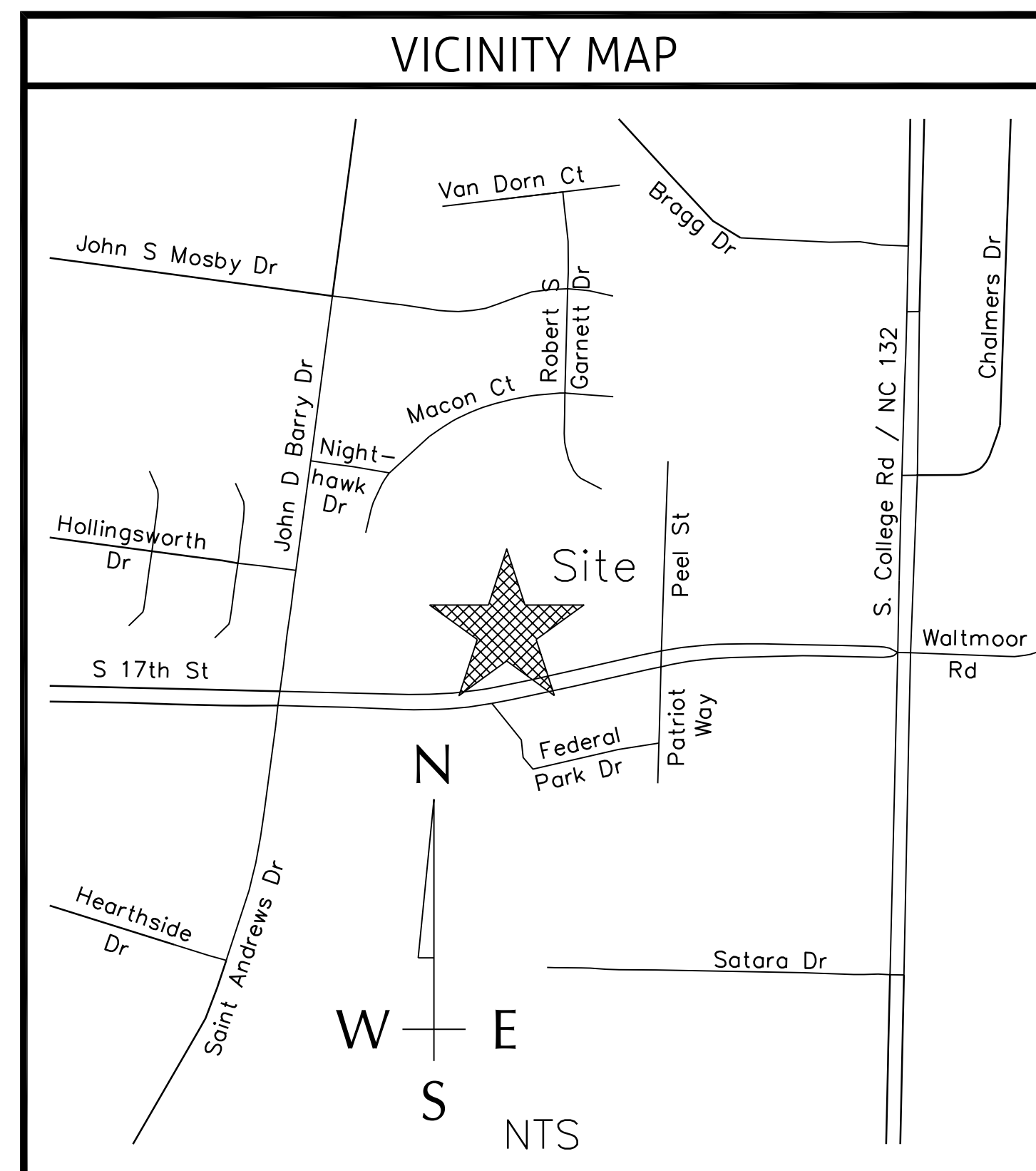


INFRASTRUCTURE CONSTRUCTION DRAWINGS FOR ARBOR COMMONS

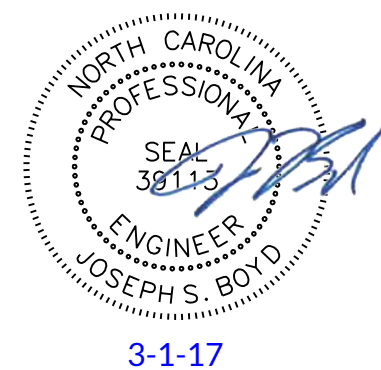
WILMINGTON, NC
MARCH 2017

CONSTRUCTION PLANS
FOR ARBOR COMMONS
WR PROJECT NO.: 03061193.01

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	TEMP. DIVERSION 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



INDEX OF SHEETS	
SHEET NO.	SHEET TITLE
C-1	PROJECT NOTES
C-2	EXISTING CONDITIONS
C-3	TREE REPLACEMENT PLAN
C-4	SITE PLAN
C-5	EROSION CONTROL PLAN
C-6	UTILITY PLAN
C-7	GRADING AND STORMWATER PLAN
C-8	LANDSCAPE & LIGHTING PLAN
C-9	HOLLINGSWORTH DRIVE PLAN & PROFILE
C-10	PRIVATE INTERPARCEL ACCESS ROAD PLAN & PROFILE
C-11	PAVEMENT MARKINGS AND SIGNAGE PLAN
C-12	DRAINAGE AREA PLAN
D-1	SANITARY SEWER DETAILS
D-2	SANITARY SEWER DETAILS
D-3	SANITARY SEWER DETAILS
D-4	WATER DISTRIBUTION SYSTEM DETAILS
D-5	WATER DISTRIBUTION SYSTEM DETAILS
D-6	ROADWAY DETAILS
D-7	STORM DRAIN DETAILS
D-8	EROSION CONTROL DETAILS



FINAL DESIGN

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	_____

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:

- 1. THE CONTRACTOR IS REQUIRED TO OBTAIN ANY/ALL PERMITS REQUIRED FOR CONSTRUCTION OF THESE PLANS.
2. 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.
3. 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.
4. 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.
5. 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.
6. CONTRACTOR TO COORDINATE WITH TRAFFIC ENGINEERING FOR THE REMOVAL AND STORAGE OF ANY TRAFFIC EQUIPMENT OR SIGNS DURING DEMOLITION, CONSTRUCTION, AND OPENING OF THIS DEVELOPMENT.
7. CONTRACTOR TO COORDINATE WITH CITY OF WILMINGTON ENGINEERING ABOUT THE DETOUR AND CLOSURE PLAN FOR THE CROSS CITY TRAIL WHICH WILL BE CLOSED AND OR PEDESTRIAN REROUTING REQUIRED FOR THE DEMOLITION, CONSTRUCTION OR OPENING OF THIS PROJECT.
8. CONTRACTOR TO COORDINATE WITH THE CITY OF WILMINGTON ABOUT ANY CITY EQUIPMENT REMOVED, RELOCATED, OR DEMOLISHED DURING THE DEMOLITION, CONSTRUCTION AND OPENING OF THIS DEVELOPMENT.
9. CONTRACTOR TO COORDINATE DIRECTLY WITH ENGINEERING TO DETERMINE IF ANY DRIVEWAY PERMITS/REVISIONS/REVIEW PROCESSES ARE REQUIRED.
10. CONTRACTOR TO COORDINATE WITH TRAFFIC ENGINEERING AT TRAFFIC PLAN FOR THE CLOSURE OF STREETS, SIDEWALKS, OR DRIVEWAYS AND IMPLEMENTATIONS OF THE VEHICLE AND PEDESTRIAN TRAFFIC PLAN TO BE USED FOR THE DURATION OF THIS PROJECT.
11. A TEMPORARY DETOUR AND CLOSURE PLAN WILL NEED TO BE FILED WITH NHC 911 FOR THE CLOSURE OF ANY PUBLIC STREETS.

GENERAL 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.
2. THE TREE SURVEY HAS BEEN PROVIDED BY ROBERT SESSOMS & ASSOCIATES.
3. REASONABLE CARE HAS BEEN EXERCISED IN SHOWING THE LOCATION OF EXISTING UTILITIES ON THE PLANS.
4. CONTRACTOR SHALL COMPLY WITH THE LATEST REVISIONS AND INTERPRETATIONS OF THE DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.
5. 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.
6. 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.
7. ALL WORK BY THE CONTRACTOR SHALL BE WARRANTED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR AFTER THE OWNER ACCEPTS THE WORK.
8. CONTRACTOR SHALL CALL THE NORTH CAROLINA ONE-CALL CENTER AT 1 (800) 632-4949 AND ALLOW THE CENTER TO LOCATE EXISTING UTILITIES BEFORE DIGGING.
9. CONTRACTOR SHALL REMOVE ASPHALT, AGGREGATE BASE COURSE, AND CONCRETE CURB & GUTTER WITHIN LIMITS OF DEMOLITION AS SHOWN ON PLAN.
10. IF THESE UNITS ARE SOLD AT ANY POINT, THE BUYER MUST RECEIVE A SUBDIVISION STREET DISCLOSURE STATEMENT.
11. THIS PROPERTY IS NOT WITHIN ANY FLOOD HAZARD AREA AS EVIDENCED ON N.C. FLOOD MAP 3720313500J.

DEMOLITION NOTES:

- 1. CONTRACTOR TO COORDINATE WITH THE OWNER TO PROPERLY MAINTAIN OR RELOCATE EXISTING SERVICE CONNECTIONS WHEN NECESSARY.
2. CONTRACTOR IS TO WALK THE SITE AND BECOME FAMILIAR WITH THE SCOPE OF DEMOLITION REQUIRED.
3. DEMOLITION SHALL INCLUDE BUT IS NOT LIMITED TO THE EXCAVATION, HAULING AND OFFSITE DISPOSAL OF CONCRETE PADS, CONCRETE DITCHES, FOUNDATIONS, SLABS, STEPS, AND STRUCTURES.
4. THE CONTRACTOR SHALL PROTECT ALL ADJACENT PROPERTY, STRUCTURES AND UTILITIES ON THE PROPERTY NOT TO BE DEMOLISHED.
5. ELECTRIC, TELEPHONE, SANITARY SEWER, WATER AND STORM SEWER UTILITIES THAT SERVICE OFF-SITE PROPERTIES SHALL BE MAINTAINED DURING THE CONSTRUCTION PROCESS BY THE CONTRACTOR.
6. EXISTING UTILITIES NOT INTENDED FOR DEMOLITION SHALL BE MAINTAINED, PROTECTED AND UNDISTURBED DURING DEMOLITION.
7. ALL EXISTING IMPROVEMENTS INDICATED OR REQUIRED TO BE DEMOLISHED SHALL INCLUDE REMOVAL FROM THE PROPERTY AND PROPER DISPOSAL.
8. 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.
9. PROVIDE SMOOTH SAW CUT OF EXISTING PAVEMENTS, CURBS AND GUTTERS AND SIDEWALKS TO BE DEMOLISHED.
10. ALL DEMOLITION WORK SHALL BE DONE IN STRICT ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS AS WELL AS OSHA REGULATIONS.
11. 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:

- 1. CLEAR AND REMOVE FROM SITE ALL TREES, ROOTS, ROOT MAT, ETC. FROM THE AREA WITHIN DESIGNATED CLEARING LIMITS.
2. PLANT GRASS OVER ALL GRADED AREAS AS NOTED IN STABILIZATION NOTES.
3. 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.
4. 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.
5. WATER, FERTILIZE, MOW AND MAINTAIN SPRIGGED, SODDED AND PLANTED AREAS UNTIL FINAL APPROVAL BY NEW HANOVER COUNTY.
6. 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

- 1. 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.
2. 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.
3. SEDIMENT WILL BE REMOVED BEHIND THE SEDIMENT FENCE WHEN IT BECOMES 0.5 FEET DEEP AT THE FENCE.
4. 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.
5. 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.
6. SEDIMENT WILL BE REMOVED FROM AROUND TEMPORARY ROCK CHECK DAMS ONCE A WEEK AND AFTER EVERY RAIN EVENT.

STABILIZATION NOTES

- 1. 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.
2. 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.

PERMANENT SEEDING SCHEDULE - MIXTURE 5CP

Table with columns: Seeding Mixture (Species, Rate), Seeding Dates (March - June), Soil Amendments (Apply Lime and Fertilizer), Mulch (Do Not Mulch), and Maintenance (Fertilize very sparingly).

TEMPORARY SEEDING-LATE WINTER/EARLY SPRING

Table with columns: Seeding Mixture (Species, Rate), and Seeding dates (Coastal Plain - Dec. 1-Apr. 15, Summer - April 15-Aug. 15, Fall - Aug. 15-Dec. 30).

Table with columns: Seeding dates (Coastal Plain - Dec. 1-Apr. 15, Summer - April 15-Aug. 15, Fall - Aug. 15-Dec. 30), Soil amendments (Follow recommendations of soil tests), and Mulch (Apply 4,000 lb/acre straw).

Soil amendments: FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 750 LB/ACRE 10-10-10 FERTILIZER.
Mulch: APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL.
Maintenance: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

FIRE & LIFE SAFETY NOTES:

- 1. LANDSCAPING OR PARKING CANNOT BLOCK OR IMPEDE THE FDC OR FIRE HYDRANTS.
2. HYDRANTS MUST BE LOCATED WITHIN 8' OF THE CURB.
3. A MINIMUM OF 5' SHALL SEPARATE UNDERGROUND FIRE LINES OR PRIVATE WATER MAINS FROM OTHER UNDERGROUND UTILITIES.
4. NEW HYDRANTS MUST BE AVAILABLE FOR USE PRIOR TO CONSTRUCTION OF THE BUILDING(S).
5. CONTRACTOR SHALL MAINTAIN AN ALL WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
6. TEMPORARY STREET SIGNS SHALL BE INSTALLED AT EACH STREET INTERSECTION WHEN CONSTRUCTION OF NEW ROADWAYS ALLOWS PASSAGE BY VEHICLES.

GRADING NOTES:

- 1. TREE PRESERVATION / REMOVAL PERMIT IS REQUIRED PRIOR TO CLEARING AND LAND DISTURBANCE.
2. NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED.
3. 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

- 1. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO START OF CONSTRUCTION.
2. THE GENERAL CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND R.O.W.'S PUBLIC OR PRIVATE, PRIOR TO WORKING IN THESE AREAS.
3. CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
4. ACCESS TO UTILITIES, FIRE HYDRANTS, STREET LIGHTING, ETC., SHALL REMAIN UNDISTURBED, UNLESS COORDINATED WITH THE RESPECTIVE UTILITY.
5. DO NOT SCALE THIS DRAWING AS IT IS A REPRODUCTION AND SUBJECT TO DISTORTION.
6. THE GENERAL CONTRACTOR SHALL REMOVE ALL DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT AND AT LEAST ONCE A WEEK DURING CONSTRUCTION.
7. THE GENERAL CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE 'CONSTRUCTION LIMITS' BROOM CLEAN AT ALL TIMES.
8. CONTRACTOR SHALL MAINTAIN AN 'AS-BUILT' SET OF DRAWINGS TO RECORD THE EXACT LOCATION OF ALL PIPING PRIOR TO CONCEALMENT.
9. 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.
10. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES.

- 11. ALL PERMITS RELATIVE TO PROJECT MUST BE OBTAINED, PRIOR TO CONSTRUCTION
12. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH PERMITS ISSUED AND APPLICABLE STATE, COUNTY, AND LOCAL CODES.
13. FOR BUILDING DIMENSIONS, SEE ARCHITECTURAL DRAWINGS.
14. ALL DIMENSIONS AND RADII ARE TO OUTSIDE FACE OF BUILDING OR TO FACE OF CURB UNLESS OTHERWISE NOTED.
15. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL INSPECTIONS, CERTIFICATIONS, EQUIPMENT, ETC., THAT MAY BE REQUIRED.
16. 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:

- 1. ALL PAVEMENT MARKINGS IN PUBLIC RIGHT-OF-WAYS AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
2. ALL SIGNS AND PAVEMENT MARKINGS IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
3. STREET NAME SIGNS FOR PUBLIC AND PRIVATE STREETS MUST BE ERECTED BEFORE A CERTIFICATE OF OCCUPANCY IS ISSUED.
4. ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
5. ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
6. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
7. CONTACT TRAFFIC ENGINEERING AT A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT OF WAY.
8. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
9. TACTILE WARNING MATS TO BE INSTALLED AT ALL WHEELCHAIR RAMPS.
10. A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT IN A CITY STREET.
11. 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.
12. ONCE STREETS ARE READY TO BE OPEN TO PUBLIC TRAFFIC, CONTACT THE TRAFFIC ENGINEERING DIVISION TO REQUEST INSTALLATION OF TRAFFIC AND STREET NAME SIGNS.
13. ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS AND CURBING WITH BE REPLACED.
14. 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 PLAN.
15. PERMITTING OF BUSINESS IDENTIFICATION SIGNAGE IS A SEPARATE PROCESS.

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

EXISTING UTILITY NOTES:

- 1. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO VERIFY THE ACTUAL LOCATION AND AVAILABILITY OF ALL EXISTING AND PROPOSED UTILITIES IN THE FIELD PRIOR TO GROUND BREAKING.
2. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS.

NOTICE REQUIRED:

ALL EXISTING UNDERGROUND UTILITIES SHALL BE PHYSICALLY LOCATED BY CONTRACT PRIOR TO THE BEGINNING OF ANY CONSTRUCTION IN THE VICINITY OF SAID UTILITIES.

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION AT LEAST TWO WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS PRIOR TO ANY EXCAVATION OR DEMOLITION.

UTILITY NOTES:

- 1. EXISTING WATER AND SANITARY SEWER SERVICES ARE CURRENTLY AVAILABLE TO THE SITE FROM PUBLIC SYSTEMS.
2. ALL UTILITY SERVICES, SUCH AS ELECTRIC POWER, CATV, GAS, AND TELEPHONE SHALL BE INSTALLED UNDERGROUND.
3. ALL WATER & SEWER UTILITIES TO BE INSTALLED PER CFPWA TECHNICAL SPECIFICATIONS & STANDARDS.
4. PROJECT SHALL COMPLY WITH CAPE FEAR PUBLIC UTILITY AUTHORITY CROSS CONNECTION CONTROL REQUIREMENTS.
5. ALL COMMERCIAL WATER SERVICES AND ANY IRRIGATION SYSTEMS SUPPLIED BY C.F.P.U.A WATER SHALL HAVE A BACKFLOW PREVENTION DEVICE ACCEPTABLE TO THE CITY AND APPROVED BY USFCFCCCHR OR ASSE.
6. WATER AND SEWER SERVICES CAN NOT BE ACTIVATED ON NEW MAINS UNTIL THE ENGINEER'S CERTIFICATION AND AS-BUILTS ARE RECEIVED AND 'FINAL APPROVAL' ISSUED BY THE PUBLIC WATER SUPPLY SECTION OF NCDENR.
7. IF CONTRACTOR DESIRES WATER FOR CONSTRUCTION, HE SHALL APPLY IN ADVANCE FOR THIS SERVICE AND MUST PROVIDE A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTION DEVICE ON THE DEVELOPER'S SIDE OF THE WATER METER BOX.
8. WHEN PVC WATER MAINS AND SERVICES ARE PROPOSED, THE PIPES ARE TO BE MARKED WITH NO. 10 INSULATED COPPER WIRE INSTALLED AND STRAPPED TO THE PIPES WITH DUCT TAPE.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OR EXISTING UTILITIES DURING CONSTRUCTION.
10. THE BELLSOUTH CONTACT IS STEVE DAYVAULT, BUILDING INDUSTRY CONSULTANT.
11. THE PROCESS FOR TELEPHONE CABLE PLACEMENT:
11.1. FINAL GRADE WILL NEED TO BE ESTABLISHED.
11.2. POWER WILL PLACE THEIR CABLE FIRST - APPROXIMATELY 3' DEEP.
11.3. BELLSOUTH & CABLE TV WILL THEN PLACE THEIR CABLE AT APPROXIMATELY 2' DEEP.
12. SOLID WASTE DISPOSAL TO BE SERVED BY PRIVATELY CONTRACTED DUMPSTER PICKUP.

LANE & SHOULDER CLOSURE REQUIREMENTS:

- 1. REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.
2. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR AN LANE CLOSURE IS INSTALLED.
3. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
4. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
5. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS.
6. DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

Approved Construction Plan form with fields for Name, Date, Planning, Public Utilities, Traffic, and Fire.

STORMWATER MANAGEMENT PLAN APPROVED CITY OF WILMINGTON ENGINEERING DEPARTMENT form with Date, Permit #, and Signed fields.



3-1-17

FINAL DESIGN

Revision table with columns: No., Revision, Date, By.

Designer information table with columns: Designer, Scale, Drawn By, Date, Checked By, Job No.

ARBOR COMMONS logo and address: Wilmington, New Hanover County, North Carolina.

PROJECT NOTES title block.

WithersRavenel logo and contact information: 1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403.

Sheet No. C-1.

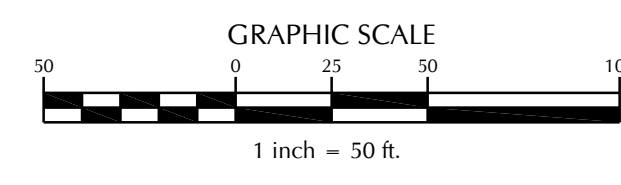
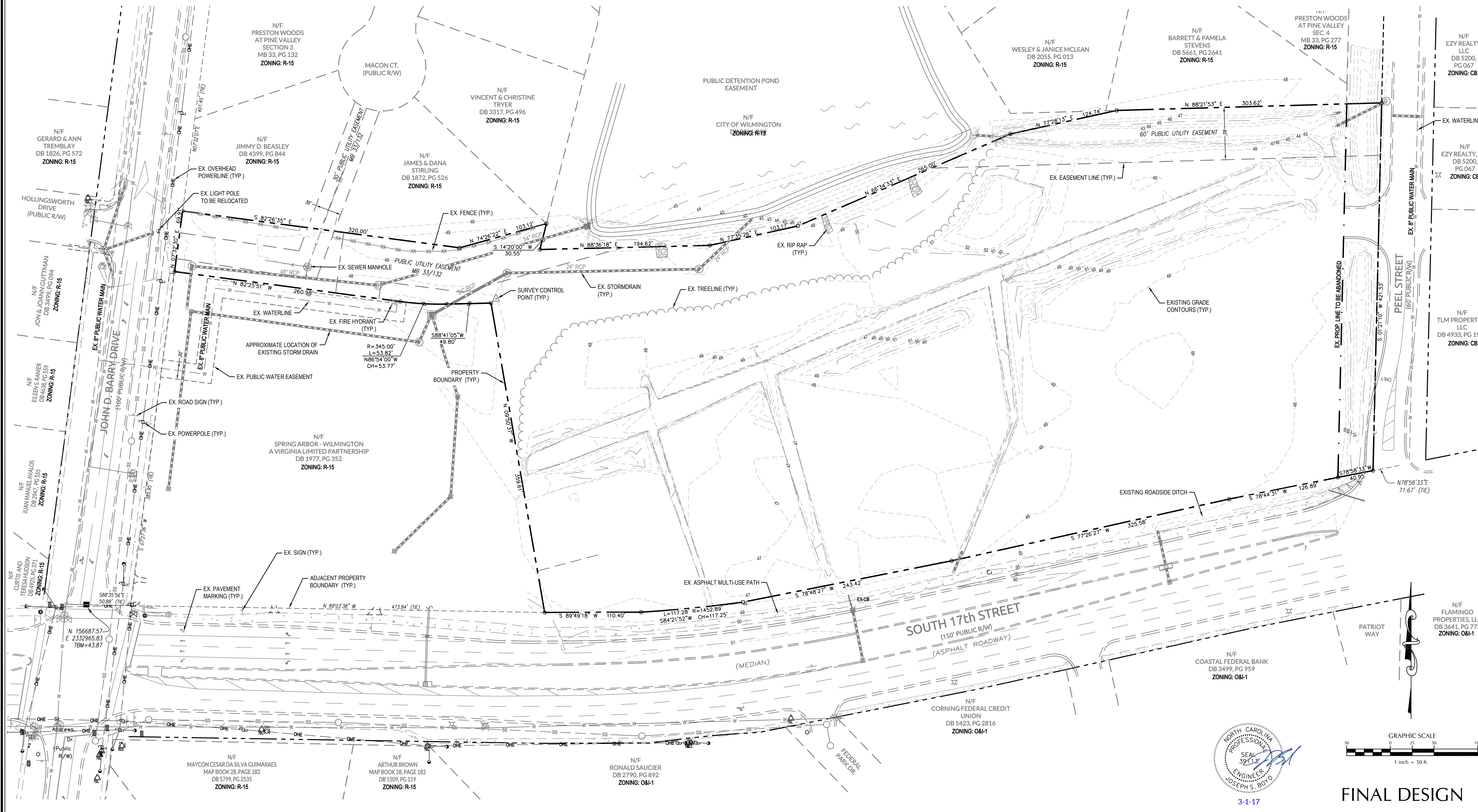
SURVEY NOTES:

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

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	REVISED PER CITY OF WILMINGTON COMMENTS	10-17-16	JSB
3	ADDED CALLOUT FOR EX. SIGNS PER COW COMMENTS	2-6-17	JSB

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

ARBOR COMMONS
 New Hanover County
 North Carolina

EXISTING CONDITIONS

WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No.
C-2

W:\ARB\06-1190\061193.01-Arbor Commons\CAD\Vector Comments-BKCE.rvt - Friday, February 24, 2017 11:28:07 AM - FALK, SANDRA

SURVEY TREE LEGEND:

- M - MAGNOLIA
- P - PINE
- O - OAK
- CH - CHERRY
- D - DOGWOOD
- FHW - FLOWERING HARDWOOD
- HW - HARDWOOD
- B - BAY TREE
- C - CEDAR



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 (3)
 ALL CONIFER TREES > 12" DBH (3)
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (1)
 TOTAL TREES TO BE REMOVED: 69
 (3) x (75% OF TYPE OF TREE) / 3: 10
 (3) x (50% OF TYPE OF TREE) / 3: 6
 (7) x (100% OF TYPE OF TREE) / 3: 3
19 REGULATED REPLACEMENT TREES REQUIRED

EX. SIGNIFICANT TREES TO BE REMOVED
 HARDWOOD, LONG LEAF PINE, PICOSSIN (PHD) 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 (12)
 TOTAL TREES TO BE REMOVED: 12
 (12) x (2 x 100% OF TYPE OF TREE) / 3: 8 SIGNIFICANT REPLACEMENT TREES REQUIRED

MITIGATION CALCULATIONS:

LOT 2:
 EX. REGULATED TREES TO BE REMOVED
 HARDWOOD TREES > 8" DBH (13)
 ALL CONIFER TREES > 12" DBH (2)
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (1)
 TOTAL TREES TO BE REMOVED: 17
 (13) x (75% OF TYPE OF TREE) / 3: 4
 (3) x (50% OF TYPE OF TREE) / 3: 1
 (1) x (100% OF TYPE OF TREE) / 3: 1
6 REGULATED REPLACEMENT TREES REQUIRED

EX. SIGNIFICANT TREES TO BE REMOVED
 HARDWOOD, LONG LEAF PINE, PICOSSIN (PHD) 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 (3)
 TOTAL TREES TO BE REMOVED: 3
 (3) x (2 x 100% OF TYPE OF TREE) / 3: 2 SIGNIFICANT REPLACEMENT TREES REQUIRED

MITIGATION CALCULATIONS:

LOT 3:
 EX. REGULATED TREES TO BE REMOVED
 HARDWOOD TREES > 8" DBH (7)
 ALL CONIFER TREES > 12" DBH (29)
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (18)
 TOTAL TREES TO BE REMOVED: 54
 (7) x (75% OF TYPE OF TREE) / 3: 2
 (29) x (50% OF TYPE OF TREE) / 3: 5
 (18) x (100% OF TYPE OF TREE) / 3: 6
13 REGULATED REPLACEMENT TREES REQUIRED

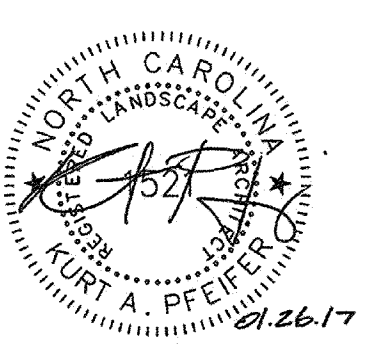
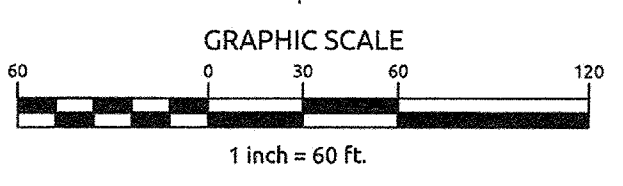
EX. SIGNIFICANT TREES TO BE REMOVED
 HARDWOOD, LONG LEAF PINE, PICOSSIN (PHD) PINE, BLACK PINE & NON-PINE CONIFER TREES > 24" DBH (0)
 ALL OTHER PINES > 32" DBH (0)
 DOGWOODS, MAGNOLIAS, AMERICAN HOLLIES & OTHER ORNAMENTAL FLOWERING TREES > 8" DBH (1)
 TOTAL TREES TO BE REMOVED: 1
 (1) x (2 x 100% OF TYPE OF TREE) / 3: 1 SIGNIFICANT REPLACEMENT TREES REQUIRED

TREE QUANTITY LEGEND:

- EX. REGULATED TREES TO BE SAVED (99)
- ⊗ EX. SIGNIFICANT TREES TO BE SAVED (14)
- EX. REGULATED TREES TO BE REMOVED (140)
- ⊗ EX. SIGNIFICANT TREES TO BE REMOVED (16)

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
1	REVISED PER COW SRB	5-24-16	MEM			NOTED
2	REVISED PER CLIENT COMMENTS	11-16-16	MEM			
3	REVISED PER COW	12-09-16	MEM		JSB	3/24/16
				Checked By	JW	Job No. 03061193.01

ARBOR COMMONS
 Wilmington New Hanover County 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

W:\03_08-1190\03193.01-164r-Commons\CAD\Landscaping_Plan.dwg - Thursday, January 26, 2017 9:42:01 AM - W:\STDRS - WGDAN

SITE INVENTORY NOTES:

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

GENERAL NOTES:

1. 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 (3534 S. COLLEGE DR.)
2. 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')
3. CAMA LAND CLASSIFICATION: URBAN

DEVELOPMENT NOTES:

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

DEVELOPMENT DATA:

TOTAL TRACT AREA: 10.59 AC ±
NEW PUBLIC R/W - 1.75 AC ±
BUFFERYARDS - 1.30 AC ±
DEVELOPMENT LOT - 7.54 AC ±

ONSITE IMPERVIOUS SURFACES (DRAINS TO POND):
EX. PUBLIC P.V.M.T. - 1,500 S.F.
PUBLIC & PRIVATE STREET P.V.M.T. - 45,264 S.F.
PUBLIC & PRIVATE SIDEWALKS - 7,474 S.F.

OFFSITE IMPERVIOUS SURFACES (DRAINS TO POND):
EX. 17TH STREET PAVEMENT & PATH - 9,333 S.F.

FUTURE LOT DEVELOPMENT:
LOT 1 - 133,540 S.F.
LOT 2 - 33,000 S.F.
LOT 3 - 106,000 S.F.
TOTAL - 272,540 S.F.

TOTAL - 336,111 S.F.

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

ONSITE IMPERVIOUS SURFACES (DOES NOT DRAIN TO POND):
PUBLIC STREET P.V.M.T. - 8,253 S.F.
PUBLIC SIDEWALKS - 1,080 S.F.

OFFSITE IMPERVIOUS SURFACES (DOES NOT DRAIN TO POND):
PUBLIC STREET P.V.M.T. - 3,600 S.F.
PUBLIC SIDEWALKS - 1,225 S.F.

Approved Construction Plan

Name _____ Date _____

Planning _____

Public Utilities _____

Traffic _____

Fire _____

STORMWATER MANAGEMENT PLAN

APPROVED

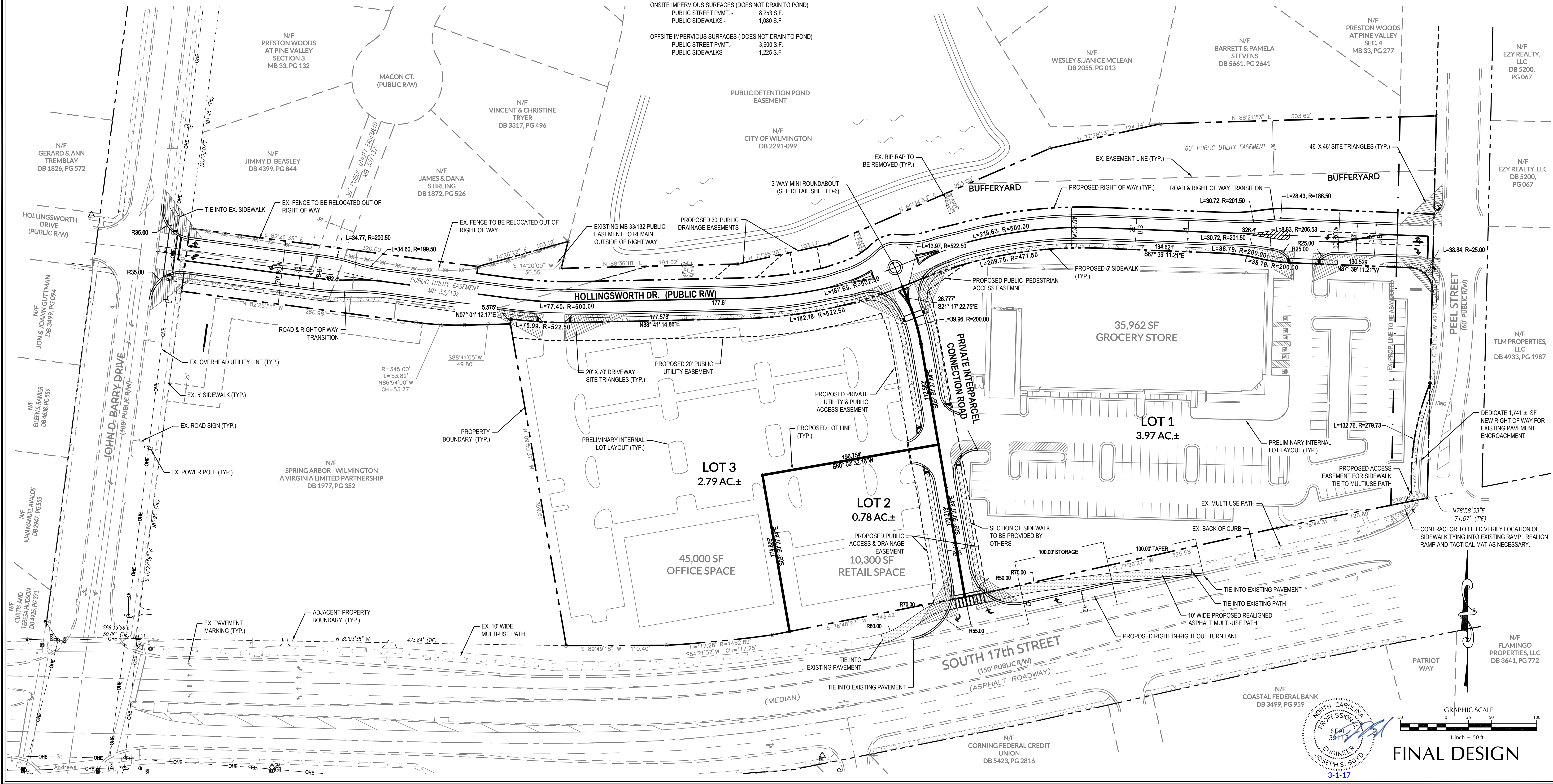
CITY OF WILMINGTON

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.



No.	Revision	Date	By	Designer	Scale
1	REVISED PER COW SRB	5-24-16	JSB	JSB	1"=50'
2	ADDED UTILITY EASEMENT PER CFP/IA REVIEW	8-24-16	JSB	JSB	
3	REVISED NCE/EMR & PER CITY OF WILMINGTON COMMENTS	10-28-16	JSB	JSB	
4	REVISED PER CUBIT COMMENTS	11-16-16	JSB	JSB	
5	REVISED PER COW COMMENTS (TRAFFIC CIRCLE, ETC.)	2-16-17	JSB	JJW	

ARBOR COMMONS

Wilmington New Hanover County North Carolina

SITE PLAN

WithersRavenel
Engineers | Planners | Surveyors

1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No. **C-4**

W:\ARB\1190\06\1193.01-Arbor Commons\CAD\Vendor Comments-BLSE.rvt - Wednesday, March 01, 2017 9:17:59 AM - BOYD, JOSEPH

EROSION CONTROL NOTES:

1. PROPOSED DISTURBED AREA: 10.12 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

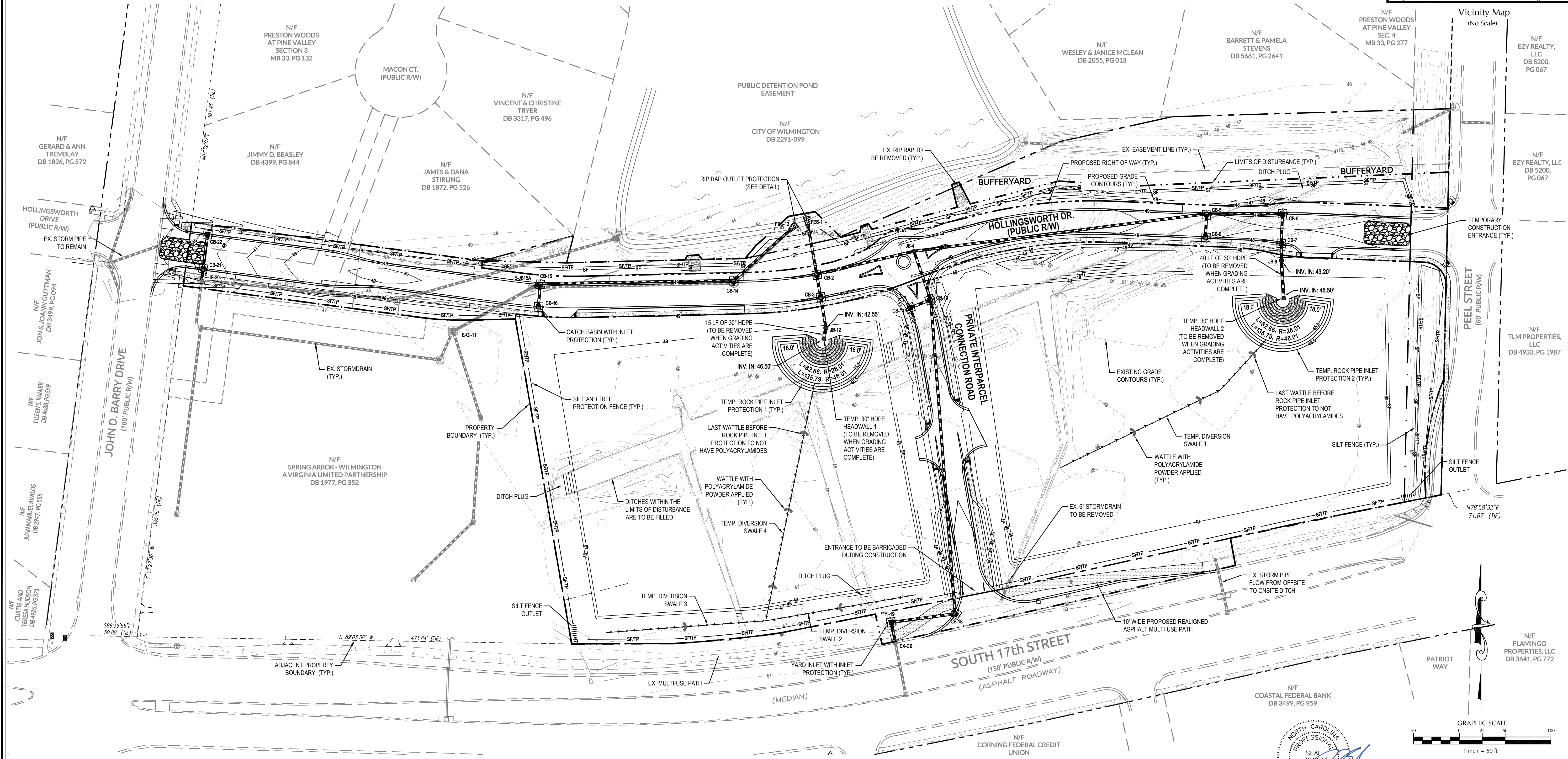
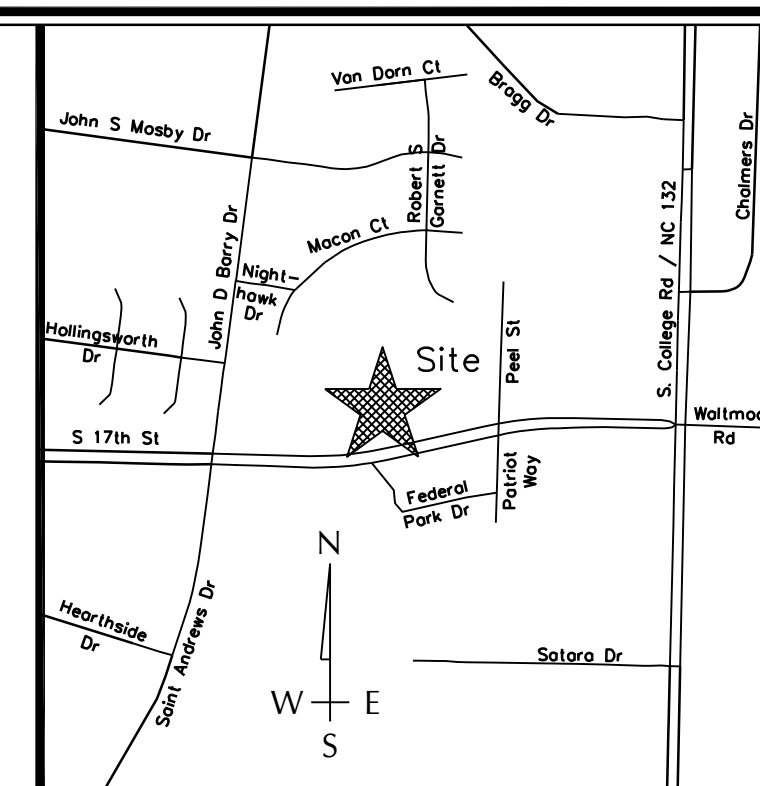
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE _____ PERMIT # _____

SIGNED _____

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



FINAL DESIGN

No.	Revision	Date	By
1	REVISED PER NHC EC & CITY SW COMMENTS	10-28-16	JSB
2	REVISED PER CLIENT COMMENTS	11-16-16	JSB
3	REVISED PER NHC EC COMMENTS	11-21-16	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

EROSION CONTROL PLAN

WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

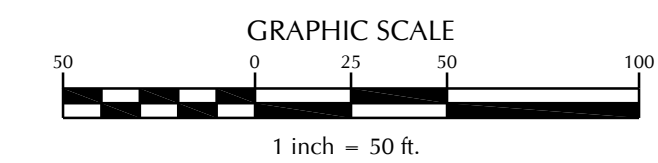
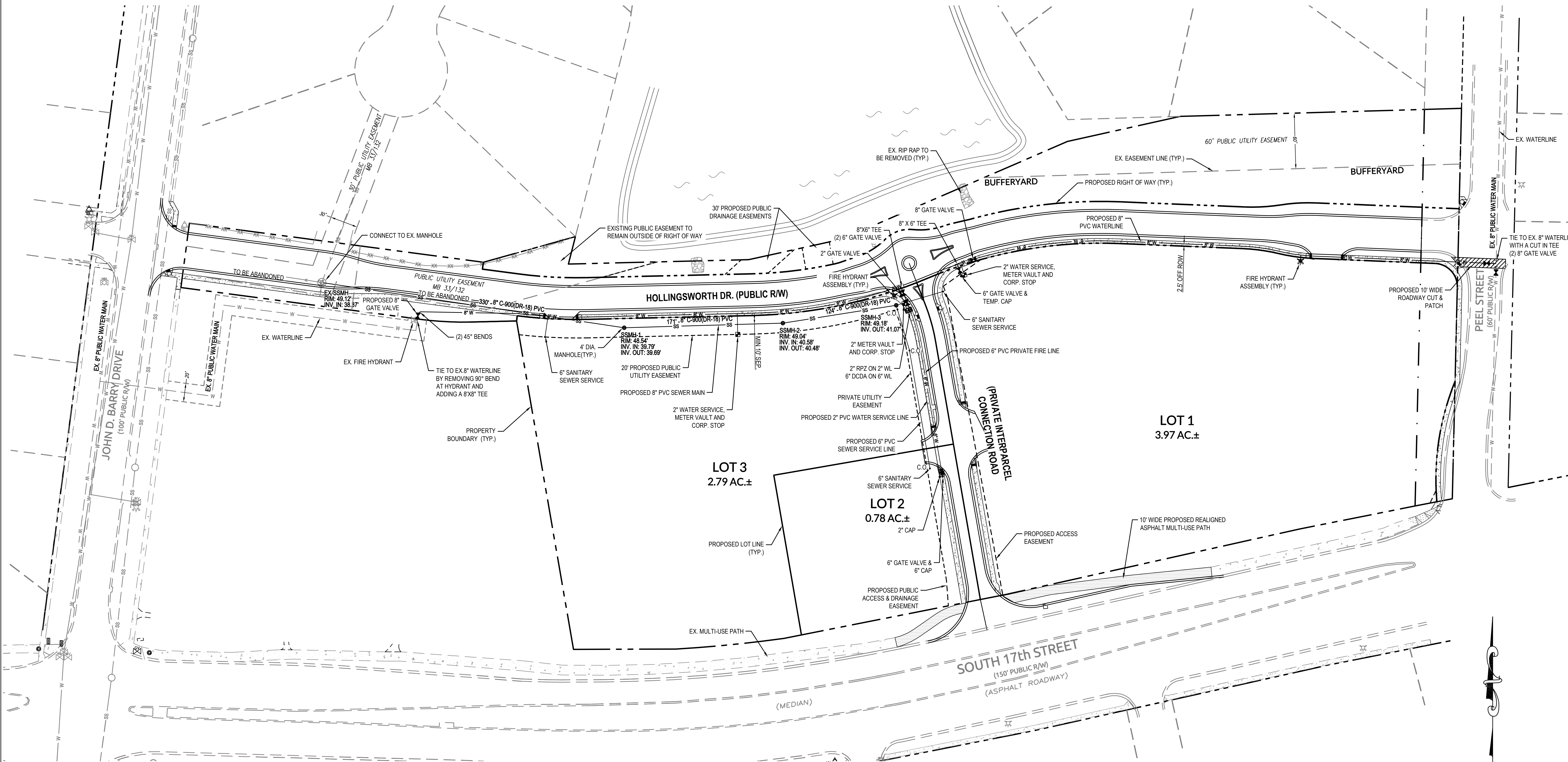
Sheet No. **C-5**

W:\03\06-1190\061193.01-Arbor Commons\CAD\Arbor Commons-BASE.rvt - Wednesday, March 01, 2017 9:39:28 AM - BOYD, JOSEPH

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

No.	Revision	Date	By
1	REVISED PER COW/SRB	5-24-16	JSB
2	RELOCATED SEWER MAIN & ADDED UTILITY EASEMENT PER CP/PA REVIEW	10-28-16	JSB
3	REVISED PER CLIENT & CP/PA COMMENTS	11-28-16	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
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

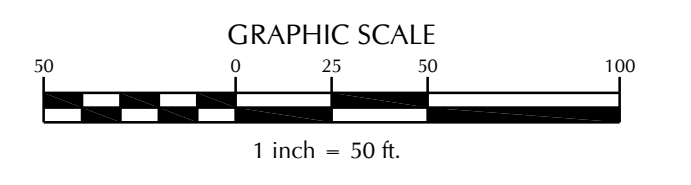
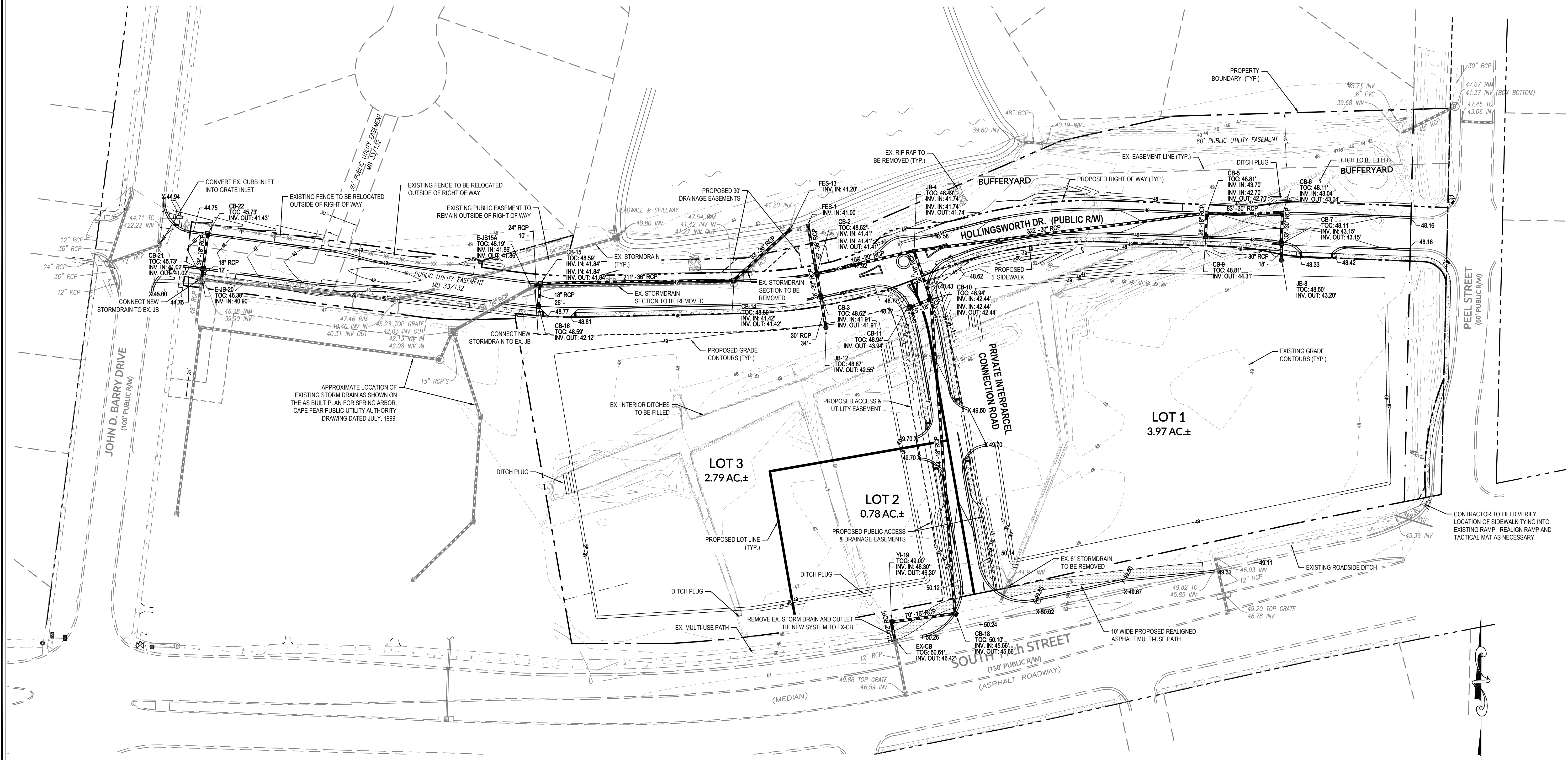
Sheet No.
C-6

W:\AR\1190\1190-193.01-Arbor Common\CD\Arbor Common-BMS.dwg Wednesday, March 01, 2017 9:15:15 AM - BDTG - JDS/PH

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

3-1-17

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	REVISED PER NHC EC & CITY OF WILMINGTON COMMENTS	10-28-16	JSB
3	REVISED PER CLIENT COMMENTS	11-16-16	JSB
4	REVISED TRAFFIC CIRCLE & TURN LANE PER COW COMMENTS	2-28-17	JSB

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

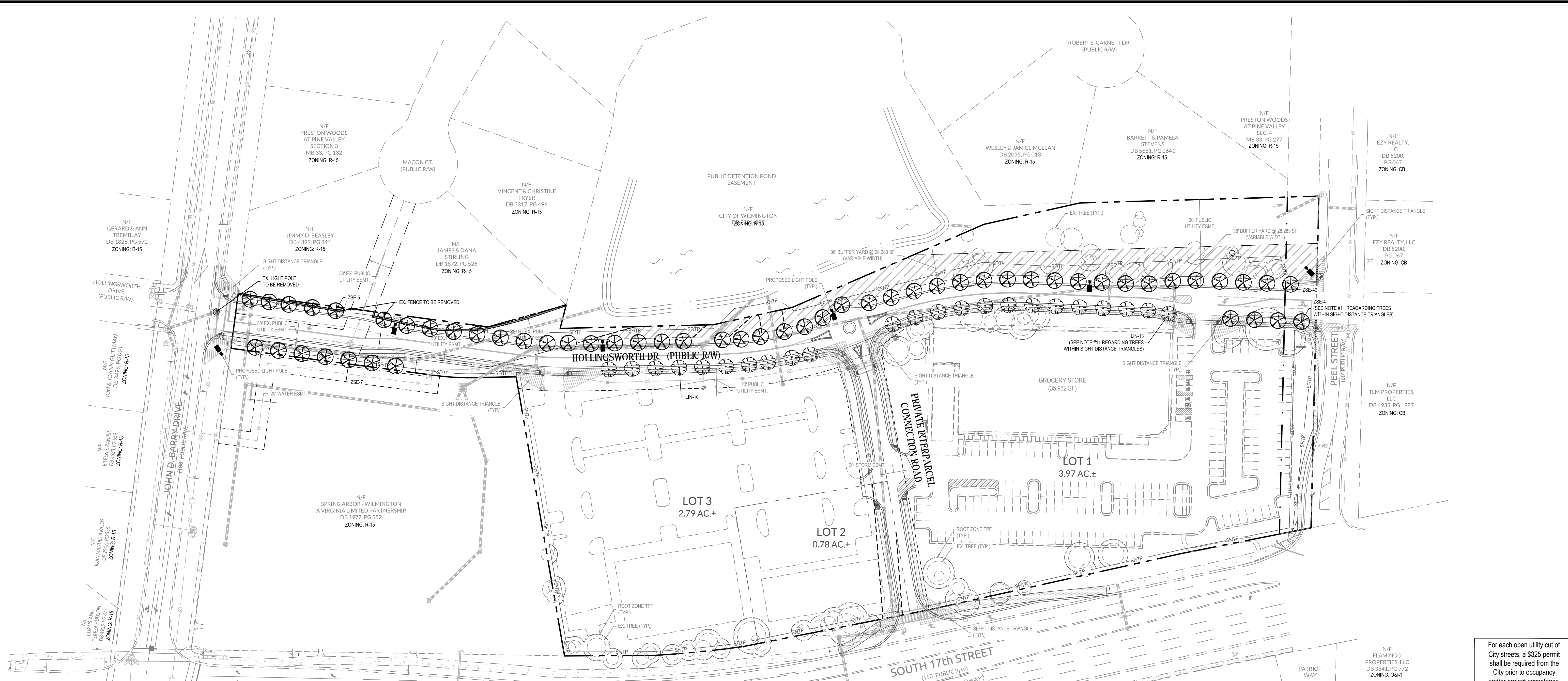
ARBOR COMMONS
 New Hanover County
 North Carolina

GRADING AND STORMWATER PLAN

WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No.
C-7

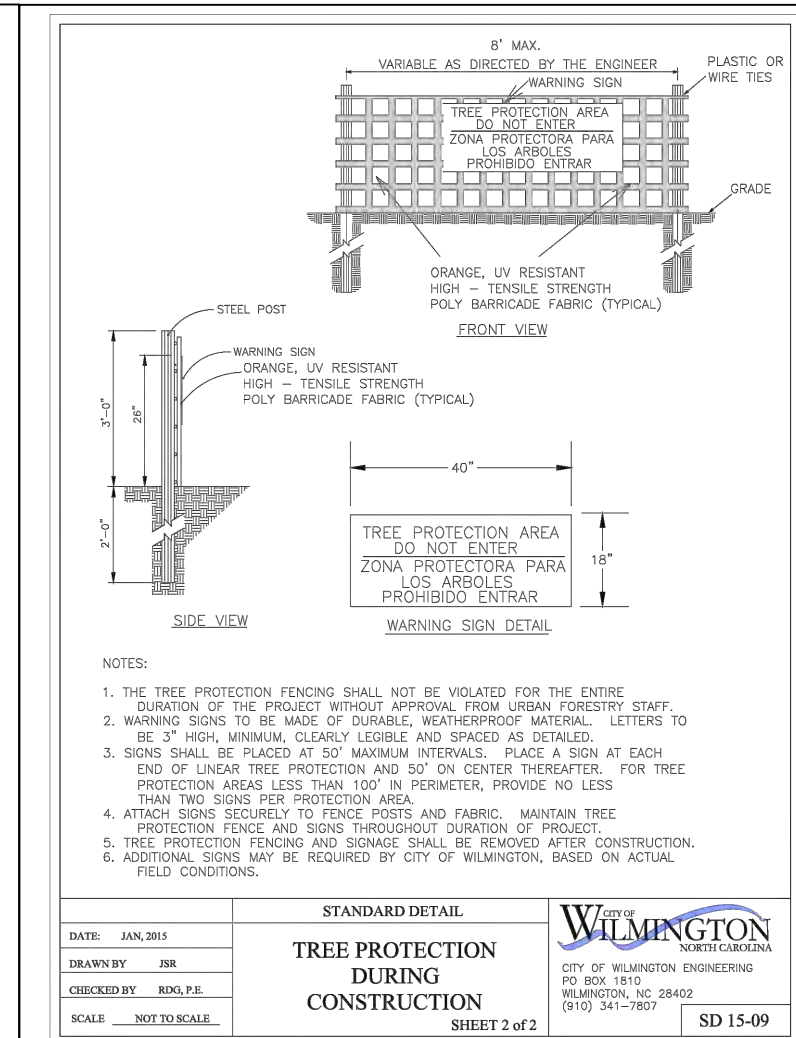
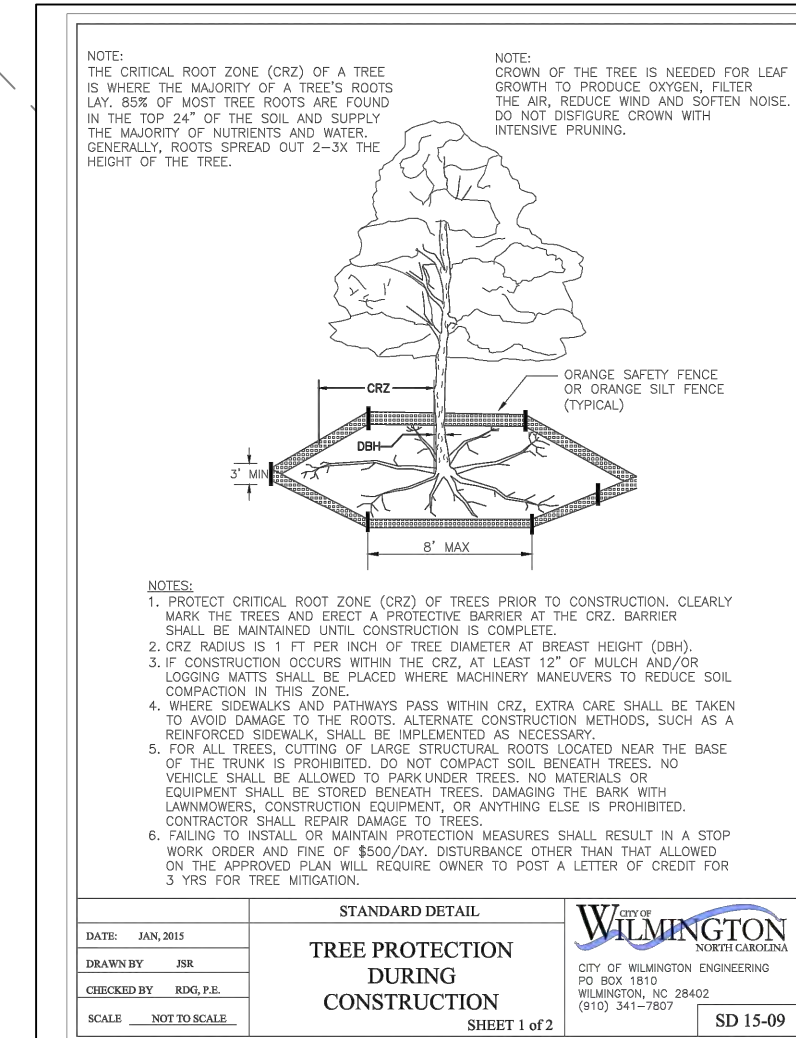
W:\ARB\1190\061193.01-Arbor Commons\CAD\Vendor Comments-BKCE.rvt - Wednesday, March 01, 2017 9:19:50 AM - BOYD, JOSEPH



- 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 SOO 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 WARRANTY 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 REDD, 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. ALL PROPOSED VEGETATION WITHIN SIGHT TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30' TO 10'.
 - 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 PLAN. (SD 15-14 COPW TECH STD5)
 - 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 PROTECTION 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	56	ZSE	Zelkova serrata	Japanese Zelkova	B&B	2 1/2" MIN.	8' MIN.	STREET TREE (30' O.C.)
UNDERSTORY TREES	23	LIN	Lagerstroemia indica 'Natchez' (STD)	Single Stem Natchez Crape Myrtle	B&B	2" MIN.	8' MIN.	STREET TREE (30' O.C.)

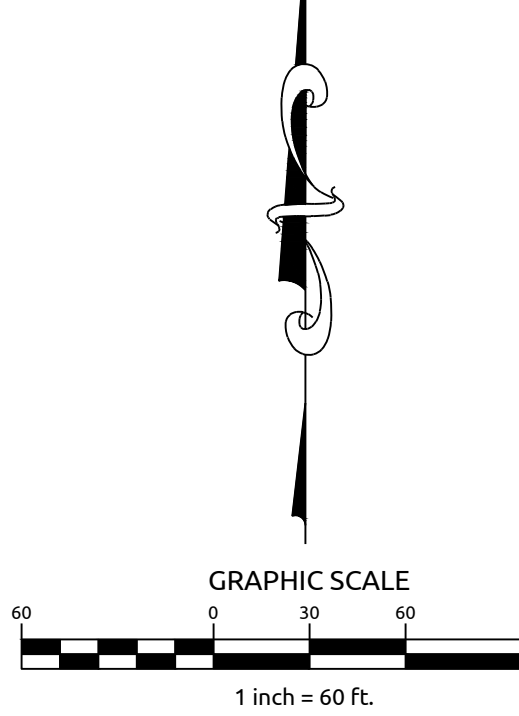
- TREE PROTECTION NOTES:**
- TO PRESERVE EXISTING TREES SPECIFIED ON THE REQUIRED LANDSCAPE PLAN TO REMAIN ON THE SITE AS A FUNCTION OF FULFILLING PURPOSES OF THIS SECTION, THE CRITICAL ROOT ZONE SHALL BE PROTECTED BY PROPER INSTALLATION OF BARRICADES AND SIGNAGE FROM VEHICULAR MOVEMENT, MATERIAL STORAGE, COMPACTING, GRADING, EXCAVATING, AND OTHER DEVELOPMENT RELATED ACTIVITIES DURING CONSTRUCTION AND IN THE FINAL LANDSCAPE DESIGN.
 - 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 PROTECTION 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.
 - DISTURBANCE OF THE CRZ WILL ONLY BE ALLOWED ON ONE (1) SIDE OF THE RETAINED TREE AND ONLY WITH PRIOR APPROVAL BY THE APPROPRIATE REVIEWING AGENCY.
 - PRIOR TO GRADING, TREE ROOTS SHALL BE PRUNED USING APPROPRIATE ARBORICULTURE PRUNING TOOLS AND PRACTICES.
 - DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN, INCLUDING INCORRECTLY PLACED TREE PROTECTION FENCING OR IMPROPER ROOT PRUNING CONSTITUTES NEGLIGENCE AND WILL REQUIRE THE OWNER TO POST AN IRREVOCABLE LETTER OF CREDIT OR OTHER MEANS OF FINANCIAL ASSURANCE APPROVED BY THE REVIEWING AGENCY FOR THREE (3) YEARS TO PROVIDE FOR MITIGATION OF THE TREE PER SECTION 18-460 TO BE RELEASED IF DETERMINED BY THE REVIEWING AGENCY THAT THE TREE IS NOT AT RISK OF DYING DUE TO THE DISTURBANCE.
 - ANY PERSON WHO IS RESPONSIBLE FOR FAILING TO PROPERLY INSTALL OR MAINTAIN PROTECTION MEASURES PURSUANT TO THIS ARTICLE SHALL BE SUBJECT TO A FINE OF FIVE HUNDRED DOLLARS (\$500.00) PER DAY AND A STOP WORK ORDER SHALL BE PLACED ON THE PROJECT. THE OWNER OF THE PROPERTY SHALL ALSO BE A JOINTLY AND SEVERALLY RESPONSIBLE PARTY IF THE IMPROPER PRACTICES ARE CONDUCTED BY AN EMPLOYEE, AGENT, OR OTHER PERSON UNDER THE CONTROL, EMPLOY, OR DIRECTION OF THE PROPERTY OWNER.
 - IF A TREE REQUIRED TO BE PROTECTED IS DESTROYED, SUBSTANTIALLY DAMAGED, OR DIES AS A RESULT OF NEGLIGENCE OR FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS SECTION ON THE PART OF ANY PROPERTY OWNER AND/OR AGENT OF THE OWNER, WITHIN THREE (3) YEARS AFTER COMPLETION OF CONSTRUCTION, THEN REPLACEMENT TREES OF A SIMILAR SPECIES SHALL BE PLANTED ON THE SITE PURSUANT TO SECTION 18-460 OF THE CITY OF WILMINGTON ORDINANCE.



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.



No.	Revision	Date	By	Designer	Scale
1	REVISED PER COW SR5	5-24-16	MEM	W&R	NOTED
2	REVISED PER CLIENT COMMENTS	11-16-16	MEM	JSB	3/24/16
3	REVISED PER COW	12-09-16	MEM	JJW	03/06/19/01

ARBOR COMMONS
New Hanover County

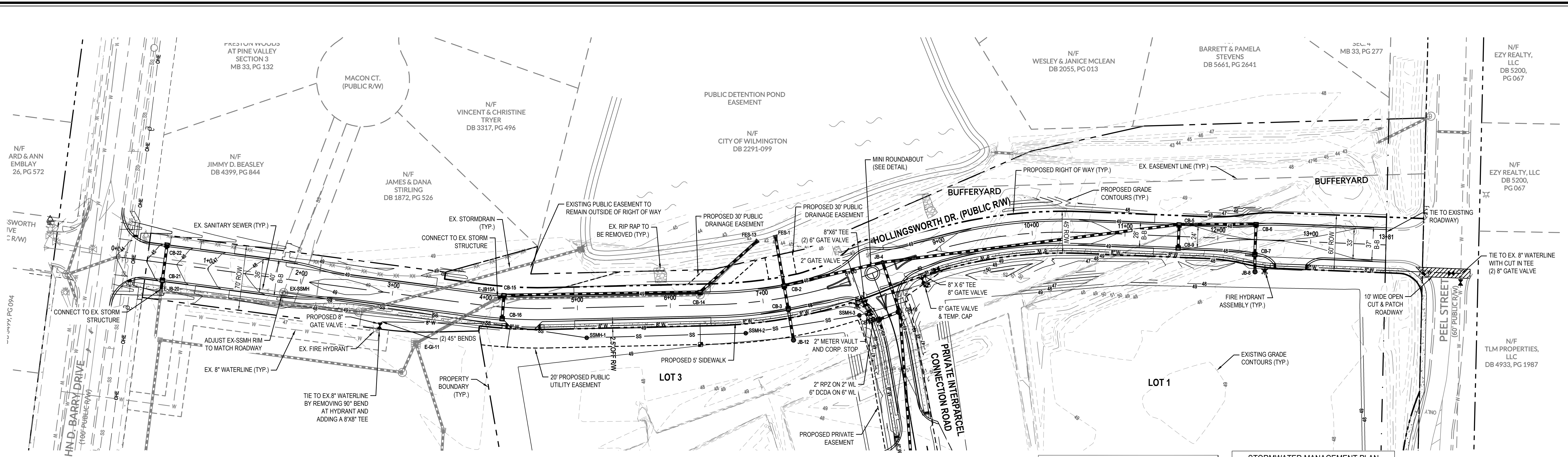
LANDSCAPE & LIGHTING PLAN

Sheet No.
C-8

Wilmington

North Carolina

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



Approved Construction Plan

Name _____ Date _____

Planning _____

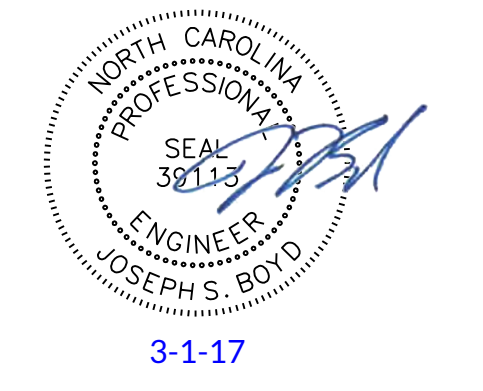
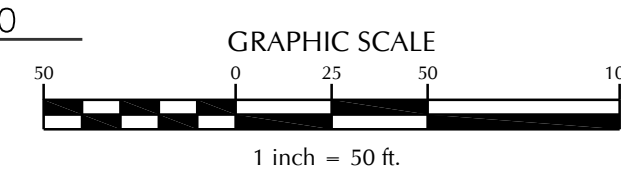
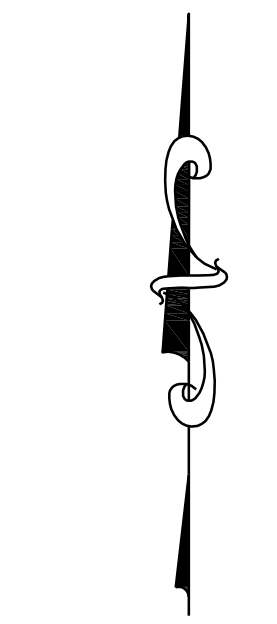
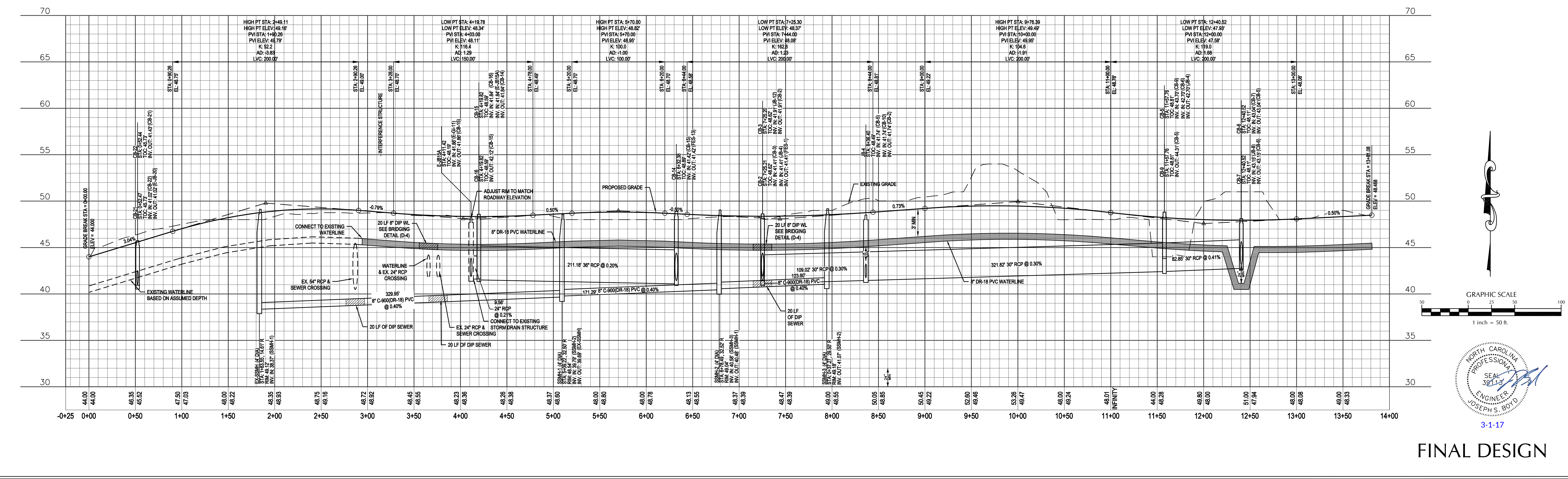
Public Utilities _____

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.



3-1-17

FINAL DESIGN

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	RELOCATED SEWERMAIN & ADDED UTILITY EASEMENT PER COW REVIEW	8-24-16	JSB
3	REVISED ROADWAY ELEVATIONS & STORM DRAIN SYSTEM	10-28-16	JSB
4	REVISED PER CLIENT & COW COMMENTS	11-28-16	JSB

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

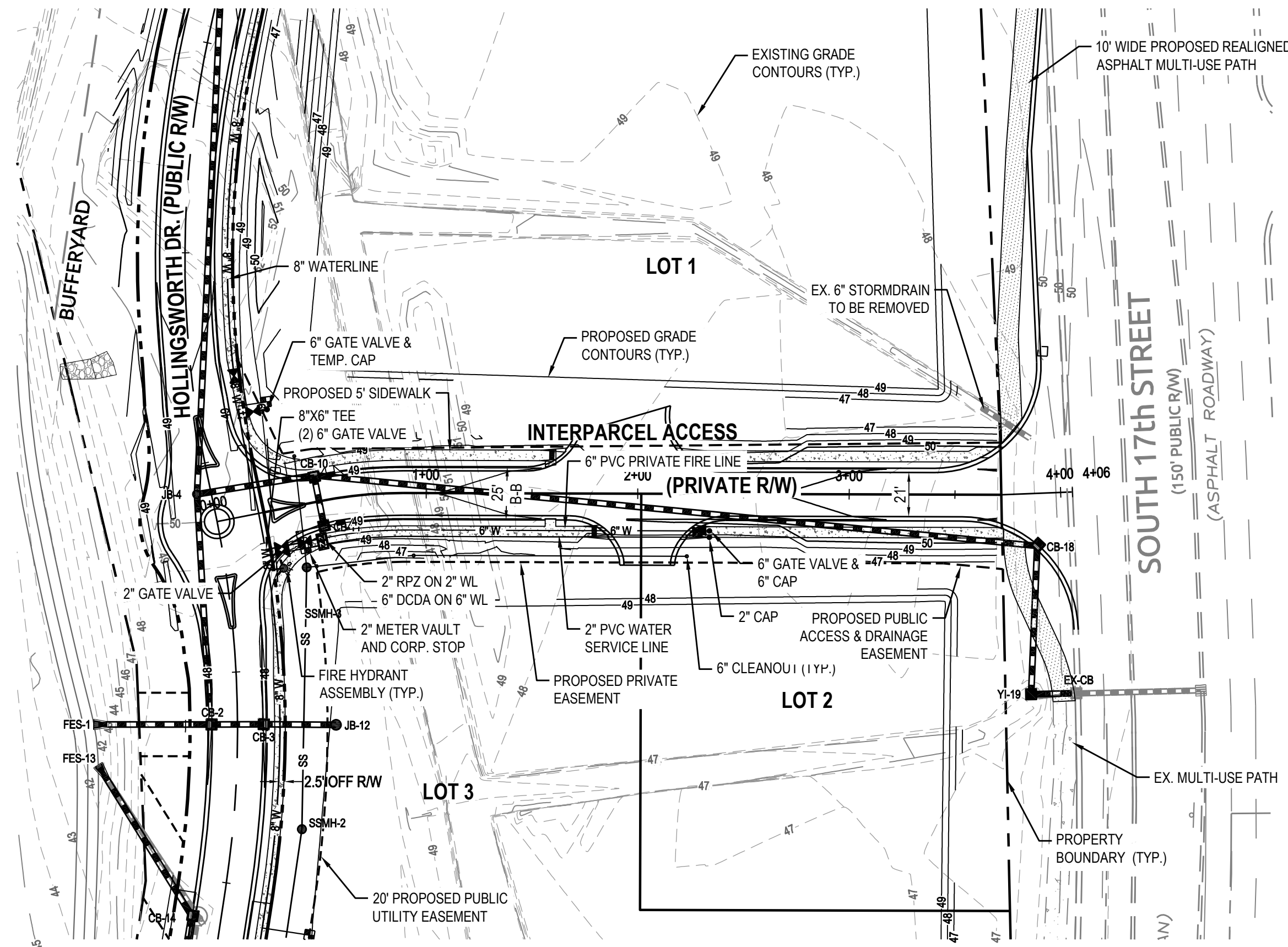
ARBOR COMMONS
 Wilmington New Hanover County North Carolina

HOLLINGSWORTH DRIVE PLAN & PROFILE

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-9

W:\03\06-1190\061193.01-Arbor Commons\CAD\Arbor Commons-BASE.dwg - Tuesday, February 28, 2017 1:49:48 PM - BOYD, JOSEPH



Approved Construction Plan

Name _____ Date _____

Planning _____

Public Utilities _____

Traffic _____

Fire _____

STORMWATER MANAGEMENT PLAN

APPROVED

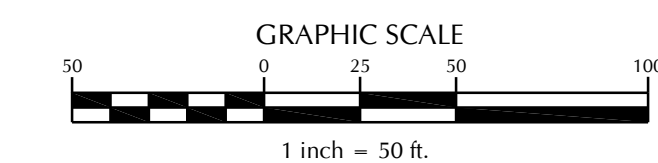
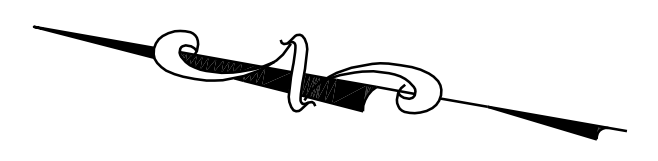
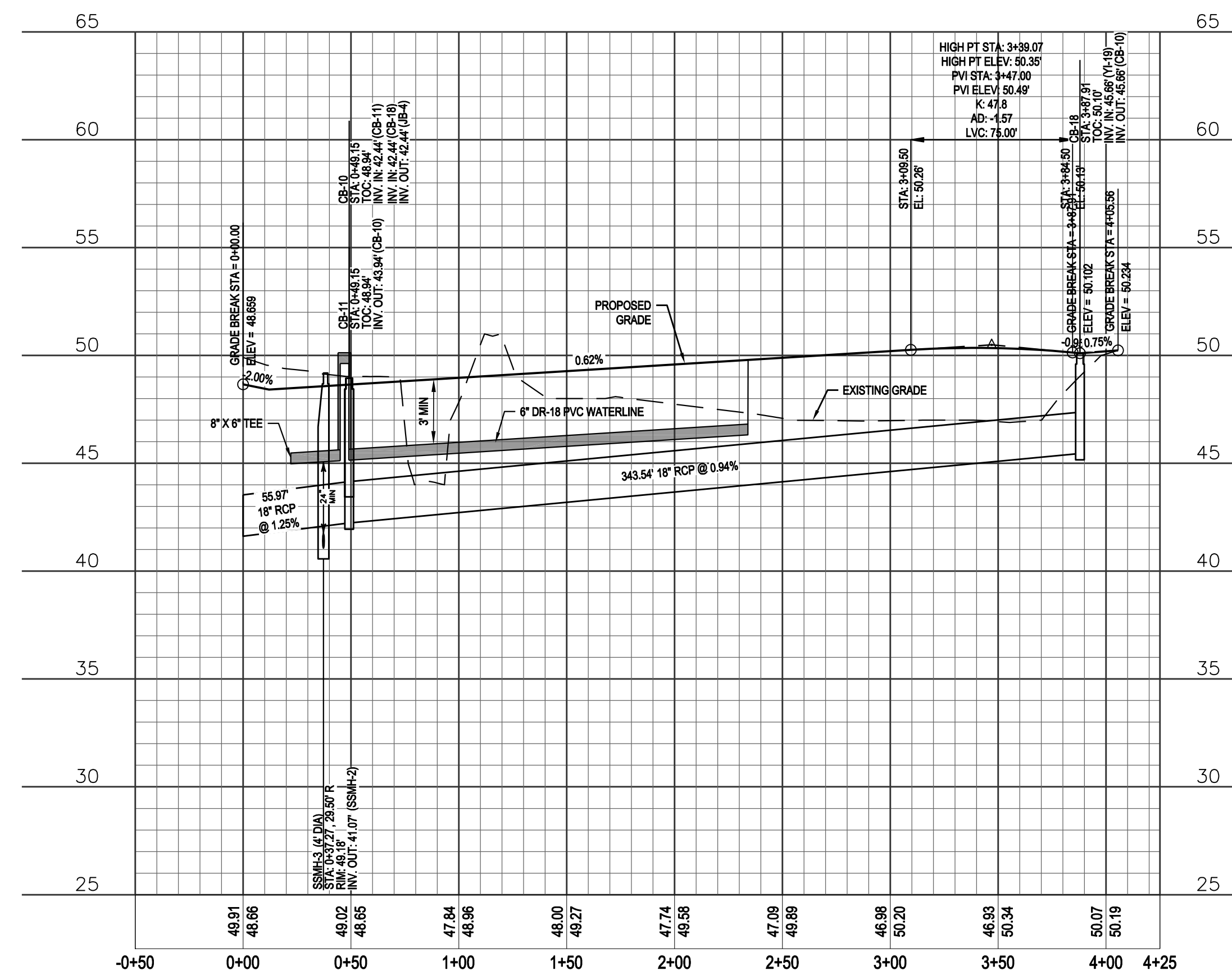
CITY OF WILMINGTON

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

W:\AR\06-1190\061193.01-Arbor Commons\CAD\Arbor Commons-BASE.dwg - Wednesday, March 01, 2017 9:20:30 AM - BOYD, JOSEPH

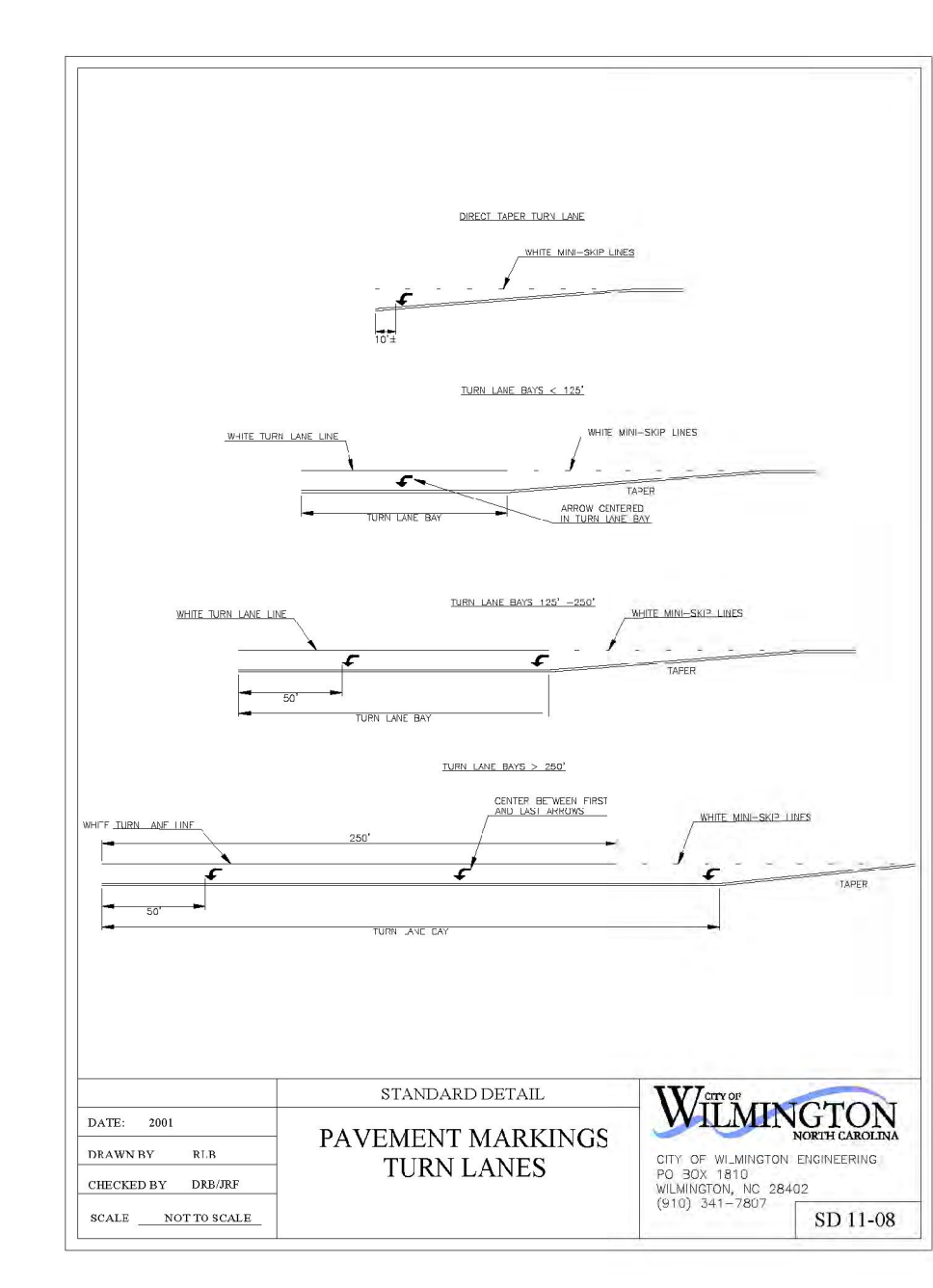
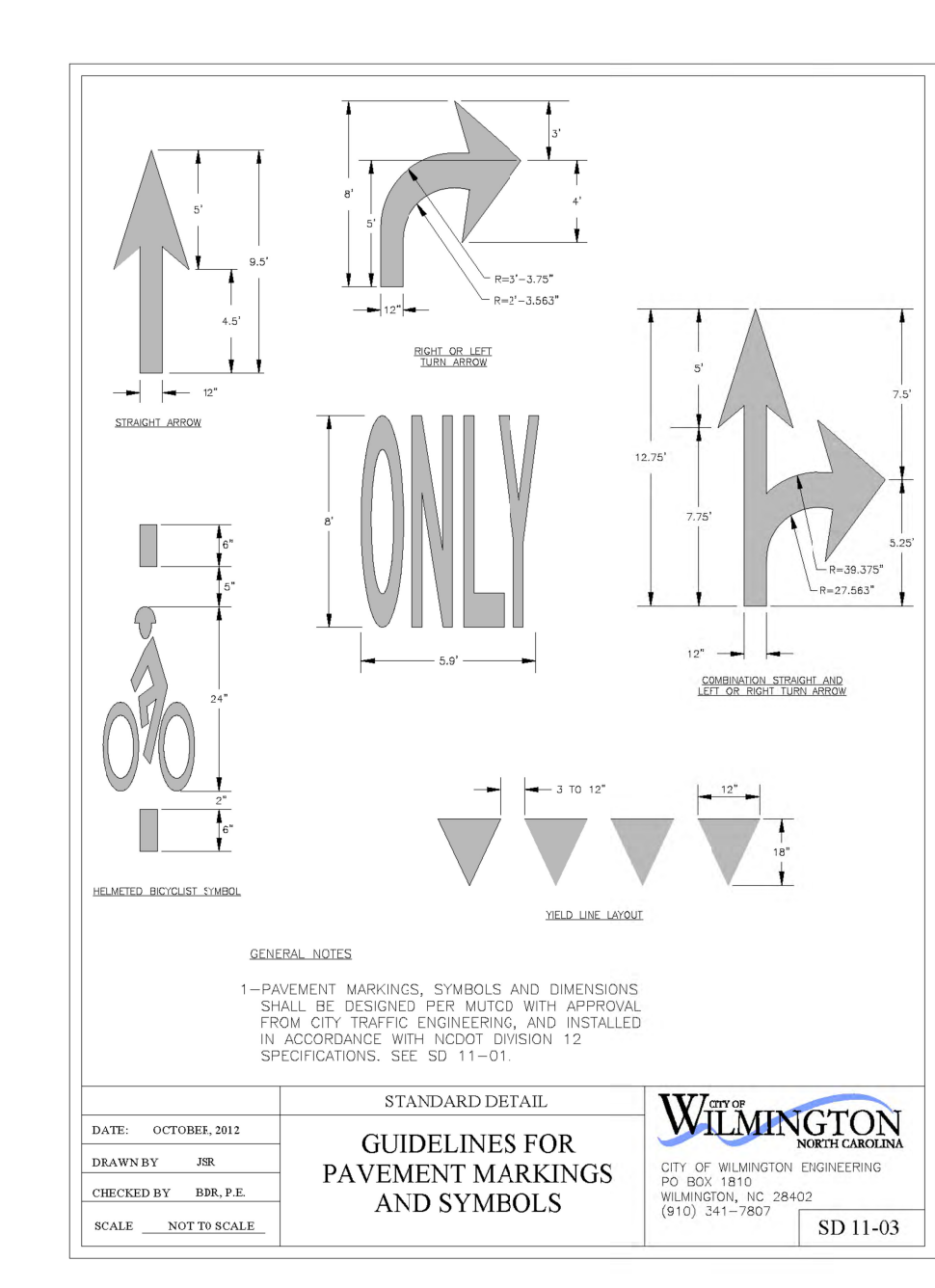
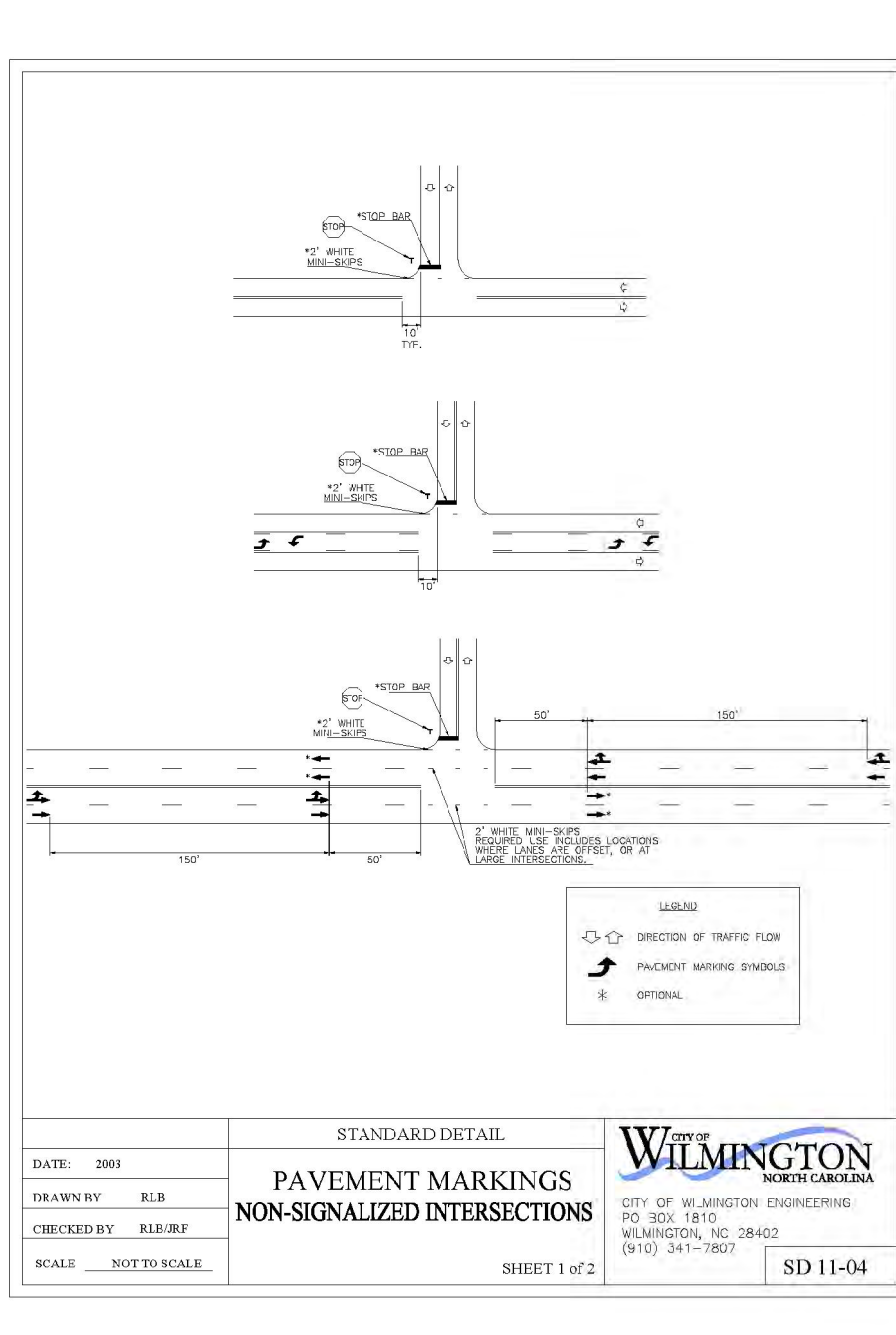
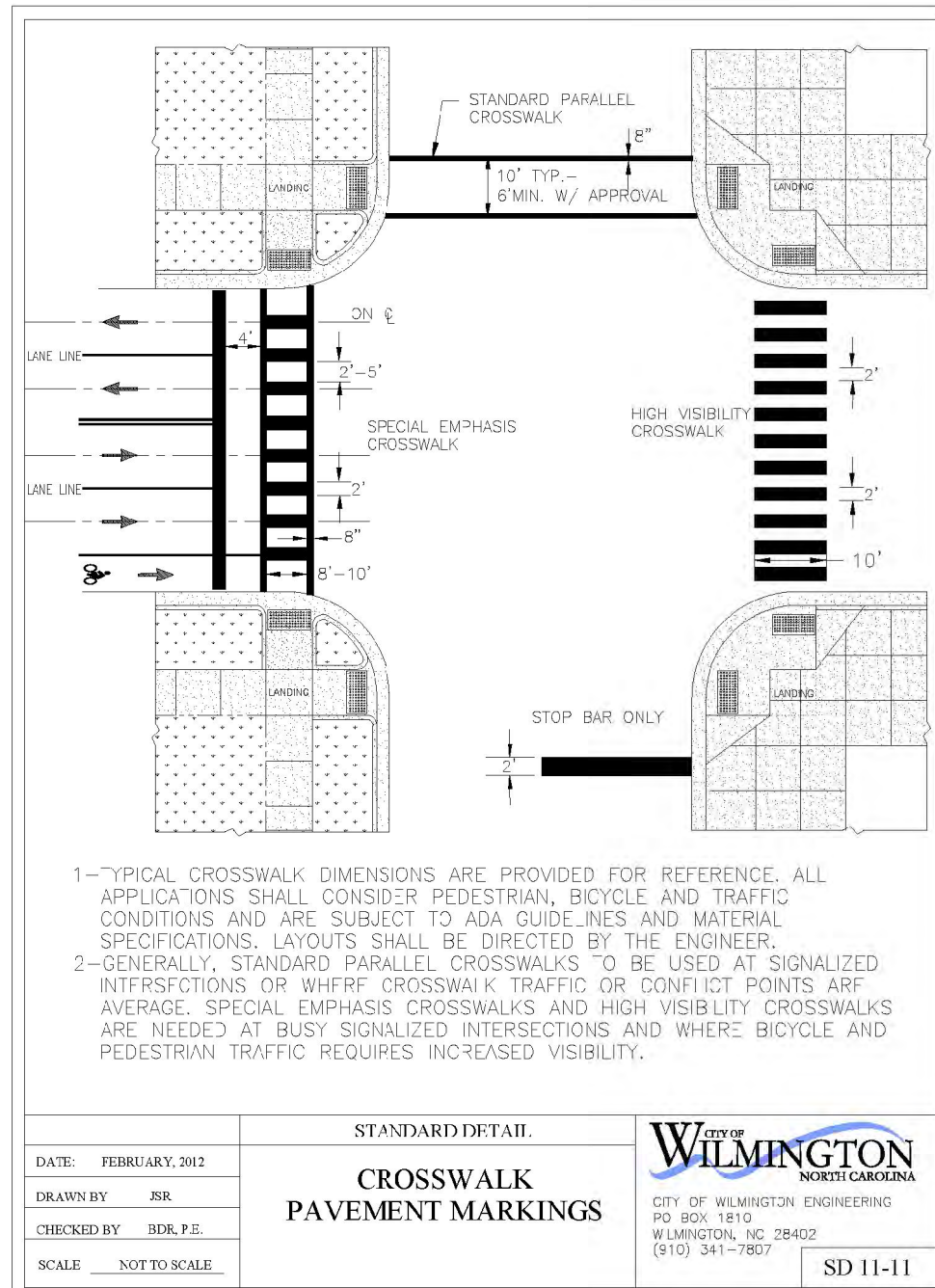
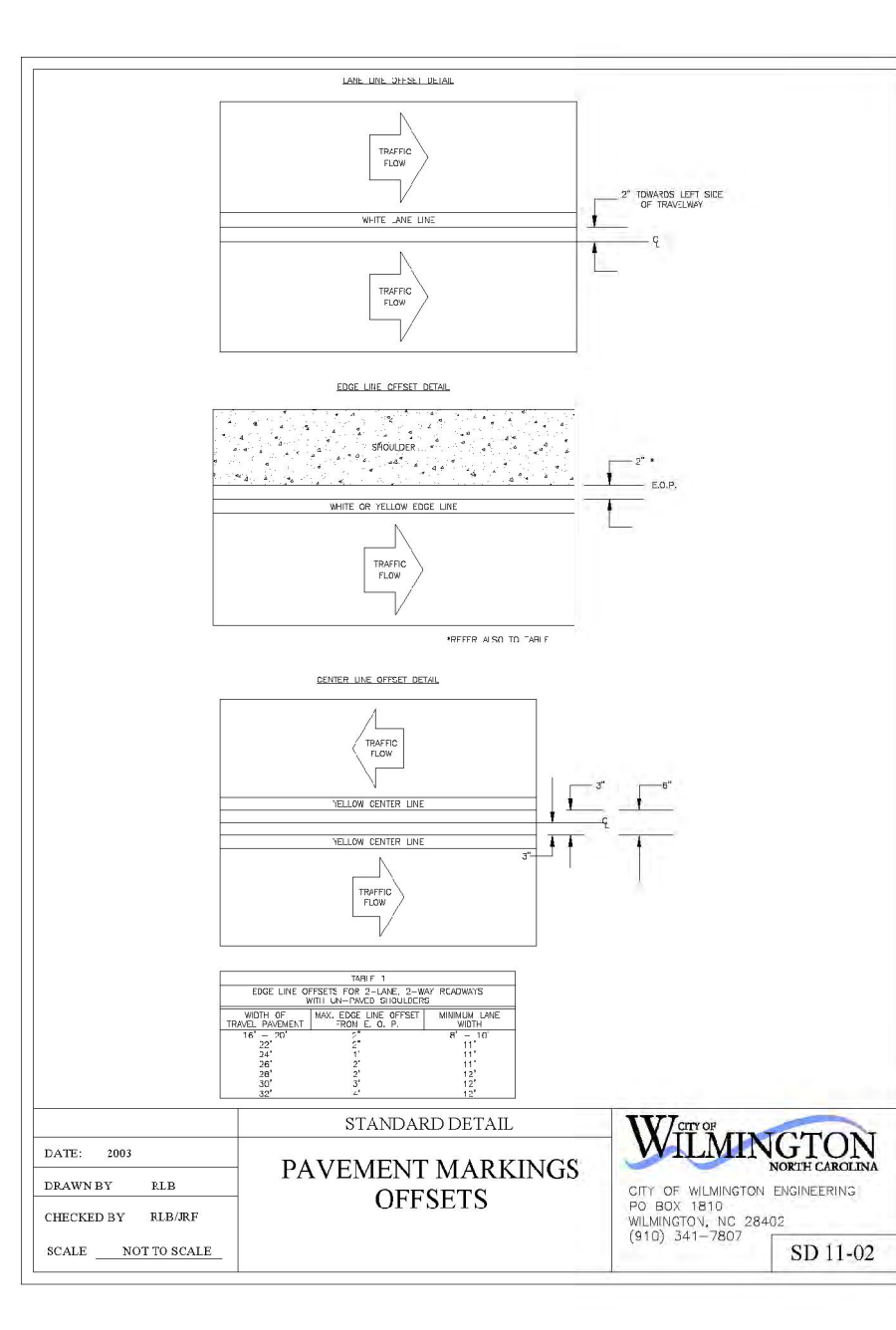
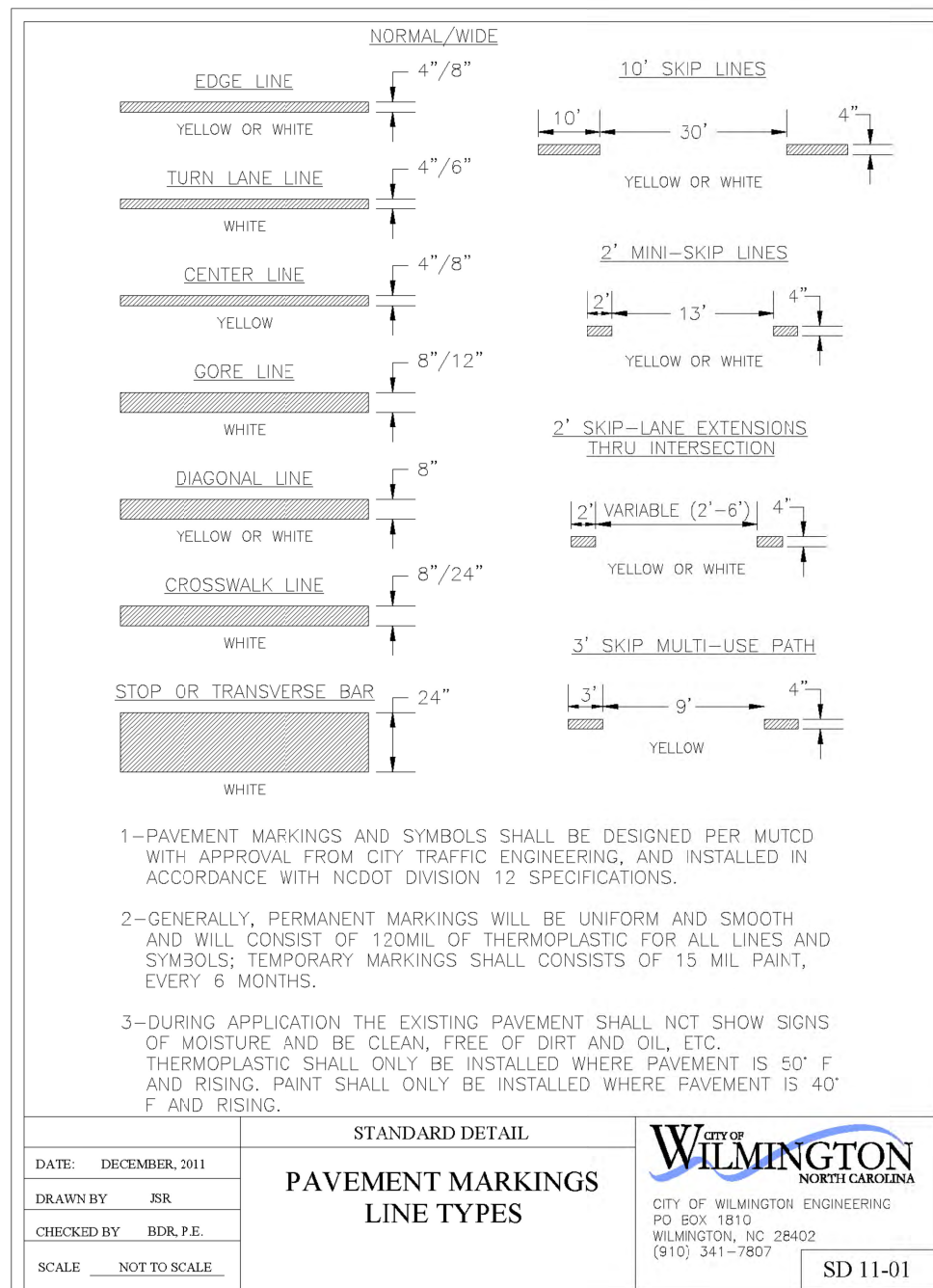
No.	Revision	Date	By	Designer	Scale
1	REVISED PER COW SRB	5-24-16	JSB	JSB	1"=50'
2	RELOCATED SEWERMAN & ADDED UTILITY EASEMENT PER CPWA REVIEW	8-24-16	JSB	JSB	
3	REVISED STORM DRAIN SYSTEM & GRADE ELEVATIONS	10-28-16	JSB	JSB	
4	REVISED PER CLIENT & CPWA COMMENTS	11-28-16	JSB	JSB	
5	REVISED ROAD GRADES & MOVED 30-18 TO CP-18 PER COW COMMENTS	2-28-17	JSB	JJW	03061193.01

ARBOR COMMONS
Wilmington New Hanover County North Carolina

PRIVATE INTERPARCEL ACCESS ROAD
PLAN & PROFILE

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

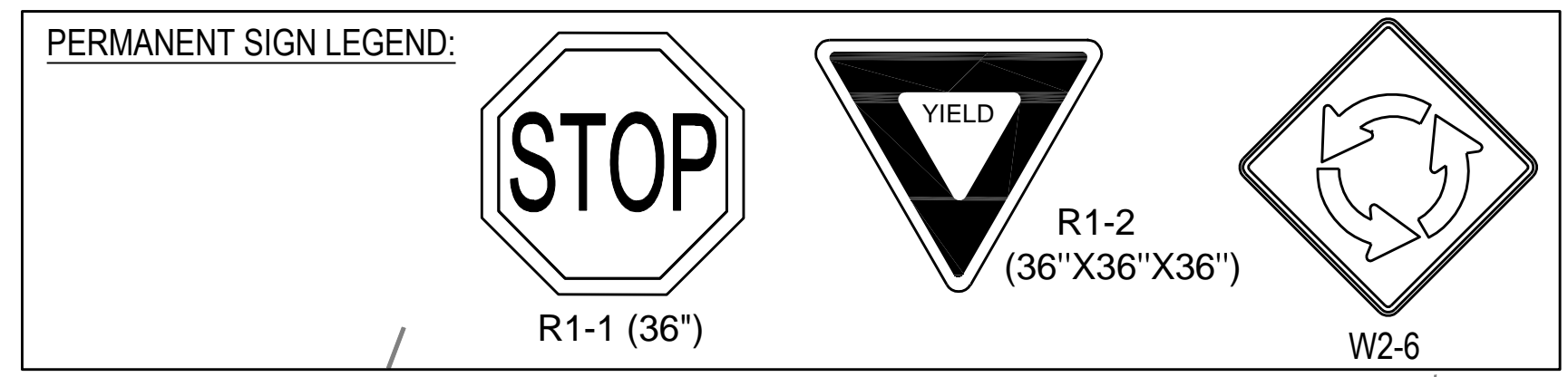
Sheet No.
C-10



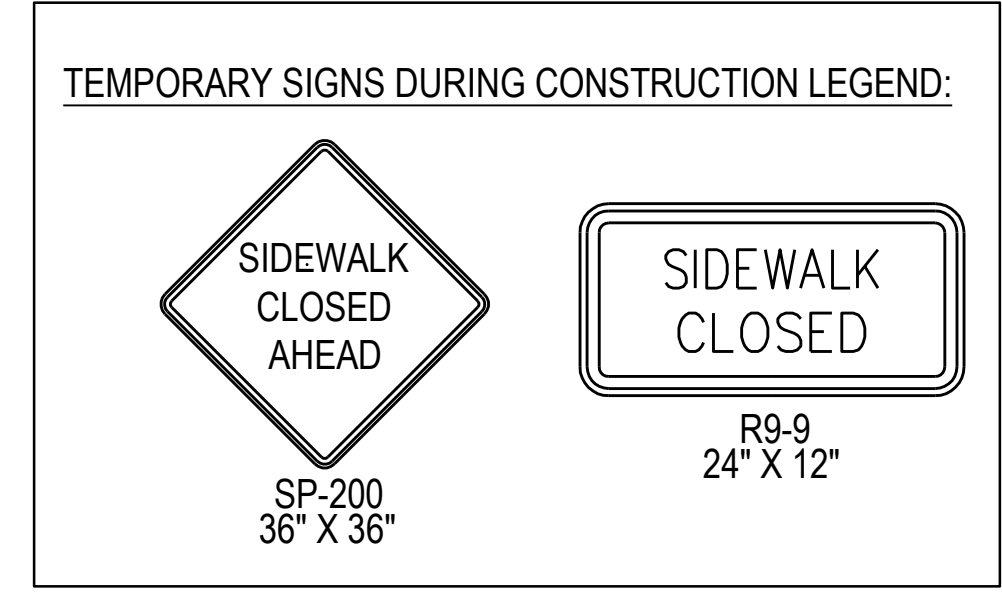
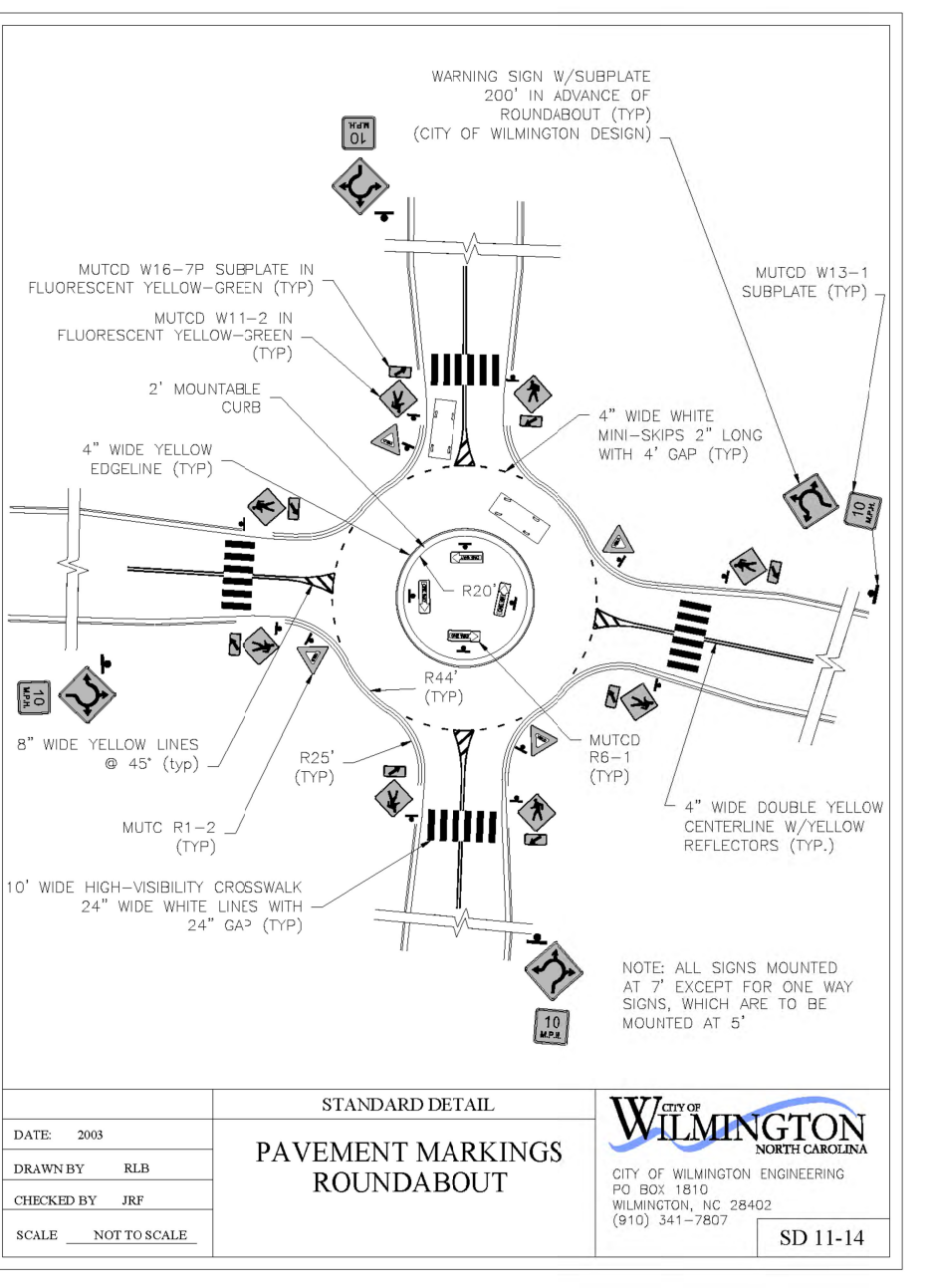
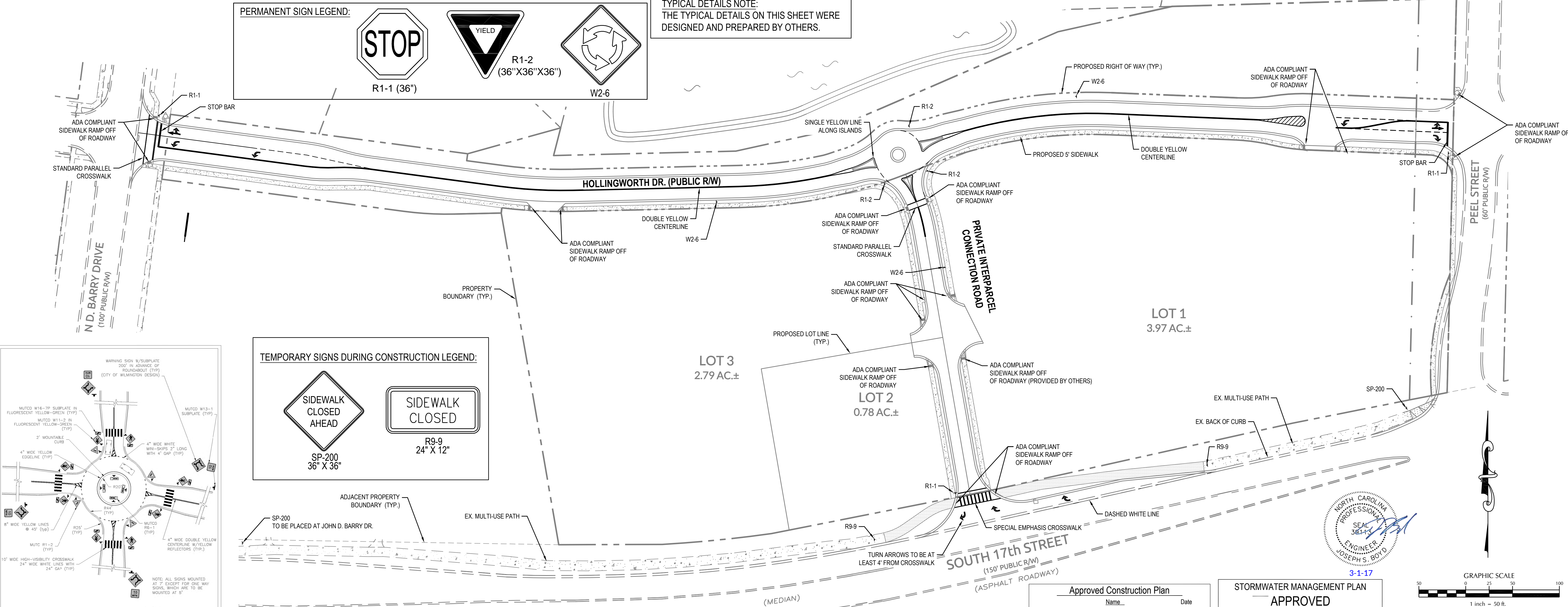
1-PAVEMENT MARKINGS AND SYMBOLS SHALL BE DESIGNED PER MUTCD WITH APPROVAL FROM CITY TRAFFIC ENGINEERING, AND INSTALLED IN ACCORDANCE WITH NC DOT DIVISION 12 SPECIFICATIONS.
 2-GENERALLY, PERMANENT MARKINGS WILL BE UNIFORM AND SMOOTH AND WILL CONSIST OF 120MIL OF THERMOPLASTIC FOR ALL LINES AND SYMBOLS. TEMPORARY MARKINGS SHALL CONSIST OF 15 MIL PAINT, EXCEPT 6 MONTHS.
 3-DURING APPLICATION THE EXISTING PAVEMENT SHALL NOT SHOW SIGNS OF MOISTURE AND BE CLEAN, FREE OF DIRT AND OIL, ETC. THERMOPLASTIC SHALL ONLY BE INSTALLED WHERE PAVEMENT IS 50' F AND RISING. PAINT SHALL ONLY BE INSTALLED WHERE PAVEMENT IS 40' F AND RISING.

1-TYPICAL CROSSWALK DIMENSIONS ARE PROVIDED FOR REFERENCE. ALL APPLICATIONS SHALL CONSIDER PEDESTRIAN, BICYCLE AND TRAFFIC CONDITIONS AND ARE SUBJECT TO ADA GUIDELINES AND MATERIAL SPECIFICATIONS. LAYOUTS SHALL BE DIRECTED BY THE ENGINEER.
 2-GENERALLY, STANDARD PARALLEL CROSSWALKS TO BE USED AT SIGNALIZED INTERSECTIONS OR WHERE CROSSWALK TRAFFIC OR CONFLICT POINTS ARE AVERAGE. SPECIAL EMPHASIS CROSSWALKS AND HIGH VISIBILITY CROSSWALKS ARE NEEDED AT BUSY SIGNALIZED INTERSECTIONS AND WHERE BICYCLE AND PEDESTRIAN TRAFFIC REQUIRES INCREASED VISIBILITY.

1-PAVEMENT MARKINGS, SYMBOLS AND DIMENSIONS SHALL BE DESIGNED PER MUTCD WITH APPROVAL FROM CITY TRAFFIC ENGINEERING, AND INSTALLED IN ACCORDANCE WITH NC DOT DIVISION 12 SPECIFICATIONS. SEE SD 11-01.



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



- SIGN NOTES:**
- INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
 - ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

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 _____

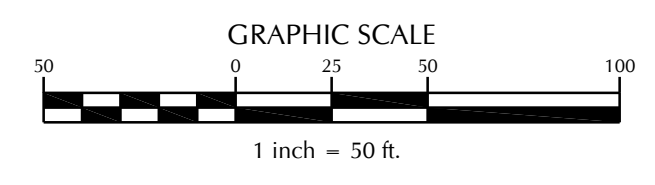
Planning _____

Public Utilities _____

Traffic _____

Fire _____

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



W:\08\06-1190\061193.01-Arbor Commons\CAD\Arbor Commons-BMCE.dwg - Tuesday, February 28, 2017 2:03:22 PM - BOYD, JOSEPH

No.	Revision	Date	By	Designer	Scale
1	REVISED PER CLIENT COMMENTS	11-16-16	JSB	JSB	1"=50'
2	REVISED PER COW COMMENTS	2-16-17	JSB	JSB	

ARBOR COMMONS
 New Hanover County
 North Carolina

PAVEMENT MARKINGS AND SIGNAGE PLAN

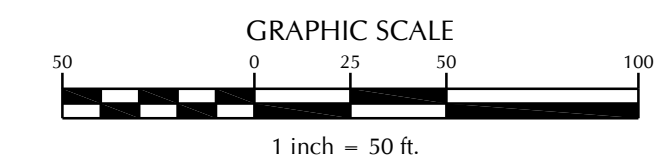
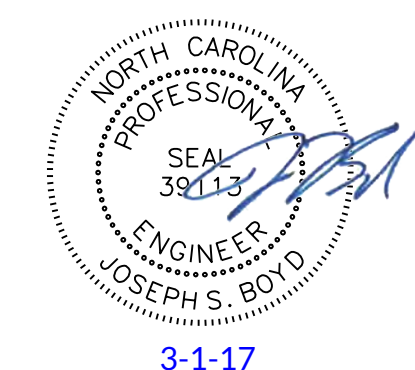
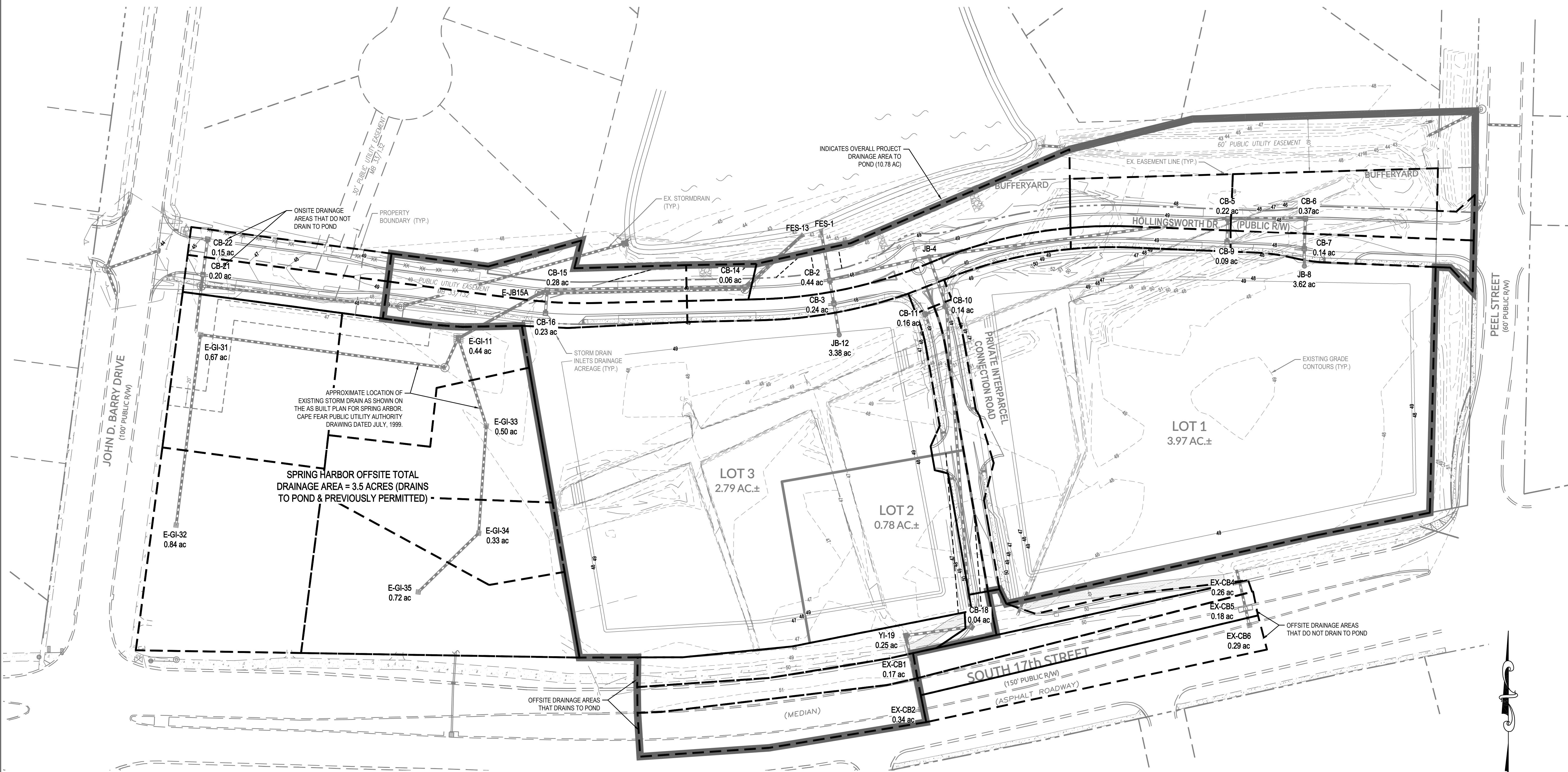
WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No. **C-11**

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

No.	Revision	Date	By	Designer	Scale
1	REVISED PER CLIENT COMMENTS	11-16-16	JSB	JSB	1"=50'
2	ADDED DA TO EX. CB 4-CB 7 PER CITY SW COMMENTS	12-19-16	JSB	SLF	Date: 10/10/2016
3	ADDED OVERALL DA PER CITY SW COMMENTS	2-28-17	JSB	JSB	Job No. 03061193.01

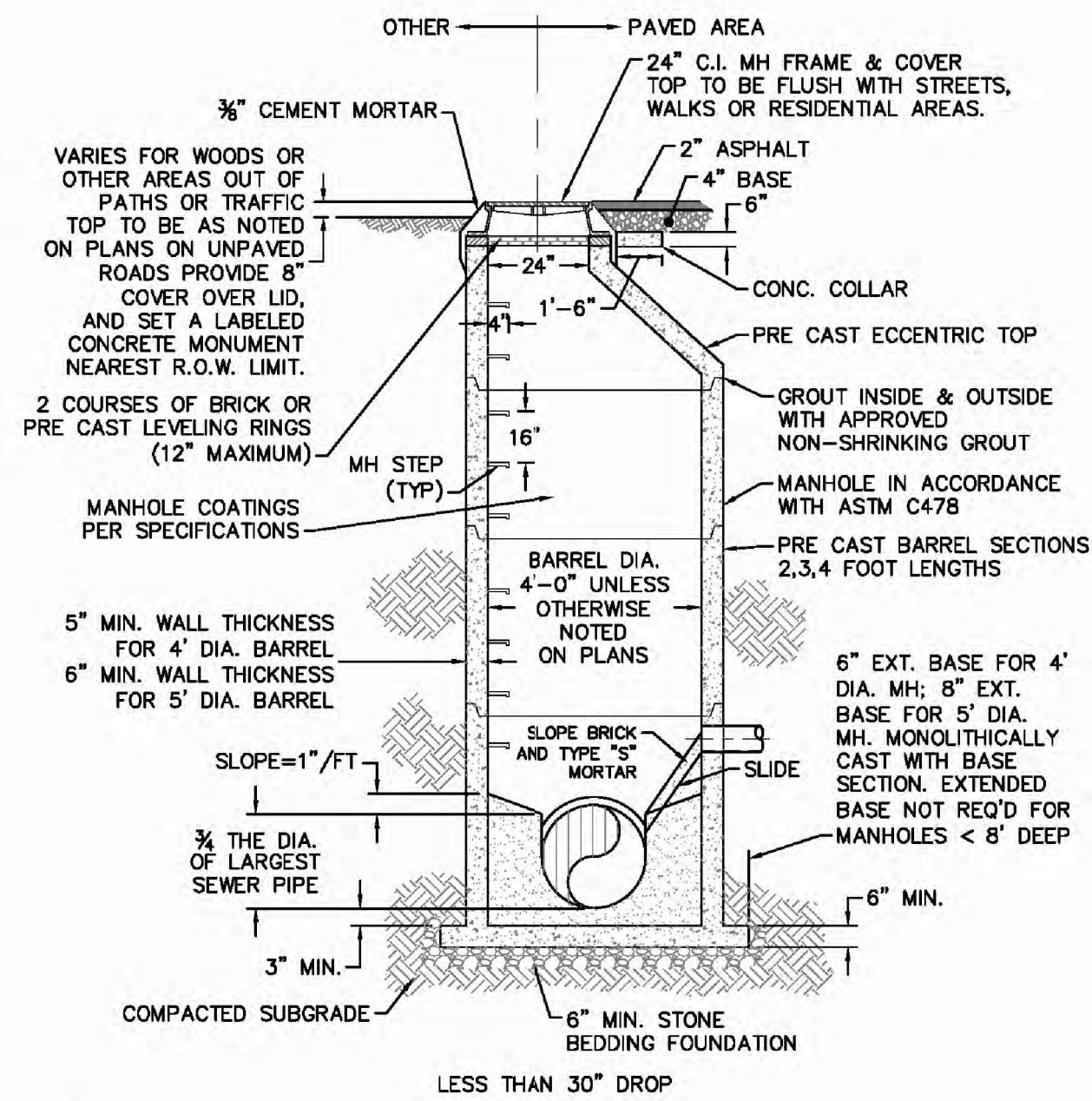
ARBOR COMMONS
 New Hanover County North Carolina

DRAINAGE AREA PLAN

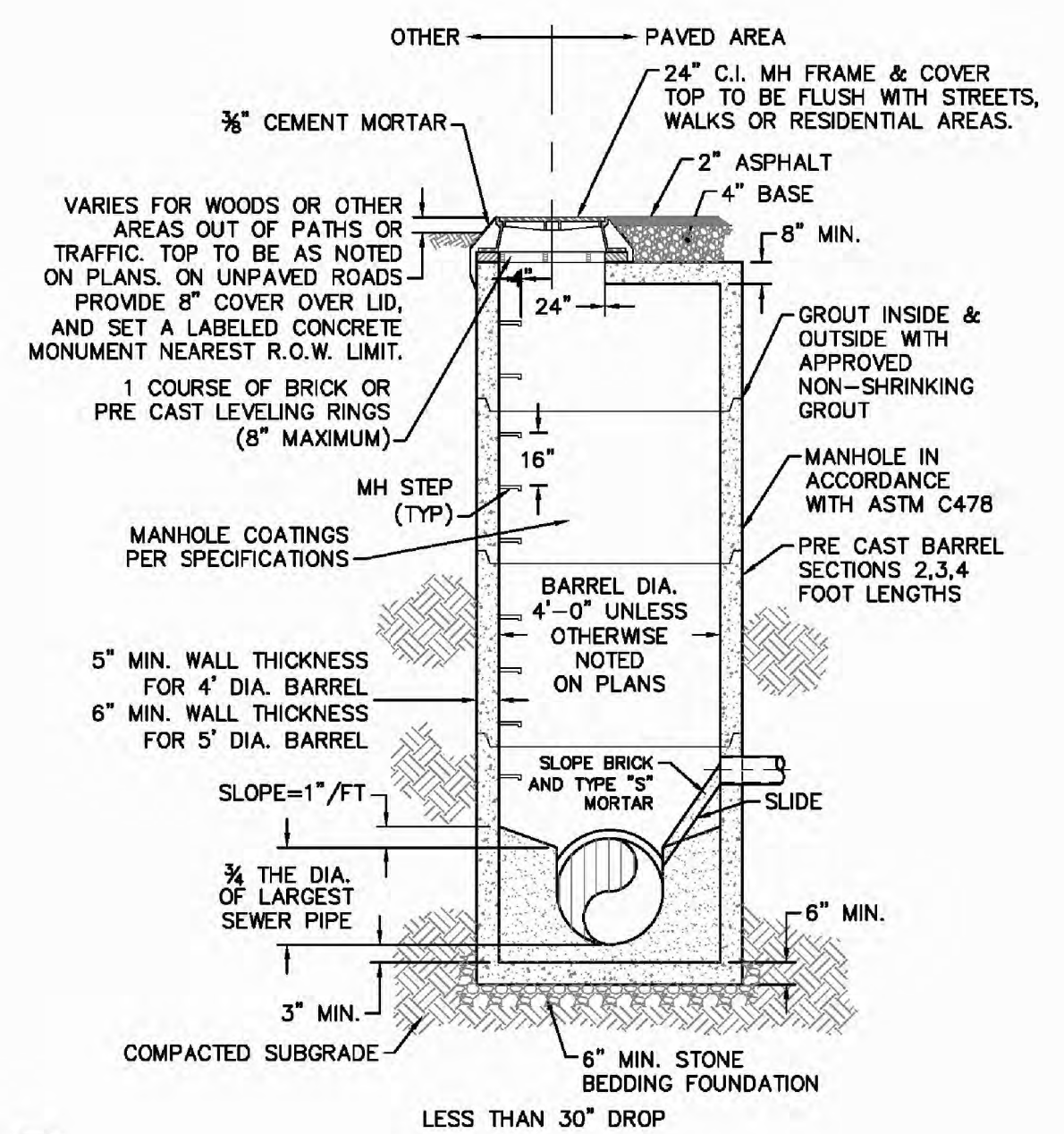
WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No.
C-12

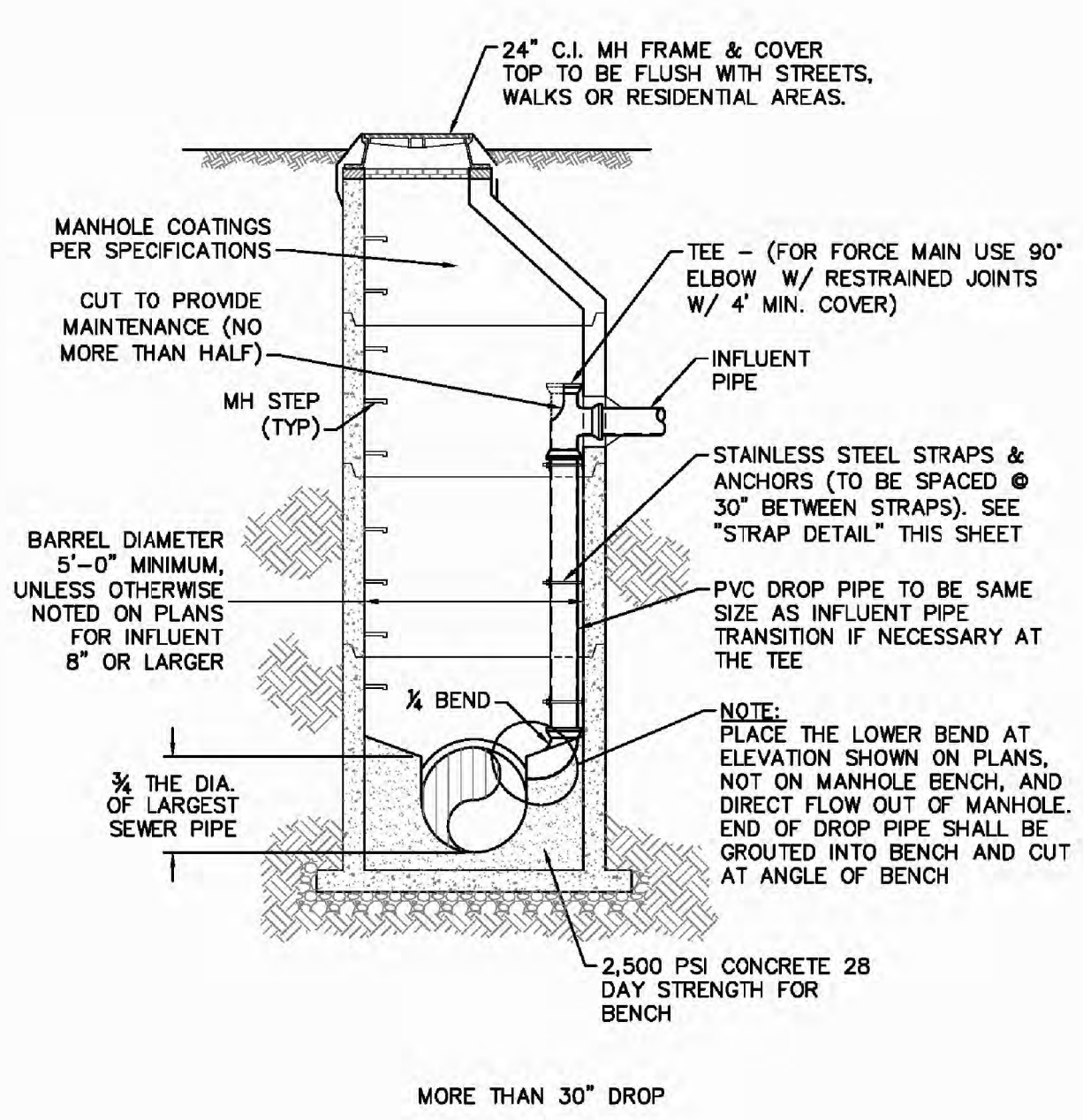
W:\UR\05-1190\081193.01-Arbor Commons\CAD\Arbor Commons-BAS-rev.dwg - Tuesday, February 28, 2017 1:35:50 PM - BDTN - JSEPH



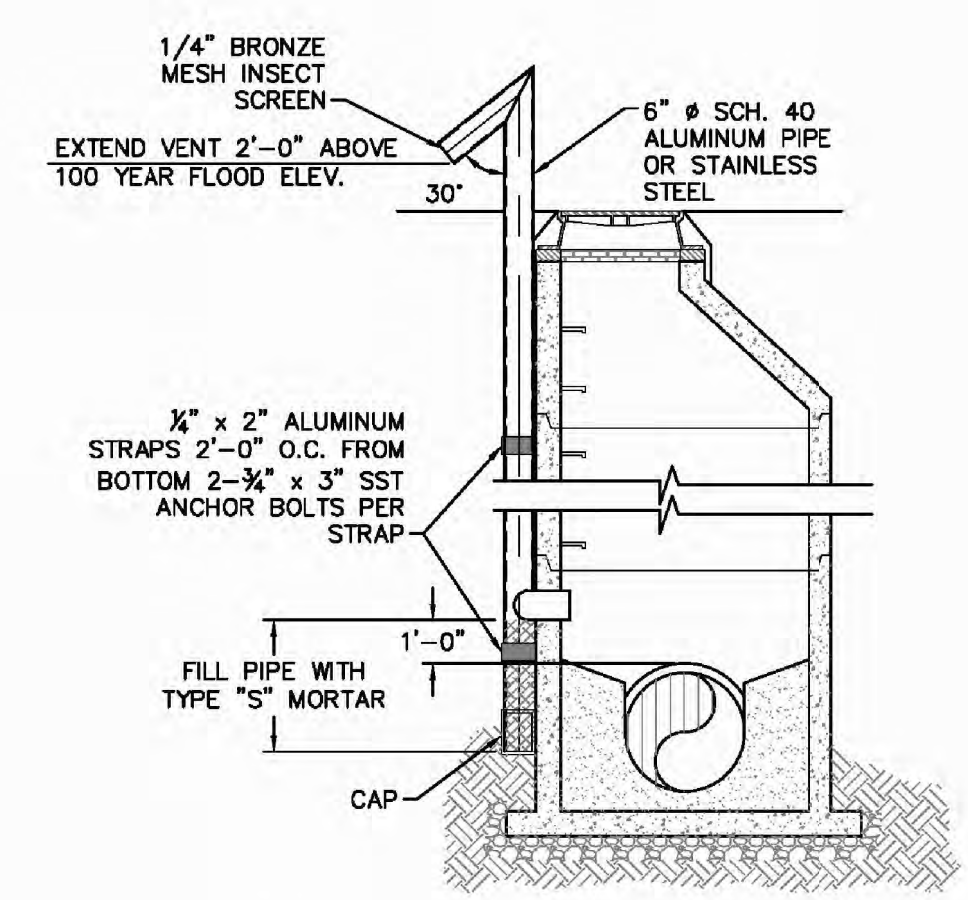
SD-1 PRECAST CONCRETE OFFSET MANHOLE TYPICAL
NOT TO SCALE



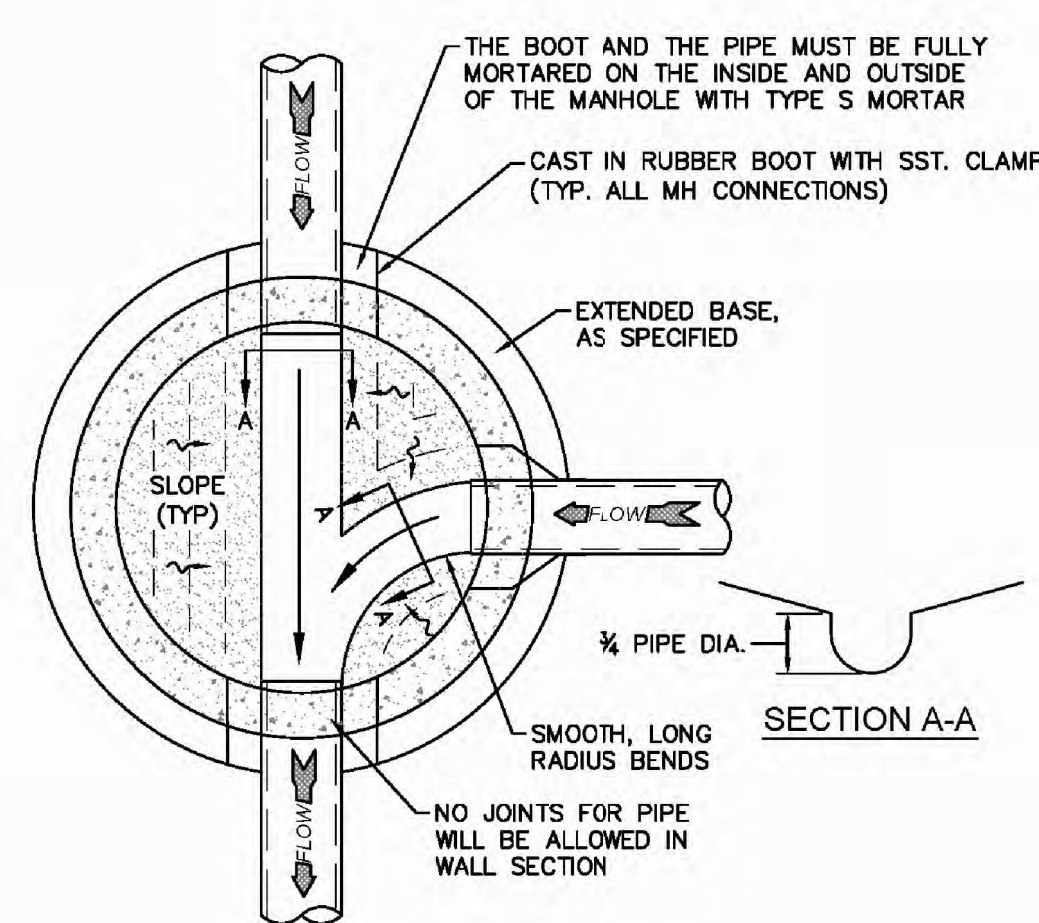
SD-2 PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL
NOT TO SCALE



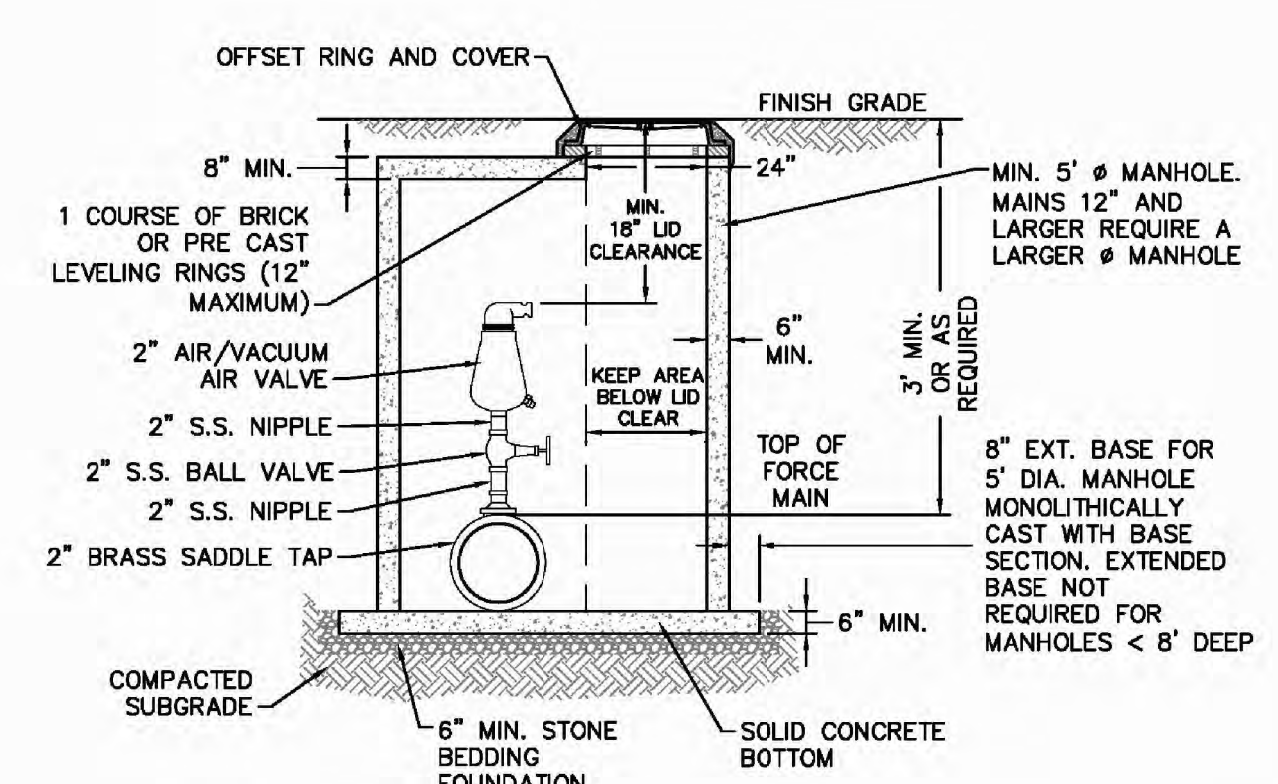
SD-3 DROP MANHOLE
NOT TO SCALE



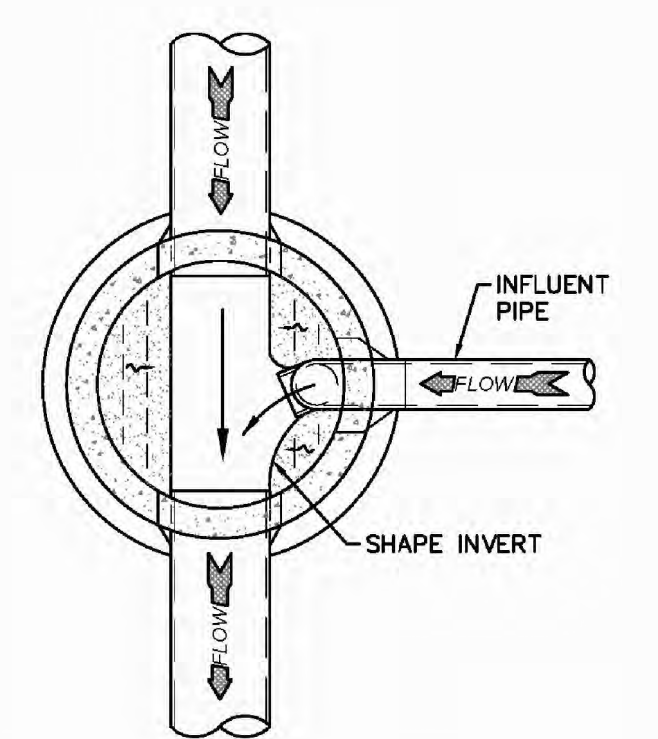
SD-4 STANDARD VENT MANHOLE
NOT TO SCALE



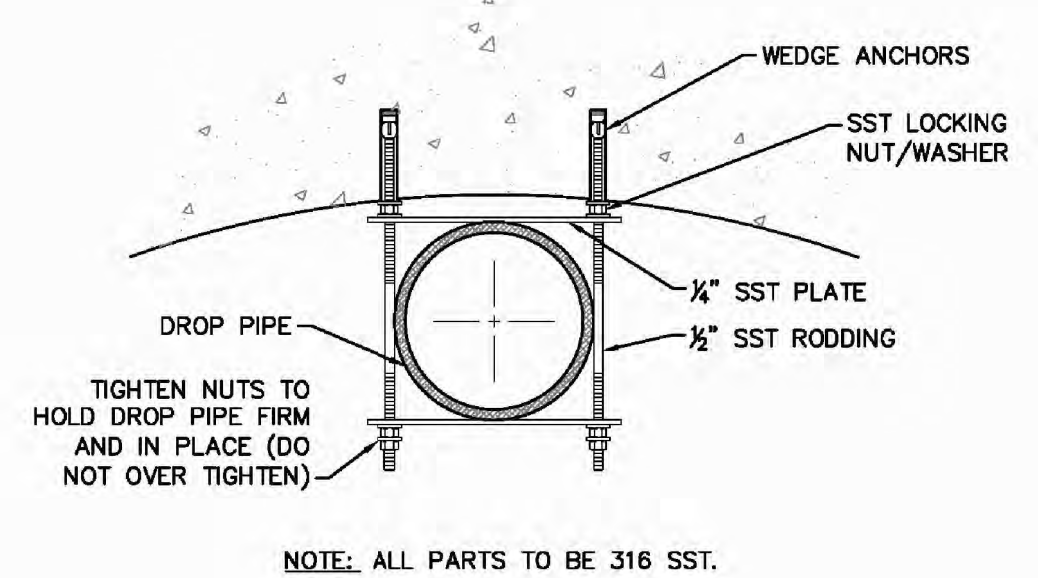
SD-5 MANHOLE FLOOR PLAN
NOT TO SCALE



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.

SD-9 STANDARD NOTES
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)

- 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 cut 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	10/26/12
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

DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFPUA
CHECKED BY: CFPUA
PROJECT NO.:

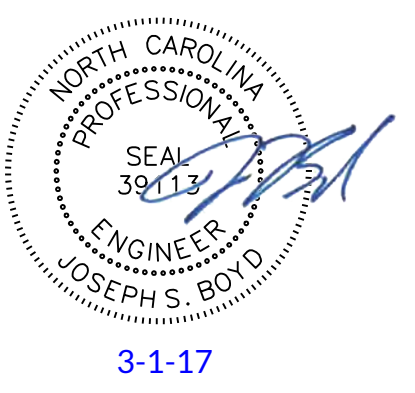
STANDARD DETAILS

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

SHEET NO.: **SSD-1**

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

FINAL DESIGN

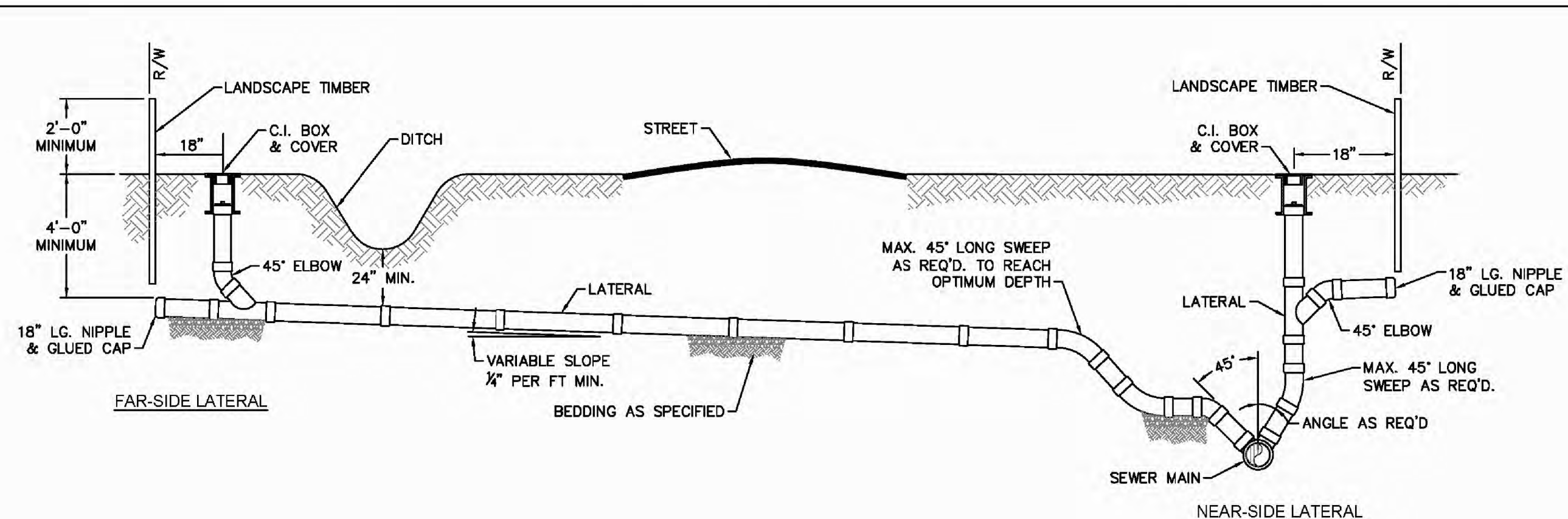


No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JJW	03061193.01

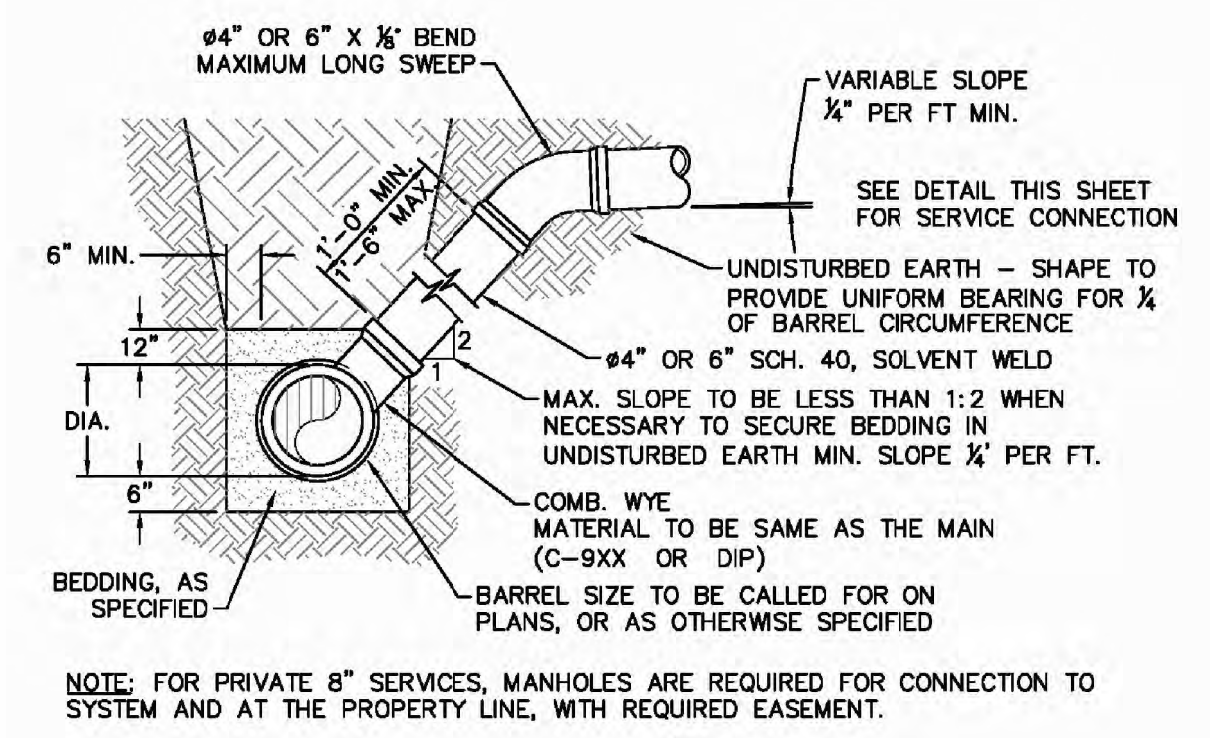
ARBOR COMMONS
Wilmington New Hanover County North Carolina

SANITARY SEWER DETAILS

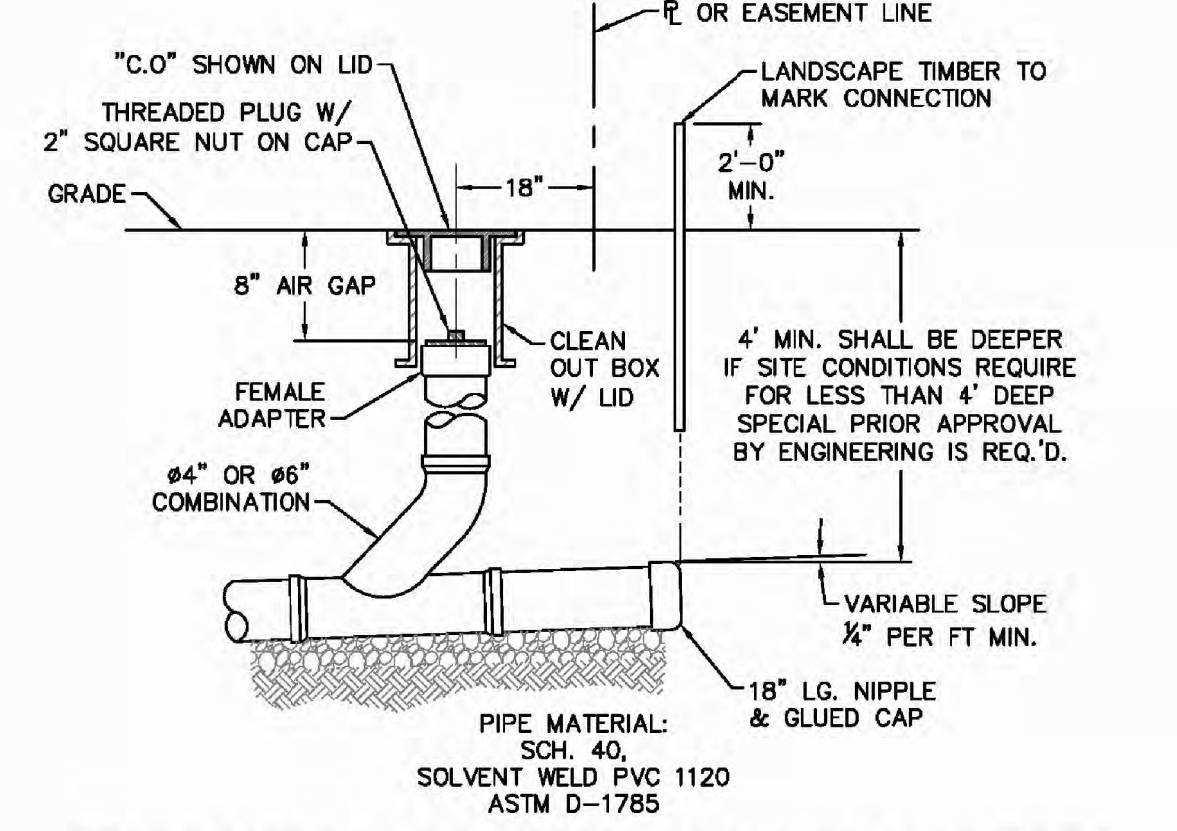
WithersRavenel
Engineers | Planners | Surveyors
1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com



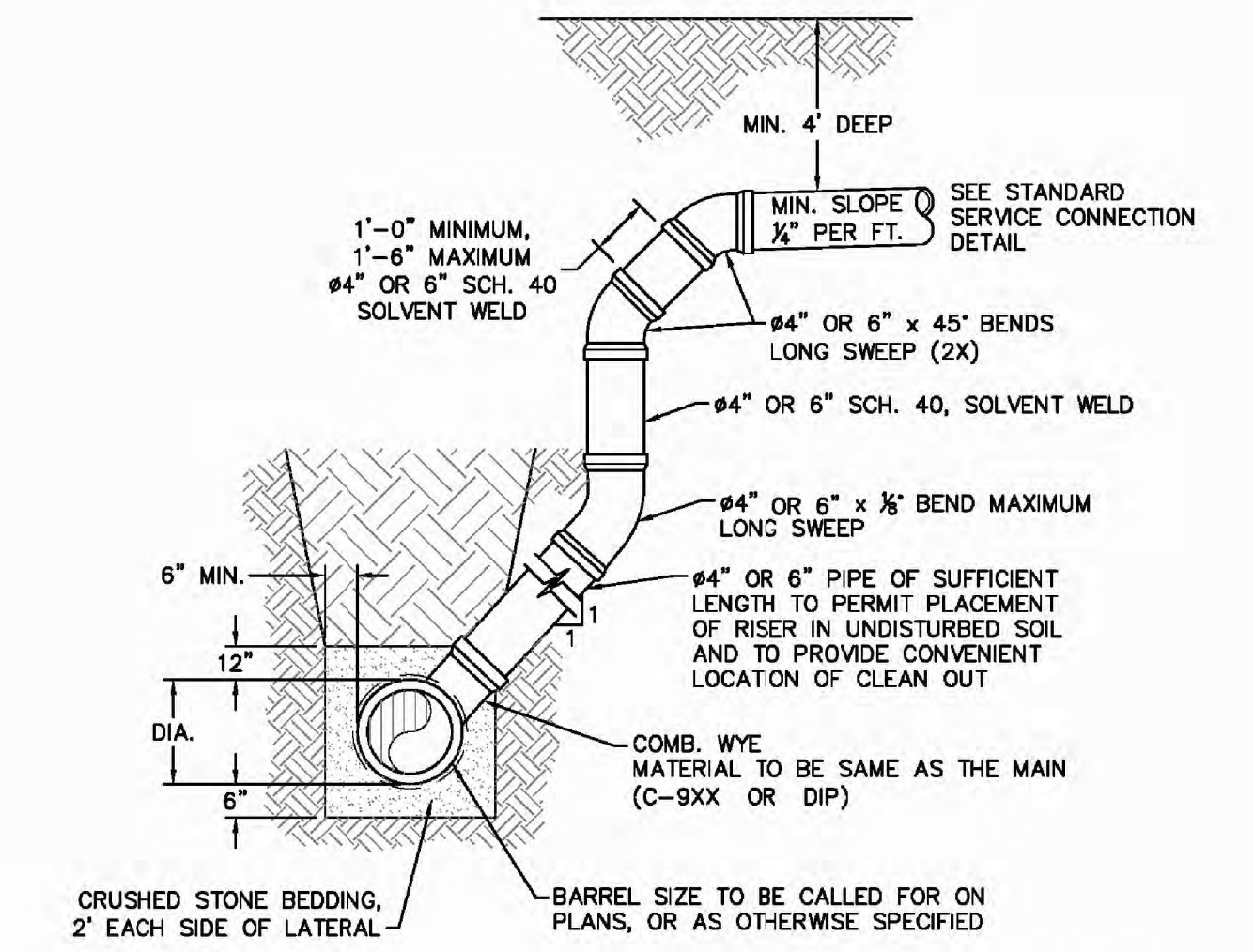
SD-19
STANDARD SERVICE CONNECTION TO SANITARY SEWER
NOT TO SCALE



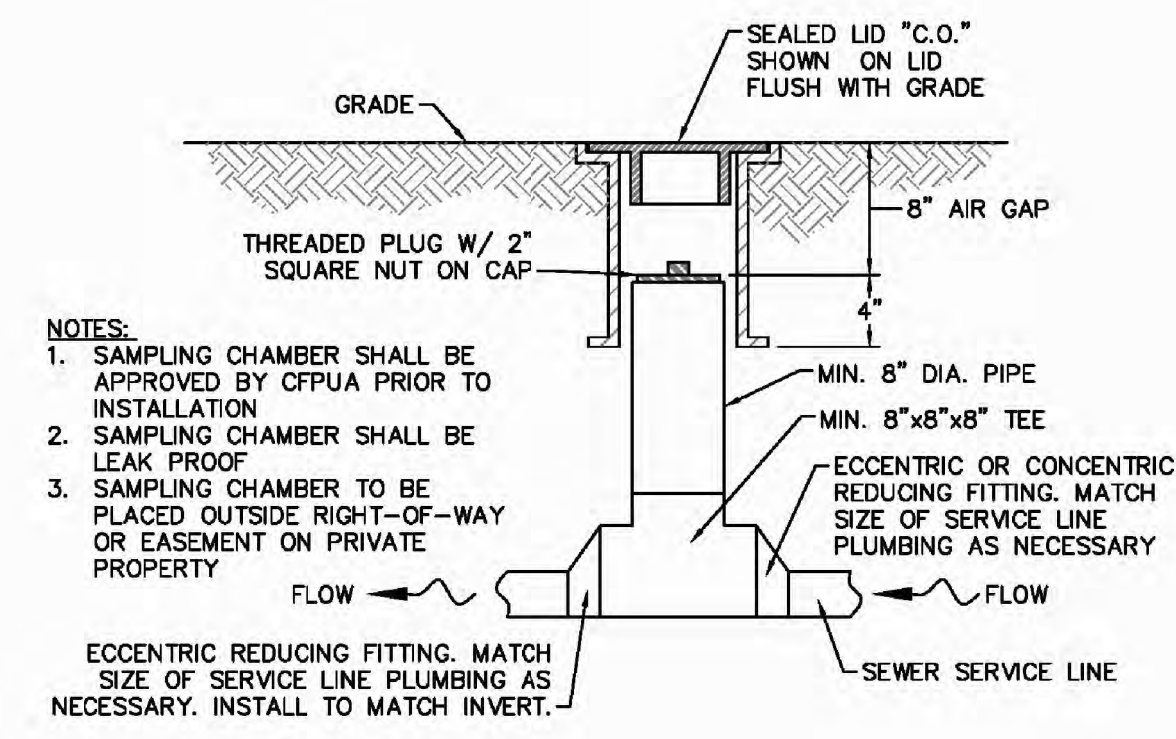
SD-10
STANDARD SERVICE LATERAL
NOT TO SCALE



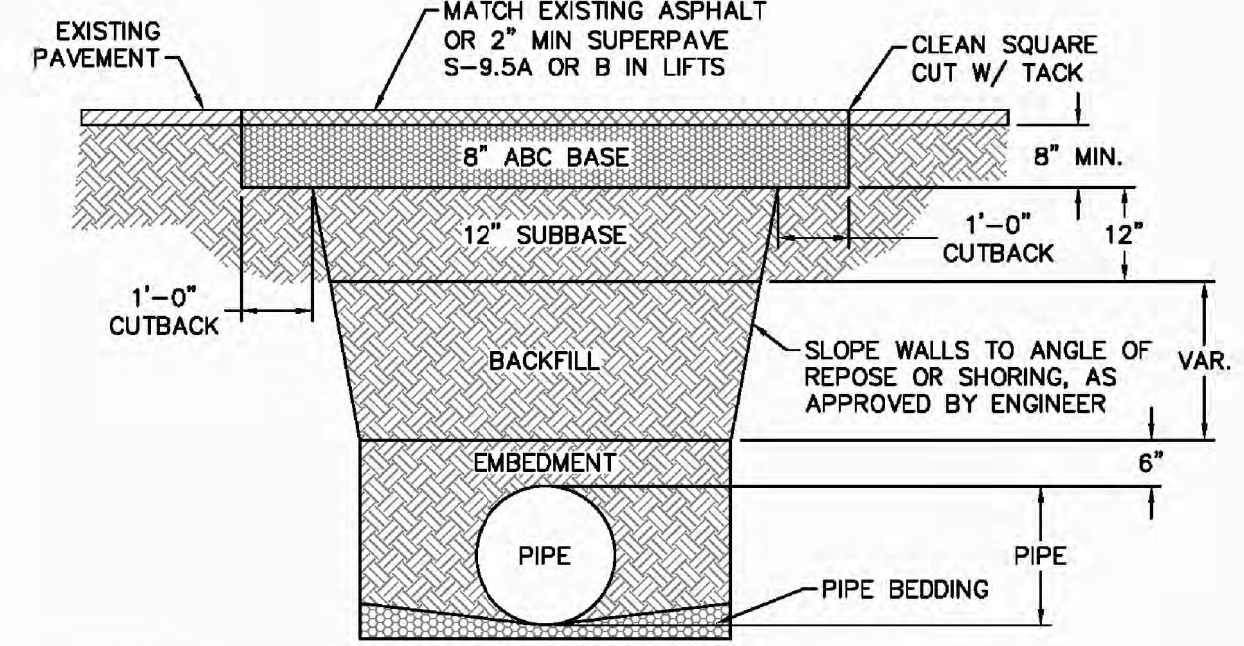
SD-11
SERVICE CONNECTION AND CLEAN-OUT
NOT TO SCALE



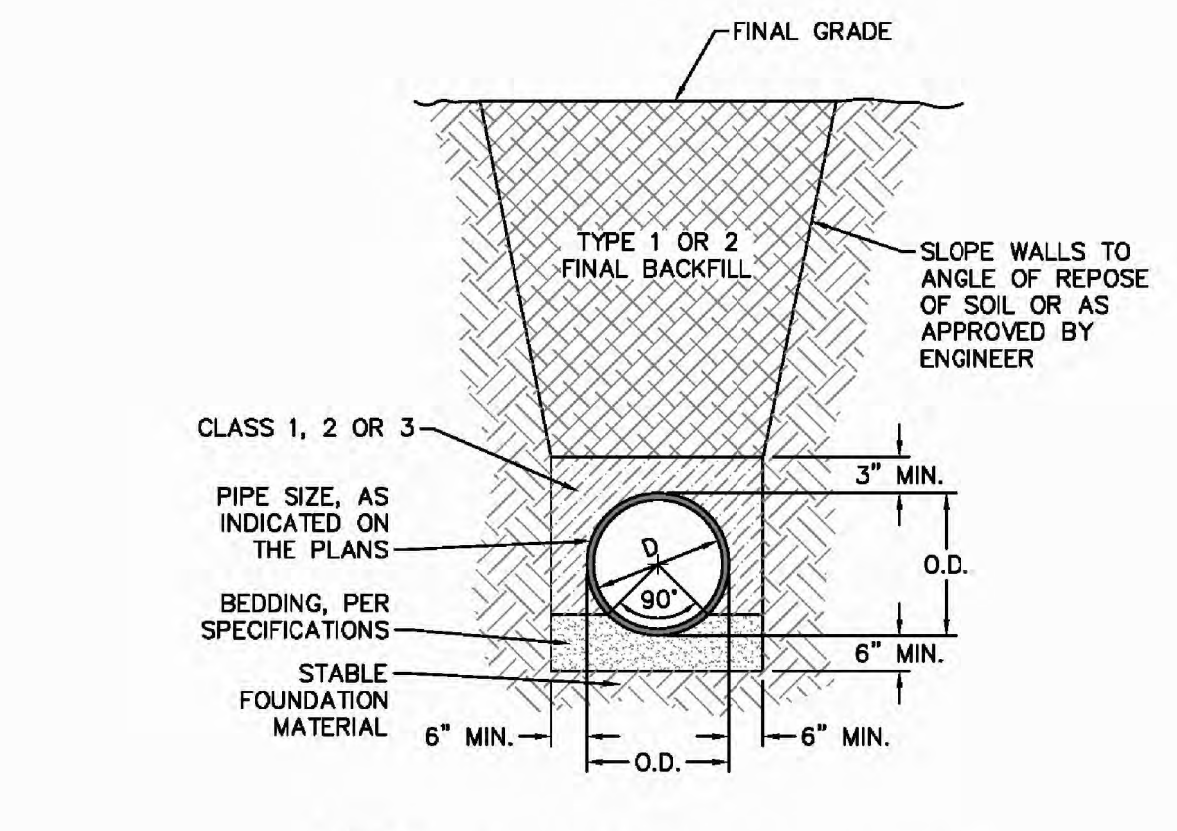
SD-12
DEEP SERVICE LATERAL
NOT TO SCALE



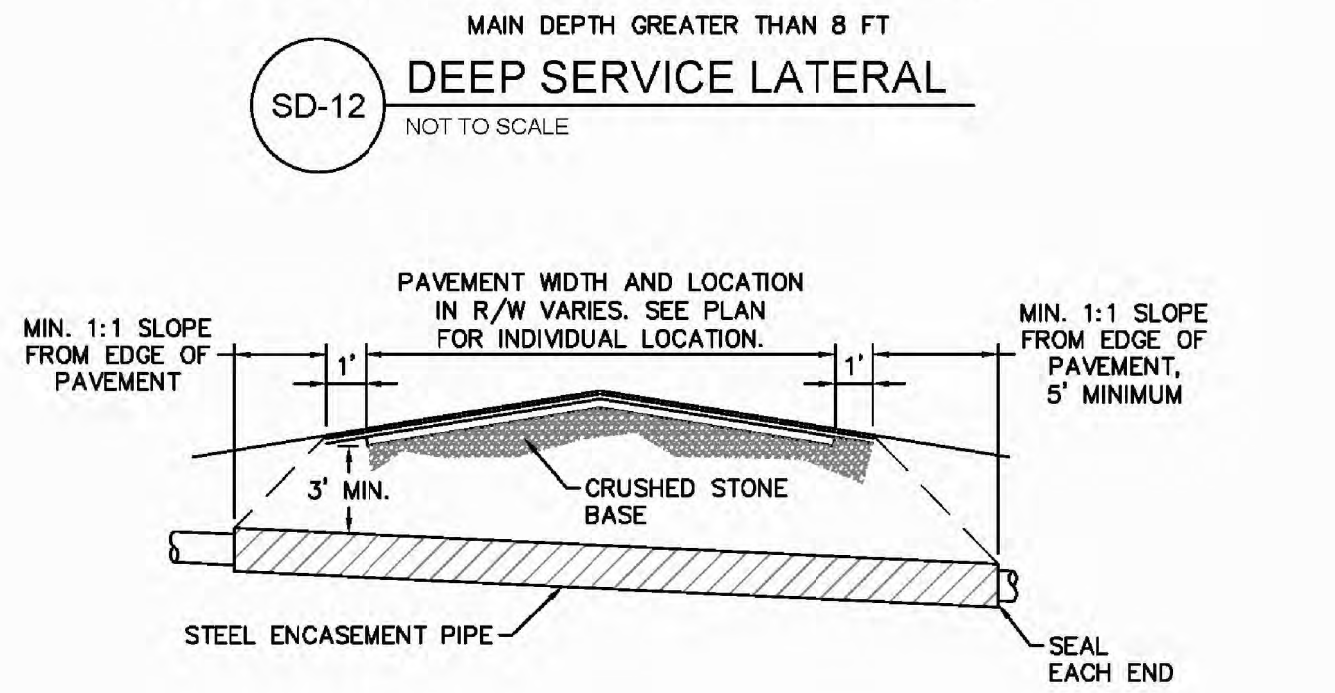
SD-13
SAMPLING CHAMBER
NOT TO SCALE



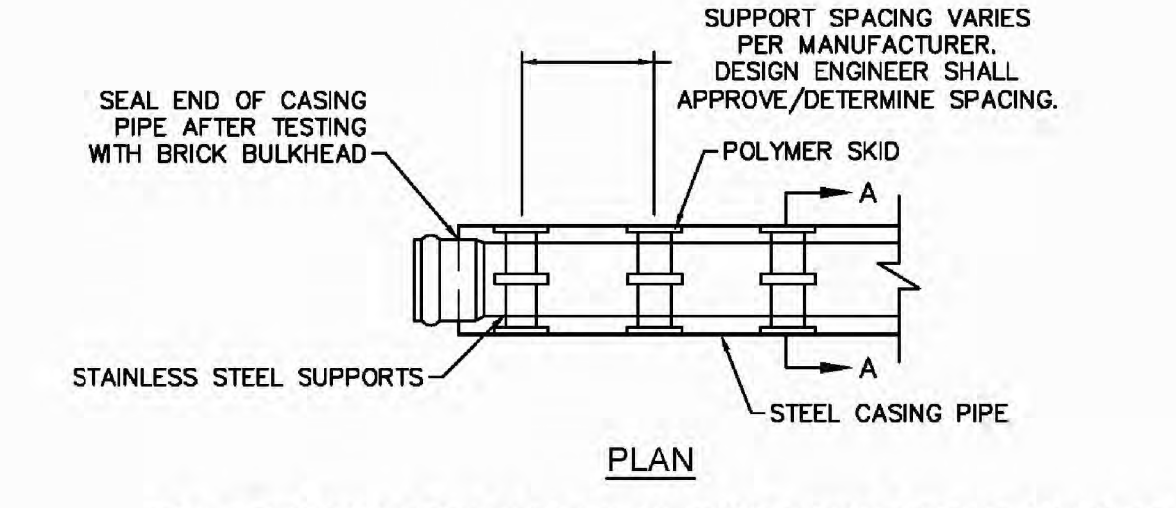
SD-14
PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



SD-15
TYPICAL TRENCH DETAIL
NOT TO SCALE



SD-16
TYPICAL BORING/JACKING DETAIL
NOT TO SCALE



SD-17
PIPE CASING SUPPORT DETAIL
NOT TO SCALE

- NOTES:**
- BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, 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)

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.

- 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

REV.	DESCRIPTION:	DATE:
1	SAMPLING CHAMBER REVISED	10/26/12
2	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)332-6560

Stewardship. Sustainability. Service.

DATE: 1/9/12
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



3-1-17

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

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

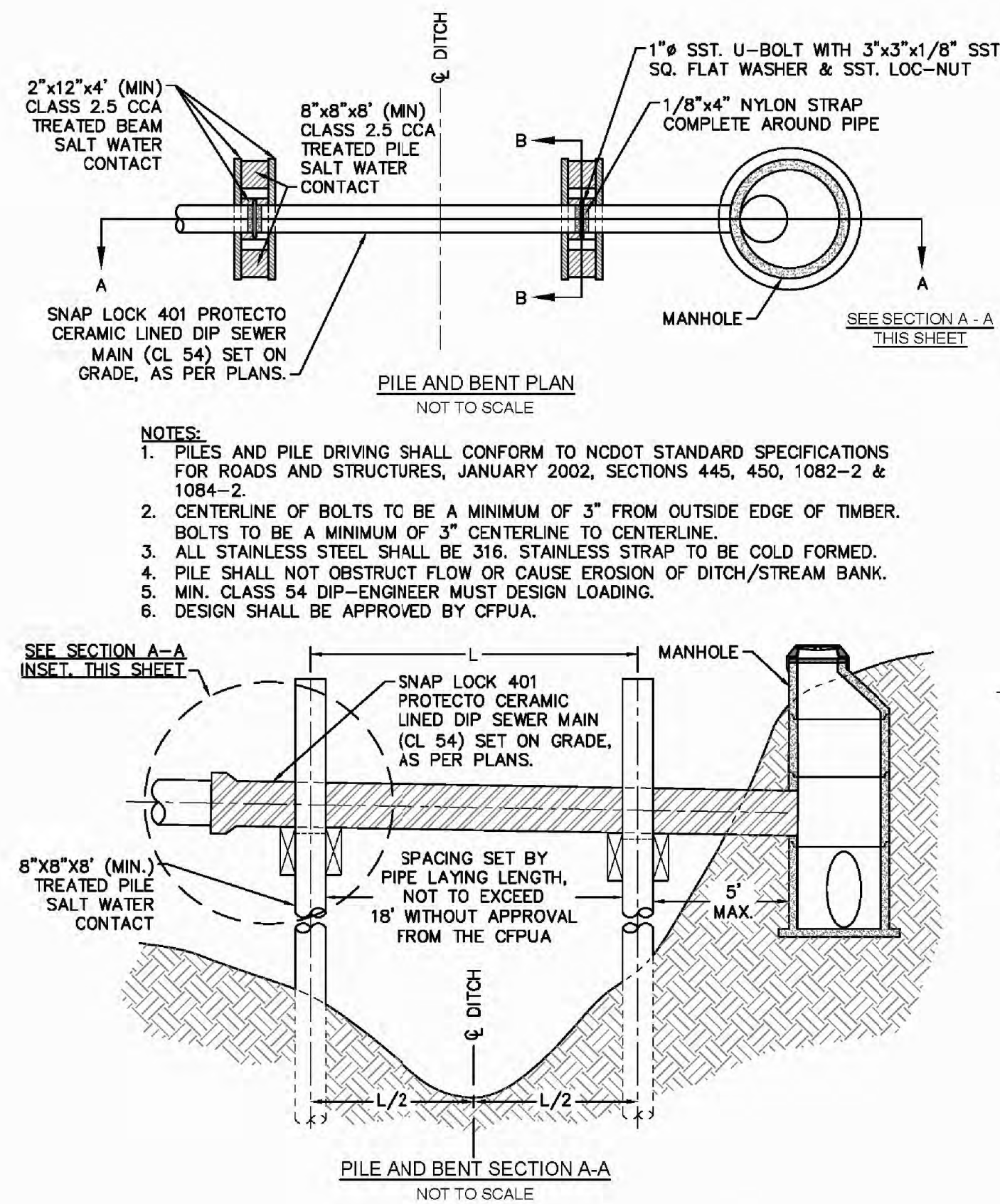
SANITARY SEWER DETAILS

WithersRavenel
Engineers | Planners | Surveyors

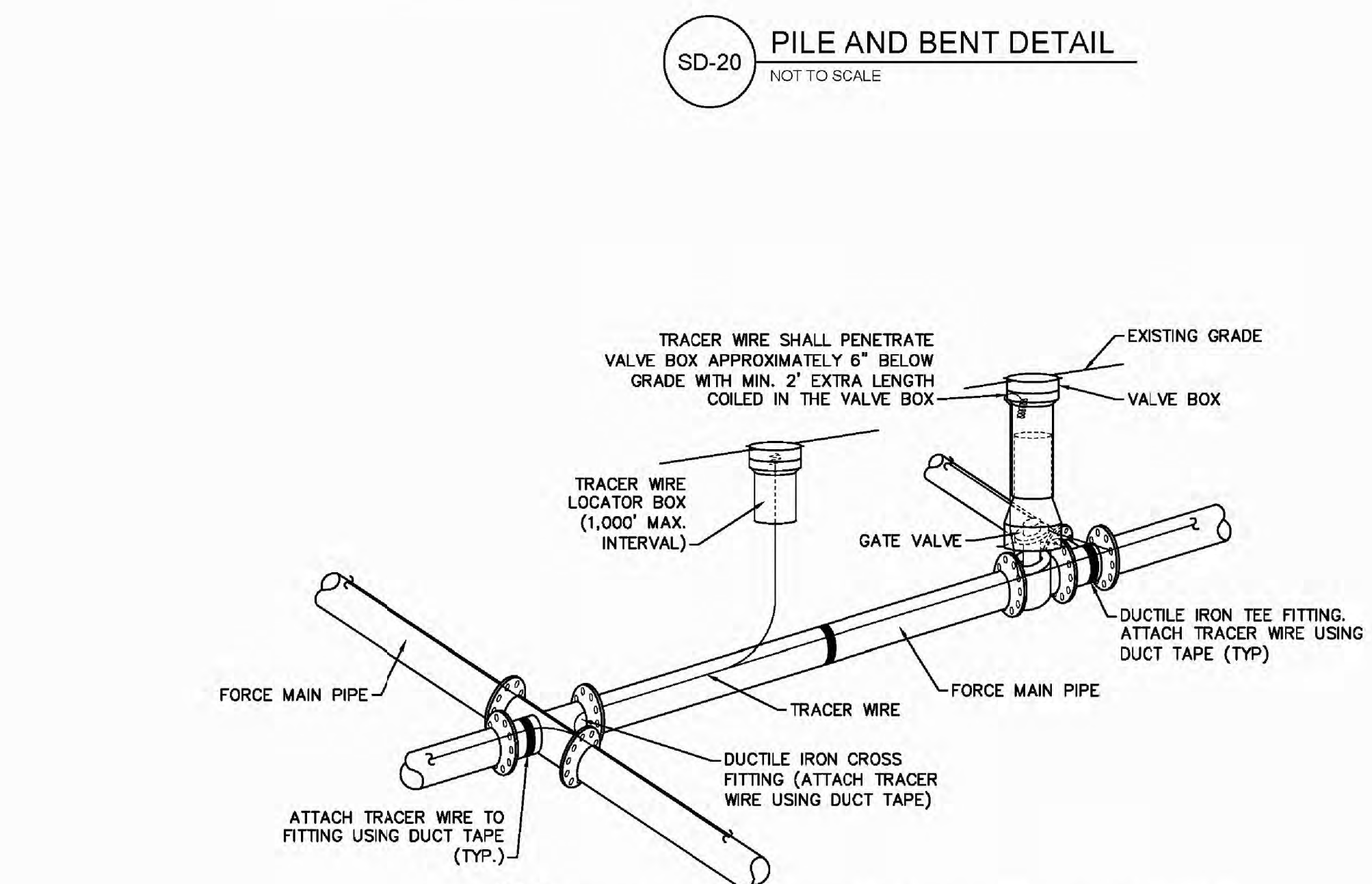
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No.
D-2

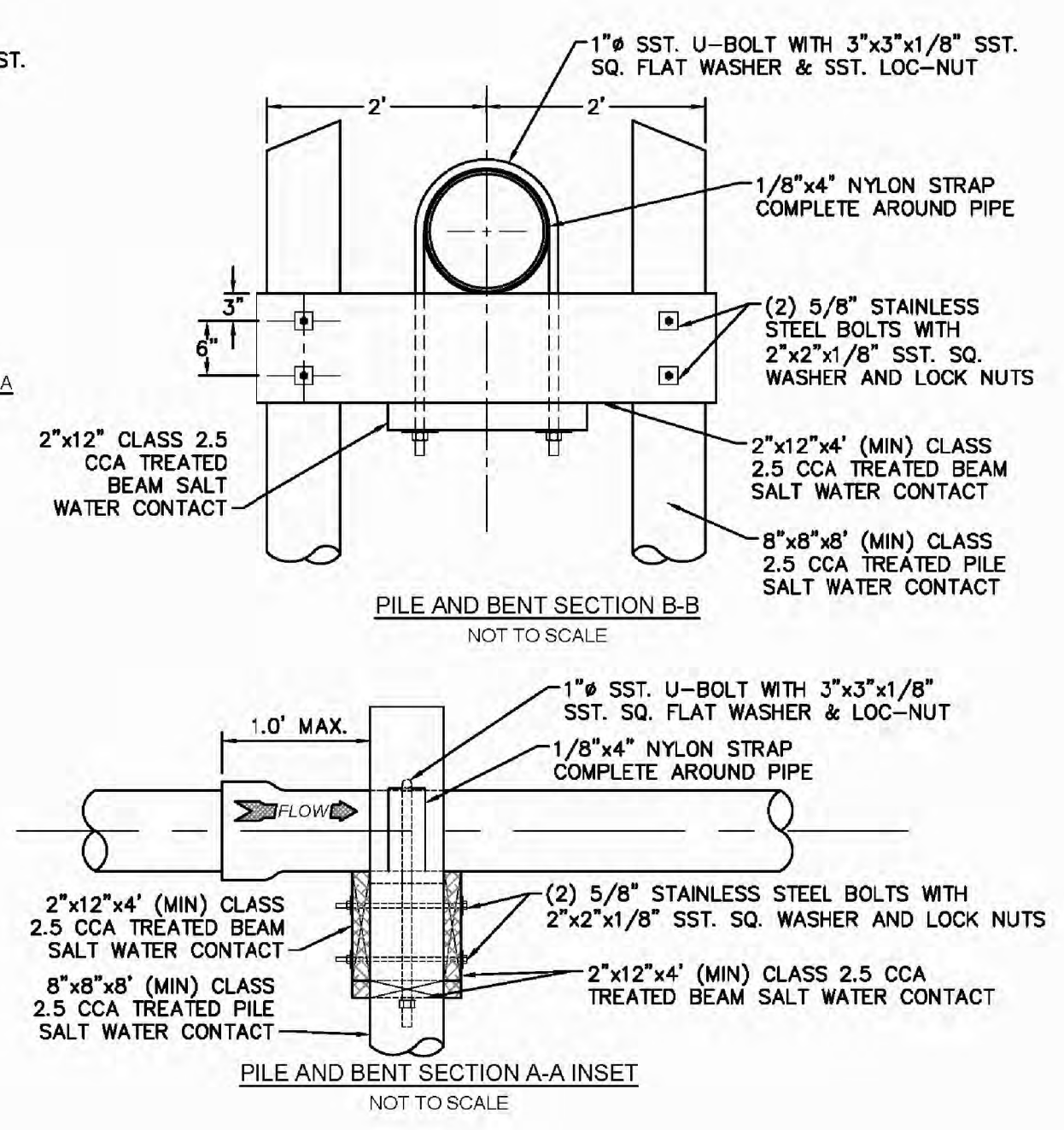
P:\ARBOR\1190\061193.01-Arbor Commons\CADD\DETAILS.dwg - Friday, February 17, 2017 1:40:29 PM - BDDT - JSD/PH



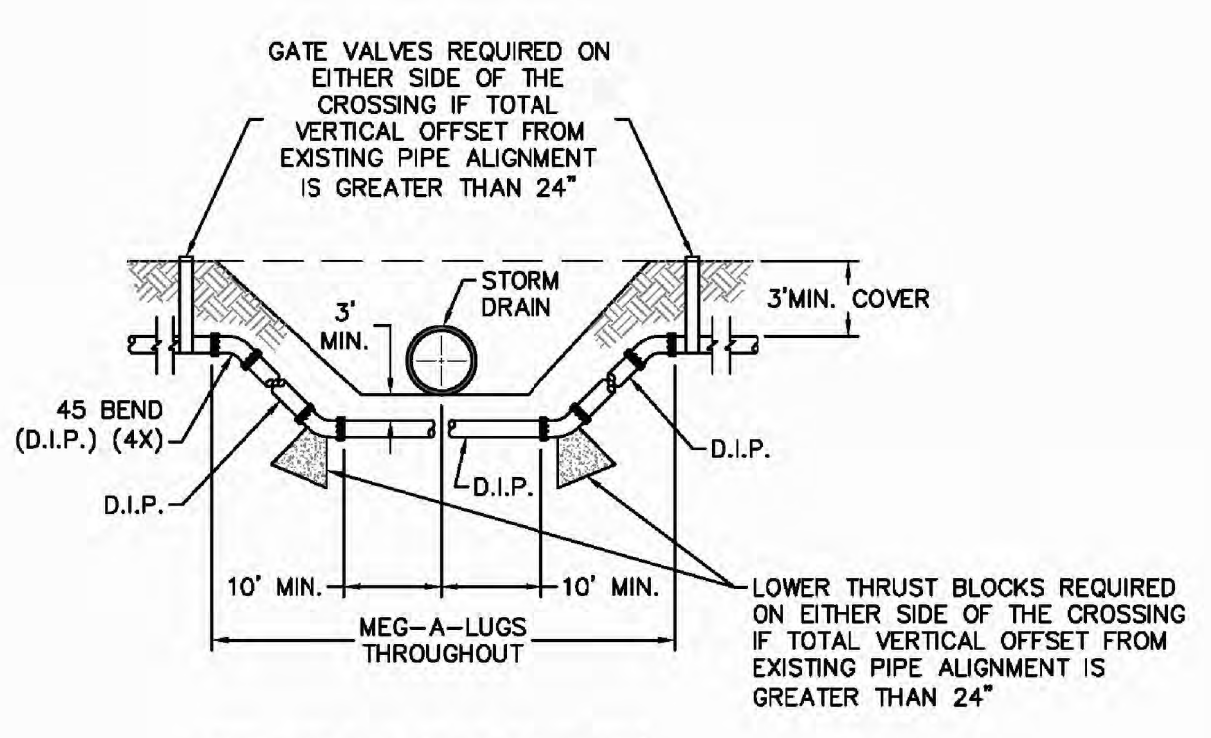
SD-20 PILE AND BENT DETAIL
NOT TO SCALE



SD-21 TRACER WIRE DETAIL
NOT TO SCALE



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



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

Approved Construction Plan

Name _____ Date _____

Planning _____

Public Utilities _____

Traffic _____

Fire _____

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

- 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 CFPWA 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)332-6560

DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFPWA
CHECKED BY: CFPWA
PROJECT NO.:
SHEET NO: SSD-3

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

FINAL DESIGN



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

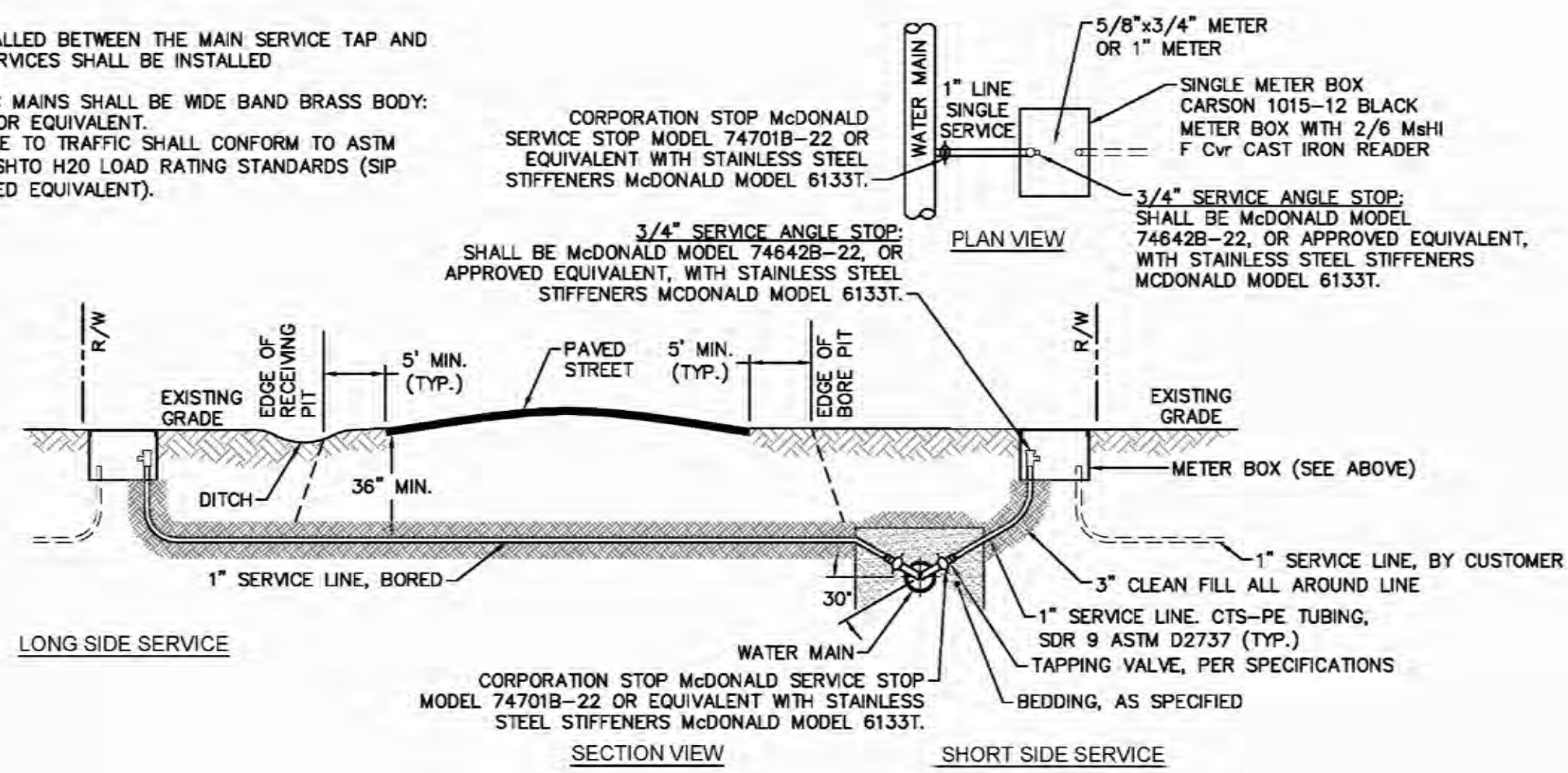
ARBOR COMMONS
Wilmington New Hanover County North Carolina

SANITARY SEWER DETAILS

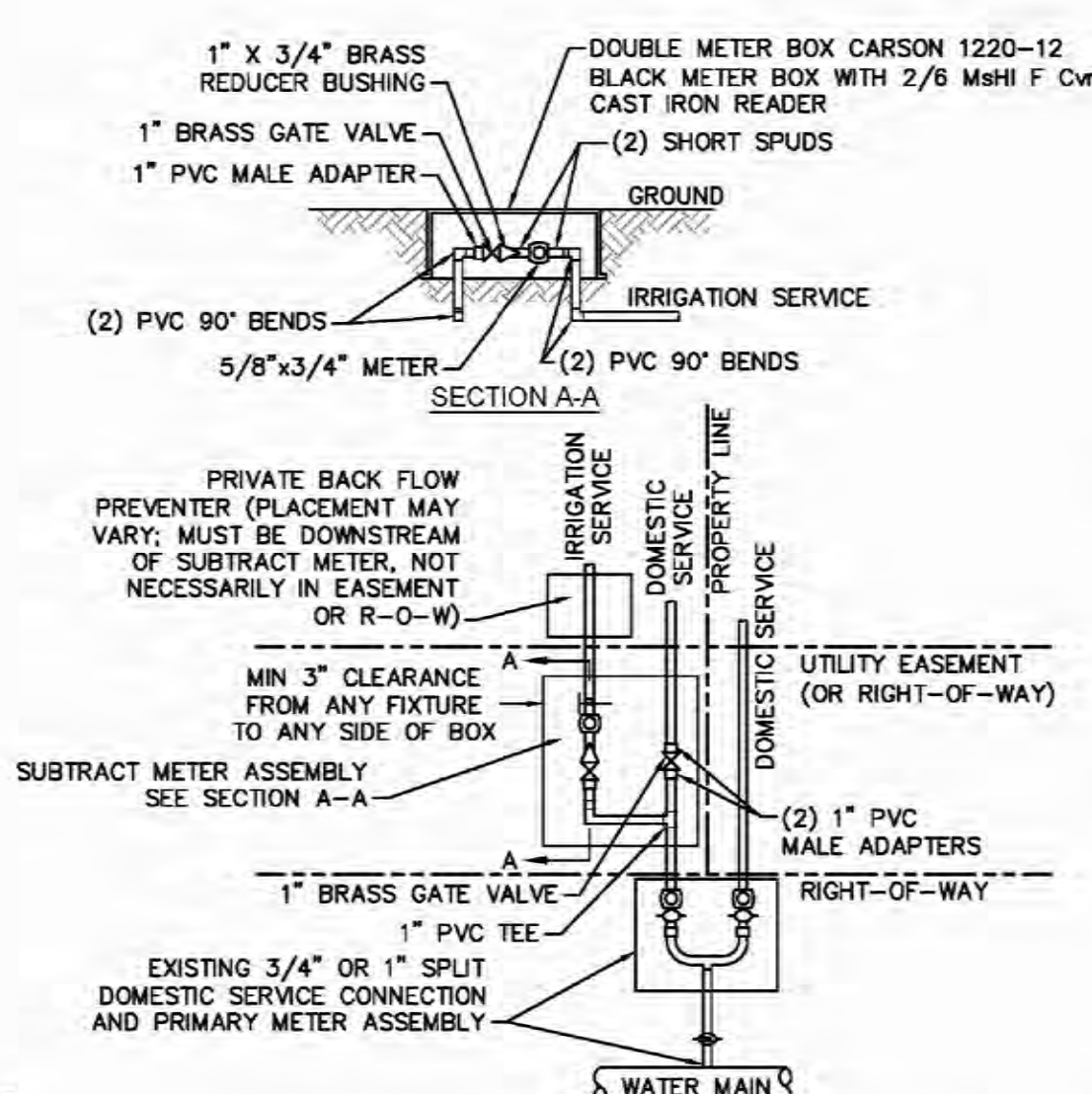
WithersRavenel
Engineers | Planners | Surveyors
1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

Sheet No. D-3

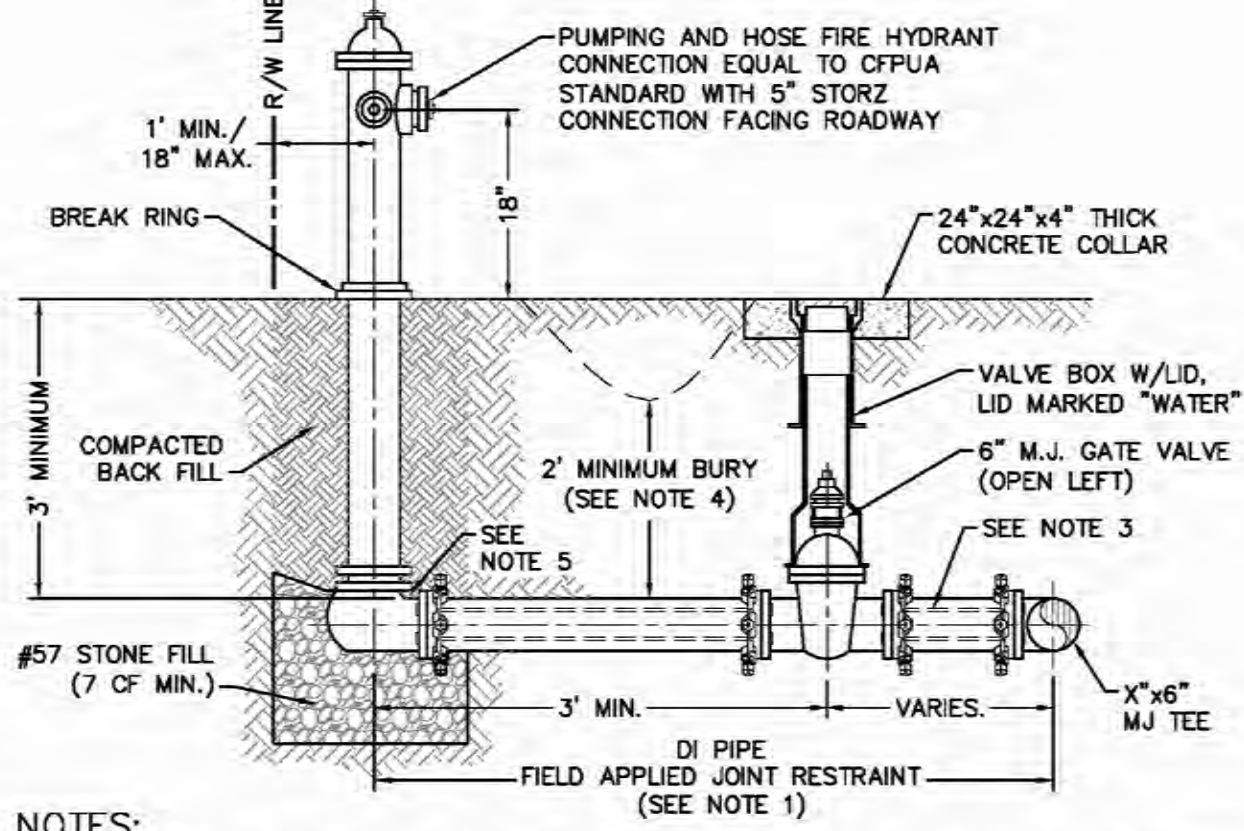
- NOTES:**
- NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
 - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
 - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM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



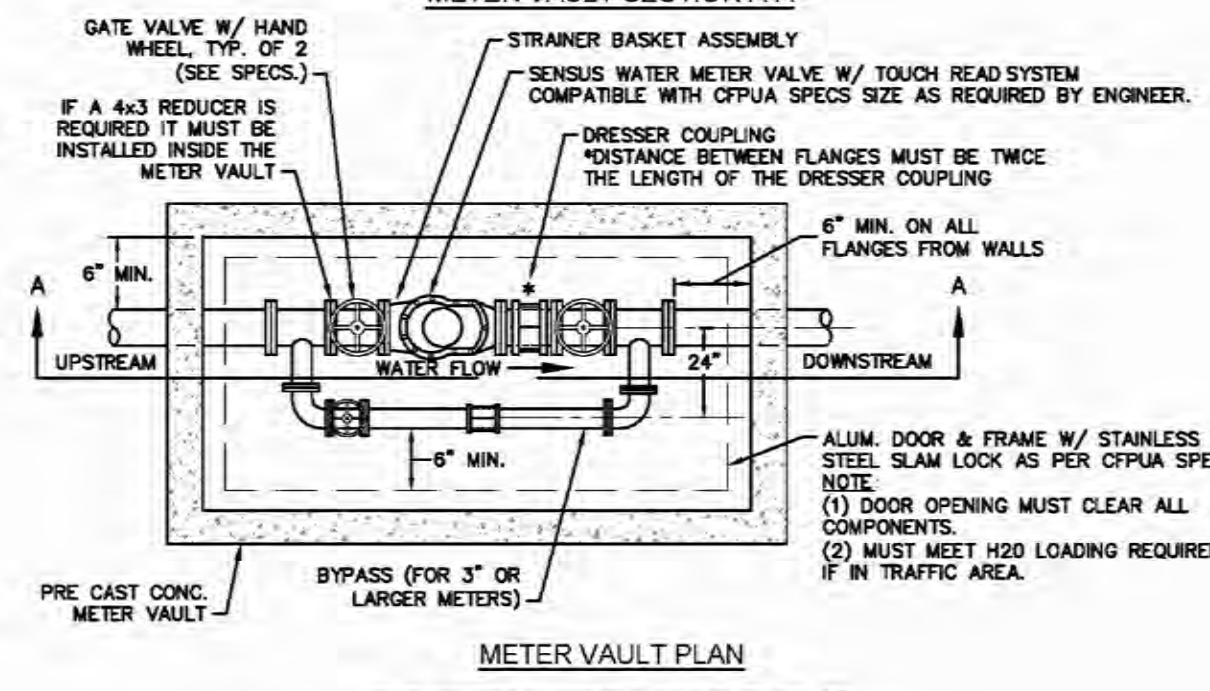
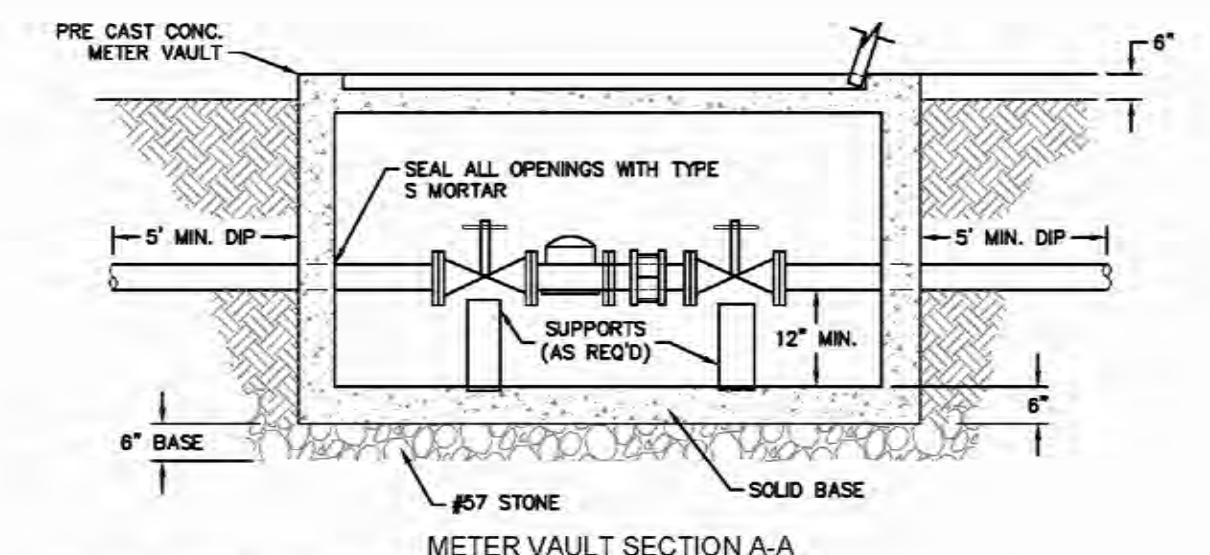
WD-18 SINGLE SERVICE CONNECTION
NOT TO SCALE



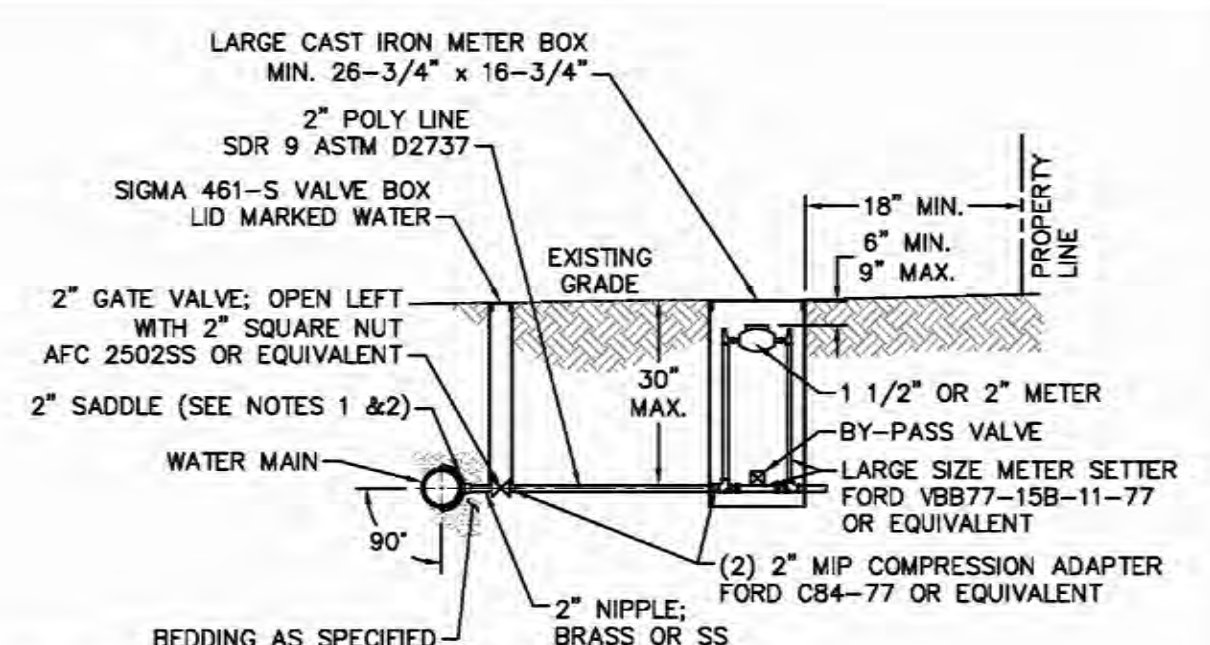
WD-8 DOUBLE SERVICE CONNECTION USING SUBTRACT METER
NOT TO SCALE



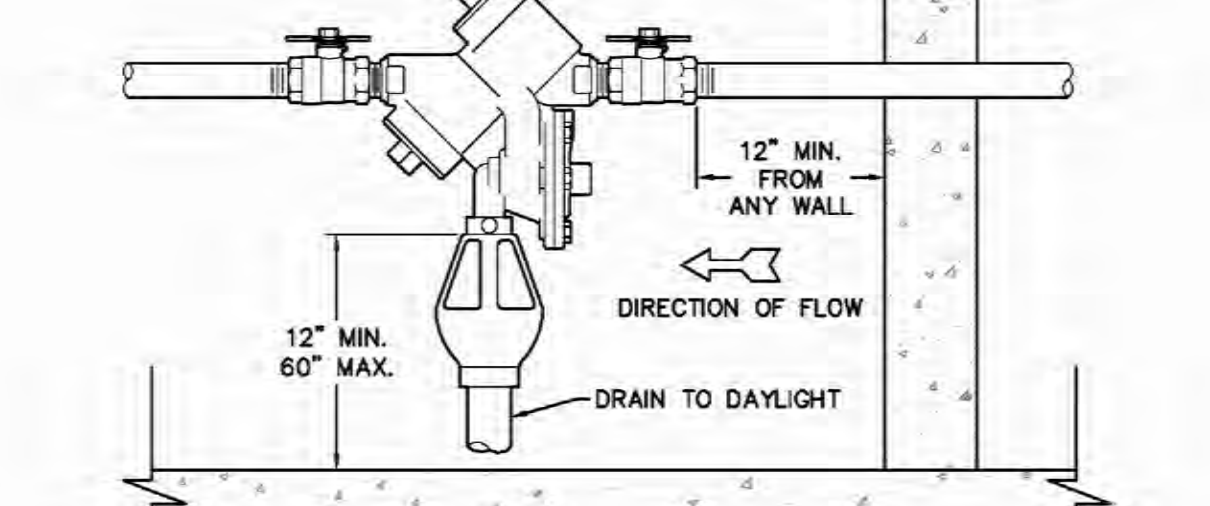
WD-10 FIRE HYDRANT ASSEMBLY
NOT TO SCALE



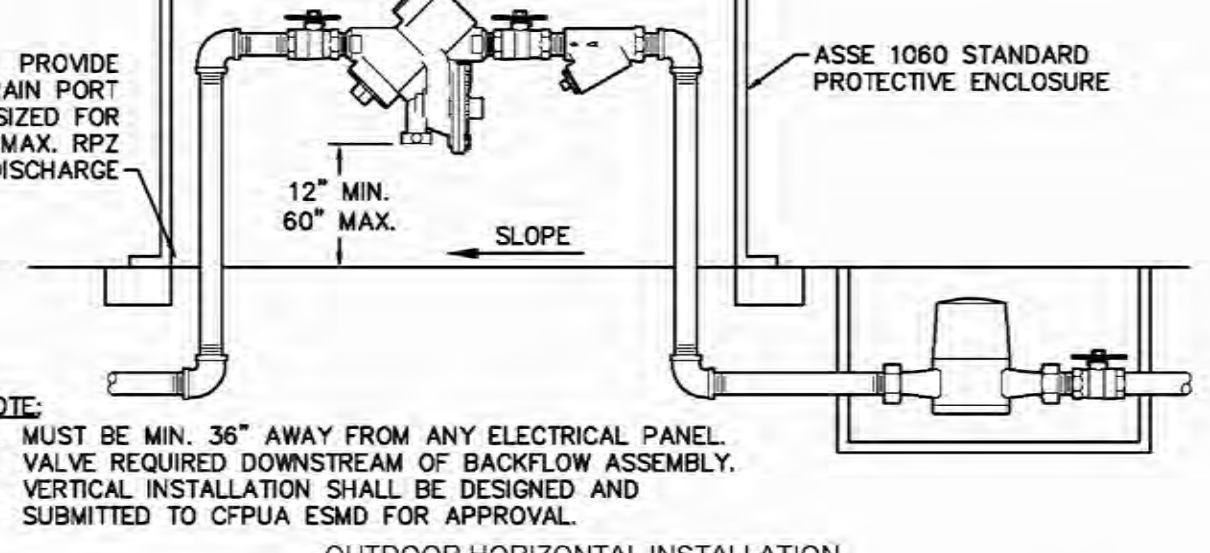
WD-1 WATER METER VAULT
NOT TO SCALE



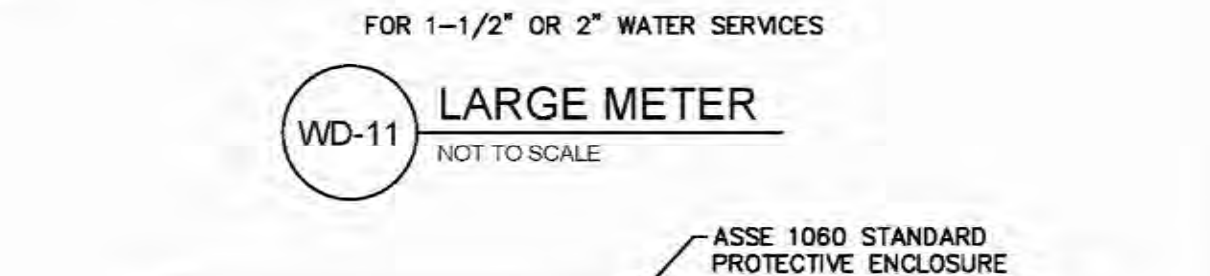
WD-11 LARGE METER
NOT TO SCALE



INDOOR HORIZONTAL INSTALLATION



WD-12 REDUCED PRESSURE PRINCIPLE ASSEMBLY
NOT TO SCALE



INDOOR INSTALLATION



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 CFPWA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

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)

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

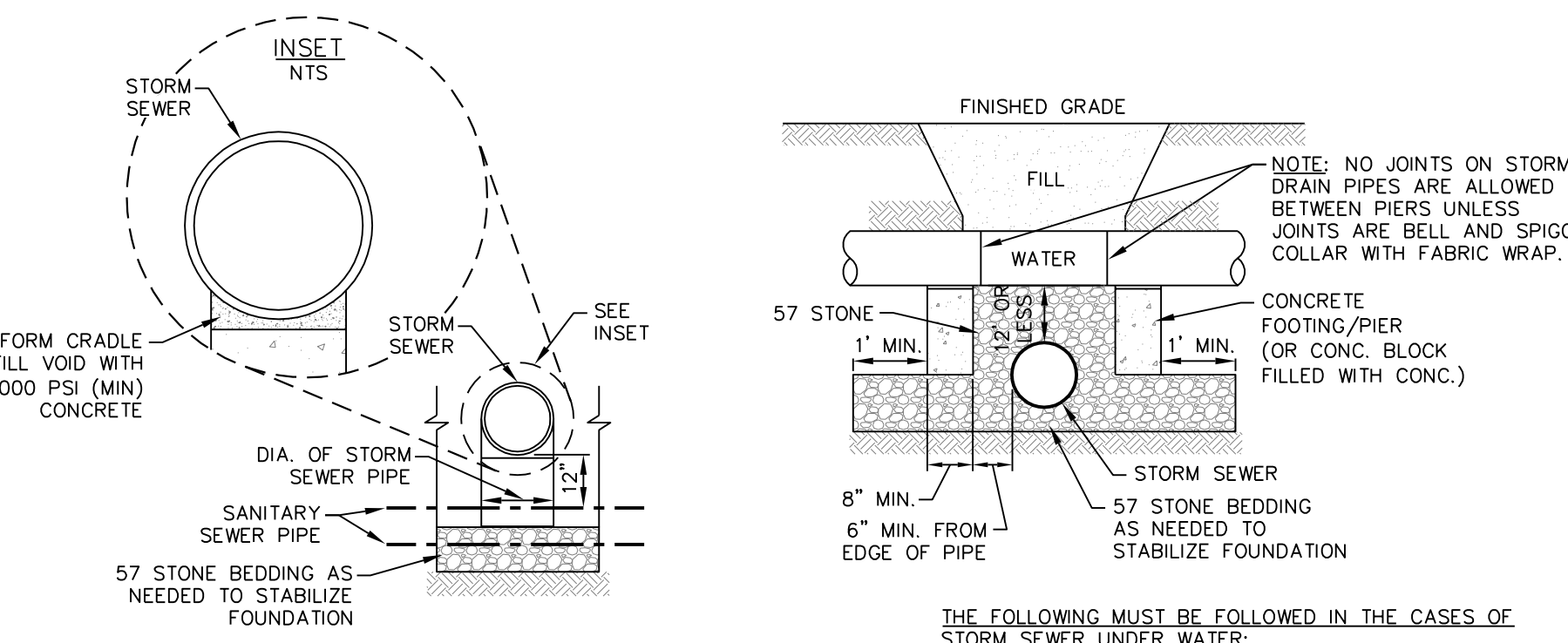
For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

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

REV:	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/29/12
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" STORZ Connection	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

CFPUA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS	GATE: 1/8/12 SCALE: N/A DRAWN BY: CFPWA CHECKED BY: CFPWA PROJECT NO:
CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560	SHEET NO: WSD-1

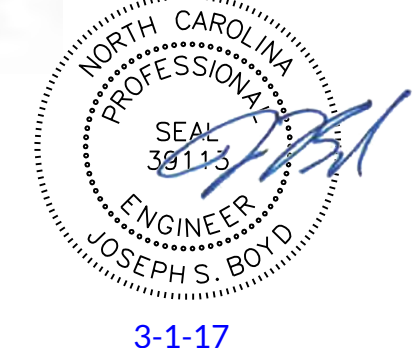


STRUCTURAL BRIDGING DETAIL FOR WATER OVER STORMWATER INSTALLATIONS WITH LESS THAN 12" SEPARATION
NTS

- THE FOLLOWING MUST BE FOLLOWED IN THE CASES OF STORM SEWER UNDER WATER:**
- A SEPARATION OF LESS THAN 12" BETWEEN STORM SEWER AND WATER, WATER MUST BE BRIDGED.
 - A SEPARATION OF 12" TO LESS THAN 24" BETWEEN STORM SEWER AND WATER, WATER CAN BE DIP OR STORM SEWER CAN BE BRIDGED.
 - A SEPARATION OF 24" OR GREATER BETWEEN STORM SEWER AND WATER REQUIRES NO BRIDGING OR DIP.

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

FINAL DESIGN

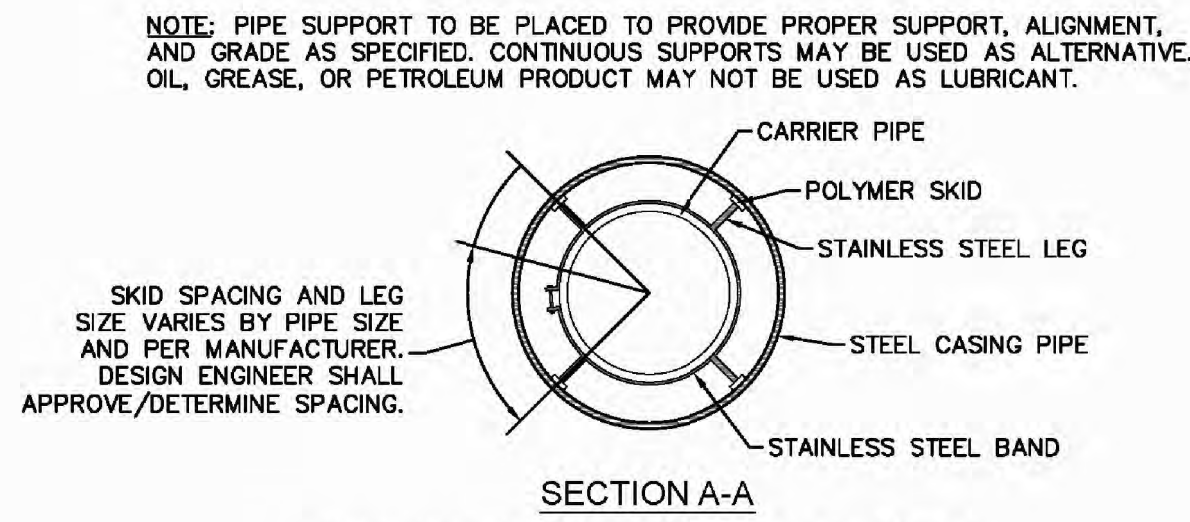
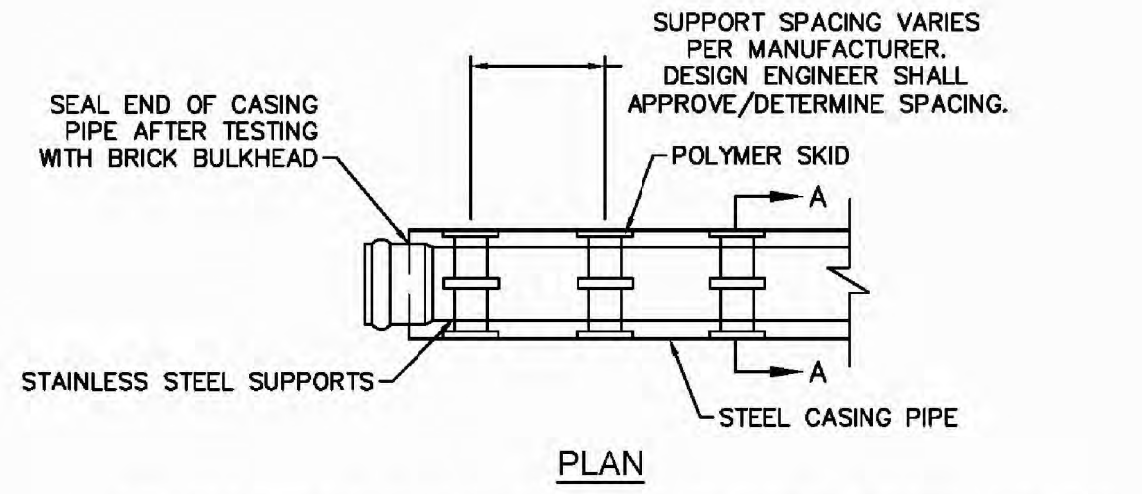


No.	Revision	Date	By	Designer	Scale
1	ADDED BRIDGING DETAIL	11-29-16	JSB	NA	NTS

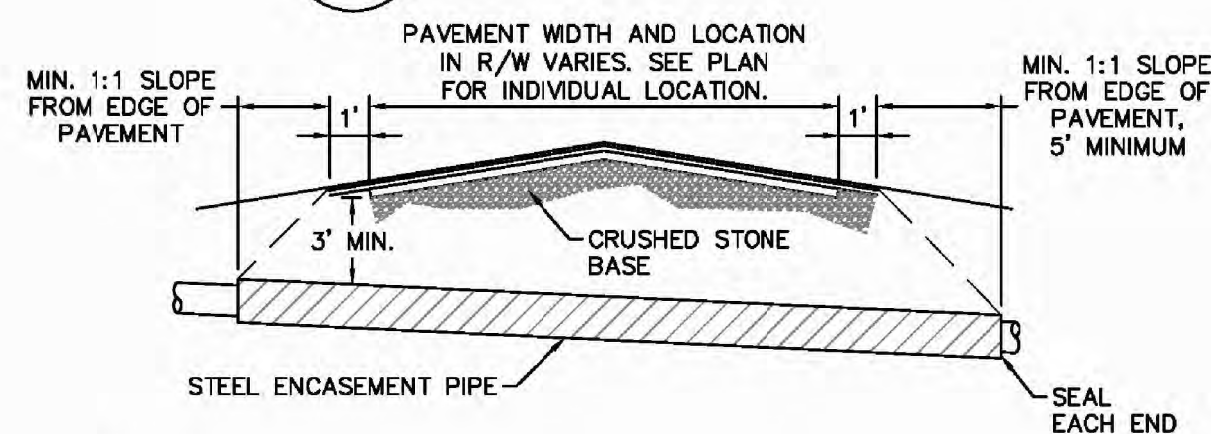
ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

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-4**

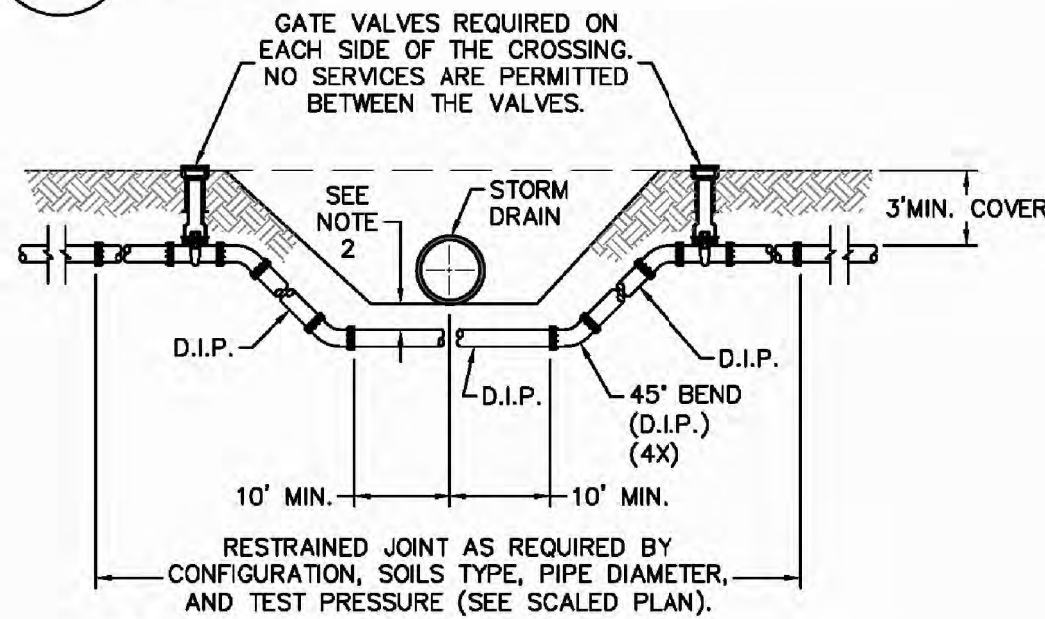


WD-15 PIPE CASING SUPPORT DETAIL
NOT TO SCALE



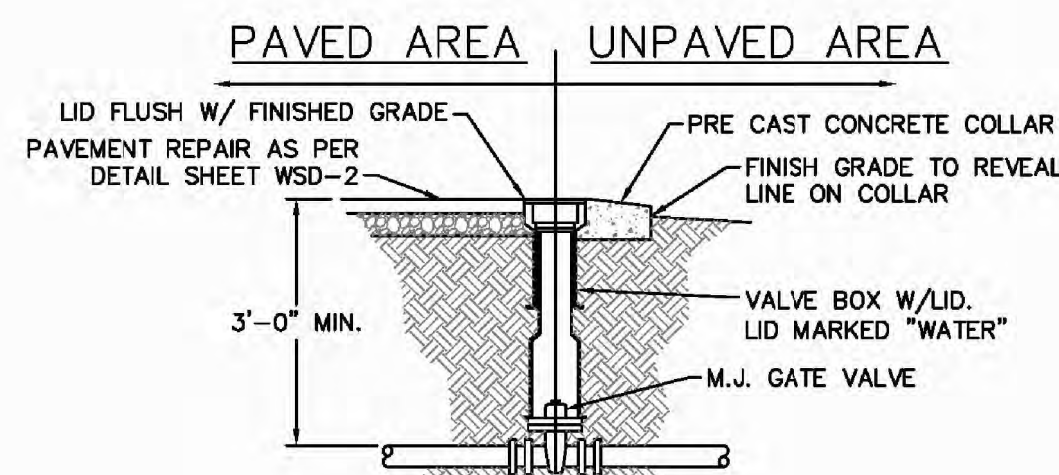
- NOTES:**
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

WD-16 TYPICAL BORING/JACKING DETAIL
NOT TO SCALE

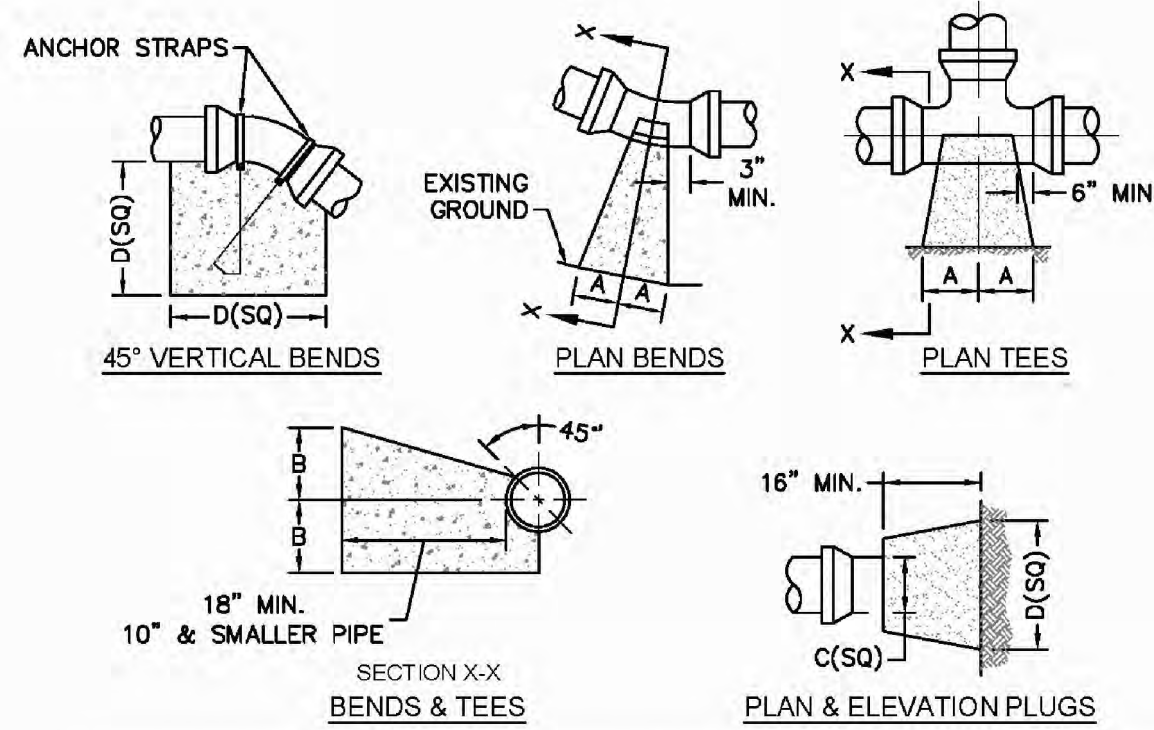


- NOTES:**
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:
a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
b. ALL OTHER LOCATIONS, 30" MIN.
c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS,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

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



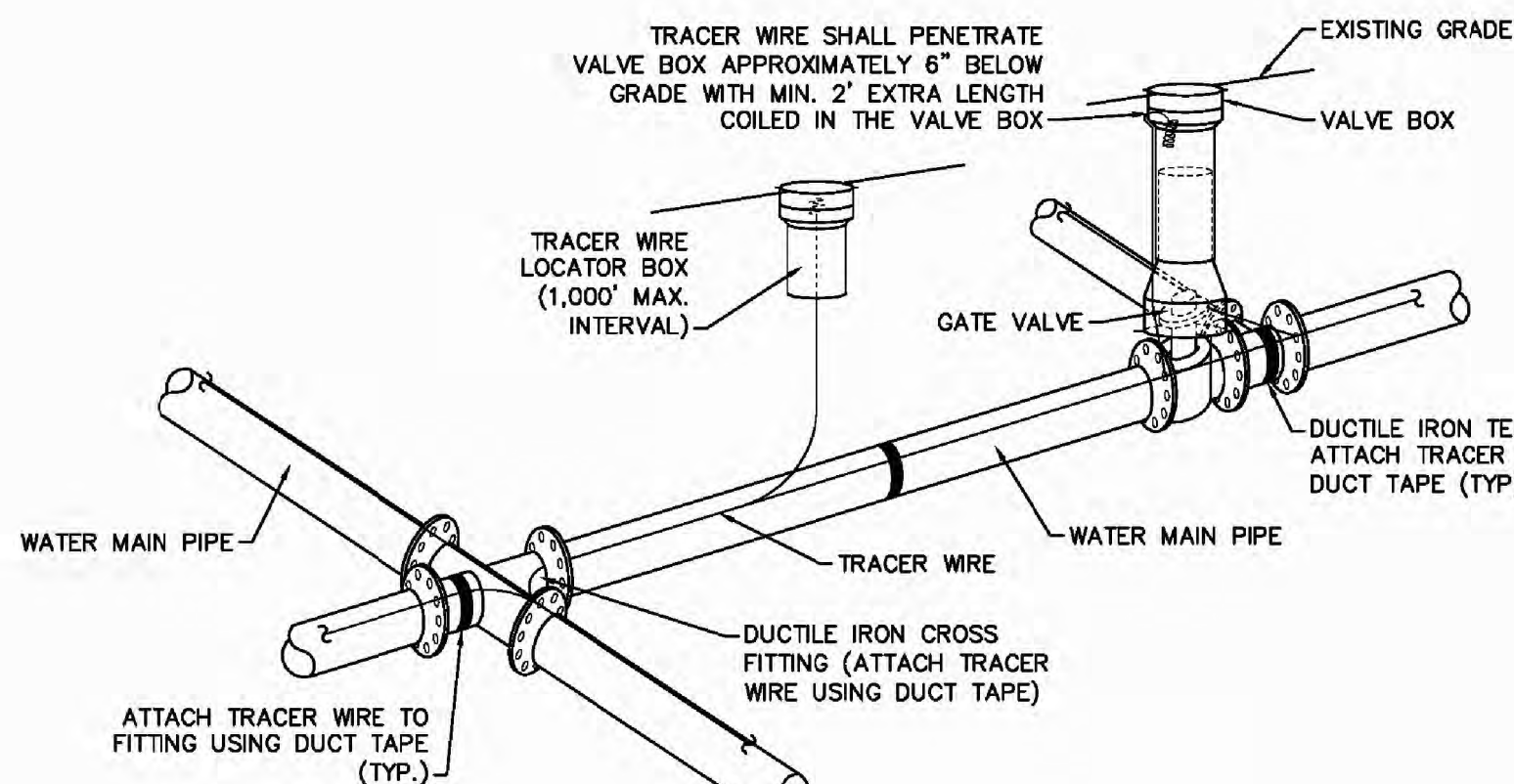
WD-3 VALVE DETAIL
NOT TO SCALE



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"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	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"

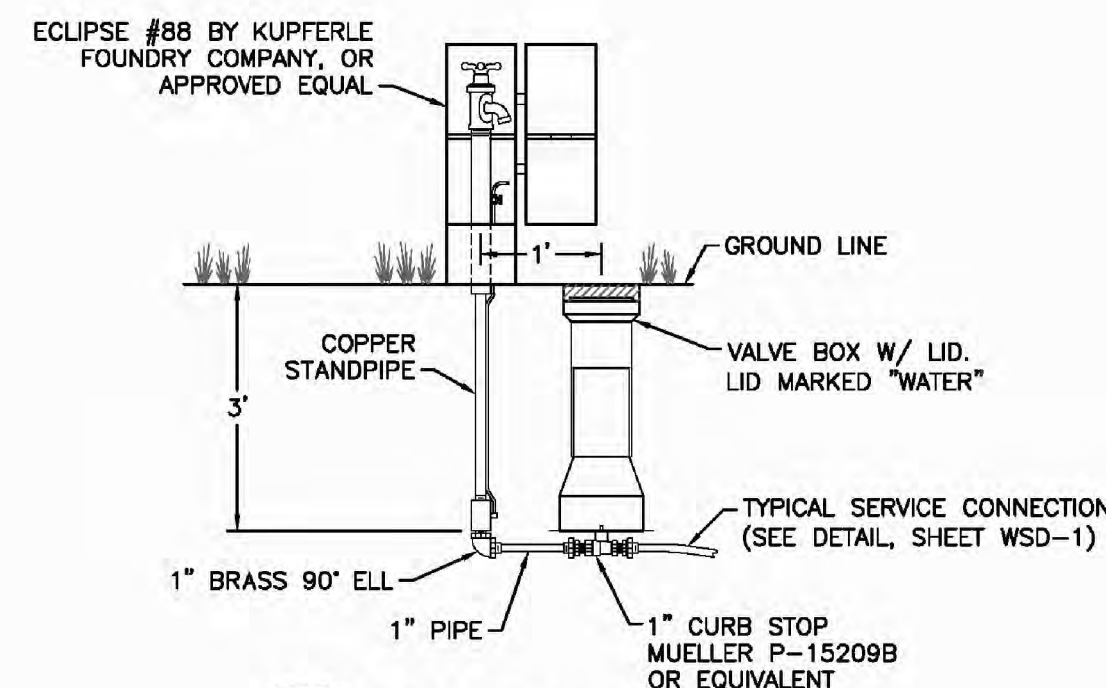
- NOTES:**
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

WD-4 THRUST BLOCK DETAIL
NOT TO SCALE

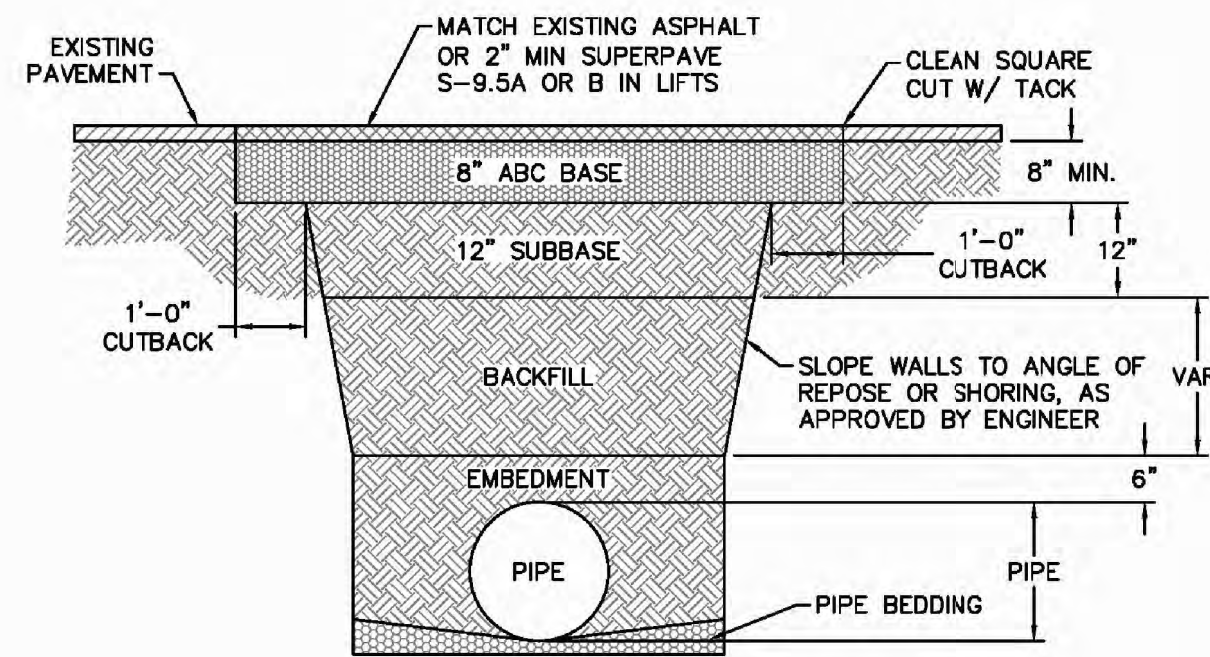


- NOTES:**
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
4. ALL SPLICES IN THE WIRE 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

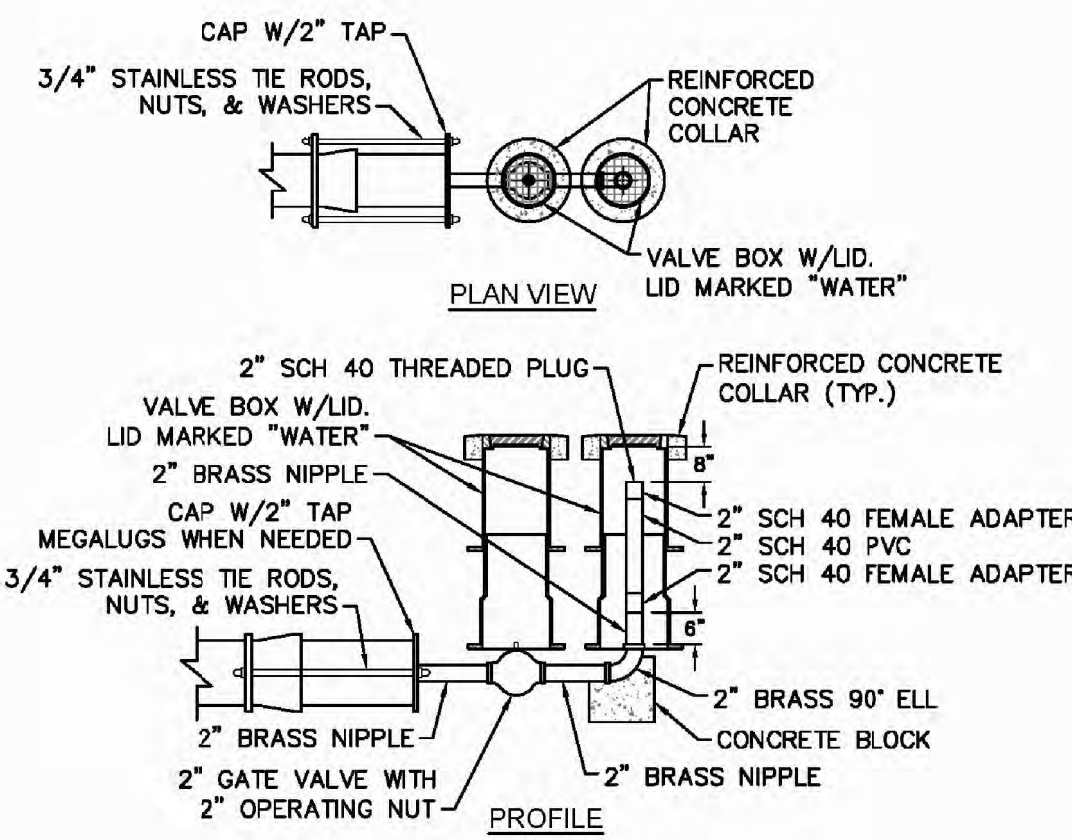


WD-6 SAMPLING STATION
NOT TO SCALE

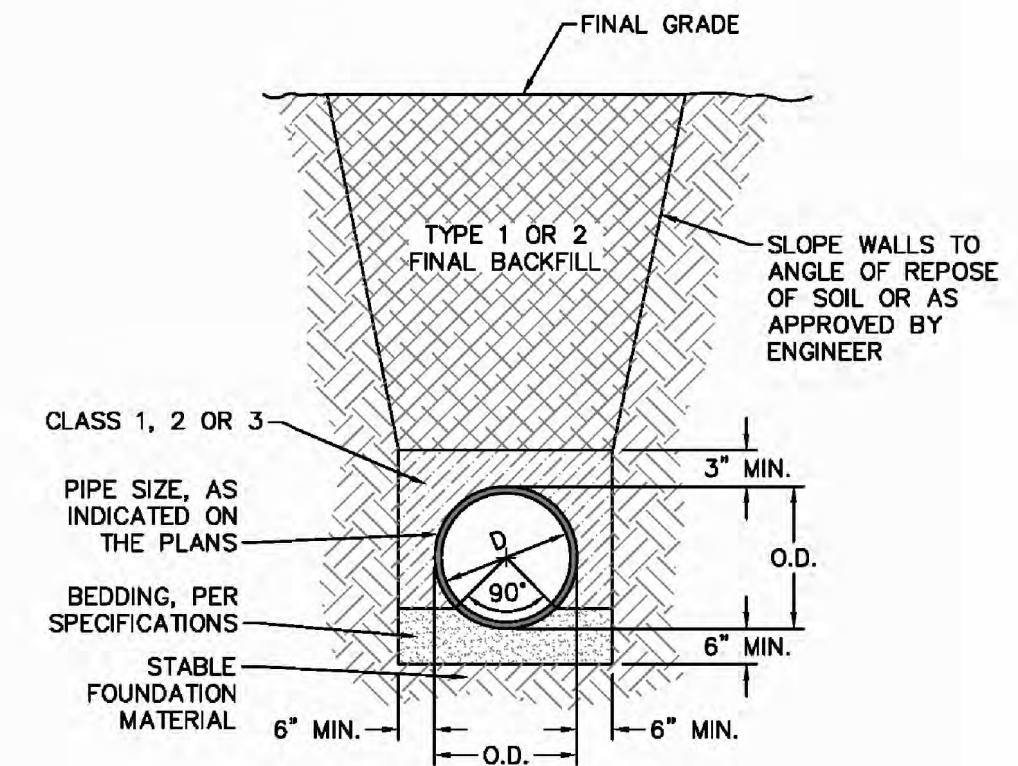


- NOTES:**
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF 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%.

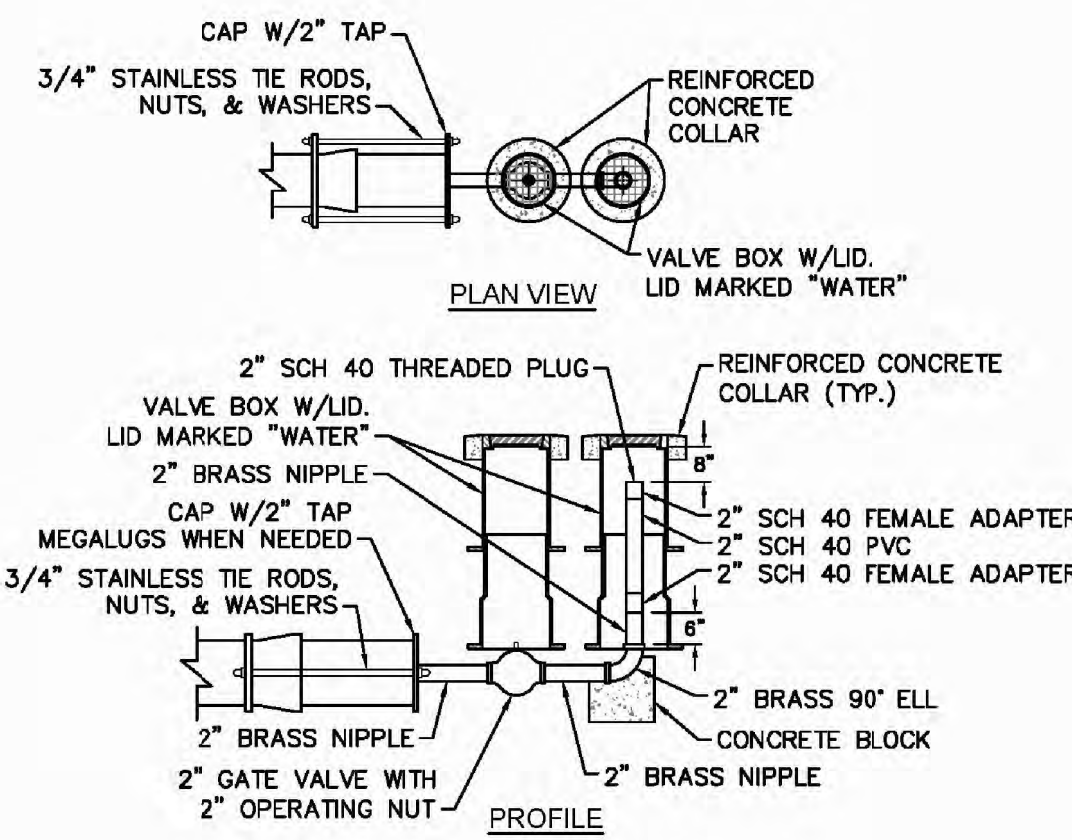
WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



WD-5 2" BLOW-OFF
NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL
NOT TO SCALE



WD-9 DOUBLE SERVICE CONNECTION
NOT TO SCALE

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	Revised Water Main Ditch and Storm Crossing Detail	11/12/13
2	Revised Water Main Ditch and Storm Crossing Detail	06/05/14
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

- 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 CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

CFPUA WATER DISTRIBUTION SYSTEM

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

SHEET NO: **WSD-2**

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

FINAL DESIGN

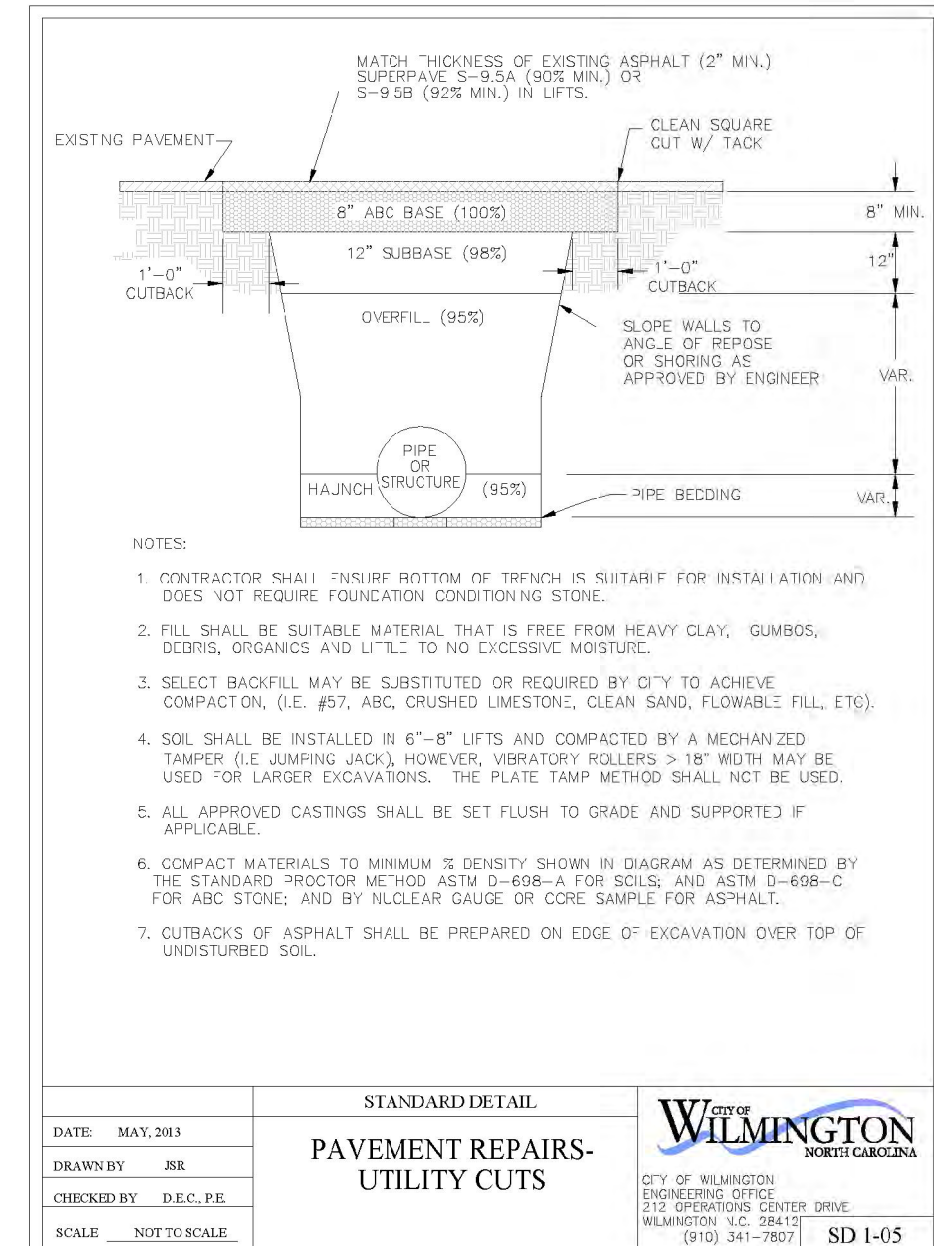
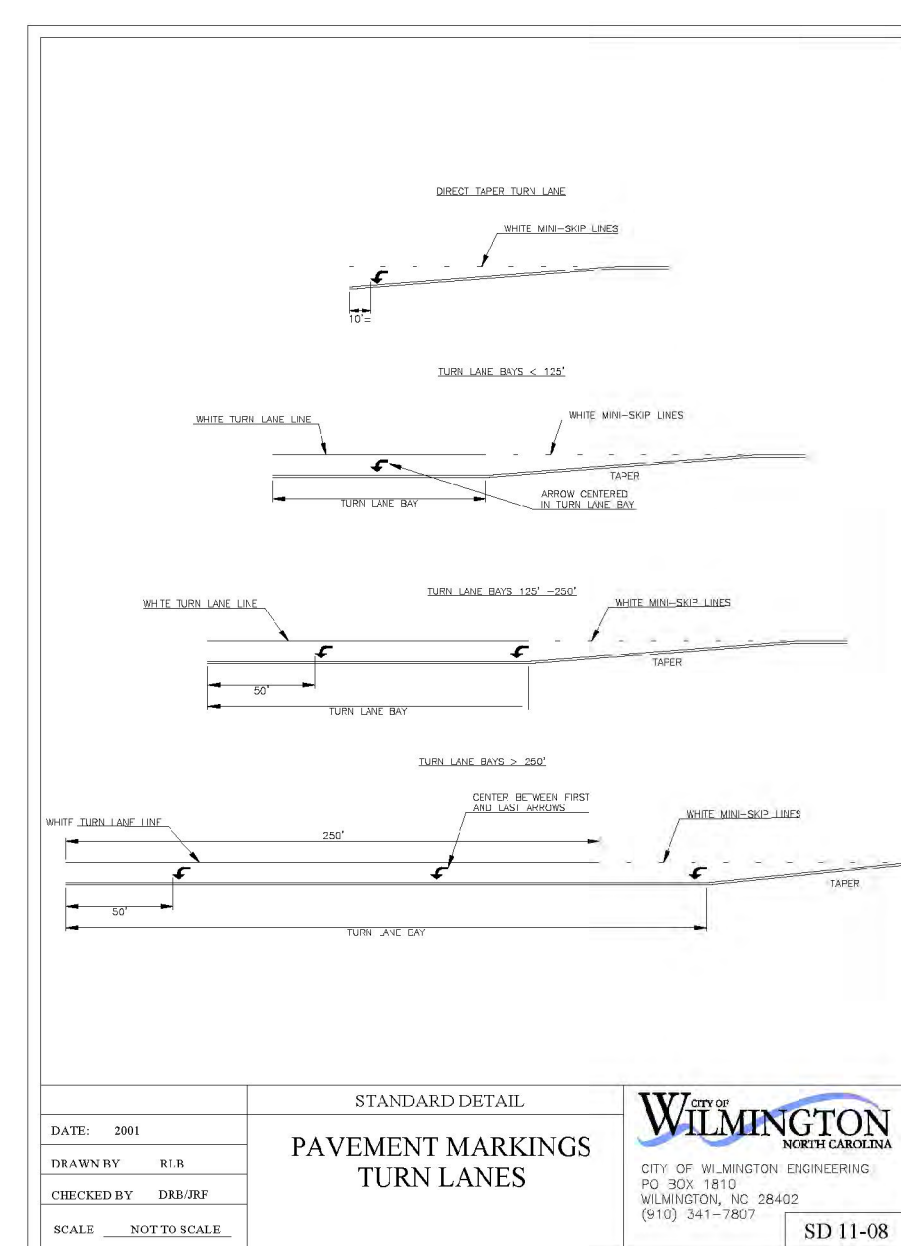
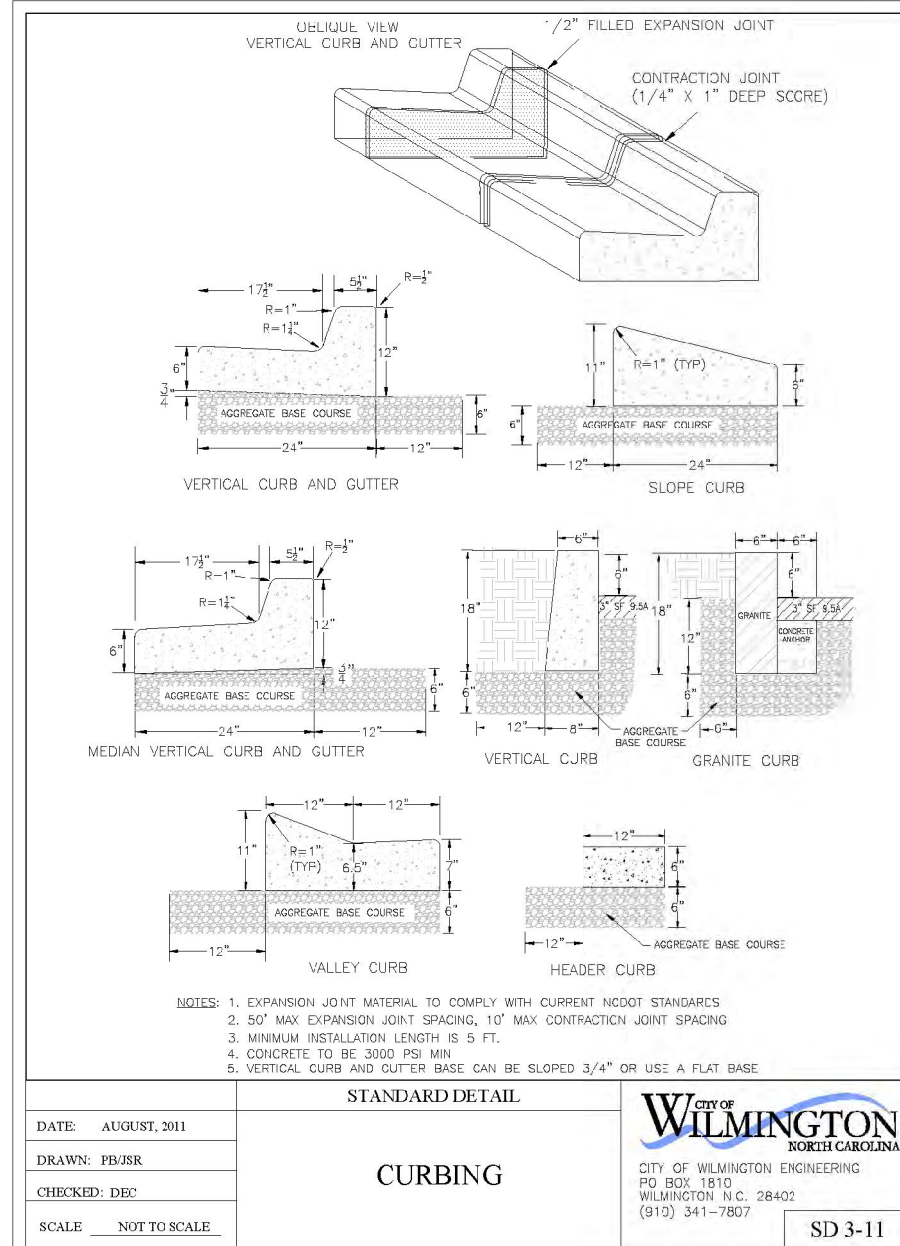
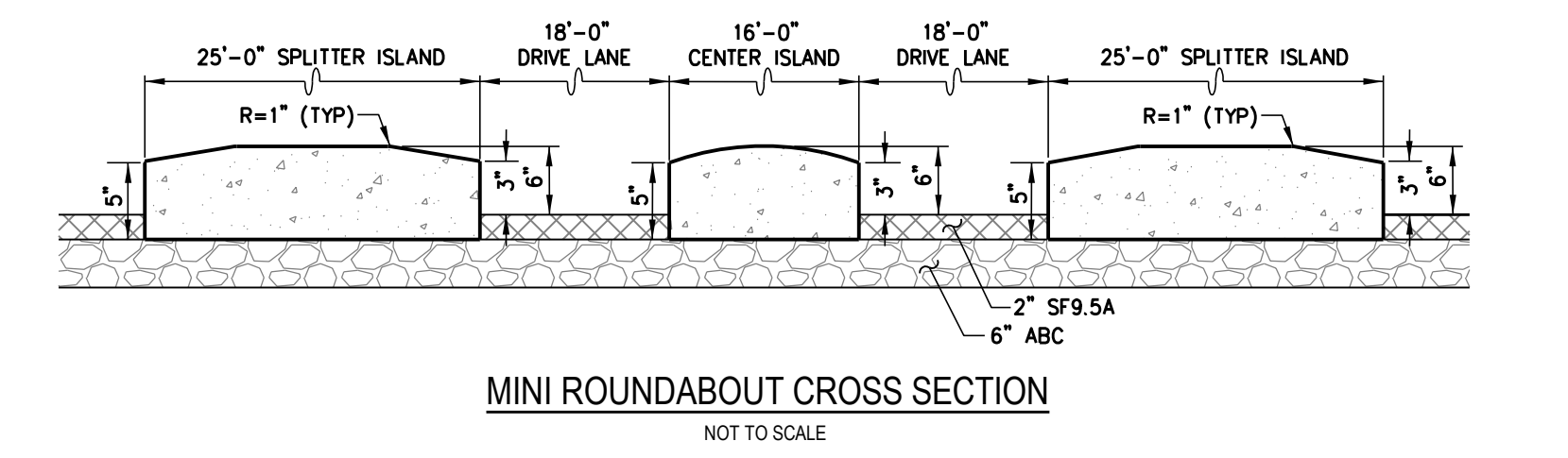
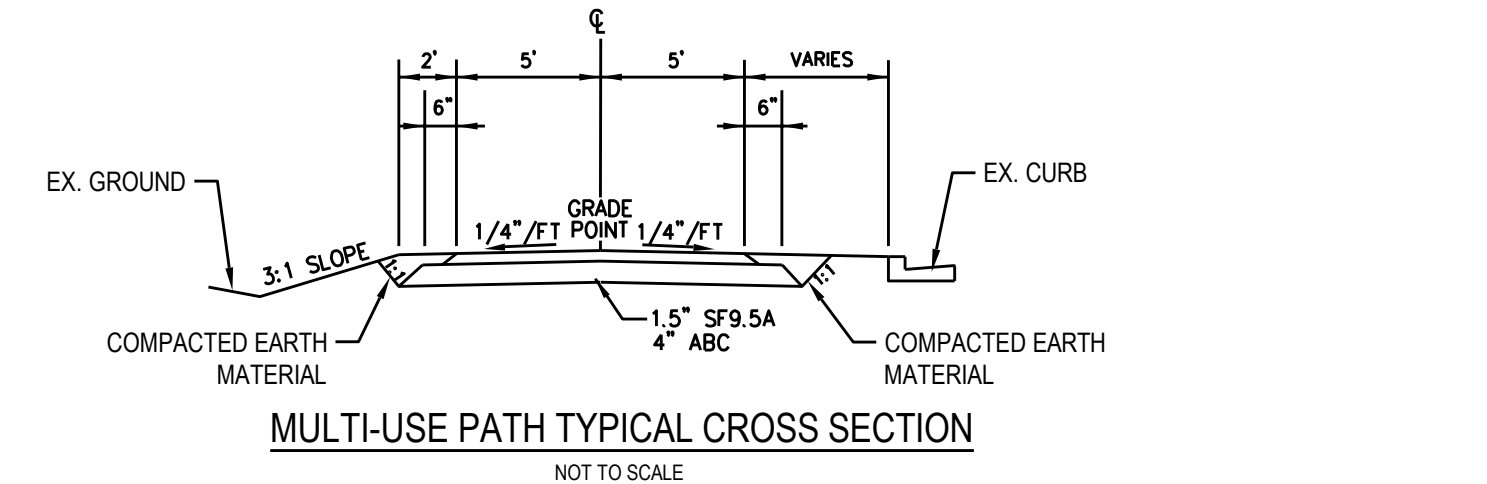
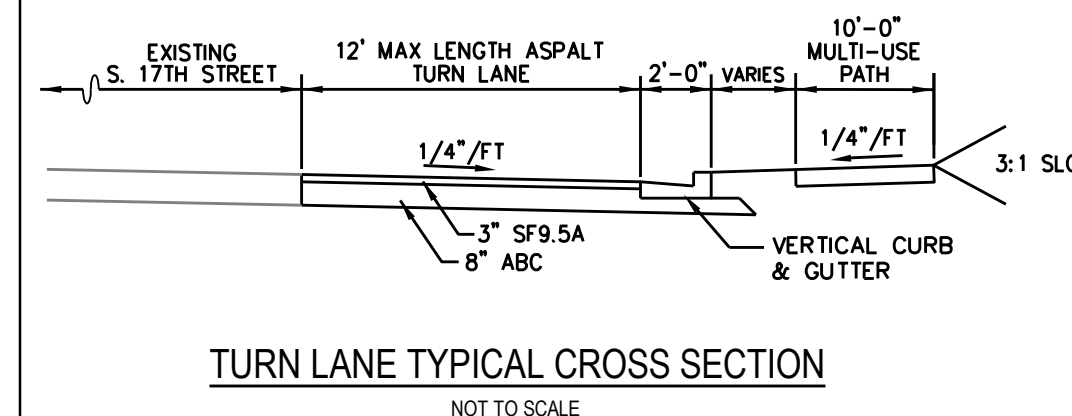
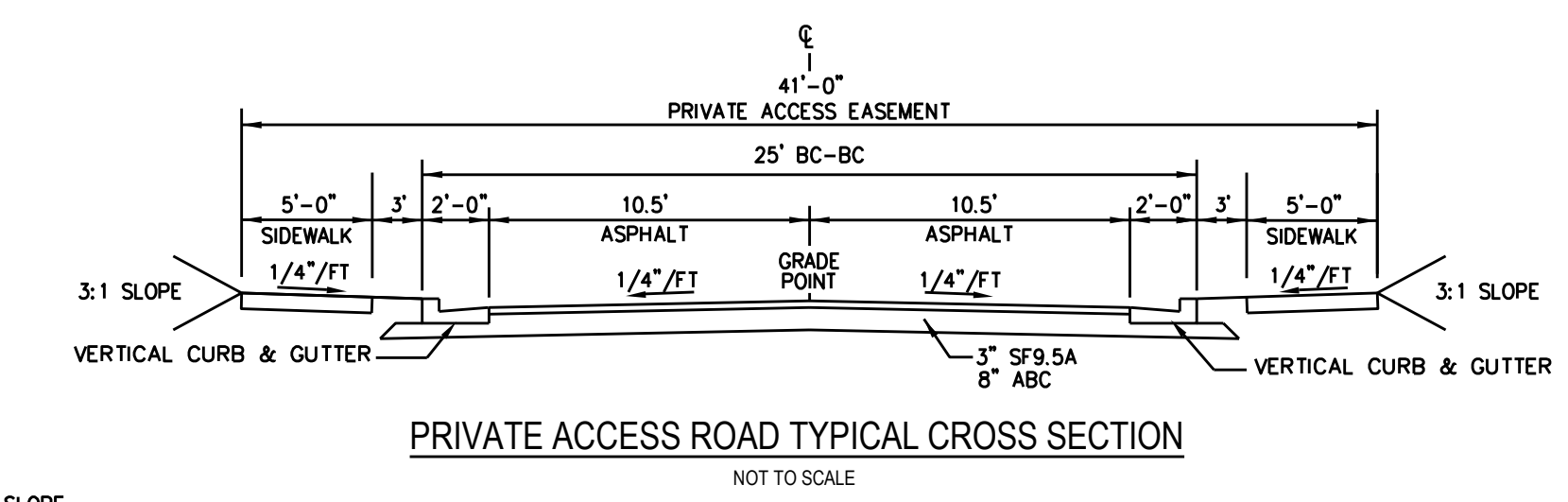
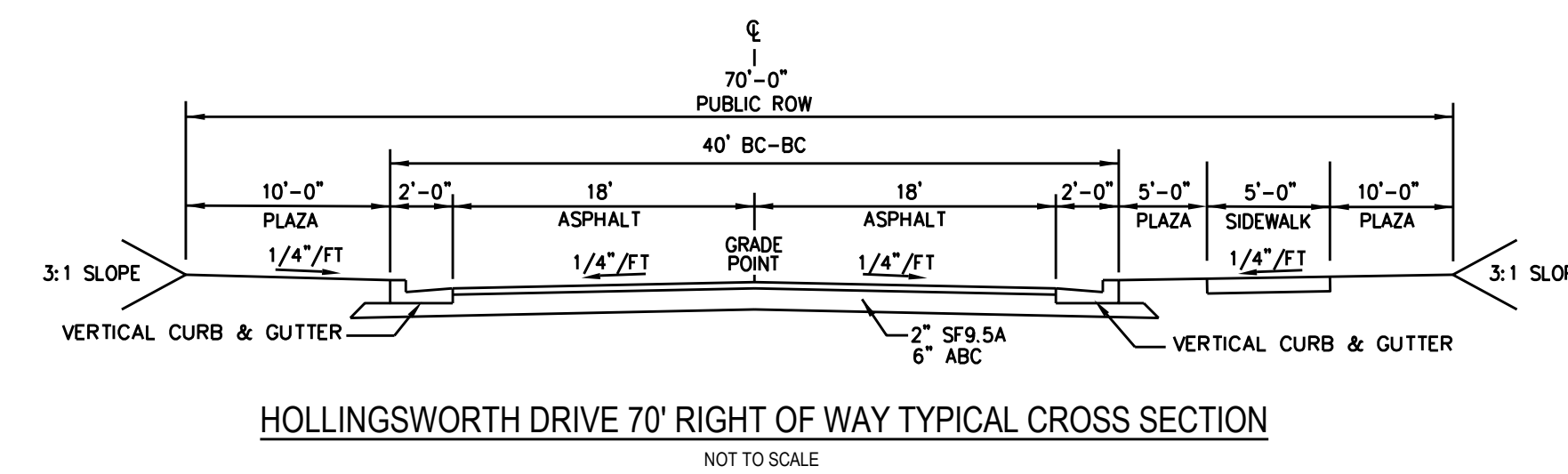
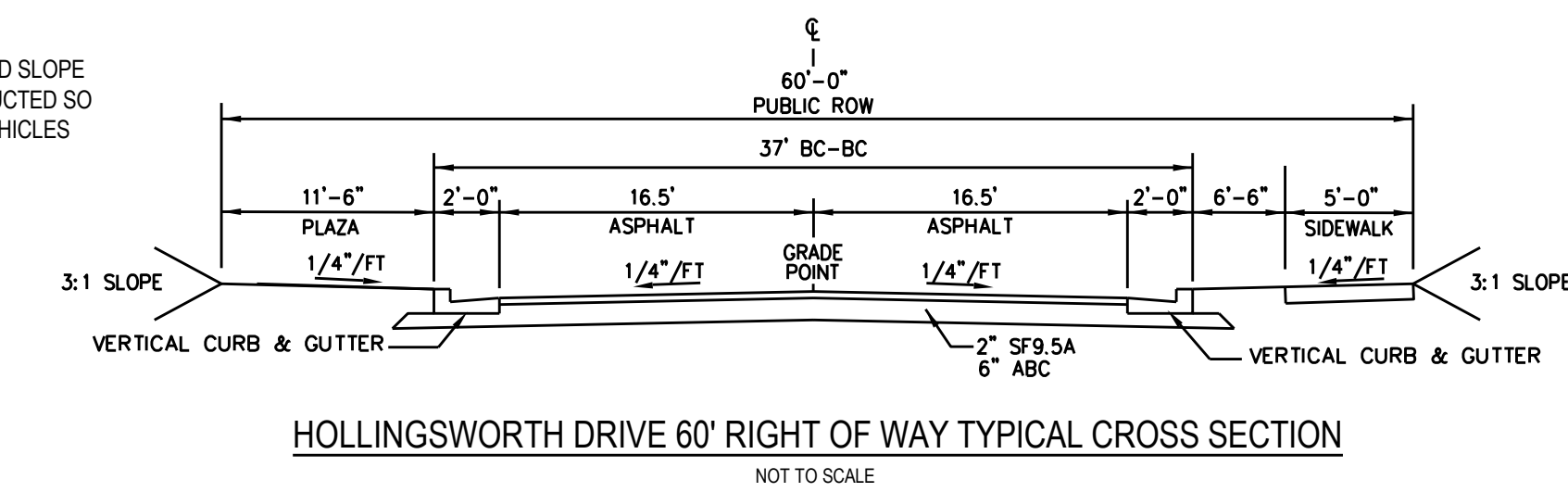
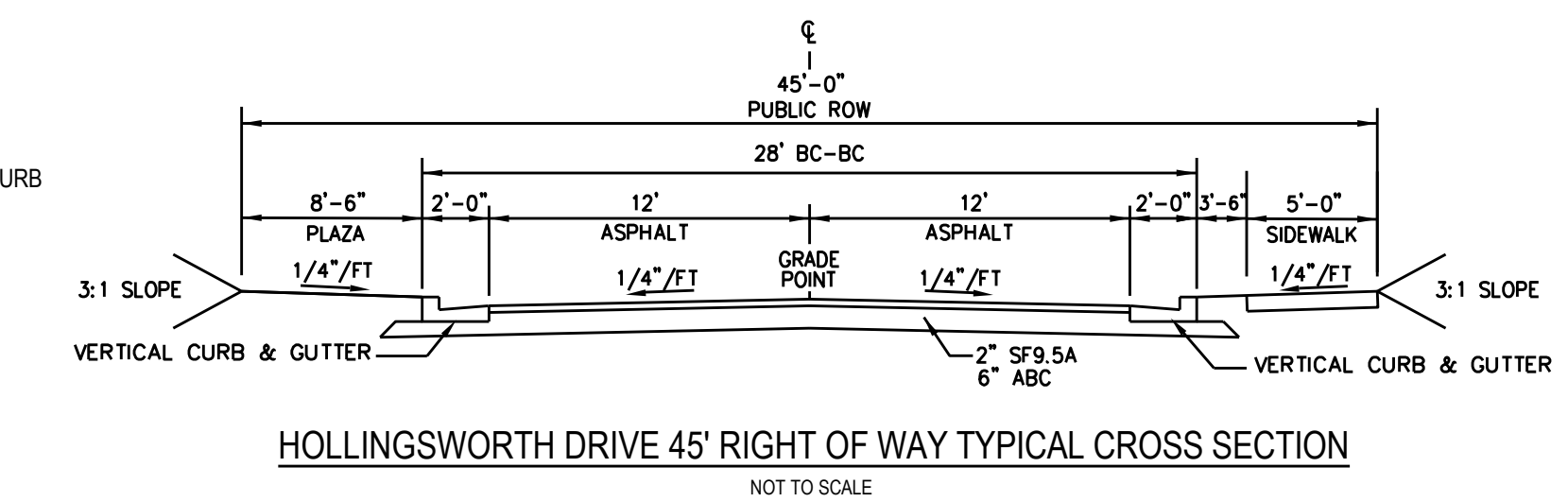
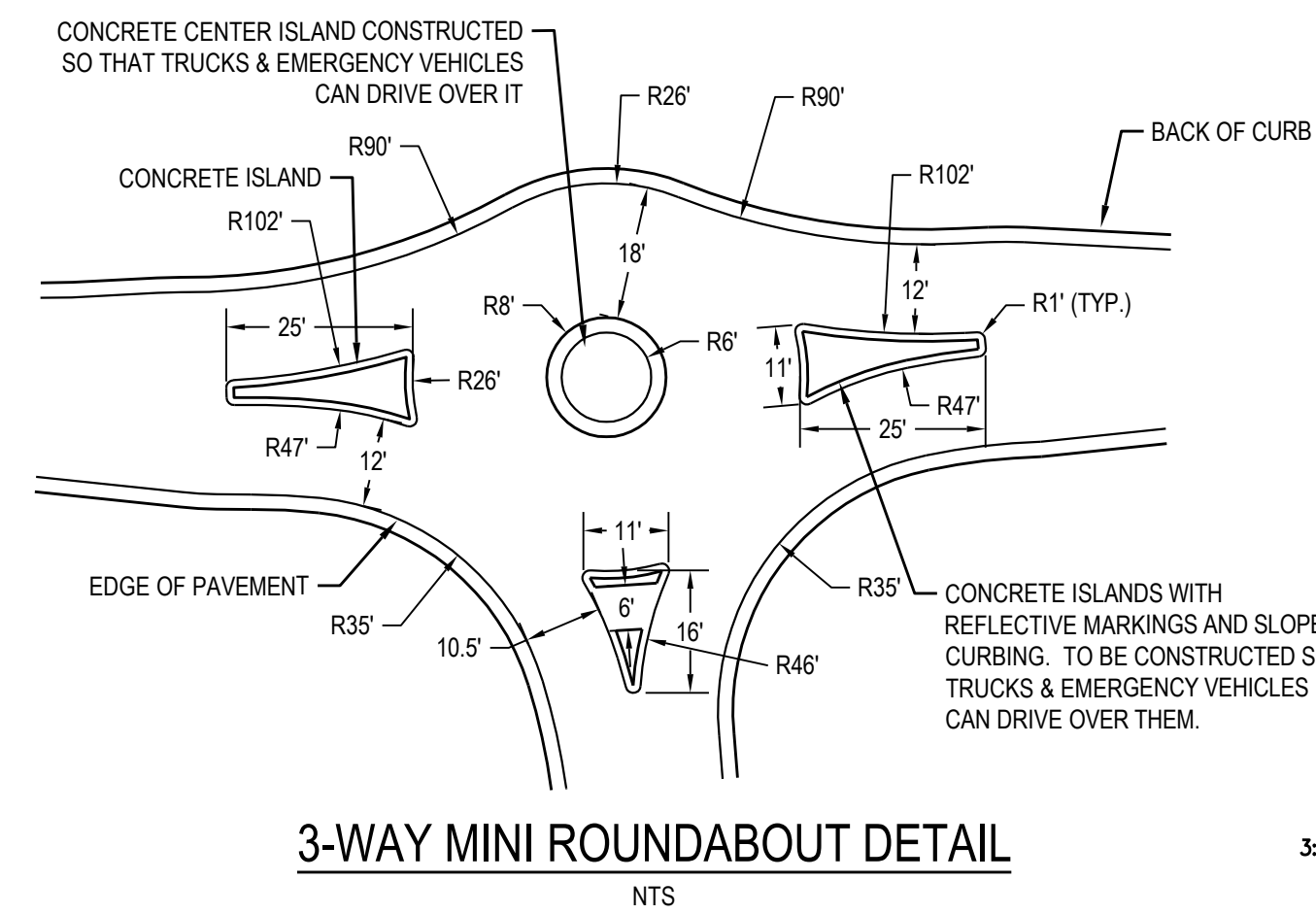
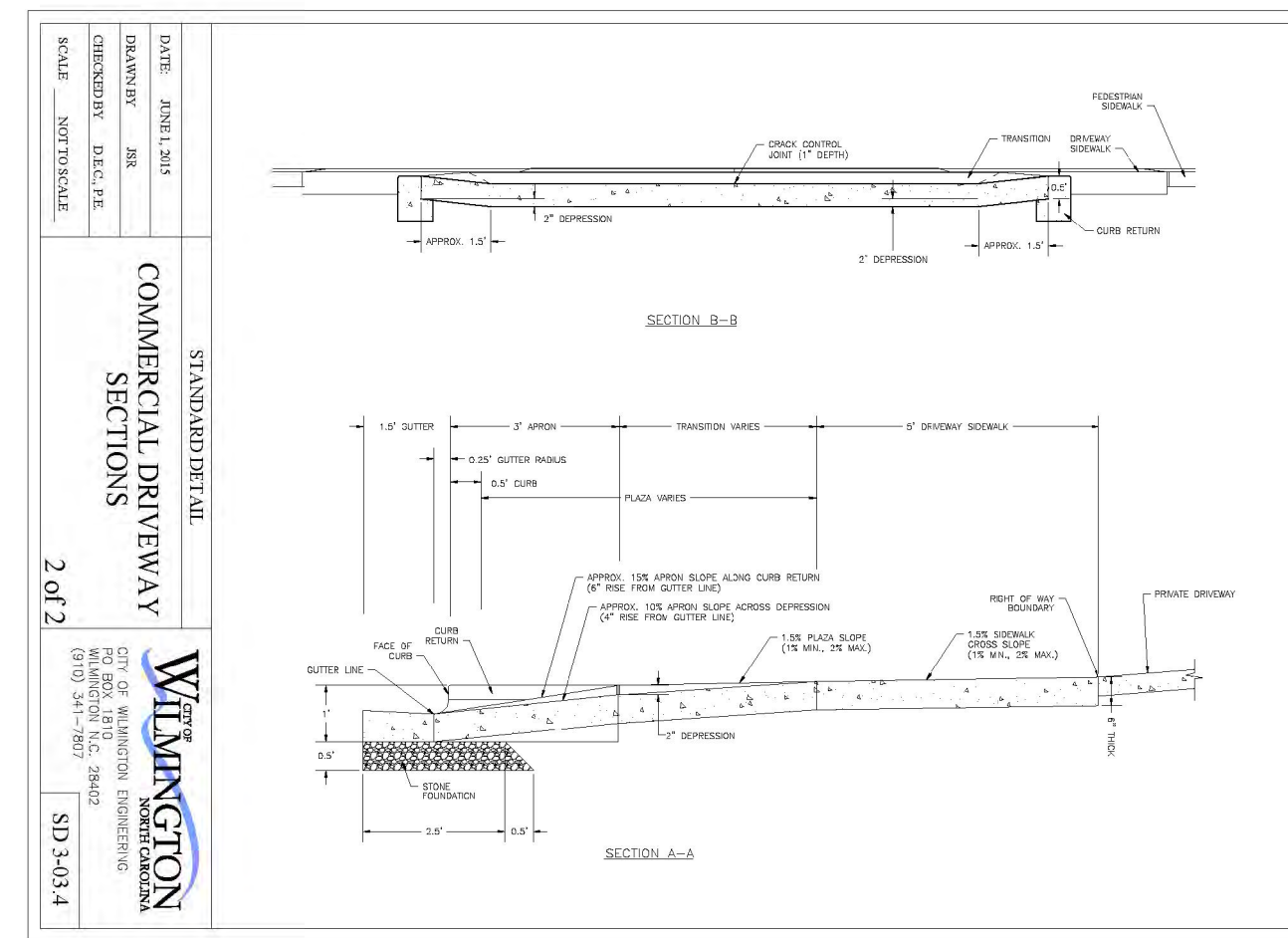
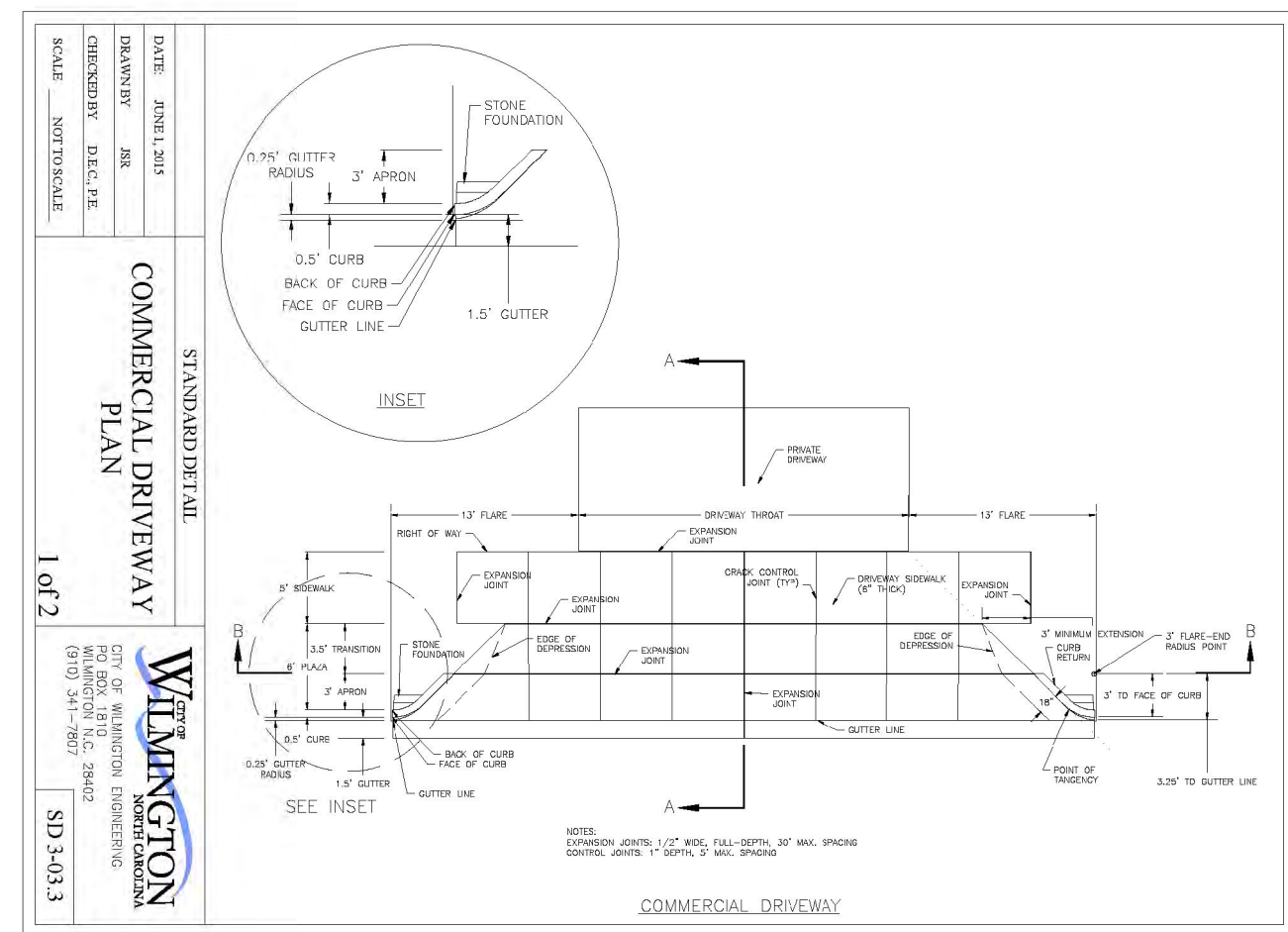


No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JJW	03061193.01

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

WATER DISTRIBUTION SYSTEM DETAILS

WithersRavenel
Engineers | Planners | Surveyors
1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

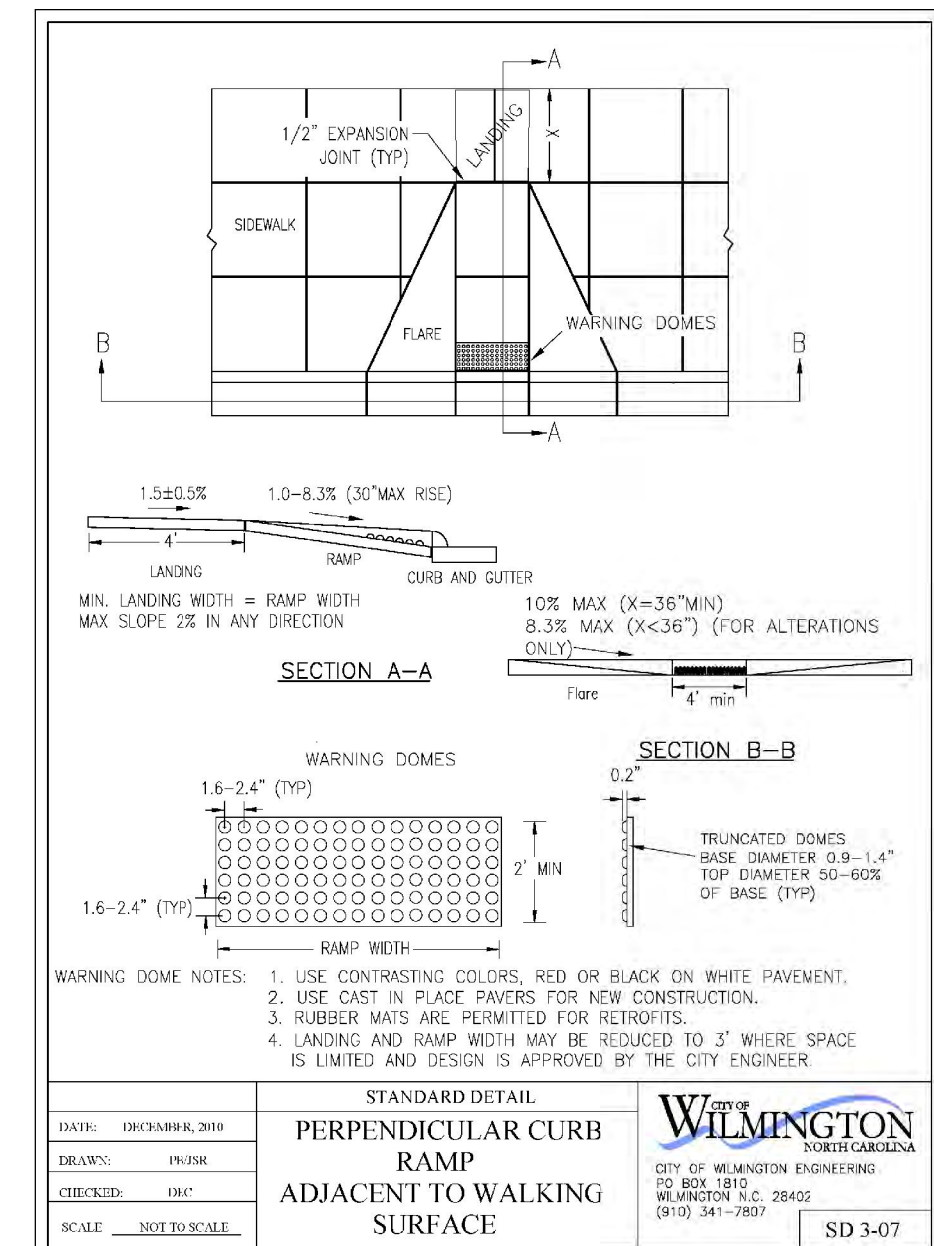
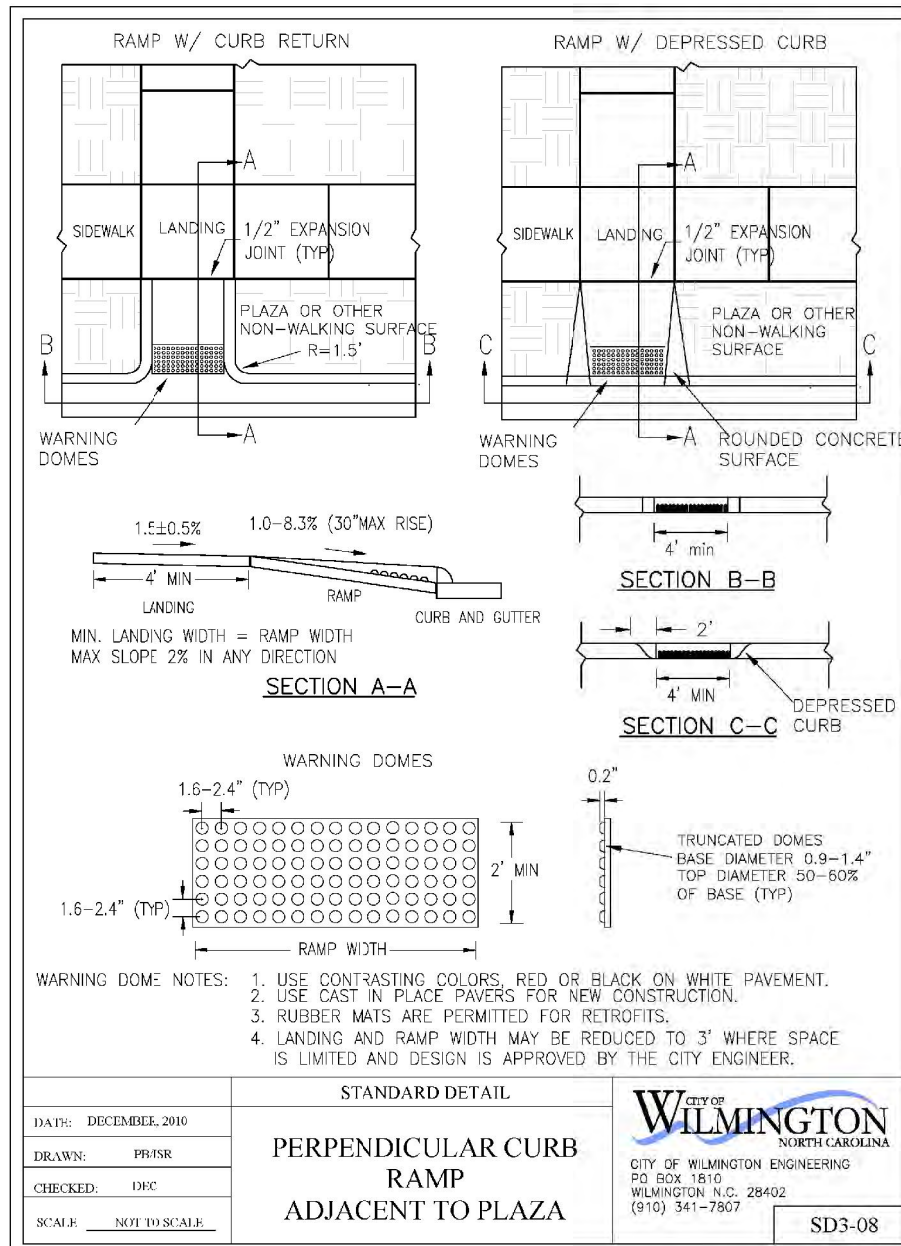
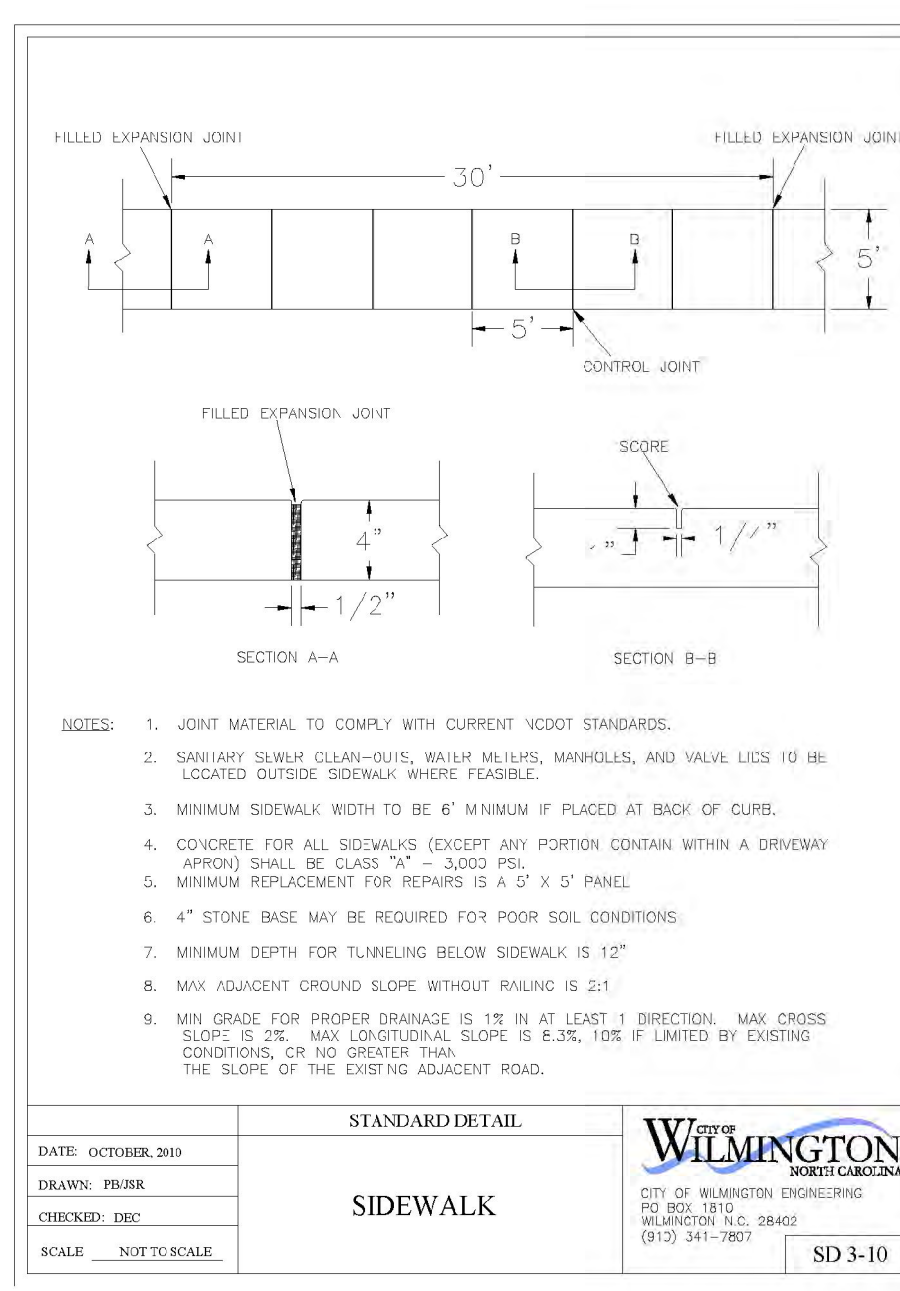


For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

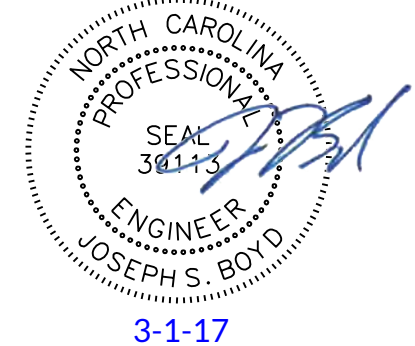
STORMWATER MANAGEMENT PLAN APPROVED
CITY OF WILMINGTON
ENGINEERING DEPARTMENT
DATE _____ PERMIT # _____
SIGNED _____

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

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



FINAL DESIGN

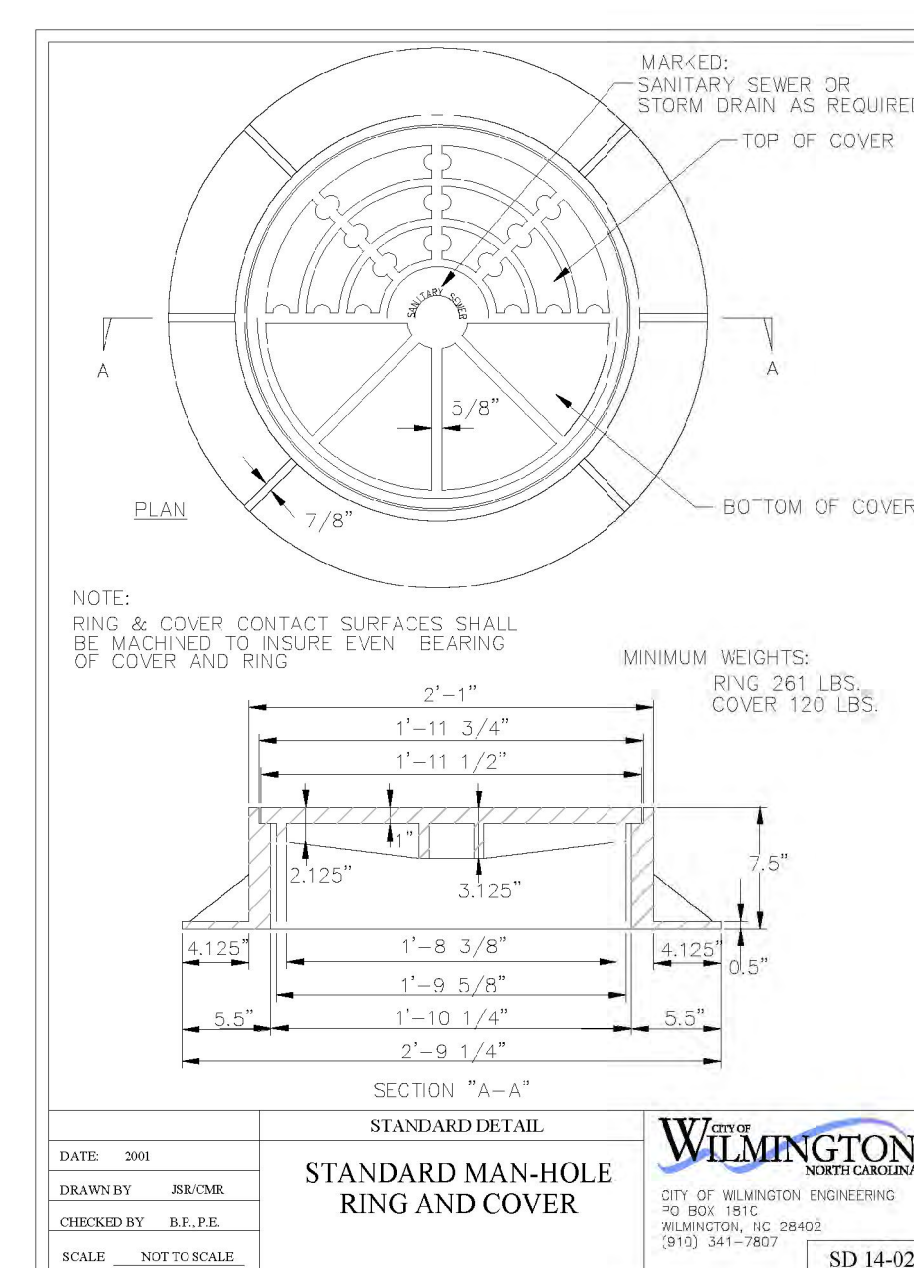
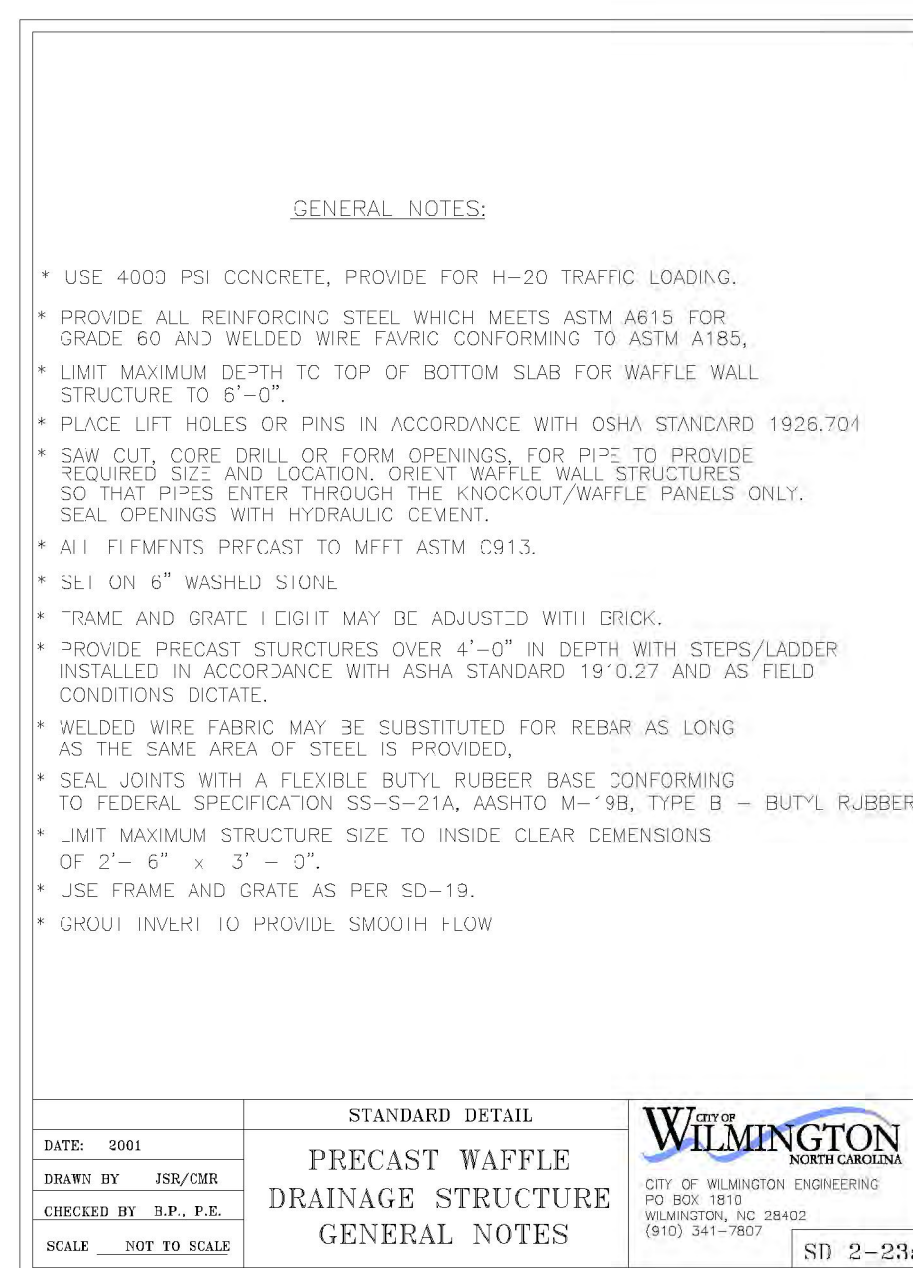
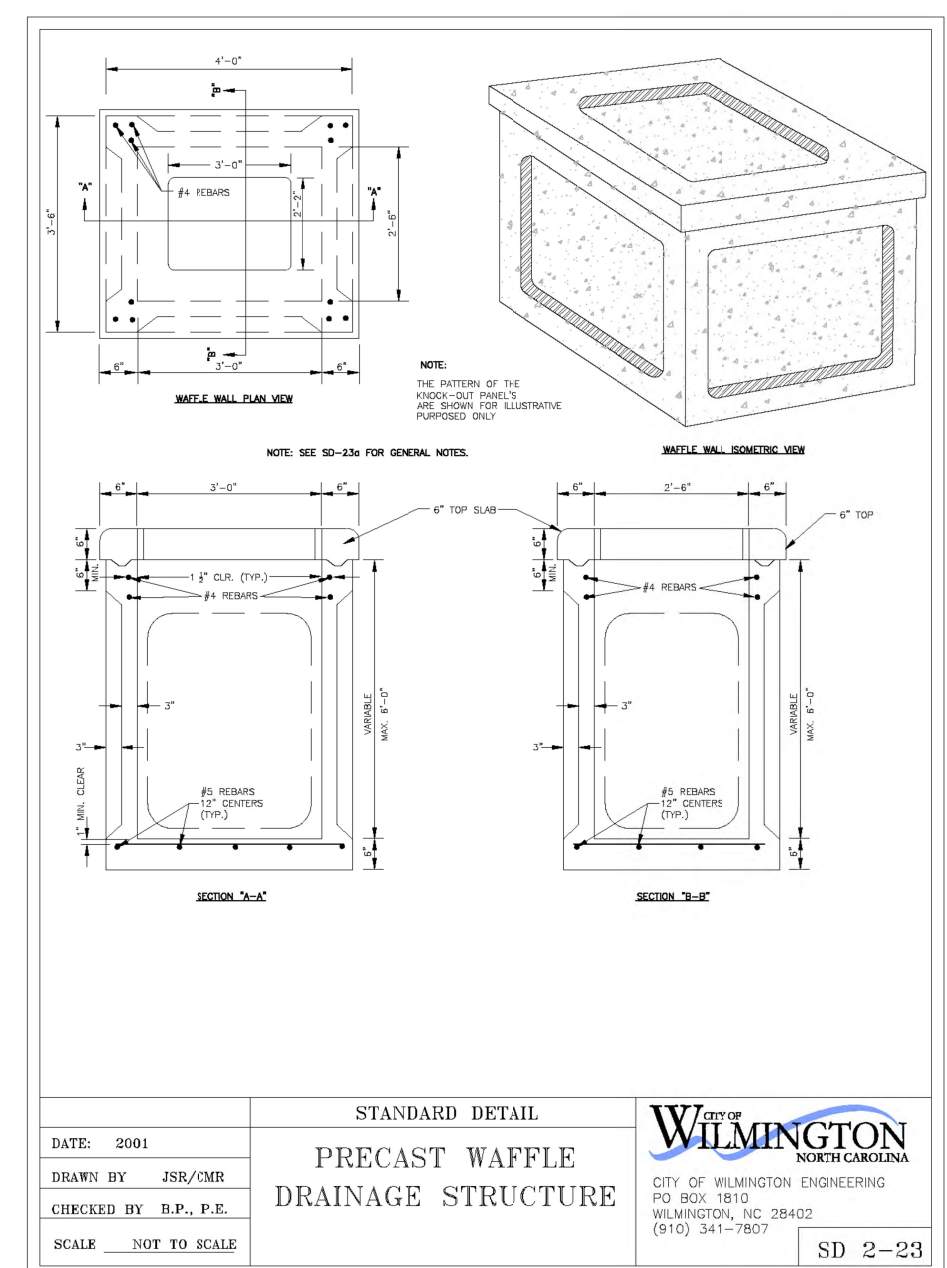
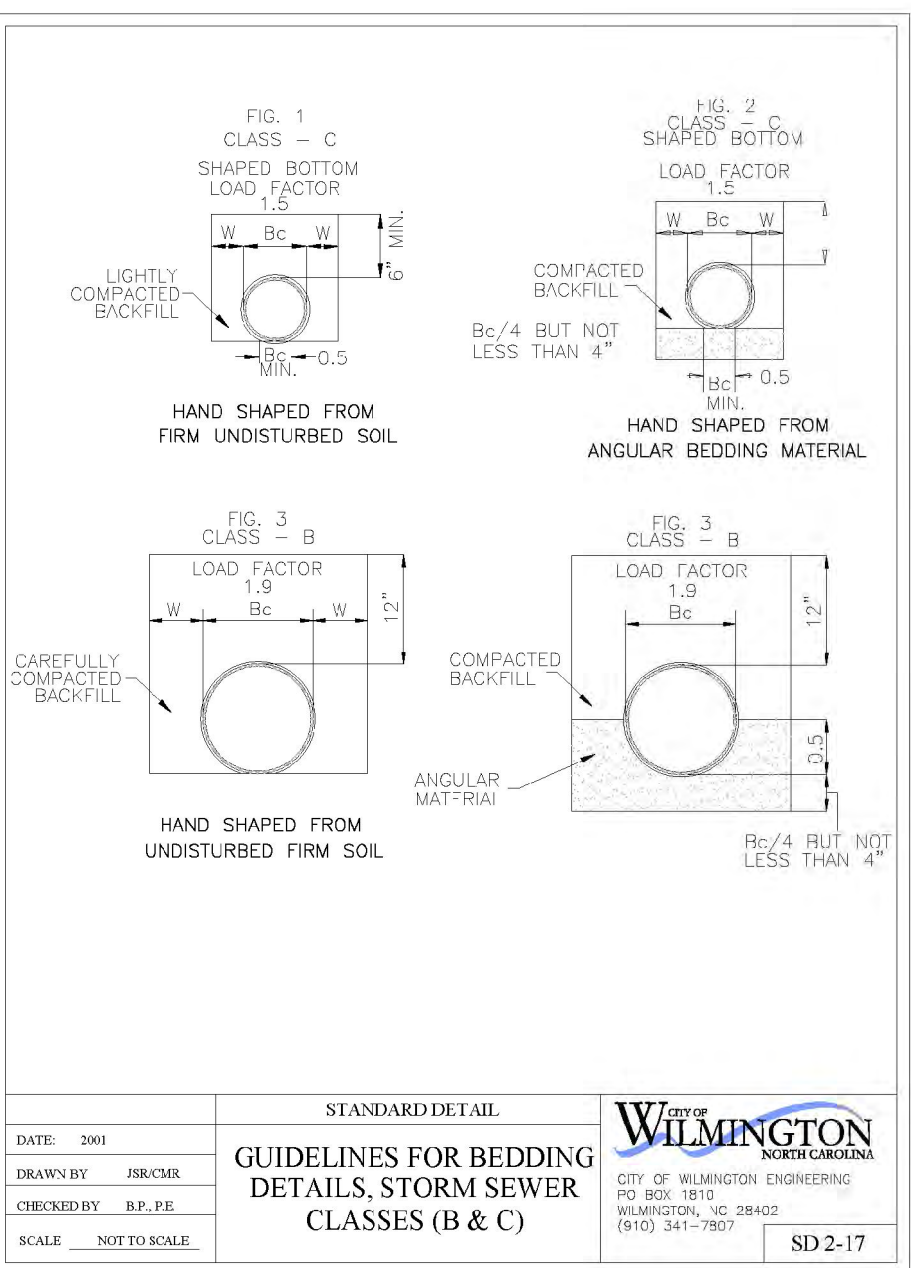
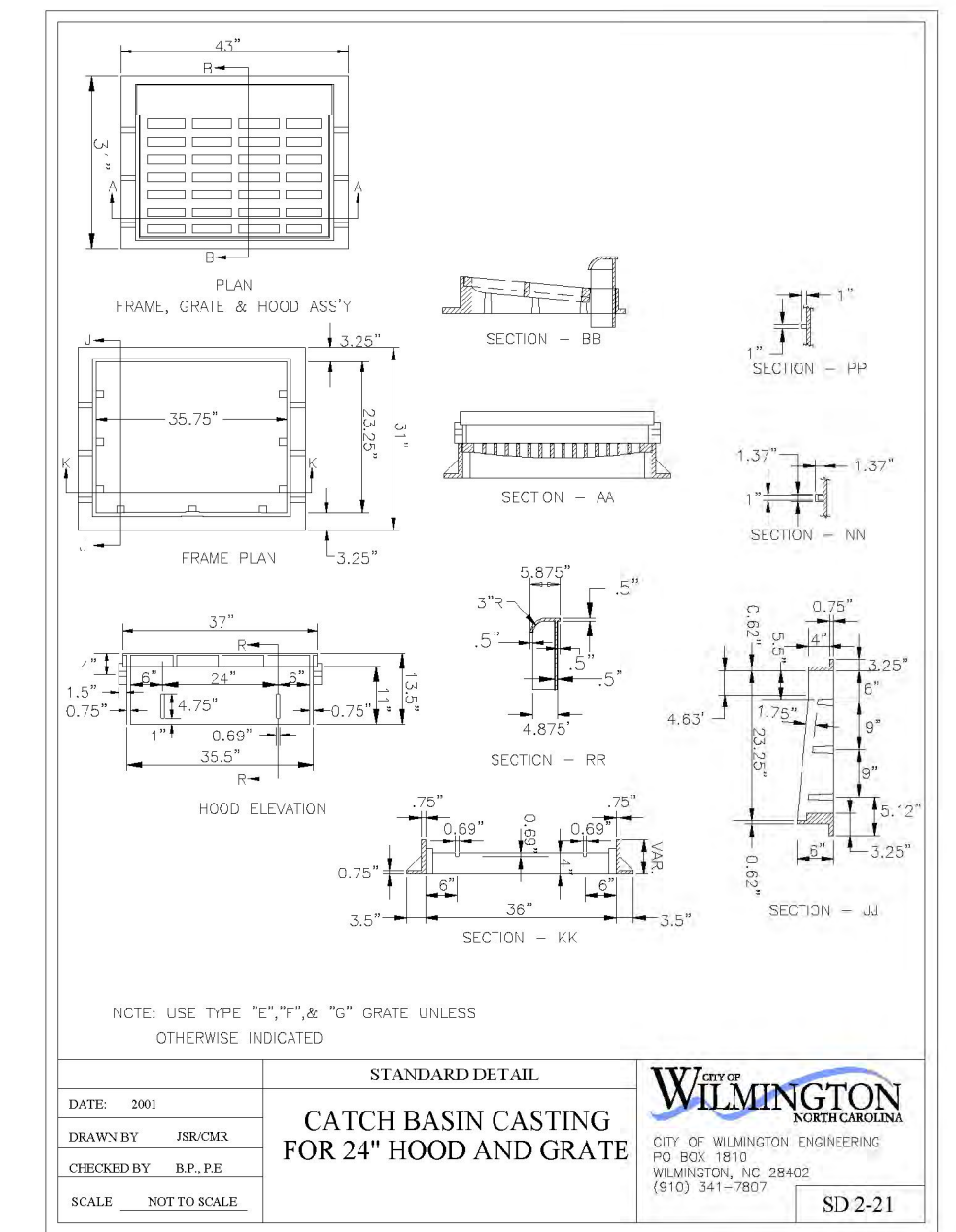
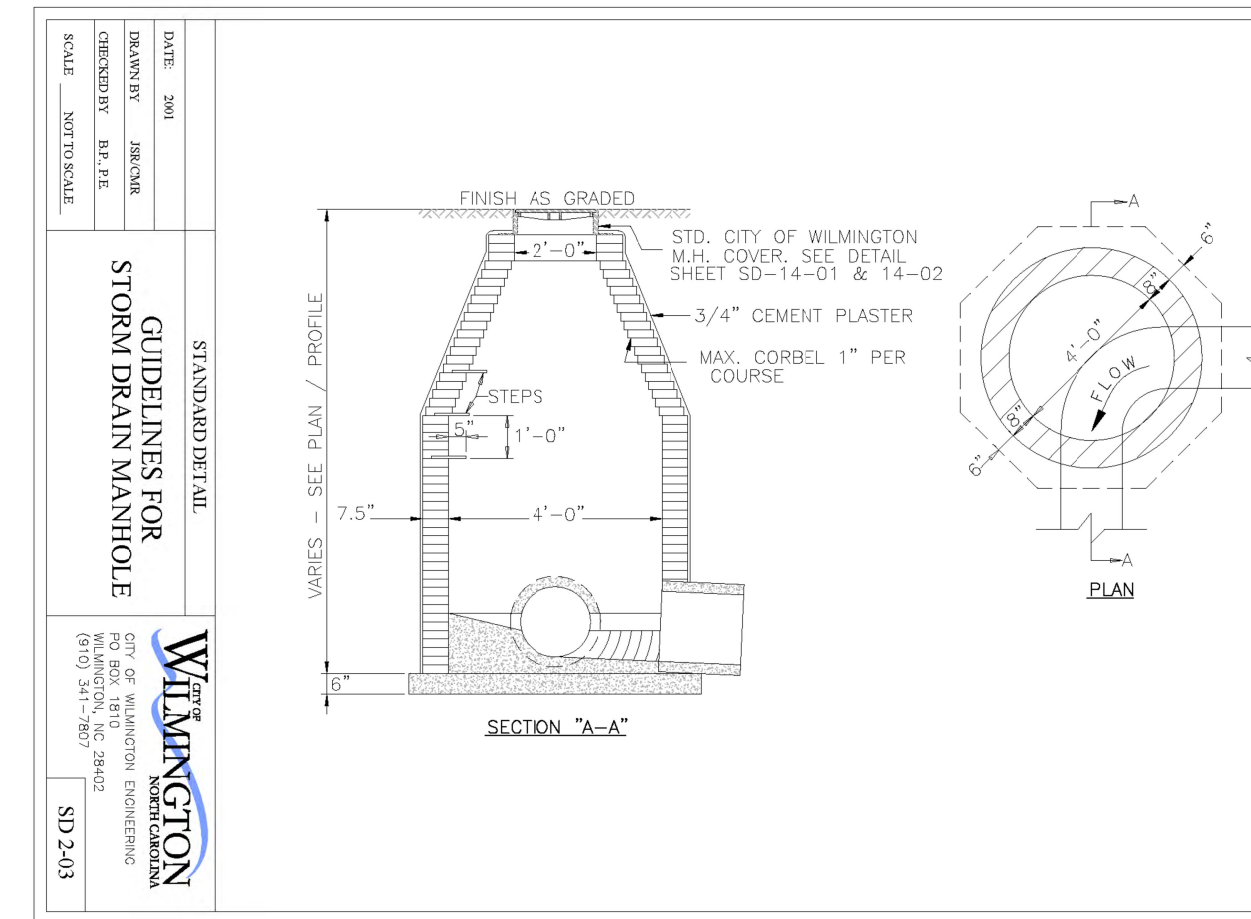
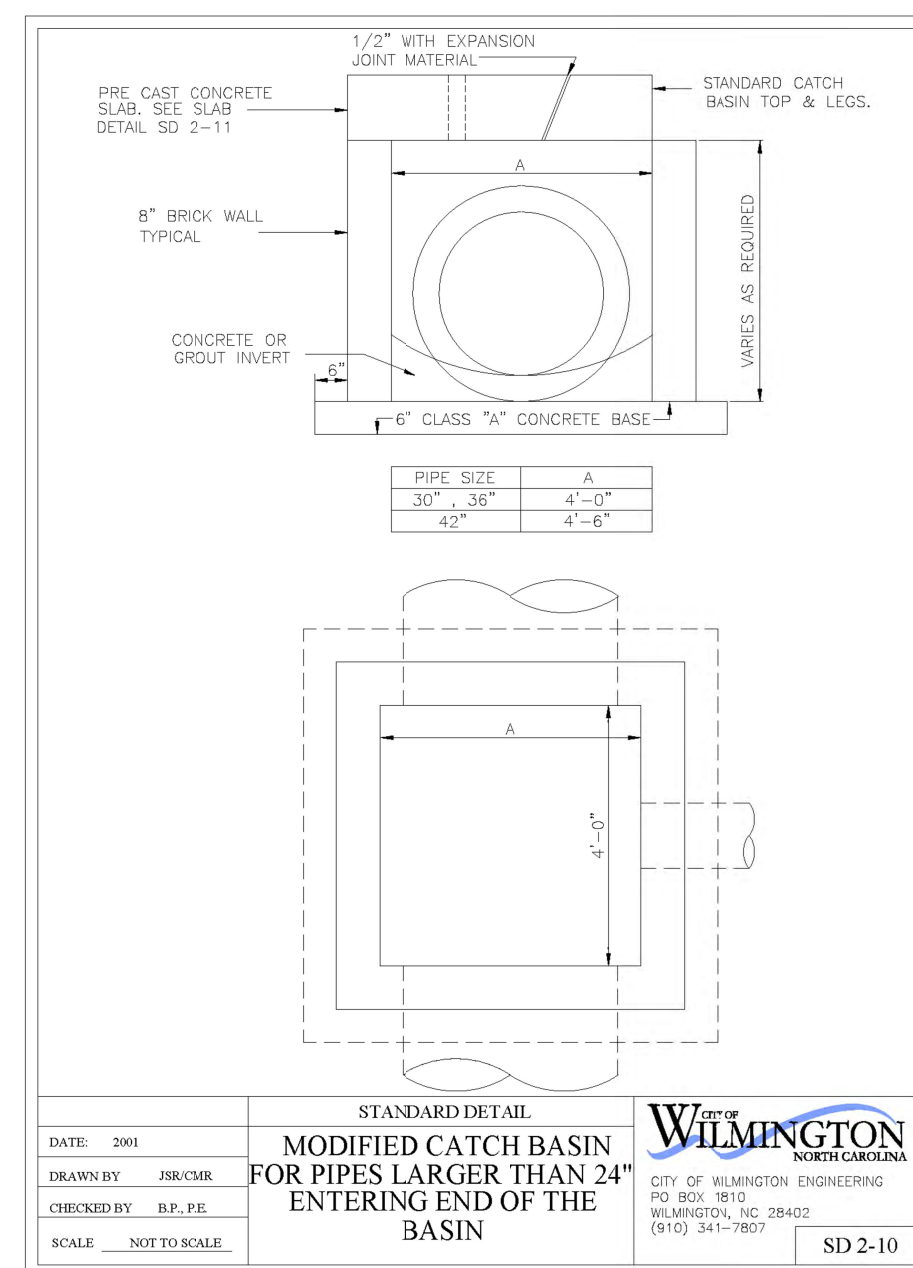
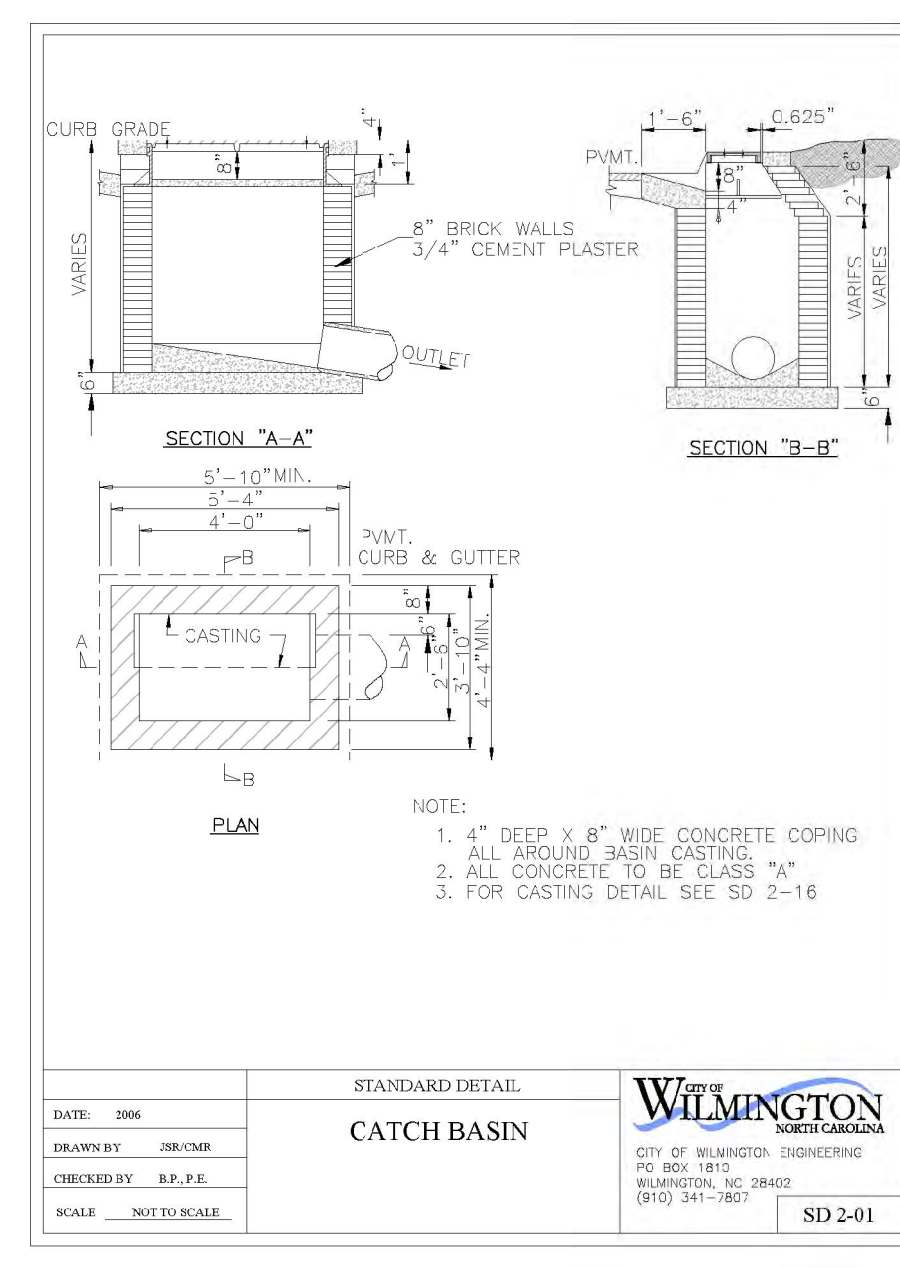
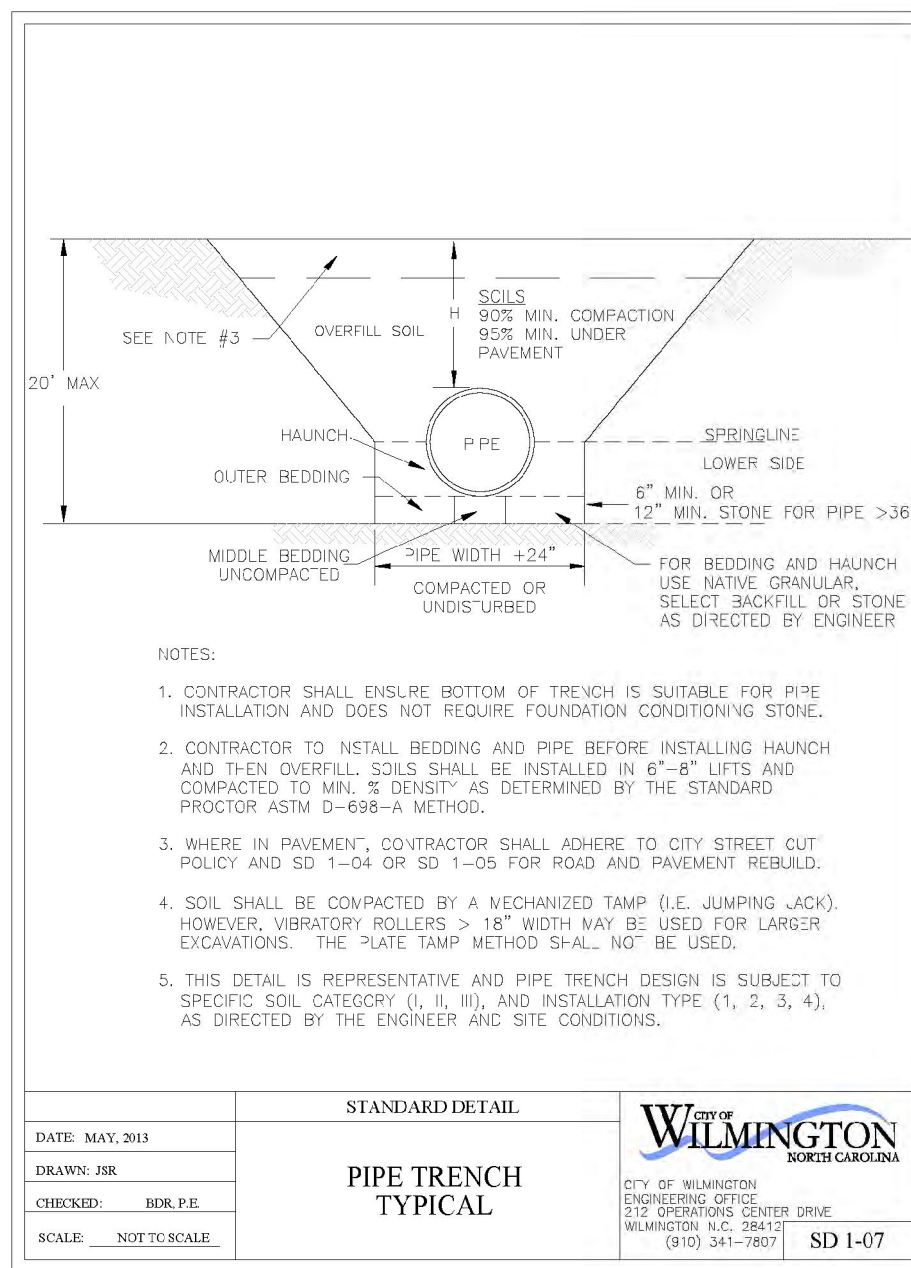


No.	Revision	Date	By	Designer	Scale
1	REVISED 70' ROW STREET TO HAVE 5' PLAZA	9-27-16	JSB	NA	NTS
2	REVISED SIDEWALK & ADDED MUP DETAIL PER COW SW	10-13-16	JSB		
3	REVISED PER CLIENT COMMENTS	11-16-16	JSB		
4	REVISED TRAFFIC CIRCLE PER COW COMMENTS	2-6-17	JSB		
5	ADDED TURN LANE CROSS SECTION PER COW COMMENTS	2-17-17	JSB		

ARBOR COMMONS
New Hanover County
North Carolina

ROADWAY DETAILS

WithersRavenel
Engineers | Planners | Surveyors
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | Tel: 910.256.9277 | License #: C-0832 | www.withersravenel.com
Sheet No. **D-6**



FLARED END SECTION OUTLET DIMENSION TABLE

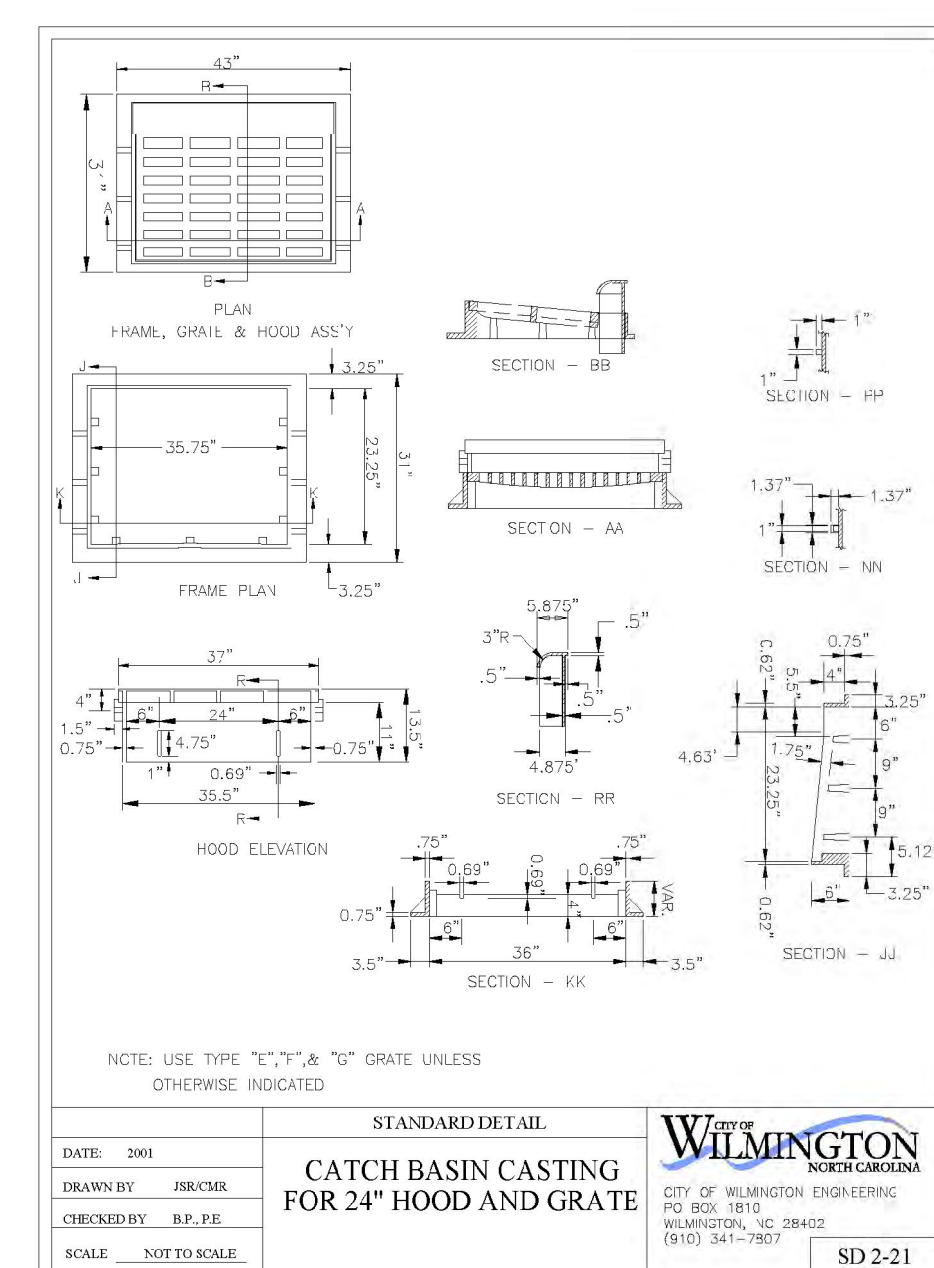
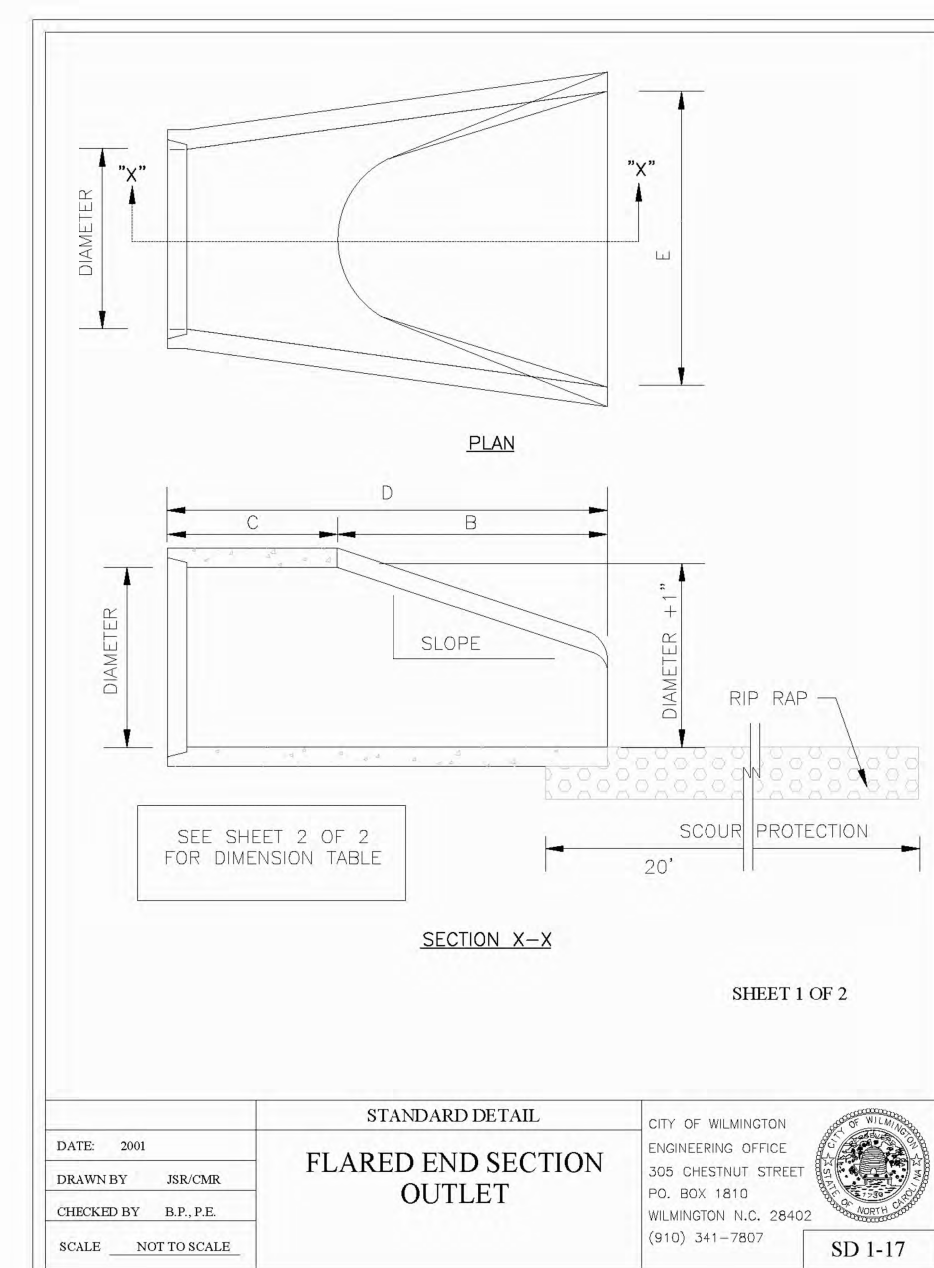
NOTE: 1. STRUCTURAL DESIGN OF END SECTION SHALL CONFORM WITH THAT OF STANDARD REINFORCED CONCRETE.

PIPE DIAMETER	WALL THICKNESS	S OFF	R	C	D	F	JNET HEIGHT		
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	1/2	73	1/2	54	2130
30	3 1/2	3:1	54	19	3/4	73	3/4	60	2380
33	3 3/4	3:1	60	36	96	66	3870		
36	4	3:1	63	34	3/4	87	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	80	39	99	96	11180		
72	7	2:1	78	21	99	108	13980		

MINIMUM WEIGHTS:
 RING 261 LBS.
 COVER 120 LBS.

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

SD 1-17



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

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.



FINAL DESIGN

3-1-17

No.	Revision	Date	By	Designer	Scale
1	ADD STORM INTERFERENCE MANHOLE DETAIL	10-19-16	JSB	NA	NTS
				Drawn By	Date
				JSB	6/30/16
				Checked By	Job No.
				JJW	03061193.01

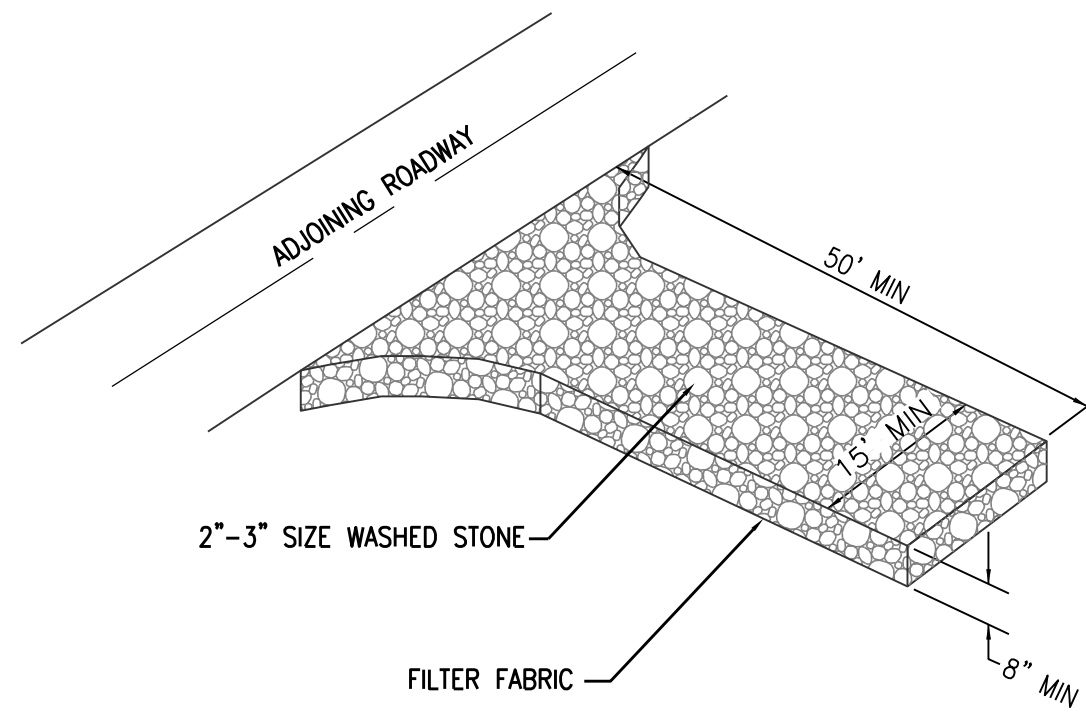
ARBOR COMMONS
 New Hanover County
 North Carolina

STORMDRAIN DETAILS

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

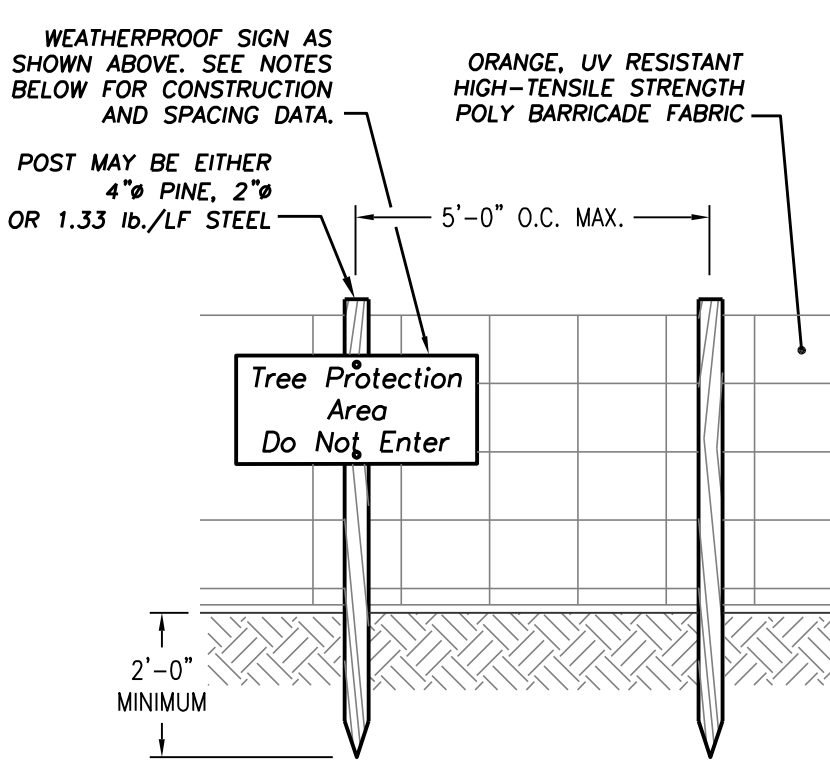
Sheet No.
 D-7

- 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 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

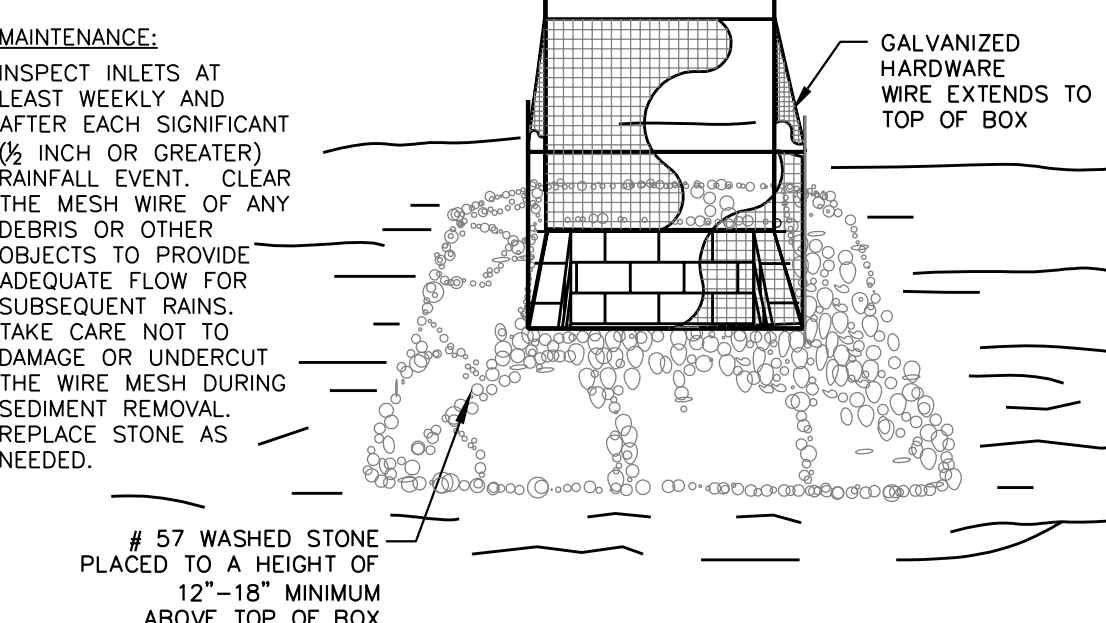
NTS



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.

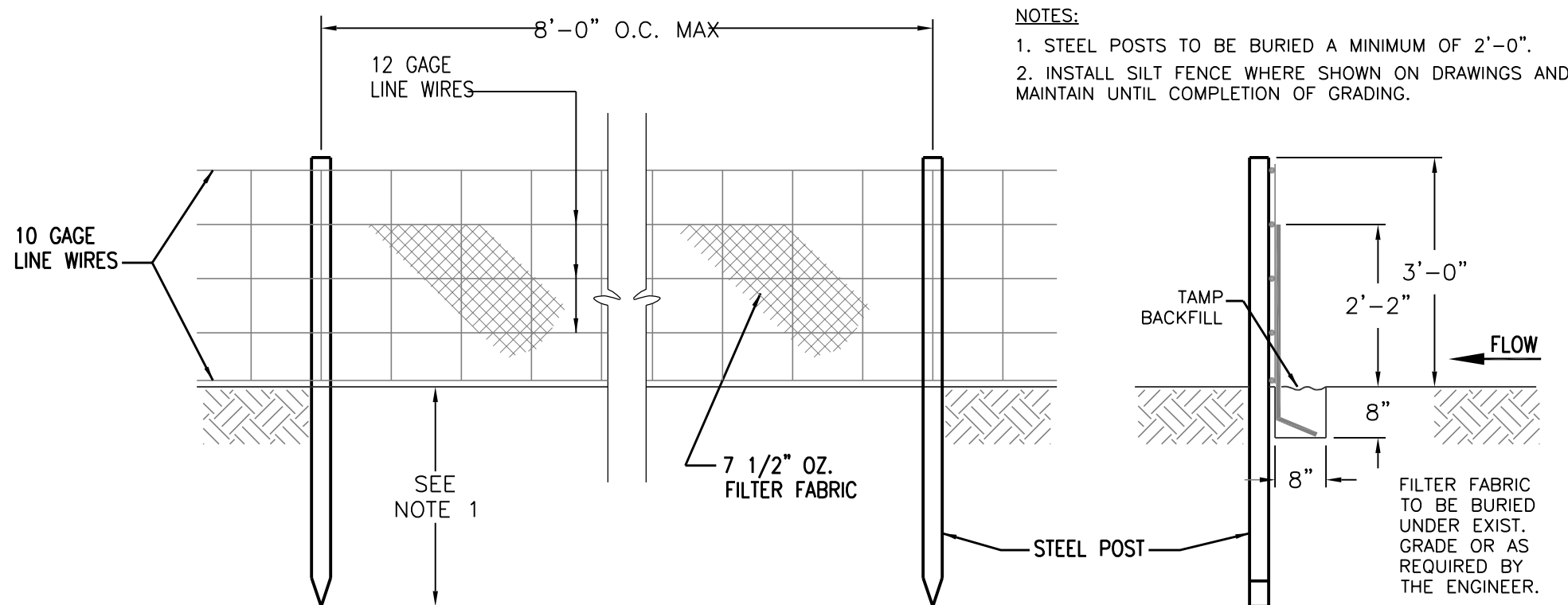


**STANDARD CATCH BASIN/
YARD INLET PROTECTION**

NTS

- MAINTENANCE:**
1. 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.

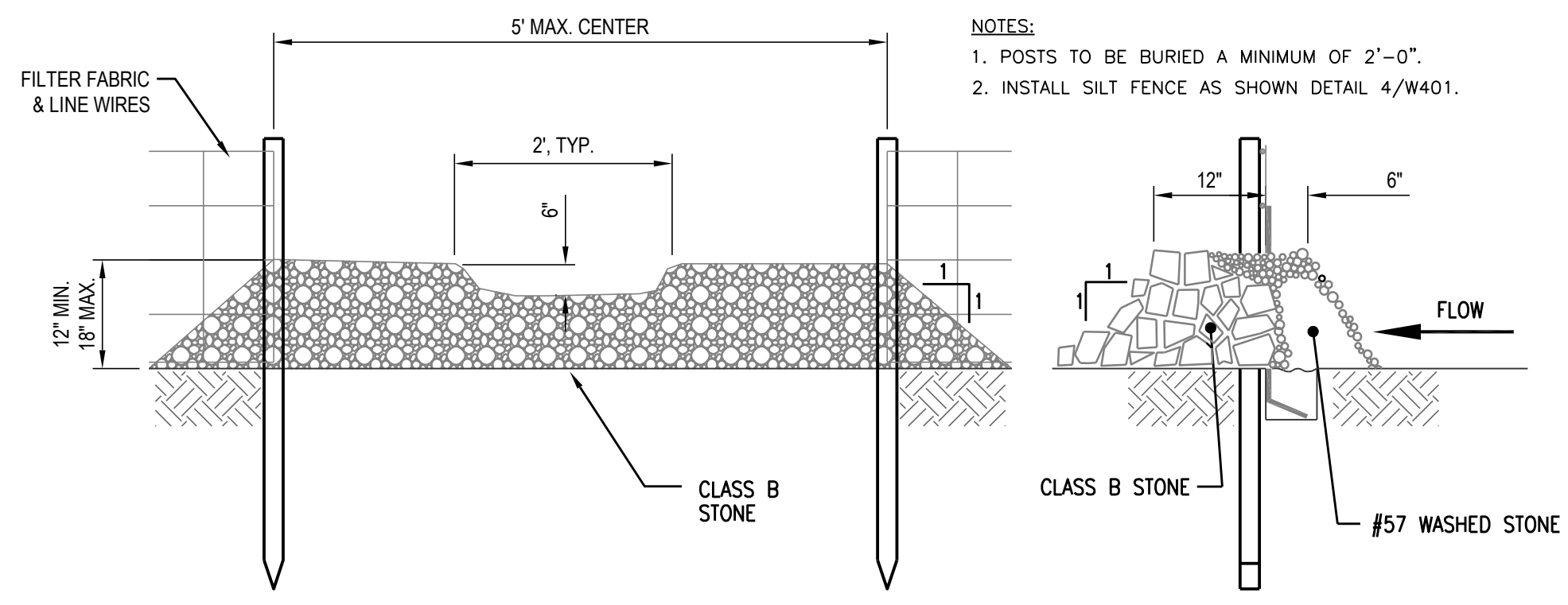
- MAINTENANCE:**
1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
 2. SHOULD THE FABRIC OF THE SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
 3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE 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

- MAINTENANCE:**
- INSPECT FOR SIGNIFICANT EROSION AROUND THE EDGES & BETWEEN SILT FENCE & DRAIN. INSTALL PROTECTIVE RIP-RAP LINERS IN PORTIONS OF THE CHANNEL WHERE EROSION OCCURS. REMOVE SEDIMENT ACCUMULATED BEHIND THE DRAINS AS REQUIRED PREVENTING DAMAGE TO SILT FENCE & ADJACENT VEGETATION. ADD STONES TO DRAINS AS REQUIRED MAINTAINING DESIGN HEIGHT & CROSS SECTION.



SILT FENCE OUTLET

NTS

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

WATTLE MAINTENANCE NOTES:

- INSPECT COMPOST SOCKS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER). REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS. THE COMPOST SOCK MUST BE REPLACED IF CLOGGED OR TORN. IF FONDING BECOMES EXCESSIVE, THE SOCK MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR A DIFFERENT MEASURE. THE SOCK NEEDS TO BE REINSTALLED IF UNDERMINED OR DISLODGED. THE COMPOST SOCK SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPLETE AND THE AREA ABOVE THE MEASURE HAS BEEN PERMANENTLY STABILIZED.

POLYACRYLAMIDE MAINTENANCE NOTES:

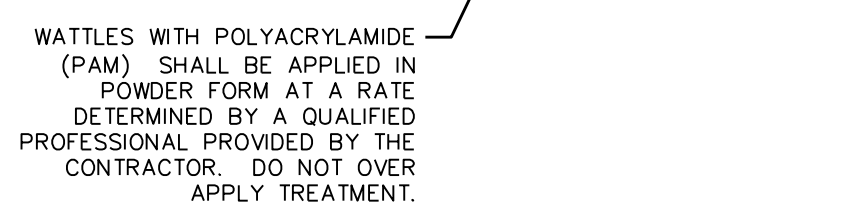
- INSPECT WATTLES AT LEAST WEEKLY OR AFTER A RAINFALL EVENT OF 1/2 INCH OR GREATER TO MAKE SURE WATTLES REMAIN IN PLACE, ARE MOIST AND ARE NOT COVERED IN SEDIMENT.
- DEGRADATION OF POLYMER COAGULANT/FLOCCULANT IS EXPECTED TO OCCUR AS A RESULT OF HIGH RAINFALL, MECHANICAL DEGRADATION, CHEMICAL, AND BIOLOGICAL HYDROLYSIS, SUNLIGHT, SALT, AND TEMPERATURE EFFECTS. REAPPLY POLYMER COAGULANT/FLOCCULANT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. REAPPLICATION IS NOT REQUIRED UNLESS POLYMER COAGULANT/FLOCCULANT TREATED AREAS ARE DISTURBED OR TURBIDITY OR WATER QUALITY SHOW THE NEED FOR AN ADDITIONAL APPLICATION. REAPPLY UNDISTURBED POLYMER COAGULANT/FLOCCULANT TREATED AREAS AS NEEDED. FURTHER POLYMER COAGULANT/FLOCCULANT APPLICATIONS MAY BE REQUIRED FOR STEEP SLOPES, HIGHLY SILTY AND CLAYEY SOILS, LONG GRADES, AND HIGH TRAFFIC OR PRECIPITATION AREAS.

- MAINTAIN ALL EQUIPMENT TO PROVIDE THE APPLICATION RATES RECOMMENDED BY THE MANUFACTURER, IN AN APPROVED AREA, RINSE ALL EQUIPMENT USED TO MIX AND APPLY POLYMER COAGULANT/FLOCCULANT THOROUGHLY WITH WATER TO AVOID FORMATION OF RESIDUES.

- REUSE OR DISPOSE RECOVERED FLOCCULATED SEDIMENTS CONTAINING POLYMER COAGULANT/FLOCCULANT IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

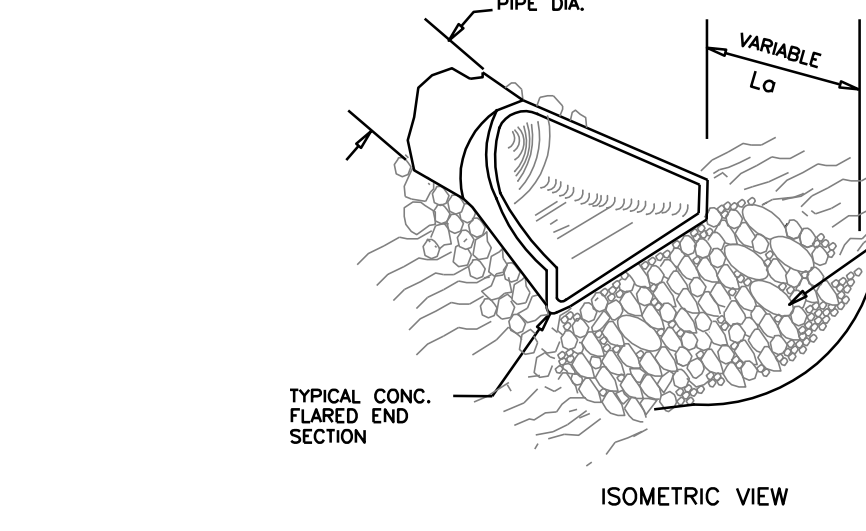
NOTES:

1. ALL MATERIAL TO MEET FILTREX® SPECIFICATIONS.
2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED 1/2 THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREX CERTIFIED™ INSTALLER.



WATTLE DETAIL

NTS

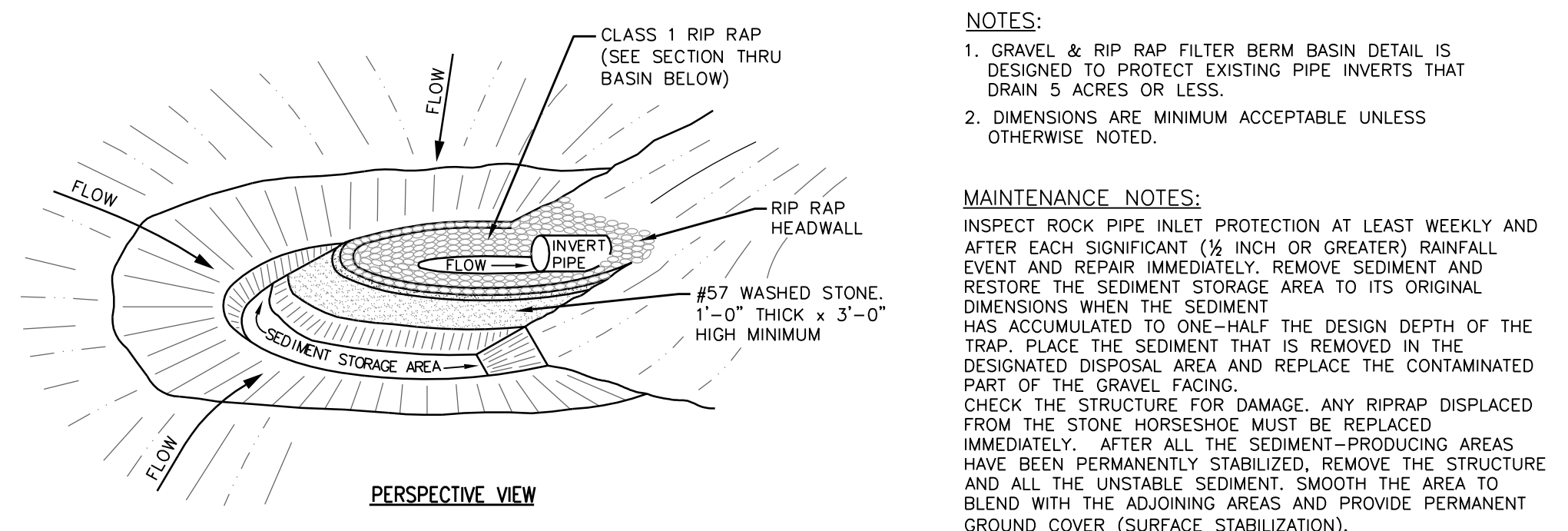


ENERGY DISSIPATOR SCHEDULE

ENERGY DISSIPATOR NO.	PIPE DIAMETER (in)	APRON THICKNESS (in)	Lo (ft)	WIDTH(W) (ft)	3do	RIPRAP SIZE
FES#1	36	36	15	18	9	CLASS 2
FES#13	36	24	13	16	9	CLASS 1

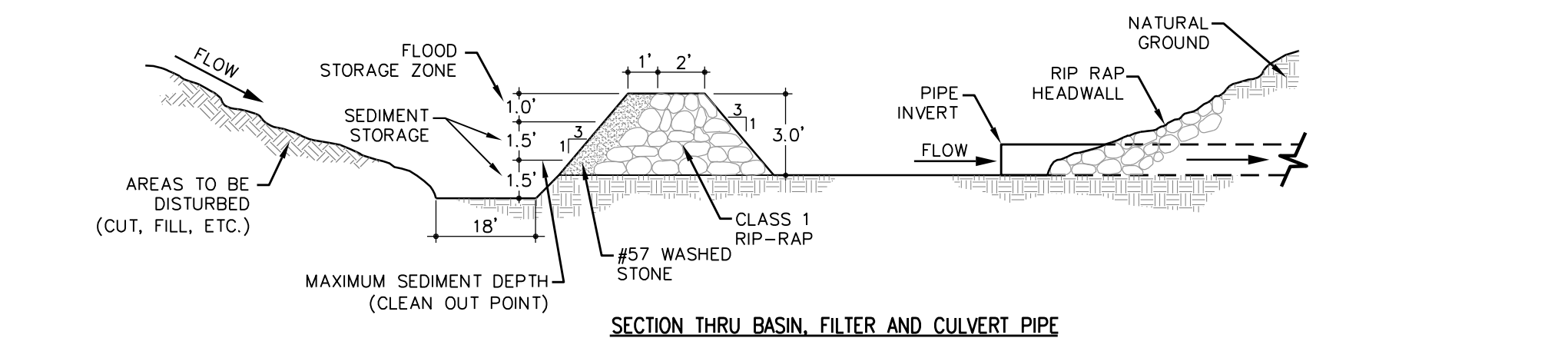
RIP RAP ENERGY DISSIPATER

N.T.S.



ROCK INLET PROTECTION

NTS

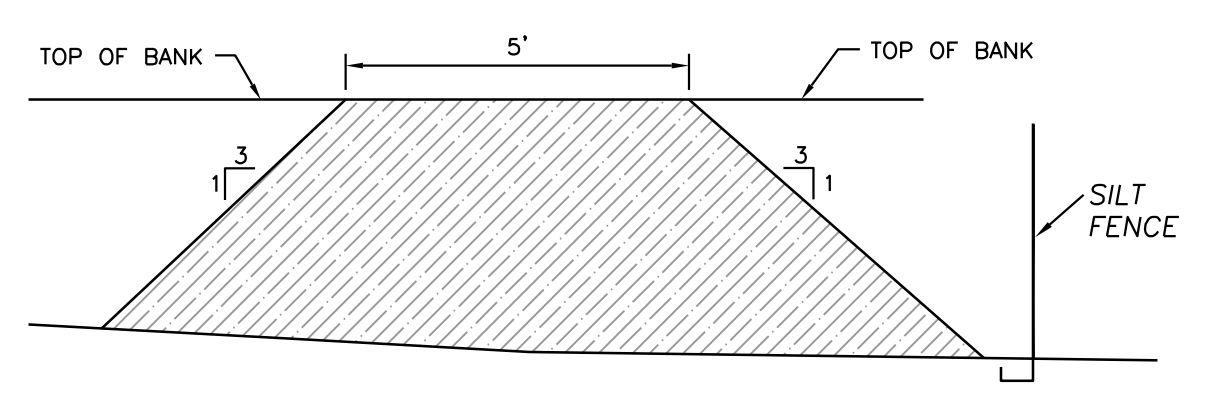


TEMPORARY DIVERSION BERMS

TD#	DRAINAGE AREA (AC)	RUNOFF COEFFICIENT	SLOPE (%)	CONSTRUCTED DEPTH (FT)	NORMAL DEPTH (FT)	TOP WIDTH (FT)	VELOCITY (FPS)
1	2.65	0.35	0.25	1.5	1.45	6	1.59
2	0.20	0.35	0.25	1.5	0.55	6	0.84
3	0.18	0.35	0.25	1.5	0.53	6	0.82
4	2.68	0.35	0.25	1.5	1.46	6	1.60

TEMPORARY DIVERSION SWALE

NTS



DITCH PLUG

NTS

SEEDBED PREPARATION:

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
 2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
 3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
 4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL.
 5. CONTINUE TILLAGE UNTIL A WELL PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
 6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
 7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
 8. INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RE-SEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED, RE-ESTABLISH FOLLOWING ORIGINAL LIME FERTILIZER AND SEEDING RATES.
 9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.
- CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENuded AREAS. THE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATES COMBINATIONS ARE POSSIBLE.
- * TEMPORARY-RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING.

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.

FINAL DESIGN



No.	Revision	Date	By
1	REVISED PER NHC EC COMMENTS & CITY COMMENTS	10-28-16	JSB
2	ADDED ROCK INLET PROTECTION DETAIL PER NHC COMMENTS	11-21-16	JSB
3	REVISED WATTLE DETAIL PER NHC COMMENTS	12-13-16	JSB

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

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

EROSION CONTROL DETAILS

WithersRavenel
Engineers | Planners | Surveyors
1410 Commonwealth Drive, Suite 301 | Wilmington, NC 28403 | 910.256.9277 | License #: C-0832 | www.withersravenel.com