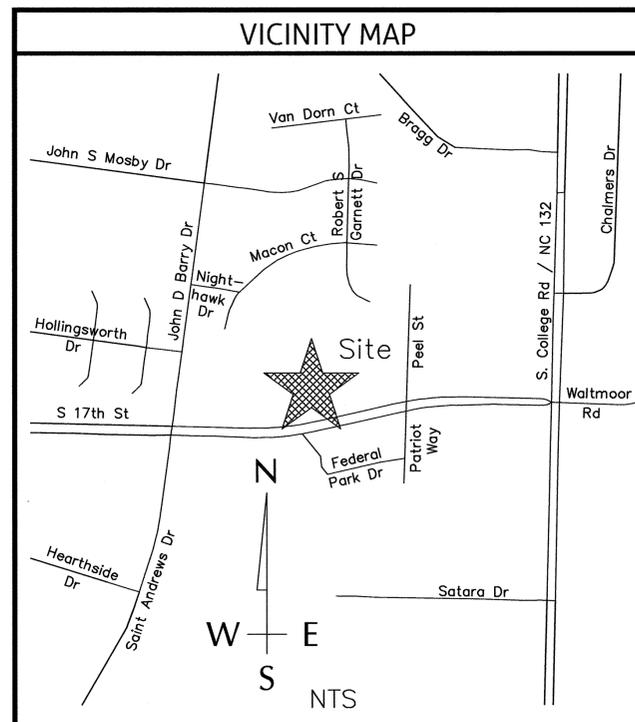


# CONSTRUCTION DRAWINGS FOR ARBOR COMMONS

WILMINGTON, NC

AUGUST 2016

LEGEND	
LINETYPE DESCRIPTION	LINETYPE DESCRIPTION
EXISTING WATERLINE	PROPOSED UNDERGROUND ELECTRIC
PROPOSED WATERLINE	EXISTING GASLINE
EXISTING STORM DRAINAGE	PROPOSED GASLINE
PROPOSED STORM DRAINAGE	SILT FENCE
EXISTING SANITARY SEWER	TREE PROTECTION & SILT FENCE
PROPOSED SANITARY SEWER	FENCE
EXISTING FORCE MAIN	TREE PROTECTION
PROPOSED FORCE MAIN	SWALE
EXISTING ELECTRIC (OVERHEAD)	RIGHT-OF-WAY
PROPOSED ELECTRIC (OVERHEAD)	EXISTING WETLANDS
EXISTING UNDERGROUND ELECTRIC	1' CONTOUR
EXISTING EASEMENT	5' CONTOUR
PROJECT BOUNDARY	PROPOSED EASEMENT



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

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

Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_



FINAL DESIGN  
NOT APPROVED FOR CONSTRUCTION

PREPARED BY:

**WithersRavenel**  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 919.469.3340 | license #: C-0832 |  
www.withersravenel.com

DEVELOPER/OWNER

**LEON CAPITAL GROUP**  
5970 Fairview Road, Suite 450  
Charlotte, NC 28210  
336-327-3050  
ATTN: TODD HARRELSON

**COORDINATION NOTES:**

- THE CONTRACTOR IS REQUIRED TO OBTAIN ANY/ALL PERMITS REQUIRED FOR CONSTRUCTION OF THESE PLANS.
- ALL WORK IS TO BE IN ACCORDANCE WITH THE CITY OF WILMINGTON, CAPE FEAR PUBLIC UTILITY AUTHORITY, NEW HANOVER COUNTY, AND THE STATE OF NORTH CAROLINA.
- THE CONTRACTOR IS TO ESTABLISH AND CHECK ALL HORIZONTAL AND VERTICAL CONTROLS TO BE USED WITH THE PROJECT. IN ADDITION, THE CONTRACTOR IS TO COMPUTE THE LAYOUT OF THE ENTIRE SITE PLAN IN ADVANCE OF BEGINNING ANY WORK ASSOCIATED WITH THE SUBJECT PLANS. CONTRACTOR SHALL EMPLOY A PROFESSIONAL SURVEYOR TO PERFORM SITE IMPROVEMENT STAKEOUT(S).
- ANY TIME WORK IS PERFORMED OFF-SITE OR WITHIN AN EXISTING EASEMENT, THE CONTRACTOR IS TO NOTIFY THE HOLDER OF SAID EASEMENT AS TO THE NATURE OF PROPOSED WORK, AND TO FOLLOW ANY GUIDELINES OR STANDARDS WHICH ARE ASSOCIATED WITH OR REFERENCED IN THE RECORDED EASEMENT.
- THE CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING WITH THE CITY OF WILMINGTON INSPECTOR AND NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO THE MEETING. AT A MINIMUM, THE CONTRACTOR, CITY INSPECTOR, AND ENGINEER SHALL ATTEND THIS MEETING.

**GENERAL NOTES:**

- THE BOUNDARY, TOPOGRAPHY AND UTILITIES SURVEY HAVE BEEN PROVIDED BY WITHERS RAVENEL. THE VERTICAL DATUM FOR THE GROUND SURVEY FOR THIS PROJECT IS NAVD 29. CONTRACTOR TO VERIFY ALL ELEVATIONS IN THE FIELD.
- THE TREE SURVEY HAS BEEN PROVIDED BY ROBERT SESSOMS & ASSOCIATES, PLLC (NC LICENSE NUMBER P-0894).
- REASONABLE CARE HAS BEEN EXERCISED IN SHOWING THE LOCATION OF EXISTING UTILITIES ON THE PLANS. THE EXACT LOCATION OF ALL EXISTING UTILITIES IS NOT KNOWN IN ALL CASES. THE CONTRACTOR SHALL EXPLORE THE AREA AHEAD OF DITCHING OPERATIONS BY OBSERVATIONS, ELECTRONIC DEVICES, HAND DIGGING AND BY PERSONAL CONTACT WITH THE UTILITY COMPANIES. IN ORDER TO LOCATE EXISTING UTILITIES IN ADVANCE OF TRENCHING OPERATIONS SO AS TO ELIMINATE OR MINIMIZE DAMAGE TO EXISTING UTILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS RESULTING FROM ANY DAMAGE TO THE EXISTING UTILITY LINES INCLUDING LOSS OF UTILITY REVENUES. CONTRACTOR SHALL ARRANGE FOR TEMPORARY SUPPORT OF EXISTING UTILITIES, SUCH AS POLES, CONDUITS, FIBER OPTIC CABLES, TELEPHONE CABLES, WATER LINES, ETC.
- CONTRACTOR SHALL COMPLY WITH THE LATEST REVISIONS AND INTERPRETATIONS OF THE DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION PROMULGATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT. CONTRACTOR SHALL PLAN AND CONSTRUCT WORK SO AS TO CAUSE MINIMUM INCONVENIENCE TO THE OWNER AND THE PUBLIC.
- CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN AT ALL TIMES DURING THE PROGRESS OR TEMPORARY SUSPENSION OF WORK, SUITABLE BARRIERS, FENCES, SIGNS OR OTHER ADEQUATE PROTECTION, INCLUDING FLAGMEN AND WATCHMEN AS NECESSARY TO INSURE THE SAFETY OF THE PUBLIC AS WELL AS THOSE ENGAGED IN THE CONSTRUCTION WORK. CONSTRUCTION SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "CONSTRUCTION AND MAINTENANCE OPERATIONS SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BY THE DOT.
- ALL MATERIAL CLEARED OR DEMOLISHED BY THE CONTRACTOR IN ORDER TO CONSTRUCT THE WORK SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF-SITE.
- ALL WORK BY THE CONTRACTOR SHALL BE WARRANTED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR AFTER THE OWNER ACCEPTS THE WORK.
- CONTRACTOR SHALL CALL THE NORTH CAROLINA ONE-CALL CENTER AT 1 (800) 632-4949 AND ALLOW THE CENTER TO LOCATE EXISTING UTILITIES BEFORE DIGGING.
- CONTRACTOR SHALL REMOVE ASPHALT, AGGREGATE BASE COURSE, AND CONCRETE CURB & GUTTER WITHIN LIMITS OF DEMOLITION AS SHOWN ON PLAN.
- IF THESE UNITS ARE SOLD AT ANY POINT, THE BUYER MUST RECEIVE A SUBDIVISION STREET DISCLOSURE STATEMENT. PLEASE NOTE THIS ON THE SITE PLAN AND ADVISE THE PROPERTY OWNER OF THIS REQUIREMENT.
- THIS PROPERTY IS NOT WITHIN ANY FLOOD HAZARD AREA AS EVIDENCED ON N.C. FLOOD MAP 3720313500J.

**DEMOLITION NOTES:**

- CONTRACTOR TO COORDINATE WITH THE OWNER TO PROPERLY MAINTAIN OR RELOCATE EXISTING SERVICE CONNECTIONS WHEN NECESSARY.
- CONTRACTOR IS TO WALK THE SITE AND BECOME FAMILIAR WITH THE SCOPE OF DEMOLITION REQUIRED. ALL DEMOLITION WORK REQUIRED TO CONSTRUCT NEW SITE IMPROVEMENTS WILL BE PERFORMED BY THE CONTRACTOR AND WILL BE UNCLASSIFIED EXCAVATION.
- DEMOLITION SHALL INCLUDE BUT IS NOT LIMITED TO THE EXCAVATION, HAULING AND OFFSITE DISPOSAL OF CONCRETE PADS, CONCRETE DITCHES, FOUNDATIONS, SLABS, STEPS, AND STRUCTURES; ABANDONED UTILITIES, BUILDINGS, PAVEMENTS AND ALL MATERIALS CLEARED AND STRIPPED TO THE EXTENT NECESSARY AS DIRECTED BY THE SOILS ENGINEER FOR THE INSTALLATION OF THE NEW IMPROVEMENTS AND WITHIN THE LIMITS OF CLEARING AND GRADING AND AS SHOWN ON THESE PLANS.
- THE CONTRACTOR SHALL PROTECT ALL ADJACENT PROPERTY, STRUCTURES AND UTILITIES ON THE PROPERTY NOT TO BE DEMOLISHED. DAMAGE TO PROPERTIES OF OTHERS DUE TO THE CONTRACTOR'S ACTIVITIES SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT NO COST TO OWNER.
- ELECTRIC, TELEPHONE, SANITARY SEWER, WATER AND STORM SEWER UTILITIES THAT SERVICE OFF-SITE PROPERTIES SHALL BE MAINTAINED DURING THE CONSTRUCTION PROCESS BY THE CONTRACTOR.
- EXISTING UTILITIES NOT INTENDED FOR DEMOLITION SHALL BE MAINTAINED, PROTECTED AND UNDISTURBED DURING DEMOLITION.
- ALL EXISTING IMPROVEMENTS INDICATED OR REQUIRED TO BE DEMOLISHED SHALL INCLUDE REMOVAL FROM THE PROPERTY AND PROPER DISPOSAL.
- CONTRACTOR SHALL COORDINATE RELOCATION OF ALL EXISTING OVER HEAD AND UNDERGROUND UTILITIES INCLUDING CABLE, GAS, TELEPHONE AND ELECTRIC AND ANY OTHER UTILITIES THROUGH THE SITE WITH THE RESPECTIVE COMPANIES.
- PROVIDE SMOOTH SAW CUT OF EXISTING PAVEMENTS, CURBS AND GUTTERS AND SIDEWALKS TO BE DEMOLISHED.
- ALL DEMOLITION WORK SHALL BE DONE IN STRICT ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS AS WELL AS OSHA REGULATIONS.
- INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATIONS OF THE MAINS BY DIGGING TEST PITS BY HAND.

**EROSION AND SEDIMENT CONTROL NOTES**

**EROSION CONTROL AND SEQUENCE OF CONSTRUCTION NOTES:**

- CLEAR AND REMOVE FROM SITE ALL TREES, ROOTS, ROOT MAT, ETC. FROM THE AREA WITHIN DESIGNATED CLEARING LIMITS.
- PLANT GRASS OVER ALL GRADED AREAS WITHIN 21 CALENDAR DAYS OF CEASE OF ANY GRADING ACTIVITY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING AND RESTORING TO PRE-CONSTRUCTION CONDITIONS ANY AREAS OUTSIDE THE PROJECT LIMITS THAT MAY INADVERTENTLY BE DAMAGED DUE TO THE FAILURE OF THE EROSION MEASURES
- DURING GRADING AND AFTER GRADING HAS BEEN COMPLETED, CONTRACTOR SHALL CONTINUE TO MAINTAIN PERMANENT AND TEMPORARY EROSION CONTROL MEASURES UNTIL FINAL INSPECTION AND APPROVAL BY THE NEW HANOVER COUNTY ENGINEERING DEPARTMENT.
- WATER, FERTILIZE, MOW AND MAINTAIN SPRIGGED, SODDED AND PLANTED AREAS UNTIL FINAL APPROVAL BY NEW HANOVER COUNTY.
- PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.

**MAINTENANCE PLAN**

- ALL EROSION AND SEDIMENT CONTROL PRACTICES 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. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
- 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 BEHIND THE SEDIMENT FENCE WHEN IT BECOMES 0.5 FEET DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER. SILT FENCE STAKES WILL BE SPACED 6 FEET APART UNLESS A WIRE BACKING IS USED WITH 8 FOOT STAKE SPACING.
- SEDIMENT WILL BE REMOVED FROM SEDIMENT TRAPS WHEN THE DESIGNED STORAGE REPLACE WHEN THE SEDIMENT POOL NO LONGER DRAINS OR WHEN THE ROCK IS DISLODGED. BAPFLES WILL BE REPAIRED OR REPLACED IF THEY COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. THEY WILL BE REPLACED PROMPTLY. SEDIMENT WILL BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE 1ST BAFFLE.
- ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDDED 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.
- SEDIMENT WILL BE REMOVED FROM AROUND TEMPORARY ROCK CHECK DAMS ONCE A WEEK AND AFTER EVERY RAIN EVENT.

**STABILIZATION NOTES**

- SLOPES LEFT EXPOSED WILL, WITHIN 21 CALENDAR DAYS OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH GROUND COVER, DEVICES, OR STRUCTURES TO RESTRAIN EROSION.
- ALL OTHER DISTURBED AREAS SHALL BE PLANTED OR OTHERWISE PROVIDED PERMANENT GROUND COVER WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT WHICHEVER PERIOD IS SHORTER.

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

Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.8.2(b))

**PERMANENT SEEDING SCHEDULE - MIXTURE 5CP**

SPECIES	RATE (LB/ACRE)
CENTPEDE GRASS	10-20

Seeding Dates  
MARCH - JUNE

**Soil Amendments**

APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS, OR APPLY 300 LB/ACRE 10-10-1 FERTILIZER.

Mulch  
DO NOT MULCH.

**Maintenance**

FERTILIZE VERY SPARINGLY LB/ACRE NITROGEN IN SPRING WITH NO PHOSPHORUS. CENTPEDE GRASS CANNOT TOLERATE HIGH PH OR EXCESS FERTILIZER.

**TEMPORARY SEEDING-LATE WINTER/EARLY SPRING**

Seeding Mixture

**WINTER AND EARLY SPRING**

SPECIES	RATE (LB/ACRE)
Rye (GRAIN)	120
ANNUAL LESPEDEZA (KORE IN PIEDMONT AND COASTAL PLAIN, KOREAN IN MOUNTAINS)	50

OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE.

**SUMMER**

SPECIES	RATE (LB/ACRE)
GERMAN MILLET	40

**FALL**

SPECIES	RATE (LB/ACRE)
RYE (GRAIN)	120

Seeding dates

COASTAL PLAIN - DEC. 1-APR. 15 - LATE WINTER AND EARLY SPRING  
APRIL 15 - AUG. 15 - SUMMER  
AUG. 15 - DEC. 30 - FALL

Soil amendments

FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 750 LB/ACRE 10-10-10 FERTILIZER.

Mulch

APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKLING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

Maintenance

REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

**GRADING NOTES:**

- TREE PRESERVATION / REMOVAL PERMIT IS REQUIRED PRIOR TO CLEARING AND LAND DISTURBANCE.
- NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED.
- PROTECTIVE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. LAND CLEARING AND CONSTRUCTION CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION REQUIREMENTS AND METHODS.

**SITE NOTES**

- ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO START OF CONSTRUCTION. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
- THE GENERAL CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND R.O.W.'S PUBLIC OR PRIVATE, PRIOR TO WORKING IN THESE AREAS.
- CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
- ACCESS TO UTILITIES, FIRE HYDRANTS, STREET LIGHTING, ETC., SHALL REMAIN UNDISTURBED, UNLESS COORDINATED WITH THE RESPECTIVE UTILITY.
- DO NOT SCALE THIS DRAWING AS IT IS A REPRODUCTION AND SUBJECT TO DISTORTION.
- THE GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT AND AT LEAST ONCE A WEEK DURING CONSTRUCTION.
- THE GENERAL CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
- CONTRACTOR SHALL MAINTAIN AN "AS-BUILT" SET OF DRAWINGS TO RECORD THE EXACT LOCATION OF ALL PIPING PRIOR TO CONCEALMENT. DRAWINGS SHALL BE GIVEN TO THE OWNER UPON COMPLETION OF THE PROJECT WITH A COPY OF THE TRANSMITTAL LETTER TO THE ENGINEER.
- IF DEPARTURES FROM THE SPECIFICATIONS OR DRAWINGS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEPARTURES AND REASONS THEREOF SHALL BE GIVEN TO THE OWNER FOR REVIEW, NO DEPARTURES FROM THE CONTRACT DOCUMENT SHALL BE MADE WITHOUT THE PERMISSION OF THE OWNER.
- CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES. THE LOCATION OF ALL EXISTING UTILITIES ARE NOT NECESSARILY SHOWN ON PLANS AND WHERE SHOWN ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL ON HIS INITIATIVE AND AT NO EXTRA COST LOCATE ALL UNDERGROUND LINES AND STRUCTURES AS NECESSARY. NO CLAIMS FOR DAMAGES OR EXTRA COMPENSATION SHALL ACCRUE TO THE CONTRACTOR FROM THE PRESENCE OF SUCH PIPE OTHER OBSTRUCTIONS OR FROM DELAY DUE TO REMOVAL OR REARRANGEMENT OF THE SAME. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND STRUCTURES. CONTACT NORTH CAROLINA ONE CALL TOLL FREE 1-800-632-4949 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL NONSUBSCRIBING UTILITIES.
- ALL PERMITS RELATIVE TO PROJECT MUST BE OBTAINED, PRIOR TO CONSTRUCTION
- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH PERMITS ISSUED AND APPLICABLE STATE, COUNTY, AND LOCAL CODES.
- FOR BUILDING DIMENSIONS, SEE ARCHITECTURAL DRAWINGS.
- ALL DIMENSIONS AND RADII ARE TO OUTSIDE FACE OF BUILDING OR TO FACE OF CURB UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL INSPECTIONS, CERTIFICATIONS, EQUIPMENT, ETC., THAT MAY BE REQUIRED.
- THE ENGINEER AND/OR OWNER DISCLAIM ANY ROLE IN THE CONSTRUCTION MEANS AND METHODS ASSOCIATED WITH THE PROJECT AS SET FORTH IN THESE PLANS.

**TRAFFIC NOTES:**

- ALL PAVEMENT MARKINGS IN PUBLIC RIGHT-OF-WAYS AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS. [DETAIL SD-13 C&W TECH STD]
- ALL SIGNS AND PAVEMENT MARKINGS IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS. [DETAIL SD 15-13 C&W TECH STD]
- ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- CONTACT TRAFFIC ENGINEERING AT 341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
- CONTACT TRAFFIC ENGINEERING AT A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT OF WAY.
- CONTACT KAREN DIXON 341-7888 TO DISCUSS STREET LIGHTING OPTIONS. THE LANDSCAPING PLAN WILL BE NEEDED TO DETERMINE STREET LIGHT LOCATIONS.
- TACTILE WARNING MATS TO BE INSTALLED AT ALL WHEELCHAIR RAMPS.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT IN A CITY STREET. NOTE THIS ON THE PLAN AND CONTACT 341-5888 FOR MORE DETAILS. IN CERTAIN CASES AN ENTIRE RESURFACING OF THE AREA BEING OPEN CUT MAY BE REQUIRED.
- IT SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER TO ERECT OFFICIAL STREET NAME SIGNS AT ALL INTERSECTIONS ASSOCIATED WITH THE SUBDIVISION IN ACCORDANCE WITH THE TECHNICAL STANDARDS AND SPECIFICATIONS MANUAL. THE SUBDIVIDER MAY ACQUIRE AND ERECT OFFICIAL STREET NAME SIGNS OR MAY CHOOSE TO CONTRACT WITH THE CITY TO INSTALL THE STREET SIGNS AND THE SUBDIVIDER SHALL PAY THE COST OF SUCH INSTALLATION. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO DISCUSS INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- ONCE STREETS ARE READY TO BE OPEN TO PUBLIC TRAFFIC, CONTACT THE TRAFFIC ENGINEERING DIVISION TO REQUEST INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS AND CURBING WITH BE REPLACED.
- A LANDSCAPING PLAN, INDICATING THE LOCATION OR REQUIRED STREET TREES SHALL BE SUBMITTED TO THE TRAFFIC ENGINEERING DIVISION AND PARKS AND RECREATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAT. PLAN SHALL ADHERE TO SD 15-17.

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**STORMWATER MANAGEMENT PLAN**

**APPROVED**

CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

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



**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION

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No.	Revision	Date	By

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JWJ	Job No.	03061193.01

**ARBOR COMMONS**

Wilmington New Hanover County North Carolina

**PROJECT NOTES**

**WithersRavenel**  
Engineers | Planners | Surveyors

1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No.  
**C-1**

**SURVEY NOTES:**

1. THE BOUNDARY, TOPOGRAPHY AND UTILITIES SURVEY HAVE BEEN PROVIDED BY WITHERS RAVENEL. THE VERTICAL DATUM FOR THE GROUND SURVEY FOR THIS PROJECT IS NAVD 29. CONTRACTOR TO VERIFY ALL ELEVATIONS IN THE FIELD.

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**STORMWATER MANAGEMENT PLAN**

**APPROVED**

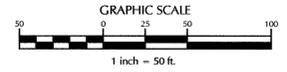
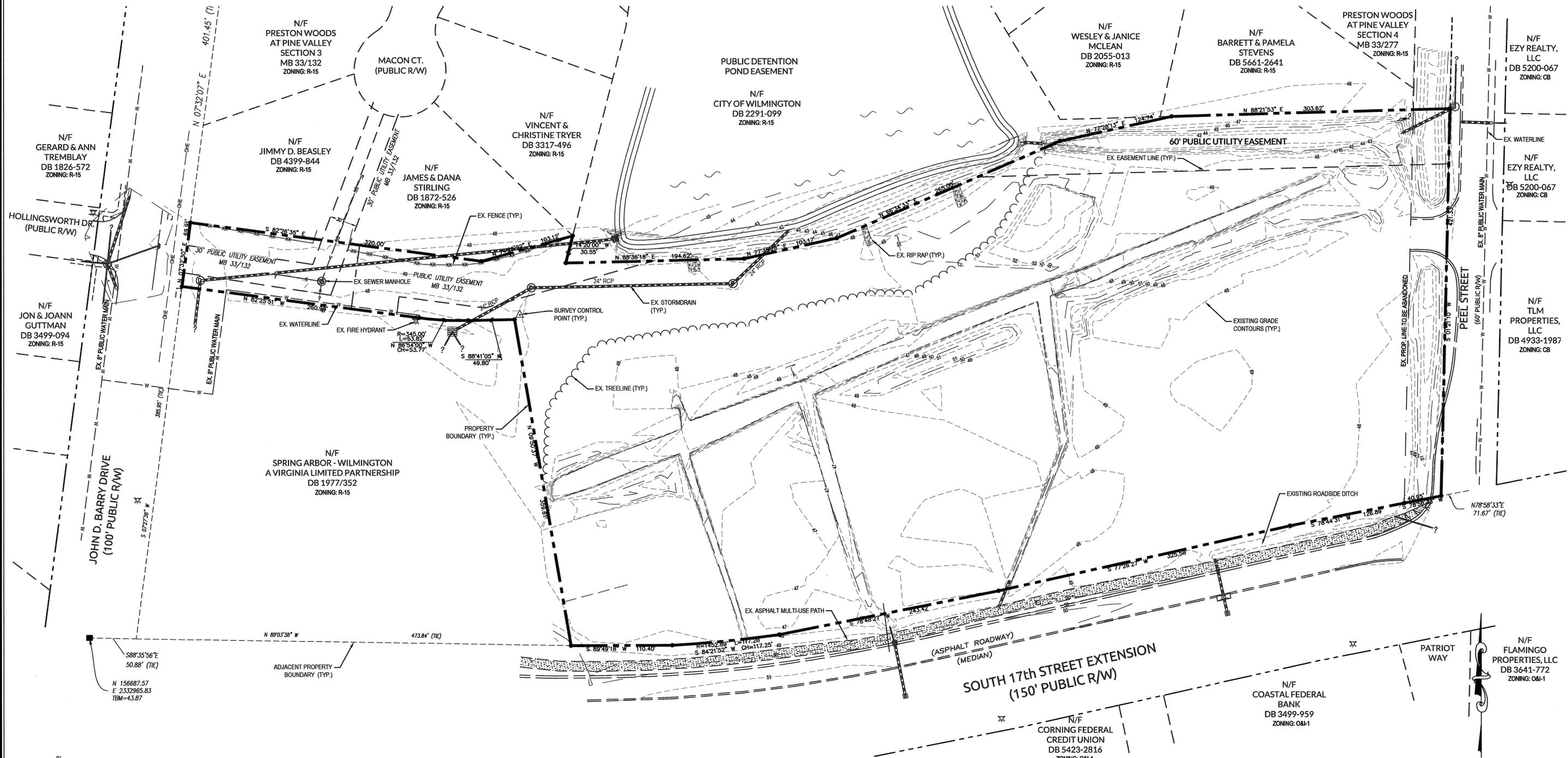
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

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



**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JJW	Job No.	03061193.01

**ARBOR COMMONS**

Wilmington New Hanover County North Carolina

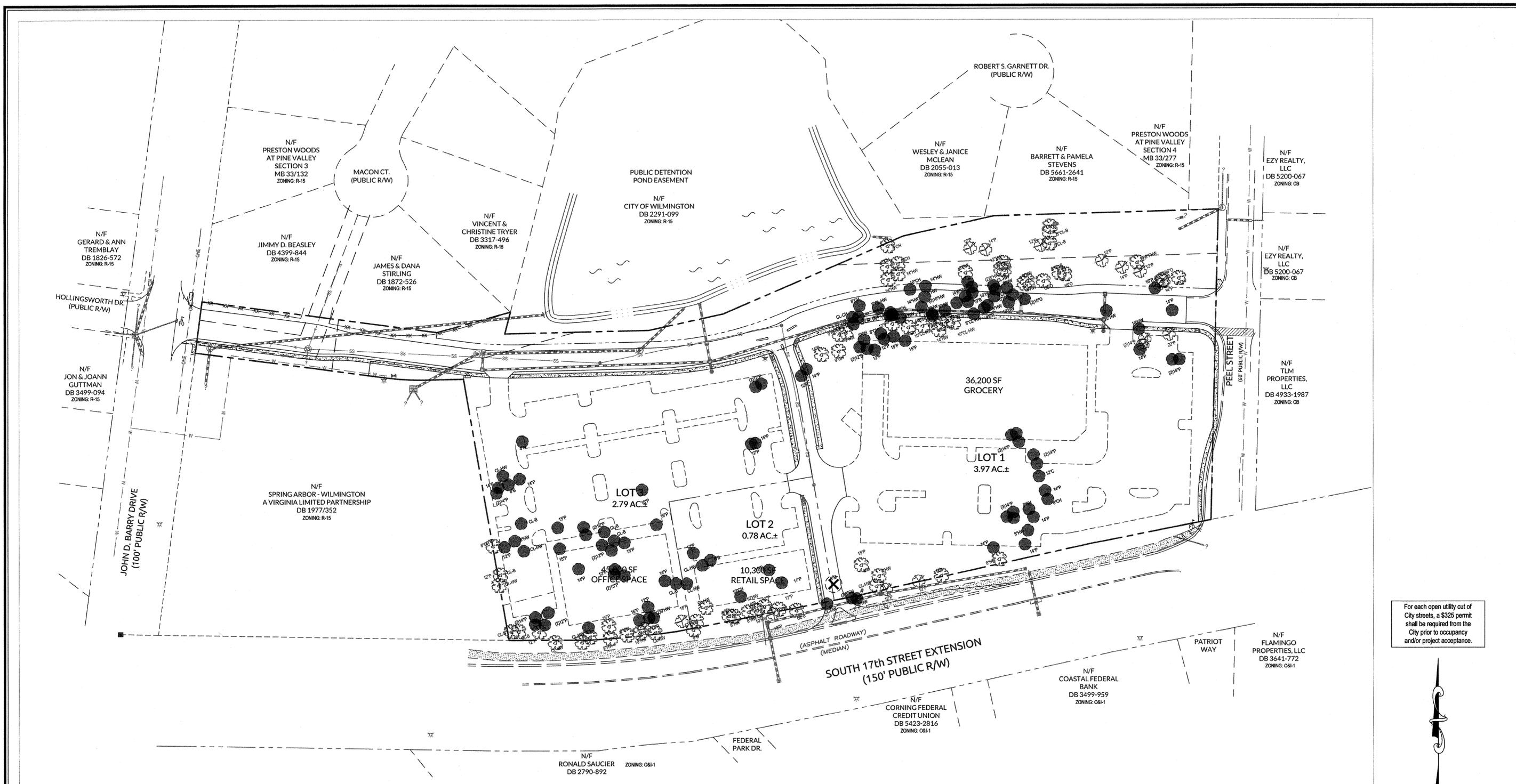
**EXISTING CONDITIONS**

**WithersRavenel**  
Engineers | Planners | Surveyors

1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No. **C-2**

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

**MITIGATION CALCULATIONS:**  
**LOT 1 & PROPOSED ROADWAY:**  
 EX. REGULATED TREES TO BE REMOVED  
 HARDWOOD TREES > 8" DBH (43)  
 ALL CONIFER TREES > 12" DBH (24)  
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (0)  
 TOTAL TREES TO BE REMOVED: 67  
 (43) x (75% OF TYPE OF TREE) / (3): 11  
 (24) x (50% OF TYPE OF TREE) / (3): 4  
**15 REGULATED REPLACEMENT TREES REQUIRED**  
 EX. SIGNIFICANT TREES TO BE REMOVED  
 HARDWOOD, LONG LEAF PINE, POCCOSIN (PND) PINE, BLACK PINE & NON-PINE CONIFER TREES > 24" DBH (0)  
 ALL OTHER PINES > 32" DBH (0)  
 DOGWOODS, MAGNOLIAS, AMERICAN HOLLIES & OTHER ORNAMENTAL FLOWERING TREES > 8" DBH (1) @ 100%  
 TOTAL TREES TO BE REMOVED: 1  
 (1) x (2) x (% OF TYPE OF TREE) / (3): 1  
**1 SIGNIFICANT REPLACEMENT TREES REQUIRED**

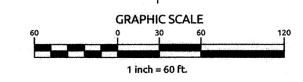
**MITIGATION CALCULATIONS:**  
**LOT 2:**  
 EX. REGULATED TREES TO BE REMOVED  
 HARDWOOD TREES > 8" DBH (8)  
 ALL CONIFER TREES > 12" DBH (3)  
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (0)  
 TOTAL TREES TO BE REMOVED: 11  
 (8) x (75% OF TYPE OF TREE) / (3): 2  
 (3) x (50% OF TYPE OF TREE) / (3): 1  
**3 REGULATED REPLACEMENT TREES REQUIRED**  
 EX. SIGNIFICANT TREES TO BE REMOVED  
 HARDWOOD, LONG LEAF PINE, POCCOSIN (PND) PINE, BLACK PINE & NON-PINE CONIFER TREES > 24" DBH (0)  
 ALL OTHER PINES > 32" DBH (0)  
 DOGWOODS, MAGNOLIAS, AMERICAN HOLLIES & OTHER ORNAMENTAL FLOWERING TREES > 8" DBH (0)  
 TOTAL TREES TO BE REMOVED: 0  
 (0) x (2) x (% OF TYPE OF TREE) / (3): 0  
**0 SIGNIFICANT REPLACEMENT TREES REQUIRED**

**MITIGATION CALCULATIONS:**  
**LOT 3:**  
 EX. REGULATED TREES TO BE REMOVED  
 HARDWOOD TREES > 8" DBH (11)  
 ALL CONIFER TREES > 12" DBH (28)  
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (1)  
 TOTAL TREES TO BE REMOVED: 40  
 (11) x (75% OF TYPE OF TREE) / (3): 3  
 (28) x (50% OF TYPE OF TREE) / (3): 5  
 (1) x (100% OF TYPE OF TREE) / (3): 1  
**9 REGULATED REPLACEMENT TREES REQUIRED**  
 EX. SIGNIFICANT TREES TO BE REMOVED  
 HARDWOOD, LONG LEAF PINE, POCCOSIN (PND) PINE, BLACK PINE & NON-PINE CONIFER TREES > 24" DBH (0)  
 ALL OTHER PINES > 32" DBH (0)  
 DOGWOODS, MAGNOLIAS, AMERICAN HOLLIES & OTHER ORNAMENTAL FLOWERING TREES > 8" DBH (0)  
 TOTAL TREES TO BE REMOVED: 0  
 (0) x (2) x (% OF TYPE OF TREE) / (3): 0  
**0 SIGNIFICANT REPLACEMENT TREES REQUIRED**

- LEGEND:**
- EX. REGULATED HARDWOOD TREES TO BE SAVED (81)
  - EX. REGULATED PINE TREES TO BE SAVED (14)
  - EX. REGULATED TREES TO BE REMOVED (115)
  - EX. SIGNIFICANT TREES TO BE REMOVED (1 - 8" MAGNOLIA)

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

**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Public Utilities \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_



No.	Revision	Date	By	Designer	W&R	Scale	NOTED
1	REVISED PER COW SRB	5-24-16	JSB				
				Drawn By	JSB	Date	3/24/16
				Checked By	JJW	Job No.	03061193.01

**ARBOR COMMONS**  
 New Hanover County  
 Wilmington, North Carolina

**TREE REPLACEMENT PLAN**

**WithersRavenel**  
 Engineers | Planners | Surveyors  
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No.  
**C-3**

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**GENERAL NOTES:**

- NEW HANOVER COUNTY PARCEL NOS.:  
313510.37.9059 (807 JOHN D. BARRY DR.)  
313510.36.8767 (4301 S. 17TH ST.) P/O  
313510.06.47.7974 (3634 S. COLLEGE DR.)
- ZONING DISTRICT: CB (CD)  
SETBACKS - 20' STREET  
20' CORNER SIDE  
20' INTERIOR SIDE TO RESIDENTIAL  
(+ 1:1 PER HGT > 20')  
25' REAR TO RESIDENTIAL  
(+ 1:1 PER HGT > 20')
- CAMA LAND CLASSIFICATION: URBAN

**DEVELOPMENT NOTES:**

- ALL DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE CITY OF WILMINGTON LAND DEVELOPMENT CODE.
- PROJECT SHALL COMPLY WITH ALL FEDERAL, STATE & NEW HANOVER COUNTY REGULATIONS.

**DEVELOPMENT DATA:**

TOTAL TRACT AREA: 10.59 AC.±	1.73 AC.±
NEW PUBLIC R/W -	1.32 AC.±
BUFFERYARDS -	7.54 AC.±
DEVELOPMENT LOT -	
ONSITE IMPERVIOUS SURFACES:	
EX. PUBLIC P/MT. -	1,500 S.F.
PUBLIC STREET P/MT. -	53,490 S.F.
PUBLIC SIDEWALKS -	9,600 S.F.
FUTURE LOT DEVELOPMENT:	
LOT 1 -	135,000 S.F.
LOT 2 -	30,200 S.F.
LOT 3 -	100,000 S.F.
TOTAL -	265,200 S.F.
OFFSITE IMPERVIOUS SURFACES:	
PUBLIC STREET P/MT. -	5,375 S.F.
PUBLIC SIDEWALKS -	800 S.F.
TOTAL -	335,965 S.F. (72.9%)

\*\* EXISTING WATER QUALITY PERMIT ALLOWANCE = 336,111 S.F. \*\*

**SITE INVENTORY NOTES:**

- THIS PROPERTY IS NOT IMPACTED BY ANY AEC.
- THERE ARE NO CONSERVATION OVERLAY BOUNDARIES AFFECTING THIS PROPERTY.
- THIS SITE IS NOT IMPACTED BY ANY RECOGNIZED HISTORIC OR ARCHEOLOGICAL SIGNIFICANCE.
- NO CEMETERIES WERE EVIDENCE ON THE SITE.
- THERE IS NO EVIDENCE OF JURISDICTIONAL WETLANDS ON THE SITE.
- THERE IS NO EVIDENCE OF ENDANGERED SPECIES OR HABITAT ISSUES ON THE SITE.
- THE SITE DRAINAGE FLOWS INTO THE BARNARDS CREEK WATERSHED WITHIN THE CAPE FEAR RIVER BASIN. CLASS C-SW WATERS.

**Approved Construction Plan**

Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

**STORMWATER MANAGEMENT PLAN**

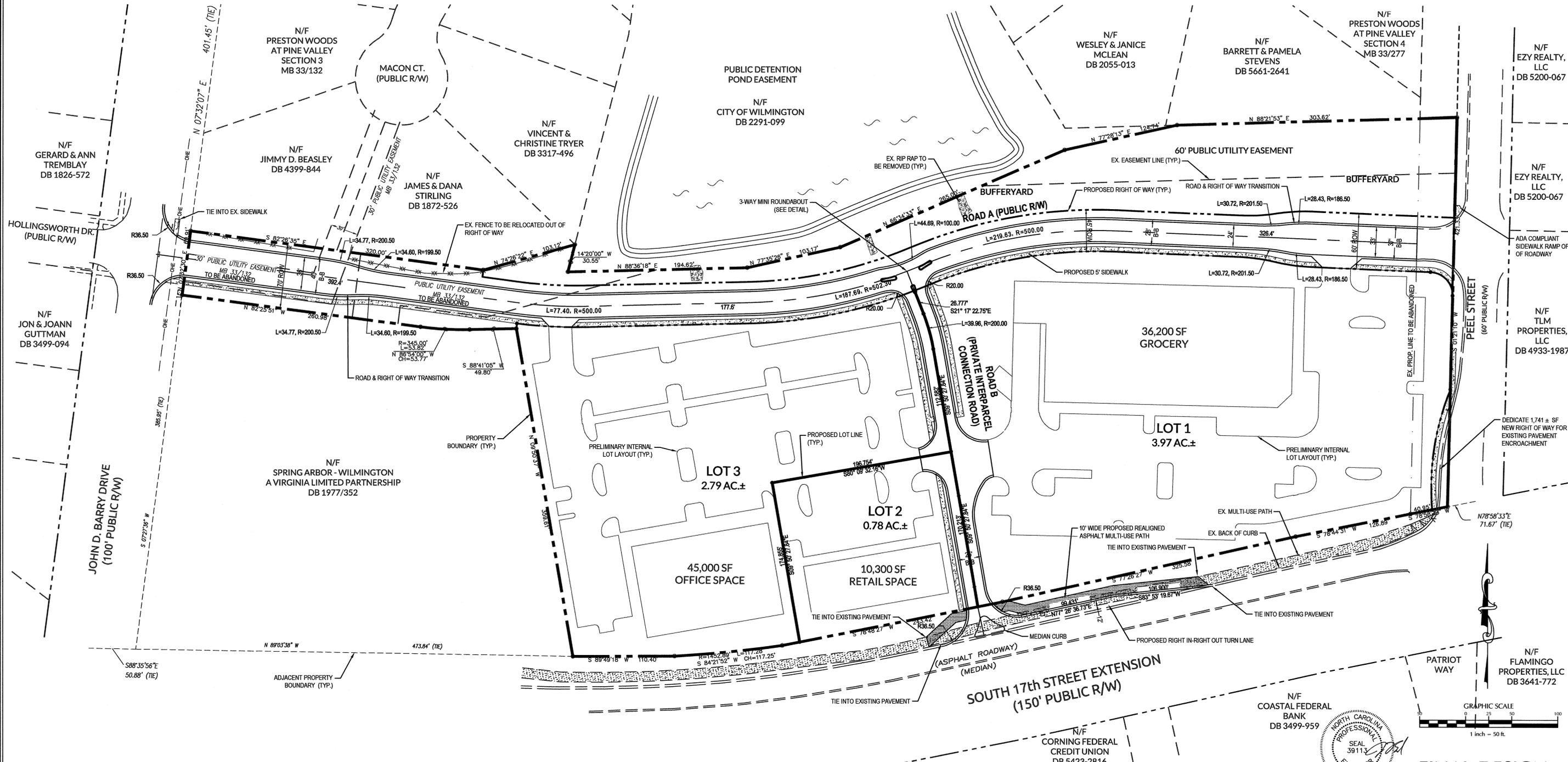
**APPROVED**

CITY OF WILMINGTON  
ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

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



**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JWW	Job No.	03061193.01

**ARBOR COMMONS**  
Wilmington New Hanover County North Carolina

**SITE PLAN**

**WithersRavenel**  
Engineers | Planners | Surveyors

1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No. **C-4**

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**EROSION CONTROL NOTES:**

1. PROPOSED DISTURBED AREA: 10.05 ACRES
2. SOILS TYPE: LE (LEON SAND), MU (MURVILLE FINE SAND) AND RM (RIMINI SAND).
3. THERE IS NO EVIDENCE OF JURISDICTIONAL WETLANDS ON THE SITE.
4. THERE IS NO EVIDENCE OF ENDANGERED SPECIES OR HABITAT ISSUES ON THE SITE.
5. THE SITE DRAINAGE FLOWS INTO THE BARNARDS CREEK WATERSHED WITHIN THE CAPE FEAR RIVER BASIN. CLASS C:SW WATERS.

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**STORMWATER MANAGEMENT PLAN**

**APPROVED**

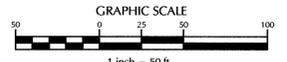
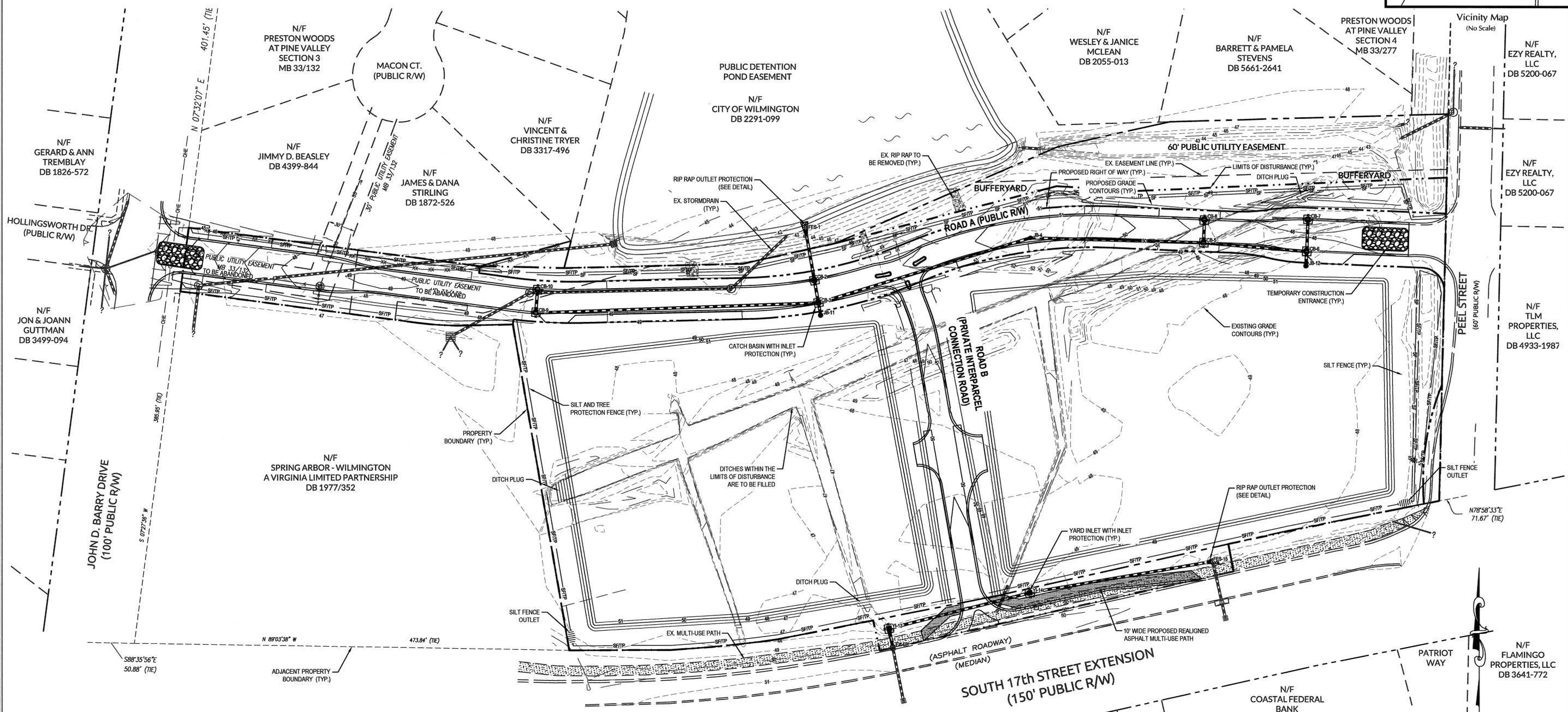
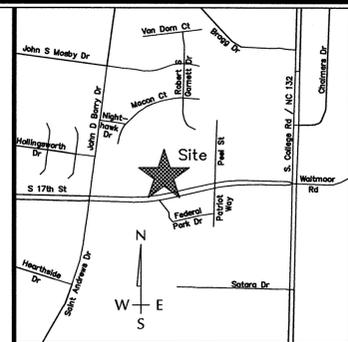
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

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



**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JWJ	Job No.	03061193.01

**ARBOR COMMONS**

Wilmington New Hanover County North Carolina

**EROSION CONTROL PLAN**

**WithersRavenel**  
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Sheet No. **C-5**

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**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**STORMWATER MANAGEMENT PLAN**

**APPROVED**

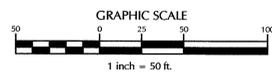
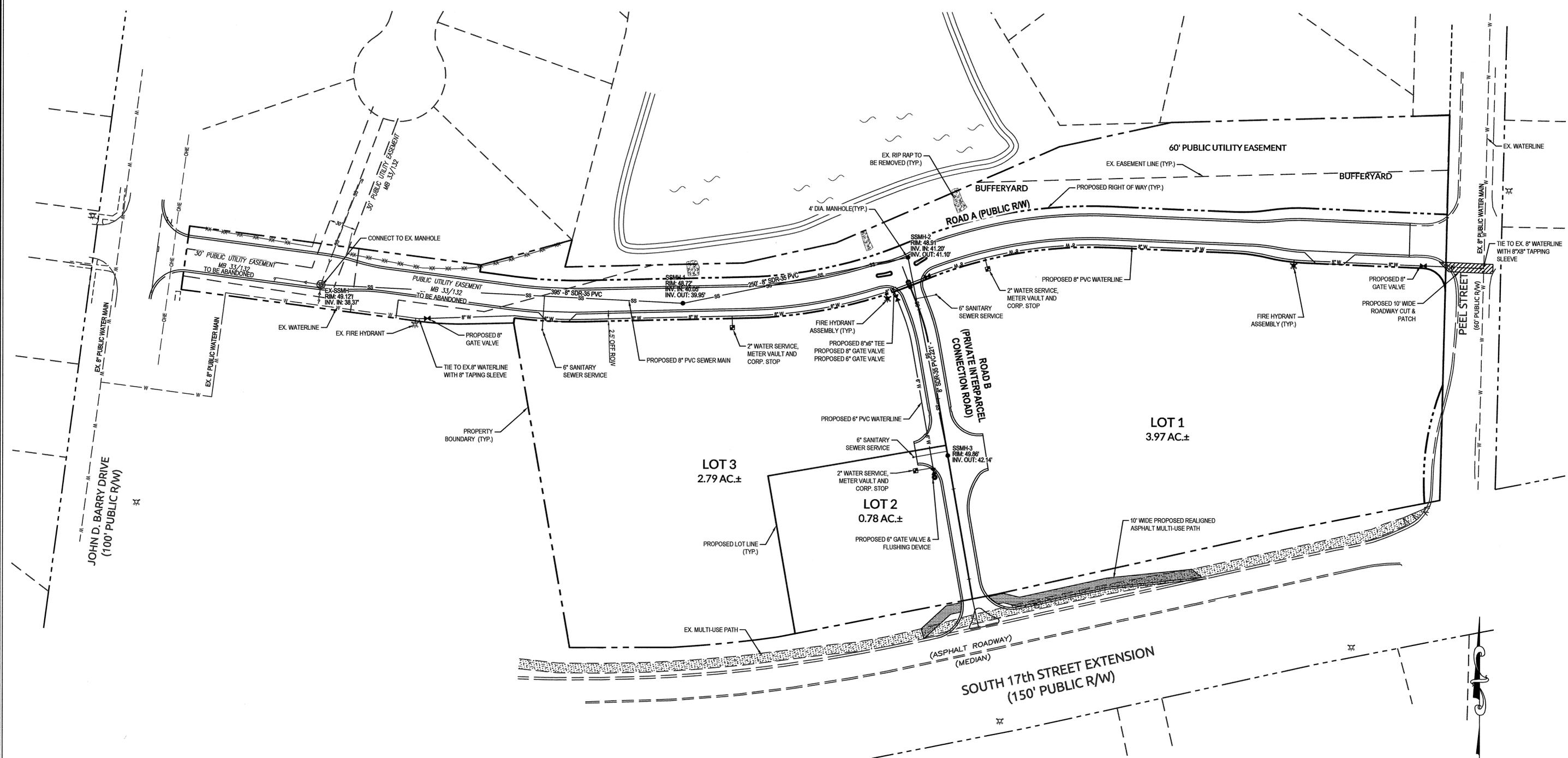
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

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



**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JJW	Job No.	03061193.01

**ARBOR COMMONS**

Wilmington New Hanover County North Carolina

**UTILITY PLAN**

**WithersRavenel**  
Engineers | Planners | Surveyors

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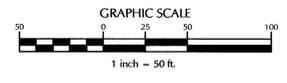
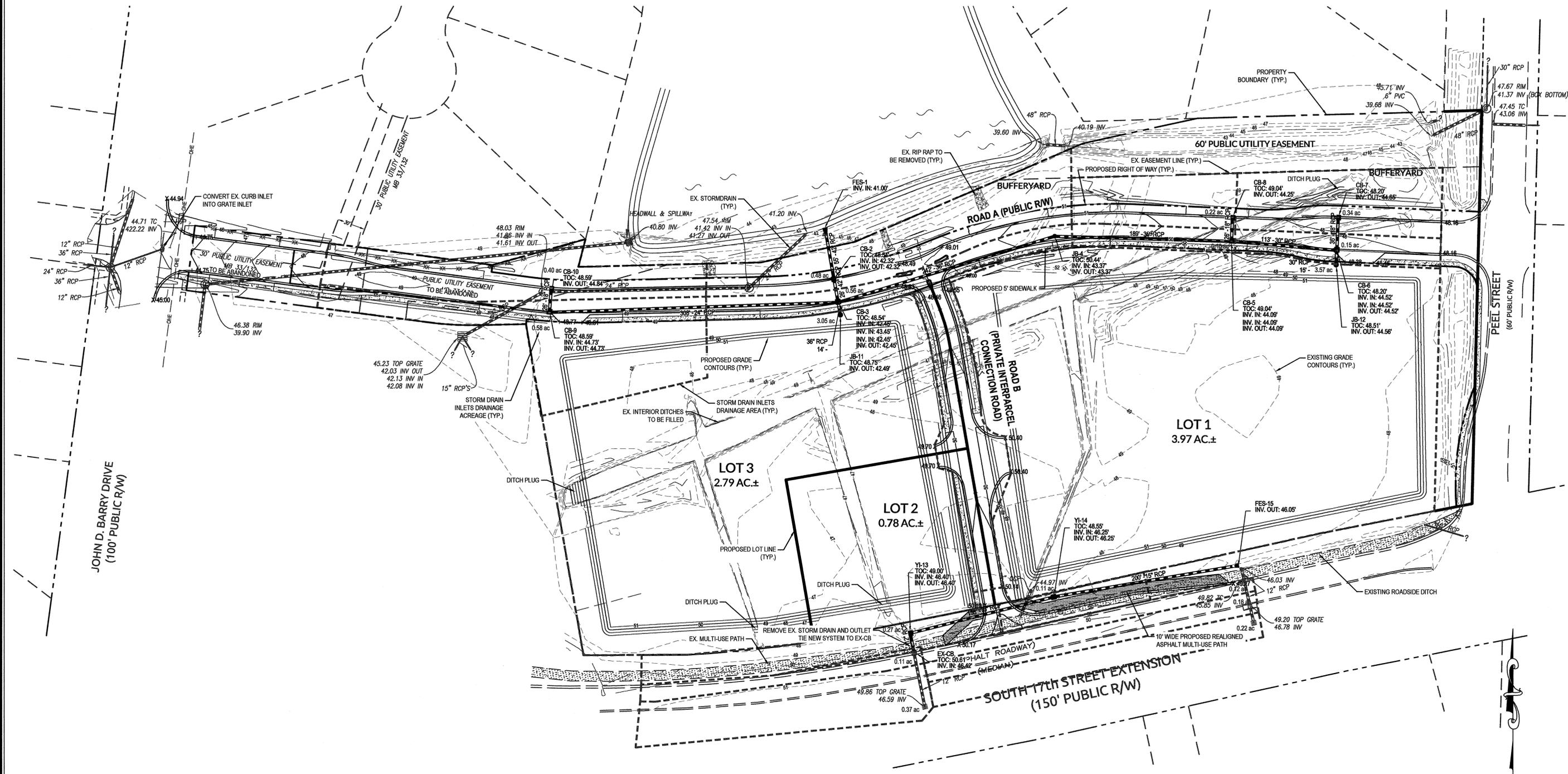
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**C-6**

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Approved Construction Plan		
Name	Date	
Planning		
Public Utilities		
Traffic		
Fire		

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

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



**FINAL DESIGN**  
 NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JJW	Job No.	03061193.01

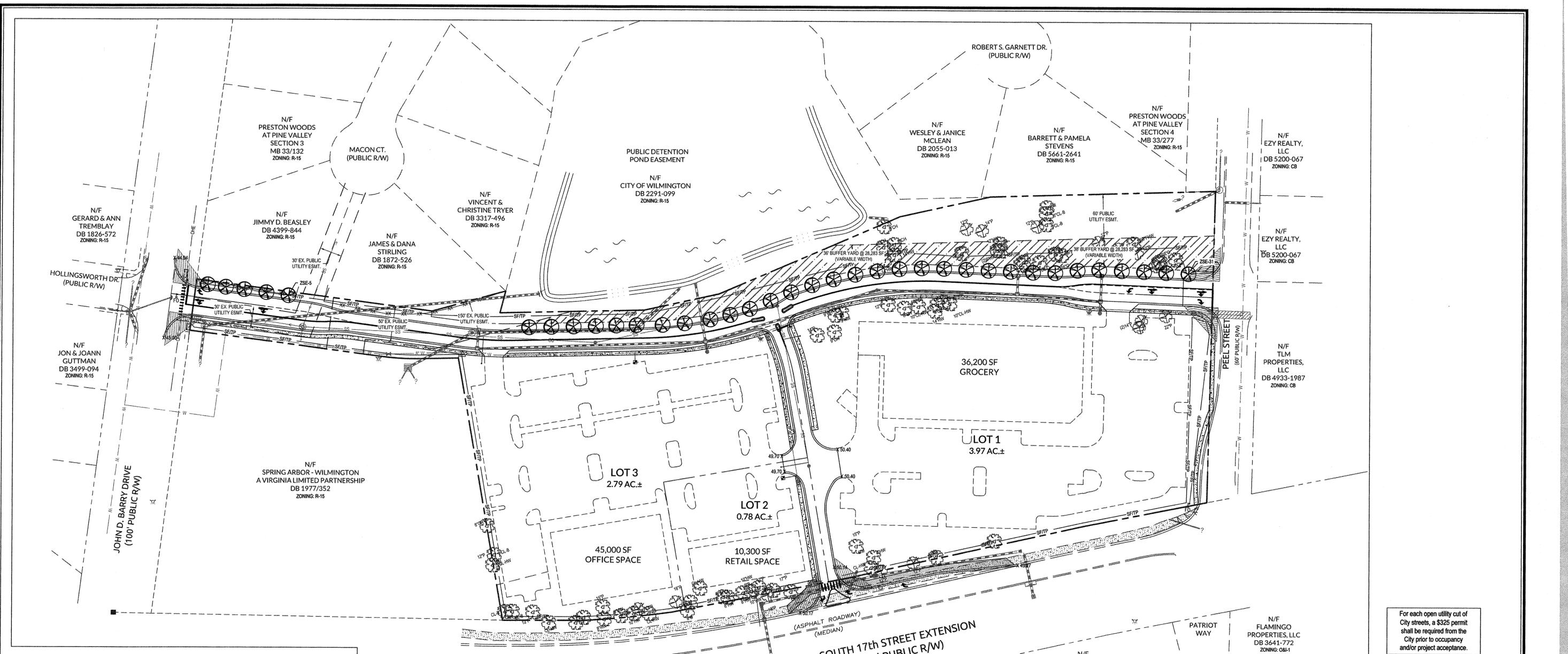
**ARBOR COMMONS**  
 Wilmington, New Hanover County, North Carolina

**GRADING AND STORMWATER PLAN**

**WithersRavenel**  
 Engineers | Planners | Surveyors  
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

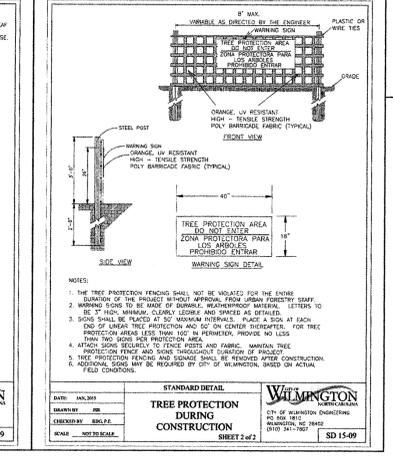
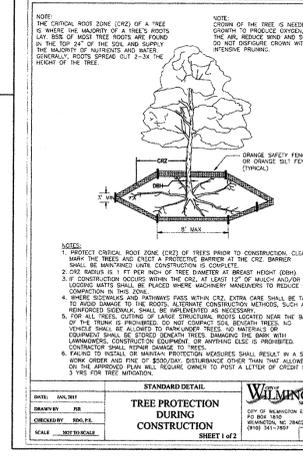
Sheet No.  
**C-7**

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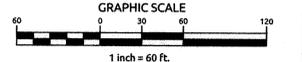
- LANDSCAPE NOTES:**
- ALL PLANTS SHALL MEET OR EXCEED THE MINIMUM STANDARDS SET FORTH IN "THE AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
  - ALL AREAS DISTURBED AND NOT SPECIFIED AS MULCHED PLANTING BEDS WILL BE GRASSED. LAWN AREAS MAY BE ESTABLISHED WITH EITHER SOIL OR SEED AT THE CONTRACTOR'S DISCRETION. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FULL STAND OF GRASS AT THE TIME OF COMPLETION.
  - CONTRACTOR SHALL USE WHATEVER METHOD OF TREE STAKING HE DEEMS FIT. HOWEVER, HE WILL BE HELD LIABLE FOR ANY DAMAGES CAUSED TO TREES BY IMPROPER STAKING METHODS (OR ABSENCE OF STAKING) AND IS RESPONSIBLE FOR UPRIGHTING AND REPLANTING TREES WHICH ARE BLOWN OVER.
  - CONTRACTOR SHALL WARRANT ALL TREES AND SHRUBS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK OF THE LANDSCAPE PLAN.
  - IF DISCREPANCIES OR AVAILABILITIES ARE FOUND IN THE PLANT SPECIES AND/OR MIN. SIZES REQ'D., CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT. SUBSTITUTIONS MAY BE MADE WITH AUTHORIZATION AS LONG AS THE PLANTS FOLLOW THE INTENDED FORM AND FUNCTION.
  - THE DEVELOPER SHALL NOTIFY LANDSCAPE DESIGNER PRIOR TO INSTALLATION TO ENSURE PROPER TREE SELECTION & SPACING.
  - EACH TREE SHALL BE A MINIMUM OF 2" CALIPER AS MEASURED FROM THE DIAMETER AT BREAST HEIGHT (DBH)
  - TREES WITHIN THE SAME BLOCKS SHALL BE THE SAME SPECIES.
  - ALL PLANTINGS SHALL BE CURBED OR OTHERWISE PHYSICALLY PROTECTED FROM VEHICULAR TRAFFIC.
  - THE OWNER IS RESPONSIBLE FOR MAINTAINING ALL REQUIRED PLANT MATERIAL AND PLANTING AREAS IN GOOD HEALTH AND APPEARANCE. ANY DEAD, UNHEALTHY OR MISSING PLANTS MUST BE REPLACED WITHIN 60 DAYS WITH VEGETATION WHICH CONFORMS TO THE INITIAL PLANTING RATES AND STANDARDS.
  - NO PLANTINGS OVER 30' IN HEIGHT SHALL BE ALLOWED IN VISION CLEARANCE. EXISTING TREES IN THE SIGHT DISTANCE TRIANGLE SHOULD BE LIMBED UP TO ACCOMMODATE THE CODE REGARDING SIGHT DISTANCE TRIANGLES.
  - PRIOR TO ANY CLEARING, GRADING, OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
  - 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 CONW TECH STD)
  - THERE IS NO CONSERVATION RESOURCES ASSOCIATED WITH THE PARCELS INCLUDING ANY RARE OR ENDANGERED SPECIES IN ACCORDANCE WITH THE NC WILDLIFE RESOURCES COMMISSION.
  - THE CRITICAL ROOT ZONE (CRZ) SHALL BE PROTECTED DURING CONSTRUCTION BY APPROVED TREE PROTECTION FENCING AND PRACTICES. TREE PROTECTIVE FENCING SHALL BE SHOWN ON SITE PLANS AND GRADING PLANS AROUND EACH TREE CLUSTER OF TREES, AT PERIMETER OF TREE-SAVE AREAS, AND AT LIMITS OF DISTURBANCE. NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTIVE FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED. TREE PROTECTIVE FENCING SHALL REMAIN IN PLACE THROUGH COMPLETION OF CONSTRUCTION ACTIVITIES.
  - IF THE ENTIRE CRZ CANNOT BE PRESERVED, THE DISTURBED AREA SHALL EXTEND NO CLOSER TO THE PROTECTED TREE TRUNK THAN ONE HALF (1/2) THE RADIUS OF THE CRZ. IN NO CASE CAN MORE THAN 40% OF THE CRZ BE DISTURBED.

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY TREES	36	ZSE	Zelkova serrata	Japanese Zelkova	88B	2" MIN.	40-60'	STREET TREE (30' O.C.)



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

**Approved Construction Plan**  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_



**PRELIMINARY  
NOT APPROVED FOR  
CONSTRUCTION**

No.	Revision	Date	By	Designer	Scale	NOTED
				W&R		
				Drawn By	Date	3/24/16
				Checked By	Job No.	
				JW	03061193.01	

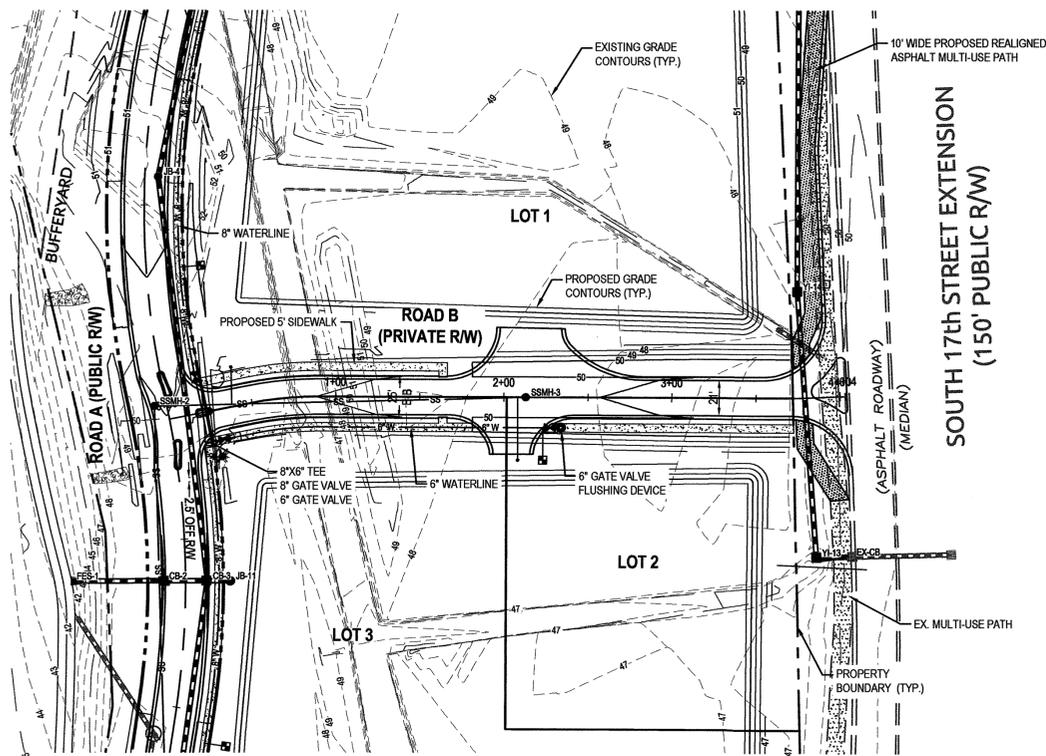
**ARBOR COMMONS**  
New Hanover County  
North Carolina

**LANDSCAPE PLAN**

**WithersRavenel**  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No.  
**C-8**





Approved Construction Plan

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

STORMWATER MANAGEMENT PLAN

APPROVED

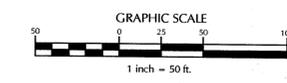
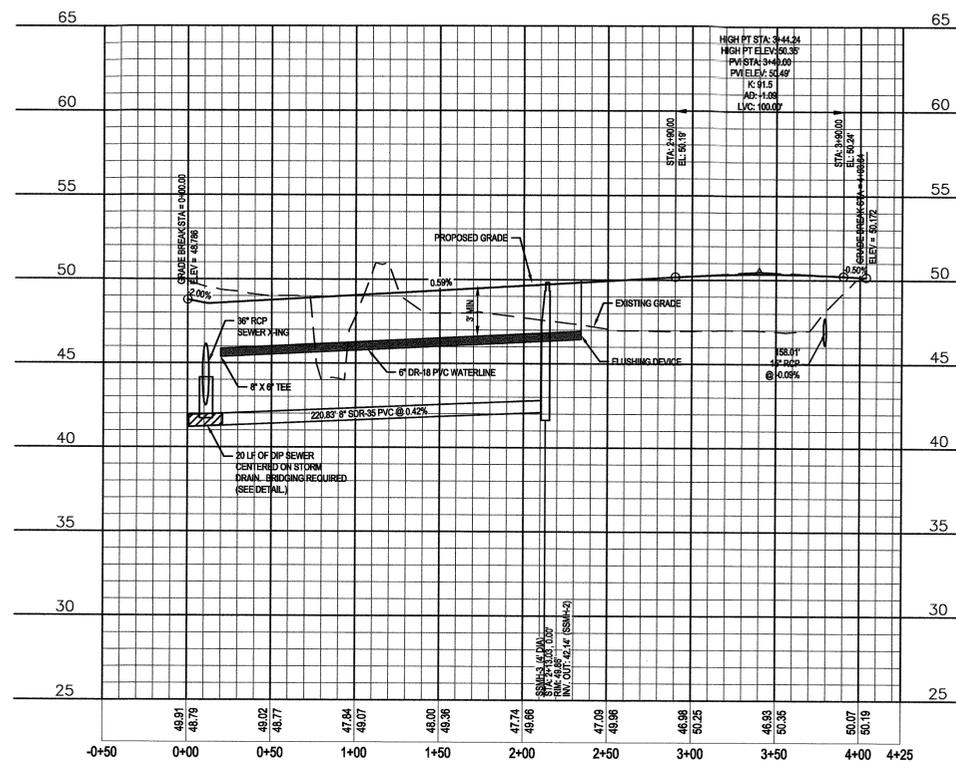
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

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



FINAL DESIGN  
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JW	Job No.	03061193.01

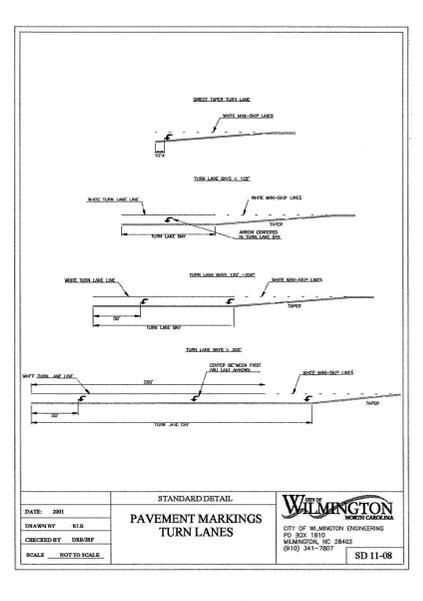
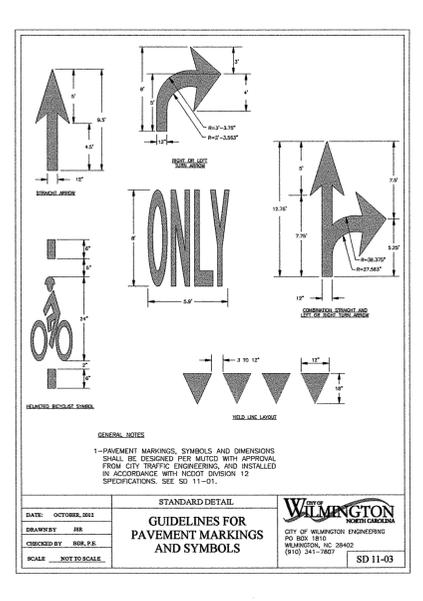
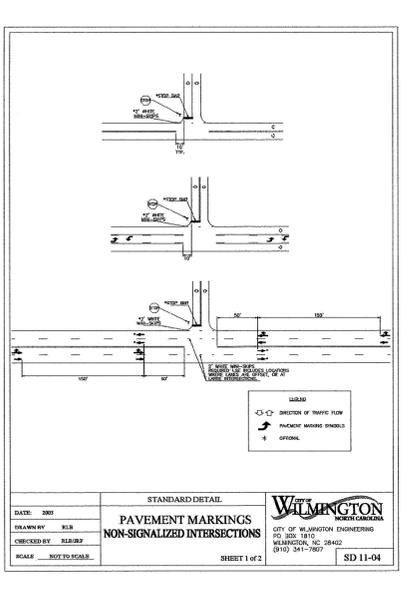
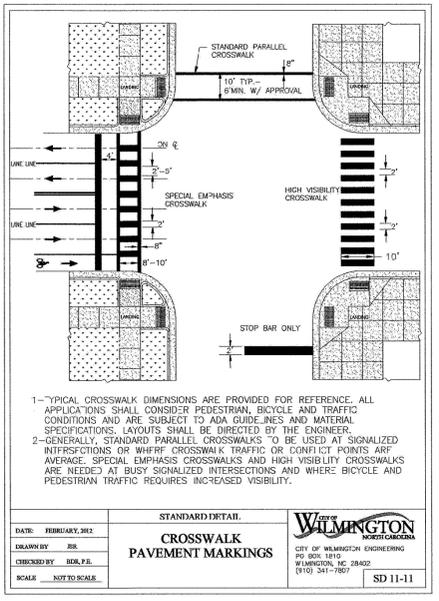
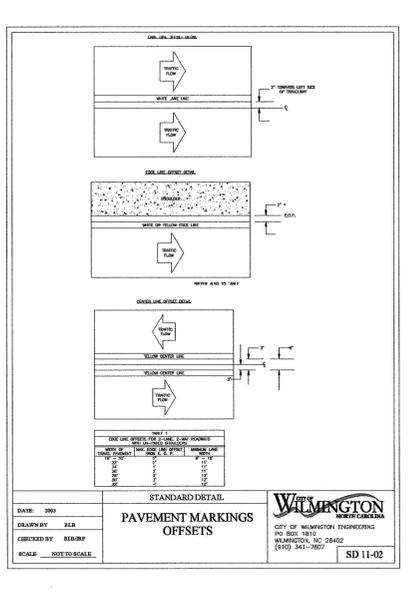
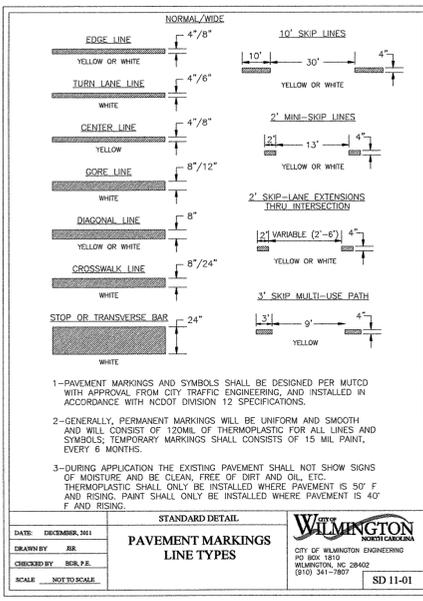
**ARBOR COMMONS**  
Wilmington New Hanover County North Carolina

**ROAD B PLAN & PROFILE**

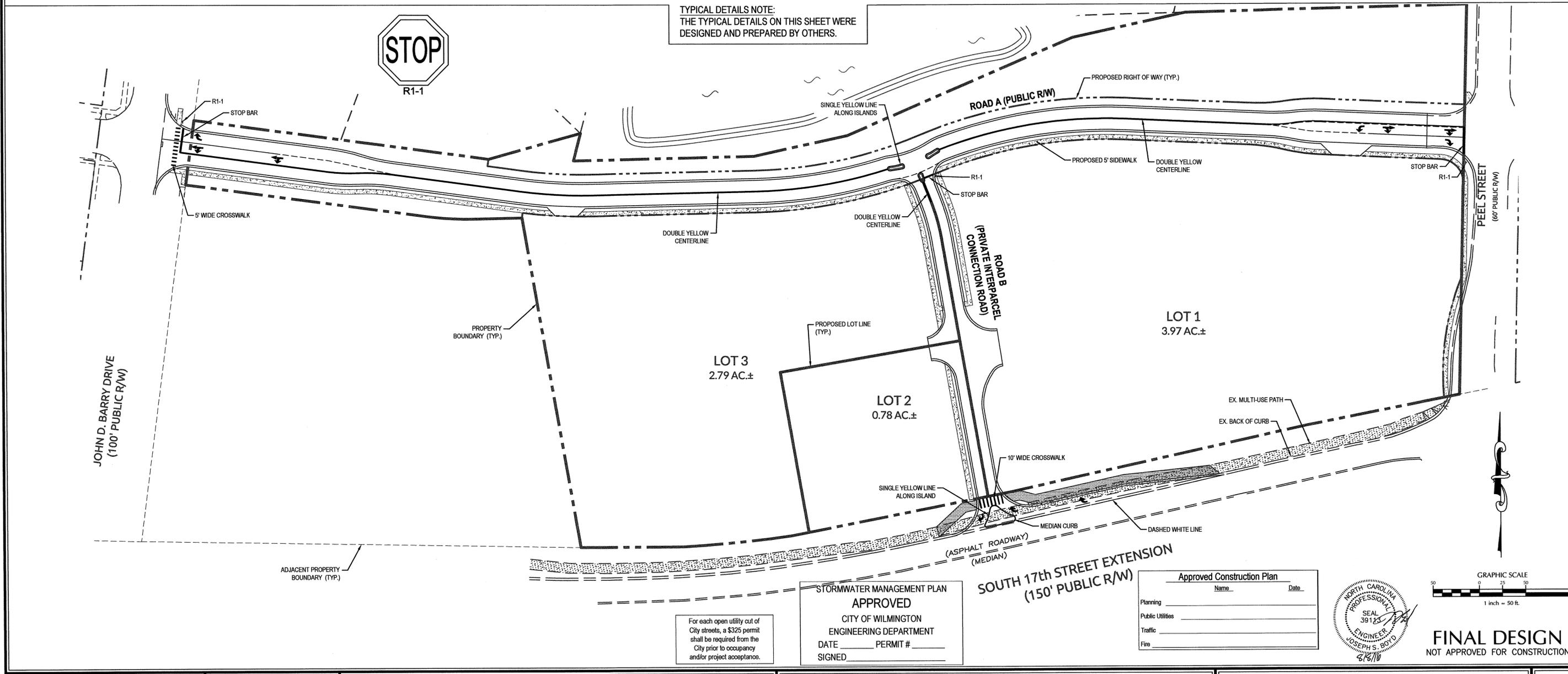
**WithersRavenel**  
Engineers | Planners | Surveyors  
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Sheet No.  
**C-10**

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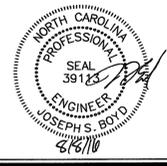
**TYPICAL DETAILS NOTE:**  
 THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.



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

**STORMWATER MANAGEMENT PLAN APPROVED**  
 CITY OF WILMINGTON  
 ENGINEERING DEPARTMENT  
 DATE: \_\_\_\_\_ PERMIT # \_\_\_\_\_  
 SIGNED: \_\_\_\_\_

**Approved Construction Plan**  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Planning: \_\_\_\_\_  
 Public Utilities: \_\_\_\_\_  
 Traffic: \_\_\_\_\_  
 Fire: \_\_\_\_\_



**FINAL DESIGN**  
 NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JWJ	Job No.	03061193.01

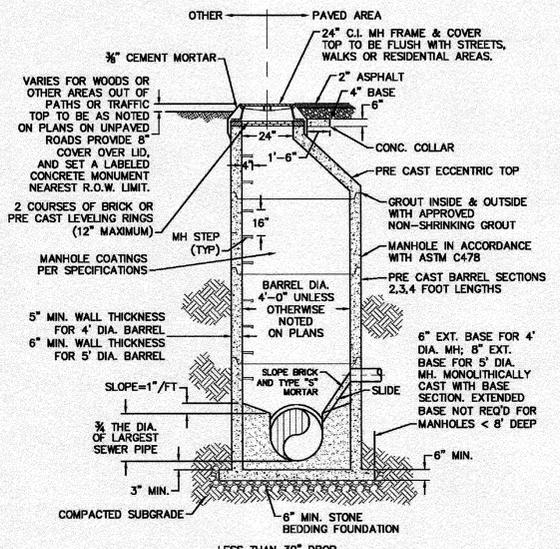
**ARBOR COMMONS**  
 Wilmington New Hanover County North Carolina

**PAVEMENT MARKINGS AND SIGNAGE PLAN**

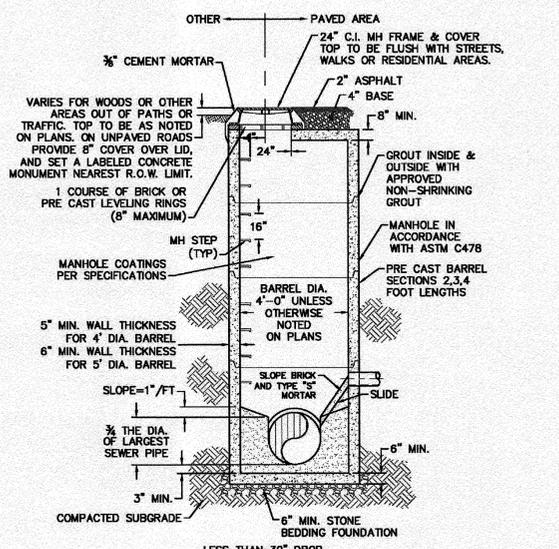
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 Engineers | Planners | Surveyors  
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | (910) 256-9277 | license #: C-0832 | www.withersravenel.com

Sheet No. **C-11**

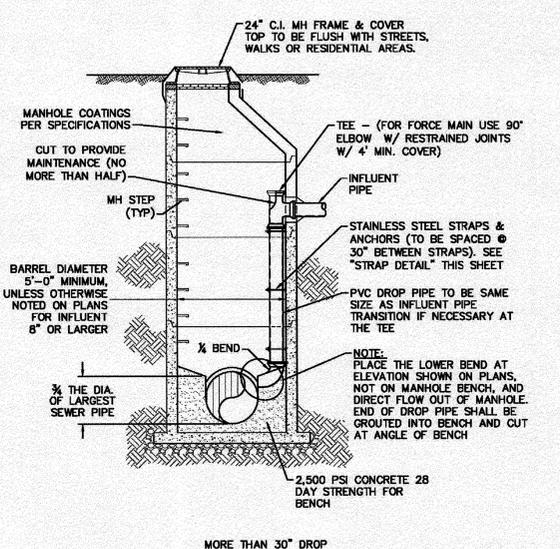
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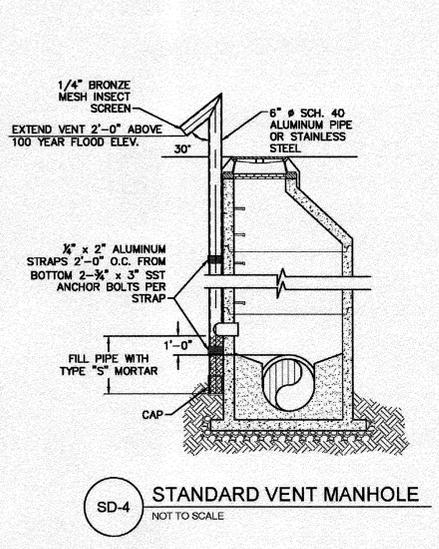
SD-1 PRECAST CONCRETE OFFSET MANHOLE TYPICAL  
NOT TO SCALE



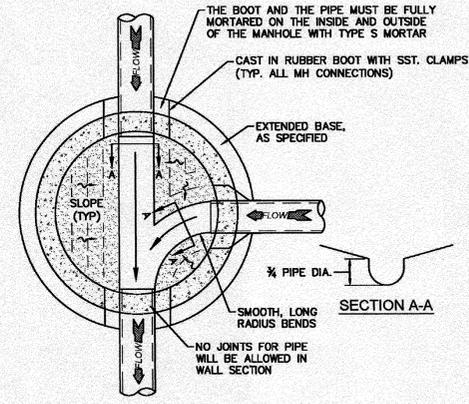
SD-2 PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL  
NOT TO SCALE



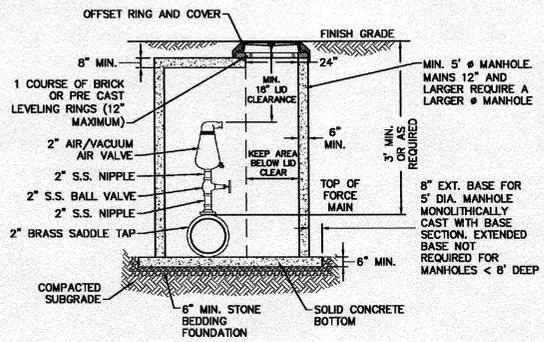
SD-3 DROP MANHOLE  
NOT TO SCALE



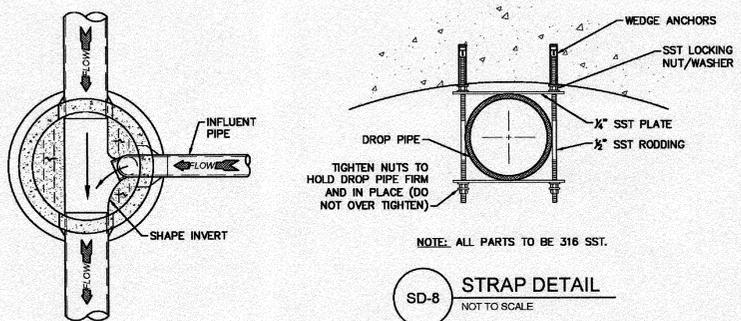
SD-4 STANDARD VENT MANHOLE  
NOT TO SCALE



SD-5 MANHOLE FLOOR PLAN  
NOT TO SCALE



SD-6 AIR/VACUUM AND AIR RELEASE COMBINATION VALVE  
NOT TO SCALE



SD-7 DROP MANHOLE FLOOR PLAN  
NOT TO SCALE

SD-8 STRAP DETAIL  
NOT TO SCALE

- CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:**
- SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
  - WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
  - ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
  - MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
  - NO FLEXIBLE COUPLINGS SHALL BE USED.
  - ALL STAINLESS STEEL FASTENERS SHALL BE 316.
  - CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.
- GENERAL NOTES:**
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
  - THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
  - THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

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

Approved Construction Plan

Name	Date
Planning _____	
Public Utilities _____	
Traffic _____	
Fire _____	

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

REV:	DESCRIPTION:	DATE:
1	AIR / VACUUM AND AIR RELEASE COMBINATION VALVE REVISED	10/28/12
2	STANDARD SEWER NOTE #6 REVISED	12/10/12
3	REVISED STANDARD VENT MANHOLE TO EXTEND VENT 2'-0" ABOVE 100 YR FLOOD	11/20/14
4	Revised Multiple Details	02/15/16

**CFPUA SANITARY SEWER**

**STANDARD DETAILS**

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6660

DATE: 1/6/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:  
SHEET NO: **SSD-1**

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION



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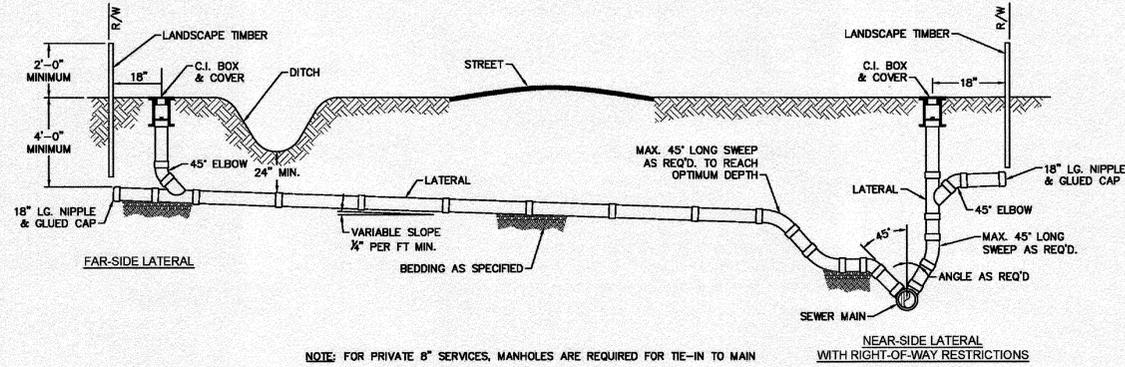
No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JWJ	03061193.01

**ARBOR COMMONS**  
Wilmington New Hanover County North Carolina

**SANITARY SEWER DETAILS**

**WithersRavenel**  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

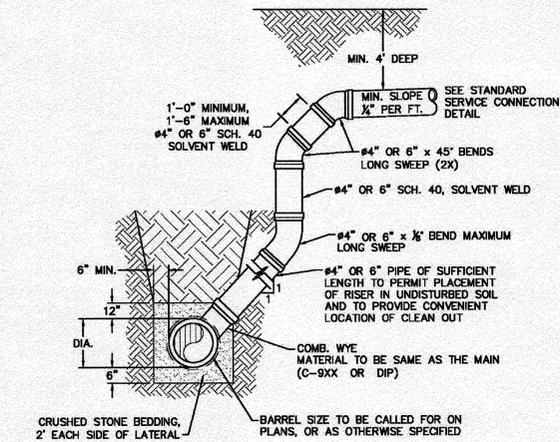
Sheet No. **D-1**



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN WITH REQUIRED EASEMENT.

**SD-19**  
NOT TO SCALE

**STANDARD SERVICE CONNECTION TO SANITARY SEWER**

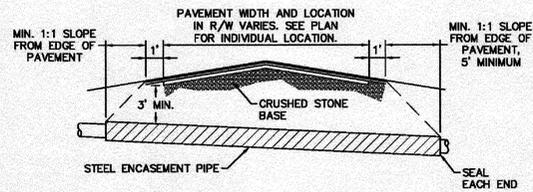


- NOTES:
- SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
  - FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH GREATER THAN 8 FT

**SD-12**  
NOT TO SCALE

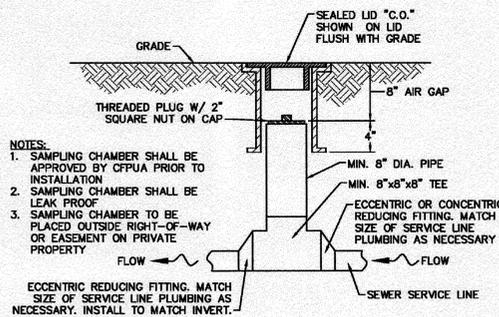
**DEEP SERVICE LATERAL**



- NOTES:
- CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
  - TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

**SD-16**  
NOT TO SCALE

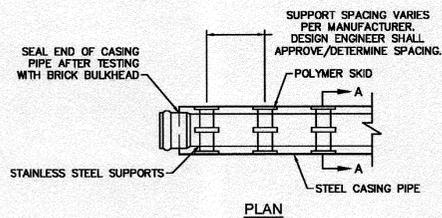
**TYPICAL BORING/JACKING DETAIL**



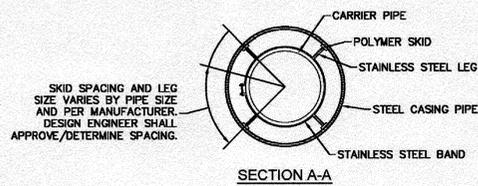
- NOTES:
- SAMPLING CHAMBER SHALL BE APPROVED BY CFPUA PRIOR TO INSTALLATION.
  - SAMPLING CHAMBER SHALL BE LEAK PROOF.
  - SAMPLING CHAMBER TO BE PLACED OUTSIDE RIGHT-OF-WAY OR EASEMENT ON PRIVATE PROPERTY.

**SD-13**  
NOT TO SCALE

**SAMPLING CHAMBER**



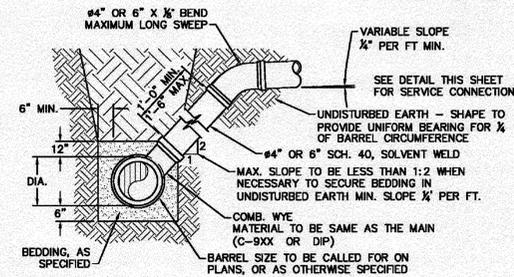
NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.



NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.

**SD-17**  
NOT TO SCALE

**PIPE CASING SUPPORT DETAIL**

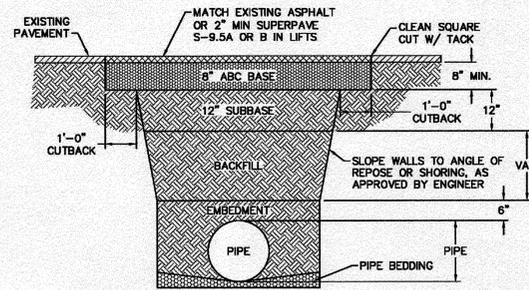


NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH LESS THAN 8 FT

**SD-10**  
NOT TO SCALE

**STANDARD SERVICE LATERAL**

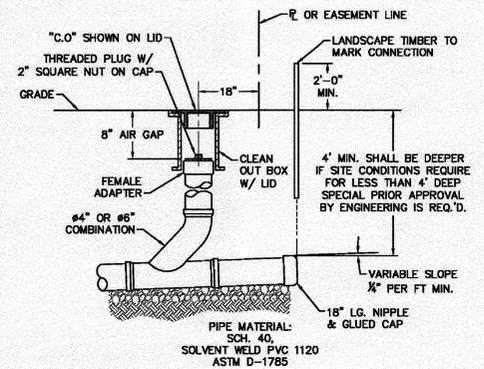


- NOTES:
- BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
  - SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
  - 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
  - BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.
  - SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
  - ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
  - ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
  - 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

(FOR PRIVATE ROADS AND PAVED AREAS, CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

**SD-14**  
NOT TO SCALE

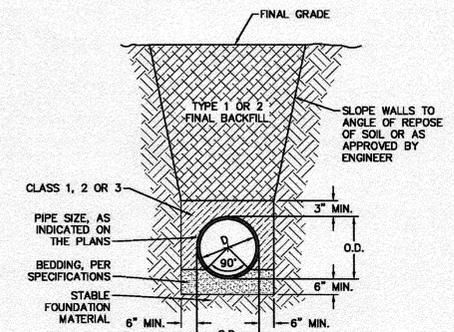
**PAVEMENT REPAIR WHERE PIPE INSTALLED**



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

**SD-11**  
NOT TO SCALE

**SERVICE CONNECTION AND CLEAN-OUT**



**SD-15**  
NOT TO SCALE

**TYPICAL TRENCH DETAIL**

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

Approved Construction Plan

Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

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

REV.	DESCRIPTION	DATE
1	SAMPLING CHAMBER REVISED	10/26/12
2	Revised Multiple Details	02/16/16

- GENERAL NOTES:
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
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  - THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

**CFPUA SANITARY SEWER**

**STANDARD DETAILS**

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6590

DATE: 1/8/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:  
SHEET NO.: **SSD-2**

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION



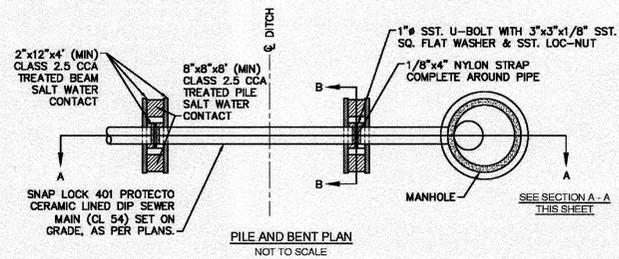
No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JJW	03/06/193.01

**ARBOR COMMONS**  
Wilmington New Hanover County North Carolina

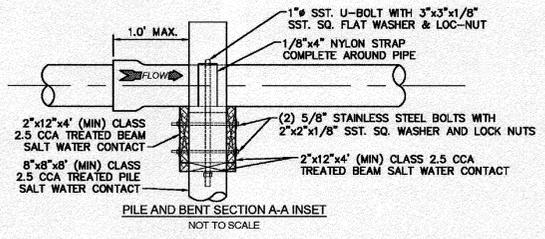
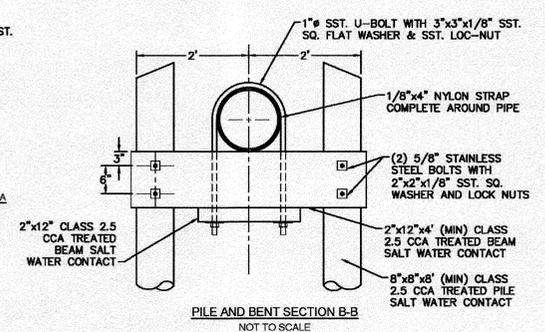
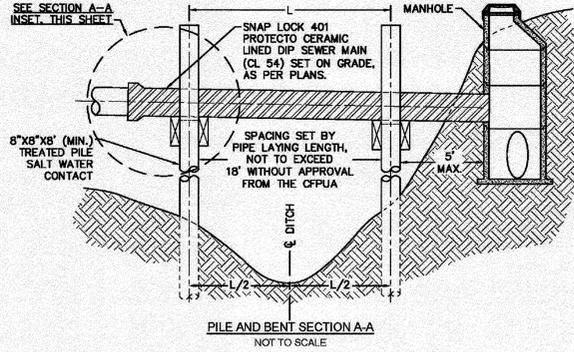
**SANITARY SEWER DETAILS**

**WithersRavenel**  
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1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | license #: C-0832 | www.withersravenel.com

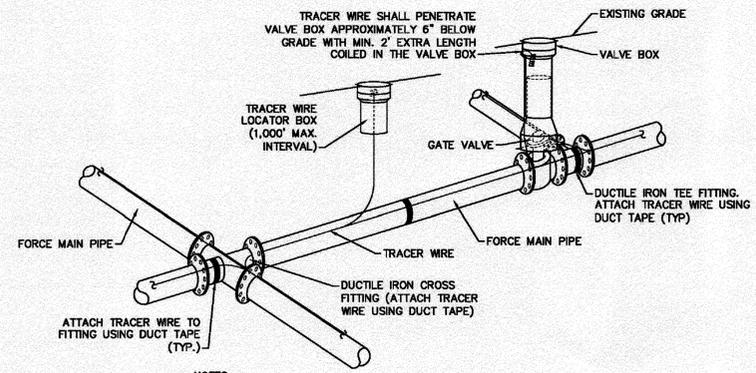
Sheet No. **D-2**



- NOTES:**
1. PILES AND PILE DRIVING SHALL CONFORM TO NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2002, SECTIONS 445, 450, 1082-2 & 1084-2.
  2. CENTERLINE OF BOLTS TO BE A MINIMUM OF 3" FROM OUTSIDE EDGE OF TIMBER. BOLTS TO BE A MINIMUM OF 3" CENTERLINE TO CENTERLINE.
  3. ALL STAINLESS STEEL SHALL BE 316. STAINLESS STRAP TO BE COLD FORMED.
  4. PILE SHALL NOT OBSTRUCT FLOW OR CAUSE EROSION OF DITCH/STREAM BANK.
  5. MIN. CLASS 54 DIP-ENGINEER MUST DESIGN LOADING.
  6. DESIGN SHALL BE APPROVED BY CFPUA.



**SD-20 PILE AND BENT DETAIL**  
NOT TO SCALE



- NOTES:**
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
  2. WIRE SHALL BE STRAPPED TO ALL PVC FORCE MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
  3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
  4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

**SD-21 TRACER WIRE DETAIL**  
NOT TO SCALE

Approved Construction Plan

Name \_\_\_\_\_ Date \_\_\_\_\_

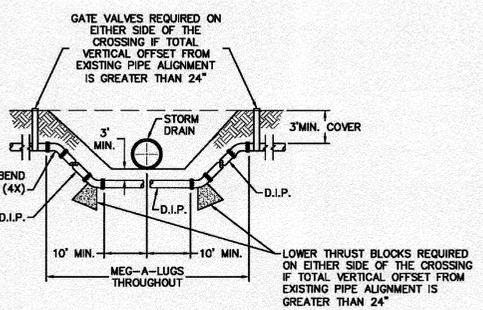
Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

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



NOTE: USE D.I.P. (CL50 OR BETTER)

**SD-18 FORCE MAIN DITCH AND STORM DRAIN CROSSING**  
NOT TO SCALE

STORMWATER MANAGEMENT PLAN

APPROVED

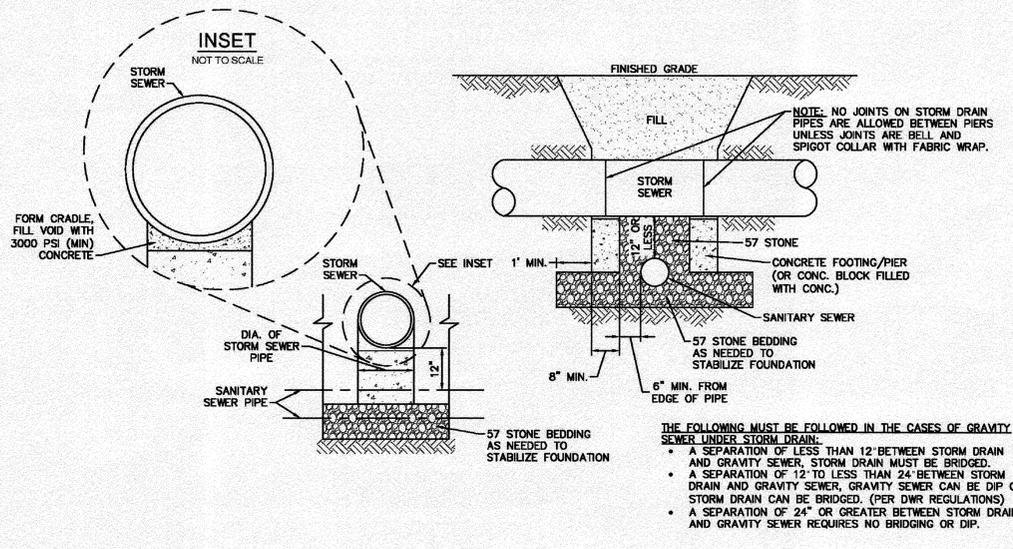
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE \_\_\_\_\_ PERMIT # \_\_\_\_\_

SIGNED \_\_\_\_\_

REV:	DESCRIPTION:	DATE:
1	ADDED NOTES TO THE STRUCTURAL BRIDGING DETAIL	03/11/15
2	Revised Tracer Wire Detail	10/20/15
3	Revised Force Main Ditch and Storm Drain Crossing Detail	02/15/16



**SD-24 STRUCTURAL BRIDGING DETAIL FOR STORMWATER OVER GRAVITY SEWER INSTALLATIONS WITH LESS THAN 12' SEPARATION**  
NOT TO SCALE

- THE FOLLOWING MUST BE FOLLOWED IN THE CASES OF GRAVITY SEWER UNDER STORM DRAIN:**
- A SEPARATION OF LESS THAN 12' BETWEEN STORM DRAIN AND GRAVITY SEWER, STORM DRAIN MUST BE BRIDGED.
  - A SEPARATION OF 12' TO LESS THAN 24' BETWEEN STORM DRAIN AND GRAVITY SEWER, GRAVITY SEWER CAN BE DIP OR STORM DRAIN CAN BE BRIDGED. (PER DWR REGULATIONS)
  - A SEPARATION OF 24' OR GREATER BETWEEN STORM DRAIN AND GRAVITY SEWER REQUIRES NO BRIDGING OR DIP.

- GENERAL NOTES:**
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
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**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

**CFPUA SANITARY SEWER**

DATE: 1/8/12

SCALE: N/A

DRAWN BY: CFPUA

CHECKED BY: CFPUA

PROJECT NO.:

**STANDARD DETAILS**

**CAPE FEAR PUBLIC UTILITY AUTHORITY**  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6560

Stewardship. Sustainability. Service.

DATE: 1/8/12

SCALE: N/A

DRAWN BY: CFPUA

CHECKED BY: CFPUA

PROJECT NO.:

**SHEET NO: SSD-3**

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION



No.	Revision	Date	By

Designer	NA	Scale	NTS
Drawn By	JSB	Date	6/30/16
Checked By	JJW	Job No.	03061193.01

**ARBOR COMMONS**  
Wilmington New Hanover County North Carolina

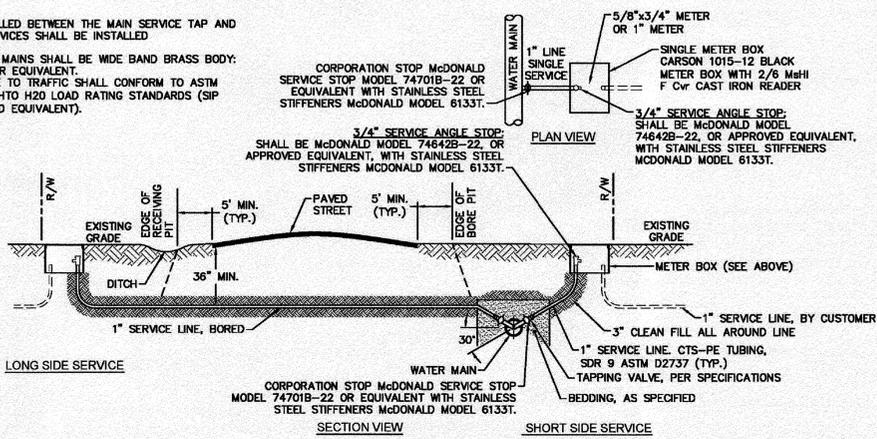
**SANITARY SEWER DETAILS**

**WithersRavenel**  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

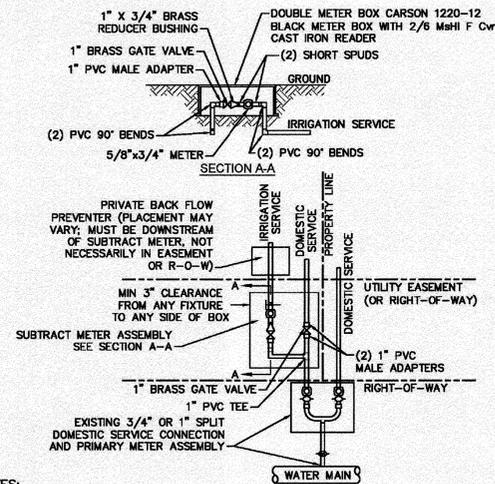
Sheet No. **D-3**

**NOTES:**

- NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
- SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
- METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4242, OR APPROVED EQUIVALENT).

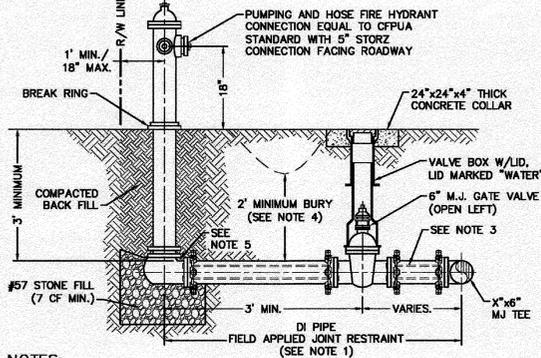


**WD-18 SINGLE SERVICE CONNECTION**  
NOT TO SCALE



- NOTES:**
- BEYOND THE PRIMARY DOMESTIC METER ASSEMBLY, CFPUA IS ONLY RESPONSIBLE FOR METER AND WASHERS OF SUBTRACT METER ASSEMBLY.
  - ALL PIPE AND FITTINGS UP TO FINAL SERVICE LINE TO BE 1\"/>

**WD-8 DOUBLE SERVICE CONNECTION USING SUBTRACT METER**  
NOT TO SCALE

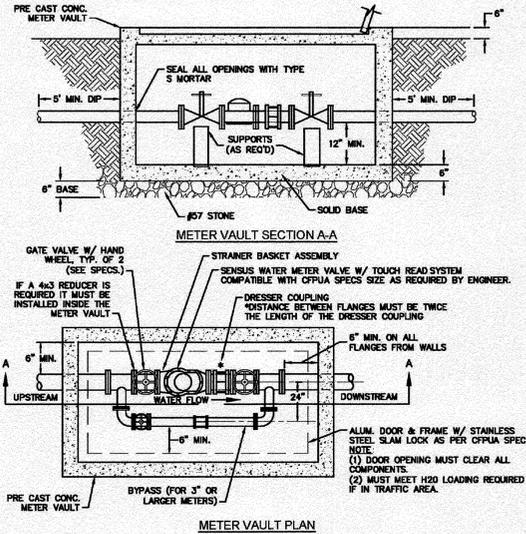


- NOTES:**
- JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA STAR PIPE PRODUCTS OR APPROVED EQUAL.
  - WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
  - CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ T-BOLT AND GASKET KITS, AS AN ALTERNATIVE.
  - HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
  - WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.

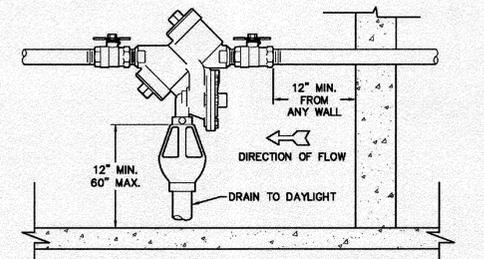
**WD-10 FIRE HYDRANT ASSEMBLY**  
NOT TO SCALE

- CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:**
- SEWER GUARDS REQUIRED AT ALL MANHOLES, STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
  - WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
  - ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
  - MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
  - NO FLEXIBLE COUPLINGS SHALL BE USED.
  - ALL STAINLESS STEEL FASTENERS SHALL BE 316.
  - CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.

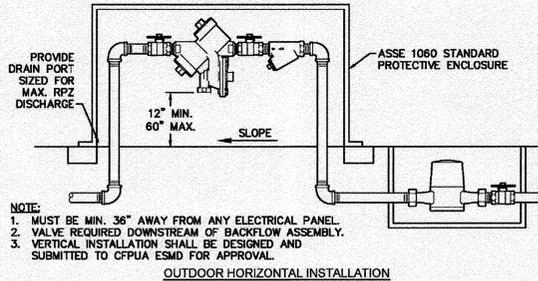
**WD-19 STANDARD NOTES**  
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)



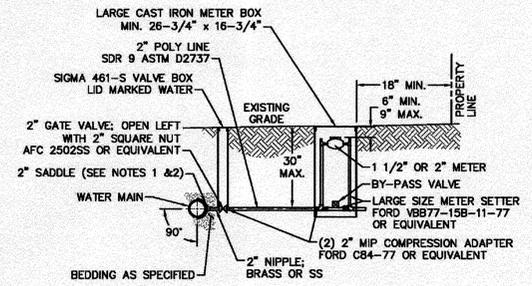
**WD-1 WATER METER VAULT**  
NOT TO SCALE



**INDOOR HORIZONTAL INSTALLATION**

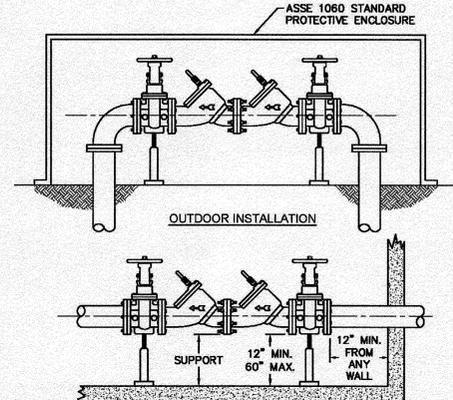


**WD-12 REDUCED PRESSURE PRINCIPLE ASSEMBLY**  
NOT TO SCALE



- NOTES:**
- ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
  - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: McDONALD 3800, FORD S90 (DOUBLE STRAP) OR EQUIVALENT.
  - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR APPROVED EQUIVALENT).
  - METER BOXES SUSCEPTIBLE TO INCIDENTAL, NON-DELIBERATE TRAFFIC SHALL CONFORM TO ANSI/SCTE 77 TIER 15 LOAD RATING STANDARDS (SYNERTECH MODEL DUO 17x30 OR APPROVED EQUIVALENT).
  - NON-TRAFFIC METER BOXES SHALL BE SIGMA MB2203 OR APPROVED EQUIVALENT.
  - 3\"/>

**WD-11 LARGE METER**  
NOT TO SCALE



- NOTE:**
- MUST BE MIN. 36\"/>

**WD-7 DOUBLE CHECK VALVE ASSEMBLY**  
NOT TO SCALE

- GENERAL NOTES:**
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
  - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
  - THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
  - THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

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

Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

REV.	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/28/12
2	Single Service Connection and Fire Hydrant Details Revised	7/23/13
3	Fire Hydrant Detail Revised	01/03/14
4	Revised Fire Hydrant Assembly To Show 5\"/>	04/10/15
5	Revised Fire Hydrant Assembly To Show Full DIP Hydrant Leg	01/19/16
6	Revised Water Meter Vault and Large Meter Details, Added Standard Notes	02/15/16

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

**CFPUA WATER DISTRIBUTION SYSTEM**

STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910) 332-6660

DATE: 1/8/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:  
SHEET NO.: **WSD-1**

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION



No.	Revision	Date	By

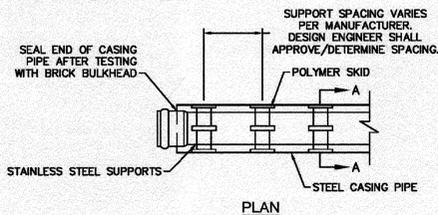
Designer	NA	Scale	NTS
Drawn By	JSB	Date	6/30/16
Checked By	JWJ	Job No.	03061193.01

**ARBOR COMMONS**  
Wilmington New Hanover County North Carolina

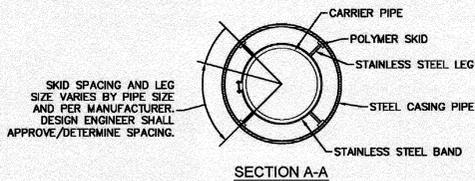
**WATER DISTRIBUTION SYSTEM DETAILS**

**WithersRavenel**  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 1011 | Wilmington, NC 28403 | Phone: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No. **D-4**

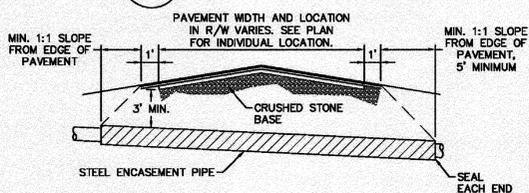


NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.



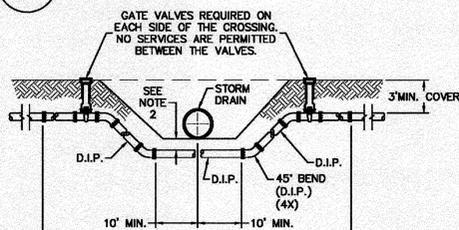
NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.

WD-15 PIPE CASING SUPPORT DETAIL  
NOT TO SCALE



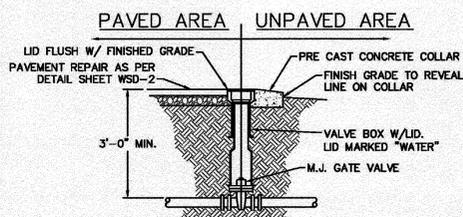
NOTES:  
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.  
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

WD-16 TYPICAL BORING/JACKING DETAIL  
NOT TO SCALE

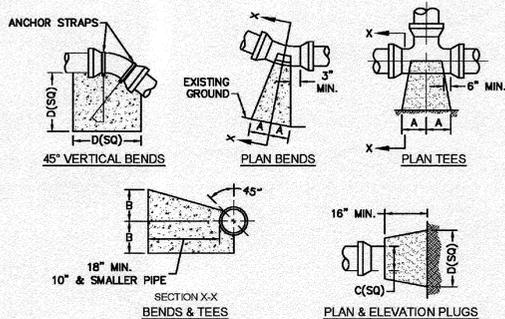


NOTES:  
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.  
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPWA:  
a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.  
b. ALL OTHER LOCATIONS, 30" MIN.  
c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE IS REQUIRED.

WD-2 WATER MAIN DITCH AND STORM DRAIN CROSSING  
NOT TO SCALE



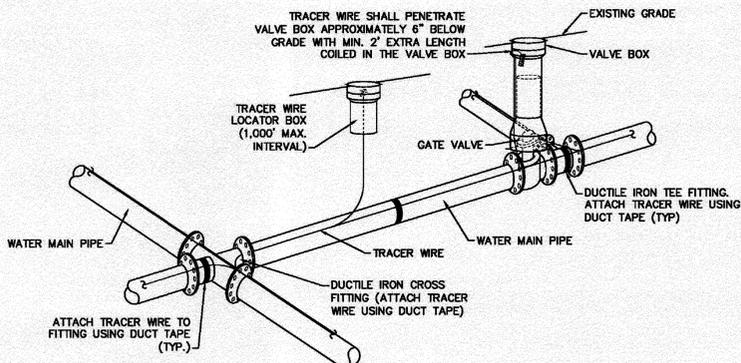
WD-3 VALVE DETAIL  
NOT TO SCALE



SIZE	90 BENDS		45 BENDS		22-1/2 BENDS		TEES/PLUGS		45 VERT. BENDS
	A	B	A	B	A	B	A	B	
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	6"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	18"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	16"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

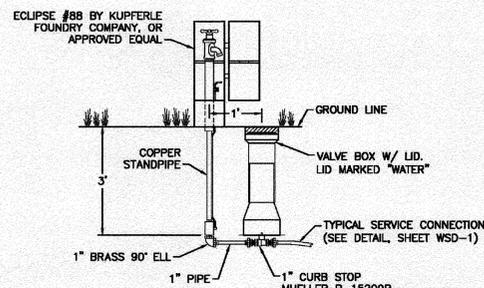
NOTES:  
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.  
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.  
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

WD-4 THRUST BLOCK DETAIL  
NOT TO SCALE

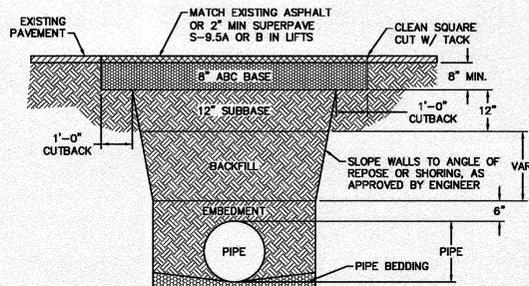


NOTES:  
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.  
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.  
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.  
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

WD-17 TRACER WIRE DETAIL  
NOT TO SCALE

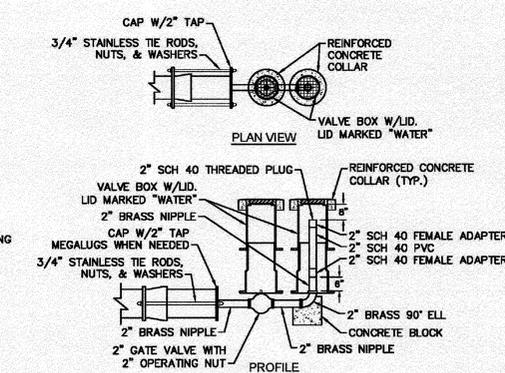


WD-6 SAMPLING STATION  
NOT TO SCALE

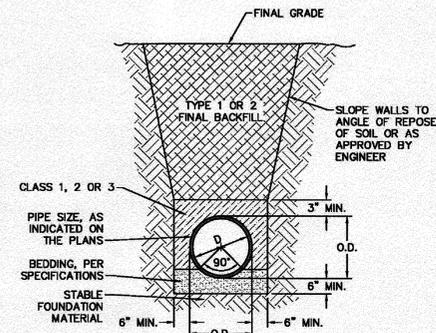


NOTES:  
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.  
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION. (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).  
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.  
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS  
5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.  
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.  
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.  
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED  
NOT TO SCALE

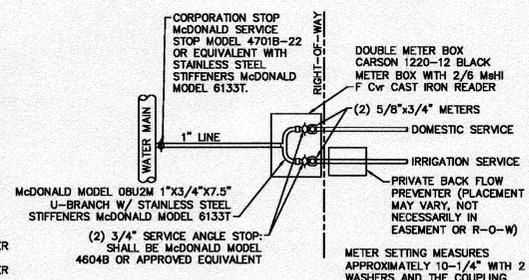


WD-5 2" BLOW-OFF  
NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL  
NOT TO SCALE

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



WD-9 DOUBLE SERVICE CONNECTION  
NOT TO SCALE

GENERAL NOTES:  
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.  
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.  
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.  
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.  
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPWA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Public Utilities \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

REV:	DESCRIPTION:	DATE:
1	Revised Water Main Ditch and Storm Crossing Detail	11/12/13
2	Revised Water Main Ditch and Storm Crossing Detail	05/05/14
3	Revised Tracer Wire Detail	10/20/15
4	Added Backflow Preventer to Double Service Connection Detail	02/01/16
5	Revised Sampling Station Detail	02/15/16

**CFPWA WATER DISTRIBUTION SYSTEM**

STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6500

DATE: 1/9/12  
SCALE: N/A  
DRAWN BY: CFPWA  
CHECKED BY: CFPWA  
PROJECT NO.:  
SHEET NO.: WSD-2

TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

FINAL DESIGN  
NOT APPROVED FOR CONSTRUCTION



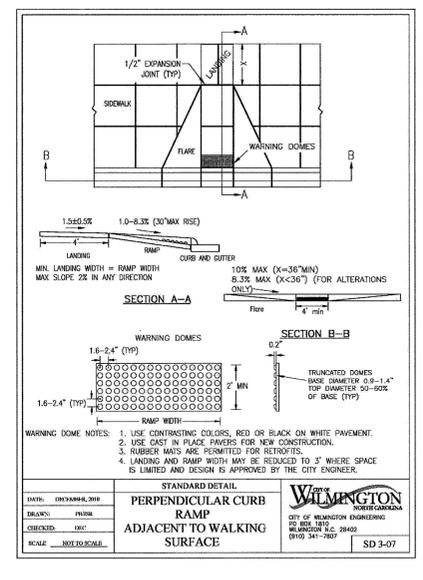
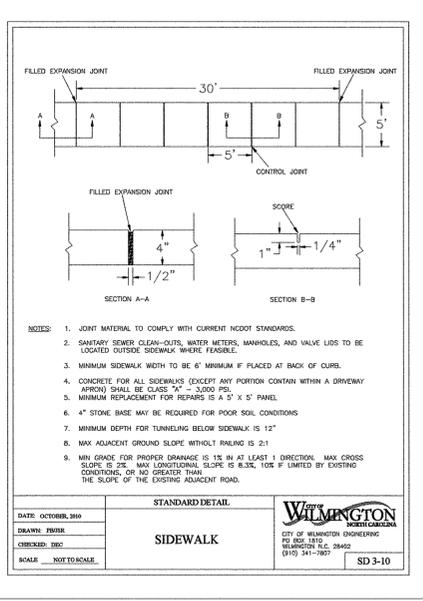
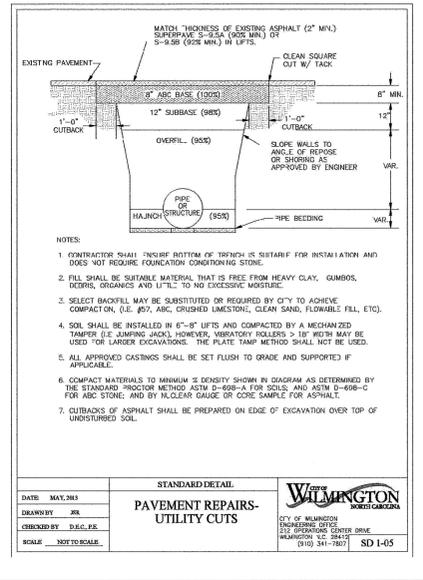
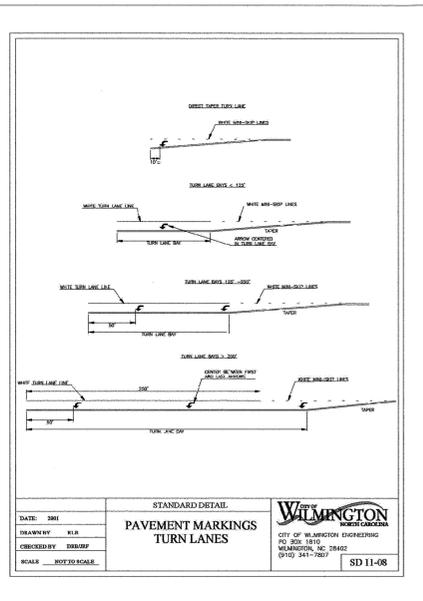
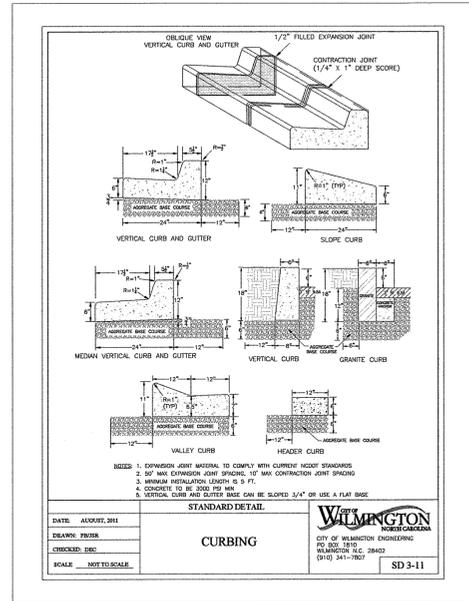
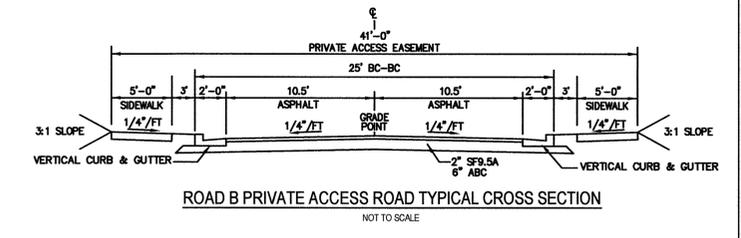
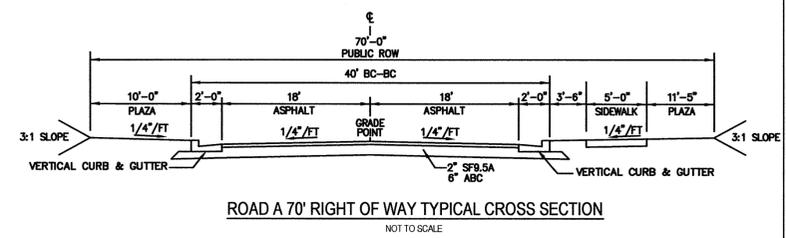
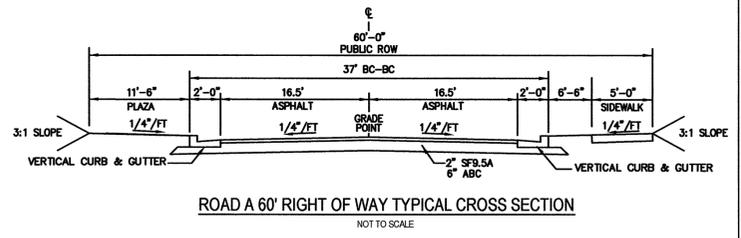
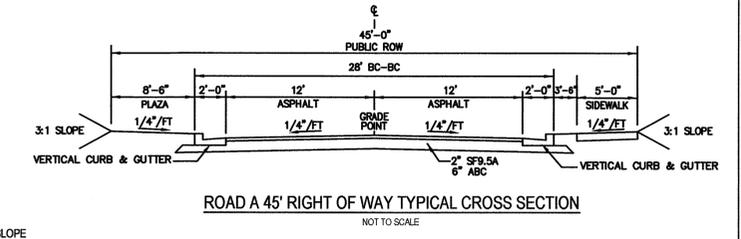
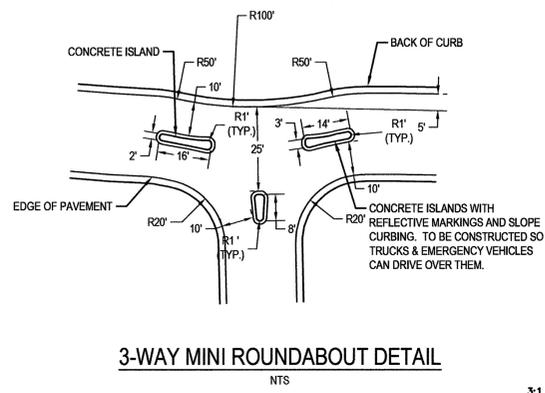
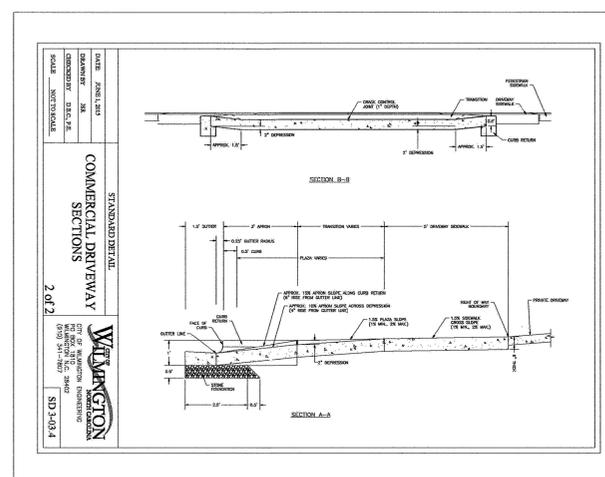
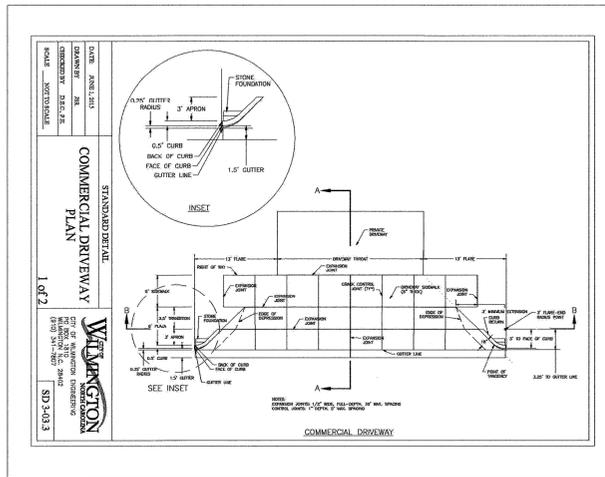
No.	Revision	Date	By

Designer: NA Scale: NTS  
Drawn By: JSB Date: 6/30/16  
Checked By: JWW Job No.: 03061193.01

ARBOR COMMONS  
New Hanover County  
Wilmington, North Carolina

WATER DISTRIBUTION SYSTEM DETAILS

WithersRavenel  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com  
Sheet No. D-5



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

Approved Construction Plan

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

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



TYPICAL DETAILS NOTE:  
THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

FINAL DESIGN  
NOT APPROVED FOR CONSTRUCTION

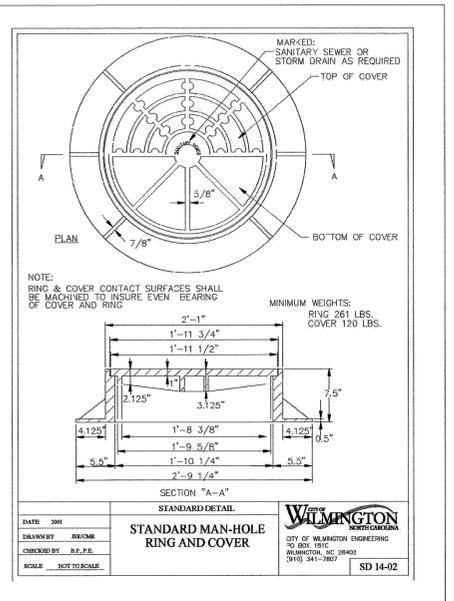
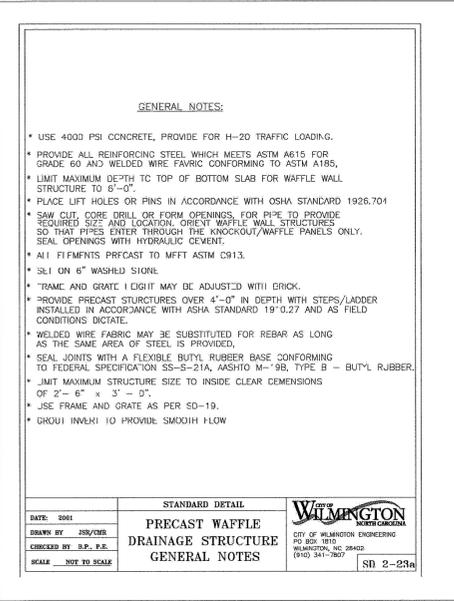
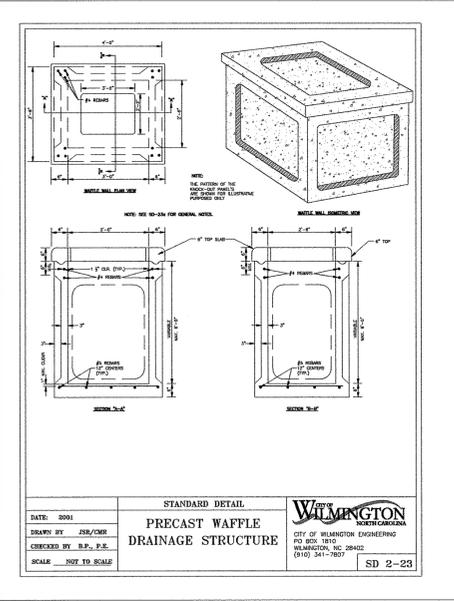
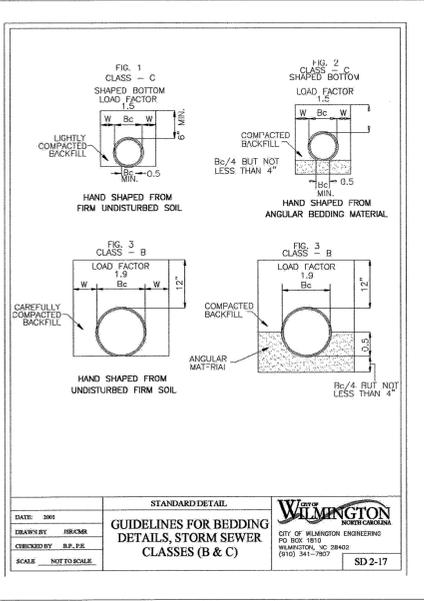
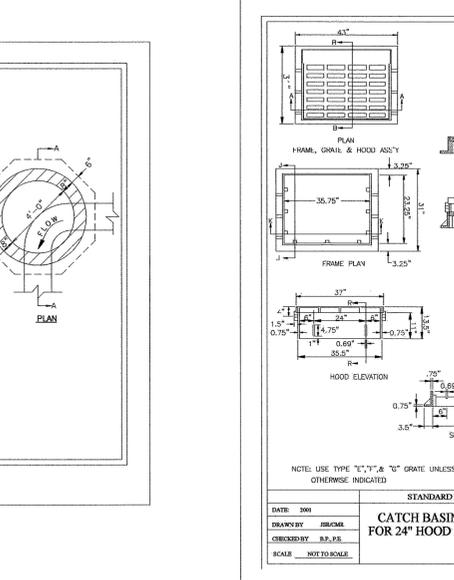
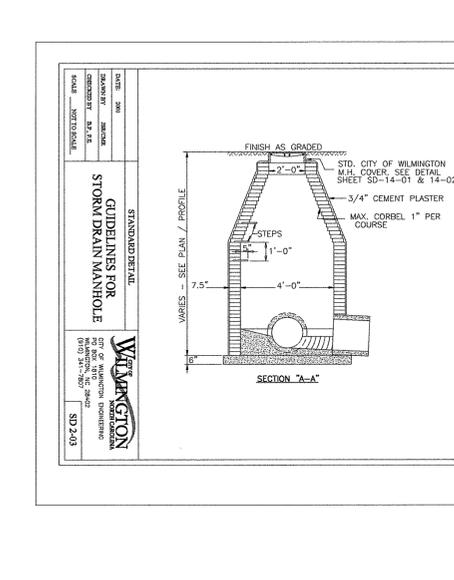
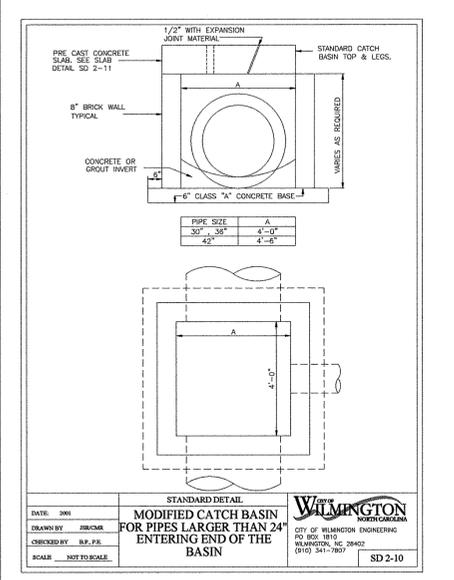
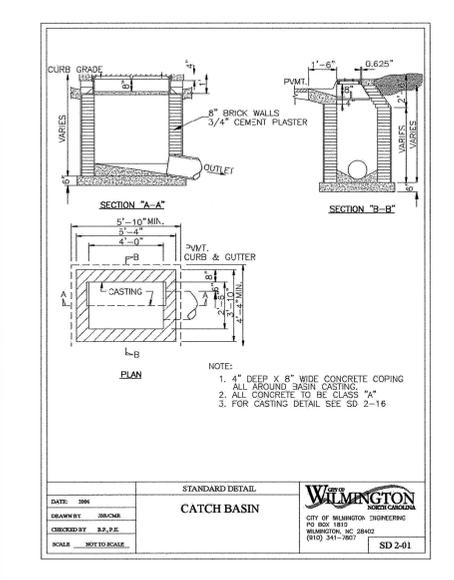
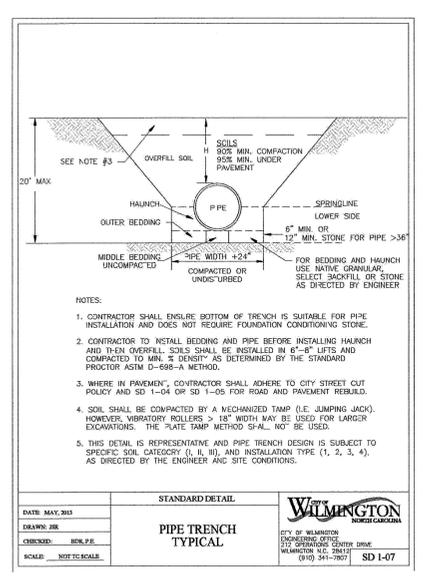
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				NA	NTS
				Date	6/30/16
				Checked By	JWS
				Job No.	03061193.01
				Checked By	JWJ

**ARBOR COMMONS**  
New Hanover County  
Wilmington, North Carolina

**ROADWAY DETAILS**

**WithersRavenel**  
Engineers | Planners | Surveyors  
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No.  
**D-6**



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

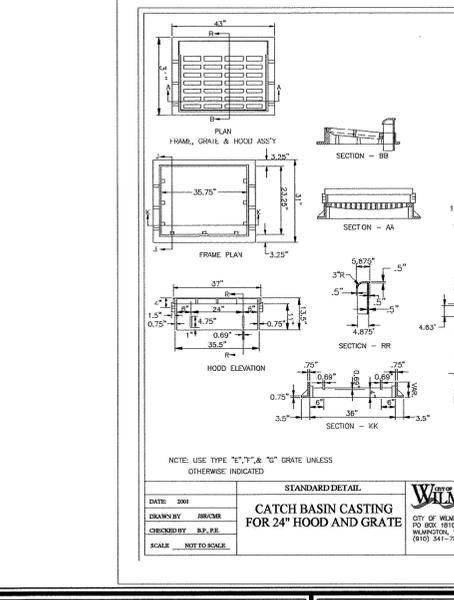
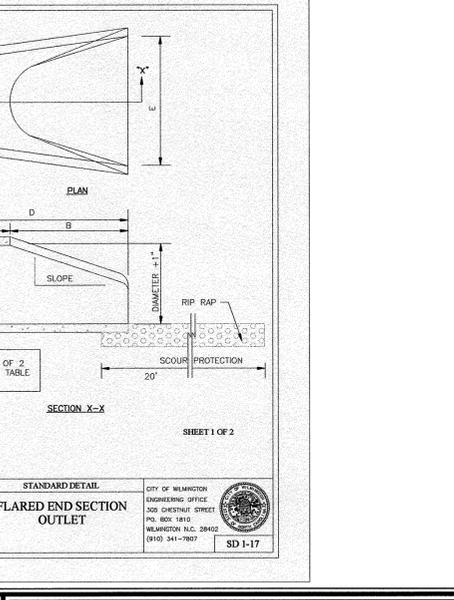
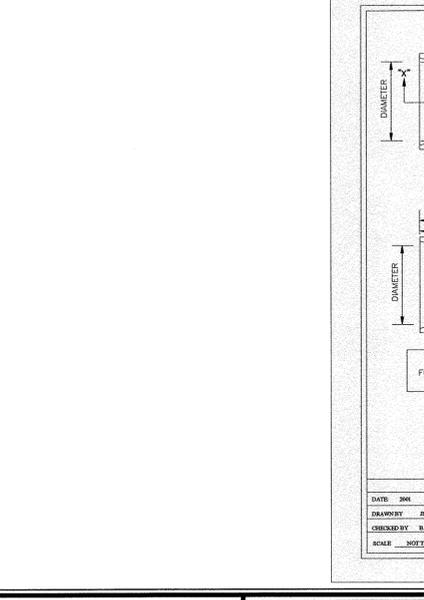
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18	2 1/2	3:1	27	46	73	36	1190	
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24	3	3:1	42	31	73	1/2	48	1770
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72	7	2:1	78	21	99	108	13880	

DIMENSIONS IN INCHES WEIGHTS IN POUNDS

SHEET 2 OF 2

DATE: 2006  
 DRAWN BY: JIB/CMB  
 CHECKED BY: R.P.P./E  
 SCALE: NOT TO SCALE

STANDARD DETAIL  
 CITY OF WILMINGTON ENGINEERING OFFICE  
 300 CHESTNUT STREET  
 WILMINGTON, NC 28402  
 (910) 341-7807  
 SD 1-17



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

PIPE DIAMETER	WALL THICKNESS	SI OFF	R	C	D	F	JUNIT WEIGHT	
12	2 1/4	3:1	24	49	73	24	730	
15	2 1/4	3:1	27	46	73	30	910	
18	2 1/2	3:1	27	46	73	36	1190	
21	2 3/4	3:1	36	37	73	42	1370	
24	3	3:1	42	31	73	1/2	48	1770
27	3 1/4	3:1	48	25	73	1/2	54	2130
30	3 1/2	3:1	54	19	73	3/4	60	2380
33	3 3/4	3:1	60	36	96	56	3870	
36	4	3:1	63	34	97	3/4	72	5320
42	4 1/2	3:1	63	35	98	78	5920	
48	5	3:1	72	26	98	84	7470	
54	5 1/2	2.4:1	66	34	100	90	8810	
60	6	2:1	60	39	99	96	11180	
72	7	2:1	78	21	99	108	13880	

DIMENSIONS IN INCHES WEIGHTS IN POUNDS

SHEET 2 OF 2

DATE: 2006  
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STANDARD DETAIL  
 CITY OF WILMINGTON ENGINEERING OFFICE  
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 SD 1-17



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

Approved Construction Plan

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

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



TYPICAL DETAILS NOTE:  
 THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.

FINAL DESIGN  
 NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By

Designer: NA Scale: NTS  
 Drawn By: JSB Date: 6/30/16  
 Checked By: JJW Job No.: 03061193.01

ARBOR COMMONS  
 New Hanover County  
 North Carolina

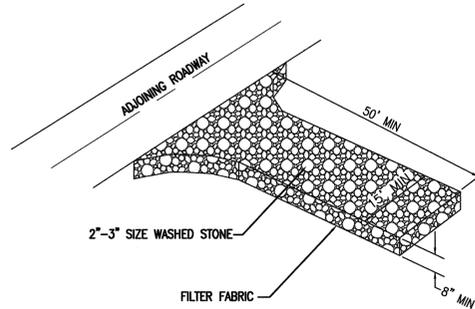
STORMDRAIN DETAILS

WithersRavenel  
 Engineers | Planners | Surveyors  
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No. D-7

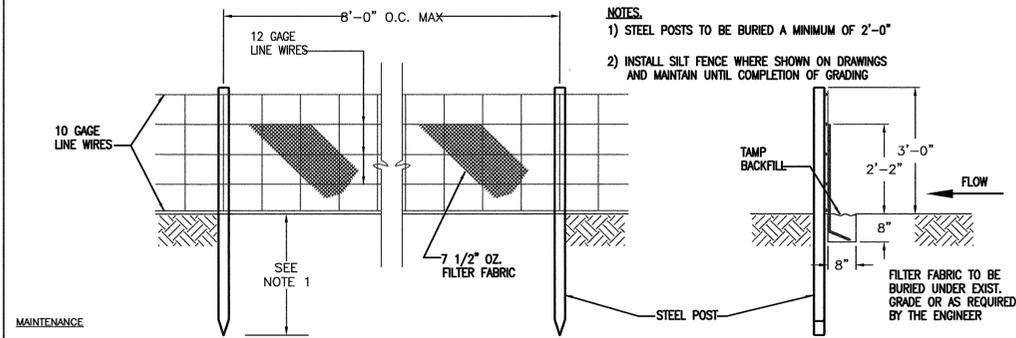
**NOTES:**

1. PROVIDE TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS.
2. LOCATE ENTRANCE TO PROVIDE MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING, OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
4. ANY MATERIAL WHICH MAKES IT ONTO THE ROAD MUST BE CLEANED UP IMMEDIATELY.
5. APPLICABLE AT ALL POINTS OF INGRESS EGRESS UNTIL SITE IS STABILIZED. FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.
6. WHEN TEMPORARY CONSTRUCTION ENTRANCES ARE LOCATED ON PAVED SURFACES, PLACE MINIMUM OF 2" OF SCREENINGS OR SAND TO HELP FACILITATE IN CLEAN-UP AND SITE RESTORATION.



**TEMPORARY CONSTRUCTION ENTRANCE**

NTS



**NOTES:**

- 1) STEEL POSTS TO BE BURIED A MINIMUM OF 2'-0"
- 2) INSTALL SILT FENCE WHERE SHOWN ON DRAWINGS AND MAINTAIN UNTIL COMPLETION OF GRADING

- MAINTENANCE**
1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
  2. SHOULD THE FABRIC OF THE SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
  3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
  4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

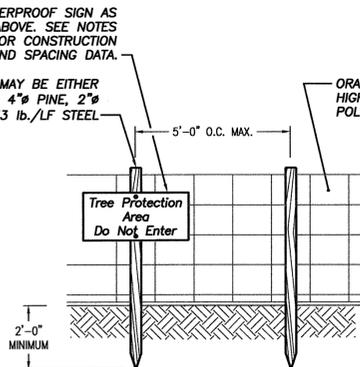
**SILT FENCE**

NTS

WEATHERPROOF SIGN AS SHOWN ABOVE. SEE NOTES BELOW FOR CONSTRUCTION AND SPACING DATA.

POST MAY BE EITHER 4" PINE, 2" OR 1.33 LB./LF STEEL

ORANGE, UV RESISTANT HIGH-TENSILE STRENGTH POLY BARRICADE FABRIC

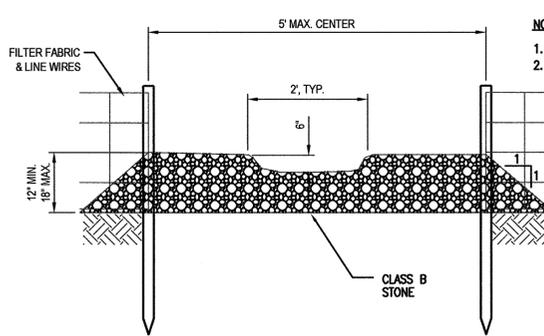


**TREE PROTECTION FENCE**

NTS

**NOTES:**

1. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
2. LETTERS ARE TO BE 3" HIGH MIN., CLEARLY LEGIBLE AND SPACED AS DETAILED.
3. SIGNS ARE TO BE PLACED NO GREATER THAN 200' ON CENTER.
4. PLACE SIGN AT EACH END OF LINEAR TREE PROTECTION AREA AND ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
5. ATTACH SIGNS SECURELY TO FENCE POST AND FABRIC.
6. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.

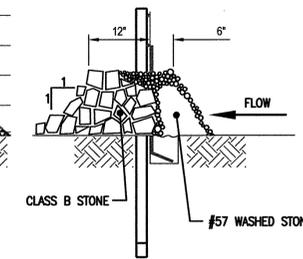


**SILT FENCE OUTLET**

NTS

**NOTES:**

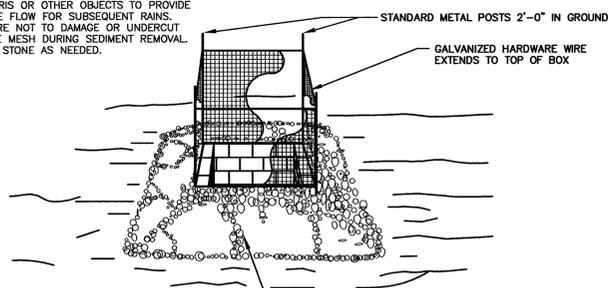
1. POSTS TO BE BURIED A MINIMUM OF 2'-0"
2. INSTALL SILT FENCE AS SHOWN DETAIL 4/W401.



**CROSS SECTION**

**MAINTENANCE**

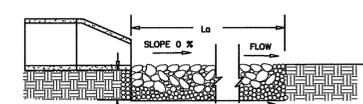
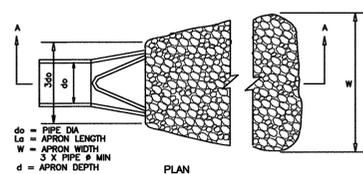
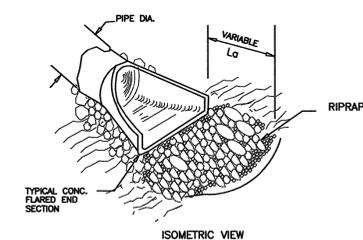
INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. CLEAR THE MESH WIRE OF ANY DEBRIS OR OTHER OBJECTS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. REPLACE STONE AS NEEDED.



**STANDARD CATCH BASIN/YARD INLET PROTECTION**

NTS

#57 WASHED STONE PLACED TO A HEIGHT OF 12"-18" MINIMUM ABOVE TOP OF BOX



- NOTES:**
- SEE SCHEDULE BELOW FOR DIMENSIONS
1. La is the length of the riprap apron.
  2. d = 1.5 times the maximum stone diameter but not less than 6"
  3. A filter blanket (filter fabric) shall be installed between the riprap and soil foundation.

**CONSTRUCTION SPECIFICATION**

1. EXCAVATE BELOW CHANNEL OUTLET AND WIDEN CHANNEL TO THE REQUIRED RIPRAP THICKNESS FOR EACH APRON. FOUNDATION TO BE CUT TO ZERO GRADE AND SMOOTHED.
2. PLACE FILTER CLOTH ON BOTTOM AND SIDES OF PREPARED FOUNDATION. ALL JOINTS TO OVERLAP A MINIMUM OF 1.0'.
3. EXERCISE CARE IN RIPRAP PLACEMENT TO AVOID DAMAGE TO FILTER FABRIC.
4. PLACE RIPRAP ON ZERO GRADE - TOP OF RIPRAP TO BE LEVEL WITH EXISTING OUTLET - NO OVERFALL AT ENDS.
5. RIPRAP TO BE HARD, ANGULAR, WELL GRADED CLASS B EROSION CONTROL STONE.
6. IMMEDIATELY AFTER CONSTRUCTION STABILIZED ALL DISTURBED AREAS WITH VEGETATION AS SHOWN IN VEGETATIVE PLAN.

**MAINTENANCE**

INSPECT RIP RAP DISSIPATERS WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT TO SEE IF ANY EROSION AROUND OR BELOW THE RIP RAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

**ENERGY DISSIPATOR SCHEDULE**

ENERGY DISSIPATOR NO.	PIPE DIAMETER (in)	APRON THICKNESS (in)	La (ft)	WIDTH (W) (ft)	3do	RIPRAP SIZE
FES#1	42	36	15	19	11	CLASS 2
FES#15	15	12	8	10	4	CLASS A

**RIP RAP ENERGY DISSIPATER**

N.T.S.

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

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Public Utilities \_\_\_\_\_

Traffic \_\_\_\_\_

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**FINAL DESIGN**  
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By	Designer	Scale
				JSB	NTS
				JSB	6/30/16
				JWJ	03061193.01

**ARBOR COMMONS**  
New Hanover County  
Wilmington North Carolina

**EROSION CONTROL DETAILS**

**WithersRavenel**  
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Sheet No.  
**D-8**

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