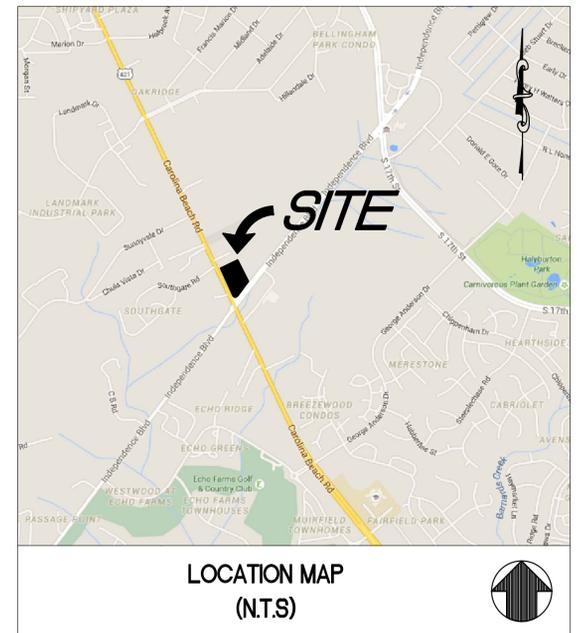


SITE DEVELOPMENT PLANS FOR:



**3739 CAROLINA BEACH RD WILMINGTON, NC
WILMINGTON
NEW HANOVER, NORTH CAROLINA
COMMUNITY BUSINESS**



SHEET INDEX:

- C-0.0 COVER SHEET
- C-0.1 SURVEY
- C-1.0 SITE PLAN
- C-1.1 DEMOLITION PLAN
- C-1.2 ROAD PLAN
- C-2.0 PAVING PLAN
- C-3.0 GRADING PLAN
- C-4.0 PRE-DRAINAGE PLAN
- C-4.1 POST-DRAINAGE PLAN
- C-5.0 EROSION CONTROL PLAN PHASE I
- C-5.1 EROSION CONTROL PLAN PHASE II
- C-5.2 EROSION CONTROL DETAILS
- C-5.3 EROSION CONTROL DETAILS
- C-5.4 EROSION CONTROL DETAILS
- C-6.0 UTILITY PLAN
- C-7.0 DETAIL SHEET
- C-7.1 DETAIL SHEET
- C-7.2 DETAIL SHEET
- C-7.3 DETAIL SHEET
- L-1.0 LANDSCAPE PLAN
- L-1.1 LANDSCAPE DETAILS

OWNER/DEVELOPER:

KANGAROO EXPRESS/CIRCLE K

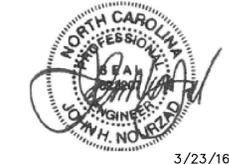
CONTACT: ANDY PRIOLO

305 GREGSON DRIVE
CARY, NC, 27511
(919) 556 1714

ENGINEER:

GreenbergFarrow

CONTACT: LARRY DIEHL
1430 WEST PEACHTREE ST. NW, SUITE 200
ATLANTA, GA 30309
(404) 601 3671



SURVEYOR

ALTA/ACSM LAND TITLE SURVEY
BOWMAN CONSULTING
210 SEVEN FARMS DRIVE, SUITE 101
CHARLESTON, SC, 29492
(843) 501-0333
SURVEYOR'S PROJECT NO. 8237-01-017

GEOTECHNICAL ENGINEER:

UNITED CONSULTANTS
625 HOLCOMB BRIDGE ROAD
NORCROSS, GEORGIA, 30071
(770) 209-0029
PROJECT NO. 2015.1064.01

CONTACTS:

PLANNING & DEVELOPMENT
JIM DIEPENBROCK
910.341.3257
JIM.DIEPENBROCK@WILMINGTONNC.GOV
305 CHESTNUT STREET
PO BOX 1810
WILMINGTON, NC 28402

FIRE
SAMMY FLOWERS
910.343.3918
SAMMY.FLOWERS@WILMINGTONNC.GOV

NCDOT
ALLEN HANCOCK
910.251.2655
DAHANCOCK@NCDOT.GOV

STORMWATER
ROB BORDON
910.341.5856
ROB.GORDON@WILMINGTONNC.GOV

WATER/WASTEWATER
KENT HARRELL, PE
910.332.6560
KENT.HARRELL@CFPUA.ORG

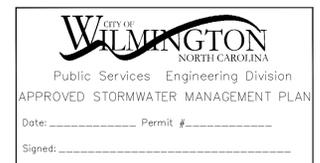
CITY TRAFFIC
BILL MCDOW
910.341.7819
BILL.MCDOW@WILMINGTONNC.GOV

ELECTRIC
DUKE ENERGY
MARK A. HATFIELD
DISTRIBUTION ENGINEERING
COASTAL PLAINS DIVISION
404 RALEIGHT STREET
WILMINGTON, NC 28412
910.350.3428

TELEPHONE
AT&T
JAMES BATSON
910.341.1621
JB7093@ATT.COM

APPROVAL:

_____ COUNTY PUBLIC WORKS DIVISION: _____

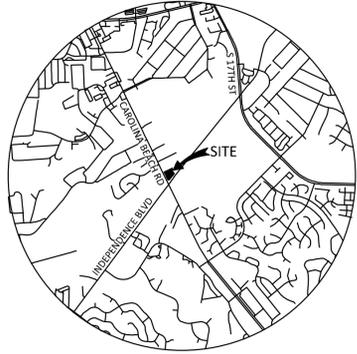


Approved Construction Plan	
Name	Date
Planning _____	
Traffic _____	
Fire _____	

NO.	DATE	DESCRIPTION	BY
4	03-23-16	ENGINEERING RESUBMITTAL	RS
3	03-15-16	NCDOT RESUBMITTAL	RS
2	03-15-16	TRAFFIC RESUBMITTAL	RS
1	03-15-16	GRADING & EROSION RESUBMITTAL	RS
0	02-03-16	COW SITE RESUBMITTAL	RS

BCPWD CASE #: PWCO 20140050

JOB NO. 20151091 DATE: 03-23-16



VICINITY MAP
SCALE: 1"=3000'

GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.

EXISTING LEGEND:

---	INDEX CONTOUR
---	INTERMEDIATE CONTOUR
---	EDGE OF PAVEMENT
---	CURB AND GUTTER
---	PROPERTY LINE
---	ADJACENT PROPERTY LINE (NOT SURVEYED)
---	SWALE / DITCH LINE
SAN	SANITARY SEWER
SW	STORM SEWER
E	OVERHEAD ELECTRIC
T	UNDERGROUND TELEPHONE SERVICE
G	UNDERGROUND GAS SERVICE
E	UNDERGROUND ELECTRIC SERVICE
DOM	WATER
IRF	IRON REBAR FOUND
IRP	IRON PIPE FOUND
(P) (F)	FLAT / FIELD
#	UTILITY POLE
-	GUY ANCHOR WIRE
+	SIGN
⊗	CURB DRAIN INLET (CD)/DRAIN INLET (DI)
⊙	STORM DRAIN MANHOLE (SDMH)
⊙	SANITARY SEWER MANHOLE (SMH)
⊙	WATER VALVE & BACK PREVENTER VALVE
⊙	WATER METER
⊙	FIRE HYDRANT (HYD.)
⊙	TREE TRUNK
⊙	CONCRETE
⊙	END SECTIONS

SITE DATA SUMMARY

SITE ADDRESS:	3739 CAROLINA BEACH RD, WILMINGTON, NC 28412
DEVELOPER:	CIRCLE K
TAX PARCEL:	3125-47-1035 (PID: R06515-003-011-000)
ZONING:	EXISTING: R-15 & CB PROPOSED: CB
CONSERVATION RESOURCES & ASSOCIATED SETBACKS:	NONE
PEDESTRIAN SIDEWALK:	EXISTING: NONE PROPOSED: YES, SEE C-1.0 FOR LOCATION
BIKE ROUTES, TRAILS & TRANSITE FACILITIES:	EXISTING: NONE PROPOSED: NONE
SOIL & PERCENT OF SITE:	(Be) BAYMEADES FINE SAND, (12.9%) (Le) LEON SAND, (66.4%) (Ly) LYNN HAVEN FINE SAND, (20.7%)
CAMA LAND CLASSIFICATION:	URBAN
SETBACKS:	REQUIRED: FRONT: 20' REAR: 10' SIDE: 0' CORNER: 20'

PROPOSED SITE IS NOT LOCATED WITHIN A 100 YEAR FLOOD PLAIN

PROJECT TEAM

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NC DOT RESUBMITTAL
02-03-16	COW SITE RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NC DOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL



3/23/16

PROFESSIONAL IN CHARGE

JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER

LARRY DIEHL

QUALITY CONTROL

FEDERICO OLIVARES, PE

DRAWN BY

RYAN SCOTT, EIT

PROJECT NAME

CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

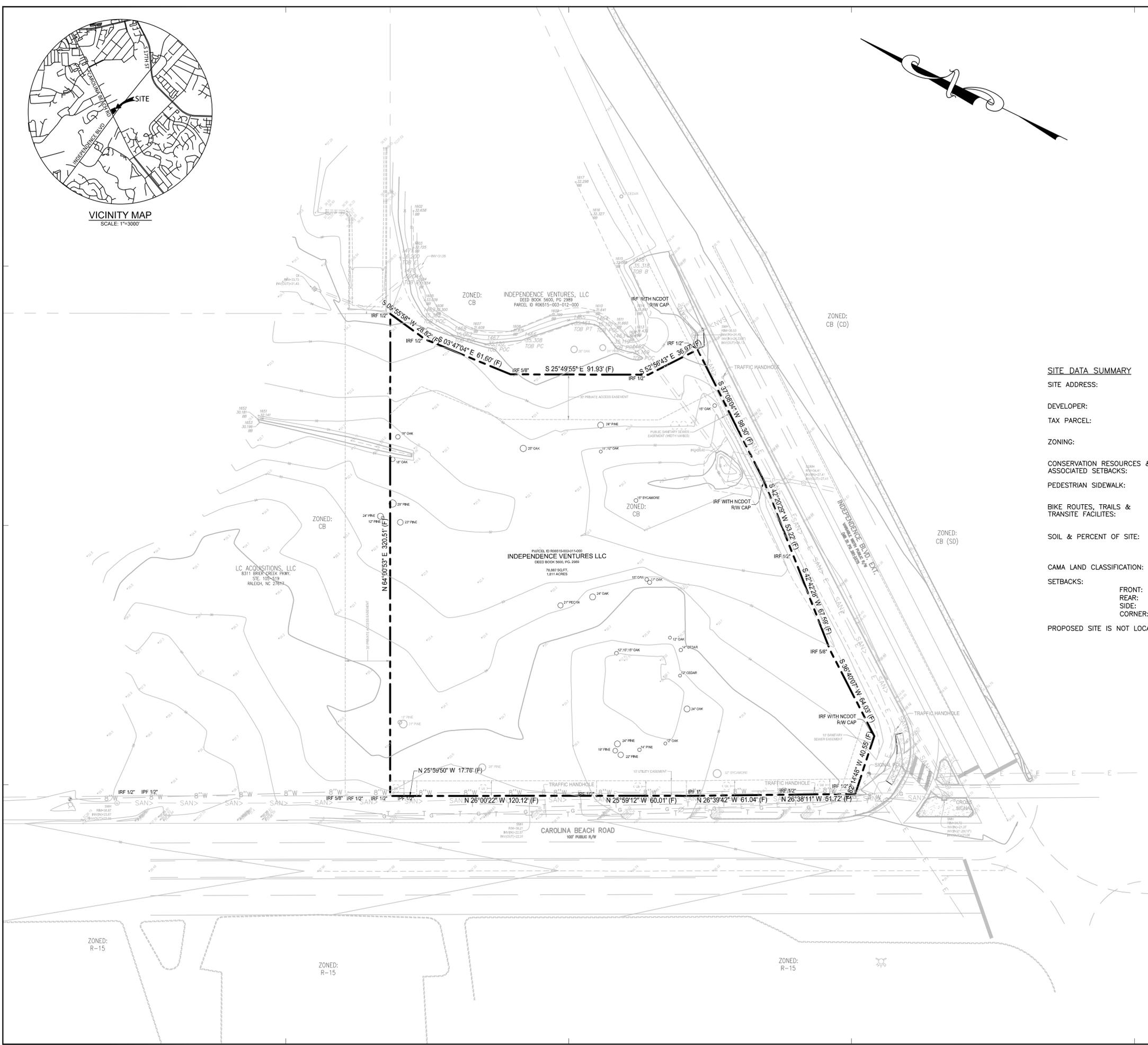
SHEET TITLE
SURVEY & SITE INVENTORY

SHEET NUMBER
C-0.1

NOT ISSUED FOR CONSTRUCTION

WILMINGTON NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

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

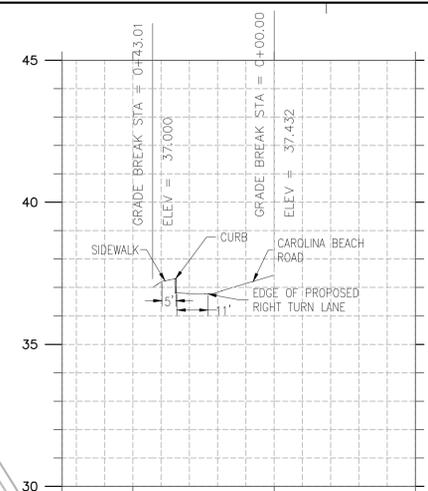


NOTES:

- PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING SHALL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
- ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST BE PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING, GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS.
- NO EQUIPMENT IS ALLOWED ON SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING IS INSTALLED AND APPROVED. PROTECTIVE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AND CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION METHODS.
- ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
- ONCE STREETS ARE OPEN TO TRAFFIC, CONTACT TRAFFIC ENGINEERING REGARDING THE INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
- CONTACT TRAFFIC ENGINEERING AT 910-341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
- CALL TRAFFIC ENGINEERING AT 910-341-7888 FORTY-EIGHT (48) HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.
- TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING PRIOR TO ACTUAL STRIPING.
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- STOP SIGNS AND STREET SIGNS TO REMAIN IN PLACE DURING CONSTRUCTION.
- TACTILE WARNING MATS WILL BE INSTALLED ON ALL WHEELCHAIR RAMPS.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET.
- ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS AND CURBING WILL BE REPLACED.
- CONTACT TRAFFIC ENGINEERING AT (910)341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
- WATER AND SEWER SERVICE SHALL MEET CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) DETAILS AND SPECIFICATIONS.
- PROJECT SHALL COMPLY WITH CFPUA CROSS CONNECTION CONTROL REQUIREMENTS. WATER METERS CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL. CALL 910-343-3910 FOR INFORMATION.
- 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.
- ANY IRRIGATION SYSTEM SUPPLIED BY CFPUA WATER SHALL COMPLY WITH THE CFPUA CROSS CONNECTION CONTROL REGULATIONS. CALL 919-343-3910 FOR INFORMATION.
- ANY IRRIGATION SYSTEM SHALL BE EQUIPPED WITH A RAIN AND FREEZER SENSOR.
- ANY BACKFLOW PREVENTION DEVICES REQUIRED BY THE CFPUA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USCFCOCHR OR ASSE.
- CONTRACTOR TO FIELD VERIFY EXISTING WATER AND SEWER SERVICE LOCATIONS, SIZES AND MATERIALS PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED OF ANY CONFLICTS.
- CONTRACTOR SHALL MAINTAIN ALL WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
- UNDERGROUND FIRE LINE(S) 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.
- NO OBSTRUCTIONS ARE PERMITTED IN THE SPACE BETWEEN THIRTY (30) INCHES AND TEN (10) FEET ABOVE THE GRADE WITHIN THE TRIANGULAR SIGHT DISTANCE.
- CONTACT THE NORTH CAROLINA ONE CALL CENTER AT 1-800-632-4949 PRIOR TO DOING ANY DIGGING, CLEARING, OR GRADING

NOTE: THE PROPOSED SITE DOES NOT CONTAIN ANY WETLANDS

TYPE OF CONSTRUCTION OF BUILDING PER INTERNATIONAL BUILDING CODE:
 BUILDING V-B
 CANOPY II-B



EXISTING LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- EDGE OF PAVEMENT
- CURB AND GUTTER
- PROPERTY LINE
- ADJOINER PROPERTY LINE (NOT SURVEYED)
- SMALL / DITCH LINE
- SANITARY SEWER
- STORM SEWER
- OVERHEAD ELECTRIC
- UNDERGROUND COMMUNICATION SERVICE
- UNDERGROUND GAS SERVICE
- UNDERGROUND ELECTRIC SERVICE
- WATER
- IRON REBAR FOUND
- IRON PIPE FOUND
- FLAT / FIELD
- UTILITY POLE
- GUY ANCHOR WIRE
- SIGN
- CURB DRAIN INLET (CD)/DRAIN INLET (DI)
- STORM DRAIN MANHOLE (SDMH)
- SANITARY SEWER MANHOLE (SMH)
- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED LEGEND:

- PROPERTY LINE
- PROPOSED CURB & GUTTER
- PROPOSED STAMPED BRICK CONCRETE
- MULTIPLE PRODUCT DISPENSER WITH CANOPY COLUMNS AND BOLLARDS
- PROPOSED SITE LIGHT, SEE PHOTOMETRIC PLAN
- PROPOSED DRAINAGE STRUCTURES (SEE GRADING/DRAINAGE PLANS)
- PROPOSED PARKING SPACES

SITE KEY NOTES

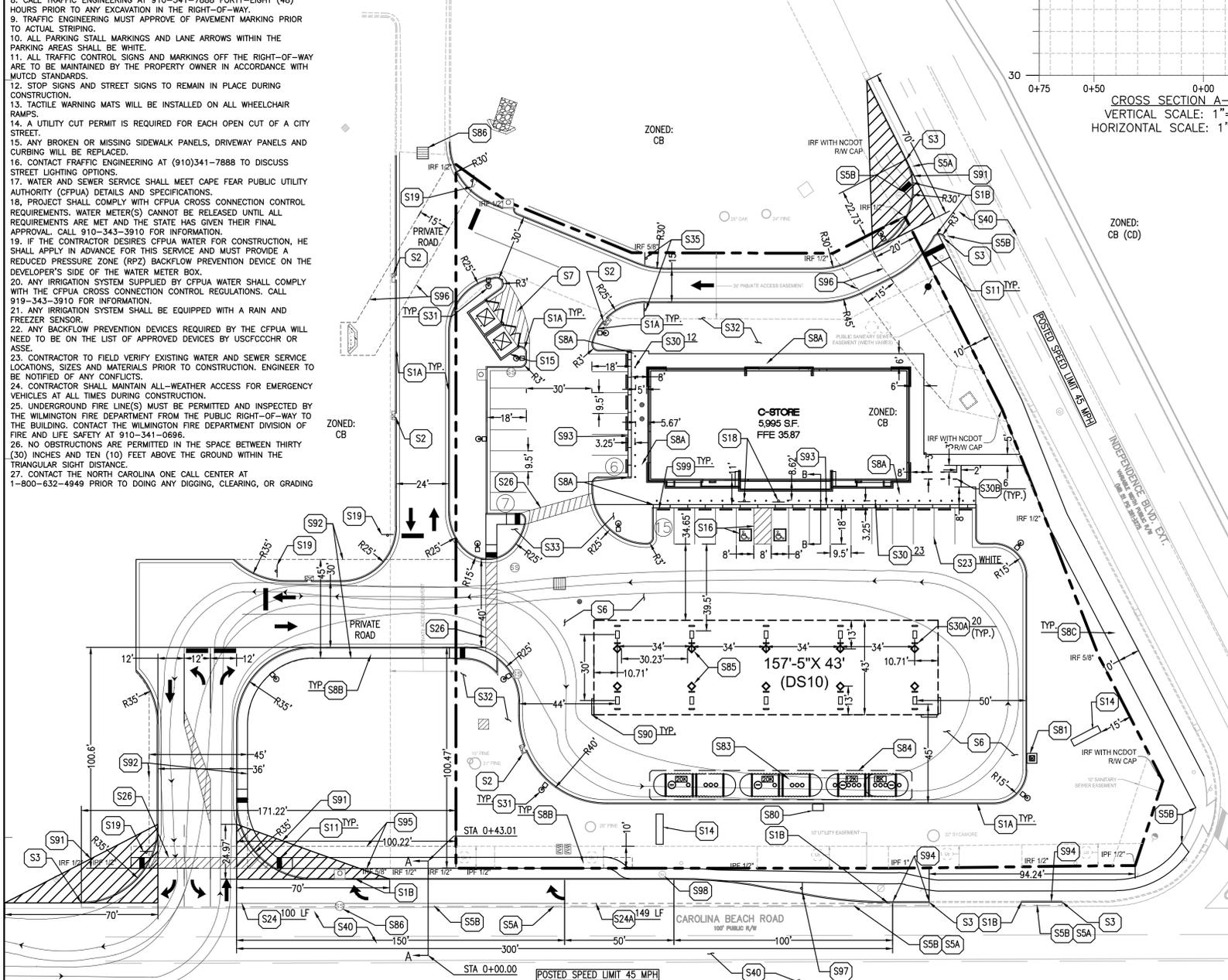
- S1A CONCRETE CURB AND GUTTER PER CITY OF WILMINGTON STD. S07-01
- S1B CONCRETE BARRIER CURB PER NCDOT STD. 846.01
- S2 CURB CUT PER DETAIL C-7.0
- S3 TAPER CURB TO MATCH EXISTING.
- S5A LIMITS OF SAWCUT AND PAVEMENT REMOVAL.
- S5B MATCH EXISTING PAVEMENT ELEVATION.
- S6 STANDARD DUTY ASPHALT/CONCRETE PAVING (PER PAVING DETAIL)
- S7 HEAVY DUTY ASPHALT/CONCRETE PAVING (PER PAVING DETAIL)
- S8A CONCRETE SIDEWALK (PER COW SD 3-10)
- S8B CONCRETE SIDEWALK (PER NCDOT 848.01)
- S8C CONCRETE SIDEWALK 10' WIDE (PER COW)
- S11 DETECTABLE WARNINGS PER ADA REQUIREMENTS (PER COW SD3-08)
- S14 MONUMENT / PYLON SIGN (BY OTHERS)
- S15 DUMPSTER ENCLOSURE (PER ARCH. PLANS)
- S16 ADA ACCESSIBLE PARKING SPACE STRIPING & SYMBOL OF ACCESSIBILITY (TYPICAL-PER ADA AND LOCAL REQUIREMENTS)
- S18 VAN ACCESSIBLE PARKING SIGN (TYPICAL-PER ADA AND LOCAL REQUIREMENTS)
- S19 "STOP" SIGN
- S23 PARKING STALL STRIPING (PER LOCAL CODES)
- S24 4" TRAFFIC LANE STRIPE (SEE NOTE FOR LENGTH) (NCDOT 1205.05)
- S24A TRAFFIC LANE STRIPE (3'-9" WHITE/SP MINI-SKIP LINE PER NCDOT 1205.05)
- S26 PEDESTRIAN CROSSWALK STRIPING (COW SD 11-11)
- S30 BOLLARD (SEE NOTE FOR NUMBER)
- S30A "INVERTED U" BOLLARD PER ARCH. PLAN (SEE NOTE FOR NUMBER)
- S30B "INVERTED U" BIKE RACK BOLLARD (SEE NOTE FOR NUMBER) PER DETAIL ON SHEET C-7.0
- S31 LIGHT POLE (TYPICAL-PER LIGHTING PLAN)
- S32 LANDSCAPE AREA (PER LANDSCAPE PLAN)
- S33 LANDSCAPE ISLAND (PER LANDSCAPE PLAN)
- S35 "DO NOT ENTER" SIGN
- S40 EXISTING PAVEMENT TO REMAIN.
- S80 UST VENT STACK, REFER TO FUELING PLANS
- S81 AIR/ YARD HYDRANT
- S83 UNDERGROUND STORAGE TANKS, SEE FUELING PLANS FOR DETAIL
- S84 HEAVY DUTY CONCRETE PAVING, SEE FUELING PLANS FOR DETAIL
- S85 CANOPY COLUMN
- S86 EXISTING CURB INLET TO BE CONVERTED INTO GRATE INLET
- S90 CANOPY SIGN (PER ARCH. PLANS)
- S91 TRIANGULAR SIGHT DISTANCE
- S92 PROPOSED PRIVATE ACCESS EASEMENT
- S93 PROPOSED FLUSH STAMPED BRICK CONCRETE
- S94 EXISTING DRIVEWAY TO BE CLOSE AND RESTORED THE VERGE AREA TO MATCH THE EXISTING SURROUNDINGS
- S95 PROPOSED PEDESTRIAN ACCESS EASEMENT
- S96 PROPOSED DRAINAGE EASEMENT
- S97 PROPOSED SIGN RELOCATION
- S98 ADJUST SANITARY SEWER LID TO MATCH PROPOSED GRADE
- S99 WHEEL STOP

GENERAL SITE NOTES:

- CONTRACTOR MUST SECURE ALL NECESSARY PERMITS PRIOR TO STARTING WORK.
- IF THE CONTRACTOR, IN THE COURSE OF THE WORK, FINDS ANY DISCREPANCIES BETWEEN THE PLANS AND THE PHYSICAL CONDITIONS OF THE LOCALITY, OR ANY ERRORS OR OMISSIONS IN THE PLANS OR IN THE LAYOUT AS GIVEN BY THE ENGINEER, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER, IN WRITING, AND THE ENGINEER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS, AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
- ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE STATE AND LOCAL GOVERNMENT AGENCY LATEST CONSTRUCTION SPECIFICATIONS AND DETAILS.
- ALL HANDICAP SITE FEATURES SHALL BE CONSTRUCTED TO MEET ALL FEDERAL, STATE AND LOCAL CODE.
- NOTIFY THE CITY INSPECTOR TWENTY-FOUR (24) HOURS BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
- THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCHMARKS, REFERENCE POINTS, AND STAKES.
- ARCHITECTURAL PLANS ARE TO BE USED FOR BUILDING STAKE OUT.
- ALL DIMENSIONS ARE FROM FACE OF BUILDING, CURB, AND WALL UNLESS OTHERWISE SPECIFIED ON PLANS.
- CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
- CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO ANY EXISTING ITEM AND/OR MATERIAL INSIDE OR OUTSIDE CONTRACT LIMITS DUE TO CONSTRUCTION OPERATION.
- ALL STREET SURFACES, DRIVEWAYS, CULVERTS, CURB AND GUTTERS, ROADSIDE DRAINAGE DITCHES AND OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED OR REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL ROAD WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STATE AND LOCAL GOVERNMENT AGENCY SPECIFICATIONS.
- STANDARD/HEAVY DUTY PAVEMENT AND CONCRETE SECTIONS SHALL FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT PREPARED BY UNITED CONSULTING, DATED NOVEMBER 11, 2015.
- ALL CURB RADII SHALL BE 5' UNLESS OTHERWISE NOTED ON THE PLANS.
- ALL PROPOSED VEGETATION WITHIN SIGHT TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30' TO 10' IN ELEVATION.

SITE DATA SUMMARY:

PROJECT NAME: CIRCLE K 20151091
 PROJECT ADDRESS: 3739 CAROLINA BEACH ROAD, WILMINGTON, NC, 28412
 PARCEL ID NUMBER: R06515-003-011-000
 ZONING: EXISTING: R-15 & CB
 PROPOSED: CB
 BUILDING SETBACKS: FRONT: 171'
 REAR: 10'
 SIDE: 0' 27' & 89'
 CORNER: 20' 189'
 CIRCLE K TRACT: 1.811 ACRES/ 78,882 SF
 CONVENIENCE STORE: 5,995 SF
 NUMBER OF BUILDINGS: 1
 NUMBER OF STORIES: 1
 BUILDING HEIGHT: 23'8"
 CANOPY WITH 10 PUMP ISLANDS: 6,515 SF
 FAR: 1:07.59
 PARKING PROVIDED: 28 (2 ACCESS. PARKING SPACES)
 PARKING REQUIRED: 15 MINIMUM (2 ACCESS. PARKING SPACES)
 IMPERVIOUS COVER: EXISTING: 1,119 SF
 PROPOSED: 51,510 SF
 PERVIOUS COVER: EXISTING: 77,763 SF
 PROPOSED: 27,371 SF
 LOT COVERAGE: EXISTING: 0.01 (1,119 SF)
 PROPOSED: 0.65 (51,510 SF)
 CAMA LAND USE CLASSIFICATION: URBAN DEVELOPMENT



Approved Construction Plan

Name	Date
Planning	
Traffic	
Fire	

CITY OF WILMINGTON
 NORTH CAROLINA
 Public Services Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: _____ Permit # _____
 Signed: _____

INTERNATIONAL BUILDING CODE:
 C-STORE BUILDING: V-B NON-SPRINKLERED
 FUEL CANOPY: II-B NON-SPRINKLERED
 BICYCLE PARKING PROVIDED: 5 BICYCLE PARKING
 BICYCLE PARKING REQUIRED: 5 BICYCLE PARKING

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NCDOT RESUBMITTAL
02-03-16	COW SITE RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NCDOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL



3/23/16
PROFESSIONAL IN CHARGE
JOHN NOURZAD
 PROFESSIONAL ENGINEER
 LICENSE NO. 023207

PROJECT MANAGER
 LARRY DIEHL
QUALITY CONTROL
 FEDERICO OLIVARES, PE
DRAWN BY
 RYAN SCOTT, DT

PROJECT NAME
CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
 20151091

SHEET TITLE
SITE PLAN

SHEET NUMBER
C-1.0

NOT ISSUED FOR CONSTRUCTION

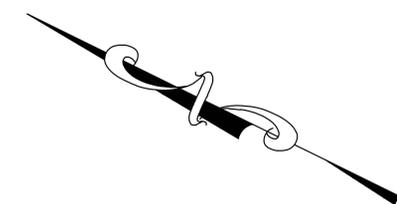
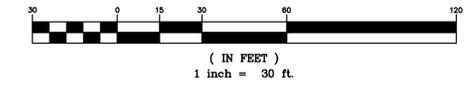
Approved Construction Plan
 Name _____ Date _____
 Planning _____
 Traffic _____
 Fire _____



Know what's below.
 Call before you dig.

City of WILMINGTON
 NORTH CAROLINA
 Public Services Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: _____ Permit # _____
 Signed: _____

GRAPHIC SCALE



EXISTING LEGEND:

- 300 — INDEX CONTOUR
- 302 — INTERMEDIATE CONTOUR
- — — EDGE OF PAVEMENT
- — — CURB AND GUTTER
- — — PROPERTY LINE
- · — · — ADJOINER PROPERTY LINE (NOT SURVEYED)
- · — · — SWALE / DITCH LINE
- SAND — SAND
- SAN — SANITARY SEWER
- S — STORM SEWER
- E — OVERHEAD ELECTRIC
- T — UNDERGROUND GAS SERVICE
- G — UNDERGROUND COMMUNICATION SERVICE
- E — UNDERGROUND GAS SERVICE
- E — UNDERGROUND ELECTRIC SERVICE
- DOM — WATER
- IRF — IRON REBAR FOUND
- (PF) — IRON PIPE FOUND
- (F) — FLAT / FIELD
- # — UTILITY POLE
- + — GUY ANCHOR WIRE
- □ — SIGN
- [] — CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
- [] — STORM DRAIN MANHOLE (SDMH)
- [] — SANITARY SEWER MANHOLE (SSMH)
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- [] — FIRE HYDRANT (HYD.)
- [] — TREE TRUNK
- [] — CONCRETE
- [] — END SECTIONS

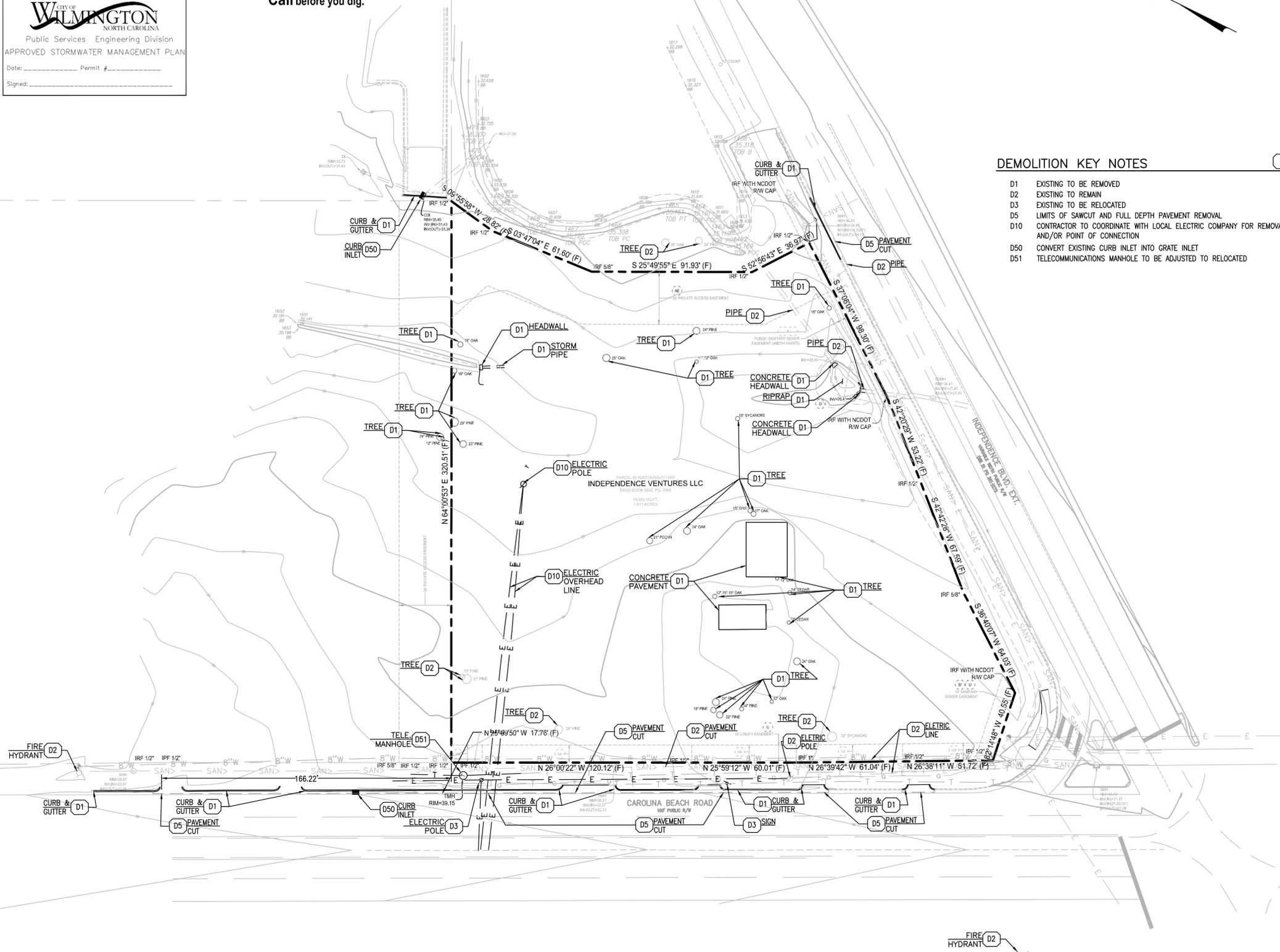
DEMOLITION KEY NOTES

- D1 EXISTING TO BE REMOVED
- D2 EXISTING TO REMAIN
- D3 EXISTING TO BE RELOCATED
- D5 LIMITS OF SAWCUT AND FULL DEPTH PAVEMENT REMOVAL
- D10 CONTRACTOR TO COORDINATE WITH LOCAL ELECTRIC COMPANY FOR REMOVAL AND/OR POINT OF CONNECTION
- D50 CONVERT EXISTING CURB INLET INTO GRATE INLET
- D51 TELECOMMUNICATIONS MANHOLE TO BE ADJUSTED TO RELOCATED

#

GENERAL DEMOLITION NOTES:

1. ANY DEMOLITION IS TO BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE CITY, COUNTY AND STATE, AND/OR GOVERNING BODY'S STANDARDS.
2. THE DEMOLITION PLAN SHALL BE DONE IN CONJUNCTION WITH THE GEOTECHNICAL INVESTIGATION REPORT.
3. EROSION AND SEDIMENT CONTROL MEASUREMENTS SHALL BE MAINTAINED AT ALL TIMES DURING DEMOLITION.
4. THE PURPOSE OF THIS DRAWING IS TO CONVEY THE OVERALL SCOPE OF WORK AND IT IS NOT INTENDED TO COVER ALL DETAILS OR SPECIFICATIONS REQUIRED TO COMPLY WITH GENERALLY ACCEPTED DEMOLITION PRACTICES. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE SITE, SCOPE OF WORK, AND ALL EXISTING CONDITIONS AT THE JOB SITE PRIOR TO BIDDING AND COMMENCING THE WORK. THE DEMOLITION CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, OR PROCEDURES USED TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND IS LIABLE FOR THE SAFETY OF THE PUBLIC OR CONTRACTOR'S EMPLOYEES DURING THE COURSE OF THE PROJECT.
5. THE DEMOLITION PLAN IS INTENDED TO SHOW REMOVAL OF KNOWN SITE FEATURES AND UTILITIES AS SHOWN ON THE SURVEY. THERE MAY BE OTHER SITE FEATURES, UTILITIES, STRUCTURES, AND MISCELLANEOUS ITEMS BOTH BURIED AND ABOVE GROUND THAT ARE WITHIN THE LIMITS OF WORK THAT MAY NEED TO BE REMOVED FOR THE PROPOSED PROJECT THAT ARE NOT SHOWN HEREON. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF SUCH ITEMS AT NO ADDITIONAL COST TO THE OWNER.
6. THE CONTRACTOR SHALL CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION TO COORDINATE DISCONNECTION AND REMOVAL OF EXISTING UTILITIES WITHIN THE AREA OF WORK.
7. UPON DISCOVERY OF ANY UNDERGROUND TANKS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE. NO REMOVAL OF TANKS SHALL OCCUR UNTIL AUTHORIZED BY OWNER.
8. BUILDING AND APPURTENANCES DESIGNATED FOR DEMOLITION SHALL NOT BE DISTURBED BY THE CONTRACTOR UNTIL HE HAS FURNISHED WITH NOTICE TO PROCEED BY THE OWNER. AS SOON AS SUCH NOTICE HAS BEEN GIVEN, THE CONTRACTOR SHALL PERFORM THE DEMOLITION, UNDER THE DIRECTION OF THE OWNER'S REPRESENTATIVE.
9. ALL EXISTING UTILITIES WITHIN THE EXISTING BUILDING ARE TO BE REMOVED, WHERE CONFLICTS OCCUR WITH GRADE, BEAMS, PILES, PROPOSED UTILITIES AND TRENCH BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS AND GEOTECHNICAL REPORT.
10. FOUNDATIONS, FLOORS, FLOOR SLABS, AND ANY OTHER UNDERGROUND BUILDING STRUCTURES SHALL BE REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS. AREAS OF STRUCTURE REMOVAL SHALL BE BACKFILLED IN ACCORDANCE WITH SPECIFICATIONS AND THE GEOTECHNICAL REPORT.
11. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE. ALL UNSUITABLE MATERIAL AND DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH ALL CITY, STATE, AND FEDERAL LAWS AND ORDINANCES.
12. ALL MATERIAL, EXCEPT THAT BELONGING TO A PUBLIC UTILITY COMPANY OR DENOTED FOR SALVAGE, SHALL BECOME PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE OWNER OF WATER, ELECTRIC, OR GAS METERS WHEN THE METERS ARE READY FOR REMOVAL, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISCONNECTING ALL UTILITIES IN COMPLIANCE WITH LOCAL REQUIREMENTS. DISCONNECT TRANSFORMERS AS REQUIRED FOR BUILDING DEMOLITION.
13. AS SOON AS DEMOLITION WORK HAS BEEN COMPLETED, THE FINAL GRADE OF BACKFILL IN DEMOLITION AREAS SHALL BE COMPACTED PER THE GEOTECHNICAL REPORT TO PRESENT A NEAT, WELL DRAINED APPEARANCE, AND TO PREVENT WATER FROM DRAINING UNNECESSARILY ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL GRADE SITE TO EXISTING STORM DRAINAGE SYSTEM TO REMAIN ON SITE.
14. EXISTING TREES TO REMAIN SHOULD BE PROTECTED FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION.
15. THE CONTRACTOR IS TO COORDINATE WORK IN THIS PROJECT TO ENSURE ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
16. THE USE OF EXPLOSIVES SHALL NOT BE PERMITTED.



GreenbergFarrow
 COAF
 1430 W. Peachtree St. NW
 Suite 200
 Atlanta, GA 30309
 t: 404 601 4000 f: 404 601 3970
PROJECT TEAM

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ISSUE/REVISION RECORD

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03-15-16	TRAFFIC RESUBMITTAL
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3/23/16
PROFESSIONAL IN CHARGE
JOHN NOURZAD
 PROFESSIONAL ENGINEER
 LICENSE NO. 023207
PROJECT MANAGER
 LARRY DIEHL
QUALITY CONTROL
 FEDERICO OLIVARES, PE
DRAWN BY
 RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
 20151091

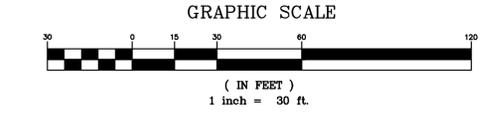
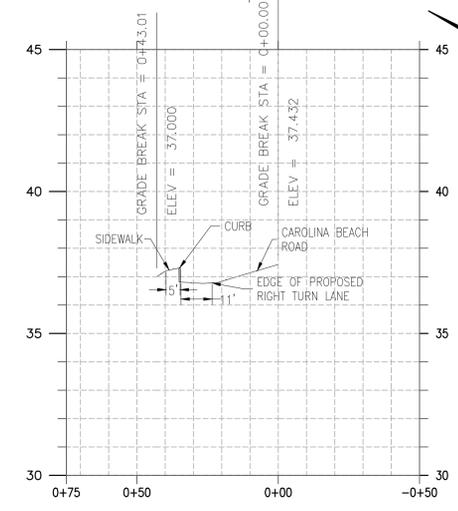
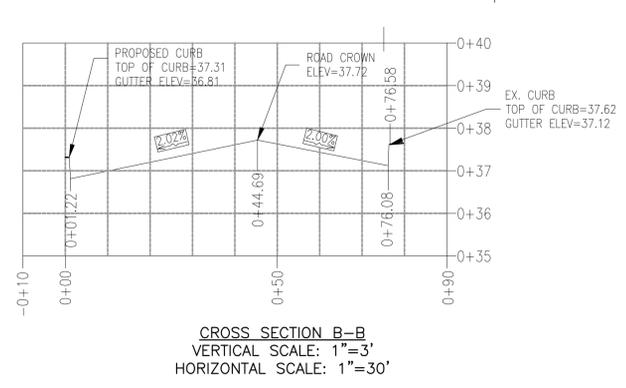
SHEET TITLE
DEMOLITION PLAN

SHEET NUMBER
C-1.1

NOT ISSUED FOR CONSTRUCTION

NOTES:

- PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING SHALL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES. NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
- ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST BE PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING, GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS.
- NO EQUIPMENT IS ALLOWED ON SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING IS INSTALLED AND APPROVED. PROTECTIVE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AND CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION METHODS.
- ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
- ONCE STREETS ARE OPEN TO TRAFFIC, CONTACT TRAFFIC ENGINEERING REGARDING THE INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
- CONTACT TRAFFIC ENGINEERING AT 910-341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
- CALL TRAFFIC ENGINEERING AT 910-341-7888 FORTY-EIGHT (48) HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.
- TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING PRIOR TO ACTUAL STRIPING.
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- STOP SIGNS AND STREET SIGNS TO REMAIN IN PLACE DURING CONSTRUCTION.
- TACTILE WARNING MATS WILL BE INSTALLED ON ALL WHEELCHAIR RAMPS.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET.
- ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS AND CURBING WILL BE REPLACED.
- CONTACT TRAFFIC ENGINEERING AT (910)341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
- WATER AND SEWER SERVICE SHALL MEET CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) DETAILS AND SPECIFICATIONS.
- PROJECT SHALL COMPLY WITH CFPUA CROSS CONNECTION CONTROL REQUIREMENTS. WATER METERS CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL. CALL 910-343-3910 FOR INFORMATION.
- 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.
- ANY IRRIGATION SYSTEM SUPPLIED BY CFPUA WATER SHALL COMPLY WITH THE CFPUA CROSS CONNECTION CONTROL REGULATIONS. CALL 919-343-3910 FOR INFORMATION.
- ANY IRRIGATION SYSTEM SHALL BE EQUIPPED WITH A RAIN AND FREEZER SENSOR.
- ANY BACKFLOW PREVENTION DEVICES REQUIRED BY THE CFPUA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USCFCOHR OR ASSE.
- CONTRACTOR TO FIELD VERIFY EXISTING WATER AND SEWER SERVICE LOCATIONS, SIZES AND MATERIALS PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED OF ANY CONFLICTS.
- CONTRACTOR SHALL MAINTAIN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
- UNDERGROUND FIRE LINE(S) 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.
- NO OBSTRUCTIONS ARE PERMITTED IN THE SPACE BETWEEN THIRTY (30) INCHES AND TEN (10) FEET ABOVE THE GROUND WITHIN THE TRIANGULAR SIGHT DISTANCE.
- CONTACT THE NORTH CAROLINA ONE CALL CENTER AT 1-800-632-4949 PRIOR TO DOING ANY DIGGING, CLEARING, OR GRADING



EXISTING LEGEND:

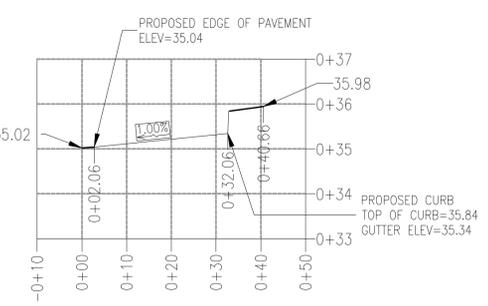
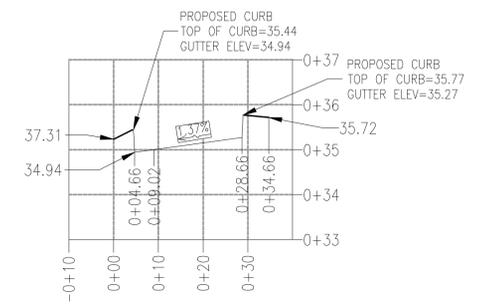
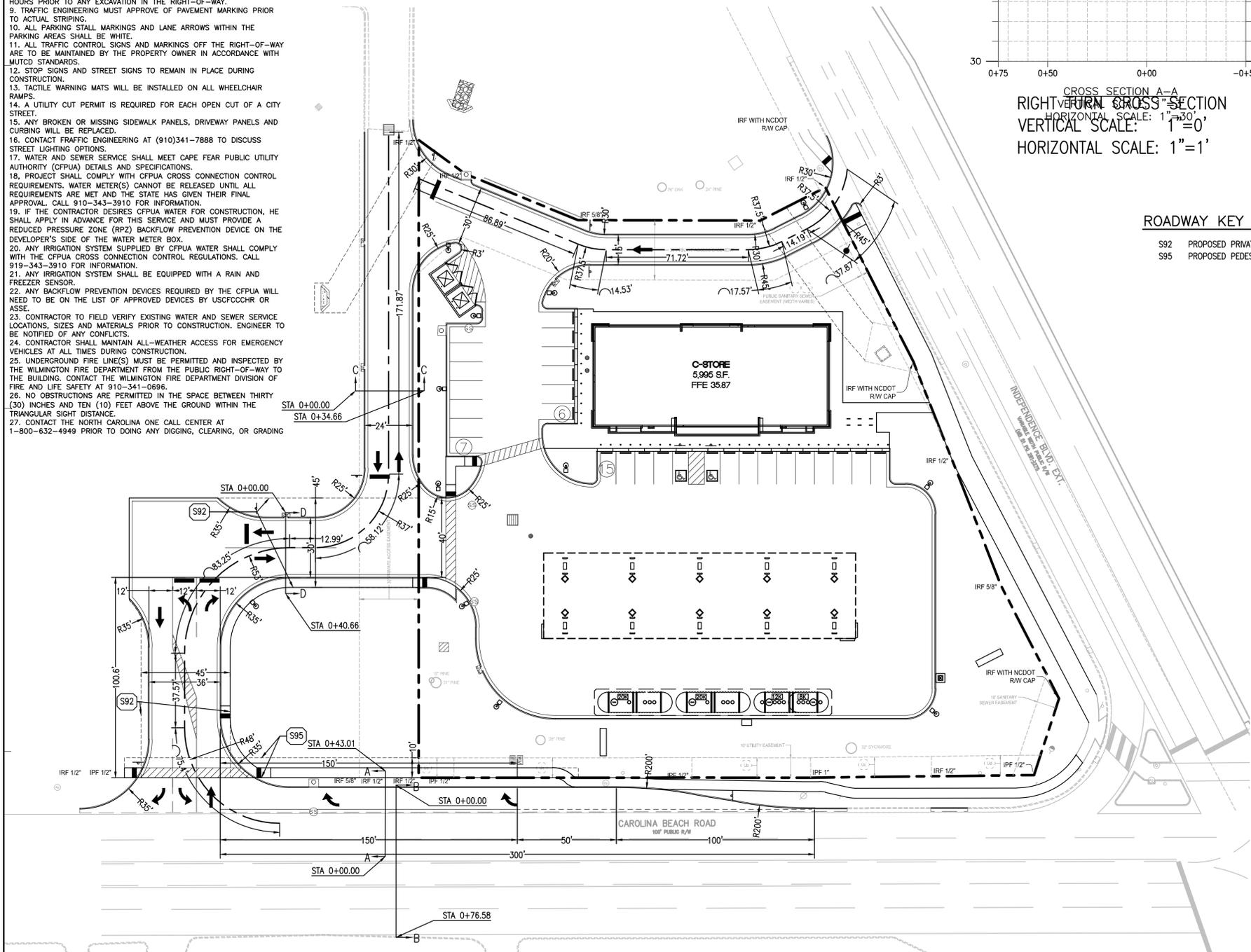
---	INDEX CONTOUR
---	INTERMEDIATE CONTOUR
---	EDGE OF PAVEMENT
---	CURB AND GUTTER
---	PROPERTY LINE
---	ADJACENT PROPERTY LINE (NOT SURVEYED)
---	SMALL / DITCH LINE
---	SANITARY SEWER
---	STORM SEWER
---	OVERHEAD ELECTRIC
---	UNDERGROUND COMMUNICATION SERVICE
---	UNDERGROUND GAS SERVICE
---	UNDERGROUND ELECTRIC SERVICE
---	WATER
---	IRON REBAR FOUND
---	IRON PIPE FOUND
---	FLAT / FIELD
---	UTILITY POLE
---	GUY ANCHOR WIRE
---	SIGN
---	CURB DRAIN INLET (CD)/DRAIN INLET (DI)
---	STORM DRAIN MANHOLE (SDMH)
---	SANITARY SEWER MANHOLE (SMH)
---	WATER VALVE & BACK PREVENTER VALVE
---	WATER METER
---	FIRE HYDRANT (HYD.)
---	TREE TRUNK
---	CONCRETE
---	END SECTIONS

ROADWAY KEY NOTES

S92	PROPOSED PRIVATE ACCESS EASEMENT
S95	PROPOSED PEDESTRIAN ACCESS EASEMENT

PROPOSED LEGEND:

---	PROPERTY LINE
---	PROPOSED CURB & GUTTER
---	PROPOSED STAMPED BRICK CONCRETE
---	MULTIPLE PRODUCT DISPENSER WITH CANOPY COLUMNS AND BOLLARDS
---	PROPOSED SITE LIGHT, SEE PHOTOMETRIC PLAN
---	PROPOSED DRAINAGE STRUCTURES (SEE GRADING/DRAINAGE PLANS)
---	PROPOSED PARKING SPACES



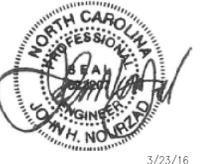
Approved Construction Plan

Name	Date
Planning	
Traffic	
Fire	

City of WILMINGTON NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

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PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K CAROLINA BEACH

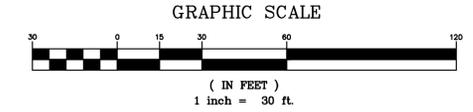
WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
ROAD PLAN

SHEET NUMBER
C-1.2



NOTE:
CONTRACTOR SHALL MILL OUT DEPTH OF THE SURFACE MIX 2' FROM THE EXISTING EDGE OF PAVEMENT INTO THE ADJACENT TRAVEL LANE, PRIOR TO REPAVING, TO ENSURE A CLEAN TIE-IN FOR THE LENGTH OF THE ADDED RIGHT TURN LANE.

EXISTING LEGEND:

- 350 --- INDEX CONTOUR
- 352 --- INTERMEDIATE CONTOUR
- --- EDGE OF PAVEMENT
- --- CURB AND GUTTER
- --- PROPERTY LINE
- --- ADJOINER PROPERTY LINE (NOT SURVEYED)
- --- SWALE / DITCH LINE
- SAN --- SANITARY SEWER
- ST --- STORM SEWER
- E --- OVERHEAD ELECTRIC
- T --- UNDERGROUND COMMUNICATION SERVICE
- G --- UNDERGROUND GAS SERVICE
- E --- UNDERGROUND ELECTRIC SERVICE
- DOM --- WATER
- IRF --- IRON REBAR FOUND
- IPF --- IRON PIPE FOUND
- (P) (F) --- PLAT / FIELD
- # --- UTILITY POLE
- GUY ANCHOR WIRE
- SIGN
- CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
- STORM DRAIN MANHOLE (SDMH)
- SANITARY SEWER MANHOLE (SMH)
- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- 18" OAK --- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED LEGEND:

- --- PROPERTY LINE
- --- PROPOSED CURB & GUTTER
- --- PROPOSED DRAINAGE STRUCTURES (SEE GRADING/DRAINAGE PLANS)
- EJ --- EXPANSION JOINT
- KCJ --- CONSTRUCTION JOINT
- CJ --- CONTROL JOINT
- --- 2-4" PVC SEEVE
- --- PROPOSED ASPHALT PAVEMENT PER CITY OF WILMINGTON STD SD1-04
- --- PROPOSED HEAVY ASPHALT PAVEMENT PER DETAIL C-7.0
- --- PROPOSED HEAVY DUTY CONCRETE PAVING
- --- CONCRETE PAVING OVER UST TANKS. SEE FUELING PLANS FOR DETAILS
- --- PROPOSED CONCRETE SIDEWALK
- --- PROPOSED CONCRETE SIDEWALK PER NCDOT STD 848.01
- --- PROPOSED ASPHALT DRIVEWAY PER NCDOT STD REF. C-7.0 CAROLINA BEACH ROAD ASPHALT PAVEMENT
- --- PROPOSED POROUS CONCRETE

PAVING KEY NOTES

- P1 MATCH EXISTING PAVEMENT ELEVATION
- P2 EXISTING PAVEMENT TO REMAIN
- P3A CONCRETE SIDEWALK
- P3B 10' WIDE CONCRETE SIDEWALK PER NCDOT STD 848.01
- P51 EXISTING DRIVEWAY TO BE REMOVED
- P52 STREET TURNOUT PER NCDOT STD 848.04
- P53 DRIVEWAY TURNOUT PER NCDOT STD 848.02
- P54 PROPOSED FLUSH STAMPED BRICK CONCRETE

GENERAL PAVING NOTES:

1. CONTRACTOR MUST SECURE ALL NECESSARY PERMITS PRIOR TO STARTING WORK.
2. IF THE CONTRACTOR, IN THE COURSE OF THE WORK, FINDS ANY DISCREPANCIES BETWEEN THE PLANS AND THE PHYSICAL CONDITIONS OF THE LOCALITY, OR ANY ERRORS OR OMISSIONS IN THE PLANS OR IN THE LAYOUT AS GIVEN BY THE ENGINEER, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER, IN WRITING, AND THE ENGINEER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS, AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
4. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE STATE AND LOCAL GOVERNMENT AGENCY LATEST CONSTRUCTION SPECIFICATIONS AND DETAILS.
5. ALL HANDICAP SITE FEATURES SHALL BE CONSTRUCTED TO MEET ALL FEDERAL, STATE AND LOCAL CODE.
6. NOTIFY THE COUNTY INSPECTOR TWENTY-FOUR (24) HOURS BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
7. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCHMARKS, REFERENCE POINTS, AND STAKES.
8. ARCHITECTURAL PLANS ARE TO BE USED FOR BUILDING STAKE OUT.
9. ALL DIMENSIONS ARE FROM FACE OF BUILDING, CURB, AND WALL UNLESS OTHERWISE SPECIFIED ON PLANS.
10. CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
11. CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO ANY EXISTING ITEM AND/OR MATERIAL INSIDE OR OUTSIDE CONTRACT LIMITS DUE TO CONSTRUCTION OPERATION.
12. ALL STREET SURFACES, DRIVEWAYS, CULVERTS, CURB AND GUTTERS, ROADSIDE DRAINAGE DITCHES AND OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED OR REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS.
13. ALL ROAD WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STATE AND LOCAL GOVERNMENT AGENCY SPECIFICATIONS.

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3/23/16

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LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

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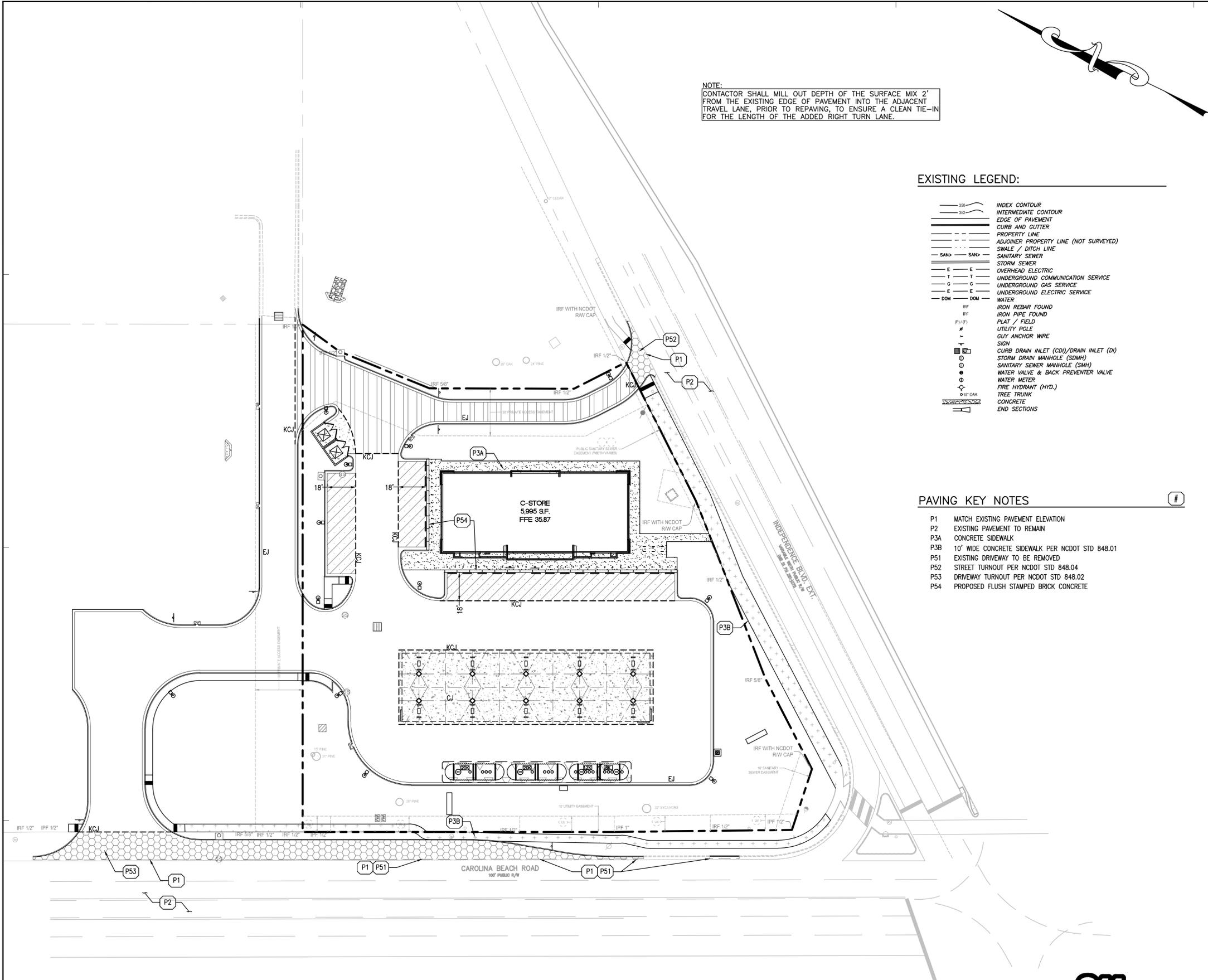


PROJECT NUMBER
20151091

SHEET TITLE
PAVING PLAN

SHEET NUMBER
C-2.0

NOT ISSUED FOR CONSTRUCTION



Know what's below.
Call before you dig.

Approved Construction Plan

Name _____ Date _____

City of WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Planning _____

Traffic _____

Fire _____

Date: _____ Permit # _____

Signed: _____

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PROJECT NAME
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CAROLINA BEACH**

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
GRADING PLAN

SHEET NUMBER
C-3.0

NOT ISSUED FOR CONSTRUCTION

Approved Construction Plan

Name _____ Date _____

Planning _____

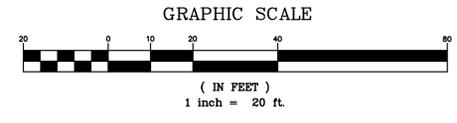
Traffic _____

Fire _____

CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____



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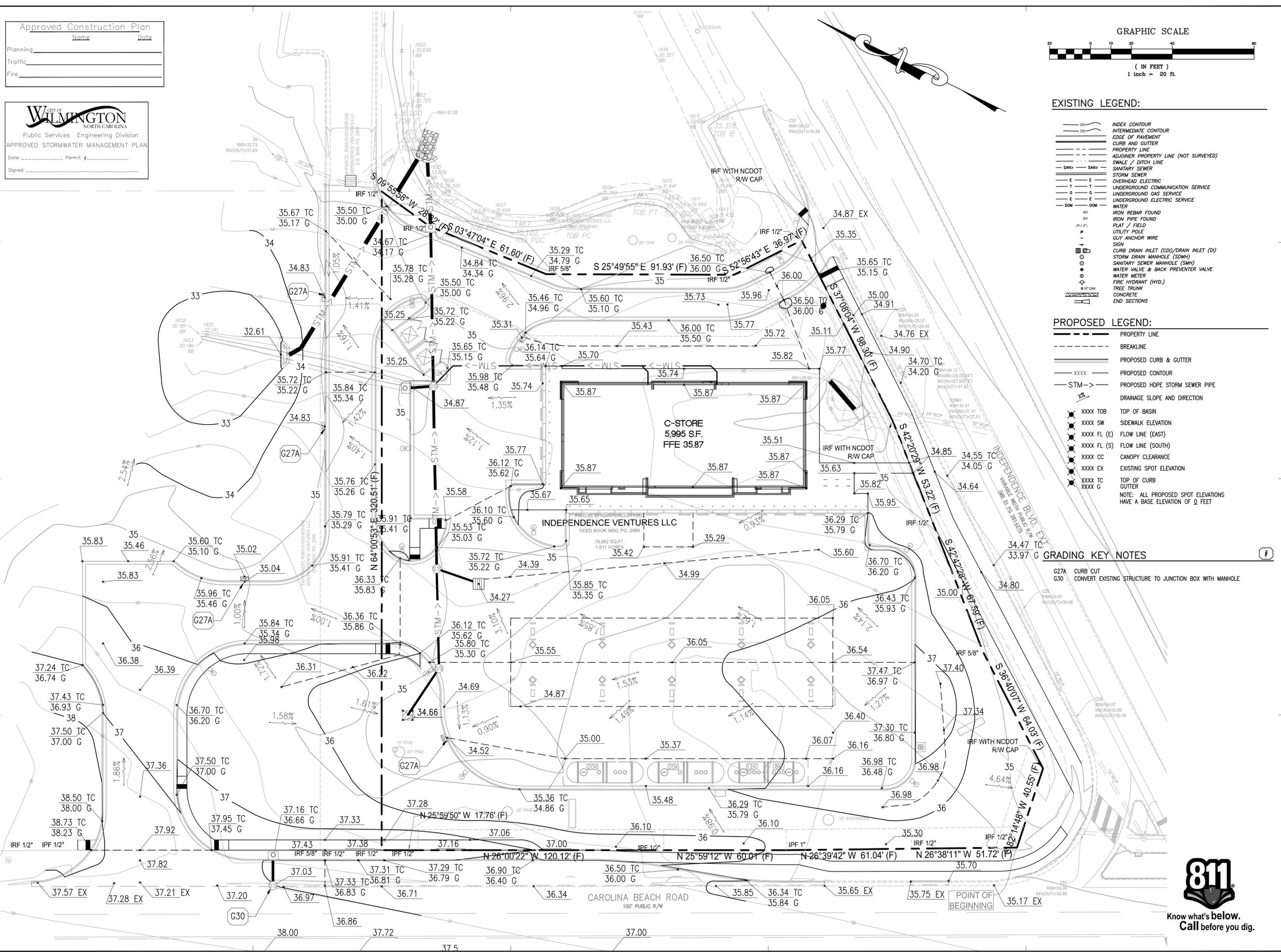
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- WATER METER
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- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED LEGEND:

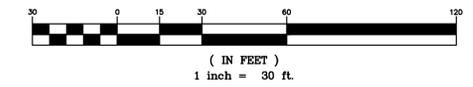
- PROPERTY LINE
- BREAKLINE
- PROPOSED CURB & GUTTER
- PROPOSED CONTOUR
- STM -> PROPOSED HDPE STORM SEWER PIPE
- DRAINAGE SLOPE AND DIRECTION
- XXXX TOB TOP OF BASIN
- XXXX SW SIDEWALK ELEVATION
- XXXX FL (E) FLOW LINE (EAST)
- XXXX FL (S) FLOW LINE (SOUTH)
- XXXX CC CANOPY CLEARANCE
- XXXX EX EXISTING SPOT ELEVATION
- XXXX TC TOP OF CURB
- XXXX G GUTTER
- NOTE: ALL PROPOSED SPOT ELEVATIONS HAVE A BASE ELEVATION OF 0 FEET

GRADING KEY NOTES

- G27A CURB CUT
- G30 CONVERT EXISTING STRUCTURE TO JUNCTION BOX WITH MANHOLE



GRAPHIC SCALE



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

CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

EXISTING LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- EDGE OF PAVEMENT
- CURB AND GUTTER
- PROPERTY LINE
- ADJACENT PROPERTY LINE (NOT SURVEYED)
- SWALE / DITCH LINE
- SANITARY SEWER
- STORM SEWER
- OVERHEAD ELECTRIC
- UNDERGROUND COMMUNICATION SERVICE
- UNDERGROUND GAS SERVICE
- UNDERGROUND ELECTRIC SERVICE
- WATER
- IRON REBAR FOUND
- IRON PIPE FOUND
- PLAT / FIELD
- UTILITY POLE
- GUY ANCHOR WIRE
- SIGN
- CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
- STORM DRAIN MANHOLE (SDMH)
- SANITARY SEWER MANHOLE (SMH)
- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED LEGEND:

- PROPERTY LINE
- EXISTING CURB & GUTTER
- EXISTING CONTOUR
- EXISTING HOPE STORM PIPE
- DRAINAGE SLOPE AND DIRECTION
- DRAINAGE BASIN BOUNDARY
- DRAINAGE BASIN ID
- DRAINAGE BASIN AREA (ACRE)
- 10-YR STORMWATER RUNOFF
- 50-YR STORMWATER RUNOFF

NOTE:

SITE SOIL:
SAND-TRACE CLAY AND SILT (COASTAL PLAIN)(SM) 0'-1' DEEP
VERY LOOSE (SP-SM) 1'-2' DEEP
LOOSE/FIRM (SP) 2'-5' DEEP

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DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NCDOT RESUBMITTAL
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03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NCDOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL



3/23/16

PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, CIT

PROJECT NAME

CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



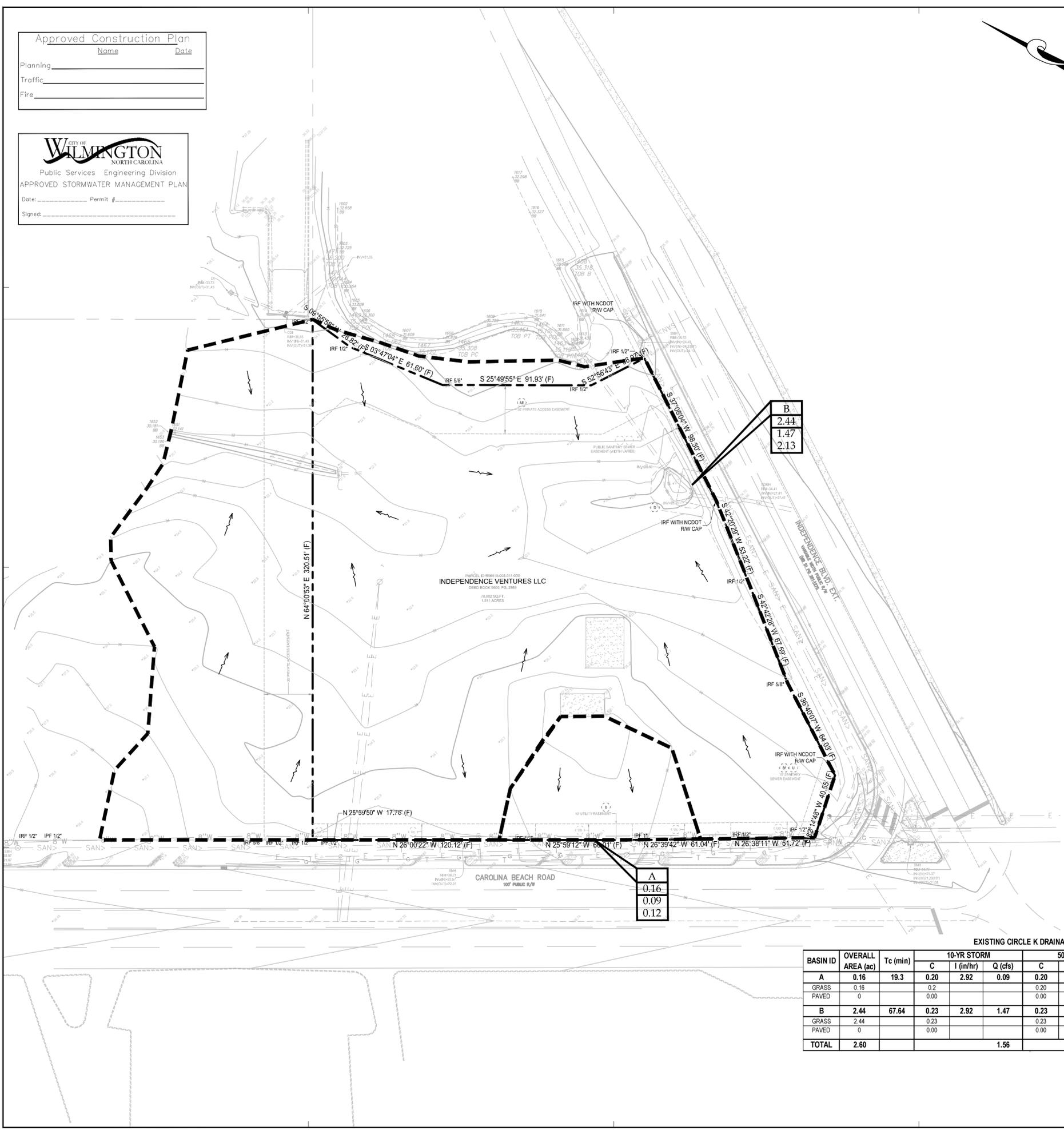
PROJECT NUMBER
20151091

SHEET TITLE
PRE-DRAINAGE PLAN

SHEET NUMBER

C-4.0

NOT ISSUED FOR CONSTRUCTION



B
2.44
1.47
2.13

A
0.16
0.09
0.12

EXISTING CIRCLE K DRAINAGE BASIN SUMMARY

BASIN ID	OVERALL AREA (ac)	Tc (min)	10-YR STORM		50-YR STORM		REMARKS		
			C	I (in/hr)	Q (cfs)	C		I (in/hr)	Q (cfs)
A	0.16	19.3	0.20	2.92	0.09	0.20	3.8	0.12	SHEET FLOWS INTO SOUTH INTO CAROLINA BEACH ROAD AND FLOWS THE GUTTER EAST
GRASS	0.16		0.2			0.20			
PAVED	0		0.00			0.00			
B	2.44	67.64	0.23	2.92	1.47	0.23	3.8	2.13	SHEET FLOWS EAST INTO HEADWALL WHICH FOLLOWS UNDER INDEPENDENCE BLVD AND DISCHARGES INTO AN EXISTING DETENTION POND TO SOUTHEAST
GRASS	2.44		0.23			0.23			
PAVED	0		0.00			0.00			
TOTAL	2.60				1.56			2.25	



Know what's below.
Call before you dig.



Know what's below. Call before you dig.

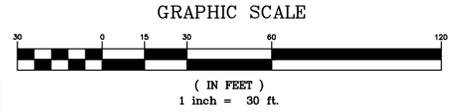
ACCUMULATED PIPE SIZING CALCULATIONS						
DRAINAGE AREA	PIPE SIZE PROVIDED	PIPE SIZE REQ. (IN)	Q (cfs) 100 YR	n	V (SLOPE)	
A	15"	8.86	1.69	0.012	0.09798	
B	21"	11.52	3.47	0.012	0.1	
C	15"	12.58	4.64	0.012	0.10583	
D	18"	13.50	5.56	0.012	0.104881	
OS-1	24"	12.54	6.42	0.012	0.147648	
OS-2	N/A	N/A	0.05	N/A	N/A	
OS-3	N/A	N/A	0.17	N/A	N/A	

CALCULATIONS PER WILMINGTON NC TECHNICAL STANDARDS CH. 5.F.2 EQUATION

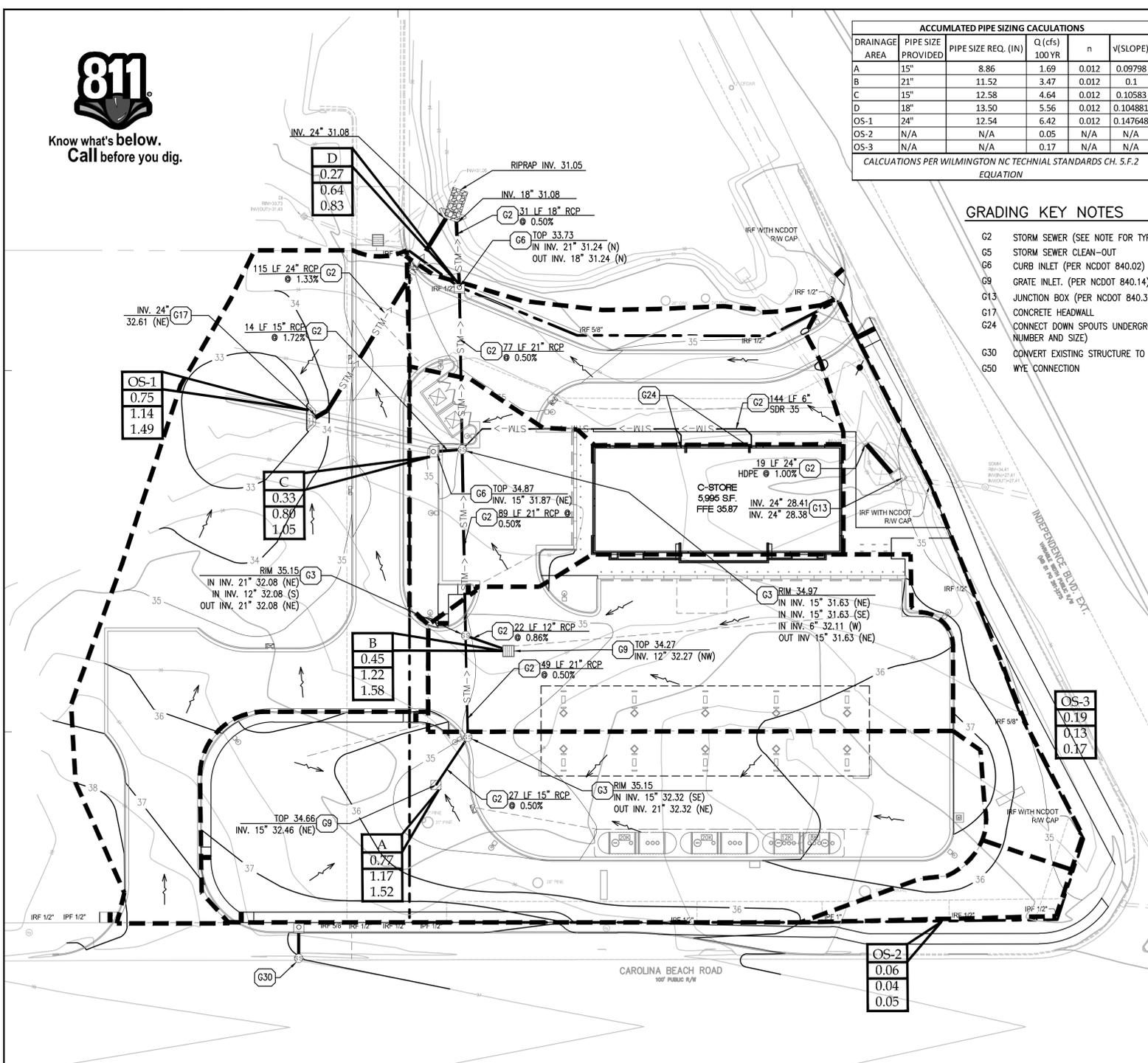
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NORTH CAROLINA
Public Services Engineering Division
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Approved Construction Plan
Name _____ Date _____
Planning _____
Traffic _____
Fire _____



GreenbergFarrow
1430 W. Peachtree St. NW
Suite 200
Atlanta, GA 30309
t: 404 601 4000 f: 404 601 3970
PROJECT TEAM



GRADING KEY NOTES

- G2 STORM SEWER (SEE NOTE FOR TYPE, SIZE AND SLOPE)
- G5 STORM SEWER CLEAN-OUT
- G6 CURB INLET (PER NCDOT 840.02)
- G9 GRATE INLET (PER NCDOT 840.14)
- G13 JUNCTION BOX (PER NCDOT 840.31)
- G17 CONCRETE HEADWALL
- G24 CONNECT DOWN SPOUTS UNDERGROUND TO STORM PIPE (SEE NOTE FOR NUMBER AND SIZE)
- G30 CONVERT EXISTING STRUCTURE TO JUNCTION BOX (NCDOT 840.31)
- G50 WYE CONNECTION

PROPOSED LEGEND:

- PROPERTY LINE
- PROPOSED CURB & GUTTER
- PROPOSED CONTOUR
- PROPOSED STORM PIPE. SEE ATTACHED NOTE FOR SIZING LENGTH AND MATERIAL
- DRAINAGE SLOPE AND DIRECTION
- DRAINAGE BASIN BOUNDARY
- DRAINAGE BASIN ID
- DRAINAGE BASIN AREA (ACRE)
- 10-YR STORMWATER RUNOFF
- 50-YR STORMWATER RUNOFF

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- TREE TRUNK
- CONCRETE
- END SECTIONS

DISSIPATOR METHOD:

Estimation of Stone Size and Dimensions For Culvert Aprons

- Step 1) Compute flow velocity V_c at culvert or paved channel outlet.
- Step 2) For pipe culverts D_c is diameter. For pipe arch, arch and box culverts, and paved channel outlets, $D_c = A_c$ where A_c = cross-sectional area of flow at outlet. For multiple culverts, use $D_c = 1.25 \times D_c$ of single culvert.

Velocity (ft/s)	5.8
Opening type	Pipe Culvert
Single or multiple openings?	Multiple
Outlet pipe diameter, D_c (ft)	2.5

NOTE 1: If opening type is anything other than "Pipe Culvert", $D_c = A_c$ (Cross-sectional area of flow at outlet).
NOTE 2: If multiple openings, $D_c = 1.25 \times D_c$ of single culvert.

- Step 3) For apron grades of 10% or steeper, use recommendations for next higher zone. (Zones 1 through 6).

Zone	2
Will apron have $\geq 10\%$ grade?	No
NOTE: For apron slopes equal to or greater than 10%, use next higher Zone in Figure 8.06d to determine apron length.	
Apron length (ft)	14

Determination of Stone Sizes For Dumped Stone Channel Linings and Revetments

- Step 1. Use figure 8.06[a] to determine maximum stone size (e.g. for 12 FPS = 20" or 550 lbs).

Max. stone size (in.)	6
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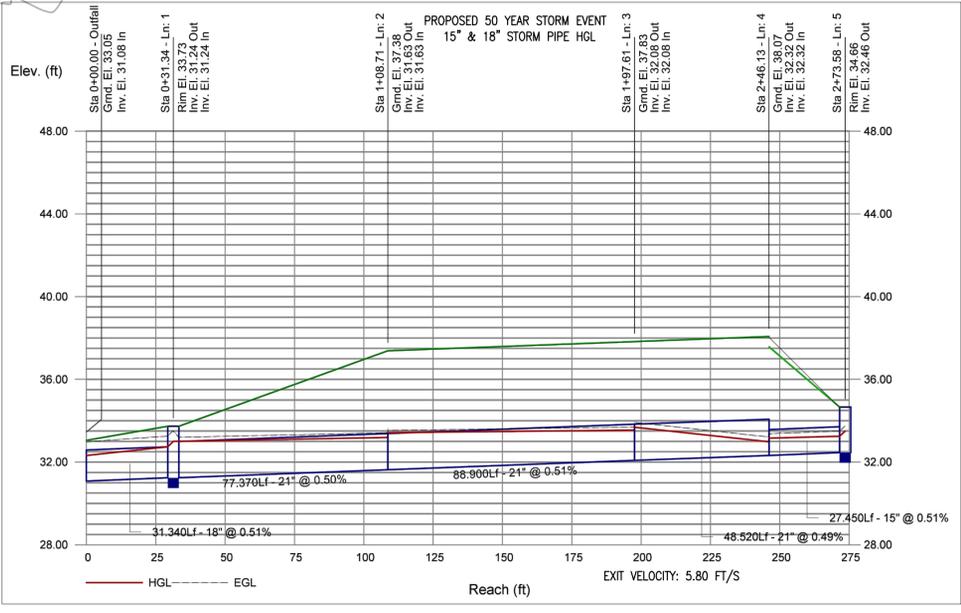
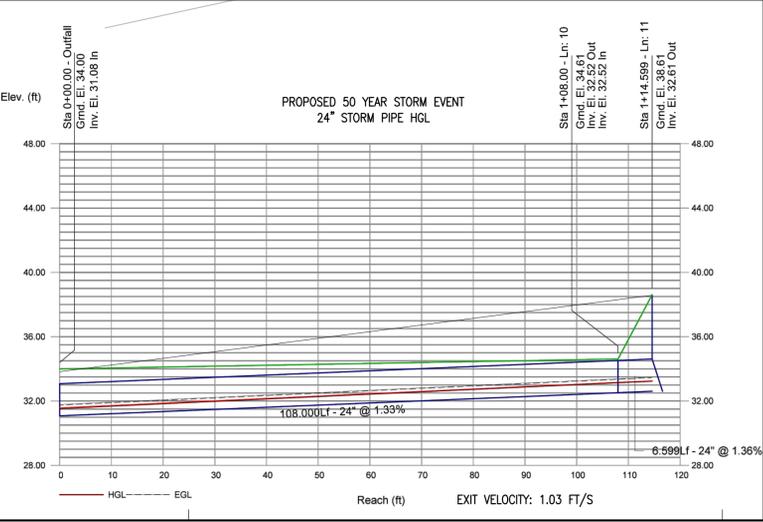
- Step 2. Use figure 8.06 [b] to determine acceptable size range for stone (for 12 FPS it is 125-500 lbs. for 75% of stone, and the maximum and minimum range in weight should be 25-500 lbs.).

Diameter (inches)	Manning's "n"	Min. thickness of lining (inches)
Fine	0.031	9
Light	0.035	12
Medium	0.040	18
Heavy	0.044	30

(Channels) (Dissipators)

Min. & max range of stones (lbs)	25-150
Weight range of 75% of stones (lbs)	50-150

PROPOSED CIRCLE K DRAINAGE BASIN SUMMARY									
BASIN ID	OVERALL AREA (ac)	Tc (min)	10-YR STORM			50-YR STORM			REMARKS
			C	I (in/hr)	Q (cfs)	C	I (in/hr)	Q (cfs)	
A	0.77	8.4	0.52	2.92	1.17	0.52	3.8	1.52	SHEET FLOWS WEST INTO PROPOSED CURB INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
B	0.45	5	0.94	2.92	1.22	0.94	3.8	1.58	SHEET FLOWS WEST INTO PROPOSED GRATE INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
C	0.33	5	0.84	2.92	0.80	0.84	3.8	1.05	SHEET FLOWS WEST INTO PROPOSED CURB INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
D	0.27	5	0.78	2.92	0.61	0.77	3.8	0.79	SHEET FLOWS WEST INTO PROPOSED CURB INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
OS-1	0.75	7.35	0.52	2.92	1.14	0.52	3.8	1.49	SHEET FLOW INTO NORTH INTO A HEADWALL THEN NORTH INTO EXISTING FOREBAY
OS-2	0.06	8.18	0.20	2.92	0.04	0.20	3.8	0.05	SHEET FLOWS SOUTH ON TO CAROLINA BEACH ROAD THEN INTO EXISTING NCDOT'S STORM SYSTEM
OS-3	0.19	10.78	0.28	2.92	0.15	0.28	3.8	0.20	SHEET FLOWS INTO EAST ON TO INDEPENDENCE BLVD. THEN INTO EXISTING NCDOT'S STORM SYSTEM
TOTAL	2.81				5.14			6.68	



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PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K CAROLINA BEACH

WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
POST DRAINAGE PLAN

SHEET NUMBER
C-4.1

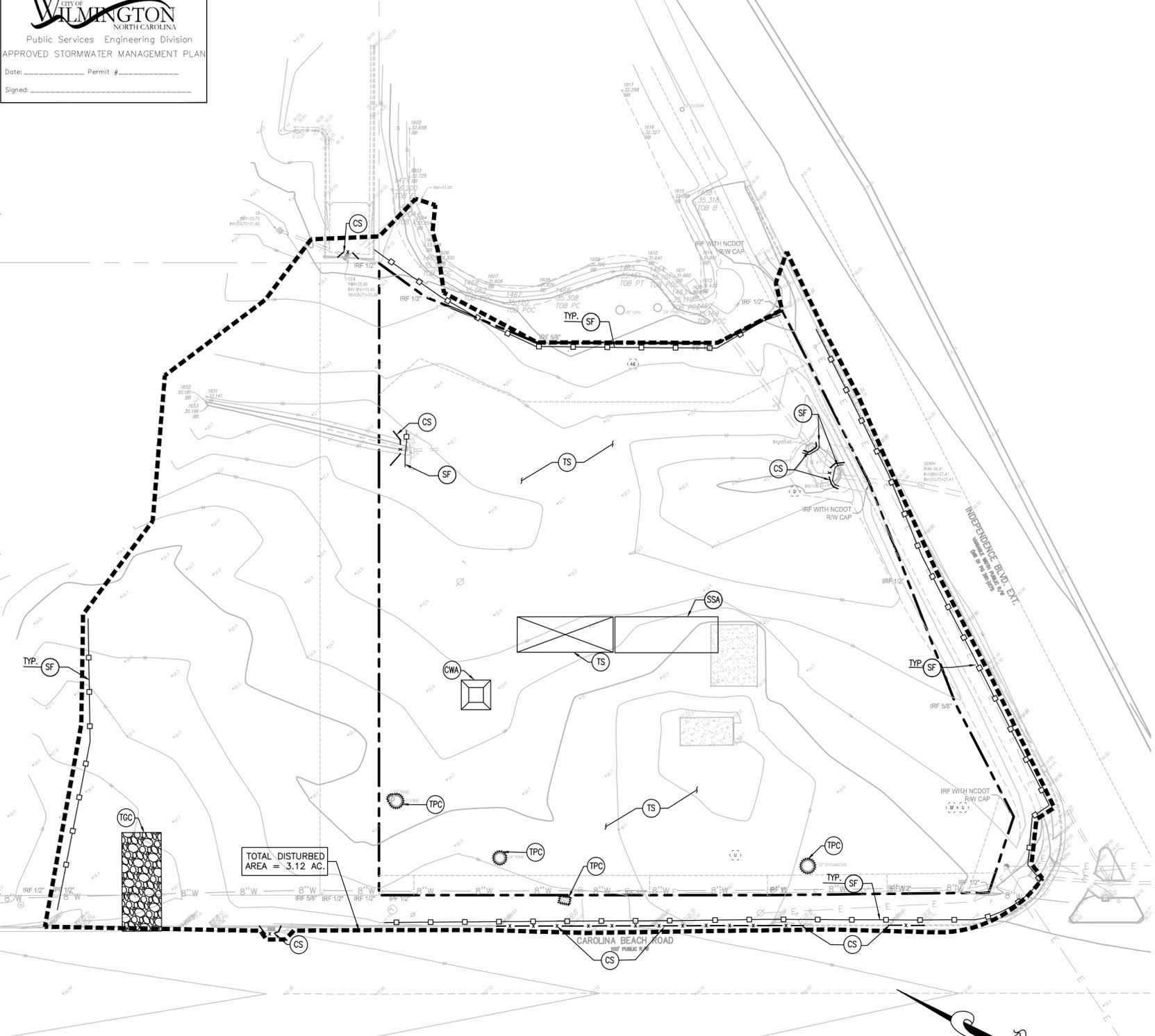
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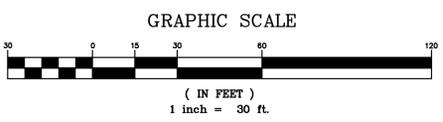
NPDES STABILIZATION TIMEFRAMES		
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES STEEPER THAN 3:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HOW ZONES



TOTAL DISTURBED AREA = 3.12 AC.

****CONTRACTOR SHALL PROVIDE AN ALL-WEATHER ACCESS ROAD AROUND THE CONSTRUCTION SITE AT ALL TIMES****

24 HR EMERGENCY CONTACT:
ANDY PRIOLO- 919.566.1714



MAINTENANCE PLAN

- ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE, LESS THAN EVERY WEEK AND WITHIN 24 HOURS OF EVERY HALF INCH RAINFALL.
- ALL POINTS OF EGRESS WILL HAVE CONSTRUCTION ENTRANCES THAT WILL BE PERIODICALLY TOP-DRESSED WITH AN ADDITIONAL 2 INCHES OF #4 STONE TO MAINTAIN PROPER DRAINAGE. THEY WILL BE MAINTAINED IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. IMMEDIATELY REMOVE OBJECTIONABLE MATERIAL SPILLED WASHED OR TRACKED ONTO THE CONSTRUCTION ENTRANCE OR ROADWAYS.
- SEDIMENT WILL BE REMOVED FROM HARDWARE CLOTH AND GRAVEL INLET PROTECTION, BLOCK AND GRAVEL INLET PROTECTION, ROCK DOWNSHUT INLET PROTECTION AND ROCK INLET PROTECTION WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS AS DESIGNED. DEBRIS WILL BE REMOVED FROM THE ROCK AND HARDWARE CLOTH TO ALLOW PROPER DRAINAGE. SILT SACKS WILL BE EMPTIED ONCE A WEEK AND AFTER EVERY RAIN EVENT. SEDIMENT WILL BE REMOVED FROM AROUND BEAVER DAMS, DANDY SACKS AND SOCKS ONCE A WEEK AND AFTER EVERY RAIN EVENT.
- DIVERSION DITCHES WILL BE CLEANED OUT IMMEDIATELY TO REMOVE SEDIMENT OR OBSTRUCTIONS FROM THE FLOW AREA. THE DIVERSION RIDGES WILL ALSO BE REPAIRED. SWALES MUST BE TEMPORARILY STABILIZED WITHIN 21 CALENDAR DAYS OF CEASE OF ANY PHASE OF ACTIVITY ASSOCIATED WITH A SWALE.
- SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES HALF FILLED. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER. STAKES MUST BE STEEL STAKE SPACING WILL BE 6 FEET MAX. WITH THE USE OF EXTRA STRENGTH FABRICS WITHOUT WIRE BACKING. STAKE SPACING WILL BE 9 FEET MAX. WHEN STANDARD STRENGTH FABRIC AND WIRE BACKING ARE USED, IF ROCK FILTERS ARE DESIGNED AT LOW POINTS IN THE SEDIMENT FENCE THE ROCK WILL BE REPAIRED OR REPLACED IF IT BECOMES HALF FULL OF SEDIMENT, NO LONGER DRAINS AS DESIGNED OR IS DAMAGED.
- SEDIMENT WILL BE REMOVED FROM SEDIMENT TRAPS WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. THE ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR WHEN THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED FROM BAFFLES WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.
- SEDIMENT WILL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE DESIGN STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR IF THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED FROM BAFFLES WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.
- ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. ALL SLOPES WILL BE STABILIZED WITHIN 21 CALENDAR DAYS. ALL OTHER AREAS WILL BE STABILIZED WITHIN 15 WORKING DAYS.
- FLOCCULANTS WILL BE USED TO ADDRESS TURBIDITY ISSUES. THE PUMPS, TANKS, HOSES AND INJECTION SYSTEMS WILL BE CHECKED FOR PROBLEMS OR TURBID DISCHARGES DAILY.

BMP MAINTENANCE NOTES

ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURE SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

- INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
- ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
- SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF OF THE SILT FENCE.
- THE VEHICLE TRACKING CONTROL SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND. THE AGGREGATE USED SHOULD BE #4 STONE OR 2" OR 3" AGGREGATE.
- THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
- PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.

SURFACE STABILIZATION MEASURES

KEY	PRACTICE	DESCRIPTION	NOTES
M	DISTURBED AREA STABILIZATION(W/ MULCHING ONLY)	Temporary protection for disturbed areas; as an erosion retardant cover when temporary seeding is inapplicable.	Straw (1-2 tons/acre), Wood chips (5-6 tons/acre), Wood fiber (0.5-1 tons/acre), Bark (35 cy/acre), Corn stalks (4-6 tons / acre), or Nets/Mats/Chemical stabilizers applicable
TS	DISTURBED AREA STABILIZATION(W/ TEMP. SEEDING)	Planting rapid-growing annual grasses, small grains, or legumes to provide initial, temporary cover for erosion control on disturbed areas.	May-Aug: German millet (40 lbs./ac), Aug-Dec: Rye grain (120 lbs./ac), Jan-May: Mixture of Rye grain (120 lbs./ac) and Koste lespedeza (50 lbs./ac) 750 (1000 lbs.-for Fall) lbs./ac of 10-10-10 fertilizer
PS	DISTURBED AREA STABILIZATION(W/ PERM. SEEDING)	Controlling runoff and preventing erosion by establishing a perennial vegetative cover with seed.	Mixture of Tall fescue (80 lbs./ac) and Koste lespedeza (40 lbs./ac) with 1000 lbs./ac of 10-10-10 fertilizer and 4,000 lbs./ac of lime May-Aug: Add 10 lbs./ac German millet Oct-Feb: Add 40 lbs./ac Rye grain
SO	DISTURBED AREA STABILIZATION(W/ PERM. SODDING)	Transplanting vegetative sections of plant materials to promptly stabilize areas that are subject to erosion.	Warm Season: Hybrid Bermuda grass, Zoysia grass, Centipede grass, or St. Augustine grass Cool Season: Tall fescue/Kentucky bluegrass
DC	DUST CONTROL	Utilize dust control methods whenever there are offsite impacts, especially periods of drought until final stabilization is reached.	Phasing the project, vegetative cover, Mulch, sprinkling water, spray-on-adhesive, calcium chloride, barriers, etc.

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

NOTE: GENERAL CONTRACTOR TO COMPLETE TABLE WITH THEIR SPECIFIC PROJECT SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TEMPORARY CONTROL MEASURES																								
STRIP & STOCKPILE TOPSOIL																								
STORM FACILITIES																								
TEMPORARY CONSTRUCTION ROADS																								
FOUNDATION / BUILDING CONSTRUCTION																								
SITE CONSTRUCTION																								
PERMANENT CONTROL STRUCTURES																								
FINISH GRADING																								
LANDSCAPING/SEED/FINAL STABILIZATION																								

EXISTING LEGEND:

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- FIRE HYDRANT (HYD.)
- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED

- BOUNDARY LINE
- CONTOUR ELEVATIONS
- CONSTRUCTION FENCE (SEE DETAIL SHEETS)
- LIMIT OF DISTURBED AREA

PROJECT INFORMATION

THE PROPOSED PROJECT IS CONSTRUCTING A GAS STATION CONSISTING OF A 5,995 S.F. CONVENIENT STORE, AN OVERHEAD CANOPY WITH 10 PUMPING ISLANDS AND ASSOCIATED PARKING AREA.
ACREAGE OF SITE IS 1.81 ACRES.
DISTURBED ACREAGE OF SITE (INCLUDING OFF-SITE WORK) IS 3.12 ACRES.
ANTICIPATED CONSTRUCTION START DATE IS JUNE 2016 AND COMPLETION DATE IS DECEMBER 2016.
CIRCLE K CONTRACTOR TO TAKE APPROPRIATE MEASURES TO KEEP SEDIMENT FROM ESCAPING SITE AND ALL ACCUMULATED SEDIMENT SHALL BE CLEANED OUT AND REMOVED FROM SITE.

KEY NOTES

- TG TEMPORARY GRAVEL CONSTRUCTION PER NCDCE (6.06)
- SF SEDIMENTATION FENCE PER NCDCE (6.62)
- CS COMPOST SOCK PER NCDCE (6.66)
- CWA CONCRETE WASHOUT AREA
- TS TEMPORARY STORAGE AREA
- SSA STABILIZED STAGING AREA
- TPC TREE PROTECTION DURING CONSTRUCTION PER (SD15-09)

SEQUENCE OF CONSTRUCTION

- PHASE I**
- INSTALL STABILIZED CONSTRUCTION ENTRANCES.
 - PREPARE TEMPORARY PARKING AND STORAGE AREA.
 - CONSTRUCT THE SEDIMENT FENCES ON THE SITE.
 - INSTALL COMPOST SOCK AS INDICATED ON THE PLAN
 - CLEAR AND GRUB THE SITE.
 - BEGIN GRADING THE SITE.
- PHASE II**
- START CONSTRUCTION OF BUILDING PAD AND STRUCTURES.
 - TEMPORARILY SEED DENUDEED AREA.
 - INSTALL UTILITIES, UNDERDRAINS, STORM SEWERS, CURBS AND GUTTERS.
 - INSTALL COMPOST SOCK AS SHOWN ON THE PLANS.
 - INSTALL RIP RAP AROUND OUTLET STRUCTURES.
 - PREPARE SITE FOR PAVING.
 - PAVE SITE.
 - COMPLETE GRADING AND INSTALL PERMANENT SEEDING AND PLANTING.
 - REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED).

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NCDOT RESUBMITTAL
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03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NCDOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL

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JOHN NOURZAD
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3/23/16

PROJECT NAME
CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
EROSION CONTROL
PLAN PHASE I

SHEET NUMBER
C-5.0

NOT ISSUED FOR CONSTRUCTION

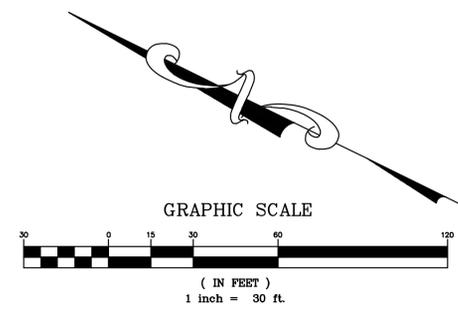
Approved Construction Plan
Name _____ Date _____

Planning _____
Traffic _____
Fire _____

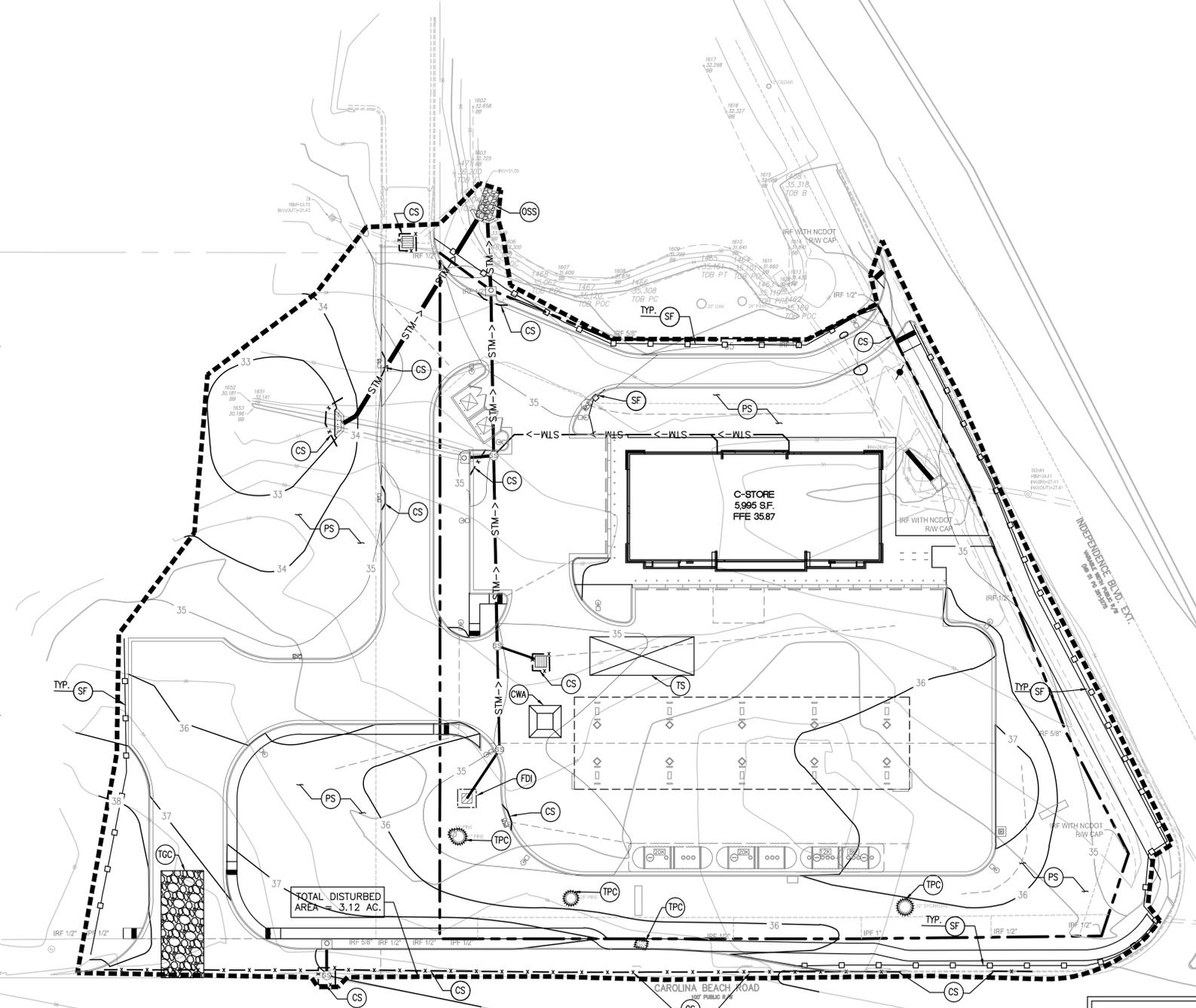
CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____
Signed: _____

NPDES STABILIZATION TIMEFRAMES		
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES STEEPER THAN 3:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HOW ZONES



****CONTRACTOR SHALL PROVIDE AN ALL-WEATHER ACCESS ROAD AROUND THE CONSTRUCTION SITE AT ALL TIMES****



MAINTENANCE PLAN

- ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE, LESS THAN ONCE EVERY WEEK AND WITHIN 24 HOURS OF EVERY HALF INCH RAINFALL.
- ALL POINTS OF EGRESS WILL HAVE CONSTRUCTION ENTRANCES THAT WILL BE PERIODICALLY TOP-DRESSED WITH AN ADDITIONAL 2 INCHES OF #4 STONE TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. IMMEDIATELY REMOVE OBJECTIONABLE MATERIAL SPILLED WASHED OR TRACKED ONTO THE CONSTRUCTION ENTRANCE OR ROADWAYS.
- SEDIMENT WILL BE REMOVED FROM HARDWARE CLOTH AND GRAVEL INLET PROTECTION, BLOCK AND GRAVEL INLET PROTECTION, ROCK DOUGHNUT INLET PROTECTION AND ROCK PIPE INLET PROTECTION WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS AS DESIGNED. DEBRIS WILL BE REMOVED FROM THE ROCK AND HARDWARE CLOTH TO ALLOW PROPER DRAINAGE. SILT SACKS WILL BE EMPTIED ONCE A WEEK AND AFTER EVERY RAIN EVENT. SEDIMENT WILL BE REMOVED FROM AROUND BEAVER DAMS, DANDY SACKS AND SOCKS ONCE A WEEK AND AFTER EVERY RAIN EVENT.
- DIVERSION DITCHES WILL BE CLEANED OUT IMMEDIATELY TO REMOVE SEDIMENT OR OBSTRUCTIONS FROM THE FLOW AREA. THE DIVERSION RIDGES WILL ALSO BE REPAIRED. SWALES WILL BE TEMPORARILY STABILIZED WITHIN 21 CALENDAR DAYS OF CEASE OF ANY PHASE OF ACTIVITY ASSOCIATED WITH A SWALE.
- SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES HALF FILLED. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER. STAKES MUST BE STEEL. STAKE SPACING WILL BE 6 FEET MAX. WITH THE USE OF EXTRA STENTCH FABRIC, WITHOUT WIRE BACKING. STAKE SPACING WILL BE 8 FEET MAX. WHEN STANDARD STENTCH FABRIC AND WIRE BACKING ARE USED IF ROCK FILTERS ARE DESIGNED AT LOW POINTS IN THE SEDIMENT FENCE THE ROCK WILL BE REPAIRED OR REPLACED IF IT BECOMES HALF FULL OF SEDIMENT, NO LONGER DRAINS AS DESIGNED OR IS DAMAGED.
- SEDIMENT WILL BE REMOVED FROM SEDIMENT TRAPS WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. THE ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR IF THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED FROM BAFFLES WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.
- SEDIMENT WILL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE DESIGN STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS OR IF THE ROCK IS DISLODGED. BAFFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED FROM BAFFLES WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE. FLOATING SKIMMERS WILL BE INSPECTED WEEKLY AND WILL BE KEPT CLEAN.
- ALL SEEDED AREAS WILL BE FERTILIZED, RESEDED AS NECESSARY AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A WOODRUS, DENSE VEGETATIVE COVER. ALL AREAS WILL BE STABILIZED WITHIN 21 CALENDAR DAYS. ALL OTHER AREAS WILL BE STABILIZED WITHIN 15 WORKING DAYS.
- FLOCCULANTS WILL BE USED TO ADDRESS TURBIDITY ISSUES. THE PUMPS, TANKS, HOSES AND INJECTION SYSTEMS WILL BE CHECKED FOR PROBLEMS OR TURBID DISCHARGES DAILY.

BMP MAINTENANCE NOTES

ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

- ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEDED AS NEEDED.
- SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF OF THE SILT FENCE.
- THE VEHICLE TRACKING CONTROL SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND. THE AGGREGATE USED SHOULD BE #4 STONE OR 2" OR 3" AGGREGATE.
- THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
- PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.

SURFACE STABILIZATION MEASURES

KEY	PRACTICE	DESCRIPTION	NOTES
M	DISTURBED AREA STABILIZATION(W/ MULCHING ONLY)	Temporary protection for disturbed areas; as an erosion retardant cover when temporary seeding is inapplicable.	Straw (1-2 tons/acre), Wood chips (5-6 tons/acre), Wood fiber (0.5-1 tons/acre), Bark (35 cy/acre), Corn stalks (4-6 tons / acre), or Nets/Mats/Chemical stabilizers applicable
TS	DISTURBED AREA STABILIZATION(W/ TEMP. SEEDING)	Planting rapid-growing annual grasses, small grains, or legumes to provide initial, temporary cover for erosion control on disturbed areas.	May-Aug: German millet (40 lbs./ac), Aug-Dec: Rye grain (120 lbs./ac), Jan-May: Mixture of Rye grain (120 lbs./ac) and Koste lespedeza (50 lbs./ac) 750 (1000 lbs.-for Fall) lbs./ac of 10-10-10 fertilizer
PS	DISTURBED AREA STABILIZATION(W/ PERM. SEEDING)	Controlling runoff and preventing erosion by establishing a perennial vegetative cover with seed.	Mixture of Tall fescue (80 lbs./ac) and Koste lespedeza (40 lbs./ac) with 1000 lbs./ac of 10-10-10 fertilizer and 4,000 lbs./ac of lime May-Aug: Add 10 lbs./ac German millet Oct-Feb: Add 40 lbs./ac Rye grain
SO	DISTURBED AREA STABILIZATION(W/ PERM. SODDING)	Transplanting vegetative sections of plant materials to promptly stabilize areas that are subject to erosion.	Warm Season: Hybrid Bermuda grass, Zoysia grass, Centipede grass, or St. Augustine grass Cool Season: Tall fescue/Kentucky bluegrass
DC	DUST CONTROL	Utilize dust control methods whenever there are offsite impacts, especially periods of drought until final stabilization is reached.	Phasing the project, vegetative cover, Mulch, sprinkling water, spray-on-adhesive, calcium chloride, barriers, etc.

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

NOTE: GENERAL CONTRACTOR TO COMPLETE TABLE WITH THEIR SPECIFIC PROJECT SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TEMPORARY CONSTRUCTION MEASURES																								
STRIP & STOCKPILE TOPSOIL																								
STORM FACILITIES																								
TEMPORARY CONSTRUCTION ROADS																								
FOUNDATION / BUILDING CONSTRUCTION																								
SITE CONSTRUCTION																								
PERMANENT CONTROL STRUCTURES																								
FINISH GRADING																								
LANDSCAPING/SEED/FINAL STABILIZATION																								

24 HR EMERGENCY CONTACT:
ANDY PRIOLO - 919.566.1714



EXISTING LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- EDGE OF PAVEMENT
- CURB AND GUTTER
- PROPERTY LINE
- ADJOINER PROPERTY LINE (NOT SURVEYED)
- SWALE / DITCH LINE
- SANITARY SEWER
- STORM SEWER
- OVERHEAD ELECTRIC
- UNDERGROUND COMMUNICATION SERVICE
- UNDERGROUND GAS SERVICE
- UNDERGROUND ELECTRIC SERVICE
- WATER
- IRON REBAR FOUND
- IRON PIPE FOUND
- PLAT / FIELD
- UTILITY POLE
- GUY ANCHOR WIRE
- SIGN
- CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
- STORM DRAIN MANHOLE (SDMH)
- SANITARY SEWER MANHOLE (SMH)
- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED

- BOUNDARY LINE
- CONTOUR ELEVATIONS
- CONSTRUCTION FENCE (SEE DETAIL SHEETS)
- LIMIT OF DISTURBED AREA

PROJECT INFORMATION

THE PROPOSED PROJECT IS CONSTRUCTING A GAS STATION CONSISTING OF A 5,995 S.F. CONVENIENT STORE, AN OVERHEAD CANOPY WITH 10 PUMPING ISLANDS AND ASSOCIATED PARKING AREA.

ACREAGE OF SITE IS 1.81 ACRES.
DISTURBED ACREAGE OF SITE (INCLUDING OFF-SITE WORK) IS 3.12 ACRES.

ANTICIPATED CONSTRUCTION START DATE IS JUNE 2016 AND COMPLETION DATE IS DECEMBER 2016.

CIRCLE K CONTRACTOR TO TAKE APPROPRIATE MEASURES TO KEEP SEDIMENT FROM ESCAPING SITE AND ALL ACCUMULATED SEDIMENT SHALL BE CLEANED OUT AND REMOVED FROM SITE.

KEY NOTES

- TCG TEMPORARY GRAVEL CONSTRUCTION PER NCDQE (6.06)
- RR ROCK RIP RAP TO REMAIN AFTER CONSTRUCTION
- SF SEDIMENTATION FENCE PER NCDQE (6.62)
- CS COMPOST SOCK PER NCDQE (6.66)
- CWA CONCRETE WASHOUT AREA
- TS TEMPORARY STORAGE AREA
- TPC TREE PROTECTION DURING CONSTRUCTION PER (SD15-09)
- FDI FABRIC DROP INLET PER NCDQE (6.51)
- OSS OUTLET STABILIZATION STRUCTURE PER NCDQE (6.41)

SEQUENCE OF CONSTRUCTION

- PHASE I**
- INSTALL STABILIZED CONSTRUCTION ENTRANCES.
 - PREPARE TEMPORARY PARKING AND STORAGE AREA.
 - CONSTRUCT THE SEDIMENT FENCES ON THE SITE.
 - INSTALL COMPOST SOCK AS INDICATED ON THE PLAN.
 - CLEAR AND GRUB THE SITE.
 - BEGIN GRADING THE SITE.
- PHASE II**
- START CONSTRUCTION OF BUILDING PAD AND STRUCTURES.
 - TEMPORARILY SEED DENUDEED AREA.
 - INSTALL UTILITIES, UNDERDRAINS, STORM SEWERS, CURBS AND GUTTERS.
 - INSTALL COMPOST SOCK AS SHOWN ON THE PLANS.
 - INSTALL RIP RAP AROUND OUTLET STRUCTURES.
 - PREPARE SITE FOR PAVING.
 - PAVE SITE.
 - COMPLETE GRADING AND INSTALL PERMANENT SEEDING AND PLANTING.
 - REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED).

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NCDOT RESUBMITTAL
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03-15-16	NCDOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL



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PROJECT NAME
CIRCLE K CAROLINA BEACH

WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
EROSION CONTROL PLAN PHASE II

SHEET NUMBER
C-5.1

NOT ISSUED FOR CONSTRUCTION

6.62 SEDIMENT FENCE

Definition
A temporary sediment control measure consisting of fabric buried at the bottom, stretched, and supported by posts.

Purpose
To retain sediment from small disturbed areas by reducing the velocity of sheet flows to allow sedimentation.

Conditions Where Practice Applies
Below small disturbed areas that are less than 1/4 acre per 100 feet of fence. Runoff can be stored behind the sediment fence without damaging the fence or the submerged area behind the fence.

Do not install sediment fences across streams, ditches, or waterways, or other areas of concentrated flow.
Sediment fence should be placed along topographic elevations, corners, where it can intercept stormwater runoff that is in dispersed sheet flow. Sediment fence should not be used alone below graded slopes greater than 10 feet in height.

Planning Considerations
A sediment fence is a system to retain sediment on the construction site. The fence retains sediment primarily by reducing flow and promoting deposition. In operation, generally the fence becomes clogged with fine particles, which reduce the flow rate. This causes a pond to develop behind the fence. The designer should anticipate ponding and provide sufficient storage areas and overflow outlets to prevent flows from overtopping the fence. Since sediment fences are not designed to withstand high water levels, locate them so that only shallow pools can form. The ends of a sediment fence into higher ground to prevent flow around the end of the fence until a "J" pattern may be appropriate to prevent end flow. Provide stabilized outlets to protect the fence system and release storm flows that exceed the design storm.

Deposition occurs as the storage pool forms behind the fence. The designer can direct flows to specified deposition areas through appropriate positioning of the fence or by providing an excavated area behind the fence. Plan deposition areas as accessible points to promote routine cleanout and maintenance. Show deposition areas in the erosion and sedimentation control plan. A sediment fence acts as a diversion if placed slightly off the contour. A maximum slope of 2 percent is recommended. This slope may be used to create shallow uniform flows from small disturbed areas and to deliver sediment laden water to deposition areas. The anchoring of the toe of the fence should be reinforced with 12 inches of No. 10 or 12 steel reinforcement bars when flow will run parallel to the toe of the fence.

Sediment fences serve no function along ridges or near drainage divides where there is little movement of water. Confusing or diverting runoff unacceptably with a sediment fence may create erosion and sedimentation problems that would not otherwise occur.

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Practice Standards and Specifications

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Stew barriers have only a 0-20% trapping efficiency and are inadequate. Stream bales may not be used in place of sediment fences. Prefabricated sediment fences with the fabric already stapled to this wooden posts do not meet minimum standards specified later in this section.

Design Criteria
Ensure that drainage area is no greater than 1/4 acre per 100 feet of fence. This is the maximum drainage area when the slope is less than 2 percent. Where all runoff is to be stored behind the fence, ensure that the maximum slope length behind a sediment fence does not exceed the specifications shown in Table 6.62a. The shorter slope length allowed for steeper slopes will greatly reduce the maximum drainage area. For example, a 10-20% slope may have a maximum slope length of 25 feet. For a 100-foot length of sediment fence, the drainage area would be 25% x 100ft = 2500 sq. ft. or 0.06 acres.

Table 6.62a Maximum Slope Length and Slope for which Sediment Fence is Applicable

Slope	Slope Length (ft)	Maximum Area (ft ²)
<2%	100	10,000
2 to 5%	75	7,500
5 to 10%	50	5,000
10 to 20%	25	2,500
>20%	15	1,500

Make the fence stable for the 10-year peak storm runoff.
Ensure that the depth of impounded water does not exceed 1.5 feet at any point along the fence.

If non-erusive outlets are provided, slope length may be increased beyond that shown in Table 6.62a, but runoff from the area should be determined and bypass capacity and erosion potential along the fence must be checked. The velocity of the flow at the outlet or the fence is a protected, reinforced outlet does not exceed 2 feet and that support post spacing does not exceed 4 feet.
The design life of a synthetic sediment fence is 6 months.

Construction Specifications
MATERIALS
1. Use a synthetic filter fabric of at least 95% by weight of polypropylene or polyethylene, which is certified by the manufacturer or supplier to the requirements in ASTM D 6661, which is shown in part 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.

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Practice Standards and Specifications

- Ensure that posts for sediment fences are 1.25 inch minimum diameter with a minimum length of 5 feet. 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

Test Material	Units	Support ¹ / Silt Fence		Type of Value
		ASTM D 4832	(N lbs)	
Grab Strength		400	500	MANRV
Machine Direction		(90)	(90)	
X-Machine Direction		400	450	MANRV
Permeability	ASTM D 4891	sec-1	0.08	MANRV
Apparent Opening Size ²	ASTM D 4751	mm	0.60	0.60
	(60 Sieve #)	(30)	(30)	
Ultraviolet Stability	ASTM D 4355	Retained Strength	70% after 500 h exposure	70% after 500 h exposure

¹ Silt Fence support shall consist of 14 gauge steel wire with a mesh spacing of 150 mm (6 inches), or precast concrete support posts of equivalent strength.
² These default values are based on empirical evidence with a variety of sediments. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotechnical tests in accordance with Test Method D 5141 should be performed by the agency to confirm suitability of these measurements.
³ As measured in accordance with Test Method D 4832.

CONSTRUCTION
1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabric.
2. Ensure that the height of the sediment fence does not exceed 24 inches above the ground surface. (Higher fences may impound volumes of water sufficient to cause failure of the structure.)
3. 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 fabric only at a support post with 4 feet minimum overlap to the next post.
4. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts. Extend the wire mesh support to the bottom of the trench. Fasten the wire reinforcement, then fabric on the upslope side of the fence post. Wire or plastic tie-ins should have minimum 50 pound tensile strength.
5. When a wire mesh support fence is used, space posts a maximum of 8 feet apart. Support posts should be driven securely into the ground a minimum of 24 inches.
6. Extra strength filter fabric with 6 feet post spacing does not require wire mesh support fence. Securely fasten the filter fabric directly to posts. Wire or plastic tie-ins should have minimum 50 pound tensile strength.

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- Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upslope from the barrier (Figure 6.62a).
- Place 12 inches of fabric along the bottom and side of the trench.
- Backfill the trench with soil placed over the filter fabric and compact. Through compaction of the backfill is critical to silt fence performance.
- Do not attach filter fabric to existing trees.

SEDIMENT FENCE INSTALLATION USING THE SLICING METHOD
Instead of excavating a trench, placing fabric and then backfilling trench, sediment fence may be installed using specially designed equipment that inserts the fabric into a cut along in the ground with a disc (Figure 6.62b).

- Installation Specifications**
- The base of both end posts should be at least one foot higher than the middle of the fence. Check with a level if necessary.
 - Install posts 4 feet apart in critical areas and 6 feet apart on standard applications.
 - Install posts 2 feet deep on the downstream side of the silt fence, and as close as possible to the fabric, enabling posts to support the fabric from upstream water pressure.
 - Install posts with the nipples facing away from the silt fabric.
 - Attach the fabric to each post with three ties, all placed within the top 8 inches of the fabric. Attach each tie diagonally 45 degrees through the fabric, with each piece at least 1 inch vertically apart. Also, each tie should be positioned to hang on a post nipple when tightened to prevent sagging.
 - Wang approximately 6 inches of fabric around the end posts and secure with 3 ties.
 - No more than 24 inches of a 36 inch fabric is allowed above ground level.
 - The installation should be checked and corrected for any deviations before completion.
 - Compaction is vitally important for effective results. Compact the soil immediately next to the silt fence fabric with the front wheel of the tractor, solid steel, or roller exerting at least 60 pounds per square foot. Compact the upstream side first, and then each side twice for a total of 4 trips.

Practice Standards and Specifications



Figure 6.62a Installation detail of a sediment fence.

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6 The Slicing Method

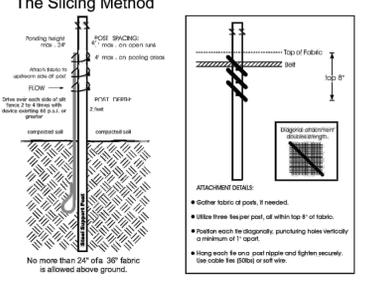


Figure 6.62b Schematic for using the slicing method to install a sediment fence. Adapted from Silt Fence that Works

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Practice Standards and Specifications

Practice Standards and Specifications

Maintenance
Inspect sediment fences at least once a week and after each rainfall. Make any required repairs immediately.
Should the fabric of a sediment fence collapse, tear, decompose or become ineffective, replace it promptly.
Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid undermining the fence during cleanout.
Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

References
ASTM D 6661 - 99, "Standard Specification for Silt Fence Material," ASTM International. For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.
ASTM D 6662 - 03, "Standard Practice for Silt Fence Installation," ASTM International. For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.
C. Joel Sprague, PE, Silt Fence Performance Limits and Installation Requirements. Sprague and Sprague Consulting Engineers and TRI/Environmental, Inc. Carpenter Erosion Control, http://www.tommy-slm.com/
Kentucky Erosion Prevention and Sediment Control Field Manual, 2004.
Range Control Measures
6.20 Temporary Diversions
Outlet Protection
6.41 Outlet Stabilization Structure
Appendix
6.03 Estimating Runoff

Rev. 9/13 6.62.7

6.66 COMPOST SOCK

Definition
A compost sock is a three-dimensional tubular sediment control and storm water runoff device typically used for perimeter control of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities. Compost socks trap sediment and other pollutants in runoff water as it passes through the matrix of the sock and by allowing water to temporarily pond behind the sock, allowing deposition of suspended solids. Compost socks are also used to reduce runoff flow velocities on sloped surfaces.

Compost socks acceptable for this application should meet the chemical, physical and biological properties specified for Practice 6.18, *Compost Blankets*.



Figure 6.66a - Compost Sock
Photo Credit - Fitmix International

Conditions Where Practice Applies
Compost socks are to be installed down slope of disturbed areas requiring erosion and sediment control. Compost socks are effective when installed perpendicular to sheet flow, in areas where sediment accumulation of less than six inches is anticipated. Acceptable applications include (Fitmix, 2001):
• Site perimeters
• Below disturbed areas subject to sheet runoff, with minor sheet or rill erosion. Compost socks should not be used alone below graded slopes greater than 10 feet in height.
• Above graded slopes to serve as a diversion berm.

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Practice Standards and Specifications

This specification covers compost produced from various organic by-products. For use as an erosion and sediment control measure on sloped areas. The product's parameters will vary based on whether vegetation will be established on the treated slope. Only compost products that meet all applicable state and federal regulations pertaining to its production and distribution may be used in this application. Approved compost products must meet related state and federal chemical contaminants (e.g., heavy metals, pesticides, etc.) and pathogen limit standards pertaining to the feedstocks (source materials) in which it are derived.

In regions subjected to higher rates of precipitation and/or greater rainfall intensity, larger compost socks should be used. In these particular regions, coarser compost products are preferred as the compost sock must allow for an improved water penetration rate. The designer should check the flow rate per foot of sock in order to ensure drainage rate of the compost sock being used is adequate. The required flow rates are outlined in Table 6.66c.

Table 6.66c - Compost Sock Initial Flow Rates

Compost Sock Design Diameter	8 inch (200mm)	12 inch (300mm)	18 inch (450mm)	24 inch (600mm)	32 inch (800mm)
Maximum Slope Length (±5%)	400 ft (183m)	750 ft (290m)	1,000 ft (366m)	1,300 ft (596m)	1,650 ft (600m)
Hydraulic Flow Through Rate (94 l/m ² /min)	7.5 gpm/ft (141 l/m ² /min)	11.3 gpm/ft (183 l/m ² /min)	15.0 gpm/ft (281 l/m ² /min)	22.5 gpm/ft (418 l/m ² /min)	30.0 gpm/ft (574 l/m ² /min)

Source: B. Faicette-2010

Construction Specifications
INSTALLATION
1. Materials used in the compost sock must meet the specifications outlined above and in Practice 6.18, *Compost Blankets*.
2. Compost socks should be located as shown on the erosion and sedimentation control plan.
3. Prior to installation, clear all obstructions including rocks, clods, and other debris greater than one inch that may interfere with proper function of the compost sock.
4. Compost socks should be installed parallel to the toe of a graded slope, a minimum of 10 feet beyond the toe of the slope. Socks located below flat areas should be located at the edge of the land-disturbance. The ends of the socks should be turned slightly up slope to prevent runoff from going around the end of the socks.
5. Fill sock netting uniformly with compost to the desired length such that logs do not deform.
6. Oak or other durable hardwood stakes 2" X 2" in cross section should be driven vertically plumb, through the center of the compost sock. Stakes should be placed at a maximum interval of 4 feet, or a maximum interval of 8 feet if the sock is placed in a 4 inch trench. See Figure 6.66b. The stakes

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Practice Standards and Specifications

Compost socks may be used as check dams in ditches not exceeding 3 feet in depth. Normally, 8 to 12 inch diameter socks should be used. Be sure to stake the sock perpendicular to the slope of the ditch. When used as check dams, installation should be similar to that of natural filter walls. The ends and middle of the sock should be staked, and additional stakes placed at a 2-foot maximum interval. See Table 6.66b for spacing.

Design Criteria
The sediment and pollutant removal process characteristic to a compost sock allows deposition of settling solids. Ponding occurs when flow flowing to the sock accumulates faster than the hydraulic flow through rate of the sock. Typically, initial hydraulic flow-through rates for a compost sock are 50% greater than geotextile fabric (silt fence). However, installation and maintenance is especially important for proper function and performance. Design consideration should be given to the duration of the project, total area of disturbance, rainfall/runoff potential, soil erosion potential, and sediment loading when specifying a compost sock.

Runoff Flow:
The depth of runoff ponded above the compost sock should not exceed the height of the compost sock. If overflow of the device is a possibility, a larger diameter sock should be constructed, other sediment control devices may be used, or management practices to reduce runoff should be installed. Alternatively, a second sock may be constructed or used in combination with Practice 6.17, *Roller Erosion Control Products* or Practice 6.18, *Compost Blankets* to slow runoff and reduce erosion.

Level Contour:
The compost sock should be placed on level contours to assist in dissipating low concentrated flow into sheet flow and reducing runoff flow velocity. Do not construct compost socks to concentrate runoff or channel water. Sheet flow of water should be perpendicular to the sock at impact and concentrated. Placing compost socks on undisturbed soil will reduce the potential for undermining by concentrated runoff flows.

Runoff and Sediment Accumulation:
The compost sock should be placed at a 10 foot minimum distance away from the toe of the slope to allow for proper runoff accumulation for sediment deposition and to allow for maximum sediment storage capacity behind the device. On flat areas, the sock should be placed at the edge of the land-disturbance.

End Around Flow:
In order to prevent water flowing around the ends of the compost sock, the ends of the sock must be constructed pointing up slope so the ends are at a higher elevation. A minimum of 10 linear feet at each end placed at a 30 degree angle is recommended.

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6.66.4

Practice Standards and Specifications

- Check dams
- Along the toe of stream and channel banks
- Around area drains or inlets located in a storm drain system
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On paved surfaces where trenching of silt fence is impossible.

A compost sock can be applied to areas of sheet runoff, on slopes up to a 2:1 grade with a maximum height of 10 feet, around inlets, and in other disturbed areas of construction sites requiring sediment control. Compost socks may also be used in sensitive environmental areas, or where trenching may damage roots. The weight of a filled sock (40 lbs / linear ft. for 8" diameter) effectively prevents sediment migration beneath the sock. It is possible to drive over a compost sock during construction (although not recommended); however, these areas should be immediately repaired by manually moving the sock back into place, if disturbed. Continued heavy construction traffic may destroy the fabric mesh, reduce the dimensions, and reduce the effectiveness of the compost sock. Vegetating the compost sock should be considered.

Compost socks shall either be made on site or delivered to the jobsite assembled. The sock shall be produced from a 5 mil thick continuous HDPE or polypropylene, woven into a tubular mesh netting material, with openings in the knitted mesh of 1/4" - 3/8" (3-10mm). This shall then be filled with compost meeting the specifications outlined in Practice 6.18, *Compost Blankets*, with the exception of particle size, to the diameter of the sock. Compost sock netting materials are also available in biodegradable plastics for areas where removal and disposal are not desired (i.e., when using pre-soaked socks). Compost socks contain the compost, maintaining its density and shape.

Compost socks should be installed parallel to the base of the slope or other affected area, perpendicular to sheet flow. The sock should be installed a minimum of 10 feet beyond the top of graded slopes. When runoff flows onto the disturbed area from a land above the work zone, a second sock may be constructed at the top of the slope in order to dissipate flows.

On locations where greater than a 200-foot long section of ground is to be treated with a compost sock, the sock lengths should be sleeved. After one sock section (200 feet) is filled and tied off (fastened) or zip tied, the second sock section shall be pulled over the first 1-2 feet and 'sleeved' creating an overlap. Once overlapped, the second section is filled with compost starting at the sleeved area to create a seamless appearance. The socks may be staked at the overlapped area (where the sleeve is) to keep the sections together. Slewing at the joints is necessary because it reduces the opportunity for water to penetrate the joints when installed in the field.

After filling, the compost sock must be staked in place. Oak or other durable hardwood stakes 2" X 2" in cross section should be driven vertically plumb, through the center of the compost sock. Stakes should be placed at a maximum interval of 4 feet, or a maximum interval of 8 feet if the sock is placed in a 4 inch trench. See Figure 6.66b. The stakes should be driven to a minimum depth of 12 inches, with a minimum of 2 inches protruding above the compost sock.

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Practice Standards and Specifications

- In the event staking is not possible (i.e., when socks are used on pavement) heavy concrete blocks shall be used behind the sock to hold it in place during runoff events.
- If the compost sock is to be left as part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation using the seeding specification in the erosion and sedimentation control plan.
- Compost socks are not to be used in perennial or intermittent streams.

Maintenance
Inspect compost socks weekly and after each significant rainfall event (1/2 inch or greater). Remove accumulated sediment and any debris. The compost sock must be replaced if clogged or torn. If ponding becomes excessive, the sock may need to be replaced with a larger diameter or a different measure. The sock needs to be reinstalled if undermined or dislodged. The compost sock shall be inspected until land disturbance is complete and the area above the measure has been permanently stabilized.

DISPOSAL/RECYCLING
Compost media is a composted organic product recycled and manufactured from locally generated organic, natural, and biologically based materials. Once all soil has been stabilized and construction activity has been completed, the compost media may be dispersed with a loader, back loader or other sediment control device and may be incorporated into the soil as an amendment or left on the soil surface to aid in permanent seeding or landscaping. Leaving the compost media on site reduces removal and disposal costs compared to other sediment control devices. The mesh netting material will be extracted from the media and disposed of properly. The photodegradable mesh netting material will degrade in 2 to 5 years if left on site. Biodegradable mesh netting material is available and does not need to be extracted and disposed of, as it will completely decompose in approximately 6 to 12 months. Using biodegradable compost socks completely eliminates the need and cost of removal and disposal.

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Practice Standards and Specifications

Table 6.66a Compost Sock BMPs as Replacements for Current Erosion Control Practices

Compost Sock BMP	Conventional Application	Product Description	Example
Silt Socks	Silt Fence (on smaller areas)	A 3-dimensional sediment control measure used for sediment removal	
Inlet Socks	Inlet Protection	Designed to allow stormwater to enter inlets while removing sediment and protecting inlets from clogging	
Ditch Check	Rock Check Dams	Contours to ditch shape and eliminates gullies	

Table 6.66a Compost Sock BMPs as Replacements for Current Erosion Control Practices
Photo credits: Fitmix International

After filling, the compost sock must be staked in place. Oak or other durable hardwood stakes 2" X 2" in cross section should be driven vertically plumb, through the center of the compost sock. Stakes should be placed at a maximum interval of 4 feet, or a maximum interval of 8 feet if the sock is placed in a 4 inch trench. See Figure 6.66b. The stakes should be driven to a minimum depth of 12 inches, with a minimum of 2 inches protruding above the compost sock.

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PROJECT TEAM

ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NCDOT RESUBMITTAL
02-03-16	COW SITE RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NCDOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL

PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K CAROLINA BEACH

WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD WILMINGTON, NC

APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____



3/23/16

APPROVED CONSTRUCTION PLAN

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

SHEET NUMBER
C-5.2

PROJECT NUMBER
20151091

SHEET TITLE
EROSION CONTROL DETAILS



PROJECT NUMBER
20151091

SHEET TITLE
EROSION CONTROL DETAILS

SHEET NUMBER
C-5.2

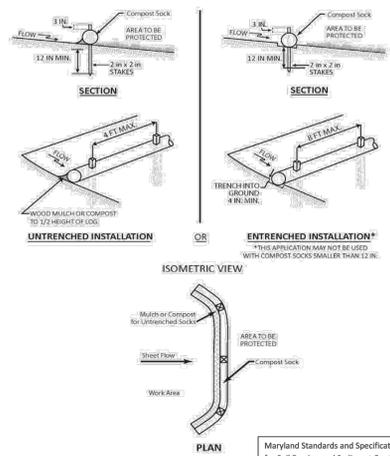


Figure 6.66b Compost Sock Installation

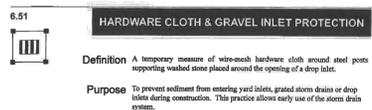
6.66.8

Rev. 013

- References**
- Chapter 3 Vegetative Considerations
 - Chapter 6 Practice Standard and Site Specifications
 - 6.10. Temporary Seeding
 - 6.11. Permanent Seeding
 - 6.17. Rolled Erosion Control Products
 - 6.18. Compost Blankets
- Tyler, R., A. Marks, B. Faucett, 2010. The Sustainable Site: Design Manual for Green Infrastructure and Low Impact Development Forester Press, Santa Barbara, CA.
- Fifield, J. 2001. Designing for Effective Sediment and Erosion Control on Construction Sites. Forester Press, Santa Barbara, CA.
- Maryland Department of Environment, Water Management Administration, 2011. Maryland Standards and Specifications for Soil Erosion and Sediment Control. Piles Ltd.

Rev. 013

6.66.9



Definition A temporary means of wire-mesh hardware cloth around steel posts used to prevent sediment from entering yard inlets, storm drains or drop inlets during construction. This practice allows early use of the storm drain system.

Purpose To prevent sediment from entering yard inlets, storm drains or drop inlets during construction. This practice allows early use of the storm drain system.

Conditions Where Practice Applies To be placed around a catch basin or a drop inlet and where the flow is light to moderate. If heavy flow is anticipated, use the rock droughnut inlet protection method (Practice 6.54, Rock Droughnut Inlet Protection). It is also used where storm drain inlets are to be made operational before permanent stabilization of the disturbed drainage area. This method of inlet protection is effective where the inlet is expected to drain shallow sheet flow. The immediate land area around the inlet should be relatively flat (less than 1 percent) and located so that accumulated sediment can be easily removed.

This practice must not be used near the edge of fill material and must not divert water over cut or fill slopes.

Design Criteria Ensure that drainage areas do not exceed 1 acre per inlet.

For securing the wire mesh hardware cloth barrier, use steel T posts. The posts need to be 1/2 inch diameter and with a minimum length of 5 feet. Make sure the posts have projections to facilitate fastening the hardware cloth. Securely drive each stake into the ground to a minimum depth of 2 feet. The maximum spacing for the posts is 4 feet.

The wire mesh should be at least a 19-gauge hardware cloth with a 1/4 inch mesh opening. The total height should be a minimum of 2 feet. Providing a flap of hardware cloth on the ground projecting away from the inlet can aid in removal of the stone at the project's completion. The sediment control stone, with a height of 16 inches, should have a smooth top of 2:1.

The top elevation of the structure must be at least 12 inches lower than the ground elevation down slope from the inlet. It is important that all storm flows pass over the structure into the storm drain and not bypass the structure. Temporary ditches below the structure may be necessary to prevent bypass flow. Soil excavated when constructing the sediment pool may be used for this purpose (Figure 6.51a).

Rev. 016

6.51.1

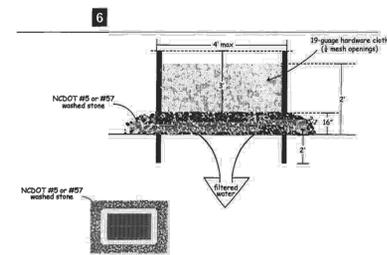


Figure 6.51b Hardware cloth and gravel inlet protection

- Construction Specifications**
- Uniformly grade a shallow depression approaching the inlet.
 - Drive 3-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. Placing a 2-foot flap of the wire mesh under the gravel for anchoring is recommended.
 - Place clean gravel (NC DOT #5 or #57 stone) on a 2:1 slope grade with a height of 16 inches around the wire, and smooth to an even grade.
 - Once the contributing drainage area has been stabilized, remove accumulated sediment, and establish final grading elevations.
 - Compact the area properly and stabilize it with groundcover.

Maintenance Inspect inlets at least weekly and after each significant (1/2 inch or greater) rainfall event. Clear the mesh wire of any debris or other objects to provide adequate flow for subsequent rains. Take care not to damage or undercut the wire mesh during sediment removal. Replace stone as needed.

- References**
- 6.52. Block and Gravel Inlet Protection
 - 6.54. Rock Droughnut Inlet Protection
- North Carolina Department of Transportation
Standard Specifications for Roads and Structures

6.51.2

Rev. 016

6.06

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

Purpose To provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads (Figure 6.06a).

Figure 6.06a Gravel entrance/exit keeps mud off public roads.



- Minimum Requirements**
- Material:** 2-3-inch washed stone over a stable foundation as specified in the plan.
 - Thickness:** 6 inches minimum (Figure 6.06b).
 - Width:** 12 ft minimum or full width of exit roadway, whichever is greater.
 - Length:** 50 ft minimum.
 - Washing facility (if required):** level area with 3-inch washed stone minimum, or a commercial rack. Divert waste water to a sediment trap or basin.

6.06.1

Temporary Gravel Construction Entrance/Exit

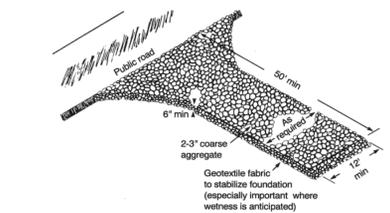


Figure 6.06b Plan of temporary construction entrance/exit.

Installation Avoid curves in public roads and steep slopes. Remove all vegetation and other objectionable material from the foundation area. Grade and crown foundation for positive drainage.

If the slope toward the road exceeds 2%, construct a ridge, 6 to 8 inches high with 3:1 side slopes, across the foundation approximately 15 ft from the entrance to divert runoff away from the public road (Figure 6.06c).

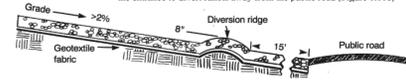


Figure 6.06c Temporary gravel construction entrance/exit with diversion ridge where grade exceeds 2%.

6.06.2

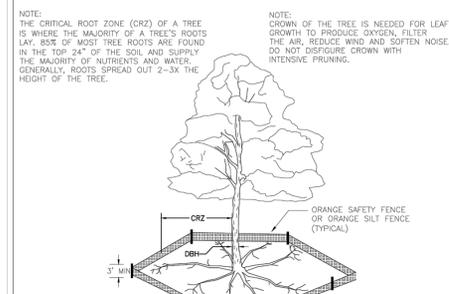


Figure 6.06c: A diagram showing a tree with its root zone (CRZ) and critical root zone (CRZ). The CRZ is the area around the tree trunk where the majority of roots are found. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep.

- NOTES:**
- PROTECT CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
 - CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
 - IF CONSTRUCTION OCCURS WITHIN THE CRZ, AT LEAST 12" OF MULCH AND/OR LOGGING MATS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.
 - WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS, SUCH AS A REINFORCED SIDEWALK, SHALL BE IMPLEMENTED AS NECESSARY.
 - FOR ALL TREES, CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO MATERIALS OR EQUIPMENT SHALL BE STORED BENEATH TREES. DAMAGING THE BARK WITH LAMINATORS, CONSTRUCTION EQUIPMENT, OR ANYTHING ELSE IS PROHIBITED. CONTRACTOR SHALL REPAIR DAMAGE TO TREES.
 - FALING TO INSTALL OR MAINTAIN PROTECTION MEASURES SHALL RESULT IN A STOP WORK ORDER AND FINE OF \$500/DAY. DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN WILL REQUIRE OWNER TO POST A LETTER OF CREDIT FOR 3 YRS FOR TREE MITIGATION.

STANDARD DETAIL

TREE PROTECTION DURING CONSTRUCTION

SHEET 1 of 2

SD 15-09

DATE: JAN, 2015
DRAWN BY: JBR
CHECKED BY: RDG, P.E.
SCALE: NOT TO SCALE

CITY OF WILMINGTON
NORTH CAROLINA
CITY OF WILMINGTON ENGINEERING
P.O. BOX 1810
WILMINGTON, NC 28402
(910) 341-7807

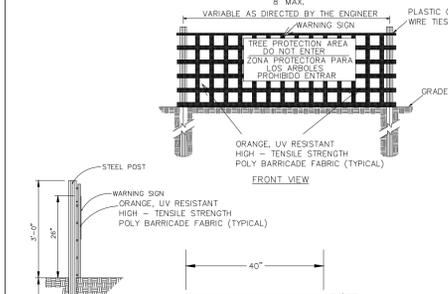


Figure 6.06c: A diagram showing a tree with its root zone (CRZ) and critical root zone (CRZ). The CRZ is the area around the tree trunk where the majority of roots are found. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep.

- NOTES:**
- THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
 - WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
 - SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 100' IN PERIMETER, PROVIDE NO LESS THAN TWO SIGNS PER PROTECTION AREA.
 - ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE AND SIGNS THROUGHOUT DURATION OF PROJECT.
 - TREE PROTECTION FENCING AND SIGNAGE SHALL BE REMOVED AFTER CONSTRUCTION.
 - ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF WILMINGTON, BASED ON ACTUAL FIELD CONDITIONS.

STANDARD DETAIL

TREE PROTECTION DURING CONSTRUCTION

SHEET 2 of 2

SD 15-09

DATE: JAN, 2015
DRAWN BY: JBR
CHECKED BY: RDG, P.E.
SCALE: NOT TO SCALE

CITY OF WILMINGTON ENGINEERING
P.O. BOX 1810
WILMINGTON, NC 28402
(910) 341-7807

SM-6 Stabilized Staging Area (SSA)

- STABILIZED STAGING AREA MAINTENANCE NOTES**
- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
 - THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE AND THE AREA COVERED WITH TOPSOIL, SEED, AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USFCO STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM IOWA/CANADA COUNTY, COLORADO, NOT AVAILABLE IN IOWA/CANADA)

Stabilized Staging Area (SSA) SM-6

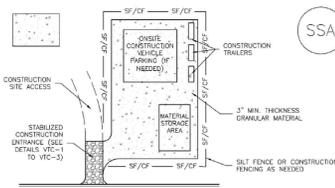


Figure 6.06c: A diagram showing a tree with its root zone (CRZ) and critical root zone (CRZ). The CRZ is the area around the tree trunk where the majority of roots are found. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep.

- STABILIZED STAGING AREA INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
 - LOCATION OF STAGING AREA(S).
 - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
 - STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
 - STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
 - THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
 - UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SPEC' #703, ASHIRT #3 COARSE AGGREGATE OR 8" (MINUS) ROCK.
 - ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

- STABILIZED STAGING AREA MAINTENANCE NOTES**
- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE. HIGH RAINFALL EVENTS SHOULD BE SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - ROCK SHALL BE REWORKED OR REDESIGNED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

Concrete Washout Area (CWA) MM-1

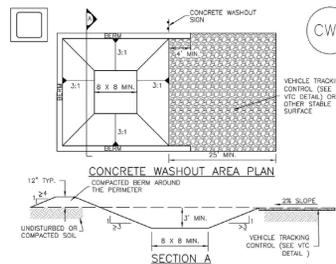


Figure 6.06c: A diagram showing a tree with its root zone (CRZ) and critical root zone (CRZ). The CRZ is the area around the tree trunk where the majority of roots are found. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep. The CRZ is 24 inches wide and 24 inches deep.

- CWA-1. CONCRETE WASHOUT AREA**
- CWA INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
 - CWA INSTALLATION LOCATION.
 - DO NOT LOCATE AN UNARMED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS UNDESIRABLE OR IF IT IS NEARLY IMPOSSIBLE TO AVOID, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (18 MIL MIN. THICKNESS) OR SURFACE STORAGE AT ANOTHER UNPROTECTED CONCRETE WASHOUT DETAIL OR ON A LINED ABOVE GROUND STORAGE AREA SHOULD BE USED.
 - THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
 - CWA SHALL INCLUDE A FLAT SURFACE OF AT LEAST 8" BY 8" SQUARE LEADING OUT OF THE SURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3 DEE.
 - BENCH SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
 - VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARD THE CWA.
 - SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE AT THE CWA AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRUCKS.
 - USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

MM-1 Concrete Washout Area (CWA)

- CWA MAINTENANCE NOTES**
- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE. HIGH RAINFALL EVENTS SHOULD BE SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
 - CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
 - THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
 - WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USFCO STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

1430 W. Peachtree St. NW
Suite 200
Atlanta, GA 30309
t: 404 601 4000 f: 404 601 3970

PROJECT TEAM

ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NC DOT RESUBMITTAL
02-03-16	COW SITE RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NC DOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL

PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K CAROLINA BEACH



3/23/16

PROFESSIONAL IN CHARGE
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PROJECT NAME
CIRCLE K CAROLINA BEACH

WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
EROSION CONTROL DETAILS

SHEET NUMBER
C-5.3

APPROVED CONSTRUCTION PLAN

Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

DATE	DESCRIPTION
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CIRCLE K
CAROLINA BEACH

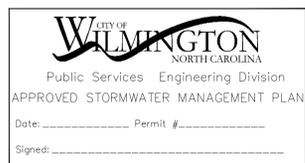
WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
EROSION CONTROL
DETAILS

SHEET NUMBER
C-5.4



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

6.15

Figure 6.15d
Spread by hand or machine; must be tacked or tied down.

Common Trouble Points

- Excavation not deep enough—riprap blocks channel, resulting in erosion along edges.
- Slope too steep—results in stone displacement. **Do not use riprap as a retaining wall.**
- Foundation not properly smoothed for filter placement—results in damage to filter.
- Filter omitted or damaged—results in piping or slumping (Figure 6.15d).

Maintenance

Inspect periodically for displaced stones, slumping, and erosion at edges, especially downstream or downslope. Properly designated and installed riprap usually requires very little maintenance if repaired promptly.

6.15.5

6.15

Figure 6.15c
Placement of channel riprap.

Common Trouble Points

- Excavation not deep enough—riprap blocks channel, resulting in erosion along edges.
- Slope too steep—results in stone displacement. **Do not use riprap as a retaining wall.**
- Foundation not properly smoothed for filter placement—results in damage to filter.
- Filter omitted or damaged—results in piping or slumping (Figure 6.15d).

Maintenance

Inspect riprap outlet structures after heavy rains for erosion at sides and ends of apron and for stone displacement. Make repairs immediately using appropriate stone sizes. Do not place stones above finished grade.

6.15.4

6.15

Table 6.15a
NC DOT Classes of Riprap and Erosion Control Stone

Riprap		Erosion Control Stone	
Class 1	Class 2	Class A	Class B
5 to 200 lb	25 to 250 lb	2" to 6"	5" to 15"
30% shall weigh a minimum of 60 lb each	60% shall weigh a minimum of 100 lb each		
No more than 10% shall weigh less than 15 lb each	No more than 5% shall weigh less than 50 lb each	10% tolerance top and bottom sizes	
		Equally distributed, no gradation specified	Equally distributed, no gradation specified

Source: NC Aggregates Association

Figure 6.15b
Riprap slope protection.

Common Trouble Points

- Foundation not excavated deep enough or wide enough—riprap restricts flow cross section, resulting in erosion around apron and scour holes at outlet.
- Riprap apron not on zero grade—causes erosion downstream.
- Stones too small or not properly graded—results in movement of stone and downstream erosion.
- Riprap not extended far enough to reach a stable section of channel—results in downstream erosion.
- Appropriate filter not installed under riprap—results in stone displacement and erosion of foundation.

Maintenance

Inspect riprap outlet structures after heavy rains for erosion at sides and ends of apron and for stone displacement. Make repairs immediately using appropriate stone sizes. Do not place stones above finished grade.

6.41.3

6.15.2

Table 6.15a
NC DOT Classes of Riprap and Erosion Control Stone

Riprap		Erosion Control Stone	
Class 1	Class 2	Class A	Class B
5 to 200 lb	25 to 250 lb	2" to 6"	5" to 15"
30% shall weigh a minimum of 60 lb each	60% shall weigh a minimum of 100 lb each		
No more than 10% shall weigh less than 15 lb each	No more than 5% shall weigh less than 50 lb each	10% tolerance top and bottom sizes	
		Equally distributed, no gradation specified	Equally distributed, no gradation specified

Source: NC Aggregates Association

Installation

Subgrade Preparation

Remove brush, trees, stumps, and other objectionable materials. Excavate deep enough for both filter and riprap. Compact any fill material to the density of surrounding undisturbed soil.

NOTE: Over-excavation to allow for riprap and filter increases the amount of spoil considerably (reference Practice 6.31, *Riprap-lined Channels*).

Cut a keyway in stable material at base of slope to reinforce the toe. Keyway depth should be 1.5 times the design thickness of riprap and should extend a horizontal distance equal to the design thickness (Figure 6.15b).

Filter

Install synthetic filter fabric or a sand/gravel filter on subgrade as specified in plans.

6.15.2

6.15

Figure 6.15a
Riprap provides immediate protection of disturbed slopes.

Purpose

To protect slopes, streambanks, channels, or areas subject to erosion by wave action (Figure 6.15a).

Minimum Requirements

- Stone: hard, angular, weather-resistant; specific gravity at least 2.5.
- Gradation: well-graded stone, 50% by weight larger than the specified d_{50} . The largest stones should not exceed 1.5 times the d_{50} specified (Table 6.15a).
- Filter: heavy-duty filter fabric or aggregate layer as specified in the plan is required under all permanent riprap installations.
- Slope: 2:1 or flatter, unless approved in plan.
- Thickness: 1.5 times the maximum stone diameter, minimum, or as specified in the plan.

6.15.1

6.41

Figure 6.41a
Riprap outlet stabilization structure prevents erosion by reducing velocity of concentrated flow.

Purpose

To reduce velocity and prevent erosion at the outlet of a channel, culvert, or other high-velocity section.

Minimum Requirements

- Capacity: peak runoff from 10-yr storm.
- Apron: as shown in plans, set on zero grade, aligned straight, with sufficient length to dissipate energy (Figures 6.41b and 6.41c).
- Foundation: extra-strength filter fabric or well-graded gravel filter layer, 6 inches thick, minimum.
- Material: hard, angular, and highly weather-resistant stone (riprap) with specific gravity at least 2.5. Stone size as specified in plans.
- Thickness: as shown in plans, at least 1.5 times the maximum stone diameter.

6.41.1

6.41

Figure 6.41b
Riprap slope protection.

Common Trouble Points

- Foundation not excavated deep enough or wide enough—riprap restricts flow cross section, resulting in erosion around apron and scour holes at outlet.
- Riprap apron not on zero grade—causes erosion downstream.
- Stones too small or not properly graded—results in movement of stone and downstream erosion.
- Riprap not extended far enough to reach a stable section of channel—results in downstream erosion.
- Appropriate filter not installed under riprap—results in stone displacement and erosion of foundation.

Maintenance

Inspect riprap outlet structures after heavy rains for erosion at sides and ends of apron and for stone displacement. Make repairs immediately using appropriate stone sizes. Do not place stones above finished grade.

6.41.4

6.41

Figure 6.41c
Riprap slope protection.

Common Trouble Points

- Foundation not excavated deep enough or wide enough—riprap restricts flow cross section, resulting in erosion around apron and scour holes at outlet.
- Riprap apron not on zero grade—causes erosion downstream.
- Stones too small or not properly graded—results in movement of stone and downstream erosion.
- Riprap not extended far enough to reach a stable section of channel—results in downstream erosion.
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Maintenance

Inspect riprap outlet structures after heavy rains for erosion at sides and ends of apron and for stone displacement. Make repairs immediately using appropriate stone sizes. Do not place stones above finished grade.

6.41.3

6.41

Figure 6.41a
Riprap outlet stabilization structure prevents erosion by reducing velocity of concentrated flow.

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To reduce velocity and prevent erosion at the outlet of a channel, culvert, or other high-velocity section.

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6.41.1

6.41

Figure 6.41a
Riprap outlet stabilization structure prevents erosion by reducing velocity of concentrated flow.

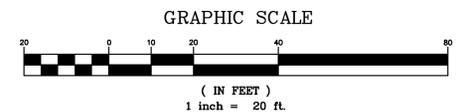
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- Material: hard, angular, and highly weather-resistant stone (riprap) with specific gravity at least 2.5. Stone size as specified in plans.
- Thickness: as shown in plans, at least 1.5 times the maximum stone diameter.

6.41.1



EXISTING LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- EDGE OF PAVEMENT
- CURB AND GUTTER
- PROPERTY LINE
- ADJACENT PROPERTY LINE (NOT SURVEYED)
- SWALE / DITCH LINE
- SANITARY SEWER
- STORM SEWER
- OVERHEAD ELECTRIC
- UNDERGROUND COMMUNICATION SERVICE
- UNDERGROUND GAS SERVICE
- UNDERGROUND ELECTRIC SERVICE
- WATER
- IRON REBAR FOUND
- IRON PIPE FOUND
- FLAT / FIELD
- UTILITY POLE
- GUY ANCHOR WIRE
- SIGN
- CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
- STORM DRAIN MANHOLE (SDMH)
- SANITARY SEWER MANHOLE (SMH)
- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- TREE TRUNK
- CONCRETE
- END SECTIONS

PROPOSED LEGEND:

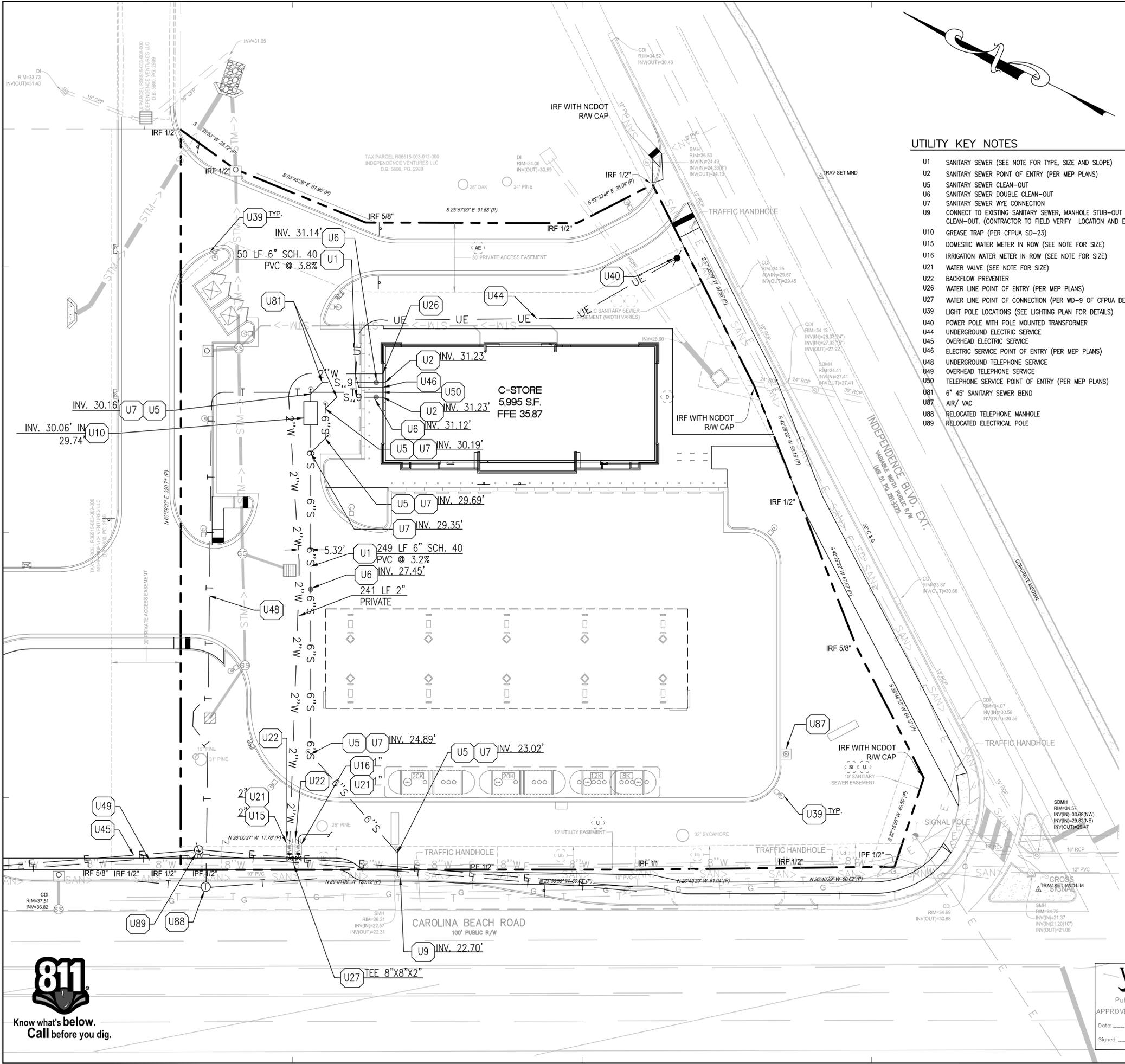
- PROPERTY LINE
 - PROPOSED CURB & GUTTER
 - GAS LINES
 - TELEPHONE LINES
 - 6" S SANITARY SEWER LINES
 - WATER LINES
 - UNDERGROUND ELECTRIC LINES
 - DOUBLE CLEAN OUT
 - CLEAN OUT
 - LIGHT POLES
- NOTE: ALL PROPOSED FLOWLINES HAVE A BASE ELEVATION OF XXXX.XX FEET

GENERAL UTILITY NOTES:

- CONTRACTOR IS TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND ENSURE NO CONFLICTS EXIST WITH PROPOSED IMPROVEMENTS. NOTIFY ENGINEER IMMEDIATELY IF UTILITIES ARE LOCATED DIFFERENTLY THAN SHOWN. THE CONTRACTOR SHALL COORDINATE WITH EACH RESPECTIVE UTILITY COMPANY IN ORDER TO RELOCATE IF NEEDED IN CONFORMANCE WITH THEIR GUIDELINES.
- CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO THE REMOVAL OF INDICATED UTILITIES ON SITE (SEE DEMOLITION PLAN). CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS REQUIRED FOR DEMOLITION AND HAUL OFF FROM THE APPROPRIATE AUTHORITIES.
- AUTHORIZATION MUST BE OBTAINED FROM THE CAP FEAR PUBLIC UTILITY AUTHORITY TO CONSTRUCT, ALTER OR MODIFY A WATER OR SEWER LINE. - APPROVAL OF SUBMITTED PLANS.
- AT THE COMPLETION OF THE WATER AND/OR SEWER CONSTRUCTION AND PRIOR TO RECORDING THE FINAL PLAT, THE CONTRACTOR WILL FURNISH THE WATER SYSTEM INSPECTOR RECORD DRAWINGS OF THE PROJECT.
- BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE GAS COMPANY FOR THE CONSTRUCTION OF THE GAS LINE BETWEEN METER AND MAIN.
- BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE POWER COMPANY FOR THE CONSTRUCTION OF ELECTRICAL CONDUIT TO PROVIDE SERVICE TO THE TRANSFORMER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING, PRIOR TO CONSTRUCTION, ALL EXISTING LOCATIONS AND INVERT ELEVATIONS OF SANITARY SEWERS, STORM DRAINAGE, AND WATER MAINS. IF ANY INVERT ELEVATION VARIES MORE THAN 0.1 FT. FROM RECORD ELEVATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. WORK SHALL NOT PROCEED UNTIL THE CONTRACTOR IS NOTIFIED BY THE ENGINEER.
- CONNECT TO EXISTING UTILITIES AND INSTALL UTILITIES IN COMPLIANCE WITH REQUIREMENTS OF APPROPRIATE JURISDICTIONAL AGENCIES.
- COORDINATE WITH BUILDING PLANS TO ASSURE ACCURACY OF UTILITY CONNECTIONS AND COMPLIANCE WITH LOCAL CODES.
- ALL SEWERS TO BE MAINTAINED THROUGHOUT CONSTRUCTION, INCLUDING CLEANING OF ANY SILT OR DEBRIS ACCUMULATED IN STRUCTURES.
- ALL SURPLUS EXCAVATED MATERIAL FROM THE TRENCH SHALL BE DISPOSED OFF THE SITE BY CONTRACTOR.
- COORDINATE EXACT TRENCHING, ROUTING, AND POINT OF TERMINATION WITH ALL UTILITY COMPANIES.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING UTILITY LOCATES.

UTILITY KEY NOTES

- U1 SANITARY SEWER (SEE NOTE FOR TYPE, SIZE AND SLOPE)
- U2 SANITARY SEWER POINT OF ENTRY (PER MEP PLANS)
- U5 SANITARY SEWER CLEAN-OUT
- U6 SANITARY SEWER DOUBLE CLEAN-OUT
- U7 SANITARY SEWER WYE CONNECTION
- U9 CONNECT TO EXISTING SANITARY SEWER, MANHOLE STUB-OUT OR CLEAN-OUT. (CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION)
- U10 GREASE TRAP (PER CFPWA SD-23)
- U15 DOMESTIC WATER METER IN ROW (SEE NOTE FOR SIZE)
- U16 IRRIGATION WATER METER IN ROW (SEE NOTE FOR SIZE)
- U21 WATER VALVE (SEE NOTE FOR SIZE)
- U22 BACKFLOW PREVENTER
- U26 WATER LINE POINT OF ENTRY (PER MEP PLANS)
- U27 WATER LINE POINT OF CONNECTION (PER WD-9 OF CFPWA DETAIL)
- U39 LIGHT POLE LOCATIONS (SEE LIGHTING PLAN FOR DETAILS)
- U40 POWER POLE WITH POLE MOUNTED TRANSFORMER
- U44 UNDERGROUND ELECTRIC SERVICE
- U45 OVERHEAD ELECTRIC SERVICE
- U46 ELECTRIC SERVICE POINT OF ENTRY (PER MEP PLANS)
- U48 UNDERGROUND TELEPHONE SERVICE
- U49 OVERHEAD TELEPHONE SERVICE
- U50 TELEPHONE SERVICE POINT OF ENTRY (PER MEP PLANS)
- U81 6" 45' SANITARY SEWER BEND
- U87 AIR/ VAC
- U88 RELOCATED TELEPHONE MANHOLE
- U89 RELOCATED ELECTRICAL POLE



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03-23-16	ENGINEERING RESUBMITTAL

PROFESSIONAL SEAL



PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, ET

PROJECT NAME
CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
UTILITY PLAN

SHEET NUMBER
C-6.0

NOT ISSUED FOR CONSTRUCTION

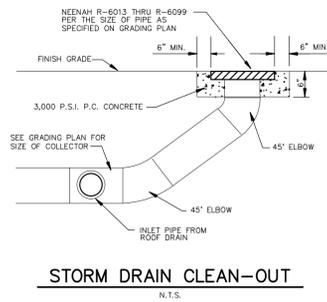


CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____
Signed: _____

Approved Construction Plan

Name	Date
Planning	_____
Traffic	_____
Fire	_____



Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

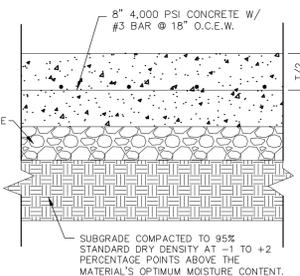
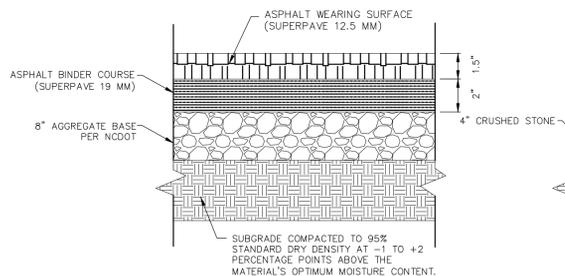
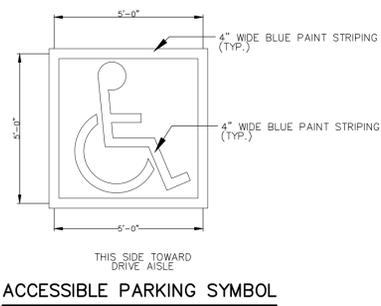
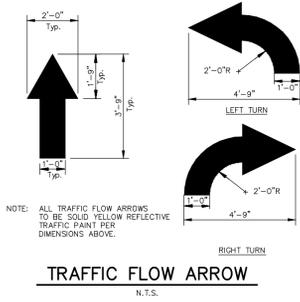
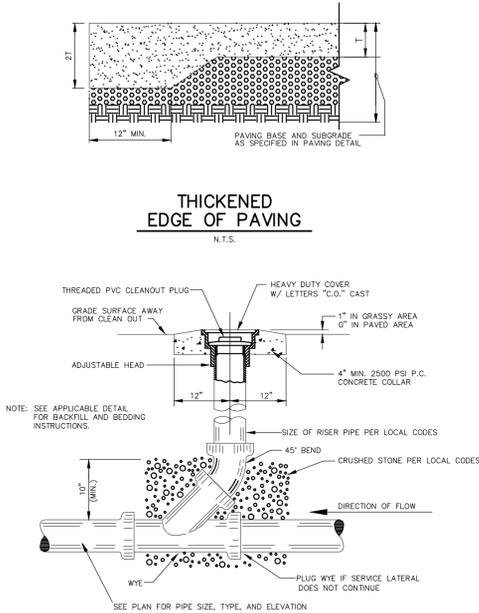
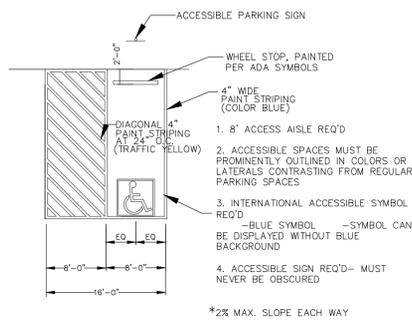
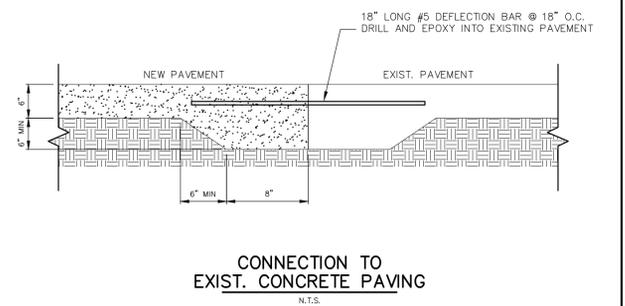
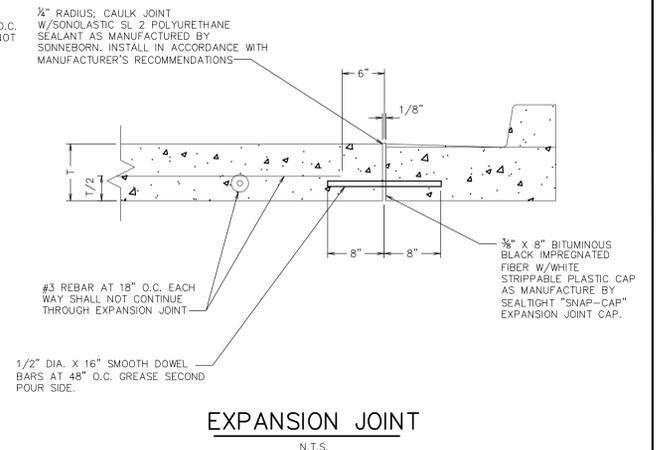
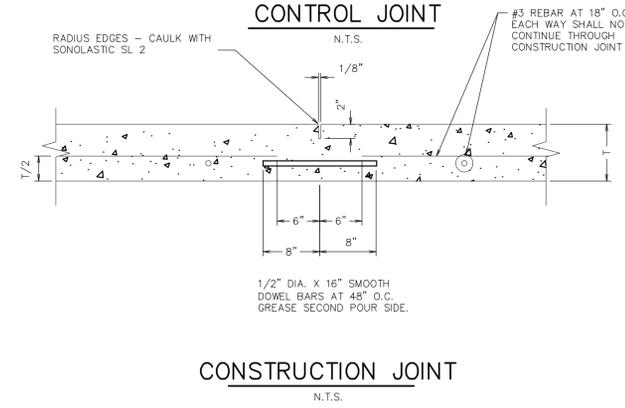
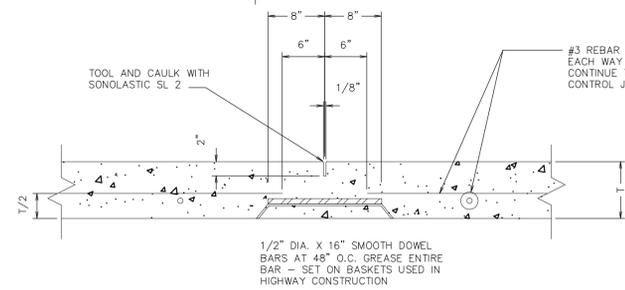
CITY OF WILMINGTON
NORTH CAROLINA

Public Services Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

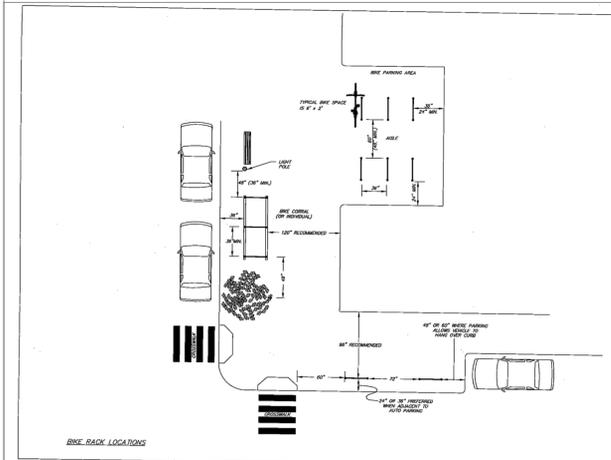
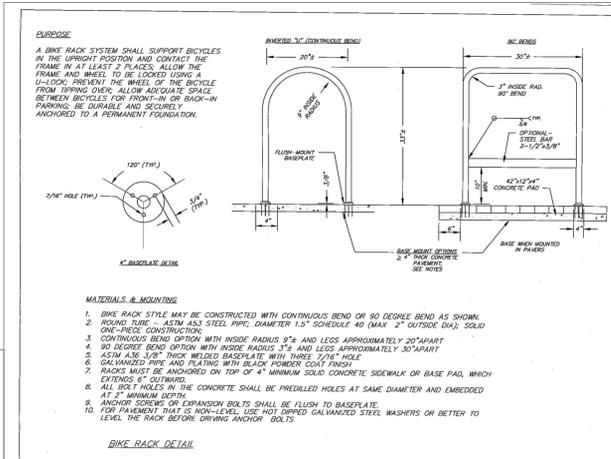
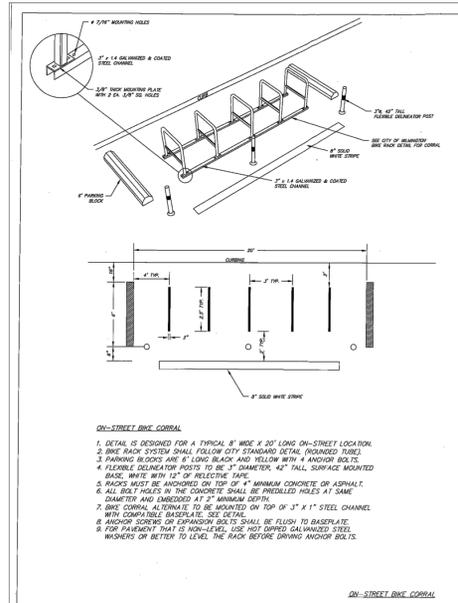
Date: _____ Permit # _____

Signed: _____



PAVING NOTES:

1. CONCRETE SHALL BE AIR-ENTRAINED WITH 6% (+/-1%) AIR WITH MINIMUM CEMENT CONTENT OF 6 SACKS PER CUBIC YARD.
2. SUBGRADE SOIL SHALL BE SCARIFIED TO A DEPTH OF AT LEAST 12".
3. PAVING MATERIALS AND PROCEDURES SHOULD CONFORM TO THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION"



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LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K CAROLINA BEACH

WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
DETAIL SHEET

SHEET NUMBER
C-7.0

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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
CONCRETE JUNCTION BOX
(WITH OPTIONAL MANHOLE)
12" THRU 66" PIPE

GENERAL NOTES:
CHAMFER ALL EXPOSED CORNERS 1".
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOBELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" OR GREATER IN ACCORDANCE WITH STD. NO. 840.06.
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E., STATIONAL BARS BENT AND BENT UP TO THE TOP SLAB, ADDITIONAL WATERABLE HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.)
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

DIMENSIONS OF BOX AND PIPE		DIMENSIONS AND QUANTITIES FOR CONCRETE JUNCTION BOXES	
PIPE	SPAN	REINFORCEMENT BARS	TOP SLAB DIMENSIONS
D	A	B	H
12"	2'-0"	2'-0"	2'-9"
15"	2'-3"	2'-3"	2'-6"
18"	2'-6"	2'-6"	2'-9"
24"	3'-0"	3'-0"	3'-3"
30"	3'-6"	3'-6"	3'-9"
36"	4'-0"	4'-0"	4'-3"
42"	4'-6"	4'-6"	4'-9"
48"	5'-0"	5'-0"	5'-3"
54"	5'-6"	5'-6"	5'-9"
60"	6'-0"	6'-0"	6'-3"
66"	7'-1"	7'-1"	6'-9"

ENGLISH STANDARD DRAWING FOR
CONCRETE JUNCTION BOX
(WITH OPTIONAL MANHOLE)
12" THRU 66" PIPE

SHEET 1 OF 1
840.31

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
CONCRETE DROP INLET
12" THRU 30" PIPE

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" OR GREATER.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOBELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
CONSTRUCT WITH PIPE CROWN MATCHING.
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
INSTALL 2" WEEP HOLES AS DIRECTED BY THE ENGINEER.
INSTALL STONE GRATES, OF A RETURN OF 1 CURB FOOT OF NO. 7MM STONE IN A PAVED FURNISH OR ON GRASS, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

DIMENSIONS OF BOX & PIPE		DIMENSIONS AND QUANTITIES FOR DROP INLET (BASED ON MIN. HEIGHT, H)	
PIPE	SPAN	MIN. HEIGHT	CONC. IN BOX
D	A	B	H
12"	3'-0"	2'-0"	2'-0"
15"	3'-3"	2'-3"	2'-3"
18"	3'-6"	2'-6"	2'-6"
24"	3'-0"	2'-0"	3'-0"
30"	3'-0"	2'-0"	3'-0"

ENGLISH STANDARD DRAWING FOR
CONCRETE DROP INLET
12" THRU 30" PIPE

SHEET 1 OF 1
840.14

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" OR GREATER.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOBELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
PIPE 24" IN DEPTH OR LESS USE 6" WALLS AND BOTTOM SLAB, OVER 24" TO 48" DEPTH USE 8" WALLS AND BOTTOM SLAB, OVER 48" TO 54" DEPTH USE 10" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
CONSTRUCT WITH PIPE CROWN MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER)			
PIPE	SPAN	WIDTH	MIN. HEIGHT
D	A	B	H
12"	3'-0"	2'-0"	2'-0"
15"	3'-3"	2'-3"	2'-3"
18"	3'-6"	2'-6"	2'-6"
24"	3'-0"	2'-0"	3'-0"
30"	3'-0"	2'-0"	3'-0"
36"	3'-0"	2'-0"	3'-0"
42"	3'-0"	2'-0"	3'-0"
48"	3'-0"	2'-0"	3'-0"
54"	3'-0"	2'-0"	3'-0"

ENGLISH STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

SHEET 2 OF 2
840.02

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TYPICAL ROAD REBUILD
12" THRU 30" PIPE

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" OR GREATER.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOBELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
CONSTRUCT WITH PIPE CROWN MATCHING.
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
INSTALL 2" WEEP HOLES AS DIRECTED BY THE ENGINEER.
INSTALL STONE GRATES, OF A RETURN OF 1 CURB FOOT OF NO. 7MM STONE IN A PAVED FURNISH OR ON GRASS, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

STANDARD CURB & GUTTER AS REQUIRED
MATCH EXISTING ASPHALT OR 2" MIN.
SHOULDER EXTENSION AS REQUIRED
1'-0" LANE
1'-0" LANE
1'-0" VARIES
CUT 1-1/2:1
FILL 2:1
6" CONTINUOUS ABC BASE
12" COMPACTED SUBBASE
OVERFILL
PIPE

NOTES:
1. PAVEMENT RESTORATION DESIGN IS DEPENDENT ON CITY STREET CUT POLICY AND PERMITTED CONDITIONS.
2. PIPE TRENCH AND COMPACTION REQUIREMENTS PER SPECIFICATIONS. SEE SD 1-07 AND SD1-05.

DATE: MAY, 2013
DRAWN BY: JSR
CHECKED BY: B.R., P.E.
SCALE: NOT TO SCALE

CITY OF WILMINGTON
NORTH CAROLINA
CITY OF WILMINGTON ENGINEERING
212 OPERATIONS CENTER DR.
WILMINGTON, NC 28412
(910) 341-7807

SD 1-04

Approved Construction Plan

Name: _____ Date: _____

Planning: _____

Traffic: _____

Fire: _____

CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____

ROCK RIP RAP
N.T.S.

PLACE RIP-RAP IN ALL AREAS INDICATED ON THE DRAWING. THE STONE SHALL CONSIST OF FIELD STONE OR ROUGH UNIFORM QUARRY STONE AS NEARLY UNIFORM IN SECTION AS IS PRACTICAL. THE STONES SHALL BE DENSE, RESISTANT TO THE ACTION OF AIR AND WATER, AND SUITABLE IN ALL ASPECTS FOR THE PURPOSE INTENDED, UNLESS OTHERWISE SPECIFIED. ALL STONES USED AS RIP-RAP SHALL WEIGH BETWEEN 50-150 POUNDS EACH, AND AT LEAST 60 PERCENT OF THE STONES SHALL WEIGH MORE THAN 100 POUNDS EACH.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" OR GREATER.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOBELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
PIPE 24" IN DEPTH OR LESS USE 6" WALLS AND BOTTOM SLAB, OVER 24" TO 48" DEPTH USE 8" WALLS AND BOTTOM SLAB, OVER 48" TO 54" DEPTH USE 10" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
CONSTRUCT WITH PIPE CROWN MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

BACK OF CURB
TOP ELEVATION
SECTION X-X
SECTION Y-Y
SECTION J-J
SECTION M-M

ENGLISH STANDARD DRAWING FOR
CONCRETE CATCH BASIN
12" THRU 54" PIPE

SHEET 1 OF 2
840.02

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
STANDARD CURB SECTION TYPE "A"

STANDARD CURB SECTION TYPE "A"

DATE: 2001
DRAWN BY: JSR/CMR
CHECKED BY: B.P., P.E.
SCALE: NOT TO SCALE

CITY OF WILMINGTON
ENGINEERING OFFICE
305 CHESTNUT STREET
PO. BOX 1810
WILMINGTON, N.C. 28402
(910) 341-7807

SD 7-01

STANDARD CROSSWALK

STOP BAR
WHEEL CHAIR RAMPS
SIDEWALK
8" WHITE CROSSWALK LINES
6" MINIMUM PEDESTRIAN CROSSWALK
4" MINIMUM PARALLEL TO CROSSWALK

HIGH-VISIBILITY CROSSWALK

SIDEWALK
WHEEL CHAIR RAMP
24" WHITE CROSSWALK LINE
24" GAP
24" WHITE CROSSWALK LINE
10' MINIMUM WIDTH

LEGEND
DIRECTION OF TRAFFIC FLOW
PAVEMENT MARKING SYMBOLS

DATE: 2001
DRAWN BY: RLB
CHECKED BY: DRW/RP
SCALE: NOT TO SCALE

CITY OF WILMINGTON
ENGINEERING OFFICE
305 CHESTNUT STREET
PO. BOX 1810
WILMINGTON, N.C. 28402
(910) 341-7807

SD 11-11

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PAVEMENT MARKINGS WHEEL CHAIR RAMPS
12" THRU 54" PIPE

PAVEMENT MARKINGS WHEEL CHAIR RAMPS

DATE: 2001
DRAWN BY: RLB
CHECKED BY: DRW/RP
SCALE: NOT TO SCALE

CITY OF WILMINGTON
ENGINEERING OFFICE
305 CHESTNUT STREET
PO. BOX 1810
WILMINGTON, N.C. 28402
(910) 341-7807

SD 11-11



3/23/16

PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K CAROLINA BEACH

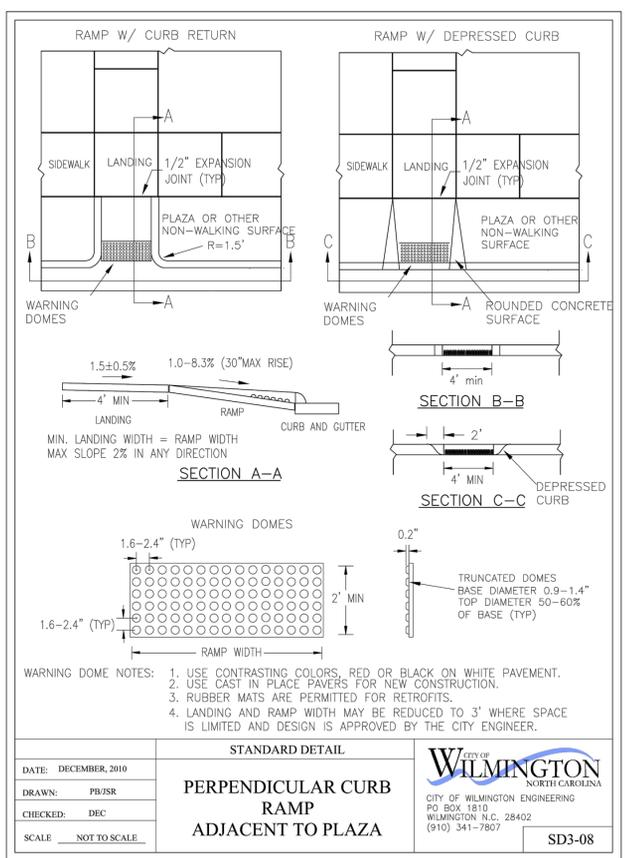
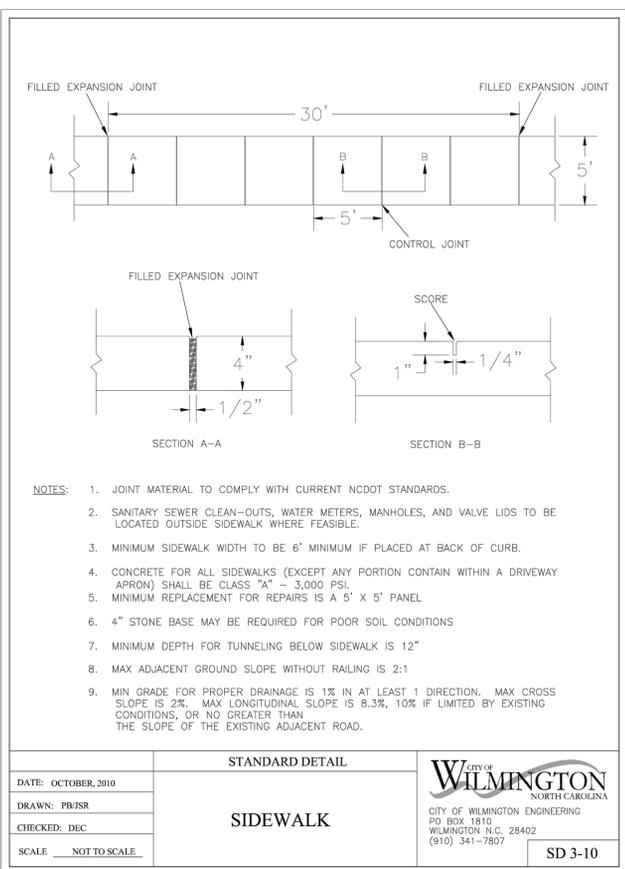
WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
DETAIL SHEET

SHEET NUMBER
C-7.1

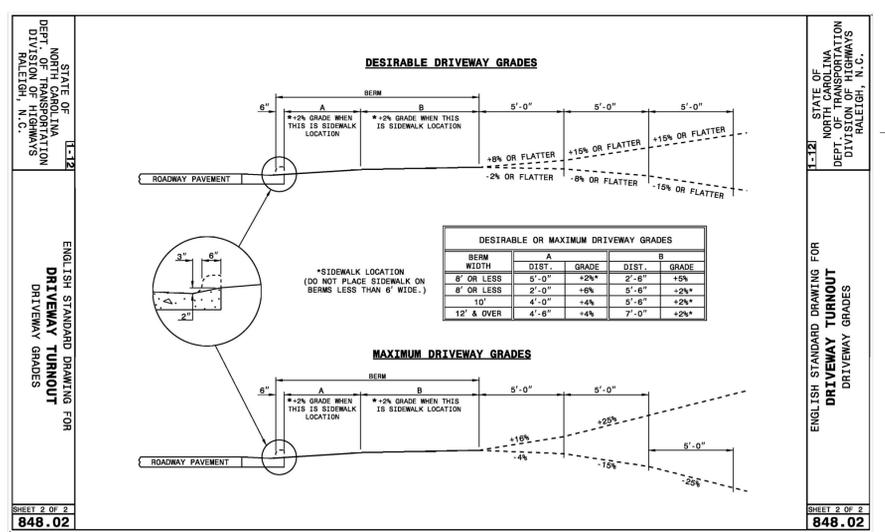
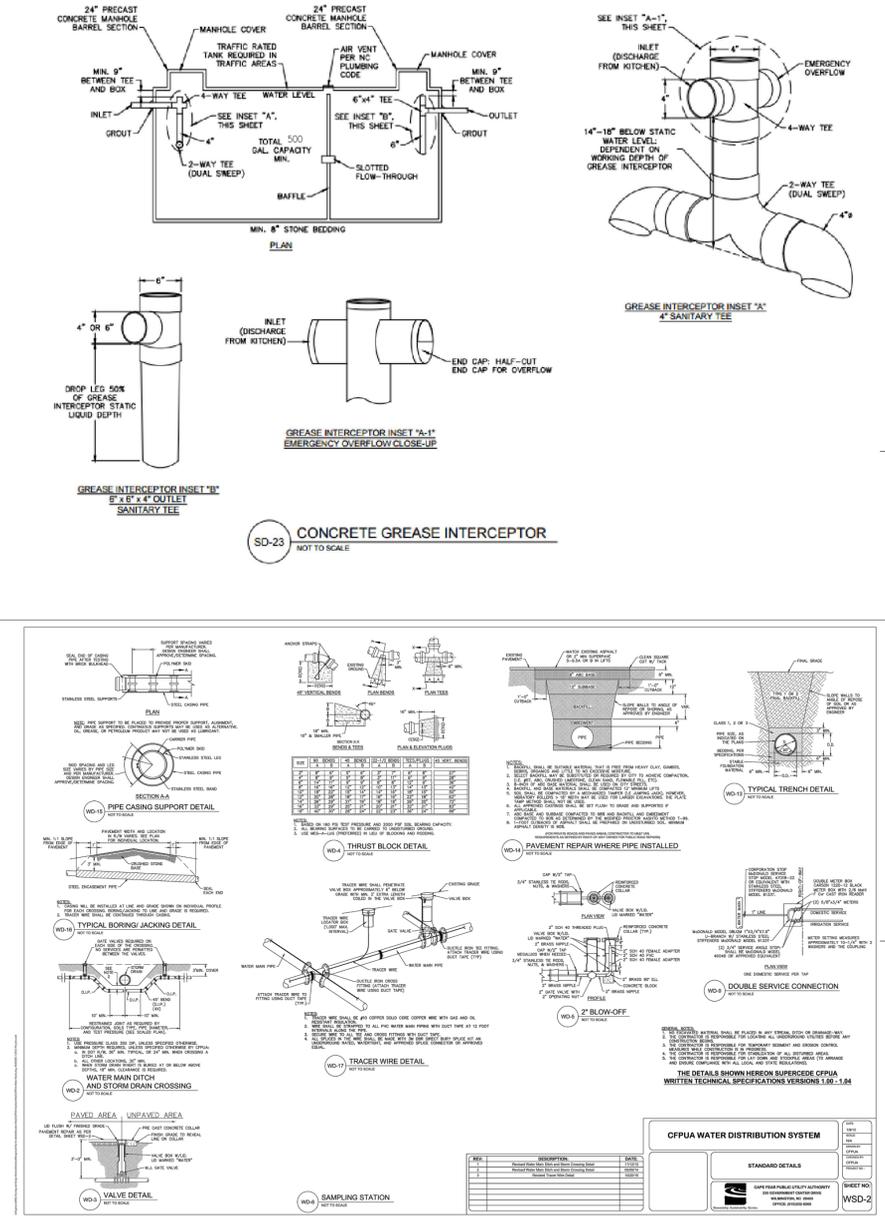
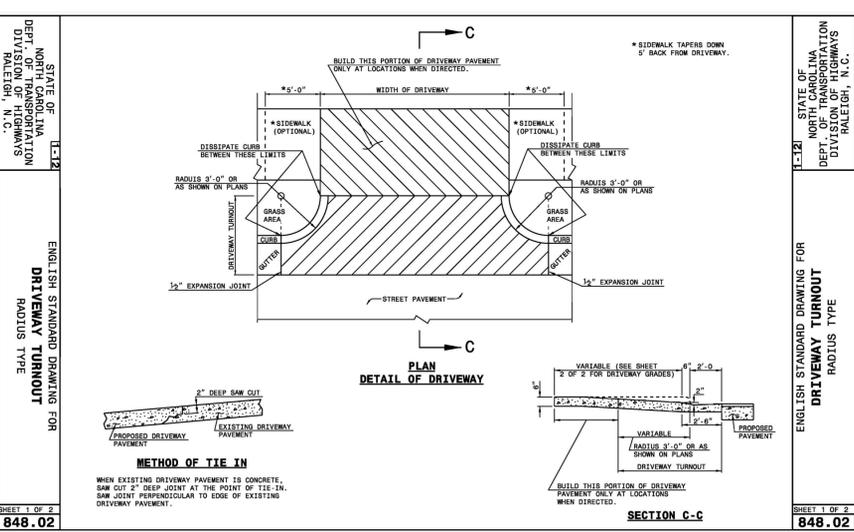
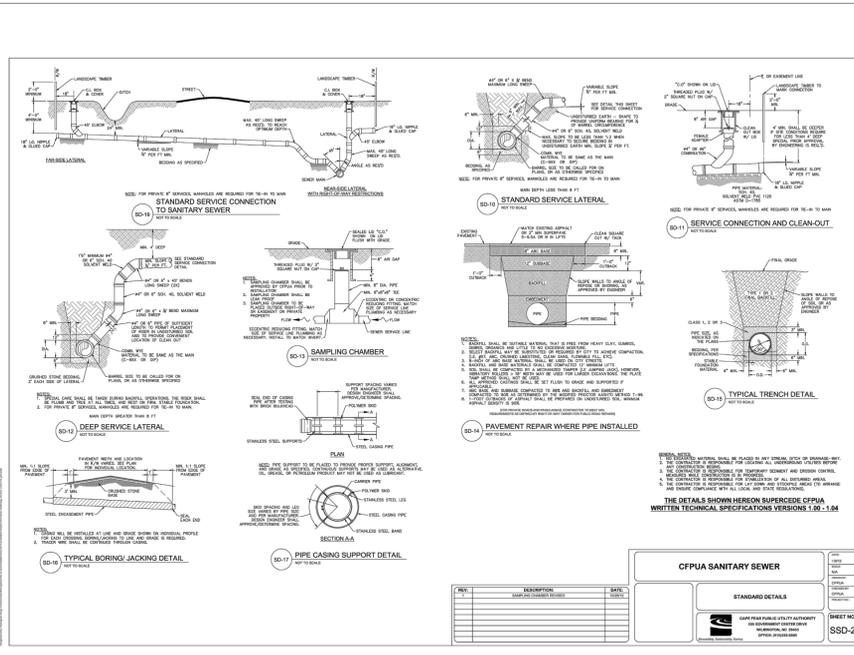


Approved Construction Plan
Name _____ Date _____

Planning _____
Traffic _____
Fire _____

CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____
Signed: _____



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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NC DOT RESUBMITTAL
02-03-16	COW SITE RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NC DOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL



PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, ET

PROJECT NAME
CIRCLE K CAROLINA BEACH

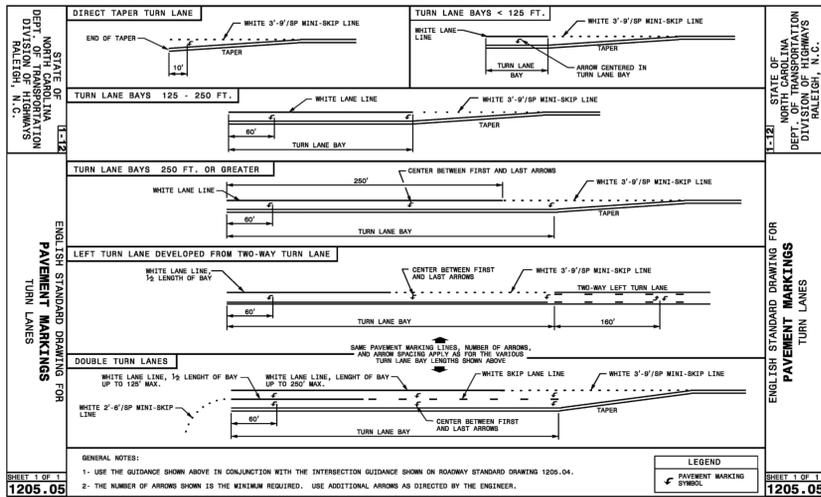
WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
DETAIL SHEET

SHEET NUMBER
C-7.2



Approved Construction Plan

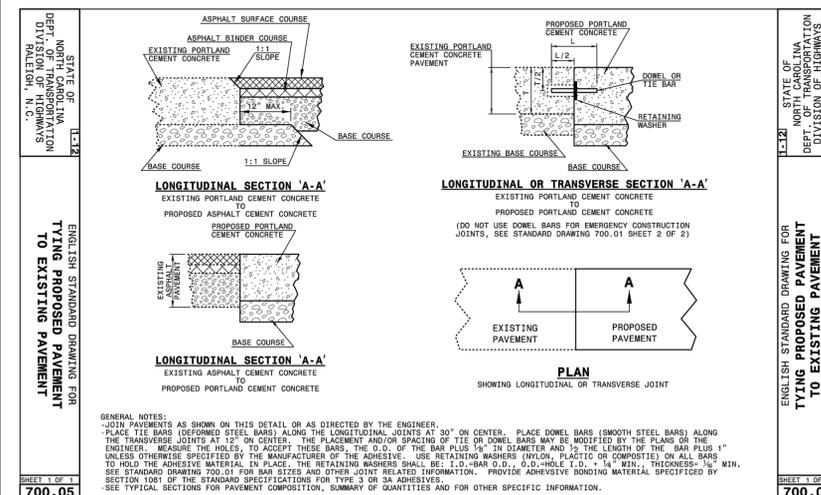
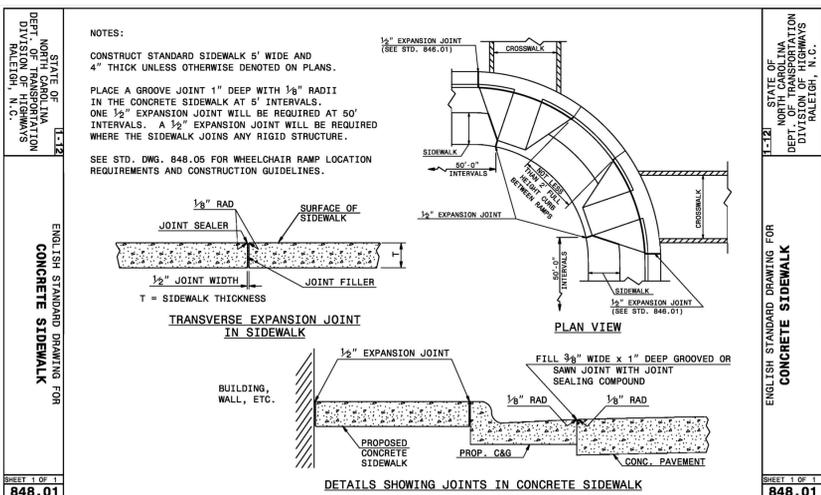
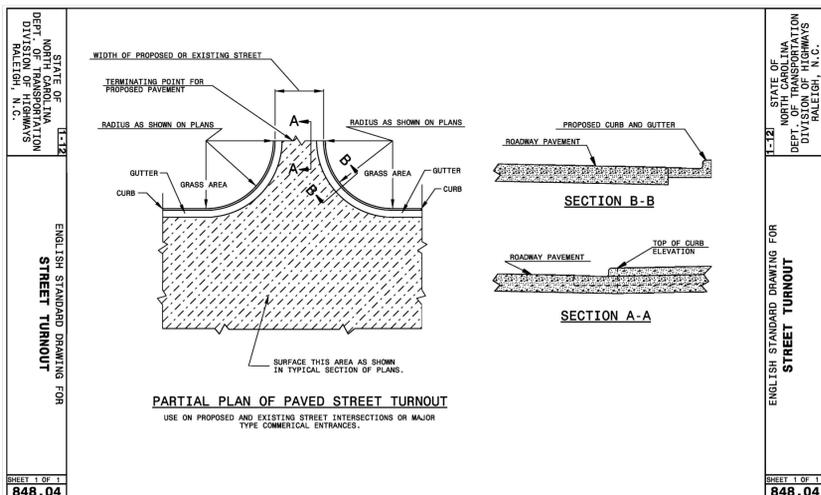
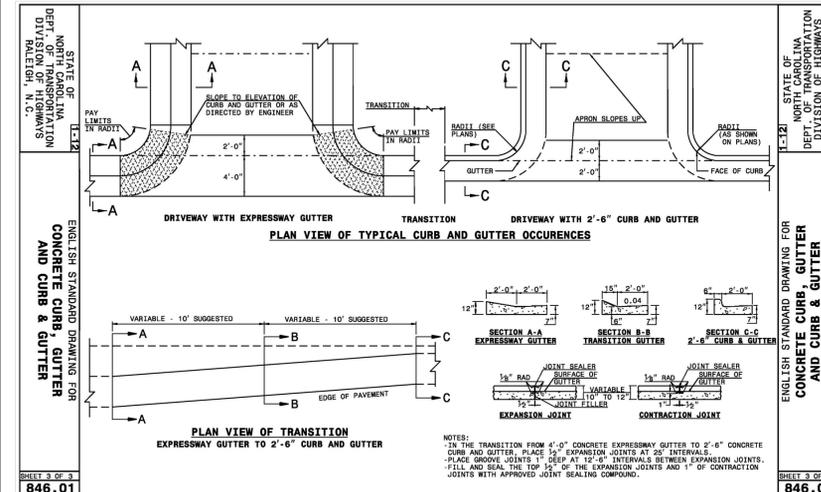
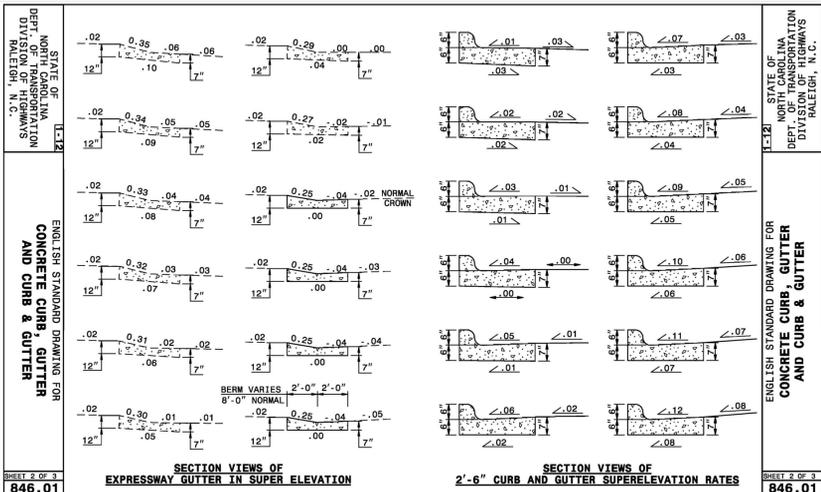
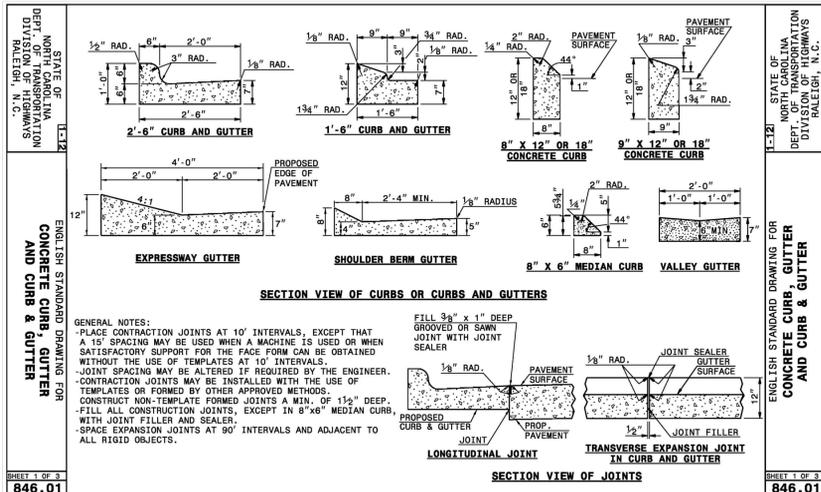
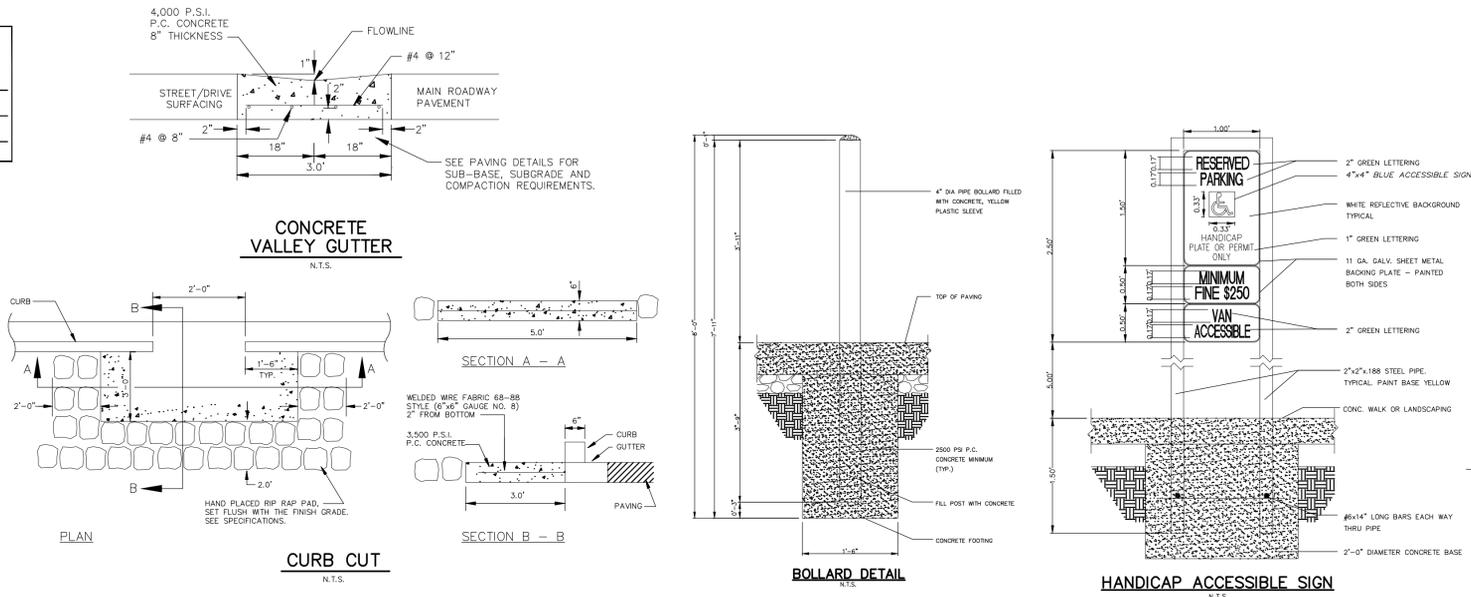
Name _____ Date _____

Planning _____
Traffic _____
Fire _____

WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____



GreenbergFarrow
CO. INC.
1430 W. Peachtree St. NW
Suite 200
Atlanta, GA 30309
t: 404 601 4000 f: 404 601 3970

PROJECT TEAM

DATE DESCRIPTION
10-20-15 SITE PLAN
12-02-15 DP SUBMITTAL
02-03-16 NCDOT RESUBMITTAL
02-03-16 COW SITE RESUBMITTAL
03-15-16 GRADING & EROSION RESUBMITTAL
03-15-16 TRAFFIC RESUBMITTAL
03-15-16 NCDOT RESUBMITTAL
03-23-16 ENGINEERING RESUBMITTAL

PROFESSIONAL SEAL

PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, DT

PROJECT NAME
CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC

PROJECT NUMBER
20151091

SHEET TITLE
DETAIL SHEET

SHEET NUMBER
C-7.3

NOT ISSUED FOR CONSTRUCTION



(IN FEET)
1 inch = 30 ft.

PROJECT TEAM

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NC DOT RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NC DOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL

Approved Construction Plan
Name: **CB**
Planning: _____
Traffic: _____
Fire: _____

CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

EXISTING LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- EDGE OF PAVEMENT
- CURB AND GUTTER
- PROPERTY LINE
- ADJACENT PROPERTY LINE (NOT SURVEYED)
- SWALE / DITCH LINE
- SANITARY SEWER
- STORM SEWER
- OVERHEAD ELECTRIC
- UNDERGROUND GAS SERVICE
- UNDERGROUND ELECTRIC SERVICE
- WATER
- IRON REBAR FOUND
- IRON PIPE FOUND
- FLAT / FIELD
- UTILITY POLE
- GUY ANCHOR WIRE
- SIGN
- CURB DRAIN INLET (CD)/DRAIN INLET (DI)
- STORM DRAIN MANHOLE (SDMH)
- SANITARY SEWER MANHOLE (SMH)
- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- TREE TRUNK
- CONCRETE
- END SECTIONS

SITE DATA SUMMARY:

PROJECT NAME: CIRCLE K 20151091
PROJECT ADDRESS: 3739 CAROLINA BEACH ROAD, WILMINGTON, NC, 28412
PARCEL ID NUMBER: R06515-003-011-000
ZONING: EXISTING: R-15 & CB
PROPOSED: CB
BUILDING SETBACKS: FRONT: 20' PROPOSED 17'
REAR: 10' PROPOSED 52'
SIDE: 0' PROPOSED 27' & 89'
CORNER: 20' PROPOSED 189'
CIRCLE K TRACT: 1.811 ACRES/ 78,882 SF
CONVENIENCE STORE: 5,995 SF
NUMBER OF BUILDINGS: 1
NUMBER OF STORIES: 1
BUILDING HEIGHT: 23'8"
CANOPY WITH 10 PUMP ISLANDS: 6,515 SF
FAR: 1:07.59
PARKING PROVIDED: 30 (2 ACCESS. PARKING SPACES)
PARKING REQUIRED: 15 MINIMUM
PERVIOUS COVER: EXISTING: 1,119 SF
PROPOSED: 51,510 SF
IMPERVIOUS COVER: EXISTING: 77,763 SF
PROPOSED: 27,371 SF
LOT COVERAGE: EXISTING: 0.01 (1,119 SF)
PROPOSED: 0.65 (51,510 SF)



3/23/16

PROFESSIONAL IN CHARGE
HAMILTON WILLIAMS
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL
QUALITY CONTROL
FEDERICO OLIVARES, PE
DRAWN BY
RYAN SCOTT, EIT

PROJECT NAME
CIRCLE K
CAROLINA BEACH

WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



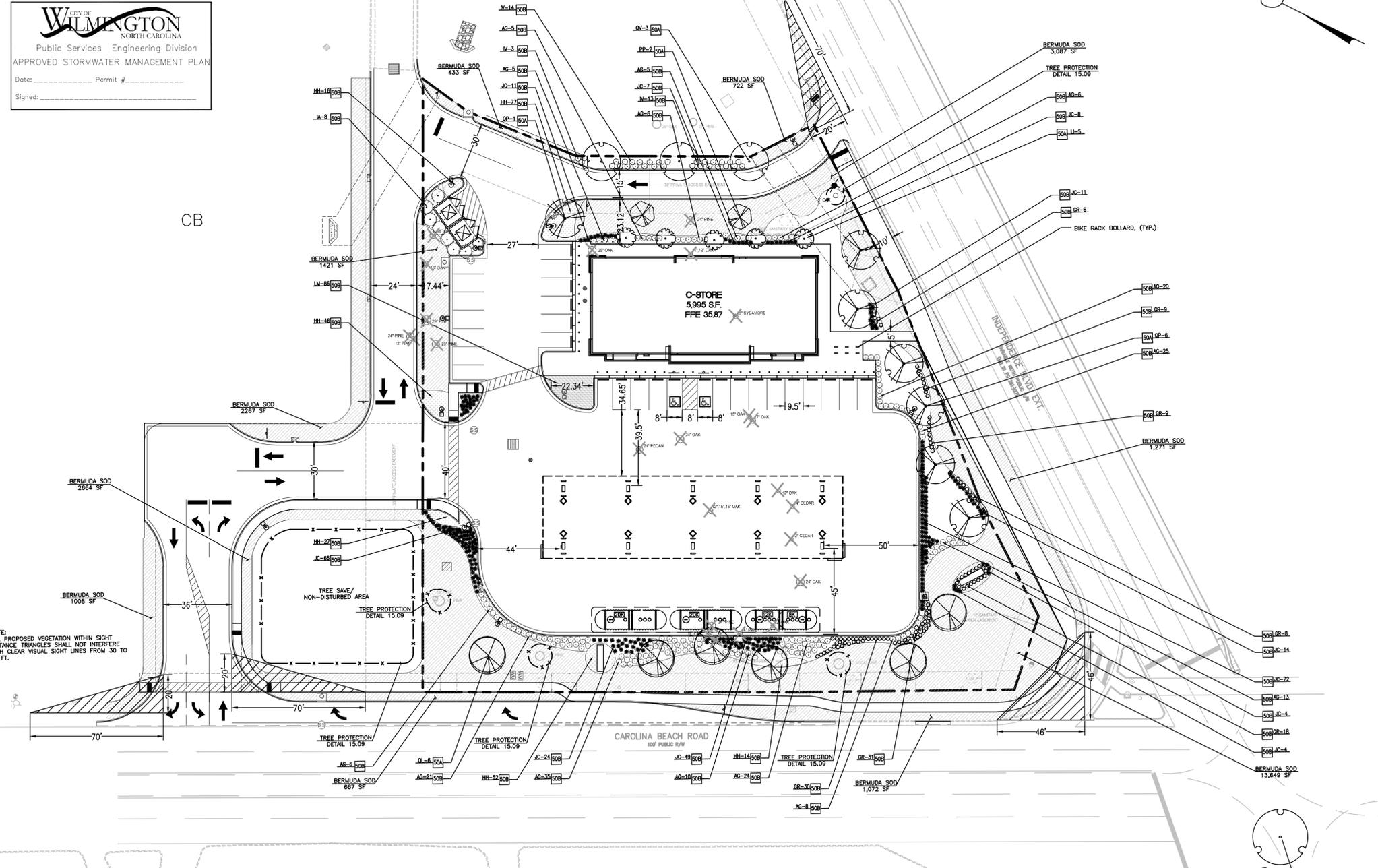
PROJECT NUMBER
20151091

SHEET TITLE
LANDSCAPE PLAN

SHEET NUMBER

L-1.0

NOT ISSUED FOR CONSTRUCTION



NOTE:
ALL PROPOSED VEGETATION WITHIN SIGHT DISTANCE TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30 TO 10 FT.

	ACRES	SQUARE FEET
SITE ACRES	1.81	78,882

TREE REPLACEMENT	REQ. PER ACRE	REQ. PER SITE
REQUIRED TREES	15	27.17
PRESERVED # OF TREES		5
REMOVED # OF TREES		26
PROPOSED # TREES		23
TOTAL # OF TREES ((PRESERVED + PROPOSED)-REMOVED)		29.17

POINT REPLACEMENT	REQ. PER ACRE	REQ. PER SITE
PRESERVED TREES	440	
REMOVED TREES	2340	
PROPOSED TREES	2030	
TOTAL POINTS ((PRESERVED + PROPOSED)-REMOVED)		130.00

TREES PRESERVED	DBH	CREDIT	UNIT DENSITY
NUMBER OF EX. TREES	15"	95	5
5	2 TO 5"	5	5
TOTAL CREDITS TO REMAIN 5			

TREES PRESERVED	DBH	MIDPOINT RATING	COMBINED RATING
NUMBER OF TREES	15"	95	95
1	15"	85	85
1	28"	95	95
1	31"	95	95
1	32"	70	70
TOTAL POINTS PRESERVED 440			

TREES REMOVED			
NUMBER OF TREES	DBH	MIDPOINT RATING	COMBINED RATING
1	11"	85	85
4	12"	85	340
1	12"	95	95
1	12"	75	75
1	14"	75	75
2	14"	95	190
2	15"	85	170
1	16"	85	85
1	16"	70	70
1	17"	85	85
2	18"	85	170
1	21"	75	75
1	22"	95	95
1	23"	95	95
2	24"	85	170
3	24"	95	285
1	25"	85	85
1	29"	95	95
TOTAL POINTS REMOVED 2340			

PROPOSED (REPLACEMENT) TREES			
NUMBER OF TREES	DBH	MIDPOINT RATING	COMBINED RATING
5	15"	95	475
5	90	450	450
7	85	595	595
6	85	510	510
TOTAL POINTS REPLACED 2030			

LANDSCAPE CALCULATIONS		
	REQUIRED	PROVIDED
STREET YARD CALCULATIONS		
341 LF (STREET FRONTAGE)*18 + 246 LF (SECONDARY FRONTAGE)*9 = 8,352/600	13.92	17
PROPOSED INTERIOR SHADING PER 27,371 S.F. IMPERVIOUS SURFACE		
19(707 SF) + 5(314 SF) = 14,296/27,371	30%	52%

PLANT LIST

KEY	QTY	COMMON NAME / BOTANICAL NAME	CAL./CONT. SIZE & HT. @ PLANTING	MATURE HEIGHT	MATURE SPREAD	SPACING	COMMENTS
QV	3	LIVE OAK Quercus virginiana	3" CAL. @ 20'	40-60'	30-40'	30 FT. O.C.	
LI	5	CRAPE MYRTLE Lagerstroemia indica	3" CAL. @ 15'	25'	12-15'	20 FT. O.C.	MULTI-STEM (3)
QL	6	LAUREL OAK Quercus laurifolia	3" CAL. @ 20'	40-60'	30-40'	30 FT. O.C.	
PP	2	LONGLEAF PINE Pinus palustris	3" CAL. @ 15'	80-100'	30-40'	40 FT. O.C.	
WP	7	WILLOW OAK Quercus phellos	3" CAL. @ 20'	70-100'	40-60'	30 FT. O.C.	
IA	8	SPIRICE PLANT Ilicium anisatum	15 GAL @ 10'	10-12'	8-10'	6 FT. O.C.	
AG	176	EDWARD GOUCHER GLOSSY ABEJIA Abelia x grandiflora Edward Goucher	5 GAL	3-4'	3-4'	36 IN. O.C.	
GR	111	DWARF GARDENIA Gardenia radicans	3 GAL	2-3'	4'	24 IN. O.C.	
JC	270	BLUE VASE JUNIPER Juniperus chinensis 'Blue Vase'	3 GAL	4-5'	3-4'	30 IN. O.C.	
IV	30	DWARF YAUJAPON HOLLY Ilex vomitoria 'Nano'	3 GAL	4-5'	4-5'	36 IN. O.C.	
HH	232	HAPPY RETURNS DAVILY Hemerocallis 'Happy Returns'	1 GAL	2-3'	2-3'	18 IN. O.C.	
LM	86	LILY TURF Liriodendron muscari	1 GAL	8-20"	12-18"	12 IN. O.C.	
28,241 SF		BERMUDA GRASS Syntherisma dactylon					

PLANTING NOTES

- LANDSCAPE PLANS ARE FOR THE LOCATION AND IDENTIFICATION OF PLANT MATERIAL ONLY. NO OTHER WORK IS TO BE PERFORMED BASED ON THESE PLANS.
- QUANTITIES ON THE PLANT SCHEDULE ARE PROVIDED FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS/HER OWN QUANTITY CALCULATIONS. IN THE EVENT OF A DISCREPANCY BETWEEN THE LANDSCAPE PLANS AND THE PLANT SCHEDULE, THE LANDSCAPE PLAN WILL TAKE PRECEDENCE. THE CONTRACTOR SHALL INFORM THE LANDSCAPE ARCHITECT IMMEDIATELY UPON DISCOVERING ANY QUANTITY DISCREPANCIES.
- THE CONTRACTOR SHALL NOT CHANGE OR SUBSTITUTE PLANT VARIETIES OR SPECIES WITHOUT PRIOR WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL TAKE 3 REPRESENTATIVE SOIL SAMPLES OF EACH PROPOSED PLANT BED AND SUBMIT COPIES OF THE RESULTS TO THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING WORK.
- CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE OF ALL PLANTING HOLES AND PLANT BEDS PRIOR TO INSTALLATION.
- STUMPS LABELED FOR REMOVAL SHALL BE EXCAVATED, NOT GROUND. REMOVE ANY DEBRIS FROM THE HOLE, FILL WITH TOP SOIL, COMPACT AND RAKE SMOOTH PRIOR TO INSTALLING NEW PLANT MATERIAL.
- TOPSOIL WILL NOT BE STOCKPILED FOR RE-USE IN LANDSCAPE WORK. CONTRACTOR SHALL IMPORT TOPSOIL AS REQUIRED TO COMPLETE LANDSCAPE WORK.

PROVIDE NEW TOPSOIL THAT IS FERTILE, FRIABLE, NATURAL LOAM, SURFACE SOIL, REASONABLY FREE OF ROOTS, STUMPS AND LARGE STONES AND FREE OF BRUSH, WEEDS, LITTER, AND OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.

OBTAIN TOPSOIL FROM LOCAL SOURCES OR FROM AREAS HAVING SIMILAR SOIL CHARACTERISTICS TO THAT FOUND AT PROJECT SITE. OBTAIN TOPSOIL ONLY FROM NATURALLY WELL DRAINED SITES WHERE TOPSOIL OCCURS IN A DEPTH OF NOT LESS THAN 4 INCHES. DO NOT OBTAIN FROM BOGS OR MARSHES. PLANT MATERIAL SHALL BE PLACED AS SHOWN ON THE LANDSCAPE PLANS.

- PLANTING SOIL MIX FOR TREES, SHRUBS, AND GROUNDCOVERS SHALL CONSIST OF THE FOLLOWING:

80% TOPSOIL
20% PREPARED ADDITIVES (BY VOLUME AS FOLLOWS):

- 3 PARTS - ORGANIC SOIL CONDITIONER (NATURE'S HELPER OR EQUAL)
- 1 PART - STERILIZED COW MANURE (OR EQUAL)
- COMMERCIALY AVAILABLE STARTER FERTILIZER @ RATES SPECIFIED BY MANUFACTURER
- LIME (AS RECOMMENDED IN SOIL ANALYSIS)

- QUALITY OF PLANT MATERIAL: ALL PLANTS SHALL CONFORM TO THE CURRENT VERSION OF THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1).

PLANT MATERIAL SHALL BE FREE OF DISEASE AND/OR INSECTS, AND SHALL HAVE A HEALTHY ROOT SYSTEM WITH NO CIRCLING OR KINKED ROOTS. CONTAINER PLANTS SHALL NOT BE ROOT BOUND. PLANT MATERIAL SHALL CONFORM TO THE CURRENT STANDARDS OF THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004).

TREES SHALL HAVE STRAIGHT TRUNKS, DENSE CANOPIES AND STRONG BRANCHING WITH GOOD CROTCH ANGLES. CONTRACTOR SHALL SUBMIT GRADE PHOTOS OF EACH TREE TO LANDSCAPE ARCHITECT PRIOR TO DELIVERY.

ALL PLANT MATERIAL SHALL BE SUFFICIENTLY WATERED TO WET THE ENTIRE ROOT BALL WITHIN TWO HOURS OF PLANTING.

- INSPECTION AND APPROVAL OF PLANT MATERIAL: ALL PLANT MATERIAL SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT UPON DELIVERY TO THE SITE, PRIOR TO INSTALLATION. CONTRACTOR SHALL GIVE LANDSCAPE ARCHITECT AT LEAST ONE WEEK NOTICE PRIOR TO PLANT DELIVERY.

- NEW SHRUB AND GROUNDCOVER PLANTING SHALL BE A MINIMUM OF 36" AWAY FROM EXISTING TREES.

- CONTRACTOR SHALL REMOVE ALL PLANT TAGS AFTER APPROVAL OF PLANT INSTALLATION BY LANDSCAPE ARCHITECT

- MULCH ALL PLANT BEDS AND TREE RINGS WITH FRESH, CLEAN PINESTRAW TO A MINIMUM DEPTH OF THREE (3) INCHES. DO NOT PILE MULCH AROUND THE BASE OF PLANTS OR TREE TRUNKS. ALL MULCH EDGES SHALL BE NEATLY TUCKED. ALL STRING AND/OR BAILING WIRE SHALL BE REMOVED. DUST SHRUBS AND GROUND COVER AFTER MULCHING TO REMOVE LOOSE PINESTRAW FROM THE PLANTS.

- BED PREPARATION FOR SOD INSTALLATION: REMOVE EXISTING VEGETATION WITHIN THE APPROVED BEDLINE. IF THE EXISTING SOIL IS COMPACTED OR OTHERWISE UNSUITABLE FOR PLANTING, REMOVE THE TOP 4 INCHES OF SOIL, TILL SUBGRADE TO A MINIMUM DEPTH OF 6 INCHES. REMOVE LARGE STONES, STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATERIAL.

SPREAD 2 INCHES OF TOPSOIL OVER THE PREPARED BED AND TILL INTO THE TOP 4 INCHES OF LOOSENED SUBGRADE. SPREAD THE REMAINING 2 INCHES OF TOPSOIL, RAKE SMOOTH AND ROLL COMPACT. BEDS SHALL BE FINISHED WITH A SLIGHT CROWN AT THE CENTER TO ALLOW WATER TO SHEET FLOW TO THE SIDES.

WATER THE BED IMMEDIATELY BEFORE LAYING THE SOD SO THAT THE TOP INCH OF SOIL IS MOIST. ALLOW WATER TO PERCOLATE SO THERE IS NO STANDING WATER. LIMIT PREPARATION TO AREAS THAT WILL BE SODDED THAT SAME DAY.

- SEEDING: ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION NOT SODDED SHALL BE SEDED, FERTILIZED, MULCHED, WATERED, AND MAINTAINED UNTIL HARDY GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE PROJECT SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

- MAINTENANCE: CONTRACTOR SHALL MAINTAIN ALL PLANT MATERIAL FROM THE TIME IT IS INSTALLED UNTIL FINAL ACCEPTANCE OR WHEN THE OWNER TAKES OVER MAINTENANCE, WHICHEVER OCCURS FIRST. MAINTENANCE SHALL INCLUDE BUT NOT BE LIMITED TO MOWING, EDGING, WEEDING, WATERING, PRUNING, FERTILIZING, ETC.

THE CONTRACTOR SHALL MAKE PERIODIC INSPECTIONS OF THE PROJECT DURING THE WARRANTY PERIOD TO ENSURE THAT THE ESTABLISHMENT RATE OF GROWTH IS ADEQUATE. ANY METHODS OR PRODUCTS DEEMED NOT NORMAL OR DETRIMENTAL TO GOOD PLANT GROWTH SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT IN WRITING. FAILURE TO INSPECT AND REPORT WILL BE INTERPRETED AS APPROVAL, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REPLACEMENTS.

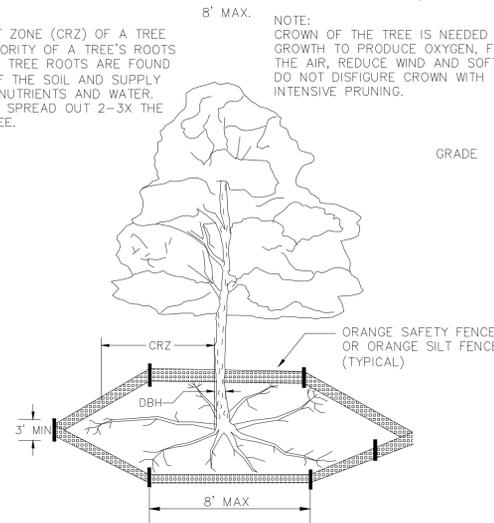
- IRRIGATION TO BE PROVIDED BY DESIGN-BUILD.

- LANDSCAPE ISLANDS: SHALL FUNCTION AS SMALL INFILTRATION DEVICES WHEN FEASIBLE.

- PROPOSED VEGETATION: WITHIN SITE TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30'-10'. (SEC. 18-566 COWF LDC)

- A LANDSCAPING PLAN: INDICATING THE LOCATION OF REQUIRED STREET TREES SHALL BE SUBMITTED TO THE CITY OF WILMINGTON TRAFFIC ENGINEERING DIVISION AND PARKS AND RECREATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAT. (SD 15-14 COWF TECH STDS)

NOTE: THE CRITICAL ROOT ZONE (CRZ) OF A TREE IS WHERE THE MAJORITY OF A TREE'S ROOTS LAY. 85% OF MOST TREE ROOTS ARE FOUND IN THE TOP 24" OF THE SOIL AND SUPPLY THE MAJORITY OF NUTRIENTS AND WATER. GENERALLY, ROOTS SPREAD OUT 2-3X THE HEIGHT OF THE TREE.



NOTES:

- PROTECT THE CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
- CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
- IF CONSTRUCTION OCCURS WITHIN THE CRZ, AT LEAST 12" OF MULCH AND/OR LOGGING MATS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.
- WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS, SUCH AS A REINFORCED SIDEWALK, SHALL BE IMPLEMENTED AS NECESSARY.
- FOR ALL TREES, CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO MATERIALS OR EQUIPMENT SHALL BE STORED BENEATH TREES. DAMAGING THE BARK WITH LAWNMOWERS, CONSTRUCTION EQUIPMENT, OR ANYTHING ELSE IS PROHIBITED. CONTRACTOR SHALL REPAIR DAMAGE TO TREES.
- FAILING TO INSTALL OR MAINTAIN PROTECTION MEASURES SHALL RESULT IN A STOP WORK ORDER AND FINE OF \$500/DAY. DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN WILL REQUIRE OWNER TO POST A LETTER OF CREDIT FOR 3 YRS FOR TREE MITIGATION.

TREE PROTECTION DURING CONSTRUCTION

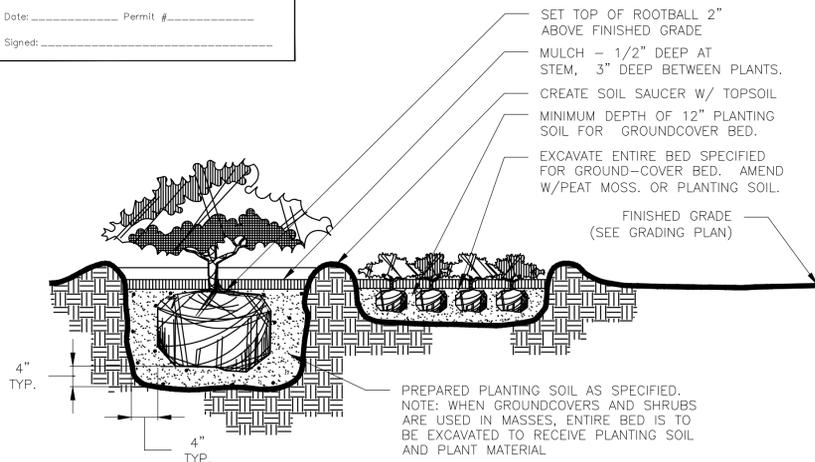
CITY OF WILMINGTON, NORTH CAROLINA DETAIL 15.09.1

Approved Construction Plan

Name	Date
Planning _____	
Traffic _____	
Fire _____	

CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

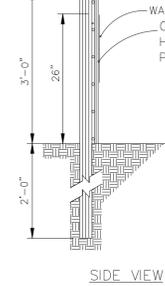
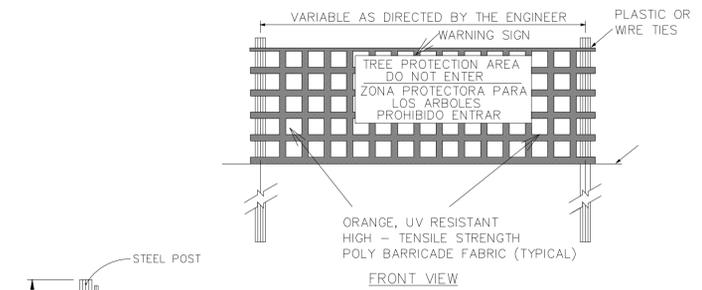
Date: _____ Permit # _____
Signed: _____



SHRUB PLANTING

N.T.S.

50B

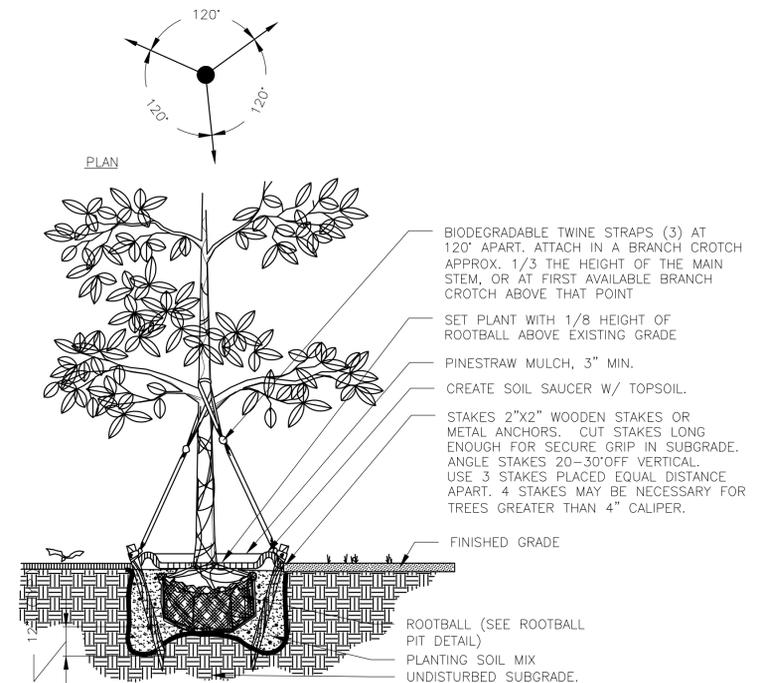


NOTES:

- THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
- WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
- SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 100' IN PERIMETER, PROVIDE NO LESS THAN TWO SIGNS PER PROTECTION AREA.
- ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE AND SIGNS THROUGHOUT DURATION OF PROJECT.
- TREE PROTECTION FENCING AND SIGNAGE SHALL BE REMOVED AFTER CONSTRUCTION.
- ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF WILMINGTON, BASED ON ACTUAL FIELD CONDITIONS.

TREE PROTECTION DURING CONSTRUCTION

CITY OF WILMINGTON, NORTH CAROLINA DETAIL 15.09.2



NOTE: STRAPS, WIDE, SOFT, BIODEGRADABLE MATERIAL MANUFACTURED FOR THE PURPOSE OF TREE ANCHORING. DO NOT USE HOSE AND WIRE.

DECIDUOUS TREE PLANTING

N.T.S.

50A

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
10-20-15	SITE PLAN
12-02-15	DP SUBMITTAL
02-03-16	NCOT RESUBMITTAL
02-03-16	COW SITE RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
03-15-16	NCOT RESUBMITTAL
03-23-16	ENGINEERING RESUBMITTAL



3/23/16

PROFESSIONAL IN CHARGE
HAMILTON WILLIAMS
PROFESSIONAL ENGINEER
LICENSE NO. 023207

PROJECT MANAGER
LARRY DIEHL

QUALITY CONTROL
FEDERICO OLIVARES, PE

DRAWN BY
RYAN SCOTT, DT

PROJECT NAME

**CIRCLE K
CAROLINA BEACH**

**WILMINGTON
NORTH CAROLINA**

**3739 CAROLINA BEACH RD
WILMINGTON, NC**



PROJECT NUMBER

20151091

SHEET TITLE

LANDSCAPE DETAILS

SHEET NUMBER

L-1.1

NOT ISSUED FOR CONSTRUCTION