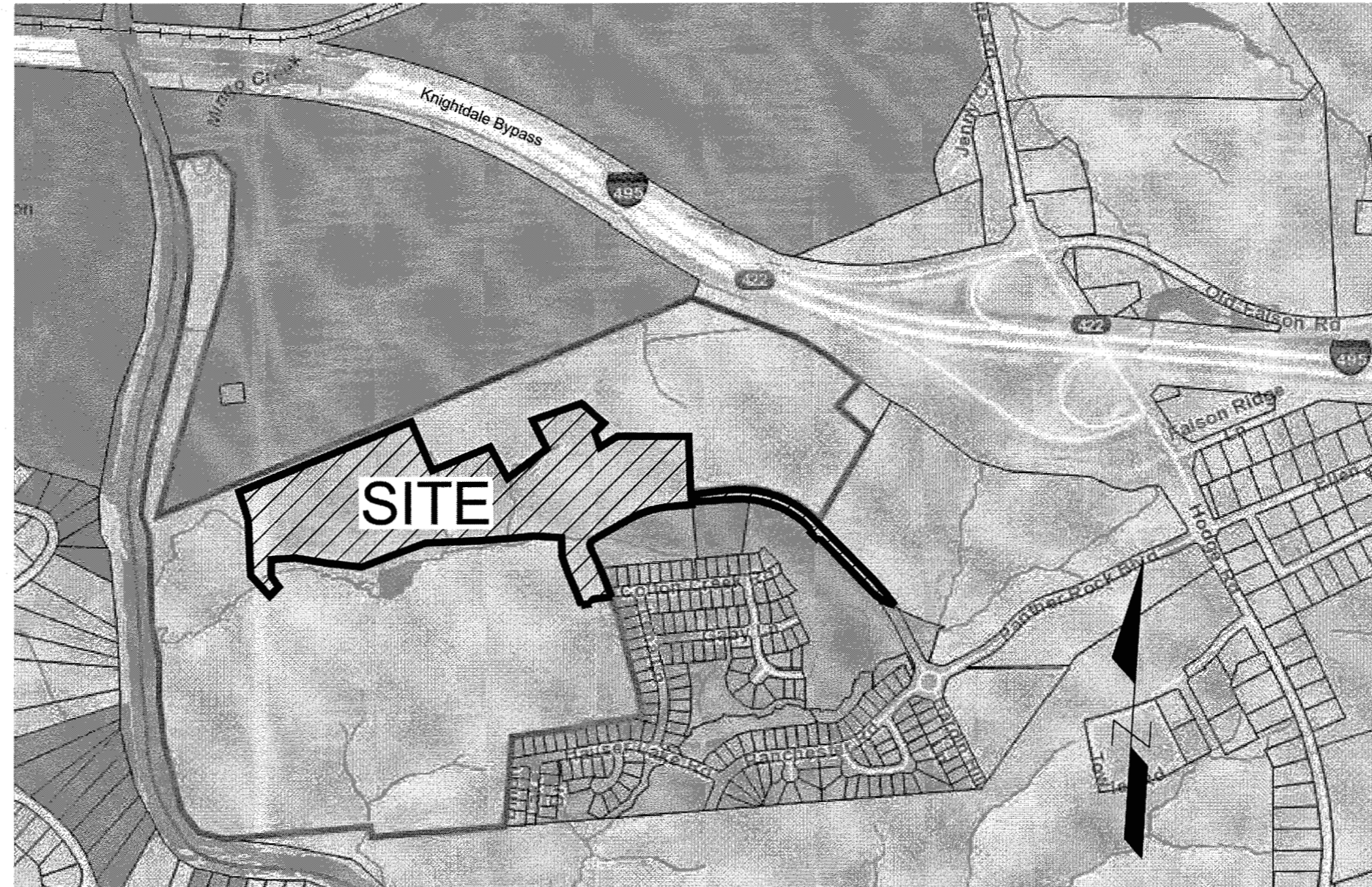


STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE, NC



OVERALL VICINITY MAP
NOT TO SCALE

Water and Sewer Permits (If Applicable)

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 # S-4454R

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 # W-5556R

EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

APPROVED
EROSION CONTROL S- 5429
STORMWATER MGMT. S-
FLOOD STUDY S-
DATE 2/24/18

Alan Alford 2/19/20
ENVIRONMENTAL CONSULTANT SIGNATURE



Sheet Number	Sheet Title
C0.0	COVER SHEET
C1.0	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.1	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.2	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.3	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.4	ENVIRONMENTAL SURVEY & TREE SURVEY
C2.0	OVERALL SUBDIVISION LAYOUT PLAN
C2.1	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C2.2	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C2.3	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C2.4	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C3.0	OVERALL GRADING & STORM DRAINAGE PLAN
C3.1	STORM DRAINAGE NETWORK TABLE
C3.2	RETAINING WALLS
C3.3	WET POND DETAIL
C3.4	WET POND PLANTING PLAN
C4.0	SEDIMENTATION & EROSION CONTROL NOTES
C4.1	STAGE 1 SEDIMENTATION & EROSION CONTROL
C4.2	STAGE 2 SEDIMENTATION & EROSION CONTROL
C4.3	STAGE 3 SEDIMENTATION & EROSION CONTROL
C4.4	SEDIMENTATION & EROSION CONTROL DETAILS
C4.5	SEDIMENTATION & EROSION CONTROL NCG01 NOTES
C5.0	SUBDIVISION UTILITY PLAN
C6.0	HARDIN HILL LANE PLAN & PROFILE
C6.1	HARDIN HILL LANE PLAN & PROFILE
C6.2	HARDIN HILL LANE PLAN & PROFILE
C6.3	HARDIN HILL LANE & HAZELNUT RIDGE LANE PLAN & PROFILE
C6.4	CASSA CLUBHOUSE WAY NORTH & SIERRA GROVE LANE PLAN & PROFILE
C6.5	CASSA CLUBHOUSE WAY SOUTH & COLTON CREEK ROAD PLAN & PROFILE
C6.6	LONGLEAF GROVE LANE PLAN & PROFILE
C6.7	BASSWOOD GLEN TRAIL PLAN & PROFILE
C7.0	DAWNTREE WAY & TANBARK RIDGE ROAD PLAN & PROFILE
C7.1	TANBARK RIDGE ROAD & PERSIMMON TREE PLACE PLAN & PROFILE
C7.2	SWEET RIVER LANE & REDBAY RIDGE TRAIL PLAN & PROFILE
C7.3	STORM DRAINAGE PLAN & PROFILE
C7.4	STORM DRAINAGE PLAN & PROFILE
C8.0	SITE DETAILS
C8.1	WATER AND SANITARY SEWER DETAILS
C8.2	STORM SEWER DETAILS
C9.0	STREET TREE PLAN
C9.1	STREET TREE PLAN
C9.2	OPEN SPACE PLAN
C9.3	ACTIVE RECREATIONAL OPEN SPACE
C9.4	LANDSCAPE DETAILS
C9.5	STREET LIGHTING PLAN

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: TOTAL 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. MATTHEWS AGRICULTURE & WOODED SINGLE-FAMILY RESIDENTIAL 34.41 ACRES 89 24 25 22 18 NEUSE LOWER NEUSE RIVER C: NSW 0 ACRES (PHASES I & II) 18.80 ACRES (PHASES I & II) 1733J & 1744J
PHASE 1	
LINEAR FOOTAGE OF PUBLIC STREET:	7,811 LF
LINEAR FOOTAGE OF PUBLIC SIDEWALK:	12,069 LF
LINEAR FOOTAGE OF PUBLIC WATER LINE:	6,375 LF
LINEAR FOOTAGE OF PUBLIC SEWER LINE:	5661 LF
LINEAR FOOTAGE OF PUBLIC STORMWATER LINE:	8373 LF
TOTAL WASTEWATER FLOW GENERATED:	22,250 GPD - 89 DU

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 Araterra 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 8:12
 - 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 slope
 - 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

A. 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.

B. Specific Requirements:

- Residential Vehicular Access
 - Alley/Rear Lane Access: A townhouse should 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 walling 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 80% 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

a. 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 plat(s), 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.

b. 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: _____

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.

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

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 reinstatement 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.

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.

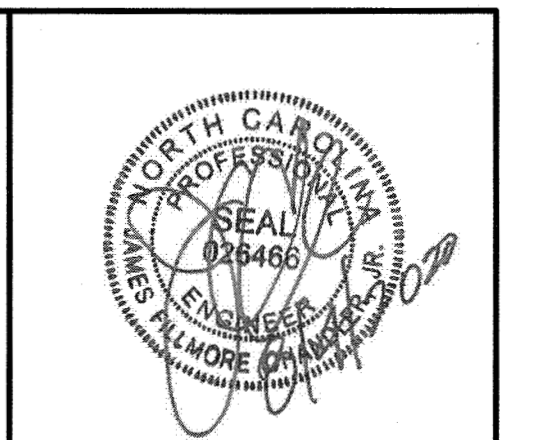
TOWN CERTIFICATION

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: 2-21-2020
DEVELOPMENT SERVICES ENGINEER

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

By: _____ DATE: 2-18-2020
ADMINISTRATOR



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	GRADING AND UTILITY REVISIONS
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 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

COVER SHEET

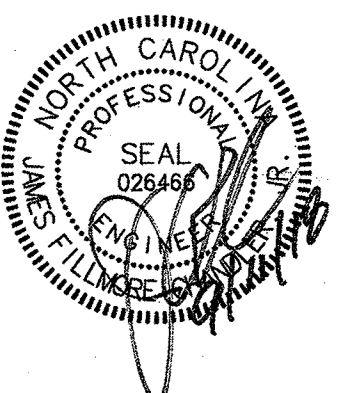
JOB NO. 37909

SHEET NO. CO.0

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part, and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE, NC



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.9511 FAX 919.866.9512 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE
 09/11/2018

DRAWN BY
 331

DESIGNED BY
 331

CHECKED BY
 JFC

SCALE
 PER PLAN

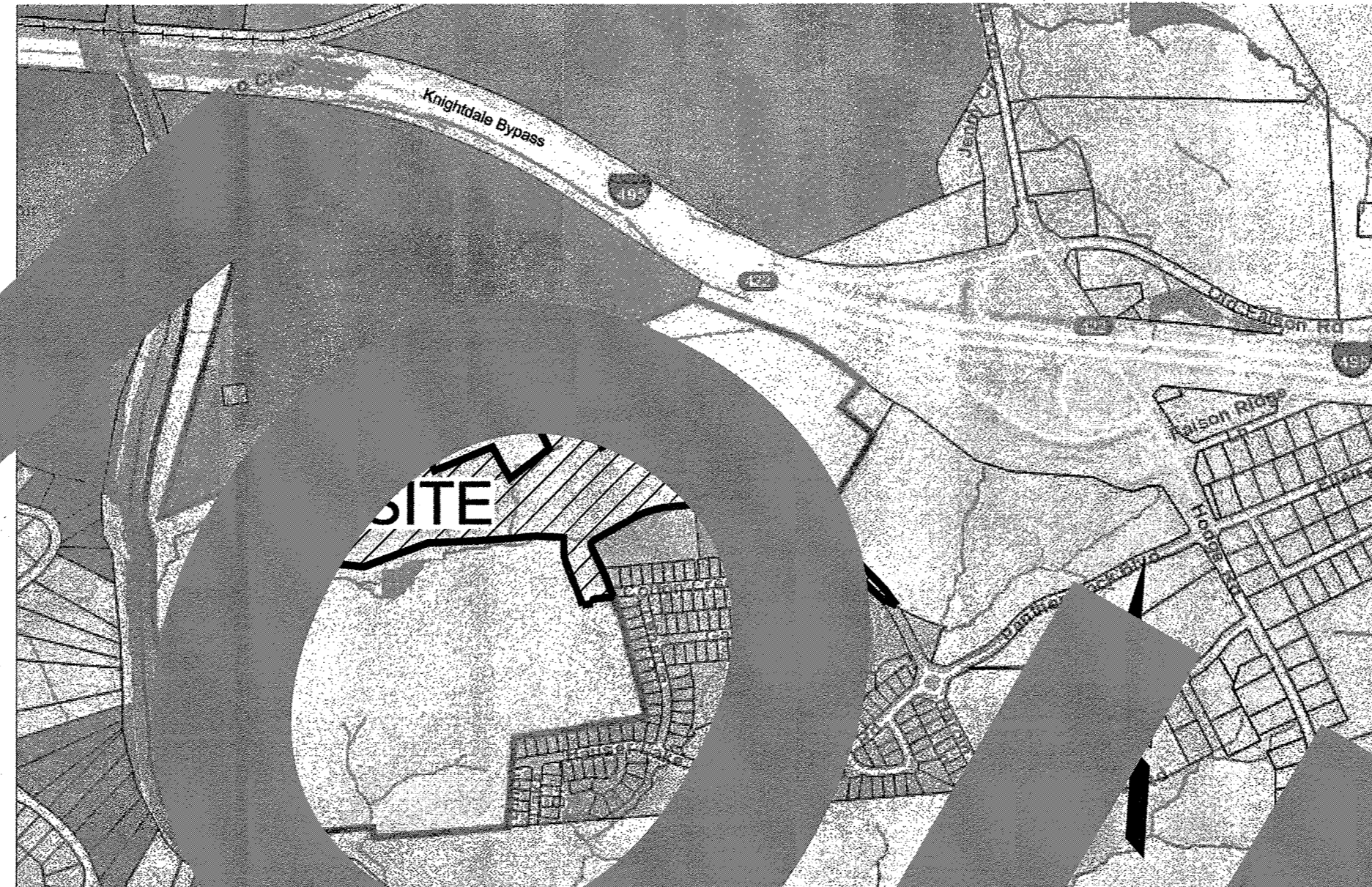
JOB NO.
 37909

SHEET NO.
 C0.0

SITE DATA

ENGINEER:	JIM CHANDLER, PE 5410 TRINITY ROAD, SUITE 102 TIMMONS GROUP RALEIGH, NC 27607 PHONE: 919-866-4507 FAX: 919-866-5663 EMAIL: JIM.CHANDLER@TIMMONS.COM
OWNER PIN 1:	AGENCY PARTNERS, LLC ATTN: JOHN FORD 1005 GLENVIEW LANE BURLINGTON, NC 27215
OWNER PIN 2:	OAK CAPITAL, LLC ATTN: JOHN FORD 1912 EASTCHESTER DRIVE, SUITE 400 HIGH POINT, NC 27285
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. MATTHEWS
EXISTING USE:	AGRICULTURE & WOODED
PROPOSED USE:	SINGLE-FAMILY RESIDENTIAL
TOTAL SITE AREA:	34.41 ACRES
TOTAL PROPOSED UNITS:	89
SINGLE FAMILY UNITS:	71
TOWNHOUSE UNITS:	18
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

	PHASE 1
LINEAR FOOTAGE OF PUBLIC STREET:	7,811 LF
LINEAR FOOTAGE OF PUBLIC SIDEWALK:	12,069 LF
LINEAR FOOTAGE OF PUBLIC WATER LINE:	6,375 LF
LINEAR FOOTAGE OF PUBLIC SEWER LINE:	5681 LF
LINEAR FOOTAGE OF PUBLIC STORMWATER LINE:	8373 LF
TOTAL WASTEWATER FLOW GENERATED:	22,250 GPD - 89 DU



Sheet List Table

Sheet Number	Sheet Title
C0.0	COVER SHEET
C1.0	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.1	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.2	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.3	TOPOGRAPHIC SURVEY FOR STONERIVER
C1.4	ENVIRONMENTAL SURVEY & TREE SURVEY
C2.0	OVERALL SUBDIVISION LAYOUT PLAN
C2.1	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C2.2	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C2.3	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C2.4	SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN
C3.0	OVERALL GRADING & STORM DRAINAGE PLAN
C3.1	STORM DRAINAGE NETWORK TABLE
C3.2	RETAINING WALLS
C3.3	WET POND DETAIL
C3.4	WET POND PLANTING PLAN
C4.0	SEDIMENTATION & EROSION CONTROL NOTES
C4.1	STAGE 1 SEDIMENTATION & EROSION CONTROL
C4.2	STAGE 2 SEDIMENTATION & EROSION CONTROL
C4.3	STAGE 3 SEDIMENTATION & EROSION CONTROL
C4.4	SEDIMENTATION & EROSION CONTROL DETAILS
C5.0	SUBDIVISION UTILITY PLAN
C6.0	HARDIN HILL LANE PLAN & PROFILE
C6.1	HARDIN HILL LANE PLAN & PROFILE
C6.2	HARDIN HILL LANE PLAN & PROFILE
C6.3	HARDIN HILL LANE & ZEBRA GRASS DRIVE PLAN & PROFILE
C6.4	BLUE OAT GRASS RUN NORTH & LITTLE BLUESTEM WAY PLAN & PROFILE
C6.5	BLUE OAT GRASS RUN SOUTH COLTON CREEK ROAD PLAN & PROFILE
C6.6	REED GRASS DRIVE PLAN & PROFILE
C6.7	PURPLE MILLET DRIVE PLAN & PROFILE
C7.0	FOUNTAIN GRASS LANE & PURPLE MOONGRASS WAY PLAN & PROFILE
C7.1	PURPLE MOONGRASS WAY & SWITCH GRASS WAY PLAN & PROFILE
C7.2	CORDGRASS LANE & MAIDEN GRASS LANE PLAN & PROFILE
C7.3	STORM DRAINAGE PLAN & PROFILE
C7.4	STORM DRAINAGE PLAN & PROFILE
C8.0	SITE DETAILS
C8.1	WATER AND SANITARY SEWER DETAILS
C8.2	STORM SEWER DETAILS
C9.0	STREET TREE PLAN
C9.1	STREET TREE PLAN
C9.2	OPEN SPACE PLAN
C9.3	ACTIVE RECREATIONAL OPEN SPACE
C9.4	LANDSCAPE DETAILS
C9.5	STREET 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 Acratera 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 8: 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 10'.
 - Side Facade articulations: For every 20' (or fraction) of continuous side elevations (calculated on a per foot 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 should 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 scape

2. 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.

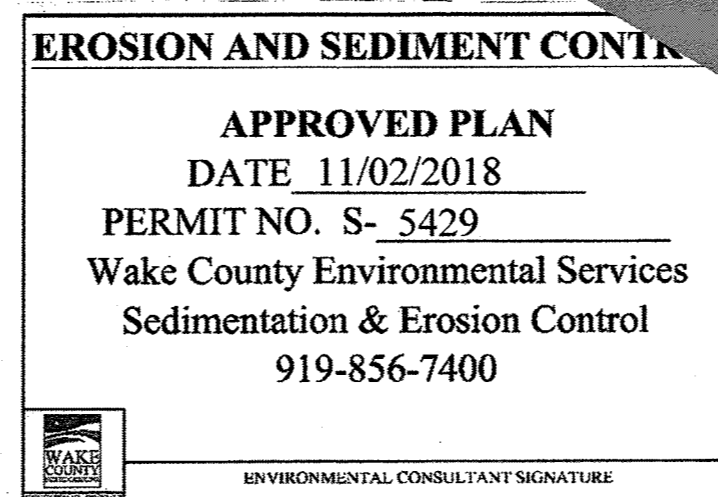
5. Wall Materials: Townhouse Building walls shall be wood clapboard, cementitious fiber board, wood shingle, wood drop siding, wood board and batten, brick, stone, or stucco. If not entirely masonry, Townhouse Building front facades shall have at least two (2) siding textures with the heavier material (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



a. Town Standards Shall Control. In the event of a conflict or inconsistency between these construction drawings and the Town of Knightdale Standards for this project, the Approved Standards of Knightdale Approved Standards shall mean all amendments necessary for approval for the Property including, but not limited to, any special use permit, subdivision plan, site plan, rezoning plat(s), 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.

b. 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, James Chandler, 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 C0.0 of these drawings.

Seal: _____ PE
 Date: 9/11/18

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-3556
 Authorized by Contract [Signature]
 Date 9/28/18

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-4454
 Authorized by Contract [Signature]
 Date 9/26/18

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.

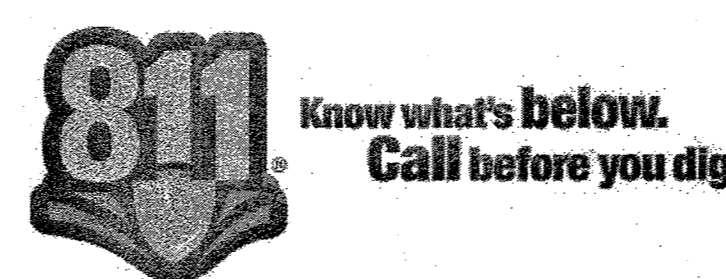
- 9.5(G): Allowing the StoneRiver Master Plan to have a Connectivity Index less than the 1.40 minimum standard.

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

By: [Signature] DATE: 10/26/18
 ADMINISTRATOR



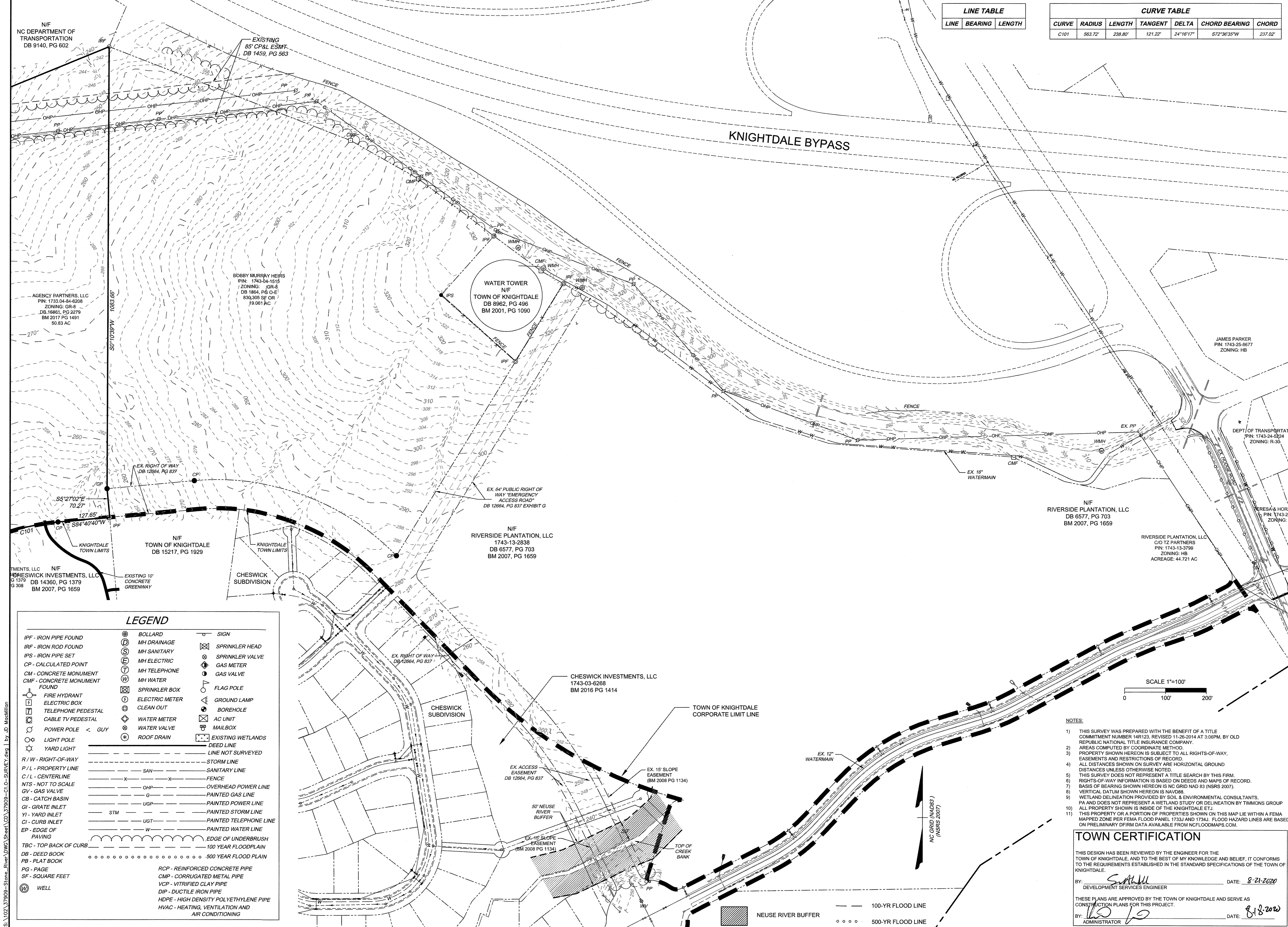
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

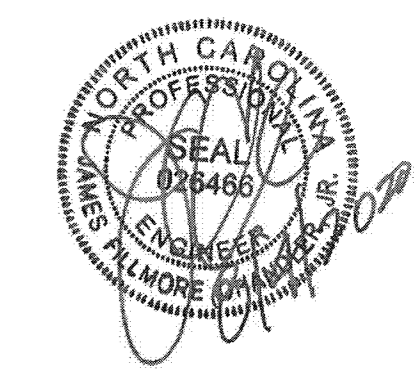
COVER SHEET

P:\102\37909-StoneRiver\DWG\Sheet\CD\37909-C0-COVER.dwg | by Keith Aston



LINE TABLE		
LINE	BEARING	LENGTH
C101	S5°27'02"E	70.27'

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C101	563.72'	238.80'	121.22'	24°16'17"	S72°36'35"W	237.02'



THIS DRAWING PREPARED AT THE
TIMMONS GROUP
 5410 Trinity Park, Raleigh, NC 27607
 TEL 919.866.4951, 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

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

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
TOPOGRAPHIC SURVEY FOR STONERIVER

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	⊙ DEED LINE
⊙ YARD LIGHT	⊙ LINE NOT SURVEYED	⊙ STORM LINE
R/W - RIGHT-OF-WAY	⊙ SANITARY LINE	⊙ FENCE
P/L - PROPERTY LINE	⊙ OVERHEAD POWER LINE	⊙ PAINTED GAS LINE
C/L - CENTERLINE	⊙ PAINTED POWER LINE	⊙ PAINTED STORM LINE
N/S - NOT TO SCALE	⊙ PAINTED TELEPHONE LINE	⊙ PAINTED WATER LINE
GV - GAS VALVE	⊙ EDGE OF UNDERBRUSH	⊙ 100 YEAR FLOODPLAIN
CB - CATCH BASIN	⊙ 500 YEAR FLOODPLAIN	⊙ RCP - REINFORCED CONCRETE PIPE
GI - GRATE INLET	⊙	⊙ CMP - CORRUGATED METAL PIPE
YI - YARD INLET	⊙	⊙ VCP - VITRIFIED CLAY PIPE
CI - CURB INLET	⊙	⊙ DIP - DUCTILE IRON PIPE
EP - EDGE OF PAVING	⊙	⊙ HDPE - HIGH DENSITY POLYETHYLENE PIPE
TBC - TOP BACK OF CURB	⊙	⊙ HVAC - HEATING, VENTILATION AND AIR CONDITIONING
DB - DEED BOOK	⊙	
PB - PLAT BOOK	⊙	
PG - PAGE	⊙	
SF - SQUARE FEET	⊙	
⊙ WELL	⊙	

- NOTES:
- 1) THIS SURVEY WAS PREPARED WITH THE BENEFIT OF A TITLE COMMITMENT NUMBER 14R123, REVISED 11-26-2014 AT 3:08PM, BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY.
 - 2) AREAS COMPUTED BY COORDINATE METHOD.
 - 3) PROPERTY SHOWN HEREON IS SUBJECT TO ALL RIGHTS-OF-WAY, EASEMENTS AND RESTRICTIONS OF RECORD.
 - 4) ALL DISTANCES SHOWN ON SURVEY ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
 - 5) THIS SURVEY DOES NOT REPRESENT A TITLE SEARCH BY THIS FIRM.
 - 6) RIGHTS-OF-WAY INFORMATION IS BASED ON DEEDS AND MAPS OF RECORD.
 - 7) BASIS OF BEARING SHOWN HEREON IS NC GRID NAD 83 (NSRS 2007).
 - 8) VERTICAL DATUM SHOWN HEREON IS NAVD83.
 - 9) WETLAND DELINEATION PROVIDED BY SOIL & ENVIRONMENTAL CONSULTANTS, PA AND DOES NOT REPRESENT A WETLAND STUDY OR DELINEATION BY TIMMONS GROUP.
 - 10) ALL PROPERTY SHOWN IS INSIDE OF THE KNIGHTDALE ETJ.
 - 11) 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: *S. ALU* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

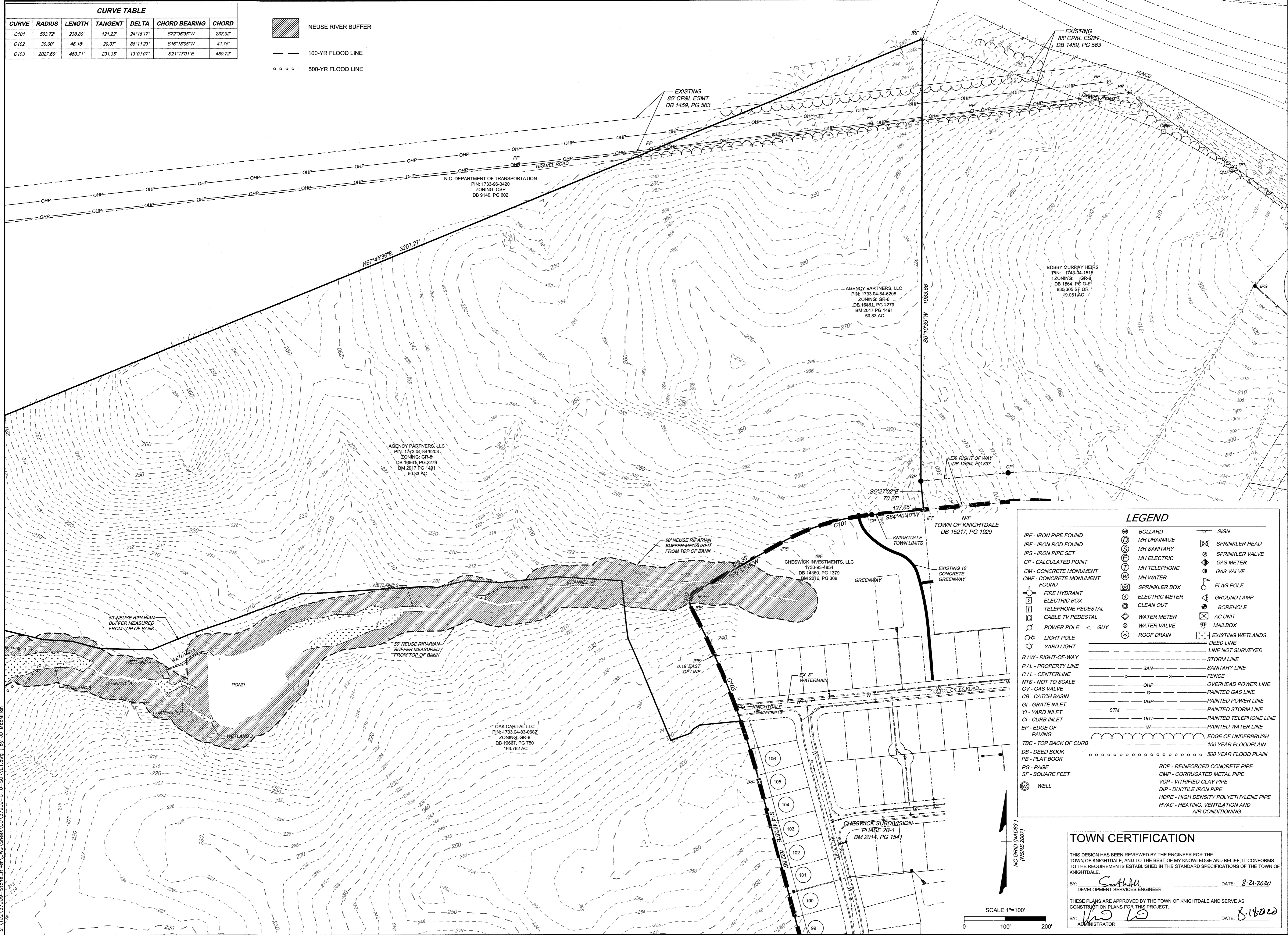
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

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

S:\102_37909-Stoner-River\DWG\Sheet_C101-SURVEY.dwg | by: J.D. MacMillan

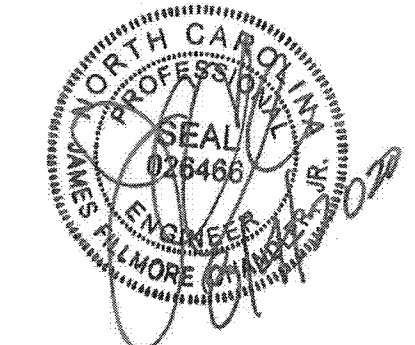
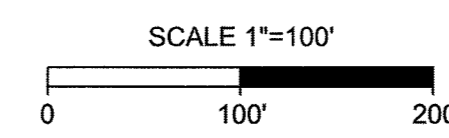
CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C101	563.72'	238.80'	121.22'	24°16'17"	S72°38'35"W	237.02'
C102	30.00'	46.18'	29.07'	88°11'23"	S16°18'05"W	41.75'
C103	2027.60'	460.71'	231.35'	13°0'10"E	S21°17'01"E	459.72'

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



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	⊙ MAILBOX
⊙ CABLE TV PEDESTAL	⊙ WATER METER	⊙ EXISTING WETLANDS
⊙ POWER POLE < GUY	⊙ WATER VALVE	⊙ DEED LINE
⊙ LIGHT POLE	⊙ ROOF DRAIN	⊙ LINE NOT SURVEYED
⊙ YARD LIGHT		⊙ STORM LINE
R/W - RIGHT-OF-WAY		⊙ SANITARY LINE
P/L - PROPERTY LINE		⊙ FENCE
C/L - CENTERLINE		⊙ OVERHEAD POWER LINE
NTS - NOT TO SCALE		⊙ PAINTED GAS LINE
GV - GAS VALVE		⊙ PAINTED POWER LINE
CB - CATCH BASIN		⊙ PAINTED STORM LINE
GI - GRATE INLET		⊙ PAINTED TELEPHONE LINE
YI - YARD INLET		⊙ PAINTED WATER LINE
CI - CURB INLET		⊙ EDGE OF UNDERBRUSH
EP - EDGE OF PAVING		⊙ 100 YEAR FLOODPLAIN
TBC - TOP BACK OF CURB		⊙ 500 YEAR FLOOD PLAIN
DB - DEED BOOK		
PB - PLAT BOOK		
PG - PAGE		
SF - SQUARE FEET		
⊙ WELL		
	⊙ 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: 8-18-20
 ADMINISTRATOR



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

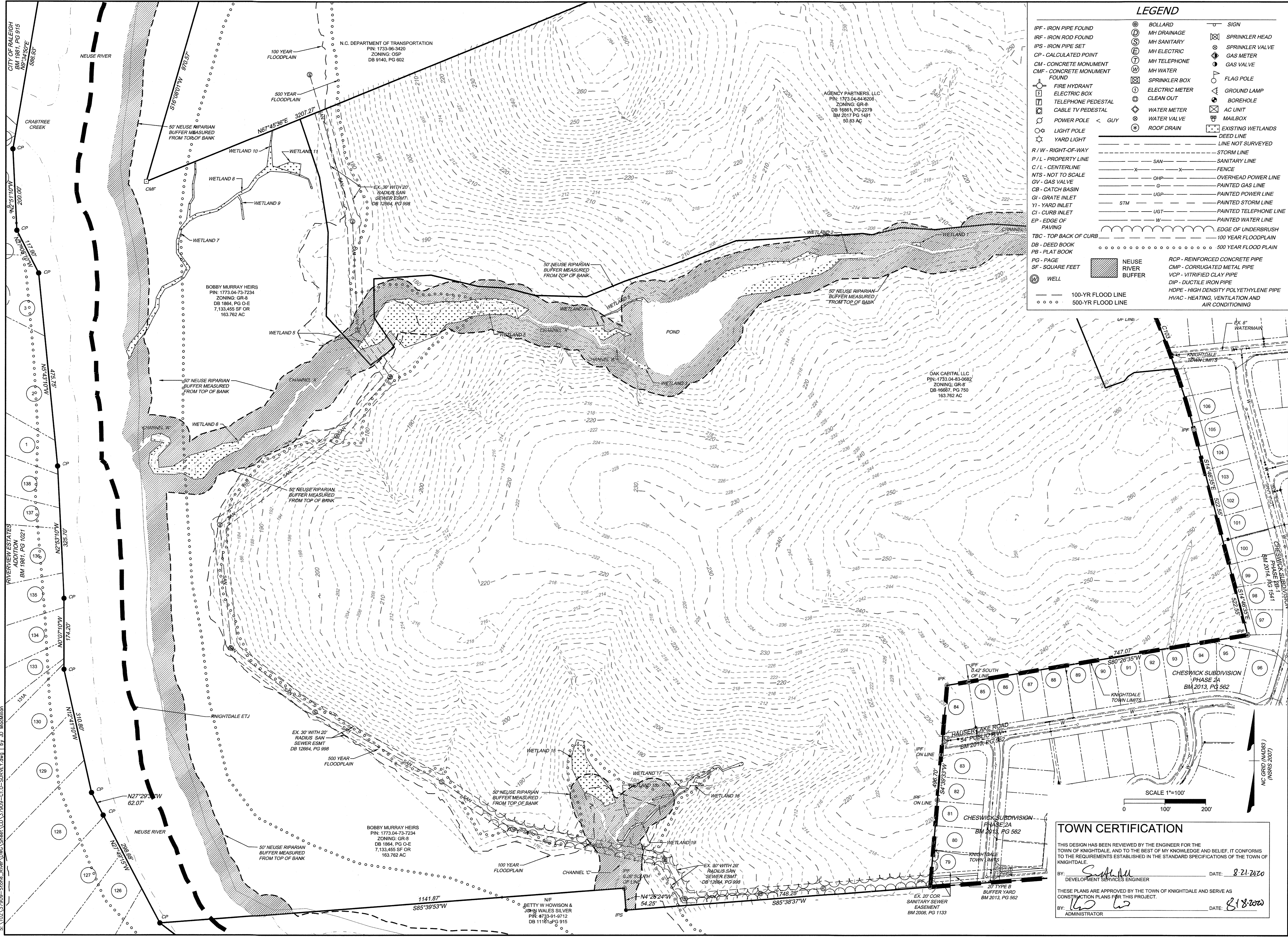
YOUR VISION ACHIEVED THROUGH OURS.
 DATE: 08/04/2020
 REVISION DESCRIPTION: GRADING AND UTILITY REVISIONS

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

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
TOPOGRAPHIC SURVEY FOR STONERIVER

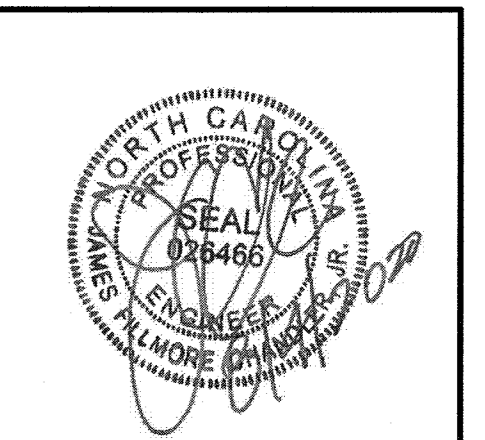
JOB NO.: 37909
 SHEET NO.: C1.1

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



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	⊗ AC UNIT
⊙ CABLE TV PEDESTAL	⊙ WATER METER	⊗ MAILBOX
⊙ POWER POLE < GUY	⊙ WATER VALVE	⊗ EXISTING WETLANDS
⊙ LIGHT POLE	⊙ ROOF DRAIN	⊗ DEED LINE
⊙ YARD LIGHT		⊗ LINE NOT SURVEYED
R/W - RIGHT-OF-WAY		⊗ STORM LINE
P/L - PROPERTY LINE		⊗ SANITARY LINE
C/L - CENTERLINE		⊗ FENCE
NTS - NOT TO SCALE		⊗ OVERHEAD POWER LINE
GV - GAS VALVE		⊗ PAINTED GAS LINE
CB - CATCH BASIN		⊗ PAINTED POWER LINE
GI - GRATE INLET		⊗ PAINTED STORM LINE
CI - CURB INLET		⊗ PAINTED TELEPHONE LINE
EP - EDGE OF PAVING		⊗ PAINTED WATER LINE
TBC - TOP BACK OF CURB		⊗ EDGE OF UNDERBRUSH
DB - DEED BOOK		⊗ 100 YEAR FLOODPLAIN
PB - PLAT BOOK		⊗ 500 YEAR FLOOD PLAIN
PG - PAGE		
SF - SQUARE FEET		
⊙ WELL		
	NEUSE RIVER BUFFER	RCP - REINFORCED CONCRETE PIPE
		CMP - CORRUGATED METAL PIPE
		VCP - VITRIFIED CLAY PIPE
		DIP - DUCTILE IRON PIPE
		HDP - HIGH DENSITY POLYETHYLENE PIPE
		HVAC - HEATING, VENTILATION AND AIR CONDITIONING



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Timmy 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	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 1

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

TOPOGRAPHIC SURVEY FOR STONERIVER

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.

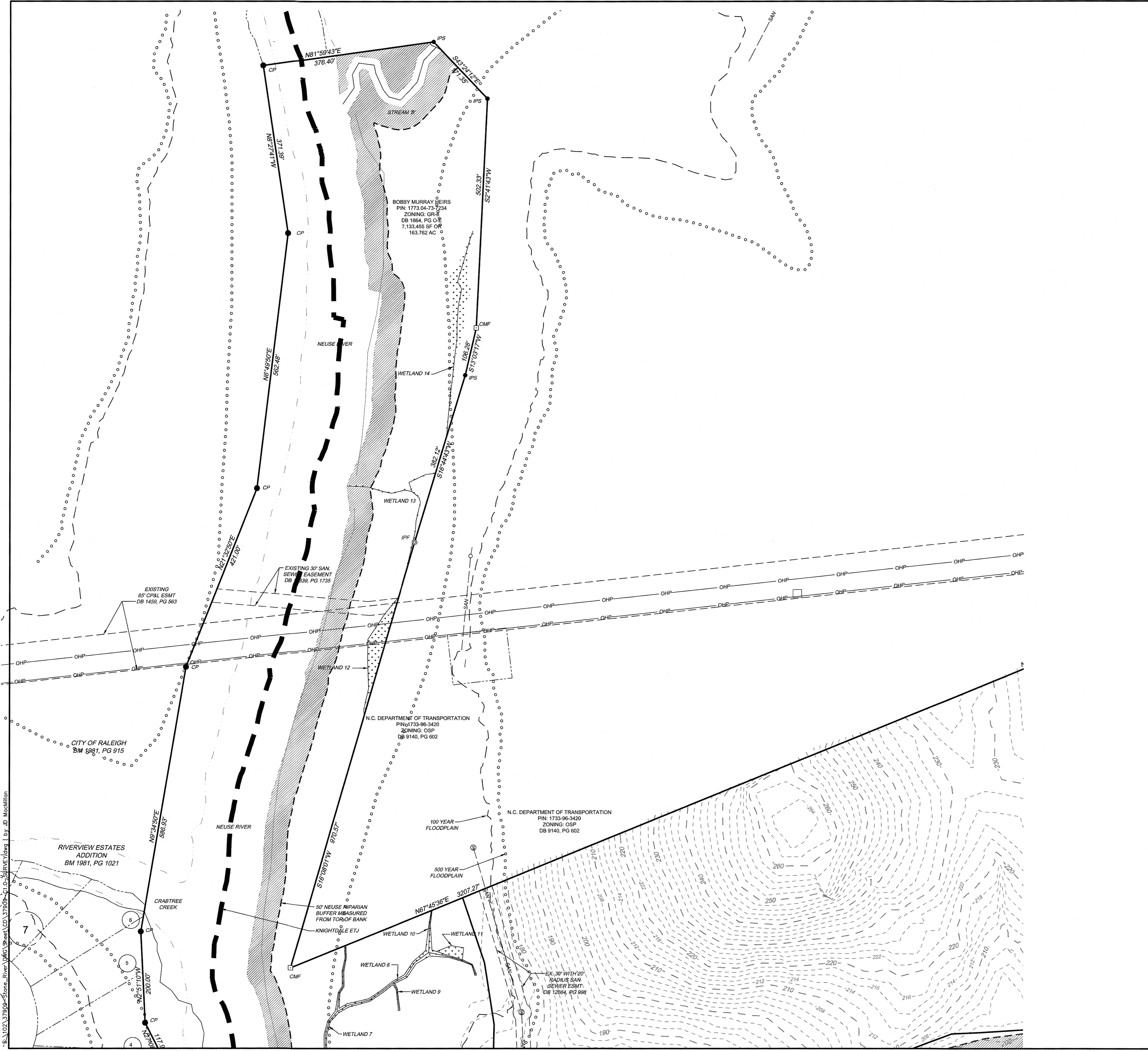
BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

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

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

JOB NO.	37909
SHEET NO.	C1.2

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



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	⊕ AC UNIT
⊕ CABLE TV PEDESTAL	⊕ WATER METER	⊕ MAILBOX
⊕ POWER POLE < GUY	⊕ WATER VALVE	⊕ EXISTING WETLANDS
⊕ LIGHT POLE	⊕ ROOF DRAIN	⊕ DEED LINE
⊕ YARD LIGHT		⊕ LINE NOT SURVEYED
R/W - RIGHT-OF-WAY		⊕ STORM LINE
P/L - PROPERTY LINE	⊕ SAN	⊕ SANITARY LINE
C/L - CENTERLINE	⊕ FENCE	⊕ OVERHEAD POWER LINE
NTS - NOT TO SCALE	⊕ OHP	⊕ PAINTED GAS LINE
GV - GAS VALVE	⊕ G	⊕ PAINTED POWER LINE
CB - CATCH BASIN	⊕ UGP	⊕ PAINTED STORM LINE
GI - GRATE INLET	⊕ STM	⊕ PAINTED TELEPHONE LINE
YI - YARD INLET	⊕ W	⊕ PAINTED WATER LINE
CI - CURB INLET		⊕ EDGE OF UNDERBRUSH
EP - EDGE OF PAVING		⊕ 100 YEAR FLOODPLAIN
TBC - TOP BACK OF CURB		⊕ 500 YEAR FLOODPLAIN
DB - DEED BOOK		
PB - PLAT BOOK		
PG - PAGE		
SF - SQUARE FEET		
⊕ WELL		

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

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

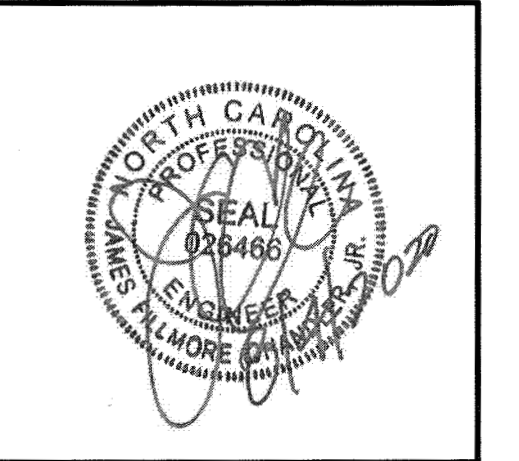
TOWN CERTIFICATION

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. ALM* 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. W.* DATE: 8-22-2020
ADMINISTRATOR



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Timbly Road, Suite 102, Raleigh, NC 27607
 TEL 919.866.4951 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 1

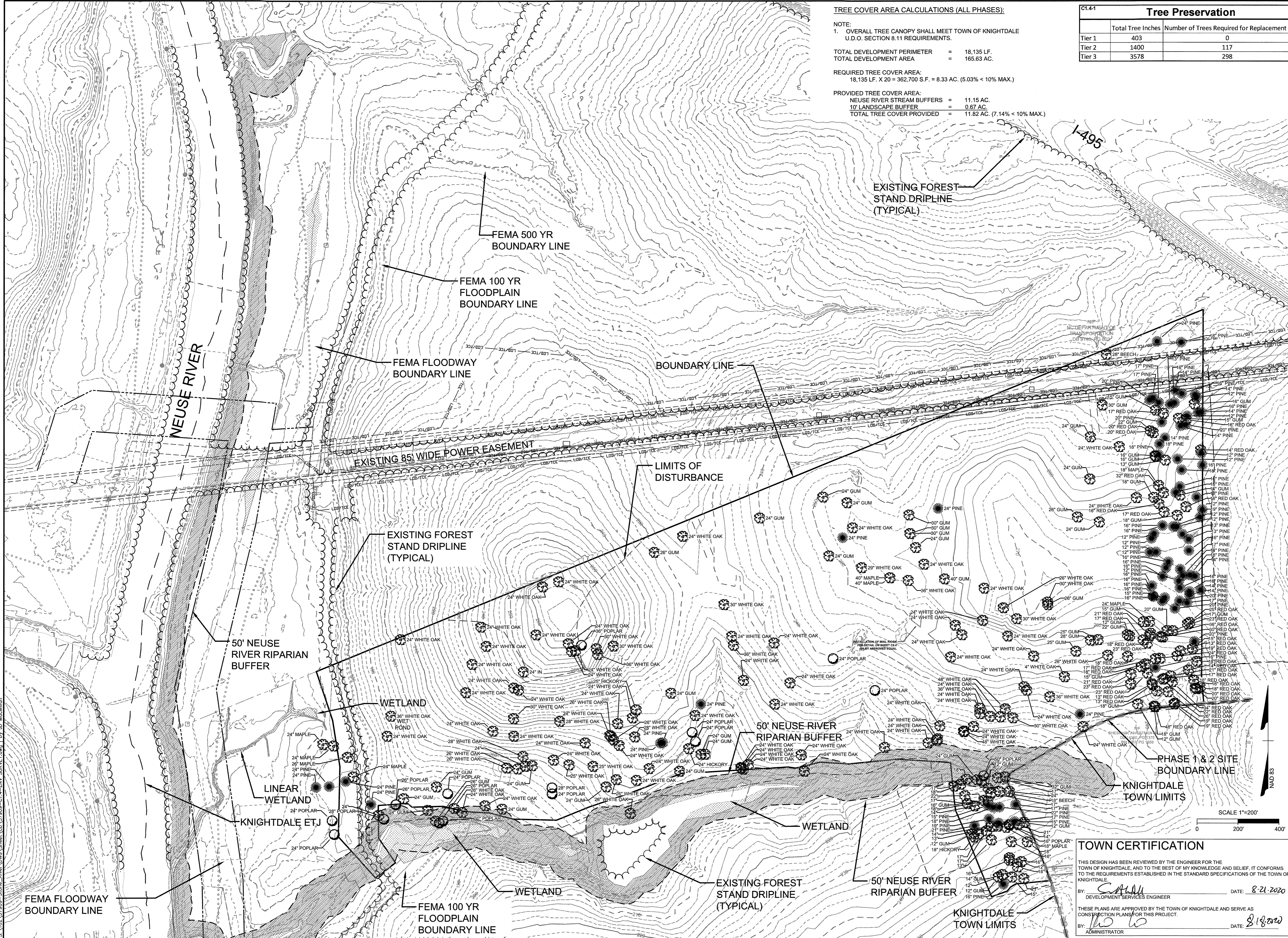
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

TOPOGRAPHIC SURVEY FOR STONERIVER

JOB NO. 37909
 SHEET NO. C1.3

S:\102\37909-Stoneriver-Subdivision\Drawings\102-37909-C10-Topographic\Drawings\102-37909-C10-Topographic.dwg | by: J.D. MacMillan

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to, construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



TREE COVER AREA CALCULATIONS (ALL PHASES):

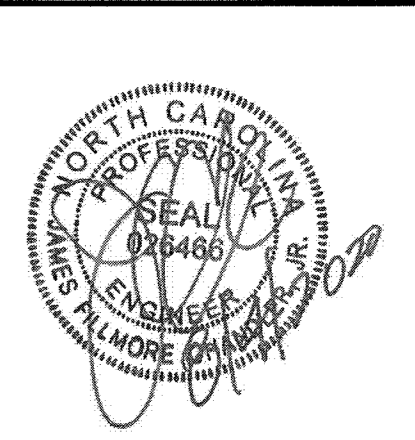
NOTE:
1. OVERALL TREE CANOPY SHALL MEET TOWN OF KNIGHTDALE U.D.O. SECTION 8.11 REQUIREMENTS.

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.)

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 102, Raleigh, NC 27607
TEL 919.866.9951 FAX 919.835.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

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

DATE	DATE
09/11/2018	

DESIGNED BY	CHECKED BY	SCALE
331	JFC	PER PLAN

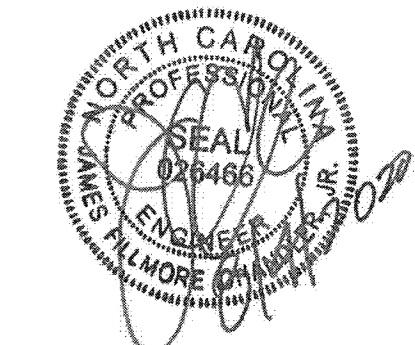
TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
ENVIRONMENTAL SURVEY & TREE SURVEY

JOB NO. 37909
SHEET NO. C1.4

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: *SAHU* 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: *Mo to* DATE: 8/21/2020
ADMINISTRATOR

S:\102\37909-Stoneriver\DWG\Sheet\C01.4-ENV SURVEY.dwg | By: JD, Mechlin



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, 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: JDS
 SCALE: PER PLAN

TIMMONS GROUP

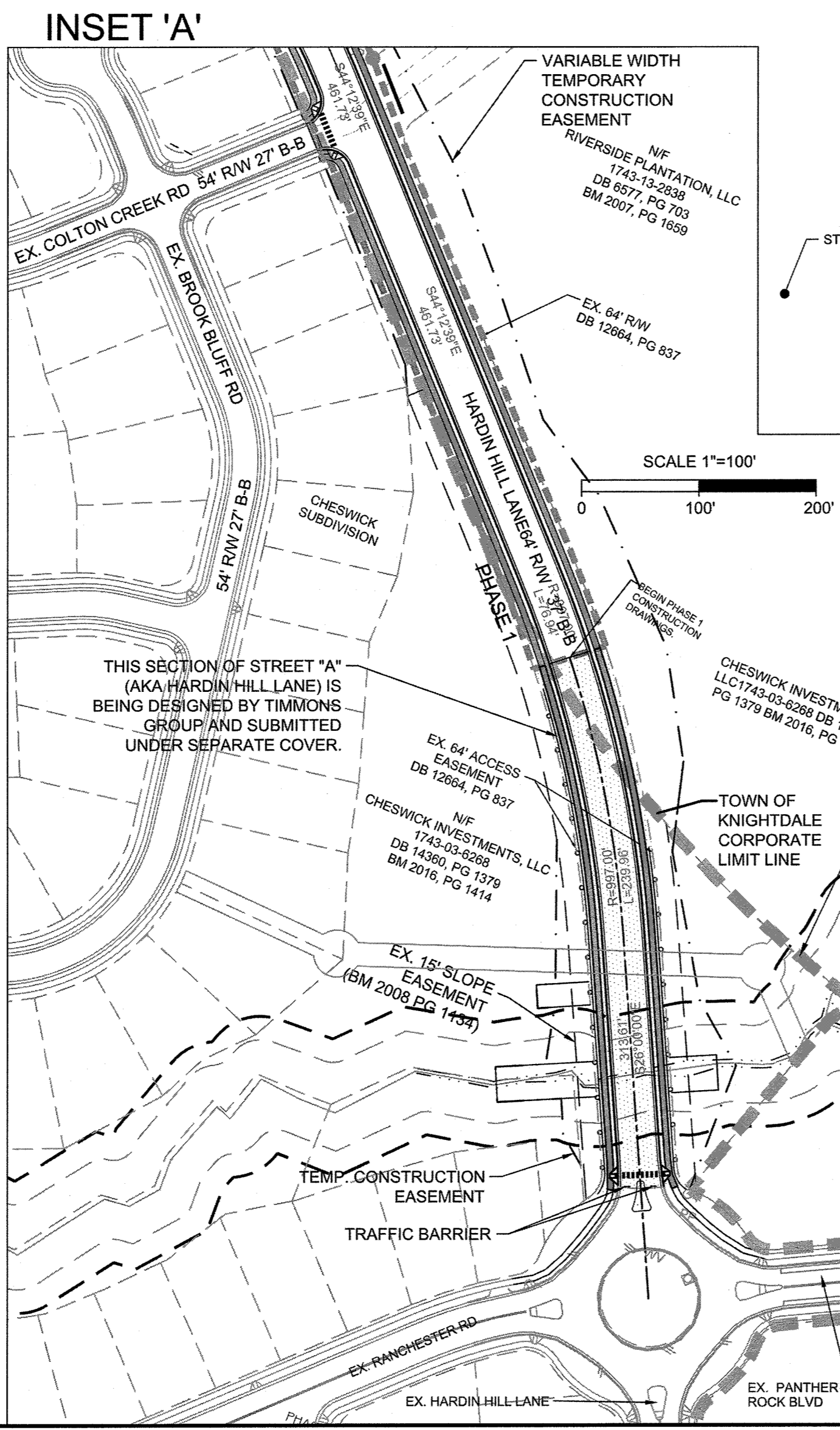
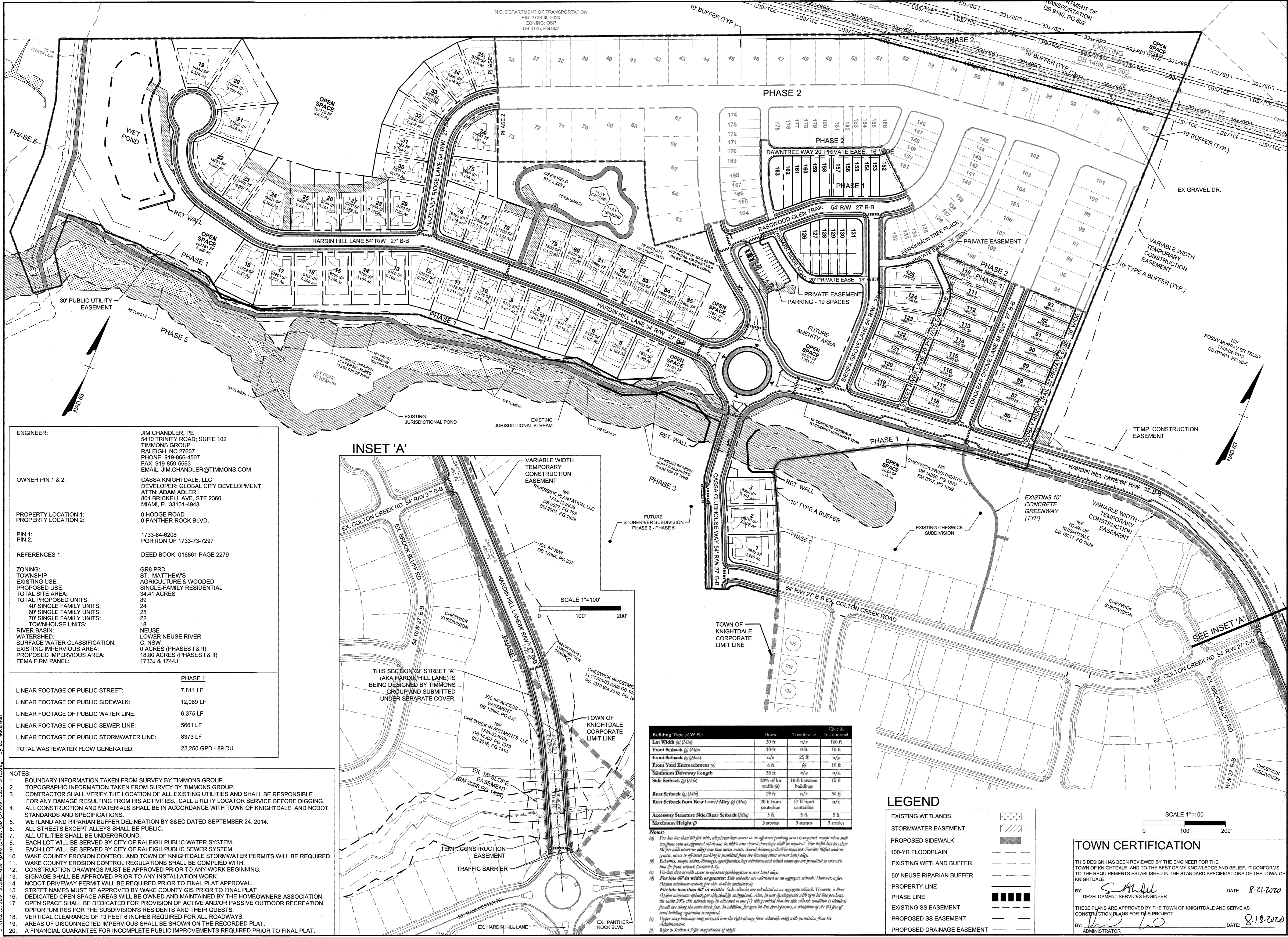
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
OVERALL SUBDIVISION LAYOUT PLAN

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

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

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

JOB NO. 37909
 SHEET NO. C2.0



Building Type (CH 5):	House	Townhouse	Civic & 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) (Min)	5 ft	5 ft	5 ft
Maximum Height (ft)	3 stories	3 stories	3 stories

Notes:

- For lots less than 80 feet wide, alley/rear lane access to all off-street parking areas is required, except when such lot front area is approved out-of-use, in which case shared driveways shall be required. For in-fill lots less than 80 feet wide where no alley/rear lane access exists, shared driveways shall be required. For lots 90 feet wide or greater, access to off-street parking is permitted from the fronting street or rear lane/alley.
- Decks, stoops, stairs, chimneys, open porches, bay windows, and raised driveways are permitted to encroach into the front setback (Section 4.4).
- For lots that provide access to off-street parking from a rear lane/alley.
- 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 rear developments with open lot line products, the outer 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.
- Upper story balconies may encroach into the right-of-way (over sidewalk only) with permission from the Administrator.
- Refer to Section 4.3 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

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.

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: 34.41 ACRES
TOTAL PROPOSED UNITS: 89
40' SINGLE FAMILY UNITS: 24
60' SINGLE FAMILY UNITS: 25
70' SINGLE FAMILY UNITS: 22
TOWNHOUSE UNITS: 18

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

	PHASE 1
LINEAR FOOTAGE OF PUBLIC STREET:	7,811 LF
LINEAR FOOTAGE OF PUBLIC SIDEWALK:	12,069 LF
LINEAR FOOTAGE OF PUBLIC WATER LINE:	6,375 LF
LINEAR FOOTAGE OF PUBLIC SEWER LINE:	5,661 LF
LINEAR FOOTAGE OF PUBLIC STORMWATER LINE:	8,373 LF
TOTAL WASTEWATER FLOW GENERATED:	22,250 GPD - 89 DU

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:\102\37909-Stone-River\DWG\Sheet\CD\37909-C2.0-STE.dwg | by: J.D. MacMillan

PAVEMENT MARKING NOTES

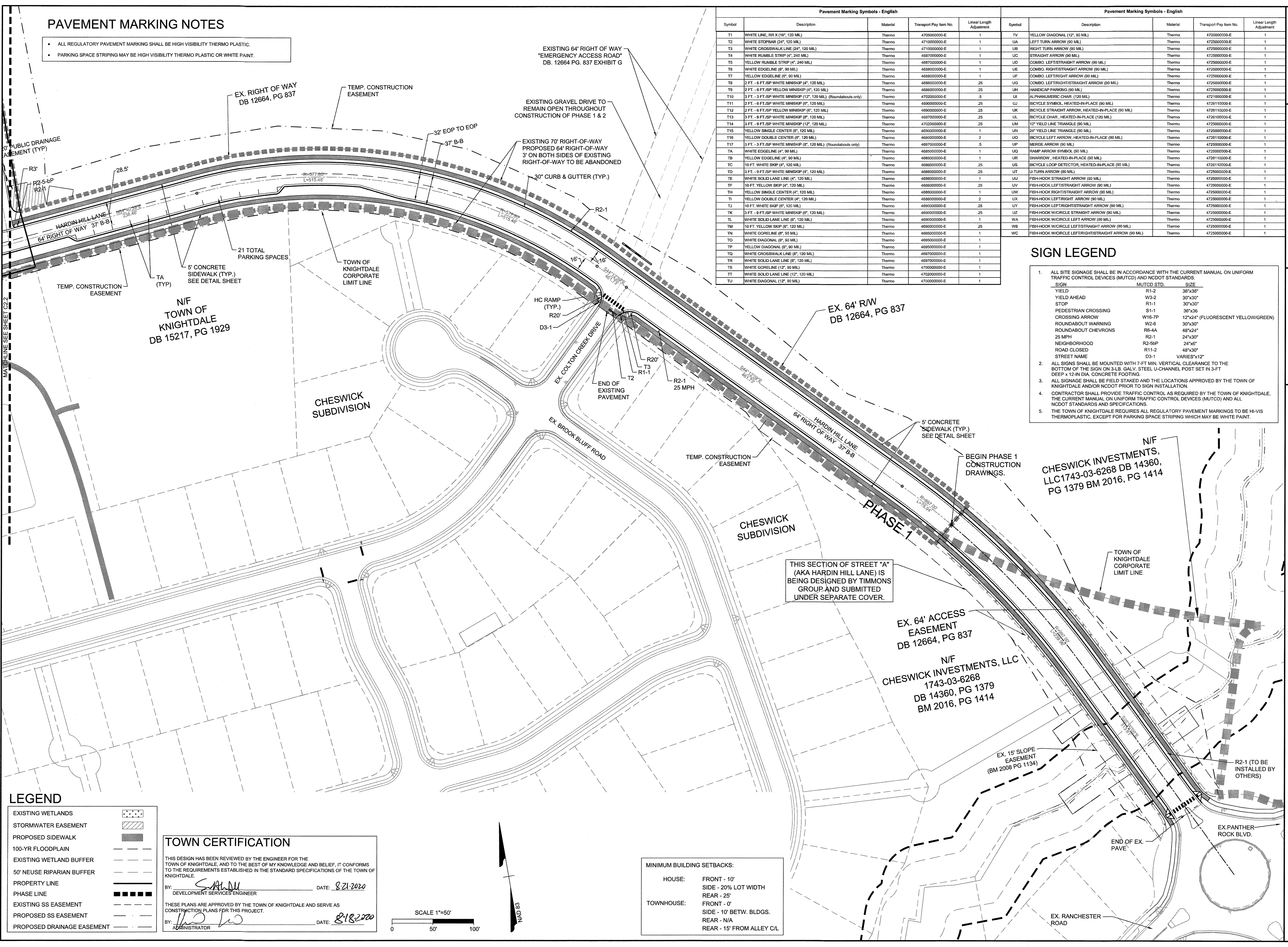
- ALL REGULATORY PAVEMENT MARKING SHALL BE HIGH VISIBILITY THERMO PLASTIC.
- PARKING SPACE STRIPING MAY BE HIGH VISIBILITY THERMO PLASTIC OR WHITE PAINT.

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	470500000-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 (4", 240 MIL)	Thermo	468700000-E	1	UC	STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T5	YELLOW RUMBLE STRIP (4", 240 MIL)	Thermo	468700000-E	1	UD	COMBO LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T6	WHITE EDGELINE (6", 90 MIL)	Thermo	468800000-E	1	UE	COMBO RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T7	YELLOW EDGELINE (6", 90 MIL)	Thermo	468800000-E	1	UF	COMBO LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
T8	2 FT. - 6 FT./SP WHITE MINISKIP (4", 120 MIL)	Thermo	468600000-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	468600000-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 (6", 120 MIL)	Thermo	469000000-E	25	UJ	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
T12	2 FT. - 6 FT./SP YELLOW MINISKIP (6", 120 MIL)	Thermo	469000000-E	25	UK	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
T13	3 FT. - 9 FT./SP WHITE MINISKIP (6", 120 MIL)	Thermo	469700000-E	25	UL	BICYCLE CHAR., HEATED-IN-PLACE (120 MIL)	Thermo	4726110000-E	1
T14	3 FT. - 9 FT./SP WHITE MINISKIP (12", 120 MIL)	Thermo	470200000-E	25	UM	12" YIELD LINE TRIANGLE (90 MIL)	Thermo	472500000-E	1
T15	YELLOW SINGLE CENTER (8", 120 MIL)	Thermo	469000000-E	1	UN	24" YIELD LINE TRIANGLE (90 MIL)	Thermo	472500000-E	1
T16	YELLOW DOUBLE CENTER (8", 120 MIL)	Thermo	469000000-E	2	UO	BICYCLE LEFT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
T17	3 FT. - 3 FT./SP WHITE MINISKIP (6", 120 MIL) (Roundabouts only)	Thermo	469700000-E	5	UP	MERGE ARROW (90 MIL)	Thermo	472500000-E	1
TA	WHITE EDGELINE (4", 90 MIL)	Thermo	468800000-E	1	UQ	RAMP ARROW SYMBOL (90 MIL)	Thermo	472500000-E	1
TB	YELLOW EDGELINE (4", 90 MIL)	Thermo	468800000-E	1	UR	SHARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
TC	10 FT. WHITE SKIP (6", 120 MIL)	Thermo	468800000-E	25	US	BICYCLE LOOP DETECTOR, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
TD	3 FT. - 9 FT./SP WHITE MINISKIP (4", 120 MIL)	Thermo	468600000-E	25	UT	U-TURN ARROW (90 MIL)	Thermo	472500000-E	1
TE	WHITE SOLID LANE LINE (4", 120 MIL)	Thermo	468800000-E	1	UU	FISH-HOOK STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TF	10 FT. YELLOW SKIP (4", 120 MIL)	Thermo	468800000-E	25	UV	FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TH	YELLOW DOUBLE CENTER (8", 120 MIL)	Thermo	469000000-E	1	UW	FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TI	YELLOW SINGLE CENTER (8", 120 MIL)	Thermo	469000000-E	1	UX	FISH-HOOK LEFT/RIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TJ	10 FT. WHITE SKIP (6", 120 MIL)	Thermo	469000000-E	25	UY	FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TK	3 FT. - 9 FT./SP WHITE MINISKIP (6", 120 MIL)	Thermo	469000000-E	25	UZ	FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TL	WHITE SOLID LANE LINE (6", 120 MIL)	Thermo	469000000-E	1	WA	FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL)	Thermo	472500000-E	1
TM	10 FT. YELLOW SKIP (6", 120 MIL)	Thermo	469000000-E	25	WB	FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TN	WHITE GORELINE (6", 90 MIL)	Thermo	469500000-E	1	WC	FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E	1
TO	WHITE DIAGONAL (8", 90 MIL)	Thermo	469500000-E	1					
TP	YELLOW DIAGONAL (8", 90 MIL)	Thermo	469500000-E	1					
TQ	WHITE CROSSWALK LINE (8", 120 MIL)	Thermo	469700000-E	1					
TR	WHITE SOLID LANE LINE (8", 120 MIL)	Thermo	469700000-E	1					
TS	WHITE GORELINE (12", 90 MIL)	Thermo	470000000-E	1					
TT	WHITE SOLID LANE LINE (12", 120 MIL)	Thermo	470200000-E	1					
TU	WHITE DIAGONAL (12", 90 MIL)	Thermo	470500000-E	1					

SIGN LEGEND

- ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.

SIGN	MUTCD STD.	SIZE
YIELD	R1-2	36"x36"
YIELD AHEAD	W3-2	30"x30"
STOP	R1-1	30"x30"
PEDESTRIAN CROSSING	S1-1	36"x36"
CROSSING ARROW	W16-7P	12"x24" (FLUORESCENT YELLOW/GREEN)
ROUNDABOUT WARNING	W2-6	30"x30"
ROUNDABOUT CHEVRONS	R6-4A	48"x24"
25 MPH	R2-1	24"x30"
NEIGHBORHOOD	R2-6P	24"x36"
ROAD CLOSED	R11-2	48"x30"
STREET NAME	D3-1	VARIABLES 12"
- ALL SIGNS SHALL BE MOUNTED WITH 7-FT MIN. VERTICAL CLEARANCE TO THE BOTTOM OF THE SIGN ON 4-LB. 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 HI-VIS THERMOPLASTIC, EXCEPT FOR PARKING SPACE STRIPING WHICH MAY BE WHITE PAINT.



LEGEND

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

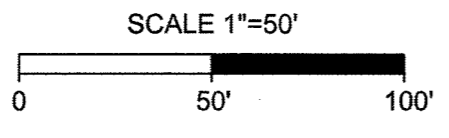
TOWN CERTIFICATION

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.

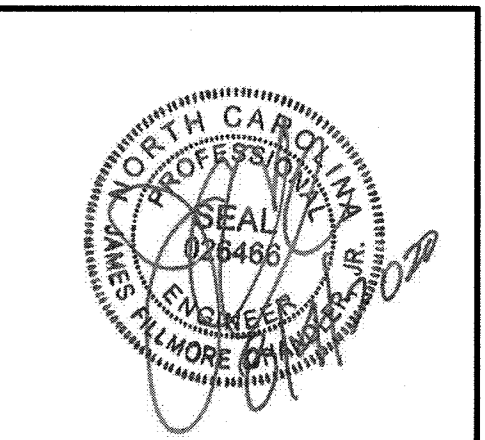
BY: *[Signature]* DATE: 8/18/2020
ADMINISTRATOR



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



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
09/04/2020	GRADING AND UTILITY REVISIONS
09/11/2018	

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

TIMMONS GROUP

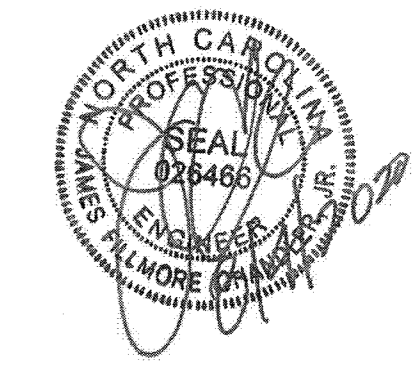
NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN

JOB NO. 37909
SHEET NO. C2.1

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



THIS DRAWING PREPARED AT THE OFFICE OF J. MOORE ENGINEERS, 5410 Trinity Road, Raleigh, NC 27607, TEL 919.866.9951 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	

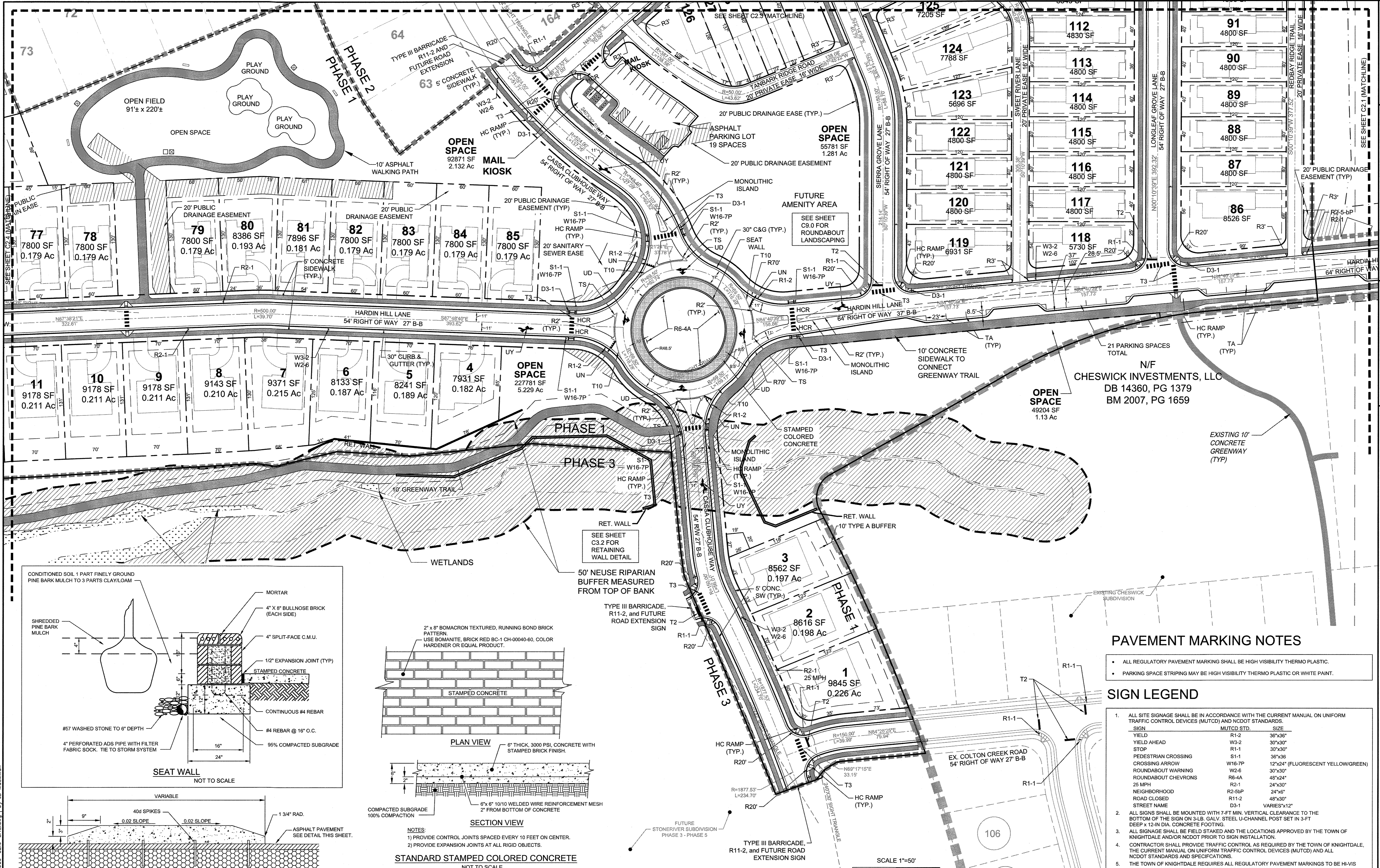
DATE: 09/11/2018
DRAWN BY: 331
DESIGNED BY: 331
CHECKED BY: JFC
SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN

JOB NO. 37909
SHEET NO. C2.2

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



PAVEMENT MARKING NOTES

- ALL REGULATORY PAVEMENT MARKING SHALL BE HIGH VISIBILITY THERMO PLASTIC.
- PARKING SPACE STRIPING MAY BE HIGH VISIBILITY THERMO PLASTIC OR WHITE PAINT.

SIGN LEGEND

SIGN	MUTCD STD.	SIZE
YIELD	R1-2	36"x36"
YIELD AHEAD	W3-2	30"x30"
STOP	R1-1	30"x30"
PEDESTRIAN CROSSING	S1-1	36"x36"
CROSSING ARROW	W16-7P	12"x24" (FLUORESCENT YELLOW/GREEN)
ROUNDABOUT WARNING	W2-6	30"x30"
ROUNDABOUT CHEVRONS	R6-4A	48"x24"
25 MPH	R2-1	24"x30"
NEIGHBORHOOD	R2-5bP	24"x6"
ROAD CLOSED	R11-2	48"x30"
STREET NAME	D3-1	VARIES*12"

1. ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.

2. ALL SIGNS SHALL BE MOUNTED WITH 7 FT MIN. VERTICAL CLEARANCE TO THE BOTTOM OF THE SIGN ON 3-LB. GALV. STEEL U-CHANNEL POST SET IN 3-FT DEEP x 12-IN DIA. CONCRETE FOOTING.

3. ALL SIGNAGE SHALL BE FIELD STAKED AND THE LOCATIONS APPROVED BY THE TOWN OF KNIGHTDALE AND/OR NCDOT PRIOR TO SIGN INSTALLATION.

4. 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.

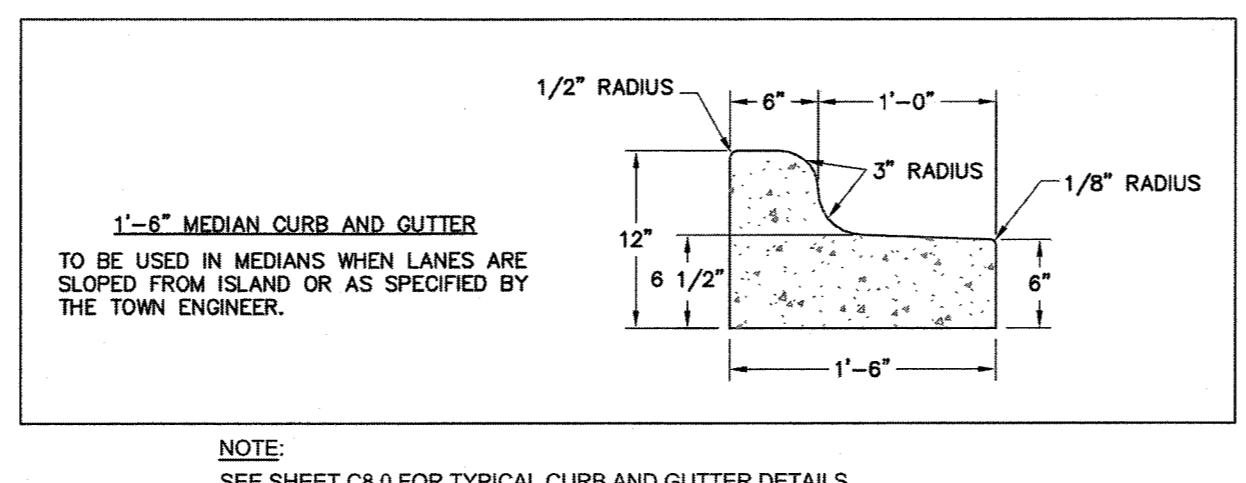
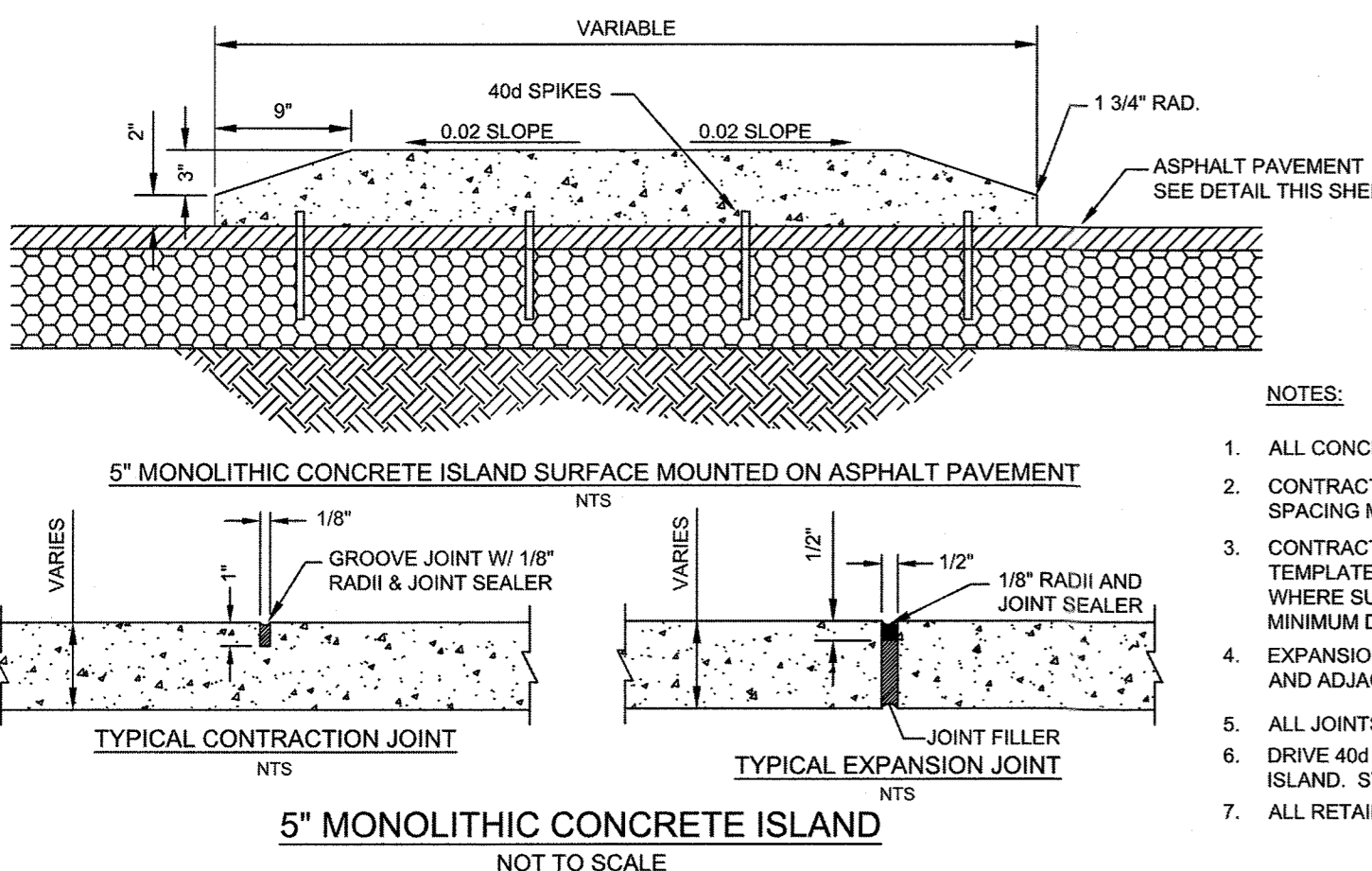
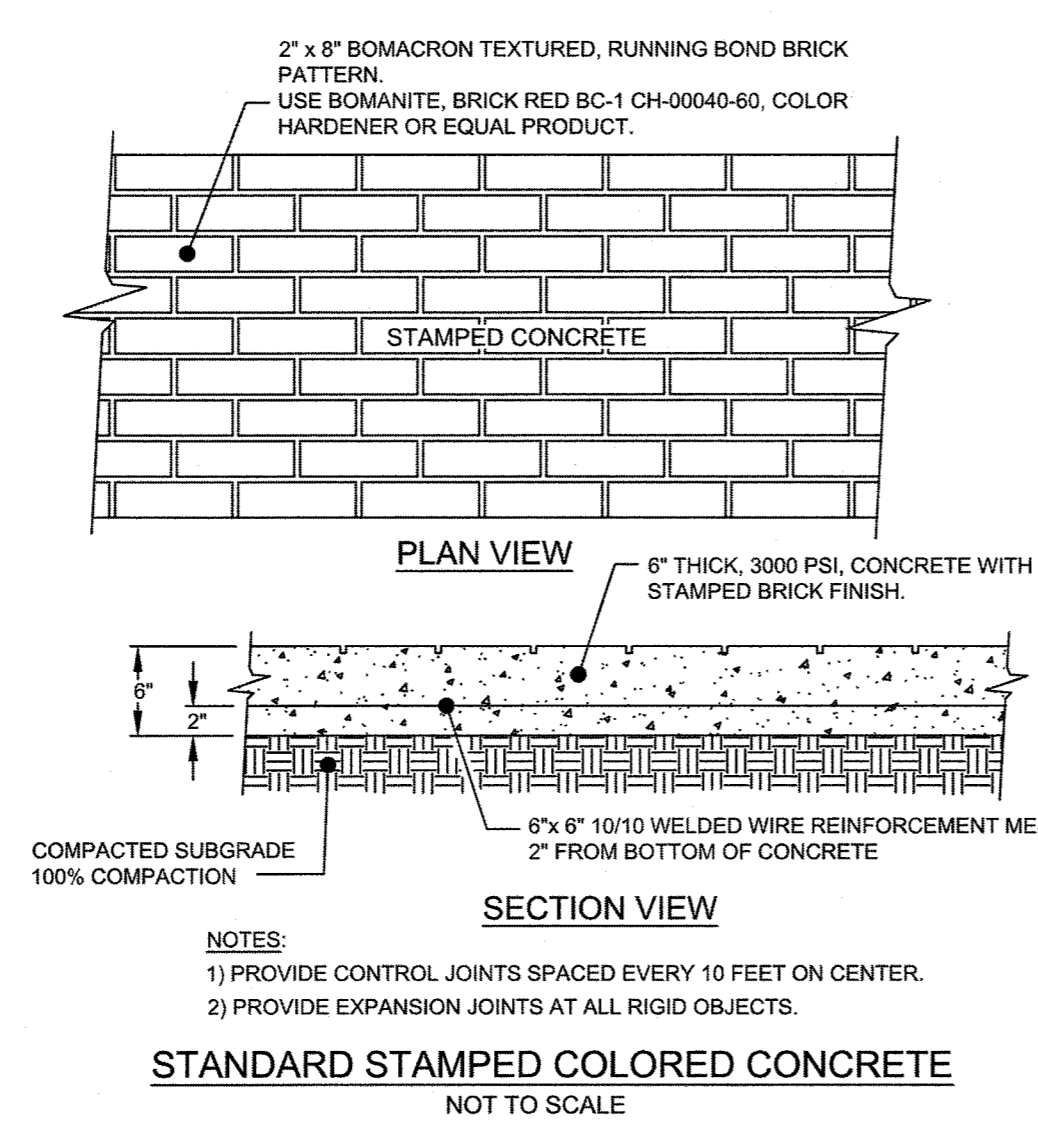
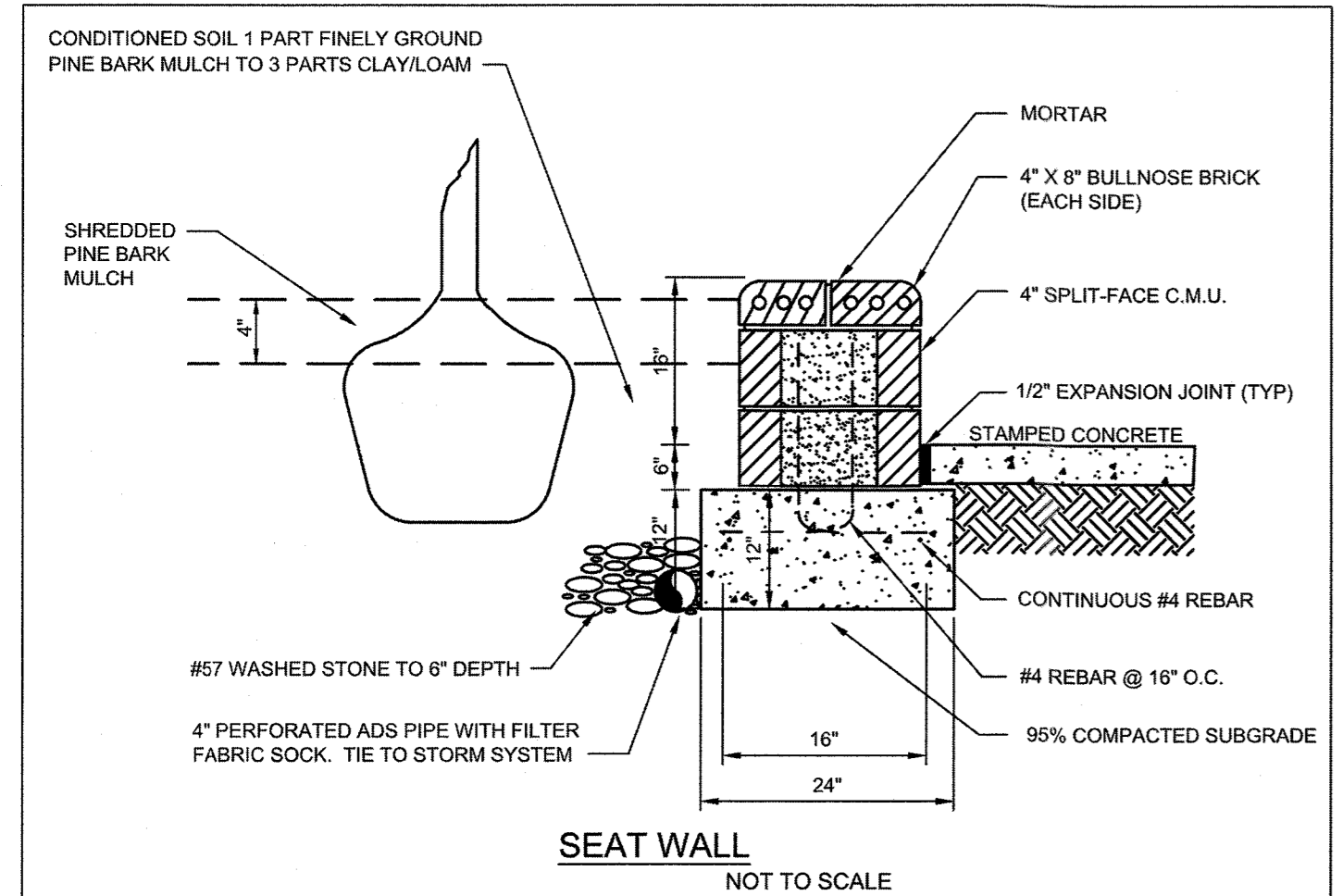
5. THE TOWN OF KNIGHTDALE REQUIRES ALL REGULATORY PAVEMENT MARKINGS TO BE HI-VIS THERMOPLASTIC, EXCEPT FOR PARKING SPACE STRIPING WHICH MAY BE WHITE PAINT.

LEGEND

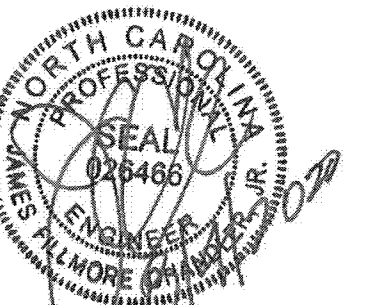
EXISTING WETLANDS	[Symbol]
STORMWATER EASEMENT	[Symbol]
PROPOSED SIDEWALK	[Symbol]
100-YR FLOODPLAIN	[Symbol]
EXISTING WETLAND BUFFER	[Symbol]
50' NEUSE RIPARIAN BUFFER	[Symbol]
PROPERTY LINE	[Symbol]
LINE LINE	[Symbol]
EXISTING SS EASEMENT	[Symbol]
PROPOSED SS EASEMENT	[Symbol]
PROPOSED DRAINAGE EASEMENT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

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



S:\102\37909-Stoner-River\DWG\Sheet\C2.2-0-SIT.dwg | by: Jd.McMillan



THIS DRAWING PREPARED AT THE
OFFICE OF
5410 Trinity Park Dr., Suite 100
Charlotte, NC 27607
TEL 919.866.4951, FAX 919.833.8124 www.timmons.com

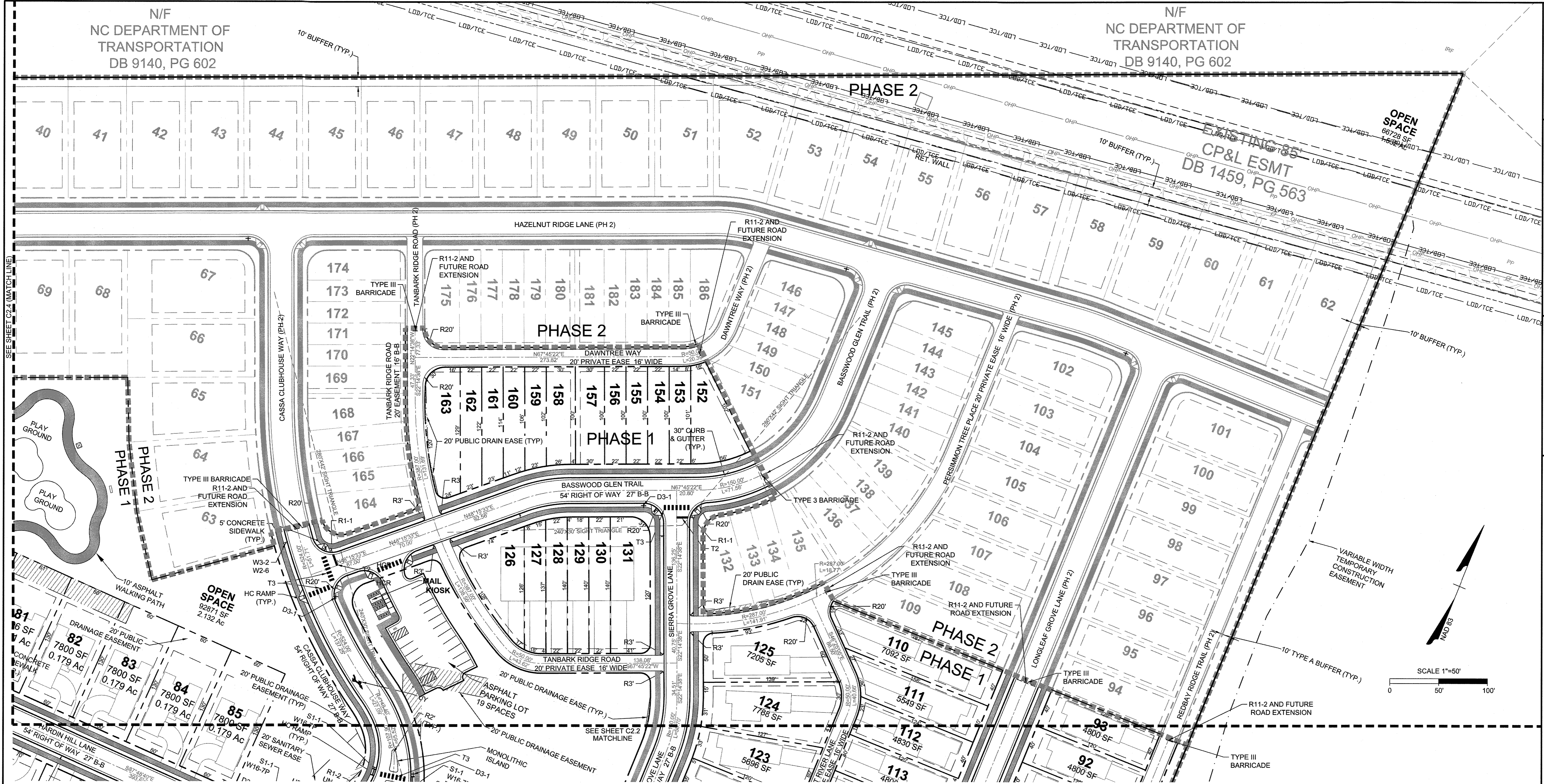
YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
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 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



Pavement Marking Symbols - English				Pavement Marking Symbols - English			
Symbol	Description	Material	Transport Pay Item No.	Symbol	Description	Material	Transport Pay Item No.
T1	WHITE LINE, RR X (18", 120 MIL)	Thermo	470500000-E	TV	YELLOW DIAGONAL (12", 90 MIL)	Thermo	470000000-E
T2	WHITE STOPBAR (24", 120 MIL)	Thermo	471000000-E	UA	LEFT TURN ARROW (90 MIL)	Thermo	472500000-E
T3	WHITE CROSSWALK LINE (24", 120 MIL)	Thermo	471000000-E	UB	RIGHT TURN ARROW (90 MIL)	Thermo	472500000-E
T4	WHITE RUMBLE STRIP (4", 240 MIL)	Thermo	468700000-E	UC	STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
T5	YELLOW RUMBLE STRIP (4", 240 MIL)	Thermo	468700000-E	UD	COMBO LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
T6	WHITE EDGELINE (8", 90 MIL)	Thermo	468800000-E	UE	COMBO RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
T7	YELLOW EDGELINE (8", 90 MIL)	Thermo	468800000-E	UF	COMBO LEFT/RIGHT ARROW (90 MIL)	Thermo	472500000-E
T8	2 FT. - 6 FT./SP WHITE MINISKIP (4", 120 MIL)	Thermo	468800000-E	UG	COMBO LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
T9	2 FT. - 6 FT./SP YELLOW MINISKIP (4", 120 MIL)	Thermo	468800000-E	UH	HANDICAP PARKING (90 MIL)	Thermo	472500000-E
T10	3 FT. - 3 FT./SP WHITE MINISKIP (12", 120 MIL) (Roundabouts only)	Thermo	470200000-E	UI	ALPHANUMERIC CHAR. (120 MIL)	Thermo	472100000-E
T11	2 FT. - 6 FT./SP WHITE MINISKIP (8", 120 MIL)	Thermo	468900000-E	UJ	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)	Thermo	472810000-E
T12	2 FT. - 6 FT./SP YELLOW MINISKIP (8", 120 MIL)	Thermo	468900000-E	UK	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	472810000-E
T13	3 FT. - 9 FT./SP WHITE MINISKIP (8", 120 MIL)	Thermo	468700000-E	UL	BICYCLE CHAR., HEATED-IN-PLACE (120 MIL)	Thermo	472610000-E
T14	3 FT. - 9 FT./SP WHITE MINISKIP (12", 120 MIL)	Thermo	470200000-E	UM	12" YIELD LINE TRIANGLE (90 MIL)	Thermo	472500000-E
T15	YELLOW SINGLE CENTER (8", 120 MIL)	Thermo	469000000-E	UN	24" YIELD LINE TRIANGLE (90 MIL)	Thermo	472500000-E
T16	YELLOW DOUBLE CENTER (8", 120 MIL)	Thermo	469000000-E	UO	BICYCLE LEFT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	472810000-E
T17	3 FT. - 3 FT./SP WHITE MINISKIP (8", 120 MIL) (Roundabouts only)	Thermo	468700000-E	UP	MERGE ARROW (90 MIL)	Thermo	472500000-E
TA	WHITE EDGELINE (4", 90 MIL)	Thermo	468500000-E	UQ	RAMP ARROW SYMBOL (90 MIL)	Thermo	472500000-E
TB	YELLOW EDGELINE (4", 90 MIL)	Thermo	468500000-E	UR	SHARROW, HEATED-IN-PLACE (90 MIL)	Thermo	472610000-E
TC	10 FT. WHITE SKP (4", 120 MIL)	Thermo	468800000-E	US	BICYCLE LOOP DETECTOR, HEATED-IN-PLACE (90 MIL)	Thermo	472810000-E
TD	3 FT. - 9 FT./SP WHITE MINISKIP (4", 120 MIL)	Thermo	468800000-E	UT	U-TURN ARROW (90 MIL)	Thermo	472500000-E
TE	WHITE SOLID LANE LANE (4", 120 MIL)	Thermo	468800000-E	UU	FISH-HOOK STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TF	10 FT. YELLOW SKP (4", 120 MIL)	Thermo	468800000-E	UV	FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TH	YELLOW SINGLE CENTER (4", 120 MIL)	Thermo	468800000-E	UW	FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TJ	YELLOW DOUBLE CENTER (4", 120 MIL)	Thermo	468800000-E	UX	FISH-HOOK LEFT/RIGHT ARROW (90 MIL)	Thermo	472500000-E
TK	10 FT. WHITE SKP (8", 120 MIL)	Thermo	468900000-E	UY	FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TL	3 FT. - 9 FT./SP WHITE MINISKIP (8", 120 MIL)	Thermo	468900000-E	UZ	FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TM	10 FT. WHITE SKP (8", 120 MIL)	Thermo	468900000-E	VA	FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL)	Thermo	472500000-E
TN	10 FT. YELLOW SKP (8", 120 MIL)	Thermo	468900000-E	VB	FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TO	WHITE GORELINE (8", 90 MIL)	Thermo	468900000-E	VC	FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	472500000-E
TP	WHITE DIAGONAL (8", 90 MIL)	Thermo	468900000-E				
TP	YELLOW DIAGONAL (8", 90 MIL)	Thermo	468900000-E				
TQ	WHITE CROSSWALK LINE (8", 120 MIL)	Thermo	468700000-E				
TR	WHITE SOLID LANE LINE (8", 120 MIL)	Thermo	468700000-E				
TS	WHITE GORELINE (12", 90 MIL)	Thermo	470200000-E				
TT	WHITE SOLID LANE LINE (12", 120 MIL)	Thermo	470200000-E				
TU	WHITE DIAGONAL (12", 120 MIL)	Thermo	470000000-E				

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-LB. 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 HI-VIS THERMOPLASTIC, EXCEPT FOR PARKING SPACE STRIPING WHICH MAY BE WHITE PAINT.

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

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

TOWN CERTIFICATION

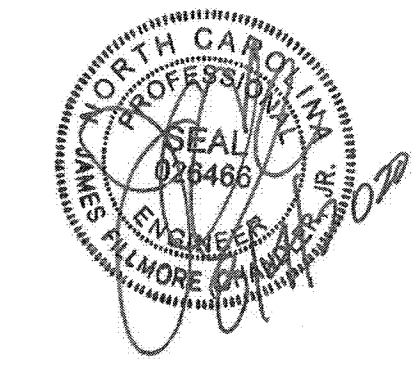
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

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

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 CL



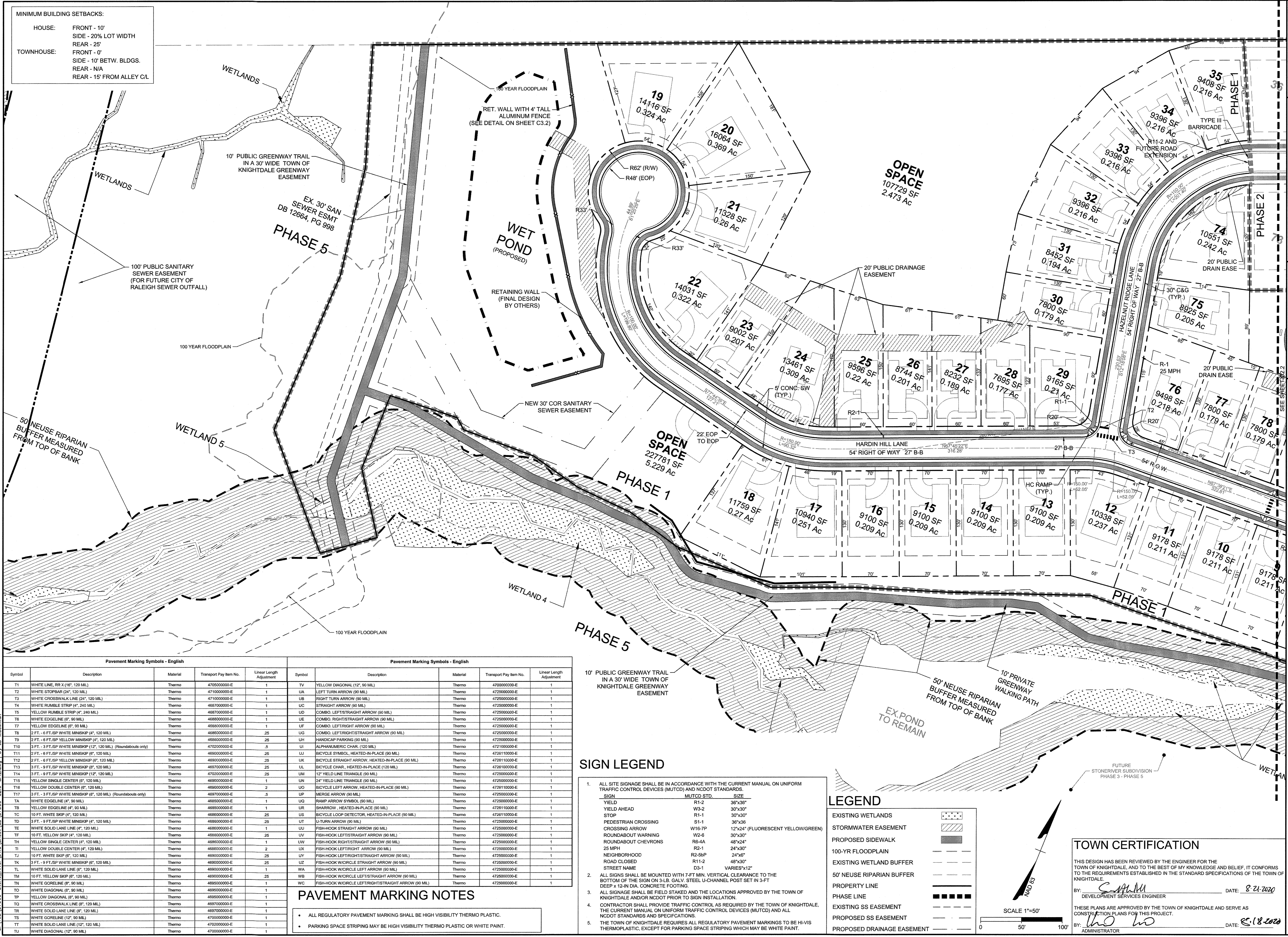
THIS DRAWING PREPARED AT THE
 OFFICE OF JAMES W. TIMMONS, INC.
 5410 Trinity Road, Suite 100, Raleigh, NC 27607
 TEL 919.866.9951 FAX 919.833.8124 www.timmons.com

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-1652
 STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 SUBDIVISION LAYOUT, SIGNAGE & MARKING PLAN

JOB NO. 37909
 SHEET NO. C2.4



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 (1/2" x 120 MIL)	Thermo	4705000000-E	1	TV	YELLOW DIAGONAL (12" x 90 MIL)	Thermo	4720000000-E	1
T2	WHITE STOPBAR (24" x 120 MIL)	Thermo	4710000000-E	1	UA	LEFT TURN ARROW (90 MIL)	Thermo	4725000000-E	1
T3	WHITE CROSSWALK LINE (24" x 120 MIL)	Thermo	4710000000-E	1	UB	RIGHT TURN ARROW (90 MIL)	Thermo	4725000000-E	1
T4	WHITE RUMBLE STRIP (24" x 240 MIL)	Thermo	4687000000-E	1	UC	STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
T5	YELLOW RUMBLE STRIP (24" x 240 MIL)	Thermo	4687000000-E	1	UD	COMBO LEFT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
T6	WHITE EDGELINE (8" x 90 MIL)	Thermo	4688000000-E	1	UE	COMBO RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
T7	YELLOW EDGELINE (8" x 90 MIL)	Thermo	4688000000-E	1	UF	COMBO LEFT/RIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
T8	2 FT. - 6 FT./SP WHITE MINISKIP (4" x 120 MIL)	Thermo	4688000000-E	25	UG	COMBO LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
T9	2 FT. - 6 FT./SP YELLOW MINISKIP (4" x 120 MIL)	Thermo	4688000000-E	25	UH	HANDICAP PARKING (90 MIL)	Thermo	4725000000-E	1
T10	3 FT. - 3 FT./SP WHITE MINISKIP (12" x 120 MIL) (Roundabouts only)	Thermo	4702000000-E	5	UI	ALPHANUMERIC CHAR. (120 MIL)	Thermo	4721000000-E	1
T11	2 FT. - 6 FT./SP WHITE MINISKIP (8" x 120 MIL)	Thermo	4690000000-E	25	UJ	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
T12	2 FT. - 6 FT./SP YELLOW MINISKIP (8" x 120 MIL)	Thermo	4690000000-E	25	UK	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
T13	3 FT. - 9 FT./SP WHITE MINISKIP (8" x 120 MIL)	Thermo	4697000000-E	25	UL	BICYCLE CHAR., HEATED-IN-PLACE (120 MIL)	Thermo	4726110000-E	1
T14	3 FT. - 9 FT./SP WHITE MINISKIP (12" x 120 MIL)	Thermo	4702000000-E	25	UM	12" YIELD LINE TRIANGLE (90 MIL)	Thermo	4725000000-E	1
T15	YELLOW SINGLE CENTER (8" x 120 MIL)	Thermo	4690000000-E	1	UN	24" YIELD LINE TRIANGLE (90 MIL)	Thermo	4725000000-E	1
T16	YELLOW DOUBLE CENTER (8" x 120 MIL)	Thermo	4690000000-E	2	UO	BICYCLE LEFT ARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
T17	3 FT. - 3 FT./SP WHITE MINISKIP (8" x 120 MIL) (Roundabouts only)	Thermo	4697000000-E	5	UP	MERGE ARROW (90 MIL)	Thermo	4725000000-E	1
TA	WHITE EDGELINE (4" x 90 MIL)	Thermo	4685000000-E	1	UQ	RAMP ARROW SYMBOL (90 MIL)	Thermo	4725000000-E	1
TB	YELLOW EDGELINE (4" x 90 MIL)	Thermo	4685000000-E	1	UR	SHARROW, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
TC	10 FT. WHITE SKIP (4" x 120 MIL)	Thermo	4686000000-E	25	US	BICYCLE LOOP DETECTOR, HEATED-IN-PLACE (90 MIL)	Thermo	4726110000-E	1
TD	3 FT. - 9 FT./SP WHITE MINISKIP (4" x 120 MIL)	Thermo	4686000000-E	25	UT	U-TURN ARROW (90 MIL)	Thermo	4725000000-E	1
TE	WHITE SOLID LANE LINE (4" x 120 MIL)	Thermo	4685000000-E	1	UU	FISH-HOOK STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TF	10 FT. YELLOW SKIP (8" x 120 MIL)	Thermo	4685000000-E	25	UV	FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TH	YELLOW SINGLE CENTER (4" x 120 MIL)	Thermo	4685000000-E	1	UW	FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TI	YELLOW DOUBLE CENTER (4" x 120 MIL)	Thermo	4686000000-E	2	UX	FISH-HOOK LEFT/TRIANGLE ARROW (90 MIL)	Thermo	4725000000-E	1
TJ	10 FT. WHITE SKIP (8" x 120 MIL)	Thermo	4690000000-E	25	UY	FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TK	3 FT. - 9 FT./SP WHITE MINISKIP (8" x 120 MIL)	Thermo	4690000000-E	25	UZ	FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TL	WHITE SOLID LANE LINE (6" x 120 MIL)	Thermo	4690000000-E	1	WA	FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL)	Thermo	4725000000-E	1
TM	10 FT. YELLOW SKIP (6" x 120 MIL)	Thermo	4690000000-E	25	WB	FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TN	WHITE GOBELINE (8" x 90 MIL)	Thermo	4685000000-E	1	WC	FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)	Thermo	4725000000-E	1
TO	WHITE DIAGONAL (8" x 90 MIL)	Thermo	4685000000-E	1					
TP	YELLOW DIAGONAL (8" x 90 MIL)	Thermo	4685000000-E	1					
TQ	WHITE CROSSWALK LINE (8" x 120 MIL)	Thermo	4697000000-E	1					
TR	WHITE SOLID LANE LINE (8" x 120 MIL)	Thermo	4697000000-E	1					
TS	WHITE GOBELINE (12" x 90 MIL)	Thermo	4700000000-E	1					
TU	WHITE SOLID LANE LINE (12" x 120 MIL)	Thermo	4702000000-E	1					
TV	WHITE DIAGONAL (12" x 90 MIL)	Thermo	4705000000-E	1					

PAVEMENT MARKING NOTES

- ALL REGULATORY PAVEMENT MARKING SHALL BE HIGH VISIBILITY THERMO PLASTIC.
- PARKING SPACE STRIPING MAY BE HIGH VISIBILITY THERMO PLASTIC OR WHITE PAINT.

SIGN LEGEND

- ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NCDOT STANDARDS.

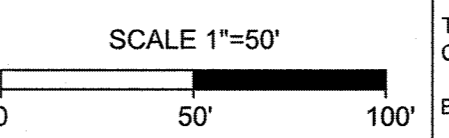
SIGN	MUTCD STD.	SIZE
YIELD	R1-2	36"x36"
STOP	W3-2	30"x30"
STOP	R1-1	30"x30"
PEDESTRIAN CROSSING	S1-1	36"x36"
CROSSING ARROW	W16-7P	12"x24" (FLUORESCENT YELLOW/GREEN)
ROUNDABOUT WARNING	W2-6	30"x30"
ROUNDABOUT CHEVRONS	R6-4A	48"x24"
25 MPH	R2-1	24"x30"
NEIGHBORHOOD	R2-5BP	24"x36"
ROAD CLOSED	R11-2	48"x30"
STREET NAME	D3-1	VARIABLES"x12"
- ALL SIGNS SHALL BE MOUNTED WITH 7-FT MIN. VERTICAL CLEARANCE TO THE BOTTOM OF THE SIGN ON 3-LB. 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 HI-VIS THERMOPLASTIC, EXCEPT FOR PARKING SPACE STRIPING WHICH MAY BE WHITE PAINT.

LEGEND

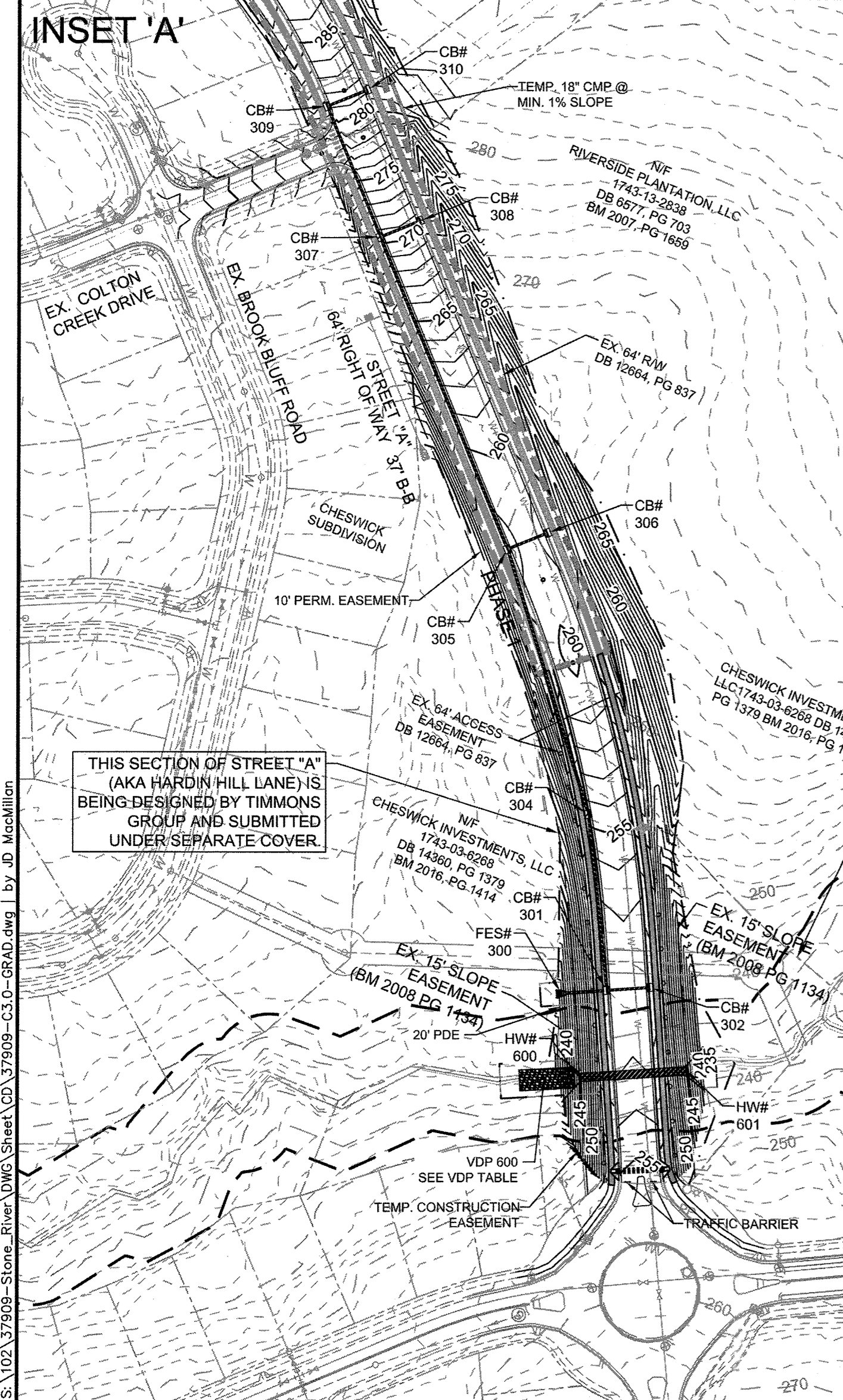
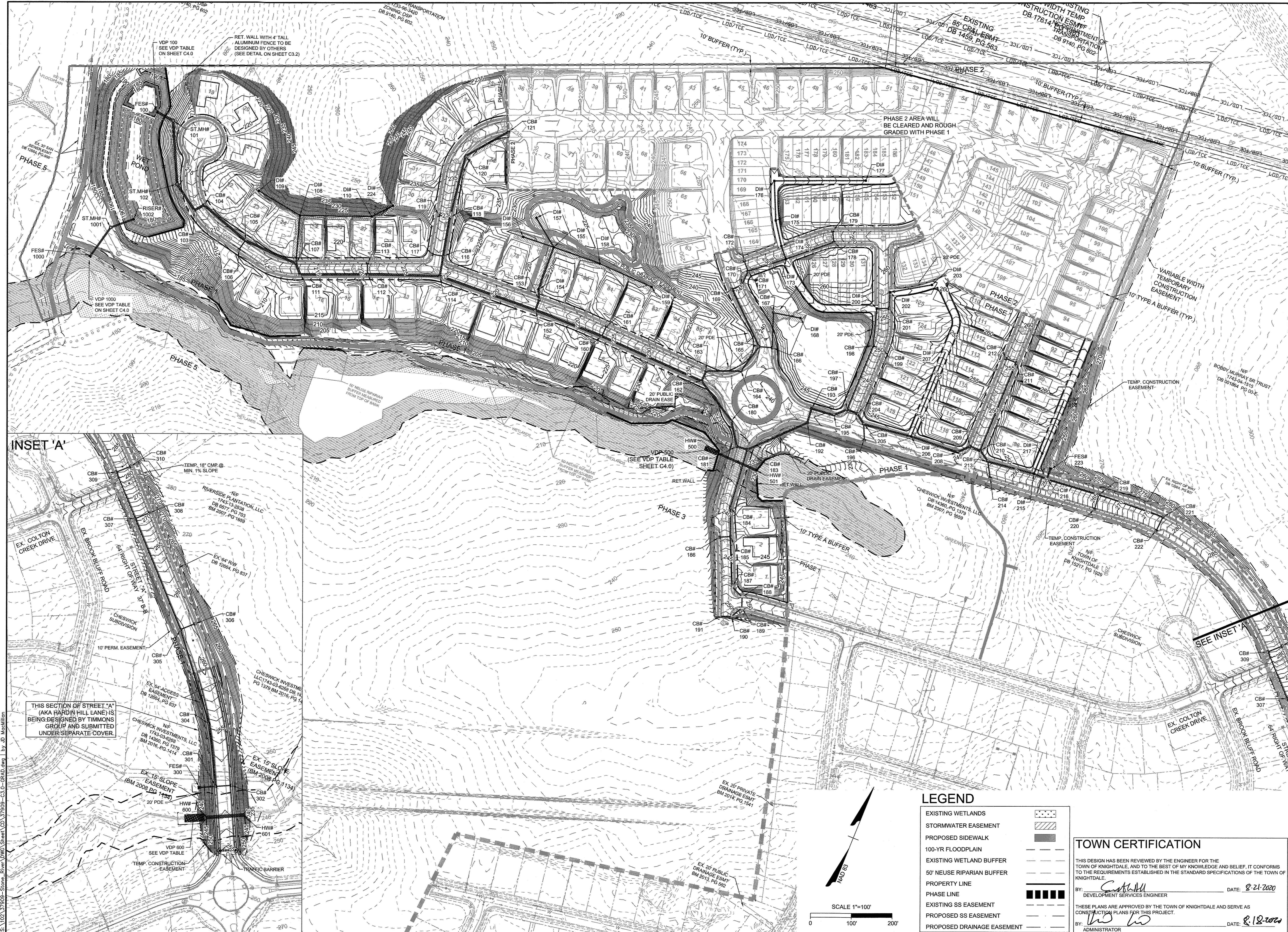
- EXISTING WETLANDS
- STORMWATER EASEMENT
- PROPOSED SIDEWALK
- 100-YR FLOODPLAIN
- EXISTING WETLAND BUFFER
- 50' NEUSE RIPARIAN BUFFER
- PROPERTY LINE
- PHASE LINE
- EXISTING SS EASEMENT
- PROPOSED SS EASEMENT
- PROPOSED DRAINAGE EASEMENT

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: 8/18/2020
 ADMINISTRATOR

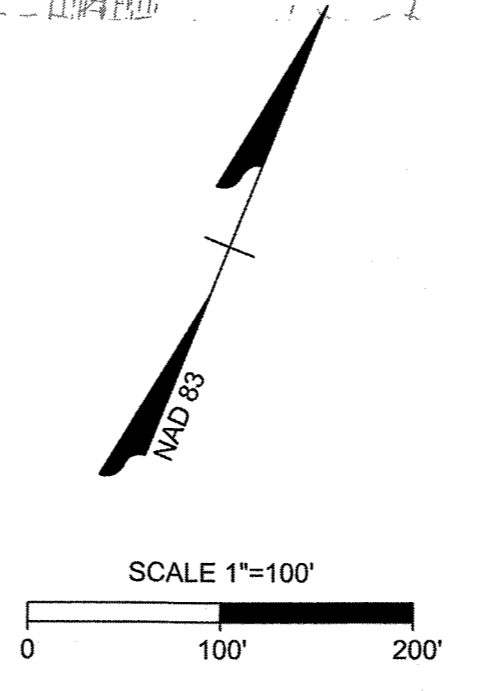


S:\02_37909-Stone-River-DWG-Sheet-CD-37909-C2-0-511.dwg by JD MacMillan



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	



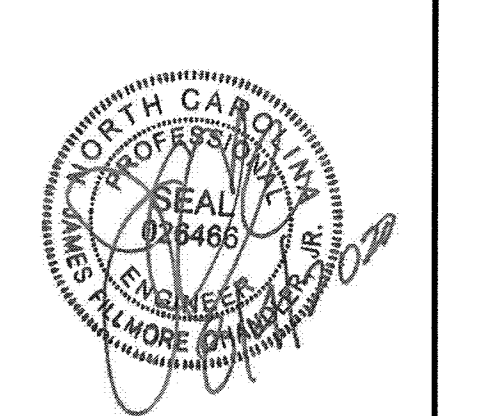
TOWN CERTIFICATION

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: 8-18-2020
 ADMINISTRATOR



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.833.4124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

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

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

OVERALL GRADING & STORM DRAINAGE PLAN

JOB NO.
37909

SHEET NO.
C3.0

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

TO WET POND #1

TO WET POND #1

TO WET POND #1

POND OUTLET

Table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains storm drainage schedule data for Wet Pond #1.

Table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains storm drainage schedule data for Wet Pond #1.

Table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains storm drainage schedule data for Wet Pond #1.

ALONG HARDIN HILL LANE EXT.

Table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains storm drainage schedule data for Hardin Hill Lane Ext.

CULVERTS

Table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains storm drainage schedule data for culverts.

Table with columns: UP STREAM STRUCTURE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains storm drainage schedule data for Pond Outlet.

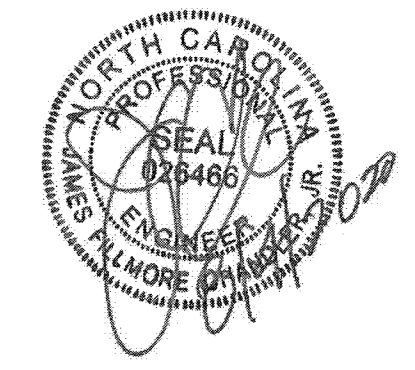
SANITARY SEWER

SANITARY SEWER SCHEDULE

Table with columns: UP STREAM STRUCTURE, SIZE, INLET DEPTH, TOP, INV IN, INV OUT, OUTLET PIPE, DOWN STREAM STRUCTURE. Contains sanitary sewer schedule data.

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.



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.

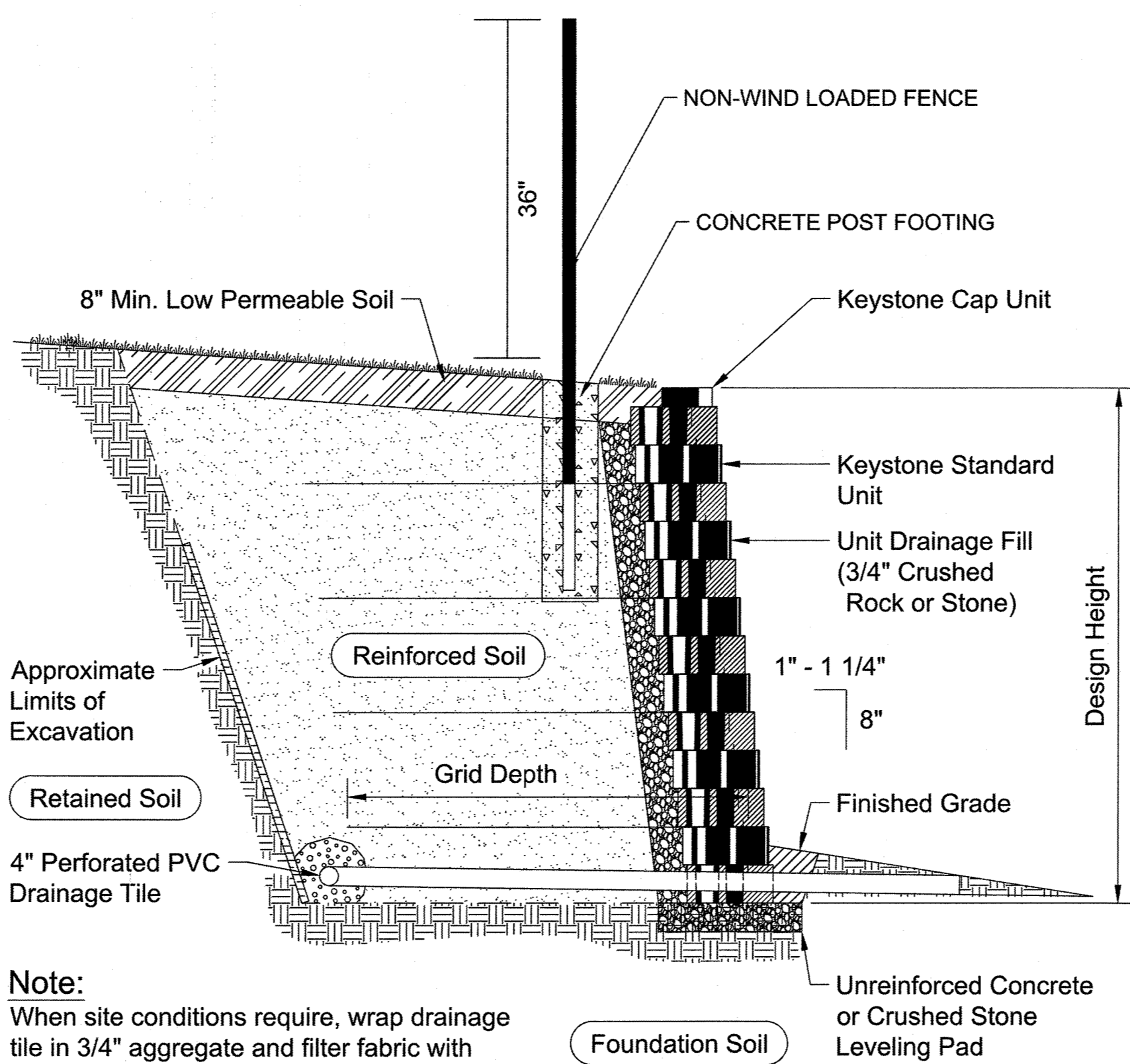
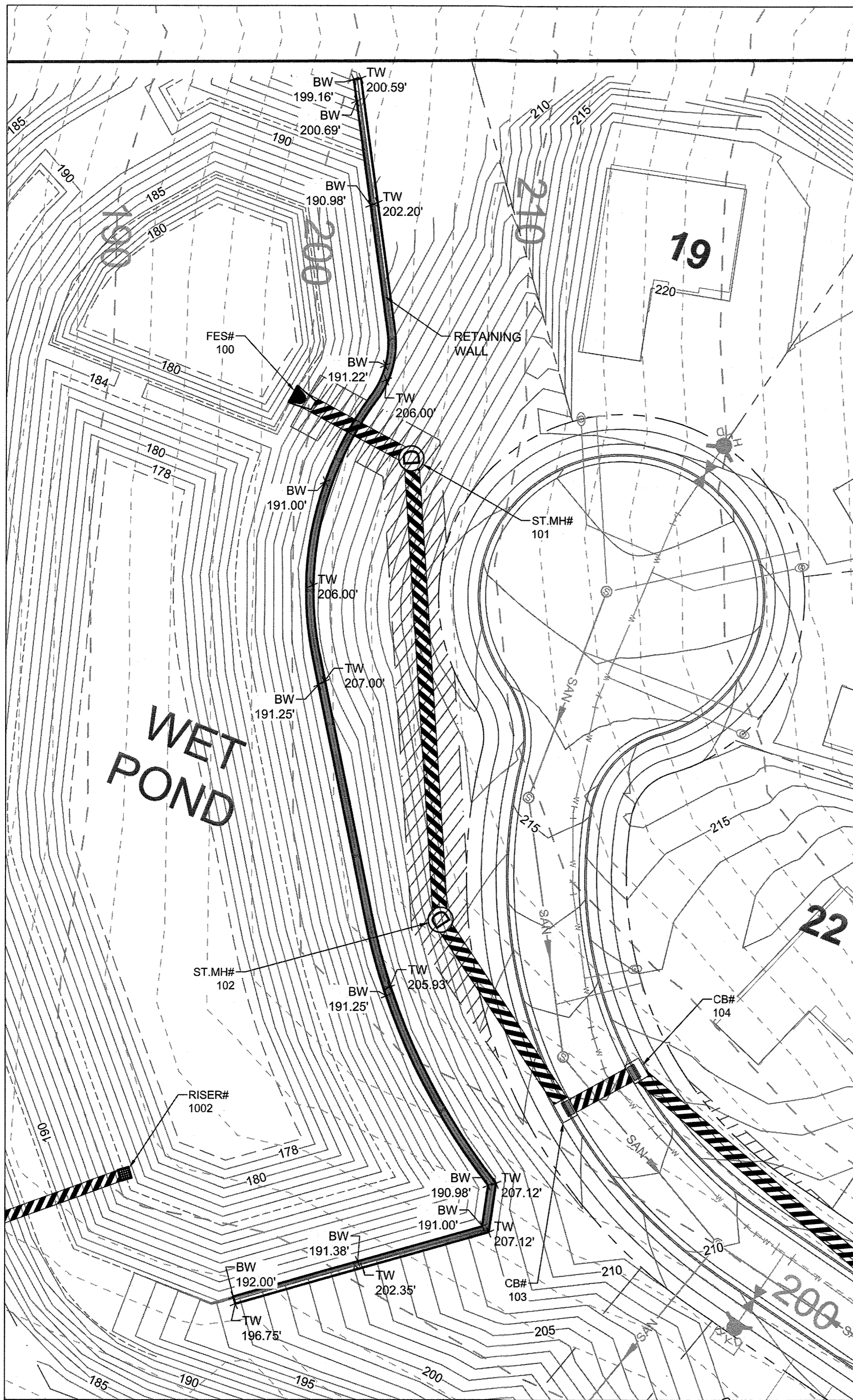
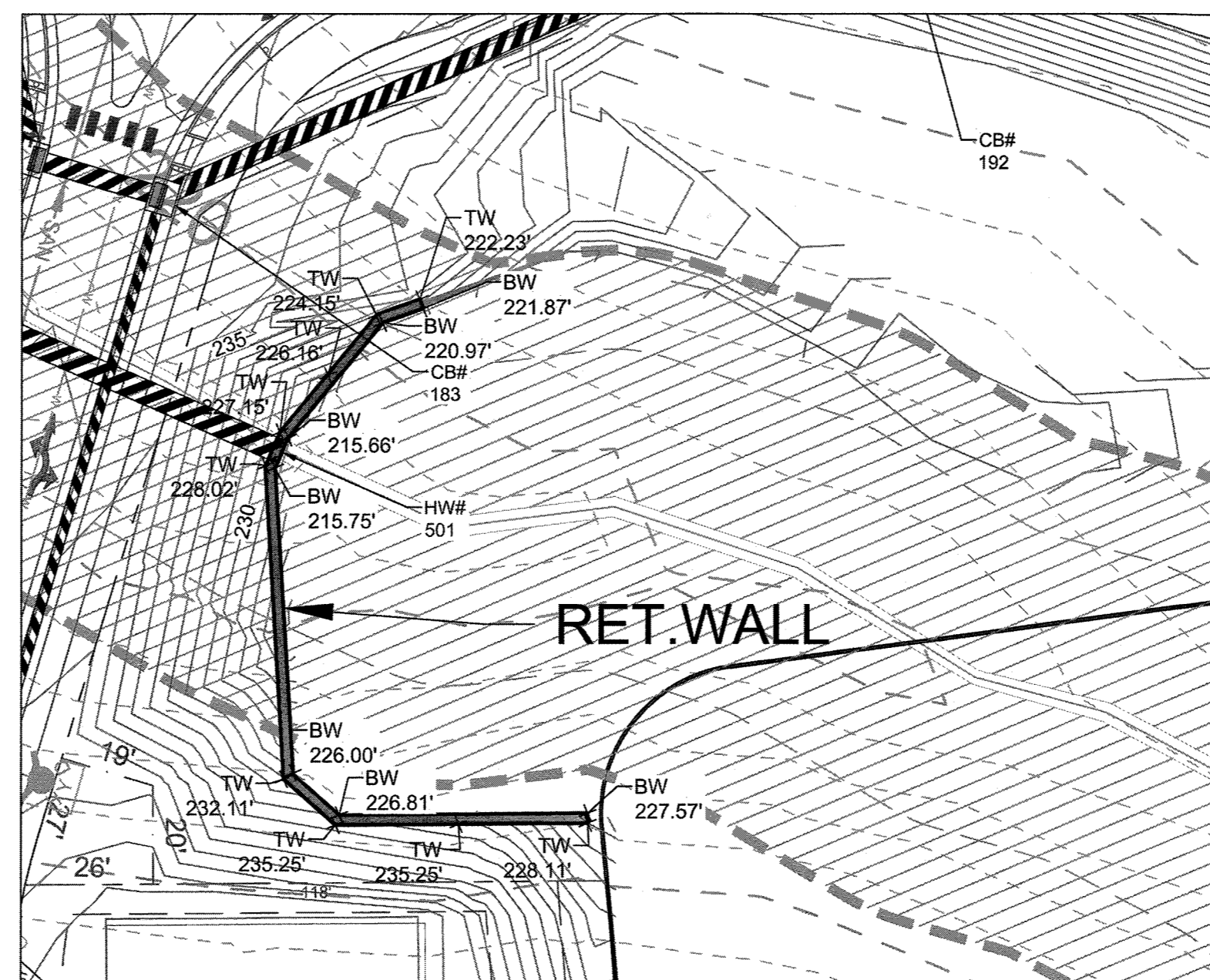
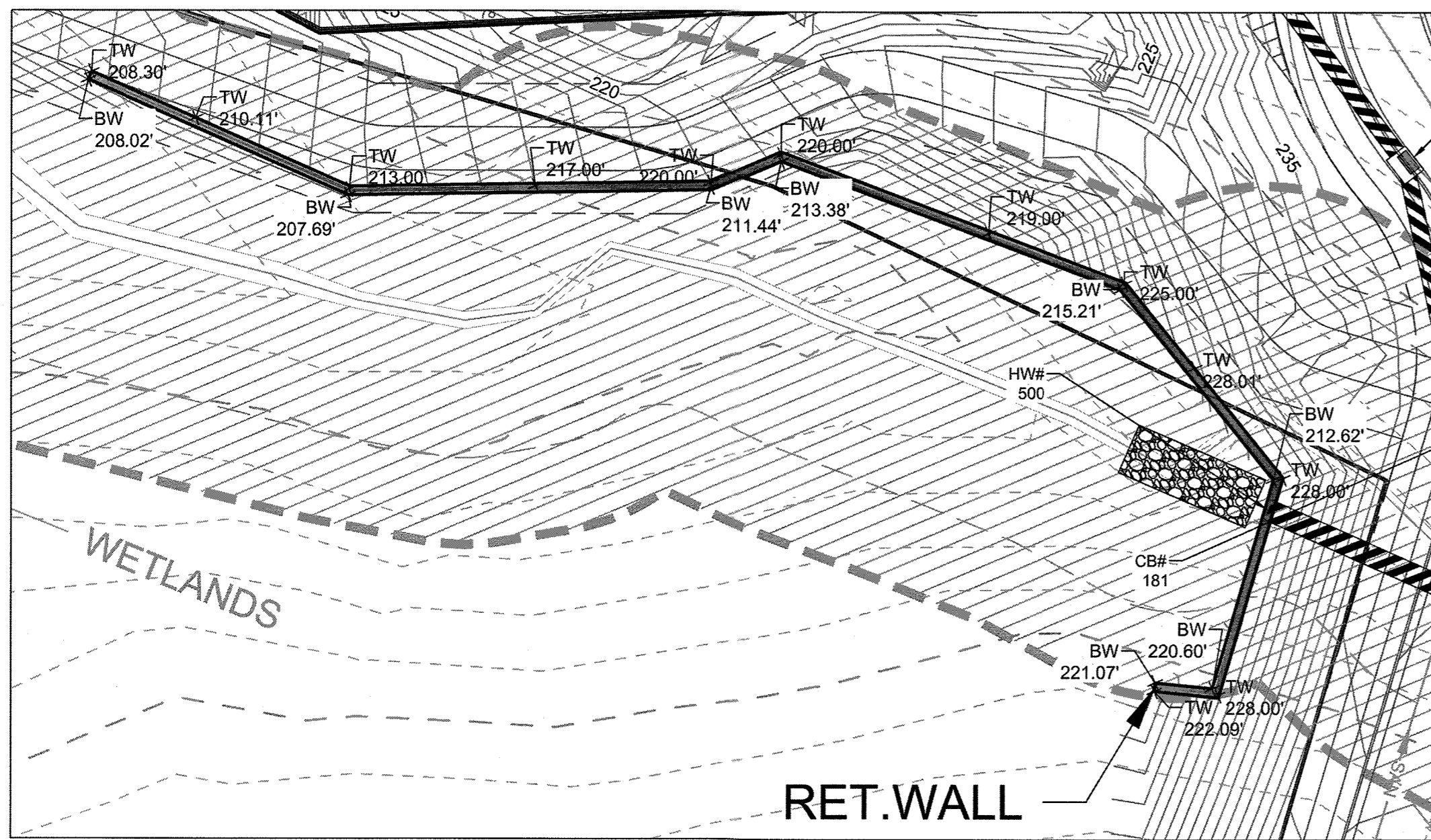
DATE 09/11/2018 DRAWN BY 331 DESIGNED BY 331 CHECKED BY JFC SCALE PER PLAN

TIMMONS GROUP NORTH CAROLINA LICENSE NO. C-1652 STONERIVER SUBDIVISION PHASE 1 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA STORM DRAINAGE NETWORK TABLE

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

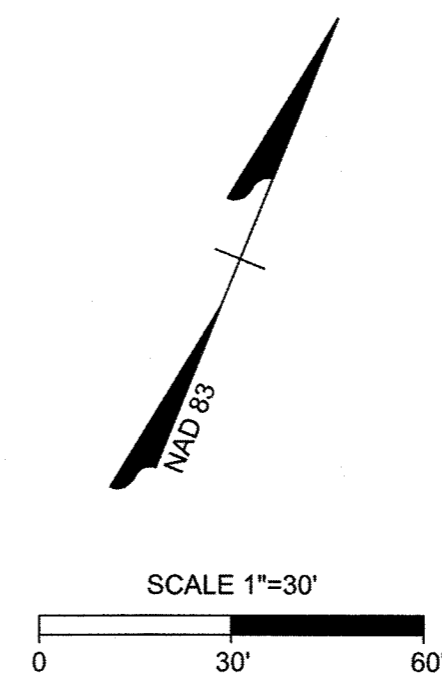
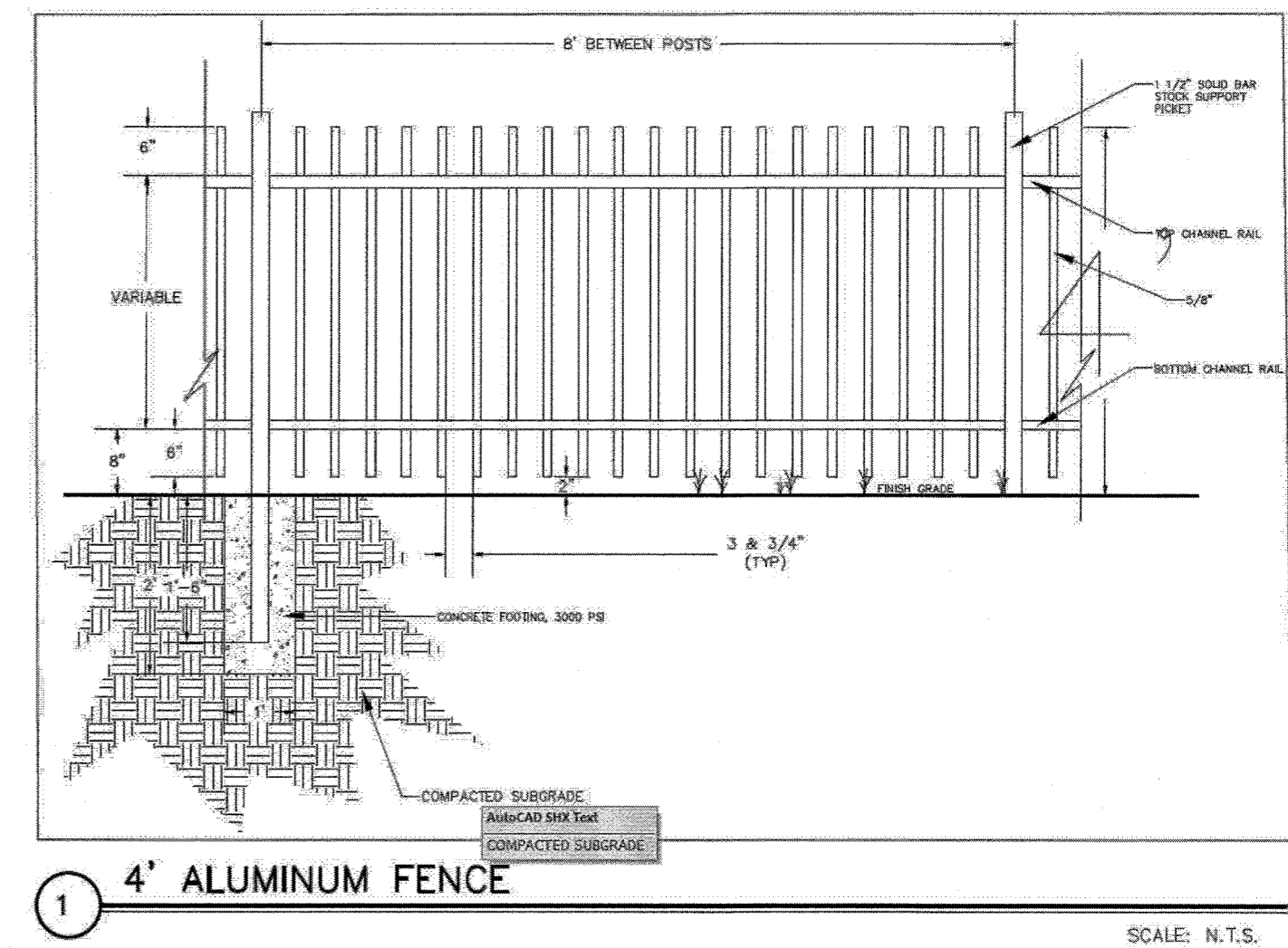
S:\102\37909-Stone_River_VWS_Sheet\102_37909-C3-C-GRAD.dwg by Jd.McMillan

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



Note:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.

Typical Reinforced Wall Section



RETAINING WALLS TO BE DESIGNED BY OTHERS

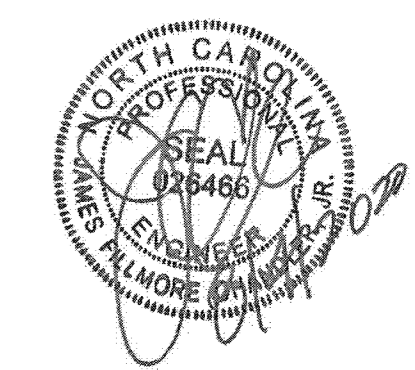
TOWN CERTIFICATION

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: *S. Hall* 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. W.* DATE: 8-18-2020
ADMINISTRATOR



THIS DRAWING PREPARED AT THE
TIMMONS GROUP
5410 Timmy Road, Suite 102, Raleigh, NC 27607
Tel. 919.866.4951, FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

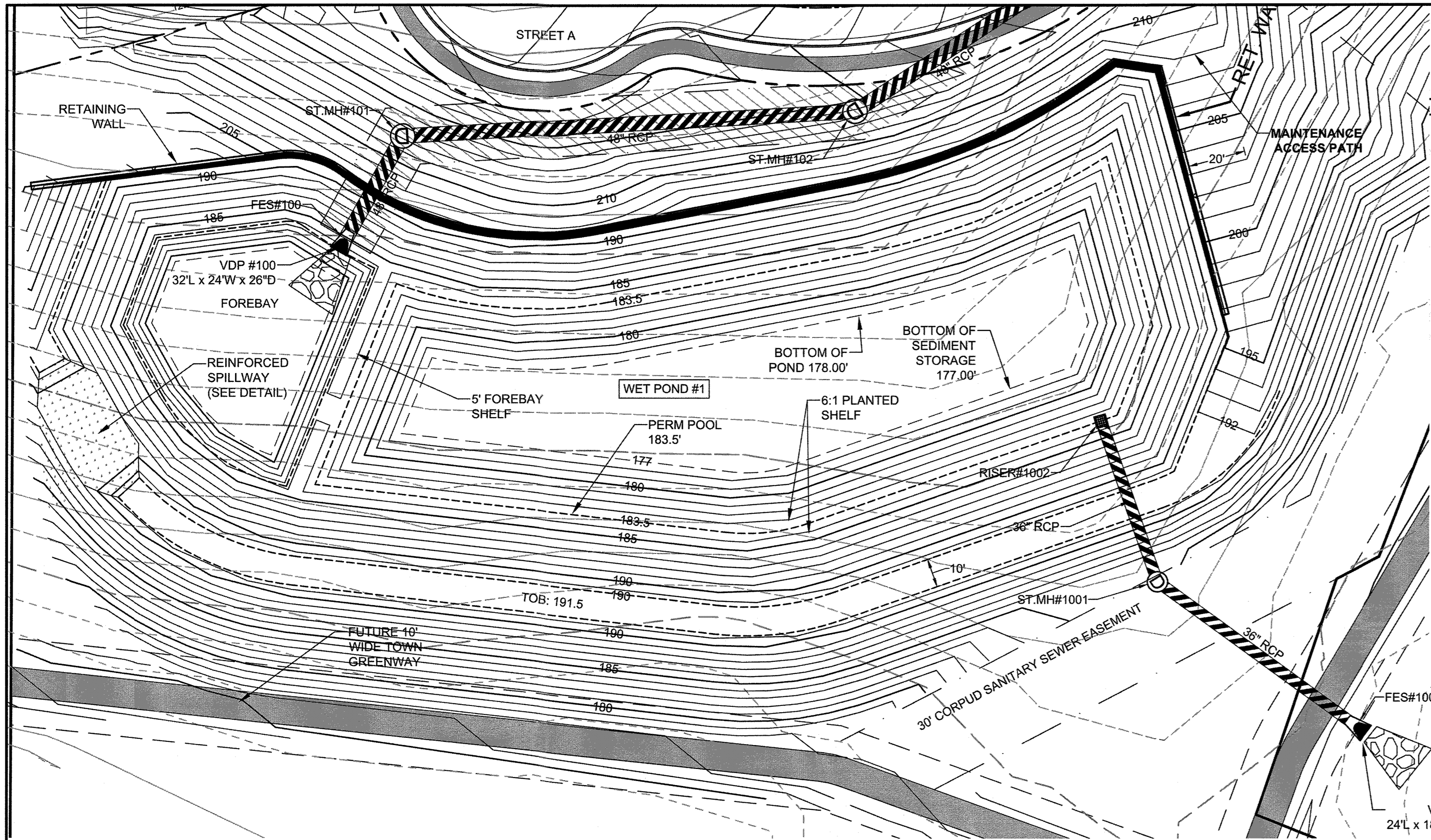
DATE	REVISION DESCRIPTION
09/11/2018	GRADING AND UTILITY REVISIONS
09/04/2020	GRADING AND UTILITY REVISIONS

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
RETAINING WALLS

JOB NO.	37909
SHEET NO.	C3.2

S:\102_37909-Stoner-River\DWG\Sheet\CD_37909-C3.0-GRAD.dwg | by JD MacMillan

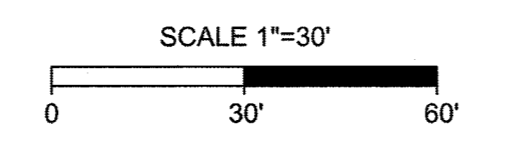
These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



FES #1000 Outlet Protection

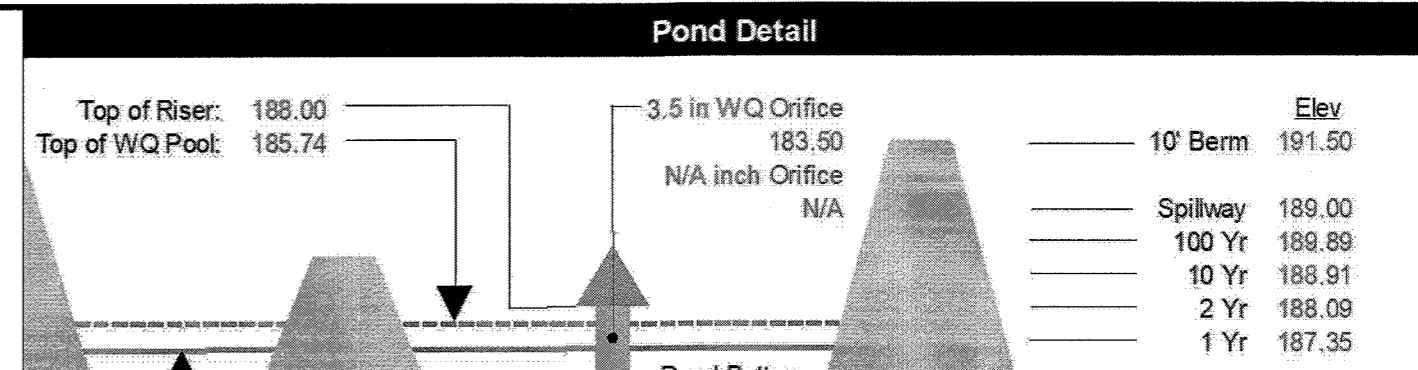
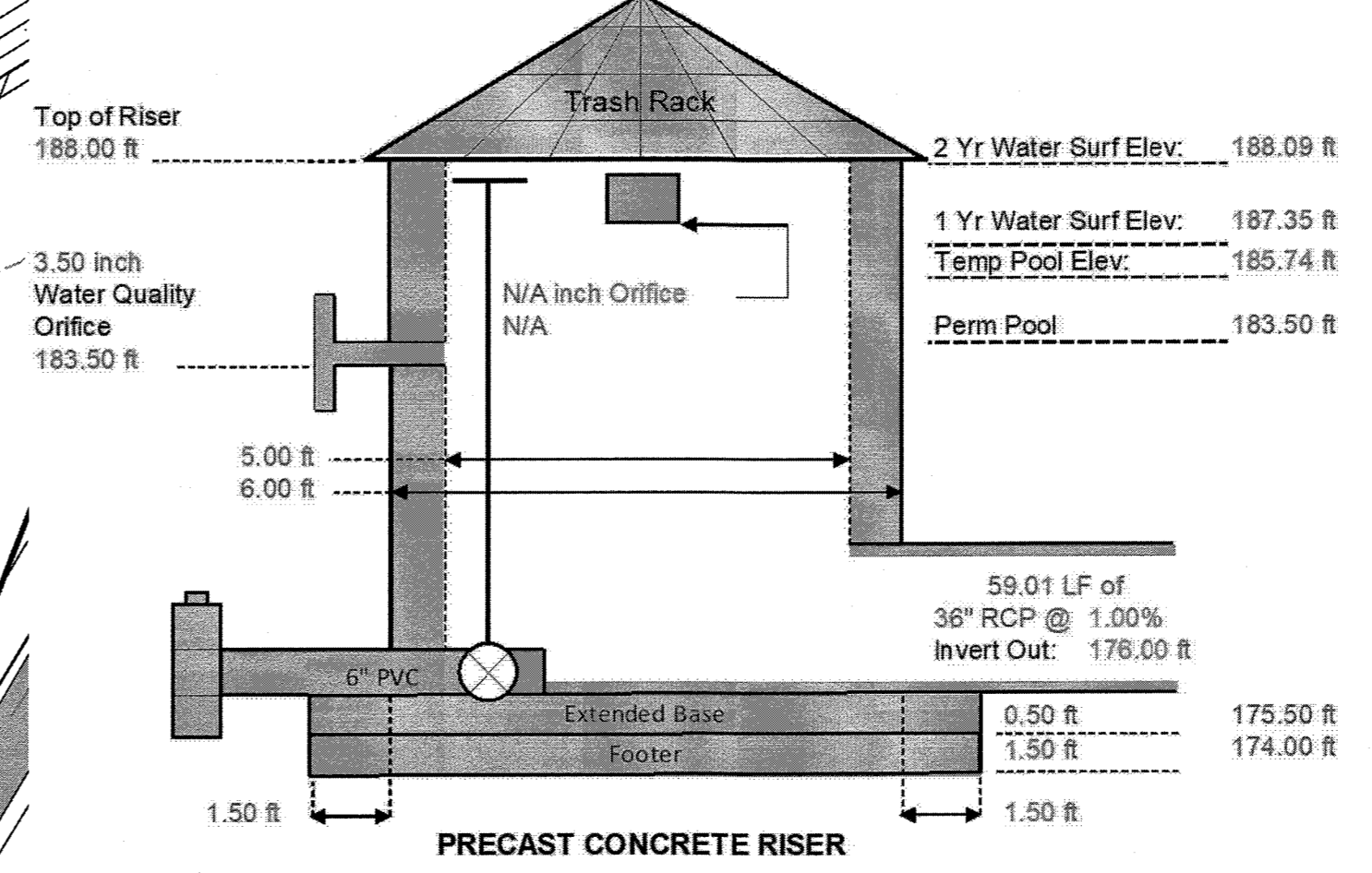
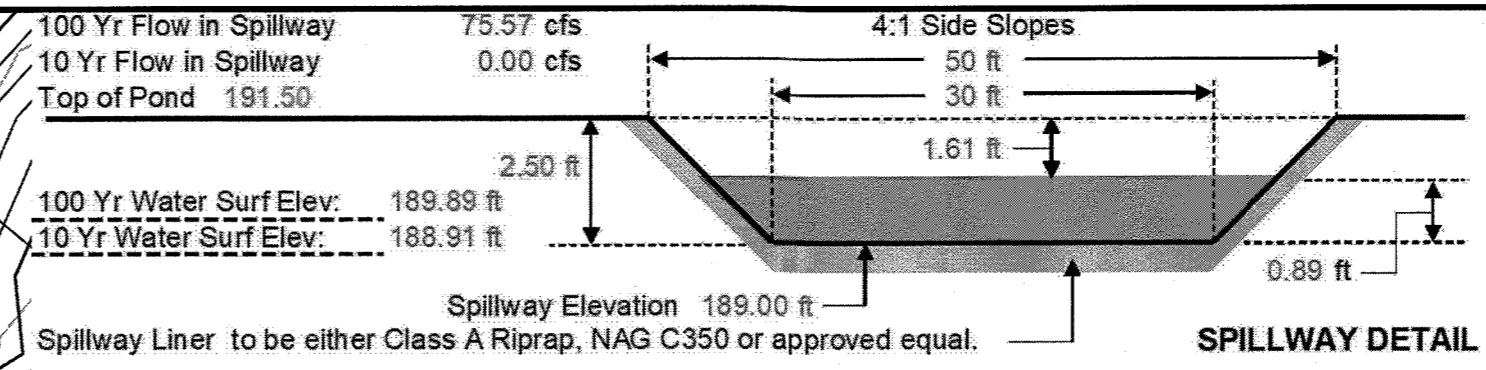
Design Freq:	10 yrs	Zone	D50	Fig. 8.06.b.1:	3
Q ₁₀ :	58.32 cfs	D ₅₀	10 in	Fig. 8.06.b.2:	10 in
Q ₅₀ :	66.79 cfs	Riprap Class	17 in		
V _{full} :	9.45 fps	Apron Thickness	1		
Q ₁₀ /Q _{full} :	0.67	Apron Length	26 in		
V/V _{full} :	1.12	Apron Width	9 ft		
V =	10.61 fps	Apron Ending Width	18 ft		

WET POND #1 PLAN VIEW



Surface Area to Drainage Area Ratio for Permanent Pool Sizing

Drainage Area to SCM	Acres	Required Surface Area of Permanent Pool (Forebay & Main Pond Combined)
Impervious Area	0.00	
Offsite Impervious Area	18.80	Average Depth (ft) = 4.0
Onsite Impervious Area	18.80	SA/DA Ratio = 1.27
Total Impervious Area	37.60	Required SA (ft ²) = 25,249
Total Drainage Area To SCM	45.64	SA as Shown (ft ²) = 26,546
Percent Impervious Area	41%	SA/DA Ratio from latest NCDCENR BMP Manual



Pond / Riser Data & Elevations

Pond Type	Wet Pond
TSS Removal	85%
Top of Pond / Berm	191.50 ft
Secondary Spillway Width	30.00 ft
Bottom of Secondary Spillway	189.00 ft
Top of Riser	188.00 ft (at least 1' Above TPE)
Riser Type / Size	5x5 ft NCDOT Drop Inlet
Top of Water Quality / Temp Pool Elev	185.74 ft (1" Runoff)
Top of Veg. Shelf	184.00 ft (0.5 ft above PPE)
Permanent Pool Elevation (Normal Pool)	183.50 ft
Water Quality Orifice Elevation & Size	183.50 ft 3.50 in
Secondary Orifice Elevation & Size	N/A ft N/A in
Bottom of Veg. Shelf	183.00 ft (0.5 ft below PPE)
Top of Sediment Storage / Pond Bottom	178.00 ft
Bottom of Sediment Storage	177.00 ft (Min 1 ft)
Invert Out of Riser	176.00 ft
Outlet Pipe Size	36.00 in
Outlet Pipe Length & Slope	59.01 ft 1.00%
Downstream Outlet Elevation	175.41 ft
1 Yr Water Surface Elev / Peak Flow (CFS)	187.35 ft 0.62 CFS
2 Yr Water Surface Elev Peak Flow (CFS)	188.09 ft 2.54 CFS
10 Yr Water Surface Elev Peak Flow (CFS)	188.91 ft 58.32 CFS
100 Yr Water Surface Elev Peak Flow (CFS)	189.89 ft 180.51 CFS

Anti-Bouyancy Calculations for the Riser Structure

Riser Dimensions	Weight of Structure	Displaced Volume
Outside Width: 6.00 ft	Walls = 19900 LBS	V = LxWx(H+Footer) = C.F.
Inside Width: 5.00 ft	Base = 6075 LBS	
Outside Length: 6.00 ft	Footer = 18225 LBS	Displaced Water =
Inside Length: 5.00 ft		C.F. * 62.4 PCF = LBS
Height: 12.00 ft	Outlet Pipe = 530 LBS	
Base Thick (ft): 0.50 ft	WQ Orifice = 5 LBS	Add 15% Factor of Safety
Footer Thick (ft): 1.50 ft		
Wall Thick (ft): 0.50 ft		
Extend' Base (ft): 1.50 ft	Weir #1 = 0 LBS	V = 594 C.F.
Areas removed from Riser	Weir #2 = 0 LBS	Disp. Water = 37,068 LBS
Outlet Pipe	Weir #3 = 0 LBS	15% F.S. = 5,560 LBS
WQ Orifice	Weir #4 = 0 LBS	
Orifice #1	Other #1 = 0 LBS	Safety Factor = 17.54%
Orifice #2		
Orifice #3	Weight = 43,565 LBS	Weight = 42,625 LBS
Orifice #4		
Other		

1.0" Water Quality Runoff Volume Calculation

Using the runoff volume calculations in the "Simple Method" as described by Schueler (1987)

Where: Rv = Runoff Coefficient, in/in

I = Percent Impervious = 41.2%

Rv = 0.05 + 0.008(I) = 0.421

1.0 inch runoff volume (Required)

Runoff volume, S = (Design rainfall) (Rv) (Drainage Area)

Design Rainfall = 1.0 inch

Drainage Area = 45.64 acres

Storage Required = 69,703 cu. ft.

Volume Storage For 1.0" Runoff Above Permanent Pool (Provided)

Depth	PPE SA (SF)	Top Temp Pool SA (SF)	Volume (CF)	Elevation
2.74	346	34,423	69,703	185.74

Size Water Quality Orifice for (2-5) Day Drawdown for 1" Runoff Volume

Q_w = CdA(2gh)^{1/2} (Orifice Equation, Cd=0.60)

Orifice Diameter (inches): 3.50

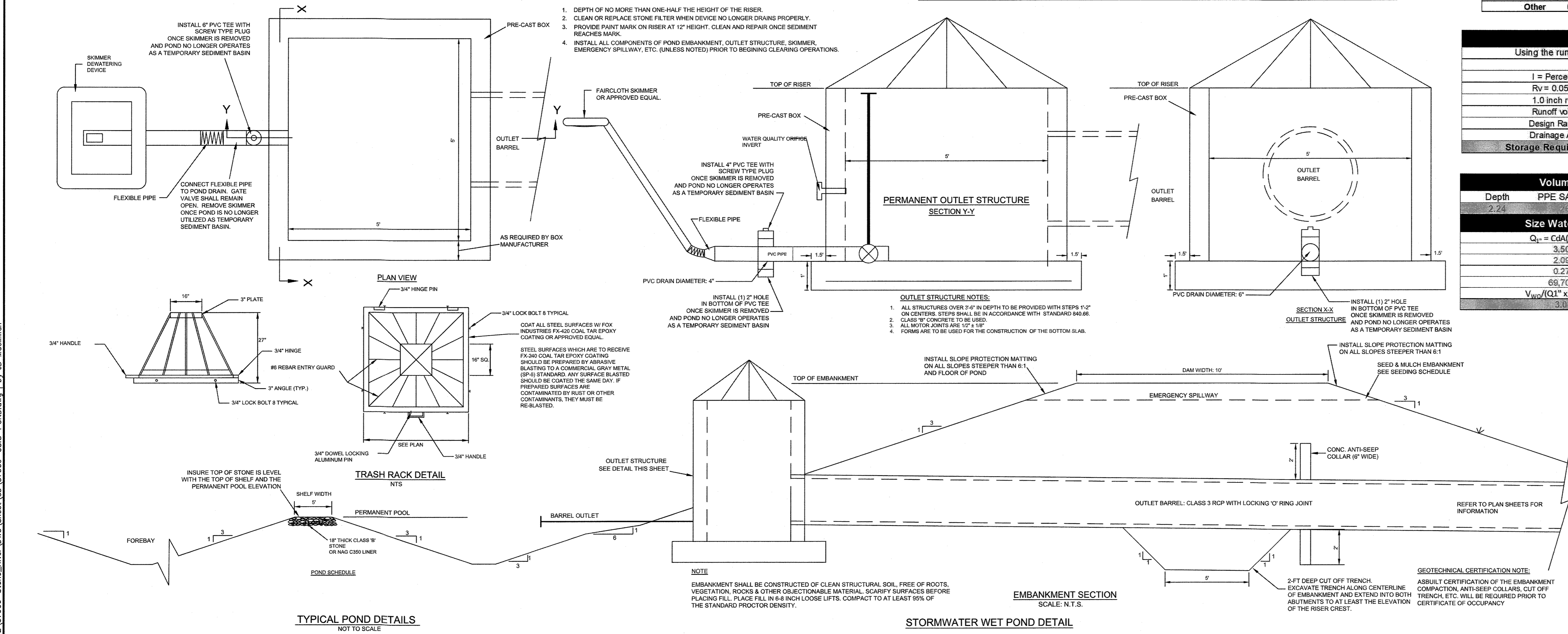
Driving Head to Centroid of Orifice (ft): 2.09

Q_{1.0"} Drawdown Rate (cfs): 0.27

Water Quality Volume (V_{wq}): 69,703

V_{wq} / (Q_{1.0"} x 86,400) = 3.0

Drawdown Time (days) (2 - 5 days): 3.0



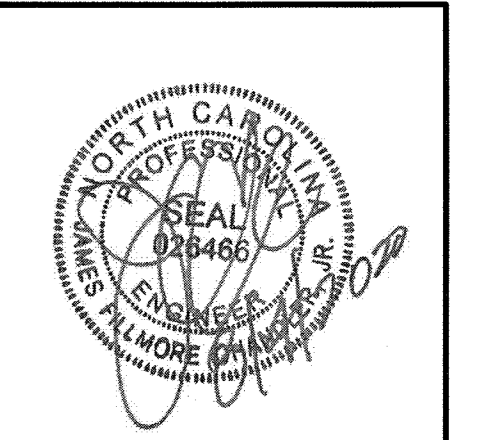
TOWN CERTIFICATION

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 WORK OFFICE OF:
5410 Trinity Road, Suite 102, Raleigh, NC 27607
TEL: 919.866.4951 FAX: 919.833.8124 www.timmons.com

REVISION DESCRIPTION

DATE	GRADING AND UTILITY REVISIONS
08/04/2020	

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-1552

STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

WET POND DETAIL

JOB NO. 37909

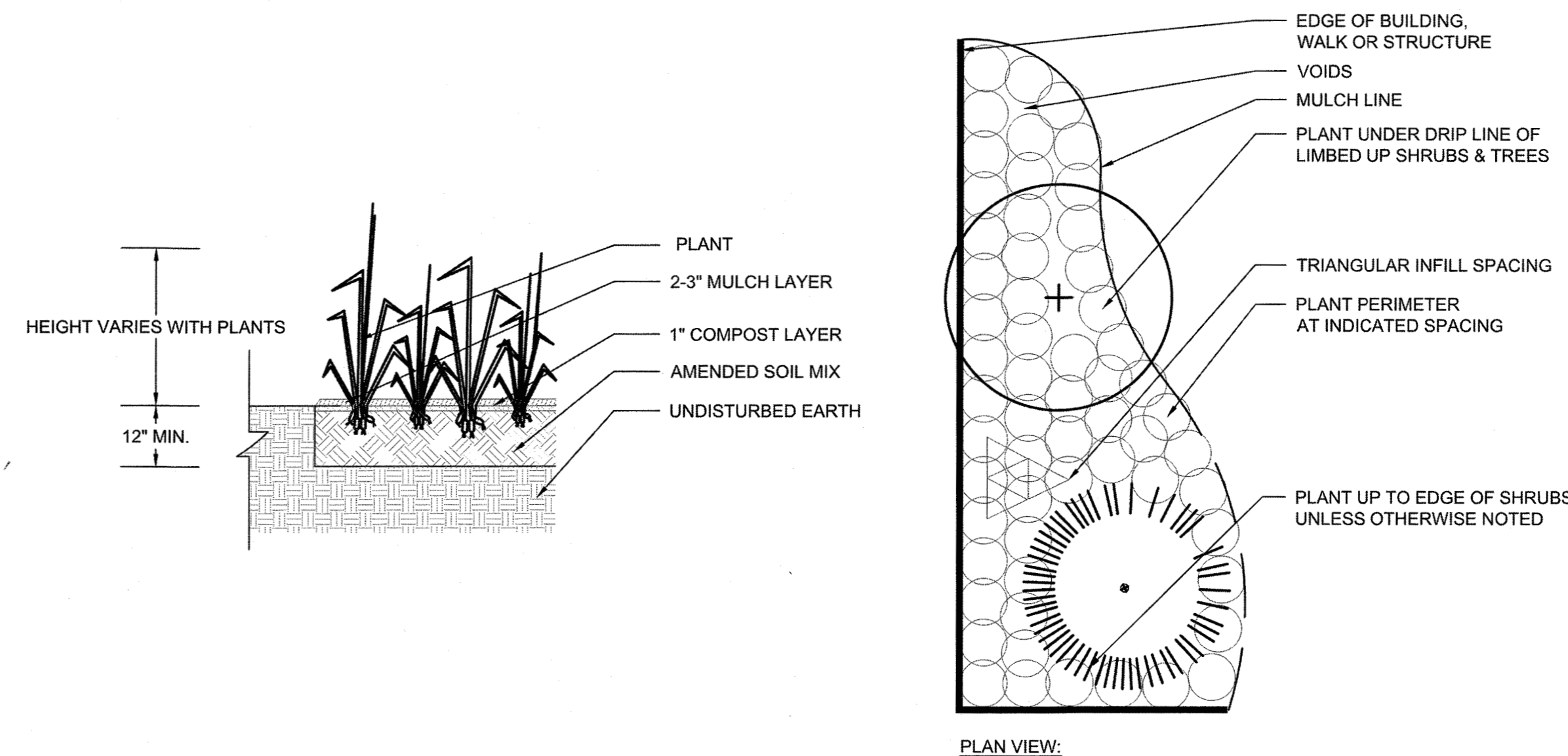
SHEET NO. C3.3

ALL CONSTRUCTION SHALL CONFORM WITH THE LATEST VERSION OF THE TOWN OF CARY AND NCDOT STANDARDS AND SPECIFICATIONS.

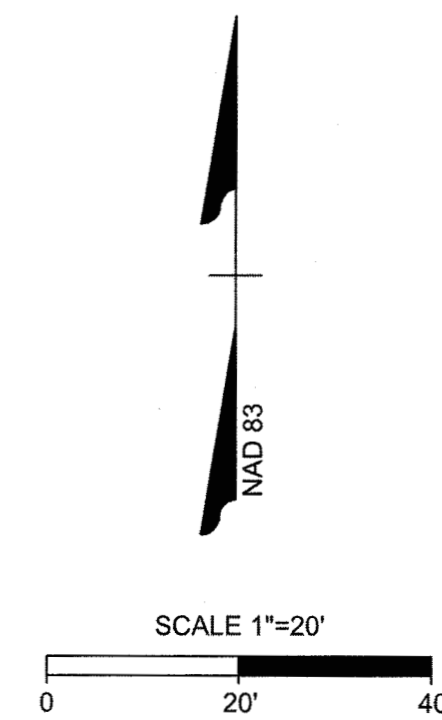
S:\102\37909-Stoner_River_DWG\Sheet\CD\37909C-C3-0-PLANT.dwg | by JD MacMillan



Planting Summary Requirements						
Dam / Berm			Non-Clumping Turf Grass			
Vegetated Shelf (6' Wide)			Area of Shelf = 9769 SF			
			(50 Plants per 200 SF of Area)			
Quantity	Type	Root	Common Name	Scientific Name	Planting Size	Notes
407	Herbaceous	Container	Swamp Milkweed	Asclepias Incarnata	4" Pot	24"-36" OC
407	Herbaceous	Container	White Turtlehead	Chelone Glabra	4" Pot	24"-36" OC
407	Herbaceous	Container	Scarlet rose mallow	Hibiscus Coccineus	4" Pot	24"-36" OC
407	Herbaceous	Container	Seashore Mallow	Kosteletzkya Virginica	4" Pot	24"-36" OC
407	Herbaceous	Container	Longleaf lobelia	Lobelia Elongata	4" Pot	24"-36" OC
407	Herbaceous	Container	Joe Pye Weed	Eupat' Fistulosus	4" Pot	24"-36" OC



1 GROUNDCOVER DETAIL
NOT TO SCALE



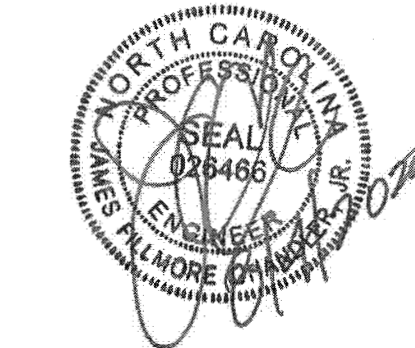
TOWN CERTIFICATION

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. ANU* 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 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
08/04/2020	GRADING AND UTILITY REVISIONS
09/11/2018	

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
WET POND PLANTING PLAN

JOB NO.
37909
SHEET NO.
C3.4

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

GENERAL NOTES

- 1. THE GRADING CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF-SITE.
2. THE GRADING CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT OR AS DIRECTED BY LOCAL AUTHORITIES OR THE ENGINEER.
3. 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.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING ANY TRACKED SOIL FROM ALL ADJACENT ROADWAYS THAT ARE IMPACTED BY CONSTRUCTION TRAFFIC.

MAINTENANCE PLAN

- 1. 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.
2. 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.
3. REMOVE SEDIMENT FROM BEHIND SILT FENCE WHEN DEPTH REACHES 6-INCHES AT THE FENCE. REPAIR SILT FENCE AS NECESSARY TO MAINTAIN A BARRIER.
4. ALL SEEDED AREAS SHALL BE FERTILIZED, RE-SEEDING AS NECESSARY, AND MULCHED ACCORDING TO SPECIAL SPECS TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE GROWTH. MAINTAIN SILT/TREE PROTECTION FENCING THROUGHOUT DURATION OF CONSTRUCTION.
5. CALL DEBBI RYALS AT 919-842-7142 FOR AN ON-SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.

STOCKPILE MAINTENANCE PLAN

- 1. 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.
2. 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.
3. THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.
4. ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

STOCKPILE DESIGN CRITERIA

- 1. 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).
2. STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
3. A NOTE SHALL BE PROVIDED ON THE APPROVED PLAN THAT STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
4. STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
5. APPROVED BMPS SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.
6. 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.
7. ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.
8. 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

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

STAGE 1 CONSTRUCTION SEQUENCE

- 1. SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU AT 919-796-8769 TO OBTAIN A LAND DISTURBING PERMIT.
2. 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.
3. 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.
4. 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.
5. CALL DEBBI RYALS AT 919-842-7142 FOR AN ON-SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.
6. 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.
7. REFER TO STAGE 2 EROSION CONTROL PLAN.

SEEDBED PREPARATION

- 1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO SIX INCHES DEEP.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE MIXTURE BELOW).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR 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.
9. CONSULT S&EC ENVIRONMENTAL CONSULTANT ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

MIXTURE

Table with 2 columns: Material and Quantity. Includes Agricultural Limestone (2 tons/acre), Fertilizer (1,000 lbs/acre), Superphosphate (500 lbs/acre), Mulch (2 tons/acre), and Anchor (2 tons/acre).

Table with 3 columns: Site Area Description, Stabilization Time Frame, and Stabilization Time Frame Exceptions. Lists stabilization requirements for perimeter dikes, high quality water zones, and various slopes.

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" PIPE TO TEMP. RISER BASIN #2. INSTALL TEMP PLUG IN CB 216 FOR INVERT OUT TO THE NORTHWEST.
5. STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITH VEGETATION, DITCH LINERS, ETC. SEED AND MULCH DENUDATED 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 KARYN PAGEAU AT 919-796-8769 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 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.
9. 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

- 1. EXCAVATE & INSTALL TEMP PIPE 'B'.
2. GRADE TEMPORARY DIVERSION & EARTH BERM. INSTALL IMPERMEABLE MEMBRANE & RIPRAP.
3. INSTALL TEMPORARY SILT FENCE.
4. INSTALL EROSION CONTROL MEASURES ON SOUTH SIDE OF STREAM PER STAGE 1 EROSION CONTROL PLAN.
5. DEWATER WORK AREA AS NEEDED TO ENSURE DRY WORK CONDITIONS SEE DETAIL 1630.06 ON SHEET C4.4.
6. INSTALL PERMANENT RCP CULVERT, HEADWALLS, & RIPRAP APRON OVER FILTER FABRIC PER STAGE 2 EROSION CONTROL PLAN.
7. REMOVE TEMPORARY EARTH BERM. FINE GRADE CHANNEL TO DIRECT STREAM FLOW INTO PERMANENT RCP CULVERT.
8. REMOVE TEMP PIPE 'B' & IMPERMEABLE MEMBRANE.
9. 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: [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

TEMPORARY RISER - BARREL BASIN W/ SKIMMER TABLE

Table with 2 columns: Basin # and Dimensions. Lists specifications for Riser Basin W/ Skimmer (Basin 1) and Riser Basin W/ Skimmer (Basin 2), including total drainage area, pipe size, and volume.

TEMPORARY SKIMMER BASIN TABLE

Table with 6 columns: Basin #, Basin Type, and Dimensions. Lists specifications for Skimmer Basins 3 through 6, including total drainage area, pipe size, and volume.

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 DENUDATED 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 KARYN PAGEAU AT 919-796-8769 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 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.

TEMPORARY BYPASS CHANNEL TABLE

Table with 4 columns: Channel #, Temp, Temp, Temp, Temp. Lists specifications for bypass channels.

TEMPORARY CHANNEL TABLE

Table with 15 columns: Channel #, Depth (ft), Basewidth (ft), Sideslopes, Liner Type, Liner Width (ft). Lists specifications for temporary channels.

TEMPORARY DIVERSION DITCH TABLE

Table with 12 columns: 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. Lists specifications for diversion ditches.

APRON DESIGN BASED ON GUIDELINES FROM NEW YORK DOT DISSIPATOR METHOD

VELOCITY DISSIPATOR PAD SCHEDULE - STONERIVER PHASES 1-2

Table with 10 columns: Structure ID, Pipe Size, Pipe Slope, Flow (Q10), Outlet Velocity (Vru), Outlet Velocity (V10), Zone, Riprap Class, D50 (in), Apron Dimensions (Length, Starting Width, Ending Width, Thickness). Lists specifications for velocity dissipator pads.

SEEDING SCHEDULE table showing seeding period, seeding type, and application rate (lbs/acre). Includes a note on temporary seeding and ground cover requirements.

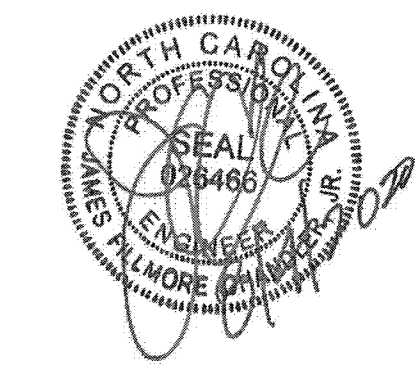
Revisions table with columns for Date and Description. Includes a note on Town of Knightdale Standard Details.

Table 1042-1 Acceptable Criteria for Rip Rap and Stone for Erosion Control. Lists minimum, midrange, and maximum stone size (in) for classes A, B, 1, and 2.

DISTURBED AREA: 52.43 AC

PHASE 1, 2, & HARDIN HILL EXT.

Vertical title block for Timmons Group. Includes company logo, contact information (5410 Trinity Road, Suite 102, Raleigh, NC 27607), project name (Stoneriver Phase 1, 2, & Hardin Hill Ext.), location (Wake County - North Carolina), license number (C-1652), and drawing details (Job No. 37909, Sheet No. C4.0).



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 Raleigh, NC 27607
 5410 Tenthon Road, Suite 300
 TEL 919.866.9551 FAX 919.833.8124 www.timmons.com

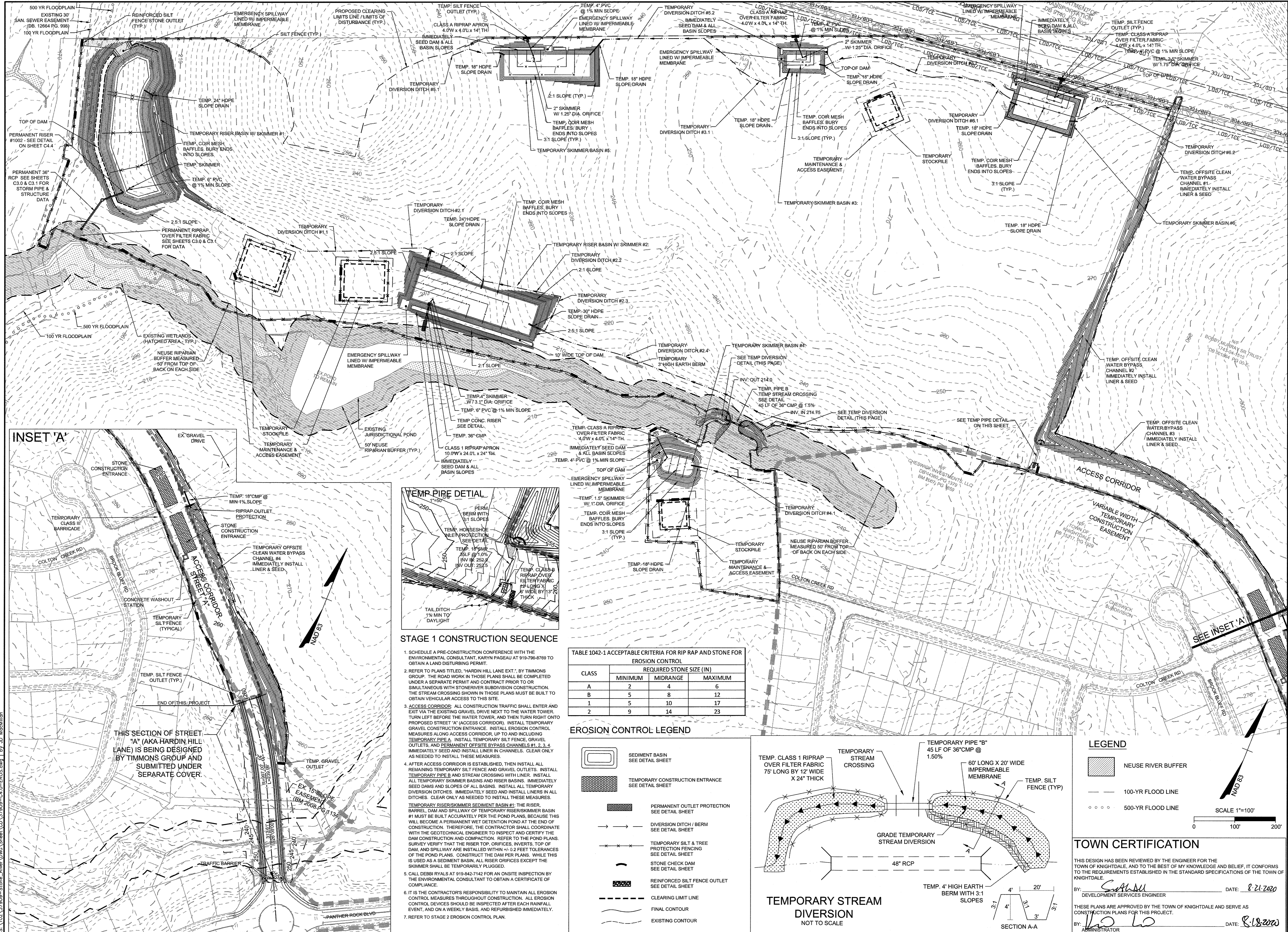
YOUR VISION ACHIEVED THROUGH OURS.

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

NORTH CAROLINA LICENSE NO. C-1652

TIMMONS GROUP
 STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 STAGE 1 SEDIMENTATION & EROSION CONTROL

JOB NO.
 37909
 SHEET NO.
 C4.1



STAGE 1 CONSTRUCTION SEQUENCE

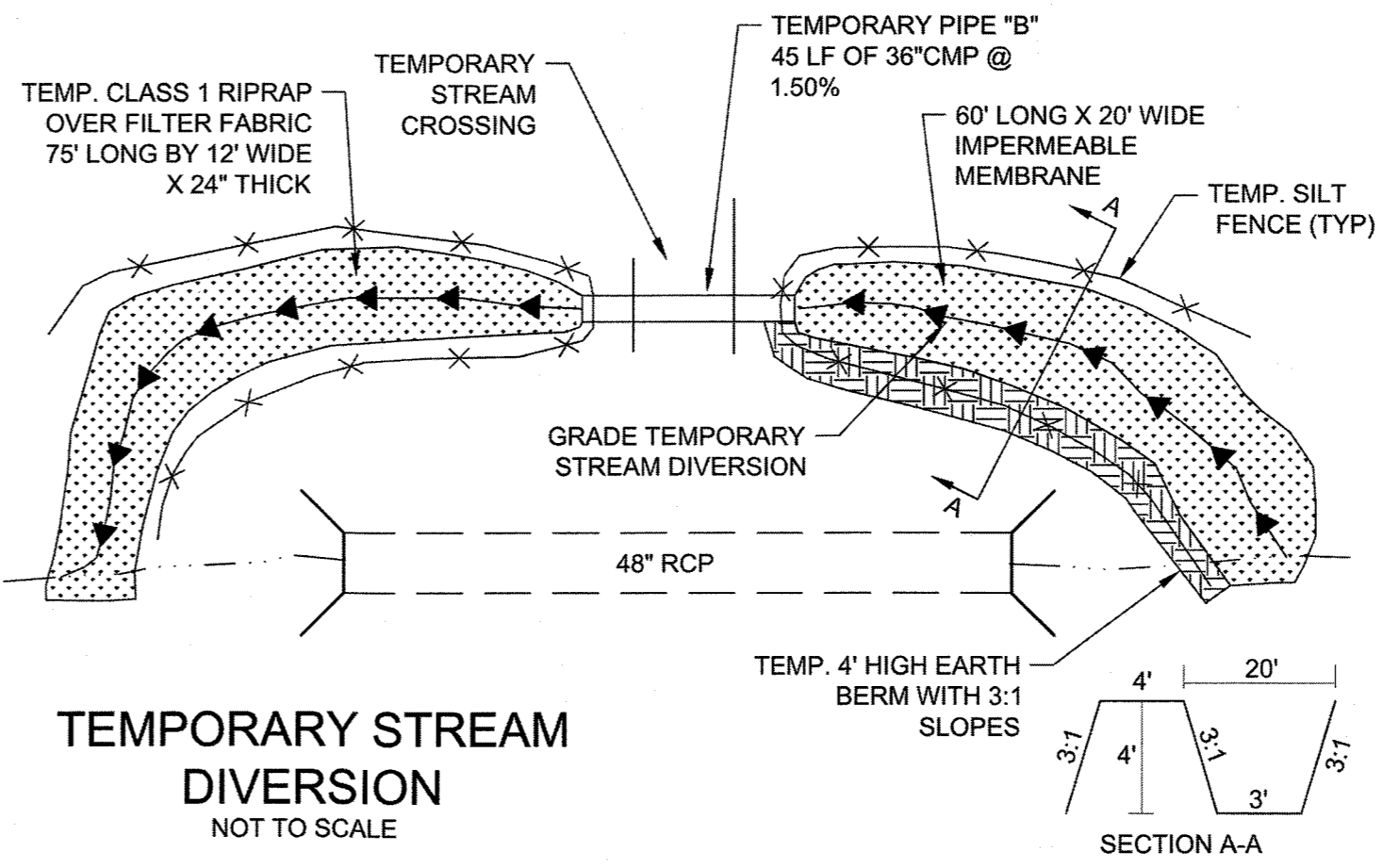
- SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU AT 919-790-8789 TO OBTAIN A LAND DISTURBING PERMIT.
- REFER TO PLANS TITLED, "HARDIN HILL LANE EXT.", BY TIMMONS GROUP. THE ROAD WORK IN THOSE PLANS SHALL BE COMPLETED UNDER A SEPARATE PERMIT AND CONTRACT PRIOR TO 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 DESH RYALS AT 919-842-7142 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.

TABLE 1042-1 ACCEPTABLE CRITERIA FOR RIP RAP AND STONE FOR EROSION CONTROL

CLASS	REQUIRED STONE SIZE (IN)		
	MINIMUM	MIDRANGE	MAXIMUM
A	2	4	6
B	5	8	12
1	5	10	17
2	9	14	23

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

SCALE 1"=100'
 0 100' 200'

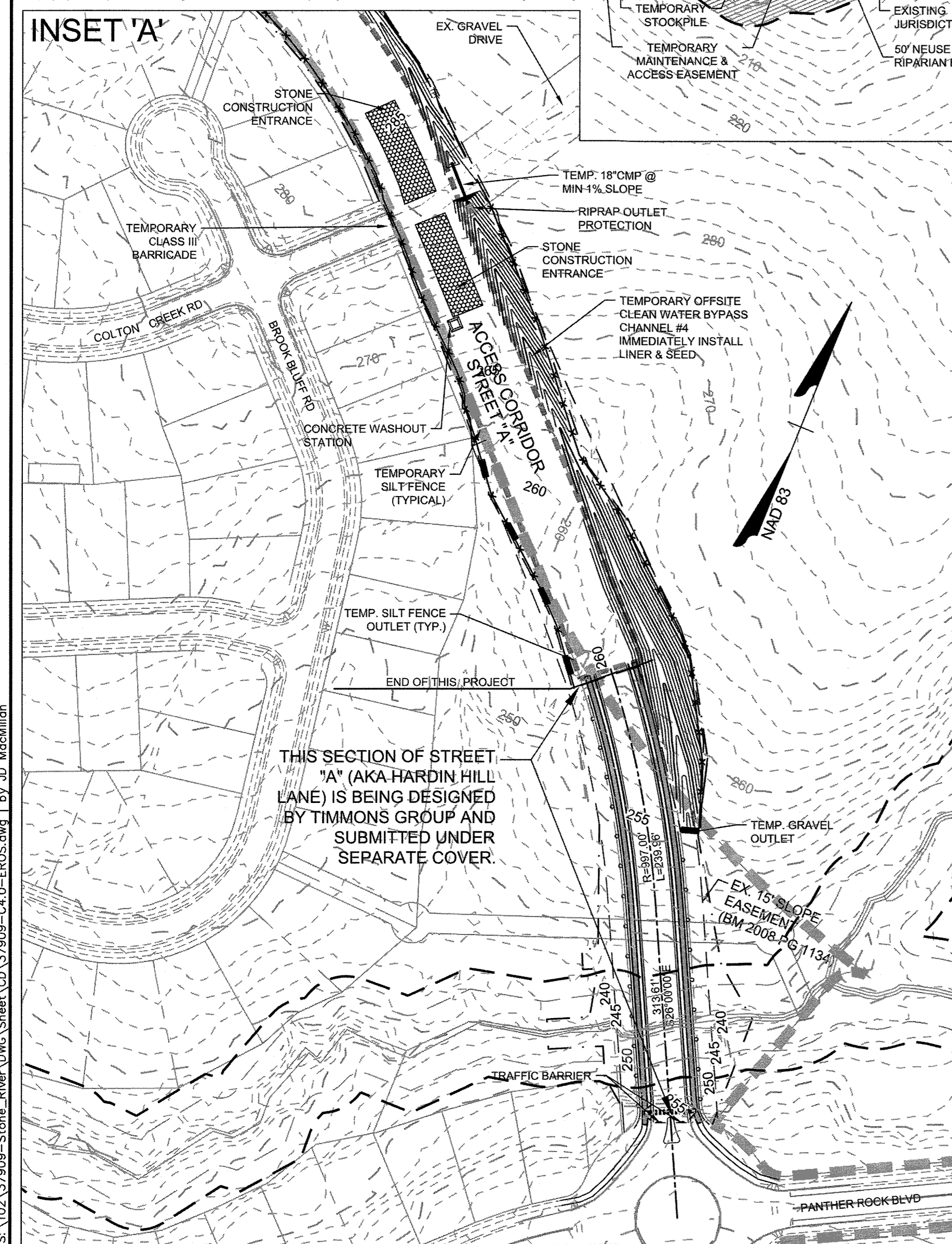
TOWN CERTIFICATION

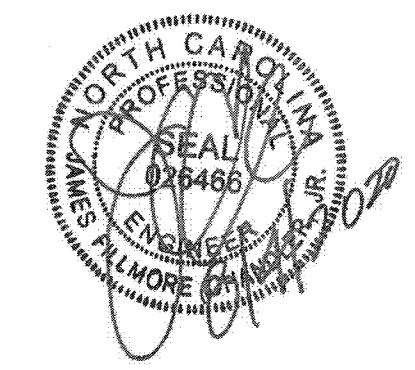
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[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: 8/21/2020
 ADMINISTRATOR





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
 09/11/2018

DRAWN BY
 331

DESIGNED BY
 331

CHECKED BY
 JFC

SCALE
 PER PLAN

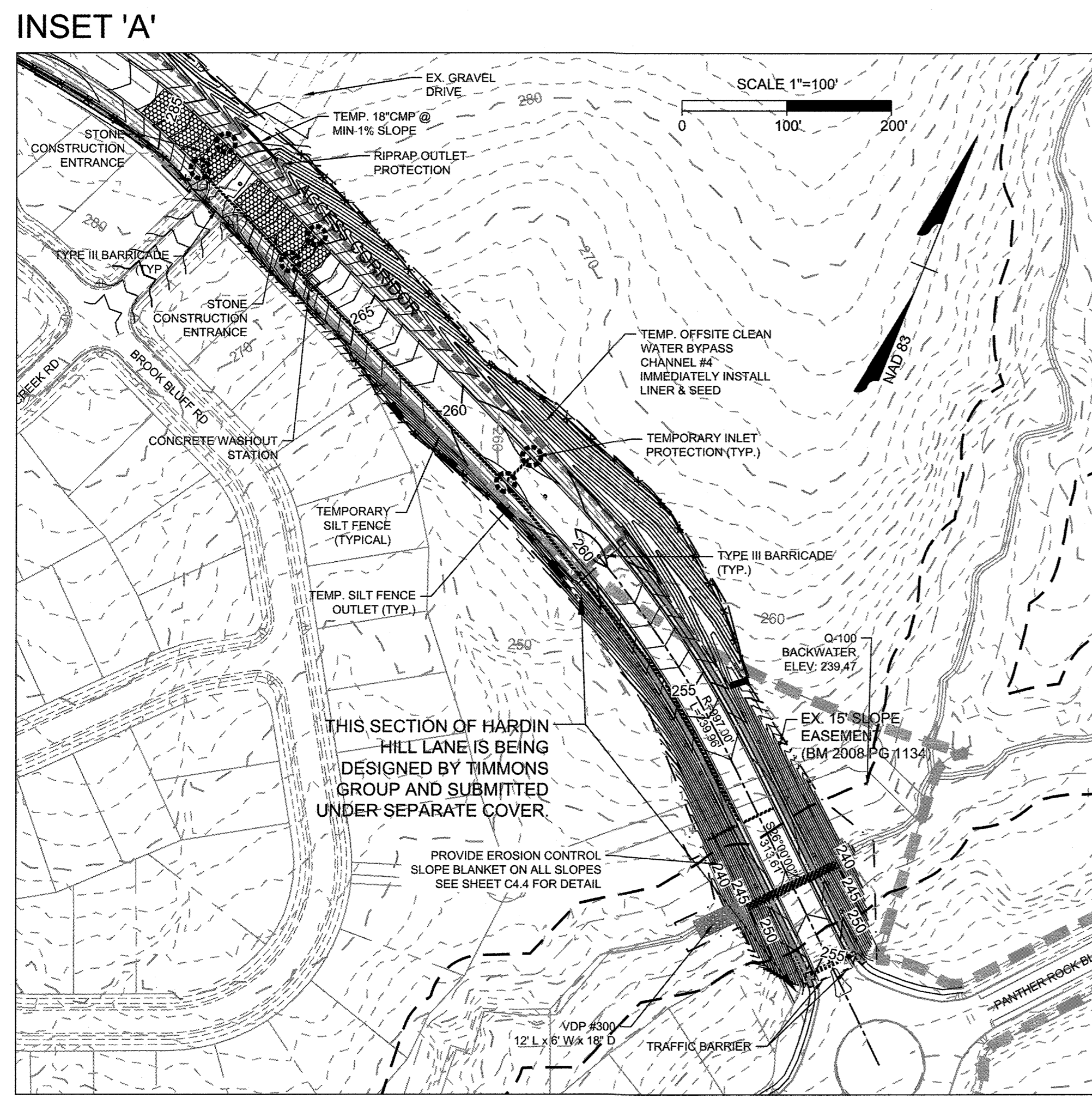
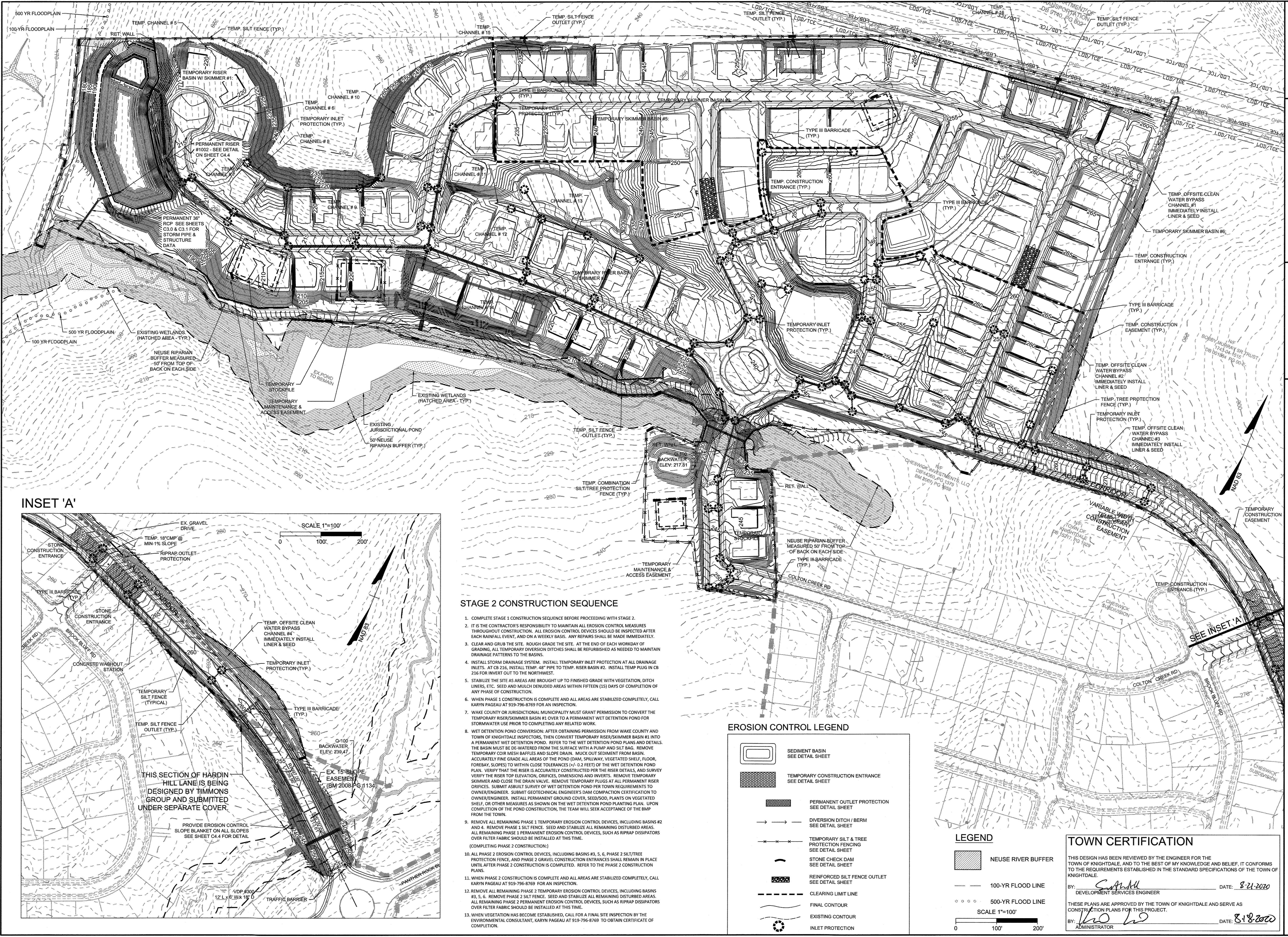
REVISION DESCRIPTION

DATE

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

JOB NO.
 37909

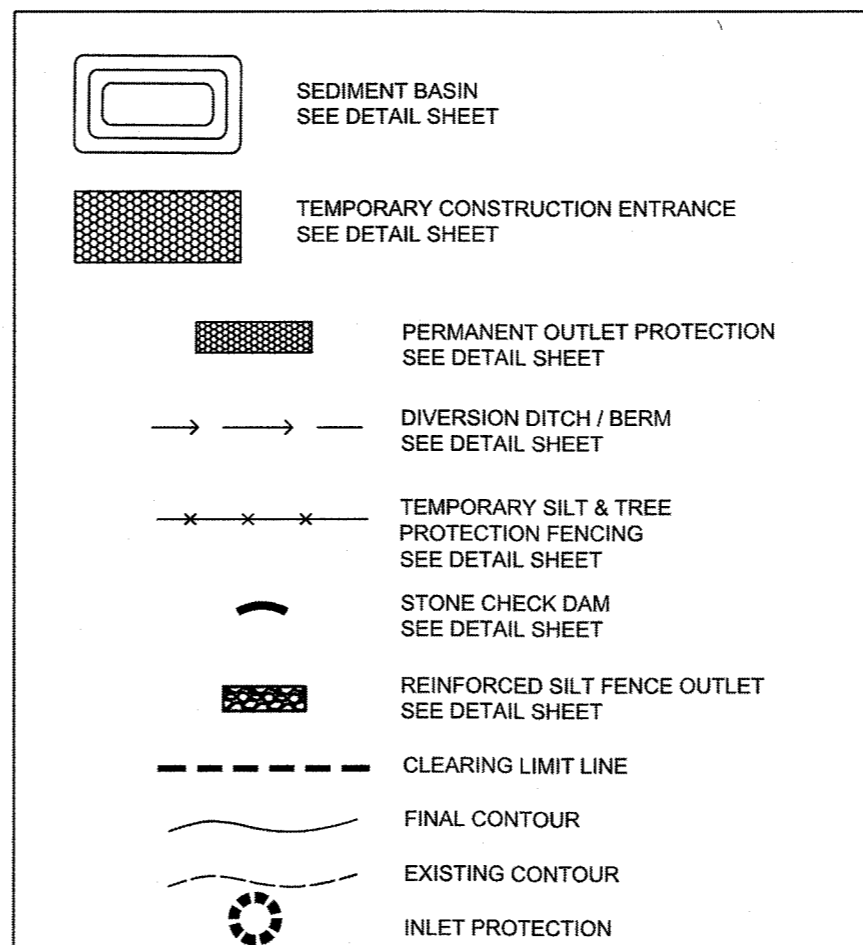
SHEET NO.
 C4.2



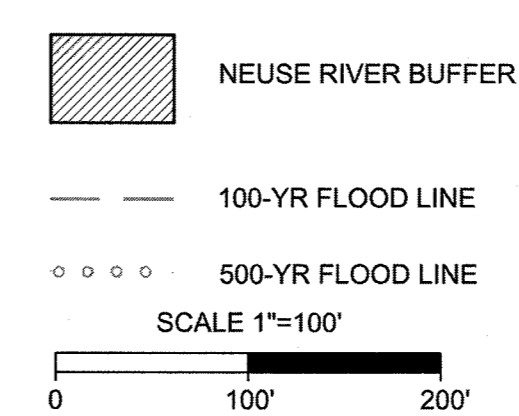
STAGE 2 CONSTRUCTION SEQUENCE

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. 24" PIPE TO TEMP. RISER BASIN #2. INSTALL TEMP. PLUG IN CB 216 FOR INVERT OUT TO THE NORTHWEST.
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 1 CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL KARYN PAGEAU AT 919-796-8769 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, SILLWALL, VEGETATED SLOPE, 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/SO, PLANTS ON VEGETATED SLOPE. ON 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 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.
 (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 KARYN PAGEAU AT 919-796-8769 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, KARYN PAGEAU AT 919-796-8769 TO OBTAIN CERTIFICATE OF COMPLETION.

EROSION CONTROL LEGEND



LEGEND



TOWN CERTIFICATION

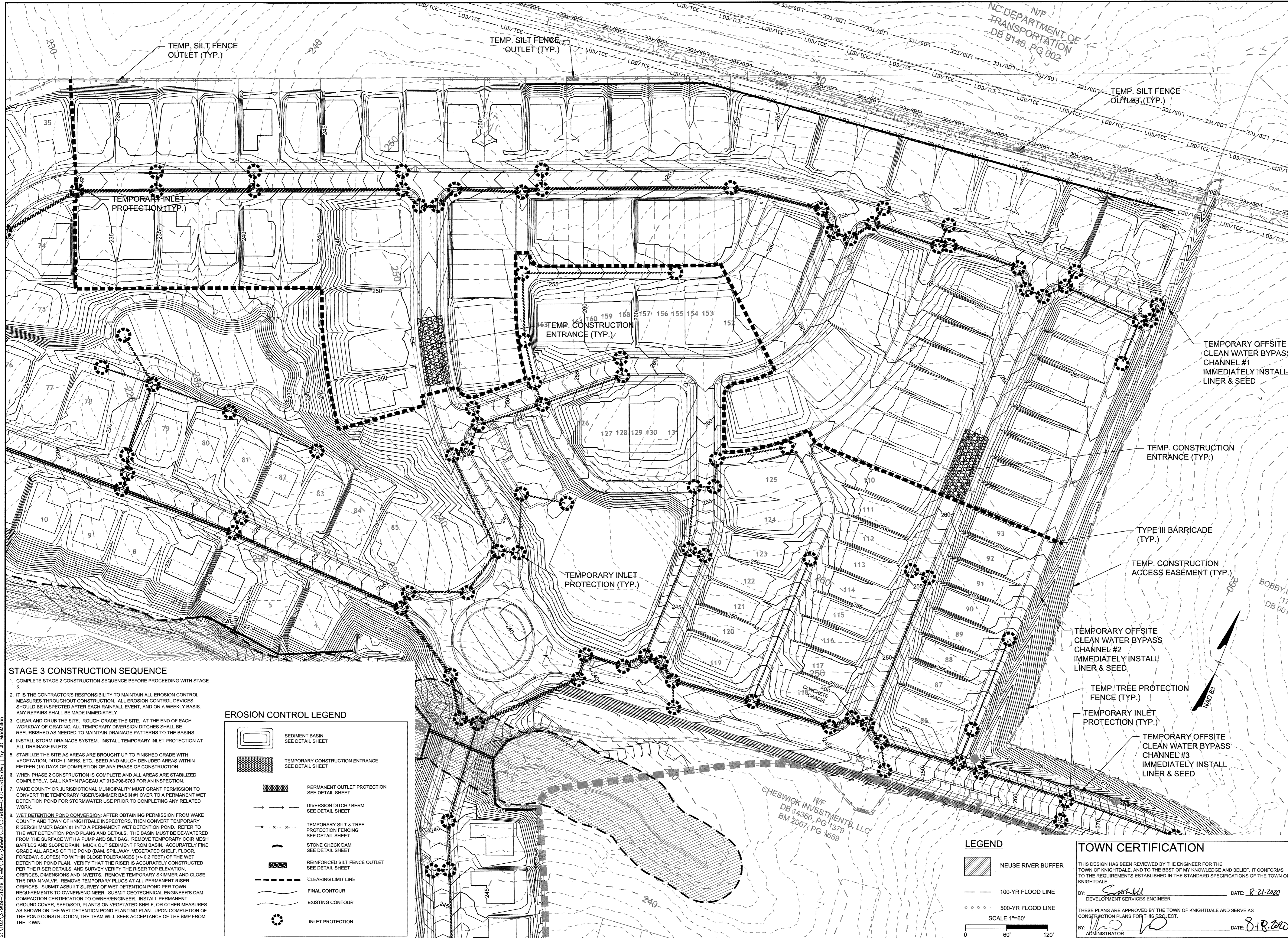
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

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

S:\102\37909-Stone_River\DWG\Sheet\C4.2-EROS.dwg | by JD MacMillan



N/C DEPARTMENT OF TRANSPORTATION
DB 9149, PG 602



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 02 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	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 PHASE 1, 2, & HARDIN HILL EXT.
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

STAGE 3 SEDIMENTATION & EROSION CONTROL

STAGE 3 CONSTRUCTION SEQUENCE

1. COMPLETE STAGE 2 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.
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 DENUDEED 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 KARYN PAGEAU AT 919-796-8769 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 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 AS-BUILT 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.

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
	INLET PROTECTION

LEGEND

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

SCALE 1"=60'

0 60' 120'

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

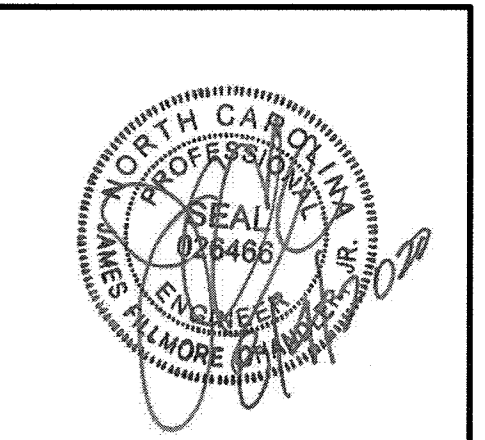
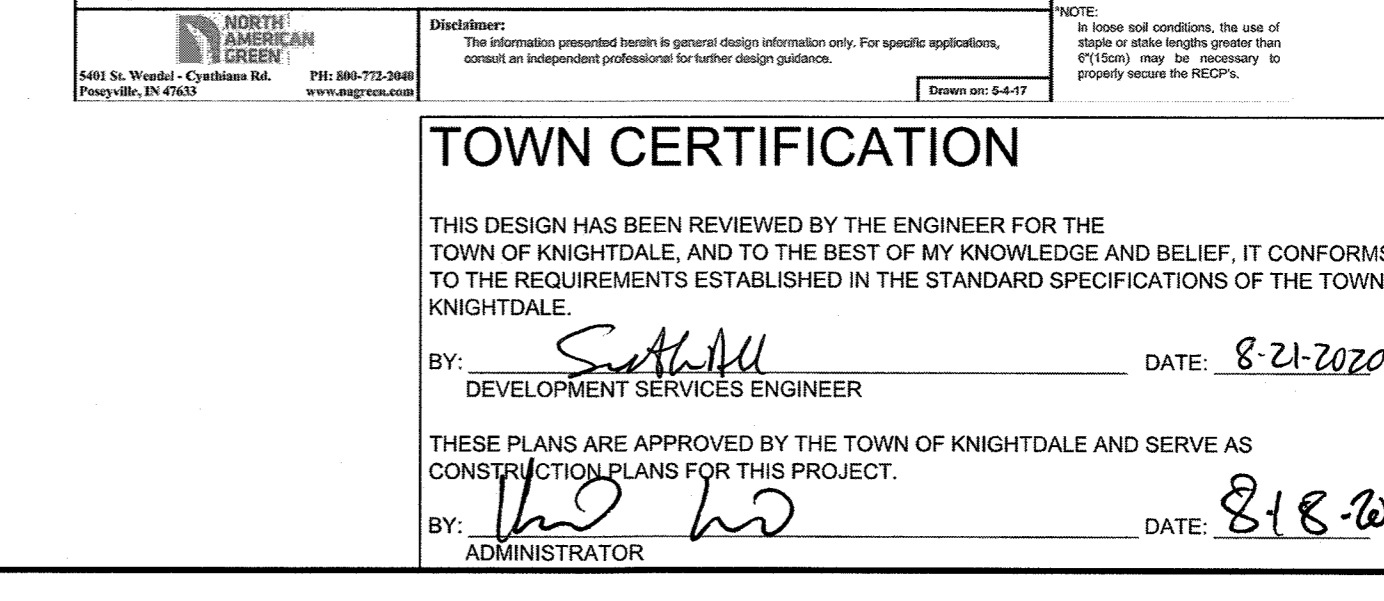
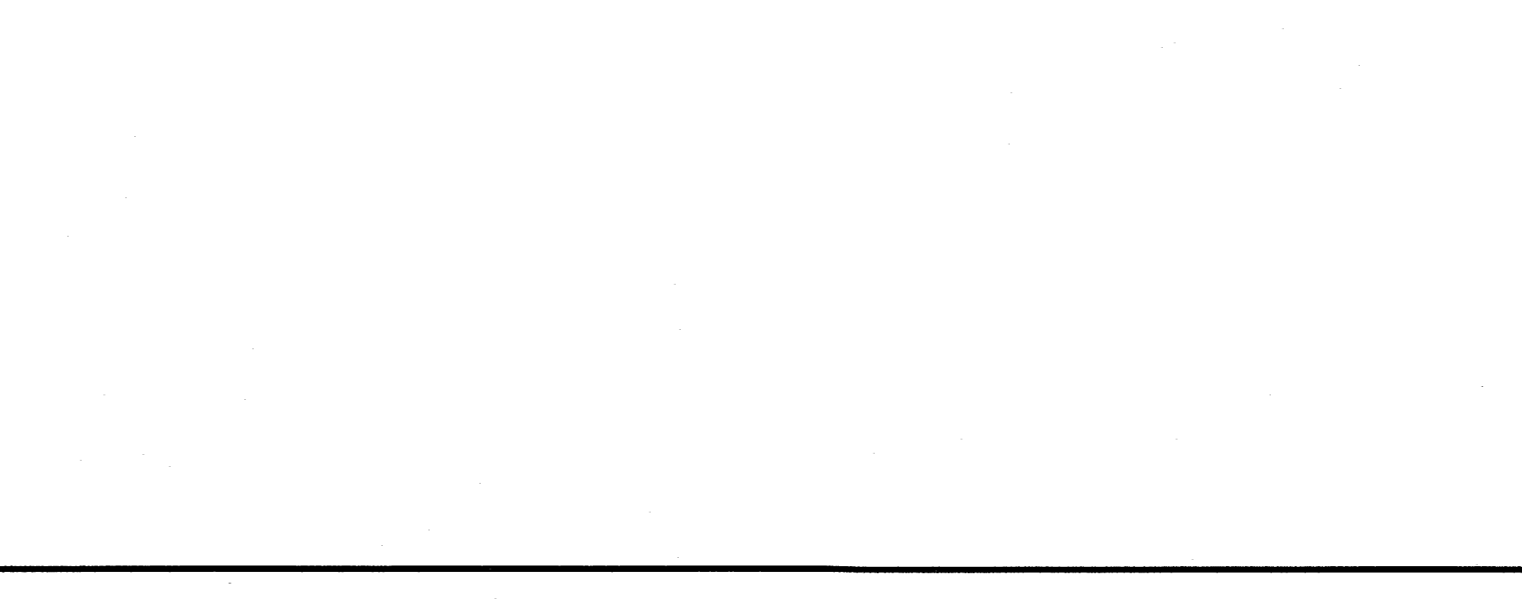
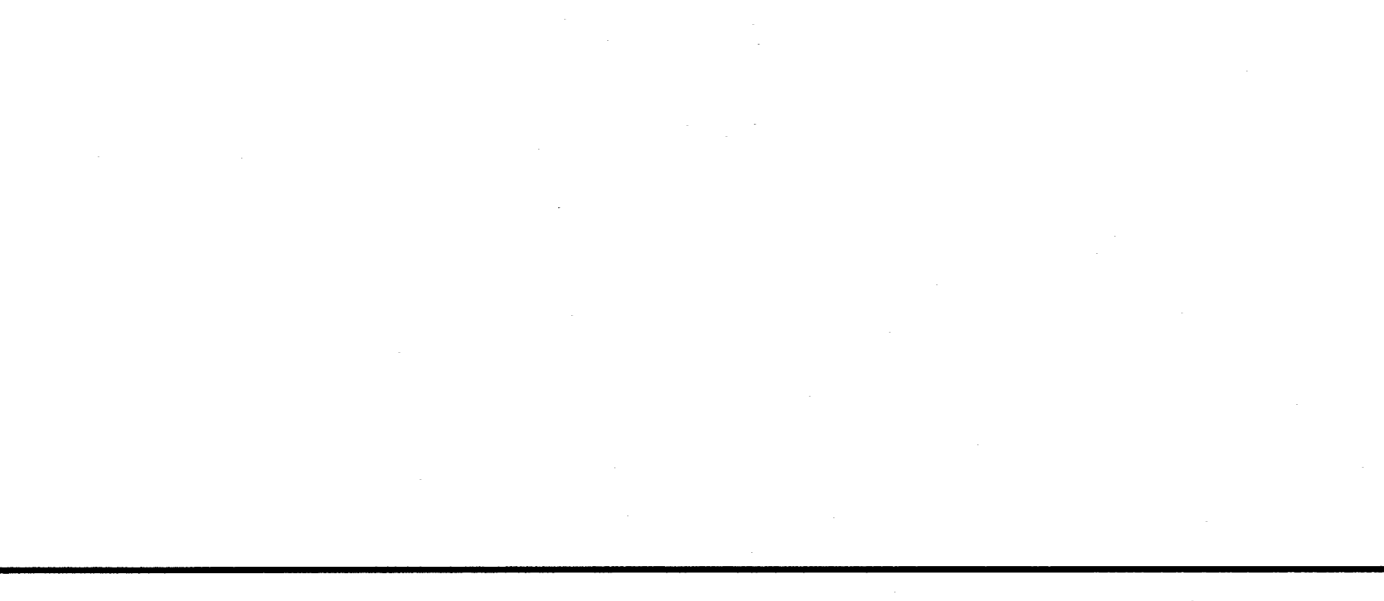
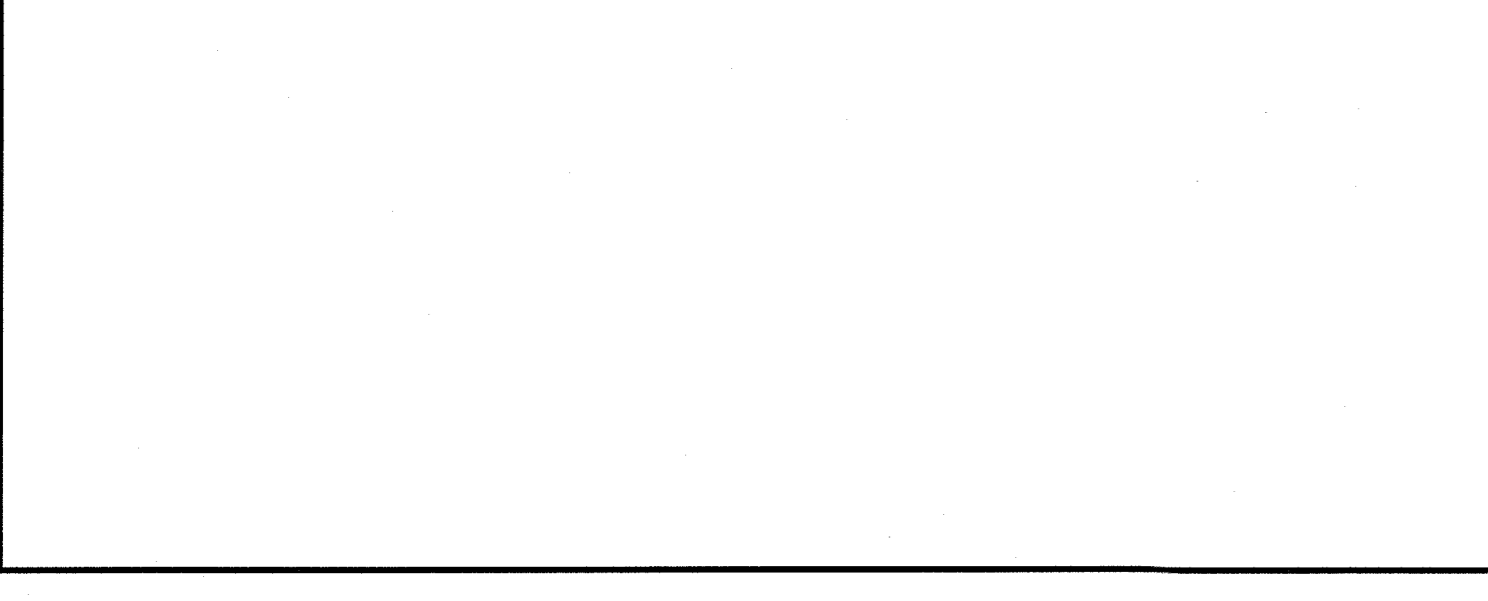
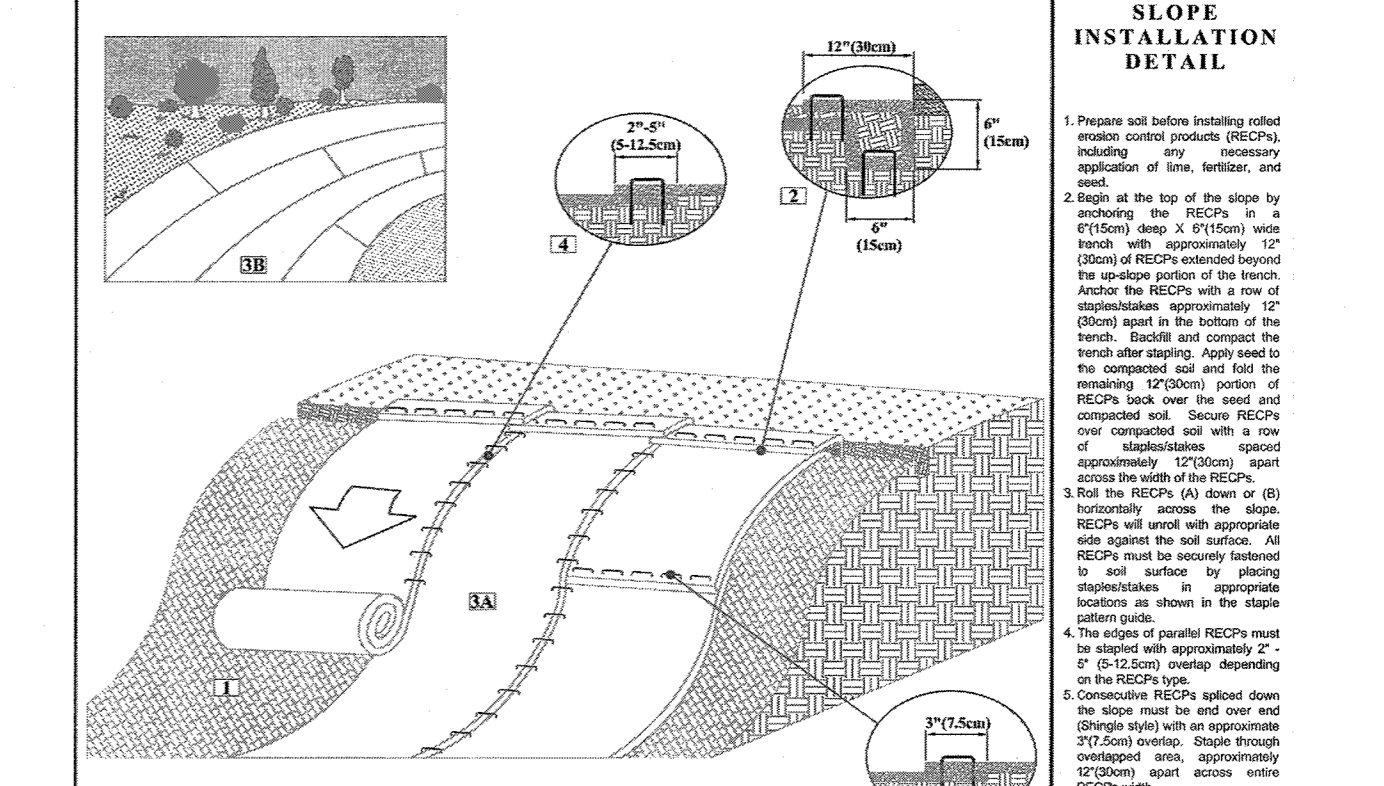
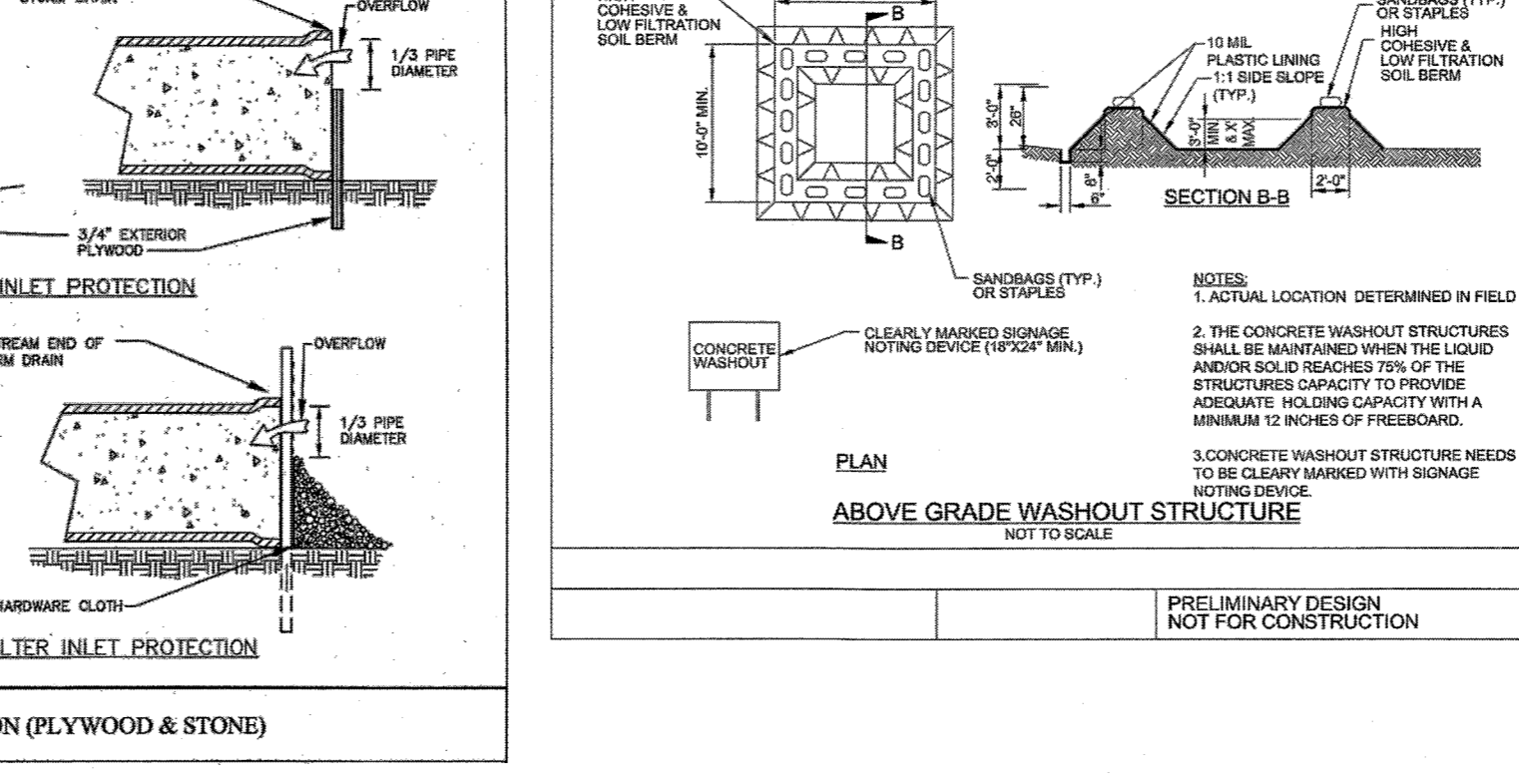
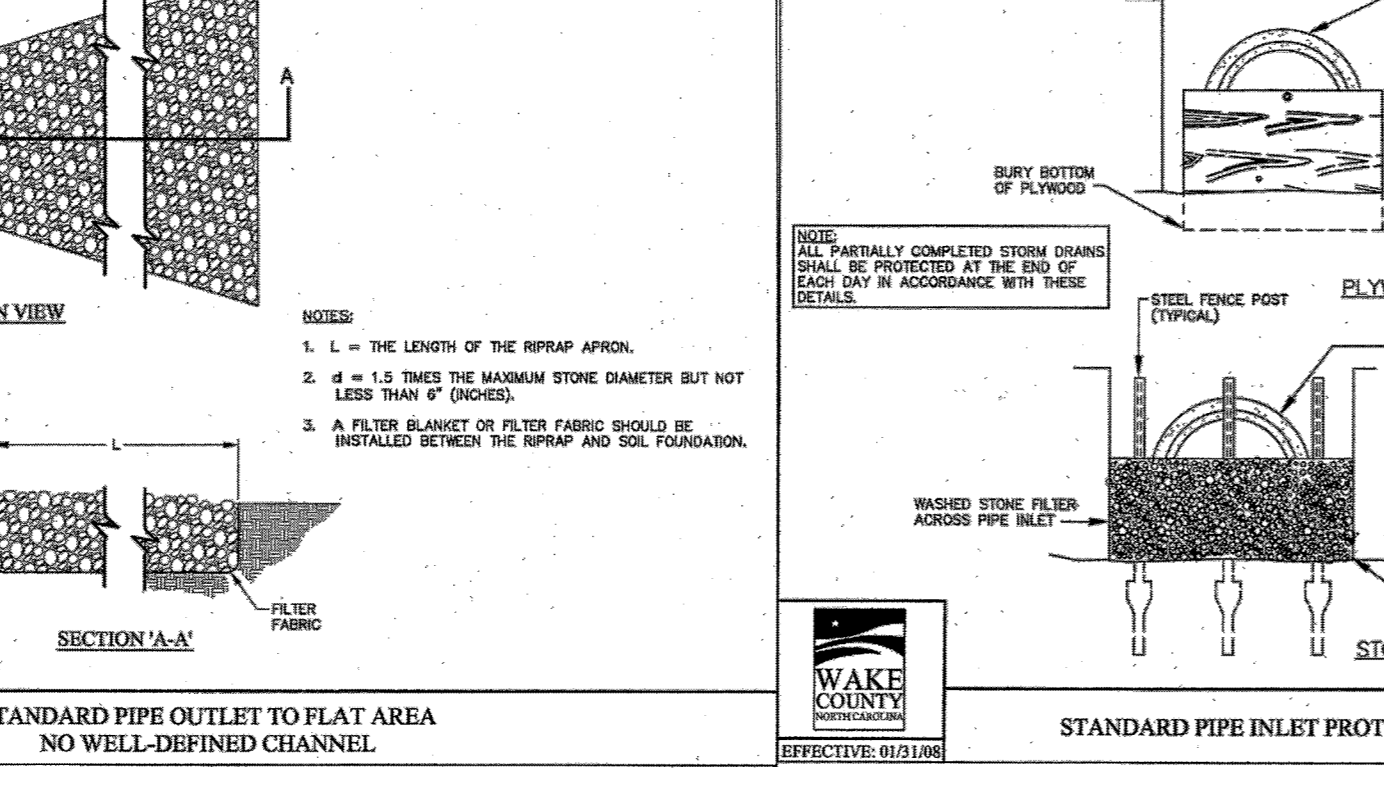
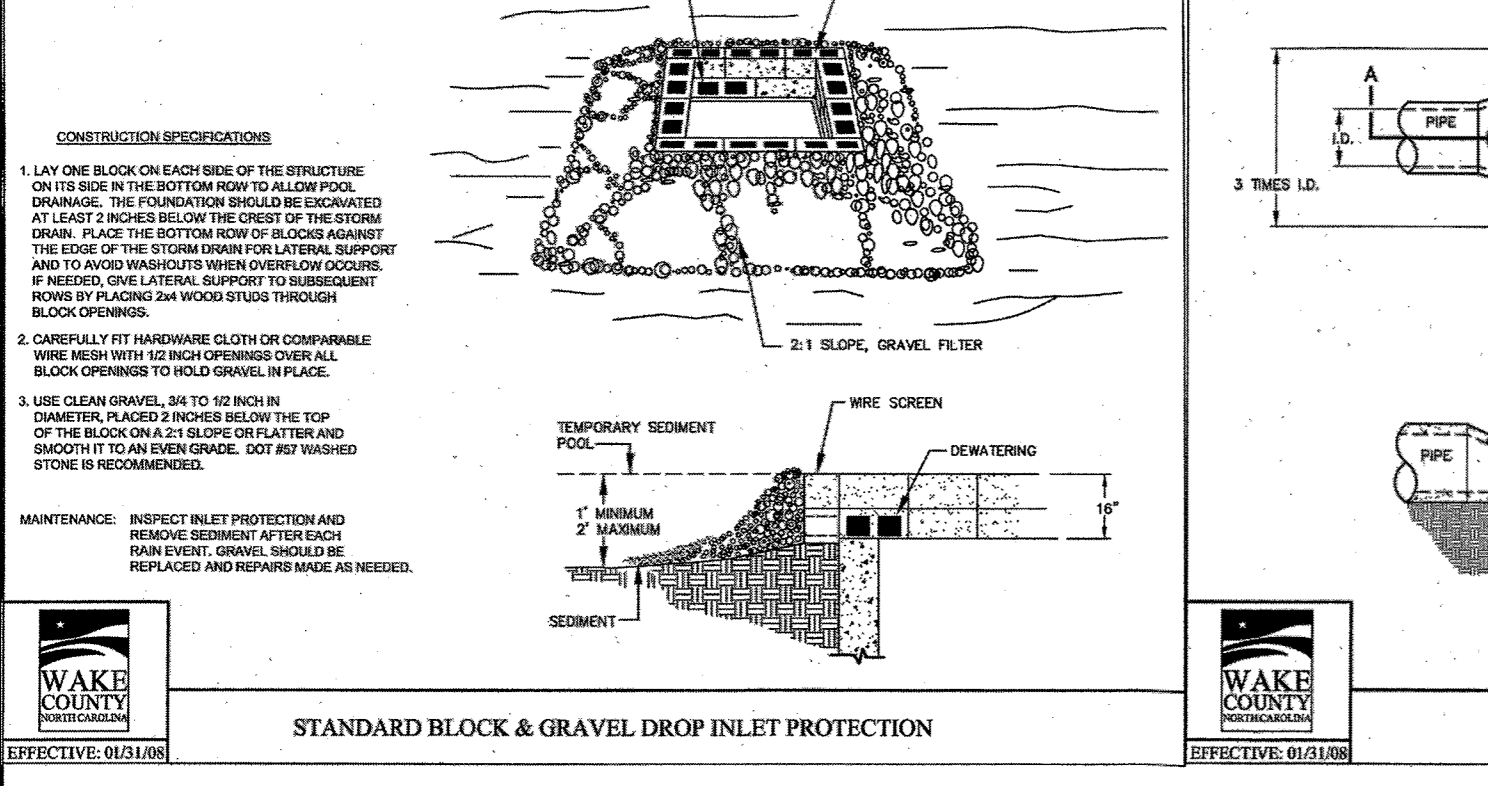
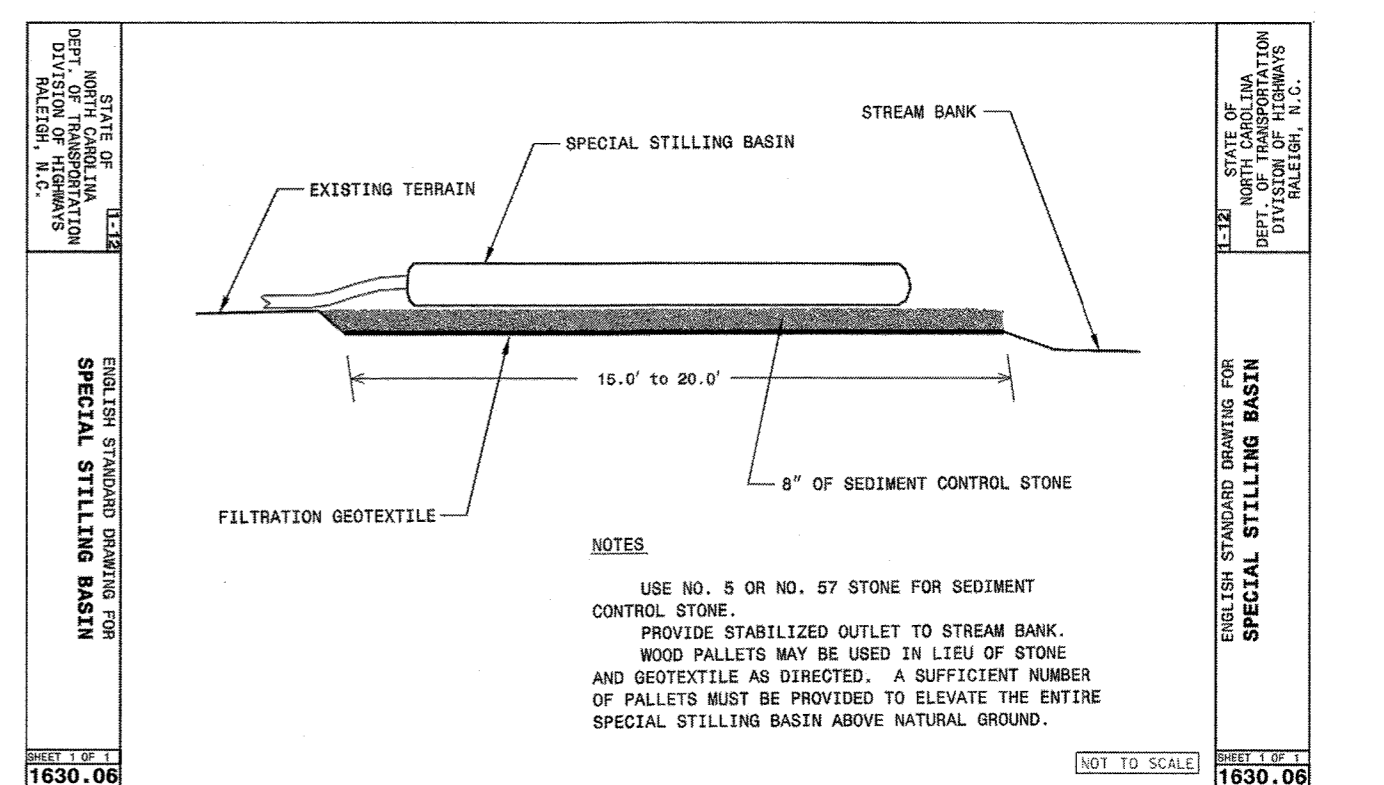
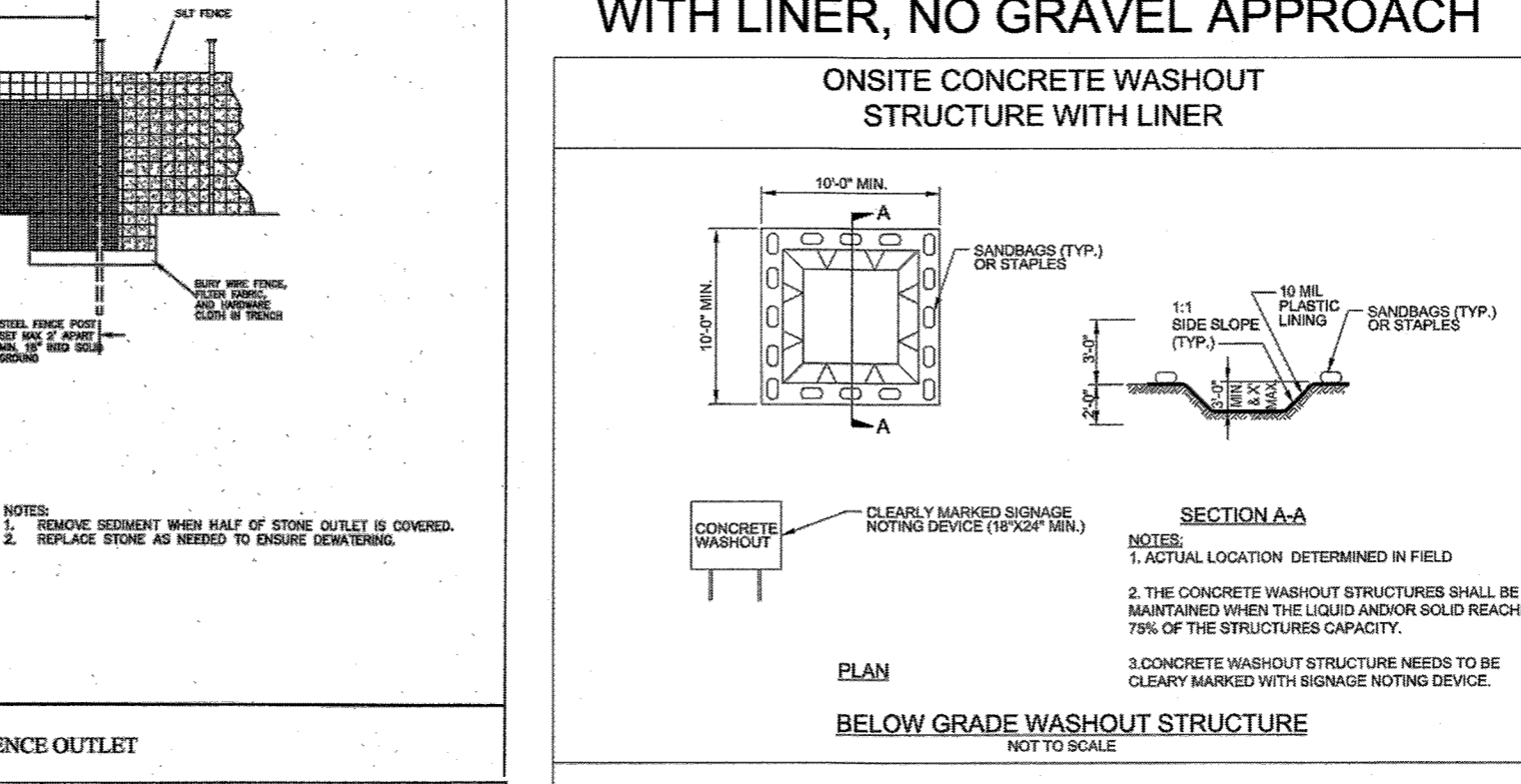
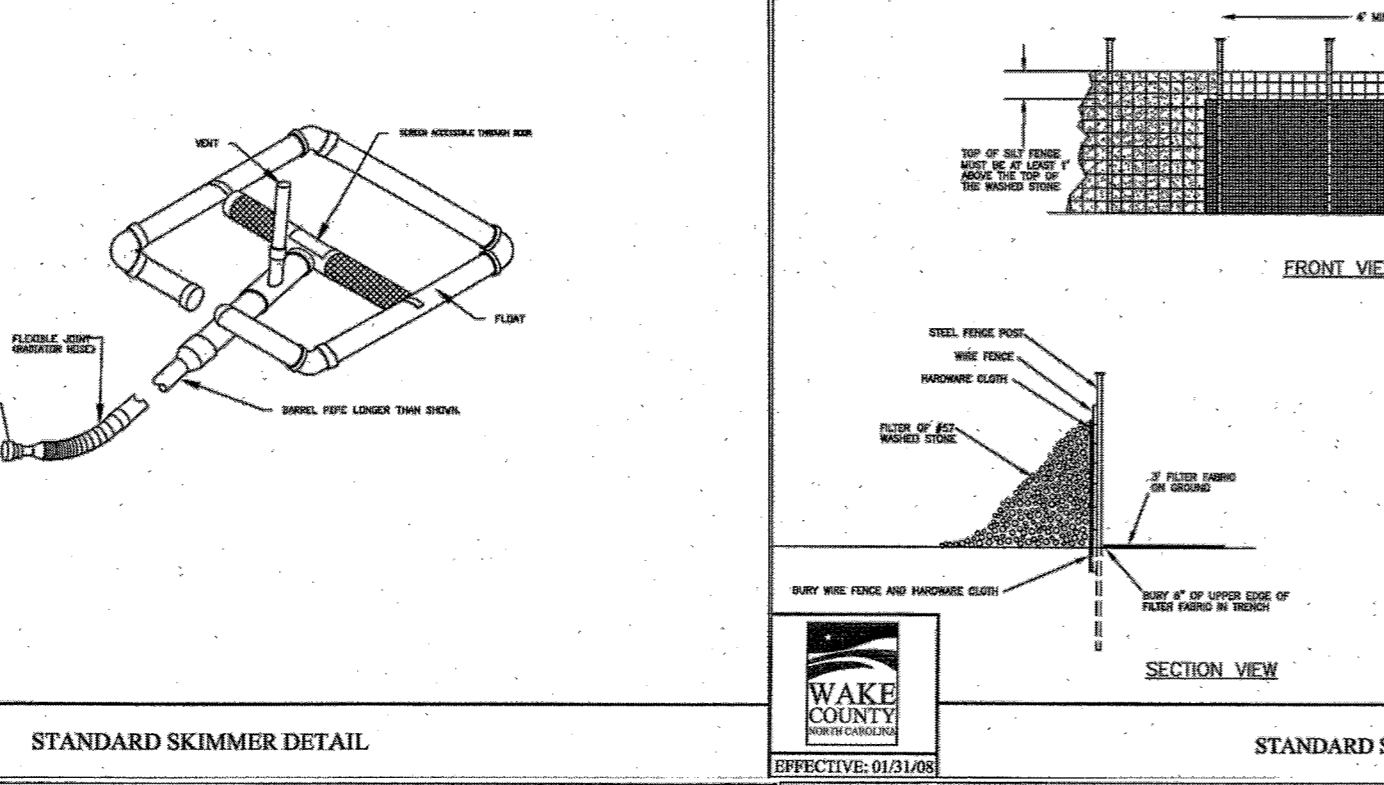
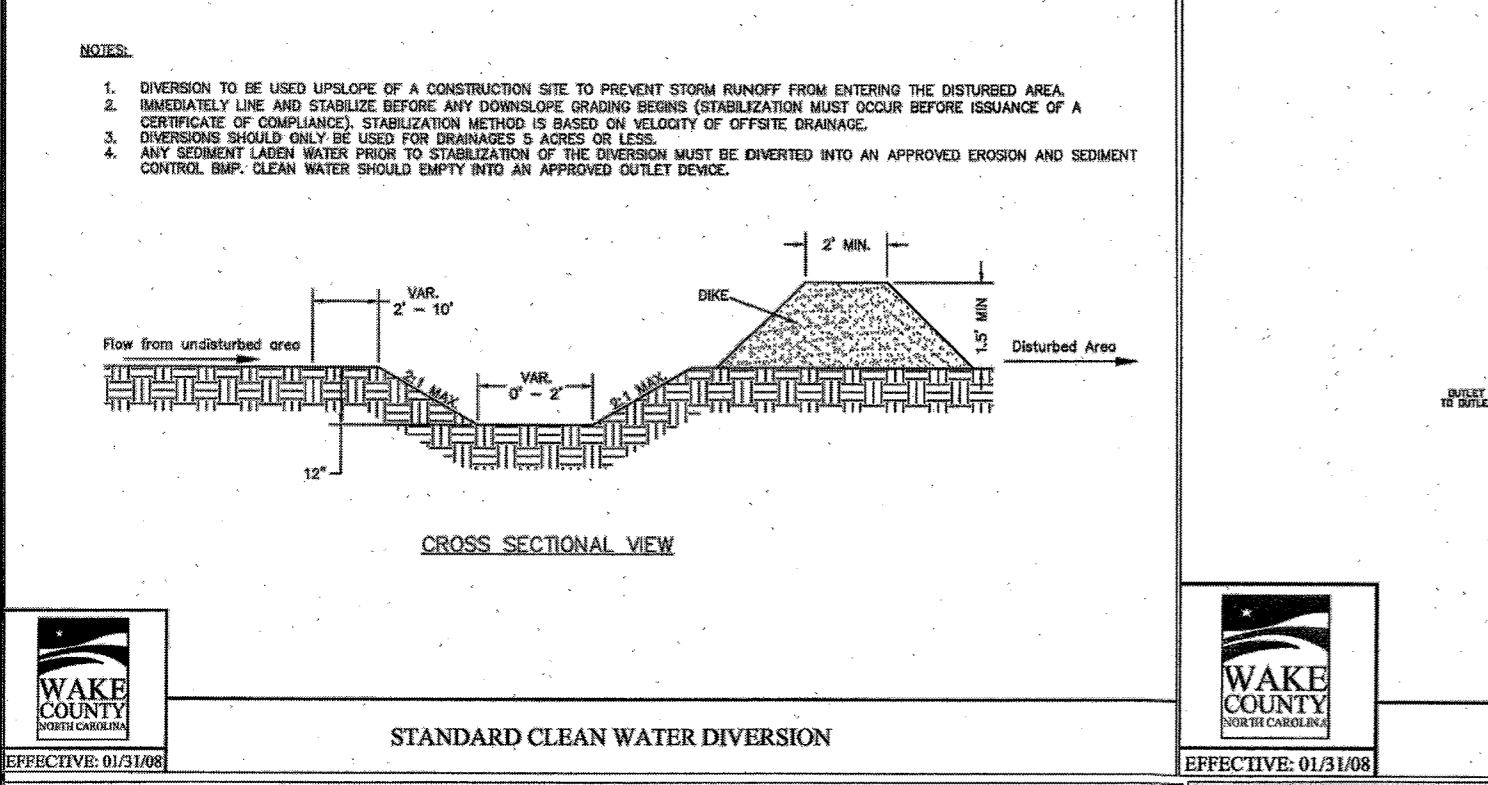
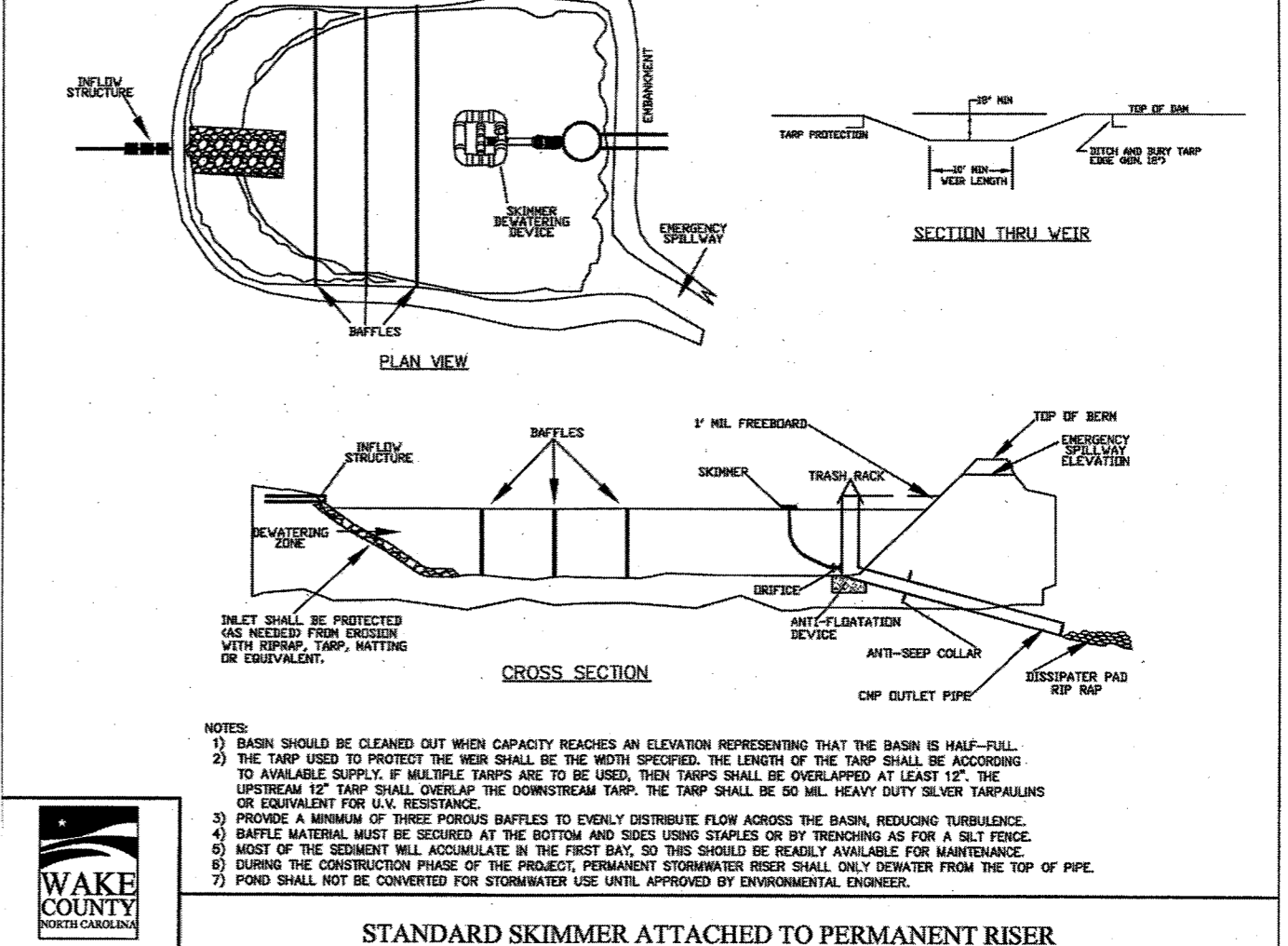
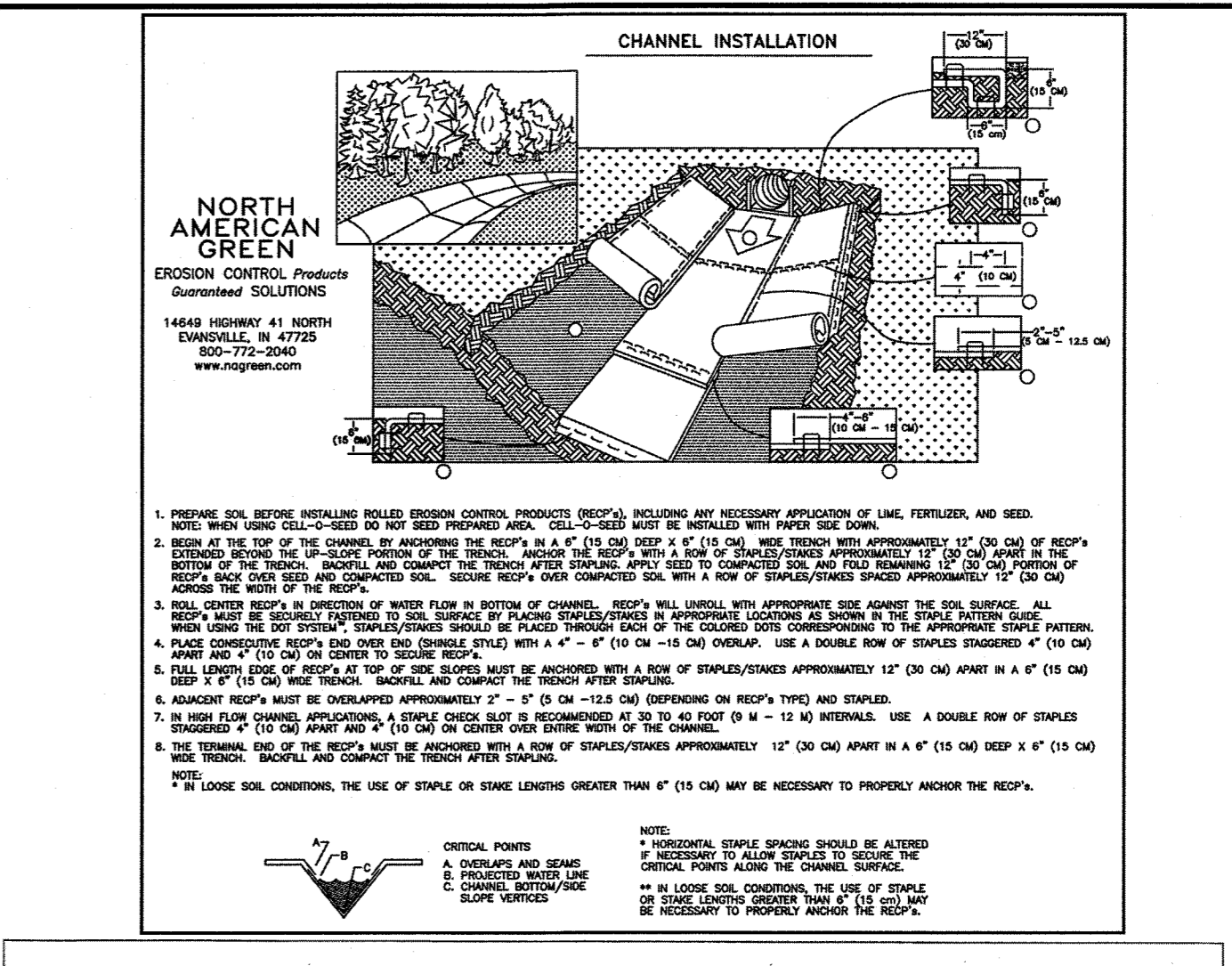
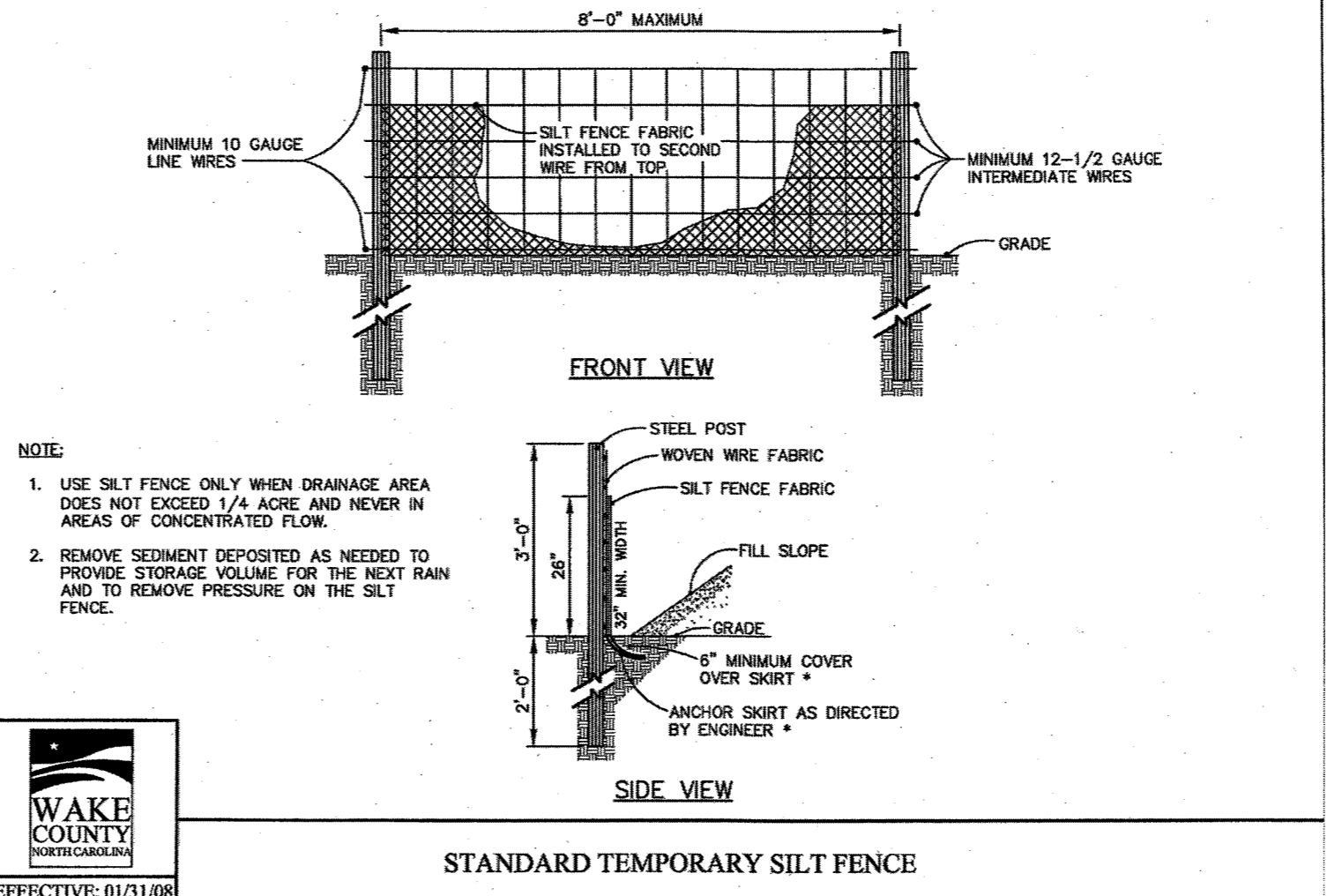
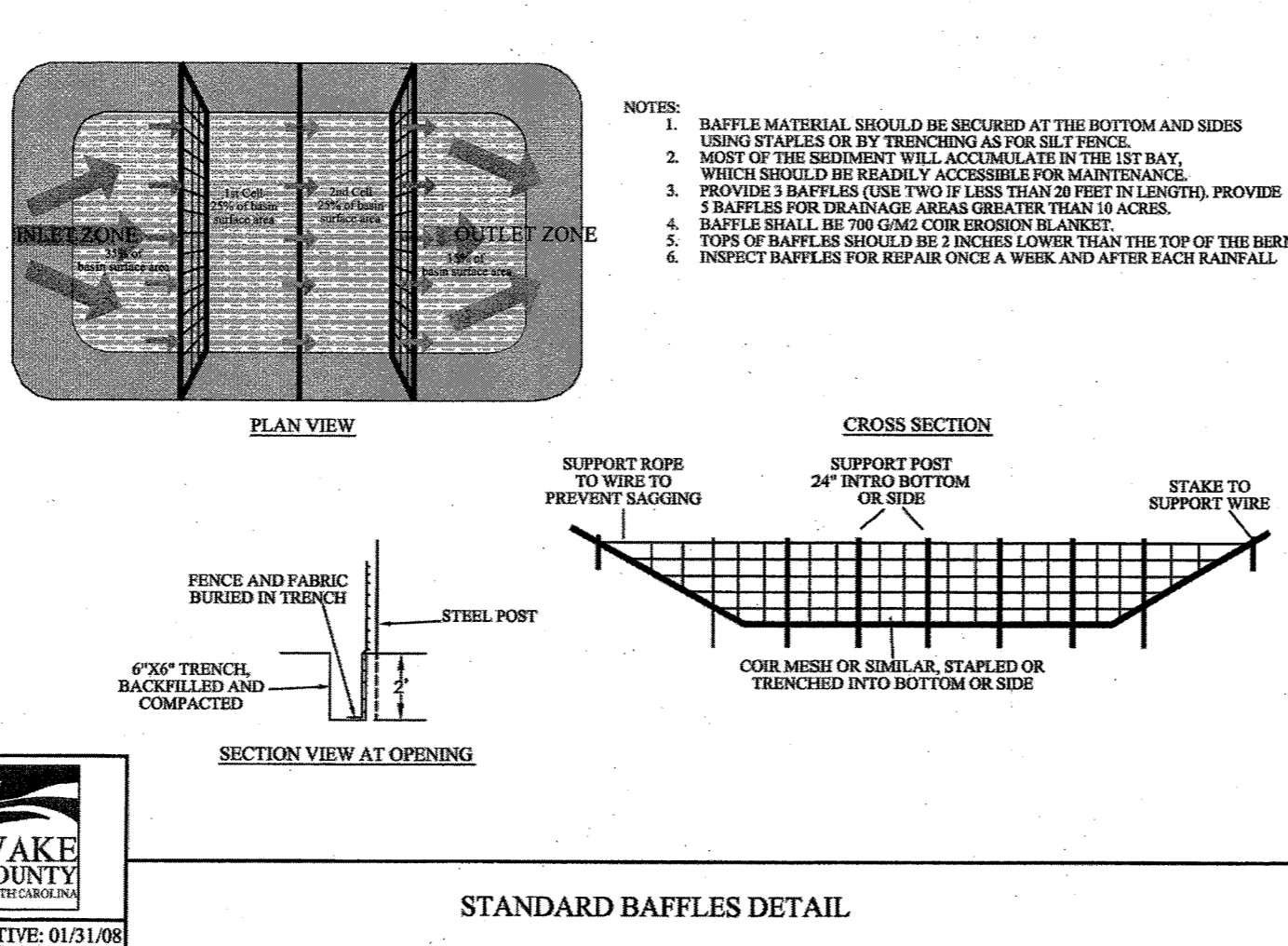
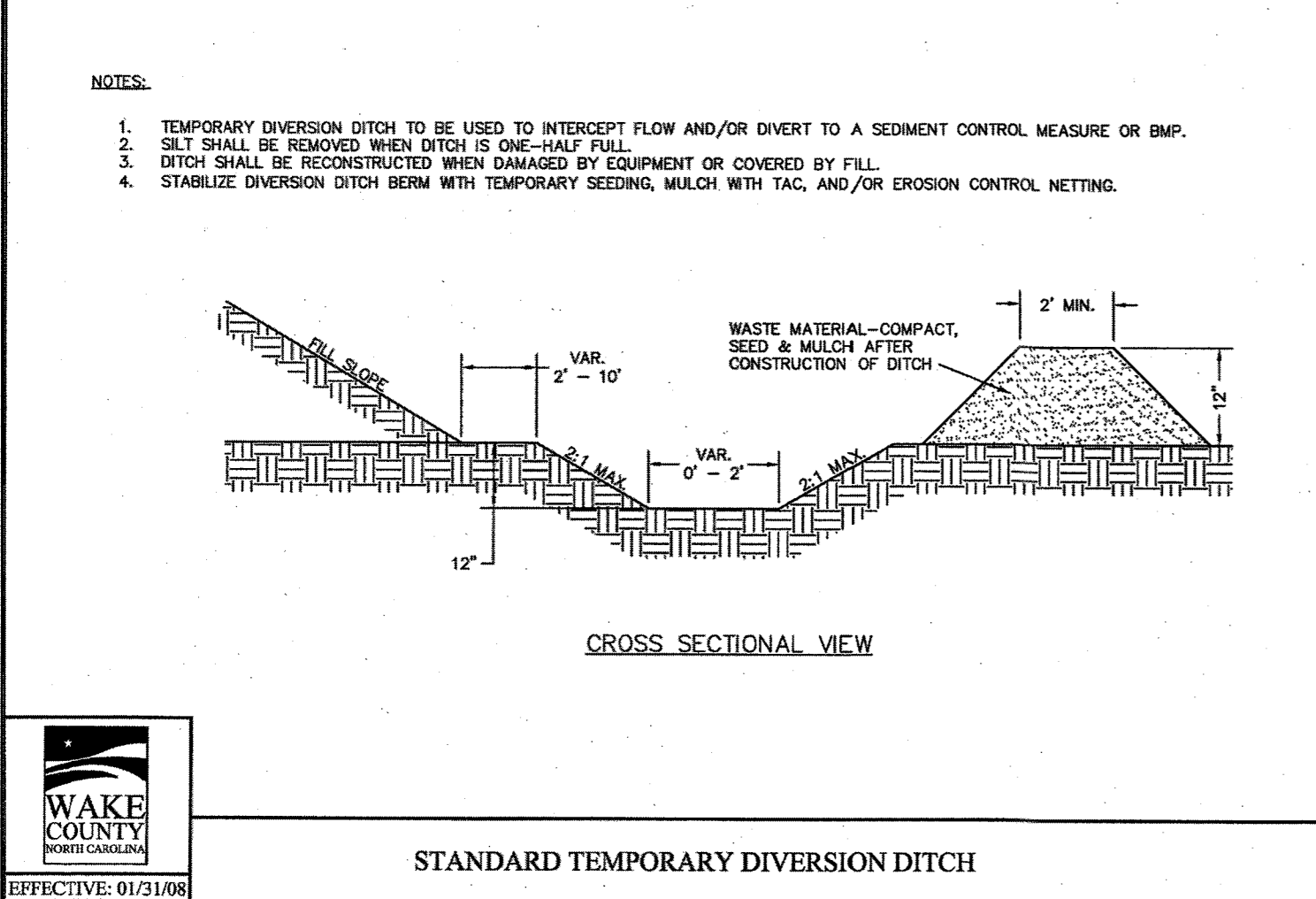
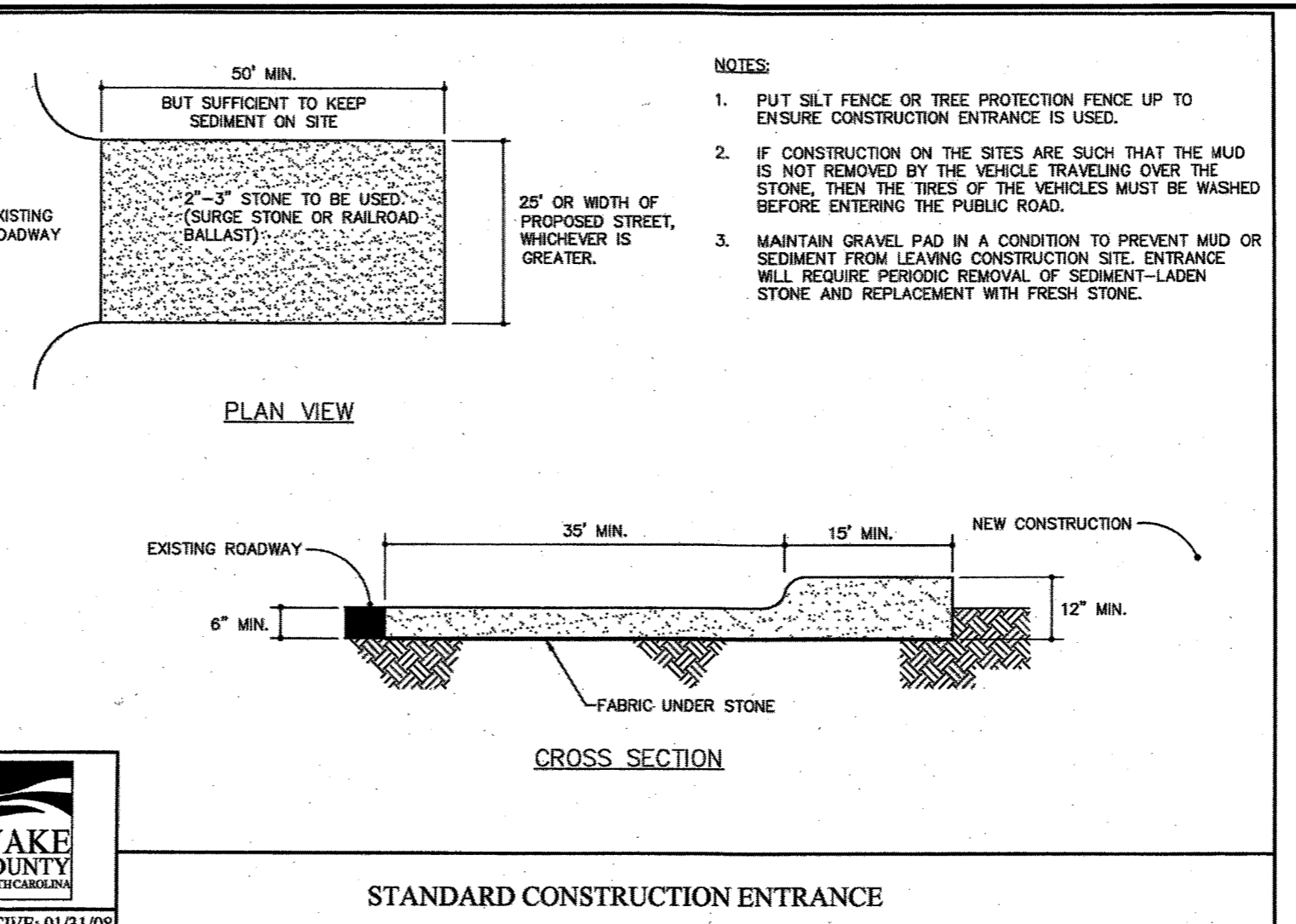
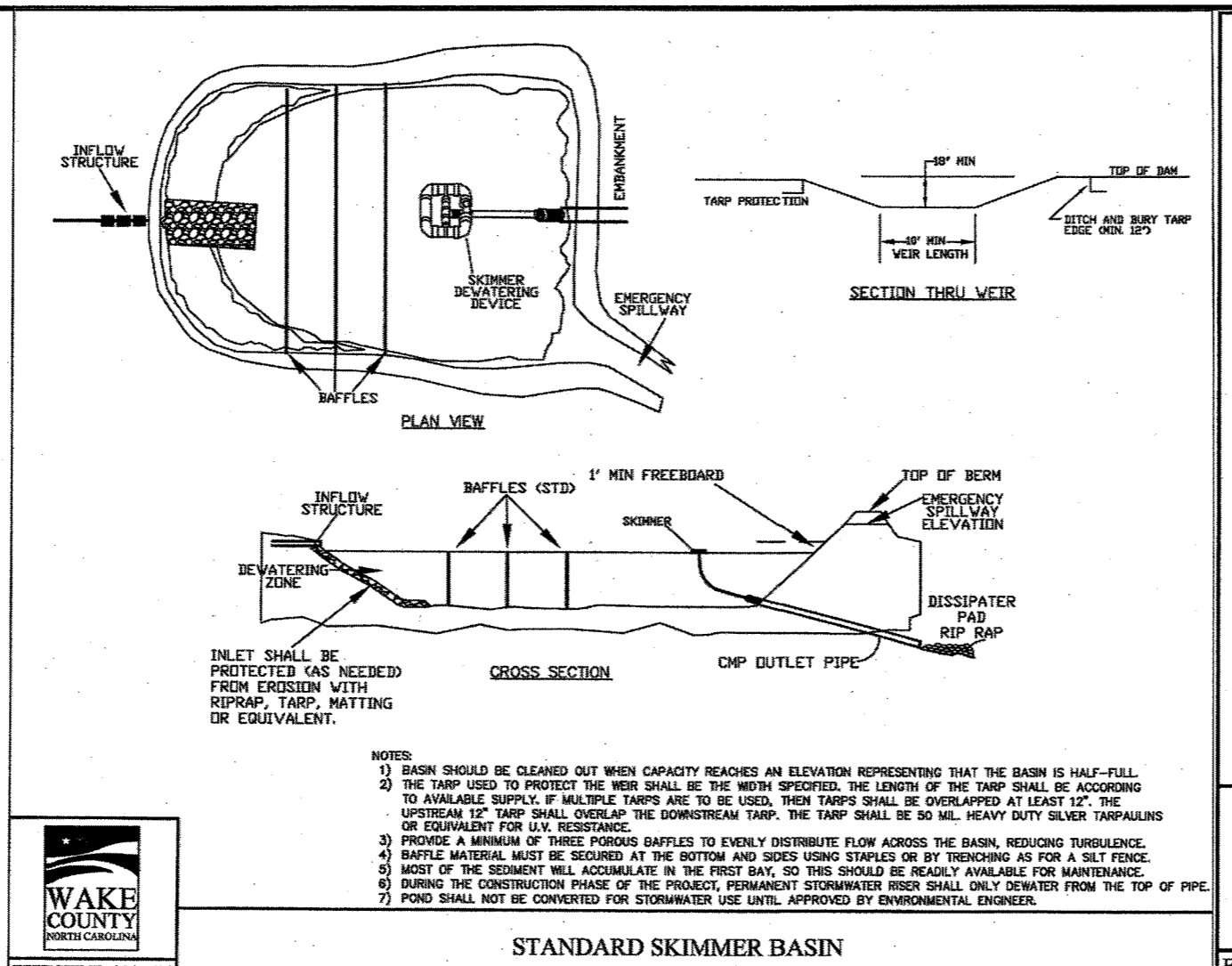
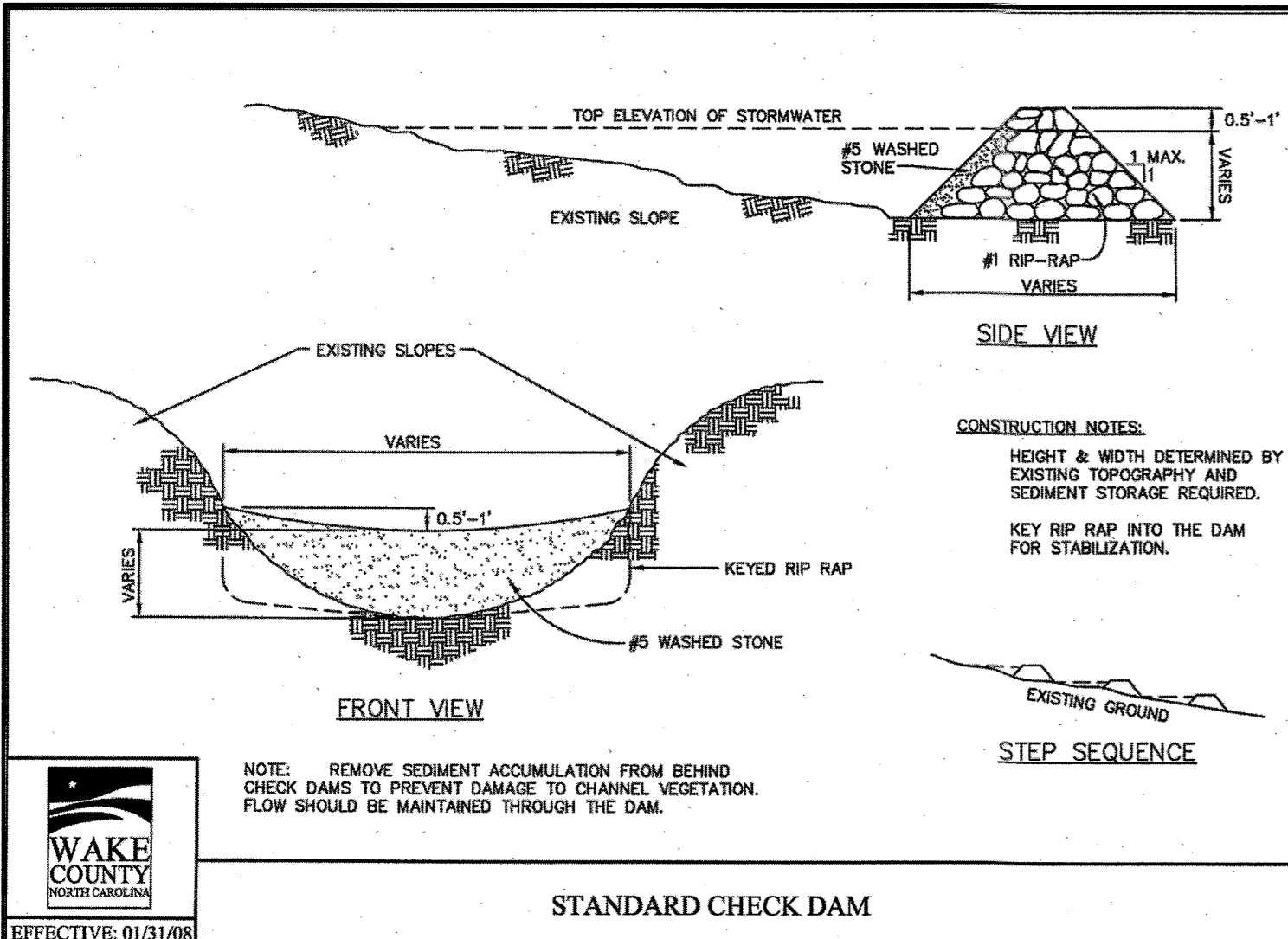
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: DATE: 8-18-2020
ADMINISTRATOR

JOB NO.
37909
SHEET NO.
C4.3

S:\102\37909-Stone River\DWG\Sheet\CD\37909-C4.0-EROS.dwg | By: JD MacArthur

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.866.4955 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

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

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
SEDIMENTATION & EROSION CONTROL DETAILS

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: *Seth Hill* 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: *Tim Hill* DATE: 8-16-2020
ADMINISTRATOR

JOB NO. 37909
SHEET NO. C4.4

S:\02\37909-Stone_River\DWG\Sheet\CD\37909-C4.4-EROS.dwg | by: J.D. MacMillan

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

Required Ground Stabilization Timeframes		
Site Area Description	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 (HQP) 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.
(d) Slopes 3:1 to 4:1	14	- 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 - 10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	- 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones - 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 tackifiersHydroseedingRoller erosion control products with or without temporary grass seedAppropriately applied straw or other mulchPlastic sheeting	<ul style="list-style-type: none">Permanent grass seed covered with straw or other mulches and tackifiersGeotextile fabrics such as permanent soil reinforcement mattingHydroseedingShrubs or other permanent plantings covered with mulchUniform and evenly distributed ground cover sufficient to restrain erosionStructural methods such as concrete, asphalt or retaining wallsRoller erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

EQUIPMENT AND VEHICLE MAINTENANCE

- Maintain vehicles and equipment to prevent discharge of fluids.
- Provide drip pans under any stored equipment.
- Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
- Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- 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

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- 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.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off-site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

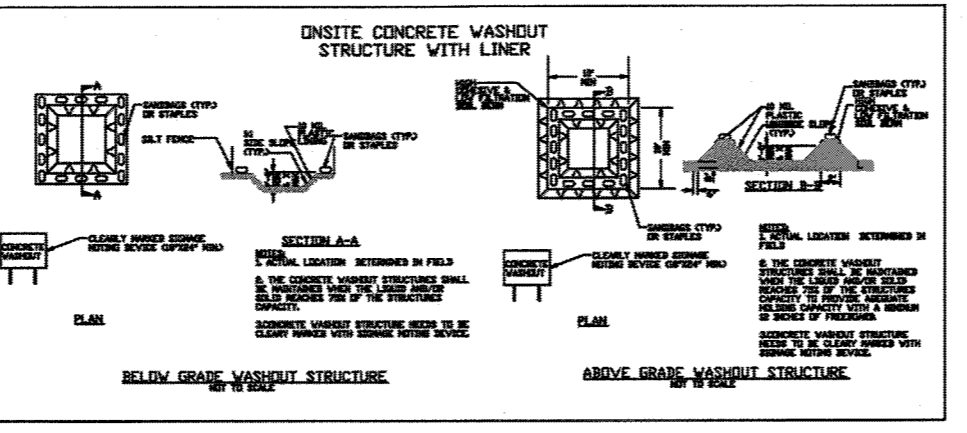
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled,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

PORTABLE TOILETS

- 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.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- Monitor portable toilets for leaking 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

- 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.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone access point when feasible.
- 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

- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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

- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- 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.
- 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.
- Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

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



NCG01 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 to 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&SC 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 measure inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measure was operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	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 outfalls 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 outside the limits, then a record of the following shall be made: 1. 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) Storms or winds on-site or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. 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 II, Section C, Item (2)(g) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (Installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, 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

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC 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&SC measure has been installed and does not significantly deviate from the location, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC 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&SC plan.	Initial and date a copy of the approved E&SC 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&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC 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&SC 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. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(b) Oil spills and release of hazardous substances per Item 2(b)(1) above	<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.
(c) Anticipated bypasses (40 CFR 122.41(m)(3))	<ul style="list-style-type: none">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.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment (40 CFR 122.41(i)(7))	<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 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(i)(8)).Division staff may waive the requirement for a written report on a case-by-case basis.

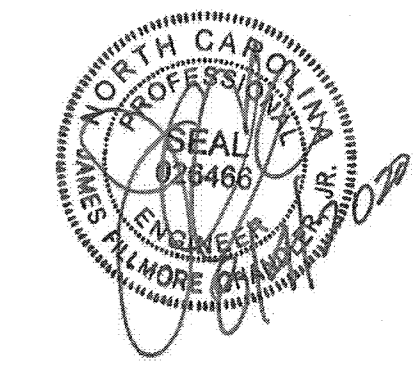
PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

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&SC 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&SC 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 pit 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.
- 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.



NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING EFFECTIVE: 04/01/19



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

YOUR VISION ACHIEVED THROUGH OURS.

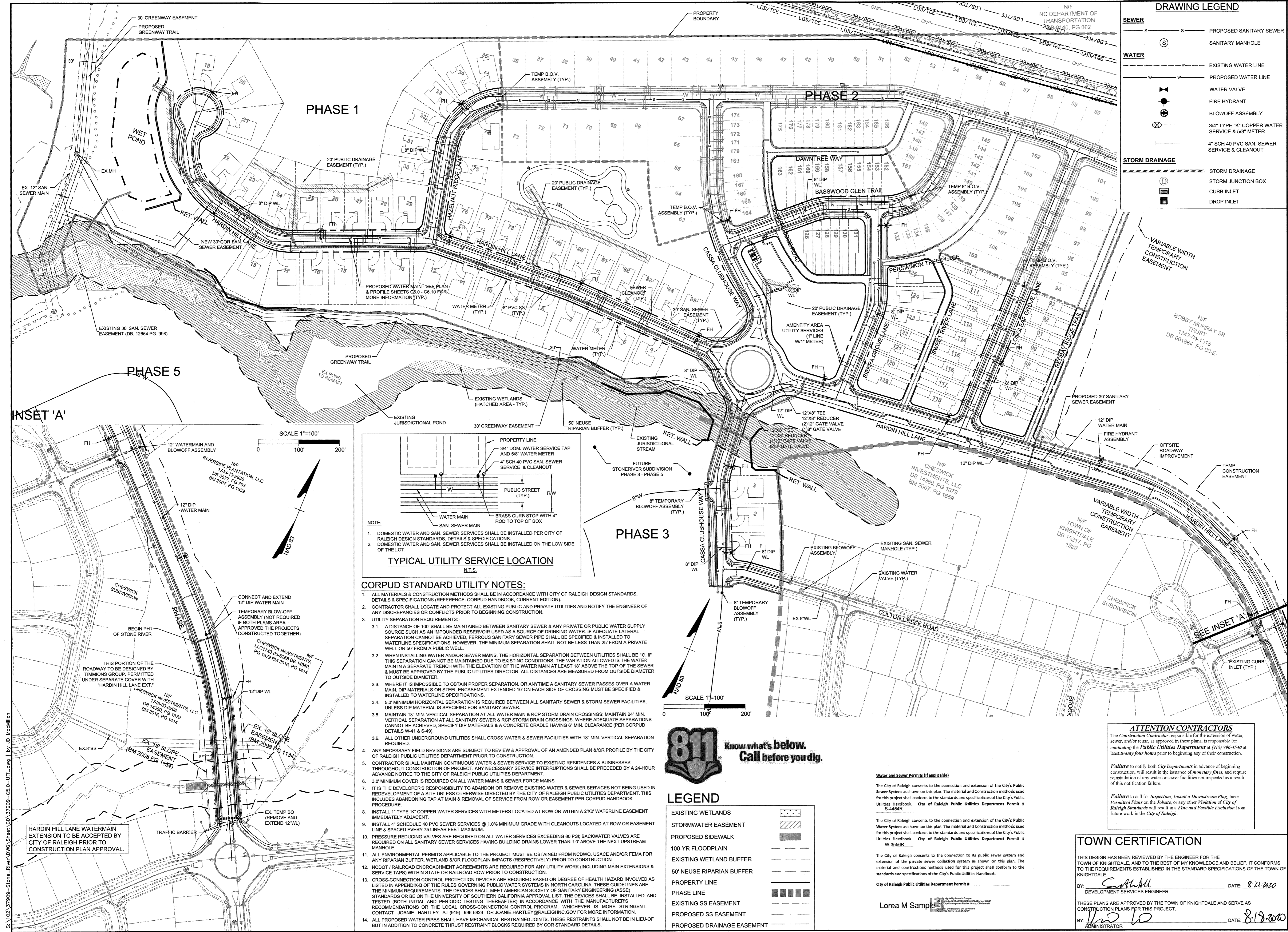
REVISION DESCRIPTION	DATE
	09/11/2018

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

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-152
STONERIVER PHASE 1, 2, & HARDIN HILL EXT.
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SEDIMENTATION & EROSION CONTROL NCG01 NOTES

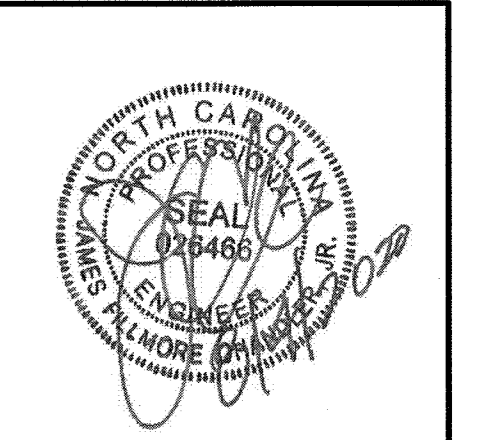
JOB NO.	37909
SHEET NO.	C4.5

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



DRAWING LEGEND

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

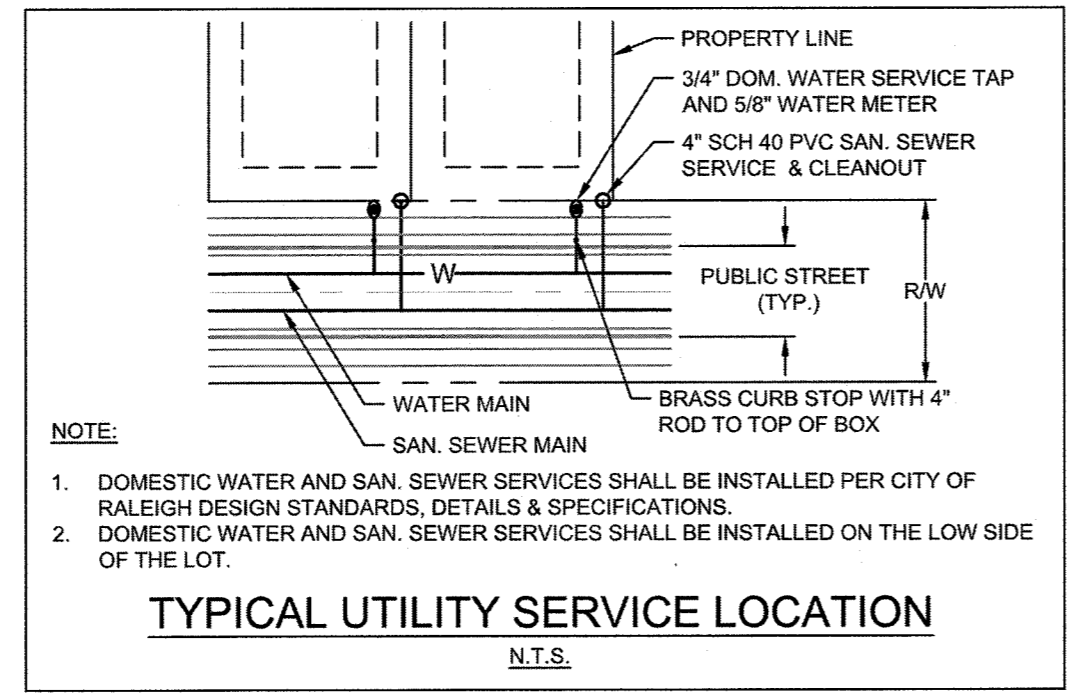
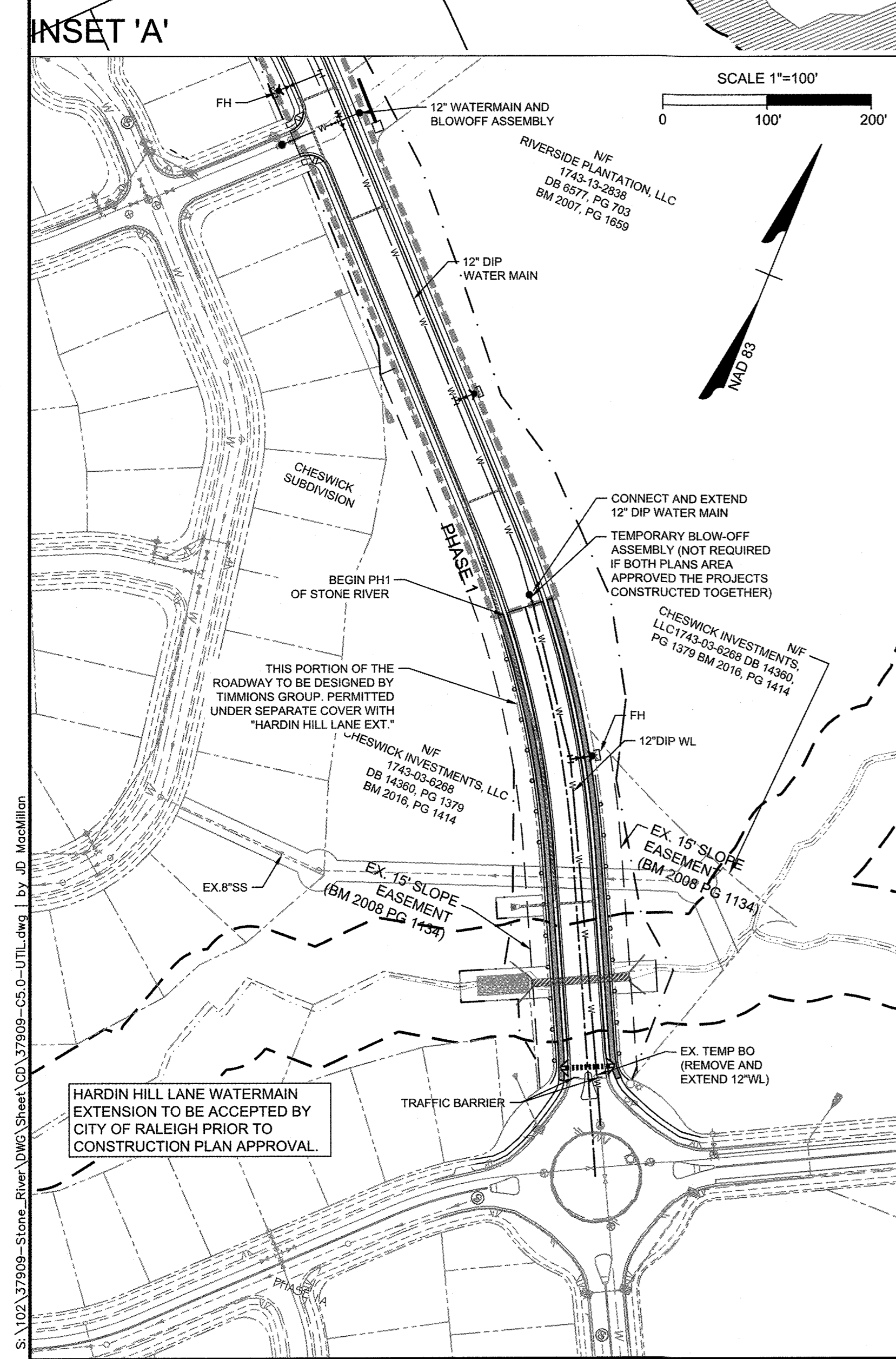


THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Raleigh, NC 27607
 TEL 919.866.6951 FAX 919.833.8124 www.timmons.com

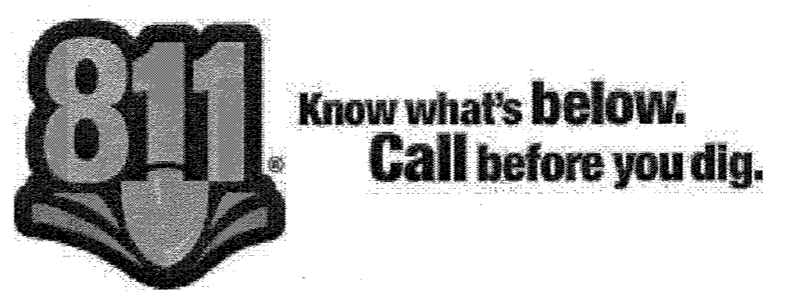
YOUR VISION ACHIEVED THROUGH OURS.

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

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



- 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 CRADLE 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" 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 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 NCDWQ, USACE AND/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND AND/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) 998-5947 OR JOANIE.HARTLEY@RALEIGH.GOV FOR MORE INFORMATION.
 - ALL PROPOSED WATER PIPES SHALL HAVE MECHANICAL RESTRAINT 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	(Symbol)
STORMWATER EASEMENT	(Symbol)
PROPOSED SIDEWALK	(Symbol)
100-YR FLOODPLAIN	(Symbol)
EXISTING WETLAND BUFFER	(Symbol)
50' NEUSE RIPARIAN BUFFER	(Symbol)
PROPERTY LINE	(Symbol)
PHASE LINE	(Symbol)
EXISTING SS EASEMENT	(Symbol)
PROPOSED SS EASEMENT	(Symbol)
PROPOSED DRAINAGE EASEMENT	(Symbol)

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-3656R

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

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) 996-1540 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 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 Eviction 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: 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: 8-17-2020
 ADMINISTRATOR

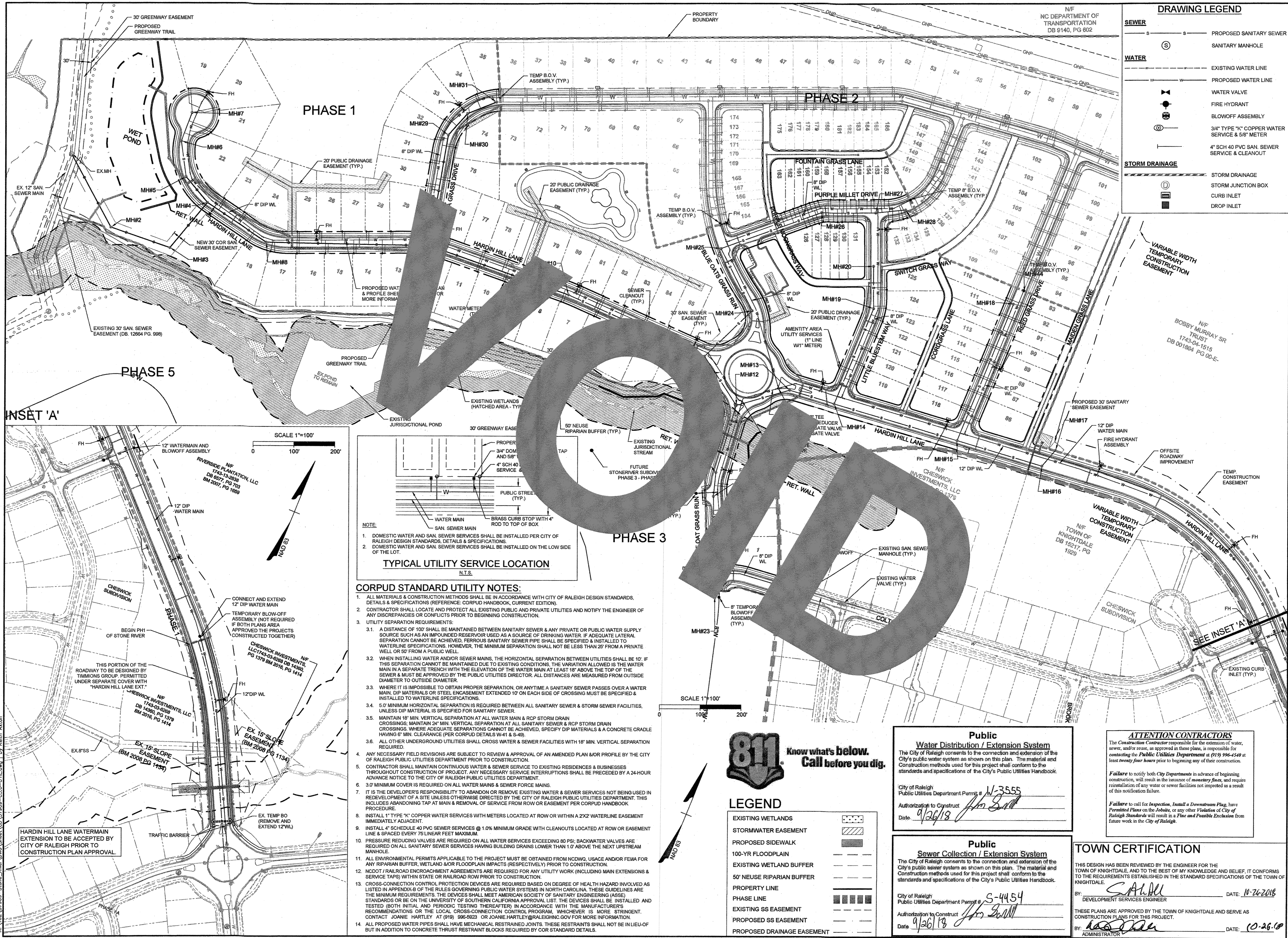
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

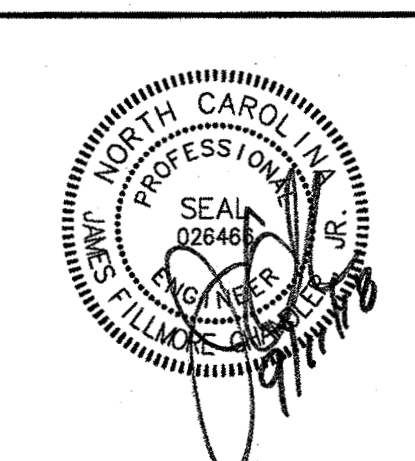
SUBDIVISION UTILITY PLAN

JOB NO.	37909
SHEET NO.	C5.0



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
	⊕	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE	— S — S —	STORM DRAINAGE
	⊕	STORM JUNCTION BOX
	⊕	CURB INLET
	⊕	DROP INLET



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 1101, Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
09/11/2018	

DESIGNED BY: JDS
 CHECKED BY: JDS
 SCALE: PER PLAN

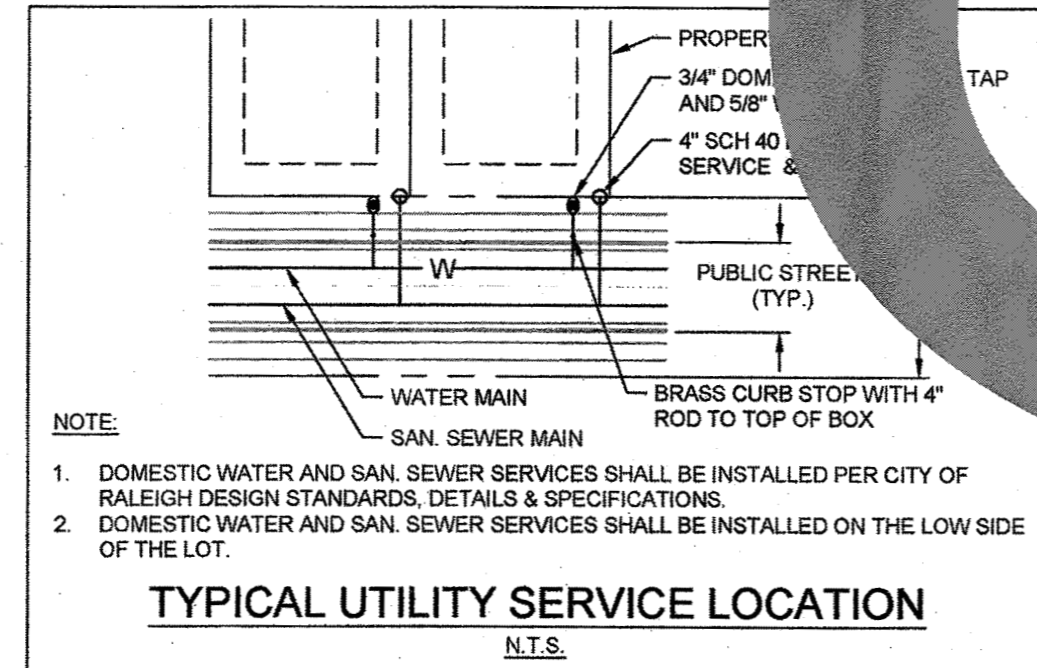
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

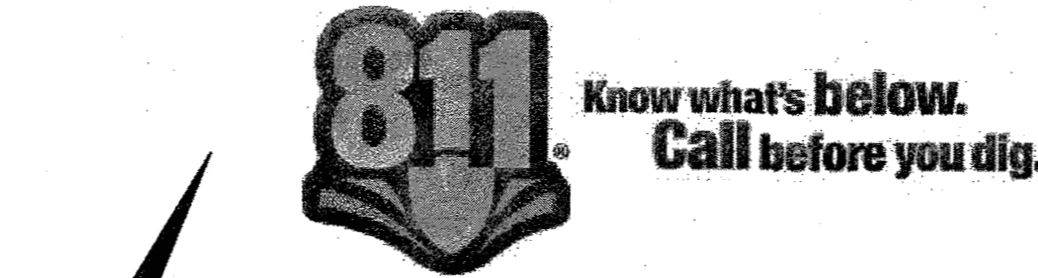
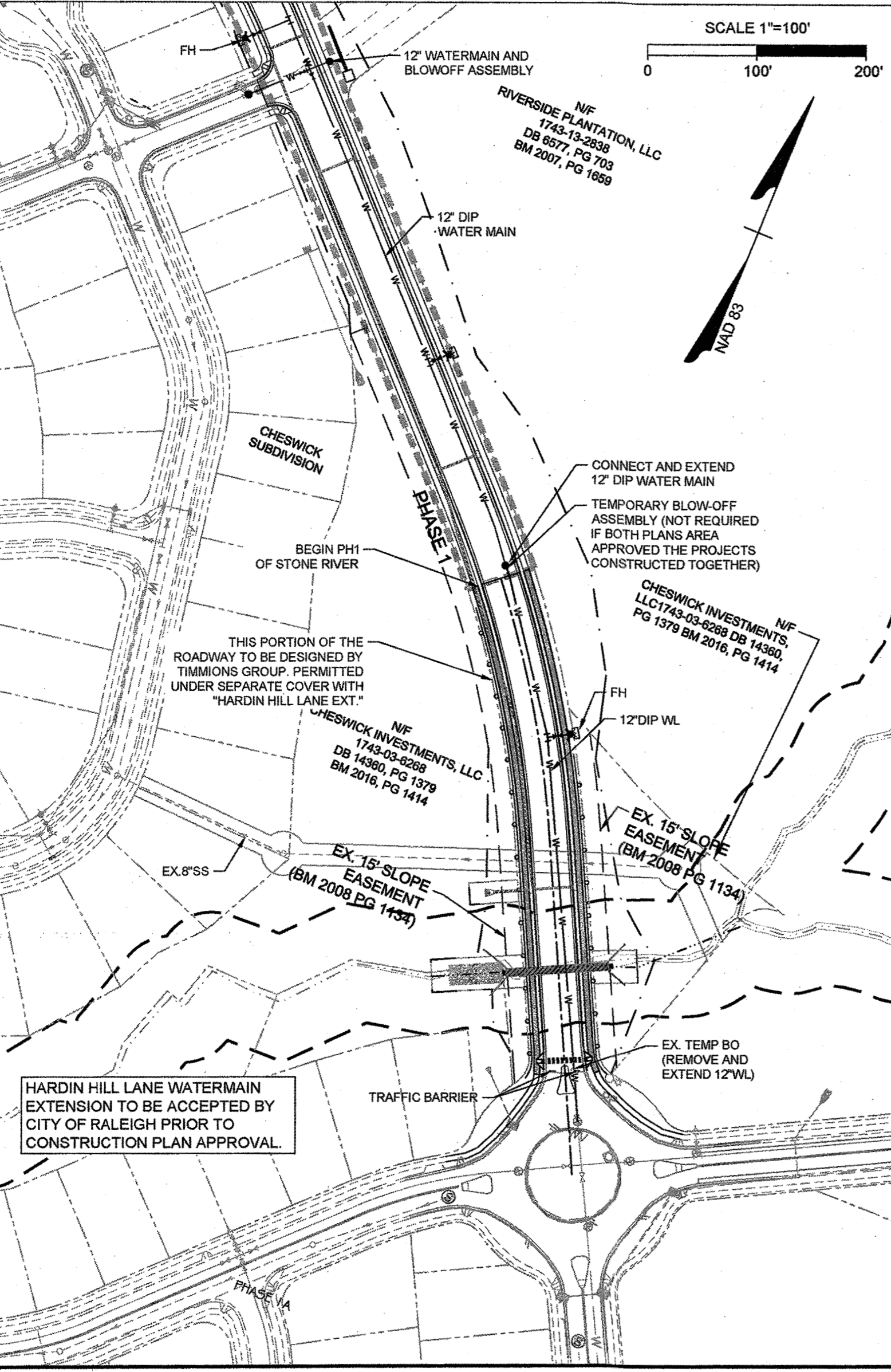
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

SUBDIVISION UTILITY PLAN

JOB NO. 37909
 SHEET NO. C5.0



- 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 100' 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 20' 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 CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-1 & 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 AND/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.
 - 30" 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' 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.
 - WOODY/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 JOANNE HARTLEY AT (919) 996-5212 OR JOANNE.HARTLEY@RALAIGH.GOV FOR MORE INFORMATION.
 - ALL PROPOSED WATER PIPES SHALL HAVE MECHANICAL RESTRAINT 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	⊕
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	⊕

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-3555**
 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-4454**
 Authorization to Construct *[Signature]*
 Date **9/26/18**

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) 996-4549 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 impacted 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

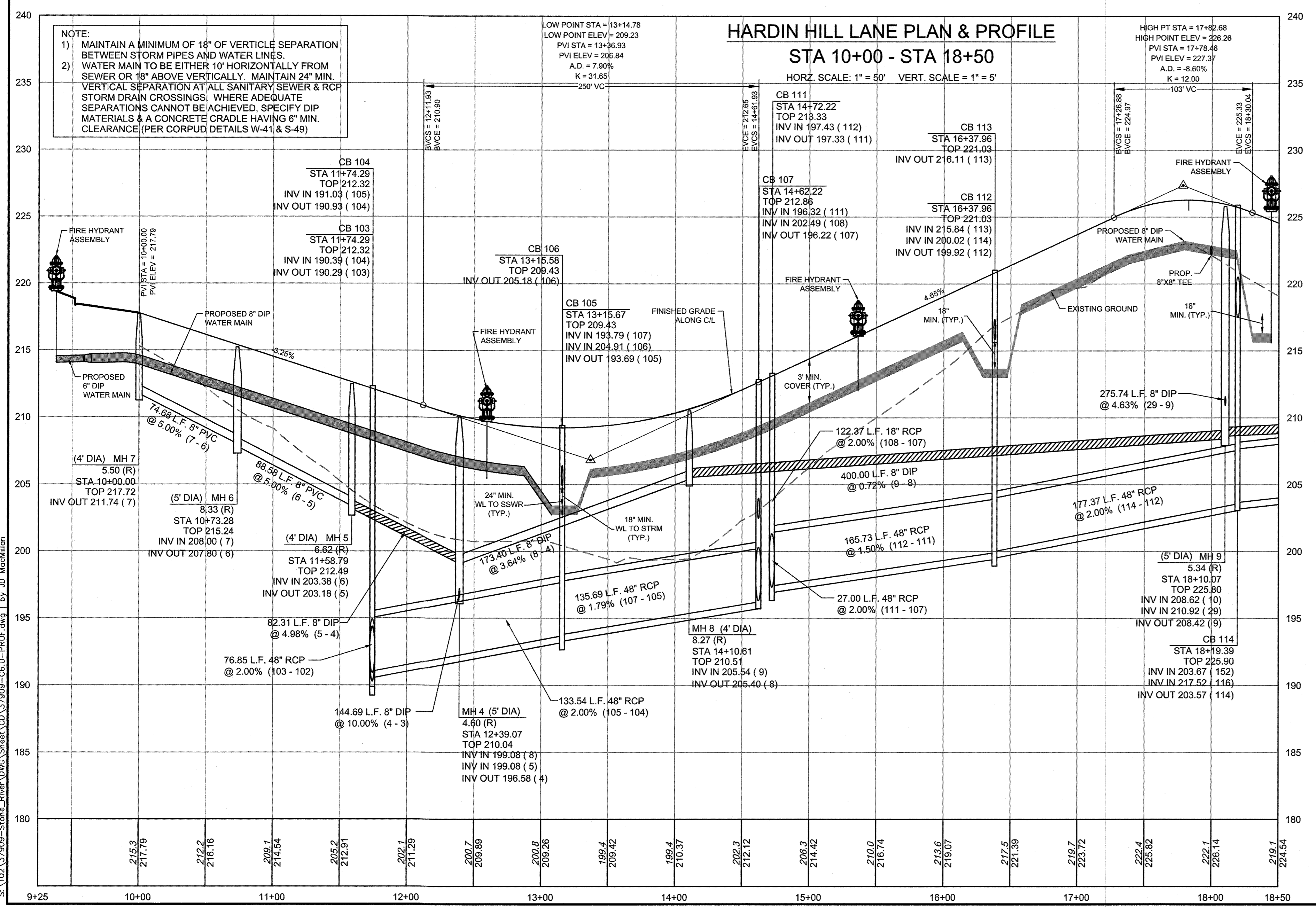
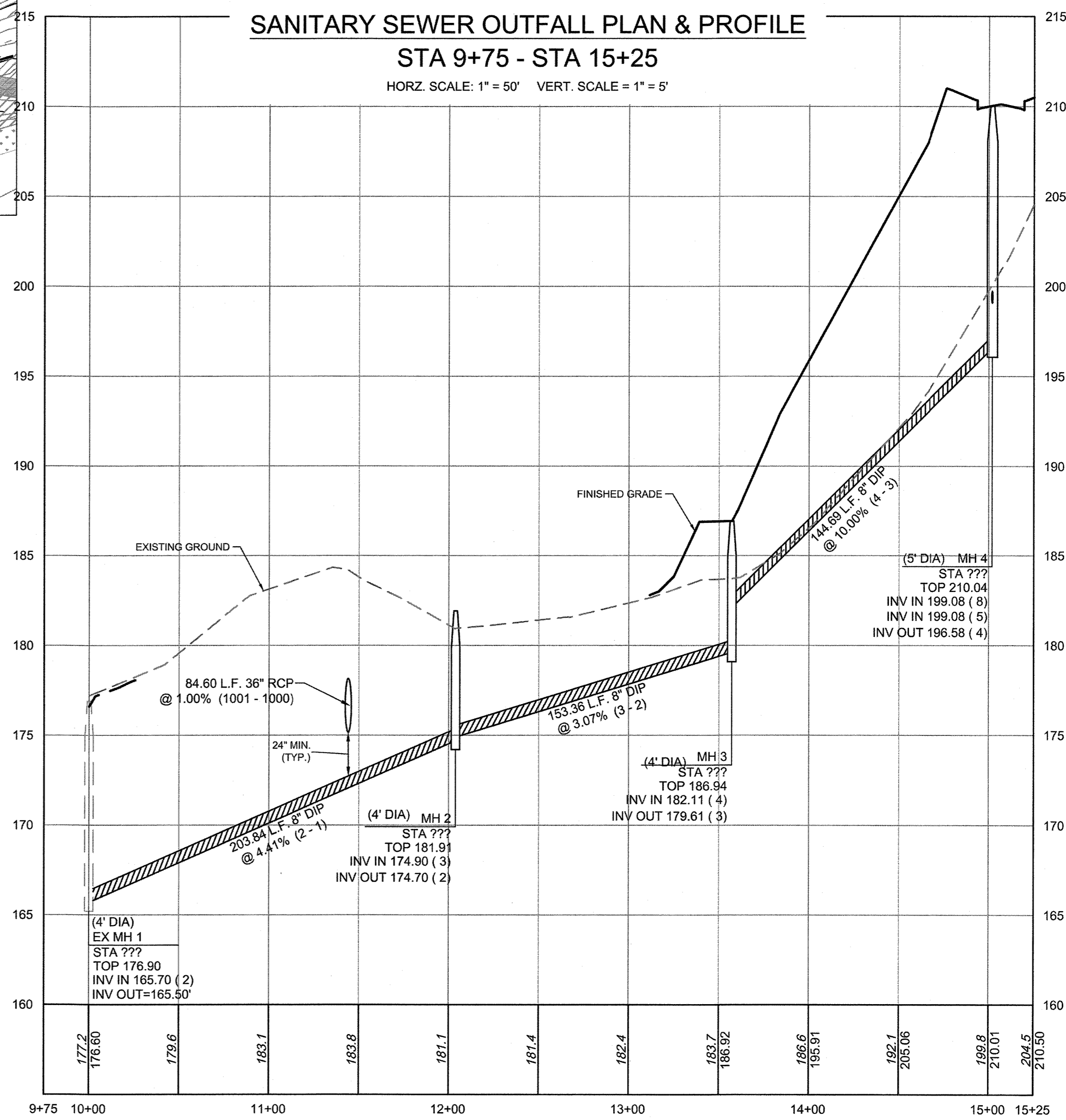
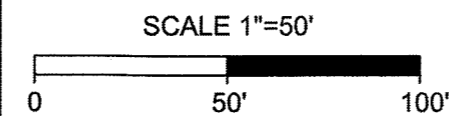
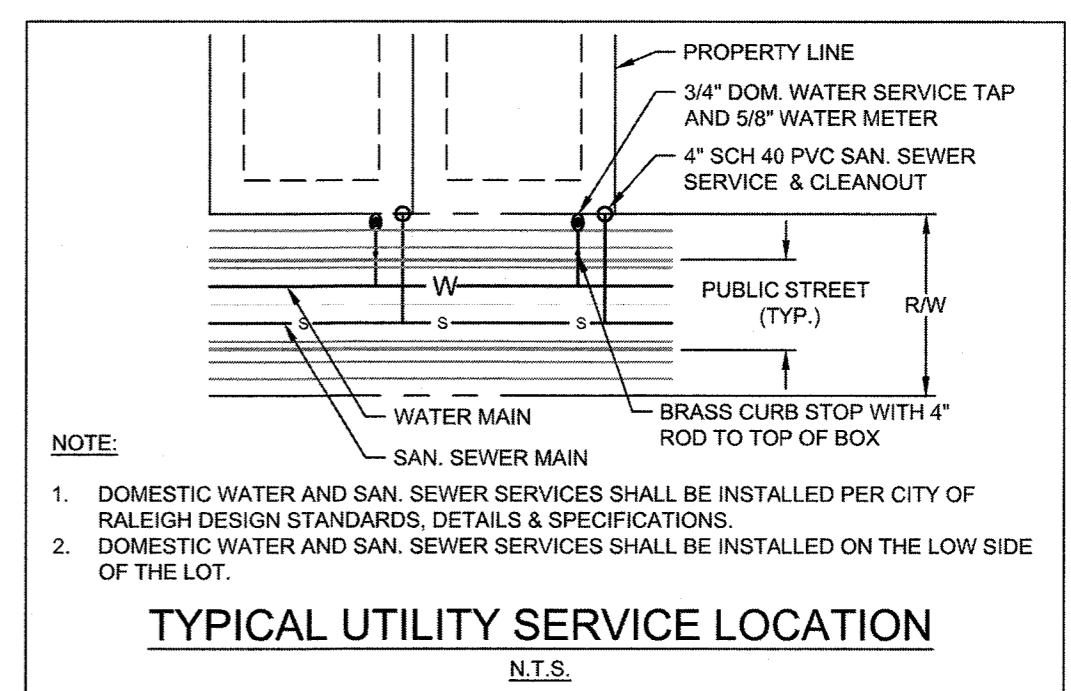
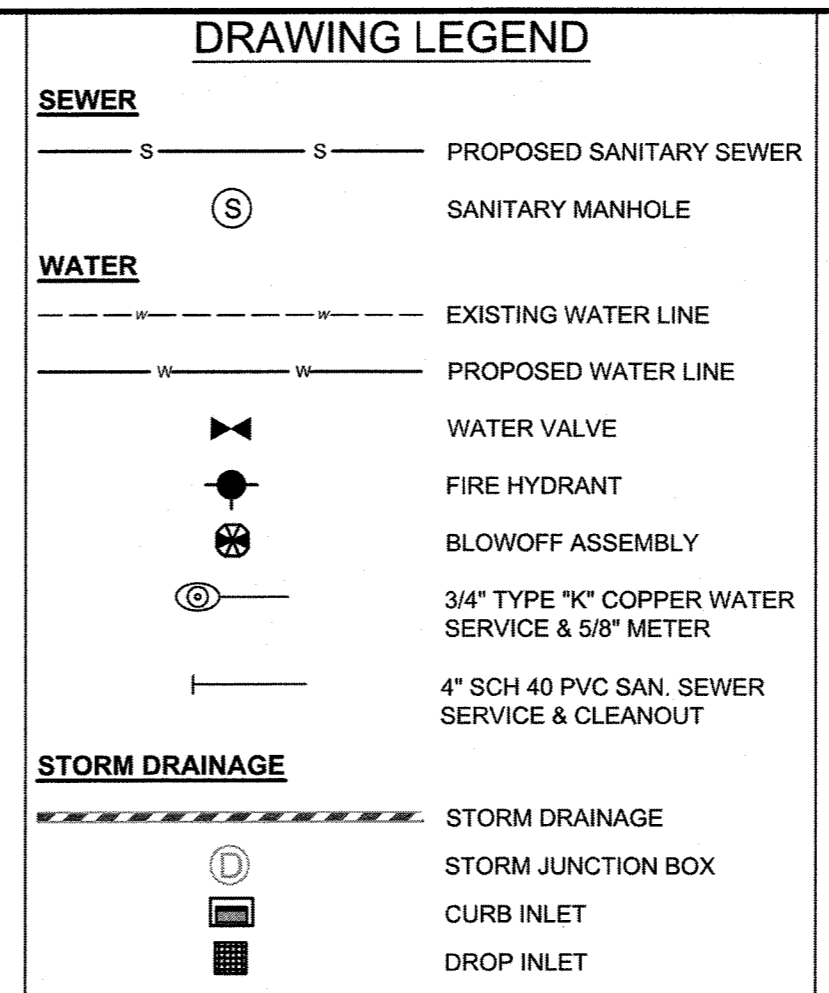
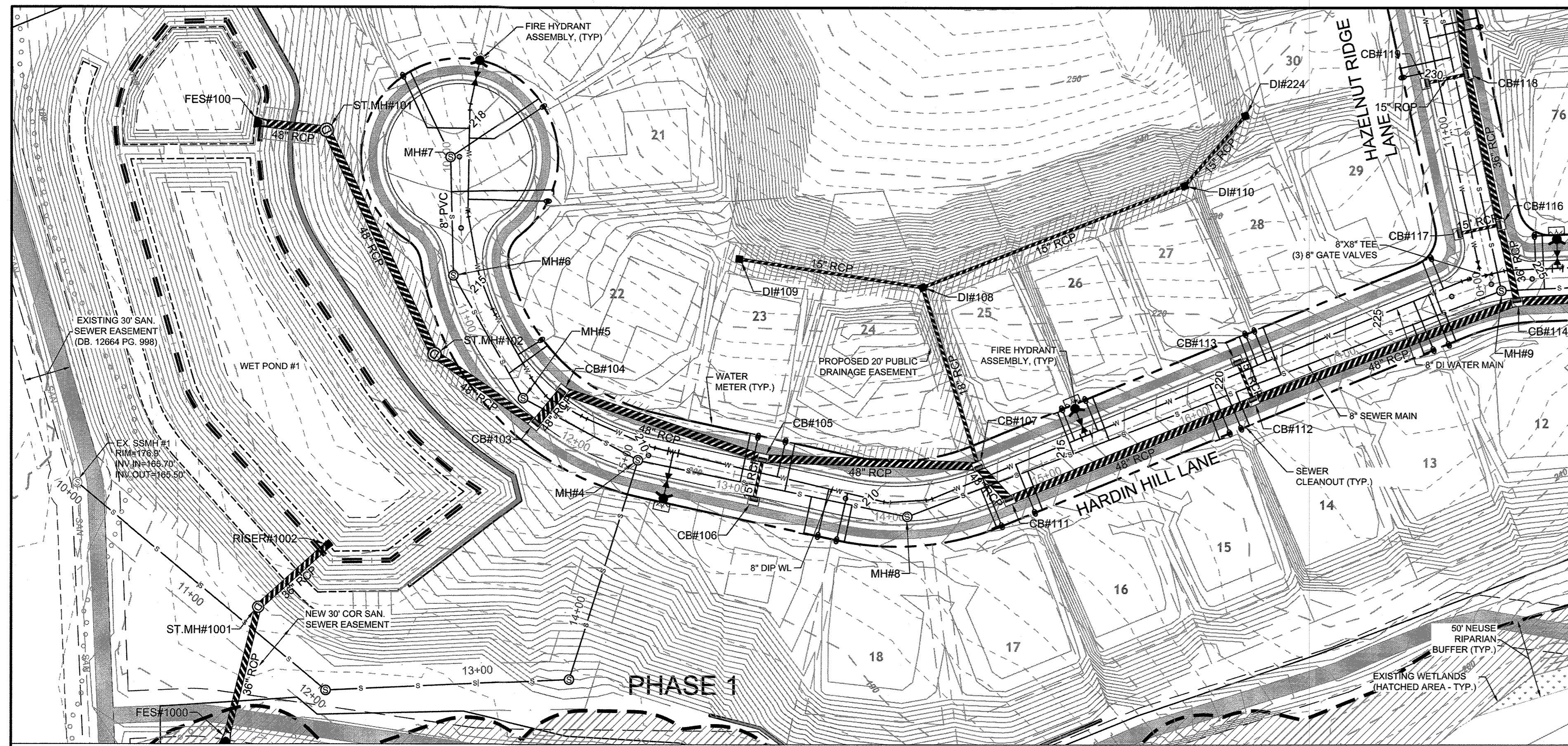
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

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

R:\02\17909-Stoneriver-Draws\DWG\Sheet\CO-17909-C5.0-UTIL.dwg | by Keith Axton



- NOTES:
- 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.
 - UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE

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 Timmy 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
09/04/2020	GRADING AND UTILITY REVISIONS

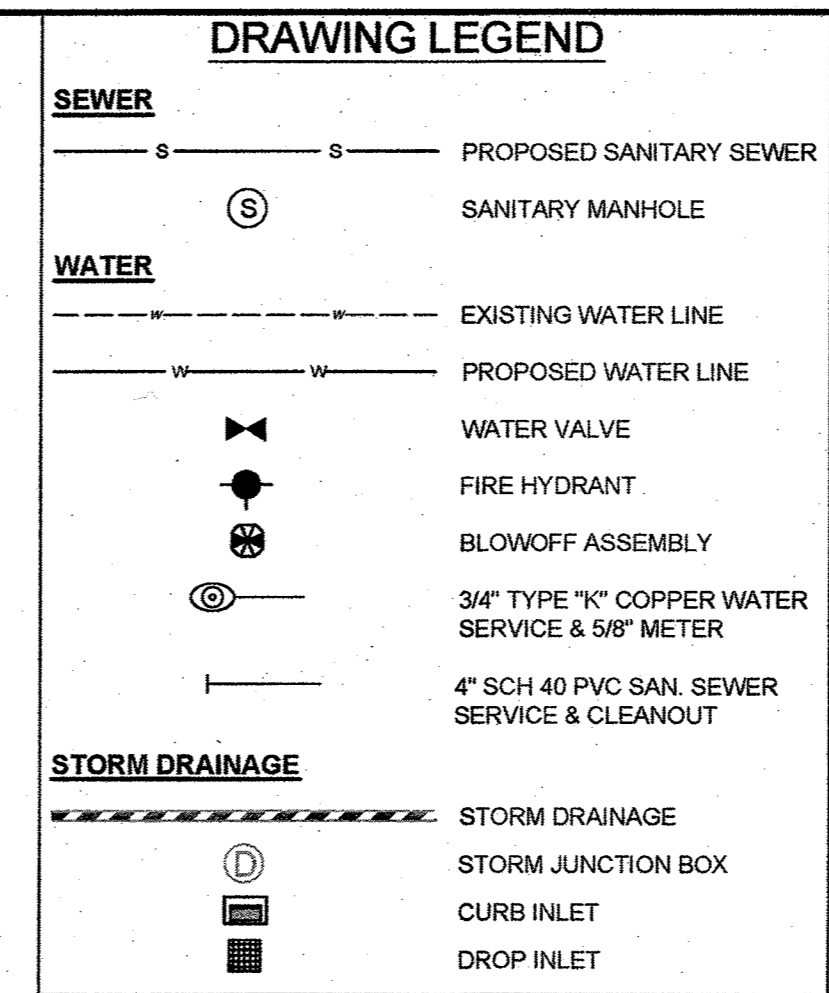
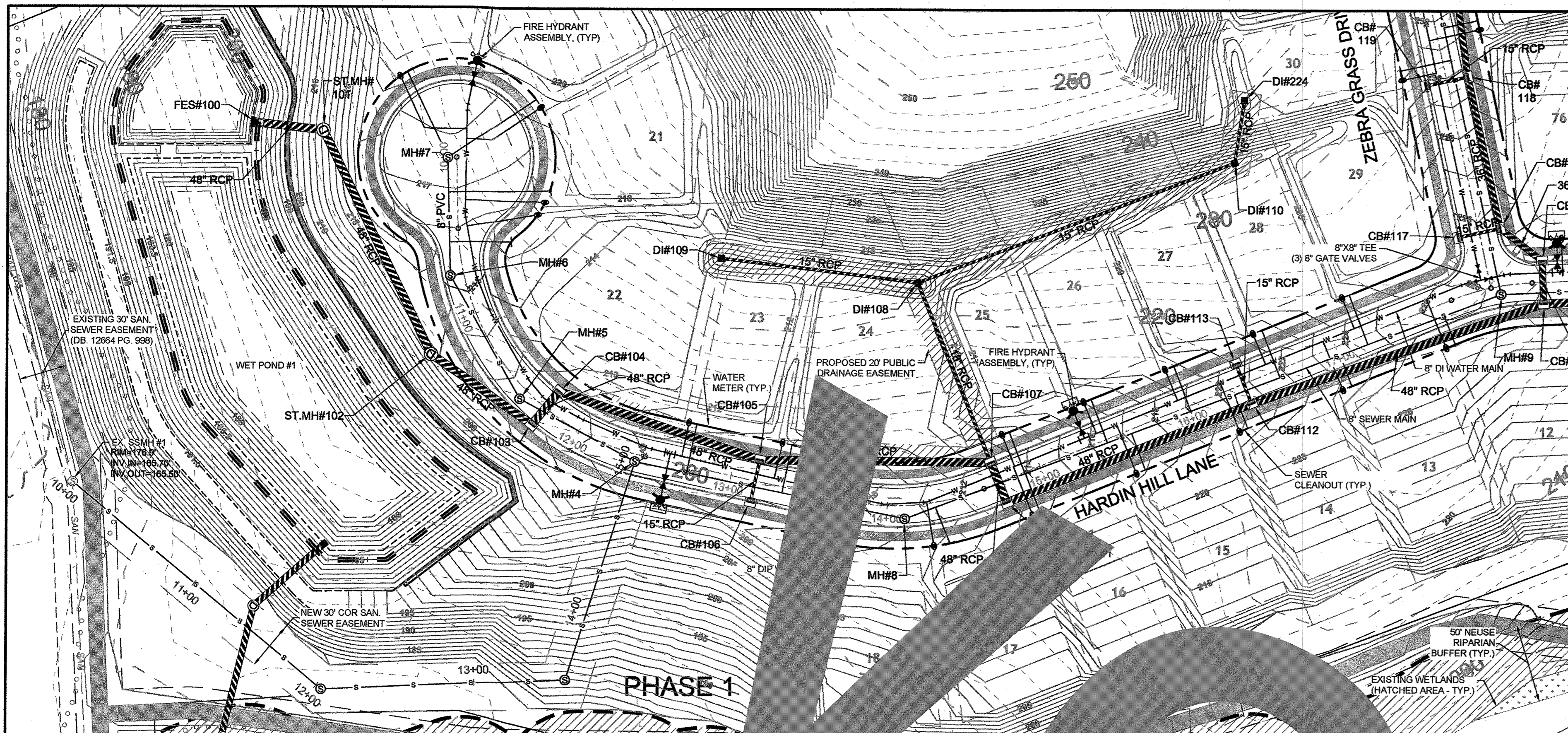
DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
 STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 HARDIN HILL LANE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C6.0

S:\102\37909-Store-River-DWC\Sheet\CD\37909-C6.0-PROF.dwg | by: J.D. MacMillan

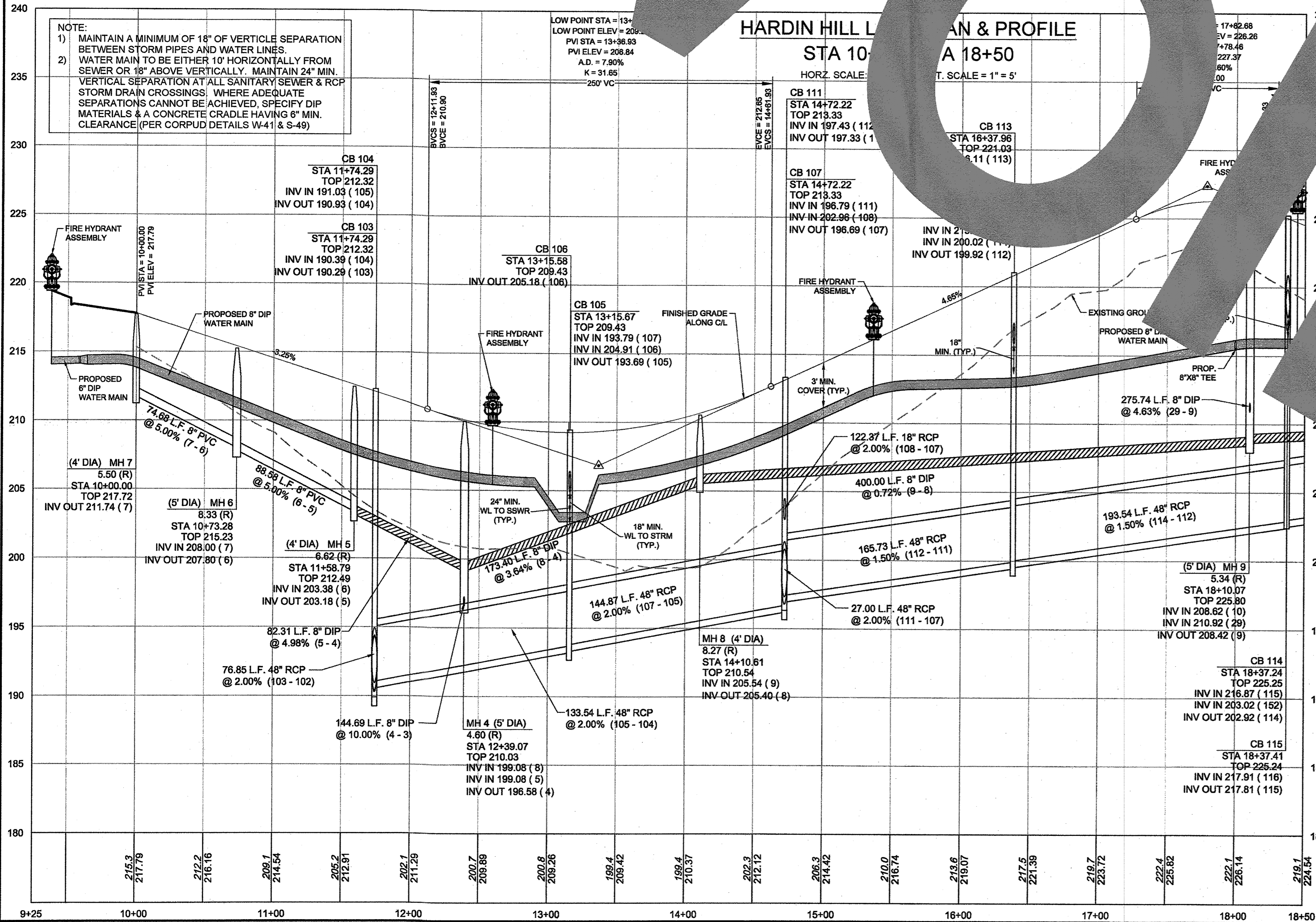
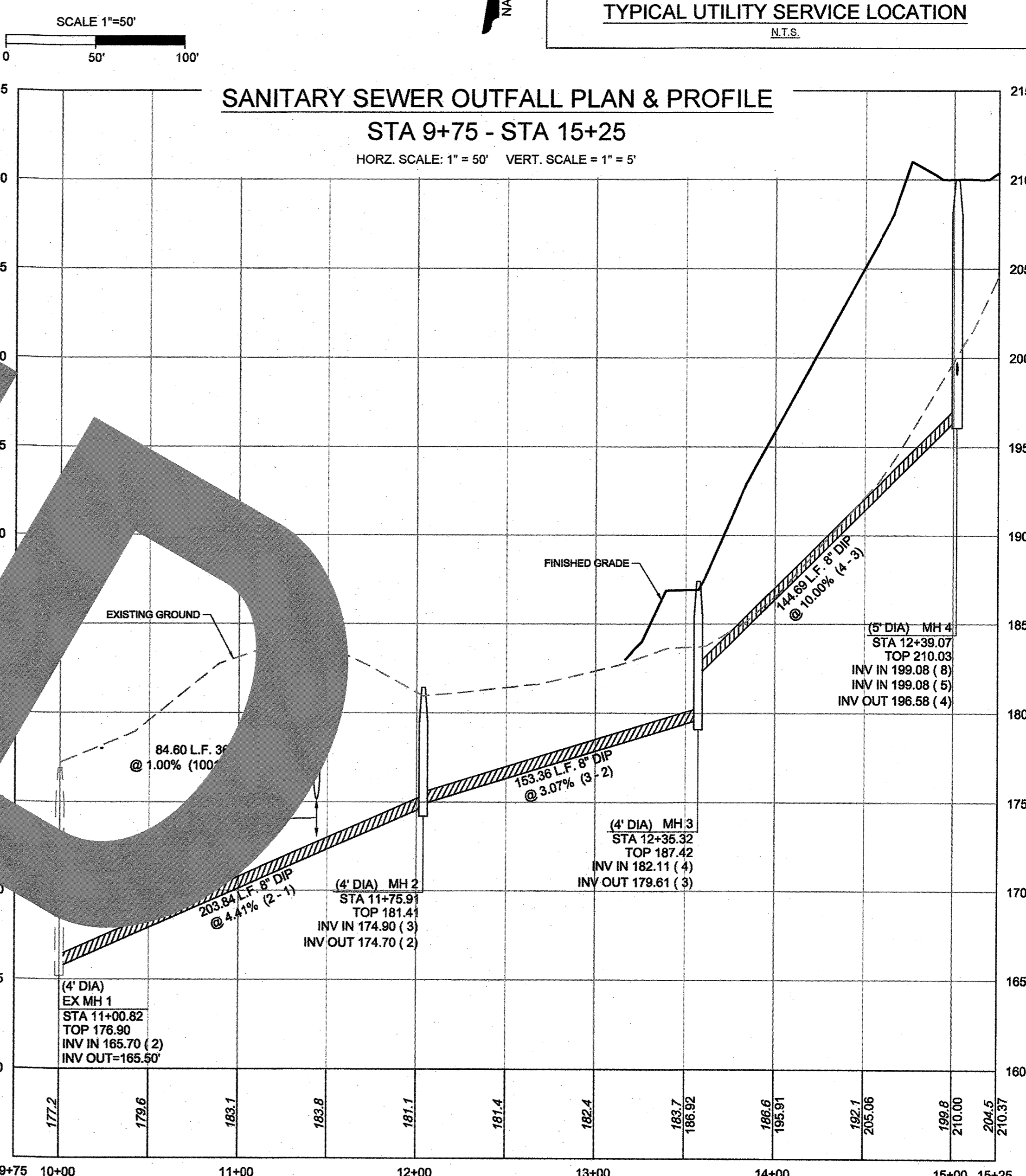
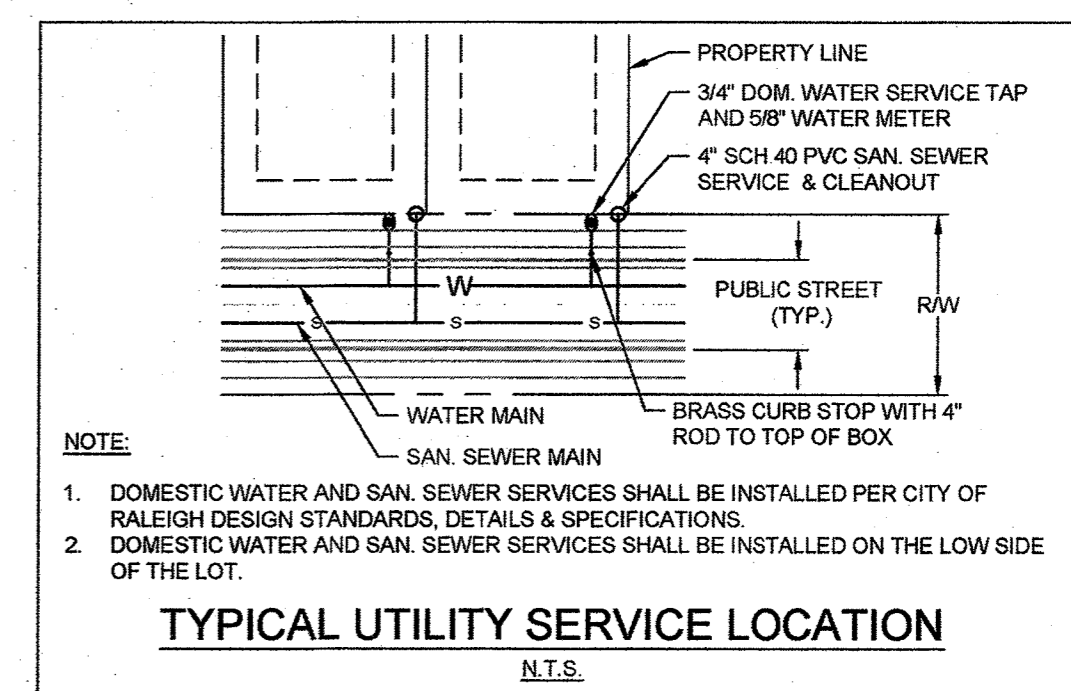


ATTENTION CONTRACTORS

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.

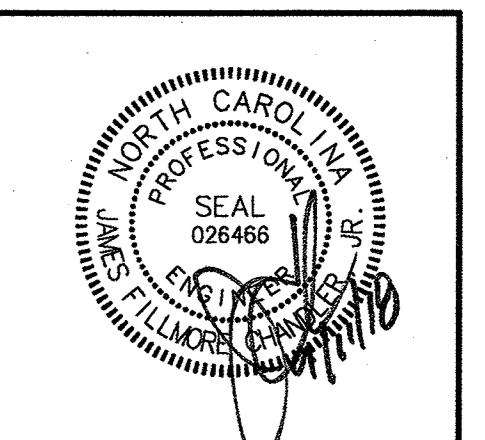
Failure to notify both City Departments in advance of beginning construction will result in the issuance of monetary fines, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

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.



NOTES:
 1. REFER TO UTILITY PLAN SHEET CS.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.
 3. UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE

<p>Public Sewer Collection / Extension System</p> <p>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.</p> <p>City of Raleigh Public Utilities Department Permit # <u>S-4154</u> Authorization to Construct <u>[Signature]</u> Date <u>9/27/19</u></p>	<p>Public Water Distribution / Extension System</p> <p>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.</p> <p>City of Raleigh Public Utilities Department Permit # <u>W-3886</u> Authorization to Construct <u>[Signature]</u> Date <u>9/26/19</u></p>	<p>TOWN CERTIFICATION</p> <p>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.</p> <p>BY: <u>[Signature]</u> DATE: <u>10-26-2018</u> DEVELOPMENT SERVICES ENGINEER</p> <p>THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.</p> <p>BY: <u>[Signature]</u> DATE: <u>10-26-18</u> ADMINISTRATOR</p>
---	---	---



THIS DRAWING PREPARED AT THE RALEIGH OFFICE
 5410 Timmon 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

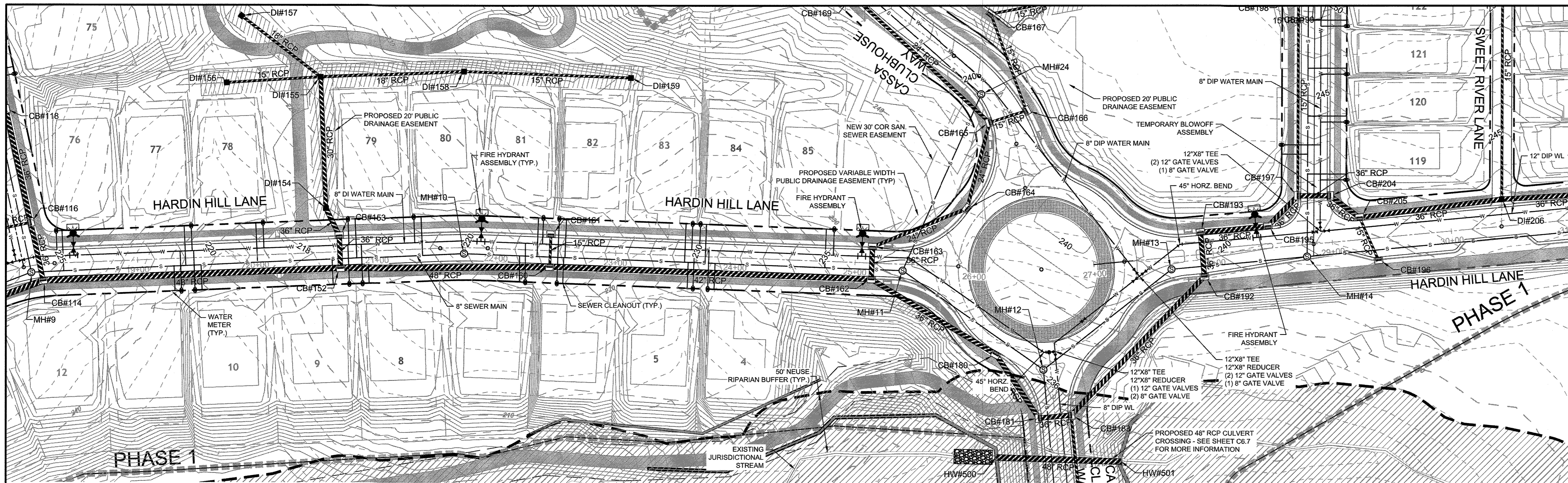
DATE	09/11/2018
DRAWN BY	331
DESIGNED BY	331
CHECKED BY	JFC
SCALE	PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
 STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 HARDIN HILL LANE PLAN & PROFILE

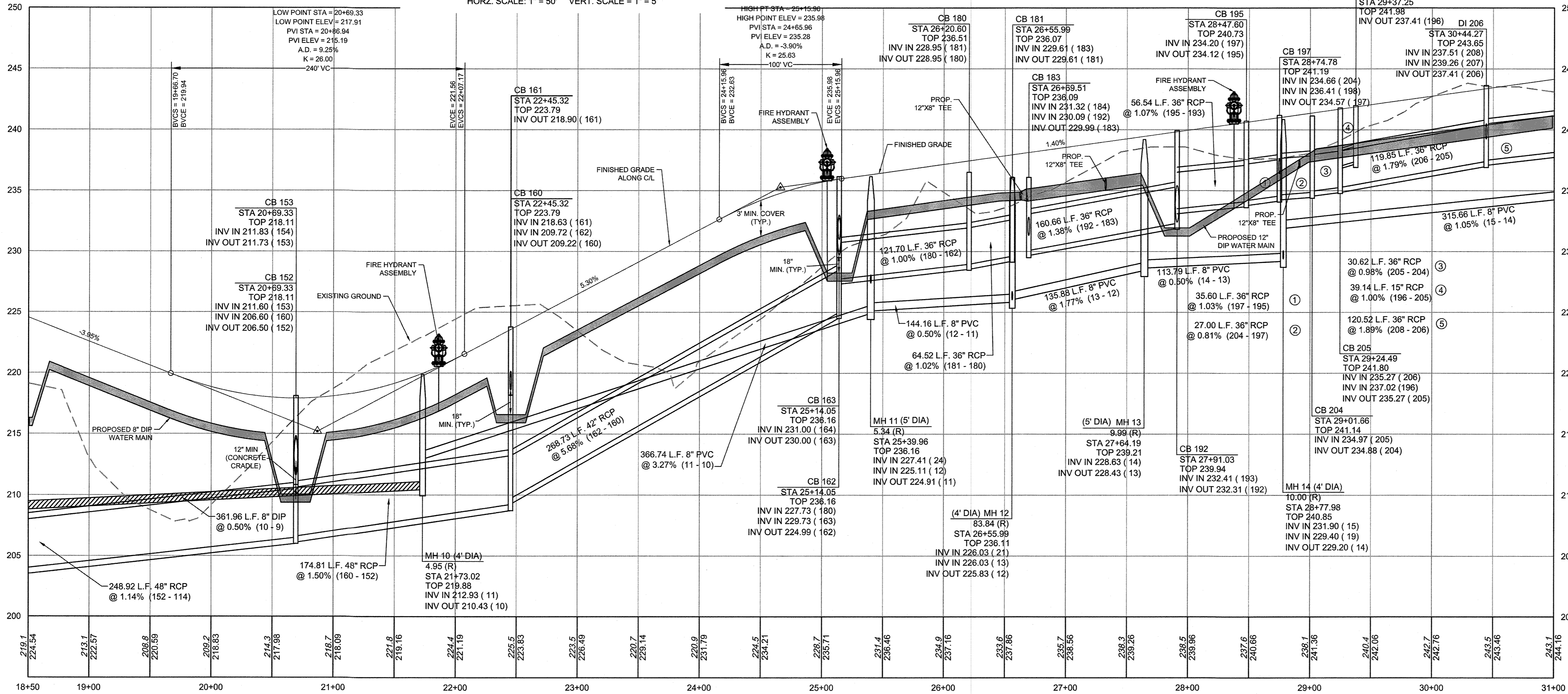
JOB NO. 37909
 SHEET NO. C6.0

R:\102A_37909-Stoneriver\DWG\Sheet\CD\37909-C6.0-PROF.dwg | by Keith Axton

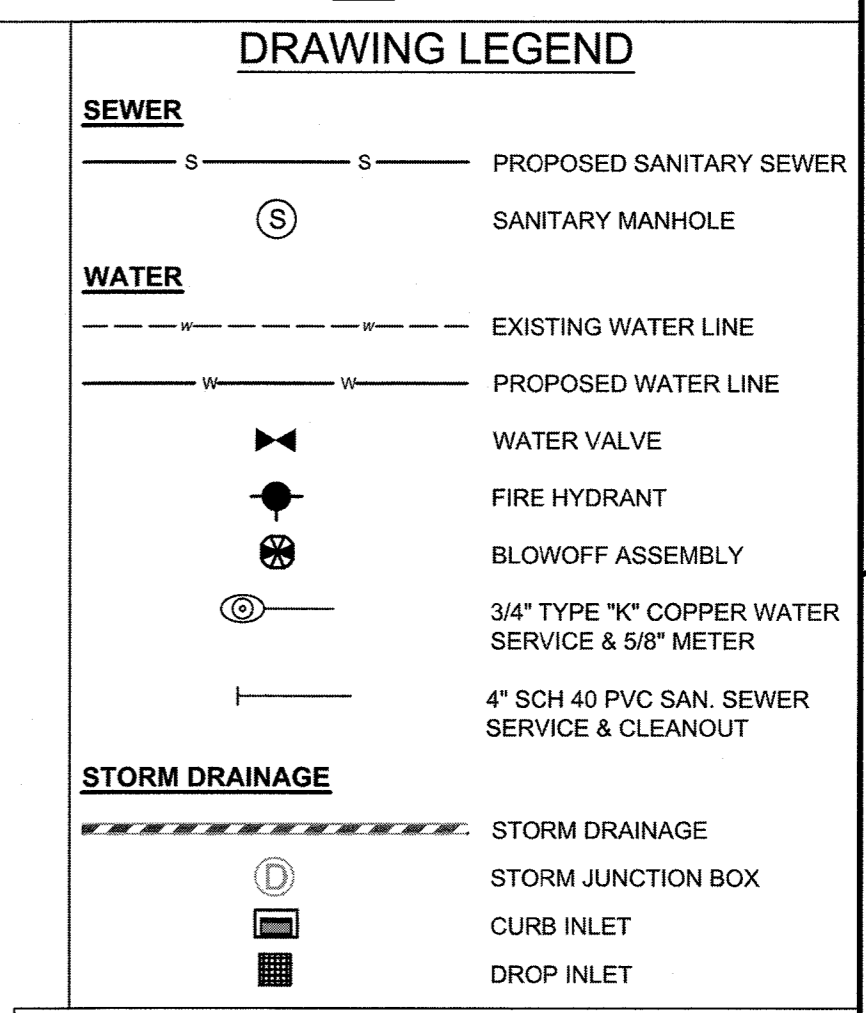


HARDIN HILL LANE PLAN & PROFILE
STA 18+50 - STA 31+00

HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



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.



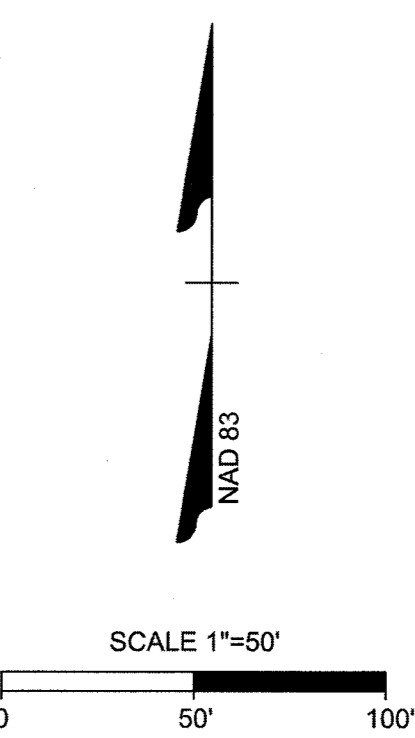
DRAWING LEGEND

SEWER
 - - - - - PROPOSED SANITARY SEWER
 (S) SANITARY MANHOLE

WATER
 - - - - - EXISTING WATER LINE
 - - - - - PROPOSED WATER LINE
 (V) WATER VALVE
 (FH) FIRE HYDRANT
 (BA) BLOWOFF ASSEMBLY
 (C) 3/4\"/>

STORM DRAINAGE
 - - - - - STORM DRAINAGE
 (D) STORM JUNCTION BOX
 (CI) CURB INLET
 (DI) DROP INLET

NOTE:
 1) MAINTAIN A MINIMUM OF 18\"/>



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 all projects 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 and extension of the City's Public Water System as shown on this plan. The material and construction methods used for all projects 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 all projects 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

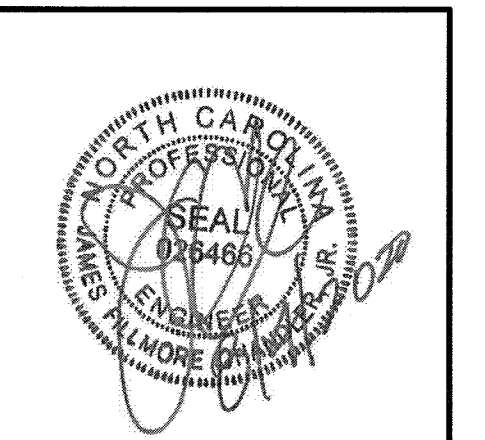
NOTES:
 1. REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.
 3. UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE.

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 919.866.4951 FAX 919.833.8124 www.timmons.com

DATE	REVISION DESCRIPTION
08/04/2020	GRADING AND UTILITY REVIEWS
09/11/2018	

YOUR VISION ACHIEVED THROUGH OURS.

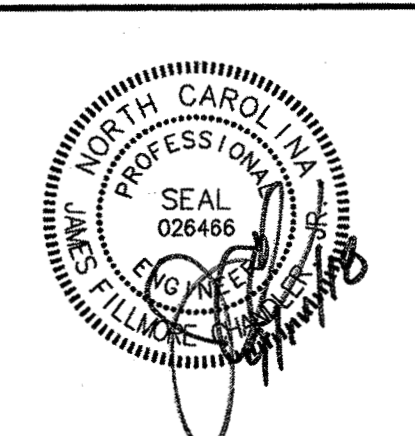
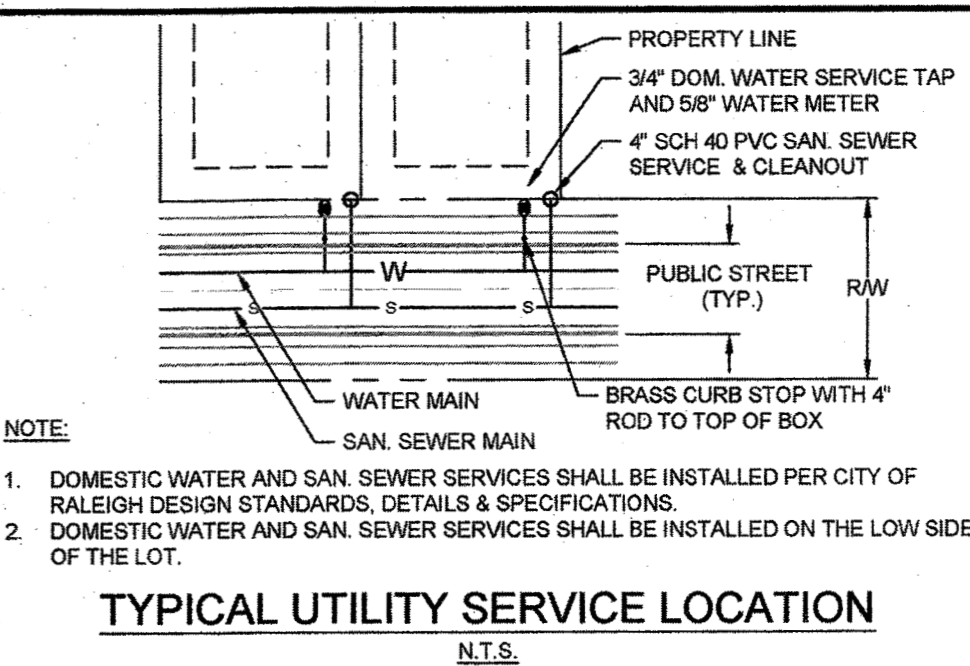
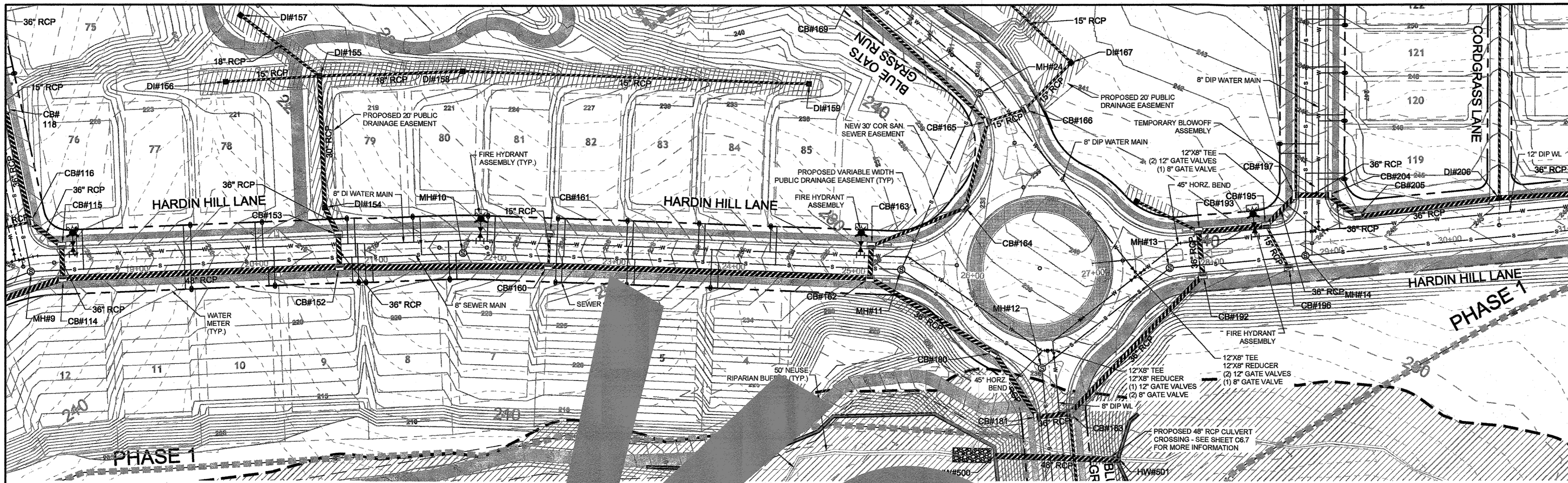
DATE	DRAWN BY	DESIGNED BY	CHECKED BY	SCALE
	331	331	JFC	PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-152
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
HARDIN HILL LANE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C6.1

S:\102\37909-Stone_River\DWG\Sheet\CD_37909-C6.0-PROF.dwg | by: JD_MacMillan



DRAWING LEGEND

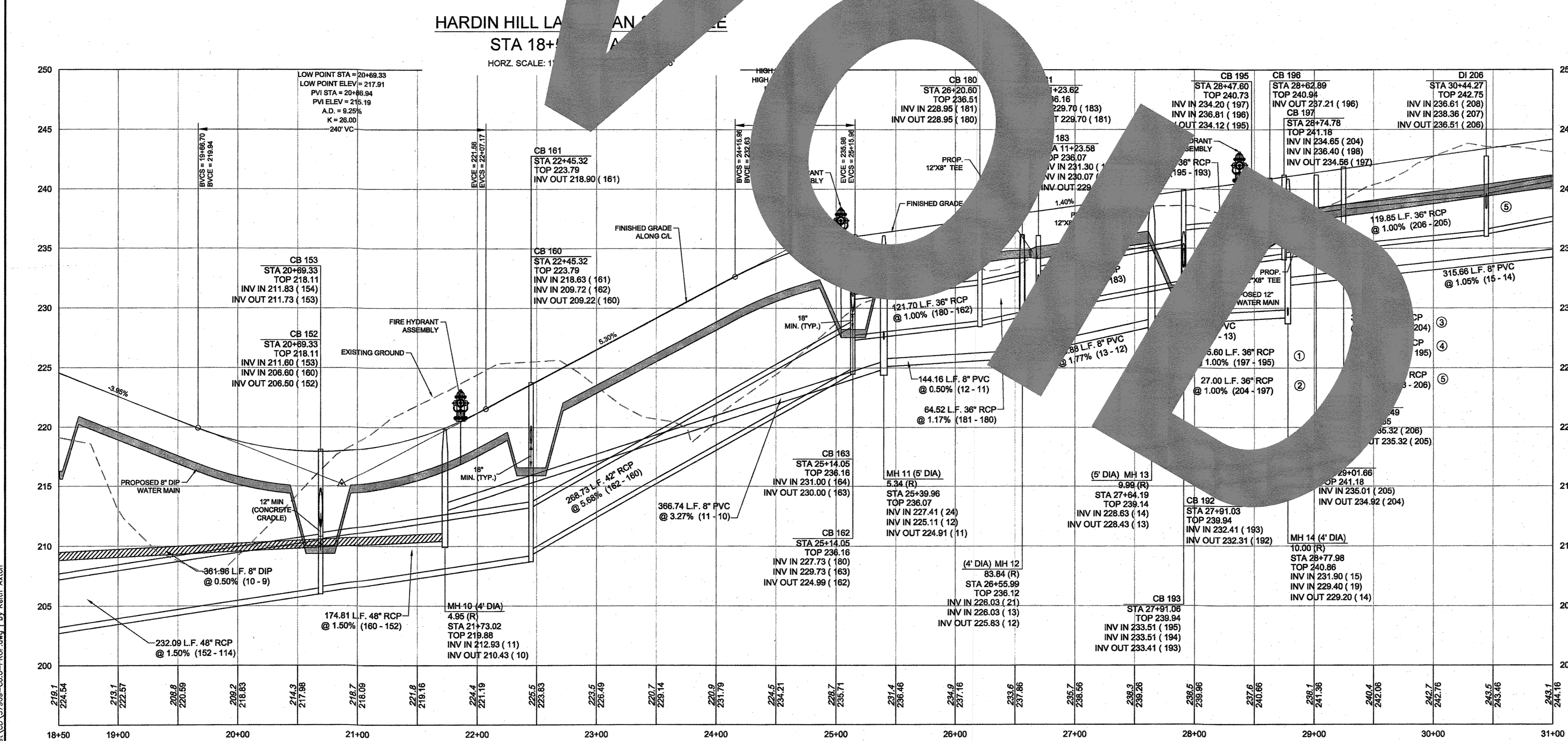
SEWER	— s — s —	PROPOSED SANITARY SEWER
	⊙	SANITARY MANHOLE
WATER	— w — w —	EXISTING WATER LINE
	— w — w —	PROPOSED WATER LINE
	⊕	WATER VALVE
	⊕	FIRE HYDRANT
	⊕	BLOWOFF ASSEMBLY
	⊕	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
	— s — s —	4" SCH 40 PVC SAN SEWER SERVICE & CLEANOUT
STORM DRAINAGE	— s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

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	DESCRIPTION
09/11/2018 <td>DRAWN BY 331</td>	DRAWN BY 331
	DESIGNED BY 331
	CHECKED BY JFC
	SCALE PER PLAN



NOTE:

- 1) MAINTAIN A MINIMUM OF 18" OF VERTICALE 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 W41 & S-49)

ATTENTION CONTRACTORS

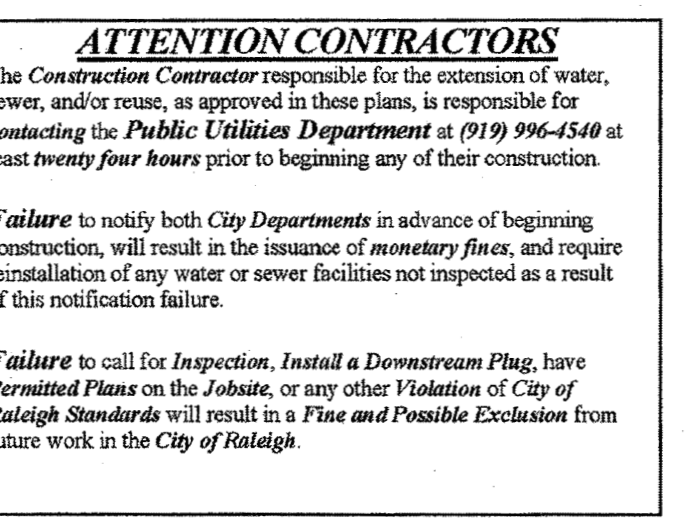
The Construction Contractor responsible for the installation of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.

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.

NOTES:

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.
3. UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE



Public Sewer Collection / Extension System

The 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 # 34454
 Authorized to Construct [Signature]
 Date 9/26/18

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-3656
 Authorized to Construct [Signature]
 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

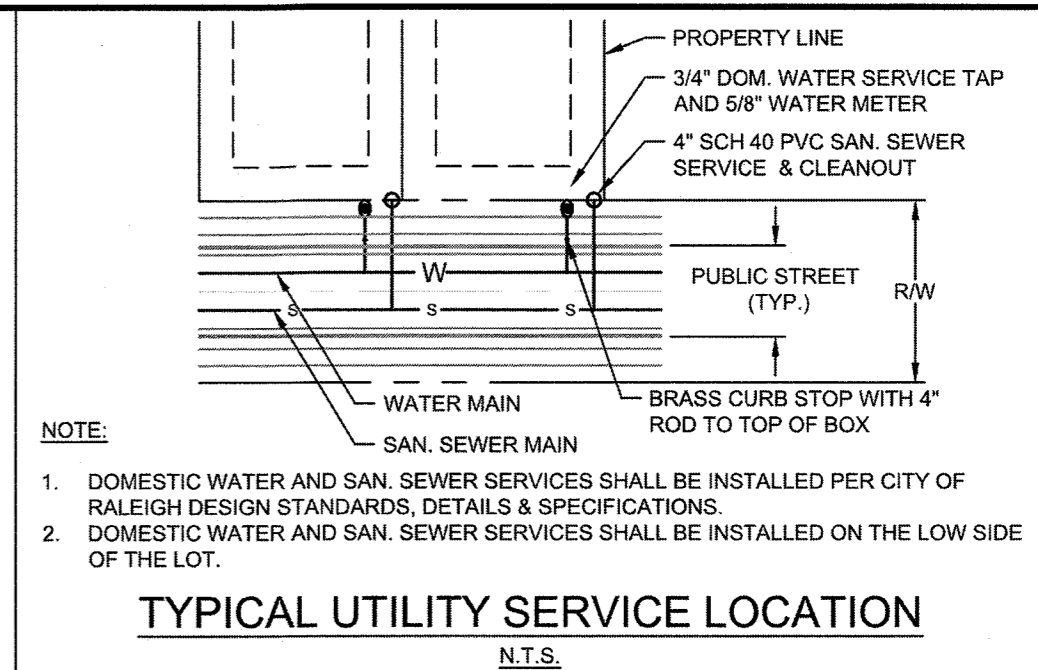
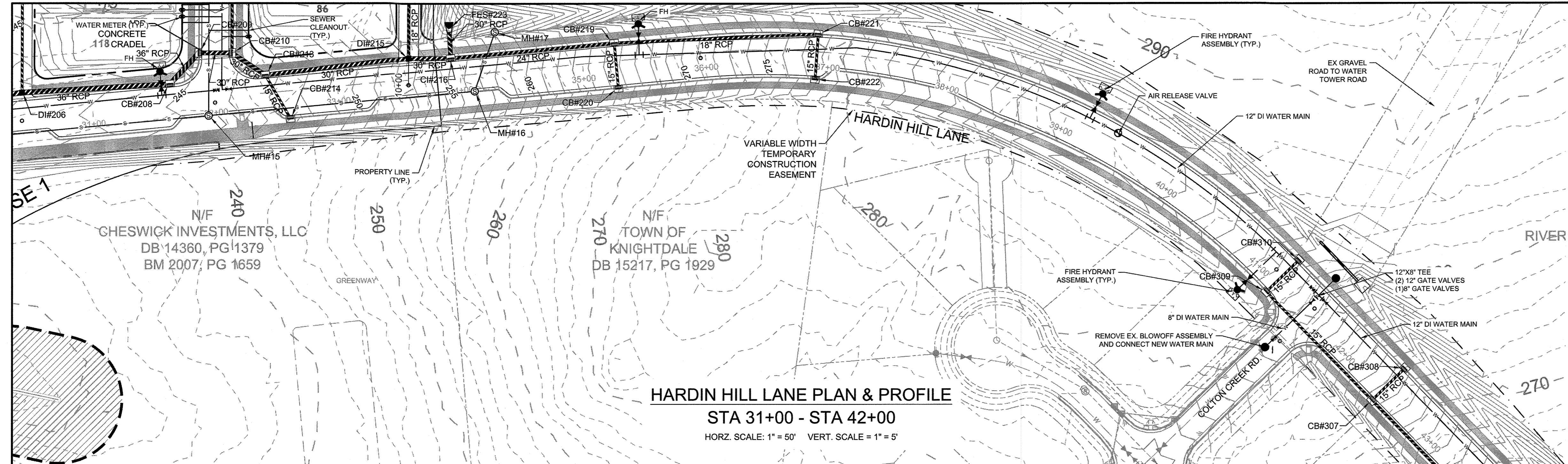
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 HARDIN HILL LANE PLAN & PROFILE

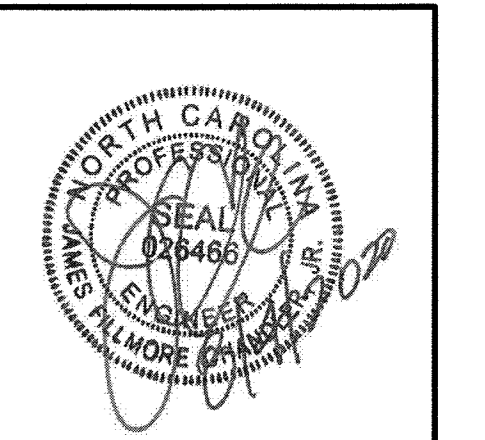
JOB NO. 37909
 SHEET NO. C6.1

R:\02\37909-Stoneriver\DWG\Sheet\C6.0-PROF.dwg | By Keith Axton



DRAWING LEGEND

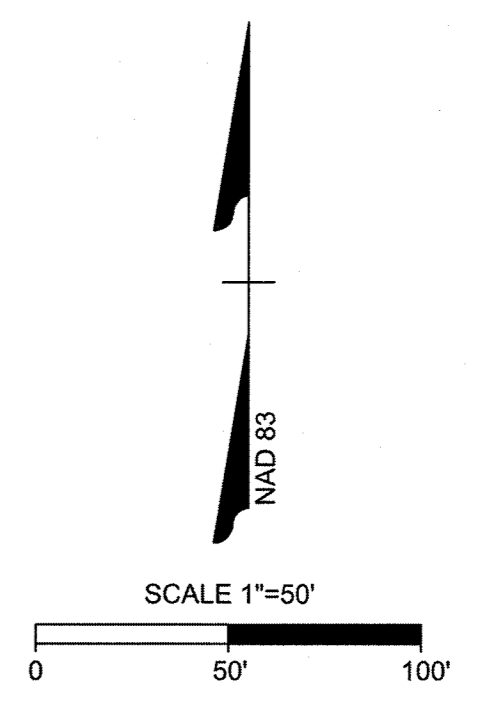
SEWER	
— S — S —	PROPOSED SANITARY SEWER
⊙	SANITARY MANHOLE
WATER	
— W — W —	EXISTING WATER LINE
- - - W - - -	PROPOSED WATER LINE
⊕	WATER VALVE
⊕	FIRE HYDRANT
⊕	BLOWOFF ASSEMBLY
⊕	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
⊕	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE	
— S — S —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



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



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 constructions 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, signed by Lorea M Sample
 09/11/2018, 10:54:22-04:07
 09/11/2018, 10:54:22-04:07
 09/11/2018, 10:54:22-04:07
 09/11/2018, 10:54:22-04:07

- 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)

NOTES:

1. REFER TO UTILITY PLAN SHEET C5.9 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
2. REFER TO SHEET C.3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.
3. UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE

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

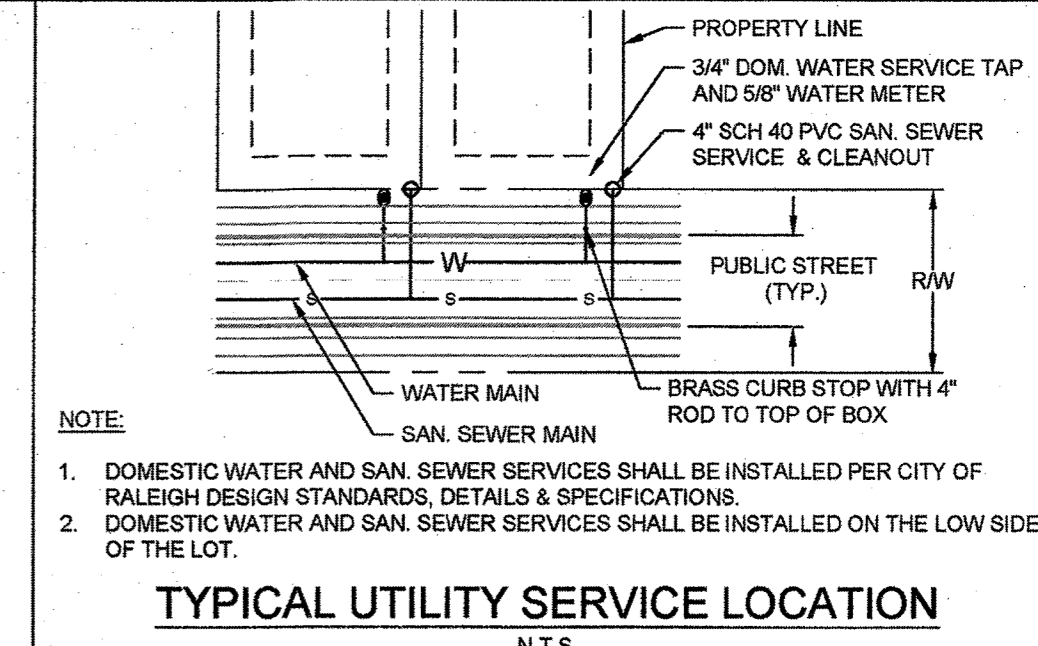
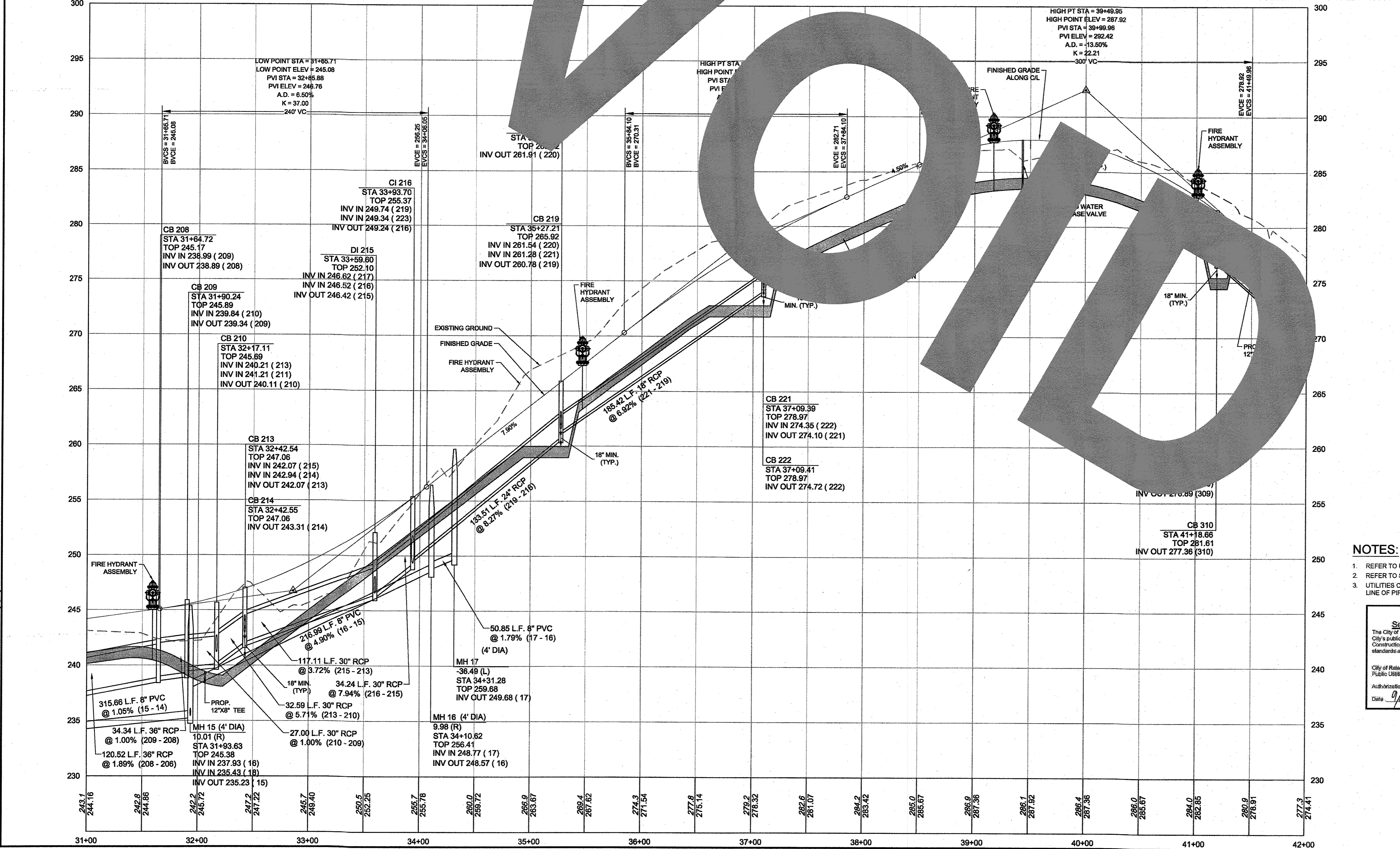
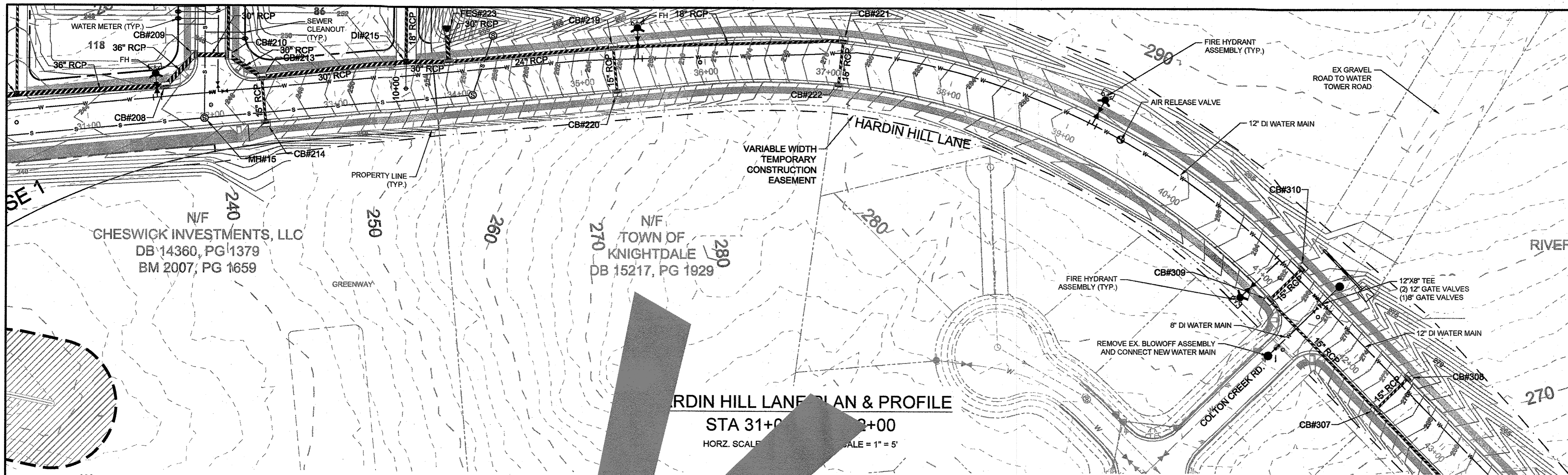
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

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

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
 STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 HARDIN HILL LANE PLAN & PROFILE

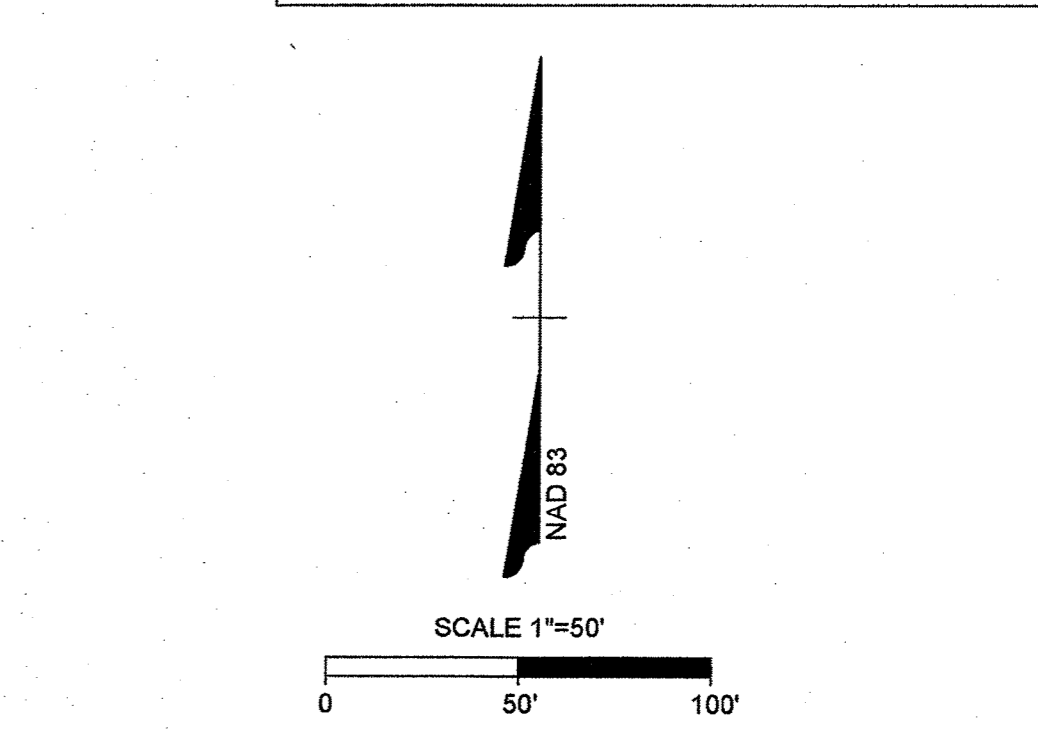
JOB NO.	37909
SHEET NO.	C6.2

S:\102\37909-Stone-River\DWG\Sheet\CD\37909-C6.2-PROP.dwg | by: JD_MacMillan



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



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) 996-6500 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 impacted 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.

- 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)

- NOTES:**
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.
 3. UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE

<p>Public Sewer Collection / Extension System</p> <p>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.</p> <p>City of Raleigh Public Utilities Department Permit Authorized to Construct Date: 9/26/18</p>	<p>Public Water Distribution / Extension System</p> <p>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.</p> <p>City of Raleigh Public Utilities Department Permit Authorized to Construct Date: 9/26/18</p>
--	--

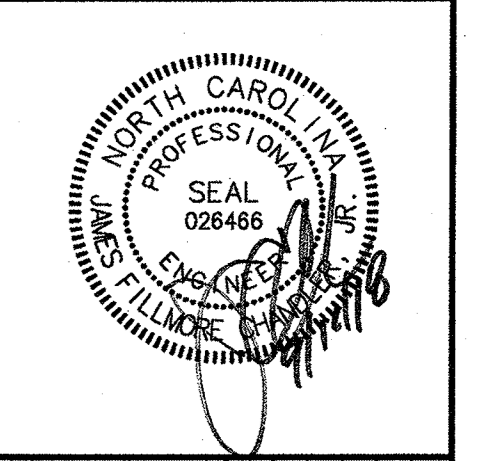
TOWN CERTIFICATION

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



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Rd., Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.6124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION

DATE	DESCRIPTION
09/11/2018 <td></td>	

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

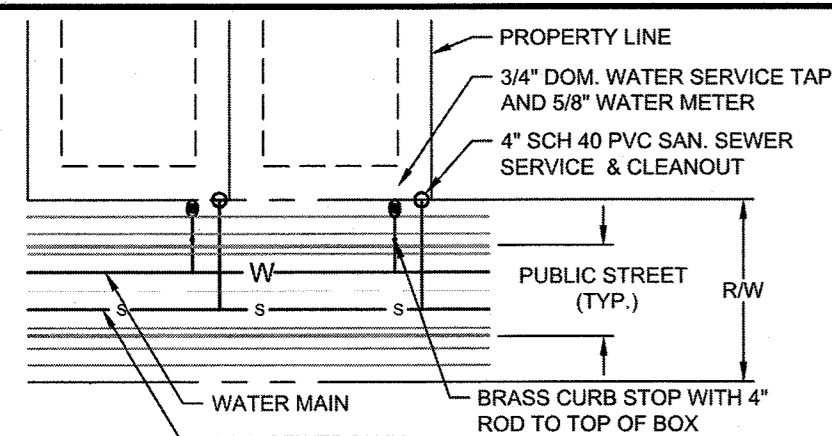
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

STONERIVER SUBDIVISION PHASE 1
HARDIN HILL LANE PLAN & PROFILE

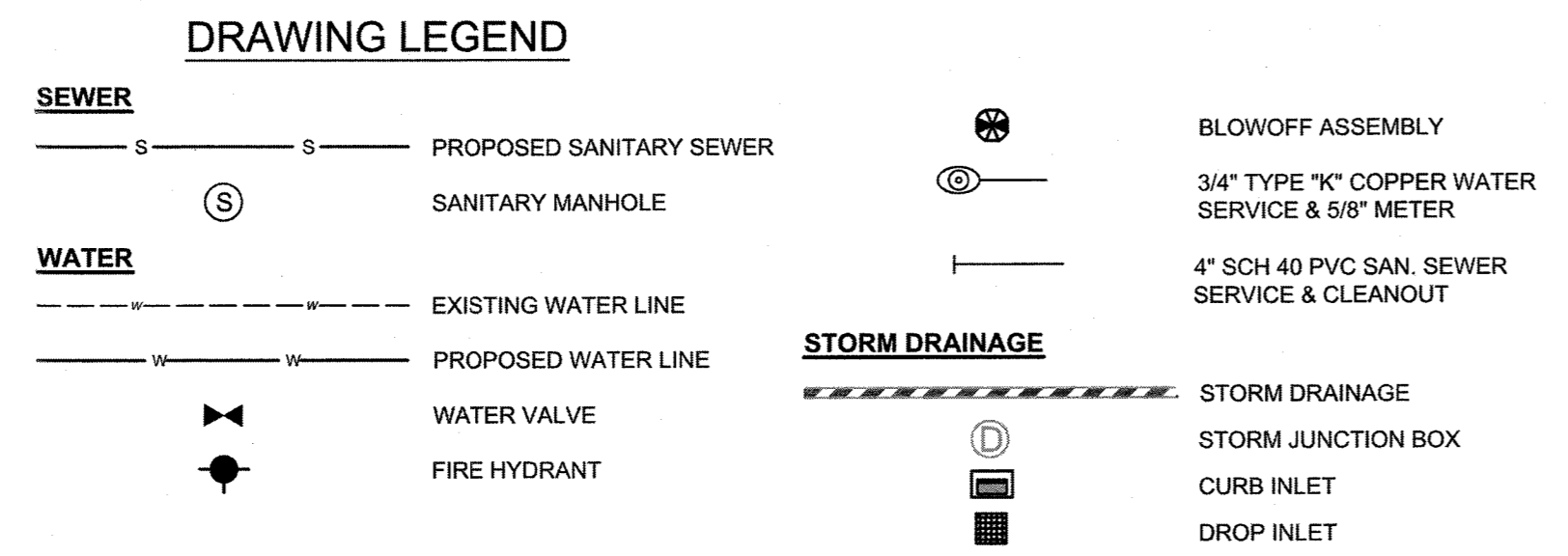
JOB NO. 37909
SHEET NO. C6.2

R:\02\37909-Stoner-River\DWG\Sheet\CD\37909-C6-C-PROF.dwg By: Keith Axton



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

TYPICAL UTILITY SERVICE LOCATION
N.T.S.



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 # _____

HAZELNUT RIDGE LANE PLAN & PROFILE

STA 9+50 - STA 17+50
HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'

Approved by Lorea M Sample
City Engineer, Raleigh, NC
Date: 08/13/2020

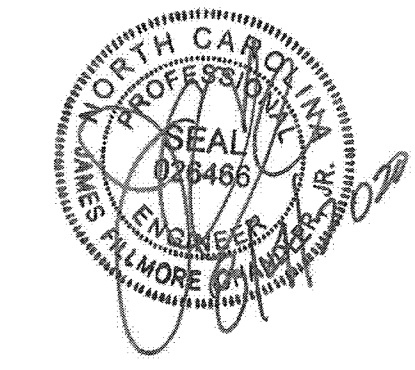
TOWN CERTIFICATION

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.

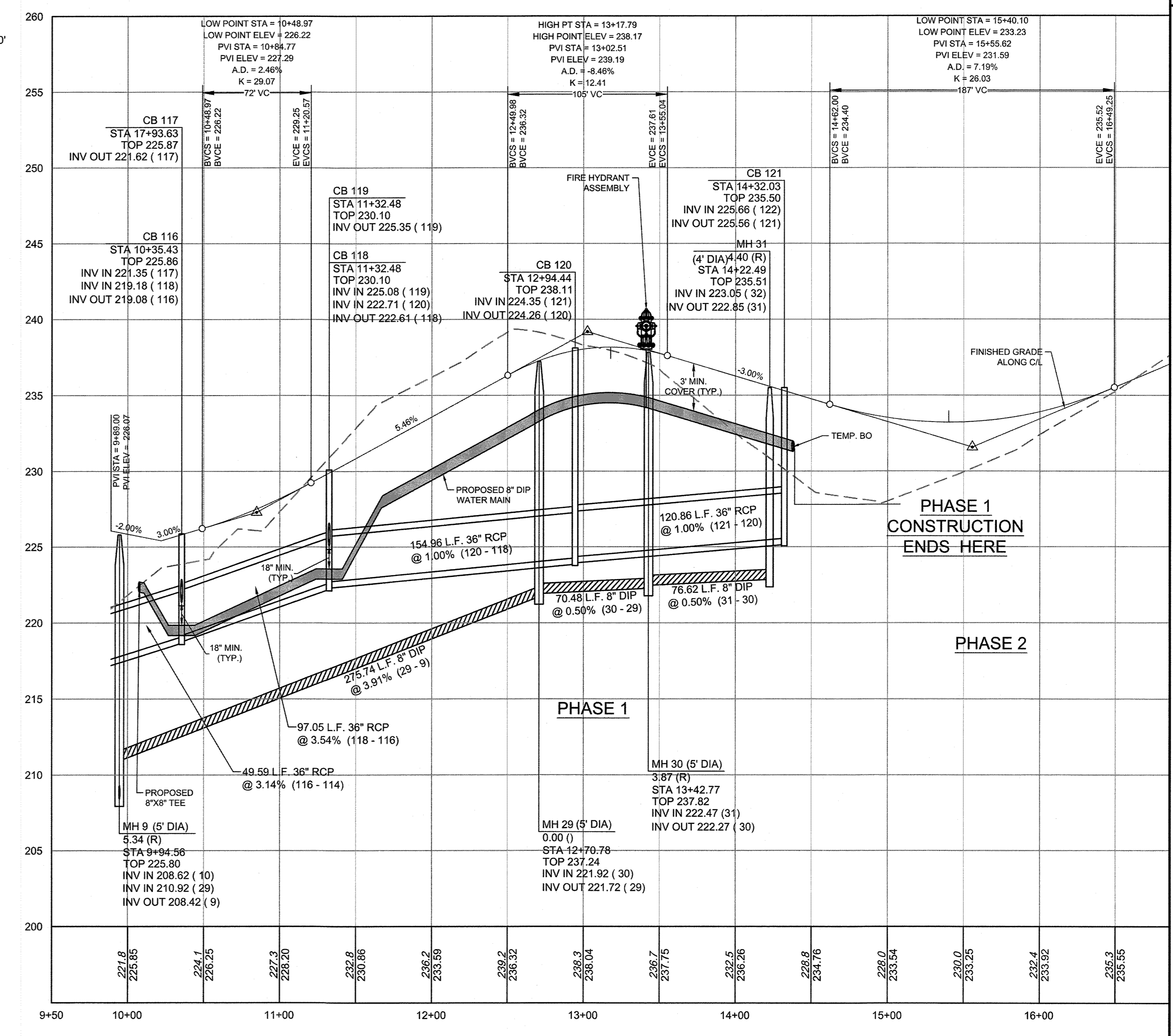
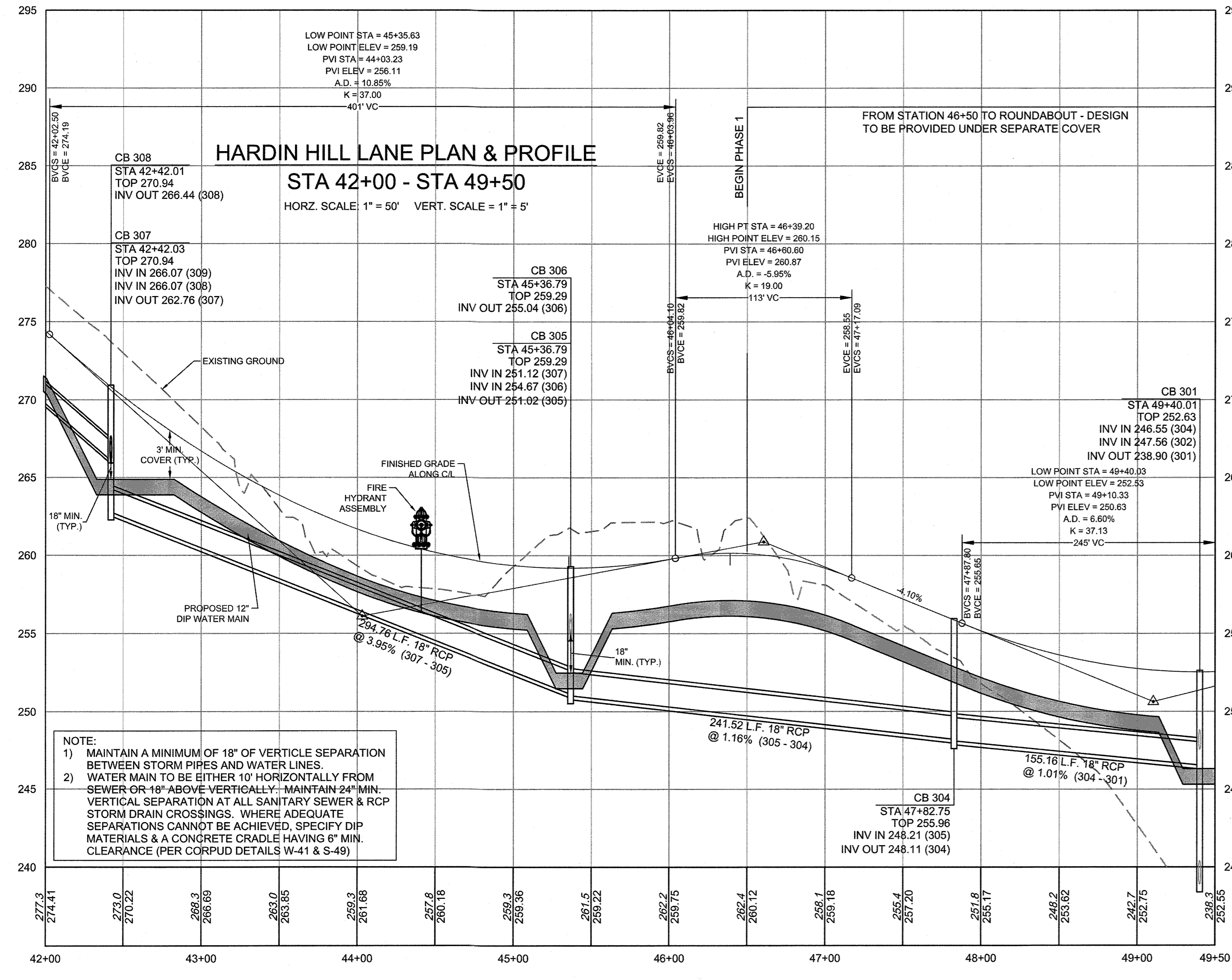
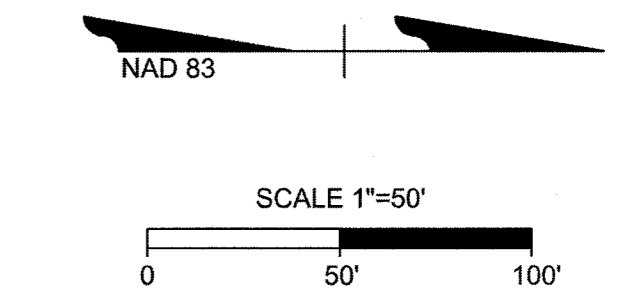
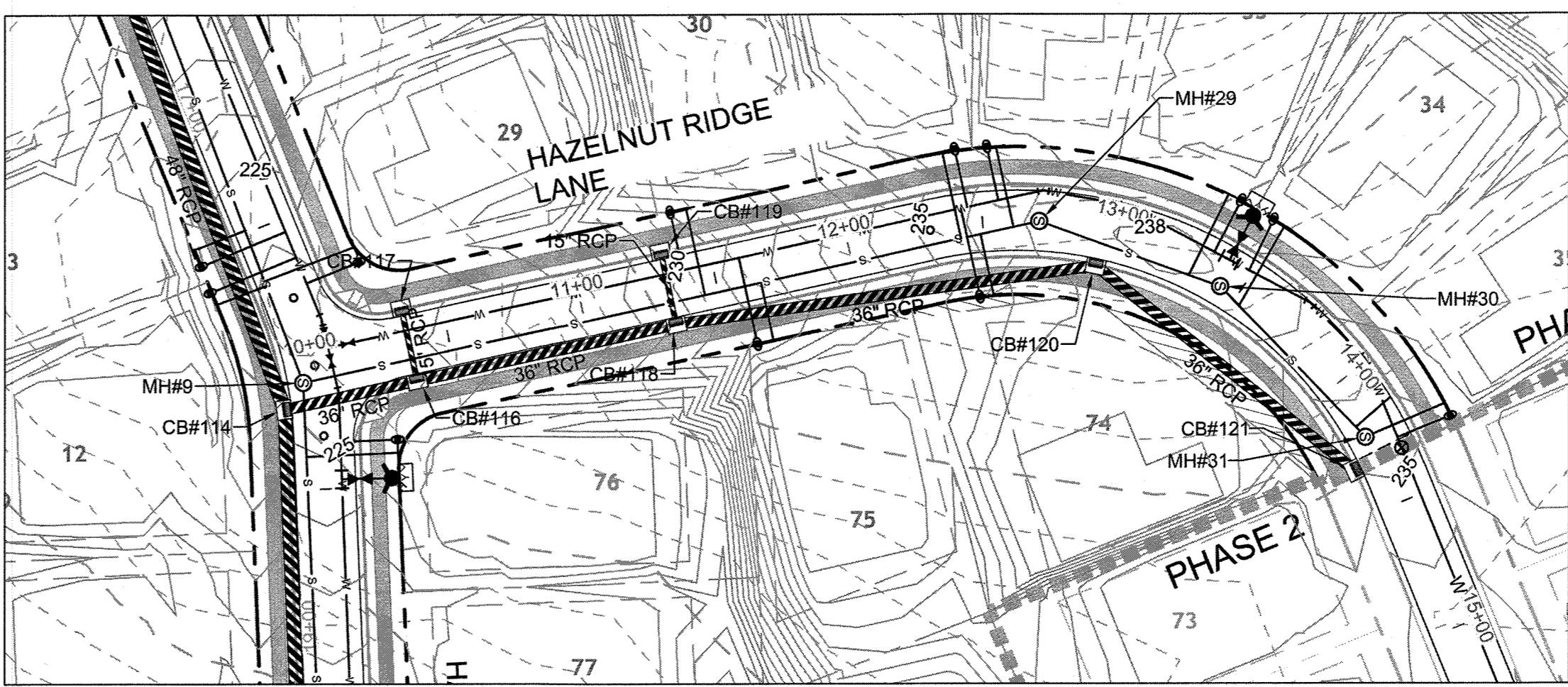
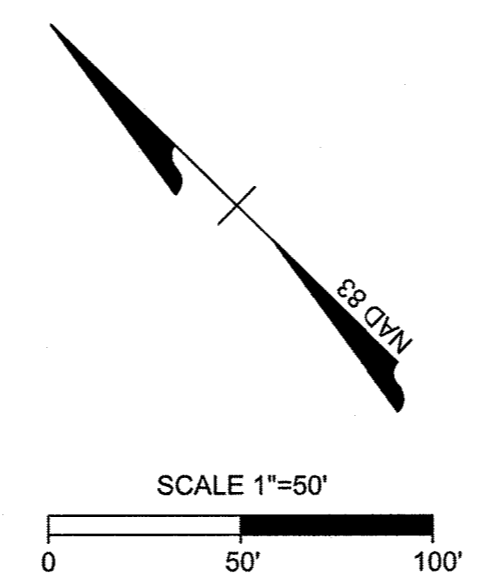
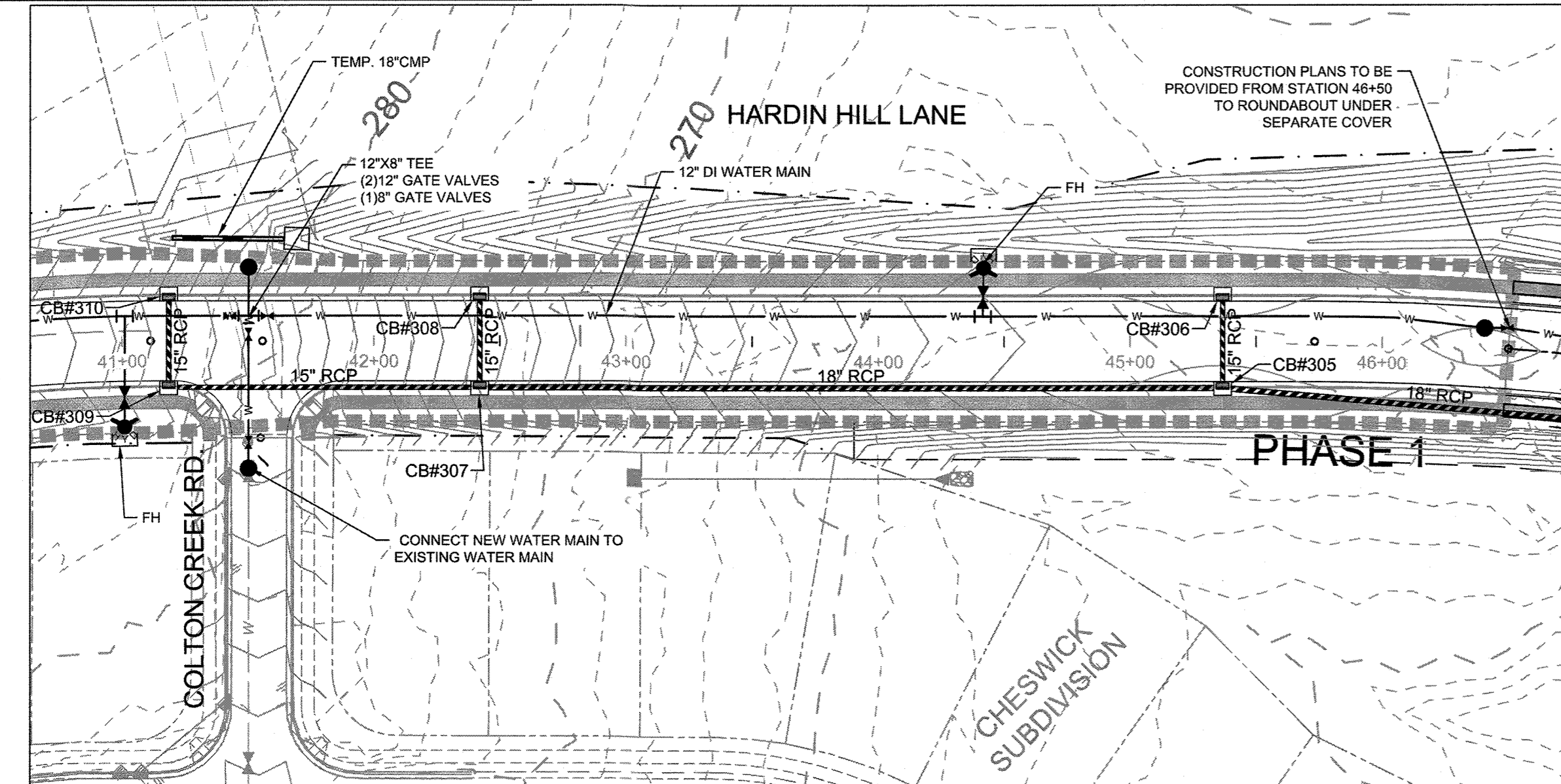
BY: *S. M. M.* DATE: 8/21/2020
DEVELOPMENT SERVICES ENGINEER

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

BY: *L. W.* DATE: 8/19/2020
ADMINISTRATOR



- NOTES:
- REFER TO UTILITY PLAN SHEET C6.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
 - REFER TO SHEET C 3.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.
 - UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE.



THIS DRAWING PREPARED AT THE OFFICE OF
5410 Trinity Road, Suite 103, Raleigh, NC 27607
TEL: 919.866.4951 FAX: 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
04/17/2020	UTILITY REVISIONS
09/04/2020	GRADING AND UTILITY REVISIONS

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

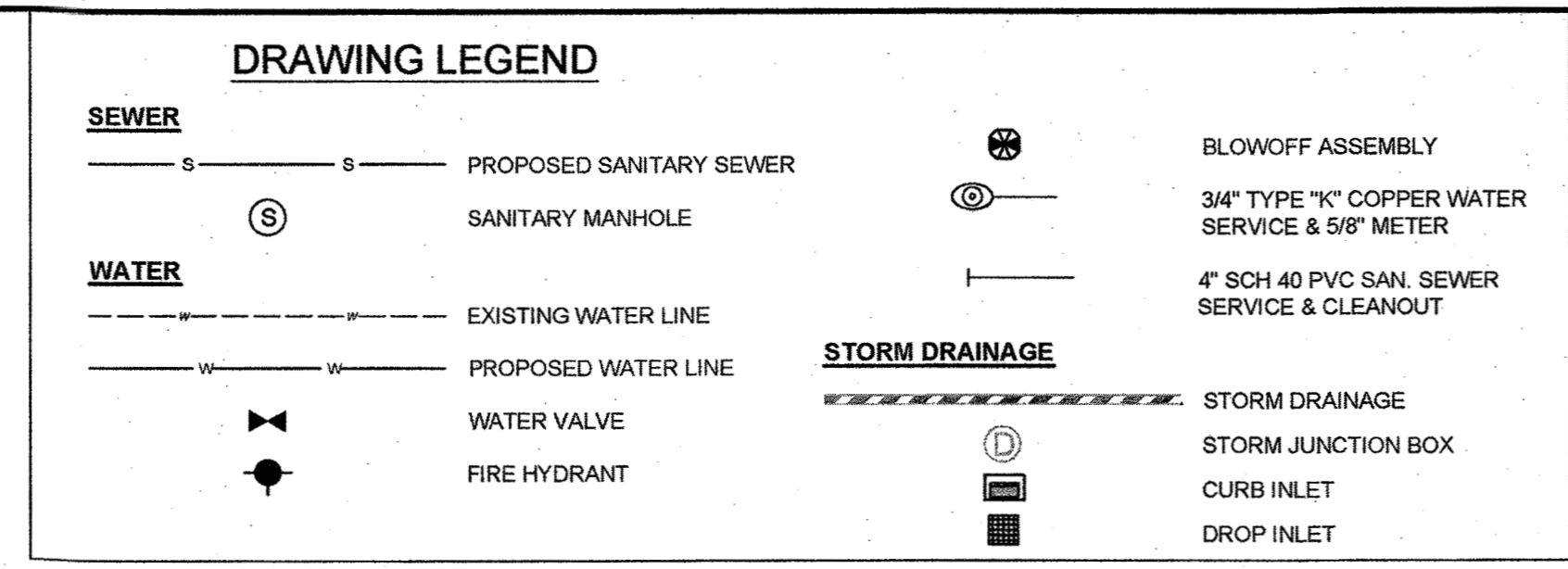
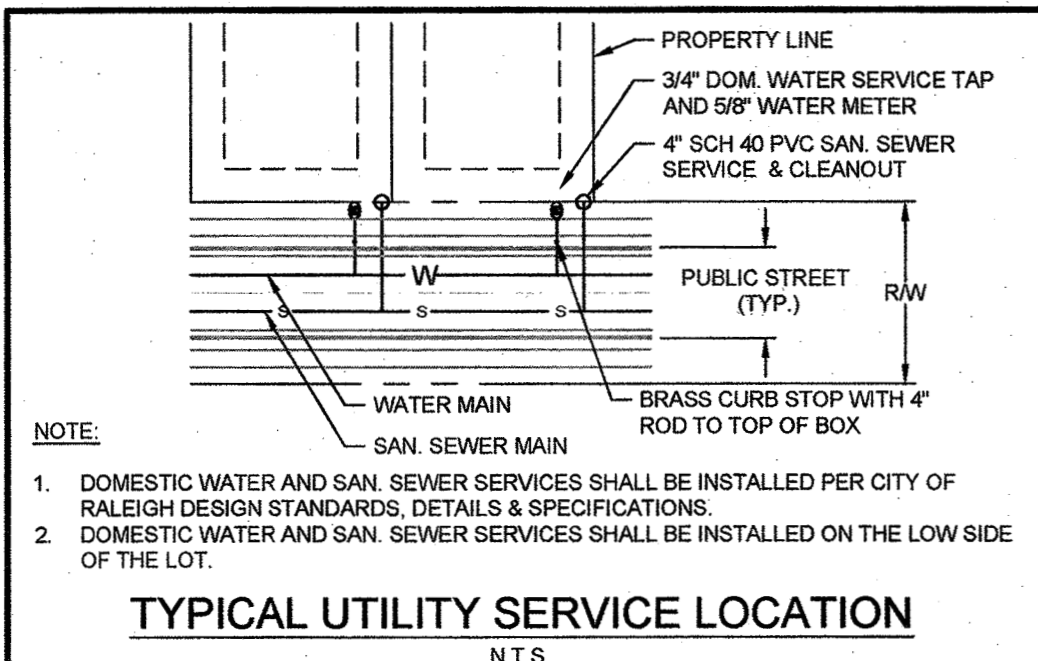
TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-152

STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

HARDIN HILL LANE & HAZELNUT RIDGE LANE PLAN & PROFILE

JOB NO. 37909
SHEET NO. C6.3

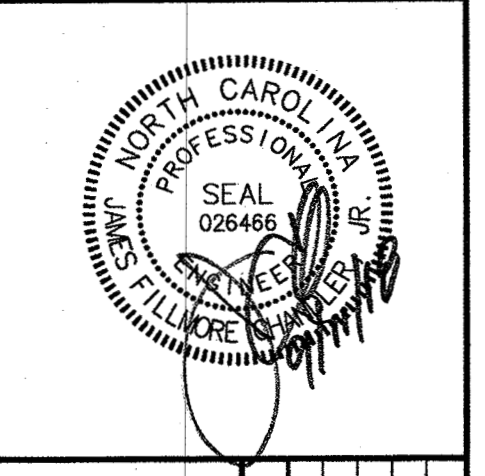


ATTENTION CONTRACTORS
 The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their construction.
 Failure to 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 Job-site, 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 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-4454**
 Authorized to Construct: **Jim Smith**
 Date: **9/26/19**

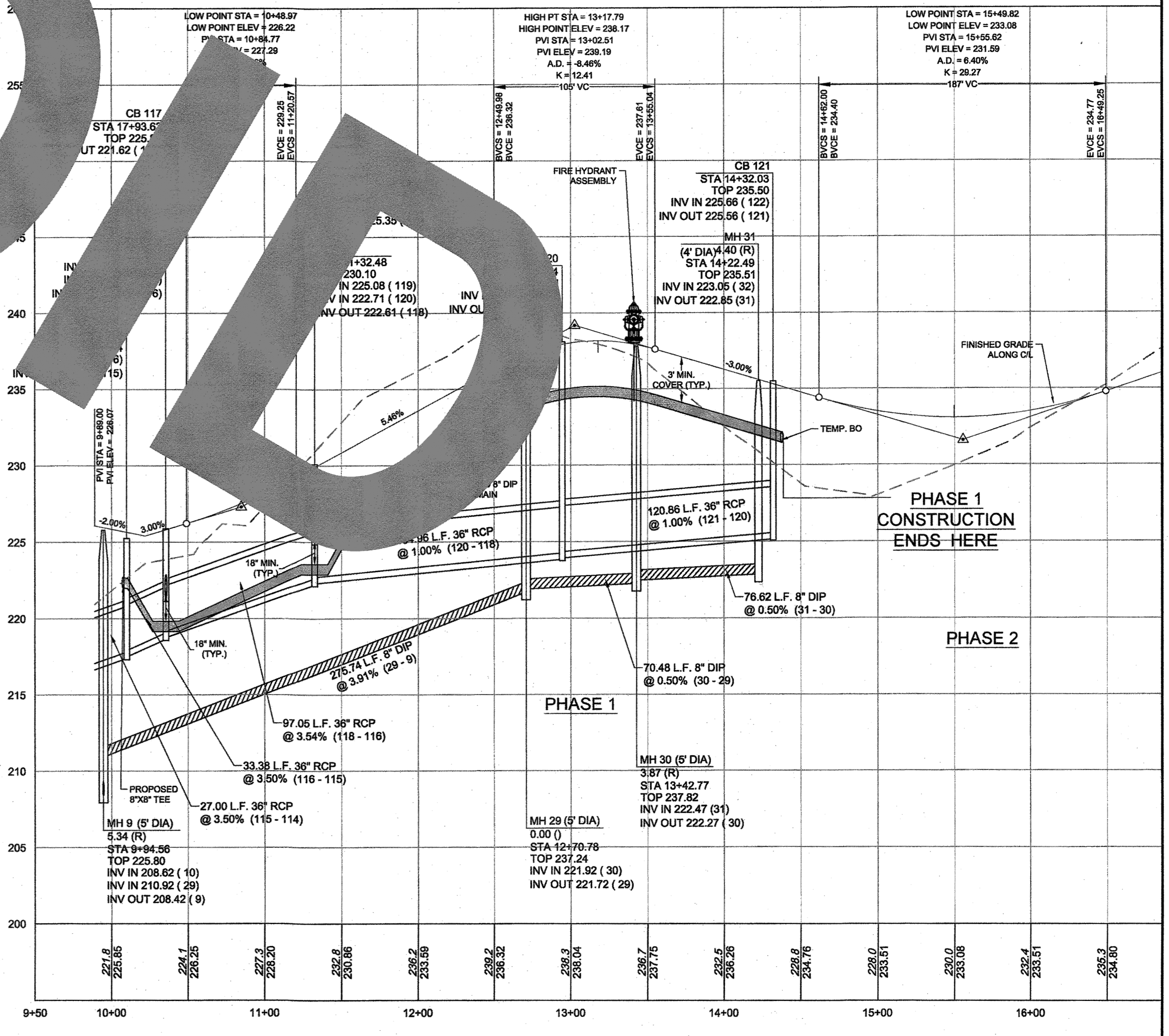
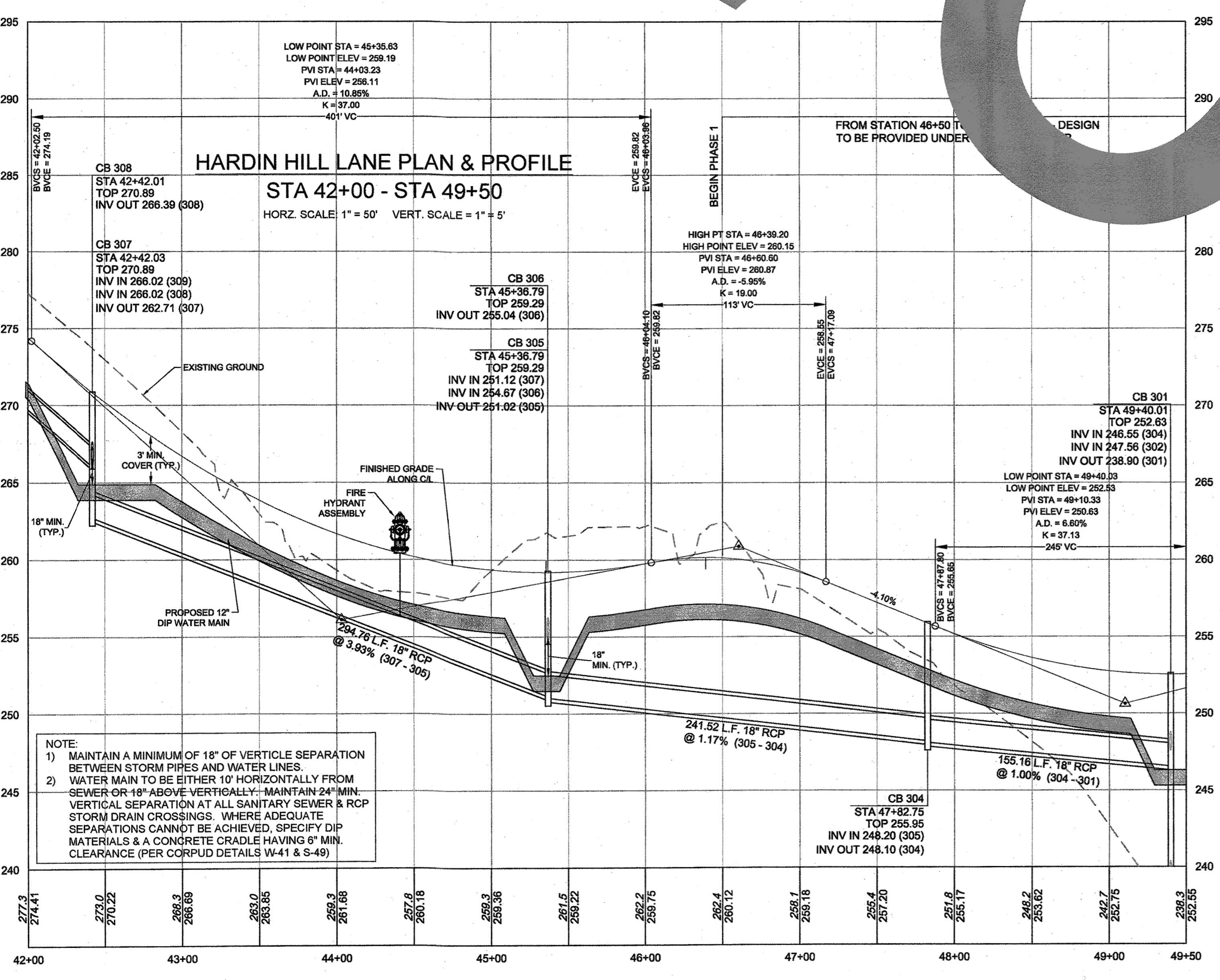
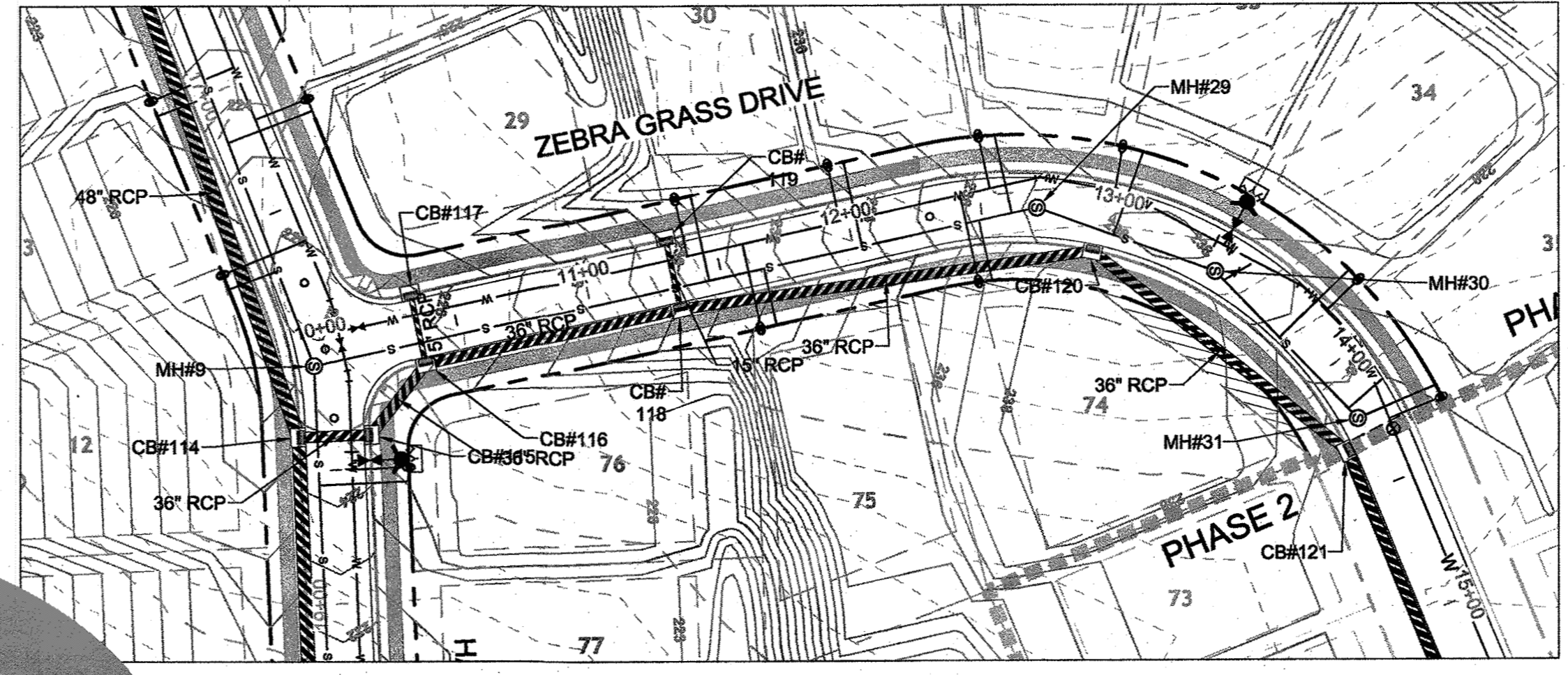
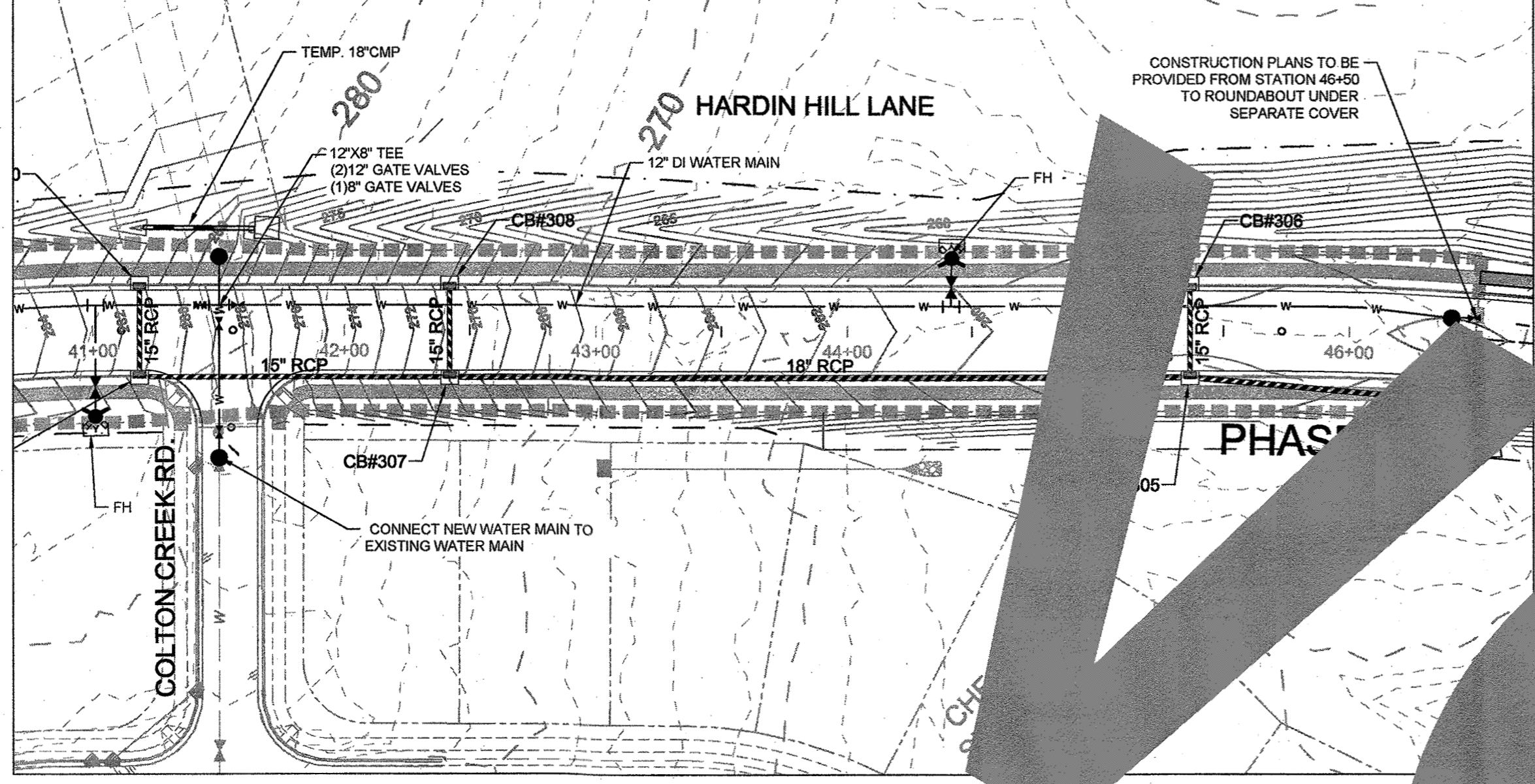
Public Water Distribution / Extension System
 The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
 City of Raleigh Public Utilities Department Permit # **W-3656**
 Authorized to Construct: **Jim Smith**
 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: **Carroll** 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: **Walter** DATE: **10-26-18**
 ADMINISTRATOR



ZEBRA GRASS DRIVE PLAN & PROFILE
 STA 9+50 - STA 17+50
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'

NOTES:
 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.
 3. UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE

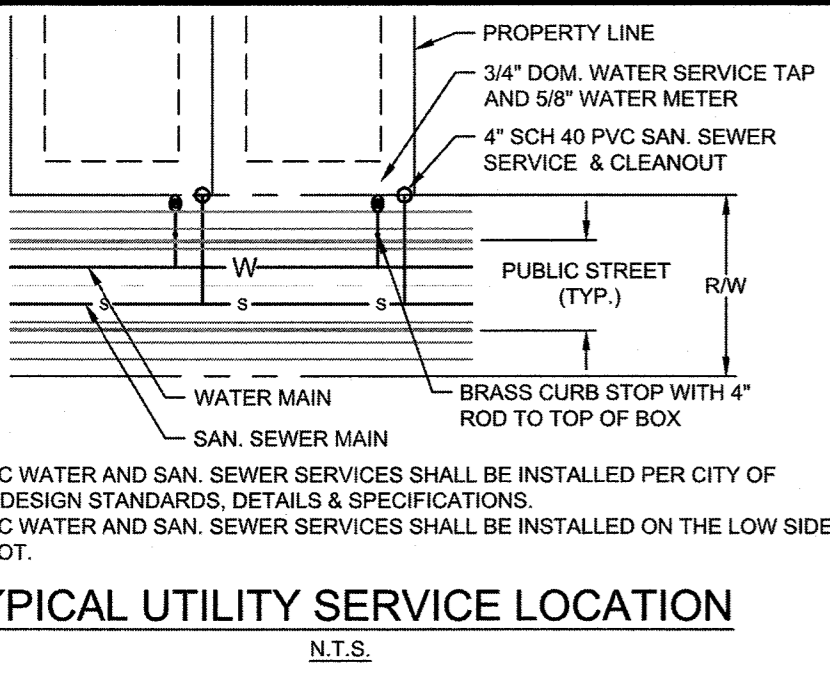


YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
 STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 HARDIN HILL LANE & ZEBRA GRASS DRIVE PLAN & PROFILE

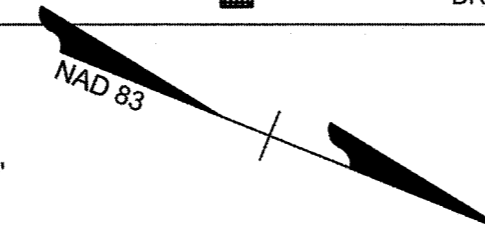
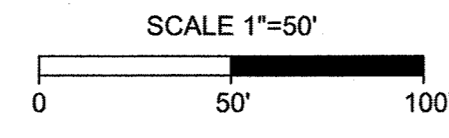
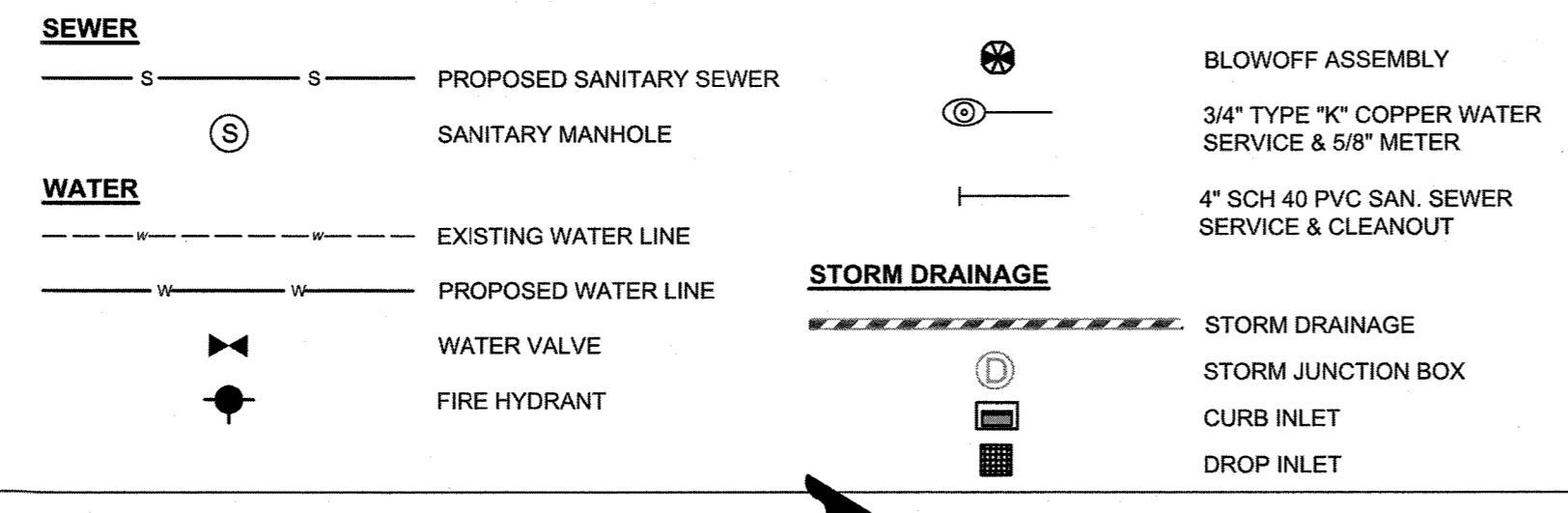
DATE	REVISION DESCRIPTION
09/11/2018	
	331
	331
	JFC
	PER PLAN

JOB NO. 37909
 SHEET NO. C6.3



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

DRAWING LEGEND



Lorea M Sample

Digitally signed by Lorea M Sample
DN: cn=Lorea M Sample, o=Timmons Group, ou=Timmons Group, c=US

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-3566R

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.

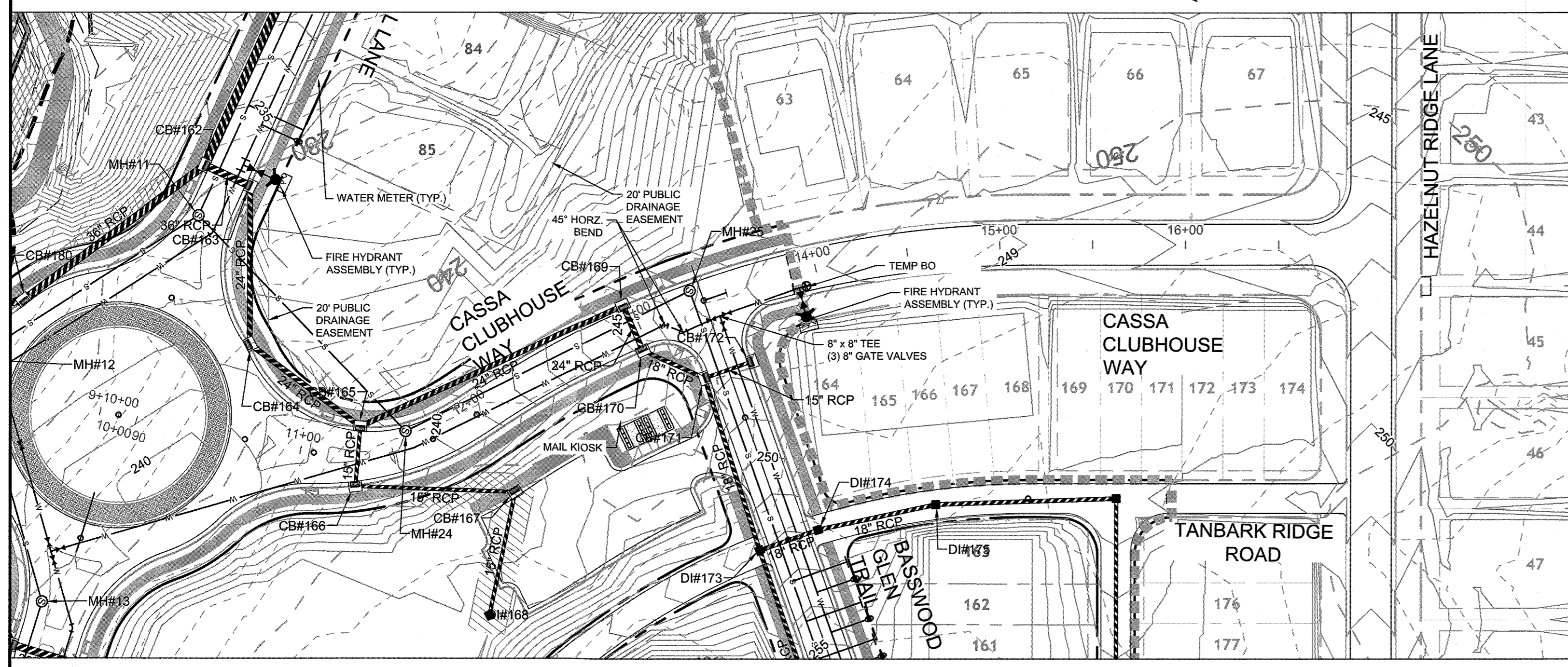
BY: *C. M. M. S.* DATE: 8-21-2020
DEVELOPMENT SERVICES ENGINEER

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

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

NOTES:

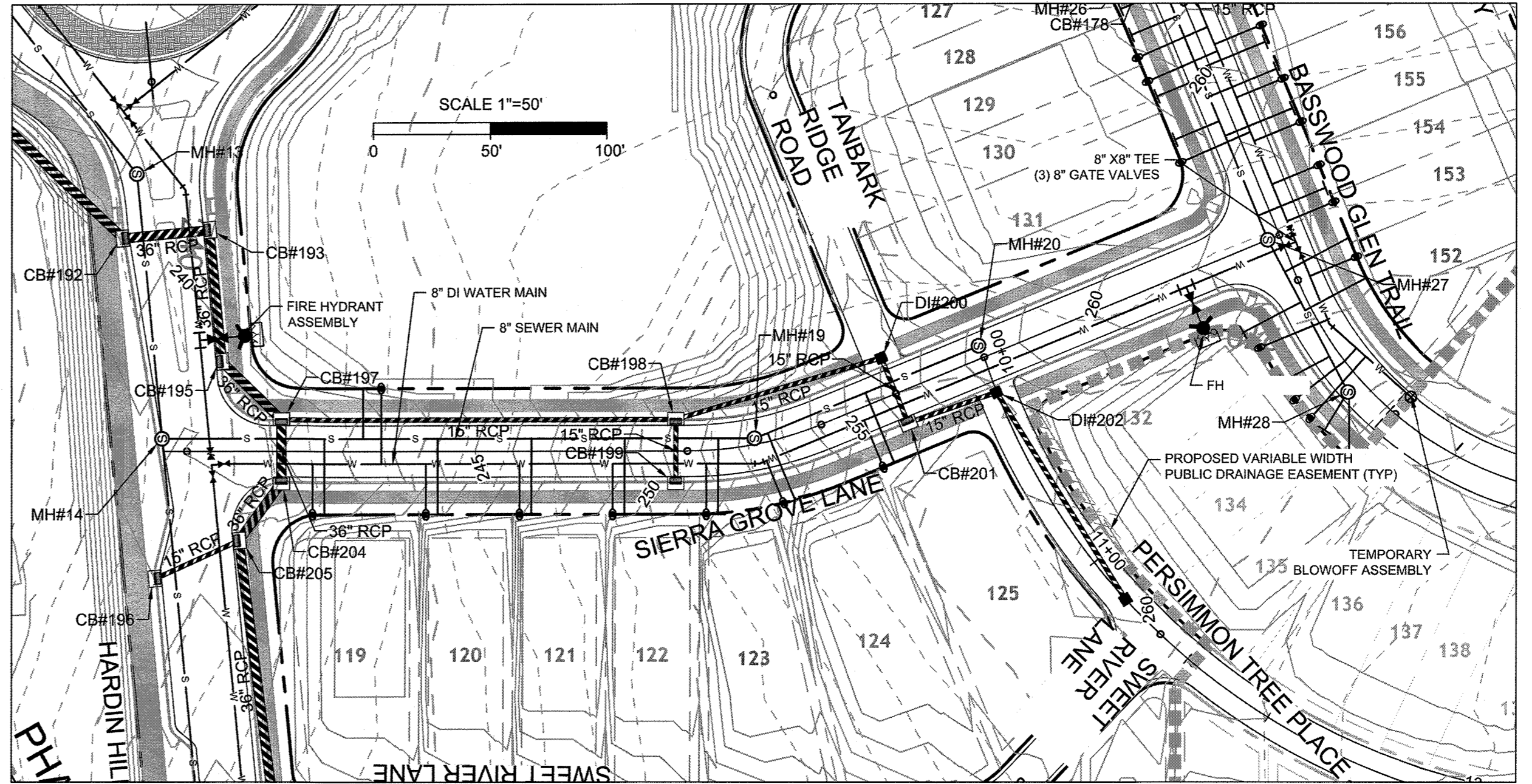
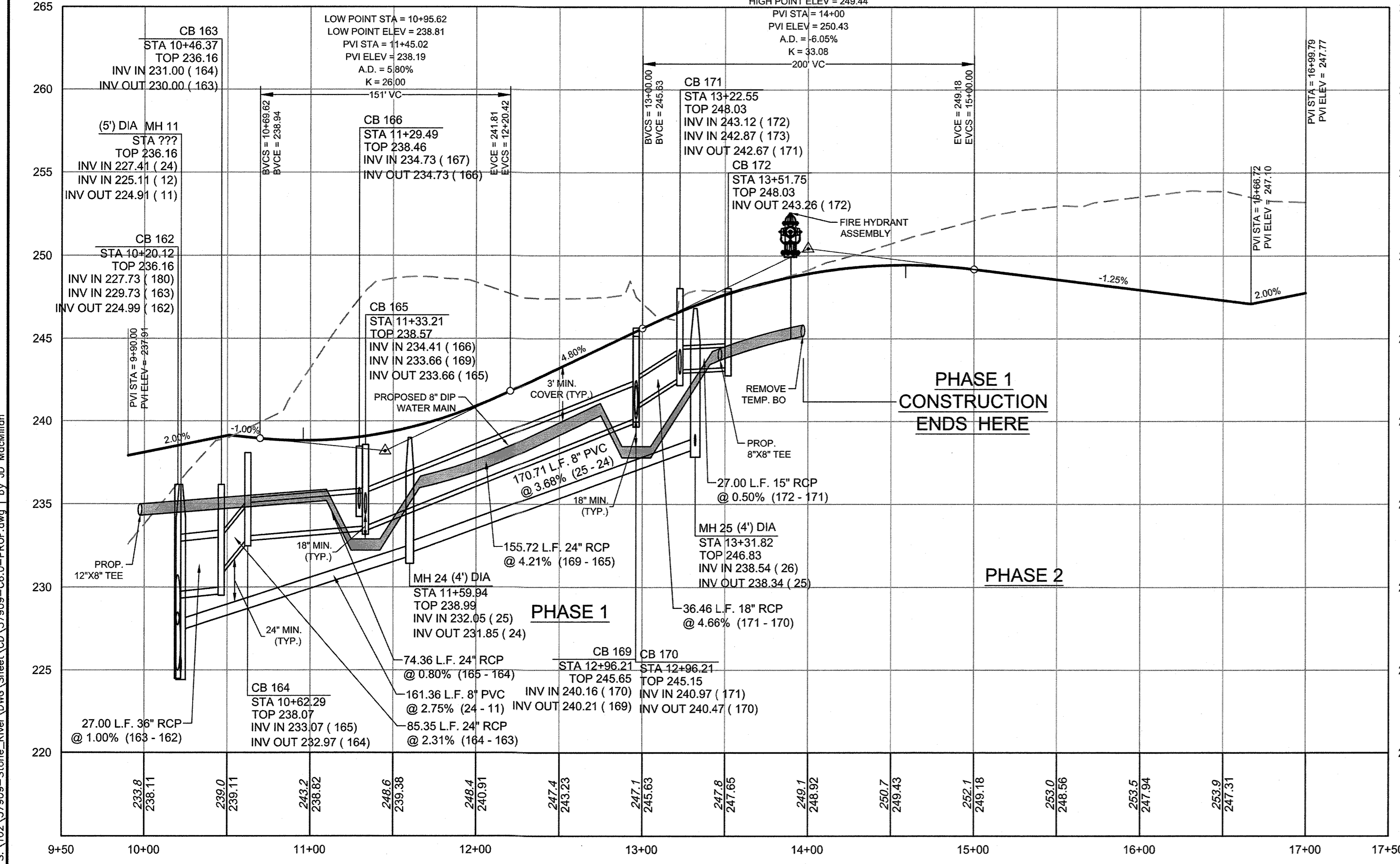
- REFER TO UTILITY PLAN SHEET C5.0 FOR STANDARD UTILITY NOTES AND SERVICE LOCATION INFORMATION.
- REFER TO SHEET C5.1 FOR STORM DRAINAGE PIPE AND STRUCTURE TABLE.
- UTILITIES CONSTRUCTED IN FILL CONDITIONS REQUIRE CLASS 1 STRUCTURAL FILL FROM EXISTING GRADE TO SPRING LINE OF PIPE.



CASSA CLUBHOUSE WAY NORTH PLAN & PROFILE

STA 9+50 - STA 17+50

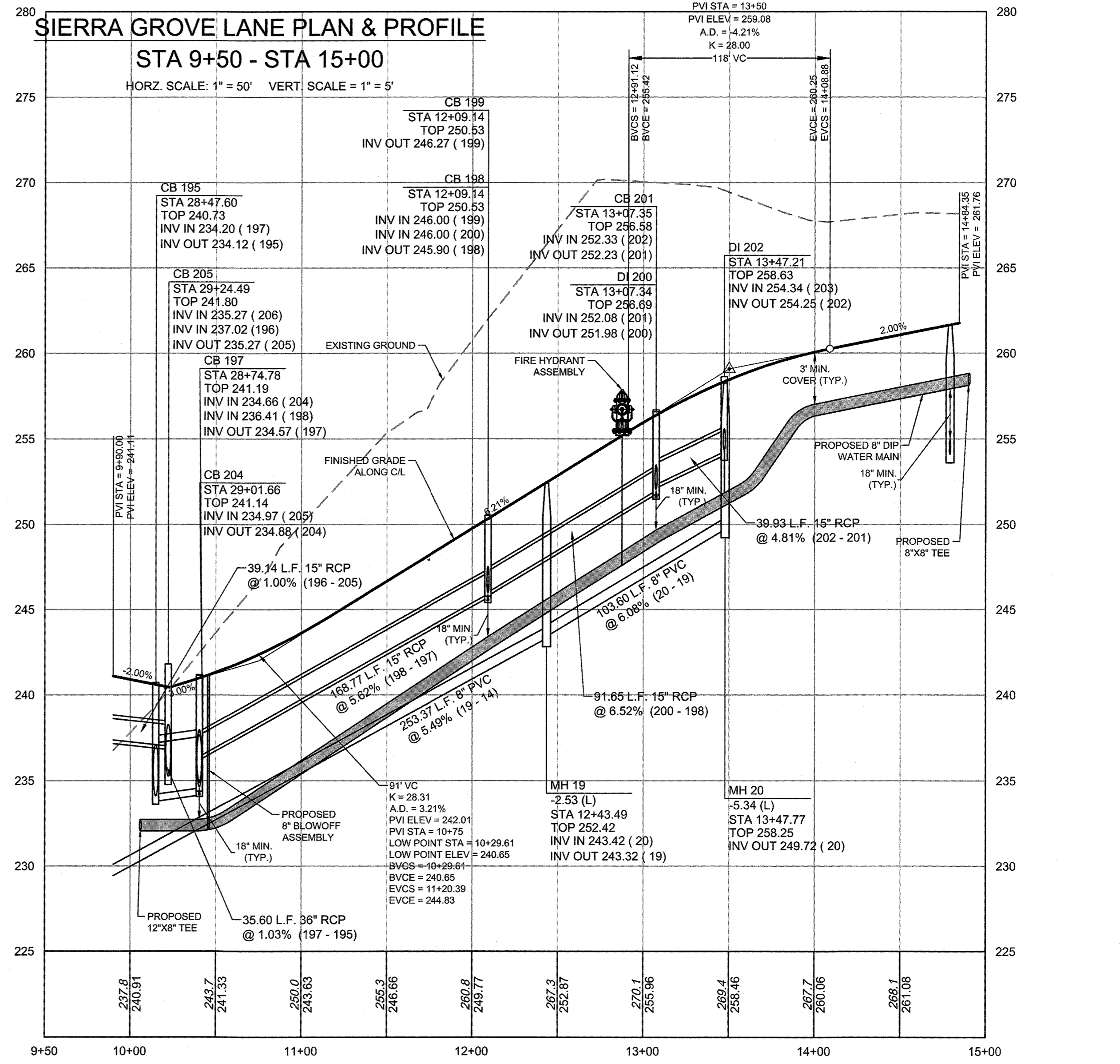
HORIZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



SIERRA GROVE LANE PLAN & PROFILE

STA 9+50 - STA 15+00

HORIZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Raleigh, NC 27607
TEL 919.866.9551 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

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

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

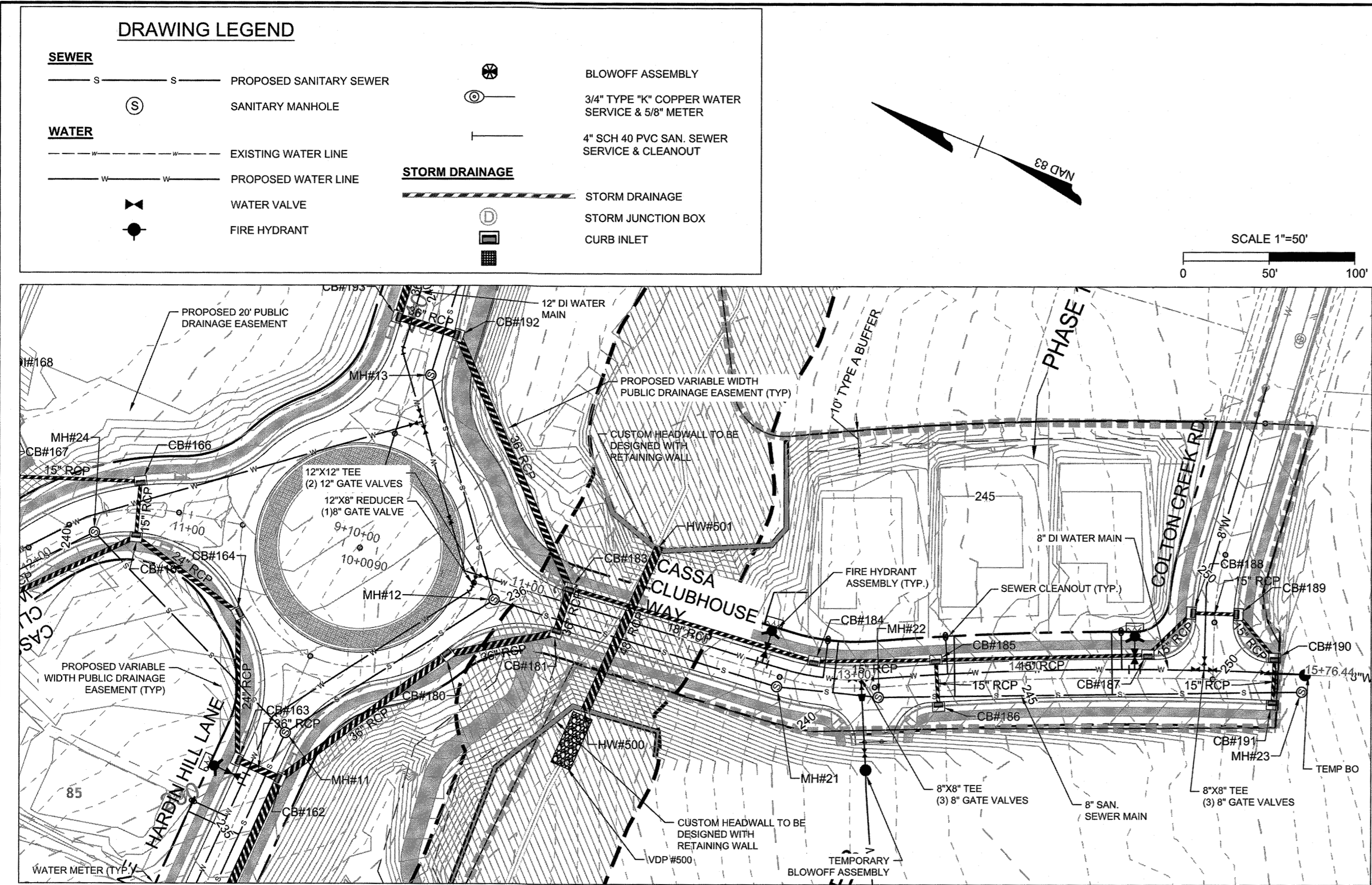
CASSA CLUBHOUSE WAY NORTH & SIERRA GROVE LANE PLAN & PROFILE

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

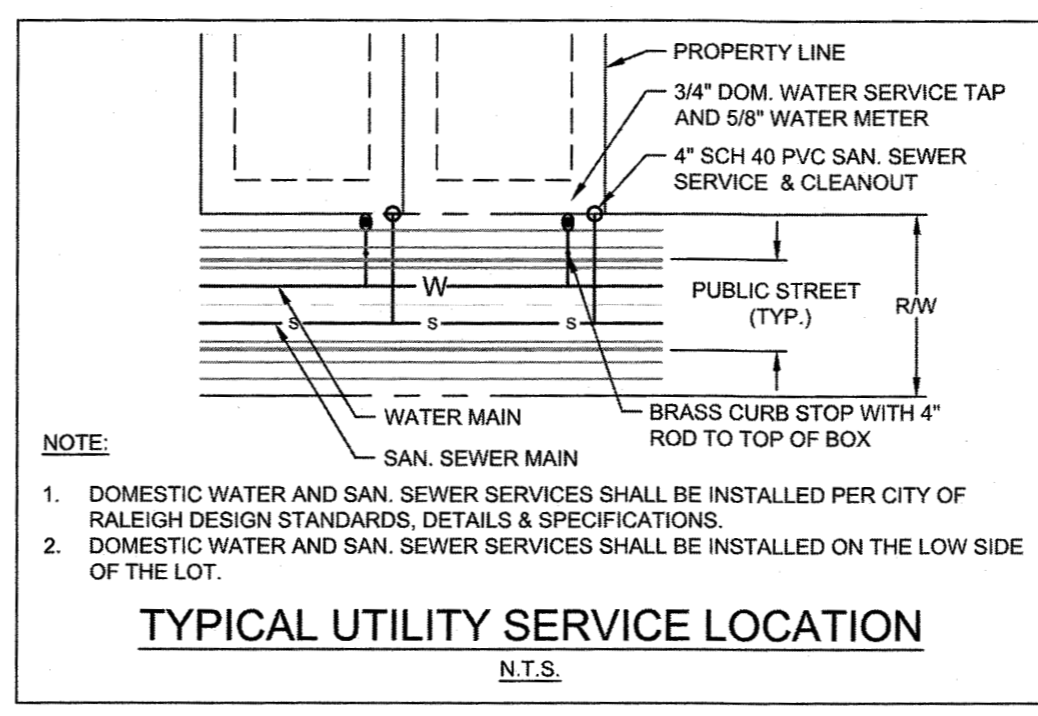
JOB NO.
37909

SHEET NO.
C6.4

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



CASSA CLUBHOUSE WAY SOUTH PLAN & PROFILE
 STA 9+50 - STA 16+00
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



Water and Sewer Permits (if applicable)

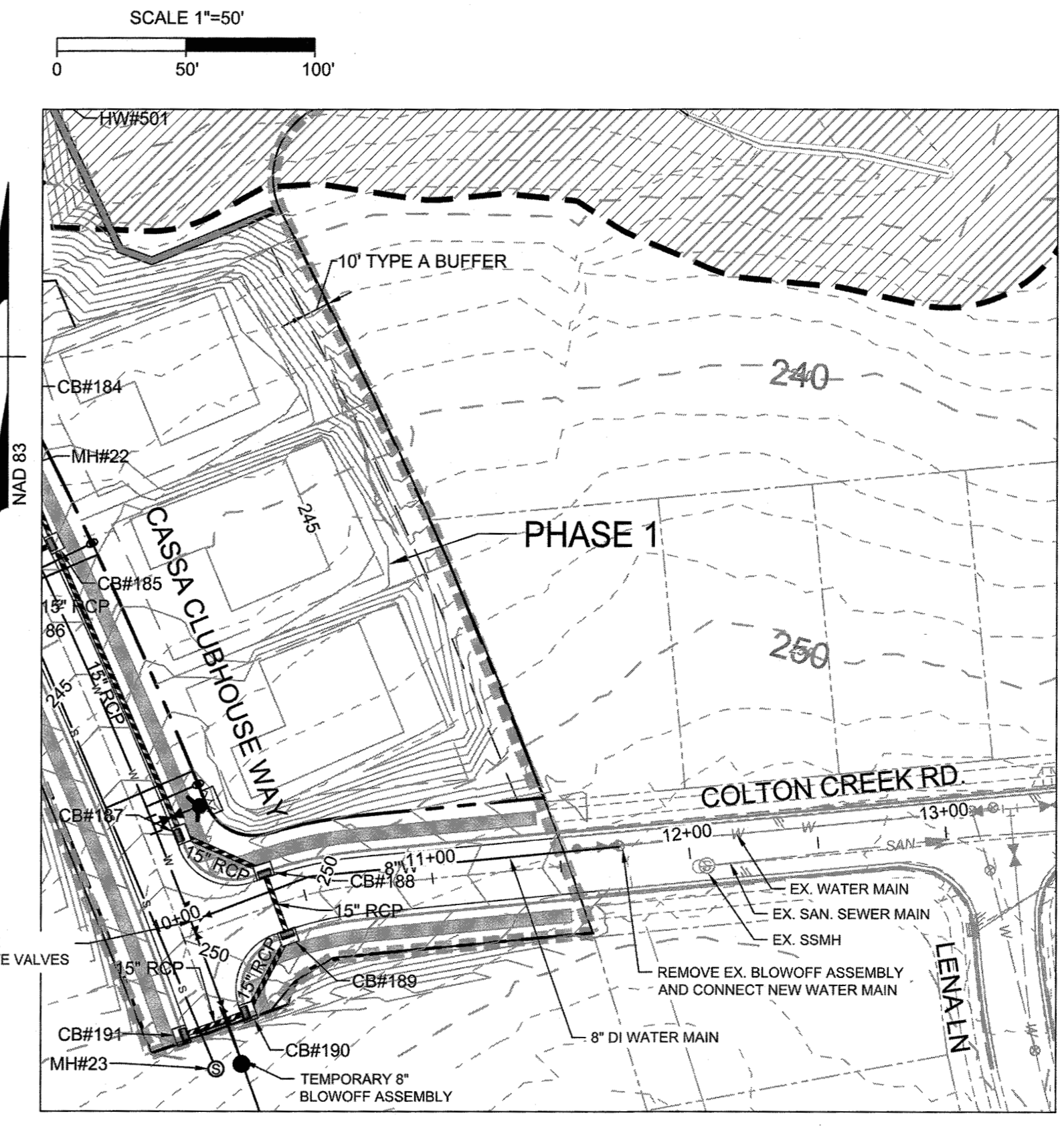
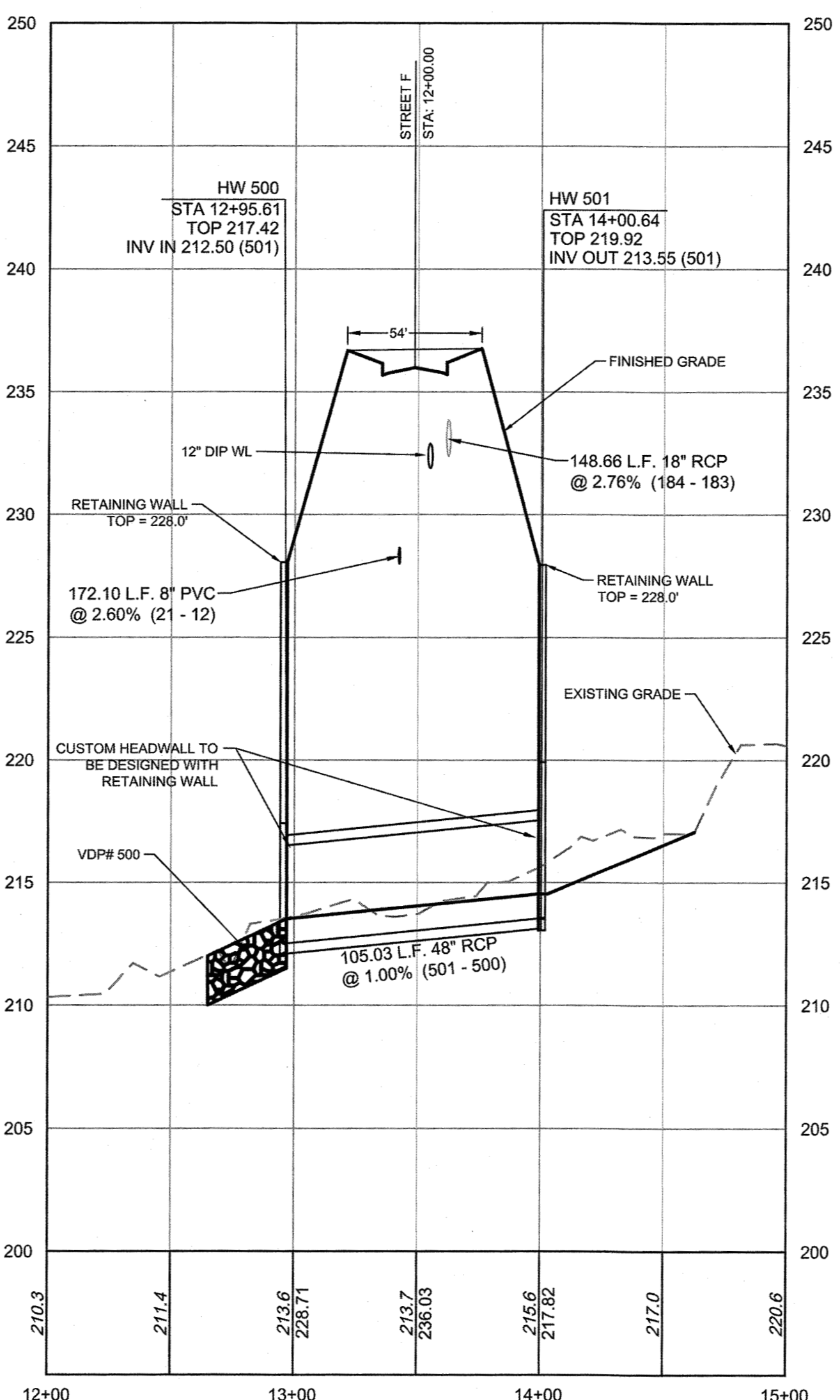
The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook - City of Raleigh Public Utilities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

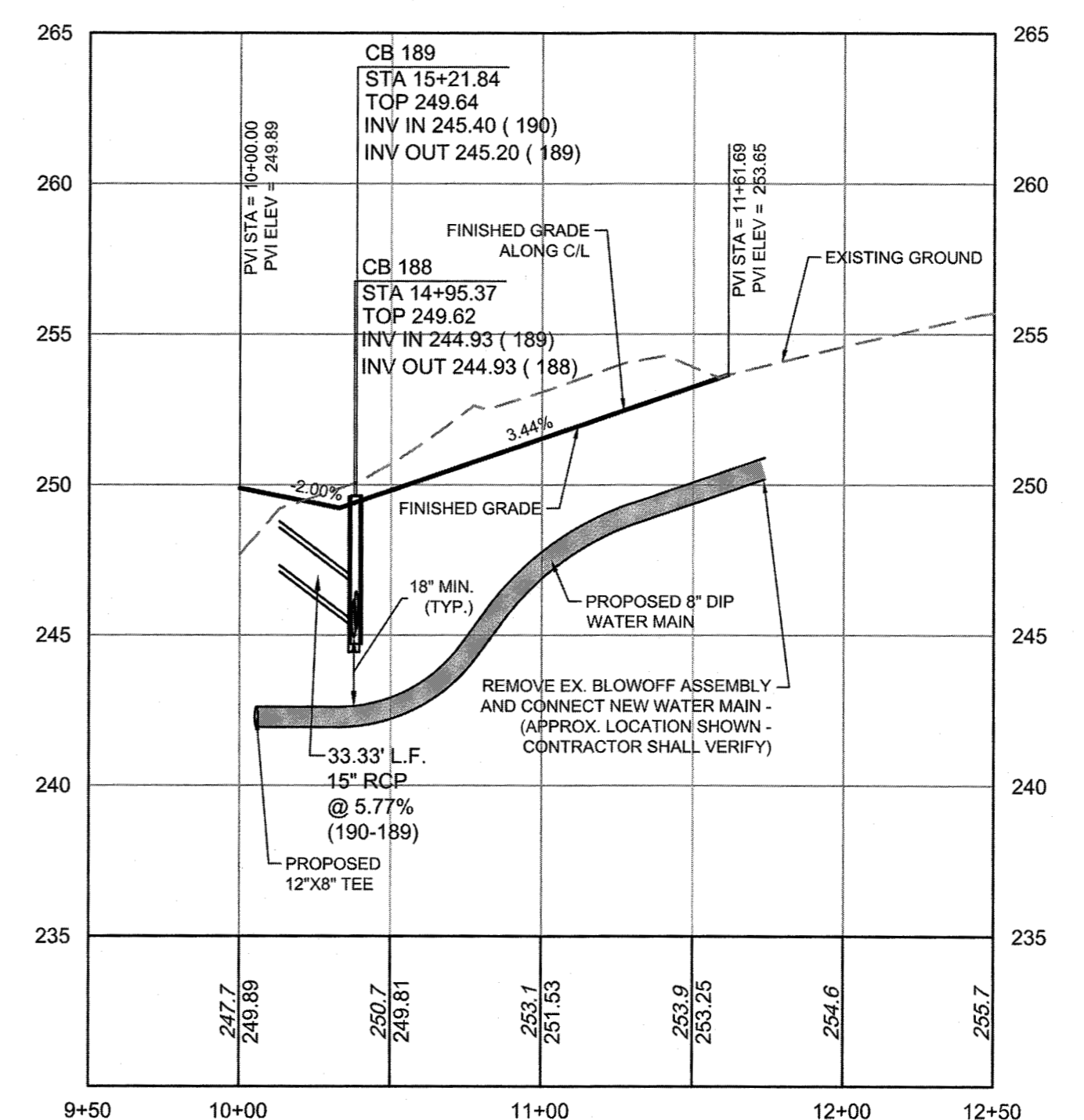
The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit #

48" CULVERT PROFILE
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



COLTON CREEK RD. PLAN & PROFILE
 STA 9+50 - STA 12+50
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



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, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
08/20/2020	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

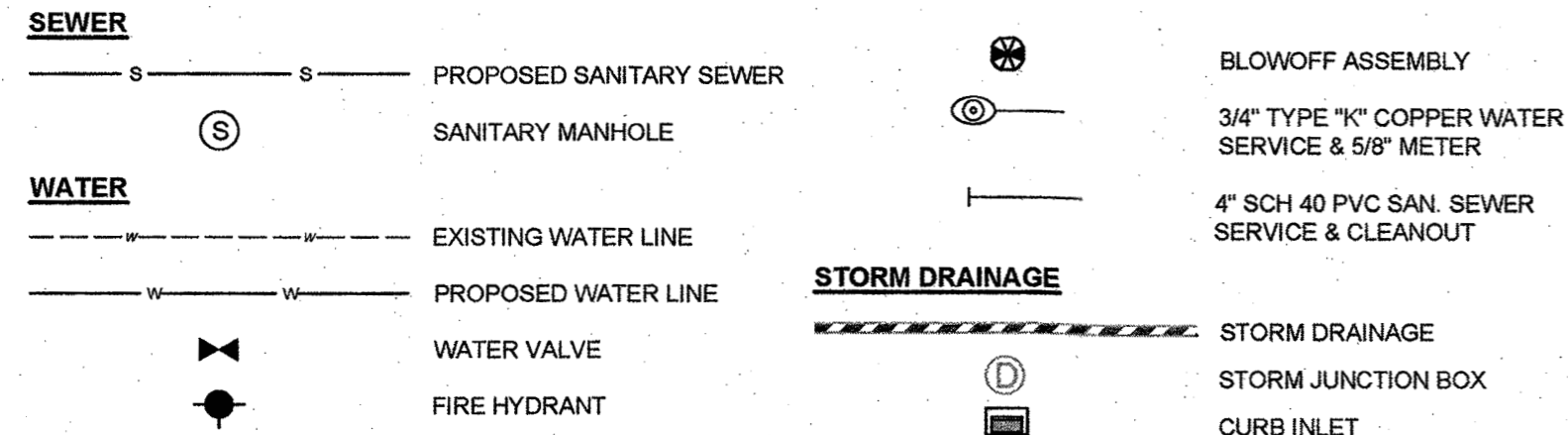
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

CASSA CLUBHOUSE WAY SOUTH & COLTON CREEK ROAD PLAN & PROFILE

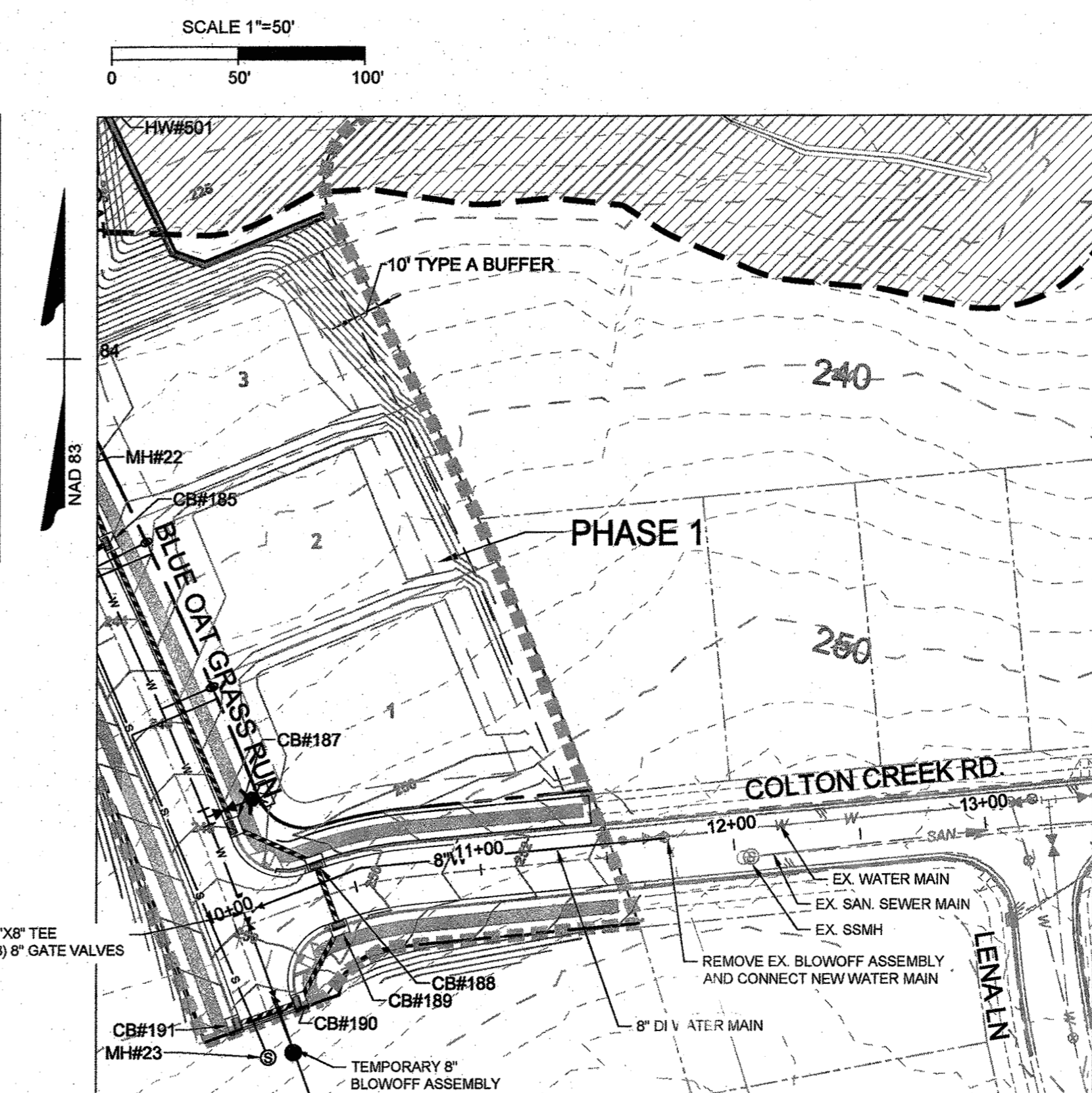
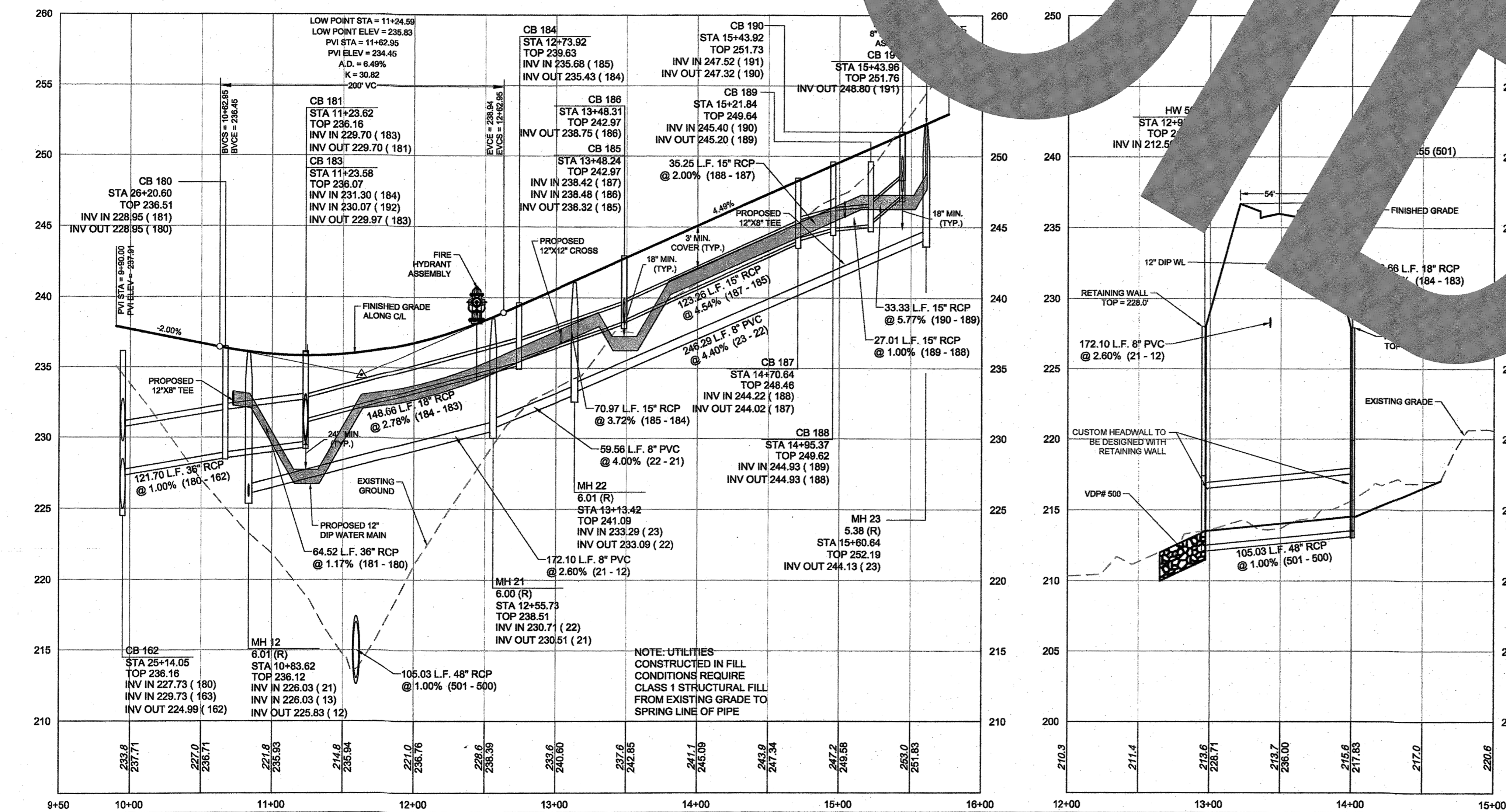
JOB NO. 37909
 SHEET NO. C6.5

S:\102\37909-Stone_River\DWG_Sheet\CD\37909-C6.0-PROF.dwg | by JD Macallan

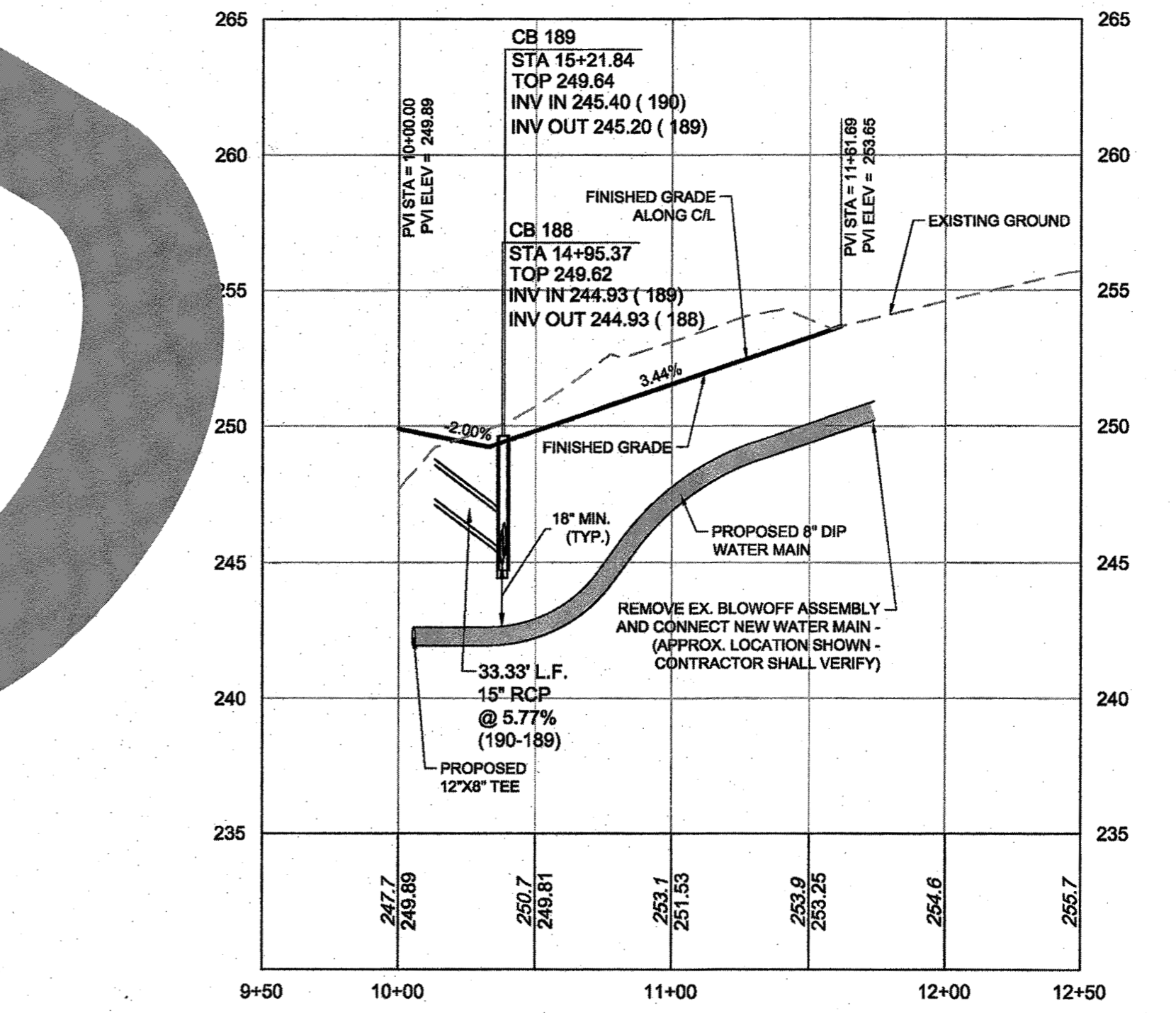
DRAWING LEGEND



BLUE OAT GRASS RUN SOUTH PLAN & PROFILE
 STA 9+50 - STA 16+00
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'

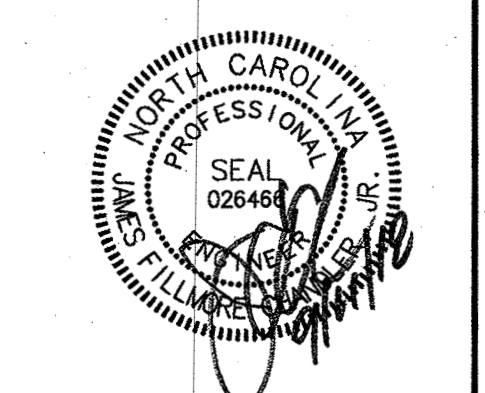


COLTON CREEK RD. PLAN & PROFILE
 STA 9+50 - STA 12+50
 HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



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 Violations 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. Smith* 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: *W. D. D. D.* DATE: 10-26-18
 ADMINISTRATOR



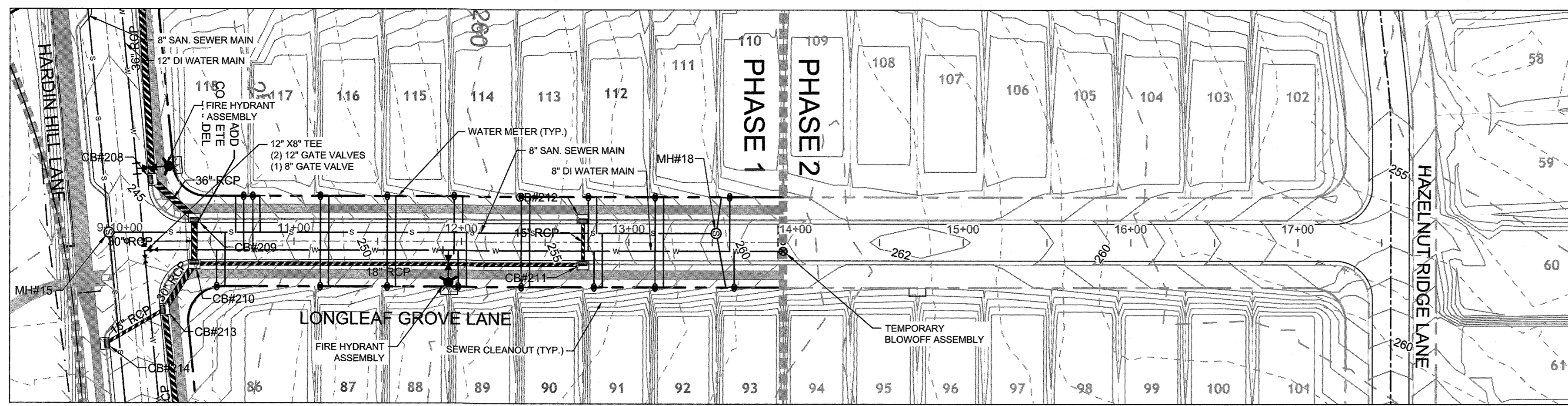
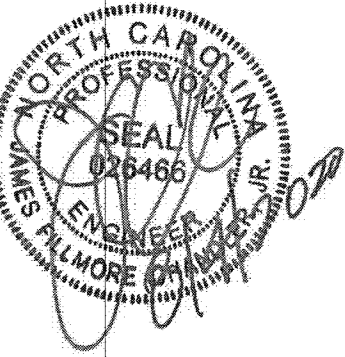
THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL: 919.866.4951 FAX: 919.833.8124 www.timmons.com

REVISION DESCRIPTION	DATE
YOUR VISION ACHIEVED THROUGH OUMS.	09/11/2018

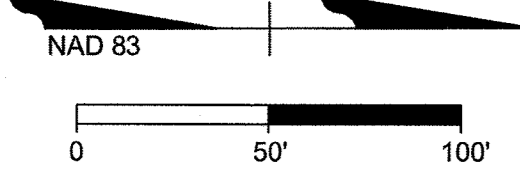
TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
BLUE OAT GRASS RUN SOUTH COLTON CREEK ROAD PLAN & PROFILE

JOB NO.	SHEET NO.
37909	C6.5

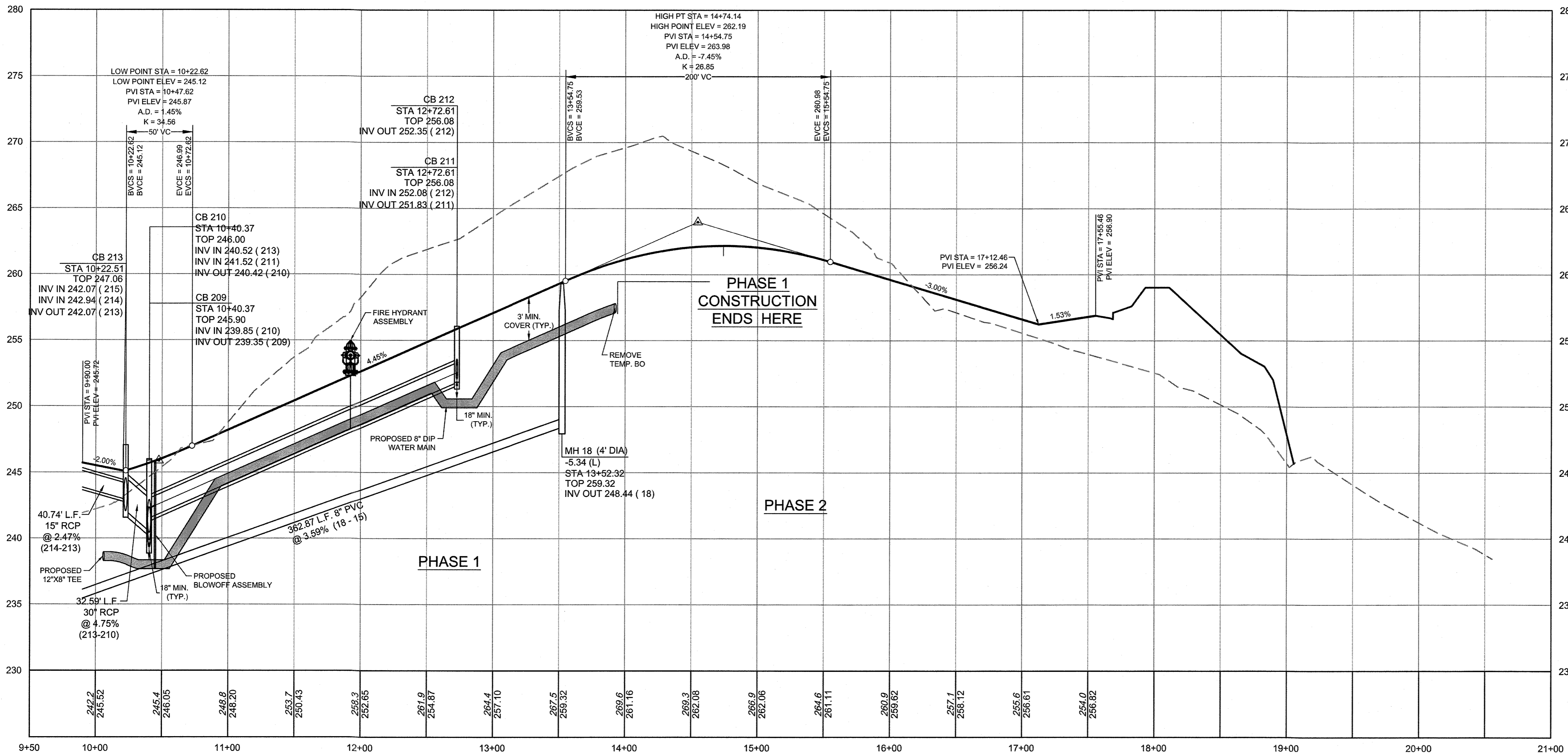
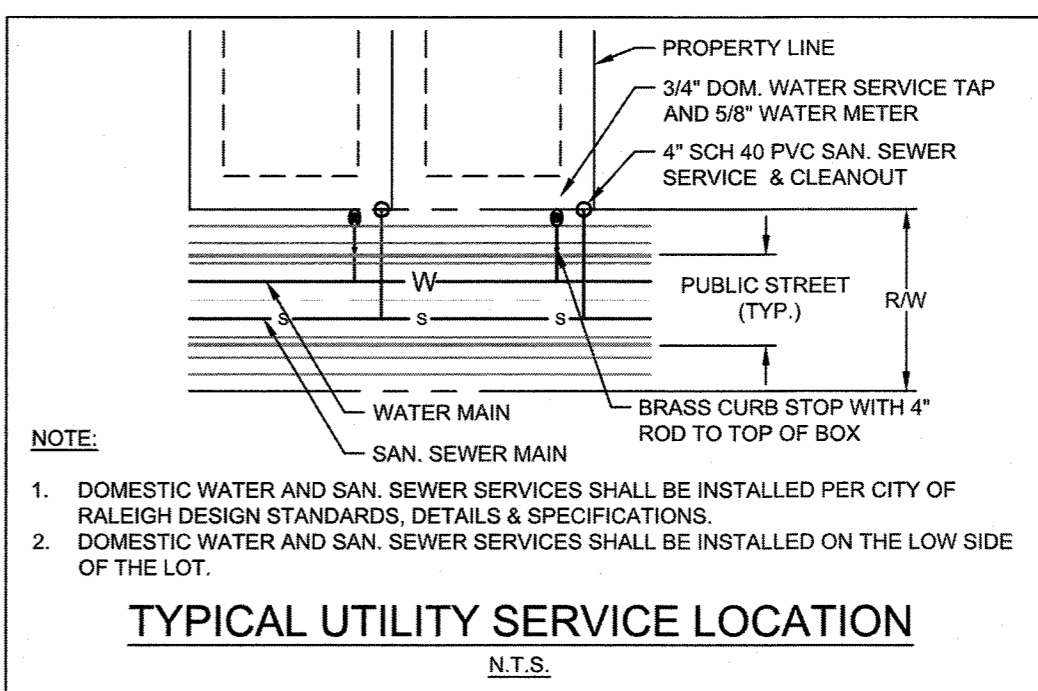
R:\102\37909-Stoneriver\DWG\Sheet\CD\37909-C6.0-PROF.dwg | by Keith Axton



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



DRAWING LEGEND				
SEWER	— S — S —	PROPOSED SANITARY SEWER	⊗	BLOWOFF ASSEMBLY
	⊙	SANITARY MANHOLE	⊕	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
WATER	— W — W —	EXISTING WATER LINE	—	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
	— W — W —	PROPOSED WATER LINE	—	STORM DRAINAGE
	⊕	WATER VALVE	⊕	STORM JUNCTION BOX
	⊕	FIRE HYDRANT	⊕	CURB 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-3550R**

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
 Digitally signed by Lorea M Sample
 DN: cn=Lorea M Sample, email=Lorea.M.Sample@raleighnc.gov, o=City of Raleigh, ou=Public Utilities Department, c=US
 Reason: I am approving this document.
 Date: 2020.08.13 11:04:51 -0400

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 Drive, Raleigh, NC 27607
 TEL 919.866.9951 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

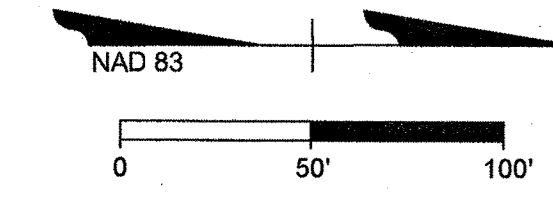
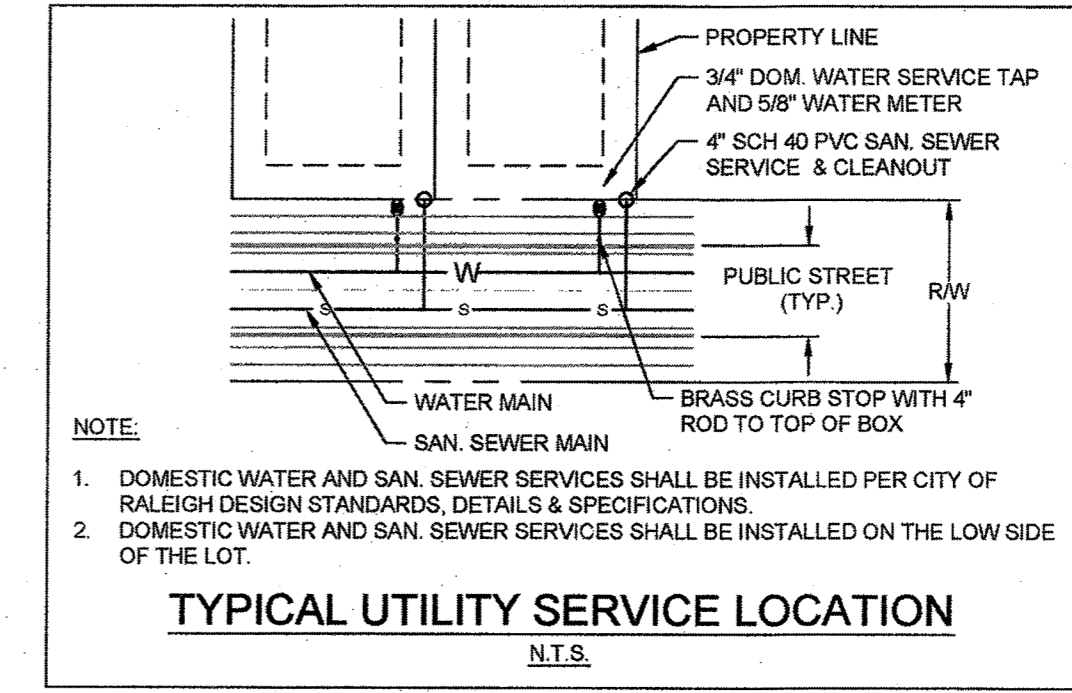
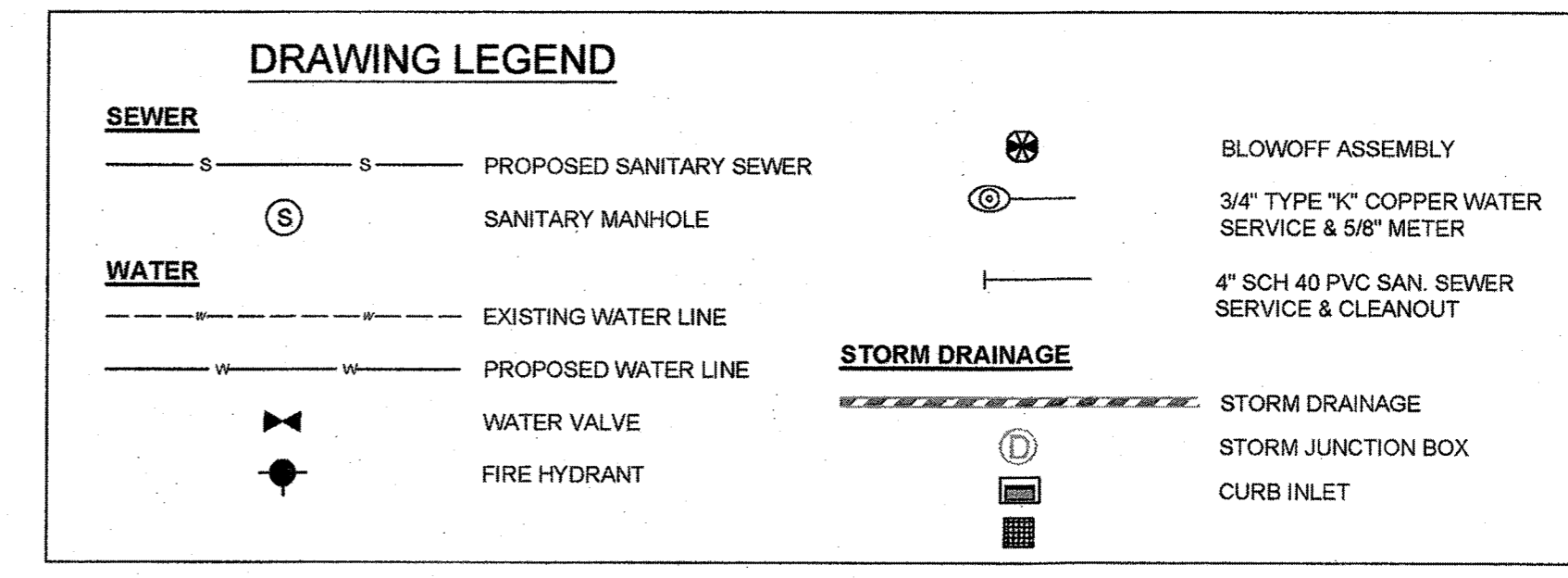
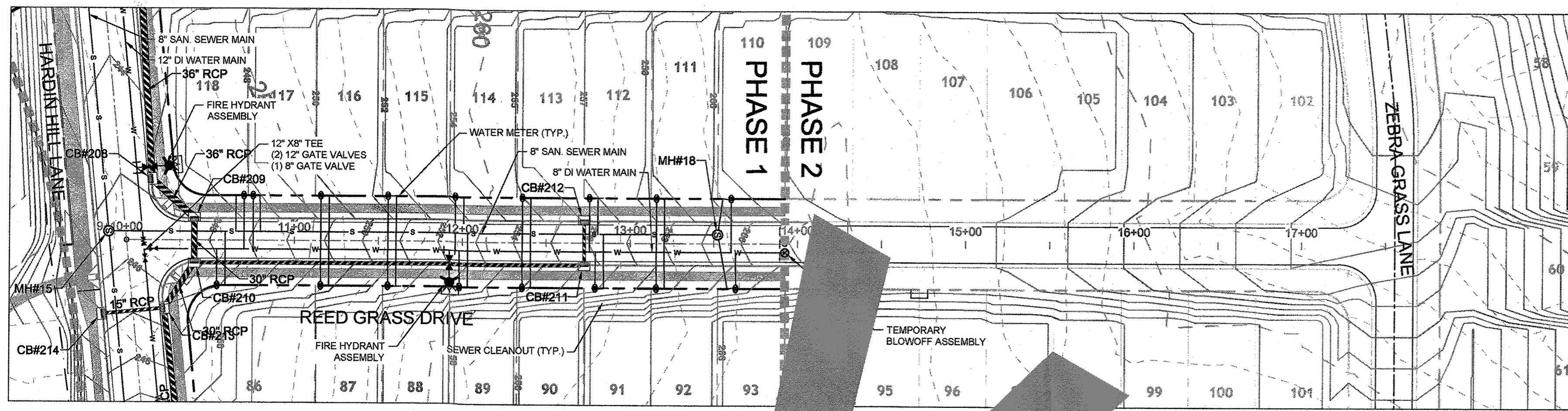
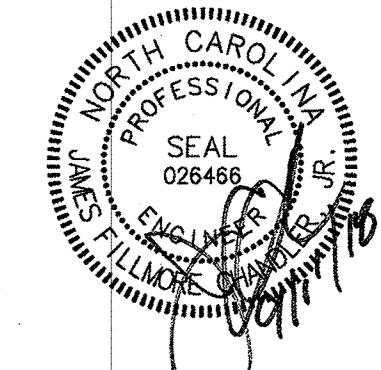
STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

LONGLEAF GROVE LANE PLAN & PROFILE

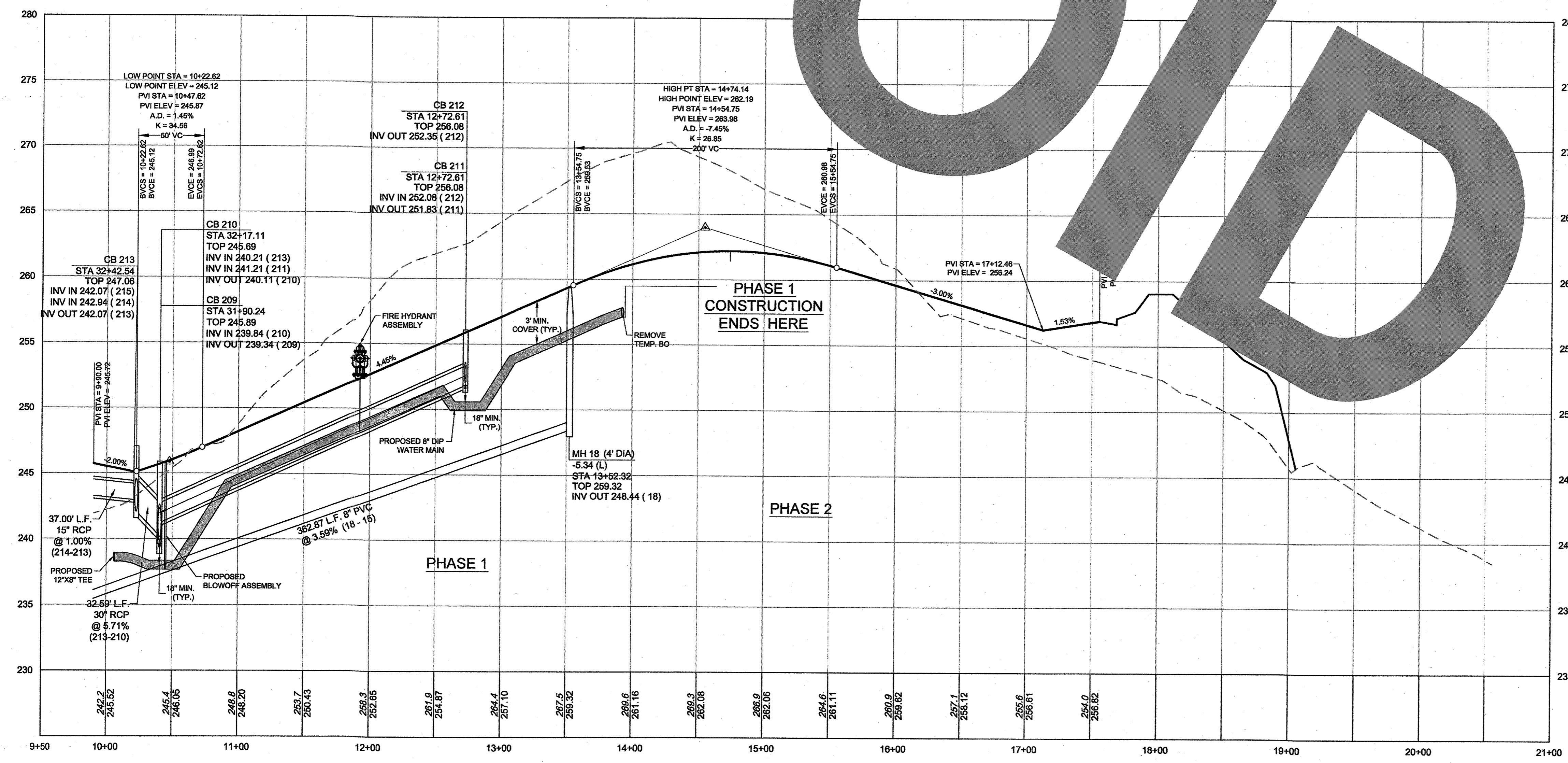
JOB NO. 37909
 SHEET NO. C6.6

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express consent of TIMMONS GROUP.



REED GRASS DRIVE PLAN & PROFILE
 STA 9+50 TO STA 21+00
 HORZ. SCALE: 1" = 40' VERT. SCALE: 1" = 5'

C O L O R I D



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 # 15-3556
 Authorized by Contract # 15-3556
 Date 10/26/18

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: *C. 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. S. C.* DATE: 10-26-18
 ADMINISTRATOR

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.966.4951 FAX 919.853.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

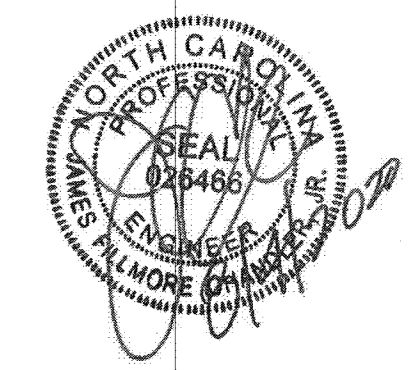
REVISION DESCRIPTION	DATE
	09/11/2018
	331
	331
	JFC
	SCALE PER PLAN

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
 STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
 REED GRASS DRIVE PLAN & PROFILE

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part, and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

JOB NO. 37909
 SHEET NO. C6.6

R:\102\37909-Stoneriver\DWG\Sheet\CD\37909-C6.0-PROF.dwg | By: Keith Axton



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
04/17/2020
08/04/2020
09/11/2018

REVISION DESCRIPTION
UTILITY REVISIONS
GRADING AND UTILITY REVISIONS

DRAWN BY
331

DESIGNED BY
331

CHECKED BY
JFC

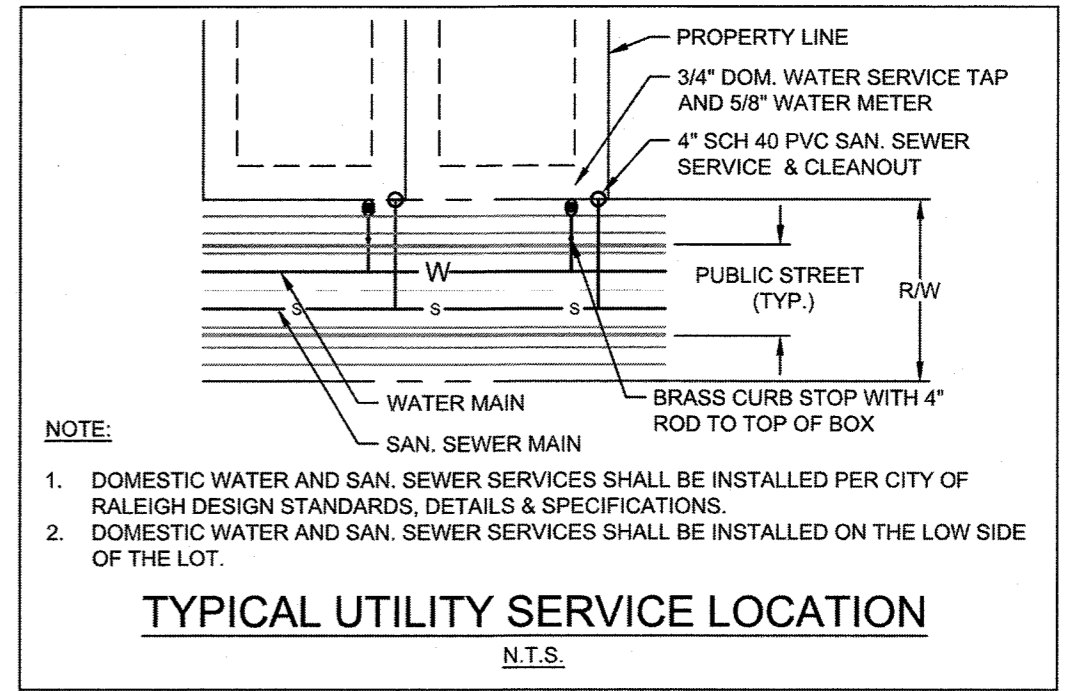
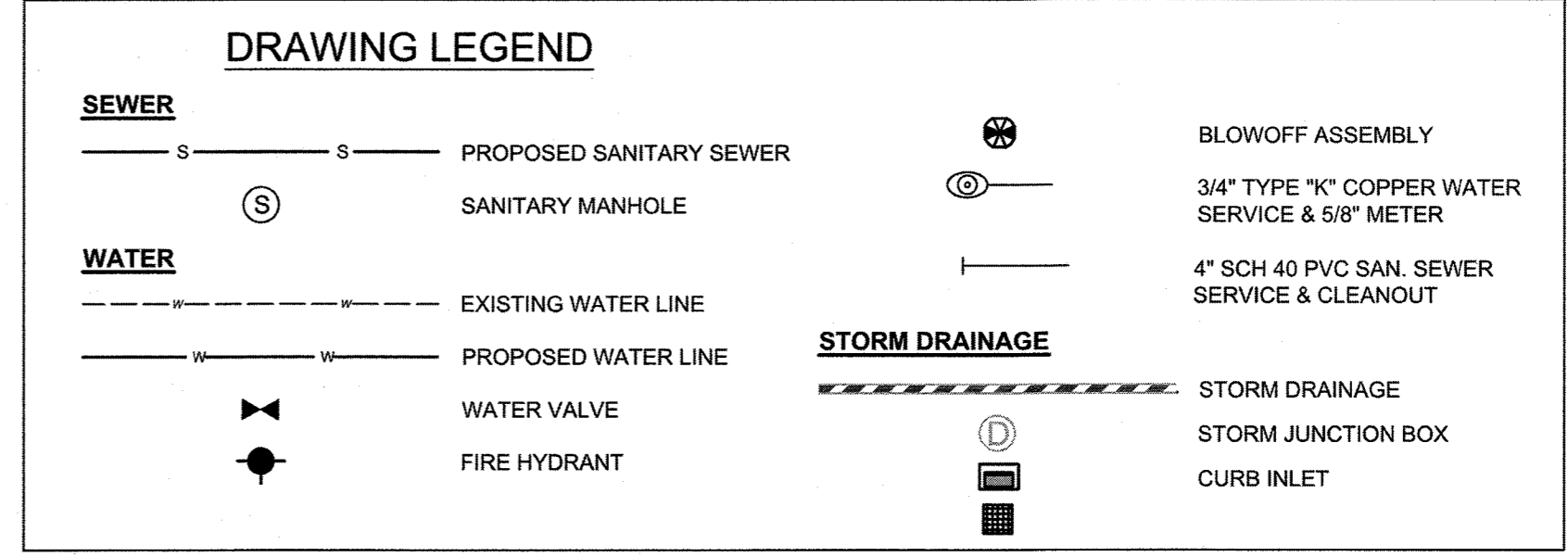
SCALE
PER PLAN

DATE

JOB NO.
37909

SHEET NO.
C6.7

DATE
8/21/2020



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.

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, P.E., Registered Professional Engineer, License No. 22446, State of North Carolina. I am approving this document on 8/21/2020.

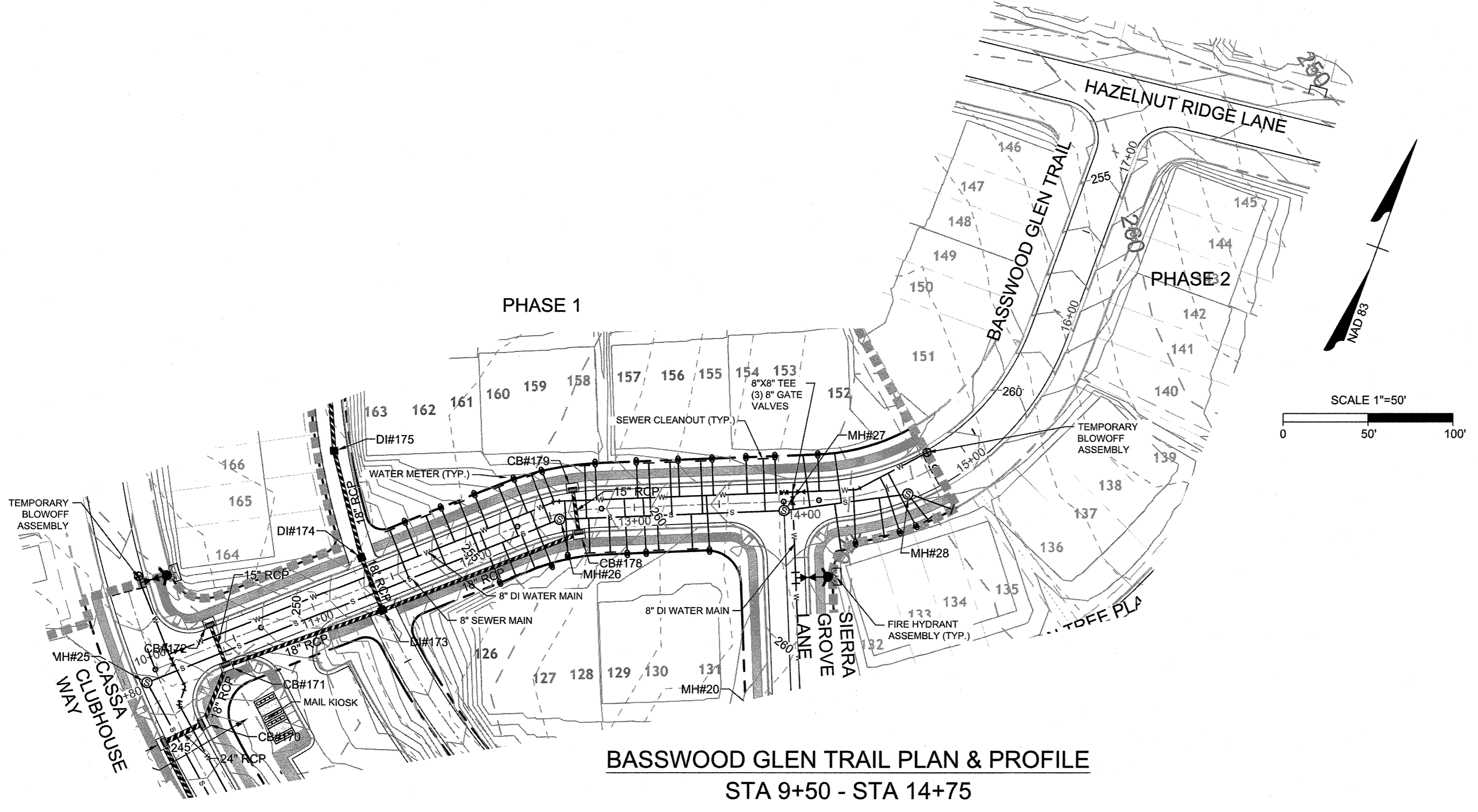
TOWN CERTIFICATION

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.

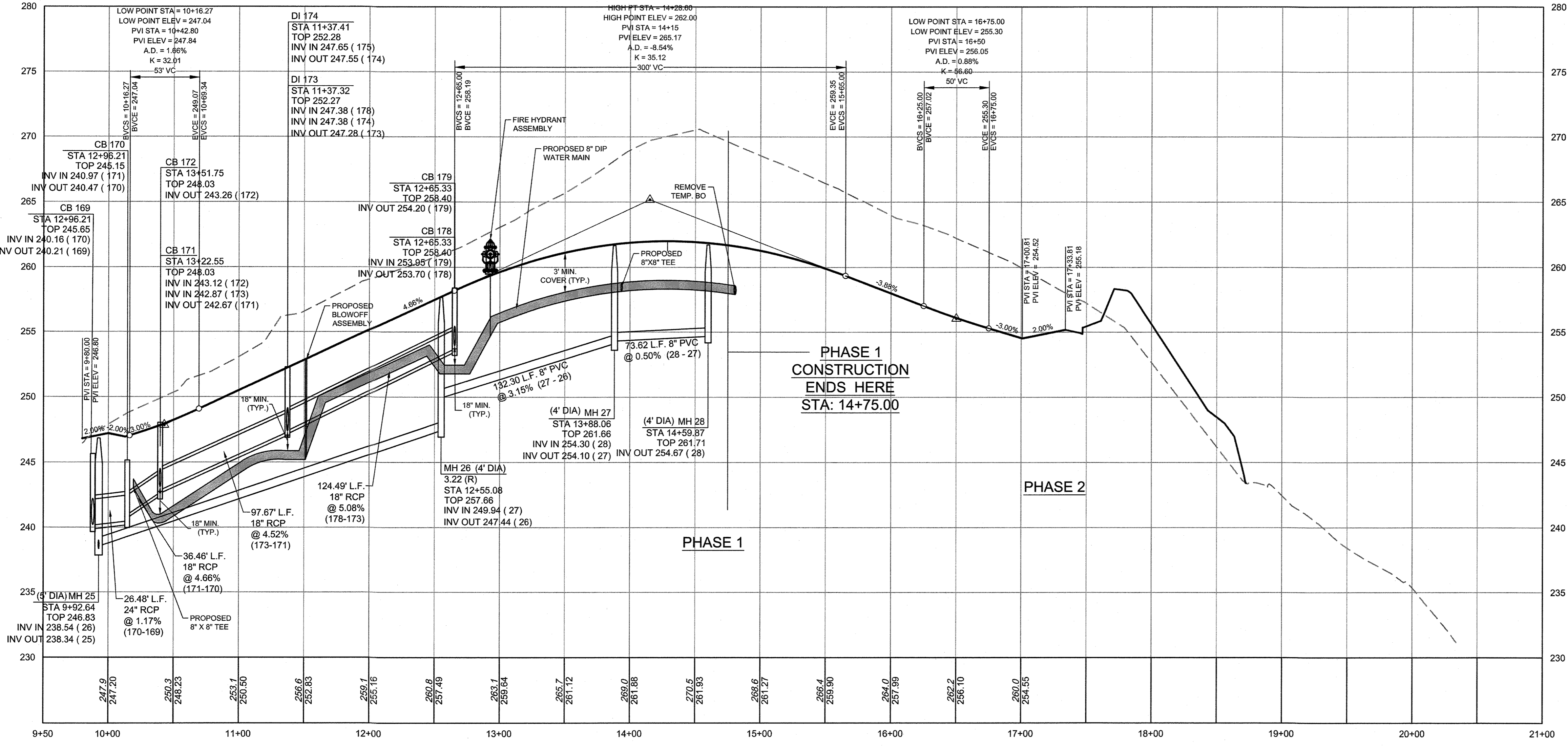
BY: *[Signature]* DATE: 8/18/2020
ADMINISTRATOR



BASSWOOD GLEN TRAIL PLAN & PROFILE

STA 9+50 - STA 14+75

HORZ. SCALE: 1" = 50' VERT. SCALE: 1" = 5'



PHASE 1 CONSTRUCTION ENDS HERE STA: 14+75.00

PHASE 2

S:\102137909-Stone_River\DWG\Sheet\CD\37909-C6.0-PROF.dwg | by: J.D. MacMillan

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
BASSWOOD GLEN TRAIL PLAN & PROFILE



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Raleigh, NC 27607
TEL 919 865-4931 FAX 919 833-8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

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

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

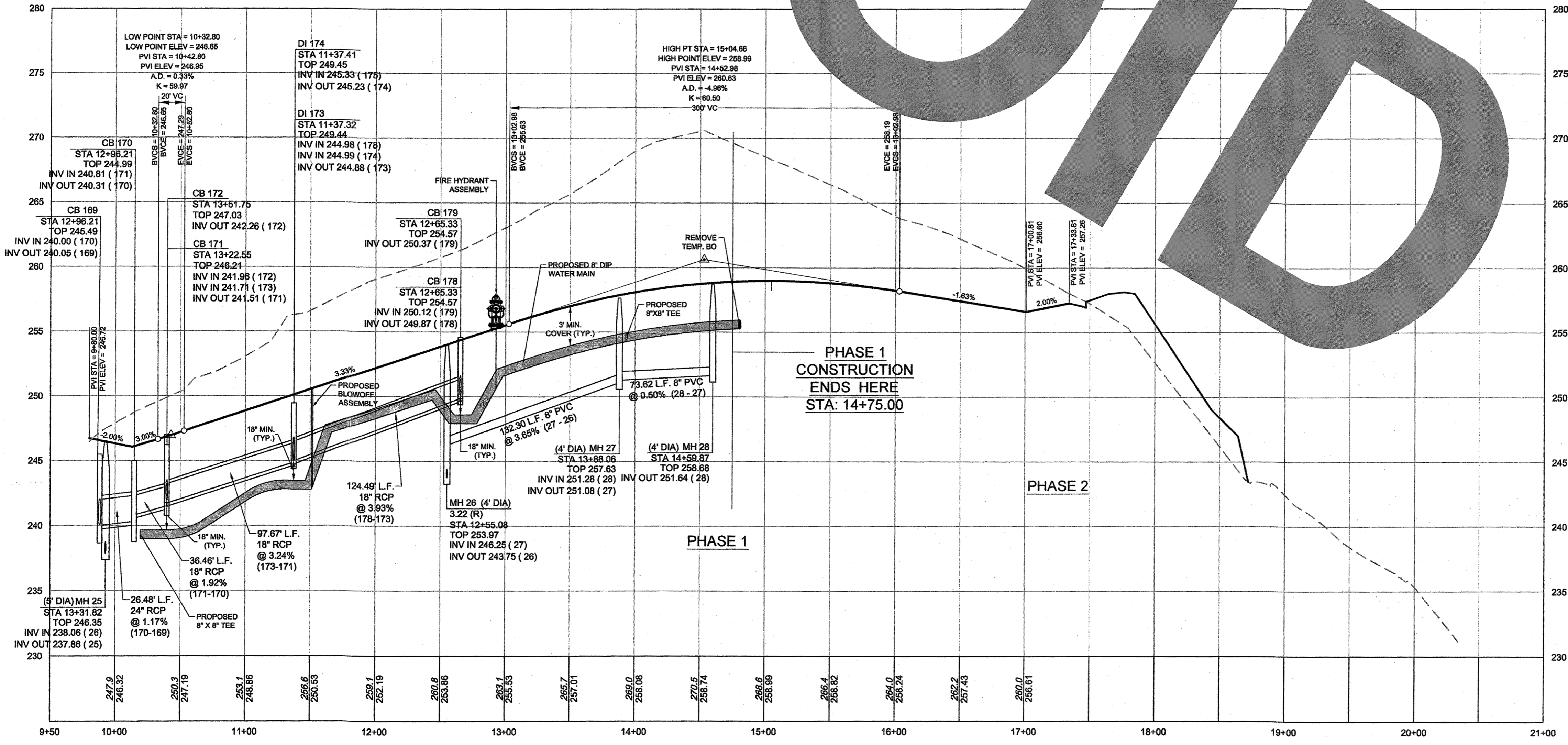
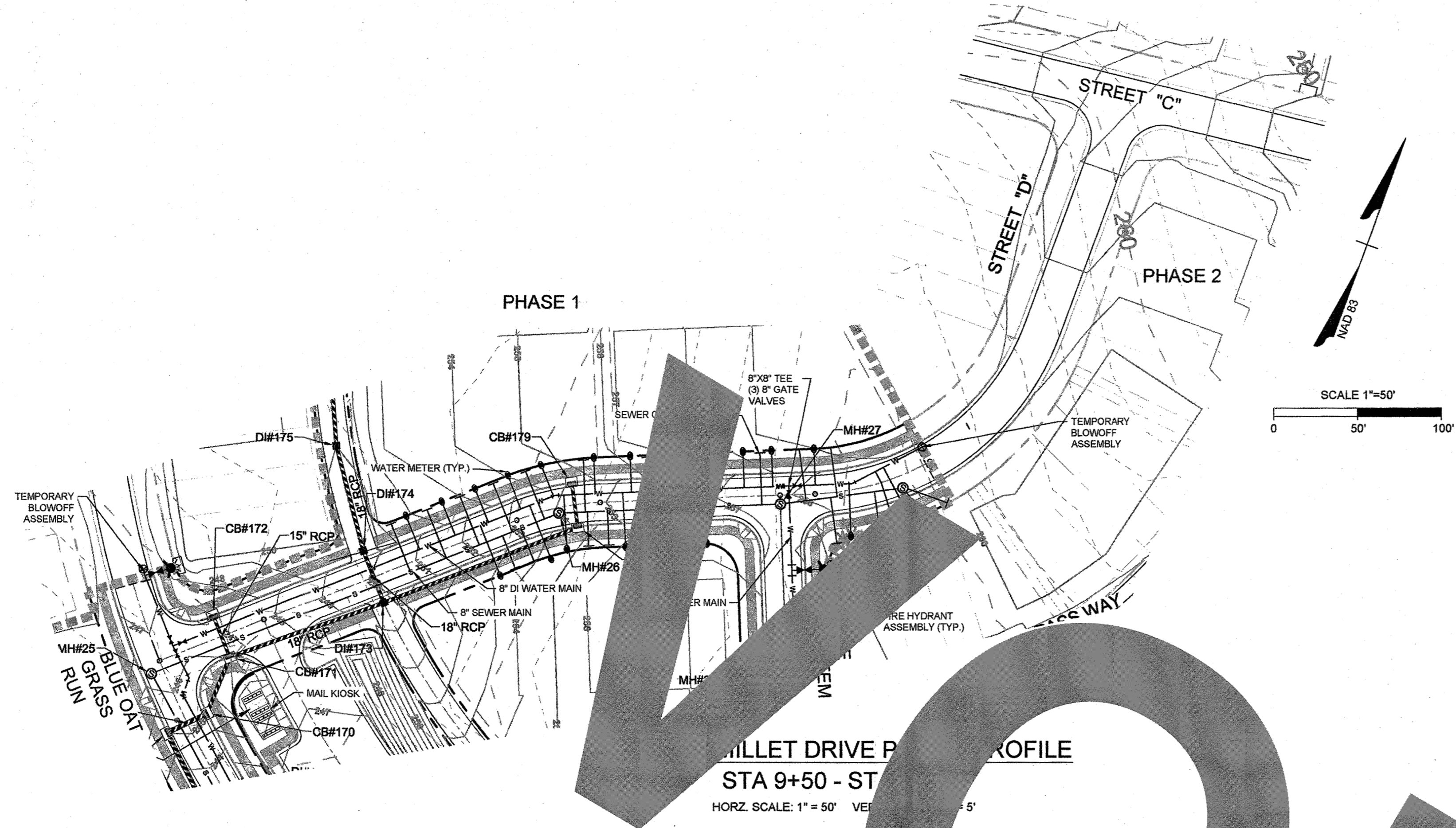
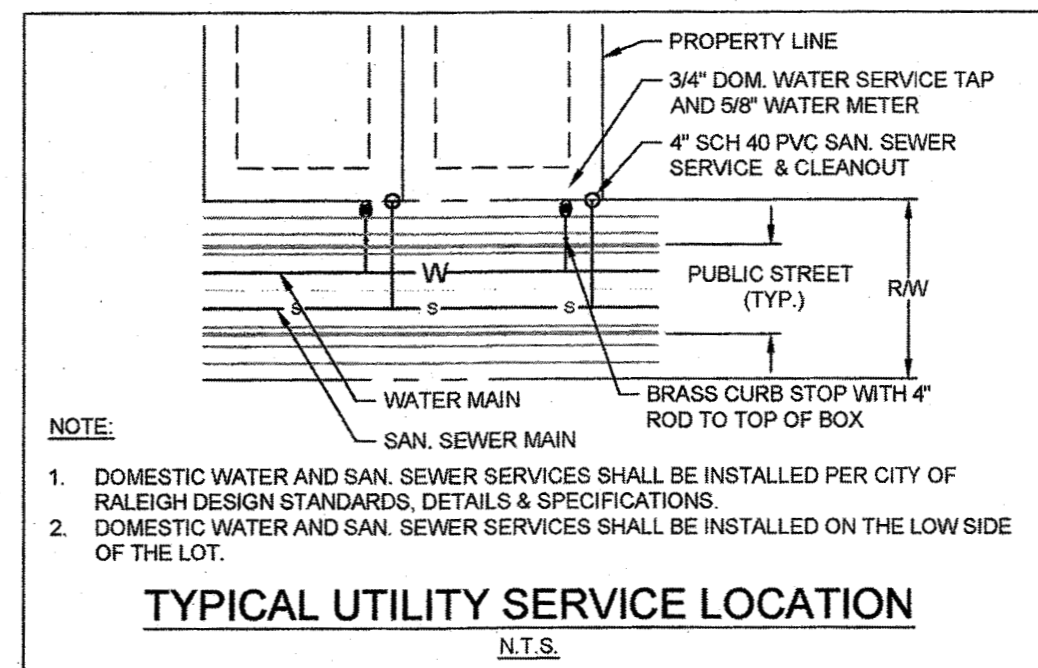
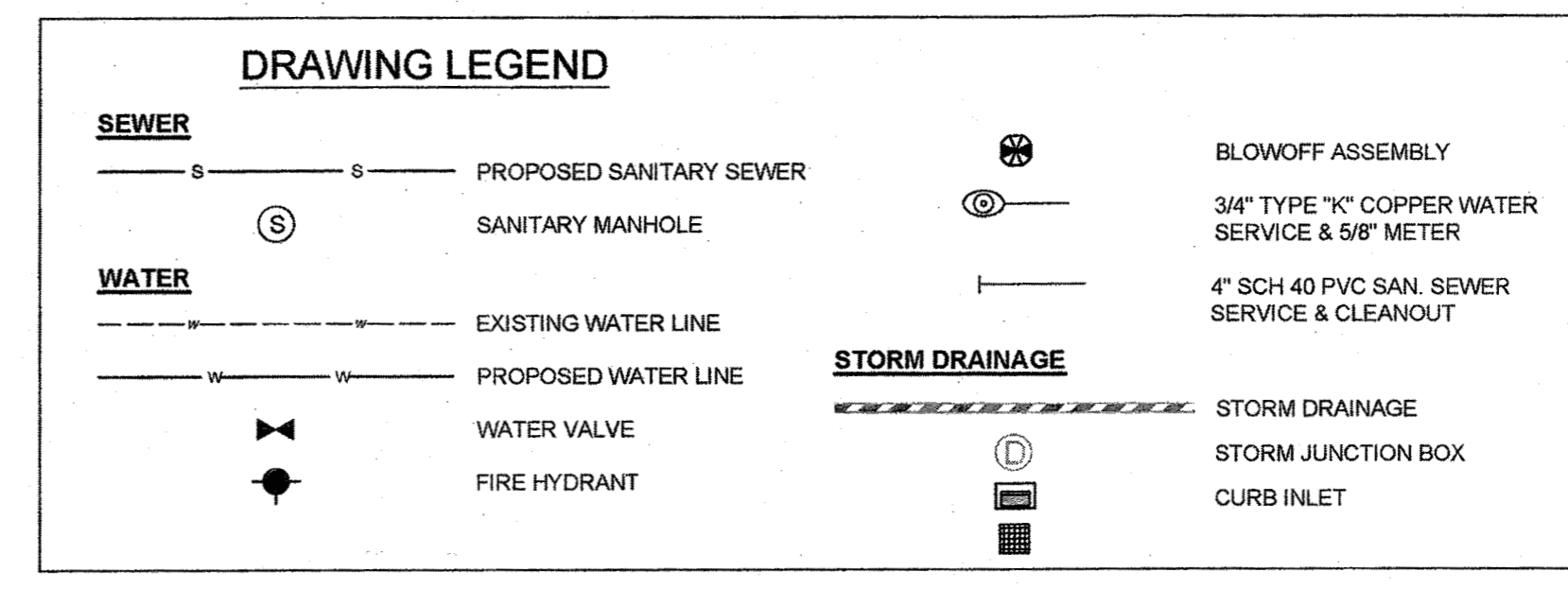
STONERIVER SUBDIVISION PHASE 1

KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

PURPLE MILLET DRIVE PLAN & PROFILE

STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
PURPLE MILLET DRIVE PLAN & PROFILE

JOB NO. 37909
SHEET NO. C6.7



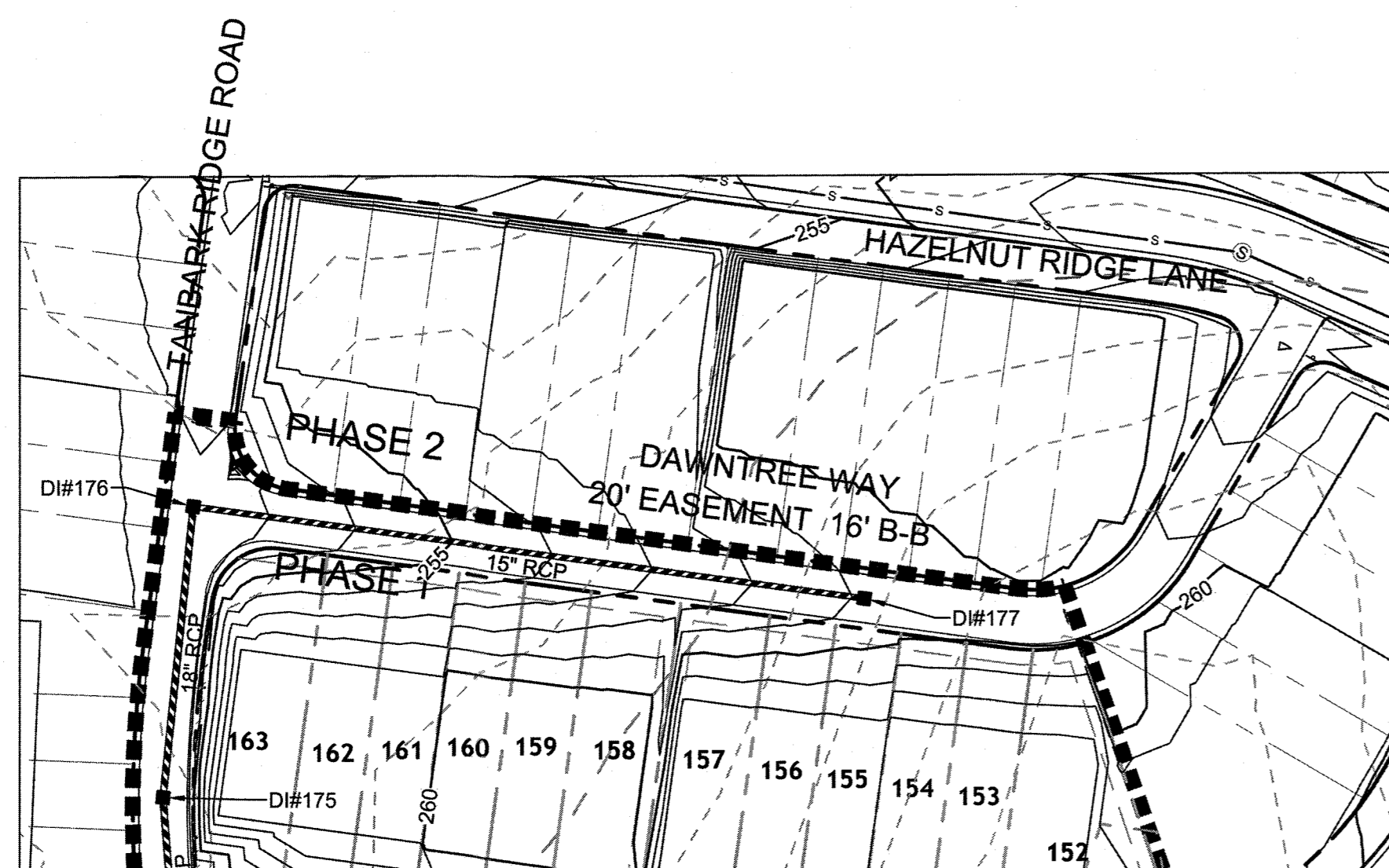
Public Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh Public Utilities Department Permit W-3556
Authorization to Construct [Signature]
Date 10/26/18

SEWER Public Water Distribution / 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-4451
Authorization to Construct [Signature]
Date 10/26/18

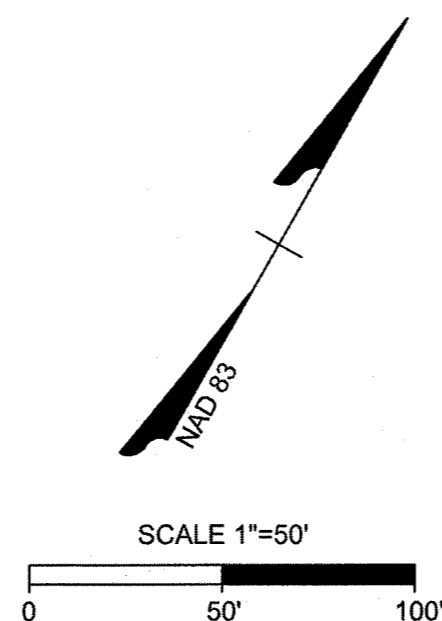
ATTENTION CONTRACTORS
The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty-four hours prior to beginning any of their construction.
Failure to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

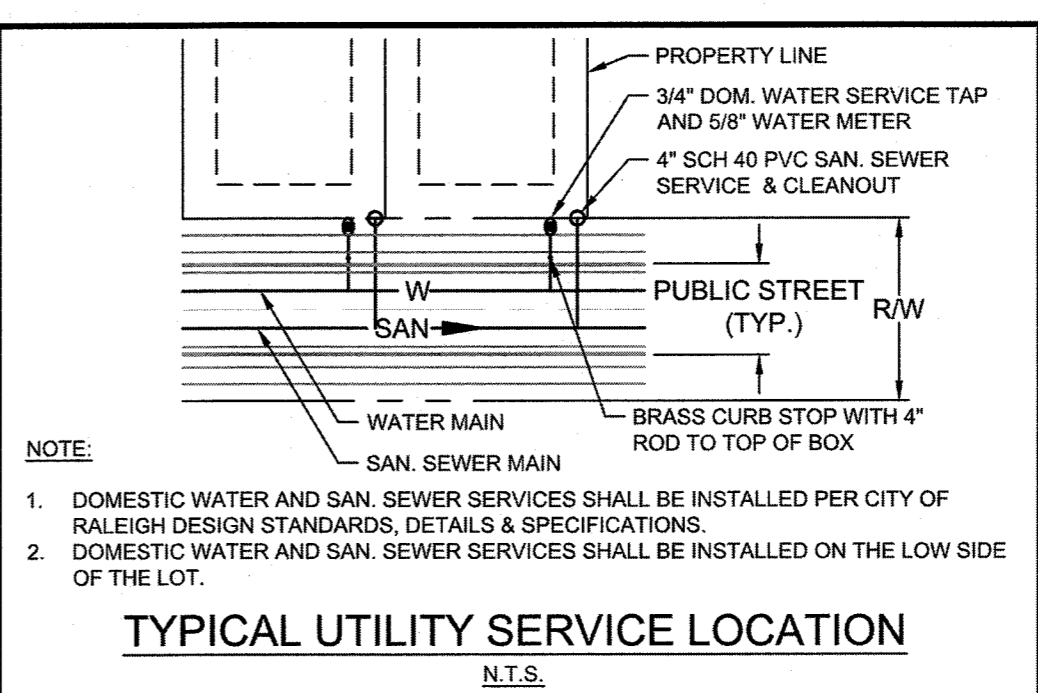
R:\102\17909-Stone_River\DWG\Sheet\CD\17909-C6.0-PROP.dwg_1 by Keith Astor



DAWNTREE WAY
STA. 9+50 - STA. 14+50
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'



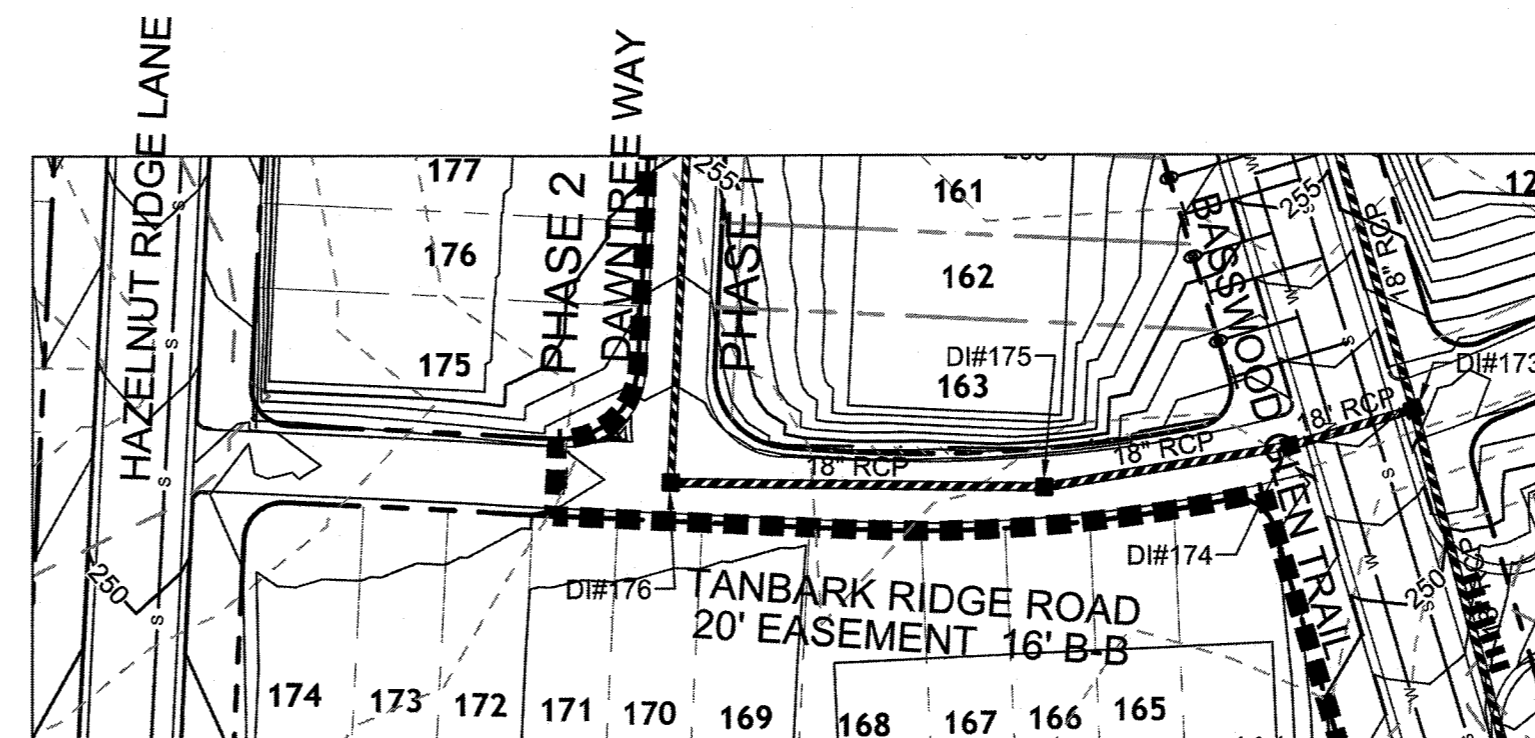
- NOTE:**
- 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 - 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT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



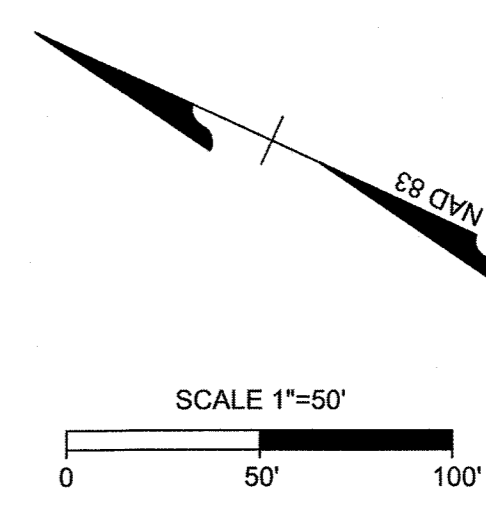
- NOTE:**
1. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED PER CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS.
 2. DOMESTIC WATER AND SAN. SEWER SERVICES SHALL BE INSTALLED ON THE LOW SIDE OF THE LOT.

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
	(CM)	3/4" TYPE "K" COPPER WATER SERVICE & 5/8" METER
	(CS)	4" SCH 40 PVC SAN. SEWER SERVICE & CLEANOUT
STORM DRAINAGE	— SD — SD —	STORM DRAINAGE
	(SJ)	STORM JUNCTION BOX
	(CI)	CURB INLET
	(DI)	DROP INLET



TANBARK RIDGE ROAD
STA. 9+50 - STA. 13+50
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'



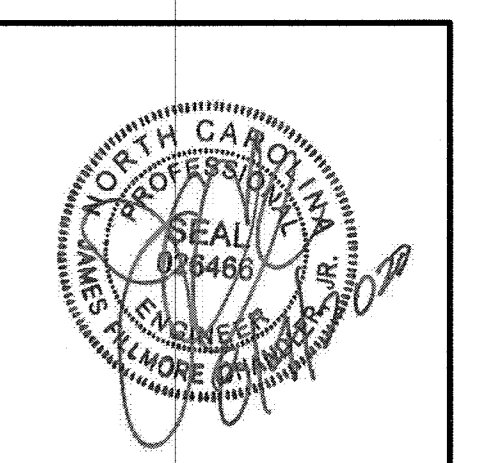
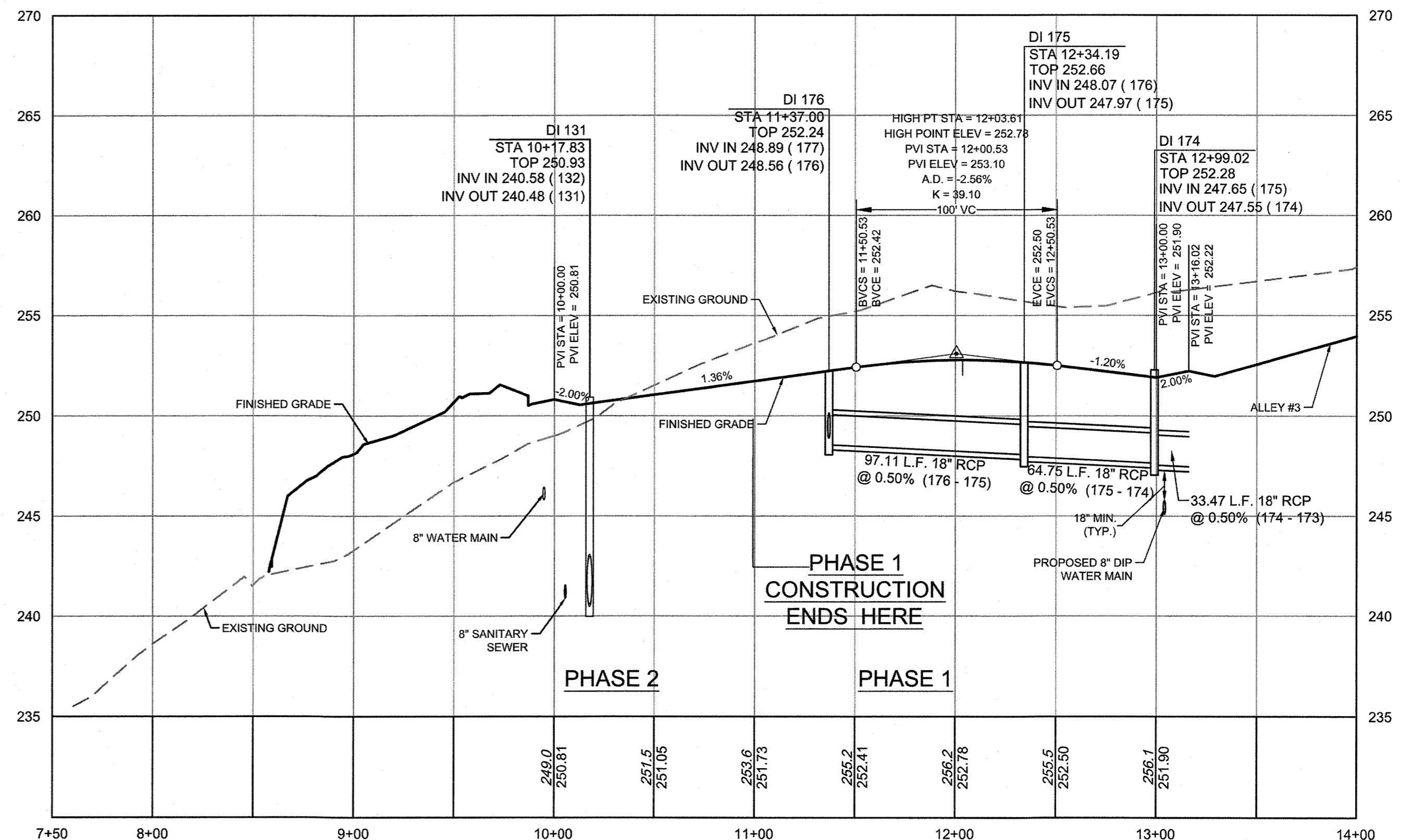
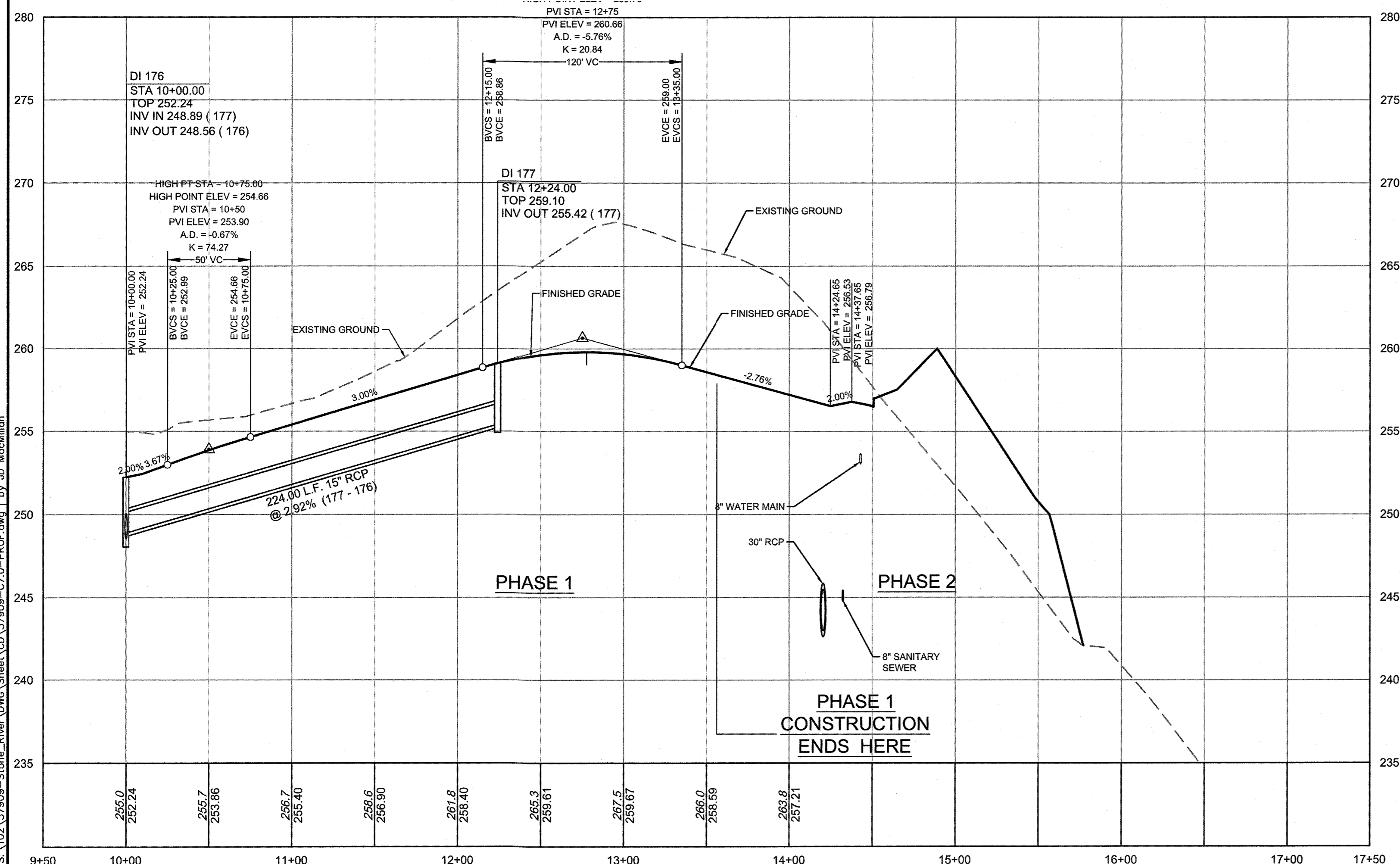
TOWN CERTIFICATION

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.M.M.* 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: 8/20/2020
 ADMINISTRATOR



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

YOUR VISION ACHIEVED THROUGH OURS.

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

REVISION DESCRIPTION	UTILITY REVISIONS
REVISIONS	GRAVING AND UTILITY REVISIONS

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

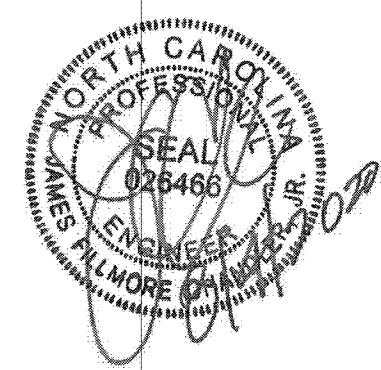
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA

DAWNTREE WAY & TANBARK RIDGE ROAD PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C7.0

S:\102\37909-Stoneriver\DWG\Sheet\CD\37909-C7.0-PROF.dwg | by: J.D. MacMillan

These plans and associate documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Park, Raleigh, NC 27607
 TEL 919.866.4951 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

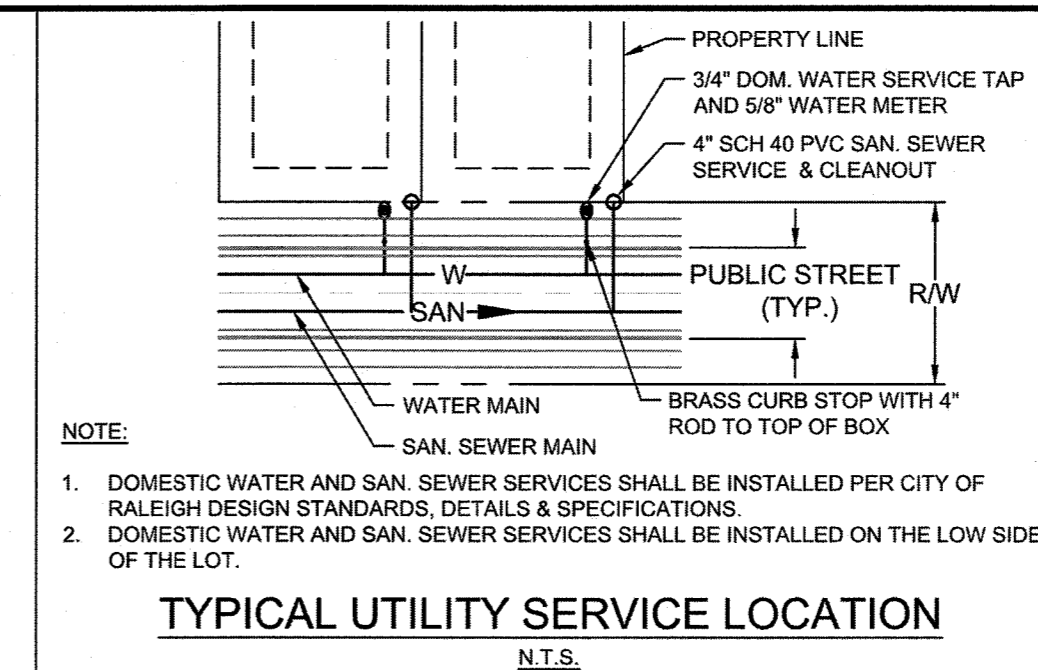
TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
TANBARK RIDGE ROAD & PERSIMMON TREE PLACE PLAN & PROFILE

JOB NO.
37909
 SHEET NO.
C7.1

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

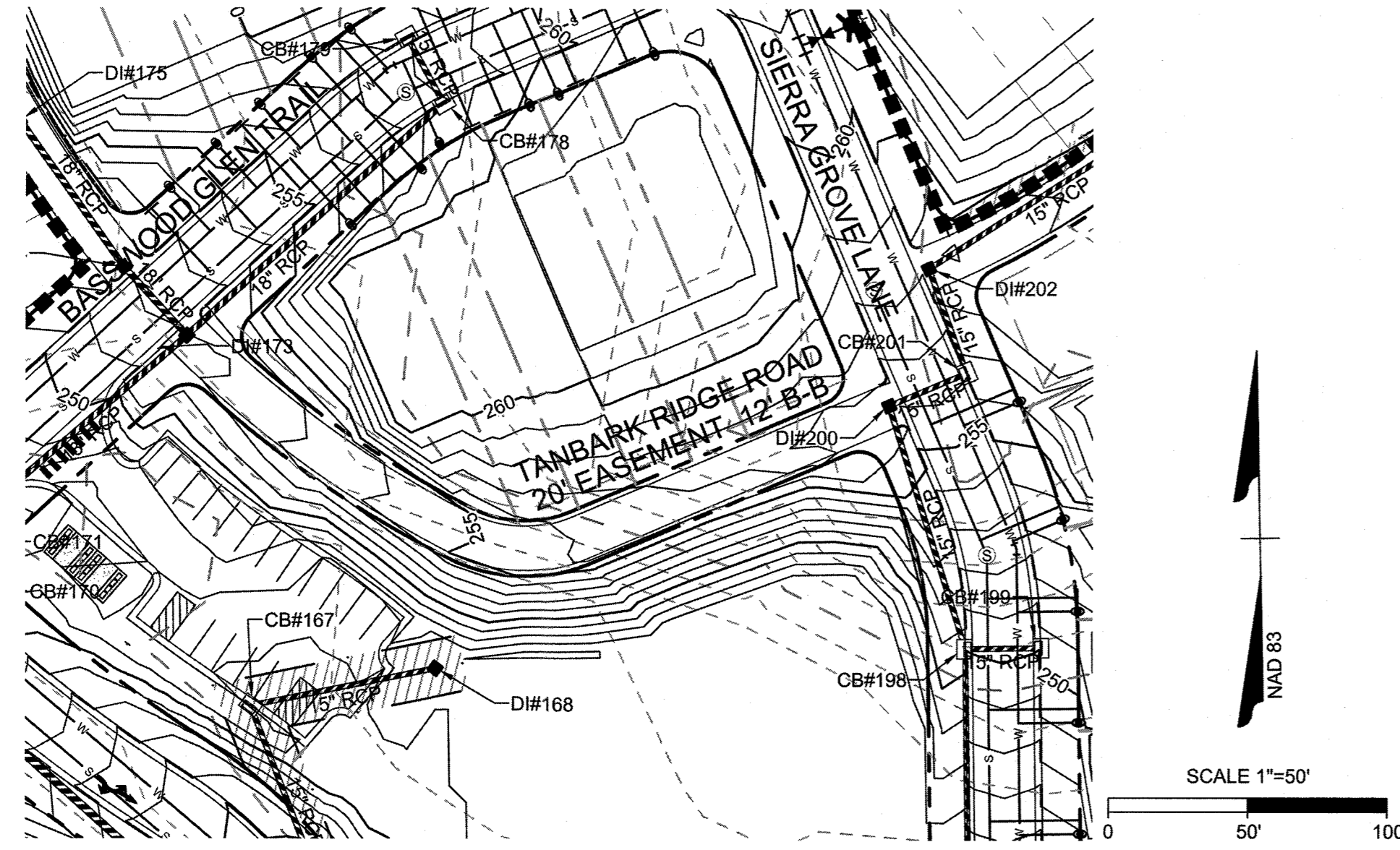
DRAWING LEGEND

- SEWER**
- S — S — PROPOSED SANITARY SEWER
 - ⊙ SANITARY MANHOLE
- WATER**
- - - - - EXISTING WATER LINE
 - W — W — 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**
- S — S — STORM DRAINAGE
 - ⊕ STORM JUNCTION BOX
 - ⊕ CURB INLET
 - ⊕ DROP INLET

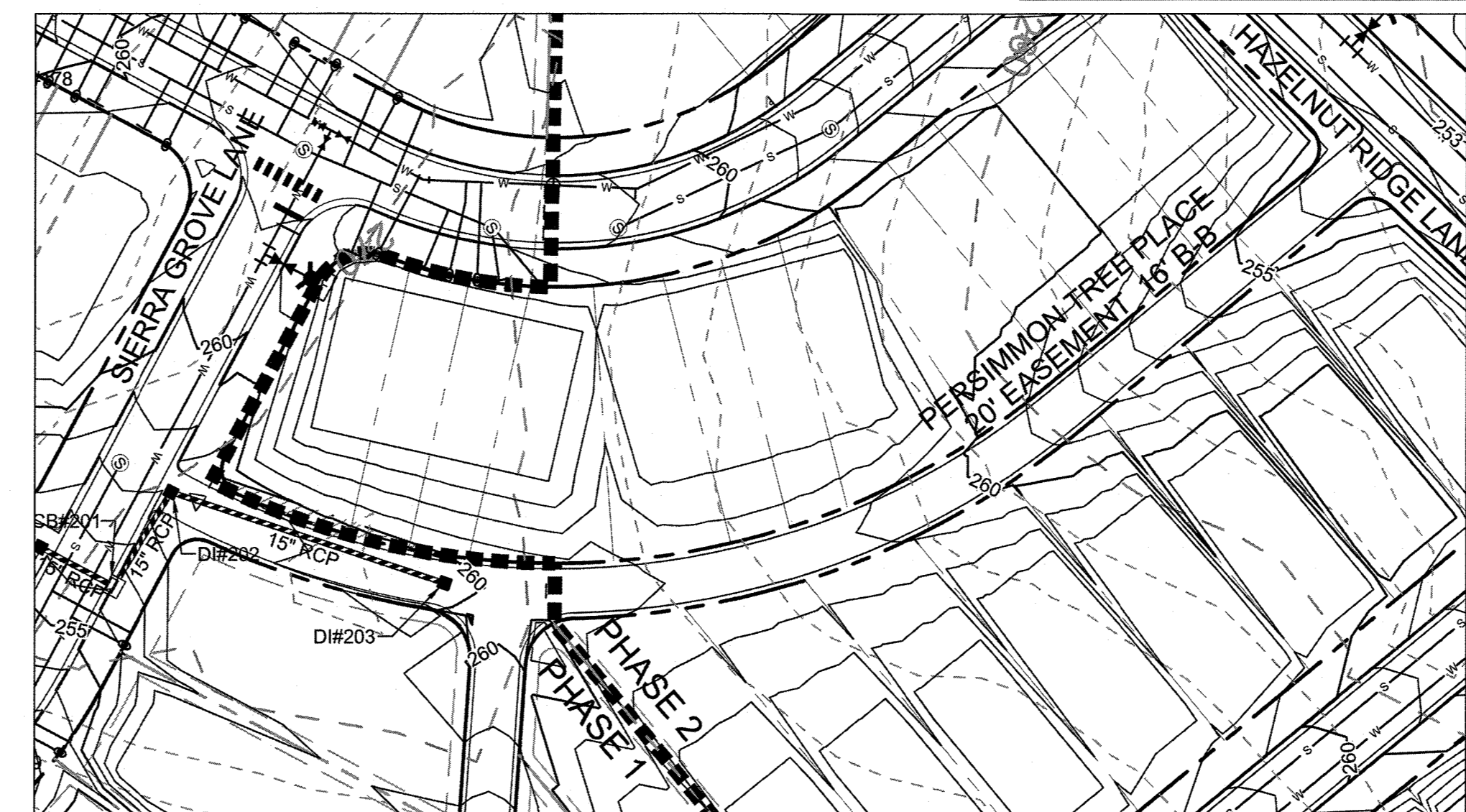


- NOTE:**
- 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 - 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT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

- NOTE:**
1. 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.



TANBARK RIDGE ROAD
 STA. 9+50 - STA. 13+50
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'



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

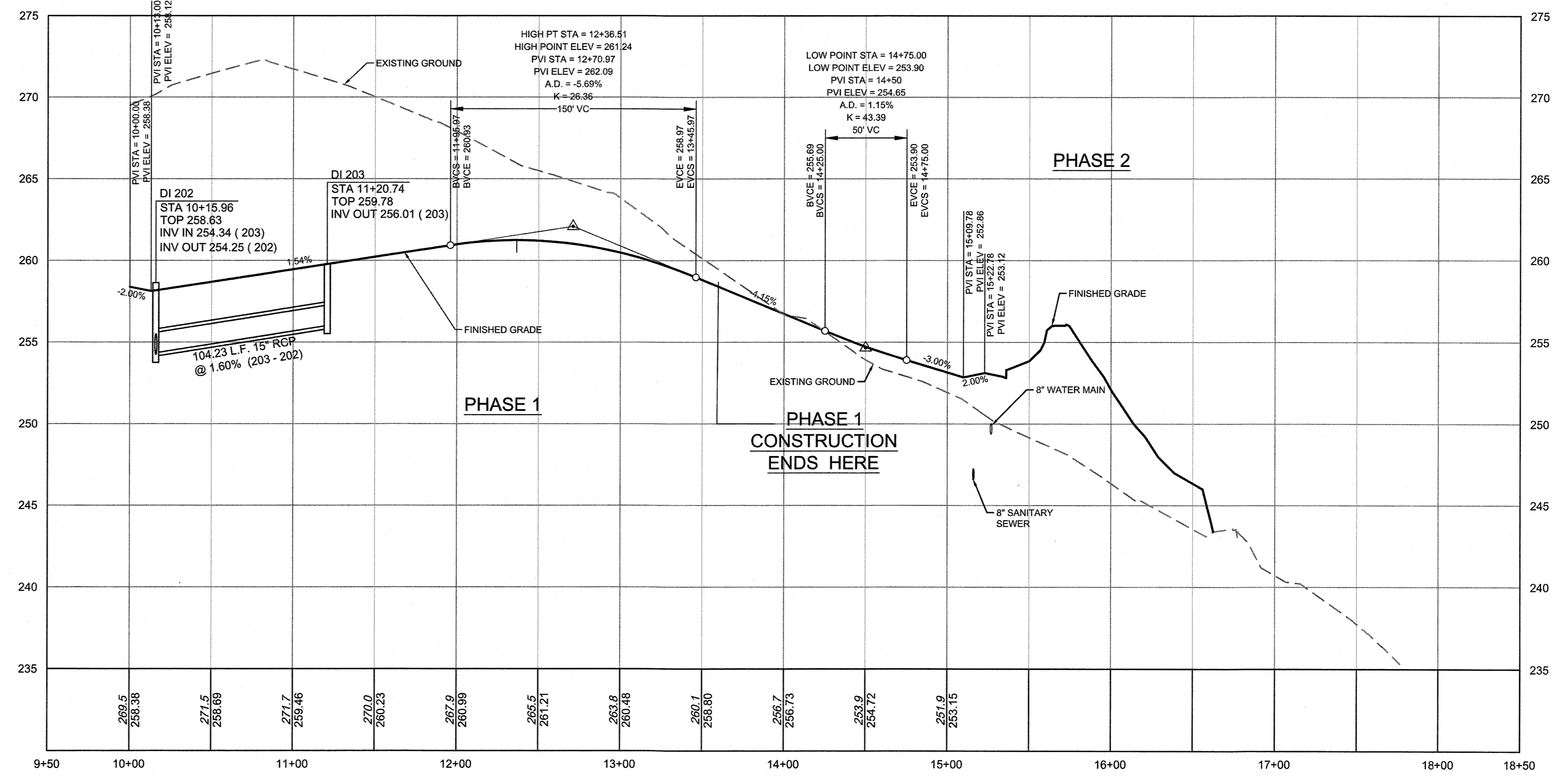
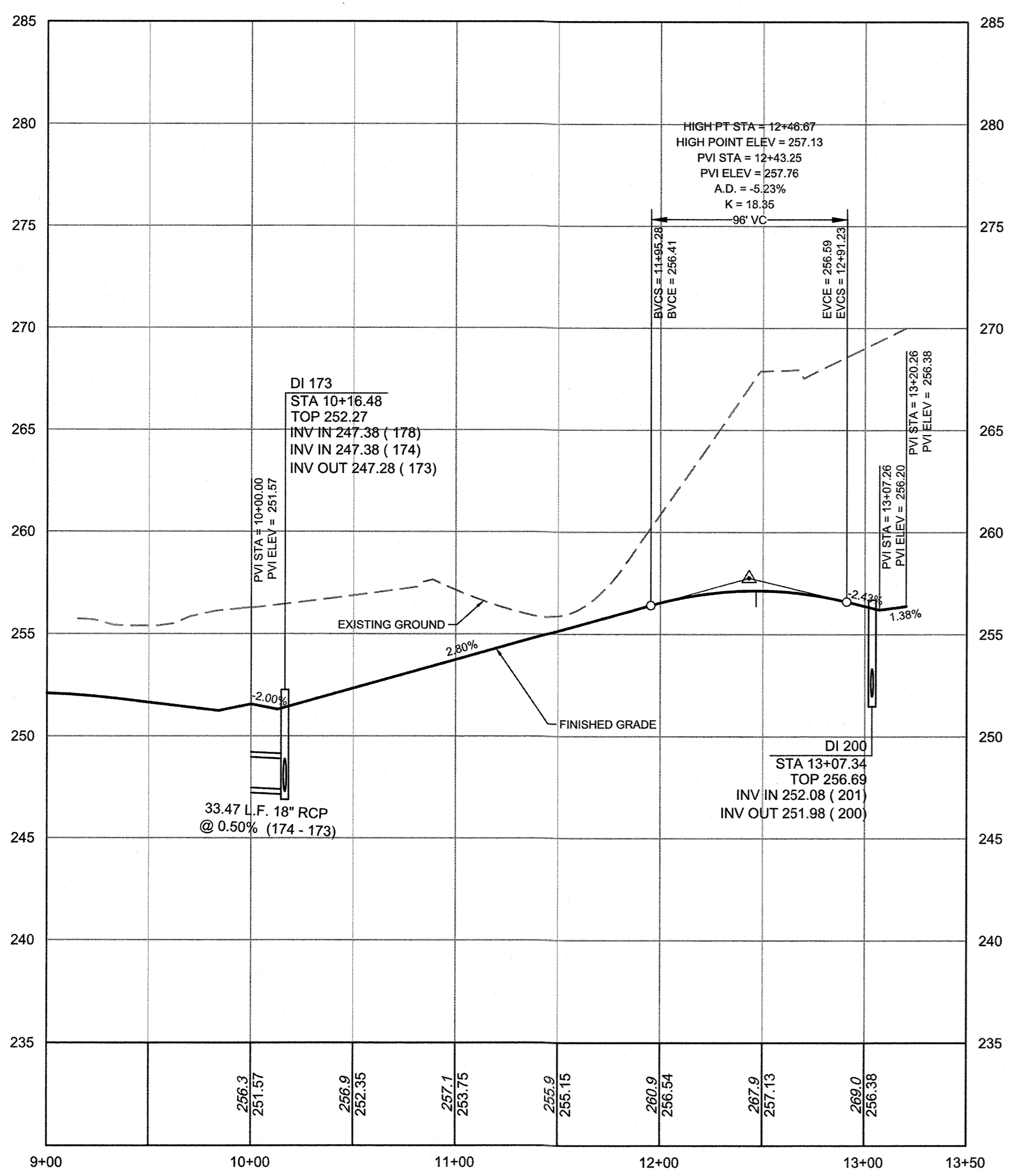
TOWN CERTIFICATION

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.

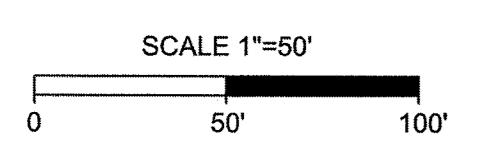
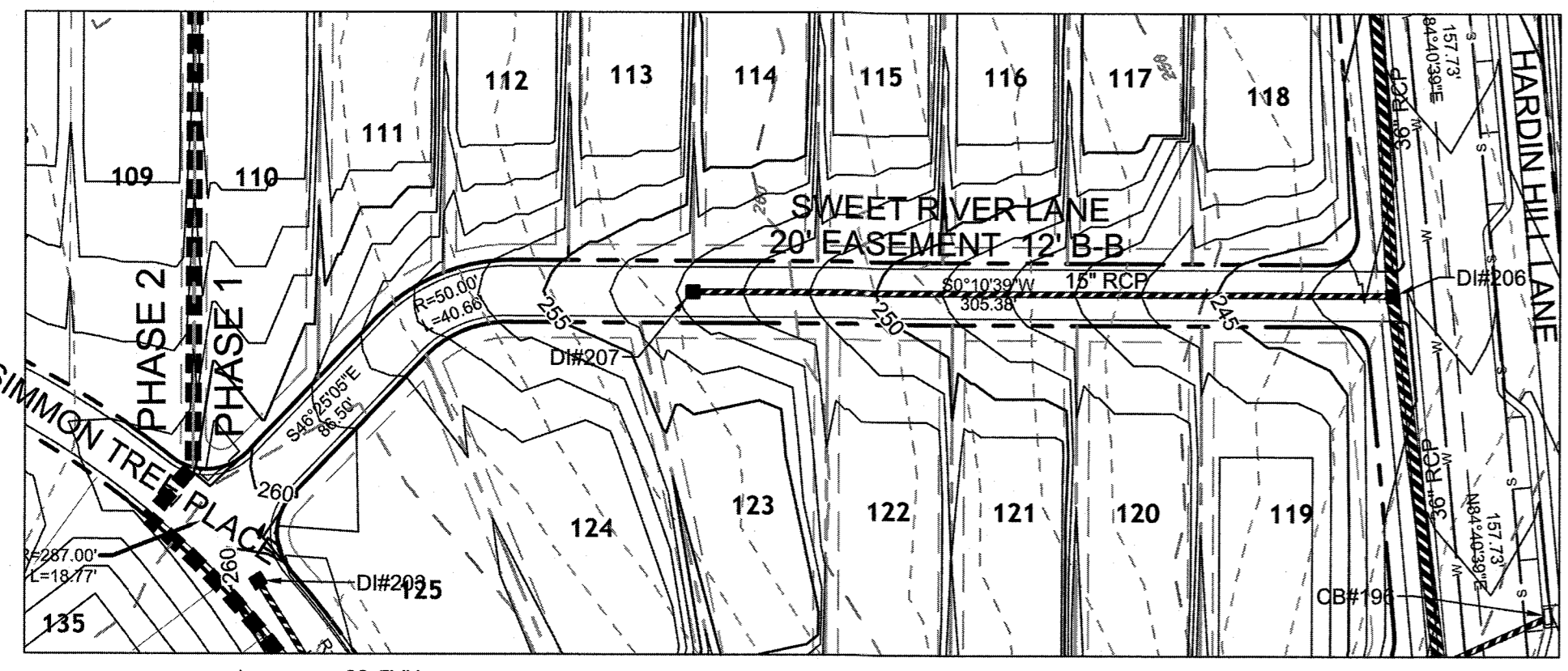
BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

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

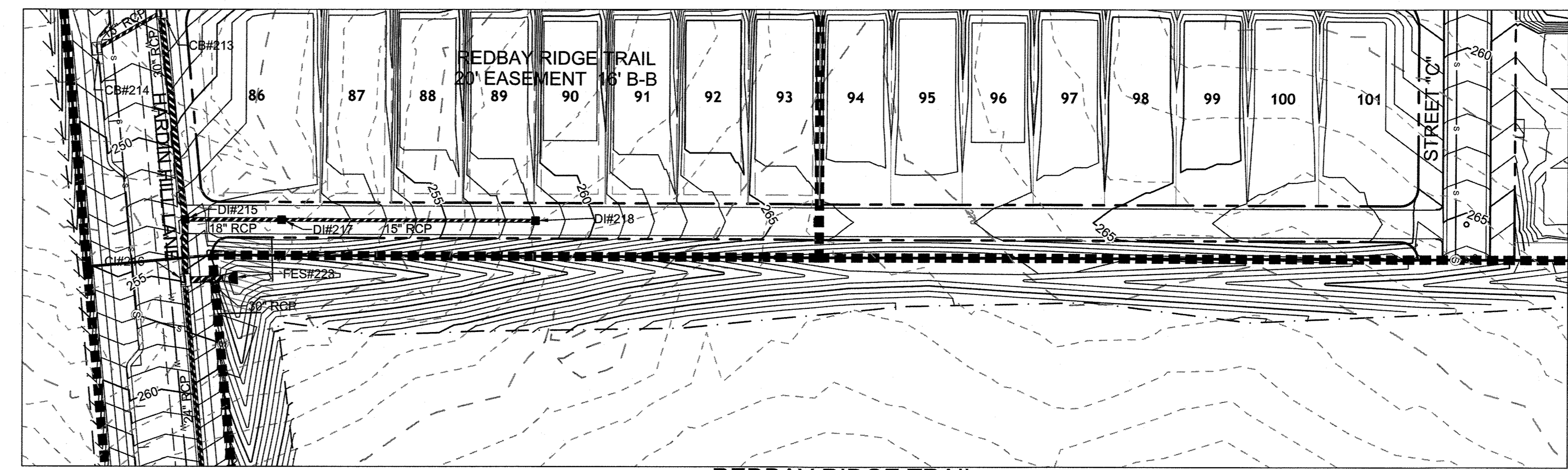
BY: *[Signature]* DATE: 8/18/2020
 ADMINISTRATOR



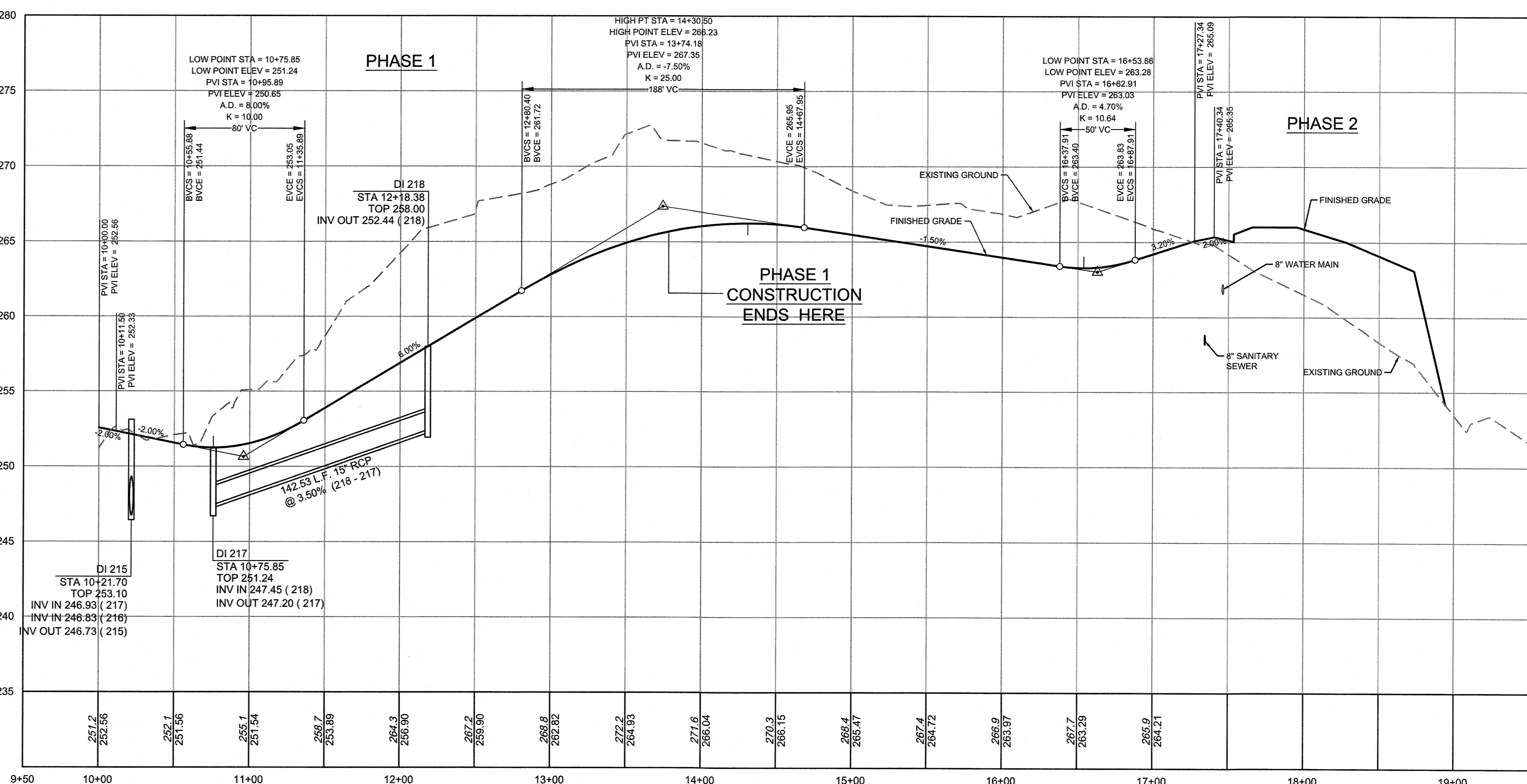
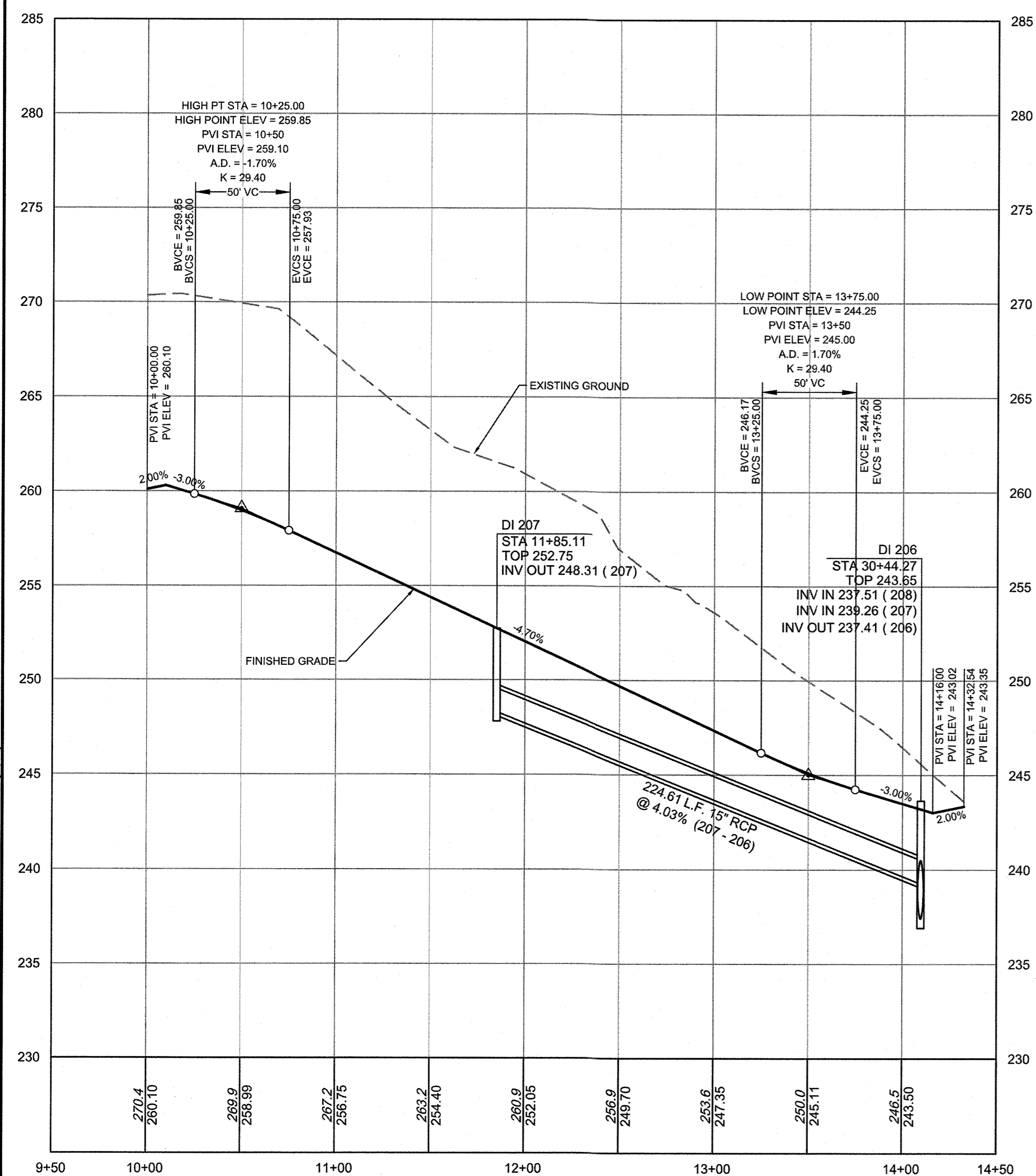
S:\102\37909-Stone_River\DWG\Sheet\CD\37909-C7.0-PROF.dwg | by JD MacMillan



SWEET RIVER LANE
STA. 9+50 - STA. 14+50
 VERTICAL SCALE: 1" = 5'
 HORIZONTAL SCALE: 1" = 5'

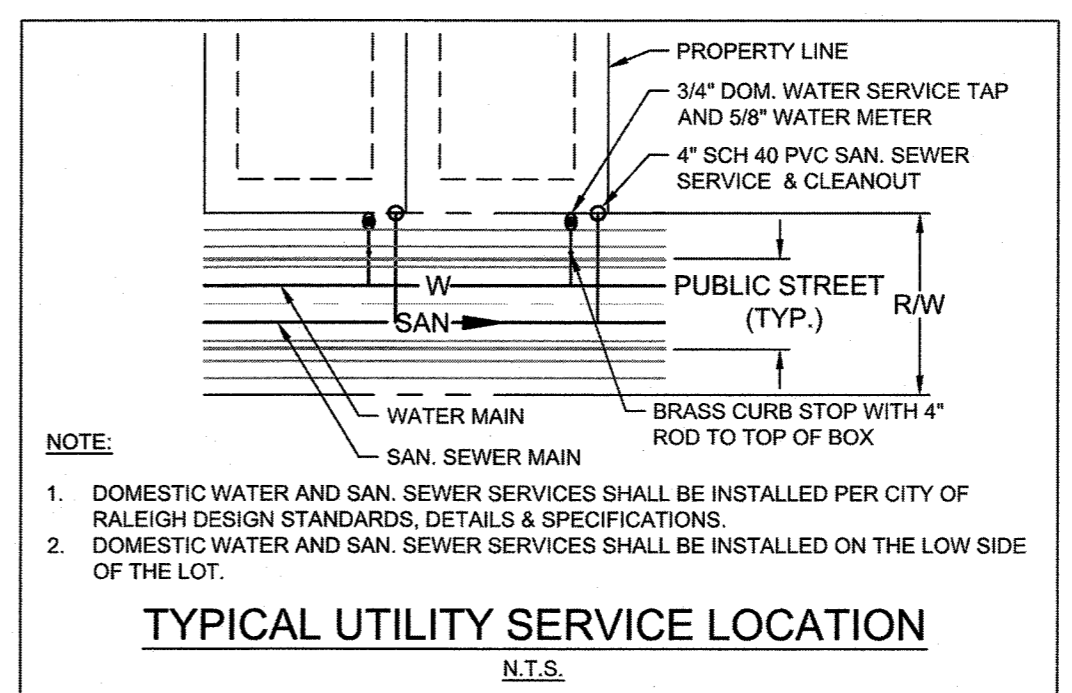


REDBAY RIDGE TRAIL
STA. 9+50 - STA. 18+00
 VERTICAL SCALE: 1" = 5'
 HORIZONTAL SCALE: 1" = 5'



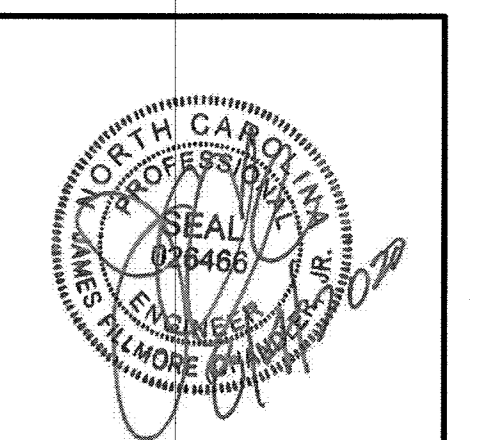
NOTE:
 1) MAINTAIN A MINIMUM OF 18" OF VERTICLE SEPARATION BETWEEN STORM PIPES AND WATER LINES.
 2) WATER MAIN TO BE EITHER 10' HORIZONTALLY FROM SEWER OR 18" ABOVE VERTICALLY. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE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

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



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



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.833.4124 www.timmons.com

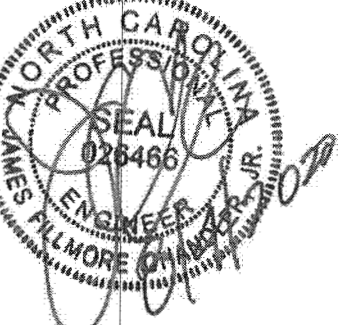
YOUR VISION ACHIEVED THROUGH OURS.

DATE	04/17/2020
DATE	09/11/2018
DRAWN BY	331
DESIGNED BY	331
CHECKED BY	JFC
SCALE	PER PLAN
REVISION DESCRIPTION	UTILITY REVISIONS GRADING AND UTILITY REVISIONS

TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
SWEET RIVER LANE & REDBAY RIDGE TRAIL PLAN & PROFILE

JOB NO.	37909
SHEET NO.	C7.2

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



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

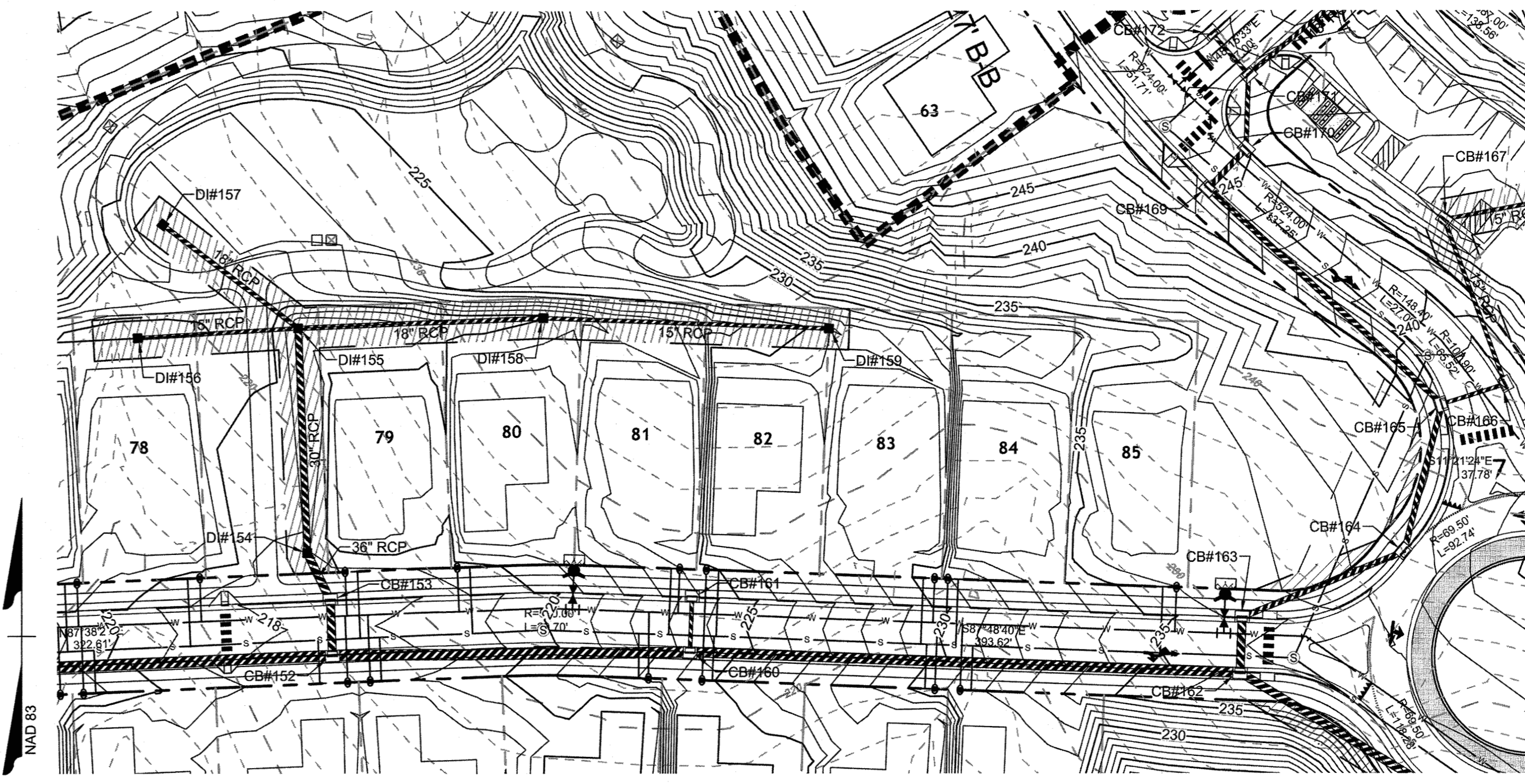
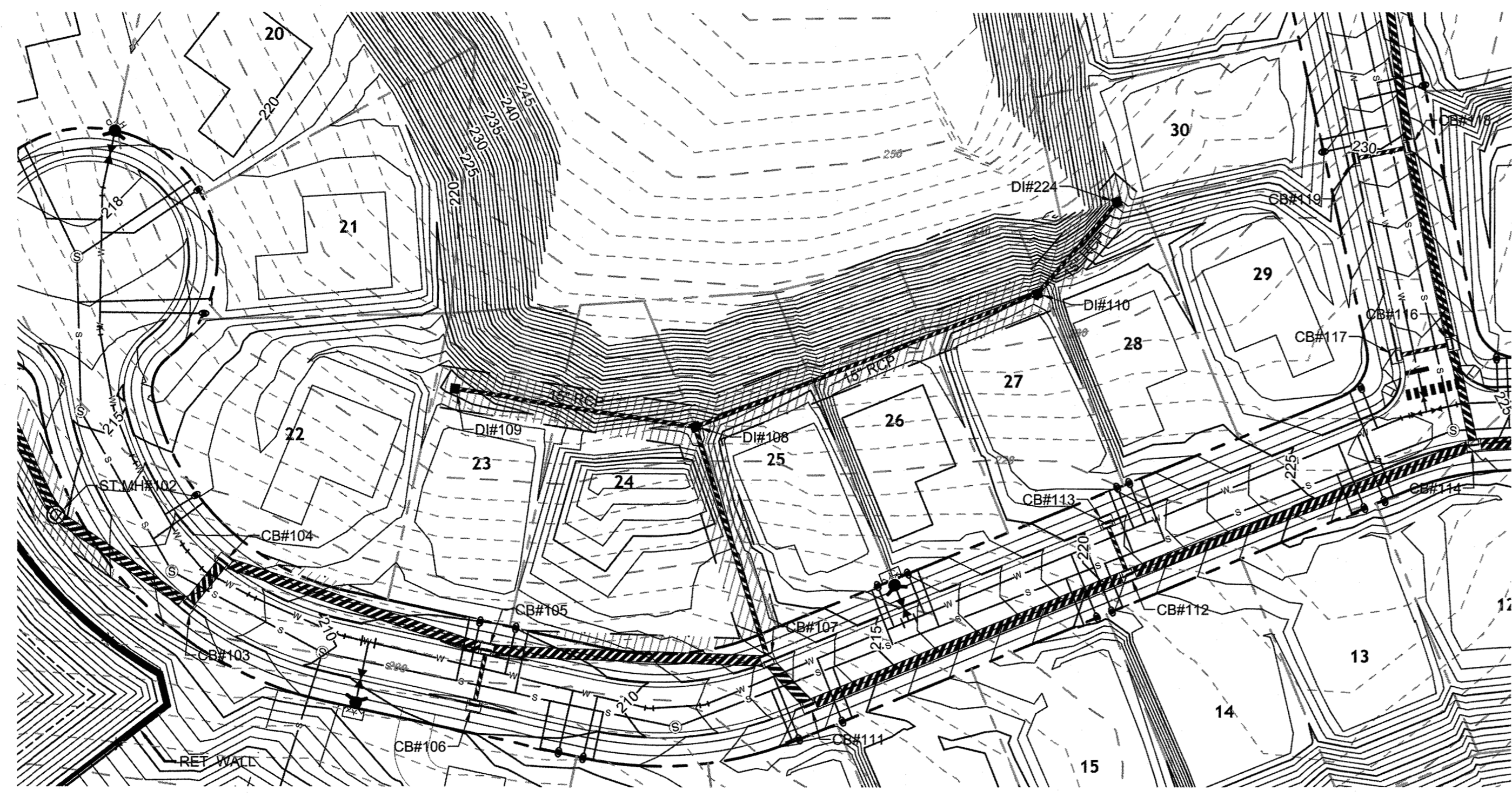
YOUR VISION ACHIEVED THROUGH OURS.

DATE: 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 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
STORM DRAINAGE PLAN & PROFILE

JOB NO. 37909
 SHEET NO. C7.3



STORM DRAINAGE PROFILE
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'

STORM DRAINAGE PROFILE
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'

STORM DRAINAGE PROFILE
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'

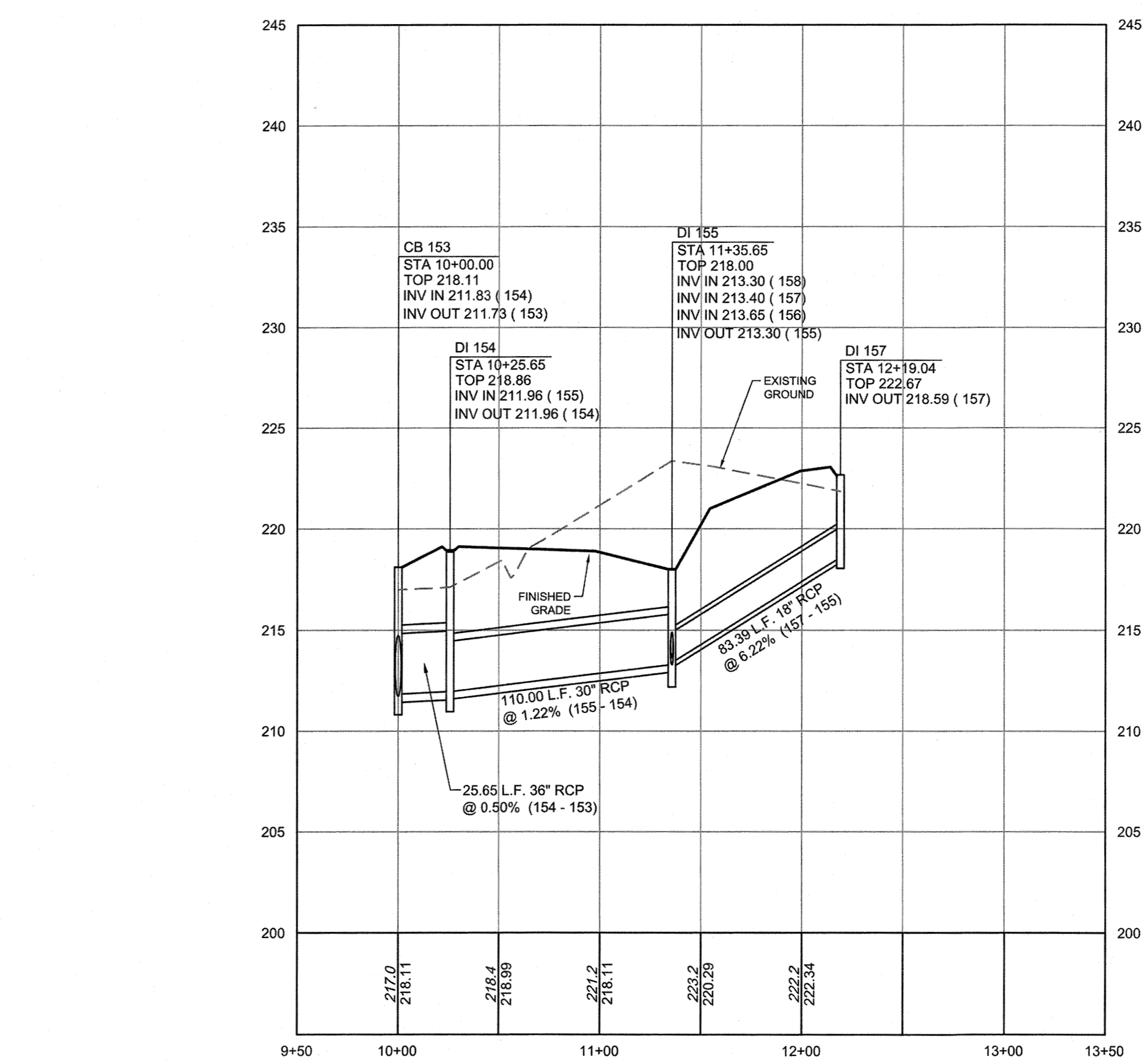
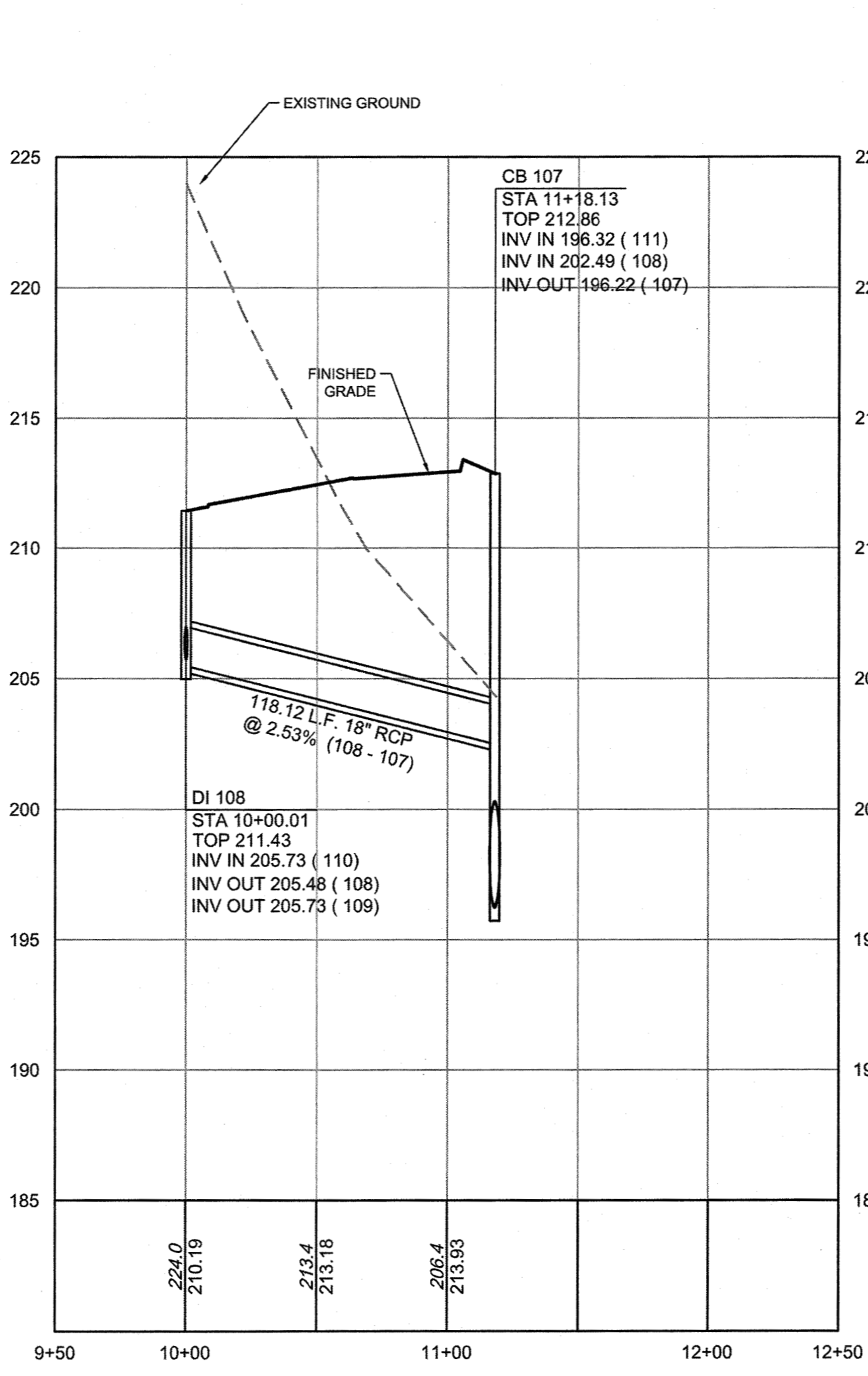
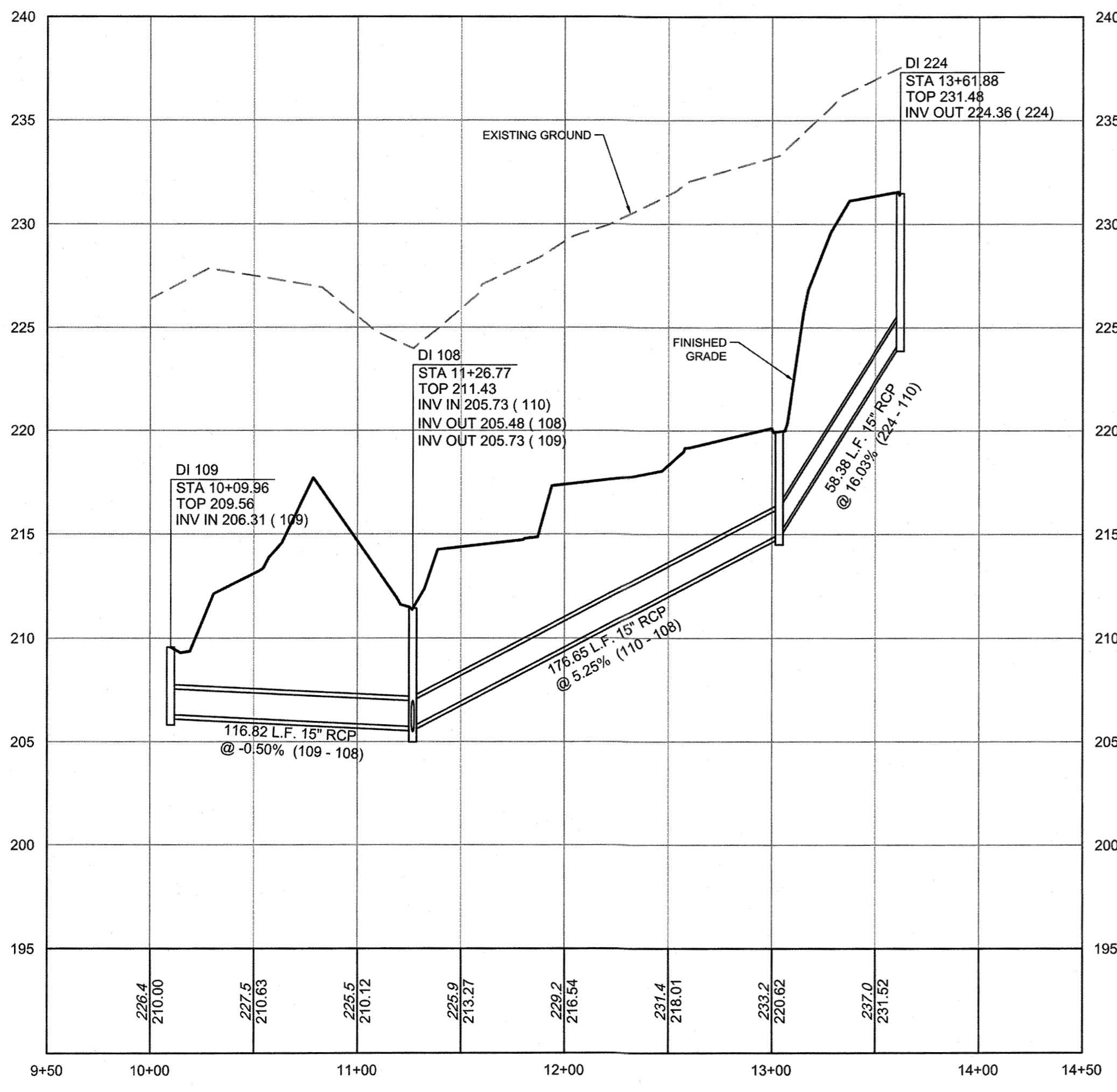
TOWN CERTIFICATION

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.

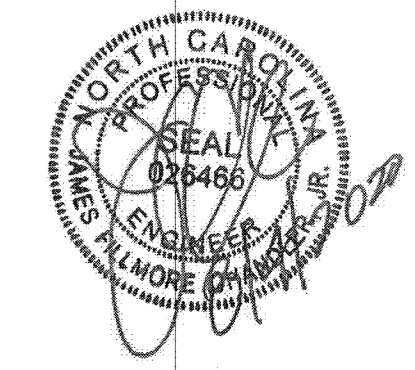
BY: *S.M.H.* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

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

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



S:\02\37909-Stone-River\DWG\Sheet\C0-7909-C7.0-PROF.dwg | By: J.D. MacMillan



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

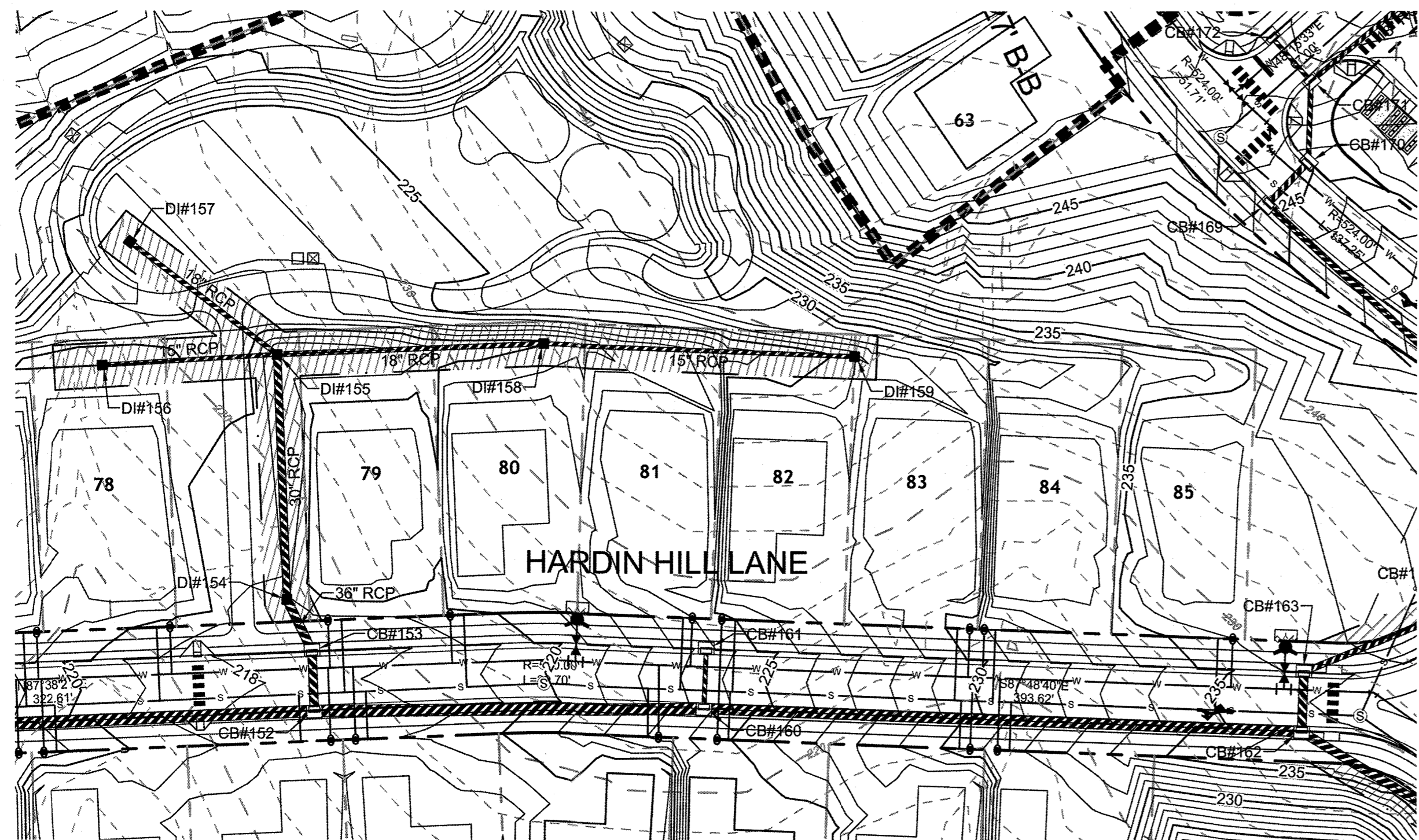
YOUR VISION ACHIEVED THROUGH OURS.

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

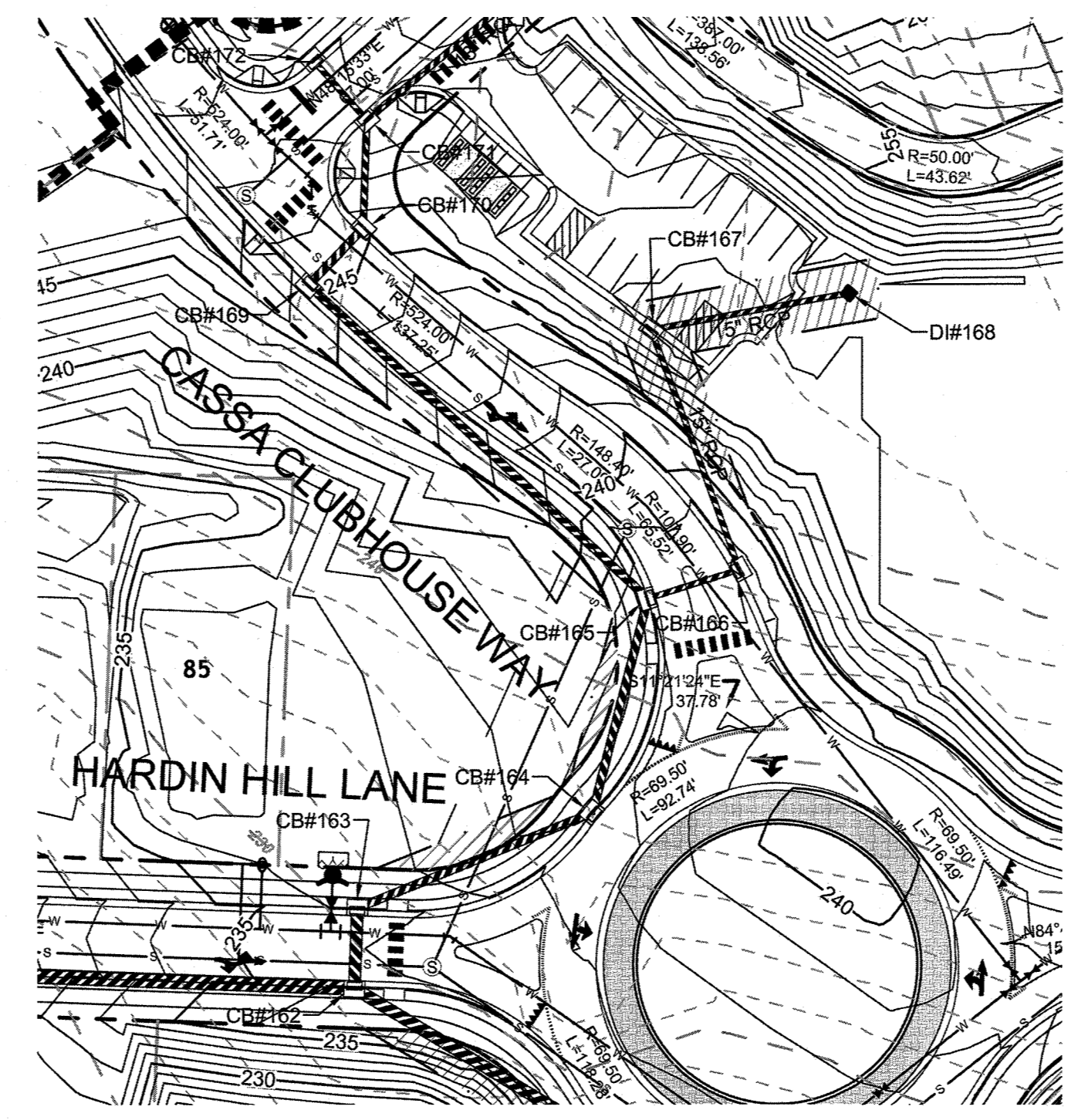
TIMMONS GROUP
 NORTH CAROLINA LICENSE NO. C-1652
STONERIVER SUBDIVISION PHASE 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
STORM DRAINAGE PLAN & PROFILE

JOB NO.
37909
 SHEET NO.
C7.4

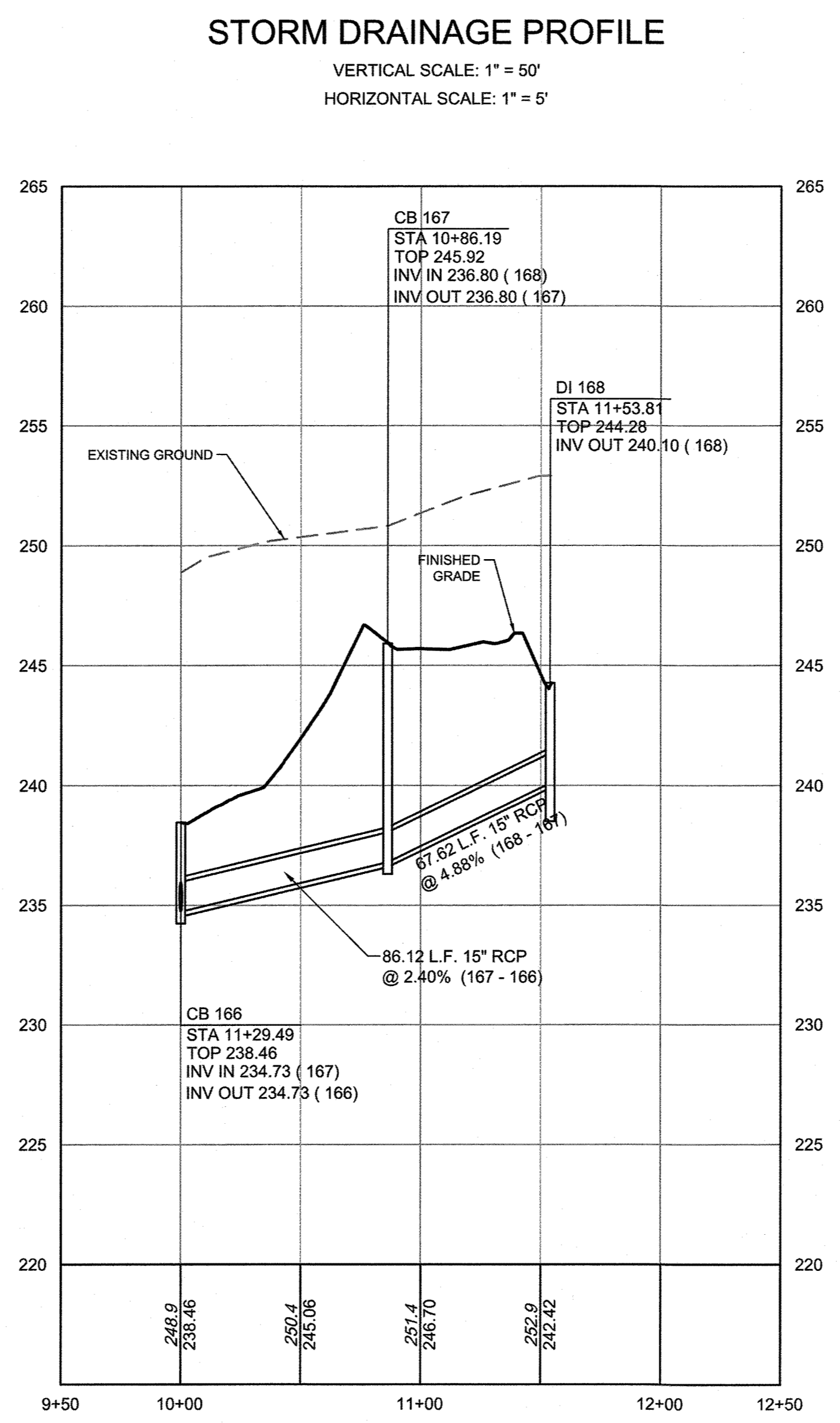
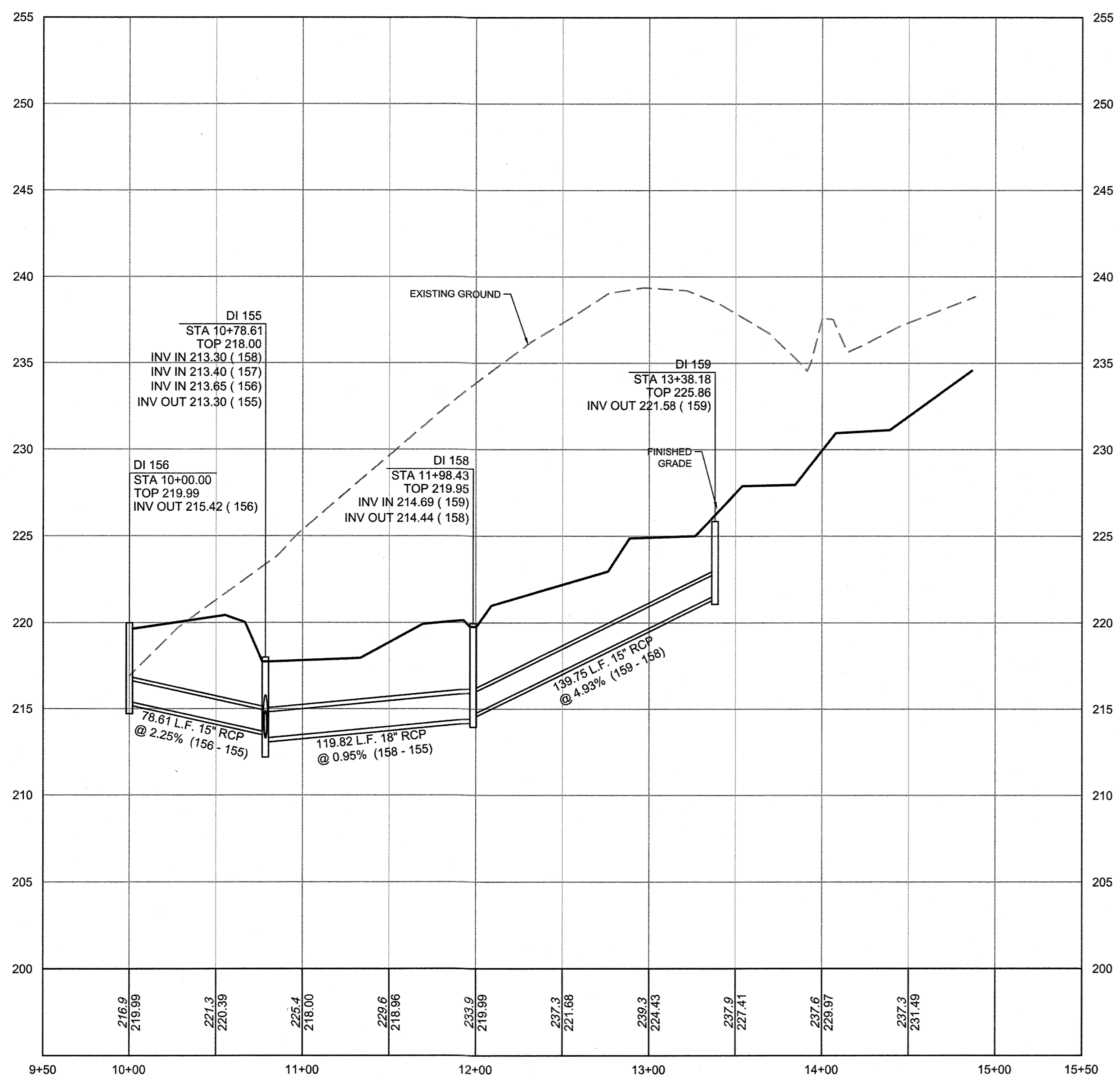
These plans and associated documents are the exclusive property of Timmons Group and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



STORM DRAINAGE PROFILE
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'

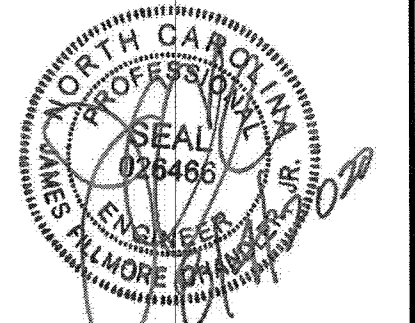


STORM DRAINAGE PROFILE
 VERTICAL SCALE: 1" = 50'
 HORIZONTAL SCALE: 1" = 5'



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

S:\102\37909-Stoneriver\DWG\Sheet\CAD\37909-C7.4-PROF.dwg | by: J.D. MacMillan



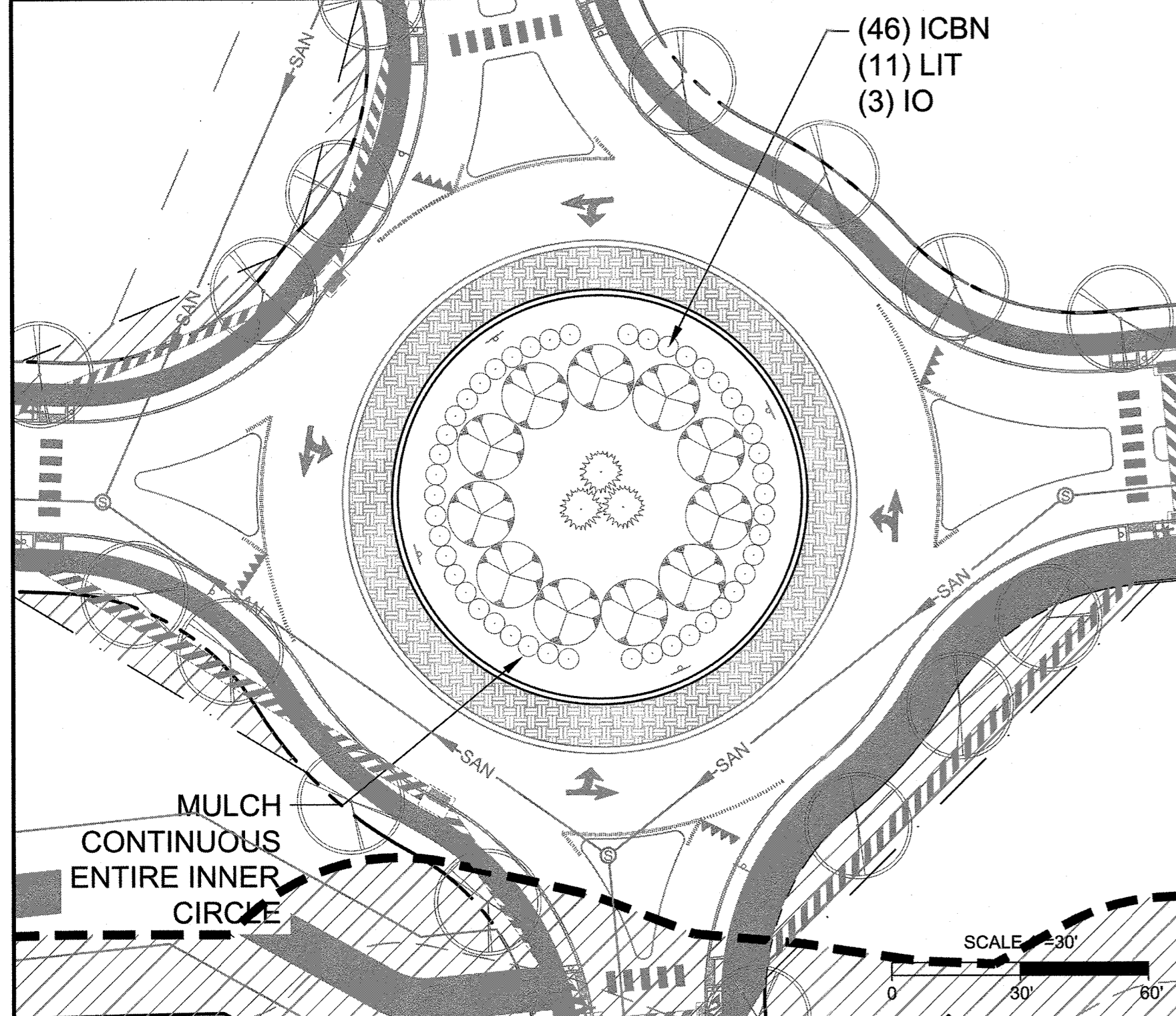
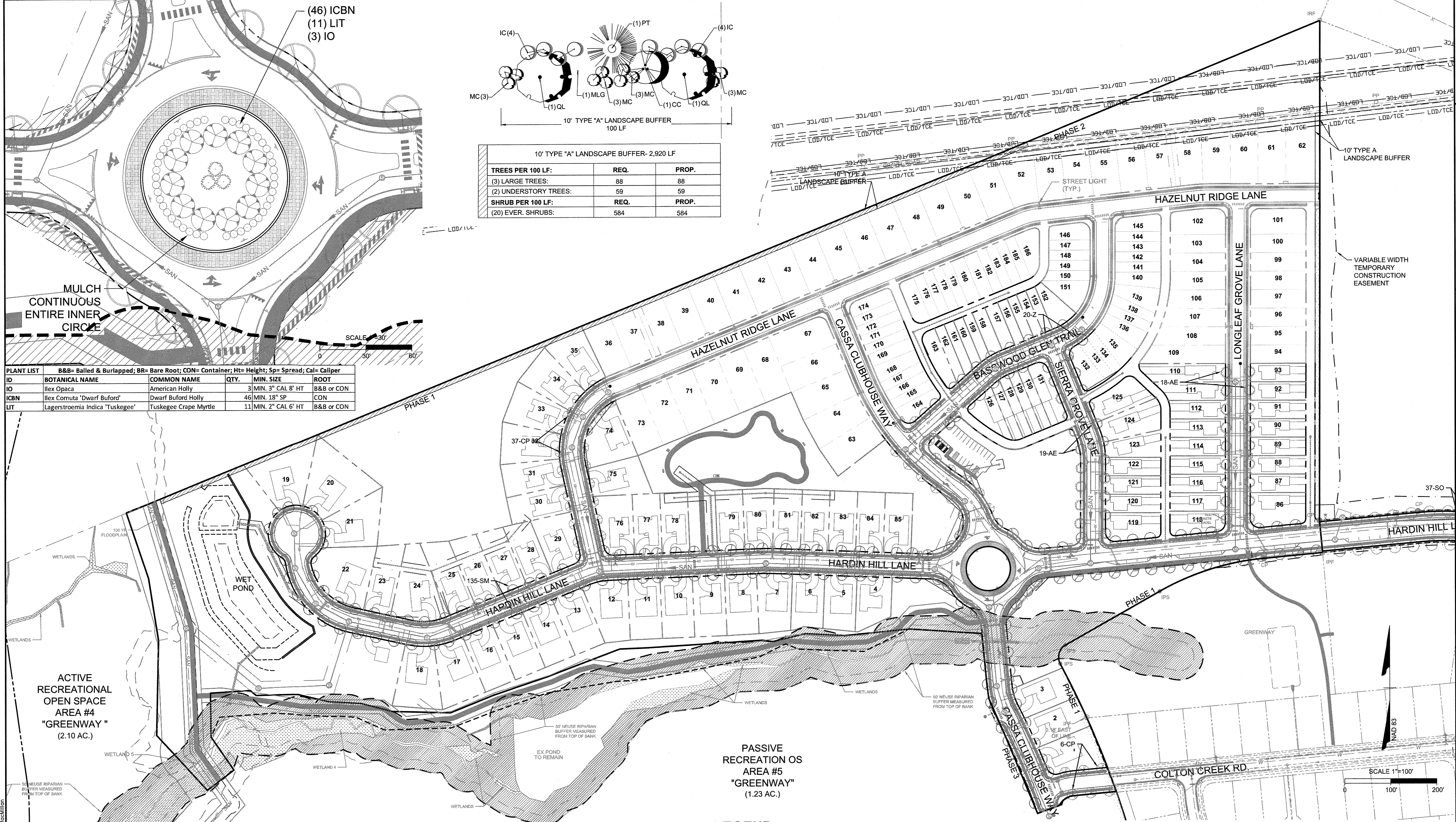
THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Ridge, Raleigh, NC 27607
 TEL 919.866.6951 FAX 919.833.8124 www.timmons.com

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 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
STREET TREE 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

PLANT LIST

ID	BOTANICAL NAME	COMMON NAME	QTY.	MIN. SIZE	ROOT
IO	Ilex Opaca	American Holly	3	MIN. 3" CAL 8' HT	B&B or CON
ICBN	Ilex Cornuta 'Dwarf Buford'	Dwarf Buford Holly	46	MIN. 18" SP	CON
LIT	Lagerstroemia Indica 'Tuskegee'	Tuskegee Crape Myrtle	11	MIN. 2" CAL 6' HT	B&B or CON

PLANT LIST - Street Trees

KEY	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	HEIGHT	ROOT	COMMENTS
Z	Zelkova scheideriana	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

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.

- NOTES:
- CONTRACTOR SHALL CONTACT UTILITY LOCATOR SERVICE TO VERIFY ALL SUBSURFACE UTILITIES PRIOR TO AND 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 @ 8 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.

LEGEND:

- NEUSE RIPARIAN BUFFER
- WETLANDS

- 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.

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

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

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

BY: DATE: 8/18/2020
 ADMINISTRATOR

S:\1003\37909-Stoneriver-Subdiv-DWG-Sheet1.dwg, 37909-C9-C-PLN1.dwg, J. D. MacMillan

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.835.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE: 08/07/2020
 REVISION DESCRIPTION: GRADING AND UTILITY REVISIONS

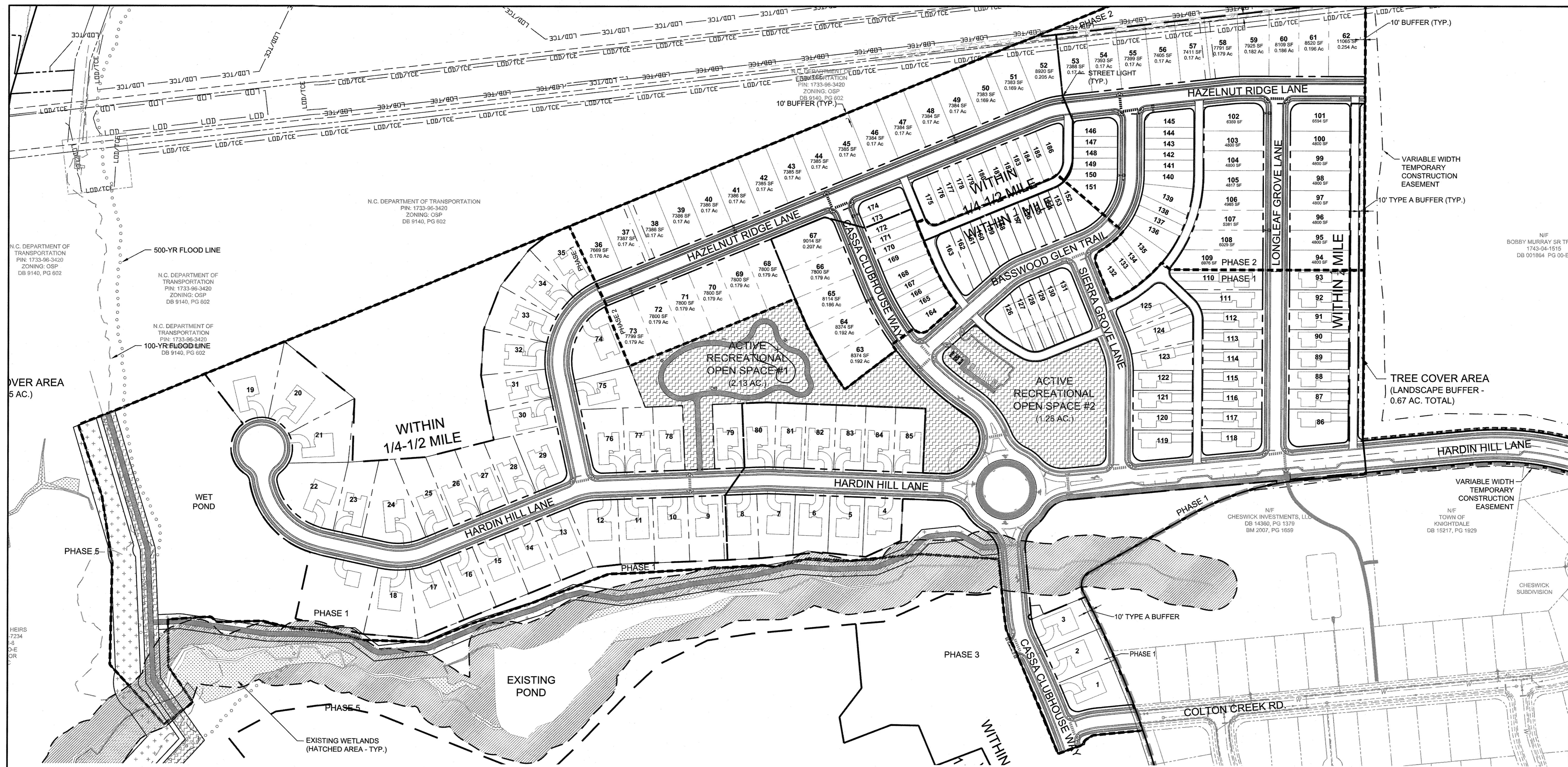
DATE: 09/11/2018
 DRAWN BY: 331
 DESIGNED BY: 331
 CHECKED BY: JFC
 SCALE: PER PLAN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

STONERIVER SUBDIVISION PHASE 1 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA OPEN SPACE PLAN

JOB NO. 37909
 SHEET NO. C9.2



RECREATIONAL OPEN SPACE CALCULATIONS (FROM APPROVED MASTER PLAN):

TOTAL SITE PERIMETER	=	15,596 L.F.
TOTAL SITE AREA	=	163.8 AC
REQUIRED TREE CANOPY AREA	15,596 L.F. X 20	= 311920 S.F. OR 7.16 AC
TREE CANOPY PERCENTAGE	7.16 AC / 164 AC	= 4.37% <10% MAX.
TREE CANOPY REQUIRED	7.16 AC.	4.37%
STREAM BUFFER	19.89 AC.	
TOTAL TREE CANOPY PROVIDED	19.89 AC.	

DENSITY	=	2.45 UNITS/ACRE
BEDROOM ESTIMATE		
167 UNITS X 3.5 BEDROOMS/UNIT	=	655 TOTAL BEDROOMS
200 UNITS X 3.5 BEDROOMS/UNIT	=	700 TOTAL BEDROOMS
14 UNITS X 3.5 BEDROOMS/UNIT	=	49 TOTAL BEDROOMS
655 BEDROOMS X 260 S.F.	=	170,170 S.F.
700 BEDROOMS X 390 S.F.	=	273,000 S.F.
49 BEDROOMS X 520 S.F.	=	25,480 S.F.
TOTAL RECREATIONAL SPACE REQUIRED	=	468,650 S.F. 10.76 AC.
25% REDUCTION DUE TO AMENITY CENTER	=	8.07 AC.

ACTIVE RECREATIONAL OPEN SPACE		
OPEN SPACE AREA #1	=	1.38 AC.
OPEN SPACE AREA #2	=	1.31 AC.
OPEN SPACE AREA #3	=	0.79 AC.
OPEN SPACE AREA #4	=	0.55 AC.
GREENWAY	=	0.78 AC.
TOTAL PROVIDED	=	4.81 AC.
TOTAL REQUIRED	=	4.03 AC.

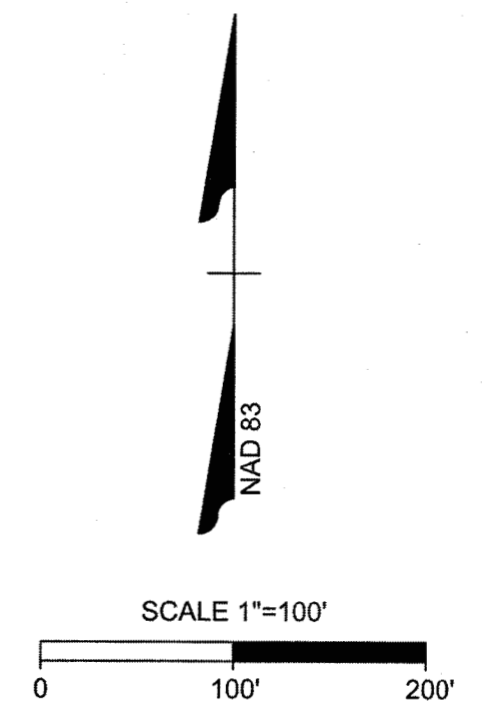
PASSIVE RECREATIONAL OPEN SPACE		
OPEN SPACE AREA #1	=	4.32 AC.
OPEN SPACE AREA #2	=	0.56 AC.
TOTAL O.S. PROVIDED	=	4.88 AC.
TOTAL O.S. REQUIRED	=	4.03 AC.

PHASE 1:		
ESTIMATED NUMBER OF BEDROOMS:		
36 UNITS X 4 BEDROOMS/UNIT	=	144 BEDROOMS WITHIN 1/4 MILE (HOUSE)
18 UNITS X 3 BEDROOMS/UNIT	=	54 BEDROOMS WITHIN 1/4 MILE (TOWNHOUSE)
35 UNITS X 4 BEDROOMS/UNIT	=	140 BEDROOMS BETWEEN 1/4 - 1/2 MILE (HOUSE)
198 BEDROOMS X 260 S.F.	=	51,480 S.F.
140 BEDROOMS X 390 S.F.	=	54,600 S.F.
SUBTOTAL RECREATIONAL SPACE REQUIRED	=	106,080 S.F. (2.44 AC.)
TOTAL REC. SPACE REQUIRED AFTER 25% REDUCTION DUE TO AMENITIES	=	1.83 AC.
OPEN SPACE PROVIDED:		
OPEN SPACE AREA #1 (PLAYGROUND/WALKING PATH)	=	2.13 AC.
OPEN SPACE AREA #2 (AMENITY CENTER)	=	1.28 AC.
PORTION OF 10' ASPHALT GREENWAY #4 IN A 30' EASEMENT (ACTIVE)	=	0.36 AC.
10' ASPHALT GREENWAY #5 IN A 30' EASEMENT (PASSIVE)	=	1.29 AC.
TOTAL ACTIVE RECREATIONAL SPACE PROVIDED	=	5.00 AC.

PHASE 2:		
ESTIMATED NUMBER OF BEDROOMS:		
31 UNITS X 4 BEDROOMS/UNIT	=	124 BEDROOMS WITHIN 1/4 MILE (HOUSE)
31 UNITS X 3 BEDROOMS/UNIT	=	93 BEDROOMS WITHIN 1/4 MILE (TOWNHOUSE)
23 UNITS X 4 BEDROOMS/UNIT	=	92 BEDROOMS BETWEEN 1/4 - 1/2 MILE (HOUSE)
14 UNITS X 3 BEDROOMS/UNIT	=	42 BEDROOMS BETWEEN 1/4 - 1/2 MILE (TOWNHOUSE)
217 BEDROOMS X 260 S.F.	=	56,420 S.F.
134 BEDROOMS X 390 S.F.	=	52,260 S.F.
SUBTOTAL RECREATIONAL SPACE REQUIRED	=	108,680 S.F. (2.49 AC.)
TOTAL REC. SPACE REQUIRED AFTER 25% REDUCTION DUE TO AMENITIES	=	1.87 AC.
OPEN SPACE PROVIDED:	=	0.00 AC.

DRAWING LEGEND:

- NEUSE RIVER BUFFER
- 100-YR FLOOD LINE
- 500-YR FLOOD LINE
- WETLANDS
- PHASE LINE
- OPEN SPACE PROXIMITY ZONE
- TREE CANOPY COVERAGE
- ACTIVE RECREATION OPEN SPACE
- PASSIVE RECREATION OPEN SPACE



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.

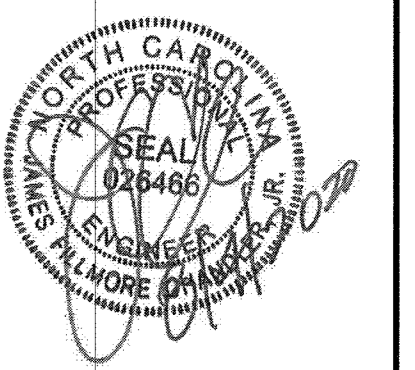
BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER

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

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

S:\102\37909-Stone_River\DWG\Sheet\CD\37909-C9.2-PLAN-OS.dwg | by: D. MacMillan

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL: 919.866.4951 FAX: 919.893.8124 www.timmons.com

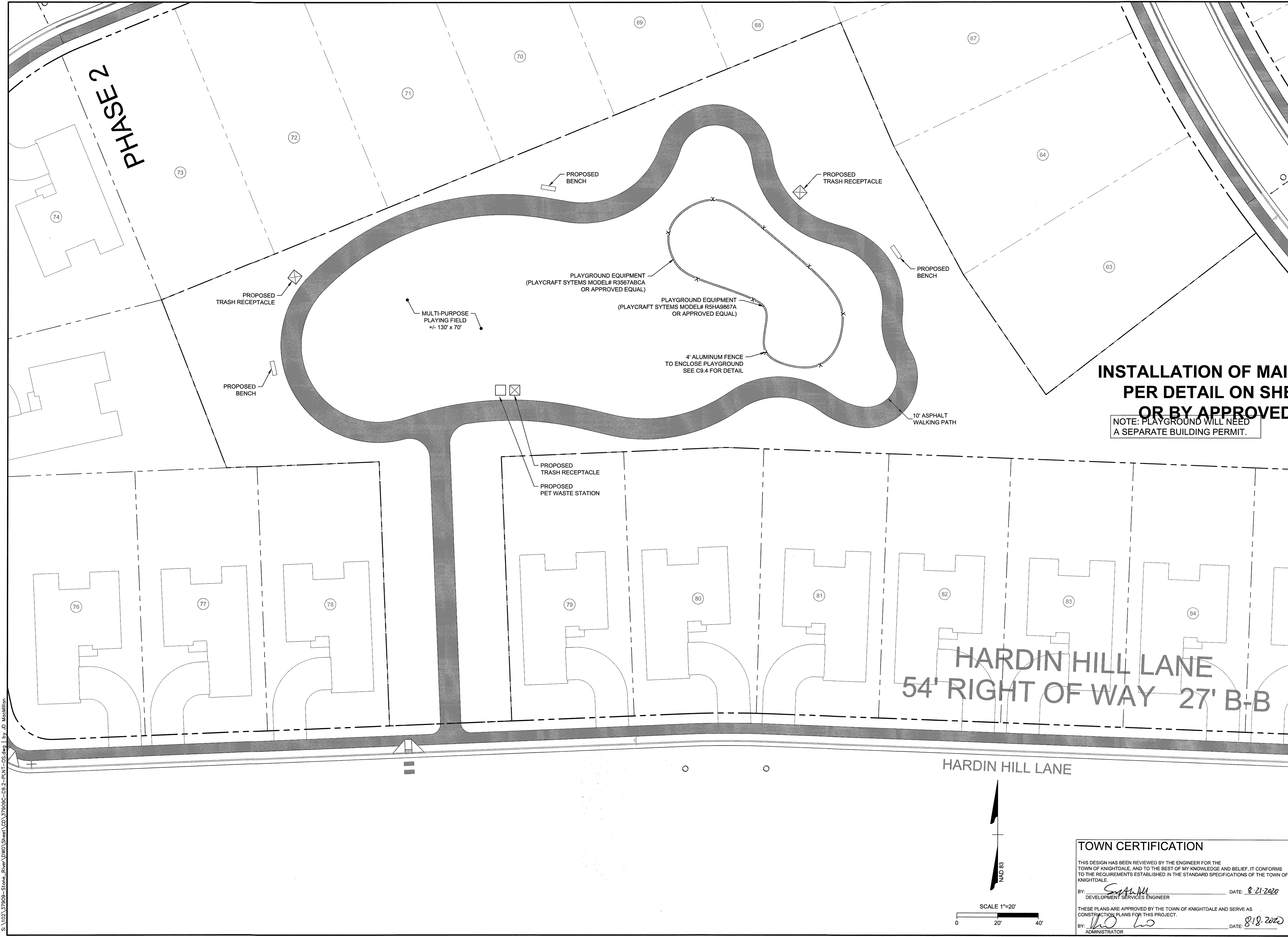
YOUR VISION ACHIEVED THROUGH OURS.

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 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
ACTIVE RECREATIONAL OPEN SPACE #1

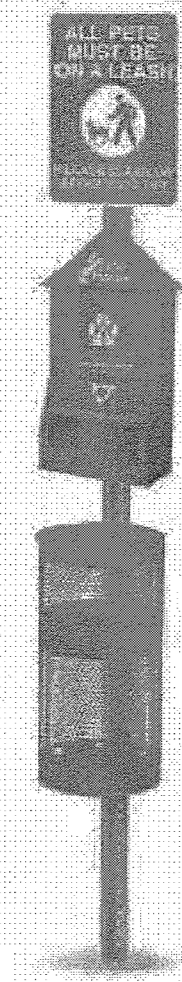
REVISION DESCRIPTION	DATE
GRADING AND UTILITY REVISIONS <td>08/04/2020</td>	08/04/2020



INSTALLATION OF MAIL PER DETAIL ON SHEET OR BY APPROVED
 NOTE: PLAYGROUND WILL NEED A SEPARATE BUILDING PERMIT.

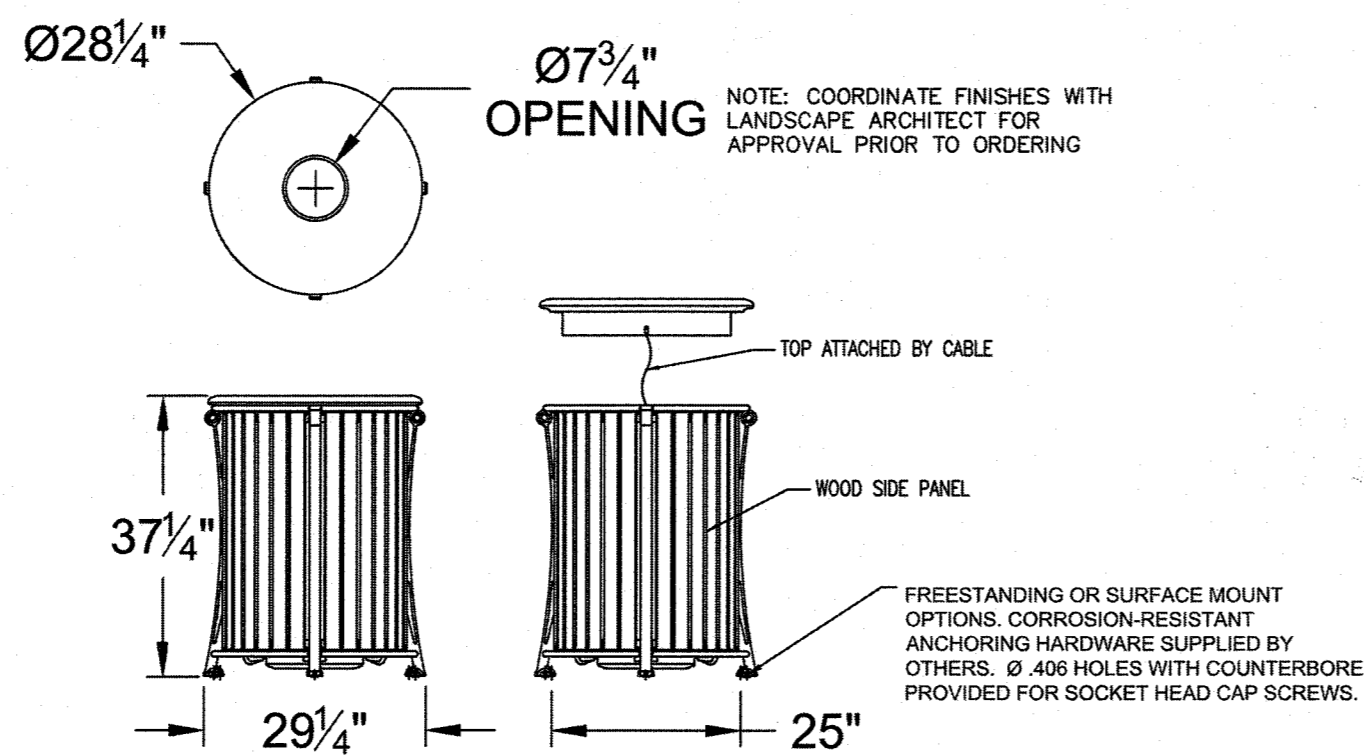
TOWN CERTIFICATION
 THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: *[Signature]* DATE: 8-21-2020
 DEVELOPMENT SERVICES ENGINEER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

S:\102\37909-Stone_River\DWG\Sheet\CD\37909-C9.3-PLAN-05.dwg | by: D. MacMillan



AVAILABLE THROUGH:
CAROLINA RECREATION & DESIGN
1940 W OAK CIRCLE
MARIETTA, GA 30062
707-420-1978

NOTE:
1. FIDOHOUSE CHOICE HEADER BAG KIT- GREEN
WITH "ALL PETS" SIGN; MODEL NO.: HLMHF11

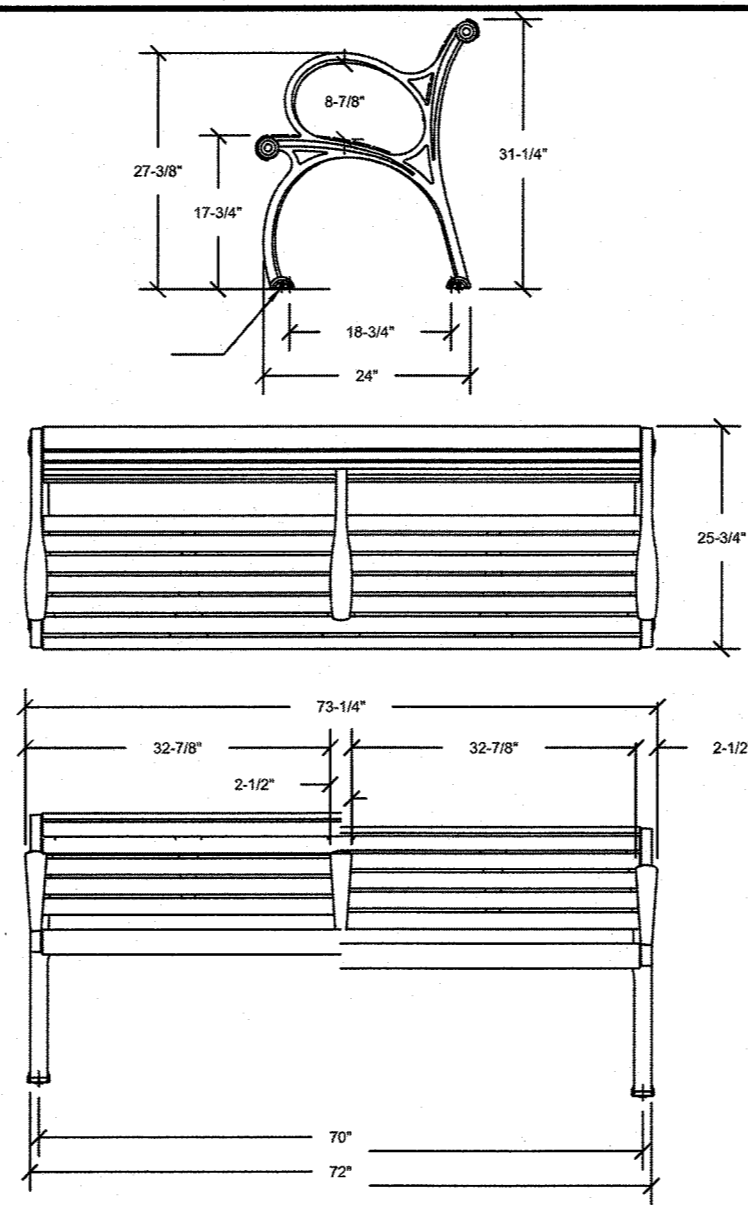


LANDSCAPE FORMS
431 LAWNDALE AVE. PHONE: 800-521-2546
KALAMAZOO, MI 49048 FAX: 269-381-3455

TITLE: PLAINWELL LITTER RECEPTACLE
- 30" D x 38" H
- TOP OPENING
- WOOD SIDE PANEL
- 35 GALLON
- SURFACE MOUNT
DESIGN: PLAINWELL
PATENT: PENDING
FILE: PL5201
DATE: 10-29-1998
AUTHOR: SWM

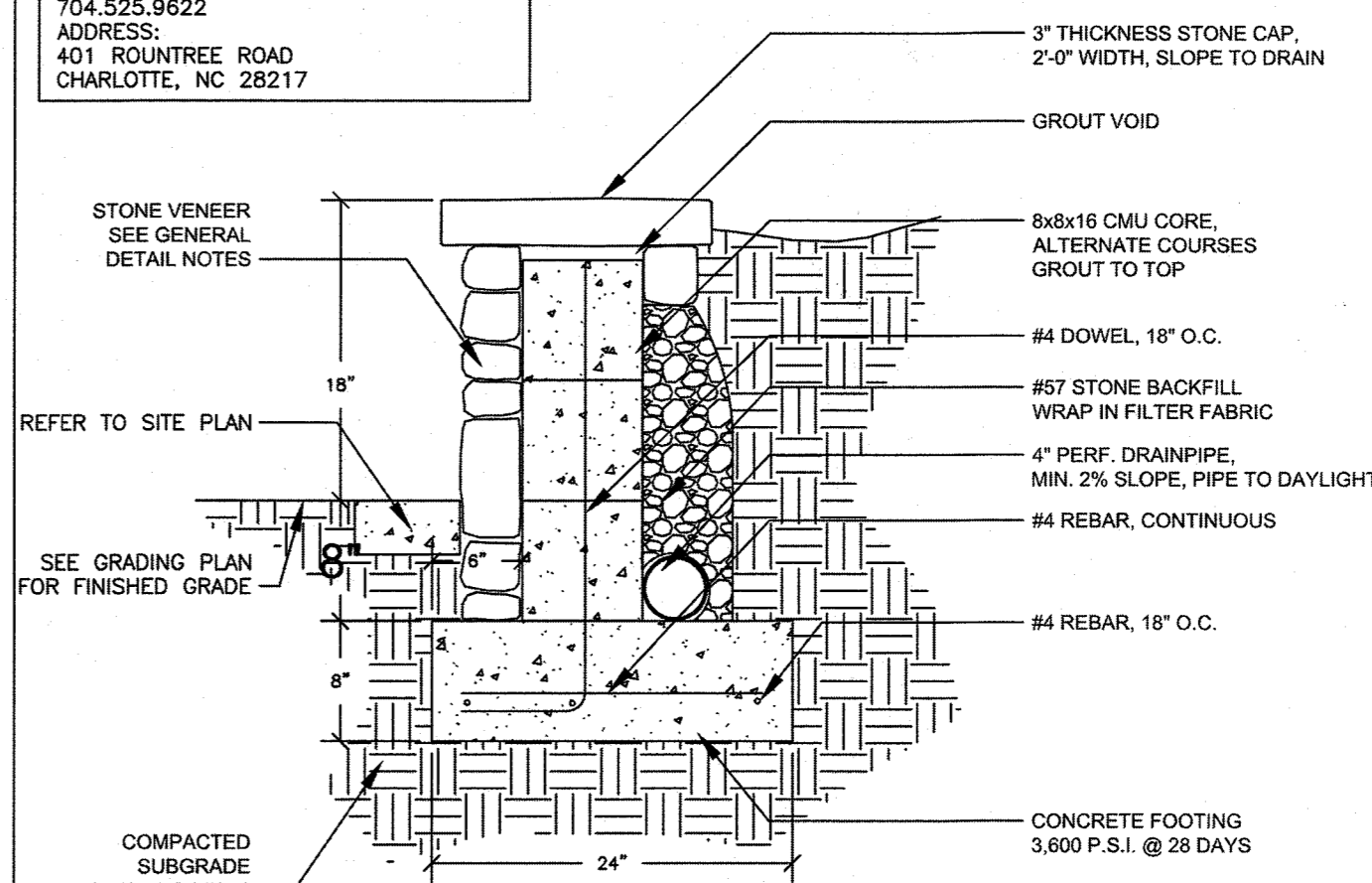
CONFIDENTIAL DRAWING INFORMATION CONTAINED HEREIN IS THE PROPERTY OF LANDSCAPE FORMS, INC. INTENDED USE IS LIMITED TO DESIGN PROFESSIONALS SPECIFYING LANDSCAPE FORMS, INC. PRODUCTS AND THEIR DIRECT CLIENTS. DRAWING IS NOT TO BE COPIED OR DISCLOSED TO OTHERS WITHOUT THE CONSENT OF LANDSCAPE FORMS, INC.

© 1998 LANDSCAPE FORMS, INC. ALL RIGHTS RESERVED.



MODEL: PLAINWELL BENCH
COLOR: BLACK POWDERCOAT, WOOD
PURPLE HEART
AVAILABLE THROUGH:
LANDSCAPE FORMS
431 LAWNDALE AVE. PHONE: 800-521-2546
KALAMAZOO, MI 49048 FAX: 269-381-3455

PRECAST CONCRETE AVAILABLE THROUGH:
LUCAS CONCRETE PRODUCTS
ROD JOHNSON
ROD@LUCASCONCRETE.COM
704.525.9622
ADDRESS:
401 ROUTINE ROAD
CHARLOTTE, NC 28217



STONE VENEER
SEE GENERAL
DETAIL NOTES

REFER TO SITE PLAN

SEE GRADING PLAN
FOR FINISHED GRADE

COMPACTED
SUBGRADE
(95% PROCTOR)

3" THICKNESS STONE CAP,
2'-0" WIDTH, SLOPE TO DRAIN

GROUT VOID

8x8x16 CMU CORE,
ALTERNATE COURSES
GROUT TO TOP

#4 DOWEL, 18" O.C.

#57 STONE BACKFILL
WRAP IN FILTER FABRIC

4" PERF. DRAINPIPE,
MIN. 2% SLOPE, PIPE TO DAYLIGHT

#4 REBAR, CONTINUOUS

#4 REBAR, 18" O.C.

CONCRETE FOOTING
3,600 P.S.I. @ 28 DAYS

5 DOG STATION

SCALE: NTS

4 TRASH RECEPTACLE: PLAINWELL
LANDSCAPE FORMS

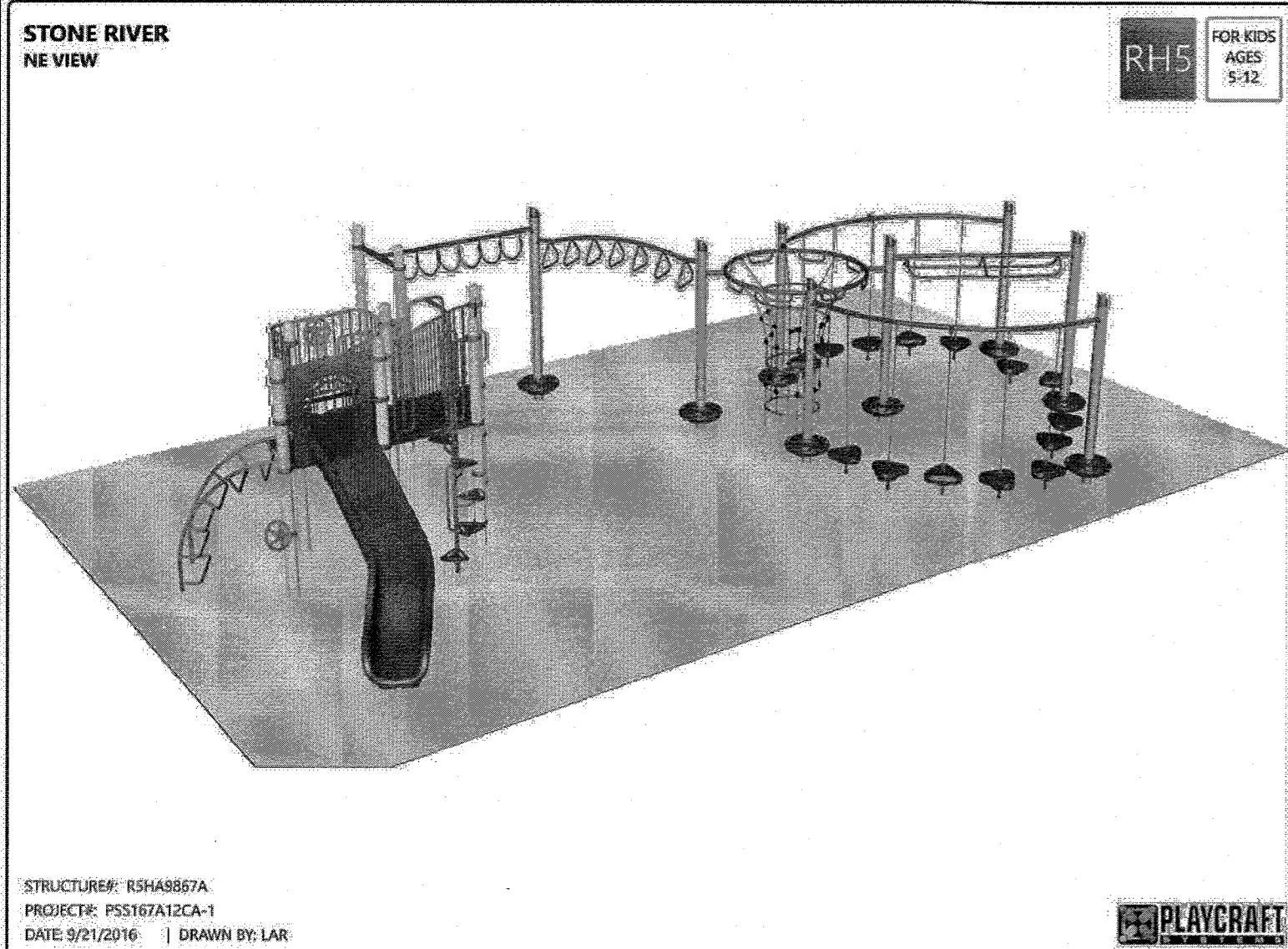
SCALE: NTS

2 SITE BENCH

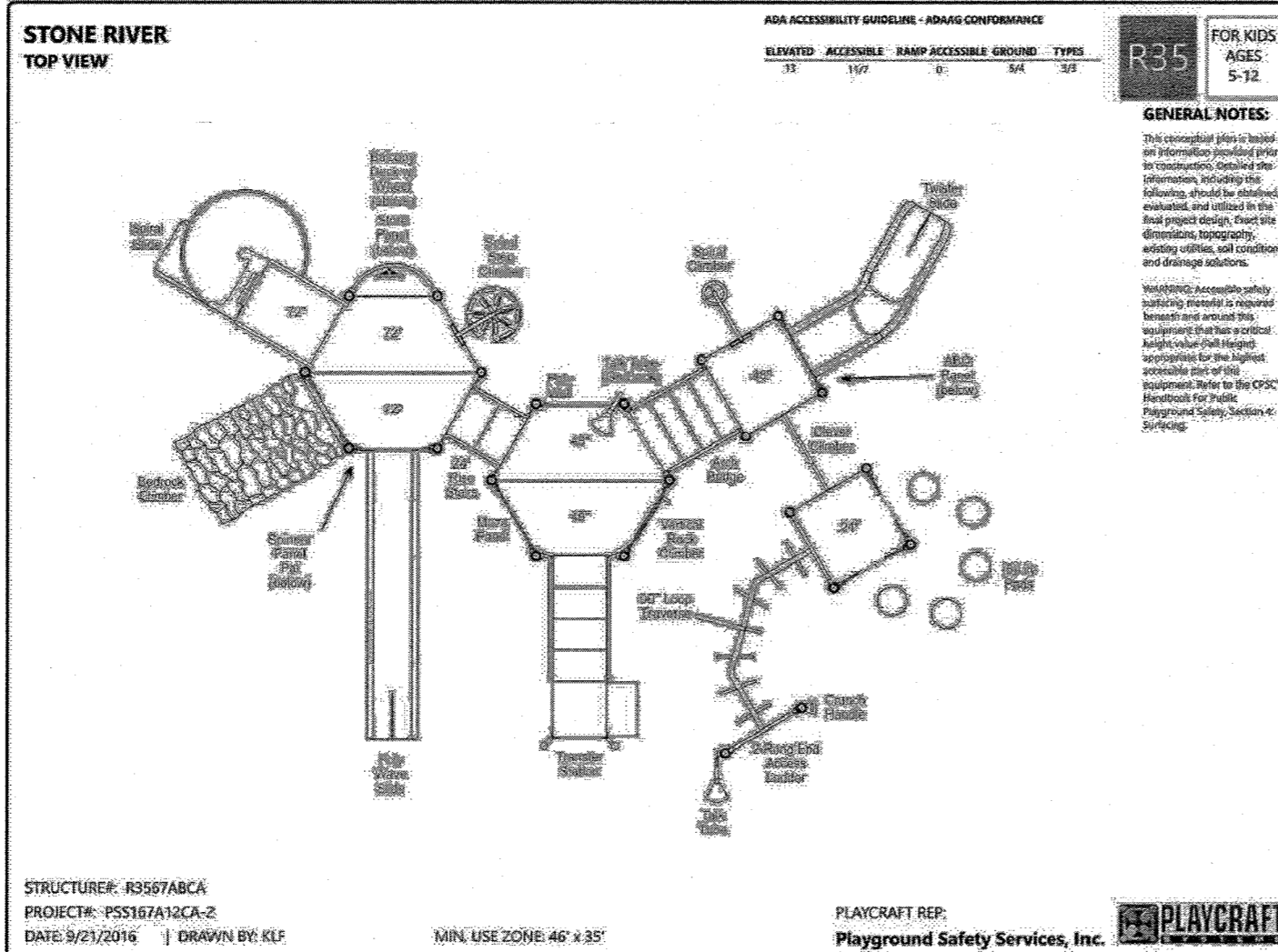
SCALE: NTS

11 STONE RETAINING WALL
8.0 (30" OR LESS)

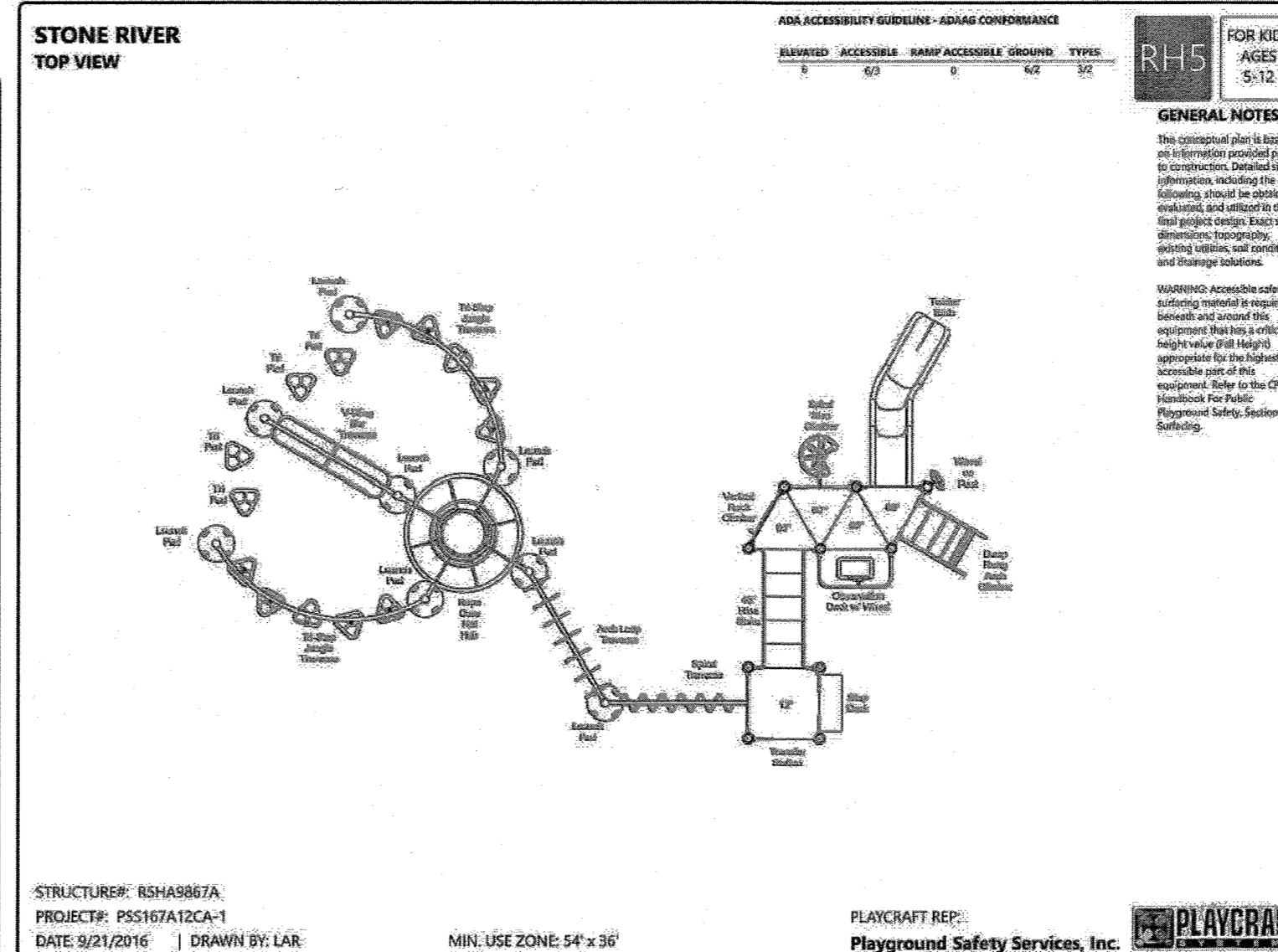
SCALE: NTS



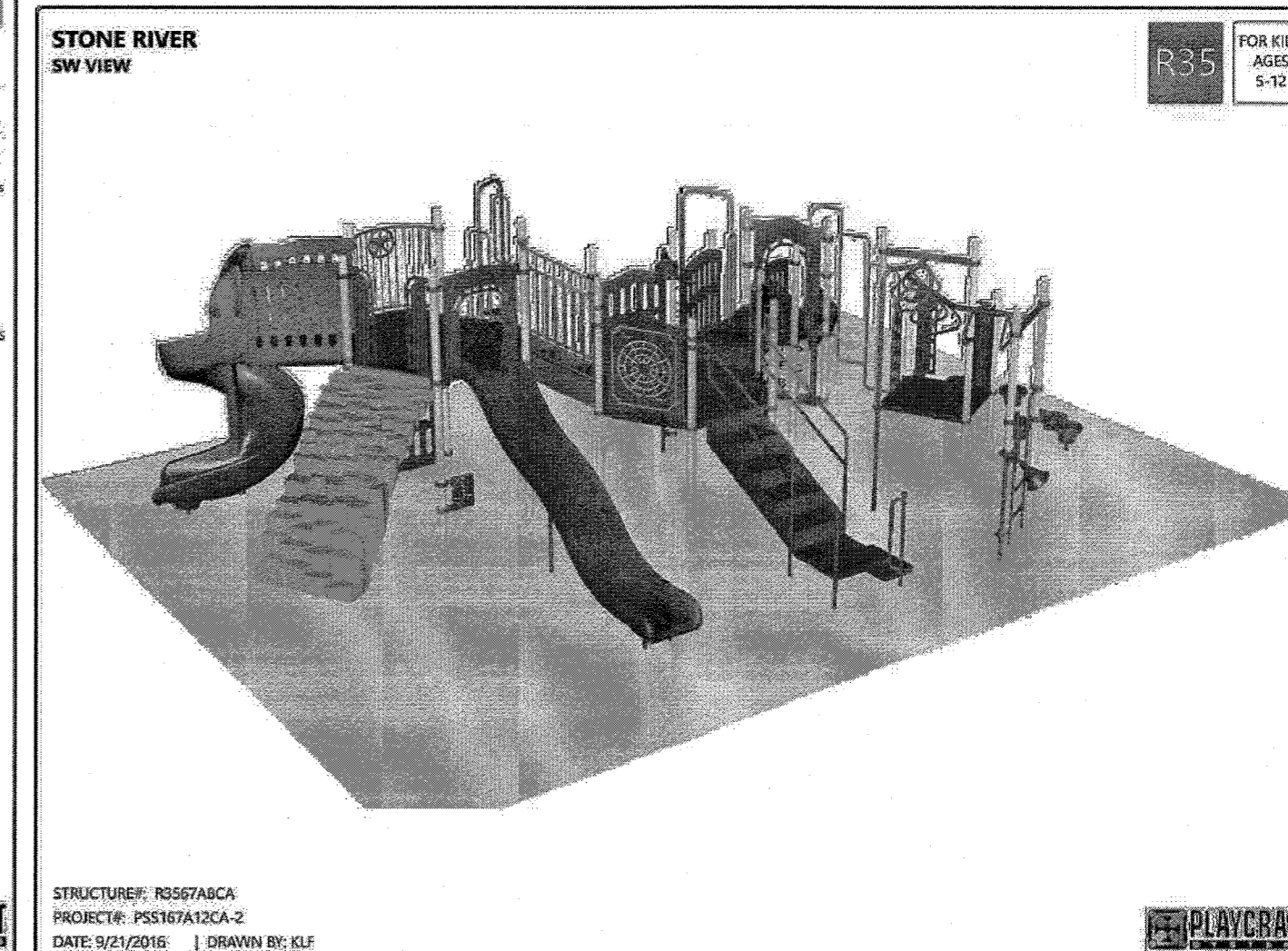
STRUCTURE: RSHASB7A
PROJECT: PSS167A12CA-1
DATE: 9/21/2016 | DRAWN BY: LAR



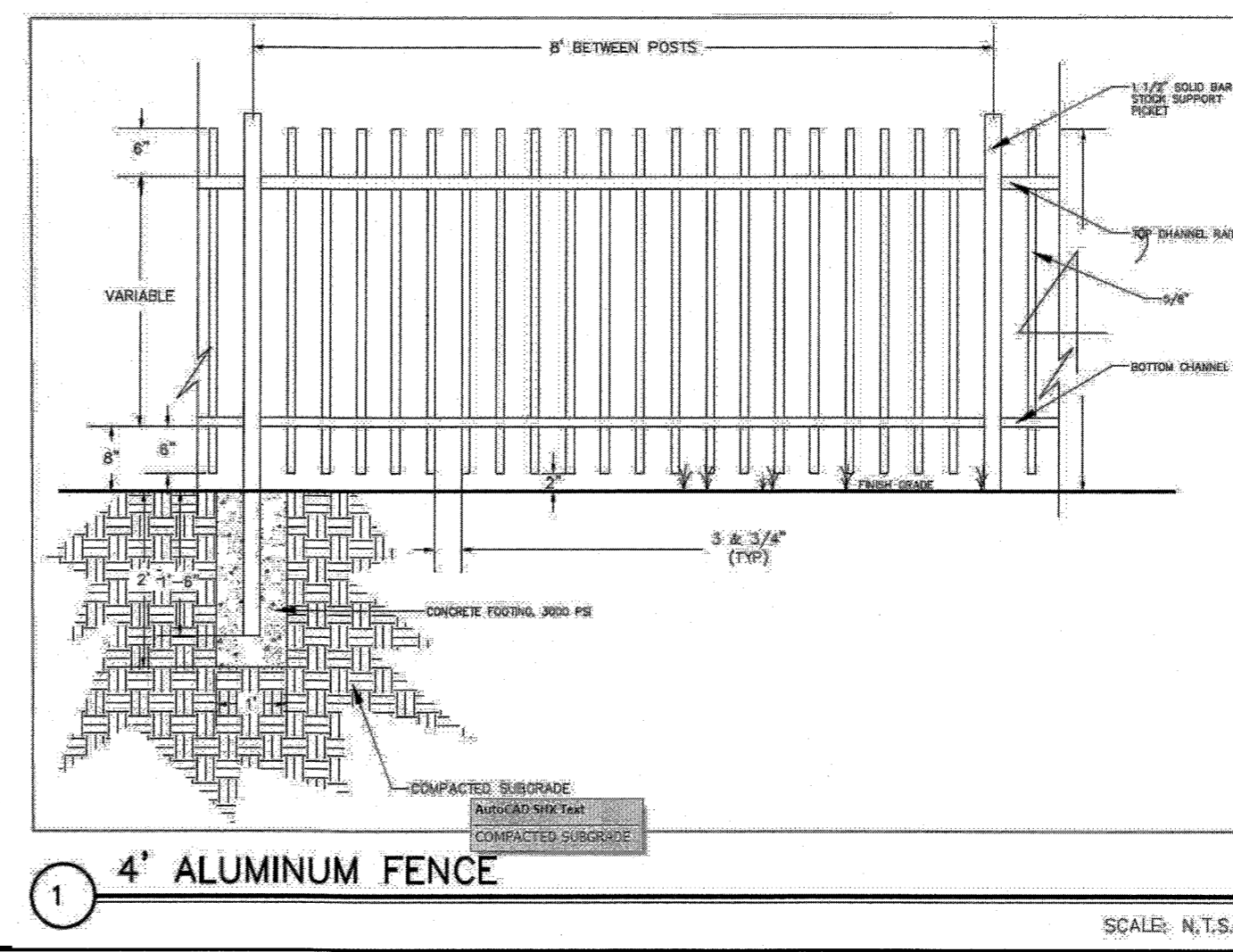
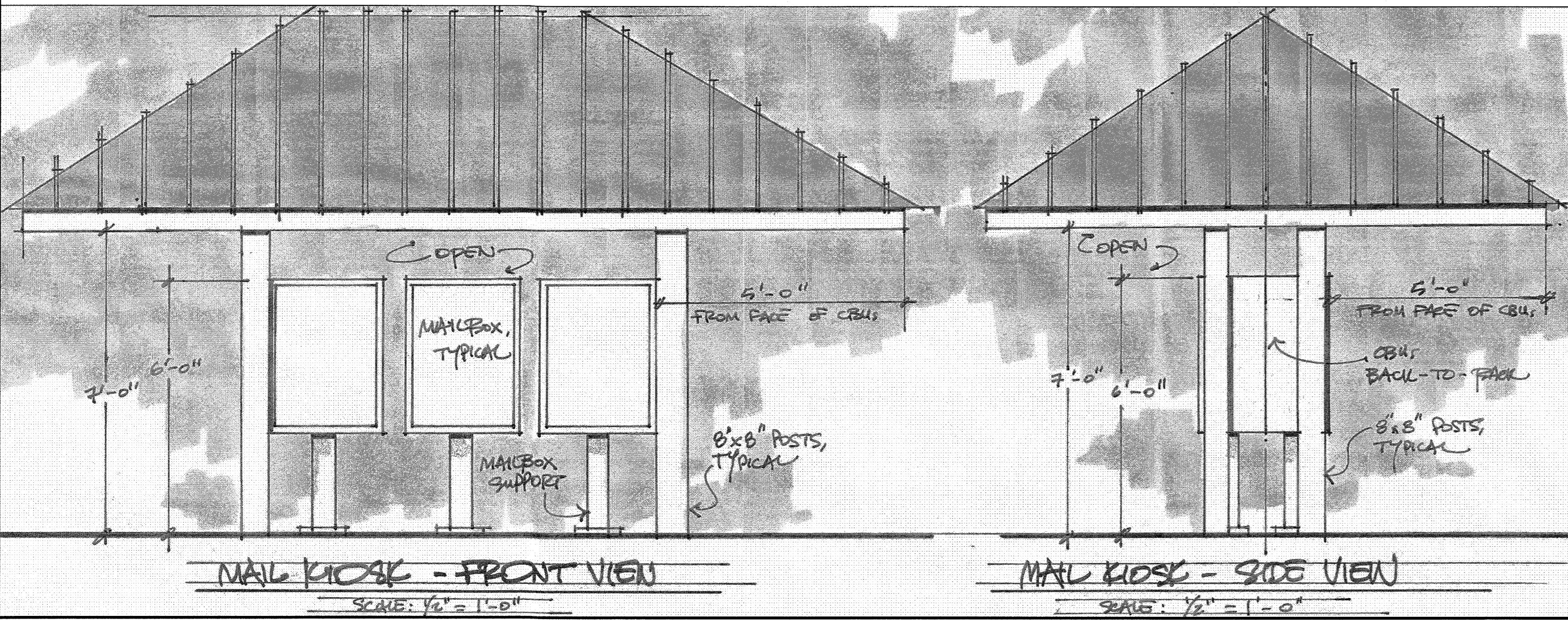
STRUCTURE: RSHASB7A
PROJECT: PSS167A12CA-1
DATE: 9/21/2016 | DRAWN BY: KJZ



STRUCTURE: RSHASB7A
PROJECT: PSS167A12CA-1
DATE: 9/21/2016 | DRAWN BY: LAR

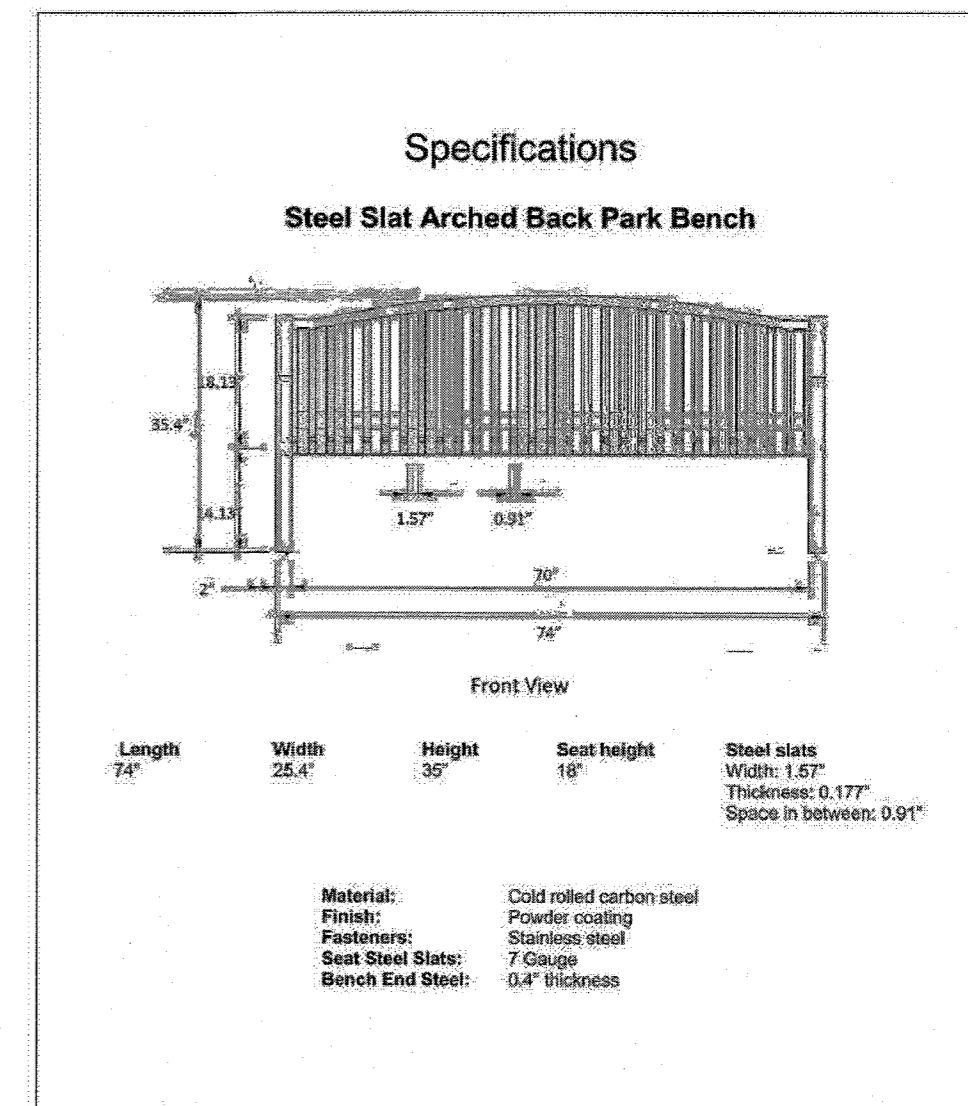


STRUCTURE: RSHASB7A
PROJECT: PSS167A12CA-2
DATE: 9/21/2016 | DRAWN BY: KJZ



4' ALUMINUM FENCE

SCALE: N.T.S.



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

STONERIVER SUBDIVISION PHASE 1
KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
LANDSCAPE DETAILS

YOUR VISION ACHIEVED THROUGH OURS.

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

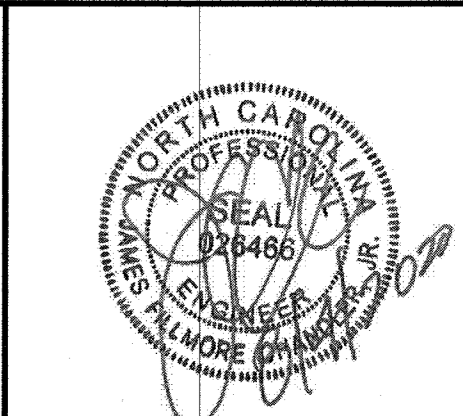
DATE: 09/11/2018

DRAWN BY: 331

DESIGNED BY: 331

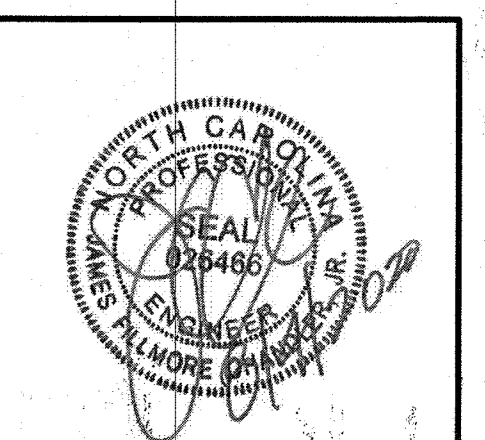
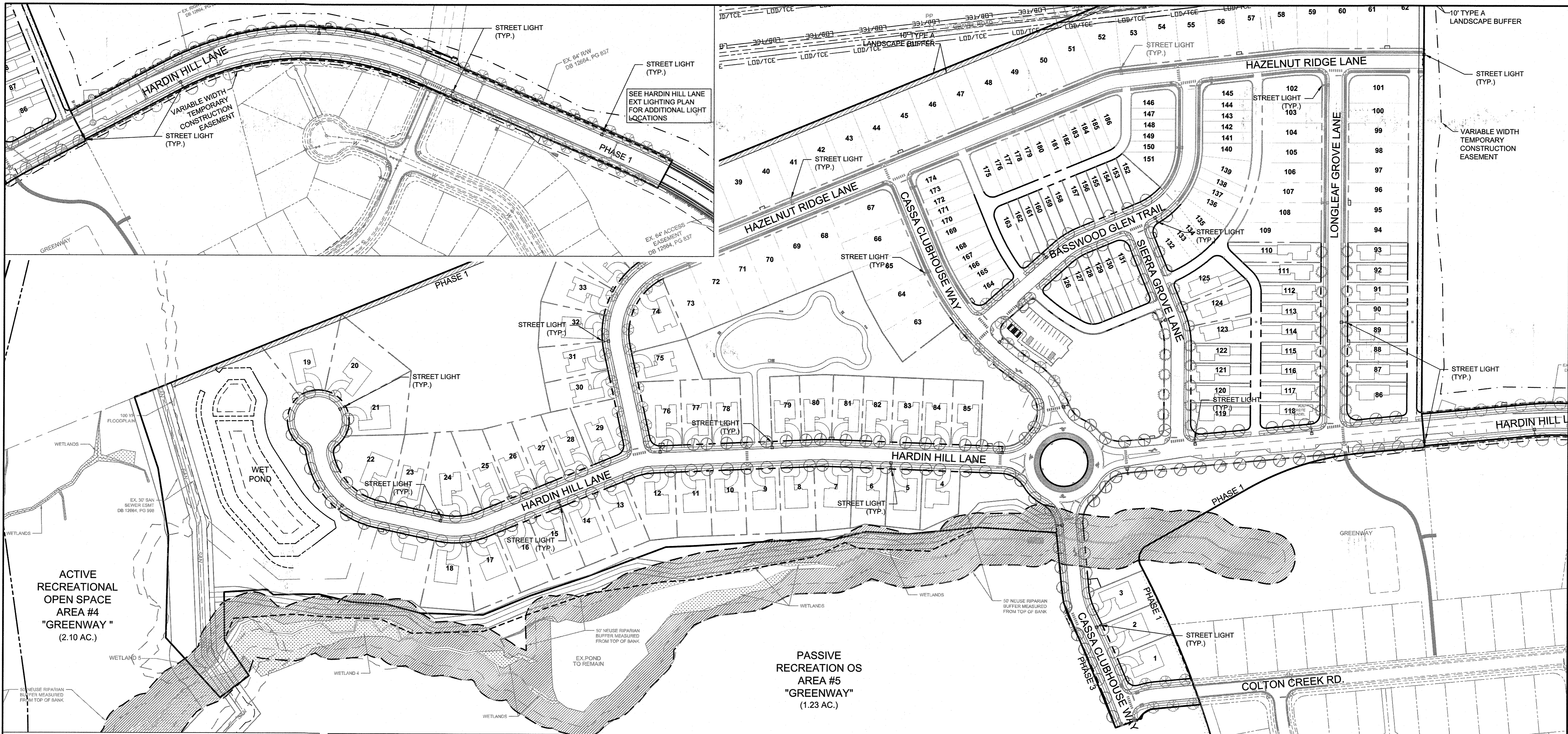
CHECKED BY: JFC

SCALE: PER PLAN



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

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
 5410 Trinity Road, Suite 102 | Raleigh, NC 27607
 TEL 919.866.4951 FAX 919.853.5124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
08/09/2020	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 1
 KNIGHTDALE - WAKE COUNTY - NORTH CAROLINA
STREET LIGHTING PLAN

JOB NO. 37909
 SHEET NO. C9.5

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

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

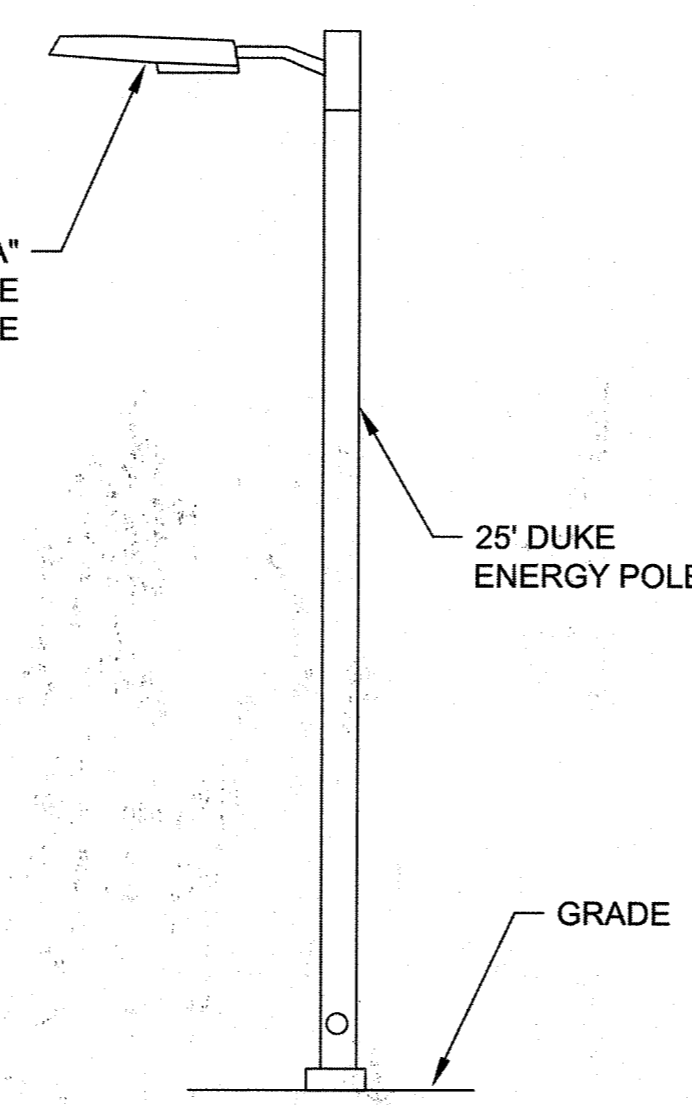
11.5 Additional Outdoor Lighting Standards for Specific Lighting Types

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 - 4,000 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)



FIXTURE "A" DETAIL

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

Outdoor Lighting

Roadway LED

Light source: LED (white)
 Wattage: 50 | 70 | 110 | 150 | 220 | 280 watts
 Light pattern: IESNA Type III (roadway)
 IESNA cutoff classification: Full cutoff
 Color temperature: 4,000K
 Warm-up and restrike times: (see LED data sheet for details)

Poles available:

Name	Mounting height	Color
Aluminum	15', 20', 25', 30', 35'	Bronze Black Gray Green
Wood	25', 30', 35'	Standard

Features

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

Backed by over 40 years of experience

Outdoor Lighting

Roadway LED

Light source: LED (white)
 Wattage: 50 | 70 | 110 | 150 | 220 | 280 watts
 Light pattern: IESNA Type III (roadway)
 IESNA cutoff classification: Full cutoff
 Color temperature: 4,000K
 Warm-up and restrike times: (see LED data sheet for details)

Poles available:

Name	Mounting height	Color
Aluminum	15', 20', 25', 30', 35'	Bronze Black Gray Green
Wood	25', 30', 35'	Standard

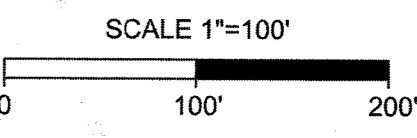
Features

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

Backed by over 40 years of experience

LEGEND

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



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

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

BY: DATE: 8-18-2020
 ADMINISTRATOR

S:\102\37909-Stoneriver\DWG\Sheet\C09-PLN1.dwg | By: J.D. MacMillan

©2014 Duke Energy Corporation. 140061 1/14