

# BARCLAY WEST

## PHASE 1 INFRASTRUCTURE

### Erosion & Sediment Control and Water Quality Plan

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

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

**LIMITS OF DISTURBANCE**  
 16.18 Acres

**SITE DATA TABLE:**  
 PARCEL IDENTIFICATION:  
 R06500-003-004-000  
 DB 5427 PG 622

#### STANDARD NOTES:

1. INFORMATION CONCERNING UNDERGROUND UTILITIES HAS 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 TO BEGIN BEFORE LOCATION OF EXISTING UTILITIES HAS BEEN DETERMINED. CALL "NO ONE-CALL" AT LEAST 48 HOURS BEFORE COMMENCING CONSTRUCTION.
3. ALL TREES WHICH ARE NOT REQUIRED TO BE CLEARED FOR CONSTRUCTION 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 ENCUMBRANCES IN ROW 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 BELL SOUTH AND DUKE ENERGY.
13. PROJECT AREA = XXX.XX ACRES.
14. THIS PROPERTY IS ZONED RB, MF-M & O&I-1.
15. SEWER AND WATER TO BE PROVIDED BY CFPWA.
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.

#### 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.

#### LEGEND

- IRON IN EXIST. CONC. MON.
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING WATERLINE
- EXISTING IRON PIPE
- EXISTING IRON REBAR
- EXISTING CONCRETE MONUMENT
- IRON SET
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- POWER POLE
- COMPUTED POINT
- X 49.0 INDICATES SPOT ELEVATION
- WETLANDS
- CONSTRUCTION ENTRANCE (TYPICAL)
- SILT FENCE (NEW) (TYPICAL)
- INLET PROTECTION (TYPICAL)
- OUTLET PROTECTION (TYPICAL)
- LIMITS OF DISTURBANCE (PROPOSED)

#### 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 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.
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.

#### 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.

#### INDEX TO DRAWINGS

| SHEET No. | DESCRIPTION                                | DRAWING No. |
|-----------|--|-------------|
| 1 OF 4    | COVER SHEET AND GENERAL NOTES              | 12820-SHT1  |
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| 3 OF 4    | Erosion Control Plans                      | 12820-SHT3  |
| 4 OF 4    | Erosion Control Plans                      | 12820-SHT4  |
| 5 OF 5    | Erosion Control Notes & Additional Details | 12820-SHT5  |

#### BENCHMARK LOCATIONS AND ELEVATIONS

| LOCATION  | ELEVATION |
|---|-----------|
| 1 EX. CONCRETE MONUMENT AT INTERSECTION OF S. 17TH STREET & MUSEUM DRIVE. | 42.58     |

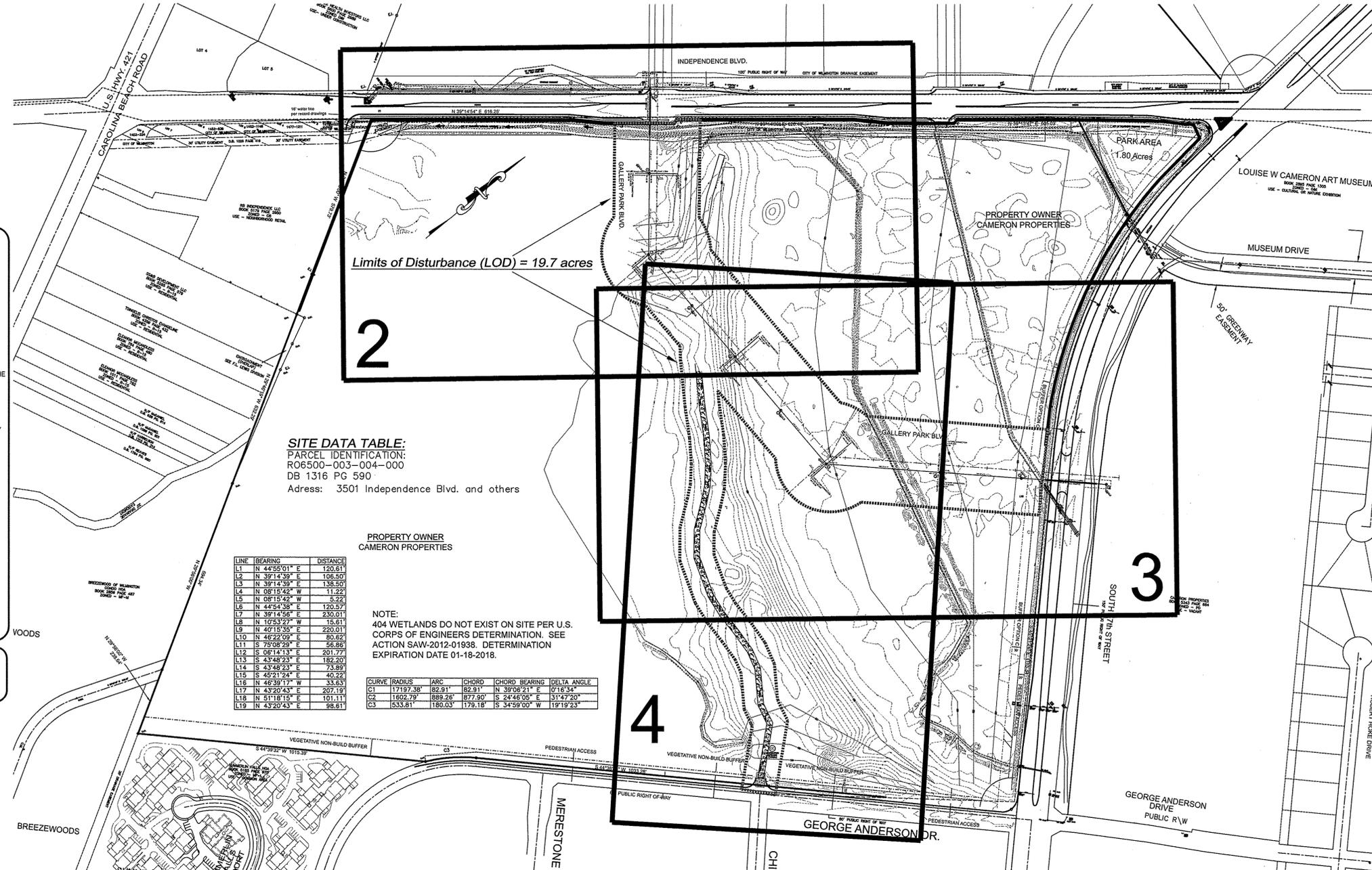
| REV. NO. | REVISIONS | DATE |
|----------|-----------|------|
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NOTE:  
 THIS PLAN TO BE UTILIZED AND REVIEWED ONLY IN CONJUNCTION WITH THE WRITTEN NARRATIVE, WHICH IS AN INTEGRAL PART OF THIS EROSION AND SEDIMENT CONTROL PLAN.

#### 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       |



**SITE DATA TABLE:**  
 PARCEL IDENTIFICATION:  
 R06500-003-004-000  
 DB 1316 PG 590  
 Address: 3501 Independence Blvd. and others

| LINE | BEARING       | DISTANCE |
|------|---------------|----------|
| L1   | N 44°55'01" E | 120.61   |
| L2   | N 39°14'39" E | 106.50   |
| L3   | N 39°14'39" E | 136.50   |
| L4   | N 08°15'42" W | 11.22    |
| L5   | N 08°15'42" W | 5.22     |
| L6   | N 44°54'38" E | 120.37   |
| L7   | N 39°14'36" E | 230.01   |
| L8   | N 10°53'27" W | 15.61    |
| L9   | N 40°15'35" E | 220.01   |
| L10  | N 42°22'09" E | 80.82    |
| 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 46°39'17" W | 33.53    |
| L17  | N 43°20'47" E | 207.18   |
| L18  | N 51°18'15" E | 101.11   |
| L19  | N 43°20'43" E | 98.61    |

| CURVE | RADIUS    | ARC     | CHORD   | CHORD BEARING | DELTA ANGLE |
|-------|-----------|---------|---------|---------------|-------------|
| C1    | 17197.36' | 82.91'  | 82.91'  | N 39°06'21" E | 0°16'34"    |
| C2    | 1502.79'  | 889.26' | 877.90' | S 24°46'05" E | 31°47'20"   |
| C3    | 533.81'   | 180.03' | 179.18' | S 34°59'00" W | 19°19'23"   |

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.

#### 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 AS LISTED BY USDOCCOR 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 910-341-0586.
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
    - 3) 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.
    - 4) 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.
    - 5) 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 & ARCHITECT TO FACILITATE ONGOING ADJOINING BUSINESS ACTIVITIES.
5. CONTRACTOR TO COORDINATE REMOVAL & RECONSTRUCTION OF LIGHTING & OTHER NON-MUNICIPAL UTILITIES SUCH AS ELECTRICAL & TELEPHONE CONNECTIONS WITH THE AFFECTED AGENCIES AND THE OWNER AND ARCHITECT.

Cover Sheet and General Notes

## BARCLAY WEST

### PHASE 1 INFRASTRUCTURE (SANITARY SEWER)

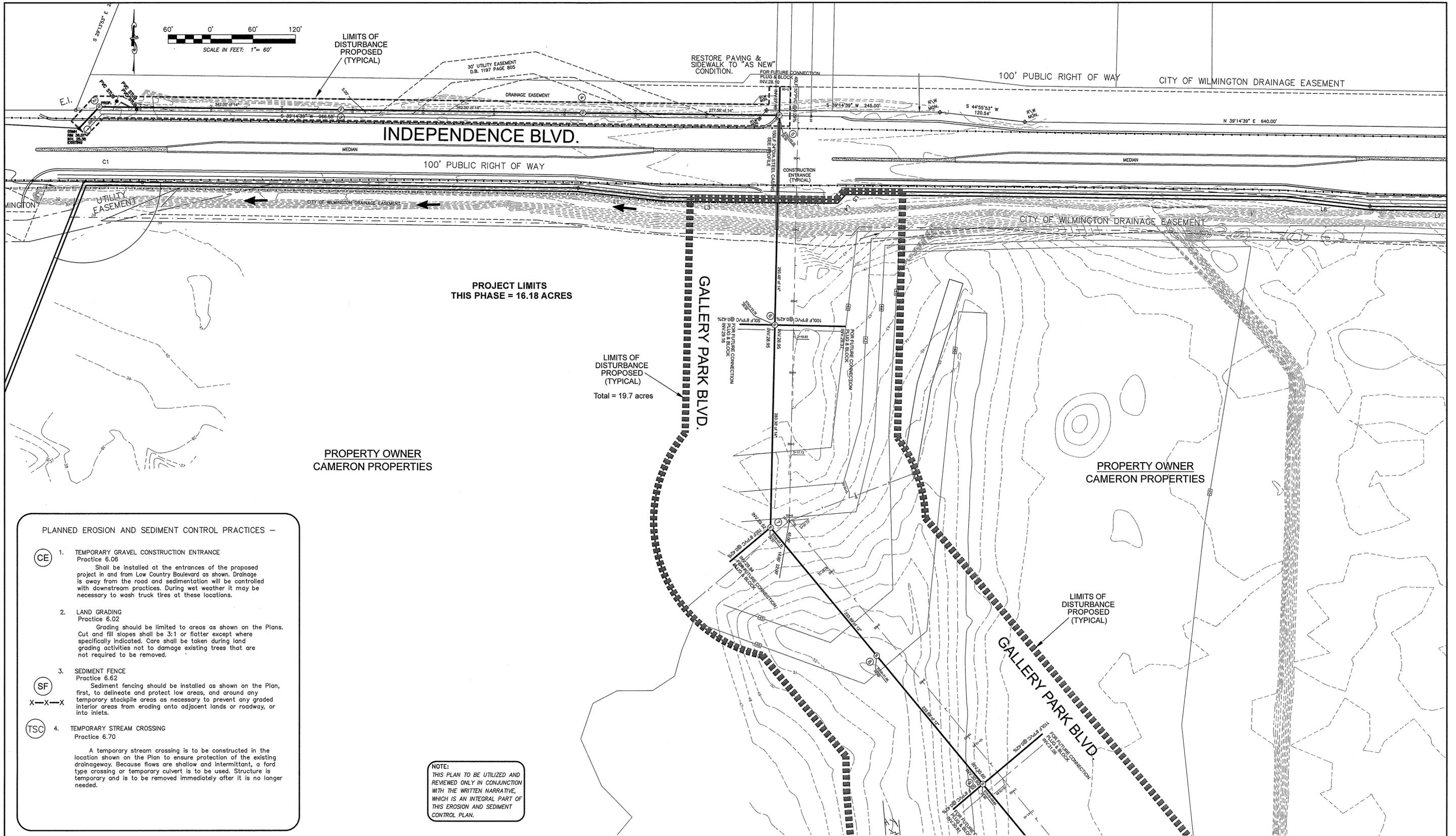
LOCATED IN THE CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA

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 FLORENZ PARKWAY  
 WILMINGTON, N.C. 28403  
 PHONE: (910) 543-8002

DATE: 2-26-14  
 SCALE: 1"=200'  
 DRAWN: DDB  
 CHECKED: DSH  
 PROJECT NO: 12498 P1-SSEWER  
 SHEET NO: 1  
 OF: 5

Professional Engineer Seal for North Carolina, No. 20007, dated 2-26-14.



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. 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** 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.
- TSC** 4. TEMPORARY STREAM CROSSING  
Practice 6.70

A temporary stream crossing is to be constructed in the location shown on the Plan to ensure protection of the existing drainage. Because flows are shallow and intermittent, a ford type crossing or temporary culvert is to be used. Structure is temporary and is to be removed immediately after it is no longer needed.

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:  
THESE PLANS ARE FOR THE CONSTRUCTION & INSTALLATION OF THE SEWER MAINS & STUB-OUTS ONLY. NO IMPERVIOUS SURFACES TO BE CONSTRUCTED AT THIS TIME. PROPOSED ROADS & RIGHTS OF WAY LINEWORK ARE FOR GEOGRAPHICAL REPRESENTATION ONLY.

\*\*NOTE WELL:  
SEWER STUB-OUTS ARE TO BE CAPPED AND PLUGGED AS PER CAPE FEAR PUBLIC UTILITY AUTHORITY'S DESIGN SPECIFICATIONS AND/OR CFPWA FIELD INSPECTOR'S INSTRUCTION.

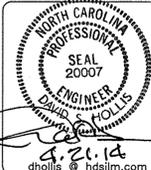
NOTE:  
404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SA-W-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.

\*\*\*NOTE WELL:  
1. EQUIPMENT CLEARANCE MINIMUM 18' 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 |
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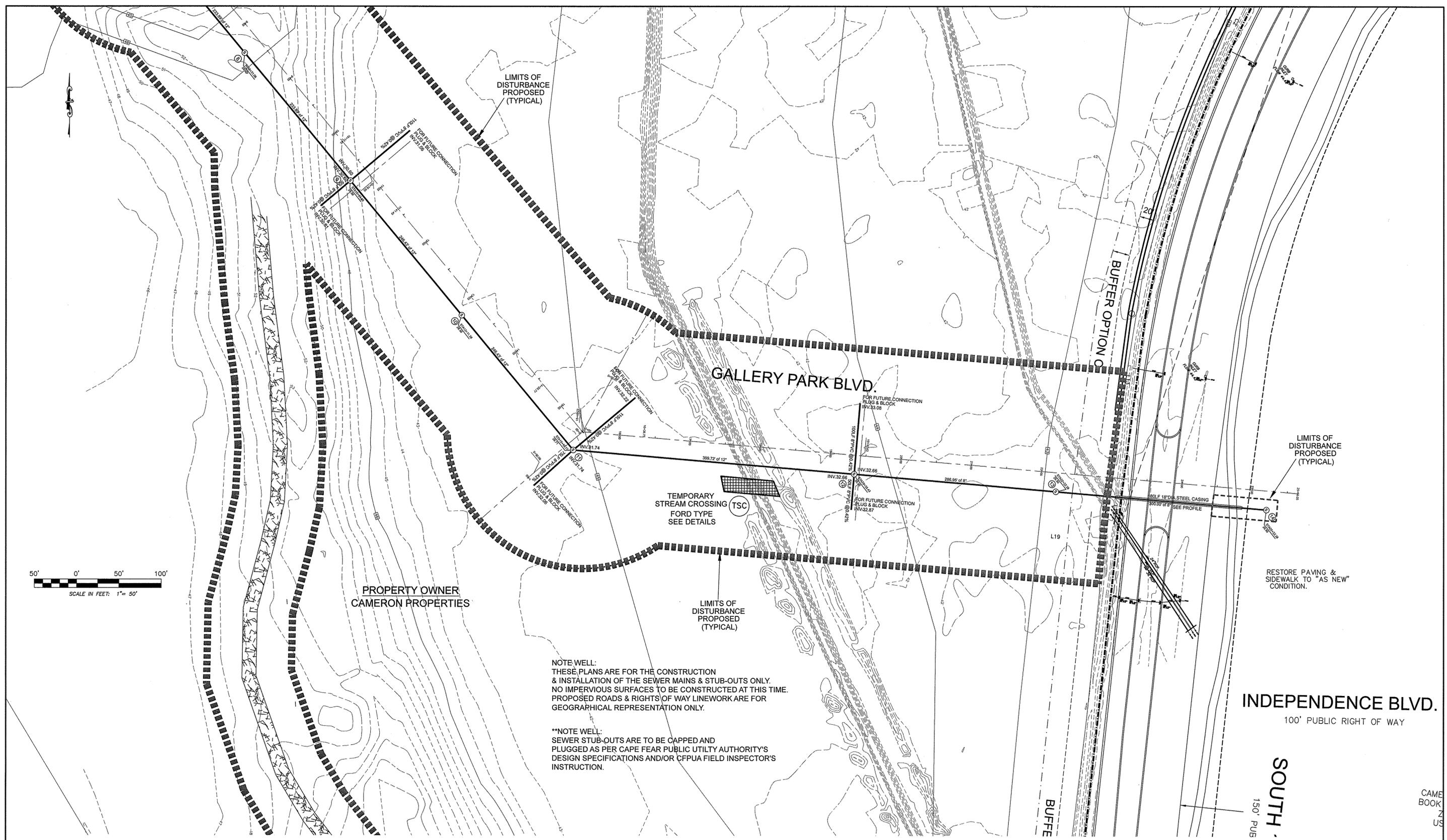
Erosion & Sediment Control and Water Quality Plan  
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LAND SURVEYORS, ENGINEERS & LAND PLANNERS  
1123 FLORAL PARKWAY  
WILMINGTON, N.C. 28403  
PHONE: (910) 343-8002

Date: 2-26-13  
Scale: HORIZ: 1"= 60'  
Drawn: DBB  
Checked: GW  
Project No: 12498 P1-SEWER  
Sheet No: 2  
Of: 5



NOTE WELL:  
 THESE PLANS ARE FOR THE CONSTRUCTION  
 & INSTALLATION OF THE SEWER MAINS & STUB-OUTS ONLY.  
 NO IMPERVIOUS SURFACES TO BE CONSTRUCTED AT THIS TIME.  
 PROPOSED ROADS & RIGHTS OF WAY LINEWORK ARE FOR  
 GEOGRAPHICAL REPRESENTATION ONLY.

\*\*NOTE WELL:  
 SEWER STUB-OUTS ARE TO BE CAPPED AND  
 PLUGGED AS PER CAPE FEAR PUBLIC UTILITY AUTHORITY'S  
 DESIGN SPECIFICATIONS AND/OR CFPWA FIELD INSPECTOR'S  
 INSTRUCTION.

NOTE:  
 A04 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 |
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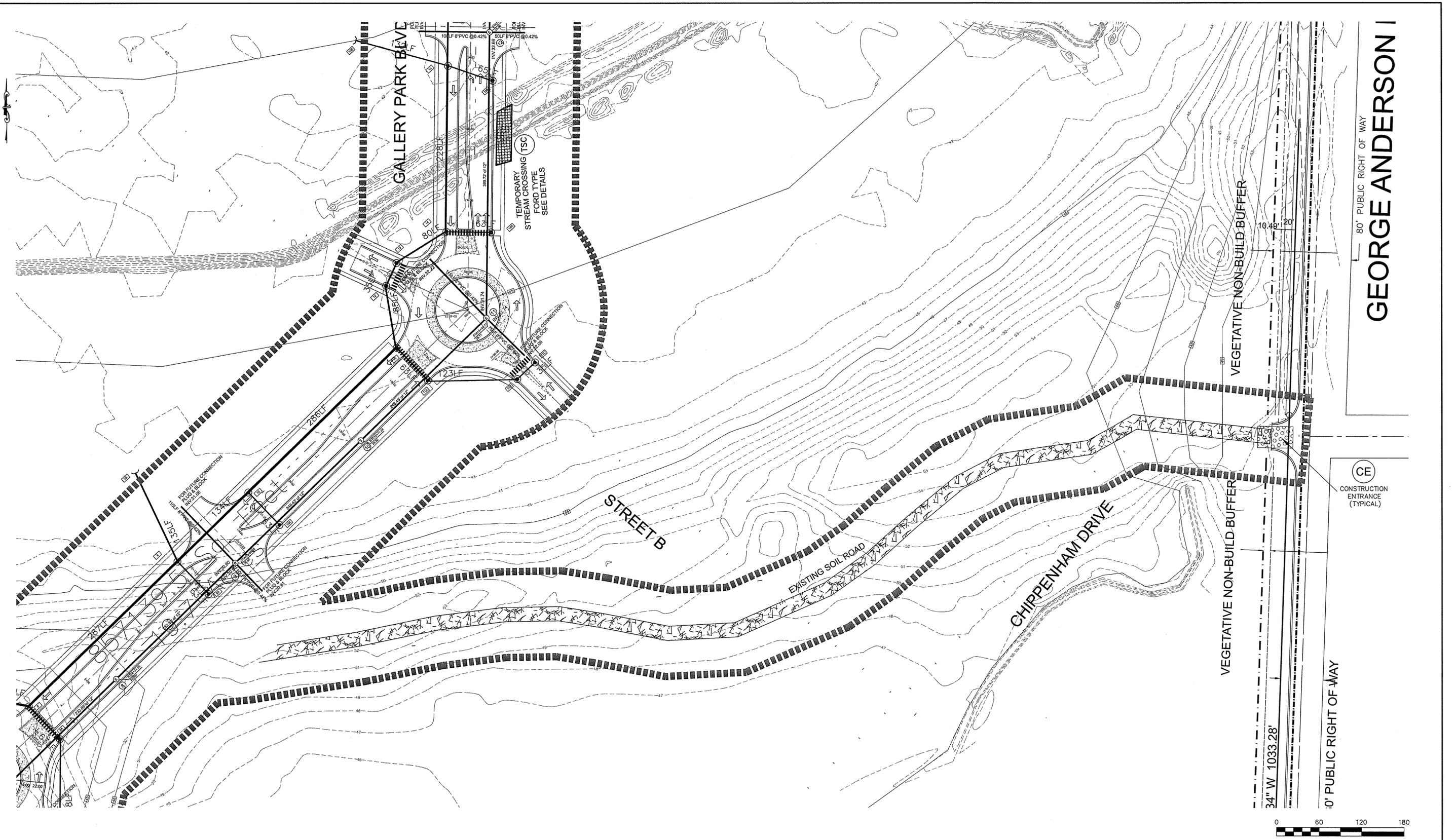
Erosion & Sediment Control and Water Quality Plan  
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 PHONE: (910) 343-9002

Date: 2-26-13  
 Scale: HORZ.: 1"=60'  
 Drawn: DBB  
 Checked: GW  
 Project No: 12498 P1-SEWER  
 Sheet No: 3  
 Of: 5



GEORGE ANDERSON I

80' PUBLIC RIGHT OF WAY

VEGETATIVE NON-BUILD BUFFER

VEGETATIVE NON-BUILD BUFFER

80' PUBLIC RIGHT OF WAY

34" W 1033.28'

CE  
CONSTRUCTION ENTRANCE (TYPICAL)



|   |           |      |
|---|-----------|------|
| STATION 0+00 THROUGH 10+50<br>INDEPENDENCE BLVD.  |           |      |
| REV. NO.  | REVISIONS | DATE |
|   |           |      |
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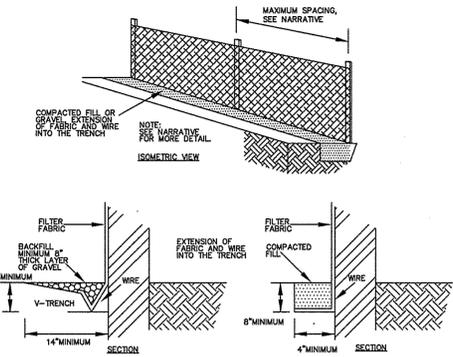
Erosion & Sediment Control and Water Quality Plan  
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LOCATED IN THE CITY OF WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

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

|             |                  |
|-------------|------------------|
| Date:       | 2-26-13          |
| Scale:      | HORIZ.: 1" = 60' |
| Drawn:      | DBB              |
| Checked:    | GW               |
| Project No: | 12498 P1-SEWER   |
| Sheet No:   | 4                |
| Of:         | 5                |

Note: Metal stakes are minimum 4' long, 1.33 lb/LF steel.

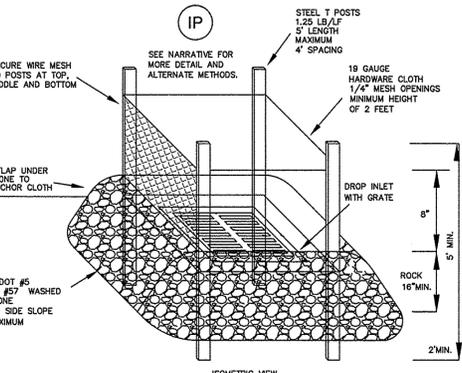


**SF SEDIMENT FENCE (SILT FENCE)**  
NTS  
PRACTICE 6.02

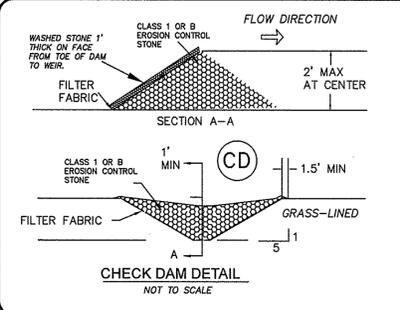
**CD CHECK DAM**

Check Dam

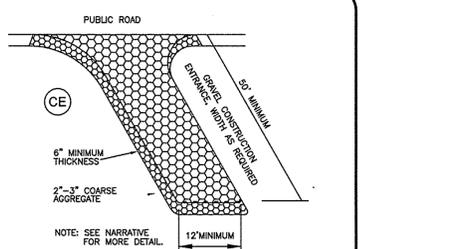
- 6.83 Construction Specifications
- Place stone to the lines and dimensions shown in the plan on a filter fabric foundation.
  - Keep the center stone section at least 9 inches below natural ground level where the dam abuts the channel banks.
  - Extend stone at least 1.5 ft beyond the ditch banks (Figure 6.83b) to keep overflow water from undercutting the dam as it re-enters the channel.
  - Set spacing between dams to ensure that the elevation at the top of the lower dam is the same as the elevation of the upper dam.
  - Protect the channel downstream from the lowest check dam, considering that water will flow over and around the dam (Practice 6.41, Outlet Stabilization Structure).
  - Make sure that the channel reach above the most upstream dam is stable.
  - Ensure that channel obstructions, such as culvert entrances below check dams, are not subject to damage or blockage from displaced stones.
- Maintenance
- Inspect check dams and channels for damage after each runoff event. Anticipate subsidence and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, install a protective riprap liner in that portion of the channel (Practice 6.31, Riprap-lined and Paved Channels). Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.



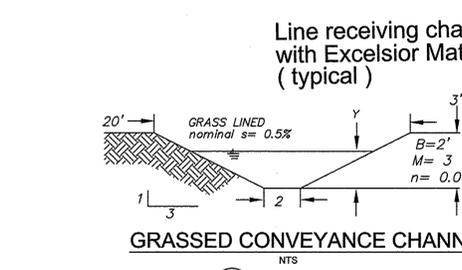
**IP HARDWARE CLOTH & GRAVEL INLET PROTECTION**  
NTS  
PRACTICE 6.51



- CONSTRUCTION SCHEDULE -**
- Obtain approval of Plan and any necessary permits, and hold a pre-construction conference prior to commencing any work.
  - Flag work limits and stake-out primary measures, for preliminary clearing and grubbing. Install all fencing entirely along the US Army Corps approved wetlands line as shown.
  - Install Gravel Construction Entrances.
  - Immediately stabilize all non construction areas. (See seeding specifications.)
  - Construct any sediment control Practices shown, prior to rough grading roadway, stockpiling material and topsoil as necessary.
  - All erosion and sediment control Practices are to be inspected weekly and after any rainfall, and repaired as necessary.
  - After site stabilization, temporary measures are to be removed.
- MAINTENANCE PLAN -**
- All measures to be inspected weekly and after any rainfall event and needed repairs made immediately.
  - 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.
  - All seeded areas shall be inspected, mowed, and re-seeded as necessary, according to specifications provided, to maintain a suitable vegetation cover.
  - Construction entrances to be maintained in a condition to prevent mud or sediment from leaving the construction site. Pile topsoiling with 2" stone may be required. Remove all objectionable material spilled, washed, or tracked onto public roadway immediately.
- 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.



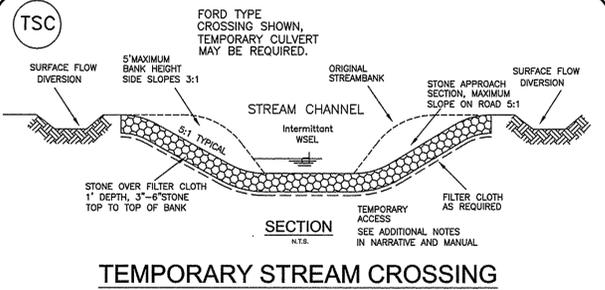
**CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT DETAIL**  
NTS



**GC GRASSED CONVEYANCE CHANNELS**  
NTS

- 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 POSITIVE DRAINAGE TO DRAINAGE SWALES AND RECEIVING STRUCTURES.
  - CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ANY RELOCATIONS, RE-ALIGNMENTS, DISCONNECTIONS OR CONNECTIONS OF EXISTING UTILITIES WITH APPLICABLE AUTHORITIES, AND ANY REQUIRED PERMITS.
  - 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. ALL MATERIALS 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       |



**TSC TEMPORARY STREAM CROSSING**  
NTS  
Practice 6.70

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.

- IP HARDWARE CLOTH & GRAVEL INLET PROTECTION (Temporary)**  
Specification # 6.51 - Construction Specifications
- As fabric, use a 19-gauge hardware cloth with 1/4 inch mesh openings, with a total height of 2 feet minimum. The sediment control stone, with a height of 16 inches, should have an outside slope of 2:1.
- For stakes, use steel T posts of 1.33 lb/linear foot with a minimum length of 5 ft., driven 2 ft. into the ground, maximum spacing of 4 feet.
- Specifications**
- Uniformly grade a shallow depression approaching the inlet.
  - Drive 5-foot steel posts 2 feet into the ground surrounding the inlet. Space posts evenly around the perimeter of the inlet, a maximum of 4 feet apart.
  - Surround the posts with wire mesh hardware cloth. Secure the wire mesh to the steel posts at the top, middle, and bottom. Place a 2-foot anchoring flap of the mesh under the gravel it recommended.
  - Place clean gravel (NOCD #5 or #57 stone) on a 2:1 slope with a height of 16 inches around the wire, and smooth to an even grade.
  - Once the contributing drainage area has been stabilized, remove the accumulated sediment, and establish final grades.
  - Compact the area properly and stabilize with groundwater.
- Maintenance**
- Inspect the barrier after each significant rain and make repairs as needed. Sediment to be removed from behind the any inlet protection devices when it becomes 0.5' deep.
- Remove sediment from the area as necessary to provide adequate storage volume for the next rain. Take care not to damage or undercut the hardware cloth during sediment removal.
- When the contributing drainage area has been adequately stabilized, remove all materials and any unstable sediment and dispose of them properly. Bring the disturbed area to the grade of the drop inlet and smooth and compact it. Appropriately stabilize all bare areas around the inlet.

- Table 6.11a - Seeding No. 4CP for Well-Drained Sandy Soils to Dry Sands, Coastal Plain; Low to Medium-Care Lowa Seeding mixture
- Species - Centropogon - Rate - 10-20 lb/acre (seed) or 33 lb/acre (sprigs)
- Seeding dates - May - June, (Sprigging can be done through July where water is available for irrigation).
- Soil amendments - Apply lime and fertilizer according to soil test, or apply 300 lb/acre 10-10-10.
- Sprigging - Plant sprigs in furrows with a tractor-drawn transplanter, or broadcast by hand.
- Furrows should be 4-6 inches deep and 2ft apart. Place sprigs about 2 ft apart in the row with one end at or above ground level (Figure 6.11a).
- Broadcast of rates shown above, and press sprigs into the top 1 1/2 inches of soil with a disk set straight so that sprigs are not brought back toward the surface.
- Mulch - Do not mulch
- Maintenance - Fertilize very sparingly - 20 lb/acre nitrogen in spring with no phosphorus. Centropogon cannot tolerate high pH or excess fertilizer.

- Table 6.111 - Seeding No. 5CP for Well-Drained Sandy Soils to Dry Sands; Low Maintenance
- Seeding mixture
- |                     |           |
|---------------------|-----------|
| Species Rate        | (lb/acre) |
| Panicum Bahiagrass  | 50        |
| Setaria lepedeza    | 30        |
| Common Bermudagrass | 10        |
| German millet       | 10        |
- Seeding rates**
- Where a neat appearance is desired, omit setaria
  - Use common Bermudagrass only on isolated sites where it cannot become a pest. Bermudagrass may be replaced with 5 lb/acre centropogon.
- Seeding dates** - Apr. 1 - July 15
- Soil amendments - Apply lime and fertilizer according to soil tests, or apply 3,000 lb/acre ground agricultural limestone and 500 lb/acre 10-10-10 fertilizer.
- Mulch - Apply 4,000 lb/acre grain straw or equivalent cover of another suitable mulch. Anchor by tacking with asphalt, nailing and netting or by crimping with a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance - Refertilize the following Apr. with 50 lb/acre nitrogen. Repeat as growth requires. May be mowed only once a year. Where a neat appearance is desired, omit setaria and now as often as needed.

- Table 6.11v - Seeding No. 7CP for Grass-lined Channels; Coastal Plain Seeding Mixture
- Species - Common Bermudagrass - Rate - 40-80 (1/2 lb/1,000 ft.)
- Seeding dates - Coastal Plain Apr - July
- Soil amendments - Apply lime and fertilizer according to soil tests, or apply 3,000 lb/acre ground agricultural limestone and 500 lb/acre 10-10-10 fertilizer.
- Mulch - Use jute, excelsior matting, or other effective channel lining material to cover the bottom of channels and ditches. The lining should extend above the highest calculated depth of flow. On channel side slopes above this height, and in ditches not requiring temporary linings, apply 4,000 lb/acre grain straw and anchor straw by stapling netting over the top.
- Mulch and anchoring materials must be allowed to wash down slopes where they can drop drainage devices.
- Maintenance - A minimum of 3 weeks is required for establishment. Inspect and repair much frequently. Refertilize the following Apr. with 50 lb/acre nitrogen.
- Refer to Appendix 6.02 for botanical names

- SF Sediment Fence (Silt Fence)**  
Specification 6.62 - Construction Specifications
- MATERIALS**
- Use a synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polyethylene yarn, which is certified by the manufacturer or supplier as conforming to the requirements shown in Table 6.62b. Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120 F.
  - Ensure that posts for sediment fences are 1.33 lb/linear ft steel with a minimum length of 4 ft. Make sure that steel posts have projections to facilitate fastening the fabric.
  - For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.
- Table 6.62b Specifications for Sediment Fence Fabric
- |  |  |
|--|--|
| Physical Property Requirements                         |  |
| Filtering Efficiency - 85% (min)                       |  |
| Tensile Strength at Standard Strength - 30 lb/in (min) |  |
| Extra Strength - 50 lb/in (min)                        |  |
| Slurry Flow Rate - 0.3 gal/sq ft/min (min)             |  |
- CONSTRUCTION**
- Construct the sediment barrier of standard strength or extra strength synthetic filter fabric.
  - Ensure that the height of the sediment fence does not exceed 18 inches above the ground surface. (Higher fences may impound volumes of water sufficient to cause failure of the structure.)
  - Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with overlap to the next post.
  - Support standard strength filter fabric by wire mesh fastened securely to the up slope side of the posts using heavy duty wire staples at least 1 inch long, or tie wires. Extend the wire mesh support to the bottom of the trench.
  - When a wire mesh support fence is used, space posts a maximum of 8 ft apart. Support posts should be driven securely into the ground to a minimum of 18 inches.
  - Extra strength filter fabric with 6ft post spacing does not require wire mesh support.
  - Riprap may be field stone or rough quarry stone. It should be hard, angular, highly weather-resistant and well graded.
  - Construct the apron on zero grade with no overfall at the end. Make the top of the riprap at the downstream level with the receiving area or slightly below it.
  - 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.
  - 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.

- Permanent Seeding**  
Specifications # 6.11 - Specifications
- Seeding Requirements**
- Establishment of vegetation should not be attempted on sites that are unsuitable due to inappropriate soil texture (Table 6.11a), poor drainage, concentrated overland flow, or steepness of slope until measures have been taken to correct these problems.
3. Provide drainage to carry water to a sediment trap or other suitable outlet.
4. Use geotextile fabric because it improves stability of the foundation in locations subject to seepage or high water table.
- Maintenance
- Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topsoiling with 2-inch stone. After each rainfall, inspect any structures used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadway.

- Temporary Seeding**  
Specification # 6.10 - Specifications
- Complete grading before preparing seedbeds and install all necessary erosion control practices, such as dikes, waterways and basins. Minimize steep slopes because they make seedbed preparation difficult and increase the erosion hazard. If soils become compacted during grading, loosen them to a depth of 6-8 inches using a ripper, harrow, or chisel plow.
- Seedbed Preparation**
- Good seedbed preparation is essential to successful plant establishment. A good seedbed is well-pulverized, loose and uniform. Where hydroseeding methods are used, the surface may be left with a more irregular surface of large clods and stones.
- Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone of the rate of 1 to 1 1/2 tons/acre on coarse-textured soils and 2-3 tons/acre on fine-textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher need not be limed.
- Fertilizer - Base application rates on soil tests. When these are not possible, apply a 10-10-10 grade fertilizer at 700-1,000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before application.
- Surface roughening - If recent tillage operations have resulted in a loose surface, additional roughening may not be required except to break up large clods. If rainfall causes the surface to become seeded or crusted, loosen it just prior to seeding by disking, raking, harrowing, or other suitable methods. Groove or furrow albedo steeper than 3:1 on the contour before seeding (Practice 6.03, Surface Roughening).

- Species Selection**
- Use the key to Permanent Seeding Mixtures (Table 6.11b) to select the most appropriate seeding mixture based on the general site and maintenance factors. A listing of species, including scientific names and characteristics, is given in Appendix 6.02.
- Seeding Preparation**
- Install necessary mechanical erosion and sedimentation control practices before seeding, and complete grading according to the approved plan.
- Lime and fertilizer needs should be determined by soil tests. Soil testing is performed free of charge by the North Carolina Department of Agriculture soil testing laboratory. Directions, sample cartons, and information sheets are available through county agricultural extension offices or from NCDAS. Because the NCDAS soil testing lab requires 1-6 weeks for sample turn-around, sampling must be planned well in advance of final grading. Testing is also done at commercial laboratories.
- When soil test are not available, follow rates suggested on the individual specification sheet for the seeding mix chosen (Tables 6.11a through 6.11v).
- Applications rates usually fall into the following ranges:
- Ground agricultural limestone
  - Light-textured, sandy soils: 1-1/2 tons/acre
  - Heavy textured, clayey soils 2-3 tons/acre
  - Fertilizer
  - Grosses 800-1,200 lb/acre of 10-10-10 (or the equivalent)
  - Gross-legume mixtures: 800-1,200 lb/acre of 5-10-10 (or the equivalent)
- Apply lime and fertilizer evenly and incorporate into the top 4-6 inches of soil by disking or other suitable means. Operate machinery on the contour. When using a hydroseeder, apply lime and fertilizer to a rough, loose surface.
- Rough surfaces according to Practice 6.03, Surface Roughening.
- Complete seedbed preparation by breaking up large clods and raking into a smooth, uniform surface (slope less than 3:1) fill in or level depressions that can collect water. Broadcast seed into a freshly loosened seedbed that has not been seeded by rainfall.

- 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 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, 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 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.

- Table 6.10a - Temporary Seeding Recommendation for Late Winter and Early Spring Seeding Mixture**
- |                      |                 |      |                               |
|----------------------|-----------------|------|-------------------------------|
| Species - Ryegrass   | Annual lepedeza | Kobs | in Piedmont and Coastal Plain |
| Rate (lb/acre) - 120 |                 |      |                               |
- Apply annual lepedeza when duration of temporary cover is not to extend beyond June
- Seeding dates-Coastal Plain - Dec. 1 - Apr. 15
- Soil amendments-Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.
- Mulch-Apply 4,000lb/acre straw. Anchor straw by tacking with asphalt, netting or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance-Refertilize if growth is not fully adequate. Re-seed, refertilize and mulch immediately following erosion or other damage.
- Table 6.10b - Temporary Seeding Recommendations for Summer Seeding Mixture**
- |                       |  |
|-----------------------|--|
| Species-German millet |  |
| Rate(lb/acre)- 40     |  |
- Seeding dates-Coastal Plain- Apr.-Aug. 15
- Soil amendments-Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.
- Mulch -Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance-Refertilize if growth is not fully adequate. Re-seed, refertilize and mulch immediately following erosion or other damage.
- Table 6.10c - Temporary Seeding Recommendation for Fall Seeding Mixture**
- |                     |  |
|---------------------|--|
| Species-Ryegrass    |  |
| Rate(lb/acre) - 120 |  |
- Seeding dates - Coastal Plain and Piedmont-Aug 15 - Dec. 30
- Soil amendments - Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer.
- Mulch-Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance- Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobs (Piedmont and Coastal Plain)

- CE Temporary Gravel Construction Entrance/Exit**  
Specification # 6.08 - Construction Specifications
- Clear the entrance and exit area of all vegetation, roots and other objectionable material and properly grade. Where hydroseeding methods are used, the surface may be left with a more irregular surface of large clods and stones.
  - Place the gravel to the specific grade and dimensions shown on the plans and smooth it.
  - Provide drainage to carry water to a sediment trap or other suitable outlet.
  - Use geotextile fabric because it improves stability of the foundation in locations subject to seepage or high water table.
- Maintenance
- Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topsoiling with 2-inch stone. After each rainfall, inspect any structures used to trap sediment and clean it out as necessary. Immediately remove all objectionable materials spilled, washed, or tracked onto public roadway.

- Plant Selection**
- Select an appropriate species or species mixture from Table 6.10a, for seeding in late winter and early spring. Table 6.10b for summer, and Table 6.10c for fall.
- Seeding**
- Evenly apply seed using a cyclone seeder (broadcast), drill, cultipacker seeder, or hand sowing. Use a soil testing lab report to determine the correct seeding and hydroseeding are appropriate for steep slopes where equipment cannot be used. Hand broadcasting is not recommended because of the difficulty in achieving a uniform distribution. Small grains should be planted no more than 1 inch deep, and grasses and legumes no more than 1/2 inch. Broadcast seed must be covered by raking or chain dragging, and then lightly firm with a roller or cultipacker. Hydroseeded mixtures should include a wood fiber (cellulose) mulch.

- Mulching**
- The use of appropriate mulch will help ensure establishment under normal conditions and is essential to seeding success under harsh site conditions (Practice 6.14, Mulching). Horn site conditions include:
- seeding in fall for winter cover (wood fiber mulches are not considered adequate for this use).
  - slopes steeper than 3:1,
  - excessively hot or dry weather,
  - covered soils (mudflow, rocky, or high in clay or sand), and
  - areas receiving concentrated flow.
- If the area to be mulched is subject to concentrated waterflow, as in channels, anchor mulch with netting (Practice 6.14, Mulching).

- Table 6.10a - Temporary Seeding Recommendation for Late Winter and Early Spring Seeding Mixture**
- |                      |                 |      |                               |
|----------------------|-----------------|------|-------------------------------|
| Species - Ryegrass   | Annual lepedeza | Kobs | in Piedmont and Coastal Plain |
| Rate (lb/acre) - 120 |                 |      |                               |
- Apply annual lepedeza when duration of temporary cover is not to extend beyond June
- Seeding dates-Coastal Plain - Dec. 1 - Apr. 15
- Soil amendments-Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.
- Mulch-Apply 4,000lb/acre straw. Anchor straw by tacking with asphalt, netting or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance-Refertilize if growth is not fully adequate. Re-seed, refertilize and mulch immediately following erosion or other damage.
- Table 6.10b - Temporary Seeding Recommendations for Summer Seeding Mixture**
- |                       |  |
|-----------------------|--|
| Species-German millet |  |
| Rate(lb/acre)- 40     |  |
- Seeding dates-Coastal Plain- Apr.-Aug. 15
- Soil amendments-Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.
- Mulch -Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance-Refertilize if growth is not fully adequate. Re-seed, refertilize and mulch immediately following erosion or other damage.
- Table 6.10c - Temporary Seeding Recommendation for Fall Seeding Mixture**
- |                     |  |
|---------------------|--|
| Species-Ryegrass    |  |
| Rate(lb/acre) - 120 |  |
- Seeding dates - Coastal Plain and Piedmont-Aug 15 - Dec. 30
- Soil amendments - Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer.
- Mulch-Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.
- Maintenance- Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobs (Piedmont and Coastal Plain)

DETAILS ARE TYPICAL OF INSTALLATIONS REQUIRED BY NEW HANOVER 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 COUNTY AND STATE CODES AND CONSTRUCTION STANDARDS.

Erosion Control Notes and Additional Details

# BARCLAY WEST

PHASE 1 INFRASTRUCTURE (SANITARY SEWER)

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

DATE: 2-26-13  
SCALE: As Shown  
DRAWN: DBB  
CHECKED: GW  
PROJECT NO: 12498 PI-EP  
SHEET NO: 5  
OF: 5

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

Professional Engineer Seal 20007  
4.2.14  
dhollis @ hdsim.com