

**General Notes:**

- The Permittee or designee shall schedule the pre-construction meeting seven (7) prior to commencing work with the Town of Pittsboro Engineering Inspector. (919) 533-5482 or mmeyer@pittsboronc.gov and froyal@pittsboronc.gov.
- The Permittee or designee shall notify the Town of Pittsboro at least forty-eight (48) hours prior to beginning any construction work. Once the work has begun, at least forty-eight (48) notice shall be given prior to any sort of disruption to the town's services such as working in a town roadway, tapping water mains, plugging sewer, etc.  
  
Notification must be provided by direct communication. Voice mail or email will not be a considered notification unless adequately responded to by a Town of Pittsboro representative.  
  
The Permittee or designee shall be responsible for notifying all customers affected by service interruptions. The Town of Pittsboro will not approve services interruptions until proof is provided that proper customer notifications has been provided.
- Existing valves shall be operated only by Town of Pittsboro staff or encase of an emergency in the presents of Town staff.
- Town of Pittsboro current standard specifications and details are available on line at pittsboronc.gov, under the engineering department page.
- The contractor shall uncover all existing town utility lines being tied into to verify their type, condition, location, invert, slope, and any other information needed to determine that the utility connection will function as designed. The contractor is responsible for making any repairs necessary to the lateral or main lines of the town water, reclaimed water, sanitary sewer, and/or storm drain system necessary for the connection to function as designed. The contractor shall locate or have located all existing underground private utilities (electric, telephone, pipelines, etc.) And structures in advance of construction and shall eliminate all conflicts prior to start of construction. Blue stake telephone 811, 800-632-4949.
- Backfilling shall not be started until lines are approved by the Town Engineer Technician, and Geotechnological firm. All backfill shall be ABC or native material unless otherwise approved on the plans as CLSM. ABC or native material shall be installed in accordance with, type 1 to 95% compaction. Backfill placement and surface replacement shall be in accordance with top STD DTL for t-top with 16" min depth ABC shelf.
- An approved set of plans shall be maintained on the job site at all times that work is in progress. Deviation from the plans shall not be allowed without an approval plan revision.
- The contractor shall supply town engineering technician/inspector construction material testing documentation throughout the project.
- Town of Pittsboro water valves shall be operated by town personnel only. The town requires a 48 hour notice for system shutdowns. Contractor is required to notify affected customers 24 hours prior. Business' may require after hours' shutdowns. Residential flows after shutdown may require a pump. Contractor is responsible to install 2" taps to relieve pressure and alleviate residual flows when needed.

**INFRASTRUCTURE CONSTRUCTION PLAN APPROVAL**

*Town of Pittsboro - Plan Authorization for Construction*

All construction must be in accordance with all Local, State and Federal rules and regulations

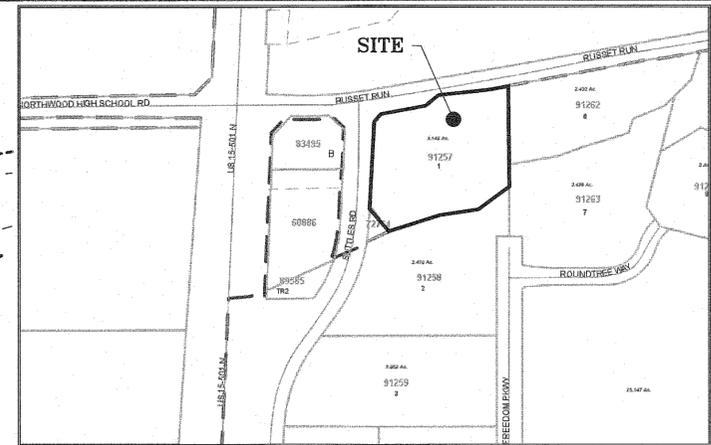
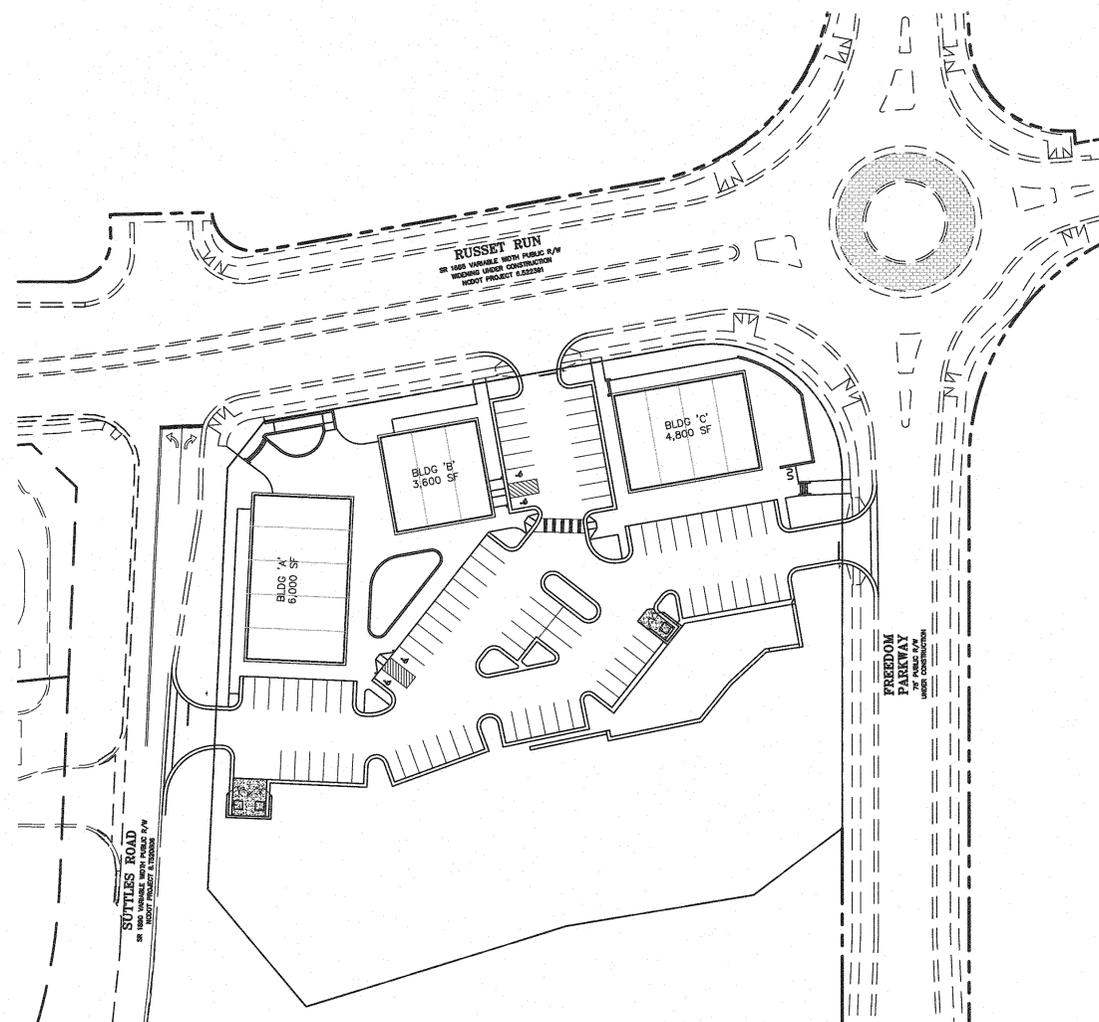
PUBLIC UTILITIES \_\_\_\_\_  
 ENGINEERING \_\_\_\_\_  
 PLANNING AND ZONING \_\_\_\_\_  
 FIRE DEPARTMENT \_\_\_\_\_  
 CHATHAM COUNTY EROSION CONTROL \_\_\_\_\_



Know what's below.  
**Call before you dig.**  
 (Or call: 1-800-632-4949)

**CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.**

CONTRACTOR'S INITIALS: \_\_\_\_\_



VICINITY MAP  
 NTS

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# PITTSBORO ROOTS

## SITE PLAN

Pittsboro, North Carolina

**SITE DATA:**

OWNER:	CHATHAM DEVELOPMENT ONE, INC. 100 MATRIX DR BOX 8000 CARY, NC 27513 919-481-3000 TIM SMITH	MAXIMUM ALLOWABLE BUILDING HEIGHT:	8 STORIES
DEVELOPER:	RON STROM DEVELOPMENT, LLC 6801 HOMEWOOD DRIVE CHAPEL HILL, NC 27514 919-489-8656 RON STROM	PROPOSED BUILDING HEIGHT:	50' MAXIMUM
PROJECT:	MIXED USE COMMERCIAL	EXISTING IMPERVIOUS SURFACE:	NONE
PIN:	9752-19-0790	PROPOSED IMPERVIOUS SURFACE:	1.5 ACRES (54.5%)
PARCEL ACREAGE:	2.75 ACRES	MAXIMUM ALLOWABLE IMPERVIOUS SURFACE:	2.75 ACRES (100%)
PROJECT ACREAGE:	1.9± ACRES	OPEN SPACE REQUIRED:	NONE
CURRENT ZONING:	PDD	OPEN SPACE PROVIDED:	0.93 ACRES (33.8%)
OVERLAY ZONING:	WS-IV, PA	REQUIRED PARKING:	87 SPACES (90 SEAT FULL SERVICE RESTAURANT WITH 9 EMPLOYEES/SHIFT @ 3,600 SF) (4,800 SF MEDICAL OFFICE WITH 8 EXAM ROOMS AND 10 EMPLOYEES INCLUDING DOCTOR) (8,000 SF SHOPPING CENTER NOT OTHERWISE SPECIFIED)
RIVER BASIN:	CAPE FEAR RIVER BASIN JORDAN LAKE, HAW RIVER	PARKING PROVIDED:	87 SPACES
BUILDING SETBACKS REQUIRED:	0.0' FRONT 0.0' SIDE 0.0' REAR		
BUILDING SETBACKS PROVIDED:	12.5' MIN. FRONT N/A SIDE 180± REAR		

**LEGEND**

	NEW	EXISTING
DRAINAGE STRUCTURE	■	□
SANITARY SEWER MANHOLE	⊙	⊙
SANITARY SEWER CLEANOUT	⊙	⊙
WATER VALVE	⊙	⊙
FIRE HYDRANT	⊙	⊙
OVERHEAD UTILITY LINE	OH	XOH
UNDERGROUND ELECTRIC LINE	E	XE
UNDERGROUND TELECOM/DATA LINE	TD	XTD
FIBER OPTIC CABLE	FO	XFO
GAS LINE	G	XG
STORM DRAINAGE PIPE	SD	XSD
SANITARY SEWER LINE	SS	XSS
WATER LINE	W	XW
SURFACE ELEVATION CONTOUR	400	400
SURFACE SPOT ELEVATION	356.44	356.44
CLEARING LIMIT/TREE LINE	~	~
LIMIT OF DISTURBANCE	⊖	⊖
ELECTRICAL TRANSFORMER PAD	T	T
TYPICAL KEYED NOTE LABEL	1	1

**civil consultants**  
 LAND PLANNERS + CIVIL ENGINEERS  
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 919-480-1648 PHONE 919-403-0336 FAX  
 Lic. #C-1030



PITTSBORO ROOTS  
 PITTSBORO, NORTH CAROLINA  
 COVER SHEET

REV.	DATE	DESCRIPTION
1	8/10/2016	BIORETENTION
2	7/12/2016	CPI SITE PLAN
3	8/15/2016	TOWN REVIEW COMMENTS

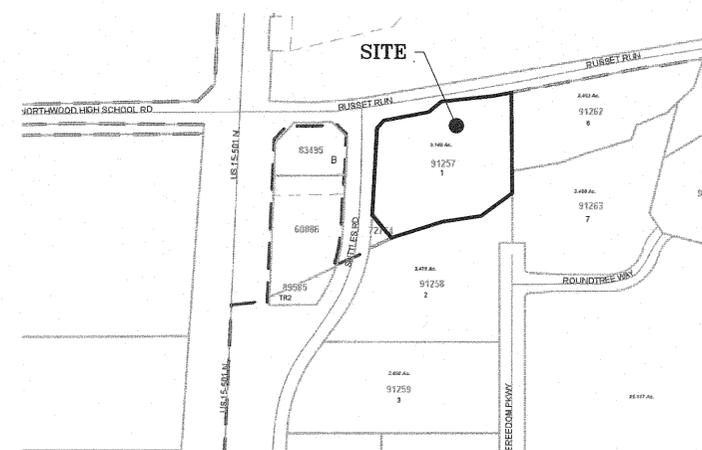
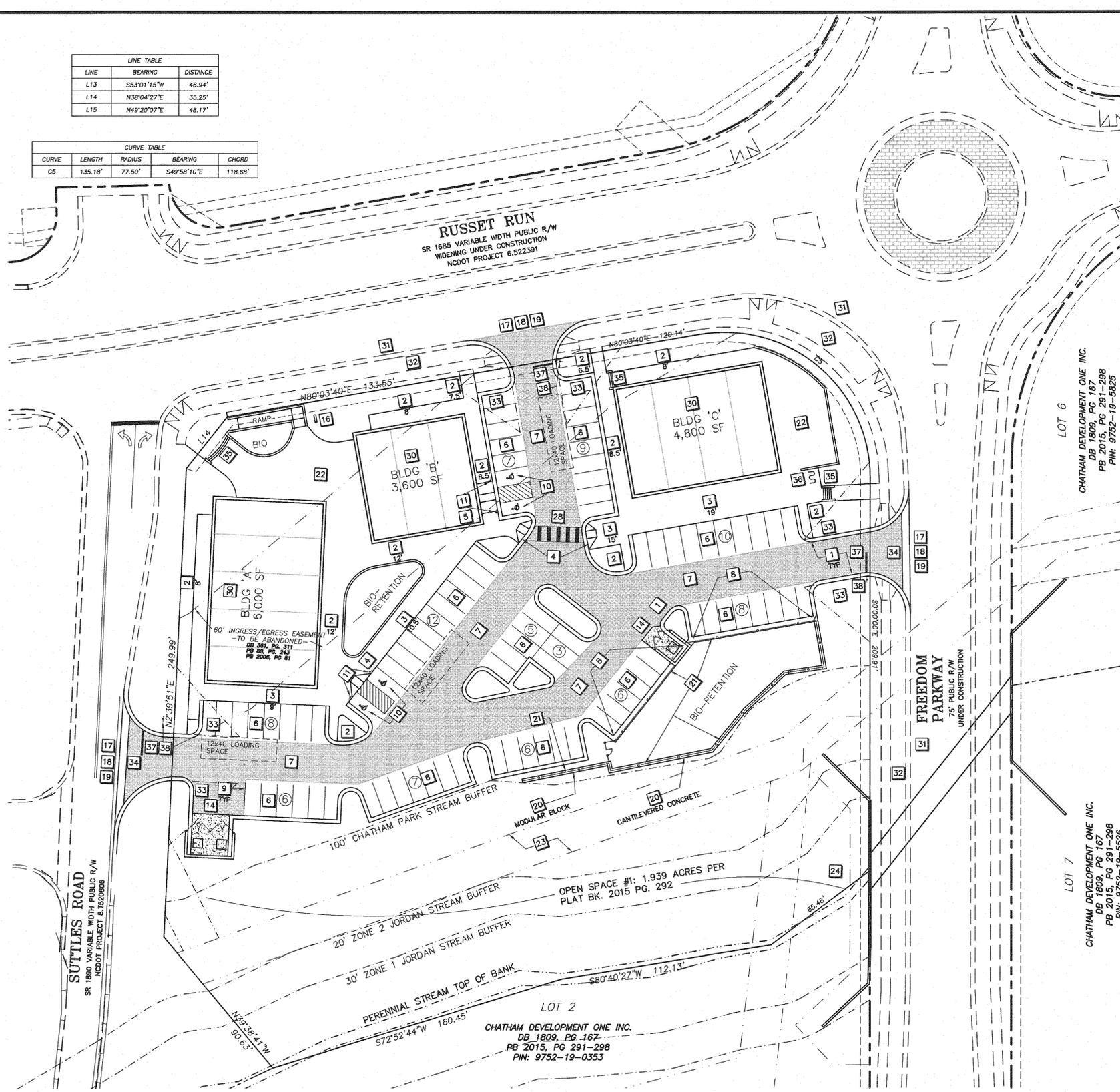
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SHEET NO.  
**C1**



LINE	BEARING	DISTANCE
L13	S53°01'15"W	46.94'
L14	N38°04'27"E	35.25'
L15	N49°20'07"E	48.17'

CURVE	LENGTH	RADIUS	BEARING	CHORD
C5	135.18'	77.50'	S49°58'10"E	118.68'



**KEY**      **KEYED NOTES – SITE PLAN**

- 1 CONCRETE CURB AND GUTTER.
- 2 STANDARD CONCRETE WALK, 5' WIDE UNLESS OTHERWISE NOTED.
- 3 TURN-DOWN CONCRETE WALK, 6' WIDE UNLESS OTHERWISE NOTED.
- 4 HANDICAP RAMP TYPE A.
- 5 HANDICAP RAMP TYPE B.
- 6 STANDARD-DUTY BITUMINOUS PAVING. USE FOR ALL PARKING SPACES.
- 7 HEAVY-DUTY BITUMINOUS PAVING. USE FOR ALL DRIVE AISLES AND SERVICE LANES.
- 8 TURNDOWN CONCRETE BAND FLUSH WITH ASPHALT.
- 9 PAINTED PARKING SPACE STRIPING USING 4" WIDE WHITE STRIPES.
- 10 PAINTED UNIVERSAL HANDICAPPED SYMBOL AND HANDICAPPED ACCESS AISLE STRIPING.
- 11 HANDICAPPED PARKING SIGNS ON POST.
- 14 CONCRETE DUMPSTER PAD AND ENCLOSURE WITH GATE AND PROTECTIVE BOLLARDS.
- 16 MONUMENT SIGN BY OTHERS. LOCATION SHOWN IS SCHEMATIC AT THIS TIME. A SEPARATE SIGN PERMIT MUST BE SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION. PROVIDE CONDUIT AND ELECTRICAL SERVICE FROM MAIN ELECTRICAL PANEL IN BUILDING.
- 17 TIE IN TO EXISTING PAVEMENT. PAVEMENT PATCH SHALL BE IN COMPLIANCE WITH THE CURRENT NCDOT AND TOWN OF PITTSBORO SUPPLEMENTAL APPROVED STANDARD. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE NCDOT AND TOWN OF PITTSBORO TO ENSURE COMPLIANCE.
- 18 TIE IN TO EXISTING CURB AND GUTTER AND/OR SIDEWALK.
- 19 PROVIDE ADEQUATE TRAFFIC CONTROL AND SAFETY MEASURES FOR PUBLIC AND WORKER SAFETY DURING ALL PHASES OF THE WORK. CONFORM TO STANDARDS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD, AND REQUIREMENTS OF APPLICABLE ROADWAY AUTHORITIES.
- 20 RETAINING WALL. DESIGN BY OTHERS. SEE GRADING PLAN FOR REQUIRED FINISHED GRADE ELEVATIONS AT TOP AND BOTTOM OF WALL.
- 21 4' HIGH CHAIN LINK FENCE WITH 4' WIDE GATE, VINYL-COATED, MATERIAL SPECIFICATIONS AND COLOR SELECTION BY OWNER.
- 22 DINING PATIO.
- 23 EXISTING PUBLIC SANITARY SEWER EASEMENT.
- 24 EXISTING PUBLIC DRAINAGE EASEMENT.
- 28 PAINTED CROSSWALK.
- 30 APPROXIMATE BUILDING FOOTPRINT.
- 31 NEW CURB AND GUTTER BY OTHERS.
- 32 NEW SIDEWALK AND H/C RAMPS BY OTHERS.
- 33 35' X 35' SIGHT DISTANCE TRIANGLE.
- 34 CONCRETE VALLEY GUTTER.
- 35 CONCRETE STAIRS WITH HANDRAILS.
- 36 U-SHAPED BIKE RACK.
- 37 PAINTED STOP BAR.
- 38 STOP SIGN.

**VICINITY MAP**  
**NTS**

- SITE NOTES**
- PROPERTY BOUNDARY AND EXISTING CONDITIONS INFORMATION TAKEN FROM FIELD SURVEYS BY WITHERS AND RAVENEL ENTITLED EXISTING CONDITIONS SURVEY LOT 1 CHATHAM PARK PLANNED DEVELOPMENT DISTRICT, DATED 6/9/16 AND REVISED 7/6/16. CAD FILES FOR ONGOING CONSTRUCTION AND PD'S OF PERMITTED CONSTRUCTION DRAWINGS FOR RUSSET RUN AND FREEDOM PARKWAY ROAD IMPROVEMENTS.
  - WHERE NEW CURB AND GUTTER IS INSTALLED IN A PUBLIC STREET RIGHT-OF-WAY, USE 30" CURB AND GUTTER. IN OTHER LOCATIONS, USE 24" CURB AND GUTTER.
  - UNLESS OTHERWISE SPECIFIED, ALL STANDARD PARKING SPACES SHALL BE 8.5' WIDE X 19' LONG, ALL DRIVE AISLES SHALL BE 24' WIDE.
  - ALL CURB DIMENSIONS ARE MEASURED TO BACK OF CURB, AND ALL CURB RADI ARE 5 FEET UNLESS INDICATED OTHERWISE.
  - USE REVERSE-PITCH CURB AND GUTTER WHERE ADJACENT PAVEMENT SLOPES AWAY FROM CURB, AND STANDARD-PITCH CURB AND GUTTER ELSEWHERE, UNLESS OTHERWISE NOTED. PROVIDE POSITIVE DRAINAGE ALONG AND FROM ALL GUTTERS.
  - ALL SITE CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI UNLESS OTHERWISE INDICATED.
  - ALL AGGREGATE BASE AND PAVING WORK SHALL COMPLY WITH NCDOT STANDARDS. SPECIFIED PAVEMENT THICKNESS REFERS TO COMPACTED THICKNESS.
  - INSTALL ALL PAVEMENT WITH POSITIVE SURFACE DRAINAGE.
  - UNLESS OTHERWISE SPECIFIED, ALL PAVEMENT MARKINGS SHALL BE MADE WITH PAINT CONFORMING TO NCDOT "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", LATEST EDITION, AND SHALL HAVE A MINIMUM DRY FILM THICKNESS OF 10 MILS. ALL MARKINGS SHALL BE WHITE UNLESS OTHERWISE SPECIFIED OR REQUIRED BY GOVERNING AUTHORITIES.
  - ALL ACCESSIBLE PARKING SPACES, AISLES, RAMPS, SIGNAGE, PAVEMENT MARKINGS, CROSSWALKS, AND ROUTES SHALL MEET APPLICABLE REQUIREMENTS OF THE NORTH CAROLINA BUILDING CODE, ICC A117.1, NC GENERAL STATUTES 20-37.6 AND 136-30, AND LOCAL REGULATIONS AND POLICIES.
  - PROVIDE ADEQUATE TRAFFIC CONTROL MEASURES DURING THE COURSE OF PROJECT WORK IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS, THE N.C. SUPPLEMENT TO THE MUTCD, ANY REGULATORY AGENCY REQUIREMENTS, AND PROJECT-SPECIFIC SAFETY CONSIDERATIONS.
  - TIE-INS TO EXISTING PAVEMENT, CURBS, WALKS, ETC. SHALL BE MADE WITH NEAT EDGES AND SMOOTH, GRADUAL TRANSITIONS THAT ARE SAFE, FUNCTIONAL, DURABLE, AND VISUALLY ACCEPTABLE TO THE OWNER AND REGULATORY AUTHORITIES.
  - BUILDING SIZE, CONFIGURATION, ARCHITECTURAL ELEMENTS, UTILITY STUBS, AND OTHER BUILDING FEATURES SHOWN ON THESE DRAWINGS ARE TAKEN FROM INFORMATION PROVIDED BY OTHERS. BUILDING LINES SHOWN GENERALLY REPRESENT THE EXTERIOR FACE OF THE BUILDING, BUT SHOULD NOT BE USED FOR BUILDING STAKING OR CONSTRUCTION. REFER TO BUILDING DESIGN DRAWINGS FOR ACTUAL BUILDING DIMENSIONS, DOOR LOCATIONS, COLUMN AND FOOTING LOCATIONS, WALL THICKNESSES, OVERHANGS, ROOF LINES, AND OTHER FEATURES. CONTRACTOR SHALL COORDINATE UTILITY AND DRAINAGE LOCATIONS, ELEVATIONS, MATERIALS, AND SIZES WITH INFORMATION SHOWN ON THE BUILDING DRAWINGS, AND SHALL VERIFY THAT BUILDING ELEMENTS WILL NOT ENCROACH INTO REQUIRED SETBACKS.

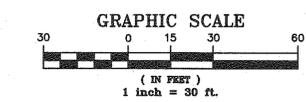


**PITTSBORO ROOTS**  
PITTSBORO, NORTH CAROLINA  
**SITE & PAVING**  
**PLAN**

REV.	DATE	DESCRIPTION
1	6/10/2016	BIORETENTION
2	7/12/2016	CPI SITE PLAN
3	8/15/2016	TOWN REVIEW COMMENTS



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**CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.**  
**CONTRACTOR'S INITIALS:** \_\_\_\_\_

DATE: MAY 13, 2016  
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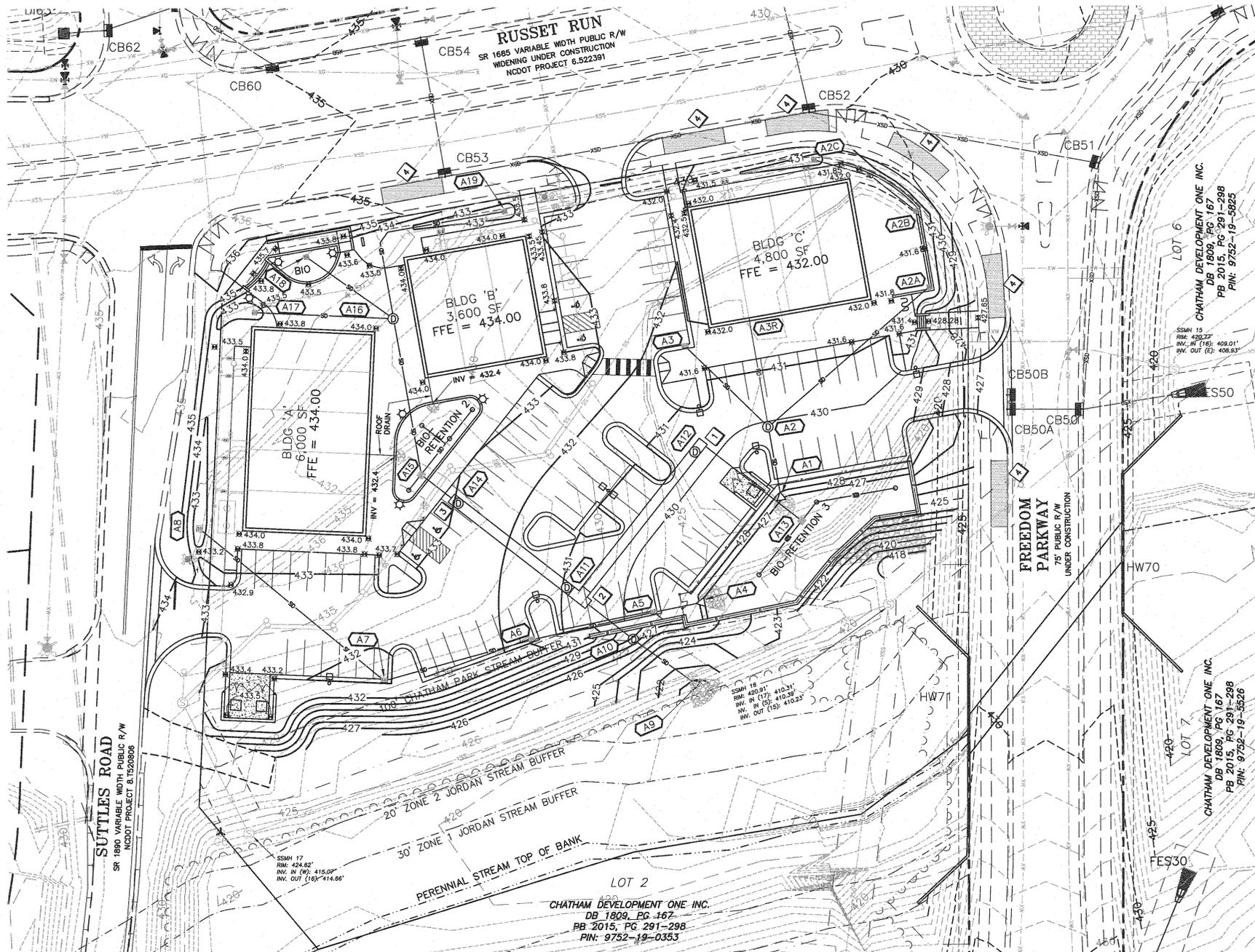
GENERAL GRADING AND STORM DRAINAGE SPECIFICATIONS

- EXISTING CONDITIONS**
- INFORMATION ABOUT EXISTING UNDERGROUND FACILITIES AND SUBSURFACE CONDITIONS INDICATED ON THESE DRAWINGS IS NOT BASED ON AN EXHAUSTIVE INVESTIGATION OF SUCH FACILITIES OR CONDITIONS, AND THE ENGINEER MAKES NO WARRANTY TO ANY PARTY REGARDING THEM. EXISTING UTILITY LINE LOCATIONS SHOWN SHOULD BE CONSIDERED APPROXIMATE, AND ACTUAL UTILITIES AND CONDITIONS MAY DIFFER FROM THOSE INDICATED. IF DIFFERING UTILITIES OR CONDITIONS EXIST, THEY MAY BE ENCOUNTERED DURING THE COURSE OF THE PROJECT WORK, AND MAY IMPACT THE PROJECT SCOPE AND TIME REQUIREMENTS.
- PROTECTION AND SAFETY**
- PRIOR TO BEGINNING WORK, AND AS NEEDED DURING THE COURSE OF PROJECT WORK, CONTRACTOR SHALL NOTIFY ALL APPLICABLE UTILITY LOCATION SERVICES AND UTILITY PROVIDERS TO VERIFY THE LOCATION OF ALL KNOWN OR SUSPECTED UTILITIES, IN ACCORDANCE WITH STATE REGULATIONS. CONTRACTOR IS ADVISED THAT SOME UTILITY PROVIDERS DO NOT SUBSCRIBE TO ONE-CALL SERVICES, AND ARE CONTACTED SEPARATELY FOR UTILITY LOCATION.
  - CONTRACTOR SHALL PROVIDE ADEQUATE MEANS AND METHODS FOR PROTECTION OF ALL EXISTING UTILITIES AND SITE FEATURES WHICH ARE INTENDED TO REMAIN IN SERVICE OR TO BE RELOCATED.
  - CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC CONTROL MEASURES DURING THE COURSE OF PROJECT WORK IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS, THE N.C. SUPPLEMENT TO THE MUTCD, ANY REGULATORY AGENCY REQUIREMENTS, AND PROJECT-SPECIFIC SAFETY CONSIDERATIONS.
  - CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY PROGRAMS AND MEASURES ON THE PROJECT SITE OR OTHERWISE RELATING TO THE PROJECT WORK, AND SHALL COMPLY WITH ALL SAFETY CODES AND REGULATIONS APPLICABLE THERETO, FOR THE PROTECTION OF WORKERS, VISITORS, AND THE GENERAL PUBLIC.
- COMPLIANCE**
- IN ADDITION TO COMPLYING WITH REQUIREMENTS OF THESE DRAWINGS AND OTHER PROJECT DOCUMENTS, ALL PROJECT CLEARING, GRADING, EROSION CONTROL, AND STORM DRAINAGE WORK SHALL BE IN ACCORDANCE WITH APPLICABLE STANDARDS AND REQUIREMENTS OF NCDOT, THE TOWN OF PITTSBORO, THE CHATHAM COUNTY SEDIMENTATION AND EROSION CONTROL OFFICE, AND THE NC BUILDING CODE.
- NOTIFICATIONS**
- NOTIFY THE ENGINEER AT LEAST TWO BUSINESS DAYS PRIOR TO BEGINNING OR RESUMING ANY STORM DRAINAGE OR STORMWATER WORK.
  - NOTIFY ALL APPLICABLE REGULATORY AUTHORITIES IN ACCORDANCE WITH THEIR REQUIREMENTS PRIOR TO BEGINNING PROJECT WORK.
  - NOTIFY THE GEOTECHNICAL ENGINEER AND TESTING SERVICE AT LEAST TWO BUSINESS DAYS PRIOR TO BEGINNING OR RESUMING ANY GRADING OR STORMWATER MANAGEMENT WORK.
- QUALITY CONTROL**
- ALL EARTHWORK OPERATIONS, INCLUDING TOPSOIL STRIPPING, STOCKPILING, EXCAVATION, FILLING, COMPACTING, TRENCHING, BACKFILLING, RETAINING WALLS, AND PAVEMENT, SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER, WHO SHALL VERIFY THE SUSTAINABILITY OF SOIL MATERIALS, MONITOR EARTHWORK ACTIVITIES, DIRECT AND OBSERVE PROOFROLLING, AND PROVIDE TESTING DURING THE PROGRESS OF THE WORK.
  - NO SOIL SHALL BE PLACED IN SERVICE OR IN PLACE UNTIL IT HAS BEEN APPROVED BY THE GEOTECHNICAL ENGINEER FOR THE INTENDED USE AND LOCATION.
  - PRIOR TO PLACEMENT OF ANY FILL, THE SUBGRADE OR PREVIOUS LIFT OF FILL SHALL BE SUCCESSFULLY TESTED OR OTHERWISE APPROVED, AND BE READY FOR SUBSEQUENT LIFT.
  - PRIOR TO PLACEMENT OF ANY AGGREGATE, PAVING, SLABS, STRUCTURES, FOOTINGS, PIPING, OR OTHER WORK, SUBGRADES AND OTHER BEARING SURFACES SHALL BE SUCCESSFULLY TESTED OR OTHERWISE APPROVED, AND DETERMINED TO BE READY FOR SUBSEQUENT WORK.
  - CONTRACTOR SHALL ALLOW AND PARTICIPATE IN SOIL TESTING ACTIVITIES, INCLUDING ACTIVE COORDINATION WITH THE GEOTECHNICAL ENGINEER AND FURNISHING PROOFROLLING EQUIPMENT, MATERIALS, AND MANPOWER AS NEEDED.
- CLEARING & GRUBBING**
- ALL VEGETATIVE MATERIAL DISLOCATED BY CLEARING AND GRUBBING ACTIVITIES SHALL BE COMPLETELY REMOVED FROM THE PROJECT SITE AND LEGALLY DISPOSED. NO ONSITE BURNING SHALL OCCUR.
  - ALL SOIL PAVEMENT, CURB, PIPE, STRUCTURES AND OTHER PHYSICAL SITE FEATURES THAT ARE INDICATED OR REQUIRED TO BE REMOVED SHALL BE LEGALLY DISPOSED IN AN OFFSITE LOCATION.
- GRADING**
- STRUCTURAL FILL IS DEFINED AS SOIL CLASSIFIED AS SM, SC, ML, AND CL FREE OF VEGETATIVE MATTER, DEBRIS OR OTHER UNSUITABLE MATTER, AND ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION; CAPABLE OF BEING COMPACTED TO THE REQUIRED DENSITY, AND WHICH HAS BEEN APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.
  - OTHER SOIL NOT MEETING THE DEFINITION FOR STRUCTURAL FILL MAY BE APPROVED BY THE GEOTECHNICAL ENGINEER FOR USE UNDER LIMITED CONDITIONS OR IN LIMITED AREAS.
  - STRUCTURAL FILL SHALL BE PLACED AND COMPACTED TO THE SOIL'S MOISTURE CONTENT IS WITHIN 4 PERCENTAGE POINTS OF THE SOIL'S OPTIMUM MOISTURE CONTENT, IN LIFTS NOT TO EXCEED 8 INCHES LOOSE THICKNESS. THE IN-PLACE COMPACTED DENSITY SHALL BE AT LEAST 90 PCF. TIGHTER SPECIFICATIONS MAY BE REQUIRED FOR SPECIFIC AREAS, MARGINAL SOIL CHARACTERISTICS, OR NON-STANDARD PLACEMENT OR COMPACTION METHODS.
  - STRUCTURAL ZONES SHALL INCLUDE ALL AREAS SUBJECT TO DIRECT BEARING PRESSURE PLUS 10 FEET HORIZONTAL PLUS THE AREA BELOW A 1:1 DOWNWARD & OUTWARD SLOPE IN ANY AREAS OF FILL.
  - ALL SOIL UNDER PAVEMENTS, BUILDINGS, AND WALKWAYS, OR IN STRUCTURAL ZONES ASSOCIATED WITH THESE AREAS, SHALL BE APPROVED IN-SITU SOIL OR APPROVED STRUCTURAL FILL COMPACTED TO AT LEAST 95% OF THE SOIL'S MAXIMUM DRY DENSITY (MDD) PER ASTM D-698. TIGHTER REQUIREMENTS MAY APPLY FOR SPECIFIC AREAS.
  - IN BUILDING AREAS THE REQUIRED SOIL DENSITY IN THE TOP 12 INCHES OF SOIL SHALL BE AT LEAST 95% MDD, WHERE THE BUILDING WILL BE PLACED ON IN-SITU SOIL, THE SOIL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER AND COMPACTED TO AT LEAST 95% MDD.
  - REFER TO STORMWATER SYSTEM DETAILS AND SPECIFICATIONS FOR MORE SPECIFIC REQUIREMENTS APPLICABLE TO STORMWATER MANAGEMENT AREAS.
  - ALL EXCESS OR UNSUITABLE SOIL SHALL BE LEGALLY DISPOSED IN AN OFFSITE OR OWNER-APPROVED ONSITE LOCATION.
  - WHERE LANDSCAPED OR YARD AREAS ADJACENT TO BUILDING WALLS, FINISHED GROUND ELEVATIONS ADJACENT TO THE WALL SHALL BE AT LEAST 3 INCHES BELOW THE FINISHED FLOOR ELEVATION, AND SHALL SLOPE AWAY FROM THE BUILDING WITH POSITIVE DRAINAGE.
- TRENCHING AND BACKFILLING**
- WHERE ROCK OR OTHER HARD MATERIAL OCCURS AT THE DESIGNED TRENCH BOTTOM, OVEREXCAVATE THE TRENCH DEPTH 6 INCHES AND REPLACE THE OVEREXCAVATION MATERIAL WITH #67 STONE.
  - WHERE THE DESIGNED TRENCH BOTTOM CONSISTS OF UNSTABLE BEARING SOIL, UNDERCUT THE TRENCH BOTTOM AND REPLACE THE UNDERCUT MATERIAL WITH #67 STONE, TO THE LIMITS ESTABLISHED BY THE GEOTECHNICAL ENGINEER. ALTERNATE MATERIAL TYPES MAY BE USED, SUBJECT TO APPROVAL OF PLACEMENT AND COMPACTION PROCEDURES BY THE GEOTECHNICAL ENGINEER.
  - BACKFILL SOIL SHALL BE STRUCTURAL FILL PLACED AND COMPACTED IN ACCORDANCE WITH REQUIREMENTS FOR THE SPECIFIC AREA AND TYPE OF WORK, WITHOUT DAMAGING OR DISPLACING PIPE OR STRUCTURES.
- STORM DRAINAGE SYSTEM**
- STORM DRAINAGE STRUCTURES SHALL CONFORM TO NCDOT STANDARDS, AND MAY BE CONSTRUCTED OF EITHER SOLID MASONRY OR PRE-CAST CONCRETE. NCDOT-APPROVED "KNOCK-OUT" TYPE STRUCTURES MAY NOT BE USED UNLESS APPROVED BY THE ENGINEER FOR SPECIFIC LOCATIONS. WHERE SUCH STRUCTURES ARE APPROVED FOR USE, STRUCTURAL INTEGRITY MAY NOT BE IMPAIRED BY REMOVAL OF CORNERS OR OTHER STRUCTURAL ELEMENTS IN ORDER TO ACCOMMODATE CONNECTING PIPING AS DESIGNED.
  - STORM DRAINAGE PIPE LENGTHS SHOWN ARE APPROXIMATE, AS MEASURED FROM THE CENTER OF DRAINAGE STRUCTURES, AND TO THE END OF ANY FLARED END SECTION (FES), AS APPLICABLE.
  - CONTRACTOR SHALL VERIFY AND COORDINATE EXACT POSITIONING OF STORM DRAINAGE PIPING AND STRUCTURES, AND SHALL MAKE ADJUSTMENTS AS NEEDED TO PROVIDE PROPER CONNECTIONS, STRUCTURE LOCATIONS, ORIENTATIONS, DIMENSIONS, ELEVATIONS, FRAME PLACEMENT, AND SURFACE DRAINAGE. REFER TO STORM DRAINAGE STRUCTURE DETAILS FOR DIMENSIONS, OFFSETS, CLEARANCES, SETBACKS FROM CURB, AND OTHER REQUIREMENTS. MODIFY STRUCTURES AS NEEDED TO ACCOMMODATE LARGE-DIAMETER PIPING, MULTIPLE PIPE PENETRATIONS, AND PIPE CONNECTION ANGLES.
  - STORM DRAINAGE PIPING SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS II, CONFORMING TO ASTM C76, UNLESS OTHERWISE NOTED. ALL JOINTS SHALL BE FULLY SEALED USING PREFORMED BUTYL RUBBER SEALING COMPOUND.
  - STORM DRAINAGE PIPING NOTED "WITH WATER TIGHT JOINTS" SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS II, CONFORMING TO ASTM C76, WITH BELL AND SPIGOT JOINTS USING RUBBER GASKETS. THE JOINT AND GASKET ASSEMBLY SHALL CONFORM TO ASTM C443. FLARE PIPE SECTIONS WITH BELL ENDS FACING UPSTREAM.
  - ROOF DRAINAGE PIPE AND FITTINGS SHALL BE SOLVENT-WELDED SCHEDULE 40 PVC, OR DUAL-WALL HDPE WITH SMOOTH INTERIOR AND SLT-TIGHT CONNECTIONS. PIPE SHALL BE INSTALLED AT 2.0% MINIMUM SLOPE, WITH 18 INCHES MINIMUM COVER. PIPE SIZE SHALL BE 6" DIAMETER UNLESS OTHERWISE SHOWN.
  - INSTALL STORM DRAINAGE PIPING TO MAINTAIN 18 INCHES MINIMUM VERTICAL CLEARANCE FROM ANY POTABLE WATER MAIN, AND 24 INCHES MINIMUM VERTICAL CLEARANCE FROM ANY SANITARY SEWER MAIN, AS MEASURED FROM OUTSIDE EDGES OF EACH PIPE.

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**REGISTERED PROFESSIONAL ENGINEER**  
NORTH CAROLINA  
No. 15151  
15151

**PITTSBORO ROOTS**  
PITTSBORO, NORTH CAROLINA  
**GRADING & STORM DRAINAGE PLAN**



STORM DRAINAGE STRUCTURE SCHEDULE																	
Structure Number	Structure Type	STRUCTURE DATA					PIPE DATA				APRON DATA			REMARKS			
		Rim/TCC Elevation	Invert In North	Invert In East	Invert In South	Invert In West	Invert Out	To	Pipe Length	Pipe Slope	Design Diameter	Pipe Material	Store Class		Thickness	Length	Width
A1	FES						427.00				15	RCP	CLASS A	12.0	4.0	4.0	
A2	NCDOT STD 840.31	429.90	427.46	427.46		427.46	427.36	A01	36.0	1.00%	15	RCP					
A2A	NDS CATCH BASIN	431.40	428.49			428.49	428.49	A02	103.0	1.00%	12	HPPPP					
A2B	NDS CATCH BASIN	431.40				428.86	428.86	A02A	37.0	1.00%	12	HPPPP					
A2C	NDS CATCH BASIN	430.75				429.42	429.42	A02B	56.0	1.00%	8	HPPPP					
A3	NCDOT STD 840.02	431.75				428.02	428.02	A02	56.0	1.00%	15	RCP					
A3R	ROOF DRAIN CONNECTION					427.89	427.89	A02	53.0	1.00%	8	PVC					
A4	FES					427.00		A03		1.00%	18	RCP	CLASS A	12.0	4.0	4.0	
A5	NCDOT STD 840.02	430.00				427.35	427.25	A04	25.0	1.00%	15	RCP					
A6	NCDOT STD 840.02	432.05				428.06	427.96	A05	61.0	1.00%	15	RCP					
A7	NCDOT STD 840.02	432.50				428.99	428.89	A06	83.0	1.00%	15	RCP					
A8	NCDOT STD 840.14	432.50				430.15	430.15	A07	116.0	1.00%	15	RCP					
A9	FES					420.84		A08		1.00%	15	RCP	CLASS B	18.0	12.0	14.0	
A10	NCDOT STD 840.31	428.50	421.48**			421.48	421.22	A09	38.0	1.00%	24	RCP					** THE INVERT IN EAST IS TEMPORARY FROM THE SEDIMENT BASIN RISER AND SHALL BE REMOVED, PLUGGED AND SEALED.
A11	SEE DET PIPE DETAIL	430.80		421.75		421.75	421.44	A10	22.0	1.00%	24	HPPPP					LENGTH OF PIPE FROM 48" TEE TO A10
A12	SEE DET PIPE DETAIL	430.24		422.69		421.44	421.14	A11	92.0	0.00%	48	HPPPP					LENGTH OF PIPE FROM 48"x15" 90° BEND TO 48" TEE
A13	SEE BIORETENTION DETAIL					423.00	423.00	A12	62.0	0.00%	18	HPPPP					
A14	SEE DET PIPE DETAIL	433.00				423.75	421.44	A11	74.0	0.00%	48	HPPPP					LENGTH OF PIPE FROM 15"x48" CAP TO 48" TEE
A15	SEE BIORETENTION DETAIL	433.20				427.02	427.02	A16	22.0	14.40%	15	HPPPP					
A16	NCDOT STD 840.02	433.90	428.88	427.90*		428.33	427.80	A16	78.0	1.00%	15	HPPPP					* FROM A19
A17	NDS CATCH BASIN	432.50				429.00	429.00	A16	67.0	1.00%	15	HPPPP					
A18	SEE BIORETENTION DETAIL	433.40				429.40	429.40	A16	52.0	1.00%	12	HPPPP					
A19	NDS CATCH BASIN	432.50				429.00	429.00	A16	110.0	1.00%	15	HPPPP					

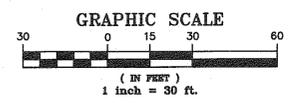
NCDOT STANDARD NUMBERS REFER TO CONCRETE STRUCTURES. MASONRY STRUCTURES MAY BE SUBSTITUTED AS NCDOT STANDARDS ALLOW. "KNOCK-OUT" TYPE PRE-CAST STRUCTURES SHALL NOT BE USED WHERE THE DESIGNED PIPE CONFIGURATION WOULD REQUIRE REMOVAL OF STRUCTURAL CORNERS OR ALTERATION OF DESIGNED PIPE ENTRY ANGLES.

MODIFY STRUCTURES AS NEEDED TO ACCOMMODATE LARGE-DIAMETER PIPING, ALTERNATE FRAMES & GRATES, MULTIPLE PENETRATIONS, AND PIPE CONNECTION ANGLES. RIM ELEVATIONS, AS NOTED ABOVE, REFER TO THE HIGHEST POINT OF THE STORM DRAINAGE STRUCTURE TOP.

PIPE LENGTHS SHOWN ARE APPROXIMATE. LENGTHS ARE MEASURED FROM THE CENTER OF DRAINAGE STRUCTURES, AND WHERE APPLICABLE, INCLUDE THE TOTAL LENGTH OF THE FLARED END SECTION.

**NDS CATCH BASINS:**  
18" CATCH BASINS BY NDS WITH 18"x18" SQUARE GRATES (TYP)  
TYPE 1: BLACK PLASTIC W/1/2" GRATE OPENINGS IN HARDSCAPE.  
TYPE 2: BLACK CAST IRON W/1" GRATE OPENINGS IN LANDSCAPE.  
ALL PIPES OUT OF NDS STRUCTURES SHALL BE HDPE SMOOTH INTERIOR.

- KEY KEYED NOTES - GRADING & STORM DRAINAGE PLAN**
- 48" x 15" 90° HPPPP BEND.
  - 48" HPPPP TEE WITH INTERNAL WEIR AND 24" CAPPED END OUTLET. SEE DETAILS.
  - 15" x 48" HPPPP CONNECTOR.
  - RELOCATED BIORETENTION CELLS FOR NEW DRIVEWAY CONNECTIONS



**CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.**  
CONTRACTOR'S INITIALS: \_\_\_\_\_

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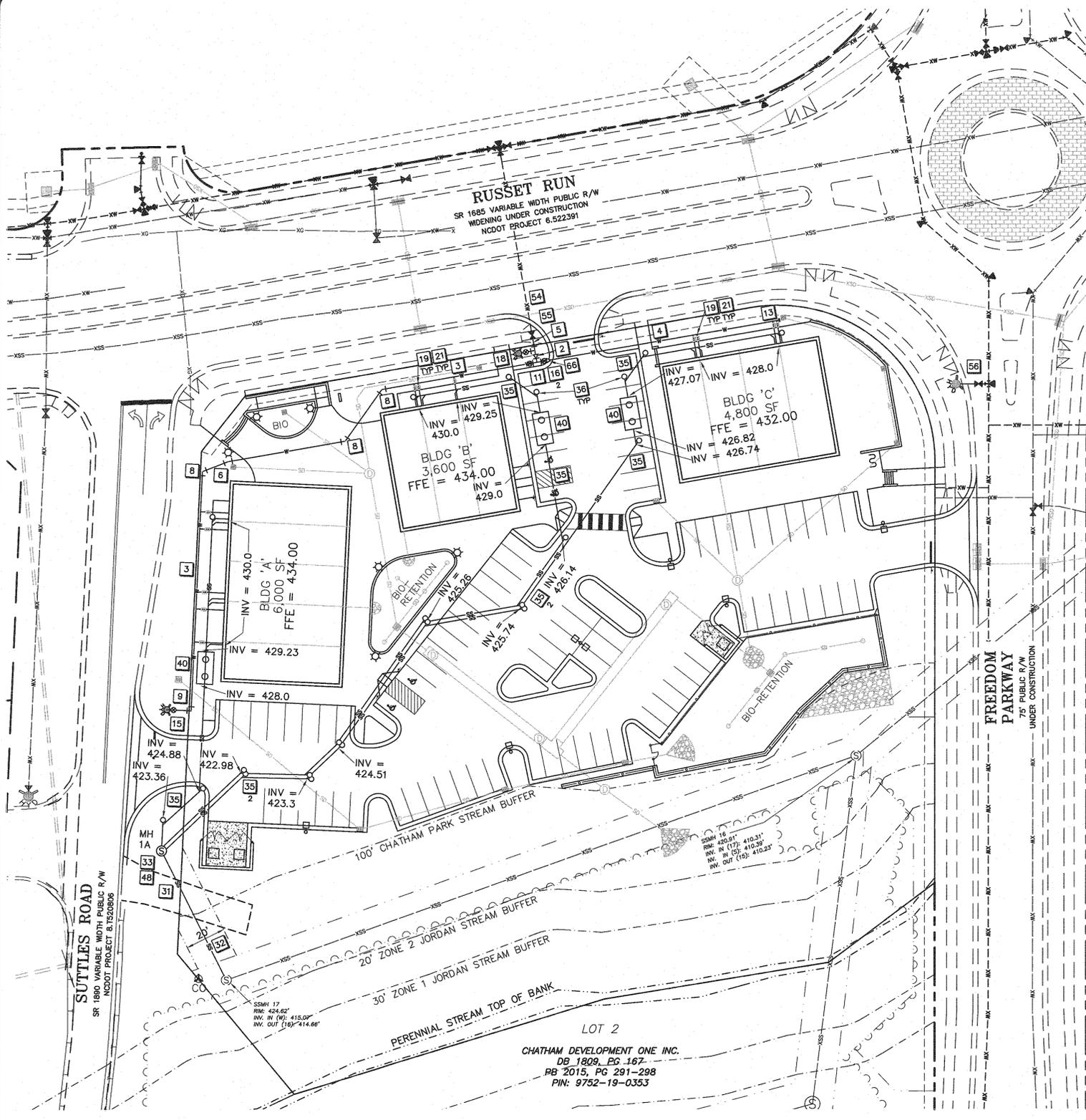
REV.	DATE	DESCRIPTION
1	6/10/2016	BIORETENTION
2	7/12/2016	CFI SITE PLAN
3	8/15/2016	TOWN REVIEW COMMENTS

DATE: MAY 13, 2016

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SHEET NO. **C4**



**UTILITY SPECIFICATIONS**

**EXISTING CONDITIONS**  
 INFORMATION ABOUT EXISTING UNDERGROUND FACILITIES AND SUBSURFACE CONDITIONS INDICATED ON THESE DRAWINGS IS NOT BASED ON AN EXHAUSTIVE INVESTIGATION OF SUCH FACILITIES OR CONDITIONS, AND THE ENGINEER MAKES NO WARRANTY TO ANY PARTY REGARDING THEM. EXISTING UTILITY LINE LOCATIONS SHOWN SHOULD BE CONSIDERED APPROXIMATE, AND ACTUAL UTILITIES AND CONDITIONS MAY DIFFER FROM THOSE INDICATED. IF DIFFERING UTILITIES OR CONDITIONS EXIST, THEY MAY BE ENCOUNTERED DURING THE COURSE OF THE PROJECT WORK, AND MAY IMPACT THE PROJECT SCOPE AND TIME REQUIREMENTS.

**PROTECTION AND SAFETY**

PRIOR TO BEGINNING WORK, AND AS NEEDED DURING THE COURSE OF PROJECT WORK, CONTRACTOR SHALL NOTIFY ALL APPLICABLE UTILITY LOCATION SERVICES AND UTILITY PROVIDERS TO REASONABLY VERIFY THE LOCATION OF ALL KNOWN OR SUSPECTED UTILITIES, IN ACCORDANCE WITH STATE REGULATIONS. CONTRACTOR IS ADVISED THAT SOME UTILITY PROVIDERS DO NOT SUBSCRIBE TO ONE-CALL SERVICES, AND MUST BE CONTACTED SEPARATELY.  
 CONTRACTOR SHALL PROVIDE ADEQUATE MEANS AND METHODS FOR PROTECTION OF ALL EXISTING UTILITIES AND SITE FEATURES WHICH ARE INTENDED TO REMAIN IN SERVICE OR IN PLACE.  
 CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC CONTROL MEASURES DURING THE COURSE OF PROJECT WORK IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS, THE N.C. SUPPLEMENT TO THE MUTCD, ANY REGULATORY AGENCY REQUIREMENTS, AND PROJECT-SPECIFIC SAFETY CONSIDERATIONS.  
 CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY PROGRAMS AND MEASURES ON THE PROJECT SITE OR OTHERWISE RELATING TO THE PROJECT WORK, AND SHALL COMPLY WITH ALL SAFETY CODES AND REGULATIONS APPLICABLE THERETO, FOR THE PROTECTION OF WORKERS, VISITORS, AND THE GENERAL PUBLIC.

**COMPLIANCE**

- ALL WATER SYSTEM AND SANITARY SEWER WORK SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
  - REQUIREMENTS OF THE TOWN OF PITTSBORO, INCLUDING THE LATEST EDITION OF CONSTRUCTION STANDARDS AND SPECIFICATIONS, CONSTRUCTION DETAILS, POLICIES AND PROCEDURES, AND FIELD DIRECTIVES BY THE UTILITY INSPECTOR.
  - REGULATIONS OF NCDENR-DIVISION OF WATER QUALITY, INCLUDING NCAAC 21 REGULATIONS AND MINIMUM DESIGN CRITERIA FOR THE PERMITTING OF GRAVITY SEWERS.
  - REGULATIONS OF NCDENR-PUBLIC WATER SUPPLY, RULES GOVERNING PUBLIC WATER SYSTEMS.
  - STREET RIGHT-OF-WAY ENCROACHMENT PERMIT REQUIREMENTS, AS APPLICABLE.
  - OSHA REQUIREMENTS RELATED TO SAFETY.
  - REQUIREMENTS OF THE N.C. PLUMBING CODE.

**NOTIFICATIONS**

- NOTIFY THE ENGINEER AT LEAST TWO BUSINESS DAYS PRIOR TO BEGINNING OR RESUMING WATERLINE OR SANITARY SEWER WORK. THE ENGINEER MUST OBSERVE CONNECTIONS, INSTALLATION, BACKFILLING, AND TESTING WORK, IN ORDER TO PROVIDE NECESSARY PROJECT CERTIFICATIONS AND CLOSE-OUT DOCUMENTS.
- NOTIFY THE APPLICABLE UTILITY AND ROADWAY AUTHORITIES IN ACCORDANCE WITH THEIR REQUIREMENTS PRIOR TO BEGINNING UTILITY WORK.
- NOTIFY THE GEOTECHNICAL ENGINEER AND TESTING SERVICE AT LEAST TWO BUSINESS DAYS PRIOR TO BEGINNING OR RESUMING TRENCHING OR BACKFILLING WORK.

**TRENCHING AND BACKFILLING**

- WHERE ROCK OR OTHER HARD MATERIAL OCCURS AT THE DESIGNED TRENCH BOTTOM, OVEREXCAVATE TRENCH DEPTH 6 INCHES AND REPLACE OVEREXCAVATION MATERIAL WITH #7 STONE BEDDING.
- WHERE THE DESIGNED TRENCH BOTTOM CONSISTS OF UNSUITABLE BEARING SOIL, UNDERCUT TRENCH BOTTOM AND REPLACE UNDERCUT MATERIAL IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
- BACKFILL SOIL SHALL BE SUITABLE MATERIAL AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
- BACKFILL SOIL SHALL BE PLACED IN LOOSE LIFTS OF 8 INCH MAXIMUM THICKNESS AND COMPACTED TO 98% OF THE SOIL'S MAXIMUM DRY DENSITY, WITHOUT DAMAGING OR DISPLACING PIPE.
- INSTALL MARKING TAPE OR TRACER WIRE OVER UTILITY LINES AS REQUIRED BY THE LOCAL UTILITY AUTHORITY.

**STORAGE AND HANDLING**

- PIPING, FITTINGS, GASKETS, AND OTHER MATERIALS SHALL BE KEPT CLEAN WHILE BEING STORED AND DURING CONSTRUCTION ACTIVITIES. PIPE BUNDLES SHALL BE STORED ON FLAT SURFACES WITH UNIFORM SUPPORT, AND PROTECTED FROM PROLONGED EXPOSURE TO SUNLIGHT WITH A COVERING ALLOWING AIR FLOW UNDERNEATH. GASKETS SHALL NOT BE EXPOSED TO OIL, GREASE, OZONE, EXCESSIVE HEAT OR DIRECT SUNLIGHT. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR STORAGE AND HANDLING OF ALL MATERIALS.

**CLEARANCES**

- SANITARY SEWER MAINS AND POTABLE WATER MAINS SHALL BE INSTALLED WITH A MINIMUM HORIZONTAL CLEARANCE OF 10 FEET BETWEEN THE OUTSIDE EDGES OF EACH PIPE.
- WHERE UTILITY AND/OR DRAINAGE LINES CROSS, THE FOLLOWING VERTICAL CLEARANCES SHALL BE PROVIDED FROM THE OUTSIDE EDGES OF EACH PIPE:
  - SANITARY SEWER OVER OR UNDER STORM DRAINAGE: 24 INCHES.
  - POTABLE WATER OVER SANITARY SEWER: 18 INCHES, WITH WATER MAIN JOINTS SPACED AT MAXIMUM CONSTANT LOCATIONS FROM THE POINT OF CROSSING.
  - POTABLE WATER UNDER SANITARY SEWER: 18 INCHES, WITH BOTH PIPELINES CONSTRUCTED OF FERROUS MATERIAL HAVING JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR 10 FEET EACH WAY OF THE POINT OF CROSSING, AND WITH A FULL SECTION OF WATER MAIN PIPE CENTERED AT THE POINT OF CROSSING.
  - POTABLE WATER OVER OR UNDER STORM DRAINAGE: 12 INCHES.
- IF THE SPECIFIED SEPARATIONS CANNOT BE ACHIEVED, CONSULT THE ENGINEER FOR ALTERNATIVES PRIOR TO PIPELINE INSTALLATION.
- ANY CHANGES FROM THE APPROVED PLANS SHALL BE SUBMITTED TO THE TOWN OF PITTSBORO FOR RE-APPROVAL PRIOR TO START OF CONSTRUCTION.

**UTILITY SPECIFICATIONS (cont.)**

**WATER SYSTEM**

- WATER MAIN PIPING SHALL BE DUCTILE IRON PIPE PER AWWA C151, PRESSURE CLASS 350, WITH INTERIOR CEMENT MORTAR LINING AND SEAL COATING PER AWWA C104, AND EXTERIOR ASPHALTIC COATING PER AWWA C151. JOINTS SHALL BE (RESTRAINED) PUSH-ON TYPE USING (RESTRAINED) JOINT RUBBER GASKETS PER AWWA C111. FITTINGS SHALL BE COMPACT MECHANICAL JOINT DUCTILE IRON PER AWWA C153, PRESSURE CLASS 350.
- PROVIDE ALL WATER SYSTEM MATERIALS IN ACCORDANCE WITH LOCAL TOWN OF PITTSBORO REQUIREMENTS.
- INSTALL WATERLINES TO PROVIDE 36" COVER TO FINISHED GRADE, UNLESS OTHERWISE SHOWN OR APPROVED BY THE ENGINEER AND INSPECTOR.
- ALL WATERLINE BENDS, CROSSES, TEES, AND ENDS SHALL BE RESTRAINED USING CONCRETE BLOCKING OR A MECHANICAL JOINT WEDGE-ACTION RESTRAINT SYSTEM RATED FOR 350 PSI.
- EXISTING VALVES SHALL BE OPERATED ONLY BY TOWN OF PITTSBORO STAFF OR IN CASE OF AN EMERGENCY IN THE PRESENCE OF TOWN STAFF.
- TOWN OF PITTSBORO WATER VALVES SHALL BE OPERATED BY TOWN PERSONNEL ONLY. THE TOWN REQUIRES 48 HOUR NOTICE FOR SYSTEM SHUTDOWNS. CONTRACTOR PERMITTED TO NOTIFY AFFECTED CUSTOMERS 24 HOURS PRIOR. BUSINESS'S MAY REQUIRE AFTER HOURS SHUTDOWNS. RESIDENTIAL FLOW AFTER SHUTDOWN MAY REQUIRE PUMP. CONTRACTOR IS RESPONSIBLE TO INSTALL 2" TAPS TO RELIEVE PRESSURE AND ALLEVIATE RESIDUAL FLOWS WHEN NEEDED.
- CONTRACTOR SHALL COORDINATE EXACT FIRE HYDRANT, WATER METER, AND BACKFLOW PREVENTER LOCATIONS WITH THE TOWN OF PITTSBORO INSPECTOR PRIOR TO INSTALLATION.

**BACKFLOW PREVENTION**

- BACKFLOW PREVENTER ASSEMBLIES AND ENCLOSURES SHALL CONFORM TO ALL TOWN OF PITTSBORO REQUIREMENTS AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL PROVIDE INITIAL TESTING AND CERTIFICATIONS AS REQUIRED FOR ACCEPTANCE.

**FIRE PROTECTION**

- WATER MAINS SHALL BE INSTALLED AND MADE OPERATIONAL AS SOON AS POSSIBLE TO PROVIDE ACTIVE FIRE HYDRANT SERVICE DURING BUILDING CONSTRUCTION.
- COORDINATE TYPE AND LOCATION OF HYDRANTS, FIRE DEPARTMENT CONNECTIONS, AND OTHER FIRE PROTECTION SYSTEM COMPONENTS WITH LOCAL FIRE CODE OFFICIAL PRIOR TO INSTALLATION.

**SANITARY SEWER**

- SANITARY SEWER MAIN PIPING SHALL BE PVC PER THE SPECIFICATIONS BELOW UNLESS AN ALTERNATE IS APPROVED BY THE TOWN OF PITTSBORO PUBLIC UTILITIES DIRECTOR.
- SANITARY SEWER MAIN PIPING SHALL BE DUCTILE IRON PIPE IF APPROVED BY THE TOWN OF PITTSBORO PUBLIC UTILITIES DIRECTOR PER AWWA C151, PRESSURE CLASS 350, WITH INTERIOR EPOXY LINING PER AWWA C104, AND EXTERIOR ASPHALTIC COATING PER AWWA C151. JOINTS SHALL BE PUSH-ON TYPE WITH RUBBER GASKETS PER AWWA C111.
- SANITARY SEWER SERVICE LINES SHALL BE DUCTILE IRON PIPE PER ASTM D3034, SDR 35. JOINTS SHALL BE PUSH-ON TYPE WITH RUBBER GASKETS PER ASTM F477.
- SANITARY SEWER MAINS SHALL BE INSTALLED WITH 36 INCHES MINIMUM COVER TO FINISHED GRADE, EXCEPT AS OTHERWISE SPECIFIED.
- SANITARY SEWER SERVICE LINES AND CLEANOUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE N.C. PLUMBING CODE, AND INCHES MINIMUM COVER TO FINISHED GRADE. SERVICE LINES SHALL MAINTAIN MAXIMUM SERVICE DEPTH USING A 2.1% SLOPE UNLESS OTHERWISE SPECIFIED.
- SERVICE PIPE AND FITTINGS WITHIN PUBLIC STREET RIGHT-OF-WAY SHALL BE PVC, SDR 35 (21 WHEN SHALLOW) AND ALL CLEANOUTS SHALL BE FITTED WITH THREADED BRONZE PLUGS.
- SERVICE LINE CLEANOUTS IN VEHICULAR AREAS SHALL BE TRAFFIC BEARING CLEANOUTS.

**CONNECTIONS**

- FOR CONNECTIONS TO EXISTING UTILITY AND DRAINAGE LINES, CONTRACTOR SHALL VERIFY EXISTING PIPE SIZE AND MATERIAL, AND PROVIDE APPROPRIATE CONNECTION FITTINGS.
- ANY CONNECTION TO EXISTING UTILITIES, OR ANY UTILITY SERVICE INTERRUPTION, SHALL BE FIRST COORDINATED WITH THE GOVERNING UTILITY AUTHORITY, AND PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THAT AUTHORITY.
- SITE UTILITY CONTRACTOR SHALL EXTEND WATER AND SANITARY SEWER SERVICES TO WITHIN 5 FEET OF THE POINT OF BUILDING PENETRATION FOR EACH UTILITY.
- BUILDING PLUMBER SHALL PROVIDE TRANSITION MATERIALS AND FITTINGS, AND MAKE PROPER CONNECTIONS TO SITE UTILITY STUB-OUTS FOR ALL WATER AND SANITARY SEWER SERVICES.
- SITE UTILITY CONTRACTOR SHALL EXTEND ROOF DRAINAGE PIPING TO WITHIN 5 FEET OF ALL DOWNSPOUT LOCATIONS, FOR EXTENSION AND CONNECTION TO DOWNSPOUTS BY OTHERS.

**TESTING AND ACCEPTANCE**

- THE GEOTECHNICAL ENGINEER SHALL PROVIDE MATERIAL AND DENSITY TESTING DURING THE COURSE OF THE WORK. PRIOR TO PLACEMENT OF ANY BASE OR PAVEMENT, CONTRACTOR SHALL PROVIDE PROOF-ROLLING OF ALL TRENCH AREAS TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
- PRIOR TO ANY SANITARY SEWER OR WATER SYSTEM IMPROVEMENTS BEING PLACED INTO SERVICE:
  - CONTRACTOR SHALL SUCCESSFULLY TEST ALL WATER MAINS FOR WATER LEAKAGE AND WATER QUALITY IN ACCORDANCE WITH PITTSBORO AND NCDENR REQUIREMENTS.
  - CONTRACTOR SHALL SUCCESSFULLY TEST ALL SANITARY SEWER MAINS FOR DEFLECTION AND LEAKAGE, AND TEST ALL SANITARY MANHOLES FOR LEAKAGE, IN ACCORDANCE WITH PITTSBORO AND NCDENR REQUIREMENTS.
  - CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF INSTALLED SANITARY SEWER MAINS AND STORM DRAINAGE PIPES AND PROVIDE DOCUMENTATION PER LOCAL REQUIREMENTS.
  - CONTRACTOR SHALL PROVIDE TO ENGINEER A SET OF MARKED UP DRAWINGS SHOWING UTILITY CHANGES, DIMENSIONAL ADJUSTMENTS, DISCOVERED SUBSURFACE UTILITIES, AND OTHER AS-BUILT INFORMATION.
  - CONTRACTOR SHALL PROVIDE DOCUMENTATION OF ALL TESTING RESULTS TO ENGINEER AND TOWN OF PITTSBORO.
  - ALL IMPROVEMENTS SHALL PASS FINAL INSPECTION BY ENGINEER AND THE UTILITY AUTHORITY.
  - ENGINEER SHALL SUBMIT ALL CERTIFICATIONS AND OTHER CLOSE-OUT DOCUMENTS TO APPLICABLE LOCAL AND STATE AUTHORITIES.

**OTHER**

- CONTRACTOR SHALL PROVIDE PRIMARY COORDINATION WITH UTILITY SERVICE PROVIDERS FOR BURING UTILITY SERVICES. THIS WORK SHALL INCLUDE MAKING APPLICATIONS FOR SERVICE, COORDINATING AND SCHEDULING WORK BY OTHERS, VERIFYING ROUTINGS AND EQUIPMENT LOCATIONS, FURNISHING AND INSTALLING CONDUIT AND PADS, AND RELATED WORK AS NEEDED.
- CONTRACTOR SHALL PROVIDE PROPER RESTORATION AND CLEAN-UP OF ALL AREAS DISTURBED BY UTILITY CONSTRUCTION.

**KEY KEYED NOTES - UTILITY PLAN**

- 8" x 6" MJ REDUCER. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 6" DIAMETER DUCTILE IRON RESTRAINED JOINT WATERLINE.
- 4" DIAMETER DUCTILE IRON RESTRAINED JOINT WATERLINE.
- REMOVE THE EXISTING BLOWOFF AND CONNECT TO EXISTING 8" DI WATER LINE.
- 11.25 DEGREE MJ BEND MATCHING PIPE SIZE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 22.5 DEGREE MJ BEND MATCHING PIPE SIZE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 45 DEGREE MJ BEND MATCHING PIPE SIZE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 90 DEGREE MJ BEND MATCHING PIPE SIZE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 6" x 4" MJ REDUCER. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 6" x 6" MJ TEE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 4" x 4" MJ TEE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 4" MJ PLUG MATCHING PIPE SIZE. PROVIDE THRUST RESTRAINT AS REQUIRED.
- 6" GATE VALVE WITH VALVE BOX AND CONCRETE COLLAR, AND FIRE HYDRANT ASSEMBLY.
- 6" GATE VALVE WITH VALVE BOX AND CONCRETE COLLAR.
- 4" GATE VALVE WITH VALVE BOX AND CONCRETE COLLAR.
- 8" x 6" MJ HYDRANT TEE, 6" GATE VALVE WITH VALVE BOX AND CONCRETE COLLAR, AND FIRE HYDRANT ASSEMBLY.
- 3/4" WATER SERVICE TAP, 3/4" SERVICE LINE TO METER, AND 5/8" METER ASSEMBLY IN METER BOX, FOR DOMESTIC WATER SERVICE. STUB 3/4" SERVICE LINE FROM METER TO BUILDING. PLUMBER TO MAKE CONNECTION TO STUB. PROVIDE ALL COMPONENTS WITH LEAD-FREE RATING.
- BACKFLOW PREVENTER DEVICE FOR DOMESTIC WATER SERVICE INSTALLED INSIDE BUILDING. DEVICE SHALL BE A LEAD-FREE ASSEMBLY. COORDINATE WITH BUILDING DESIGN DOCUMENTS TO VERIFY LOCATION, SIZE, CONFIGURATION, MODEL, AND REQUIREMENTS FOR INSTALLATION, CLEARANCES, & DRAINAGE.
- 8" DIAMETER PVC SANITARY SEWER MAIN.
- NEW PUBLIC SANITARY SEWER EASEMENT.
- NEW SANITARY SEWER MANHOLE.
- 6" PVC SANITARY SEWER SERVICE LINE.
- 6" PVC SANITARY SEWER CLEANOUT ASSEMBLY (TYP). PROVIDE SPACING AND LOCATIONS AS SHOWN.
- 5,000 GALLON GREASE INTERCEPTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING SHOP DRAWINGS TO THE TOWN OF PITTSBORO PUBLIC UTILITIES DIRECTOR, JOHN POTEAT, FOR APPROVAL PRIOR TO INSTALLATION OF THE GREASE TRAP(S).
- PROVIDE ADEQUATE TRAFFIC CONTROL AND SAFETY MEASURES FOR PUBLIC AND WORKER SAFETY DURING ALL PHASES OF THE WORK. CONFORM TO STANDARDS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD, AND REQUIREMENTS OF APPLICABLE ROADWAY AUTHORITIES.
- COORDINATE WITH UTILITY PROVIDERS FOR REMOVAL AND/OR RELOCATION OF EXISTING UTILITY POLES, LINES, AND DEVICES AS NEEDED. ACCOUNT FOR REASONABLE LEAD TIMES FOR WORK BY OTHERS.
- PAVEMENT CUT AND PATCH AS NEEDED FOR UTILITY LINE INSTALLATION. CONFORM TO ALL RIGHT-OF-WAY ENCROACHMENT CONDITIONS FOR THE WORK.
- APPROXIMATE LOCATION OF EXISTING UNDERGROUND UTILITY SERVICE. VERIFY LOCATION WITH PROVIDER.
- APPROXIMATE LOCATION OF 8" WATER MAIN UNDER CONSTRUCTION BY OTHERS.
- APPROXIMATE LOCATION OF GATE VALVE UNDER CONSTRUCTION BY OTHERS.
- APPROXIMATE LOCATION OF FIRE HYDRANT UNDER CONSTRUCTION BY OTHERS.
- PRIOR TO UTILITY INSTALLATION, FIELD DETERMINE LOCATIONS AND ELEVATIONS OF BURIED UTILITIES OR OTHER FEATURES THAT WILL BE CROSSED BY THE NEW UTILITY. VERIFY THAT ADEQUATE CLEARANCES (AND SLOPES, IF APPLICABLE) WILL BE MAINTAINED. CONSULT ENGINEER AS NEEDED TO RESOLVE ANY NON-CONFORMING CONDITIONS.
- 8" x 6" MJ REDUCER. PROVIDE THRUST RESTRAINT AS REQUIRED.

**REFERENCES:**

- SEE COVER SHEET FOR TOWN OF PITTSBORO GENERAL UTILITY NOTES.

**GRAPHIC SCALE**



**CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.**

CONTRACTOR'S INITIALS: \_\_\_\_\_

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 JOHN P. GETTLE  
 915110

**PITTSBORO ROOTS**  
 PITTSBORO, NORTH CAROLINA  
 UTILITY PLAN

REV.	DATE	DESCRIPTION
1	6/10/2016	BIOCIRECTION
2	7/12/2016	CPI SITE PLAN
3	8/15/2016	TOWN REVIEW COMMENTS

DATE: MAY 13, 2018  
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SHEET NO.

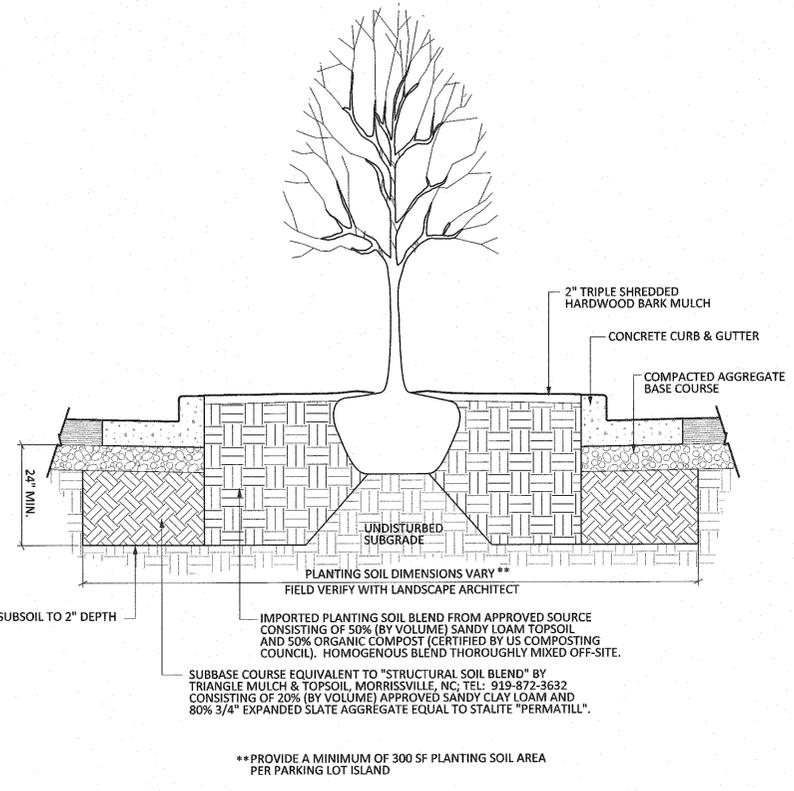
**U1**



Know what's below.  
 Call before you dig.  
 (Or call: 1-800-632-4949)

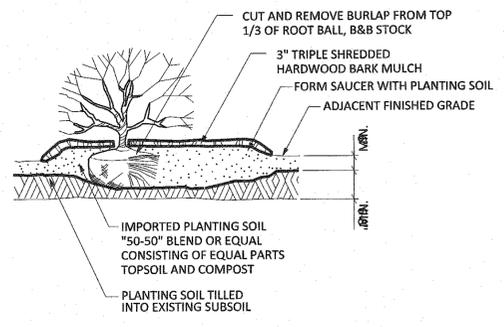




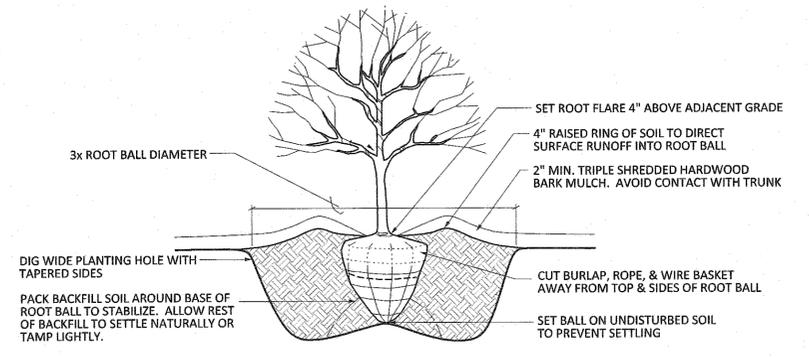


1 L2.0 TYPICAL PARKING LOT ISLAND TREE PLANTING

- NOTES:
- WHERE SEVERAL PLANTS WILL BE PLANTED CLOSE TOGETHER SUCH THAT THEY WILL LIKELY SHARE ROOT SPACE, TILL IN SOIL AMENDMENTS TO A DEPTH OF 4"-6" OVER THE ENTIRE AREA BEFORE PLANTING. ADD 3-4" OF ORGANIC COMPOST AND TILL INTO TOP 6" OF PREPARED SOIL. ADD COMPOST AT 20-35% BY VOLUME TO BACKFILL OR USE IMPORTED PLANTING BLEND.
  - FOR CONTAINER GROWN PLANTS, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
  - IF HARDPAN CONDITIONS ARE ENCOUNTERED WHEN PLANTING, CONSULT LANDSCAPE ARCHITECT TO VERIFY IF ADJUSTED PLANTING HEIGHTS OR ALTERNATIVE DRAINAGE SYSTEMS ARE REQUIRED.
  - THOROUGHLY SOAK THE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
  - DO NOT WRAP TRUNK. MARK THE NORTH SIDE OF THE TREE IN THE NURSERY AND LOCATE TO THE NORTH IN THE FIELD.
  - DO NOT STAKE TREES EXCEPT WHERE DIRECTED BY LANDSCAPE ARCHITECT.
  - AVOID SHADE TREES WITH TWO LEADERS OR REMOVE ONE AT PLANTING. OTHERWISE DO NOT PRUNE TREE AT PLANTING EXCEPT FOR SPECIFIC STRUCTURAL CORRECTIONS.



2 L2.0 SHRUB PLANTING DETAIL



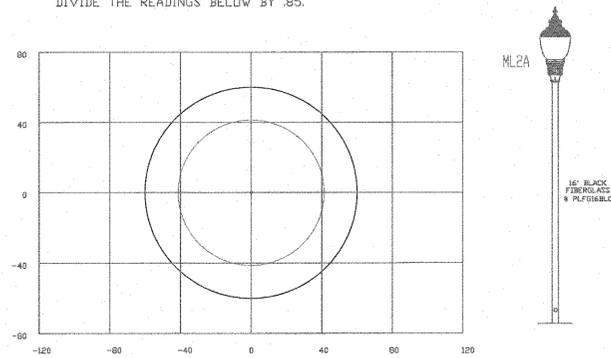
3 L2.0 TYPICAL TREE PLANTING DETAIL

PLANTING SCHEDULE							
KEY	QTY	COMMON NAME	BOTANICAL NAME	CAL/RT	MIN HT.	MIN SPR	NOTES
<b>TREES</b>							
AA		SERVICEBERRY	Amelanchier x grandiflora 'Autumn Brilliance'	B&B	8'		MULTI-STEM (MIN. 3 CANES)
CC		EASTERN REDBUD	Cercis canadensis	CONTAINER	5'		MULTI-STEM (MIN. 3 CANES)
CV		WHITE FRINGETREE	Chionanthus virginicus	CONTAINER	5'		TREE FORM
QP		WILLOW OAK	Quercus phellos	2" B&B			
QL		WATER OAK	Quercus lyrata	2" B&B			
LIN		NATCHEZ CRAPE MYRTLE	Lagerstroemia x indica 'Natchez'	2" B&B			SINGLE STEM
LT		TULIP POPLAR	Liriodendron tulipifera	2" B&B			
MCT		SOUTHERN WAX MYRTLE	Myrica Cerifera	B&B	8'		TREE FORM
MGL		LITTLE GEM MAGNOLIA	Magnolia grandiflora 'Little Gem'	CONTAINER	6'		
NS		BLACK GUM	Nyssa sylvatica	2" B&B			
<b>SHRUBS</b>							
AGW		GUMPO WHITE AZALEA	Azalea x Satsuki 'Gumpo White'	3 GAL	15"		
AGS		SHERWOOD ABELIA	Abelia x grandiflora 'Sherwoodii'	3 GAL	18"		
IEB		EMILY BRUNER HOLLY	Ilex x 'Emily Bruner'	B&B	60"		
IGN		INKBERRY	Ilex glabra 'Nigra'	5 GAL	24"		HEDGE, 30" ON CENTER
JN		WINTER JASMINE	Jasminum nudiflorum	3 GAL	15"		42" ON CENTER
JS		SARGENTS JUNIPER	Juniperus chinensis 'Sargentii'	3 GAL	15"		42" ON CENTER
MCS		SOUTHERN WAX MYRTLE	Myrica Cerifera	7 GAL	30"		DENSE SHRUB
RD		GEORGIA PETITE HAWTHORN	Rhaphiolepis x delacourii 'Georgia Petite'	5 GAL	18"		30" ON CENTER
VT		ROUND LEAF LAURUSTINUS	Viburnum tinus	5 GAL	18"		42" ON CENTER
<b>HIGH WATER TABLE PLANTINGS (3"-6" STANDING WATER TYPICAL, PERIODS OF DEEPER INUNDATION AND DROUGHT)</b>							
SL		BROADLEAF ARROWHEAD	Sagittaria latifolia	4-1/2" POTS			30" ON CENTER NATURALIZED MIXTURE
PC		PICKERELWEED	Pontederia cordata	4-1/2" POTS			
JE		SOFT RUSH	Juncus effusus	4-1/2" POTS			
PV		SWITCH GRASS	Panicum virgatum	QUART POTS			36" ON CENTER
RL		GREEN HEADED CONEFLOWER	Rudbeckia laciniata	QUART POTS			30" ON CENTER
IV		BLUE FLAG	Iris virginica	QUART POTS			30" ON CENTER
<b>GRASSES &amp; PERENNIALS</b>							
CA		Feather Reed Grass	Calamagrostis acutiflora 'Karl Foerster'	1 gallon			HYDROSEED @ 5 LBS. PER ACRE
EC		Weeping Lovegrass	Eriogrostis curvula				
EP		Purple Coneflower	Echinacea purpurea	QUART POTS			
LM		Liriope	Liriope muscari 'Big Blue'	QUART POTS			
PA		Dwarf Fountain Grass	Pennisetum alopecurioides 'Cassian'	1 gallon			
SS		Salvia	Salvia sylvestris 'May Night'	QUART POTS			

ISOFOOTCANDLE CURVES

FIXTURE: MITCHELL LED w/TOP HAT  
 MOUNTING HEIGHT: 16 FT  
 LIGHT SOURCE: 50W LED'S, 4000K  
 PATTERN: TYPE V, B3-U3-G3  
 ASSY # L48LED05MTBLMC

NOTE: THE FOOTCANDLE READINGS BELOW ARE MAINTAINED AND HAVE BEEN DEPRECIATED FOR LAMP LUMEN DEPRECIATION AND LUMINAIRE DIRT DEPRECIATION. FOR INITIAL FOOTCANDLES, DIVIDE THE READINGS BELOW BY .85.

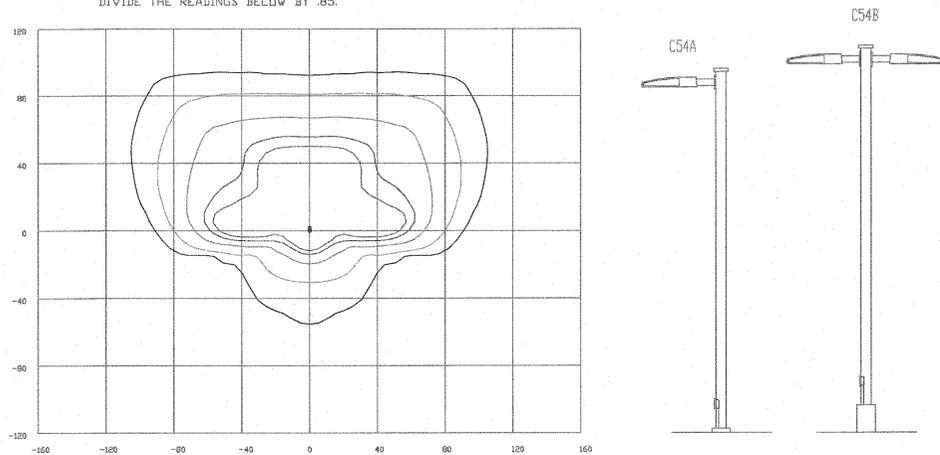


LEGEND (OUTER to INNER): 0.100 , 0.200 , 0.300

ISOFOOTCANDLE CURVES

FIXTURE: LED205, GALLEON  
 MOUNTING HEIGHT: 30, 32 FT  
 LIGHT SOURCE: LED'S, 4000K, 70 CRI  
 PATTERN: TYPE IV, B3-U0-G4 (zero light at or above 90 degrees)  
 ASSY# L21KLED21S4BLMC (BLACK)  
 POLE ASSY# PLS30ABDSOBLC (BLACK)  
 BRACKET ASSY# LBKTSUBULC (BLACK)

NOTE: THE FOOTCANDLE READINGS BELOW ARE MAINTAINED AND HAVE BEEN DEPRECIATED FOR LED LUMEN DEPRECIATION AND LUMINAIRE DIRT DEPRECIATION. FOR INITIAL FOOTCANDLES, DIVIDE THE READINGS BELOW BY .85.



LEGEND (OUTER to INNER): 0.10 , 0.25 , 0.60 , 1.00 , 1.25

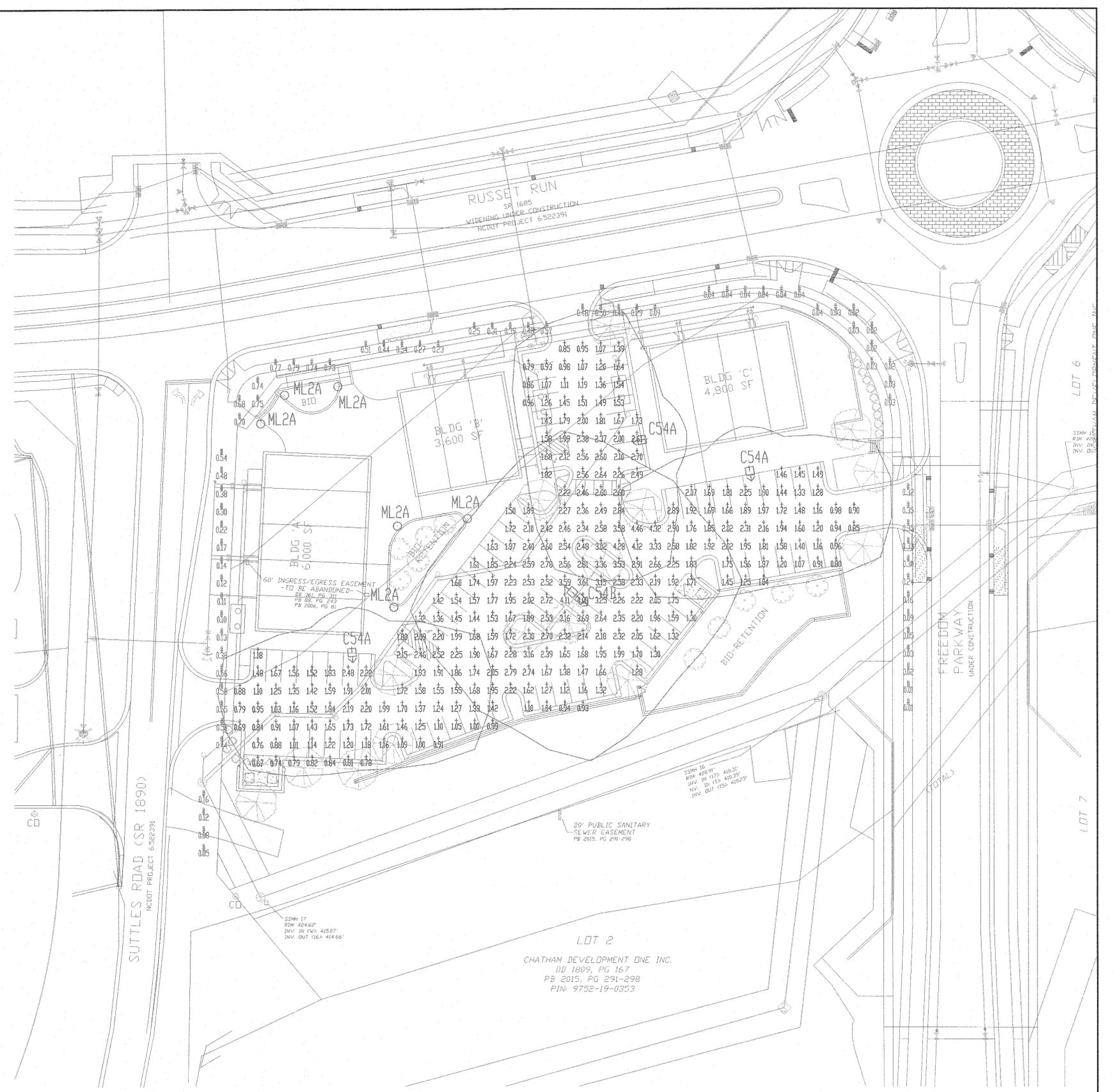
CALCULATION SUMMARY										
AREA NAME	DIMENSIONS	GRID / TYPE	# PTS	SPAC	GROUP	AVE	MAX	MIN	MAX/MIN	AVE/MIN
Parking	584.63x476.50ft	PARKING	307	10.00	<+>	1.83	4.46	0.67	6.65	2.73
TRESPASS			73	10.00	<#>	0.28	0.79	0.01	68.39	24.21

PBD ROOTS LUMINAIRE SCHEDULE						
TYPE	SYMBOL	DESCRIPTION	LAMP	LUMENS	MOUNTING/BALLAST	LLF QTY
C54A	⊕	COOPER LIGHTING CP205 4 1/POLE (1) *C054* CP205_4_1-4/POLE	(64) LED 4000K	20555	30' MT HT Cooper SB	0.85 3
C54B	⊕	COOPER LIGHTING CP205 4 20180 (2) *C054* CP205_4_1-4/POLE	(128) LED 4000K	20555	32' MT HT Cooper SB	0.85 1
ML2A	○	Holophane MCHLED_T_1/POST (1) *ML02* MCHLED_T_1/POST	(1) LED ARRAY	4773	16' ALUM POST SCREW IN	0.87 6

LIGHTING DESIGN TOLERANCE

The calculated footcandle light levels in this lighting design are predicted values and are based on specific information that has been supplied to Duke Energy Progress. Any inaccuracies in the supplied information, differences in luminaire installation, lighted area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions (volage or otherwise) in the lighted area, or lighting from sources other than listed in this design may produce different results from the predicted values. Normal tolerances of voltage, lamp output, and ballast and luminaire manufacture will also affect results.

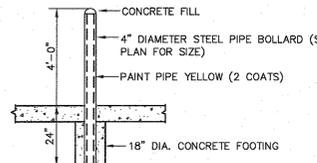
Customer approval: \_\_\_\_\_ Date: \_\_\_\_\_



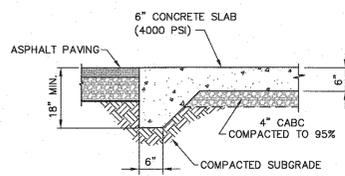
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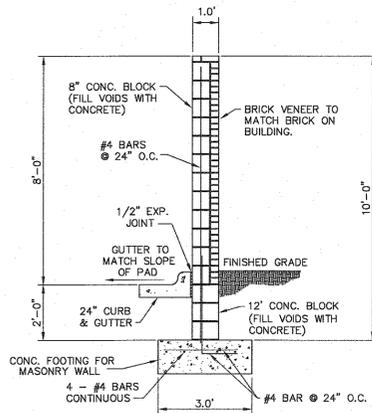
PBD ROOTS	
PITTSBORO NC	
SITE LIGHTING PLAN	
Designed by	DEP LIGHTING SOLUTIONS
Reviewed by	C. BRENCO Scale 1" = 30'
Date	07/18/2016 Size "Arch D"
Description	LED205 SHOEBOX & MITCHELL LED FIXTURES
Drawing No.	16-0159A Sht. 1 OF 1



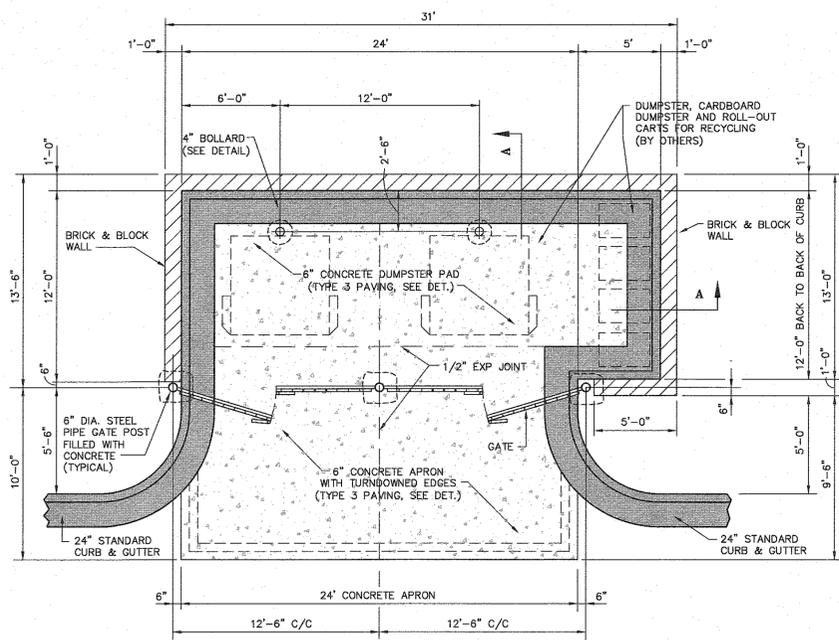
STEEL PIPE BOLLARD  
NTS



TURNDOWN DUMPSTER PAD  
NTS

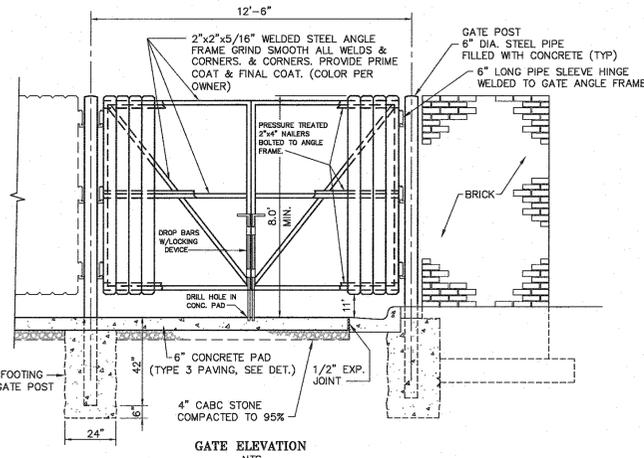


DUMPSTER SCREEN WALL  
SECTION A-A



DOUBLE DUMPSTER PAD  
AND SCREEN PLAN  
NTS

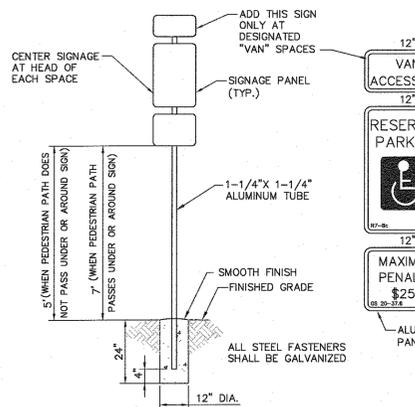
DOUBLE DUMPSTER PAD  
WITH BRICK SCREEN WALL  
NTS



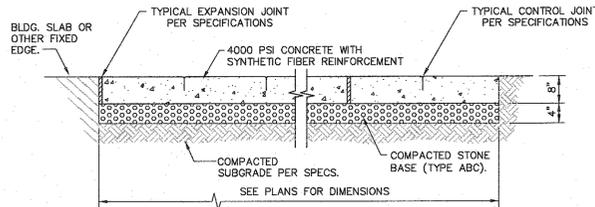
GATE ELEVATION  
NTS

TURNDOWN CONCRETE WALK  
NTS

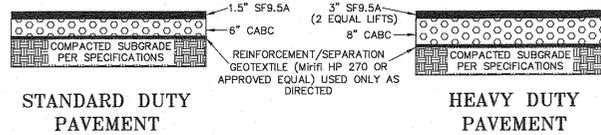
STANDARD 24"  
CURB & GUTTER SECTION  
(NOT TO BE USED IN STREET RIGHT-OF-WAY)  
NTS



HANDICAP PARKING SIGNAGE  
NTS



CONCRETE PAVING DETAIL-TYPE 3  
NTS



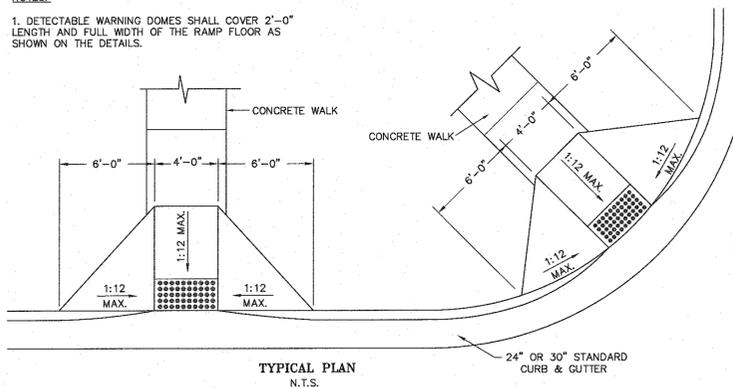
STANDARD DUTY  
PAVEMENT

HEAVY DUTY  
PAVEMENT

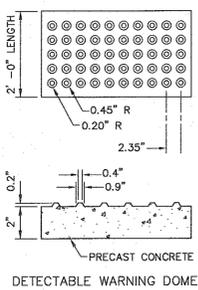
- NOTES:
- CONSTRUCTION PROCEDURES, MIX RATIOS, AGGREGATE SIZES, AND COMPACTED DENSITIES SHALL BE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES LATEST EDITION.
  - INDICATED THICKNESS REFLECTS COMPACTED THICKNESS WITH TOLERANCES AS ALLOWED BY NCDOT STANDARDS.

NOTES:

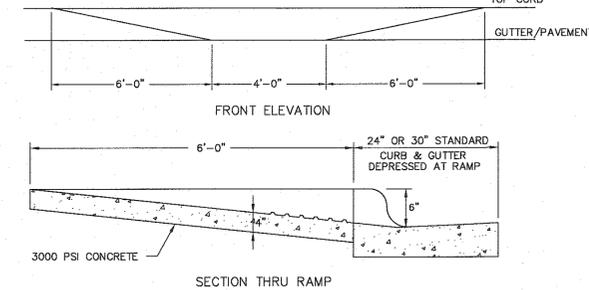
- DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.



TYPICAL PLAN  
N.T.S.



DETECTABLE WARNING DOMES



SECTION THRU RAMP

TYPE 'A' HANDICAP RAMP  
N.T.S.

SPECIFICATIONS FOR ALL CAST-IN-PLACE PORTLAND CEMENT CONCRETE

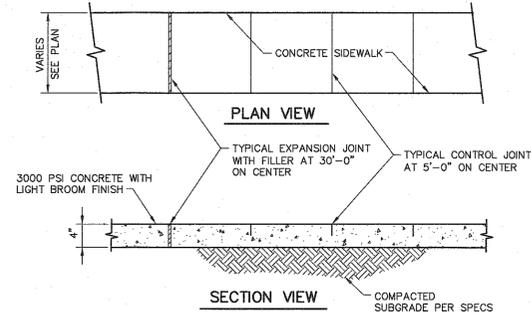
- NOTIFY THE ENGINEER AND ANY AGENCY HAVING JURISDICTION OVER THE CONCRETE AT LEAST TWO BUSINESS DAYS PRIOR TO PLACEMENT OF ANY CONCRETE.
- ENSURE THAT SUBGRADES COMPLY WITH PROJECT REQUIREMENTS FOR ELEVATION, SLOPE, SOIL CHARACTERISTICS, AND DENSITY PRIOR TO PLACING ANY FORMS, BASE MATERIAL, OR CONCRETE.
- VERIFY THAT CURRENT AND FORECASTED WEATHER CONDITIONS ARE APPROPRIATE FOR CONCRETE PLACEMENT.
- CONCRETE MATERIALS AND WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS, AS APPLICABLE:

DESCRIPTION	STANDARD	COMMENT
READY-MIX CONCRETE	ASTM C94	TYPE I OR IA ONLY
PORTLAND CEMENT	ASTM C150	
COARSE AND FINE AGGREGATE	ASTM C33	
MIXING WATER	ASTM C1602	GRADE 60
REINFORCING WIRE AND STEEL	ASTM A82/A185/A615	
REINFORCING STEEL PLACEMENT	ACI 318	
AIR-ENTRAINING ADMIXTURES	ASTM C260	TYPE 1 ONLY
CHEMICAL ADMIXTURES	ASTM C494	
CURING COMPOUND	ASTM C309	
SHEET COVERINGS / CURING	ASTM C171 / ACI 308	NORMAL-WEIGHT
EXPANSION JOINT FILLER	ASTM D994	
FIBER-REINFORCED CONCRETE	ASTM C1116	
PROPORTIONING OF MIXES	ACI 211.1	NORMAL-WEIGHT
MIXING, TRANSPORT, & PLACEMENT	ACI 304	
SUMP TESTING	ASTM C143	
SAMPLING / TEST SPECIMENS	ASTM C 172 / C31	HOT WEATHER / COLD WEATHER
HOT WEATHER / COLD WEATHER	ACI 305 / 306	

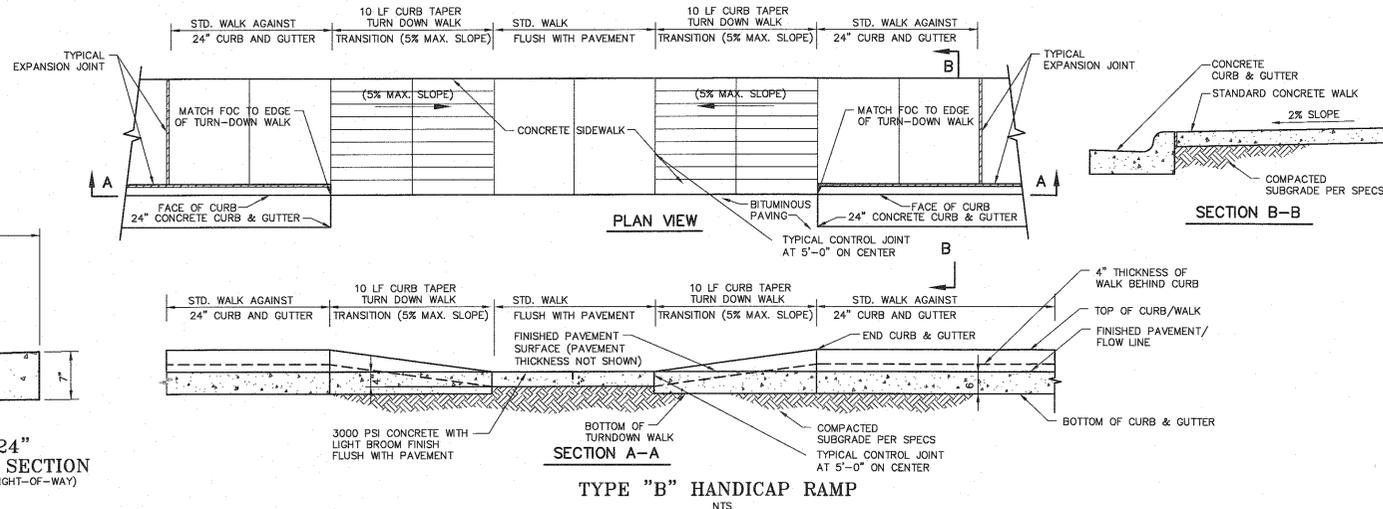
- PROVIDE ALL CONCRETE MATERIALS AND WORK IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS AND GOVERNING AUTHORITY REQUIREMENTS, AS APPLICABLE. IN CASE OF CONFLICTING REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.
- FOR CONCRETE WORK IN EXISTING OR ANTICIPATED FUTURE NCDOT RIGHTS OF WAY, COMPLY WITH REQUIREMENTS OF THE LATEST EDITION OF NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, AND AASHTO STANDARDS SPECIFIED THEREIN.
- UNLESS OTHERWISE SPECIFIED OR REQUIRED, PROVIDE NORMAL-WEIGHT CONCRETE HAVING A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI, WITH A MAXIMUM WATER/CEMENT RATIO OF 0.58, AND A SLUMP RANGE BETWEEN 1.5 AND 3.0 INCHES.
- WHERE EXTERIOR CONCRETE WILL BE FULLY OR PARTIALLY ABOVE THE FROST LINE, PROVIDE AIR-ENTRAINED CONCRETE WITH AN AIR CONTENT OF 5% BY VOLUME, PLUS OR MINUS 1.5% UNLESS OTHERWISE SPECIFIED. SYNTHETIC FIBER REINFORCEMENT SHALL BE FIBERMESH 300 BY PROPEX, AT A MINIMUM RATE OF 1.5 LBS. PER CUBIC YARD OF CONCRETE, OR APPROVED EQUAL.
- UNLESS OTHERWISE SHOWN OR NOTED, PROVIDE CONTROL JOINTS AND EXPANSION JOINTS WITH MAXIMUM SPACING AND PHYSICAL CHARACTERISTICS AS FOLLOWS:

JOINT TYPE	WALKS	PADS, BY THICKNESS			CURB & GUTTER	SPECIFICATION
		4"	6"	8"		
CONTROL	5'	6'	10'	12'	10'	SAW-CUT OR TOoled TO A MINIMUM DEPTH OF 1/3 OF THE CONCRETE THICKNESS
EXPANSION	30'	24'	24'	24'	50'	1/2 INCH WIDE X FULL DEPTH, FILLED WITH PRE-MOULDed BITUMINOUS-IMPREGNATED COMPRESSIBLE FIBER BOARD

- PROVIDE EXPANSION JOINTS AGAINST ALL METAL FRAMES, CASTINGS, BOLLARDS, STRUCTURES, FOOTINGS, SLABS, APRONS, OR OTHER FIXED OBJECTS.
- INSTALL CONSTRUCTION JOINTS, CONFORMING TO EXPANSION JOINT REQUIREMENTS, AT ANY EDGE WHERE PLACEMENT OPERATIONS ARE DISCONTINUOUS FOR LONGER THAN 30 MINUTES.
- COMPLY WITH MATERIAL SAMPLING AND TESTING REQUIREMENTS AS SPECIFIED FOR THE PROJECT.
- PROVIDE ADEQUATE CONCRETE FINISHING, PROTECTION, AND CURING MEASURES. UNLESS OTHERWISE NOTED, PROVIDE A LIGHT-BROOM FINISH ON ALL SURFACES THAT WILL EXPERIENCE FOOT TRAFFIC.
- EXPOSED CONCRETE SURFACES SHALL HAVE A UNIFORM APPEARANCE WITHOUT UNINTENDED CRACKS, AND WITH PROPER DIMENSIONS, ELEVATIONS, AND SLOPES. JOINTS SHALL BE STRAIGHT, NEAT, AND PROPERLY SPACED, WITH LEVEL SURFACE CONDITIONS ACROSS THE WIDTH OF EACH JOINT.
- WASH OUT CONCRETE TRUCKS AND DRUMS IN APPROVED LOCATIONS ONLY.



STANDARD CONCRETE WALK  
NTS



TYPE "B" HANDICAP RAMP  
NTS

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LAND PLANNERS & CIVIL ENGINEERS  
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3708 LYCKAN PARKWAY • SUITE 201 • DURHAM, NC 27707  
919.480.1645 PHONE  
LIC. #C-1030

NORTH CAROLINA PROFESSIONAL ENGINEER  
REEL  
KEITH R. GETTLE  
05/15/16

PITTSBORO ROOTS  
PITTSBORO, NORTH CAROLINA  
GENERAL SITE  
DETAILS

REV.	DATE	DESCRIPTION

DATE: JULY 18, 2016  
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SHEET NO.  
**D1**





NOTES:  
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.  
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

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

SHEET 1 OF 1  
840.66

NOTE: USE TYPE "E", "F" AND "G" GRATE UNLESS OTHERWISE NOTED.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

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

SHEET 1 OF 2  
840.03

DETAIL SHOWING TYPES OF GRATES USE ACCORDING TO WATER FLOW.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

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

SHEET 2 OF 2  
840.03

GENERAL NOTES:  
USE CLASS "B" CONCRETE THROUGHOUT.  
PROVIDE ALL DROP INLETS OVER 3'-0" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
OPTIONAL CONSTRUCTION - MONOLITHIC POOL. 2" KEYWAY OR #4 BAR DOMES AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.  
CONSTRUCT WITH PIPE CROSSL MATCHING.

INSTALL 2" REINFORCERS AS DIRECTED BY THE ENGINEER.  
INSTALL STEEL GRATE OR A REINFORCER OF A CURB FOOT OF NO. 7M STEEL IN A POROUS FABRIC BAG OR W/MP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER. DRAWING NOT TO SCALE.

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

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

SHEET 1 OF 1  
840.14

GENERAL NOTES:  
USE CLASS "B" CONCRETE THROUGHOUT.  
PROVIDE ALL CATCH BASINS OVER 6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
OPTIONAL CONSTRUCTION - MONOLITHIC POOL. 2" KEYWAY OR #4 BAR DOMES AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.  
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.  
FOR 6" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 6" TO 12" IN HEIGHT USE 6" WALLS AND BOTTOM SLAB. OVER 12" TO 18" IN HEIGHT USE 6" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.  
CONSTRUCT WITH PIPE CROSSL MATCHING. CHANGERS ALL EXPOSED CORNERS 1".  
DRAWING NOT TO SCALE.

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

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

SHEET 1 OF 2  
840.02

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

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

SHEET 2 OF 2  
840.02

DIMENSIONS OF BOX & PIPE OVER		DIMENSIONS OF BOX & PIPE UNDER		DIMENSIONS OF BOX & PIPE UNDER		DIMENSIONS OF BOX & PIPE UNDER		DIMENSIONS OF BOX & PIPE UNDER	
PIPE	SPAN	WIDTH	HEIGHT	PIPE	SPAN	WIDTH	HEIGHT	PIPE	SPAN
12"	3'-0"	2'-0"	2'-0"	12"	3'-0"	2'-0"	2'-0"	12"	3'-0"
15"	3'-0"	2'-0"	2'-0"	15"	3'-0"	2'-0"	2'-0"	15"	3'-0"
18"	3'-0"	2'-0"	2'-0"	18"	3'-0"	2'-0"	2'-0"	18"	3'-0"
24"	3'-0"	2'-0"	2'-0"	24"	3'-0"	2'-0"	2'-0"	24"	3'-0"
30"	3'-0"	2'-0"	2'-0"	30"	3'-0"	2'-0"	2'-0"	30"	3'-0"
36"	3'-0"	2'-0"	2'-0"	36"	3'-0"	2'-0"	2'-0"	36"	3'-0"
42"	3'-0"	2'-0"	2'-0"	42"	3'-0"	2'-0"	2'-0"	42"	3'-0"
48"	3'-0"	2'-0"	2'-0"	48"	3'-0"	2'-0"	2'-0"	48"	3'-0"
54"	3'-0"	2'-0"	2'-0"	54"	3'-0"	2'-0"	2'-0"	54"	3'-0"

When the area below the outlet is not a defined channel, build a flat apron to disperse runoff.

Where a defined channel exists, wrap and shape the apron to fit the channel. If necessary, line the entrance to provide a transition into the receiving channel.

ENGLISH STANDARD DRAWING FOR STONE APRON OUTLET PROTECTION (WITH OPTIONAL MANHOLE)

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

SHEET 1 OF 1  
840.31

GENERAL NOTES:  
CHANGERS ALL EXPOSED CORNERS 1".  
USE CLASS "B" CONCRETE THROUGHOUT.  
OPTIONAL CONSTRUCTION - MONOLITHIC POOL. 2" KEYWAY OR #4 BAR DOMES AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.  
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.  
PROVIDE ALL JUNCTION BOXES OVER 3'-0" IN DEPTH WITH STEPS 12" ON CENTER IN ACCORDANCE WITH STD. NO. 840.66.  
ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE POSITION OF THE MANHOLE (I.E. DIAGONAL BARS SHOWN AROUND OPENING IN TOP SLAB). ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

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

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

SHEET 1 OF 1  
840.31

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATE FOR USE WITH STD. DWS. S. 840.14 AND 840.15

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

SHEET 1 OF 1  
840.15

INSTALLATION

- REFER TO THE PLANS FOR LOCATION, EXTENT, AND SPECIFICATIONS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER, ARCHITECT, OR RESPONSIBLE PERSONNEL ON THE SITE FOR ASSISTANCE. EROSION CONTROL PERSONNEL HAVE COPIES OF INSTRUCTIONS AND MAY HAVE PHOTOGRAPHS OR PROPERLY INSTALLED APRONS AS A AID TO INSTALLATION.
- IF THE STONE APRON IS NOT INSTALLED CORRECTLY THE FIRST TIME, IT WILL HAVE TO BE REBUILT.
- DETERMINE THE LOCATION ON THE GROUND TAKING INTO CONSIDERATION:
  - DECIDE HOW EQUIPMENT AND MATERIAL WILL REACH THE LOCATION TO CONSTRUCT THE APRON. DO NOT "PAINT YOURSELF INTO A CORNER" AND PLACE FILL, STRUCTURES, ETC. THAT COULD BLOCK
- THE LOCATION OF THE APRON MUST BE SOLID GROUND. IT MAY BE NECESSARY TO EXCAVATE THE LOCATION TO REMOVE MUD AND THEN BACKFILL WITH GOOD MATERIAL. THIS IS NECESSARY SO THE STONE DOES NOT DISAPPEAR INTO THE MUD, WHICH WOULD REQUIRE MUCH MORE STONE TO COMPLETE THE APRON AND MAKE INSTALLATION DIFFICULT.
- CLEAR THE LOCATION OF THE APRON. LEAVE AS MUCH OF THE EXISTING VEGETATION AS POSSIBLE AROUND THE LOCATION TO HOLD THE SOIL IN PLACE AND REDUCE THE AREA THAT WILL HAVE TO BE STABILIZED AFTERWARD.
- EXCAVATE THE BOTTOM TO THE REQUIRED DEPTH TO ACCEPT THE STONE AND THE FILTER BLANKET. WHEN FINISHED, THE BOTTOM OF THE APRON MUST BE LEVEL WITH THE BOTTOM OF THE CHANNEL. THERE CANNOT BE AN OVERFALL AT THE END OF THE APRON.
- PLACE THE FILTER BLANKET, AS SPECIFIED IN THE PLAN, OVER THE LOCATION AND UNDER THE LIP OF THE FLARED END SECTION.
- PLACE THE SPECIFIED STONE TO THE REQUIRED DIMENSIONS AND SHAPE IT TO THE CONFIGURATION
- STABILIZE THE AREA AROUND THE APRON THAT WAS DISTURBED DURING CONSTRUCTION. USE ADDITIONAL STONE OR VEGETATION, WHICHEVER IS APPROPRIATE FOR THE SITUATION.

SHOWN IN THE PLAN.

RIP RAP APRON  
NTS

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATE FOR USE WITH STD. DWS. S. 840.14 AND 840.15

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

SHEET 1 OF 1  
840.15

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATE FOR USE WITH STD. DWS. S. 840.14 AND 840.15

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

SHEET 1 OF 1  
840.15

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**PITTSBORO ROOTS**  
PITTSBORO, NORTH CAROLINA  
GRADING & STORM DRAINAGE DETAILS

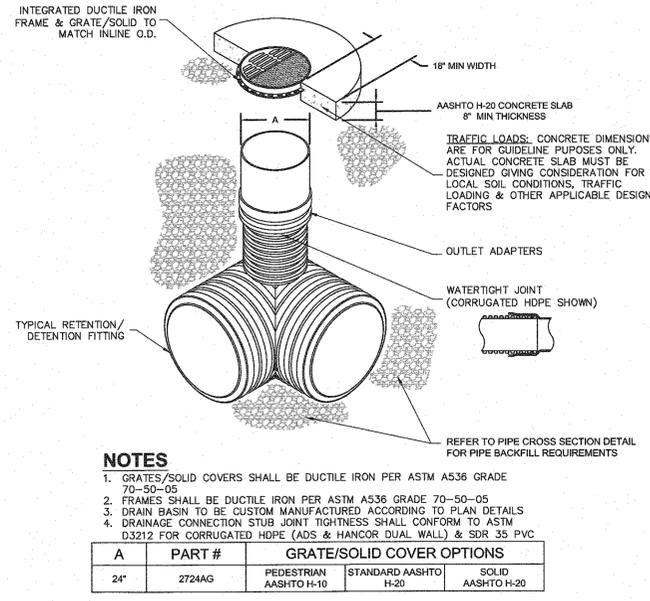
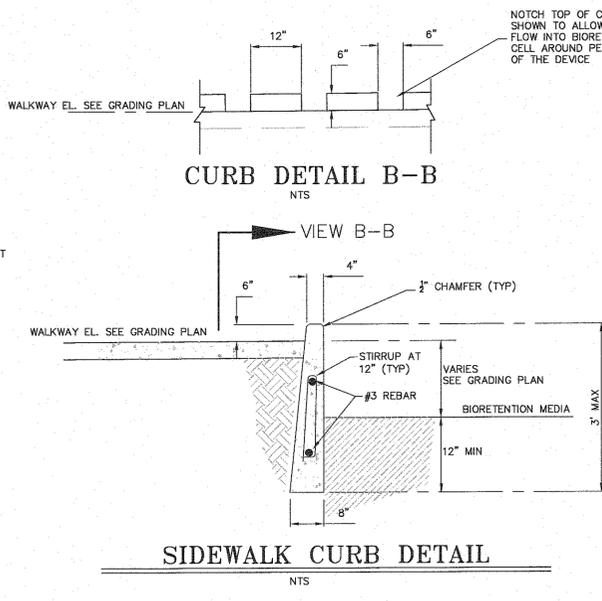
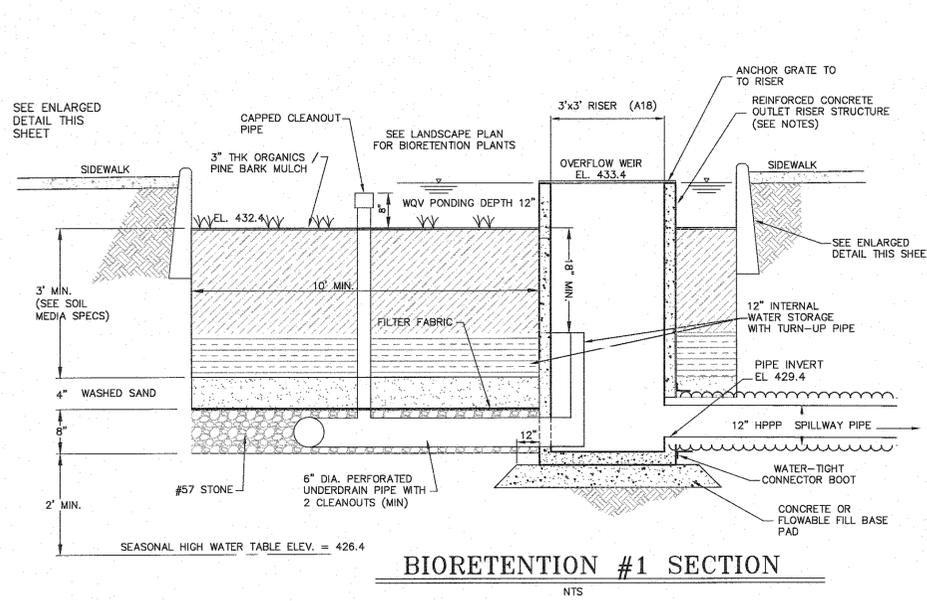
DATE: JULY 18, 2016

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CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.

CONTRACTOR'S INITIALS: \_\_\_\_\_

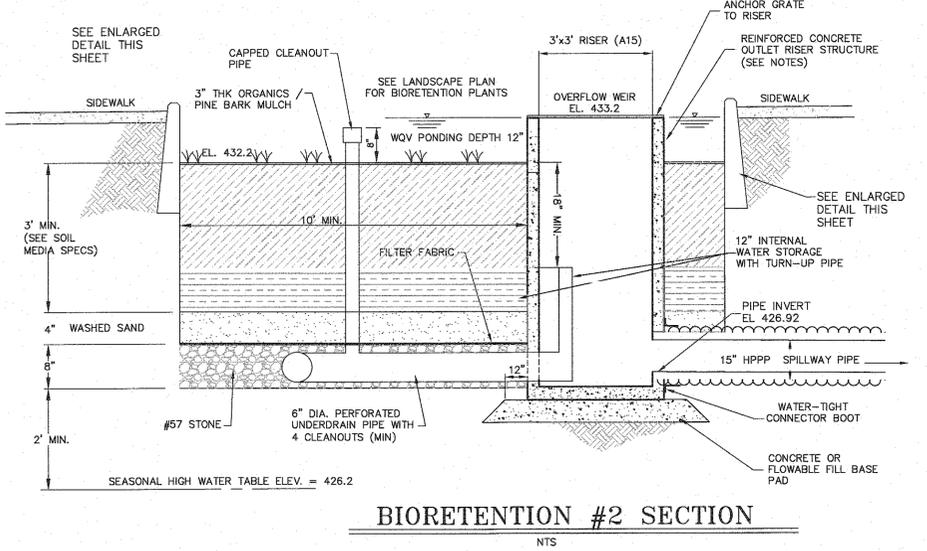
SHEET NO. **D4**



**NOTES**

- GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC

A	PART #	GRATE/SOLID COVER OPTIONS
24"	2724AG	PEDESTRIAN AASHTO H-10    STANDARD AASHTO H-20    SOLID AASHTO H-20



**CONSTRUCTION SPECIFICATIONS  
STORMWATER MANAGEMENT IMPOUNDMENT**

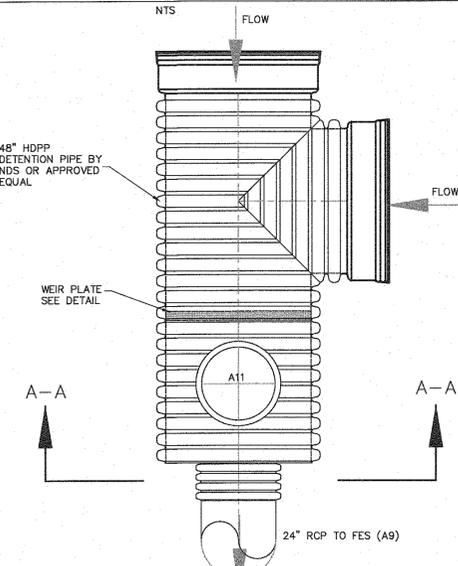
**APPLICABILITY**  
THIS SECTION OF SPECIFICATIONS APPLIES TO ALL WORK FOR THE STORMWATER MANAGEMENT IMPOUNDMENT (BIORETENTION CELLS) AND ASSOCIATED FEATURES, UNLESS MORE SPECIFIC REQUIREMENTS ARE SHOWN FOR CERTAIN ELEMENTS, IN WHICH CASE THE MORE SPECIFIC REQUIREMENTS SHALL APPLY.

**PRE-CONSTRUCTION COORDINATION**  
MEETING: SCHEDULE AND HOLD A PRE-CONSTRUCTION MEETING WITH THE ENGINEER AND OTHERS, SPECIFICALLY FOR THE STORMWATER IMPOUNDMENT WORK, PRIOR TO BEGINNING ANY WORK IN THE IMPOUNDMENT AREA.

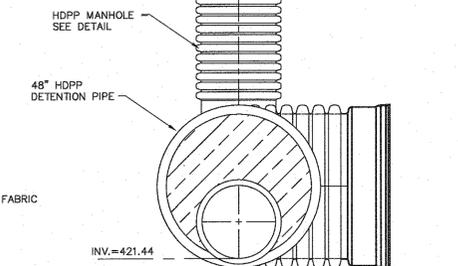
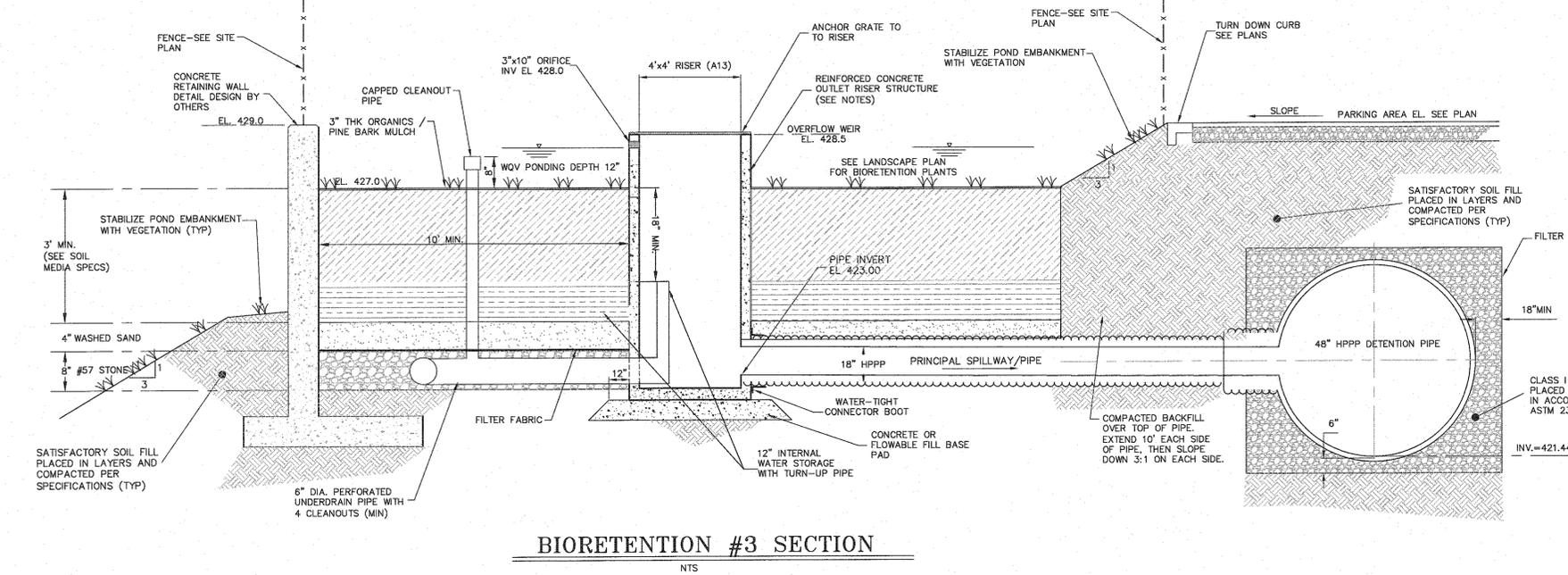
**SUBMITTALS**: SUBMIT THE FOLLOWING TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION:  
 1. PROPOSED CONSTRUCTION PLAN (SEE SEQUENCING REQUIREMENTS)  
 2. SPECS AND LITERATURE FOR ALL MANUFACTURED PRODUCTS  
 3. GRADATION ANALYSIS FOR MEDIA MIXTURE IN BIORETENTION CELLS  
 4. CONCRETE AND FLOWABLE FILL MIX ANALYSIS  
 5. NAME AND QUALIFICATIONS FOR DETENTION PIPE INSTALLER

**APPROVAL OF SEQUENCE**: SUBMIT A PROPOSED PLAN OF CONSTRUCTION TO THE ENGINEER FOR APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING, OUTLINING THE SEQUENCE AND METHODS OF INSTALLATION, TEMPORARY SUPPORT, FORMING, PLACEMENT, COMPACTING, ETC. FOR THE VARIOUS IMPOUNDMENT ELEMENTS. IDENTIFY ANY PROPOSED VARIATIONS FROM THE GENERAL SEQUENCE.

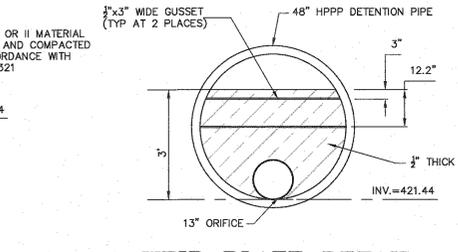
**DETENTION PIPE (HDPP) MANHOLE DETAIL**



**DETENTION PIPE-PLAN (A11)**



**DETENTION PIPE-VIEW A-A**



**WEIR PLATE DETAIL**

- GENERAL NOTES:**
- OUTLET STRUCTURE AND PIPING**
- THE RISER STRUCTURE SHALL CONSIST OF PRECAST CONCRETE BASE AND RISER SECTIONS OF THE TYPE AND DIMENSIONS SHOWN. SQUARE OR RECTANGULAR SECTIONS SHALL BE SOLID-WALL CATCH BASIN TYPE STRUCTURES, AND APPROVED FOR USE BY NCDOT. ALL RISER JOINTS SHALL BE SEALED WATER-TIGHT USING FLEXIBLE BUTYL RUBBER JOINT MATERIAL, RUBBER GASKETS, OR OTHER SUITABLE MATERIAL. ALL PIPE CONNECTIONS TO THE RISER SHALL BE MADE WITH A WATER TIGHT FLEXIBLE CONNECTOR BOOT PER ASTM C923.
- CONCRETE**
- CONCRETE WORK SHALL CONFORM TO PROJECT CONCRETE SPECIFICATIONS.
- FLOWABLE FILL**
- FLOWABLE FILL SHALL CONSIST OF A MIXTURE OF PORTLAND CEMENT, AGGREGATE NOT GREATER THAN 3/8 INCH DIAMETER, WATER, AND OTHER APPROVED COMPONENTS, WITH A MINIMUM PH OF 4.0, AND A 28-DAY COMPRESSIVE STRENGTH OF AT LEAST 150 PSI. THE MIXTURE SHALL BE SUFFICIENTLY FLOWABLE TO BE SELF-LEVELING, FILLING ALL VOIDS UNDER THE PIPE AND PIPE HAUNCHES WITHOUT REQUIRING VIBRATION.
- PLANTINGS**
- PROVIDE, INSTALL, AND MAINTAIN PLANTS, SHRUBS, AND TREES AS SHOWN OR SPECIFIED ON THE LANDSCAPE DRAWINGS.
- FINAL SURFACE STABILIZATION**
- STABILIZE ALL SURFACES OF THE EMBANKMENT, SPILLWAY, SLOPES, SPOIL AND BORROW AREAS THAT ARE NOT COVERED BY OTHER SPECIFIED MATERIALS WITH GRASS IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
- BIORETENTION NOTES:**
- ALL DRAINAGE AREAS TO A BIORETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF AMENDED SOILS, MULCH OR PLANTINGS.
- BIORETENTION PLANTING SOIL MEDIA SPECIFICATIONS:**
- THE PLANTING SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN ONE-HALF INCH IN DIAMETER. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, JOHNSON GRASS, QUACK GRASS, MUDWORT, NUTSEDGE, POISON IVY, CANADA THISTLE, OR OTHER NOXIOUS WEEDS.
  - PLANTING MIX FOR BIORETENTION CELL - UNIFORM SOIL MIXTURE FREE OF STONES, OR LARGE ROOTS, CONTAINING THE FOLLOWING TYPES AND RATIOS (BY WEIGHT) OF COMPONENTS:  
 85-88% SAND (ASTM C-33)  
 8%-10% FINE SOIL MATERIAL (INCLUDES BOTH SILT OR CLAY)  
 3%-5% ORGANICS / PINE BARK MULCH
  - SOIL SHALL HAVE A HYDRAULIC CONDUCTIVITY OF BETWEEN 1 IN/HR AND 6 IN/HR, WITH A 2 IN/HR RATE BEING OPTIMAL. PHOSPHOROUS INDEX SHALL BE BETWEEN 10 AND 30
  - GRADING - CLEARING, STRIPPING, EXCAVATION, FILLING, TRENCHING, BACKFILLING, COMPACTION, AND FINE-GRADING WORK SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF PROJECT SPECIFICATIONS.
  - UNDERDRAIN GRAVEL - CLEAN, HARD, ANGULAR GRAVEL CONFORMING TO NCDOT DESIGNATION # 57 OR # 8 AS APPROPRIATE.
  - GEOTEXILE FABRIC - NON-WOVEN, NEEDLE-PUNCHED GEOTEXILE WITH 135 LBS. PUNCTURE STRENGTH (ASTM D-4833), 220 LBS. TENSILE STRENGTH (ASTM D-4632), AND APPARENT OPENING SIZE OF U.S. STD. #80 SIEVE (ASTM D-4751).
  - UNDERDRAIN PIPING - NOMINAL 6" DIAMETER SCHEDULE 40 PVC, WITH 3/8" DIAMETER PERFORATIONS SPACED EQUALLY AROUND THE FULL PIPE PERIMETER. CLEANOUT PIPE AND FITTINGS SHALL BE SOLVENT-WELDED SCHEDULE 40 PVC PER THE DETAIL SHOWN AND EXTEND AT LEAST 8" ABOVE THE MULCH LAYER. MINIMUM 1 CLEANOUT PER 1000 SQUARE FEET OF SURFACE AREA OF THE DEVICE.
- DETENTION PIPE (HDPP) NOTES:**
- ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
  - ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
  - MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED, SEE ASTM D2321.
  - FILTER FABRIC: A GEOTEXTILE FABRIC MAY BE USED AS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.
  - FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER.
  - BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR II. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 6".
  - INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
  - COVER: MINIMUM COVER OVER ALL RETENTION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS IS 12" FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION FOR TRAFFIC APPLICATIONS. MINIMUM COVER IS 12" UP TO 36" DIAMETER PIPE AND 24" OF COVER FOR 42"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. MAXIMUM FILL HEIGHT LIMITED TO 8 FT OVER FITTINGS FOR STANDARD INSTALLATIONS. CONTACT A PRODUCT REPRESENTATIVE WHEN MAXIMUM FILL HEIGHTS EXCEED 8 FT FOR INSTALLATION CONSIDERATIONS.
- CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.**
- CONTRACTOR'S INITIALS:** \_\_\_\_\_

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KEITH P. GETTLE  
030913  
9/5/16

**PITTSBORO ROOTS**  
PITTSBORO, NORTH CAROLINA  
**BIORETENTION CELL**  
**DETAILS**

REV.	DATE	DESCRIPTION

DATE: JULY 18, 2016

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**CONTRACTOR'S RECORD DRAWING MARKUP OF AS-BUILT CHANGES DURING CONSTRUCTION.**

**CONTRACTOR'S INITIALS:** \_\_\_\_\_

SHEET NO.  
**D5**