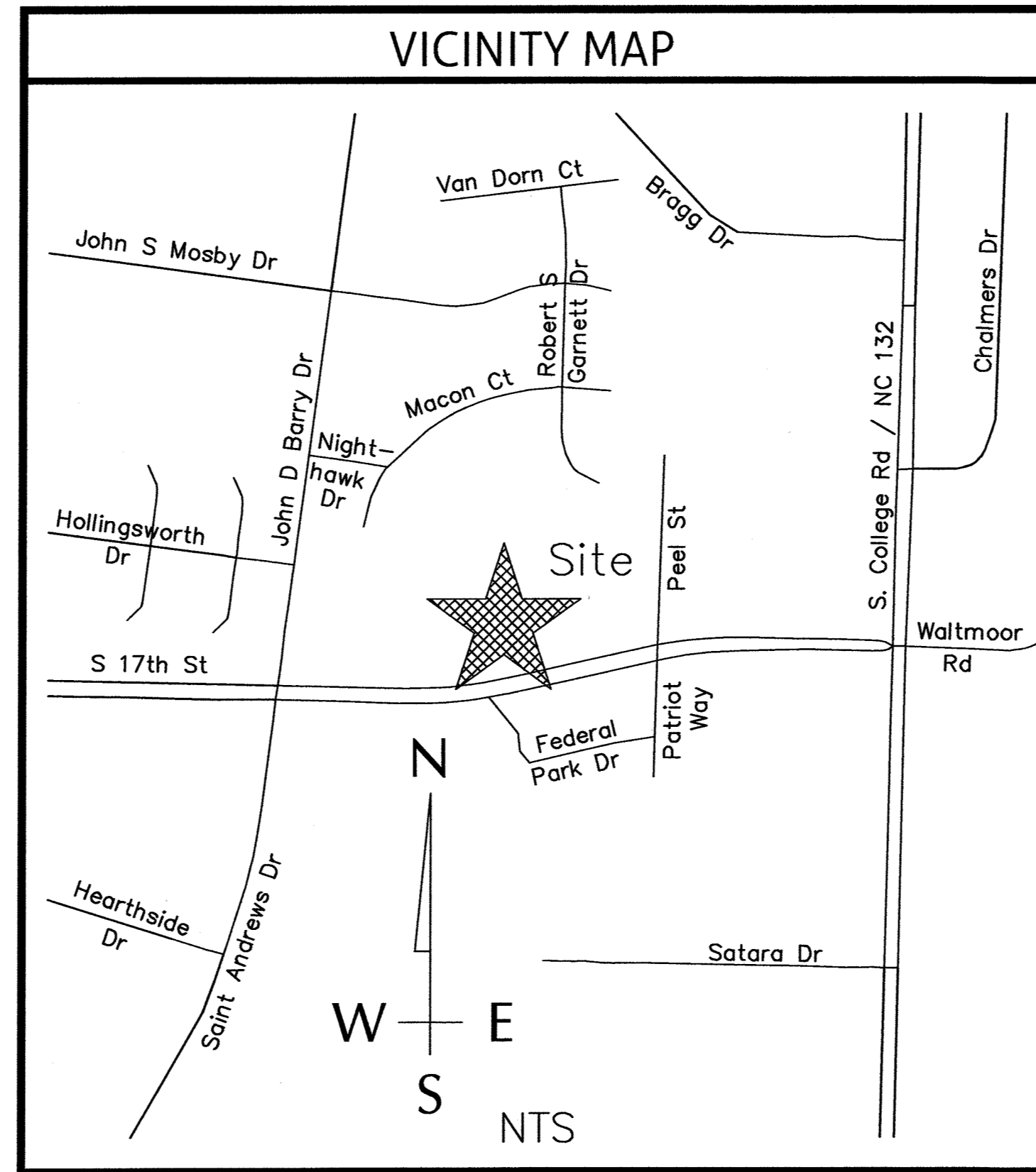


INFRASTRUCTURE CONSTRUCTION DRAWINGS FOR ARBOR COMMONS

WILMINGTON, NC
OCTOBER 2016

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 PLAN
C-9	HOLLINGSWORTH DRIVE PLAN & PROFILE
C-10	ROAD B 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

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

Approved Construction Plan

Name _____ Date _____

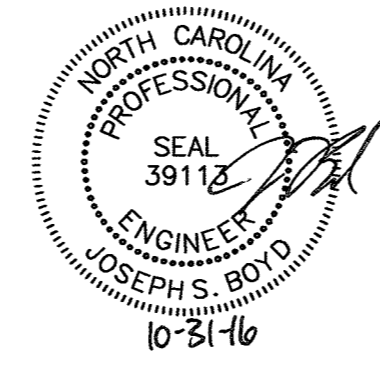
Planning _____

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
NOT APPROVED FOR CONSTRUCTION

PREPARED BY:

WithersRavenel
Engineers | Planners | Surveyors

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

DEVELOPER/OWNER

LEON CAPITAL GROUP
5970 Fairview Road, Suite 450
Charlotte, NC 28210
336-327-3050

ATTN: TODD HARRELSON

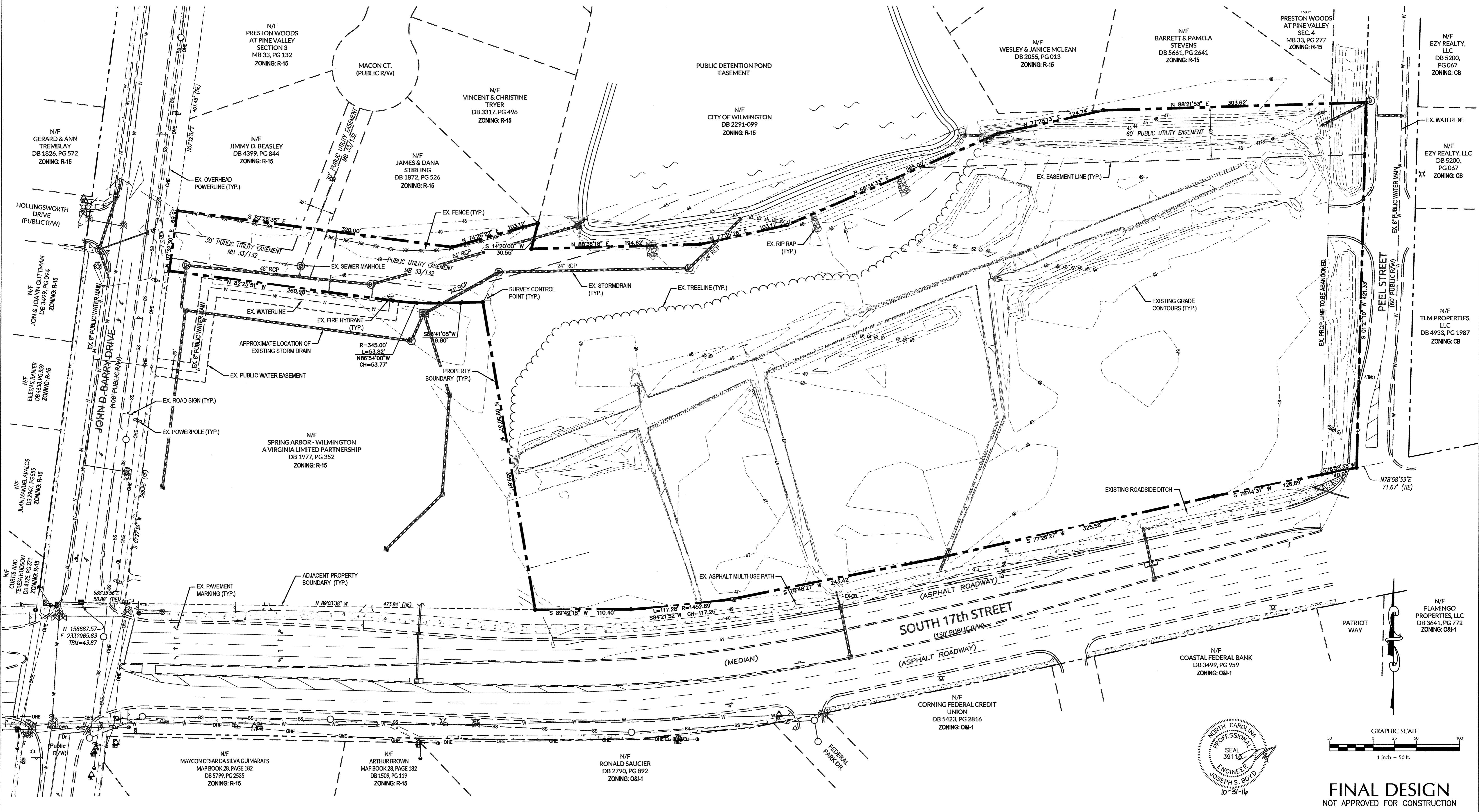
SURVEY NOTES:

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 # _____
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No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	REVISED PER CITY OF WILMINGTON COMMENTS	10-17-16	JSB

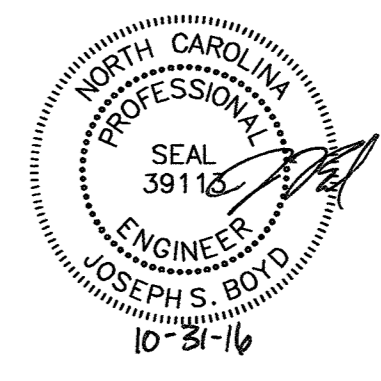
Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/16
Checked By	JJW	Job No.	03061193.01

ARBOR COMMONS
 New Hanover County
 North Carolina

EXISTING CONDITIONS

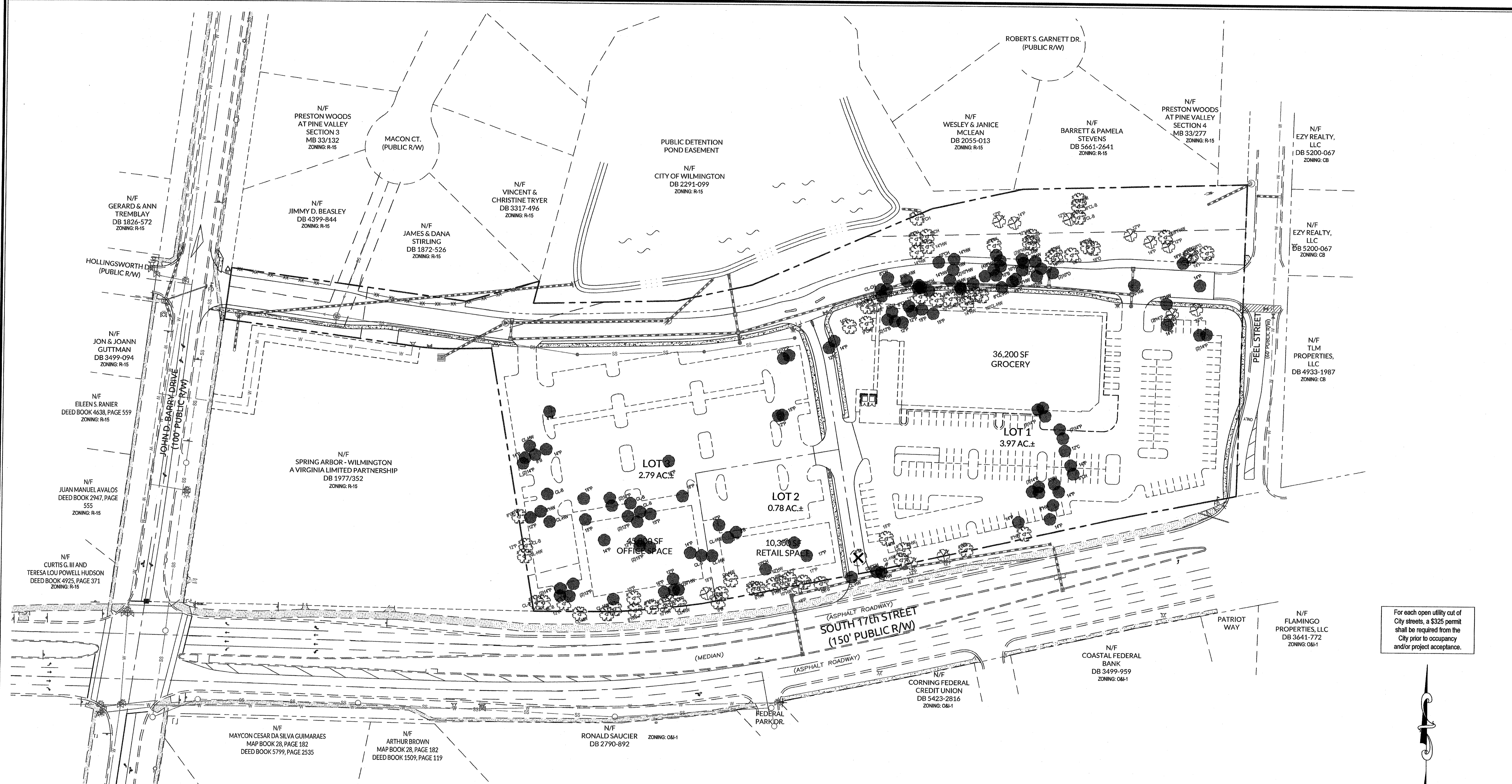
WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0632 | www.withersravenel.com

Sheet No.
C-2



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

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

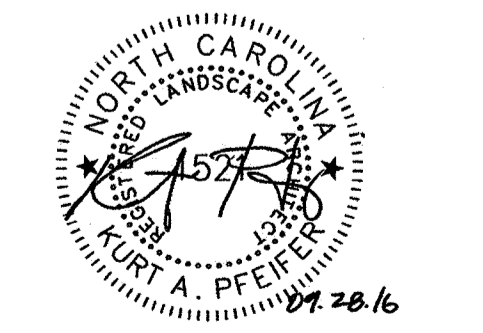
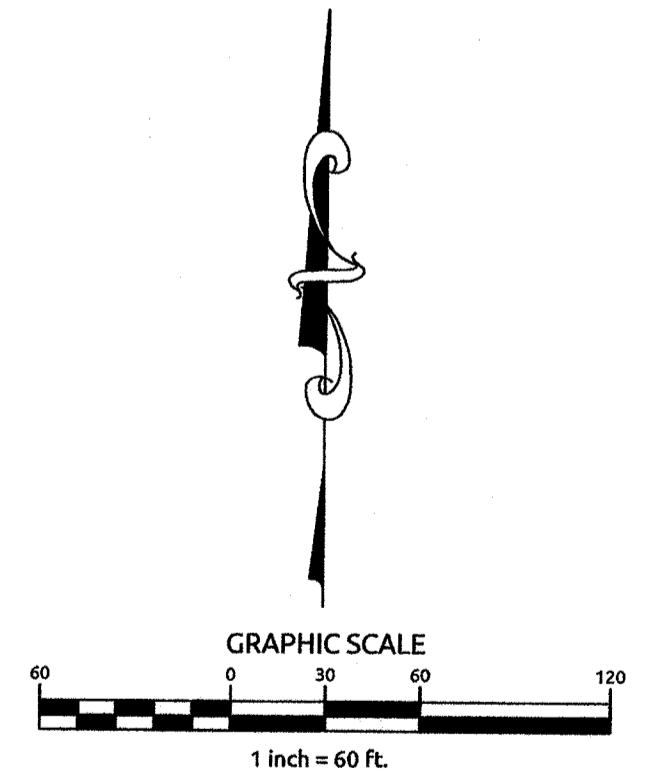
MITIGATION CALCULATIONS:
LOT 3:
 EX. REGULATED TREES TO BE REMOVED
 HARDWOOD TREES > 8" DBH (11)
 ALL CONIFER TREES > 12" DBH (28)
 ALL DOGWOODS, MAGNOLIAS, OTHER ORNAMENTAL FLOWERING TREES & AMERICAN HOLLIES > 4" DBH (1)
 TOTAL TREES TO BE REMOVED: 40
 (11) x (75% OF TYPE OF TREE) / (3): 3
 (28) x (50%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

- LEGEND:**
- EX. REGULATED HARDWOOD TREES TO BE SAVED (61)
 - EX. REGULATED PINE TREES TO BE SAVED (14)
 - EX. REGULATED TREES TO BE REMOVED (115)
 - EX. SIGNIFICANT TREES TO BE REMOVED (1 - 8" MAGNOLIA)

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

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

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
1	REVISED PER COW SRB	5-24-16	JSB

Designer: W&R
 Scale: NOTED
 Drawn By: JSB
 Date: 3/24/16
 Checked By: JWW
 Job No.: 03061193.01

ARBOR COMMONS
 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:\08-1150\081193.01-Arbor Commons\CAD\Landscape\Plan\03-28-2016 10:46:51 AM - MISTERS, REGAN

SITE INVENTORY NOTES:

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

GENERAL NOTES:

- NEW HANOVER COUNTY PARCEL NOS.:
313510.37.9059 (807 JOHN D. BARRY DR.)
313510.36.8767 (4301 S. 17TH ST.) P/O
313510.06.47.7974 (3534 S. COLLEGE DR.)
- ZONING DISTRICT: CB (CD)
SETBACKS - 20' STREET
20' CORNER SIDE
20' INTERIOR SIDE TO RESIDENTIAL
(+ 1.1 PER HGT > 20')
25' REAR TO RESIDENTIAL
(+ 1.1 PER HGT > 20')
- CAMA LAND CLASSIFICATION: URBAN

DEVELOPMENT NOTES:

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

DEVELOPMENT DATA:

TOTAL TRACT AREA: 10.59 AC.±
 NEW PUBLIC RW - 1.73 AC.±
 BUFFERYARDS - 1.32 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. - 44,442 S.F.
 PUBLIC & PRIVATE SIDEWALKS - 7,525 S.F.

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

FUTURE LOT DEVELOPMENT:
 LOT 1 - 135,000 S.F.
 LOT 2 - 32,500 S.F.
 LOT 3 - 105,811 S.F.
 TOTAL - 273,311 S.F.

TOTAL - 336,111 S.F.

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

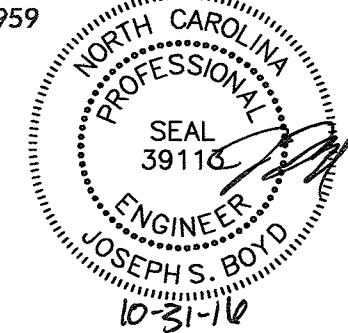
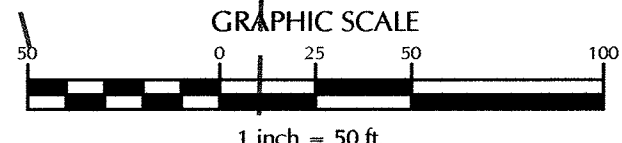
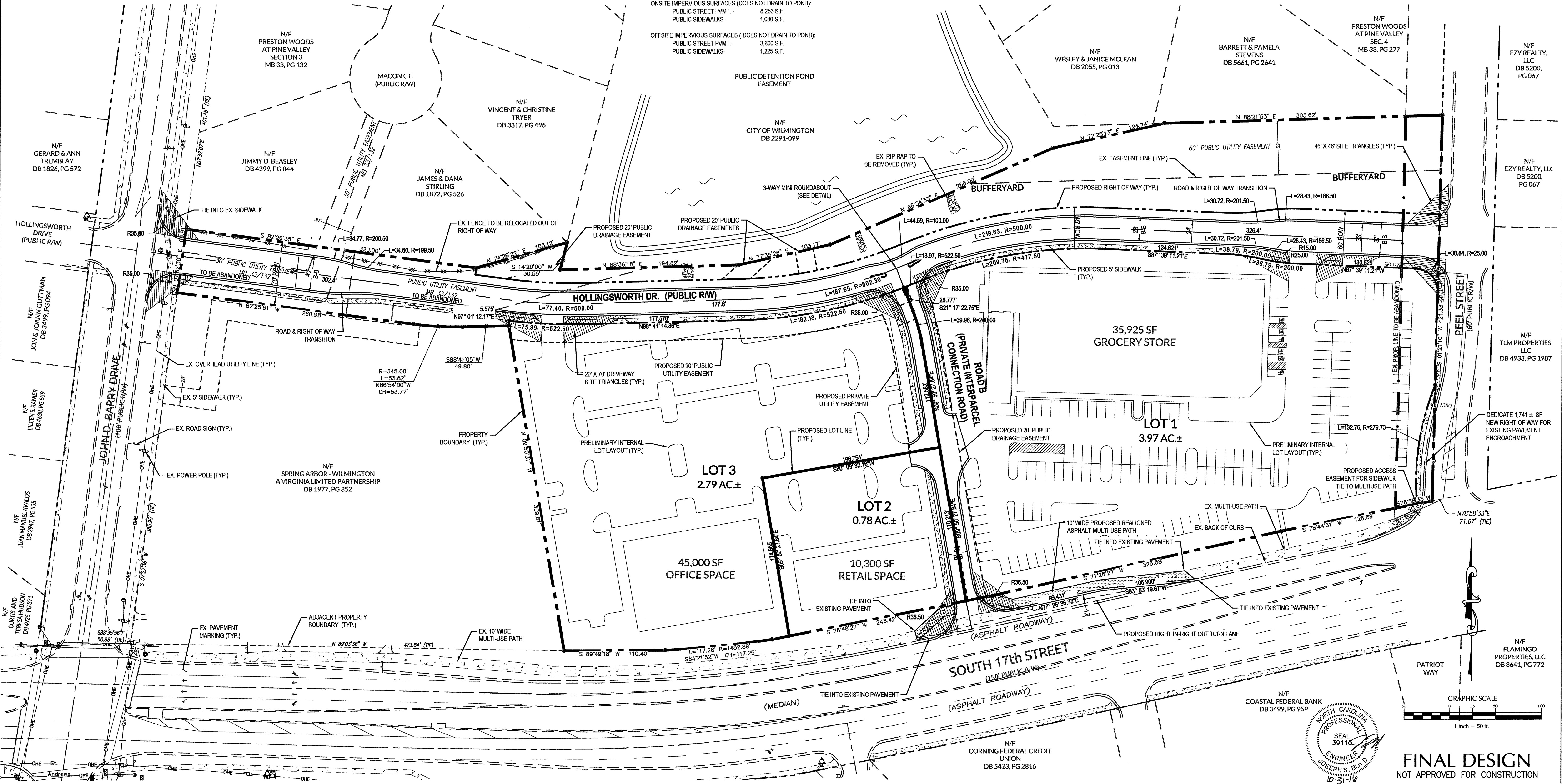
ONSITE IMPERVIOUS SURFACES (DOES NOT DRAIN TO POND):
 PUBLIC STREET P.V.M.T. - 8,253 S.F.
 PUBLIC SIDEWALKS - 1,080 S.F.

OFFSITE IMPERVIOUS SURFACES (DOES NOT DRAIN TO POND):
 PUBLIC STREET P.V.M.T. - 3,800 S.F.
 PUBLIC SIDEWALKS - 1,225 S.F.

Approved Construction Plan	
Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

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

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FINAL DESIGN
 NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By	Designer	Scale
1	REVISED PER COW SRB	5-24-16	JSB	JSB	1"=50'
2	ADDED UTILITY EASEMENT PER CFWIA REVIEW	8-24-16	JSB	JSB	
3	REVISED NOCDM.R & PER CITY OF WILMINGTON COMMENTS	10-28-16	JSB	JSB	

Drawn By: JSB Date: 3/24/16
 Checked By: JWJ Job No.: 03061193.01

ARBOR COMMONS
 New Hanover County
 North Carolina

SITE PLAN

WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | t: 910.256.9277 | license #: C-0632 | www.withersravenel.com

Sheet No. **C-4**

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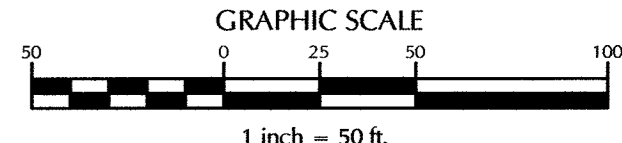
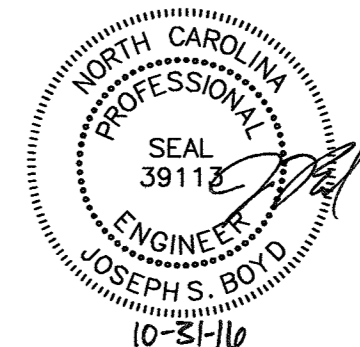
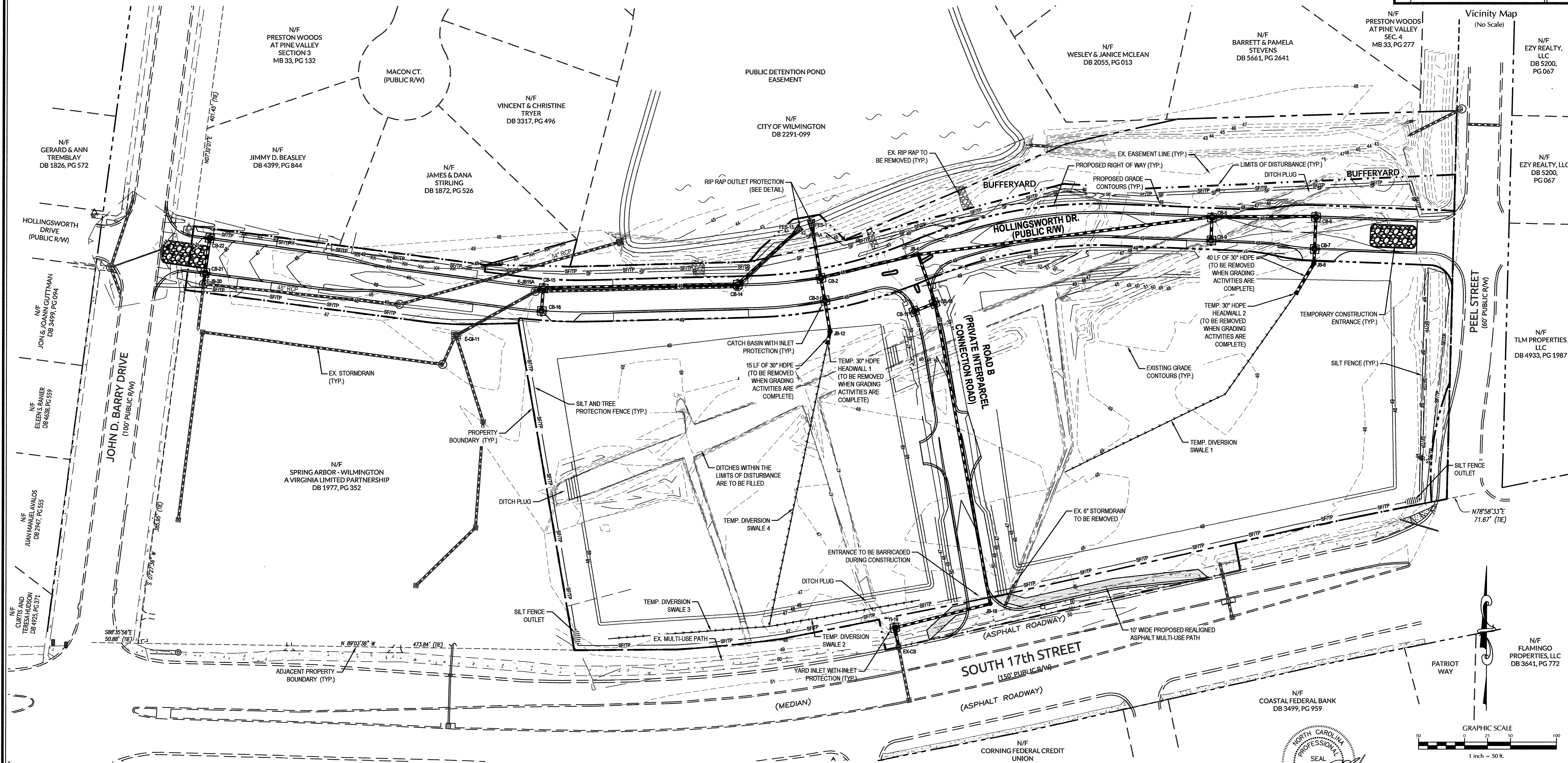
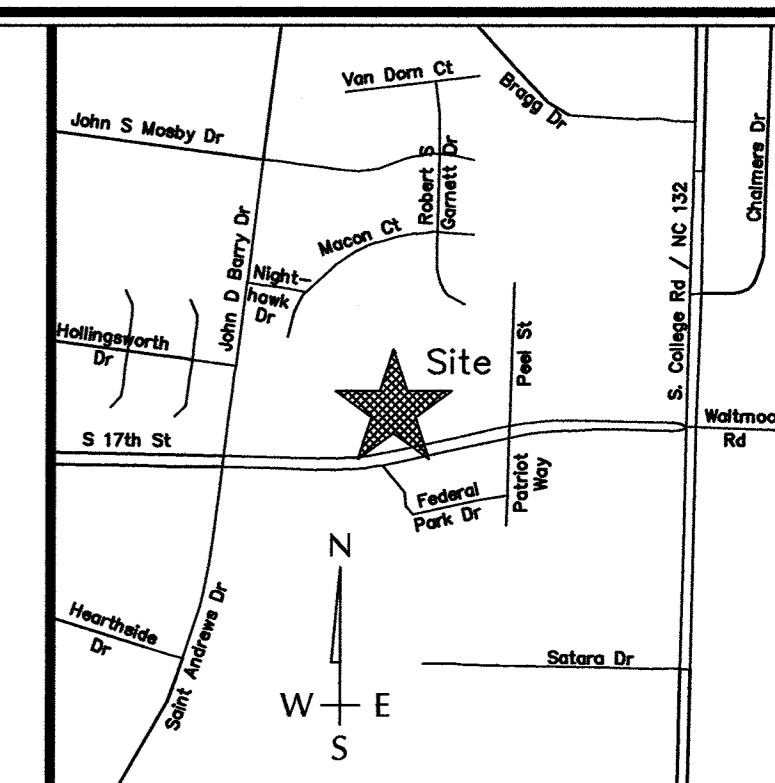
EROSION CONTROL NOTES:

1. PROPOSED DISTURBED AREA: 10.11 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	

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FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER NHC EC & CITY SW COMMENTS	10-28-16	JSB

Designer	JSB	Scale	1"=50'
Drawn By	JSB	Date	3/24/18
Checked By	JJW	Job No.	03061193.01

ARBOR COMMONS
New Hanover County
North Carolina

EROSION CONTROL PLAN

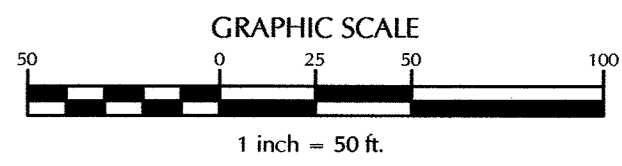
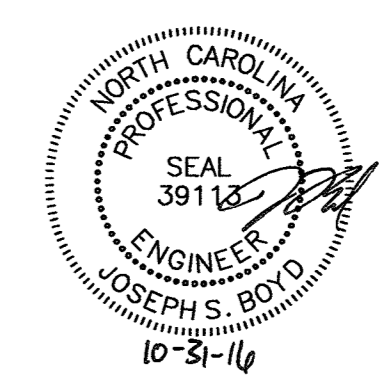
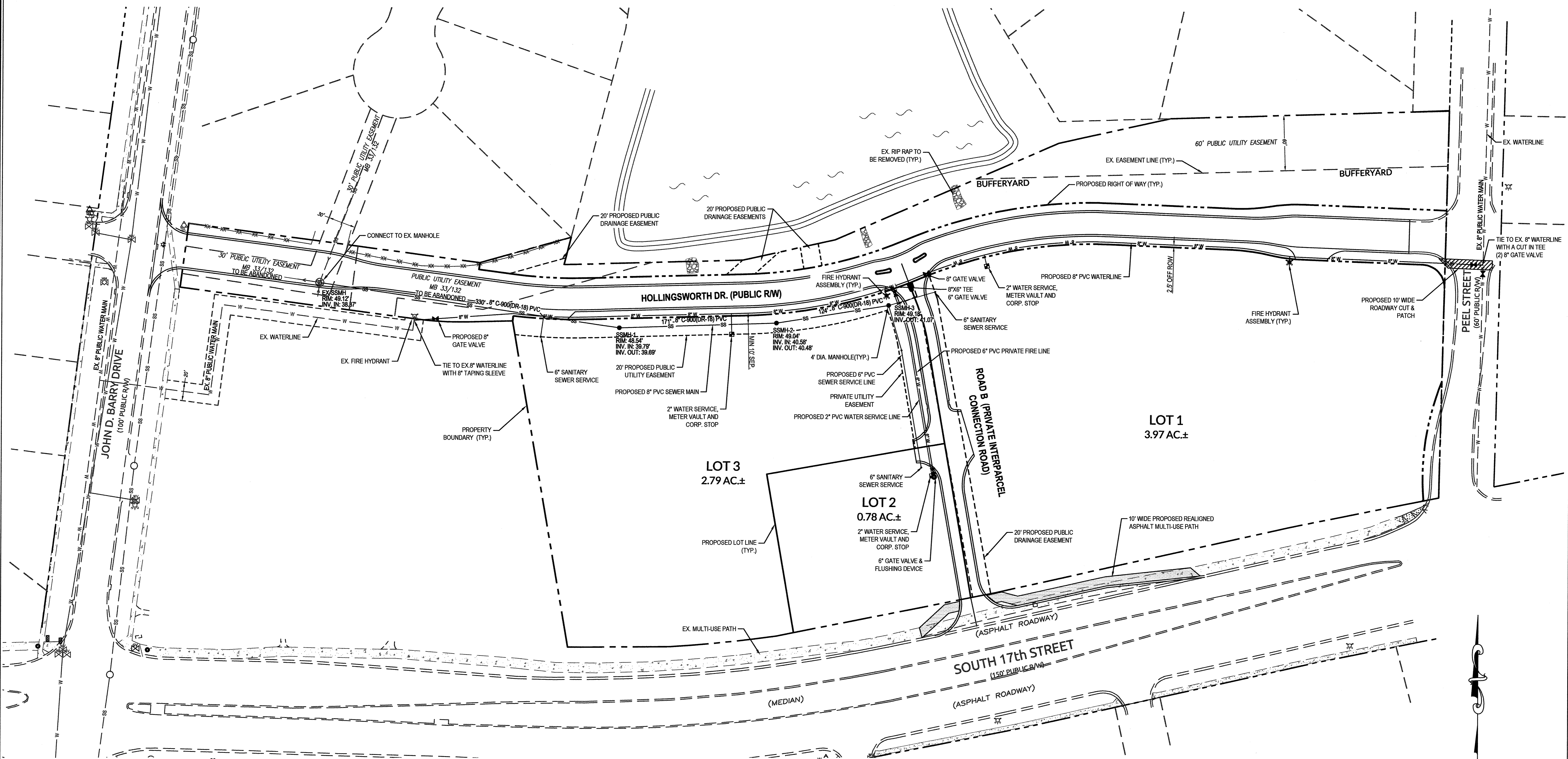
	Sheet No. C-5
WithersRavenel Engineers Planners Surveyors	
1410 Commonwealth Drive, Suite 101 Wilmington, NC 28403 T: 910.256.9277 license #: C-0832 www.withersravenel.com	

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Approved Construction Plan	
Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

STORMWATER MANAGEMENT PLAN
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 NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	RELOCATED SEWER MAIN & ADDED UTILITY EASEMENT PER COWA REVIEW	10-28-16	JSB

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

ARBOR COMMONS
 Wilmington New Hanover County North Carolina

UTILITY PLAN

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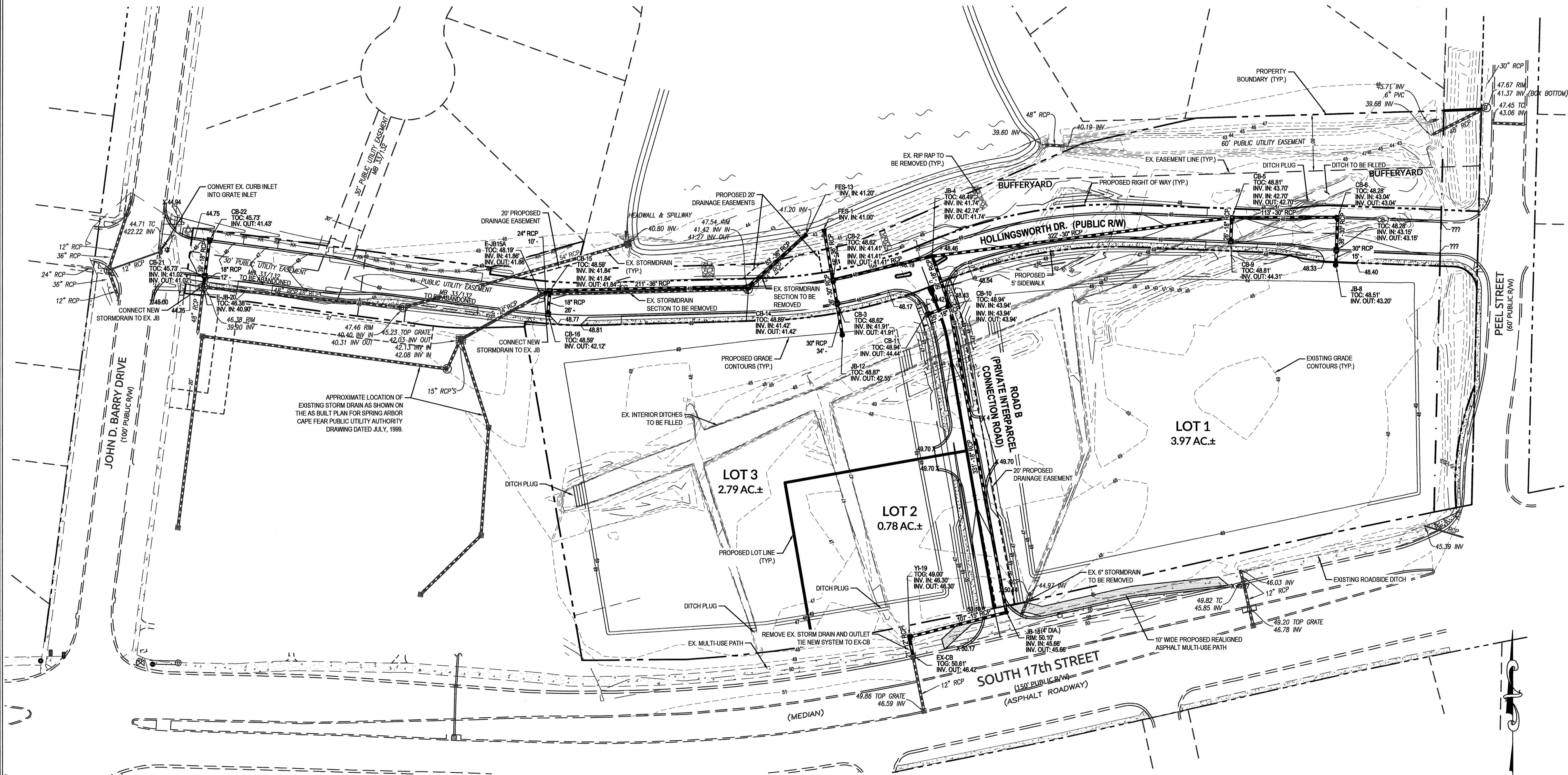
Sheet No.
C-6

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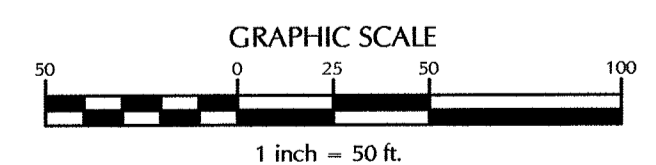
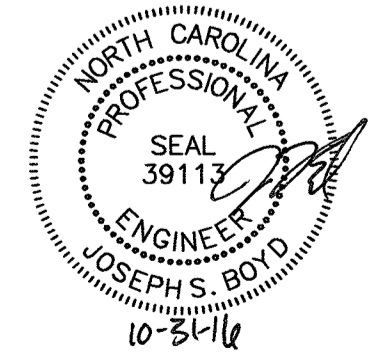
Approved Construction Plan
 Name _____ Date _____
 Planning _____
 Public Utilities _____
 Traffic _____
 Fire _____

STORMWATER MANAGEMENT PLAN
APPROVED
 CITY OF WILMINGTON
 ENGINEERING DEPARTMENT
 DATE _____ PERMIT # _____
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FINAL DESIGN
 NOT APPROVED FOR CONSTRUCTION

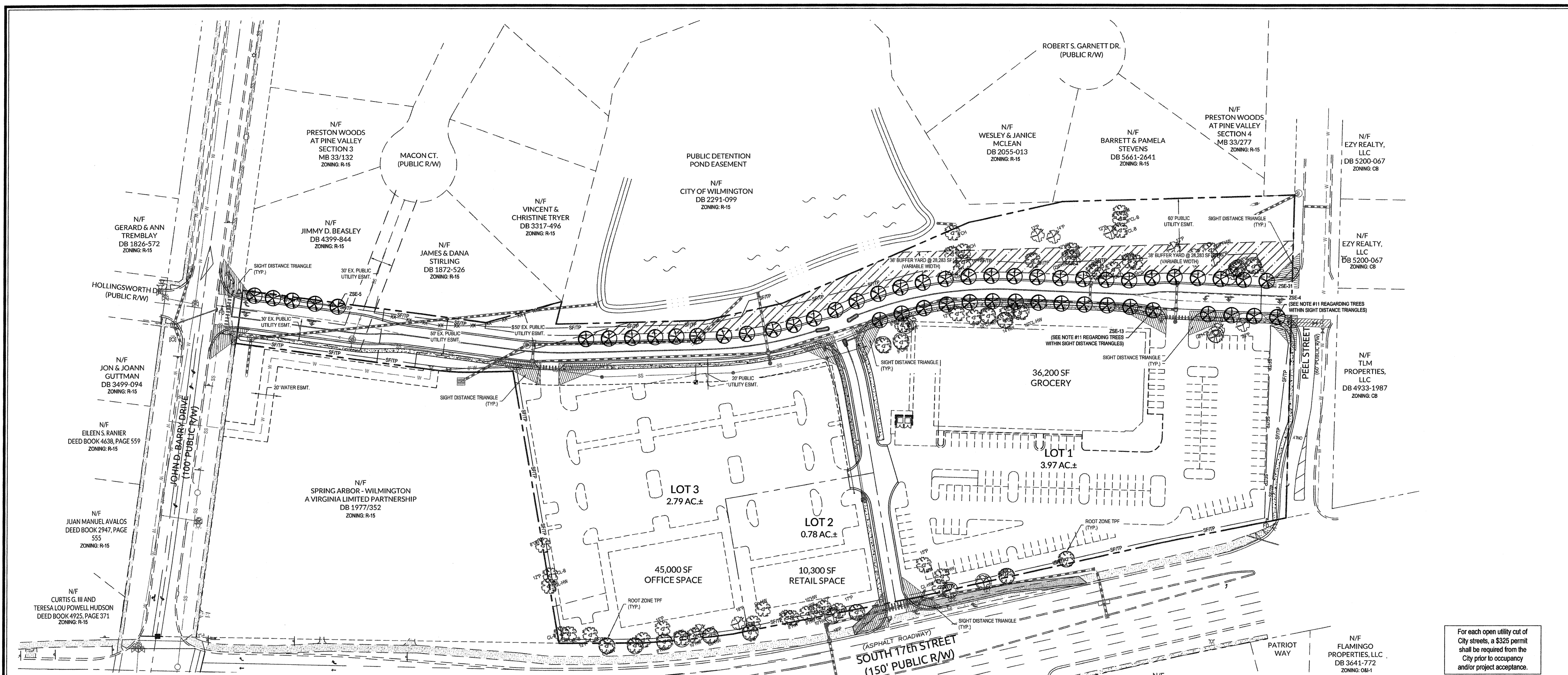
No.	Revision	Date	By	Designer	Scale
1	REVISED PER COW SRB	5-24-16	JSB	JSB	1"=50'
2	REVISED PER NHC EC & CITY OF WILMINGTON COMMENTS	10-28-16	JSB	JSB	3/24/16
				Checked By: JWW	Job No. 03061193.01

ARBOR COMMONS
 Wilmington New Hanover County North Carolina

GRADING AND STORMWATER PLAN

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

Sheet No.
C-7



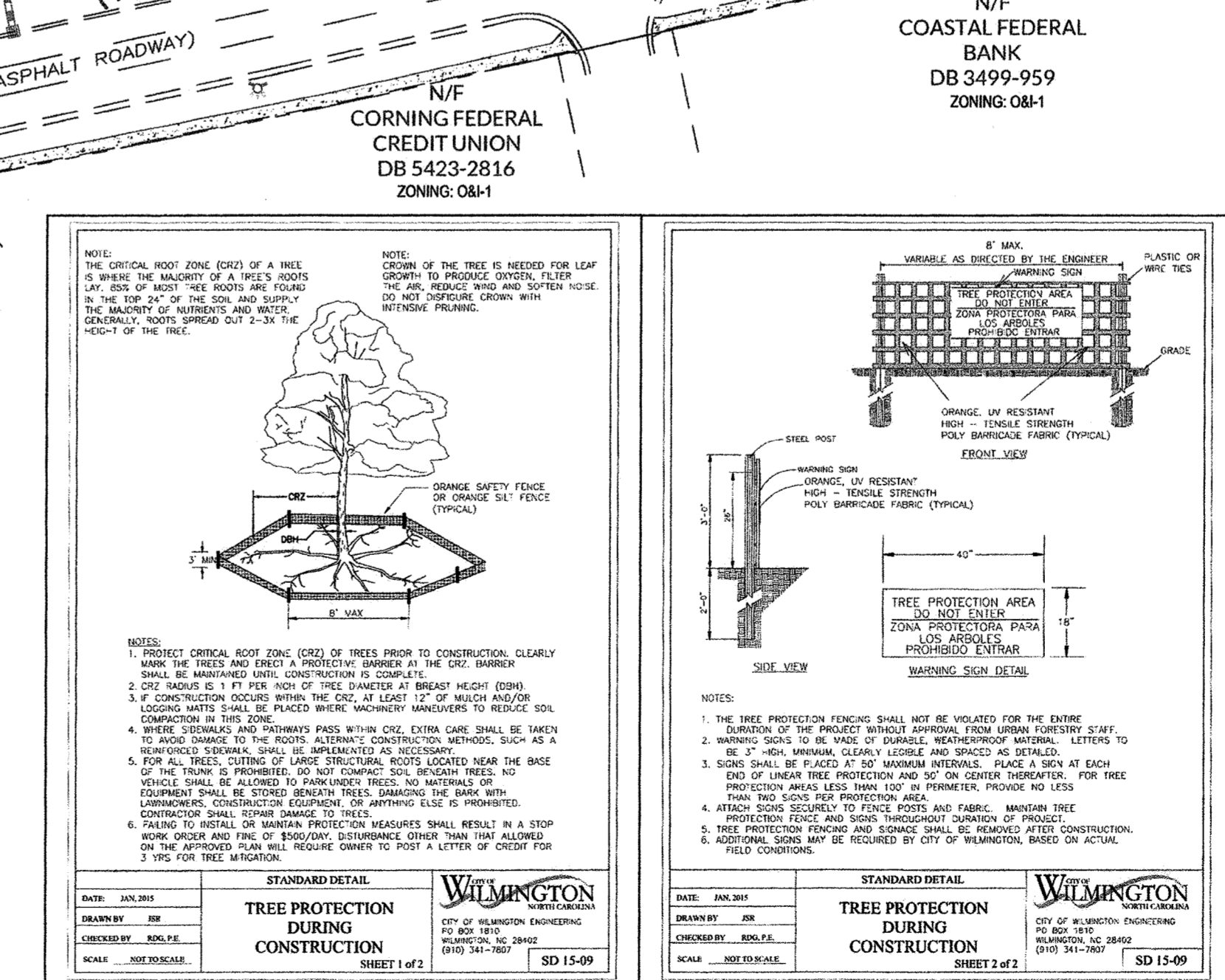
- LANDSCAPE NOTES:**
1. ALL PLANTS SHALL MEET OR EXCEED THE MINIMUM STANDARDS SET FORTH IN "THE AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
 2. ALL AREAS DISTURBED AND NOT SPECIFIED AS MULCHED PLANTING BEDS WILL BE GRASSED. LAWN AREAS MAY BE ESTABLISHED WITH EITHER SOD 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.
 3. 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 IRRIGATING AND REPLANTING TREES WHICH ARE BLOWN OVER.
 4. CONTRACTOR SHALL WARRANT ALL TREES AND SHRUBS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK OF THE LANDSCAPE PLAN.
 5. IF DISCREPANCIES OR AVAILABILITIES ARE FOUND IN THE PLANT SPECIES AND/OR MIN. SIZES REQ'D, CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT. SUBSTITUTIONS MAY BE MADE WITH AUTHORIZATION AS LONG AS THE PLANTS FOLLOW THE INTENDED FORM AND FUNCTION.
 6. THE DEVELOPER SHALL NOTIFY LANDSCAPE DESIGNER PRIOR TO INSTALLATION TO ENSURE PROPER TREE SELECTION & SPACING.
 7. EACH TREE SHALL BE A MINIMUM OF 2" CALIPER AS MEASURED FROM THE DIAMETER AT BREAST HEIGHT (DBH).
 8. TREES WITHIN THE SAME BLOCKS SHALL BE THE SAME SPECIES.
 9. ALL PLANTINGS SHALL BE CURBED OR OTHERWISE PHYSICALLY PROTECTED FROM VEHICULAR TRAFFIC.
 10. 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.
 11. 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'.
 12. 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.
 13. A LANDSCAPING PLAN INDICATING THE LOCATION OF REQUIRED STREET TREES SHALL BE SUBMITTED TO THE CITY OF WILMINGTON TRAFFIC ENGINEERING DIVISION AND PARKS AND RECREATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAT (SD 15-14 CDFW TECH STDS).
 14. THERE IS NO CONSERVATION RESOURCES ASSOCIATED WITH THE PARCELS INCLUDING ANY RARE OR ENDANGERED SPECIES IN ACCORDANCE WITH THE NC WILDLIFE RESOURCES COMMISSION.
 15. 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.
 16. 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 SCHEDULE

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY TREES	53	ZSE	Zelkova serrata	Japanese Zelkova	B&B	2 1/2" MIN.	8' MIN.	STREET TREE (30' O.C.)

TREE PROTECTION NOTES:

1. 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.
2. 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.
3. 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 FORTY (40) PERCENT OF THE CRZ BE DISTURBED.
4. BEFORE EXCAVATION AND OTHER ACTIVITY CONSTRUCTION ACTIVITIES, SUCH AS A REMOVED BARRICADE, SHALL BE IMPLEMENTED AS NECESSARY.
5. FOR ALL TREES, CUTTING OF LIMBS, STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. ALL CUTS TO REMOVED TREES SHALL BE MADE AT AN ANGLE TO THE TRUNK AND SHALL BE MADE AT A MINIMUM OF 45 DEGREES TO THE TRUNK. CONSTRUCTION EQUIPMENT OF ANY TYPE IS PROHIBITED FROM ENTERING THE CRZ UNLESS NECESSARY TO MAINTAIN TREE PROTECTION FENCING OR SIGNAGE.
6. FAILURE TO 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.
7. 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 _____

GRAPHIC SCALE
1 inch = 60 ft.

WILMINGTON
NORTH CAROLINA
PLANNING DEPARTMENT
L. A. PFEIFER, III
09-28-16

No.	Revision	Date	By
1	TOW COMMENTS: STREET TREES, NOTES & LABELS ADDED	09.28.16	MEM

Designer: W&R Scale: NOTED
Drawn By: JSB Date: 3/24/16
Checked By: JJW Job No.: 03061193.01

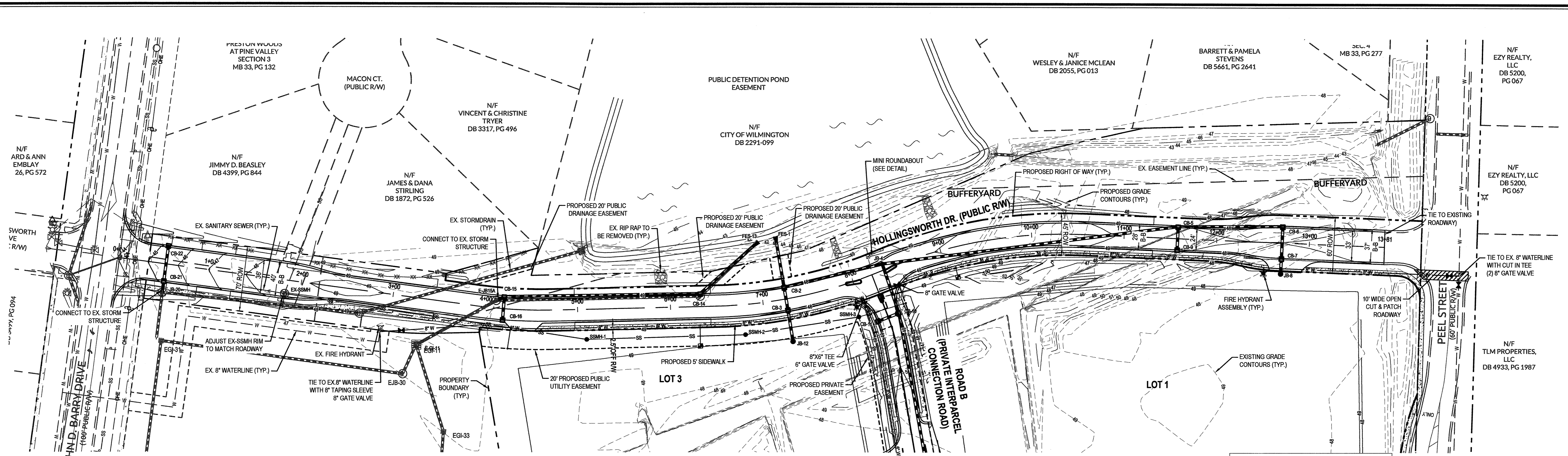
ARBOR COMMONS
Wilmington New Hanover County North Carolina

LANDSCAPE PLAN

WILMINGTON
STANDARD DETAILS
TREE PROTECTION DURING CONSTRUCTION
SHEET 2 of 2
SD 15-09

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Sheet No. **C-8**



Approved Construction Plan

Name _____ Date _____

Planning _____

Public Utilities _____

Traffic _____

Fire _____

STORMWATER MANAGEMENT PLAN

APPROVED

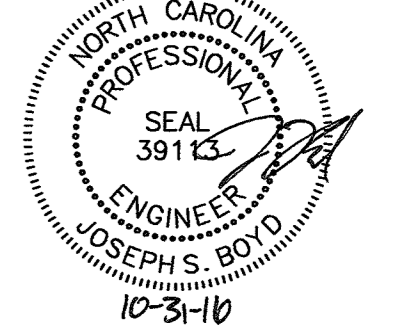
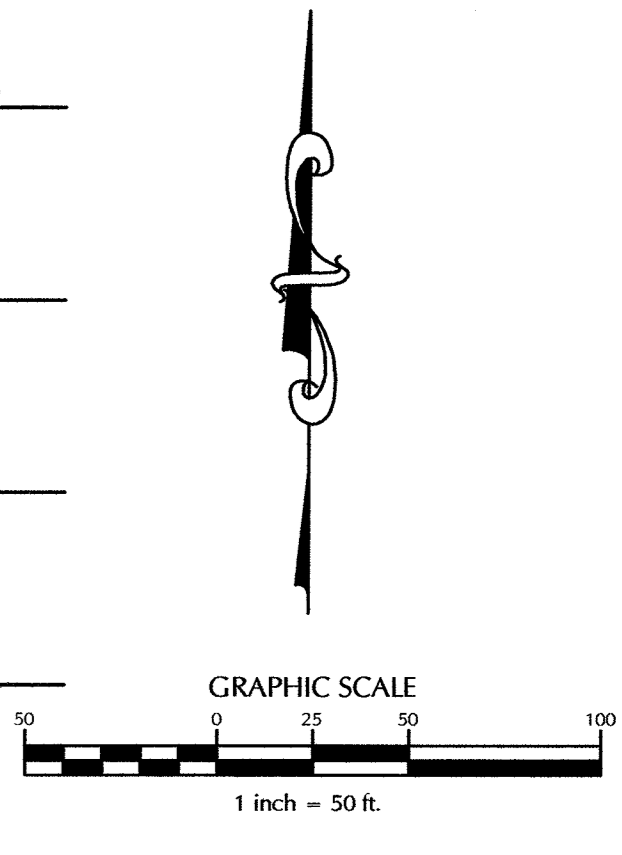
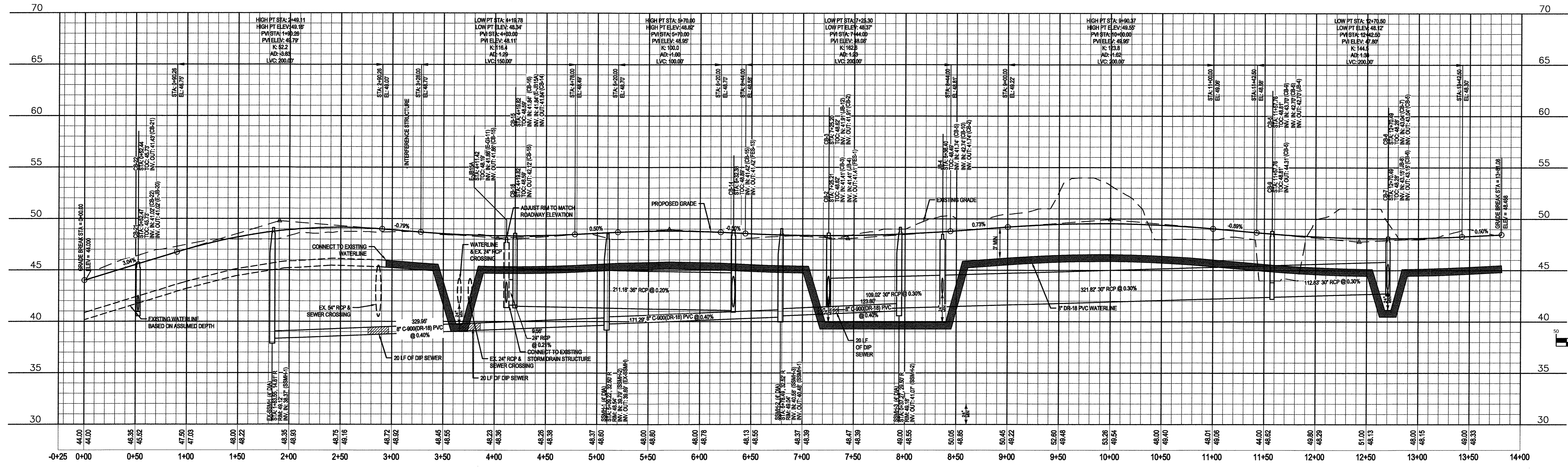
CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE _____ PERMIT # _____

SIGNED _____

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



FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	RELOCATED SEWER MAIN & ADDED UTILITY EASEMENT PER CFWA REVIEW	8-24-16	JSB
3	REVISED ROADWAY ELEVATIONS & STORM DRAIN SYSTEM	10-28-16	JSB

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

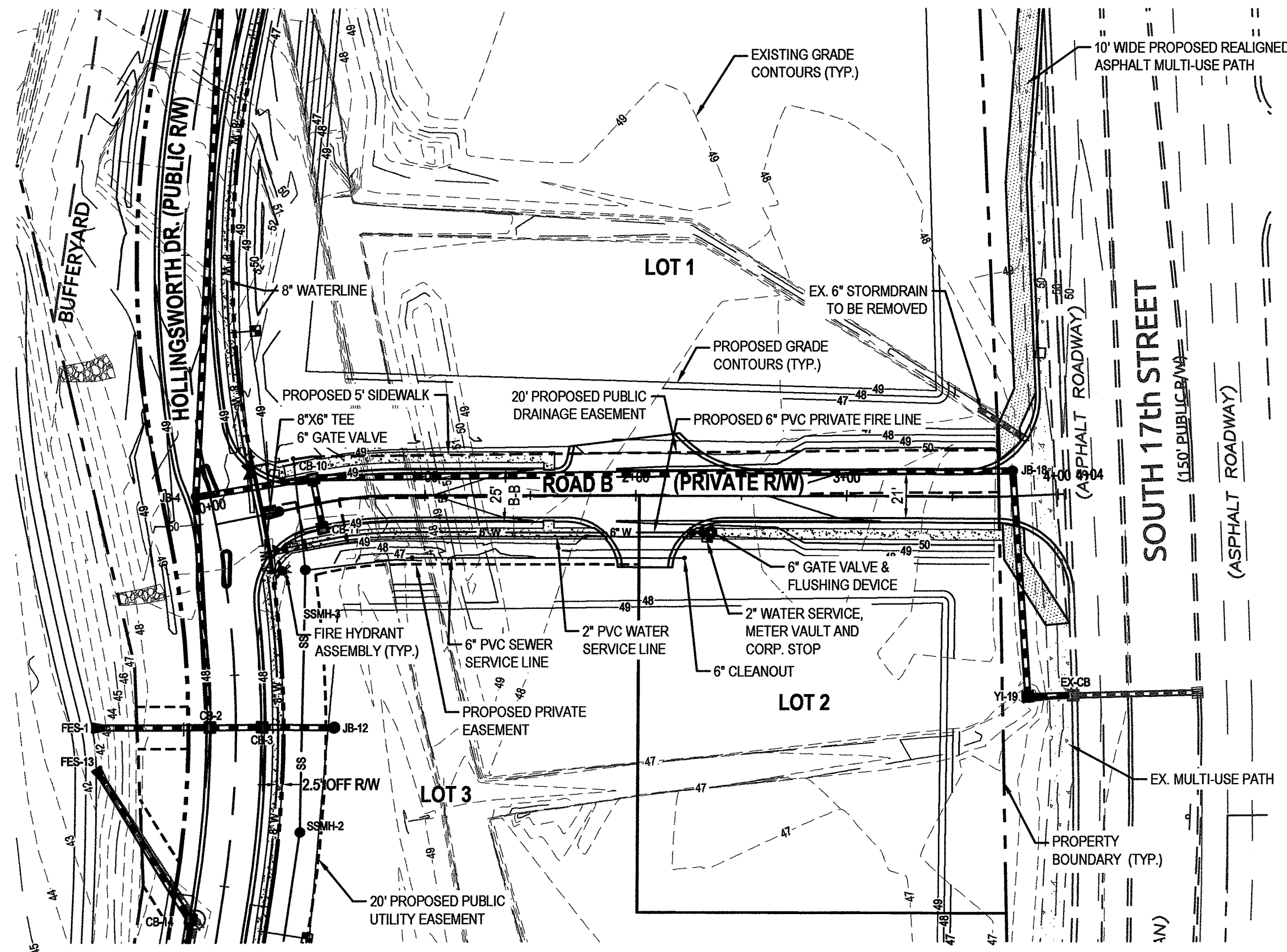
ARBOR COMMONS
Wilmington New Hanover County North Carolina

HOLLINGSWORTH DRIVE PLAN & PROFILE

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Sheet No.
C-9

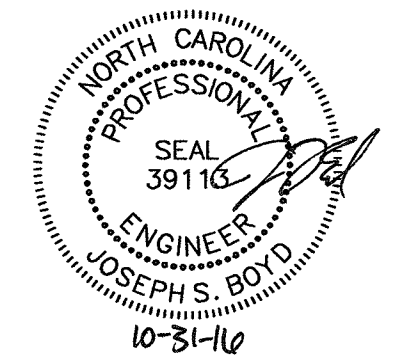
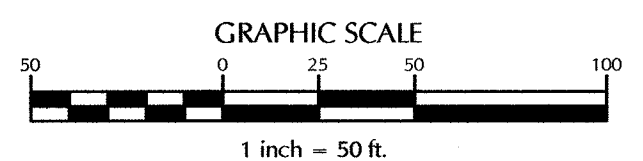
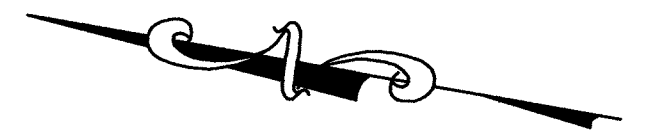
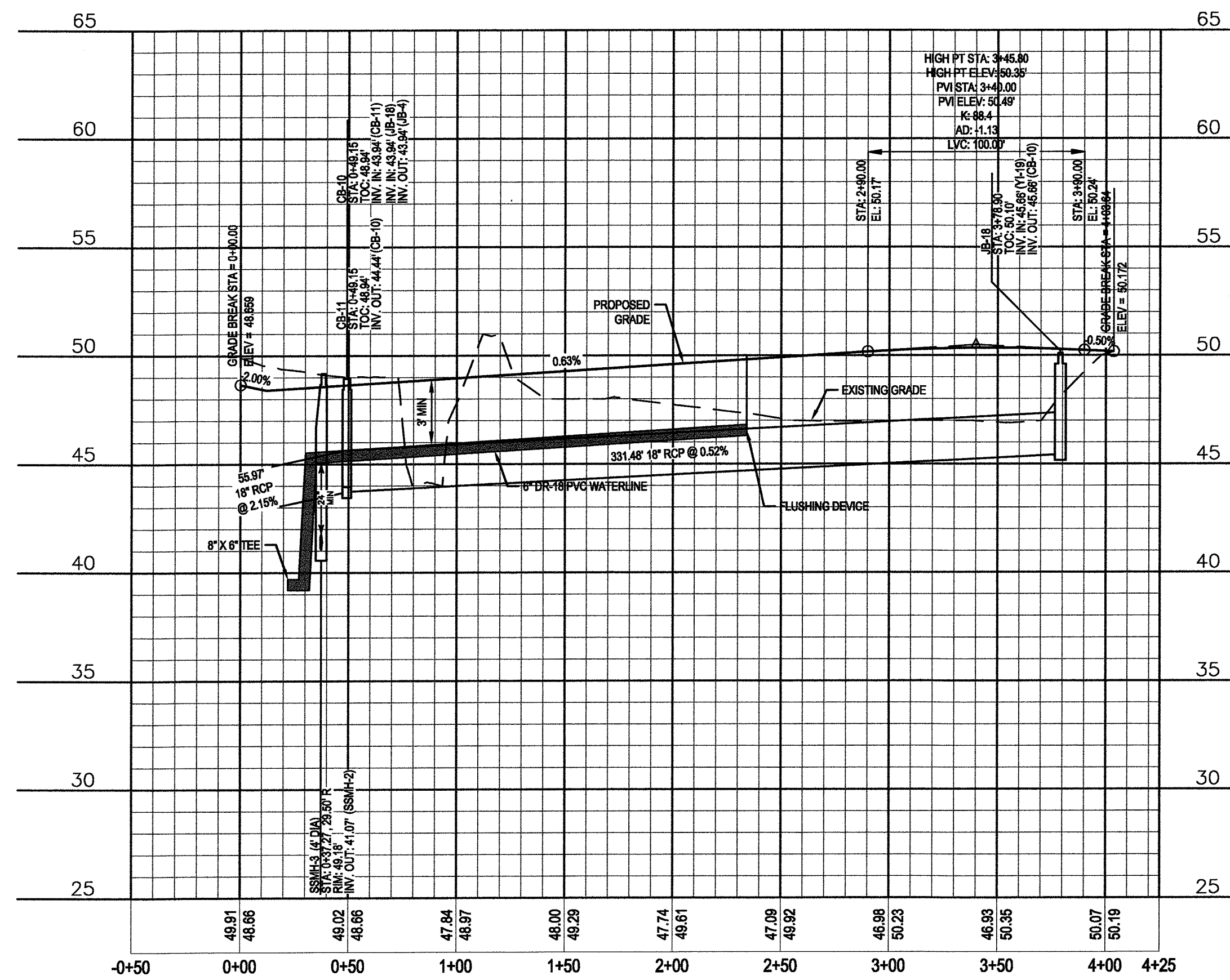
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Approved Construction Plan
 Name _____ Date _____
 Planning _____
 Public Utilities _____
 Traffic _____
 Fire _____

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

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FINAL DESIGN
 NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By
1	REVISED PER COW SRB	5-24-16	JSB
2	RELOCATED SEWER MAIN & ADDED UTILITY EASEMENT PER COWSR REVIEW	8-24-16	JSB
3	REVISED STORM DRAIN SYSTEM & GRADE ELEVATIONS	10-28-16	JSB

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

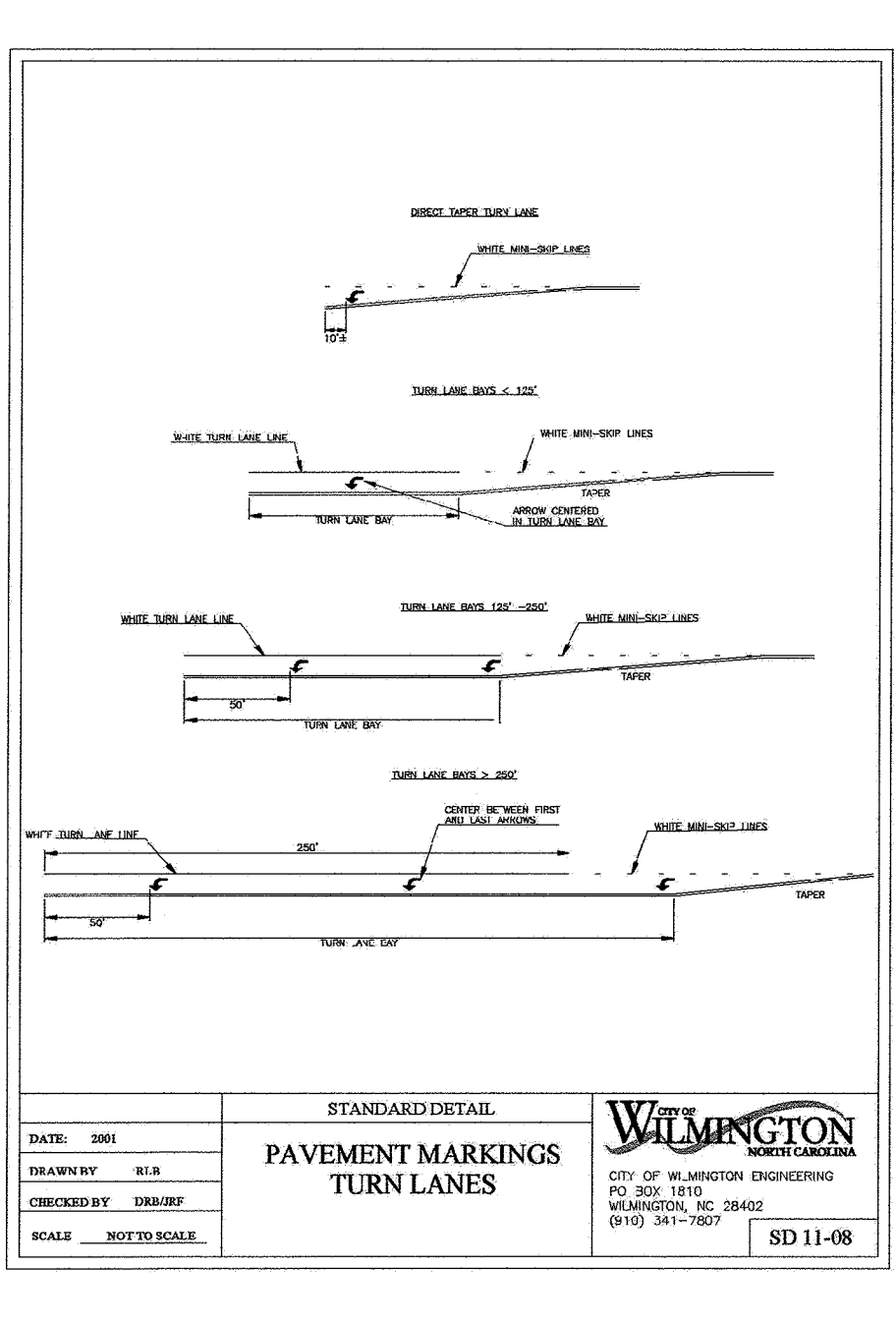
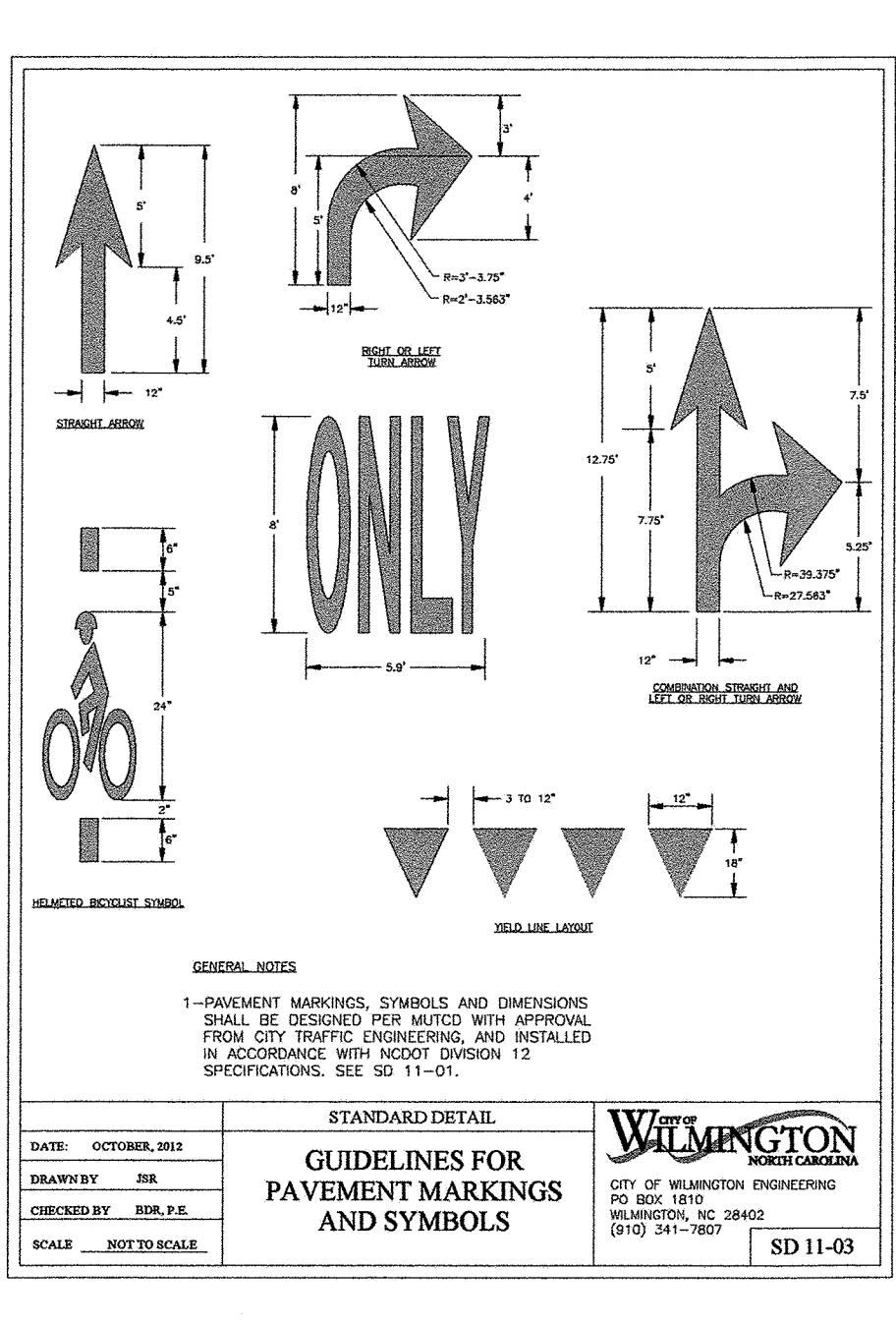
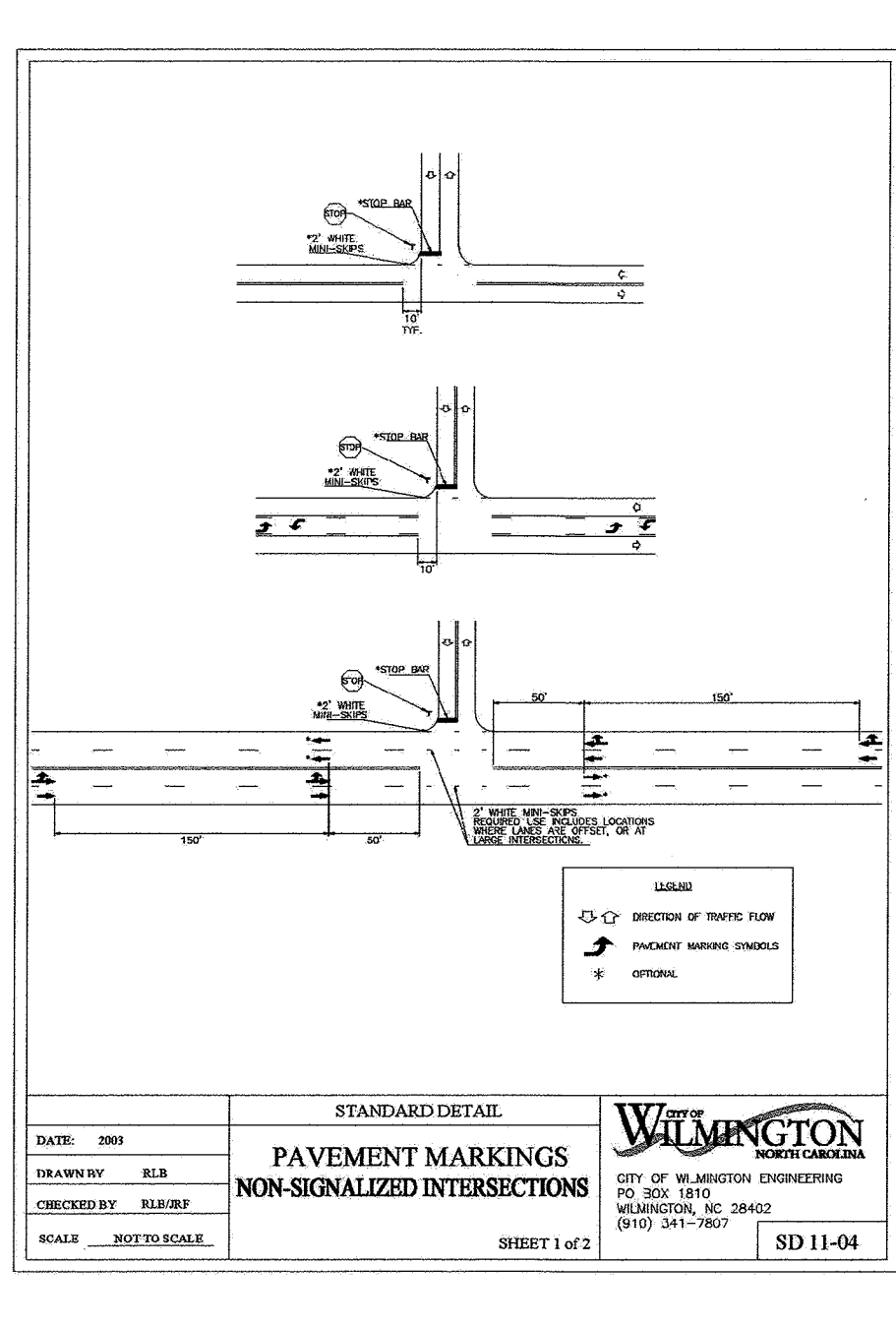
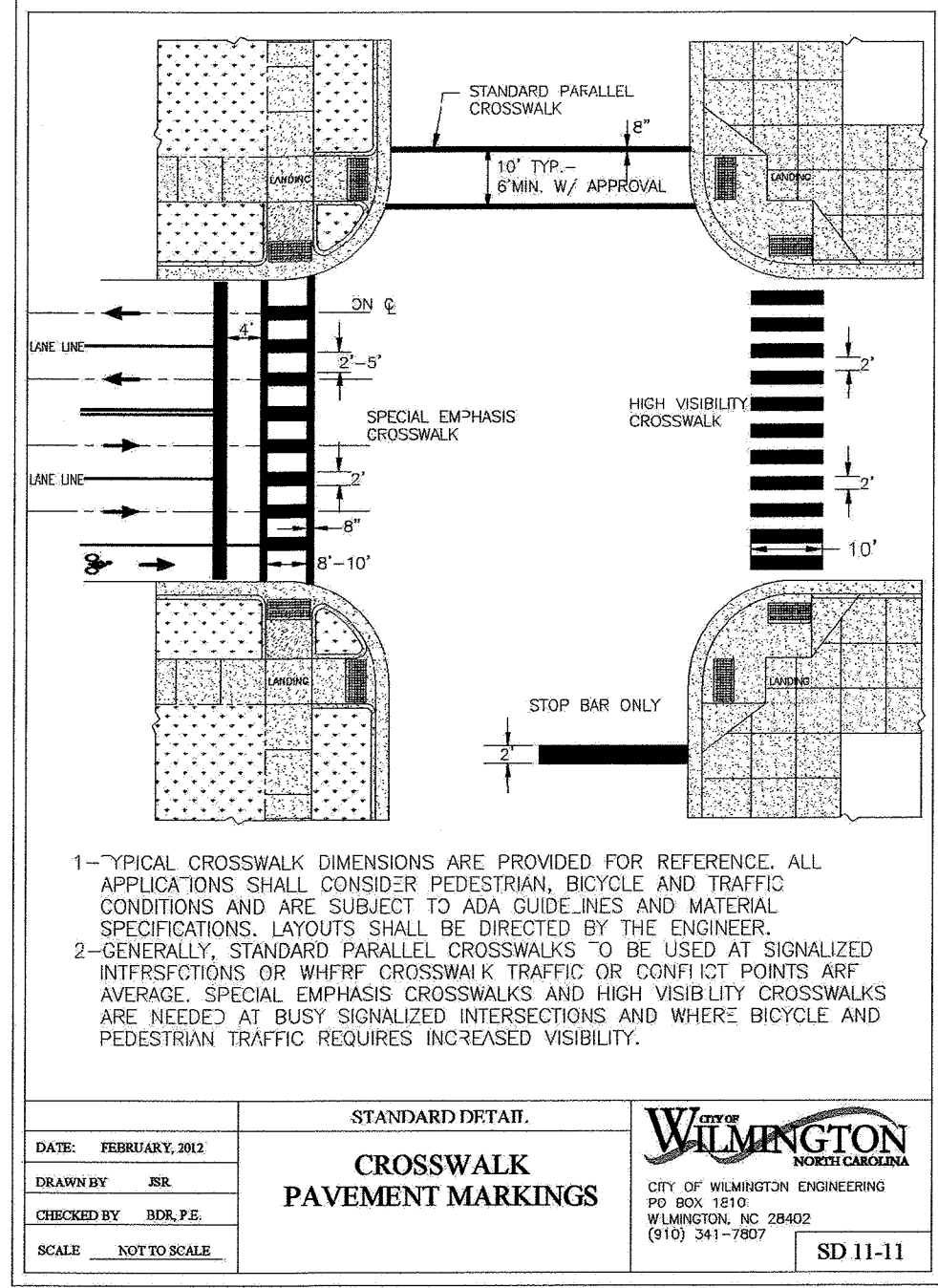
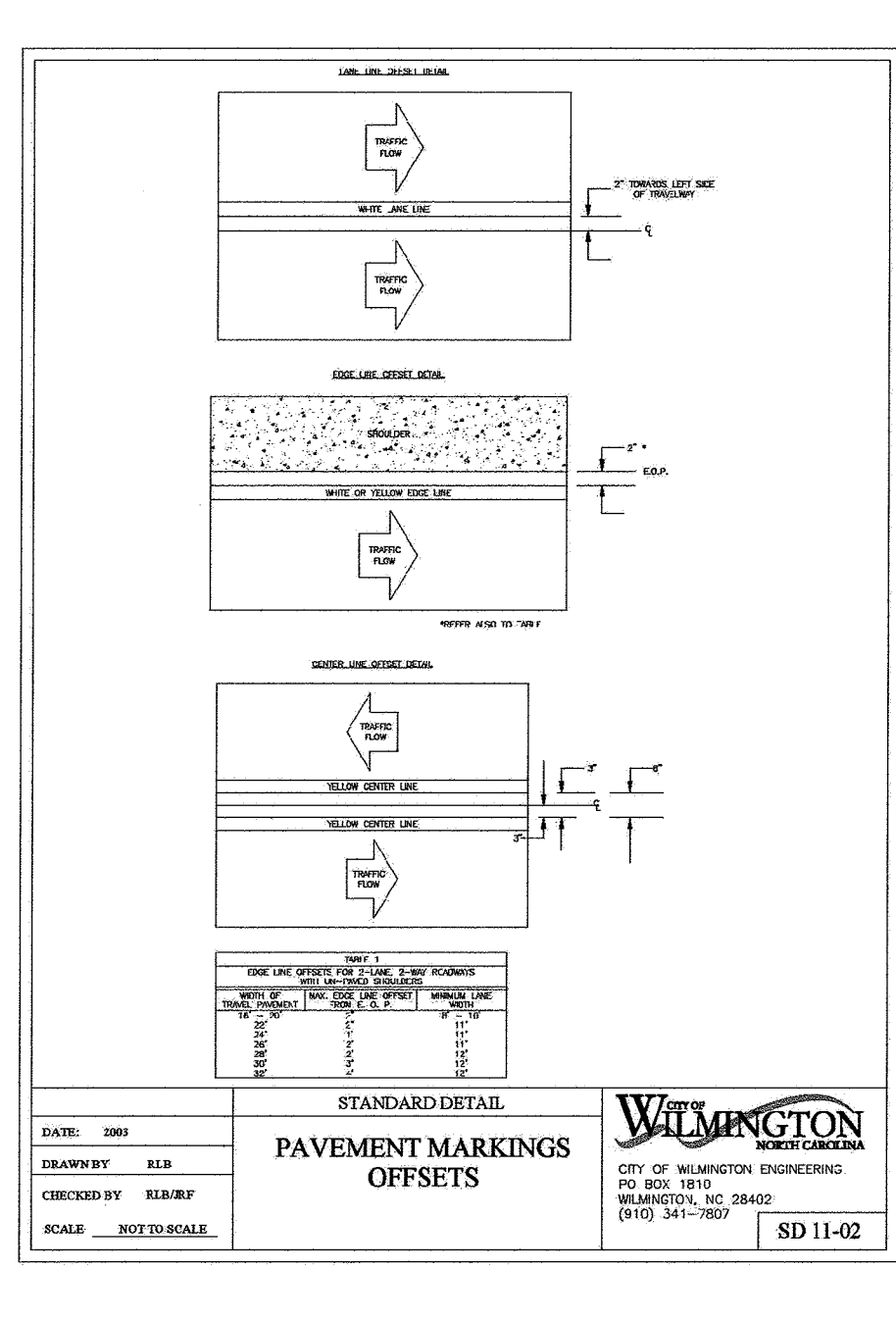
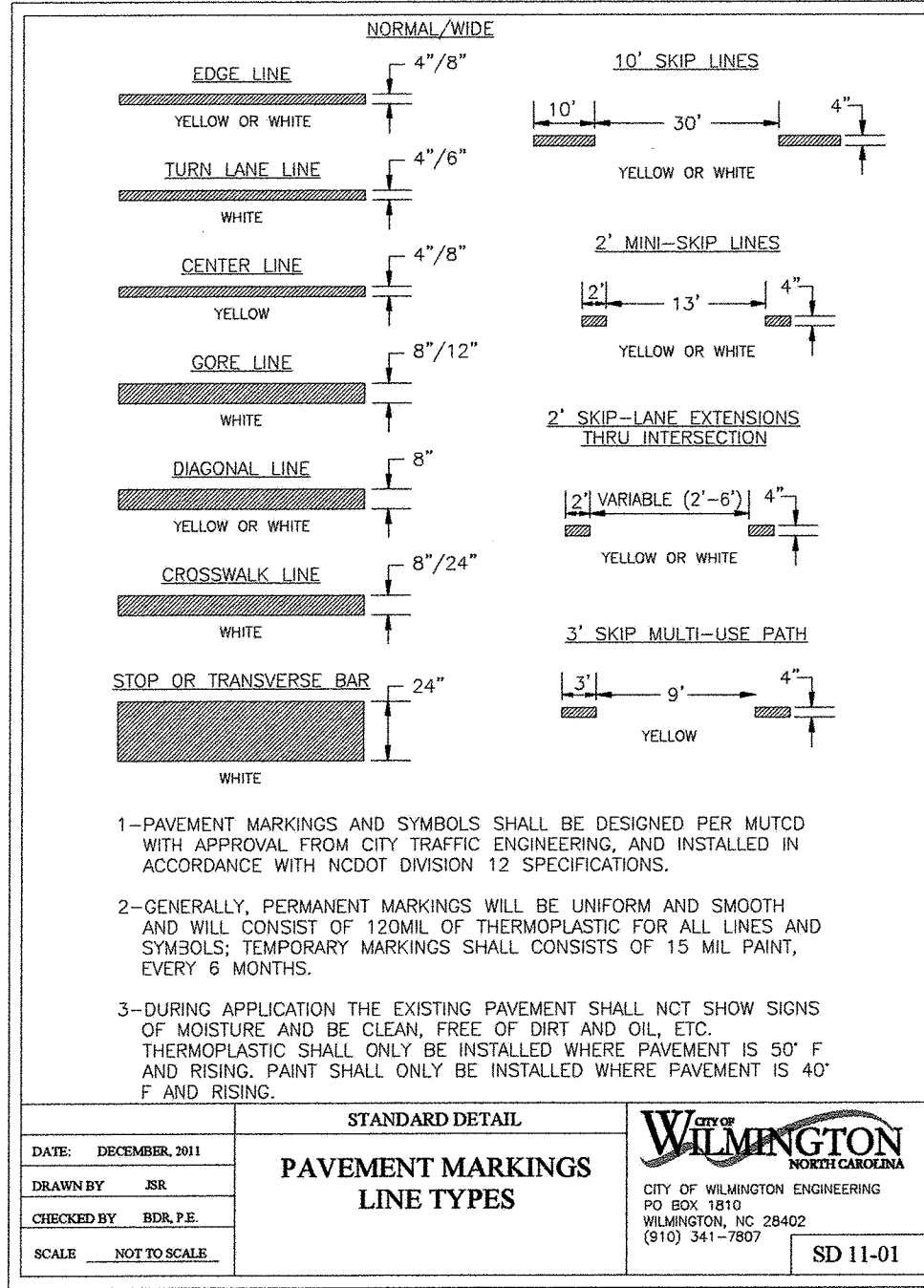
ARBOR COMMONS
 Wilmington New Hanover County North Carolina

ROAD B PLAN & PROFILE

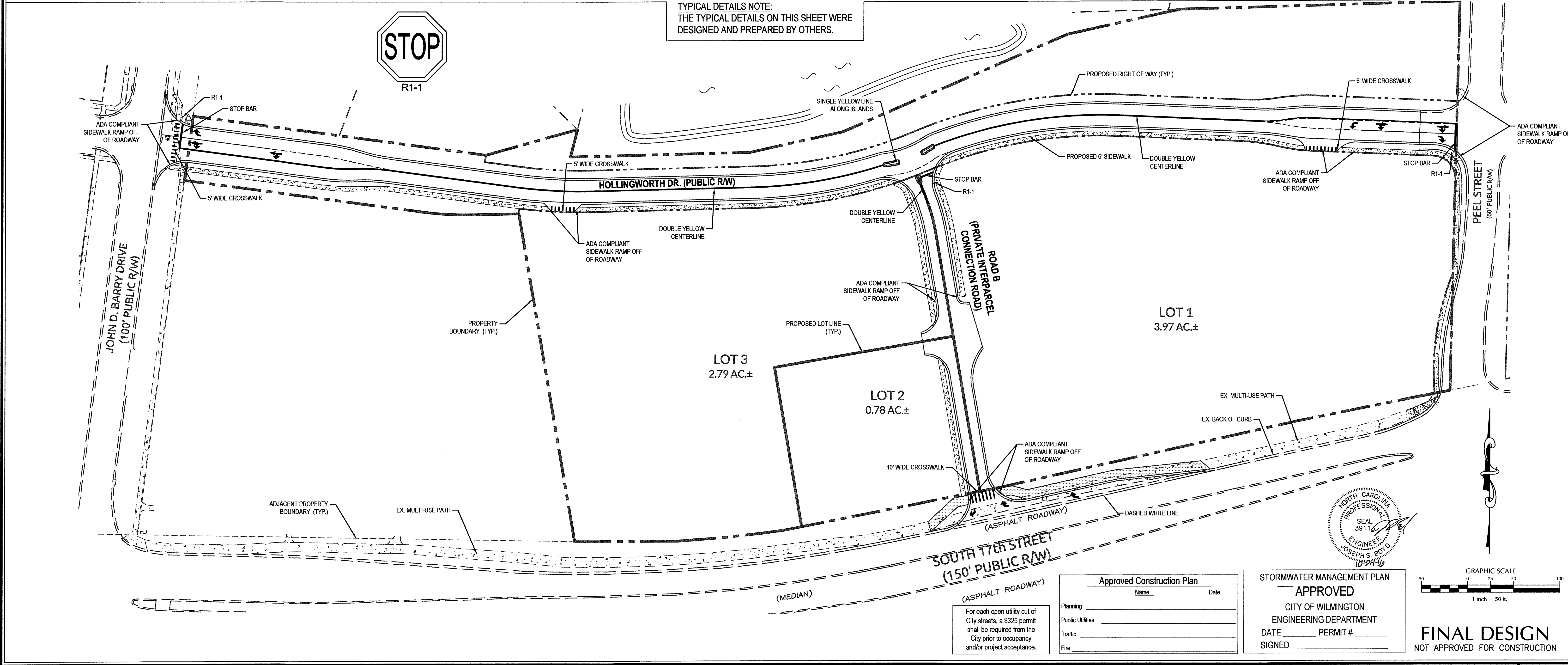
WithersRavenel
 Engineers | Planners | Surveyors
 1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | license #: C-0832 | www.withersravenel.com

Sheet No.
C-10

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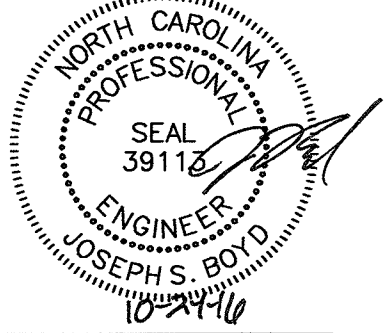
TYPICAL DETAILS NOTE:
 THE TYPICAL DETAILS ON THIS SHEET WERE DESIGNED AND PREPARED BY OTHERS.



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

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

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



No.	Revision	Date	By

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

ARBOR COMMONS
 New Hanover County
 Wilmington, North Carolina

PAVEMENT MARKINGS AND SIGNAGE PLAN

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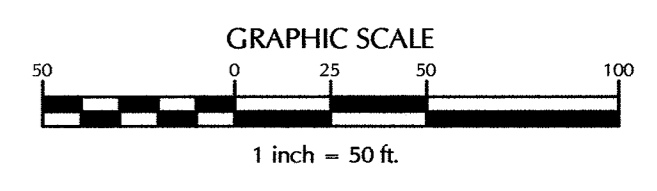
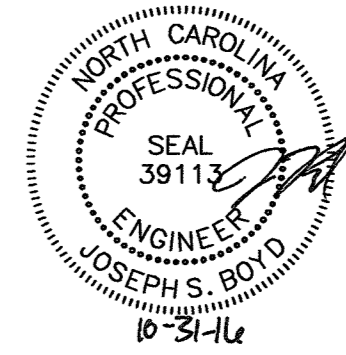
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Approved Construction Plan		
Name	Date	
Planning		
Public Utilities		
Traffic		
Fire		

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

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FINAL DESIGN
 NOT APPROVED FOR CONSTRUCTION

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No.	Revision	Date	By

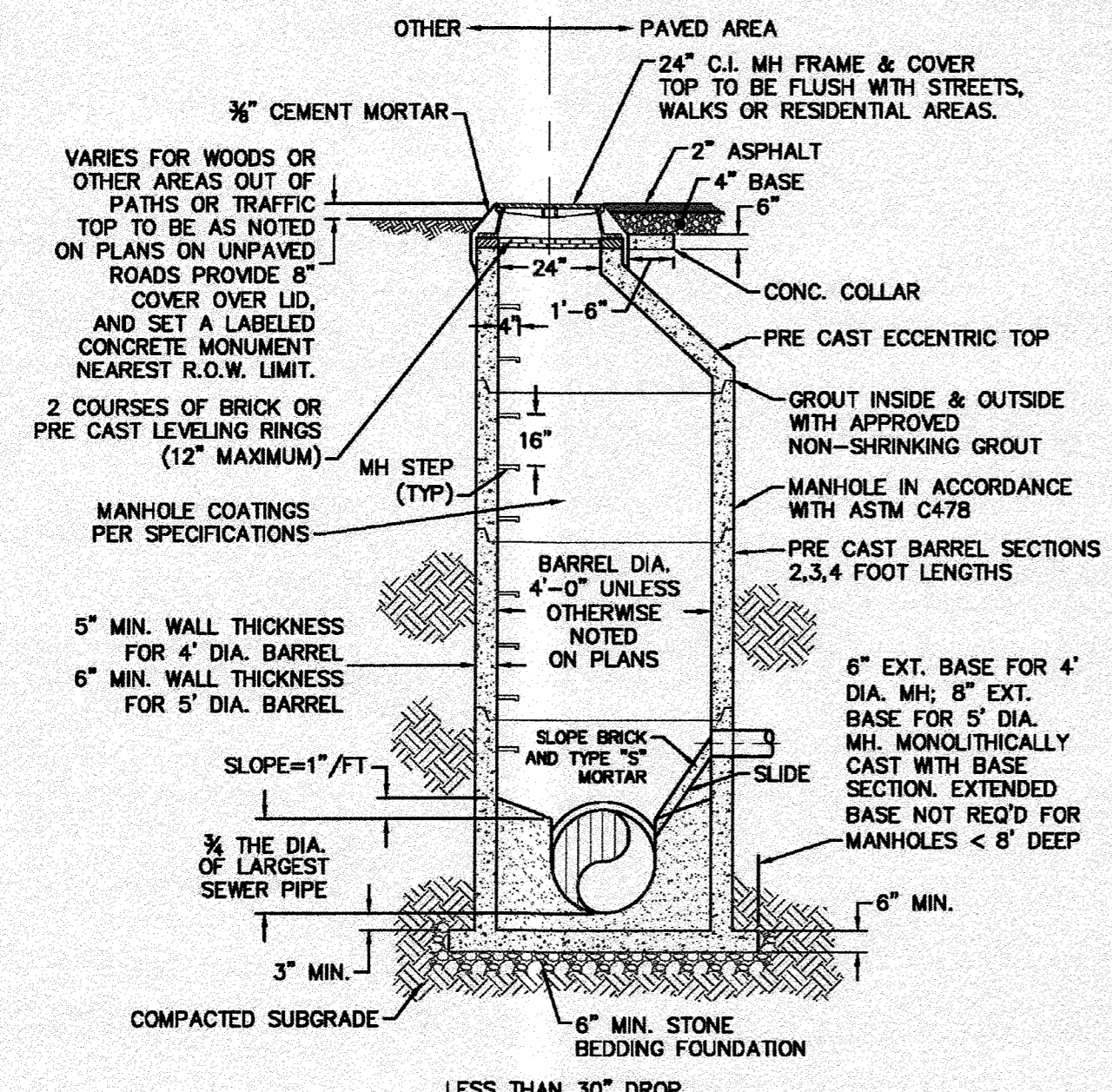
Designer	JSB	Scale	1"=50'
Drawn By	SLF	Date	10/10/2016
Checked By	JSB	Job No.	03061193.01

ARBOR COMMONS
 New Hanover County North Carolina

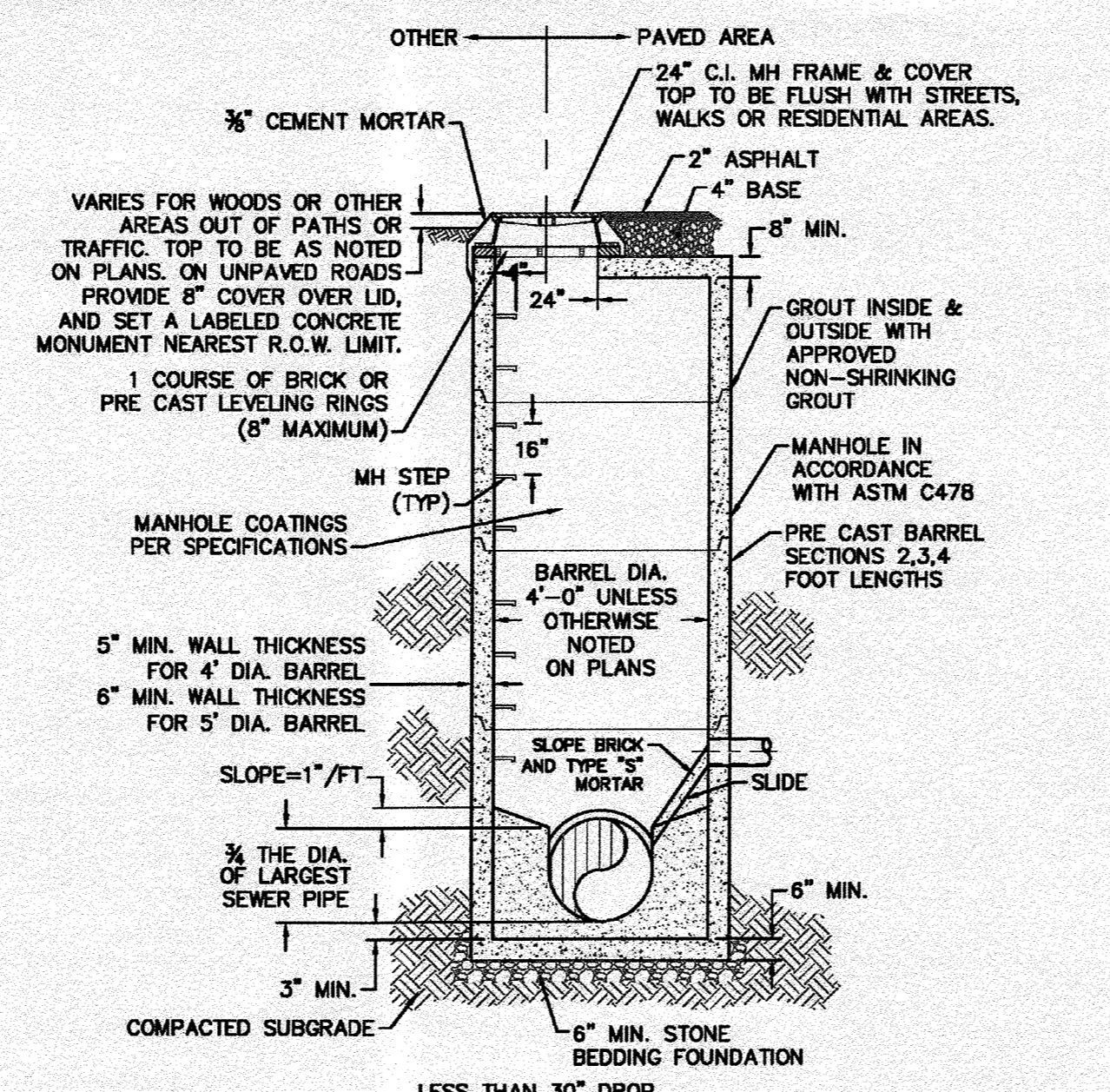
DRAINAGE AREA PLAN

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

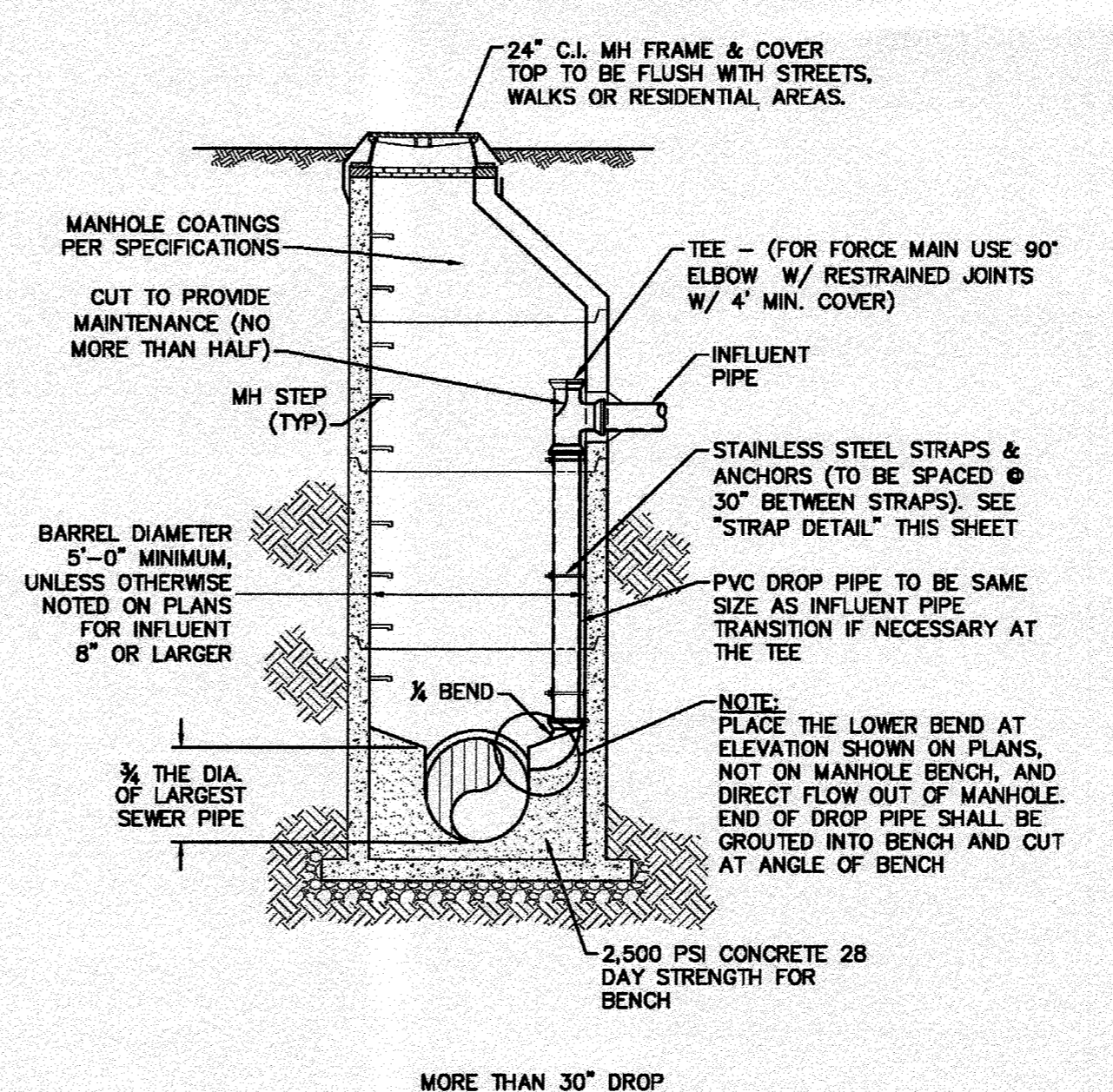
Sheet No.
C-12



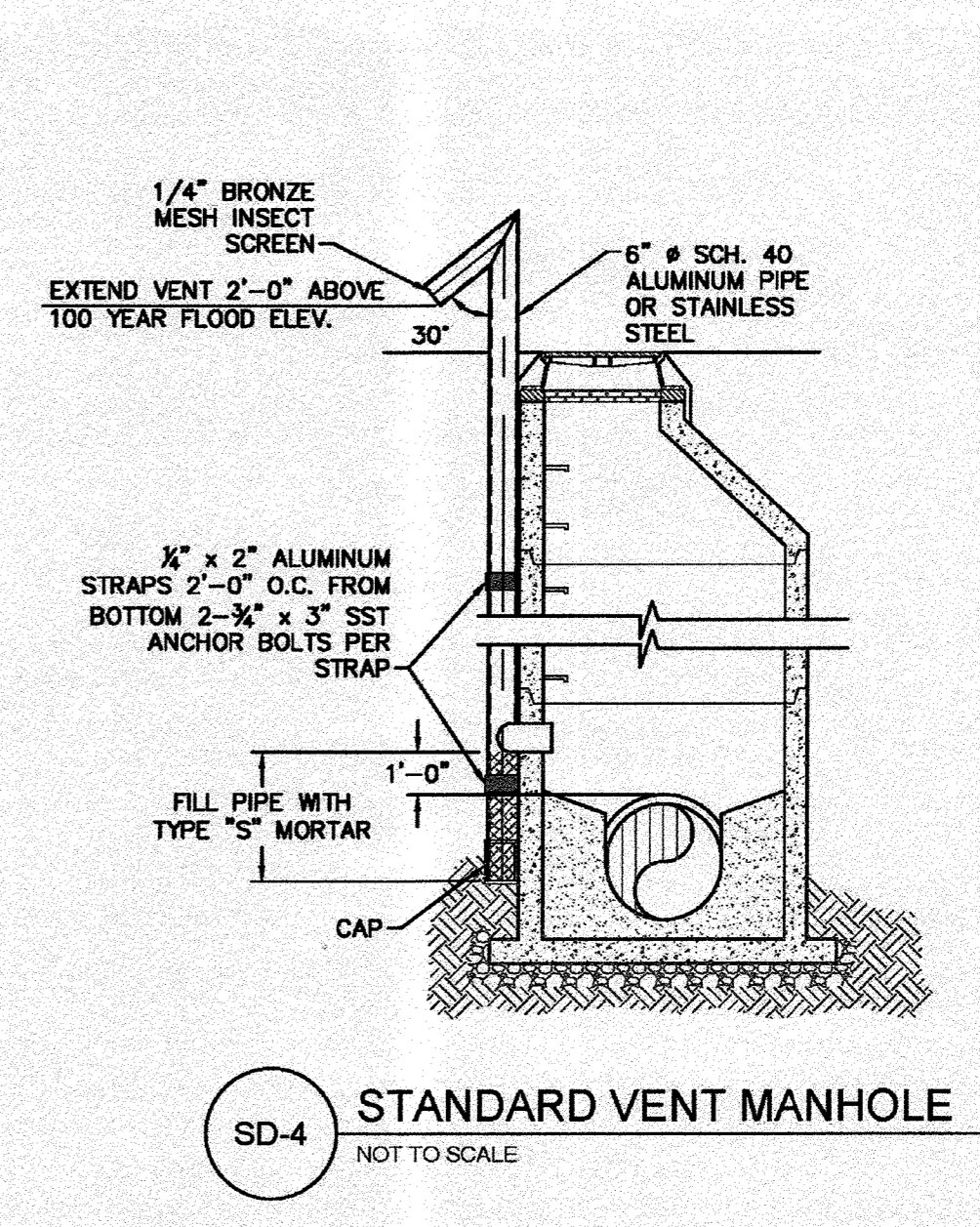
SD-1 PRECAST CONCRETE OFFSET MANHOLE TYPICAL
NOT TO SCALE



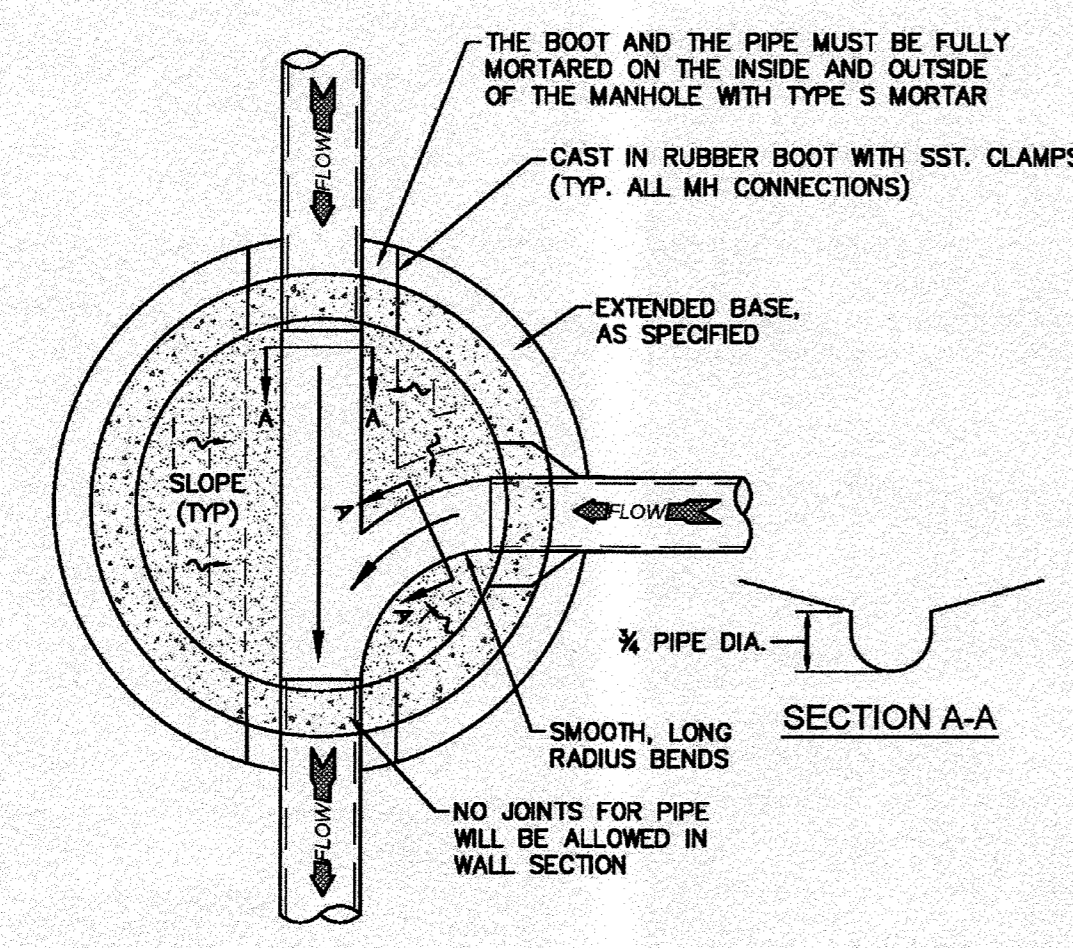
SD-2 PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL
NOT TO SCALE



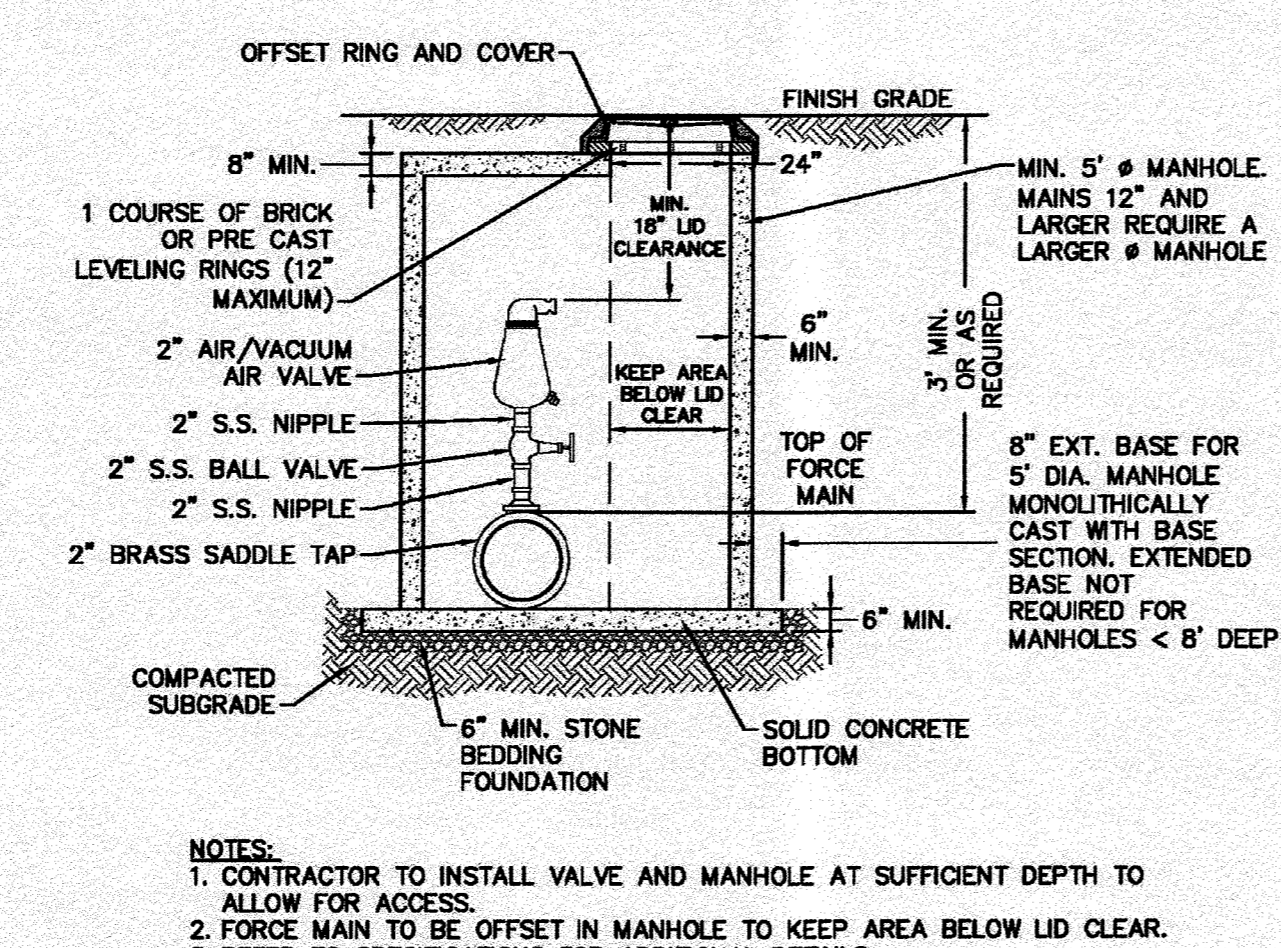
SD-3 DROP MANHOLE
NOT TO SCALE



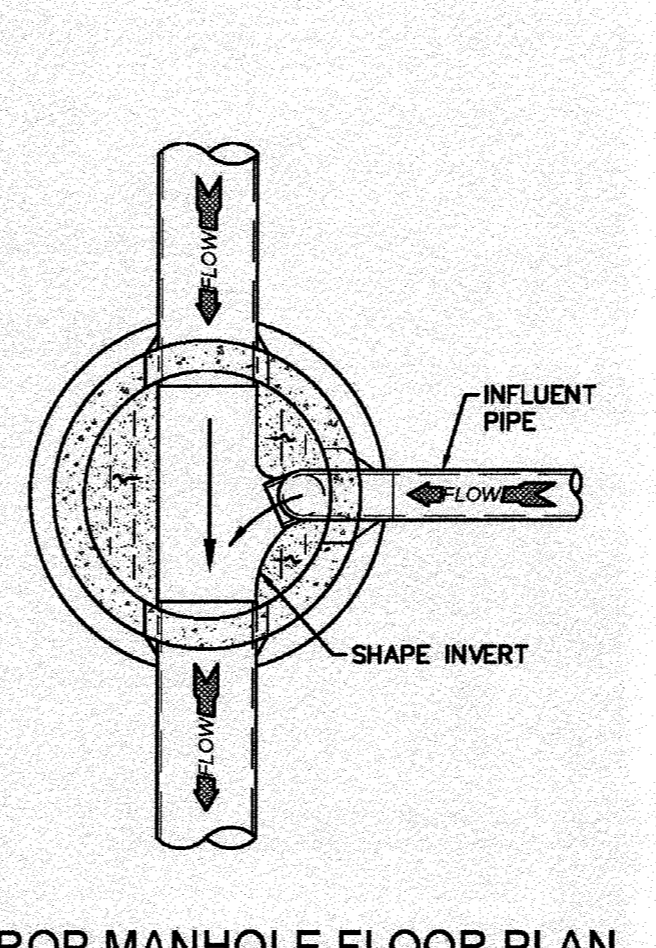
SD-4 STANDARD VENT MANHOLE
NOT TO SCALE



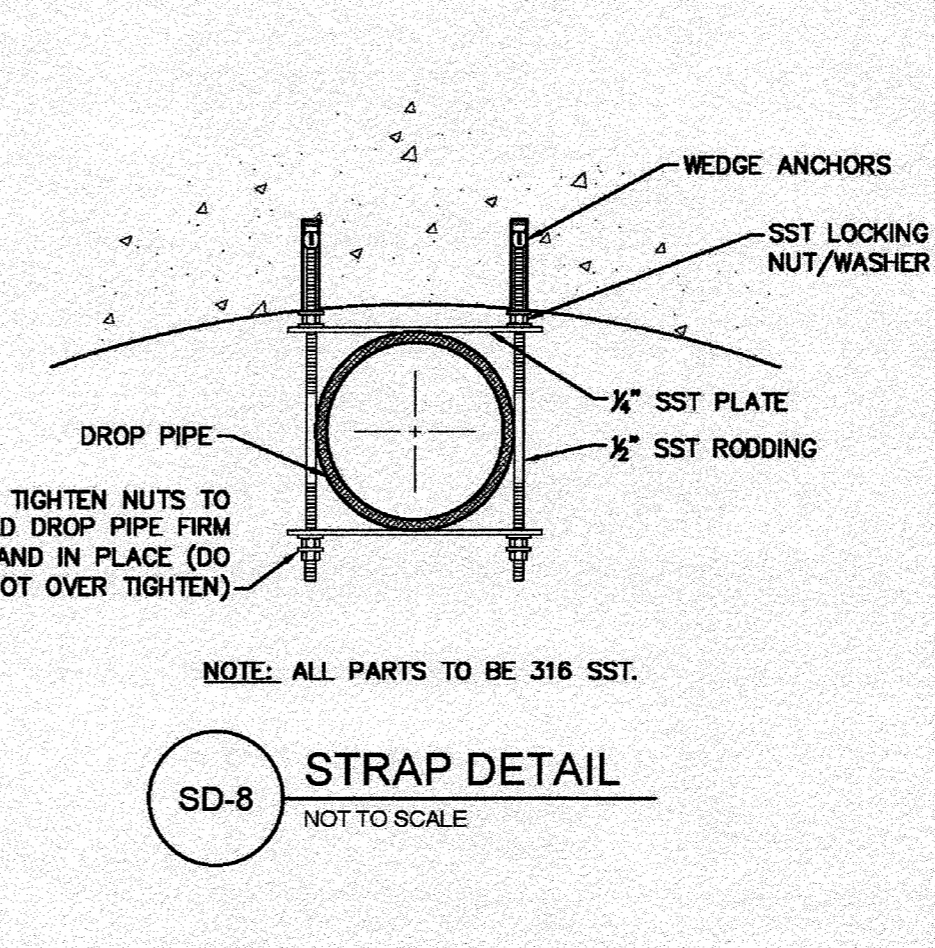
SD-5 MANHOLE FLOOR PLAN
NOT TO SCALE



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	10/28/12
2	STANDARD SEWER NOTE #6 REVISED	12/10/12
3	REVISED STANDARD VENT MANHOLE TO EXTEND VENT 2'-0" ABOVE 100 YR FLOOD	11/20/14
4	Revised Multiple Details	02/15/16

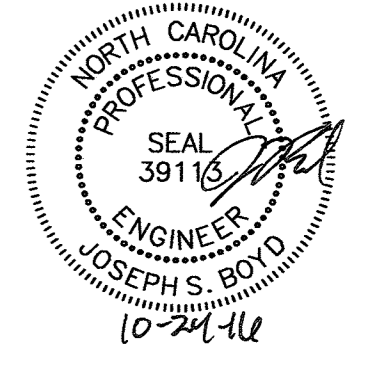
CFPUA SANITARY SEWER

STANDARD DETAILS

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

DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFP/UA
CHECKED BY: CFP/UA
PROJECT NO.: _____

SHEET NO: **SSD-1**



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

FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION

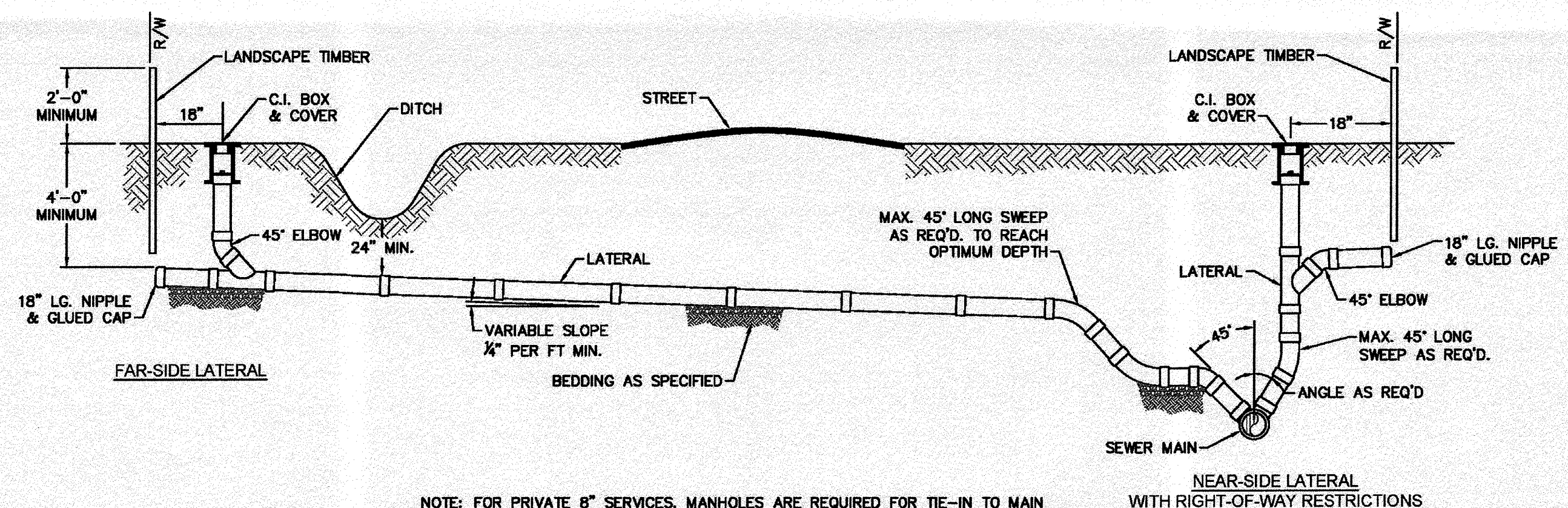
No.	Revision	Date	By	Designer	Scale
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				JSB	8/30/16
				JJW	03061193.01

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Wilmington New Hanover County North Carolina

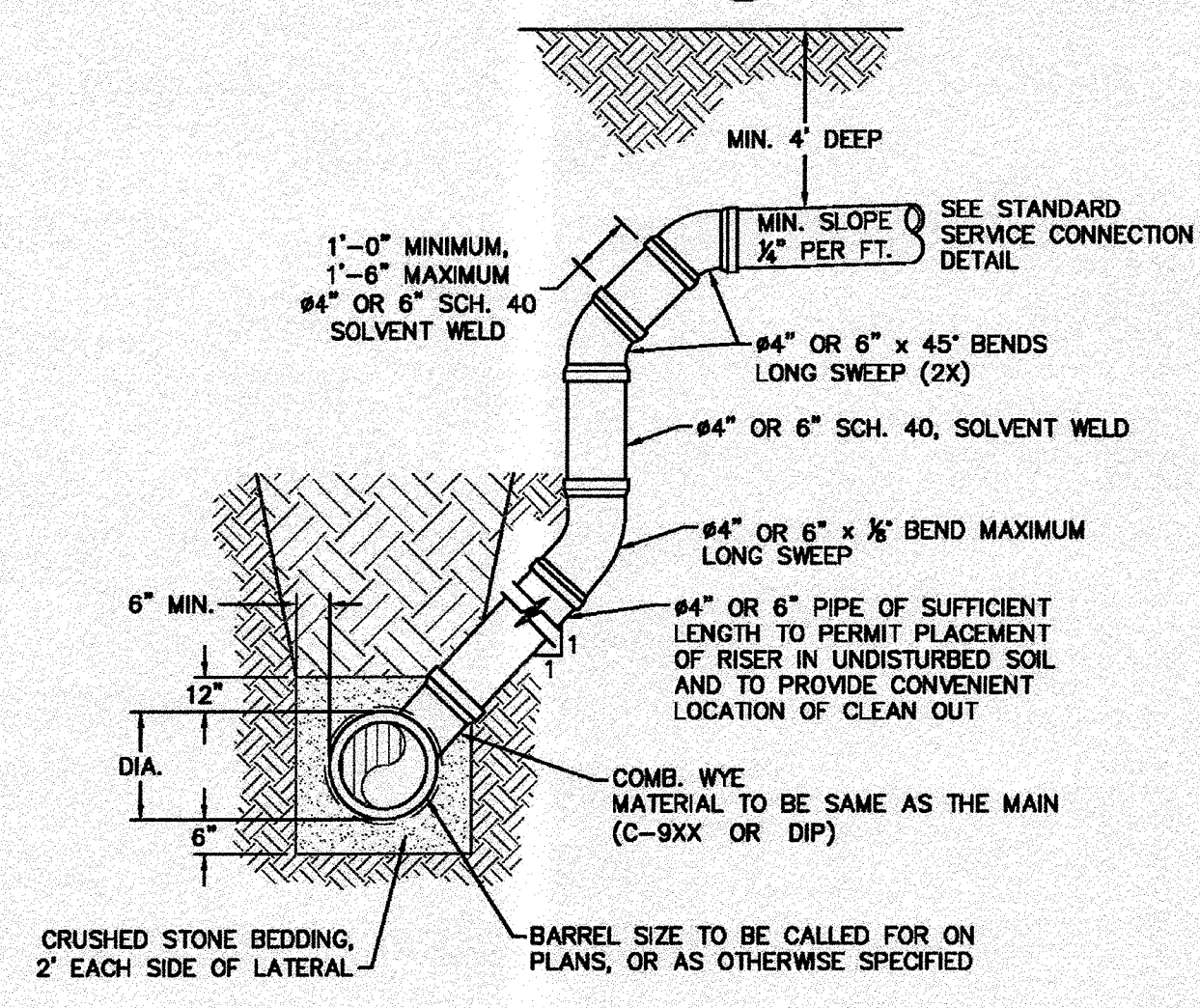
SANITARY SEWER DETAILS

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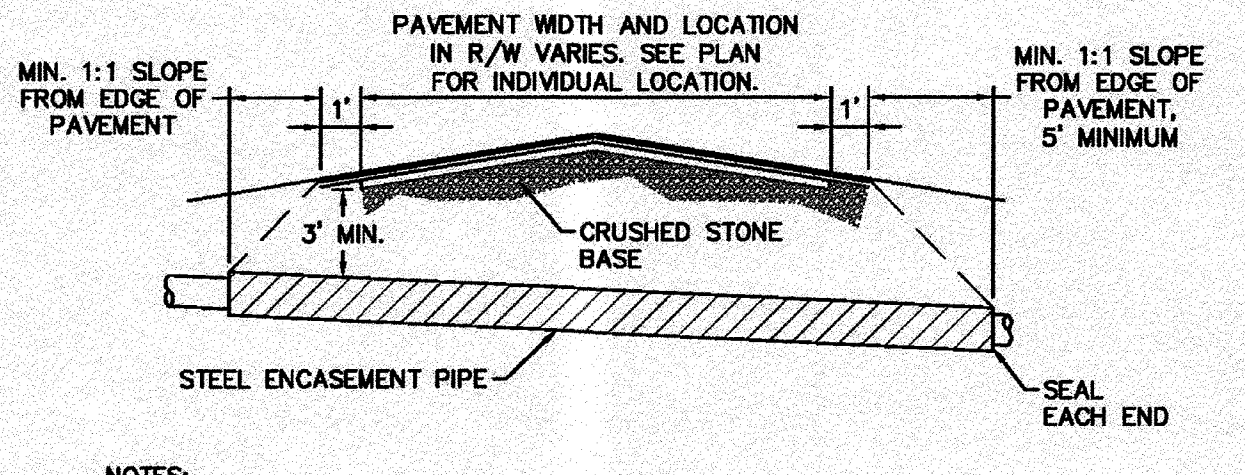
Sheet No. **D-1**



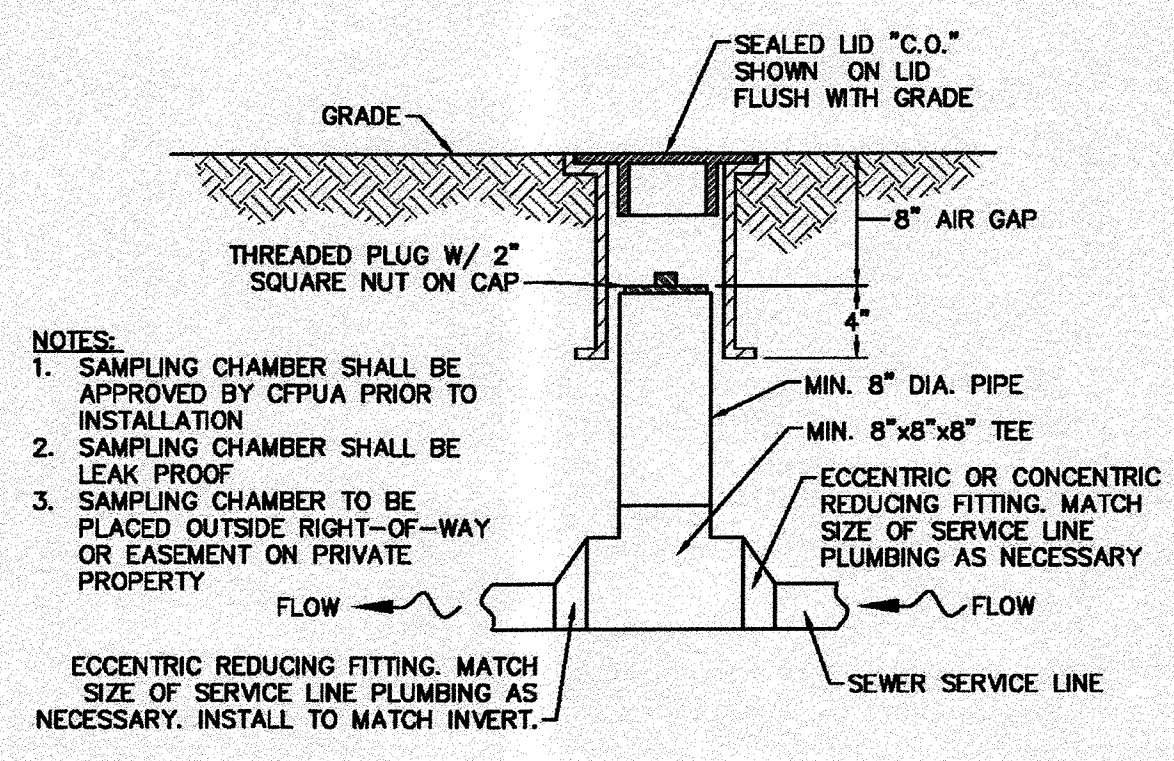
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN WITH REQUIRED EASEMENT.
SD-19 STANDARD SERVICE CONNECTION TO SANITARY SEWER
 NOT TO SCALE



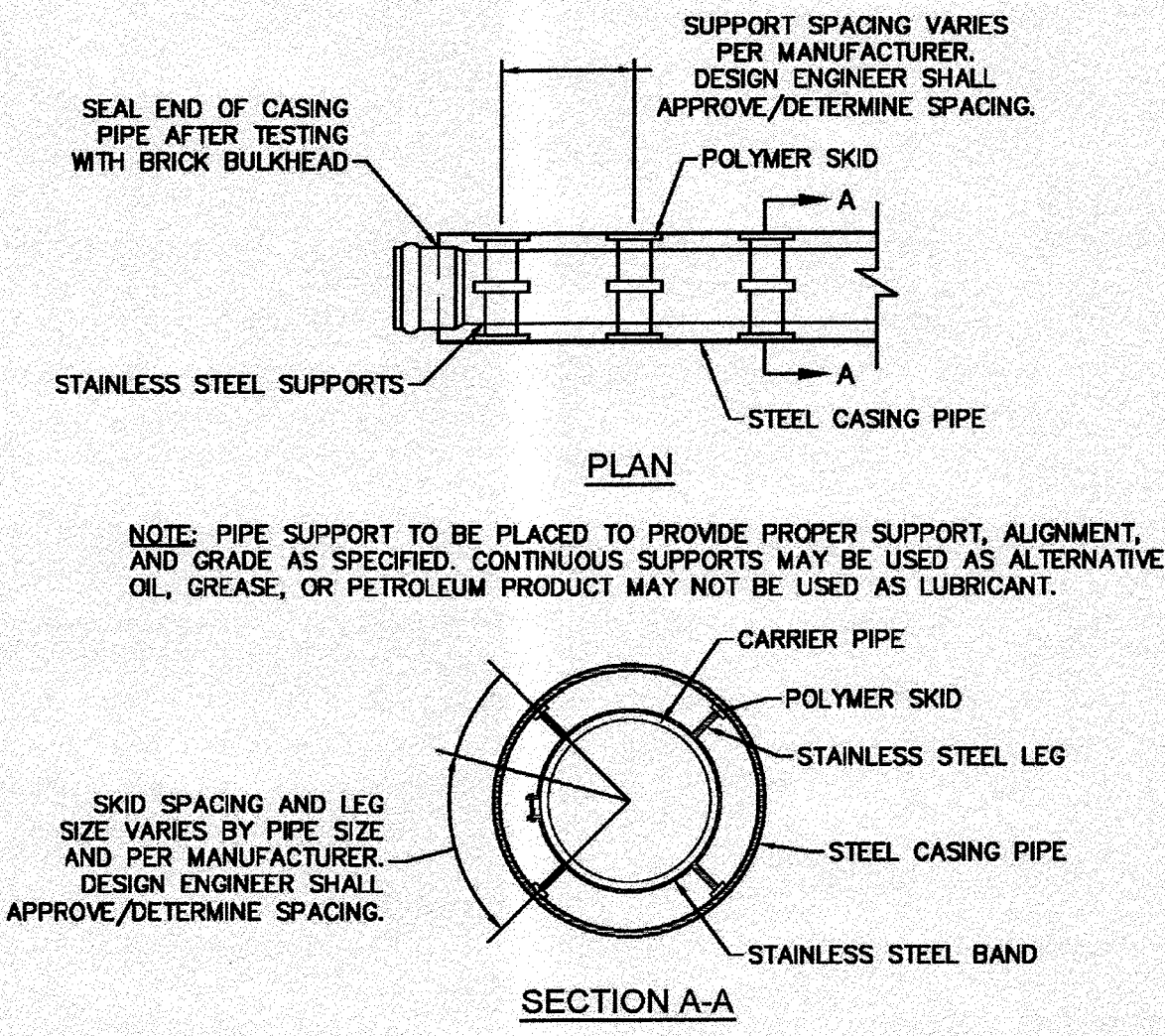
NOTE: 1. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION. 2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
SD-12 DEEP SERVICE LATERAL
 NOT TO SCALE



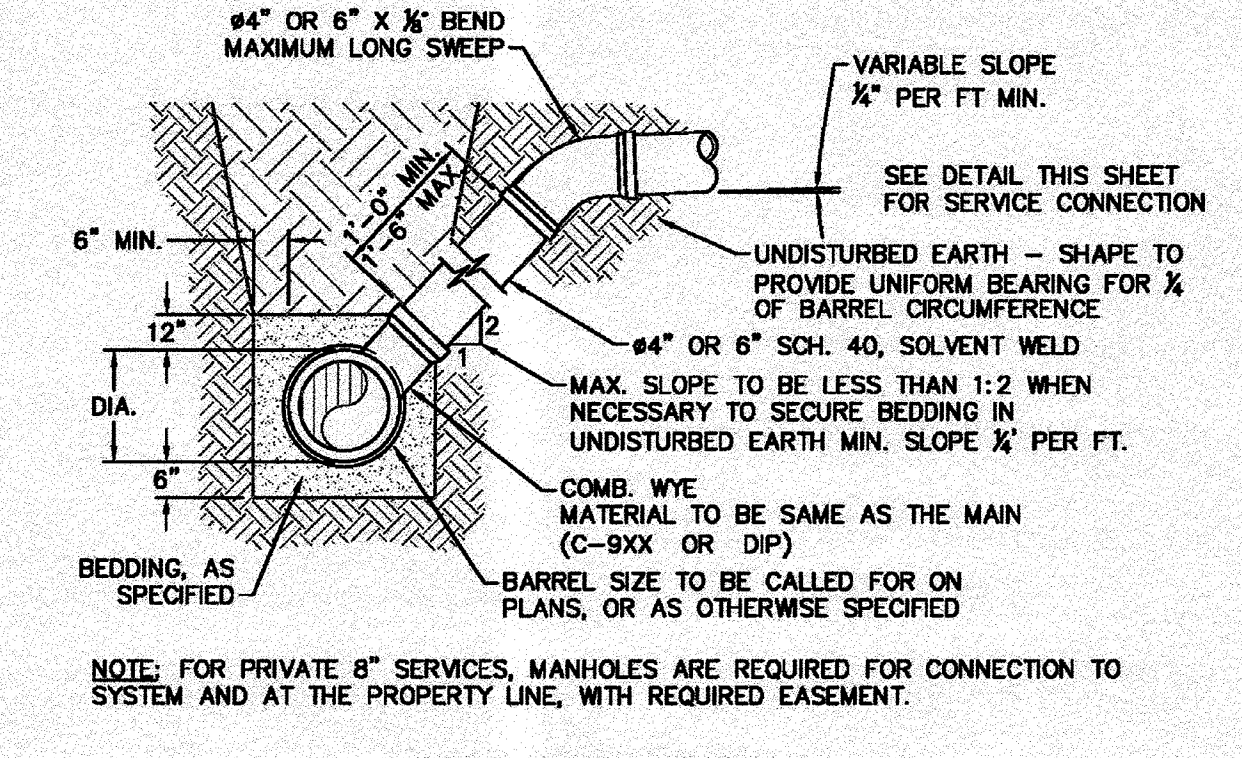
NOTE: 1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED. 2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.
SD-16 TYPICAL BORING/JACKING DETAIL
 NOT TO SCALE



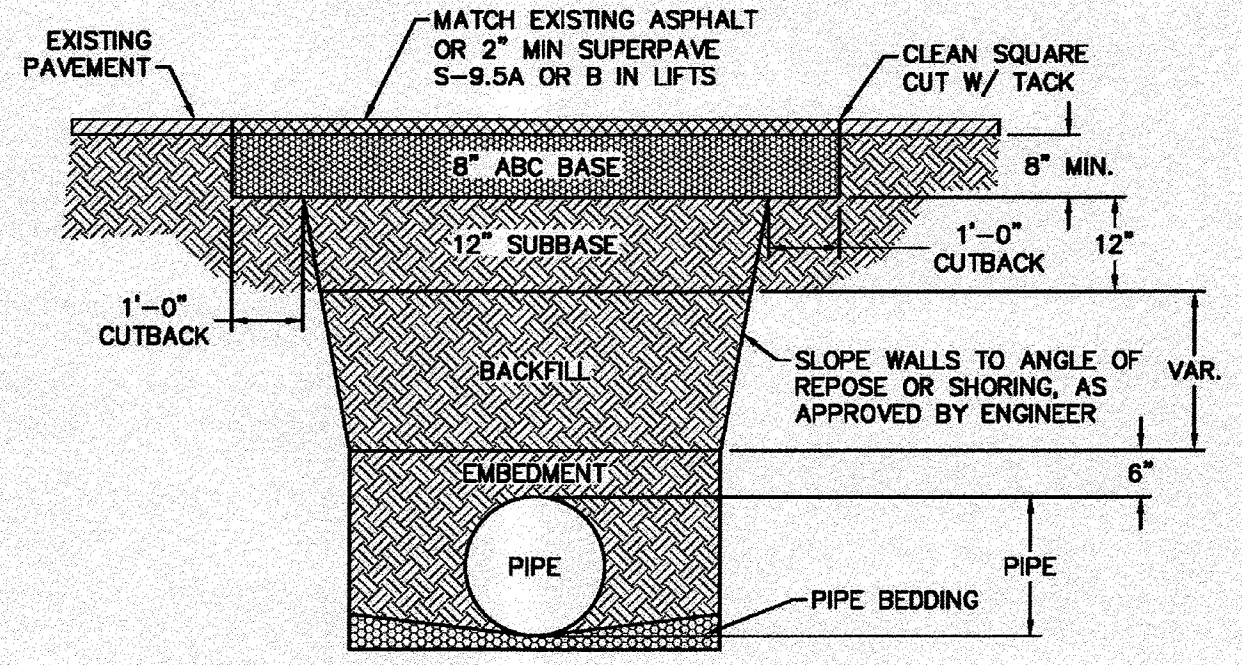
NOTE: 1. SAMPLING CHAMBER SHALL BE APPROVED BY CFPUA PRIOR TO INSTALLATION. 2. SAMPLING CHAMBER SHALL BE LEAK PROOF. 3. SAMPLING CHAMBER TO BE PLACED OUTSIDE RIGHT-OF-WAY OR EASEMENT ON PRIVATE PROPERTY. ECCENTRIC REDUCING FITTING. MATCH SIZE OF SERVICE LINE PLUMBING AS NECESSARY. INSTALL TO MATCH INVERT.
SD-13 SAMPLING CHAMBER
 NOT TO SCALE



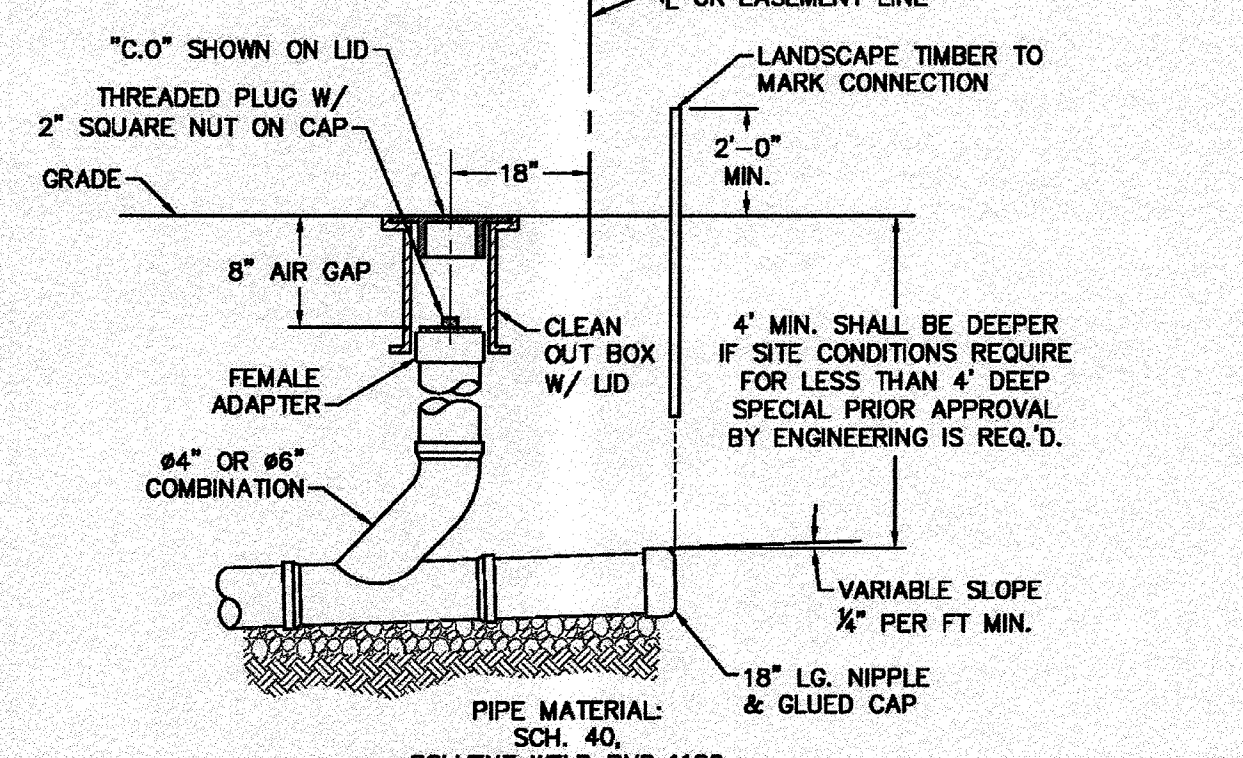
NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.
SD-17 PIPE CASING SUPPORT DETAIL
 NOT TO SCALE



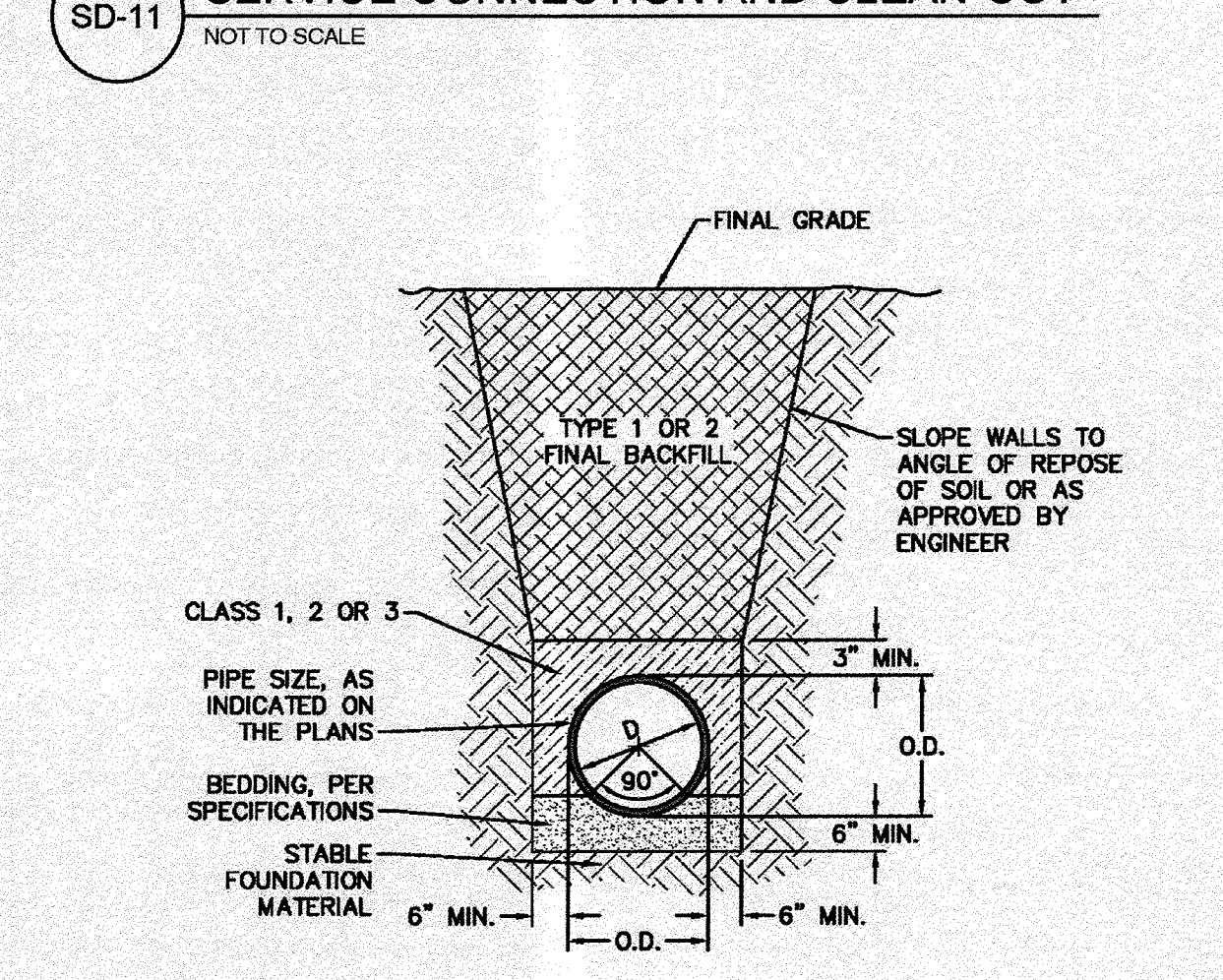
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
SD-10 STANDARD SERVICE LATERAL
 NOT TO SCALE



NOTE: 1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE. 2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION. (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC). 3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS. 4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS. 5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED. 6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE. 7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99. 8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%. (FOR PRIVATE ROADS AND PAVED AREAS, CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)
SD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
 NOT TO SCALE



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.
SD-11 SERVICE CONNECTION AND CLEAN-OUT
 NOT TO SCALE



SD-15 TYPICAL TRENCH DETAIL
 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.

- 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).

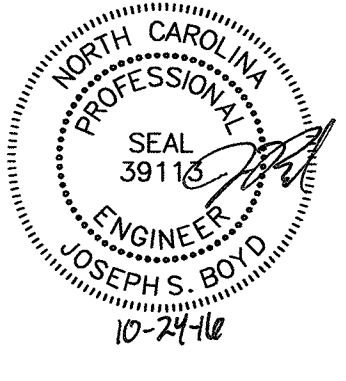
THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

CFPUA SANITARY SEWER		DATE: 1/9/12
STANDARD DETAILS		SCALE: N/A
CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 <small>Stewardship. Sustainability. Service.</small>		DRAWN BY: CFPUA
SSD-2		CHECKED BY: CFPUA
		PROJECT NO.:
		SHEET NO.:

REV.	DESCRIPTION:	DATE:
1	SAMPLING CHAMBER REVISED	10/26/12
2	Revised Multiple Details	02/15/18

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

FINAL DESIGN
 NOT APPROVED FOR CONSTRUCTION



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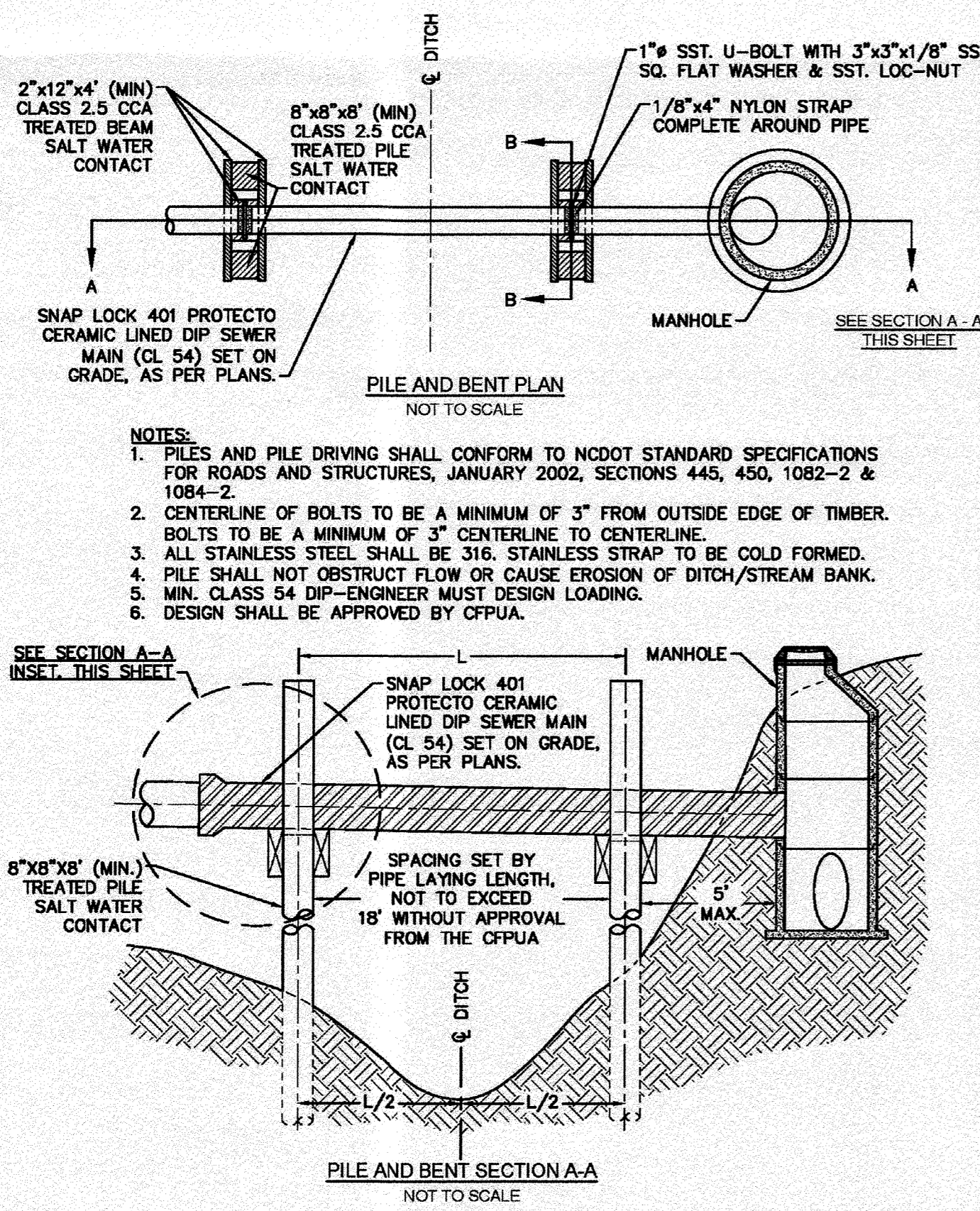
No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JJW	03061193.01

ARBOR COMMONS
 New Hanover County
 North Carolina

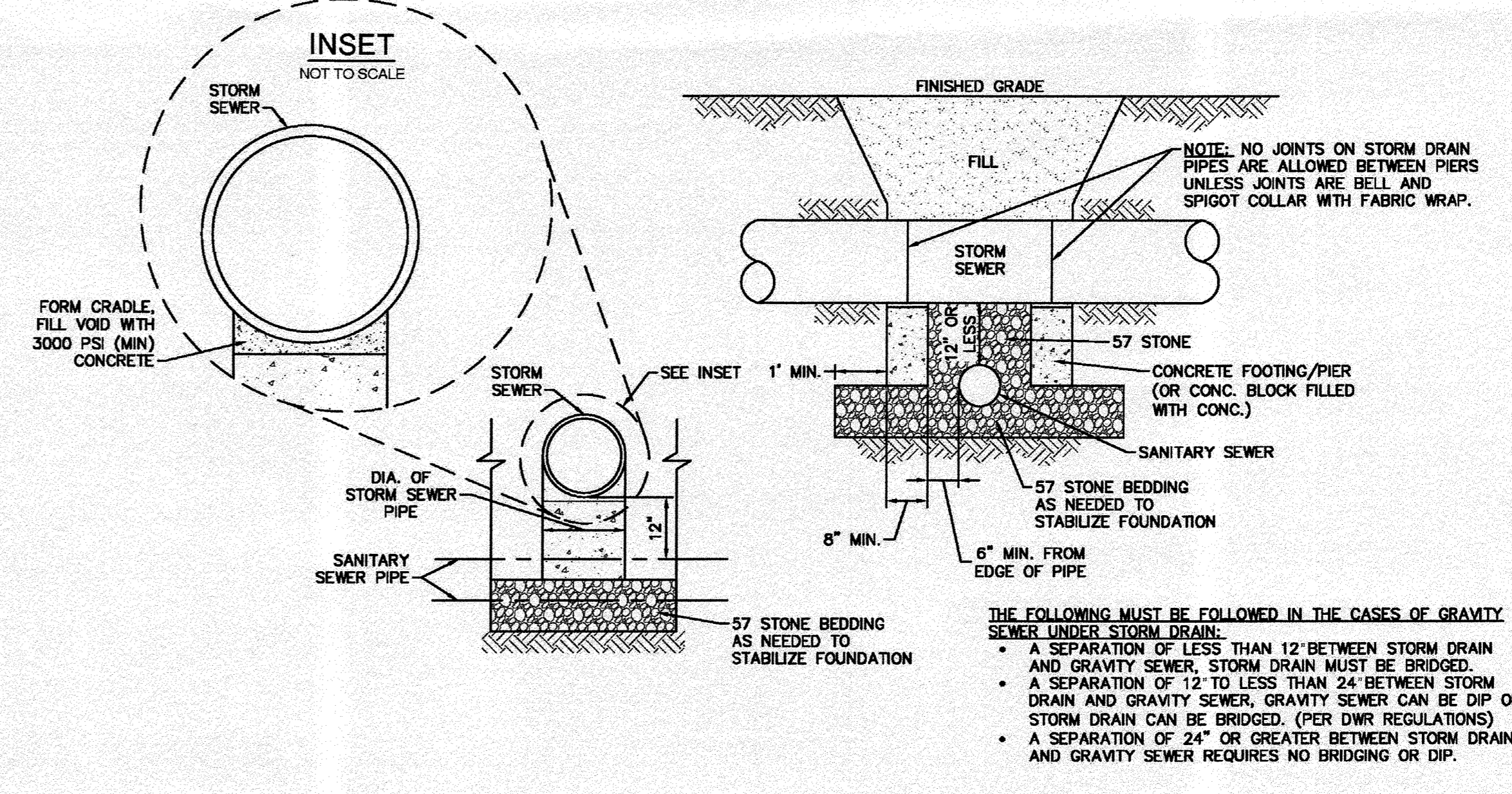
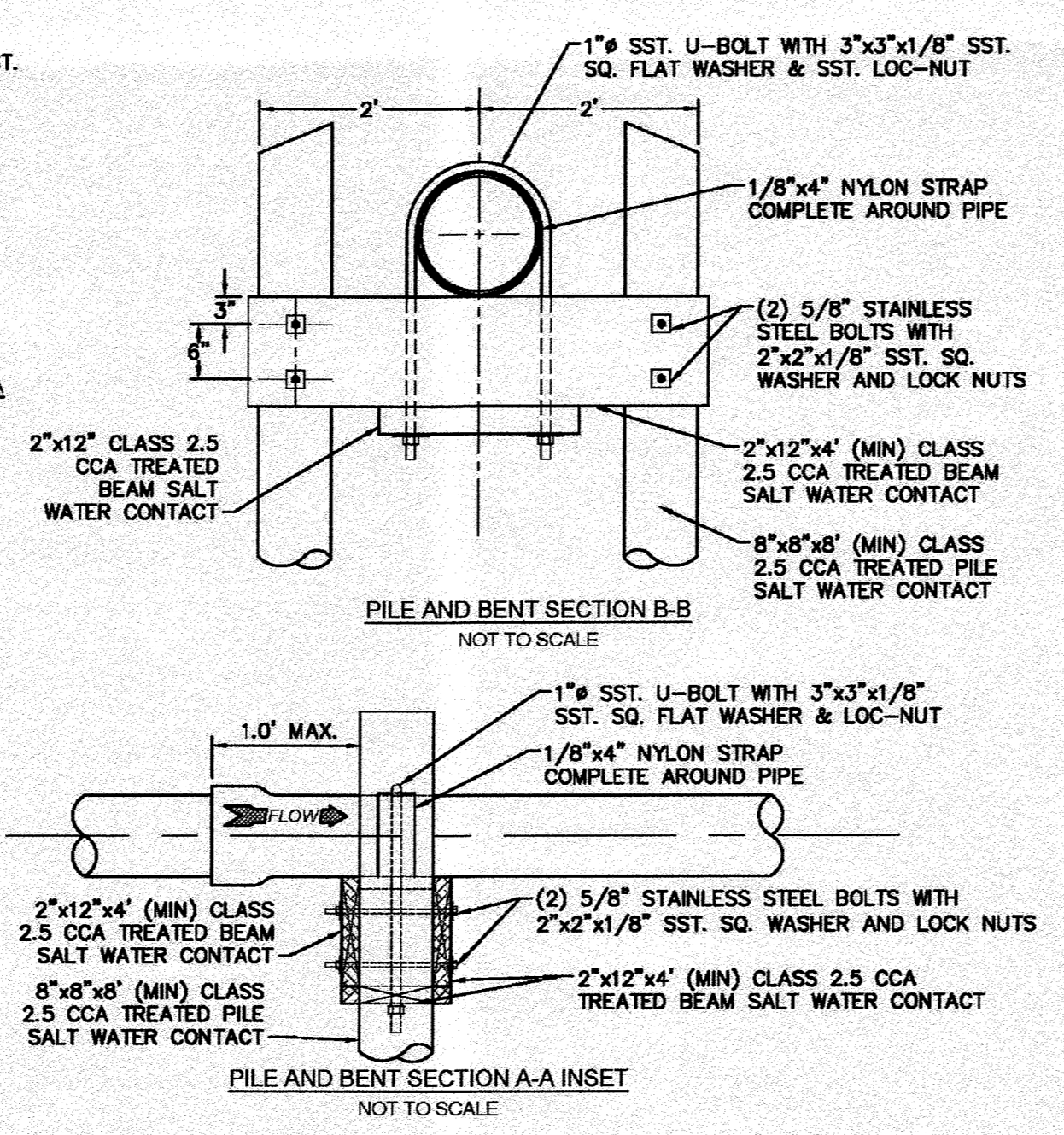
SANITARY SEWER DETAILS

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

Sheet No.
D-2



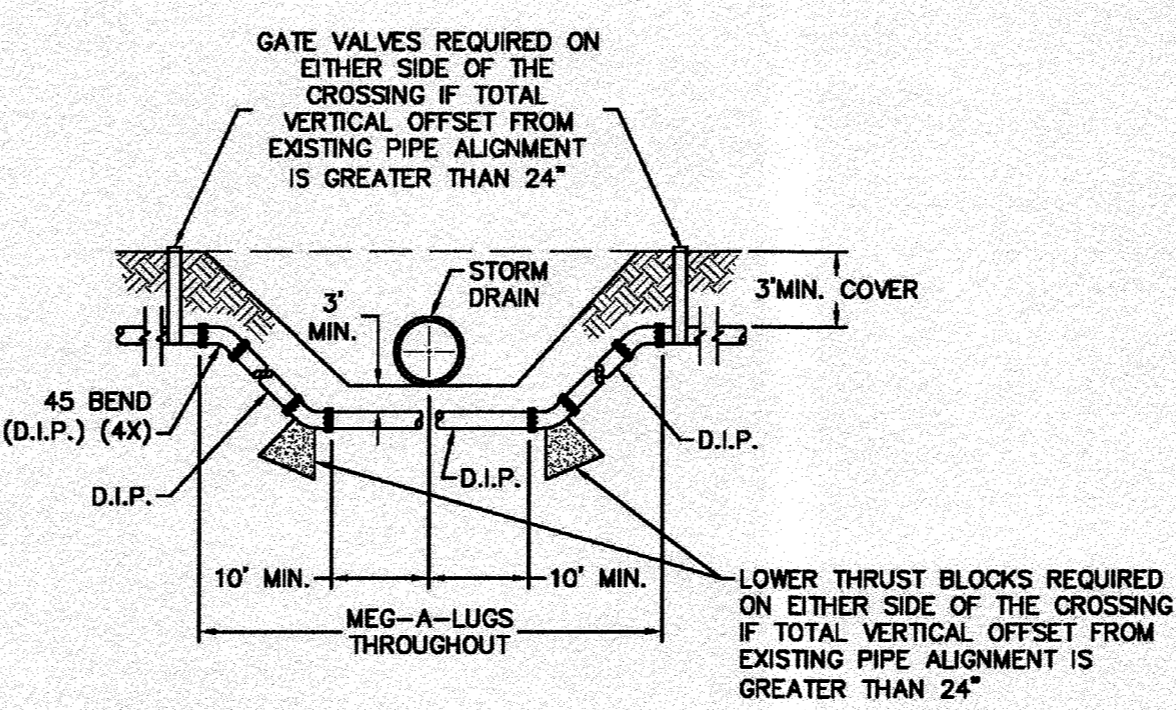
- NOTES:**
1. PILES AND PILE DRIVING SHALL CONFORM TO NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2002, SECTIONS 445, 450, 1082-2 & 1084-2.
 2. CENTERLINE OF BOLTS TO BE A MINIMUM OF 3" FROM OUTSIDE EDGE OF TIMBER. BOLTS TO BE A MINIMUM OF 3" CENTERLINE TO CENTERLINE.
 3. ALL STAINLESS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



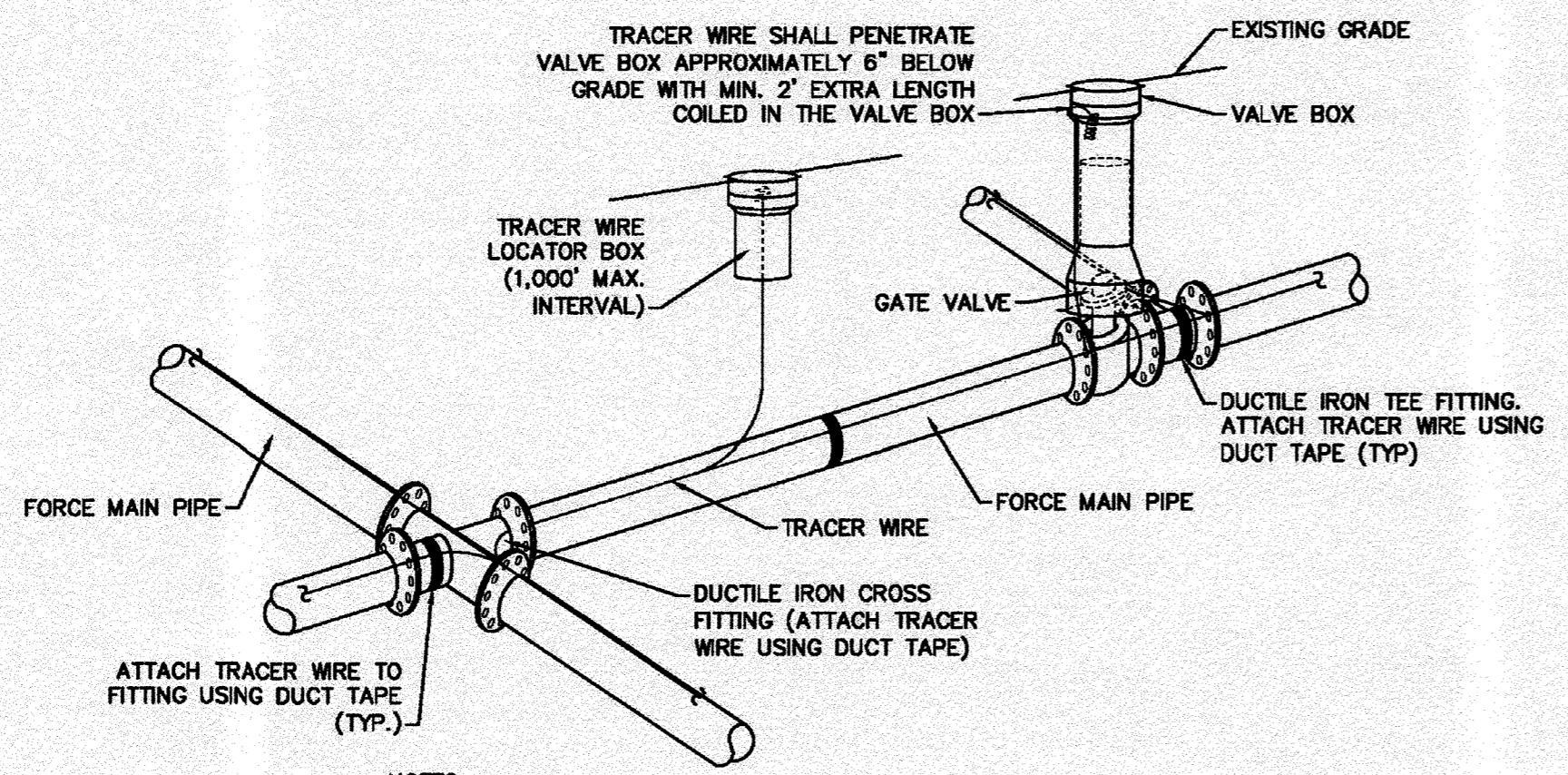
- THE FOLLOWING MUST BE FOLLOWED IN THE CASES OF GRAVITY SEWER UNDER STORM DRAIN:**
- A SEPARATION OF LESS THAN 12" BETWEEN STORM DRAIN AND GRAVITY SEWER, STORM DRAIN MUST BE BRIDGED.
 - A SEPARATION OF 12" TO LESS THAN 24" BETWEEN STORM DRAIN AND GRAVITY SEWER, GRAVITY SEWER CAN BE DIP OR STORM DRAIN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

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

SD-20 NOT TO SCALE
PILE AND BENT DETAIL



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



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

SD-21 NOT TO SCALE
TRACER WIRE DETAIL

Approved Construction Plan

Name _____ Date _____

Planning _____

Public Utilities _____

Traffic _____

Fire _____

STORMWATER MANAGEMENT PLAN

APPROVED

CITY OF WILMINGTON

ENGINEERING DEPARTMENT

DATE _____ PERMIT # _____

SIGNED _____

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

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

CFPUA SANITARY SEWER

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

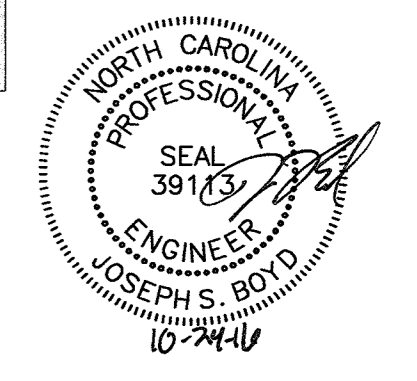
STANDARD DETAILS

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

SHEET NO:
SSD-3

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

FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION



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

ARBOR COMMONS
New Hanover County
North Carolina

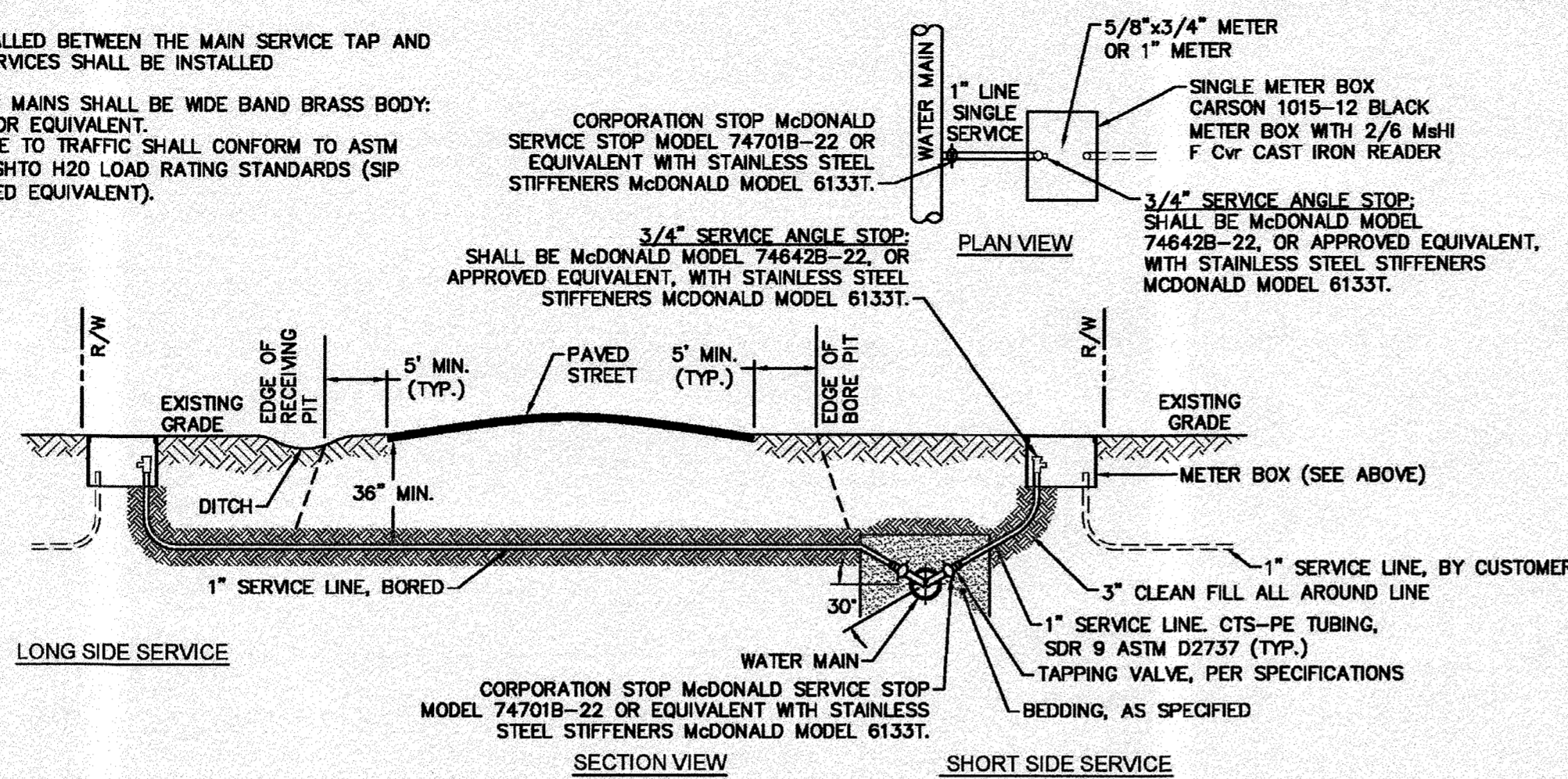
SANITARY SEWER DETAILS

WithersRavenel
Engineers | Planners | Surveyors

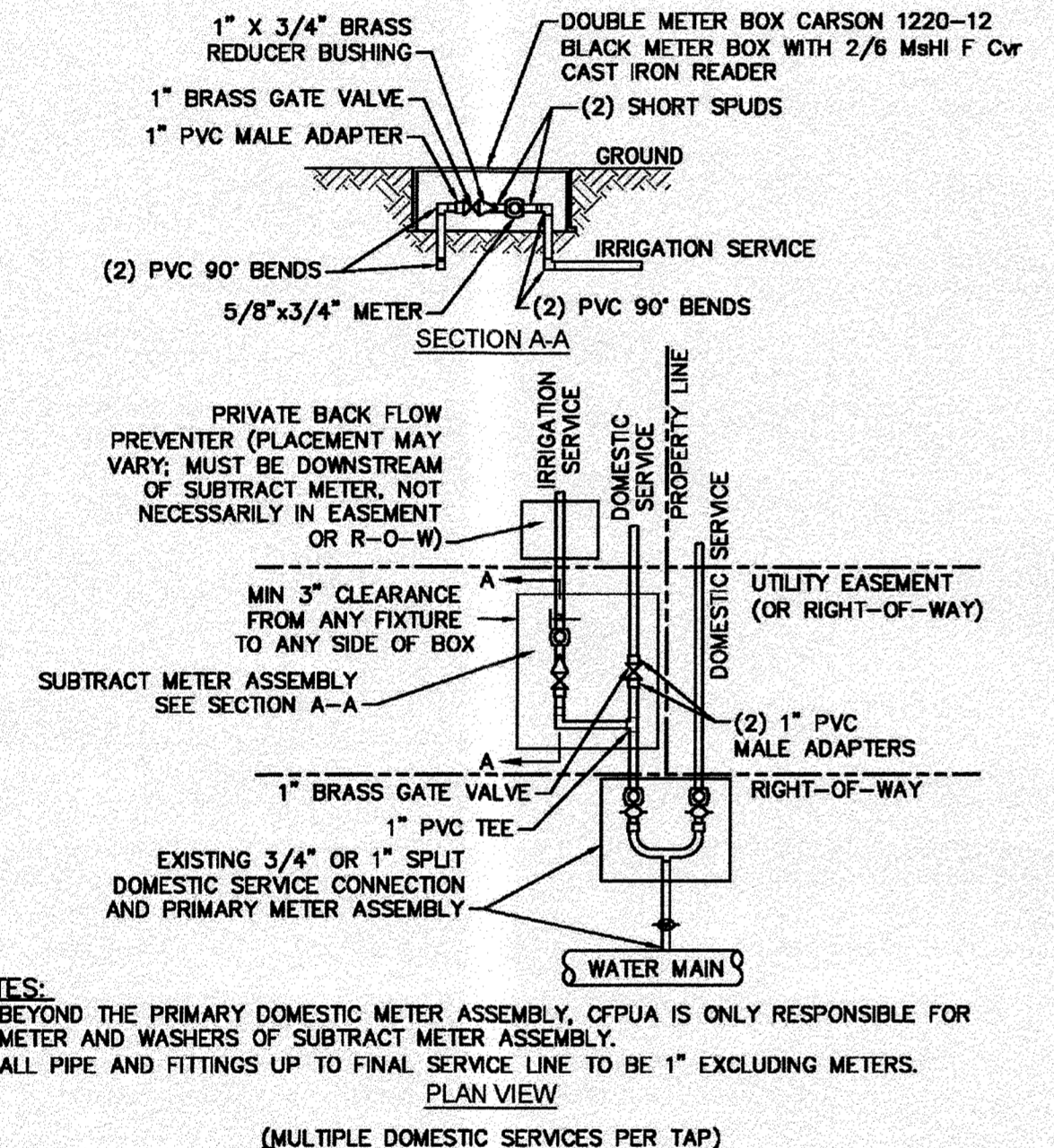
1410 Commonwealth Drive, Suite 101 | Wilmington, NC 28403 | T: 910.256.9277 | license #: C-0632 | www.withersravenel.com

SHEET NO.
D-3

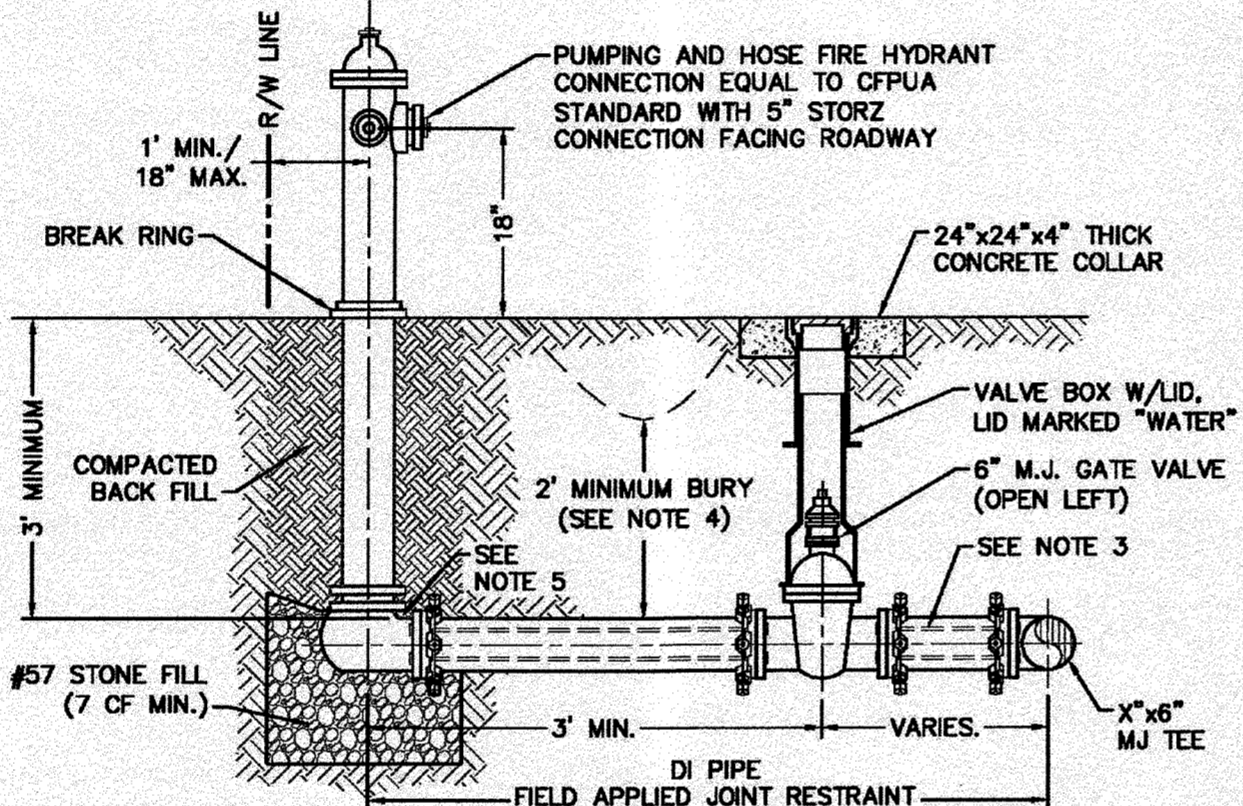
- NOTES:**
- NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
 - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
 - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM 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

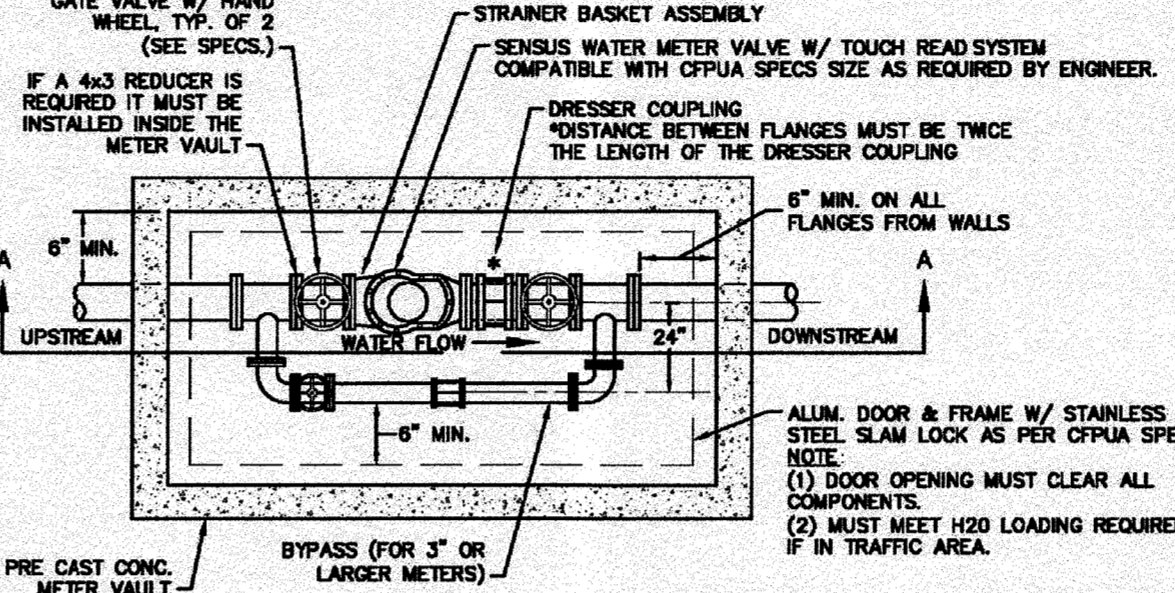
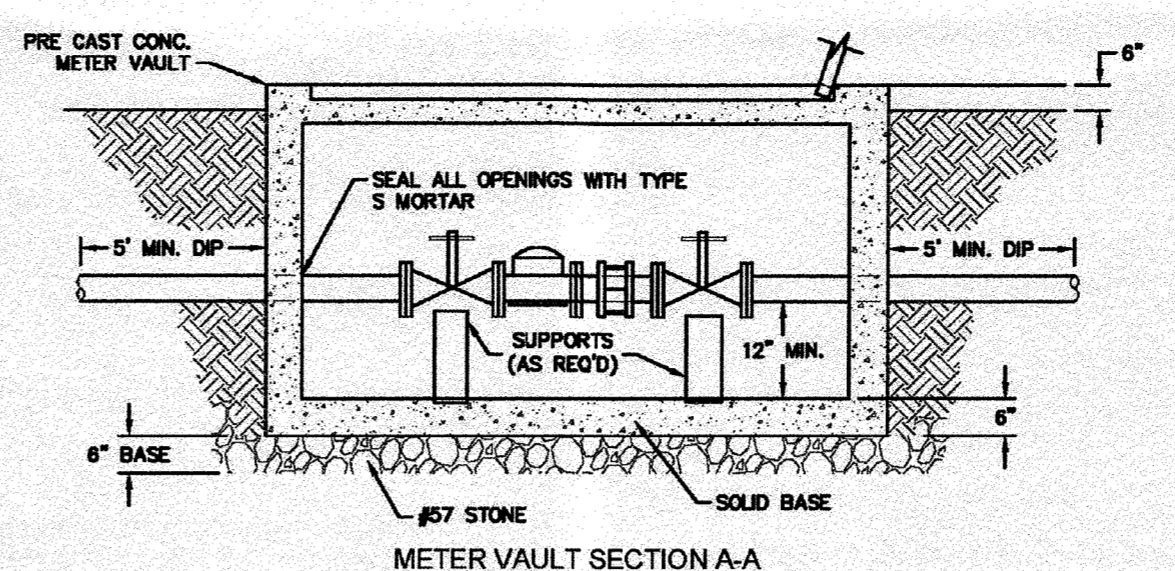


- NOTES:**
- JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
 - WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
 - CONTINUOUS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

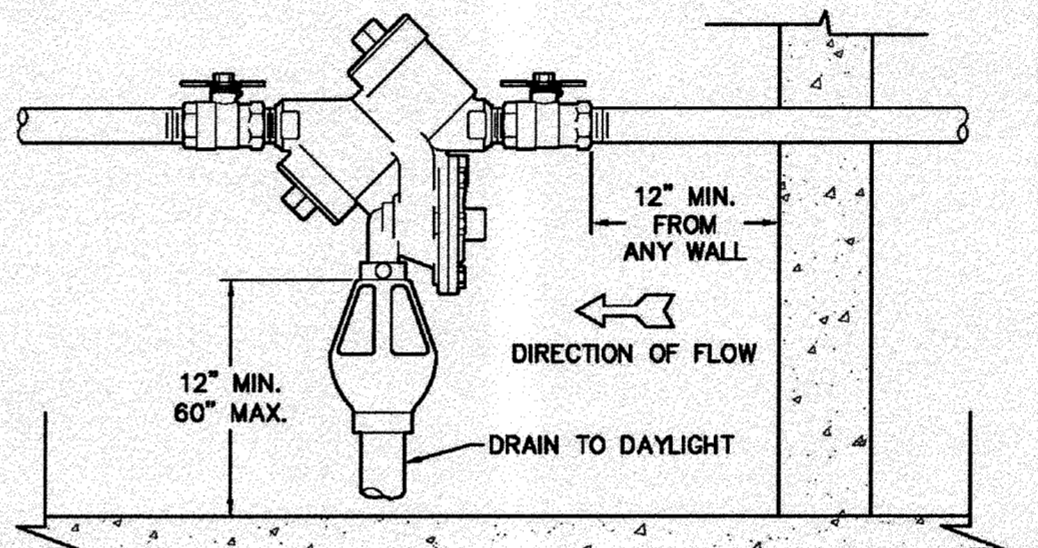
WD-10 FIRE HYDRANT ASSEMBLY
NOT TO SCALE

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

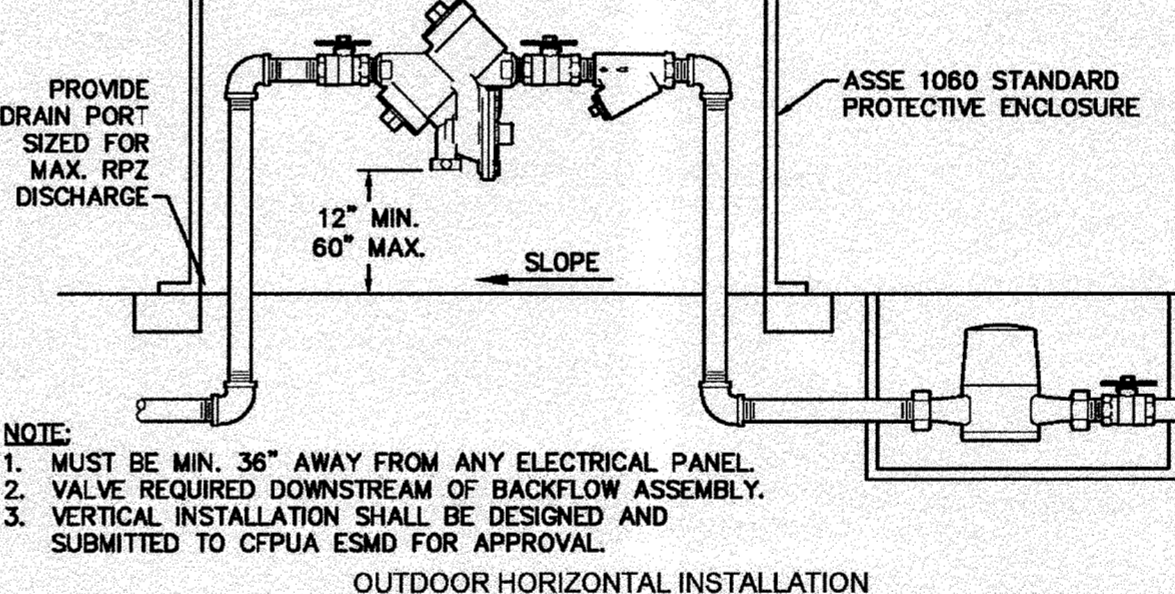
WD-19 STANDARD NOTES
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)



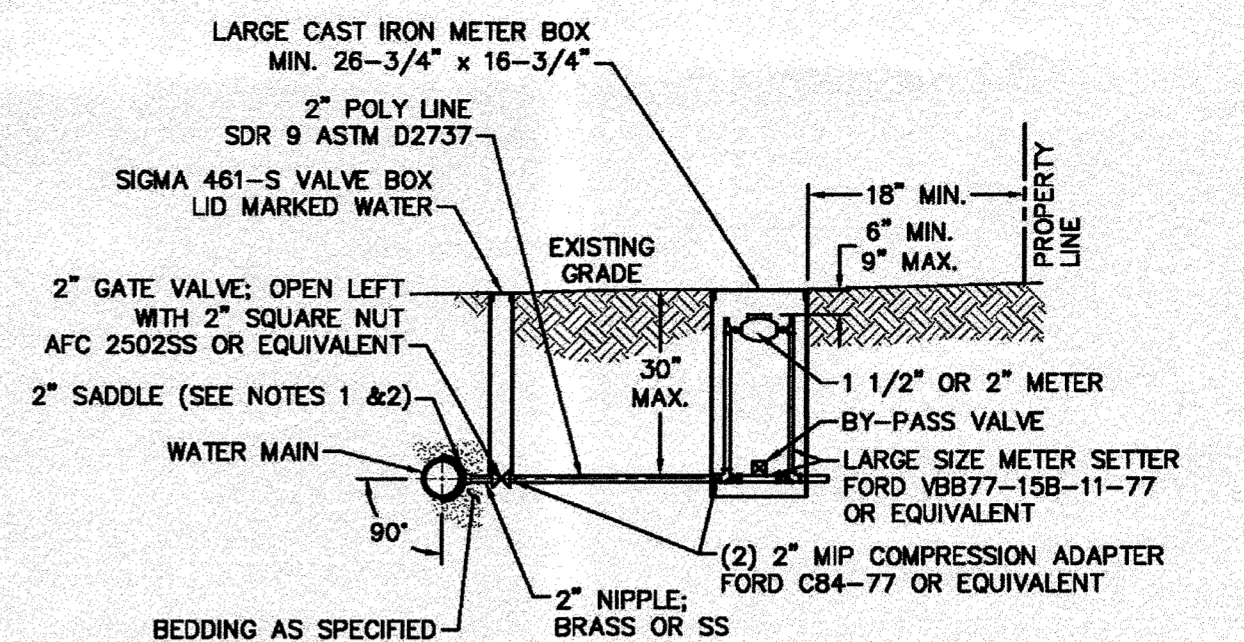
WD-1 WATER METER VAULT
NOT TO SCALE



WD-12 REDUCED PRESSURE PRINCIPLE ASSEMBLY
NOT TO SCALE

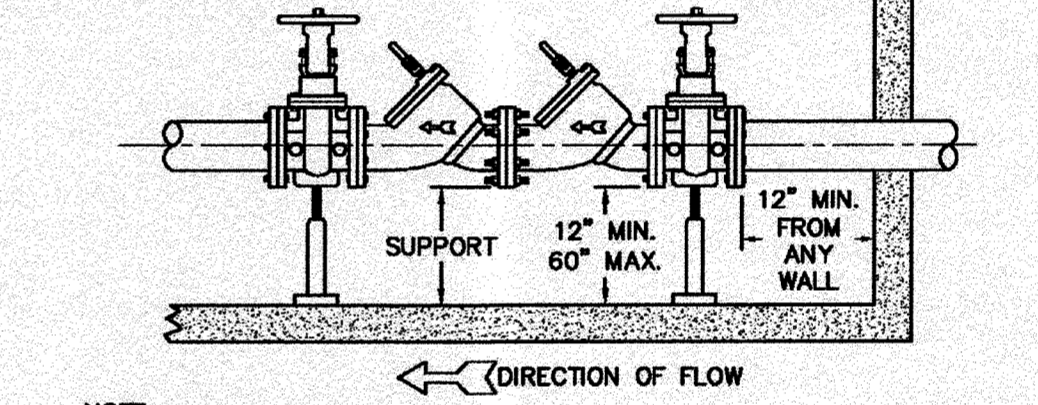
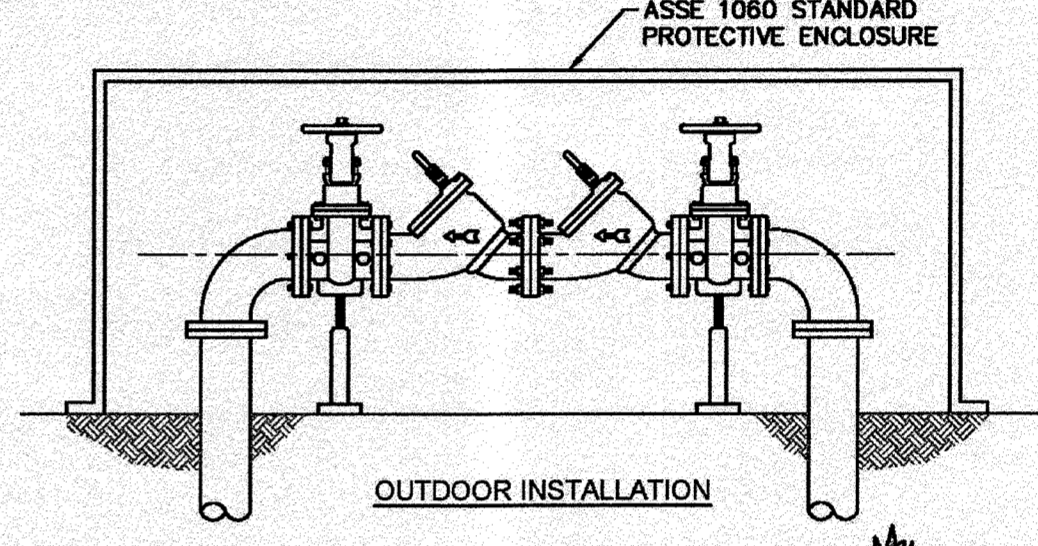


WD-12 REDUCED PRESSURE PRINCIPLE ASSEMBLY
NOT TO SCALE



- NOTES:**
- ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
 - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: McDONALD 3800, FORD S80 (DOUBLE STRAP) OR EQUIVALENT.
 - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR APPROVED EQUIVALENT).
 - METER BOXES SUSCEPTIBLE TO INCIDENTAL, NON-DELIBERATE TRAFFIC SHALL CONFORM TO ANSI/SCTE 77 TIER 15 LOAD RATING STANDARDS (SYNERTECH MODEL DUO 17x30 OR APPROVED EQUIVALENT).
 - NON-TRAFFIC METER BOXES SHALL BE SIGMA MB2203 OR APPROVED EQUIVALENT.
 - 3\"/>

WD-11 LARGE METER
NOT TO SCALE



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

WD-7 DOUBLE CHECK VALVE ASSEMBLY
NOT TO SCALE

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

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

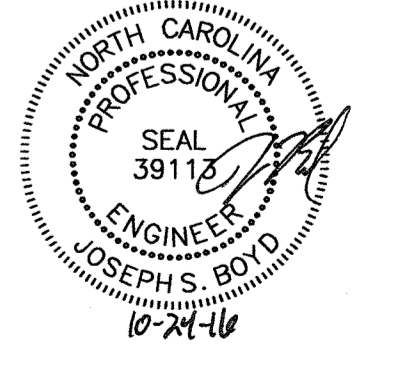
REV.	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/28/12
2	Single Service Connection and Fire Hydrant Details Revised	7/23/13
3	Fire Hydrant Detail Revised	01/03/14
4	Revised Fire Hydrant Assembly To Show 3\"/>	

CFPUA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS

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

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



TYPICAL DETAILS NOTE:
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DESIGNED AND PREPARED BY OTHERS.

FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION

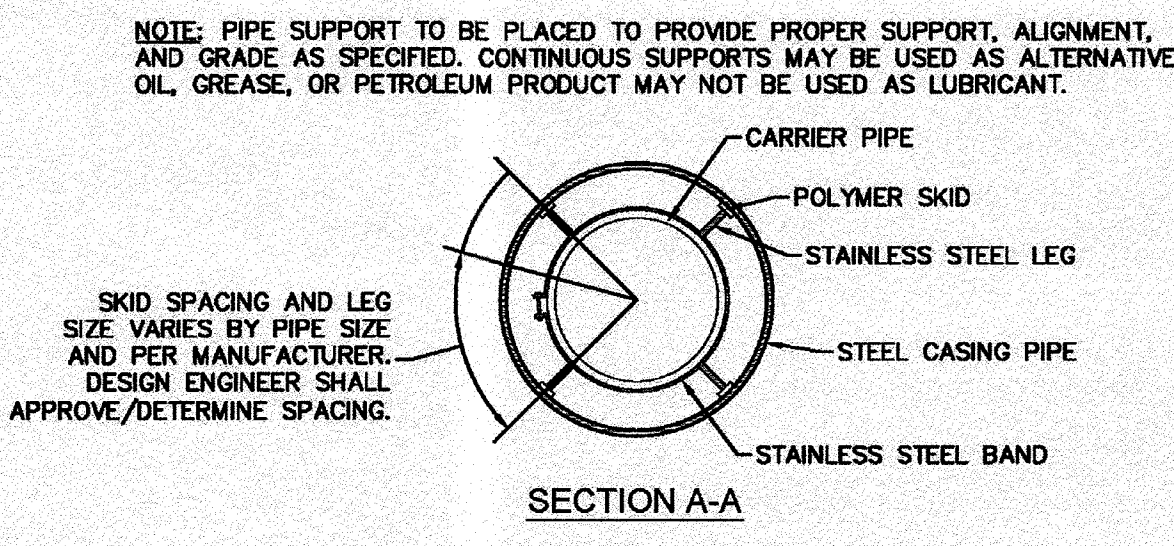
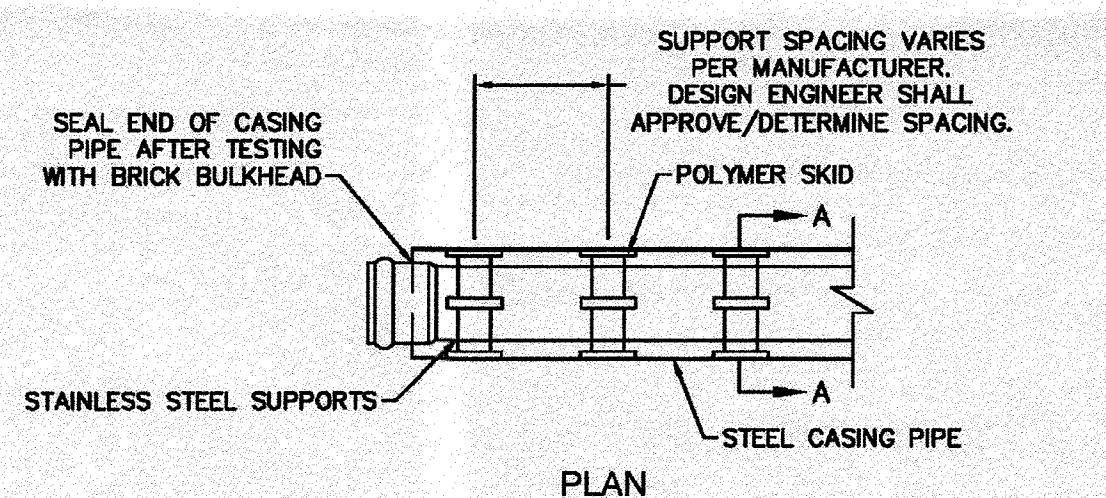
No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JJW	03061193.01

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

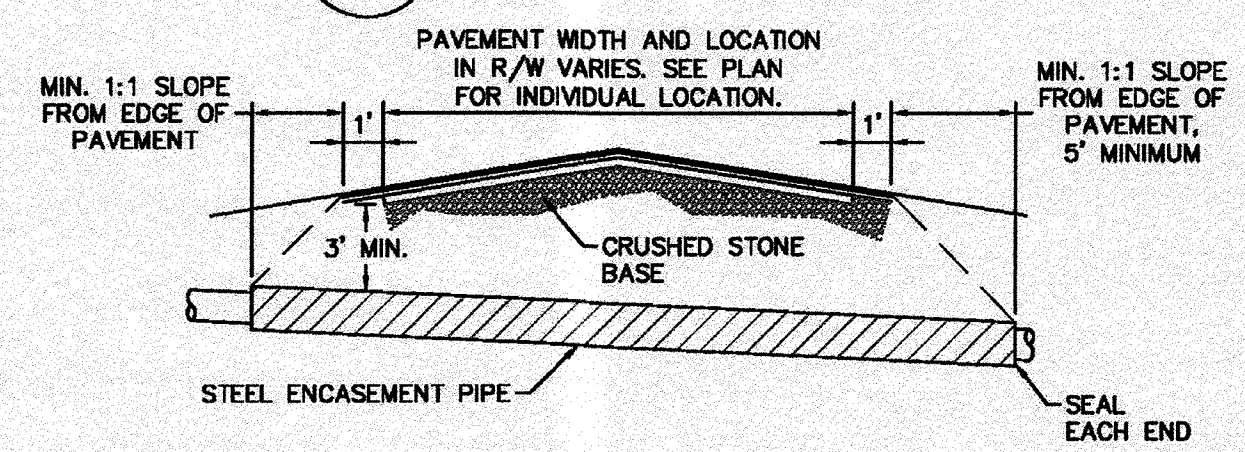
WATER DISTRIBUTION SYSTEM DETAILS

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

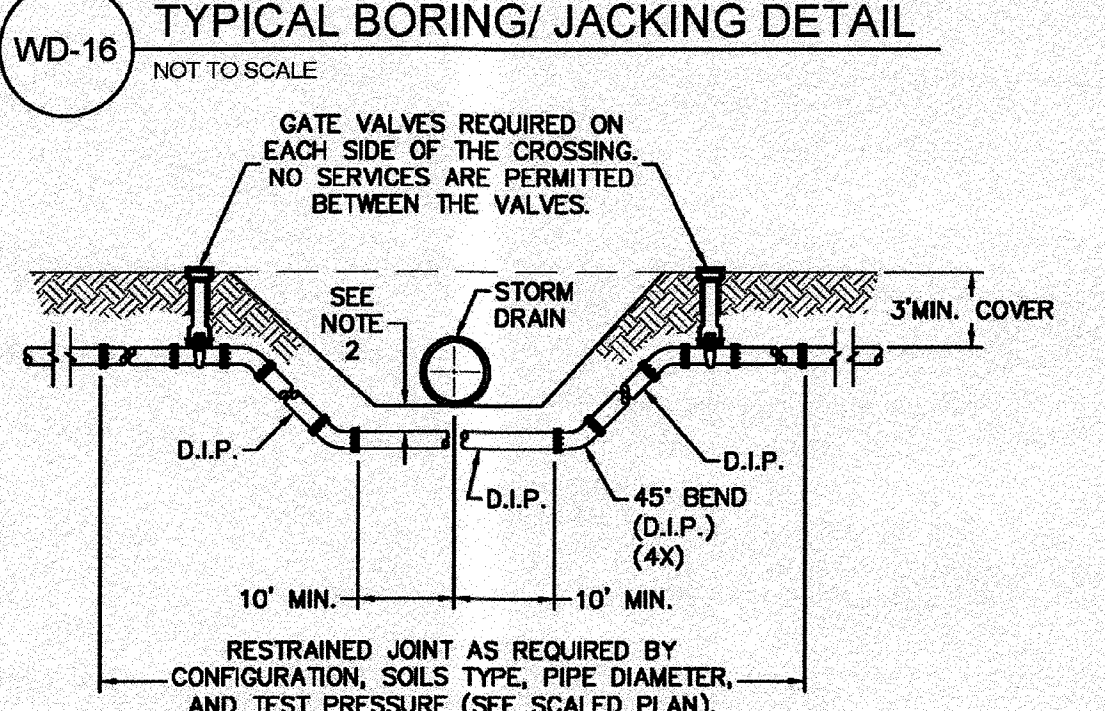
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WD-15 PIPE CASING SUPPORT DETAIL
NOT TO SCALE

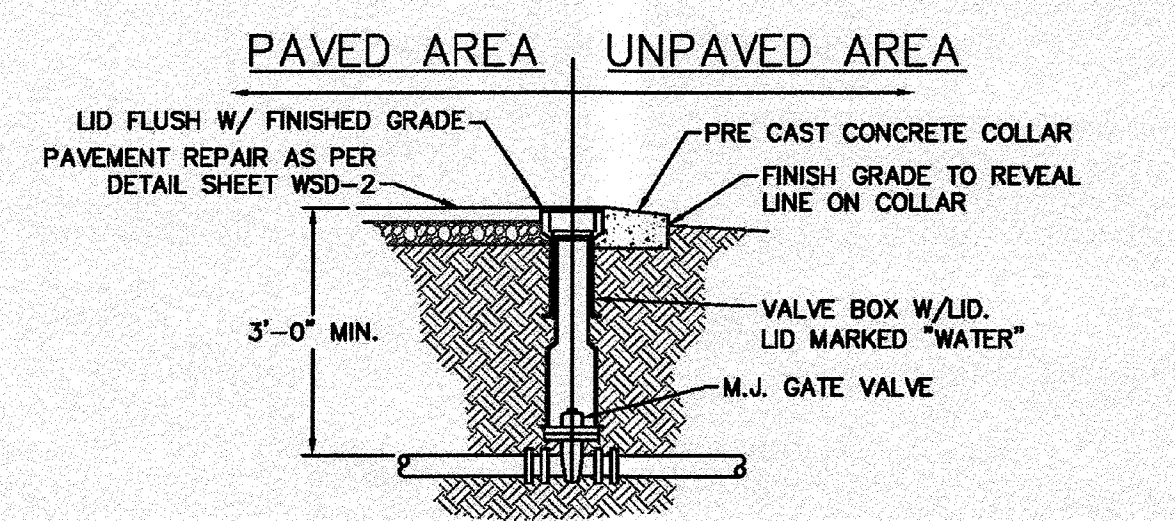


WD-16 TYPICAL BORING/JACKING DETAIL
NOT TO SCALE

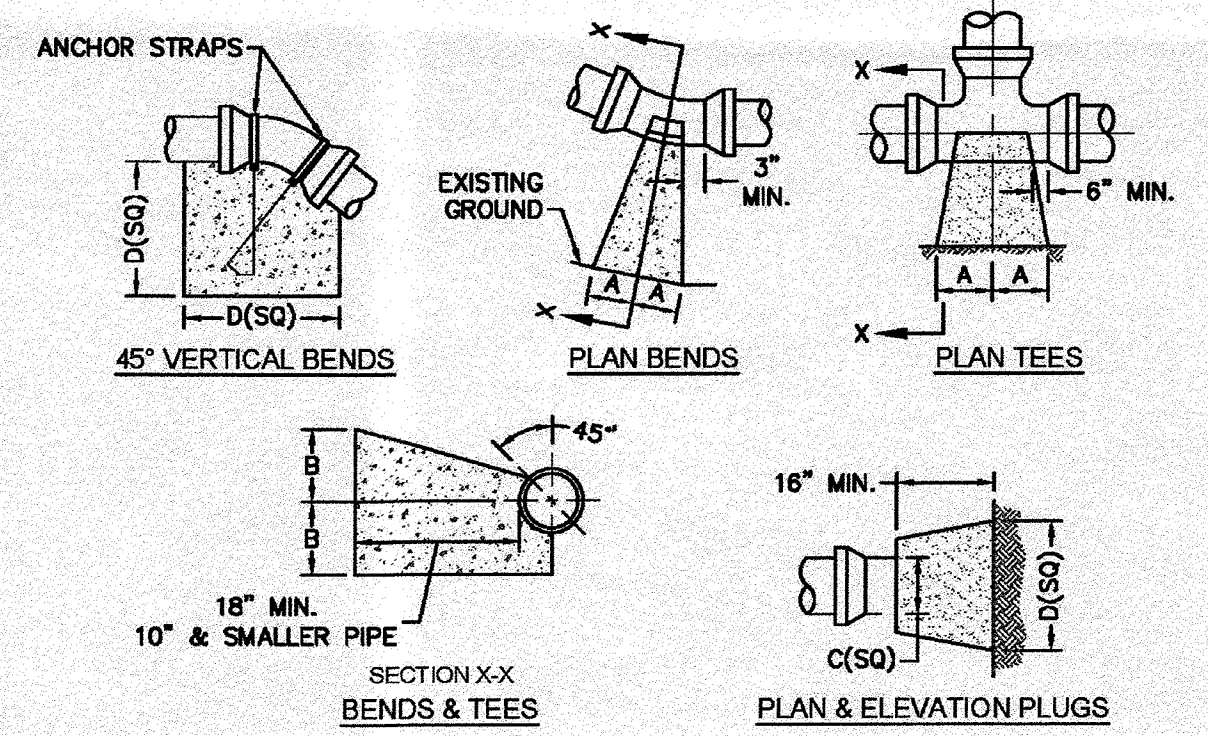


WD-16 TYPICAL BORING/JACKING DETAIL
NOT TO SCALE

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

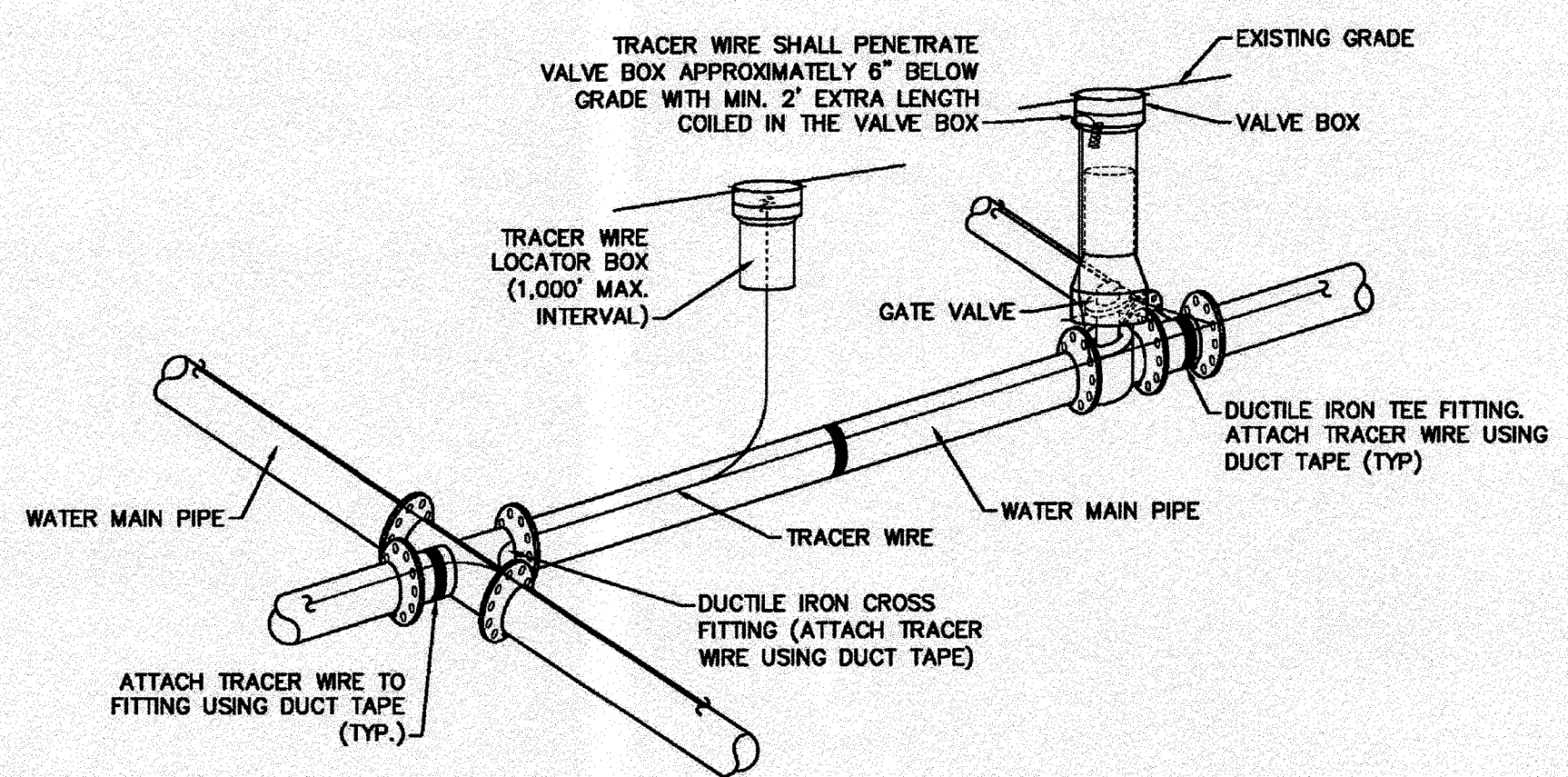


WD-3 VALVE DETAIL
NOT TO SCALE

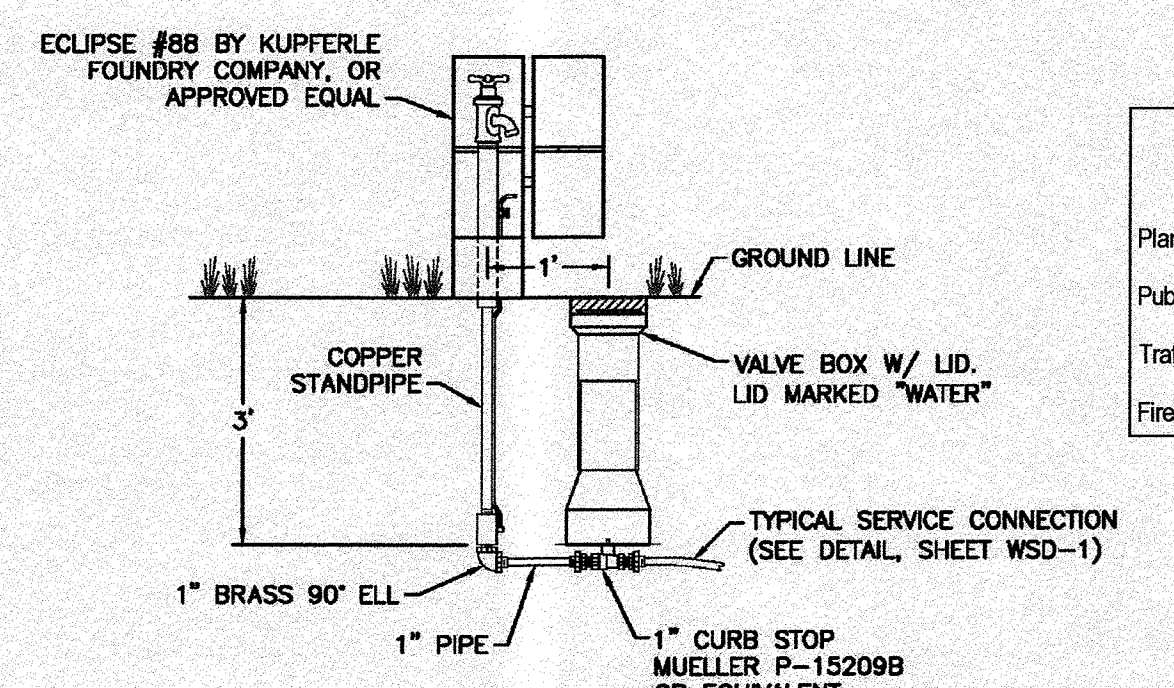


SIZE	90 BENDS		45 BENDS		22-1/2 BENDS		TEES/PLUGS		45 VERT. BENDS
	A	B	A	B	A	B	A	B	
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	26"	18"	17"	16"	16"	22"	18"	62"
14"	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"

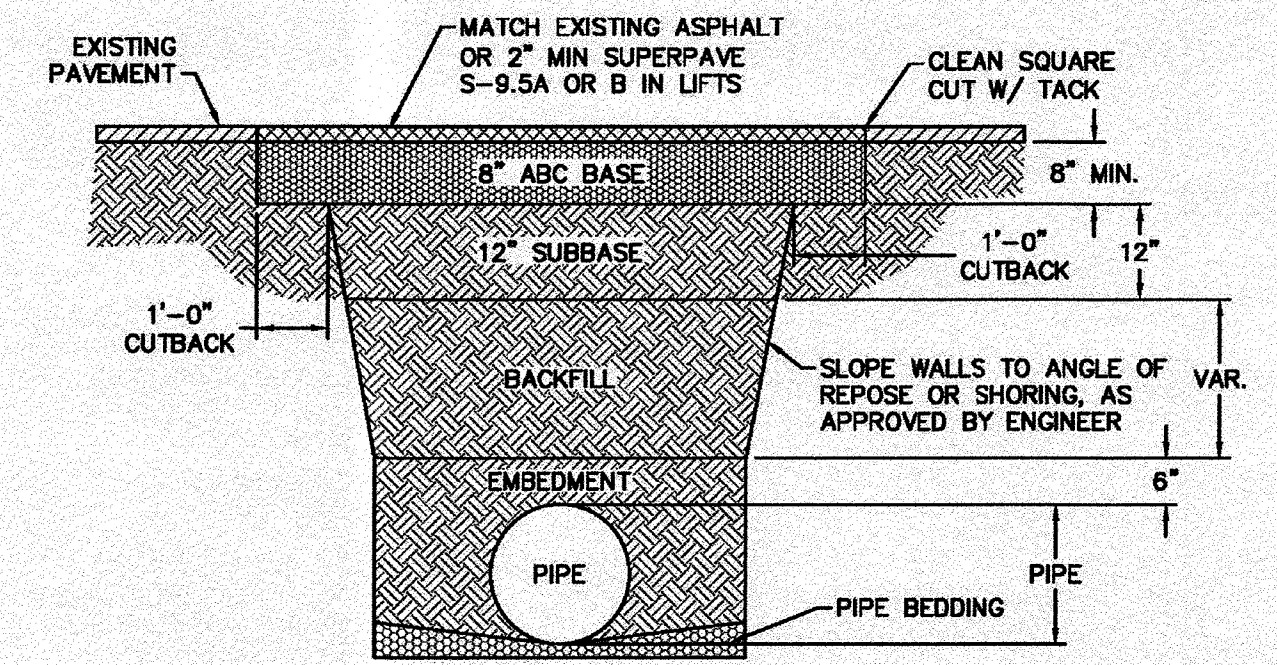
WD-4 THRUST BLOCK DETAIL
NOT TO SCALE



WD-17 TRACER WIRE DETAIL
NOT TO SCALE

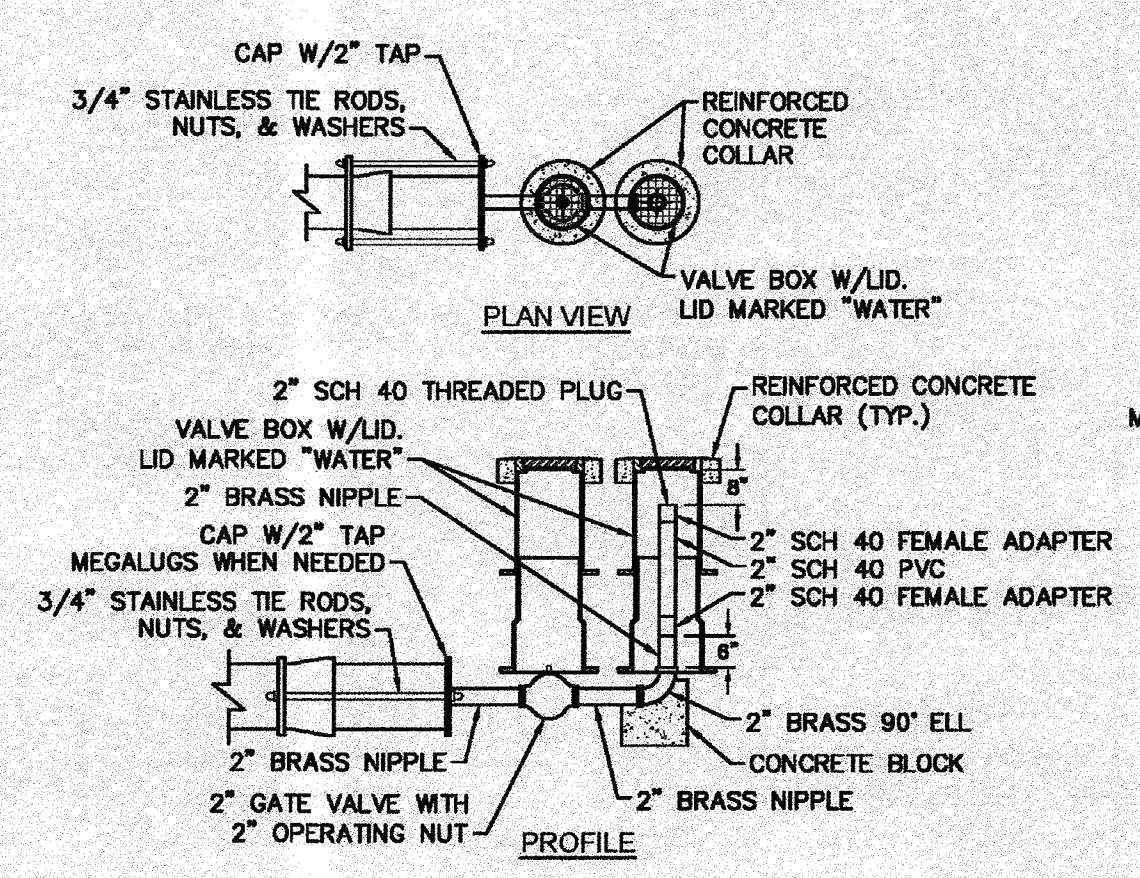


WD-6 SAMPLING STATION
NOT TO SCALE

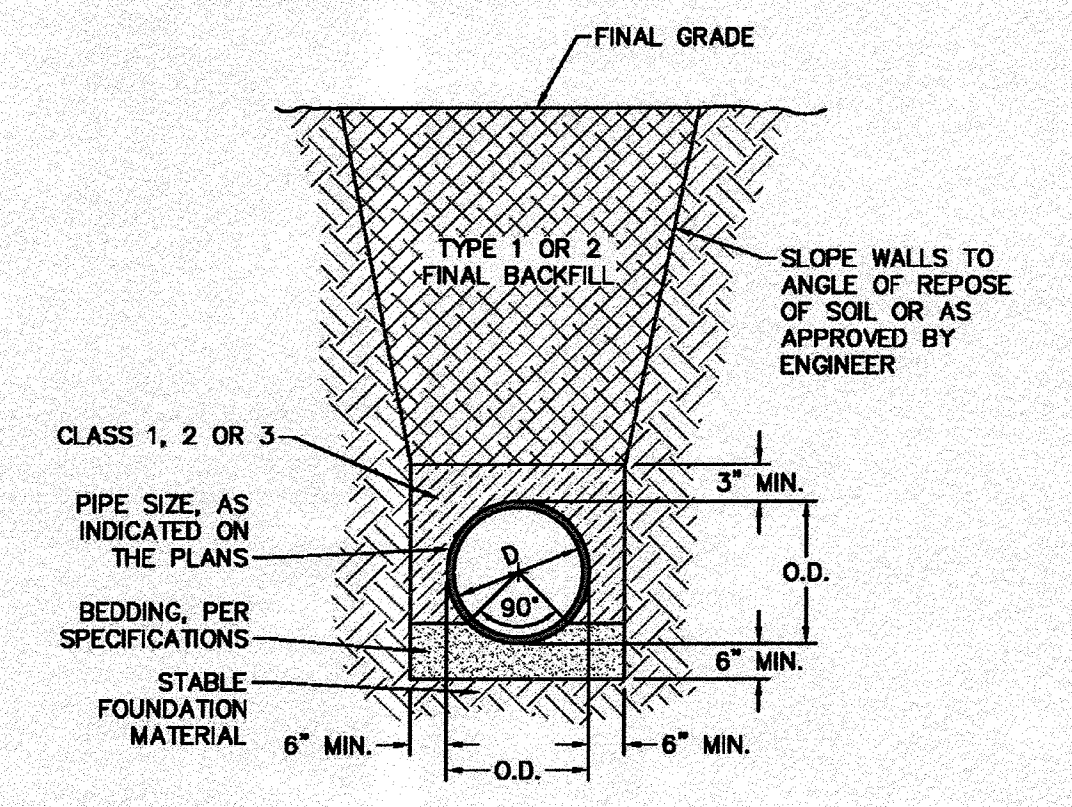


WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE

WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



WD-5 2" BLOW-OFF
NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL
NOT TO SCALE

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

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

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	05/05/14
3	Revised Tracer Wire Detail	10/20/15
4	Added Backflow Preventer to Double Service Connection Detail	02/01/16
5	Revised Sampling Station Detail	02/15/16

CFPUA WATER DISTRIBUTION SYSTEM

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

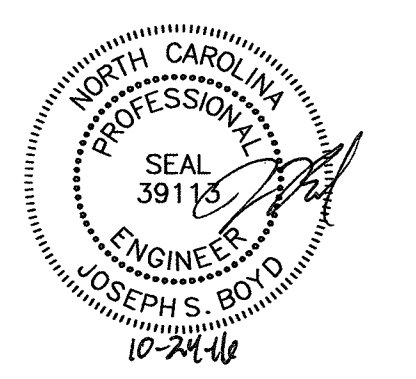
STANDARD DETAILS

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

SHEET NO: **WSD-2**

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

FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION



W:\04\08-1180\081183-01-Anchor Commons\CAD\DETAILS.dwg - Tuesday, August 02, 2016 2:01:08 PM - E:\D\JOSEPH

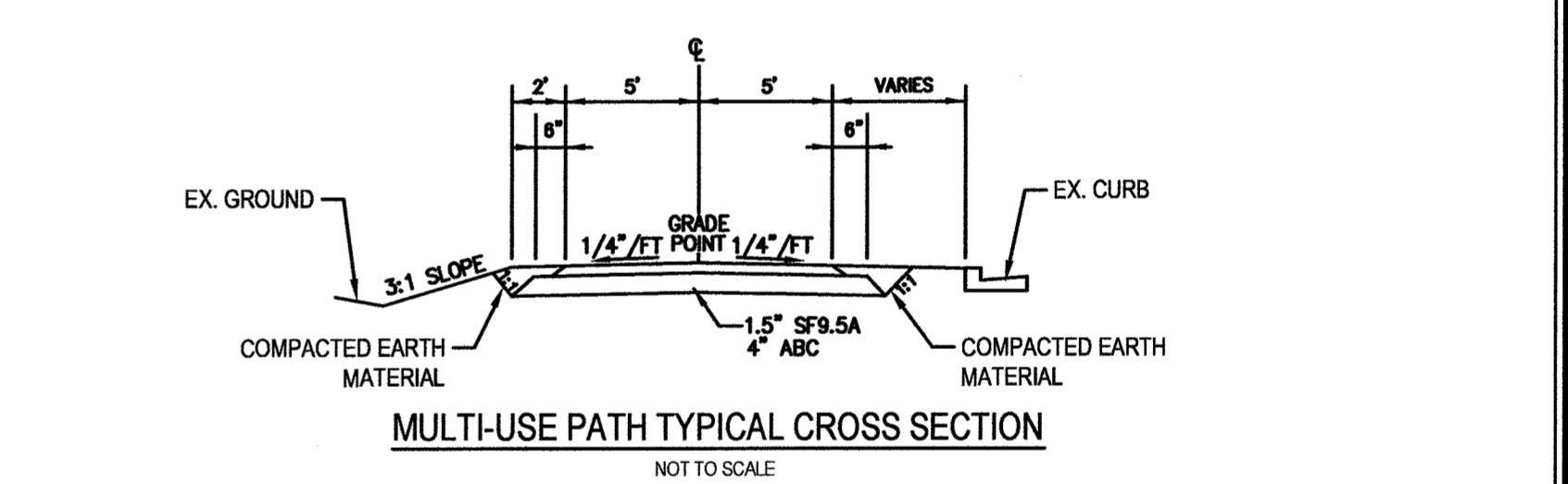
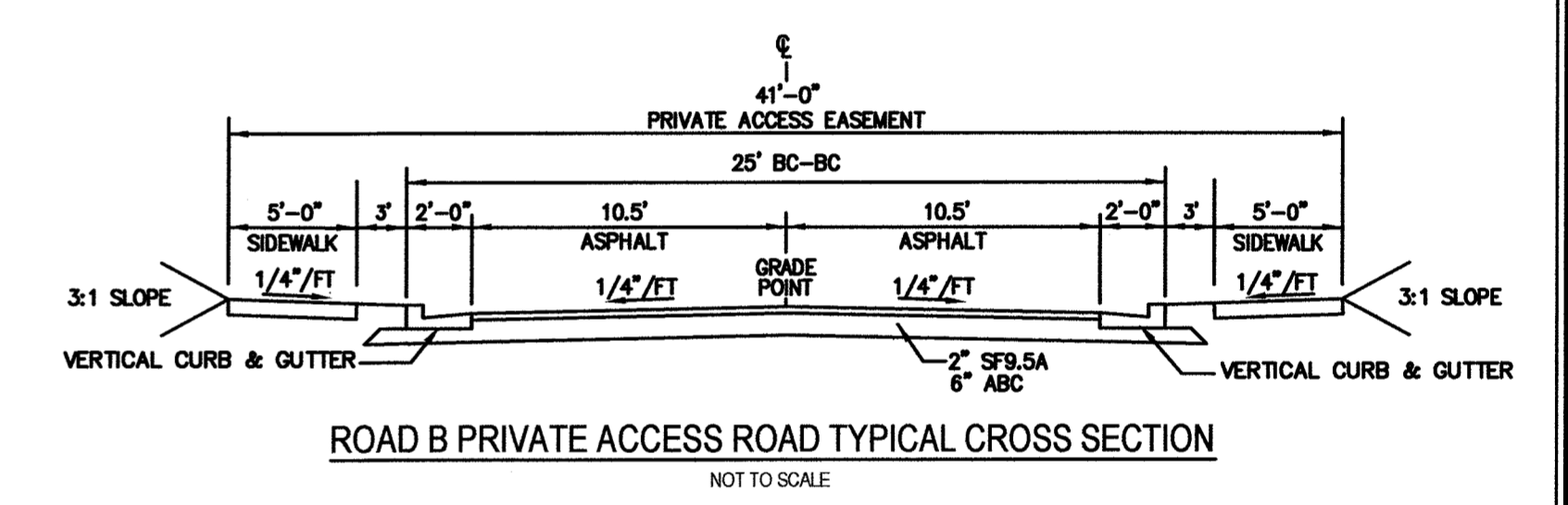
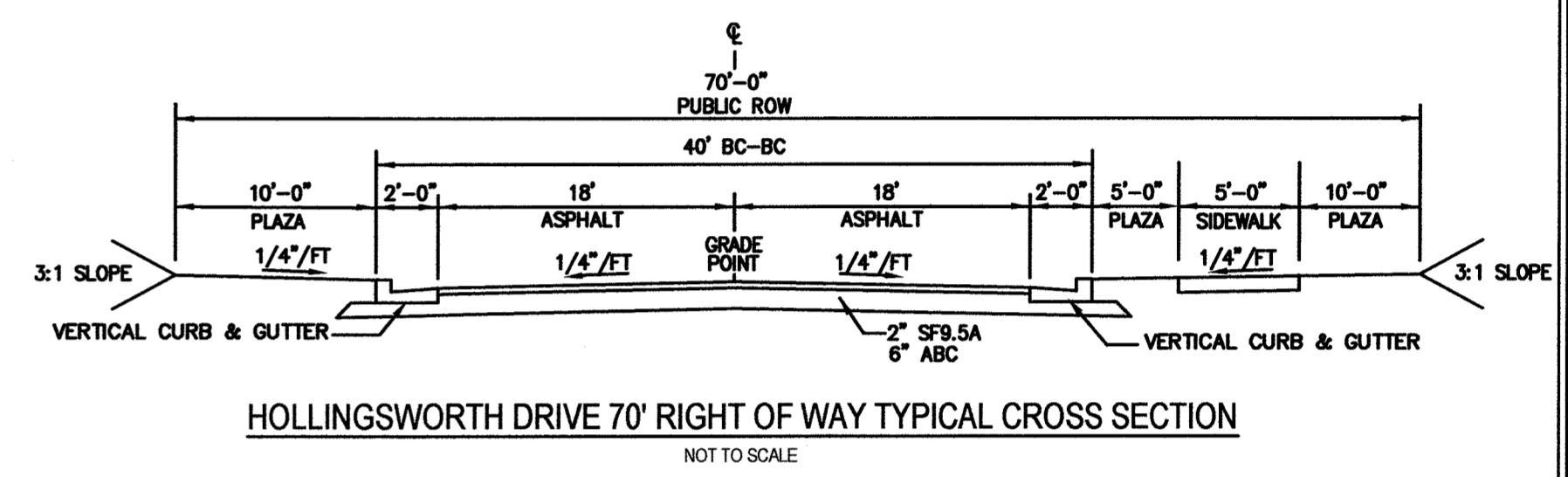
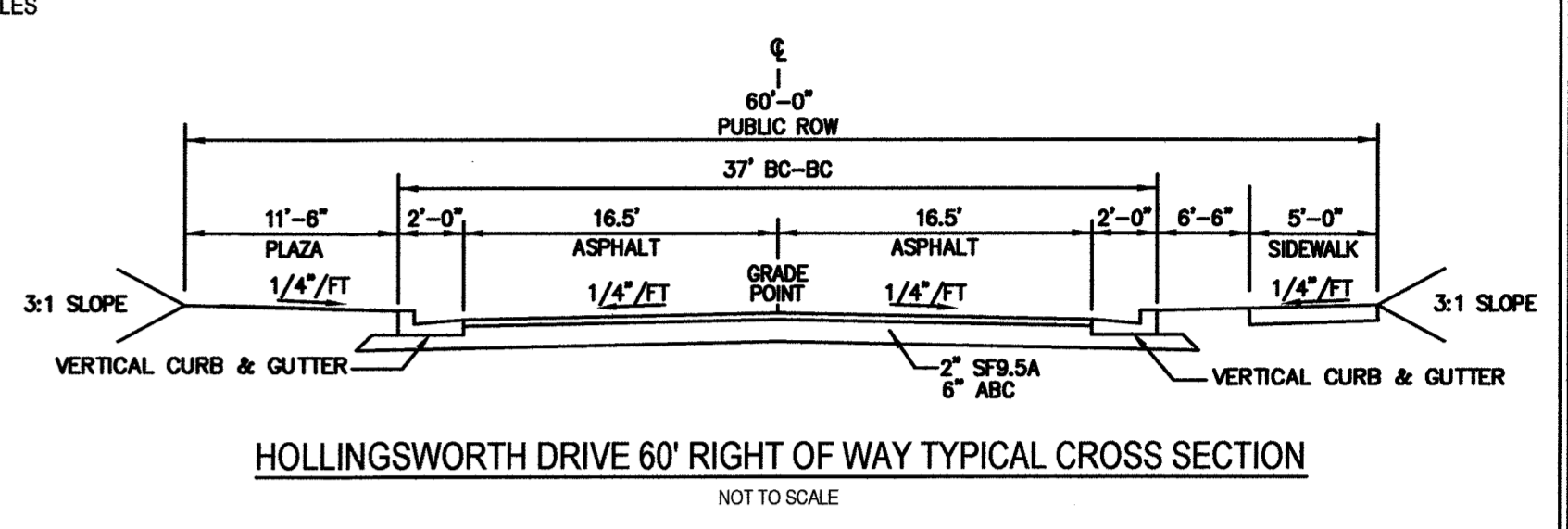
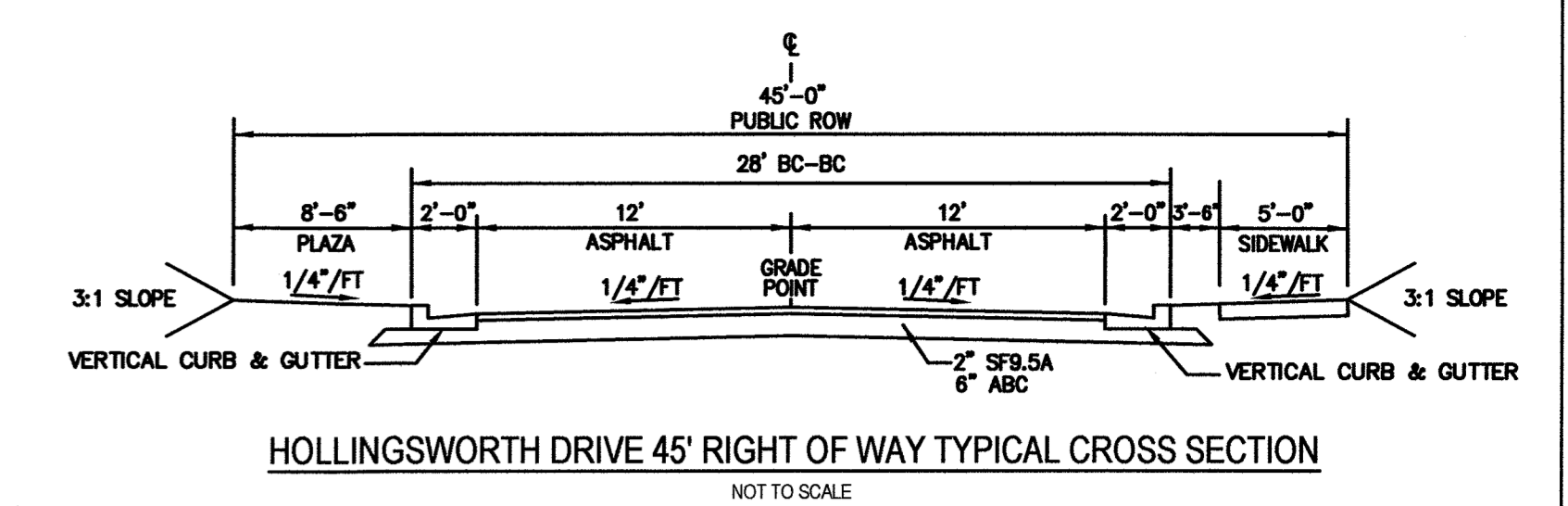
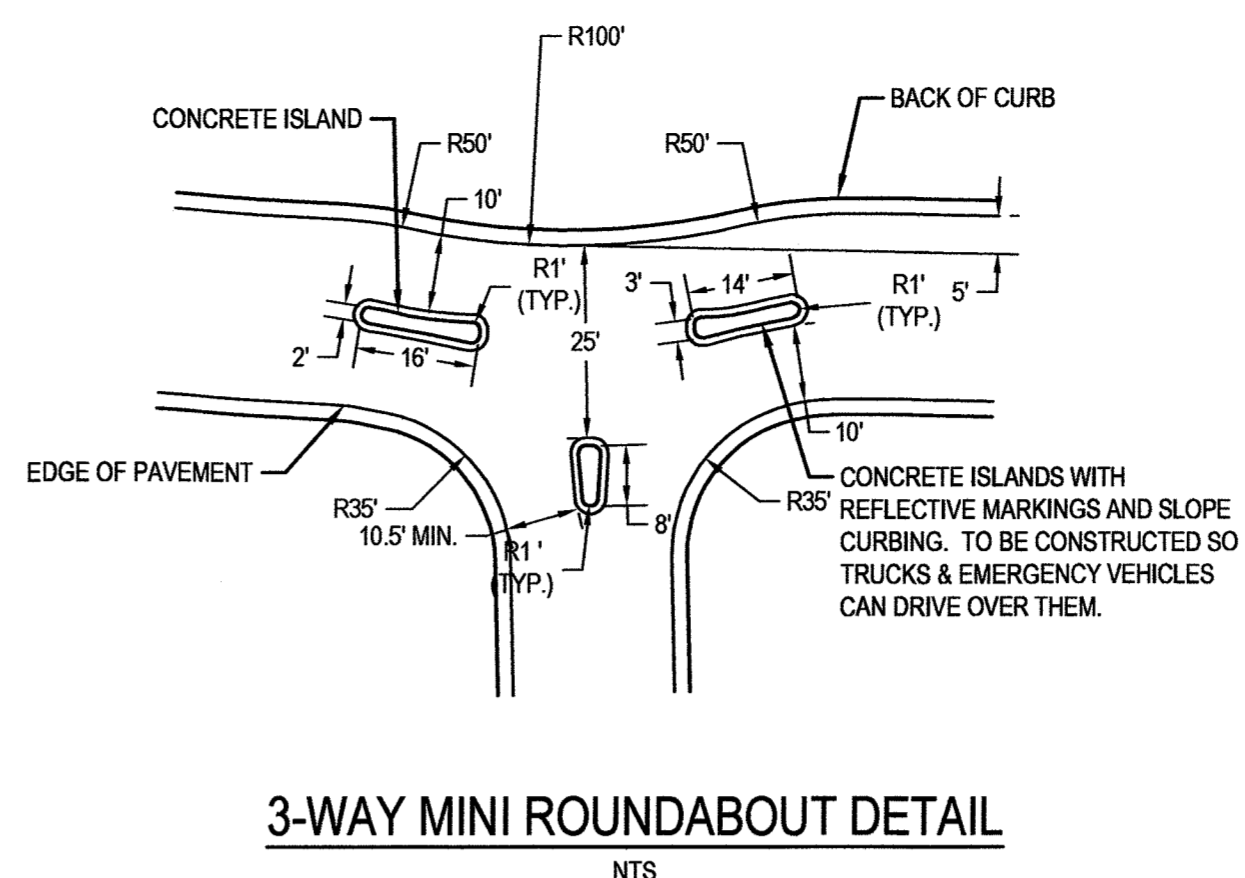
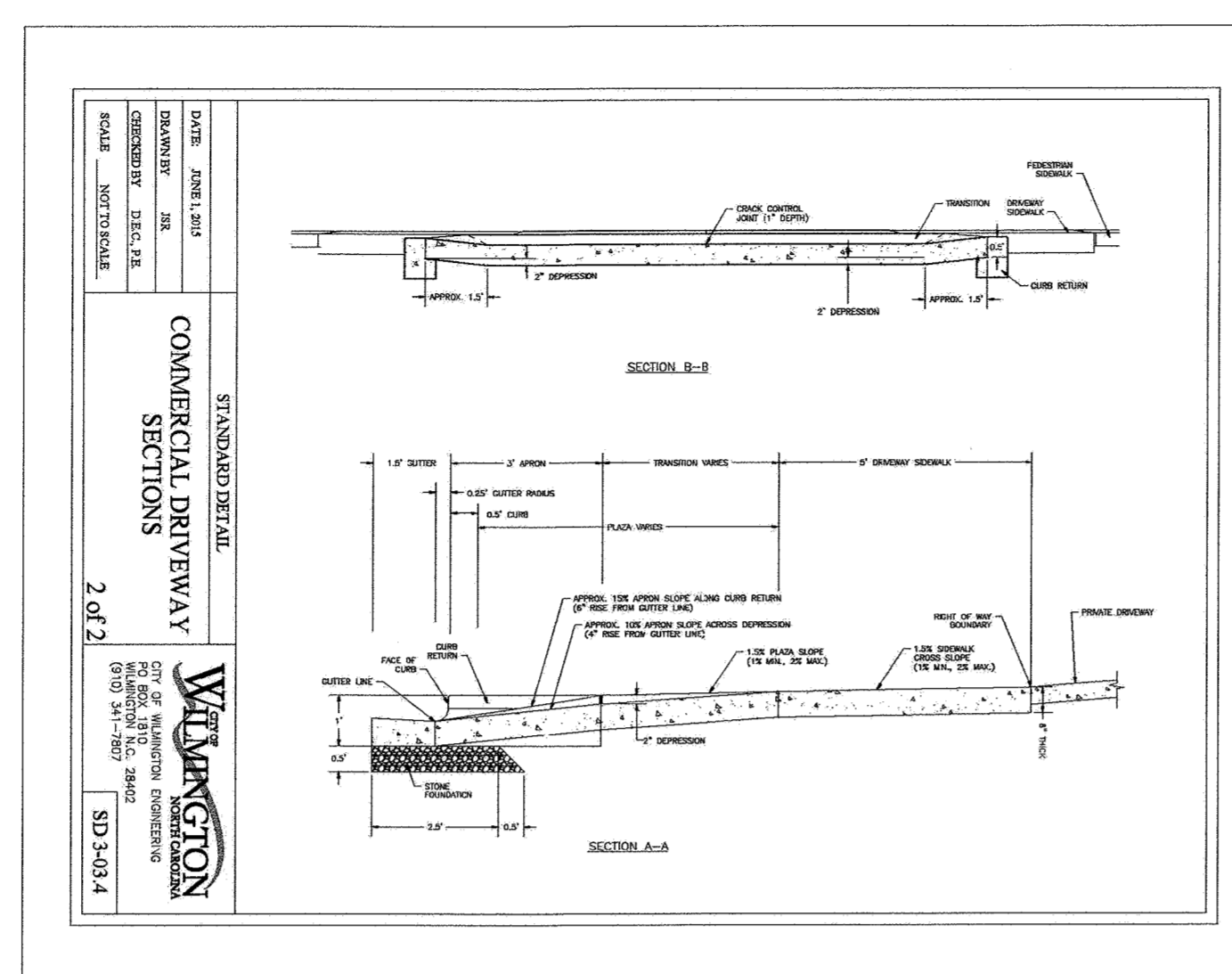
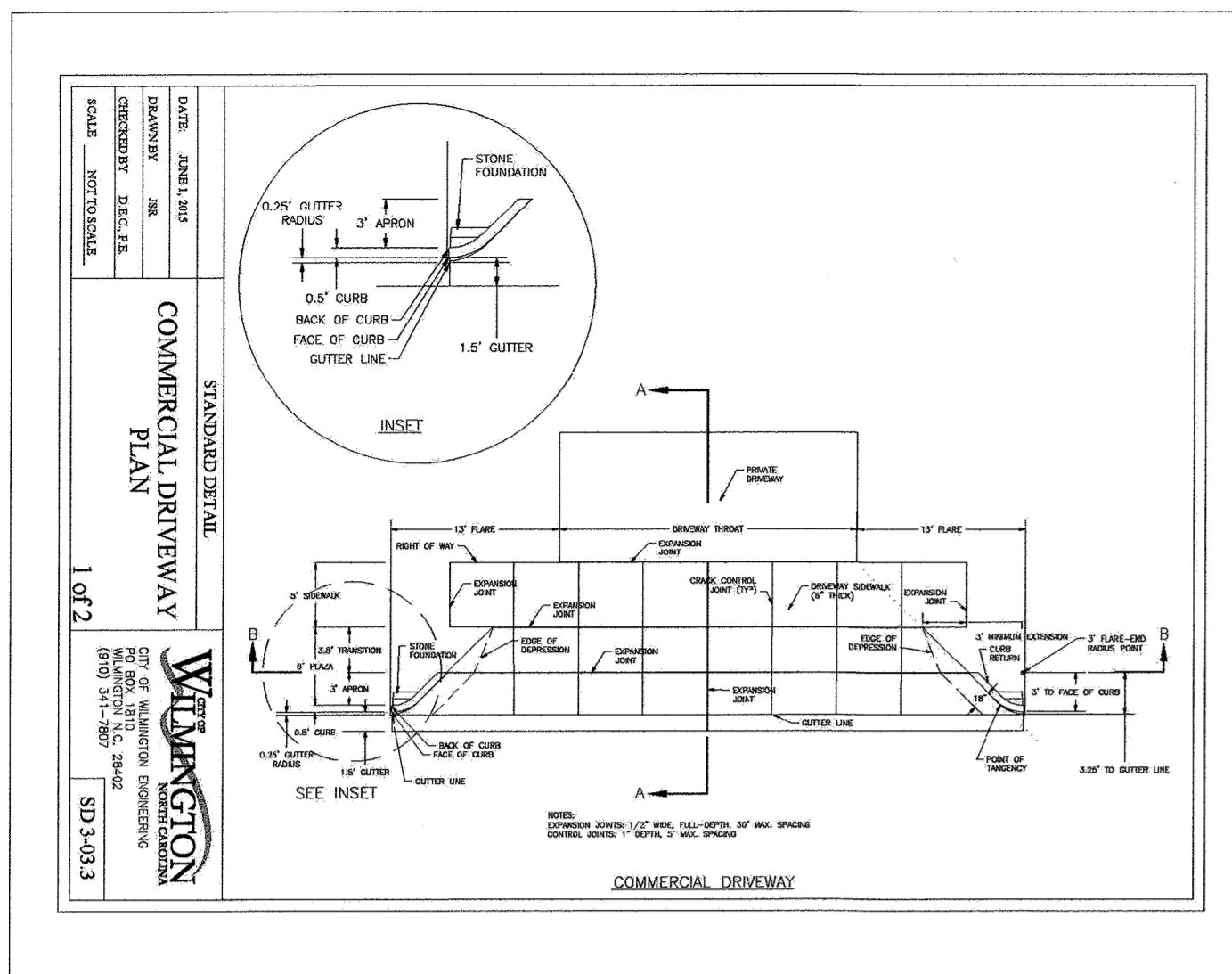
No.	Revision	Date	By	Designer	Scale
				NA	NTS
				JSB	6/30/16
				JWJ	03061183.01

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

WATER DISTRIBUTION SYSTEM DETAILS

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

Sheet No. **D-5**



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

Approved Construction Plan

Name _____ Date _____

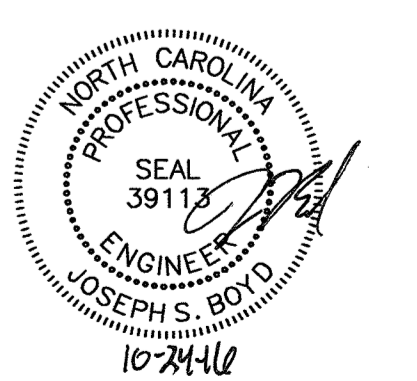
Planning _____

Public Utilities _____

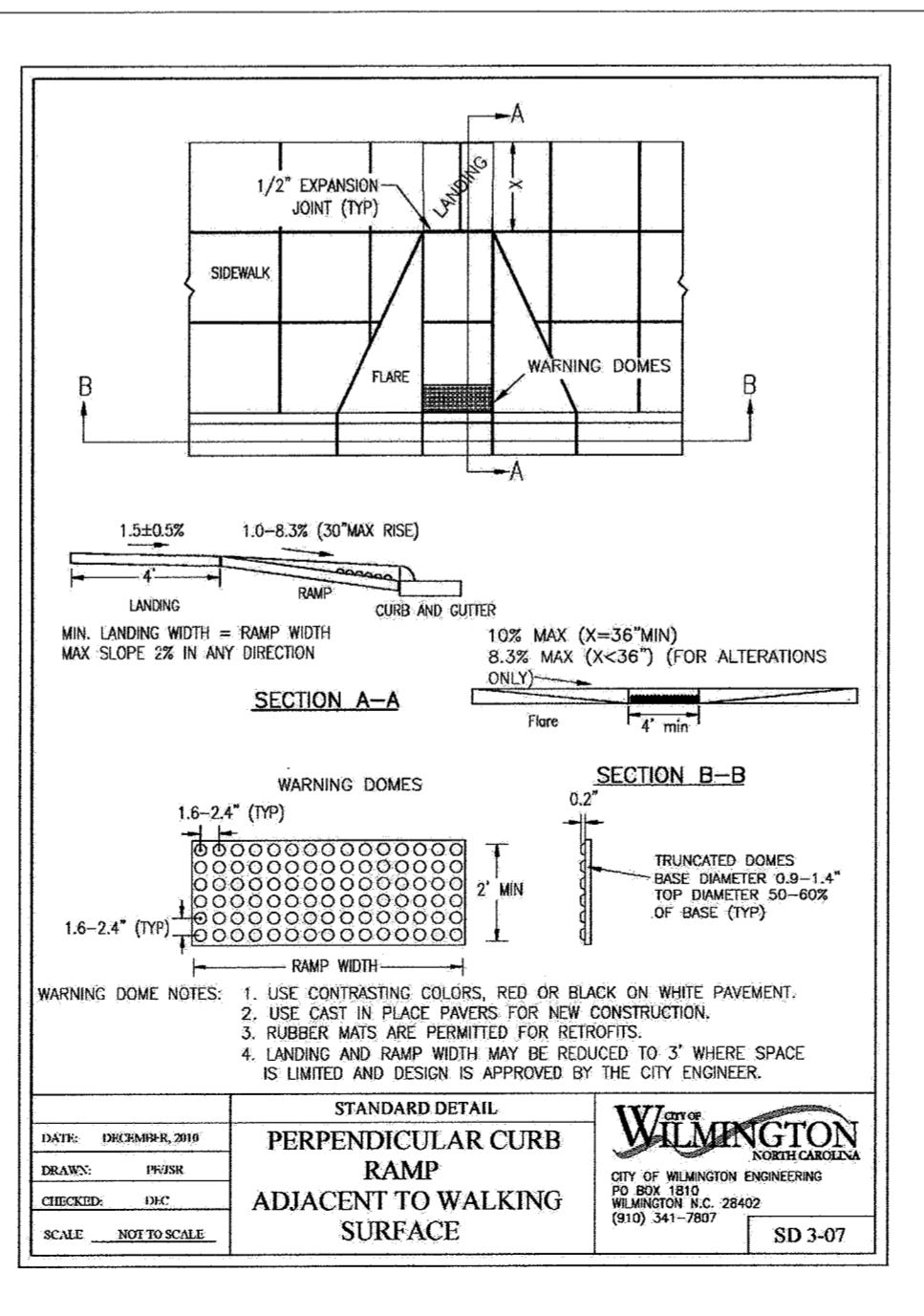
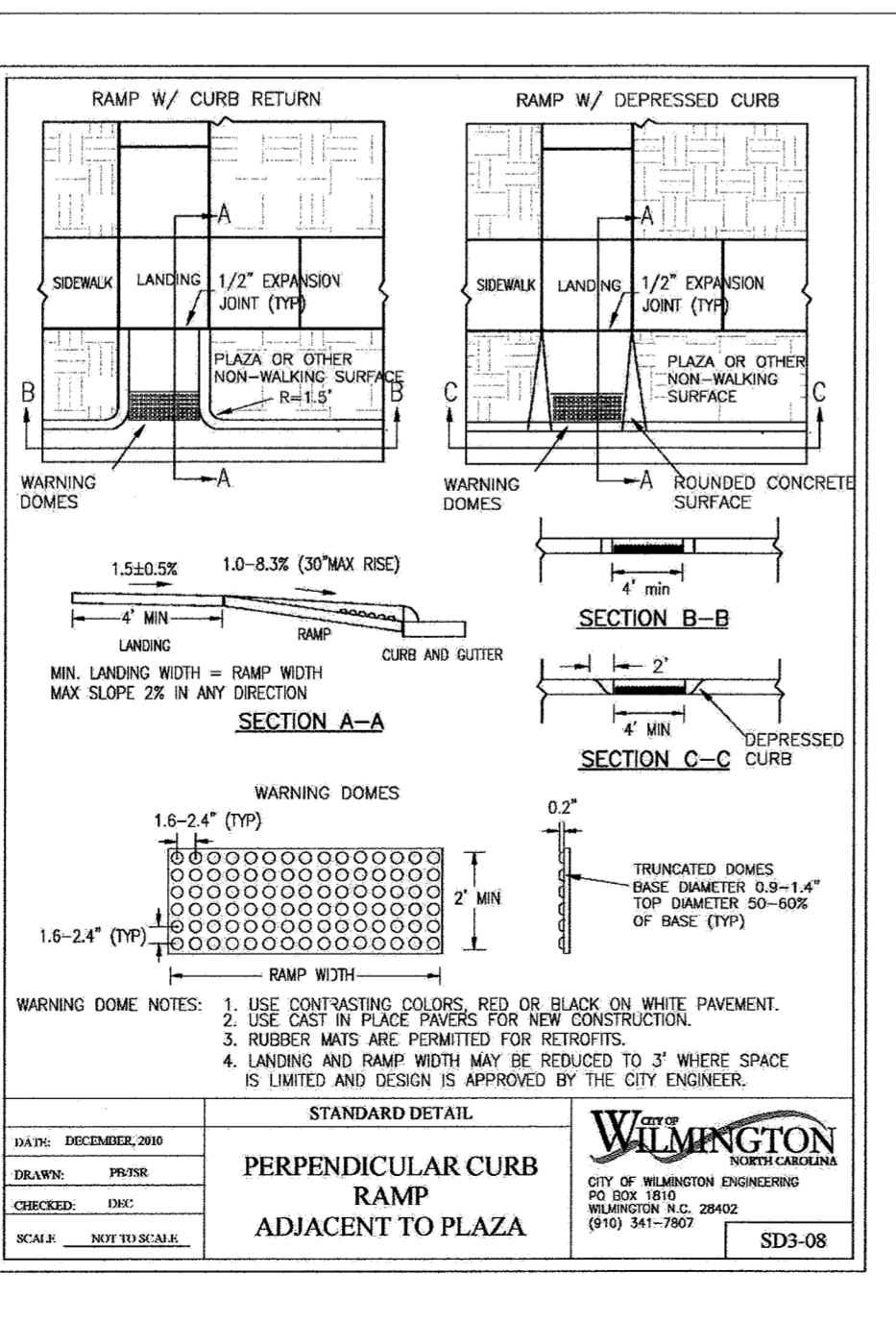
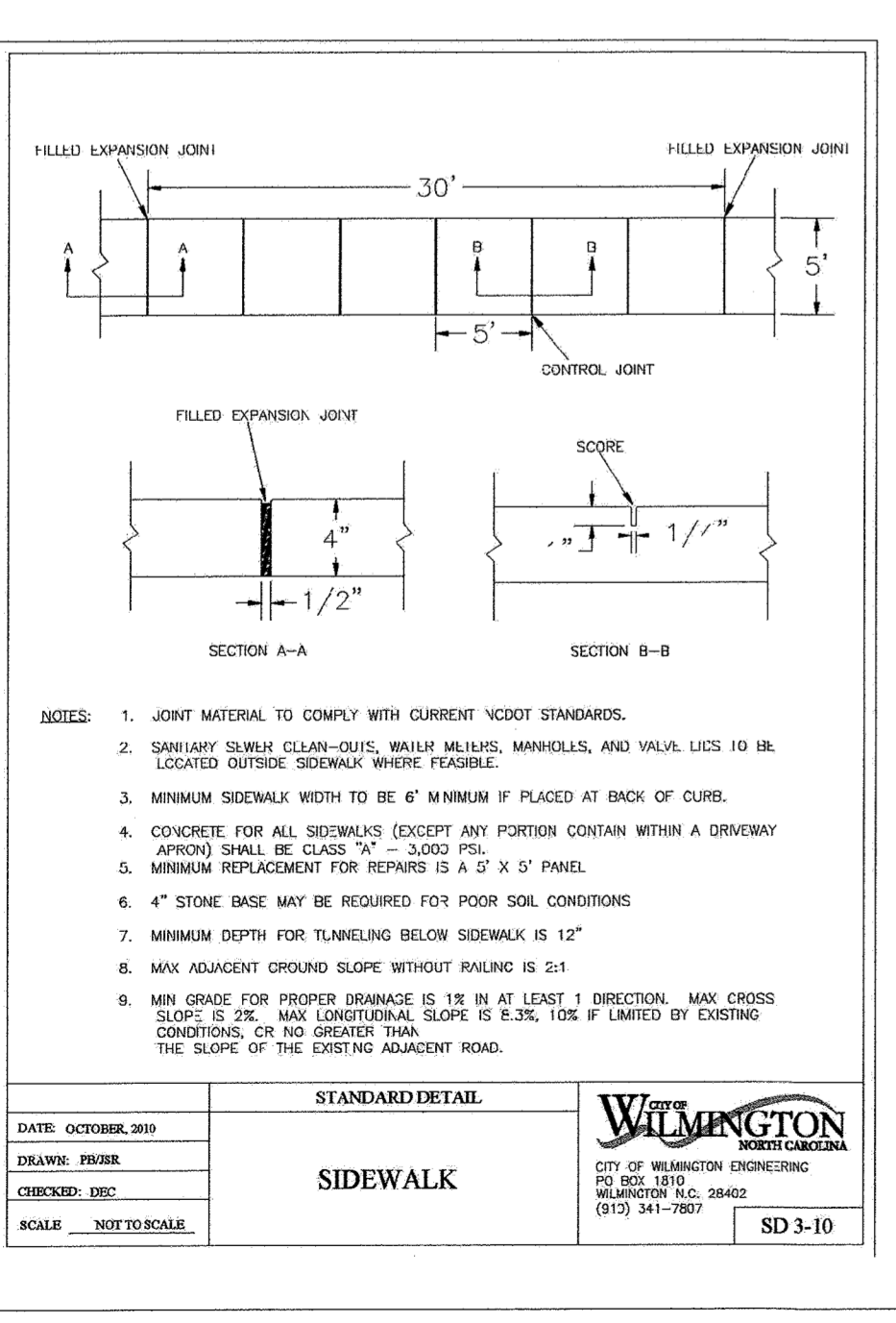
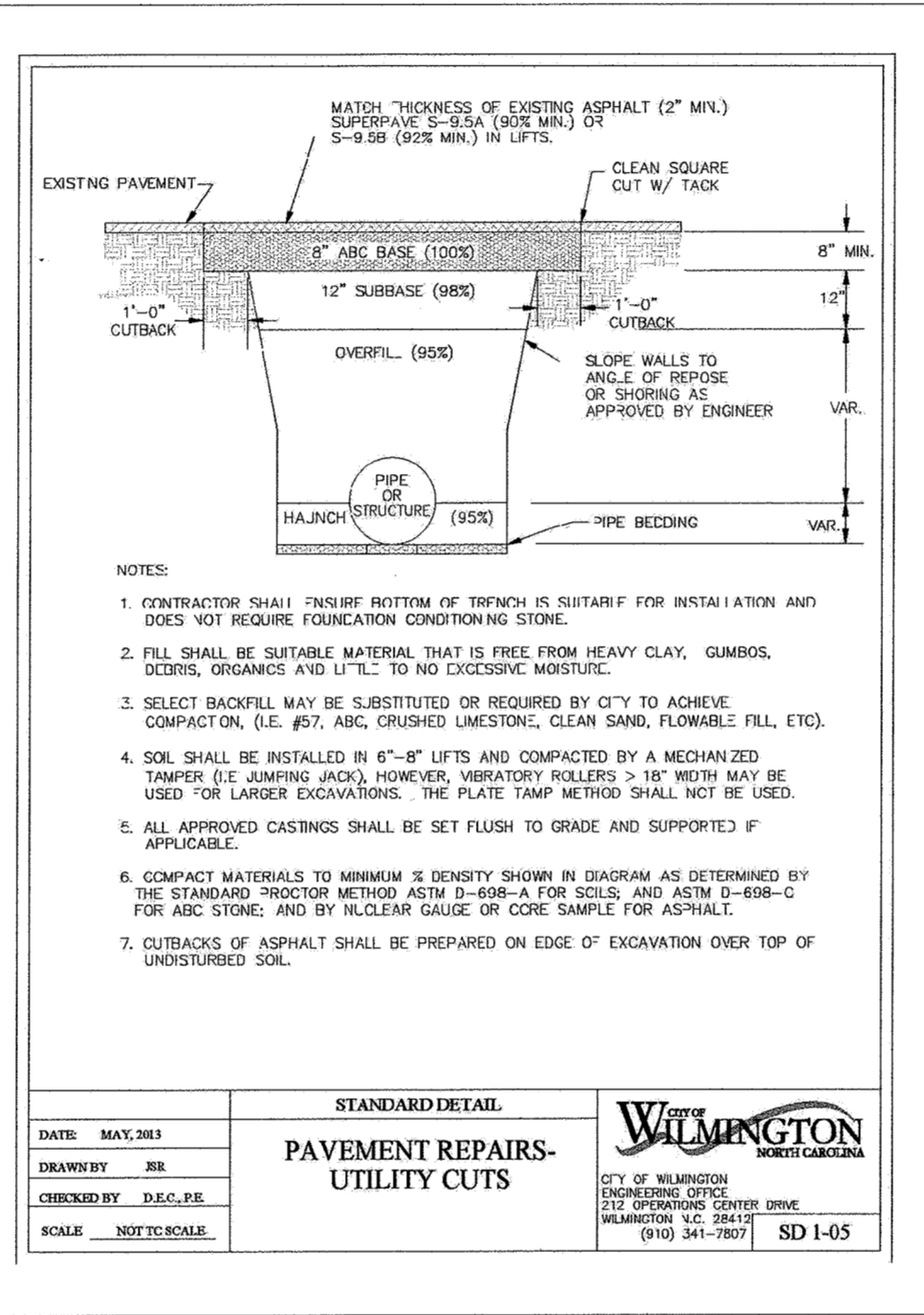
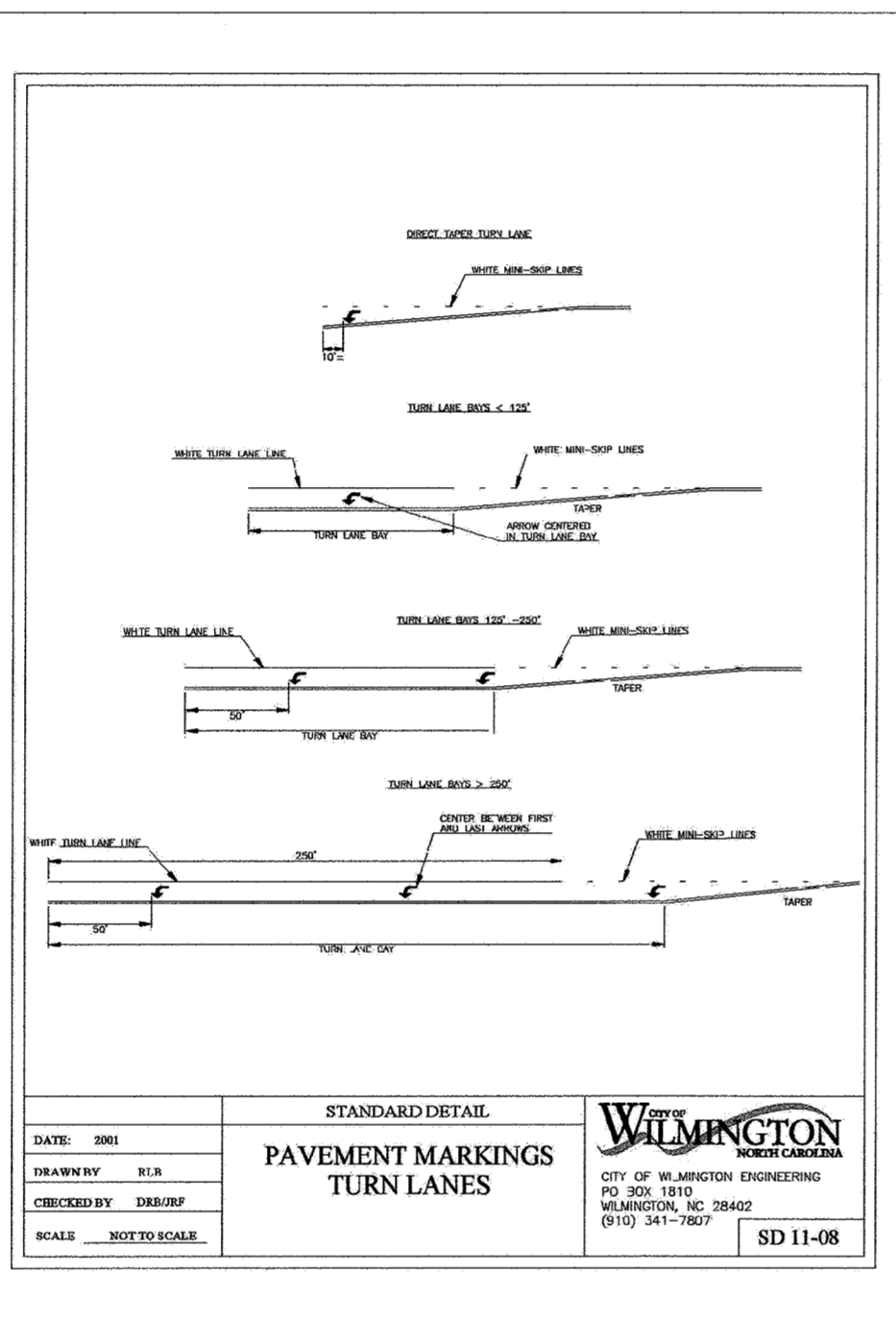
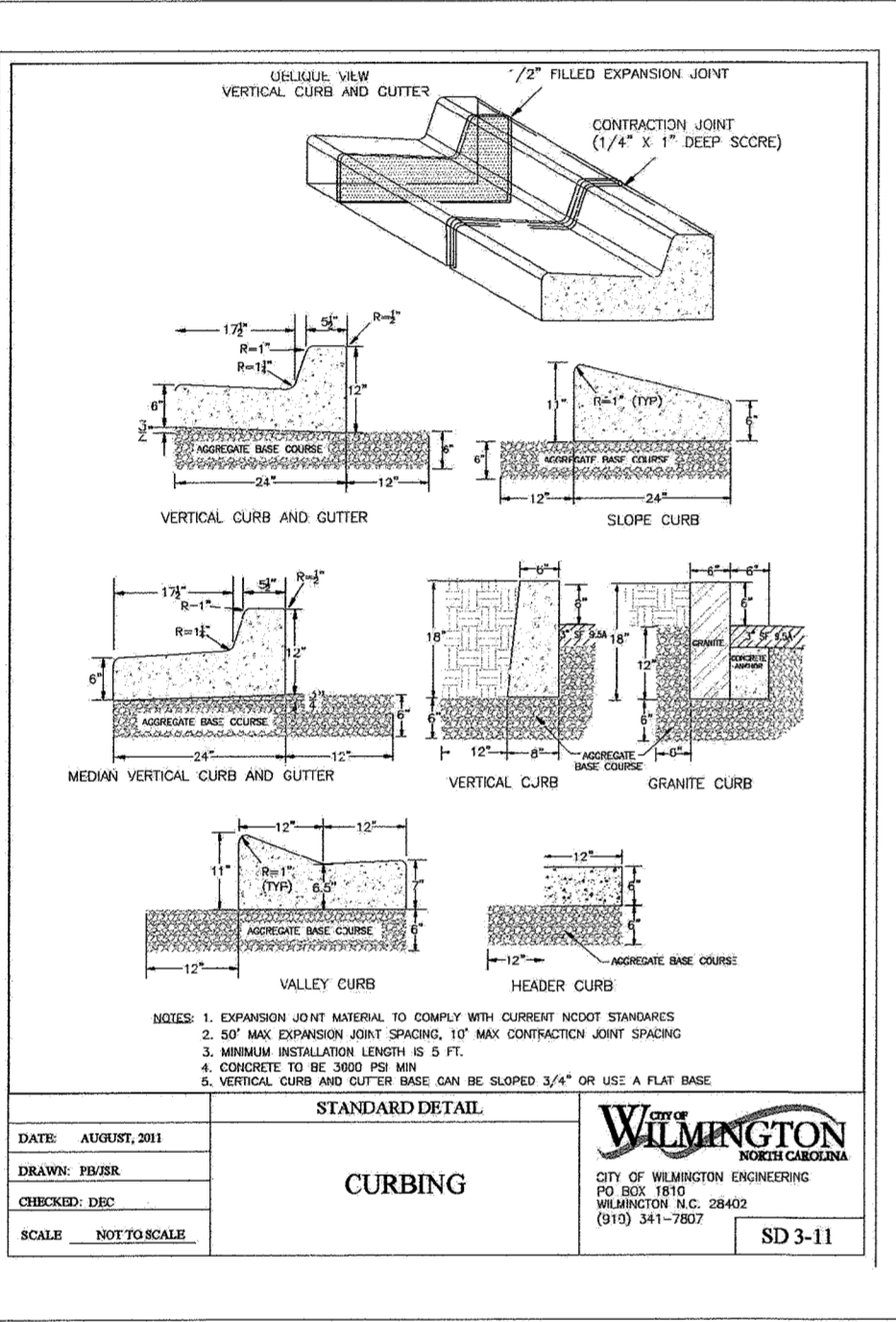
Traffic _____

Fire _____

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



FINAL DESIGN
 NOT APPROVED FOR CONSTRUCTION



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

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No.	Revision	Date	By	Designer	Scale
1	REVISED 70' ROW STREET TO HAVE 5' PLAZA	9-27-16	JWB	NA	NTS
2	REVISED SIDEWALK & ADDED MUP DETAIL PER COW SW	10-13-16	JWB	JWB	6/30/16

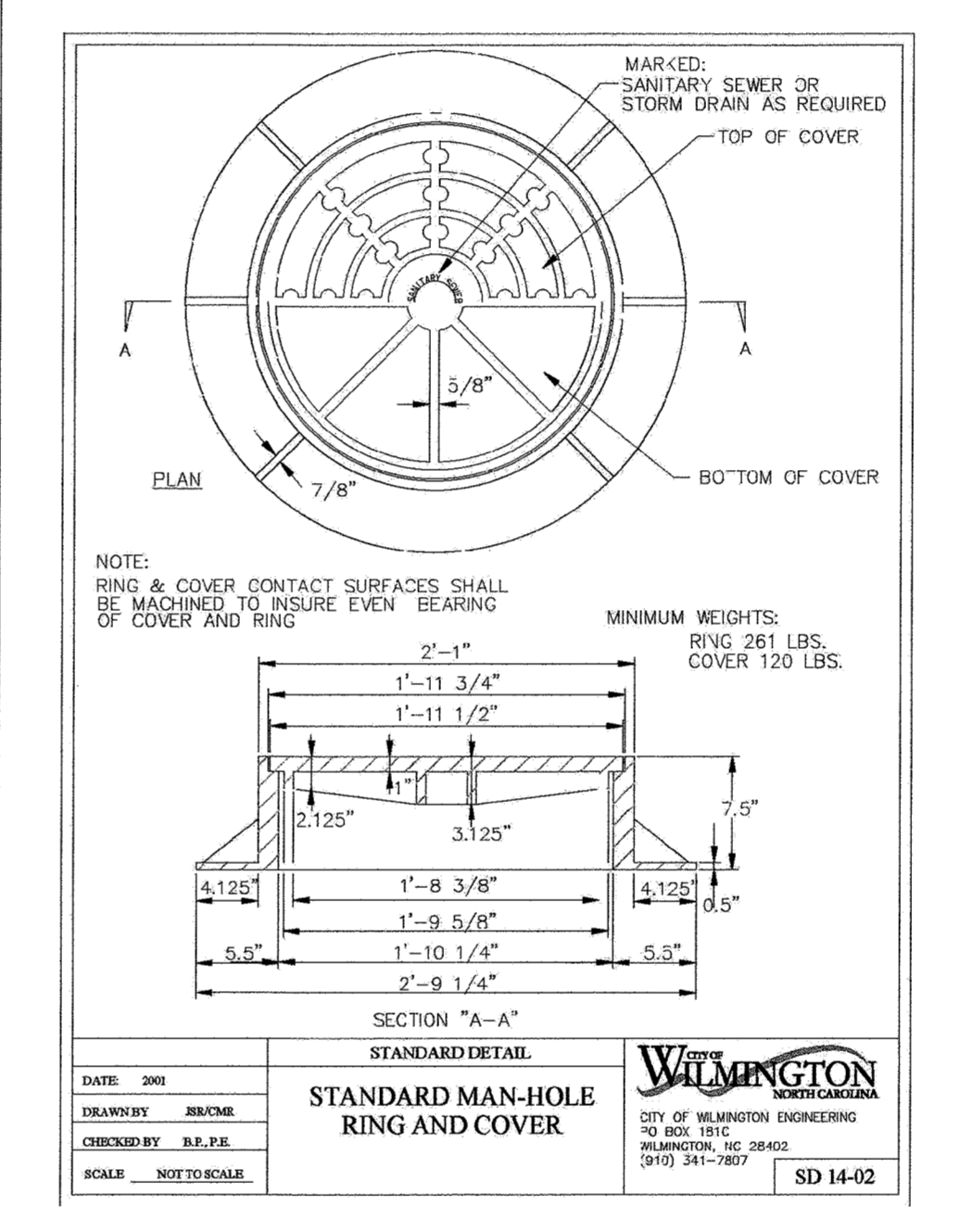
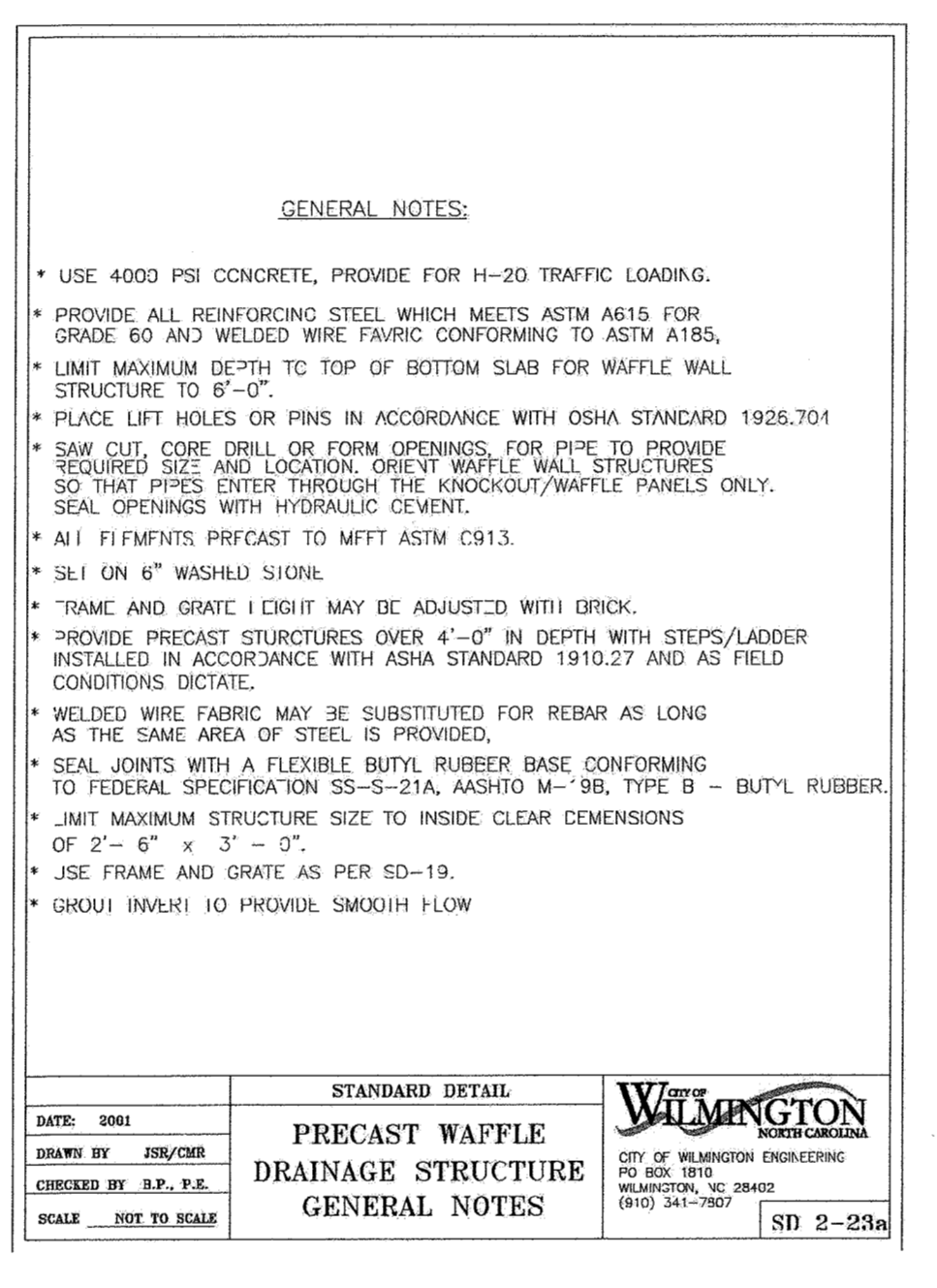
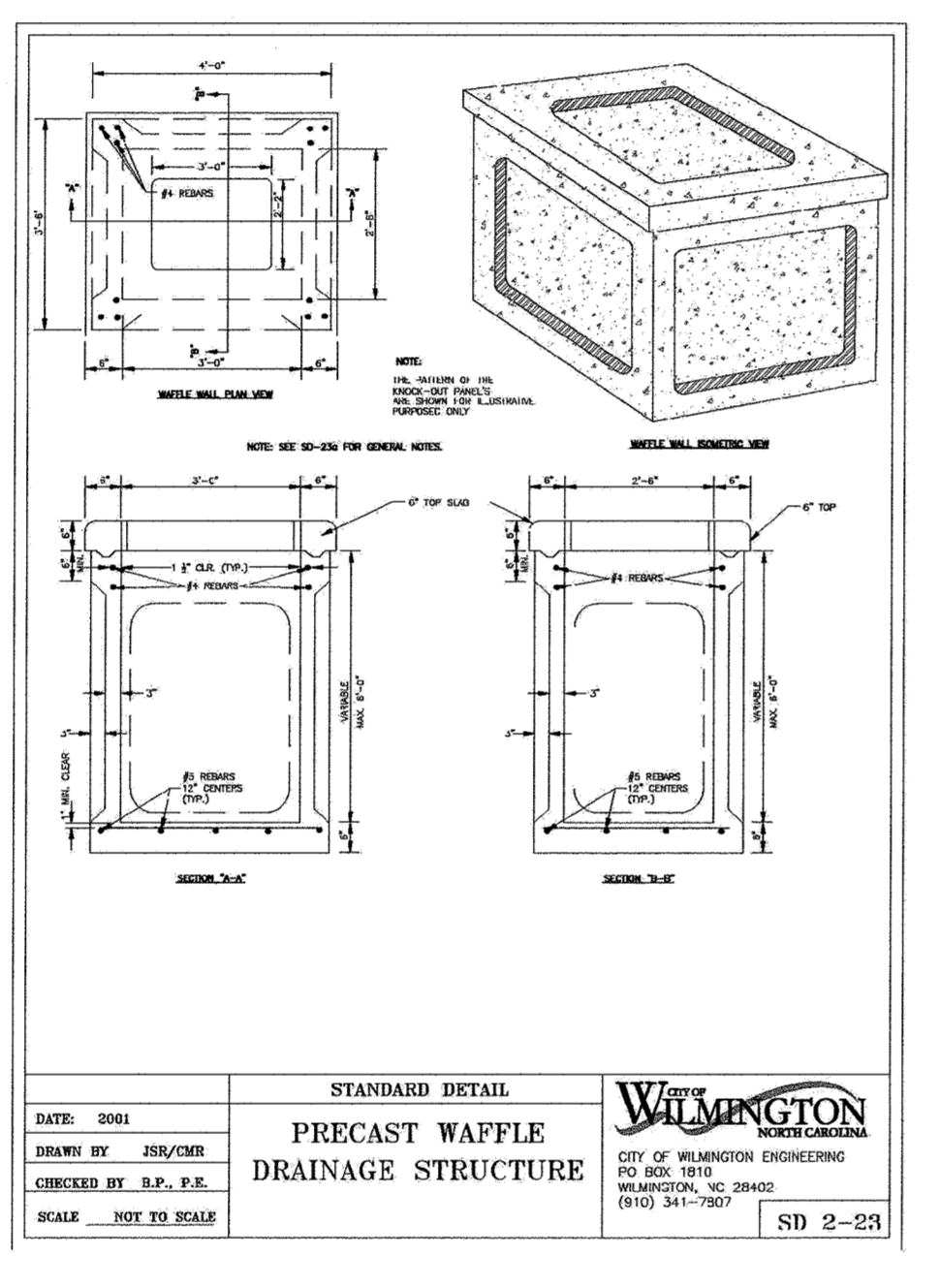
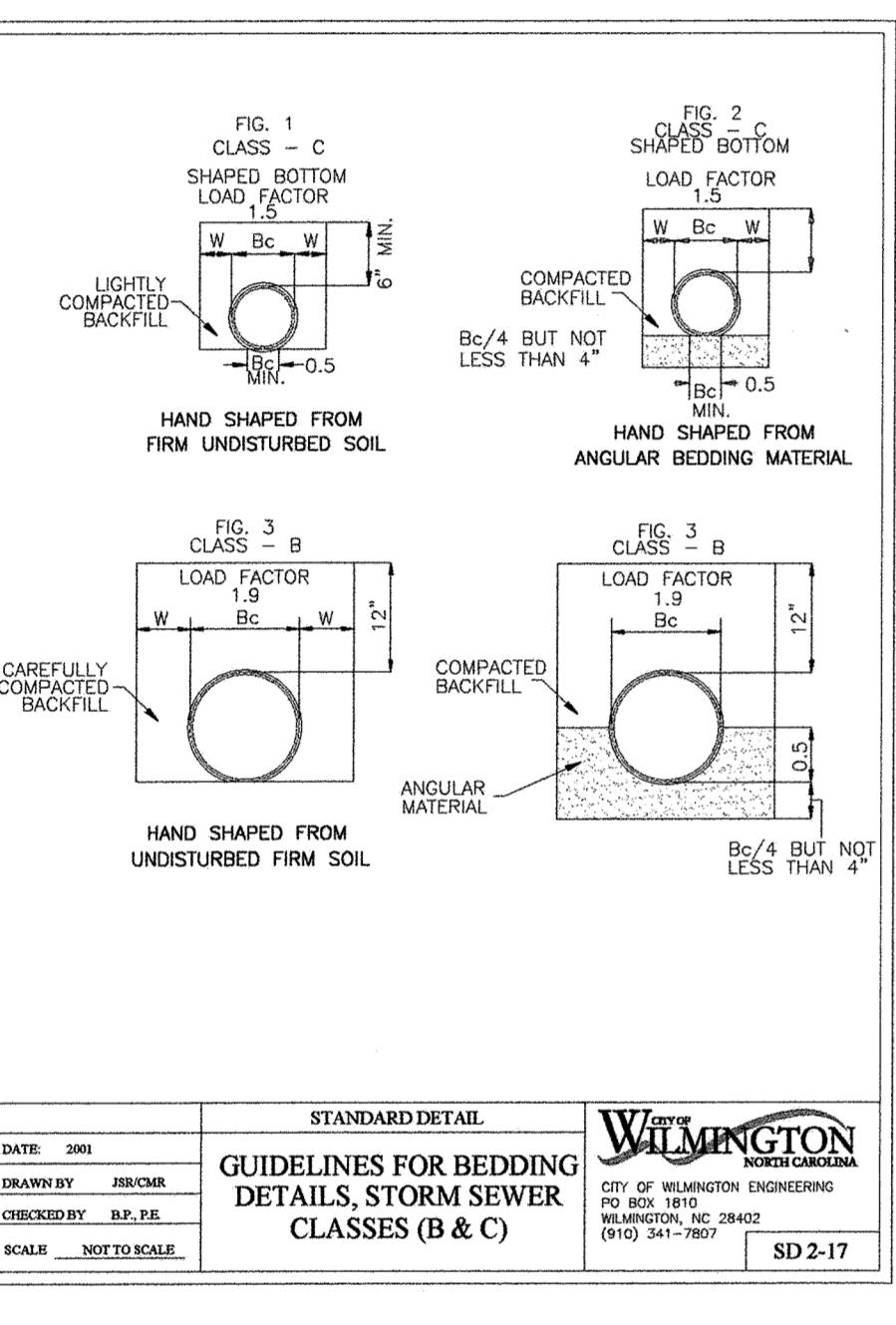
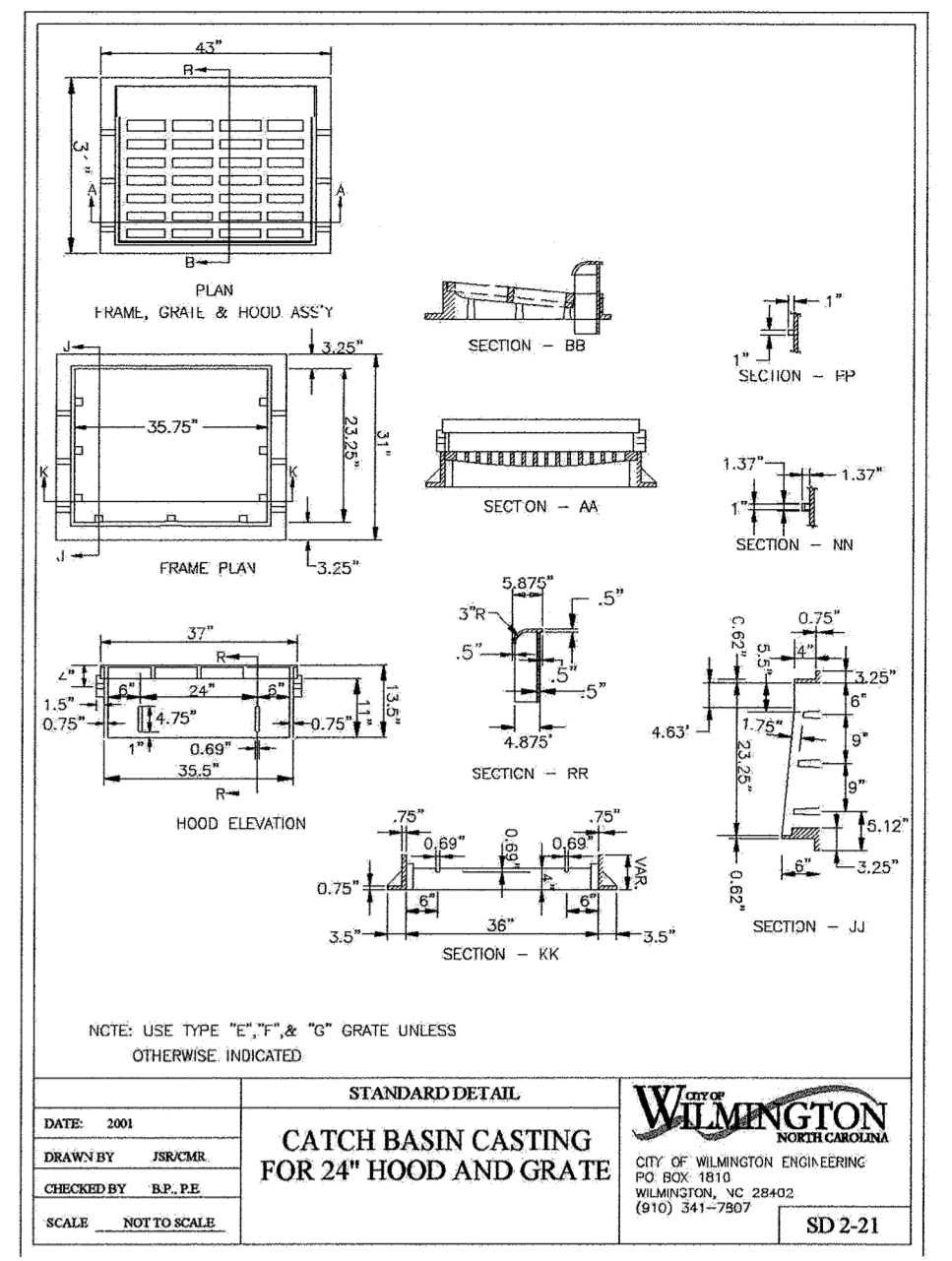
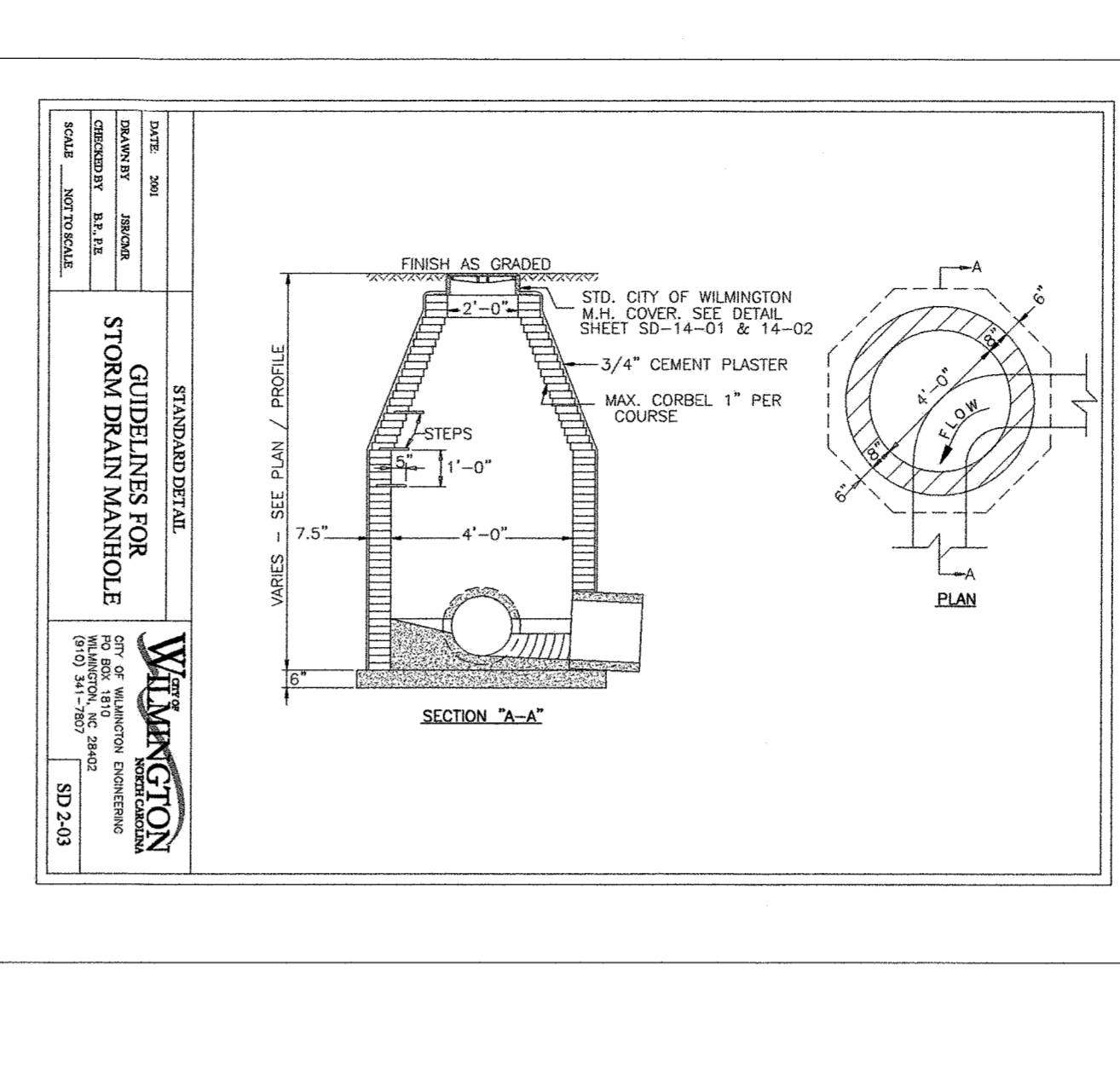
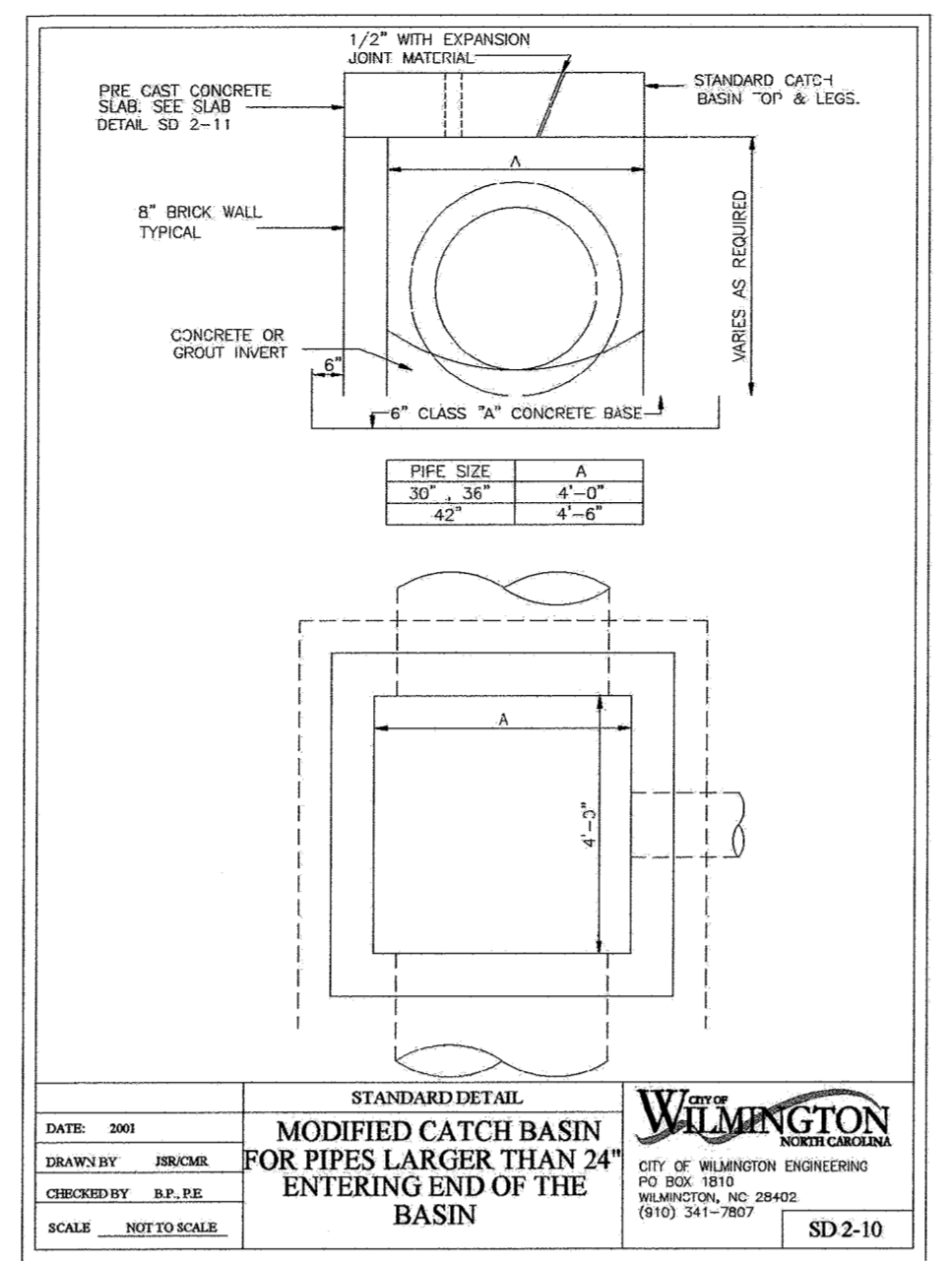
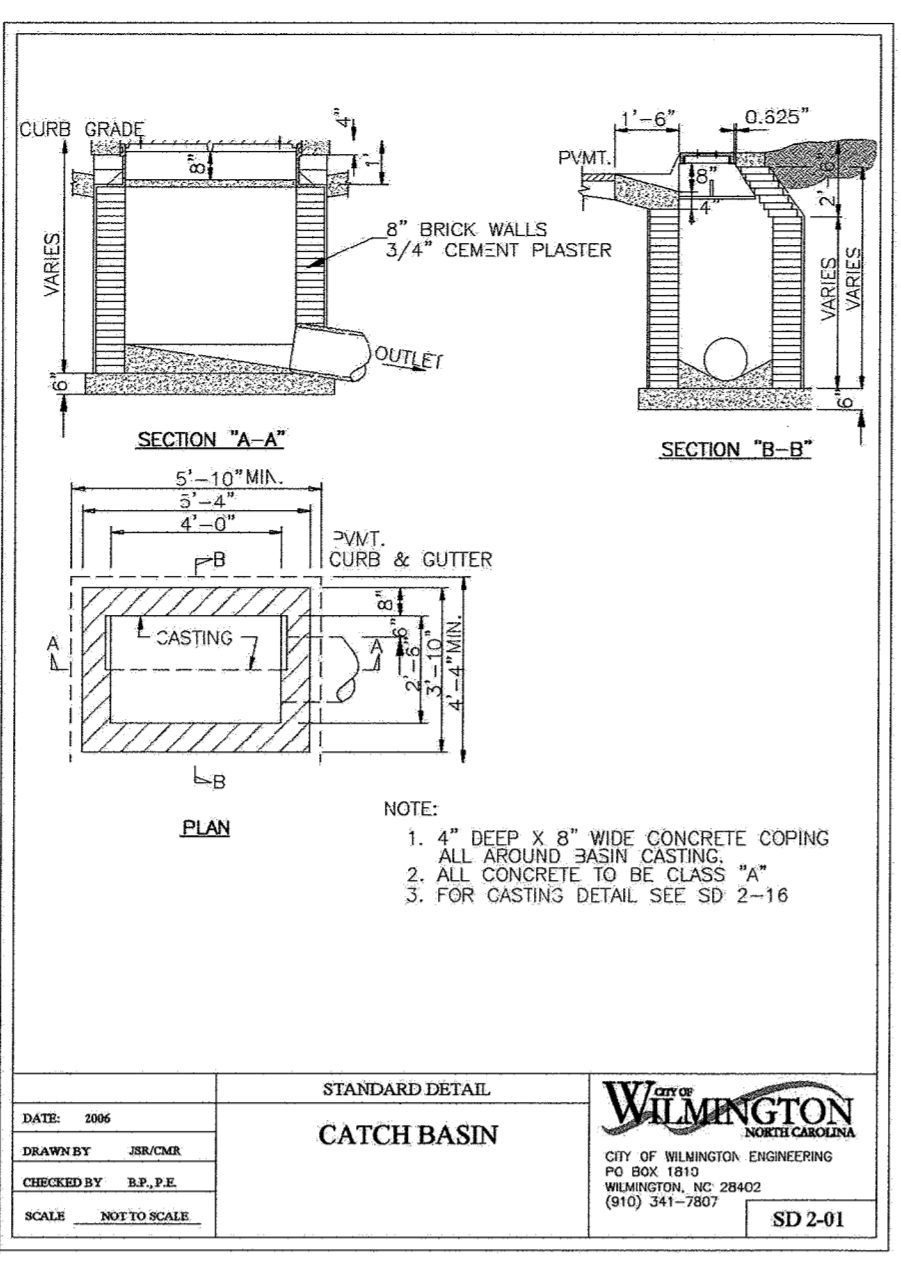
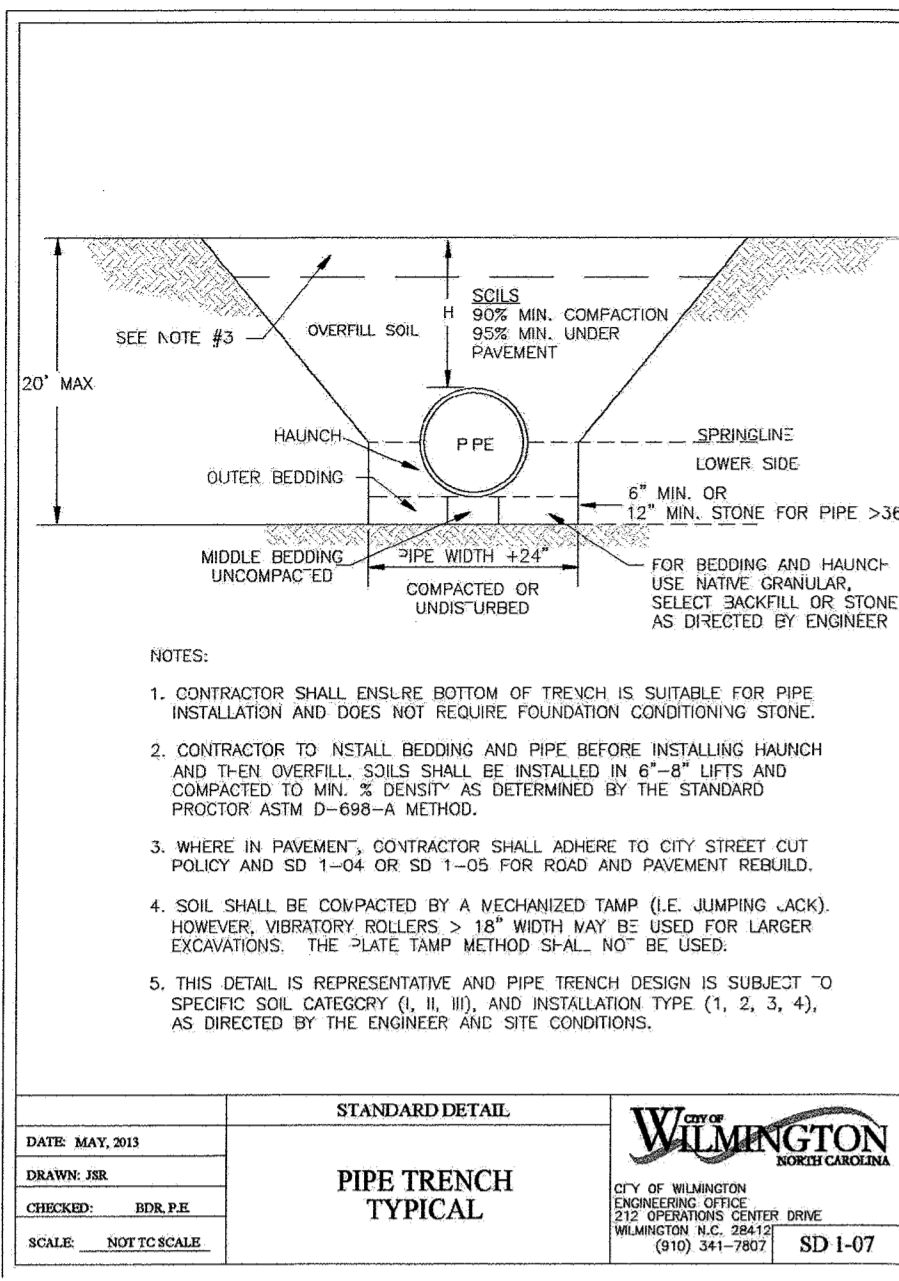
Checked By: JWB Job No. 03061193.01

ARBOR COMMONS
 New Hanover County
 North Carolina

ROADWAY DETAILS

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 1410 Commonwealth Drive, Suite 1011 | Wilmington, NC 28403 | T: 910.256.9277 | License #: C-0832 | www.withersravenel.com

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

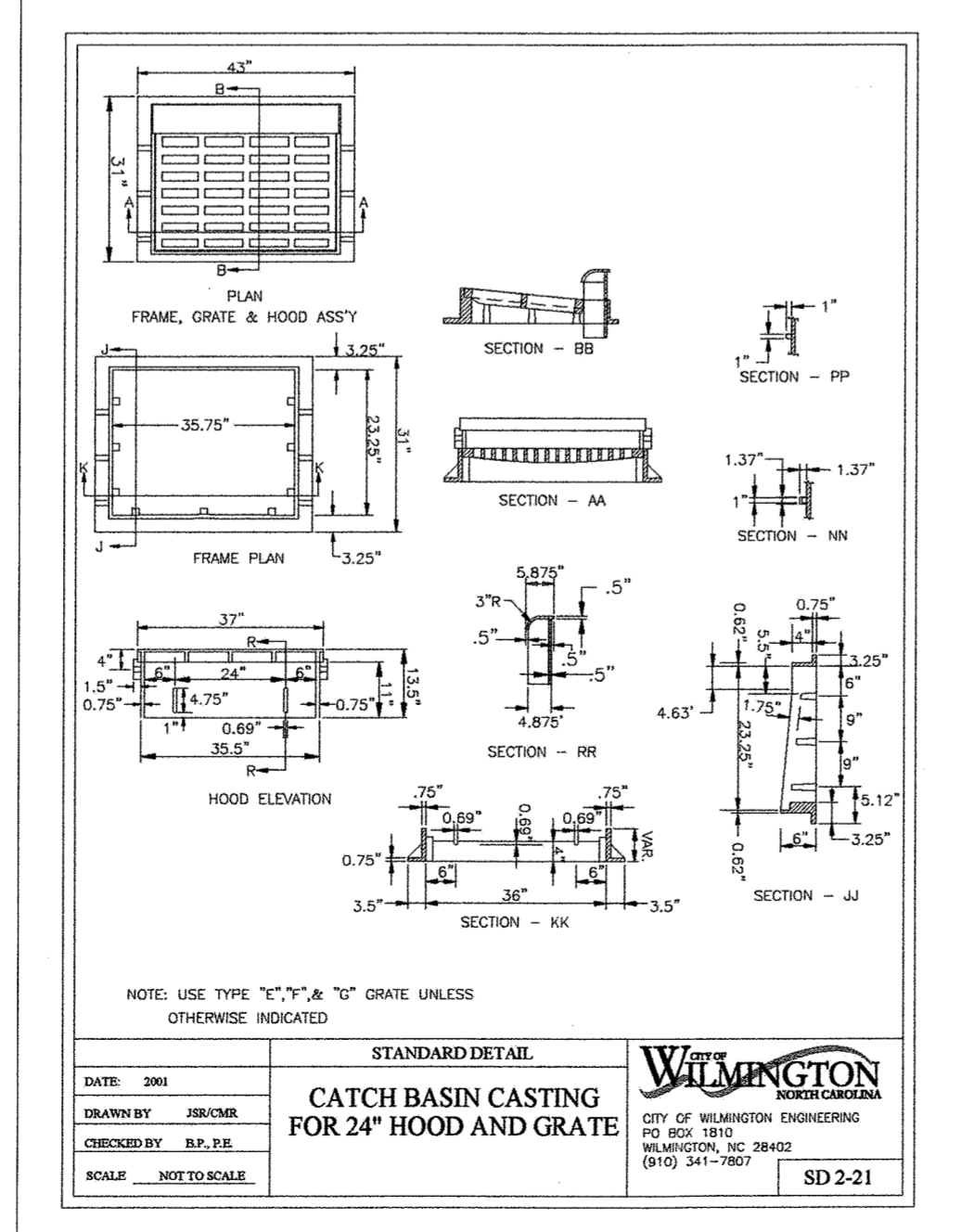
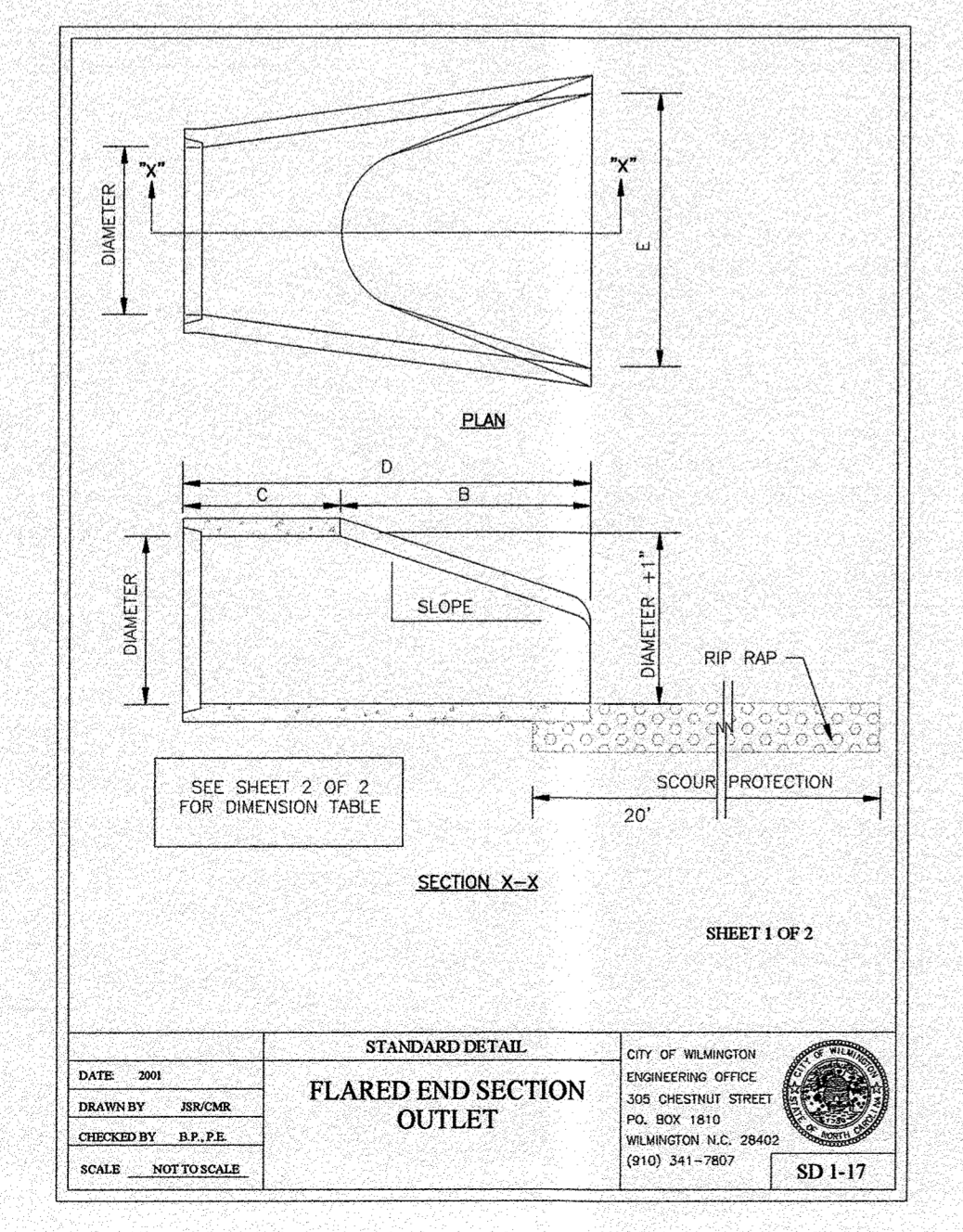
PIPE DIAMETER	WALL THICKNESS	SLOPE	B	C	D	E	UNIT WEIGHT
12	2 1/4"	3:1	24	48	73	24	730
15	2 1/4"	3:1	27	46	73	30	910
18	2 1/2"	3:1	27	46	73	36	1190
21	2 3/4"	3:1	36	37	73	42	1370
24	3"	3:1	42	31 1/2	73	48	1770
27	3 1/4"	3:1	48	25 1/2	73	54	2130
30	3 1/2"	3:1	54	19 3/4	73	60	2380
33	3 3/4"	3:1	60	36	96	66	3670
36	4"	3:1	63	34 3/4	97	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	8610
60	6"	2:1	60	39	99	96	11180
72	7"	2:1	78	21	99	108	13980

DIMENSIONS IN INCHES WEIGHTS IN POUNDS

SHEET 2 OF 2

DATE: 2008
DRAWN BY: JWB/CMB
CHECKED BY: R.P.P.S.
SCALE: NOT TO SCALE

STANDARD DETAIL
CITY OF WILMINGTON ENGINEERING
PO BOX 1810
WILMINGTON, NC 28402
(910) 341-7807
SD 1-17



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

Approved Construction Plan

Name _____ Date _____

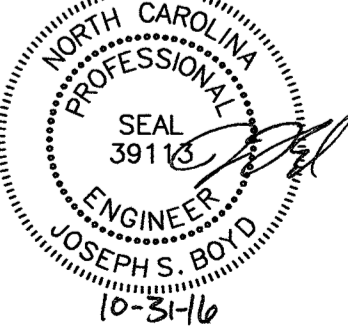
Planning _____

Public Utilities _____

Traffic _____

Fire _____

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



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

FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By	Designer	Scale
1	ADD STORM INTERFERENCE MANHOLE DETAIL	10-19-16	JSB	NA	NTS

Drawn By: JSB
Checked By: JWB
Job No.: 03061193.01

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

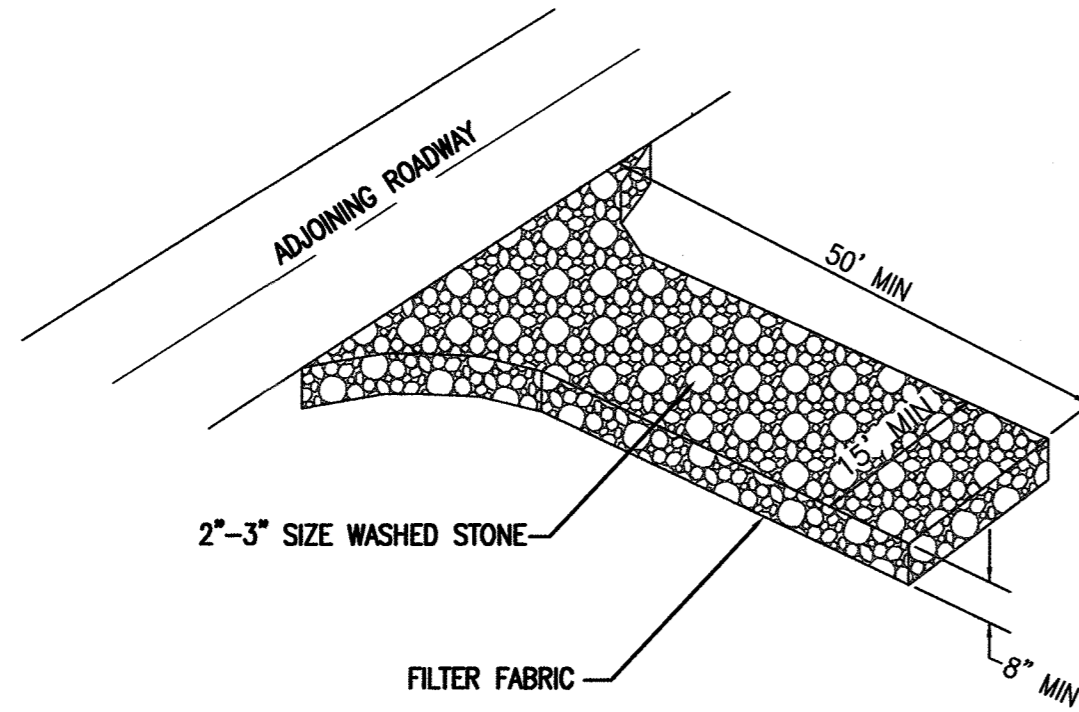
STORMDRAIN DETAILS

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Sheet No. **D-7**

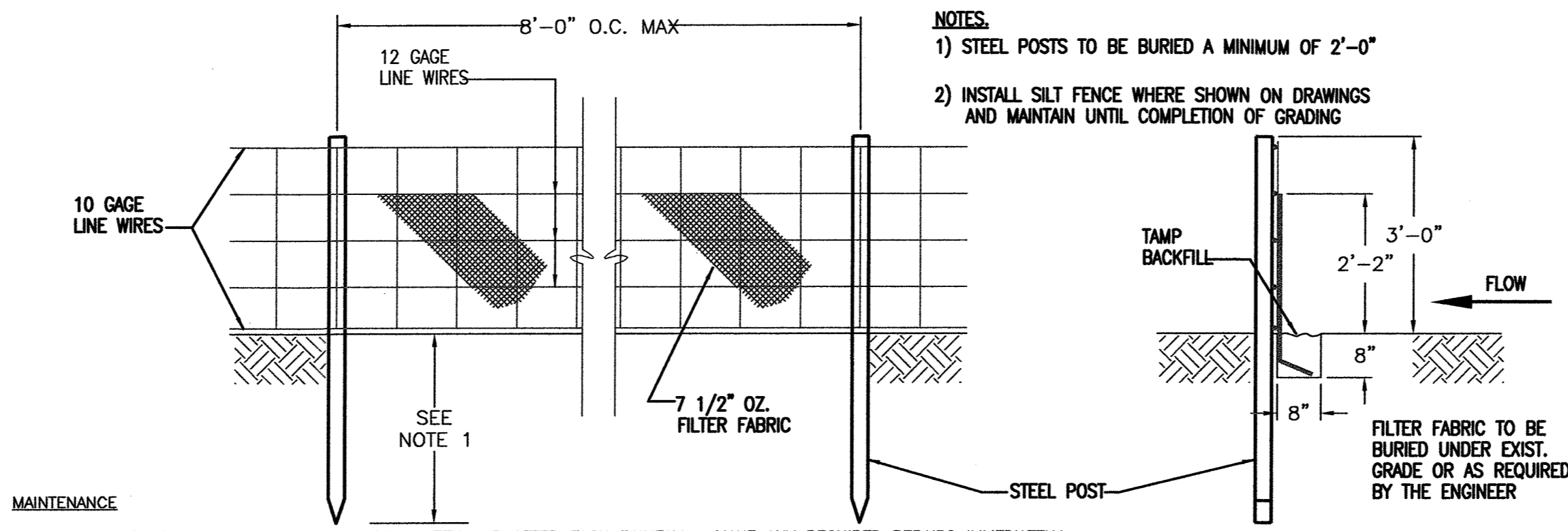
NOTES:

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 TOP-DRESSING 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



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

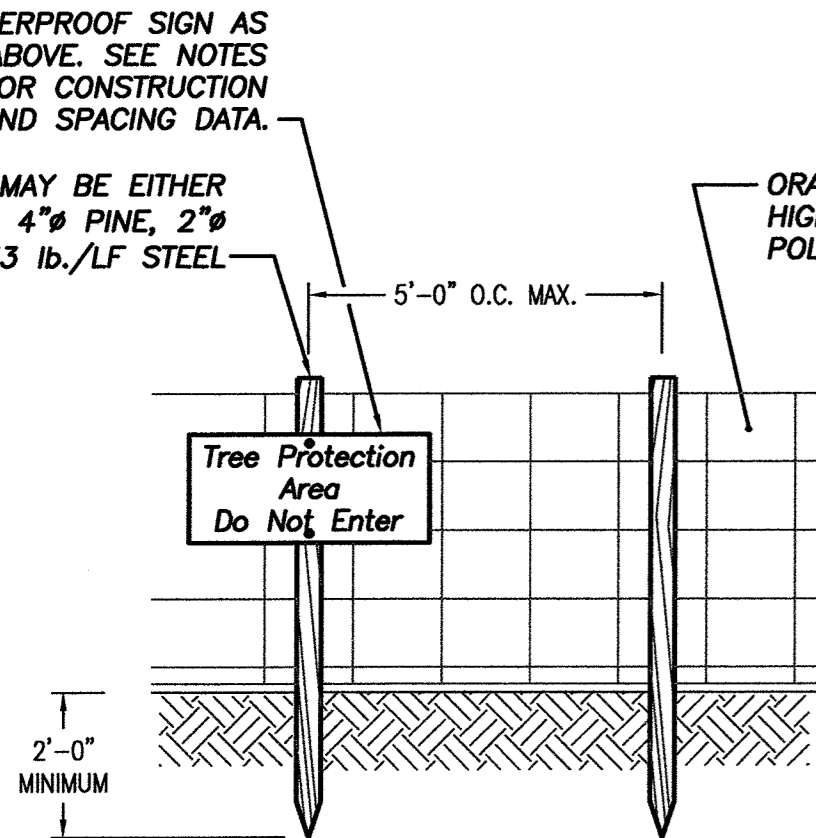
SILT FENCE

NTS

- 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.

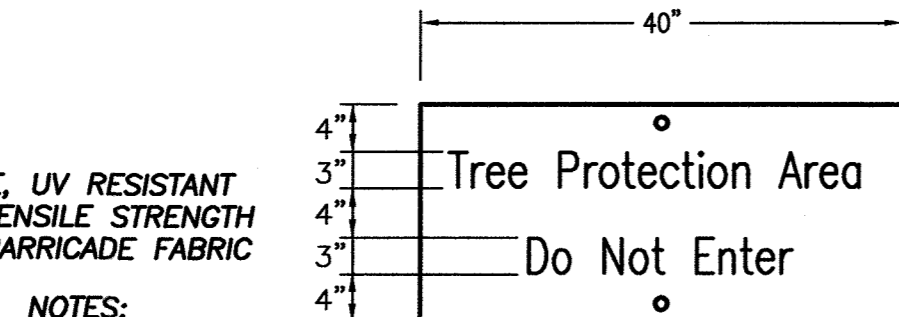
WEATHERPROOF SIGN AS SHOWN ABOVE. SEE NOTES BELOW FOR CONSTRUCTION AND SPACING DATA.

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



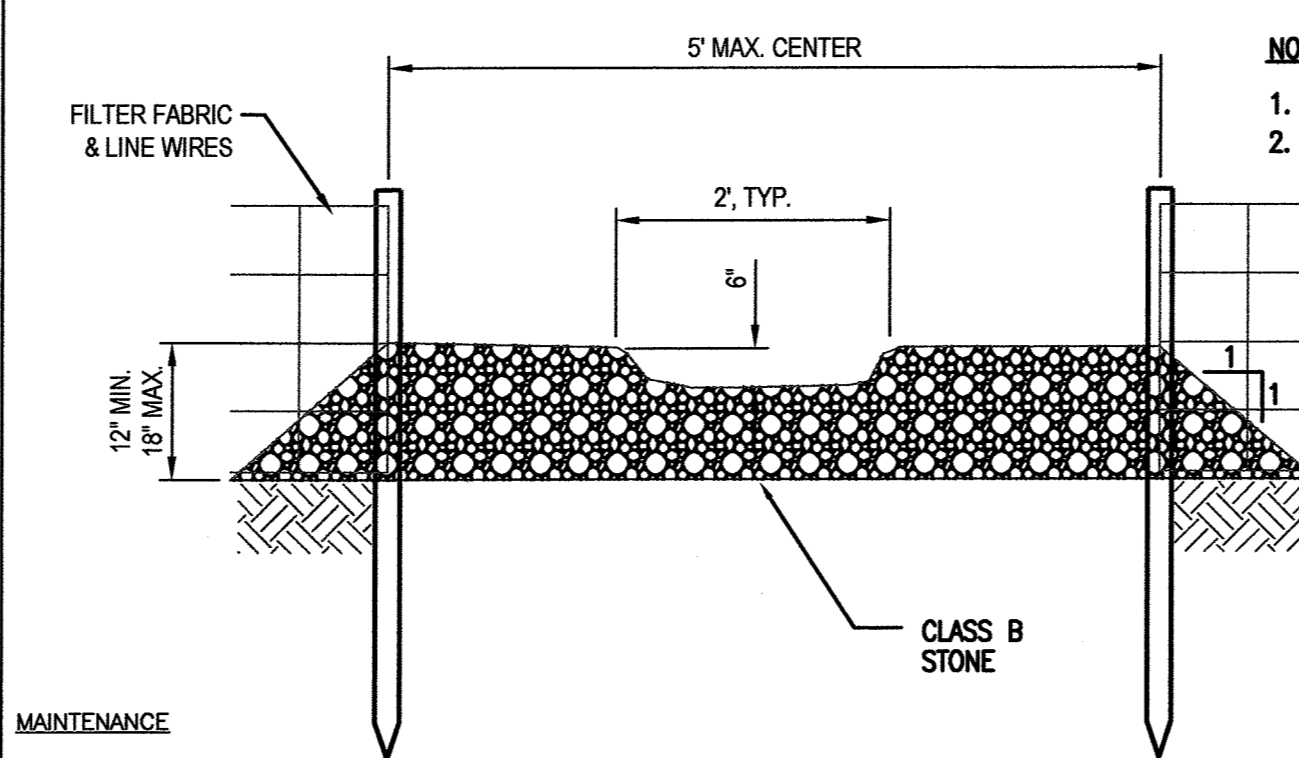
TREE PROTECTION FENCE

NTS



NOTES:

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

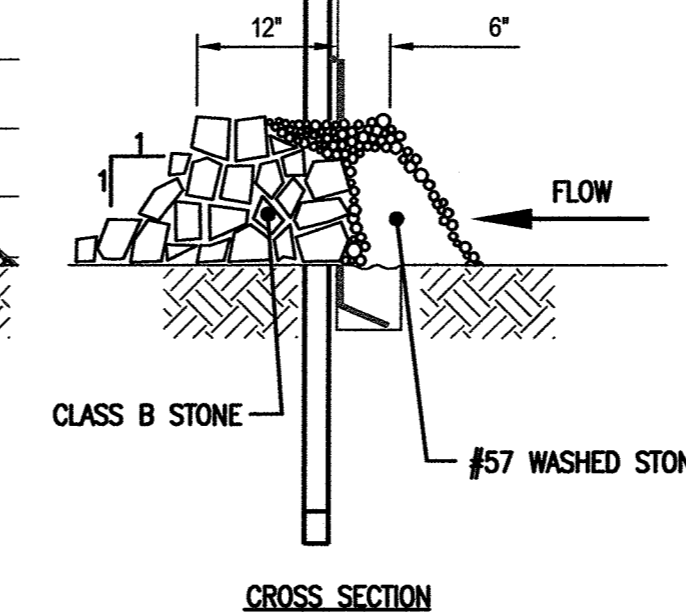


SILT FENCE OUTLET

NTS

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

- 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.



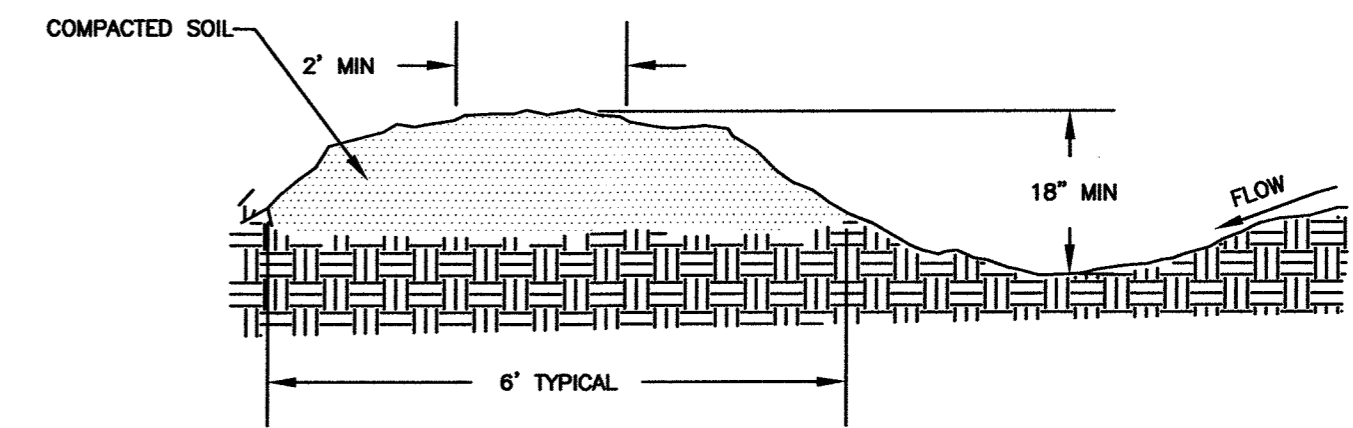
CROSS SECTION

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 SEEDED 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 DENUDE 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.



MAINTENANCE

INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

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

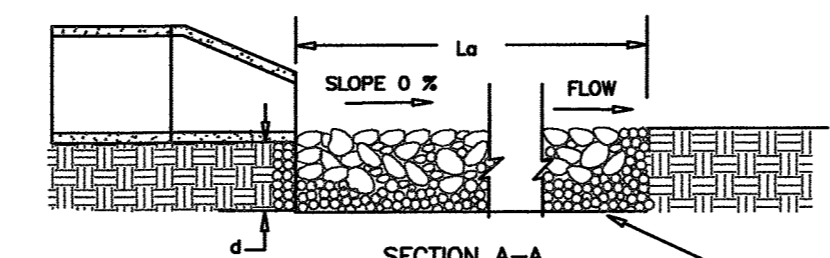
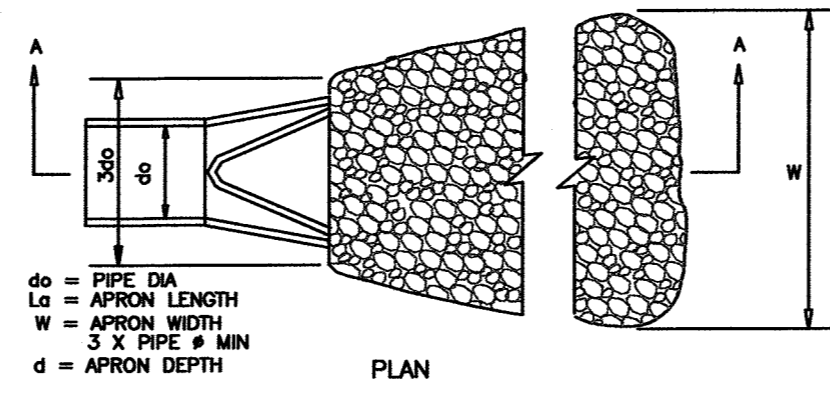
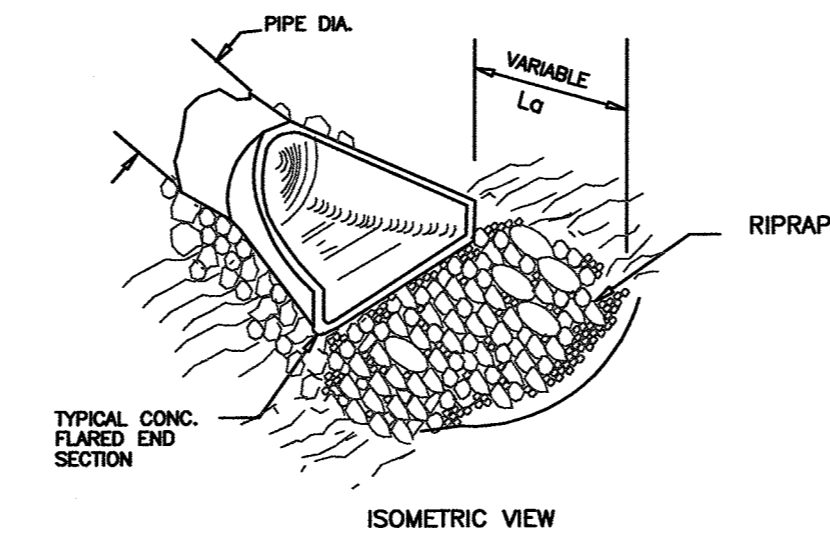
NTS

CONSTRUCTION SPECIFICATION

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

MAINTENANCE

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



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

ENERGY DISSIPATOR SCHEDULE

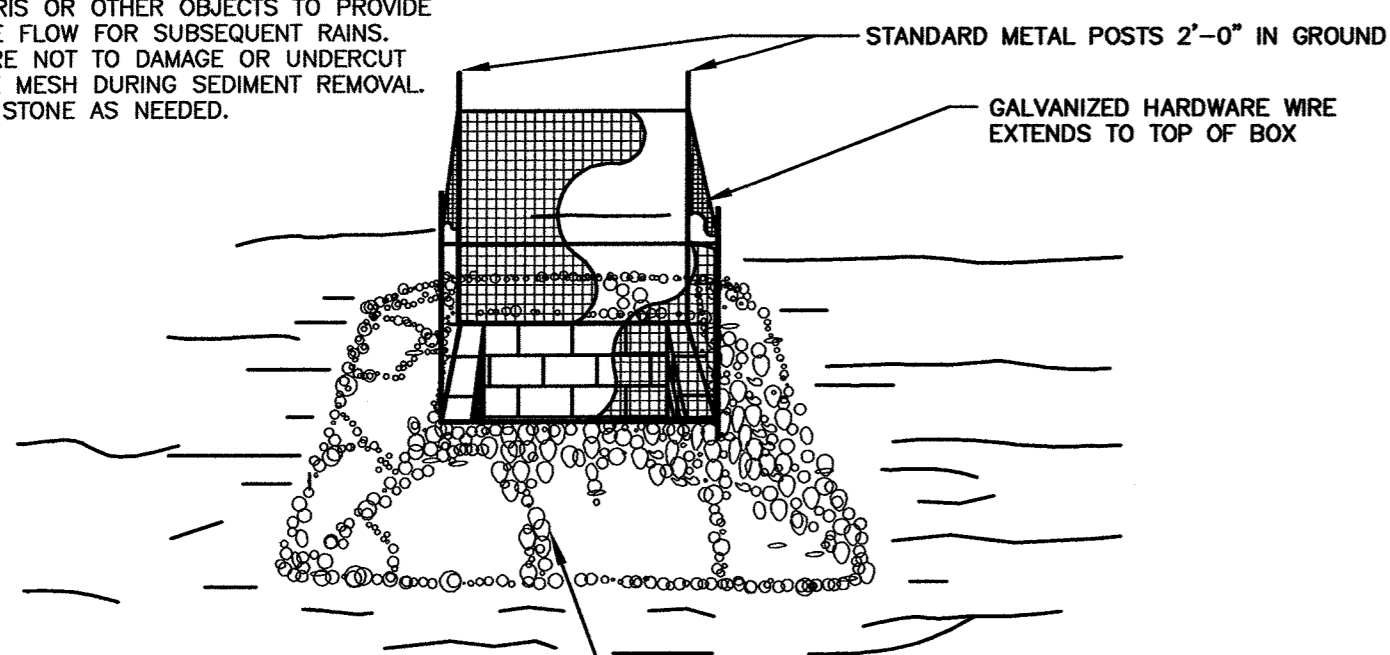
ENERGY DISSIPATOR NO.	PIPE DIAMETER (in)	APRON THICKNESS (in)	La (ft)	WIDTH(W) (ft)	3do	RIPRAP SIZE
FES#1	36	36	15	18	9	CLASS 2
FES#13	36	24	13	16	9	CLASS 1

RIP RAP ENERGY DISSIPATER

N.T.S.

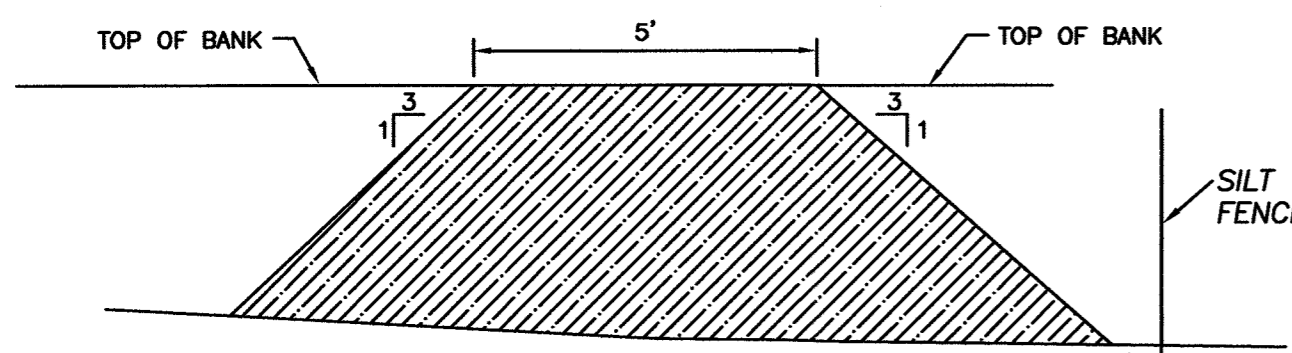
MAINTENANCE

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



STANDARD CATCH BASIN/YARD INLET PROTECTION

NTS



NOTES:

1. DITCH PLUG TO BE INSTALLED BEFORE GRADING IS STARTED
2. THE DITCH MUST BE IMMEDIATELY FILLED ONCE THE PLUG IS INSTALLED AND BEFORE ANY RAIN EVENT.

DITCH PLUG

NTS

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

Approved Construction Plan

Name _____ Date _____

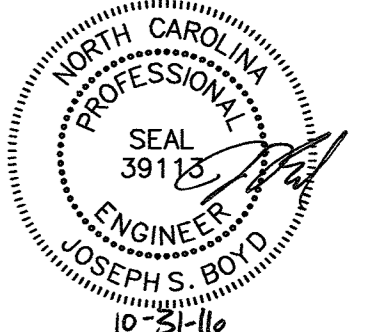
Planning _____

Public Utilities _____

Traffic _____

File _____

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FINAL DESIGN
NOT APPROVED FOR CONSTRUCTION

No.	Revision	Date	By	Designer	Scale
1	REVISED PER NHC EC COMMENTS & CITY COMMENTS	10-28-16	JSB	JSB	NTS
				Checked By: JWJ	Date: 6/30/16
				Job No. 03061193.01	

ARBOR COMMONS
New Hanover County
Wilmington, North Carolina

EROSION CONTROL DETAILS

WithersRavenel
Engineers | Planners | Surveyors
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Sheet No.
D-8