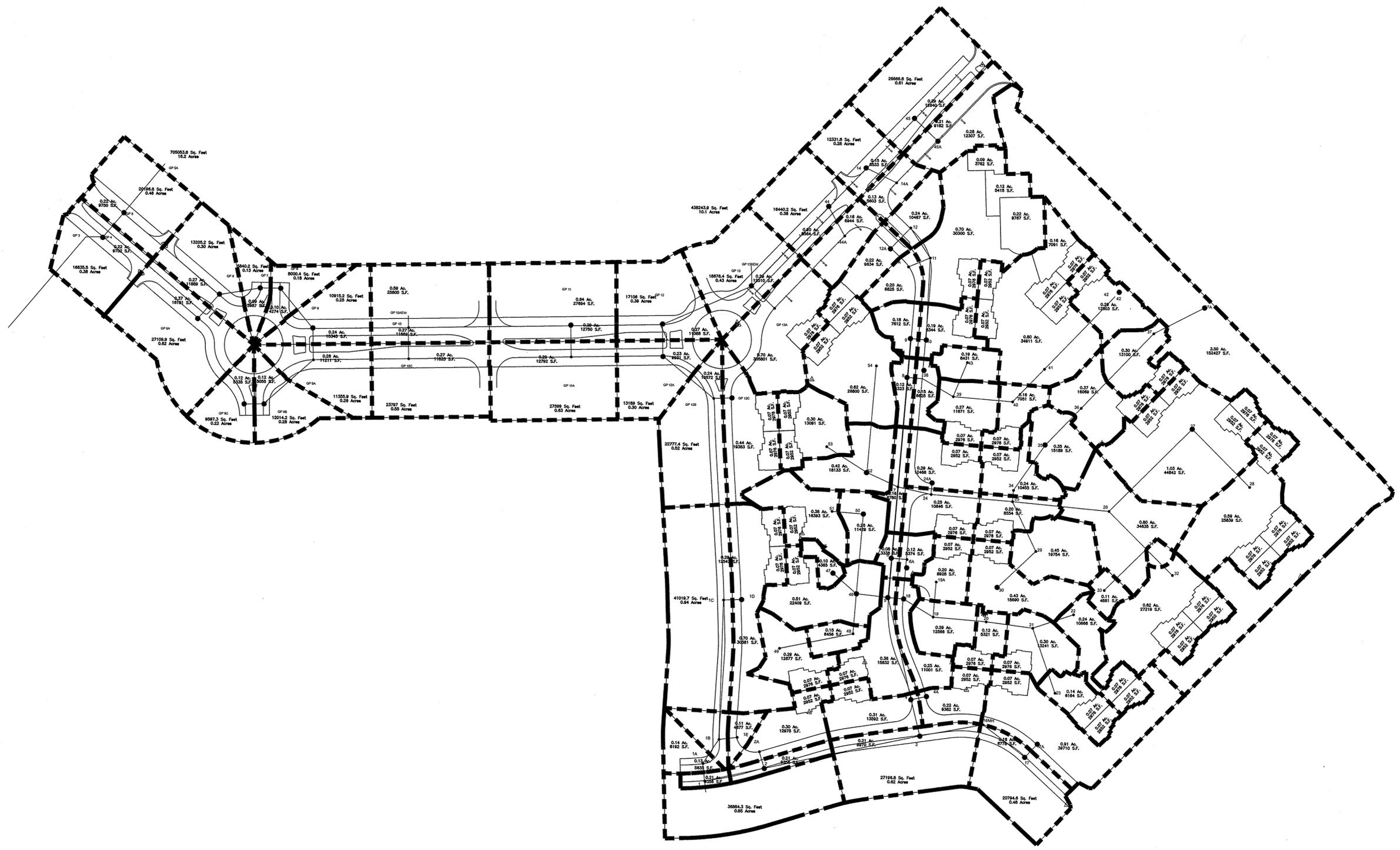
Striping Plan
Barclay West
Gallery Park Boulevard
CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
1201 GLEN MEADE ROAD
WILMINGTON, NC 28403
910-762-2676

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002 LICENSE No. :C-0552

Date: 1-30-15
Scale: AS SHOWN
Drawn: DSH
Checked: GAW
Project No: 12498
Sheet No: 1
Of: 1

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For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

STORMWATER MANAGEMENT PLAN
APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____
PERMIT # _____
SIGNED _____

Barclay West - Drainage Areas Forebay 1		Barclay West - Drainage Areas Forebay 2					
Inlet	Area	Inlet	Area	Inlet	Area	Inlet	Area
acres	acres	acres	acres	acres	acres	acres	acres
4	0.60	9B	0.40	12	0.66	13	0.13
5	0.68	9C	0.34	12A	0.53	14	0.43
5A(future)	16.19	10	0.52	12B	0.76	46	0.90
6A	0.57	10A	0.34	12C	0.58	45A	0.49
7	0.99	10B	0.35	13	0.72	44	0.58
8	0.22	10C	0.82	13A	0.77	44A	0.16
9	0.28	11	0.58	13B(future)	10.06		
9A	0.52	11A	1.21				
1	0.01	8	0.12	19	0.29	32	0.80
1A	0.14	9	0.18	19A	0.27	33	0.11
1B	0.10	10	0.28	20	0.19	34	0.31
1C	1.23	11	1.20	21	0.37	35	0.35
1D	0.83	11A	0.20	22	0.38	36	0.44
1E	0.11	12	0.24	23	0.28	37	0.37
2	0.21	12A	0.29	24	0.32	37A	3.50
2A	0.37			24A	0.36	38	0.15
3	0.83			25	0.27	39	0.34
4	0.38			26	0.80	40	0.23
4A	0.29			27	1.31	41	1.17
5	0.43	16MH	0	28	1.01	42	0.59
6	0.08	17	0.64	29	0.45	43	0.16
6A	0.12	17A	0.98	30	0.50		
7	0.16	18	0.25	31	0.10		

Barclay West & Gallery Park Apartments Storm Sewer Drainage Areas Map

Scale: 1"= 100'

Approved Construction Plan		
	Name	Date
Planning		
Traffic		
Fire		

REV. NO.	REVISIONS	DATE
2	REVISION TO GALLERY PARK BOULEVARD	2-26-15
1	MAJOR REVISION TO GALLERY PARK BOULEVARD	1-30-15

Water Quality Pond Plans - Drainage and BUA Areas
Barclay West
Regional Pond No.1 Plans & Profiles and Details
CITY OF WILMINGTON
NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
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1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002 LICENSE No. :C-058Z

Date: 10-6-14
Scale: 1"= 100'
Drawn: DSH
Checked: GAW
Project No: 12498
Sheet No: 1 of 1



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