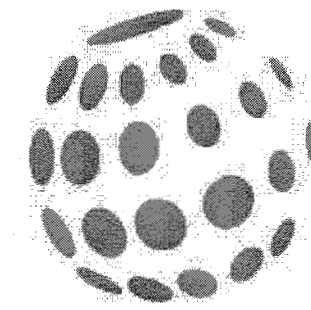


STONERIVER SUBDIVISION PHASE 2

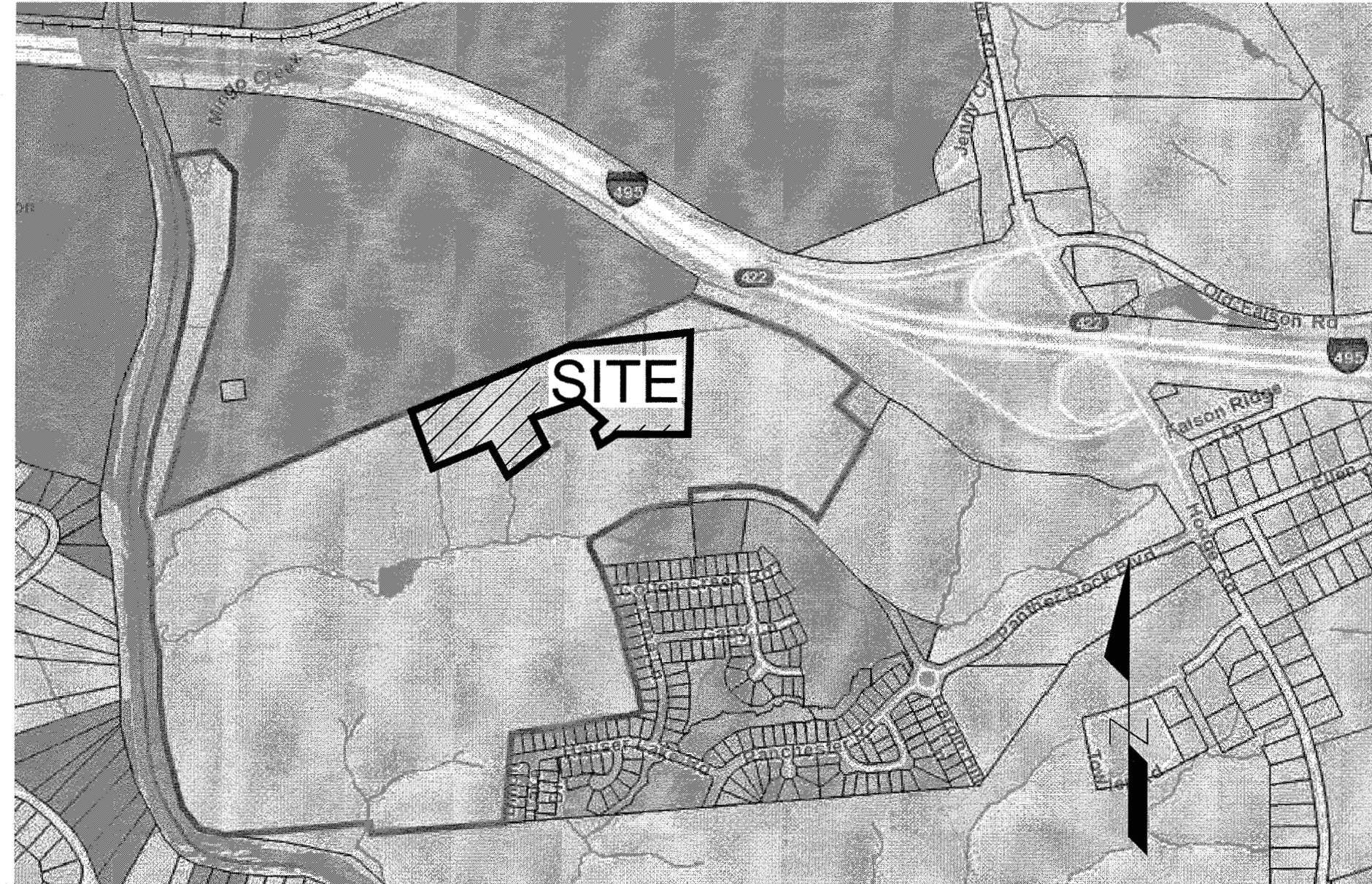
KNIGHTDALE, NC



GLOBAL CITY
DEVELOPMENT

SITE DATA

ENGINEER:	JIM CHANDLER, PE 5410 TRINITY ROAD, SUITE 102 TIMMONS GROUP RALEIGH, NC 27607 PHONE: 919-866-4507 FAX: 919-859-5663 EMAIL: JIM.CHANDLER@TIMMONS.COM
OWNER PIN 1 & 2:	CASSA KNIGHTDALE, LLC DEVELOPER: GLOBAL CITY DEVELOPMENT ATTN: ADAM ADLER 801 BRICKELL AVE, STE 2360 MIAMI, FL 33131-4943
PROPERTY LOCATION 1: PROPERTY LOCATION 2:	0 HODGE ROAD 0 PANTHER ROCK BLVD.
PIN 1: PIN 2:	1733-84-6208 PORTION OF 1733-73-7297
REFERENCES 1:	DEED BOOK 016861 PAGE 2279
ZONING: TOWNSHIP: EXISTING USE: PROPOSED USE: TOTAL SITE AREA: PROPOSED UNITS: 40' SINGLE FAMILY UNITS: 60' SINGLE FAMILY UNITS: 70' SINGLE FAMILY UNITS: TOWNHOUSE UNITS: RIVER BASIN: WATERSHED: SURFACE WATER CLASSIFICATION: EXISTING IMPERVIOUS AREA: PROPOSED IMPERVIOUS AREA: FEMA FIRM PANEL:	GR8 PRD ST. MATTHEW'S AGRICULTURE & WOODED SINGLE-FAMILY RESIDENTIAL 16.14 ACRES 97 16 38 0 43 NEUSE LOWER NEUSE RIVER C, NSW 0 ACRES (PHASES I & II) 18.80 ACRES (PHASES I & II) 1733J & 1744J
	PHASE 2
LINEAR FOOTAGE OF PUBLIC STREET:	2,550 LF
LINEAR FOOTAGE OF CURB AND GUTTER:	4800 LF
LINEAR FOOTAGE OF PUBLIC SIDEWALK:	5000 LF
LINEAR FOOTAGE OF PUBLIC WATER LINE:	2,554 LF
LINEAR FOOTAGE OF PUBLIC SEWER LINE:	2,445 LF
LINEAR FOOTAGE OF PUBLIC STORMWATER LINE:	1,962 LF
TOTAL WASTEWATER FLOW GENERATED:	24250 GPD - 97 DU



OVERALL VICINITY MAP
NOT TO SCALE

Sheet Number	Sheet Title
C0.0	COVER SHEET
C1.0	EXISTING CONDITIONS SHEET
C1.1	EXISTING CONDITIONS SHEET
C1.4	ENVIRONMENTAL & TREE SURVEY
C2.0	OVERALL SUBDIVISION LAYOUT PLAN
C2.1	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C3.0	STORM DRAINAGE & GRADING PLAN
C3.1	STORM DRAINAGE & SANITARY SEWER TABLES
C3.2	RETAINING WALLS
C4.0	SEDIMENTATION & EROSION CONTROL NOTES
C4.1	STAGE 1 EROSION CONTROL PLAN
C4.2	STAGE 2 EROSION CONTROL PLAN
C4.3	STAGE 3 EROSION CONTROL PLAN
C4.4	EROSION CONTROL DETAIL SHEET
C4.5	EROSION CONTROL NCG01 NOTES SHEET
C5.0	OVERALL UTILITY PLAN
C6.0	HAZELNUT RIDGE LANE PLAN & PROFILE
C6.1	HAZELNUT RIDGE LANE PLAN & PROFILE
C6.2	CASSA CLUBHOUSE WAY PLAN & PROFILE
C6.3	LONGLEAF GROVE LANE PLAN & PROFILE
C6.4	BASSWOOD GLEN TRAIL PLAN & PROFILE
C7.0	DAWN TREE WAY & TANBARK RIDGE ROAD PLAN & PROFILE
C7.1	PERSIMMON TREE PLACE PLAN & PROFILE
C7.2	REDBAY RIDGE TRAIL PLAN & PROFILE
C8.0	SITE DETAILS
C8.1	SITE DETAILS
C8.2	SITE DETAILS
C9.0	LANDSCAPE PLAN
C9.1	OPEN SPACE PLAN
C9.2	LIGHTING PLAN

ZONING CONDITIONS:

Voluntary Applicant Conditions:

- The development will consist of residential lots not to exceed 4 units per acre or 656 lots.
- Design Guidelines:
 - It is the intention of Acrterra Land, LLC to continue the architectural character of the successful Cheswick subdivision. As such, the residential development would adhere to the following design guidelines:
 - Single Family Detached**
 - Single-family 2 story homes will have a minimum heated square footage of 2200 sq. ft.
 - Single-family 1 or 1.5 story homes will have a minimum heated square footage of 1800 sq. ft.
 - All single-family homes with crawl spaces will be wrapped in brick or natural or cultured stone on all sides
 - All single-family homes with raised stem wall or raised slab foundations will have a minimum exposure of 18" with brick or stone.
 - All single-family homes will have a combination of 2 or more of the following materials on the front facade (not counting foundation): stone, brick, lap siding, cedar shakes or board and batten unless the home is only stone or brick. When 2 materials are used, the materials shall be different, but complementary colors.
 - Lap siding, shakes or board and batten on single family homes shall be fiber cement.
 - All single-family homes built on 60' lots or wider would have a minimum width of 40' at the front elevation (including porches).
 - All single-family homes would have a front porch with a minimum depth of 5'. Front porch posts will be at least 6"x6".
 - Main roof pitches (excluding porches) fronting the street for 2 story homes will be at least 6: 12
 - Main roof pitches (excluding porches) fronting the street for 1 and 1.5 story homes will be at least 6:12
 - There will be a 12" overhang on every gable end
 - All garage doors will have decorative lights
 - Garages will not protrude more than 6" from the front porch or stoop
 - At least 50% of the homes shall have a rear porch or deck at least 10' x 10'. The remaining homes shall have a patio at least 10' x 7'
 - Side Facade articulations: For every 20' (or fraction) of continuous side elevations (calculated on a per floor basis), there shall be 1 window or door added to the side elevation. For example, a 55' first floor depth shall have 3 windows on the first floor. If the second floor is 35', there shall be 2 windows on the second floor. Any siding break on the side of the home such as a fireplace, side porch, wall offsets could be used as an alternate to windows.

Townhomes:

- Description: The Townhouse Building is at least a 1,250-square foot building with at least 50% greater than 1,500 square feet, with 2 or more units (up to a max. of 6 units) on individual lots that are located side-by-side and preferably accessed from a rear lane or alley. As a result, the Townhouse typically only has 1 yard in the rear, although variations may include a small front setback to provide for landscaping, while the bulk, scale, and architectural design of the building(s) reflects that of the surrounding neighborhood or planned development, as may apply.
- Specific Requirements:
 - Residential Vehicular Access
 - Alley/Rear Lane Access: A townhouse must be accessed by a rear lane or alley to minimize pedestrian and vehicle conflicts, maximize on-street short term guest parking, and provide more landscaping along the street scope
 - Unit Differentiation
 - A single townhouse unit shall be differentiated from adjacent units along the common wall from foundation to roof ridge to be architecturally distinguishable from each other. Specifically, the following standards must be met:
 - Roof line breaks must be provided where each unit's roof appears to stand alone;
 - Gables may not span between two units;
 - Each unit shall have at least two materials (brick, stone, stucco, clapboard, scales, shingles, board, and batten, etc.) on the primary facade, with each material being of different but complementary color than the material on the adjacent unit.
 - Rear yards shall provide at least one of the following:
 - Architectural wall/fencing matching the structure.
 - Storage room that divides the units creating a courtyard like setting.
 - Shrubs extending out delineating each rear yard.

3. Unit Design Details: All Townhouse Buildings shall provide detailed design along all unit facades visible from a public right-of-way. Detailed design shall be provided by using at least one (1) of the architectural features from each of the following three (3) feature categories on all facades as appropriate for the proposed architectural style (may vary features on rear/side/front elevations):

- Entrance (primary facade only):
 - Porch Pillars (6" min width)
 - Sidelights
 - Decorative Door Surround (6" min width) with Pediment or Crown
- Window Treatment:
 - Decorative Window Surround (4" min width) with Crown
 - Shutters with Fasteners
 - Window Box Planters
- Roof Line:
 - Dormer/Gable
 - Bracketed Eaves
 - Decorative cornice or roof line (flat roofs only)

4. Foundations

- Material: The crawlspace of buildings shall be enclosed with brick, stone, or stucco. Slabs shall be covered with brick or stone. Areas under porches may be enclosed with lattice.
- Landscaping: At least 60% of the length of any foundation wall visible from the right-of-way must be landscaped with foundation plantings.

5. Wall Materials: Townhouse Building walls shall be wood clapboard, cementitious fiber board, wood shingle, wood drop siding, wood board and batten, brick, stone, or stucco. If not entirely masonry, Townhouse Building front facades shall have at least two (2) siding textures with the heavier material (i.e. stone, brick) placed below the lighter material (i.e. siding, shakes) to give the sense of support and grounding. (brick, stone, stucco, clapboard, scales, shingles, board, and batten, etc.) must change between units (applicable to each floor); and

6. Roofs

- Materials: Townhouse Building roofs shall be clad in wood shingles, standing seam metal, slate, copper, or asphalt shingles.
- Pitch: Main roofs on residential buildings shall be symmetrical gables or hips with a pitch between 6: 12 and 12:12. Monopitch (shed) roofs are allowed only if they are attached to the wall of the main building. No monopitch roof shall be less than 3: 12.

7. Administrative Approval of Minor Variances: The Staff may approve minor variances to the Specific Requirements listed above provided that such minor variance meets the overall intent of these Townhouse Standards and conforms to the Comprehensive Plan and other adopted plans of the Town.

- Ability to grade the site outside of the proposed right-of-way (mass grading). A single phase of the development shall not encompass more than 50 acres of grading unless approved by the Town's Development Services Department.
- Provide a 10' Type A buffer adjacent to the existing homes in Cheswick that would abut the Stoneriver development.
- The Stoneriver entrance monument will be placed near the leg of the roundabout of Hardin Hill Ln. & Panther Rock Blvd. (PINs 1743-03-7192, 1743-03-4436, 174303-9361) and outside of the public right-of-way.
- The Cheswick entrance monument will be relocated from Panther Rock Blvd. and Hodge Rd. to a parcel on the corner of Ranchester Rd. & Panther Rock Blvd. (PIN 1743-02-9924). The Cheswick entrance monument shall be relocated before the HOA is turned over to the residents.
- Ability to locate street graphics on light poles on Panther Rock Blvd., Hardin Hill Ln. and new 4th leg of the roundabout.

ATTENTION CONTRACTORS

The Construction Contractor responsible for the extension of water, sewer, and/or gas, 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.

Town Approved Standards Shall Control. In the event of a conflict or inconsistency between these construction drawings and the Town of Knightdale's Approved Standards for this project, the Approved Standards shall control. Town of Knightdale Approved Standards shall mean all development documents necessary for approval for the Property including, but not limited to, any special use permit, subdivision plan, site plan, subdivision agreement, phasing schedule, Development Agreement, Utility Allocation Agreement, Annexation Agreement, the Town of Knightdale Standard Specification and Details Manual and applicable provisions of the North Carolina State Building Code.

Professional Design Engineer Certification. These improvements shall be constructed in accordance with the following drawings and with the Standard Specifications of the Town of Knightdale.

I, _____, PE, certify that the Standard Specifications of the Town of Knightdale have been thoroughly checked and found to be applicable to this project. All exceptions to the applicable Town standards have been previously approved by the Town of Knightdale and said exceptions are shown on Sheet(s) _____ of these drawings.

Seal By: _____, PE
Date: _____

VARIANCE CONDITIONS:

- 9.5(E): Allowing the applicant to exceed the maximum cul-de-sac length for "Street A" on the Stoneriver Master Plan.

Conditions:

 - "Street F" must extend southward and connect to "Street A".
 - Public access must be provided from "Street A" to the common open space.
- 9.5(G): Allowing the Stoneriver Master Plan to have a Connectivity Index less than the 1.40 minimum standard.



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval: Lorea M Sample
Raleigh Water Review Officer

Water and Sewer Permits (if applicable)

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-4454R

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-3558R

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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.

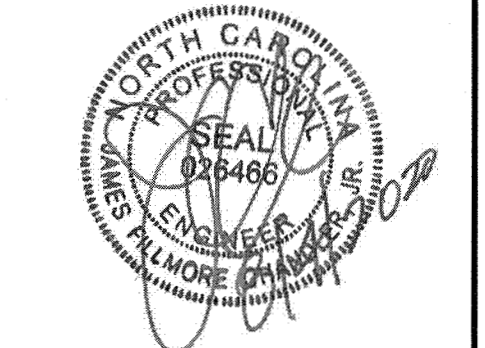
City of Raleigh Public Utilities Department Permit # _____

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

By: _____ DATE: 8/21/2020
DEVELOPMENT SERVICES ENGINEER

By: _____ DATE: 8/19/2020
ADMINISTRATOR



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.866.4551 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

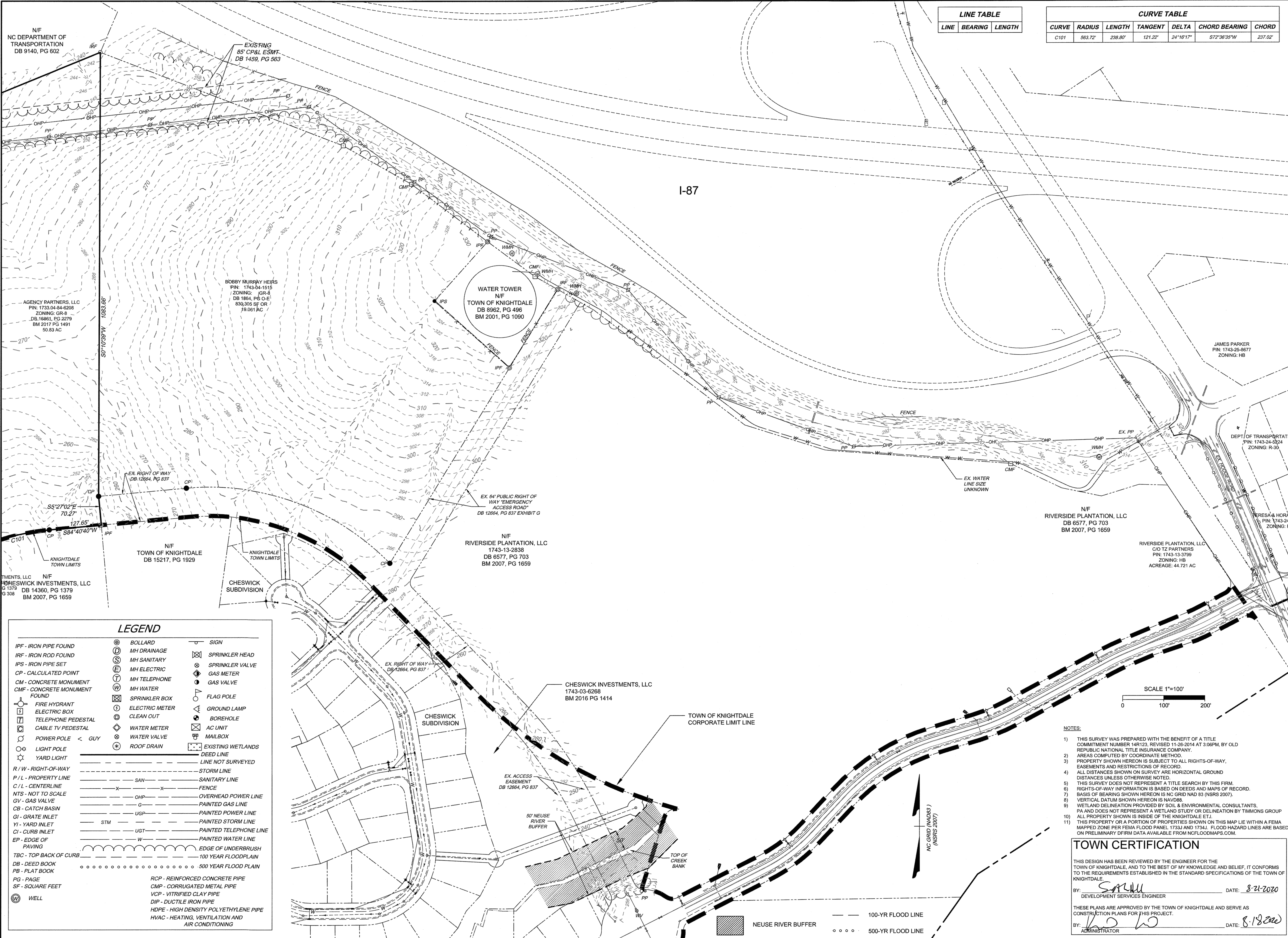
DATE	REVISION DESCRIPTION
09/04/2020	GRADING AND UTILITY REVISIONS
09/11/2018	

DATE: 09/11/2018
DRAWN BY: 331
DESIGNED BY: 331
CHECKED BY: JFC
SCALE: PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
COVER SHEET

JOB NO. 37909
SHEET NO. C0.0

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LINE TABLE		
LINE	BEARING	LENGTH
C101	S5°27'02"E	70.27'
	S84°40'40"W	127.65'

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C101	563.72'	238.80'	121.22'	24°18'17"	S72°38'35"W	237.02'



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
08/04/2020	GRADING AND UTILITY REVISIONS

DATE	DRAWN BY	DESIGNED BY	CHECKED BY	SCALE
09/11/2018	331	331	JFC	PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

EXISTING CONDITIONS SHEET

JOB NO. 37909
 SHEET NO. C1.0

LEGEND		
IPF - IRON PIPE FOUND	⊙ BOLLARD	⊙ SIGN
IRF - IRON ROD FOUND	⊙ MH DRAINAGE	⊙ SPRINKLER HEAD
IPS - IRON PIPE SET	⊙ MH SANITARY	⊙ SPRINKLER VALVE
CP - CALCULATED POINT	⊙ MH ELECTRIC	⊙ GAS METER
CM - CONCRETE MONUMENT	⊙ MH TELEPHONE	⊙ GAS VALVE
CMF - CONCRETE MONUMENT FOUND	⊙ MH WATER	⊙ FLAG POLE
⊙ FIRE HYDRANT	⊙ SPRINKLER BOX	⊙ GROUND LAMP
⊙ ELECTRIC BOX	⊙ ELECTRIC METER	⊙ BOREHOLE
⊙ TELEPHONE PEDESTAL	⊙ CLEAN OUT	⊙ WATER METER
⊙ CABLE TV PEDESTAL	⊙ AC UNIT	⊙ WATER VALVE
⊙ POWER POLE < GUY	⊙ MAILBOX	⊙ ROOF DRAIN
⊙ LIGHT POLE	⊙ EXISTING WETLANDS	
⊙ YARD LIGHT	⊙ DEED LINE	
R / W - RIGHT-OF-WAY	⊙ LINE NOT SURVEYED	
P / L - PROPERTY LINE	⊙ STORM LINE	
C / L - CENTERLINE	⊙ SANITARY LINE	
NTS - NOT TO SCALE	⊙ FENCE	
GV - GAS VALVE	⊙ OHP - OVERHEAD POWER LINE	
CB - CATCH BASIN	⊙ G - PAINTED GAS LINE	
GI - GRATE INLET	⊙ UGP - PAINTED POWER LINE	
YI - YARD INLET	⊙ STM - PAINTED STORM LINE	
CI - CURB INLET	⊙ UGT - PAINTED TELEPHONE LINE	
EP - EDGE OF PAVING	⊙ W - PAINTED WATER LINE	
TBC - TOP BACK OF CURB	⊙ EDGE OF UNDERBRUSH	
DB - DEED BOOK	⊙ 100 YEAR FLOODPLAIN	
PB - PLAT BOOK	⊙ 500 YEAR FLOODPLAIN	
PG - PAGE	⊙ RCP - REINFORCED CONCRETE PIPE	
SF - SQUARE FEET	⊙ CMP - CORRUGATED METAL PIPE	
⊙ WELL	⊙ VCP - VITRIFIED CLAY PIPE	
	⊙ DIP - DUCTILE IRON PIPE	
	⊙ HDPE - HIGH DENSITY POLYETHYLENE PIPE	
	⊙ HVAC - HEATING, VENTILATION AND AIR CONDITIONING	

- NOTES:**
- THIS SURVEY WAS PREPARED WITH THE BENEFIT OF A TITLE COMMITMENT NUMBER 14R123, REVISED 11-26-2014 AT 3:06PM, BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY.
 - AREAS COMPUTED BY COORDINATE METHOD.
 - PROPERTY SHOWN HEREON IS SUBJECT TO ALL RIGHTS-OF-WAY, EASEMENTS AND RESTRICTIONS OF RECORD.
 - ALL DISTANCES SHOWN ON SURVEY ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
 - THIS SURVEY DOES NOT REPRESENT A TITLE SEARCH BY THIS FIRM.
 - RIGHTS-OF-WAY INFORMATION IS BASED ON DEEDS AND MAPS OF RECORD.
 - BASIS OF BEARING SHOWN HEREON IS NC GRID NAD 83 (NSRS 2007).
 - VERTICAL DATUM SHOWN HEREON IS NAVD83.
 - WETLAND DELINEATION PROVIDED BY SOIL & ENVIRONMENTAL CONSULTANTS, PA AND DOES NOT REPRESENT A WETLAND STUDY OR DELINEATION BY TIMMONS GROUP.
 - ALL PROPERTY SHOWN IS INSIDE OF THE KNIGHTDALE ETJ.
 - THIS PROPERTY OR A PORTION OF PROPERTIES SHOWN ON THIS MAP LIE WITHIN A FEMA MAPPED ZONE PER FEMA FLOOD PANEL 1733J AND 1734J. FLOOD HAZARD LINES ARE BASED ON PRELIMINARY DFIRM DATA AVAILABLE FROM NCFLOODMAPS.COM.

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

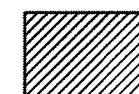
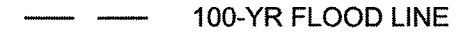
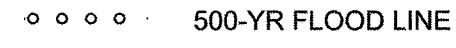
BY: *SAMU* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

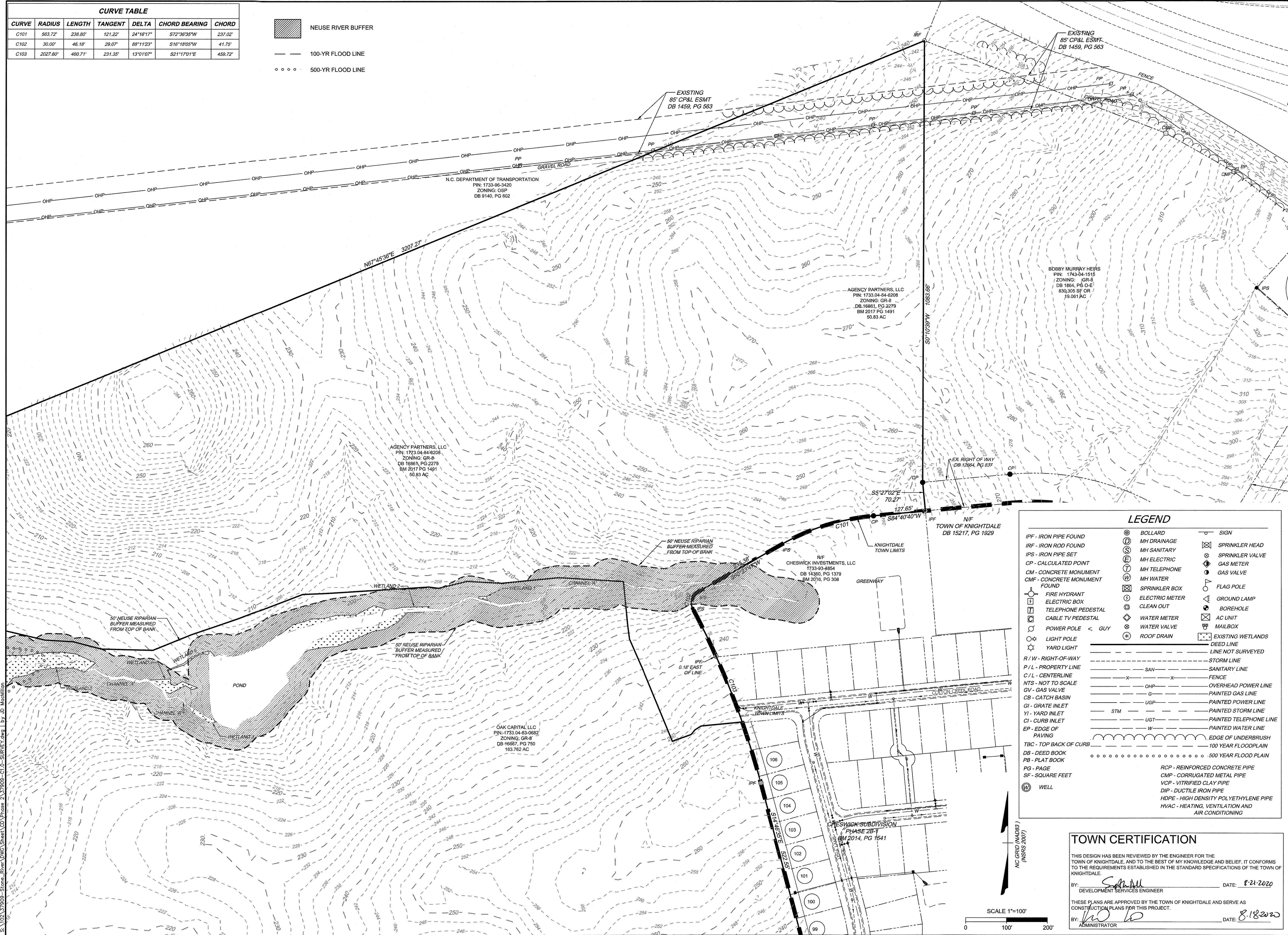
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *ho* DATE: 8-18-2020
 ADMINISTRATOR

S:\102137909-Stoner-River\DWG\Sheet\CD\Phase 2\37909-C1-D-SURVEY.dwg | By: J.D. MacArthur

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C101	563.72'	238.80'	121.22'	24°16'17"	S72°38'35"W	237.02'
C102	30.00'	46.18'	28.07'	89°11'23"	S16°18'05"W	41.75'
C103	2027.60'	460.71'	231.35'	13°01'07"	S21°17'01"E	459.72'

-  NEUSE RIVER BUFFER
-  100-YR FLOOD LINE
-  500-YR FLOOD LINE



LEGEND	
IPF - IRON PIPE FOUND	⊙ BOLLARD
IRF - IRON ROD FOUND	⊙ MH DRAINAGE
IPS - IRON PIPE SET	⊙ MH SANITARY
CP - CALCULATED POINT	⊙ MH ELECTRIC
CM - CONCRETE MONUMENT	⊙ MH TELEPHONE
CMF - CONCRETE MONUMENT FOUND	⊙ MH WATER
⊙ FIRE HYDRANT	⊙ SPRINKLER BOX
⊙ ELECTRIC BOX	⊙ ELECTRIC METER
⊙ TELEPHONE PEDESTAL	⊙ CLEAN OUT
⊙ CABLE TV PEDESTAL	⊙ WATER METER
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⊙ LIGHT POLE	⊙ ROOF DRAIN
⊙ YARD LIGHT	⊙ SIGN
⊙ SPRINKLER HEAD	⊙ SPRINKLER VALVE
⊙ GAS METER	⊙ GAS VALVE
⊙ AC UNIT	⊙ FLAG POLE
⊙ MAILBOX	⊙ GROUND LAMP
⊙ BOREHOLE	⊙ EXISTING WETLANDS
⊙ LINE NOT SURVEYED	⊙ DEED LINE
⊙ STORM LINE	⊙ SANITARY LINE
⊙ FENCE	⊙ OVERHEAD POWER LINE
⊙ PAINTED GAS LINE	⊙ PAINTED POWER LINE
⊙ PAINTED STORM LINE	⊙ PAINTED TELEPHONE LINE
⊙ PAINTED WATER LINE	⊙ EDGE OF UNDERBRUSH
⊙ 100 YEAR FLOODPLAIN	⊙ 500 YEAR FLOODPLAIN
⊙ RCP - REINFORCED CONCRETE PIPE	⊙ CMP - CORRUGATED METAL PIPE
⊙ VCP - VITRIFIED CLAY PIPE	⊙ DIP - DUCTILE IRON PIPE
⊙ HDPE - HIGH DENSITY POLYETHYLENE PIPE	⊙ HVAC - HEATING, VENTILATION AND AIR CONDITIONING

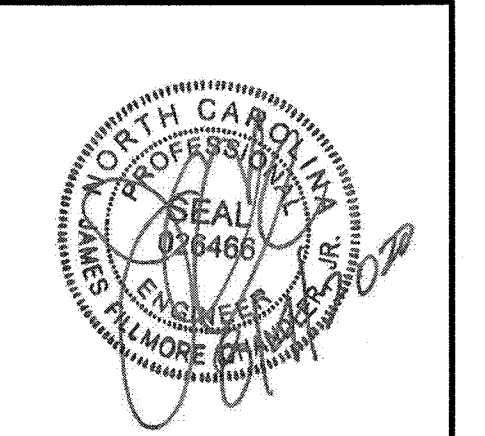
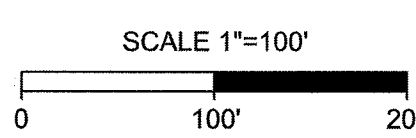
TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8-18-2020
ADMINISTRATOR



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Parkway, Raleigh, NC 27607
 TEL 919.866.6951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
08/04/2020	GRADING AND UTILITY REVISIONS

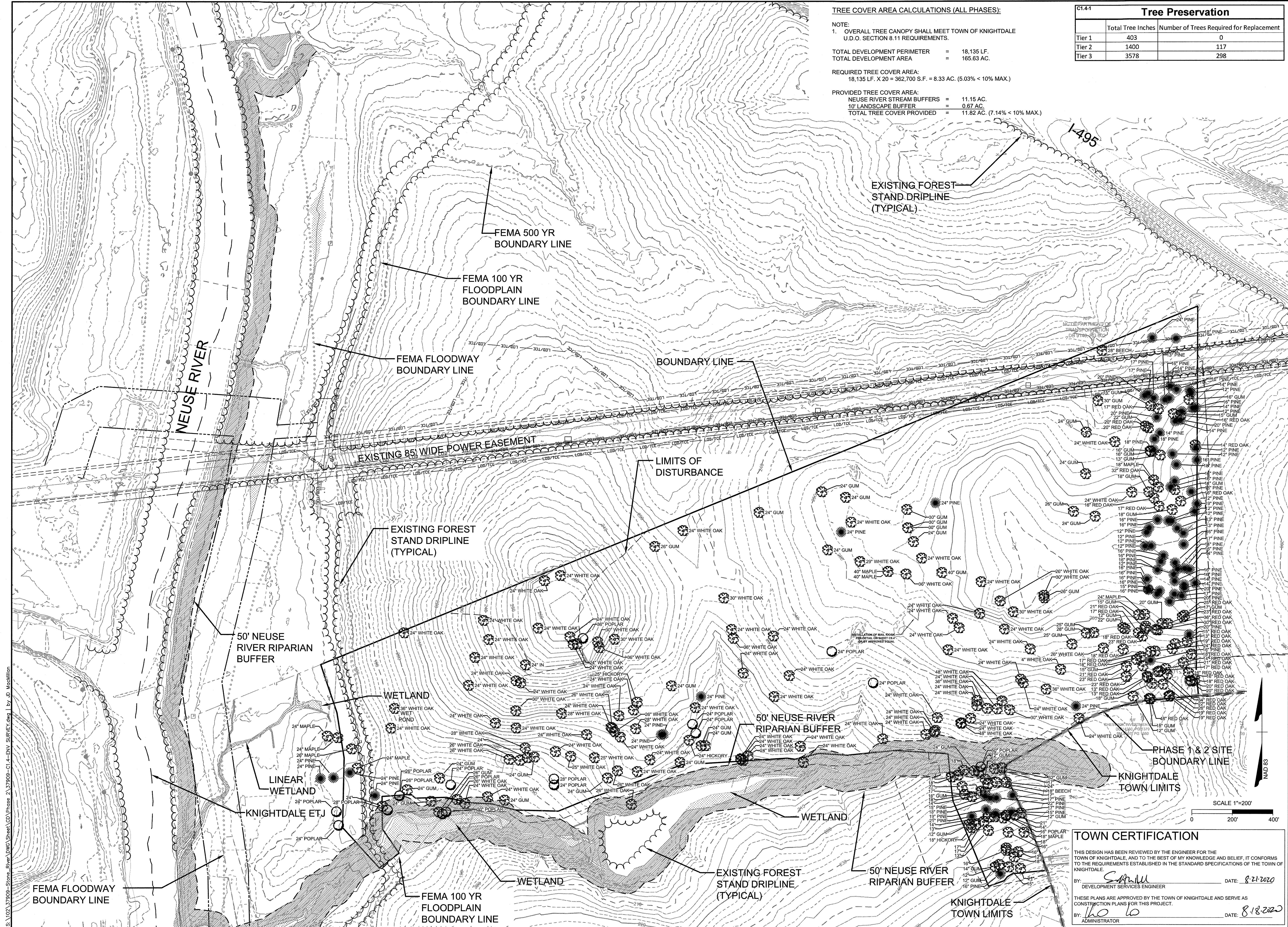
DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 EXISTING CONDITIONS SHEET

JOB NO. 37909
 SHEET NO. C1.1

S:\102\37909-Stoneriver\DWG\Sheet\CD\Phase 2\37909-C1-0-SURVEY.dwg | by JD MacMillan



TREE COVER AREA CALCULATIONS (ALL PHASES):

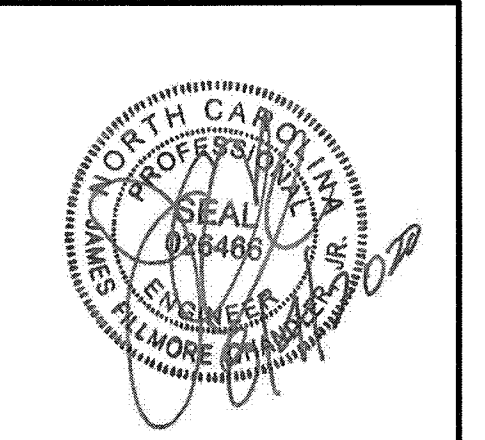
NOTE:
 1. OVERALL TREE CANOPY SHALL MEET TOWN OF KNIGHTDALE U.D.O. SECTION 8.11 REQUIREMENTS.

TOTAL DEVELOPMENT PERIMETER = 18,135 LF.
 TOTAL DEVELOPMENT AREA = 165.63 AC.

REQUIRED TREE COVER AREA:
 18,135 LF. X 20 = 362,700 S.F. = 8.33 AC. (5.03% < 10% MAX.)

PROVIDED TREE COVER AREA:
 NEUSE RIVER STREAM BUFFERS = 11.15 AC.
 10' LANDSCAPE BUFFER = 0.67 AC.
 TOTAL TREE COVER PROVIDED = 11.82 AC. (7.14% < 10% MAX.)

C1.4-1 Tree Preservation		
	Total Tree Inches	Number of Trees Required for Replacement
Tier 1	403	0
Tier 2	1400	117
Tier 3	3578	298



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 02 | Raleigh, NC 27607
 TEL 919.866.9551 FAX 919.633.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
08/04/2020	GRADING AND UTILITY REVISIONS

DATE: 09/11/2018

DRAWN BY: 331

DESIGNED BY: 331

CHECKED BY: JFC

SCALE: PER PLAN

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8-18-2020
 ADMINISTRATOR

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

ENVIRONMENTAL & TREE SURVEY

JOB NO. 37909
 SHEET NO. C1.4

S:\102\37909-Stoneriver\DWG\Sheet\CD\Phase 2\37909-C1.4-ENV SURVEY.dwg | Lby: J.D. MacMillan



THIS DRAWING PREPARED AT THE
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 5410 Trinity Road, Suite 102, Raleigh, NC 27607
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YOUR VISION ACHIEVED THROUGH OURS.

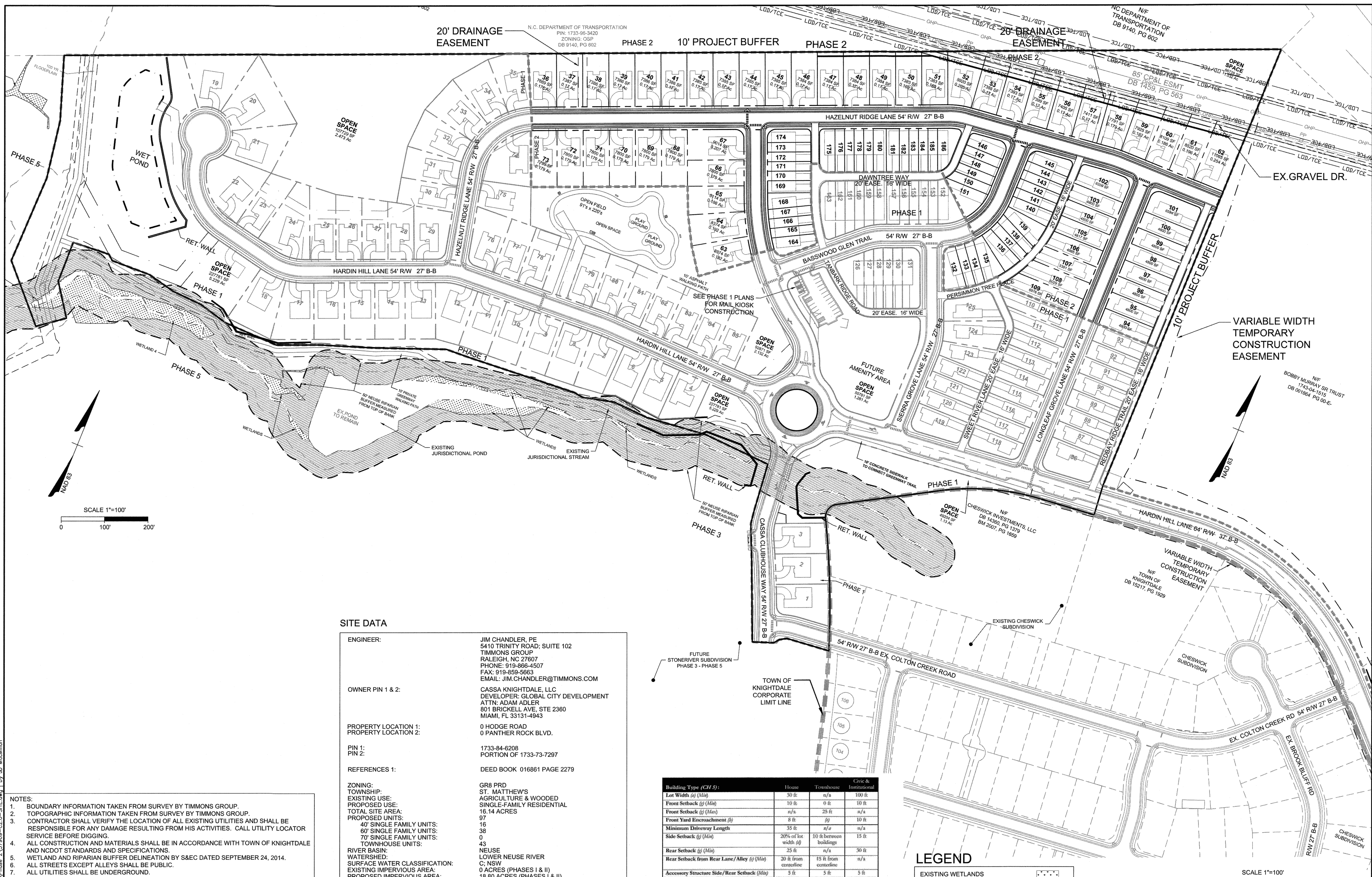
DATE: 08/04/2020
 DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
OVERALL SUBDIVISION LAYOUT PLAN

JOB NO. 37909
 SHEET NO. C2.0



SITE DATA

ENGINEER:	JIM CHANDLER, PE 5410 TRINITY ROAD, SUITE 102 TIMMONS GROUP RALEIGH, NC 27607 PHONE: 919-866-4507 FAX: 919-859-5663 EMAIL: JIM.CHANDLER@TIMMONS.COM
OWNER PIN 1 & 2:	CASSA KNIGHTDALE, LLC DEVELOPER: GLOBAL CITY DEVELOPMENT ATTN: ADAM ADLER 801 BRICKELL AVE, STE 2360 MIAMI, FL 33131-4943
PROPERTY LOCATION 1:	0 HODGE ROAD
PROPERTY LOCATION 2:	0 PANTHER ROCK BLVD.
PIN 1:	1733-84-6208
PIN 2:	PORTION OF 1733-73-7297
REFERENCES 1:	DEED BOOK 016861 PAGE 2279
ZONING:	GR8 PRD
TOWNSHIP:	ST. MATTHEW'S
EXISTING USE:	AGRICULTURE & WOODED
PROPOSED USE:	SINGLE-FAMILY RESIDENTIAL
TOTAL SITE AREA:	16.14 ACRES
PROPOSED UNITS:	97
40' SINGLE FAMILY UNITS:	16
60' SINGLE FAMILY UNITS:	38
70' SINGLE FAMILY UNITS:	0
TOWNHOUSE UNITS:	43
RIVER BASIN:	NEUSE
WATERSHED:	LOWER NEUSE RIVER
SURFACE WATER CLASSIFICATION:	C; NSW
EXISTING IMPERVIOUS AREA:	0 ACRES (PHASES I & II)
PROPOSED IMPERVIOUS AREA:	18.80 ACRES (PHASES I & II)
FEMA FIRM PANEL:	1733J & 1744J
LINEAR FOOTAGE OF PUBLIC STREET:	2,550 LF
LINEAR FOOTAGE OF CURB AND GUTTER:	4800 LF
LINEAR FOOTAGE OF PUBLIC SIDEWALK:	5000 LF
LINEAR FOOTAGE OF PUBLIC WATER LINE:	2,554 LF
LINEAR FOOTAGE OF PUBLIC SEWER LINE:	2,445 LF
LINEAR FOOTAGE OF PUBLIC STORMWATER LINE:	1,962 LF
TOTAL WASTEWATER FLOW GENERATED:	24250 GPD - 97 DU

Building Type (CH 5):	House	Townhouse	Grts & Institutional
Lot Width (ft) (Min)	30 ft	n/a	100 ft
Front Setback (ft) (Min)	10 ft	0 ft	10 ft
Front Setback (ft) (Max)	n/a	25 ft	n/a
Front Yard Encroachment (ft)	8 ft	(f)	10 ft
Minimum Driveway Length	35 ft	n/a	n/a
Side Setback (ft) (Min)	20% of lot width (f)	10 ft between buildings	15 ft
Rear Setback (ft) (Min)	25 ft	n/a	30 ft
Rear Setback from Rear Lane/Alley (ft) (Min)	20 ft from centerline	15 ft from centerline	n/a
Accessory Structure Side/Rear Setback (ft) (Max)	5 ft	5 ft	5 ft
Maximum Height (ft)	3 stories	3 stories	3 stories

Notes:
 (a) For lots less than 90 feet wide, alley rear line access to all off-street parking areas is required, except when such lots front onto an approved sidewalk, in which case shared driveways shall be required. For all lots less than 80 feet wide where no alley rear line access exists, shared driveways shall be required. For lots 80 feet wide or greater, access to off-street parking is permitted from the fronting street or rear lane/ally.
 (b) Balconies, stoops, stairs, chimneys, bay windows, and raised driveways are permitted to encroach into the front setback (Section 4.4).
 (c) For lots that provide access to off-street parking from a rear lane/ally.
 (d) For lots 60' in width or greater: Side setbacks are calculated as an aggregate setback. However, a five (5) foot minimum setback per side shall be maintained.
 For lots less than 60' in width: Side setbacks are calculated as an aggregate setback. However, a three (3) foot minimum setback per side shall be maintained. Also, in new developments with open lot line products, the entire 20% side setback may be allocated to one (1) side provided that the side setback condition is identical for all lots along the same block face. In addition, for open lot line developments, a minimum of six (6) feet of total building separation is required.
 (e) Upper story balconies may encroach into the right-of-way (over sidewalks only) with permission from the Administrator.
 (f) Refer to Section 4.5 for computation of height.

LEGEND

- EXISTING WETLANDS
- STORMWATER EASEMENT
- PROPOSED SIDEWALK
- 100-YR FLOODPLAIN
- EXISTING WETLAND BUFFER
- 50' NEUSE RIPARIAN BUFFER
- PROPERTY LINE
- PHASE LINE
- EXISTING SS EASEMENT
- PROPOSED SS EASEMENT
- PROPOSED DRAINAGE EASEMENT

SCALE 1"=100'

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8/18/2020
 ADMINISTRATOR

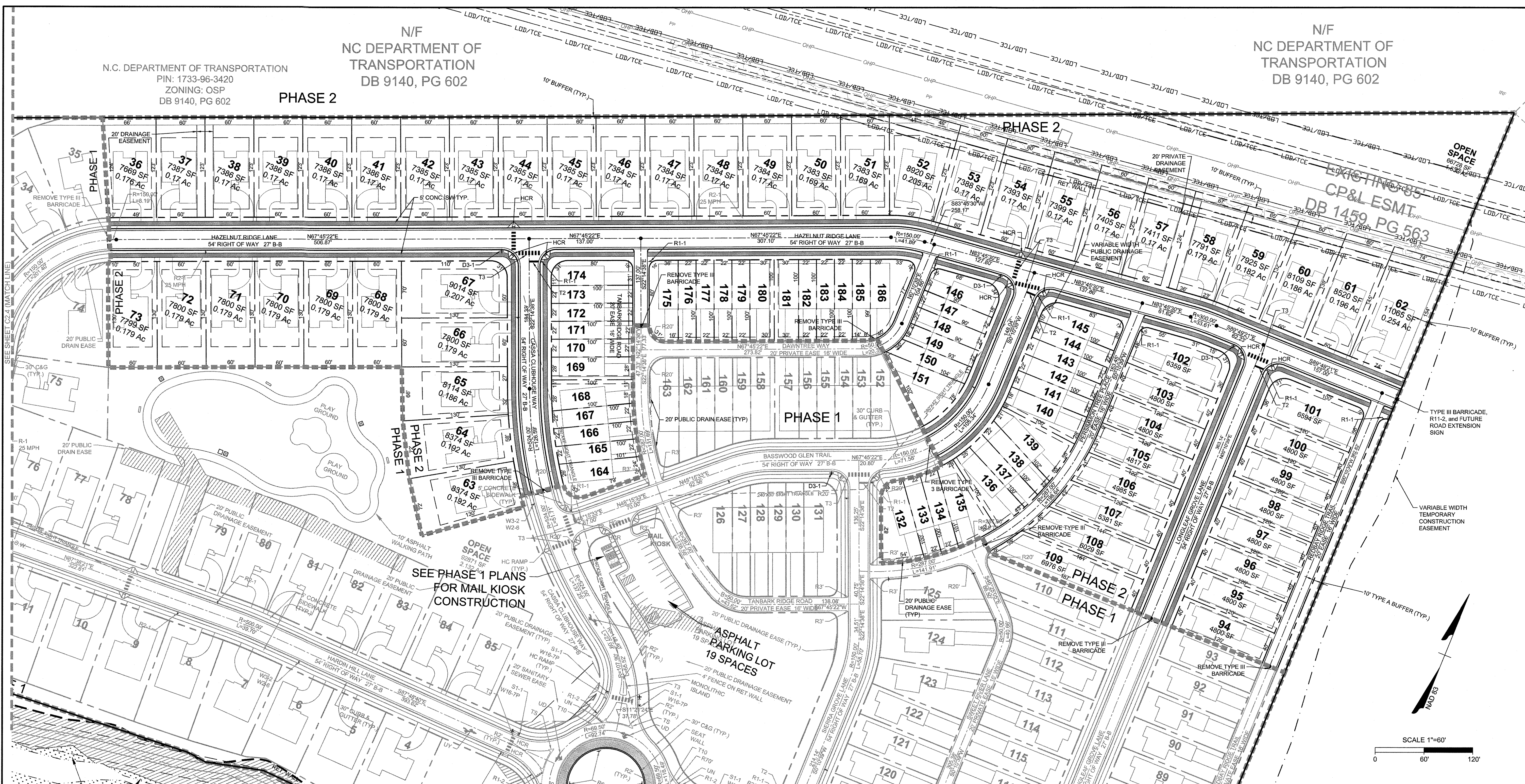
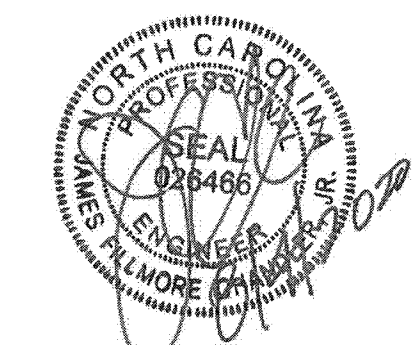
- NOTES:
- BOUNDARY INFORMATION TAKEN FROM SURVEY BY TIMMONS GROUP.
 - TOPOGRAPHIC INFORMATION TAKEN FROM SURVEY BY TIMMONS GROUP.
 - CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM HIS ACTIVITIES. CALL UTILITY LOCATOR SERVICE BEFORE DIGGING.
 - ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH TOWN OF KNIGHTDALE AND NCDOT STANDARDS AND SPECIFICATIONS.
 - WETLAND AND RIPARIAN BUFFER DELINEATION BY S&EC DATED SEPTEMBER 24, 2014. ALL STREETS EXCEPT ALLEYS SHALL BE PUBLIC.
 - ALL UTILITIES SHALL BE UNDERGROUND.
 - EACH LOT WILL BE SERVED BY CITY OF RALEIGH PUBLIC WATER SYSTEM.
 - EACH LOT WILL BE SERVED BY CITY OF RALEIGH PUBLIC SEWER SYSTEM.
 - WAKE COUNTY EROSION CONTROL AND TOWN OF KNIGHTDALE STORMWATER PERMITS WILL BE REQUIRED.
 - WAKE COUNTY EROSION CONTROL REGULATIONS SHALL BE COMPLIED WITH.
 - CONSTRUCTION DRAWINGS MUST BE APPROVED PRIOR TO ANY WORK BEGINNING.
 - SIGNAGE SHALL BE APPROVED PRIOR TO ANY INSTALLATION WORK.
 - NCDOT DRIVEWAY PERMIT WILL BE REQUIRED PRIOR TO FINAL PLAT APPROVAL.
 - STREET NAMES MUST BE APPROVED BY WAKE COUNTY GIS PRIOR TO FINAL PLAT.
 - DEDICATED OPEN SPACE AREAS WILL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
 - OPEN SPACE SHALL BE DEDICATED FOR PROVISION OF ACTIVE AND/OR PASSIVE OUTDOOR RECREATION OPPORTUNITIES FOR THE SUBDIVISION'S RESIDENTS AND THEIR GUESTS.
 - VERTICAL CLEARANCE OF 13 FEET 6 INCHES REQUIRED FOR ALL ROADWAYS.
 - AREAS OF DISCONNECTED IMPERVIOUS SHALL BE SHOWN ON THE RECORDED PLAT.
 - A FINANCIAL GUARANTEE FOR INCOMPLETE PUBLIC IMPROVEMENTS REQUIRED PRIOR TO FINAL PLAT.

S:\02\37909-Stone-River\DWG\Sheet\CD\Phase 2\37909-C2.0-SITE.dwg | by JD.McMillan

N.C. DEPARTMENT OF TRANSPORTATION
PIN: 1733-96-3420
ZONING: OSP
DB 9140, PG 602

N/F
NC DEPARTMENT OF
TRANSPORTATION
DB 9140, PG 602

N/F
NC DEPARTMENT OF
TRANSPORTATION
DB 9140, PG 602



THIS DRAWING PREPARED AT THE
5410 Timmons Road, Suite 102, Raleigh, NC 27607
TEL 919.866.4951, FAX 919.833.8124, www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.
DATE: 09/04/2020
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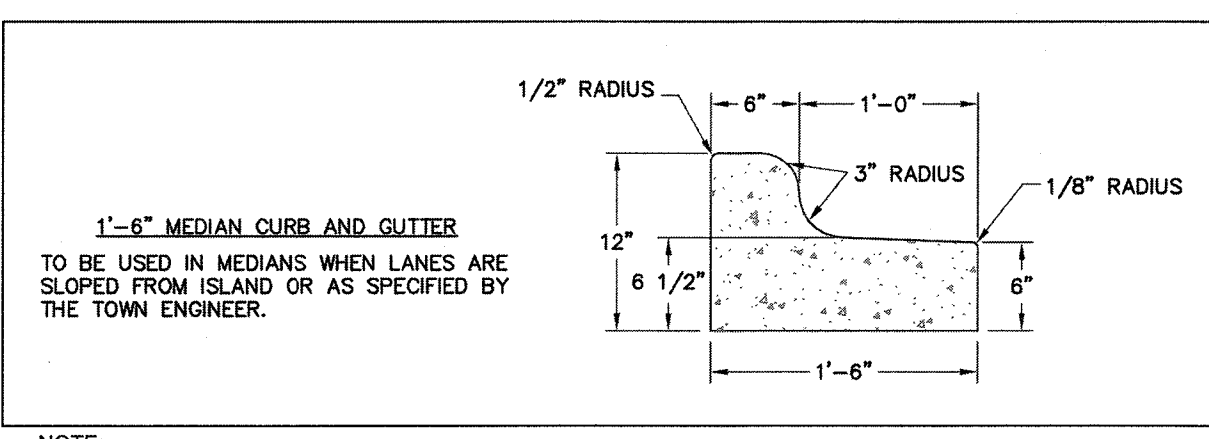
DESIGNED BY: 331
CHECKED BY: JFC
SCALE: PER PLAN

REVISION DESCRIPTION
DATE: 09/04/2020
DATE: 09/11/2018

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-152
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN

JOB NO. 37909
SHEET NO. C2.1

Pavement Marking Symbols - English				Pavement Marking Symbols - English					
Symbol	Description	Material	Transport Pay Item No.	Linear Length Adjustment	Symbol	Description	Material	Transport Pay Item No.	Linear Length Adjustment
T1	WHITE LINE, RR X (16", 120 MIL)	Thermo	470500000-E	1	TV	YELLOW DIAGONAL (12", 90 MIL)	Thermo	470000000-E	1
T2	WHITE STOPBAR (24", 120 MIL)	Thermo	471000000-E	1	UA	LEFT TURN ARROW (90 MIL)	Thermo	472500000-E	1
T3	WHITE CROSSWALK LINE (24", 120 MIL)	Thermo	471000000-E	1	UB	RIGHT TURN ARROW (90 MIL)	Thermo	472500000-E	1
T4	WHITE RUMBLE STRIP (2", 240 MIL)	Thermo	489700000-E	1	UC	STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T5	YELLOW RUMBLE STRIP (4", 240 MIL)	Thermo	489700000-E	1	UD	COMBO LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T6	WHITE EDGELINE (8", 90 MIL)	Thermo	488800000-E	1	UE	COMBO RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T7	YELLOW EDGELINE (8", 90 MIL)	Thermo	488800000-E	1	UF	COMBO LEFT/RIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T8	2 FT. - 6 FT./SP WHITE MINISKIP (4", 120 MIL)	Thermo	488800000-E	.25	UG	COMBO LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T9	2 FT. - 6 FT./SP YELLOW MINISKIP (4", 120 MIL)	Thermo	488800000-E	.25	UH	HANDICAP PARKING (90 MIL)	Thermo	472500000-E	1
T10	3 FT. - 3 FT./SP WHITE MINISKIP (12", 120 MIL) (Roundabouts only)	Thermo	470200000-E	.5	UI	ALPHANUMERIC CHAR. (120 MIL)	Thermo	472100000-E	1
T11	2 FT. - 6 FT./SP WHITE MINISKIP (8", 120 MIL)	Thermo	489000000-E	.25	UJ	BI-CYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)	Thermo	4728110000-E	1
T12	2 FT. - 6 FT./SP YELLOW MINISKIP (8", 120 MIL)	Thermo	489000000-E	.25	UK	BI-CYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4728110000-E	1
T13	3 FT. - 9 FT./SP WHITE MINISKIP (8", 120 MIL)	Thermo	489700000-E	.25	UL	BI-CYCLE CHAR., HEATED-IN-PLACE (120 MIL)	Thermo	4728110000-E	1
T14	3 FT. - 9 FT./SP YELLOW MINISKIP (8", 120 MIL)	Thermo	489700000-E	.25	UM	12" YIELD LINE TRIANGLE (90 MIL)	Thermo	472500000-E	1
T15	YELLOW SINGLE CENTER (8", 120 MIL)	Thermo	489000000-E	1	UN	24" YIELD LINE TRIANGLE (90 MIL)	Thermo	472500000-E	1
T16	YELLOW DOUBLE CENTER (8", 120 MIL)	Thermo	489000000-E	2	UO	BI-CYCLE LEFT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4728110000-E	1
T17	3 FT. - 3 FT./SP WHITE MINISKIP (8", 120 MIL) (Roundabouts only)	Thermo	489700000-E	.5	UP	MERGE ARROW (90 MIL)	Thermo	472500000-E	1
TA	WHITE EDGELINE (4", 90 MIL)	Thermo	488500000-E	1	UQ	RAMP ARROW SYMBOL (90 MIL)	Thermo	472500000-E	1
TB	YELLOW EDGELINE (4", 90 MIL)	Thermo	488500000-E	1	UR	SHARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4728110000-E	1
TC	10 FT. WHITE SKIP (4", 120 MIL)	Thermo	488800000-E	.25	US	BI-CYCLE LOOP DETECTOR, HEATED-IN-PLACE (90 MIL)	Thermo	4728110000-E	1
TD	5 FT. - 9 FT./SP WHITE MINISKIP (4", 120 MIL)	Thermo	488800000-E	.25	UT	U-TURN ARROW (90 MIL)	Thermo	472500000-E	1
TE	WHITE SOLID LANE LINE (4", 120 MIL)	Thermo	488800000-E	1	UU	FISH-HOOK STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TF	10 FT. YELLOW SKIP (4", 120 MIL)	Thermo	488800000-E	.25	UV	FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TH	YELLOW SINGLE CENTER (4", 120 MIL)	Thermo	488800000-E	1	UW	FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TI	YELLOW DOUBLE CENTER (4", 120 MIL)	Thermo	488800000-E	2	UX	FISH-HOOK LEFT/RIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TJ	10 FT. WHITE SKIP (8", 120 MIL)	Thermo	489000000-E	.25	UY	FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TK	5 FT. - 9 FT./SP WHITE MINISKIP (8", 120 MIL)	Thermo	489000000-E	.25	UZ	FISH-HOOK W/BI-CYCLE STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TL	WHITE SOLID LANE LINE (8", 120 MIL)	Thermo	488800000-E	1	WA	FISH-HOOK W/BI-CYCLE LEFT ARROW (90 MIL)	Thermo	472500000-E	1
TM	10 FT. YELLOW SKIP (8", 120 MIL)	Thermo	488800000-E	.25	WB	FISH-HOOK W/BI-CYCLE LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TN	WHITE GORELINE (8", 90 MIL)	Thermo	488500000-E	1	WC	FISH-HOOK W/BI-CYCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TO	WHITE DIAGONAL (8", 90 MIL)	Thermo	488500000-E	1					
TP	YELLOW DIAGONAL (8", 90 MIL)	Thermo	488500000-E	1					
TQ	WHITE CROSSWALK LINE (8", 120 MIL)	Thermo	489700000-E	1					
TR	WHITE SOLID LANE LINE (8", 120 MIL)	Thermo	489700000-E	1					
TS	WHITE GORELINE (12", 90 MIL)	Thermo	470200000-E	1					
TT	WHITE SOLID LANE LINE (12", 120 MIL)	Thermo	470200000-E	1					
TU	WHITE DIAGONAL (12", 120 MIL)	Thermo	470200000-E	1					



- SIGN LEGEND**
- ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.
 - ALL SIGNS SHALL BE MOUNTED WITH 7 FT. MIN. VERTICAL CLEARANCE TO THE BOTTOM OF THE SIGN ON 3.8" GALV. STEEL U-CHEMEL POST SET IN 3-FT DEEP x 12-IN DIA. CONCRETE FOOTING.
 - ALL SIGNAGE SHALL BE FIELD STAKED AND THE LOCATIONS APPROVED BY THE TOWN OF KNIGHTDALE AND/OR NCDOT PRIOR TO SIGN INSTALLATION.
 - CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AS REQUIRED BY THE TOWN OF KNIGHTDALE, THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ALL NCDOT STANDARDS AND SPECIFICATIONS.
 - THE TOWN OF KNIGHTDALE REQUIRES ALL REGULATORY PAVEMENT MARKINGS TO BE H-VIS THERMOPLASTIC, EXCEPT FOR PARKING SPACE STRIPING WHICH MAY BE WHITE PAINT.

LEGEND

EXISTING WETLANDS	R1-2
STORMWATER EASEMENT	W3-2
PROPOSED SIDEWALK	R1-1
100-YR FLOODPLAIN	S1-1
EXISTING WETLAND BUFFER	W16-7P
50' NEUSE RIPARIAN BUFFER	W6-4A
PROPERTY LINE	R2-1
PHASE LINE	25 MPH
EXISTING SS EASEMENT	R2-5bP
PROPOSED SS EASEMENT	R11-2
PROPOSED DRAINAGE EASEMENT	D3-1

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER

BY: *[Signature]* DATE: 8-18-2020
ADMINISTRATOR

MINIMUM BUILDING SETBACKS:
HOUSE: FRONT - 10'
SIDE - 20% LOT WIDTH
REAR - 25'
TOWNHOUSE: FRONT - 0'
SIDE - 10' BETW. BLDGS.
REAR - N/A
REAR - 15' FROM ALLEY C/L

SEE EROSION CONTROL PLANS FOR ADDITIONAL DETAILS ON SWALES

DB 17674, PG 1463



TO WET POND #1

STORM DRAINAGE SCHEDULE (100)						
UP STREAM STRUCTURE	INLET DEPTH	TOP	INV IN	INV OUT	OUTLET PIPE	DOWN STREAM STRUCTURE
PH2 151	3.77'	263.28		259.52' (15" RCP)	67.04' @ 0.50%	148
PH2 150	4.28'	266.36		262.08' (15" RCP)	27.00' @ 0.80%	149
PH2 149	4.82'	266.36	261.86' (15" RCP) 150	261.78' (15" RCP)	15.91' @ 1.51%	148
PH2 148	6.68'	265.76	259.18' (15" RCP) 151 261.52' (15" RCP) 149	259.08' (15" RCP)	118.66' @ 3.57%	146
PH2 147	4.29'	259.40		255.11' (15" RCP)	27.39' @ 1.00%	146
PH2 146	4.41'	259.15	254.84' (15" RCP) 148 254.84' (15" RCP) 147	254.74' (15" RCP)	35.36' @ 5.60%	145
PH2 145	4.00'	256.51	252.76' (15" RCP) 146	252.51' (18" RCP)	27.00' @ 1.00%	144
PH2 144	4.37'	256.51	252.24' (18" RCP) 145	252.14' (18" RCP)	33.63' @ 3.33%	143
PH2 143	4.61'	255.53	251.02' (18" RCP) 144	250.92' (18" RCP)	105.29' @ 2.02%	141
PH2 142	4.02'	253.32		249.30' (15" RCP)	34.15' @ 1.02%	140
PH2 141	5.04'	253.33	248.79' (18" RCP) 143	248.29' (24" RCP)	18.03' @ 0.50%	140
PH2 140	5.39'	253.59	248.20' (24" RCP) 141 248.95' (15" RCP) 142	248.47' (24" RCP)	100.81' @ 2.29%	138
PH2 139	4.50'	254.60		250.10' (18" RCP)	28.36' @ 1.30%	138
PH2 138	8.70'	254.76	246.18' (24" RCP) 140 249.73' (18" RCP) 139	246.06' (30" RCP)	40.05' @ 1.32%	137
PH2 137	9.58'	255.01	245.53' (30" RCP) 138	245.43' (30" RCP)	27.00' @ 0.74%	136
PH2 136	9.88'	255.01	245.23' (30" RCP) 137	245.13' (30" RCP)	36.49' @ 2.33%	135
PH2 135	11.97'	256.15	244.28' (30" RCP) 136	244.18' (30" RCP)	136.78' @ 1.37%	134
PH2 134	14.58'	256.79	242.31' (30" RCP) 135	242.21' (30" RCP)	276.66' @ 0.50%	132

TO WET POND #1

STORM DRAINAGE SCHEDULE (100)						
UP STREAM STRUCTURE	INLET DEPTH	TOP	INV IN	INV OUT	OUTLET PIPE	DOWN STREAM STRUCTURE
PH2 133	6.20'	251.59		247.32' (15" RCP)	27.00' @ 1.70%	132
PH2 132	10.86'	251.59	246.86' (15" RCP) 133 240.83' (30" RCP) 134	240.73' (30" RCP)	29.07' @ 0.50%	131
PH2 131	10.45'	250.93	240.58' (30" RCP) 132	240.48' (30" RCP)	98.54' @ 0.50%	130
PH2 130	9.12'	249.01	239.99' (30" RCP) 131	239.89' (30" RCP)	35.38' @ 0.50%	129
PH2 129	7.66'	247.37	239.71' (30" RCP) 130	239.71' (30" RCP)	27.00' @ 0.50%	128
PH2 128	7.80'	247.37	239.58' (30" RCP) 129	239.58' (30" RCP)	35.36' @ 0.50%	126
PH2 127	5.18'	246.62		241.44' (15" RCP)	27.01' @ 1.00%	126
PH2 126	8.28'	246.58	241.17' (15" RCP) 127 239.40' (30" RCP) 128	238.80' (36" RCP)	216.30' @ 3.35%	124
PH2 125	4.23'	237.52		233.29' (15" RCP)	27.00' @ 1.00%	124
PH2 124	6.34'	237.52	231.56' (36" RCP) 128 233.02' (15" RCP) 125	231.56' (36" RCP)	142.83' @ 3.20%	122
PH2 123	4.75'	233.45		228.70' (15" RCP)	27.00' @ 1.00%	122
PH2 122	6.46'	233.45	228.43' (15" RCP) 123 226.99' (36" RCP) 124	226.99' (36" RCP)	116.70' @ 1.14%	121

LEGEND

- EXISTING WETLANDS
- STORMWATER EASEMENT
- PROPOSED SIDEWALK
- 100-YR FLOODPLAIN
- EXISTING WETLAND BUFFER
- 50' NEUSE RIPARIAN BUFFER
- PROPERTY LINE
- PHASE LINE
- EXISTING SS EASEMENT
- PROPOSED SS EASEMENT
- PROPOSED DRAINAGE EASEMENT

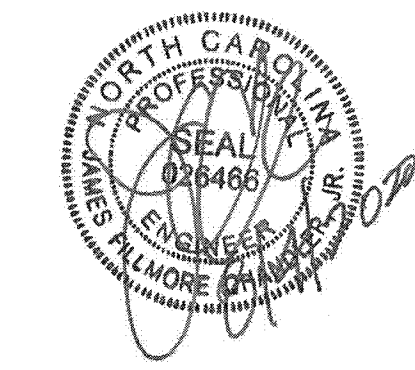
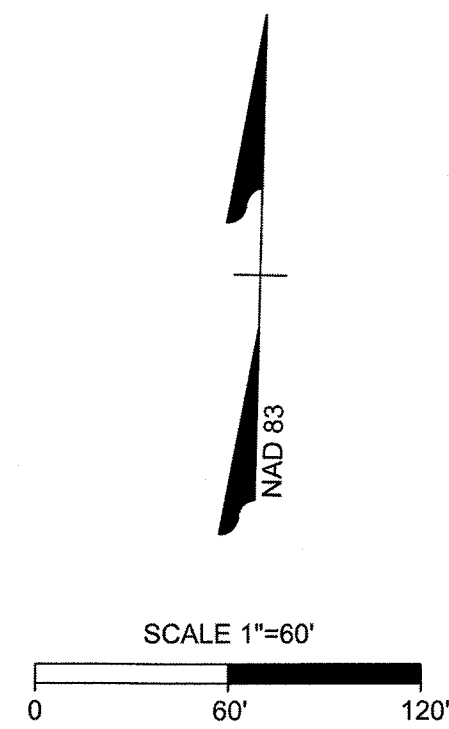
TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8-19-2020
ADMINISTRATOR



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 Raleigh, NC 27607
TEL 919.866-9951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION
DATE 08/04/2020 GRADING AND UTILITY REVISIONS

DATE 09/11/2018
DRAWN BY 331
DESIGNED BY 331
CHECKED BY JFC
SCALE PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

STORM DRAINAGE & GRADING PLAN

JOB NO. 37909
SHEET NO. C3.0

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TO WET POND #1

TO WET POND #1

TO WET POND #1

POND OUTLET

STORM DRAINAGE SCHEDULE (100) table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include PH1 224 through PH1 173.

STORM DRAINAGE SCHEDULE (100) table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include PH1 172 through PH2 123.

STORM DRAINAGE SCHEDULE (100) table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include PH2 122 through PH1 100.

ALONG HARDIN HILL LANE EXT.

STORM DRAINAGE SCHEDULE (300) table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include PH1 310 through PH1 305.

CULVERTS

STORM DRAINAGE SCHEDULE (500) table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include 601 HARDIN HILL EXT through 500 PHASE I.

STORM DRAINAGE SCHEDULE (STRM - POND - 1000) table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include PH1 1002 through PH1 1000.

SANITARY SEWER

SANITARY SEWER SCHEDULE table with columns: UP STREAM STRUCTURE, SIZE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Rows include PH2 MH 44 through EX MH 1.

TOWN CERTIFICATION

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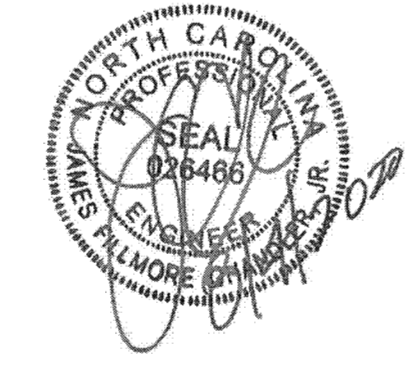
DATE: 09/11/2018 DRAWN BY: 331 DESIGNED BY: 331 CHECKED BY: JFC SCALE: PER PLAN

TIMMONS GROUP STONERIVER SUBDIVISION PHASE 2 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA STORM DRAINAGE & SANITARY SEWER TABLES NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA STORM DRAINAGE & SANITARY SEWER TABLES NORTH CAROLINA LICENSE NO. C-1652

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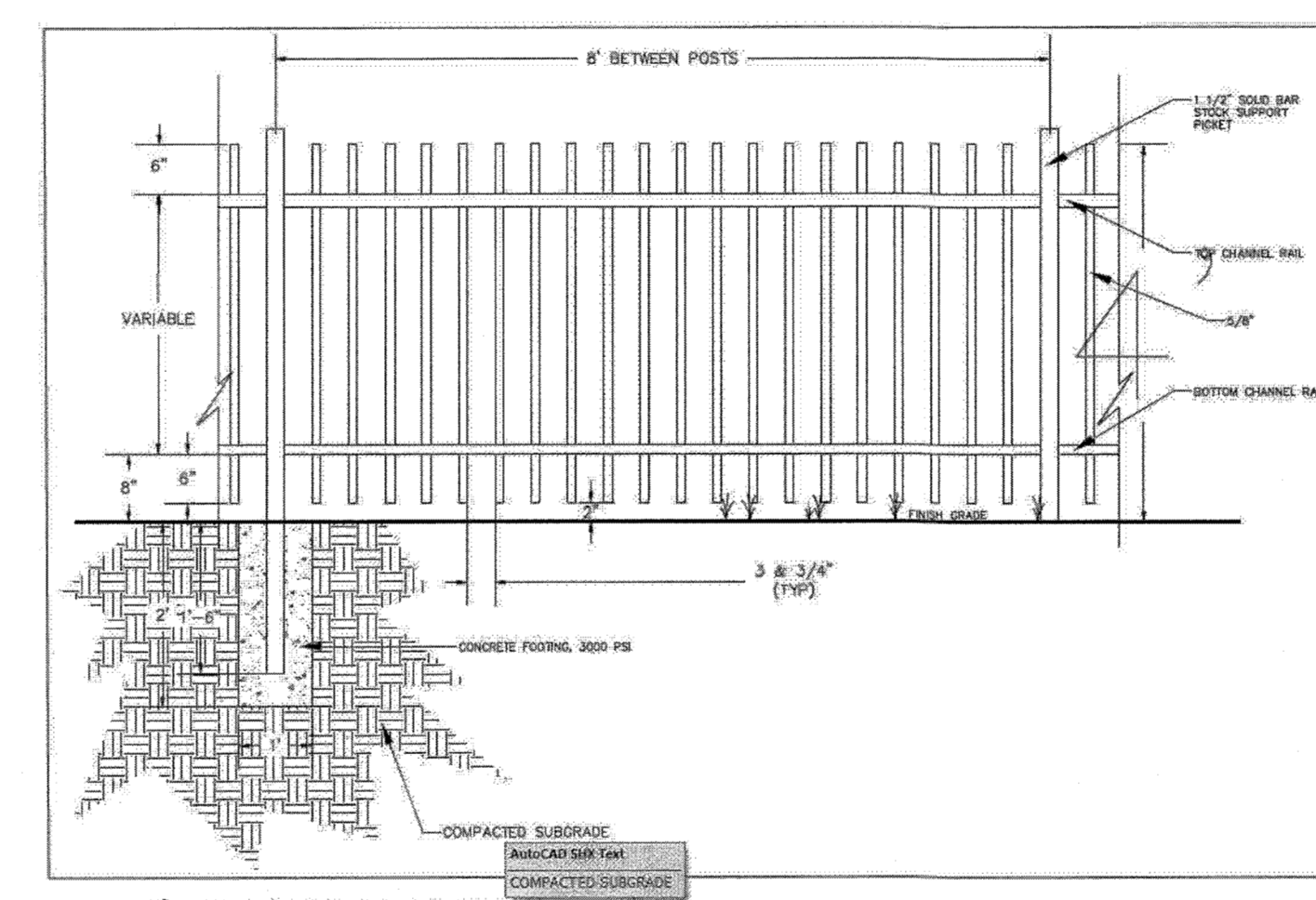
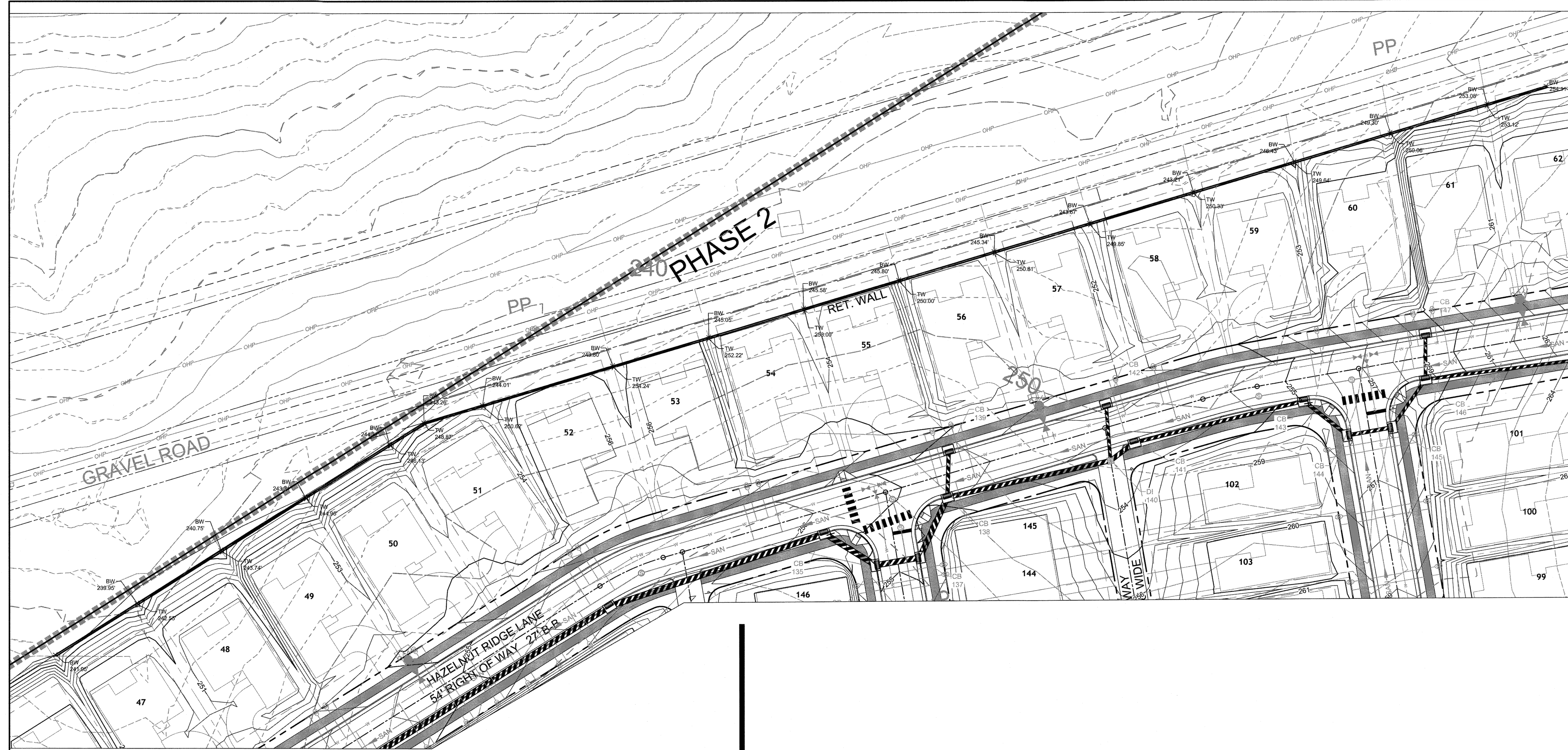
DATE: 09/11/2018

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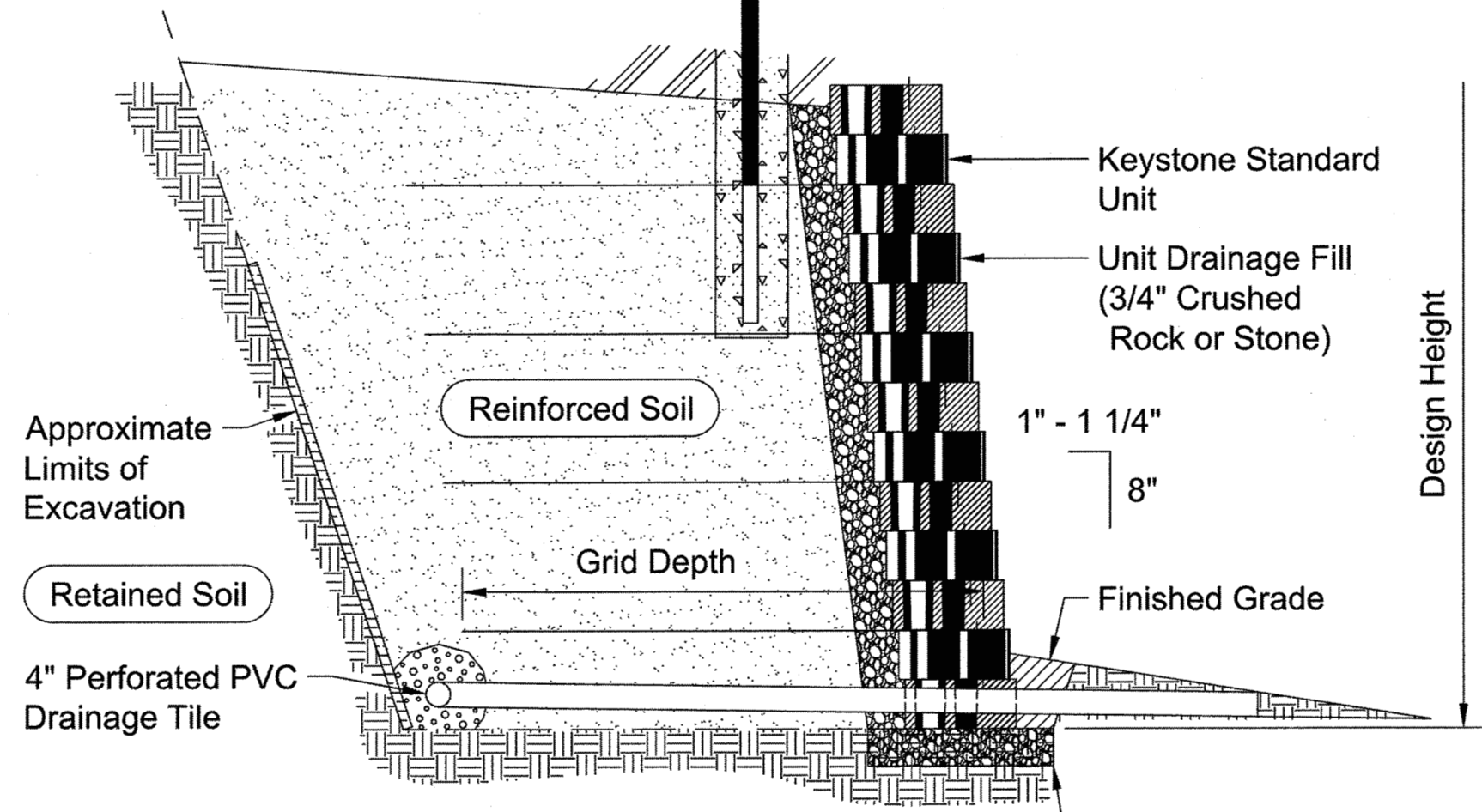
TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
RETAINING WALLS

JOB NO. 37909
 SHEET NO. C3.2

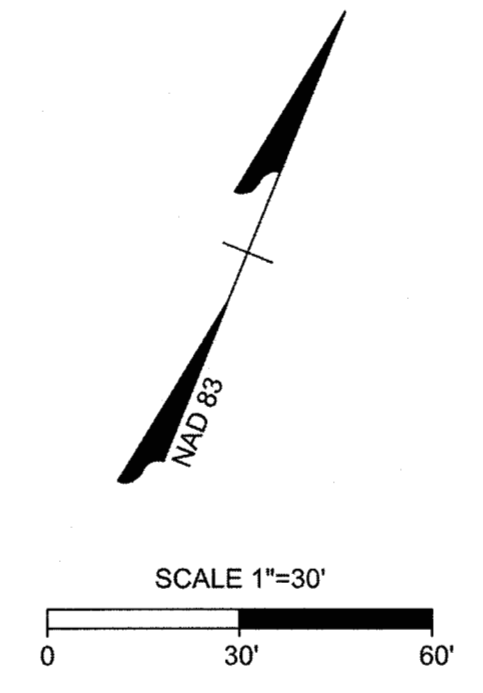


1 4' ALUMINUM FENCE
 SCALE: N.T.S.



Note:
 When site conditions require, wrap drainage tile in 3/4\"/>

Typical Reinforced Wall Section



RETAINING WALLS TO BE DESIGNED BY OTHERS

TOWN CERTIFICATION
 THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: *SAMU* DEVELOPMENT SERVICES ENGINEER DATE: 8/21/2020
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: *ko ko* ADMINISTRATOR DATE: 8/18/2020

S:\102\37909-Stone-River\DWG\Sheet\CD\Phase 2\37909-C3.0-GRAD.dwg | by: d. MacMillan

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GENERAL NOTES

- THE GRADING CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF-SITE.
- THE GRADING CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT OR AS DIRECTED BY LOCAL AUTHORITIES OR THE ENGINEER.
- THE GRADING CONTRACTOR SHALL BE RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL CLEARING AND GRADING WASTE MATERIALS GENERATED DURING HIS PHASE OF WORK AND FOR OBTAINING ALL APPLICABLE PERMITS FOR OFF-SITE STOCKPILES AND/OR WASTE AREAS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING ANY TRACKED SOIL FROM ALL ADJACENT ROADWAYS THAT ARE IMPACTED BY CONSTRUCTION TRAFFIC.

MAINTENANCE PLAN

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL MEASURES AS DESIGNED.
- REMOVE SEDIMENT FROM SEDIMENT SKIMMER BASINS WHEN STORAGE CAPACITY HAS BEEN APPROXIMATELY 50% FILLED. CLEAN OR REPLACE GRAVEL FILTER WHEN THE SEDIMENT POOL NO LONGER DRAINS PROPERLY.
- REMOVE SEDIMENT FROM BEHIND SILT FENCE WHEN DEPTH REACHES 6-INCHES AT THE FENCE. REPAIR SILT FENCE AS NECESSARY TO MAINTAIN A BARRIER.
- ALL SEEDED AREAS SHALL BE FERTILIZED, RE-SEEDDED AS NECESSARY, AND MULCHED ACCORDING TO PROJECT SPECS TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE GROWTH.
- MAINTAIN SILT/TREE PROTECTION FENCING THROUGHOUT DURATION OF CONSTRUCTION.

STOCKPILE MAINTENANCE PLAN

- SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND REDUCES EROSION PROBLEMS. TARPS SHOULD BE KEPT IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
- IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THE STOCKPILE.
- THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.
- ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

STOCKPILE DESIGN CRITERIA

- A 25-FOOT TEMPORARY MAINTENANCE AND ACCESS EASEMENT SHALL BE SHOWN AROUND ALL PROPOSED STOCKPILES (EROSION CONTROL MEASURES SURROUNDING THE STOCKPILE SHALL BE SHOWN AT THE OUTER LIMIT OF THIS EASEMENT).
- STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
- A NOTE SHALL BE PROVIDED ON THE APPROVED PLAN THAT STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
- STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
- APPROVED BMPS SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.
- STOCKPILING MATERIALS ADJACENT TO A DITCH, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM BUFFER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS DEMONSTRATED TO BE UNAVAILABLE.
- ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.
- OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDO AND STATE REGULATIONS. ALL SPOIL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY WAKE COUNTY OF ANY OFFSITE DISPOSAL OF SOIL, PRIOR TO DISPOSAL. FILL OF FEMA FLOODWAYS AND NON-ENCROACHMENT AREAS ARE PROHIBITED EXCEPT AS OTHERWISE PROVIDED BY SUBSECTION 14-19-2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).

BASIN REMOVAL SEQUENCE

- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
- 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.
- PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
- INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
- WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVISE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

STAGE 1 CONSTRUCTION SEQUENCE

- SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, DEBBI RYALS AT 919-842-7142 TO OBTAIN A LAND DISTURBING PERMIT.
- REFER TO PLANS TITLED, "HARDIN HILL LANE EXT.", BY TIMMONS GROUP. THE ROAD WORK IN THOSE PLANS SHALL BE COMPLETED UNDER A SEPARATE PERMIT AND CONTRACT PRIOR TO OR SIMULTANEOUS WITH STONERIVER SUBDIVISION CONSTRUCTION. THE STREAM CROSSING SHOWN IN THOSE PLANS MUST BE BUILT TO OBTAIN VEHICULAR ACCESS TO THIS SITE.
- ACCESS CORRIDOR: ALL CONSTRUCTION TRAFFIC SHALL ENTER AND EXIT VIA THE EXISTING GRAVEL DRIVE NEXT TO THE WATER TOWER. TURN LEFT BEFORE THE WATER TOWER, AND THEN TURN RIGHT ONTO PROPOSED STREET "A" (ACCESS CORRIDOR). INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE. INSTALL EROSION CONTROL MEASURES ALONG ACCESS CORRIDOR, UP TO AND INCLUDING TEMPORARY PIPE A. INSTALL TEMPORARY SILT FENCE, GRAVEL OUTLETS, AND PERMANENT OFFSITE BYPASS CHANNELS #1, 2, 3, 4. IMMEDIATELY SEED AND INSTALL LINER IN CHANNELS. CLEAR ONLY AS NEEDED TO INSTALL THESE MEASURES.
- AFTER ACCESS CORRIDOR IS ESTABLISHED, THEN INSTALL ALL REMAINING TEMPORARY SILT FENCE AND GRAVEL OUTLETS. INSTALL TEMPORARY PIPE B AND STREAM CROSSING WITH LINER. INSTALL ALL TEMPORARY SKIMMER BASINS AND RISER BASINS. IMMEDIATELY SEED DAMS AND SLOPES OF ALL BASINS. INSTALL ALL TEMPORARY DIVERSION DITCHES. IMMEDIATELY SEED AND INSTALL LINERS IN ALL DITCHES. CLEAR ONLY AS NEEDED TO INSTALL THESE MEASURES.
TEMPORARY RISER/SKIMMER SEDIMENT BASIN #1: THE RISER, BARREL, DAM AND SPILLWAY OF TEMPORARY RISER/SKIMMER BASIN #1 MUST BE BUILT ACCURATELY PER THE POND PLANS, BECAUSE THIS WILL BECOME A PERMANENT WET DETENTION POND AT THE END OF CONSTRUCTION. THEREFORE, THE CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICAL ENGINEER TO INSPECT AND CERTIFY THE DAM CONSTRUCTION AND COMPACTION. REFER TO THE POND PLANS. SURVEY VERIFY THAT THE RISER TOP, ORIFICES, INVERTS, TOP OF DAM, AND SPILLWAY ARE INSTALLED WITHIN +/- 0.2 FEET TOLERANCES OF THE POND PLANS. CONSTRUCT THE DAM PER PLANS. WHILE THIS IS USED AS A SEDIMENT BASIN, ALL RISER ORIFICES EXCEPT THE SKIMMER SHALL BE TEMPORARILY PLUGGED.
- CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-6411 FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL DEVICES SHOULD BE INSPECTED AFTER EACH RAINFALL EVENT, AND ON A WEEKLY BASIS, AND REFURBISHED IMMEDIATELY.
- REFER TO STAGE 2 EROSION CONTROL PLAN.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
- RIP THE ENTIRE AREA TO SIX INCHES DEEP.
- REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
- APPLY AGRICULTURAL LIME, FERTILIZER AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE MIXTURE BELOW).
- CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
- SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- CONSULT S&E ENVIRONMENTAL CONSULTANT ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

MIXTURE

AGRICULTURAL LIMESTONE	2 TONS/ACRE - SMALL GRAIN STRAW
FERTILIZER	1,000 LBS/ACRE - 10-10-10
SUPERPHOSPHATE	500 LBS/ACRE - 20% ANALYSIS
MULCH	2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR	2 TONS/ACRE - SMALL GRAIN STRAW

GROUND STABILIZATION *		
SITE AREA DESCRIPTION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND 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 ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
ANY OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HQW ZONES)
SLOPES 2:1 OR STEEPER MUST BE LINED WITH EXELSOR NETTING OR SIMILAR AND SEED	IMMEDIATELY UPON COMPLETION OF SLOPE GRADING	NONE

* EXTENSIONS OF TIME MAY BE APPROVED BY THE PERMITTING AUTHORITY BASED ON WEATHER OR OTHER SITE-SPECIFIC CONDITIONS THAT MAKE COMPLIANCE IMPRACTICABLE. (SECTION II.B)(2)(B)

STAGE 2 CONSTRUCTION SEQUENCE

- COMPLETE STAGE 1 CONSTRUCTION SEQUENCE BEFORE PROCEEDING WITH STAGE 2.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL DEVICES SHOULD BE INSPECTED AFTER EACH RAINFALL EVENT, AND ON A WEEKLY BASIS. ANY REPAIRS SHALL BE MADE IMMEDIATELY.
- CLEAR AND GRUB THE SITE. ROUGH GRADE THE SITE. AT THE END OF EACH WORKDAY OF GRADING, ALL TEMPORARY DIVERSION DITCHES SHALL BE REFURBISHED AS NEEDED TO MAINTAIN DRAINAGE PATTERNS TO THE BASINS.
- INSTALL STORM DRAINAGE SYSTEM. INSTALL TEMPORARY INLET PROTECTION AT ALL DRAINAGE INLETS. AT CB 216, INSTALL TEMP. 48" PIPE TO TEMP. RISER BASIN #2. INSTALL TEMP MULCH IN CB 216 FOR INVERT OUT TO THE NORTHWEST.
- STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITH VEGETATION, DITCH LINERS, ETC. SEED AND MULCH DENUDEED AREAS WITHIN FIFTEEN (15) DAYS OF COMPLETION OF ANY PHASE OF CONSTRUCTION.
- WHEN PHASE 1 CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-6411 FOR AN INSPECTION.
- WAKE COUNTY OR JURISDICTIONAL MUNICIPALITY MUST GRANT PERMISSION TO CONVERT THE TEMPORARY RISER/SKIMMER BASIN #1 OVER TO A PERMANENT WET DETENTION POND FOR STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
- WET DETENTION POND CONVERSION: AFTER OBTAINING PERMISSION FROM WAKE COUNTY AND TOWN OF KNIGHTDALE INSPECTORS, THEN CONVERT TEMPORARY RISER/SKIMMER BASIN #1 INTO A PERMANENT WET DETENTION POND. REFER TO THE WET DETENTION POND PLANS AND DETAILS. THE BASIN MUST BE DE-WATERED FROM THE SURFACE WITH A PUMP AND SILT BAG. REMOVE TEMPORARY COIR MESH BAFFLES AND SLOPE DRAIN. MUCK OUT SEDIMENT FROM BASIN. ACCURATELY FINE GRADE ALL AREAS OF THE POND (DAM, SPILLWAY, VEGETATED SHELF, FLOOR, FOREBAY, SLOPES) TO WITHIN CLOSE TOLERANCES (+/- 0.2 FEET) OF THE WET DETENTION POND PLAN. VERIFY THAT THE RISER IS ACCURATELY CONSTRUCTED PER THE RISER DETAILS, AND SURVEY VERIFY THE RISER TOP ELEVATION, ORIFICES, DIMENSIONS AND INVERTS. REMOVE TEMPORARY SKIMMER AND CLOSE THE DRAIN VALVE. REMOVE TEMPORARY PLUGS AT ALL PERMANENT RISER ORIFICES. SUBMIT ASBUILT SURVEY OF WET DETENTION POND PER TOWN REQUIREMENTS TO OWNER/ENGINEER. SUBMIT GEOTECHNICAL ENGINEER'S DAM COMPACTION CERTIFICATION TO OWNER/ENGINEER. INSTALL PERMANENT GROUND COVER, SEED/SOD, PLANTS ON VEGETATED SHELF, OR OTHER MEASURES AS SHOWN ON THE WET DETENTION POND PLANTING PLAN. UPON COMPLETION OF THE POND CONSTRUCTION, THE TEAM WILL SEEK ACCEPTANCE OF THE BMP FROM THE TOWN.
- REMOVE ALL REMAINING PHASE 1 TEMPORARY EROSION CONTROL DEVICES, INCLUDING BASINS #2 AND 4. REMOVE PHASE 1 SILT FENCE. SEED AND STABILIZE ALL REMAINING DISTURBED AREAS. ALL REMAINING PHASE 1 PERMANENT EROSION CONTROL DEVICES, SUCH AS RIPRAP DISSIPATORS OVER FILTER FABRIC SHOULD BE INSTALLED AT THIS TIME.

CULVERT CONSTRUCTION SEQUENCE

- EXCAVATE & INSTALL TEMP PIPE 'B'.
- GRADE TEMPORARY DIVERSION & EARTH BERM. INSTALL IMPERMEABLE MEMBRANE & RIPRAP.
- INSTALL TEMPORARY SILT FENCE.
- INSTALL EROSION CONTROL MEASURES ON SOUTH SIDE OF STREAM PER STAGE 1 EROSION CONTROL PLAN.
- INSTALL PERMANENT RCP CULVERT, HEADWALLS, & RIPRAP APRON OVER FILTER FABRIC PER STAGE 2 EROSION CONTROL PLAN.
- REMOVE TEMPORARY EARTH BERM. FINE GRADE CHANNEL TO DIRECT STREAM FLOW INTO PERMANENT RCP CULVERT.
- REMOVE TEMP PIPE 'B' & IMPERMEABLE MEMBRANE.
- COMPLETE FILL/GRADING/COMPACTION OVER RCP CULVERT. IMMEDIATELY SEED ALL SLOPES.

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *S. Small* DATE: 8/21/2020
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *L. D.* DATE: 8/18/2020
ADMINISTRATOR

TEMPORARY RISER - BARREL BASIN W/ SKIMMER TABLE

BASIN #	1	2
BASIN TYPE	RISER BASIN W/ SKIMMER	RISER BASIN W/ SKIMMER
TOTAL DRAINAGE AREA =	8.20 AC	25.50 AC
DISTURBED DRAINAGE AREA =	7.20 AC	20.50 AC
C =	0.47	0.45
Tc =	10 MIN	10 MIN
I (10) =	5.83	5.83
Q (10) =	22.47 CFS	66.90 CFS
MIN REQ VOLUME = 1,800 CF/TOTAL ACRE =	14760 CF	45900 CF
MIN REQ SURF AREA = 435 SF/Q(10) =	29101 SF	29101 SF
BASIN FLOOR DIMENSIONS =	305'L X 40'W X 7'D	292'L X 77'W X 3.5'D
VOLUME PROVIDED =	106842 CF	112000 CF
SURFACE AREA PROVIDED =	26946 SF	29200 SF
TOP OF BERM ELEV =	191.5	210.0
SPILLWAY ELEV =	189.0	207.5
FLOOR ELEV =	177.0	204.0
10-YR WSE =	188.9	208.6
FREEBOARD =	2.7 FT	1.4 FT
SPILLWAY WIDTH =	30 FT	20 FT
SKIMMER SIZE =	2.50 INCHES	4.00 INCHES
ORIFICE DIAMETER =	2.30 INCHES	3.50 INCHES
DEWATERING TIME =	3.0 DAYS	3.0 DAYS

TEMPORARY SKIMMER BASIN TABLE

BASIN #	3	4	5	6
BASIN TYPE	SKIMMER BASIN	SKIMMER BASIN	SKIMMER BASIN	SKIMMER BASIN
TOTAL DRAINAGE AREA =	2.80 AC	2.72 AC	9.50 AC	6.10 AC
DISTURBED DRAINAGE AREA =	2.80 AC	1.57 AC	9.50 AC	6.10 AC
C =	0.50	0.50	0.50	0.50
Tc =	5 MIN	5 MIN	5 MIN	5 MIN
I (10) =	7.49	7.49	7.49	7.49
Q (10) =	10.49 CFS	10.19 CFS	35.58 CFS	22.84 CFS
MIN REQ VOLUME = 1,800 CF/DIST ACRE =	5040 CF	4896 CF	17100 CF	10980 CF
MIN REQ SURF AREA = 435 SF/Q(10) =	4561 SF	4431 SF	15476 SF	9937 SF
BASIN FLOOR DIMENSIONS =	84'L X 36'W X 2'D	78'L X 42'W X 2'D	208'L X 60'W X 2'D	140'L X 59'W X 2'D
VOLUME PROVIDED =	112000 CF	8088 CF	28272 CF	19004 CF
SURFACE AREA PROVIDED =	4608 SF	4860 SF	15840 SF	10792 SF
TOP OF BERM ELEV =	245.5	228.0	230.0	248.6
SPILLWAY ELEV =	244.0	226.0	228.0	247.0
FLOOR ELEV =	242.0	224.0	226.0	245.0
10-YR WSE =	244.5	226.5	229.0	247.6
FREEBOARD =	1.0 FT	1.5 FT	1.0 FT	1.0 FT
SPILLWAY WIDTH =	10 FT	10 FT	15 FT	15 FT
SKIMMER SIZE =	2.00 INCHES	1.50 INCHES	3.00 INCHES	2.50 INCHES
ORIFICE DIAMETER =	1.25 INCHES	1.25 INCHES	2.00 INCHES	1.75 INCHES
DEWATERING TIME =	3.4 DAYS	3.8 DAYS	3.7 DAYS	3.4 DAYS

STAGE 3 CONSTRUCTION SEQUENCE

- COMPLETE STAGE 2 CONSTRUCTION SEQUENCE BEFORE PROCEEDING WITH STAGE 3.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL DEVICES SHOULD BE INSPECTED AFTER EACH RAINFALL EVENT, AND ON A WEEKLY BASIS. ANY REPAIRS SHALL BE MADE IMMEDIATELY.
- CLEAR AND GRUB THE SITE. ROUGH GRADE THE SITE. AT THE END OF EACH WORKDAY OF GRADING, ALL TEMPORARY DIVERSION DITCHES SHALL BE REFURBISHED AS NEEDED TO MAINTAIN DRAINAGE PATTERNS TO THE BASINS.
- INSTALL STORM DRAINAGE SYSTEM. INSTALL TEMPORARY INLET PROTECTION AT ALL DRAINAGE INLETS.
- STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITH VEGETATION, DITCH LINERS, ETC. SEED AND MULCH DENUDEED AREAS WITHIN FIFTEEN (15) DAYS OF COMPLETION OF ANY PHASE OF CONSTRUCTION.
- WHEN PHASE 2 CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-6411 FOR AN INSPECTION.
- WAKE COUNTY OR JURISDICTIONAL MUNICIPALITY MUST GRANT PERMISSION TO CONVERT THE TEMPORARY RISER/SKIMMER BASIN #1 OVER TO A PERMANENT WET DETENTION POND FOR STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
- WET DETENTION POND CONVERSION: AFTER OBTAINING PERMISSION FROM WAKE COUNTY AND TOWN OF KNIGHTDALE INSPECTORS, THEN CONVERT TEMPORARY RISER/SKIMMER BASIN #1 INTO A PERMANENT WET DETENTION POND. REFER TO THE WET DETENTION POND PLANS AND DETAILS. THE BASIN MUST BE DE-WATERED FROM THE SURFACE WITH A PUMP AND SILT BAG. REMOVE TEMPORARY COIR MESH BAFFLES AND SLOPE DRAIN. MUCK OUT SEDIMENT FROM BASIN. ACCURATELY FINE GRADE ALL AREAS OF THE POND (DAM, SPILLWAY, VEGETATED SHELF, FLOOR, FOREBAY, SLOPES) TO WITHIN CLOSE TOLERANCES (+/- 0.2 FEET) OF THE WET DETENTION POND PLAN. VERIFY THAT THE RISER IS ACCURATELY CONSTRUCTED PER THE RISER DETAILS, AND SURVEY VERIFY THE RISER TOP ELEVATION, ORIFICES, DIMENSIONS AND INVERTS. REMOVE TEMPORARY SKIMMER AND CLOSE THE DRAIN VALVE. REMOVE TEMPORARY PLUGS AT ALL PERMANENT RISER ORIFICES. SUBMIT ASBUILT SURVEY OF WET DETENTION POND PER TOWN REQUIREMENTS TO OWNER/ENGINEER. SUBMIT GEOTECHNICAL ENGINEER'S DAM COMPACTION CERTIFICATION TO OWNER/ENGINEER. INSTALL PERMANENT GROUND COVER, SEED/SOD, PLANTS ON VEGETATED SHELF, OR OTHER MEASURES AS SHOWN ON THE WET DETENTION POND PLANTING PLAN. UPON COMPLETION OF THE POND CONSTRUCTION, THE TEAM WILL SEEK ACCEPTANCE OF THE BMP FROM THE TOWN.

BYPASS CHANNEL TABLE

CHANNEL #	TEMP.	TEMP.	TEMP.	TEMP.
1	2	3	4	
DEPTH (FT)	1.5	1.5	1.5	1.5
BASEWIDTH (FT)	5	1	1	1
SIDESLOPES	3:1	3:1	3:1	3:1
LINER TYPE	NAG C350	NAG C350	NAG C350	NAG C350
LINER WIDTH (FT)	10	10	10	10

TEMPORARY CHANNEL TABLE

CHANNEL #	5	6	6A	7	8	9	10	11	12	13	14	15	16
DEPTH (FT)	1.5	1.5	1.5	2.0	2.0	2.0	1.5	2.0	2.0	2.0	2.0	2.0	2.0
BASEWIDTH (FT)	1	1	1	3	2	1	2	2	2	2	2	2	2
SIDESLOPES	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	5:1	3:1	3:1	3:1	3:1
LINER TYPE	NAG S75	NAG S75	NAG P300	NAG S75	NAG S75	NAG P300	NAG C350	NAG C350	NAG S75	NAG C350	NAG P300	NAG P300	NAG P300
LINER WIDTH (FT)	10	10	10	12	12	12	10	10	14	12	12	12	12

TEMPORARY DIVERSION DITCH TABLE

DITCH #	TDD 1.1	TDD 2.1	TDD 2.2	TDD 2.3	TDD 2.4	TDD 3.1	TDD 3.2	TDD 4.1	TDD 5.1	TDD 5.2	TDD 6.1	TDD 6.2
DEPTH (FT)	2.5	1.5	1.5	1.5	2.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
BASEWIDTH (FT)	0	0	0	0	2	0	0	0	0	0	0	0
SIDESLOPES	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1	3:1
LINER TYPE	NAG C350	NAG C350	NAG C350	NAG C350	NAG C350	NAG S75	NAG S75	NAG S75	NAG C350	NAG C350	NAG S75	NAG S75
LINER WIDTH (FT)	12	8	8	8	15	8	8	8	8	8	8	8

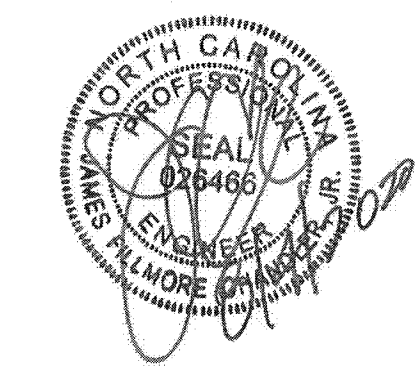
APRON DESIGN BASED ON GUIDELINES FROM NEW YORK DOT DISSIPATOR METHOD

VELOCITY DISSIPATOR PAD SCHEDULE - STONERIVER PHASES 1-2

STRUCTURE ID	PIPE SIZE (IN)	PIPE SLOPE	FLOW (Q10) (CFS)	OUTLET VELOCITY (V10) (FT/S)		ZONE	RIPRAP CLASS	D50 (IN)	APRON DIMENSIONS				
				(VFull)	(V10)				LENGTH (FT)	STARTING WIDTH (FT)	ENDING WIDTH (FT)	THICKNESS (")	
FES 100	Permanent	48	1.30%	161.85	13.02	14.82	3	1	10	32	12	24	26
HW 500	Permanent	48	1.00%	33.91	11.42	9.21	3	1	10	32	12	24	26
FES 1000	Permanent	36	1.00%	58.32	9.42	10.58	3	1	10	24	9	18	26

GEOTEXTILE FABRIC WILL BE REQUIRED UNDER ALL RIPRAP DISSIPATOR PADS

SEEDING SCHEDULE		
MAXIMUM SLOPE 3:1		
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACRE)
AUGUST 15 - NOVEMBER 01	TALL FESCUE	300
NOVEMBER 01 - MARCH 01	TALL FESCUE AND ABRUZZI RYE	300
MARCH 01 - APRIL 15	TALL FESCUE	300
APRIL 15 - JUNE 30	HULLED COMMON BERMAIDGRASS	25
	TALL FESCUE AND	120
JULY 01 - AUGUST 15	*BROWNTOP MILLET OR *SORGHUM-SUDAN HYBRIDS	35
	TALL FESCUE AND	120
MARCH 01 - JUNE 01	SERICEA LESPEDEZA (SCARIFIED) AND	50
MARCH 01 - APRIL 15	TALL FESCUE OR	120
MARCH 01 - JUNE 30	WEEPING LOVEGRASS OR HULLED COMMON BERMAIDGRASS	10
	*TALL FESCUE AND	25
JUNE 01 - SEPTEMBER 01</		



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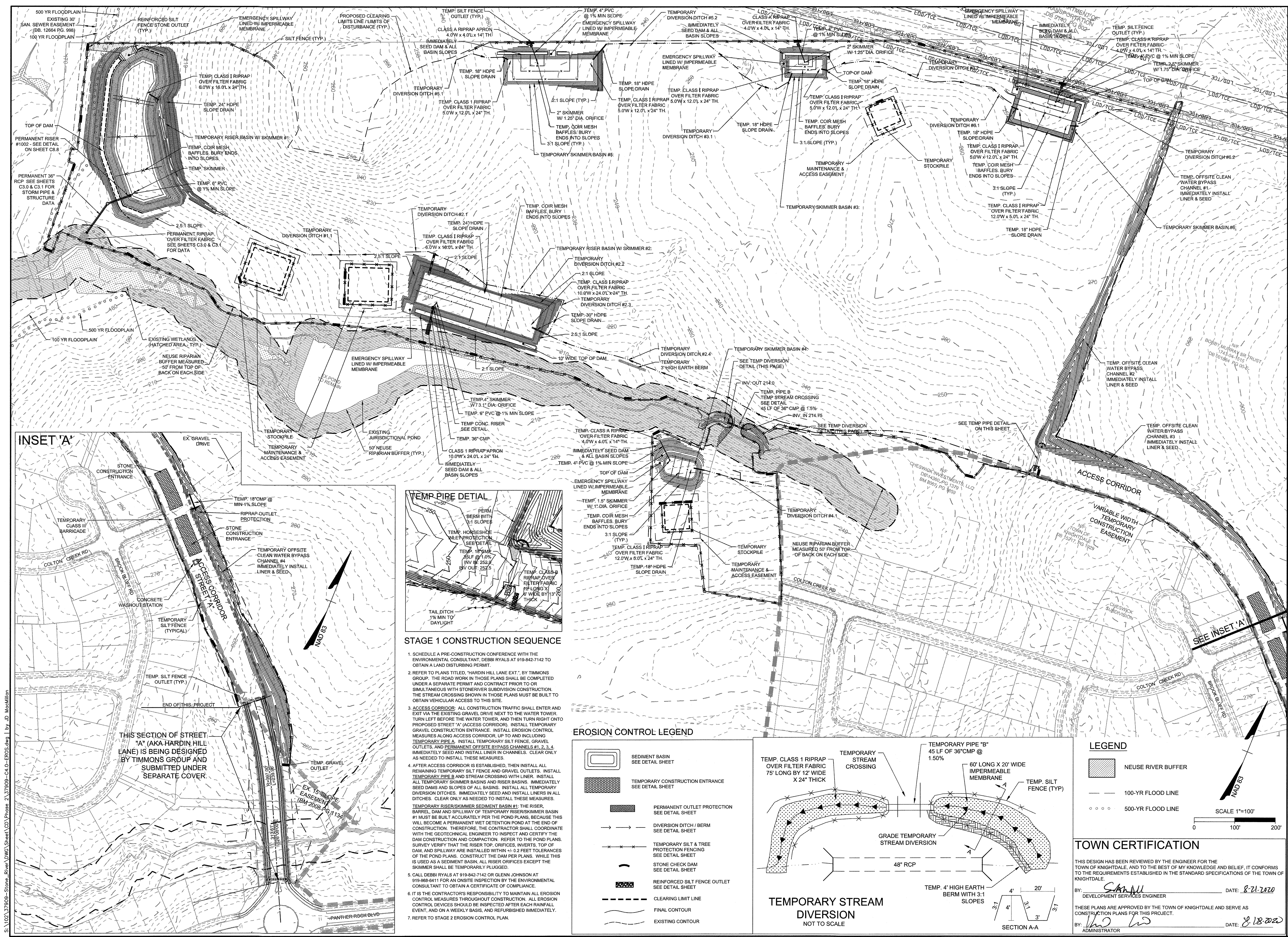
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DATE
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 DRAWN BY
 331
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 JFC
 SCALE
 PER PLAN

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

STAGE 1 EROSION CONTROL PLAN
 JOB NO.
 37909
 SHEET NO.
 C4.1

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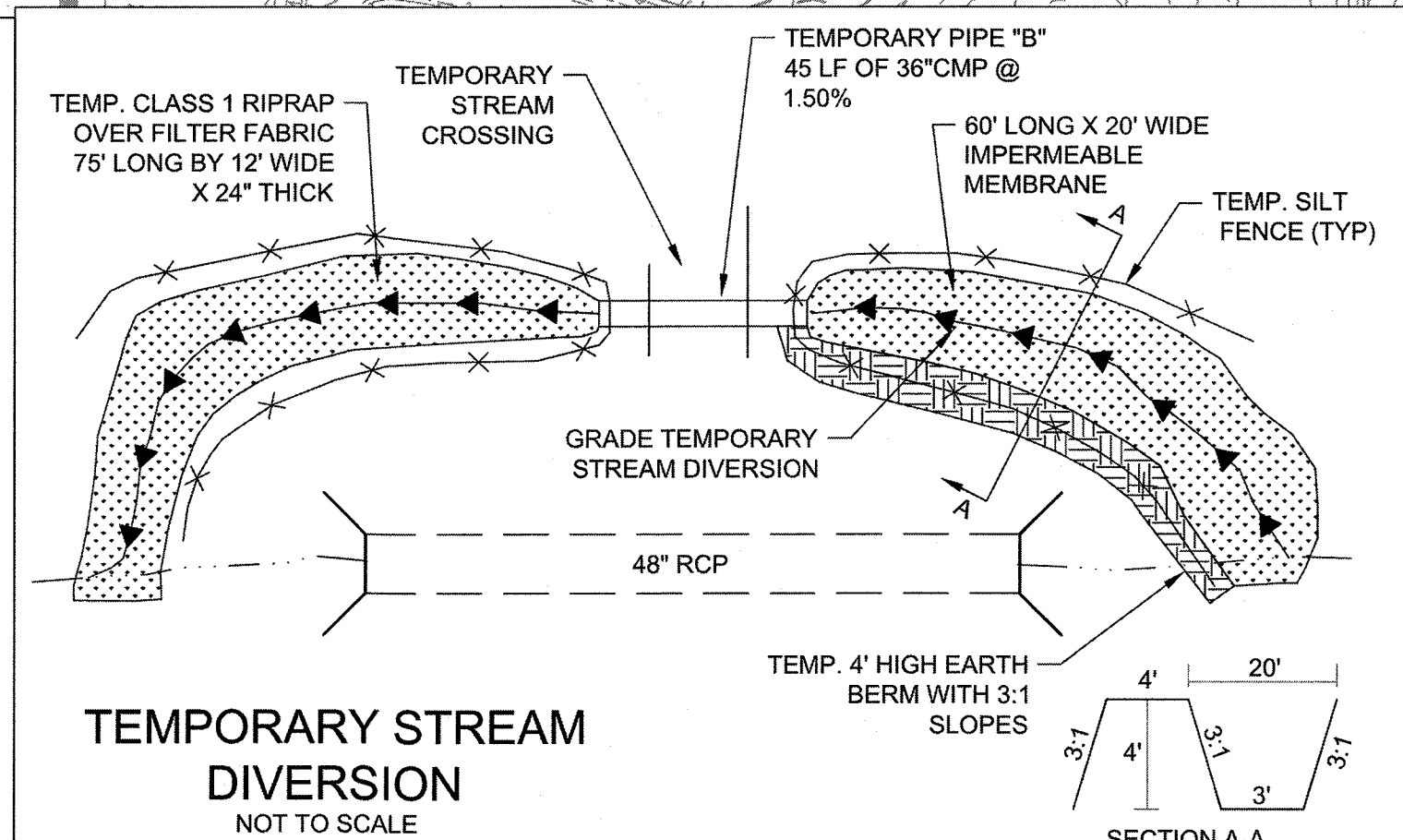


STAGE 1 CONSTRUCTION SEQUENCE

- SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, DEBBI RYALS AT 919-842-7142 TO OBTAIN A LAND DISTURBING PERMIT.
- REFER TO PLANS TITLED, "HARDIN HILL LANE EXT.", BY TIMMONS GROUP. THE ROAD WORK IN THOSE PLANS SHALL BE COMPLETED UNDER A SEPARATE PERMIT AND CONTRACT PRIOR TO OR SIMULTANEOUS WITH STONERIVER SUBDIVISION CONSTRUCTION. THE STREAM CROSSING SHOWN IN THOSE PLANS MUST BE BUILT TO OBTAIN VEHICULAR ACCESS TO THIS SITE.
- ACCESS CORRIDOR:** ALL CONSTRUCTION TRAFFIC SHALL ENTER AND EXIT VIA THE EXISTING GRAVEL DRIVE NEXT TO THE WATER TOWER. TURN LEFT BEFORE THE WATER TOWER, AND THEN TURN RIGHT ONTO PROPOSED STREET "A" (ACCESS CORRIDOR). INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE. INSTALL EROSION CONTROL MEASURES ALONG ACCESS CORRIDOR, UP TO AND INCLUDING TEMPORARY PIPE A. INSTALL TEMPORARY SILT FENCE, GRAVEL OUTLETS, AND PERMANENT OFFSITE BYPASS CHANNELS #1, 2, 3, 4. IMMEDIATELY SEED AND INSTALL LINER IN CHANNELS. CLEAR ONLY AS NEEDED TO INSTALL THESE MEASURES.
- AFTER ACCESS CORRIDOR IS ESTABLISHED, THEN INSTALL ALL REMAINING TEMPORARY SILT FENCE AND GRAVEL OUTLETS. INSTALL TEMPORARY PIPE B AND STREAM CROSSING WITH LINER. INSTALL ALL TEMPORARY SKIMMER BASINS AND RISER BASINS. IMMEDIATELY SEED DAMS AND SLOPES OF ALL BASINS. INSTALL ALL TEMPORARY DIVERSION DITCHES. IMMEDIATELY SEED AND INSTALL LINER IN ALL DITCHES. CLEAR ONLY AS NEEDED TO INSTALL THESE MEASURES. TEMPORARY RISER/SKIMMER SEDIMENT TO BASIN #1: THE RISER, BARREL, DAM AND SPILLWAY OF TEMPORARY RISER/SKIMMER BASIN #1 MUST BE BUILT ACCURATELY PER THE POND PLANS, BECAUSE THIS WILL BECOME A PERMANENT WET DETENTION POND AT THE END OF CONSTRUCTION. THEREFORE, THE CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICAL ENGINEER TO INSPECT AND CERTIFY THE DAM CONSTRUCTION AND COMPACTION. REFER TO THE POND PLANS. SURVEY VERIFY THAT THE RISER TOP, ORIFICES, INVERTS, TOP OF DAM, AND SPILLWAY ARE INSTALLED WITHIN +/- 0.2 FEET TOLERANCES OF THE POND PLANS. CONSTRUCT THE DAM PER PLANS. WHILE THIS IS USED AS A SEDIMENT BASIN, ALL RISER ORIFICES EXCEPT THE SKIMMER SHALL BE TEMPORARILY PLUGGED.
- CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-4411 FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL DEVICES SHOULD BE INSPECTED AFTER EACH RAINFALL EVENT, AND ON A WEEKLY BASIS, AND REPAIRS SHOULD BE MADE IMMEDIATELY.
- REFER TO STAGE 2 EROSION CONTROL PLAN.

EROSION CONTROL LEGEND

- SEDIMENT BASIN SEE DETAIL SHEET
- TEMPORARY CONSTRUCTION ENTRANCE SEE DETAIL SHEET
- PERMANENT OUTLET PROTECTION SEE DETAIL SHEET
- DIVERSION DITCH / BERM SEE DETAIL SHEET
- TEMPORARY SILT & TREE PROTECTION FENCING SEE DETAIL SHEET
- STONE CHECK DAM SEE DETAIL SHEET
- REINFORCED SILT FENCE OUTLET SEE DETAIL SHEET
- CLEARING LIMIT LINE
- FINAL CONTOUR
- EXISTING CONTOUR



LEGEND

- NEUSE RIVER BUFFER
- 100-YR FLOOD LINE
- 500-YR FLOOD LINE

TOWN CERTIFICATION

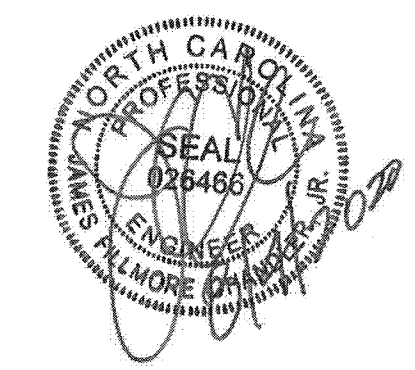
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BY: *[Signature]* DATE: 8/21/2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8/18/2020
 ADMINISTRATOR

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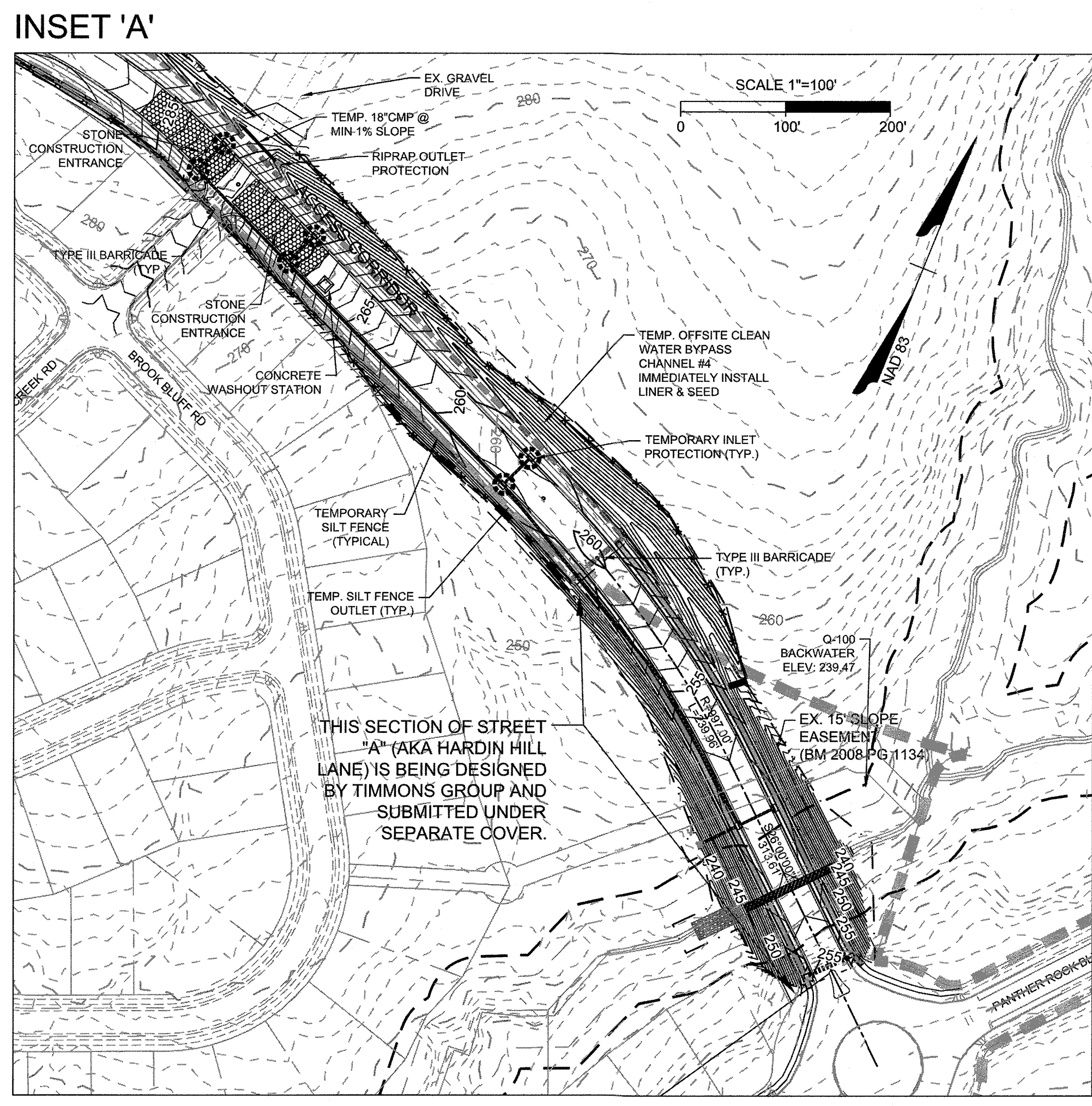
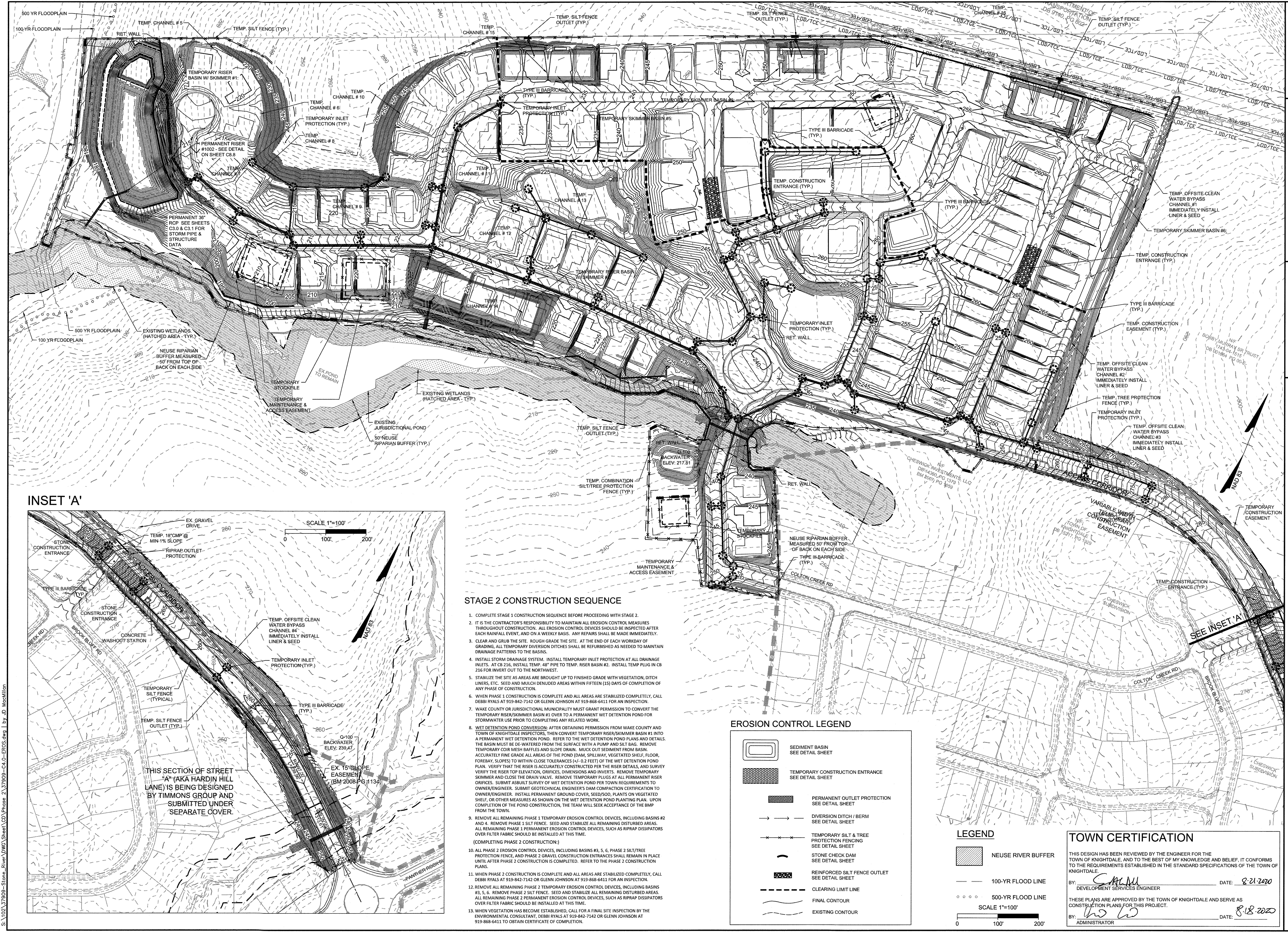
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TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

STAGE 2 EROSION CONTROL PLAN

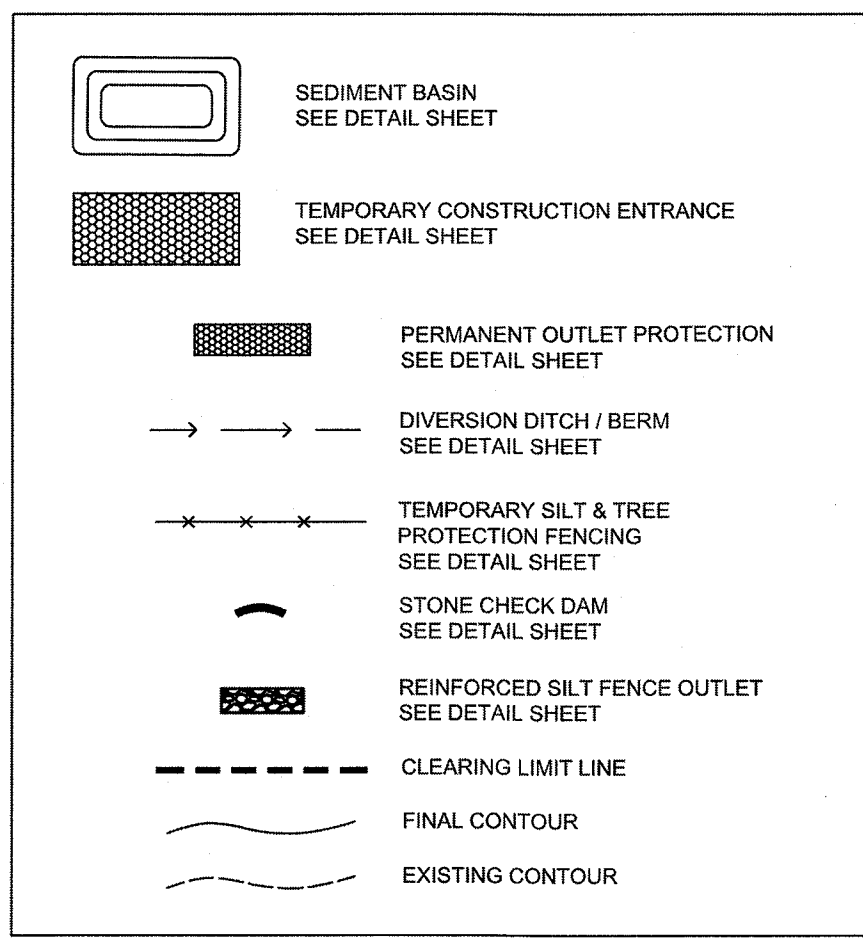
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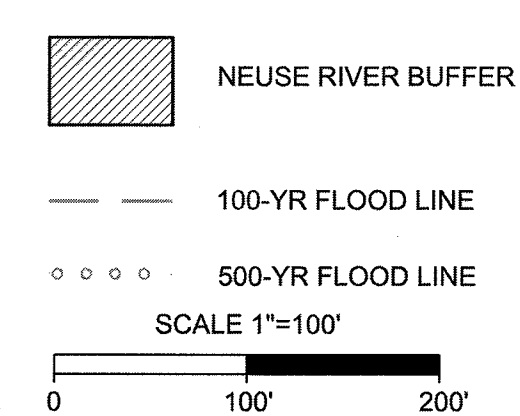
STAGE 2 CONSTRUCTION SEQUENCE

1. COMPLETE STAGE 1 CONSTRUCTION SEQUENCE BEFORE PROCEEDING WITH STAGE 2.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL DEVICES SHOULD BE INSPECTED AFTER EACH RAINFALL EVENT, AND ON A WEEKLY BASIS. ANY REPAIRS SHALL BE MADE IMMEDIATELY.
3. CLEAR AND GRUB THE SITE. ROUGH GRADE THE SITE. AT THE END OF EACH WORKDAY OF GRADING, ALL TEMPORARY DIVERSION DITCHES SHALL BE REFURBISHED AS NEEDED TO MAINTAIN DRAINAGE PATTERNS TO THE BASINS.
4. INSTALL STORM DRAINAGE SYSTEM. INSTALL TEMPORARY INLET PROTECTION AT ALL DRAINAGE INLETS. AT CB 216, INSTALL TEMP. 48\"/>
- 5. STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITH VEGETATION, DITCH LINERS, ETC. SEED AND MULCH DENUDE AREAS WITHIN FIFTEEN (15) DAYS OF COMPLETION OF ANY PHASE OF CONSTRUCTION.
- 6. WHEN PHASE 1 CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-6411 FOR AN INSPECTION.
- 7. WAKE COUNTY OR JURISDICTIONAL MUNICIPALITY MUST GRANT PERMISSION TO CONVERT THE TEMPORARY RISER/SKIMMER BASIN #1 OVER TO A PERMANENT WET DETENTION POND FOR STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
- 8. WET DETENTION POND CONVERSION: AFTER OBTAINING PERMISSION FROM WAKE COUNTY AND TOWN OF KNIGHTDALE INSPECTORS, THEN CONVERT TEMPORARY RISER/SKIMMER BASIN #1 INTO A PERMANENT WET DETENTION POND. REFER TO THE WET DETENTION POND PLANS AND DETAILS. THE BASIN MUST BE DE-WATERED FROM THE SURFACE WITH A PUMP AND SILT BAG. REMOVE TEMPORARY COIR MESH Baffles AND SLOPE DRAIN. MUCK OUT SEDIMENT FROM BASIN. ACCURATELY FINE GRADE ALL AREAS OF THE POND (DAM, SPILLWAY, VEGETATED SHEL, FLOOR, FOREBAY, SLOPES) TO WITHIN CLOSE TOLERANCES (+/- 0.2 FEET) OF THE WET DETENTION POND PLAN. VERIFY THAT THE RISER IS ACCURATELY CONSTRUCTED PER THE RISER DETAILS, AND SURVEY VERIFY THE RISER TOP ELEVATION, ORIFICES, DIMENSIONS AND INVERTS. REMOVE TEMPORARY SKIMMER AND CLOSE THE DRAIN VALVE. REMOVE TEMPORARY PLUGS AT ALL PERMANENT RISER ORIFICES. SUBMIT ASBUILT SURVEY OF WET DETENTION POND PER TOWN REQUIREMENTS TO OWNER/ENGINEER. SUBMIT GEOTECHNICAL ENGINEER'S DAM COMPACTION CERTIFICATION TO OWNER/ENGINEER. INSTALL PERMANENT GROUND COVER, SEED/SOIL, PLANTS ON VEGETATED SHEL, OR OTHER MEASURES AS SHOWN ON THE WET DETENTION POND PLANTING PLAN. UPON COMPLETION OF THE POND CONSTRUCTION, THE TEAM WILL SEEK ACCEPTANCE OF THE BMP FROM THE TOWN.
- 9. REMOVE ALL REMAINING PHASE 1 TEMPORARY EROSION CONTROL DEVICES, INCLUDING BASINS #2 AND 4. REMOVE PHASE 2 SILT FENCE. SEED AND STABILIZE ALL REMAINING DISTURBED AREAS. ALL REMAINING PHASE 2 PERMANENT EROSION CONTROL DEVICES, SUCH AS RIPRAP DISSIPATORS OVER FILTER FABRIC SHOULD BE INSTALLED AT THIS TIME.
- (COMPLETING PHASE 2 CONSTRUCTION)
- 10. ALL PHASE 2 EROSION CONTROL DEVICES, INCLUDING BASINS #3, 5, 6, PHASE 2 SILT/TREE PROTECTION FENCE, AND PHASE 2 GRAVEL CONSTRUCTION ENTRANCES SHALL REMAIN IN PLACE UNTIL AFTER PHASE 2 CONSTRUCTION IS COMPLETED. REFER TO THE PHASE 2 CONSTRUCTION PLANS.
- 11. WHEN PHASE 2 CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-6411 FOR AN INSPECTION.
- 12. REMOVE ALL REMAINING PHASE 2 TEMPORARY EROSION CONTROL DEVICES, INCLUDING BASINS #3, 5, 6. REMOVE PHASE 2 SILT FENCE. SEED AND STABILIZE ALL REMAINING DISTURBED AREAS. ALL REMAINING PHASE 2 PERMANENT EROSION CONTROL DEVICES, SUCH AS RIPRAP DISSIPATORS OVER FILTER FABRIC SHOULD BE INSTALLED AT THIS TIME.
- 13. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT, DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-868-6411 TO OBTAIN CERTIFICATE OF COMPLETION.

EROSION CONTROL LEGEND



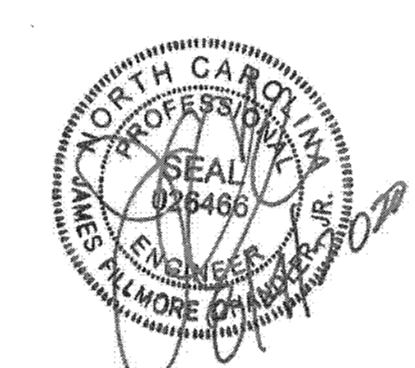
LEGEND



TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: *[Signature]* DATE: 8-18-2020
 ADMINISTRATOR

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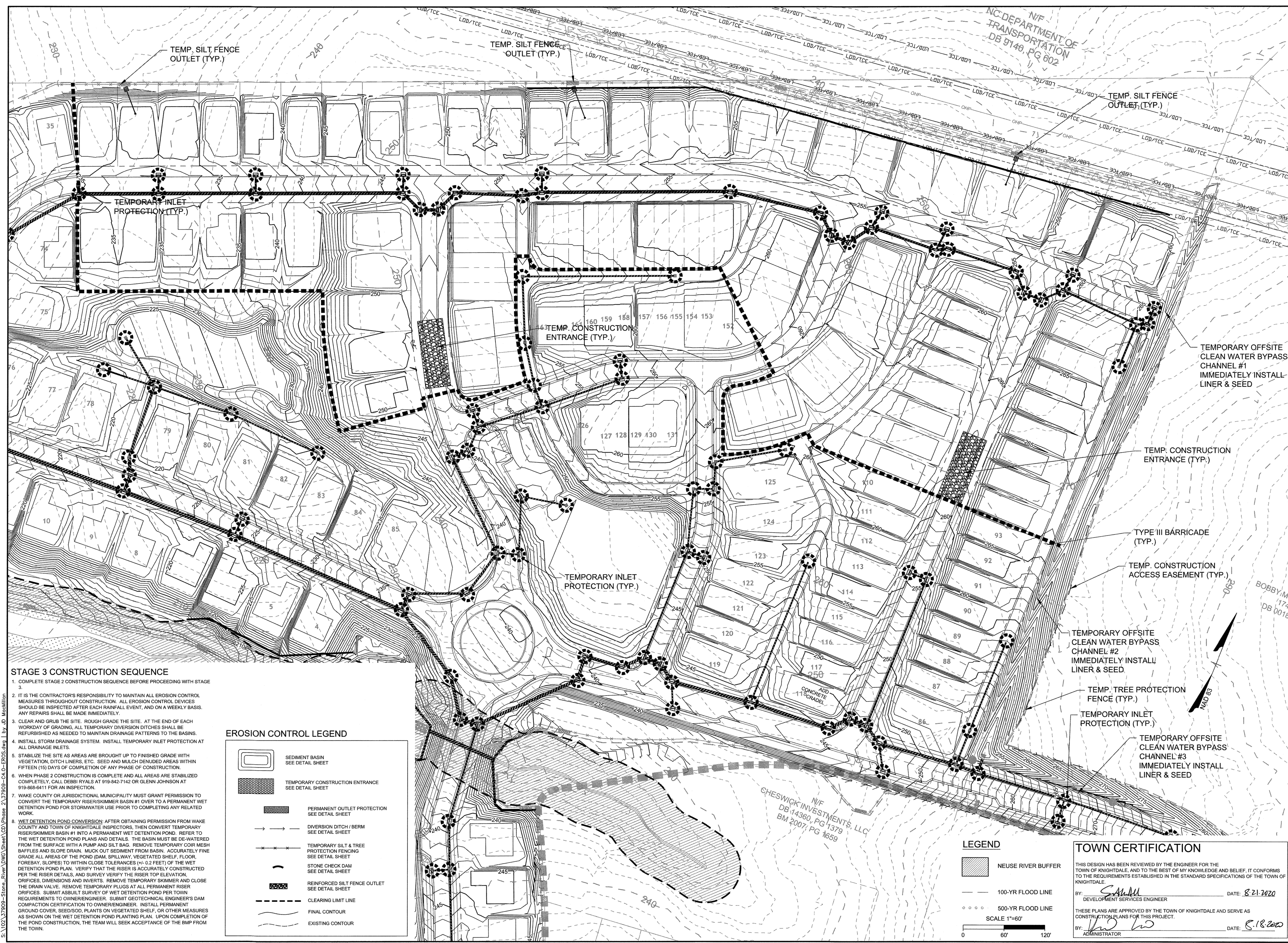
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TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
KNIIGHTDALE - WAKE COUNTY - NORTH CAROLINA

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SHEET NO.
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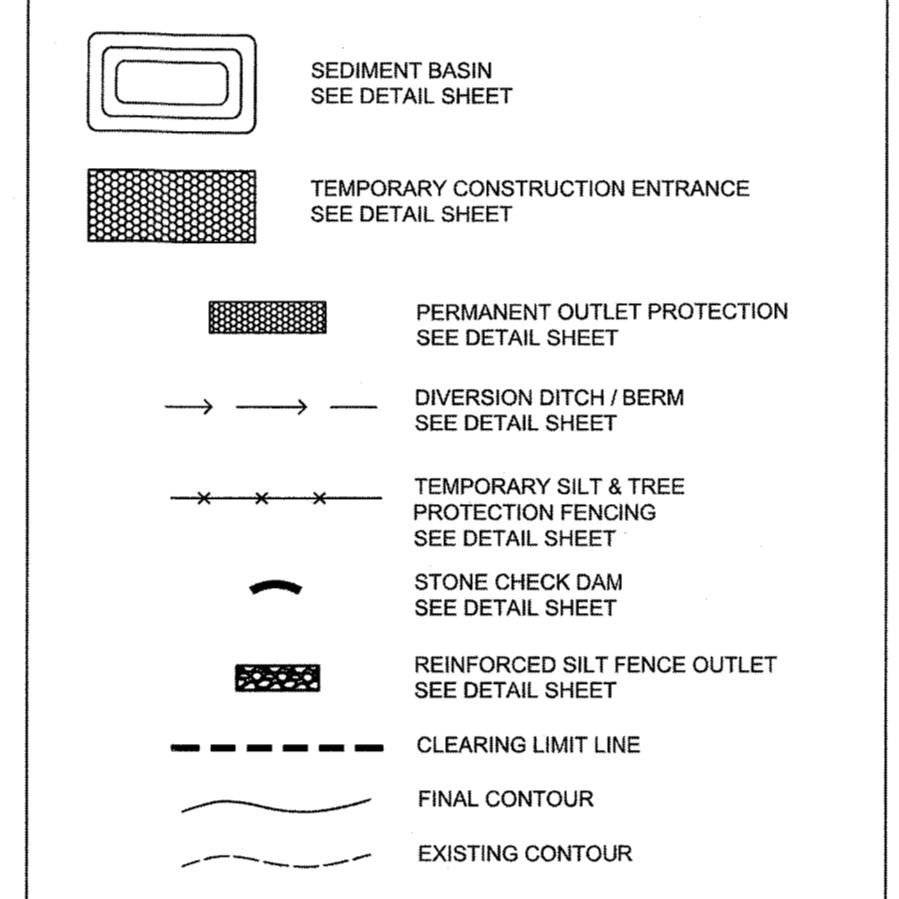
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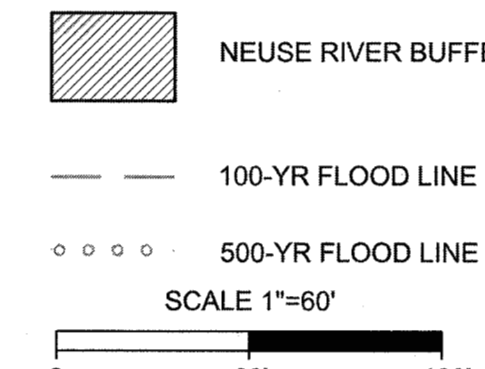
STAGE 3 CONSTRUCTION SEQUENCE

1. COMPLETE STAGE 2 CONSTRUCTION SEQUENCE BEFORE PROCEEDING WITH STAGE 3.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. ALL EROSION CONTROL DEVICES SHOULD BE INSPECTED AFTER EACH RAINFALL EVENT, AND ON A WEEKLY BASIS. ANY REPAIRS SHALL BE MADE IMMEDIATELY.
3. CLEAR AND GRUB THE SITE. ROUGH GRADE THE SITE. AT THE END OF EACH WORKDAY OF GRADING, ALL TEMPORARY DIVERSION DITCHES SHALL BE REFURBISHED AS NEEDED TO MAINTAIN DRAINAGE PATTERNS TO THE BASINS.
4. INSTALL STORM DRAINAGE SYSTEM. INSTALL TEMPORARY INLET PROTECTION AT ALL DRAINAGE INLETS.
5. STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITH VEGETATION, DITCH LINERS, ETC. SEED AND MULCH DENuded AREAS WITHIN FIFTEEN (15) DAYS OF COMPLETION OF ANY PHASE OF CONSTRUCTION.
6. WHEN PHASE 2 CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL DEBBI RYALS AT 919-842-7142 OR GLENN JOHNSON AT 919-866-6411 FOR AN INSPECTION.
7. WAKE COUNTY OR JURISDICTIONAL MUNICIPALITY MUST GRANT PERMISSION TO CONVERT THE TEMPORARY RISER/SKIMMER BASIN #1 OVER TO A PERMANENT WET DETENTION POND FOR STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
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EROSION CONTROL LEGEND



LEGEND



TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIIGHTDALE.

BY: *[Signature]* DATE: 8.21.2020
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8.18.2020
ADMINISTRATOR

BOBBY/MU
1743
DB 00184

CHESWICK INVESTMENTS, LLC
DB 14360, PG 1379
BM 2007, PG 1659

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT
 Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION		
Site Area Description	Required Ground Stabilization Timeframes Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed - 7 days for slopes greater than 50' in length and with slopes steeper than 4:1 - 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones
(d) Slopes 3:1 to 4:1	14	- 10 days for Falls Lake Watershed - 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones
(e) Areas with slopes flatter than 4:1	14	- 10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION
 Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> Temporary grass seed covered with straw or other mulches and tackifiers Hydroseeding Roller erosion control products with or without temporary grass seed Appropriately applied straw or other mulch Plastic sheeting 	<ul style="list-style-type: none"> Permanent grass seed covered with straw or other mulches and tackifiers Geotextile fabrics such as permanent soil reinforcement matting Hydroseeding Shrubs or other permanent plantings covered with mulch Uniform and evenly distributed ground cover sufficient to restrain erosion Structural methods such as concrete, asphalt or retaining walls Roller erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS
 1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants.
 2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
 3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions.
 4. Provide ponding area for containment of treated Stormwater before discharging offsite.
 5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

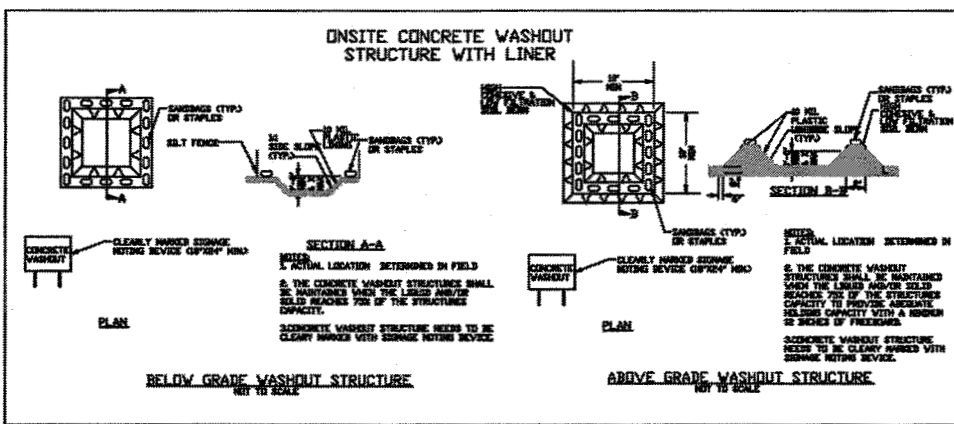
EQUIPMENT AND VEHICLE MAINTENANCE
 1. Maintain vehicles and equipment to prevent discharge of fluids.
 2. Provide drip pans under any stored equipment.
 3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
 4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
 5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
 6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE
 1. Never bury or burn waste. Place litter and debris in approved waste containers.
 2. Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
 3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
 4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
 5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
 6. Anchor all lightweight items in waste containers during times of high winds.
 7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
 8. Dispose waste off-site at an approved disposal facility.
 9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE
 1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
 2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
 3. Contain liquid wastes in a controlled area.
 4. Containment must be labeled, sized and placed appropriately for the needs of site.
 5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS
 1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
 2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
 3. Monitor portable toilets for leakage and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT
 1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
 2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
 3. Provide stable stone access point when feasible.
 4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



CONCRETE WASHOUTS
 1. Do not discharge concrete or cement slurry from the site.
 2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
 3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
 4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
 5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
 6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
 7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
 8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
 9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
 10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES
 1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
 2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
 3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
 4. Do not stockpile these materials on-site.

HAZARDOUS AND TOXIC WASTE
 1. Create designated hazardous waste collection areas on-site.
 2. Place hazardous waste containers under cover or in secondary containment.
 3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NGC01 GROUND STABILIZATION AND MATERIALS HANDLING EFFECTIVE: 04/01/19

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION
 Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero". The permittee may use another rain-monitoring device approved by the Division.
(2) E&S measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measures, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outlets (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outlets inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Visible sedimentation in or around site limits, then a record of the following shall be made: a. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands on-site (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item 2(c) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&S measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or reinstallation of permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING
 1. **E&S Plan Documentation**
 The approved E&S plan as well as any approved deviation shall be kept on the site. The approved E&S plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&S plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&S measure has been installed and does not significantly deviate from the approved E&S plan.	Initial and date each E&S measure on a copy of the approved E&S plan or complete, date and sign an inspection report that lists each E&S measure shown on the approved E&S plan. This documentation is required upon the initial installation of the E&S measures or if the E&S measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&S plan.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&S measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&S measures.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. **Additional Documentation to be Kept on Site**
 In addition to the E&S plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- This General Permit as well as the Certificate of Coverage, after it is received.
- Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. **Documentation to be Retained for Three Years**
 All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. **Occurrences that Must be Reported**
 Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
- Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

2. **Reporting Timeframes and Other Requirements**
 After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 2(b)-(c) above	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses (40 CFR 122.41(m)(3))	<ul style="list-style-type: none"> A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass. Within 24 hours, an oral or electronic notification.
(d) Unanticipated bypasses (40 CFR 122.41(m)(3))	<ul style="list-style-type: none"> Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass. Within 24 hours, an oral or electronic notification.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment (40 CFR 122.41(j)(7))	<ul style="list-style-type: none"> Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. (40 CFR 122.41(j)(6)). Division staff may waive the requirement for a written report on a case-by-case basis.



NGC01 SELF-INSPECTION, RECORDKEEPING AND REPORTING EFFECTIVE: 04/01/19

PART II, SECTION 6, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- The E&S plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&S plan authority has approved these items.
- The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item 2(c) and (d) of this permit.
- Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems.
- Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in item (c) above.
- Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
- Sediment removed from the dewatering treatment devices described in item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

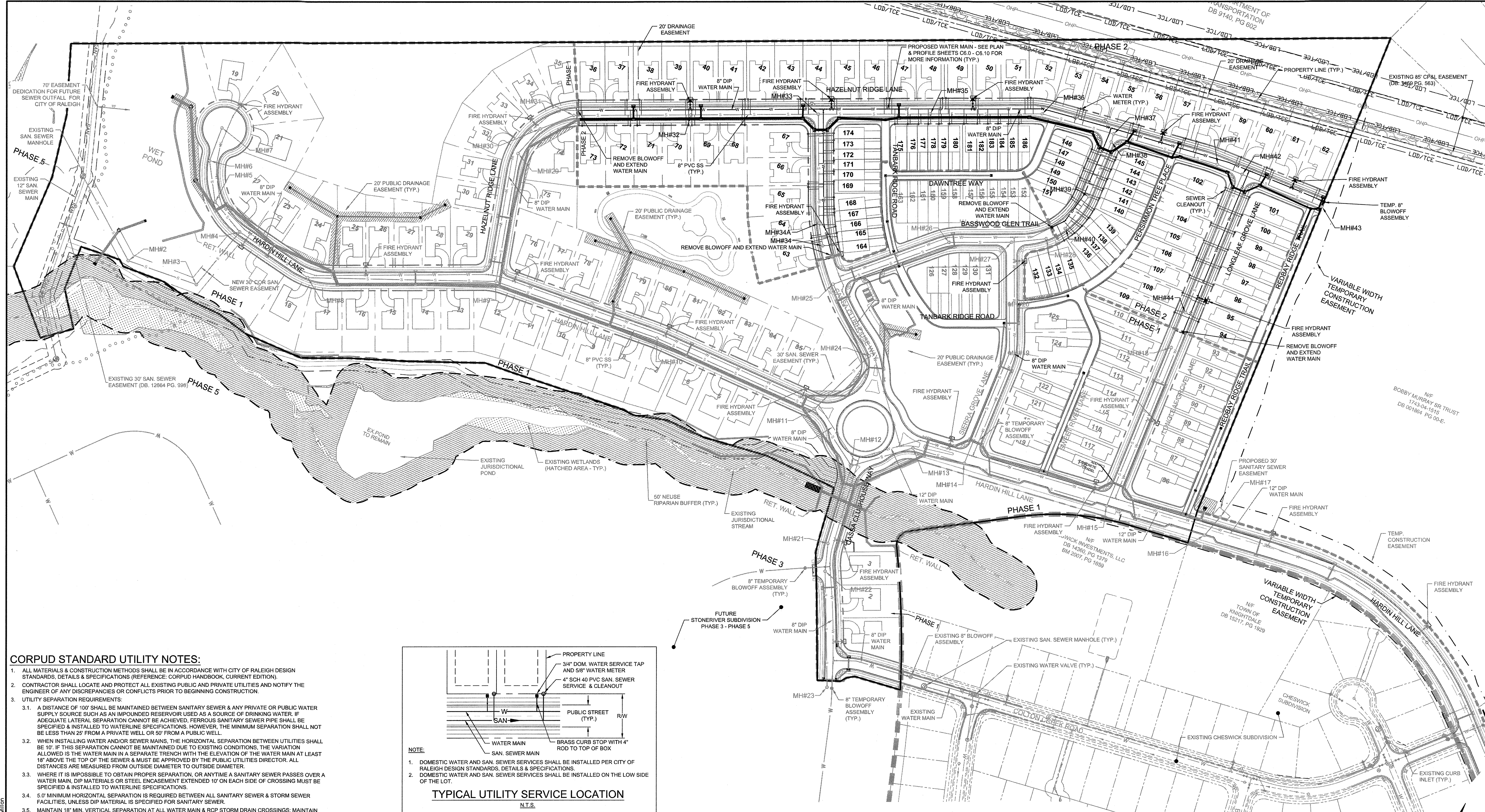
REVISION DESCRIPTION	DATE
	09/11/2018

DRAWN BY	331
DESIGNED BY	331
CHECKED BY	JFC
SCALE	PER PLAN

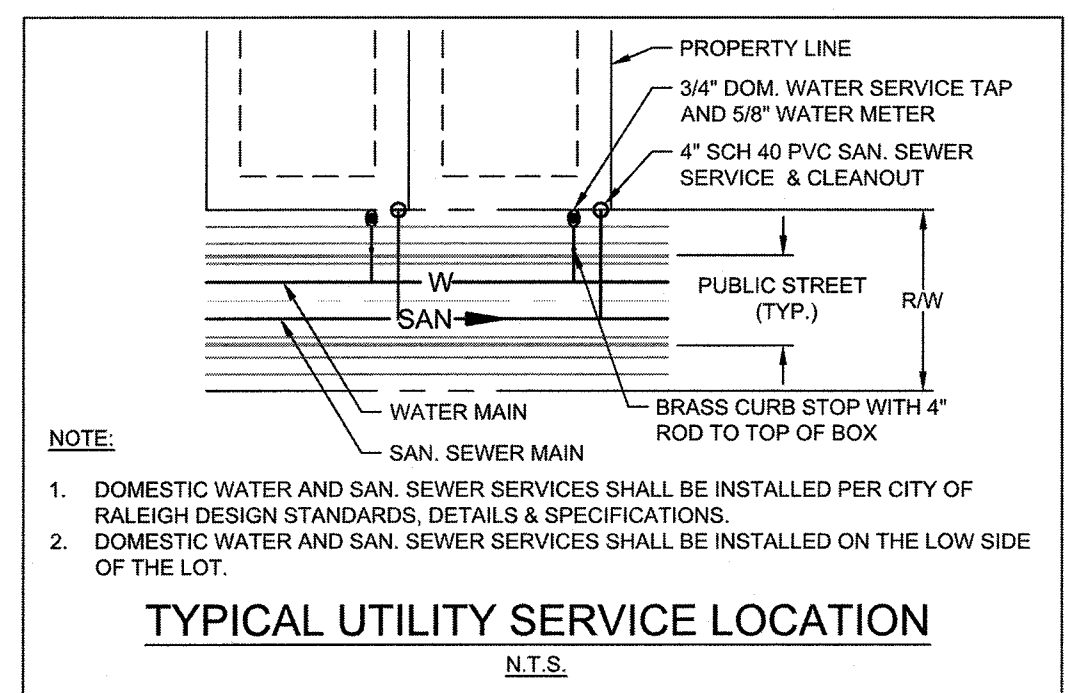
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STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
EROSION CONTROL NCG01 NOTES SHEET
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- CORPUD STANDARD UTILITY NOTES:**
- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION).
 - CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING PUBLIC AND PRIVATE UTILITIES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
 - UTILITY SEPARATION REQUIREMENTS:
 - A DISTANCE OF 10' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL, OR 50' FROM A PUBLIC WELL.
 - WHEN INSTALLING WATER AND/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
 - WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATER MAIN, DIP MATERIALS OR STEEL ENCASUREMENT EXTENDED 10" ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
 - 5' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
 - MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATER MAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE GRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49).
 - ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
 - ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
 - CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24-HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
 - 3.0" MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS.
 - IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.
 - INSTALL 1" TYPE "K" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT.
 - INSTALL 4" SCHEDULE 40 PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
 - PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
 - ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE AND/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
 - NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
 - CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
 - ALL PROPOSED WATER PIPES SHALL HAVE MECHANICAL RESTRAINED JOINTS. THESE RESTRAINTS SHALL NOT BE IN LIEU OF BUT IN ADDITION TO CONCRETE THRUST RESTRAINT BLOCKS REQUIRED BY COR STANDARD DETAILS.



LEGEND

EXISTING WETLANDS		DRAWING LEGEND	
STORMWATER EASEMENT		SEWER	— S — S — PROPOSED SANITARY SEWER
PROPOSED SIDEWALK			○ SANITARY MANHOLE
100-YR FLOODPLAIN		WATER	— W — W — EXISTING WATER LINE
EXISTING WETLAND BUFFER			— W — W — PROPOSED WATER LINE
50' NEUSE RIPARIAN BUFFER			— W — W — WATER VALVE
PROPERTY LINE			● FIRE HYDRANT
PHASE LINE			○ BLOWOFF ASSEMBLY
EXISTING SS EASEMENT			○ 3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
PROPOSED SS EASEMENT			— 4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
		STORM DRAINAGE	— S — S — STORM DRAINAGE
			□ STORM JUNCTION BOX
			□ CURB INLET
			□ DROP INLET



Water and Sewer Permits (if applicable)

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-4454R

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-3556R

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # _____

Lorea M Sample

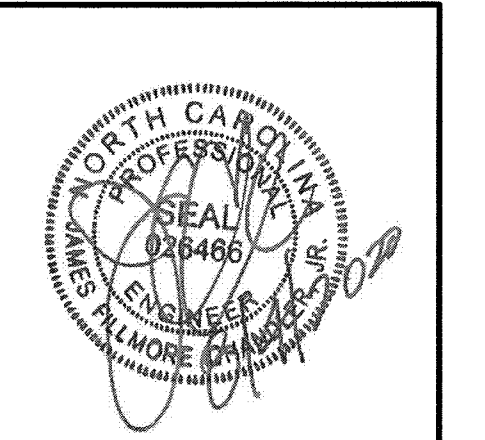
TOWN CERTIFICATION

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BY: *SAMM* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *LMS* DATE: 8-18-2020
ADMINISTRATOR



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TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

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DATE	09/04/2020
DATE	09/11/2018
DRAWN BY	331
DESIGNED BY	331
CHECKED BY	JFC
SCALE	PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1552

STONERIVER SUBDIVISION PHASE 2

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

OVERALL UTILITY PLAN

JOB NO.	37909
SHEET NO.	C5.0

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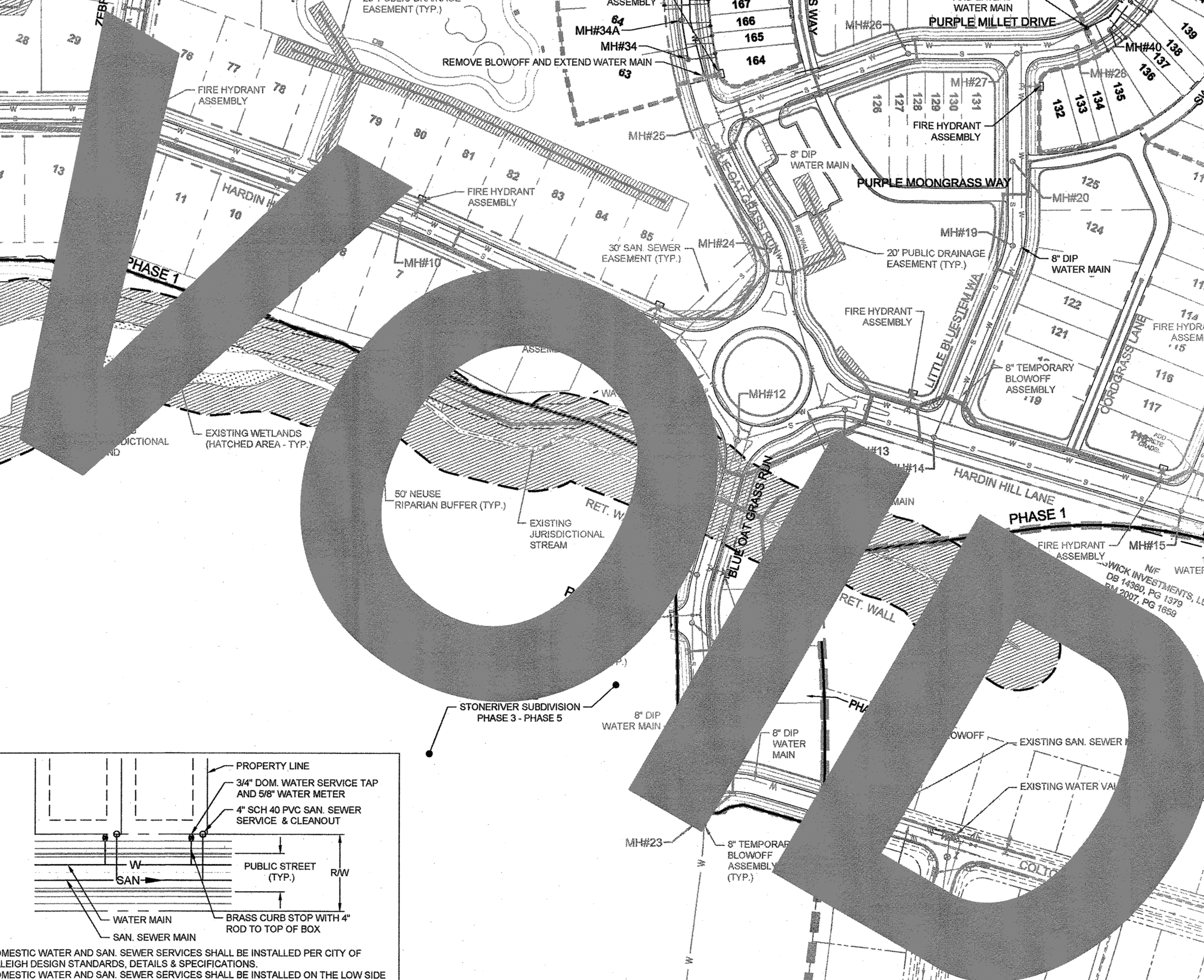
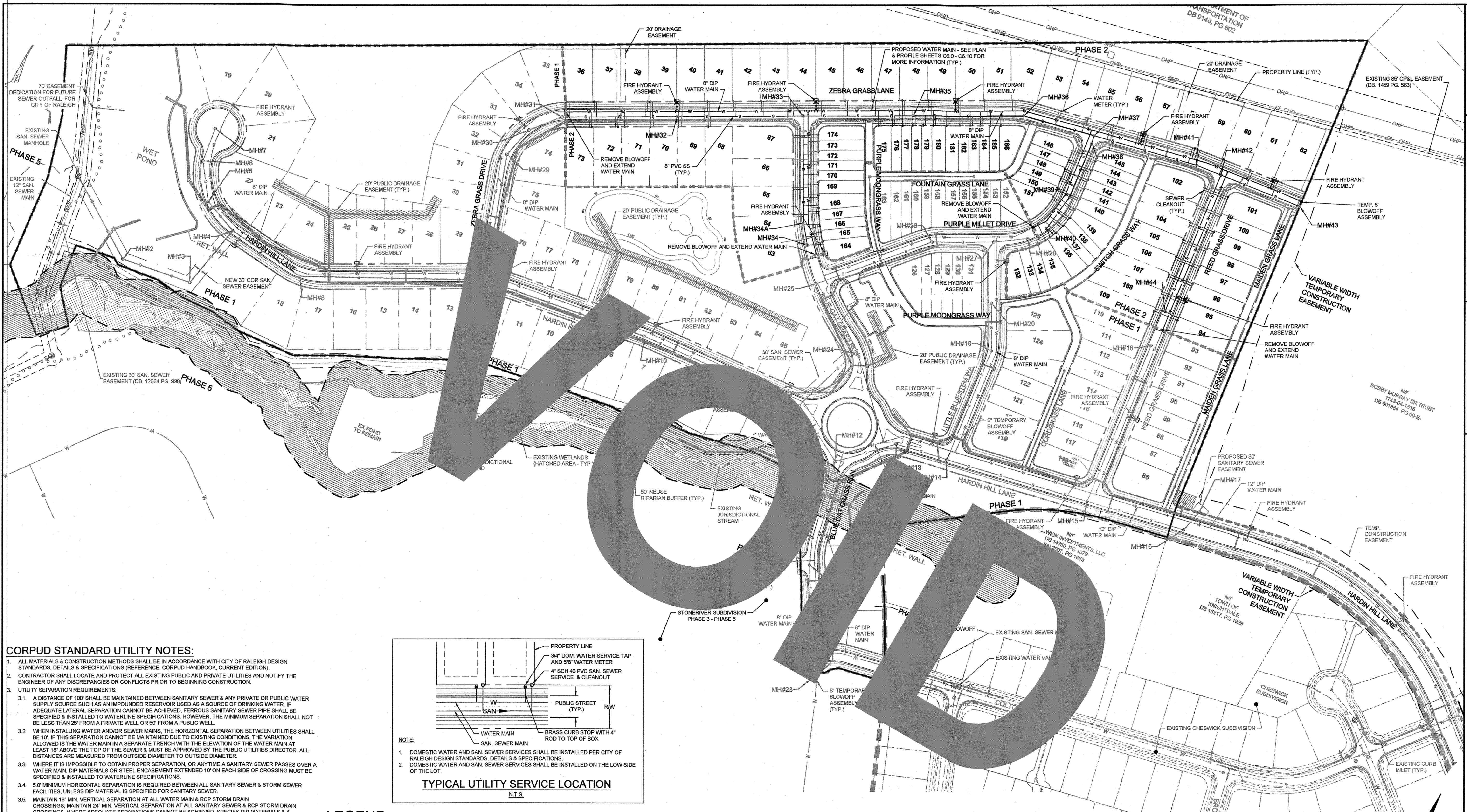
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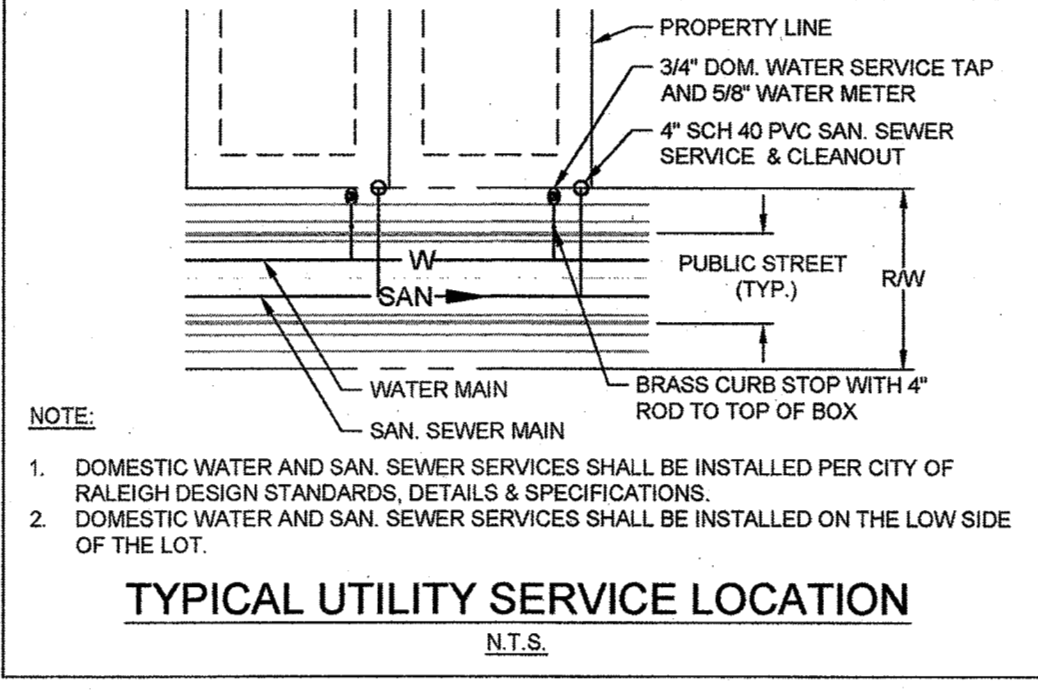
DATE
09/11/2018
DRAWN BY
331
DESIGNED BY
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PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
OVERALL UTILITY PLAN

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *[Signature]* DATE: 10-24-2018
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *[Signature]* DATE: 10-26-18
ADMINISTRATOR



- CORPUS STANDARD UTILITY NOTES:**
- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUS HANDBOOK, CURRENT EDITION).
 - CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING PUBLIC AND PRIVATE UTILITIES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
 - UTILITY SEPARATION REQUIREMENTS:
 - A DISTANCE OF 10' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
 - WHEN INSTALLING WATER AND/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
 - WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER CROSSING OVER A WATER MAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
 - 5' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
 - MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATER MAIN & RCP STORM DRAIN CROSSINGS. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUS DETAILS W-41 & S-49).
 - ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
 - ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
 - CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24-HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
 - 3' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS.
 - IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUS HANDBOOK PROCEDURE.
 - INSTALL 1" TYPE "K" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'x2' WATERLINE EASEMENT IMMEDIATELY ADJACENT.
 - INSTALL 4" SCHEDULE 40 PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
 - PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
 - ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWM, USACE AND/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
 - NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
 - CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
 - ALL PROPOSED WATER PIPES SHALL HAVE MECHANICAL RESTRAINED JOINTS. THESE RESTRAINTS SHALL NOT BE IN LIEU OF BUT IN ADDITION TO CONCRETE THRUST RESTRAINT BLOCKS REQUIRED BY CORPUS STANDARD DETAILS.



LEGEND

EXISTING WETLANDS	
STORMWATER EASEMENT	
PROPOSED SIDEWALK	
100-YR FLOODPLAIN	
EXISTING WETLAND BUFFER	
50' NEUSE RIPARIAN BUFFER	
PROPERTY LINE	
PHASE LINE	
EXISTING SS EASEMENT	
PROPOSED SS EASEMENT	

DRAWING LEGEND

SEWER		PROPOSED SANITARY SEWER
		SANITARY MANHOLE
WATER		EXISTING WATER LINE
		PROPOSED WATER LINE
		WATER VALVE
		FIRE HYDRANT
		BLOWOFF ASSEMBLY
		3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
		4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE		STORM DRAINAGE
		STORM JUNCTION BOX
		CURB INLET
		DROP INLET

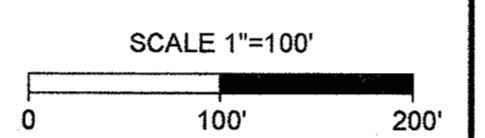
Public Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh
Public Utilities Department Permit # *W-3557*
Authorization to Construct *[Signature]*
Date *9/26/18*

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-4455*
Authorization to Construct *[Signature]*
Date *9/26/18*

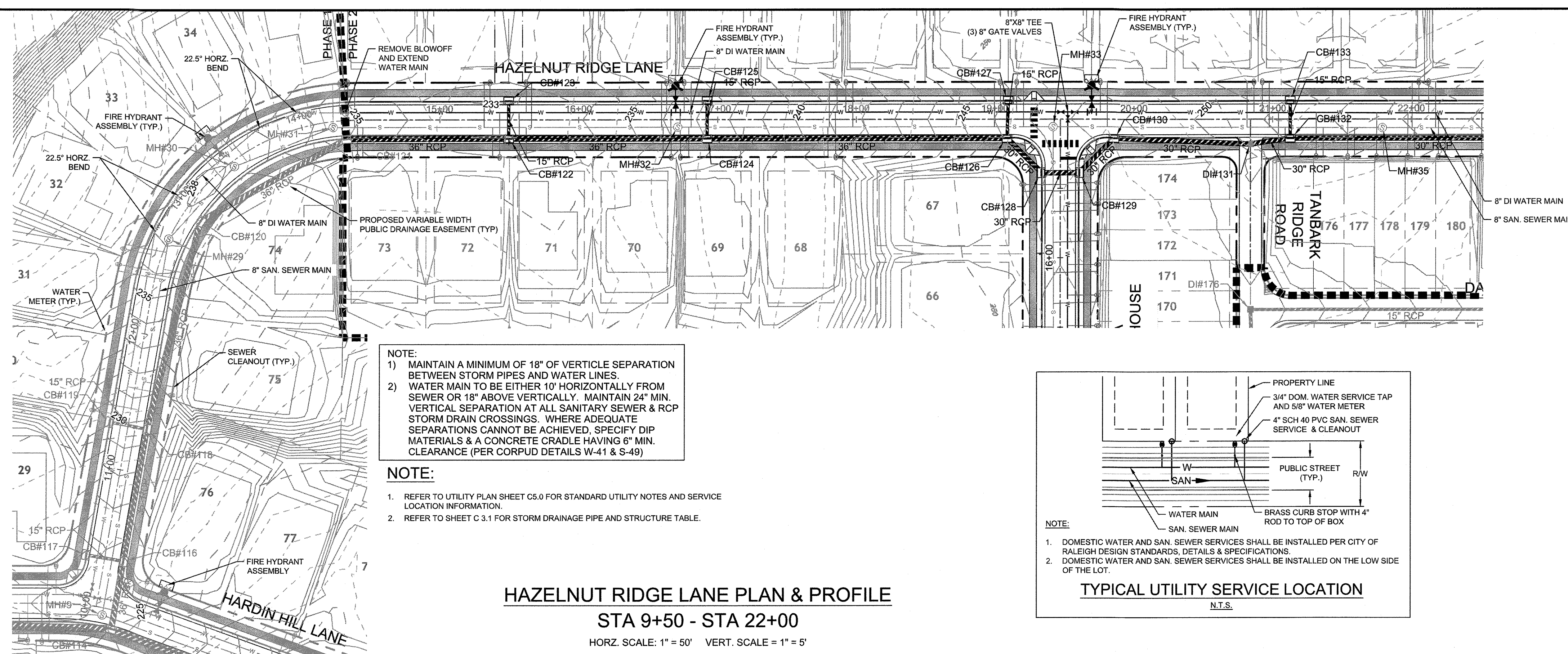


ATTENTION CONTRACTORS
The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.
Failure to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

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *[Signature]* DATE: 10-24-2018
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *[Signature]* DATE: 10-26-18
ADMINISTRATOR

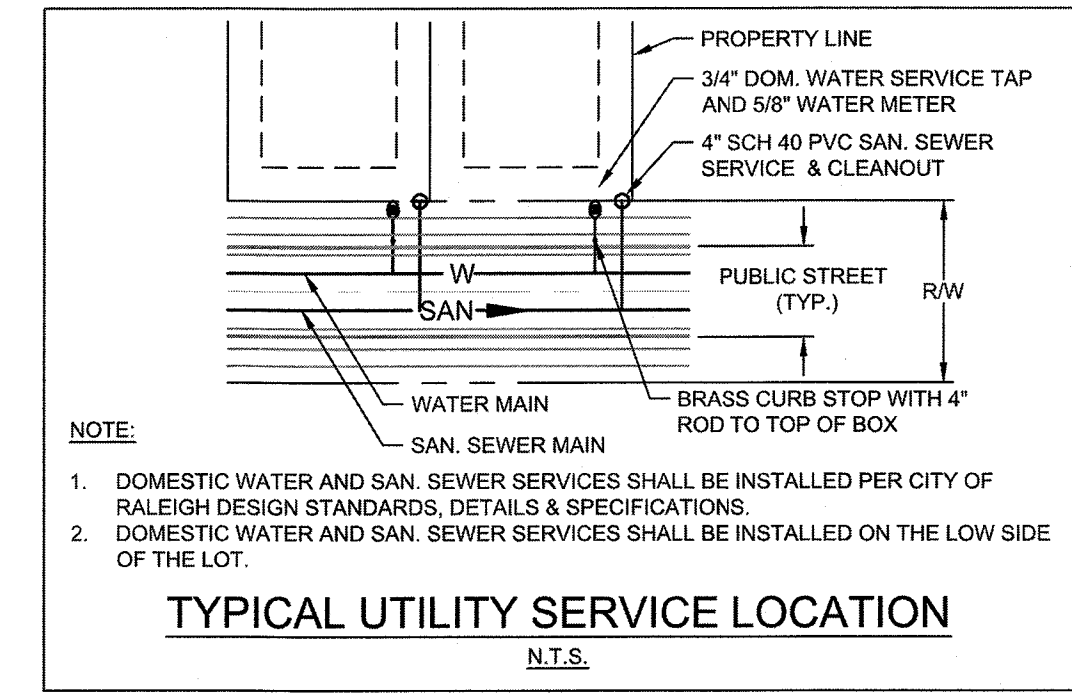


R:\102-37909-Stoneriver-Subdivision-Phase-2\37909-C5.0-UTL.dwg | by Keith Astor



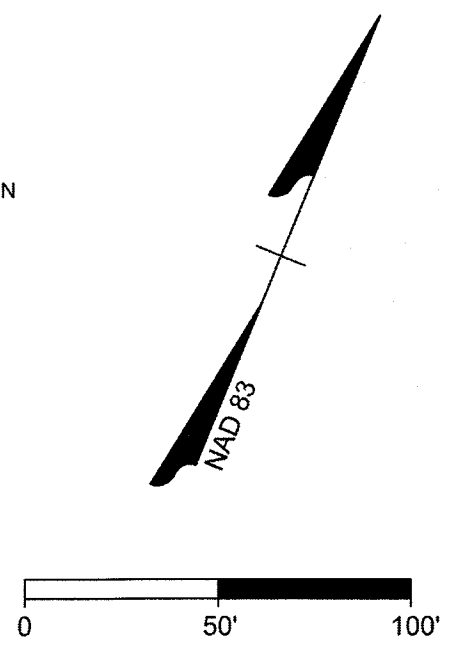
NOTE:
 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49).

NOTE:
 1. REFER TO UTILITY PLAN SHEET C6.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

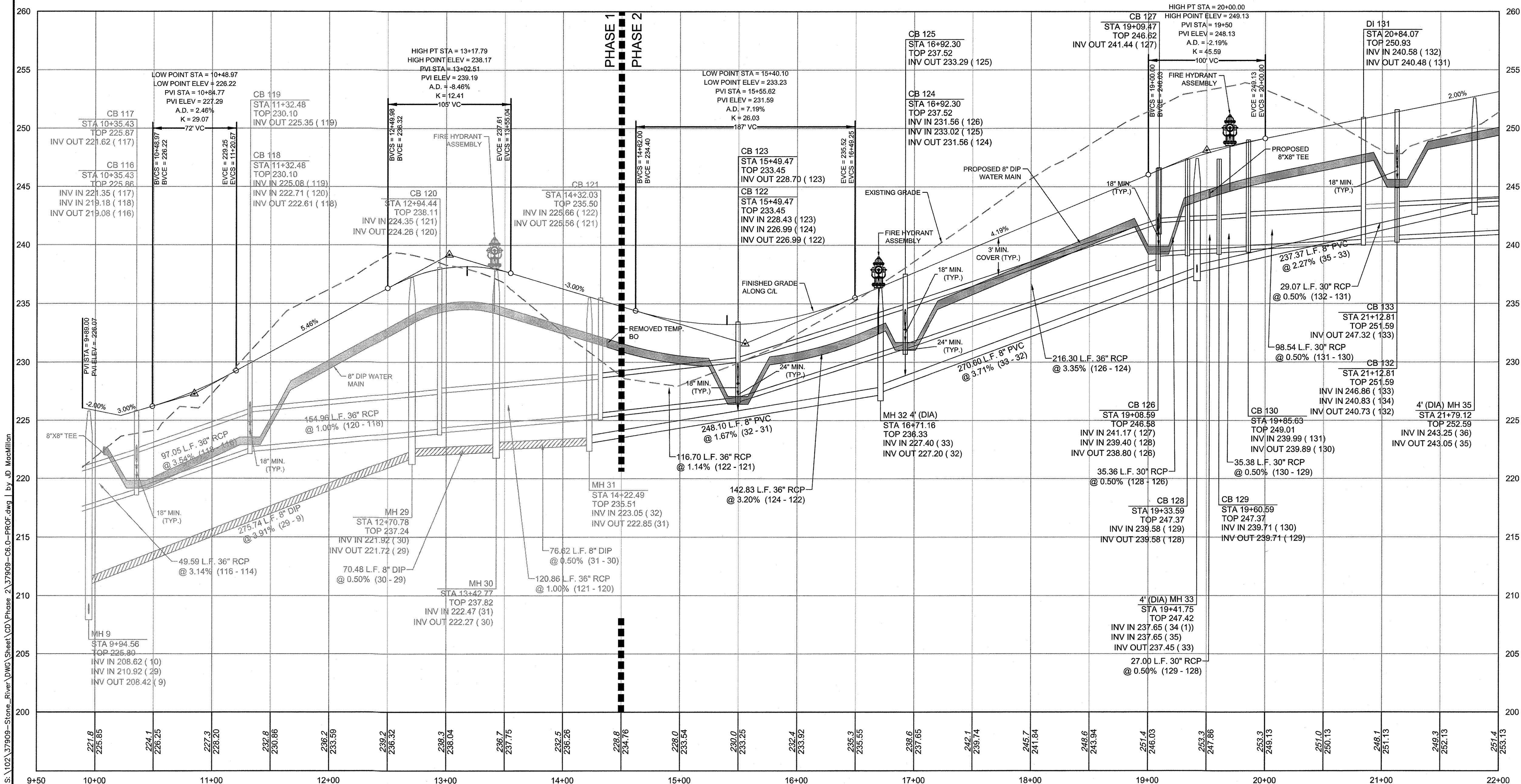


NOTE:
 1. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED PER CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS.
 2. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED ON THE LOW SIDE OF THE LOT.

HAZELNUT RIDGE LANE PLAN & PROFILE
STA 9+50 - STA 22+00
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



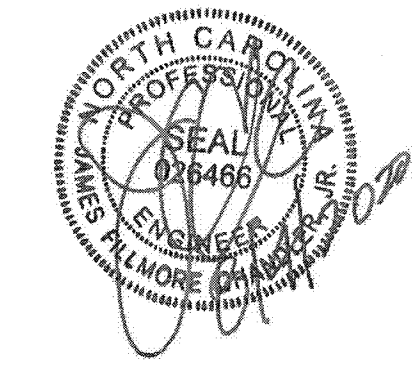
DRAWING LEGEND	
SEWER	
	PROPOSED SANITARY SEWER
	SANITARY MANHOLE
WATER	
	EXISTING WATER LINE
	PROPOSED WATER LINE
	WATER VALVE
	FIRE HYDRANT
	BLOWOFF ASSEMBLY
	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE	
	STORM DRAINAGE
	STORM JUNCTION BOX
	CURB INLET
	DROP INLET



Water and Sewer Permits (if applicable)
 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-4454R
 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-3556R
 The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 #

Lorea M Sample
 I am approving this document
 2020.09.15 11:18:00 AM

TOWN CERTIFICATION
 THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: *[Signature]* DATE: 8-19-2020
 ADMINISTRATOR



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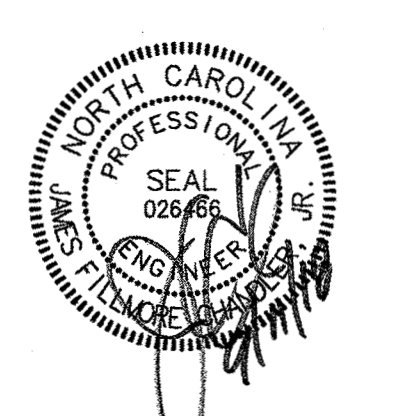
DATE	DATE
04/17/2020	09/11/2018

DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
HAZELNUT RIDGE LANE PLAN & PROFILE

JOB NO.	37909
SHEET NO.	C6.0

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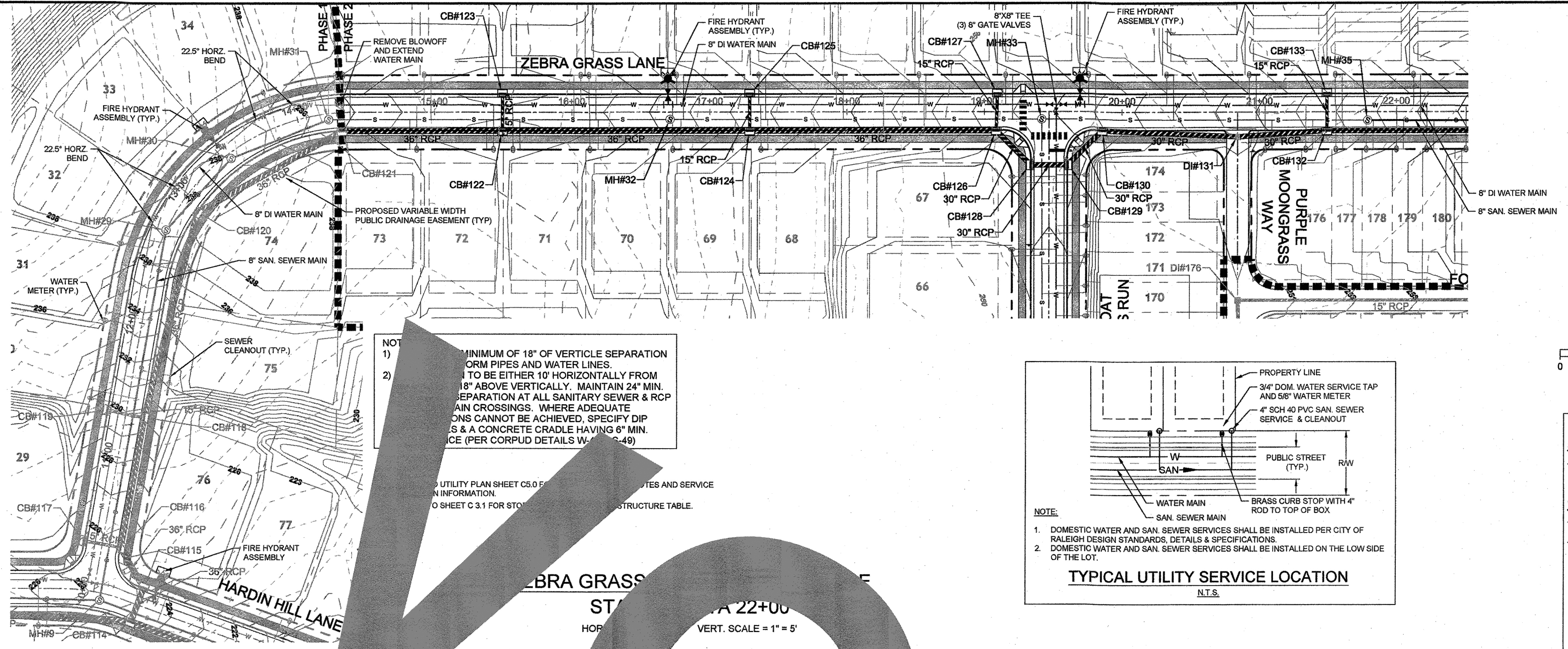
YOUR VISION ACHIEVED THROUGH OURS.

DATE: 09/11/2018
DRAWN BY: 331
DESIGNED BY: 331
CHECKED BY: JFC
SCALE: PER PLAN

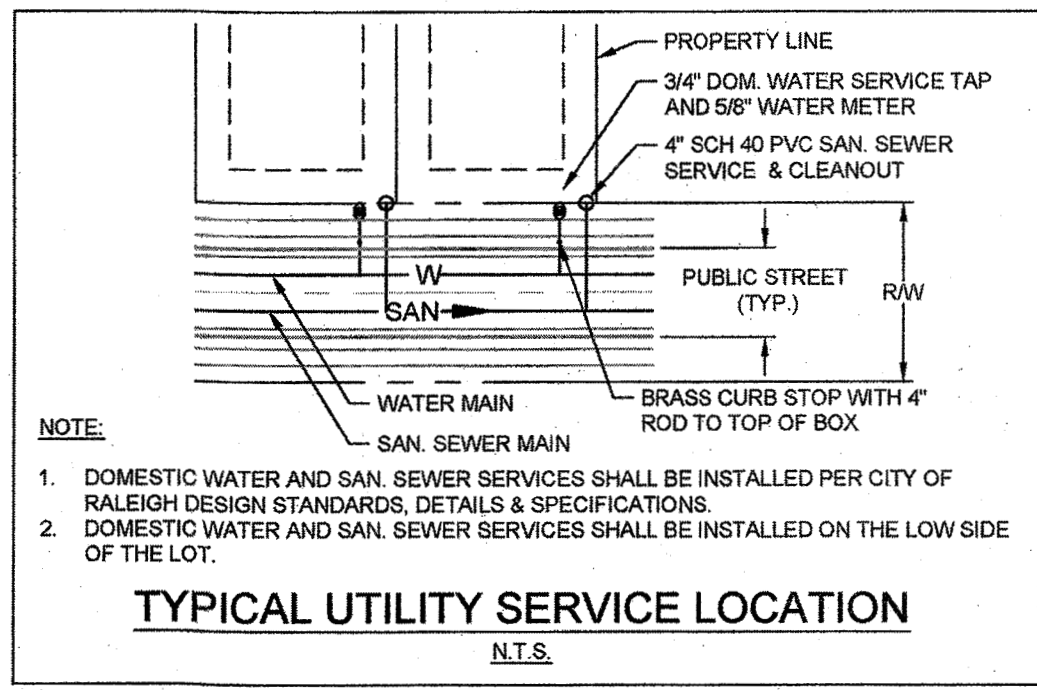
TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
ZEBRA GRASS DRIVE PLAN & PROFILE

JOB NO. 37909
SHEET NO. C6.0

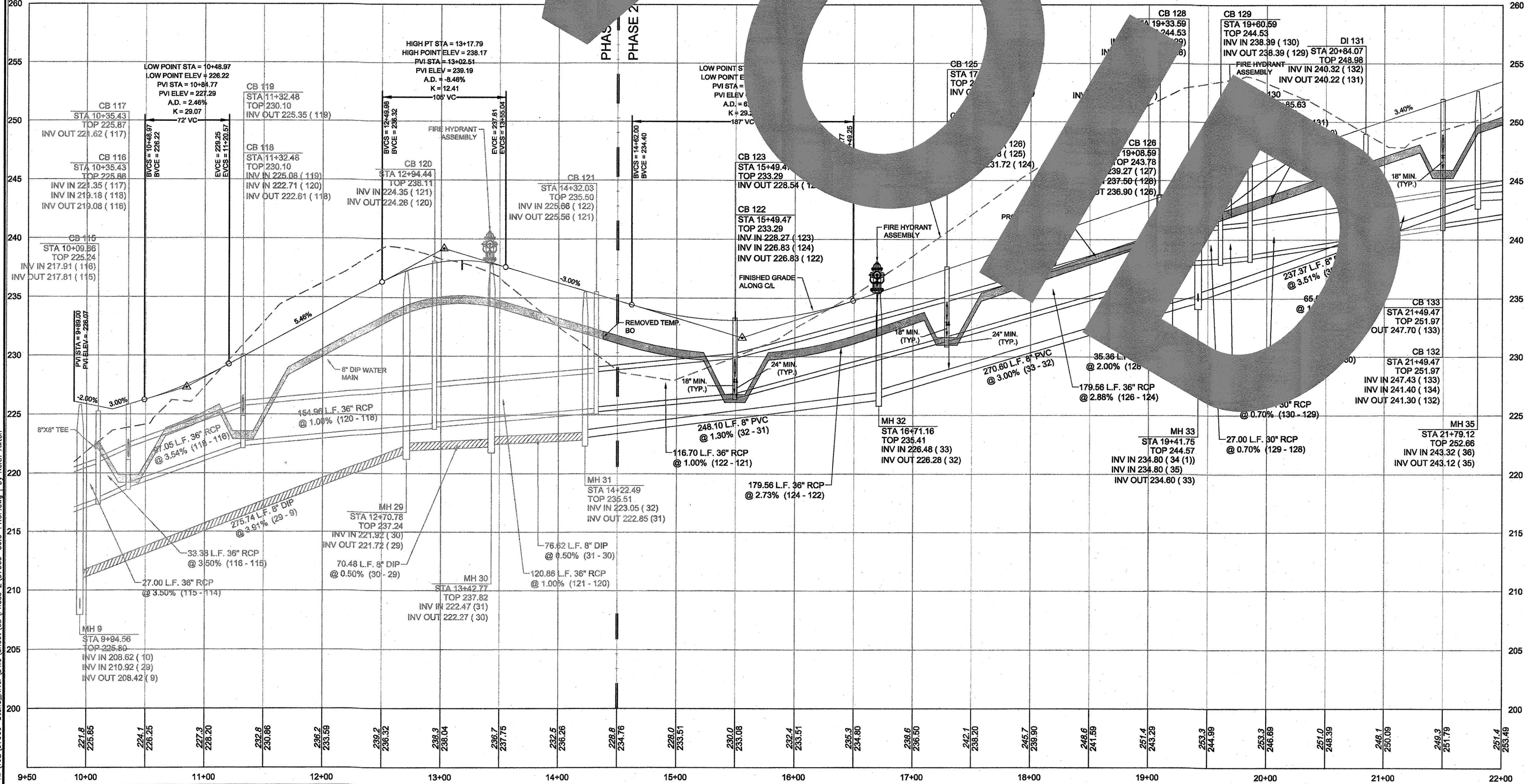


NOT TO SCALE
1) MINIMUM OF 18" OF VERTICAL SEPARATION BETWEEN WATER MAINS AND SANITARY SEWER MAINS.
2) SEPARATION TO BE EITHER 10' HORIZONTALLY FROM THE WATER MAIN OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. SEPARATION AT ALL SANITARY SEWER & RCP MAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP SLOPES & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUS DETAILS W-10-49)



DRAWING LEGEND

	PROPOSED SANITARY SEWER
	SANITARY MANHOLE
	EXISTING WATER LINE
	PROPOSED WATER LINE
	WATER VALVE
	FIRE HYDRANT
	BLOWOFF ASSEMBLY
	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
	STORM DRAINAGE
	STORM JUNCTION BOX
	CURB INLET
	DROP INLET



ATTENTION CONTRACTORS
The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4549 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 Sewer Collection / Extension System
The City of Raleigh consents to the construction 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 # 5-4155
Authorization to Construct
Date 9/26/18

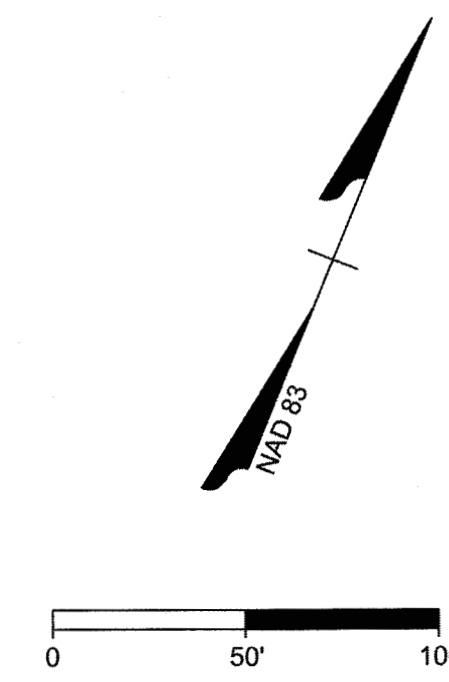
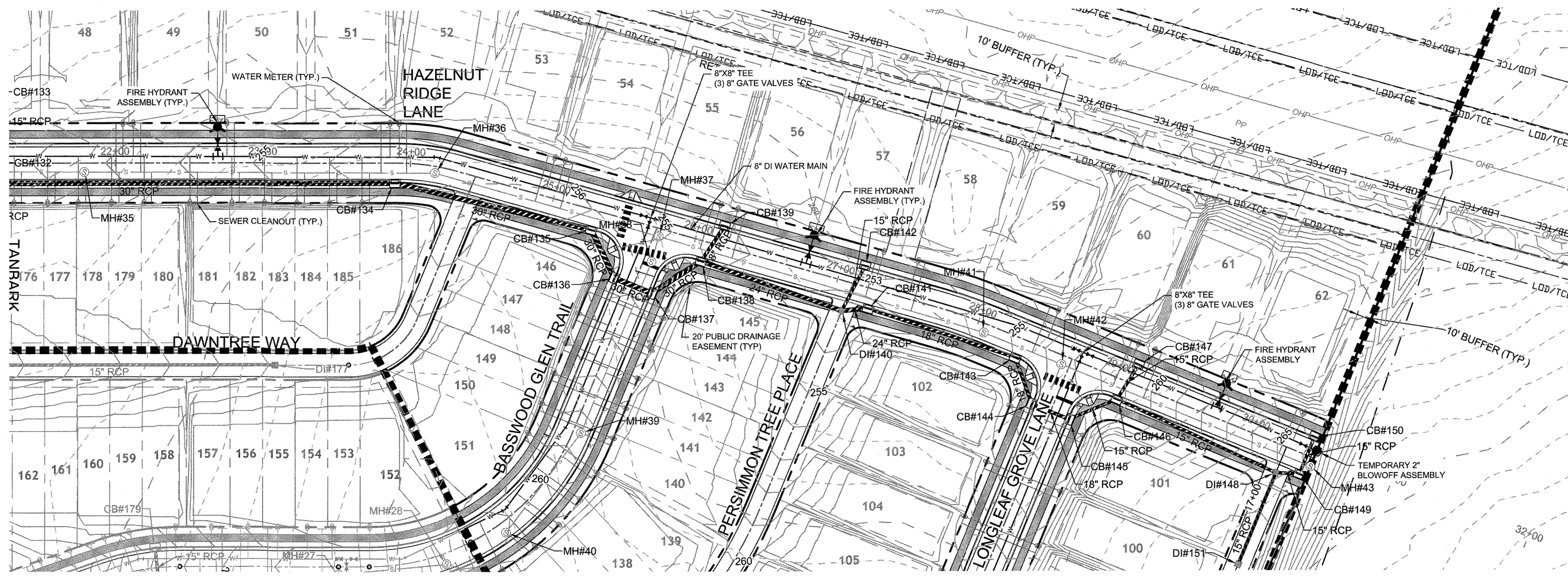
Public Water Distribution / Extension System
The City of Raleigh consents to the construction and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities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

City of Raleigh
Public Utilities Department Permit # W-3557
Authorization to Construct
Date 9/26/18

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: [Signature] DATE: 10-26-18
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: [Signature] DATE: 10-26-18
ADMINISTRATOR

R:\024\37909-Stoneriver\DWG\Sheet\CD\Phase 2\37909-C6.0-PROF.dwg | by: Keith Axton



Water and Sewer Permits (if applicable)

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-4454R

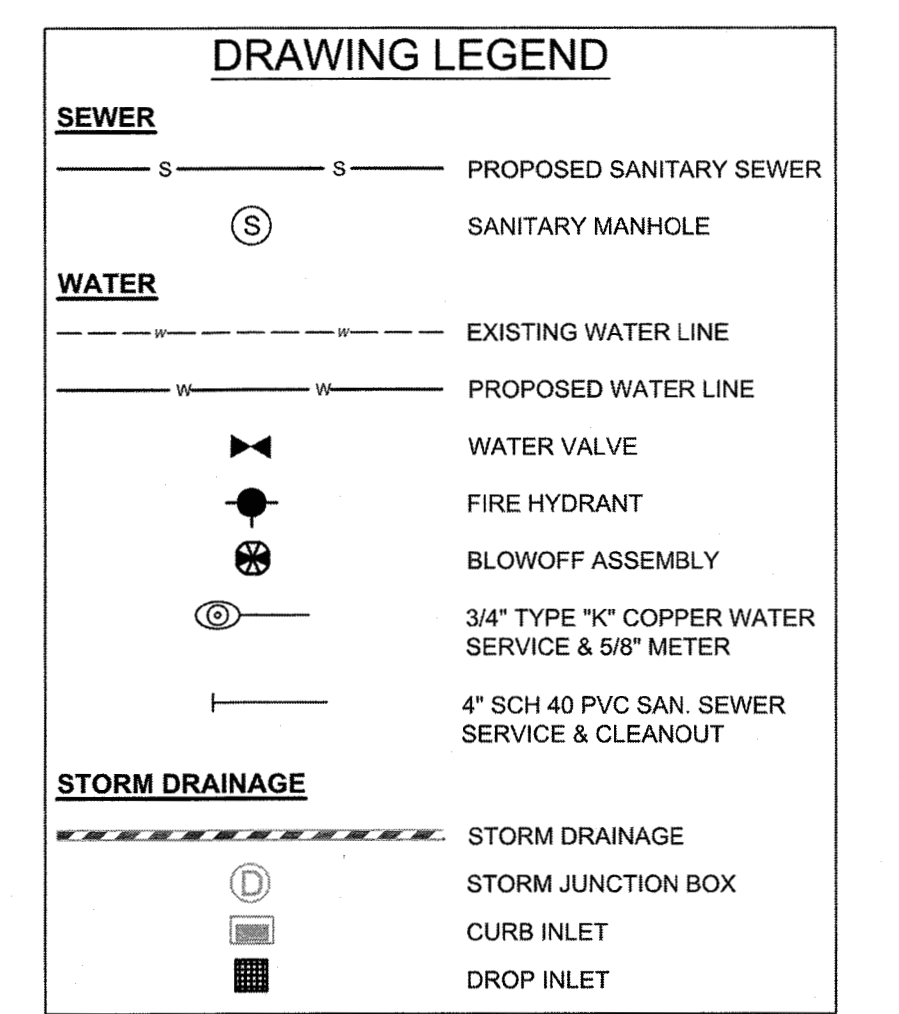
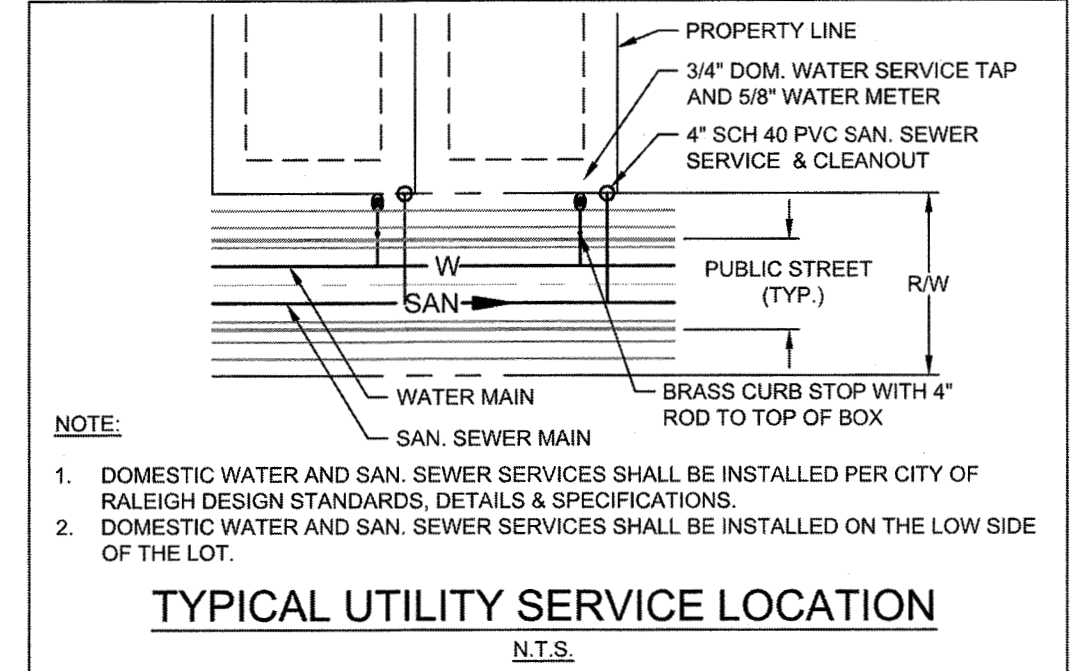
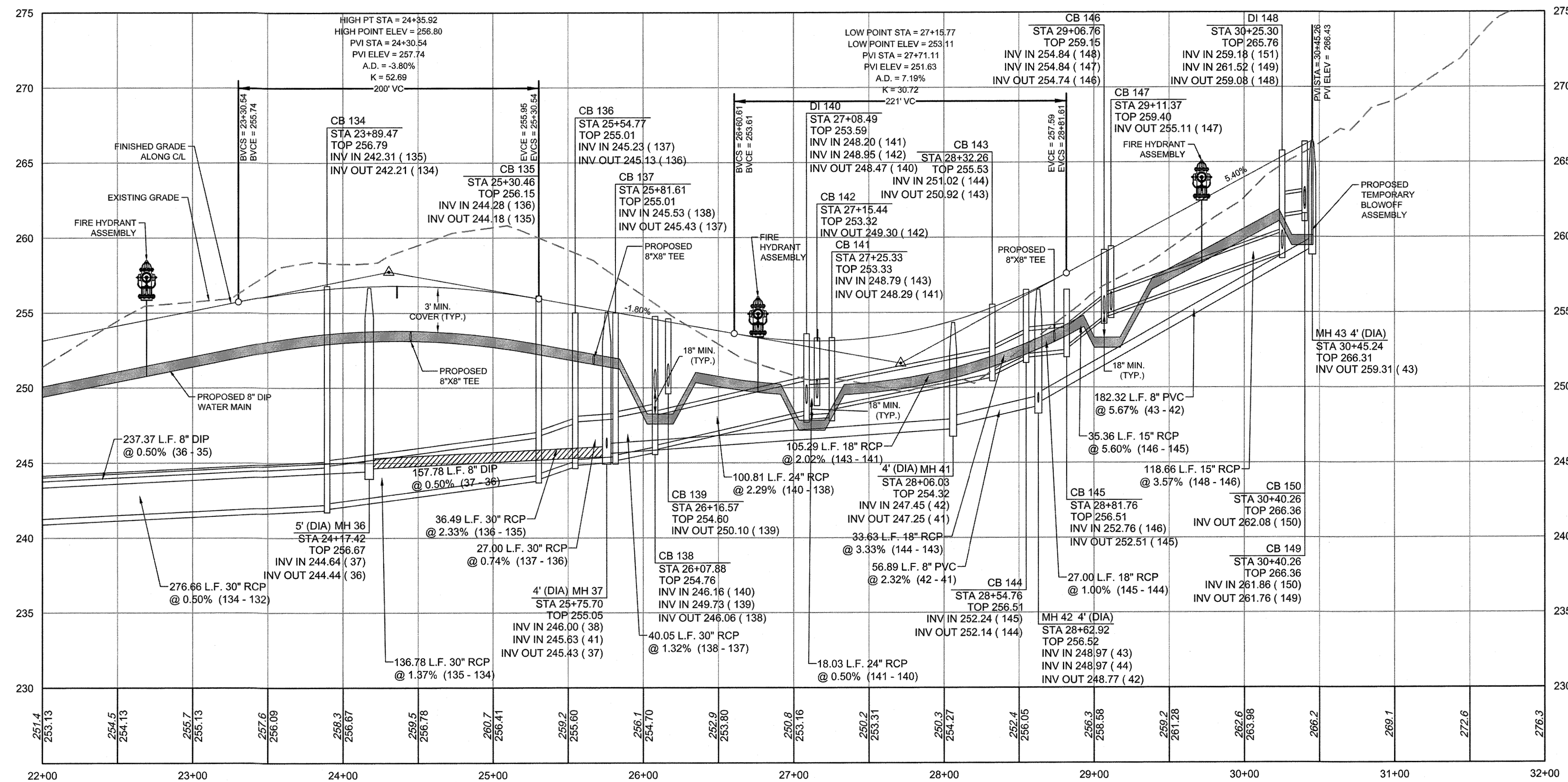
The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3556R

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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-4454R

Approved by: Lorea M Sample
 Date: 09/11/2018
 Title: Development Review Group, Civil/Storm Water Engineer
 License No. 000008131119240407

HAZELNUT RIDGE LANE PLAN & PROFILE
STA 22+00 - STA 30+75
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



NOTE:
 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)

NOTE:
 1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

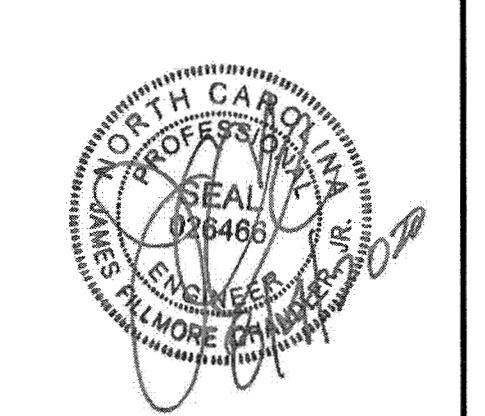
TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

By: *[Signature]* DATE: 8/21/2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

By: *[Signature]* DATE: 8/18/2020
 ADMINISTRATOR



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 TEL: 919.866.4951 FAX: 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
UTILITY REVISIONS	08/17/2020
GRADING AND UTILITY REVISIONS	08/04/2020

DATE	09/11/2018
DRAWN BY	331
DESIGNED BY	331
CHECKED BY	JFC
SCALE	PER PLAN

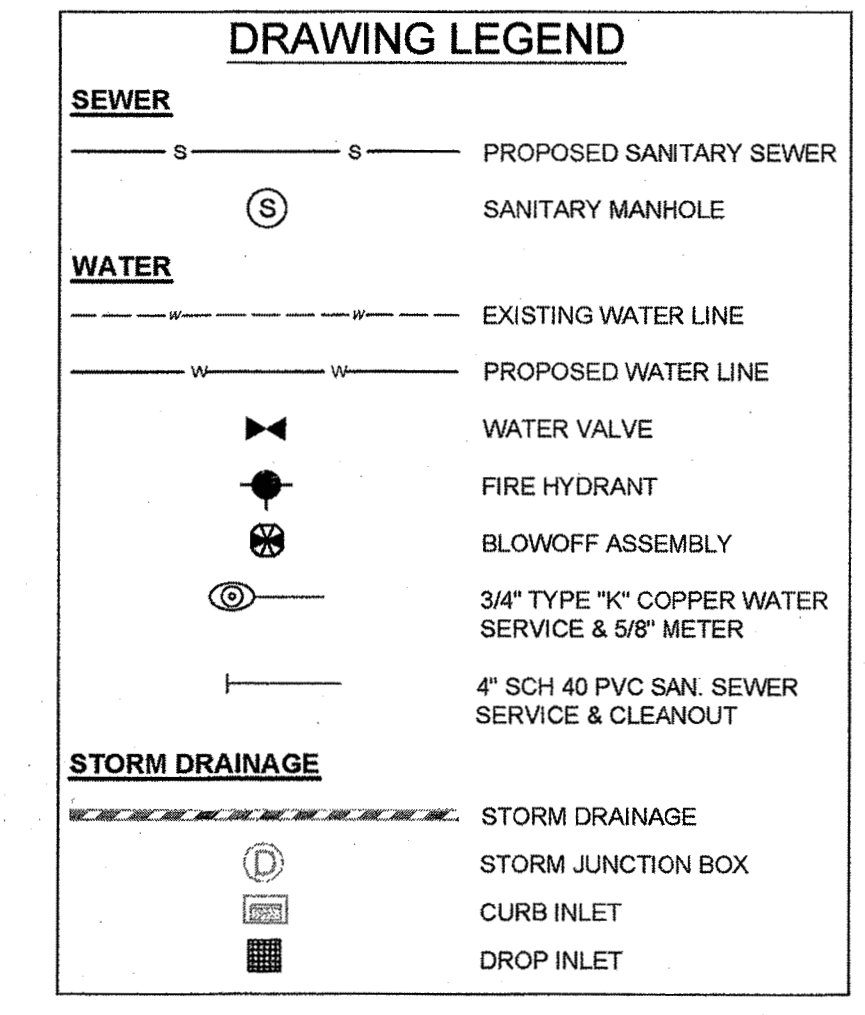
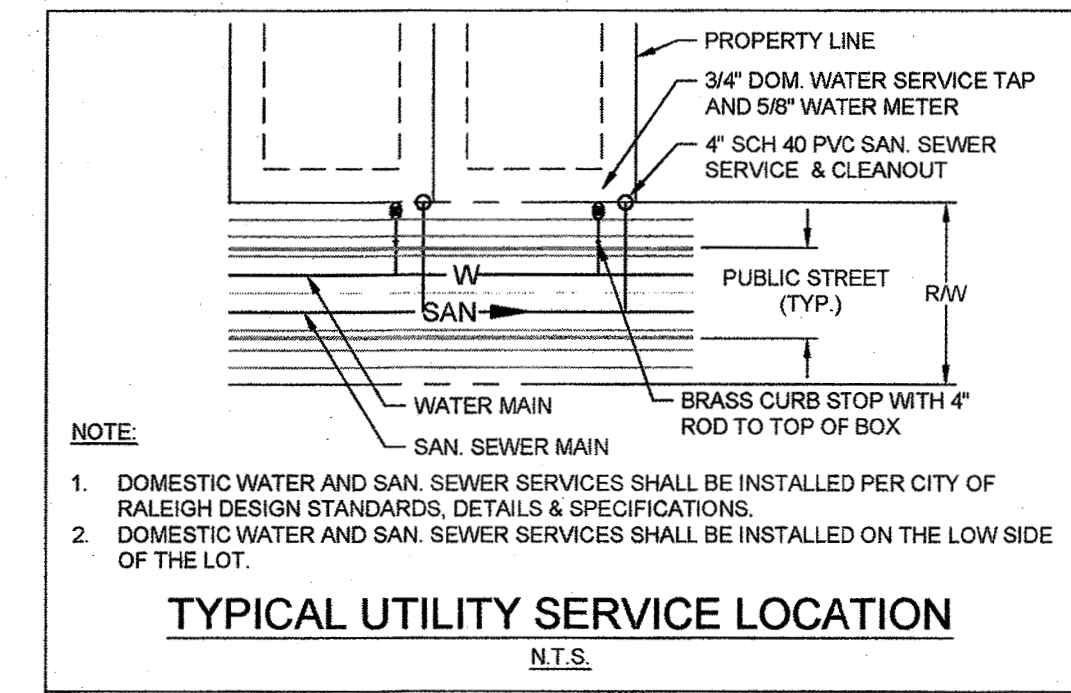
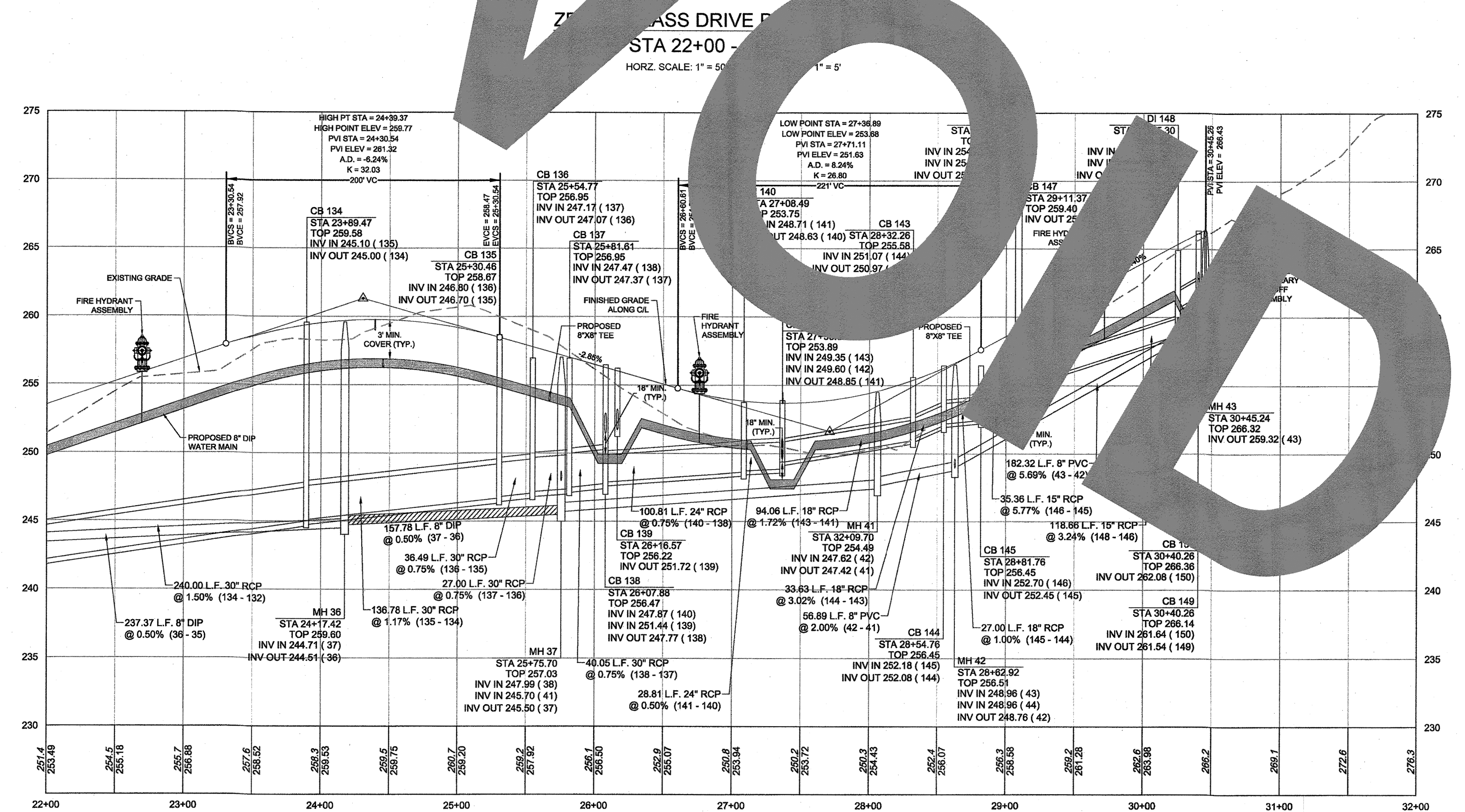
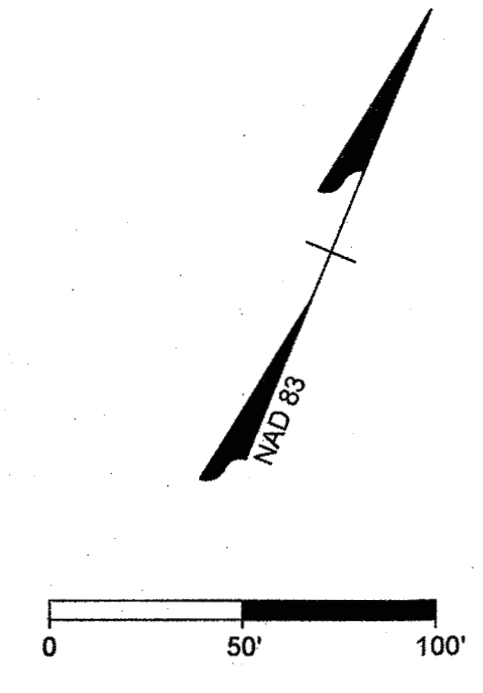
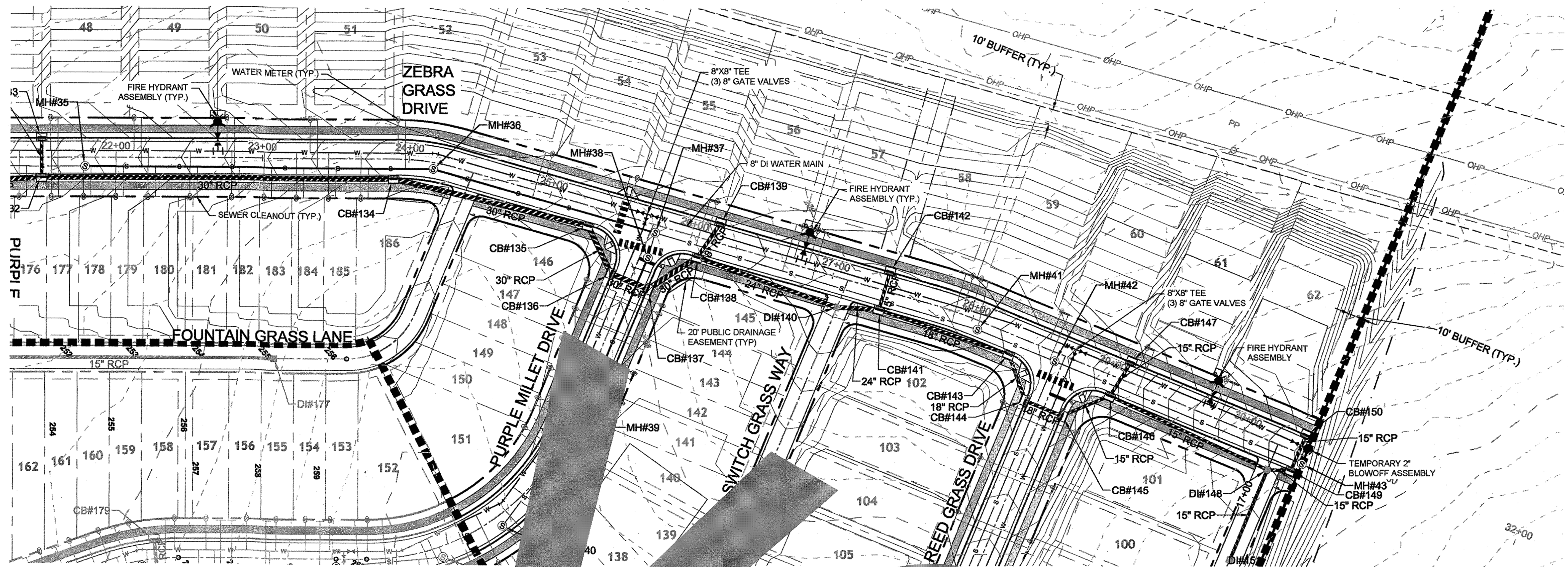
TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

HAZELNUT RIDGE LANE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C6.1

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NOTE:
 1) MAINTAIN A MINIMUM OF 18" OF VERTICAL SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49).

NOTE:
 1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 2. REFER TO SHEET C 3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

ATTENTION CONTRACTORS
 The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-1540 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 installation 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 No. 3357
 Authorization to Construct
 Date: 10/21/18

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 No. 3415
 Authorization to Construct
 Date: 10/21/18

TOWN CERTIFICATION
 THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: S. McAllister DATE: 10-21-2018
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: [Signature] DATE: 10-26-18
 ADMINISTRATOR



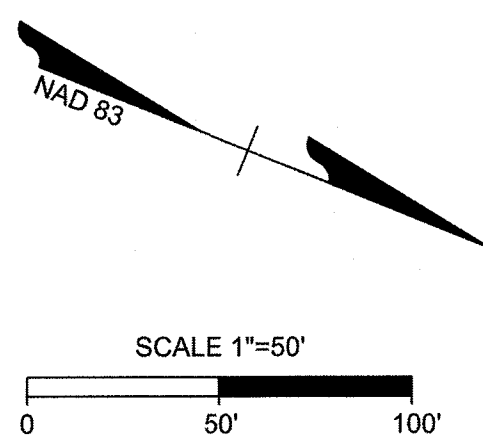
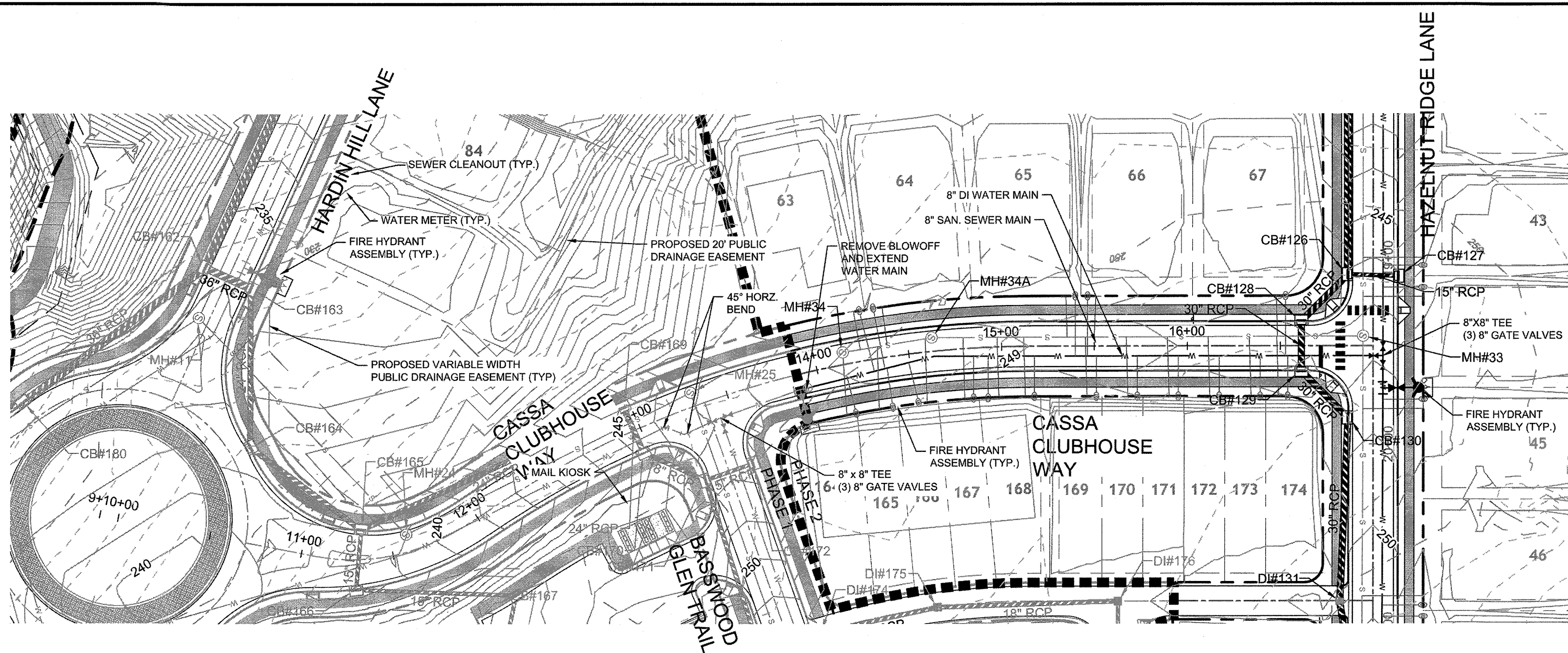
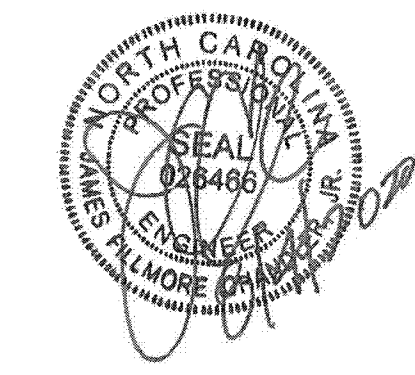
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 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.966.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.
 DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

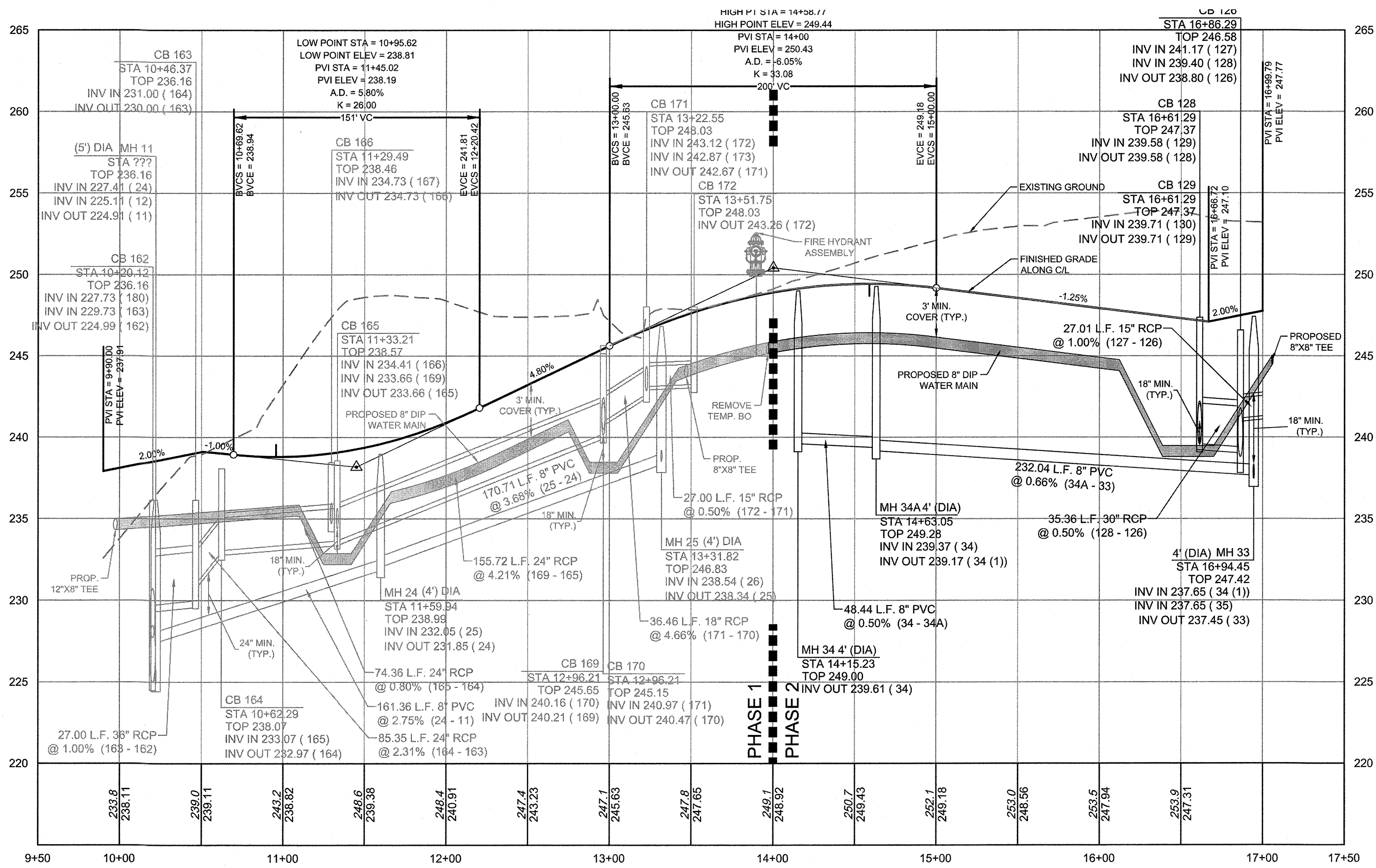
TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
ZEBRA GRASS DRIVE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C6.1

R:\02\37909-Stone_River\DWG\Sheet\CD\Phase 2\37909-C6.0-PROF.dwg | by Keith Axton



CASSA CLUBHOUSE WAY PLAN & PROFILE
STA 9+50 - STA 17+50
HORIZ. SCALE: 1" = 50' VERT. SCALE = 1" = 5'



Water and Sewer Permits (if applicable)

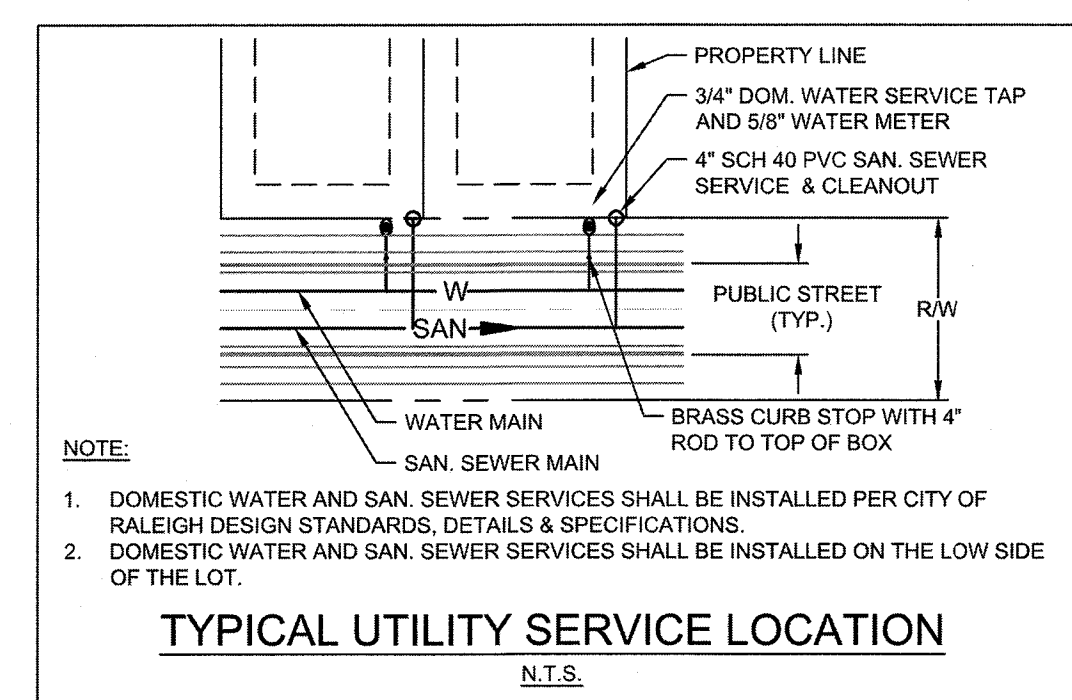
The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # S-4454R

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-3556R

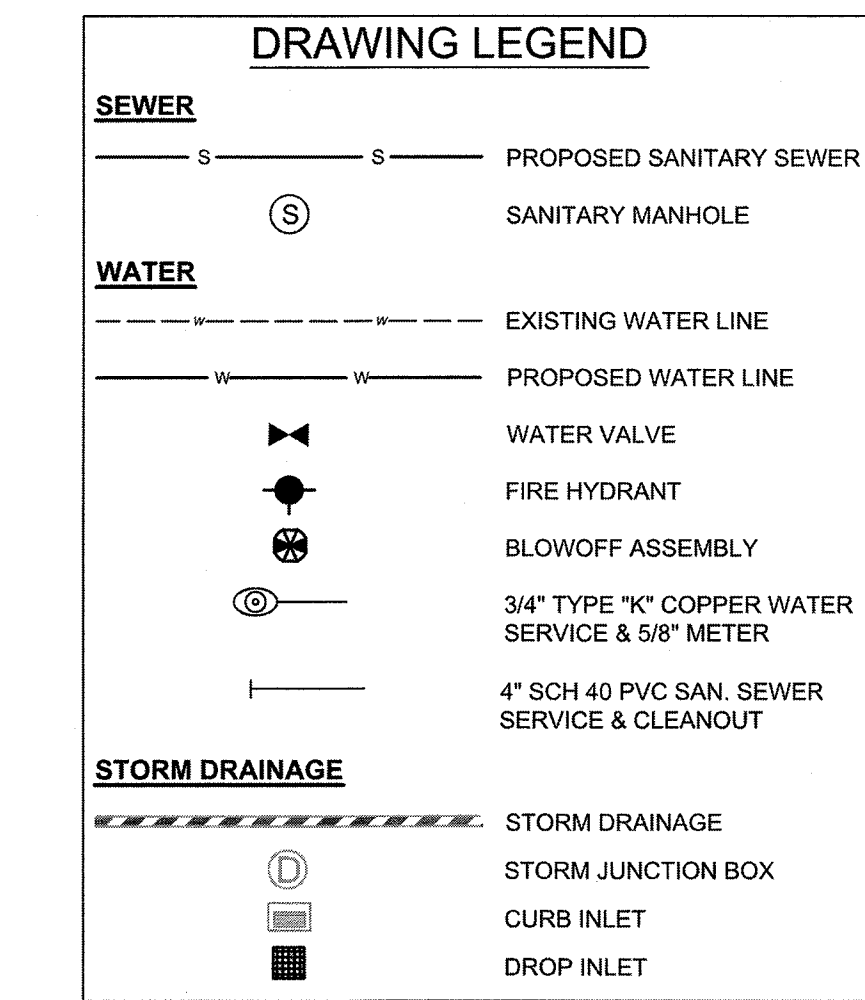
The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit #

Lorea M Sample
City Engineer
5410 Trinity Road, Raleigh, NC 27607
TEL 919.866.4931 FAX 919.953.8124 www.timmons.com



- NOTE: 1. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED PER CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS. 2. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED ON THE LOW SIDE OF THE LOT.



- NOTE: 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES. 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 8" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)

- NOTE: 1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION. 2. REFER TO SHEET C 3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *[Signature]* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *[Signature]* DATE: 8-18-2020
ADMINISTRATOR

THIS DRAWING PREPARED AT THE RALEIGH OFFICE
5410 Trinity Road, Raleigh, NC 27607
TEL 919.866.4931 FAX 919.953.8124 www.timmons.com

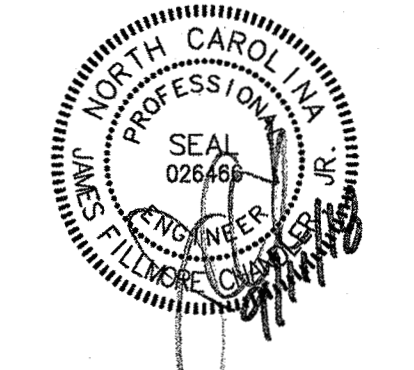
YOUR VISION ACHIEVED THROUGH OURS.

DATE: 04/17/2020
08/04/2020
09/11/2018
DRAWN BY: 331
DESIGNED BY: 331
CHECKED BY: JFC
SCALE: PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
CASSA CLUBHOUSE WAY PLAN & PROFILE

JOB NO. 37909
SHEET NO. C6.2

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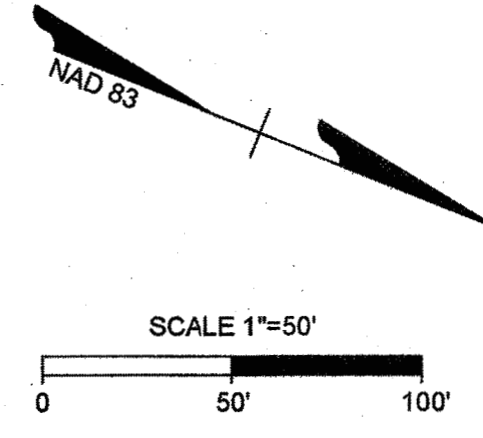
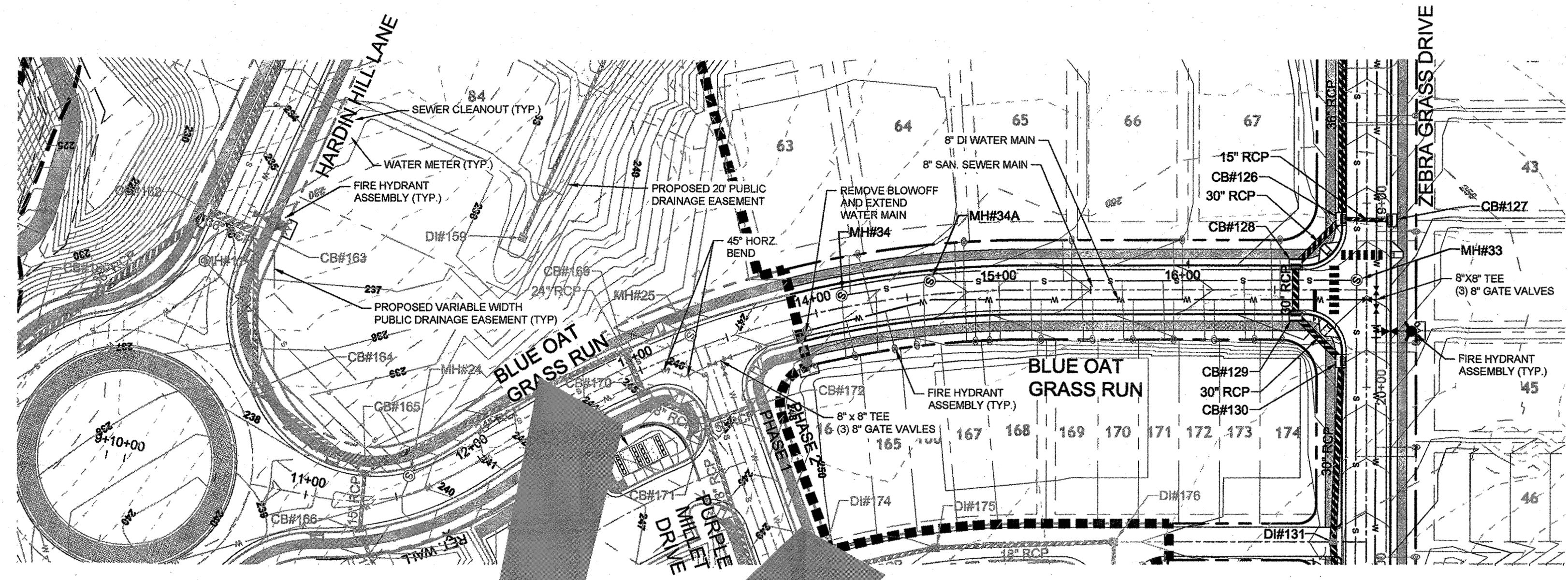
YOUR VISION ACHIEVED THROUGH OURS.

DATE
09/11/2018
DRAWN BY
331
DESIGNED BY
331
CHECKED BY
JFC
SCALE
PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
BLUE OAT GRASS RUN PLAN & PROFILE

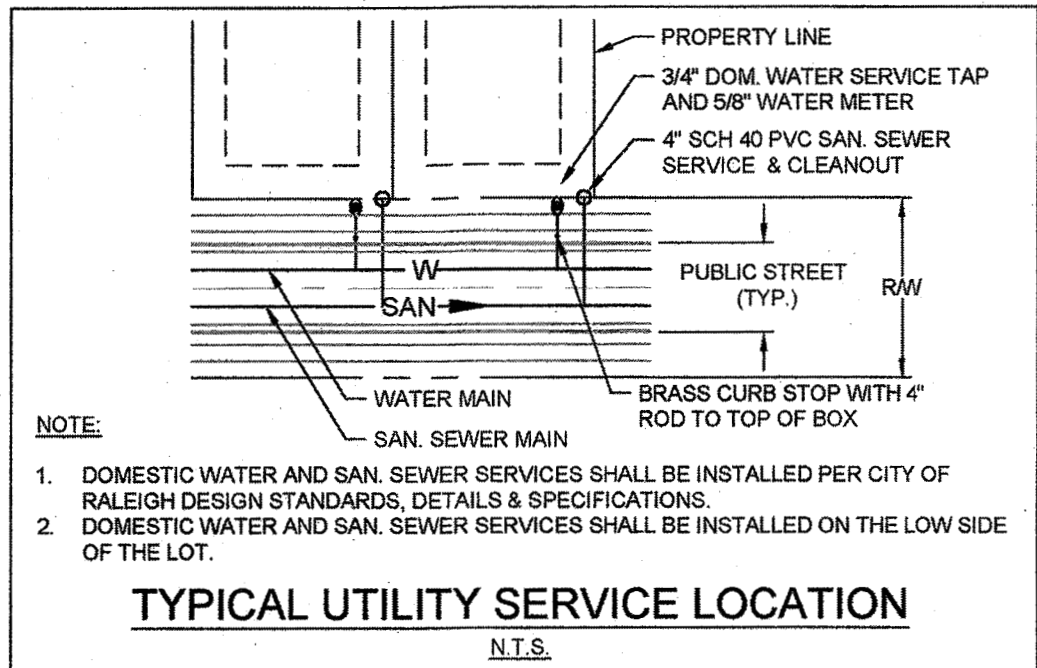
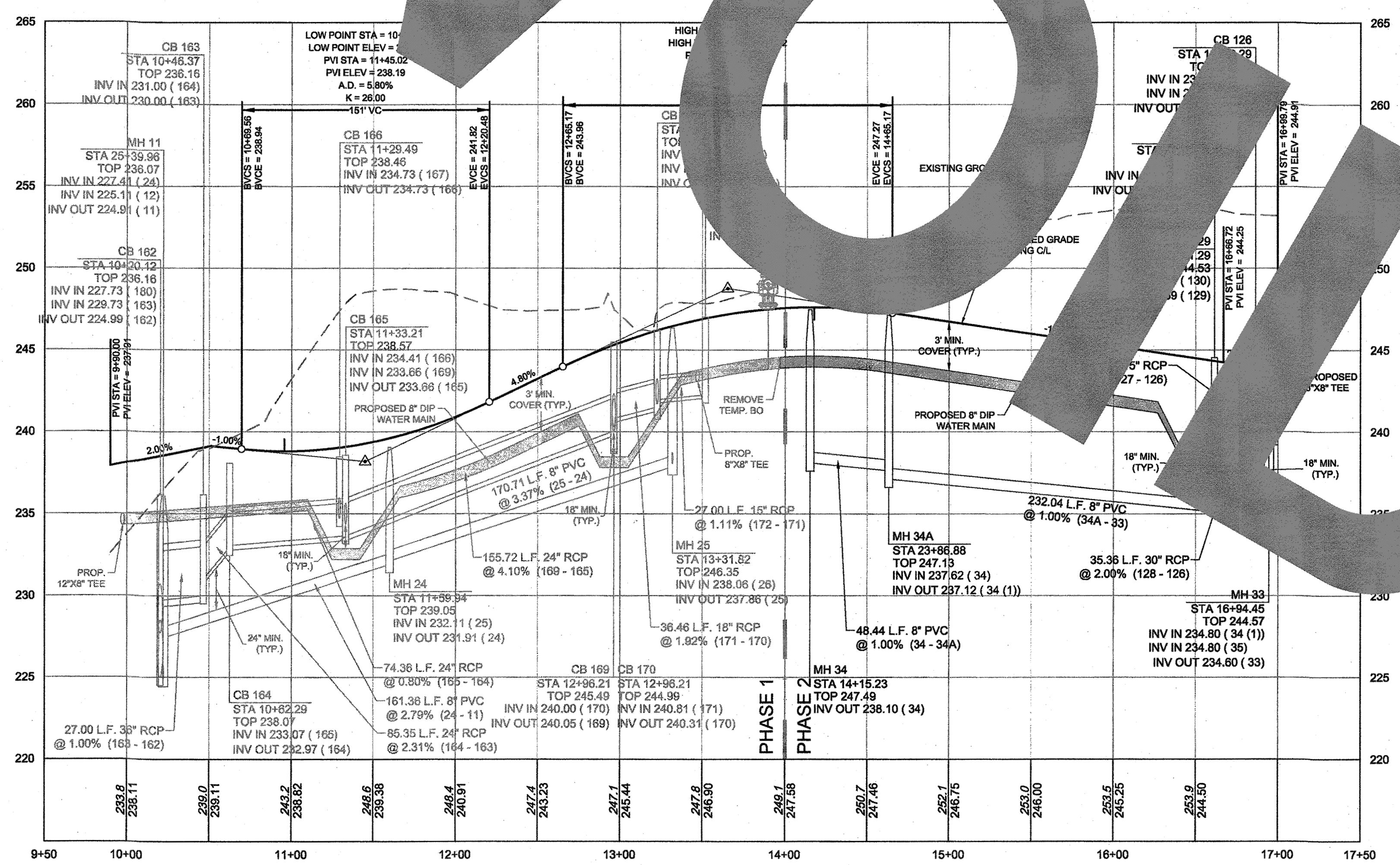
JOB NO.
37909
SHEET NO.
C6.2

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BLUE OAT GRASS RUN PLAN & PROFILE

STATIONING: STA 10+00 TO STA 17+50



DRAWING LEGEND

SEWER	— s — s —	PROPOSED SANITARY SEWER
	⊙	SANITARY MANHOLE
WATER	— w — w —	EXISTING WATER LINE
	— w — w —	PROPOSED WATER LINE
	⊕	WATER VALVE
	⊕	FIRE HYDRANT
	⊕	BLOWOFF ASSEMBLY
	⊕	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
	— s — s —	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE	— s — s —	STORM DRAINAGE
	⊕	STORM JUNCTION BOX
	⊕	CURB INLET
	⊕	DROP INLET

NOTE:
1. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED PER CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS.
2. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED ON THE LOW SIDE OF THE LOT.

NOTE:
1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 8" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)

NOTE:
1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
2. REFER TO SHEET C 3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

ATTENTION CONTRACTORS

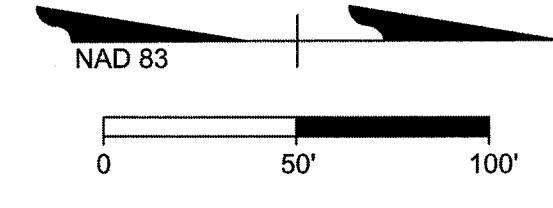
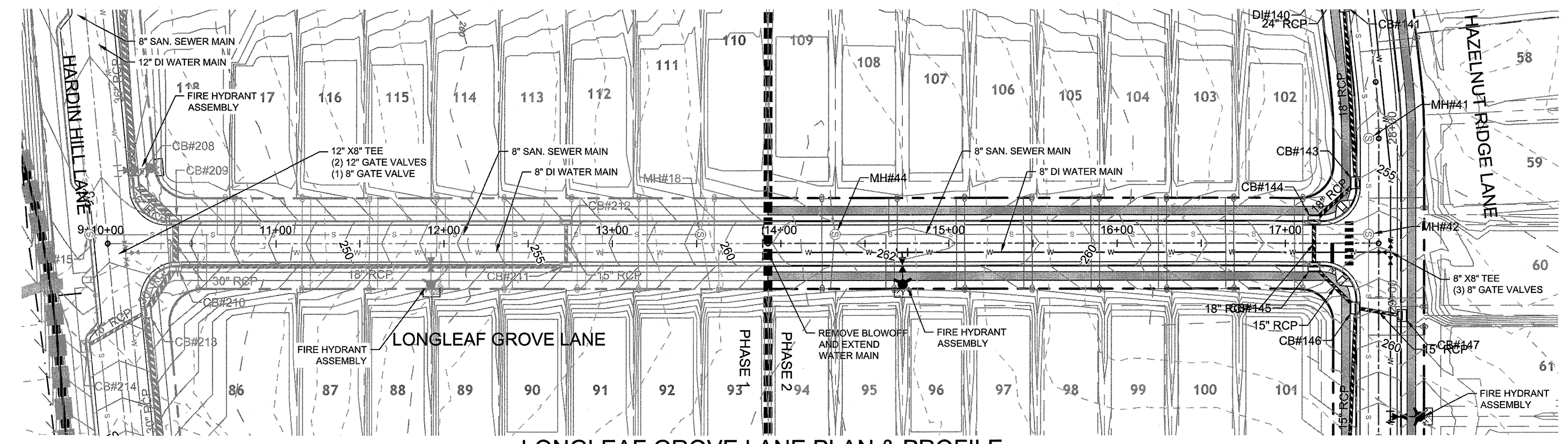
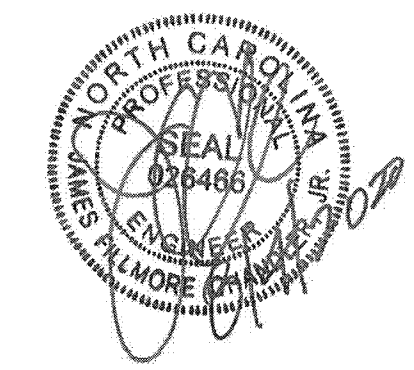
The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.
Failure to notify both City Departments 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 No. 3337
Authorized to Construct
Date: 9/21/18

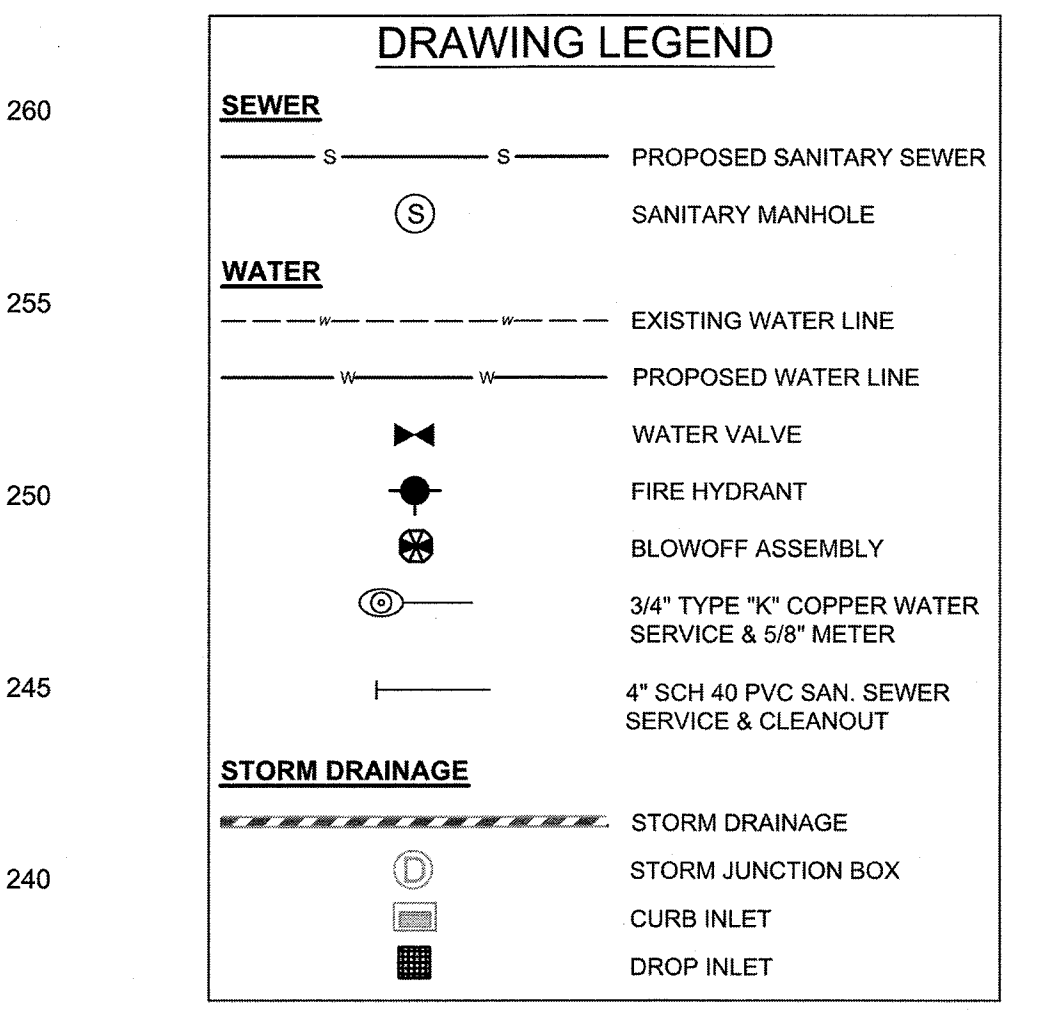
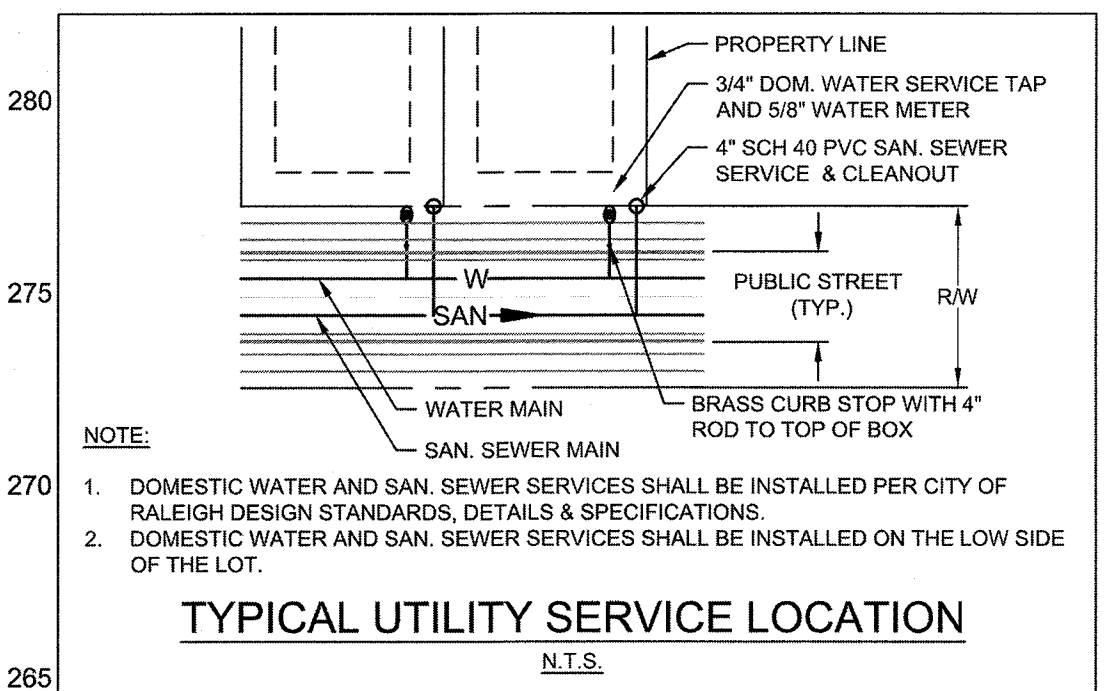
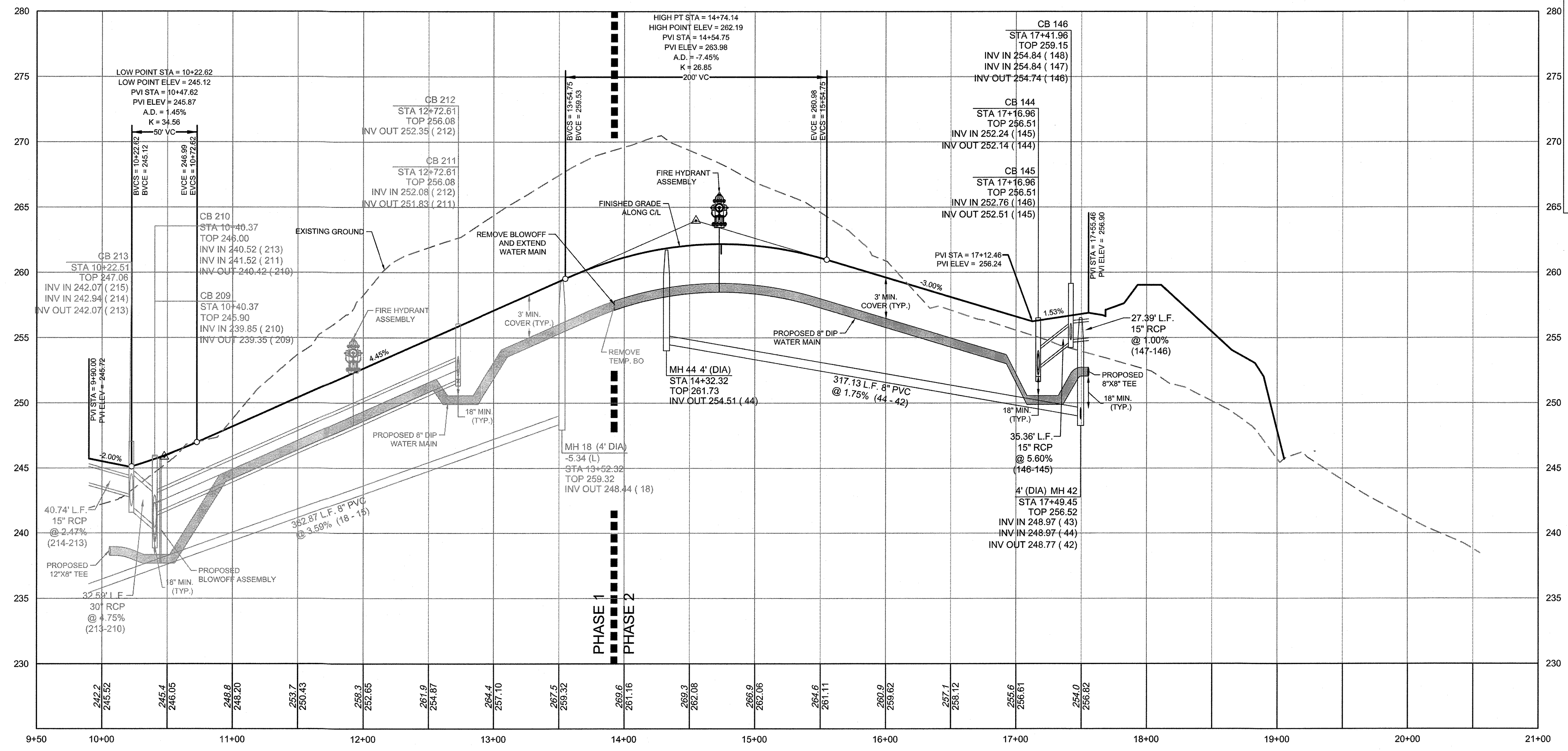
Public Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh
Public Utilities Department Permit No. 41455
Authorized to Construct
Date: 9/21/18

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *C. Hill* DATE: 10-26-2018
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *M. Brown* DATE: 10-26-2018
ADMINISTRATOR



LONGLEAF GROVE LANE PLAN & PROFILE
STA 9+50 - STA 18+00
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



NOTE:
 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 2) WATER MAIN TO BE EITHER 10" HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)

NOTE:
 1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

TOWN CERTIFICATION
 THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: *[Signature]* DATE: 8/18/2022
 ADMINISTRATOR

Water and Sewer Permits (if applicable)
 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-4454R
 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-3556R
 The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # _____

Lorea M Sample

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YOUR VISION ACHIEVED THROUGH OURS.
 DATE: 08/04/2020
 REVISION DESCRIPTION: GRADING AND UTILITY REVISIONS

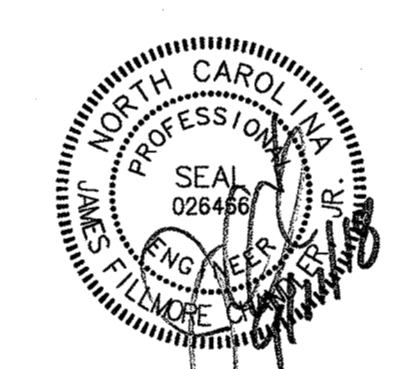
DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1552
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
LONGLEAF GROVE LANE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C6.3

S:\02\37909-Stone_River\DWG\Sheet\CD\Phase 2\37909-C6.0-PROF.dwg | by: d. MacMillan

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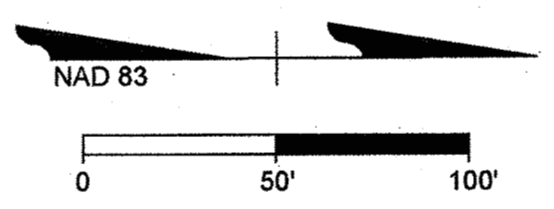
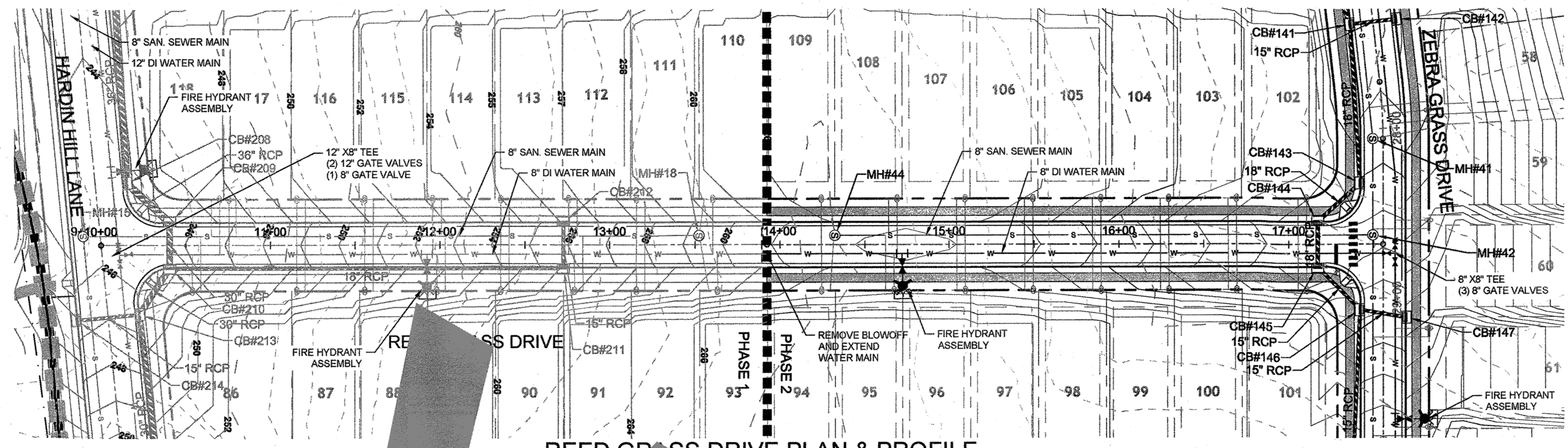
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5410 Trinity Road, Suite 300
TEL 919.986.4951 FAX 919.953.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

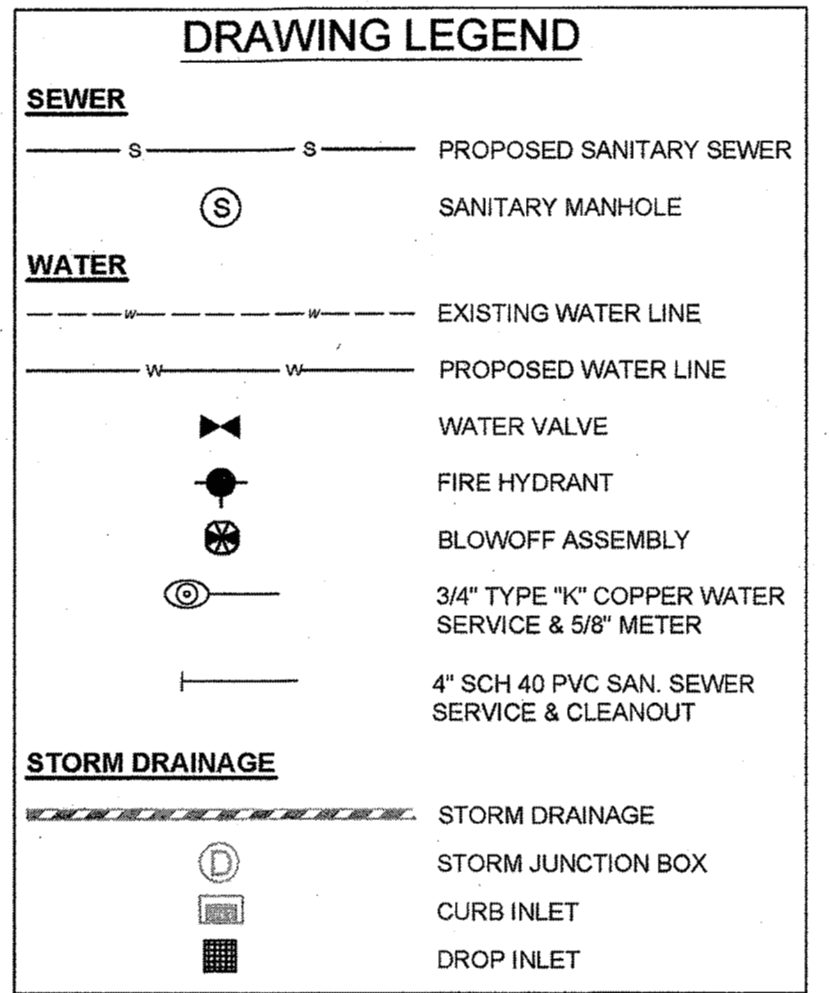
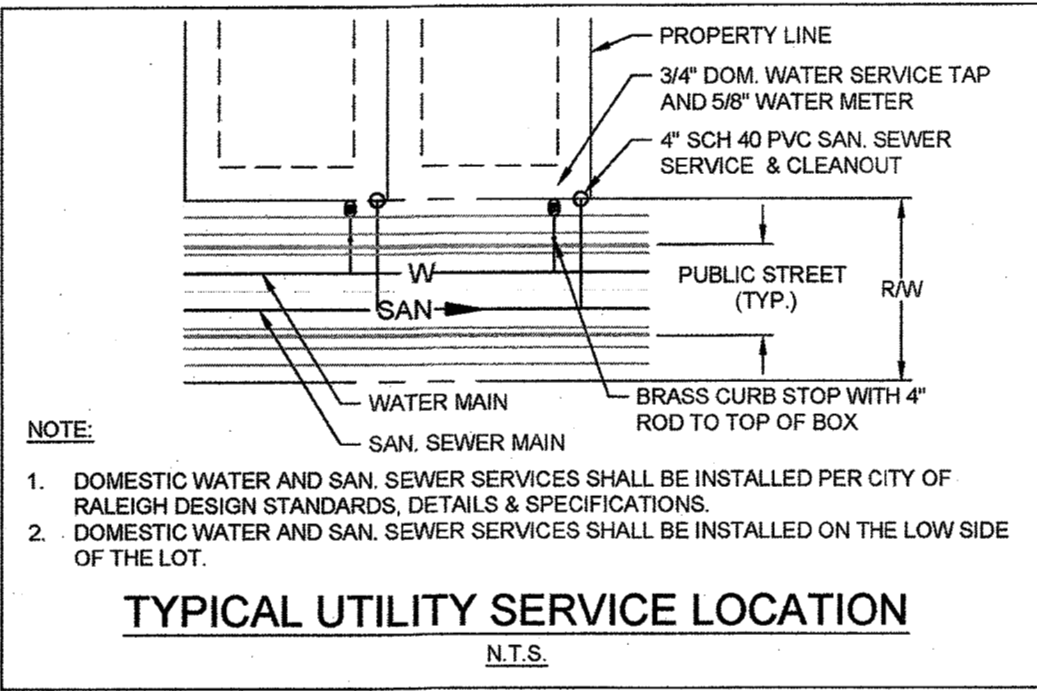
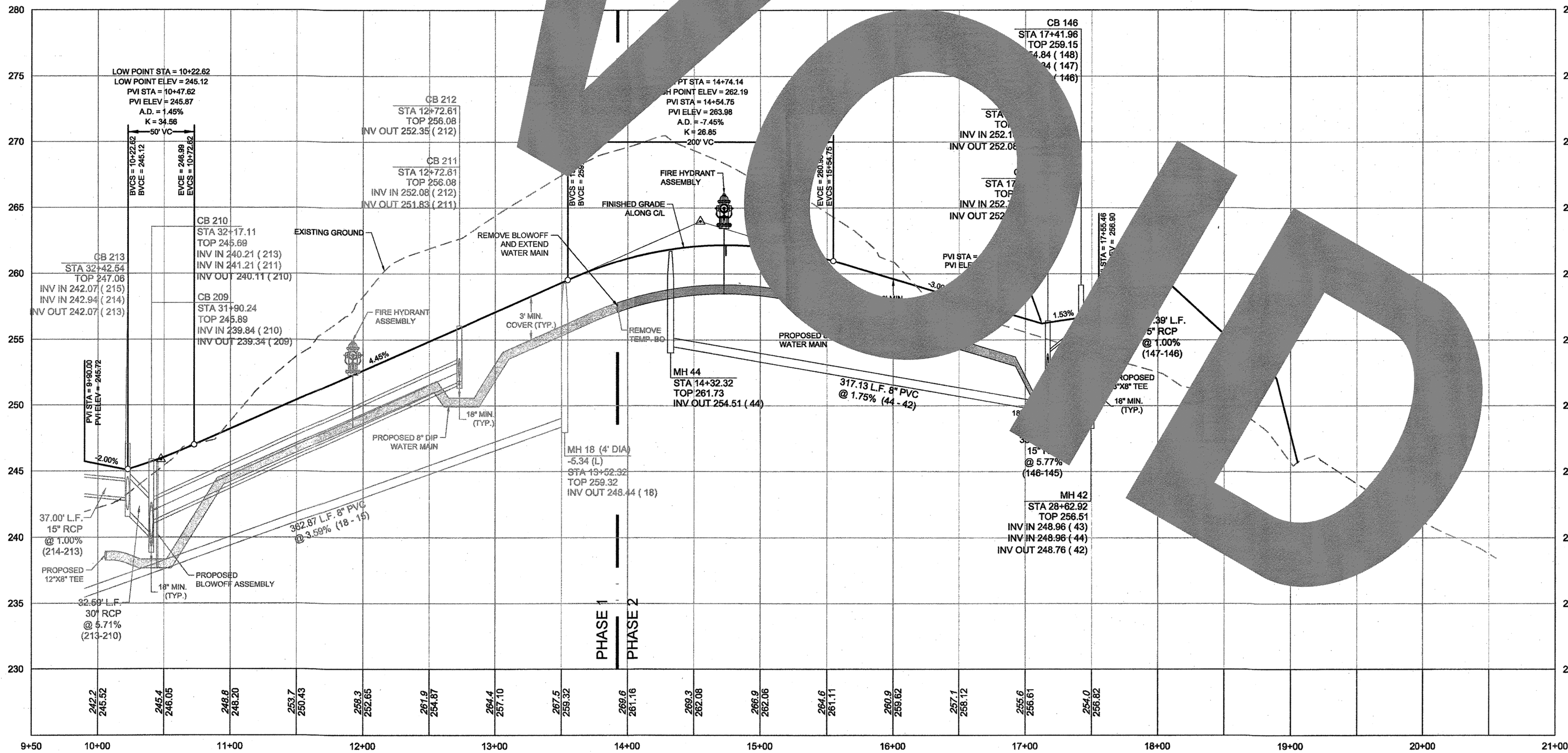
DATE 09/11/2018
DRAWN BY 331
DESIGNED BY 331
CHECKED BY JFC
SCALE PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
REED GRASS DRIVE PLAN & PROFILE

JOB NO. 37909
SHEET NO. C6.3



REED GRASS DRIVE PLAN & PROFILE
100 - STA 18+00
HORIZONTAL SCALE = 1" = 50' VERT. SCALE = 1" = 5'



NOTE:
1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
2) WATER MAIN TO BE EITHER 10' HORIZONTALY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)

NOTE:
1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

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) 996-4340 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.

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *[Signature]* DATE: 10-26-2018
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *[Signature]* DATE: 10-26-18
ADMINISTRATOR

Public Water Distribution / Extension System
The City of Raleigh consents to the correction 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-3887
Authorized to Construct *[Signature]*
Date 9/24/18

Public Sewer Collection / Extension System
This City of Raleigh consents to the correction 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-4115
Authorized to Construct *[Signature]*
Date 9/24/18

R:\102\37909-Stone_River\DWG\Sheet\CD\Phase 2\37909-C6.0-PROF.dwg | By: Keith Axten



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YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION
UTILITY REVISIONS
GRADING AND UTILITY REVISIONS

DATE
04/17/2020
08/04/2020

DATE
09/11/2018

DRAWN BY
331

DESIGNED BY
331

CHECKED BY
JFC

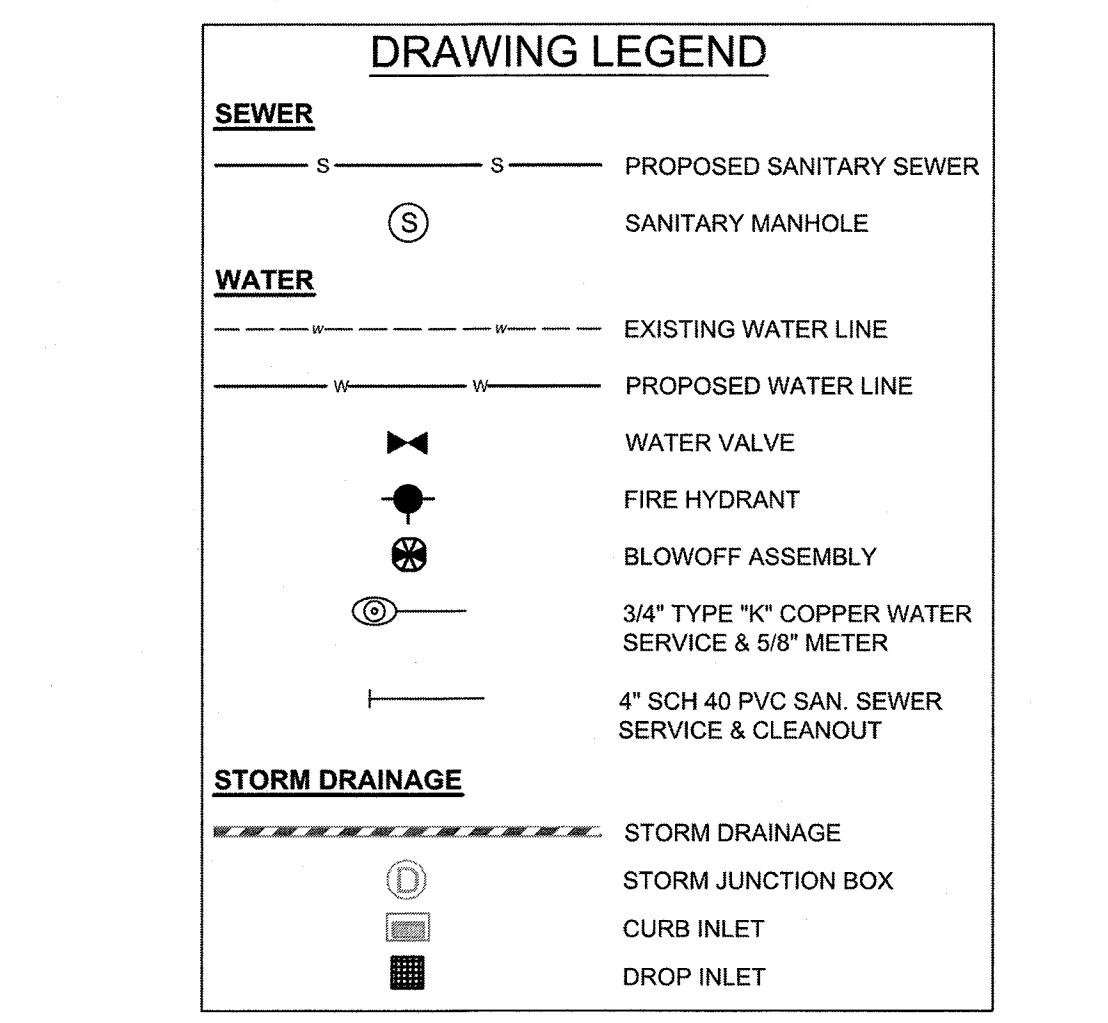
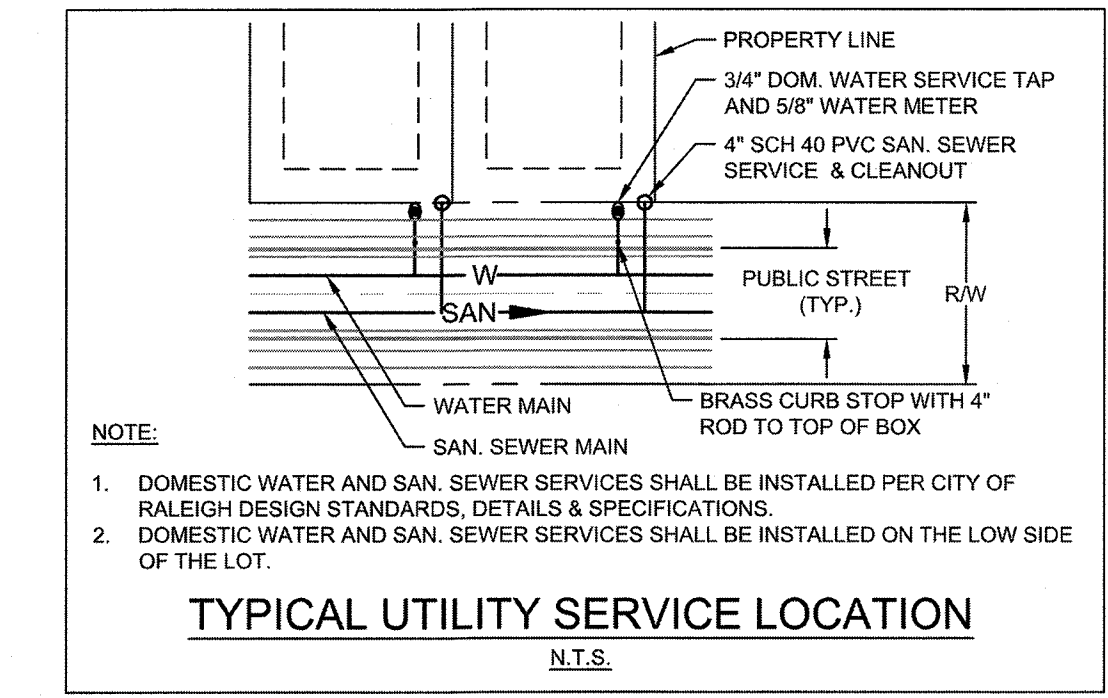
SCALE
PER PLAN

DATE
08-21-2020

DATE
8-18-2020

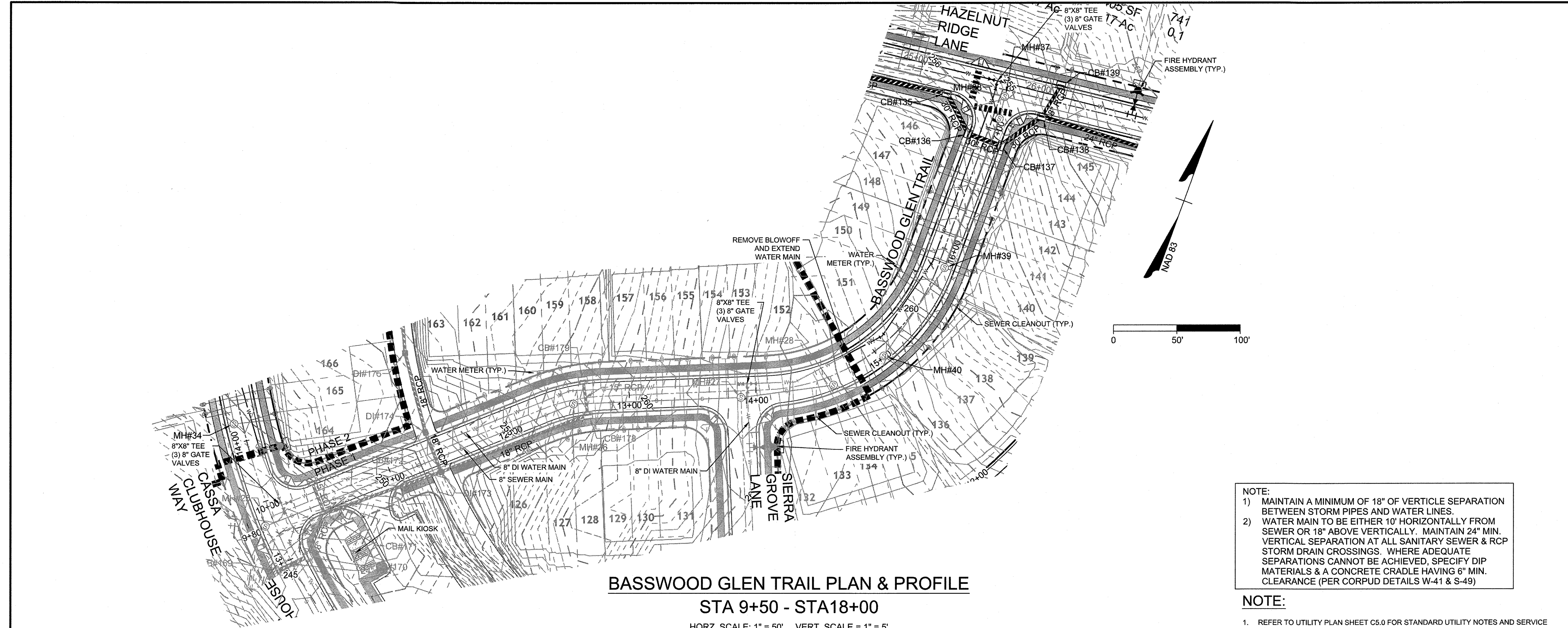
JOB NO.
37909

SHEET NO.
C6.4



NOTE:
1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES
2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)

NOTE:
1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.



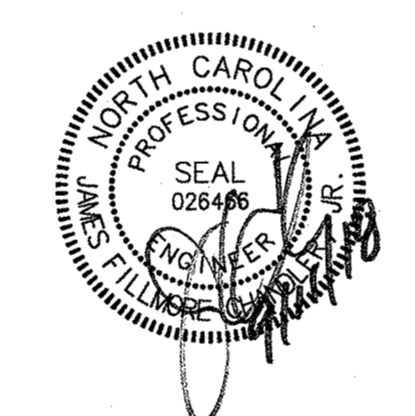
BASSWOOD GLEN TRAIL PLAN & PROFILE
STA 9+50 - STA18+00
HORZ. SCALE: 1" = 50' VERT. SCALE = 1" = 5'

Water and Sewer Permits (if applicable)
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-4454R
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-3556R
The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 #

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *[Signature]* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *[Signature]* DATE: 8-18-2020
ADMINISTRATOR

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
BASSWOOD GLEN TRAIL PLAN & PROFILE

S:\102\37909-Stone-River\DWG\Sheet\CD\Phase 2\37909-C6.4-PROP.dwg | by JD MacAllister



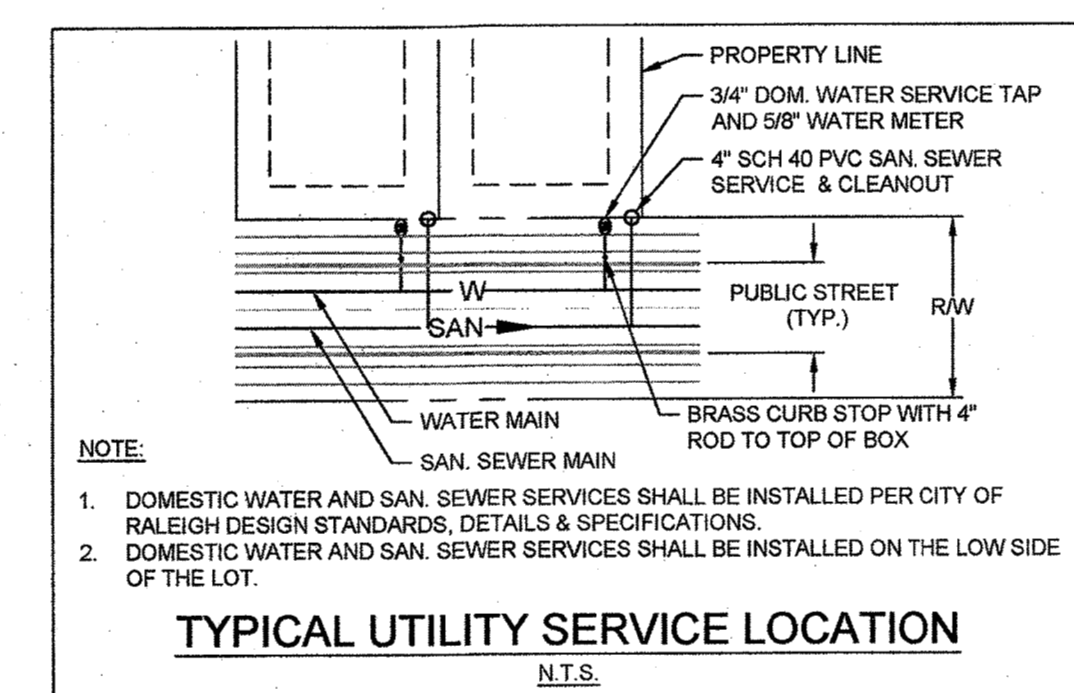
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5410 Trinity Road, Raleigh, NC 27607
TEL 919.966.4951 FAX 919.963.6124 www.timmons.com

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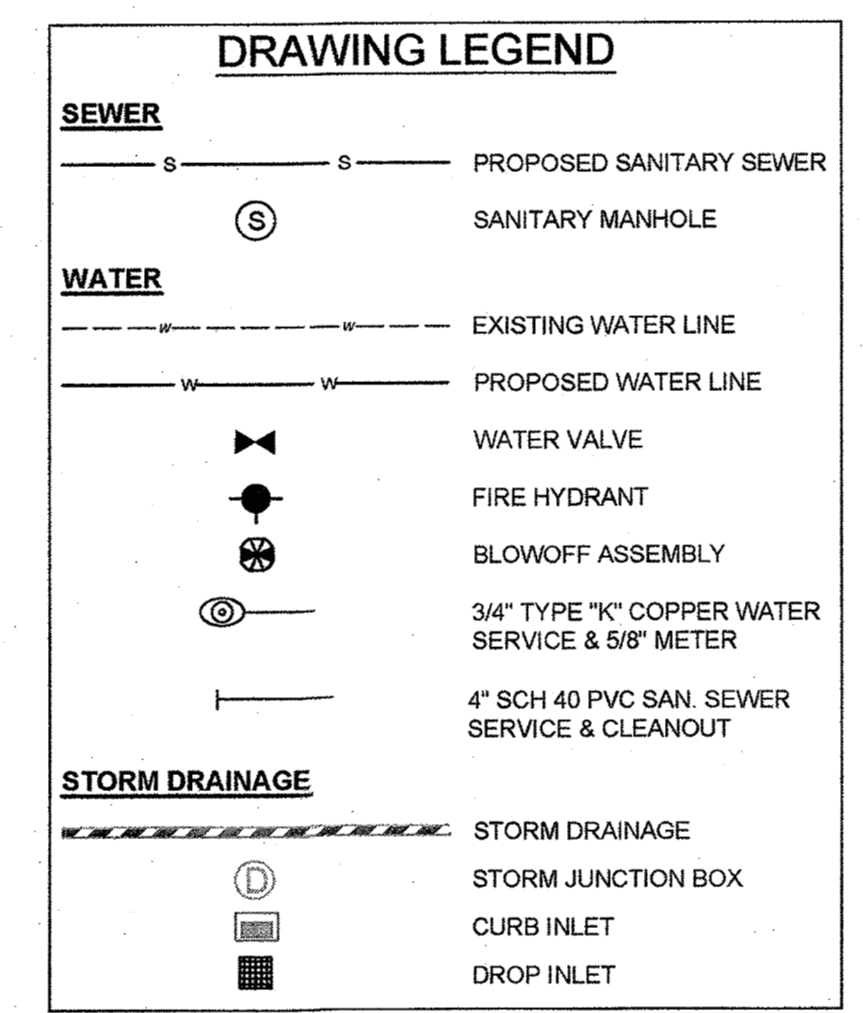
DATE
09/11/2018
DRAWN BY
331
DESIGNED BY
331
CHECKED BY
JFC
SCALE
PER PLAN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
PURPLE MILLET DRIVE PLAN & PROFILE

JOB NO.
37909
SHEET NO.
C6.4

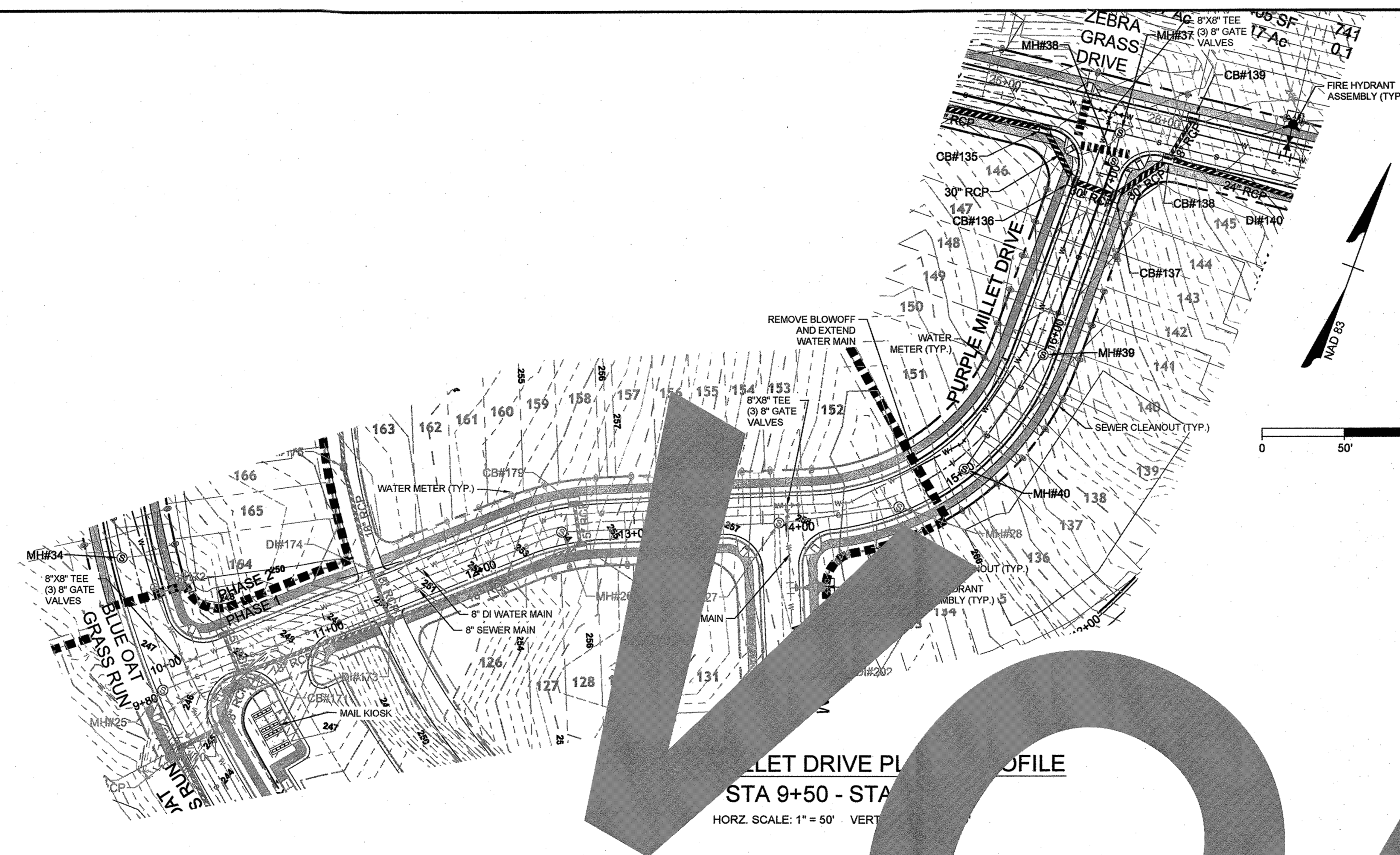


NOTE:
1. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED PER CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS.
2. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED ON THE LOW SIDE OF THE LOT.
TYPICAL UTILITY SERVICE LOCATION
N.T.S.

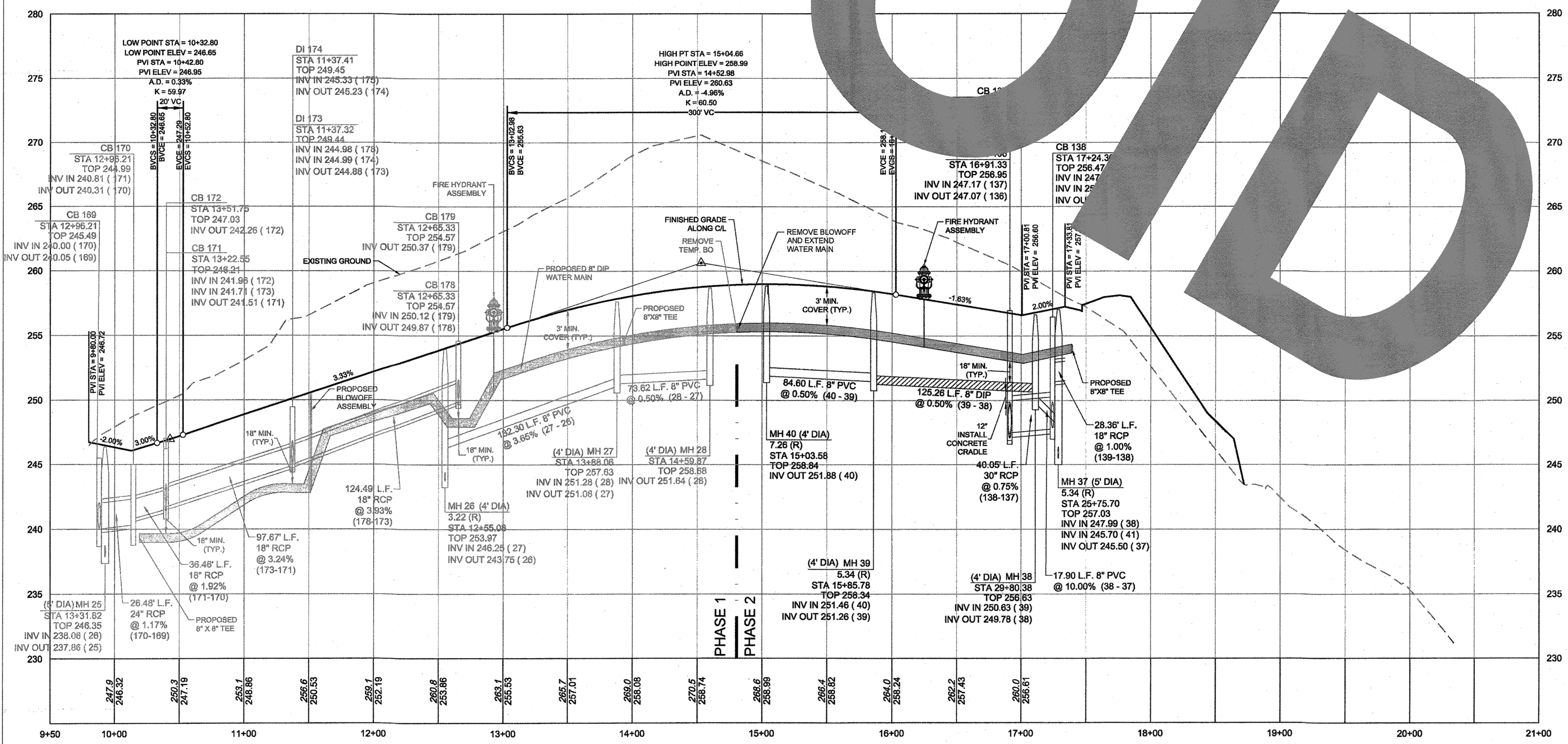


NOTE:
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NOTE:
1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.



PURPLE MILLET DRIVE PROFILE
STA 9+50 - STA 21+00
HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



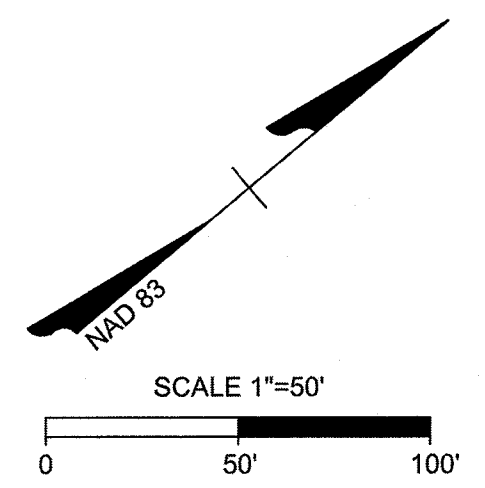
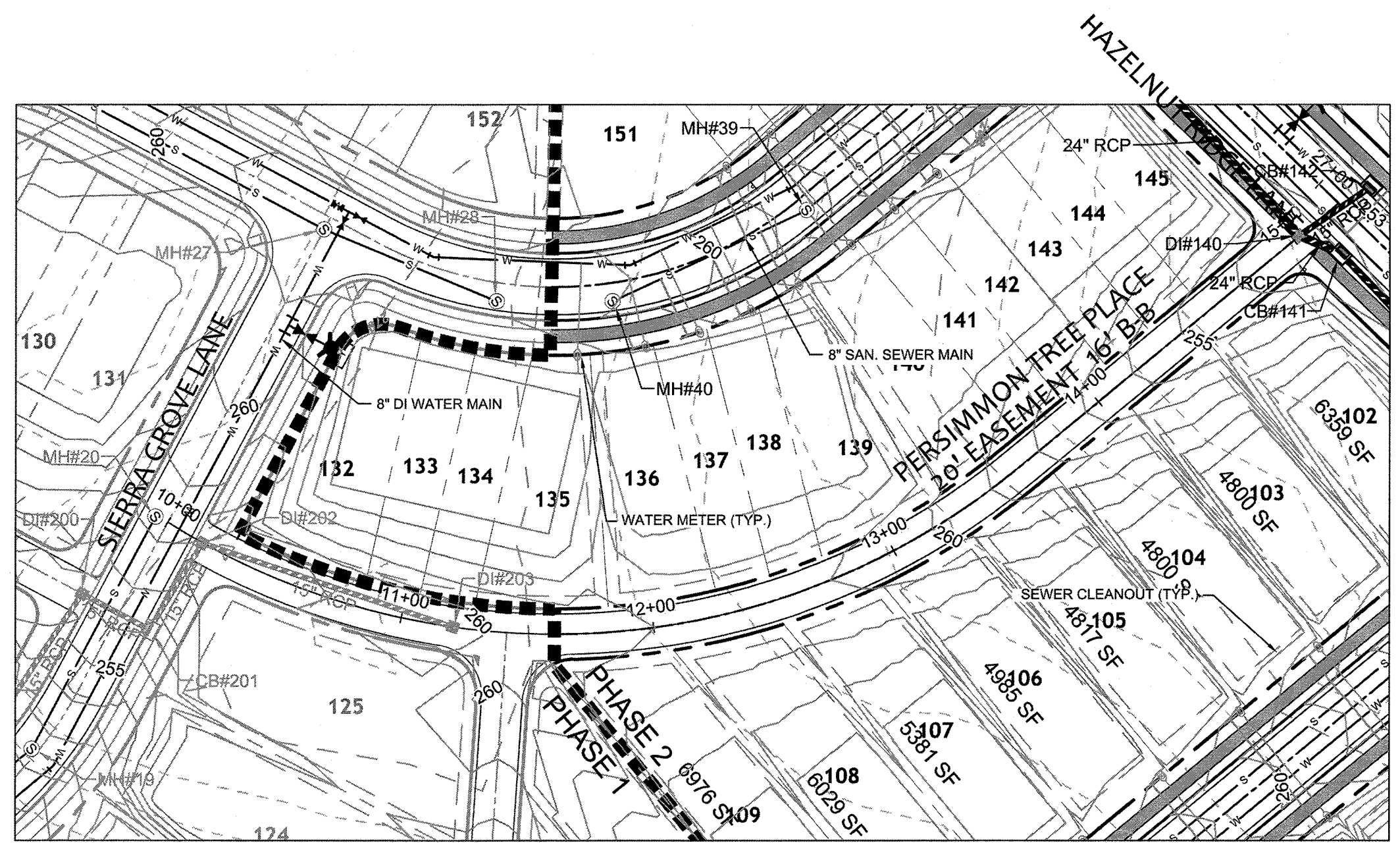
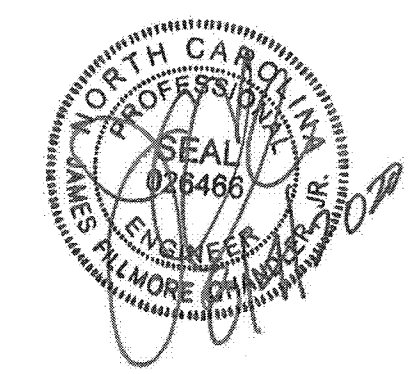
Public Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh
Public Utilities Department Permit # *W-2887*
Authorization to Construct
Date *9/20/18*

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-4455*
Authorization to Construct
Date *9/20/18*

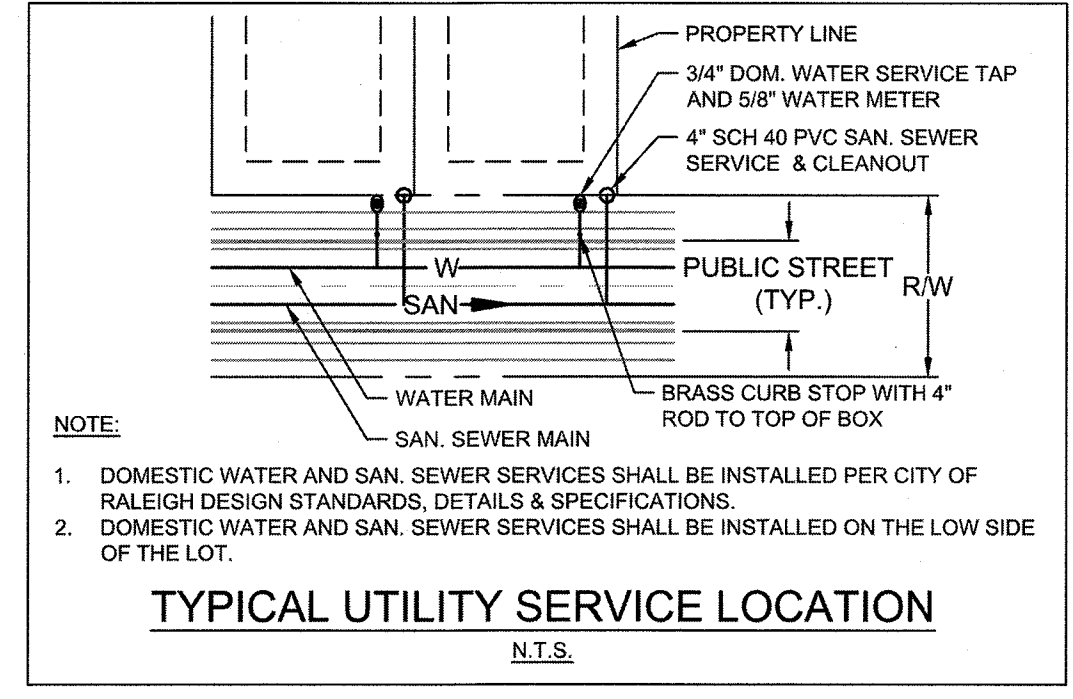
ATTENTION CONTRACTORS
The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.
Failure to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

TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: *S. A. M. M.* DATE: *10-26-2018*
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *M. J. M.* DATE: *10-26-18*
ADMINISTRATOR

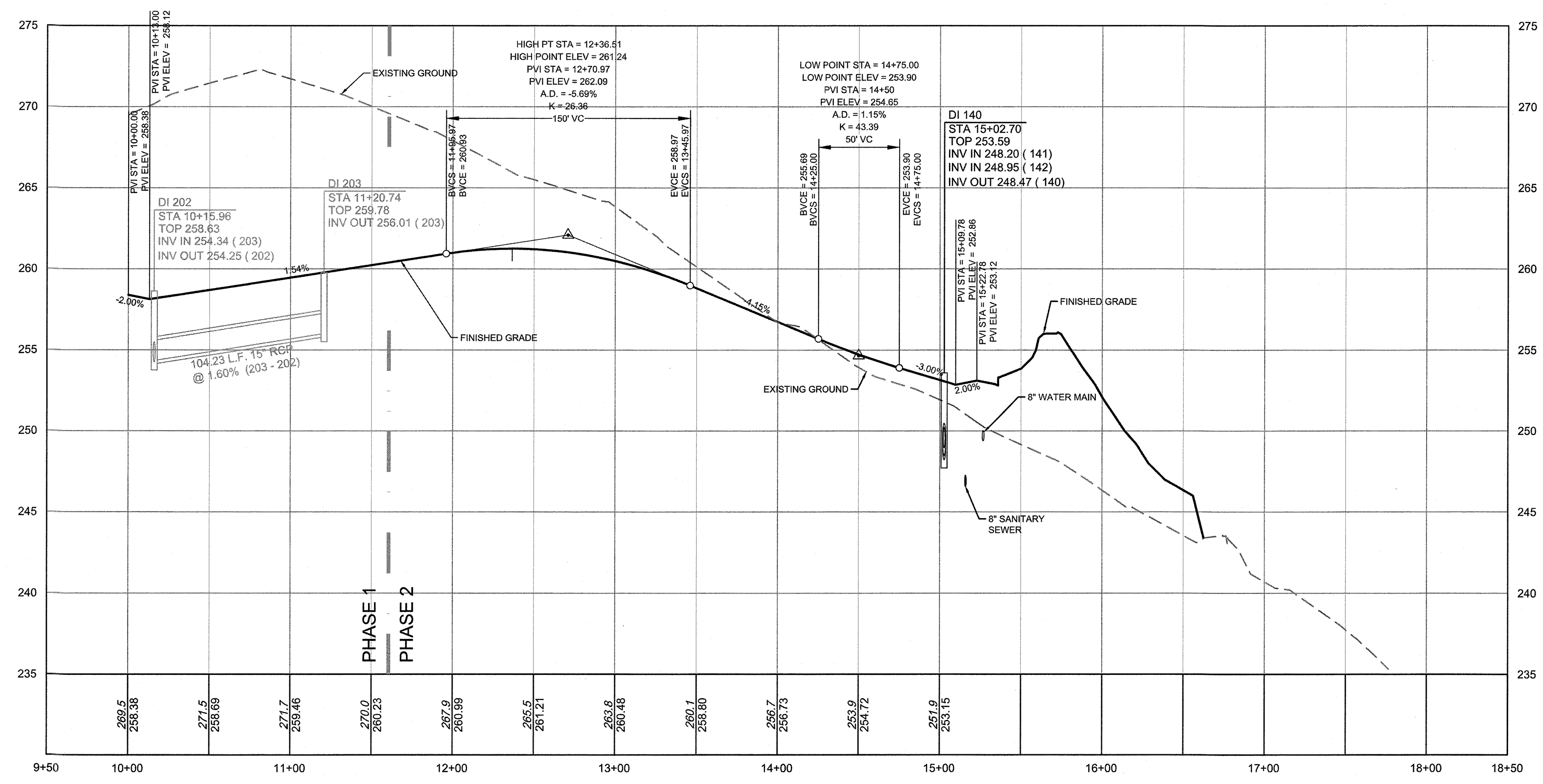
R:\02\37909-Stone_River\DWG\Sheet\CD\Phase 2\37909-C6.0-PROF.dwg Lby Keith Axton



PERSIMMON TREE PLACE
STA. 9+50 - STA. 15+50
 VERTICAL SCALE: 1" = 5'
 HORIZONTAL SCALE: 1" = 5'



DRAWING LEGEND	
SEWER	
— S — S —	PROPOSED SANITARY SEWER
(S)	SANITARY MANHOLE
WATER	
— W — W —	EXISTING WATER LINE
— W — W —	PROPOSED WATER LINE
(V)	WATER VALVE
(FH)	FIRE HYDRANT
(BA)	BLOWOFF ASSEMBLY
(3/4")	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
(4")	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE	
(D)	STORM DRAINAGE
(J)	STORM JUNCTION BOX
(CI)	CURB INLET
(DI)	DROP INLET



- NOTE:**
- REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 - REFER TO SHEET C 3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.

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BY: *S. AM* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *W. L. W.* DATE: 8-18-2020
 ADMINISTRATOR

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 TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE: 04/17/2020
 09/04/2020
 DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

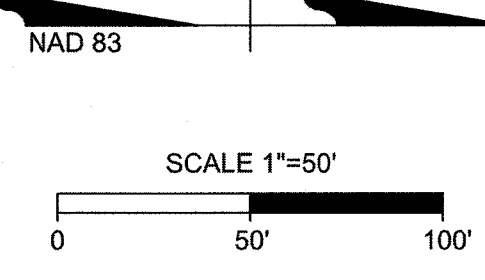
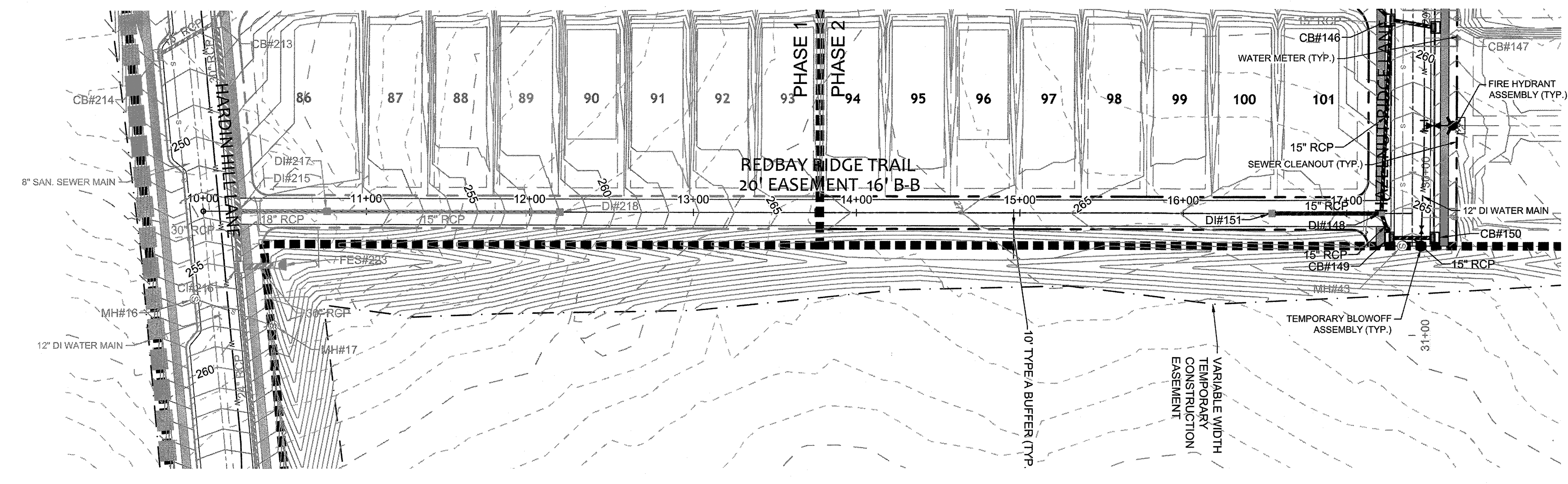
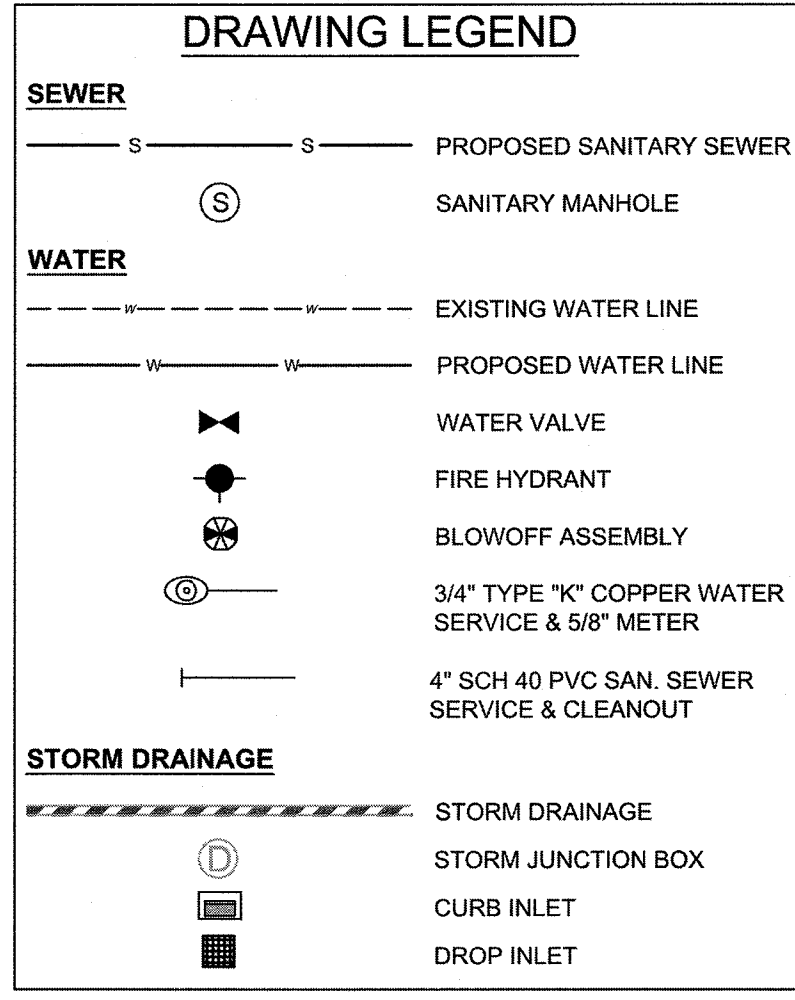
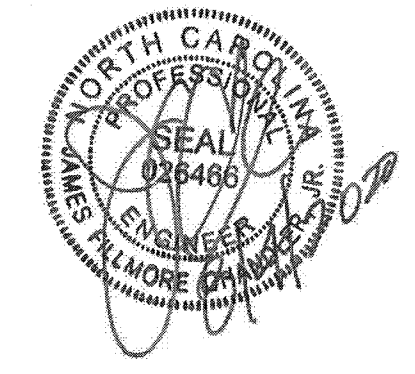
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

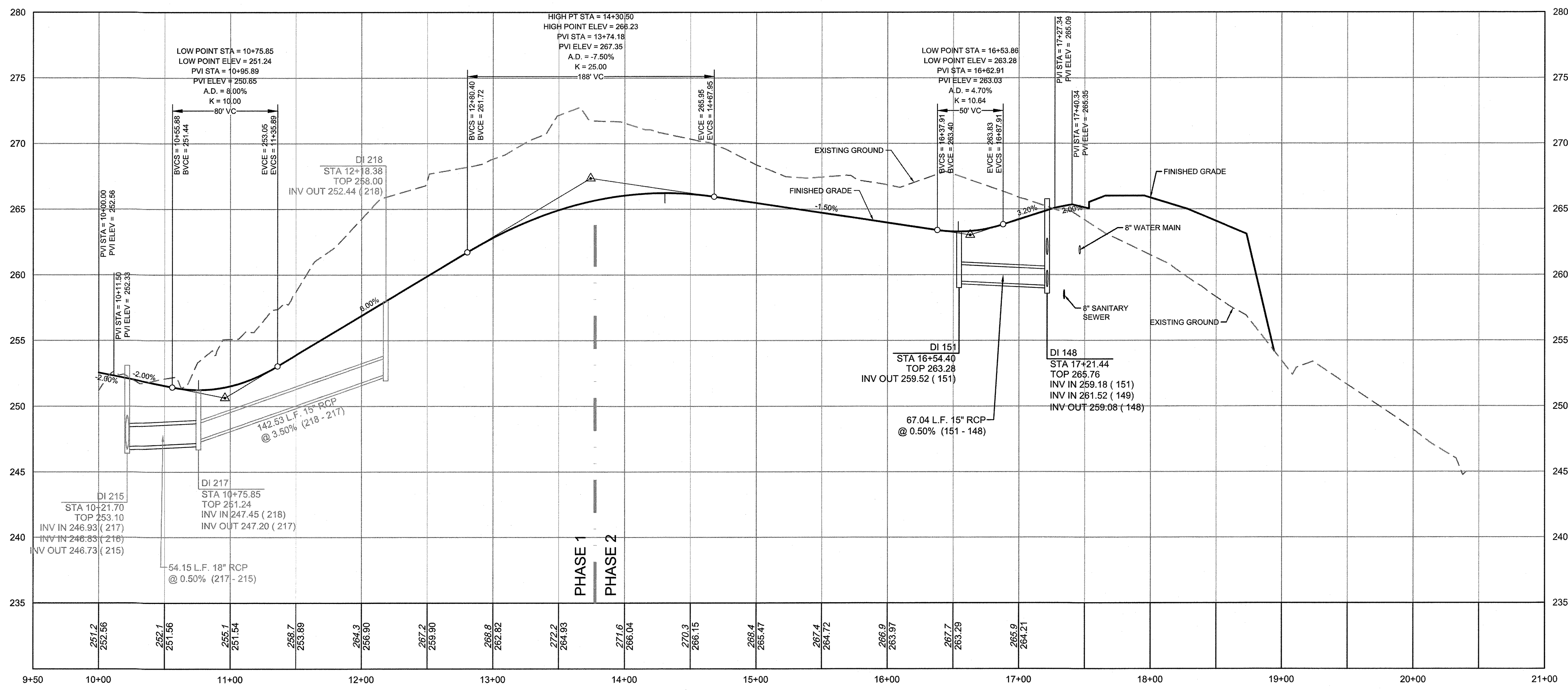
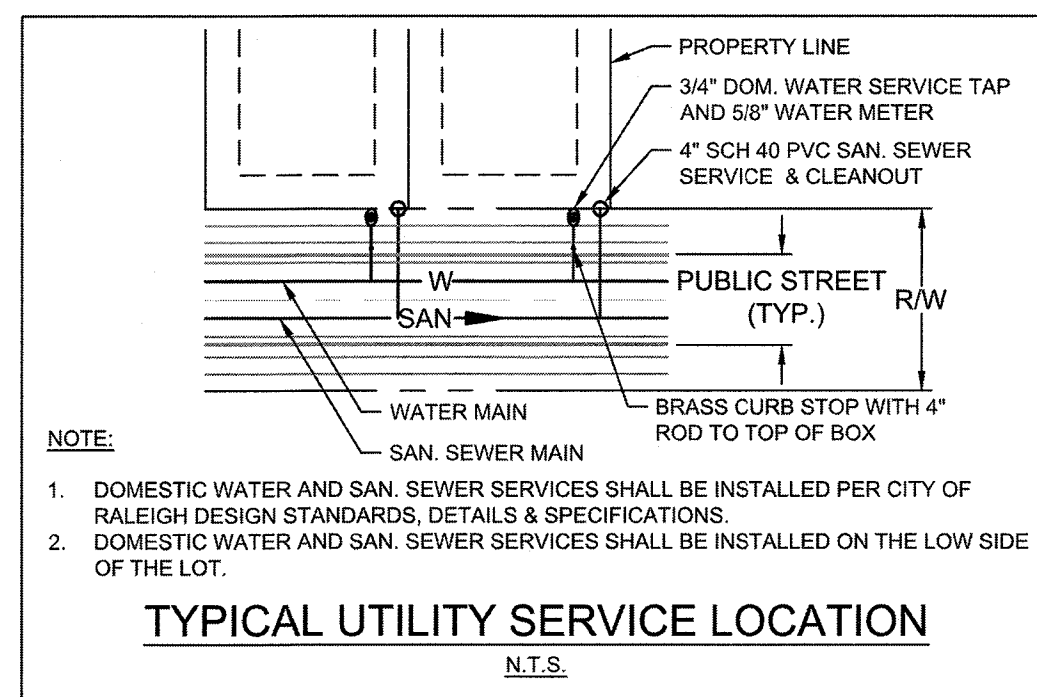
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

PERSIMMON TREE PLACE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C7.1



REDBAY RIDGE TRAIL
STA. 9+50 - STA. 18+00
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'



NOTE:
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BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

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BY: *[Signature]* DATE: 8-18-2020
 ADMINISTRATOR

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YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
09/11/2018	UTILITY REVISIONS
09/04/2020	GRADING AND UTILITY REVISIONS

DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

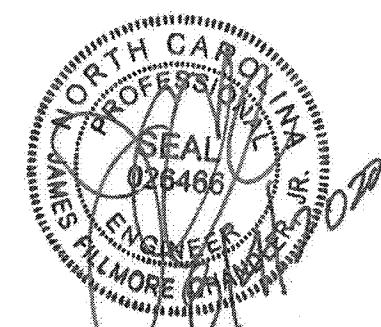
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

REDBAY RIDGE TRAIL PLAN & PROFILE

Job No. 37909
 Sheet No. C7.2

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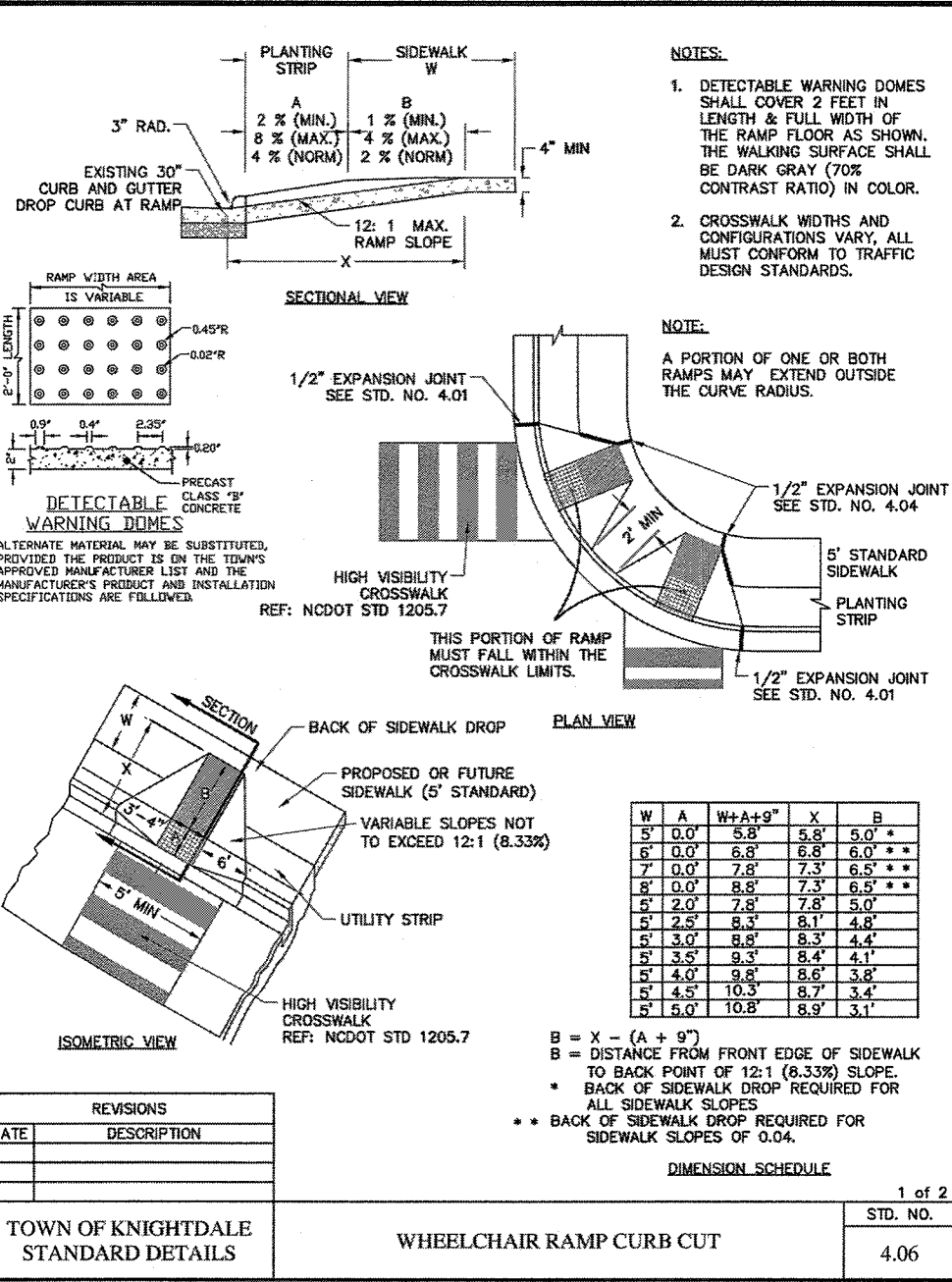
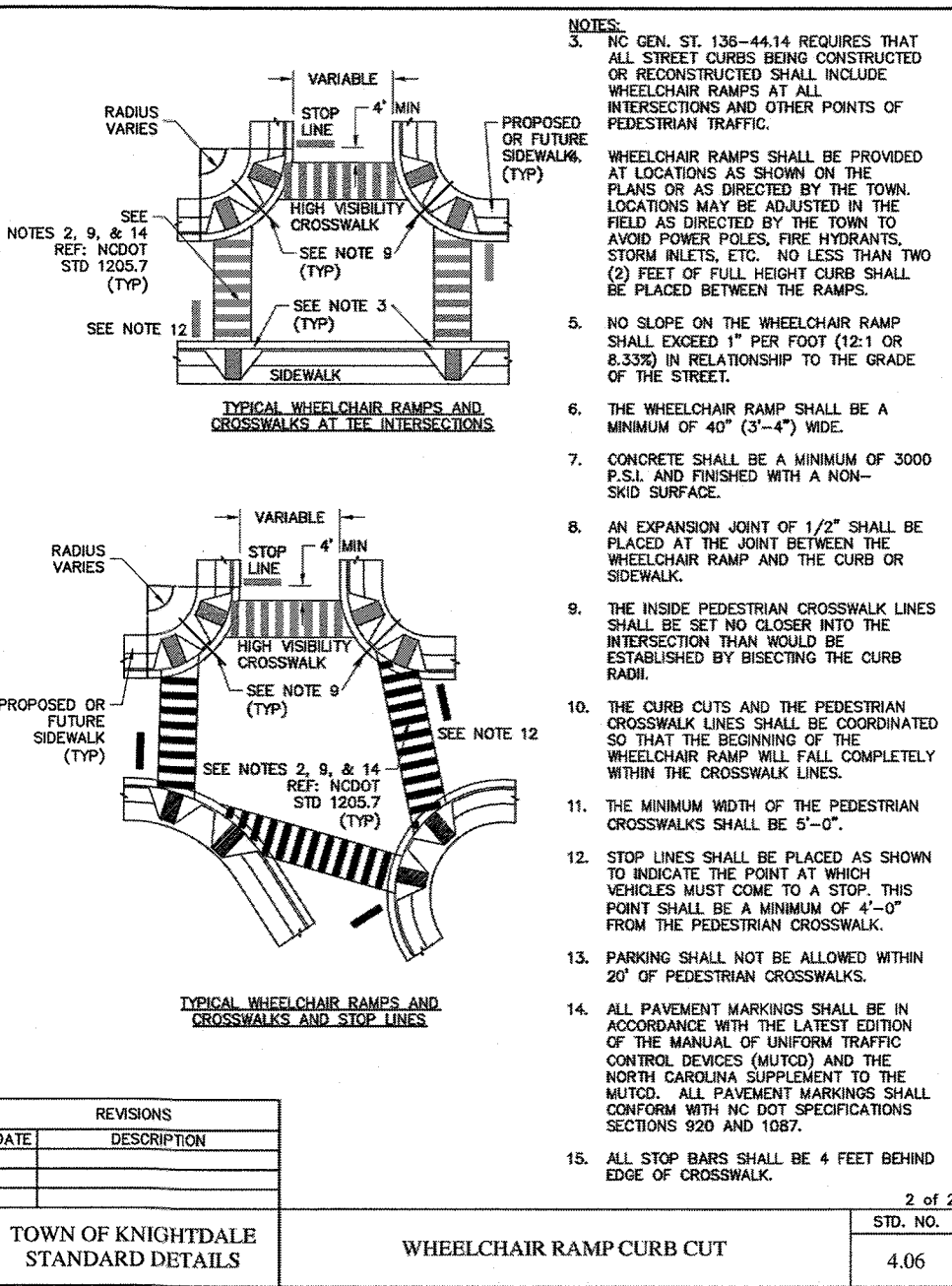
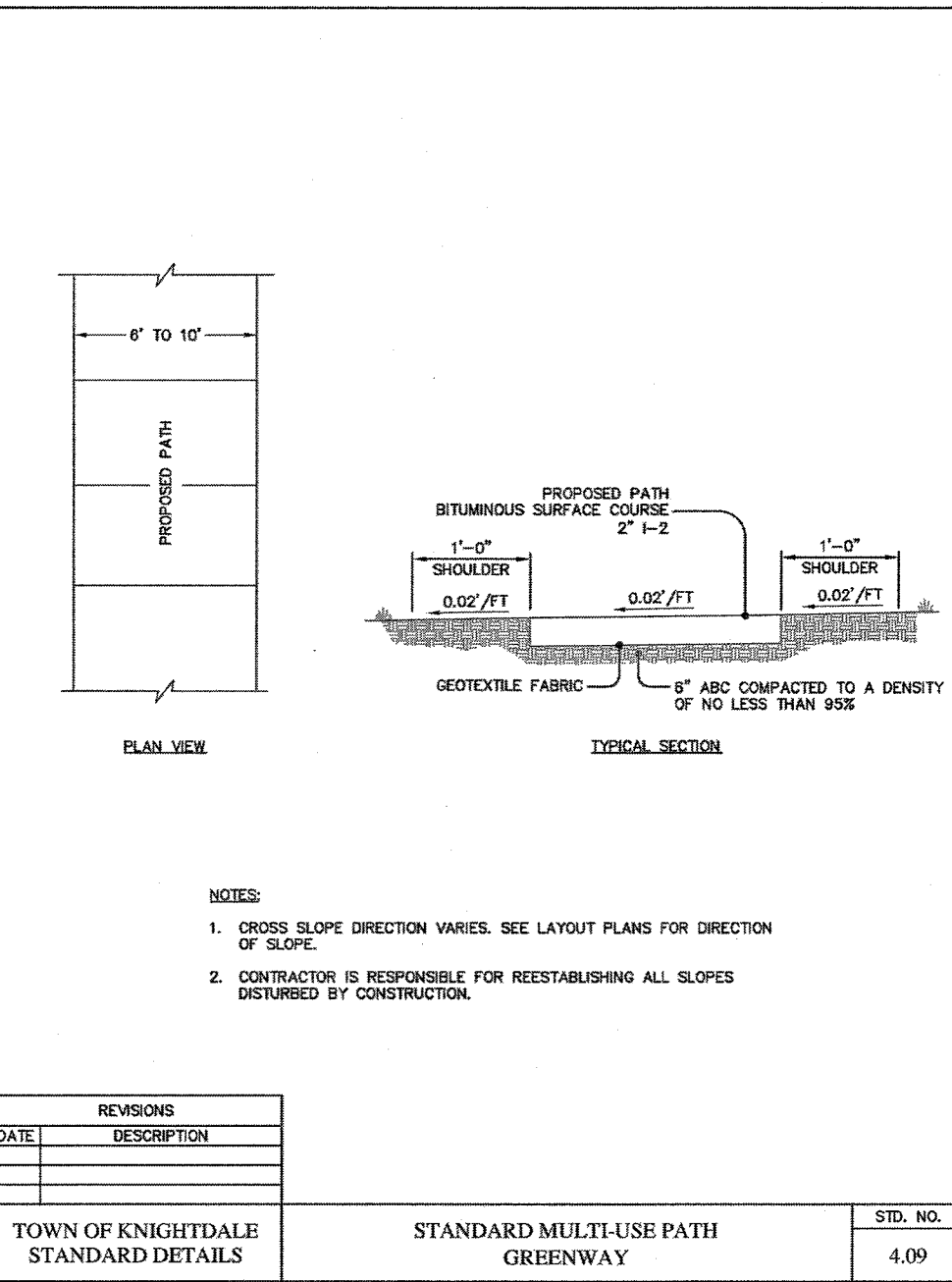
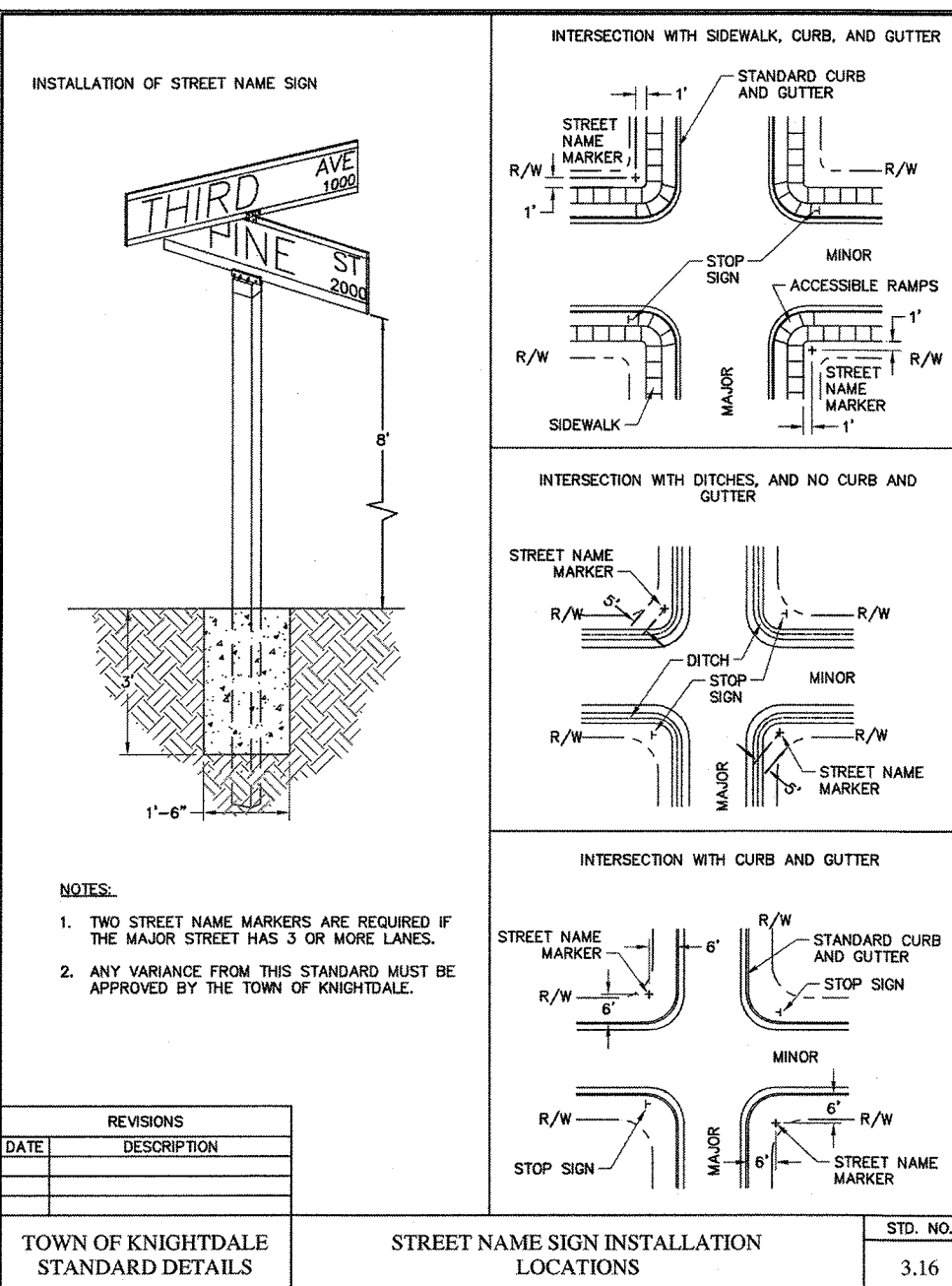
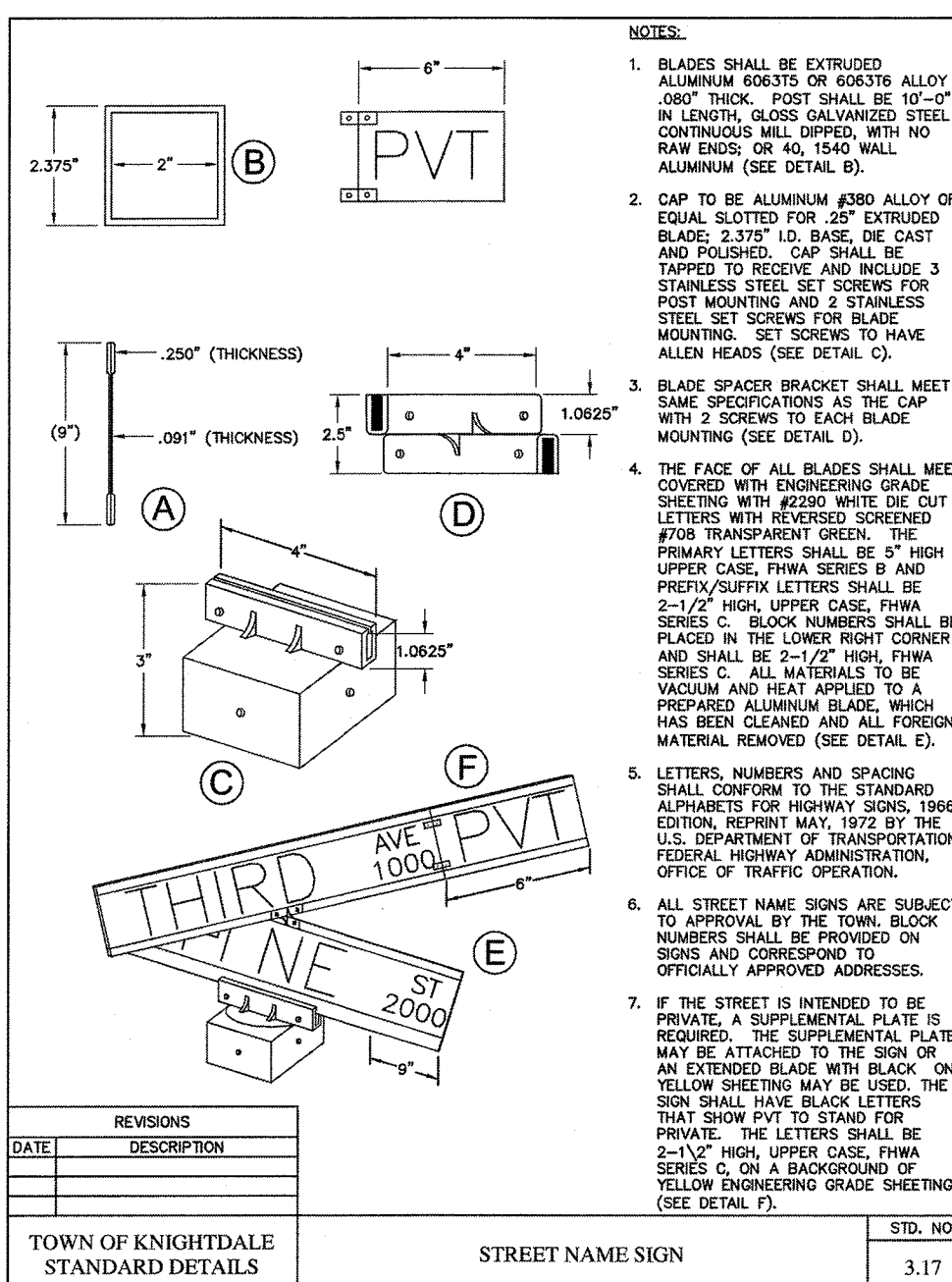
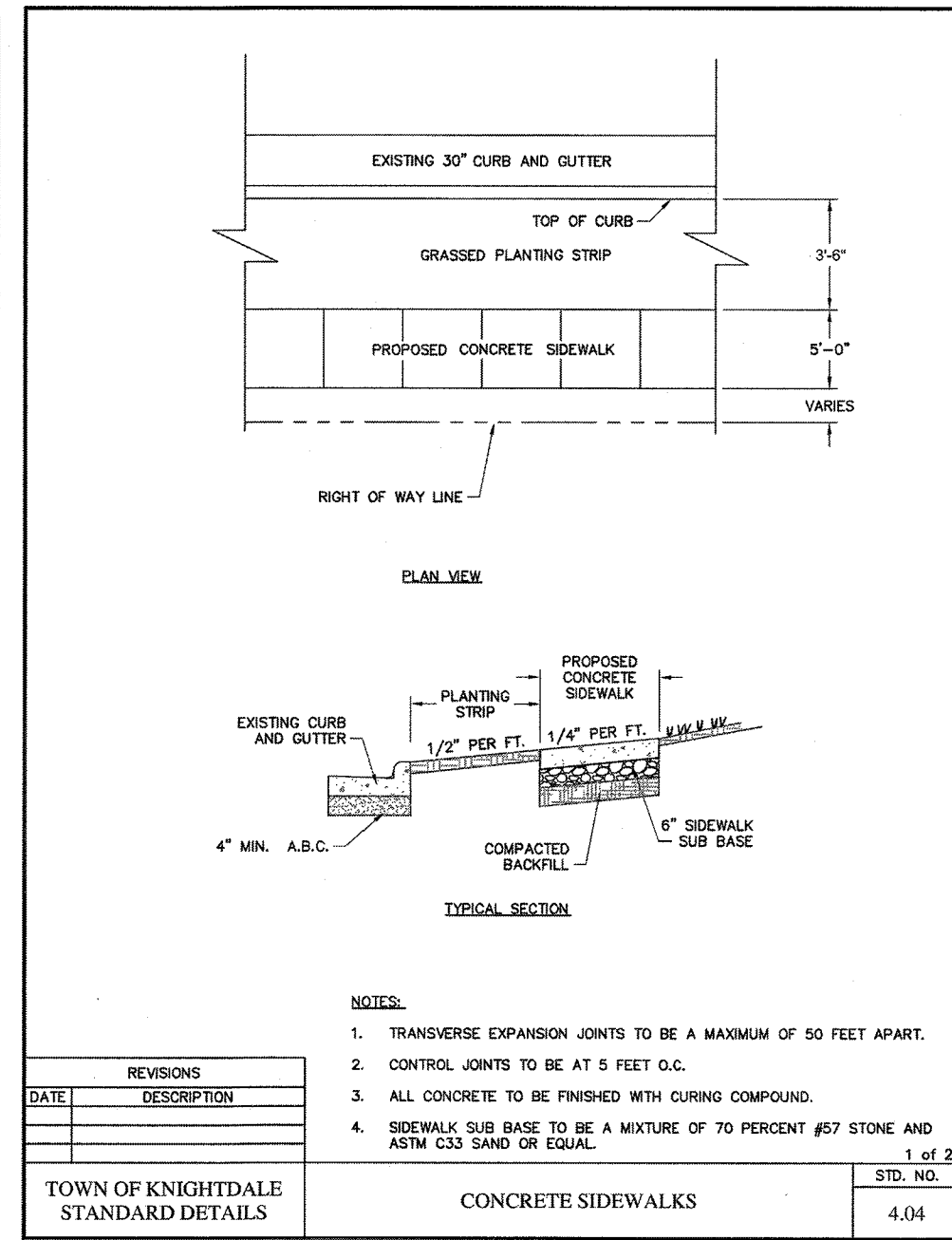
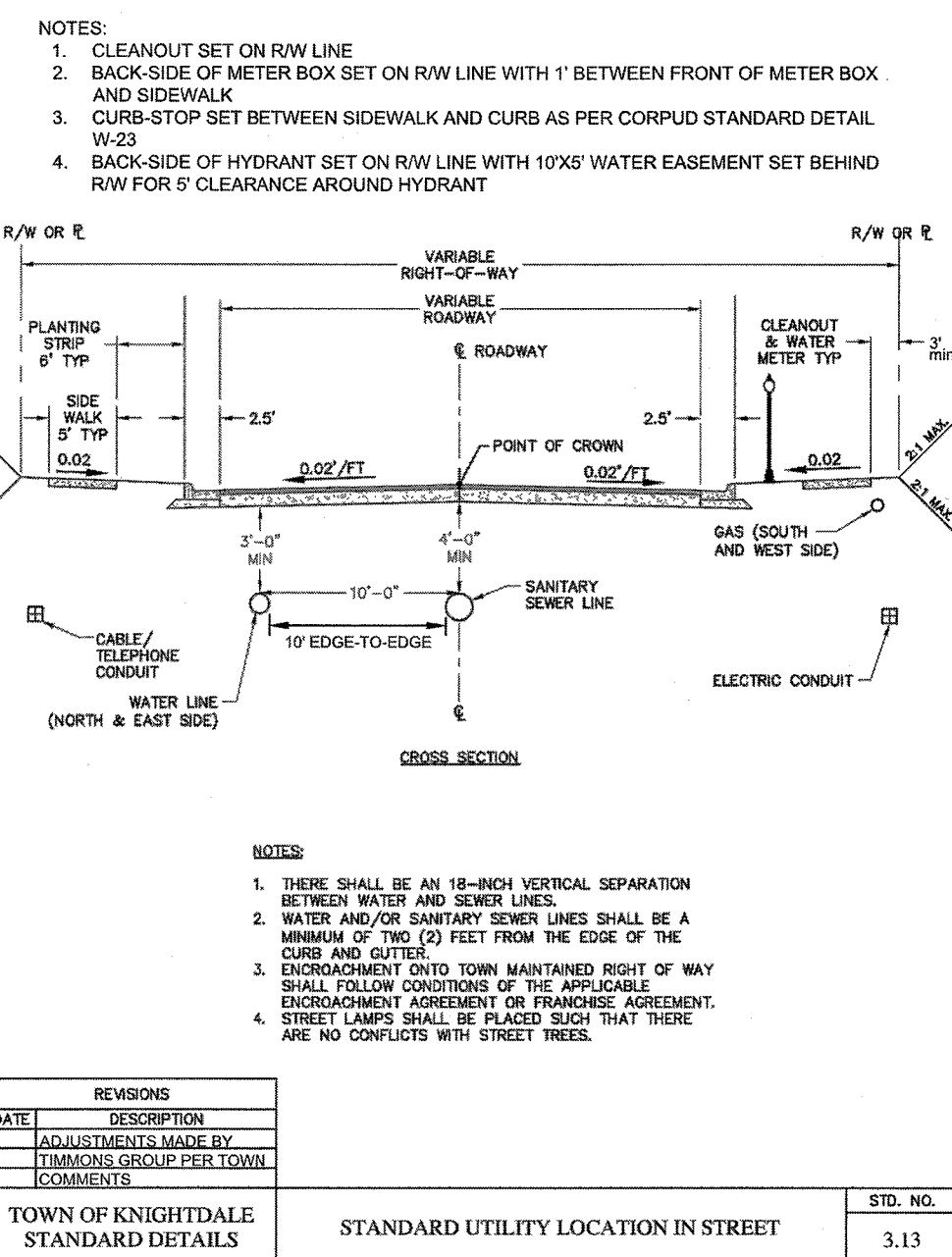
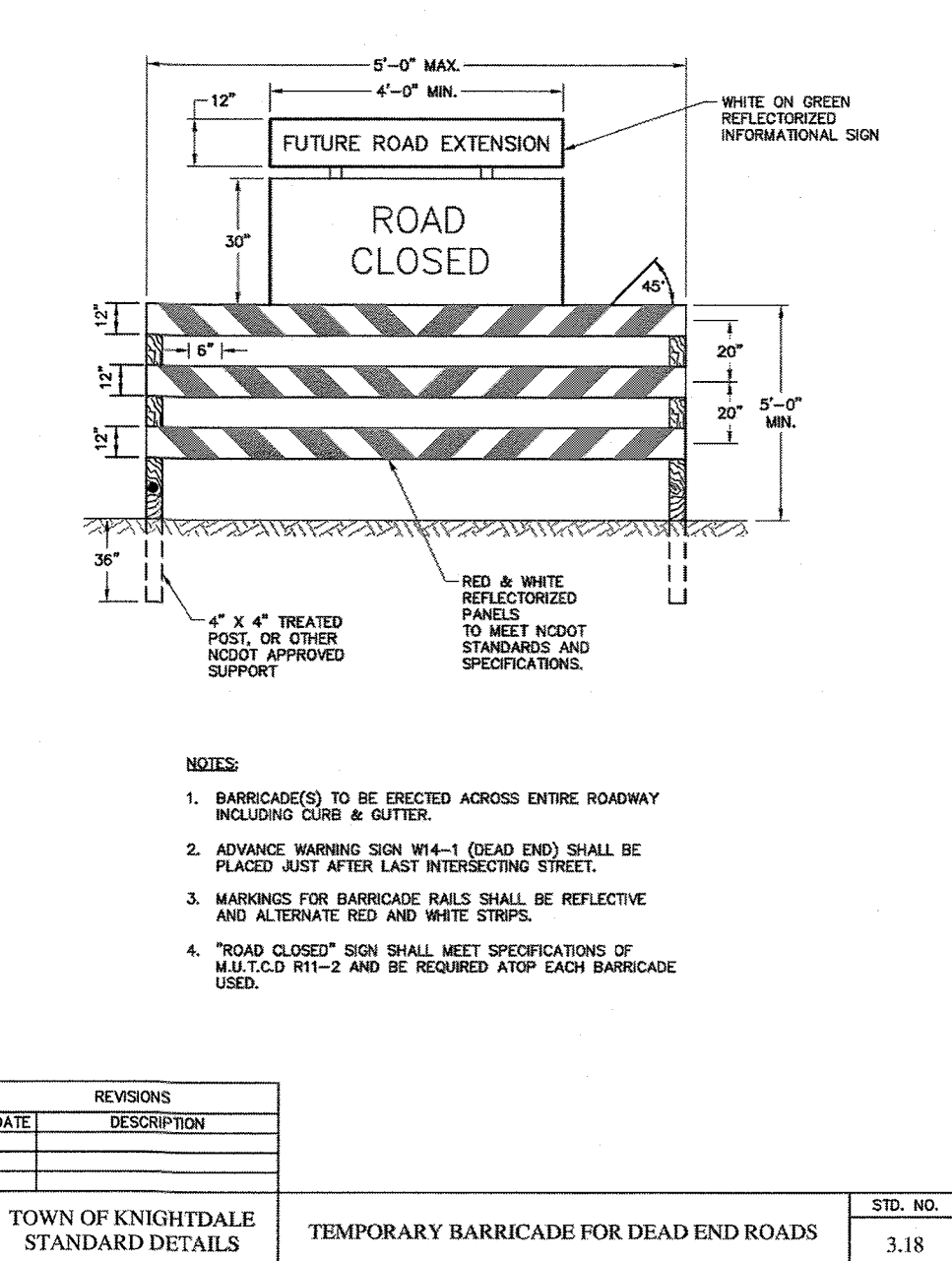
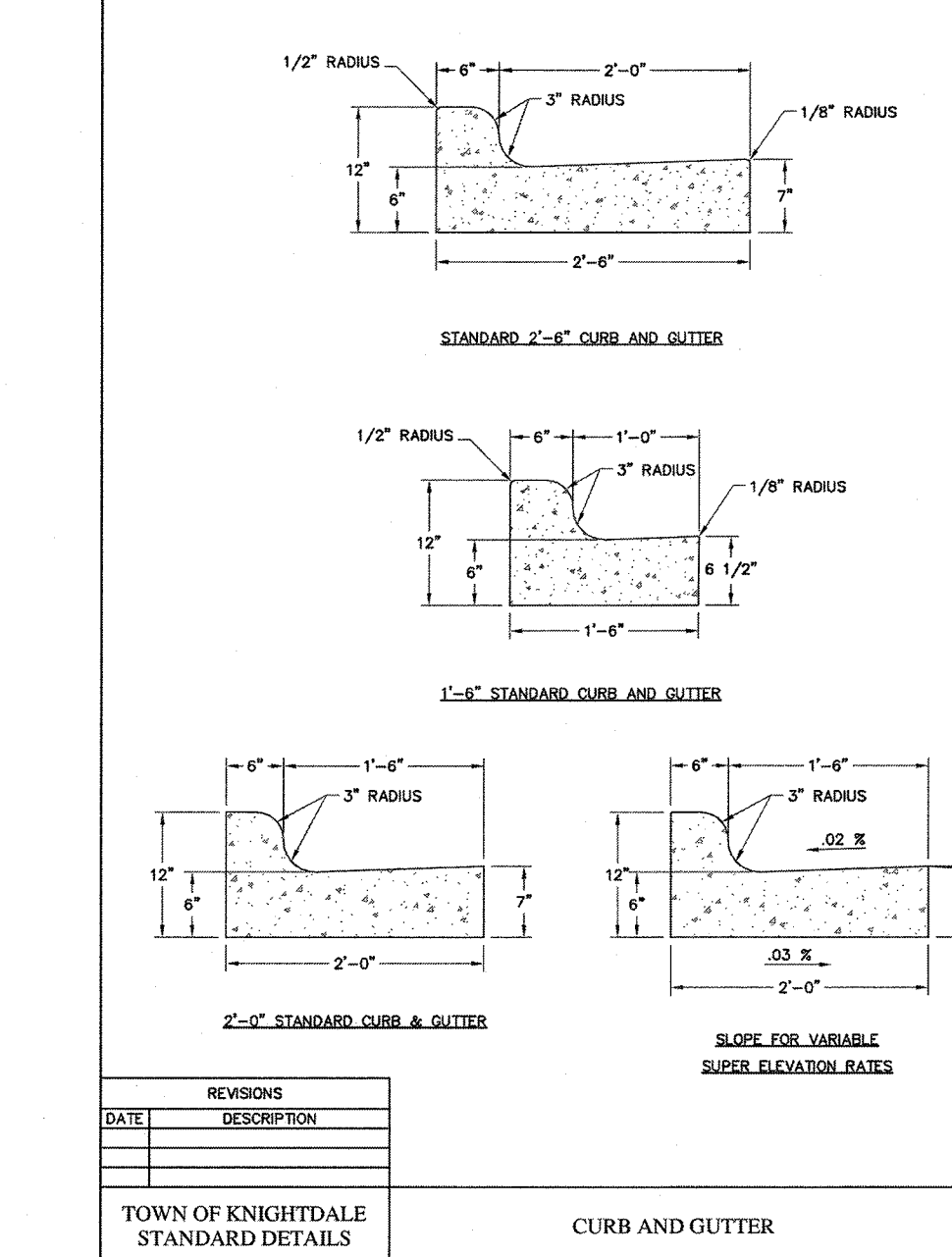
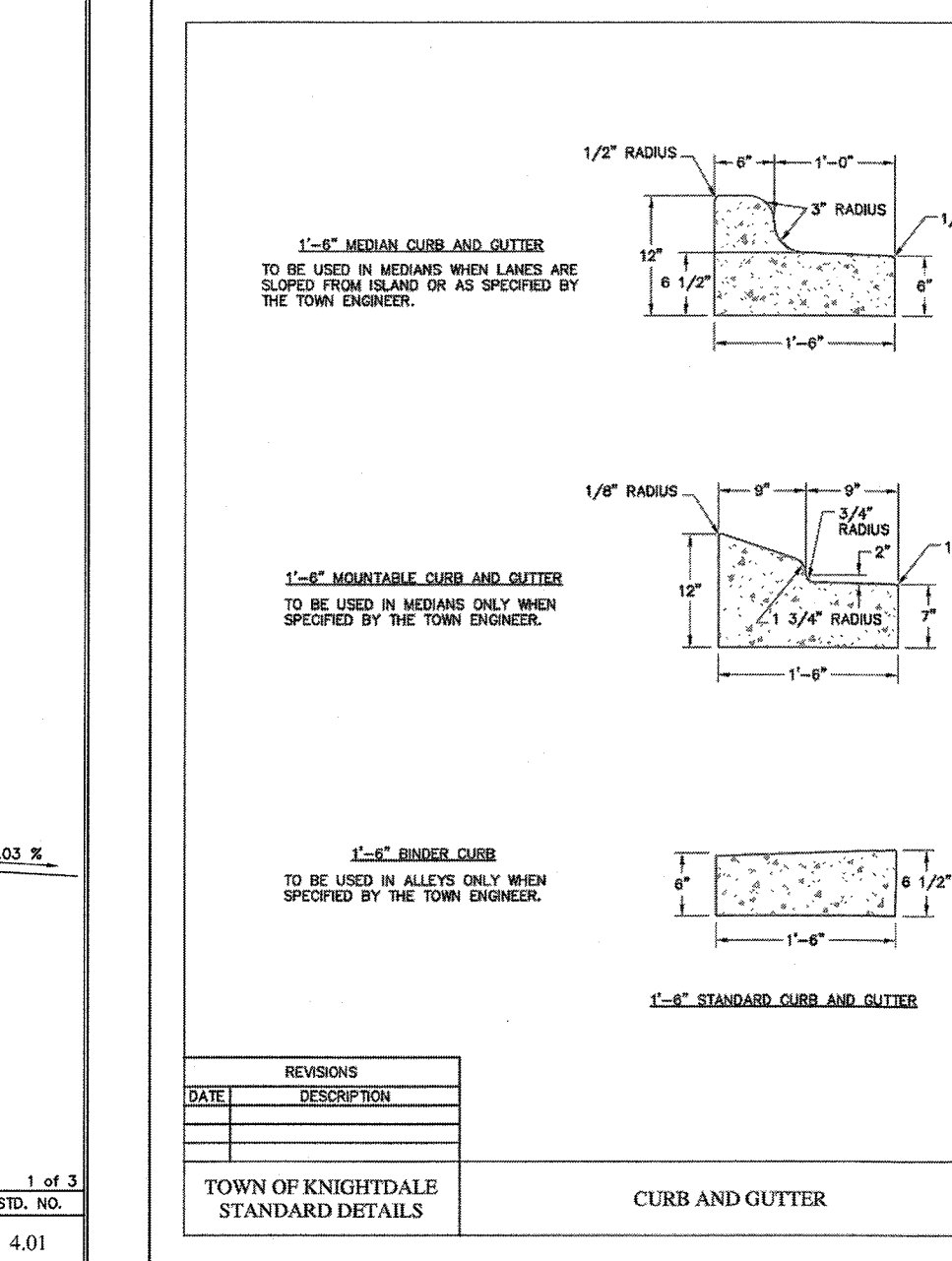
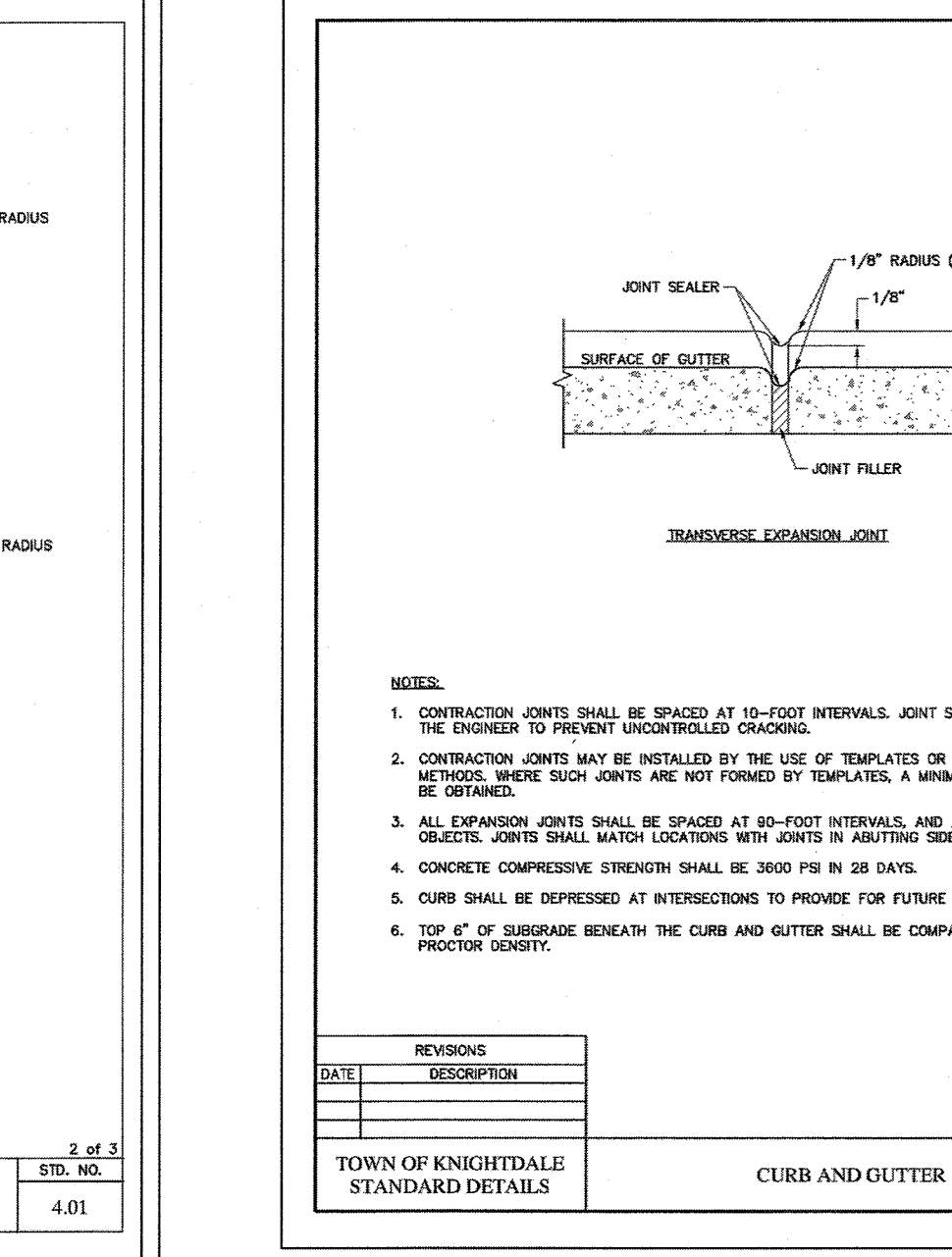
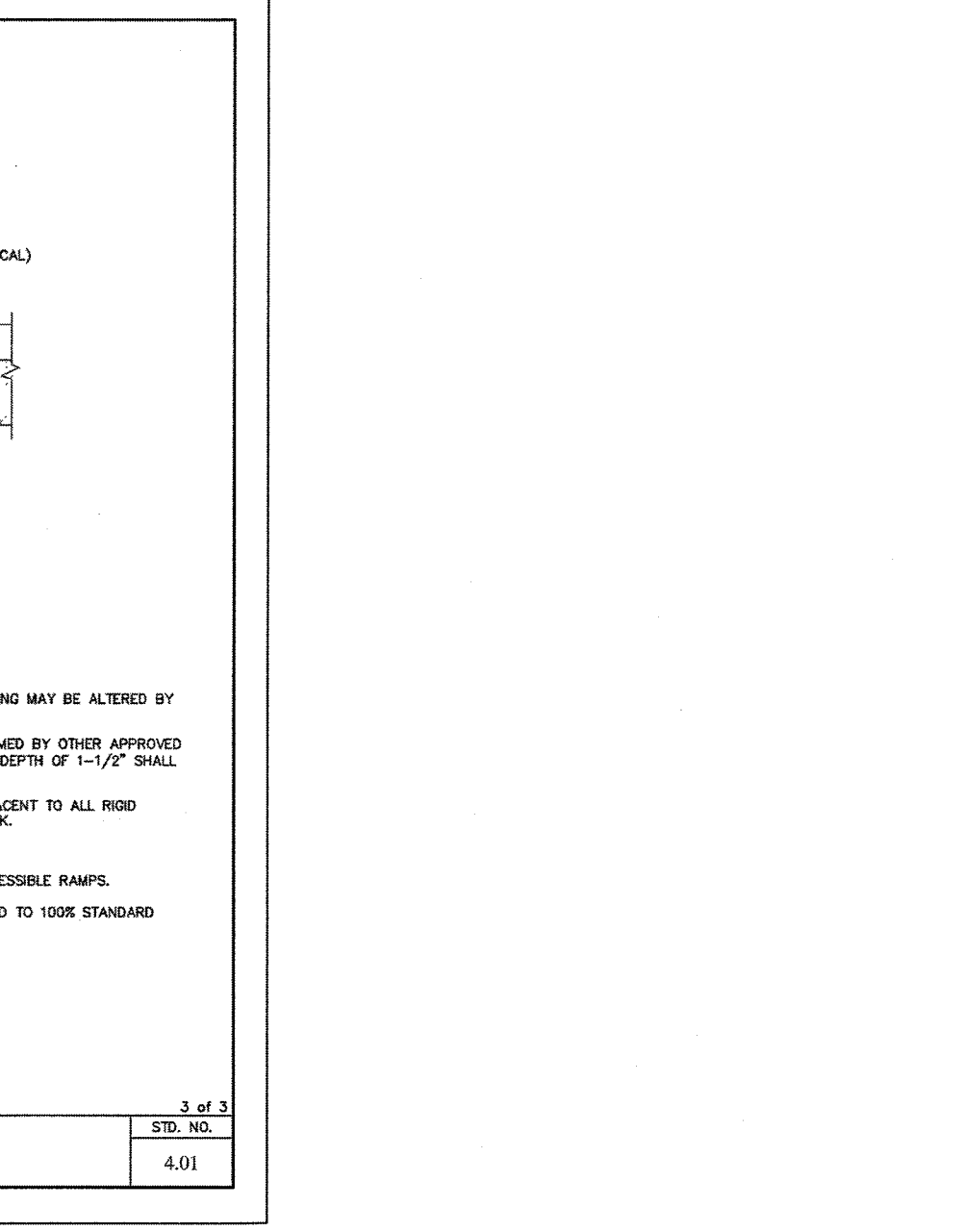
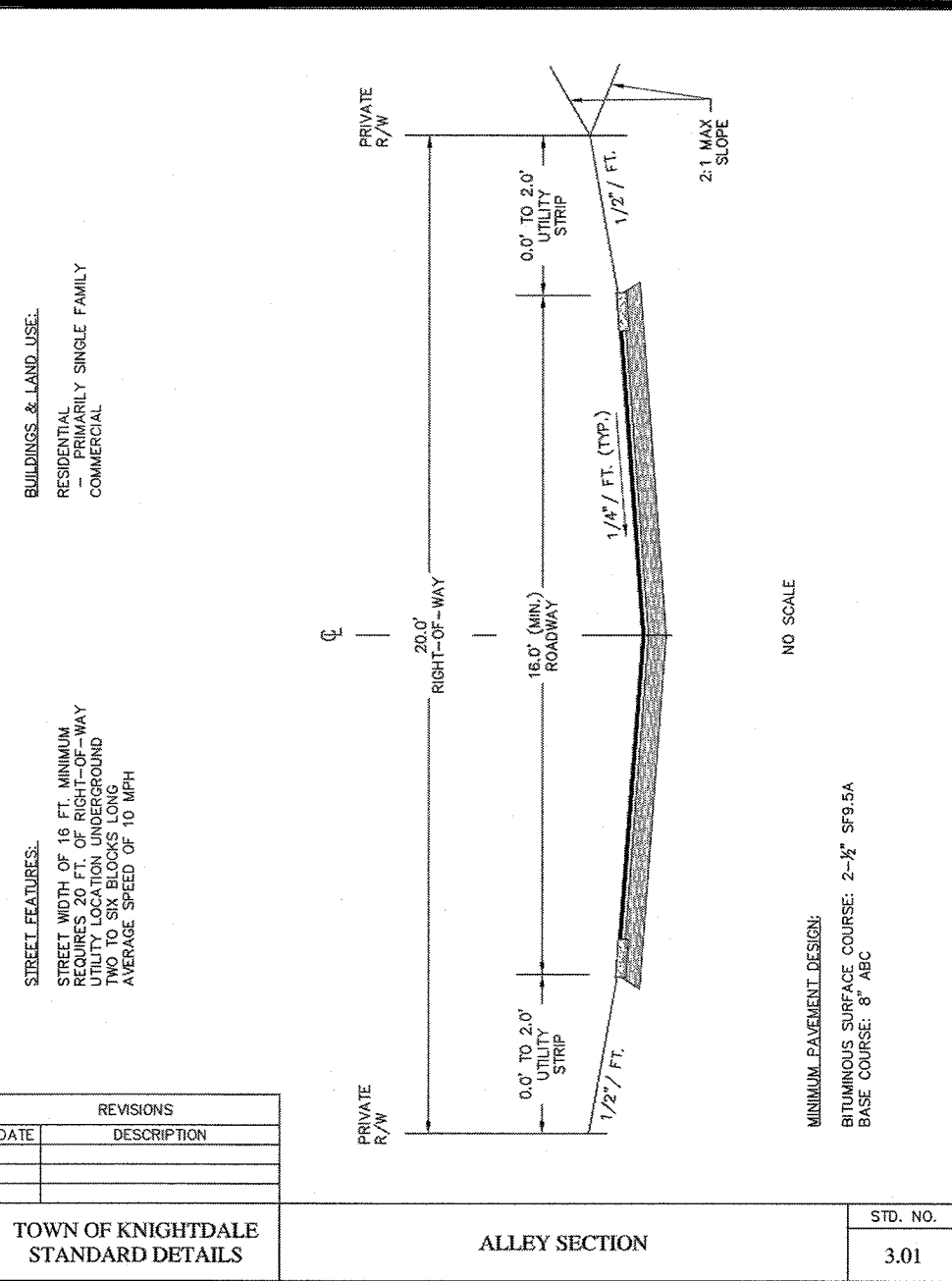
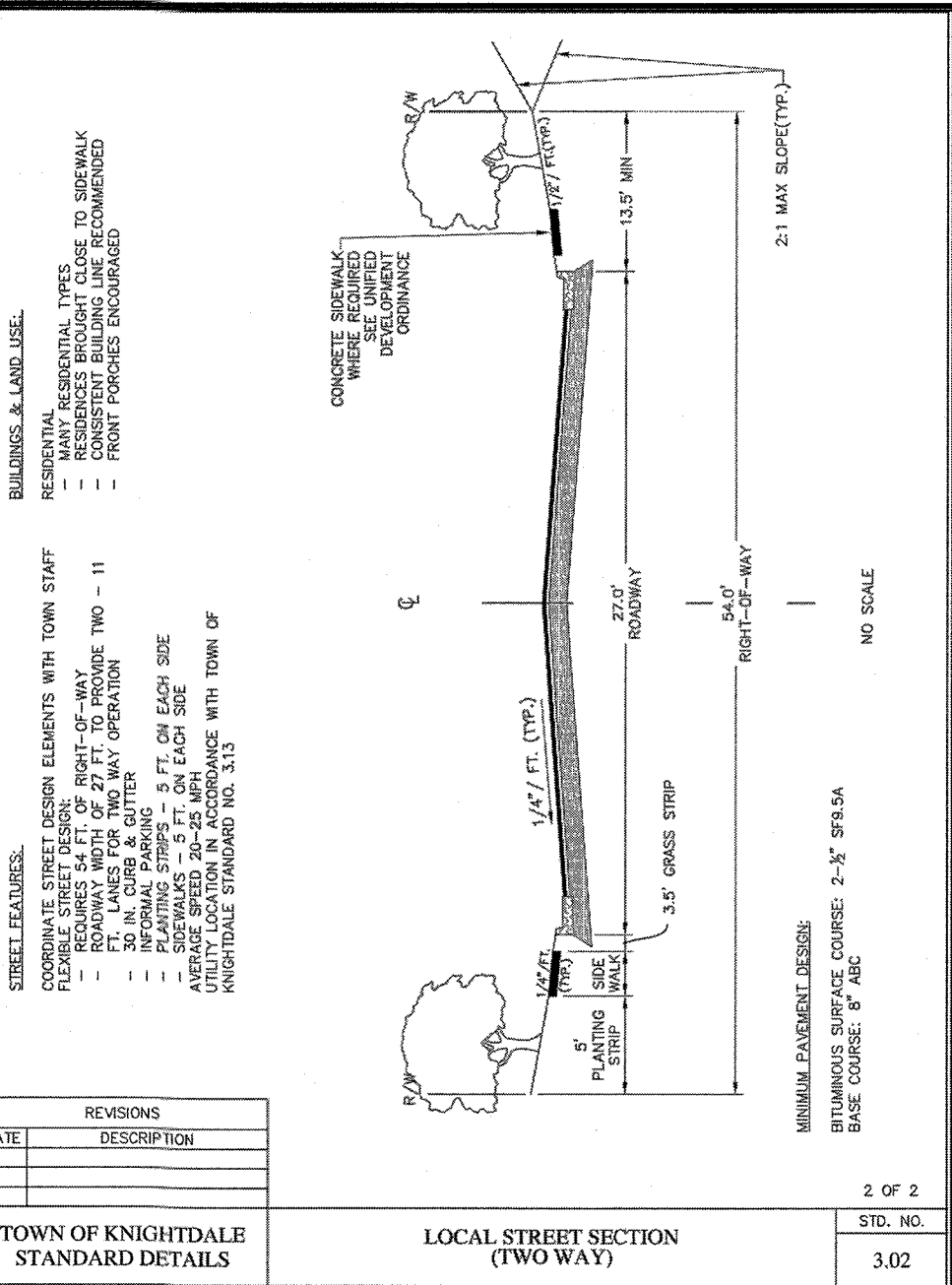
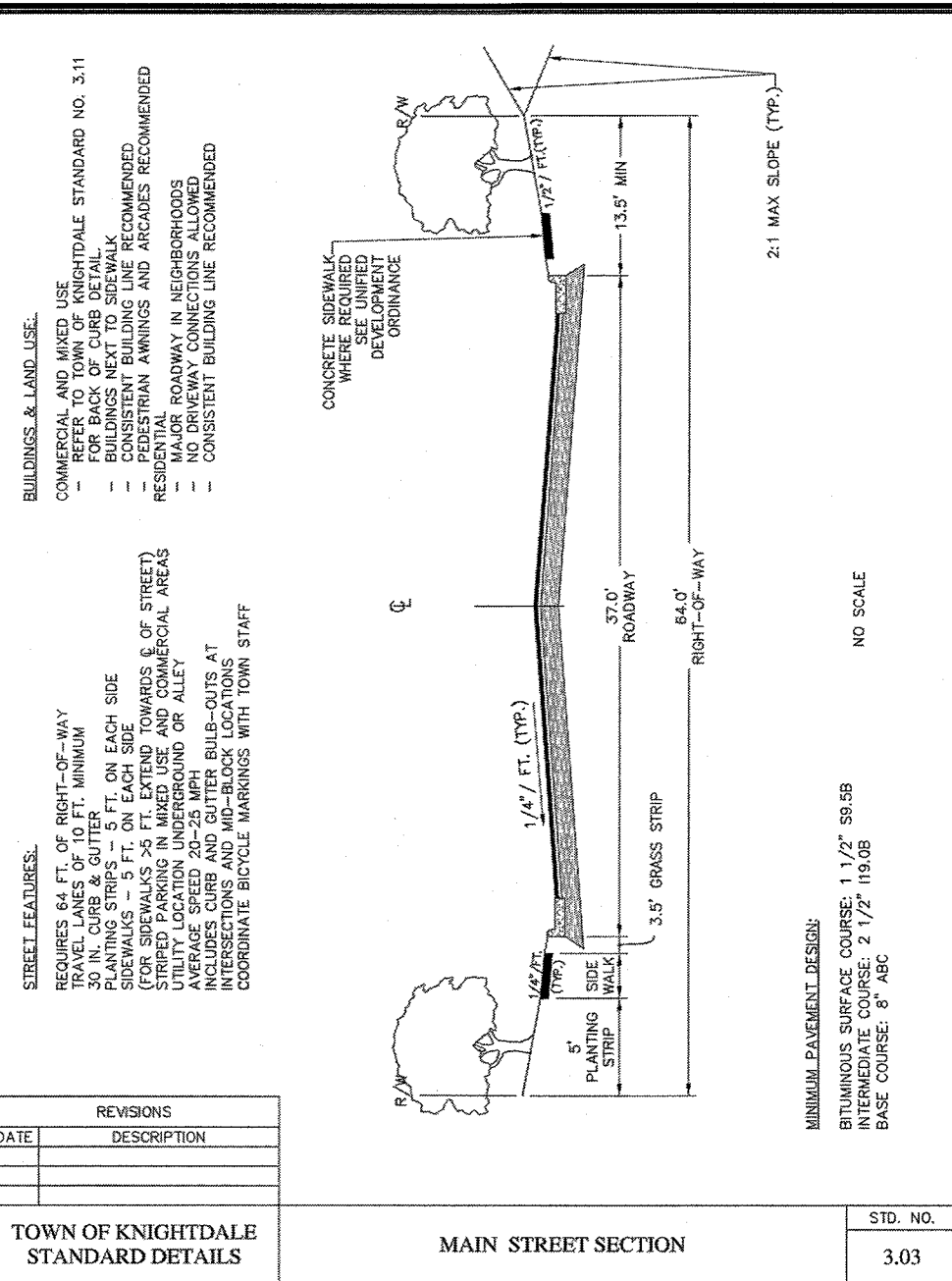
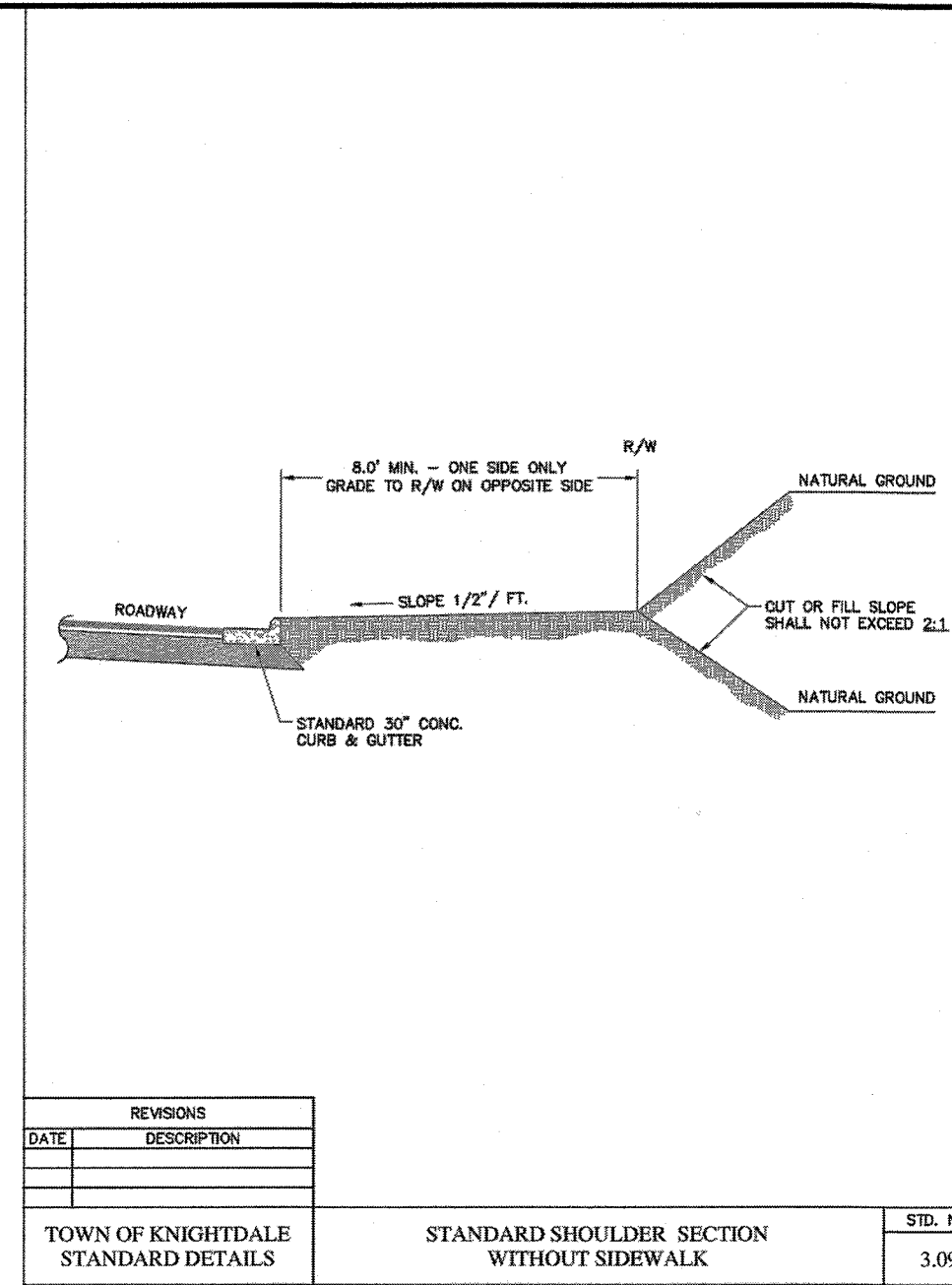
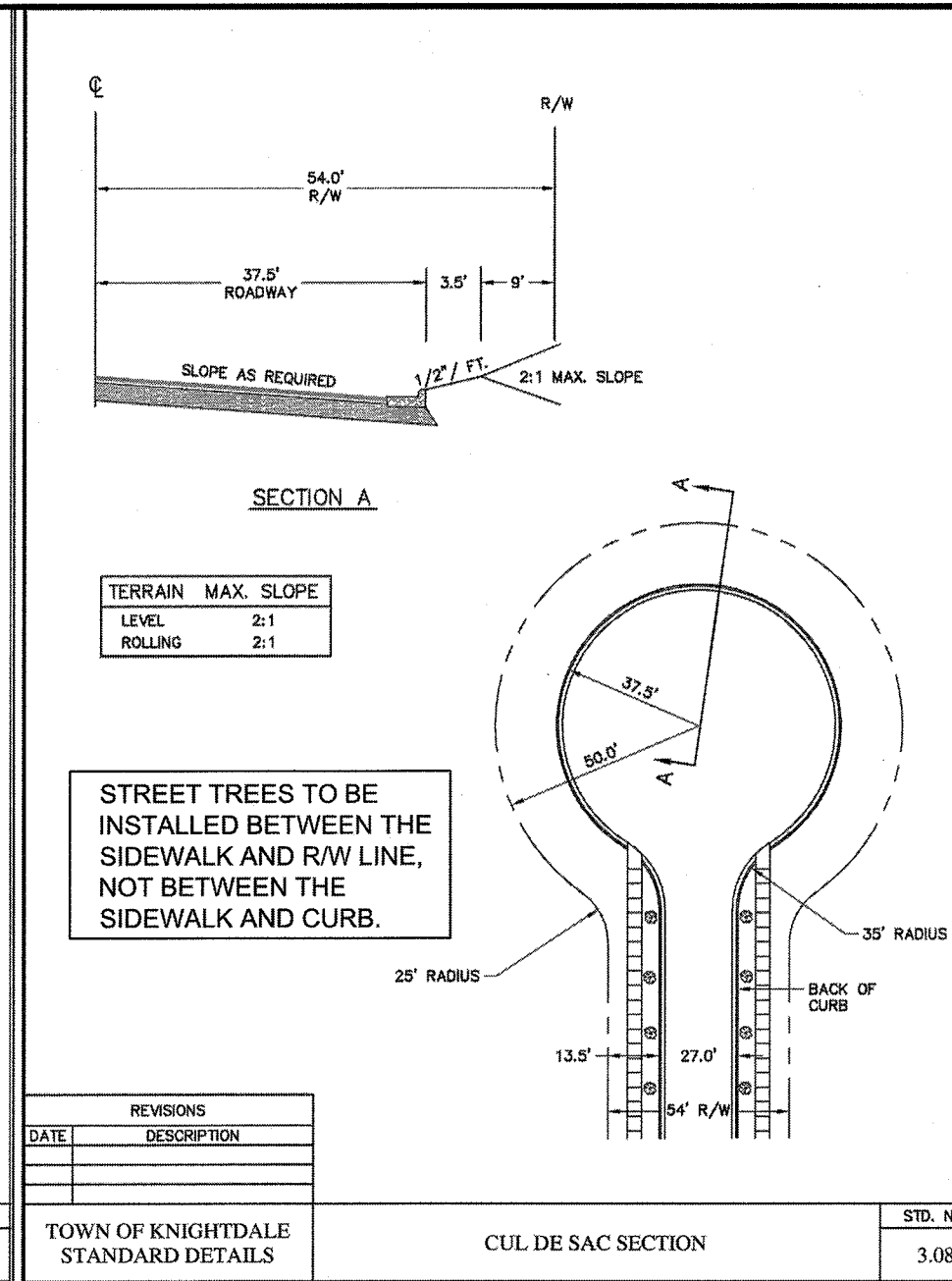
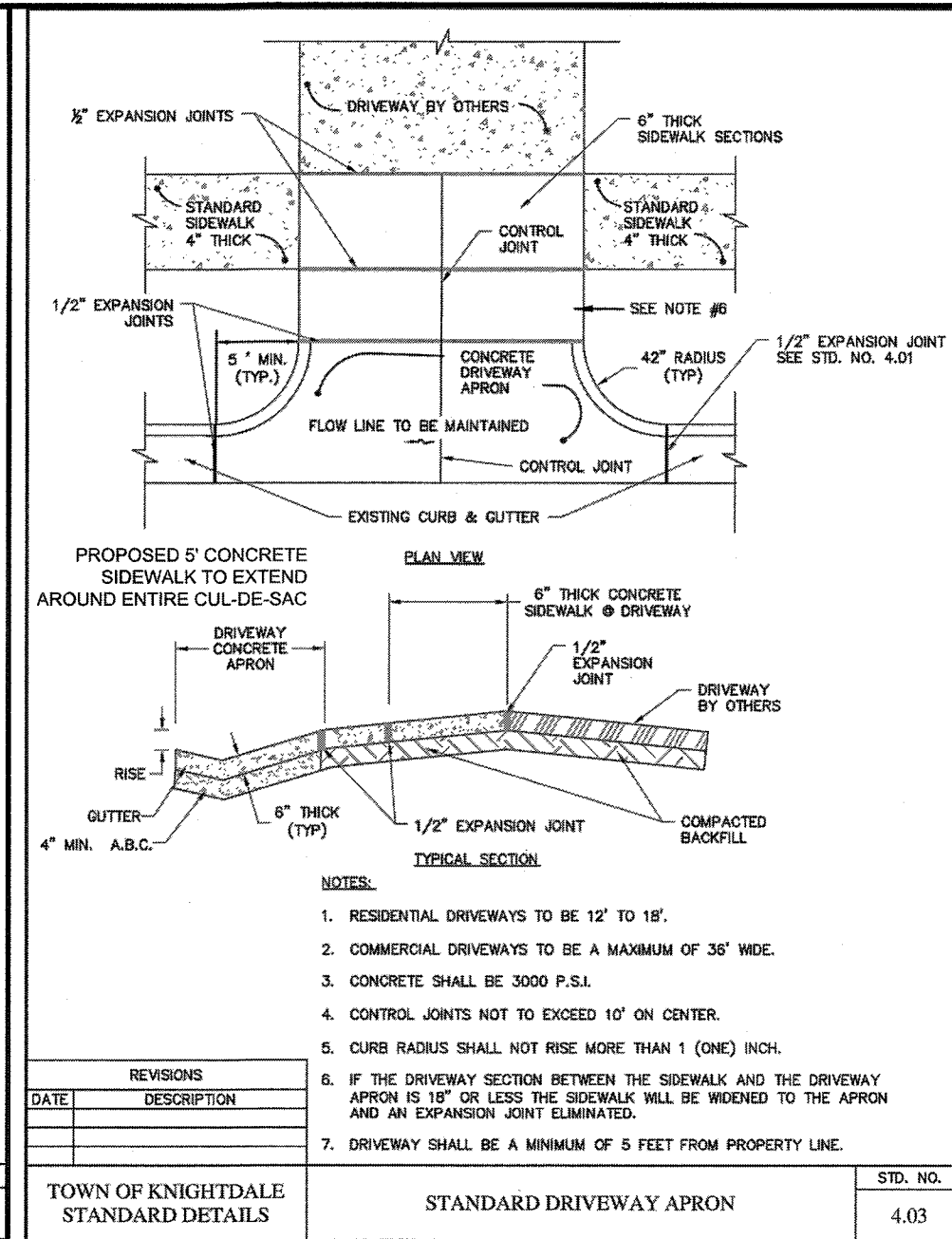
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TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SITE DETAILS

REVISION DESCRIPTION
 DATE 08/04/2020 GRADING AND UTILITY REVISIONS
 DATE 09/11/2018
 DRAWN BY 331
 DESIGNED BY 331
 CHECKED BY JFC
 SCALE PER PLAN



TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8-18-2020
 ADMINISTRATOR

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD UTILITY LOCATION IN STREET	WHEELCHAIR RAMP CURB CUT	TEMPORARY BARRICADE FOR DEAD END ROADS	CURB AND GUTTER	CURB AND GUTTER	CURB AND GUTTER	STANDARD SHOULDER SECTION WITHOUT SIDEWALK	CUL DE SAC SECTION	STANDARD DRIVEWAY APRON
3.13	3.13	4.06	3.18	4.01	4.01	4.01	3.09	3.08	4.03

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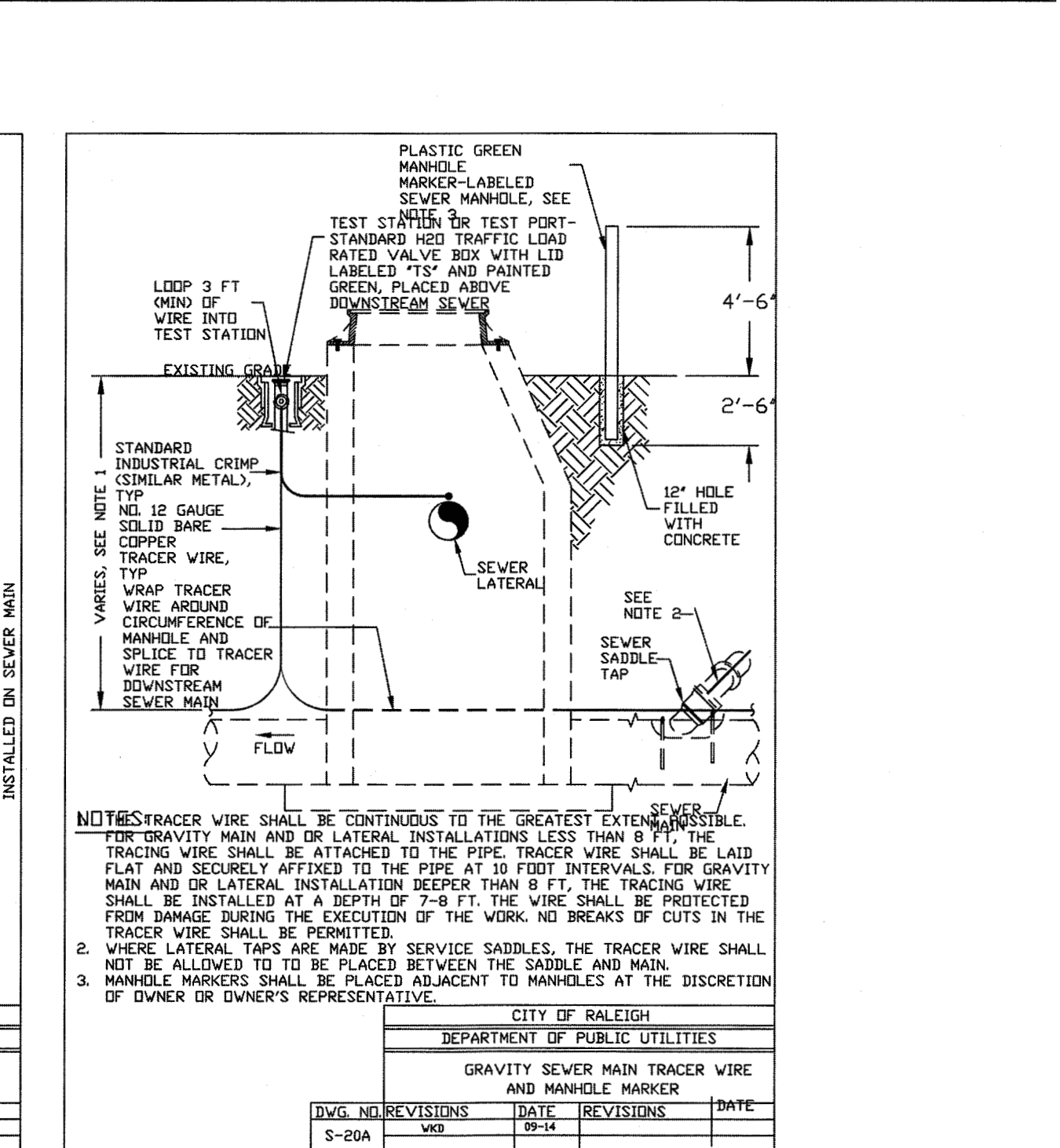
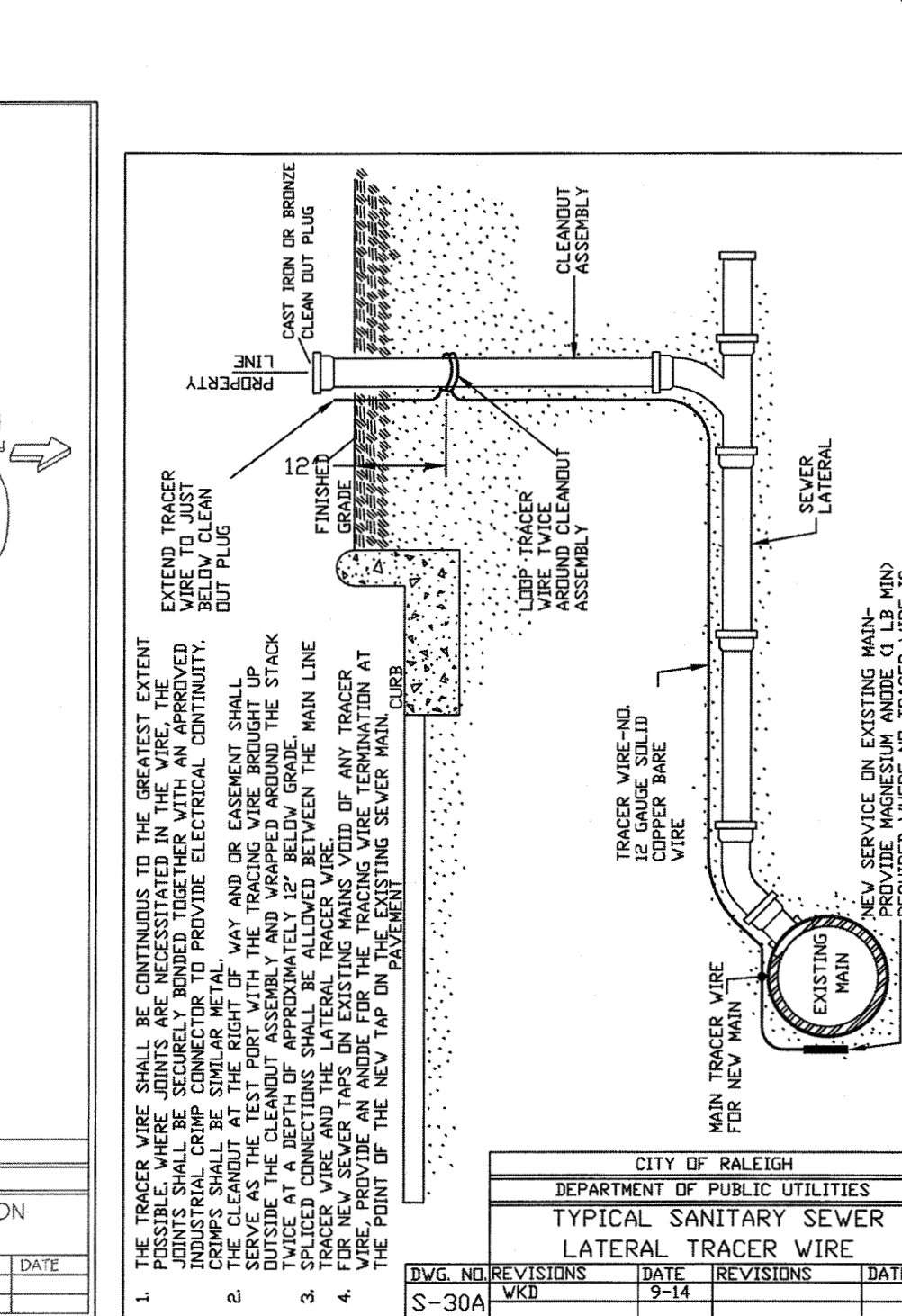
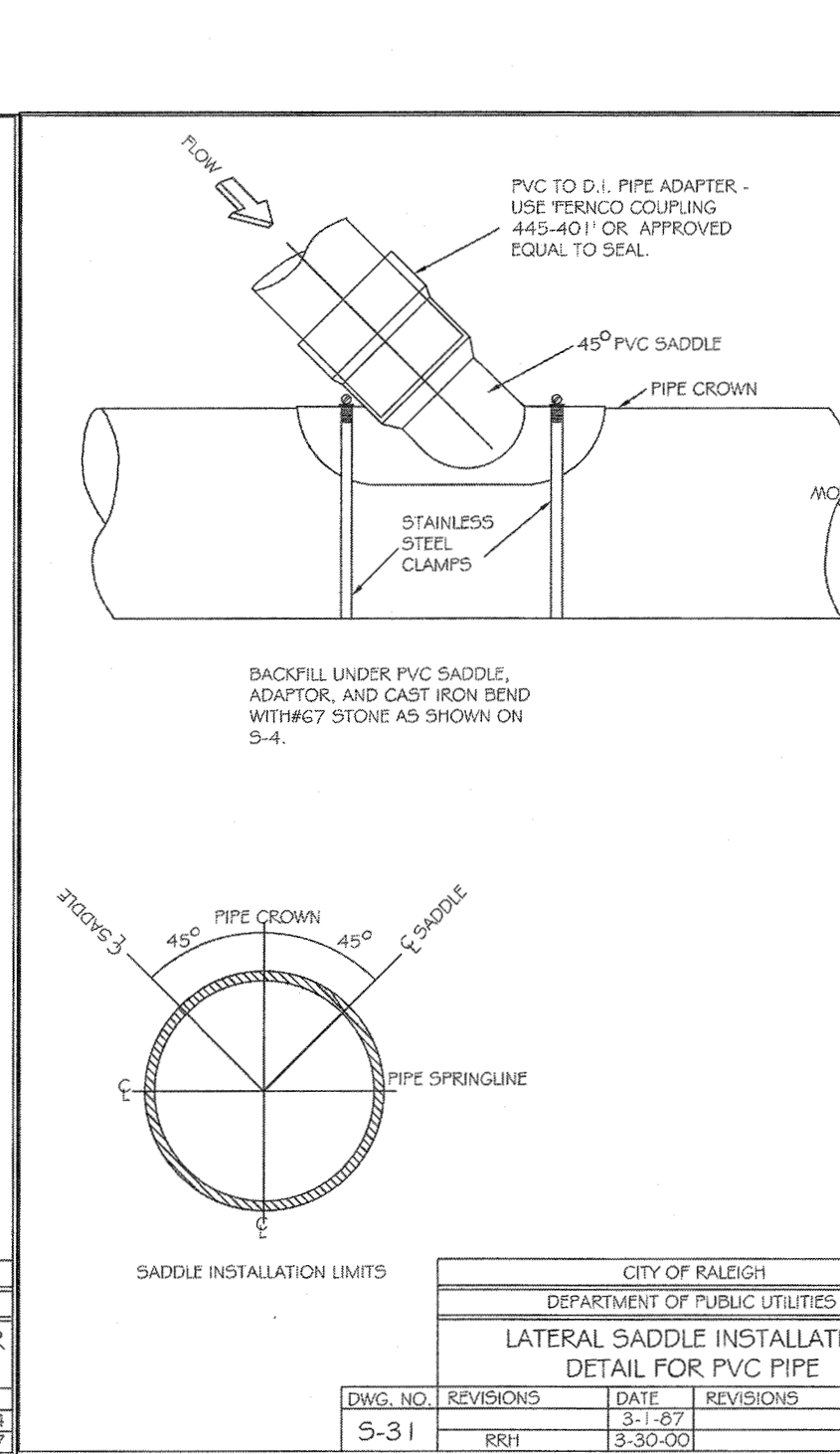
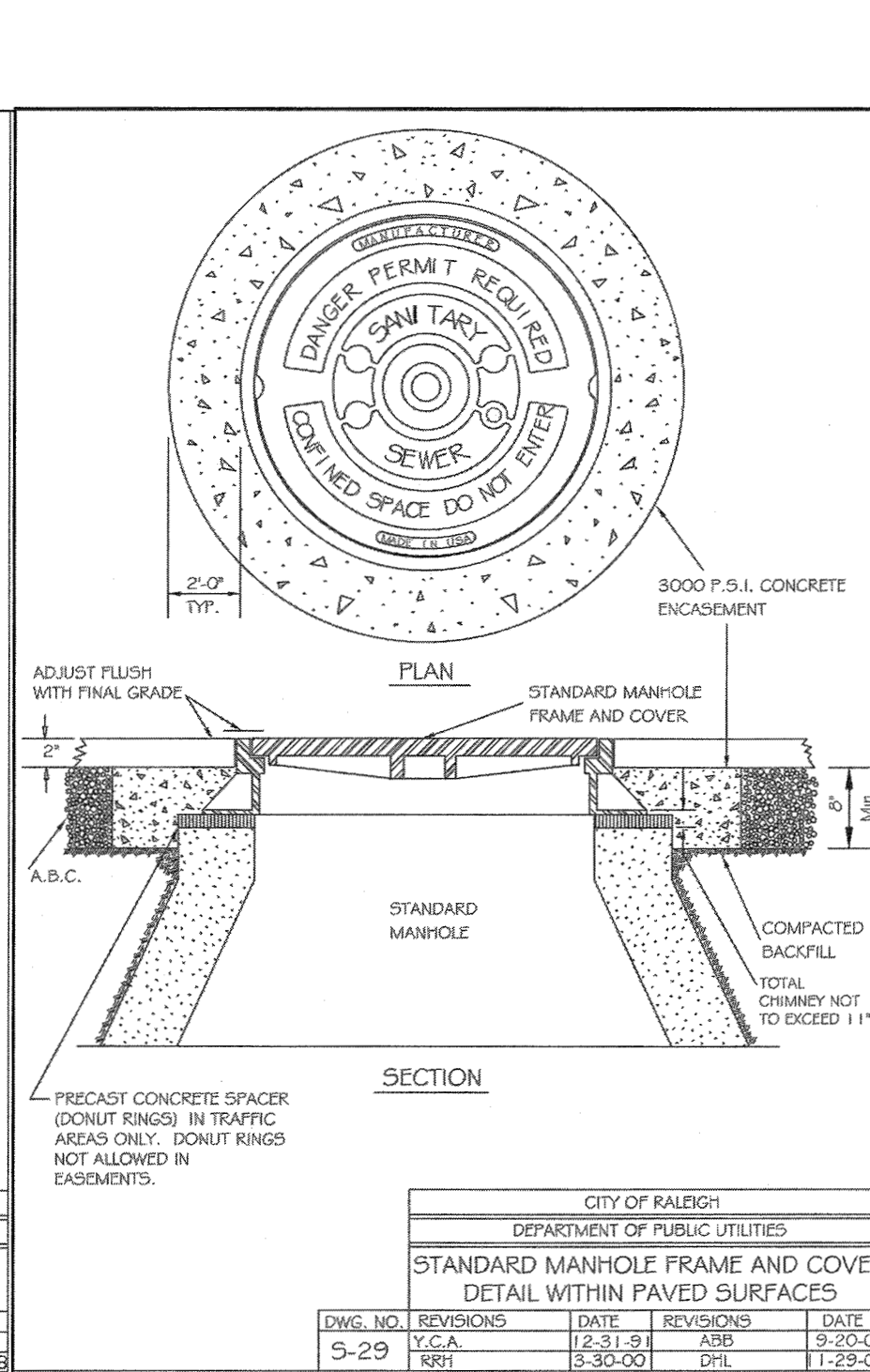
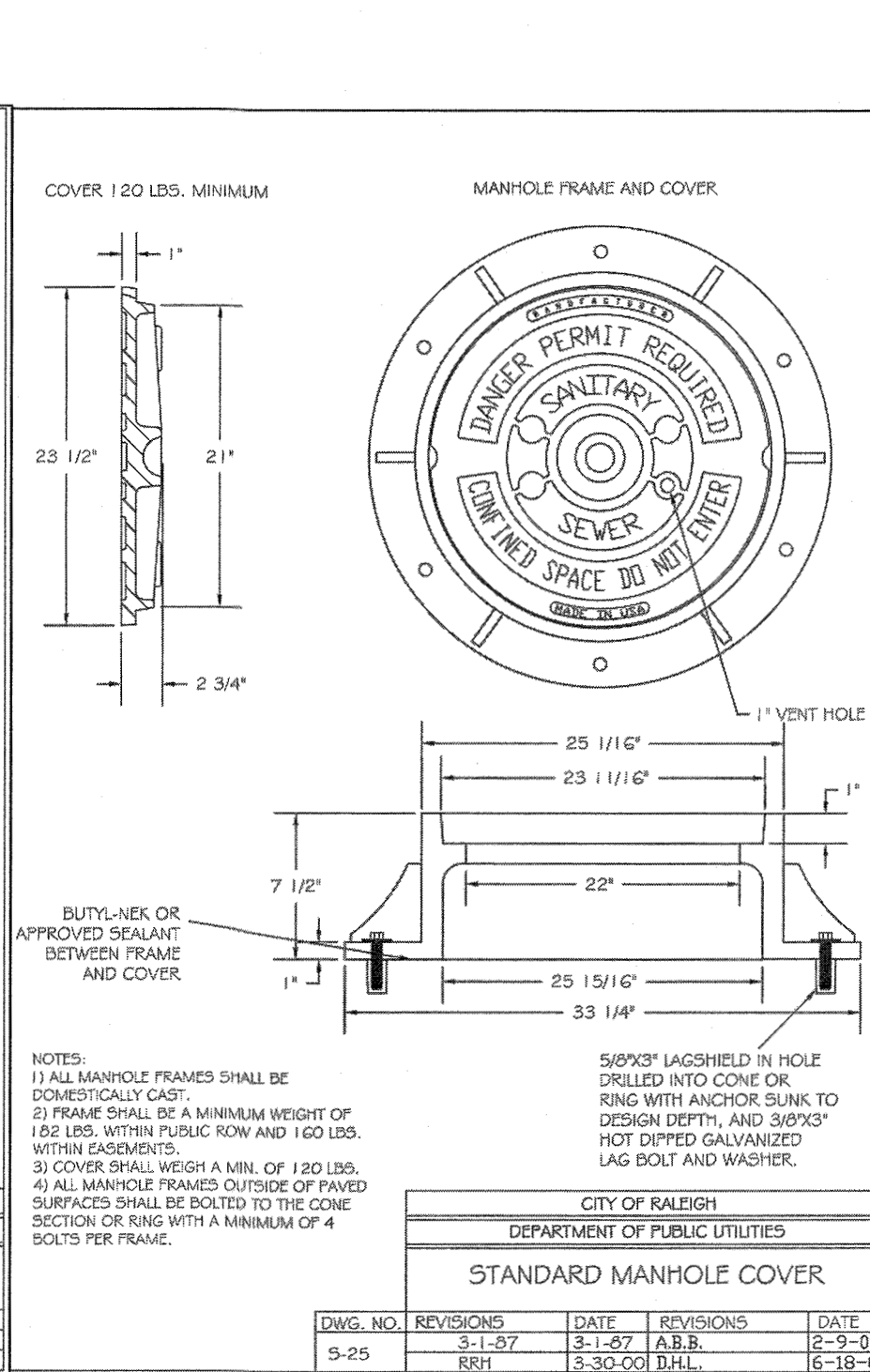
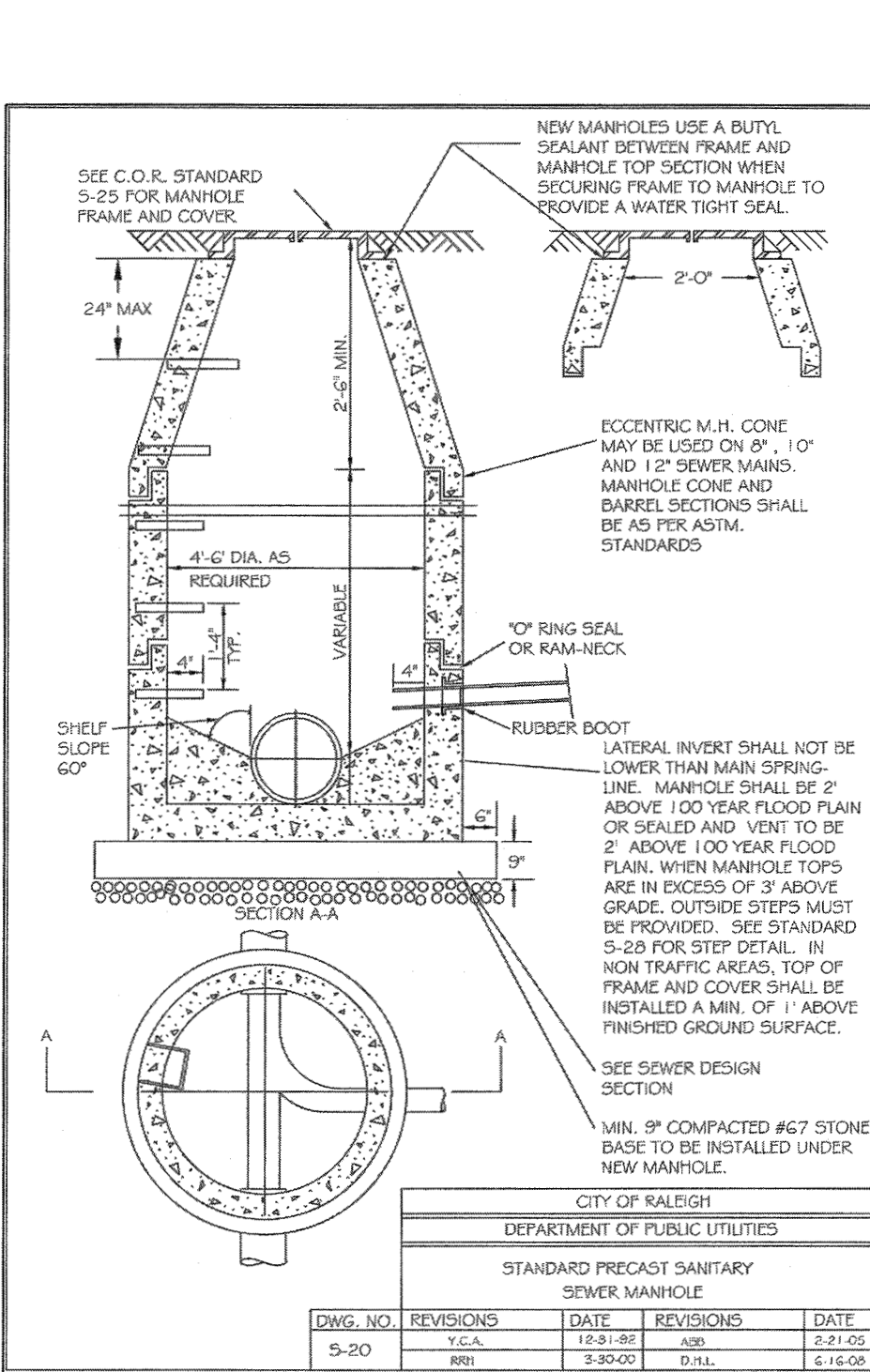
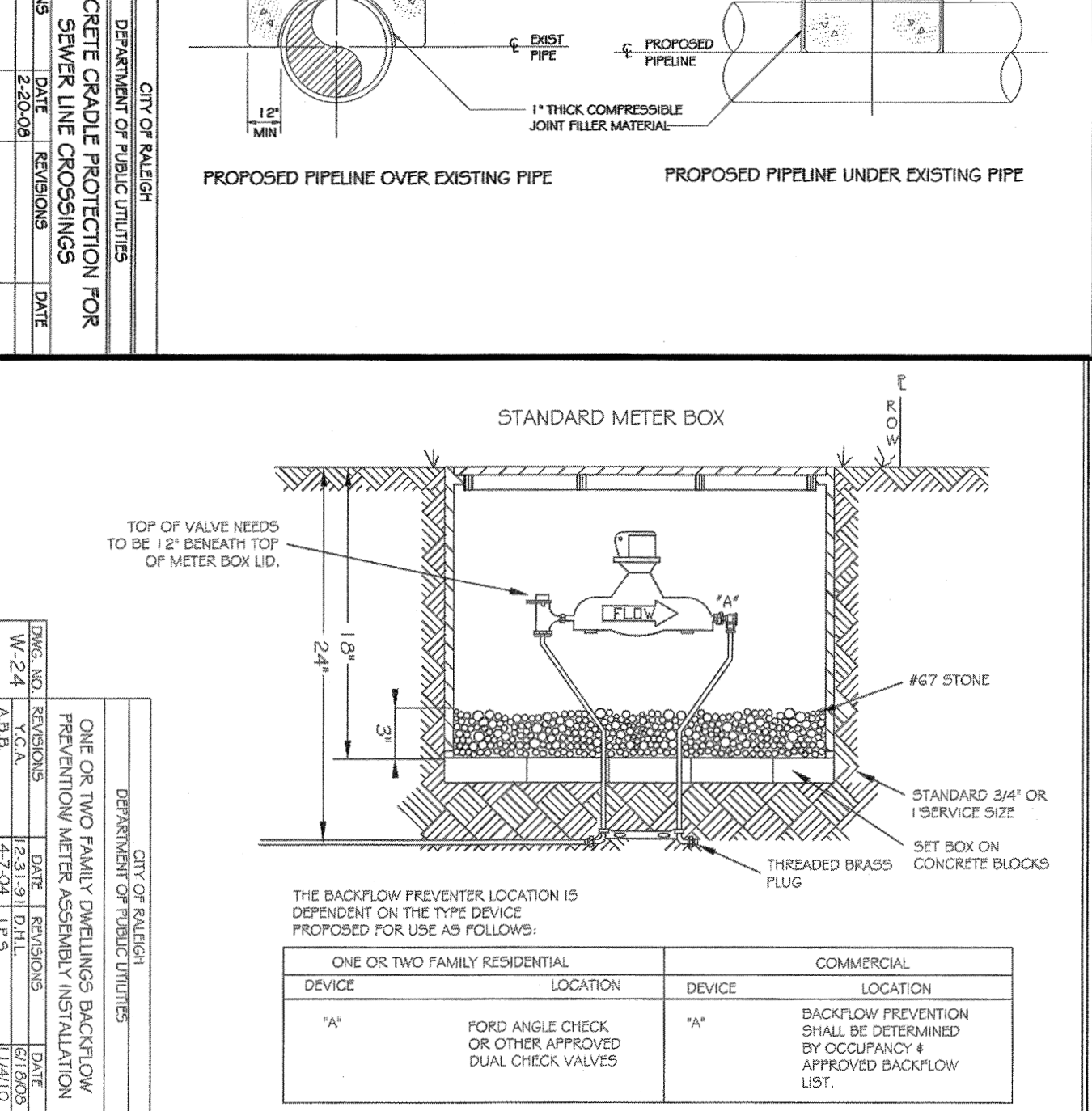
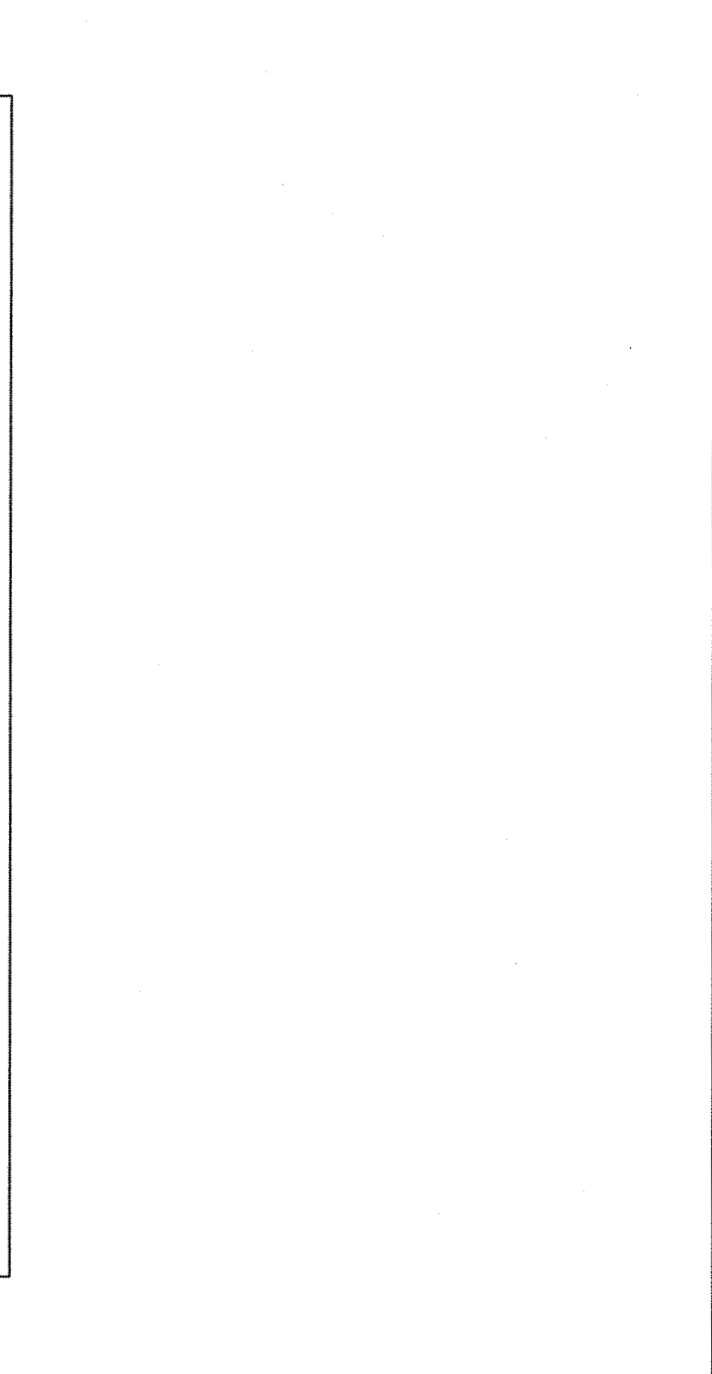
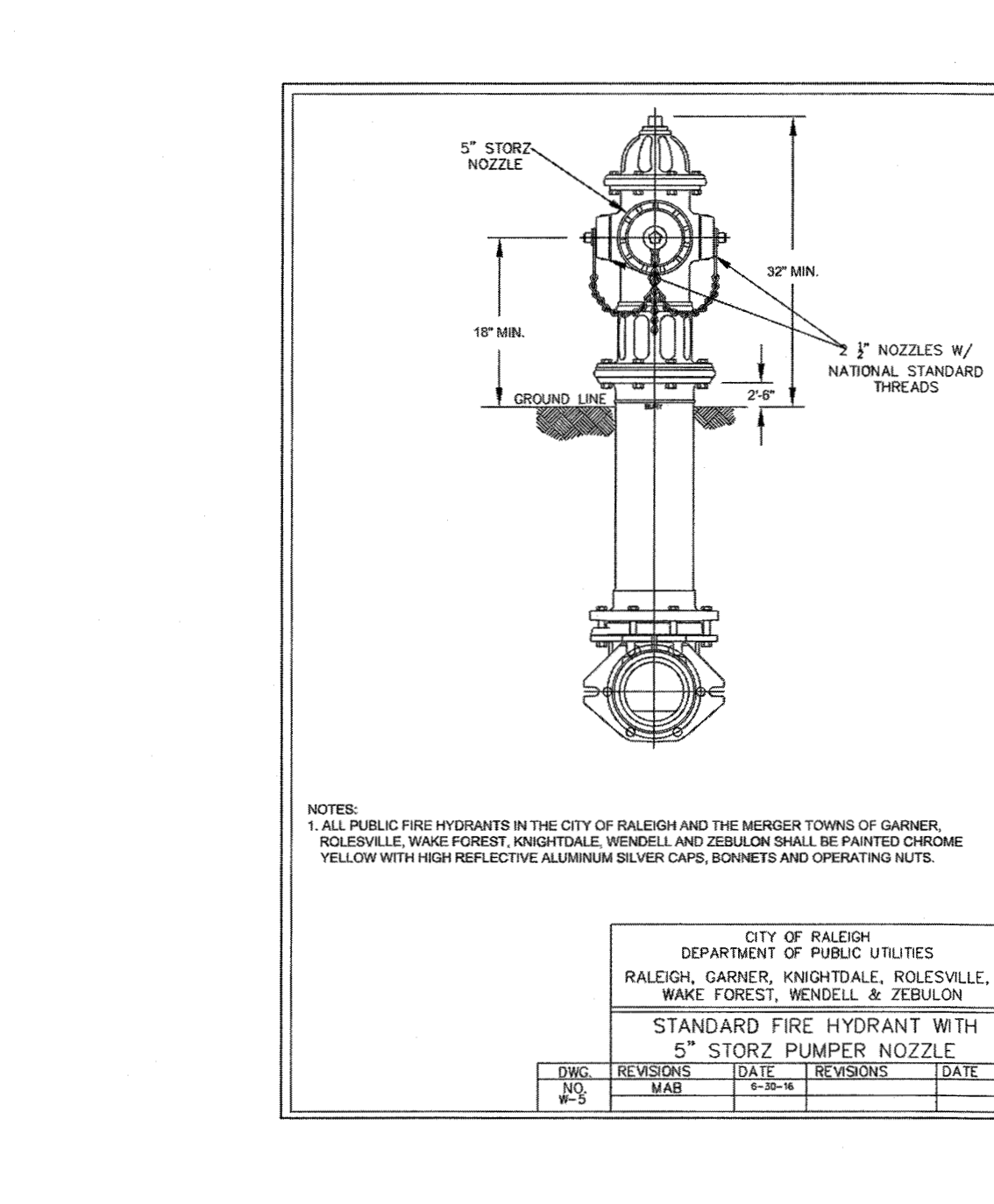
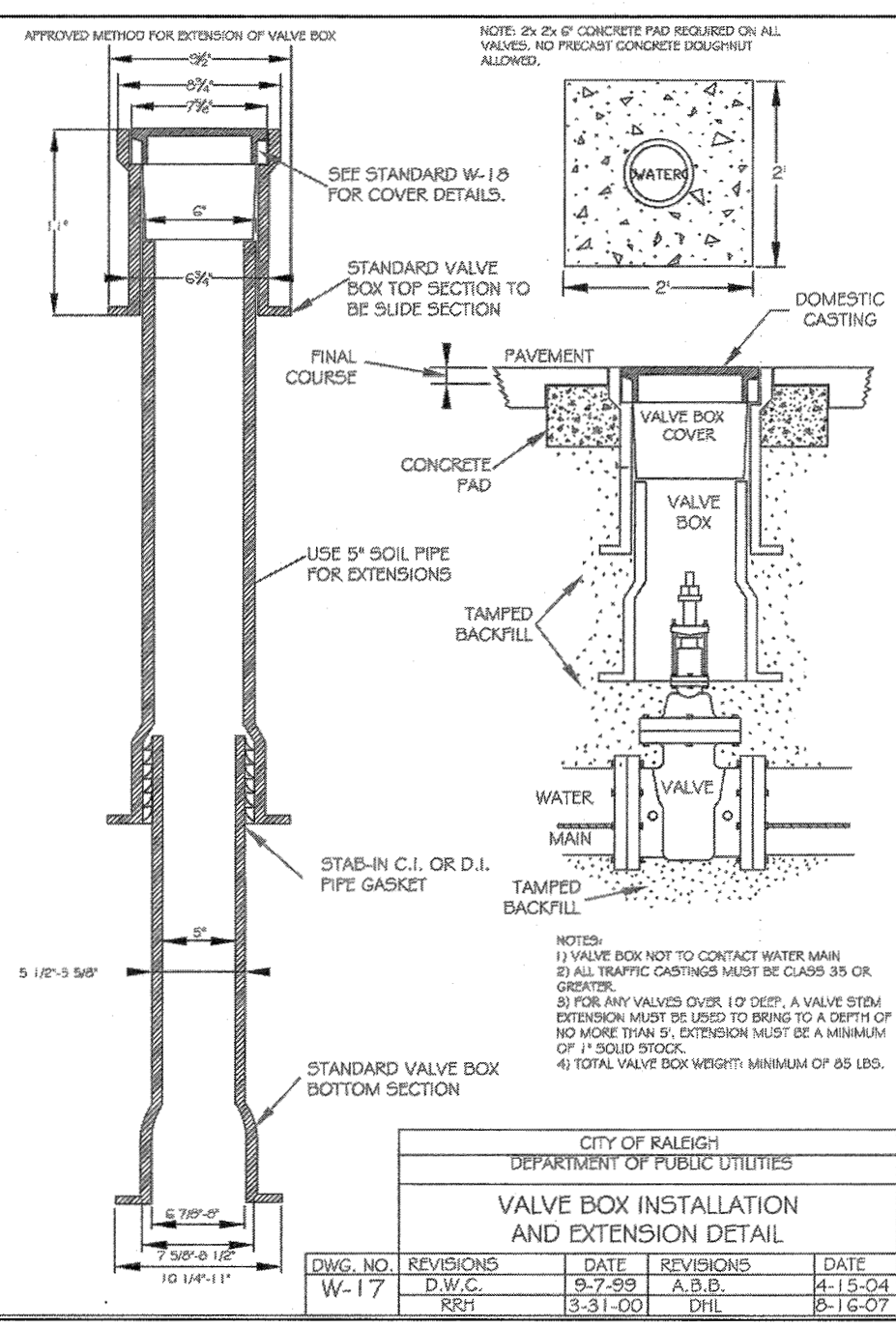
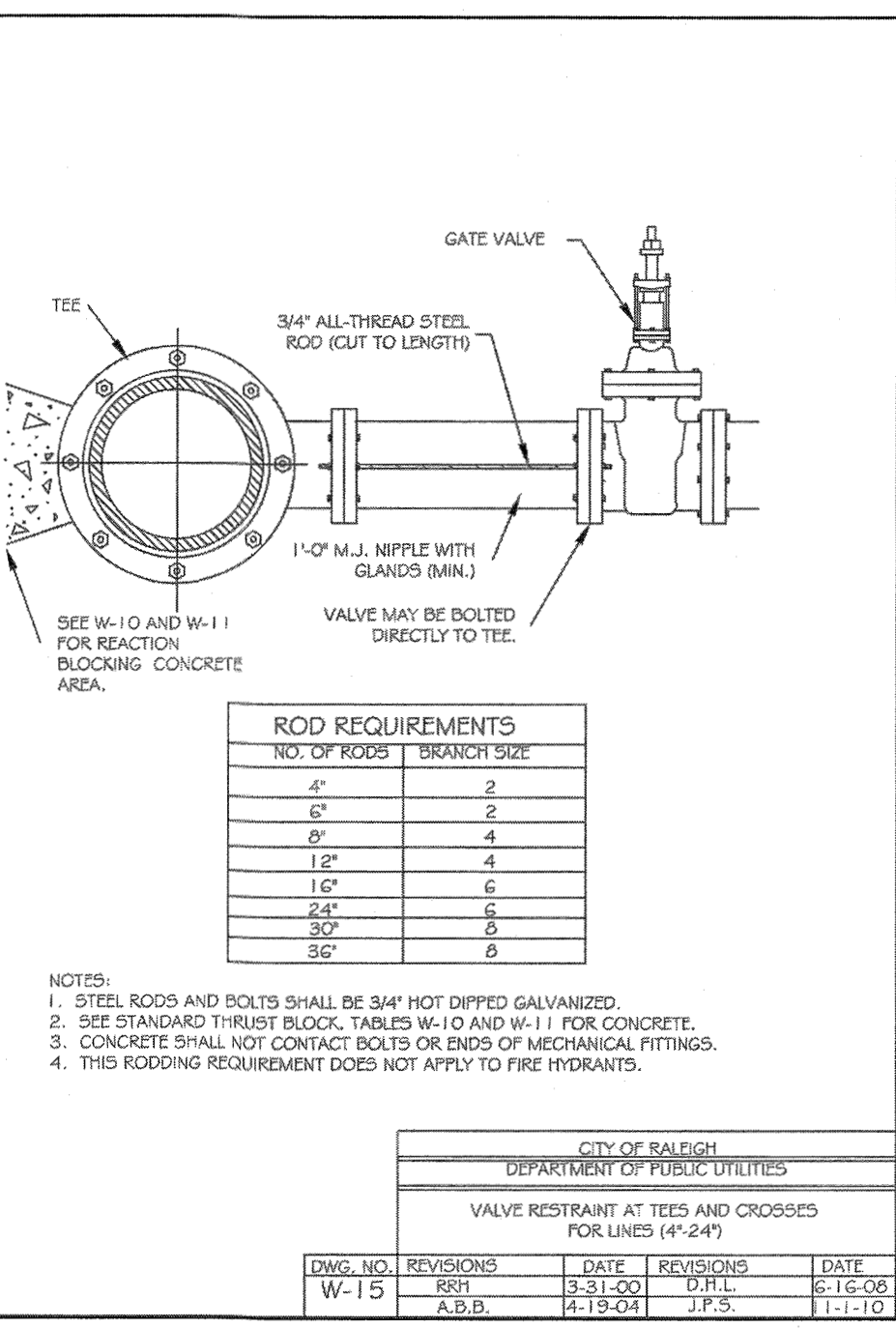
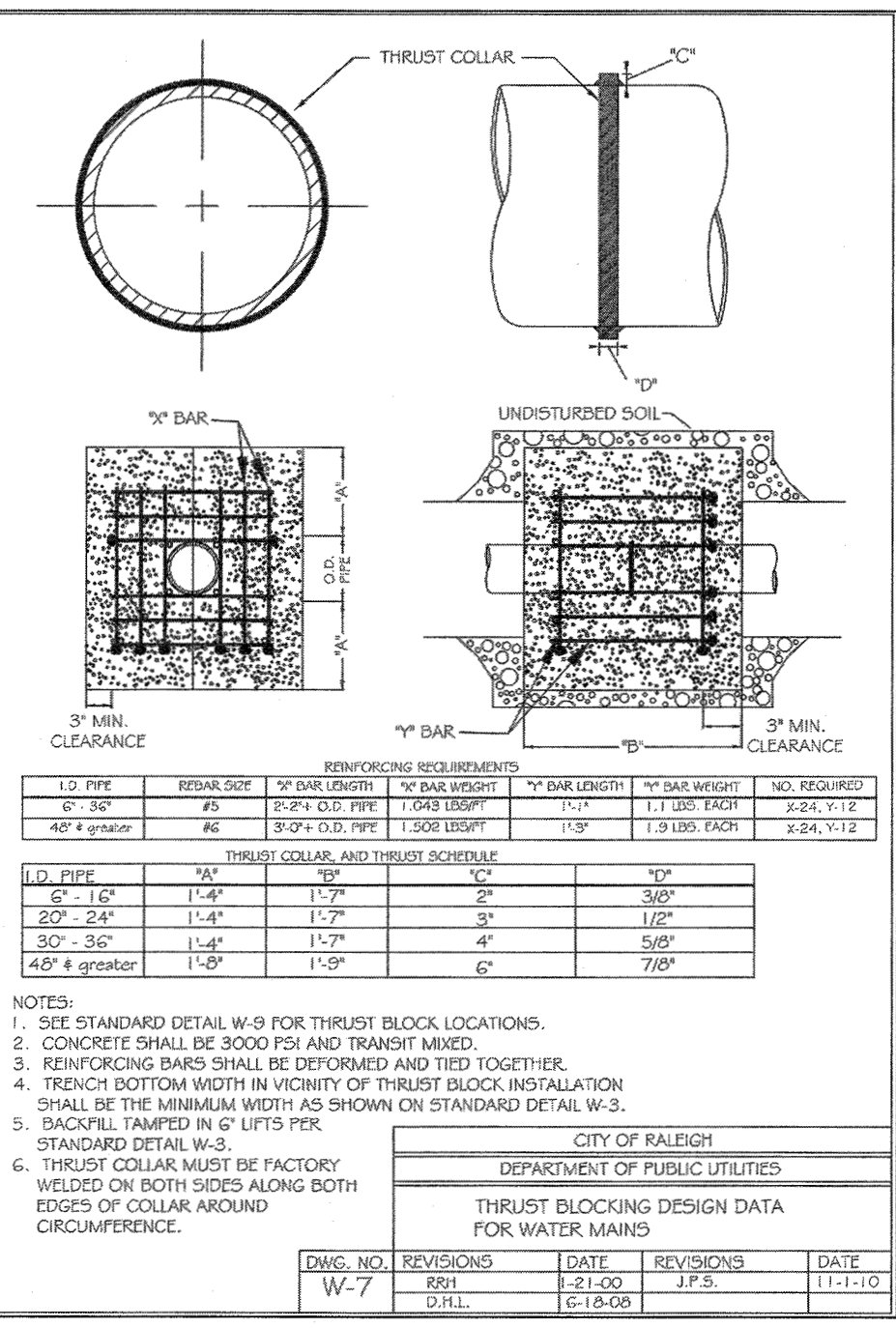
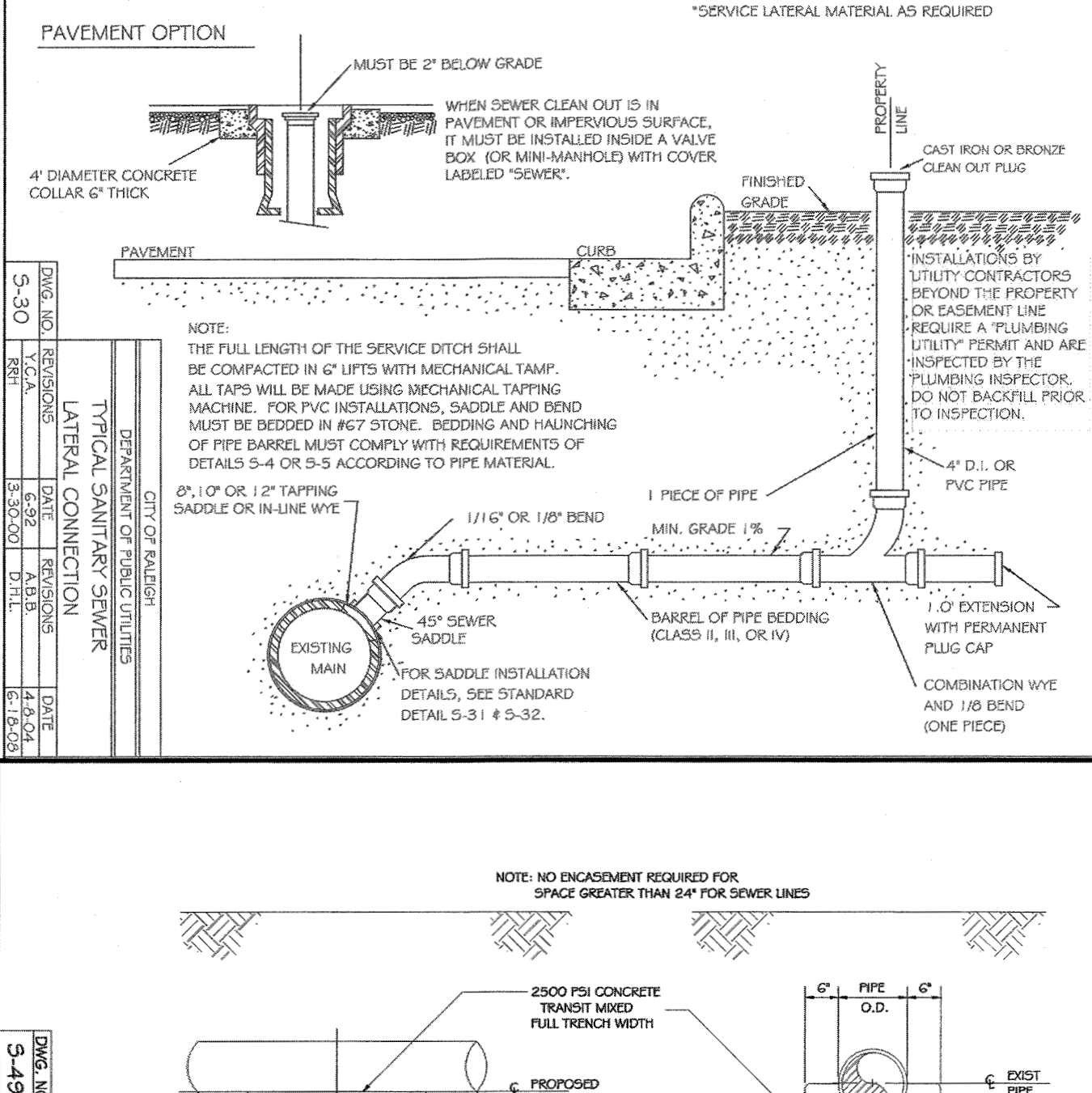
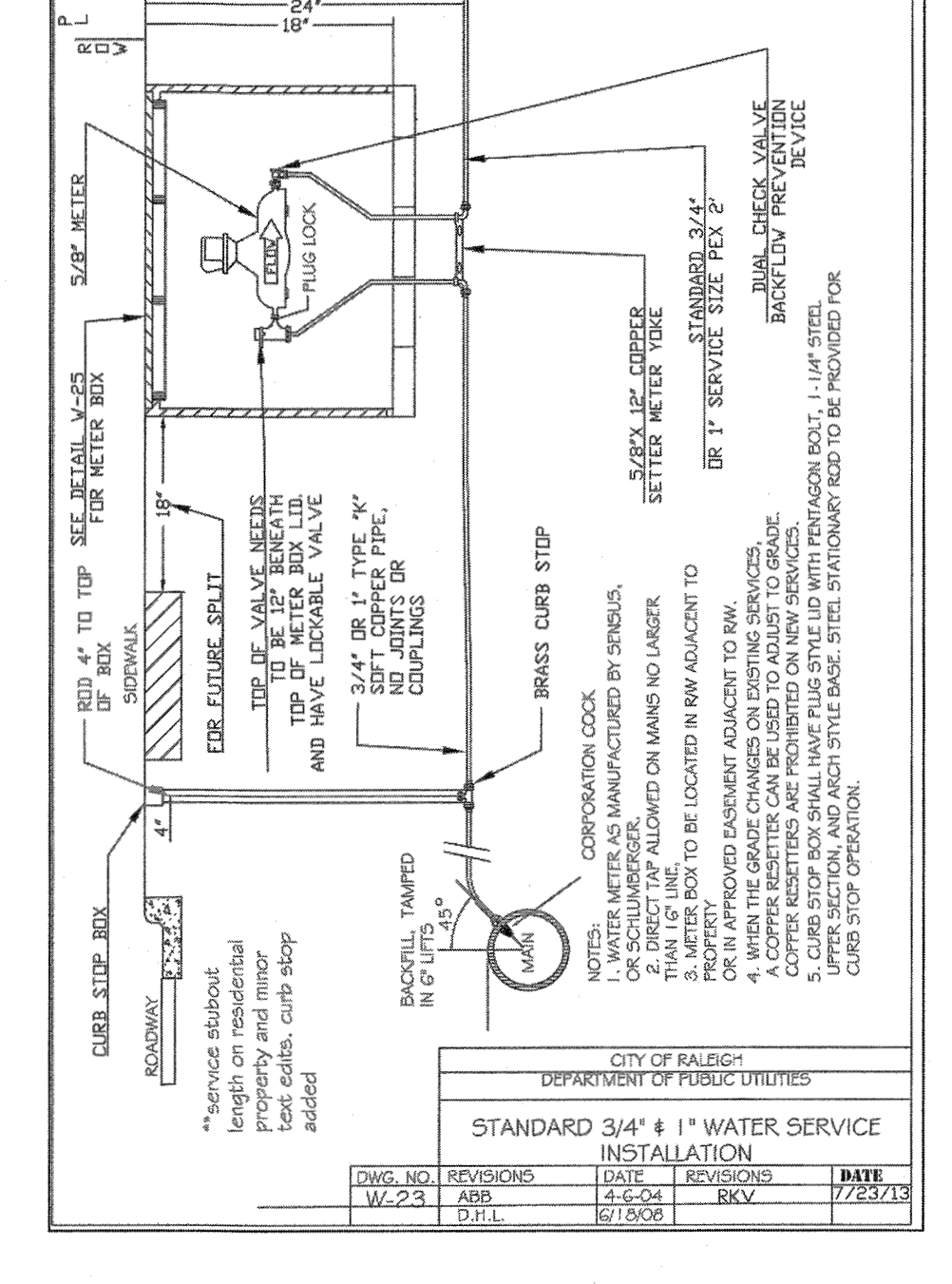
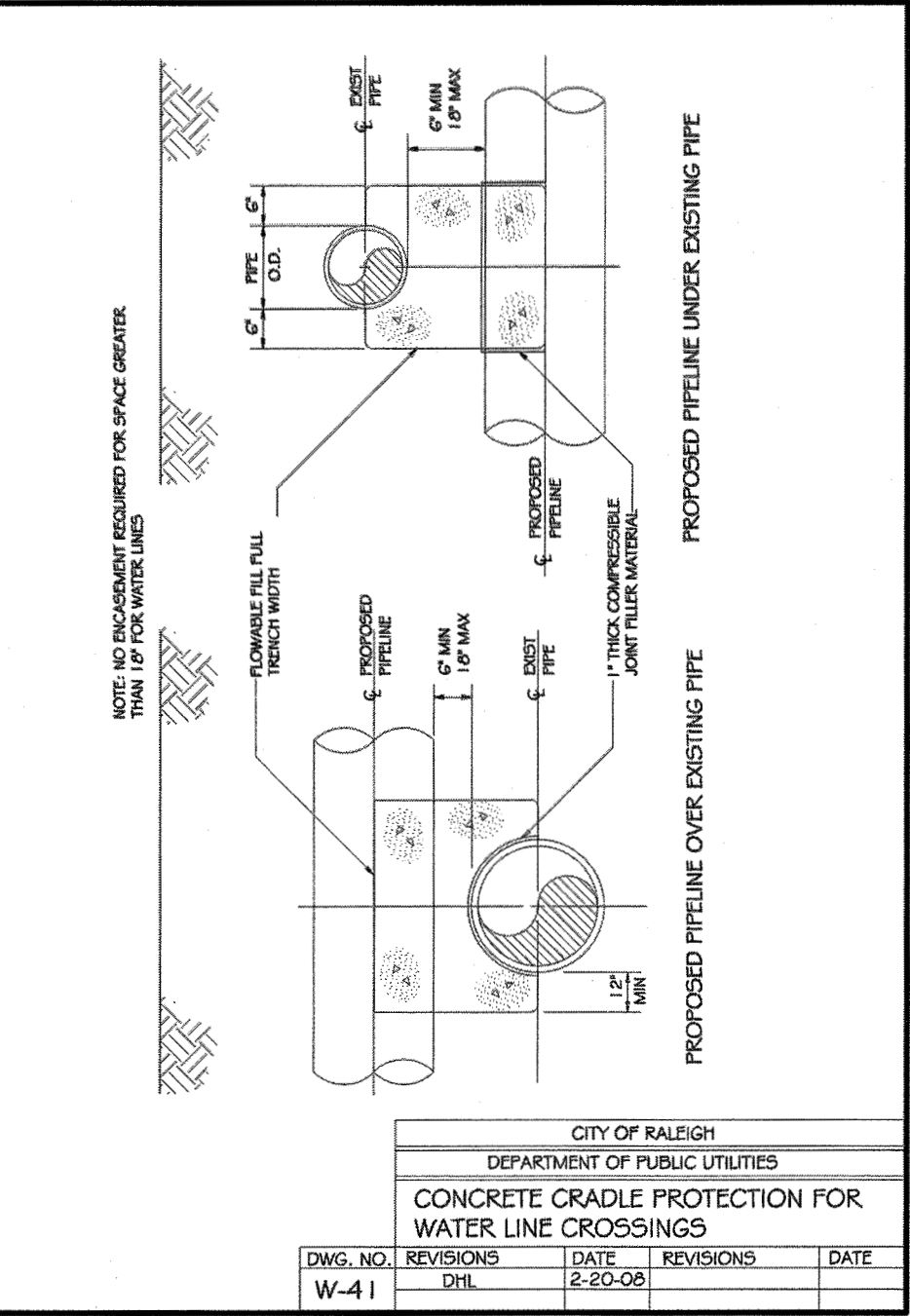
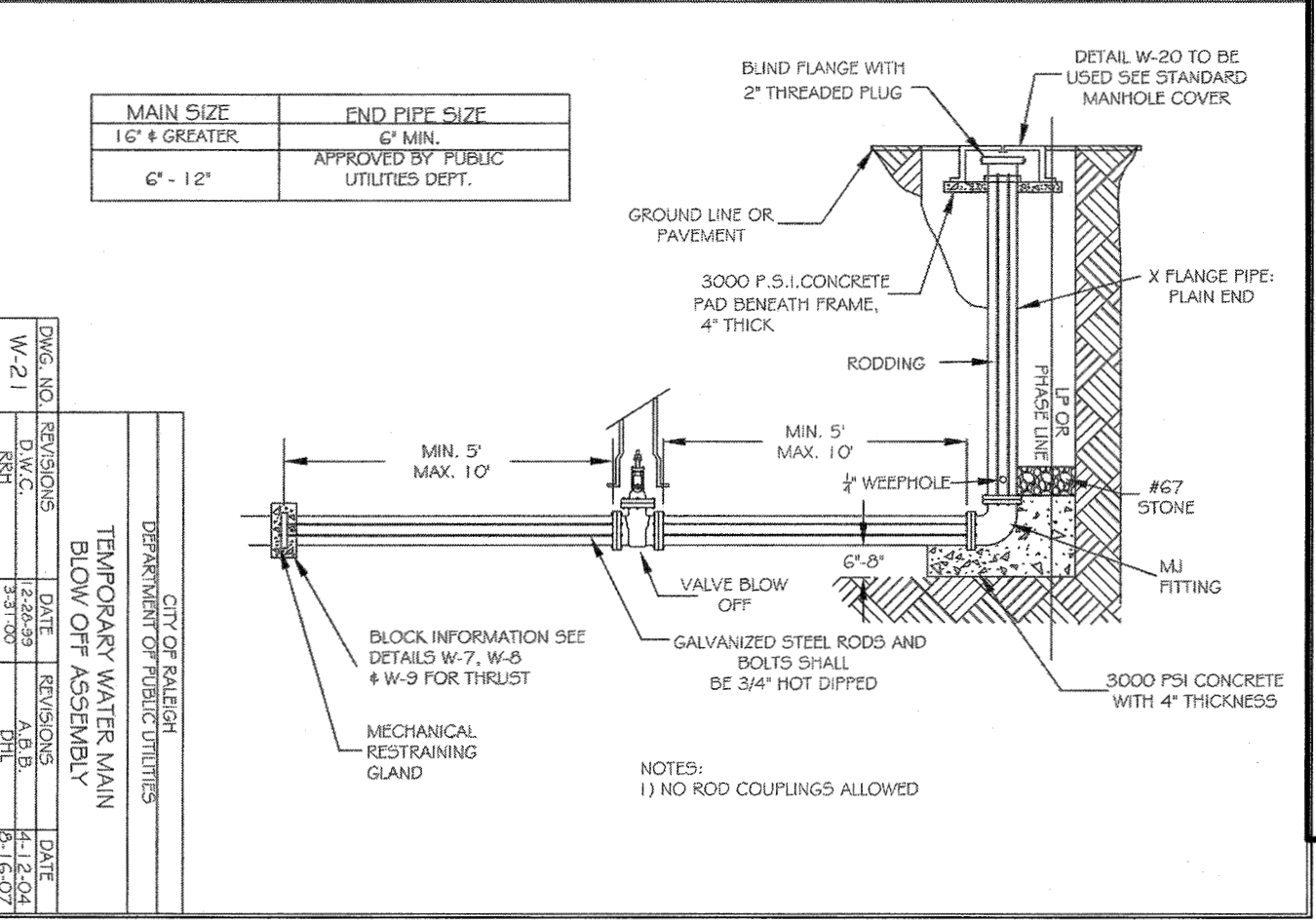
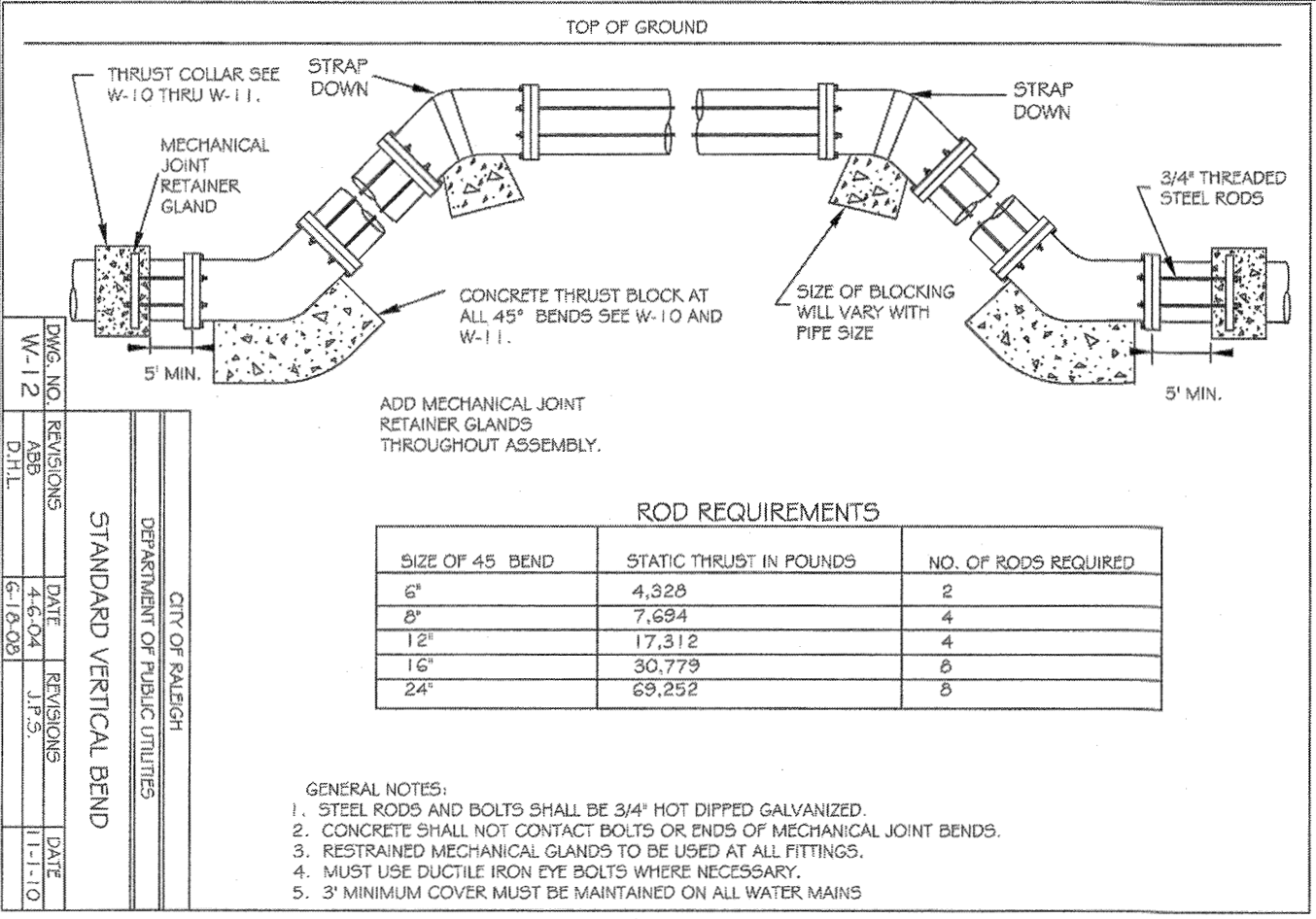
TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *CAJDU* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *WJL* DATE: 8-18-2020
ADMINISTRATOR



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DATE	REVISION DESCRIPTION
08/04/2020	GRADING AND UTILITY REVISIONS

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SITE DETAILS

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NOTES:

1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6" UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF AT LEAST 85% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
3. THE FINAL 24" OF BACKFILL MATERIAL SHALL BE COMPACTED TO 100% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
4. ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
5. BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.

PIPE SHALL BE PLACED ON SUSTAINABLE MATERIAL

REVISIONS	DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS TRENCH FOR STORM DRAIN PIPES STD. NO. 5.02

NOTES:

1. EITHER SOLID BRICK, SOLID BLOCK, OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I. ALL CONCRETE SHALL BE 3000 P.S.I. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 1/2" AS INSET DIMENSIONS.

REVISIONS	DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD DROP INLET WITH GRATE AND FRAME STD. NO. 5.04

NOTES:

1. MORTAR JOINTS SHALL BE 1/2" THICK.
2. ALL CONCRETE SHALL BE 3000 P.S.I.
3. SLAB SLIPS SHALL BE FORMED PRIOR TO PLACING OF CONCRETE.
4. USE TYPE "A" GRATE AT SAG POINTS, OTHERWISE USE TYPE "B" OR "C" FOR THE APPROPRIATE FLOW DIRECTION.
5. MASONRY UNITS MAY BE JAMBO BRICK, CONCRETE BRICK OR SOLID CONCRETE BLOCK.
6. ALL WALLS GREATER THAN 6" IN DEPTH SHALL BE CONSTRUCTED 12" THICK.

REVISIONS	DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD CURB INLET STD. NO. 5.05

NOTES:

1. 2 #5 OR LESS USE ON FLAT GRATES.
2. 2 #5 OR MORE USE ON FLAT GRATES.
3. CURB & GUTTER WITH CURB SHALL HAVE ONE STEEP GRATE.
4. CURB & GUTTER WITH CURB SHALL HAVE TWO STEEP GRATES.
5. 2 #5 OR MORE USE ON STEEP GRATES.
6. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
7. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
8. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
9. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
10. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
11. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
12. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
13. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
14. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
15. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
16. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
17. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
18. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
19. 1/2" MIN. FOR MORE USE ON STEEP GRATES.
20. 1/2" MIN. FOR MORE USE ON STEEP GRATES.

REVISIONS	DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD CURB INLET STD. NO. 5.05

NOTES:

1. SEE STANDARD DETAIL 5.09 FOR DIMENSIONS.
2. PLACE 1 CUBIC FOOT OF WASHED STONE BEHIND EACH WEIR HOLE.

REVISIONS	DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD REINFORCED CONCRETE HEADWALL WITH WINGWALLS STD. NO. 5.06

NOTES:

1. ALL DIMENSIONS FOR WALLS NOT LISTED SHALL BE AS SHOWN FOR SINGLE PIPE.
2. DOUBLE PIPE HEADWALLS @ 6'-0".

DIMENSIONS FOR SINGLE PIPE HEADWALLS		DIMENSIONS FOR DOUBLE PIPE HEADWALLS	
WALL REINFORCEMENT	SLAB REINFORCEMENT	WALL REINFORCEMENT	SLAB REINFORCEMENT

REVISIONS	DATE	DESCRIPTION

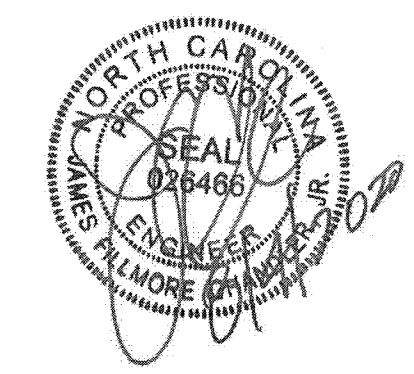
TOWN OF KNIGHTDALE STANDARD DETAILS DIMENSIONS FOR HEADWALL WITH WINGWALLS STD. NO. 5.09

NOTES:

1. 2" DIA. HOLES REQUIRED FOR STORM SEWER.
2. TYPICAL MANHOLE CENTERS.
3. TOP OF COVER.
4. BOTTOM OF COVER.
5. 1/2" MIN.
6. 1/2" MIN.
7. 1/2" MIN.
8. 1/2" MIN.
9. 1/2" MIN.
10. 1/2" MIN.
11. 1/2" MIN.
12. 1/2" MIN.
13. 1/2" MIN.
14. 1/2" MIN.
15. 1/2" MIN.
16. 1/2" MIN.
17. 1/2" MIN.
18. 1/2" MIN.
19. 1/2" MIN.
20. 1/2" MIN.

REVISIONS	DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD MANHOLE RING & COVER STD. NO. 5.10



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 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SITE DETAILS

TOWN CERTIFICATION

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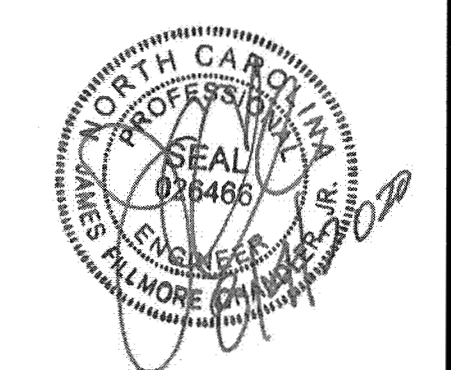
BY: *Subaru* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *W.D. MacCallian* DATE: 8-18-2020
 ADMINISTRATOR

JOB NO. 37909
 SHEET NO. C8.2

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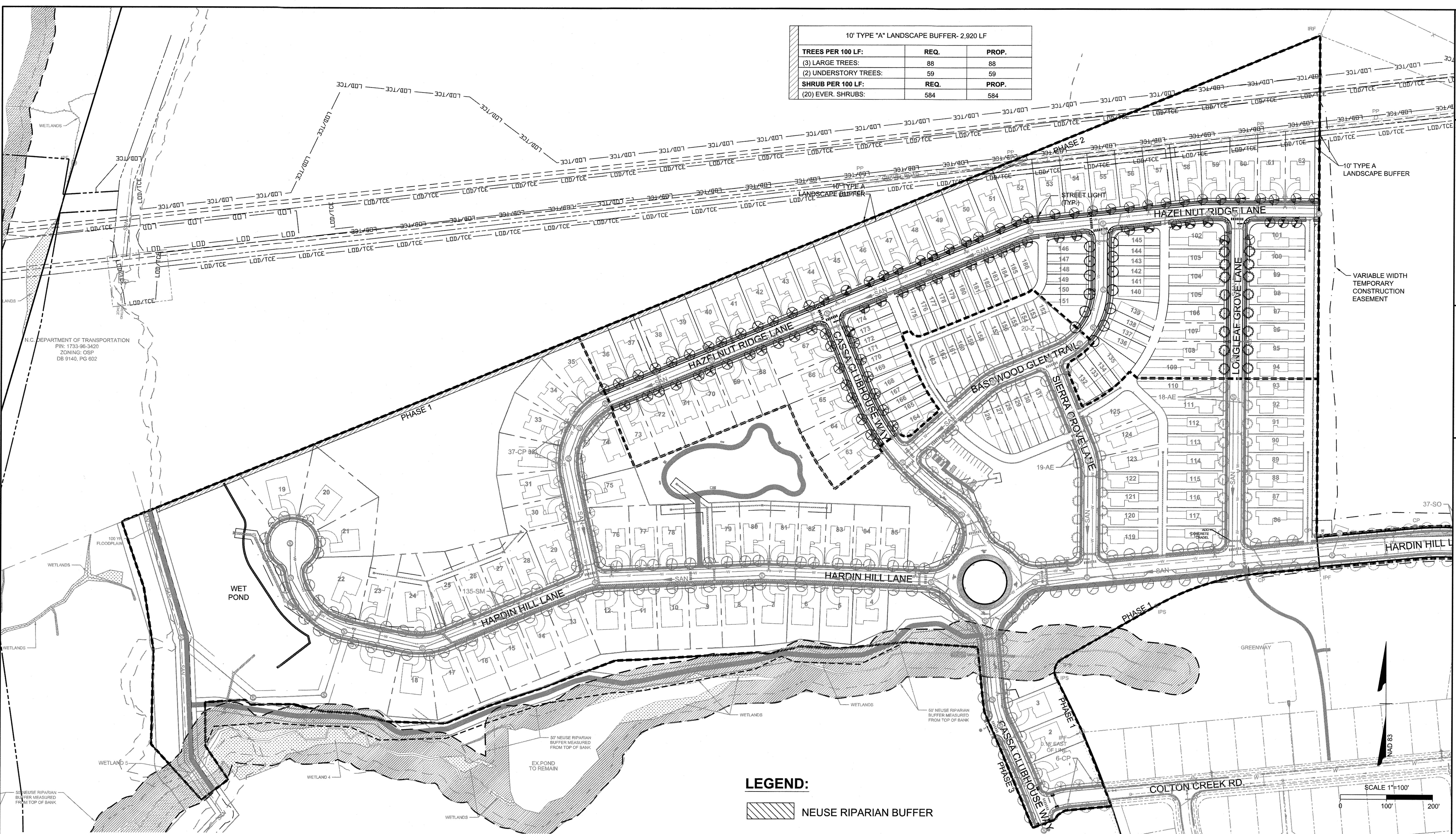
DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
LANDSCAPE PLAN

JOB NO.: 37909
 SHEET NO.: C9.0

10' TYPE "A" LANDSCAPE BUFFER - 2,920 LF		
TREES PER 100 LF:	REQ.	PROP.
(3) LARGE TREES:	88	88
(2) UNDERSTORY TREES:	59	59
SHRUB PER 100 LF:	REQ.	PROP.
(20) EVER. SHRUBS:	584	584



LEGEND:

- NEUSE RIPARIAN BUFFER
- WETLANDS

SCOPE OF WORK:
 Furnish all labor, materials, and equipment required or indicated by the drawings and specifications to complete the work including installation of all trees, shrubs, groundcover, annuals, seed, sod and mulch.

MATERIALS AND WORK:
 The selection of all materials and the execution of all work required under the contract shall be subject to approval by the owner. The owner shall have the right to reject and all materials and any and all work, which in his opinion, does not meet the requirements of the contract.

PLANT MATERIALS:
 All plant materials shall be nursery grown, freshly dug in the field, naturally shaped, well branched, fully foliated when in leaf with fully developed root systems. Trees must be self supporting, with straight trunks and leaders in tact. All plants must be free of disease, insect infestation or their eggs and shall have been grown in climatic conditions similar to those of the project site.

PLANT SIZE:
 Specified sizes indicates the minimum allowable size at planting. Where container and height spreads are indicated for a single species, both size requirements shall be met. When only plant height or spread are indicated, container size shall be based on ANSI standards.

ORGANIC MATTER:
 Aged manure, compost or pine bark fines, at the option of the contractor, material shall be air dried, finely shredded and suitable for horticultural purposes and shall contain no more than 35 moisture content by weight.

PINE BARK MULCH:
 All pine bark mulch shall be clean, double ground, fine textured nugget mulch with minimal amounts of sapwood content.

TURF AREAS:
 Prior to any seeding or sod application, verify that all trenching and land disturbing activities have been completed. Ensure all areas are free of stones, large soil clods and any other construction debris.

TOWN CERTIFICATION

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BY: *SAMM* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: *WLO* DATE: 8-18-2020
 ADMINISTRATOR

- NOTES:**
- CONTRACTOR SHALL CONTACT UTILITY LOCATOR SERVICE TO VERIFY ALL SUBSURFACE UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION ON THE SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM HIS ACTIVITIES.
 - PLANT MATERIAL ON THIS SITE MUST BE INSTALLED IN CONFORMANCE WITH THE GENERAL PLANTING NOTES AND DETAILS ON THIS PLAN.
 - ALL SOD TO BE REBEL FESCUE IV, TURF GEM, LESCO OR EQUAL. ALL SEED TO BE REBEL FESCUE IV, TURF GEM, LESCO OR EQUAL @ 6 LBS. PER 1000 S.F.
 - ALL MULCH SHALL BE DOUBLE GROUND PINE BARK MULCH TO A DEPTH OF 4".
 - ALL ABOVE GROUND ELECTRICAL TRANSFORMERS, DUMPSTERS, AND BACKFLOW PREVENTION VALVE HOT BOXES SHALL BE SCREENED FROM VIEW WHILE MAINTAINING REQUIRED ACCESS TO LOCAL CODE STANDARDS AND REQUIREMENTS.
 - DO NOT ALTER PLANS WITHOUT PERMISSION FROM THE TOWN OF KNIGHTDALE AND THE DESIGN FIRM OR OWNER. NOTIFY THE DESIGN FIRM OF ANY DISCREPANCIES ON THE PLAN.
 - LANDSCAPE CONTRACTOR SHALL PROVIDE DESIGN BUILD IRRIGATION PROPOSAL TO THE OWNER FOR PROJECT AREAS TO BE SPECIFIED BY THE OWNER.
 - CONTRACTOR SHALL PROVIDE 6" PVC SLEEVES UNDER STREETS AND DRIVE AISLES FOR IRRIGATION LINES.
 - STREET TREES SHALL BE LOCATED BEHIND THE SIDEWALK.
 - ABOVE GROUND UTILITIES TO BE SCREENED IN ACCORDANCE WITH UDO SECTION 8.7.

PLANT LIST - Street Trees

KEY	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	HEIGHT	ROOT	COMMENTS
Z	Zelkova schneideriana	Zelkova	20	2" Cal.	8' Min.	B&B	
SM	Acer saccharum 'Bonfire'	Sugar Maple	135	2" Cal.	8' Min.	B&B	
SO	Quercus acutissima	Sawtooth Oak	37	2" Cal.	8' Min.	B&B	
CP	Pistacia chinensis 'Keith Davey'	Chinese Pistache	66	2" Cal.	8' Min.	B&B	
AE	Ulmus parvifolia Emer II 'Allee'	Allee Elm	37	2" Cal.	8' Min.	B&B	

PLANT SCHEDULE TYPE "A" BUFFER PHASE 1 & 2

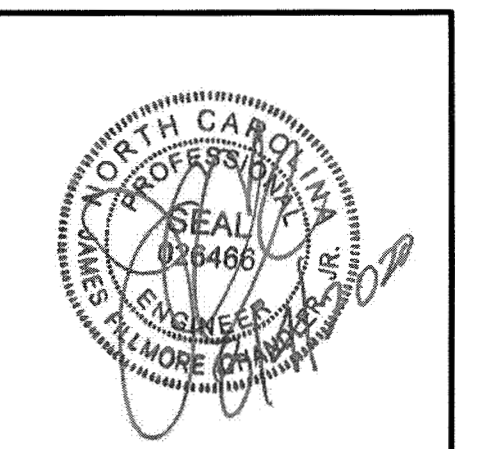
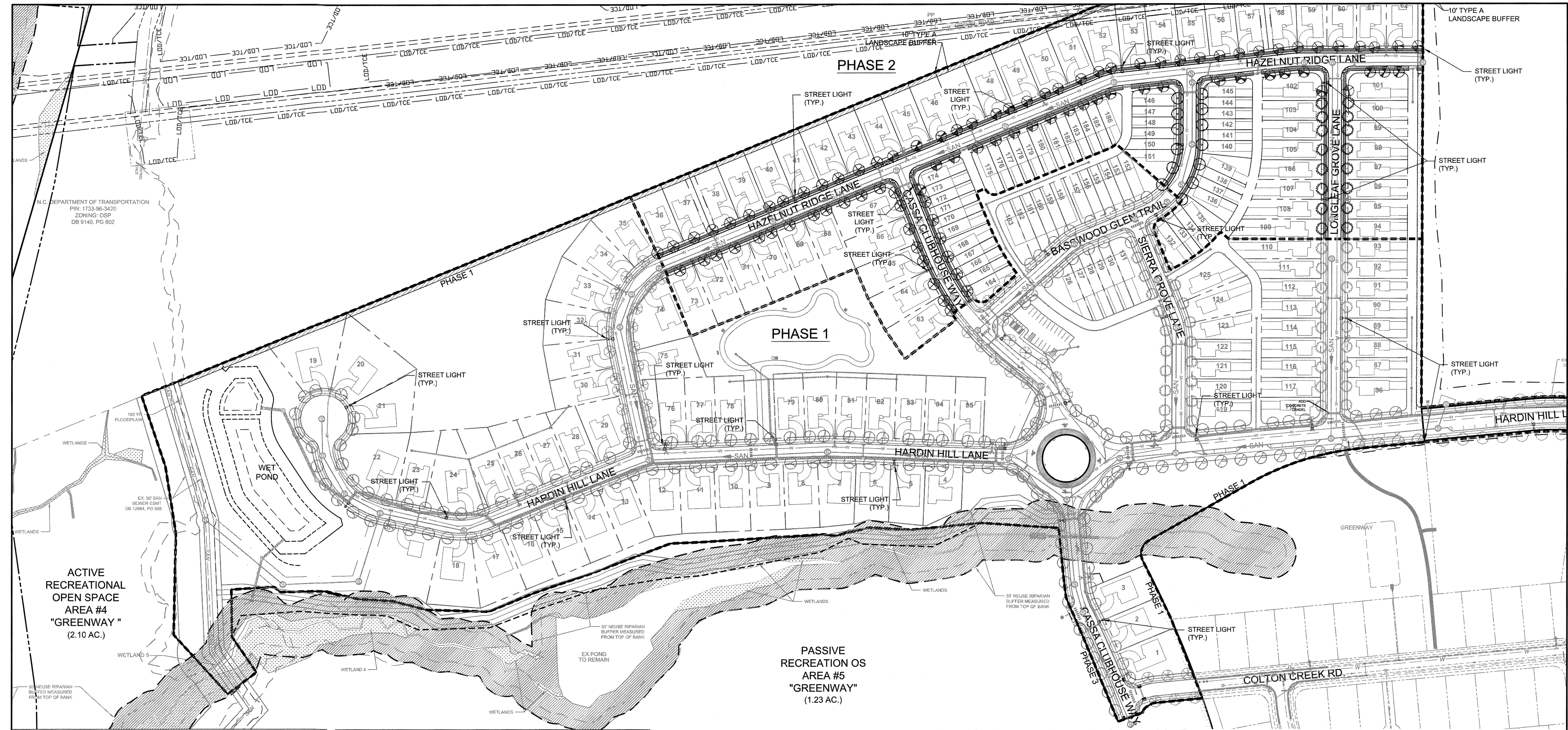
TREES	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM INSTALLED SIZE	REMARKS
QL	52	QUERCUS LYRATA	OVERCUP OAK	2" CAL., 8' HT.	
PT	36	PINUS TAEDA	LOBLOLLY PINE	2" CAL., 8' HT.	
MLG	30	MAGNOLIA GRANDIFLORA 'LITTLE GEM'	LITTLE GEM MAGNOLIA	2" CAL., 8' HT.	
CC	29	CERCIS CANADENSIS	EASTERN REDBUD	2" CAL., 8' HT.	

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALLED SIZE	REMARKS
IC	234	ILEX CRENATA 'HELLERI'	HELLERI HOLLY	18" HT/SPRD 3 GAL	
MC	350	MYRICA CERIFERA	WAX MYRTLE	18" HT/SPRD 3 GAL	

ALL PORTIONS OF THE BUFFER YARD NOT PLANTED WITH TREES AND SHRUBS MUST HAVE A MIN. DEPTH OF 3" OF NATURAL MULCH.

- PLANT NOTES:**
- Each single-family or duplex lot shall contain a minimum of one (1) canopy tree for every 2,000 square feet of lot area or fraction thereof up to 20,000 square feet in lot area. Any portion of the residential lot occupied by a recorded utility easement shall not be included as part of the total lot area. The location of planting to account for physical conditions may be adjusted by the Administrator. (SEE SHEET C9.1 FOR TREE REQUIRED CALCULATIONS.)
 - The use of existing trees meeting the following standards to satisfy this requirement is encouraged. Existing large shade trees measuring more than six (6) inches in DBH may be counted towards fulfilling this requirement.
 - Required street trees (Section 8.10) may not be counted towards the fulfillment of the residential landscaping requirement. Apart from required street trees, all other trees required under this Chapter shall be planted within the private lot.
 - Foundation plantings consisting of evergreen shrubs shall be installed along the entire foundation wall of the building. Plant installation shall be a minimum of two feet in height planted at four-foot intervals.

S:\102\37909-Stone-River\DWG\Sheet\CD\Phase 2\37909-C9.0-PLANT.dwg | by: JD MacMillan



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08/04/2020	GRADING AND UTILITY REVISIONS

DATE	09/11/2018
DRAWN BY	331
DESIGNED BY	331
CHECKED BY	JFC
SCALE	PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
 STONERIVER SUBDIVISION PHASE 2
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 LIGHTING PLAN

JOB NO. 37909
 SHEET NO. C9.2

ACTIVE RECREATIONAL OPEN SPACE AREA #4 "GREENWAY" (2.10 AC.)

PASSIVE RECREATION OS AREA #5 "GREENWAY" (1.23 AC.)

DUKE ENERGY

Outdoor Lighting
 Roadway LED

The Roadway LED is a green solution and great fit for streets, roads, long, narrow areas and parking lots. This energy-efficient luminaire delivers the light where it is needed while increasing visibility and reducing spill light to adjoining properties. Choose low to medium light output on wood or fiberglass poles for mount on an existing pole. Available with one to four fixtures per pole, depending on the fixture/pole combination selected.

LED (Light Emitting Diode)	50 70 110 150 220 280 watts
Mounting heights	15, 20, 25, 30, 35'
Colors	Bronze Black Grey Green
Poles	Style A, C Wood

For additional information, visit duke-energy.com/OutdoorLighting or call us toll free: 800.544.0999 (24 and 48) 800.921.2332 (N)

DUKE ENERGY

Outdoor Lighting
 Roadway LED

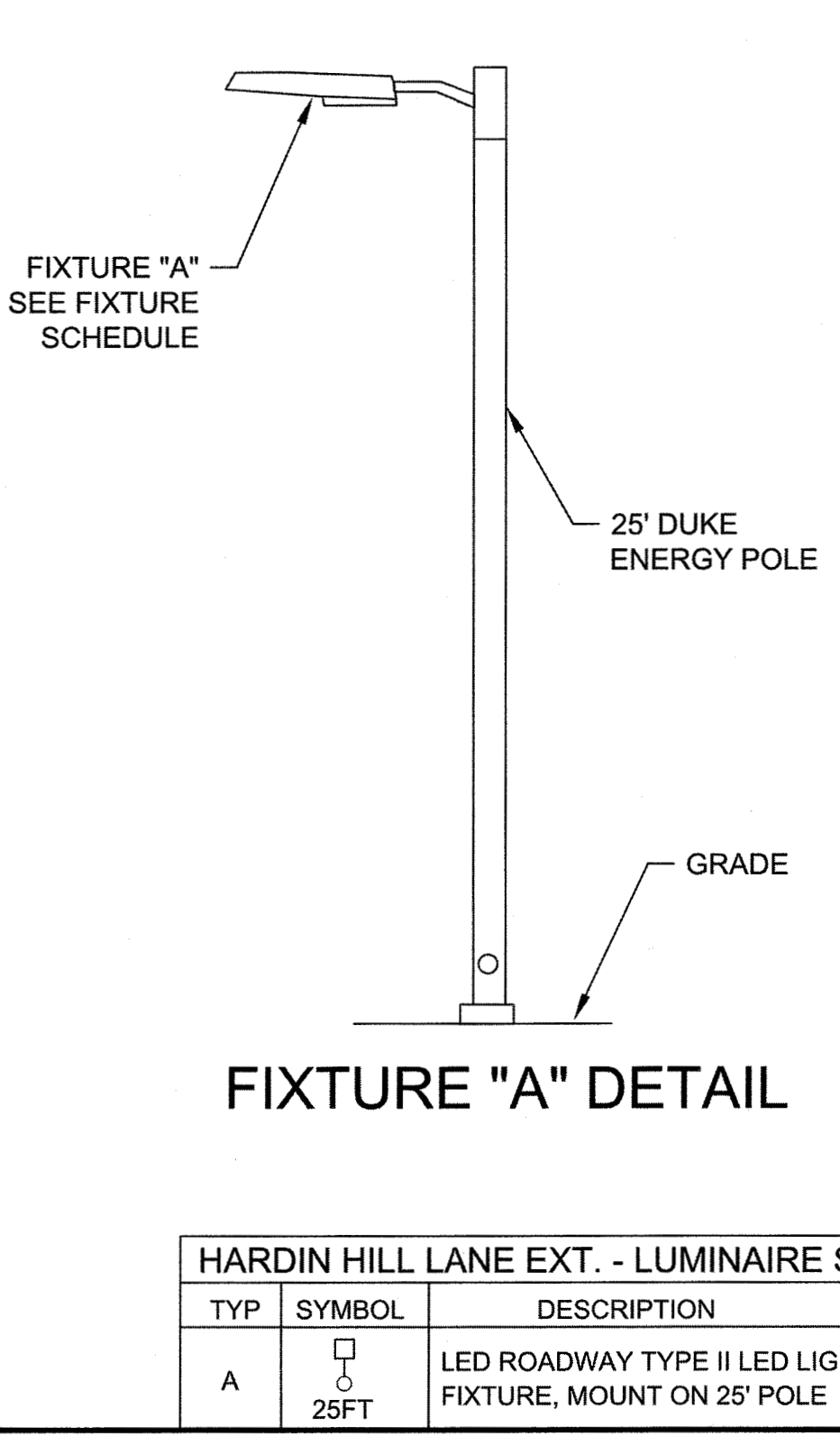
Light source: LED (or CFL)
 Wattage: 50 | 70 | 110 | 150 | 220 | 280W
 Light pattern: IESNA Type III (60°)
 Color temperature: 4,000K
 Warm-up and restrike time: Instant on (no message or restrike time)

Light distribution pattern

Poles available:	Name	Mounting height	Color
Aluminum		15, 20, 25, 30, 35'	Bronze Black Grey Green
	Wood	25, 30, 35'	Standard

Features	Benefits
No installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance included	Eliminates high and unexpected repair bills
Electricity included	Less expensive than metered service
Warranty included	Worry-free
One low monthly cost on your electric bill	Convenience and savings for you
Turnkey operation	Provides hassle-free installation and service
Backed by over 40 years of experience	A name you can trust today... and tomorrow

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11.5 Additional Outdoor Lighting Standards for Specific Lighting Types

In addition to meeting the general lighting standards in Section 11.4, the following types of lighting shall also meet the additional specific standards listed below.

A. Street Lighting
 Street lighting shall be placed on all streets by the developer to allow for the safe use of streets by cars, cyclists and pedestrians. Developer placed lighting shall also include all improved frontages on local and NCDOT streets. Developers requesting upgrades from the Town's minimum street light specification of a fiberglass pole with a fully-shielded, arm-mounted LED fixture shall pay the Town up front the difference in the costs of maintenance for the desired LED fixture and pole covering a period of 10 years. Developers interested in pursuing this option should consult with the Administrator concerning the Town's "Premium Lighting Policy". All street lighting shall conform to the specific standards for LED lighting in subsection "B" as well as the following design standards:

- Average Spacing Maximums:** The following maximum average spacing requirements between street lights shall apply to all local, collector and arterial street classifications according to the use context of the adjacent land as listed below, except alleys (Section 17.3A1) which are exempt from said requirements.
 - Local & Collector Streets:
 - Residential at less than three (<3) unit per acre - 500 feet
 - Residential from three (3.0) to eight (8.0) units per acre - 250 feet
 - Residential over eight (>8.0) units per acre - 150 feet
 - All other uses - 300 feet
 - Arterial Streets: All uses - 150 feet
- Minimum Initial Delivered Lumen Levels:**
 - Local Streets - 4,800 lumens
 - Collector Streets in Residential Areas - 12,500 lumens
 - Collector Streets in Other Areas - 12,500 lumens
 - Arterial Streets - 18,500 lumens
- BUG Rating:** All street lights shall be fully-shielded (no light at or above horizontal) and shall not exceed the following BUG ratings established for each type of street:
 - Local Streets - B1, U1, G1
 - Collector Streets in Residential Areas - B2, U2, G2
 - Collector Streets in Other Areas - B3, U3, G3
 - Arterial Streets - B3, U3, G3
- Placement:**
 - Although the primary purpose of street lighting is to provide adequate lighting for the roadway, street lighting should also promote pedestrian. Therefore, lighting should be placed in a manner to minimize the casting of shadows on sidewalks.
 - Lighting shall be placed as far from street trees as the landscaping plan will allow.
 - Lights on newly constructed streets shall be alternately staggered on each side of the street wherever possible.
 - Lighting shall be placed at all street intersections, in street curves and at the end of any street or cul-de-sac.

(Note: For additional information on the connectivity and circulation of streets, please refer to Chp. 9)

HARDIN HILL LANE EXT. - LUMINAIRE SCHEDULE

TYP	SYMBOL	DESCRIPTION	LAMP	LUMENS	MOUNTING/BALLAST	LLF
A		LED ROADWAY TYPE II LED LIGHT FIXTURE, MOUNT ON 25' POLE	(1) 50W LED 4000 K	4476	25' DUKE ENERGY POLE	0.64

LEGEND

- LED STREET LIGHTS (9,500 LUMENS LED 75 ROADWAY LIGHT) ALUMINUM POLE - HEIGHT 30'
- STREET / SHADE TREE

SCALE 1"=100'

0 100' 200'

TOWN CERTIFICATION

THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *S. Smith* DATE: 8.21.2020
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8/18/2020
 ADMINISTRATOR