BARCLAY WEST
PHASE 1 INFRASTRUCTURE

Plans and Profiles

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

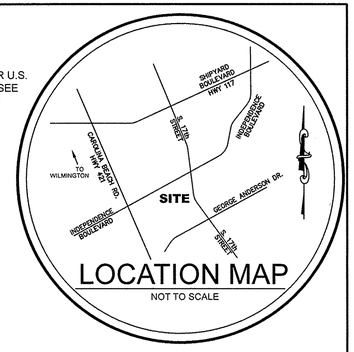
OWNER / DEVELOPER:
CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
Wilmington, NC 28406
910-762-2676

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.



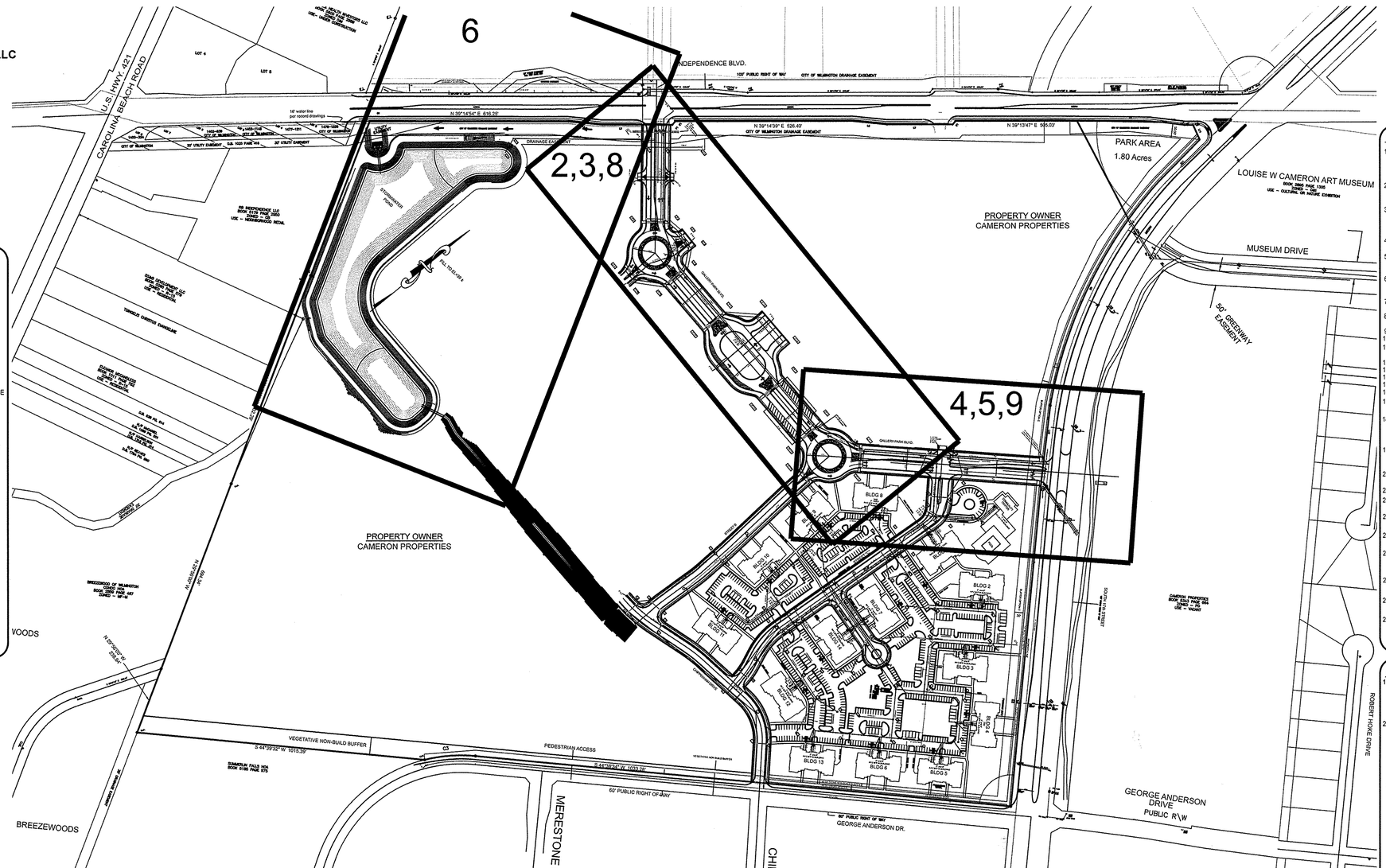
LOCATION MAP
NOT TO SCALE

WATER:
12" pipe = 2,114 LF
8" pipe = 654 LF

TOTAL WATER MAINS:
Total pipe = 2, 768 LF

SEWER:
Existing

STANDARD NOTES:
1. 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.
2. NO CONSTRUCTION IS TO BEGIN BEFORE LOCATION OF EXISTING UTILITIES HAS BEEN DETERMINED. CALL "NC ONE-CALL" AT LEAST 48 HOURS BEFORE COMMENCING CONSTRUCTION.
3. ALL TREES WHICH ARE NOT REQUIRED TO BE CLEARED FOR CONSTUCTION SHALL BE PRESERVED WHEREVER POSSIBLE UNLESS OTHERWISE DIRECTED.
4. 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.
5. 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
6. 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.
7. EXTREME CARE SHALL BE TAKEN TO ENSURE MINIMUM SEPARATIONS AT ALL UTILITY CROSSINGS.
8. 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.
9. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS.
10. THIS PLAN IS FOR SITE GRADING, ROADWORK & SEWER INSTALLATION ONLY.
11. NO ENCUMBERANCES IN R/W EXCEPT AS SHOWN.
12. 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 BELLSOUTH AND DUKE ENERGY..
13. TEMPORARY PROJECT AREA LIMITS ARE AS SHOWN.
14. THIS PROPERTY IS ZONED:RB, MF-M & O&I-1.
15. SEWER AND WATER TO BE PROVIDED BY CFPUA.
16. SITE WILL MEET ALL ZONING REQUIREMENTS.
17. ANY REGULATED TREES ON SITE TO BE PRESERVED AS SHOWN.
18. STRIPING AND LANES TO CITY STANDARDS (THERMOPLASTIC).
19. NO VEHICULAR ACCESS TO SITE EXCEPT AS SHOWN.
20. ALL UTILITIES UNDERGROUND.
21. LANDSCAPING PLAN BY OTHERS.



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

0 200 400 600

GENERAL NOTES:
1. 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.
2. 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.
3. 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.
4. ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
5. 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.
6. 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.
7. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
8. CALL TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.
9. TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING PRIOR TO ACTUAL STRIPING.
10. ALL PARKING STALL MARKINGS & LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
11. ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE OWNER.
12. STOP SIGNS AND STREET SIGNS TO REMAIN IN PLACE DURING CONSTRUCTION.
13. TACTILE WARNING MATS WILL BE INSTALLED ON ALL WHEELCHAIR RAMPS.
14. A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET.
15. ANY BROKEN OR MISSING SIDEWALK PANELS OR CURBING WILL BE REPLACED.
16. CONTACT THE CITY AT 341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
17. WATER AND SEWER SERVICE SHALL MEET CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) DETAILS AND SPECIFICATIONS.
18. 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.
19. IF THE CONTRACTOR DESIRES CFPUA 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.
20. ANY IRRIGATION SYSTEM SUPPLIED BY CFPUA WATER SHALL COMPLY WITH CFPUA CROSS CONNECTION CONTROL REGULATIONS. CALL 343-3910 FOR INFORMATION.
21. ANY IRRIGATION SYSTEM SHALL BE EQUIPPED WITH A RAIN AND FREEZER SENSOR.
22. ANY BACKFLOW PREVENTION DEVICES REQUIRED BY CFPUA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USCFCCCHR OR ASSE.
23. CONTRACTOR TO FIELD VERIFY EXISTING WATER AND SEWER SERVICE LOCATIONS, SIZES AND MATERIALS PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED OF ANY CONFLICTS.
24. CONTRACTOR SHALL MAINTAIN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
25. 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 910-341-0696.
26. NO OBSTRUCTIONS ARE PERMITTED IN THE SPACE BETWEEN THIRTY (30) INCHES AND TEN (10) FEET ABOVE THE GROUND WITHIN THE TRIANGULAR SIGHT DISTANCE.
27. CONTACT THE NORTH CAROLINA ONE CALL CENTER AT 1-800-632-4949 PRIOR TO ANY DIGGING, CLEARING OR GRADING.
28. 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:
1. CLEARING AND GRUBBING OF SITE TO INCLUDE REMOVAL OF EXISTING CURB, 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.
2. MINIMUM UTILITIES SEPARATION SHALL BE MAINTAINED AS FOLLOWS:
   a) 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:
   1) 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
   2) 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
   b) 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.
   c) 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.
   d) 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.
3. SEE DETAIL SHEETS FOR TYPICAL UTILITIES HOOKUPS.
4. CONTRACTOR TO COORDINATE STAGING OF CONSTRUCTION ACTIVITIES WITH THE OWNER & ACHITECT TO FACILITATE ONGOING ADJOINING BUSINESS ACTIVITIES.
5. 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.

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

SITE DATA TABLE:
PARCEL IDENTIFICATION:
RO6500-003-004-000
DB 5427 PG 622

INDEX TO DRAWINGS

SHEET No.	DESCRIPTION	
1 OF 10	COVER SHEET and GENERAL NOTES	
2–9 OF 10	Plans & Profiles	
10 OF 10	TYPICAL DETAILS	
P1 – P3	WATER QUALITY POND	
WSD–1	CFPUA WATER CONSTRUCTION STANDARD DETAILS	CFPUA
WSD–2	CFPUA WATER CONSTRUCTION STANDARD DETAILS	CFPUA

SURVEY NOTES:
1. AREA COMPUTED BY COORDINATE METHOD.
2. ALL DISTANCES ARE HORIZONTAL GROUND.
3. PROPERTY SUBJECT TO ALL EASEMENTS OF RECORD.
4. THE UNDERGROUND UTILITIES SHOWN ON THIS SURVEY ARE LOCATED FROM FIELD SURVEY INFORMATION, AND EXISTING ASBUILT 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 FORM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
5. THIS MAP IS NOT FOR CONVEYANCE, RECORDATION, OR SALES.
6. PORTIONS OF THIS PROPERTY ARE LOCATED WITHIN A 100 YEAR FLOOD HAZARD AREA ACCORDING TO FLOOD INSURANCE RATE MAP COMMUNITY ID#3720312500J, DATED APRIL 3, 2006, PANEL 3125J
7. THIS PROPERTY IS ZONED RB, MF-M & O&I-1.
8. SURVEYED IN 2013, and 2014.
9. COMBINED GRID FACTOR = 1.00000.

STORM SEWER SUMMARY
Forebay No.1

Line no.	Line ID	Flow rate (cfs)	Size (in)	Line length (ft)	Invert down (ft)	Invert up (ft)	Line slope (%)	Grate down (ft)	Grate up (ft)	Dnstrm line no.
1	1 TO 2	162.68	66	57	31.50	32.50	1.75	38.00	41.39	End
2	2 TO 3	162.68	66	447	32.50	33.50	0.22	41.39	45.21	1
3	3 TO 4	162.68	66	35	33.50	33.70	0.57	45.21	42.01	2
4	4 TO 5	159.21	66	63	33.70	33.90	0.32	42.01	41.59	3
5	5 TO 6	100.23	54	252	34.90	35.30	0.16	41.59	42.04	4
6	6 TO 7	91.21	54	85	35.30	35.50	0.24	42.04	42.70	5
7	7 TO 8	89.94	54	38	35.50	35.60	0.26	42.70	42.70	6
8	8 TO 9	88.32	54	105	35.60	35.80	0.19	42.70	42.52	7
9	9 TO 10	78.20	48	192	36.30	36.60	0.16	42.52	44.17	8
10	10 TO 11	66.91	48	326	36.60	37.00	0.12	44.17	44.12	9
11	11 TO 12	57.45	42	184	37.50	37.80	0.16	44.12	43.75	10
12	12 TO 13	42.82	42	195	37.80	38.10	0.15	43.75	43.75	11
13	5 TO 5A	55.05	42	129	33.90	34.20	0.23	41.59	44.00	4
14	6 TO 6A	5.72	18	63	38.30	38.50	0.32	42.04	42.04	5
15	9 TO 9A	7.29	24	63	38.20	38.50	0.48	42.52	42.51	8
16	9A TO 9B	4.28	18	134	39.00	39.30	0.22	42.51	42.42	15
17	9B TO 9C	1.97	18	38	39.30	39.40	0.26	42.42	42.42	16
18	10 TO 10A	3.55	18	152	39.10	39.30	0.13	44.17	44.28	9
19	10 TO 10C	4.74	18	63	39.10	39.30	0.32	44.17	44.17	9
20	11 TO 11A	6.10	18	63	39.50	39.80	0.48	44.12	44.12	10
21	12 TO 12A	10.81	24	63	39.30	39.50	0.32	43.75	43.78	11
22	12A TO 12B	7.75	24	133	39.50	39.70	0.15	43.78	43.73	21
23	12B TO 12C	3.35	18	36	40.20	40.30	0.28	43.73	43.77	22
24	13 TO 13A	4.45	18	63	40.00	40.20	0.32	43.73	43.73	12
25	13 TO 13B	34.20	36	141	38.10	38.40	0.21	43.73	44.00	12
26	10A TO 10B	2.02	18	111	39.30	39.50	0.18	44.28	44.13	18

Return period = 10 Yrs.

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

BENCHMARK LOCATIONS AND ELEVATIONS

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

REV. NO.	REVISIONS	DATE

Copyright © Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

Cover Sheet and General Notes
BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON *NEW HANOVER COUNTY, NORTH CAROLINA*

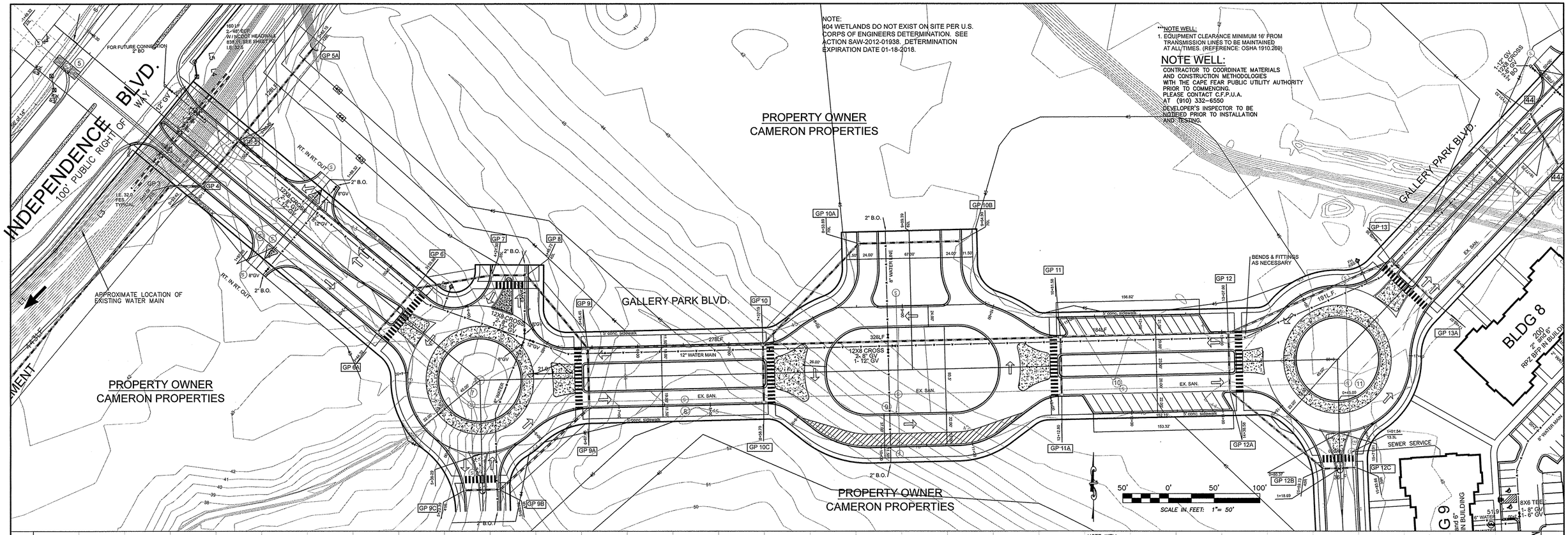
NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID W. HOLLIS
10-03-14
dhollis @ hdslfm.com

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:	1"=200'
Drawn:	GW
Checked:	DSH
Project No:	12498
Sheet No:	1
Of:	10

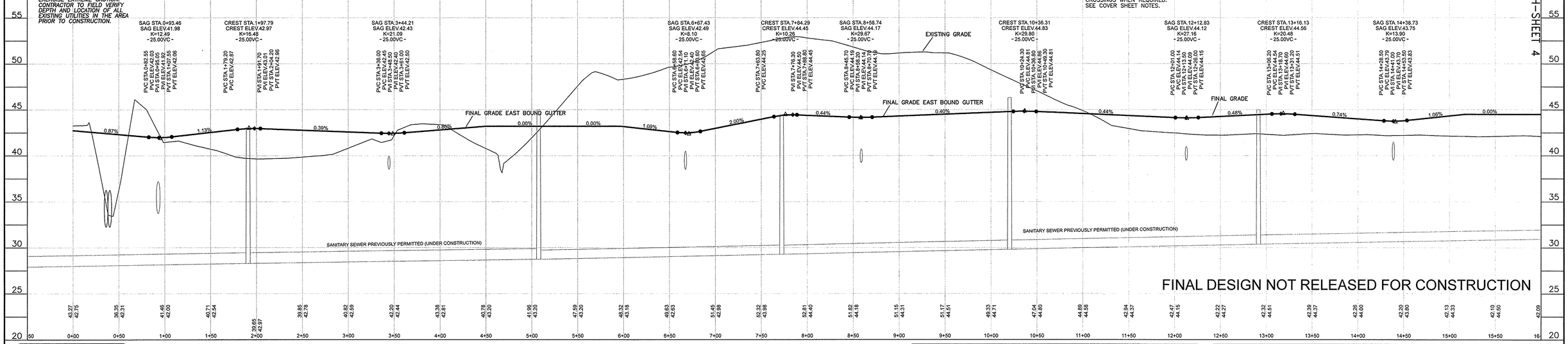
F:\All\Project Folders\12498-BARCLAY WEST\Engineering\12498 BASE eng 01-23-14.dwg (Layout Cover-1)



NOTE WELL:
LOCATION OF MULTIPLE UTILITIES EXERCISE EXTREME CAUTION. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF ALL EXISTING UTILITIES IN THE AREA PRIOR TO CONSTRUCTION.

GALLERY PARK BLVD. EAST BOUND GUTTER PROFILE

NOTE WELL:
MULTIPLE UTILITIES SHOWN GRAPHICALLY IN PROFILE. DEVIATIONS NOTED AS SHOWN. MAINTAIN 36" COVER AND USE DIP AT CROSSINGS WHEN REQUIRED. SEE COVER SHEET NOTES.



FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

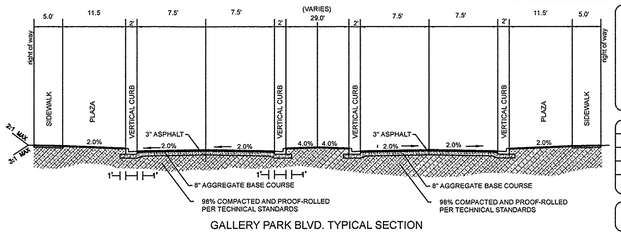
PROFILE LEGEND

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		



GALLERY PARK BLVD. TYPICAL SECTION
(100 FT. R/W VARIES)

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

REV. NO.	REVISIONS	DATE

Copyright © - Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to the document, in whole or part, without written consent of the Land Surveyor or Engineer is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

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

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID S. HOLLIS
10-23-14
dhollis @ hdsilm.com

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

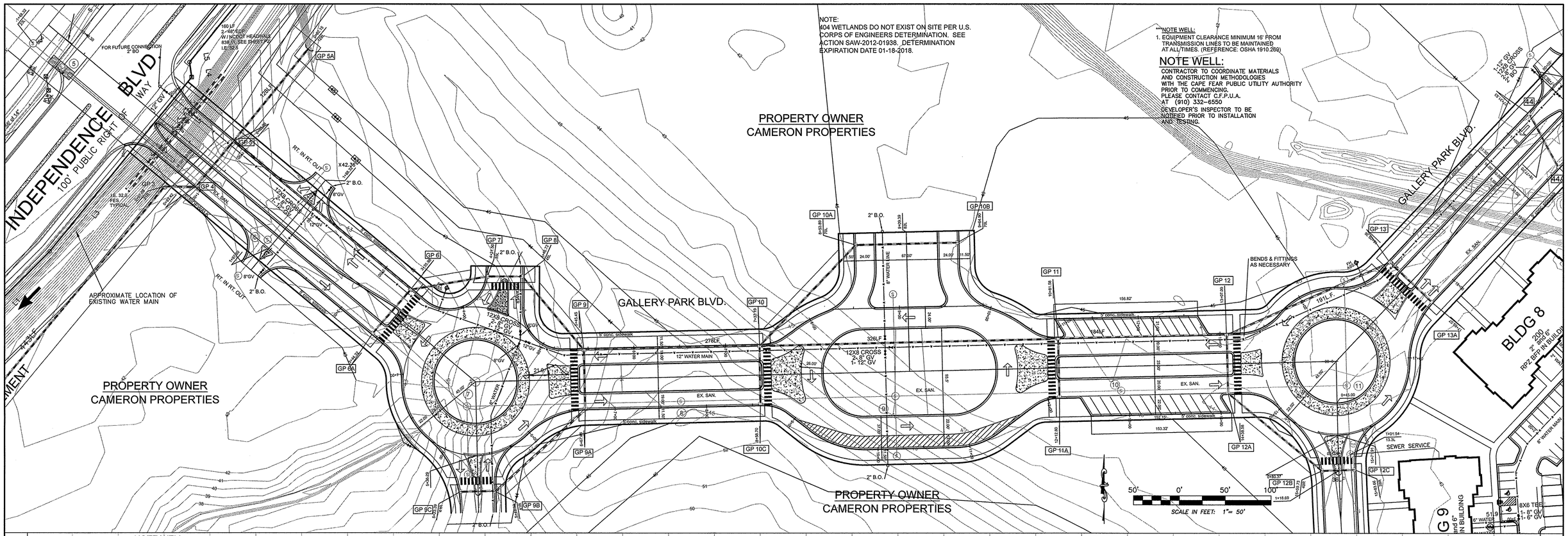
Date: 10-3-14
Scale: HORZ.: 1"= 50' VERT.: 1"= 5'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 2 Of: 10

F:\All\Project Folders\12498-BARCLAY WEST\Engineering\12498 BASE eng 01-23-14.dwg (Layout PP-3)

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 1910.289)

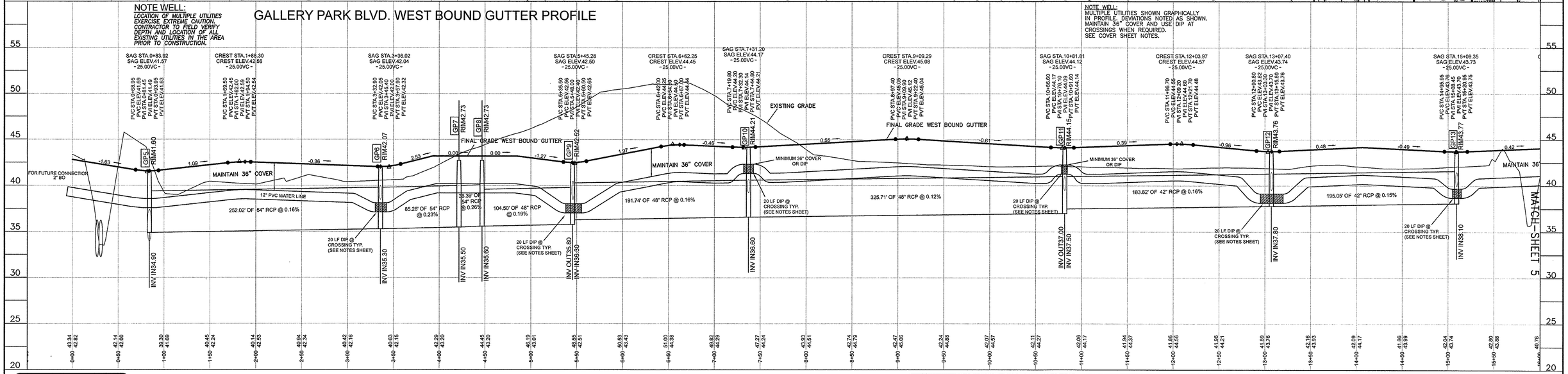
NOTE WELL:
CONTRACTOR TO COORDINATE MATERIALS AND CONSTRUCTION METHODOLOGIES WITH THE CAPE FEAR PUBLIC UTILITY AUTHORITY PRIOR TO COMMENCING.
PLEASE CONTACT C.F.P.U.A. AT (910) 332-6550
DEVELOPER'S INSPECTOR TO BE NOTIFIED PRIOR TO INSTALLATION AND TESTING.



NOTE WELL:
LOCATION OF MULTIPLE UTILITIES EXERCISE EXTREME CAUTION. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF ALL EXISTING UTILITIES IN THE AREA PRIOR TO CONSTRUCTION.

NOTE WELL:
MULTIPLE UTILITIES SHOWN GRAPHICALLY IN PROFILE. DEVIATIONS NOTED AS SHOWN. MAINTAIN 36" COVER AND USE DIP AT CROSSINGS WHEN REQUIRED. SEE COVER SHEET NOTES.

GALLERY PARK BLVD. WEST BOUND GUTTER PROFILE



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		

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

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

REV. NO.	REVISIONS	DATE

Copyright © , Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

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

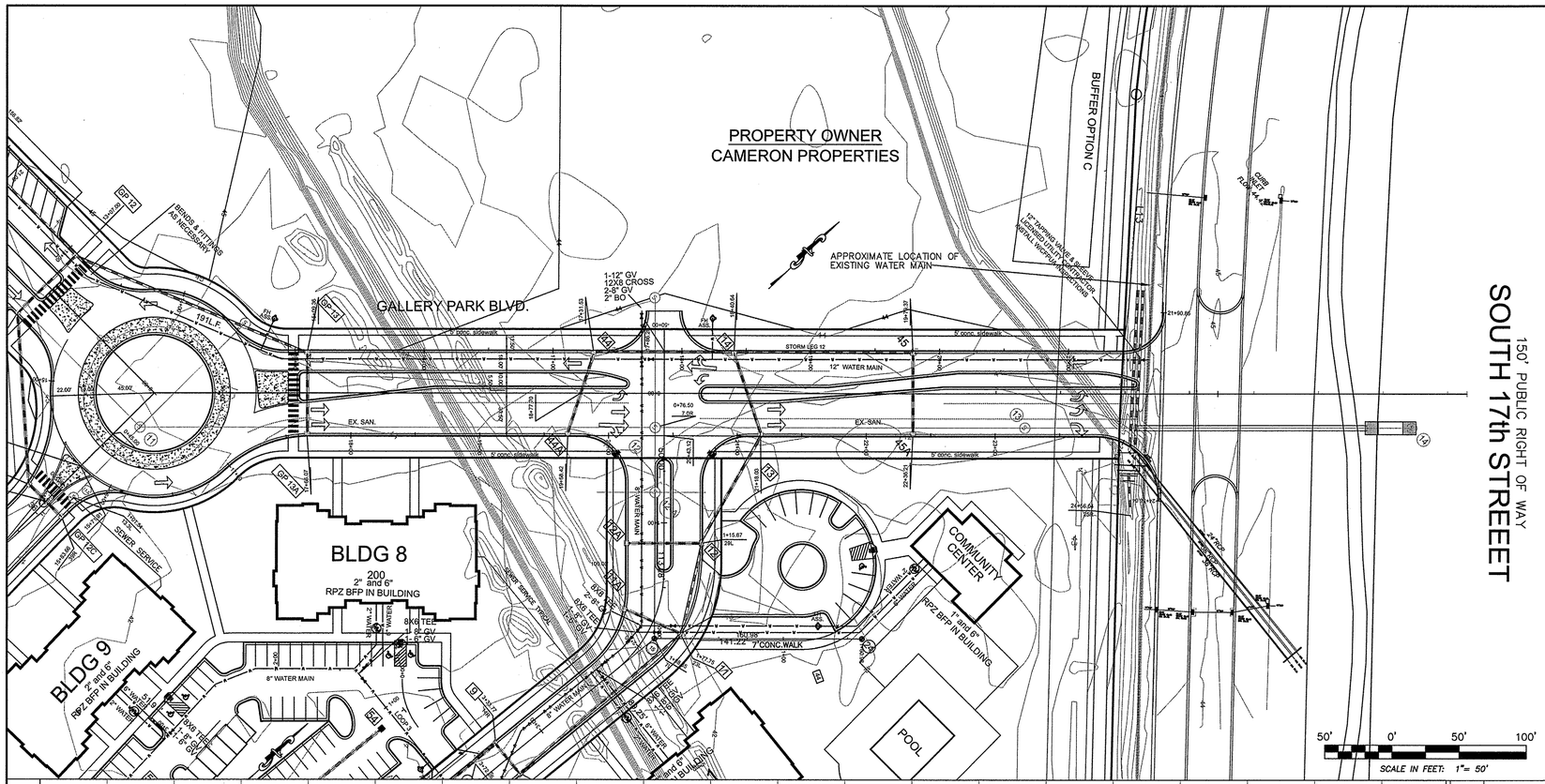
NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID S. HOLLIS
11.07.14
dhollis @ hdsilm.com

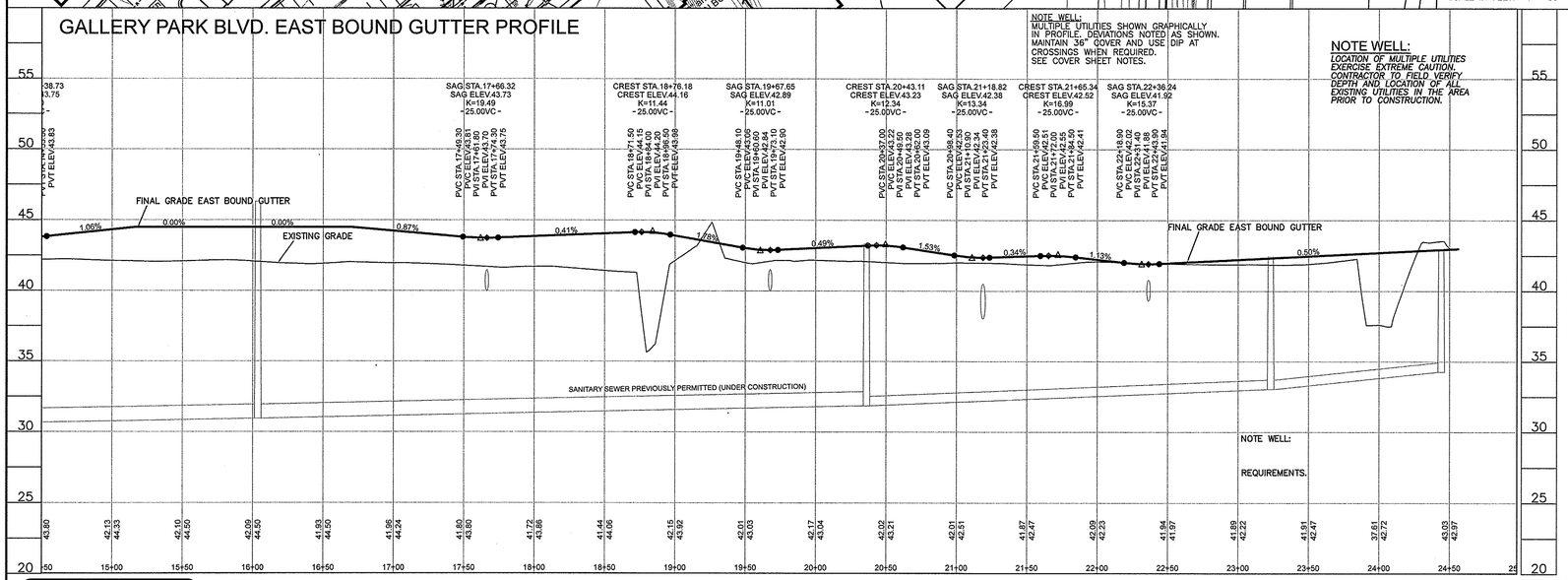
OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

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: HORZ.: 1"= 50' VERT.: 1"= 5'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 3 Of: 10

F:\All\Project Folders\12498-BARCLAY WEST\Engineering\12498 BASE eng 01-23-14.dwg (Layout PP-3)





FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

EXISTING GROUND ELEVATION | PROPOSED FINISHED TOP OF CURB LINE ELEVATION

38.0 37.5 | 38.0 37.5

1+00 | 1+50

PROPOSED CENTERLINE ALIGNMENT STATION

PROFILE LEGEND

***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
1	REVISED AS PER CITY COMMENTS	12-3-14

Copyright © Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID S. HOLLIS
12-03-14
dhollis @ hdsilm.com

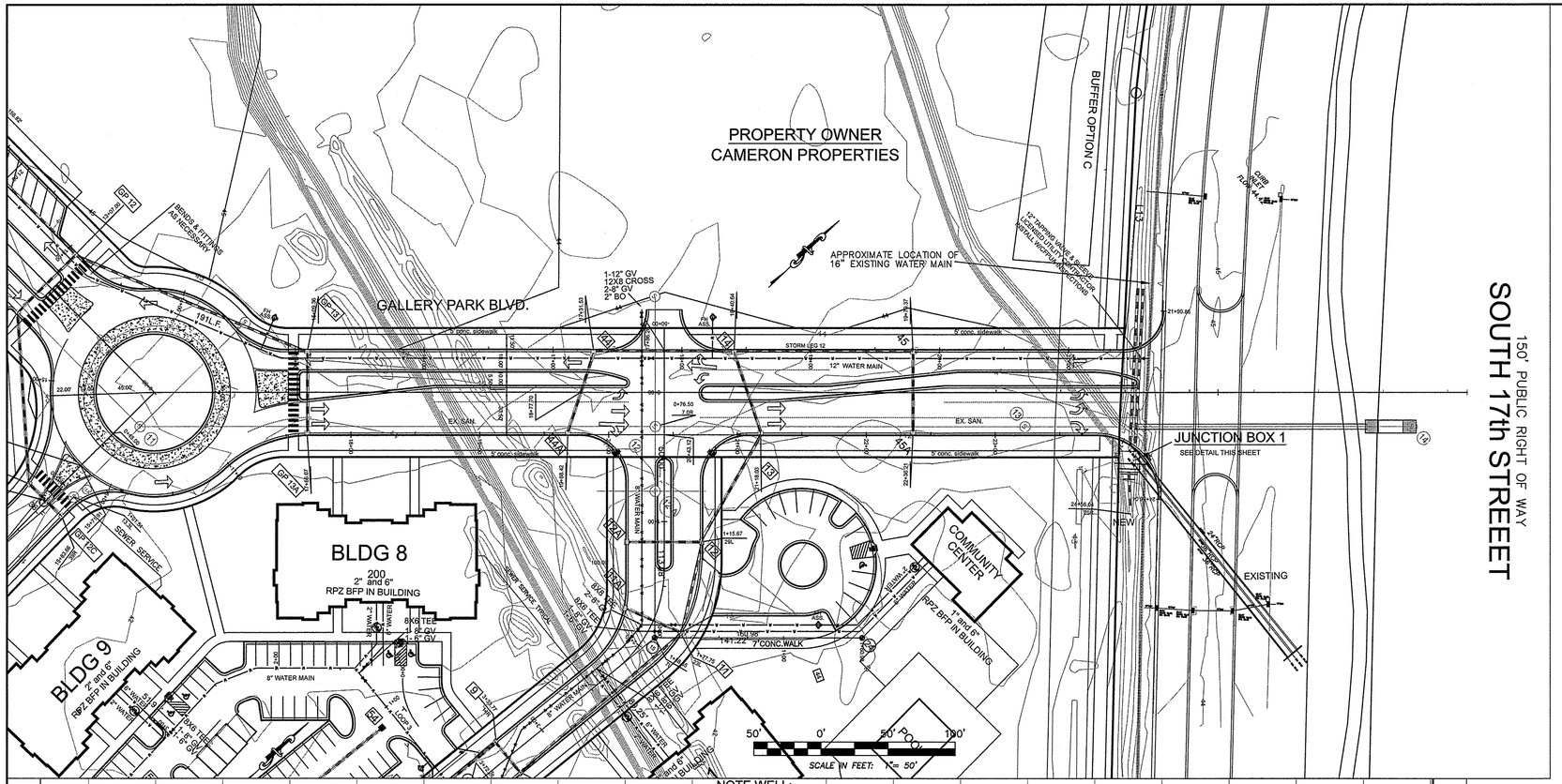
PLANS & PROFILES
BARCLAY WEST
PHASE 1 INFRASTRUCTURE
LOCATED IN THE CITY OF WILMINGTON — NEW HANOVER COUNTY, NORTH CAROLINA

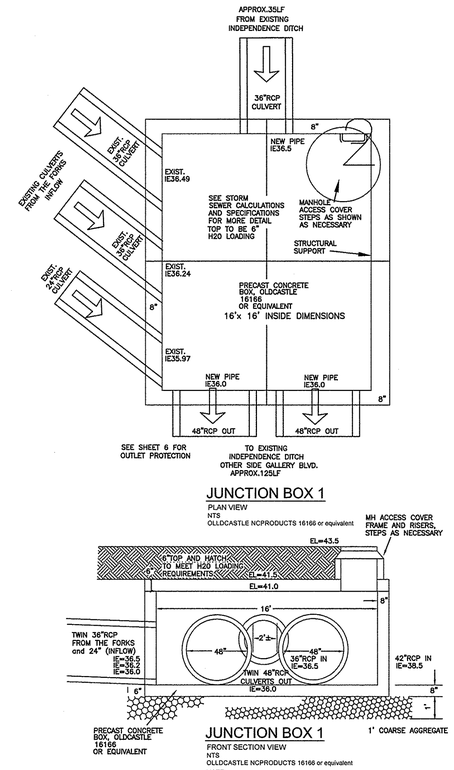
OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

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: HORZ.: 1"= 50' VERT.: 1"= 5'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 4 Of: 10

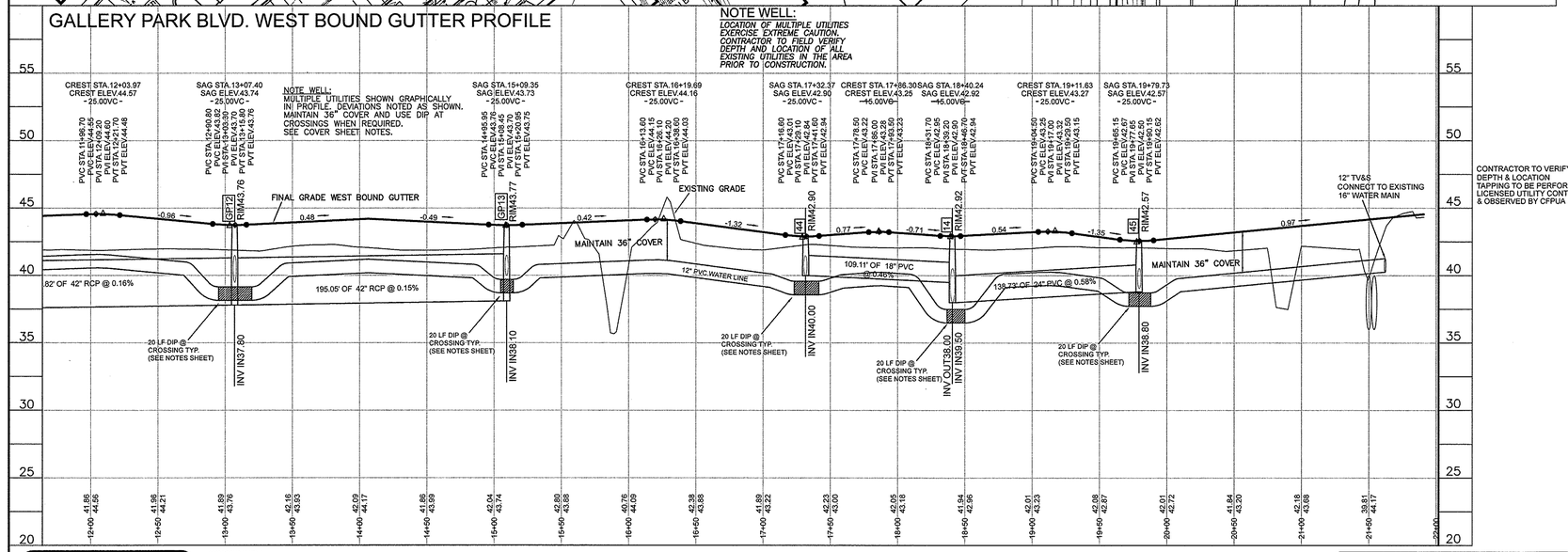
F:\All\Project Folders\12498-BARCLAY WEST\Engineering\12498 BASE eng 01-23-14.dwg (Layout PP-4)

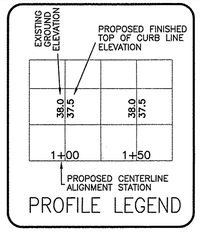




GALLERY PARK BLVD. WEST BOUND GUTTER PROFILE

NOTE WELL:
LOCATION OF MULTIPLE UTILITIES EXERCISE EXTREME CAUTION. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF ALL EXISTING UTILITIES IN THE AREA PRIOR TO CONSTRUCTION.





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

REV. NO.	REVISIONS	DATE
1	REVISED AS PER CITY COMMENTS	12-3-14

Copyright © , Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

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

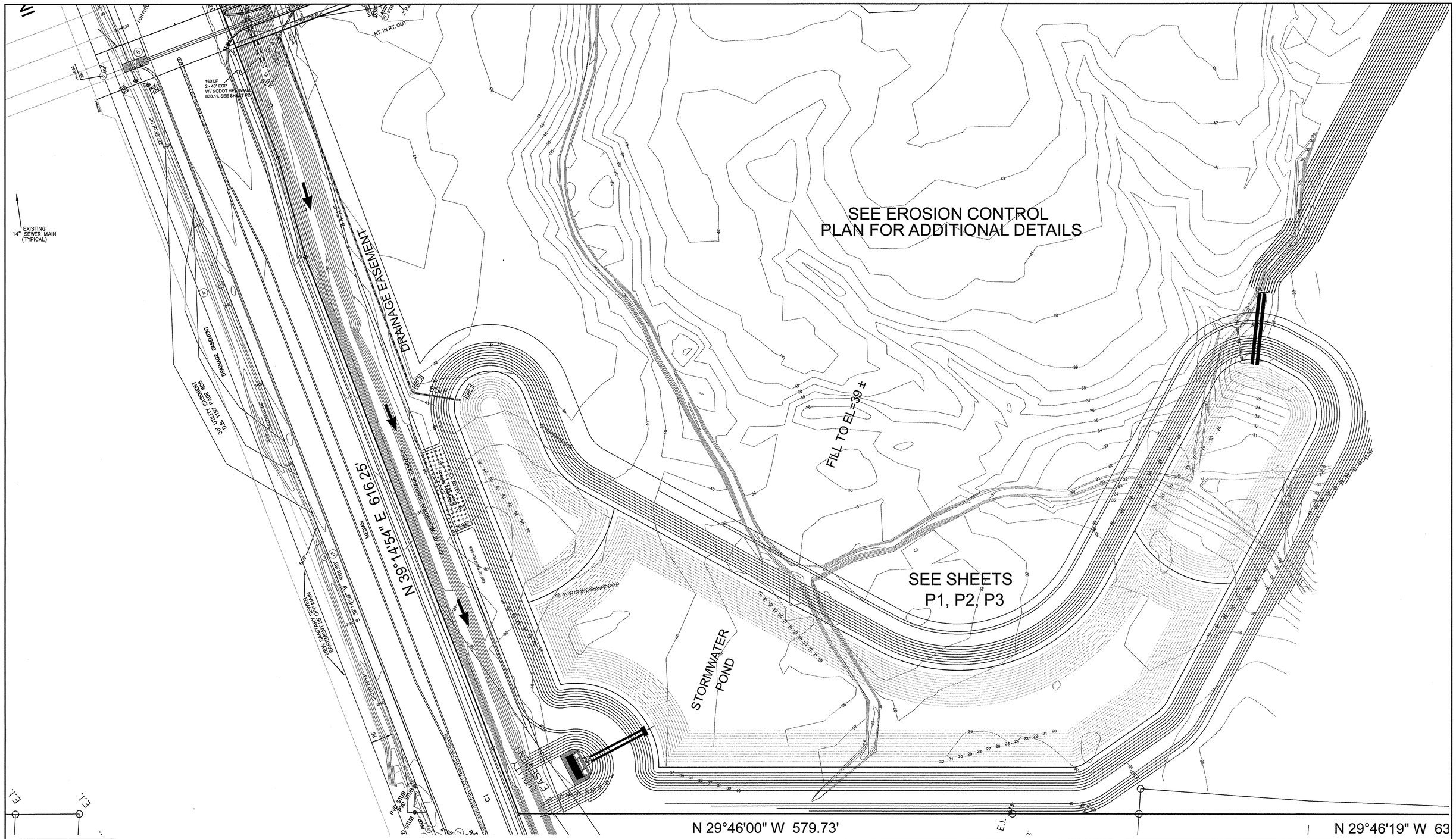
NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID H. DOLLIS
12-03-14
dhollis@hdslim.com

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: HORZ.: 1"= 50' VERT.: 1"= 5'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 5 Of: 10

F:\All\Project Folders\12498-BARCLAY WEST\Engineering\12498 BASE eng 01-23-14.dwg (Layout PP-4)



EXISTING GROUND ELEVATION | PROPOSED FINISHED TOP OF CURB LINE ELEVATION

38.0 / 37.5	38.0 / 37.5
1+00	1+50

PROPOSED CENTERLINE ALIGNMENT STATION

PROFILE LEGEND

***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.

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

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.

WATER QUALITY FACILITY
SEE SHEETS P1 - P3 FOR ADDITIONAL DETAILS

REV. NO.	REVISIONS	DATE

Copyright © , Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

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

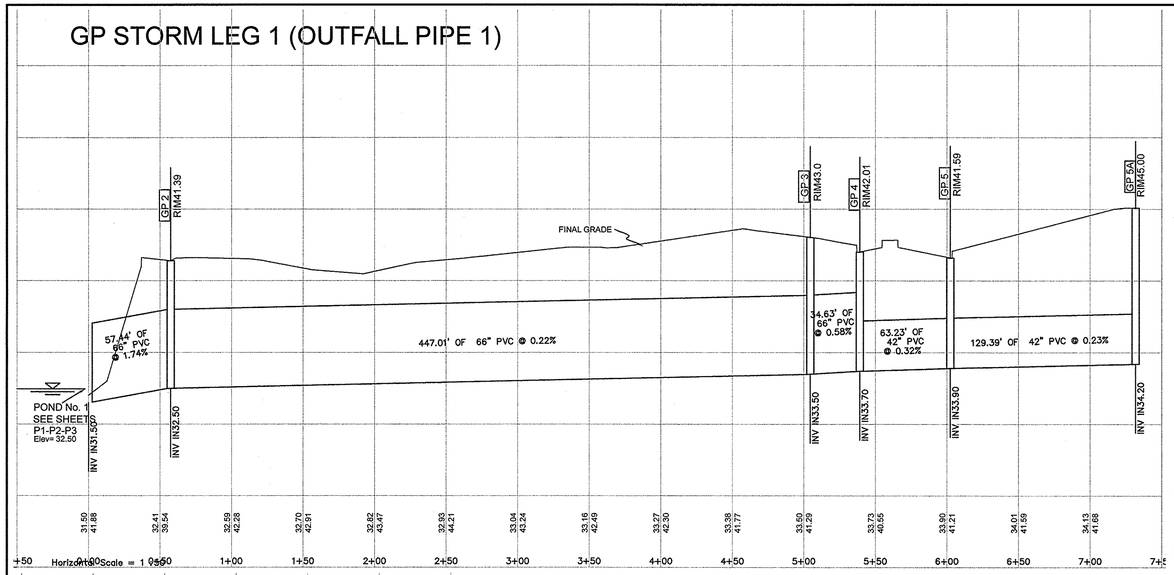
NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID HOLLIS
10-03-14
dhollis @ hdsilm.com

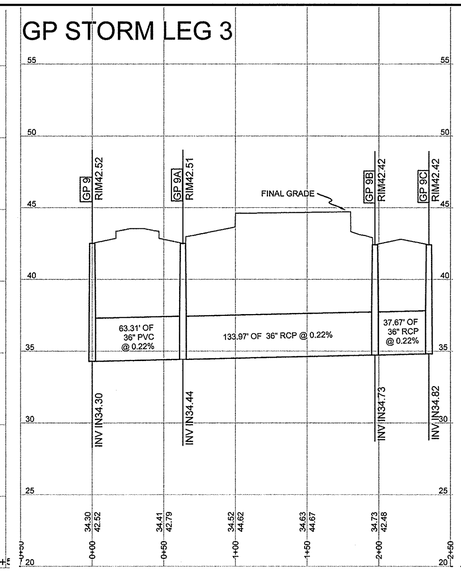
OWNER: CAMERON PROPERTIES LAND COMPANY, LLC
P.O. BOX 3649
WILMINGTON, N.C. 28406 PH 910-762-2676

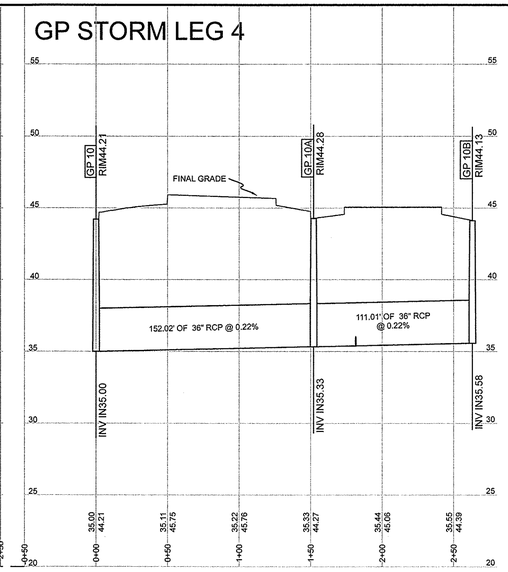
HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL PARKWAY
WILMINGTON, N.C. 28403
PHONE: (910) 343-8002
License # C-0597

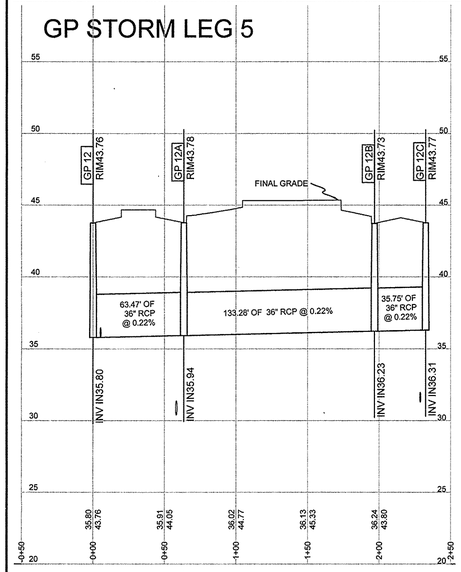
Date:	10-3-14
Scale:	HORZ.: 1"= 50' VERT.: 1"= 5'
Drawn:	GW
Checked:	DH
Project No:	12498
Sheet No:	6
Of:	10

F:\All\Project Folders\12498-BARCLAY WEST\Engineering\12498 BASE eng 01-23-14.dwg (Layout PP-2)





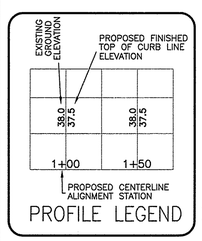




STORM SEWER SUMMARY
Forebay No.1

Line no.	Line ID	Flow rate (cfs)	Size (in)	Line length (ft)	Invert down (ft)	Invert up (ft)	Line slope (%)	Grate down (ft)	Grate up (ft)	Dnstrm line no.
1	1 TO 2	162.68	66	57	31.50	32.50	1.75	38.00	41.39	End
2	2 TO 3	162.68	66	447	32.50	33.50	0.22	41.39	43.00	1
3	3 TO 4	162.68	66	35	33.50	33.70	0.57	43.00	42.01	2
4	4 TO 5	159.21	66	63	33.70	33.90	0.32	42.01	41.59	3
5	5 TO 6	100.23	54	252	34.90	35.30	0.16	41.59	42.04	4
6	6 TO 7	91.21	54	85	35.30	35.50	0.24	42.04	42.70	5
7	7 TO 8	89.94	54	38	35.50	35.60	0.26	42.70	42.70	6
8	8 TO 9	88.32	54	105	35.60	35.80	0.19	42.70	42.52	7
9	9 TO 10	78.20	48	192	36.30	36.60	0.16	42.52	44.17	8
10	10 TO 11	66.91	48	326	36.60	37.00	0.12	44.17	44.12	9
11	11 TO 12	57.45	42	184	37.50	37.80	0.16	44.12	43.75	10
12	12 TO 13	42.82	42	195	37.80	38.10	0.15	43.75	43.75	11
13	5 TO 5A	55.05	42	129	33.90	34.20	0.23	41.59	45.00	4
14	6 TO 6A	5.72	18	63	38.30	38.50	0.32	42.04	42.04	5
15	9 TO 9A	7.29	24	63	38.20	38.50	0.48	42.52	42.51	8
16	9A TO 9B	4.28	18	134	39.00	39.30	0.22	42.51	42.42	15
17	9B TO 9C	1.97	18	38	39.30	39.40	0.26	42.42	42.42	16
18	10 TO 10A	3.55	18	152	39.10	39.30	0.13	44.17	44.28	9
19	10 TO 10C	4.74	18	63	39.10	39.30	0.32	44.17	44.17	9
20	11 TO 11A	6.10	18	63	39.50	39.80	0.48	44.12	44.12	10
21	12 TO 12A	10.81	24	63	39.30	39.50	0.32	43.75	43.78	11
22	12A TO 12B	7.75	24	133	39.50	39.70	0.15	43.78	43.73	21
23	12B TO 12C	3.35	18	36	40.20	40.30	0.28	43.73	43.77	22
24	13 TO 13A	4.45	18	63	40.00	40.20	0.32	43.73	43.73	12
25	13 TO 13B	34.20	36	141	38.10	38.40	0.21	43.73	44.00	12
26	10A TO 10B	2.02	18	111	39.30	39.50	0.18	44.28	44.13	18

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		

0 50 100

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.

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

ADDITIONAL PROFILES

REV. NO.	REVISIONS	DATE
1	Reused Storm Leg 1 to match Summary	11.04.14

Copyright © , Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

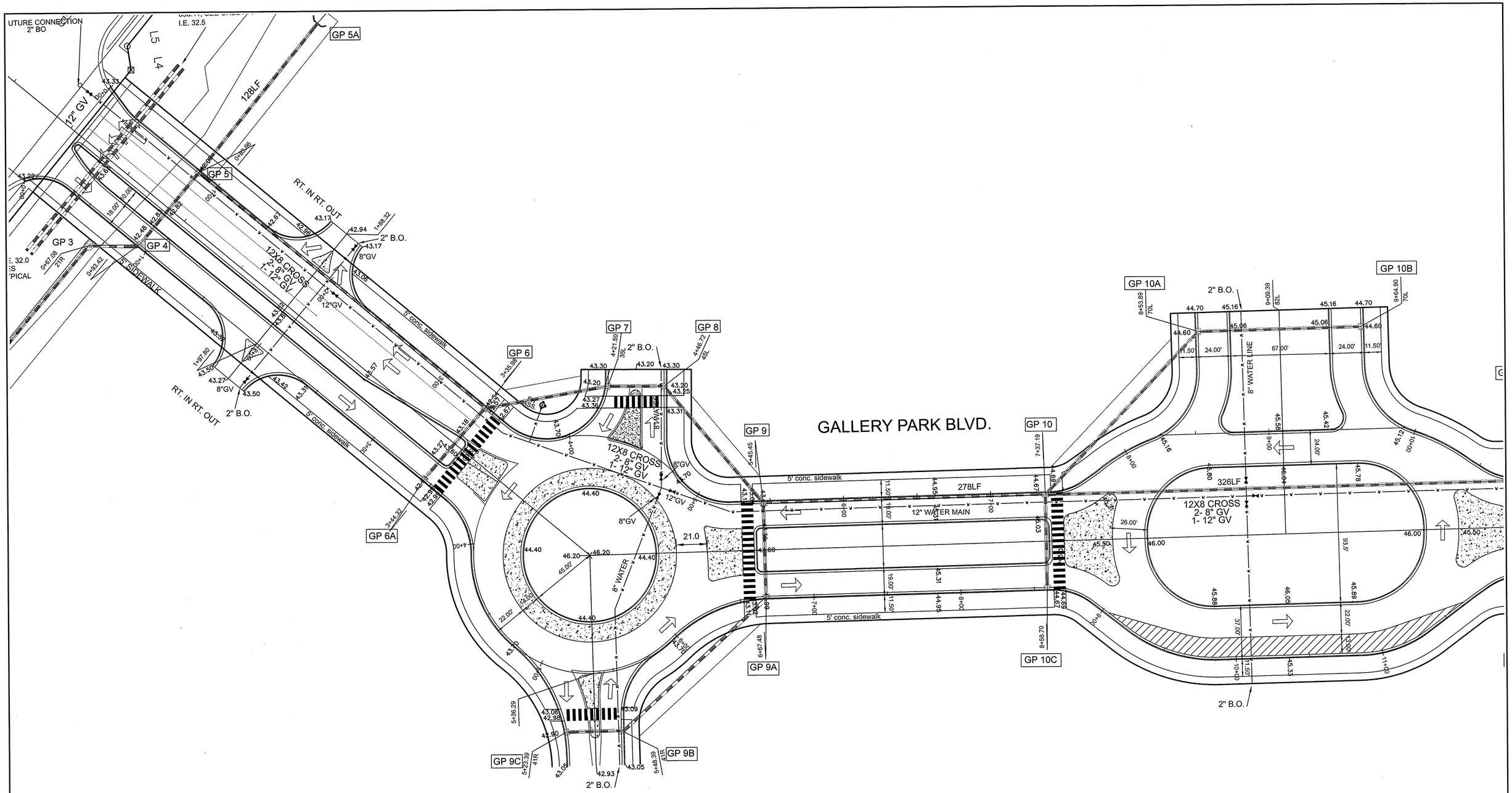
NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DANIEL S. HOLLIS
11-04-14
dhollis @ hdslim.com

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
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: HORZ.: 1"= 50' VERT.: 1"= 5'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 7
Of: 10



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		

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

0 30 60 90

LAY-OUT SHEET

REV. NO.	REVISIONS	DATE

Copyright © Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

BARCLAY WEST

PHASE 1 INFRASTRUCTURE

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

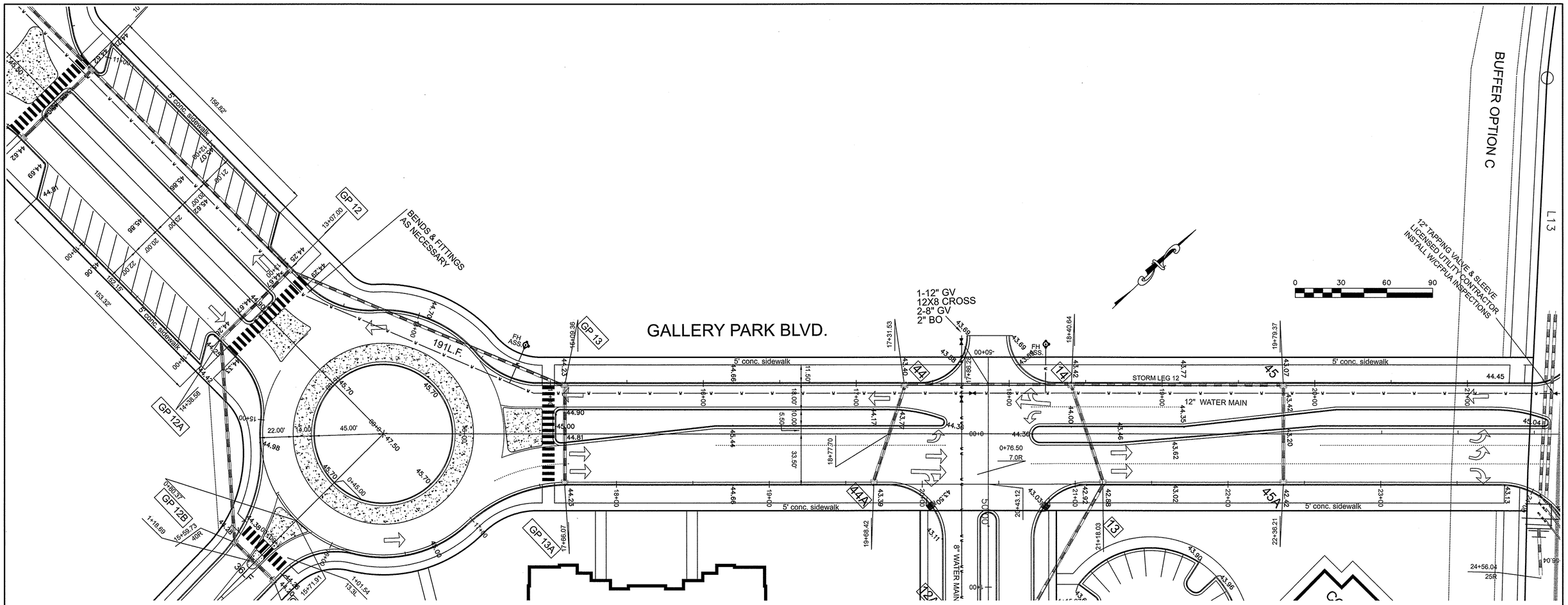
NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID S. HOLLIS

10.03.14

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: HORZ.: 1"= 30'
Drawn: GW
Checked: DH
Project No: 12498
Sheet No: 8
Of: 10



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		

FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

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

0 30 60 90

LAY-OUT SHEET

REV. NO.	REVISIONS	DATE
1	REVISED AS PER CITY COMMENTS	12-3-14

Copyright ©, Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID HOLLIS

12-03-14

BARCLAY WEST

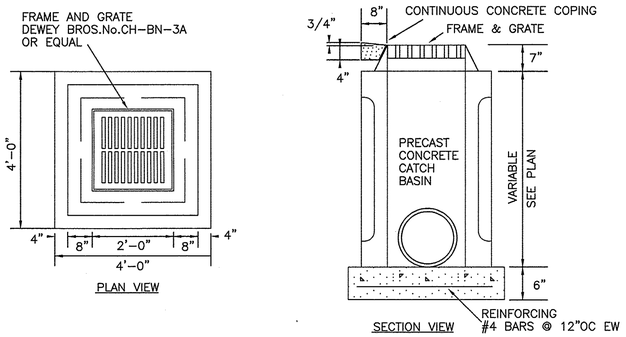
PHASE 1 INFRASTRUCTURE

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:	HORZ.: 1"= 30'
Drawn:	GW
Checked:	DH
Project No:	12498
Sheet No:	9
Of:	10

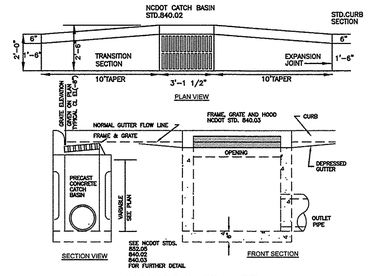


CATCH BASIN DETAIL

NTS

NOTE:
PRECAST CONCRETE CATCH BASIN
TO BE SIZED AS NECESSARY,

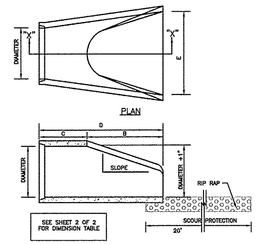
OR MAY BE CONSTRUCTED OF
BLOCK OR BRICK



PRECAST CURB INLET
N.T.S.

SEE SHEET P2 FOR OUTLET PROTECTION

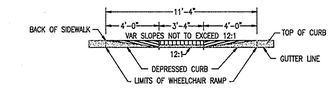
NOTE:
1. STRUCTURAL DESIGN OF END SECTION SHALL CONFORM WITH THAT OF STANDARD REINFORCED CONCRETE.



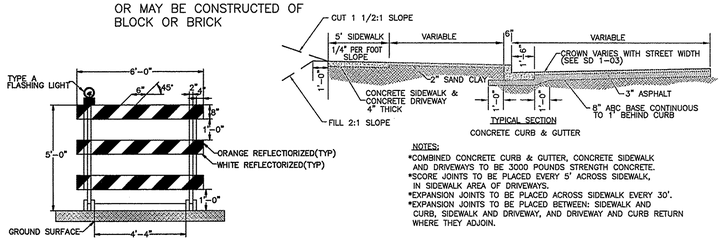
PIPE DIAMETER	WALL THICKNESS	SLOPE	B	C	D	E	UNIT WEIGHT
12	2 1/4	3:1	24	49	73	24	730
15	2 1/4	3:1	27	46	73	30	910
18	2 1/2	3:1	27	46	73	36	1190
21	2 3/4	3:1	36	37	73	42	1370
24	3	3:1	42	31 1/2	73 1/2	48	1770
27	3 1/4	3:1	48	25 1/2	73 1/2	54	2130
30	3 1/2	3:1	54	19 3/4	73 3/4	60	2380
33	3 3/4	3:1	60	36	96	66	3870
36	4	3:1	63	34 3/4	97 3/4	72	5320
42	4 1/2	3:1	63	35	98	78	5920
48	5	3:1	72	26	98	84	7470
54	5 1/2	2.4:1	66	34	100	90	8810
60	6	2:1	60	39	99	96	11180
72	7	2:1	78	21	99	108	13980

DIMENSIONS IN INCHES WEIGHTS IN POUNDS

FLARED END SECTION – OUTLET
SD 1-17
NOT TO SCALE

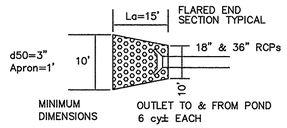


SECTION B-B



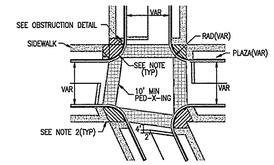
NOTES:
*COMBINED CONCRETE CURB & GUTTER, CONCRETE SIDEWALK AND DRIVEWAYS TO BE 3000 POUNDS STRENGTH CONCRETE.
*SCORE JOINTS TO BE PLACED EVERY 5' ACROSS SIDEWALK, IN SIDEWALK AREA OF DRIVEWAYS.
*EXPANSION JOINTS TO BE PLACED ACROSS SIDEWALK EVERY 30'.
*EXPANSION JOINTS TO BE PLACED BETWEEN: SIDEWALK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

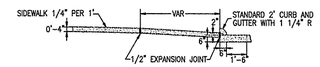


OUTLET PROTECTION and ROCK STABILIZATION APRON

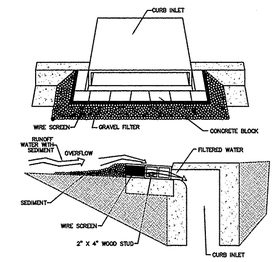
NOT TO SCALE



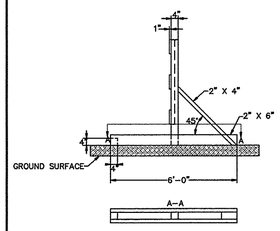
TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS & STOP BARS



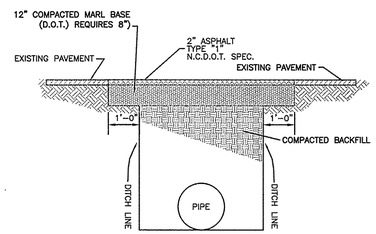
SECTION A-A



CURB INLET PROTECTION
SD 13-02
NOT TO SCALE



TYPE III BARRICADE
SD 15-07
NOT TO SCALE



NOTES:
* BACKFILL TO BE INSTALLED IN 6" LIFTS (MAXIMUM) AND COMPACTED TO A 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

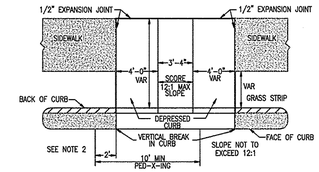
GENERAL NOTES

I. LOCATION OF WHEELCHAIR RAMPS:
1. IN ACCORDANCE WITH THE RATIFIED HOUSE BILL 1206, ALL STREET CURBS IN NORTH CAROLINA BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILITIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY HANDICAPPED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER MAJOR POINTS OF PEDESTRIAN FLOW.
2. WHEELCHAIR RAMPS SHOULD BE LOCATED AS INDICATED IN DETAIL DRAWINGS, HOWEVER EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. MAY AFFECT PLACEMENT.

II. CONSTRUCTION NOTES:
1. NO SLOPE SHALL EXCEED 1"=1" (12:1) ON THE RAMP OR SIDEWALK.
2. IN NO CASE SHALL THE WIDTH OF WHEELCHAIR RAMPS BE LESS THAN 40" (3'-4"). WIDTHS MAY EXCEED 40" IF NECESSARY.
3. USE CLASS "A" CONCRETE WITH THE SURFACE HAVING A ROUGH, NON-SKID TYPE FINISH.
4. 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE CONCRETE WHEELCHAIR RAMP JOINS ANY RIGID PAVEMENT OR STRUCTURE.
5. CONSTRUCTION METHODS SHALL CONFORM WITH THOSE OF THE GOVERNING BODY WHICH HAS JURISDICTION OF THE PARTICULAR STREET.

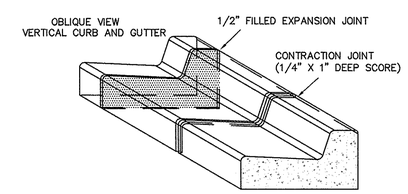
III. ADDITIONAL NOTES:
1. THE INSIDE PEDESTRIAN CROSSWALK LINES SHALL BE ESTABLISHED BY BISECTING THE INTERSECTION RADII WHERE MARKED (SEE NOTE 6).
2. THE WHEELCHAIR RAMP SHALL BE LOCATED SO THAT THE BEGINNING OF THE WHEEL CHAIR RAMP WILL BE TWO FEET FROM THE INSIDE PEDESTRIAN CROSSWALK LINE.
3. THE WIDTH OF THE PEDESTRIAN CROSWALK SHALL BE 10 FEET UNLESS A GREATER WIDTH IS REQUIRED TO ACCOMMODATE THE PEDESTRIAN TRAFFIC.
4. STOP BARS SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN, OR OTHER LEGAL REQUIREMENTS.
5. PARKING SHALL BE ELIMINATED A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
6. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION. THIS IS AVAILABLE FROM THE SUPERINTENDENT OF DOCUMENTS, U.S GOVERNMENT

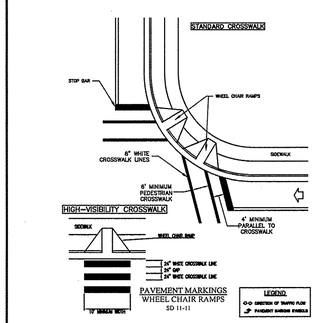
GUIDELINES FOR
WHEELCHAIR RAMPS
SD8-09

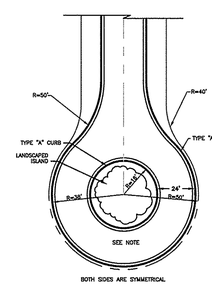


PLAN VIEW WHEELCHAIR RAMP

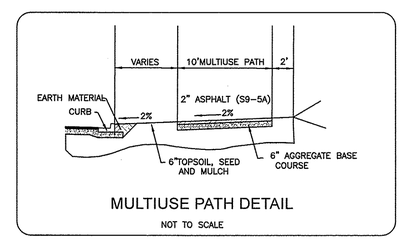
GUIDELINES FOR WHEELCHAIR RAMPS & DEPRESSED CURBS
SD 8-10
NOT TO SCALE





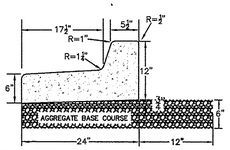


RESIDENTIAL
(38') CUL-DE-SAC
WITH LANDSCAPED
ISLAND
SD 1-13a
NOT TO SCALE

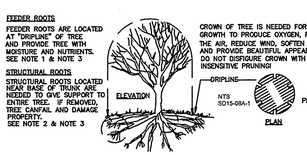


MULTIUSE PATH DETAIL
NOT TO SCALE

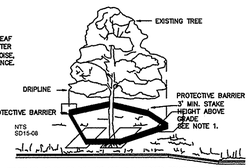
VERTICAL CURB AND GUTTER



MEDIAN VERTICAL CURB AND GUTTER

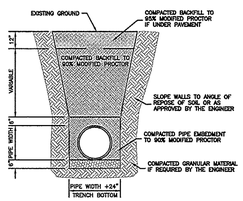


TREE PROTECTION DURING CONSTRUCTION –
1. CLEARLY MARK THE TREE TO BE SAVED PRIOR TO CONSTRUCTION AND ERECT A PROTECTIVE BARRIER AT THE DRIPLINE. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO HEAVY MATERIALS SHALL BE STORED BENEATH TREES. RESULTS OF COMPACTION CAUSE WATER AND AIR NOT TO REACH THE ROOTS AND THE TREE WILL DIE. THE FEEDING ROOTS OCCUR WELL AWAY FROM THE BASE OF THE TREE TO THE EDGE OF THE OVERHEAD BRANCH CANOPY. DAMAGING THE BARK WITH LAWNMOWERS, CONSTRUCTION EQUIPMENT, OR ANYTHING DESCRIBED BELOW WILL KILL THE PROTECTIVE BARRIER SHOULD PREVENT DAMAGE FROM OCCURING DURING CONSTRUCTION.
2. NO CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK. REMOVAL OF THESE ROOTS ALONG ONE SIDE IS OFTEN DONE BECAUSE OF A WALK, PAVING OR BUILDING WHICH IS BEING CONSTRUCTED. THESE ARE ESSENTIAL IN SUPPORTING THE TREE AND HOLDING IT UPRIGHT IN HIGH WINDS.
3. AVOID CUT AND FILL WITHIN DIAMETER OF TREE CROWN DURING EXCAVATION.

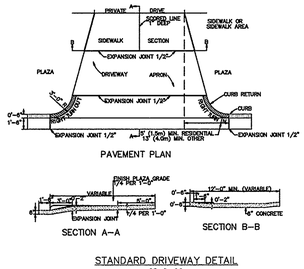


TREES TO BE SAVED WILL BE CLEARLY MARKED PRIOR TO CONSTRUCTION AND A PROTECTIVE BARRIER IS TO BE INSTALLED AT THE DRIPLINE.
DRIP LINE – THE AREA OF SOIL DIRECTLY BENEATH THE TREE EXTENDING OUT TO THE TIPS OF THE OUTERMOST BRANCHES.

METHOD OF TREE
PROTECTION DURING
CONSTRUCTION
NTS



STANDARD PIPE TRENCH DETAIL
SD 1-07
NOT TO SCALE



FINAL DESIGN NOT RELEASED FOR CONSTRUCTION

TYPICAL DETAILS

REV. NO.	REVISIONS	DATE
1	REVISED AS PER CITY COMMENTS	12-3-14

Copyright © , Hanover Design Services, P.A. All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID STI HOLLIS
12.03.14

BARCLAY WEST

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

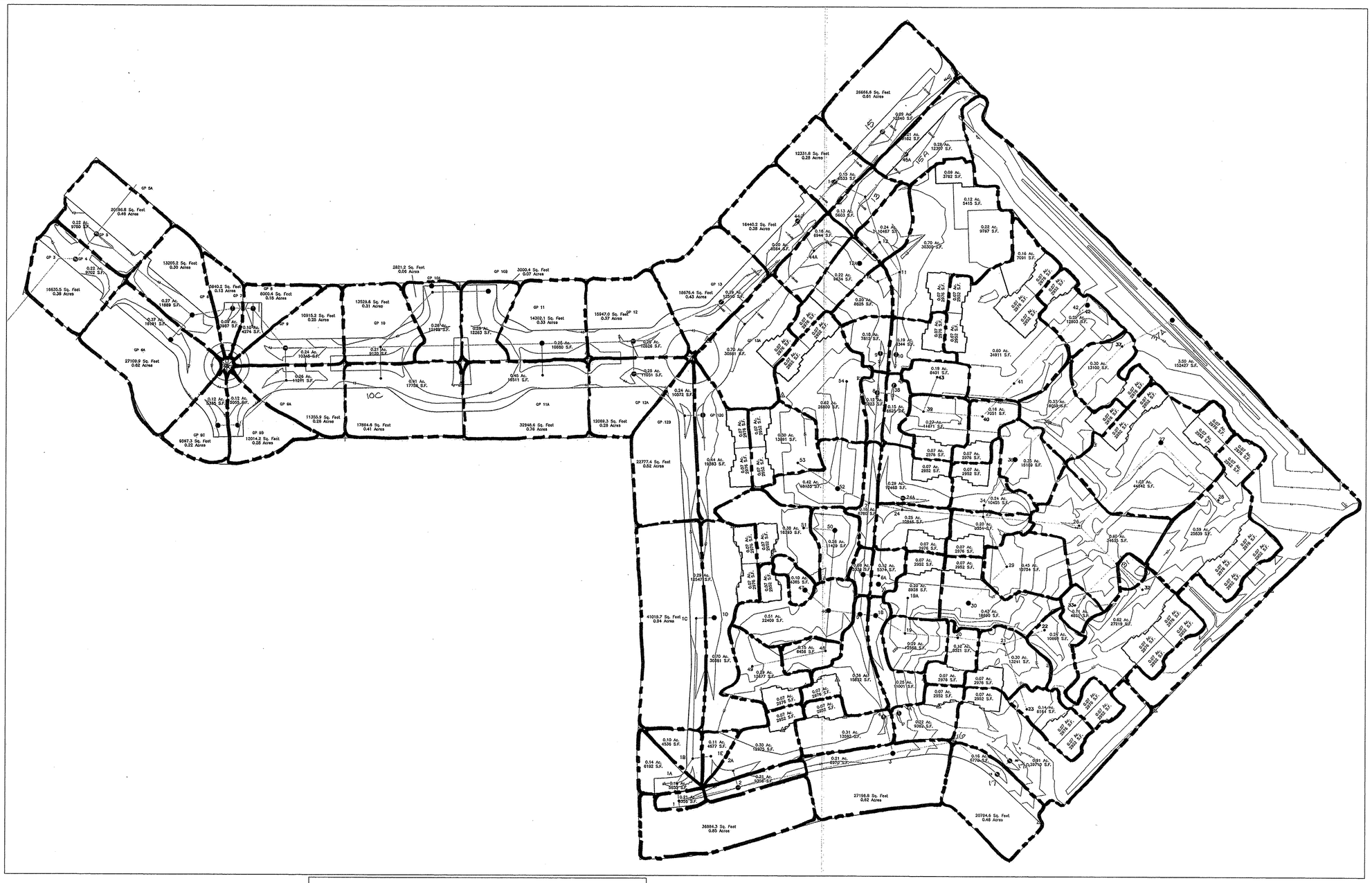
OWNER: BARCLAY WEST APARTMENTS, LLC
P.O. BOX 2562
MOUNT PLEASANT, SC 29465 PH 843-324-5424

HANOVER DESIGN SERVICES, P.A.
LAND SURVEYORS, ENGINEERS & LAND PLANNERS
1123 FLORAL 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

LOCATION MAP

NOT TO SCALE



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		

Barclay West - Drainage Areas Forebay 1

Inlet	Area acres	Inlet	Area acres	Inlet	Area acres
4	0.60	9B	0.40	12	0.66
5	0.68	9C	0.34	12A	0.53
5A(future)	16.19	10	0.52	12B	0.76
6A	0.57	10A	0.34	12C	0.58
7	0.99	10B	0.35	13	0.72
8	0.22	10C	0.82	13A	0.77
9	0.28	11	0.58	13B(future)	10.06
9A	0.52	11A	1.21		

Barclay West - Drainage Areas Forebay 2

Inlet	Area acres	Inlet	Area acres	Inlet	Area acres	Inlet	Area acres	Inlet	Area acres
1	0.01	8	0.12	19	0.29	32	0.80	46	0.58
1A	0.14	9	0.18	19A	0.27	33	0.11	47	0.10
1B	0.10	10	0.26	20	0.19	34	0.31	48	0.15
1C	1.23	11	1.20	21	0.37	35	0.35	49	0.36
1D	0.83	11A	0.20	22	0.38	36	0.44	50	0.26
1E	0.11	12	0.24	23	0.28	37	0.37	51	0.45
2	0.21	12A	0.29	24	0.32	37A	3.50	52	0.42
2A	0.37	13	0.13	24A	0.36	38	0.15	53	0.44
3	0.83	14	0.43	25	0.27	39	0.34	54	0.76
4	0.38	15	0.90	26	0.80	40	0.23		
4A	0.29	15A	0.49	27	1.31	41	1.17		
5	0.43	16MH	0	28	1.01	42	0.36		
6	0.08	17	0.64	29	0.45	43	0.16		
6A	0.12	17A	0.98	30	0.50	44	0.58		
7	0.16	18	0.25	31	0.10	44A	0.16		

Barclay West & Gallery Park Apartments
Storm Sewer Drainage Areas Map

Scale: 1"= 100'

REV. NO.	REVISIONS	DATE

Copyright © Hanover Design Services, P.A., All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

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

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID SCHOLLIS

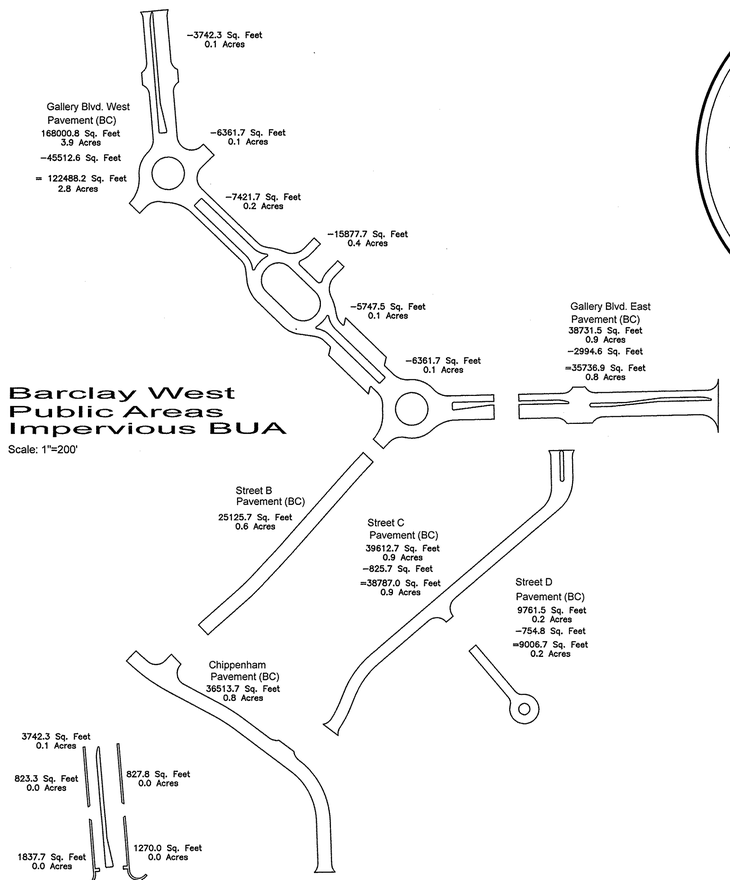
10-08-14

dhollis@hdslim.com

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-0597

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

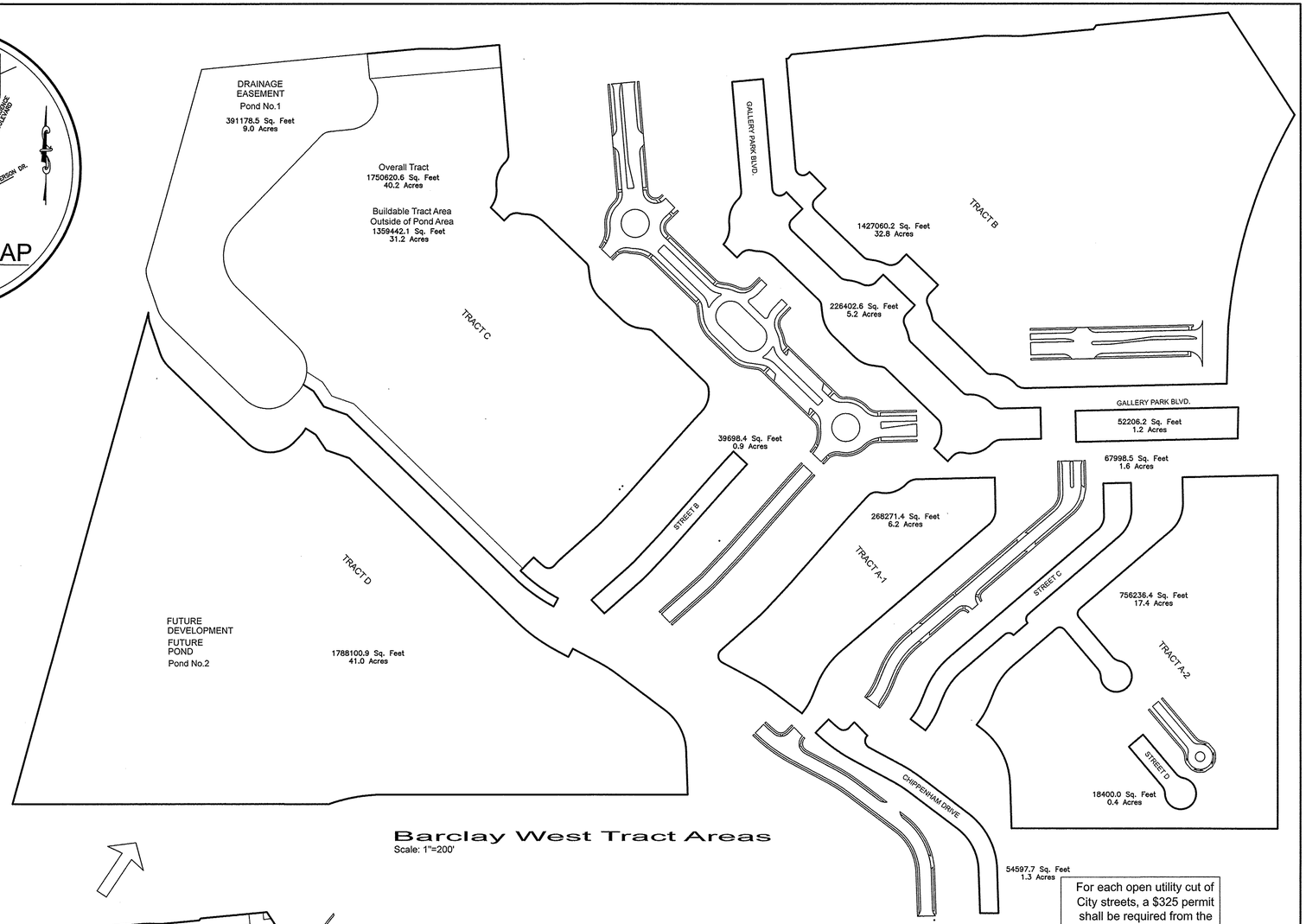


Barclay West Public Areas Impervious BUA

Scale: 1"=200'

LOCATION MAP

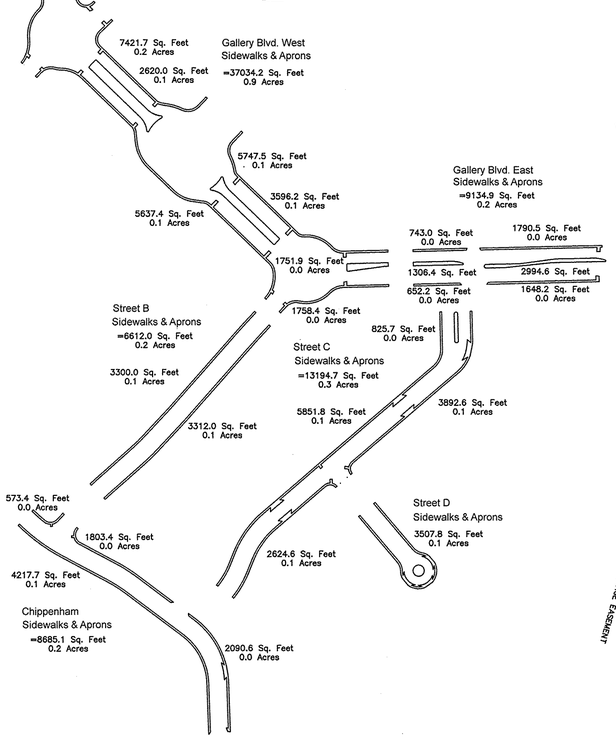
NOT TO SCALE

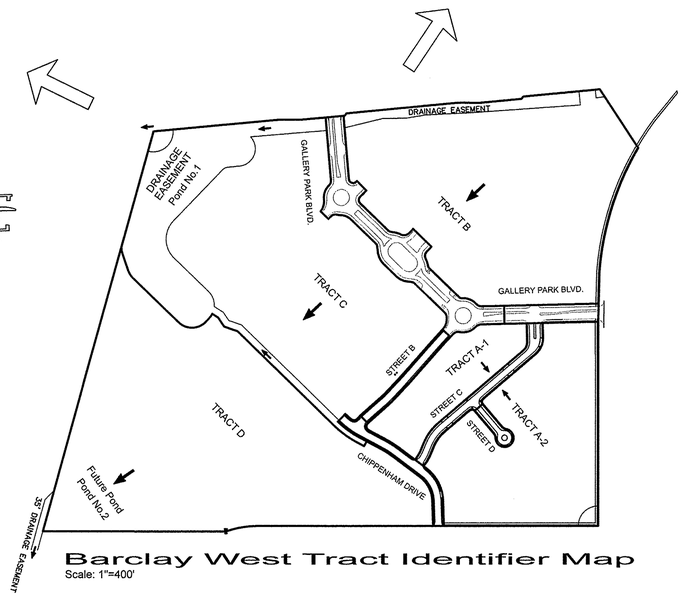


Barclay West Tract Areas

Scale: 1"=200'

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





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 sf	Pvmt (BC) sf	SW, Islands sf	Street BUA sf	Forebay No.
A-1	268,271	201,203	2	Gallery East	52,206	35,737	9,135	44,872	2
A-2	756,236	567,177	2	Gallery West	226,403	122,488	37,034	159,522	1
B	1,427,060	1,070,295	1	Street B	39,698	25,126	6,612	31,738	2
overall C	1,750,621	NA	NA	Street C	67,999	38,787	13,195	51,982	2
(-) DE	392,179	NA	NA	Street D	18,400	9,007	3,508	12,515	2
net C	1,359,442	1,019,582	2	Chippenham	54,598	36,514	8,685	45,199	2
D	1,788,101	FUTURE POND							
Totals Tracts	**4,202,188**	**2,858,257**		**Total Streets**	**459,304**	**267,659**	**78,169**	**345,828**	
Total DA	**4,661,492**			**Total Impervious**	**3,204,085**			**Total BUA %**	**69%**
	107.01	acres							
Area into Forebay 1		1,653,463	39%						
Area into Forebay 2		2,616,850	61%						
Stormwater Management:									
Pre-developed CN		55		4,661,492					
Post-developed CN grass		61		1,457,407					
Post-developed CN BUA		98		3,204,085					
Composite Post-developed CN		86		4,661,492					

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

Approved Construction Plan

	Name	Date
Planning		
Traffic		
Fire		

Barclay West Tract Areas Summary Spreadsheet

Scale: NTS

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*

REV. NO.	REVISIONS	DATE

Copyright ©, Hanover Design Services, P.A., All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID S. CHOLLIS

10-03-14

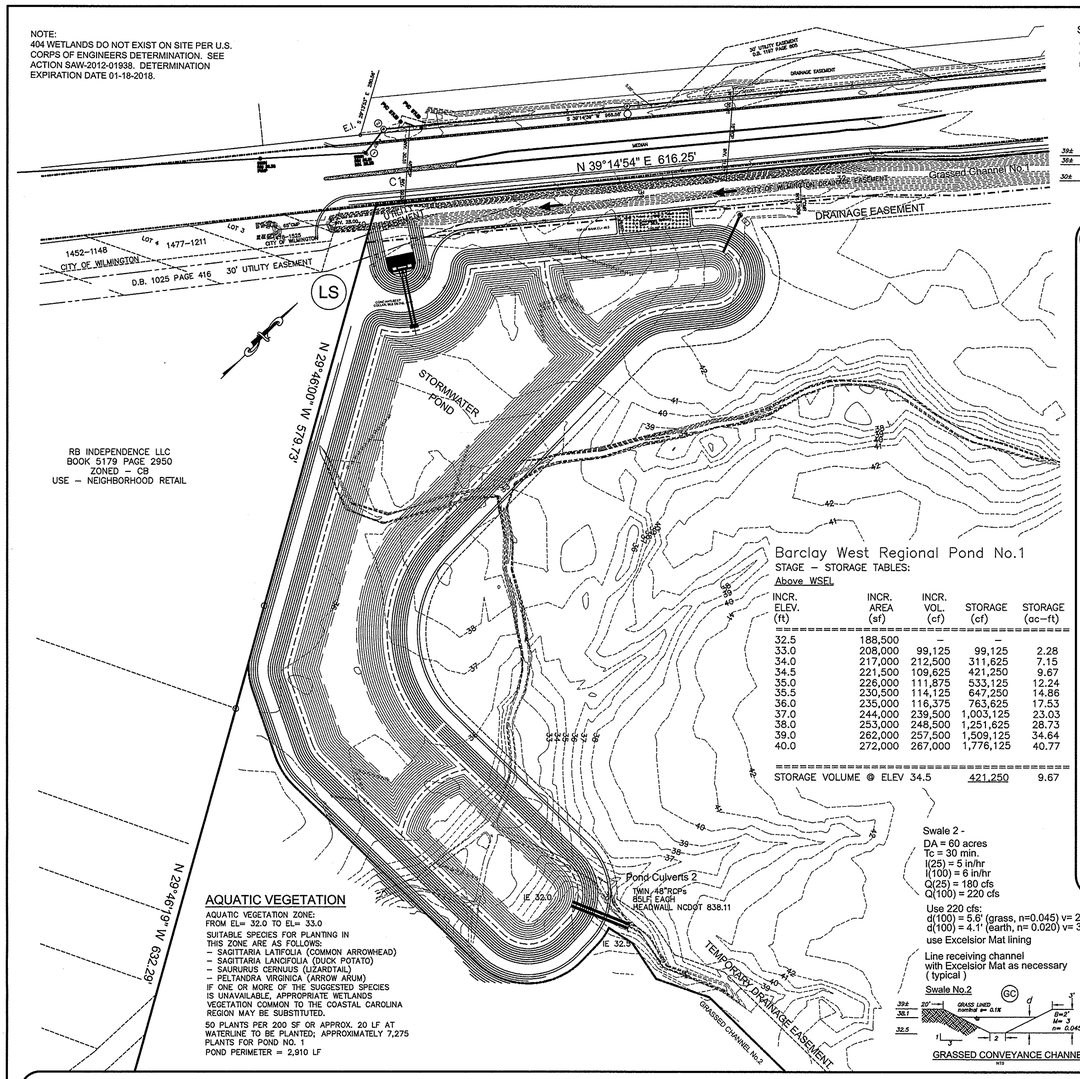
dhollis @ hdsllm.com

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-0597

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

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.



AQUATIC VEGETATION

AQUATIC VEGETATION ZONE:
FROM EL= 32.0 TO EL= 33.0

SUITABLE SPECIES FOR PLANTING IN THIS ZONE ARE AS FOLLOWS:
- SAGITTARIA LATIFOLIA (COMMON ARROWHEAD)
- SAGITTARIA LANCIFOLIA (DUCK POTATO)
- SAURURUS CERNUUS (LIZARDTAIL)
- PELTANDRA VIRGINICA (ARROW ARUM)

IF ONE OR MORE OF THE SUGGESTED SPECIES IS UNAVAILABLE, APPROPRIATE WETLANDS VEGETATION COMMON TO THE COASTAL CAROLINA REGION MAY BE SUBSTITUTED.

50 PLANTS PER 200 SF OR APPROX. 20 LF AT WATERLINE TO BE PLANTED; APPROXIMATELY 7,275 PLANTS FOR POND NO. 1
POND PERIMETER = 2,910 LF

Barclay West Regional Pond No.1

STAGE – STORAGE TABLES:
Above WSEL

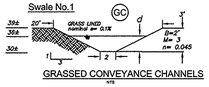
INCR. ELEV. (ft)	INCR. AREA (sf)	INCR. VOL. (cf)	STORAGE (cf)	STORAGE (ac–ft)
32.5	188,500	–	–	–
33.0	208,000	99,125	99,125	2.28
34.0	217,000	212,500	311,625	7.15
34.5	221,500	109,625	421,250	9.67
35.0	226,000	111,875	533,125	12.24
35.5	230,500	114,125	647,250	14.86
36.0	235,000	116,375	763,625	17.53
37.0	244,000	239,500	1,003,125	23.03
38.0	253,000	248,500	1,251,625	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 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



GRASSED CONVEYANCE CHANNELS
NTS

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(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

GRASSED CONVEYANCE CHANNELS
NTS

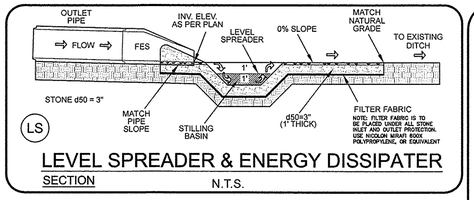
SB

Sediment Basin

Specifications # 6.61 – Construction Specifications
1.Site preparations–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 cleanout. Stockpile all topsoil or soil containing organic matter for use on the outer shell of the embankment to facilitate vegetative establishment. Place temporary sediment control measures below the basin as needed.
2.Cut–off 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 areas 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 be 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 6 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 treed 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 spillways–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.
Place a minimum depth of 2ft. of hand–compacted backfill over the pipe spillway before crossing it with construction equipment. Anchor the riser in place by concrete or other satisfactory means to prevent flotation. In no case should the pipe conduit be installed by cutting a trench through the dam after the embankment is complete.
5.Emergency spillway–Install the emergency spillway in undisturbed soil. The achievement of planned elevations, grade, design width, and entrance and exit channel slopes are critical to the successful operation of emergency spillway.
6.Inlets–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 (References: Runoff Control Measures and Outlet Protection).
7.Erosion control–Construct the structure so that the disturbed area is minimized. Divert surface water away from bare 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 (References: 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.

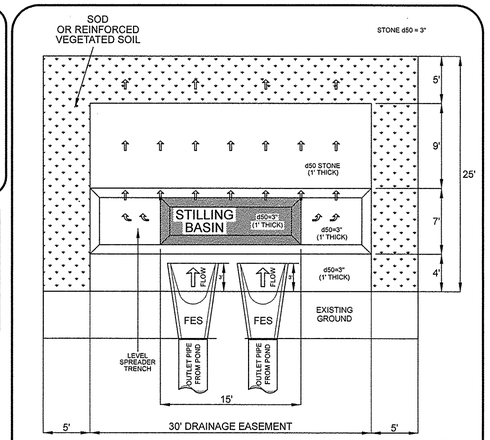
Maintenance
Check sediment basins after periods of significant runoff. Remove sediment and restore the basin to its original dimensions when sediment accumulates to one–half the design depth.
Check the embankment, spillways, and outlet for erosion damage, and inspect the embankment for piping and settlement. 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

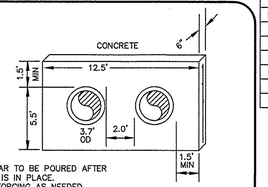
SECTION N.T.S.



LEVEL SPREADER & ENERGY DISSIPATER

PLAN N.T.S. LS

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



NOTE: COLLAR TO BE POURED AFTER PIPE IS IN PLACE. REINFORCING AS NEEDED

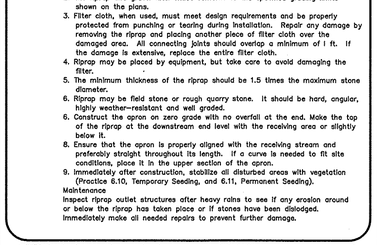
ANTI-SEEP COLLAR

NOT TO SCALE

OP

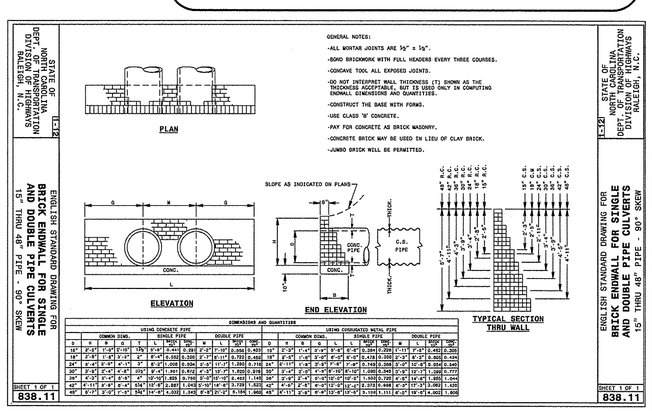
Outlet Stabilization Structure
Specification # 6.41 – Construction Specifications
1. Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plans. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas 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 receiving area 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.



BOTH FOREBAYS SECTION DETAIL

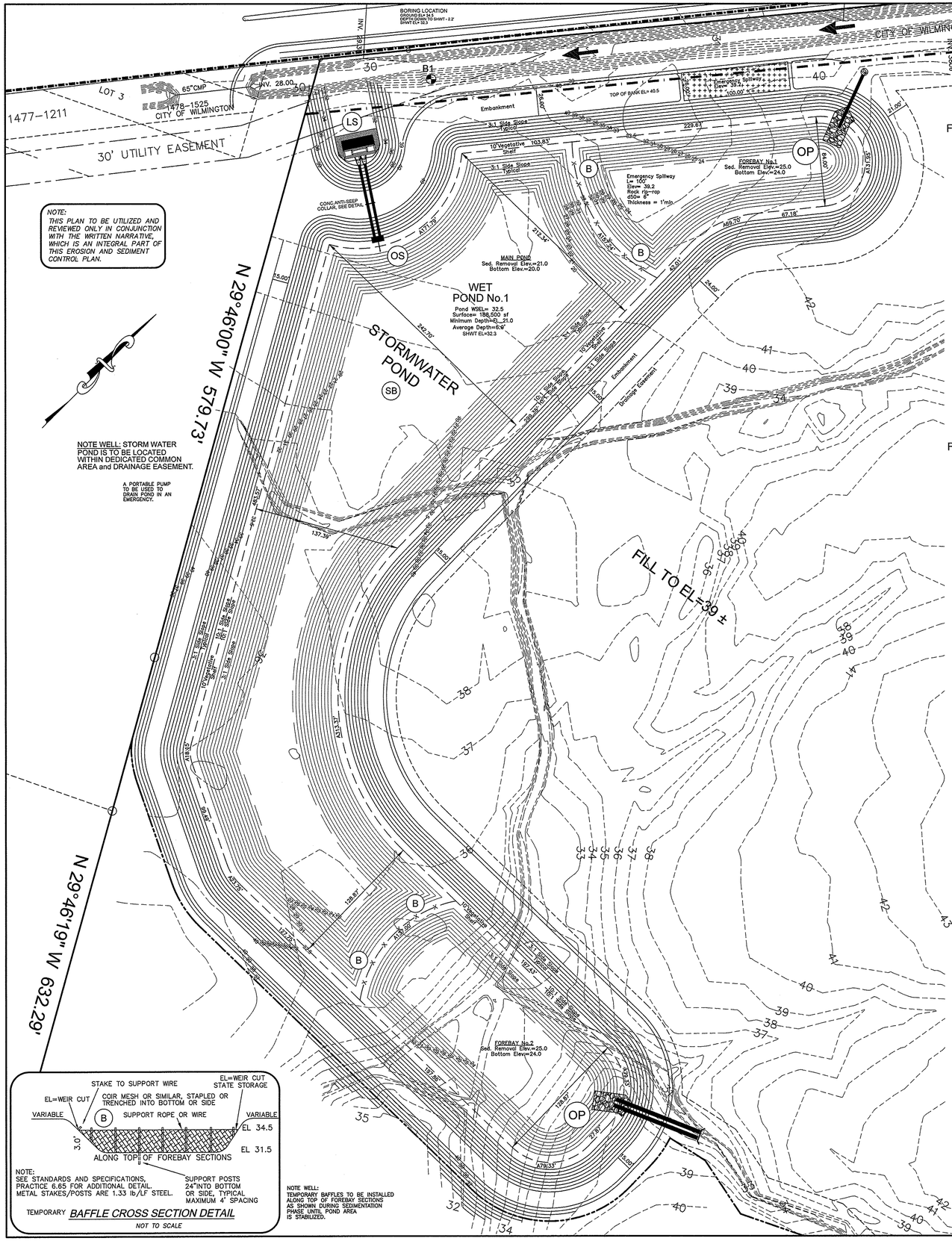
NOT TO SCALE



GENERAL NOTES:
-ALL MORTAR JOINTS ARE 3/8" x 3/8".
-BOND BRICKWORK WITH FULL HEADERS EVERY THREE COURSES.
-CONCAVE TOOL ALL EXPOSED JOINTS.
-DO NOT INTERPRET WALL THICKNESS (T) SHOWN AS THE THICKNESS ACCEPTABLE, BUT IS USED ONLY IN COMPUTING ENDWALL DIMENSIONS AND QUANTITIES.
-CONSTRUCT THE BASE WITH FORMS.
-USE CLASS 'B' CONCRETE.
-PAY FOR CONCRETE AS BRICK MASONRY.
-CONCRETE BRICK MAY BE USED IN LIEU OF CLAY BRICK.
-JUMBO BRICK WILL BE PERMITTED.

DIMENSIONS AND QUANTITIES

| USING CONCRETE PIPE | | |



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 WELL: STORM WATER POND IS TO BE LOCATED WITHIN DEDICATED COMMON AREA and DRAINAGE EASEMENT.

NOTE WELL:
1. All storm water runoff from built upon areas (i.e. impervious surfaces) to be directed to the storm sewer collection system (i.e. storm inlets or pond forebays) by swales, overland flow, additional grading, or landscaping inlets.

Forebay No.1

Line no.	Line ID	Flow rate (cfs)	Size (in)	Line length (ft)	Invert down (ft)	Invert up (ft)	Line slope (%)	Grate down (ft)	Grate up (ft)	Dnstrm line no.
1	1 TO 2	162.68	66	57	31.50	32.50	1.75	38.00	41.39	End
2	2 TO 3	162.68	66	447	32.50	33.50	0.22	41.39	45.21	1
3	3 TO 4	162.68	66	35	33.50	33.70	0.57	45.21	42.01	2
4	4 TO 5	159.21	66	63	33.70	33.90	0.32	42.01	41.59	3
5	5 TO 6	100.23	54	252	34.90	35.30	0.16	41.59	42.04	4
6	6 TO 7	91.21	54	85	35.30	35.50	0.24	42.04	42.70	5
7	7 TO 8	89.94	54	38	35.50	35.60	0.26	42.70	42.70	6
8	8 TO 9	88.32	54	105	35.60	35.80	0.19	42.70	42.52	7
9	9 TO 10	78.20	48	192	36.30	36.60	0.16	42.52	44.17	8
10	10 TO 11	66.91	48	326	36.60	37.00	0.12	44.17	44.12	9
11	11 TO 12	57.45	42	184	37.50	37.80	0.16	44.12	43.75	10
12	12 TO 13	42.82	42	195	37.80	38.10	0.15	43.75	43.75	11
13	5 TO 5A	55.05	42	129	33.90	34.20	0.23	41.59	44.00	4
14	6 TO 6A	5.72	18	63	38.30	38.50	0.32	42.04	42.04	5
15	9 TO 9A	7.29	24	63	38.20	38.50	0.48	42.52	42.51	8
16	9A TO 9B	4.28	18	134	39.00	39.30	0.22	42.51	42.42	15
17	9B TO 9C	1.97	18	38	39.30	39.40	0.26	42.42	42.42	16
18	10 TO 10A	3.55	18	152	39.10	39.30	0.13	44.17	44.28	9
19	10 TO 10C	4.74	18	63	39.10	39.30	0.32	44.17	44.17	9
20	11 TO 11A	6.10	18	63	39.50	39.80	0.48	44.12	44.12	10
21	12 TO 12A	10.81	24	63	39.30	39.50	0.32	43.75	43.78	11
22	12A TO 12B	7.75	24	133	39.50	39.70	0.15	43.78	43.73	21
23	12B TO 12C	3.35	18	36	40.20	40.30	0.28	43.73	43.77	22
24	13 TO 13A	4.45	18	63	40.00	40.20	0.32	43.73	43.73	12
25	13 TO 13B	34.20	36	141	38.10	38.40	0.21	43.73	44.00	12
26	10A TO 10B	2.02	18	111	39.30	39.50	0.18	44.28	44.13	18

Return period = 10 Yrs.

Forebay No.2

Line no.	Line ID	Flow rate (cfs)	Size (in)	Line length (ft)	Invert down (ft)	Invert up (ft)	Line slope (%)	Grate down (ft)	Grate up (ft)	Dnstrm line no.
1	OUT TO 1	154.79	60	22	33.50	33.70	0.91	40.00	45.03	End
2	1 TO 1A	13.03	24	36	39.00	39.50	1.39	45.03	44.67	1
3	1 TO 2	141.70	60	122	33.70	33.90	0.16	45.03	44.55	1
4	1A TO 1B	12.22	24	58	39.50	40.00	0.86	44.67	45.08	2
5	1B TO 1C	11.00	24	281	40.00	40.50	0.18	45.08	44.20	4
6	1C TO 1D	4.80	18	36	41.00	41.20	0.56	44.20	44.20	5
7	1B TO 1E	0.64	18	37	41.00	41.50	1.35	45.08	45.08	4
8	2 TO 2A	2.14	18	36	40.50	41.00	1.39	44.55	44.55	3
9	2 TO 3	138.35	60	319	33.90	34.20	0.09	44.55	45.09	3
10	3 TO 4	125.37	60	75	34.20	34.40	0.27	45.09	44.54	9
11	4 TO 5	121.50	60	210	34.40	34.70	0.14	44.54	44.13	10
12	5 TO 6	96.29	60	80	34.70	34.90	0.25	44.13	44.13	11
13	6 TO 7	95.13	60	144	34.90	35.10	0.14	44.14	43.58	12
14	7 TO 8	41.22	48	221	35.40	35.70	0.14	43.58	42.93	13
15	8 TO 9	27.28	42	79	35.70	35.90	0.25	42.93	42.84	14
16	9 TO 10	26.24	42	31	35.90	36.00	0.32	42.84	42.84	15
17	10 TO 11	24.74	36	165	36.50	36.80	0.18	42.84	42.46	16
18	11 TO 12	17.53	30	72	37.30	37.50	0.28	42.46	42.26	17
19	12 TO 13	14.46	30	96	37.50	37.80	0.31	42.26	42.41	18
20	13 TO 14	13.71	30	67	37.80	38.00	0.30	42.41	42.95	19
21	14 TO 45	7.37	24	139	38.50	38.80	0.50	42.95	42.23	20
22	45 TO 45A	2.83	18	63	39.10	39.30	0.32	42.33	42.33	21
23	14 TO 44	3.85	18	109	39.50	40.00	0.46	42.95	43.38	20
24	44 TO 44A	0.93	18	66	40.00	40.30	0.45	43.38	43.38	23
25	12 TO 12A	1.68	18	58	38.50	39.00	0.86	42.26	42.26	18
26	11 TO 11A	1.16	18	47	39.00	39.50	1.06	42.46	42.46	17
27	8 TO 38	13.25	24	31	38.00	38.50	1.61	42.93	42.53	14
28	7 TO 24	46.38	42	68	36.50	37.00	0.74	43.58	43.83	13
29	24 TO 25	42.45	42	164	37.00	37.30	0.18	43.83	44.07	28
30	25 TO 34	13.81	30	23	37.30	37.40	0.43	44.07	44.07	29
31	24 TO 24A	2.08	18	23	40.00	40.50	2.17	43.83	43.83	28
32	6 TO 6A	0.69	18	31	40.00	40.50	1.61	44.14	44.14	12
33	5 TO 16	11.74	18	31	40.00	40.50	1.61	44.13	44.13	11
34	4 TO 4A	1.68	18	31	40.50	41.00	1.61	44.54	44.54	10
35	3 TO 16MH	8.17	18	129	40.00	43.00	2.33	45.09	47.68	9
36	16MH TO 17	8.17	18	107	43.00	43.50	0.47	47.68	46.75	35
37	17 TO 17A	4.94	18	36	43.50	43.70	0.56	46.75	46.75	36
38	18 TO 19	10.29	18	70	40.50	40.70	0.29	44.13	44.00	33
39	19 TO 20	7.05	18	107	40.70	43.20	2.34	44.00	47.50	38
40	20 TO 21	5.96	18	95	43.20	43.70	0.53	47.50	47.50	39
41	21 TO 22	2.20	18	86	43.70	44.00	0.35	47.50	47.01	40
42	21 TO 23	1.62	18	138	43.70	46.00	1.67	47.50	49.00	40
43	19 TO 19A	1.56	18	71	40.70	41.00	0.42	44.00	44.00	38
44	25 TO 26	21.58	30	195	38.00	38.50	0.26	44.07	43.80	29
45	26 TO 27	11.71	24	235	39.00	39.50	0.21	43.80	43.00	44
46	27 TO 28	5.10	18	164	40.00	40.50	0.30	43.00	43.60	45
47	26 TO 31	5.25	18	107	40.00	42.50	2.34	43.80	46.80	44
48	31 TO 32	4.04	18	74	42.50	43.00	0.68	46.80	46.26	47
49	31 TO 33	0.64	18	119	42.50	44.00	1.26	46.80	47.50	47
50	25 TO 29	5.49	18	111	40.00	40.50	0.45	44.07	44.00	29
51	29 TO 30	2.89	18	106	40.50	40.80	0.28	44.00	44.01	50
52	34 TO 35	12.02	30	110	37.40	37.60	0.18	44.07	44.02	30
53	35 TO 36	10.00	24	104	37.60	37.90	0.29	44.02	44.82	52
54	36 TO 37	7.45	24	210	37.90	38.30	0.19	44.82	43.00	53
55	37 TO 37A	5.31	24	94	38.30	38.50	0.21	43.00	42.00	54
56	38 TO 39	12.38	24	71	38.50	38.70	0.28	42.93	43.00	27
57	39 TO 40	9.31	24	120	38.70	39.00	0.25	43.00	44.00	56
58	40 TO 41	7.98	18	92	39.00	39.30	0.33	44.00	43.00	57
59	41 TO 42	2.08	18	204	39.30	39.80	0.25	43.00	42.79	58
60	39 TO 43	1.10	18	74	39.50	40.00	0.68	43.00	43.00	56
61	5 TO 46	10.99	18	64	39.00	39.50	0.78	44.13	44.00	11
62	46 TO 47	0.58	18	63	39.50	41.00	2.38	44.00	44.50	61
63	46 TO 48	2.95	18	81	39.50	41.00	1.85	44.00	45.00	61
64	48 TO 49	2.08	18	150	41.00	41.50	0.33	45.00	44.50	63
65	46 TO 50	4.11	18	162	39.50	40.00	0.31	44.00	43.00	61
66	50 TO 51	2.60	18	63	40.00	41.00	1.59	43.00	44.02	65
67	7 TO 52	6.61	18	68	39.00	39.50	0.74	43.58	43.01	13
68	52 TO 53	1.91	18	96	39.50	41.00	1.56	43.01	44.01	67
69	52 TO 54	2.88	18	216	39.50	40.00	0.23	43.01	43.10	67

Return period = 10 Yrs.

B Baffles

Specifications # 6.65 – Construction Specifications
1. Grade the basin so that the bottom is level front to back and side to side.
2. Install posts or saw horses across the width of the sediment basin (Practice 6.62, Sediment Fence).
3. Steel posts should be driven to a depth of 24 inches, spaced a maximum of 4 feet apart, and installed up the sides of the basin as well. The top of the fabric should be 6 inches higher than the invert of the spillway (El=22.0)
4. Install at least three rows of baffles between the inlet and outlet discharge point. Basins less than 20 feet in length may use 2 baffles.
5. When using posts, add a support wire or rope across the top of the measure to prevent sagging.
6. Wrap porous material, like jute backed by coir material, over a sawhorse or the top wire. Hammer rebar into the sawhorse legs for anchoring. The fabric should have five to ten percent openings in the weave. Attach fabric to a rope and a support structure with zip ties, wires, or staples.
7. The bottom and sides of the fabric should be anchored in a trench or pinned with 8–inch erosion control matting staples.
8. Do not splice the fabric, but use a continuous piece across the basin.

Maintenance
Inspect baffles at least once a week and after each rainfall. Make any required repairs immediately.
Be sure to maintain access to the baffles. Should the fabric of a baffle collapse, tear, or decompose, or become ineffective, replace it promptly.
Remove sediment deposits when it reaches half full to provide adequate storage volume for the next rain and to reduce pressure on the baffles. Take care to avoid damaging the baffles during cleanout. Sediment depth should never exceed half the designed storage depth.
After the contributing drainage area has been properly stabilized, remove all baffle materials and unstable sediment deposits, bring the area to grade, and stabilize it.

See narrative for additional details and descriptions, including pictures.

CONSTRUCTION SCHEDULE –

SEE PLAN THIS SHEET and ADDITIONAL DETAILS ON SHEET 6

1. Obtain approval of Plan and any necessary permits, and hold a pre–construction conference prior to commencing any work.
2. Flag work limits and stake–out parking lot, primary measures, and Silt Fencing and Sediment Basin for preliminary grading.
3. Install Gravel Construction Entrances.
4. Install Silt Fencing as shown on Plan prior to clearing and grubbing site. Sediment Basin to be constructed prior to building.
5. Install utilities in roadway and drives, establish final grades and stabilize parking areas and roadways with stone base course.
6. Final grade building sites. Install non–municipal utilities as needed, and vegetatively stabilize areas where building construction is not imminent.
7. All erosion and sediment control Practices are to be inspected weekly and after any rainfall, and repaired as necessary.
8. Upon completion of building construction, the roadway and parking areas are to be paved and all areas permanently vegetatively stabilized. After site stabilization, temporary measures are to be removed and the Sediment Basin cleaned to its original design contours. If necessary, and riser structures orifices opened, so as to function as a stormwater management / water quality retention pond.

MAINTENANCE PLAN –

1. All measures to be inspected weekly and after any rainfall event and needed repairs made immediately.
2. Sediment Basin to be cleaned out when the level of sediment reaches as shown on individual pond plans.
3. Construction entrance to be maintained in a condition to prevent mud or sediment from leaving the construction site. Periodic topdressing with 2"stone may be required. Remove all objectionable material spilled, washed, or tracked onto public roadways immediately.
4. Sediment to be removed from behind the any Silt Fence and Inlet protection devices when it becomes 0.5' deep. Fencing and inlet protection to be repaired as needed to maintain a barrier.
5. All seeded areas shall be fertilized, mulched, and re–seeded as necessary, according to specifications provided, to maintain a suitable vegetative cover.
6. Inspect rip–rap outlet structures weekly and after significant (1/2 inch or greater) rainfall events to see if any erosion around or below rip–rap has taken place, or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.
7. Inspect baffles at least once a week and after each rainfall. Make any required repairs immediately.
8. Skimmer to be inspected weekly and after each significant rain event (1/2 inch or greater) and repaired immediately. Make sure that the skimmer does not become entangled in basin vegetation or trapped in silt due to low water conditions.

VEGETATIVE PLAN –

1. 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.

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.

DESIGNER'S PLAN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE LATEST CITY OF WILMINGTON ORDINANCES AND STORMWATER DESIGN MANUAL."

SIGNATURE: _____

PRINTED NAME AND TITLE: DAVID S. HOLLIS, PE, PLS

DATE: _____

REGISTRATION NUMBER: PE #20007

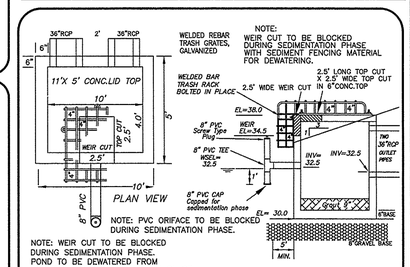
PROPERTY OWNER CERTIFICATION:

"I HEREBY CERTIFY THAT I AM THE CURRENT OWNER OF THE PROPERTY AND THAT UPON RECEIPT OF "AUTHORIZATION–TO–CONSTRUCT"ANY CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT, WILL BE PERFORMED IN ACCORDANCE WITH THIS PLAN AND THAT THE APPLICABLE ORDINANCES AND RULES OF THE CITY OF WILMINGTON, THE STATE OF NORTH CAROLINA AND THE FEDERAL GOVERNMENT AND ITS AGENCIES WHICH ARE HEREBY MADE PART OF THIS PLAN, AS THE OWNER, I ACCEPT FULL RESPONSIBILITY FOR THE CONSTRUCTION AND OPERATION AND MAINTENANCE OF THE PROPOSED FACILITIES. I WILL NOT ATTEMPT TO TRANSFER THIS RESPONSIBILITY WITHOUT THE WRITTEN AUTHORIZATION OF THE CITY OF WILMINGTON.

SIGNATURE: _____

PRINTED NAME AND TITLE: Adair Graham, Jr., Manager Member
Cameron Properties Land Company, LLC

DATE: _____



NOTE: WEIR CUT TO BE BLOCKED DURING SEDIMENTATION PHASE.
POND TO BE DEWATERED FROM THE TOP DURING SEDIMENTATION PHASE.
TEMPORARY SEDIMENT STORAGE BETWEEN ELEV 32.5 AND 38.0 IS 1,251,625 CF

(OS) OUTLET STRUCTURE DETAILS (POND 1)
NOT TO SCALE

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 George Anderson as shown. Drainage 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) —X—X 3. SEDIMENT FENCE
Practice 6.62
Sediment fencing should be installed as shown on the Plan, first, to delineate and protect low areas, and around any temporary stockpile areas as necessary to prevent any graded interior areas from eroding onto adjacent lands or roadway, or into inlets.

(OP) 4. OUTLET STABILIZATION
Practice 6.41
Riprap aprons will be located at the downstream end of all discharge pipes to prevent scour.

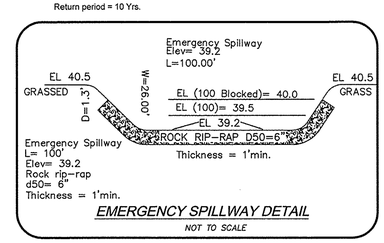
(SB) 7. SEDIMENT BASIN
Practice 6.61
The Sediment Basin is to be constructed (see Construction Schedule) as the primary Practice to prevent sediment from leaving the site. Detailed design and spillway configurations are specified in the details as shown on this Plan and the Narrative. The PVC outlet is to be blocked and weir blocked 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 open the control orifices.

(IP) 8. INLET PROTECTION
Practice 6.51
Storm sewer inlet barriers of hardware cloth and gravel inlet protection are to be constructed to help prevent sediment from entering the storm sewer system. After permanent stabilization of the entire contributing watershed area, the storm sewer system is to be flushed to remove accumulated sediment and ensure design flows.

(B) 9. BAFFLES:
Practice 6.65
Porous baffles are to be installed after pond excavation to spread stormwater flow and decrease velocity. The installation should be similar to a sediment fence with materials such as 700 g/m^2 coir erosion blanket, coir mesh, or tree protection fence folded over to reduce pore size. See next Sheet for specifications, and the Narrative or Erosion Control Manual for additional details.

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



EMERGENCY SPILLWAY DETAIL
NOT TO SCALE

NOTE:
SEE STANDARDS AND SPECIFICATIONS, PRACTICE 6.65 FOR ADDITIONAL DETAIL.
METAL STAKES/POSTS ARE 1.33 lb/LF STEEL.
SUPPORT POSTS 24"INTO BOTTOM OR SIDE, TYPICAL MAXIMUM 4' SPACING

TEMPORARY BAFFLE CROSS SECTION DETAIL
NOT TO SCALE

NOTE WELL:
TEMPORARY BAFFLES TO BE INSTALLED ALONG TOP OF FOREBAY SECTIONS AS SHOWN DURING SEDIMENTATION PHASE UNTIL POND AREA IS STABILIZED.

Approved Construction Plan	
	Name / Date
Planning	
Traffic	
Fire	

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_____

REV. NO.	REVISIONS	DATE
1	REVISED AS PER CITY COMMENTS	12–02–14

50 25 0 50
SCALE IN FEET: 1"= 50'

Copyright ©, Hanover Design Services, P.A., All rights reserved. Reproduction or use of the contents of this document, or additions or deletions to this document, in whole or part, without written consent of the Land Surveyor or Engineer, is prohibited. Only copies from the original of this document, marked with the original signature and original seal of the Surveyor or Engineer, shall be considered to be valid and true copies.

NORTH CAROLINA PROFESSIONAL SEAL 20007 ENGINEER DAVID S. HOLLIS
12.02.14
dhollis @ hdsllm.com

Erosion & Sediment Control and Water Quality Pond Plans

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–0597

Date: 10–6–14
Scale: 1"= 50'
Drawn: DSH
Checked: GAW
Project No: 12498
Sheet No: P3
Of: 3