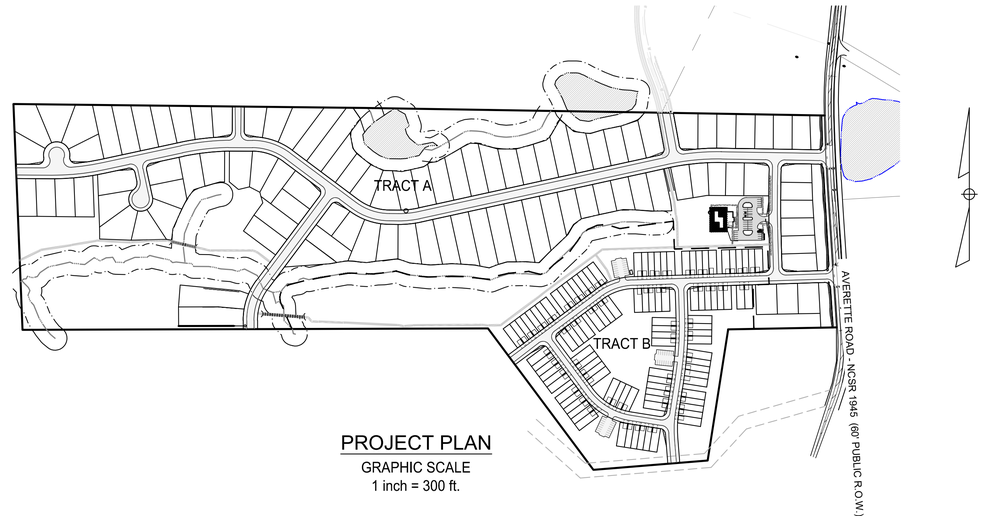
ELIZABETH HEIGHTS

CONSTRUCTION DRAWINGS

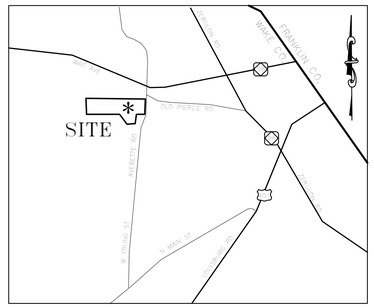
TRACT A

TOWN OF ROLESVILLE
WAKE COUNTY, NC

DRAWING LIST	
C000	COVER
C001	NOTES AND ABBREVIATIONS
C101	EXISTING CONDITIONS
C102	SOILS MAP
C103	EXISTING CONDITIONS CONT.
C300	OVERALL SITE DATA
C301	SITE PLAN
C302	SITE PLAN
C303	SITE PLAN
C304	PHASING MAP
C310	OVERALL GRADING DATA
C311	GRADING PLAN
C312	GRADING PLAN
C313	GRADING PLAN
C314	STORM STRUCTURE TABLES
C315	STORM PIPE TABLES
C316	AVERETTE ROAD GRADING PLAN
C317	INTERSECTION IMPROVEMENTS GRADING PLAN
C320	OVERALL EROSION CONTROL PLAN
C321	EROSION CONTROL PLAN
C322	EROSION CONTROL PLAN
C323	EROSION CONTROL PLAN
C324	AVERETTE ROAD EROSION CONTROL PLAN
~~C324A~~	~~INTERSECTION IMPROVEMENTS EROSION CONTROL PLAN~~
C325	OVERALL EROSION CONTROL PLAN
C326	EROSION CONTROL PLAN
C327	EROSION CONTROL PLAN
C328	EROSION CONTROL PLAN
C400	OVERALL UTILITY PLAN
C401	UTILITY PLAN
C402	UTILITY PLAN
C403	UTILITY PLAN
C404	UTILITY PROFILE
C405	UTILITY PROFILE
C407	OFFSITE WATER EXTENSION
C408	AVERETTE WATER EXTENSION
C410	SEWER CROSSING
C420	OFFSITE SEWER OUTFALL PLAN
C421	REHABILITATION PLAN OFFSITE SEWER LINE
C422	REHABILITATION PROFILES OFFSITE SEWER LINE
C501	PLAN AND PROFILE KAVANAUGH ROAD
C502	PLAN AND PROFILE KAVANAUGH ROAD
C503	PLAN AND PROFILE KAVANAUGH ROAD
C504	PLAN AND PROFILE FRAZIER PIKE ROAD
C505	PLAN AND PROFILE ROSE FINCH CIRCLE
C506	PLAN AND PROFILE GOLDEN-ASTER TRAIL
C507	PLAN AND PROFILE GEMSTONE WAY
C508	PLAN AND PROFILE CLASSICAL WAY
C509	PLAN AND PROFILE MARSH HAWK WAY
C510	PLAN AND PROFILE SHINGLE-OAK ROAD
C511	PLAN AND PROFILE SHINGLE-OAK ROAD
C512	PLAN AND PROFILE BLUE DASH LANE
C513	PLAN AND PROFILE BARRED OWL TRAIL
C513B	STORM DETAILS CONT.
~~C514~~	~~PLAN AND PROFILE SWEETLEAF LANE~~
C522	BMP DETAILS - BMP 1
C523	BMP DETAILS - BMP 2
C524	BMP DETAILS - BMP 3
~~C525~~	~~BMP DETAILS - BMP 4~~
C701	ROAD WIDE PLAN
C702	CROSS SECTIONS
C703	CROSS SECTIONS
C704	CROSS SECTIONS
~~C710~~	~~INTERSECTION IMPROVEMENTS PLAN~~
~~C711~~	~~CROSS SECTIONS~~
~~C712~~	~~CROSS SECTIONS~~
C801	DETAILS
C802	DETAILS
C803	DETAILS
C804	DETAILS
C805	DETAILS
C806	DETAILS
C807	DETAILS
C808	DETAILS
C809	DETAILS
C810	DETAILS
C811	STORM DETAILS CONT.
~~A-XXX~~	~~ARCHITECTURALS - TOWNHOMES~~



PROJECT PLAN
GRAPHIC SCALE
1 inch = 300 ft.



VICINITY MAP
(NTS)

Rolesville
Genuine Community • Capital Convention • Est. 1837
Planning

REV SP 19-01 / Construction Drawings /
Elizabeth Springs Phase 2 Townhomes Revision
APPROVED
Date: April 14, 2025

Town of Rolesville Planning Department

DEVELOPER:
WRIGHT-WHITLEY DEVELOPMENT COMPANY, LLC
1225 N WHITE ST
WAKE FOREST, NC 27583

OWNER:
DOUGLAS JONES
1109 AVERETTE RD
WAKE FOREST, NC 27587

SITE ADDRESS:
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32648 THOMAS B. COOPER
04/15/2025 9:56:15 AM
Douglas B Cooper

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

UTILITY IMPROVEMENTS	
8" PVC PUBLIC SEWER	9,375 LF
8" DIP PUBLIC SEWER	2,085 LF
16" PVC PUBLIC SEWER	890 LF
CLASS III RCP STORM	~~11,445 LF~~ 10,925 LF
4" DIP PUBLIC WATER	110 LF
6" DIP PUBLIC WATER	225 LF
8" DIP PUBLIC WATER	~~4,185 LF~~ 3,725 LF
12" DIP PUBLIC WATER	4,646 LF
16" DIP PUBLIC WATER	900 LF

WAKE CO. STORMWATER NOTE:
Maximum Impervious Area Square Footage on each Individual Lot will be Stringently Enforced with no Exceptions into Perpetuity. Plans approved with a maximum impervious surface of 4,500 SF (Single Family) 2,500 SF (Townhome) per lot.

EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT
APPROVED
EROSION CONTROL ☒ S- EC-011532-2019
STORMWATER MGMT. ☒ S- WF-011530-2019
FLOOD STUDY ☐ S-
DATE
WAKE COUNTY NORTH CAROLINA
ENVIRONMENTAL CONSULTANT SIGNATURE

811 KNOW WHAT IS BELOW CALL BEFORE YOU DIG

PROJECT NUMBER: ----

ELIZABETH HEIGHTS - ----

P:\2017 PROJECTS\170348 ELIZABETH HEIGHTS\ENG\CAD\DWG\SHEETS\CONSTRUCTION DRAWINGS\C000 COVER.DWG

ABBREVIATIONS

@	AT
A	AREA
A.B.C.	AGGREGATE BASE COURSE
AC	ACRE
A.D.	ALGEBRAIC DIFFERENCE
A.F.F.	ABOVE FINISHED FLOOR
AL	AREA LIGHT
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
ASSY.	ASSEMBLY
B-B	BACK TO BACK
BEAR.	BEARING
BLDG.	BUILDING
BOC	BACK OF CURB
BOT.	BOTTOM
℄	CENTERLINE
C.A.B.C.	CRUSHED AGGREGATE BASE COURSE
CB	CATCH BASIN
C-C	CENTER TO CENTER
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
C&G	CURB AND GUTTER
CH	CHORD
CI	CURB INLET
CL.	CLASS
CNST	CONSTRUCTION
C.O.	CLEAN-OUT
CO.	COMPANY
COL	COLUMN
CONC.	CONCRETE
CONN	CONNECTION
CPP	CORRUGATED PLASTIC PIPE
CSP	CORRUGATED STEEL PIPE
CULV.	CULVERT
°	DEGREE(S)
△	DELTA ANGLE
Ø / DIA.	DIAMETER
D	DEPTH / DEPT
DB	DEED BOOK
Dc	DEGREE OF CURVATURE
DET	DETAIL
DI	DROP INLET
DIP	DUCTILE IRON PIPE
DN	DOWN
D/W	DRIVEWAY
DWG(S).	DRAWING(S)
E	EAST
EA.	EACH
EL/ELEV	ELEVATION
ELEC.	ELECTRICAL
EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX/EXIST	EXISTING
F.D.	FLOOR DRAIN
FES	FLARED END SECTION
FFE	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FHA	FIRE HYDRANT ASSEMBLY
FI	FLOW INDICATOR
FLEX.	FLEXIBLE
FL	FLANGE
FM	FORCE MAIN
FO	FIBER OPTIC CABLE
FOP	FIBER OPTIC POST
FOSC	FIBER OPTIC SIGNAL CABLE
FOC	FACE OF CURB
FT	FEET
FUT	FUTURE
GA	GAUGE
GAL.	GALLON
GALV.	GALVANIZED
GEN	GENERATOR
G/L	GUTTER LINE
GV	GATE VALVE
GW	GUY WIRE/ANCHOR
HD	HEAVY DUTY
HEX.	HEXAGONAL
HOR(IZ).	HORIZONTAL
HP	HIGH POINT
HWL	HIGH WATER LEVEL
HWY.	HIGHWAY
ICV	IRRIGATION CONTROL VALVE
ID	INSIDE DIAMETER
IN	INCH(ES)
INV.	INVERT
JB	JUNCTION BOX
K	CURVE COEFFICIENT
L	LENGTH
LB	POUND(S)
LD	LIGHT DUTY
LF	LINEAR FEET
LG	LONG
LP	LIGHT POLE
LT	LEFT
LWL	LOW WATER LEVEL

MAX.	MAXIMUM
MECH.	MECHANICAL
MFR.	MANUFACTURER
MH	MANHOLE
MIN.	MINIMUM
MI	MILE
MJ	MECHANICAL JOINT
# / NO.	NUMBER
N	NORTH
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N/F	NOW OR FORMERLY
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
O.C.	ON CENTER(S)
O.D.	OUTSIDE DIAMETER
OHE	OVERHEAD ELECTRIC
OPER	OPERATION
OPNG	OPENING
PB	PLAT BOOK
PC	POINT OF CURVATURE
PERM.	PERMANENT
PG	PAGE
PI	POINT OF INTERSECTION
PITO	POINT OF INTERSECTION - TURN OUT
PL	PROPERTY LINE
PROP.	PROPOSED
PS	POINT OF SWITCH
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PT	POINT
PVC	POLYVINYL CHLORIDE
P.V.C.	POINT OF VERTICAL CURVATURE
P.V.I.	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
P.V.T.	POINT OF VERTICAL TANGENCY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RED.	REDUCER
REQ'D.	REQUIRED
RJ	RESTRAINED JOINT
RR	RAILROAD
RT	RIGHT
R/W	RIGHT OF WAY
S	SOUTH
SAN	SANITARY
SCH	SCHEDULE
SDMH	STORM DRAIN MANHOLE
SEC	SECONDS
SECT.	SECTION
SED.	SEDIMENT
SEW	SEWER
SF	SQUARE FEET
SHT. / SH.	SHEET
SP	SERVICE POLE
SPEC.	SPECIFICATION
SQ.	SQUARE
SR	STATE ROAD
SS	STAINLESS STEEL
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
STA.	STATION
STD.	STANDARD
STL	STEEL
S/W	SIDEWALK
T/C	TOP OF CURB
TEL.	TELEPHONE
TEMP.	TEMPORARY
TK	THICK
T/G	TOP OF GRATING
T.O.	TOP OF...
TP	TELEPHONE PEDESTAL
T/S	TOP OF SLAB
TSB	TRAFFIC SIGNAL BOX
TST	TEMPORARY SEDIMENT TRAP
T/W	TOP OF WALL
TYP.	TYPICAL
U/G	UNDER GROUND
UGE	UNDER GROUND ELECTRIC
UV	ULTRAVIOLET
V	VALVE
VC	VERTICAL CURVE
VERT.	VERTICAL
W	WIDTH
W	WEST
W/	WITH
WD	WIDE
WL	WATER LEVEL
W/L	WATER LINE
WM	WATER METER
WSE	WATER SURFACE ELEVATION
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
YD	YARD
YI	YARD INLET
YH	YARD HYDRANT
YR	YEAR

GENERAL NOTES

FOR THE PURPOSE OF THE FOLLOWING NOTES:

- "CONTRACTOR" REFERS TO GENERAL CONTRACTOR
- "OWNER" REFERS TO DOUGLAS JONES OR HIS AUTHORIZED AGENTS
- "ENGINEER" REFERS TO BATEMAN CIVIL SURVEY COMPANY

GENERAL SITE/CIVIL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH PERMITS AS ISSUED, AND ANY AND ALL APPLICABLE STATE, COUNTY AND LOCAL CODES
2. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL INSPECTIONS, CERTIFICATIONS, AND/OR ANY OTHER REQUIREMENTS WHICH MUST BE MET UNDER CONTRACT.
3. ALL DIMENSIONS ARE IN RADII, TO OUTSIDE FACE OF BUILDING, TO CENTERLINE, CENTER TO CENTER ON STRIPES, AND/OR TO FACE OF CURB, UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE CAUSED BY HIS OPERATIONS TO EXISTING UTILITIES AND FACILITIES WHICH ARE NOT INCLUDED AS PART OF THE INTENDED WORK. DAMAGED UTILITIES AND FACILITIES SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, TO THE SATISFACTION OF THE OWNERS' REPRESENTATIVE, AT NO ADDITIONAL COST TO THE OWNER.
5. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION OPERATIONS WITH ANY AND ALL OTHER CONSTRUCTION ACTIVITIES WHICH MAY BE OCCURRING SIMULTANEOUSLY ON THE SITE. LACK OF COORDINATION ON THE CONTRACTOR'S PART RESULTING IN EXTRA WORK OR SCHEDULE DELAYS SHALL NOT CONSTITUTE A CHANGE ORDER.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR SHALL CONTACT THE NC ONE CALL CENTER, AT 1-800-632-4949, AT LEAST 48 HOURS BEFORE THE START OF CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE AT NO ADDITIONAL COST TO THE OWNER, FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE APPROPRIATE STATE, COUNTY, OR MUNICIPAL AUTHORITY RELEASES THE SITE AT WHICH TIME THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS DIRECTED BY THE ENGINEER.
9. CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE CORRESPONDING SECTIONS OF THE NORTH CAROLINA EROSION AND SEDIMENTATION CONTROL PLANNING AND DESIGN MANUAL, LATEST EDITION AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
10. THE LOCATION OF ALL STRUCTURES SHOWN REPRESENTS THE BEST INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF THE SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION, SIZE, AND TYPE OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RELOCATION (AS DIRECTED BY THE ENGINEER) OF ANY CONFLICTING UNDERGROUND UTILITIES, IF REQUIRED, AT NO ADDITIONAL COST TO THE OWNER. IT IS ADVISABLE THE CONTRACTOR VISIT THE SITE PRIOR TO BIDDING AND BECOME FAMILIAR WITH THE SITE AND ANY POTENTIAL CONFLICTS.
11. THE CONTRACTOR IS RESPONSIBLE FOR ALL SITE LAYOUTS AND STAKING AND THE COST THEREOF SHALL BE INCLUDED IN HIS BID.
12. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES THE CONTRACTOR SHALL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO THE NORMAL WORKING HOURS. THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXEMPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
13. ALL EXISTING UTILITIES AND IMPROVEMENTS THAT BECOME DAMAGED DURING CONSTRUCTION SHALL BE COMPLETELY RESTORED TO THE SATISFACTION OF THE OWNER AND ENGINEER AT THE CONTRACTOR'S SOLE EXPENSE.
14. THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, INCLUDING, BUT NOT LIMITED TO BRACING AND SHORING. OBSERVATION VISITS TO THE SITE BY THE ENGINEER AND/OR THE ENGINEER'S REPRESENTATIVE(S) SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
15. ALL WORK WITHIN NCDOT RIGHTS-OF-WAY SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. THE CONTRACTOR SHALL ABIDE BY THE NCDOT DRIVEWAY AND ENCROACHMENT PERMITS AND THEIR CONDITIONS.
16. SITE DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE TOWN OF ROLESVILLE LAND DEVELOPMENT ORDINANCE.
17. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ADHERING TO ALL OSHA SAFETY REQUIREMENTS, INCLUDING TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION.
18. CONSTRUCTION TO BE IN ACCORDANCE WITH TOWN OF ROLESVILLE & NCDOT STANDARDS AND SPECIFICATIONS.

GENERAL UTILITY NOTES

1. THE APPROXIMATE LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE TRUE LOCATION PRIOR TO COMMENCING WORK. IN THE EVENT A CONFLICT OR POTENTIAL CONFLICT IS IDENTIFIED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
2. THE CONTRACTOR SHALL COORDINATE ALL WORK AFFECTING UTILITIES WITH THE RESPECTIVE UTILITY COMPANY OWNER. ALL DETAILS OF CONSTRUCTION AND/OR RELOCATION SHALL BE APPROVED BY THE UTILITY OWNERS AND OTHER APPROVING AGENCIES, IF REQUIRED.
3. PROTECTION OF ALL EXISTING STRUCTURES TO REMAIN DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
4. ALL UTILITY CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
5. RELATION BETWEEN WATER MAINS AND SEWER LINES:

   A. HORIZONTAL AND VERTICAL SEPARATION:

   1.) WATERLINES SHALL BE LAID AT LEAST 10 FEET HORIZONATALLY FROM ANY EXISTING OR PROPOSED SEWER LINE. THE DISTANCE SHALL BE MEASURED FROM EDGE TO EDGE. IF AN OBSTRUCTION PROHIBITS A 10-FOOT SEPARATION, THE CONTRACTOR SHALL CONTACT THE ENGINEER. INSTALLATION OF THE WATER MAIN CLOSER TO A SEWER LINE IS ALLOWED PROVIDED THAT THE WATER MAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATER MAIN IS AT LEAST 18-INCHES ABOVE THE TOP OF THE SEWER.

   2.) IF IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS DESCRIBED ABOVE OR ANY TIME THE SEWER IS OVER THE WATER MAIN, BOTH THE WATER MAIN AND SEWER LINE MUST BE CONSTRUCTED OF FERROUS PIPE COMPLYING WITH PUBLIC WATER SUPPLY DESIGN STANDARDS AND PRESSURE TESTED TO 150 PSI (MINIMUM) TO ASSURE WATERTIGHTNESS BEFORE BACKFILLING.

   B. CROSSINGS

   1.) FOR WATER MAINS CROSSING UNDER SEWER LINES: LINES SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18-INCHES BETWEEN THE OUTSIDE EDGE OF THE WATER MAIN AND THE OUTSIDE EDGE OF THE SEWER LINE. THE CROSSING SHALL BE ARRANGED SO THAT ONE 20-FOOT SECTION OF WATERLINE SHALL BE CENTERED AT THE CROSSING. ONE OF THE FOLLOWING METHODS MUST THEN BE UTILIZED AS DIRECTED BY THE ENGINEER:

   I.) THE SEWER SHALL BE DESIGNED AND CONSTRUCTED OF FERROUS PIPE AND SHALL BE PRESSURE TESTED AT 150 PSI TO ASSURE WATERTIGHTNESS PRIOR TO BACKFILLING OR,

   II.) EITHER THE WATER MAIN OR SEWER LINE MAY BE ENCASED IN A WATERTIGHT CARRIER PIPE WHICH EXTENDS 10-FEET BEYOND BOTH SIDES OF THE CROSSING, MEASURED PERPENDICULAR TO THE WATER MAIN. THE CARRIER PIPE SHALL BE OF A MATERIAL APPROVED BY THE REGULATORY AGENCY FOR USE IN WATER MAIN CONSTRUCTION.

   2.) FOR WATER MAINS CROSSING OVER A SEWER LINE: LINES SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18-INCHES BETWEEN THE OUTSIDE EDGE OF THE WATER MAIN AND THE OUTSIDE EDGE OF THE SEWER. IN AN 18-INCH MINIMUM VERTICAL SEPARATION CANNOT BE MET, THEN THE WATERLINE SHALL BE CONSTRUCTED OF A FERROUS MATERIAL WITH ONE 20-FOOT SECTION OF PIPE CENTERED AT THE CROSSING. ONE OF THE CROSSING CONSTRUCTION METHODS ABOVE: 6.B.1.)I) OR II) SHALL BE UTILIZED.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING RECORDS AND SUBMIT AS BUILT DRAWINGS FOR UTILITIES.
7. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL CONCRETE STRUCTURES, CASTINGS AND PIPING MATERIALS FOR APPROVAL PRIOR TO PURCHASING. ENGINEER SHALL HAVE 10 DAYS TO REVIEW INITIAL SUBMITTALS AND 5 DAYS FOR RESUBMITTALS.

DRAINAGE NOTES

1. CONTRACTOR SHALL EXERCISE CARE, ESPECIALLY AT INTERSECTIONS AND GUTTER LINES, TO PROVIDE POSITIVE DRAINAGE. ANY AREAS WHERE WATER IS IMPOUNDED AS A RESULT OF THIS CONSTRUCTION SHALL BE CORRECTED BY CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. POSITIVE DRAINAGE OF ALL ROADWAY AREAS TO THE STORM DRAIN INLETS OR OTHER ACCEPTABLE DRAINAGE CHANNELS SHALL BE MAINTAINED AT ALL TIMES.
2. CONTRACTOR SHALL MAINTAIN EXISTING STREAMS, DITCHES, DRAINAGE STRUCTURES, CULVERTS AND FLOWS AT ALL TIMES DURING THE WORK. CONTRACTOR SHALL PAY FOR ALL PERSONAL INJURY AND PROPERTY DAMAGE WHICH MAY OCCUR AS A RESULT OF FAILING TO MAINTAIN ADEQUATE DRAINAGE.
3. ALL PIPES, DRAINAGE INLETS AND OTHER STRUCTURES UNCOVERED DURING CONSTRUCTION SHALL BE INSPECTED BY THE ENGINEER BEFORE BEING BACKFILLED OR BURIED. THE ENGINEER MAY REQUIRE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER, TO UNCOVER AND RE-COVER SUCH STRUCTURES IF THEY HAVE BEEN BACKFILLED OR BURIED WITHOUT SUCH INSPECTION.
4. ELEVATIONS GIVEN FOR CATCH BASINS ARE MEASURED AT THE TOP OF CURB AT TH CENTER OF STRUCTURE. ELEVATIONS FOR MANHOLES, JUNCTION BOXES AND DROP INLETS ARE MEASURED AT THE CENTER OF GRATE COVER.
5. CONSTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL CONCRETE STRUCTURES, CASTINGS AND PIPING MATERIALS FOR APPROVAL PRIOR TO PURCHASING. ENGINEER SHALL HAVE 10 DAYS TO REVEIW INITIAL SUBMITTALS AND 5 DAYS FOR RESUBMITTALS.

GENERAL GRADING NOTES

1. ALL PROPOSED ELEVATIONS SHOWN HEREIN ARE FINISHED GRADE ELEVATIONS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING SEWER RIM ELEVATIONS IN RELATION TO PROPOSED GRADE PRIOR TO INSTALLATION. ALL EXISTING MANHOLE COVERS, CATCH BASINS, VALVE COVERS, ETC. THAT ARE TO REMAIN SHALL BE ADJUSTED (RAISED OR LOWERED) TO FINISHED GRADE.
3. CLEAR AND GRUB SITE TO GRADING LIMITS SHOWN ON THE SITE GRADING PLANS.
4. ALL TOPSOIL AND UNSUITABLE FILL MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF SUBBASE MATERIAL AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
5. ALL EXCAVATED MATERIAL PLACEMENT TO BE COORDINATED WITH THE OWNER FOR AVAILABLE SPOIL LOCATIONS.
6. ALL MATERIAL THAT IS UNSUITABLE FOR GRADING/EMBANKMENT WILL BE RELOCATED OFF-SITE BY THE CONTRACTOR TO A SUITABLE LOCATION AS DIRECTED BY THE OWNER IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
7. AREAS SCHEDULED FOR EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
8. ALL EMBANKMENTS SHALL BE COMPACTED AS SPECIFIED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.
9. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO EMBANKMENT SLOPES OF STRUCTURAL FILLS.
10. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF THREE INCHES PRIOR TO PLACEMENT OF TOPSOIL.
11. THE PROPOSED CONTOURS AND GRADIENTS ARE APPROXIMATE. THE ELEVATIONS SHOWN ARE FOR FINISH GRADE ASPHALT AND FINISH GROUND.
12. ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE AND AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION.

TRAFFIC AND SIGNAGE

1. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGGERS OR OTHER DEVICES AS NECESSARY TO PROVIDE FOR SAFETY.
2. THE CONTRACTOR SHALL MAINTAIN INDIVIDUAL VEHICULAR AND PEDESTRIAN ACCESS TO ALL PROPERTY OWNERS ALONG THE PROJECT ALIGNMENT.
3. THE CONTRACTOR SHALL MAINTAIN EXISTING TRAFFIC PATTERNS WHEN POSSIBLE. IF CONSTRUCTION ACTIVITIES DEEM NECESSARY, THE CONTRACTOR SHALL UTILIZE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FEDERAL, STATE AND LOCAL AGENCIES TO MAINTAIN SAFE TRAFFIC FLOW.
4. CONTRACTOR SHALL NOTIFY PROPERTY OWNER(S) FIVE (5) BUSINESS DAYS IN ADVANCE OF BLOCKING ANY ENTRANCE. NO ENTRANCE SHALL BE BLOCKED MORE THAN TWELVE (12) HOURS IN ANY 24 HOUR PERIOD WITHOUT APPROVAL OF THE PROPERTY OWNER.

EARTHWORK AND SITE CONDITIONS

1. UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS, IN AREAS OUTSIDE OF NCDOT RIGHT-OF-WAYS, ALL FILL MATERIALS SHALL BE COMPACTED TO 95% OF THE THEORETICAL MAXIMUM DENSITY AS DETERMINED BY AASHTO-99 METHOD A, WITHIN PLUS OR MINUS 2% OF OPTIMUM MOISTURE. FOR THE FULL WIDTH AND DEPTH OF THE FILL. ALL FILL MATERIAL UNDER PAVED AREAS SHALL BE NCDOT #21B CRUSHED STONE, APPROVED SOIL, OR SELECTED MATERIAL, 95% COMPACTED WITH CBR OF 30, COMPACTED IN 6-INCH DEEP LIFTS AS DIRECTED BY THE PROJECT INSPECTOR.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS PRIOR TO BEGINNING WORK, AND IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN THE EVENT THERE ARE ANY DISCREPANCIES BETWEEN SUCH CONDITIONS AND THOSE SHOWN ON THE PLANS AND SPECIFICATIONS.
3. TOPSOIL STOCKPILED FROM CLEARING AND GRUBBING SHALL BE FREE FROM ROOTS, BRUSH, DEBRIS AND ROCKS. EXCESS STOCKPILED TOPSOIL MAY BE PLACED ON SITE AT THE DIRECTION OF THE ENGINEER OR DISPOSED OF OFFSITE.
4. THE CONTRACTOR SHALL USE QUALITY STRUCTURAL FILL DIRT AS REQUIRED TO COMPLETE THE WORK AS SOWN ON THE PLANS. IMPORTED FILL DIRT SHALL BE TESTED BY A REGISTERED GEOTECHNICAL ENGINEER IN NORTH CAROLINA AND THE RESULTS SUBMITTED TO THE ENGINEER PRIOR TO IMPORTING AND PLACING ANY FILL MATERIAL.
5. UNSUITABLE MATERIAL PLACED AS FILL WILL BE REMOVED AND REPLACED WITH APPROVED MATERIAL AT THE CONTRACTORS EXPENSE.
6. FILL SHALL BE PLACED AND COMPACTED ACCORDING TO NC DOT STANDARD SPECIFICATIONS. THIS ALSO APPLIES TO AREAS OUTSIDE OF THE DOT RIGHT-OF-WAY.

VEGETATION

1. PRIOR TO REMOVING ANY TREES, CONTRACTOR SHALL MEET WITH THE PROPERTY OWNERS AND THE ENGINEER TO REVIEW THE LIMITS OF CONSTRUCTION AND OBTAIN PERMISSION TO REMOVE TREES REQUIRED TO DO THE WORK.
2. TREE AND PLANT ROOTS OR BRANCHES THAT MAY INTERFERE WITH THE WORK SHALL BE TRIMMED OR CUT ONLY WITH THE APPROVAL OF THE OWNER. ANY TREES OR PLANTS WHICH ARE SHOWN TO REMAIN THAT DO NOT INTERFERE WITH THE WORK, BUT ARE DAMAGED BY CONTRACTOR OR HIS SUBCONTRACTORS, SHALL BE REPAIRED OR REPLACED BY CONTRACTOR AT NO ADDITIONAL COST.
3. TREES CUT DOWN SHALL BE COMPLETELY REMOVED, INCLUDING THEIR ROOTS.
4. ON-SITE BURNING IS NOT PERMITTED.
5. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL DEBRIS OFF SITE AT AN APPROVED DISPOSAL FACILITY. DEBRIS INCLUDES, BUT IS NOT LIMITED TO, TREES, ROOTS AND STUMPS.

WORK IN NCDOT RIGHTS OF WAY

1. ALL WORK WITHIN NCDOT RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NCDOT "ROADWAY STANDARD DRAWING" AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES." THIS INCLUDES LANE CLOSURES, ROAD CLOSURES, POSITIVE PROTECTION AND/OR ANY OTHER WARNING OR POSITIVE PROTECTION DEVICES NECESSARY FOR THE SAFETY OF THE ROAD USERS DURING CONSTRUCTION AND ANY SUBSEQUENT MAINTENANCE. WHEN THERE IS NO GUIDANCE PROVIDED IN THE ROADWAY STANDARD DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL COMPLY WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS."
2. THE CONTRACTOR SHALL FOLLOW ALL SPECIAL PROVISIONS INCLUDED AS PART OF THE RIGHT-OF-WAY ENCROACHMENT AGREEMENT AND DRIVEWAY CONSTRUCTION PERMIT.
3. THE CONTRACTOR SHALL NOTIFY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) TEN WORKING DAYS IN ADVANCE OF INITIATING EITHER OPEN-CUT OR JACK-AND-BORE INSTALLATION OF PIPELINE WITHIN/UNDERNEATH ANY COUNTY ROAD FOR LAYING THE NEW WATER MAIN.
4. DURING NON-WORKING HOURS, EQUIPMENT SHALL NOT BE PARKED IN THE RIGHT-OF-WAY.
5. ALL FILL AREAS/BACKFILL IN NCDOT RIGHTS-OF-WAY SHALL BE COMPACTED TO 95% DENSITY IN ACCORDANCE WITH AASHTO T99 AS MODIFIED BY THE NCDOT. ALL MATERIAL TO A DEPTH OF 8-INCHES BELOW THE FINISHED SURFACE OF THE SUBGRADE SHALL BE COMPACTED TO A DENSITY EQUAL TO AT LEAST 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T99 AS MODIFIED BY THE DEPARTMENT. THE SUBGRADE SHALL BE COMPACTED AT A MOISTURE CONTENT WHICH IS APPROXIMATELY THAT REQUIRED TO PRODUCE THE MAXIMUM DENSITY INDICATED BY THE ABOVE TEST METHOD. THE CONTRACTOR SHALL DRY OR ADD MOISTURE TO THE SUBGRADE WHEN REQUIRED TO PROVIDE A UNIFORMLY COMPACTED AND ACCEPTABLE SUBGRADE.
6. DISTURBED OR DAMAGED STRUCTURES WITHIN THE NCDOT RIGHT-OF-WAY INCLUDING SIGNAGE, GUIDERAILS, AND DRAINAGE STRUCTURES SHALL BE RESTORED TO ITS ORIGINAL CONDITION. RIGHT-OF-WAY MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REFERENCED BY A REGISTERED LAND SURVEYOR AND RESET AFTER CONSTRUCTION.
7. ACCESS, PARKING, OR MATERIAL STORAGE SHALL NOT BE ALLOWED ALONG ANY STATE-MAINTAINED ROADWAY WITHOUT FIRST RECEIVING APPROVAL FROM THE NCDOT.
8. DIRECTIONAL DRILLING / BORING UNDER NCDOT ROADWAYS:
   - UNDER NO CONDITION SHALL JETTING ALONG OR WET BORING WITH WATER OF UTILITY PIPELINES BE ALLOWED.
   - DIRECTIONAL BORING USING JETTING WITH BENTONITE (OR EQUIVALENT MATERIAL) SLURRY IS APPROVED AT A MINIMUM DEPTH OF THREE-FEET (COVER) BELOW THE GROUND SURFACE AND OUTSIDE THE THEORETICAL 1:1 SLOPE FROM THE EXISTING EDGE OF PAVEMENT EXCEPT WHERE THE PARALLEL INSTALLATION CROSSES A PAVED ROADWAY.
   - DIRECTIONAL BORES ARE NOT ALLOWED BENEATH BRIDGE FOOTINGS, CULVERT WINGWALL FOOTINGS, OR RETAINING WALLS.
   - THE TIP OF THE DRILL STRING SHALL HAVE A CUTTER HEAD.
   - DETECTION WIRE SHALL BE INSTALLED WITH NON-FERROUS MATERIAL.
   - ALL DIRECTIONAL BORES SHALL MAINTAIN A MINIMUM DISTANCE OF 5-FEET FROM THE NEAREST PART OF PIPE CULVERTS AND BOX CULVERTS AND TEN-FOOT MINIMUM CLEARANCE FROM BRIDGES AND FOOTINGS.
   - OVERBORING SHALL NOT BE MORE THAN TWO-INCHES GREATER THAN THE DIAMETER OF EITHER THE PIPE OR ENCASEMENT. AN OVERBORE GREATER THAN TWO-INCHES WILL BE CONSIDERED IF THE ENCROACHMENT AGREEMENT INCLUDES A STATEMENT SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA THAT SAID OVERBORE WILL NOT DAMAGE EITHER THE PAVEMENT OR SUBGRADE.
9. THE CONTRACTOR SHALL PERFORM AND PROVIDE COPIES TO THE ENGINEER OF ALL REQUIRED COMPACTION TESTS, CONCRETE CYLINDER TESTS AND ASPHALT TESTS.
10. ALL MATERIALS SHALL BE FROM A NCDOT CERTIFIED PLANT.
11. ENCROACHMENT AGREEMENT(S) SHALL BE OBTAINED FROM NCDOT FOR ANY WORK WITHIN NCDOT RIGHT OF WAY.

PROJECT SPECIFIC NOTES

1.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

P:\2017 Projects\170348 Elizabeth Heights\Engr\CAD\DWG\Sheets\Construction Drawings\C001 Notes and Abbreviations.dwg

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

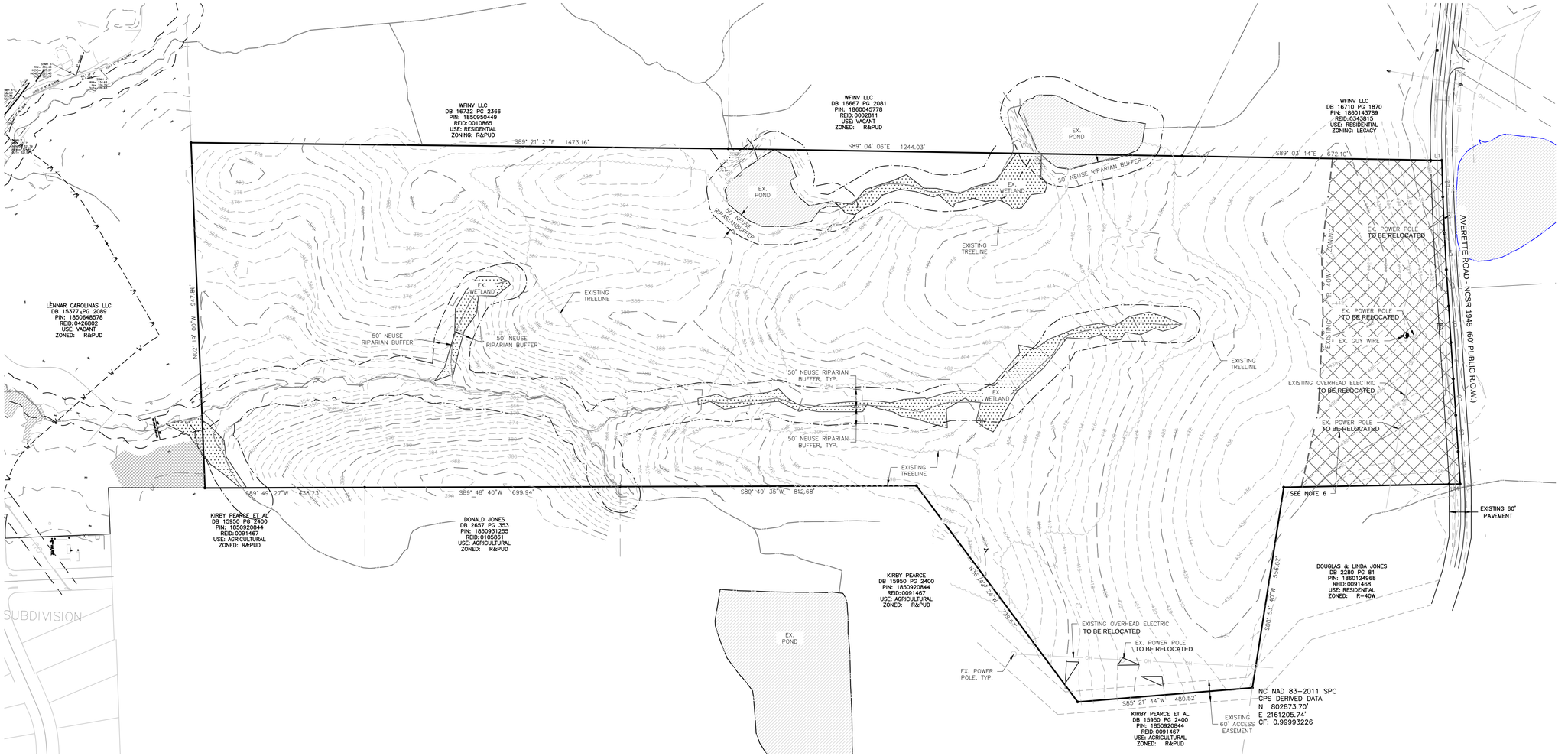
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

NOTES

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	170348

SHEET
C001



PARCEL LINE DATA		
SEGMENT	LENGTH	DIRECTION
L1	30.56	S89° 03' 14"E
L2	100.25	S1° 44' 46"E
L3	100.00	S2° 19' 26"E
L4	100.00	S3° 06' 18"E
L5	100.00	S3° 36' 38"E
L6	100.00	S3° 41' 51"E
L7	100.00	S3° 44' 15"E
L8	100.00	S3° 49' 56"E
L9	100.00	S3° 49' 58"E
L10	88.72	S3° 25' 52"E
L11	30.03	S88° 55' 16"W

LEGEND:

- EXISTING POND
- EXISTING WETLAND
- EXISTING WATERSHED (R-40W)
- EXISTING STREAM / TOP OF BANK
- EXISTING 50' NEUSE RIVER BASIN RIPARIAN BUFFER

EXISTING TRACT DATA:

DEVELOPER:
WRIGHT-WHITLEY DEVELOPMENT COMPANY, LLC
1225 N. WHITE ST.
WAKE FOREST, NC 27588
CONTACT NO: (919) 349-5220
NC PIN: 1860-03-8619
DEED REFERENCE: DB 017035, PG 01542
REAL ESTATE ID: 0002813

TOTAL TRACT AREA : 82.22 AC
AREA WITHIN ROW: 0.61 AC
NEW TOAL AREA: 81.61 AC
ZONING: R & PUD, R40W
EXISTING USE: VACANT / UNDEVELOPED WOODS

OWNER:
DOUGLAS JONES
1109 AVERETTE RD
WAKE FOREST, NC 27587

NOTES

1. PER FEMA MAPS 3720185OOJ & 3720186000J FOR NORTH CAROLINA, THERE ARE NO FLOOD HAZARD AREAS WITHIN THE DEVELOPMENT BOUNDARIES.
2. EXISTING BOUNDARY TAKEN FROM A SURVEY BY BATEMAN CIVIL SURVEY COMPANY ON AUG. 8, 2017.
3. EXISTING TOPOGRAPHY DOWNLOADED FROM WAKE COUNTY GIS.
4. WETLANDS AND STREAMS HAVE RECIEVED A PRELIMINARY JURISDICTIONAL DELINIATION FROM THE CORPS. (CURRENTLY PENDING).
5. ARRANGEMENTS HAVE BEEN MADE WITH AUSTIN CREEK DEVELOPER TO EXTEND UTLITIES TO SITE PROPERTY LINE. IN THE EVENT THIS DEVELOPMENT PRECEEDS THE AUSTIN CREEK DEVELOPMENT, PERMISSION HAS BEEN GRANTED TO TIE INTO EXISTING UTILITIES.
6. DUKE ENERGY COORDINATION

REVISIONS		
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018
REV.NO.	DESCRIPTIONS	

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=150' 150 0 150 300

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EXISTING CONDITIONS PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C101

GENERAL NOTES:

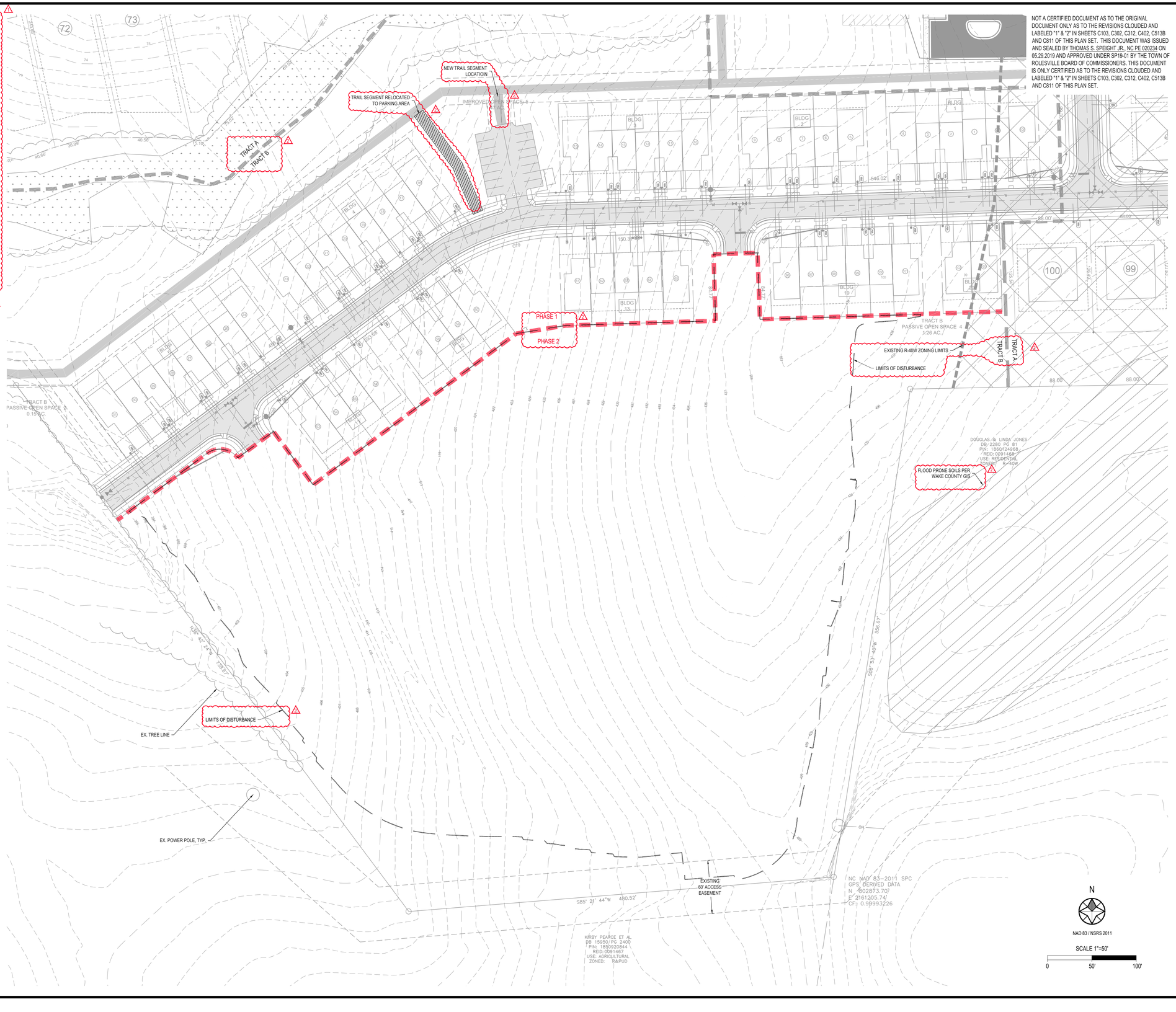
1. ALL UTILITIES OR STRUCTURES NOT INDICATED FOR REMOVAL OR MODIFICATION ARE TO REMAIN AND BE PROTECTED FROM DAMAGE.
2. ALL WASTE MATERIAL GENERATED FROM CLEARING AND DEMOLITION ACTIVITIES SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS.
3. REMOVE TOPSOIL AND STOCKPILE APPROPRIATELY ON-SITE. ON-SITE TEMPORARY STOCKPILES SHALL BE LOCATED WITHIN THE CONSTRUCTION LIMITS.
4. ALL PAVEMENT OR CONCRETE TO BE REMOVED SHALL BE SAW CUT TO PROVIDE A STRAIGHT AND UNIFORM JOINT WITH NEW CONSTRUCTION. ANY EXISTING PAVEMENT, SIDEWALK, CURB & GUTTER, ETC. THAT MUST BE REMOVED TO ALLOW NEW CONSTRUCTION SHALL BE REMOVED AND REPAIRED PER SPECIFICATIONS AND DETAILS OR TO MATCH EXISTING CONDITIONS (WHETHER OR NOT SHOWN ON THE DRAWINGS TO BE REMOVED). UTILITY INSTALLATIONS MAY UTILIZE OPEN CUT OF PAVEMENTS UNLESS INDICATED OTHERWISE. TRENCH IN EXISTING ASPHALT SHALL BE PATCHED PER PAVEMENT REPAIR DETAIL.
5. PROTECT ALL ADJACENT PROPERTIES, THE GENERAL PUBLIC AND ALL OF THE OWNER'S FACILITIES. SHOULD DAMAGE OCCUR, NOTIFY THE ENGINEER IMMEDIATELY.
6. THE CONTRACTOR SHALL EMPLOY A QUALIFIED UTILITY LOCATOR SERVICE TO LOCATE ALL UNDERGROUND UTILITIES (INCLUDING, BUT NOT LIMITED TO ELECTRICAL, TELEPHONE, GAS, CABLE AND FIBER OPTIC) WITHIN THE LIMITS OF CONSTRUCTION.
7. VERIFY ALL ILLUSTRATED KNOWN UNDERGROUND ELEMENTS. EXERCISE REASONABLE EFFORTS TO PROTECT ANY UNKNOWN UNDERGROUND ELEMENTS. NOTIFY THE ENGINEER IMMEDIATELY IF UNKNOWN ELEMENTS ARE DISCOVERED THAT WOULD NECESSITATE MODIFICATION TO THE PROPOSED DESIGN.
8. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND OSHA REGULATIONS.
9. EXISTING MANHOLES, VALVE BOXES, VAULTS, CLEANOUTS, UTILITY POLES, ETC. TO REMAIN WITHIN THE GRADING LIMITS SHALL BE ADJUSTED AS NEEDED TO FUNCTION PROPERLY WITH THE PROPOSED FINISHED GRADES (WHETHER INDICATED OR NOT TO BE MODIFIED).
10. GENERAL CONTRACTOR TO COORDINATE ALL PEDESTRIAN ACCESS PATHS, LOCATIONS, LIGHTING, ETC. WITH OWNER.
11. CONTRACTOR SHALL INSPECT ALL EXISTING SIDEWALK AND SHALL REPLACE OR REPAIR ANY BROKEN OR DAMAGED SECTIONS.
12. CONTRACTOR SHALL COMPLY WITH WAKE COUNTY CONSTRUCTION STANDARDS AND SPECS.

EXISTING CONDITIONS NOTES

1. BOUNDARY AND FIELD TOPOGRAPHIC SURVEY PROVIDED BY BATEMAN CIVIL SURVEY COMPANY, AUGUST 8, 2017..
2. ADDITIONAL BASE INFORMATION PER WAKE COUNTY GIS.
3. PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL FLOOD HAZARD AREAS OR FUTURE CONDITIONS FLOOD HAZARD AREAS, AS SHOWN ON FIRM PANEL #3720186000K (ZONE X) DATED JULY 19, 2022.
4. EXISTING CONDITIONS AS SHOWN ON THESE PLANS ARE GENERAL AND ILLUSTRATIVE IN NATURE AND DO NOT INCLUDE MECHANICAL, ELECTRICAL AND MISCELLANEOUS STRUCTURES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE PROJECT SITE AND FAMILIARIZE WITH ACTUAL FIELD CONDITIONS PRIOR TO BIDDING AND COMMENCING WORK. IF FIELD CONDITIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THE CONTRACTOR SHALL NOTIFY THE PROJECT LANDSCAPE ARCHITECT OR ENGINEER IMMEDIATELY.
5. SURVEY INFORMATION BY OTHERS. ENGINEER HAS NOT VERIFIED THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED AND SHALL NOT BE RESPONSIBLE FOR ERRORS OR OMISSION THAT MAY BE INCORPORATED AS A RESULT. THIS SHALL NOT BE CONSIDERED A CERTIFIED SURVEY.

SYMBOL LEGEND

- FLOOD PRONE SOILS (GIS)
- EX. R-40W ZONING (SEE NOTE 6 ON SHEET C300 OF FULLY APPROVED ELIZABETH HEIGHTS CONST. DRAWINGS SP-19-01)
- PHASE LINE
- TRACT LINE
- LIMITS OF DISTURBANCE



REV #	DATE	DESCRIPTION
1	12.16.2024	BUILDING FOOTPRINT REVISION TO SP-19-01
2	02.20.2025	REVISION TO SP-19-01 PER TOR COMMENTS

p:\2017 projects\170348 elizabeth heights\ENG\CAD\DWG\Sheets\Revision\P170348_C100_EXIST.dwg

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

FINAL DRAWING

FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 32548 ENGINEER THOMAS S. SPEIGHT JR.
04/15/2025 10:00:16 AM

Douglas B Cooper

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

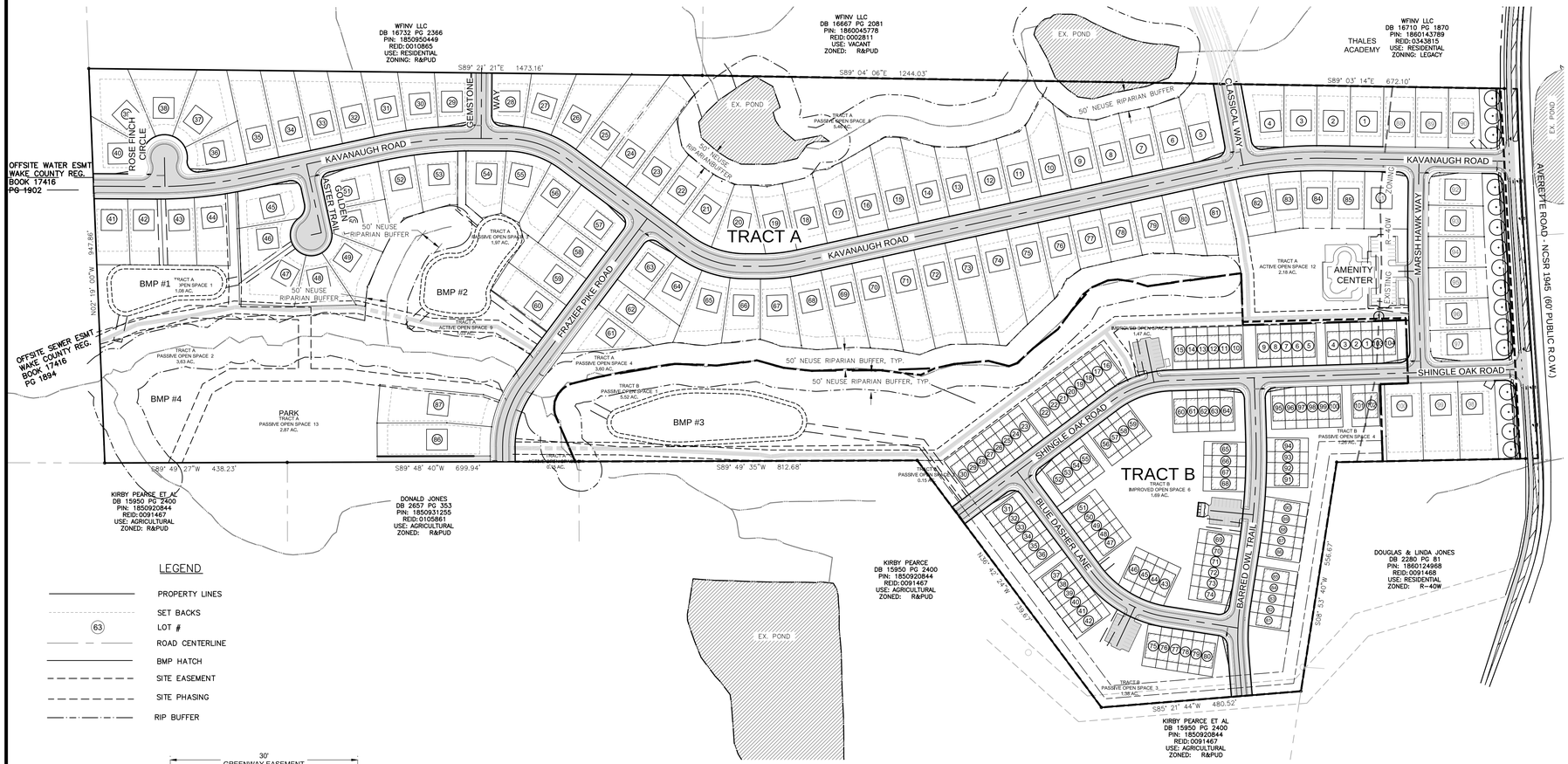
ELIZABETH HEIGHTS
PHASE 2 REVISIONS

1206 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY

EXISTING CONDITIONS CONT.

Design By:	BCSC
Date:	24.11.13
Project #:	P170348

SHEET C103



SITE DEVELOPMENT DATA

GROSS TRACT AREA:	82.399 AC.
AREA IN EXISTING ROW:	0.613 AC.
AREA IN NEW DEDICATED ROW:	0.261 AC.
NEW GROSS TRACT AREA:	81.525 AC.
PROPOSED USE:	RESIDENTIAL
MAXIMUM BUILDING HEIGHT:	45 FT, 3 STORIES

ALLOWED DENSITY

SINGLE FAMILY DWELLINGS (TRACT "A")	4 / AC.
TOWNHOUSES (TRACT "B")	8 / AC.
TOTAL TRACT	4 / AC.

PROPOSED DENSITY

AREA IN TRACT "A", SINGLE FAMILY DWELLINGS:	58.38 AC.
PROPOSED LOTS:	100 LOTS
PROPOSED DENSITY TRACT "A":	1.71 LOTS / AC.
AREA IN TRACT "B":	23.15 AC.
PROPOSED UNITS:	104 UNITS
PROPOSED DENSITY TRACT "B":	4.49 UNITS / AC.
TOTAL PROPOSED DENSITY:	2.53 UNITS / AC.

LOT DIMENSIONS

TRACT "A" (SINGLE FAMILY)	
MINIMUM WIDTH:	50'
PROPOSED:	80'
AVERAGE LOT SIZE:	11,382 SF
TRACT "B" (TOWNHOUSES)	
MINIMUM LOT WIDTH:	20'
PROPOSED:	26'

SETBACKS

TRACT "A" (SINGLE FAMILY)	
FRONT	25'
REAR	25'
SIDE	5'
TRACT "B" (TOWNHOUSES)	
FRONT	15' (FROM R.O.W.)
PROPOSED	20'
REAR	15' (FROM PROPERTY LINE)

IMPERVIOUS AREA SUMMARY

-EXISTING IMPERVIOUS AREA:	0 SF
-PROPOSED IMPERVIOUS AREA:	
-SITE AREA IN ROADS, PARKING, ETC. :	347,814 SF
-TOTAL AREA IN LOTS:	225,000 SF
AVERAGE IMPERVIOUS AREA PER LOT:	*4,500 SF*
-TOTAL IMPERVIOUS AREA:	572,814 SF

PARKING

TRACT "A" (SINGLE FAMILY DETACHED)	
NUMBER OF UNITS:	100
CLUSTER MAILBOX UNITS:	
REQUIRED:	4 SPACES (79-104 DWELLING UNITS)
PROPOSED:	5 SPACES AT AMENITY CENTER
TRACT "B" (TOWNHOUSES)	
NUMBER OF UNITS:	104
REQUIRED:	2.5 / TOWNHOUSE 104 x 2.5 = 260)
PROPOSED:	324
REQUIRED GUEST PARKING:	1 / 4 TOWNHOUSES (104 / 4 = 26)
PROPOSED GUEST PARKING:	42
CLUSTER MAILBOX UNITS:	
REQUIRED PARKING SPACES:	4 SPACES (79-104 DWELLING UNITS)
PROVIDED PARKING SPACES:	6 SPACES AT NORTH PARKING LOT

PERIMETER LANDSCAPE BUFFERS

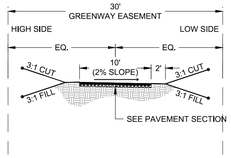
TRACT "A" (SINGLE FAMILY)	
CLASS II ADJOINING CLASS II:	NONE
STREETSCAPE AVERETTE ROAD:	50'
TRACT "B" (TOWNHOUSES)	
CLASS III ADJOINING CLASS II:	20' TYPE B LANDSCAPE 50' PERIMETER YARD BUFFER

RECREATION & OPEN SPACE

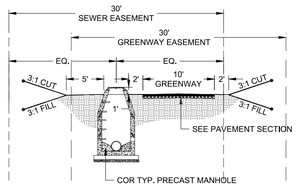
REQUIRED	
TRACT "A" (SINGLE FAMILY)	
10% OF SFD (58.38 AC.):	5.84 AC.
PROPOSED:	21.43 AC.
50% OF 5.84 AC. TO BE SUITABLE FOR ACTIVE:	2.92 AC.
PROPOSED ACTIVE OPEN SPACE:	4.17 AC. (1.25 ACRES EXTRA)
PROPOSED PASSIVE OPEN SPACE:	17.26 AC
TRACT "B" (TOWNHOUSES)	
15% OF TH (23.15 AC):	3.47 AC.
PROPOSED:	11.47 AC.
35% OF REQUIRED SPACE TO BE IMPROVED:	1.22 AC.
PROPOSED IMPROVED OPEN SPACE:	1.25 AC. (UNUSED FROM TRACT A AMENITY)
PROPOSED PASSIVE OPEN SPACE:	8.31 AC.

LEGEND

- PROPERTY LINES
- SET BACKS
- (63) LOT #
- ROAD CENTERLINE
- BMP HATCH
- SITE EASEMENT
- SITE PHASING
- RIP BUFFER



30' ROLESVILLE PUBLIC GREENWAY EASEMENT TYPICAL SECTION



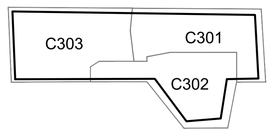
30' ROLESVILLE PUBLIC GREENWAY EASEMENT & 30' RALEIGH PUBLIC SEWER EASEMENT TYPICAL SECTION



GREENWAY PAVEMENT SECTION DETAIL

SITE PLAN NOTES

1. PER FEMA MAPS 3720185000J & 3720186000J FOR NORTH CAROLINA, THERE ARE NO FLOOD HAZARD AREAS WITHIN THE DEVELOPMENT BOUNDARIES.
2. WATER SUPPLY AND WASTE WATER FOR ALL LOTS IN THIS DEVELOPMENT SHALL BE BY PROVIDED BY THE CITY OF RALEIGH THROUGH A MERGER AGREEMENT WITH THE TOWN OF ROLESVILLE.
3. ROAD NAMES SHALL BE SUBMITTED AND APPROVED PRIOR TO APPROVAL OF THE FINAL PLAT.
4. ALL OPEN SPACE PARCELS SHALL BE OWNED BY A LEGALLY ORGANIZED HOME OWNERS ASSOCIATION THAT WILL BE RESPONSIBLE FOR MANAGING AND ENSURING RESIDENTS' ACCESS.
5. AS PER THE TOWN OF ROLESVILLE UDO 15.4.8.2.B.4, THE PROPOSED PASSIVE OPEN SPACE MAY CONTAIN ENVIRONMENTALLY SENSITIVE AREAS, LIKE BODIES OF WATER, NEUSE RIVER RIPARIAN BUFFERS, WETLANDS, SPECIAL FLOOD HAZARD AREAS, ROCK OUTCROPS AND STEEP SLOPES. PASSIVE OPEN SPACE WILL BE USED FOR CONSERVATION OF NATURAL RESOURCES, MEADOWS, WOODLANDS, WETLANDS, WILDLIFE CORRIDORS AND SIMILAR CONSERVATION ORIENTED ACTIVITIES.
6. IT IS THE INTENT OF THIS PROJECT THAT THE 6.53 AC. ZONED R-40W WILL BE REGRADED AT CONSTRUCTION SO THAT IT CAN BE REMOVED FROM THE WATERSHED. FOLLOWING THE WATERSHED ADJUSTMENT, A REZONING REQUEST WILL BE FILED. THE 12 SINGLE FAMILY DETACHED LOTS AND 4 TOWNHOME LOTS CURRENTLY LOCATED IN THE R-40W HAVE NOT BEEN SHOWN ON THIS PRELIMINARY SUBDIVISION PLAT BUT, WILL BE SUBMITTED FOR TOWN APPROVAL ONCE THE WATERSHED ADJUSTMENT HAS BEEN FINALIZED AND THE REZONING APPROVED.
7. FRONT FACING TOWNHOME GARAGES SHALL HAVE AT LEAST TWENTY FEET (20') SEPARATING THE NEIGHBORING DRIVEWAYS OR NO MORE THAN FIVE FEET (5') SEPARATING NEIGHBORING DRIVEWAYS. IF THE SEPARATION MEASURES FIVE FEET (5') OR LESS, THE NEXT SEPARATION MUST BE AT LEAST TWENTY FEET (20'). REAR FACING GARAGES MAY BE ACCESSED BY A PRIVATE ALLEY WITH NO SEPARATION REQUIREMENTS.
8. HANDICAP RAMPS WILL BE INSTALLED AT ALL INTERSECTIONS NECCESSARY FOR SIDEWALK CONNECTIVITY.



SITE PLAN SHEET KEY

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

150 0 150 300
1"=150'

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

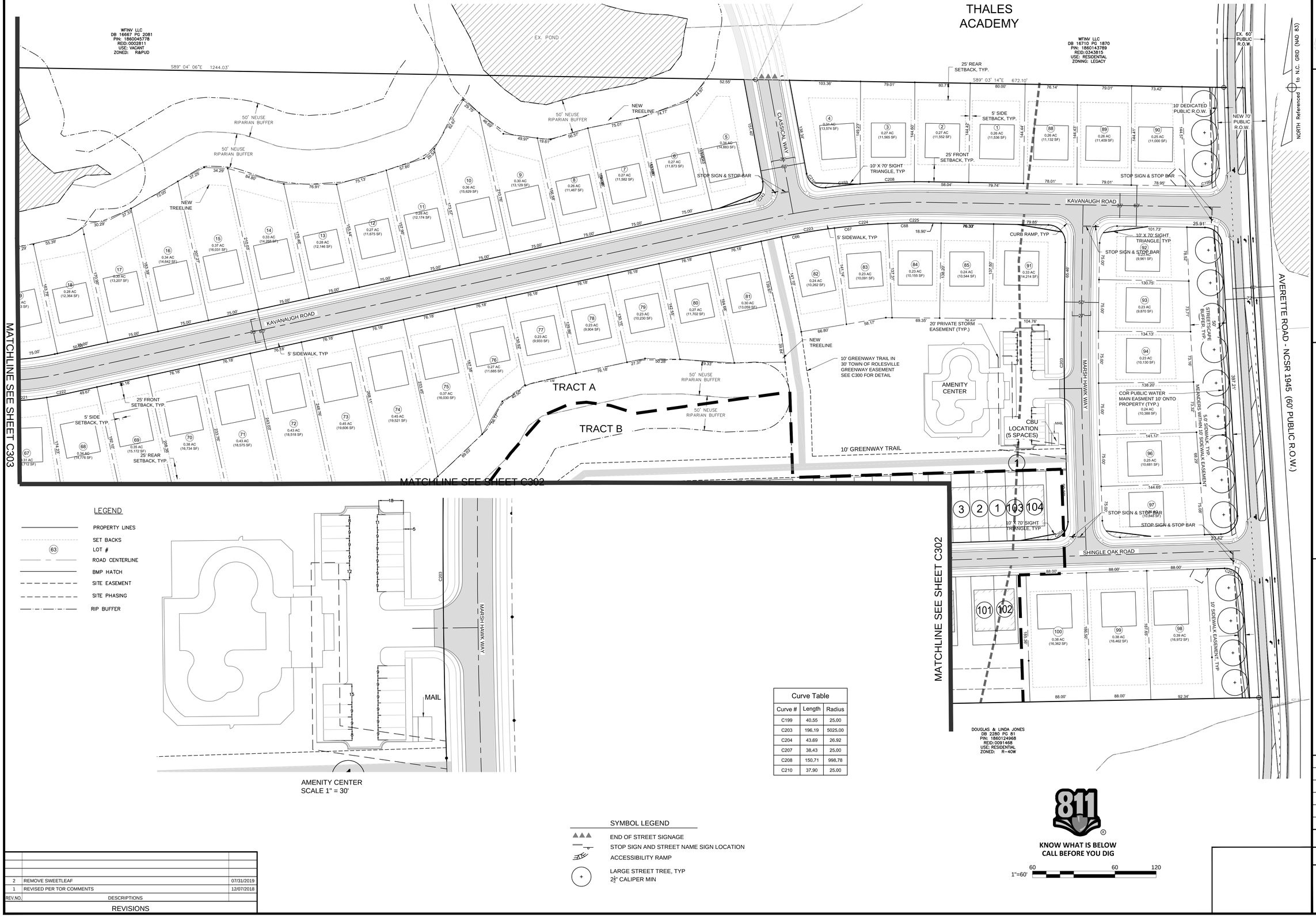
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OVERALL SITE DATA

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C300



Curve Table		
Curve #	Length	Radius
C199	40.55	25.00
C203	196.19	5025.00
C204	43.69	26.92
C207	38.43	25.00
C208	150.71	998.78
C210	37.90	25.00

SYMBOL LEGEND

- END OF STREET SIGNAGE
- STOP SIGN AND STREET NAME SIGN LOCATION
- ACCESSIBILITY RAMP
- LARGE STREET TREE, TYP 2½" CALIPER MIN

KNOW WHAT IS BELOW CALL BEFORE YOU DIG

1"=60' 60 60 120

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

SITE PLAN

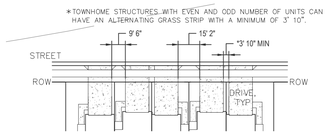
Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C301

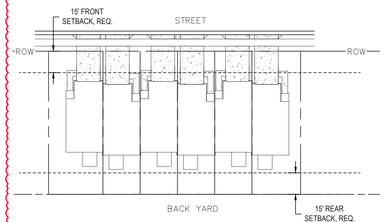
SITE DATA	
OWNER	EXPERIENCEONE HOMES LLC
SITE ADDRESS	PO BOX 5509
	CARY, NC 27512
PIN	1860039129
OVERLAY	NAME
EXISTING USE	VACANT
PROPOSED USE	SFA DWELLINGS
ZONING	R&PUD & R-40W
SP-19-01 APPROVED SFA DWELLING UNITS	51
PROPOSED SFA DWELLING UNITS	51
GROSS TRACT AREA	10.11 AC.
PHASE 2 PROPOSED ROADS	
BARRED OWL TRAIL (50' R/W WIDTH)	716 LF
BLUE DASHER LANE (50' R/W WIDTH)	639 LF

SYMBOL LEGEND

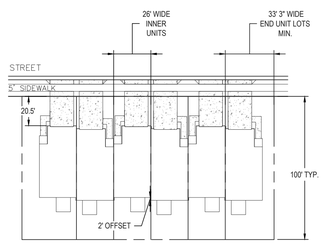
- END OF STREET SIGNAGE
- STOP SIGN AND STREET NAME SIGN LOCATION
- ACCESSIBILITY RAMP
- LARGE STREET TREE, TYP 2½" CALIPER MIN
- FLOOD PRONE SOILS (GIS)
- EX. R-40W ZONING (SEE NOTE 6 ON SHEET C300 OF FULLY APPROVED ELIZABETH HEIGHTS CONST. DRAWINGS SP-19-01)
- PHASE LINE
- TRACT LINE



DRIVEWAY SEPARATION DETAIL
NOT TO SCALE

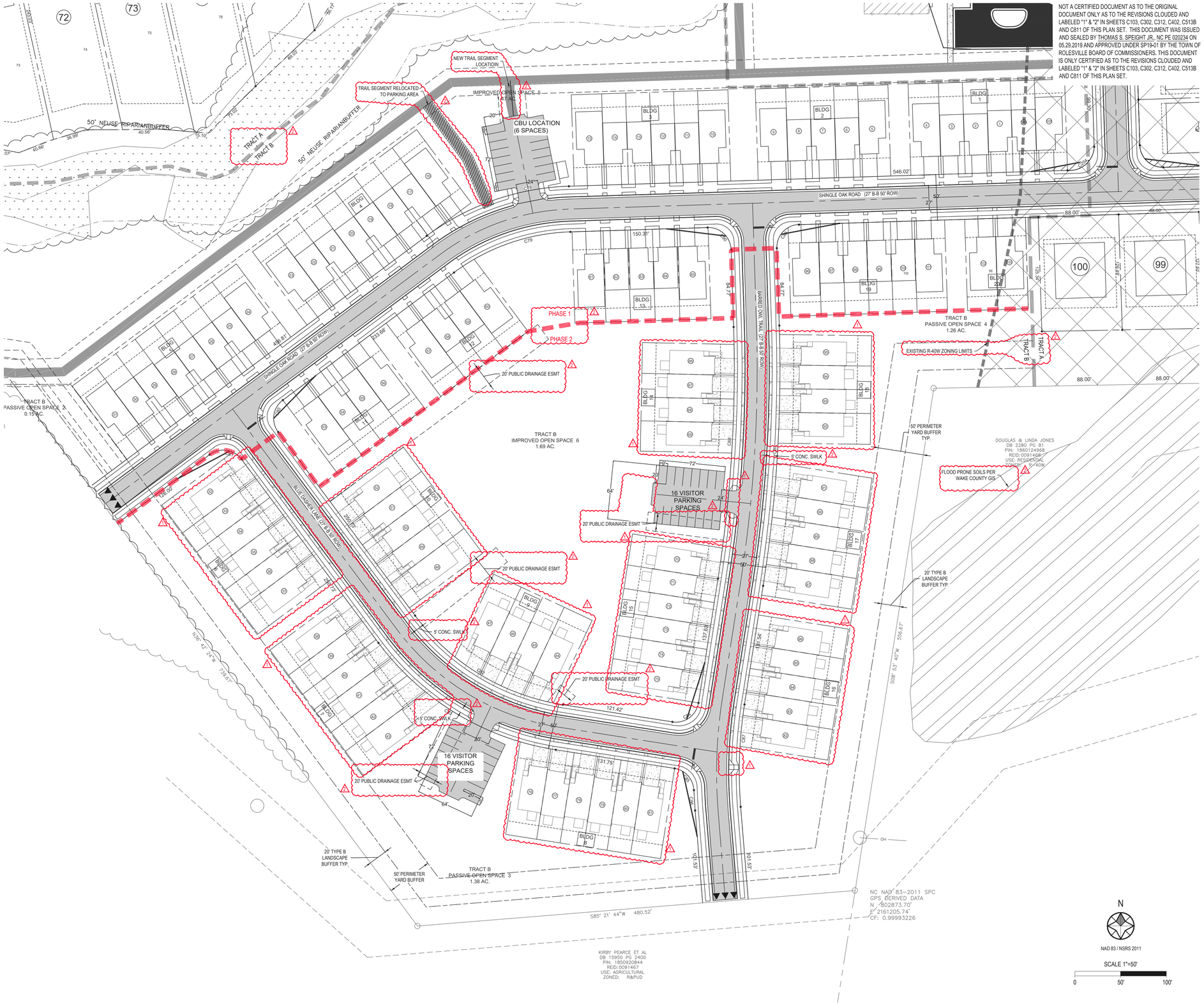


TOWNHOUSE SETBACK DETAIL
NOT TO SCALE



TOWNHOUSE LOT DIMENSIONS
NOT TO SCALE

REV #	DATE	DESCRIPTION
1	12.16.2024	BUILDING FOOTPRINT REVISION TO SP-19-01
2	02.20.2025	REVISION TO SP-19-01 PER TOR COMMENTS



NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

FINAL DRAWING

FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32844 DOUGLAS B. COOPER
04/15/2025 10:02:09 AM
Douglas B Cooper

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
PHASE 2 REVISIONS

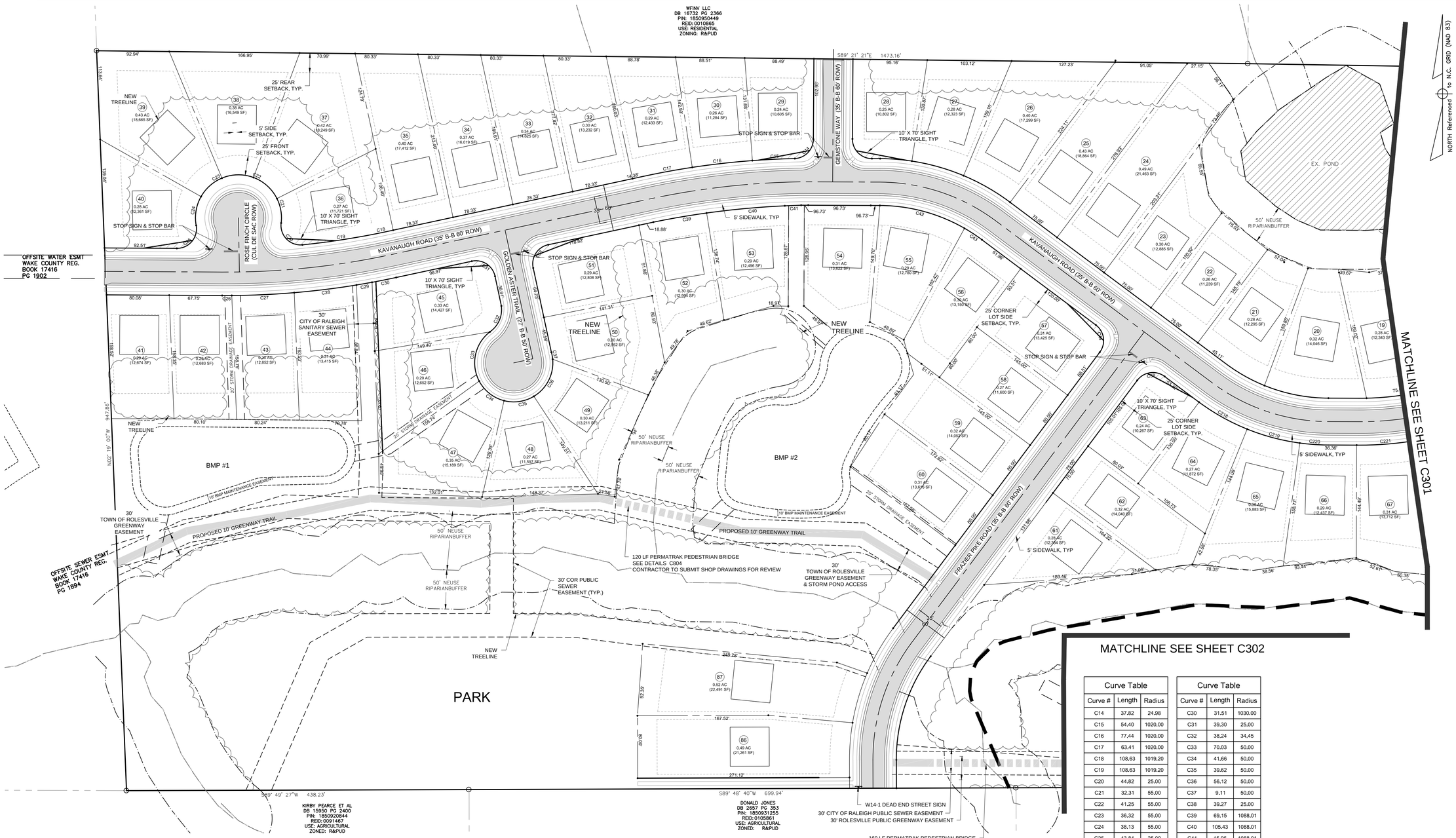
1206 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY

SITE PLAN CONT.

Design By:	BCSC
Date:	24.11.13
Project #:	P170348

SHEET
C302

p:\2017 projects\170348 elizabeth heights\ENGR\CAD\DWG\Sheets\Revision\P170348_C020_SITE.dwg



Curve Table		
Curve #	Length	Radius
C14	37.82	24.98
C15	54.40	1020.00
C16	77.44	1020.00
C17	63.41	1020.00
C18	108.63	1019.20
C19	108.63	1019.20
C20	44.82	25.00
C21	32.31	55.00
C22	41.25	55.00
C23	36.32	55.00
C24	38.13	55.00
C25	43.84	25.00
C26	12.32	1030.00
C27	80.03	1030.00
C28	80.29	1030.00
C29	20.18	1030.00

Curve Table		
Curve #	Length	Radius
C30	31.51	1030.00
C31	39.30	25.00
C32	38.24	34.45
C33	70.03	50.00
C34	41.66	50.00
C35	39.62	50.00
C36	56.12	50.00
C37	9.11	50.00
C38	39.27	25.00
C39	69.15	1088.01
C40	105.43	1088.01
C41	15.96	1088.01
C42	113.40	220.00
C43	26.70	220.00
C44	39.27	25.00
C58	39.26	25.00

LEGEND

- PROPERTY LINES
- SET BACKS
- (63) LOT #
- ROAD CENTERLINE
- BMP HATCH
- SITE EASEMENT
- SITE PHASING
- RIP BUFFER

SYMBOL LEGEND

- END OF STREET SIGNAGE
- STOP SIGN AND STREET NAME SIGN LOCATION
- ACCESSIBILITY RAMP
- LARGE STREET TREE, TYP 2½" CALIPER MIN

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEET LEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW CALL BEFORE YOU DIG

1"=60' 60 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

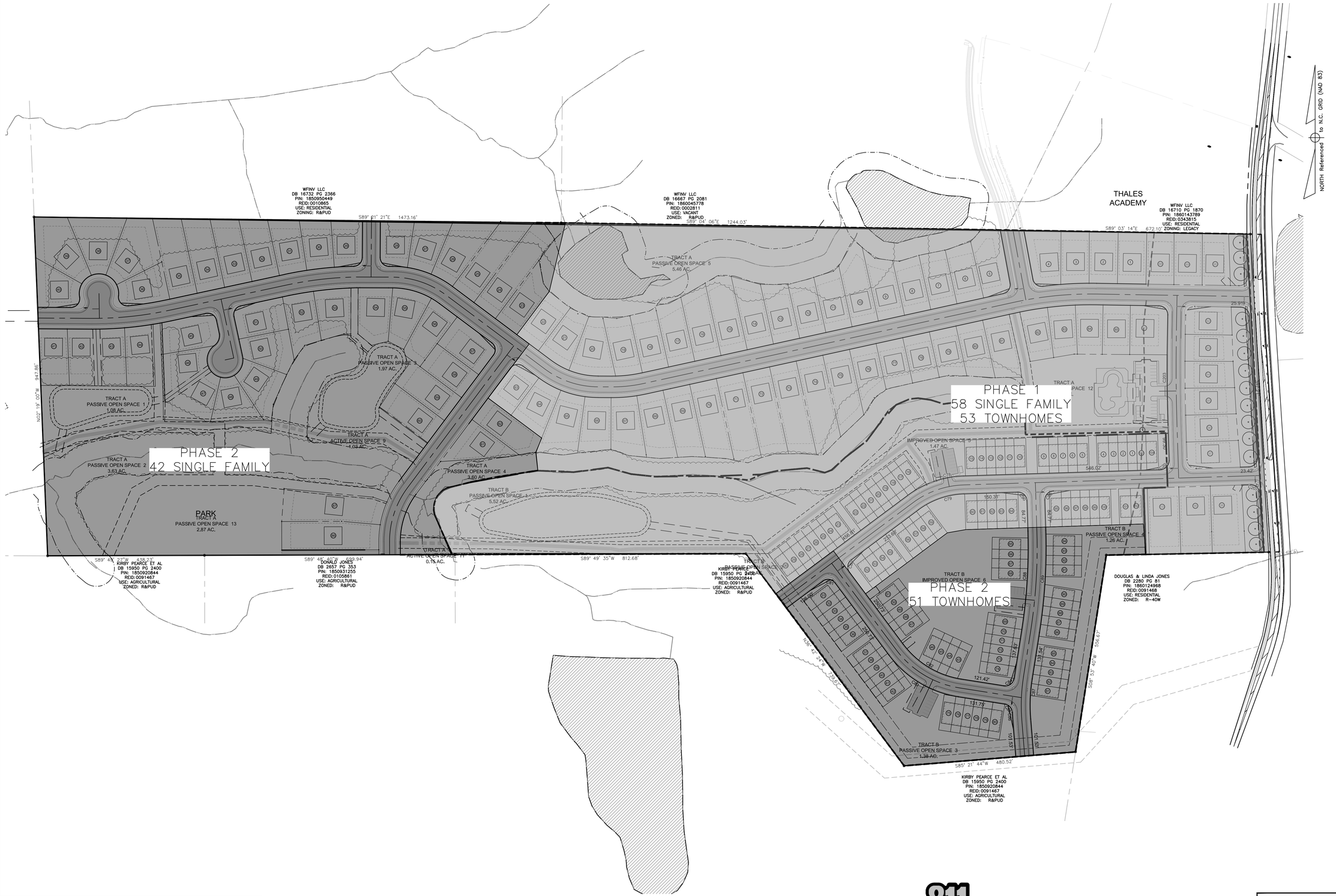
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

SITE PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C303



REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=120' 120' 0' 120' 240'

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

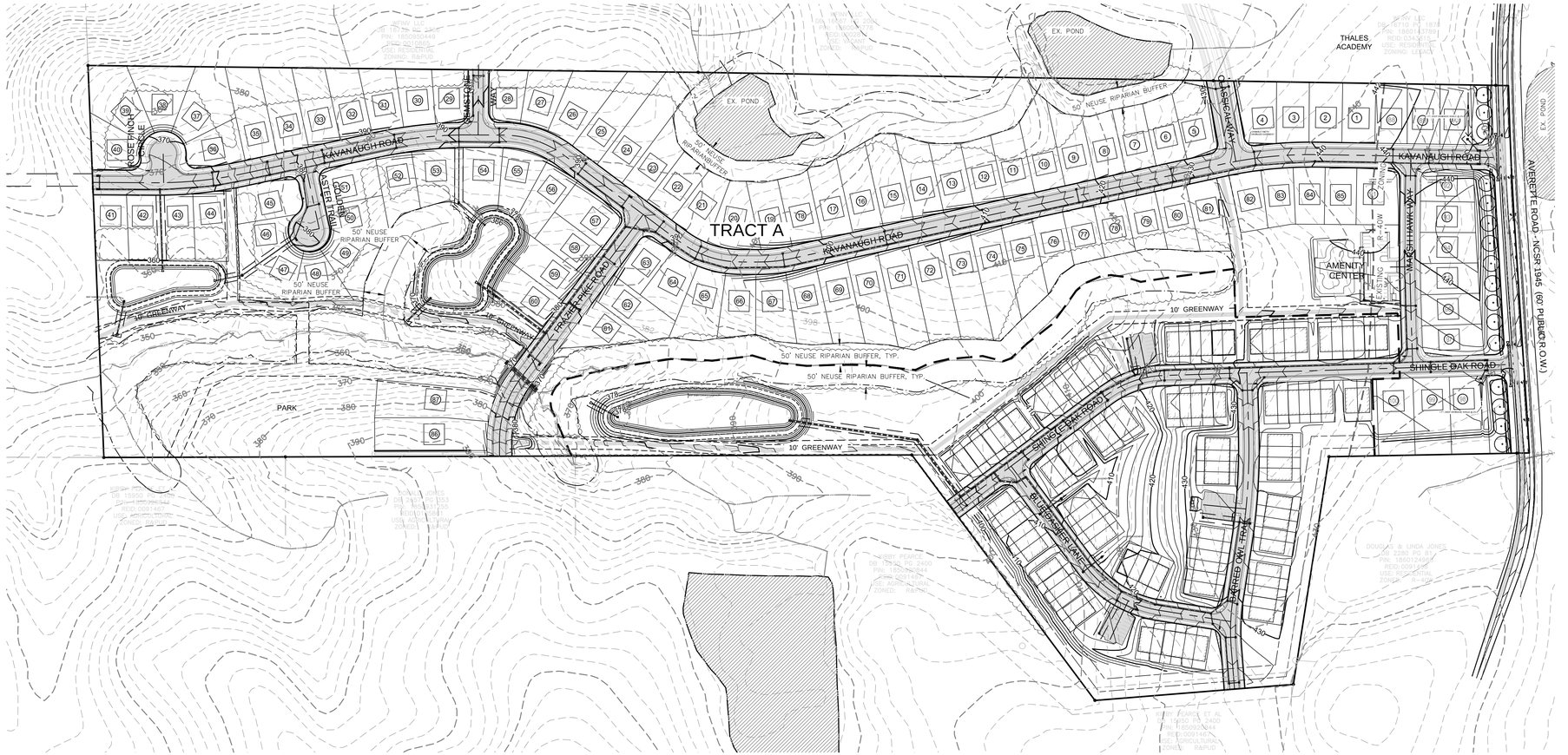
ELIZABETH HEIGHTS---

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PHASING MAP

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C304



NORTH Referenced to N.C. GRID (NAD 83)

LEGEND:

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=150' 150 0 150 300

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

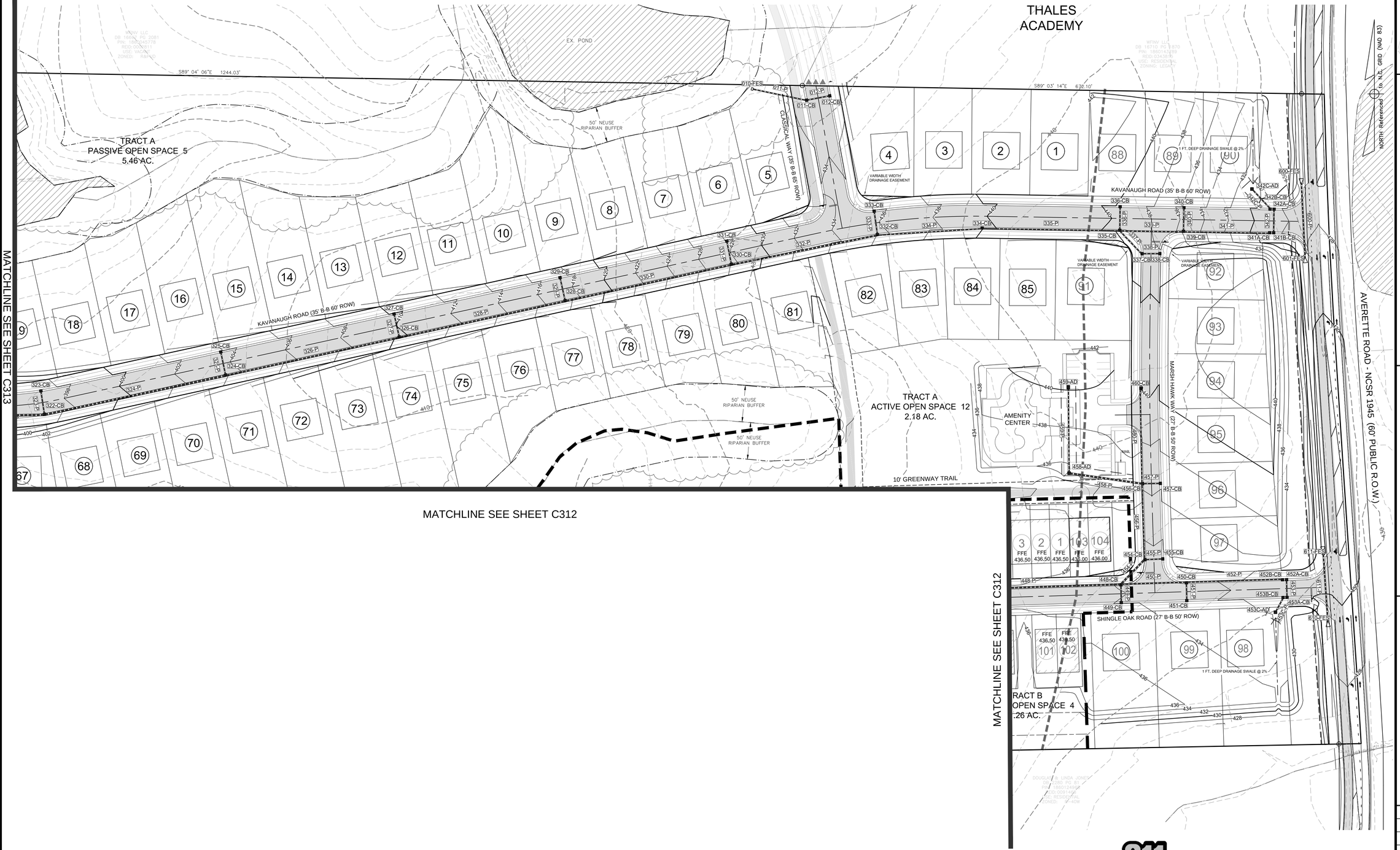
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OVERALL GRADING PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C310



REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

60 60 120
1"=60'

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

GRADING PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C311

STORM STRUCTURE TABLE				
STRUCTURE	RIM EL	STRUCTURE IN	INVERT 1N	INVERT OUT
411-AD-A	407.90	411-AD-B	402.92	402.72
411-AD-B	414.00			404.60
414-AD-A	413.80			408.70
420-AD-A	419.98			416.53

STORM SYSTEM DATA					
DOWNSTREAM STRUCTURE	UPSTREAM STRUCTURE	SIZE	LENGTH	SLOPE	MATERIAL
420-AD-A	420-AD	15	21.96	0.50%	Reinforced Concrete Pipe
414-AD-A	414-AD	18	86.47	1.03%	Reinforced Concrete Pipe
411-AD-B	411-AD-A	24	152.73	1.10%	Reinforced Concrete Pipe
411-AD-A	411-AD	24	110.32	1.00%	Reinforced Concrete Pipe

NOTE:
* CATCH BASINS LABELED WITH AN ASTERISK ARE TO BE ROLLOVER GRATES.

LEGEND:

- OHE — EXISTING OVERHEAD ELECTRIC LINE
- EXISTING ELECTRIC POLE
- X — EXISTING FENCE
- 300 — EXISTING MAJOR CONTOURS
- 302 — EXISTING MINOR CONTOURS
- EXISTING RIPARIAN BUFFER
- EXISTING STREAM
- EXISTING TREES
- EXISTING WETLAND
- PROPOSED CATCH BASIN
- PROPOSED FLARED END SECTION
- 300 — PROPOSED MAJOR CONTOURS
- 302 — PROPOSED MINOR CONTOURS
- PROPOSED RIP RAP
- PROPOSED STORM MANHOLE
- PROPOSED STORM PIPE
- PROPOSED YARD INLET
- PROPOSED JUNCTION BOX

SYMBOL LEGEND

- END OF STREET SIGNAGE
- STOP SIGN AND STREET NAME SIGN LOCATION
- ACCESSIBILITY RAMP
- LARGE STREET TREE, TYP 2½" CALIPER MIN
- FLOOD PRONE SOILS (GIS)
- EX. R-40W ZONING (SEE NOTE 6 ON SHEET C300 OF FULLY APPROVED ELIZABETH HEIGHTS CONST. DRAWINGS SP-19-01)
- PHASE LINE
- TRACT LINE

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

REV #	DATE	DESCRIPTION
1	12.16.2024	BUILDING FOOTPRINT REVISION TO SP-19-01
2	02.20.2025	REVISION TO SP-19-01 PER TOR COMMENTS

p:\2017 projects\170348 elizabeth heights\ENGR\CAD\DWG Sheets\Revision\P170348_C500_GRAD.dwg

FINAL DRAWING

FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32648 DOUGLAS B. COOPER

04/15/2025 10:03:28 AM

Douglas B Cooper

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

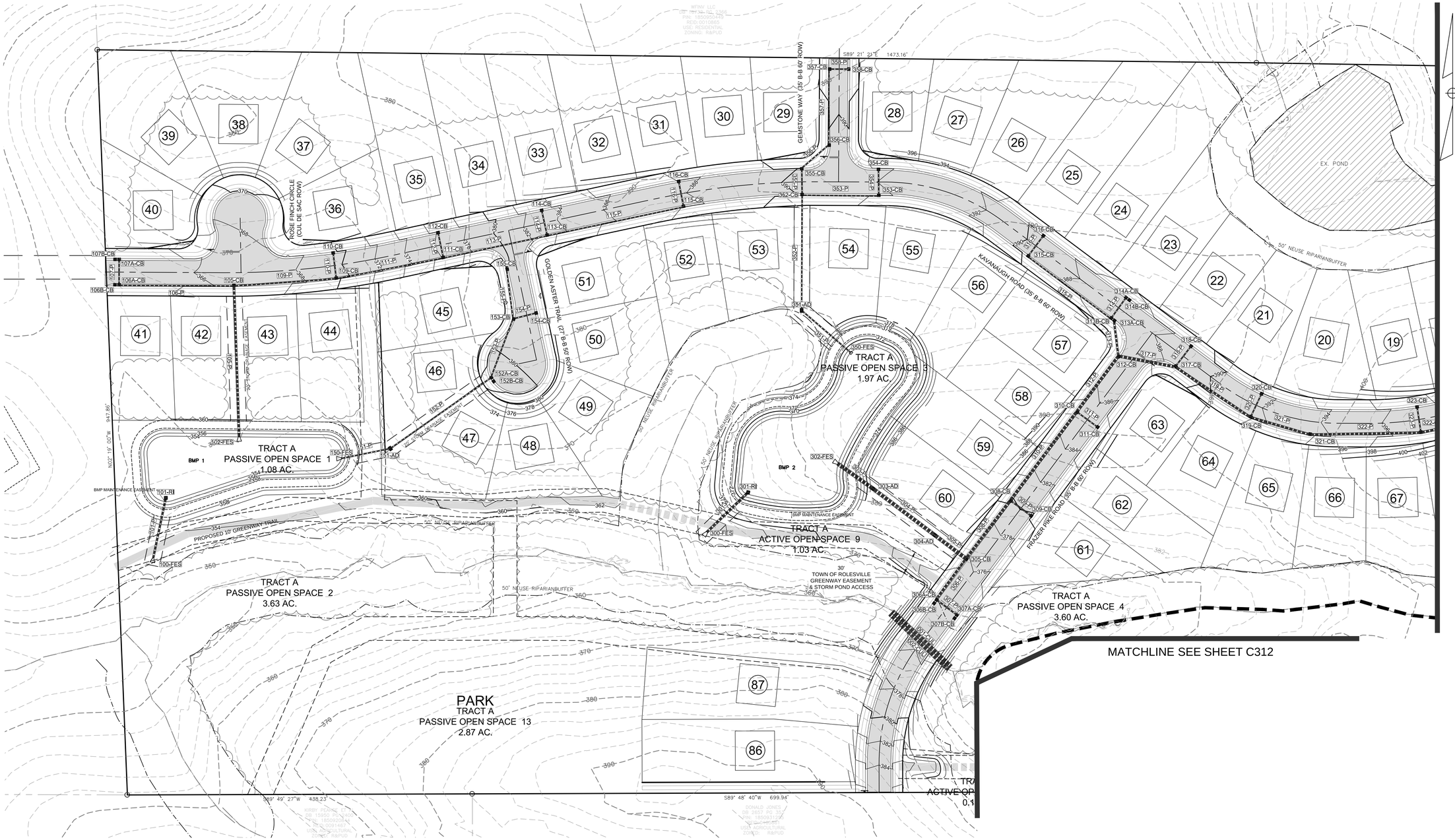
ELIZABETH HEIGHTS PHASE 2 REVISIONS

1206 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY

GRADING PLAN CONT.

Design By:	BCSC
Date:	24.11.13
Project #:	P170348

SHEET C312



REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

60 60 120
1"=60'

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

GRADING PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C313

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
010-FES	RIM = 428.22 SUMP = 425.28	011-P - 15" RCP - INV IN = 425.28	
011-CB	RIM = 433.13 SUMP = 426.03	012-P - 15" RCP - INV IN = 429.48	011-P - 15" RCP - INV OUT = 426.03
012-CB	RIM = 433.13 SUMP = 429.82		012-P - 15" RCP - INV OUT = 429.82
100-FES	RIM = 354.33 SUMP = ???	101-P - 24" RCP - INV IN = 352.00	
101-RI	RIM = 357.00 SUMP = 352.77		101-P - 24" RCP - INV OUT = 352.77
102-FES	RIM = 357.46 SUMP = ???	105-P - 30" RCP - INV IN = 354.00	
105-CB	RIM = 366.31 SUMP = 356.28	109-P - 18" RCP - INV IN = 361.09 106-P - 18" RCP - INV IN = 357.00	105-P - 30" RCP - INV OUT = 356.28
106A-CB	RIM = 364.46 SUMP = 359.58	107-P - 15" RCP - INV IN = 359.78	106-P - 18" RCP - INV OUT = 359.58
106B-CB	RIM = 364.39 SUMP = 359.58		
107A-CB	RIM = 364.45 SUMP = 360.12		107-P - 15" RCP - INV OUT = 360.12
107B-CB	RIM = 364.39 SUMP = 360.12		
109-CB	RIM = 369.28 SUMP = 364.60	110-P - 15" RCP - INV IN = 364.96 111-P - 15" RCP - INV IN = 364.80	109-P - 18" RCP - INV OUT = 364.60
110-CB	RIM = 369.29 SUMP = 365.30		110-P - 15" RCP - INV OUT = 365.30
111-CB	RIM = 376.08 SUMP = 371.55	113-P - 15" RCP - INV IN = 372.07 112-P - 15" RCP - INV IN = 371.75	111-P - 15" RCP - INV OUT = 371.55
112-CB	RIM = 376.09 SUMP = 372.09		112-P - 15" RCP - INV OUT = 372.09
113-CB	RIM = 382.96 SUMP = 378.41	114-P - 15" RCP - INV IN = 378.61 115-P - 15" RCP - INV IN = 378.94	113-P - 15" RCP - INV OUT = 378.41
114-CB	RIM = 382.95 SUMP = 378.95		114-P - 15" RCP - INV OUT = 378.95

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
115-CB	RIM = 387.55 SUMP = 383.01	116-P - 15" RCP - INV IN = 383.21	115-P - 15" RCP - INV OUT = 383.01
116-CB	RIM = 387.54 SUMP = 383.55		116-P - 15" RCP - INV OUT = 383.55
150-FES	RIM = 354.52 SUMP = ???	151-P - 15" RCP - INV IN = 354.00	
151-AD	RIM = 366.49 SUMP = 358.03	152-P - 15" RCP - INV IN = 358.23	151-P - 15" RCP - INV OUT = 358.03
152A-CB	RIM = 379.19 SUMP = 374.98	153-P - 15" RCP - INV IN = 375.18	152-P - 15" RCP - INV OUT = 374.98
152B-CB	RIM = 379.75 SUMP = 374.98		
153-CB	RIM = 380.91 SUMP = 376.63	155-P - 15" RCP - INV IN = 376.83 154-P - 15" RCP - INV IN = 376.83	153-P - 15" RCP - INV OUT = 376.63
154-CB	RIM = 381.14 SUMP = 377.14		154-P - 15" RCP - INV OUT = 377.14
155-CB	RIM = 380.40 SUMP = 377.46		155-P - 15" RCP - INV OUT = 377.46
300-FES	RIM = 368.38 SUMP = ???	301-P - 30" RCP - INV IN = 364.00	
301-RI	RIM = 371.00 SUMP = 364.73		301-P - 30" RCP - INV OUT = 364.73
302-FES	RIM = 370.50 SUMP = ???	303-P - 48" RCP - INV IN = 366.00	
303-AD	RIM = 382.45 SUMP = 367.55	304-P - 48" RCP - INV IN = 367.75	303-P - 48" RCP - INV OUT = 367.55
304-AD	RIM = 378.06 SUMP = 368.85	305-P - 48" RCP - INV IN = 369.05	304-P - 48" RCP - INV OUT = 368.85
305-CB	RIM = 376.36 SUMP = 369.55	308-P - 36" RCP - INV IN = 369.75 306-P - 30" RCP - INV IN = 369.75	305-P - 48" RCP - INV OUT = 369.55
306A-CB	RIM = 374.93 SUMP = 370.39	307-P - 18" RCP - INV IN = 370.59	306-P - 30" RCP - INV OUT = 370.39
306B-CB	RIM = 374.93 SUMP = 370.39		

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
307A-CB	RIM = 374.93 SUMP = 370.93		307-P - 18" RCP - INV OUT = 370.93
307B-CB	RIM = 374.93 SUMP = 370.93		
308-CB	RIM = 379.75 SUMP = 374.50	310-P - 36" RCP - INV IN = 374.70 309-P - 18" RCP - INV IN = 374.70	308-P - 36" RCP - INV OUT = 374.50
309-CB	RIM = 379.76 SUMP = 375.76		309-P - 18" RCP - INV OUT = 375.76
310-CB	RIM = 385.04 SUMP = 380.21	311-P - 15" RCP - INV IN = 380.72 312-P - 36" RCP - INV IN = 380.41	310-P - 36" RCP - INV OUT = 380.21
311-CB	RIM = 385.05 SUMP = 381.06		311-P - 15" RCP - INV OUT = 381.06
312-CB	RIM = 386.71 SUMP = 381.29	317-P - 36" RCP - INV IN = 381.49 313-P - 24" RCP - INV IN = 381.50	312-P - 36" RCP - INV OUT = 381.29
313A-CB	RIM = 387.17 SUMP = 382.48		313-P - 24" RCP - INV OUT = 382.48
313B-CB	RIM = 387.22 SUMP = 382.48	315-P - 15" RCP - INV IN = 382.68 314-P - 15" RCP - INV IN = 382.90	
314A-CB	RIM = 387.24 SUMP = 383.24		314-P - 15" RCP - INV OUT = 383.24
314B-CB	RIM = 387.24 SUMP = 383.24		
315-CB	RIM = 389.24 SUMP = 384.70	316-P - 15" RCP - INV IN = 384.90	315-P - 15" RCP - INV OUT = 384.70
316-CB	RIM = 389.24 SUMP = 385.24		316-P - 15" RCP - INV OUT = 385.24
317-CB	RIM = 388.51 SUMP = 383.49	319-P - 30" RCP - INV IN = 383.69 318-P - 15" RCP - INV IN = 384.23	317-P - 36" RCP - INV OUT = 383.49
318-CB	RIM = 388.56 SUMP = 384.57		318-P - 15" RCP - INV OUT = 384.57
319-CB	RIM = 391.44 SUMP = 386.42	321-P - 30" RCP - INV IN = 386.62 320-P - 15" RCP - INV IN = 387.11	319-P - 30" RCP - INV OUT = 386.42
320-CB	RIM = 391.45 SUMP = 387.45		320-P - 15" RCP - INV OUT = 387.45

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
321-CB	RIM = 393.36 SUMP = 388.34	322-P - 30" RCP - INV IN = 388.54	321-P - 30" RCP - INV OUT = 388.34
322-CB	RIM = 396.88 SUMP = 391.86	324-P - 30" RCP - INV IN = 392.06 323-P - 15" RCP - INV IN = 392.55	322-P - 30" RCP - INV OUT = 391.86
323-CB	RIM = 396.89 SUMP = 392.89		323-P - 15" RCP - INV OUT = 392.89
324-CB	RIM = 403.41 SUMP = 398.39	326-P - 24" RCP - INV IN = 398.59 325-P - 15" RCP - INV IN = 399.08	324-P - 30" RCP - INV OUT = 398.39
325-CB	RIM = 403.42 SUMP = 399.42		325-P - 15" RCP - INV OUT = 399.42
326-CB	RIM = 409.69 SUMP = 404.19	327-P - 15" RCP - INV IN = 405.35 328-P - 24" RCP - INV IN = 404.39	326-P - 24" RCP - INV OUT = 404.19
327-CB	RIM = 409.68 SUMP = 405.69		327-P - 15" RCP - INV OUT = 405.69
328-CB	RIM = 417.07 SUMP = 412.53	329-P - 15" RCP - INV IN = 412.73 330-P - 24" RCP - INV IN = 413.06	328-P - 24" RCP - INV OUT = 412.53
329-CB	RIM = 417.07 SUMP = 413.07		329-P - 15" RCP - INV OUT = 413.07
330-CB	RIM = 427.58 SUMP = 416.20	331-P - 15" RCP - INV IN = 423.27 332-P - 24" RCP - INV IN = 416.40	330-P - 24" RCP - INV OUT = 416.20
331-CB	RIM = 427.61 SUMP = 423.61		331-P - 15" RCP - INV OUT = 423.61
332-CB	RIM = 435.54 SUMP = 418.43	333-P - 15" RCP - INV IN = 429.10 334-P - 15" RCP - INV IN = 418.63	332-P - 24" RCP - INV OUT = 418.43
333-CB	RIM = 435.53 SUMP = 431.52		333-P - 15" RCP - INV OUT = 431.52
334-CB	RIM = 439.48 SUMP = 420.06	335-P - 18" RCP - INV IN = 420.26	334-P - 15" RCP - INV OUT = 420.06
335-CB	RIM = 439.33 SUMP = 422.14	339-P - 18" RCP - INV IN = 422.34 336-P - 15" RCP - INV IN = 434.99 337-P - 15" RCP - INV IN = 433.43	335-P - 18" RCP - INV OUT = 422.14
336-CB	RIM = 439.32 SUMP = 435.33		336-P - 15" RCP - INV OUT = 435.33
337-CB	RIM = 438.83 SUMP = 433.86	338-P - 15" RCP - INV IN = 434.06	337-P - 15" RCP - INV OUT = 433.86

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
338-CB	RIM = 438.32 SUMP = 434.32		338-P - 15" RCP - INV OUT = 434.32
339-CB	RIM = 435.38 SUMP = 423.21	341-P - 18" RCP - INV IN = 423.41 340-P - 15" RCP - INV IN = 431.04	339-P - 18" RCP - INV OUT = 423.21
340-CB	RIM = 435.38 SUMP = 431.38		340-P - 15" RCP - INV OUT = 431.38
341A-CB	RIM = 428.67 SUMP = 424.59		341-P - 18" RCP - INV OUT = 424.59
341B-CB	RIM = 428.42 SUMP = 424.59	342-P - 15" RCP - INV IN = 424.59	
342A-CB	RIM = 428.42 SUMP = 424.93		342-P - 15" RCP - INV OUT = 424.93
342B-CB	RIM = 428.92 SUMP = 425.99	342C-P - 15" RCP - INV IN = 425.99	
342C-AD	RIM = 430.34 SUMP = 424.35		342C-P - 15" RCP - INV OUT = 426.35
350-FES	RIM = 368.94 SUMP = 366.00	351-P - 15" RCP - INV IN = 366.00	
351-AD	RIM = 379.53 SUMP = 374.00	352-P - 15" RCP - INV IN = 374.00	351-P - 15" RCP - INV OUT = 374.00
352-CB	RIM = 390.09 SUMP = 382.12	353-P - 15" RCP - INV IN = 386.09 355-P - 15" RCP - INV IN = 382.32	352-P - 15" RCP - INV OUT = 382.12
353-CB	RIM = 392.20 SUMP = 387.14	354-P - 15" RCP - INV IN = 387.34	353-P - 15" RCP - INV OUT = 387.14
354-CB	RIM = 391.69 SUMP = 387.69		354-P - 15" RCP - INV OUT = 387.69
355-CB	RIM = 390.49 SUMP = 382.66	356-P - 15" RCP - INV IN = 382.86	355-P - 15" RCP - INV OUT = 382.66
356-CB	RIM = 390.16 SUMP = 383.31	357-P - 15" RCP - INV IN = 383.51	356-P - 15" RCP - INV OUT = 383.31
357-CB	RIM = 388.94 SUMP = 384.48	358-P - 15" RCP - INV IN = 384.68	357-P - 15" RCP - INV OUT = 384.48
358-CB	RIM = 388.93 SUMP = 384.94		358-P - 15" RCP - INV OUT = 384.94

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
400-FES	RIM = 379.33 SUMP = ???	401-P - 24" RCP - INV IN = 373.22	
401-RI	RIM = 382.00 SUMP = 373.91		401-P - 24" RCP - INV OUT = 373.91
402-FES	RIM = 380.50 SUMP = ???	403-P - 48" RCP - INV IN = 376.00	
403-AD	RIM = 398.00 SUMP = 389.47	404-P - 48" RCP - INV IN = 389.67	403-P - 48" RCP - INV OUT = 389.47
404-CB	RIM = 398.67 SUMP = 391.40	406-P - 36" RCP - INV IN = 392.40 405-P - 15" RCP - INV IN = 393.60	404-P - 48" RCP - INV OUT = 391.40
405-CB	RIM = 398.14 SUMP = 393.87		405-P - 15" RCP - INV OUT = 393.87
406-CB	RIM = 402.33 SUMP = 397.46	432-P - 30" RCP - INV IN = 398.04 407-P - 36" RCP - INV IN = 397.66	406-P - 36" RCP - INV OUT = 397.46
407-CB	RIM = 402.96 SUMP = 397.92	408-P - 36" RCP - INV IN = 398.12	407-P - 36" RCP - INV OUT = 397.92
408-CB	RIM = 404.10 SUMP = 399.27	409-P - 36" RCP - INV IN = 399.47	408-P - 36" RCP - INV OUT = 399.27
409-CB	RIM = 404.76 SUMP = 399.73	410-P - 36" RCP - INV IN = 399.93	409-P - 36" RCP - INV OUT = 399.73
410-CB	RIM = 407.58 SUMP = 400.85	411-P - 24" RCP - INV IN = 401.05 413-P - 24" RCP - INV IN = 402.81 412-P - 15" RCP - INV IN = 404.06	410-P - 36" RCP - INV OUT = 400.85
411-AD	RIM = 405.69 SUMP = 401.42		411-P - 24" RCP - INV OUT = 401.42
412-AD	RIM = 407.60 SUMP = 404.32		412-P - 15" RCP - INV OUT = 404.32
413-CB	RIM = 414.09 SUMP = 407.10	416-P - 24" RCP - INV IN = 408.99 415-P - 15" RCP - INV IN = 410.35 414-P - 18" RCP - INV IN = 407.30	413-P - 24" RCP - INV OUT = 407.10
414-AD	RIM = 411.88 SUMP = 407.61		414-P - 18" RCP - INV OUT = 407.61
415-AD	RIM = 414.11 SUMP = 410.61		415-P - 15" RCP - INV OUT = 410.61
416-CB	RIM = 417.90 SUMP = 411.45	417-P - 15" RCP - INV IN = 411.65 420-P - 24" RCP - INV IN = 413.03	416-P - 24" RCP - INV OUT = 411.45

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
417-CB	RIM = 417.96 SUMP = 411.91	419-P - 15" RCP - INV IN = 412.11 418-P - 15" RCP - INV IN = 414.30	417-P - 15" RCP - INV OUT = 411.91
418-CB	RIM = 419.79 SUMP = 416.08		418-P - 15" RCP - INV OUT = 416.08
419-AD	RIM = 417.00 SUMP = 413.00		419-P - 15" RCP - INV OUT = 413.00
420-CB	RIM = 421.32 SUMP = 416.22	421-P - 24" RCP - INV IN = 416.42	420-P - 24" RCP - INV OUT = 416.22
421-CB	RIM = 426.59 SUMP = 417.81	427-P - 18" RCP - INV IN = 422.59 422-P - 18" RCP - INV IN = 418.01	421-P - 24" RCP - INV OUT = 417.81
422-CB	RIM = 426.73 SUMP = 418.28	423-P - 15" RCP - INV IN = 418.48	422-P - 18" RCP - INV OUT = 418.28
423-CB	RIM = 427.21 SUMP = 418.98	425-P - 15" RCP - INV IN = 419.18 424-P - 15" RCP - INV IN = 423.03	423-P - 15" RCP - INV OUT = 418.98
424-CB	RIM = 427.28 SUMP = 423.29		424-P - 15" RCP - INV OUT = 423.29
425-CB	RIM = 424.74 SUMP = 420.29	426-P - 15" RCP - INV IN = 420.49	425-P - 15" RCP - INV OUT = 420.29
426-CB	RIM = 424.75 SUMP = 420.75		426-P - 15" RCP - INV OUT = 420.75
427-CB	RIM = 429.25 SUMP = 424.83	428-P - 15" RCP - INV IN = 425.03 429-P - 15" RCP - INV IN = 425.14	427-P - 18" RCP - INV OUT = 424.83
428-CB	RIM = 429.17 SUMP = 425.29		428-P - 15" RCP - INV OUT = 425.29
429-CB	RIM = 433.71 SUMP = 427.06	431-P - 15" RCP - INV IN = 427.26 430-P - 15" RCP - INV IN = 429.45	429-P - 15" RCP - INV OUT = 427.06
430-AD	RIM = 433.71 SUMP = 429.71		430-P - 15" RCP - INV OUT = 429.71
431-AD	RIM = 432.13 SUMP = 428.13		431-P - 15" RCP - INV OUT = 428.13
432-AD	RIM = 405.80 SUMP = 401.15	433-P - 15" RCP - INV IN = 401.35 434-P - 30" RCP - INV IN = 401.53	432-P - 30" RCP - INV OUT = 401.15
433-CB	RIM = 405.88 SUMP = 401.61		433-P - 15" RCP - INV OUT = 401.61

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
434-AD	RIM = 411.03 SUMP = 406.29	435-P - 18" RCP - INV IN = 406.49 436-P - 30" RCP - INV IN = 406.75	434-P - 30" RCP - INV OUT = 406.29
435-CB	RIM = 411.16 SUMP = 406.75		435-P - 18" RCP - INV OUT = 406.75
436-AD	RIM = 415.79 SUMP = 410.92	438-P - 30" RCP - INV IN = 411.12 437-P - 15" RCP - INV IN = 411.57	436-P - 30" RCP - INV OUT = 410.92
437-CB	RIM = 415.82 SUMP = 411.83		437-P - 15" RCP - INV OUT = 411.83
438-CB	RIM = 419.42 SUMP = 412.03	439-P - 15" RCP - INV IN = 412.23 440-P - 30" RCP - INV IN = 414.94	438-P - 30" RCP - INV OUT = 412.03
439-AD	RIM = 419.14 SUMP = 413.12		439-P - 15" RCP - INV OUT = 413.12
440-CB	RIM = 422.31 SUMP = 417.55	441-P - 15" RCP - INV IN = 417.78 442-P - 30" RCP - INV IN = 417.75	440-P - 30" RCP - INV OUT = 417.55
441-CB	RIM = 422.31 SUMP = 418.04		441-P - 15" RCP - INV OUT = 418.04
442-AD	RIM = 428.88 SUMP = 419.33	447-P - 24" RCP - INV IN = 419.53 443-P - 15" RCP - INV IN = 424.22	442-P - 30" RCP - INV OUT = 419.33
443-CB	RIM = 428.86 SUMP = 424.48	444-P - 15" RCP - INV IN = 424.68	443-P - 15" RCP - INV OUT = 424.48
444-CB	RIM = 430.64 SUMP = 426.05	445-P - 15" RCP - INV IN = 426.25	444-P - 15" RCP - INV OUT = 426.05
445-CB	RIM = 431.30 SUMP = 426.51	446-P - 15" RCP - INV IN = 426.71	445-P - 15" RCP - INV OUT = 426.51
446-CB	RIM = 432.32 SUMP = 428.46		446-P - 15" RCP - INV OUT = 428.46
447-CB	RIM = 432.08 SUMP = 420.31	448-P - 24" RCP - INV IN = 420.51	447-P - 24" RCP - INV OUT = 420.31
448-CB	RIM = 433.89 SUMP = 423.69	450-P - 18" RCP - INV IN = 423.89 449-P - 15" RCP - INV IN = 429.54 454-P - 24" RCP - INV IN = 428.34	448-P - 24" RCP - INV OUT = 423.69
449-CB	RIM = 433.85 SUMP = 429.80		449-P - 15" RCP - INV OUT = 429.80
450-CB	RIM = 432.55 SUMP = 424.79	452-P - 18" RCP - INV IN = 424.99 451-P - 15" RCP - INV IN = 428.26	450-P - 18" RCP - INV OUT = 424.79

STRUCTURE TABLE			
NAME	RIM	PIPES IN	PIPES OUT
451-CB	RIM = 432.59 SUMP = 428.52		451-P - 15" RCP - INV OUT = 428.52
452A-CB	RIM = 430.74 SUMP = 426.30		452-P - 18" RCP - INV OUT = 426.30
452B-CB	RIM = 430.67 SUMP = 426.30	453-P - 15" RCP - INV IN = 426.30	
453A-CB	RIM = 430.67 SUMP = 426.56		453-P - 15" RCP - INV OUT = 426.56
453B-CB	RIM = 430.74 SUMP = 426.76	453C-P - 15" RCP - INV IN = 426.76	
453C-AD	RIM = 430.94 SUMP = 424.98		453C-P - 15" RCP - INV OUT = 426.98
454-CB	RIM = 433.53 SUMP = 428.80	456-P - 18" RCP - INV IN = 429.00 455-P - 15" RCP - INV IN = 429.34	454-P - 24" RCP - INV OUT = 428.80
455-CB	RIM = 433.42 SUMP = 429.60		455-P - 15" RCP - INV OUT = 429.60
456-CB	RIM = 436.24 SUMP = 430.04	460-P - 15" RCP - INV IN = 432.47 458-P - 24" RCP - INV IN = 430.24 457-P - 15" RCP - INV IN = 432.20	456-P - 18" RCP - INV OUT = 430.04
457-CB	RIM = 436.22 SUMP = 432.46		457-P - 15" RCP - INV OUT = 432.46
458-AD	RIM = 432.95 SUMP = 431.25	459-P - 15" RCP - INV IN = 431.52	458-P - 24" RCP - INV OUT = 431.25
459-AD	RIM = 440.17 SUMP = 436.14		459-P - 15" RCP - INV OUT = 436.14
460-CB	RIM = 439.94 SUMP = 436.01		460-P - 15" RCP - INV OUT = 436.01
600-FES	RIM = 428.30 SUMP = ???	600-P - 18" RCP - INV IN = 424.47	
601-FES	RIM = 429.33 SUMP = ???		600-P - 18" RCP - INV OUT = 425.50
610-FES	RIM = 428.26 SUMP = ???	611-P - 18" RCP - INV IN = 426.80	
611-FES	RIM = 430.10 SUMP = ???		611-P - 18" RCP - INV OUT = 427.77

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=150' 150 0 150 300

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

STORM STRUCTURE TABLES

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C314

PIPE TABLE					
NAME	CONNECT	SIZE	LENGTH	SLOPE	MATERIAL
001-CUL	UP: DOWN:	48"	102.24'	1.47%	RCP
002-CUL	UP: DOWN:	48"	102.15'	1.47%	RCP
011-P	UP: 011-CB DOWN: 010-FES	15"	74.95'	1.00%	RCP
012-P	UP: 012-CB DOWN: 011-CB	15"	34.00'	1.00%	RCP
101-P	UP: 101-RI DOWN: 100-FES	24"	77.45'	1.00%	RCP
105-P	UP: 105-CB DOWN: 102-FES	30"	191.18'	1.19%	RCP
106-P	UP: 106A-CB DOWN: 105-CB	18"	145.96'	1.77%	RCP
107-P	UP: 107A-CB DOWN: 106A-CB	15"	34.00'	1.00%	RCP
109-P	UP: 109-CB DOWN: 105-CB	18"	130.45'	2.69%	RCP
110-P	UP: 110-CB DOWN: 109-CB	15"	34.00'	1.00%	RCP
111-P	UP: 111-CB DOWN: 109-CB	15"	138.64'	4.87%	RCP
112-P	UP: 112-CB DOWN: 111-CB	15"	34.00'	1.00%	RCP
113-P	UP: 113-CB DOWN: 111-CB	15"	134.96'	4.70%	RCP
114-P	UP: 114-CB DOWN: 113-CB	15"	34.00'	1.00%	RCP
115-P	UP: 115-CB DOWN: 113-CB	15"	177.07'	2.29%	RCP
116-P	UP: 116-CB DOWN: 115-CB	15"	34.00'	1.00%	RCP
151-P	UP: 151-AD DOWN: 150-FES	15"	63.19'	6.38%	RCP
152-P	UP: 152A-CB DOWN: 151-AD	15"	156.05'	10.74%	RCP
153-P	UP: 153-CB DOWN: 152A-CB	15"	80.31'	1.80%	RCP
154-P	UP: 154-CB DOWN: 153-CB	15"	31.17'	1.00%	RCP
155-P	UP: 155-CB DOWN: 153-CB	15"	63.34'	1.00%	RCP
301-P	UP: 301-RI DOWN: 300-FES	30"	72.63'	1.00%	RCP
303-P	UP: 303-AD DOWN: 302-FES	48"	54.98'	2.82%	RCP
304-P	UP: 304-AD DOWN: 303-AD	48"	98.08'	1.12%	RCP
305-P	UP: 305-CB DOWN: 304-AD	48"	49.75'	1.00%	RCP
306-P	UP: 306A-CB DOWN: 305-CB	30"	64.25'	1.00%	RCP
307-P	UP: 307A-CB DOWN: 306A-CB	18"	34.00'	1.00%	RCP
308-P	UP: 308-CB DOWN: 305-CB	36"	92.95'	5.11%	RCP
309-P	UP: 309-CB DOWN: 308-CB	18"	34.00'	3.13%	RCP
310-P	UP: 310-CB DOWN: 308-CB	36"	140.84'	3.91%	RCP
311-P	UP: 311-CB DOWN: 310-CB	15"	34.00'	1.00%	RCP
312-P	UP: 312-CB DOWN: 310-CB	36"	88.39'	1.00%	RCP
313-P	UP: 313A-CB DOWN: 312-CB	24"	44.73'	2.19%	RCP
314-P	UP: 314A-CB DOWN: 313B-CB	15"	34.01'	1.00%	RCP
315-P	UP: 315-CB DOWN: 313B-CB	15"	131.78'	1.53%	RCP
316-P	UP: 316-CB DOWN: 315-CB	15"	34.00'	1.00%	RCP
317-P	UP: 317-CB DOWN: 312-CB	36"	73.57'	2.72%	RCP
318-P	UP: 318-CB DOWN: 317-CB	15"	34.00'	1.00%	RCP
319-P	UP: 319-CB DOWN: 317-CB	30"	115.17'	2.37%	RCP
320-P	UP: 320-CB DOWN: 319-CB	15"	33.99'	1.00%	RCP
321-P	UP: 321-CB DOWN: 319-CB	30"	78.89'	2.18%	RCP
322-P	UP: 322-CB DOWN: 321-CB	30"	141.00'	2.35%	RCP
323-P	UP: 323-CB DOWN: 322-CB	15"	34.00'	1.00%	RCP
324-P	UP: 324-CB DOWN: 322-CB	30"	253.14'	2.50%	RCP
325-P	UP: 325-CB DOWN: 324-CB	15"	34.00'	1.00%	RCP
326-P	UP: 326-CB DOWN: 324-CB	24"	242.80'	2.31%	RCP
327-P	UP: 327-CB DOWN: 326-CB	15"	34.00'	1.00%	RCP
328-P	UP: 328-CB DOWN: 326-CB	24"	231.89'	3.51%	RCP

PIPE TABLE					
NAME	CONNECT	SIZE	LENGTH	SLOPE	MATERIAL
329-P	UP: 329-CB DOWN: 328-CB	15"	34.00'	1.00%	RCP
330-P	UP: 330-CB DOWN: 328-CB	24"	232.42'	1.35%	RCP
331-P	UP: 331-CB DOWN: 330-CB	15"	34.01'	1.00%	RCP
332-P	UP: 332-CB DOWN: 330-CB	24"	203.39'	1.00%	RCP
333-P	UP: 333-CB DOWN: 332-CB	15"	34.00'	7.14%	RCP
334-P	UP: 334-CB DOWN: 332-CB	15"	143.19'	1.00%	RCP
335-P	UP: 335-CB DOWN: 334-CB	18"	187.95'	1.00%	RCP
336-P	UP: 336-CB DOWN: 335-CB	15"	34.00'	1.00%	RCP
337-P	UP: 337-CB DOWN: 335-CB	15"	43.00'	1.00%	RCP
338-P	UP: 338-CB DOWN: 337-CB	15"	26.01'	1.00%	RCP
339-P	UP: 339-CB DOWN: 335-CB	18"	86.97'	1.00%	RCP
340-P	UP: 340-CB DOWN: 339-CB	15"	34.00'	1.00%	RCP
341-P	UP: 341A-CB DOWN: 339-CB	18"	117.75'	1.00%	RCP
342-P	UP: 342A-CB DOWN: 341B-CB	15"	34.00'	1.00%	RCP
342C-P	UP: 342C-AD DOWN: 342B-CB	15"	36.34'	1.00%	RCP
351-P	UP: 351-AD DOWN: 350-FES	15"	82.80'	9.66%	RCP
352-P	UP: 352-CB DOWN: 351-AD	15"	146.38'	5.54%	RCP
353-P	UP: 353-CB DOWN: 352-CB	15"	97.42'	1.08%	RCP
354-P	UP: 354-CB DOWN: 353-CB	15"	34.79'	1.00%	RCP
355-P	UP: 355-CB DOWN: 352-CB	15"	34.51'	1.00%	RCP
356-P	UP: 356-CB DOWN: 355-CB	15"	44.80'	1.00%	RCP
357-P	UP: 357-CB DOWN: 356-CB	15"	96.60'	1.00%	RCP
358-P	UP: 358-CB DOWN: 357-CB	15"	26.00'	1.00%	RCP
401-P	UP: 401-RI DOWN: 400-FES	24"	69.06'	1.00%	RCP
403-P	UP: 403-AD DOWN: 402-FES	48"	312.32'	4.31%	RCP
404-P	UP: 404-CB DOWN: 403-AD	48"	172.83'	1.00%	RCP
405-P	UP: 405-CB DOWN: 404-CB	15"	26.55'	1.00%	RCP
406-P	UP: 406-CB DOWN: 404-CB	36"	99.73'	5.08%	RCP
407-P	UP: 407-CB DOWN: 406-CB	36"	26.00'	1.00%	RCP
408-P	UP: 408-CB DOWN: 407-CB	36"	39.46'	2.91%	RCP
409-P	UP: 409-CB DOWN: 408-CB	36"	26.25'	0.99%	RCP
410-P	UP: 410-CB DOWN: 409-CB	36"	91.99'	1.00%	RCP
411-P	UP: 411-AD DOWN: 410-CB	24"	37.03'	1.00%	RCP
412-P	UP: 412-AD DOWN: 410-CB	15"	26.00'	1.00%	RCP
413-P	UP: 413-CB DOWN: 410-CB	24"	173.24'	2.47%	RCP
414-P	UP: 414-AD DOWN: 413-CB	18"	31.26'	1.00%	RCP
415-P	UP: 415-AD DOWN: 413-CB	15"	26.00'	1.00%	RCP
416-P	UP: 416-CB DOWN: 413-CB	24"	96.21'	2.55%	RCP
417-P	UP: 417-CB DOWN: 416-CB	15"	26.05'	1.00%	RCP
418-P	UP: 418-CB DOWN: 417-CB	15"	50.87'	3.50%	RCP
419-P	UP: 419-AD DOWN: 417-CB	15"	89.22'	1.00%	RCP
420-P	UP: 420-CB DOWN: 416-CB	24"	86.61'	3.68%	RCP
421-P	UP: 421-CB DOWN: 420-CB	24"	136.50'	1.02%	RCP
422-P	UP: 422-CB DOWN: 421-CB	18"	27.32'	0.99%	RCP
423-P	UP: 423-CB DOWN: 422-CB	15"	44.24'	1.13%	RCP
424-P	UP: 424-CB DOWN: 423-CB	15"	26.02'	1.00%	RCP
425-P	UP: 425-CB DOWN: 423-CB	15"	111.06'	1.00%	RCP
426-P	UP: 426-CB DOWN: 425-CB	15"	26.00'	1.00%	RCP

PIPE TABLE					
NAME	CONNECT	SIZE	LENGTH	SLOPE	MATERIAL
427-P	UP: 427-CB DOWN: 421-CB	18"	49.15'	4.54%	RCP
428-P	UP: 428-CB DOWN: 427-CB	15"	26.48'	1.00%	RCP
429-P	UP: 429-CB DOWN: 427-CB	15"	192.19'	1.00%	RCP
430-P	UP: 430-AD DOWN: 429-CB	15"	26.00'	1.00%	RCP
431-P	UP: 431-AD DOWN: 429-CB	15"	87.58'	1.00%	RCP
432-P	UP: 432-AD DOWN: 406-CB	30"	83.62'	3.72%	RCP
433-P	UP: 433-CB DOWN: 432-AD	15"	26.03'	1.00%	RCP
434-P	UP: 434-AD DOWN: 432-AD	30"	125.14'	3.81%	RCP
435-P	UP: 435-CB DOWN: 434-AD	18"	26.22'	0.99%	RCP
436-P	UP: 436-AD DOWN: 434-AD	30"	114.32'	3.65%	RCP
437-P	UP: 437-CB DOWN: 436-AD	15"	26.01'	1.00%	RCP
438-P	UP: 438-CB DOWN: 436-AD	30"	90.80'	1.00%	RCP
439-P	UP: 439-AD DOWN: 438-CB	15"	89.76'	1.00%	RCP
440-P	UP: 440-CB DOWN: 438-CB	30"	72.57'	3.60%	RCP
441-P	UP: 441-CB DOWN: 440-CB	15"	26.00'	1.00%	RCP
442-P	UP: 442-AD DOWN: 440-CB	30"	157.61'	1.00%	RCP
443-P	UP: 443-CB DOWN: 442-AD	15"	26.00'	1.00%	RCP
444-P	UP: 444-CB DOWN: 443-CB	15"	40.77'	3.37%	RCP
445-P	UP: 445-CB DOWN: 444-CB	15"	25.99'	1.00%	RCP
446-P	UP: 446-CB DOWN: 445-CB	15"	40.98'	4.26%	RCP
447-P	UP: 447-CB DOWN: 442-AD	24"	77.48'	1.01%	RCP
448-P	UP: 448-CB DOWN: 447-CB	24"	318.76'	1.00%	RCP
449-P	UP: 449-CB DOWN: 448-CB	15"	25.98'	1.00%	RCP
450-P	UP: 450-CB DOWN: 448-CB	18"	89.44'	1.00%	RCP
451-P	UP: 451-CB DOWN: 450-CB	15"	26.00'	1.00%	RCP
452-P	UP: 452A-CB DOWN: 450-CB	18"	131.38'	1.00%	RCP
453-P	UP: 453A-CB DOWN: 452B-CB	15"	26.00'	1.00%	RCP
453C-P	UP: 453C-AD DOWN: 453B-CB	15"	21.89'	1.00%	RCP
454-P	UP: 454-CB DOWN: 448-CB	24"	46.40'	1.00%	RCP
455-P	UP: 455-CB DOWN: 454-CB	15"	26.00'	1.00%	RCP
456-P	UP: 456-CB DOWN: 454-CB	18"	103.95'	1.00%	RCP
457-P	UP: 457-CB DOWN: 456-CB	15"	26.00'	1.00%	RCP
458-P	UP: 458-AD DOWN: 456-CB	24"	100.50'	1.00%	RCP
459-P	UP: 459-AD DOWN: 458-AD	15"	117.46'	3.94%	RCP
460-P	UP: 460-CB DOWN: 456-CB	15"	130.03'	2.72%	RCP
600-P	UP: 601-FES DOWN: 600-FES	18"	102.70'	1.00%	RCP
611-P	UP: 611-FES DOWN: 610-FES	18"	97.16'	1.00%	RCP

CLASS IV

CLASS IV

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=150'

150 0 150 300

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

STORM PIPE TABLES

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C315

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

SCALE
1"=50'
50 0 50 100

NORTH

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

AVERETTE ROAD GRADING PLAN

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C316

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

SCALE
1"=50'
50 0 50 100

NORTH

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

AVERETTE RD. / WAIT AVE.
GRADING PLAN

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C317
OF: ----



WAKE COUNTY BASIN REMOVAL SEQUENCE:

1. SCHEDULE A SITE MEETING WITH THE ENVIRONMENT ENGINEER/CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCE OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
3. PERFORM SEEDBED PREPARATION, SEED, MULCH, AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
4. INSTALL VELOCITY DISSIPATERS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
5. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- ROCK CHECK DAM

TOTAL DISTURBED AREA =
1,852,574 SF
42.52 AC

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=150' 150 0 150 300

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OVERALL
EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C320



SKIMMER BASIN SUMMARY

Basin	Dist. Area	Drain. Area	Cc	Intensity 25yr. (in/hr)	Q10 (cfs)	Required Storage	Required SA (sf)	Depth	Avg.Dims. Width	Bottom Dims. Length	Bottom Dims. Width	Top Dims. Length	Top Dims. Width	Top Dims. Length	Provided Storage	Provided SA (sf)	*Skimmer Size (in)	Skimmer Factor	*Skimmer Orifice Diameter (in)	Spillway Flow Depth	*Weir Width
Stage 1 & 2 Skimmer Basins																					
1	4.33 ac	7.32 ac	0.50	7.22	26.43	13,180 cf	11,500	Dimensions per BMP #1design							46,270 cf	17,257	2.5		2.1	0.50'	27.0'
2	4.43 ac	7.47 ac	0.50	7.22	26.97	13,450 cf	11,730	Dimensions per BMP #2 design							83,655 cf	23,602	2.5		2.1	0.50'	28.0'
3	18.92 ac	18.92 ac	0.50	7.22	68.31	34,060 cf	29,720	Dimensions per BMP #3 design							106,376 cf	38,349	4.0		3.0	0.50'	70.0'
~~4~~	~~2.17 ac~~	~~2.17 ac~~	~~0.50~~	~~7.22~~	~~7.83~~	~~3,010 cf~~	~~3,410~~	Dimensions per BMP #4 design							~~11,602 cf~~	~~4,739~~	~~1.5~~		~~1.3~~	~~0.50'~~	~~10.0'~~
5	1.26 ac	1.68 ac	0.50	7.22	6.08	3,030 cf	2,650	3.0'	28'	65'	19'	56'	37'	74'	5,460 cf	2,738	1.5		1.2	0.50'	10.0'
6	4.56 ac	4.56 ac	0.50	7.22	16.46	8,210 cf	7,160	3.0'	51'	111'	42'	102'	60'	120'	16,983 cf	7,200	2.0		1.8	0.50'	17.0'
Note:																					
*Skimmer and skimmer orifices sizes assume a drawdown time of 3 days using Faircloth Skimmer method for determining skimmer and orifice size.																					
*Volume calculation does not include freeboard																					
*Add 1.5' to depth to obtain overall depth of basin																					
*Minimum length of weir is 10'																					

DIVERSION DITCH LINER SUMMARY - Elizabeth Heights

Temporary Diversion #	Total Area (ac)	Total Length	Begin Elevation	End Elevation	Δ Elevation	Tc	Slope	C	Intensity	Q	Depth	Shear	Liner
Stage 1 Diversions													
1	0.42	296.0	366.0	360.0	6.0	2.80	0.020	0.5	7.22	1.50	0.37	0.47	Straw w/ Net
2	1.58	726.0	389.5	362.0	27.5	4.40	0.038	0.5	7.22	5.70	0.54	1.28	Straw w/ Net
3	0.50	179.0	389.5	378.0	11.5	1.22	0.064	0.5	7.22	1.79	0.32	1.28	Straw w/ Net
4	0.80	385.0	390.5	378.0	12.5	2.86	0.032	0.5	7.22	2.90	0.44	0.89	Straw w/ Net
5	7.73	1634.0	443.5	398.0	45.5	9.24	0.028	0.5	7.22	27.90	1.04	1.81	Synthetic Mat
6	7.30	1550.0	425.5	384.0	41.5	9.01	0.027	0.5	7.22	26.34	1.02	1.70	Synthetic Mat
~~7~~	~~0.95~~	~~862.0~~	~~386.0~~	~~364.0~~	~~22.0~~	~~5.84~~	~~0.026~~	~~0.5~~	~~7.22~~	~~3.43~~	~~0.48~~	~~0.76~~	~~Straw w/ Net~~
~~8~~	~~0.33~~	~~565.0~~	~~392.0~~	~~364.0~~	~~28.0~~	~~3.27~~	~~0.050~~	~~0.5~~	~~7.22~~	~~1.18~~	~~0.29~~	~~0.90~~	~~Straw w/ Net~~
9	0.22	185.0	442.5	434.0	8.5	1.42	0.046	0.5	7.22	0.80	0.25	0.72	Straw w/ Net
10	0.81	424.0	436.0	429.5	6.5	4.12	0.015	0.5	7.22	2.93	0.50	0.48	Straw w/ Net

LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- ROCK CHECK DAM

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=60' 60 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

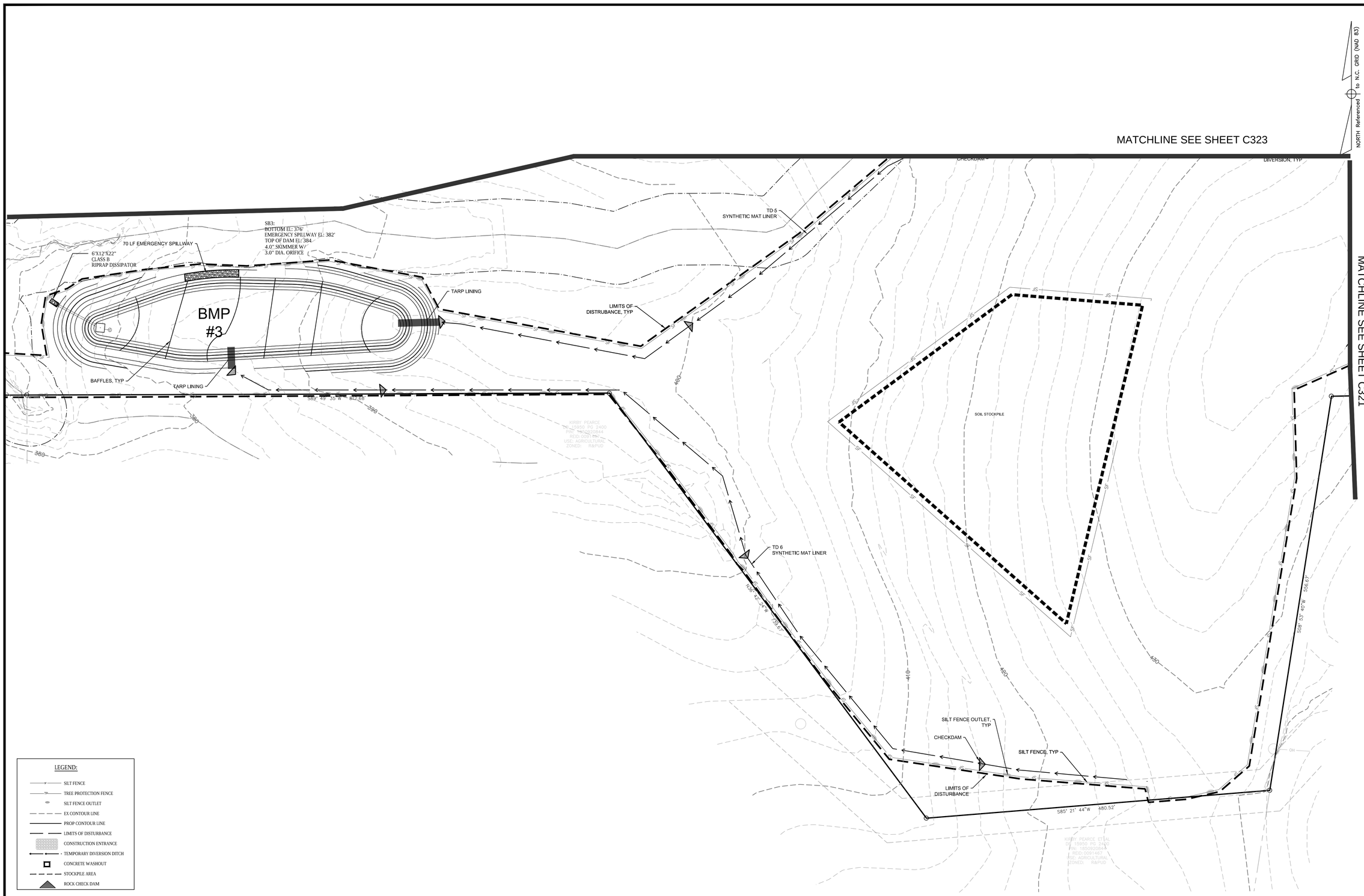
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C321



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- ROCK CHECK DAM

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

CONSTRUCTION DRAWINGS

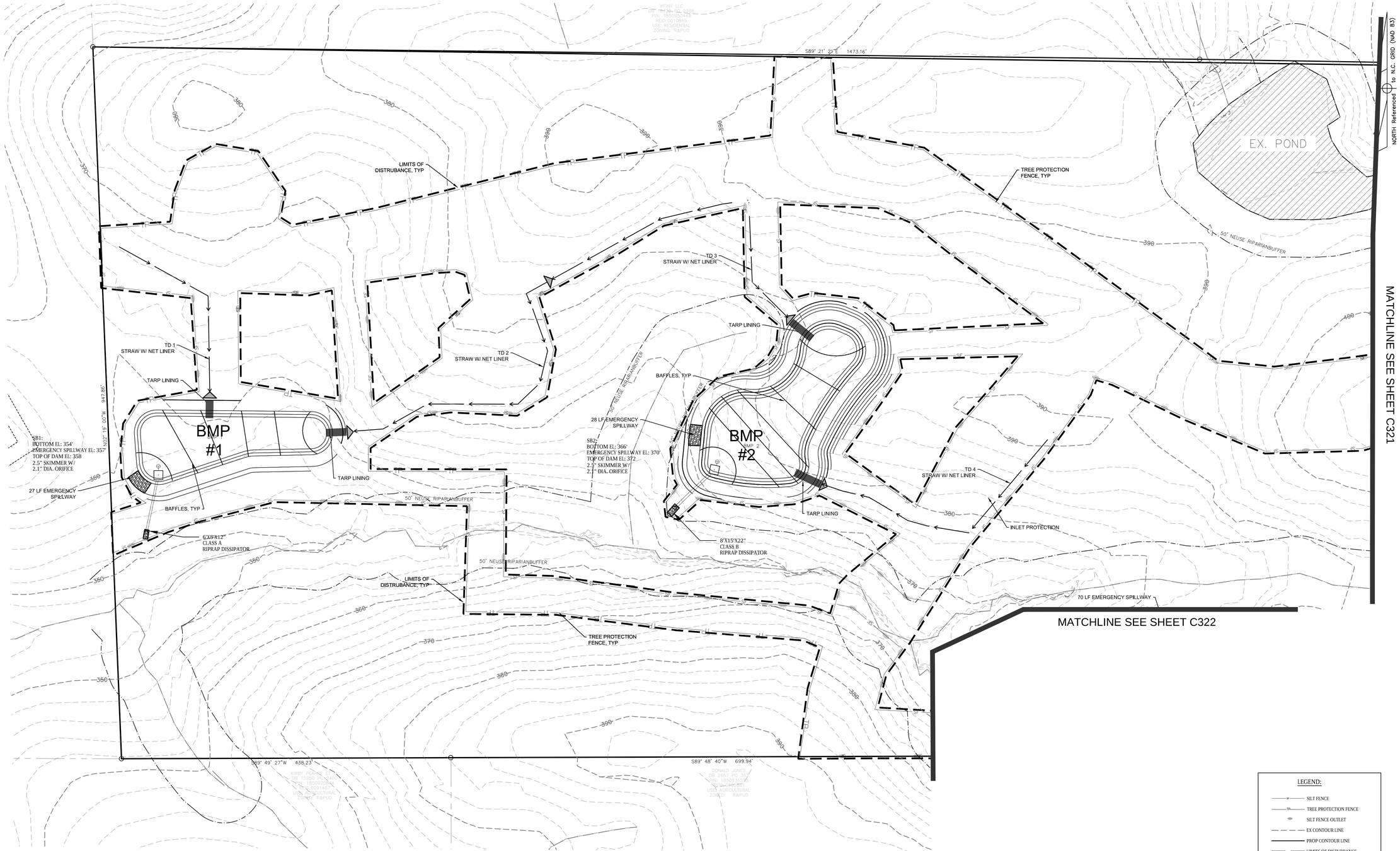
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET

C322



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- ROCK CHECK DAM

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=60' 60 60 120

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

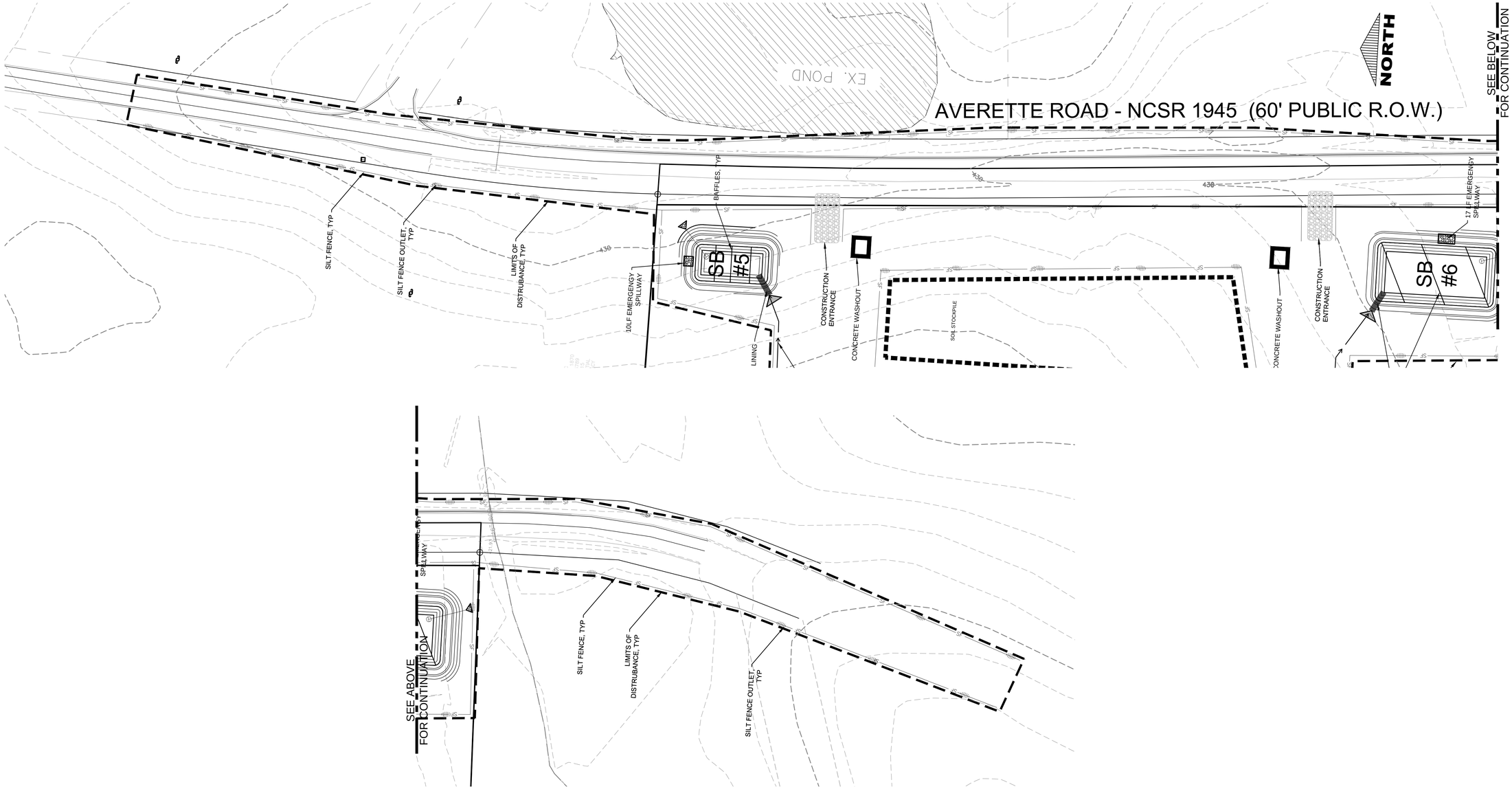
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C323



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- ROCK CHECK DAM

SCALE
1"=50'
50 0 50 100

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

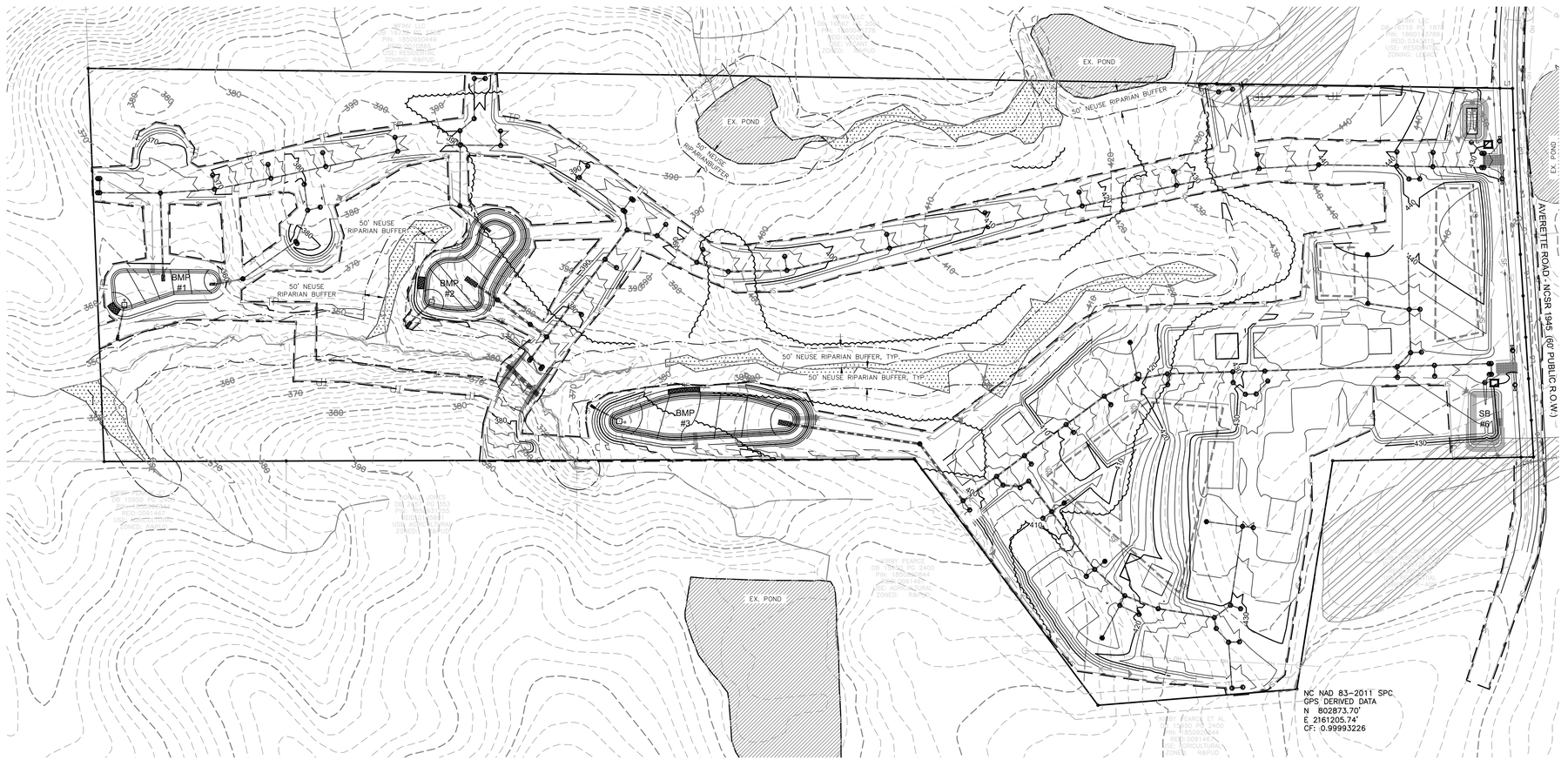
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

AVERETTE ROAD
EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.\170348

SHEET
C324



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- INLET PROTECTION
- ROCK CHECK DAM

TOTAL DISTURBED AREA =
1,852,574 SF
42.52 AC

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=150' 150 0 150 300

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

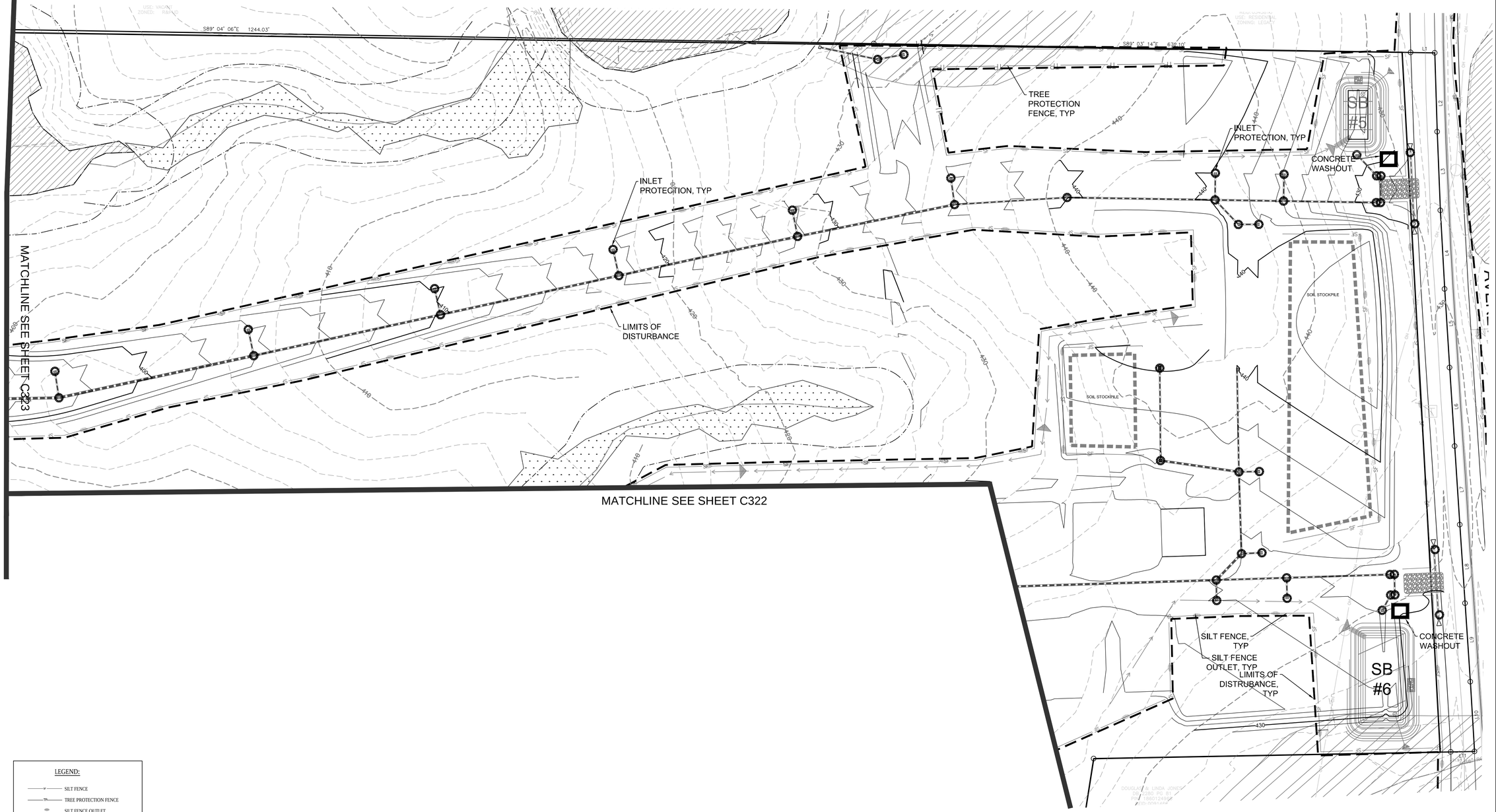
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OVERALL EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=150'
Date:	07/31/2019
Project Number:	170348

SHEET
C325



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- INLET PROTECTION
- ROCK CHECK DAM

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=60' 60 0 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

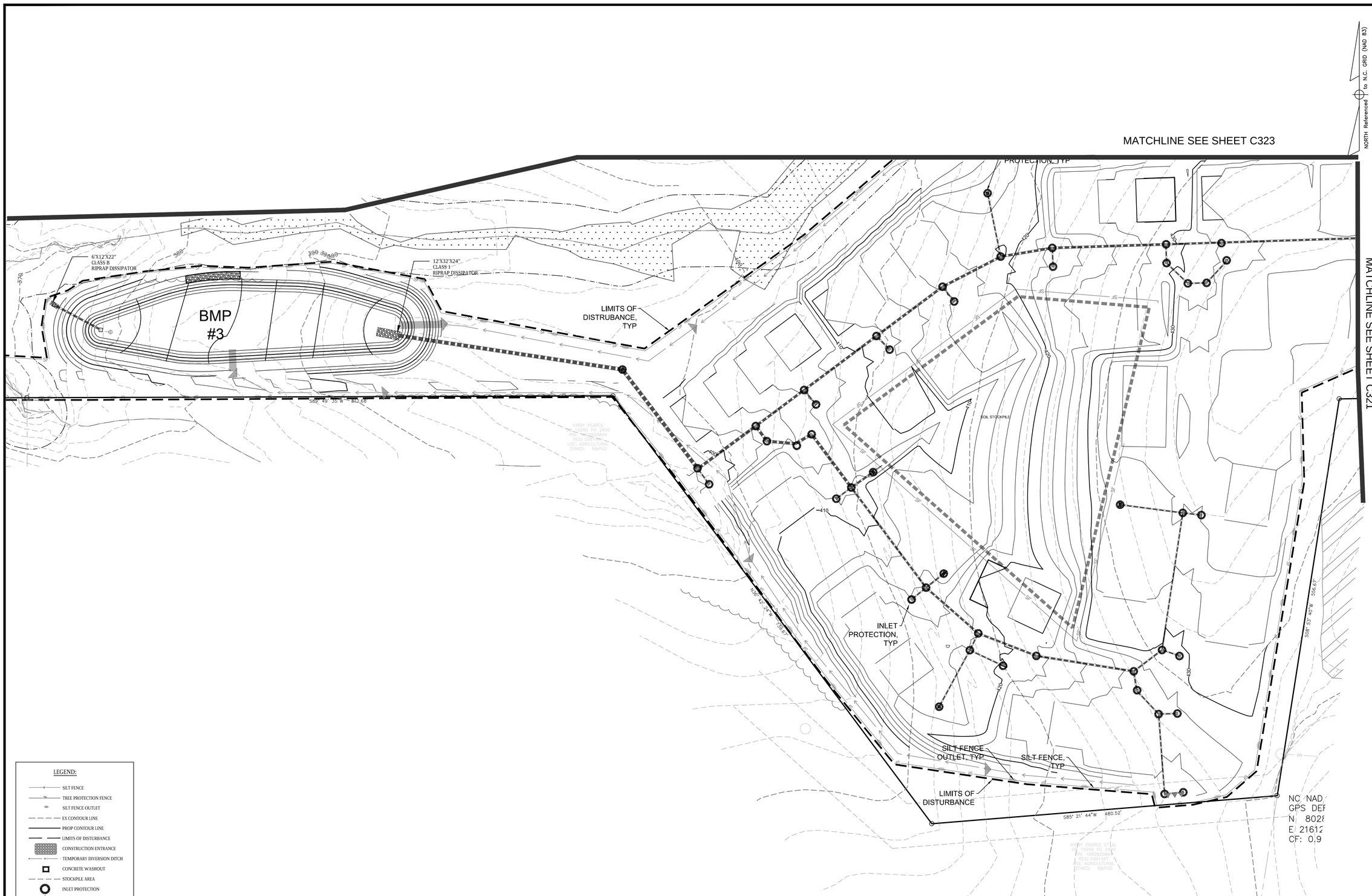
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C326



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- INLET PROTECTION
- ROCK CHECK DAM

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

CONSTRUCTION DRAWINGS

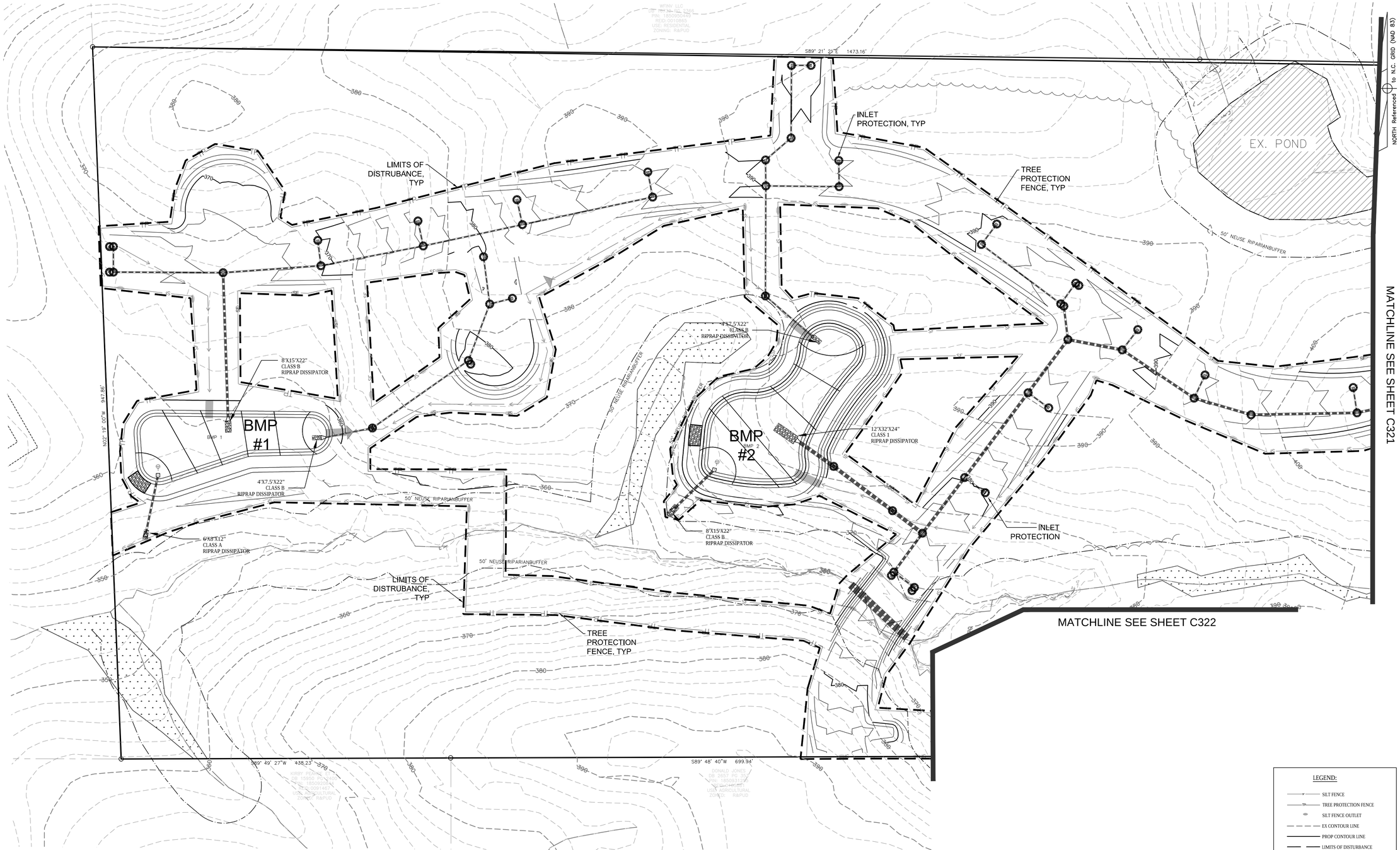
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET

C327



LEGEND:

- SILT FENCE
- TREE PROTECTION FENCE
- SILT FENCE OUTLET
- EX CONTOUR LINE
- PROP CONTOUR LINE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE
- TEMPORARY DIVERSION DITCH
- CONCRETE WASHOUT
- STOCKPILE AREA
- INLET PROTECTION
- ROCK CHECK DAM

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

KNOW WHAT IS BELOW CALL BEFORE YOU DIG

1"=60' 60 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

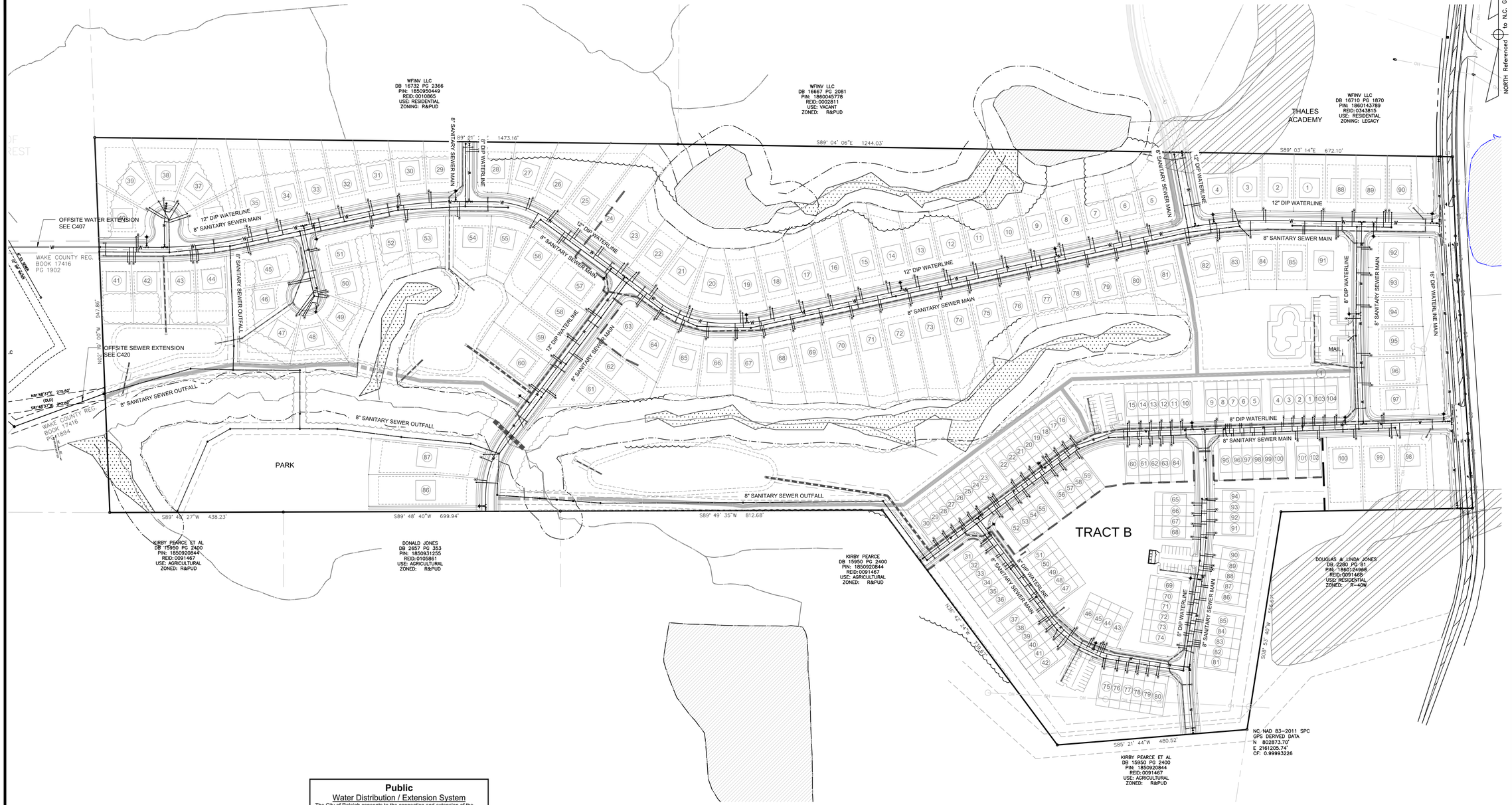
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

EROSION CONTROL PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C328



Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=120' 120' 0' 120' 240'

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

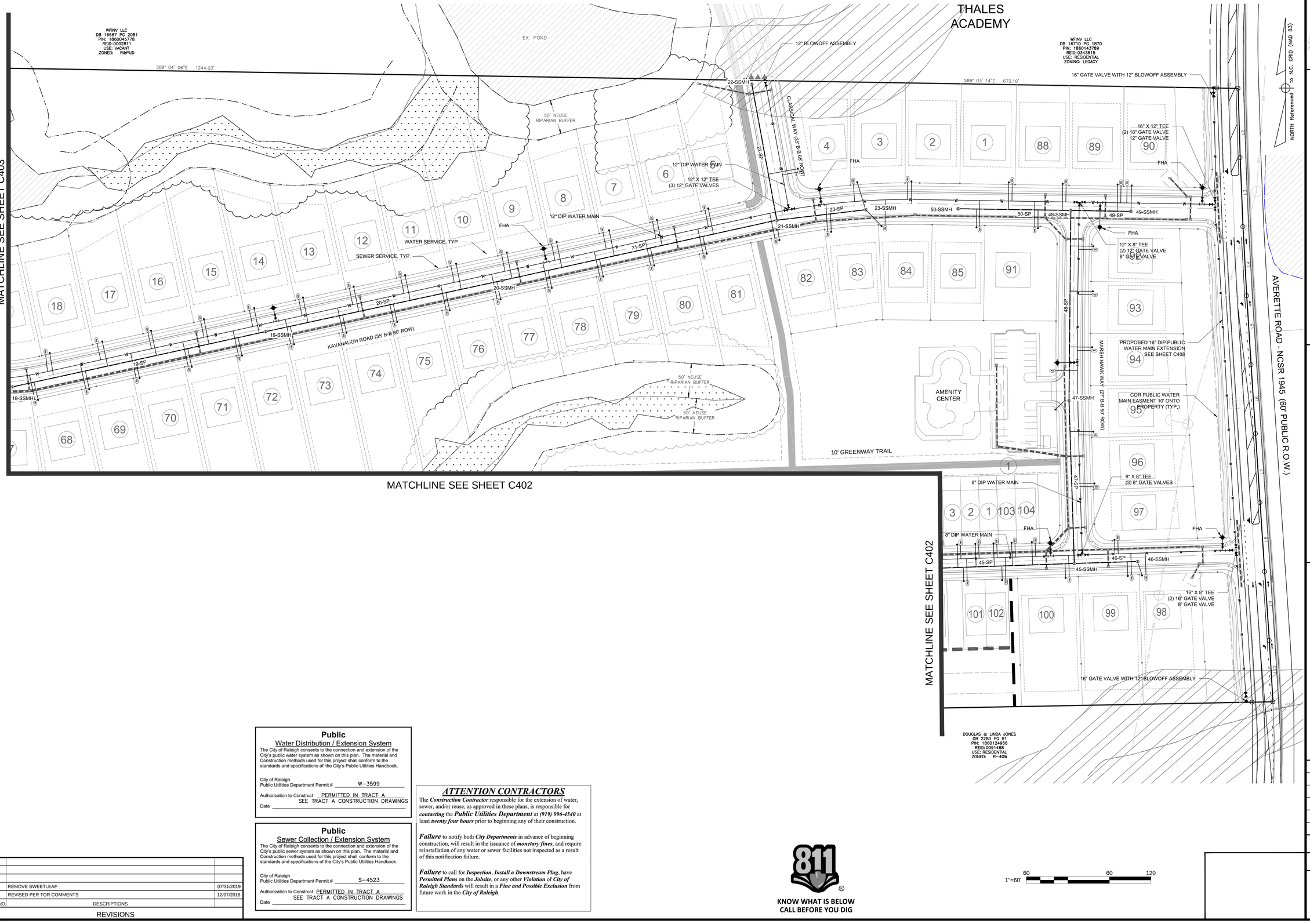
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OVERALL UTILITY PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=120'
Date:	07/31/2019
Project Number:	170348

SHEET
C400



Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

811
KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

1"=60' 60 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

UTILITY PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C401

SYMBOL LEGEND

- END OF STREET SIGNAGE
- STOP SIGN AND STREET NAME SIGN LOCATION
- ACCESSIBILITY RAMP
- LARGE STREET TREE, TYP 2½" CALIPER MIN
- FLOOD PRONE SOILS (GIS)
- EX. R-40W ZONING (SEE NOTE 6 ON SHEET C300 OF FULLY APPROVED ELIZABETH HEIGHTS CONST. DRAWINGS SP-19-01)
- PHASE LINE
- TRACT LINE

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

NEW TRAIL SEGMENT LOCATION
TRAIL SEGMENT RELOCATED TO PARKING AREA
IMPROVED OPEN SPACE 5 4.7 AC.
TRACT A
TRACT B
PHASE 1
PHASE 2
TRACT B PASSIVE OPEN SPACE 4 1.26 AC.
TRACT B IMPROVED OPEN SPACE 6 1.69 AC.
TRACT B PASSIVE OPEN SPACE 2 0.15 AC.
TRACT B PASSIVE OPEN SPACE 3 1.38 AC.
EXISTING R-40W ZONING LIMITS
TEMPORARY 8" BLOWOFF ASSEMBLY
8" BLOWOFF ASSEMBLY
8" DIP WATER MAIN
8" X 8" TEE (3) 8" GATE VALVES
16" GATE VALVE W
SHINGLE OAK ROAD (27' B-B 50' ROW)
WHITE OAK TRAIL (27' B-B 50' ROW)
SEWER SERVICE (TYP.)
WATER SERVICE (TYP.)
DROP INLET
20' PUBLIC DRAINAGE ESMT
FHA
BLDG 1 BLDG 2 BLDG 3 BLDG 4 BLDG 5 BLDG 6 BLDG 7 BLDG 8 BLDG 9 BLDG 10 BLDG 11 BLDG 12 BLDG 13 BLDG 15 BLDG 16 BLDG 17 BLDG 18 BLDG 19 BLDG 20
50' PERIMETER YARD BUFFER TYP.
20' TYPE B LANDSCAPE BUFFER TYP.
FLOOD PRONE SOILS PER WAKE COUNTY GIS
DOUGLAS & LINDA JONES DB 2280 PG 81 PIN: 1860124968 REID: 0091458 USE: RESIDENTIAL ZONED: R-40W
KIRBY PEARCE ET AL DB 15950 PG 2400 PIN: 1850920844 REID: 0091467 USE: AGRICULTURAL ZONED: R&PUD
N36° 42' 25"W 739.67'
S08° 53' 40"W 566.67'
S85° 21' 44"W 480.52'
NC NAD 83-2011 SPC GPS DERIVED DATA N 802873.70' E 2161205.74' CF: 0.99993226
NAD 83 / NSRS 2011
SCALE 1"=50'
0 50' 100'
KNOW WHAT IS BELOW CALL BEFORE YOU DIG

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV #	DATE	DESCRIPTION
1	12.16.2024	BUILDING FOOTPRINT REVISION TO SP-19-0
2	02.20.2025	REVISION TO SP-19-01 PER TOR COMMENT

FINAL DRAWING

FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20234 DOUGLAS B. COOPER

04/15/2025 10:05:06 AM

Douglas B Cooper

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS PHASE 2 REVISIONS

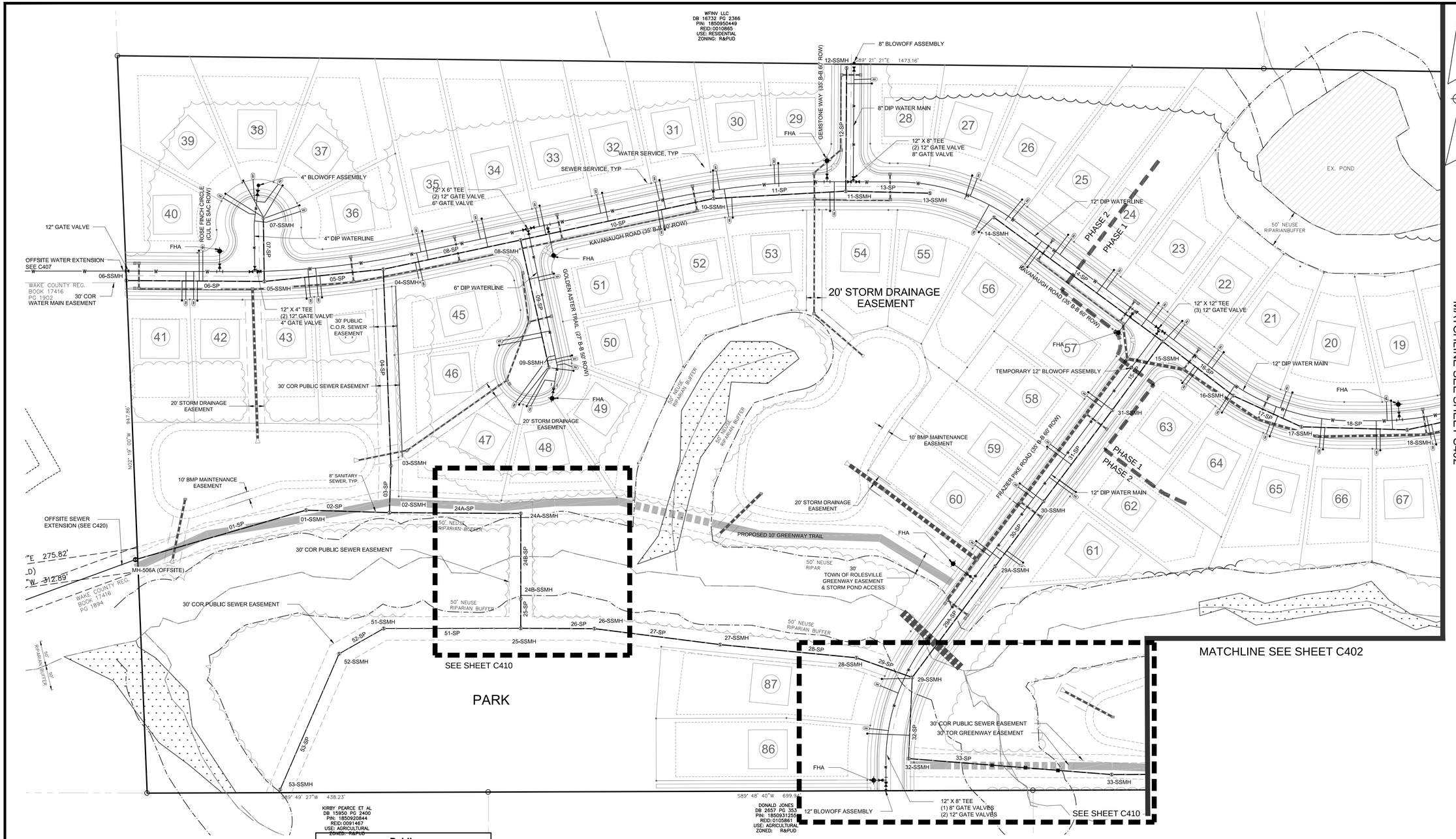
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY

UTILITY PLAN CONT.

Design By:	BCSC
Date:	24.11.13
Project #:	P170348

SHEET C402

p:\2017 projects\170348 elizabeth heights\ENGR\CAD\DWGS\Sheets\Revision\P170348_C400_UTIL.dwg



Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

NORTH Referenced to N.C. GRID (NAD 83)

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

UTILITY PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C403

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

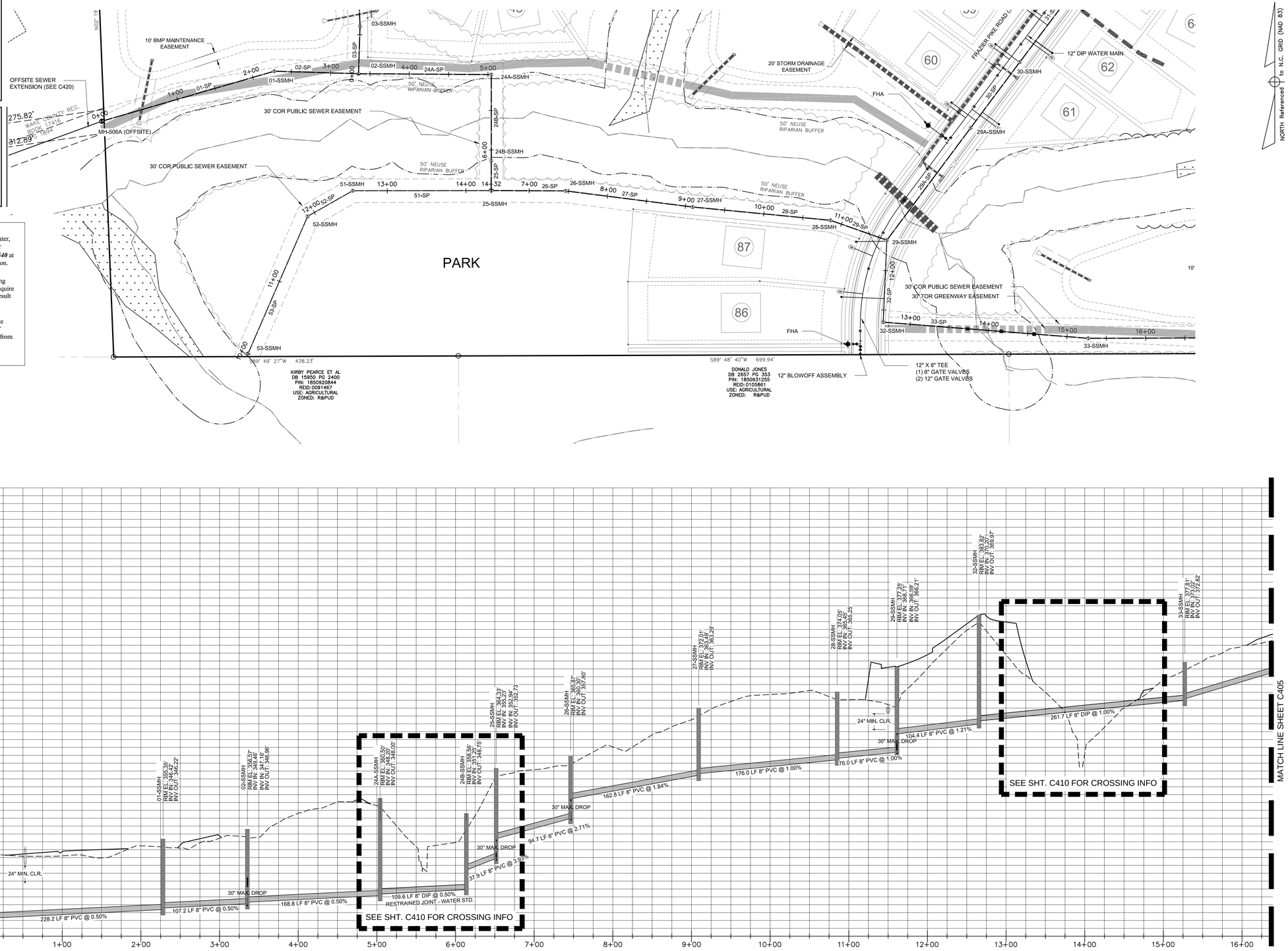
Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.



1"=60'

811 KNOW WHAT IS BELOW CALL BEFORE YOU DIG

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

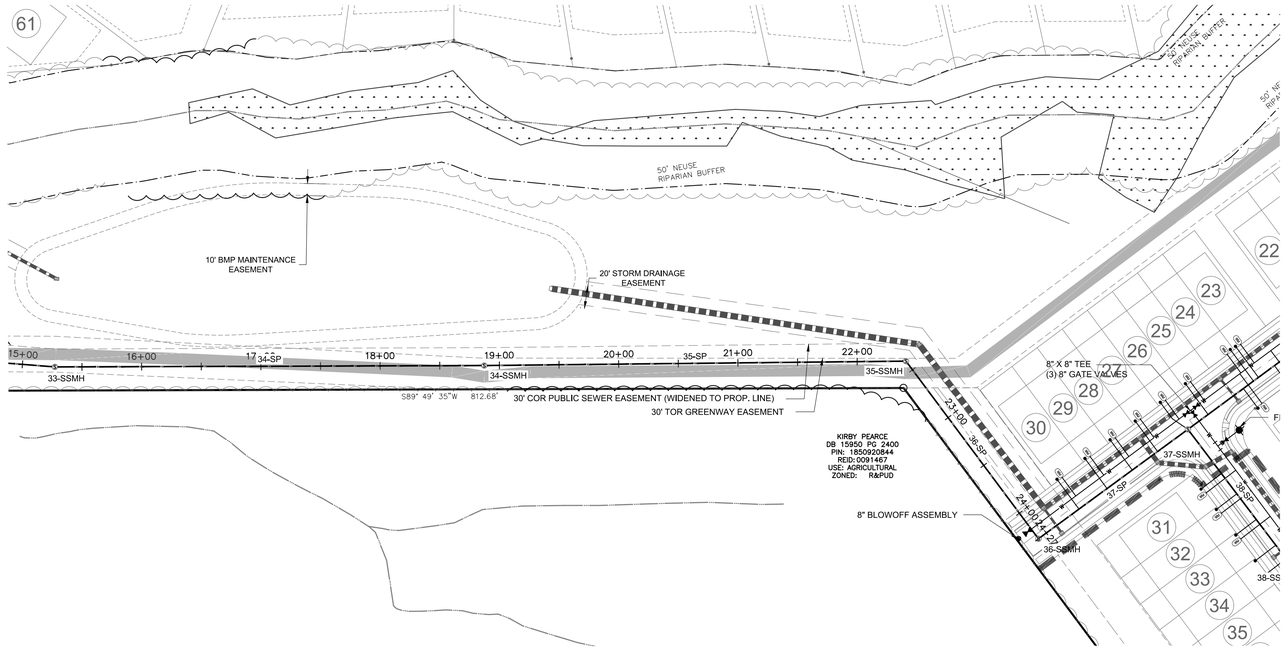
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

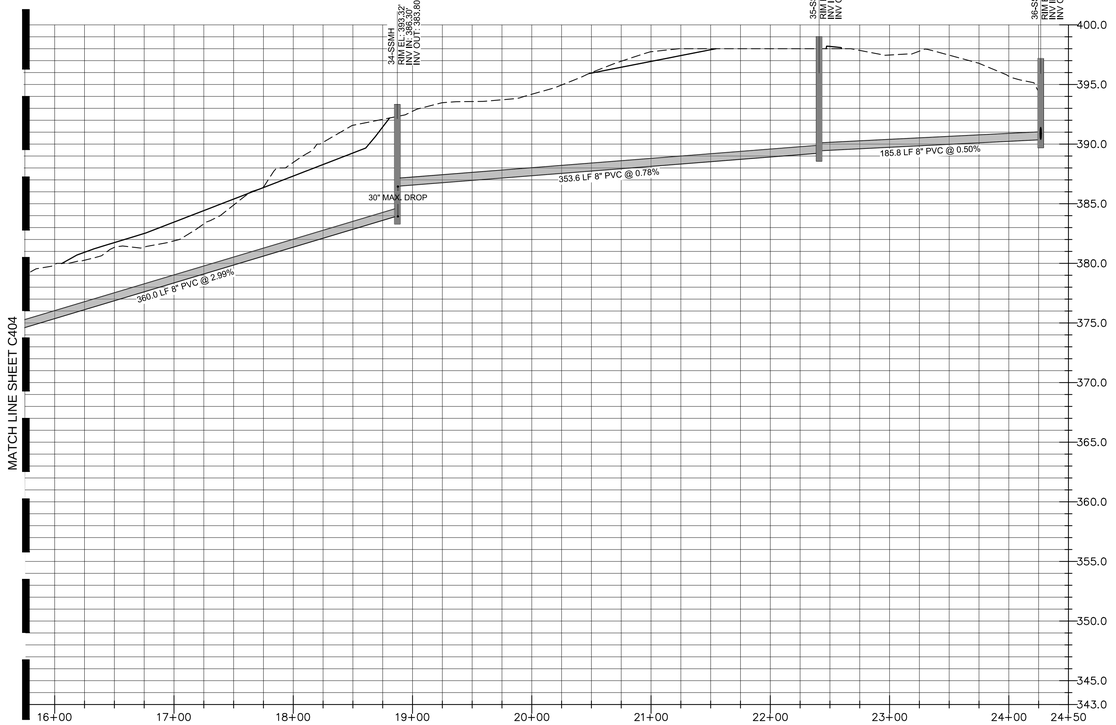
SANITARY SEWER PROFILE

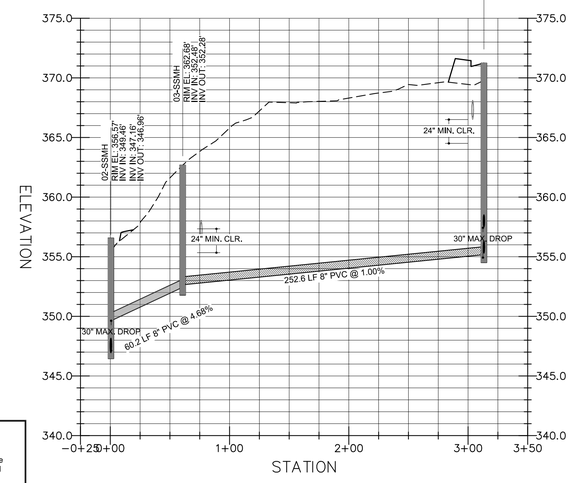
Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C404









Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

1"=60' 60 60 120

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

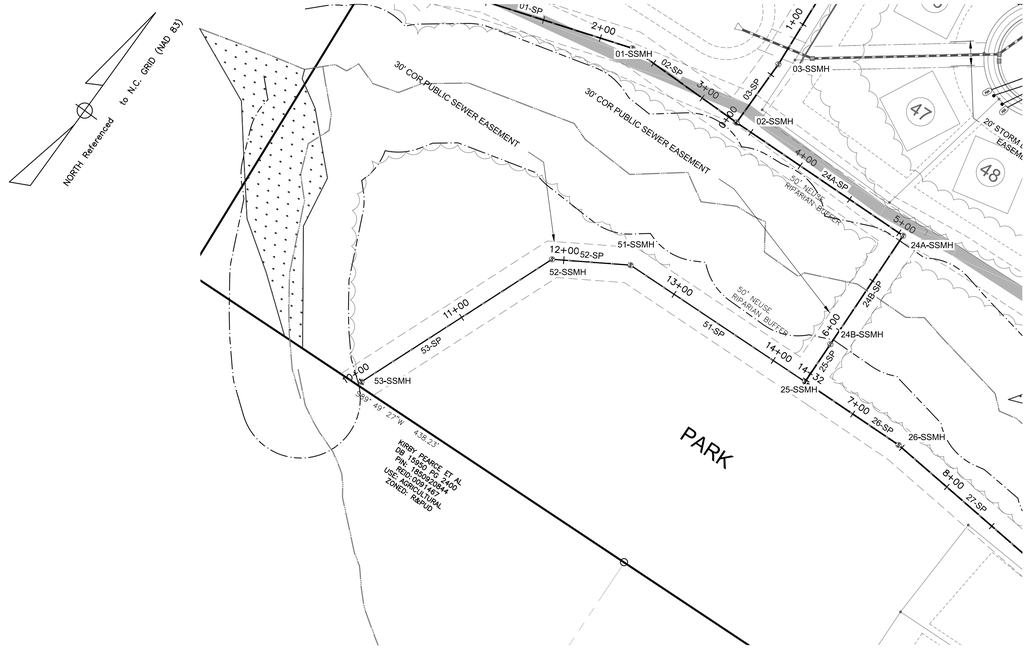
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

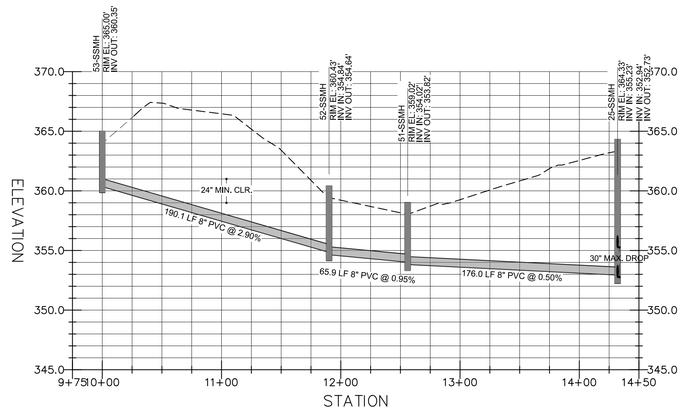
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

SANITARY SEWER PROFILE

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C405





Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

1"=60' 60 60 120

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR

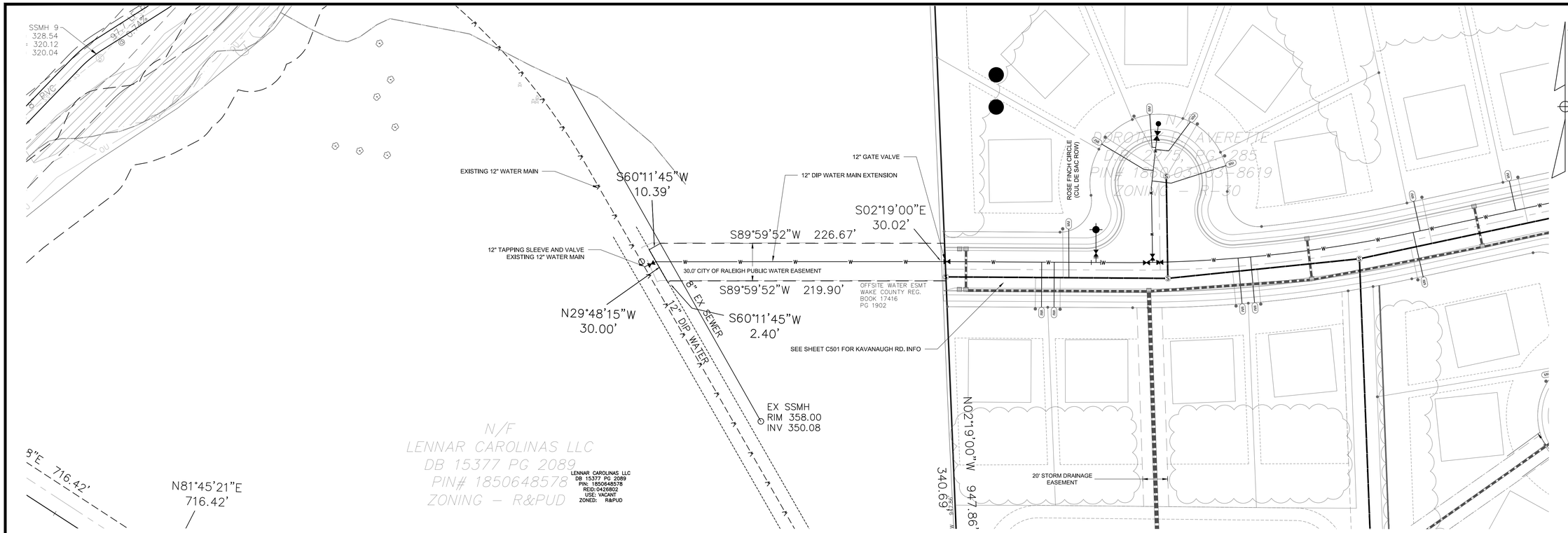
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

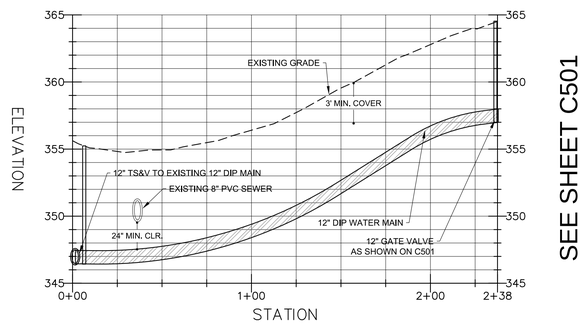
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

SANITARY SEWER PROFILE

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C406





SEE SHEET C501

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

1"=40' 40 40 80

811
KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

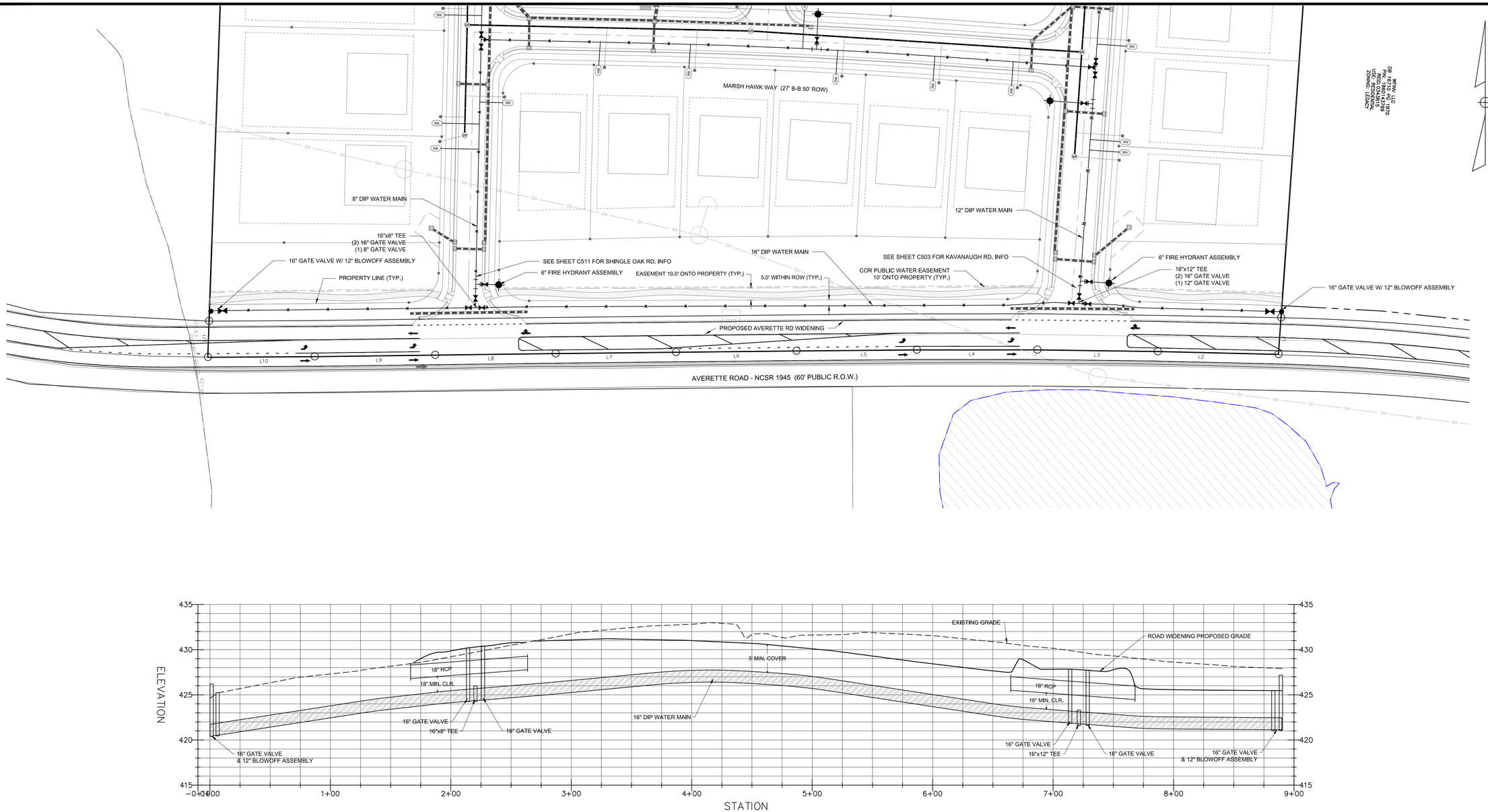
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OFFSITE WATER EXTENSION

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C407



ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

1"=40' 40 40 80

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

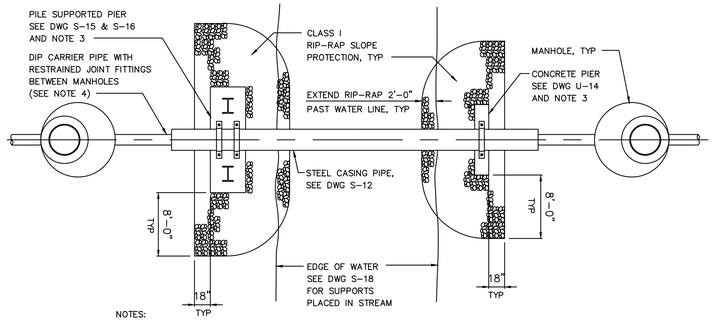
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

AVERETTE WATER EXTENSION

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C408



NOTES:

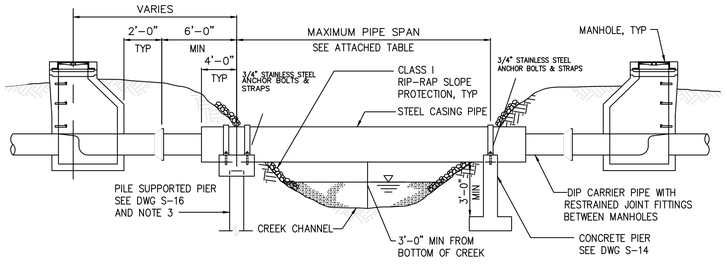
1. RIP RAP FOR SLOPE PROTECTION SHALL BE CLASS I RIP RAP IN ACCORDANCE WITH SECTION 868 OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES".

   RIP RAP SHALL BE PLACED IN ACCORDANCE WITH DRAWING 868.01 OF THE NORTH CAROLINA DEPARTMENT OF
2. TRANSPORTATION'S "ROADWAY STANDARD DRAWINGS".

   SUPPORT TYPE FOR PIERS SHALL BE DETERMINED BY ENGINEER BASED ON SUBGRADE CONDITIONS AT SITE. SEE DRAWING S-14 FOR SUBGRADE PARAMETERS FOR EACH
3. TYPE OF FOUNDATION.
4. WHERE DUCTILE IRON PIPE IS USED FOR CARRIER PIPE, DUCTILE IRON CARRIER PIPE SHALL BE INSTALLED UTILIZING 2 PIPE ALIGNMENT GUIDES PER JOINT ONE FOURTH OF THE PIPE JOINT LENGTH IN FROM BOTH THE BELL AND SPIGOT ENDS.

1 AERIAL PIPE CROSSING PLAN

Scale: N.T.S.



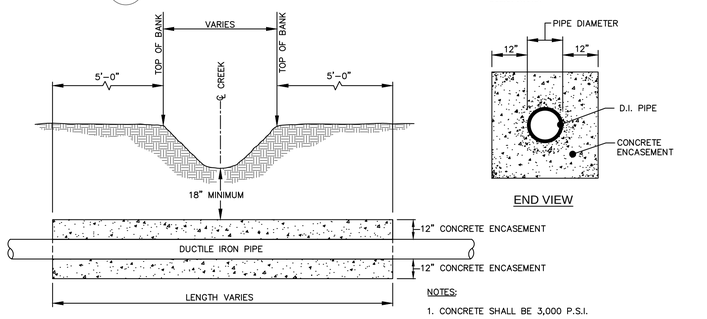
CARRIER PIPE, DIP DIAMETER (IN.)	CASING PIPE, STEEL DIAMETER (IN.)	MINIMUM CASING PIPE WALL THICKNESS (IN.)	ALLOWABLE SPAN (FT.)
8	16	0.3750	45

NOTES:

1. STEEL PIPE SHALL BE EITHER SPIRAL WELDED OR SMOOTH WALL SEAMLESS WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI. PAINTING AND LINING SHALL BE AS REQUIRED BY THE CITY OF RALEIGH PUBLIC UTILITIES HANDBOOK.
2. DUCTILE IRON PIPE SHALL BE SUPPORTED WITH TWO SPIDERS AT EVERY JOINT WITHIN THE CASING PIPE USING APPROVED PIPE ALIGNMENT GUIDE. SEE DRAWING S-39. ALL JOINTS SHALL BE RESTRAINED JOINT, SEE NOTE 2, DWG S-10.
3. PILE SUPPORTED PIERS TO BE USED IN CONSTRUCTION. SEE DETAIL 4 THIS SHEET
4. BOTTOM OF PIPE TO BE AT A MINIMUM OF 1' ABOVE THE 25 YEAR FLOOD ELEVATION.

2 AERIAL PIPE CROSSING ELEVATION

Scale: N.T.S.

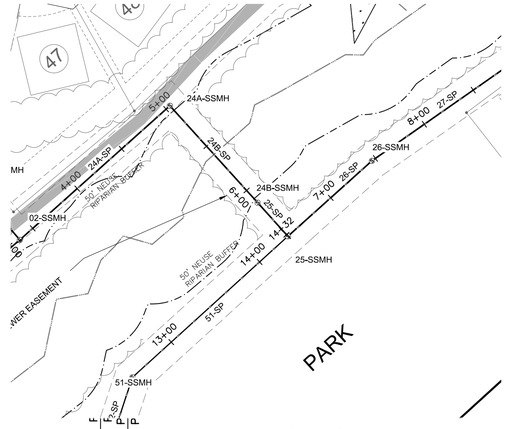


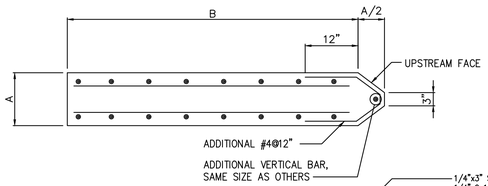
NOTES:

1. CONCRETE SHALL BE 3,000 P.S.I.
2. CONCRETE ENCASEMENT NOT REQUIRED WHEN PIPE IS AT LEAST 3 FEET UNDER CENTERLINE OF CREEK BOTTOM.

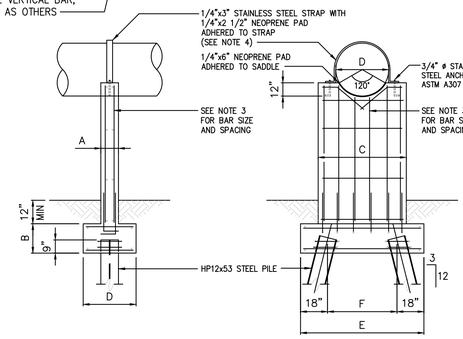
3 STREAM CROSSING

Scale: N.T.S.





PILE SPACING "I" (FT.)	5'-0"
FOOTING LENGTH "E" (FT.)	8'-0"
FOOTING WIDTH "D" (FT.)	3'-0"
PIER WIDTH "C" (FT.)	3'-0"
FOOTING THICKNESS "B" (IN.)	20
PIER THICKNESS "A" (IN.)	12
CASING PIPE DIA "D" (IN.)	14-20

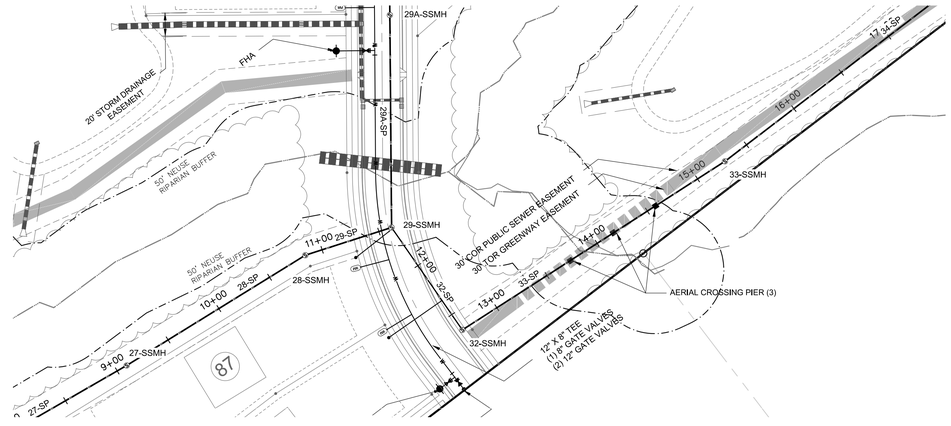


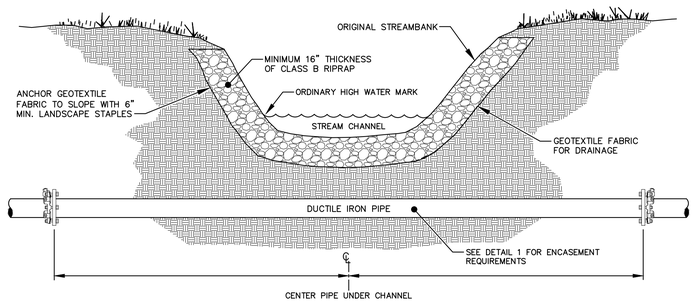
NOTES:

1. PILE SUPPORTED PIER FOUNDATION DESIGN SHOWN ON THIS DETAIL IS BASED ON THE FOLLOWING PARAMETERS:
   MINIMUM CAPACITY OF HP12x53 PILE = 30 TONS
   CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
   GRADE 60 REINFORCING STEEL
   MAXIMUM STREAM VELOCITY = 10 FT/SEC
2. IF FIELD CONDITIONS REQUIRE ANY DEVIATION FROM THESE PARAMETERS, THE FOUNDATION DESIGN SHALL BE REVIEWED BY THE ENGINEER.
3. LENGTH OF PILES SHALL BE AS REQUIRED TO DEVELOP 30 TON CAPACITY BY EITHER END BEARING, FRICTION OR A COMBINATION OF END BEARING AND FRICTION. AS A MINIMUM, PILES SHALL BE DRIVEN AT LEAST 15 FEET INTO UNDISTURBED SOIL.
4. TWELVE-INCH AND FOURTEEN-INCH WIDE PIERS SHALL BE REINFORCED WITH #5 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. EIGHTEEN-INCH WIDE PIERS SHALL BE REINFORCED WITH #7 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. FOOTINGS SHALL BE REINFORCED TYPICALLY TO PIERS.
5. EIGHTEEN-INCH WIDE PIERS SHALL REQUIRE TWO STRAPS OVER THE PIPE INSTEAD OF ONE (AS SHOWN).
6. WHEN CONCRETE SUPPORTS ARE REQUIRED TO BE LOCATED WITHIN A STREAM AND ARE NOT COVERED WITH BACKFILL, SEE SECTION ABOVE FOR COLUMN MODIFICATION.

4 AERIAL STREAM CROSSING PILE SUPPORTED PIER

Scale: N.T.S.





NOTES:

1. MAINTAIN ORIGINAL CONTOURS IN STREAMBED AND BANKS.
2. FACE OF PROPOSED RIPRAP BANK TO MATCH EXISTING CONTOURS OF STREAMBANKS.
3. RIPRAP MUST BE KEYED INTO THE GROUND AND THE ORIGINAL CONTOURS SHALL BE MAINTAINED AS PER U.S. ARMY CORPS OF ENGINEERS.

5 STREAM BANK RESTORATION

Scale: N.T.S.

1"=60' (60 60 120)

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

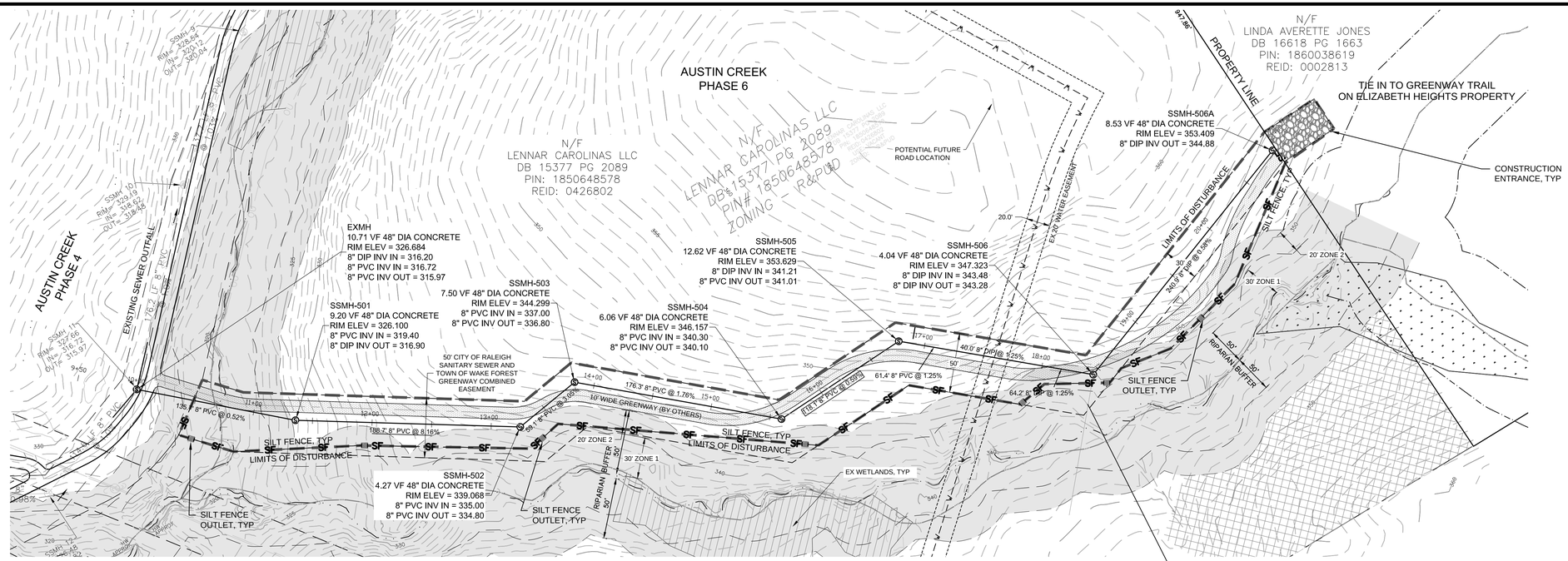
NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

SANITARY SEWER STREAM CROSSING

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=60'
Date:	07/31/2019
Project Number:	170348

SHEET
C410



LEGEND:

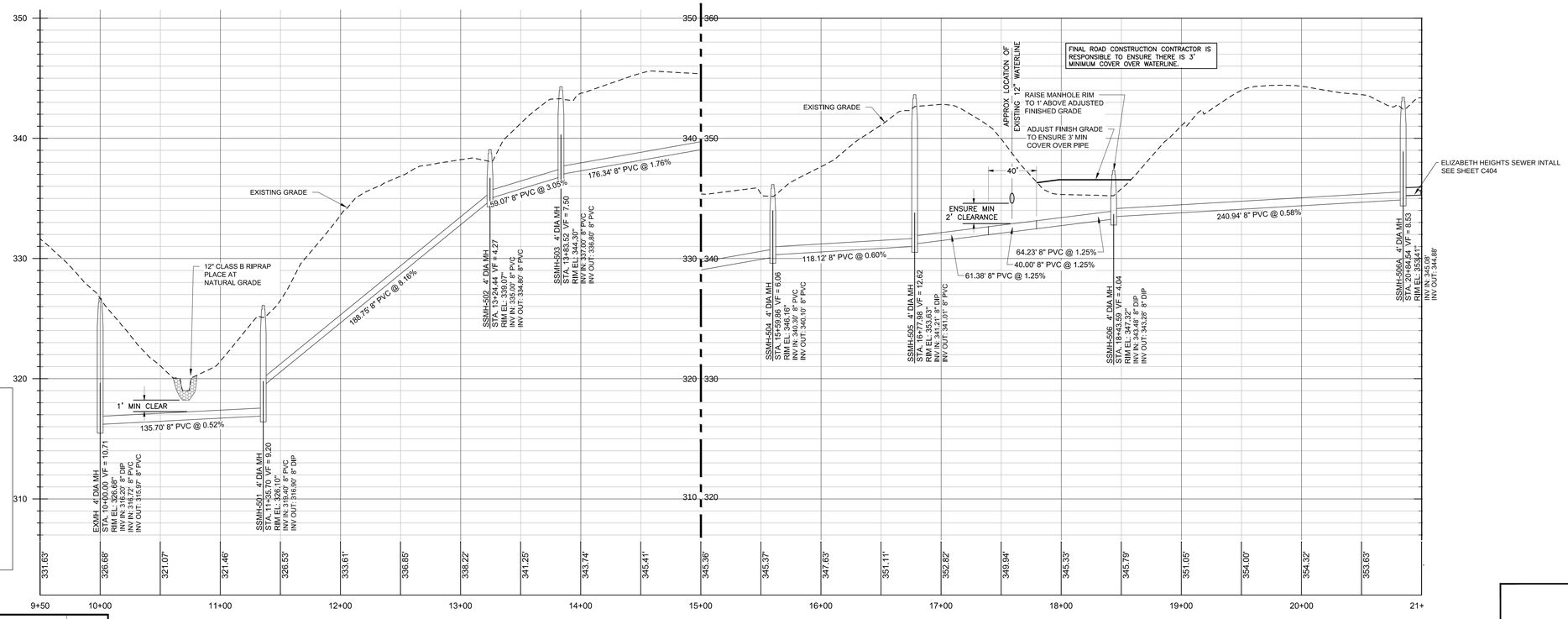
- LIMITS OF DISTURBANCE
- SF — SF — TREE PROTECTION / SILT COMBINATION FENCE
- SF — SF — SILT FENCE OUTLET
- CONSTRUCTION ENTRANCE
- — — 326 — — EX CONTOURS

OFFSITE SEWER OUTFALL

GRAPHIC SCALE

HORIZONTAL 1"=50' (50 0 50 100)

VERTICAL 1"=5' (5 0 5)



DISTURBED AREA

45,673 SF

1.05 AC.

Public

Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public

Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

OFFSITE SEWER OUTFALL PLAN

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
420

P:\2017 Projects\170348 Elizabeth Heights\Engr\CAD\DWG\Sheets\Offsite Sewer\C420 Sewer Bypass Pumping Plan and Profile.dwg



LEGEND:

- *LIMITS OF DISTURBANCE*
- *TREE PROTECTION / SILT COMBINATION FENCE*
- *SILT FENCE OUTLET*
- *CONSTRUCTION ENTRANCE*

DISTURBED AREA
77,965 SF
1.79 AC.

NOTES:
3. BACKGROUND MAP IMAGERY TAKEN FROM WAKE COUNTY GIS.
4. CONTRACTOR SHALL PROVIDE STANDARD SPECIFICATIONS, DETAILS, AND A DETAILED CONSTRUCTION SEQUENCE FOR THE USE OF PUMP BYPASS EQUIPMENT, METHODS, AND FINAL TESTING.

PUMP INFO:
1. SUCTION STATIC LIFT: 14.6 FT
2. N.P.S.H. REQ'D: 33.44 FT.
3. REQ'D HORSEPOWER : 15 HP

* FINAL HYDRAULIC PUMP DESIGN IS TO BE SUBMITTED BY THE CONTRACTOR AND SEALED BY NC REGISTERED PE.

SEWER FLOW INFO:
PEAK FLOW: 685,313 GPD

NORTH

SCALE
1"=50' 50 0 50 100

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, III

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

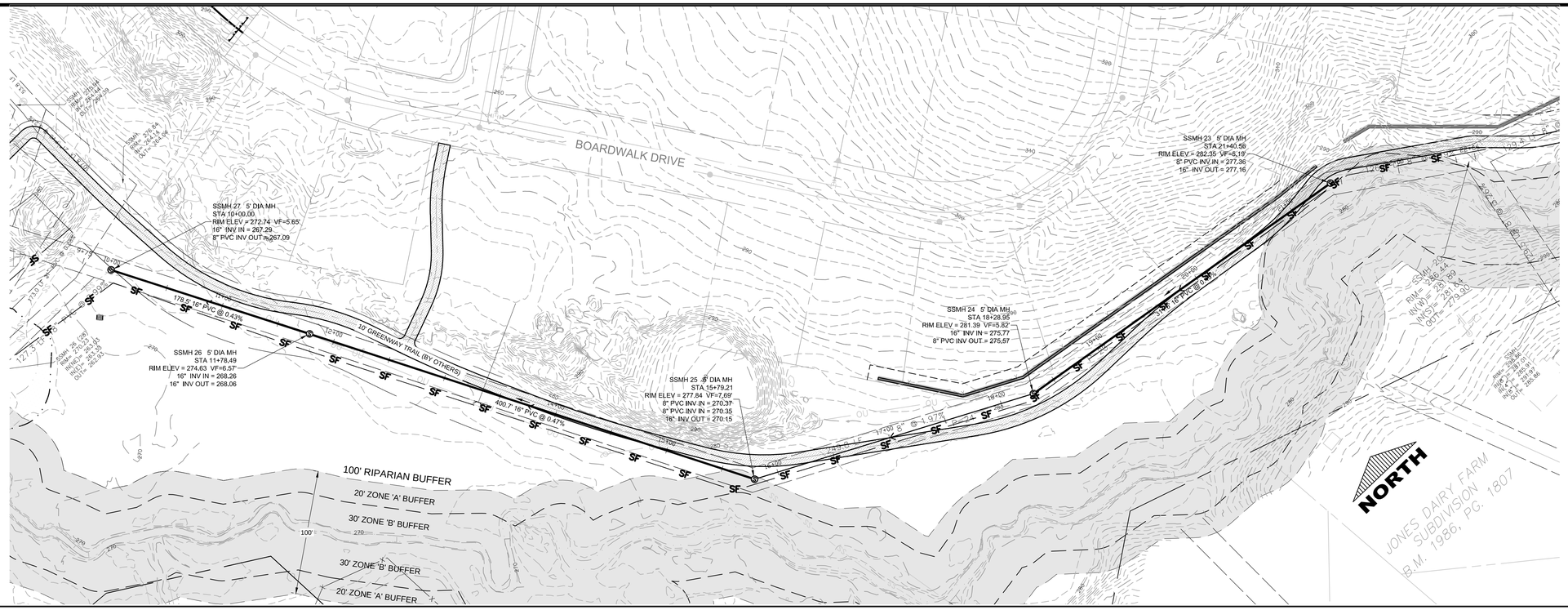
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

REHABILITATION PLAN
OFFSITE SEWER LINE

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
421



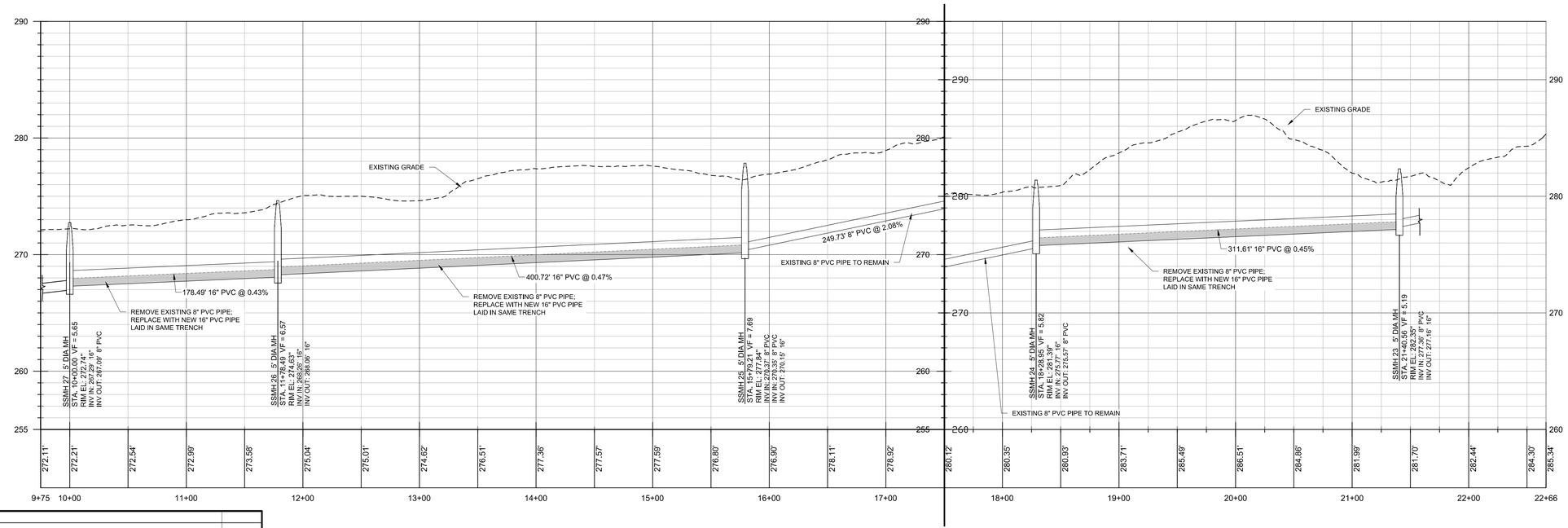
SEWER FROM OUTFALL
AT ELIZABETH HEIGHTS PROPERTY

SEWER REHABILITATION PROFILE

GRAPHIC SCALE

HORIZONTAL 1"=50' 50 0 50 100

VERTICAL 1"=5' 5 0 5



KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

REHABILITATION PROFILE
OFFSITE SEWER LINE

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
422



KAVANAUGH RD - PLAN
SCALE: 1"=40'
STA: 34+30 - 46+27

KAVANAUGH ROAD					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
C44	250.00	159.20	N71° 25' 50.35"W	34+41.29	36+00.49
L27		101.13	N89° 47' 54.81"W	36+00.49	37+01.61
C45	1000.00	196.79	S83° 29' 05.78"W	37+01.61	38+98.40
L28		336.67	S77° 50' 50.44"W	38+98.40	42+35.07
C46	1000.00	217.80	S84° 05' 12.99"W	42+35.07	44+52.87
L29		174.47	N89° 40' 24.45"W	44+52.87	46+27.34

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

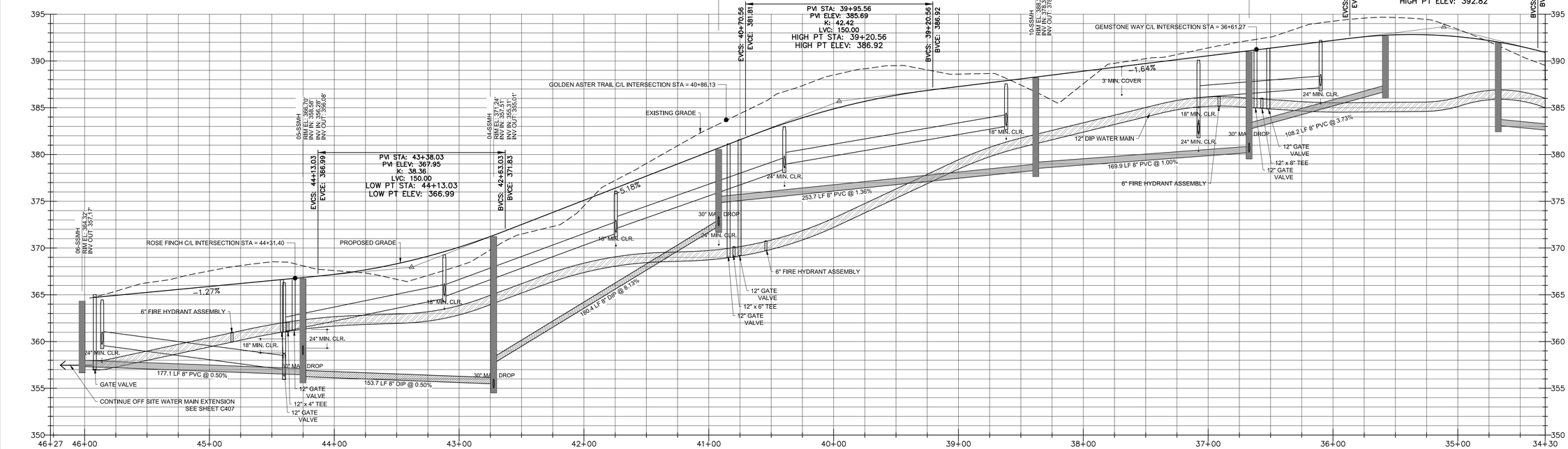
Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.



KAVANAUGH RD - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 34+30 - 46+27

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

SEE SHEET C502

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

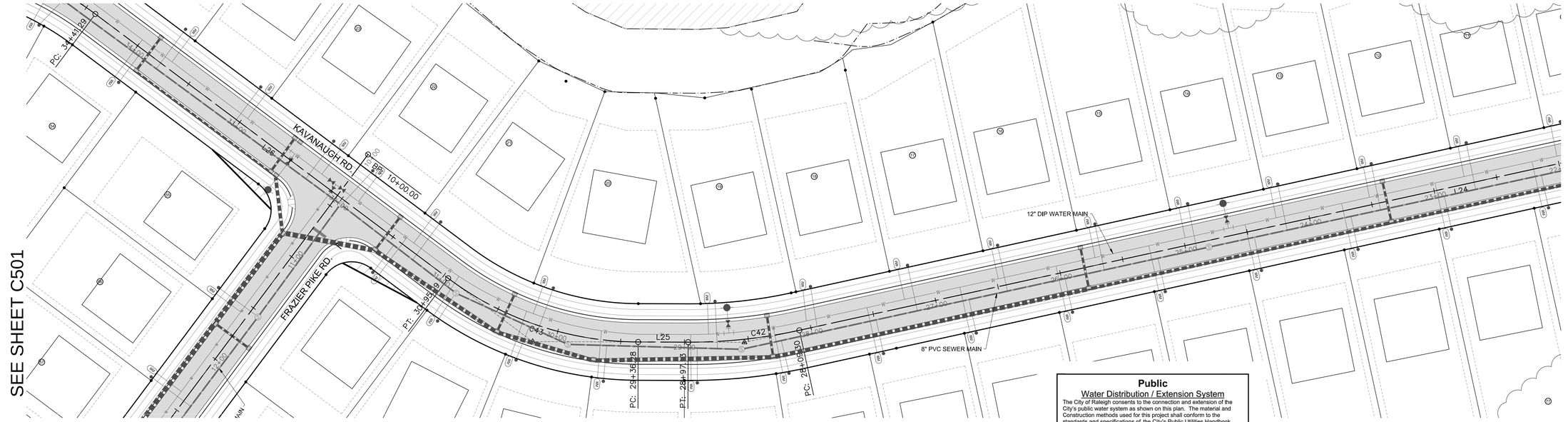
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
KAVANAUGH RD.

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C501



KAVANAUGH RD - PLAN
SCALE: 1"=40'
STA: 22+50 - 34+30

KAVANAUGH ROAD					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L22		91.51	S87° 40' 34.01"W	10+00.00	10+91.51
L23		425.34	N89° 03' 35.12"W	10+91.51	15+16.85
C41	1000.00	232.32	S84° 17' 05.60"W	15+16.85	17+49.16
L24		1060.14	S77° 37' 46.33"W	17+49.16	28+09.30
C42	400.00	87.83	S83° 55' 10.72"W	28+09.30	28+97.13
L25		39.15	N89° 47' 24.88"W	28+97.13	29+36.28
C43	250.00	159.71	N71° 29' 20.56"W	29+36.28	30+95.99
L26		345.31	N53° 11' 16.25"W	30+95.99	34+41.29

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

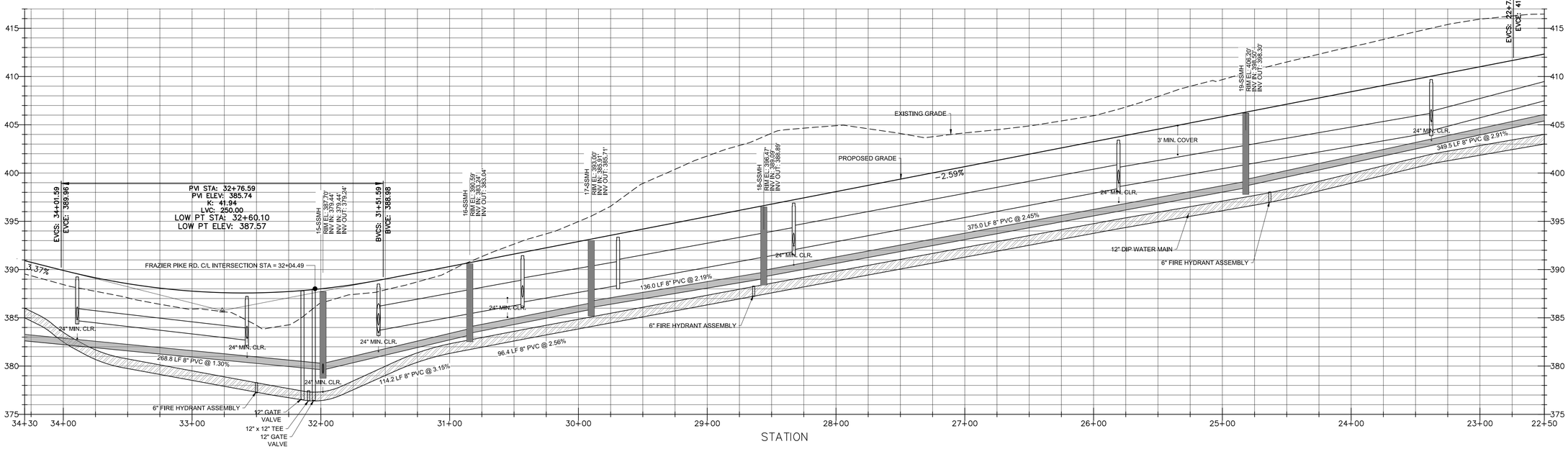
Date _____

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.



KAVANAUGH RD - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 22+50 - 34+30

REV.NO.	DESCRIPTIONS	
	REVISIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

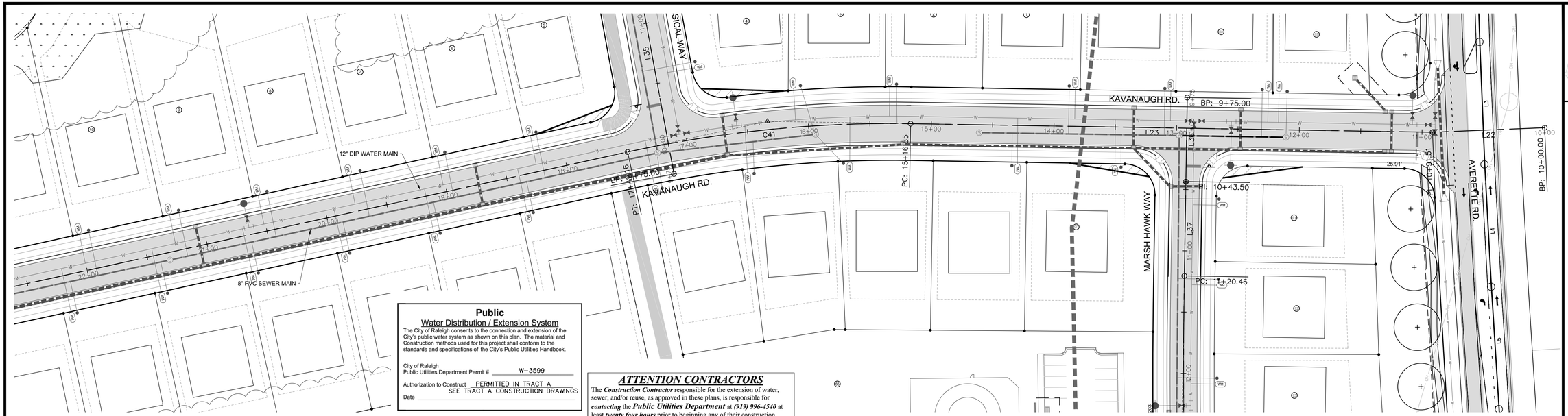
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
KAVANAUGH RD.

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C502



KAVANAUGH RD - PLAN
SCALE: 1"=40'
STA: 10+25 - 22+50

SEE SHEET C502

KAVANAUGH ROAD					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L22		91.51	S87° 40' 34.01"W	10+00.00	10+91.51
L23		425.34	N89° 03' 35.12"W	10+91.51	15+16.85
C41	1000.00	232.32	S84° 17' 05.60"W	15+16.85	17+49.16
L24		1060.14	S77° 37' 46.33"W	17+49.16	28+09.30
C42	400.00	87.83	S83° 55' 10.72"W	28+09.30	28+97.13
L25		39.15	N89° 47' 24.88"W	28+97.13	29+36.28
C43	250.00	159.71	N71° 29' 20.56"W	29+36.28	30+95.99
L26		345.31	N53° 11' 16.25"W	30+95.99	34+41.29

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

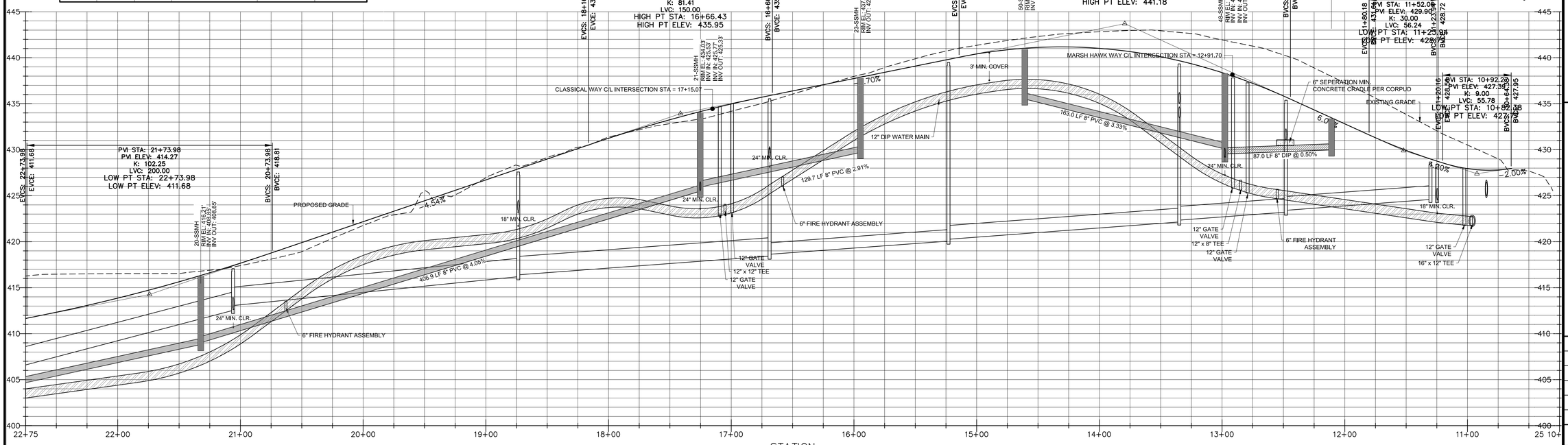
Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.



KAVANAUGH RD - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 10+25 - 22+50

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPECHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

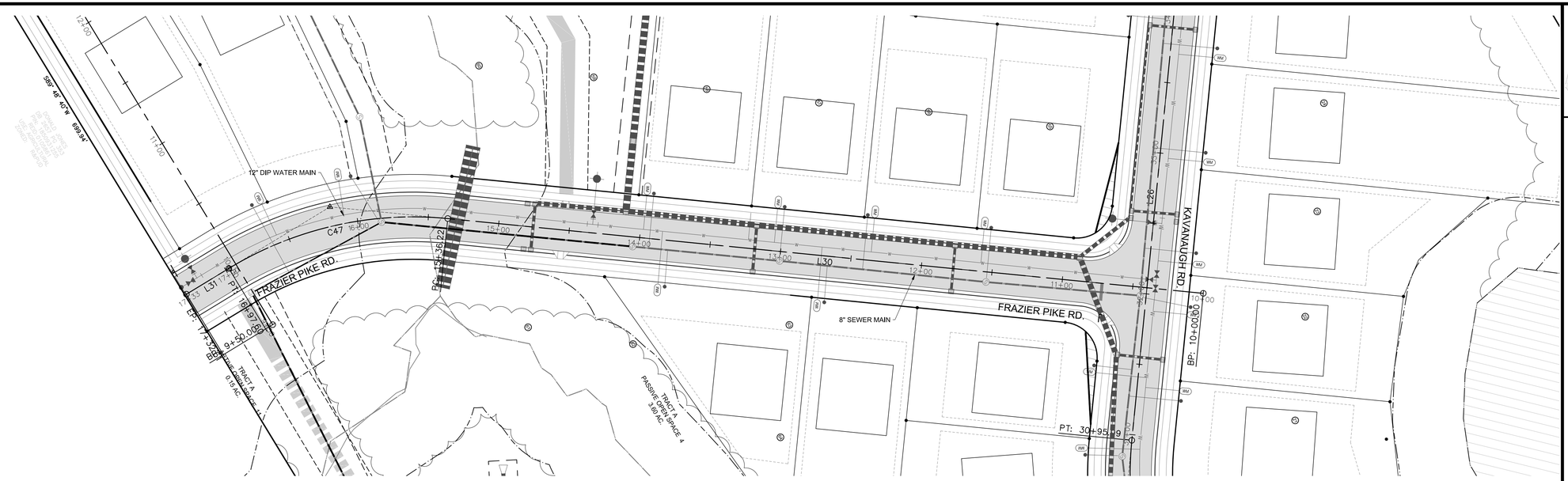
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
KAVANAUGH RD.

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C503

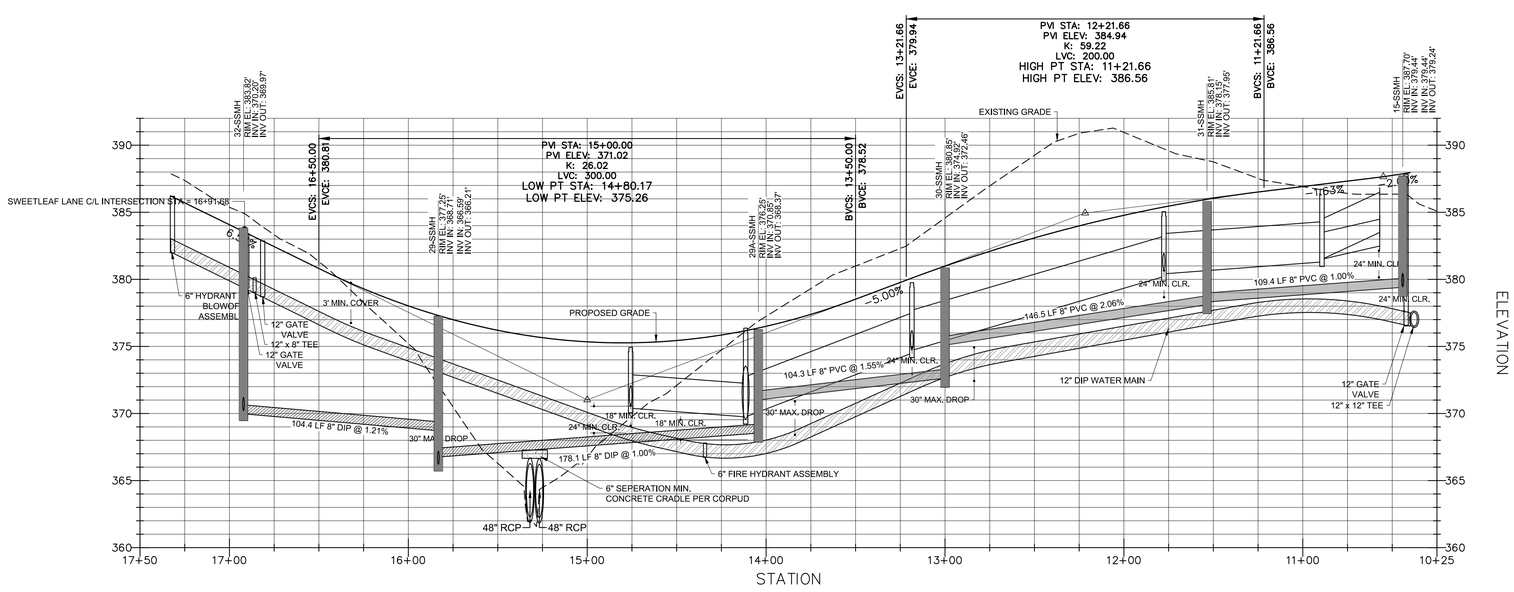
NORTH Referenced to N.C. GRID (NAD 83)



FRAZIER PIKE RD - PLAN
SCALE: 1"=40'
STA: 10+25 - 17+33

NORTH Referenced to N.C. GRID (NAD 83)

FRAZIER PIKE ROAD					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L30		536.22	S36° 48' 43.75"W	10+00.00	15+36.22
C47	250.00	161.38	S18° 19' 09.18"W	15+36.22	16+97.60
L31		35.02	S0° 10' 35.92"E	16+97.60	17+32.61



FRAZIER PIKE RD - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 10+25 - 17+33

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W- 3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S- 4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

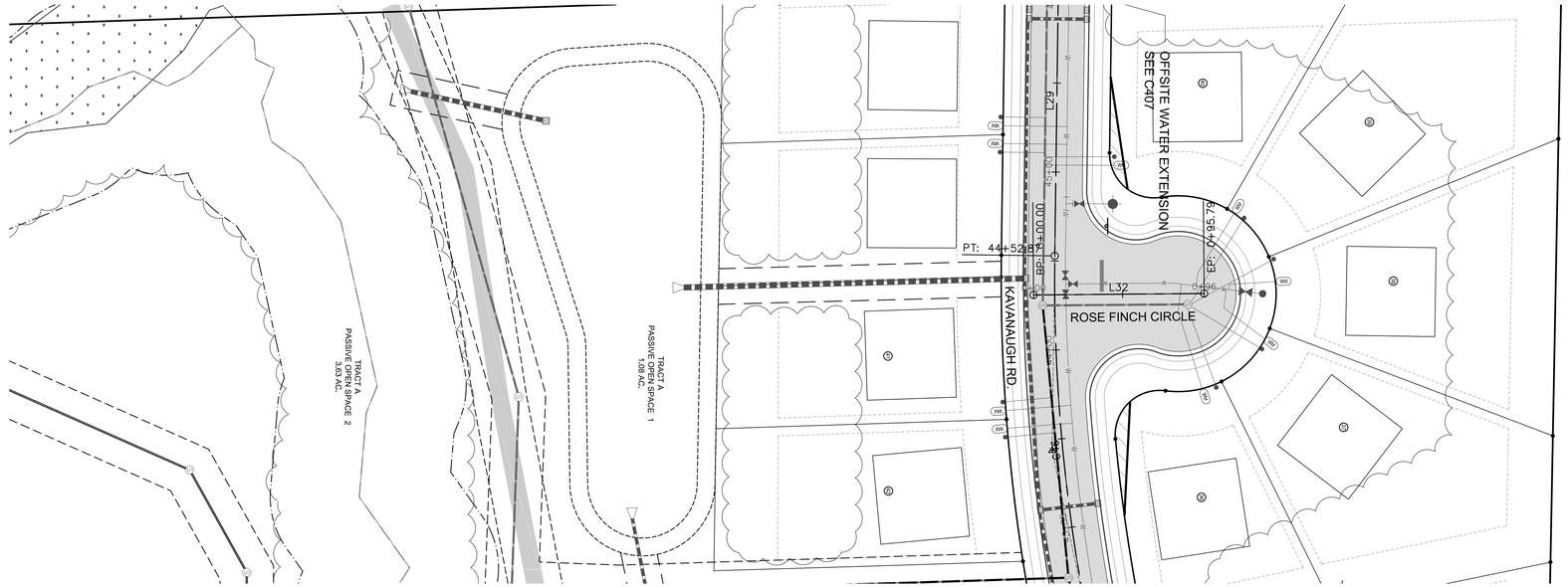
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

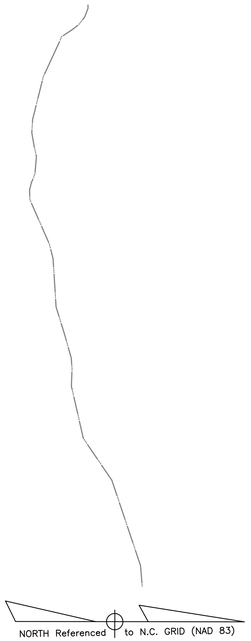
PLAN AND PROFILE
FRAZIER PIKE RD.

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

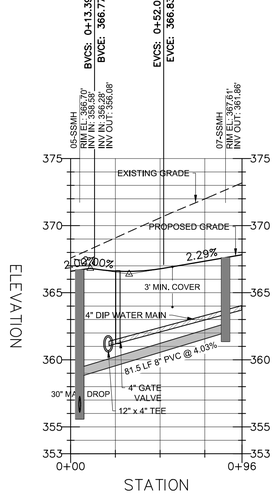
SHEET
C504



ROSE FINCH CIRCLE - PLAN
SCALE: 1"=40'
STA: 0+00 - 0+96



ROSE FINCH CIRCLE					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L32		95.79	N0° 55' 32.50"W	0+00.00	0+95.79



ROSE FINCH CIRCLE - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 0+00 - 0+96

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

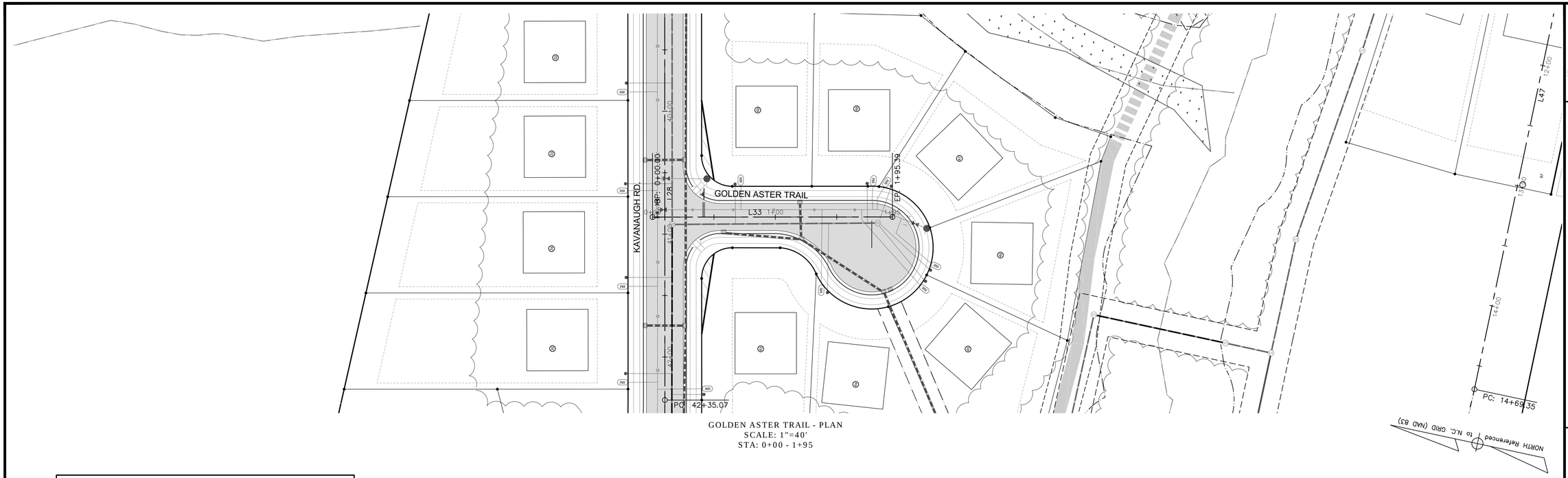
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
ROSE FINCH CIRCLE

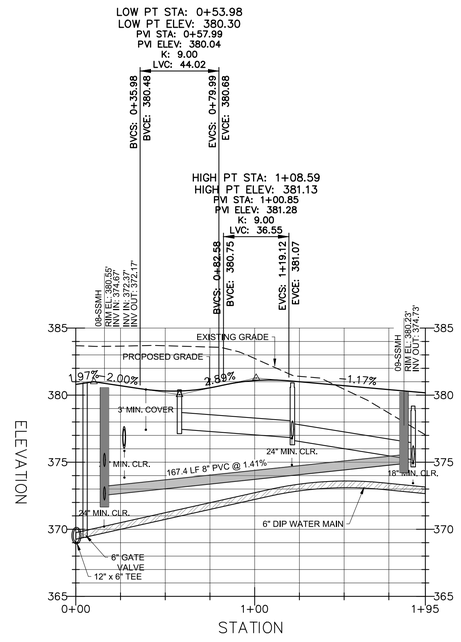
Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C505



GOLDEN ASTER TRAIL - PLAN
SCALE: 1"=40'
STA: 0+00 - 1+95

GOLDEN ASTER TRAIL					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L33		195.39	S12° 09' 09.56"E	0+00.00	1+95.39



GOLDEN ASTER TRAIL - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 0+00 - 1+95

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

ELIZABETH HEIGHTS----

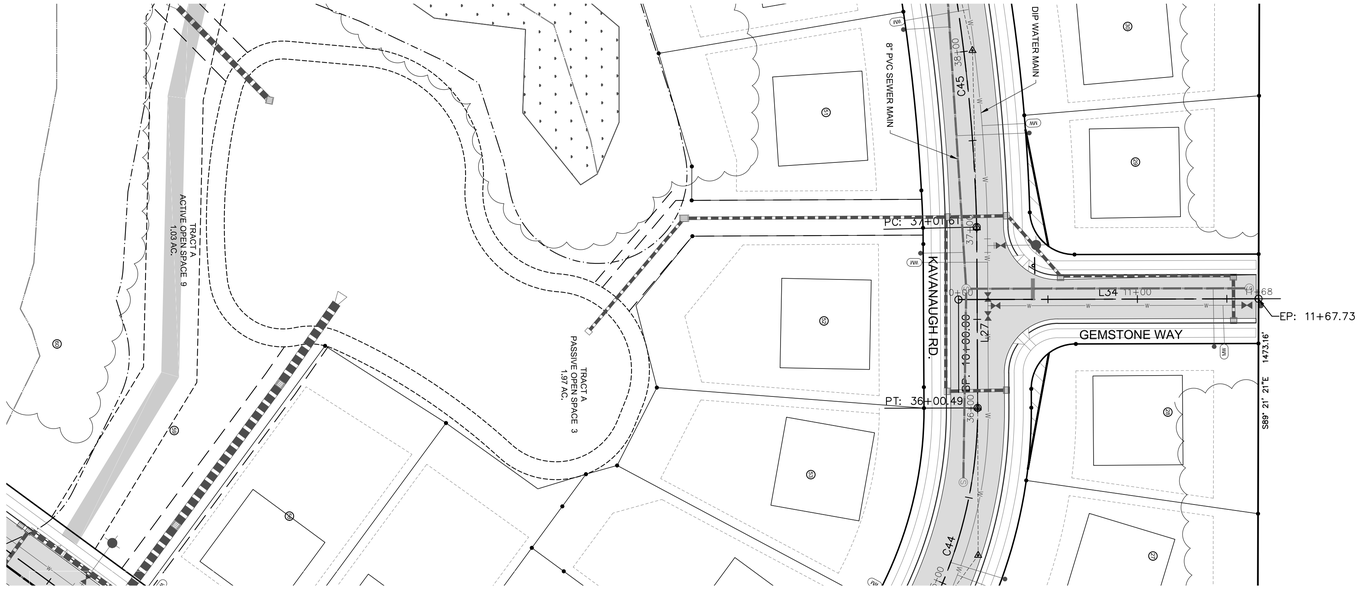
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

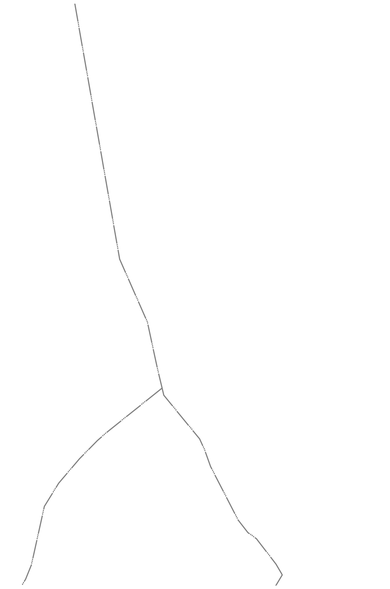
PLAN AND PROFILE
GOLDEN ASTER TRAIL

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C506

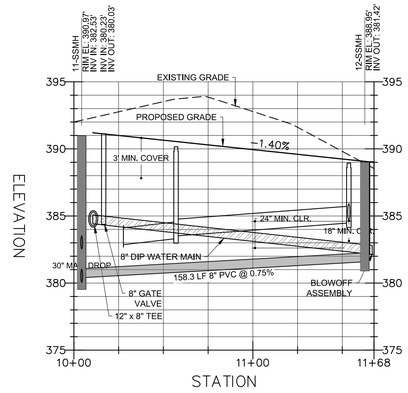


GEMSTONE WAY - PLAN
SCALE: 1"=40'
STA: 10+00 - 11+68



NORTH Referenced to N.C. GRID (NAD 83)

GEMSTONE WAY					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L34		167.73	N0° 21' 13.83"E	10+00.00	11+67.73



GEMSTONE WAY - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 10+00 - 11+68

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date _____

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

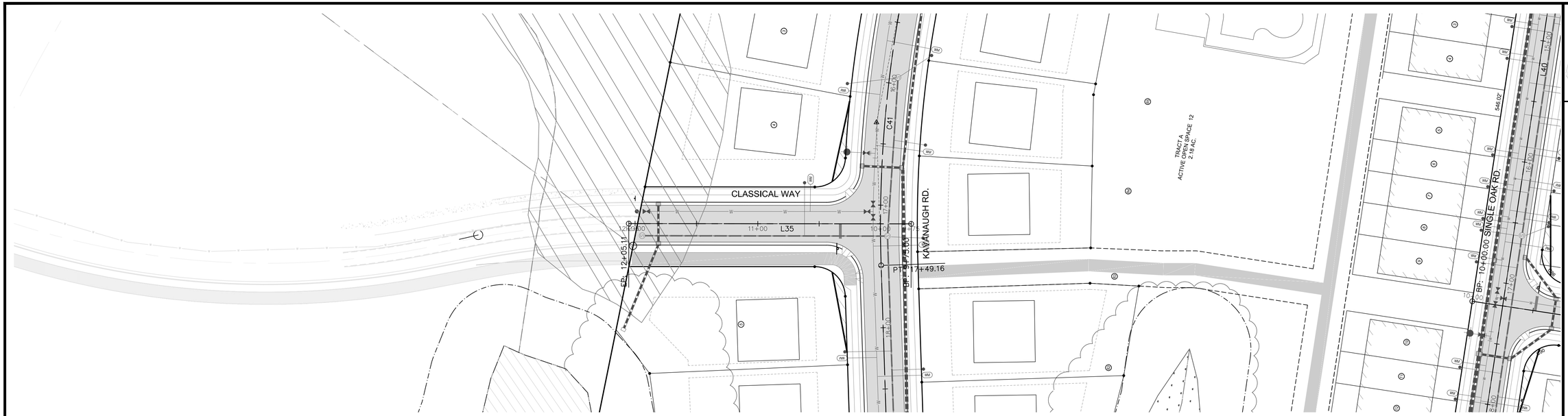
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
GEMSTONE WAY

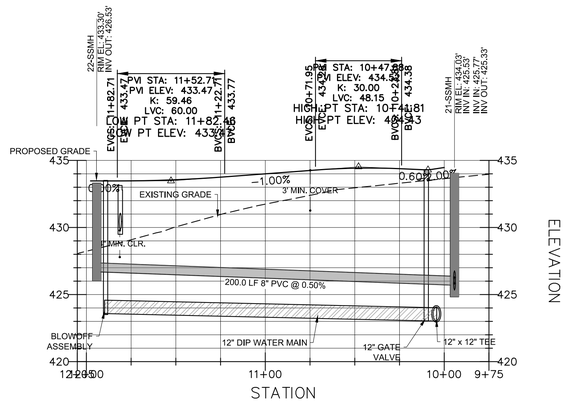
Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C507



CLASSICAL WAY - PLAN
SCALE: 1"=40'
STA: 09+75 - 12+05

CLASSICAL WAY					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L35		230.11	N10° 26' 45.70"W	9+75.00	12+05.11



CLASSICAL WAY - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 09+75 - 12+05

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

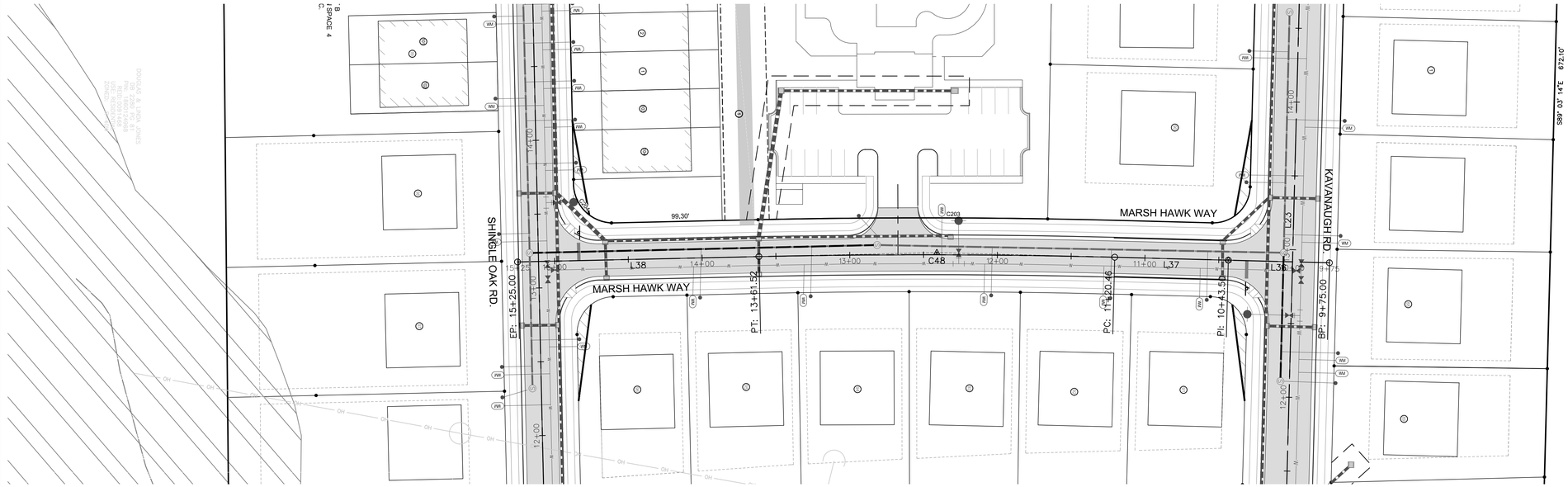
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
CLASSICAL WAY

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

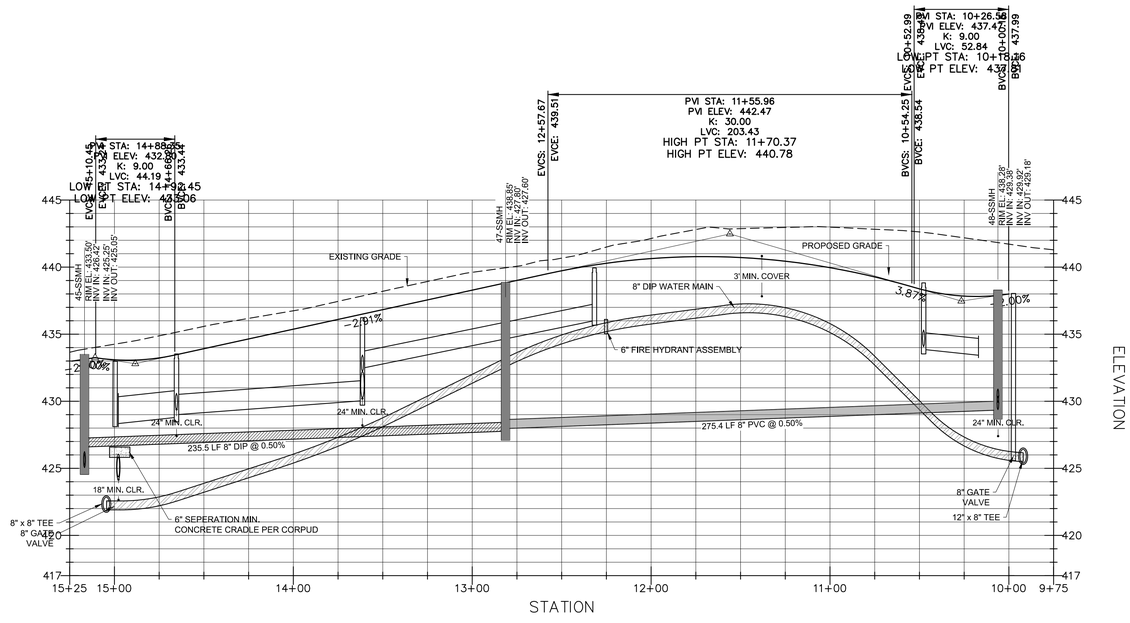
SHEET
C508



MARSH HAWK WAY - PLAN
SCALE: 1"=40'
STA: 09+75 - 15+25

NORTH Referenced to N.C. GRID (NAD 83)

MARSH HAWK WAY					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L36		68.50	S0° 56' 24.88"W	9+75.00	10+43.50
L37		76.96	S0° 56' 24.88"W	10+43.50	11+20.46
C48	5000.00	241.06	S0° 26' 27.43"E	11+20.46	13+61.52
L38		163.48	S1° 49' 19.73"E	13+61.52	15+25.00



MARSH HAWK WAY - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 09+75 - 15+25

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

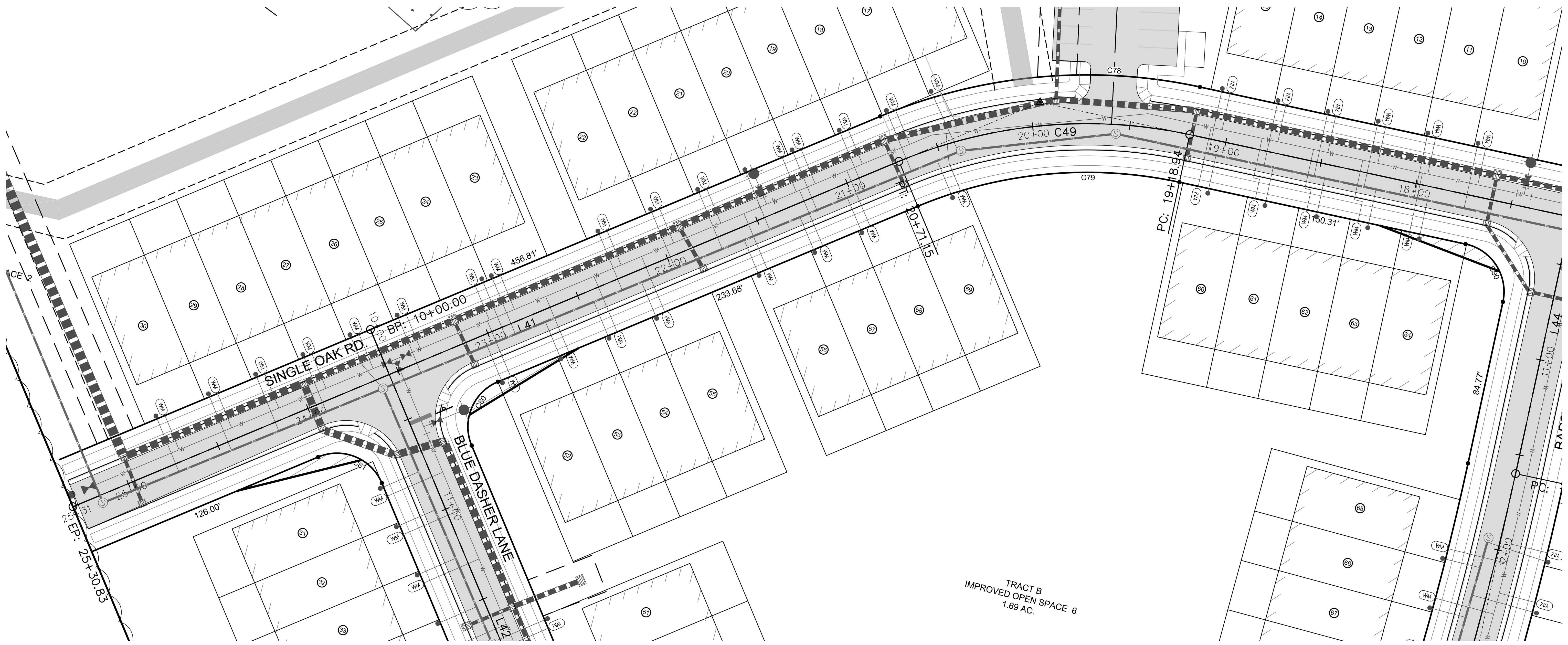
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

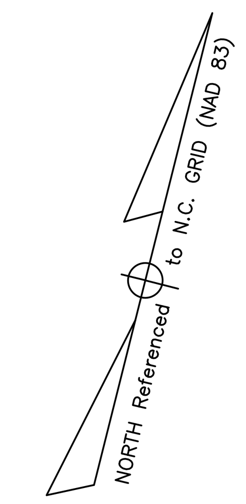
PLAN AND PROFILE
MARSH HAWK WAY

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C509

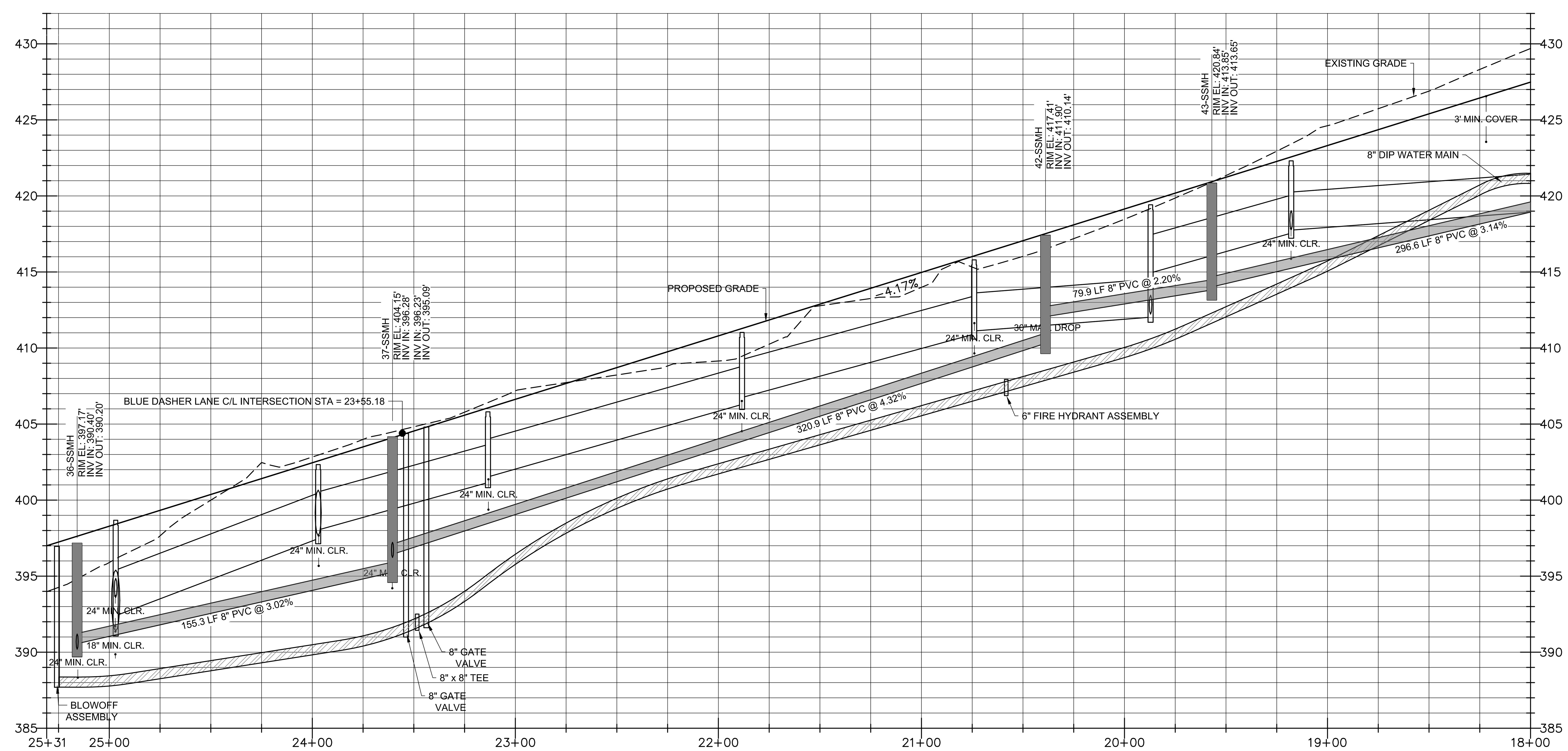


SEE SHEET C511



SINGLE OAK RD. - PLAN
SCALE: 1"=40'
STA: 18+00 - 25+31

SINGLE OAK ROAD					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L39		90.62	S86° 10' 11.26"W	10+00.00	10+90.62
C50	200.00	7.01	S87° 10' 25.76"W	10+90.62	10+97.63
L40		821.31	S88° 10' 40.27"W	10+97.63	19+18.94
C49	250.00	152.21	S70° 44' 08.37"W	19+18.94	20+71.15
L41		459.68	S53° 17' 36.47"W	20+71.15	25+30.83



SINGLE OAK RD. - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 18+00 - 25+31

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The *Construction Contractor* responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for *contacting* the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

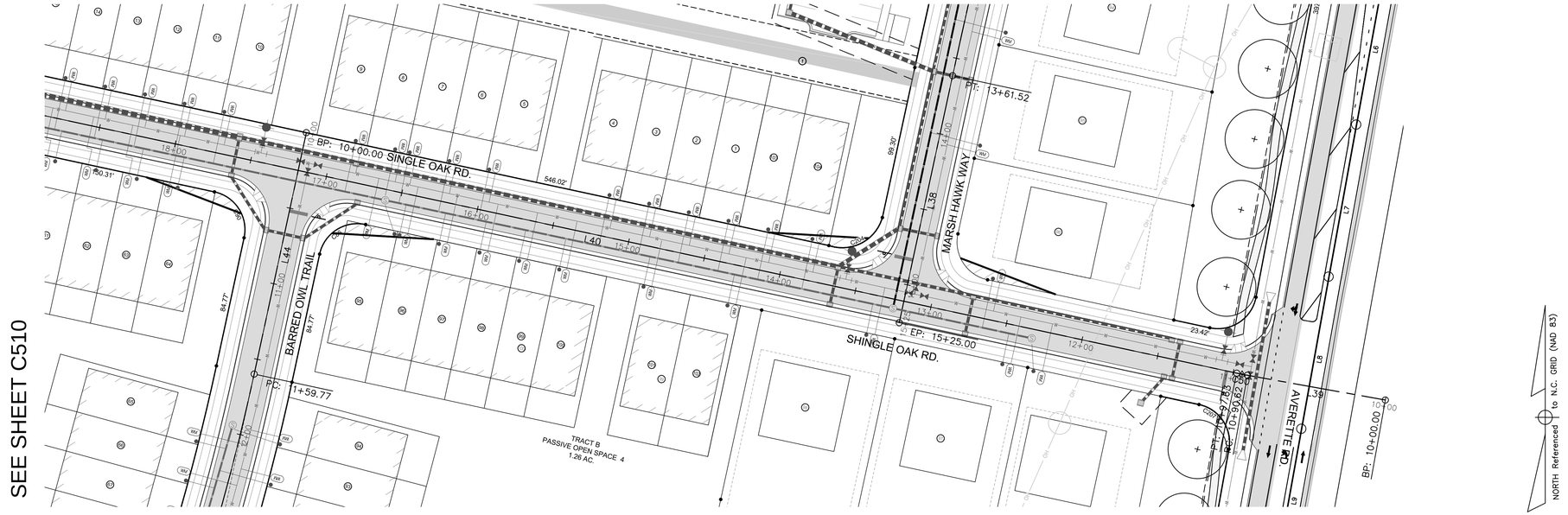
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
SHINGLE OAK RD.

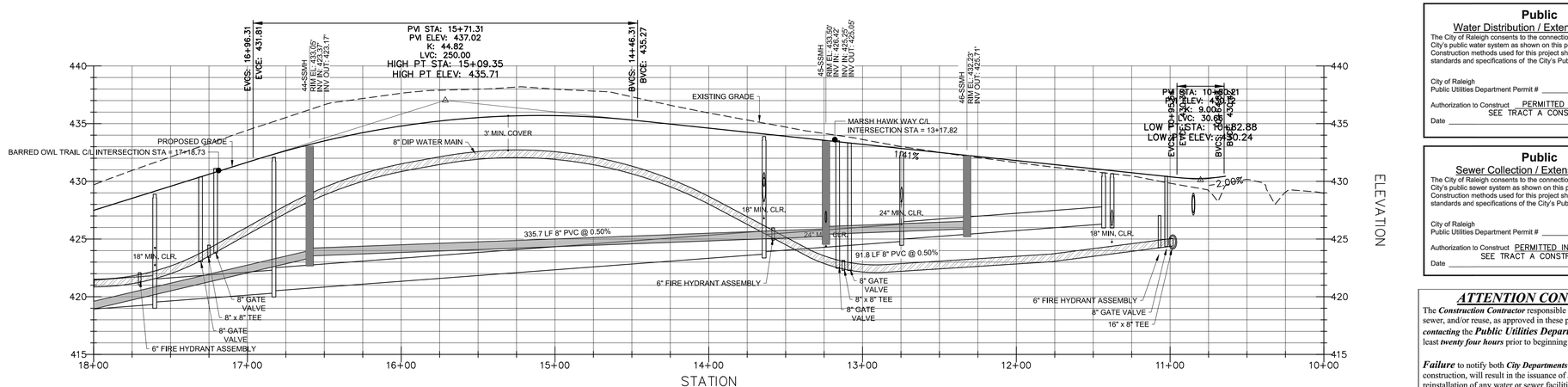
Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C510



SINGLE OAK RD. - PLAN
SCALE: 1"=40'
STA: 10+00 - 18+00

SINGLE OAK ROAD					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L39		90.62	S86° 10' 11.26"W	10+00.00	10+90.62
C50	200.00	7.01	S87° 10' 25.76"W	10+90.62	10+97.63
L40		821.31	S88° 10' 40.27"W	10+97.63	19+18.94
C49	250.00	152.21	S70° 44' 08.37"W	19+18.94	20+71.15
L41		459.68	S53° 17' 36.47"W	20+71.15	25+30.83



SINGLE OAK RD. - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 10+00 - 18+00

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

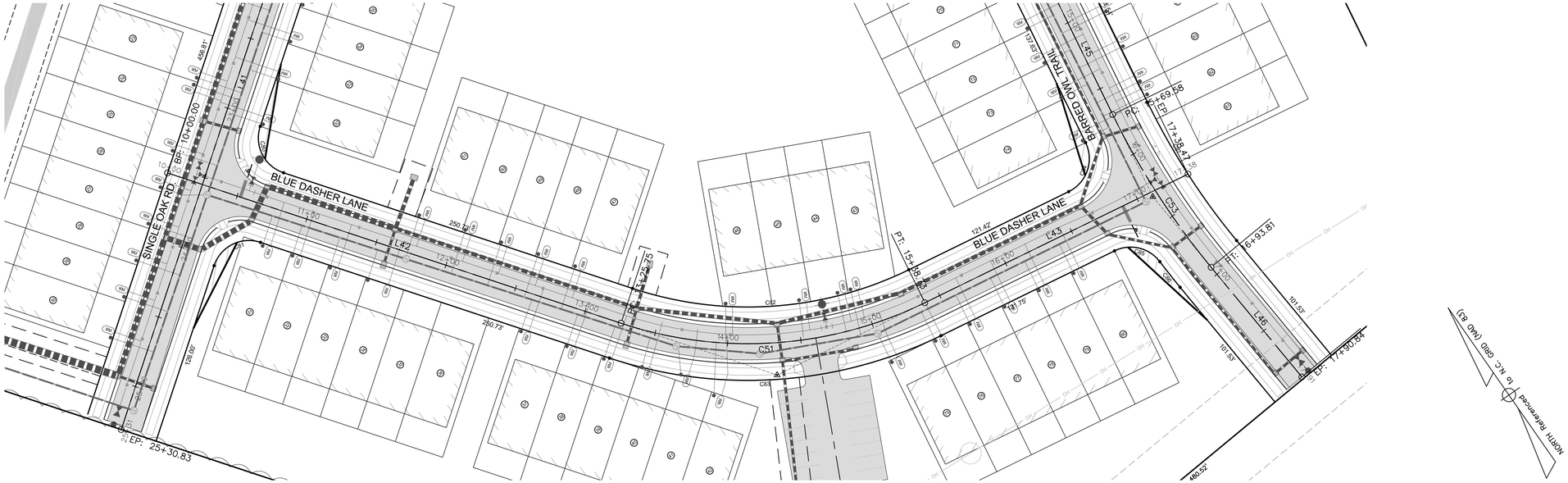
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
SHINGLE OAK RD.

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

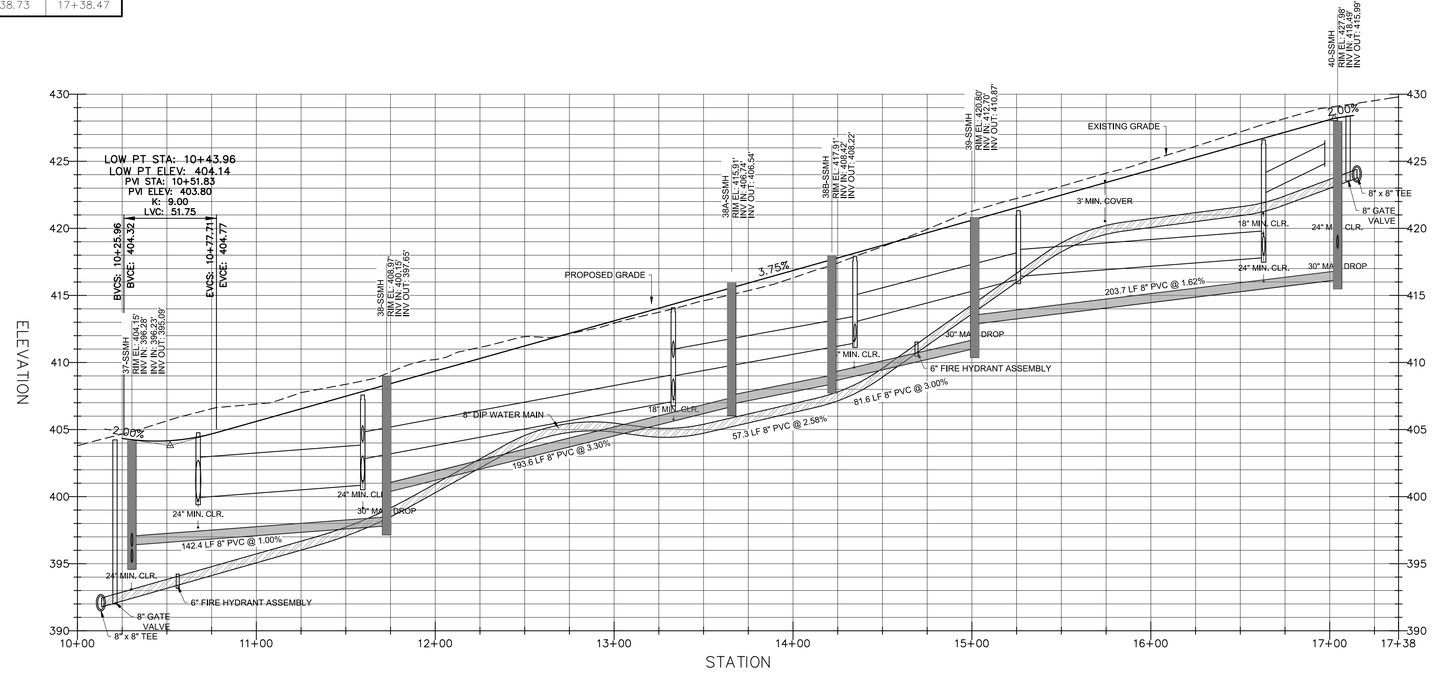
SHEET
C511



BLUE DASHER LANE - PLAN
SCALE: 1"=40'
STA: 10+00 - 17+38

BLUE DASHER LANE

Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L42		325.75	S36° 42' 23.59"E	10+00.00	13+25.75
C51	275.00	212.98	S58° 53' 35.14"E	13+25.75	15+38.73
L43		199.74	S81° 04' 46.69"E	15+38.73	17+38.47



BLUE DASHER LANE - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 10+00 - 17+38

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
	REVISIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

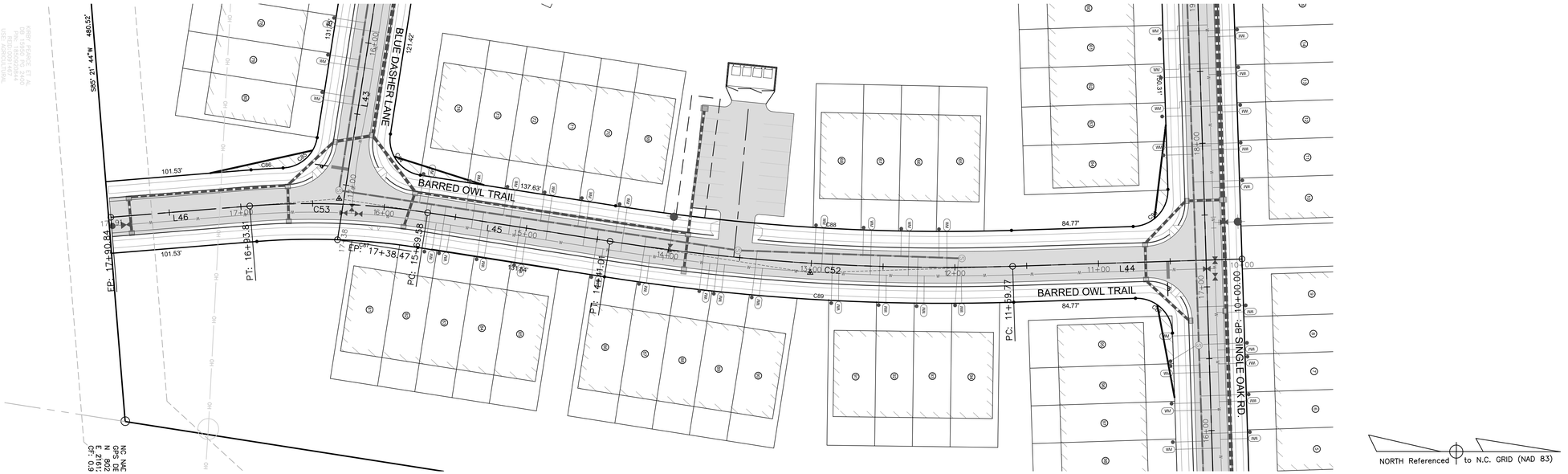
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

PLAN AND PROFILE
BLUE DASHER LANE

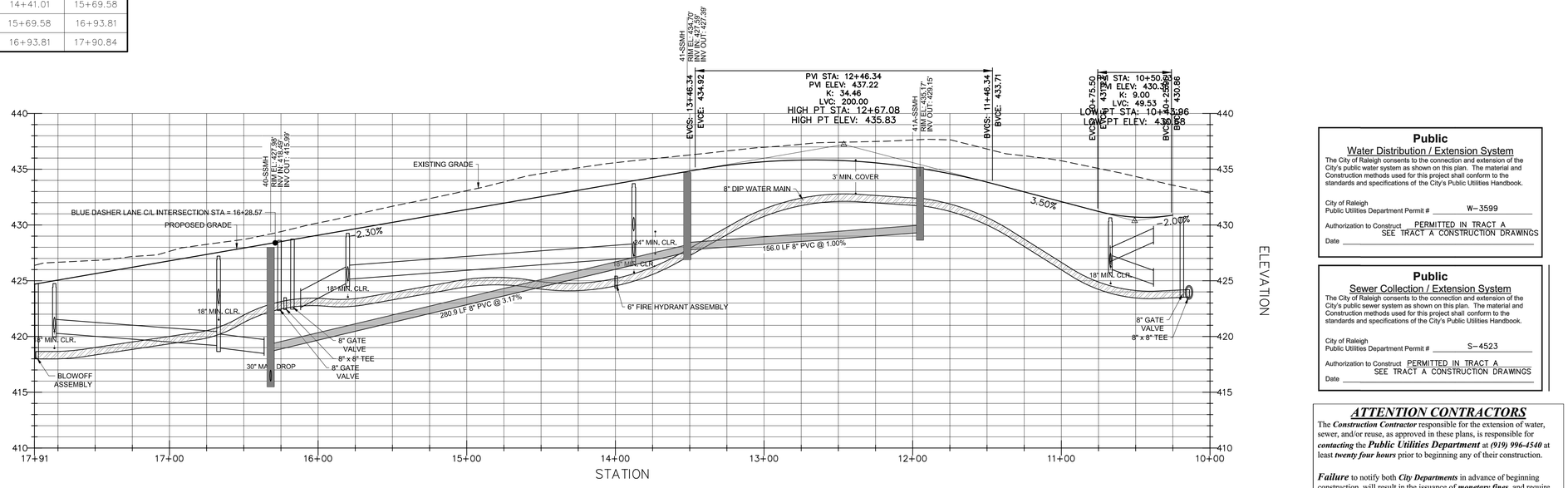
Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C512



BARRED OWL TRAIL - PLAN
SCALE: 1"=40'
STA: 10+00 - 17+91

BARRED OWL TRAIL					
Number	Radius	Length	Line/Chord Direction	Start Station	End Station
L44		159.77	S1° 49' 19.73"E	10+00.00	11+59.77
C52	1500.00	281.24	S3° 32' 56.79"W	11+59.77	14+41.01
L45		128.56	S8° 55' 13.31"W	14+41.01	15+69.58
C53	525.00	124.23	S2° 08' 28.47"W	15+69.58	16+93.81
L46		97.03	S4° 38' 16.37"E	16+93.81	17+90.84



BARRED OWL TRAIL - PROFILE
HOR. SCALE: 1"=40' VER. SCALE: 1"=8'
STA: 10+00 - 17+91

Public
Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-3599

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

Public
Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4523

Authorization to Construct PERMITTED IN TRACT A
SEE TRACT A CONSTRUCTION DRAWINGS

Date

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

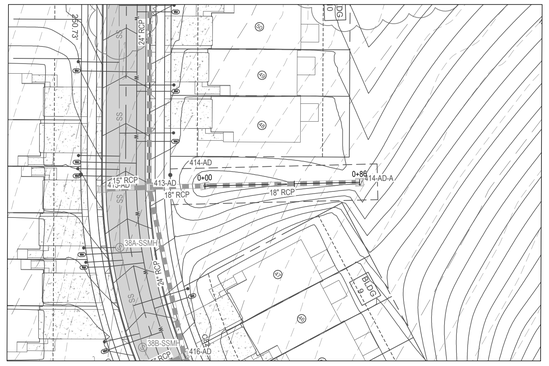
PLAN AND PROFILE
BARRED OWL TRAIL

Project Engineer:	TSS
Designed By:	MP
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

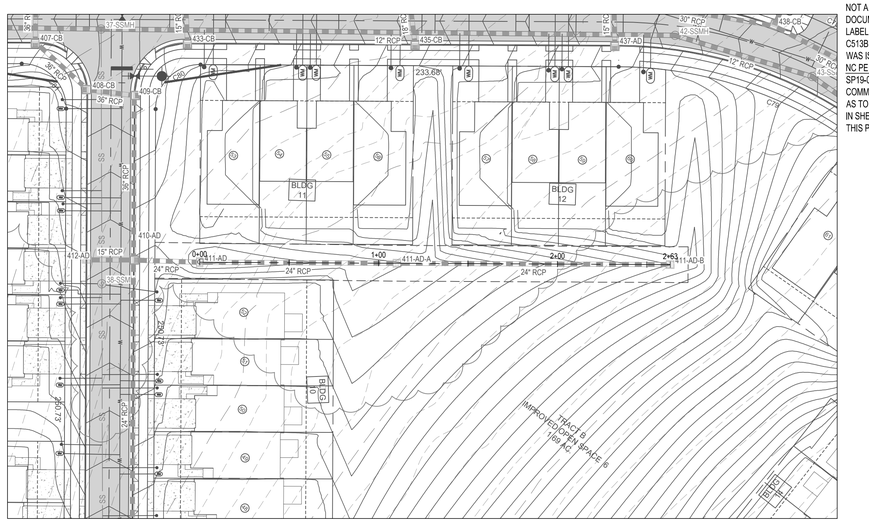
SHEET
C513



STORM SEWER - PLAN



STORM SEWER - PLAN



STORM SEWER - PLAN

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

N

NAD 83 / NSRS 2011

SCALE 1"=40'

0 40' 80'



N

NAD 83 / NSRS 2011

SCALE 1"=40'

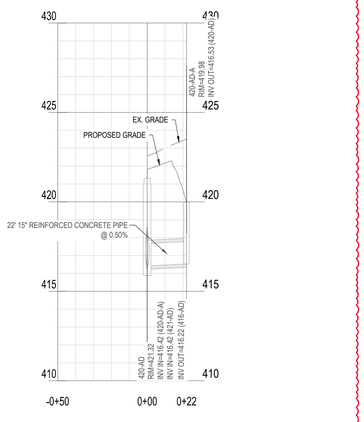
0 40' 80'

N

NAD 83 / NSRS 2011

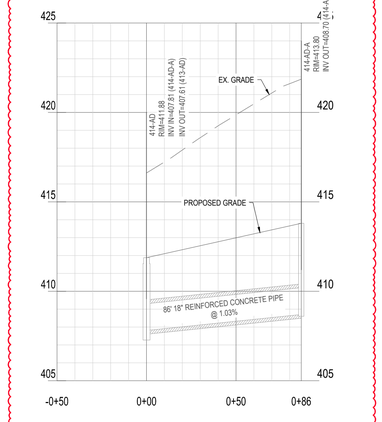
SCALE 1"=40'

0 40' 80'



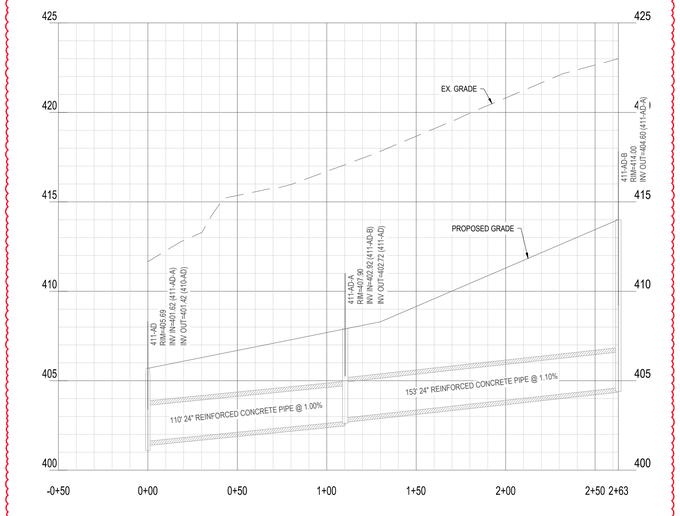
STORM SEWER - PROFILE

PROFILE SCALE
1" = 40' HORIZ.
1" = 4' VERT.



STORM SEWER - PROFILE

PROFILE SCALE
1" = 40' HORIZ.
1" = 4' VERT.



STORM SEWER - PROFILE

PROFILE SCALE
1" = 40' HORIZ.
1" = 4' VERT.

REV #	DATE	DESCRIPTION
1	12.16.2024	BUILDING FOOTPRINT REVISION TO SP-19-01
2	02.20.2025	REVISION TO SP-19-01 PER TOR COMMENTS

FINAL DRAWING

FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32584 DOUGLAS B. COOPER

04/15/2025 10:12:03 AM

Douglas B Cooper

Digitally signed by Douglas B Cooper
DN: cn=Douglas B Cooper, o=Bateman Civil Survey Company, ou=Engineer, email=dcooper@batemancivil.com, c=US
Reason: I have reviewed this document
Date: 2025.04.15 10:12:03-04'00'

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1051
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS PHASE 2 REVISIONS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY

STORM SEWER PLAN & PROFILE CONT.

Design By:	BCSC
Date:	24.11.13
Project #:	P170348

SHEET
C513B

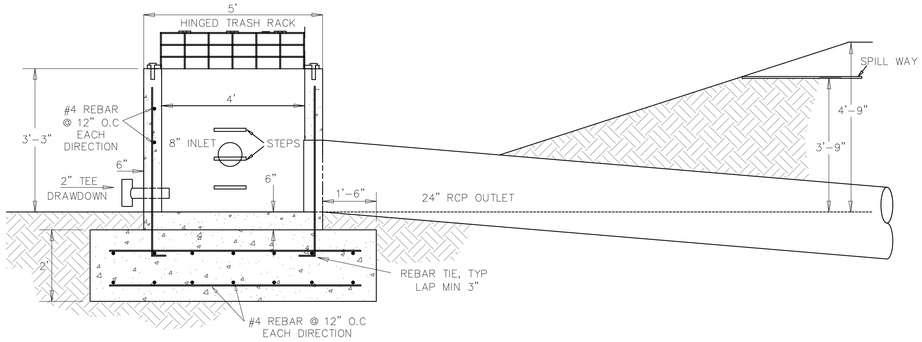
p:\2017 projects\170348 elizabeth heights\ENG\CAD\DWG\Sheets\Revision\P170348_C800_ROAD_IMPR.dwg

LEGEND:

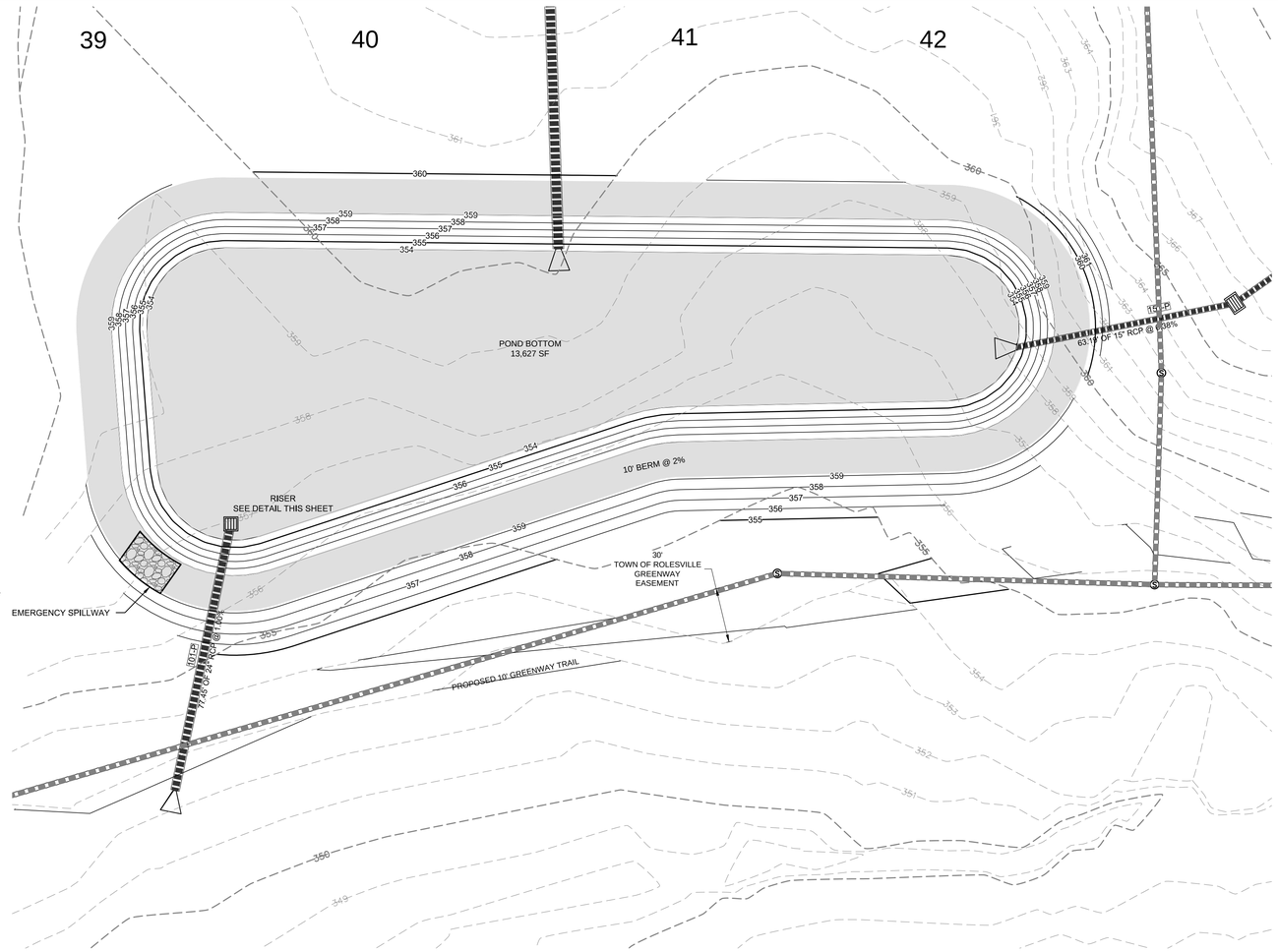
LIMITS OF DISTURBANCE

326 EX CONTOUR LINE

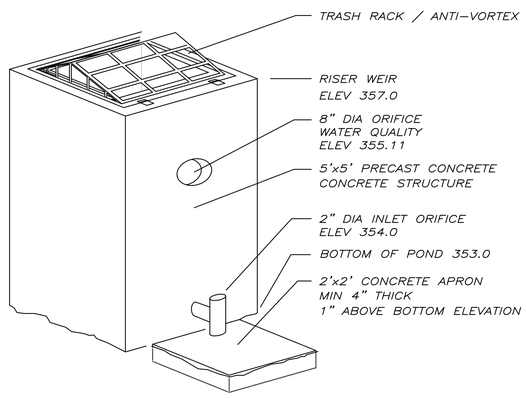
326 PROPOSED CONTOUR LINE



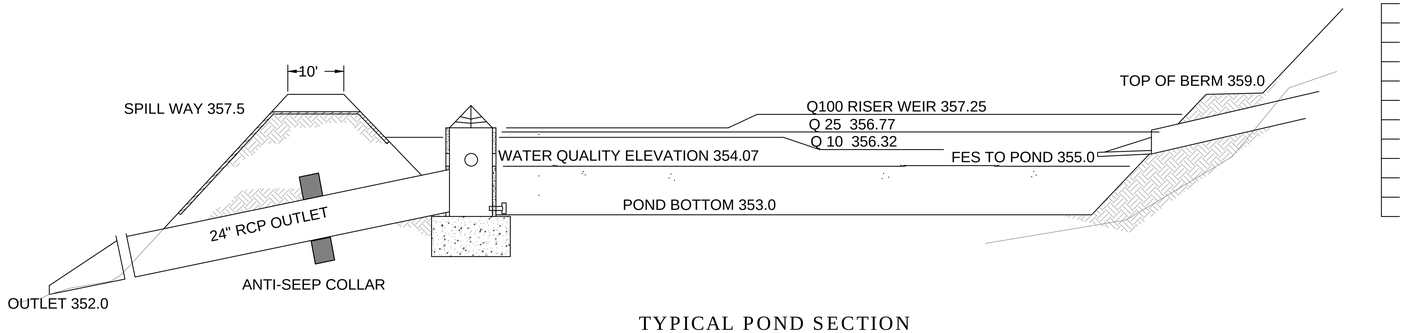
RISER - SECTION
SCALE: 1"=2'



BMP 1 - PLAN
SCALE: 1"=20'



RISER STRUCTURE VIEW
NOT TO SCALE



TYPICAL POND SECTION
NOT TO SCALE

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

ROLESVILLE NOTE:
TRACT B - TOWNHOMES IS A SEPARATE SUBMITTAL AS A QUASI-JUDICIAL DETAILED SITE PLAN AND SHOULD BE NOTED AS NOT INCLUDED WITH THESE SUBDIVISION CONSTRUCTION PLANS. THE DETAILED SITE PLAN IS A SEPARATE QUASI-JUDICIAL APPROVAL PROCESS PER THE ROLESVILLE UNIFIED DEVELOPMENT ORDINANCE. THE DETAILED SITE PLAN MUST BE APPROVED THE TOWN BOARD OF COMMISSIONERS AND CANNOT BE INCLUDED IN THE ADMINISTRATIVE APPROVAL OF THE CONSTRUCTION PLANS FOR TRACT A, SINGLE-FAMILY RESIDENTIAL LOTS. THE SUBMITTED SITE PLAN SHALL INCLUDE THE LISTED INFORMATION STATED IN SECTION 3.6.3 GENERAL CONDITIONS AND LIMITATIONS ASSOCIATED WITH A SPECIAL USE PERMIT. A COPY OF SAID SECTION IS BELOW. PLEASE SUBMIT A REVISED DETAIL SITE PLAN APPLICATION FOR PHASE 2, TOWNHOMES THAT WILL INCLUDE ALL IMPROVEMENTS AND DETAILS LISTED IN SECTION 3.6.3 FOR THE DEVELOPMENT. PLEASE SUBMIT A SEPARATE DETAIL SITE PLAN APPLICATION FOR TRACT B - TOWNHOMES THAT WILL INCLUDE ALL IMPROVEMENTS FOR THE DEVELOPMENT OF THIS TRACT.

SYMBOL LEGEND

END OF STREET SIGNAGE

STOP SIGN AND STREET NAME SIGN LOCATION

ACCESSIBILITY RAMP

LARGE STREET TREE, TYP
2½" CALIPER MIN

811
KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=60' 60 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

BMP DETAILS
BMP 1

Project Engineer:	TSS
Designed By:	TSS
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

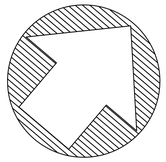
SHEET
C522

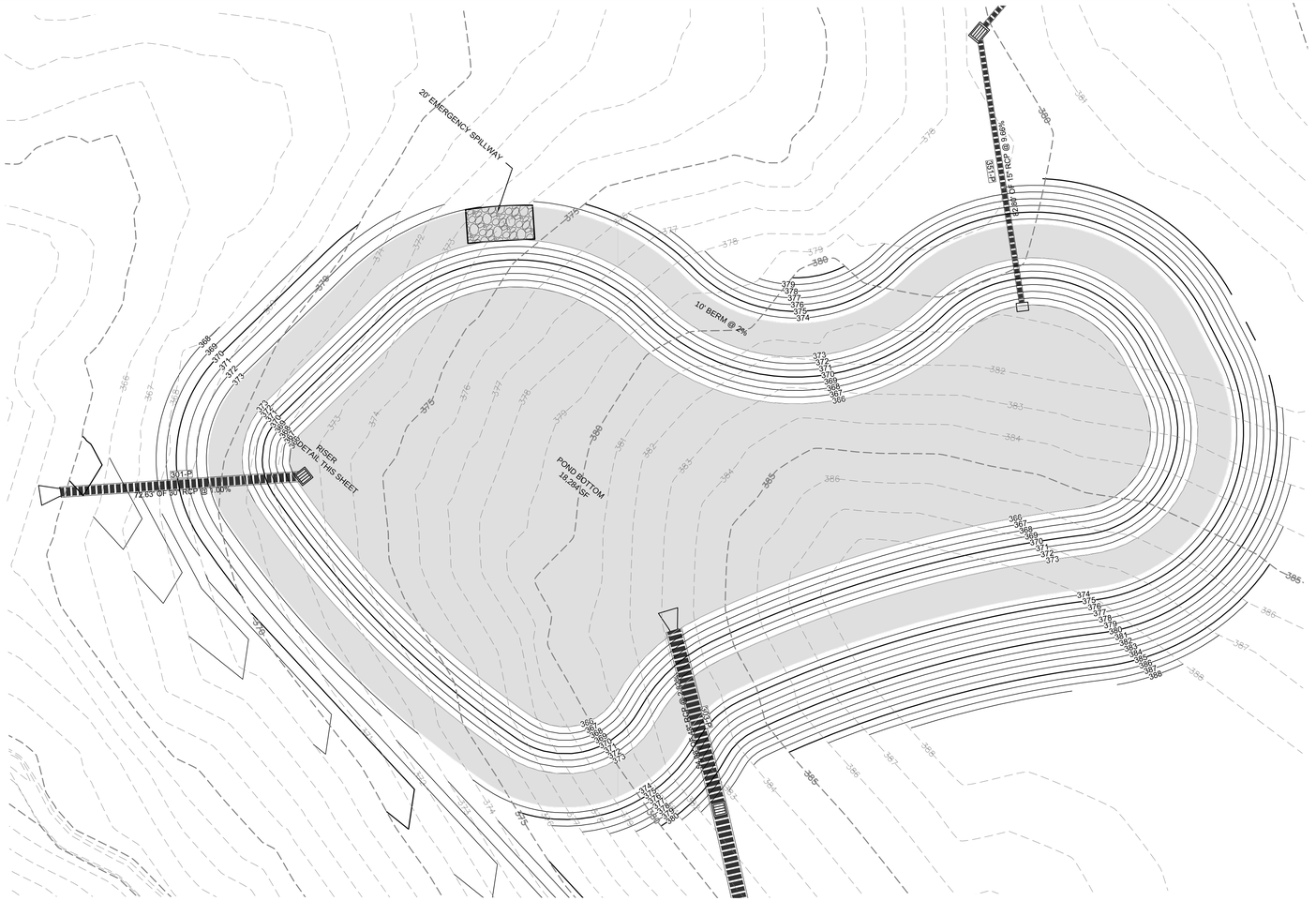
LEGEND:

LIMITS OF DISTURBANCE

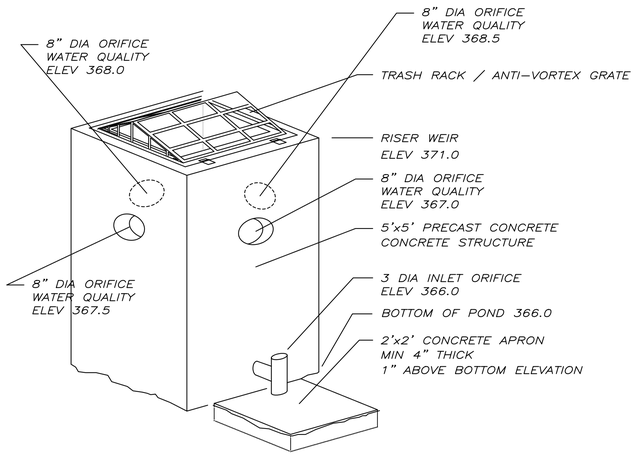
326 EX CONTOUR LINE

326 PROPOSED CONTOUR LINE

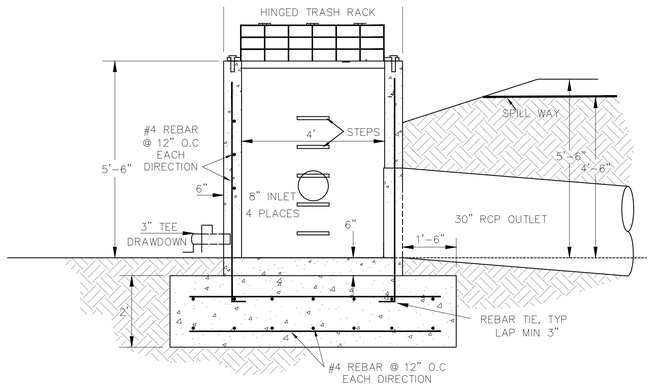




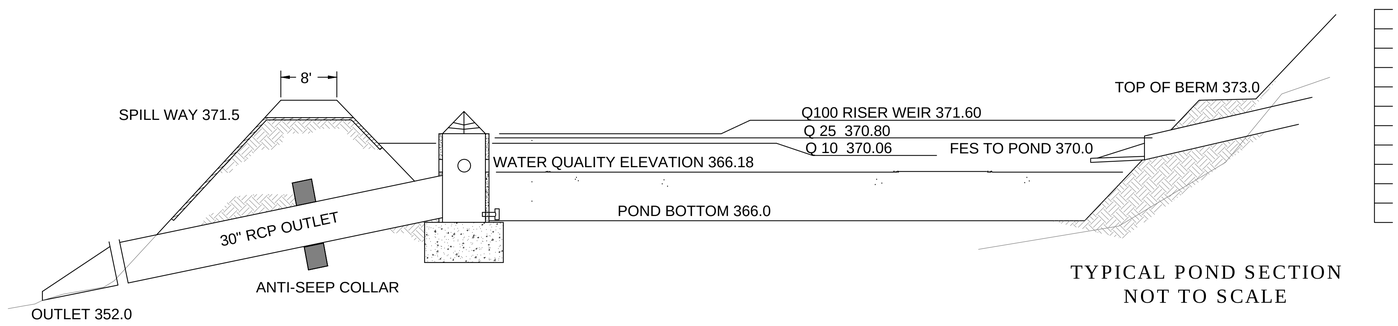
BMP 2 - PLAN
SCALE: 1"=20'



RISER STRUCTURE VIEW
NOT TO SCALE



RISER - SECTION
SCALE: 1"=2'



TYPICAL POND SECTION
NOT TO SCALE

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

ROLESVILLE NOTE:
TRACT B - TOWNHOMES IS A SEPARATE SUBMITTAL AS A QUASI-JUDICIAL DETAILED SITE PLAN AND SHOULD BE NOTED AS NOT INCLUDED WITH THESE SUBDIVISION CONSTRUCTION PLANS. THE DETAILED SITE PLAN IS A SEPARATE QUASI-JUDICIAL APPROVAL PROCESS PER THE ROLESVILLE UNIFIED DEVELOPMENT ORDINANCE. THE DETAILED SITE PLAN MUST BE APPROVED THE TOWN BOARD OF COMMISSIONERS AND CANNOT BE INCLUDED IN THE ADMINISTRATIVE APPROVAL OF THE CONSTRUCTION PLANS FOR TRACT A, SINGLE-FAMILY RESIDENTIAL LOTS. THE SUBMITTED SITE PLAN SHALL INCLUDE THE LISTED INFORMATION STATED IN SECTION 3.6.3 GENERAL CONDITIONS AND LIMITATIONS ASSOCIATED WITH A SPECIAL USE PERMIT. A COPY OF SAID SECTION IS BELOW. PLEASE SUBMIT A REVISED DETAIL SITE PLAN APPLICATION FOR PHASE 2, TOWNHOMES THAT WILL INCLUDE ALL IMPROVEMENTS AND DETAILS LISTED IN SECTION 3.6.3 FOR THE DEVELOPMENT. PLEASE SUBMIT A SEPARATE DETAIL SITE PLAN APPLICATION FOR TRACT B - TOWNHOMES THAT WILL INCLUDE ALL IMPROVEMENTS FOR THE DEVELOPMENT OF THIS TRACT.

811 KNOW WHAT IS BELOW CALL BEFORE YOU DIG

60 60 120
1"=60'

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

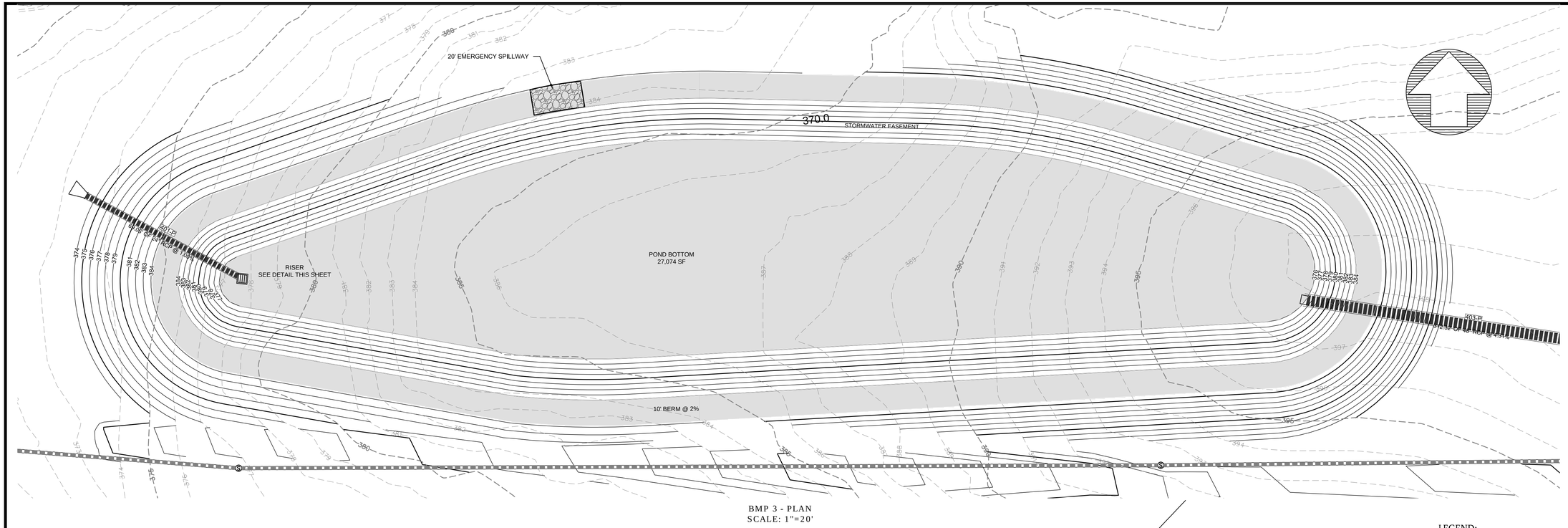
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

BMP DETAILS
BMP2

Project Engineer:	TSS
Designed By:	TSS
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

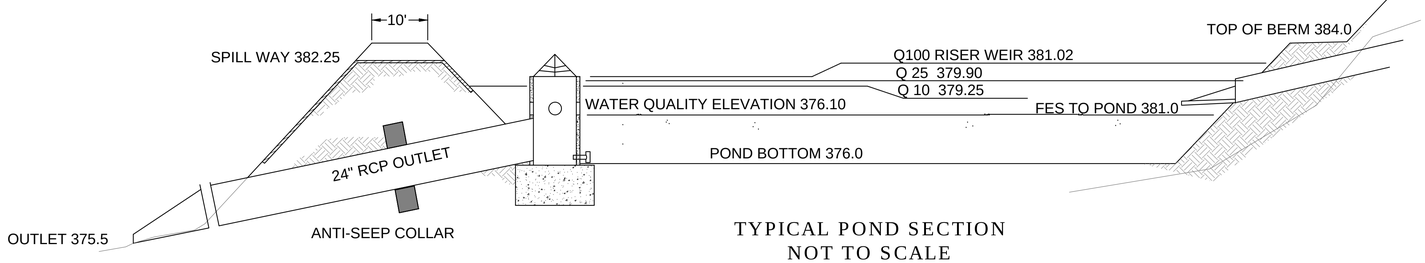
SHEET
C523



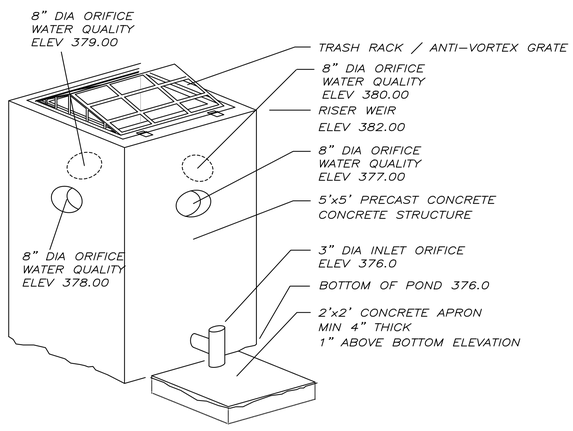
BMP 3 - PLAN
SCALE: 1"=20'

LEGEND:

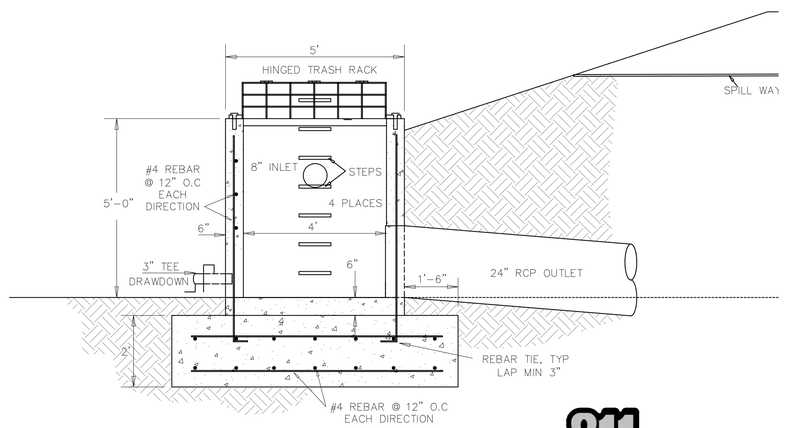
- LIMITS OF DISTURBANCE
- 326 EX CONTOUR LINE
- 326 PROPOSED CONTOUR LINE



TYPICAL POND SECTION
NOT TO SCALE



RISER STRUCTURE VIEW
NOT TO SCALE



RISER - SECTION
SCALE: 1"=2'

ROLESVILLE NOTE:
TRACT B - TOWNHOMES IS A SEPARATE SUBMITTAL AS A QUASI-JUDICIAL DETAILED SITE PLAN AND SHOULD BE NOTED AS NOT INCLUDED WITH THESE SUBDIVISION CONSTRUCTION PLANS. THE DETAILED SITE PLAN IS A SEPARATE QUASI-JUDICIAL APPROVAL PROCESS PER THE ROLESVILLE UNIFIED DEVELOPMENT ORDINANCE. THE DETAILED SITE PLAN MUST BE APPROVED THE TOWN BOARD OF COMMISSIONERS AND CANNOT BE INCLUDED IN THE ADMINISTRATIVE APPROVAL OF THE CONSTRUCTION PLANS FOR TRACT A, SINGLE-FAMILY RESIDENTIAL LOTS. THE SUBMITTED SITE PLAN SHALL INCLUDE THE LISTED INFORMATION STATED IN SECTION 3.6.3 GENERAL CONDITIONS AND LIMITATIONS ASSOCIATED WITH A SPECIAL USE PERMIT. A COPY OF SAID SECTION IS BELOW. PLEASE SUBMIT A REVISED DETAIL SITE PLAN APPLICATION FOR PHASE 2, TOWNHOMES THAT WILL INCLUDE ALL IMPROVEMENTS AND DETAILS LISTED IN SECTION 3.6.3 FOR THE DEVELOPMENT. PLEASE SUBMIT A SEPARATE DETAIL SITE PLAN APPLICATION FOR TRACT B - TOWNHOMES THAT WILL INCLUDE ALL IMPROVEMENTS FOR THE DEVELOPMENT OF THIS TRACT.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

KNOW WHAT IS BELOW
CALL BEFORE YOU DIG

1"=60' 60 60 120

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

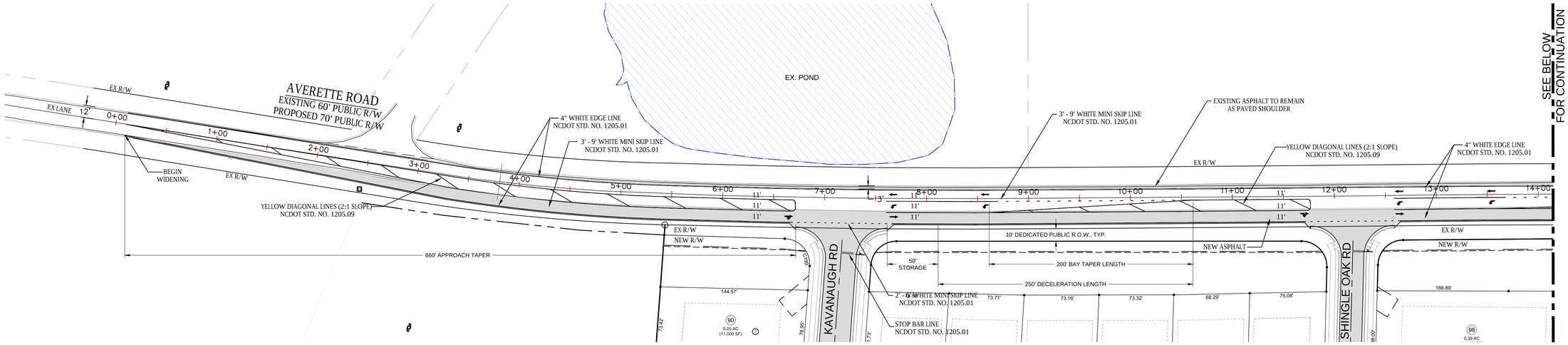
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

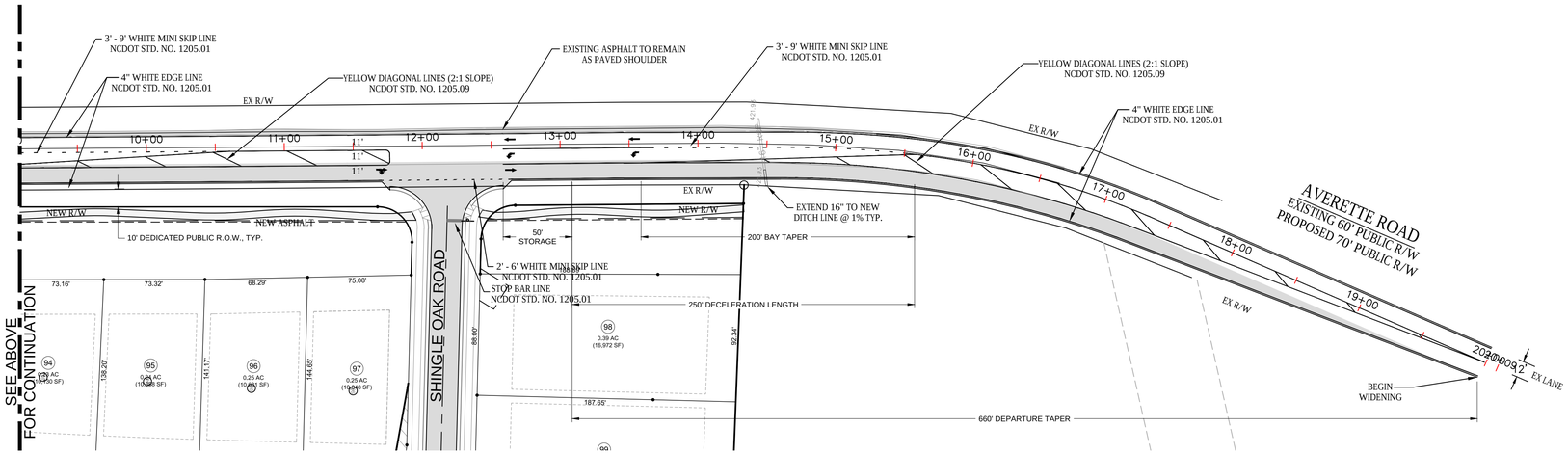
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

BMP DETAILS
BMP3

Project Engineer:	TSS
Designed By:	TSS
Drawn By:	MP
Checked By:	TSS
Scale:	AS SHOWN
Date:	07/31/2019
Project Number:	170348

SHEET
C524

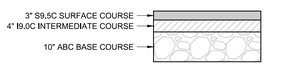




NOTES:

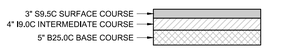
1. ALL CONSTRUCTION IN THE RIGHT OF WAY SHALL TO BE IN ACCORDANCE TO NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THEIR ACTIVITIES. CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE 48 HOURS PRIOR TO BEGINNING CONSTRUCTION. NC ONE CALL 1-800-632-4949 PER NCGS 87-102.
3. NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DRIVEWAY PERMIT IS REQUIRED BEFORE STARTING CONSTRUCTION.
4. THE DEVELOPER IS RESPONSIBLE FOR THE FABRICATION AND INSTALLATION OF ALL REQUIRED SIGNS AND PAVEMENT MARKINGS WITH IN THE PUBLIC RIGHT OF WAY.
5. CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC MAINTENANCE PLAN FOR REVIEW AND APPROVAL BY DOT PRIOR TO BEGINNING WORK WITHIN THE RIGHT OF WAY.
6. CONTRACTOR SHALL MAINTAIN ACCESS DURING ALL TIMES OF CONSTRUCTION.
7. CONTRACTOR SHALL CONTACT WAKE COUNTY SCHOOLS TO COORDINATE ROAD WORK SO IT WILL NOT ADVERSELY AFFECT THE SCHOOLS TRANSPORTATION SCHEDULE AND OR OPERATIONS.
8. THERMOPLASTIC PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS SHALL BE INSTALLED WITHIN THE TURN LANE CONSTRUCTION LIMITS IN ACCORDANCE WITH THE STANDARD NCDOT STANDARDS AND SPECIFICATIONS.
9. THE CONTRACTOR SHALL RESURFACE THE ENTIRE WITH OF THE ROADWAY FOR THE ENTIRE LENGHT OF THE CONSTRUCITON LIMITS WITH 1.5 INCES OF S-9.5B. BOTH ENDS OF THE TURN LANE SHALL BE MILLED (0" TO 1.5") A MINIMUM OF 50 FEET SO THAT THERE WILL BE A SMOOTH TRANSITION BACK TO THE EXISTING PAVEMENT.

FOR WIDENING GREATER THAN 6'

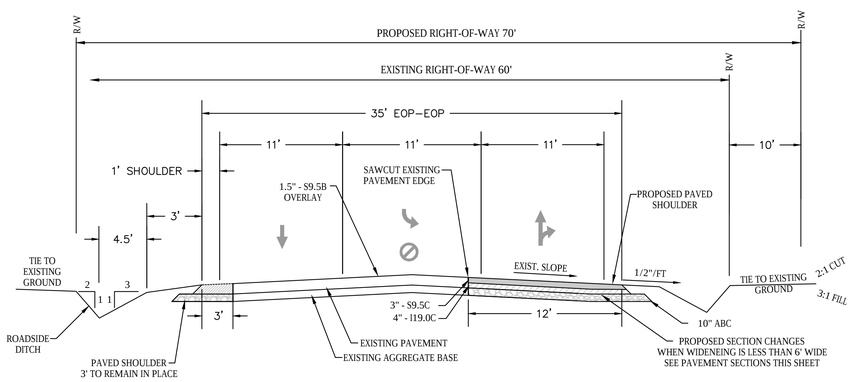


ALL SUB-BASE SOIL TO BE COMPACTED TO NCDOT STANDARD PROCTOR SPECIFICATION

FOR WIDENING LESS THAN 6'



ALL SUB-BASE SOIL TO BE COMPACTED TO NCDOT STANDARD PROCTOR SPECIFICATION



TYPICAL ROAD WIDENING SECTION
AVERETTE ROAD, WAKE COUNTY
NOT TO SCALE

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

SCALE
1"=50'
50 0 50 100

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

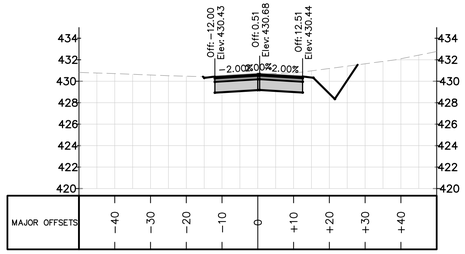
ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

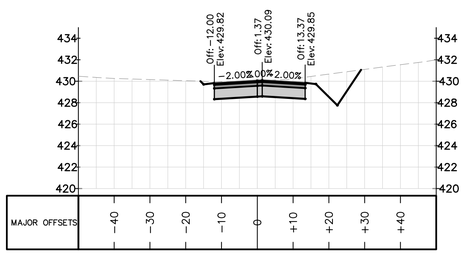
AVERETTE ROAD
WIDENING PLAN

Project Engineer:	TSS
Designed By:	LEG
Drawn By:	LEG
Checked By:	TSS
Scale:	1"=50'
Date:	07/31/2019
Project Number:	.170348

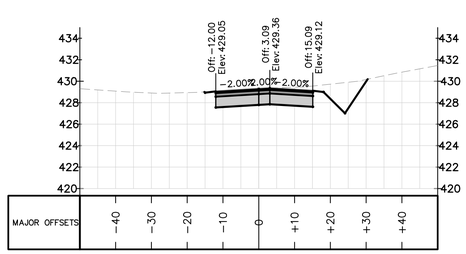
SHEET
C701
OF: ----



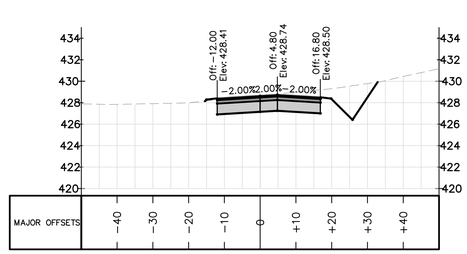
0+25.00



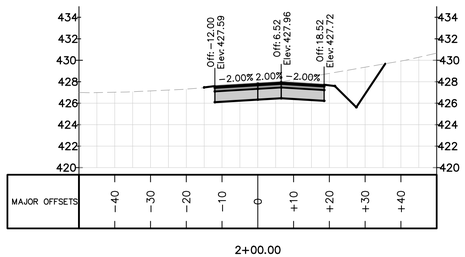
0+50.00



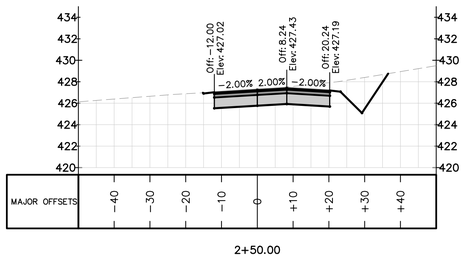
1+00.00



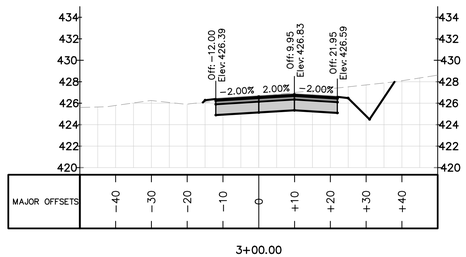
1+50.00



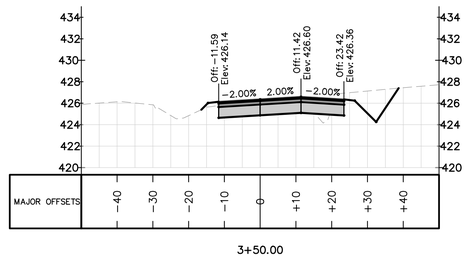
2+00.00



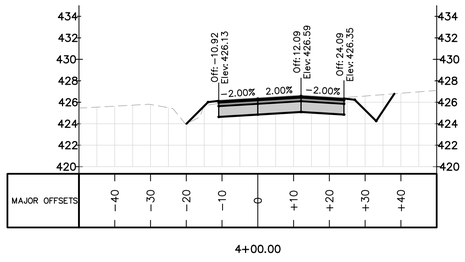
2+50.00



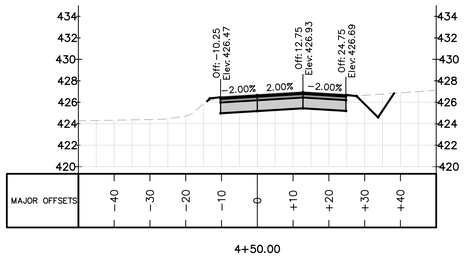
3+00.00



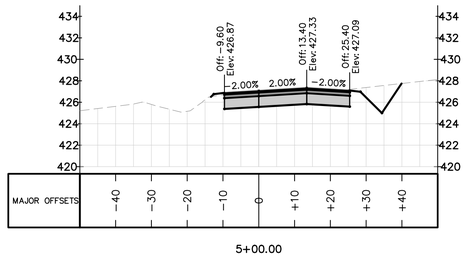
3+50.00



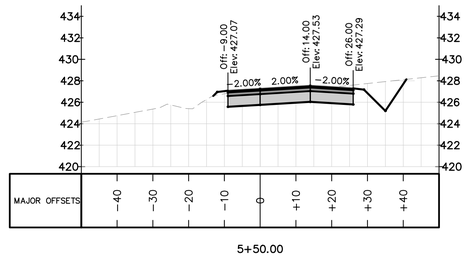
4+00.00



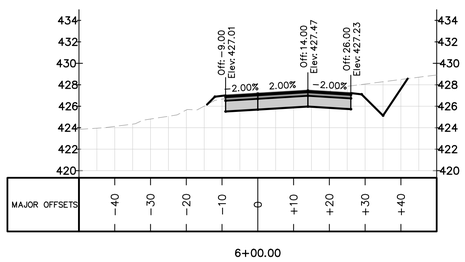
4+50.00



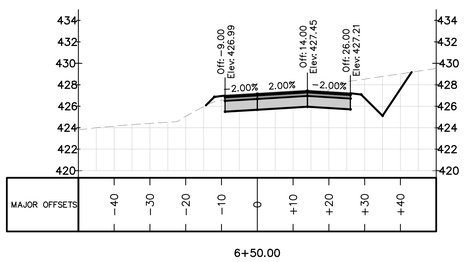
5+00.00



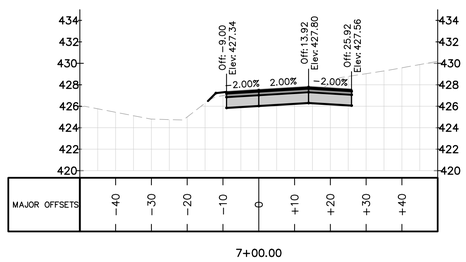
5+50.00



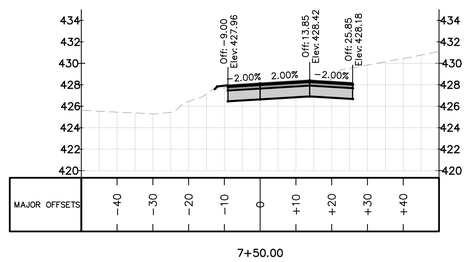
6+00.00



6+50.00



7+00.00



7+50.00

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

SCALE

1"=20' 20 20 40

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

ELIZABETH HEIGHTS----

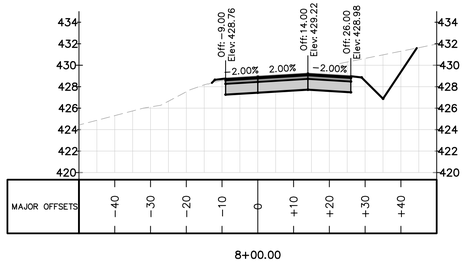
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

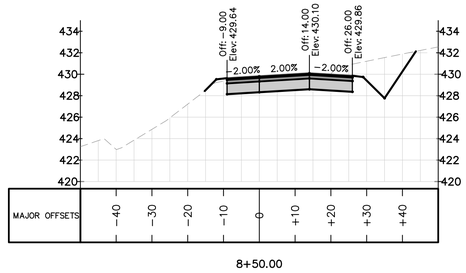
AVERETTE ROAD
CROSS SECTIONS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

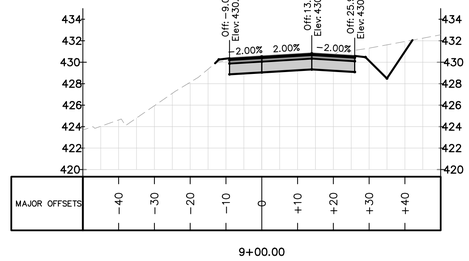
SHEET
C702
OF: ----



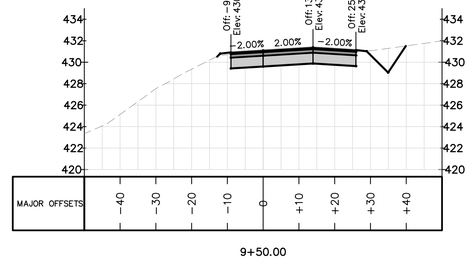
8+00.00



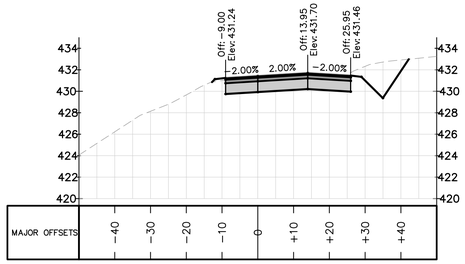
8+50.00



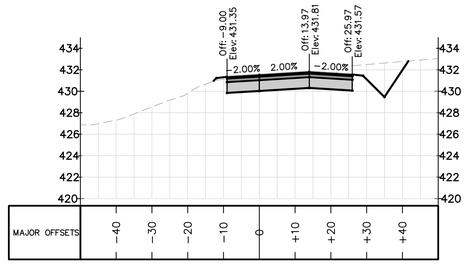
9+00.00



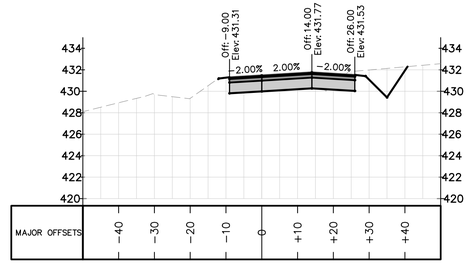
9+50.00



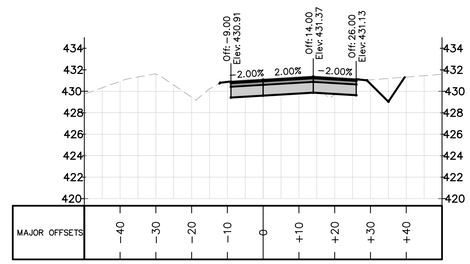
10+00.00



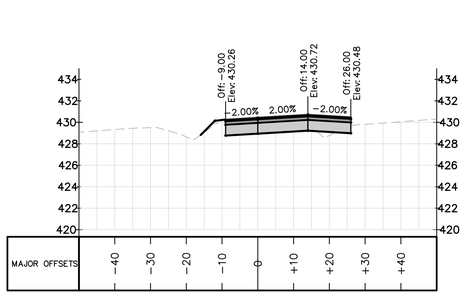
10+50.00



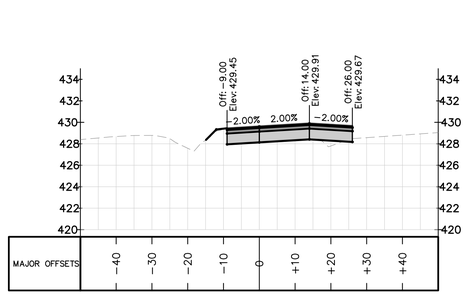
11+00.00



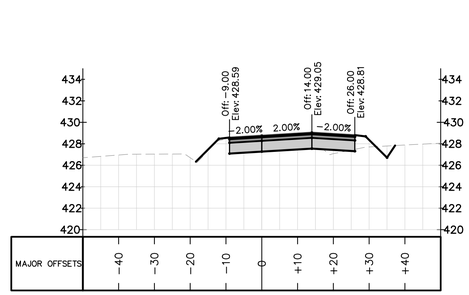
11+50.00



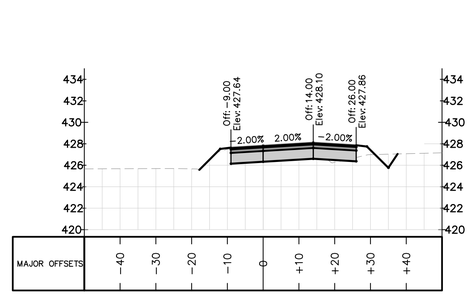
12+00.00



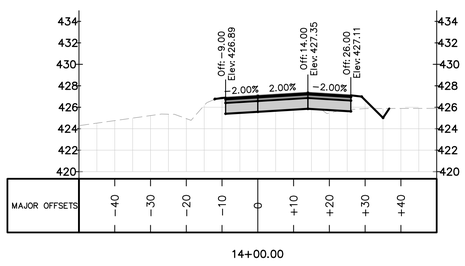
12+50.00



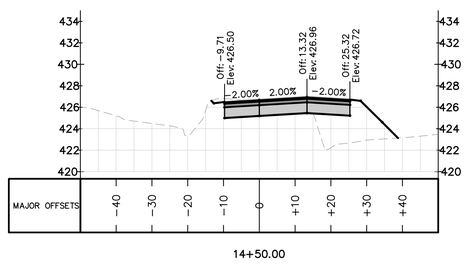
13+00.00



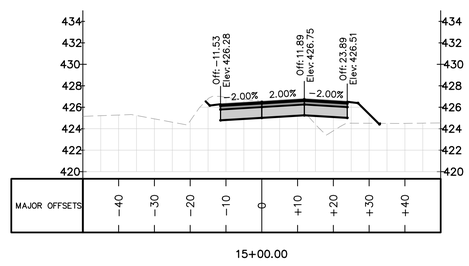
13+50.00



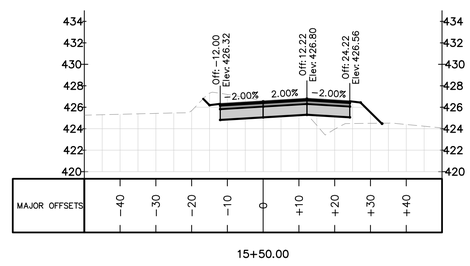
14+00.00



14+50.00



15+00.00



15+50.00

SCALE

1"=20' 20 20 40

REV.NO.	DESCRIPTIONS	
	REVISIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

ELIZABETH HEIGHTS---

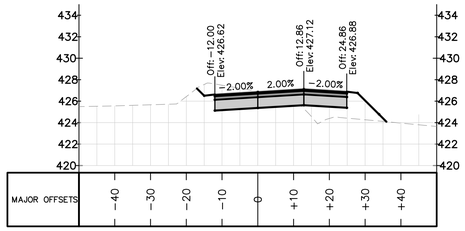
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

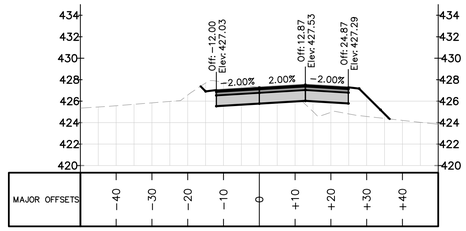
AVERETTE ROAD
CROSS SECTIONS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

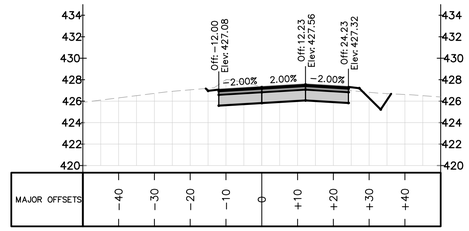
SHEET
C703
OF: ----



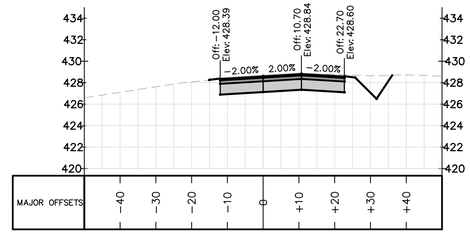
16+00.00



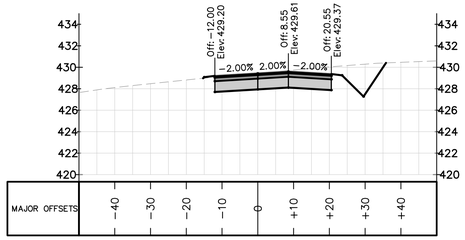
16+50.00



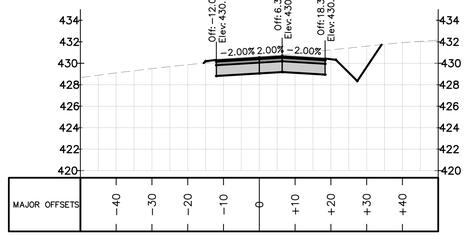
17+00.00



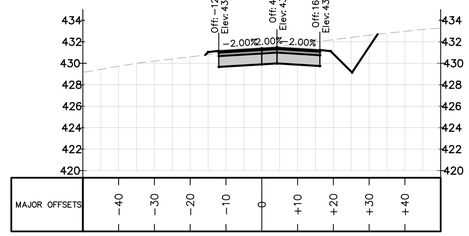
17+50.00



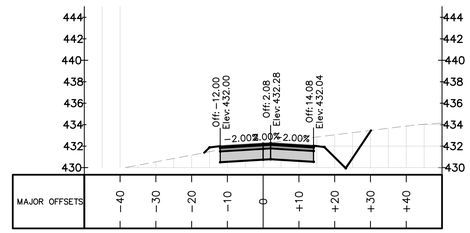
18+00.00



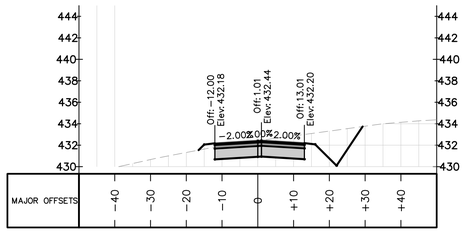
18+50.00



19+00.00



19+50.00



19+75.00

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

SCALE

1"=20' 20 20 40

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

ELIZABETH HEIGHTS----

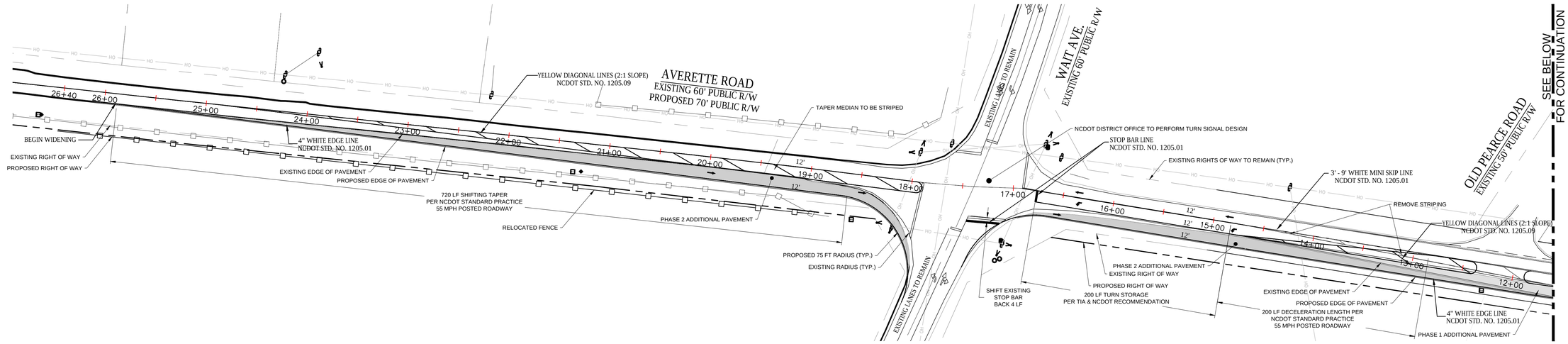
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

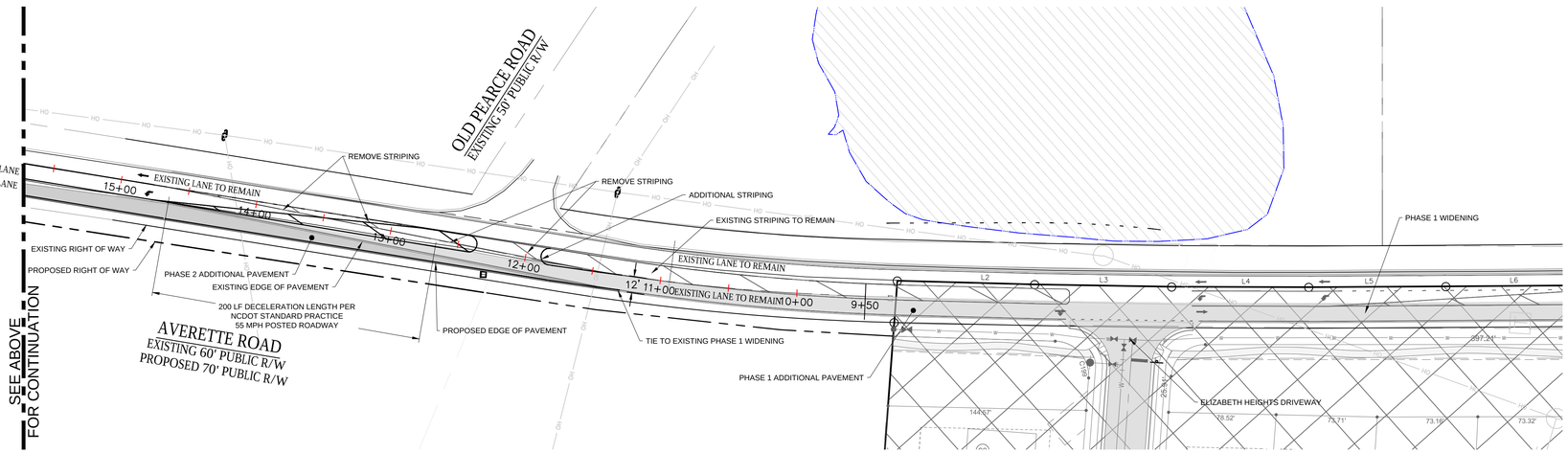
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

AVERETTE ROAD
CROSS SECTIONS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C704
OF: ----

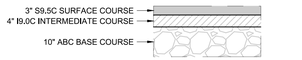




NOTES:

1. ALL CONSTRUCTION IN THE RIGHT OF WAY SHALL TO BE IN ACCORDANCE TO NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THEIR ACTIVITIES. CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE 48 HOURS PRIOR TO BEGINNING CONSTRUCTION. NC ONE CALL 1-800-632-4949 PER NCGS 87-102.
3. NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DRIVEWAY PERMIT IS REQUIRED BEFORE STARTING CONSTRUCTION.
4. THE DEVELOPER IS RESPONSIBLE FOR THE FABRICATION AND INSTALLATION OF ALL REQUIRED SIGNS AND PAVEMENT MARKINGS WITH IN THE PUBLIC RIGHT OF WAY.
5. CONTRACTOR IS RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC MAINTENANCE PLAN FOR REVIEW AND APPROVAL BY DOT PRIOR TO BEGINNING WORK WITHIN THE RIGHT OF WAY.
6. CONTRACTOR SHALL MAINTAIN ACCESS DURING ALL TIMES OF CONSTRUCTION.
7. CONTRACTOR SHALL CONTACT WAKE COUNTY SCHOOLS TO COORDINATE ROAD WORK SO IT WILL NOT ADVERSELY AFFECT THE SCHOOLS TRANSPORTATION SCHEDULE AND OR OPERATIONS.
8. THERMOPLASTIC PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS SHALL BE INSTALLED WITHIN THE TURN LANE CONSTRUCTION LIMITS IN ACCORDANCE WITH THE STANDARD NCDOT STANDARDS AND SPECIFICATIONS.
9. THE CONTRACTOR SHALL RESURFACE THE ENTIRE WITH OF THE ROADWAY FOR THE ENTIRE LENGHT OF THE CONSTRUCITON LIMITS WITH 1.5 INCES OF S-9.5B. BOTH ENDS OF THE TURN LANE SHALL BE MILLED (0" TO 1.5") A MINIMUM OF 50 FEET SO THAT THERE WILL BE A SMOOTH TRANSITION BACK TO THE EXISTING PAVEMENT.

FOR WIDENING GREATER THAN 6'

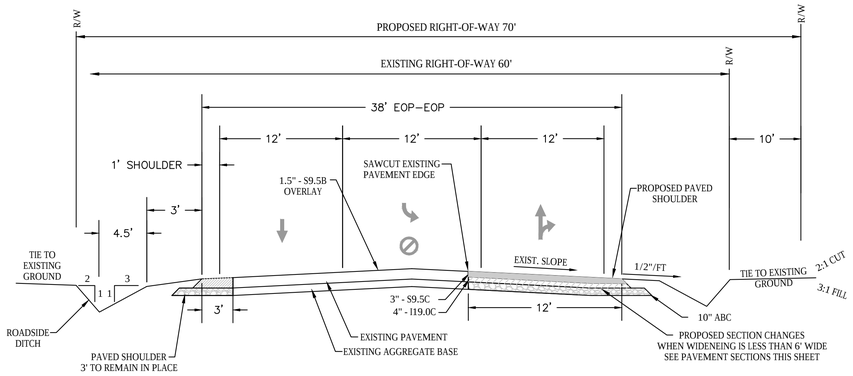


ALL SUB-BASE SOIL TO BE COMPACTED TO NCDOT STANDARD PROCTOR SPECIFICATION

FOR WIDENING LESS THAN 6'



ALL SUB-BASE SOIL TO BE COMPACTED TO NCDOT STANDARD PROCTOR SPECIFICATION



TYPICAL ROAD WIDENING SECTION
AVERETTE ROAD, WAKE COUNTY
NOT TO SCALE

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019

REVISIONS

NORTH

SCALE
1"=50'
50 0 50 100

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

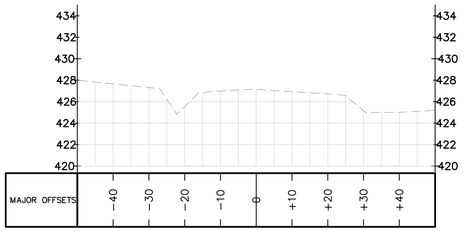
ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

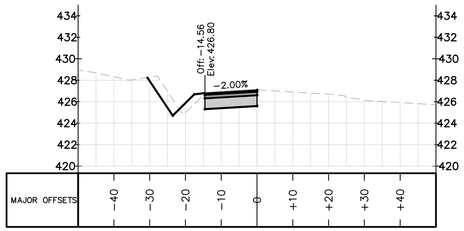
AVERETTE RD. / WAIT AVE.
INTERSECTION IMPROVEMENTS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

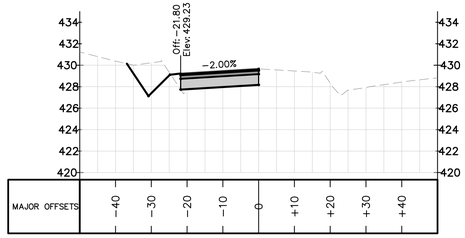
SHEET
C710
OF: ----



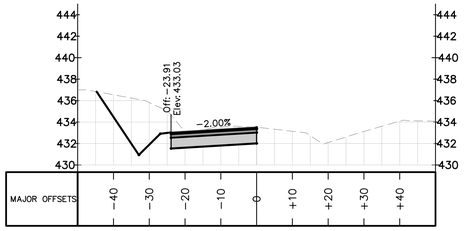
10+00.00



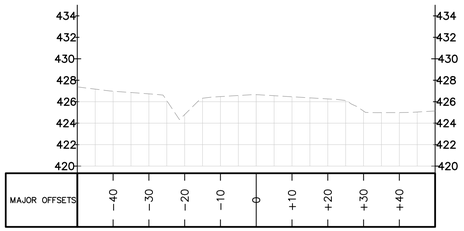
12+00.00



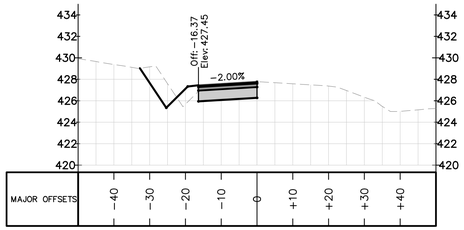
14+00.00



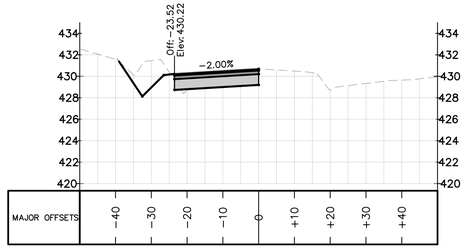
16+00.00



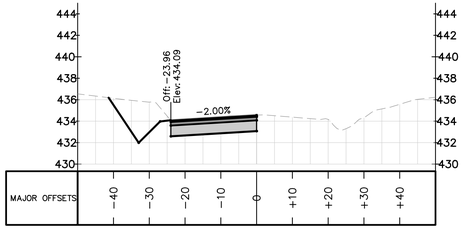
10+50.00



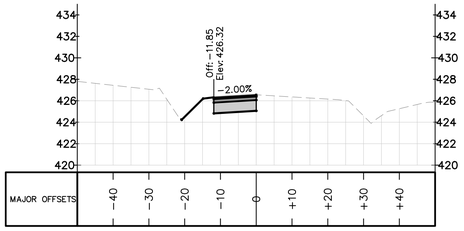
12+50.00



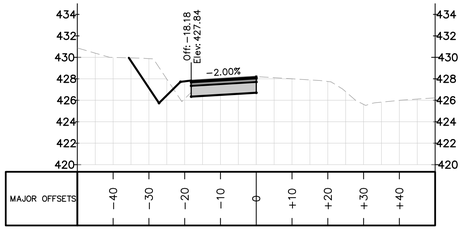
14+50.00



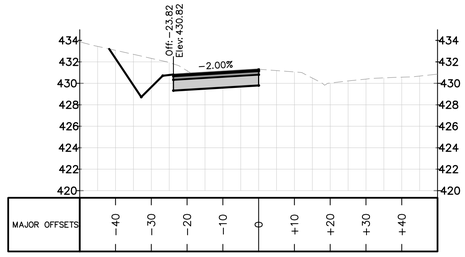
16+50.00



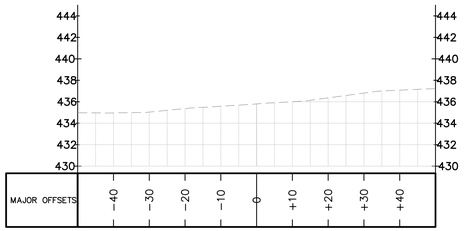
11+00.00



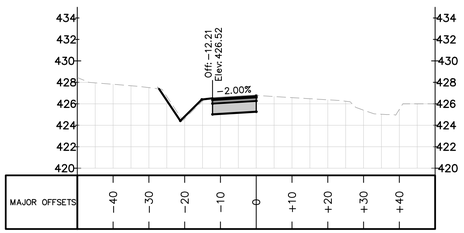
13+00.00



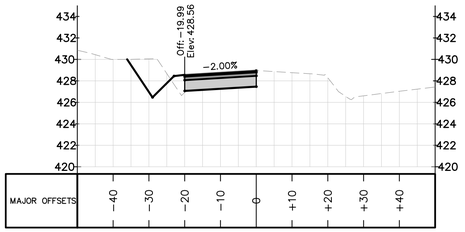
15+00.00



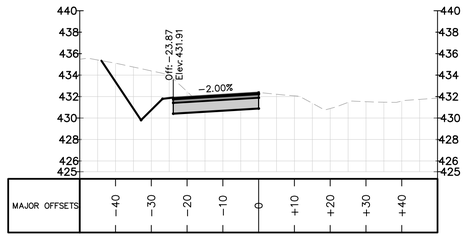
17+00.00



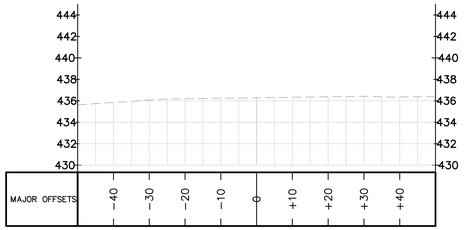
11+50.00



13+50.00



15+50.00



17+50.00

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

SCALE

1"=20' 20 20 40

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

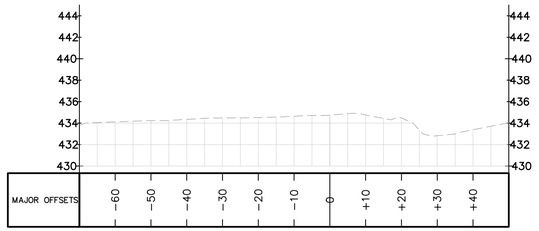
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

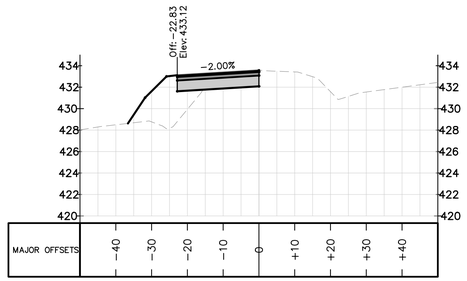
AVERETTE ROAD
CROSS SECTIONS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

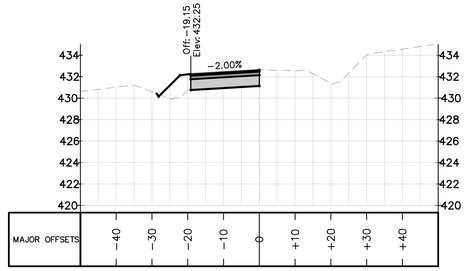
SHEET
C711
OF: ----



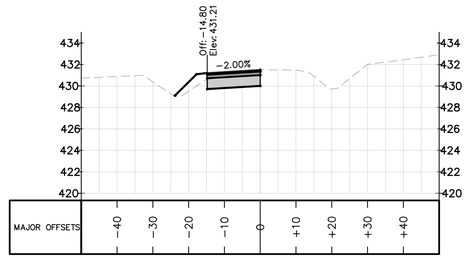
18+00.00



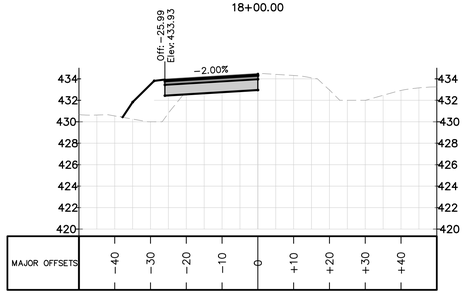
20+00.00



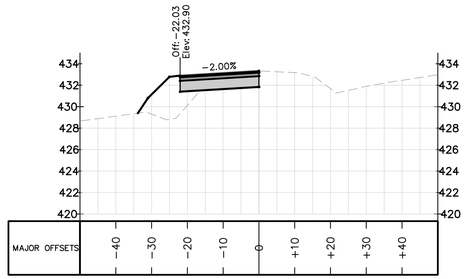
22+00.00



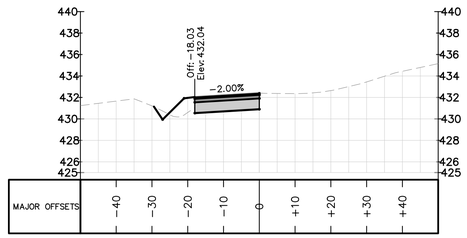
24+00.00



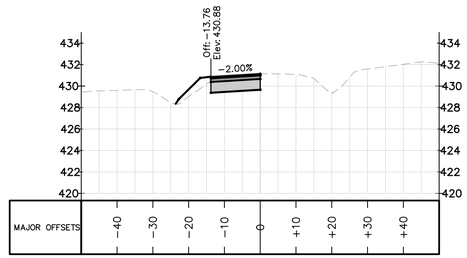
18+50.00



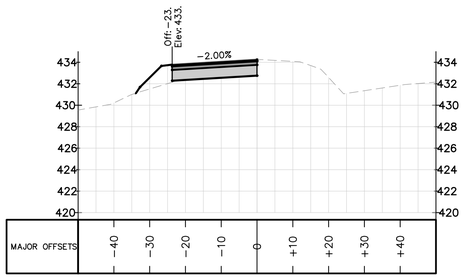
20+50.00



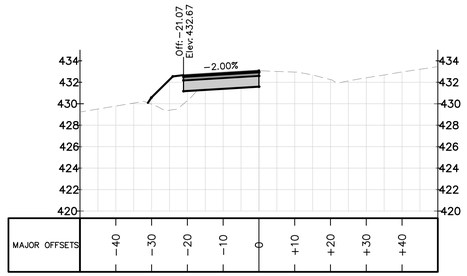
22+50.00



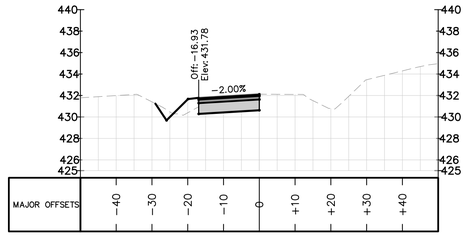
24+50.00



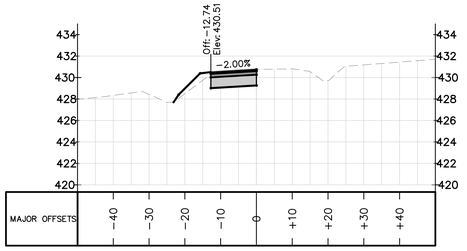
19+00.00



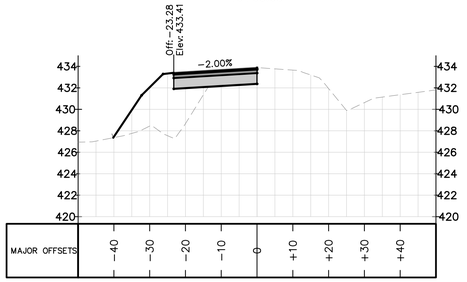
21+00.00



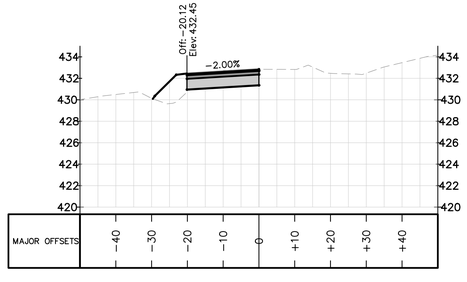
23+00.00



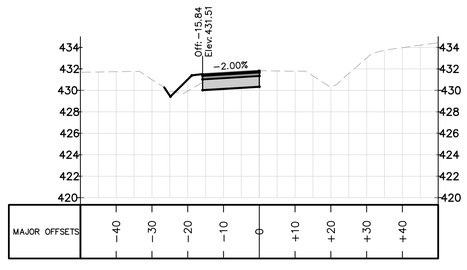
25+00.00



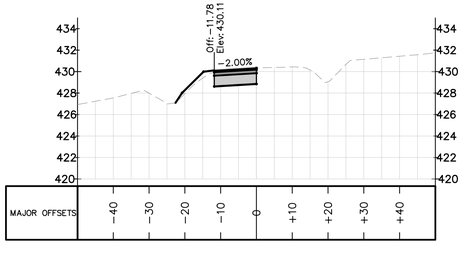
19+50.00



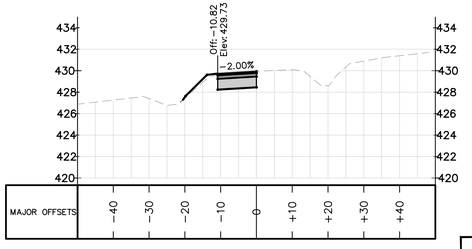
21+50.00



23+50.00



25+50.00



26+00.00

SCALE

1"=20' 20 20 40

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

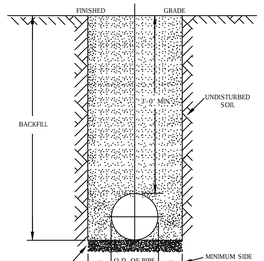
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS

1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

AVERETTE ROAD
CROSS SECTIONS

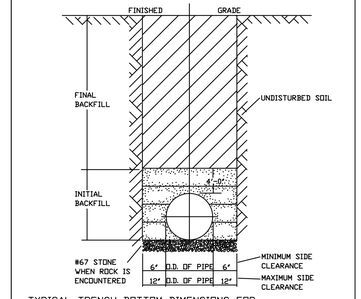
Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C712
OF: ----



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

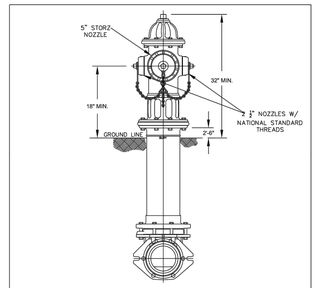
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	D.W.C.	9-3-99	ABB	2-15-05
	RRH	3-31-00	J.P.S.	10-29-10



TYPICAL TRENCH BOTTOM DIMENSIONS FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE.

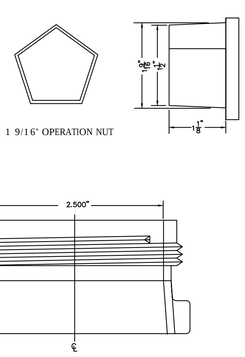
NOTES:
1. Trenches requiring shoring and bracing, dimensions shall be taken from the inside face of the shoring and bracing.
2. No rocks or boulders 4" or larger to be used in initial backfill.
3. All backfill material shall be suitable native material.
4. Backfill shall be tamped in 6" layers in traffic areas, 12" in non-traffic areas.
5. Achieve 80% compaction in non-traffic areas, achieve 95% compaction in traffic areas.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	D.W.C.	3-1-87		
		9-3-99		

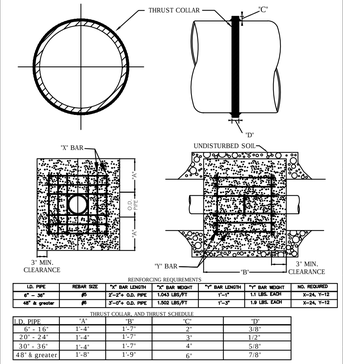


NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
RALEIGH, GARNER, KNIGHTDALE, ROLESVILLE, WAKE FOREST, WENDELL & ZEBULON				
STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-5	MAB	3-30-16		



CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-6	RRH	3-31-00	DRL	2-15-05
	A.B.B.	7-17-04	J.P.S.	11-1-10



REINFORCING REQUIREMENTS

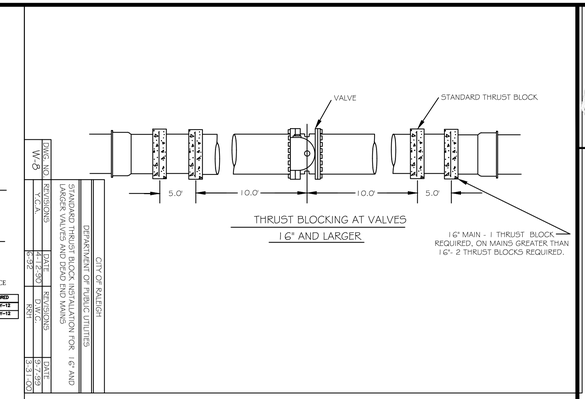
I.D. PIPE	REBAR SIZE	"A" BAR LENGTH	"A" BAR WEIGHT	"B" BAR LENGTH	"B" BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2"± O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS. EACH	X=24, Y=13
42" & greater	#5	2'-4"± O.D. PIPE	1.043 LBS/FT	1'-3"	1.8 LBS. EACH	X=24, Y=12

THRUST COLLAR AND THRUST SCHEDULE

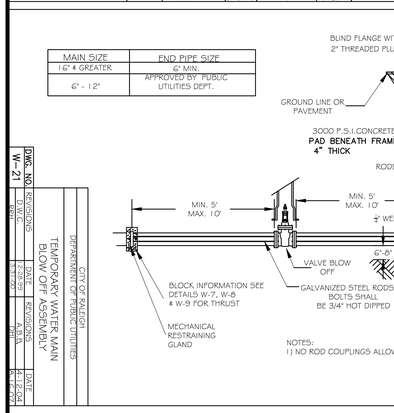
I.D. PIPE	"A"	"B"	"C"	"D"
6" - 16"	1'-4"	1'-7"	2"	3/8"
20" - 24"	1'-4"	1'-7"	3"	1/2"
30" - 36"	1'-4"	1'-7"	4"	5/8"
48" & greater	1'-8"	1'-9"	6"	7/8"

NOTES:
1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
THRUST BLOCKING DESIGN DATA FOR WATER MAINS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-7	RRH	1-21-00	J.P.S.	
	D.R.I.	6-18-08	11-1-10	

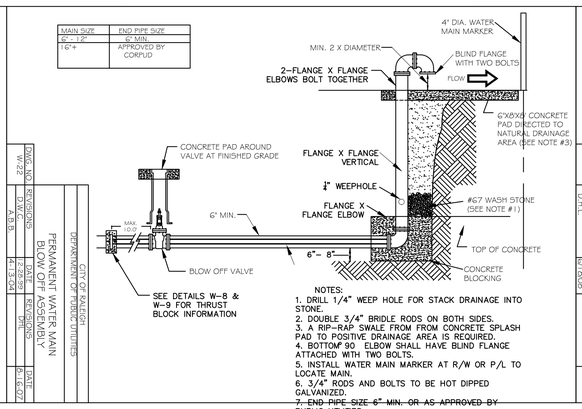


CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD THRUST BLOCK INSTALLATION FOR 6" AND LARGER VALVES AND DEAD END MAINS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-8	Y.C.A.	4-12-90	D.W.C.	9-7-99
	RRH	3-31-00	J.P.S.	11-1-10



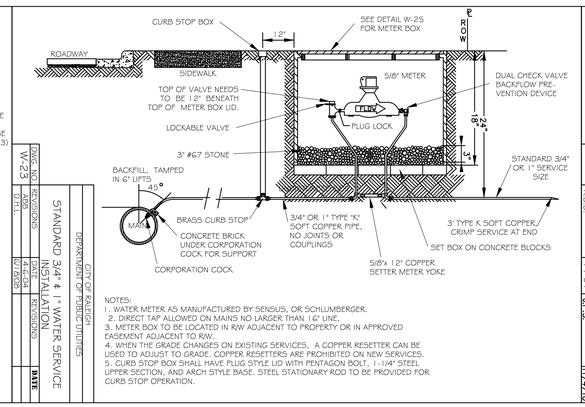
NOTES:
1) NO ROD COUPLINGS ALLOWED

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TEMPORARY WATER MAIN BLOW OFF ASSEMBLY				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-21	D.W.C.	9-7-99	A.B.B.	4-12-04
	RRH	3-31-00		



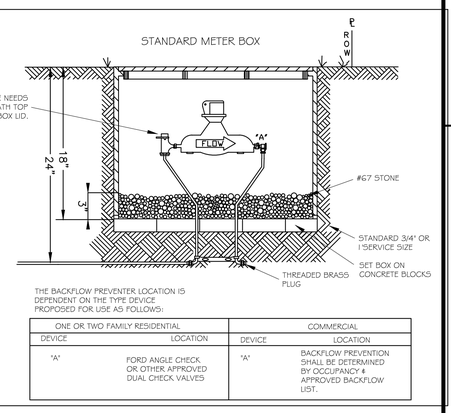
NOTES:
1. DRILL 1/4" WEEP HOLE FOR STACK DRAINAGE INTO STONE.
2. DOUBLE 3/4" BRIDLE RODS ON BOTH SIDES.
3. A RIP-RAP SWALE FROM FROM CONCRETE SPLASH PAD TO POSITIVE DRAINAGE AREA IS REQUIRED.
4. BOTTOM 90 ELBOW SHALL HAVE BLIND FLANGE ATTACHED WITH TWO BOLTS.
5. INSTALL WATER MAIN MARKER AT R/W OR P/L TO LOCATE MAIN.
6. 3/4" RODS AND BOLTS TO BE HOT DIPPED GALVANIZED.
7. END PIPE SIZE 6" MIN. OR AS APPROVED BY PUBLIC UTILITIES.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
PERMANENT WATER MAIN BLOW OFF ASSEMBLY				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-22	D.W.C.	9-7-99		
	RRH	3-31-00		



NOTES:
1. METER AS MANUFACTURED BY SENSUS, OR SCHLUMBERGER.
2. DIRECT TAP ALLOWED ON MAINS NO LARGER THAN 16" LINE.
3. METER BOX TO BE LOCATED IN R/W ADJACENT TO PROPERTY OR IN APPROVED EASEMENT ADJACENT TO R/W.
4. WHEN THE GRADE CHANGES ON EXISTING SERVICES, A COPPER RESETTER CAN BE USED TO ADJUST TO GRADE. COPPER RESETTERS ARE PROHIBITED ON NEW SERVICES.
5. CURB STOP BOX SHALL HAVE PLUG STYLE LID WITH PENTAGON BOLT, 1-1/4" STEEL UPPER SECTION, AND ARCH STYLE BASE. STEEL STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION.

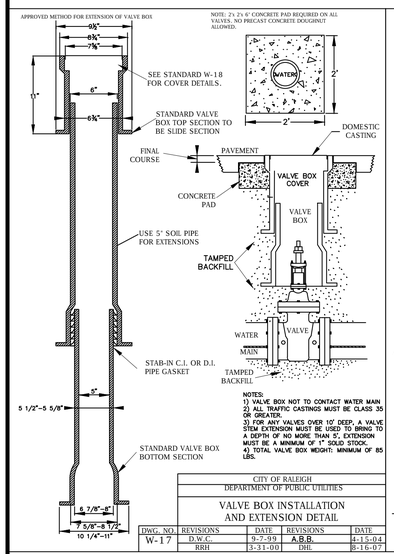
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD 3/4" & 1" WATER SERVICE INSTALLATION				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-23	D.R.I.	6-18-08		
		07-09-09		



THE BACKFLOW PREVENTER LOCATION IS DEPENDENT ON THE TYPE DEVICE PROPOSED FOR USE AS FOLLOWS:

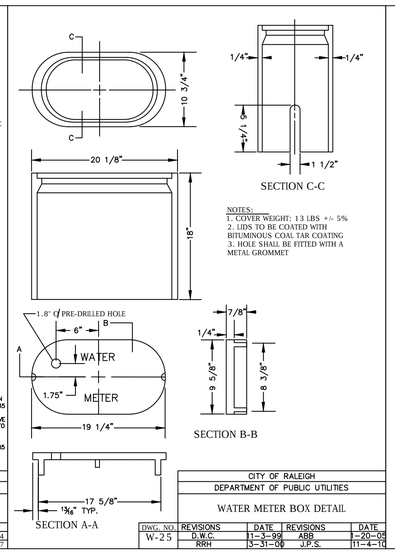
ONE OR TWO FAMILY RESIDENTIAL		COMMERCIAL	
DEVICE	LOCATION	DEVICE	LOCATION
"A"	FORD ANGLE CHECK OR OTHER APPROVED DUAL CHECK VALVES	"A"	BACKFLOW PREVENTION SHALL BE DETERMINED BY OCCUPANCY & APPROVED BACKFLOW LIST.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
ONE OR TWO FAMILY DWELLINGS BACKFLOW PREVENTION METER ASSEMBLY INSTALLATION				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-24	A.B.B.	4-12-04		
		11-1-10		



NOTES:
1) VALVE BOX NOT TO CONTACT WATER MAIN
2) ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
3) FOR ANY VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5', EXTENSION MUST BE A MINIMUM OF 1" SOLID STOCK.
4) TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
VALVE BOX INSTALLATION AND EXTENSION DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-17	D.W.C.	9-7-99	A.B.B.	4-15-04
	RRH	3-31-00	DRL	8-16-07



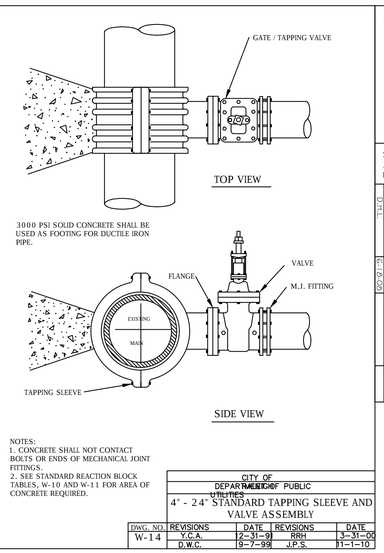
SECTION A-A

SECTION C-C

NOTES:
1. COVER WEIGHT: 13 LBS +/- 5%
2. LIDS TO BE COATED WITH BITUMINOUS COAL TAR COATING
3. HOLE SHALL BE FITTED WITH A METAL GROMMET

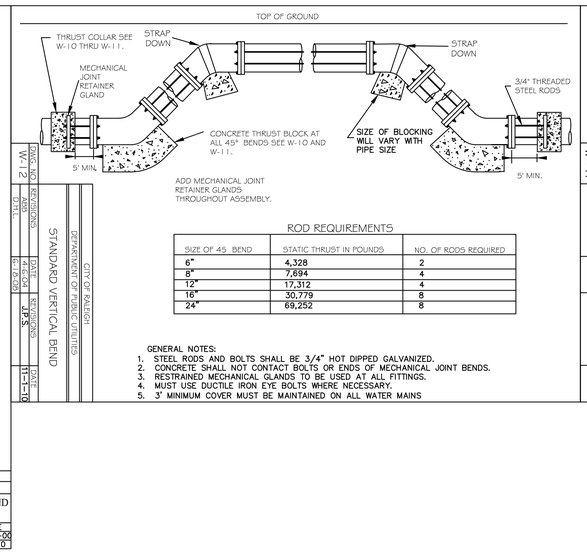
SECTION B-B

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
WATER METER BOX DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-25	D.W.C.	11-3-99	ABB	1-20-05
	RRH	3-31-00	J.P.S.	11-4-10



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	Y.C.A.	12-31-91	RRH	3-31-00
	D.W.C.	9-7-99	J.P.S.	11-1-10

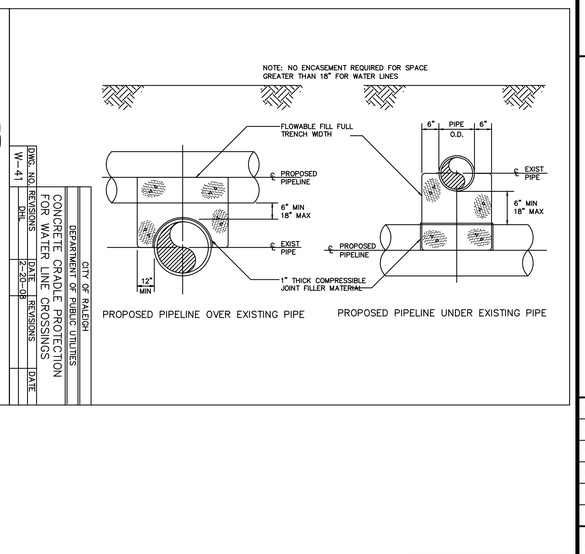


ROD REQUIREMENTS

SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL WATER MAINS

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD VERTICAL BEND				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-12	D.R.I.	6-18-08		
		11-1-10		



PROPOSED PIPELINE OVER EXISTING PIPE

PROPOSED PIPELINE UNDER EXISTING PIPE

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
CONCRETE CRADLE PROTECTION FOR WATER LINE CROSSINGS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-41	Dist.	2-20-08		

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

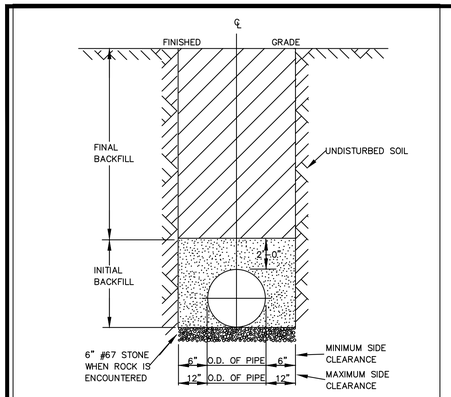
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

WATER DETAILS

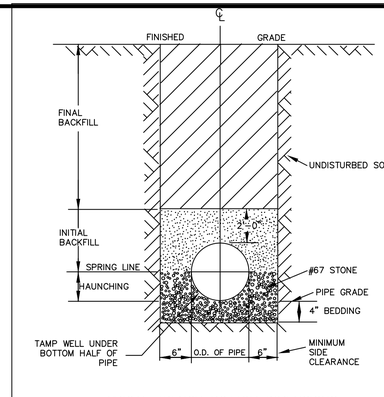
Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C801



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 80% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. IF IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

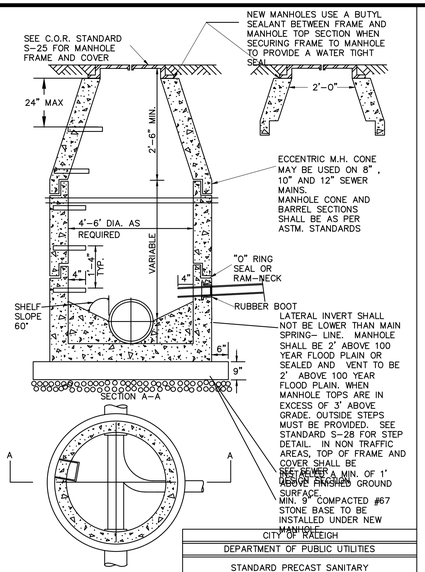
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C.	9-3-99		
	RRH	3-30-00		



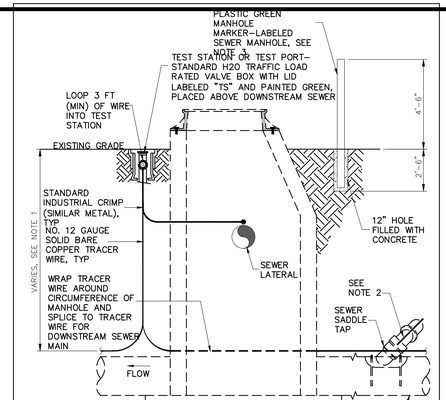
TYPICAL TRENCH BOTTOM DIMENSIONS
FOR SDR 35 PVC GRAVITY PIPE

NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-5	TO NOTES	3-1-87	D.W.C.	9-3-99
		7-2-82	RRH	3-30-00



CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD PRECAST SANITARY SEWER MANHOLE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20	Y.C.A.	12-31-92	ABB	2-21-05
	RRH	3-30-00	D.H.L.	6-16-08



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A	WKD	09-14		

AERIAL PIPE CROSSING

GENERAL NOTES:

1. ALL MATERIALS UTILIZED ON THESE DETAIL SHEETS SHALL CONFORM TO THE APPROPRIATE SECTIONS OF THE CITY OF RALEIGH PUBLIC UTILITIES HANDBOOK UNLESS NOTED OTHERWISE HEREIN.
2. RESTRAINED JOINT PIPE AND FITTINGS SHALL CONSIST OF BOLTED RETAINER RINGS AND WELDED RETAINER BARS OR BOLTLESS TYPE WHICH INCLUDE DUCTILE IRON LOCKING SEGMENTS AND RUBBER RETAINERS. BOLTS FOR RESTRAINED JOINTS (IF APPLICABLE) SHALL CONFORM TO ANSI B18.2. RESTRAINED PIPE AND FITTINGS SHALL BE FLEX-RING OR LOK-RING TYPE JOINTS AS MANUFACTURED BY AMERICAN CAST IRON PIPE CO.; TR FLEX AS MANUFACTURED BY US PIPE,
3. SUPER-LOCK AS MANUFACTURED BY CLOW, BOLT-LOK OR SNAP-LOK AS MANUFACTURED BY GRIFFIN PIPE PRODUCTS, OR EQUAL.

   CONCRETE PROPERTIES SHALL BE AS FOLLOWS:
   CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
   NOMINAL SLUMP = 4 INCHES
   WATER/CEMENTITOUS MATERIALS RATIO = 0.45 (MAX)
   AIR CONTENT = 6% * 1.5%
   CONCRETE SHALL BE COMPOSED OF CEMENT, WATER, COARSE AGGREGATES, FINE AGGREGATES AND AIR. CEMENT SHALL BE TYPE I/II OR II IN ACCORDANCE WITH ASTM C-150. MATERIAL REQUIREMENTS FOR ALL FINE AND COARSE AGGREGATES
4. SHALL CONFORM TO ASTM C-33. COARSE AGGREGATE SHALL BE SIZE No. 57
5. OR 67 AN APPROVED CLASS 'F' FLYASH MAY BE SUBSTITUTED FOR AN EQUAL AMOUNT OF CEMENT BY WEIGHT UP TO 25%.

   ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".

6. CONVENTIONAL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 AND SHALL BE PLACED IN ACCORDANCE WITH "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS" (LATEST EDITION) AS PUBLISHED BY THE CONCRETE
7. REINFORCING INSTITUTE. SPLICES SHALL BE CLASS 'B' CONFORMING TO THE PROVISIONS OF ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".

   NEOPRENE BEARING PADS SHALL BE FORMED FROM PREVIOUSLY UNVULCANIZED, 100% VIRGIN NEOPRENE, WITH DUROMETER HARDNESS = 50.

   PILES SHALL BE STRUCTURAL STEEL HP12x53 PILES AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36. PILES SHALL BE DRIVEN TO DEPTHS REQUIRED TO OBTAIN AN ULTIMATE BEARING CAPACITY OF NOT LESS THAN TWO TIMES THE DESIGN LOADING OF 30 TONS. PILES SHALL PENETRATE A MINIMUM OF FIFTEEN FEET INTO UNDISTURBED SOIL. IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED. IF REQUESTED BY THE ENGINEER, PILES SHALL BE TESTED TO DETERMINE THE ULTIMATE CAPACITY OF THE PILES. THE METHOD OF LOAD TESTING SHALL CONFORM TO ASTM D1143 AND THE NORTH CAROLINA STATE BUILDING CODE. WHERE PILES ARE EXPOSED, PILES SHALL BE PAINTED AND/OR COATED IN ACCORDANCE WITH THE CITY SPECIFICATIONS.

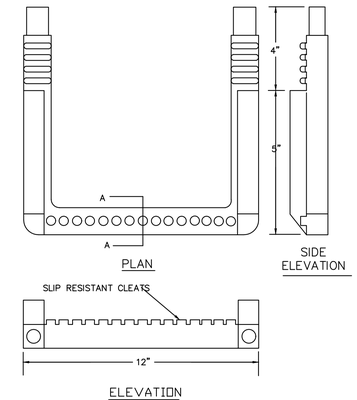
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
AERIAL PIPE CROSSING GENERAL NOTES				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-10	D.H.L.	5/15/08		

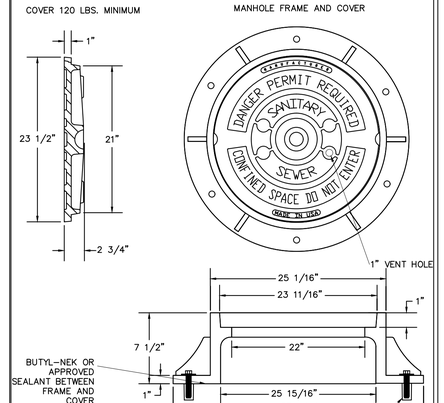
NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE JOINTS ARE NECESSITATED IN THE WIRE, THE JOINTS SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CRIMP CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CRIMPS SHALL BE SIMILAR METAL.
2. THE CLEANOUT AT THE RIGHT OF WAY AND OR EASEMENT SHALL SERVE AS THE TEST PORT WITH THE TRACING WIRE BROUGHT UP OUTSIDE THE CLEANOUT ASSEMBLY AND WRAPPED AROUND THE STACK TWICE AT A DEPTH OF APPROXIMATELY 12" BELOW GRADE.
3. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
4. FOR NEW SEWER TAPS ON EXISTING MAINS VOID OF ANY TRACER WIRE, PROVIDE AN ANODE FOR THE TRACING WIRE TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER MAIN.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30A	WKD	9-14		

TYPICAL SANITARY SEWER LATERAL TRACER WIRE

DEPARTMENT OF PUBLIC UTILITIES — CITY OF RALEIGH

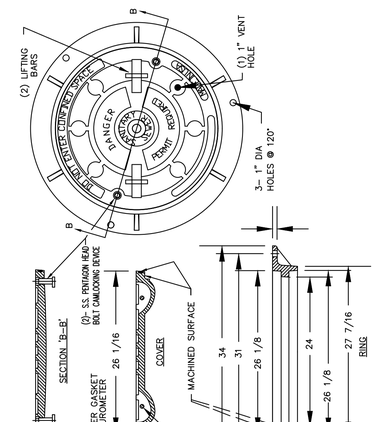




NOTES:
1) ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2) FRAME SHALL BE A MINIMUM WEIGHT OF 182 LBS. WITHIN PUBLIC ROW AND 160 LBS. WITHIN EASEMENTS.
3) COVER SHALL WEIGH A MIN. OF 120 LBS.
4) ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

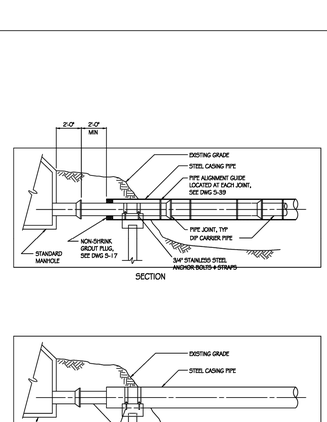
5/8"X3" LAGSHIELD IN HOLE DRILLED INTO CONE OR RING WITH ANCHOR SUNK TO DESIGN DEPTH, AND 3/8"X3" HOT DIPPED GALVANIZED LAG BOLT AND WASHER.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD MANHOLE COVER				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25	3-1-87	3-1-87	A.B.B.	2-9-05
	RRH	3-30-00	D.H.L.	6-18-08

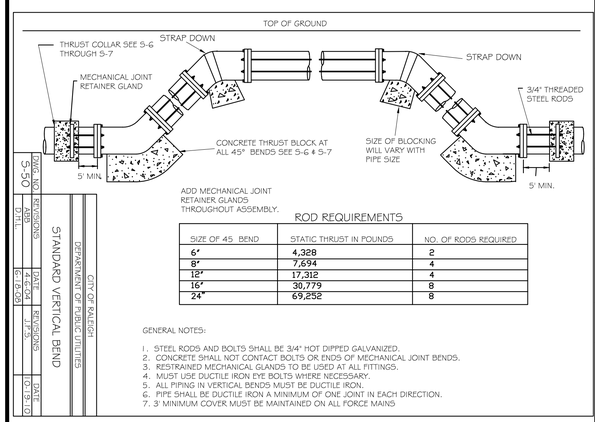


Note: solid cover required when water tight manhole specified.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
FLAT TOP MANHOLE COVER				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25a	3-1-87	3-1-87	A.B.B.	2-9-05
	RRH	3-30-00	D.H.L.	6-18-08



CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
AERIAL PIPE CROSSING TYPICAL PIPE SECTION & ELEVATION				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-13	D.H.L.	6/16/08		



ROD REQUIREMENTS

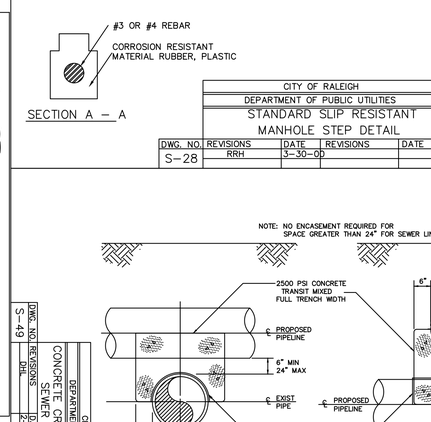
SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. ALL PIPING IN VERTICAL BENDS MUST BE DUCTILE IRON.
6. PIPE SHALL BE DUCTILE IRON A MINIMUM OF ONE JOINT IN EACH DIRECTION.
7. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL FORCE MAINS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-50	ABB	4-6-04		
	D.H.L.	6-16-08		

STANDARD VERTICAL BEND

DEPARTMENT OF PUBLIC UTILITIES — CITY OF RALEIGH



SECTION A – A

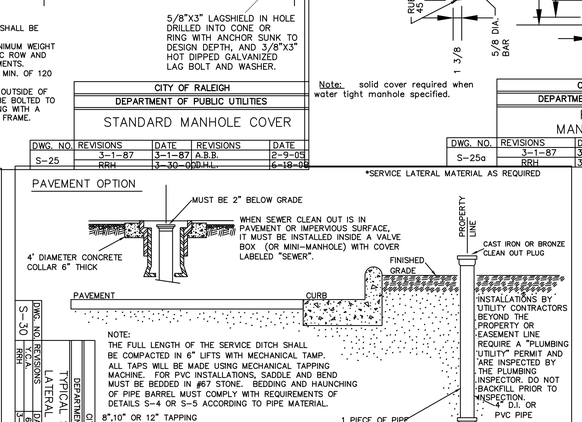
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-28	RRH	3-30-00		

PROPOSED PIPELINE OVER EXISTING PIPE — PROPOSED PIPELINE UNDER EXISTING PIPE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-49	D.H.L.	2-20-08		

CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

DEPARTMENT OF PUBLIC UTILITIES — CITY OF RALEIGH



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30	RRH	3-30-00		
	D.H.L.	6-16-08		

TYPICAL SANITARY SEWER LATERAL CONNECTION

DEPARTMENT OF PUBLIC UTILITIES — CITY OF RALEIGH

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S SPEIGHT

ELIZABETH HEIGHTS

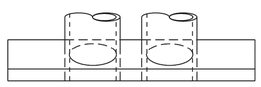
Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

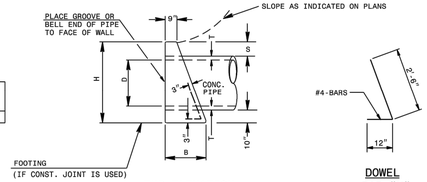
SEWER DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C802

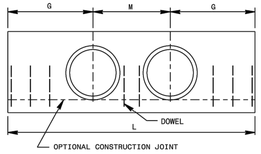


PLAN



END ELEVATION

DOWEL
BAR-"X"



ELEVATION

DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE

LOC.	PIPE DIA.	SINGLE PIPE							DOUBLE PIPE							
		15"	18"	24"	30"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	
	BARS	"X"	"X"	"X"	"X"	"X"	"X" Y*	"X" Y*	"X"	"X"	"X"	"X"	"X"	"X" Y*	"X" Y*	
G	QTY.	2	2	3	3	4	4 5		2	2	3	3	4	4 5		
M	QTY.	-	-	-	-	-	- 2	- 2	1	1	2	2	2	2 3	2 3	2
G	QTY.	2	2	3	3	4	4 5		2	2	3	3	4	4 5		
TOTAL LBS.		9	9	14	14	19	55	65	12	12	19	19	23	77	92	

DIMENSIONS AND CONCRETE QUANTITIES

USING CONCRETE PIPE										
	COMMON DIMENSIONS					SINGLE PIPE		DOUBLE PIPE		
D	H	B	G	T	S	L	YD³	M	L	YD³
15"	3'-3"	1'-8"	2'-9"	2¼"	9½"	5'-6"	0.7	2'-2"	7'-8"	1.0
18"	3'-7"	1'-10"	3'-2"	2½"	10"	6'-4"	1.0	2'-7"	8'-11"	1.3
24"	4'-2"	2'-1"	4'-0"	3"	10"	8'-0"	1.5	3'-5"	11'-5"	2.0
30"	5'-0"	2'-6"	4'-7"	4¼"	11½"	9'-2"	2.3	4'-3"	13'-5"	3.1
36"	5'-8"	2'-8"	5'-6"	4¾"	11½"	11'-0"	3.4	5'-0"	16'-0"	4.5
42"	6'-2"	3'-1"	6'-4"	5¼"	11½"	12'-8"	4.5	5'-10"	18'-6"	6.0
48"	6'-9"	3'-5"	7'-2"	5¾"	11½"	14'-4"	6.0	6'-8"	21'-0"	8.0

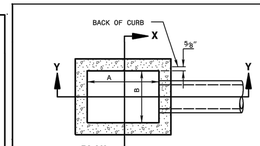
*SEE SHEET 3

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

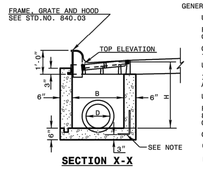
1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

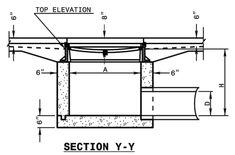
SHEET 1 OF 3
838.01



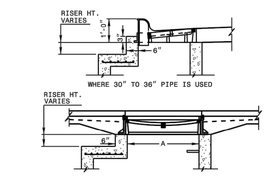
PLAN



SECTION X-X



SECTION Y-Y



DETAIL SHOWING METHOD OF RISER CONSTRUCTION

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS 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.

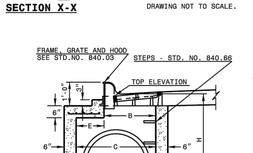
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

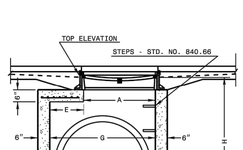
CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

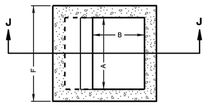
DRAWING NOT TO SCALE.



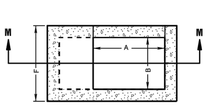
SECTION J-J
WHERE 30" TO 36" PIPE IS USED



SECTION M-M
WHERE 42" TO 54" PIPE IS USED



PLAN



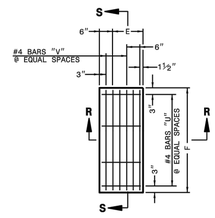
PLAN

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

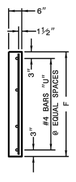
1-18

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

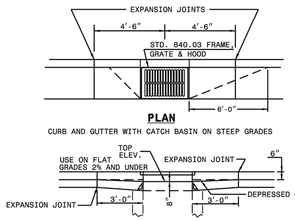
SHEET 1 OF 2
840.02



PLAN OF TOP SLAB

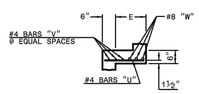


SECTION S-S

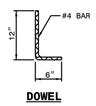


PLAN
CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES

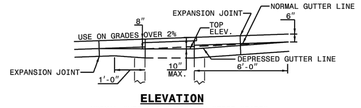
ELEVATION
NORMAL CURB AND GUTTER ON LIGHT GRADES



SECTION R-R



DOWEL



ELEVATION
NORMAL CURB AND GUTTER ON STEEP GRADES

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION		BARS-U		BARS-V		BARS-W		TOTAL LBS.	CU.YDS. CONC. IN BOX		DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH		TOP SLAB	BOTTOM SLAB	C.M.	R.C.
D	A	B	C	G	H											EQ. CONC. WIDTH SECT. 1		
12"	3'-0"	2'-2"	--	--	2'-9"	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			3'-0"											0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"			3'-3"											0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-9"											0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"		4'-3"	1'-2"	4'-0"	4	1'-5"	2	3'-9"	3	3'-9"	39	0.123	0.321	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"		4'-9"	1'-8"	4'-0"	4	1'-11"	3	3'-9"	3	3'-9"	43	0.161	0.358	1.714	0.132	0.178
42"	3'-0"	2'-2"		4'-5"	5'-3"	1'-5"	3'-2"	4	1'-8"	2	2'-11"	3	2'-11"	32	0.112	0.318	1.738	0.180	0.243
48"	3'-0"	2'-2"		5'-0"	5'-9"	2'-0"	3'-2"	4	2'-3"	3	2'-11"	3	2'-11"	35	0.145	0.352	2.052	0.235	0.317
54"	3'-0"	2'-2"		5'-7"	6'-3"	2'-7"	3'-2"	4	2'-10"	5	2'-11"	3	2'-11"	41	0.180	0.386	2.387	0.297	0.401

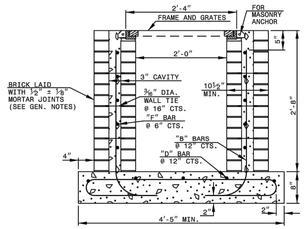
* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

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

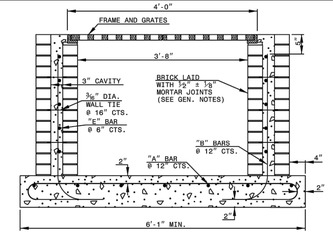
1-18

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

SHEET 2 OF 2
840.02

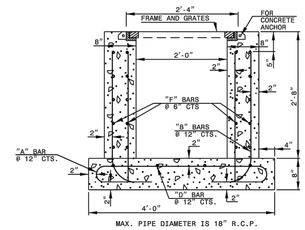


SECTION X-X

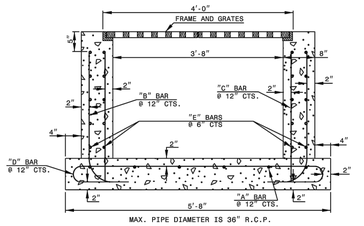


SECTION Y-Y

BRICK ALT.



SECTION X-X



SECTION Y-Y

CONCRETE ALT.

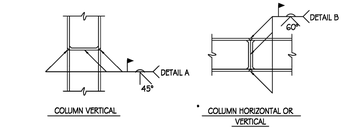
NOTES:
-HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
-MAXIMUM HEIGHT FOR THIS STRUCTURE IS 14'-0".
-MAKE ALL ADJUSTMENTS AS DIRECTED BY THE ENGINEER.
-DEPTH OF STEEL GRATE WILL REQUIRE DEEPER SEAT ALONG SHORT WALLS.

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

1-18

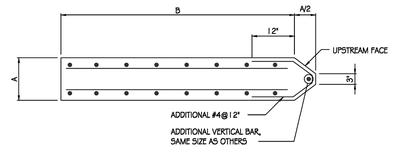
ROADWAY STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 1 OF 2
840.35



* POSITION OF COLUMN DURING WELDING

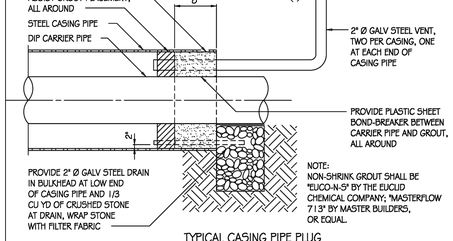
STEEL PILE SPLICE



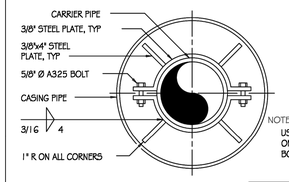
PLAN - CONCRETE SUPPORT NOSING
(WHEN EXPOSED TO STREAM FLOW)

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
AERIAL PIPE CROSSING
CONCRETE SUPPORT DETAILS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
5-19	D.H.L.	6/16/08		



TYPICAL CASING PIPE PLUG



NOTE:
USE A MINIMUM OF 2 SPIDERS PER JOINT PLACED ONE FOURTH OF THE PIPE JOINT LENGTH IN FROM BOTH THE BELL AND SPIGOT.

PIPE ALIGNMENT GUIDE

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
AERIAL PIPE CROSSING
CASING PIPE DETAILS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
5-18	A.B.B.	11-15-04		
	D.H.L.	6-18-08		

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

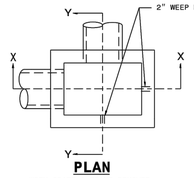
ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

SEWER CONT. / STORM DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

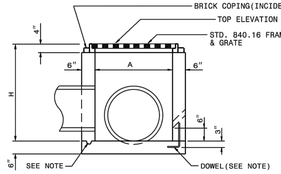
SHEET
C803

ELIZABETH HEIGHTS----

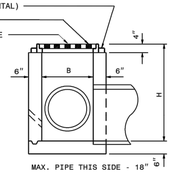


PLAN

WITH GRATE & FRAME REMOVED



SECTION X-X



SECTION Y-Y



DOWEL

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)

DIMENSIONS OF BOX & PIPE				CUBIC YARDS CONC. IN BOX			DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	WALL PER FT. HT.	TOTAL CONCRETE FOR MINIMUM HEIGHT, H	C.M.	R.C.
D	A	B	H					
12"	3'-0"	2'-0"	2'-0"	0.222	0.222	0.592	0.015	0.026
15"	/	/	2'-3"	/	/	0.648	0.023	0.036
18"	/	/	2'-6"	/	/	0.703	0.033	0.049
24"	/	/	3'-0"	/	/	0.814	0.059	0.085
30"	3'-0"	2'-0"	3'-6"	0.222	0.222	0.925	0.092	0.127

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

1-18

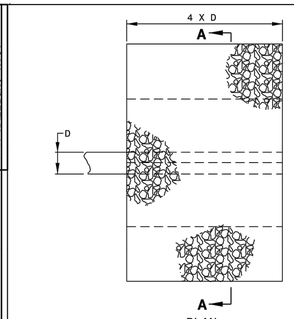
ROADWAY STANDARD DRAWING FOR

CONCRETE DROP INLET

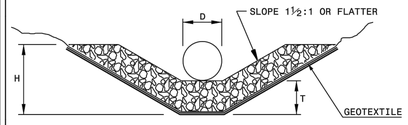
12" THRU 30" PIPE

SHEET 1 OF 1

840.14



PLAN



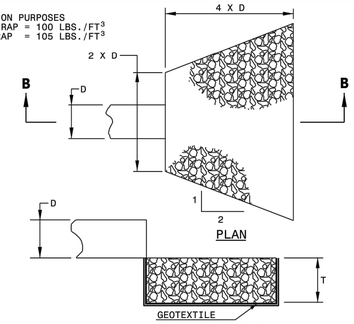
SECTION A-A

PIPE OUTLET WITH DITCH

H= RIP RAP TO TOP OF PIPE (MAX. H = D + T)
T= 15" CLASS I RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS
T= 12" CLASS 'B' RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS

D	OUTLET W/DITCH					OUTLET W/O DITCH				
	CLASS 'B' RIP RAP	CLASS I RIP RAP				CLASS 'B' RIP RAP	CLASS I RIP RAP			
	TONS	TONS	S.Y.	TONS	CU.YDS. FOR T=1.5'	TONS	TONS	S.Y.	TONS	CU.YDS. FOR T=1.5'
12"	2	5	5	2	5	1	4	2	1	4
15"	2	7	7	3	7	1	5	3	2	6
18"	3	10	9	4	10	2	7	4	2	8
24"	5	14	15	7	15	3	11	7	4	12
30"	8	21	21	11	22	5	16	11	7	17
36"	11	28	29	15	30	7	22	16	10	23
42"	15	37	39	20	39	10	28	22	13	30
48"	-	-	49	26	50	-	-	28	17	38
54"	-	-	60	33	62	-	-	36	21	47
60"	-	-	73	40	75	-	-	44	26	56
66"	-	-	87	48	89	-	-	54	32	67
72"	-	-	102	57	104	-	-	64	38	78

NOTE:
FOR CALCULATION PURPOSES
CLASS 'B' RIP RAP = 100 LBS./FT^3
CLASS I RIP RAP = 105 LBS./FT^3



PLAN

SECTION B-B

PIPE OUTLET WITHOUT DITCH

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

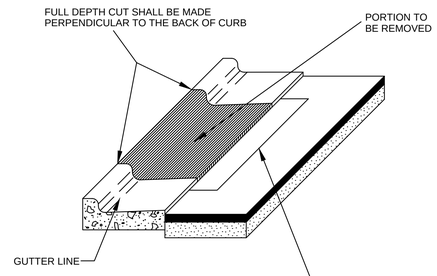
1-18

ROADWAY STANDARD DRAWING FOR

GUIDE FOR RIP RAP AT PIPE OUTLETS

SHEET 1 OF 1

876.02



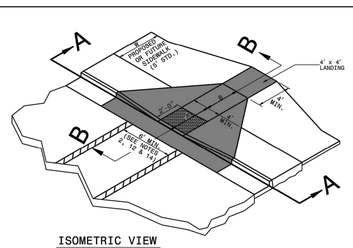
IF THE FINAL LIFT OF ASPHALT HAS BEEN INSTALLED AND IS DAMAGED DURING CURB REMOVAL, A ONE FOOT WIDE SECTION OF ASPHALT SHOULD BE SAWCUT AND REMOVED FOR FORMS TO BE USED TO KEEP A STRAIGHT EDGE ON THE DRIVEWAY APRON. REINSTALL HOT MIX SURFACE ASPHALT PATCH S9.5B.

IF THE FINAL LIFT OF ASPHALT HAS NOT BEEN INSTALLED, THE ASPHALT IN FRONT OF THE APRON CAN REMAIN IN PLACE.

NOTES:
1. CURB AND GUTTER SECTION SHALL BE REMOVED IN ACCORDANCE WITH DRIVEWAY WIDTH APPROVED BY THE CITY.
2. IF PERPENDICULAR CUT IS LESS THAN 5' FROM NEXT JOINT, THEN THE PARALLEL CUT SHALL BE MADE TO THAT JOINT.
3. THIS METHOD IS NOT ALLOWED IN NEW ROADWAY CONSTRUCTION.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/1/18	NOT TO SCALE
	STANDARD METHOD OF REMOVING EXISTING CURB (FOR A DRIVEWAY APRON INSTALLATION)	
	T-10.24	

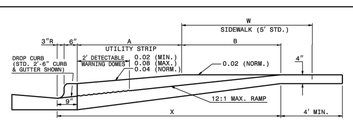


ISOMETRIC VIEW

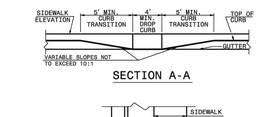
PAY LIMITS FOR CURB RAMP

NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

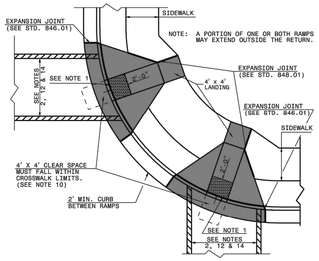
DETECTABLE WARNING DOMES



SECTION B-B



SECTION A-A



PLAN VIEW
DUAL RAMPS
ANY RADII
(4' MIN. FLOOR WIDTH)

W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0'*
6'	0.0'	6.8'	6.8'	6.0'**
7'	0.0'	7.8'	7.3'	6.5'**
8'	0.0'	8.8'	7.3'	6.5'**
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES O.04.

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

1-18

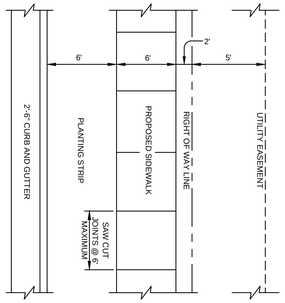
ROADWAY STANDARD DRAWING FOR

CURB RAMP

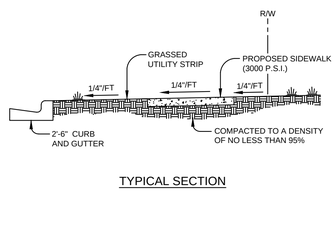
PROPOSED CURB AND GUTTER

SHEET 1 OF 3

848.05



PLAN VIEW



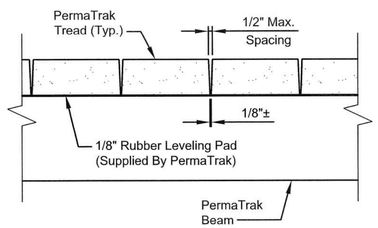
TYPICAL SECTION

TRANSVERSE EXPANSION JOINT

NOTES:
1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET.
2. ALL CONCRETE TO BE 3000 PSI AND FINISHED WITH CURING COMPOUND.
3. A 6 INCH DEPTH IS REQUIRED AT LOCATIONS OF DRIVEWAY CROSSINGS, AT STREET INJTERSECTIONS (ALONG THE LENGTH OF RADIUS CURB RETURNS), AND IN THE HANDICAP RAMPS.

CITY OF RALEIGH
STANDARD DETAIL

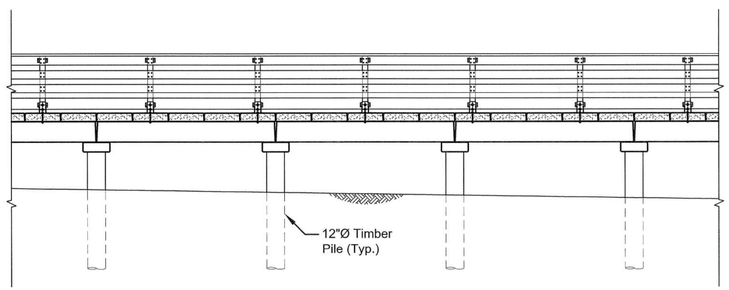
REVISIONS	DATE: 8/1/18	NOT TO SCALE
	CONCRETE SIDEWALK	
	T-30.01	



TYPICAL TREAD SPACING DETAIL

Scale: Not To Scale

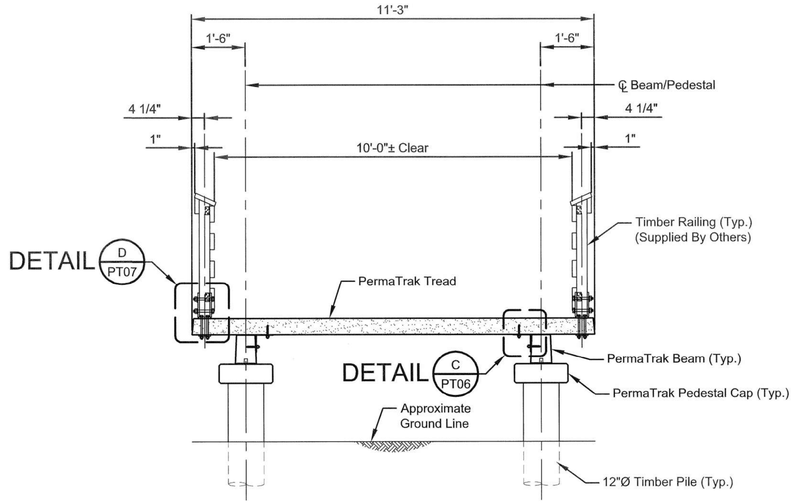
PERMATRK PEDESTRIAN BRIDGE



TYPICAL LONGITUDINAL SECTION

Scale: 1/4" = 1'-0"

PERMATRK PEDESTRIAN BRIDGE



1 PT02 **SECTION**

Scale: Not To Scale

PT03, PT04, PT05, PT06

PERMATRK PEDESTRIAN BRIDGE

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS

CONSTRUCTION DRAWINGS

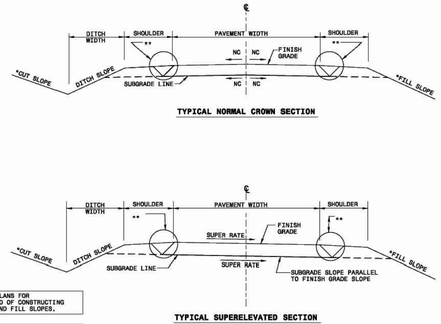
1205 AVERETTE ROAD
LAKE FOREST, NC 27587
WAKE COUNTY, NC

SITE DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET

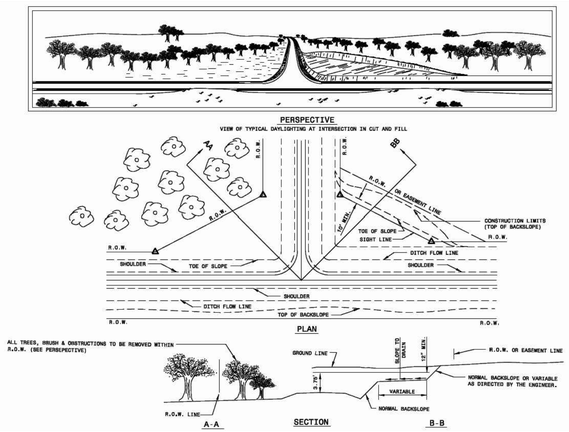
C804



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
GUIDE FOR GRADING SUBGRADE
SECONDARY AND LOCAL

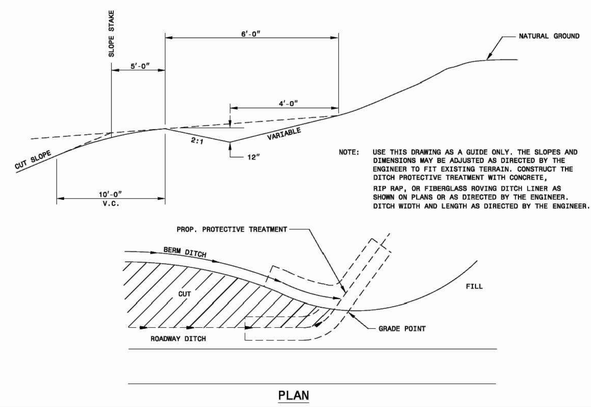
SHEET 1 OF 1
225.02



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
METHOD OF GRADING SIGHT DISTANCE AT INTERSECTIONS

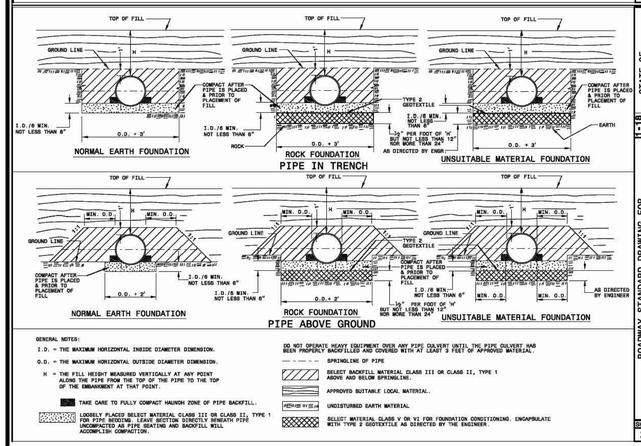
SHEET 1 OF 1
225.06



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
GUIDE FOR BERM DITCH CONSTRUCTION

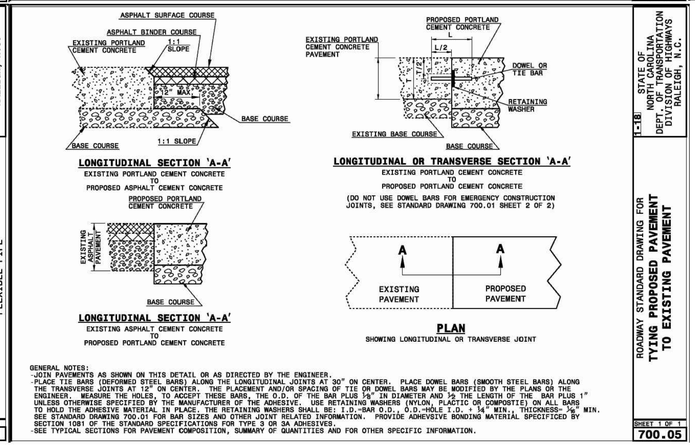
SHEET 1 OF 1
240.01



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

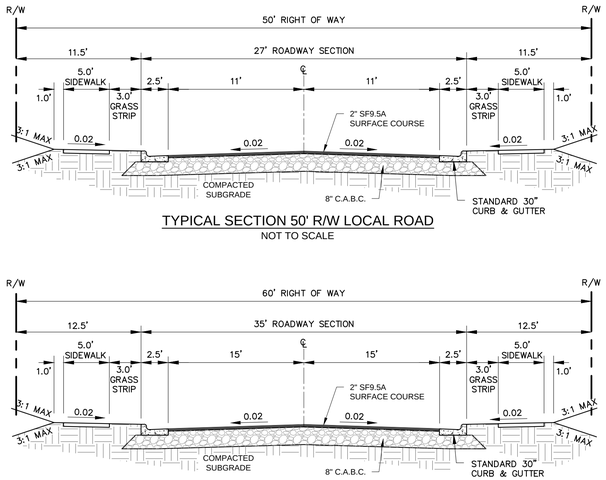
SHEET 1 OF 3
300.01

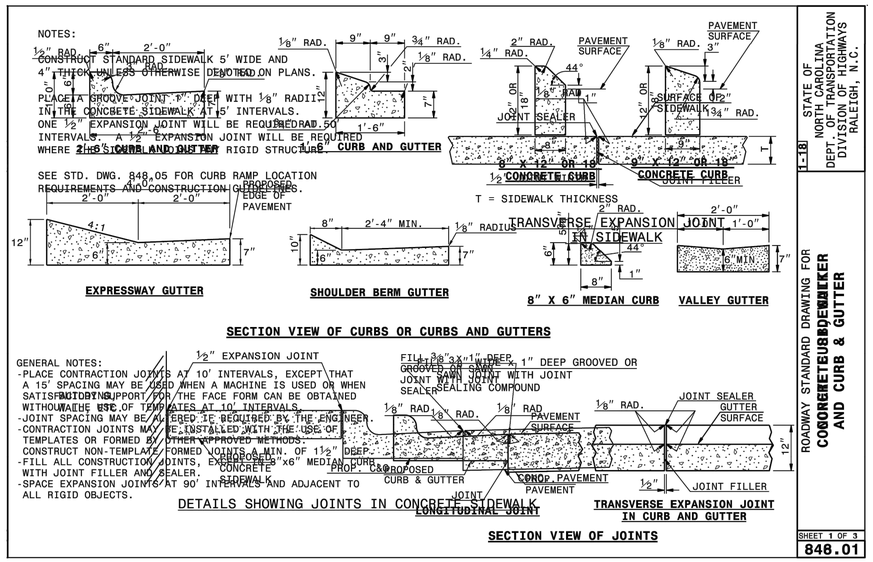


1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
TYING PROPOSED PAVEMENT TO EXISTING PAVEMENT

SHEET 1 OF 1
700.05





ROADWAY STANDARD DRAWING FOR
CONCRETE SIDEWALK AND CURB & GUTTER

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

SHEET 1 OF 3
848.01

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

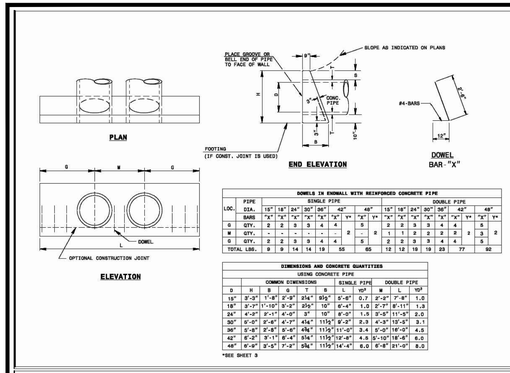
ELIZABETH HEIGHTS----

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

NCDOT DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C805



DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE

LOC.	PIPE	SINGLE PIPE						DOUBLE PIPE					
	DIA.	15"	18"	24"	30"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"
	BARS	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"	"A"
G	QTY.	2	2	3	3	4	4	5	2	2	3	3	4	4	5
W	QTY.	-	-	-	-	-	-	2	-	2	1	2	2	2	3
S	QTY.	2	2	3	3	4	4	5	2	2	3	3	4	4	5
TOTAL LBS.		9	9	14	14	19	55	65	12	12	19	19	23	77	92

DIMENSIONS AND CONCRETE QUANTITIES USING CONCRETE PIPE

	COMMON DIMENSIONS						SINGLE PIPE		DOUBLE PIPE	
G	H	S	Q	T	S	L	YD³	W	L	YD³
15"	3'-3"	1'-8"	2'-3"	3'4"	9'5"	5'-8"	0.7	2'-3"	7'-8"	1.0
18"	3'-7"	1'-10"	3'-3"	3'5"	10"	6'-4"	1.0	2'-7"	8'-11"	1.3
24"	4'-3"	2'-4"	3'-11"	4'-0"	3"	10"	6'-0"	1.5	3'-3"	11'-6"	2.0
30"	5'-0"	2'-8"	4'-7"	4'4"	11'5"	8'-3"	2.3	4'-3"	13'-8"	3.1
36"	5'-8"	3'-0"	5'-6"	4'8"	11'5"	11'-0"	3.4	5'-0"	16'-0"	4.5
42"	6'-3"	3'-1"	6'-4"	5'4"	11'5"	13'-8"	4.8	5'-10"	18'-6"	6.0
48"	6'-9"	3'-5"	7'-3"	5'8"	11'5"	16'-4"	6.0	6'-8"	21'-0"	8.0

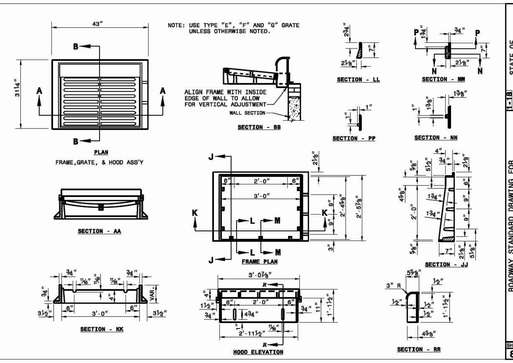
*SEE SHEET 3

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

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE HEADWALLS AND DOUBLE PIPE CULVERTS
15" THRU 48" PIPE - 90° SKEW

SHEET 1 OF 3
838.01

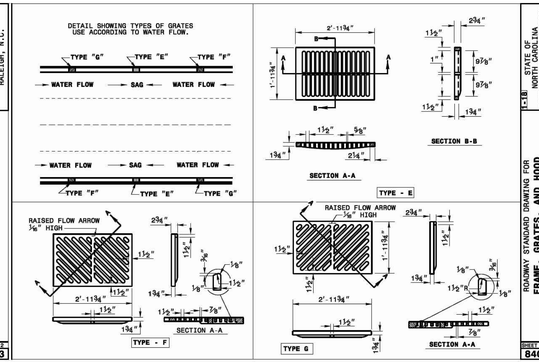


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

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

SHEET 1 OF 3
840.03

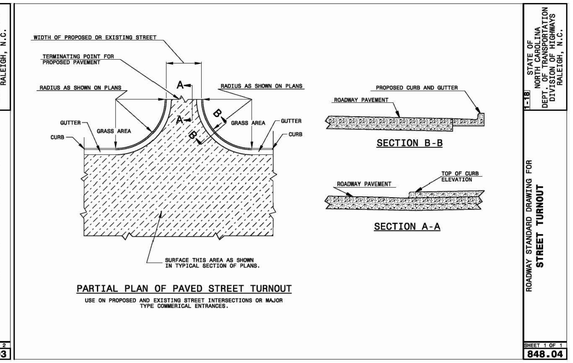


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

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

SHEET 2 OF 3
840.03

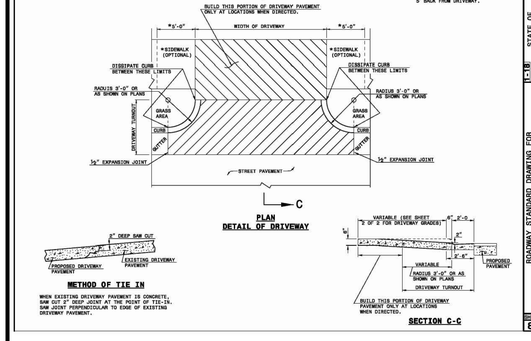


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
STREET TURNOUT

SHEET 1 OF 1
848.04

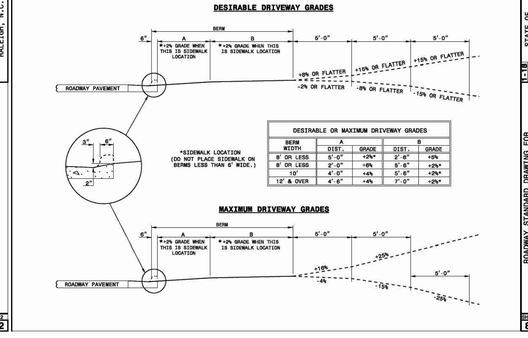


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE CURB, GUTTER AND CURB & GUTTER

SHEET 1 OF 3
846.01



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

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE CURB, GUTTER AND CURB & GUTTER

SHEET 2 OF 3
846.01

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

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE CURB, GUTTER AND CURB & GUTTER

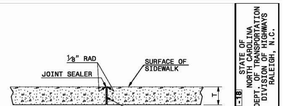
SHEET 3 OF 3
846.01

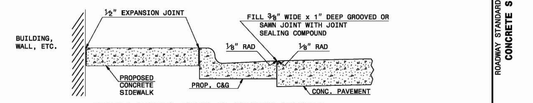
NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



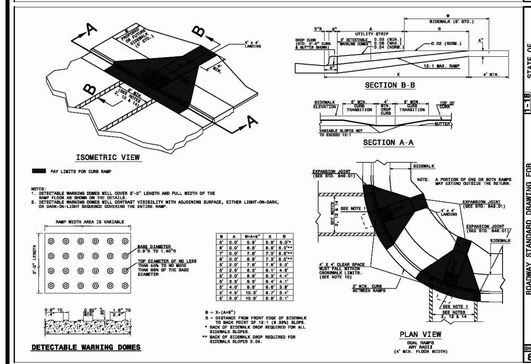


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE SIDEWALK

SHEET 1 OF 1
848.01

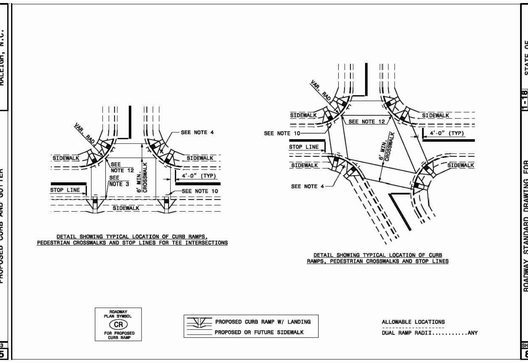


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 1 OF 3
848.05



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

1-18

ROADWAY STANDARD DRAWING FOR
CURB RAMP
PROPOSED CURB AND GUTTER

SHEET 2 OF 3
848.05

NOTES:

1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGHT THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE ON THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

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

1-18

ROADWAY STANDARD DRAWING FOR
CURB RAMPS
NOTES

SHEET 3 OF 3
848.05

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

1-18

ROADWAY STANDARD DRAWING FOR
DRIVEWAY TURNOUT
RADIUS TYPE

SHEET 1 OF 2
848.02

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

1-18

ROADWAY STANDARD DRAWING FOR
DRIVEWAY GRADES

SHEET 2 OF 2
848.02

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

NCDOT DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C806

CONTINUOUS LINES

EDGE LINE — 4"/6" — YELLOW OR WHITE

LANE LINE — 4"/6" — WHITE

CENTER LINE — 4"/6" — YELLOW

GORE LINE — 8"/12" — WHITE

DIAGONAL LINE — 12" 45 MPH OR HIGHER; 8" LESS THAN 45 MPH — YELLOW OR WHITE

CROSSWALK LINE — 8" TRANSVERSE; 24" LONGITUDINAL — WHITE

RxR LINE — 16" — WHITE

STOP OR TRANSVERSE BAR — 24" — WHITE

10'-30'/SP SKIP LINE

UNLESS OTHERWISED SHOWN, USE 10'-30'/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.

10' 30' 4"/6" — YELLOW OR WHITE

2'-6'/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 2'-6'/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND MINI-SKIPS USED FOR BICYCLE LANE LINES.

2' 6' 4"/6" — YELLOW OR WHITE

3'-3'/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3'-3'/SP MINI-SKIPS FOR THE WHITE EDGE LINE EXTENSIONS AT ROUNDABOUTS.

3' 3' 8"/12" — WHITE

3'-9'/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3'-9'/SP MINI-SKIPS FOR MINI-SKIP LANE LINES AND LINE EXTENSIONS THROUGH TAPERS.

3' 9' 4"/6" — WHITE

GENERAL NOTES:

1- USE 6" LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** LINE TYPES AND OFFSETS

SHEET 1 OF 2 — **1205.01**

EDGE LINE OFFSET DETAIL

2" MAX., REFER ALSO TO TABLE 1 — E.O.T. — WHITE OR YELLOW EDGE LINE

CENTER LINE OFFSET DETAIL

3" 3" 6" — YELLOW CENTER LINE — YELLOW CENTER LINE

LANE LINE OFFSET DETAIL

2" TOWARDS LEFT SIDE OF TRAVELWAY — WHITE LANE LINE

TABLE 1

EDGE LINE OFFSETS FOR 2-LANE, 2-WAY ROADWAYS WITH UN-PAVED SHOULDERS

WIDTH (W) OF TRAVEL PAVEMENT	MAX. EDGE LINE OFFSET FROM E.O.T.	MINIMUM LANE WIDTH (W)
16' - 18'	2"	8' - 9'
19'	4"	9'
20'	6"	9.5'
21'	8"	10'
22'	10"	10'
23'	10"	10.5'
24'	1'	11'
26'	2'	11'
28'	2'	12'
30'	3'	12'
32'	4'	12'

LEGEND

W = WIDTH OF TRAVEL LANE
E.O.T.= EDGE OF TRAVEL
DIRECTION OF TRAFFIC FLOW

TWO-WAY UNDIVIDED ROADWAY

SEE EDGE LINE OFFSET DETAIL — W — W — SEE EDGE LINE OFFSET DETAIL — SEE CENTER LINE OFFSET DETAIL

TWO-WAY UNDIVIDED ROADWAY WITH TWO-WAY LEFT TURN LANE

SEE EDGE LINE OFFSET DETAIL — W — W — W — SEE EDGE LINE OFFSET DETAIL — SEE CENTER LINE OFFSET DETAIL

MULTI-LANE ROADWAY

SEE EDGE LINE OFFSET DETAIL — W — W — W — SEE EDGE LINE OFFSET DETAIL — SEE LANE LINE OFFSET DETAIL

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** LINE TYPES AND OFFSETS

SHEET 2 OF 2 — **1205.01**

TWO-LANE, TWO-WAY ROADWAY

SHOULDER — WHITE EDGE LINES — YELLOW SKIP CENTER LINES, PASSING SIDE — E.O.T. — SHOULDER — YELLOW SKIP CENTER LINES — YELLOW CENTER LINE, NO PASSING SIDE — DOUBLE YELLOW CENTER LINE (TWO YELLOW CENTER LINES) — E.O.T.

PASSING ZONE - BOTH DIRECTIONS — PASSING ZONE - SINGLE DIRECTION — NO-PASSING ZONE - BOTH DIRECTIONS

PASSING/NO PASSING ZONES WILL BE DETERMINED BY THE ENGINEER.

TWO-LANE, TWO-WAY ROADWAY WITH TWO-WAY LEFT TURN LANE

320' TYPICAL SPACING BETWEEN SETS OF ARROW SYMBOLS — SPACING CAN BE INCREASED OR DECREASED AS DETERMINED BY THE ENGINEER

SHOULDER — WHITE EDGE LINES — E.O.T. — 10' — 10' — SHOULDER — YELLOW SKIP CENTER LINES — YELLOW CENTER LINES — E.O.T.

GENERAL NOTES:

1- EDGE LINES ARE NOT REQUIRED ALONG CURB AND GUTTER LOCATIONS.

2- CONTINUE EDGE LINES THROUGH MINOR DRIVEWAYS. DO NOT CONTINUE EDGE LINES AT INTERSECTIONS AND MAJOR DRIVEWAYS, SEE ROADWAY STANDARD DRAWING 1205.05 FOR ADDITIONAL GUIDANCE.

3- REFER TO ROADWAY STANDARD DRAWINGS 1205.01 AND 1205.08 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND

W = WIDTH OF TRAVEL LANE
E.O.T.= EDGE OF TRAVEL
DIRECTION OF TRAFFIC FLOW
PAVEMENT MARKING SYMBOLS

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** TWO-LANE AND MULTI-LANE ROADWAYS

SHEET 1 OF 2 — **1205.02**

DIRECT TAPER TURN LANE

WHITE 3'-9'/SP MINI-SKIP LINE — END OF TAPER — 10' — TAPER

TURN LANE BAYS < 125 FT.

WHITE 3'-9'/SP MINI-SKIP LINE — WHITE LANE LINE — TAPER — TURN LANE BAY — ARROW CENTERED IN TURN LANE BAY

TURN LANE BAYS 125 - 250 FT.

WHITE LANE LINE — WHITE 3'-9'/SP MINI-SKIP LINE — 60' — TAPER — TURN LANE BAY

TURN LANE BAYS 250 FT. OR GREATER

WHITE LANE LINE — CENTER BETWEEN FIRST AND LAST ARROWS — 250' — WHITE 3'-9'/SP MINI-SKIP LINE — 60' — TAPER — TURN LANE BAY

LEFT TURN LANE DEVELOPED FROM TWO-WAY TURN LANE

WHITE LANE LINE — ½ LENGTH OF BAY — CENTER BETWEEN FIRST AND LAST ARROWS — WHITE 3'-9'/SP MINI-SKIP LINE — TWO-WAY LEFT TURN LANE — 60' — TURN LANE BAY — 160'

SAME PAVEMENT MARKING LINES, NUMBER OF ARROWS, AND ARROW SPACING APPLY AS FOR THE VARIOUS TURN LANE BAY LENGTHS SHOWN ABOVE

DOUBLE TURN LANES

WHITE LANE LINE, ½ LENGHT OF BAY UP TO 125' MAX. — WHITE LANE LINE, LENGHT OF BAY UP TO 250' MAX. — WHITE SKIP LANE LINE — WHITE 3'-9'/SP MINI-SKIP LINE — WHITE 2'-6'/SP MINI-SKIP LINE — 60' — CENTER BETWEEN FIRST AND LAST ARROWS — TAPER — TURN LANE BAY

GENERAL NOTES:

1- USE THE GUIDANCE SHOWN ABOVE IN CONJUNCTION WITH THE INTERSECTION GUIDANCE SHOWN ON ROADWAY STANDARD DRAWING 1205.04.

2- THE NUMBER OF ARROWS SHOWN IS THE MINIMUM REQUIRED. USE ADDITIONAL ARROWS AS DIRECTED BY THE ENGINEER.

LEGEND

PAVEMENT MARKING SYMBOL

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** TURN LANES

SHEET 1 OF 1 — **1205.05**

CROSSWALK PLACEMENT GUIDANCE

DETAIL 'A' — DETAIL 'B' — 4' MIN., SEE NOTE 5 — 4' MIN. TO STOP BAR — UNLESS OTHERWISE SPECIFIED, HI-VISIBILITY CROSSWALK MARKINGS SHOULD BE USED AT MID-BLOCK CROSSINGS, SEE DETAIL 'C' — HI-VISIBILITY CROSSWALK, SEE DETAIL 'C' — STANDARD CROSSWALK- 8" MIN. WHITE TRANSVERSE LINES WITH 8" MIN. GAP BETWEEN THE LINES

GENERAL NOTES:

1- USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.

2- THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALLED AS SPECIFIED ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.

3- THE STANDARD CROSSWALK IS TWO WHITE 8" MIN. TRANSVERSE LINES WITH A 6' MIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" WAX. WIDE LONGITUDINAL LINES WITH 24" MIN. GAPS BETWEEN LINES, SEE DETAIL 'C'. HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 6' WIDE. CURB RAMPS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARES.

4- STOP BARS SHOULD BE PLACED A 4' MIN. IN ADVANCE OF NEAREST CROSSWALK LINE.

5- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.

6- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' X 4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.

7- SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.

8- CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR DETAILS OF A SPECIAL DESIGN.

DETAIL 'A'- DUAL CURB RAMPS

CURB & GUTTER — STOPBAR — SIDEWALK — 4" MIN. — 4' X 4' CLEAR SPACE, SEE NOTE 6

DETAIL 'B'- SINGLE DIAGONAL CURB RAMP

CURB & GUTTER — STOPBAR — SIDEWALK — 4" MIN. — 2' MIN. — SEE NOTE 7 — 4' X 4' CLEAR SPACE, SEE NOTE 6 — 2' MIN.

DETAIL 'C'- HI-VISIBILITY CROSSWALK

24" MAX. WIDTH — 24" MIN. GAP — 6" MIN. WIDTH

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** PEDESTRIAN CROSSWALKS

SHEET 1 OF 1 — **1205.07**

UNDIVIDED MULTI-LANE ROADWAY WITH TWO-WAY LEFT TURN LANE

320' TYPICAL SPACING BETWEEN SETS OF LEFT TURN ARROW SYMBOLS — SPACING MAY BE INCREASED OR DECREASED AS DETERMINED BY THE ENGINEER

SHOULDER — WHITE EDGE LINE — E.O.T. — 10' — 10' — SHOULDER — WHITE SKIP LANE LINES — YELLOW SKIP CENTER LINES — YELLOW CENTER LINES — WHITE EDGE LINE — E.O.T.

DIVIDED FOUR-LANE ROADWAY

WHITE EDGE LINE — SHOULDER — OUTSIDE E.O.T. — SHOULDER — YELLOW EDGE LINES — WHITE SKIP LINES — INSIDE E.O.T. — MEDIAN — WHITE EDGE LINE — SHOULDER — OUTSIDE E.O.T.

GENERAL NOTES:

1- EDGE LINES ARE NOT REQUIRED ALONG CURB AND GUTTER LOCATIONS.

2- CONTINUE EDGE LINES THROUGH MINOR DRIVEWAYS. DO NOT CONTINUE EDGE LINES AT INTERSECTIONS AND MAJOR DRIVEWAYS, SEE ROADWAY STANDARD DRAWING 1205.05 FOR ADDITIONAL GUIDANCE.

3- REFER TO ROADWAY STANDARD DRAWINGS 1205.01 AND 1205.08 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND

W = WIDTH OF TRAVEL LANE
E.O.T.= EDGE OF TRAVEL
DIRECTION OF TRAFFIC FLOW
PAVEMENT MARKING SYMBOLS

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** TWO-LANE AND MULTI-LANE ROADWAYS

SHEET 2 OF 2 — **1205.02**

SIGNALIZED MULTI-LANE ROADWAY WITH TURN BAYS

SEE NOTE 1 — 60' — 150' THRU LANE ARROW SPACING — STOP BAR — SEE NOTE 1 — REFER TO STD. 1205.05 FOR TURN LANE MARKINGS GUIDANCE — REFER TO STD. 1205.09 FOR PAINTED ISLAND GUIDANCE — WHITE 2'-6'/SP MINI-SKIP LINES, SEE NOTE 3 — *WHITE 2'-6'/SP MINI-SKIP LINES, SEE NOTE 2

GENERAL NOTES:

1- REFER TO THE PAVEMENT MARKING PLAN FOR STOP BAR LOCATIONS FOR SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR AS DIRECTED BY THE ENGINEER.

2- MINI-SKIP LANE LINE EXTENSIONS SHOULD BE USED AT INTERSECTIONS THAT HAVE REDUCED VISIBILITY CONDITIONS SUCH AS OFFSET, SKEWED, OR CURVED ROADWAYS.

3- MINI-SKIP LANE LINE EXTENSIONS SHALL BE USED WHERE MULTIPLE TURN LANES ARE USED.

4- REFER TO ROADWAY STANDARD DRAWINGS 1205.01, 1205.02, 1205.05, 1205.08 AND 1205.09 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND

DIRECTION OF TRAFFIC FLOW
PAVEMENT MARKING SYMBOLS
OPTIONAL

TWO-LANE, TWO-WAY ROADWAY

*STOP BAR, SEE NOTE 1 — *WHITE 2'-6'/SP MINI-SKIP LINE, SEE NOTE 3 — 10' TYP.

TWO-LANE, TWO-WAY ROADWAY WITH TWO-WAY LEFT TURN LANE

*STOP BAR, SEE NOTE 1 — *WHITE 2'-6'/SP MINI-SKIP LINE, SEE NOTE 3 — 10' TYP. — 160'

UNDIVIDED MULTI-LANE ROADWAY

*STOP BAR, SEE NOTE 1 — *WHITE 2'-6'/SP MINI-SKIP LINE, SEE NOTE 3 — 150' — 60' — 10' TYP. — *WHITE 2'-6'/SP MINI-SKIP LINES, SEE NOTE 2

DIVIDED MULTI-LANE ROADWAY WITH TURN BAY

*STOP BAR, SEE NOTE 1 — *WHITE 2'-6'/SP MINI-SKIP LINE, SEE NOTE 3 — MONOLITHIC ISLANDS MAY BE OUTLINED WITH EDGE LINES — YELLOW 2'-6'/SP MINI-SKIP LINE — MEDIAN — CONTINUE EDGE LINE AROUND MEDIAN — 150' — 60' — REFER TO STD. 1205.05 FOR TURN LANE MARKING GUIDANCE — WHITE 2'-6'/SP MINI-SKIP LINE

DIVIDED MULTI-LANE ROADWAY WITH WIDE MEDIAN CROSSOVER

*STOP BAR, SEE NOTE 1 — *WHITE 2'-6'/SP MINI-SKIP LINE, SEE NOTE 3 — CONTINUE EDGE LINE AROUND MEDIAN — YELLOW 2'-6'/SP MINI-SKIP LINES — MEDIAN — >30' REF. — 150' — 60' — USE DOUBLE YELLOW CENTER LINE AND ARROW SYMBOLS IN MEDIAN CROSSOVER WHEN WIDTH OF MEDIAN EXCEEDS 30 FT, OTHERWISE THEY ARE NOT REQUIRED.

GENERAL NOTES:

1- PLACEMENT OF STOP BARS AT NON-SIGNALIZED INTERSECTIONS IS OPTIONAL AND USED WHERE IT IS IMPORTANT TO INDICATE THE POINT WHICH VEHICLES ARE REQUIRED TO STOP. PLACE STOP BARS NO LESS THAN 4 FEET AND NO MORE THAN 30 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. USE 10 FEET AS THE TYPICAL SETBACK DISTANCE OR AS DIRECTED BY THE ENGINEER.

2- MINI-SKIP LANE LINE EXTENSIONS SHOULD BE USED AT INTERSECTIONS THAT HAVE REDUCED VISIBILITY CONDITIONS SUCH AS OFFSET, SKEWED, OR CURVED ROADWAYS.

3- MINI-SKIP EDGE LINE EXTENSIONS MAY BE PLACED THROUGH INTERSECTIONS AND MAJOR DRIVEWAYS.

4- REFER TO ROADWAY STANDARD DRAWINGS 1205.01, 1205.02, 1205.05, 1205.08 AND 1205.09 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND

STOP SIGN — STATIONARY SIGN
DIRECTION OF TRAFFIC FLOW — PAVEMENT MARKING SYMBOLS
OPTIONAL

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** INTERSECTIONS

SHEET 1 OF 2 — **1205.04**

STATE OF NORTH CAROLINA — DEPT. OF TRANSPORTATION — DIVISION OF HIGHWAYS — RALEIGH, N.C. — 1"=1'0"

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** INTERSECTIONS

SHEET 2 OF 2 — **1205.04**

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

CONSTRUCTION DRAWINGS

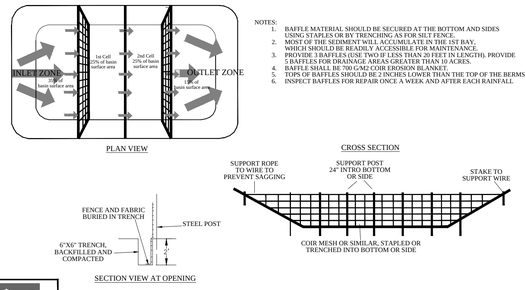
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

NCDOT DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET

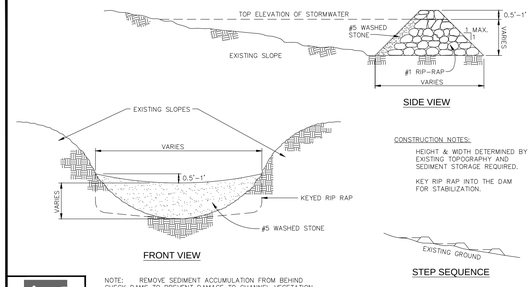
C807



NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (ONE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 700 G/M2 COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD BAFFLES DETAIL

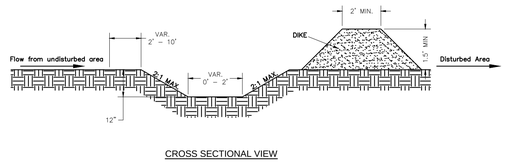


NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

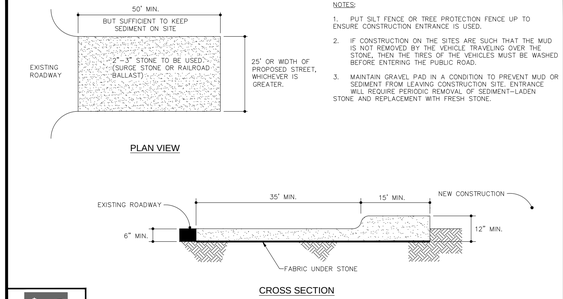
STANDARD CHECK DAM

NOTES:
1. DIVERSION TO BE USED UPSLOPE OF A CONSTRUCTION SITE TO PREVENT STORM RUNOFF FROM ENTERING THE DISTURBED AREA.
2. IMMEDIATELY LINE AND STABILIZE BEFORE ANY DOWNSLOPE GRADING BEGINS (STABILIZATION MUST OCCUR BEFORE ISSUANCE OF A CERTIFICATE OF COMPLIANCE). STABILIZATION METHOD IS BASED ON VELOCITY OF OFFSITE DRAINAGE.
3. DIVERSIONS SHOULD ONLY BE USED FOR DRAINAGES 5 ACRES OR LESS.
4. ANY SEDIMENT LADEN WATER PRIOR TO STABILIZATION OF THE DIVERSION MUST BE DIVERTED INTO AN APPROVED EROSION AND SEDIMENT CONTROL BMP. CLEAN WATER SHOULD EMPTY INTO AN APPROVED OUTLET DEVICE.



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD CLEAN WATER DIVERSION

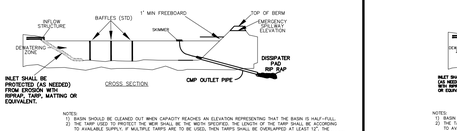


NOTES:
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

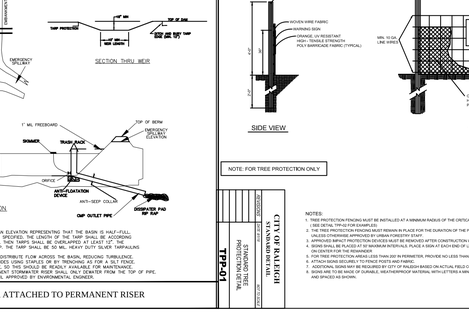
STANDARD CONSTRUCTION ENTRANCE

NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.



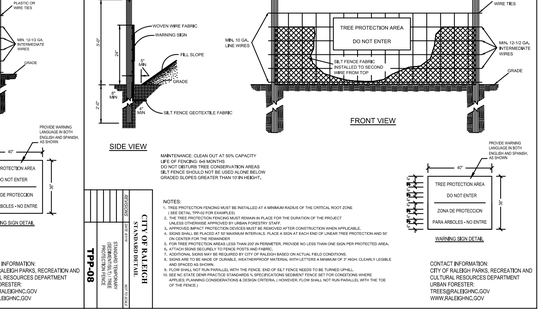
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD TEMPORARY DIVERSION DITCH



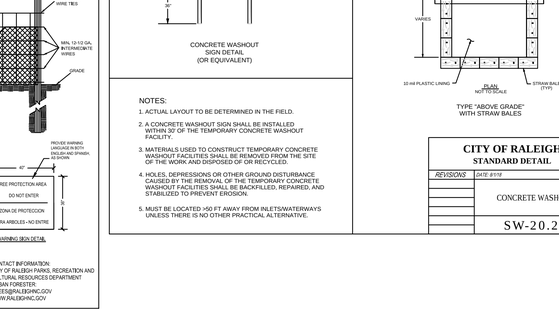
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD HORSESHOE INLET PROTECTION



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 05/31/18

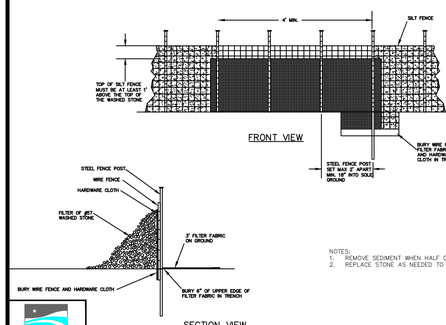
STANDARD LOT BY LOT EROSION CONTROL DETAIL



NOTE:
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD TEMPORARY SILT FENCE

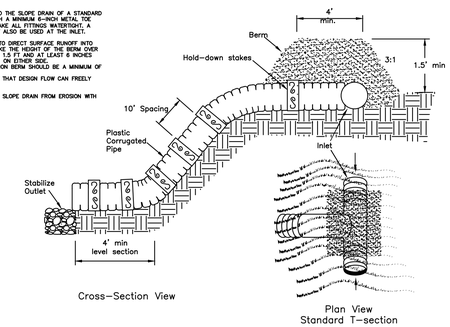


NOTES:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

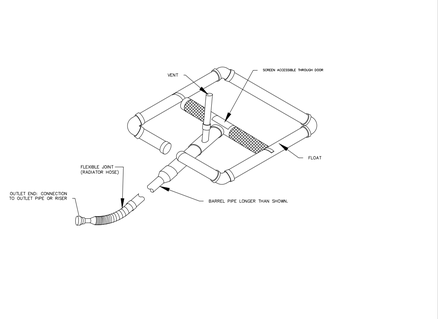
STANDARD SILT FENCE OUTLET

NOTES:
1. CONSTRUCT THE ENTRANCE TO THE SLOPE DRAIN OF A STANDARD FLARED-END SECTION OF PIPE WITH A MINIMUM 6-INCH METAL TOE PLATE (CROSS-SECTION VIEW). MAKE ALL FITTINGS WATERTIGHT. A STANDARD T-SECTION FITTING MAY ALSO BE USED AT THE INLET.
2. USE AN EARTHEN DIVERSION TO DIRECT SURFACE RUNOFF INTO THE TEMPORARY SLOPE DRAIN. MAKE THE HEIGHT OF THE BERM OVER THE DRAIN CONDUIT A MINIMUM OF 1.5 FT AND AT LEAST 6 INCHES HIGHER THAN THE ADJOINING BERMS ON EITHER SIDE. COMPACT THE LOWEST POINT OF THE DIVERSION BERM SHOULD BE A MINIMUM OF 1 FT ABOVE THE TOP OF THE DRAIN SO THAT DESIGN FLOW CAN FREELY ENTER THE PIPE.
3. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION WITH RIPRAP DISSIPATOR.



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD TEMPORARY SLOPE DRAIN



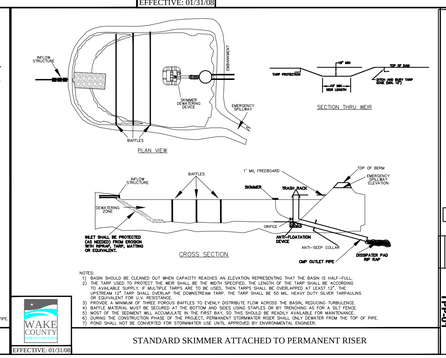
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SKIMMER DETAIL

NOTES:
1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12", THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE SO WL, HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT.
3) PROVIDE A MINIMUM OF 3 PERI FOROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) PROVIDE A MINIMUM OF 1 FT OF FREEBOARD BETWEEN THE TOP OF THE SKIMMER WEIR AND THE LOWEST POINT FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SKIMMER BASIN



NOTES:
1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12", THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE SO WL, HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT.
3) PROVIDE A MINIMUM OF 3 PERI FOROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) PROVIDE A MINIMUM OF 1 FT OF FREEBOARD BETWEEN THE TOP OF THE SKIMMER WEIR AND THE LOWEST POINT FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNITS, APPROVED BY ENVIRONMENTAL ENGINEER.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SKIMMER ATTACHED TO PERMANENT RISER

NOTES:
1. TREE PROTECTION FENCING MUST BE INSTALLED AT A MINIMUM RADIUS OF THE CRITICAL ROOT ZONE (SEE DETAIL TPP-02 FOR EXAMPLES).
2. TREE PROTECTION FENCING MUST REMAIN IN PLACE FOR THE DURATION OF THE PROJECT - UNLESS OTHERWISE APPROVED BY URBAN FORESTRY STAFF.
3. APPROVED IMPACT PROTECTION DEVICES MUST BE REMOVED AFTER CONSTRUCTION WHEN APPLICABLE.
4. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER FOR THE REMAINDER.
5. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTED AREA.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF RALEIGH BASED ON ACTUAL FIELD CONDITIONS.
8. SIGNS SHALL BE MADE OF DURABLE, WEATHERPROOF MATERIAL WITH LETTERS A MINIMUM OF 1" HIGH, CLEARLY LEGIBLE AND SPACED AS SHOWN.

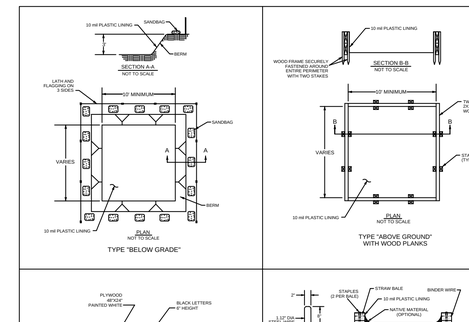
CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT
URBAN FORESTER
TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

CITY OF RALEIGH STANDARD DETAIL
TPP-01
STANDARD TREE PROTECTION PLAN

NOTES:
1. TREE PROTECTION FENCING MUST BE INSTALLED AT A MINIMUM RADIUS OF THE CRITICAL ROOT ZONE (SEE DETAIL TPP-02 FOR EXAMPLES).
2. TREE PROTECTION FENCING MUST REMAIN IN PLACE FOR THE DURATION OF THE PROJECT - UNLESS OTHERWISE APPROVED BY URBAN FORESTRY STAFF.
3. APPROVED IMPACT PROTECTION DEVICES MUST BE REMOVED AFTER CONSTRUCTION WHEN APPLICABLE.
4. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER FOR THE REMAINDER.
5. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTED AREA.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF RALEIGH BASED ON ACTUAL FIELD CONDITIONS.
8. SIGNS SHALL BE MADE OF DURABLE, WEATHERPROOF MATERIAL WITH LETTERS A MINIMUM OF 1" HIGH, CLEARLY LEGIBLE AND SPACED AS SHOWN.
9. FLOW SHALL NOT RUN PARALLEL WITH THE FENCE. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
10. SEE NC STATE DESIGN PRACTICE STANDARDS & SPECIFICATIONS SEDIMENT FENCE SET FOR CONDITIONS WHERE APPLIES. PLANNING CONSIDERATIONS & DESIGN CRITERIA, (HOWEVER, FLOW SHALL NOT RUN PARALLEL WITH THE TOE OF THE FENCE).

CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT
URBAN FORESTER
TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

CITY OF RALEIGH STANDARD DETAIL
TPP-04
STANDARD TREE PROTECTION PLAN



NOTES:
1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.
5. MUST BE LOCATED >50 FT AWAY FROM INLETS/WATERWAYS UNLESS THERE IS NO OTHER PRACTICAL ALTERNATIVE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/1/18	NOT TO SCALE
	CONCRETE WASHOUT	
	SW-20.25	

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

Bateman Civil Survey Company
Engineers • Surveyors • Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, JR.

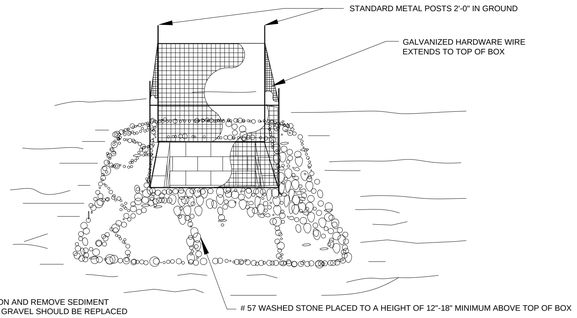
ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

WAKE COUNTY
EROSION CONTROL DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C808



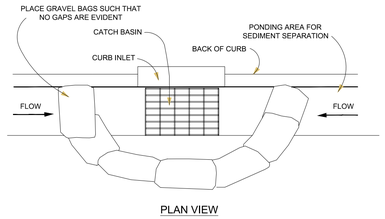
NOTE:

1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

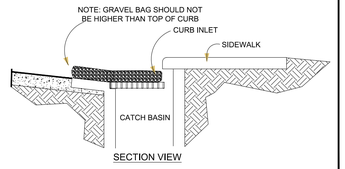
STANDARD GRAVEL YARD INLET PROTECTION



PLAN VIEW

NOTES:

1. PLACE GRAVEL BAG BARRIER ON GENTLY SLOPING STREET, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNNOFF.
2. USE SAND BAGS OF WOVEN GEOTEXTILE FABRIC (NOT BURLAP) AND FILL WITH $\frac{1}{2}$ INCH (OR SMALLER) GRAVEL. BAGS MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.
3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.
4. WHEN INSTALLING CURB INLET PROTECTION DEVICES, **NEVER** BLOCK THE CURB INLET.

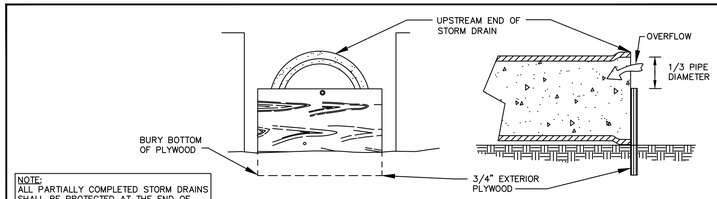


SECTION VIEW

WAKE COUNTY NORTH CAROLINA

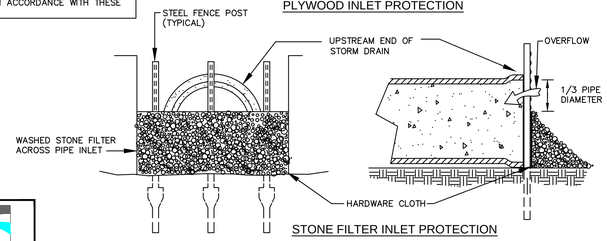
EFFECTIVE: 01/31/08

STANDARD GRAVEL BAG CURB INLET PROTECTION



NOTE:
ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.

PLYWOOD INLET PROTECTION

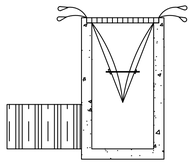


STONE FILTER INLET PROTECTION

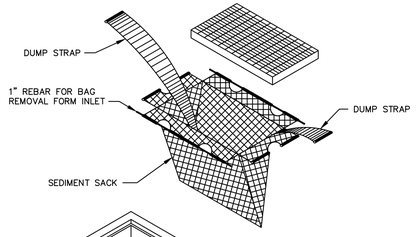
WAKE COUNTY NORTH CAROLINA

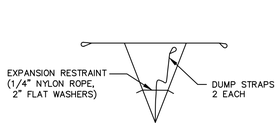
EFFECTIVE: 01/31/08

STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)

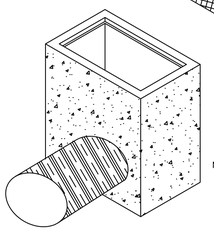


INSTALLATION DETAIL





BAG DETAIL



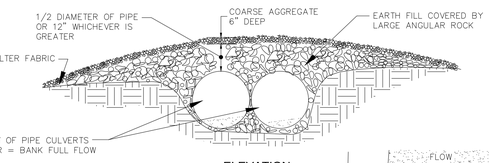
NOTES:

1. SOME MUNICIPALITIES DO NOT ALLOW GUTTER PROTECTION ON PUBLIC ROADS. SILT BAGS SHOULD BE USED WITH THESE CASES.
2. BAGS SHOULD BE CLEANED OUT AFTER EVERY RAIN EVENT AND/OR AS NEEDED.

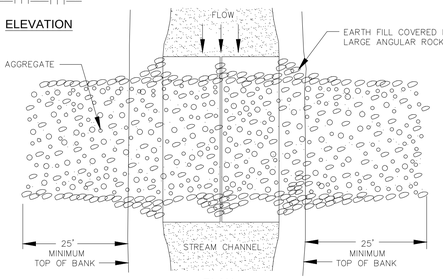
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE



ELEVATION

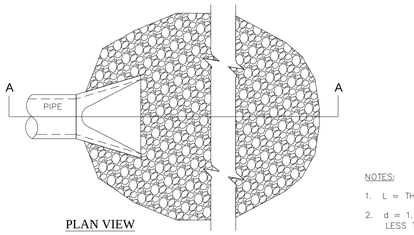


PLAN

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

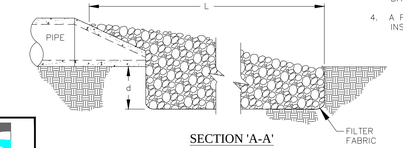
STANDARD TEMPORARY STREAM CROSSING



PLAN VIEW

NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

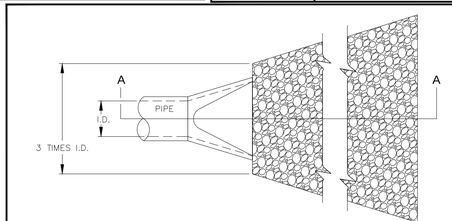


SECTION 'A-A'

WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

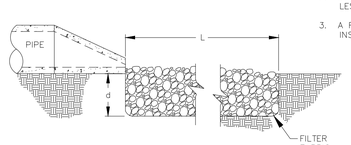
STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL



PLAN VIEW

NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

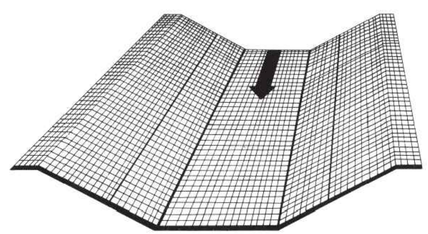


SECTION 'A-A'

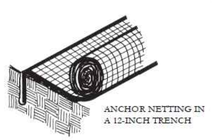
WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

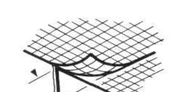
STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL



IN CHANNELS, ROLL OUT STRIPS OF NETTING PARALLEL TO THE DIRECTION OF FLOW AND OVER THE PROTECTIVE MULCH.



ANCHOR NETTING IN A 12-INCH TRENCH



JOIN STRIPS BY ANCHORING AND OVERLAPPING

NOT TO SCALE

MATTING DETAIL

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT, III

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

WAKE COUNTY
EROSION CONTROL DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C809

WAKE COUNTY CONSTRUCTION SEQUENCE:

1. SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER SCOTT REAMS VIA 919-868-4986. OBTAIN A LAND-DISTURBING PERMIT.
2. INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
3. CALL SCOTT REAMS VIA 919-868-4986 FOR AN ONSITE INSPECTION TO OBTAIN A CERTIFICATE OF COMPLIANCE.
4. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
5. INSTALL STORM SEWER, IF SHOWN, AND PROTECT INLETS WITH BLOCK AND GRAVEL INLET CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION, BUILDING, ETC.
6. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
7. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL SCOTT REAMS VIA 919-868-4986 FOR AN INSPECTION.
8. IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
9. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE WATERSHED MANAGER SCOTT REAMS VIA 919-868-4986. OBTAIN A CERTIFICATE OF COMPLETION.

EROSION CONTROL MEASURES SELF INSPECTION

1. THE FINANCIALLY RESPONSIBLE PARTY, LANDOWNER, OR THEIR AGENT SHALL CONDUCT INSPECTIONS OF ALL EROSION CONTROL DEVICES AND PRACTICES IN ACCORDANCE WITH NCDENR DIVISION OF LAND RESOURCES REQUIREMENTS FOR SELF INSPECTION.
2. A SELF INSPECTION SHALL BE PERFORMED AFTER EACH PHASE OF THE APPROVED SEDIMENT AND EROSION CONTROL PLAN IS COMPLETE. THIS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO THE FOLLOWING:
   - 2.1. INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROL MEASURES.
   - 2.2. CLEARING AND GRUBBING OF EXISTING GROUND COVER.
   - 2.3. COMPLETION OF ANY PHASE OF GRADING OF SLOPES OR FILLS.
   - 2.4. INSTALLATION OF STORM DRAINAGE FACILITIES.
   - 2.5. COMPLETION OF CONSTRUCTION OR DEVELOPMENT
   - 2.6. ESTABLISHMENT OF PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION.
3. PERSON PERFORMING INSPECTION MAY USE THE STANDARD FORM PROVIDED BY NCDENR DIVISION OF LAND RESOURCES OR MAY MARK UP A SINGLE COPY OF THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. ANY DOCUMENTATION OF THE SELF INSPECTIONS SHALL BE MAINTAINED ON-SITE AND MADE AVAILABLE TO THE EROSION CONTROL INSPECTOR.
4. THE SEDIMENTATION POLLUTION CONTROL ACT WAS AMENDED IN 2006 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH PHASE OF THE PROJECT TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. RULES DETAILING THE DOCUMENTATION OF THESE INSPECTIONS TOOK EFFECT OCTOBER 1, 2010. AS OF AUGUST 1, 2013 THE SELF-INSPECTION PROGRAM WAS COMBINED WITH THE WEEKLY SELF-MONITORING PROGRAM OF THE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES. THE FOCUS OF THE SELF-INSPECTION REPORT IS THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES ACCORDING TO THE APPROVED PLAN. THE INSPECTIONS MUST BE CONDUCTED AFTER EACH PHASE OF THE PROJECT, AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131. A COMBINED SELF-INSPECTION / SELF-MONITORING FORM IS AVAILABLE AT THE FOLLOWING WEB ADDRESS: http://portal.ncdenr.org/web/lr/erosion . IF YOU HAVE ANY QUESTIONS OR CANNOT ACCESS THE FORM, PLEASE CONTACT THE LAND QUALITY SECTION AT (910) 433-3300.

PERMANENT SEEDING OF GRASS LINED CHANNELS

(GRASS-LINED CHANNELS, COASTAL PLAIN AND LOWER PIEDMONT, NCDENR STD. SEEDING TABLE 6.11j)

SEEDING DATES:
APRIL - JULY

SEEDING MIXTURE:

SPECIES:	RATE:
COMMON BERMUDAGRASS	40-80 LB/AC (1-2 LB/1000SF)

SOIL AMENDMENTS:
APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS, OR APPLY 3000 LB/AC GROUND AGRICULTURAL LIMESTONE AND 500 LB/AC 10-10-10 FERTILIZER.

MULCH:
USE A ROLLED EROSION CONTROL PRODUCT TO COVER THE BOTTOM OF CHANNELS AND DITCHES. THE LINING SHOULD EXTEND ABOVE THE HIGHEST CALCULATED DEPTH OF FLOW. ON CHANNEL SIDE SLOPES ABOVE THIS HEIGHT, AND IN DRAINAGES NOT REQUIRING TEMPORARY LININGS, APPLY 4000 LB/AC GRAIN STRAW AND ANCHOR STRAW BY STAPLING NETTING OVER THE TOP.

MAINTENANCE:
A MINIMUM OF 3 WEEKS IS REQUIRED FOR ESTABLISHMENT. INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE THE FOLLOWING APRIL ACCORDING TO SOIL TESTS OR APPLY 50 LB/AC NITROGEN.

TEMPORARY SEEDBED PREPARATION

1. A GOOD SEEDBED IS WELL PULVERIZED, LOOSE, AND UNIFORM.
2. LIMING - APPLY LIME ACCORDING TO SOIL TEST RECOMMENDATIONS. IF THE pH (ACIDITY) OF THE SOIL IS NOT KNOW, AN APPLICATION OF GROUND AGRICULTURAL LIMESTONE AT THE RATE OF 1 - 1.5 TONS/ACRE ON FINE TEXTURED SOILS AND 2-3 TONS/ACRE ON COARSE TEXTURED SOILS IS USUALLY SUFFICIENT. APPLY LIMESTONE UNIFORMLY AND INCORPORATE INTO THE TOP 4-6 INCHES OF THE SOIL. SOILS WITH A pH OF 6 OR HIGHER NEED NOT BE LIMED.
3. FERTILIZER - BASE APPLICATION RATES ON SOIL TESTS. WHEN THESE ARE NOT POSSIBLE APPLY A 10-10-10 GRADE FERTILIZER AT 700 - 1000 LB/ACRE. BOTH FERTILIZER AND LIME SHOULD BE INCORPORATED INTO THE TOP 4-6 INCHES OF SOIL. IF A HYDRAULIC SEEDER IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES BEFORE APPLICATION.
4. SURFACE ROUGHENING - IF RECENT TILLAGE OPERATIONS HAVE RESULTED IN A LOOSE SURFACE, ADDITIONAL ROUGHENING MAY NOT BE REQUIRED, EXCEPT TO BREAK UP LARGE CLODS. IF RAINFALL CAUSES THE SURFACE TO BECOME SEALED OR CRUSTED, LOOSEN IT JUST PRIOR TO SEEDING BY DISKING, RAKING, HARROWING, OR OTHER SUITABLE METHODS. GROOVE OR FURROW SLOPES STEEPER THAN 3:1 ON THE CONTOUR BEFORE SEEDING. SEE OTHER REQUIREMENTS FOR SURFACE ROUGHENING ON THIS SHEET.

NPDES Stormwater Discharge Permit for Construction Activities (NCGO1) NCDENR/Division of Water Quality NEW STABILIZATION TIMEFRAMES (Effective Aug. 3, 2011)		
SITE AREA DESCRIPTION	**STABILIZATION TIMEFRAME**	**EXCEPTIONS**
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

REV.NO.	DESCRIPTIONS	
2	REMOVE SWEETLEAF	07/31/2019
1	REVISED PER TOR COMMENTS	12/07/2018

REVISIONS

TEMPORARY SEEDING SCHEDULE

(TO TEMPORARILY STABILIZE DENUDED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF 15 WORKING DAYS)

SEEDING DATES: DECEMBER 1 THRU APRIL 15

SEEDING MIXTURE:

SPECIES	RATE (LBS/AC)
RYE (GRAIN)	120
ANNUAL LESPEDEZA (KOBE)	50

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

SOIL AMENDMENTS:
FOLLOW SOIL TESTS OR APPLY:
2,000 LBS/AC LIMESTONE AND
750 LB/AC 10-10-10 FERTILIZER

MULCH: 4,000 LBS/AC - ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

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

SEEDING DATES: APRIL 15 - AUGUST 15

SEEDING MIXTURE:

SPECIES	RATE (LBS/AC)
GERMAN MILLET	40

SOIL AMENDMENTS:
FOLLOW SOIL TESTS OR APPLY:
2,000 LBS/AC LIMESTONE AND
750 LB/AC 10-10-10 FERTILIZER

MULCH: 4,000 LBS/AC - ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OF A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

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

SEEDING DATES: AUGUST 15 THRU DECEMBER 15

SEEDING MIXTURE:

SPECIES	RATE (LBS/AC)
RYE (GRAIN)	120

SOIL AMENDMENTS:
FOLLOW SOIL TESTS OR APPLY:
2,000 LBS/AC LIMESTONE AND
1,000 LB/AC 10-10-10 FERTILIZER

MULCH: 4,000 LBS/AC - ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OF A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE: REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOPDRESS WITH 50 LBS/AC OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LBS/AC KOBE IN LATE FEBRUARY OR EARLY MARCH

PERMANENT SEEDBED PREPARATION

1. INSTALL NECESSARY MECHANICAL EROSION AND SEDIMENTATION CONTROL PRACTICES BEFORE SEEDING, AND COMPLETE GRADING ACCORDING TO THE APPROVED PLAN.
2. LIME AND FERTILIZER NEEDS SHOULD BE DETERMINED BY SOIL TESTS. SOIL TESTING IS PERFORMED FREE OF CHARGE BY THE NC DEPT. OF AGRICULTURE. SOIL TESTING LABORATORY. DIRECTIONS, SAMPLE CARTONS, AND INFORMATION ARE AVAILABLE THROUGH COUNTY AGRICULTURAL EXTENSION OFFICES OR FROM NCDA. BECAUSE THE NCDA SOIL TESTING LAB REQUIRES 1-6 WEEKS FOR SAMPLE TURN-AROUND, SAMPLING MUST BE PLANNED WELL IN ADVANCE OF FINAL GRADING. TESTING IS ALSO DONE BY COMMERCIAL LABORATORIES.
3. WHEN SOIL TESTS ARE NOT AVAILABLE, FOLLOW RATES SUGGESTED IN THE PERMANENT SEEDING SCHEDULE ON THIS SHEET. APPLICATION RATES USUALLY FALL INTO THE FOLLOWING RANGES:

   GROUND AGRICULTURAL LIMESTONE:
   LIGHT TEXTURED, SANDY SOILS: 1 - 1.5 TONS/ACRE
   HEAVY TEXTURED, CLAYEY SOILS: 2 - 3 TONS/ACRE

   FERTILIZER:
   GRASSES: 800 - 1200 LB/ACRE OF 10-10-10 (OR EQUIVALENT)
   GRASS-LEGUME MIXTURES: 800 - 1200 LB/ACRE OF 5-10-10 (OR EQUIVALENT)
4. APPLY LIME AND FERTILIZER EVENLY AND INCORPORATE INTO THE TOP 4-6 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. OPERATE MACHINERY ON THE CONTOUR.
5. ROUGHEN SURFACES IN ACCORDANCE WITH THE NOTES ON SURFACE ROUGHENING ON THIS SHEET.
6. COMPLETE SEEDBED PREPARATION BY BREAKING UP LARGE CLODS AND RAKING INTO A SMOOTH, UNIFORM SURFACE (SLOPES LESS THAN 3:1.) FILL IN OR LEVEL DEPRESSIONS THAT CAN COLLECT WATER. BROADCAST SEED INTO A FRESHLY LOOSENED SEEDBED THAT HAS NOT BEEN SEALED BY RAINFALL.

WAKE COUNTY BASIN REMOVAL SEQUENCE:

1. SCHEDULE A SITE MEETING WITH THE ENVIRONMENT ENGINEER/CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCE OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
3. PERFORM SEEDBED PREPARATION, SEED, MULCH, AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
4. INSTALL VELOCITY DISSIPATERS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
5. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

PERMANENT SEEDING SCHEDULE

Seeding Schedule

For Shoulders, Side Ditches, Slopes (Max 3:1):

Date	Type	Planting Rate
Aug 15–Nov 1	Tall Fescue	300 lbs/acre
Nov 1–Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1–Apr 15	Tall Fescue	300 lbs/acre
Apr 15–Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1–Aug 15	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	125 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum-Sudan Hybrids)

For Shoulders, Side Ditches, Slopes (3:1 to 2:1):

Date	Type	Planting Rate
Mar 1–Jun 1	Sericea Lespedeza (scarified) and use the following combinations:	50 lbs/acre (Sericea Lespedeza);
Mar 1–Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1–Jun 30	Or add Weeping Love grass	10 lbs/acre
Mar 1–Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1–Sept 1	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	120 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Mullet); 30 lbs/acre (Sorghum-Sudan Hybrids)
Sept 1–Mar 1	Sericea Lespedeza (unhulled – unscarified) AND Tall Fescue	70 lbs/acre (Sericea Lespedeza); 120 lbs/acre (Tall Fescue)

MULCH:
APPLY 4,000 LB/ACRE GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR BY TACKING WITH ASPHALT, ROVING, NETTING, OR BY CRIMPING WITH A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE THE FOLLOWING APRIL WITH 50 LB/ACRE NITROGEN. REPEAT AS GROWTH REQUIRES. MAY BE MOWED AS OFTEN AS NEEDED.

NOTE: SEE NCDOT'S LATEST STANDARDS FOR STABILIZATION FOR MORE INFORMATION.

SURFACE ROUGHENING

CUT SLOPE ROUGHENING FOR AREAS NOT TO BE MOWED

-STAIR-STEP GRADE OR GROOVE CUT SLOPES WITH A GRADIENT STEEPER THAN 3:1.
-USE STAIR-STEP GRADING ON ANY ERODIBLE MATERIAL SOFT ENOUGH TO BE RIPPED WITH A BULLDOZER. SLOPES CONSISTING OF SOFT ROCK WITH SOME SUBSOIL ARE PARTICULARLY SUITED TO STAIR-STEP GRADING.
-MAKE THE VERTICAL CUT DISTANCE LESS THAN THE HORIZONTAL DISTANCE, & SLIGHTLY SLOPE THE HORIZONTAL POSITION OF THE "STEP" IN TOWARD THE VERTICAL WALL.
-DO NOT MAKE INDIVIDUAL VERTICAL CUTS MORE THAN 2 FEET IN SOFT MATERIALS OR MORE THAN 3 FEET IN ROCKY MATERIALS.
-GROOVING USES MACHINERY TO CREATE A SERIES OF RIDGES & DEPRESSIONS THAT RUN ACROSS THE SLOPE (ON THE CONTOUR).
-GROOVE USING ANY APPROPRIATE IMPLEMENT THAT CAN BE SAFELY OPERATED ON THE SLOPE, SUCH AS DISKS, TILLERS, SPRING HARROWS, OR THE TEETH ON A FRONT END LOADER BUCKET. DO NOT MAKE SUCH GROOVES LESS THAN 3 INCHES DEEP NOR MORE THAN 15 INCHES APART.

FILL SLOPE AREAS NOT TO BE MOWED

-PLACE FILL SLOPES WITH A GRADIENT STEEPER THAN 3:1 IN LIFTS NOT TO EXCEED 9 INCHES, & MAKE SURE EACH LIFT IS PROPERLY COMPACTED. ENSURE THAT THE FACE OF THE SLOPE CONSISTS OF LOOSE, UNCOMPACTED FILL 4-6 INCHES DEEP. USE GROOVING AS DESCRIBED ABOVE, TO ROUGHEN THE FACE OF THE SLOPES, IF NECESSARY.
-DO NOT BLADE OR SCRAPE THE FINAL SLOPE FACE.

CUTS FILLS & GRADED AREAS THAT WILL BE MOWED

-MAKE MOWED SLOPES NO STEEPER THAN 3:1.
-ROUGHEN THESE AREAS TO SHALLOW GROOVES BY NORMAL TILLING, DISKING, HARROWING, OR USE OF CULTIPACK-SEEDER. MAKE THE FINAL PASS OF ANY SUCH TILLAGE IMPLEMENT ON THE CONTOUR.
-MAKE GROOVES, FORMED BY SUCH IMPLEMENTS, CLOSE TOGETHER (LESS THAN 10 INCHES) & NOT LESS THAN 1 INCH DEEP.
-EXCESSIVE ROUGHNESS IS UNDESIRABLE WHERE MOWING IS PLANNED.

ROUGHENING WITH TRACKED MACHINERY

-LIMIT ROUGHENING WITH TRACKED MACHINERY TO SANDY SOILS TO AVOID UNDUE COMPACTION OF THE SOIL SURFACE. TRACKING IS GENERALLY NOT AS EFFECTIVE AS THE OTHER ROUGHENING METHODS DESCRIBED.
-OPERATE TRACKED MACHINERY UP & DOWN THE SLOPE TO LEAVE HORIZONTAL DEPRESSIONS IN THE SOIL. DO NOT BACK-BLADE DURING THE FINAL GRADING OPERATION.

COMPLETE SEEDBED PREPARATION BY BREAKING UP LARGE CLODS & RAKING INTO A SMOOTH, UNIFORM SURFACE (SLOPES LESS THAN 3:1). FILL IN OR LEVEL DEPRESSIONS THAT CAN COLLECT WATER. BROADCAST SEED INTO A FRESHLY LOOSENED SEEDBED THAT HAS NOT BEEN SEALED BY RAINFALL.

NORTH CAROLINA PROFESSIONAL SEAL 20234 ENGINEER THOMAS S. SPEIGHT

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1061
NCBELS FIRM No. C-2378

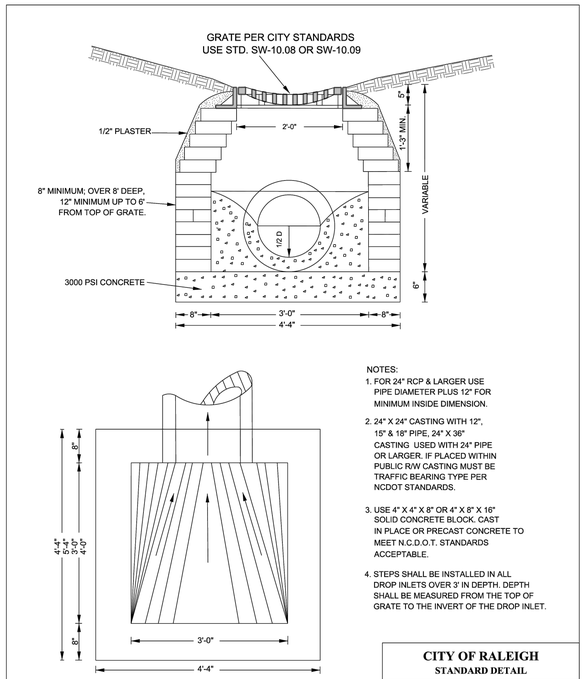
ELIZABETH HEIGHTS

ELIZABETH HEIGHTS
CONSTRUCTION DRAWINGS
1205 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY, NC

WAKE COUNTY
EROSION CONTROL DETAILS

Project Engineer:	TSS
Designed By:	RAJ
Drawn By:	RAJ
Checked By:	TSS
Scale:	NTS
Date:	07/31/2019
Project Number:	.170348

SHEET
C810

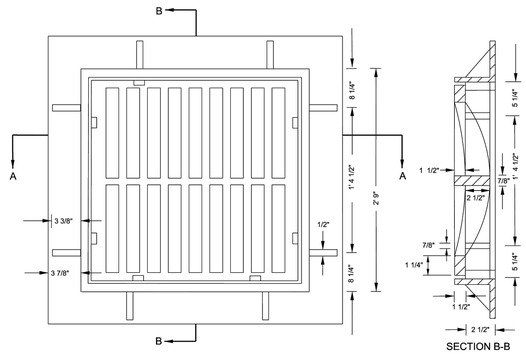


NOTES:

1. FOR 24" RCP & LARGER USE PIPE DIAMETER PLUS 12" FOR MINIMUM INSIDE DIMENSION.
2. 24" X 24" CASTING WITH 12", 15" & 18" PIPE, 24" X 36" CASTING USED WITH 24" PIPE OR LARGER. IF PLACED WITHIN PUBLIC R/W CASTING MUST BE TRAFFIC BEARING TYPE PER NCDOT STANDARDS.
3. USE 4" X 4" X 8" OR 4" X 8" X 16" SOLID CONCRETE BLOCK. CAST IN PLACE OR PRECAST CONCRETE TO MEET N.C.D.O.T. STANDARDS ACCEPTABLE.
4. STEPS SHALL BE INSTALLED IN ALL DROP INLETS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF GRATE TO THE INVERT OF THE DROP INLET.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
		STANDARD DROP INLET
		SW-10.03

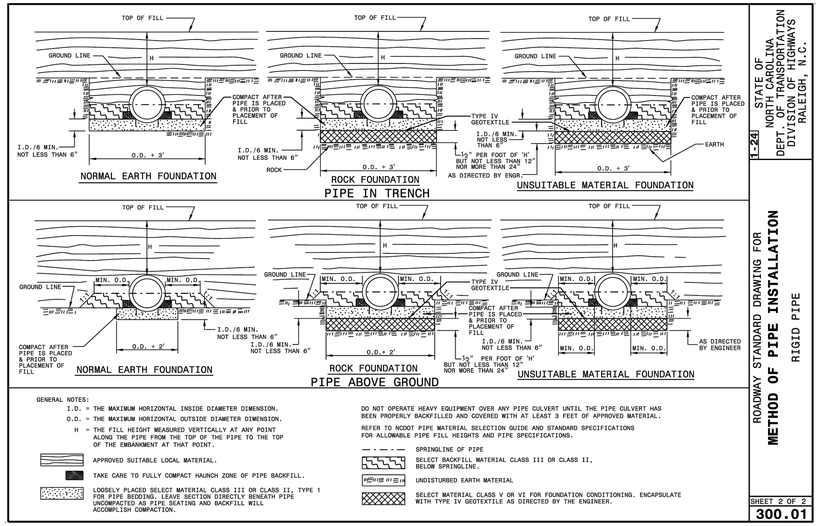


STANDARD 24" X 24" DROP INLET CASTING

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
		DROP INLET CASTING
		SW-10.08

NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT ONLY AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET. THIS DOCUMENT WAS ISSUED AND SEALED BY THOMAS S. SPEIGHT JR., NC PE 020234 ON 05.29.2019 AND APPROVED UNDER SP19-01 BY THE TOWN OF ROLESVILLE BOARD OF COMMISSIONERS. THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS CLOUDED AND LABELED "1" & "2" IN SHEETS C103, C302, C312, C402, C513B AND C811 OF THIS PLAN SET.

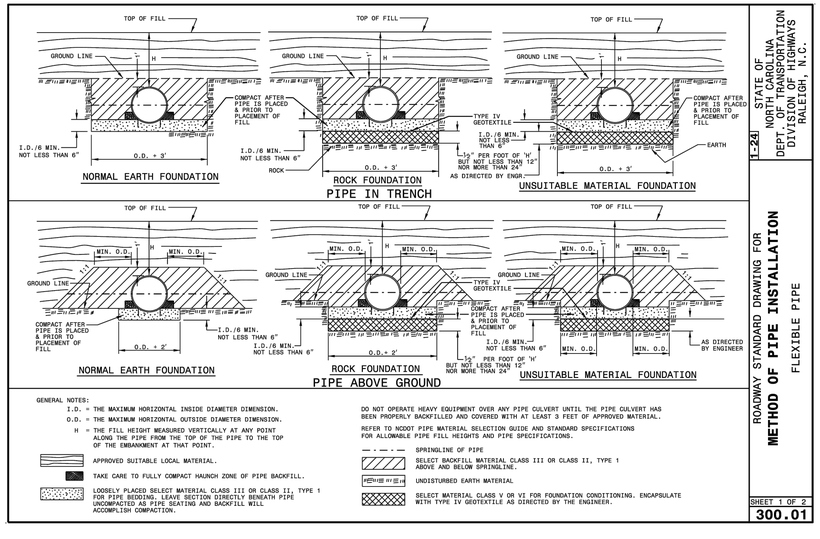


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2
300.01



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

1-24

ROADWAY STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01

REV #	DATE	DESCRIPTION
1	12.16.2024	BUILDING FOOTPRINT REVISION TO SP-19-01
2	02.20.2025	REVISION TO SP-19-01 PER TOR COMMENTS

FINAL DRAWING

FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32818 DOUGLAS B. COOPER
04/15/2025 10:17:24 AM

Douglas B Cooper

Digitally signed by Douglas B Cooper
DN: cn=Douglas B Cooper, o=Bateman Civil Survey Co, ou=Surveyor, l="Bateman Civil Survey Co", st=North Carolina, c=US, serialNumber=0a01410d0000018d0c1b5900950, 2.5.4.65="Douglas B Cooper"
Reason: I have reviewed this document
Date: 2025.04.15 10:18:09-04'00'

Bateman Civil Survey Company
Engineers ● Surveyors ● Planners
2524 Reliance Avenue, Apex, North Carolina 27539
Phone: 919.577.1080 Fax: 919.577.1081
NCBELS FIRM No. C-2378

ELIZABETH HEIGHTS
PHASE 2 REVISIONS

1206 AVERETTE ROAD
WAKE FOREST, NC 27587
WAKE COUNTY

STORM DETAILS CONT.

Design By:	BCSC
Date:	24.11.13
Project #:	P170348

SHEET
C811

p:\2017 projects\170348 elizabeth heights\ENG\CAD\DWG\Sheets\Revision\P170348_C900_DTLS.dwg