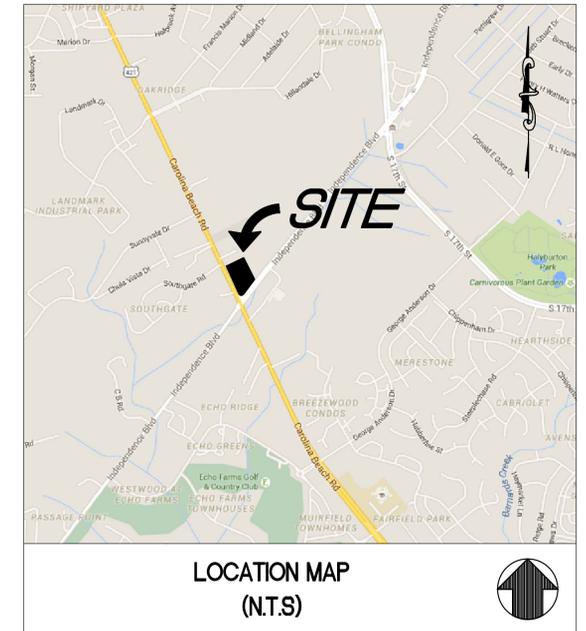


FLOOD INSURANCE RATE MAP
(N.T.S.)

SITE DEVELOPMENT PLANS FOR:



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



LOCATION MAP
(N.T.S.)

SHEET INDEX:

- | | | | |
|-------|-------------------------------|-------|-------------------|
| C-0.0 | COVER SHEET | L-1.1 | LANDSCAPE DETAILS |
| 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 | | |

OWNER/DEVELOPER:

KANGAROO EXPRESS/CIRCLE K

CONTACT: ANDY PRIOLO

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

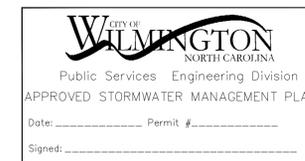
ENGINEER:

GreenbergFarrow

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



5/20/16



Approved Construction Plan	
Name	Date
Planning _____	
Traffic _____	
Fire _____	

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: _____

NO.	DATE	DESCRIPTION	BY
4	05-20-16	ENGINEERING RESUBMITTAL #4	RS
3	05-16-16	ENGINEERING RESUBMITTAL #3	RS
2	03-23-16	ENGINEERING RESUBMITTAL	RS
1	03-15-16	NCDOT RESUBMITTAL	RS
0	03-15-16	TRAFFIC RESUBMITTAL	RS

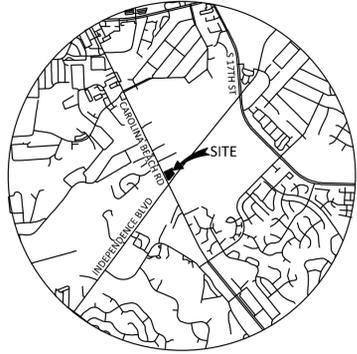
BCPWD CASE #: PWCO 20140050

JOB NO. 20151091

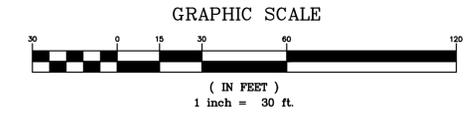
DATE: 05-20-16

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



VICINITY MAP
SCALE: 1"=3000'



EXISTING LEGEND:

	INTERMEDIATE CONTOUR
	EDGE OF PAVEMENT
	CURB AND GUTTER
	PROPERTY LINE
	ADJOINING 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 (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

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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
05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4

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:	<u>REQUIRED</u> FRONT: 20' REAR: 10' SIDE: 0' CORNER: 20'

PROPOSED SITE IS NOT LOCATED WITHIN A 100 YEAR FLOOD PLAIN



5/20/16

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



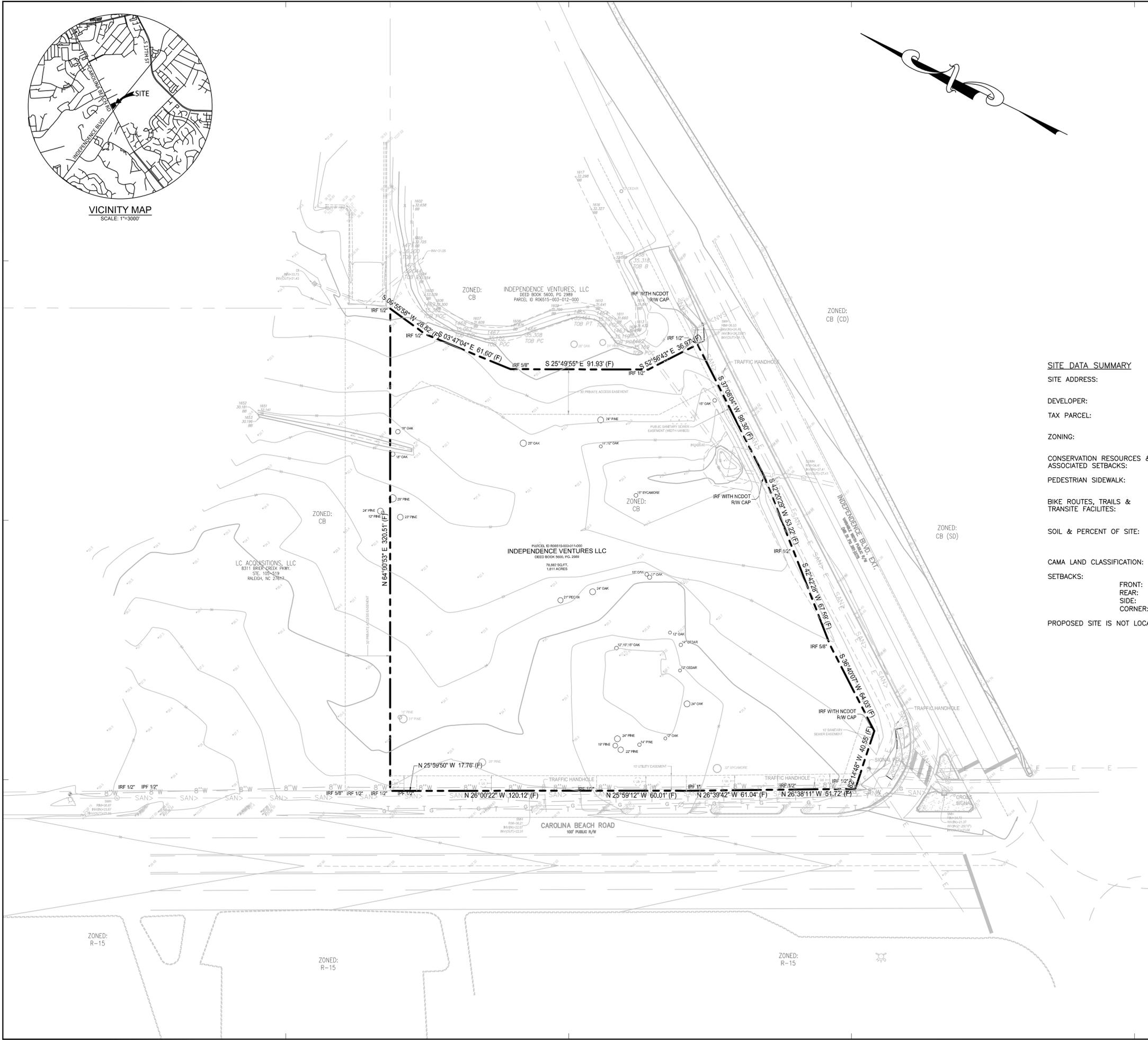
PROJECT NUMBER
20151091

SHEET TITLE
SURVEY & SITE INVENTORY

SHEET NUMBER
C-0.1

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

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

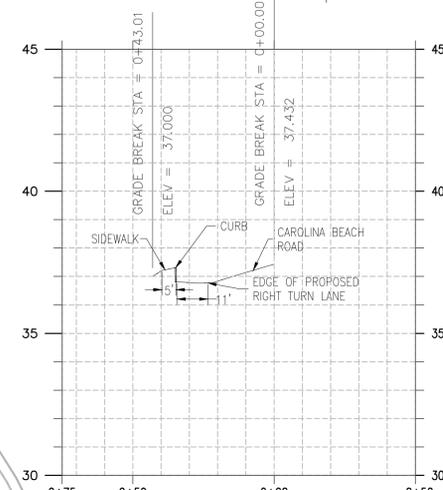


NOTES:

- 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
- 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 (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
- FLAT / FIELD
- MULTIPLE PRODUCT DISPENSER WITH CANOPY COLUMNS AND BOLLARDS
- PROPOSED SITE LIGHT, SEE PHOTOMETRIC PLAN
- PROPOSED DRAINAGE STRUCTURES (SEE GRADING/DRAINAGE PLANS)
- PROPOSED PARKING SPACES

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 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 USE 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

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: 54,416 SF
 PERVIOUS COVER: EXISTING: 77,763 SF
 PROPOSED: 24,466 SF
 LOT COVERAGE: EXISTING: 0.01 (1,119 SF)
 PROPOSED: 0.65 (51,510 SF)
 CAMA LAND USE CLASSIFICATION: URBAN DEVELOPMENT

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

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
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03-23-16	ENGINEERING RESUBMITTAL
05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4



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

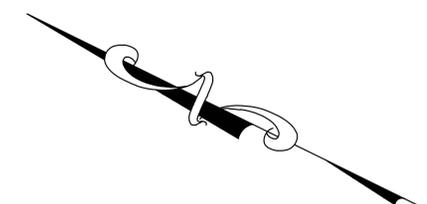
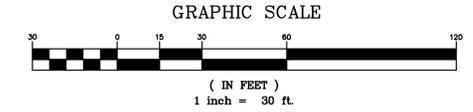
SHEET NUMBER
C-1.0

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: _____



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 — SANITARY SEWER
- SAND — STORM SEWER
- E — OVERHEAD ELECTRIC
- T — UNDERGROUND GAS SERVICE
- G — UNDERGROUND COMMUNICATION SERVICE
- E — UNDERGROUND ELECTRIC SERVICE
- DOM — WATER
- IRF — IRON REBAR FOUND
- (PF) — IRON PIPE FOUND
- (F) — PLAT / FIELD
- # — UTILITY POLE
- + — GUY ANCHOR WIRE
- ▽ — SIGN
- [] — CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
- [] — STORM DRAIN MANHOLE (SDMH)
- [] — SANITARY SEWER MANHOLE (SSMH)
- [] — WATER VALVE & BACK PREVENTER VALVE
- [] — WATER METER
- [] — FIRE HYDRANT (HYD.)
- [] — TREE TRUNK
- [] — CONCRETE
- [] — END SECTIONS

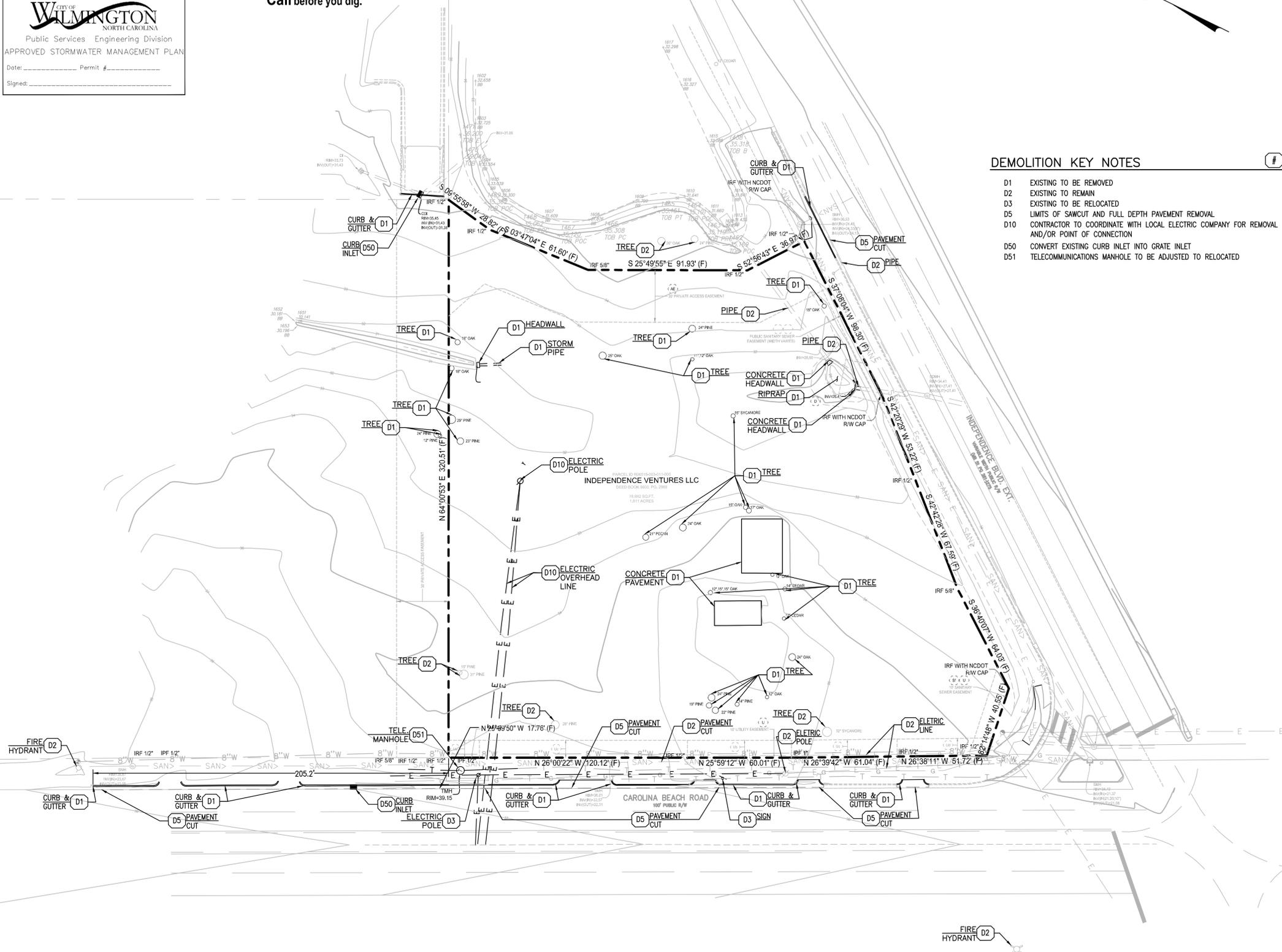
DEMOLITION KEY NOTES

- 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.



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03-23-16	ENGINEERING RESUBMITTAL #3
05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4



5/20/16
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



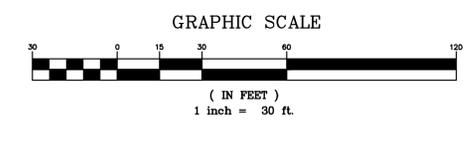
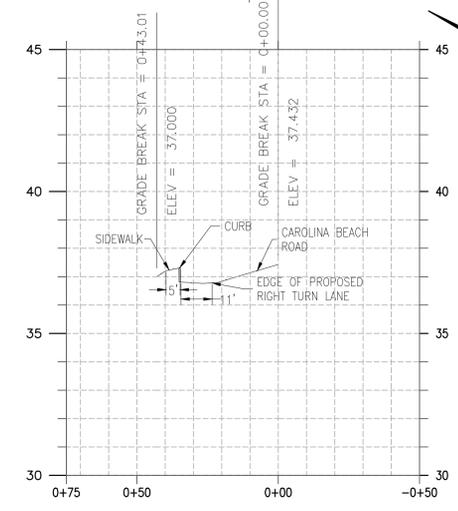
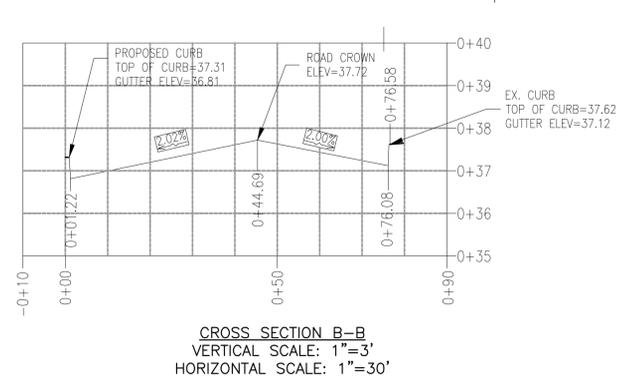
PROJECT NUMBER
 20151091

SHEET TITLE
DEMOLITION PLAN

SHEET NUMBER
C-1.1

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(S) 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 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:

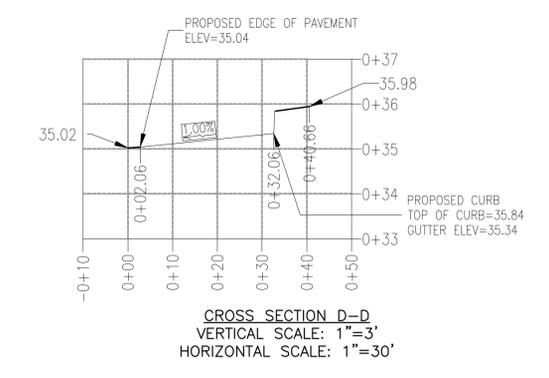
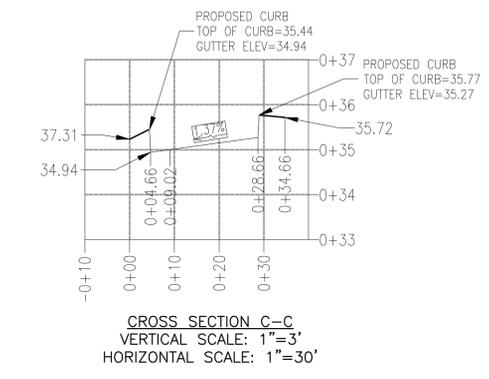
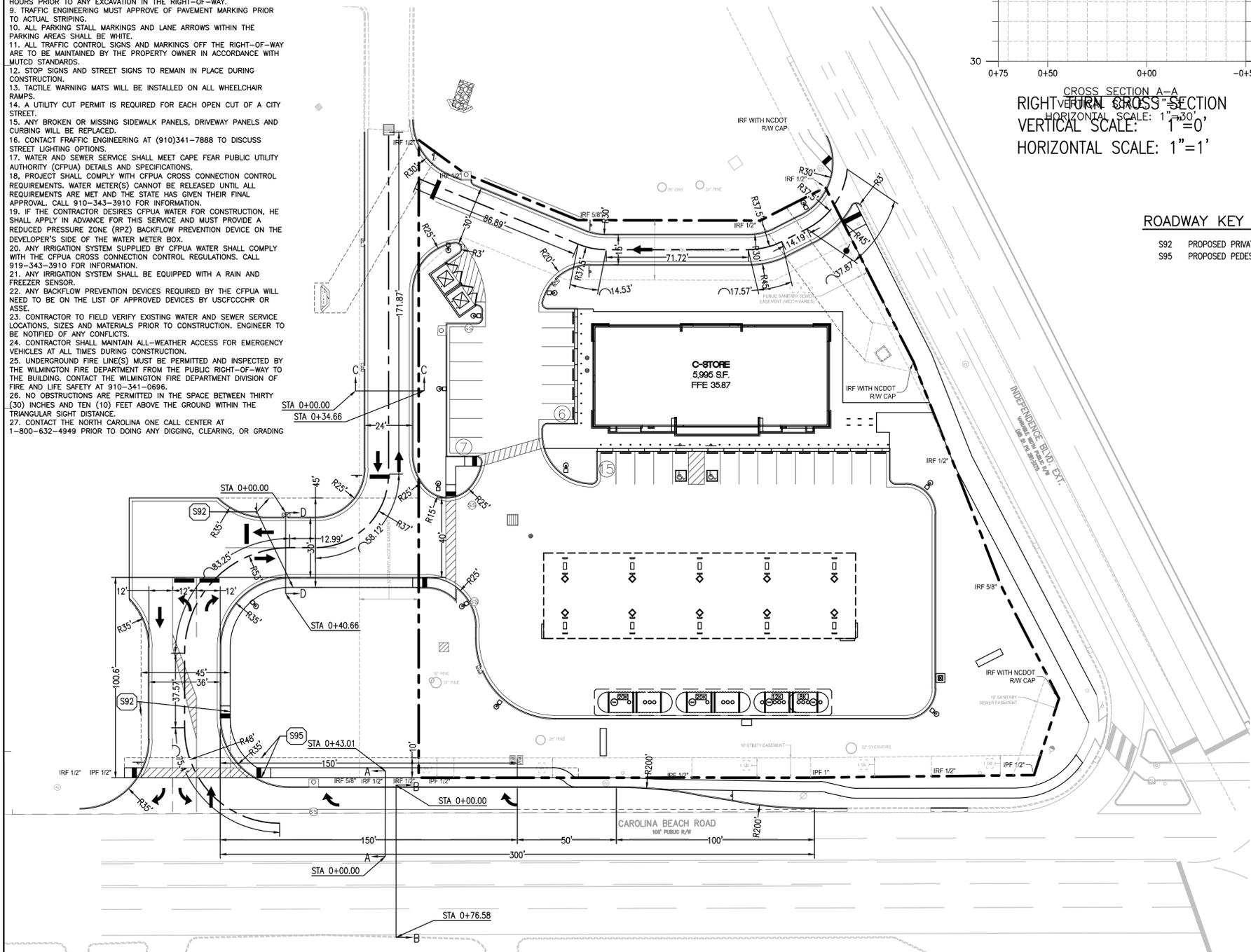
---	INDEX CONTOUR
---	INTERMEDIATE CONTOUR
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---	CURB AND GUTTER
---	PROPERTY LINE
---	ADJACENT PROPERTY LINE (NOT SURVEYED)
---	SMALL / DITCH LINE
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---	STORM SEWER
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---	UNDERGROUND COMMUNICATION SERVICE
---	UNDERGROUND GAS SERVICE
---	UNDERGROUND ELECTRIC SERVICE
---	WATER
---	IRON REBAR FOUND
---	IRON PIPE FOUND
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---	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 # _____
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LICENSE NO. 023207

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FEDERICO OLIVARES, PE

DRAWN BY
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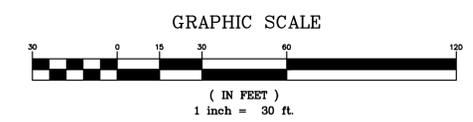
WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD WILMINGTON, NC



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 SD3-01
- --- 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 PER DETAIL C-7.0
- --- PROPOSED ASPHALT MULTI-USE PATH PER COW SD 3-01

PAVING KEY NOTES

- P1 MATCH EXISTING PAVEMENT ELEVATION
- P2 EXISTING PAVEMENT TO REMAIN
- P3A CONCRETE SIDEWALK
- P3B 10' WIDE ASPHALT MULTI-USE PATH PER COW SD 3-01
- 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
- P55 SPEREATION WALL REFER TO DETAIL ON C-7.0

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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PROJECT NAME
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CAROLINA BEACH

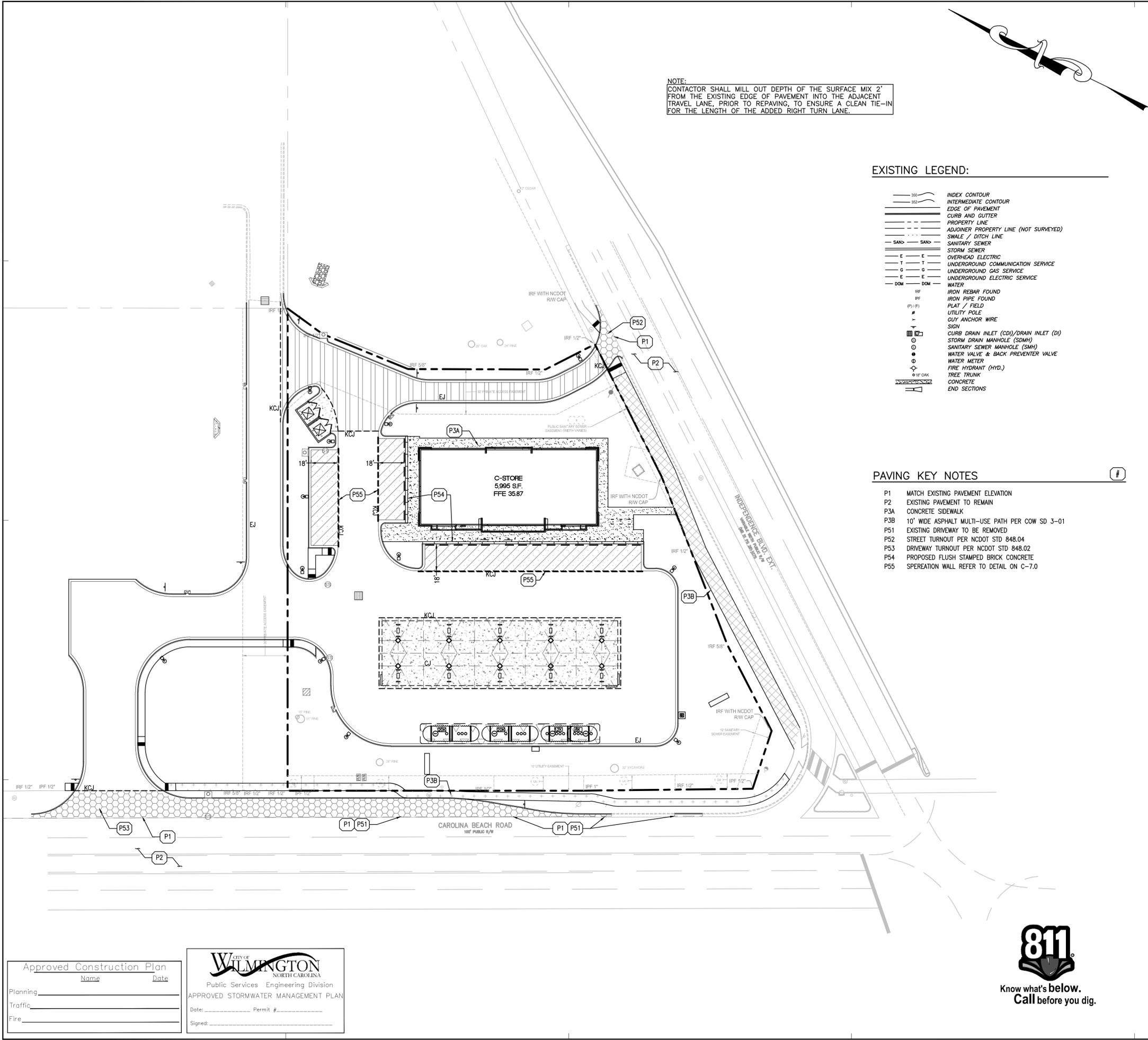
WILMINGTON
NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
PAVING PLAN

SHEET NUMBER
C-2.0



Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

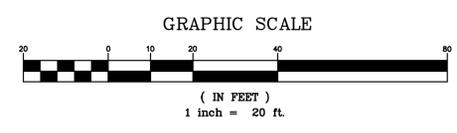
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NORTH CAROLINA
Public Services Engineering Division
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Date: _____ Permit # _____

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Approved Construction Plan
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 Planning _____
 Traffic _____
 Fire _____

CITY OF WILMINGTON
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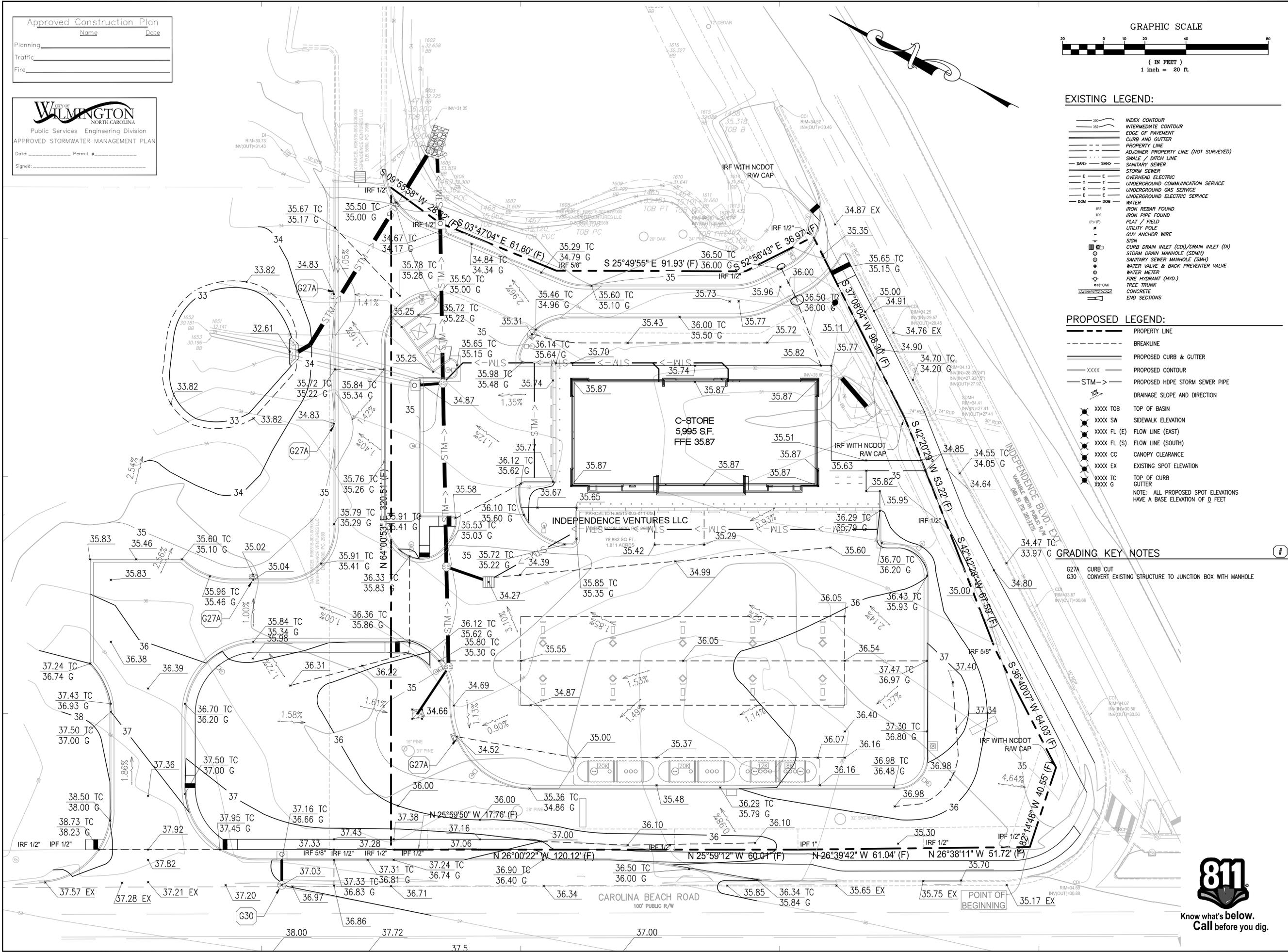
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- WATER METER
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- TREE TRUNK
- CONCRETE
- END SECTIONS

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



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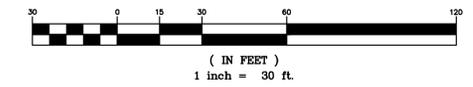
SHEET TITLE
GRADING PLAN

SHEET NUMBER
C-3.0



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 Call before you dig.

GRAPHIC SCALE



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Name _____ Date _____
Planning _____
Traffic _____
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- 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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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
05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4



5/20/16

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

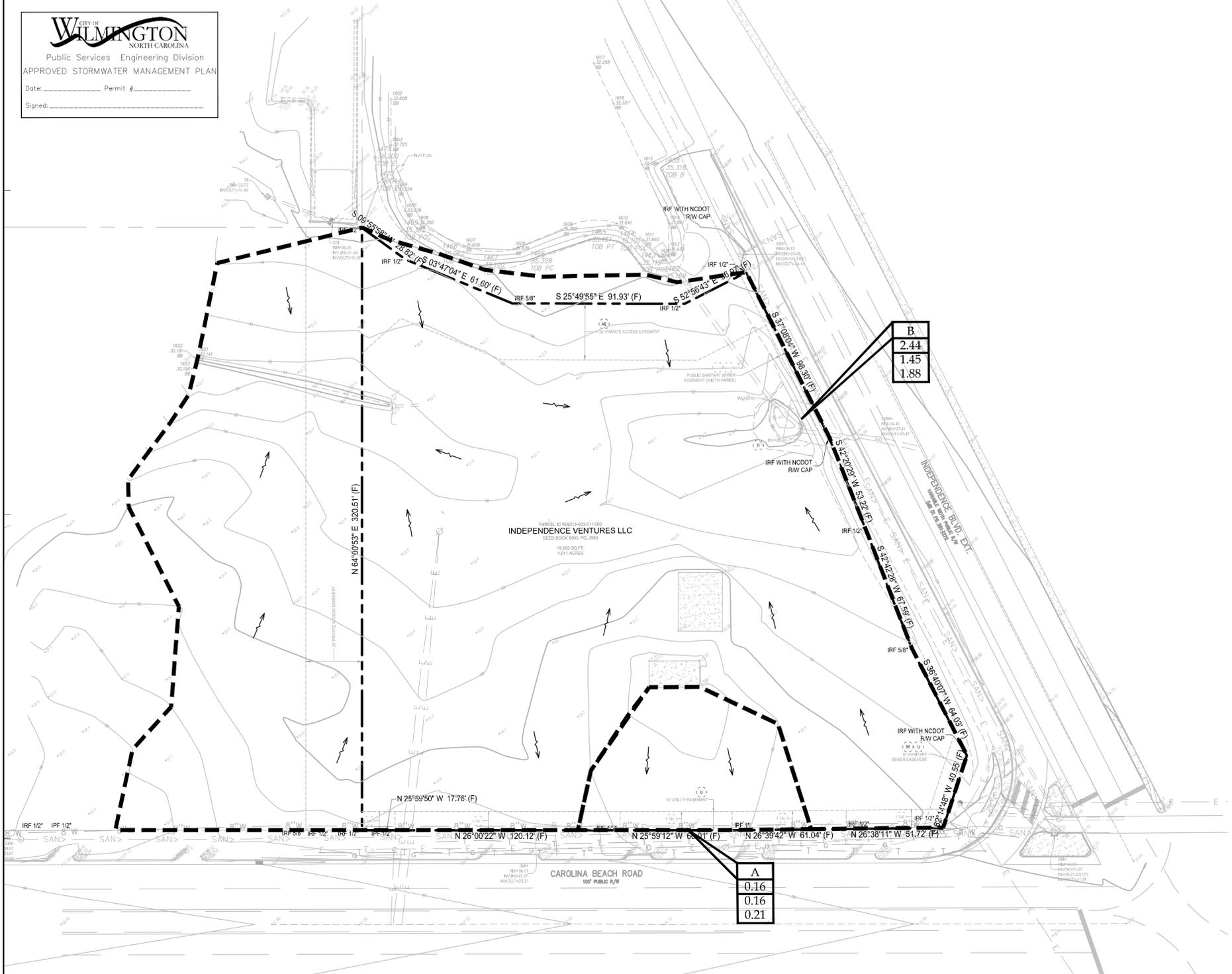


PROJECT NUMBER
20151091

SHEET TITLE
PRE-DRAINAGE PLAN

SHEET NUMBER

C-4.0



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	5.11	0.16	0.20	6.46	0.21	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	2.58	1.45	0.23	3.35	1.88	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				1.61			2.09	



Know what's below. Call before you dig.

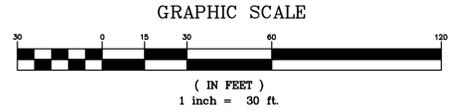
ACCUMULATED PIPE SIZING CALCULATIONS					
DRAINAGE AREA	PIPE SIZE PROVIDED	PIPE SIZE REQ. (IN)	Q (cfs) 100 YR	n	V(SLOPE)
A	15"	8.86	1.69	0.012	0.09798
B	21"	11.52	3.47	0.012	0.1
C	15"	12.58	4.64	0.012	0.10583
D	18"	13.50	5.56	0.012	0.104881
OS-1	24"	12.54	6.42	0.012	0.147648
OS-2	N/A	N/A	0.05	N/A	N/A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

CALCUATIONS PER WILMINGTON NC TECHNIAL STANDARDS CH. 5.F.2 EQUATION

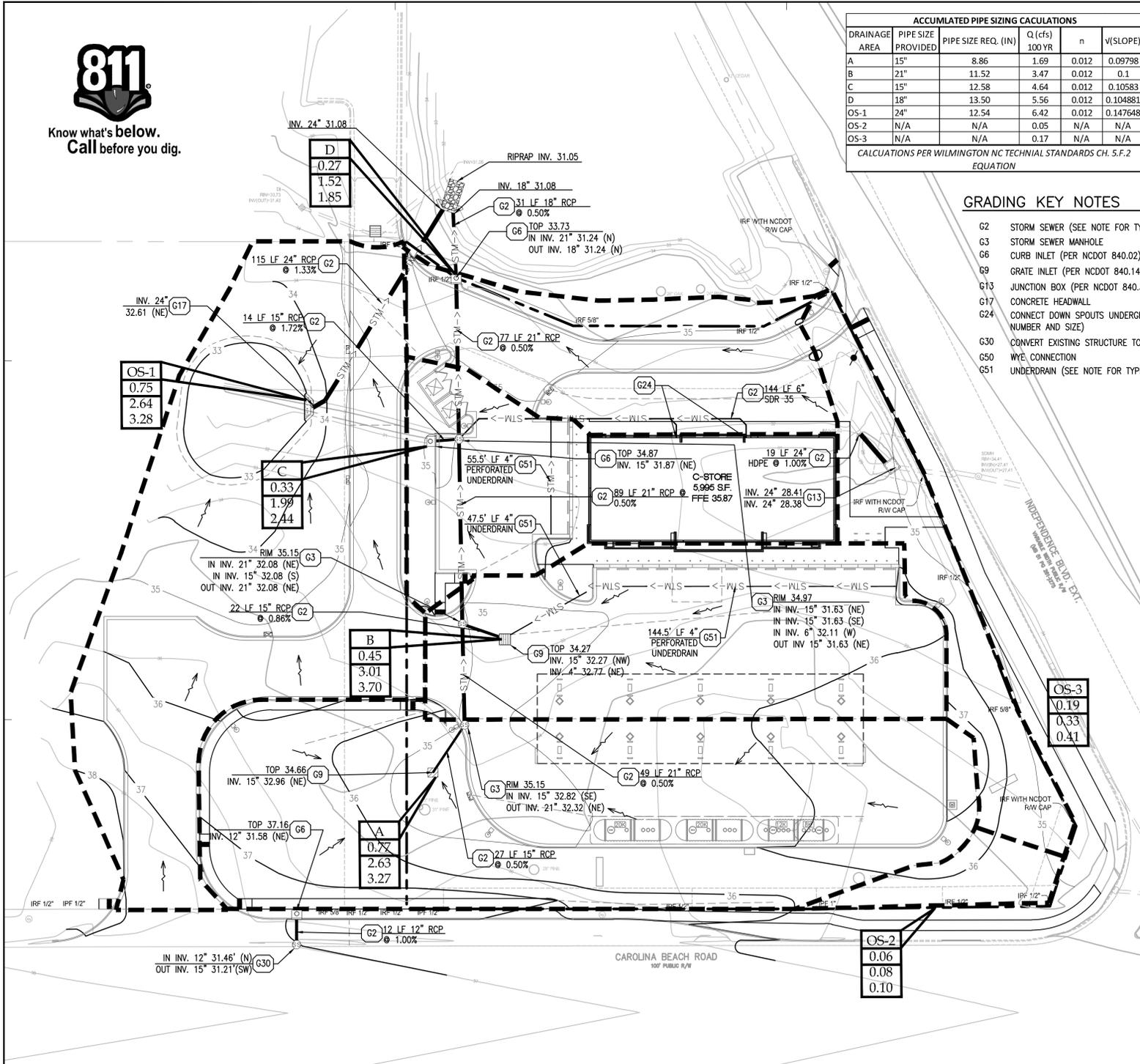
City of WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit #: _____
Signed: _____

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)
- G3 STORM SEWER MANHOLE
- 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
- G51 UNDERDRAIN (SEE NOTE FOR TYPE, SIZE AND SLOPE)

PROPOSED LEGEND:

- PROPERTY LINE
- PROPOSED CURB & GUTTER
- XXXX PROPOSED CONTOUR
- STM--> PROPOSED STORM PIPE. SEE ATTACHED NOTE FOR SIZING LENGTH AND MATERIAL
- > DRAINAGE SLOPE AND DIRECTION
- DRAINAGE BASIN BOUNDARY
- A DRAINAGE BASIN ID
- 1.90 DRAINAGE BASIN AREA (ACRE)
- 4.08 10-YR STORMWATER RUNOFF
- 6.76 50-YR STORMWATER RUNOFF

EXISTING LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- EDGE OF PAVEMENT
- CURB AND GUTTER
- PROPERTY LINE
- ADJONER 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
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- CURB DRAIN INLET (CDI)/DRAIN INLET (DI)
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- WATER VALVE & BACK PREVENTER VALVE
- WATER METER
- FIRE HYDRANT (HYD.)
- 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_o (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, $D_c = 1.25 \times D_o$ of single culvert.

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

Zone	2	Figure 8.06c
Will apron have $\geq 10\%$ grade?	No	
Apron length (ft)	14	Figure 8.06d

NOTE: For apron slopes equal to or greater than 10%, use next higher Zone in Figure 8.06d to determine apron length.

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** Figure 8.06e

- Step 2. Use figure 8.06 [f] 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.).

NOTE: In determining channel velocities for stone linings and revetment, use the following coefficients of roughness:

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
		36

(Channels) (Dissipators)

Min. & max range of stones (lbs) **25-150** Figure 8.05f
Weight range of 75% of stones (lbs) **50-150** Figure 8.05f

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)	HGL ELEV. (ft)	C	I (in/hr)	Q (cfs)	HGL ELEV. (ft)	
A	0.77	8.4	0.52	6.56	2.63	33.67	0.52	8.16	3.27	34.16	SHEET FLOWS WEST INTO PROPOSED CURB INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
GRASS	0.463		0.20			0.20					
PAVED	0.307		0.95			0.95					
B	0.45	5	0.94	7.23	3.01	33.60	0.94	8.87	3.70	34.14	SHEET FLOWS WEST INTO PROPOSED GRATE INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
GRASS	0.098		0.20			0.20					
PAVED	0.437		0.95			0.95					
C	0.33	5	0.84	7.23	1.99	33.37	0.84	8.87	2.44	33.79	SHEET FLOWS WEST INTO PROPOSED CURB INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
GRASS	0.048		0.20			0.20					
PAVED	0.28		0.95			0.95					
D	0.27	5	0.78	7.23	1.52	32.82	0.77	8.87	1.85	32.92	SHEET FLOWS WEST INTO PROPOSED CURB INLET, THEN FLOWS NORTH INTO EXISTING FOREBAY
GRASS	0.066		0.20			0.20					
PAVED	0.204		0.95			0.95					
OS-1	0.75	7.35	0.52	6.74	2.64	33.17	0.52	8.37	3.28	33.24	SHEET FLOW INTO NORTH INTO A HEADWALL THEN NORTH INTO EXISTING FOREBAY
GRASS	0.428		0.20			0.20					
PAVED	0.322		0.95			0.95					
OS-2	0.06	8.18	0.20	6.60	0.08	N/A	0.20	8.2	0.10	N/A	SHEET FLOWS SOUTH ON TO CAROLINA BEACH ROAD THEN INTO EXISTING NCDOT STORM SYSTEM
GRASS	0.06		0.20			0.20					
PAVED	0		0.95			0.95					
OS-3	0.19	10.78	0.28	6.17	0.33	N/A	0.28	7.72	0.41	N/A	SHEET FLOWS INTO EAST ON TO INDEPENDENCE BLVD. THEN INTO EXISTING NCDOT STORM SYSTEM
GRASS	0.17		0.20			0.20					
PAVED	0.02		0.95			0.95					
TOTAL	2.81				12.20				15.05		

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5/20/16

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
POST DRAINAGE PLAN

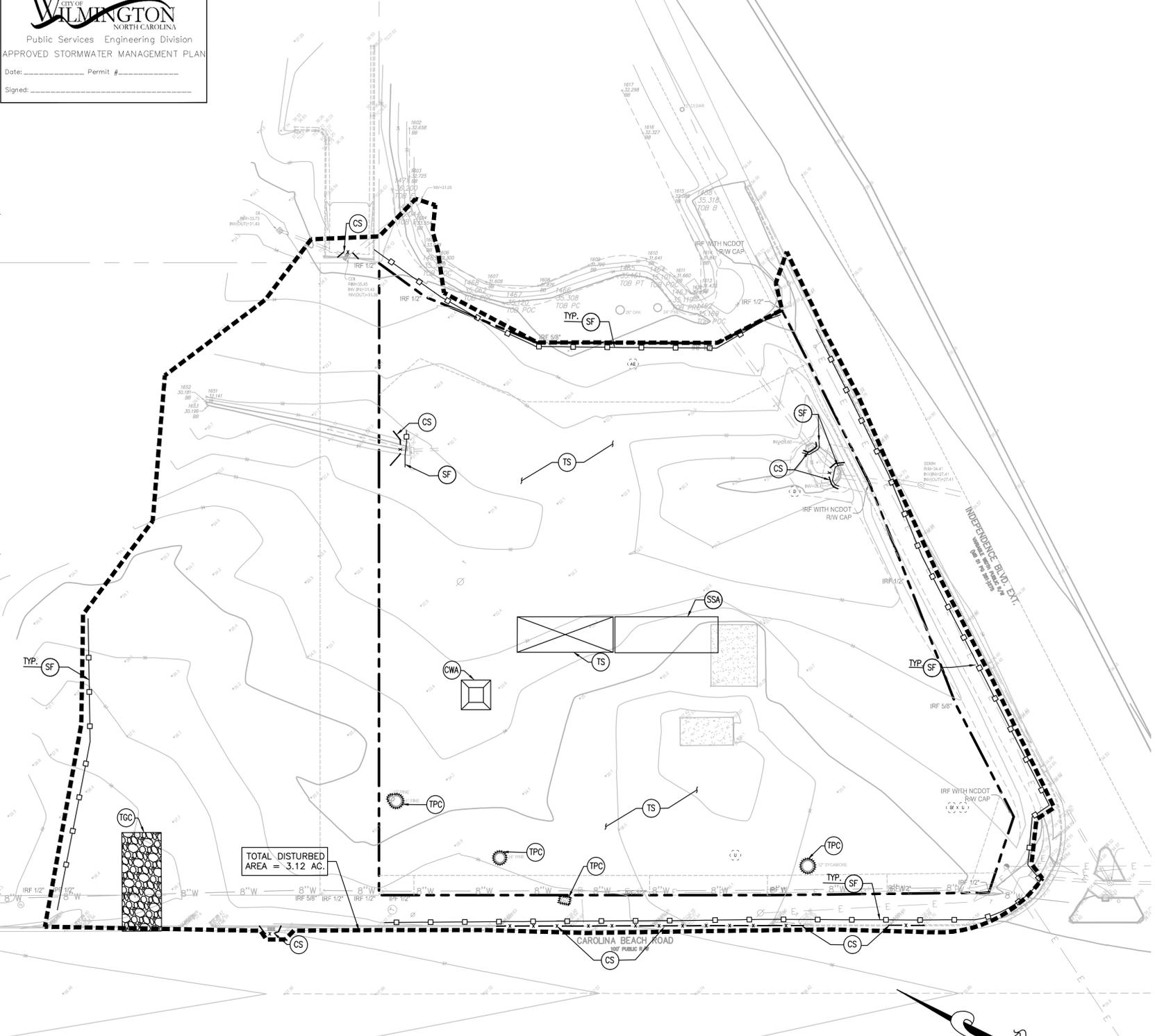
SHEET NUMBER
C-4.1

Approved Construction Plan
Name _____ Date _____

Planning _____
Traffic _____
Fire _____

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

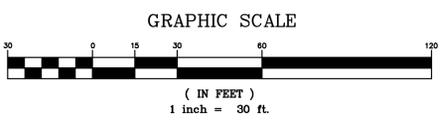
NPDES STABILIZATION TIMEFRAMES		
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
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 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 DITCH. 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 DOWNSLOPE 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 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 (4-8 tons / acre), or Nuts/Meats/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:

- 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
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- 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

- TG TEMPORARY GRAVEL CONSTRUCTION PER NCDCEQ (6.06)
- SF SEDIMENTATION FENCE PER NCDCEQ (6.62)
- CS COMPOST SOCK PER NCDCEQ (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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PROJECT TEAM

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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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05-20-16	ENGINEERING RESUBMITTAL #4



PROFESSIONAL IN CHARGE
JOHN NOURZAD
PROFESSIONAL ENGINEER
LICENSE NO. 0232107

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
EROSION CONTROL
PLAN PHASE I

SHEET NUMBER
C-5.0

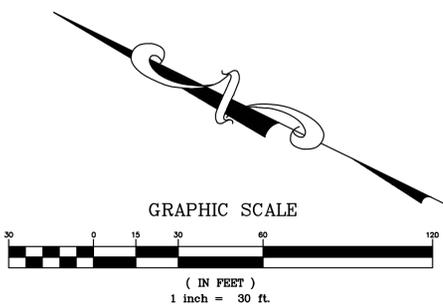
Approved Construction Plan
Name _____ Date _____

Planning _____
Traffic _____
Fire _____

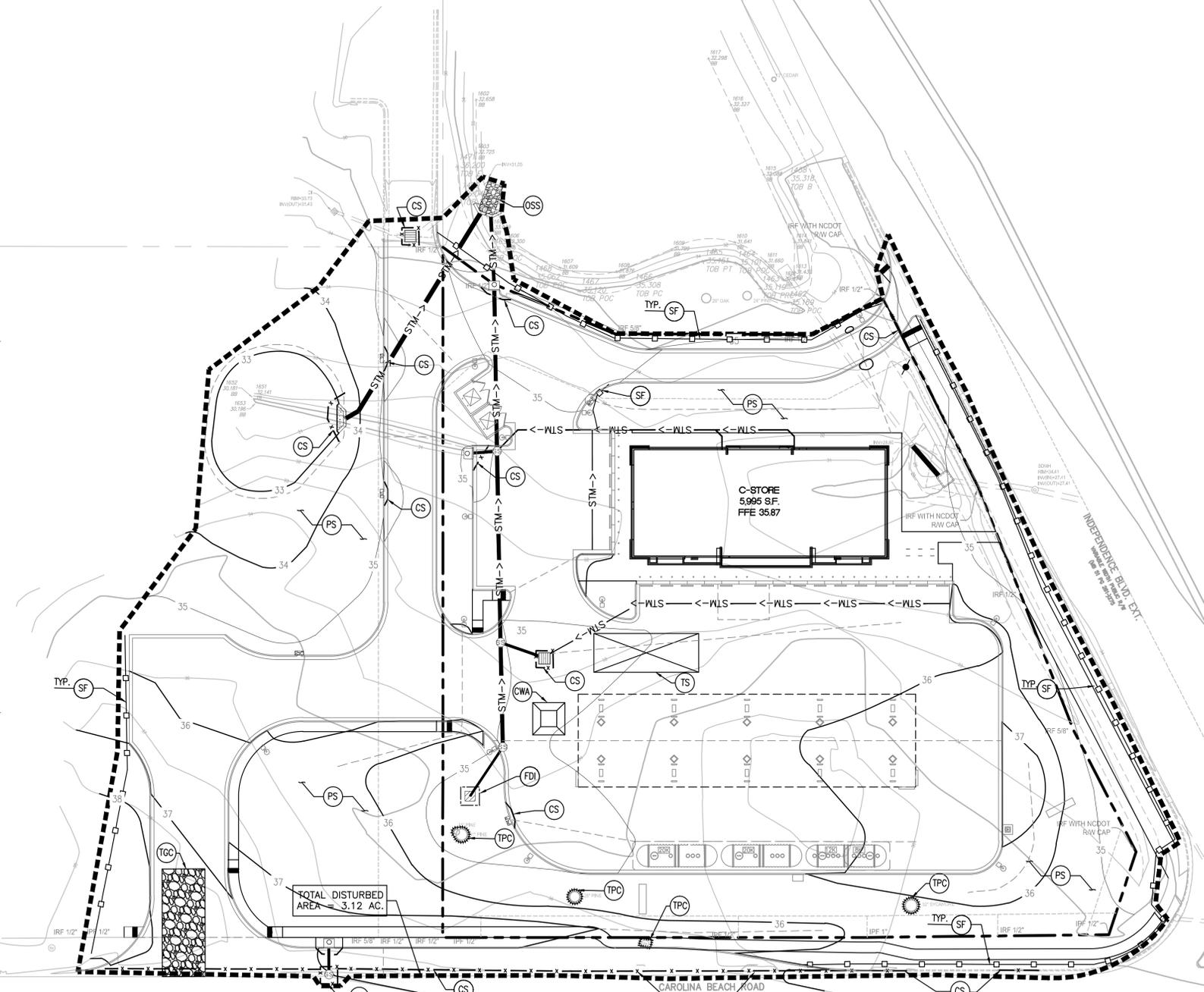


Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN
Date: _____ Permit # _____
Signed: _____

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 STENTGH FABRIC, WITHOUT WIRE BACKING. STAKE SPACING WILL BE 8 FEET MAX. WHEN STANDARD STENTGH 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 THR 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, RESEED AS NECESSARY AND MULCHED ACCORDING TO SPECIFICATIONS IN THE BEGETATIVE PLAN TO MAINTAIN A VIGOROUS, 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 RESEED 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 REQUIRED 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 grassing 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 (4-8 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 Kodo 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 Kodo 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.	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
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 - REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED).

PROJECT TEAM

NAME	ROLE
JOHN NOURZAD	PROFESSIONAL ENGINEER
LARRY DIEHL	PROJECT MANAGER
FEDERICO OLIVARES, PE	QUALITY CONTROL
RYAN SCOTT, EIT	DRAWN BY

ISSUE/REVISION RECORD

DATE	DESCRIPTION
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05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4

PROFESSIONAL IN CHARGE
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FEDERICO OLIVARES, PE

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RYAN SCOTT, EIT

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



5/20/16

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PROFESSIONAL ENGINEER
LICENSE NO. 023207

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CIRCLE K CAROLINA BEACH

WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

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SHEET NUMBER
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DATE	DESCRIPTION
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05-16-16	ENGINEERING RESUBMITTAL #4
05-20-16	ENGINEERING RESUBMITTAL #4



5/20/16
PROFESSIONAL IN CHARGE
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LICENSE NO. 023207

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FEDERICO OLIVARES, PE
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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-5.4

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

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

6.15 Riprap



- Riprap not properly graded—results in stone movement and erosion along edges.
- Foundation toe not properly reinforced—results in undercut riprap slope or slumping.
- Fill slopes not properly compacted before placing riprap—results in stone displacement.

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 Riprap

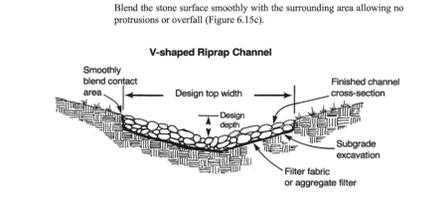


Figure 6.15c Placement of channel riprap.

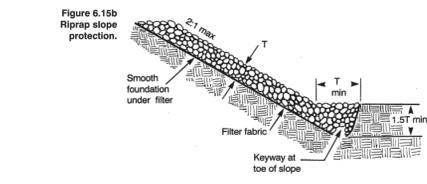
- Common Trouble Points**
- Excavation not deep enough—riprap blocks channel, resulting in erosion along edges.
 - Slope too steep—results in stone displacement. **Do not use riprap as a retaining wall.**
 - Foundation not properly smoothed for filter placement—results in damage to filter.
 - Filter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

6.15.4

6.15 Riprap

- **Synthetic filter fabric**—Place filter fabric on a smooth foundation. Overlap edges at least 12 inches, with anchor pins spaced every 3 ft along overlap. For large stones, a 4-inch layer of sand may be needed to protect filtercloth.
- **Sand/gravel filter**—Spread well-graded aggregate in a uniform layer to the required thickness (6 inches minimum). If two or more layers are specified, place the layer of smaller stones first and avoid mixing the layers.

Stone Placement Place riprap immediately after installing filter.
Install riprap to full thickness in one operation. Do not dump through chutes or use any method that causes segregation of stone sizes. Avoid dislodging or damaging underlying filter material when placing the stone.
If fabric is damaged, remove riprap and repair fabric by adding another layer, overlapping the damaged area by 12 inches.
Place small stones in voids to form a dense, uniform, well-graded mass. Selective loading at the quarry and some hand placement may be necessary to obtain an even distribution of stone sizes.



6.15.3

6 Riprap

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 RIPRAP

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 OUTLET STABILIZATION STRUCTURE

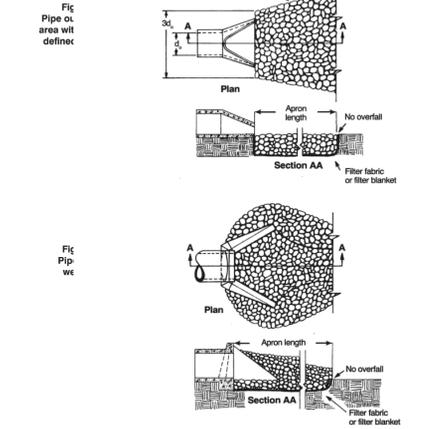
Purpose To reduce velocity and prevent erosion at the outlet of a channel, culvert, or other high-velocity section.



- 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 Riprap



Note: In both figures, the thickness of riprap is as shown in plans (minimum thickness is 1.5 times maximum stone diameter).

6.41.3

6.41 Riprap

- 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.

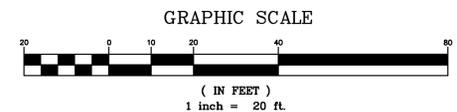
Maintenance Inspect riprap outlet structures after heavy rains for erosion at sides and ends of apron and for stone displacement.
Make repairs immediately using appropriate stone sizes. Do not place stones above finished grade.

6.41.4

6 Outlet Stabilization Structure

Installation Excavate subgrade below design elevation to allow for thickness of filter and riprap. Install riprap to minimum thickness of 1.5 times maximum stone diameter. Final structure should be to lines and elevations shown in plans.
NOTE: Over-excavation to allow for riprap and filter increases the amount of spoil considerably (reference Practice 6.31, *Riprap-lined Channels*).
Construct apron on zero grade. If there is no well-defined channel, cross section may be level or slightly depressed in the middle (Figure 6.41b). In a well-defined channel, extend riprap and filter to the top of the bank or as shown on plans (Figure 6.41c). Blend riprap smoothly to the surrounding land.
Apron should be straight and properly aligned with the receiving stream. If a curve is necessary to fit site conditions, curve the apron near the upstream end.
Compact any fill used in the subgrade to the density of the surrounding undisturbed material. Subgrade should be smooth enough to protect fabric from tearing.
Install a continuous section of extra-strength filter fabric on smooth, compacted foundation.
Protect filter fabric from tearing while placing riprap with machinery. Repair any damage immediately by removing riprap and installing another section of filter fabric. Upstream section of fabric should overlap downstream section to a minimum of 1 ft.
Make sure top of riprap apron is level with receiving stream or slightly below it. Riprap should not restrict the channel or produce an overfall.
Immediately following installation, stabilize all disturbed areas with vegetation as shown in plans.

6.41.2



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
---	SANITARY SEWER LINES
---	WATER LINES
---	UNDERGROUND ELECTRIC LINES
---	DOUBLE CLEAN OUT
---	CLEAN OUT
---	LIGHT POLES

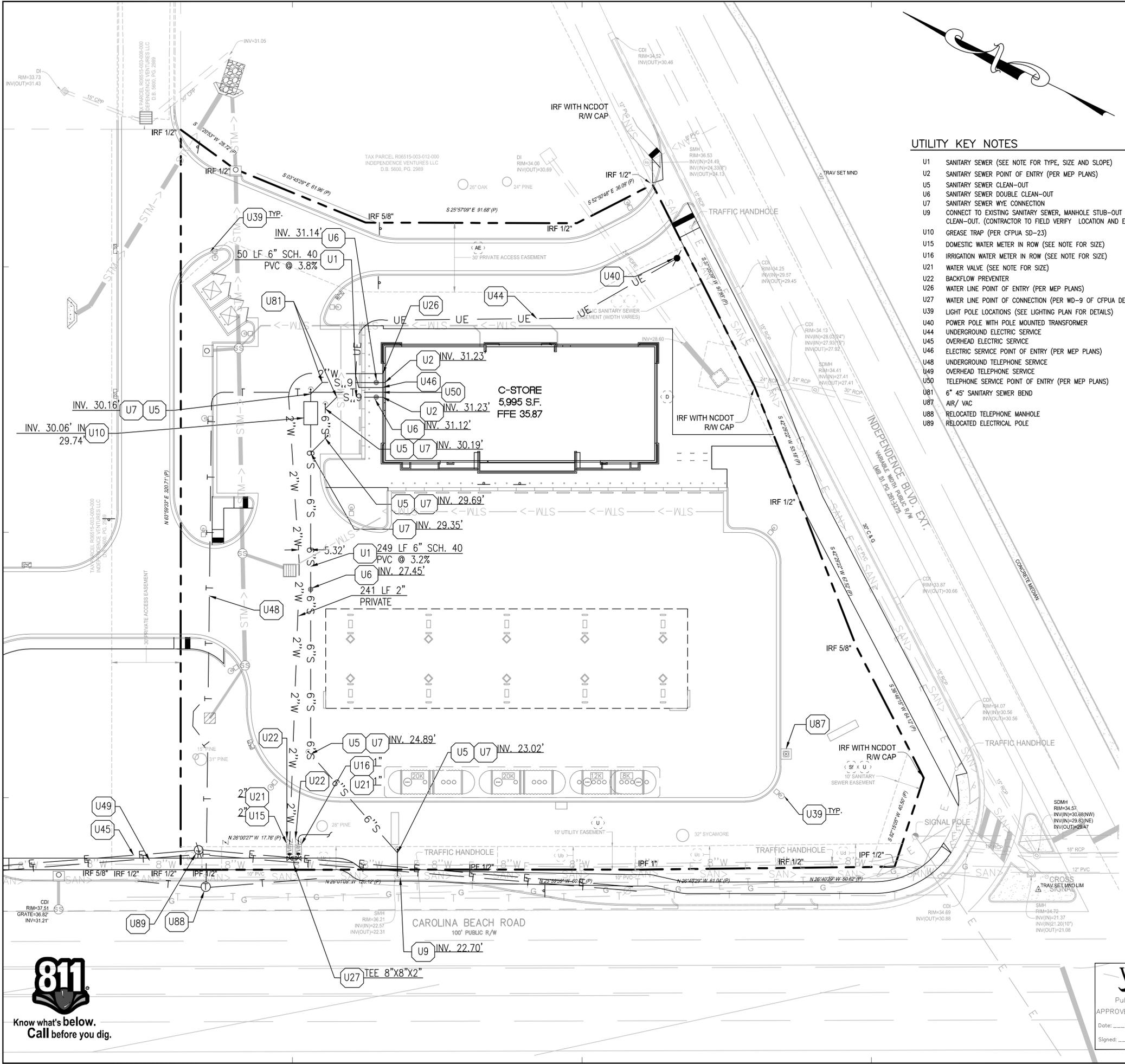
NOTE: ALL PROPOSED FLOWLINES HAVE A BASE ELEVATION OF XXXX.XX FEET

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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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 #3
05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4

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

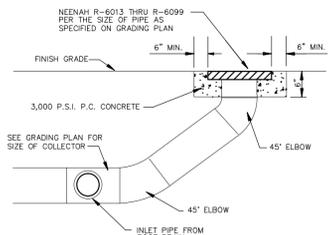


CITY OF WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

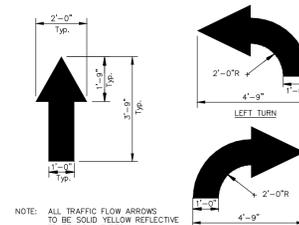
Date: _____ Permit # _____
Signed: _____

Approved Construction Plan

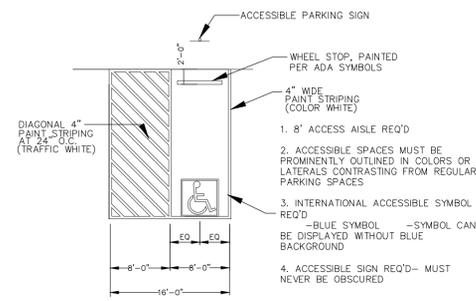
Name	Date
Planning _____	
Traffic _____	
Fire _____	



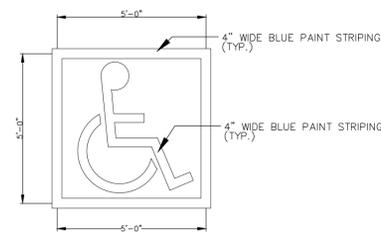
STORM DRAIN CLEAN-OUT
N.T.S.



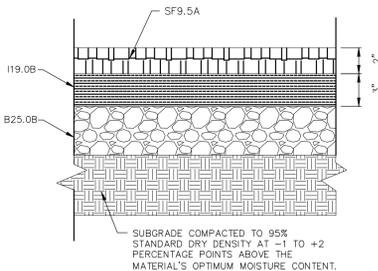
TRAFFIC FLOW ARROW
N.T.S.



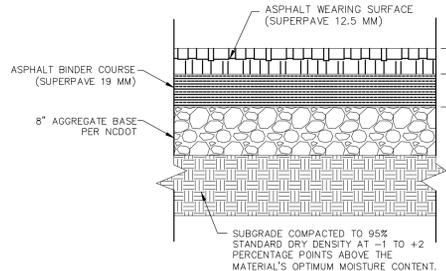
ACCESSIBLE PARKING STALL
N.T.S.



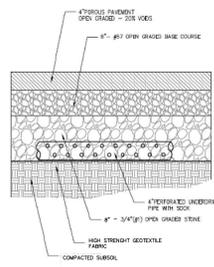
ACCESSIBLE PARKING SYMBOL
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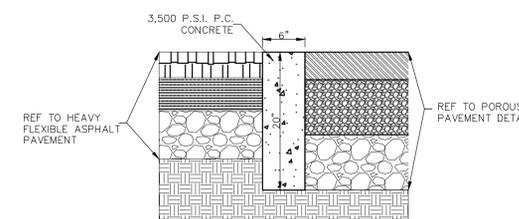
CAROLINA BEACH ROAD ASPHALT PAVEMENT
N.T.S.



HEAVY FLEXIBLE ASPHALT PAVEMENT
N.T.S.

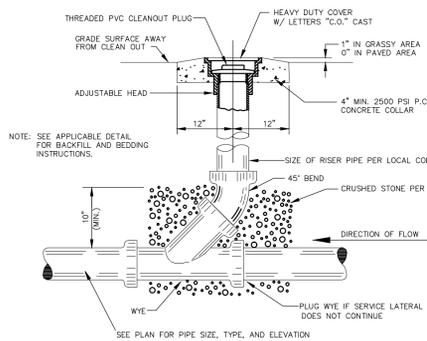


POROUS PAVEMENT DETAIL
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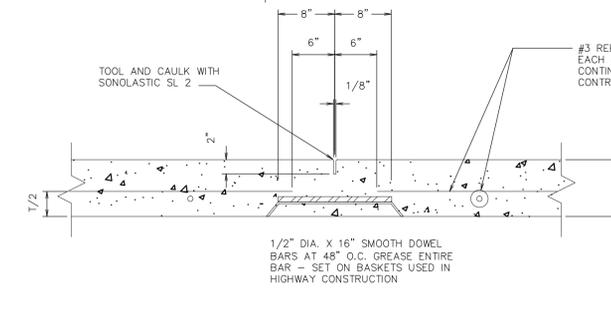


SPERATION WALL DETAIL
N.T.S.

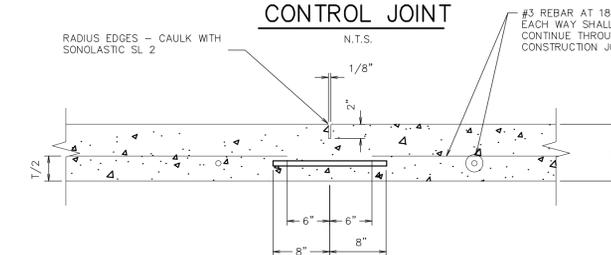
THICKENED EDGE OF PAVING
N.T.S.



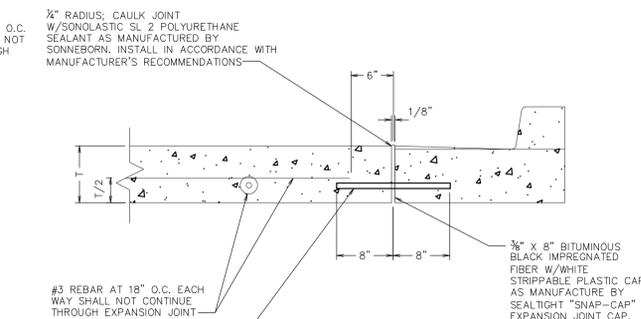
SANITARY SEWER CLEAN-OUT
N.T.S.



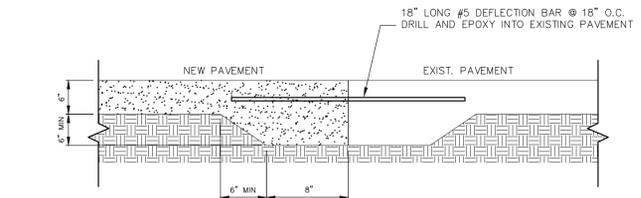
CONTROL JOINT
N.T.S.



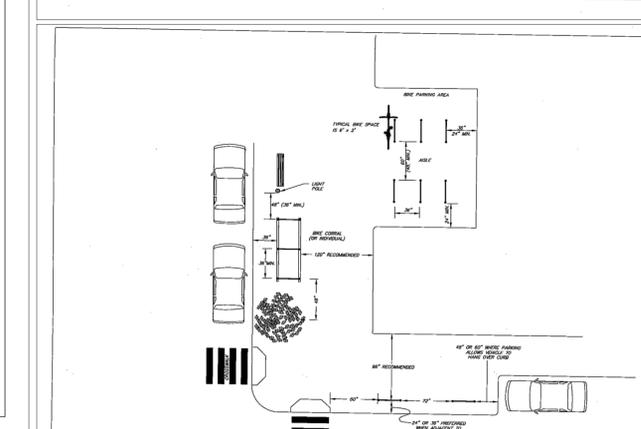
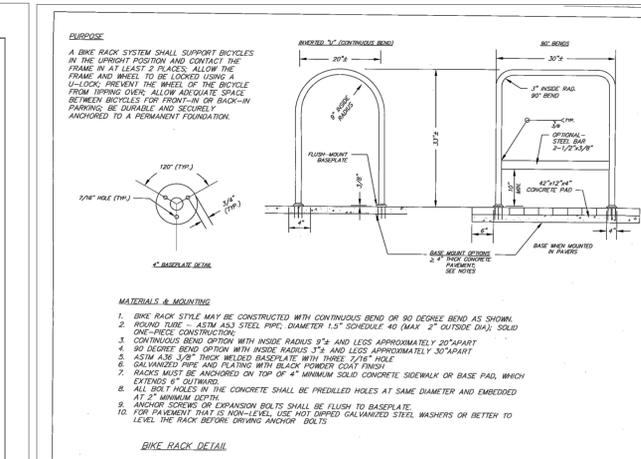
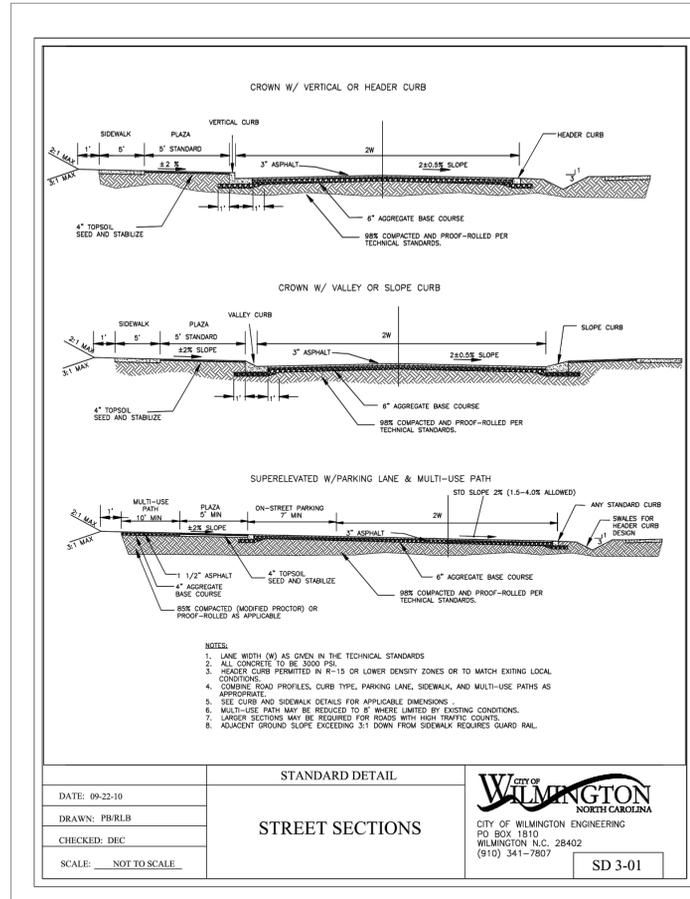
CONSTRUCTION JOINT
N.T.S.



EXPANSION JOINT
N.T.S.



CONNECTION TO EXIST. CONCRETE PAVING
N.T.S.



PAVING NOTES:
 1. CONCRETE SHALL BE AIR-ENTRAINED WITH 6% (+/-1%) AIR WITH MINIMUM CEMENT CONTENT OF 6 BAGS 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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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
03-23-16	ENGINEERING RESUBMITTAL
05-16-16	ENGINEERING RESUBMITTAL #3
05-20-16	ENGINEERING RESUBMITTAL #4

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 CENTERS IN ACCORDANCE WITH STD. NO. 840.06.
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E., STAGIONAL BARS BENT UP AROUND OPENING IN 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.

PIPE	DIMENSIONS OF BOX & PIPE				REINFORCEMENT BARS "A"		CUBIC YARDS TO BOX		TOTAL QUANTITIES BOX AND SLAB		DEDUCTIONS FOR ONE PIPE (Q.V.)					
	D	A	B	H	NO.	LENGTH	E	F	TOP SLAB DIMENSIONS	TOP SLAB	BOTTOM SLAB	MLU FT. OF ST.	LINE REINF. MIN. TH	DEL. VOL. MIN. TH	C.S.	R.C.
12"	2'-0"	2'-0"	2'-0"	2'-9"	12	2'-0"	3'-0"	3'-0"	0.187	0.187	0.185	22	0.750	0.015	0.024	
15"	2'-3"	2'-3"	2'-3"	2'-9"	12	2'-3"	3'-3"	3'-3"	0.198	0.198	0.204	24	0.802	0.023	0.026	
18"	2'-6"	2'-6"	2'-6"	2'-9"	14	2'-3"	3'-6"	3'-6"	0.227	0.227	0.222	30	1.085	0.033	0.049	
24"	3'-0"	3'-0"	3'-0"	3'-9"	16	3'-9"	4'-0"	4'-0"	0.298	0.298	0.259	40	1.434	0.059	0.085	
30"	3'-6"	3'-6"	3'-6"	3'-9"	18	4'-3"	4'-6"	4'-6"	0.375	0.375	0.298	51	1.860	0.082	0.127	
36"	4'-0"	4'-0"	4'-0"	4'-9"	20	4'-9"	5'-0"	5'-0"	0.463	0.463	0.353	64	2.341	0.102	0.178	
42"	4'-6"	4'-6"	4'-6"	4'-9"	22	5'-3"	5'-6"	5'-6"	0.560	0.560	0.370	77	2.878	0.130	0.243	
48"	5'-0"	5'-0"	5'-0"	5'-9"	24	6'-3"	6'-4"	6'-4"	0.743	0.743	0.407	111	3.623	0.235	0.317	
54"	5'-6"	5'-6"	5'-6"	5'-9"	26	6'-9"	6'-10"	6'-10"	0.880	0.880	0.444	128	4.283	0.287	0.401	
60"	6'-0"	6'-0"	6'-0"	6'-9"	30	7'-3"	7'-6"	7'-6"	1.042	1.042	0.481	145	5.090	0.387	0.485	
66"	7'-1"	7'-1"	6'-9"	6'-9"	32	7'-10"	8'-1"	8'-1"	1.210	1.210	0.518	169	5.917	0.444	0.589	

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 CENTERS. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.06.
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 CROWNS MATCHING.
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
INSTALL 6" WEEPHOLES AS DIRECTED BY THE ENGINEER.
INSTALL STONE GRATES, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 75M STONE IN A PROPER FABRIC BAG OR MAT, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

PIPE	DIMENSIONS OF BOX & PIPE				REINFORCEMENT BARS "A"		CUBIC YARDS TO BOX		TOTAL QUANTITIES BOX AND SLAB		DEDUCTIONS FOR ONE PIPE	
	D	A	B	H	NO.	LENGTH	E	F	TOP SLAB DIMENSIONS	TOP SLAB	BOTTOM SLAB	MLU FT. OF ST.
12"	3'-0"	2'-0"	2'-0"	3'-0"	0.222	0.222	0.592	0.015	0.028			
15"	3'-6"	2'-6"	2'-6"	3'-6"	0.444	0.444	0.592	0.023	0.038			
18"	4'-0"	3'-0"	3'-0"	4'-0"	0.703	0.703	0.592	0.033	0.049			
24"	4'-6"	3'-6"	3'-6"	4'-6"	0.814	0.814	0.592	0.059	0.085			
30"	5'-0"	4'-0"	4'-0"	5'-0"	0.822	0.822	0.592	0.092	0.127			

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

SHEET 1 OF 1
840.14

Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

WILMINGTON
NORTH CAROLINA
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____

ROCK RIP RAP

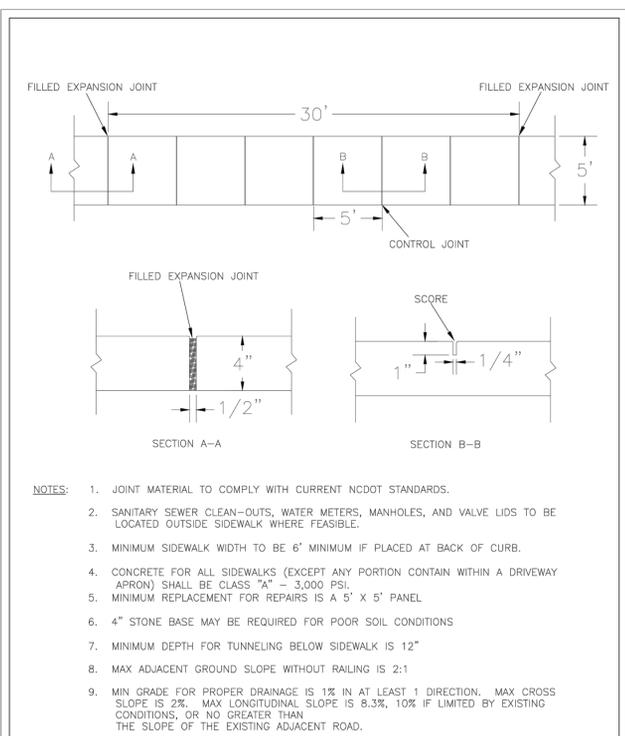
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PLACE RIP-RAP IN ALL AREAS INDICATED ON THE DRAWING. THE STONE SHALL CONSIST OF FIELD STONE OR ROUGH UNIFORM QUARRY STONE AS NEARLY UNIFORM IN SECTION AS IS PRACTICAL. THE STONES SHALL BE DENSE, RESISTANT TO THE ACTION OF AIR AND WATER, AND SUITABLE 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.

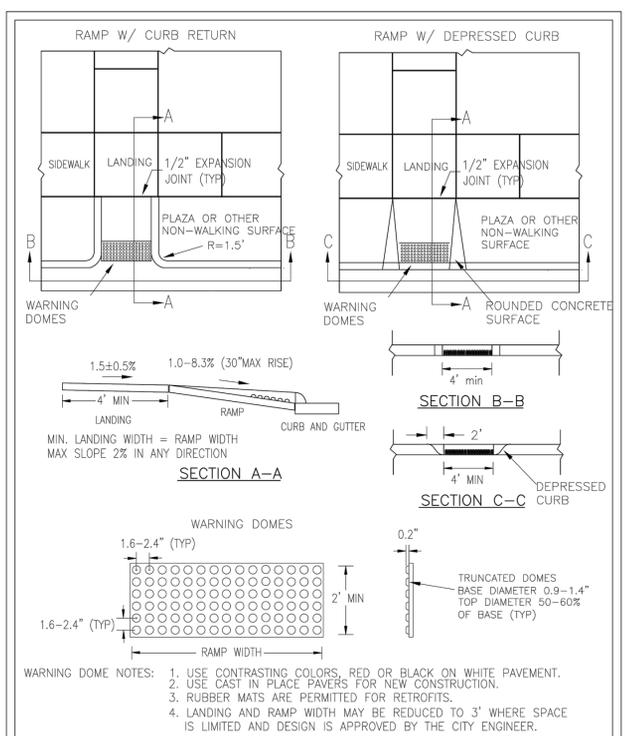
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

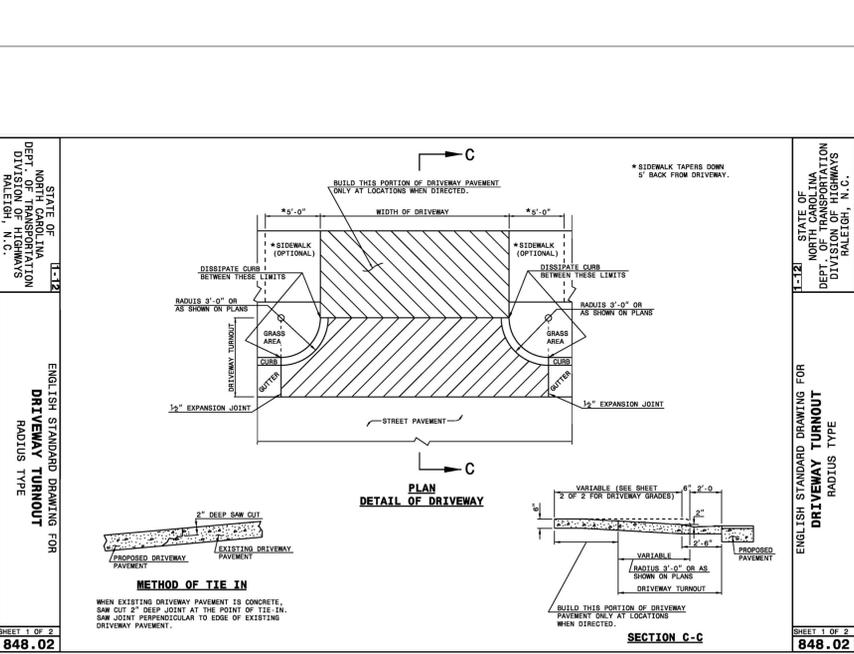
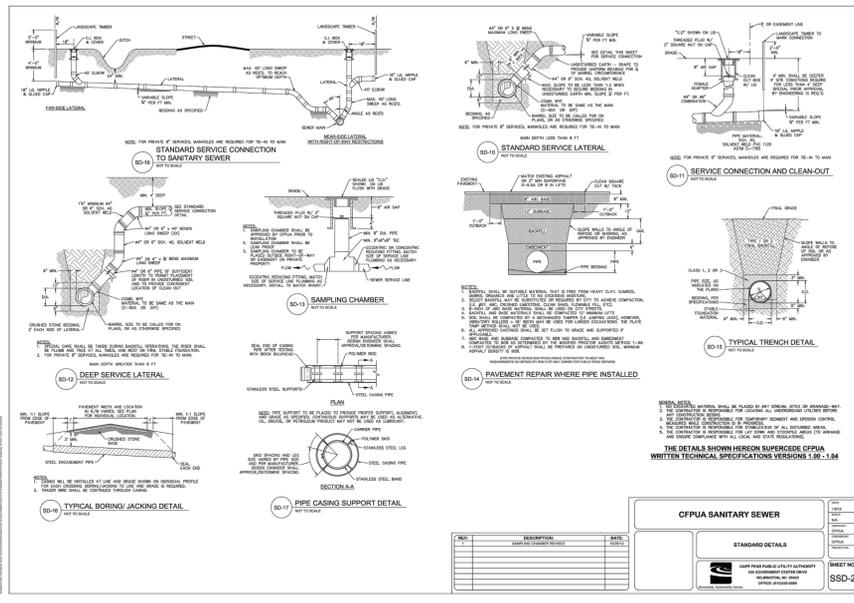
GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" OR CENTERS. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.06.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOBELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE 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 6" IN DEPTH OR LESS USE 6" WALLS AND BOTTOM SLAB, OVER 6" TO 12" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 12" TO 18" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 18" TO 24" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 24" TO 30" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 30" TO 36" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 36" TO 42" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 42" TO 48" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 48" TO 54" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 54" TO 60" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 60" TO 66" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 66" TO 72" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 72" TO 78" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 78" TO 84" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 84" TO 90" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 90" TO 96" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 96" TO 102" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 102" TO 108" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 108" TO 114" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 114" TO 120" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 120" TO 126" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 126" TO 132" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 132" TO 138" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 138" TO 144" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 144" TO 150" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 150" TO 156" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 156" TO 162" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 162" TO 168" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 168" TO 174" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 174" TO 180" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 180" TO 186" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 186" TO 192" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 192" TO 198" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 198" TO 204" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 204" TO 210" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 210" TO 216" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 216" TO 222" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 222" TO 228" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 228" TO 234" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 234" TO 240" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 240" TO 246" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 246" TO 252" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 252" TO 258" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 258" TO 264" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 264" TO 270" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 270" TO 276" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 276" TO 282" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 282" TO 288" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 288" TO 294" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 294" TO 300" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 300" TO 306" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 306" TO 312" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 312" TO 318" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 318" TO 324" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 324" TO 330" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 330" TO 336" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 336" TO 342" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 342" TO 348" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 348" TO 354" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 354" TO 360" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 360" TO 366" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 366" TO 372" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 372" TO 378" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 378" TO 384" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 384" TO 390" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 390" TO 396" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 396" TO 402" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 402" TO 408" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 408" TO 414" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 414" TO 420" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 420" TO 426" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 426" TO 432" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 432" TO 438" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 438" TO 444" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 444" TO 450" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 450" TO 456" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 456" TO 462" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 462" TO 468" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 468" TO 474" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 474" TO 480" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 480" TO 486" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 486" TO 492" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 492" TO 498" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 498" TO 504" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 504" TO 510" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 510" TO 516" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 516" TO 522" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 522" TO 528" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 528" TO 534" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 534" TO 540" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 540" TO 546" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 546" TO 552" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 552" TO 558" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 558" TO 564" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 564" TO 570" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 570" TO 576" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 576" TO 582" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 582" TO 588" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 588" TO 594" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 594" TO 600" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 600" TO 606" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 606" TO 612" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 612" TO 618" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 618" TO 624" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 624" TO 630" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 630" TO 636" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 636" TO 642" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 642" TO 648" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 648" TO 654" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 654" TO 660" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 660" TO 666" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 666" TO 672" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 672" TO 678" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 678" TO 684" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 684" TO 690" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 690" TO 696" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 696" TO 702" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 702" TO 708" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 708" TO 714" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 714" TO 720" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 720" TO 726" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 726" TO 732" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 732" TO 738" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 738" TO 744" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 744" TO 750" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 750" TO 756" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 756" TO 762" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 762" TO 768" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 768" TO 774" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 774" TO 780" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 780" TO 786" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 786" TO 792" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 792" TO 798" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 798" TO 804" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 804" TO 810" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 810" TO 816" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 816" TO 822" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 822" TO 828" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 828" TO 834" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 834" TO 840" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 840" TO 846" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 846" TO 852" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 852" TO 858" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 858" TO 864" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 864" TO 870" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 870" TO 876" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 876" TO 882" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 882" TO 888" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 888" TO 894" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 894" TO 900" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 900" TO 906" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 906" TO 912" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 912" TO 918" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 918" TO 924" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 924" TO 930" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 930" TO 936" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 936" TO 942" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 942" TO 948" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 948" TO 954" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 954" TO 960" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 960" TO 966" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 966" TO 972" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 972" TO 978" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 978" TO 984" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 984" TO 990" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 990" TO 996" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 996" TO 1002" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1002" TO 1008" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1008" TO 1014" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1014" TO 1020" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1020" TO 1026" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1026" TO 1032" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1032" TO 1038" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1038" TO 1044" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1044" TO 1050" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1050" TO 1056" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1056" TO 1062" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1062" TO 1068" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1068" TO 1074" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1074" TO 1080" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1080" TO 1086" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1086" TO 1092" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1092" TO 1098" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1098" TO 1104" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1104" TO 1110" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1110" TO 1116" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1116" TO 1122" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1122" TO 1128" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1128" TO 1134" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1134" TO 1140" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1140" TO 1146" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1146" TO 1152" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1152" TO 1158" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1158" TO 1164" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1164" TO 1170" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1170" TO 1176" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1176" TO 1182" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1182" TO 1188" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1188" TO 1194" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1194" TO 1200" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1200" TO 1206" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1206" TO 1212" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1212" TO 1218" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1218" TO 1224" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1224" TO 1230" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1230" TO 1236" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1236" TO 1242" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1242" TO 1248" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1248" TO 1254" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1254" TO 1260" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1260" TO 1266" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1266" TO 1272" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1272" TO 1278" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1278" TO 1284" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1284" TO 1290" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1290" TO 1296" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1296" TO 1302" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1302" TO 1308" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1308" TO 1314" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1314" TO 1320" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1320" TO 1326" DEPTH USE 6" 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1542" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1542" TO 1548" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1548" TO 1554" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1554" TO 1560" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1560" TO 1566" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1566" TO 1572" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1572" TO 1578" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1578" TO 1584" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1584" TO 1590" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1590" TO 1596" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1596" TO 1602" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1602" TO 1608" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1608" TO 1614" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1614" TO 1620" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1620" TO 1626" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1626" TO 1632" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1632" TO 1638" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1638" TO 1644" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1644" TO 1650" DEPTH USE 6" WALLS AND BOTTOM SLAB, OVER 1650" TO 1656" DEPTH USE 6" WALLS AND BOTTOM SLAB



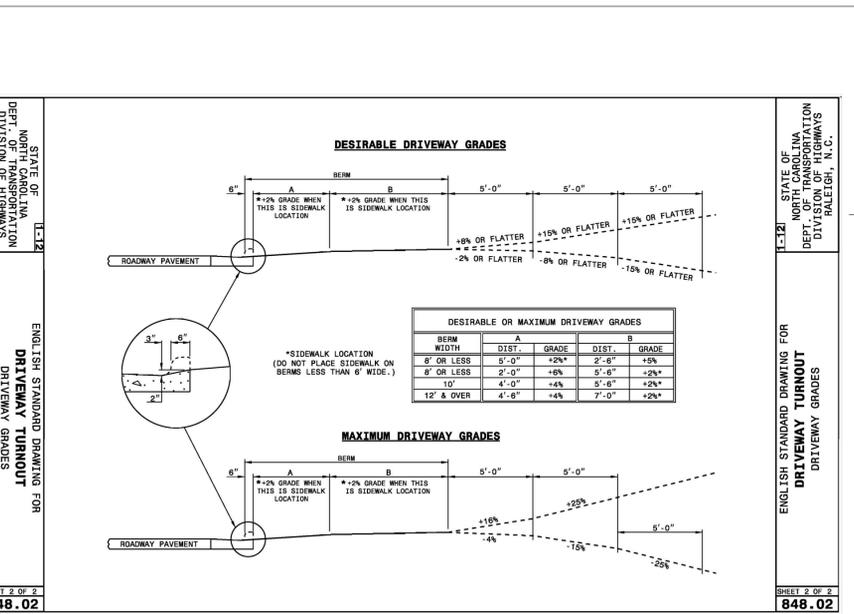
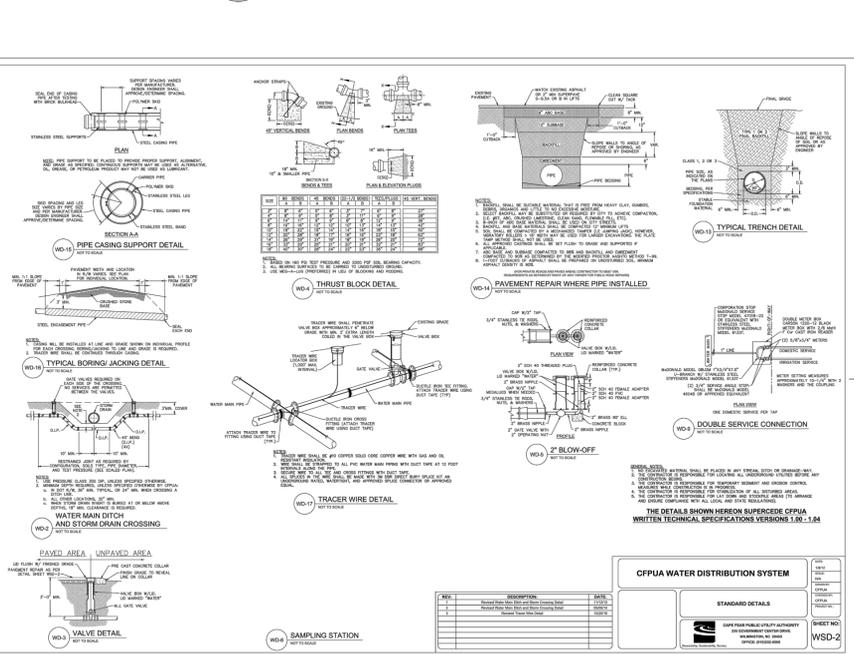
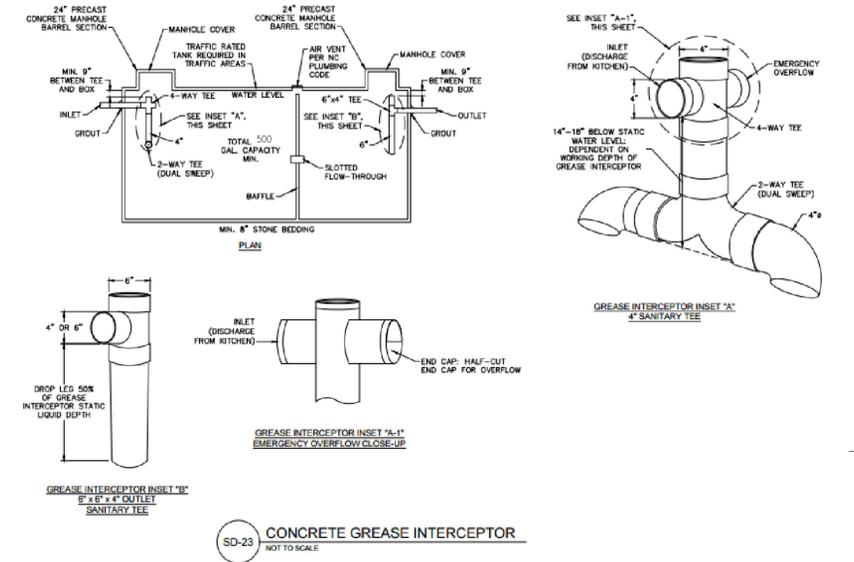
DATE: OCTOBER, 2010	STANDARD DETAIL	<p>CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, N.C. 28402 (910) 341-7807</p>	SD 3-10
DRAWN: PBJSR	SIDEWALK		
CHECKED: DEC			
SCALE: NOT TO SCALE			



DATE: DECEMBER, 2010	STANDARD DETAIL	<p>CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, N.C. 28402 (910) 341-7807</p>	SD3-08
DRAWN: PBJSR	PERPENDICULAR CURB RAMP ADJACENT TO PLAZA		
CHECKED: DEC			
SCALE: NOT TO SCALE			



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH STANDARD DRAWING FOR DRIVEWAY TURNOUT RADIUS TYPE	SHEET 1 OF 2 848.02
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH STANDARD DRAWING FOR DRIVEWAY TURNOUT DRIVEWAY GRADES	SHEET 2 OF 2 848.02
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Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

City of Wilmington
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	
05-16-16	ENGINEERING RESUBMITTAL #3	
05-20-16	ENGINEERING RESUBMITTAL #4	



5/20/16

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

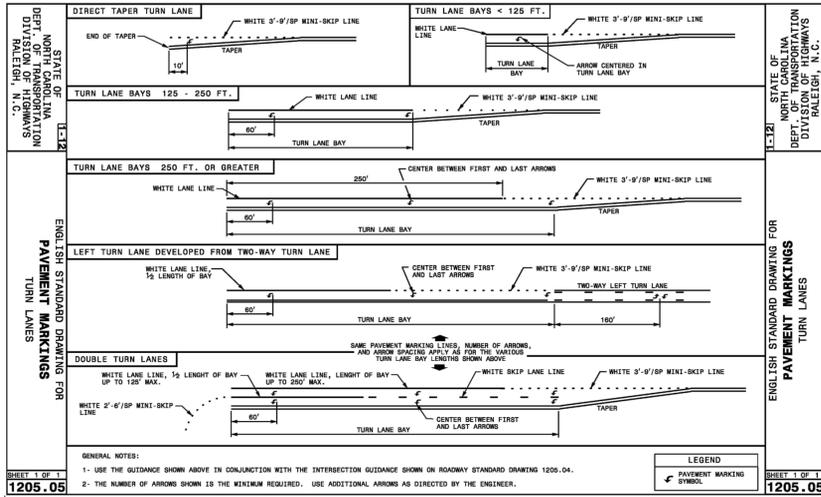
WILMINGTON NORTH CAROLINA
3739 CAROLINA BEACH RD
WILMINGTON, NC



PROJECT NUMBER
20151091

SHEET TITLE
DETAIL SHEET

SHEET NUMBER
C-7.2



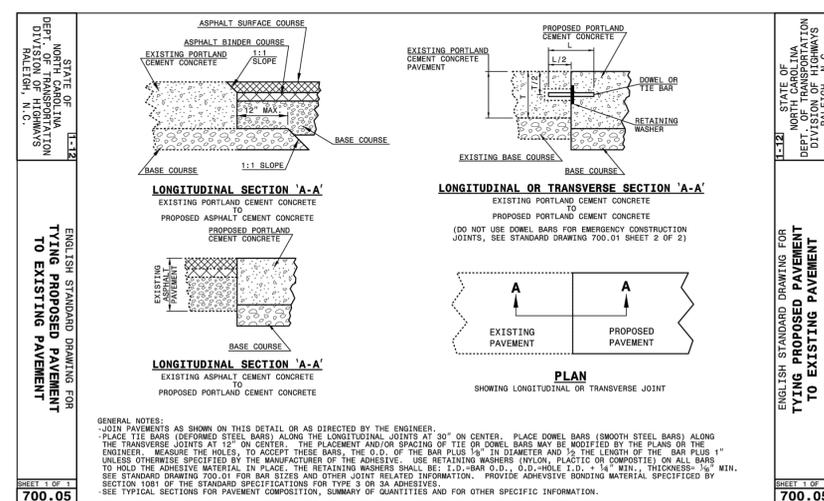
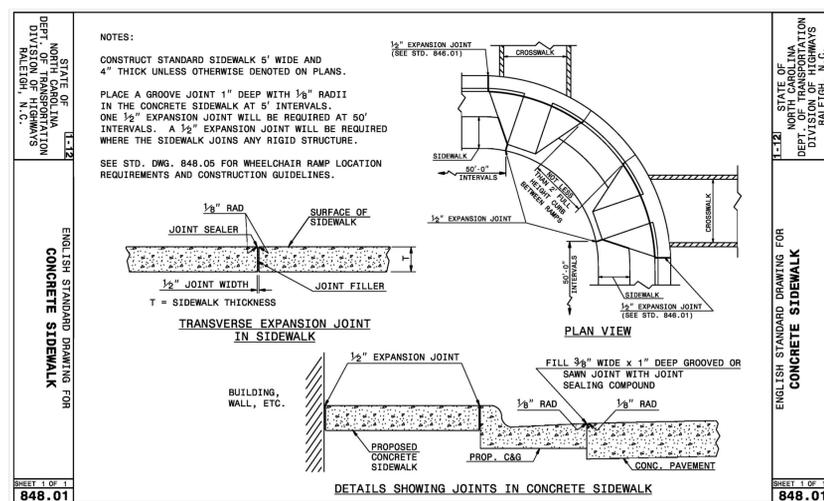
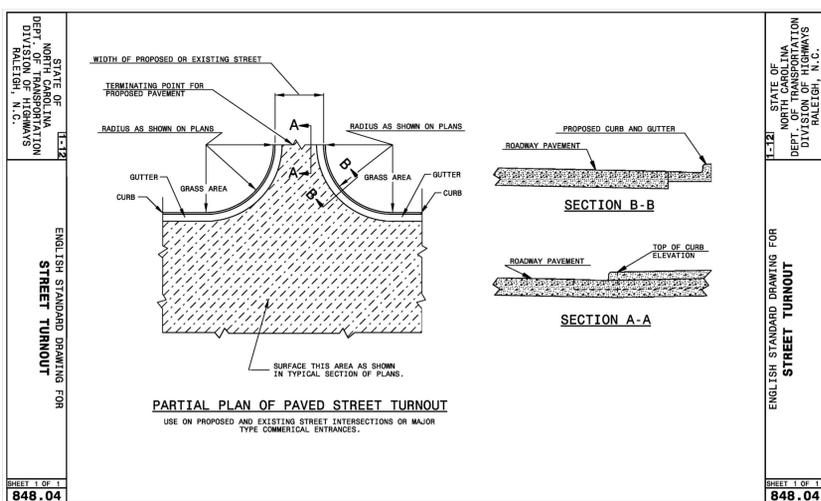
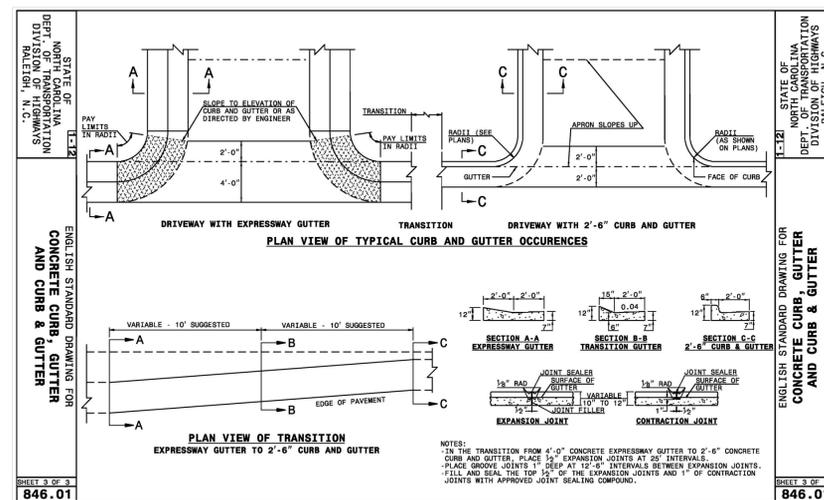
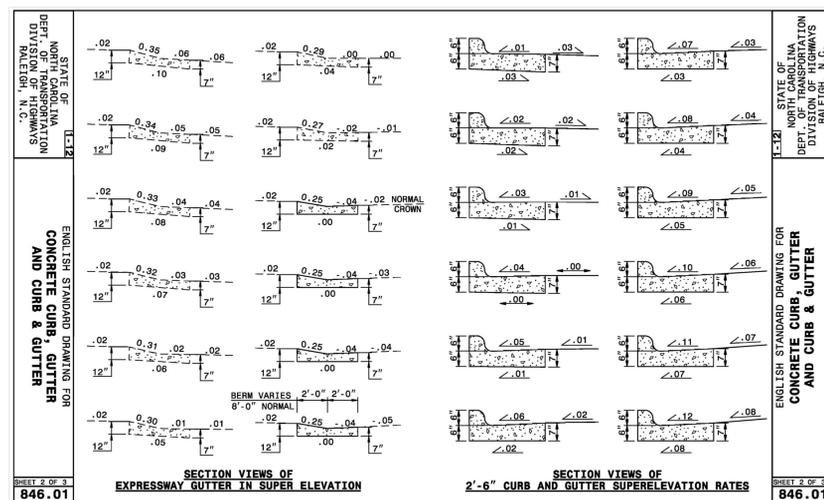
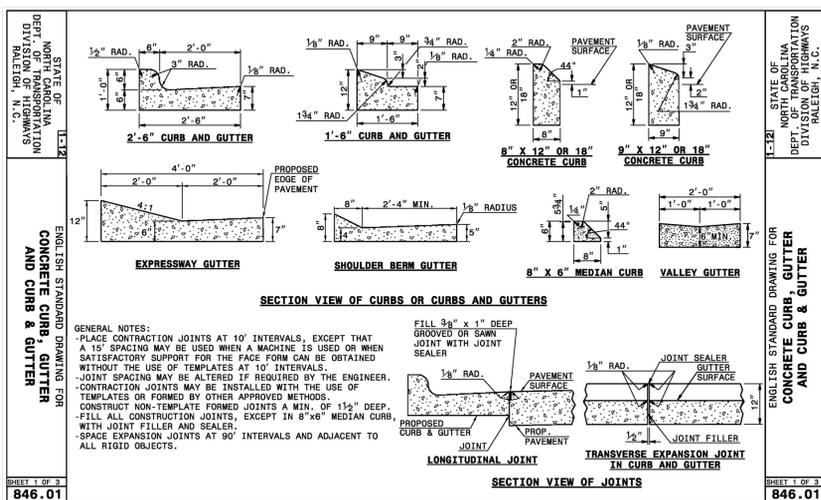
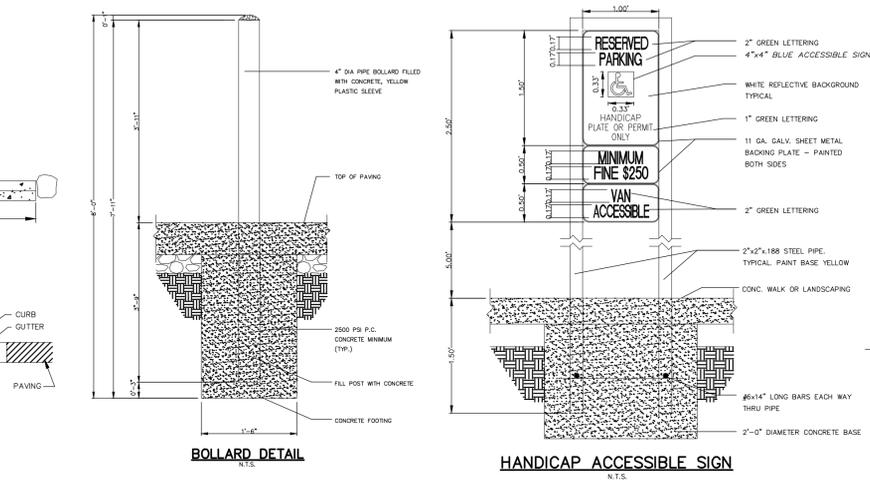
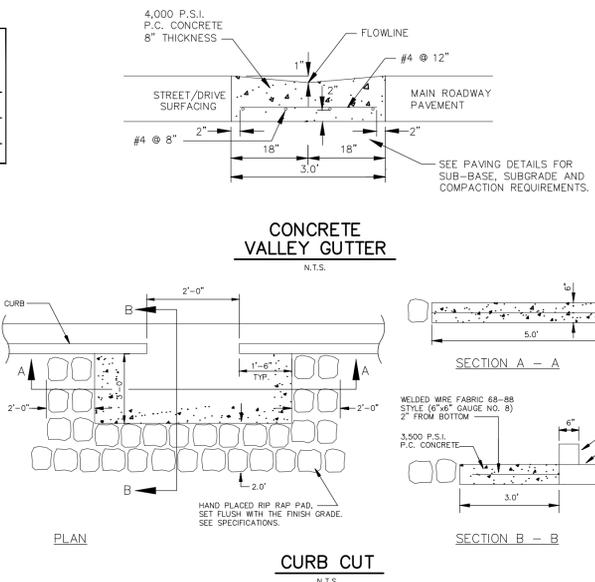
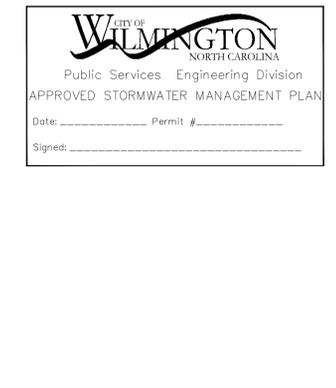
Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____



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

PROJECT TEAM

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

PROJECT NUMBER
20151091

SHEET TITLE
DETAIL SHEET

SHEET NUMBER
C-7.3



5/20/16



(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	NCDOT RESUBMITTAL
03-15-16	GRADING & EROSION RESUBMITTAL
03-15-16	TRAFFIC RESUBMITTAL
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05-16-16	ENGINEERING RESUBMITTAL #5
05-20-16	ENGINEERING RESUBMITTAL #4



5/20/16

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

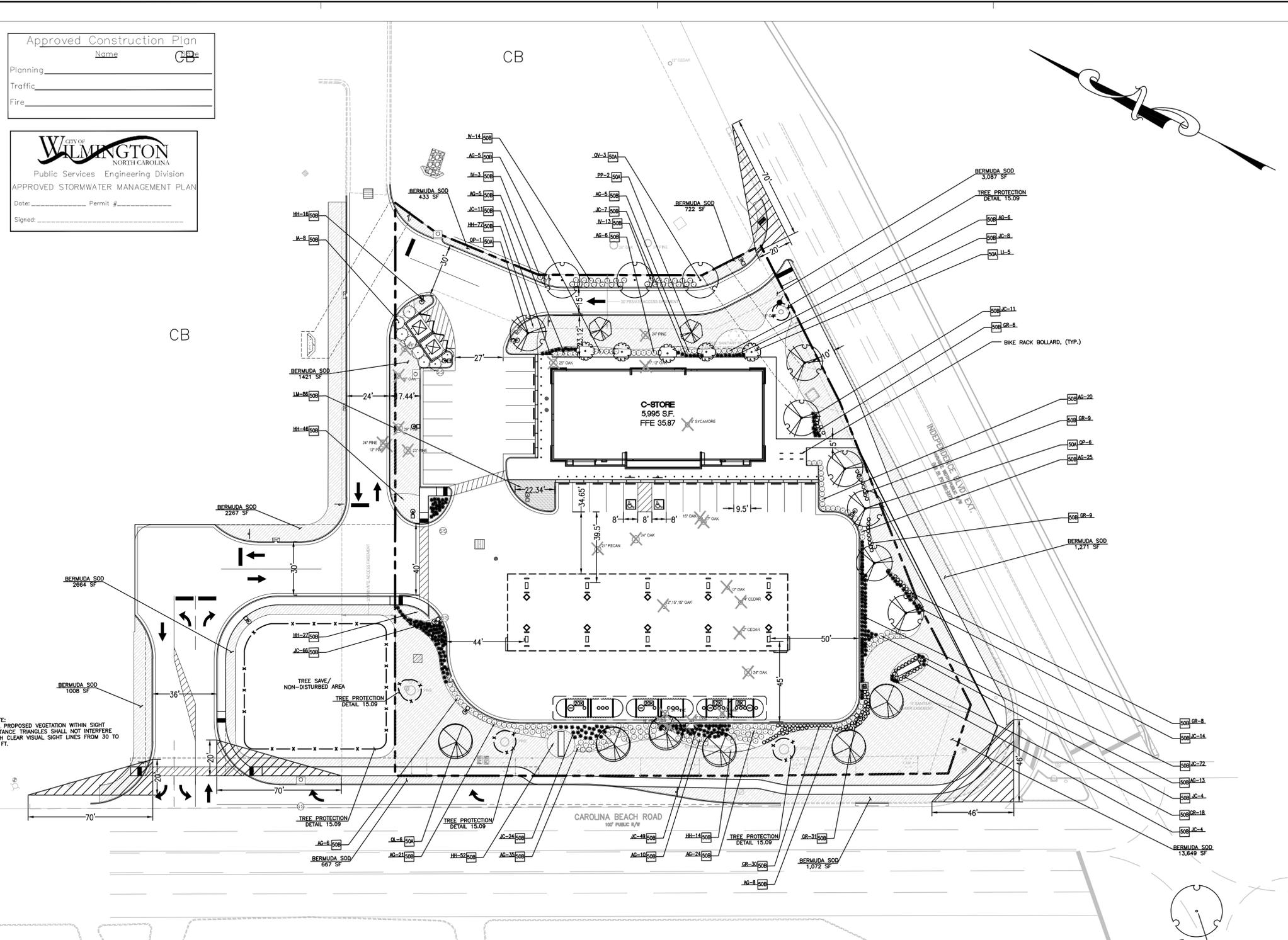
SHEET TITLE
LANDSCAPE PLAN

SHEET NUMBER

L-1.0

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 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

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' (REQUIRED), 171' (PROPOSED); REAR: 10'; SIDE: 0'; CORNER: 20' & 89' (REQUIRED), 189' (PROPOSED)

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)

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

ACRES	SQUARE FEET
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	95	450
7	85	95	595
6	85	70	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	SPIKE 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 Liriope 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.

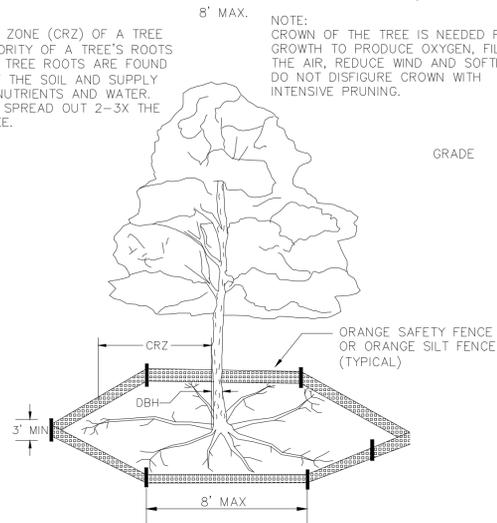
- IRRIGATION TO BE PROVIDED BY DESIGN-BUILD.

- 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.



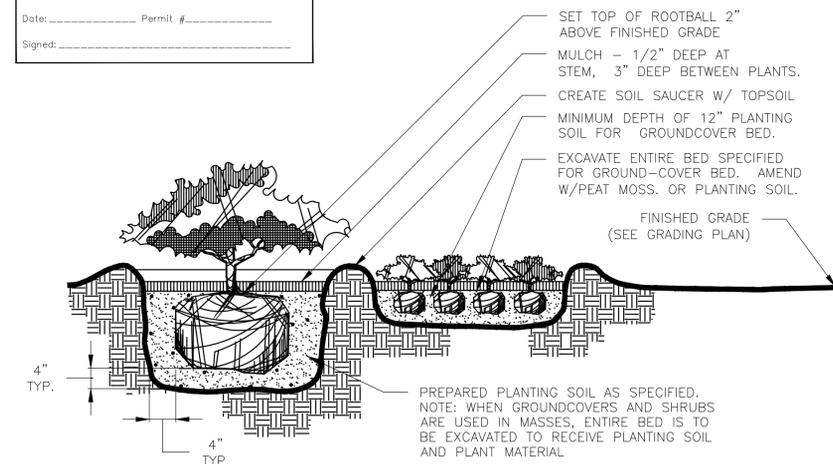
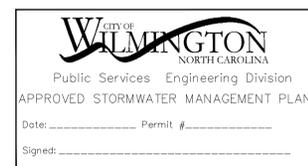
NOTES:

- PROTECT 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

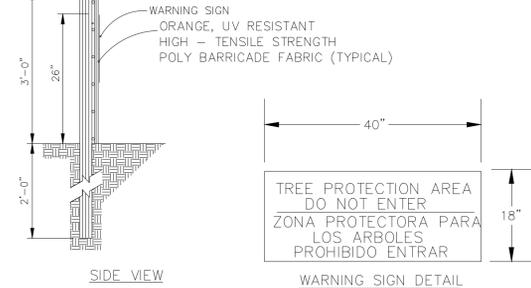
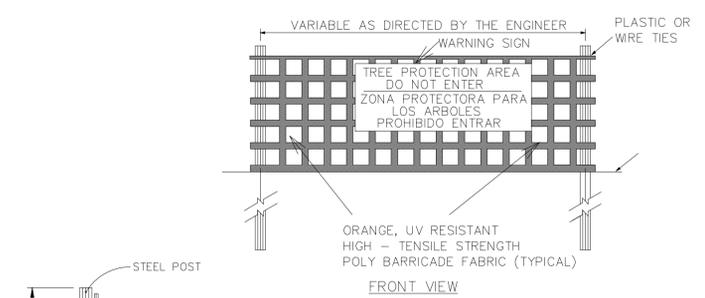
Approved Construction Plan	
Name	Date
Planning _____	
Traffic _____	
Fire _____	



SHRUB PLANTING

N.T.S.

50B

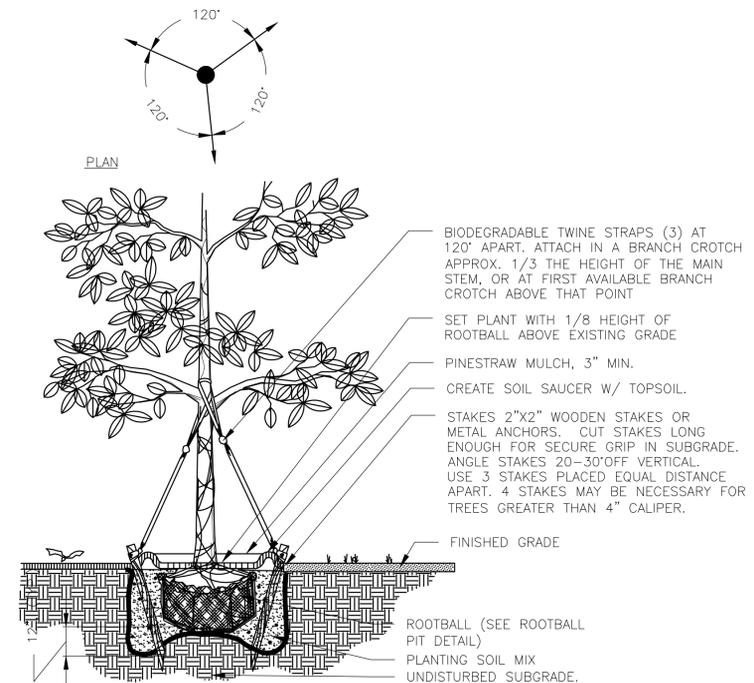


NOTES:

- 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

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5/20/16

PROFESSIONAL IN CHARGE
HAMILTON WILLIAMS
PROFESSIONAL ENGINEER
LICENSE NO. 023207

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LARRY DIEHL

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CAROLINA BEACH**

**WILMINGTON
NORTH CAROLINA**

**3739 CAROLINA BEACH RD
WILMINGTON, NC**



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20151091

SHEET TITLE
LANDSCAPE DETAILS

SHEET NUMBER

L-1.1