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TOWN CERTIFICATION. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: Samuel A. MacDonald Date: _____

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____

Administrator

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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

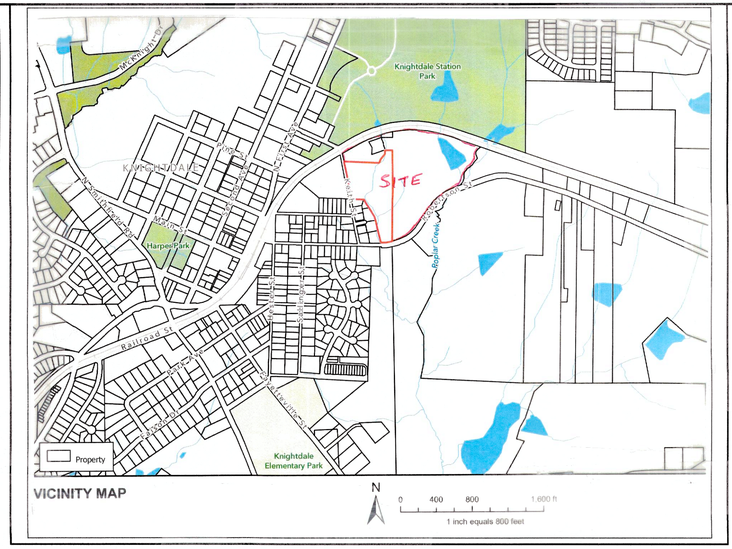
CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT# S-5041R

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926R

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

Cydney Terry
2026.04.14 15:21:27-04'00'



VICINITY MAP

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.

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.

OFFSITE SPOIL NOTE:
IF AN OFFSITE SPOIL OR BORROW SITE IS UTILIZED, THEN THE DISTURBED AREA FOR THE SPOIL/BORROW AREA SHALL BE INCLUED/ADDED INTO THE LAND DISTURBANCE PLAN AND PERMIT UNLESS THE SPOIL/BORROW SITE ALREADY HAS A SEPARATE LAND DISTURBANCE PERMIT.

DENUDED AREA = 21.8 AC.

SITE DATA – THE COLLECTION PUD

CURRENT PINS – 1754 53 7747 1754 53 9404 1754 63 0926
1754 53 9814 1754 63 5524

DEVELOPER – TCTBM, LLC
6131 FALLS OF NEUSE ROAD SUITE 200
RALEIGH, NORTH CAROLINA 27609
(919) 247 – 1932

TRACT AREAS:
CURRENT TRACT SIZE – 28.264 ACRES 1,231,186 SF
MEASURED TO CL OF KEITH ST. AND ROBERTSON ST.

R/W DEDICATION KEITH ST. AND ROBERTSON ST.: 1.274 AC 55,495.44 SF
NET TOTAL TRACT SIZE AFTER R/W DEDICATION – 26.99 ACRES 1,175,684.4 SF

CURRENT LAND USES – VACANT/AGRICULTURE
PROPOSED LAND USE – MIXED DENSITY LAND USE
CURRENT ZONING: GR8–PUD
INSIDE CITY LIMITS
WATERSHED: LOWER NEUSE RIVER

PROPOSED DENSITY: 3.33 DU/AC
90 PROPOSED LOTS

PROPOSED IMPERVIOUS SURFACE AREA: 9.523 AC
35.28%

TREE SAVE AREA:
REQUIRED TREE SAVE (SITE AREA 26.99 AC)
SITE PERIMETER X 20' (10% OF SITE 2.7 AC. MAX) =
4547 LF X 20' = 91,140 SF 2.09 AC

PROVIDED TREE SAVE AREA:

AREA 1:	11,136 SF	0.26 AC
AREA 2:	15,538 SF	0.36 AC
AREA 3:	30,443 SF	0.70 AC
AREA 4:	10,781 SF	0.25 AC
AREA 5:	25,946 SF	0.60 AC
TOTAL AREA:	93,844 SF	2.15 AC

CONNECTIVITY INDEX: 17 LINKS/12 NODES = 1.42

SETBACKS:

FRONT LOADED SINGLE FAMILY:	12 LOTS
MINIMUM LOT SIZE:	7,500 SF
LOT WIDTH:	60' MIN.
FRONT SETBACK:	10'
MIN. DRIVEWAY LENGTH	20'
SIDE SETBACK:	20% LOT WIDTH (MIN. 5')
REAR SETBACK:	25'
MAX. BUILDING HEIGHT:	3 STORIES
REAR LOADED SINGLE FAMILY:	41 LOTS
MINIMUM LOT SIZE:	4,500 SF
LOT WIDTH:	35' MIN.
FRONT SETBACK:	10'
SIDE SETBACK:	20% LOT WIDTH (MIN. 3')
REAR SETBACK:	20' (FROM CENTER OF ALLEY)
MAX. BUILDING HEIGHT:	3 STORIES
TOWNHOMES:	37 LOTS
MINIMUM FRONT SETBACK:	0'
MAXIMUM FRONT SETBACK:	25'
MINIMUM BUILDING SEPARATION:	10'
REAR SETBACK:	15' (FROM CENTER OF ALLEY)
MAX. BUILDING HEIGHT:	3 STORIES

SITE CONTAINS NO FEMA 100 YEAR FLOOD PLAIN PER 3720175400K DATE 7/19/2022
SITE CONTAINS WETLAND AREAS
SITE CONTAINS NEUSE RIVER BUFFER AREAS.
REFERENCE: SAGE ECOLOGICAL SERVICES, LLC PER APPROVED MASTER PLAN BY MCADAMS: KNIGHTDALE PROJECT # ZMA-6-19 DATED OCT. 14, 2019

ALL WORK AND MATERIALS SHALL CONFORM TO THE TOWN OF KNIGHTDALE DESIGN AND CONSTRUCTION STANDARDS AND NCDOT
WATER AND SEWER CONSTRUCTION PER THE CITY OF RALEIGH PUBLIC UTILITY DEPT. DESIGN AND CONSTRUCTION STANDARDS
CONTRACTOR SHALL VERIFY THE ABOVE AND BELOW GROUND LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION
CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY CONFLICTING UTILITIES WITH THE APPROPRIATE UTILITY COMPANY AND/OR AUTHORITY
CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO THE START OF CONSTRUCTION

WATER ALLOCATION REQUEST

POINTS REQUIRED: 50
POINTS PROVIDED: 50

– MAJOR SUBDIVISION (5 OR MORE LOTS):	15
– HOUSES AND TOWNHOMES:	15
– OUTDOOR DISPLAY OF PUBLIC ART:	4
– IPEMA CERTIFIED PLAYGROUND EQUIPMENT:	4
– STORMWATER-BIO-RETENTION:	5
– PROVISION OF ON STREET PARKING:	4
– USE OF DROUGHT TOLERANT PLANTINGS:	3

• PROPOSED CONSTRUCTION DRAWING REVISIONS

1. Add phasing and reduce from 97 to 90 dwelling units.
2. Switch the location of the Rear Load Single Family along Robertson Road with Townhomes for higher denisty dwelling units along higher traffic corridor and less sewer infrastructure.
3. Switch the location of the Central Park to be adjacent to the natural area and SCMs to create a larger and more comprehensive amenity offering.
4. Add pedestrian connectivity from townhomes to open space, additional visitor parking spaces along Alleys and on-street parking along 1 side of Heathers Mist Road.
5. Add three (3) active recreation amenities including a butterfly garden, dog park, and pocket park.
6. Adjust Keith Street and Robertson Road improvements to comply with updates to the Comprehensive Transportation Plan after the original approval of the Construction Drawings.

*REVISED
CONSTRUCTION PLANS – PHASE 1
THE COLLECTION
PUD
SINGLE FAMILY AND TOWNHOMES DEVELOPMENT
614 KEITH ST.
KNIGHTDALE, NORTH CAROLINA 27545
WAKE COUNTY PINS: 1754 53 7747, 1754 53 9814, 1754 53 9404, 1754 63 5524 AND 1754 63 0926
KNIGHTDALE PROJECT #: ZMA-6-19

OPEN SPACE CALCULATIONS

PHASE 1	# OF UNITS	# OF BR	TOTAL # BR
SINGLE FAMILY HOMES	9	3.5	32
TOWNHOMES	14	2.5	35
			67
PHASE 1	MULTIPLER	SQUARE FT	ACRES
TOTAL OPEN SPACE REQUIRED	260	18,200	0.418
TOTAL OPEN SPACE PROVIDED		197,422.7	4.53
*based on all proposed units within 1/4 mile of Knightdale Station Park			
PASSIVE OPEN SPACE REQ.		9,100	0.209
PASSIVE OPEN SPACE PROVID.		176,078.3	4.04
ACTIVE OPEN SPACE REQ.		9,100	0.209
ACTIVE OPEN SPACE PROVID.		21,344.4	0.49

PHASE 2	# OF UNITS	# OF BR	TOTAL # BR
SINGLE FAMILY HOMES	44	3.5	154
TOWNHOMES	23	2.5	58
			212
PHASE 2	MULTIPLER	SQUARE FT	ACRES
TOTAL OPEN SPACE REQUIRED	260	54,080	1.242
TOTAL OPEN SPACE PROVIDED		380,269.7	8.73
*based on all proposed units within 1/4 mile of Knightdale Station Park			
PASSIVE OPEN SPACE REQ.		27,040	0.621
PASSIVE OPEN SPACE PROVID.		352,243.9	8.09
ACTIVE OPEN SPACE REQ.		27,040	0.621
ACTIVE OPEN SPACE PROVID.		28,025.8	0.64

TOTAL	ACRES	DIFFERENCE	%CHANGE
TOTAL OPEN SPACE APPROVED	10.48		
TOTAL OPEN SPACE REVISED	13.26	+2.78	26.52%
PASSIVE OPEN SPACE APPROV.	9.35		
PASSIVE OPEN SPACE REVISED	12.13	+2.78	29.73%
ACTIVE OPEN SPACE APPROV.	1.13		
ACTIVE OPEN SPACE REVISED	1.13	+0.00	0.00%

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

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 OF KNIGHTDALE CONTACTS:

KNIGHTDALE PUBLIC WORKS
919-217-2250
swengineering@knightdalenc.gov

INSPECTIONS MANAGER, TOK PUBLIC WORKS
JOHN STOVER
919-349-2521
john.stover@knightdalenc.gov

TOWN ESC CONSTRUCTION INSPECTOR
919-919-2254

STORMWATER MANAGER, PUBLIC WORKS
IKE ARCHER
919-217-2255
ike.archer@knightdalenc.gov

STORMWATER TECH, PUBLIC WORKS
919-217-2256

CODE ENFORCEMENT OFFICER, DS
DONOVAN APPLEWHITE
919-217-2248
donovan.applewhite@knightdalenc.gov

REV 5/21/25 FOR UPDATED LAND DISTURBANCE PERMIT

PROPOSED IMPERVIOUS AREA BREAKDOWN		
ROADWAYS	132,338.15 SF	3.038 AC
INTERNAL S/W & CONC.	13,459.57 SF	0.309 AC
R/W S/W & SIDE PATH	29,132.35 SF	0.669 AC
LOTS	239,900 SF	5.507 AC
TOTAL IMPERVIOUS AREA:	414,830.07 SF	9.523 AC

NOTE ON LOT IMPERVIOUS:
SINGLE FAMILY FRONT LOAD @ 4,400 SF IMP./LOT
REAR ALLEY LOAD SINGLE FAMILY @ 3,300 SF IMP./LOT
TOWNHOMES @ 1,400 SF IMP./LOT
PROPOSED IMPERVIOUS SURFACE AREA: 9.523 AC
35.28%

RALEIGH WATER INSPECTIONS QUANTITIES (SUBDIVISIONS & SITE PLANS)			
Phase Number(s)	PHASE 1		
Number of Lot(s)	23		
Number of Units	23		
Public Water (LF)	2,017		
Public Sewer (LF)	1,422		
Public Force Main (LF)	0		
Private Sewer* (LF)	0		
Water Service Stubs (Quantity)	26		
Sewer Service Stubs (Quantity)	25		
Average Daily Flow per Phase**	5,137		

*Sewer mains and manholes as part of a collection system.
**Entire Project Flow. Based on 75gpd per bedroom for residential (apartments, single family dwelling, townhouse, condos), or based on 15A NCAC 02T .0114 Wastewater Design Flow Rates for Commercial and Industrial.
The meter size must match domestic service size (exemption – 3/4" service tap with 5/8" meter).

THOMPSON and ASSOCIATES, P.A.
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
TEL. 919 465-1566
C-0343

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

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, Randall L. Miller, 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 the drawings. Specification and Details Manual and applicable provisions of the North Carolina State Building Code.

Seal: NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER

By: Randall L. Miller, PE
Date: 03/26/2026

REVISIONS:			
PLAN PREPARATION DATE	NO.	DATE	DESCRIPTION
7/28/2025	1	8/12/25	1ST SUBMITTAL
	2	10/22/25	1ST REVIEW COMMENTS
	3	12/19/25	2ND REVIEW COMMENTS
	4	02/27/26	3RD REVIEW COMMENTS
	5	03/26/26	FINAL SIGNATURE SET

PUBLIC IMPROVEMENT QUANTITIES:
TOWN OF KNIGHTDALE

	PHASE 1
Public Street (LF)	1,688
Curb and Gutter (LF)	3,501
Public Sidewalk (LF)	1,573
Public Multi-Use Path (LF)	1,249
Stormdrain (LF)	1,705
Tree Protection Fence (LF)	713
# STORM WATER SCM'S	2

TOWN OF KNIGHTDALE

950 Steeple Square Court
Knightdale, NC 27545
KnightdaleNC.gov

ORDINANCE #20-08-19-002
AN ORDINANCE TO AMEND THE UNIFIED DEVELOPMENT ORDINANCE OF THE TOWN OF KNIGHTDALE WHICH INCLUDES THE ZONING DISTRICT MAP

ZMA-6-19 The Collection Planned Unit Development

WHEREAS, the Town of Knightdale has received a petition to amend the zoning of the property from Rural Transition (RT) to General Residneital-8 Planned Unit Development (GR-8 PUD); and

WHEREAS, the Town Council finds the proposed Zoning Map Amendment is consistent with the KnightdaleNext 2035 Comprehensive Plan as it addresses several of the guiding principles including encouraging infill development & redevelopment, providing great neighborhoods & expanded home choices, supporting parks & recreation, promoting compact development patterns, and sustaining the natural environment. It is further consistent with the General Growth Framework, Growth & Conservation, Street Network, and Trails & Greenway Maps. The request is also reasonable and in the public interest as it aids in developing a vibrant, sustainable, and safe community design in which people desire to live, work, and visit;

NOW, THEREFORE, BE IT ORDAINED by the Town Council of the Town of Knightdale, North Carolina:

SECTION 1: That the Unified Development Ordinance of the Town of Knightdale Code, which includes the Zoning District Map, be amended to rezone approximately 28.13 ± acres located within the Town of Knightdale's Corporate Limits and Extra Territorial Jurisdiction located east of Keith Street, and north of Robertson Street, and identified as Wake County PINs 1754-63-5524, 1754-53-9404, 1754-53-7747, 1754-53-9814, and 1754-63-0926 from Rural Transition (RT) to General Residnetial-8 Planned Unit Development (GR-8 PUD) as indicated.

SECTION 2. That the additional conditions contained within the application identified as ZMA-6-19 and PUD document (Exhibit A), and listed below apply as additional zoning conditions to the parcels of land identified as PINs 1754-63-5524, 1754-53-9404, 1754-53-7747, 1754-53-9814, and 1754-63-0926:

1. Townhomes within the proposal will comprise 41.24% of the total number of dwelling units.
2. Single-family dwelling units on lots 60 feet in width will be accessed via a driveway that connects to the fronting public right-of-way. Additionally, front- and rear-loaded single-family dwellings will be served by driveways that are a minimum length of 20' rather than the UDO requirement of 35".
3. Allowance of mass grading the entire site, including lots exceeding the UDO required prohibition on mass grading.
4. Single-Family Dwelling Architectural Standards: In addition to the elevations, the applicant agrees to the Single-Family Dwelling Architectural Standards found in UDO Ch. 5.7 and the additional conditions listed below:
   a. Single-family 2-story homes built on lots at least 60-feet wide will have a minimum of 2,000 square feet and 1-story homes on such lots will be a minimum of 1,600 square feet. Lots that are at least 60-feet wide will have front-loaded two car garages.
   b. Single-family homes built on lots less than 60-square feet will have a minimum of 1,450 square feet and have alley-loaded garages with the exceptions that a maximum of 15% of such homes may be a minimum of 1,450 square feet.
   c. All single-family homes shall be raised from the finished grade a minimum of 18" and shall have stem wall or raised slab foundations that shall be covered on all sides with brick or stone. Areas under porches may be enclosed with lattice.
   d. All single-family homes with a crawl space will be wrapped in brick or stone on all sides.
   e. All single-family homes will have a combination of two or more of the following materials on the front façade (not counting the foundation): stone, brick, lap siding, fiber cement siding, shake or board and batten. All siding will be fiber cement. Vinyl may only be used for soffits, fascia, and corner boards.
   f. All single-family homes will have a front porch with a minimum depth of five (5) feet. Front porch posts will be at least 6"x6".
   g. Main roof pitches (excluding porches) for 2-story homes shall be at least 7:12.
   h. There shall be a 12" overhang on every gable roof end,
   i. Main roof pitches for 1-story and 1.5-story homes will be at least 6:12.
   j. Garages for lots that are at least 60-feet wide will not protrude more than six (6) feet from the front porch or stoop and all garage doors shall over window inserts and hardware.
   k. For every linear 30 feet (or fraction) of continuous side elevation, there shall be one window or door added to the side elevation. Any siding break on the side of the home such as a fireplace, porch, wall offset can be used as an alternative to a window or door.
   l. Garages will not exceed 45% of the front façade width or will be split into two bays.
5. Townhouse Architectural Standards: In addition to the elevations, the applicant agrees to the Townhouse Architectural Standards found in UDO Ch. 5.8 and the additional conditions listed below:
   a. All townhouse units will have alley-loaded two car garages.
   b. All townhouse units shall be raised from the finished grade a minimum of 18" and have stem wall or raised slab foundations that shall be covered on all sides with brick or stone. Areas under porches may be enclosed with lattice.
   c. All townhouse units will have a combination of two or more of the following materials on the front façade (not counting the foundation): stone, brick, lap siding, fiber cement siding, shake or board and batten. All siding will be fiber cement. Vinyl may be used for soffits, fascias, and corner boards.
   d. Usable front porches shall be at least five (5) feet deep and extend more than 30% of the primary façade.
   e. All townhouse units shall provide detailed design elements using at least one (1) of the features from each of the four categories below:
      - Entrance:
        - Recessed entry with 6" minimum width door trim
        - Covered porch with 6" minimum width pillars/posts/columns
      - Building Offset:
        - Façade offset
        - Roofline offset
      - Roof:
        - Dormer
        - Gable
        - Cupola/Tower/Chimney
        - Decorative cornice of roof line (flat roof only)

      And at least two (2) of the following elements:
      - Front Façade:
        - Bay window
        - Balcony
        - Porch
        - Shutters
        - Window trim with 4" minimum width
        - Patterned finish (scales, shakes, wainscoting, brick, or stone)
   f. There shall be a 12" overhang on every gable roof end.
   g. Townhouse building walls shall be wood clapboard, cement fiber board or shingle, wood board and batten, brick, or stone.
   h. Main roofs on townhouse buildings shall have 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. Monoptich roofs shall have a pitch of at least 3:12.
   i. For every second and third story of the side elevations, there shall be a minimum of three windows added to the side elevation. Any siding break on the side of the home such as a fireplace or wall offset can be used as an alternate to a window. On the ground floor there shall be at minimum of one window on the side elevations.
   j. The second and third stories of the rear elevation shall have either a balcony and door(s) or windows making up a minimum of 25% of the length of the rear elevation. The percentage is measured as the horizontal plane (lineal feet) containing a balcony and door(s) or windows divided by the total horizontal plane length.
   k. No two townhome units in a building shall have the same exterior paint color scheme.
   l. All townhomes shall be three (3) stories.
6. The submitted site plan (Exhibit A) and PUD Document with home elevations and zoning conditions (Exhibit B) will serve as the site-specific development plan. However, the applicant must submit Construction Drawings to the Town for approval that are in conformance with the approved conditions of the GR-8 PUD zoning district, master plan comments, Unified Development Ordinance, and comments from the October 31, 2019 DRC meeting.

SECTION 3. That all laws and clauses of law in conflict herewith are hereby repealed to the extent of said conflict.

SECTION 4. That if this ordinance or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions of this ordinance which can be given separate effect and to the end the provisions of this ordinance are declared to be severable.

SECTION 5. That this ordinance has been adopted following a duly advertised public hearing of the Town Council and following review and recommendation by the Land Use Review Board.

SECTION 6. That this ordinance shall be enforced as provided in G.S. 160A-175 or as provided for in the Knightdale Town Code

SECTION 7. That this ordinance shall become effective upon its adoption by Town Council.

Adopted this 19th day of August, 2020

James A. Roberson, Mayor

ATTEST:

Heather M. Smith, Town Clerk

APPROVED AS TO FORM:

Roger Knight, Town Attorney

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

CONSTRUCTION PLANS **SHEET 0**

ZONING CONDITIONS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
FAX (919) 465-1585
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA			
OWNER: TCTBM, LLC			ZONED PUD
DATE 2/15/21	DRAWN MTH		JOB NO. 20-
SCALE 1" = 60	SURVEYED ----		DWG COLLECTION-SITE
REVISIONS: 12/19/25			PIN: SEE SITE DATA TABLE

PROPERTY CURVE TABLE				
CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C1	1193.80'	635.90'	N 88°33'36" E	628.41'
C2	2198.01'	186.66'	S 73°24'07" E	186.60'
C3	415.71'	230.12'	S 48°35'54" W	227.20'
C4	580.48'	200.27'	S 42°33'17" W	199.28'
C5	571.75'	286.68'	S 70°46'00" W	283.69'
C6	1605.55'	63.58'	S 87°24'03" W	63.57'
C7	1365.59'	318.65'	S 66°21'31" W	317.93'

PROPERTY LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 14°30'01" W	47.06'
L2	N 88°01'36" W	18.39'
L3	N 63°39'41" E	16.65'
L4	N 54°49'03" E	30.82'
L5	N 04°09'46" W	28.45'
L6	N 07°44'48" W	18.23'
L7	N 32°57'08" E	18.23'
L8	N 75°26'53" E	13.71'
L9	N 04°10'22" E	44.06'
L10	N 04°10'22" E	36.52'
L11	N 01°55'47" W	34.75'
L12	N 12°32'57" W	34.75'
L13	N 21°53'45" W	25.40'
L14	N 50°41'47" W	25.40'
L15	N 20°18'12" W	13.80'
L16	N 20°18'12" W	23.98'
L17	S 18°57'15" W	23.17'
L18	S 33°37'38" E	25.58'
L19	S 06°07'03" W	34.34'
L20	S 38°04'15" E	18.15'
L21	S 34°53'45" W	9.01'
L22	S 17°03'59" E	19.44'
L23	S 89°46'45" E	10.32'
L24	S 16°24'44" E	5.43'
L25	N 75°50'52" W	14.02'
L26	S 36°17'51" W	55.17'
L27	S 11°30'45" W	14.30'
L28	S 70°57'34" W	22.39'
L29	N 32°54'46" W	14.37'
L30	S 71°14'02" W	17.09'
L31	S 11°52'36" W	13.89'
L32	S 16°47'46" E	37.00'
L33	S 45°47'43" W	18.54'
L34	S 07°49'18" W	33.34'
L35	S 61°23'21" W	40.02'
L36	N 38°46'44" W	21.30'
L37	S 62°32'29" W	54.07'
L38	S 23°51'10" W	48.67'
L39	S 50°29'55" W	29.16'
L40	N 79°26'15" W	19.86'
L41	S 32°55'51" W	24.78'
L42	S 59°03'01" W	27.50'
L43	S 67°37'41" W	34.62'
L44	S 74°16'22" W	4.13'
L45	S 13°25'14" W	6.75'
L46	S 04°35'54" E	26.25'
L47	N 21°34'02" W	10.00'

NORFOLK SOUTHERN RAILROAD
100' RIGHT OF WAY
B.M. 2018, PG. 750

NC GRID (NAD83-2011)

KEITH STREET
50' PUBLIC R/W
B.M. 1996, PG. 1629

MF-DEVELOPMENT LLC
PIN:1754633524, 1754630926,
1754539404, 1754539814
D.B. 18570 PG. 438
B.M. 1994, PG. 445
1,126,929 SQ.FT.
25.87 AC.

N/F
CAROLYN SCHATZ
PIN: 1754536281
D.B. 15871, PG. 1216

N/F
CAROLYN SCHATZ
PIN:1754537168
D.B. 15871, PG. 1216

N/F
DWIGHT HIGH
PIN:1754538007
D.B. 12378, PG. 1155

N/F
JOANNE DENNIS
PIN:1754528935
D.B. 17015, PG. 2134

N/F
MAOLA JONES
PIN:1754528863
D.B. 4657, PG. 15

N/F
JAMES POOLE, ETAL.
PIN:1754834965
D.B. 15997, PG. 77

ROBERTSON ROAD F/S SR 2500
60' PUBLIC R/W
B.M. 1994, PG. 445

30' CITY OF RALEIGH UTILITY EASEMENT
SEE B.M. 2008, PG. 1242

WETLAND WC-1
WETLAND WC-2
WETLAND WC-3
WETLAND WC-4
WETLAND WD
WETLAND WB-1
WETLAND WB-2
WETLAND WB-3

WOODED
OPEN
POND
BARN
SHED
HOUSE
FOOTER
FENCE OVER LINE
SWINGS OVER LINE
SHED OVER LINE 3.2'

50' BUFFER FROM TOP OF BANK
30' BUFFER FROM TOP OF BANK
CL OF CREEK IS PROPERTY LINE

24"CMP=317.35
24"CMP=316.68
36"RCP=301.95
36"RCP=300.93
18"RCP=295.14
30"RCP=290.94
30"RCP=291.49

TBM
SET IRON PIPE
=309.20

TBM
CONCRETE MONUMENT
=292.98

SS1
RIM=324.00
10"HDPE(N)=312.90
10"HDPE(E)=313.05
10"HDPE(S)=312.75

SS2
RIM=320.49
10"HDPE(N)=310.29
10"HDPE(S)=310.19

SS3
RIM=324.60
10"HDPE(N)=304.45
10"HDPE(S)=303.40

SS4
RIM=307.03
10"HDPE(N)=289.43
10"HDPE(S)=288.63

SS5
RIM=305.80
10"HDPE(N)=285.80
10"HDPE(S)=285.20

SS6
RIM=312.38
10"HDPE(N)=281.38
10"HDPE(S)=281.18

SS7
RIM=313.99
8"HDPE(S)=305.59

SS8
RIM=312.38
8"HDPE(N)=299.40
8"HDPE(S)=296.48
8"HDPE(W)=297.16

SS9
RIM=295.64
8"HDPE(S)=289.56
8"HDPE(W)=289.64

LEGEND

(WF)	WETLAND FLAG
O(SZ)	DECIDUOUS
P(SZ)	EVERGREEN
(S) EXSS1	EXISTING SANITARY SEWER MANHOLE
	EX. FIRE HYDRANT
(W)	EX. WATER METER
	EX. WATER VALVE
	EXISTING POWER POLE
	EXISTING FIBER OPTIC MARKER
	EXISTING TELEPHONE PEDESTAL
FOH	EXISTING FIBER OPTIC BOX
	EX. SIGN
AC	EX. AIR CONDITIONER
	EX. CLEANOUT
E	EX. ELECTRICAL PANEL
---W---W---	EXISTING WATERLINE
---EXSS----	EXISTING SANITARY SEWER
---OU---OU---	EXISTING OVERHEAD UTILITY
---UT---UT---	EXISTING UNDERGROUND UTILITY
---SD---SD---	EXISTING STORM DRAIN
	TREE LINE
+329.06	SPOT ELEV.

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL K. MILLER
12/15/2025

0 60 120 180

CONSTRUCTION PLANS ***SHEET 1***

EXISTING CONDITIONS PLAN
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA			
OWNER: TCTBM, LLC			ZONED PUD
DATE 2/15/21	DRAWN MTH		JOB NO. 20-
SCALE 1" = 60	SURVEYED ----		DWG COLLECTION EXCOND
REVISIONS: 3/23/22;12/19/25			PIN: SEE SITE DATA TABLE

NC GRID (NAD83-2011)

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

NOTE:
- ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

NOTE:
RETAINING WALLS REQUIRE A SEPARATE BUILDING PERMIT.

NOTE:
EXACT LOCATION OF THE MULCH PATH TO BE DETERMINED IN THE FIELD TO AVOID ANY TREE REMOVAL IN ZONE 1 OF NEUSE RIVER BUFFER

OPEN SPACE

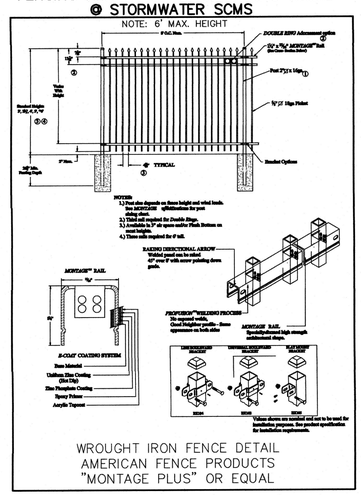
TREE SAVE AREA

WETLAND

VARIABLE WIDTH SCM ACCESS & MAINT. EASEMENT

FENCING ALONG TOP OF RETAINING WALLS @ STORMWATER SCMS

NOTE: 6' MAX. HEIGHT



WROUGHT IRON FENCE DETAIL
AMERICAN FENCE PRODUCTS
"MONTAGE PLUS" OR EQUAL

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2. ADDITIONAL R/W WILL BE DEDICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

PHASE 2

OPEN SPACE CALCULATIONS

PHASE 1	# OF UNITS	# OF BR	TOTAL # BR
SINGLE FAMILY HOMES	9	3.5	32
TOWNHOMES	14	2.5	35
			67
PHASE 1	MULTIPLER	SQUARE FT	ACRES
TOTAL OPEN SPACE REQUIRED	260	18,200	0.418
TOTAL OPEN SPACE PROVIDED		197,422.7	4.53
*based on all proposed units within 1/4 mile of Knightdale Station Park			
PASSIVE OPEN SPACE REQ.		9,100	0.209
PASSIVE OPEN SPACE PROVID.		176,078.3	4.04
ACTIVE OPEN SPACE REQ.		9,100	0.209
ACTIVE OPEN SPACE PROVID.		21,344.4	0.49

PHASE 2	# OF UNITS	# OF BR	TOTAL # BR
SINGLE FAMILY HOMES	44	3.5	154
TOWNHOMES	23	2.5	58
			212
PHASE 2	MULTIPLER	SQUARE FT	ACRES
TOTAL OPEN SPACE REQUIRED	260	54,080	1.242
TOTAL OPEN SPACE PROVIDED		380,269.7	8.73
*based on all proposed units within 1/4 mile of Knightdale Station Park			
PASSIVE OPEN SPACE REQ.		27,040	0.621
PASSIVE OPEN SPACE PROVID.		352,243.9	8.09
ACTIVE OPEN SPACE REQ.		27,040	0.621
ACTIVE OPEN SPACE PROVID.		28,025.8	0.64

TOTAL	ACRES	DIFFERENCE	%CHANGE
TOTAL OPEN SPACE APPROVED	10.48		
TOTAL OPEN SPACE REVISED	13.26	+2.78	26.52%
PASSIVE OPEN SPACE APPROV.	9.35		
PASSIVE OPEN SPACE REVISED	12.13	+2.78	29.73%
ACTIVE OPEN SPACE APPROV.	1.13		
ACTIVE OPEN SPACE REVISED	1.13	+0.00	0.00%

PARKING CALCULATIONS – CBU's

MAILBOX UNITS – 90
MIN. REQUIRED PARKING SPACES – 3 OR 1/2 MAX. , WHICHEVER IS GREATER
MAX. REQUIRED PARKING – (90-48)/32 = 1.3 + 3 = 4.3 (5 SPACES MAX.)
MIN. REQUIRED PARKING SPACES – 3
PROVIDED PARKING SPACES – 5 (INCLUDES 1 H/C SPACE)

OPEN SPACE AREAS

	PHASE 1	PHASE 2	TOTAL
ACTIVE RECREATION OPEN SPACE –	21,344.4 SF (0.49 AC)	28,025.8 SF (0.64 AC)	49,370.2 SF (1.13 AC)
PASSIVE RECREATION OPEN SPACE –	176,078.3 SF (4.04 AC)	352,243.9 SF (8.09 AC)	528,322.2 SF (12.13 AC)

LOT COUNT

LOT COUNT	PHASE 1	PHASE 2	TOTAL
SINGLE FAMILY (FRONT LOADED) – 60'x 140'	3 LOTS	9 LOTS	12 LOTS
SINGLE FAMILY (REAR ALLEY LOADED) – 40' x 115'–125'	6 LOTS	35 LOTS	41 LOTS
TOWNHOMES (REAR ALEY LOADED) – 22' x 100'–150'	14 LOTS	23 LOTS	37 LOTS
TOTAL # OF LOTS:	23 LOTS	67 LOTS	90 LOTS

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

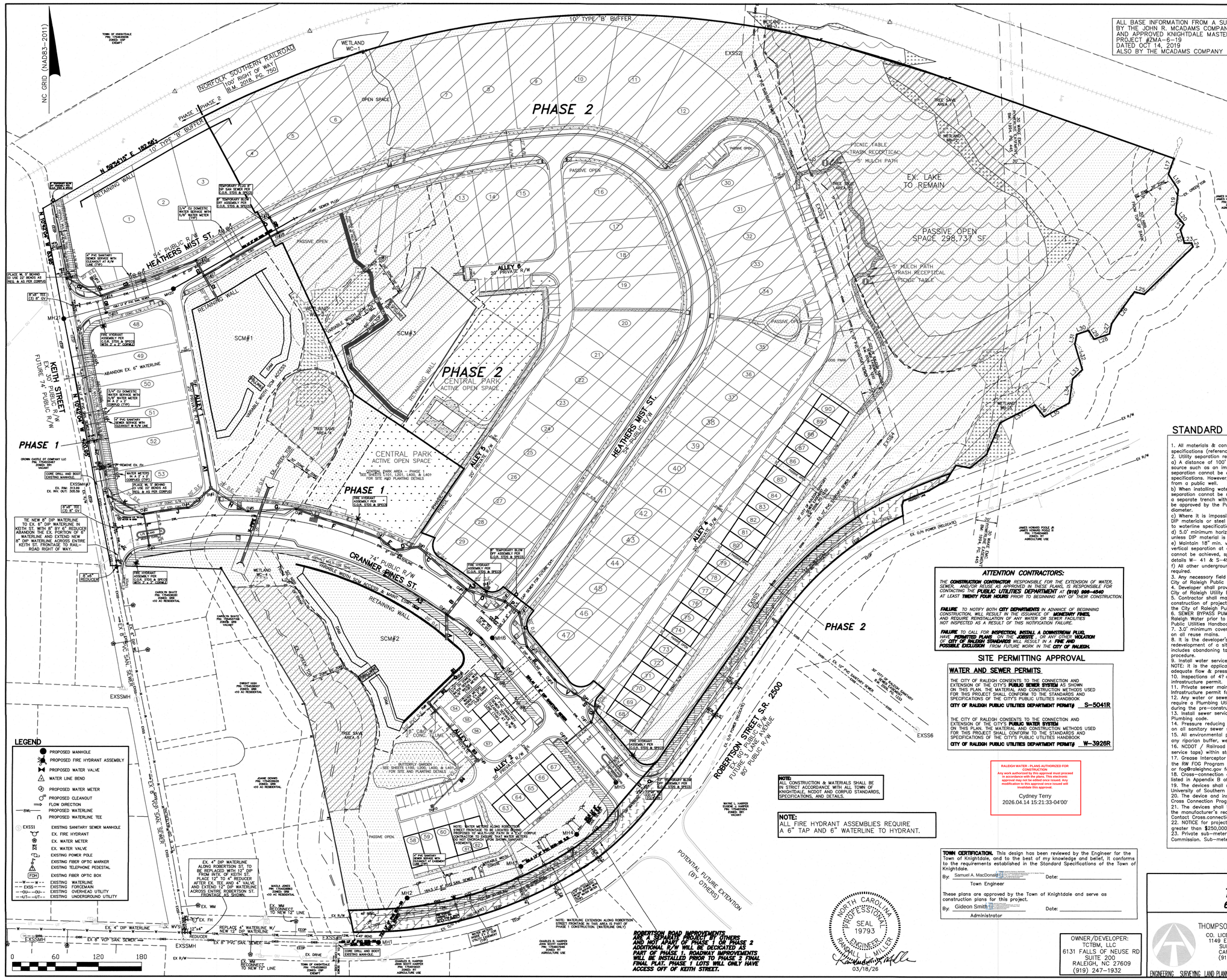
SHEET 2

SITE PLAN
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA

OWNER: TCTBM, LLC			ZONED PUD
DATE 7/28/2025	DRAWN RLM		JOB NO. 20–
SCALE 1" = 60	SURVEYED ----		DWG COLLECTION-SITE
REVISIONS: 10-02-2025 12-15-2025 01-20-2026 02-25-2026 4-16-2026			PIN: SEE SITE DATA TABLE


NC GRID (NADB3-2011)
NORFOLK SOUTHERN RAILROAD
100' RIGHT OF WAY
B.M. 2018, PG. 750
10' TYPE 'B' BUFFER
WETLAND WC-1
OPEN SPACE
PHASE 1
PHASE 2
PHASE 2
CENTRAL PARK
ACTIVE OPEN SPACE
EX. LAKE TO REMAIN
PASSIVE OPEN SPACE 298,737 SF
PICNIC TABLE
TRASH RECEPTICAL
5' MULCH PATH
RETAINING WALL
HEATHERS MIST ST.
534' PUBLIC R/W
ALLEY 6
20' PRIVATE R/W
ALLEY 5
20' PRIVATE R/W
ALLEY 4
20' PRIVATE R/W
ALLEY 3
20' PRIVATE R/W
ALLEY 2
20' PRIVATE R/W
ALLEY 1
20' PRIVATE R/W
CRANMER PINES ST.
74' PUBLIC R/W
ROBERTSON STREET S.R. 2500
EX. 60' PUBLIC R/W
FUTURE 3 LANE AVENUE
80' PUBLIC R/W
KEITH STREET
EX. 30' PUBLIC R/W
FUTURE 74' PUBLIC R/W
SCM#1
SCM#2
SCM#3
TREE SAVE AREA A
TREE SAVE AREA 5
POTENTIAL FUTURE EXTENSION (BY OTHERS)
N 59°54'15" E 1187.56'
N 10°05'45" W 450.00'
S 10°05'45" E 450.00'
N 10°05'45" W 450.00'
ABANDON EX. 6" WATERLINE
REMOVE EX. FH
TIE NEW 8" DIP WATERLINE TO EX. 8" DIP WATERLINE IN KEITH ST. WITH 8" BY 6" REDUCER ABANDON THE EX. PORTION OF 8" WATERLINE AND EXTEND NEW 8" DIP WATERLINE ACROSS ENTIRE KEITH ST. FRONTAGE TO RAIL-ROAD RIGHT OF WAY
EX. 4" DIP WATERLINE ALONG ROBERTSON ST. TO BE REPLACED WITH 12" DIP FROM INTX. OF KEITH ST. PLACE 12" TO 4" REDUCER AFTER EX. TEE, AND 4" VALVE, AND EXTEND 12" DIP WATERLINE ACROSS ENTIRE ROBERTSON ST. FRONTAGE AS SHOWN.
REPLACE 4" WATERLINE W/ NEW 12" DIP WATERLINE
EX. 4" DIP WATERLINE
EX. 8" PVC SAN. SEWER
EX. 8" VCP SAN. SEWER
EXSSMH
EX. DRIVE
EX. R/W
EX. WM RECONNECT TO NEW 12" LINE
EX. FH
EX. WM
EX. 12"x4" REDUCER
EX. 12" 45° BEND
EX. 12" 22° BEND
EX. 12" 11° BEND
EX. 12" 90° BEND
EX. 12" TEE
EX. 12" VALVE
EX. 12" VALVE & BOX
EX. 12" CAP
EX. 12" PLUG
EX. 12" CROSS
EX. 12" TEE & VALVE
EX. 12" TEE & VALVE & BOX
EX. 12" TEE & VALVE & BOX
EX. 12" TEE & VALVE & BOX

NC GRID (NAD83-2011)

PHASE 1

PHASE 2

KEITH STREET
EX. 50' PUBLIC R/W
FUTURE 74' PUBLIC R/W

N 10°42'04" W 400.95'

ABANDON EX. 6" WATERLINE

3/4" CU DOMESTIC WATER SERVICE WITH 5/8" WATER METER IN A 2' x 3' CORPUED (TYP)

4" PVC SANITARY SEWER SERVICE WITH CLEANOUT @ R/W LINE

CROWN CASTLE GT COMPANY LLC
PIN: 1754533467
ZONED: RR1
VACANT

CORE DRILL AND BOOT EXISTING MANHOLE.

REMOVE EX. FH

WATER METERS IN A 2' x 3' CORPUD (TYP)

PLACE WL 5' BEHIND CI USE 22° BENDS AS REQ. & AS PER CORPUD

EXSSMH#7
EX. RIM: 313.99
EX. INV. OUT: 309.59

8"x8" TEE
(3) 8" GV

TIE NEW 8" DIP WATERLINE TO EX. 6" DIP WATERLINE IN KEITH ST. WITH 8" BY 6" REDUCER ABANDON THE EX. PORTION OF 6" WATERLINE AND EXTEND NEW 8" DIP WATERLINE ACROSS ENTIRE KEITH ST. FRONTAGE TO RAIL-ROAD RIGHT OF WAY.

8"x6" REDUCER

FIRE HYDRANT ASSEMBLY PER C.O.R. STDS & SPECS WITH 3" x 3" CORWL

CAROLYN SHATZ
PIN: 1754536281
ZONED: GRB
<10 AC RESIDENTIAL

CAROLYN SHATZ
PIN: 1754537168
ZONED: GRB
VACANT

EX 8" PVC SAN. SEWER

EX. 6" DIP WL

EXSSMH

DWIGHT HIGH
PIN: 1754538007
ZONED: GRB
<10 AC RESIDENTIAL

ALLEY 1
20' PRIVATE R/W

VARIABLE WIDTH SCM ACCESS

DAM

TREE SAVE AREA 4

CENTRAL PARK
ACTIVE OPEN SPACE

CENTRAL PARK AREA - PHASE 1
SEE SHEETS L101, L201, L400, & L401
FOR SITE AND PLANTING DETAILS

EX. CREEK TOB

30' ZONE AE
8' ZONE A

20' D.E.

CI#2 CI#4 CI#5 CI#6 CI#7 CI#8 CI#9 CI#10 CI#11 CI#12 CI#13 CI#14 CI#15 CI#16 CI#17

30" STD. CONC. CI#4

3' CONC. S/W

8" DIP WATERLINE

X-PRESS

FIRE HYDRANT ASSEMBLY PER C.O.R. STDS & SPECS

8" TEMPORARY BLOW OFF ASSEMBLY PER C.O.R. STDS & SPECS

FIRE HYDRANT ASSEMBLY PER C.O.R. STDS & SPECS

WETLAND WC-4

L/S WETLAND

10' ASPHALT MULTI-USE TRAIL

74' PUBLIC R/W
CRANMER PINES ST.

VARIABLE WIDTH SCM ACCESS & MAINT. ESMT.

RETAINING WALL

50' NSB FROM TOP OF BANK

SCM#2

EX. CREEK TOB

TREE SAVE AREA 5

BUTTERFLY GARDEN
SEE SHEETS L100, L200, L400, & L401
FOR SITE AND PLANTING DETAILS

18" C&G W/ 2' CONC. FLUME

ALLEY 3
20' PRIVATE R/W

ALLEY 2
20' PRIVATE R/W

ALLEY 4
20' PRIVATE R/W

ALLEY 5
20' PRIVATE R/W

HEATHERS MIST ST.
54' PUBLIC R/W

MH1 MH2 MH3 MH4 MH5 MH6

294.41 LF 8" DIP SANITARY SEWER

164.5 LF 8" HIGH SAN. SEWER

59.4 LF 8" DIP SAN. SER.

50.8 LF 8" DIP SAN. SER.

CAP SEWER FOR FUTURE EXT.

4" PVC SANITARY SEWER SERVICE WITH CLEANOUT AT EASEMENT LINE (TYP.)

4" PVC SANITARY SEWER SERVICE WITH CLEANOUT AT R/W

WATER METERS INSIDE 5' x 2' COR UTILITY EASEMENT (TYP)

NOTE: WATER METERS ALONG ROBERTSON STREET FRONTAGE TO BE LOCATED BEHIND PROPOSED 10' MULTI-USE PATH IN A 2'x2' CORPUE CONTRACTOR TO ENSURE THAT WATER METERS DO NOT ENCROACH UPON SHOWN SANITARY EASEMENTS.

12" TEMPORARY BLOW OFF ASSEMBLY PER C.O.R. STDS & SPECS

12"x8" TEE (2) 12" GV (1) 8" GV

8" DIP WATERLINE

EX. 10" PVC SANITARY SEWER

30' CITY OF RALEIGH SANITARY SEWER EASEMENT B.M. 2006 PG 1232

30' CITY OF RALEIGH SANITARY SEWER EASEMENT B.M. 2006 PG 1233

EX. 10" PVC SANITARY SEWER

EXSS4

EXSS5

EXSS6

PROPERTY LINE

5' TAPER

EX. O/H POWER (RELOCATE)

ROBERTSON STREET S.R. 2500
EX. 60' PUBLIC R/W
FUTURE 3 LANE AVENUE
80' PUBLIC R/W

ROBERTSON ROAD IS A SEPARATE PR
AND NOT APART O

PHASE 2

POTENTIAL FUTURE EXTENTION (BY OTHERS)

WAYNE L. HARPER
EUGENE L. HARPER
PIN: 1754621854
ZONED: RR1
VACANT

JOANNE DENNIS
PIN: 1754528935
ZONED: GRB
<10 AC RESIDENTIAL

MAOLA JONES
PIN: 1754528863
ZONED: GRB
<10 AC RESIDENTIAL

EX. 4" DIP WATERLINE ALONG ROBERTSON ST. TO BE REPLACED WITH 12" DIP FROM INTX. OF KEITH ST. PLACE 12" TO 4" REDUCER AFTER EX. TEE AND 4" VALVE AND EXTEND 12" DIP WATERLINE ACROSS ENTIRE ROBERTSON ST. FRONTAGE AS SHOWN.

EX. WM

EX. FH

EX. WV'S

EX. 4" DIP WATERLINE

REPLACE 4" WATERLINE W/ NEW 12" DIP WATERLINE

REDUCER 12"x4"

EXSSMH

EX 8" PVC SAN. SEWER

EX. WM RECONNECT TO NEW 12" LINE

EX R/W

EOEP

EX. DRIVE

45° BEND

45° BEND

CORE DRILL AND BOOT EXISTING MANHOLE.

TOWN OF KNIGHTDALE
PIN: 1754528603
ZONED: GSP
EXEMPT

CHARLES R. HARPER
JOHN SCOTT HARPER
PIN: 1754514021
ZONED: RT
AGRICULTURE USE

CHARLES R. HARPER
JOHN SCOTT HARPER
PIN: 1754607948
ZONED: RT
AGRICULTURE USE

NOTE: WATERLINE EXTENSION ALONG ROBERTSON STREET FRONTAGE IN THIS AREA IS PART OF PHASE 1 CONSTRUCTION. (WATERLINE ONLY)

WATER METERS INSIDE 5' x 2' COR UTILITY EASEMENT (TYP)

1/4" DU DOMESTIC WATER SERVICE WITH 5/8" WATER METER (TYP)

FIRE HYDRANT ASSEMBLY PER C.O.R. STDS & SPECS

LEGEND

- PROPOSED MANHOLE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED WATER VALVE
- WATER LINE BEND
- PROPOSED WATER METER
- PROPOSED CLEANOUT
- FLOW DIRECTION
- 8WL — PROPOSED WATERLINE
- PROPOSED WATERLINE TEE
- EXSS1 — EXISTING SANITARY SEWER MANHOLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. WATER VALVE
- EXISTING POWER POLE
- EXISTING FIBER OPTIC MARKER
- EXISTING TELEPHONE PEDESTAL
- FOH — EXISTING FIBER OPTIC BOX
- W — W — EXISTING WATERLINE
- EXSS — EXISTING FORCEMAIN
- OU — OU — EXISTING OVERHEAD UTILITY
- UT — UT — EXISTING UNDERGROUND UTILITY

0 40 80 120

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.

ALL BASE INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2 ADDITIONAL R/W WILL BE DECICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041R

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926R

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.
Cydney Terry
2026.04.14 15:21:39-04'00'

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.

NOTE:
ALL FIRE HYDRANT ASSEMBLIES REQUIRE A 6" TAP AND 6" WATERLINE TO HYDRANT.

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

CONSTRUCTION PLANS SHEET 3A

UTILITY PLAN ENLARGED 'A'
THE COLLECTION - PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566

ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 40	SURVEYED ----	DWG COLLECTION-UTIL
REVISIONS: 10-22-25; 12-15-25 02-27-26 03-18-2026		PIN: SEE SITE DATA TABLE

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041R

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926R

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Cydney Terry
2026.04.14 15:21:45-04'00'

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By: Samuel A. MacDonald Date: _____
Town Engineer

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By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

0 40 80 120

NC GRID (NAD83-2011)

TOWN OF KNIGHTDALE
PIN: 1754645656
ZONED: OSP
EXEMPT

NORFOLK SOUTHERN RAILROAD
100' RIGHT OF WAY
B.M. 2018, PG. 750

WETLAND WC-1

OPEN SPACE

PHASE 1 PHASE 2

10' TYPE 'B' BUFFER

N 59°54'15" E 182.56'

RETAINING WALL

N 10°42'04" W 83.95'

54' PUBLIC R/W
HEATHERS MIST ST.

PHASE 1

KEITH STREET
EX. 30' PUBLIC R/W
FUTURE 74' PUBLIC R/W

PHASE 2

PASSIVE OPEN

ALLEY 6
20' PRIVATE R/W

SCM#1

SCM#3

WETLAND WC-3

RETAINING WALL

PHASE 2
CENTRAL PARK
ACTIVE OPEN SPACE

EXSS1

EXSS2

EXSS3

WETLAND WB-1

WETLAND WB-2

TREE SAVE AREA 1

TREE SAVE AREA

PICNIC TABLE
TRASH RECEPTICAL
5' MULCH PATH

EX. LAKE TO REMAIN

PASSIVE OPEN

5' MULCH PATH
TRASH RECEPTIC
PICNIC TABLE

SHEET 3B

CONSTRUCTION PLANS
UTILITY PLAN ENLARGED 'B'
THE COLLECTION – PHASE 1
614 KEITH ST, KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA
OWNER: TCTBM, LLC ZONED PUD
DATE 7/28/2025 DRAWN RLM JOB NO. 20-
SCALE 1" = 40 SURVEYED ---- DWG COLLECTION-UTIL
REVISIONS: 10-22-25; 12-15-25 02-27-26 03-18-2026
PIN: SEE SITE DATA TABLE

NOTES:

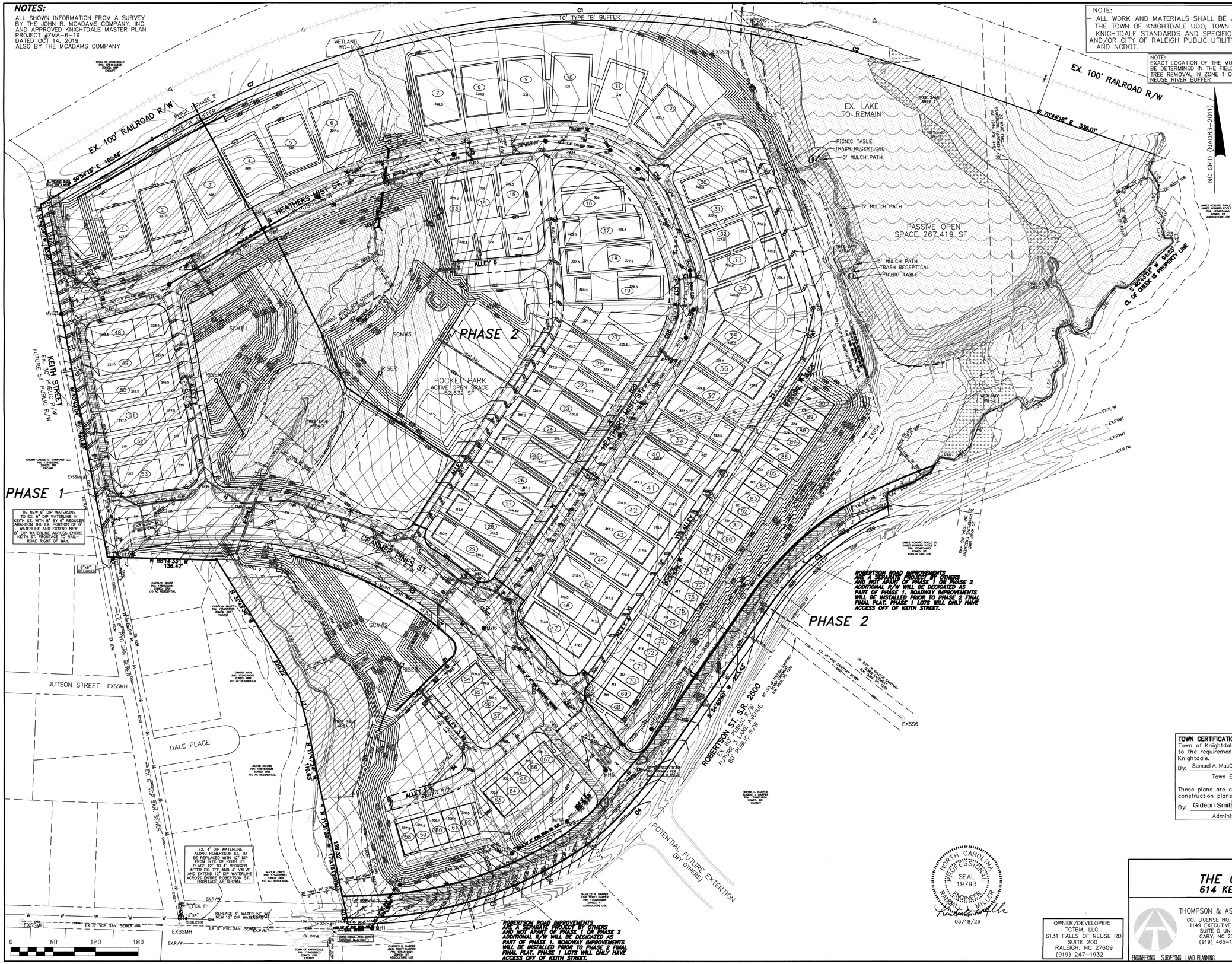
ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

NOTE:
- ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

NOTE:
EXACT LOCATION OF THE MULCH PATH TO BE DETERMINED IN THE FIELD TO AVOID ANY TREE REMOVAL IN ZONE 1 OF NEUSE RIVER BUFFER

LEGEND:

- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TP TREE PROTECTION FENCE
- CF COMBINATON SILT/TREE PROTECTION FENCE
- RETAINING WALL



FOR PIPE AND STRUCTURE SCHEDULES SEE SHEET 6

FOR SCM #1, 2, & 3 INFORMATION SEE SHEETS 8, 9, & 10

FOR PRE DEVELOPMENT DRAINAGE SEE SHEET 11

FOR POST DEVELOPMENT DRAINAGE SEE SHEET 12

FOR EROSION CONTROL SEE SHEETS 13 & 14

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NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
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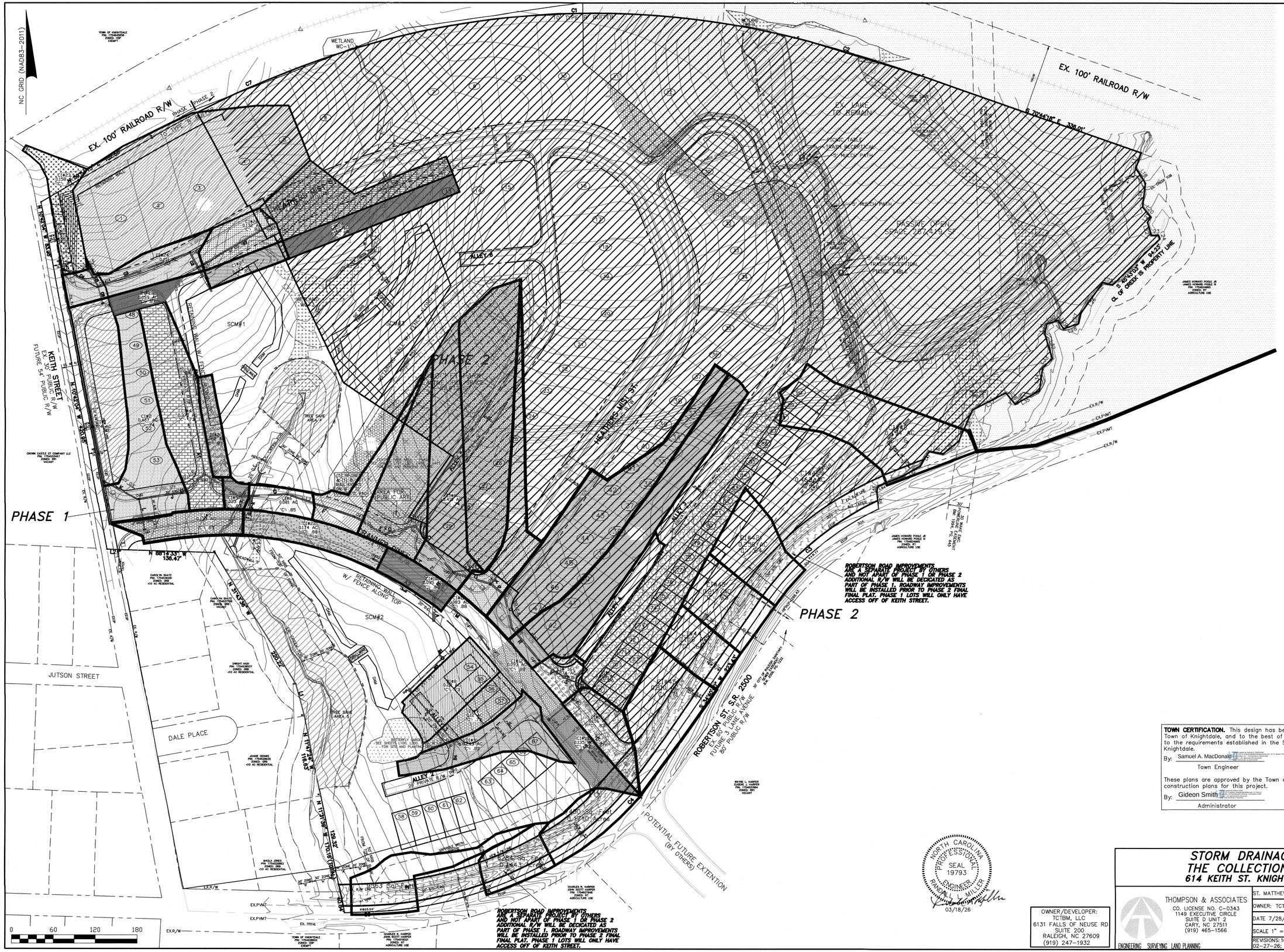
SHEET 4

STORM DRAINAGE PLAN
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 03/30/2026	DRAWN RLM	JOB NO. 20-
SCALE 1" = 60'	SURVEYED ----	DWG: COLLECTION-GRADE
REVISIONS: 3-18-26		PIN: SEE SITE DATA TABLE



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NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SHEET 5

STORM DRAINAGE AREA MAP
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 60'	SURVEYED ----	DWG: COLLECTION-GRADE
REVISIONS: 10-22-25; 12-15-25 02-27-26; 03-18-26		PIN: SEE SITE DATA TABLE

STORM DRAINAGE SCHEDULE SYSTEM #1 DRAINS TO SCM#2

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
A	HDPE	42"	~35'	300.80	300.50	0.86%	7.76 AC	33.00 cfs	6.81 fps	W/ FES ✪ OUTLET
B	HDPE	36"	~44'	301.30	301.00	0.68%	7.32 AC			
C	HDPE	30"	~84'	302.50	301.80	0.83%	2.11 AC			
D	HDPE	30"	~33'	303.20	302.70	1.52%	1.78 AC			
E	HDPE	24"	~23'	305.30	303.40	8.26%	1.63 AC			
F	RCP	24"	~118'	306.20	305.50	0.59%	1.53 AC			
G	RCP	24"	~63'	306.90	306.40	0.79%	1.45 AC			
H	RCP	24"	~60'	307.50	307.10	0.67%	1.42 AC			
I	RCP	24"	~39'	308.00	307.70	0.79%	1.23 AC			
J	RCP	18"	~39'	308.40	308.10	0.78%	0.86 AC			
K	HDPE	18"	~53'	308.80	308.50	0.57%	0.32 AC			
L	HDPE	15"	~43'	308.80	308.50	0.70%	0.13 AC			
M	HDPE	15"	~57'	304.40	304.00	0.70%	0.17 AC			
N	HDPE	15"	~50'	304.90	304.50	0.80%	.09 AC			
O	HDPE	30"	~56'	303.50	302.90	1.07%	4.02 AC			
P	HDPE	30"	~23'	303.80	303.60	0.87%	2.40 AC			
Q	HDPE	30"	~50'	304.20	303.90	0.60%	1.80 AC			
R	HDPE	18"	~56'	304.80	304.50	0.54%	1.28 AC			
S	HDPE	18"	~20'	306.10	305.90	1.00%	0.97 AC			
T	HDPE	15"	~44'	307.00	306.70	0.68%	0.14 AC			
U	HDPE	15"	~20'	306.50	306.30	1.00%	0.67 AC			
V	HDPE	18"	~45'	305.70	305.20	1.11%	1.18 AC			
W	HDPE	15"	~201'	312.60	306.80	2.89%	0.14 AC			
X	HDPE	18"	~87'	306.80	304.00	3.22%	1.21 AC			
Y	HDPE	15"	~125'	310.20	306.90	2.64%	0.96 AC			
Z	HDPE	18"	~25'	311.00	310.80	0.80%	0.29 AC			
A1	RCP	15"	~141'	312.70	309.30	2.41%	0.11 AC			
A2	HDPE	15"	~102'	304.90	303.20	1.67%	0.17 AC			
A3	HDPE	15"	~34'	305.00	304.00	2.94%	0.62 AC			

PHASE 2 CONSTRUCTION

STORM STRUCTURE SCHEDULE SYSTEM #1

CRANMER PINES ST
DI#10
CL STA. 15+15.85 23.5' RIGHT
TBOC: 309.24
INV. IN = 301.00 (PIPE B)
INV. IN = 303.20 (PIPE A2)
INV. IN = 304.00 (PIPE M)
INV. OUT = 300.80 (PIPE A)

CRANMER PINES ST
DI#9
CL STA. 15+15.85 23.5' LEFT
TBOC: 308.24
INV. IN = 301.80 (PIPE C)
INV. IN = 304.00 (PIPE A3)
INV. IN = 302.90 (PIPE O)
INV. OUT = 301.30 (PIPE B)

CRANMER PINES ST
DI#8
CL STA. 14+04.12 17.5' LEFT
TBOC: 309.18
INV. IN = 303.40 (PIPE E)
INV. OUT = 303.20 (PIPE D)

CRANMER PINES ST
DI#7
CL STA. 13+79.47 23.5' LEFT
TBOC: 309.45
INV. IN = 305.50 (PIPE F)
INV. OUT = 305.30 (PIPE E)

ALLEY 5
DI#3
CL STA. 10+35 ✪ CL OF ALLEY 5
GRATE: 308.57
INV. IN = 302.70 (PIPE D)
INV. OUT = 302.50 (PIPE C)

CRANMER PINES ST
DI#6
CL STA. 12+62.84 28.5' LEFT
TBOC: 311.72
INV. IN = 306.40 (PIPE G)
INV. OUT = 306.20 (PIPE F)

CRANMER PINES ST
DI#5
CL STA. 12+00.00 17.5' LEFT
TBOC: 312.66
INV. IN = 307.10 (PIPE H)
INV. OUT = 306.90 (PIPE G)

ALLEY 1
DI#2
CL STA. 12+91.51 ✪ CL OF ALLEY 1
GRATE: 312.71
INV. IN = 307.70 (PIPE I)
INV. IN = 309.30 (PIPE A1)
INV. OUT = 307.50 (PIPE H)

ALLEY 1
DI#1
CL STA. 11+44.85 CL ALLEY 1
GRATE: 317.82

INV. OUT = 312.70 (PIPE A1)

CRANMER PINES ST
DI#4
CL STA. 11+18.48 23.5' LEFT
TBOC: 312.51
INV. IN = 308.10 (PIPE J)
INV. OUT = 308.00 (PIPE I)

CRANMER PINES ST
DI#3
CL STA. 10+58.36 23.5' RIGHT
TBOC: 311.94

INV. OUT = 308.80 (PIPE L)

CRANMER PINES ST
DI#2
CL STA. 10+58.36 23.5' LEFT
TBOC: 311.94
INV. IN = 308.50 (PIPE K)
INV. IN = 308.50 (PIPE L)
INV. OUT = 308.40 (PIPE J)

KEITH ST.
DI#1
CL STA. 16+19.08 15.5' RIGHT
TBOC: 313.60

INV. OUT = 308.80 (PIPE K)

HEATHERS MIST ST
DI#13
CL STA. 26+19.40 13.5' RIGHT
TBOC: 308.98
INV. IN = 303.60 (PIPE P)
INV. IN = 304.00 (PIPE X)
INV. OUT = 303.50 (PIPE O)

HEATHERS MIST ST
DI#14
CL STA. 26+19.40 13.5' LEFT
TBOC: 308.98
INV. IN = 303.90 (PIPE Q)
INV. OUT = 303.80 (PIPE P)

CRANMER PINES ST
DI#15
CL STA. 16+27.63 23.5' LEFT
TBOC: 309.03
INV. IN = 304.50 (PIPE R)
INV. OUT = 304.20PIPE Q)

CRANMER PINES ST
DI#16
CL STA. 16+81.93 17.5' LEFT
TBOC: 309.96

INV. IN = 305.20 (PIPE V)
INV. OUT = 304.80 (PIPE R)

CRANMER PINES ST
DI#17
CL STA. 17+65.83 23.5' LEFT
TBOC: 310.27
INV. IN = 306.70 (PIPE T)
INV. IN = 306.50 (PIPE U)

CRANMER PINES ST
DI#18
CL STA. 17+65.83 23.5' RIGHT
TBOC: 310.27

INV. OUT = 307.00 (PIPE T)

OFFSITE (SEE PLANS)
DI#6
GRATE: ~310.00
INV. IN = 306.30 (PIPE U)
INV. OUT = 306.10 (PIPE S)

ALLEY 4
DI#4
CL STA. 10+35 CL ALLEY 4
GRATE: 310.27
INV. IN = 305.90 (PIPE S)
INV. OUT = 305.70 (PIPE V)

ALLEY 4 **PHASE 2 CONSTRUCTION**
DI#5
CL STA. 12+83.60 CL ALLEY 4
GRATE: 317.31

INV. OUT = 312.60 (PIPE W)

HEATHERS MIST ST
DI#19
CL STA. 25+31.40 13.5' RIGHT
TBOC: 311.51
INV. IN = 306.90 (PIPE Y)
INV. OUT = 306.80 (PIPE X)

HEATHERS MIST ST
DI#20
CL STA. 24+05.57 13.5' RIGHT
TBOC: 315.80
INV. IN = 310.80 (PIPE Z)
INV. OUT = 310.20 (PIPE Y)

HEATHERS MIST ST
DI#21
CL STA. 24+05.57 13.5' LEFT
TBOC: 315.80

INV. OUT = 311.00 (PIPE Z)

OFFSITE - SEE PLANS
DI#7
GRATE: ~308.00

INV. OUT = 305.00 (PIPE A3)

CRANMER PINES ST
DI#11
CL STA. 15+75.20 17.5' RIGHT
TBOC: 308.57
INV. IN = 304.50 (PIPE N)
INV. OUT = 304.40 (PIPE M)

CRANMER PINES ST
DI#12
CL STA. 16+27.63 23.5' RIGHT
TBOC: 309.03

INV. OUT = 304.90 (PIPE N)

CRANMER PINES ST
DI#22
CL STA. 14+08.00 23.5' RIGHT
TBOC: 308.98

INV. OUT = 304.90 (PIPE A2)

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

STORM DRAINAGE SCHEDULE SYSTEM #2 DRAINS TO SCM#2

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
B1	HDPE	15"	~16'	300.60	300.50	0.63%	0.59 AC	3.07 cfs	4.34 fps	W/ FES ✪ OUTLET
B2	HDPE	15"	~47'	301.00	300.70	0.64%	0.58 AC			
B3	HDPE	15"	~101'	301.60	301.07	0.52%	0.36 AC			
B4	HDPE	15"	~86'	302.20	301.70	0.58%	0.24 AC			

STORM STRUCTURE SCHEDULE SYSTEM #2

SCM #2 INLET

JB#1
RIM: ~307.3
INV. IN = 300.70 (PIPE B2)
INV. OUT = 300.60 (PIPE B1)

ALLEY 3
BEYOND PAVEMENT CL STA. 11+35.29

DI#8
GRATE: ~305.00
INV. IN = 301.07 (PIPE B3)
INV. OUT = 301.00 (PIPE B2)

ALLEY 3

DI#9
CL STA. 10+30 ALLEY 3
GRATE: 308.12
INV. IN = 301.70 (PIPE B4)
INV. OUT = 301.60 (PIPE B3)

ALLEY 2

DI#10
CL STA. 12+24.88 ALLEY 2
GRATE: 306.79

INV. OUT = 302.20 (PIPE B4)

STORM DRAINAGE SCHEDULE SYSTEM #3 DRAINS TO SCM#1

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
C1	HDPE	30"	~39'	314.90	311.00	10.00%	2.80 AC	12.12 cfs	10.0 fps	W/ FES ✪ OUTLET
C2	HDPE	24"	~24'	315.20	315.00	0.83%	2.73 AC			
C3	HDPE	24"	~136'	318.50	317.70	0.59%	1.56 AC			
C4	HDPE	15"	~53'	323.10	319.60	6.60%	0.16 AC			
C5	HDPE	18"	~28'	320.60	319.80	2.86%	1.13 AC			
C6	HDPE	15"	~24'	320.60	320.40	0.83%	0.06 AC			
C7	RCP	18"	~116'	322.30	320.90	1.21%	1.04 AC			
C8	RCP	15"	~24'	323.60	322.60	4.17%	0.28 AC			
C9	RCP	15"	~8'	322.60	322.50	1.36%	0.60 AC			
C10	RCP	18"	~24'	327.10	326.10	4.17%	0.29 AC			
C11	RCP	18"	~177'	327.60	326.10	0.85%	0.22 AC			
C12	HDPE	15"	~59'	328.30	327.70	1.02%	0.20 AC			
C13	HDPE	15"	~24'	328.60	328.40	0.83%	0.15 AC			

PHASE 2 CONSTRUCTION

STORM STRUCTURE SCHEDULE SYSTEM #3 DRIANS TO SCM#1

KEITH STREET
CI#23
CL STA. 19+27.54 15.5' RIGHT
TBOC: 327.96

INV. OUT = 323.10 (PIPE C4)

HEATHERS MIST ST.
CI#24
CL STA. 10+58.88 13.5' LEFT
TBOC: 323.78
INV. IN = 319.60 (PIPE C4)
INV. IN = 319.80 (PIPE C5)
INV. IN = 320.40 (PIPE C6)
INV. OUT = 318.50 (PIPE C3)

HEATHERS MIST ST.
CI#25
CL STA. 10+58.88 13.5' RIGHT
TBOC: 323.78

INV. OUT = 320.60 (PIPE C6)

OFFSITE LOT #1 SEE PLANS
DI#12

GRATE: ~325.00

INV. OUT = 320.60 (PIPE C5)

HEATHERS MIST ST.
CI#26
CL STA. 12+02.00 13.5' LEFT
TBOC: 325.41
INV. IN = 317.70 (PIPE C3)
INV. OUT = 315.20 (PIPE C2)

HEATHERS MIST ST.
CI#27
CL STA. 12+02.00 13.5' RIGHT
TBOC: 325.41
INV. IN = 315.00 (PIPE C2)
INV. IN = 320.90 (PIPE C7)
INV. OUT = 314.90 (PIPE C1)

HEATHERS MIST ST.
CI#28
CL STA. 13+20.43 13.5' RIGHT
TBOC: 326.75
INV. IN = 322.60 (PIPE C8)
INV. IN = 322.50 (PIPE C9)
INV. OUT = 322.30 (PIPE C7)

HEATHERS MIST ST.
CI#29
CL STA. 13+20.43 13.5' LEFT
TBOC: 326.75

INV. OUT = 323.60 (PIPE C8)

HEATHERS MIST ST.
CI#30
CL STA. 15+82.55 13.5' RIGHT
TBOC: 329.73
INV. IN = 328.10 (PIPE C10)
INV. IN = 326.10 (PIPE C11)
INV. OUT = 326.00 (PIPE C9)

HEATHERS MIST ST.
CI#31
CL STA. 15+82.55 13.5' LEFT
TBOC: 329.73

INV. OUT = 327.10 (PIPE C10)

HEATHERS MIST ST.
CI#32
CL STA. 17+68.77 13.5' RIGHT
TBOC: 331.78
INV. IN = 327.70 (PIPE C12)
INV. OUT = 327.60 (PIPE C11)

HEATHERS MIST ST.
CI#33
CL STA. 18+35.90 13.5' RIGHT
TBOC: 331.82
INV. IN = 328.40 (PIPE C13)
INV. OUT = 328.30 (PIPE C12)

HEATHERS MIST ST.
CI#34
CL STA. 18+35.90 13.5' LEFT
TBOC: 331.82

INV. OUT = 328.60 (PIPE C13)

PHASE 2 CONSTRUCTION

STORM DRAINAGE SCHEDULE SYSTEM #4 DRAINS TO SCM#3

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
D1	HDPE	30"	~32'	312.20	312.00	0.63%	2.47 AC	10.77 cfs	5.51 fps	W/ FES ✪ OUTLET
D2	HDPE	15"	~130'	313.10	312.40	0.54%	0.07 AC			
D3	HDPE	24"	~43'	313.00	312.30	1.63%	2.34 AC			
D4	HDPE	24"	~42'	313.40	313.10	0.71%	2.13 AC			
D5	HDPE	24"	~38'	313.70	313.50	0.53%	2.02 AC			
D6	HDPE	24"	~77'	314.20	313.80	0.52%	1.94 AC			
D7	HDPE	24"	~18'	314.40	314.30	0.56%	1.87 AC			
D8	HDPE	24"	~76'	314.90	314.50	0.53%	1.80 AC			
D9	HDPE	24"	~54'	315.30	315.00	0.56%	1.73 AC			
D10	HDPE	18"	~112'	316.60	316.00	0.54%	1.07 AC			
D11	HDPE	18"	~69'	317.10	316.70	0.57%	0.70 AC			
D12	HDPE	15"	~63'	318.90	317.80	1.75%	0.51 AC			
D13	HDPE	15"	~79'	324.00	318.80	5.32%	0.28 AC			
D14	HDPE	15"	~29'	324.60	324.20	1.40%	0.11 AC			

STORM STRUCTURE SCHEDULE SYSTEM #4

ALLEY 5
DI#3
CL STA. 12+05.00 CL ALLEY 5
GRATE: 316.83

INV. OUT = 313.10 (PIPE D2)

ALLEY 5
DI#4
CL STA. 13+35.00 CL ALLEY 5
GRATE: 323.51
INV. IN = 313.40 (PIPE D2)
INV. IN = 312.50 (PIPE D3)
INV. OUT = 312.20 (PIPE D1)

ALLEY 5
DI#15
CL STA. 13+80.18 ✪ CL ALLEY 5
GRATE: 325.84
INV. IN = 313.10 (PIPE D4)
INV. OUT = 313.00 (PIPE D3)

ALLEY 5
STMH1 (STORM MANHOLE)
CL STA. 15+23.52 5' LEFT
RIM: 328.17
INV. IN = 314.50 (PIPE D5)
INV. OUT = 314.40 (PIPE D4)

SHADY HAVEN LN
DI#15A ADDED DROP INLET
CL STA. 14+82.50 ✪ CL SHADY HAVEN
GRATE: 330.00
INV. IN = 313.80 (PIPE D5)
INV. OUT = 313.70 (PIPE D5)

ALLEY 5
STMH2 (STORM MANHOLE)
CL STA. 15+40.28 5' LEFT
GRATE: 330.88
INV. IN = 314.30 (PIPE D7)
INV. OUT = 314.20 (PIPE D6)

ALLEY 5
DI#16
CL STA. 15+58.14.00 CL ALLEY 5
GRATE: 330.30
INV. IN = 314.50 (PIPE D8)
INV. OUT = 314.40 (PIPE D7)

ALLEY 5
DI#17
CL STA. 16+36.00 CL ALLEY 5
GRATE: 328.02
INV. IN = 315.00 (PIPE D9)
INV. OUT = 314.90 (PIPE D8)

ALLEY 5
DI#18
CL STA. 16+90.00 CL ALLEY 5
GRATE: 326.44
INV. IN = 316.00 (PIPE D10)
INV. IN = 316.80 (PIPE D13)
INV. OUT = 315.30 (PIPE D9)

ALLEY 5
DI#19
CL STA. 18+03.63 CL ALLEY 5
GRATE: 323.59
INV. IN = 316.70 (PIPE D11)
INV. OUT = 316.60 (PIPE D10)

ALLEY 5
DI#20
CL STA. 18+72.51 CL ALLEY 5=
CL STA. 15+27.55 CL ALLEY 6
GRATE: 321.53
INV. IN = 317.80 (PIPE D12)
INV. OUT = 317.10 (PIPE D11)

HEATHERS MIST ST.
CI#36
CL STA. 20+89.50 19.5' RIGHT
TBOC: 328.63
INV. IN = 324.20 (PIPE D14)
INV. OUT = 324.00 (PIPE D13)

HEATHERS MIST ST.
CI#35
CL STA. 20+89.50 13.5' LEFT
TBOC: 328.63

INV. OUT = 324.60 (PIPE D14)

PHASE 2 CONSTRUCTION

STREAM CROSSING STORM DRAINAGE

STORM DRAINAGE SCHEDULE X-PIPE #1

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
X-PIPE 1	RCP	36"	~111'	303.00	302.00	0.90%	8.71 AC	44.63 cfs	8.95 fps	W/ HEADWALL ✪ OUTLET AND INLET

STORM DRAINAGE SCHEDULE X-PIPE #2 — PHASE 2 CONSTRUCTION

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
X-PIPE 2	RCP	24"	~112'	320.00	314.00	5.36%	2.30 AC	11.62 cfs	8.53 fps	W/ HEADWALL ✪ OUTLET AND INLET

ENERGY DISSIPATOR SCHEDULE

DISSIPATOR NUMBER	OUTLET PIPE	V25 (FPS)	La (FT.)	W (FT.)	D50 STONE SIZE (IN.)	MIN. LINING THICK. (IN.)	APRON MATERIAL
D2	X-PIPE 1	8.86	24	9	13	18	CLASS "B" STONE
D3	X-PIPE 2	9.95	16	6	13	18	CLASS "B" STONE

PHASE 2 CONSTRUCTION

USE SPECIFIED STONE FOR EROSION CONTROL
PLACE DISSIPATOR AS PER DETAIL SHOWN ON DETAIL SHEET
WITH REQUIRED UNDERLINER

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SHEET 6

STORM DRAINAGE PIPE & STRUCTURE SCHEDULE
THE COLLECTION - PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
NO SCALE	SURVEYED ----	DWG COLLECTION STM
REVISIONS: 10-3-25; 12-15-25 02/27/26 03/18/26		PIN: SEE SITE DATA TABLE

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

NOTE:
- ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

NOTE:
EXACT LOCATION OF THE MULCH PATH TO BE DETERMINED IN THE FIELD TO AVOID ANY TREE REMOVAL IN ZONE 1 OF NEUSE RIVER BUFFER

LEGEND:
- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TP — TREE PROTECTION FENCE
- CF — COMBINATON SILT/TREE PROTECTION FENCE
- RETAINING WALL

FOR PIPE AND STRUCTURE SCHEDULES SEE SHEET 6

FOR SCM #1, 2, & 3 INFORMATION SEE SHEETS 8, 9, & 10

FOR PRE DEVELOPMENT DRAINAGE SEE SHEET 11

FOR POST DEVELOPMENT DRAINAGE SEE SHEET 12

FOR EROSION CONTROL SEE SHEETS 13 & 14

EROSION CONTROL NOTES:

ALL WAKE COUNTY EROSION CONTROL ORDINANCES SHALL BE CONFORMED TO DURING CONSTRUCTION.
ALL DRAINAGE STRUCTURES AND PIPES SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
PLACEMENT, LOCATION AND QUANTITY OF EROSION CONTROL DEVICES AND DRAINAGE STRUCTURES MAY ALTER TO BETTER CONFORM TO EXISTING FIELD CONDITIONS IF APPROVED BY THE ENVIRONMENTAL INSPECTOR OF WAKE COUNTY.
CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
CONTRACTOR SHALL VERIFY THE LOCATION AF ALL EXISTING UTILITIES (ABOVE AND BELOW GROUND) PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITY CONFLICTS WITH THE APPROPRIATE UTILITY AUTHORITY

GENERAL PROJECT NOTES:

CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE, CITY OF RALEIGH, AND WAKE COUNTY TO REFER TO DURING CONSTRUCTION OF THE PROJECT.

CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES IN THE AREA PRIOR TO CONSTRUCTION AND COORDINATE RELOCATION, IF NEEDED, OF THESE UTILITIES WITH THE APPROPRIATE AUTHORITIES.

ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH WAKE COUNTY SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.

NOTE ON RETAINING WALLS:

RETAINING WALLS TO BE DESIGNED BY OTHERS
RETAINING WALLS TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS
RETAINING WALLS TO BE AS PER ALL STANDARDS OF INSTALLATION AS OUTLINED BY MANUFACTURER

CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVALS FOR RETAINING WALL INSTALLATION

GROUND STABILIZATION REQUIRED WITHIN 7 DAYS FOR PERIMETER AREAS AND FOR SLOPES GREATER THAN 3:1. ALL OTHER AREAS IT IS REQUIRED WITHIN 14 DAYS OF ANY PHASE OF GRADING.

GRADING NOTES:
PRIOR TO GRADING, A GRADING AND EROSION CONTROL PLAN SHALL BE FILED WITH APROPRIATE AGENCY.
A GRADING PERMIT SHALL BE OBTAINED AS REQUIRED.
ALL GRADING AND EROSION CONTROL REQUIREMENTS OF THE SOIL AND EROSION CONTROL ORDINANCE OF THE GOVERNING AGENCY SHALL BE COMPLIED WITH

LOCATION, PLACEMENT, AND/OR QUANTITY OF EROSION CONTROL MATERIALS AND/OR DEVICES MAY VARY TO BETTER CONFORM TO FIELD CONDITIONS.

NOTE ON INSPECTIONS:
PROJECT WILL BE SUBJECT TO THE NORTH CAROLINA DIVISION OF LAND RESOURCES SELF INSPECTION PROGRAM. AN EROSION CONTROL INSPECTION WILL BE PREFORMED AFTER EACH PHASE OF GRADING AND THE INSPECTION SHALL BE DOCUMENTED IN WRITING. IT IS RECOMMENDED THAT THE NCDEMLR JOINT INSPECTION FORM BE UTILIZED FOR THIS AND THE REQUIRED NPDES INSPECTIONS.

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2 ADDITIONAL R/W WILL BE DECICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2 ADDITIONAL R/W WILL BE DECICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER 03/18/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SHEET 7

GRADING AND DRAINAGE PLAN
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

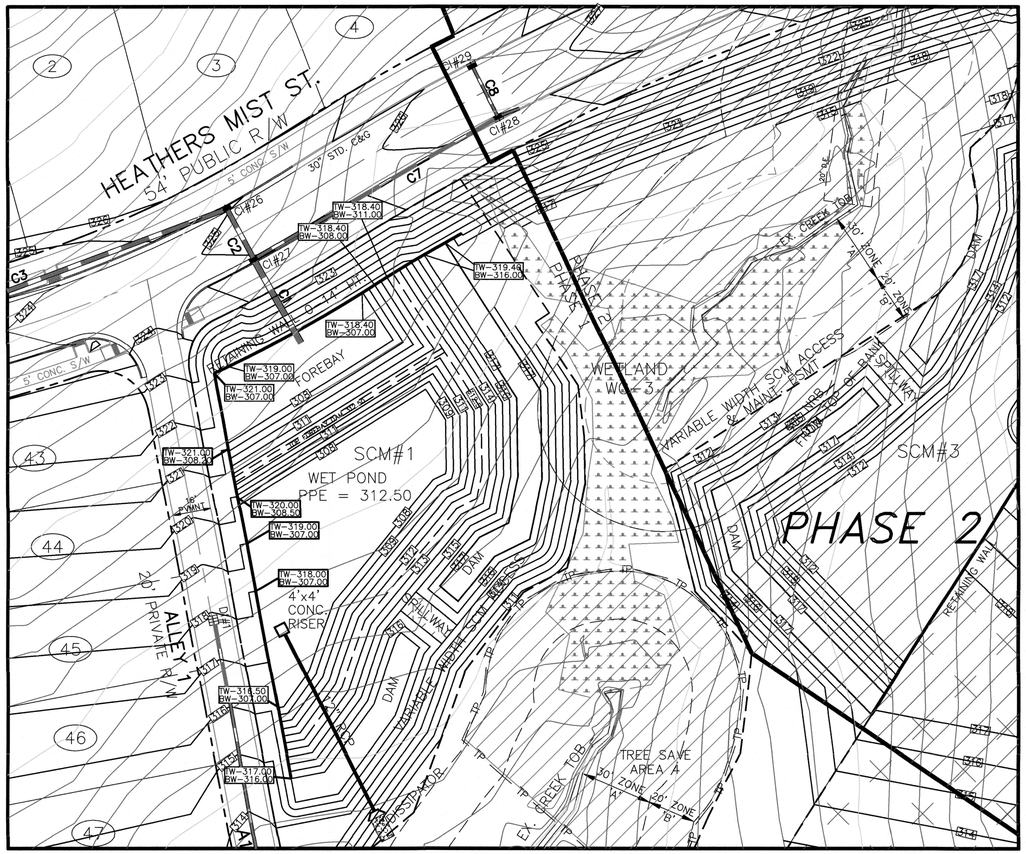
THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

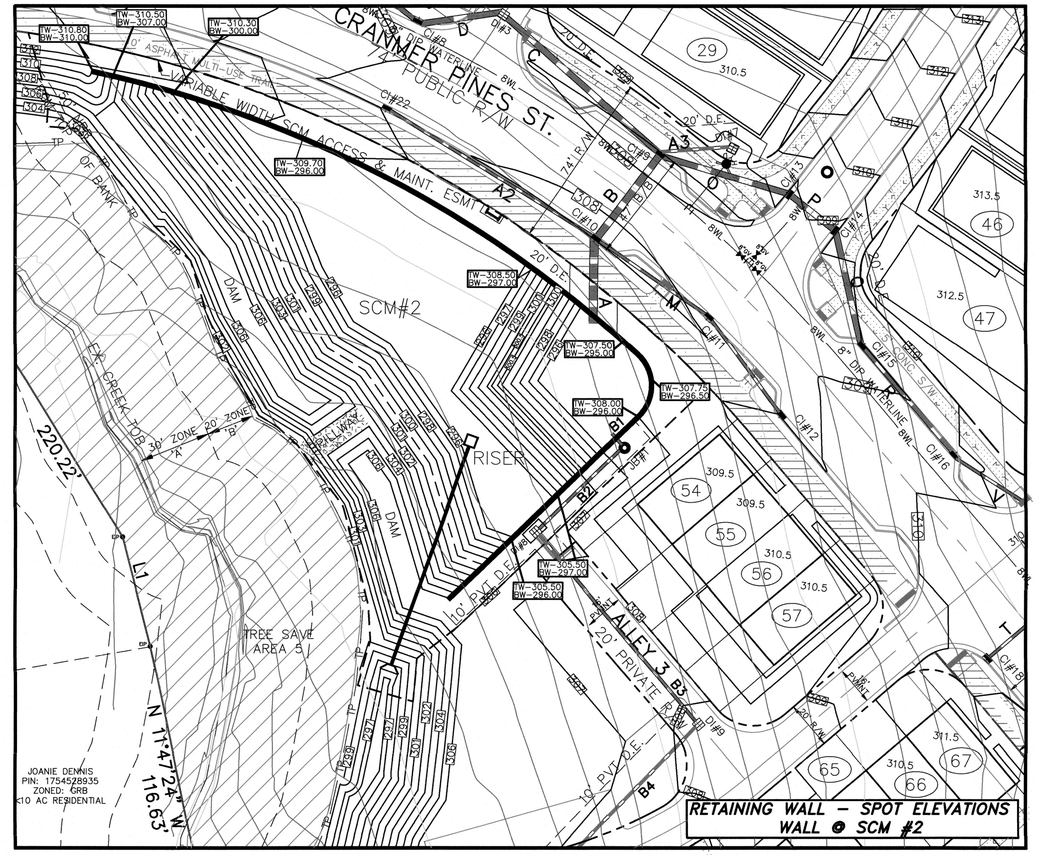
ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA

OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
SCALE 1" = 60'	SURVEYED ----	DWG:COLLECTION-GRADE

REVISIONS: 10-22-25; 12-15-25
02-27-26 03-18-26

PIN: SEE SITE DATA TABLE





LEGEND:

- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TP TREE PROTECTION FENCE
- CF COMBINATON SILT/TREE PROTECTION FENCE
- RETAINING WALL

FOR PIPE AND STRUCTURE SCHEDULES SEE SHEET 6

FOR SCM #1, 2, & 3 INFORMATION SEE SHEETS 8, 9, & 10

FOR PRE DEVELOPMENT DRAINAGE SEE SHEET 11

FOR POST DEVELOPMENT DRAINAGE SEE SHEET 12

FOR EROSION CONTROL SEE SHEETS 13 & 14

GENERAL PROJECT NOTES:

CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE, CITY OF RALEIGH, AND WAKE WAKE COUNTY TO REFER TO DURING CONSTRUCTION OF THE PROJECT.

CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES IN THE AREA PRIOR TO CONSTRUCTION AND COORDINATE RELOCATION, IF NEEDED, OF THESE UTILITIES WITH THE APPROPRIATE AUTHORITIES.

ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH WAKE COUNTY SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.

NOTE ON RETAINING WALLS:

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CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVALS FOR RETAINING WALL INSTALLATION

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

NOTE:
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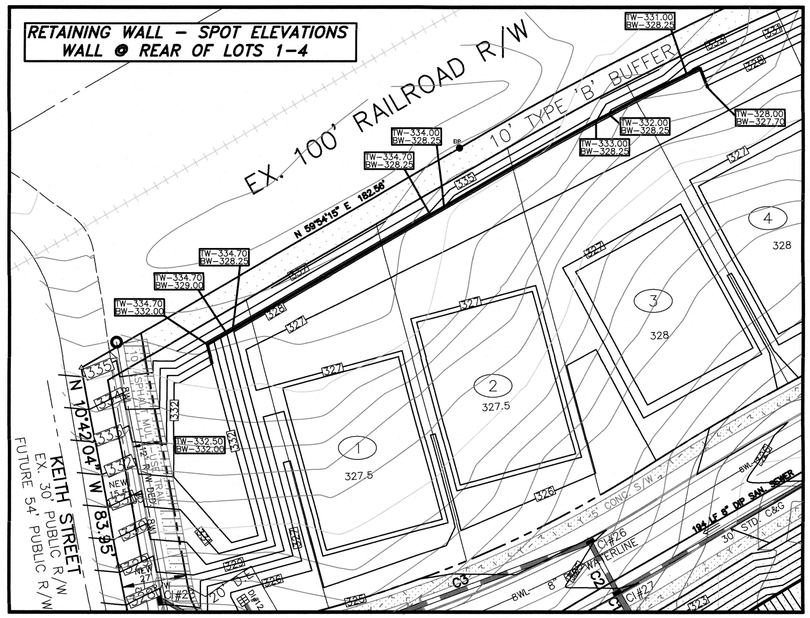
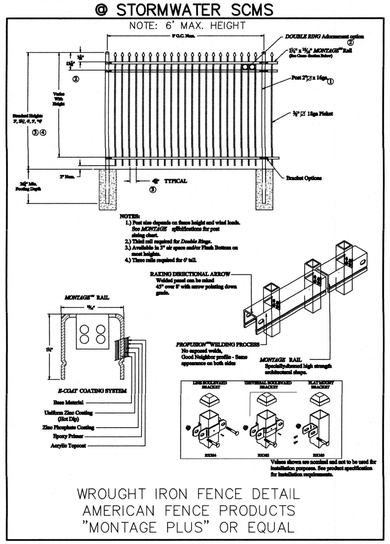
RETAINING WALL – SPOT ELEVATIONS
WALL @ SCM #2

RETAINING WALL – SPOT ELEVATIONS
WALL @ REAR OF LOTS 1-4



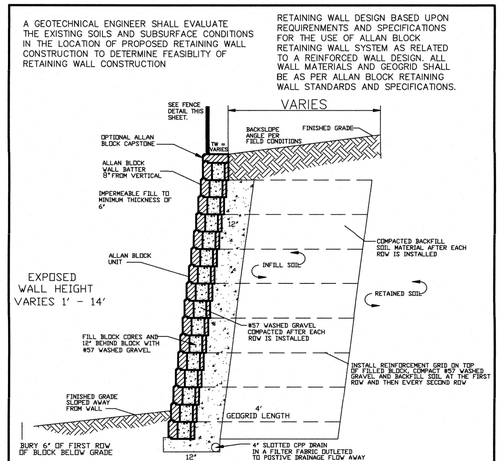
FENCING ALONG TOP OF RETAINING WALLS @ STORMWATER SCMS



WROUGHT IRON FENCE DETAIL
AMERICAN FENCE PRODUCTS
"MONTAGE PLUS" OR EQUAL

A GEOTECHNICAL ENGINEER SHALL EVALUATE THE EXISTING SOILS AND SUBSURFACE CONDITIONS IN THE LOCATION OF PROPOSED RETAINING WALL CONSTRUCTION TO DETERMINE FEASIBLITY OF RETAINING WALL CONSTRUCTION

RETAINING WALL DESIGN BASED UPON REQUIRENMENTS AND SPECIFICATIONS FOR THE USE OF ALLAN BLOCK RETAINING WALL SYSTEM AS RELATED TO A REINFORCED WALL DESIGN. ALL WALL MATERIALS AND GEOGRID SHALL BE AS PER ALLAN BLOCK RETAINING WALL STANDARDS AND SPECIFICATIONS.



RETAINING WALL DESIGN SHALL BE APPROVED BY ENGINEERING AND BY BUILDING INSPECTIONS. PERMIT FOR INSTALLATION WITH BE REQUIRED

RETAINING WALL SECTION (NTS)

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL V. MILLER
02/27/26

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

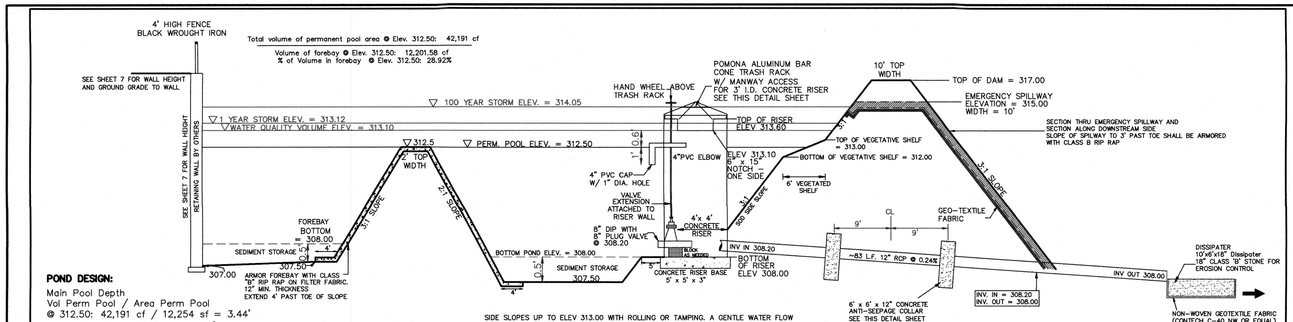
OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SHEET 7A

RETAINING WALL – SPOT ELEVATIONS THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
SCALE 1" = 30'	SURVEYED ----	DWG: COLLECTION-GRADE
REVISIONS: 10-3-25; 12-12-25 02-27-26		PIN: SEE SITE DATA TABLE



POND DESIGN:

Main Pool Depth
Vol Perm Pool / Area Perm Pool
@ 312.50: 42,191 cf / 12,254 sf = 3.44'
Perm. Pool Hydraulic Depth = 3.0'
Bottom Elev. = 308.00
Perm Pool Elev. = 312.50
Emergency Spillway Elev. = 315.00
Top of Dam = 317.00
Maximum slopes: 3:1
Required surface area @ perm pool to remove 85% of TSS:
~60% of the drainage area is impervious surface area
For a 3.44' deep pond SA = 1.949% x 3.12 acres = 2,648.83 sf
Proposed surface area SA @ Elev. 312.50: 12,254 sf

PERMANENT WET POND SCM #1 (NTS)

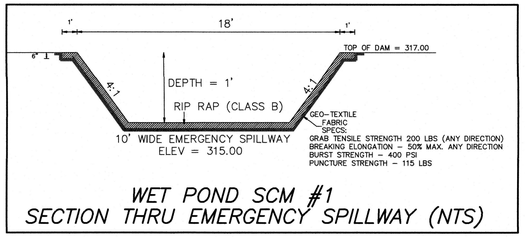
SEE THIS DETAIL SHEET FOR INFORMATION ON WET POND, ITS COMPONENTS, SPECIFICATIONS, AND DETAILS. ALSO SEE THIS SHEET FOR INFORMATION ON VEGETATION PLANTINGS ALONG POND SHELF.

TREATMENT VOLUME SIZING – SCM #1 WET POND:
WET POND AREA TREATS & STORES 1" OF RUNOFF FROM THE SITE.
TREATMENT VOLUME FOR SCM USING THE SIMPLE METHOD:

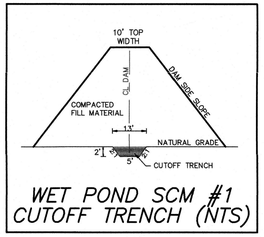
1. POST RUN-OFF FROM SITE:
   IMPERVIOUS AREA = 1.347 AC.
   PERVIOUS AREA = 1.429 AC.
2. REQUIRED VOLUME OF RUNOFF FROM FIRST 1" RUNOFF FROM SITE AREA AS PER NCDENR BMP MANUAL
   Rv = 0.05 + 0.9 x I
   where I_a = 1.88 ac./3.12 ac. = 0.60
   Rv = 0.59
   V required = 3,630 x 1" x 0.59 x 3.12 ac.
   V required = 6,,682.10 cf
3. Total V provided between Elev. 312.50 and 313.10 = 7,715.90 cf

DRAW DOWN CALCULATIONS FOR WET POND – SCM #1:

Permanent Pool Elevation @ 312.50
Volume @ 312.50 = 31,276 cf
Treatment Volume Elevation @ 313.10
Volume @ 313.10 = 36,921.80 cf
Volume runoff to drain = 5,645.80 cf
Draw down 2 – 5 days
2 days(24hr/day)(60min/hr)(60sec/min) = 172,800 secs.
7,715.90 cf / 172,800 secs. = 0.045 cfs (Q out)
Orifice Equation
$0.045 \text{ cfs} = 0.6 \text{ A } ((2)(32.2)(0.6'))^{0.5}$
A = 0.012 sf
$A = (3.14)R^2$
$0.012 \text{ sf} = (3.14) R^2$
R = 0.062 ft = 0.744 in.
=> USE 1" DIAMETER ORIFICE – DRAW DOWN 4.39 DAYS



WET POND SCM #1 SECTION THRU EMERGENCY SPILLWAY (NTS)



WET POND SCM #1 CUTOFF TRENCH (NTS)

BUOYANT FORCE CALCULATIONS FOR RISER

VOLUME OF 4' x 4' RSER PLUS 12" RCP UNDER WATER = 103.69 CF

BUOYANT FORCE 136.52 CF x 62.4 LB/CF = 8,518.85 LBS

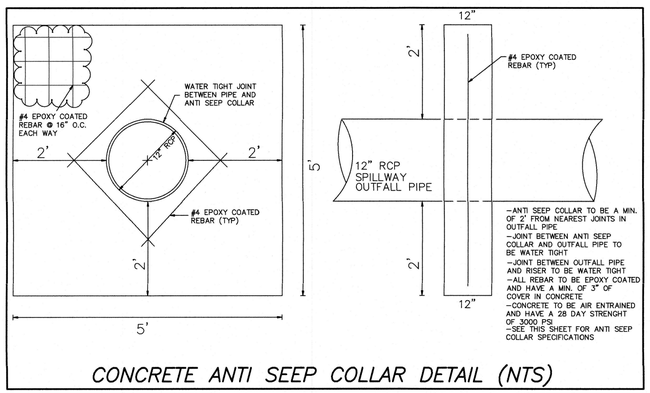
ANTI FLOATATION DEVICE
CONCRETE PAD
5' x 5' x 3'
AREA =75 CF

CONCRETE WEIGHT
75 LB/CFx147 CF=11,025 LB
11,025 LBS > 8,518.85 LBS

SAFETY FACTOR = 1.29 > 1.15

CONCRETE PAD
5' x 5' x 3' ADEQUATE

CONCRETE RISER DETAILS WET POND SCM #1 (NTS)



CONCRETE ANTI SEEP COLLAR DETAIL (NTS)

STORMWATER SCM #1 – WET POND
1" = 40'

STANDARDS AND SPECIFICATIONS FOR WET POND

A. ACSESS

1. UNOBSTRUCTED ACCESS FROM THE NEARBY PUBLIC RIGHT OF WAY SHALL BE PROVIDED TO THE TOP OF THE DAM. THIS MAINTAINED ACCESS TO THE TOP OF DAM SHALL BE A MINIMUM OF 10' WIDE, SHALL HAVE A MAXIMUM CENTERLINE GRADE AND CROSS SLOPE OF 5:1 HORIZONTAL TO VERTICAL (H: V) AND 10:1 (H: V), RESPECTIVELY, AND SHALL BE PLACED IN A 20' WIDE CLEARED ACCESS EASEMENT. THIS ACCESS EASEMENT SHALL REMAIN FREE OF ALL TREES, SHRUBS, OR OTHER OBSTRUCTIONS, INCLUDING FENCES, MAILBOXES, AND UTILITY STRUCTURES. AT CURB AND GUTTER SECTIONS, A CONCRETE DRIVEWAY ENTRANCE (OR A MOUNTABLE/ROLL CURB) SHALL BE PROVIDED. THE USE OF RESIDENTIAL DRIVEWAYS FOR ACCESS SHALL NOT BE PERMITTED.

2. THE PRINCIPAL ACCESS TO THE TOP OF DAM AND THE RISER STRUCTURE IS ACROSS THE TOP OF DAM AND DOWN THE 4:1 SIDE SLOPES OF THE EMERGENCY SPILLWAY. SPILLWAY LINED WITH RIP RAP.

3. ACCESS SHALL BE PROVIDED TO THE INSIDE AND INVERT OF THE RISER STRUCTURE. THIS CAN BE PROVIDED BEST WITH THE PROVISION OF A TRASH RACK ACCESS HATCH AND STEPS DOWN THE INSIDE FACE OF THE RISER. WHEN THE TOP OF THE RISER IS GREATER THAN 4' ABOVE THE ADJACENT GROUND SURFACE, STEPS UP THE OUTSIDE FACE OF THE RISER SHALL BE PROVIDED ALSO.

B. DAM EMBANKMENTS

1. THE MINIMUM FOUNDATION ZONE FOR THE EARTHEN DAM SHALL BE 7' (THIS IS A CLASS C DAM)

2.THE PLANTING OF TREES AND OTHER LANDSCAPING EXCEPT GRASS ON THE STRUCTURAL EMBANKMENT OR FOUNDATION ZONES OF ANY EARTHEN DAM IS PROHIBITED. NO NEW LANDSCAPING SHALL BE PERMITTED WITHIN THE LIMITS OF THE EMERGENCY SPILLWAY AREA.

3. THE TOP OF THE DAM SHALL BE 10' IN WIDTH.

4. A CUT OFF TRENCH OF A 5' MINIMUM WIDTH ON THE CENTERLINE OF DAM DAM TO A DEPTH OF 2' SHALL BE INCORPORATED.

C. EMERGENCY SPILLWAY

1. EMERGENCY SPILLWAY SHALL BE ARMORED WITH RIP RAP OR EQUAL. INSTALLATION SHALL BE AS PER MANUFACTURER'S SPECIFICATIONS.

2. EMERGENCY SPILLWAY SHALL BE ARMORED THRU THE DAM SECTION AND DOWN ALONG BACK SLOPE OF DAM TO A POINT 3' PAST THE TOE OF DAM.

D. RISER STRUCTURE

1. RISER STRUCTURE TO BE REINFORCED PRECAST CONCRETE. RISER STRUCTURES WITH MULTIPLE SECTIONS SHALL HAVE WATER TIGHT JOINTS WITH EACH SECTION BOLTED TO ADJACENT SECTIONS WITH STAINLESS STEEL STRAPS AND HARDWARE.

2. RISER STRUCTURE SHALL INCLUDE A PEAK–ROOFED TRASH RACK WITH A MINIMUM ROOF SLOPE OF 2:1 (H:V). TRASH RACK TO INCLUDE AN ACCESS HATCH. HATCH TO HAVE A MIN. CLEAR SPACE OPENING OF AT LEAST 2' x 3' AND SHALL AGLIN WITH ACCESS STEPS INSIDE THE STRUCTURE. HATCH TO BE SECURED WITH LOCK AND CHAIN. TRASH RACK TO BE BOLTED TO TOP OF RISER. MATERIAL TO BE EITHER GALVANIZED OR PRIMED AND PAINTED. BOLTS TO BE STAINLESS STEEL. TRASH RACK TO BE ALUMINUM BAR CONE TRASH RACK WITH MANWAY ACCESS FOR 3' I.D. CONCRETE MANHOLE RISER BY POMONA PIPE PRODUCTS.

3. A 8" DIAMETER PLUG VALVE, WHICH INCLUDES A STEM EXTENSION AND FLYWHEEL SHALL BE PROVIDED. THE STEM EXTENSION SHALL BE ATTACHED TO THE INSIDE WALL OF THE RISER STRUCTURE. THE FLYWHEEL SHALL EXTEND ABOVE THE TOP OF THE TRASH RACK. PLUG AND VALVE TO BE BLOCKED UP 1' ABOVE POND BOTTOM.

E. PRINCIPAL SPILLWAY PIPE (PSP)

1. PRINCIPAL SPILLWAY PIPE SHALL BE RCP. THE RCP SHALL HAVE A MINIMUM PIPE STRENGTH CONFORMING TO AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) C–76, CLASS III STANDARDS.

2. GASKETED JOINT PIPE SHALL BE WRAPPED WITH A DOUBLE LAYER OF NON–WOVEN FILTER FABRIC ON THE OUTSIDE OF THE PIPE AT EACH JOINT. THE FABRIC WRAP SHALL COVER A 2' LENGTH OF PIPE AND SHALL BE CENTERED OVER THE JOINT.

F. OUTFALL STRUCTURES

1. ALL DISSIPATOR DEVICES ASSOCIATED WITH THE POND OUTFALL SHALL BE INSTALLED IN ACCORDANCE WITH NCDEQ AND TOWN OF KNIGHTDALE GUIDELINES.

G. INLETS

1. POND INLET PIPES SHALL EXTEND THRU THE SLOPES AND INTO THE POND AREA. PIPE OUTLET TO EXTEND A MINIMUMOF 12" BEYOND THE FACE OF THE SLOPE.

H. VEGETATIVE SHELF

1. A 6' WIDE AQUATIC BENCH SHALL BE PROVIDED AT THE SHORELINE. THE AQUATIC BENCH SHALL, AT THE OUTER LIMITS (SHORELINE), BEGIN 6" ABOVE THE SURFACE OF THE PERMANENT POOL AND SHALL BE GRADED AT 6:1 (H:V) SLOPE SUCH THAT A 6" DEPTH IS PROVIDED AT THE INNER LIMITS OF THE BENCH.

I. DAM EMBANKMENT CONSTRUCTION STANDARDS

1. CONTROLL FILL, AS SPECIFIED BY THE GEOTECHNICAL ENGINEER, IN THE DAM EMBANKMENT SHALL BE PLACED IN 6" LOOSE LAYERS (3" LOOSE LAYERS WITHIN 3' OF EITHER SIDE OF THE PRINCIPAL SPILLWAY PIPE TO A DEPTH OF 2' OVER THE PIPE), AND SHALL BE COMPACTED TO A DENSITY OF NO LESS THAN 95% OF THE STANDARD PROCTOR MAXIMUM DENSITY AT A MOISTURE CONTENT OF = OR – 2% POINTS OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE TO ASTM D698.

2. ALL VISIBLE ORGANIC DEBRIS, SUCH AS ROOTS AND LIMBS, SHALL BE REMOVED FROM THE FILL MATERIAL PRIOR TO COMPACTION TO THE REQUIRED DENSITY. SOILS WITH ORGANIC MATTER CONTENT EXCEEDING 5% BY WEIGHT SHALL NOT BE USED. STONE WITH SIZE MEASUREMENTS GREATER THAN 3" (IN ANY DIRECTION) SHALL BE REMOVED FROM THE FILL PRIOR TO COMPACTION.

3. FILL MATERIAL PLACED AT DENSITIES LOWER THAN SPECIFIED MINIMUM DENSITIES OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED RANGES OR OTHERWISE NOT CONFORMING TO THE SPECIFIED REQUIREMENTS SHALL BE REMOVED AND REWORKED OR REMOVED AND REPLACED WITH ACCEPTABLY PLACED MATERIALS.

4. ANY FILL LAYER THAT IS SMOOTH DRUM ROLLED TO REDUCE MOISTURE PENETRATION DURING A STORM EVENT SHALL BE PROPERLY SCARIFIED PRIOR TO THE PLACEMENT OF THE NEXT SOIL LIFT.

5. SURFACE WATER AND STREAM FLOW S SHALL BE CONTROLLED CONTINUOUSLY THROUGHOUT CONSTRUCTION AND THE PLACEMENT OF CONTROLLED FILL.

6. FOUNDATION AREAS MAY REQUIRE UNDERCUTTING OF COMPRESSIBLE AND/ORUNSUITABLE SOILS IN ADDITION TO THAT INDICATED ON THE PLANS. ALL SUCH UNDERCUTTING SHALL BE PERFORMED AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER AND SHALL BE MONITORED AND DOCUMENTED BY THE GEOTECHNICAL ENGINEER DURING CONSTRUCTION. IN NO CASE SHALL THERE BE AN ATTEMPT TO STABILIZE ANY PORTIONS OF THE FOUNDATION SOILS WITH CRUSHED STONE.

7. TREATMENT OF SEEPAGE ARES, SUBGRADE PREPARATION, FOUNDATION DEWATERING, AND ROCK FOUNDATION PREPARATION (TREATMENT WITH SLUSH GROUTING, DENTAL CONCRETE, ETC) MAY BE REQUIRED AT THE DISRECTION OF THE TOWN OR THE GEOTECHNICAL ENGINEER OVERSEEING THE CONSTRUCTION OF THE DAM AND OUTLET WORKS OF THE FACILITY. ALL SUCH ACTIVITIES SHALL BE CLOSELY MONITORED AND DOCUMENTED BY THE GEOTECHNICAL ENGINEER DURING CONSTRUCTION.

8. FILL PLACED ADJACENT TO THE RISER AND PRINCIPAL SPILLWAY PIPE SHALL BE PLACED IN A MANNER WHERE LIFTS ARE AT THE SAME LEVEL ON BOTH SIDES OF THE STRUCTURES.

9.EARTHWORK COMPACTION WITHIN 3' OF ANY STRUCTURES SHALL BE ACCOMPLISHED BY MEANS OF HAND TAMPERS, MANUALLY DIRECTED POWER TAMPERS OR PLATE COMPACTORS, OR MINATURE SELF PROPELLED ROLLERS.

I. DAM EMBANKMENT CONSTRUCTION STANDARDS (CONTINUED)

10. COMPACTION BY MEANS OF DROP WEIGHTS FROM A CRANE OR HOIST SHALL NOT BE PERMITTED.

11. HEAVY EQUIPMENT SHALL NOT BE ALLOWED TO PASS OVER CAST IN PLACE STRUCTURES (INCLUDING CRADDLE) UNTIL ADEQUATE CURING TIME HAS ELASPED.

12. TO RE–ESTABLISH VEGETATION AFTER CONSTRUCTION, A 2"–3" LAYER OF TOPSOIL SHALL BE PLACED ON THE DISTURBED EMBANKMENT SURFACE AND THE AREA SEEDED AND MULCHED OR HYDROSEEDED. IF GRASS STABILIZATION IS ATTEMPTED DURING THE SUMMER MONTHS, THE PLACEMENT OF SOD AND THE IMPLEMENTATION OF AN AGGRESSIVE WATERING PROGRAM MAY BE THE BEST AND QUICKEST MEANS OF ACHIEVING THE 85% STABILIZATION REQUIREMENT OF THE BCE CERTIFICATION PROGRAM. WHEN WATERING RESTRICTIONS ARE IN PLACE DURING DROUGHT CONDITIONS, OTHER AVENUES FOR WATERING (SUCH AS USING RECLAIMED WATER, ETC) SHALL BE IMPLEMENTED.

NOTE: ALL SLOPES OF DEVISE SHALL BE STABILIZED WITH NON CLUMPING TURF GRASS. 90% GERMINATION OF NON–CLUMPING TURF GRASS (CENTIPEDE OR HYBRID BERMUDA) WILL BE REQUIRED ON ALL SLOPES PRIOR TO FINAL CERTIFICATION.

J. SEEPAGE CONTROL STANDARDS

1. ANTI SEEP COLLARS INSTALLED AS PER DETAIL AND PLACED AT POINT IN DAM THAT ALLOWS FOR 2' OF COVER.

2. UTILITY CONDUITS OTHER THAN THE PRINCIPAL SPILLWAY SHALL NOT BE PERMITTED TO PENETRATE THE EMBANKMENT OR THE EMBANKMENT FOUNDATION OF THE EARTHEN DAM. THESE UTILITY CONDUITS SHALL BE ROUTED AROUND THE EMBANKMENT AND FOUNDATION AREAS.

3. ANTI SEEP COLLAR SHALL FORM A WATER TIGHT CONNECTION WITH THE PRINCIPAL SPILLWAY PIPE. ANTI SEEP COLLAR SHALL EXTEND A MINIMUM OF 2' BEYOND THE OUTLET BARREL AND INCREASE THE HYDRAULIC LENGTH OF TRAVEL BY AT LEAST 15%. COLLARS TO BE PLACED NO CLOSER THAN 10' AND NO FURTHER THAN 25' APART. A MINIMUM OF 1 ANTI SEEP COLLAR SHALL BE LOCATED DOWNSTREAM OF THE CENTERLINE OF THE DAM.

L. TESTING, OBSERVATION, AND CERTIFICATION

1. TESTS OF THE DEGREE (%) OF COMPACTION OF THE PLACED FILL IN THE DAM SHALL BE PERFORMED AS A PART OF THE PERMITTEE'S NORMAL QUALITY CONTROL PROGRAM FOR THE CONSTRUCTION OF THE DAM. TESTS SHALL BE CONDUCTED CONCURRENT WITH THE INSTALLATION OF THE COMPACTED FILL, AND THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF THE DAM SO THAT THE TESTING CAN BE COMPLETED. SHOULD THE RESULTS OF THE TESTS INDICATE THAT THE SPECIFIED DEGREE OF COMPACTION HAS NOT BEEN OBTAINED, THE PORTIONS OF THE DAM REPRESENTED BY SUCH TESTS SHALL BE REWORKED OR REBUILT. ALL PORTIONS OF THE DAM SHALL ACHIEVE THE SPECIFIED MINIMUM DEGREE OF COMPACTION.

M. MAINTENANCE AND ANNUAL CERTIFICATION

1. THE IMPOUNDMENT SCM SHALL BE MAINTAINED IN ACCORDANCE WITH THE SPECIFIC RECOMMENDATIONS AND REQUIREMENTS CONTAINED IN THE OPERATION AND MAINTENANCE MANUAL PREPARED FOR THE FACILITY AND IN ACCORDANCE WITH THE GENERAL RECOMMENDATIONS CONTAINED IN THE OWNER'S MAINTENANCE GUIDE FOR STORWATER SCM'S CONSTRUCTED IN THE TOWN OF KNIGHTDALE. THIS DOCEMENT CAN BE FOUND ON THE STORMWATER SERVICES PAGE OF THE TOWN OF KNIGHTDALE WEBSITE.
2. THE IMPOUNDMENT SCM SHALL BE CERTIFIED ANNUALLY IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE'S SCM MAINTENANCE CERTIFICATION PROTOCOL. THESE DOCUMENTS CAN BE FOUND ON THE STORMWATER SERVICES PAGE OF THE TOWN OF KNIGHTDALE'S WEBSITE.

REQUIRED TOWN OF KNIGHTDALE SCM BASIN REMOVAL SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE TOWN OF KNIGHTDALE EROISION CONTROL INSPECTOR TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.

2. CONTACT NCDEQ–RALEIGH REGIONAL OFFICE (919) 791–4200 TO DETERMINE THE DIVISION OF ENERGY, MINERAL AND LAND RESOURCES CONTACT PERSON TO RECEIVE DEWATERING NOTIFICATIONS. AT LEAST 10 DAYS PRIOR TO BEGINNING DEWATERING ACTIVITY, SEND EMAIL TO NCDEQ–DEMLR CONTACT PERSON AND COPY ENVIRONMENTAL CONSULTANT THAT MET YOU ONSITE. THE EMAIL SHOULD INCLUDE E&SC JURISDICTION: WAKE COUNTY, WAKE COUNTY PROJECT: NAME, NUMBER, AND LOCATION (CITY/TOWN), ENVIRONMENTAL CONSULTANT NAME, AND ADDRESS THE FOLLOWING: a) REASON FOR CONVERSION b) BASIN #, c) DEWATERING METHOD, AND d) ALL OTHER NECESSARY INFO FROM PART II, SECTION G, ITEM 4 OF THE NCG01. (KEEP EMAIL FOR YOUR NPDES MONITORING DOCUMENTATION.

3. AFTER RECEIVING POSITIVE CONFIRMATION FROM NCDEQ–DEMLR THAT YOU MAY REMOVE THE BASIN OR ON >DAY 11, WHICHEVER IS SOONER, REMOVE BASIN(S) AND ASSOCIATED TEMPORARY EROSION DITCHES. IF PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPERATION FOR SEEDING.

4. PERFORM SEEDBED PREPERATION, SEED, MULCH, AND ANCHOR ANY RESULTING BARE AREAS IMMEDIATELY USING NON–CLUMPING TURF GRASS (CENTIPEDE/HYBRID BERMUDA).

5. INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.

6. WHEN SITE IS FULLY STABILIZED, CALL EROSION CONTROL INSPECTOR FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION. NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE EROSION CONTROL INSPECTOR AND STORMWATER TECHNICIAN TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE.

WET POND SCM #1 PLANT LIST:

PLANTINGS ARE AT 50 PLANTINGS/200 SF OF AREA

NOTE: ALL SLOPES OF DEVICE SHALL BE STABILIZED WITH NON–CLUMPING TURF GRASS
CENTIPEDE/EREMOCHLOA OPHIUROIDES OR HYBRID BERMUDA/CYNODON DACTYLON x C. TRANSVAGLENSIS GERMPLASMA

WET POND:
POND ZONE 4 – TEMPORARY INUNDATION: 73.7 SF AREA (REGULAR TO TEMPORARY INUNDATION ELEV. 313.00 – 313.10)

COMMON NAME/BOTANICAL NAME	SPREAD	AREA/%	QUANTITY	ROOT
NO PLANTINGS PROPOSED GIVEN AREA IS SMALL AND ONLY 0.33' IN WIDTH				

WET POND:
POND ZONE 3 – SHALLOW WATER: 724.2 SF AREA (FIRST 3' OF VEGETATIVE SHELF ELEV. 312.50 – 313.00)

COMMON NAME/BOTANICAL NAME	SPREAD	AREA/%	QUANTITY	ROOT
Starrush whitetop/Rhynchospora colorata	2' o.c.	241 sf/33.24%	60	
Swamp Milkweed/Asclepias incarnata	2' o.c.	242 sf/33.38%	60	Small Pot or bare Root
Narrow plumegrass/Saccharum baldwinii	2' o.c.	242 sf/33.38%	60	

WET POND:
POND ZONE 2 – DEEP POOL TO SHALLOW WATER TRANSITION: 588.70 SF AREA (LAST 3' OF VEGETATIVE SHELF ELEV. 312.5 – 312.00)

COMMON NAME/BOTANICAL NAME	SPREAD	AREA/%	QUANTITY	ROOT
White Turtlehead/Chelone glabra	2' o.c.	196 sf/33.28%	49	
Joe Pye Weed/Eupatoriadelphus dubius	2' o.c.	196 sf/33.28%	49	Small Pot
Quill sedge/Carex tenera	2' o.c.	197 sf/33.44%	49	or bare Root

NC DEQ STORMWATER DESIGN MANUAL
WET POND MIN. DESIGN CRITERIA

MDC 1 MAIN POOL SURFACE AREA AND VOLUME
SCM USING SA/OA TABLE FOR 3.44' AVE. DEPTH – NEED 2,674.30 SF SCM HAS 8,633.50 SF
MDC 2 MAIN POOL DEPTH
SCM MAIN POOL DEPTH USING D–AVG OF PERM POOL VOL/PERM POOL AREA = 3.44'
MDC 3 SEDIMENT STORAGE
SCM CALLS FOR A MIN. OF 6" OF SEDIMENT STORAGE AT THE FORBAY AND MAIN POOL AREAS
MDC 4 LOCATION OF INLETS AND OUTLETS
SCM HAS THE OUTLET STRUCTURE AT THE WIDEST WIDTH OF POND
MDC 5 FOREBAY
SCM HAS FOREBAY THAT HAS A 28.92% VOLUME CAPACITY
MDC 6 VEGETATED SHELF
SCM HAS THE REQUIRED 6' VEGETATED SHELF AROUND THE POND
MDC 7 DRAWDOWN TIME
SCM HAS AN ORIFICE THAT WILL ALLOW FOR A DRAWDOWN TIME OF 4.39 DAYS
MDC 8 PROTECTION OF RECEIVING STREAM
SCM OUTLETS THE 1 YEAR 24 HOUR STORM AT A RATE OF 0.18 CFS WHICH IS NON EROSIVE
MDC 9 FOUNTAINS
SCM WILL HAVE NO FOUNTAINS
MDC 10 TRASH RACK
SCM WILL HAVE A TRASH RACK
MDC 11 VEGETATION
SCM WILL BE PLANTED AS REQUIRED

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247–1932

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL A. MILLER
12/15/25

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

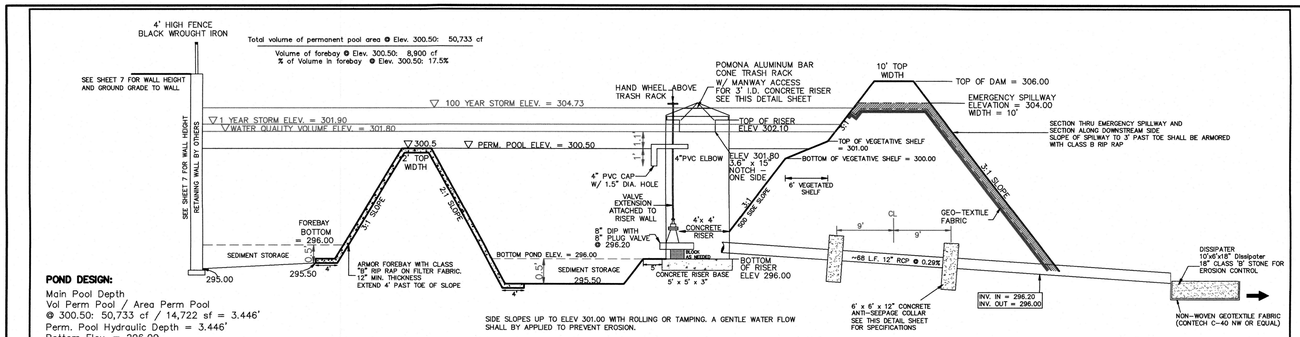
SHEET 8

SCM #1 – WET POND DETAILS
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C–0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465–1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
SCALE 1" = 60'	SURVEYED ----	DWG COLLECTION–POST DA
REVISIONS:10–22–25;12–15–25		PIN: SEE SITE DATA TABLE

SEE THIS SHEET FOR POND PLANTINGS AND SCHEDULE
SEE SHEET 7 FOR PROPOSED GRADING AND DRAINAGE PLAN
SEE SHEET 11 FOR PROPOSED PRE DEVELOPMENT DRAINAGE
SEE SHEET 12 FOR POST DEVELOPMENT DRAINAGE AND STORMWATER



POND DESIGN:

Main Pool Depth
Vol Perm Pool / Area Perm Pool
@ 300.50: 50,733 cf / 14,722 sf = 3.446'
Perm. Pool Hydraulic Depth = 3.446'
Bottom Elev. = 296.00
Perm Pool Elev. = 300.50
Emergency Spillway elev. = 304.00
Top of Dam = 306.00
Maximum slopes: 3:1
Required surface area @ perm pool to remove 85% of TSS:
~54% of the drainage area is impervious surface area
For a 3.446' deep pond SA = 1.778S x 8.83 acres = 6,838.81 sf
Proposed surface area SA @ Elev. 300.50: 14,722 sf

PERMANENT WET POND SCM #2 (NTS)

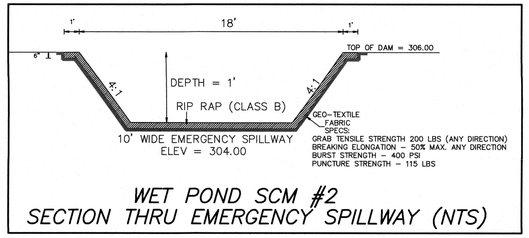
SEE THIS DETAIL SHEET FOR INFORMATION ON WET POND, ITS COMPONENTS, SPECIFICATIONS, AND DETAILS. ALSO SEE THIS SHEET FOR INFORMATION ON VEGETATION PLANTINGS ALONG POND SHELF.

TREATMENT VOLUME SIZING – SCM WET POND #2:
WET POND AREA TREATS & STORES 1" OF RUNOFF FROM THE SITE.
TREATMENT VOLUME FOR SCM USING THE SIMPLE METHOD:

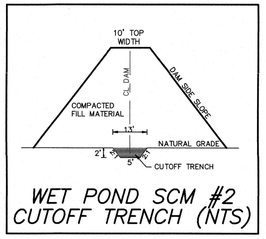
1. POST RUN-OFF FROM SITE:
   IMPERVIOUS AREA = 5.60 AC.
   PERVIOUS AREA = 3.23 AC.
2. REQUIRED VOLUME OF RUNOFF FROM FIRST 1" RUNOFF FROM SITE AREA AS PER NCDENR BMP MANUAL
   Rv = 0.05 + 0.9 x I
   where I_a = 5.60 ac./8.83 ac. = 0.63
   Rv = 0.62
   V required = 3,630 x 1" x 0.62 x 8.83 ac.
   V required = 19,872.80 cf
3. Total V provided between Elev. 300.50 and 301.80 = 20,880.08 cf

DRAW DOWN CALCULATIONS FOR WET POND – SCM #2:

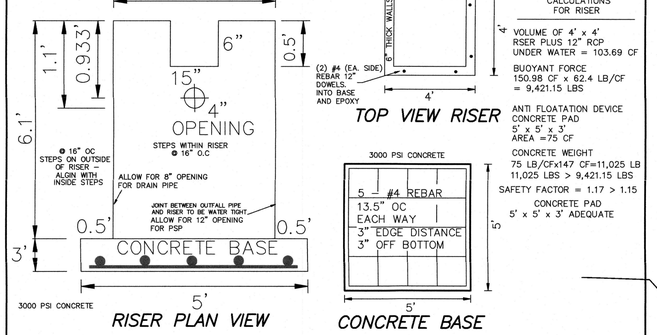
Permanent Pool Elevation @ 300.50
Volume @ 300.50 = 50,733 cf
Treatment Volume Elevation @ 301.60
Volume @ 301.80 = 71,613.08 cf
Volume runoff to drain = 20,880.08 cf
Draw down 2 – 5 days
2 days(24hr/day)(60min/hr)(60sec/min) = 172,800 secs.
20,880.08 cf / 172,800 secs. = 0.12 cfs (Q out)
Orifice Equation
0.12 cfs = 0.6 A $((2)(32.2)(1.3'))^{0.5}$
A = 0.022 sf
$A = (3.14)R^2$
$0.022 \text{ sf} = (3.14)\ R^2$
R = 0.084 ft = 1.01 in.
=> USE 1.5" DIAMETER ORIFICE – DRAW DOWN 3.61 DAYS



WET POND SCM #2 SECTION THRU EMERGENCY SPILLWAY (NTS)

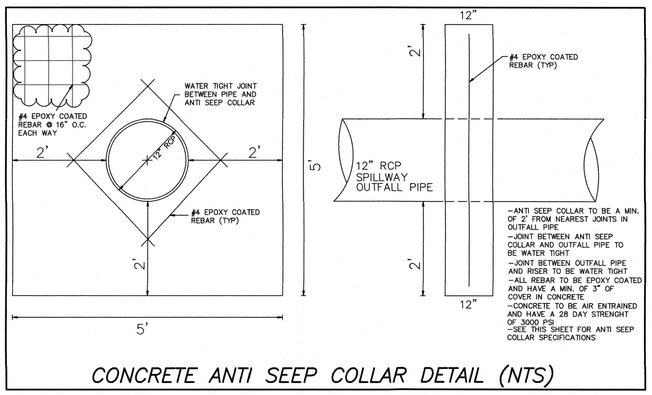


WET POND SCM #2 CUTOFF TRENCH (NTS)

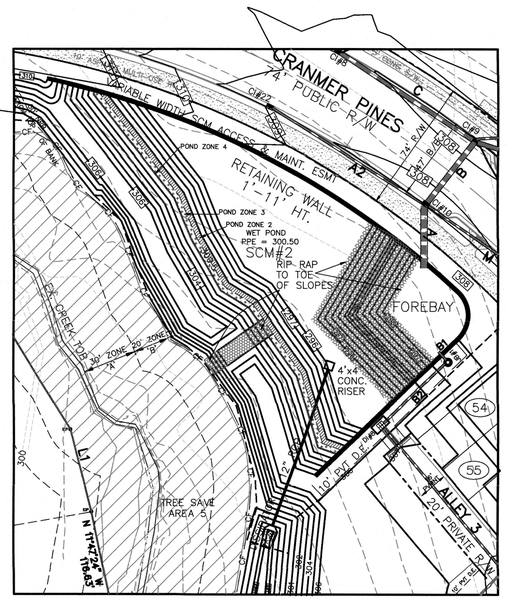


RISER PLAN VIEW — CONCRETE BASE

CONCRETE RISER DETAILS WET POND SCM #2 (NTS)



CONCRETE ANTI SEEP COLLAR DETAIL (NTS)



NC GRID (NAD83-2011)

TOWN OF KNIGHTDALE
PIN: 1754545656
ZONED: OSP
EXEMPT

NORFOLK SOUTHERN RAILROAD
100' RIGHT OF WAY
B.M. 2018, PG. 750

EX. 100' RAILROAD R/W

EUGENE HARPER/ ETAL.
PIN:1754539814
D.B. 16578/ PG. 2505
26,141 SQ.FT.
0.60 AC/

EXIST FOOTER

EUGENE HARPER/ ETAL.
PIN:1754537747
D.B. 6754, PG. 596
B.M. 1920, PG. 166
78,117 SQ.FT.
1.79 AC.

WETLAND WC-1

WETLAND WC-2

WETLAND WC-3

WETLAND WC-4

WETLAND WC-5

WETLAND WC-6

WETLAND WC-7

WETLAND WC-8

WETLAND WC-9

WETLAND WC-10

WETLAND WC-11

WETLAND WC-12

WETLAND WC-13

WETLAND WC-14

WETLAND WC-15

WETLAND WC-16

WETLAND WC-17

WETLAND WC-18

WETLAND WC-19

WETLAND WC-20

WETLAND

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

NOTE:
- ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

LEGEND:

- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TP TREE PROTECTION FENCE
- CF COMBINATON SILT/TREE PROTECTION FENCE
- RETAINING WALL

NITROGEN LOADING TABLE FROM SITE:

TYPE OF LAND COVER	SITE AREA (ACRES)	TN EXPORT COEFF. (LBS/AC/YR)	TN EXPORT BY LAND USE (LBS/YR)	TN EXPORT FROM SITE (LBS/AC/YR)
PERMANENTLY PRESERVED UNDISTURBED AREA	9.173	0.60	5.504	
PERMANENTLY PRESERVED MANAGED OPEN SPACE (lawns – managed)	8.294	1.20	9.953	
IMPERVIOUS SURFACES (pavement, sidewalk, drives, roof tops)	9.523	21.2	201.888	
TOTAL	26.990		217.345	
AVERAGE FOR SITE				8.053

Nitrogen Control Calculations:

Total TN export by land use = 217.345 lbs/yr
Total TN export from site = 8.053 lbs/ac/yr

=> Export is more than 3.60 lbs/ac/yr and less than 10.0 lbs/ac/yr.

Since export is more than 3.6 lbs/ac/yr, developer to do a combination of on-site SCM's to lessen payment impacts. Then, the developer will pay a one time off-set payment to bring the nitrogen down to 3.6 lbs/ac/yr.

Wet Pond Area removes 30% of the nitrogen load and Bio-retention Area removes 40% (WS) of nitrogen load. Only get credit for nitrogen removal from surfaces draining into SCM from the site. No credit for treatment of offsite drainage surfaces into SCM.

Wet Pond Area removes 30% of the nitrogen load
Managed pervious = 5.32 ac; Impervious Surfaces = 6.32 ac. (from on site drainage only)
TN Export:
(5.32 ac. x 1.2 lbs/ac/yr) + (6.32 ac. x 21.2 lbs/ac/yr) = 140.368 lbs/yr
140.368 lbs/yr x 0.30 = 42.110 lbs/yr

Bio-retention Area removes 40% (WS) of nitrogen load
Impervious Surfaces = 1.65 ac.; Managed pervious = 1.22 ac.
TN Export:
(1.65 ac. x 21.2 lbs/ac/yr) + (1.22 ac. x 1.2 lbs/ac/yr) = 36.444 lbs/yr
36.444 lbs/yr x 0.40 = 14.578 lbs/yr

217.345 lbs/yr – 42.110 lbs/yr – 14.578 lbs/yr = 160.657 lbs/yr
160.657 lbs/yr / 26.990 ac. = 5.952 lbs/ac/yr < 6 lbs/ac/yr – buy down remaining to 3.6 target

TOTAL NUTRIENT OFFSET PAYMENT FOR SITE:
(5.952 lbs/ac/yr – 3.6 lbs/ac/yr) x 26.99 ac x 30 yr x $18.49/lb = $35,212.82
(already paid $36,838.37)

SEE SHEETS 8–10 FOR PROPOSED SCM STORMWATER PLANS
SEE SHEET 6 FOR DRAINAGE STRUCTURE SCHEDULES

STORMWATER MANAGEMENT:

MAXIMUM ALLOWABLE DISCHARGE FOR SITE IS LIMITED TO THE PRE–DEVELOPMENT 1 YEAR – 24 HOUR STORM DISCHARGE.
POST DEVELOPMENT FLOWS CANNOT EXCEED MORE THAN THE PRE DEVELOPMENT LEVEL FOR THE ENTRE SITE.

SITE REQUIRED TO TREAT RUNOFF FOR 85% TSS REMOVAL
SITE IS REQUIRED TO CAPTURE FIRST 1" RUNOFF FOR TREATMENT

SEE SHEET 11 FOR PRE DEVELOPMENT DRAINAGE

PRE DEVELOPMENT RUNOFF FROM SITE – SEE SHEET 11 FOR DRAINAGE MAP

DRAINAGE AREA		TOTAL AREA ACRES	WEIGHTED CN	OVERLAND SHEET FLOW LINEAR FEET	OVERLAND SHALLOW FLOW LINEAR FEET	CHANNEL FLOW LINEAR FEET	TOTAL TC MIN.	PRE Q1 FLOW CFS
	DA1	16.127	74 WOODS/OPEN	300		1008	24.07	10.61
	DA2	1.891	74 WOODS/OPEN	298	–		14.5	1.79
	DA3	9.379	72 WOODS/OPEN	190	–	526	12.2	8.89
		27.397	TOTAL DRAINAGE AREA – PRE DEVELOPMENT		TOTAL RUNOFF FROM SITE – PRE DEVELOPMENT			21.29

PRE RUNOFF CALCULATIONS

Pre–Development rate was calculated using the SCS Method:
See Pre–Development Drainage Sheet 11
for calculation on total pre–development runoff rates.

$Q_{1/pre}$ = 21.29 cfs (total from site)

POST DEVELOPMENT RUNOFF FROM SITE AFTER CONSTRUCTION NOT TO SCM

DRAINAGE AREA	TOTAL AREA ACRES	WEIGHTED CN	OPEN SPACE AREA CN = 63	MAN.PERV. CN = 61	IMPERVIOUS AREA CN = 98	TOTAL TC MIN.	POST Q1 FLOW –CFS
DA1 TO OFFSITE	4.93	67	3.34 AC	0.91 AC	0.68 AC	25.10	1.80
DA2 TO OFFSITE	6.26	65	5.23 AC	0.63 AC	0.40 AC	12.2	2.91
DA3 TO OFFSITE	0.90	81	–	0.42 AC	0.48 AC	5	1.81
					TOTAL POST Q1 (CFS) FLOWING FROM SITE NOT TO A SCM		6.52

TOTAL POST DEVELOPMENT RUNOFF FROM SITE & FROM OFFSITE DRAINING TO SCM

DRAINAGE AREA	TOTAL AREA ACRES	WEIGHTED CN	MANAGED PERVIOUS 61	IMPERVIOUS AREA CN = 98	TOTAL TC MIN.	POST Q1 FLOW INTO SCM –CFS	POST Q1 ROUTED THRU SCM –CFS
DA TO SCM #1	(0.31 OFFSITE) (2.81 SITE) 3.12	75	1.90 AC	1.22 AC	USE 5	4.49	0.05
DA TO SCM #2	(8.83 SITE) 8.83	82	3.73 AC	5.10 AC	USE 5	18.63	0.76
DA TO SCM #3	(2.87 SITE) 2.87	82	1.22 AC	1.65 AC	USE 5	6.06	(PLUS 0.22 THRU MEDIA) 0.32
			TOTAL POST Q1 (CFS) FLOWING FROM SITE ROUTED THRU SCM's				1.13 (PLUS 0.22 THRU MEDIA)

TOTAL ROUTING THRU SCM's PLUS FLOWS NOT TO SCM's – TOTAL RESULTING OUTFLOWS (POST DEVELOPMENT)

$Q_{1/post\ routed\ thru\ scm\ including\ offsite\ da}$ = 0.05 cfs + 0.76 cfs + 0.32 cfs = 1.13 cfs total routed thru scm's

$Q_{1/post\ not\ to\ scm's}$ = 1.80 cfs + 2.91 cfs + 1.81 cfs = 6.52 cfs total not to scm's – directly offsite

$Q_{1/post\ –\ total\ from\ site}$ = 1.13 cfs thru scm's + 0.22 cfs thru bio soil + 6.52 cfs not to scm = 7.87 cfs total

$Q_{1/post\ total\ from\ site}$ = 7.87 cfs is less than $Q_{1/pre\ total\ from\ site}$ = 21.29 cfs

SITE IS IN COMPLIANCE

SITE DRAINAGE AREA – DA1 TO OFFSITE – NOT TO SCM
1 YR – 24 HR DISCHARGE
POST = 1.80 cfs + TOTAL
1 YR – 24 HR DISCHARGE
POST = 1.35 cfs FROM SCM's
TOTAL POST 1 YR – 24 HR = 3.015 cfs LESS THAN
1 YR – 24 HR DISCHARGE
PRE = 10.61 cfs

SITE DRAINAGE AREA – DA2 TO OFFSITE – NOT TO SCM
1 YR – 24 HR DISCHARGE
POST = 2.91 cfs LESS THAN
1 YR – 24 HR DISCHARGE
PRE = 8.89 cfs

SITE DRAINAGE AREA – DA3 TO OFFSITE – NOT TO SCM
1 YR – 24 HR DISCHARGE
POST = 1.81 cfs
1 YR – 24 HR DISCHARGE
PRE = 1.79 cfs

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE OR PHASE 2 ADDITIONAL R/W WILL BE DEDICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TBM PARTNERS
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247–1932

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDAL L. MILLER
03/18/26

SHEET 12

POST DEVELOPMENT DRAINAGE MAP
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C–0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465–1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA	
OWNER: TCTBM, LLC		ZONED PUD	
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–	
SCALE 1" = 60'	SURVEYED ----	DWG:COLLECTION–GRADE	
REVISIONS:10–22–25;12–15–25 03–18–26		PIN: SEE SITE DATA TABLE	

- ALL WORK AND MATERIALS SHALL BE AS PER TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT. EROSION CONTROL SHALL BE AS PER TOWN OF KNIGHTDALE EROSION CONTROL STANDARDS.

NC GRID (NAD83-2011)

TOWN OF KNIGHTDALE
PIN: 1754645656
ZONED: OSP
EXEMPT

NORFOLK SOUTHERN RAILROAD
100' RIGHT OF WAY
B.M. 2018, PG. 750

EX. 100' RAILROAD R/W

N 59°24'45" E 1167.56'

WETLAND WC-1

WETLAND WC-2

WETLAND WC-3

WETLAND WC-4

WETLAND WC-5

WETLAND WC-6

WETLAND WC-7

WETLAND WC-8

WETLAND WC-9

WETLAND WC-10

WETLAND WC-11

WETLAND WC-12

WETLAND WC-13

WETLAND WC-14

WETLAND WC-15

WETLAND WC-16

WETLAND WC-17

WETLAND WC-18

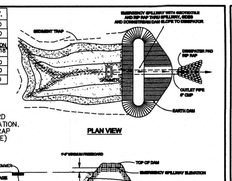
WETLAND WC-19

WETLAND WC-20

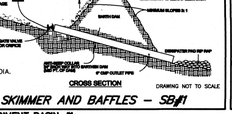
WETLAND

NC GRID (NADB3-2011)

TEMP SED BASIN SB #1	DIMENSIONS	ELEV.
EMERGENCY SPILLWAY	10'	318.00
TOP OF DAM WIDTH	10'	317.00
ANTI-SEEP COLLAR	MIN. 6" PERP. TO FLOW EXTEND 2' ON EACH SIDE OF RISER	
RIP RAP DISSIPATER PAD	Lo 5' x W 5' x D 1'	
OUTLET PIPE INVERT IN	6" CMP	308.00
OUTLET PIPE INVERT OUT	6" CMP	307.00
SEDIMENT STORAGE AREA	SEE GRADES	315.00



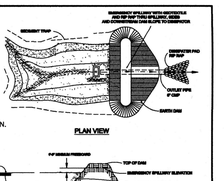
SEDIMENT BASIN WILL HAVE 12" SLOPE DRAIN ENTERING INTO BASIN. SEE THIS SHEET FOR ~LOCATION AND ~LENGTH. ALSO SEE STANDARD DETAIL ON SHEET 39 FOR ADDITIONAL INFORMATION. OUTLET END OF SLOPE DRAIN TO HAVE A RIPRAP DISSIPATOR (5' x 15' x 18" – CLASS B STONE)



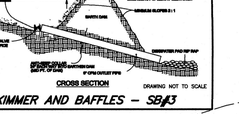
SKIMMER SIZES
RESULTING DEWATERING TIME IS 3 DAYS
SB#1 – SKIMMER SIZE = 3" WITH A 2.5" ORIFICE DIA.

SEDIMENT BASIN WITH SKIMMER AND BAFFLES – SB#1

TEMP SED BASIN SB#3	DIMENSIONS	ELEV.
EMERGENCY SPILLWAY	10'	316.00
TOP OF DAM WIDTH	10'	317.00
ANTI-SEEP COLLAR	MIN. 6" PERP. TO FLOW EXTEND 2' ON EACH SIDE OF RISER	
RIP RAP DISSIPATER PAD	Lo 5' x W 5' x D 1'	
OUTLET PIPE INVERT IN	6" CMP	310.00
OUTLET PIPE INVERT OUT	6" CMP	311.00
SEDIMENT STORAGE AREA	SEE GRADES	315.00



SEDIMENT BASIN WILL HAVE 12" SLOPE DRAIN ENTERING INTO BASIN. SEE THIS SHEET FOR ~LOCATION AND ~LENGTH. ALSO SEE STANDARD DETAIL ON SHEET 39 FOR ADDITIONAL INFORMATION. OUTLET END OF SLOPE DRAIN TO HAVE A RIPRAP DISSIPATOR (5' x 15' x 18" – CLASS B STONE)



ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

SKIMMER SIZES
RESULTING DEWATERING TIME IS 3 DAYS
SB#3 – SKIMMER SIZE = 3" WITH A 2.5" ORIFICE DIA.

SEDIMENT BASIN WITH SKIMMER AND BAFFLES – SB#3

SKIMMER SEDIMENT BASIN #1:

=> Rainfall Intensity for 10 Year 5 Minute Storm = I = 7.2 in./hr.
=> Q = C x I x A = 0.7 x 7.2 in/hr x 2.5 ac. = 12.6 cfs

MINIMUM STORAGE CAPACITY:
1,800 cf/acre x drainage area = 1,800 cf/ac x 2.5 ac = 4,500 cf

PROPOSED STORAGE CAPACITY:
Volume (cf) = surface area (sq.ft.) x max. pool depth (ft.)
Volume (cf) @ 315' = 19,178.65 cf

MINIMUM REQUIRED SURFACE AREA:
435 sf x 12.6 cfs = 5,481 sf

PROPOSED SURFACE AREA = 5,675.60 SF @ ELEVATION 315.00
BASIN SIZE: SEE GRADES ON PLAN FROM BOTTOM 308' TO 315' INSIDE BASIN

SKIMMER SEDIMENT BASIN #3:

=> Rainfall Intensity for 10 Year 5 Minute Storm = I = 7.2 in./hr.
=> Q = C x I x A = 0.7 x 7.2 in/hr x 3.9 ac. = 19.66 cfs

MINIMUM STORAGE CAPACITY:
1,800 cf/acre x drainage area = 1,800 cf/ac x 3.9 ac = 7,020 cf

PROPOSED STORAGE CAPACITY:
Volume (cf) = surface area (sq.ft.) x max. pool depth (ft.)
Volume (cf) @ 315' = 19,597.5 cf

MINIMUM REQUIRED SURFACE AREA:
435 sf x 19.66 cfs = 8,552.1 sf

PROPOSED SURFACE AREA = 8,708.3 SF @ ELEVATION 315.00
BASIN SIZE: SEE GRADES ON PLAN FROM BOTTOM 312' TO 315' INSIDE BASIN

OFFSITE SPOIL NOTE:
IF AN OFFSITE SPOIL OR BORROW SITE IS UTILIZED, THEN THE DISTURBED AREA FOR THE SPOIL/BORROW AREA SHALL BE INCLUDED/ADDED INTO THE LAND DISTURBANCE PLAN AND PERMIT UNLESS THE SPOIL/BORROW SITE ALREADY HAS A SEPARATE LAND DISTURBANCE PERMIT.

GROUND STABILIZATION REQUIRED WITHIN 7 DAYS FOR PERIMETER AREAS AND FOR SLOPES GREATER THAN 3:1. ALL OTHER AREAS IT IS REQUIRED WITHIN 14 DAYS OF ANY PHASE OF GRADING.

STOCK PILE NOTES:
Soil stockpiles shall be located on the approved plan and shall adhere to the following requirements:
Design Criteria:
a. 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).
b. Unless approved, the footprints shall be setback a minimum of 25' from adjacent property lines.
c. A note shall be provided on the approved plan that stockpile height shall not exceed 35 feet.
d. Stockpile slopes shall be 2:1 or flatter.
e. Stockpiles shall be shown on the plan to control any potential sediment loss from a stockpile.
f. Stockpiling materials adjacent to a ditch, drainageway, watercourses, floodplain, buffer, or other body of water shall be avoided unless an alternate location is demonstrated to be unavoidable.
g. Any concentrated flow likely to affect the stockpile shall be diverted to an approved flow.
h. Off-site spoil or borrow areas must be in compliance with Town of Knightdale Ordinance. Applicant shall submit a copy of the approved grading permit or letter on approved sediment control plan. Applicant shall submit a copy to Town of Knightdale of any offsite disposal of soil, prior to disposal. Fill of FEMA Floodway or non-encroachment areas are prohibited except as otherwise provided by the Town of Knightdale United Development Ordinance (certifications and permits required).
Maintenance Requirements to be Noted on the Plan
a. Periodic top dressing with additional soil may be required and will reduce erosion problems. Slope should be keyed in at the top of the slope to keep water from running underneath the plastic.
b. If a stockpile is to remain over winter after the project is complete (builders, etc.), the Financial responsible party must notify the Town of Knightdale of the new responsible party for that stockpile.
c. The approved plan shall provide for the use of stopped seeding and mulching on a continual basis while the stockpile is in use.
d. Establish and maintain a vegetative buffer at the toe of the slope (where practical)

NOTES ON TREE PROTECTION FENCE:
TREE PROTECTION FENCE TO BE PLACED ON ITS OWN STAKED LINE AND SUPPORTS. TREE PROTECTION FENCE SHALL NOT BE ON SAME STAKED LINE AND SUPPORTS WITH SILT FENCING.
FOLLOWING PLAN APPROVAL, PLEASE CONTACT THE TOWN OF KNIGHTDALE SEDIMENTATION AND EROSION CONTROL AT 919-217-2255 FOR REVIEW AND APPROVAL OF THE SOIL EROSION AND SEDIMENT PLAN. APPROVAL OF THE PLAN BY THE TOWN OF KNIGHTDALE IS CONTINGENT ON A LETTER FROM THE TOWN STATING THAT THE REQUIRED TREE PROTECTION FENCING HAS BEEN INSTALLED, INSPECTED, AND APPROVED BY THE SEDIMENT AND EROSION CONTROL DEPARTMENT. A "CERTIFICATE OF COMPLIANCE" FROM THE TOWN, FOR THIS PROJECT, IS REQUIRED PRIOR TO RECEIVING A BUILDING PERMIT.

LEGEND

- W —— EXISTING WATER LINE
- SS —— EXISTING SANITARY SEWER
- (S) EXISTING SANITARY SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EX. WATER VALVE
- EXISTING POWER POLE
- EXISTING FIBER OPTIC MARKER
- EXISTING TELEPHONE PEDESTAL
- FOH EXISTING FIBER OPTIC BOX
- EXSS EXISTING FORCEMAIN
- OU EXISTING OVERHEAD UTILITY
- UT EXISTING UNDERGROUND UTILITY

NOTE:
PLAN WILL BE SUBJECT TO NCDENR SELF-INSPECTION PROGRAM. AN EROSION CONTROL INSPECTION WILL BE CONDUCTED AFTER EACH PHASE OF GRADING AND THE INSPECTION DOCUMENTED IN WRITING. IT IS RECOMMENDED THAT THE CONTRACTOR UTILIZE THE NCDLQ/NCDWR JOINT SELF-INSPECTION FORM.

DENUDED AREA = 21.8 AC.

LEGEND:

- CF — COMBINATION SILT FENCE TREE PROTECTION FENCE
- TF — TREE PROTECTION FENCE
- SF — SILT FENCE
- TEMPORARY DIVERSION
- SFO SILT FENCE OUTLET
- PROPOSED GRADE
- ROCK CHECK DAM
- HORSESHOE INLET PROTECTION

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

CONSTRUCTION PLANS SHEET 13-A

INITIAL EROSION CONTROL PLANS WITH APPROVED CROSSING AND IMPACT PERMITS

THE COLLECTION

614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
C-0343
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA
OWNER: TCTBM, LLC		ZONED PUD
DATE: 3-11-22	DRAWN MTH	JOB NO. 20-
SCALE 1" = 40	SURVEYED-OTHERS	DWG COLLECTION-EXCOND

REVISIONS:7/14/22;8/24/22;1/12/23
2/17/23;3/9/23;5/21/25;12/15/25 PIN: SEE SITE DATA TABLE

TOWN CERTIFICATION. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORFOLK SOUTHERN RAILROAD
100' RIGHT OF WAY
B.M. 2018, PG. 750

EX. 100' RAILROAD R/W

TOWN OF KNIGHTDALE
PIN: 1754645656
ZONED: OSP
EXEMPT

EUGENE HARPER, ETAL
PIN:1754539814
D.B. 16378, PG. 2505
26,141 SQ.FT.
0.60 AC.

EUGENE HARPER, ETAL. WOODED
PIN:1754537747
D.B. 6754, PG. 596
B.M. 1920, PG. 196
78,117 SQ.FT.
1.79 AC.

WAYNE HARPER, ETAL.
PIN:1754635524, ~~1754630926,~~
1754539404
D.B. 6075, PG. 504
B.M. 1994, PG. 445
1,126,929 SQ.FT.
25.87 AC.

CROWN CASTLE GT COMPANY LLC
PIN: 1754533467
ZONED: RR1
VACANT

KEITH STREET
30' PUBLIC R/W
B.M. 1996, PG. 1629

N 59°54'15" E 182.56'
N 10°42'04" W 83.35'
N 10°42'04" W 420.95'
S 88°14'33" E 420.12'
N 68°25'58" W 156.51'
N 21°34'02" W 75.00'
N 11°23'16" W 149.44'
S 68°25'58" E 147.18'

WETLAND WC-1
WETLAND WC-1A
WETLAND WC-2
WETLAND WC-3
WETLAND WC-4

WETLAND AREA APPROVED TO BE FILLED

EXIST. FOOTER TO BE REMOVED
EXIST. BARN TO BE REMOVED

LIMITS OF DISTURBANCE (TYPICAL)

TEMPORARY DIVERSION DITCH 1 (SEE DETAIL)
TEMPORARY DIVERSION DITCH 2 (SEE DETAIL)
TEMPORARY DIVERSION DITCH 3 (SEE DETAIL)
TEMPORARY DIVERSION DITCH 6 (SEE DETAIL)
TEMPORARY DIVERSION DITCH 7 (SEE DETAIL)
TEMPORARY DIVERSION DITCH 8 (SEE DETAIL)

ROCK CHECK DAM (TYP)

COMBINATION TREE AND SILT FENCE (TYP.)

SILT FENCE (TYP.)

CWO CONCRETE WASH OUT SEE DETIAL SHEET

NCG01 SELF INSPECTION RECORDS, PERMIT BOX & RAIN GAUGE

HORSESHOE INLET PROTECTION

25' x 50' x 12" RIP RAP CONSTRUTION ENTRANCE. SEE DETIAL SHEET

~32 LF TEMP 15" HDPE IN EX. DITCH

PIPE DISCHARGE THRU SILT FENCE OUTLET & TO DISCHARGE OFFSITE

SILT FENCE OUTLET EVERY 100' (TYP.)

~24 If 12" CPP SLOPE DRAIN WITH 5' x 15" x 18" CLASS "B" RIPRAP DISSIPATOR

~10 If 12" CPP SLOPE DRAIN WITH 5' x 15" x 18" CLASS "B" RIPRAP DISSIPATOR

~15 If 12" CPP SLOPE DRAIN WITH 5' x 15" x 18" CLASS "B" RIPRAP DISSIPATOR

~16 If 12" CPP SLOPE DRAIN WITH 5' x 15" x 18" CLASS "B" RIPRAP DISSIPATOR

~27 If 12" CPP SLOPE DRAIN WITH 5' x 15" x 18" CLASS "B" RIPRAP DISSIPATOR

~19 LF 18" HDPE/ TEMP. CROSSING PIPE WITH FILTER FABRIC & COARSE AGGREGATE SEE DETAIL SHEET 39

~19 LF 18" HDPE TEMP. CROSSING PIPE WITH FILTER FABRIC & COARSE AGGREGATE

HORSESHOE INLET PROTECTION (TYP)

COMBINATION TREE AND SILT FENCE (TYP.)

ROCK CHECK DAM (TYP)

TEMPORARY DIVERSION DITCH 7 (SEE DETAIL)

SKIMMER W/ BAFFLES

SB#1 SB#3 SB#4

SKIMMER

DISSIPATER Lo =5' W =4' D =1'6" CLASS "B" STONE SEE DETAIL SHEET

ESW

15 x 15 FILTER BAG

ATOP AN AREA OF 20' x 20' OF 8" #57 STONE ATOP A DRAINAGE GEOTEXTILE FABRIC (TYP)

VEHICLE CROSSING AREA ALONG TEMP. DIVERSION DITCH SEE DETAIL ON SHEET 40. AT END OF EACH DAY, MAINTAIN DIVERSION DITCH TO ENSURE SEDIMENT LADEN RUNOFF IS DIVERTED INTO SEDIMENT BASIN.

SEE INSET 1 SHEET JM2 FOR IMPACT INFORMATION

ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

50' NRB FROM TOP OF BANK

30' BUFFER FROM TOP OF BANK

CITY OF RALEIGH SANITARY SEWER EASEMENT B.M. 2009, PG. 1921

WETLAND WC-4

EX. POND TO REMAIN

TREE SAVE AREA 1

TREE SAVE AREA 2

TREE SAVE AREA 3

TREE SAVE AREA 4

STOCKPILE NOTES:
SEEDING OR COVERING STOCKPILE WITH TARPS OR MULCH IS REQUIRED. TARPS SHOULD BE KEYED IN AT TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDER THE PLASTIC.
IF STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE, THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY THE TOWN OF KNIGHTDALE OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
THE STOCKPILE AREA SHALL BE MULCHED AND SEEDED ON A CONTINUOUS BASIS WHILE IN USE.
ESTABLISH A VEGETATIVE BUFFER AT THE TOE OF SLOPE OF THE STOCKPILE WHERE PRACTICAL.

+316.10
STOCK PILE AREA
MAX. 35' HT.
MAX. SLOPES 2:1

+322.17

SILT FENCE OUTLET (TYP.)

MATCHLINE SEE SHEET 13-B

TEMPORARY DIVERSION DITCH 1
LENGTH =426 LF.
DA = 1.44 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 1.44 AC = 7.25 CFS
V10= 6.14 fps
D10 = 0.42'
Slope = 2.8%
n = 0.018
Shear Stress = 0.74 psf
Allow. Shear Stress = 1.75 psf
DITCH TO BE LINED WITH ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

TEMPORARY DIVERSION DITCH 2
LENGTH =591 LF.
DA = 1.73 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 1.73 AC = 8.72 CFS
V10= 5.82 fps
D10 = 0.5'
Slope = 2.0%
n = 0.018
Shear Stress = 0.62 psf
Allow. Shear Stress = 1.75 psf
DITCH TO BE LINED WITH ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

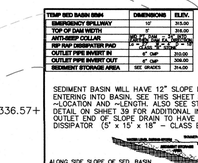
TEMPORARY DIVERSION DITCH 3
LENGTH =~590 LF.
DA = 3.90 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 3.90 AC = 19.66 CFS
V10= 6.14 fps
D10 = 0.42'
Slope = 2.8%
n = 0.018
Shear Stress = 0.74 psf
Allow. Shear Stress = 1.75 psf
DITCH TO BE LINED WITH ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

TEMPORARY DIVERSION DITCH 6
LENGTH =194 LF.
DA = 0.40 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 0.40 AC = 2.02 CFS
V10= 4.72 fps
D10 = 0.16'
Slope =4.27%
n = 0.018
Shear Stress = 0.48 psf
Allow. Shear Stress = 1.75 psf
DITCH TO BE LINED WITH ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

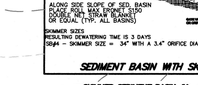
TEMPORARY DIVERSION DITCH 7
LENGTH =~218 LF.
DA = 0.60 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 0.60 AC = 3.08 CFS
V10= 2.66 fps
D10 = 0.42'
Slope =0.5%
n = 0.018
Shear Stress = 0.13 psf
Allow. Shear Stress = 1.75 psf
DITCH TO BE LINED WITH ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

TEMPORARY DIVERSION DITCH 8
LENGTH =194 LF.
DA = 0.96 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 0.96 AC = 4.84 CFS
V10= 5.55 fps
D10 = 0.33'
Slope =2.85%
n = 0.018
Shear Stress = 0.59 psf
Allow. Shear Stress = 1.75 psf
DITCH TO BE LINED WITH ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

TEMP SED BASIN SB#6	DIMENSIONS	ELEV.
EMERGENCY SPILLWAY	10'	313.50
TOP OF DAM WIDTH	10'	314.50
ANTI-SEEP COLLAR	MIN. 6" PERP. TO FLOW EXTEND 2' ON EACH SIDE OF RISER	
RIP RAP DISSIPATER PAD	Lo 5' x W 5' x D 1'	
OUTLET PIPE INVERT IN	6" CMP	310.00
OUTLET PIPE INVERT OUT	6" CMP	308.00
SEDIMENT STORAGE AREA	SEE GRADES	314.00



SEDIMENT BASIN WILL HAVE 12" SLOPE DRAIN ENTERING INTO BASIN. SEE THIS SHEET FOR ~LOCATION AND ~LENGTH. ALSO SEE STANDARD DETAIL ON SHEET 39 FOR ADDITIONAL INFORMATION. OUTLET END OF SLOPE DRAIN TO HAVE A RIPRAP DISSIPATOR (5' x 15' x 18" – CLASS B STONE)



ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

SKIMMER SIZES
RESULTING DEWATERING TIME IS 3 DAYS
SB#4 – SKIMMER SIZE = 3" WITH A 3.4" ORIFICE DIA.

SEDIMENT BASIN WITH SKIMMER AND BAFFLES – SB#4

SKIMMER SEDIMENT BASIN #4:

=> Rainfall Intensity for 10 Year 5 Minute Storm = I = 7.2 in./hr.
=> Q = C x I x A = 0.7 x 7.2 in/hr x 2.9 ac. = 14.62 cfs

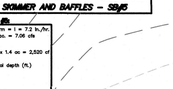
MINIMUM STORAGE CAPACITY:
1,800 cf/acre x drainage area = 1,800 cf/ac x 2.9 ac = 5,220 cf

PROPOSED STORAGE CAPACITY:
Volume (cf) = surface area (sq.ft.) x max. pool depth (ft.)
Volume (cf) @ 314' = 42,516 cf

MINIMUM REQUIRED SURFACE AREA:
435 sf x 14.62 cfs = 6,359.7 sf

PROPOSED SURFACE AREA = 13,222 SF @ ELEVATION 314.00
BASIN SIZE: SEE GRADES ON PLAN FROM BOTTOM 310' TO 314' INSIDE BASIN

TEMP SED BASIN SB#5	DIMENSIONS	ELEV.
EMERGENCY SPILLWAY	10'	314.00
TOP OF DAM WIDTH	10'	315.00
ANTI-SEEP COLLAR	MIN. 6" PERP. TO FLOW EXTEND 2' ON EACH SIDE OF RISER	
RIP RAP DISSIPATER PAD	Lo 5' x W 5' x D 1'	
OUTLET PIPE INVERT IN	6" CMP	311.00
OUTLET PIPE INVERT OUT	6" CMP	310.00
SEDIMENT STORAGE AREA	SEE GRADES	313.00



SEDIMENT BASIN WILL HAVE 12" SLOPE DRAIN ENTERING INTO BASIN. SEE THIS SHEET FOR ~LOCATION AND ~LENGTH. ALSO SEE STANDARD DETAIL ON SHEET 39 FOR ADDITIONAL INFORMATION. OUTLET END OF SLOPE DRAIN TO HAVE A RIPRAP DISSIPATOR (5' x 15' x 18" – CLASS B STONE)



ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

SKIMMER SIZES
RESULTING DEWATERING TIME IS 3 DAYS
SB#5 – SKIMMER SIZE = 3" WITH A 1.7" ORIFICE DIA.

SEDIMENT BASIN WITH SKIMMER AND BAFFLES – SB#5

SKIMMER SEDIMENT BASIN #5:

=> Rainfall Intensity for 10 Year 5 Minute Storm = I = 7.2 in./hr.
=> Q = C x I x A = 0.7 x 7.2 in/hr x 1.4 ac = 7.06 cfs

MINIMUM STORAGE CAPACITY:
1,800 cf/acre x drainage area = 1,800 cf/ac x 1.4 ac = 2,520 cf

PROPOSED STORAGE CAPACITY:
Volume (cf) = surface area (sq.ft.) x max. pool depth (ft.)
Volume (cf) @ 323' = 3,908.7 cf

MINIMUM REQUIRED SURFACE AREA:
435 sf x 7.06 cfs = 3071.1 sf

PROPOSED SURFACE AREA = 5,565 SF @ ELEVATION 323.00

SEE GRADES ON PLAN FROM BOTTOM 320' TO 324' INSIDE BASIN

MATCHLINE SEE SHEET 13-A

CROWN CASTLE GT COMPANY LLC
PIN: 1754533467
ZONED: RR1
VACANT

EXIST HOUSE TO BE REMOVED

SEE INSET 1 SHEET IMP FOR IMPACT INFORMATION

N 88°14'33" W 136.47'

COMBINATION TREE AND SILT FENCE (TYP.)

N/F CAROLYN SCHATZ PIN:1754536281 D.B. 15871, PG. 1216 ZONE GRB < 10 AC RESIDENTIAL

N/F CAROLYN SCHATZ PIN:1754637168 D.B. 15871, PG. 1216 ZONE GRB VACANT

N 31°43'36" W 220.22'

50' BUFFER FROM TOP OF BANK

N/F DWIGHT HIGH PIN:1754538007 D.B. 12378, PG. 1155 ZONE GRB < 10 AC RESIDENTIAL

JUTSON STREET

DALE PLACE

N 11°14'24" W 116.63'

N/F JOANNE DENNIS PIN:1754528935 D.B. 17015, PG. 2134 ZONE GRB < 10 AC RESIDENTIAL

N 11°31'38" W 170.16'

N/F MAOLA JONES PIN:1754528863 D.B. 4657, PG. 5 ZONE GRB < 10 AC RESIDENTIAL

129.32'

NC GRID (NAD83-2011)

WETLAND AREA APPROVED TO BE FILLED

WETLAND

WOODED

TEMPORARY DIVERSION DITCH 3 (SEE DETAIL)

HORSESHOE INLET PROTECTION (TYP)

B SKIMMER W/ BAFFLES

SB#2

SKIMMER

ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

~24 lf 12" CPP SLOPE DRAIN WITH 5' x 15" x 18" CLASS "B" RIPRAP DISSIPATOR

HORSESHOE INLET PROTECTION

15 x 15 FILTER BAG

15 x 15 FILTER BAG ATOP AN AREA OF 20' x 20' OF 8" #57 STONE ATOP DRAINAGE GEOTEXTILE FABRIC (TYP)

DISSIPATOR 5'-0" x 15'-0" x 4' CLASS "B" STONE SEE DETAIL SHEET

TEMPORARY DIVERSION DITCH 4 (SEE DETAIL)

VEHICLE CROSSING AREA ALONG TEMP. DIVERSION DITCH SEE DETAIL ON SHEET 40. AT END OF EACH DAY, MAINTAIN DIVERSION DITCH TO ENSURE SEDIMENT LADEN RUNOFF IS DIVERTED INTO SEDIMENT BASIN.

SILT FENCE OUTLET EVERY 100' (TYP.)

COMBINATION TREE AND SILT FENCE (TYP.)

SILT FENCE (TYP.)

ROCK CHECK DAM (TYP)

EX. RCP

ROCK CHECK DAM (TYP)

C6

TEMPORARY DIVERSION DITCH 5 (SEE DETAIL)

VEHICLE CROSSING AREA ALONG TEMP. DIVERSION DITCH SEE DETAIL ON SHEET 40. AT END OF EACH DAY, MAINTAIN DIVERSION DITCH TO ENSURE SEDIMENT LADEN RUNOFF IS DIVERTED INTO SEDIMENT BASIN.

ROCK CHECK DAM (TYP)

SILT FENCE (TYP.)

ROCK CHECK DAM (TYP)

SILT FENCE (TYP.)

25' x 50' x 12" RIP RAP CONSTRUTION ENTRANCE. SEE DETIAL SHEET

TEMPORARY DIVERSION DITCH 1 (SEE DETAIL)

C4

C5

SILT FENCE (TYP.)

36"RCP=301.93'

36"RCP=300.93'

18"RCP=295.43'

18"RCP=295.14'

S 34°40'40" W 223.43'

ROBERTSON STREET/S.R.2500
60' PUBLIC R/W
B.M. 1994, PG. 445

NOTE:
EXACT LOCATION OF THE MULCH PATH TO BE DETERMINED IN THE FIELD TO AVOID ANY TREE REMOVAL IN ZONE 1 OF NEUSE RIVER BUFFER

WAYNE L. HARPER
EUGENE J. HARPER
PIN: 1754621854
ZONED: RR1
VACANT

POTENTIAL FUTURE EXTENTION (BY OTHERS)

TOWN OF KNIGHTDALE
PIN: 1754528603
ZONED: OSP
EXEMPT

CHARLES R. HARPER
JOHN SCOTT HARPER
PIN: 1754519021
ZONED: RT
AGRICULTURE USE

CHARLES R. HARPER
JOHN SCOTT HARPER
PIN: 1754607948
ZONED: RT
AGRICULTURE USE

DENUDED AREA = 21.8 AC.

LEGEND:
- CF — COMBINATION SILT FENCE TREE PROTECTION FENCE
- TF — TREE PROTECTION FENCE
- SF — SILT FENCE
- TEMPOARY DIVERSION
- SFO — SILT FENCE OUTLET
- 298 — PROPOSED GRADE
- ROCK CHECK DAM
- HORSESHOE INLET PROTECTION

LEGEND
- W — EXISTING WATER LINE
- SS — EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EX. WATER VALVE
- EXISTING POWER POLE
- EXISTING FIBER OPTIC MARKER
- EXISTING TELEPHONE PEDESTAL
- FOH — EXISTING FIBER OPTIC BOX
- EXSS — EXISTING FORCEMAIN
- OU — EXISTING OVERHEAD UTILITY
- UT — EXISTING UNDERGROUND UTILITY

ALL WORK AND MATERIALS SHALL BE AS PER TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT. EROSION CONTROL SHALL BE AS PER TOWN OF KNIGHTDALE EROSION CONTROL STANDARDS.

GENERAL PROJECT NOTES:

ALL WORK AND MATERIALS SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE AND TOWN OF KNIGHTDALE SEDIMENT AND EROSION CONTROL ORDINANCE.

CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE & ITS EROSION CONTROL ORDINANCE TO REFER TO DURING CONSTRUCTION OF THE PROJECT.

CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES IN THE AREA PRIOR TO CONSTRUCTION AND COORDINATE RELOCATION, IF NEEDED, OF THESE UTILITIES WITH THE APPROPRIATE AUTHORITIES.

ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.

REQUIRED TOWN OF KNIGHTDALE SCM BASIN REMOVAL SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. CONTACT NCDEQ-RALEIGH REGIONAL OFFICE (919) 791-4200 TO DETERMINE THE DIVISION OF ENERGY, MINERAL AND LAND RESOURCES CONTACT PERSON TO RECEIVE DEWATERING NOTIFICATIONS, AT LEAST 10 DAYS PRIOR TO BEGINNING DEWATERING ACTIVITY, SEND EMAIL TO NCDEQ-DEMLR CONTACT PERSON AND COPY ENVIRONMENTAL CONSULTANT THAT MET YOU ONSITE. THE EMAIL SHOULD INCLUDE EARC JURISDICTION: WAKE COUNTY, WAKE COUNTY PROJECT: NAME, NUMBER, AND LOCATION (CITY/TOWN), ENVIRONMENTAL CONSULTANT NAME, AND ADDRESS THE FOLLOWING: a) REASON FOR DEWATERING METHOD, AND d) ALL OTHER NECESSARY INFO FROM PART II, SECTION G, ITEM 4 OF THE NCG01. (KEEP EMAIL FOR YOUR NPDES MONITORING DOCUMENTATION.
3. AFTER RECEIVING POSITIVE CONFIRMATION FROM NCDEQ-DEMLR THAT YOU MAY REMOVE THE BASIN OR ON >DAY 11, WHICHEVER IS SOONER, REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPERATION FOR SEEDING.
4. PERFORM SEEDBED PREPERATION, SEED, MULCH, AND ANCHOR ANY RESULTING BARE AREAS IMMEDIATELY USING NON-CLUMPING TURF GRASS (CENTIPEDE/HYBRID BERMUDA).
5. INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
6. WHEN SITE IS FULLY STABILIZED, CALL EROSION CONTROL INSPECTOR FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION. NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE EROSION CONTROL INSPECTOR AND STORMWATER TECHNICIAN TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE.

TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE:

1. SCHEDULE AN INITIAL PRE-CONSTRUCTION CONFERENCE WITH THE TOWN OF KNIGHTDALE. OBTAIN A LAND DISTURBANCE PERMIT.
2. INSTALL ALL PERIMETER CONTROLS AS SHOWN ON APPROVED PLANS. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. CLEARING SHOULD BE LIMITED TO A MAXIMUM 35' "RIBBION" AROUND PERIMETER TO INSTALL CONTROLS. NO GRADING OR EXCAVATION SHOULD OCCUR.
3. SCHEDULE ON SITE PRECONSTRUCTION MEETING WITH THE TOWN OF KNIGHTDALE TO INSPECT THE INSTALLED PERIMETER CONTROLS.
4. IF APPROVED, PROCEED WITH INSTALLING OF THE TEMPORARY STREAM CROSSINGS AS SHOWN ON THE APPROVED PLANS. PLEASE REFER TO DETAIL ON SHEET 39 FOR TEMPORARY STREAM CROSSSING. CONTRACTOR SHALL INSTALL TEMP. STREAM CROSSING DURING A PERIOD OF TWO CONSECUTIVE DRY DAYS. SEE ADDITIONAL SEQUENCE FOR TEMPORARY STREAM CROSSING THIS SHEET. ONLY DISTRUB AREA NEEDED FOR TEMPORARY CROSSINGS.
5. AFTER TEMPORARY STREAM CROSSING INSTALLTIONS, PROCEED WITH INSTALLING GRAVEL CONSTRUCTION PAD, TEMP. DIVERSIONS, SILT FENCE, COMBINATION FENCE, SILT FENCE OUTLETS, ROCK CHECK DAMS, SEDIMENT BASINS, AND ALL OTHER EROSION CONTROL DEVICES AS SHOWN ON APPROVED PLANS. CLEAR ONLY AS NEEDED TO INSTALL THESE DEVICES. SEED ALL TEMP. DIVERSIONS, BERMS, AND SEDIMENT BASINS IMMEDIATELY AFTER CONSTRUCTION.
6. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ON SITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
7. INTIAL TEMP. VEHICLE CROSSINGS ALONG TEMP. DIVERSION DITCHES AS SHOWN ON PLANS. REFER TO DETAIL ON SHEET 40 FOR INFORMATION ON CROSSINGS AT TEMP. DIVERSION DITCHES. MAINTAIN CROSSINGS IN DIVERSION DITCHES AS NEEDED. AT THE END OF EACH WORK DAY, RE-ESTABLISH DIVERSION AS NEEDED TO ENSURE POSITIVE FLOW TO A SEDIMENT BASIN.
8. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE. ENSURE COMPLIANCE WITH ALL APPROVED IMPACT AND CROSSING PERMITS.
9. MAINTAIN ALL TEMP. EROSION CONTROL DEVICES AS REQUIRED AND CHECK AFTER EACH RAIN EVENT. ENSURE ALL SEDIMENT LADEN RUNOFF IS DIRECTED INTO A SEDIMENT BASIN.
10. SEE SHEET 14 FOR ADDITIONAL SEQUENCE AND EROSION CONTROL MEASURES.

SEQUENCE FOR INSTALLATION, MAINTENANCE AND REMOVAL OF TEMP. STREAM CROSSING PIPES:

1. AFTER APPROVED PERMIT, PRE-CONSTRUCTION MEETING -- CLEAR AREA AS NEEDED FOR PLACEMENT OF PIPES FOR TEMPORARY STREAM CROSSING. CONTRACTOR SHALL INSTALL TEMPORARY STREAM CROSSING DURING A PERIOD OF TWO CONSECUTIVE DRY DAYS.
2. DIVERT ALL SURFACE WATER AWAY FROM INSTALLATION AREA ONTO UNDISTURBED AREAS NEXT TO THE STREAM.
3. PLACE PIPE IN STONE PIPE AT DESIRED LOCATION WITH THE APPROPRIATE LENGTH ALONG THE FLOW LINE AND WITHIN THE EXISTING STREAM CHANNEL. KEEP CROSSING AT A RIGHT ANGLE TO STREAM FLOW. MAINTAIN EXISTING FLOW AS NEEDED/REQUIRED TO INSTALL THESE MEASURES.
4. PLACE EARTH FILL, LARGE ANGULAR ROCK, COARSE AGGREGATE, AND FILTER FABRIC OVER AND ACROSS TEMPORARY CROSSING AREA AS PER STANDARD DETAIL ON SHEET 39.
5. MAINTAIN TEMPORARY CROSSINGS AS NEEDED DURING THE INITIAL CLEARING AND GRUBBING OF THE SITE. INSPECT THE SITE FOR EROSION, SILTATION, STONE LOSS AND MAINTAIN AS NEEDED. INSPECT AFTER RAIN EVENTS FOR NEEDED BLOCKAGES, RIP RAP DISPLACEMENT, ETC. AS NEEDED. MAKE ALL REPAIRS IMMEDIATELY TO PREVENT FURTHER DAMAGE TO THE INSTALLATION.
6. AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE TEMP. 18" HDPE. PREPARE AREA FOR PLACEMENT OF PERMANENT RCP DRAINAGE. PLACE RCP STORM DRAINAGE AS PER APPROVED PLANS. REFER TO SHEET 14 FOR SEQUENCE & INFORMATION ON THE PLACEMENT OF THE PERMANENT RCP STORM DRAINAGE.

NOTES ON TREE PROTECTION FENCE:
TREE PROTECTION FENCE TO BE PLACED ON ITS OWN STAKED LINE AND SUPPORTS. TREE PROTECTION FENCE SHALL NOT BE ON SAME STAKED LINE AND SUPPORTS WITH SILT FENCING.
FOLLOWING PLAN APPROVAL, PLEASE CONTACT THE TOWN OF KNIGHTDALE SEDIMENTATION AND EROSION CONTROL AT 919-217-2255 FOR REVIEW AND APPROVAL OF THE SOIL EROSION AND SEDIMENT PLAN. APPROVAL OF THE PLAN BY THE TOWN OF KNIGHTDALE IS CONTINGENT ON A LETTER FROM THE TOWN STATING THAT THE REQUIRED TREE PROTECTION FENCING HAS BEEN INSTALLED, INSPECTED, AND APPROVED BY THE SEDIMENT AND EROSION CONTROL DEPARTMENT. A "CERTIFICATE OF COMPLIANCE" FROM THE TOWN, FOR THIS PROJECT, IS REQUIRED PRIOR TO RECEIVING A BUILDING PERMIT.

GROUND STABILIZATION REQUIRED WITHIN 7 DAYS FOR PERIMETER AREAS AND FOR SLOPES GREATER THAN 3:1. ALL OTHER AREAS IT IS REQUIRED WITHIN 14 DAYS OF ANY PHASE OF GRADING.

OFFSITE SPOIL NOTE:
IF AN OFFSITE SPOIL OR BORROW SITE IS UTILIZED, THEN THE DISTURBED AREA FOR THE SPOIL/BORROW AREA SHALL BE INCLUIED/ADDED INTO THE LAND DISTURBANCE PLAN AND PERMIT UNLESS THE SPOIL/BORROW SITE ALREADY HAS A SEPARATE LAND DISTURBANCE PERMIT.

EROSION CONTROL NOTES

ALL TOWN OF KNIGHTDALE EROSION CONTROL ORDINANCES SHALL BE CONFORMED TO DURING CONSTRUCTION.
PLACEMENT, LOCATION AND QUANTITY OF EROSION CONTROL DEVICES AND DRAINAGE STRUCTURES MAY ALTER TO BETTER CONFORM TO EXISTING FIELD CONDITIONS IF APPROVED BY THE ENVIRONMENTAL INSPECTOR OF THE TOWN OF KNIGHTDALE.
CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES (ABOVE AND BELOW GROUND) PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITY CONFLICTS WITH THE APPROPRIATE UTILITY AUTHORITY.

TEMP SED BASIN SB #2	DIMENSIONS	ELEV.
EMERGENCY SPILLWAY	10'	305.00
TOP OF DAM WIDTH	9'	316.00
ANTI-SEEP COLLAR	MID ELEV. PERM POOL 4' x 4' 309.00 EXPOSED TOP ELEV. 312.00	
RIP RAP DISSIPATER PAD	14' W x 20' L x 2' DEEP	
OUTLET PIPE INVERT IN	12" RCP	297.50
OUTLET PIPE INVERT OUT	12" RCP	297.00
SEDIMENT STORAGE AREA	SEE GRADES	304.00



SEDIMENT BASIN WILL HAVE 12" SLOPE DRAIN ENTERING INTO BASIN. SEE THIS SHEET FOR ~LOCATION AND ~LENGTH. ALSO SEE STANDARD DETAIL ON SHHET 39 FOR ADDITIONAL INFORMATION. OUTLET END OF SLOPE DRAIN TO HAVE A RIPRAP DISSIPATOR (5' x 15' x 18" – CLASS B STONE)

ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

SKIMMER SIZES
RESULTING DEWATERING TIME IS 3 DAYS
SB#2 – SKIMMER SIZE = 5" WITH A 4.3" ORIFICE DIA.

SEDIMENT BASIN WITH SKIMMER AND BAFFLES – SB#2

TEMP SED BASIN SB#4	DIMENSIONS	ELEV.
EMERGENCY SPILLWAY	10'	315.00
TOP OF DAM WIDTH	9'	318.00
ANTI-SEEP COLLAR	MID ELEV. PERM POOL 4' x 4' 309.00 EXPOSED TOP ELEV. 312.00	
RIP RAP DISSIPATER PAD	14' W x 20' L x 2' DEEP	
OUTLET PIPE INVERT IN	6" CMP	310.00
OUTLET PIPE INVERT OUT	6" CMP	309.00
SEDIMENT STORAGE AREA	SEE GRADES	314.00



SEDIMENT BASIN WILL HAVE 12" SLOPE DRAIN ENTERING INTO BASIN. SEE THIS SHEET FOR ~LOCATION AND ~LENGTH. ALSO SEE STANDARD DETAIL ON SHHET 39 FOR ADDITIONAL INFORMATION. OUTLET END OF SLOPE DRAIN TO HAVE A RIPRAP DISSIPATOR (5' x 15' x 18" – CLASS B STONE)

ALONG SIDE SLOPE OF SED. BASIN PLACE ROLL MAX ERONET S150 DOUBLE NET STRAW BLANKET OR EQUAL (TYP. ALL BASINS)

SKIMMER SIZES
RESULTING DEWATERING TIME IS 3 DAYS
SB#4 – SKIMMER SIZE = 3.4" WITH A 3.4" ORIFICE DIA.

SEDIMENT BASIN WITH SKIMMER AND BAFFLES – SB#4

SKIMMER SEDIMENT BASIN #2:

=> Rainfall Intensity for 10 Year 5 Minute Storm = I = 7.2 in./hr.
=> Q = C x I x A = 0.7 x 7.2 in/hr x 3.4 ac. = 17.14 cfs

MINIMUM STORAGE CAPACITY:
1,800 cf/acre x drainage area = 1,800 cf/ac x 3.4 ac = 6,120 cf

PROPOSED STORAGE CAPACITY:
Volume (cf) = surface area (sq.ft.) x max. pool depth (ft.)
Volume (cf) @ 304' = 71,380 cf

MINIMUM REQUIRED SURFACE AREA:
435 sf x 17.14 cfs = 7,455.90 sf

PROPOSED SURFACE AREA = 15,916 SF @ ELEVATION 304.00
BASIN SIZE: SEE GRADES ON PLAN FROM BOTTOM 297' TO 304' INSIDE BASIN

SKIMMER SEDIMENT BASIN #4:

=> Rainfall Intensity for 10 Year 5 Minute Storm = I = 7.2 in./hr.
=> Q = C x I x A = 0.7 x 7.2 in/hr x 2.9 ac. = 14.62 cfs

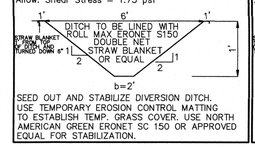
MINIMUM STORAGE CAPACITY:
1,800 cf/acre x drainage area = 1,800 cf/ac x 2.9 ac = 5,220 cf

PROPOSED STORAGE CAPACITY:
Volume (cf) = surface area (sq.ft.) x max. pool depth (ft.)
Volume (cf) @ 314' = 42,516 cf

MINIMUM REQUIRED SURFACE AREA:
435 sf x 14.62 cfs = 6,659.7 sf

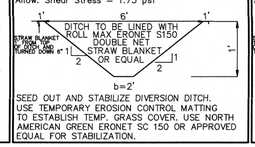
PROPOSED SURFACE AREA = 13,222 SF @ ELEVATION 314.00
BASIN SIZE: SEE GRADES ON PLAN FROM BOTTOM 310' TO 314' INSIDE BASIN

TEMPORARY DIVERSION DITCH 3
LENGTH ~229 LF.
DA = 1.06 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 1.06 AC = 5.34 CFS
V10= 6.01 fps
D10 = 0.33'
Slope = 3.4%
n = 0.018
Shear Stress = 0.70 psf
Allow. Shear Stress = 1.75 psf



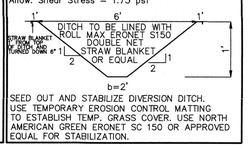
SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

TEMPORARY DIVERSION DITCH 4
LENGTH ~526 LF.
DA = 1.37 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 1.37 AC = 6.90 CFS
V10= 5.51 fps
D10 = 0.44'
Slope = 2.1%
n = 0.018
Shear Stress = 0.58 psf
Allow. Shear Stress = 1.75 psf



SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

TEMPORARY DIVERSION DITCH 5
LENGTH ~470 LF.
DA = 0.70 AC.
WEIGHTED "C" = 0.70
Time of Concentration = 5 minutes
Q10 = 0.70 x 7.2 IN/HR x 0.70 AC = 3.53 CFS
V10= 2.99 fps
D10 = 0.42'
Slope = 0.64%
n = 0.018
Shear Stress = 0.17 psf
Allow. Shear Stress = 1.75 psf



SEED OUT AND STABILIZE DIVERSION DITCH. USE TEMPORARY EROSION CONTROL MATTING TO ESTABLISH TEMP. GRASS COVER. USE NORTH AMERICAN GREEN ERONET SC 150 OR APPROVED EQUAL FOR STABILIZATION.

PLANS TO CLEAR AND GRUB SITE AREAS ONCE IMPACTS PERMITS ARE OBTAINED TO ALLOW WORK IN AREA OF PERMITTED BUFFER IMPACTS, PERMITTED WETLAND IMPACTS, AND PERMITTED STREAM CROSSINGS.

NOTE:
PLAN WILL BE SUBJECT TO NCDEMLR SELF-INSPECTION PROGRAM. AN EROSION CONTROL INSPECTION WILL BE CONDUCTED AFTER EACH PHASE OF GRADING AND THE INSPECTION DOCUMENTED IN WRITING. IT IS RECOMMENDED THAT THE CONTRACTOR UTILIZE THE NCDLQ/NCDWR JOINT SELF-INSPECTION FORM.

GRADING NOTES:
PRIOR TO GRADING, A GRADING AND EROSION CONTROL PLAN SHALL BE FILED WITH APPROPRIATE AGENCY.
A GRADING PERMIT SHALL BE OBTAINED AS REQUIRED.
ALL GRADING AND EROSION CONTROL REQUIREMENTS OF THE SOIL AND EROSION CONTROL ORDINANCE OF THE GOVERNING AGENCY SHALL BE COMPLIED WITH.

0 40 80 120

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L MILLER
12/15/25

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

CONSTRUCTION PLANS SHEET 13-B
INITIAL EROSION CONTROL PLANS
WITH APPROVED CROSSING AND IMPACT PERMITS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
C-0343
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA

OWNER: TCTBM, LLC		ZONED PUD
DATE: 3-11-22	DRAWN MTH	JOB NO. 20-
SCALE 1" = 40	SURVEYED-OTHERS	DWG COLLECTION-EXCOND

REVISIONS:7/14/22;8/24/22;1/12/23 2/17/23;3/9/23;5/21/25;12/15/25
PIN: SEE SITE DATA TABLE

SEQUENCE FOR PERMANENT STREAM CROSSING WITH X-PIPE 1 AND X-PIPE 2 WITH PUMP AROUND.

AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE THE TEMP. 18" HDPE. SEE SHEETS 13, 13A, AND 13B FOR SEQUENCE ON THE REMOVAL OF THE TEMP. 18" HDPE. BEGIN PREPARATION FOR PERMANENT RCP DRAINAGE INSTALLATION:

1. Install upstream dam structure, consisting of sand bags wrapped in plastic sheeting with rock, at the location shown on the approved plans.
2. Place appropriately sized pump at a location that allows the pump intake to be placed in the pool above the upstream dam area.
3. Intake to be suspended above the bottom of the stream bed, with a mesh screen over the hose inlet.
4. Install the downstream dam structure, consisting of sand bags wrapped in plastic with rock, at the the location shown on the approved plans.
5. Install velocity dissipation device at the downstream end of the pumping unit.
6. Once pump is transporting the stream flow, begin in-stream construction activities.
7. Prepare bottom of pipe crossing as required per approved crossing plan with pipe inlet and outlet trenches, pipe installation, backfilling.
8. Install pipe crossing as per approved plan with pipe installation, fill, and headwalls.
9. Inspect permanent crossing periodically and after each rain event to check blockage, erosion, scour, slope failure, and riprap displacement. Make all repairs immediately to prevent further damage to installation.
10. Once in-stream construction activities are complete, permanently stabilize stream bottom and banks prior to returning flow to the channel. Install dissipator and place matting, seeding, and mulch to establish a re-vegetative surface along banks and along disturbed areas next to stream. During the remaining construction project, provide measures needed to divert runoff from areas along stream that are being re-vegetated.
11. Remove the downstream dam structure first, followed by upstream dam structure. Shut off/remove pumps.
12. Each waterbody crossing is treated as a specialized separate construction activity, such that trenching, pipe installation, backfilling, and permanent stabilization are completed in as few calendar days as possible and in no event greater than an extended dry period of 5 days.

SEQUENCE FOR PERMANENT STREAM CROSSING WITH X-PIPE 1 AND X-PIPE 2 WITH PUMP AROUND.

AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE THE TEMP. 18" HDPE. SEE SHEETS 13, 13A, AND 13B FOR SEQUENCE ON THE REMOVAL OF THE TEMP. 18" HDPE. BEGIN PREPARATION FOR PERMANENT RCP DRAINAGE INSTALLATION:

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12. Each waterbody crossing is treated as a specialized separate construction activity, such that trenching, pipe installation, backfilling, and permanent stabilization are completed in as few calendar days as possible and in no event greater than an extended dry period of 5 days.

NOTE:
- ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

LEGEND:
- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TF — TREE PROTECTION FENCE
- RETAINING WALL
- CF — COMBINATION SILT FENCE TREE PROTECTION FENCE
- SF — SILT FENCE
- SFO SILT FENCE OUTLET
- ROCK CHECK DAM
- GRAVEL INLET PROTECTION

FOR PIPE AND STRUCTURE SCHEDULES SEE SHEET 6

FOR SCM #1, 2, & 3 INFORMATION SEE SHEETS 8, 9, & 10

FOR PRE DEVELOPMENT DRAINAGE SEE SHEET 11

FOR POST DEVELOPMENT DRAINAGE SEE SHEET 12

FOR INITIAL EROSION CONTROL SEE SHEET 13

EROSION CONTROL NOTES:

ALL TOWN OF KNIGHTDALE EROSION CONTROL ORDINANCES SHALL BE CONFORMED TO DURING CONSTRUCTION.
ALL DRAINAGE STRUCTURES AND PIPES SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
PLACEMENT, LOCATION AND QUANTITY OF EROSION CONTROL DEVICES AND DRAINAGE STRUCTURES MAY ALTER TO BETTER CONFORM TO EXISTING FIELD CONDITIONS IF APPROVED BY THE ENVIRONMENTAL INSPECTOR OF THE TOWN OF KNIGHTDALE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
CONTRACTOR SHALL VERIFY THE LOCATION AF ALL EXISTING UTILITIES (ABOVE AND BELOW GROUND) PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITY CONFLICTS WITH THE APPROPRIATE UTILITY AUTHORITY.

GENERAL PROJECT NOTES:

CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE AND THE CITY OF RALEIGH TO REFER TO DURING CONSTRUCTION OF THE PROJECT.

CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES IN THE AREA PRIOR TO CONSTRUCTION AND COORDINATE RELOCATION, IF NEEDED, OF THESE UTILITIES WITH THE APPROPRIATE AUTHORITIES.

ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.

NOTE ON RETAINING WALLS:

RETAINING WALLS TO BE DESIGNED BY OTHERS
RETAINING WALLS TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS
RETAINING WALLS TO BE AS PER ALL STANDARDS OF INSTALLATION AS OUTLINED BY MANUFACTURER
RETAINING WALLS WILL BE POURED IN PLACED REINFORCED CONCRETE WALLS (NO GEO GRID)
CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVALS FOR RETAINING WALL INSTALLATION

OFFSITE SPOIL NOTE:
IF AN OFFSITE SPOIL OR BORROW SITE IS UTILIZED, THEN THE DISTURBED AREA FOR THE SPOIL/BORROW AREA SHALL BE INCLUED/ADDED INTO THE LAND DISTURBANCE PLAN AND PERMIT UNLESS THE SPOIL/BORROW SITE ALREADY HAS A SEPARATE LAND DISTURBANCE PERMIT.

GROUND STABILIZATION REQUIRED WITHIN 7 DAYS FOR PERIMETER AREAS AND FOR SLOPES GREATER THAN 3:1. ALL OTHER AREAS IT IS REQUIRED WITHIN 14 DAYS OF ANY PHASE OF GRADING.

GRADING NOTES:

PRIOR TO GRADING, A GRADING AND EROSION CONTROL PLAN SHALL BE FILED WITH APROPRIATE AGENCY.
A GRADING PERMIT SHALL BE OBTAINED AS REQUIRED.
ALL GRADING AND EROSION CONTROL REQUIREMENTS OF THE SOIL AND EROSION CONTROL ORDINANCE OF THE GOVERNING AGENCY SHALL BE COMPLIED WITH.

LOCATION, PLACEMENT, AND/OR QUANTITY OF EROSION CONTROL MATERIALS AND/OR DEVICES MAY VARY TO BETTER CONFORM TO FIELD CONDITIONS.

NOTE ON INSPECTIONS:
PROJECT WILL BE SUBJECT TO THE NORTH CAROLINA DIVISION OF LAND RESOURCES SELF INSPECTION PROGRAM. AN EROSION CONTROL INSPECTION WILL BE PREFORMED AFTER EACH PHASE OF GRADING AND THE INSPECTION SHALL BE DOCUMENTED IN WRITING. IT IS RECOMMENDED THAT THE NCDEMLR JOINT INSPECTION FORM BE UTILIZED FOR THIS AND THE REQUIRED NPDES INSPECTIONS.

TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE:

10. SEE SHEETS 13, 13A, AND 13B FOR INITIAL SEQUENCE AND INSTALLATIONS.
11. AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE TEMP. 18" HDPE CROSSINGS. PREPARE AREA FOR PLACEMENT OF PERMANENT RCP DRAINAGE. SEE THIS SHEET FOR SEQUENCE AND INFORMATION ON THE PLACEMENT OF THE PERMANENT RCP STORM DRAINAGE.
12. AFTER PERMANENT RCP CROSSINGS ARE IN PLACE AS SHOWN ON APPROVED PLANS, ENSURE DISTURBED AREAS AROUND PERMANENT CROSSINGS ARE STABILIZED AND SURROUNDING AREAS ARE DIVERTED INTO SEDIEMNT BASINS. MAINTAIN THESE DIVERSIONS DURING CONSTRUCTION.
13. CONTINUE TO GRADE SITE AS REQUIRED AND SHOWN ON APPROVED PLANS. MAINTAIN DIVERSIONS INTO SEDIMENT BASINS DURING GRADING. AS SITE IS GRADED, INSTALL STROM DRAINAGE AS REQUIRED AND SHOWN ON APPROVED PLANS.
14. PROTECT INLETS WITH BLOCK AND GRAVEL CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED. MEASURES AS SHOWN ON THE APPROVED PLANS.
15. BEGIN SITE CONSTRUCTION FOR GRADING SITE FOR ROADWAYS AND BUILDING PAD CONSTRUCTION.
16. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
17. FINISH GRADING SITE FOR ALL ROADWAYS, UTILITIES, AND IMPROVEMENTS AS PER APPROVED PLANS. STABILIZE FINISHED AREAS AS REQUIRED AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED.
18. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL EROSION CONTROL INSPECTOR FOR AN INSPECTION.
19. IF THE SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC. AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS SHOULD NOW BE INSTALLED.
20. WHEN VEGETATION HAS BECOME ESTABLISHED (90% GERMINATION), CALL FOR A FINAL INSPECTION BY THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATE OF COMPLETION.
21. WHEN APPROVED, BEGIN TO REMOVE SEDIMENT BASINS #4 & #5. DEWATER BASIN WITH FILTER BAG AS PER STANDARD FILTER BAG FOR DEWATERING ACTIVITIES. SEE DETAIL SHEET FOR FILTER BAG DETAILS. SEE SCM BASIN REMOVAL SEQUENCE ON THIS SHEET FOR MORE INFORMATION ON REMOVAL. REMOVE SEDIMENT AS NEEDED AND DISPOSE OF PROPERLY ON SITE. FILL BASIN AREAS AS REQUIRED. SEED AND STABILIZE ALL DISTURBED AREAS.
22. WHEN APPROVED, BEGIN TO CONVERT SEDIMENT BASINS #1-#3 TO PERMANENT SCM's. DEWATER BASINS WITH FILTER BAG AS PER STANDARD FILTER BAG FOR DEWATERING ACTIVITIES. SEE DETAIL SHEET FOR FILTER BAG DETAILS. SEE SCM BASIN REMOVAL SEQUENCE ON THIS SHEET FOR MORE ON REMOVAL. REMOVE SEDIMENT AS NEEDED AND DISPOSE OF PROPERLY ON SITE. RE-SHAPE AND GRADE AREAS FOR FINAL SCM SHAPE. INSTALL RISERS AND PIPES FOR ALL SCM's AS PER APPROVED PLANS. SEED AND STABILIZE ALL DISTURBED AREAS.
23. WHEN VEGETATION HAS BEEN ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATION OF COMPLIANCE.

REQUIRED TOWN OF KNIGHTDALE SCM BASIN REMOVAL SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. CONTACT NCDEQ-RALEIGH REGIONAL OFFICE (919) 791-4200 TO DETERMINE THE DIVISION OF ENERGY, MINERAL AND LAND RESOURCES CONTACT PERSON TO RECEIVE DEWATERING NOTIFICATIONS. AT LEAST 10 DAYS PRIOR TO BEGINNING DEWATERING ACTIVITY, SEND EMAIL TO NCDEQ-DEMLR CONTACT PERSON AND COPY ENVIRONMENTAL CONSULTANT THAT MET YOU ONSITE. THE EMAIL SHOULD INCLUDE E&SC JURISDICTION: WAKE COUNTY, WAKE COUNTY PROJECT: NAME, NUMBER, AND LOCATION (CITY/TOWN), ENVIRONMENTAL CONSULTANT NAME, AND ADDRESS THE FOLLOWING: a) REASON FOR CONVERSION b) BASIN #, c) DEWATERING METHOD, AND d) ALL OTHER NECESSARY INFO FROM PART II, SECTION G, ITEM 4 OF THE NCG01. (KEEP EMAIL FOR YOUR NPDES MONITORING DOCUMENTATION.
3. AFTER RECEIVING POSITIVE CONFIRMATION FROM NCDEQ-DEMLR THAT YOU MAY REMOVE THE BASIN OR ON >DAY 11, WHICHEVER IS SOONER, REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPERATION FOR SEEDING.
4. PERFORM SEEDBED PREPERATION, SEED, MULCH, AND ANCHOR ANY RESULTING BARE AREAS IMMEDIATELY USING NON-CLUMPING TURF GRASS (CENTIPEDE/HYBRID BERMUDA).
5. INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
6. WHEN SITE IS FULLY STABILIZED, CALL EROSION CONTROL INSPECTOR FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION. NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE EROSION CONTROL INSPECTOR AND STORMWATER TECHNICIAN TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE.

ENERGY DISSIPATOR SCHEDULE

DISSIPATOR NUMBER	OUTLET PIPE	VOS (TPS)	'LS' (FT.)	'W' (FT.)	D50 STONE SIZE (IN.)	MIN. LINING THICK. (IN.)	APRON MATERIAL
D1	E1	4.20	8	6	6	12	CLASS 'B' STONE
D2	X-PIPE 1	8.86	24	9	13	18	CLASS 'B' STONE
D3	X-PIPE 2	9.95	16	6	13	18	CLASS 'B' STONE

USE SPECIFIED STONE FOR EROSION CONTROL
PLACE DISSIPATOR AS PER DETAIL SHOWN ON DETAIL SHEET WITH REQUIRED UNDERLINER

NOTES:

ALL SHOWN INFORMATION FROM A SURVEY BY THE JOHN R. MCADAMS COMPANY, INC. AND APPROVED KNIGHTDALE MASTER PLAN PROJECT #ZMA-6-19 DATED OCT 14, 2019 ALSO BY THE MCADAMS COMPANY

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2 ADDITIONAL R/W WILL BE DECICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

DENUDED AREA = 21.8 AC.

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

CONSTRUCTION PLANS ***SHEET 14***

PHASE 1 EROSION CONTROL PLAN – OVERALL VIEW
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA			
OWNER: TCTBM, LLC		ZONED PUD	
DATE: 3-11-22	DRAWN MTH	JOB NO. 20-	
SCALE 1" = 60	SURVEYED ----	DWG: COLLECTION-GRADE	
REVISIONS: 7/14/22;8/24/22;1/02/23 02/27/26 03/18/26		PIN: SEE SITE DATA TABLE	

NC GRID (NAD83-2011)

0 60 120 180

OPEN SPACE
TREE SAVE AREA
WETLAND

CONSTRUCTION PLANS
PHASE 1 EROSION CONTROL PLAN – ENLARGED PLAN A
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
FAX (919) 465-1585
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY		NORTH CAROLINA
OWNER: TCTBM, LLC		ZONED	PUD
DATE: 2-16-2021	DRAWN MTH	JOB NO.	20-
SCALE 1" = 40	SURVEYED ----	DWG:	COLLECTION-GRADE
REVISIONS: 7/14/22;8/24/22;1/12/23 02/27/26 03/18/26		PIN:	SEE SITE DATA TABLE

0 40 80 120

OPEN SPACE

TREE SAVE AREA

WETLAND

LEGEND:

- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TF TREE PROTECTION FENCE
- RETAINING WALL
- CF COMBINATION SILT FENCE TREE PROTECTION FENCE
- SF SILT FENCE
- SFO SILT FENCE OUTLET
- ROCK CHECK DAM
- GRAVEL INLET PROTECTION

TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE:

10. SEE SHEETS 13, 13A, AND 13B FOR INITIAL SEQUENCE AND INSTALLATIONS.
11. AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE TEMP. 18" HDPE CROSSINGS. PREPARE AREA FOR PLACEMENT OF PERMANENT RCP DRAINAGE. SEE THIS SHEET FOR SEQUENCE AND INFORMATION ON THE PLACEMENT OF THE PERMANENT RCP STORM DRAINAGE.
12. AFTER PERMANENT RCP CROSSINGS ARE IN PLACE AS SHOWN ON APPROVED PLANS., ENSURE DISTURBED AREAS AROUND PERMANENT CROSSINGS ARE STABILIZED AND SURROUNDING AREAS ARE DIVERTED INTO SEDIEMNT BASINS. MAINTAIN THESE DIVERSIONS DURING CONSTRUCTION.
13. CONTINUE TO GRADE SITE AS REQUIRED AND SHOWN ON APPROVED PLANS. MAINTAIN DIVERSIONS INTO SEDIMENT BASINS DURING GRADING. AS SITE IS GRADED, INSTALL STROM DRAINAGE AS REQUIRED AND SHOWN ON APPROVED PLANS.
14. PROTECT INLETS WITH BLOCK AND GRAVEL CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED. MEASURES AS SHOWN ON THE APPROVED PLANS.
15. BEGIN SITE CONSTRUCTION FOR GRADING SITE FOR ROADWAYS AND BUILDING PAD CONSTRUCTION.
16. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LINING, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
17. FINISH GRADING SITE FOR ALL ROADWAYS, UTILITIES, AND IMPROVEMENTS AS PER APPROVED PLANS. STABILIZE FINISHED AREAS AS REQUIRED AND MAINTAIN EROSION CONTROL DEVICES AS REQUIRED.
18. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL EROSION CONTROL INSPECTOR FOR AN INSPECTION.
19. IF THE SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC. AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS SHOULD NOW BE INSTALLED.
20. WHEN VEGETATION HAS BECOME ESTABLISHED (90% GERMINATION), CALL FOR A FINAL INSPECTION BY THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATE OF COMPLETION.
21. WHEN APPROVED, BEGIN TO REMOVE SEDIMENT BASINS #4 & #5. DEWATER BASIN WITH FILTER BAG AS PER STANDARD FILTER BAG FOR DEWATERING ACTIVITIES. SEE DETAIL SHEET FOR FILTER BAG DETAILS. SEE SCM BASIN REMOVAL SEQUENCE ON THIS SHEET FOR MORE INFORMATION ON REMOVAL. REMOVE SEDIMENT AS NEEDED AND DISPOSE OF PROPERLY ON SITE. FILL BASIN AREAS AS REQUIRED, SEED AND STABILIZE ALL DISTURBED AREAS.
22. WHEN APPROVED, BEGIN TO CONVERT SEDIMENT BASINS #1–#3 TO PERMANENT SCM's. DEWATER BASINS WITH FILTER BAG AS PER STANDARD FILTER BAG FOR DEWATERING ACTIVITIES. SEE DETAIL SHEET FOR FILTER BAG DETAILS. SEE SCM BASIN REMOVAL SEQUENCE ON THIS SHEET FOR MORE ON REMOVAL. REMOVE SEDIMENT AS NEEDED AND DISPOSE OF PROPERLY ON SITE. RE-SHAPE POND AND GRADE AREAS FOR FINAL SCM SHAPE. INSTALL RISERS AND PIPES FOR ALL SCM's AS PER APPROVED PLANS. SEED AND STABILIZE ALL DISTURBED AREAS.
23. WHEN VEGETATION HAS BEEN ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATION OF COMPLIANCE.

SEQUENCE FOR PERMANENT STREAM CROSSING WITH X-PIPE 1 AND X-PIPE 2 WITH PUMP AROUND:

AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE THE TEMP. 18" HDPE. SEE SHEETS 13, 13A, AND 13B FOR SEQUENCE ON THE REMOVAL OF THE TEMP. 18" HDPE. BEGIN PREPARATION FOR PERMANENT RCP DRAINAGE INSTALLATION:

1. Install upstream dam structure, consisting of sand bags wrapped in plastic sheeting with rock, at the location shown on the approved plans.
2. Place appropriately sized pump at a location that allows the pump intake to be placed in the pool above the upstream dam area.
3. Intake to be suspended above the bottom of the stream bed, with a mesh screen over the hose inlet.
4. Install the downstream dam structure, consisting of sand bags wrapped in plastic with rock, at the the location shown on the approved plans.
5. Install velocity dissipation device at the downstream end of the pumping unit.
6. Once pumping is transporting the stream flow, begin in-stream construction activities.
7. Prepare bottom of pipe crossing as required per approved crossing plan with pipe inlet and outlet 1' below existing stream bottom.
8. Install pipe crossing as per approved plan with pipe installation, fill, and headwalls.
9. Inspect permanent crossing periodically and after each rain event to check blockage, erosion, scour, slope failure, and riprap displacement. Make all repairs immediately to prevent further damage to installation.
10. Once in-stream construction activities are complete, permanently stabilize stream bottom and banks prior to returning flow to the channel. Install dissipator and place matting, seeding, and mulch to estabslish a re-vegetative surface along banks and along disturbed areas next to stream. During the remaining construction project, provide measures needed to divert runoff from areas along stream that are being re-vegetated.
11. Remove the downstream dam structure first, followed by upstream dam structure. Shut off/remove pumps.
12. Each waterbody crossing is treated as a specialized separate construction activity, such that trenching, pipe installation, backfilling, and permanent stabilization are completed in as few calendar days as possible and in no event greater than an extended dry period of 5 days.

EROSION CONTROL NOTES

ALL TOWN OF KNIGHTDALE EROSION CONTROL ORDINANCES SHALL BE CONFORMED TO DURING CONSTRUCTION.
ALL DRAINAGE STRUCTURES AND PIPES SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
PLACEMENT, LOCATION AND QUANTITY OF EROSION CONTROL DEVICES AND DRAINAGE STRUCTURES MAY ALTER TO BETTER CONFORM TO EXISTING FIELD CONDITIONS IF APPROVED BY THE ENVIRONMENTAL INSPECTOR OF THE TOWN OF KNIGHTDALE.
CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
CONTRACTOR SHALL VERIFY THE LOCATION AF ALL EXISTING UTILITIES (ABOVE AND BELOW GROUND) PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITY CONFLICTS WITH THE APPROPRIATE UTILITY AUTHORITY.

NOTE ON INSPECTIONS:
PROJECT WILL BE SUBJECT TO THE NORTH CAROLINA DIVISION OF LAND RESOURCES SELF INSPECTION PROGRAM. AN EROSION CONTROL INSPECTION WILL BE PREFORMED AFTER EACH PHASE OF GRADING AND THE INSPECTION SHALL BE DOCUMENTED IN WRITING. IT IS RECOMMENDED THAT THE NCDEMLR JOINT INSPECTION FORM BE UTILIZED FOR THIS AND THE REQUIRED NPDES INSPECTIONS.

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

GENERAL PROJECT NOTES:

CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE AND THE CITY OF RALEIGH TO REFER TO DURING CONSTRUCTION OF THE PROJECT.

CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES IN THE AREA PRIOR TO CONSTRUCTION AND COORDINATE RELOCATION, IF NEEDED, OF THESE UTILITIES WITH THE APPROPRIATE AUTHORITIES.

ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.

NOTE ON RETAINING WALLS:
RETAINING WALLS TO BE DESIGNED BY OTHERS
RETAINING WALLS TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS
RETAINING WALLS TO BE AS PER ALL STANDARDS OF INSTALLATION AS OUTLINED BY MANUFACTURER
RETAINING WALLS WILL BE POURED IN PLACED REINFORCED CONCRETE WALLS (NO GEO GRID)
CONTRACTOR SHALL OBTAIN ALL PERMITS AND APPROVALS FOR RETAINING WALL INSTALLATION

ENERGY DISSIPATOR SCHEDULE

DISSIPATOR NUMBER	OUTLET PIPE	V25 (FPS)	La (FT.)	W (FT.)	D50 STONE SIZE (IN.)	MIN. LINING THICK. (IN.)	APRON MATERIAL
D1	F2	4.20	8	6	6	12	CLASS 'B' STONE
D2	X–PIPE 1	8.86	24	9	13	18	CLASS 'B' STONE
D3	X–PIPE 2	9.95	16	6	13	18	CLASS 'B' STONE

USE SPECIFIED STONE FOR EROSION CONTROL
PLACE DISSIPATOR AS PER DETAIL SHOWN ON DETAIL SHEET WITH REQUIRED UNDERLINER

OFFSITE SPOIL NOTE:
IF AN OFFSITE SPOIL OR BORROW SITE IS UTILIZED, THEN THE DISTURBED AREA FOR THE SPOIL/BORROW AREA SHALL BE INCLUED/ADDED INTO THE LAND DISTURBANCE PLAN AND PERMIT UNLESS THE SPOIL/BORROW SITE ALREADY HAS A SEPARATE LAND DISTURBANCE PERMIT.

GROUND STABILIZATION REQUIRED WITHIN 7 DAYS FOR PERIMETER AREAS AND FOR SLOPES GREATER THAN 3:1. ALL OTHER AREAS IT IS REQUIRED WITHIN 14 DAYS OF ANY PHASE OF GRADING.

GRADING NOTES:
PRIOR TO GRADING, A GRADING AND EROSION CONTROL PLAN SHALL BE FILED WITH APROPRIATE AGENCY.
A GRADING PERMIT SHALL BE OBTAINED AS REQUIRED.
ALL GRADING AND EROSION CONTROL REQUIREMENTS OF THE SPIL AND EROSION CONTROL ORDINANCE OF THE GOVERNING AGENCY SHALL BE COMPLIED WITH.

LOCATION, PLACEMENT, AND/OR QUANTITY OF EROSION CONTROL MATERIALS AND/OR DEVICES MAY VARY TO BETTER CONFORM TO FIELD CONDITIONS.

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

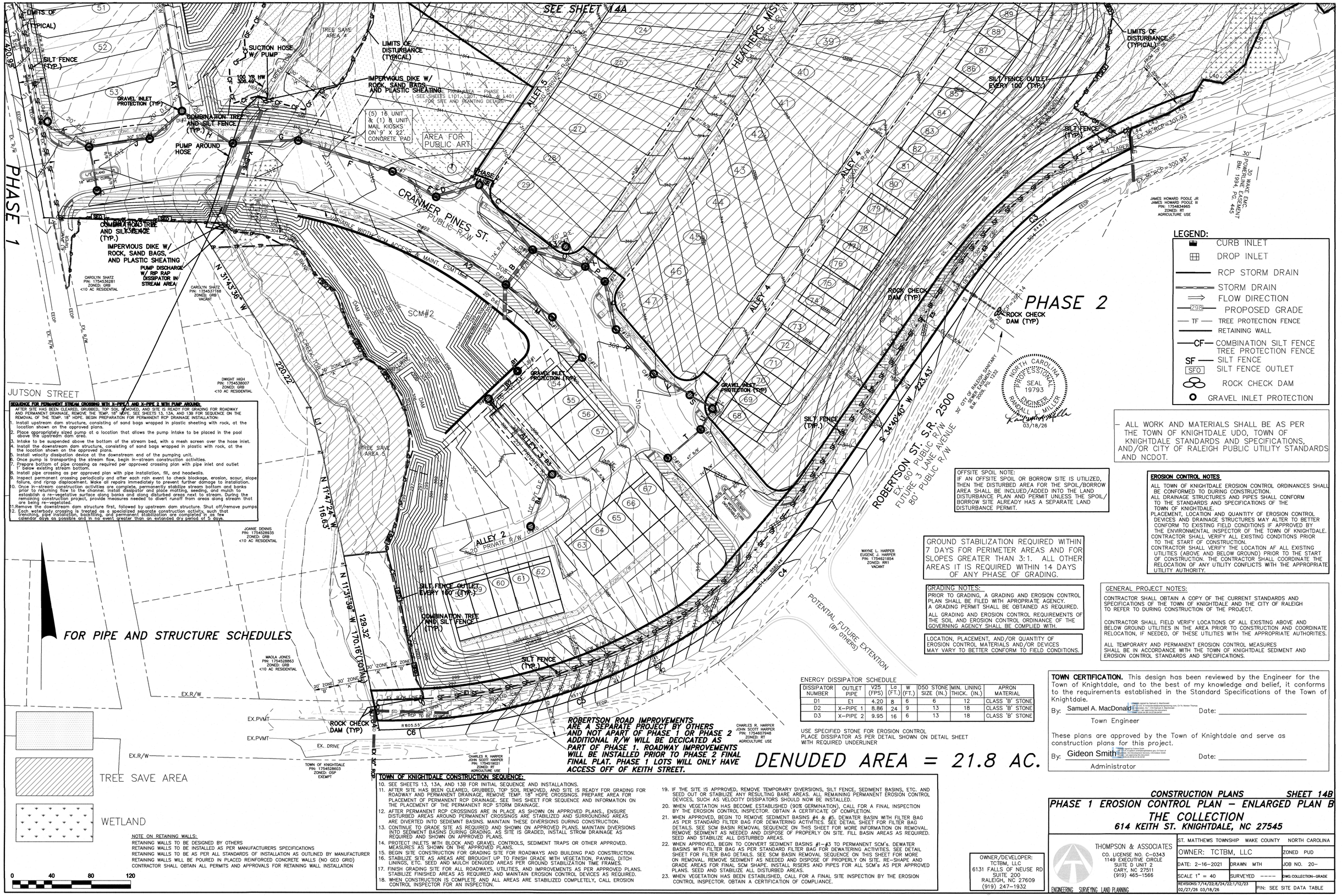
NOTE:
– ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

NOTE:
EXACT LOCATION OF THE MULCH PATH TO BE DETERMINED IN THE FIELD TO AVOID ANY TREE REMOVAL IN ZONE 1 OF NEUSE RIVER BUFFER

FOR PIPE AND STRUCTURE SCHEDULES SEE SHEET 6

DENUDED AREA = 21.8 AC.

PHASE 1
PHASE 2
C1
C2
C7
10' TYPE 'B' BUFFER
EX. 100' RAILROAD R/W
N 59°54'15" E 182.56'
KEITH STREET
EX. 30' PUBLIC R/W
FUTURE 54' PUBLIC R/W
HEATHERS MIST ST.
54' PUBLIC R/W
ALLEY 6
SS1
LIMITS OF DISTURBANCE (TYPICAL)
COMBINATION TREE AND SILT FENCE(TYP.)
IMPERVIOUS DIKE W/ ROCK, SAND BAGS,
100 YR HW 320.41
SUCTION HOSE W/ PUMP
PUMP AROUND HOSE
IMPERVIOUS DIKE W/ ROCK, SAND BAGS, AND PLASTIC SHEATING
ROCK CHECK DAM (TYP)
PUMP DISCHARGE W/ RIP RAP DISSIPATOR IN STREAM AREA
NCG01 SELF INSPECTION RECORDS, PERMIT BOX & RAIN GAUGE SEE DETAIL SHEET 45
CONC. WASH OUT
SILT FENCE (TYP.)
GRAVEL INLET PROTECTION (TYP)
25' x 50' x 12" RIP RAP CONSTRUTION ENTRANCE. SEE DETIAL SHEET
~32 LF TEMP 15" HDPE IN EX. DITCH
SCM#1
SCM#3
WETLAND WC-1
WETLAND WC-2
WETLAND WC-3
WETLAND WB-1
WETLAND WD
VARIABLE WIDTH SCM ACCESS & MAINTENANCE
PERIMETER MAINT. ACCESS
PHASE 2 ROCKET PARK ACTIVE OPEN SPACE 52,832 SF
EX. LAKE TO REMAIN
TREE SAVE AREA 1
TREE SAVE AREA 2
TREE SAVE AREA 3
PASSIVE OPEN SPACE 267,419 SF
SILT FENCE OUTLET EVERY 100' (TYP.)
PICNIC TABLE
TRASH RECEPTICAL
5' MULCH PATH
COMBINATION TREE AND SILT FENCE
54' R/W
22' B/B
SEE SHEET 14B



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1. Install upstream dam structure, consisting of sand bags wrapped in plastic sheeting with rock, at the location shown on the approved plans.
2. Place appropriately sized pump at a location that allows the pump intake to be placed in the pool above the upstream dam area.
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5. Install velocity dissipation device at the downstream end of the pumping unit.
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12. Each waterbody crossing is treated as a specialized separate construction activity, such that trenching, pipe installation, backfilling, and permanent stabilization are completed in as few calendar days as possible and in no event greater than an extended dry period of 5 days.

TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE:

10. SEE SHEETS 13, 13A, AND 13B FOR INITIAL SEQUENCE AND INSTALLATIONS.
11. AFTER SITE HAS BEEN CLEARED, GRUBBED, TOP SOIL REMOVED, AND SITE IS READY FOR GRADING FOR ROADWAY AND PERMANENT DRAINAGE, REMOVE TEMP. 18" HDPE CROSSINGS. PREPARE AREA FOR PLACEMENT OF PERMANENT RCP DRAINAGE. SEE THIS SHEET FOR SEQUENCE AND INFORMATION ON THE PLACEMENT OF THE PERMANENT RCP STORM DRAINAGE.
12. AFTER PERMANENT RCP CROSSINGS ARE IN PLACE AS SHOWN ON APPROVED PLANS., ENSURE DISTURBED AREAS AROUND PERMANENT CROSSINGS ARE STABILIZED AND SURROUNDING AREAS ARE DIVERTED INTO SEDIEMNT BASINS. MAINTAIN THESE DIVERSIONS DURING CONSTRUCTION.
13. CONTINUE IN-STREAM SITE AS REQUIRED AND SHOWN ON APPROVED PLANS. MAINTAIN DIVERSIONS INTO SEDIMENT BASINS DURING GRADING. AS SITE IS GRADED, INSTALL STROM DRAINAGE AS REQUIRED AND SHOWN ON APPROVED PLANS.
14. PROTECT INLETS WITH BLOCK AND GRAVEL CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED. MEASURES AS SHOWN ON THE APPROVED PLANS.
15. BEGIN SITE CONSTRUCTION FOR GRADING SITE FOR ROADWAYS AND BUILDING PAD CONSTRUCTION.
16. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
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21. WHEN APPROVED, BEGIN TO REMOVE SEDIMENT BASINS #4 & #5. DEWATER BASIN WITH FILTER BAG AS PER STANDARD FILTER BAG FOR DEWATERING ACTIVITIES. SEE DETAIL SHEET FOR FILTER BAG DETAILS. SEE SCM BASIN REMOVAL SEQUENCE ON THIS SHEET FOR MORE INFORMATION ON REMOVAL. REMOVE SEDIMENT AS NEEDED AND DISPOSE OF PROPERLY ON SITE. FILL BASIN AREAS AS REQUIRED. SEED AND STABILIZE ALL DISTURBED AREAS.
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LEGEND:
- CURB INLET
- DROP INLET
- RCP STORM DRAIN
- STORM DRAIN
- FLOW DIRECTION
- 298 PROPOSED GRADE
- TF TREE PROTECTION FENCE
- RETAINING WALL
- CF COMBINATION SILT FENCE TREE PROTECTION FENCE
- SF SILT FENCE
- SFO SILT FENCE OUTLET
- ROCK CHECK DAM
- GRAVEL INLET PROTECTION

- ALL WORK AND MATERIALS SHALL BE AS PER THE TOWN OF KNIGHTDALE UDO, TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS, AND/OR CITY OF RALEIGH PUBLIC UTILITY STANDARDS AND NCDOT.

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER 03/18/26

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LOCATION, PLACEMENT, AND/OR QUANTITY OF EROSION CONTROL MATERIALS AND/OR DEVICES MAY VARY TO BETTER CONFORM TO FIELD CONDITIONS.

EROSION CONTROL NOTES

ALL TOWN OF KNIGHTDALE EROSION CONTROL ORDINANCES SHALL BE CONFORMED TO DURING CONSTRUCTION.
ALL DRAINAGE STRUCTURES AND PIPES SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
PLACEMENT, LOCATION AND QUANTITY OF EROSION CONTROL DEVICES AND DRAINAGE STRUCTURES MAY ALTER TO BETTER CONFORM TO EXISTING FIELD CONDITIONS IF APPROVED BY THE ENVIRONMENTAL INSPECTOR OF THE TOWN OF KNIGHTDALE.
CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
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GENERAL PROJECT NOTES:

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CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES IN THE AREA PRIOR TO CONSTRUCTION AND COORDINATE RELOCATION, IF NEEDED, OF THESE UTILITIES WITH THE APPROPRIATE AUTHORITIES.

ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.

ENERGY DISSIPATOR SCHEDULE

DISSIPATOR NUMBER	OUTLET PIPE	V25 (FPS)	La (FT.)	W (FT.)	D50 STONE SIZE (IN.)	MIN. LINING THICK. (IN.)	APRON MATERIAL
D1	E1	4.20	8	6	6	12	CLASS 'B' STONE
D2	X–PIPE 1	8.86	24	9	13	18	CLASS 'B' STONE
D3	X–PIPE 2	9.95	16	6	13	18	CLASS 'B' STONE

USE SPECIFIED STONE FOR EROSION CONTROL
PLACE DISSIPATOR AS PER DETAIL SHOWN ON DETAIL SHEET WITH REQUIRED UNDERLINER

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247–1932

CONSTRUCTION PLANS **SHEET 14B**

PHASE 1 EROSION CONTROL PLAN – ENLARGED PLAN B
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C–0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465–1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA
OWNER: TCTBM, LLC		ZONED PUD
DATE: 2–16–2021	DRAWN MTH	JOB NO. 20–
SCALE 1" = 40	SURVEYED ----	DWG: COLLECTION–GRADE
REVISIONS: 7/14/22; 8/24/22; 1/12/23 02/27/26 03/18/26		PIN: SEE SITE DATA TABLE

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041R

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926R

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.

GENERAL NOTES:

- ALL WORK AND MATERIALS SHALL CONFORM TO THE STANDARDS AND SPECS. OF THE TOWN OF KNIGHTDALE, C.O.R.P.U.D. & NCDOT
- CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL VERIFY THE LOCATION (ABOVE AND BELOW GROUND) OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE, IF NECESSARY, THE RELOCATION OF ANY UTILITIES WITH THE APPROPRIATE UTILITY AUTHORITY.
- ALL REQUIRED PERMITS FOR CONSTRUCTION SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONTRACTOR SHALL OBTAIN A COPY OF THE TOWN OF KNIGHTDALE & CORPUD STDS. AND SPECIFICATIONS TO USE AND REFER TO DURING CONSTRUCTION.

STORM DRAINAGE SCHEDULE SYSTEM #1 DRAINS TO SCM#2

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
A	HDPE	42"	~35'	300.80	300.50	0.86%	7.76 AC	33.00 cfs	6.81 fps	W/ FES & OUTLET
B	HDPE	36"	~44'	301.30	301.00	0.68%	7.32 AC			
C	HDPE	30"	~84'	302.50	301.80	0.83%	2.11 AC			
D	HDPE	30"	~33'	303.20	302.70	1.52%	1.78 AC			
E	HDPE	24"	~23'	305.30	303.40	8.26%	1.63 AC			
F	RCP	24"	~118'	306.20	305.50	0.59%	1.53 AC			
G	RCP	24"	~63'	306.90	306.40	0.79%	1.45 AC			
H	RCP	24"	~60'	307.50	307.10	0.67%	1.42 AC			
I	RCP	24"	~39'	308.00	307.70	0.79%	1.23 AC			
J	RCP	18"	~39'	308.40	308.10	0.76%	0.86 AC			
K	HDPE	18"	~53'	308.80	308.50	0.57%	0.32 AC			
L	HDPE	15"	~43'	308.80	308.50	0.70%	0.13 AC			
M	HDPE	15"	~57'	304.40	304.00	0.70%	0.17 AC			
N	HDPE	15"	~50'	304.90	304.50	0.80%	.09 AC			
O	HDPE	30"	~56'	303.50	302.90	1.07%	4.02 AC			
P	HDPE	30"	~23'	303.80	303.60	0.87%	2.40 AC			
Q	HDPE	30"	~50'	304.20	303.90	0.60%	1.80 AC			
R	HDPE	18"	~56'	304.80	304.50	0.54%	1.28 AC			
S	HDPE	18"	~20'	306.10	305.90	1.00%	0.97 AC			
T	HDPE	15"	~44'	307.00	306.70	0.68%	0.14 AC			
U	HDPE	15"	~20'	306.50	306.30	1.00%	0.67 AC			
V	HDPE	18"	~45'	305.70	305.20	1.11%	1.18 AC			
W	HDPE	15"	~201'	312.60	309.80	2.89%	0.14 AC			
X	HDPE	18"	~67'	309.80	304.00	5.22%	1.21 AC			
Y	HDPE	15"	~125'	310.20	308.90	2.64%	0.96 AC	PHASE 2 CONSTRUCTION		
Z	HDPE	15"	~25'	311.00	310.90	0.80%	0.29 AC			
A1	RCP	15"	~141'	312.70	309.30	2.41%	0.11 AC			
A2	HDPE	15"	~102'	304.90	303.20	1.67%	0.17 AC			
A3	HDPE	15"	~34'	305.00	304.00	2.94%	0.62 AC			

STORM DRAINAGE SCHEDULE X-PIPE #1

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
X-PIPE 1	RCP	36"	~111'	303.00	302.00	0.90%	8.71 AC	44.63 cfs	8.95 fps	W/ HEADWALL & OUTLET AND INLET

STORM STRUCTURE SCHEDULE SYSTEM #1

CRANMER PINES ST
CI#10
CL STA. 15+15.85 23.5' RIGHT
TBOC: 309.24
INV. IN = 301.00 (PIPE H)
INV. IN = 303.00 (PIPE W)
INV. IN = 304.00 (PIPE X)
INV. IN = 302.90 (PIPE I)
INV. OUT = 301.30 (PIPE B)

CRANMER PINES ST
CI#9
CL STA. 15+15.85 23.5' LEFT
TBOC: 308.24
INV. IN = 301.80 (PIPE C)
INV. IN = 304.00 (PIPE A3)
INV. IN = 302.90 (PIPE B)
INV. OUT = 301.30 (PIPE B)

CRANMER PINES ST
CI#8
CL STA. 14+04.12 17.5' LEFT
TBOC: 308.18
INV. IN = 303.40 (PIPE E)
INV. OUT = 303.50 (PIPE D)

CRANMER PINES ST
CI#7
CL STA. 13+29.47 23.5' LEFT
TBOC: 308.45
INV. IN = 305.50 (PIPE F)
INV. OUT = 305.30 (PIPE E)

ALLEY 5
DI#5
CL STA. 10+35 @ CL OF ALLEY 5
GRATE: 308.57
INV. IN = 302.70 (PIPE D)
INV. OUT = 302.60 (PIPE C)

CRANMER PINES ST
DI#6
CL STA. 12+92.84 28.5' LEFT
TBOC: 311.72
INV. IN = 309.40 (PIPE G)
INV. OUT = 306.20 (PIPE F)

CRANMER PINES ST
CI#5
CL STA. 12+00.00 17.5' LEFT
TBOC: 312.66
INV. IN = 307.10 (PIPE H)
INV. OUT = 306.90 (PIPE G)

ALLEY 1
DI#2
CL STA. 12+91.51 @ CL OF ALLEY 1
GRATE: 312.71
INV. IN = 307.70 (PIPE I)
INV. IN = 306.30 (PIPE A1)
INV. OUT = 307.50 (PIPE H)

ALLEY 1
DI#1
CL STA. 11+44.85 CL ALLEY 1
GRATE: 317.82
INV. OUT = 312.70 (PIPE A1)

CRANMER PINES ST
CI#4
CL STA. 11+18.48 23.5' LEFT
TBOC: 312.51
INV. IN = 308.10 (PIPE J)
INV. OUT = 308.00 (PIPE I)

CRANMER PINES ST
CI#3
CL STA. 10+58.36 23.5' RIGHT
TBOC: 311.84
INV. OUT = 308.80 (PIPE L)

CRANMER PINES ST
CI#2
CL STA. 10+58.36 23.5' LEFT
TBOC: 311.84
INV. IN = 308.50 (PIPE K)
INV. IN = 308.50 (PIPE L)
INV. OUT = 308.40 (PIPE J)

KEITH ST.
CI#1
CL STA. 10+19.08 15.5' RIGHT
TBOC: 313.60
INV. OUT = 308.80 (PIPE K)

HEATHERS MIST ST
CI#13
CL STA. 26+19.40 13.5' RIGHT
TBOC: 308.95
INV. IN = 303.60 (PIPE P)
INV. IN = 304.00 (PIPE X)
INV. OUT = 303.50 (PIPE O)

HEATHERS MIST ST
CI#12
CL STA. 26+19.40 13.5' LEFT
TBOC: 308.95
INV. IN = 303.90 (PIPE O)
INV. OUT = 303.80 (PIPE P)

CRANMER PINES ST
CI#11
CL STA. 16+27.63 23.5' LEFT
TBOC: 309.03
INV. IN = 304.50 (PIPE R)
INV. OUT = 304.00(PIPE Q)

CRANMER PINES ST
DI#15
CL STA. 18+81.93 17.5' LEFT
TBOC: 309.96
INV. IN = 305.20 (PIPE V)
INV. OUT = 304.80 (PIPE R)

CRANMER PINES ST
CI#FT
CL STA. 17+65.83 23.5' LEFT
TBOC: 312.27
INV. IN = 306.70 (PIPE T)
INV. IN = 308.50 (PIPE U)

CRANMER PINES ST
DI#15
CL STA. 17+65.83 23.5' RIGHT
TBOC: 310.27
INV. OUT = 307.00 (PIPE T)

OFFSITE (SEE PLANS)
DI#R
GRATE: ~310.00
INV. IN = 306.30 (PIPE U)
INV. OUT = 306.10 (PIPE S)

ALLEY 4
DI#4
CL STA. 10+35 CL ALLEY 4
GRATE: 310.27
INV. IN = 305.90 (PIPE S)
INV. OUT = 305.70 (PIPE Y)

HEATHERS MIST ST
CI#13
CL STA. 25+31.40 13.5' RIGHT
TBOC: 311.92
INV. IN = 308.90 (PIPE Y)
INV. OUT = 308.80 (PIPE X)

HEATHERS MIST ST
CI#15
CL STA. 24+05.57 13.5' RIGHT
TBOC: 315.80
INV. IN = 310.80 (PIPE Z)
INV. OUT = 310.20 (PIPE Y)

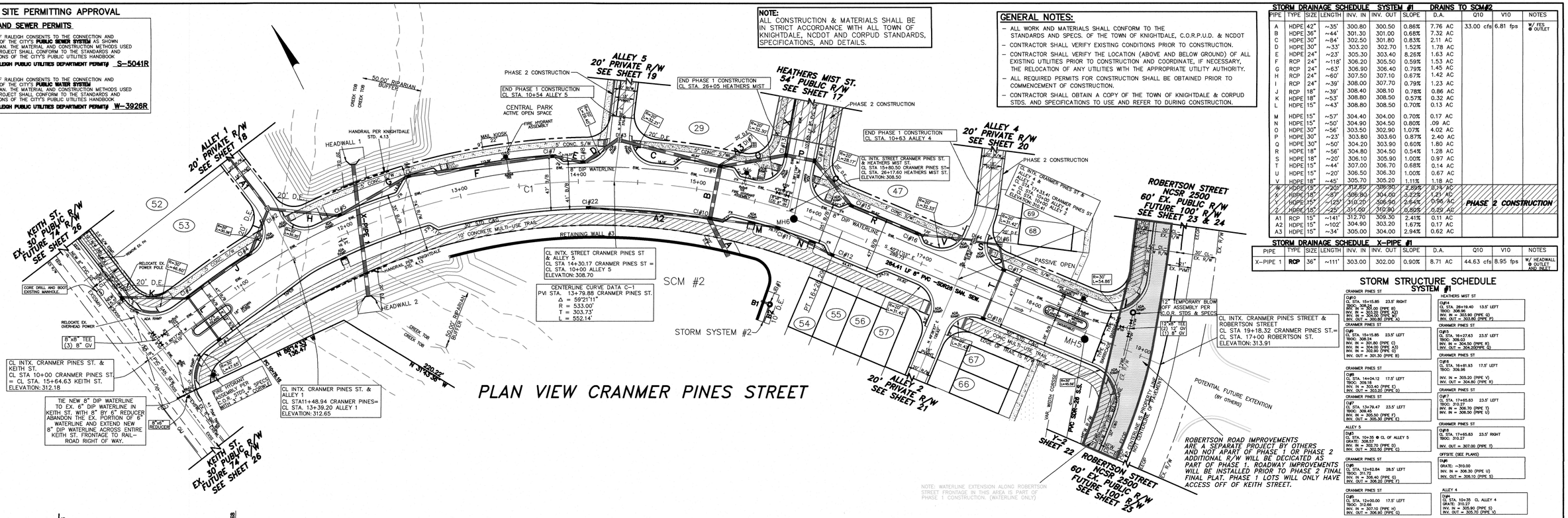
HEATHERS MIST ST
CI#11
CL STA. 24+05.57 13.5' LEFT
TBOC: 315.80
INV. OUT = 311.00 (PIPE Z)

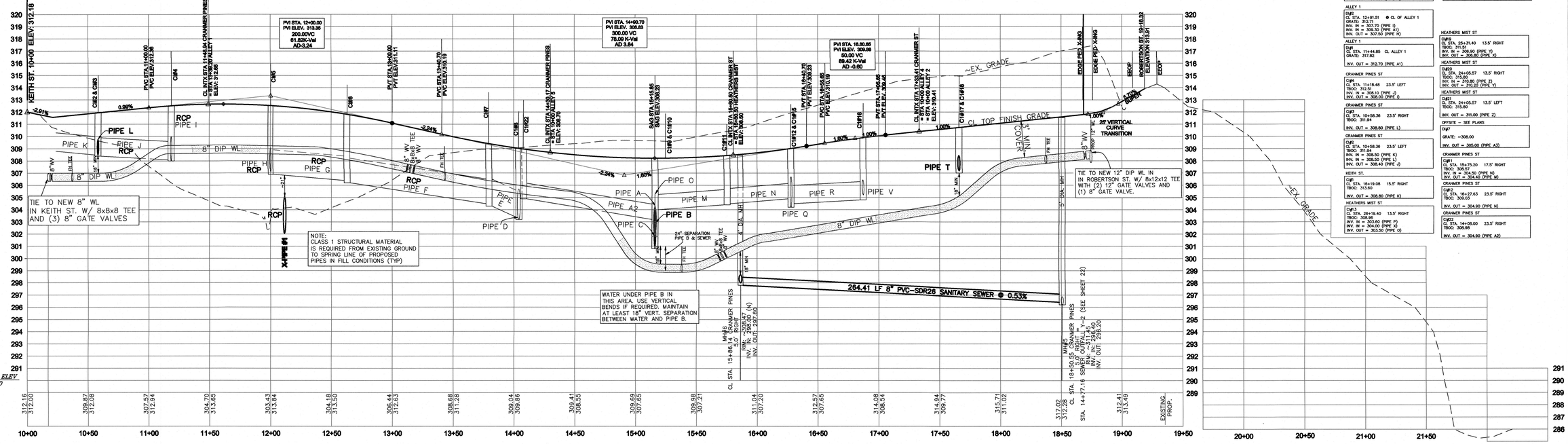
OFFSITE — SEE PLANS
DI#7
GRATE: ~308.00
INV. OUT = 305.00 (PIPE A3)

CRANMER PINES ST
CI#F1
CL STA. 15+75.20 17.5' RIGHT
TBOC: 308.57
INV. IN = 304.50 (PIPE N)
INV. OUT = 304.40 (PIPE M)

CRANMER PINES ST
CI#F2
CL STA. 16+27.63 23.5' RIGHT
TBOC: 309.03
INV. OUT = 304.90 (PIPE N)

CRANMER PINES ST
CI#20
CL STA. 14+08.00 23.5' RIGHT
TBOC: 308.98
INV. OUT = 304.90 (PIPE A2)





SCALE: 1" = 40' HORIZ.
1" = 4' VERT.
0 40 80 120

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.
Cydney Terry
2026.04.14 15:21:51-04'00'

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

PRELIMINARY DRAWING FOR REVIEW ONLY

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

PLAN AND PROFILE CRANMER PINES STREET THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

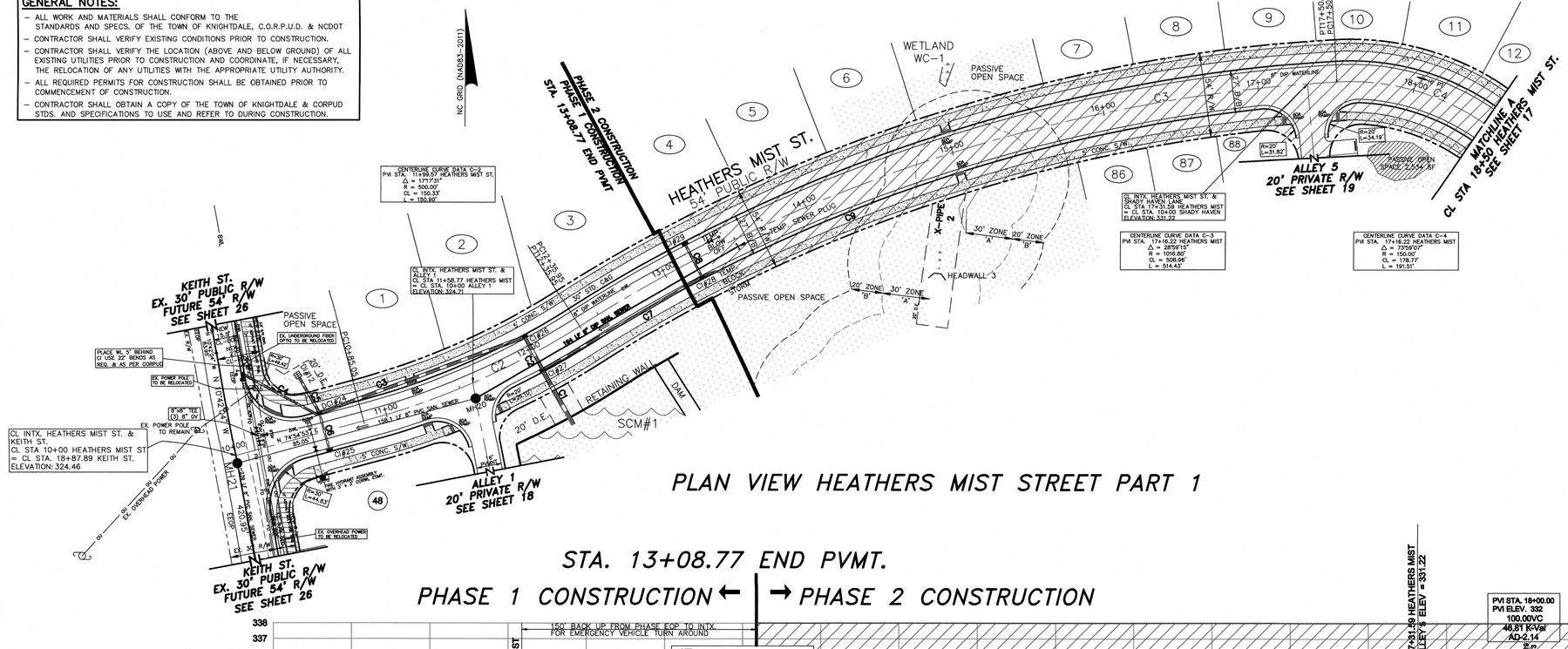
THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 40'	SURVEYED ----	DWG STREET A
REVISIONS:10-3-2;12-15-25 02-26-27; 03-18-26		PIN: SEE SITE DATA TABLE

SHEET 15

GENERAL NOTES:

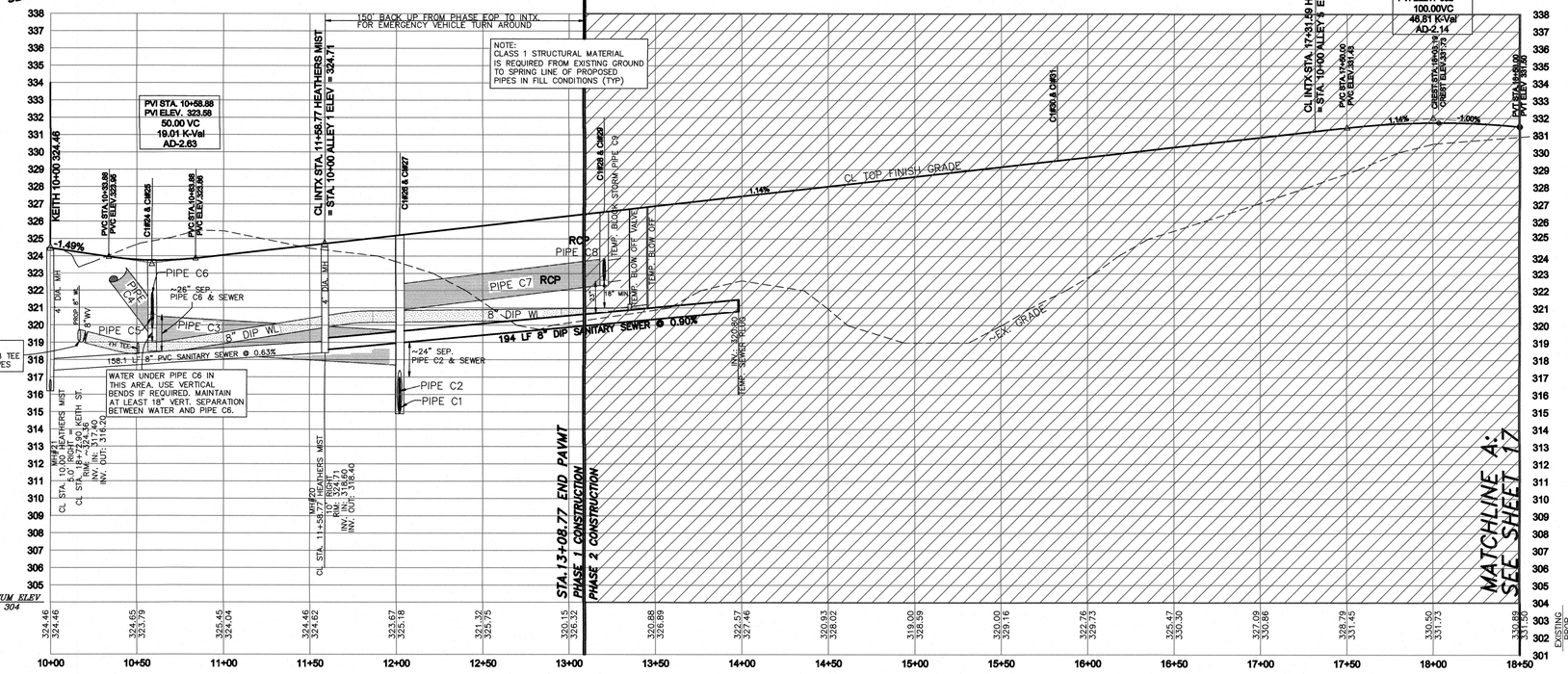
- ALL WORK AND MATERIALS SHALL CONFORM TO THE STANDARDS AND SPECS. OF THE TOWN OF KNIGHTDALE, C.O.R.P.U.D. & NCDOT
- CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL VERIFY THE LOCATION (ABOVE AND BELOW GROUND) OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE, IF NECESSARY, THE RELOCATION OF ANY UTILITIES WITH THE APPROPRIATE UTILITY AUTHORITY.
- ALL REQUIRED PERMITS FOR CONSTRUCTION SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONTRACTOR SHALL OBTAIN A COPY OF THE TOWN OF KNIGHTDALE & CORPUD STDS. AND SPECIFICATIONS TO USE AND REFER TO DURING CONSTRUCTION.



PLAN VIEW HEATHERS MIST STREET PART 1

STA. 13+08.77 END PVMT.

PHASE 1 CONSTRUCTION ← | → PHASE 2 CONSTRUCTION



PROFILE VIEW HEATHERS MIST STREET PART 1

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.

SCALE: 1" = 40' HORIZ.
1" = 4' VERT.
0 40 80 120

STORM DRAINAGE SCHEDULE X-PIPE #2 — PHASE 2 CONSTRUCTION

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
X-PIPE 2	RCP	24"	~112'	320.00	314.00	5.36%	2.30 AC	11.62 cfs	9.53 fps	W/ HEADWALL & OUTLET PROTECTION

STORM DRAINAGE SCHEDULE SYSTEM #3 DRAINS TO SCM#1

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
CI	HDPE	30"	~39'	314.90	311.00	10.00%	2.80 AC	12.12 cfs	10.0 fps	W/ FES & OUTLET
C2	HDPE	24"	~24'	315.20	315.00	0.83%	2.73 AC			
C3	HDPE	24"	~136'	318.50	317.70	0.59%	1.56 AC			
C4	HDPE	15"	~53'	323.10	319.60	6.60%	0.16 AC			
C5	HDPE	18"	~28'	320.60	319.80	2.86%	1.13 AC			
C6	HDPE	15"	~24'	320.60	320.40	0.83%	0.06 AC			
C7	RCP	18"	~116'	322.30	320.90	1.21%	1.04 AC			
C8	RCP	15"	~24'	323.60	322.60	4.17%	0.28 AC			
C9	RCP	15"	~8'	322.61	322.50	1.36%	0.60 AC			
C10	RCP	15"	~24'	327.10	326.10	4.17%	0.29 AC			
C11	RCP	18"	~177'	327.90	326.10	0.85%	0.22 AC			
C12	HDPE	18"	~59'	328.30	327.70	1.02%	0.20 AC			PHASE 2 CONSTRUCTION
C13	HDPE	15"	~24'	328.60	328.40	0.83%	0.15 AC			

STORM STRUCTURE SCHEDULE SYSTEM #3 DRIANS TO SCM#1

KEITH STREET

CI#23
CL STA. 19+27.54 15.5' RIGHT
TBOC: 327.96
INV. OUT = 323.10 (PIPE C4)

HEATHERS MIST ST.

CI#24
CL STA. 10+58.88 13.5' LEFT
TBOC: 323.78
INV. IN = 319.60 (PIPE C4)
INV. IN = 319.80 (PIPE C5)
INV. IN = 320.40 (PIPE C6)
INV. OUT = 318.50 (PIPE C3)

HEATHERS MIST ST.

CI#25
CL STA. 10+58.88 13.5' RIGHT
TBOC: 323.78
INV. OUT = 320.60 (PIPE C6)

OFFSITE LOT #1 SEE PLANS

DI#12
GRATE: ~325.00
INV. OUT = 320.60 (PIPE C5)

HEATHERS MIST ST.

CI#26
CL STA. 12+02.00 13.5' LEFT
TBOC: 325.41
INV. IN = 317.70 (PIPE C3)
INV. OUT = 315.20 (PIPE C2)

HEATHERS MIST ST.

CI#27
CL STA. 12+02.00 13.5' RIGHT
TBOC: 325.41
INV. IN = 315.00 (PIPE C2)
INV. IN = 320.90 (PIPE C7)
INV. OUT = 314.90 (PIPE C1)

HEATHERS MIST ST.

CI#28
CL STA. 13+30.43 13.5' RIGHT
TBOC: 326.75
INV. IN = 322.60 (PIPE C8)
INV. IN = 322.50 (PIPE C9)
INV. OUT = 322.30 (PIPE C7)

HEATHERS MIST ST.

CI#29
CL STA. 13+20.43 13.5' LEFT
TBOC: 326.75
INV. OUT = 323.60 (PIPE C8)

HEATHERS MIST ST.

CI#30
CL STA. 15+82.53 13.5' RIGHT
TBOC: 328.73
INV. IN = 326.10 (PIPE C10)
INV. IN = 326.10 (PIPE C11)
INV. OUT = 326.00 (PIPE C9)

HEATHERS MIST ST.

CI#31
CL STA. 15+82.55 13.5' LEFT
TBOC: 329.73
INV. OUT = 327.10 (PIPE C10)

HEATHERS MIST ST.

CI#32
CL STA. 17+66.77 13.5' RIGHT
TBOC: 331.78
INV. IN = 327.70 (PIPE C12)
INV. OUT = 327.60 (PIPE C11)

HEATHERS MIST ST.

CI#33
CL STA. 18+36.90 13.5' RIGHT
TBOC: 331.82
INV. IN = 328.40 (PIPE C13)
INV. OUT = 328.30 (PIPE C12)

HEATHERS MIST ST.

CI#34
CL STA. 18+36.90 13.5' LEFT
TBOC: 331.82
INV. OUT = 328.80 (PIPE C13)

PHASE 2 CONSTRUCTION

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans as approved. approved may not be edited once issued. Any modification to this approval once issued will invalidate this approval.
Cydney Terry
2026.04.14 15:21:57-04'00'

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L MILLER
03/18/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SHEET 16

PLAN AND PROFILE HEATHERS MIST ST. (PART 1)
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 40'	SURVEYED ----	DWG STREET B
REVISIONS: 10-3-25; 12-15-25 02-27-26; 03-18-26	PIN: SEE SITE DATA TABLE	

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.

GENERAL NOTES:

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- CONTRACTOR SHALL OBTAIN A COPY OF THE TOWN OF KNIGHTDALE & CORPUD STDS. AND SPECIFICATIONS TO USE AND REFER TO DURING CONSTRUCTION.

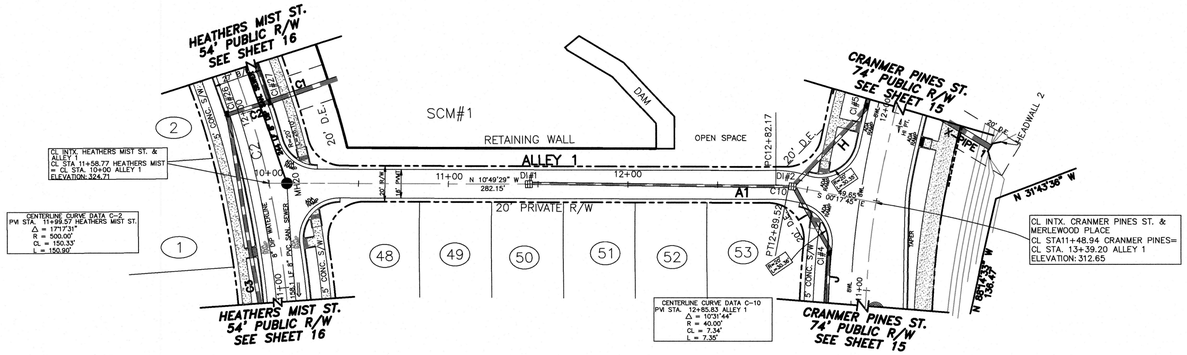
STORM DRAINAGE SCHEDULE SYSTEM #1
DRAINS TO SCM #2

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.
A1	RCP	15"	~141'	312.70	309.30	2.41%	0.11 AC
H	RCP	24"	~60'	307.50	307.10	0.67%	1.42 AC
I	RCP	24"	~39'	308.00	307.70	0.79%	1.23 AC

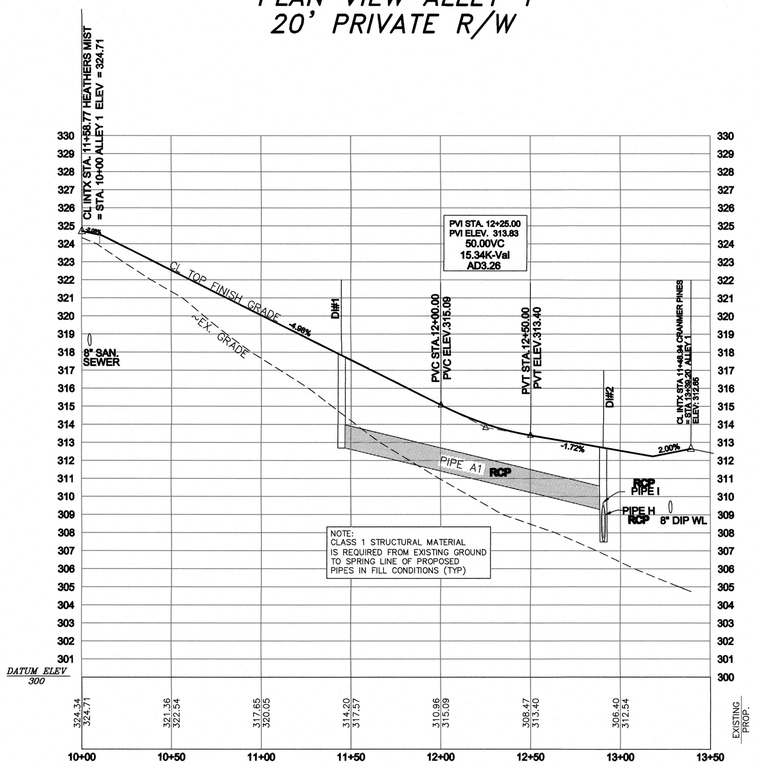
STORM STRUCTURE SCHEDULE SYSTEM #1

ALLEY 1
DI#2
CL STA. 12+90.42 @ CL ALLEY 1
GRATE: 312.74
INV. IN = 307.70 (PIPE I)
INV. IN = 309.30 (PIPE A1)
INV. OUT = 307.50 (PIPE H)

ALLEY 1
DI#1
CL STA. 11+44.85 @ CL ALLEY 1
GRATE: 317.82
INV. OUT = 312.70 (PIPE A1)



PLAN VIEW ALLEY 1
20' PRIVATE R/W



PROFILE VIEW ALLEY 1

SCALE: 1" = 40' HORIZ.
1" = 4' VERT.
0 40 80 120

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
02/27/26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

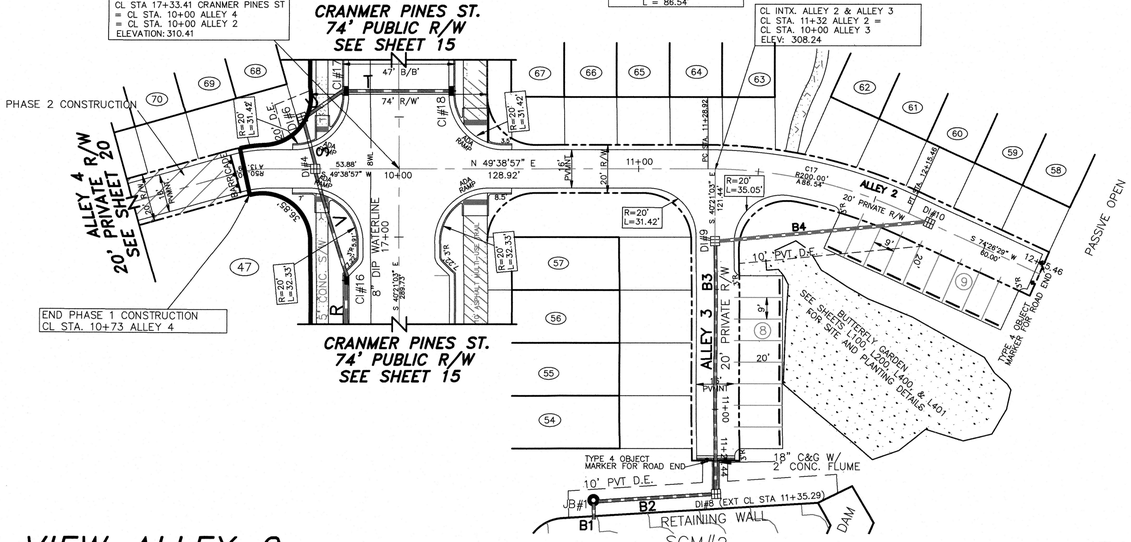
SHEET 18

PLAN AND PROFILE ALLEY 1
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
SCALE 1" = 40'	SURVEYED ----	DWG ALLEY 1
REVISIONS: 10/3/25; 2/27/26		PIN: SEE SITE DATA TABLE

NOTE:
ALL CONSTRUCTION & MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL TOWN OF KNIGHTDALE, NCDOT AND CORPUD STANDARDS, SPECIFICATIONS, AND DETAILS.



STORM DRAINAGE SCHEDULE SYSTEM #2 DRAINS TO SCM#2

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.	Q10	V10	NOTES
B1	HDPE	15"	~16'	300.60	300.50	0.63%	0.59 AC	3.07 cfs	4.34 fps	W/ FES & OUTLET
B2	HDPE	15"	~47'	301.00	300.70	0.64%	0.58 AC			
B3	HDPE	15"	~101'	301.60	301.07	0.52%	0.36 AC			
B4	HDPE	15"	~86'	302.20	301.70	0.58%	0.24 AC			

STORM STRUCTURE SCHEDULE SYSTEM #2

SCM #2 INLET

JB#1
RIM: ~307.3
INV. IN = 300.70 (PIPE B2)
INV. OUT = 300.60 (PIPE B1)

ALLEY 3
BEYOND PAVEMENT CL STA. 11+35.29

DI#8
GRATE: ~305.00
INV. IN = 301.07 (PIPE B3)
INV. OUT = 301.00 (PIPE B2)

ALLEY 3

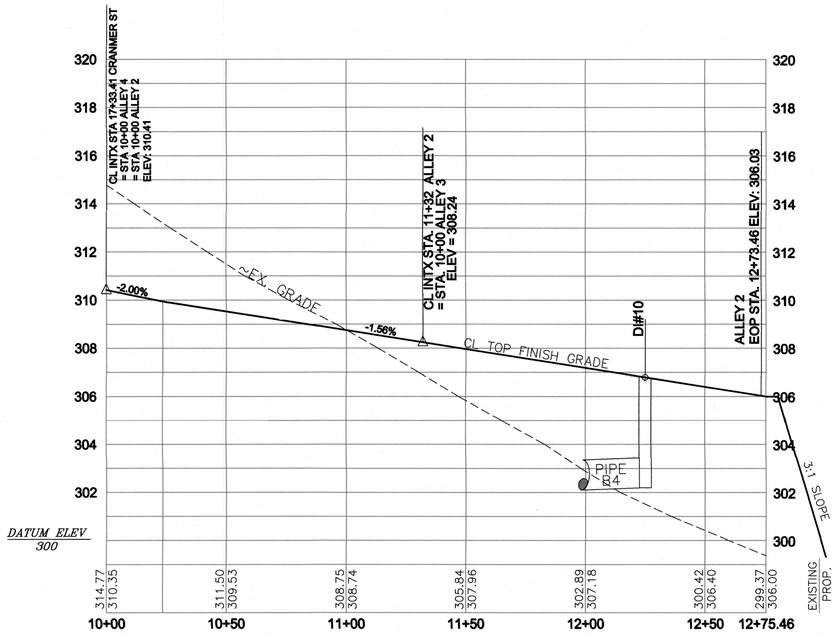
DI#9
CL STA. 10+30 ALLEY 3
GRATE: 308.12
INV. IN = 301.70 (PIPE B4)
INV. OUT = 301.60 (PIPE B3)

ALLEY 2

DI#10
CL STA. 12+24.88 ALLEY 2
GRATE: 306.79

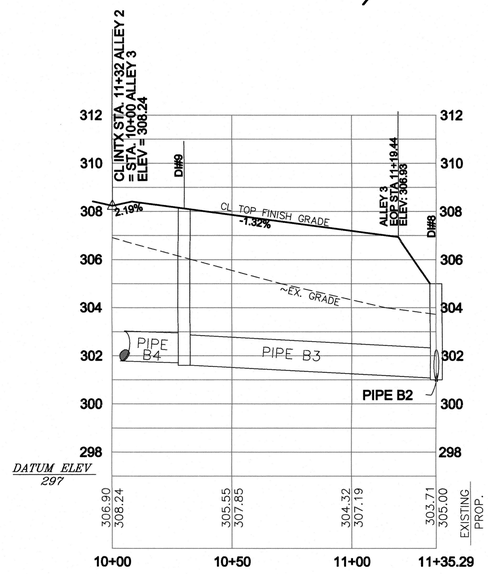
INV. OUT = 302.20 (PIPE B4)

PLAN VIEW ALLEY 2 20' PRIVATE R/W



PROFILE VIEW ALLEY 2 20' PRIVATE R/W

PLAN ALLEY 3 20' PRIVATE R/W



PROFILE VIEW ALLEY 3 20' PRIVATE R/W

SCALE: 1" = 30' HORIZ.
1" = 3' VERT.
0 30 60 90



02/27/26

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

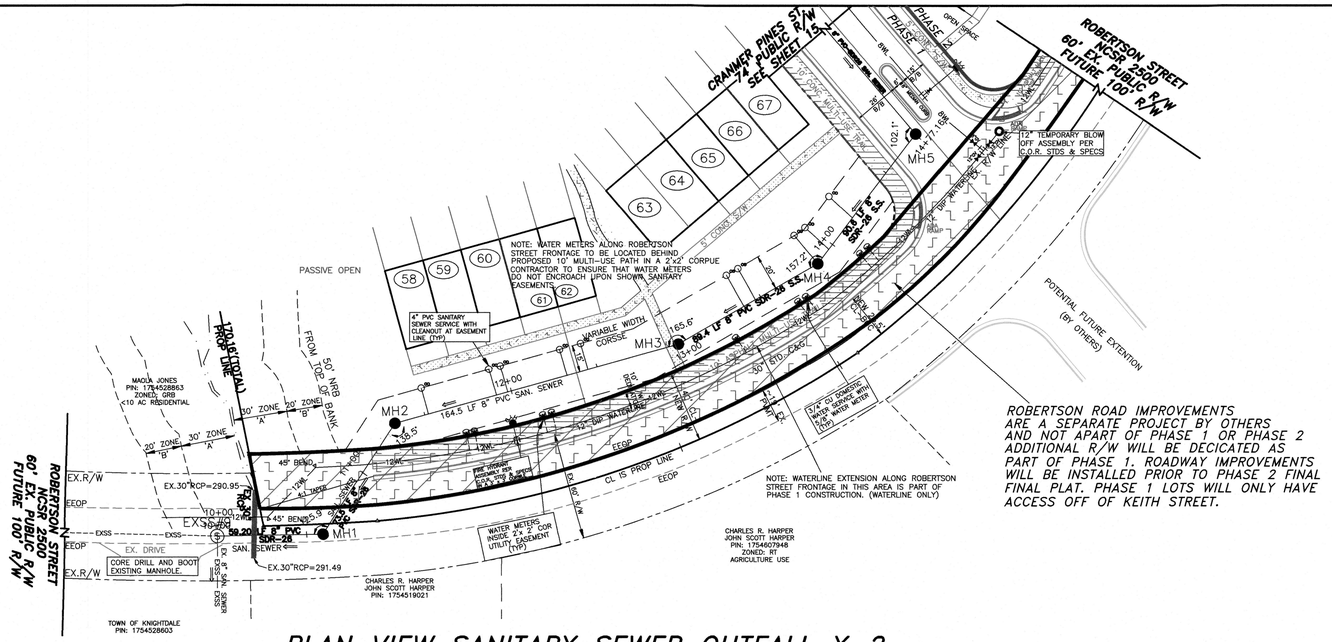
SHEET 21

PLAN AND PROFILE ALLEY 2 AND ALLEY 3
THE COLLECTION - PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

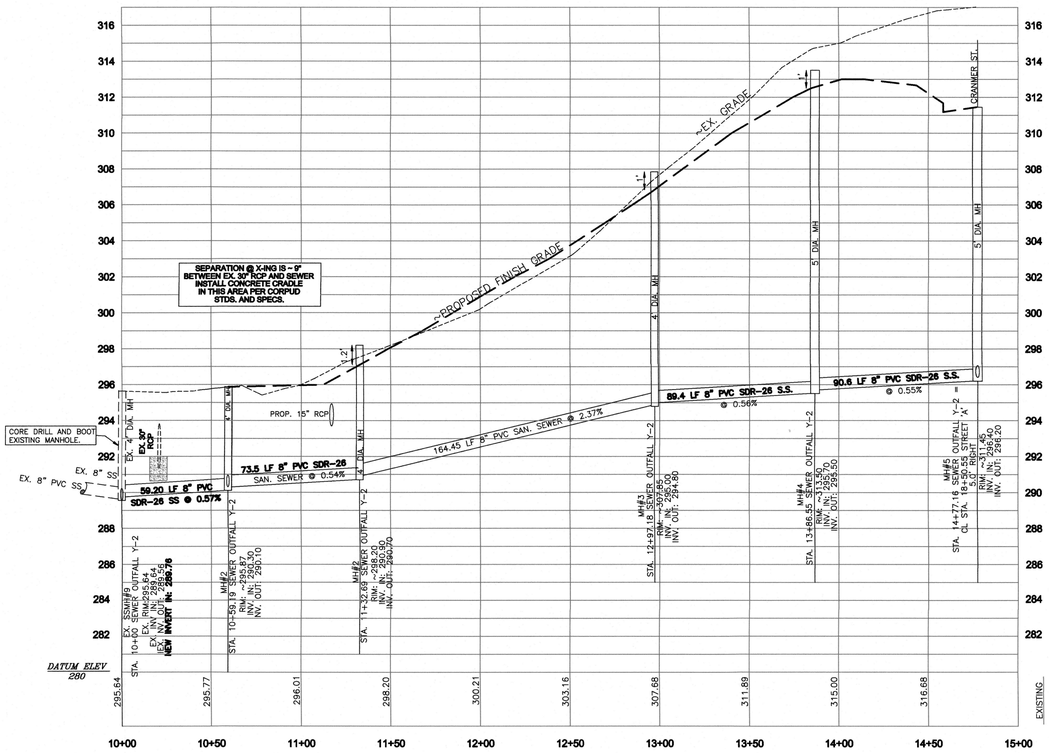
THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 30'	SURVEYED ----	DWG ALLEY 4 & 5
REVISIONS: 10-3-25 02-27-26		PIN: SEE SITE DATA TABLE

NC GRID (NAD83-2011)



PLAN VIEW SANITARY SEWER OUTFALL Y-2



PROFILE VIEW SANITARY SEWER OUTFALL Y-2

SCALE: 1" = 40' HORIZ.
1" = 4' VERT.
0 40 80 120

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.
Cydney Terry
2026.04.14 15:22:04-04'00'

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL K. MILLER
03-18-26

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

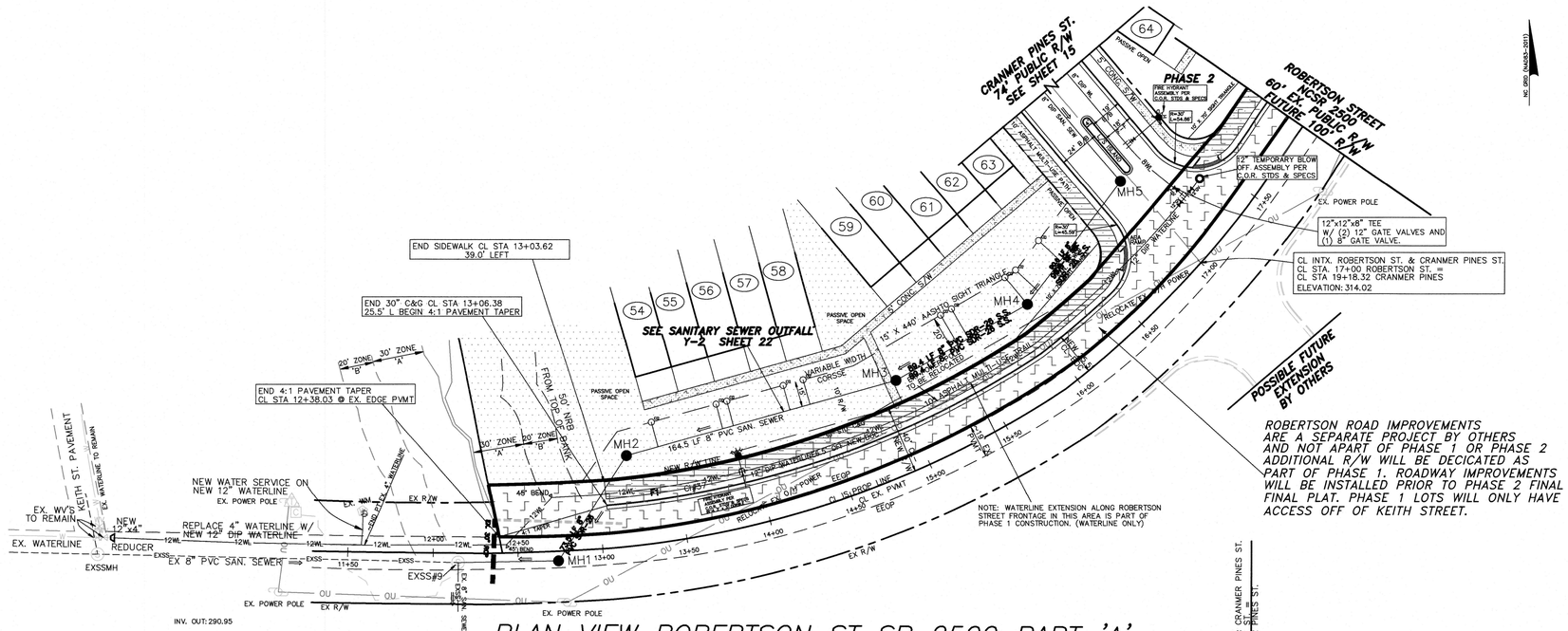
THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

SHEET 22

PLAN AND PROFILE SANITARY SEWER OUTFALL Y-2
THE COLLECTION - PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA

OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 40'	SURVEYED -----	DWG OUTFALLS Y1 Y2
REVISIONS: 10-3-25;12-15-25 02-26-27; 03-18-26		PIN: SEE SITE DATA TABLE



NOTE: WATERLINE EXTENSION ALONG ROBERTSON STREET FRONTAGE IN THIS AREA IS PART OF PHASE 1 CONSTRUCTION. (WATERLINE ONLY)

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2 ADDITIONAL R/W WILL BE DECICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

PLAN VIEW ROBERTSON ST SR 2500 PART 'A'

PROFILE VIEW ROBERTSON ST SR 2500 PART 'A'

SCALE: 1" = 40' HORIZ.
1" = 4' VERT.
0 40 80 120

GENERAL NOTES:

- ALL WORK AND MATERIALS SHALL CONFORM TO THE STANDARDS AND SPECS. OF THE TOWN OF KNIGHTDALE, C.O.R.P.U.D. & NCDOT
- CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL VERIFY THE LOCATION (ABOVE AND BELOW GROUND) OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE, IF NECESSARY, THE RELOCATION OF ANY UTILITIES WITH THE APPROPRIATE UTILITY AUTHORITY.
- ALL REQUIRED PERMITS FOR CONSTRUCTION SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONTRACTOR SHALL OBTAIN A COPY OF THE TOWN OF KNIGHTDALE & CORPUD STDS. AND SPECIFICATIONS TO USE AND REFER TO DURING CONSTRUCTION.

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.
Cydney Terry
2026.04.14 15:22:09-04'00'

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041R

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926R

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: Samuel A. MacDonald, PE Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19793 WILLIAM L. MILLER
03/18/26

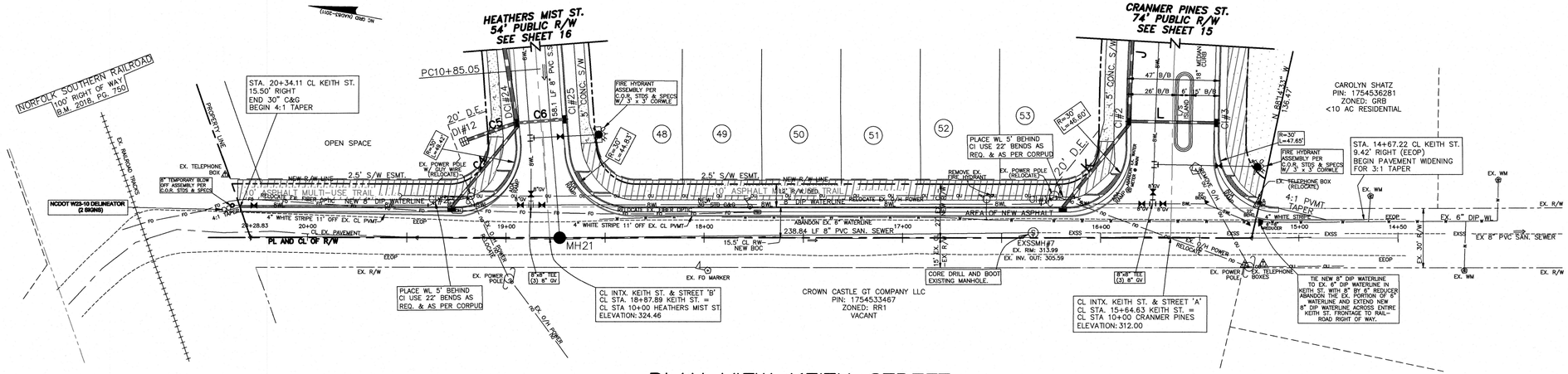
OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

CONSTRUCTION PLANS ***SHEET 24***

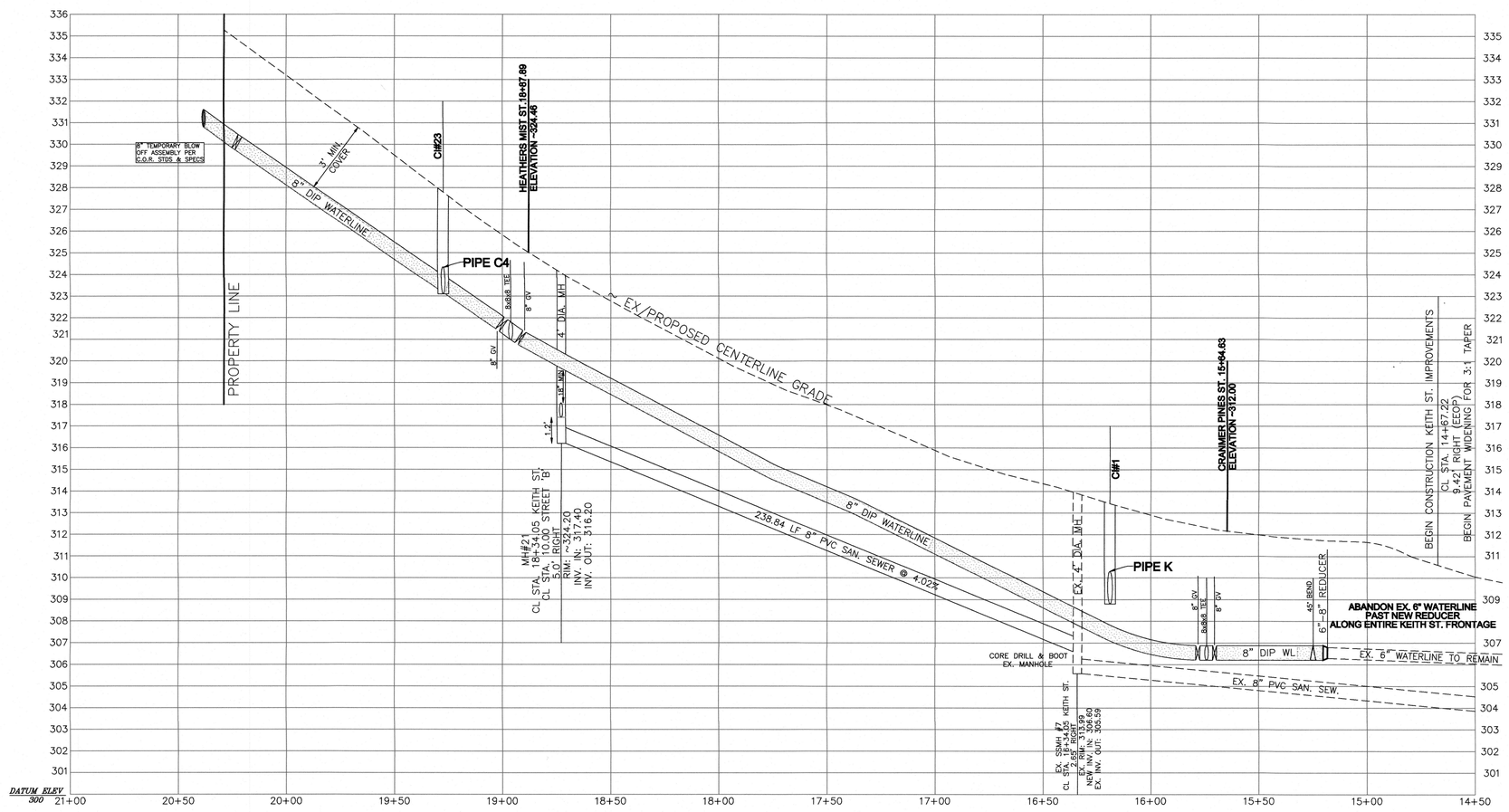
PLAN AND PROFILE ROBERTSON ST. S.R. 2500 PART 'A'
THE COLLECTION – PHASE 1

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
SCALE 1" = 40'	SURVEYED ----	DWG ROBERTSON ST
REVISIONS: 10-3-2025; 12-15-25 03/18/26		PIN: SEE SITE DATA TABLE

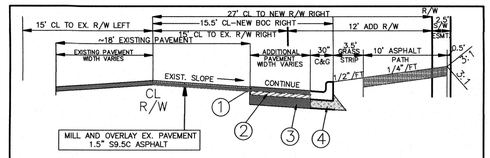


PLAN VIEW KEITH STREET



PROFILE VIEW KEITH STREET
SEE X-SECTIONS SHEET 30 FOR MORE INFORMATION

SCALE: 1" = 30' HORIZ.
1" = 3' VERT.
0 30 60 90



TYPICAL SECTION FOR PAVEMENT WIDENING
NTS

PAVEMENT SCHEDULE PER TOWN OF KNIGHTDALE STD. 3.04

1. 1.5" S 9.5B ASPHALT SURFACE COURSE
2. 2.5" I 19.0B INTERMEDIATE COURSE
3. 8" ABC FOR WIDENING > 6' WIDTH
   OR
   5.0" ACBC TYPE B 25.0 C
   FOR WIDENING < 6' WIDTH (FULL DEPTH ASPHALT)
4. 6" ABC UNDER CURB

MILL AND OVERLY LIMITS

MILL ENTIRE FRONTAGE EX. CL PAVEMENT TO EEOP
RIGHT SIDE
CL STA. 14+67.22 TO 20+67.50
MILL 1.5" AND OVERLAY WITH 1.5" S 9.5 C

OVERLAY ENTIRE FRONTAGE EX. CL PAVEMENT TO EEOP
RIGHT SIDE
CL STA. 14+67.22 TO 20+67.50
MILL 1.5" AND OVERLAY WITH 1.5" S 9.5 C

STORM DRAINAGE SCHEDULE

PIPE	TYPE	SIZE	LENGTH	INV. IN	INV. OUT	SLOPE	D.A.
K	HDPE	18"	~49'	308.80	308.50	0.61%	0.32 AC
C4	HDPE	15"	~49'	323.10	319.60	7.14%	0.16 AC

STORM STRUCTURE SCHEDULE

KEITH ST.
CI#1
CL STA. 16+19.08 15.5' RIGHT
TBOC: 313.60
INV. OUT = 308.80 (PIPE K)

KEITH STREET
CI#23
CL STA. 19+27.54 15.5' RIGHT
TBOC: 327.96
INV. OUT = 323.10 (PIPE C4)

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
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Cydney Terry
2026.04.14 15:22:15-04'00'

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL L. MILLER
03/18/26

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: Gideon Smith Date: _____
Administrator

SHEET 29

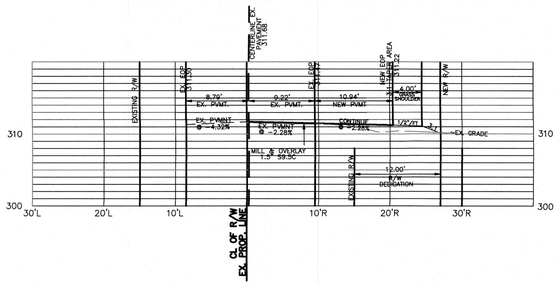
PLAN AND PROFILE KEITH STREET
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

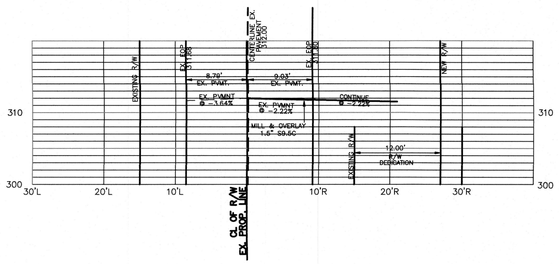
THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 30'	SURVEYED ----	DWG KEITH ST
REVISIONS: 10-3-25; 12-15-25 02-27-26; 03-18-26		

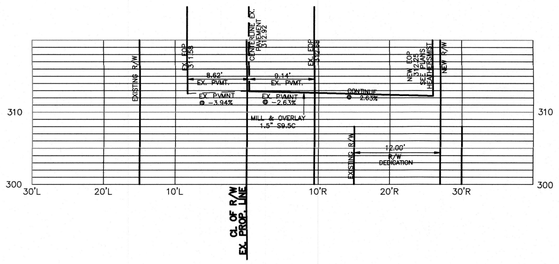
KEITH ST. STA. 15+00
PAVEMENT WIDENING FOR TAPER RIGHT SIDE



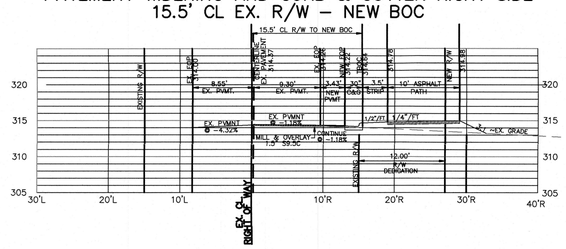
KEITH ST. STA. 15+50
PAVEMENT WIDENING RIGHT SIDE
AREA AT ENTRANCE CRANMER PINES ST.
SEE PLANS CRANMER PINES ST.



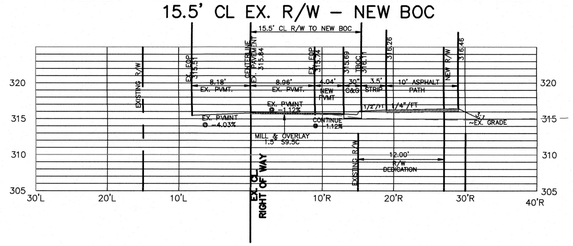
KEITH ST. STA. 16+00
PAVEMENT WIDENING RIGHT SIDE
AREA AT ENTRANCE HEATHERS MIST ST.
SEE PLANS HEATHERSMIST ST.



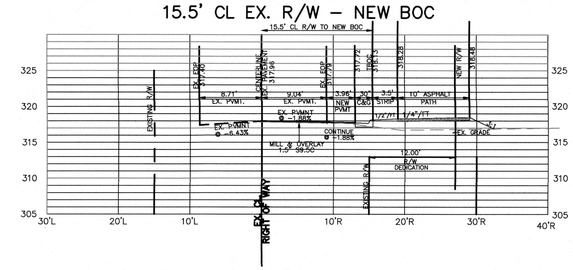
KEITH ST. STA. 16+50
PAVEMENT WIDENING AND CURB & GUTTER RIGHT SIDE
15.5' CL EX. R/W – NEW BOC



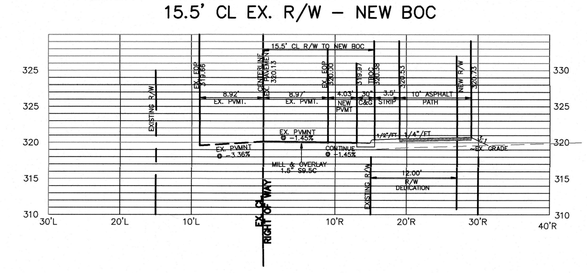
KEITH ST. STA. 17+00
PAVEMENT WIDENING AND CURB & GUTTER RIGHT SIDE
15.5' CL EX. R/W – NEW BOC



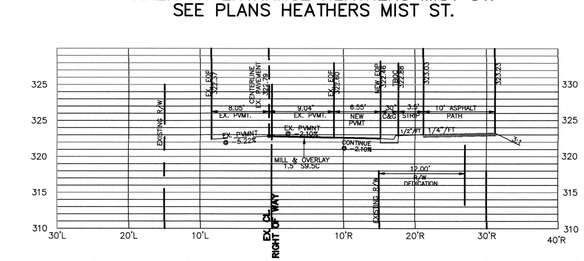
KEITH ST. STA. 17+50
PAVEMENT WIDENING AND CURB & GUTTER RIGHT SIDE
15.5' CL EX. R/W – NEW BOC



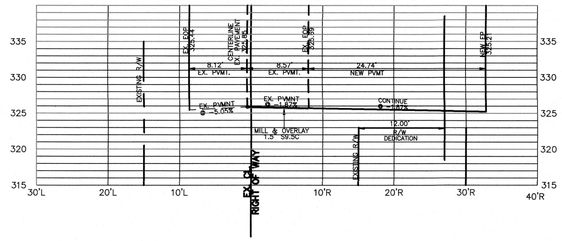
KEITH ST. STA. 18+00
PAVEMENT WIDENING AND CURB & GUTTER RIGHT SIDE
15.5' CL EX. R/W – NEW BOC



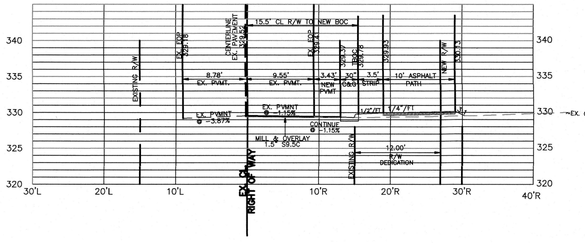
KEITH ST. STA. 18+50
PAVEMENT WIDENING RIGHT SIDE
AREA AT ENTRANCE HEATHERS MIST ST.
SEE PLANS HEATHERS MIST ST.



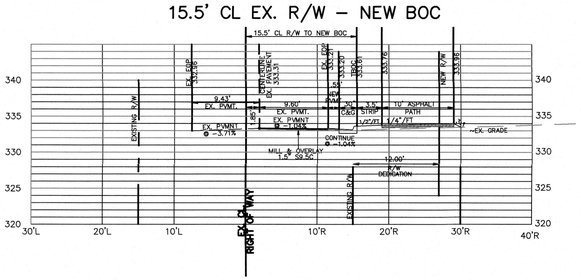
KEITH ST. STA. 19+00
PAVEMENT WIDENING RIGHT SIDE
AREA AT ENTRANCE HEATHERS MIST ST.
SEE PLANS HEATHERS MIST ST.



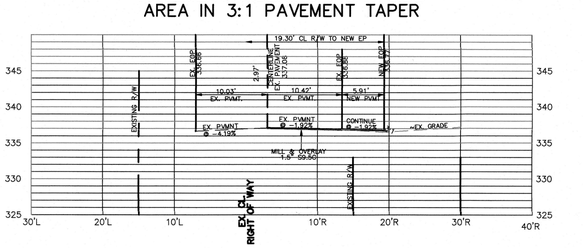
KEITH ST. STA. 19+50
PAVEMENT WIDENING AND CURB & GUTTER RIGHT SIDE
15.5' CL EX. R/W – NEW BOC



KEITH ST. STA. 20+00
PAVEMENT WIDENING AND CURB & GUTTER RIGHT SIDE
15.5' CL EX. R/W – NEW BOC



KEITH ST. STA. 20+50
PAVEMENT WIDENING RIGHT SIDE
AREA IN 3:1 PAVEMENT TAPER



SCALE: 1" = 10' HORIZ.
1" = 10' VERTICAL

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL R. MILLER
10/22/25

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

SHEET 30

KEITH STREET X-SECTIONS
THE COLLECTION – PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
SCALE 1" = 10	SURVEYED ----	DWG KEITH ST
REVISIONS: 10/22/25		

HEATHERS MIST ST.

PASSIVE OPEN SPACE

PASSIVE OPEN

PASSIVE OPEN SPACE 298,272.6 SF

TREE SAVE AREA 3

5' MULCH PATH
TRASH RECEPTICAL
PICNIC TABLE

PASSIVE OPEN

DOG PARK

30' CITY OF RALEIGH SANITARY SEWER EASEMENT B.M. 2009, PG. 1232

30' CITY OF RALEIGH SANITARY SEWER EASEMENT B.M. 2009, PG. 1232

N 10°42'04" W 83.95'

10' HI-VISIBILITY X-WALK PER MUTCD

STOP SIGN MUTCD R1-1

24" STOP BAR PER MUTCD

NO PARKING MUTCD R8-3

ST. NAME PER TOK 3.16

SPEED LIMIT 25 MUTCD R2-1

4" SOLID WHITE LINE 11' OFF EX. CL PAVEMENT

10' ASPHALT MULTI-USE TRAIL

KEITH STREET
EX. 30' PUBLIC R/W
FUTURE 54' PUBLIC R/W

N 10°42'04" W 420.95'

EOAP

EX. R/W

CROWN CASTLE GT COMPANY LLC
PIN: 1754533467
ZONED: RR1
VACANT

48 49 50 51 52 53

ALLEY 1

5' CONC S/W

SCM#1

RETAINING WALL W/ FENCE ALONG TOP

DAM

SPILLWAY

SCM#3

POSSIBLE PATH TO BE CONSTRUCTED BY FIELD DESIGNED

ALLEY 6

17 18 19 20 21 22 23 24 25 26 27 28 29

PHASE 2
CENTRAL PARK
ACTIVE OPEN SPACE
28,025.8 SF

PHASE 2

PHASE 1

CENTRAL PARK
ACTIVE OPEN SPACE
21,344.4 SF
CENTRAL PARK AREA - PHASE 1
SEE SHEETS L101, L201, L400, & L401
FOR SITE AND PLANTING DETAILS

ALLEY 5

HEATHERS MIST ST.

32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47

ALLEY 4

PED X-ING SIGN MUTCD W11-2 W/ DIRECTIONAL ARROW MUTCD W16-7PL

8' HI-VISIBILITY X-WALK PER MUTCD

ST. NAME PER TOK 3.16

(5) 16 UNIT & (1) 10 UNIT MAIL KIOSKS ON 9' X 22' CONCRETE PAD & 5 PARKING SPACES

ADA PARKING SIGN

WHITE TURN ARROWS (THERMOPLASTIC)

4" WHITE SKIP LANE LINE

4" SOLID YELLOW LINE W/ INTERNAL DIAGONALS

1'/3 ISLAND

18" GEDAN CURB

10' HI-VISIBILITY X-WALK PER MUTCD

SPEED LIMIT 25 MUTCD R2-1

CRANMER PINES ST.

10' ASPHALT MULTI-USE TRAIL

4" SOLID WHITE LINE

L2

N 88°14'33" W
136.47'

MONUMENT SIGN BY DEVELOPER REQUIRES SEPARATE PERMIT FROM T.O.K.

4' TAPER

CAROLYN SHATZ
PIN: 1754536281
ZONED: GRB
<10 AC RESIDENTIAL

CAROLYN SHATZ
PIN: 1754537168
ZONED: GRB
VACANT

N 31°43'36" W
220.22'

L1

N 11°47'24" W
116.63'

N 11°31'39" W

DWIGHT HIGH
PIN: 1754538007
ZONED: GRB
<10 AC RESIDENTIAL

JUTSON STREET

PHASE 1

RETAINING WALL W/ FENCE ALONG TOP SEE DETAIL THIS SHEET

SCM#2

10' HI-VISIBILITY X-WALK PER MUTCD

PED X-ING SIGN MUTCD W11-2 W/ DIRECTIONAL ARROW MUTCD W16-7PR

54 55 56 57

4" WHITE PARKING LINES

ALLEY 3

"BUTTERFLY GARDEN" SEE SHEETS L100, L200, L400, & L401 FOR SITE AND PLANTING DETAILS

ALLEY 2

58 59 60 61 62 63 64 65 66 67

PASSIVE OPEN

4" WHITE PARKING LINES

4" WHITE SKIP LANE LINE

4" SOLID YELLOW LINE W/ INTERNAL DIAGONALS

18" GEDAN CURB

STOP SIGN MUTCD R1-1

WHITE TURN ARROWS (THERMOPLASTIC)

24" STOP BAR PER MUTCD

10' HI-VISIBILITY X-WALK PER MUTCD

ST. NAME SEE SHEET 36

SPEED LIMIT 25 MUTCD R2-1

MONUMENT SIGN BY DEVELOPER REQUIRES SEPARATE PERMIT FROM T.O.K.

ROBERTSON ST. S.R. 2500
EX. 60' PUBLIC R/W
FUTURE 3 LANE AVENUE
80' PUBLIC R/W

S 34°40'40" W 223.43'

C3

C4

POTENTIAL

JAMES HOWARD POOLE JR
JAMES HOWARD POOLE III
PIN: 1754834965
ZONED: RT
AGRICULTURE USE

30' WAKE EMC POWERLINE EASEMENT B.M. 1994, PG. 445

WAYNE L. HARPER
EUGENE J. HARPER
PIN: 1754621854
ZONED: RR1
VACANT

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

ROBERTSON ROAD IMPROVEMENTS ARE A SEPARATE PROJECT BY OTHERS AND NOT APART OF PHASE 1 OR PHASE 2 ADDITIONAL R/W WILL BE DECICATED AS PART OF PHASE 1. ROADWAY IMPROVEMENTS WILL BE INSTALLED PRIOR TO PHASE 2 FINAL FINAL PLAT. PHASE 1 LOTS WILL ONLY HAVE ACCESS OFF OF KEITH STREET.

SEE SHEET 36 FOR SIGN POLE DETAIL

FOR KEITH STREET PAVEMENT STRIPING SEE SHEET 29

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

NORTH CAROLINA PROFESSIONAL SEAL 19793 ENGINEER RANDALL V. MILLER
03/18/26

CONSTRUCTION PLANS **SHEET 31**

SIGNAGE AND STRIPING PLAN – PHASE 1
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO: C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY		NORTH CAROLINA
OWNER: TCTBM, LLC			ZONED PUD
DATE 10/17/2025	DRAWN RLM		JOB NO. 20-
SCALE 1" = 40	SURVEYED ----		DWG COLLECTION-STRIPE
REVISIONS:12-15-25;2-27-26 03-18-26			PIN: SEE SITE DATA TABLE

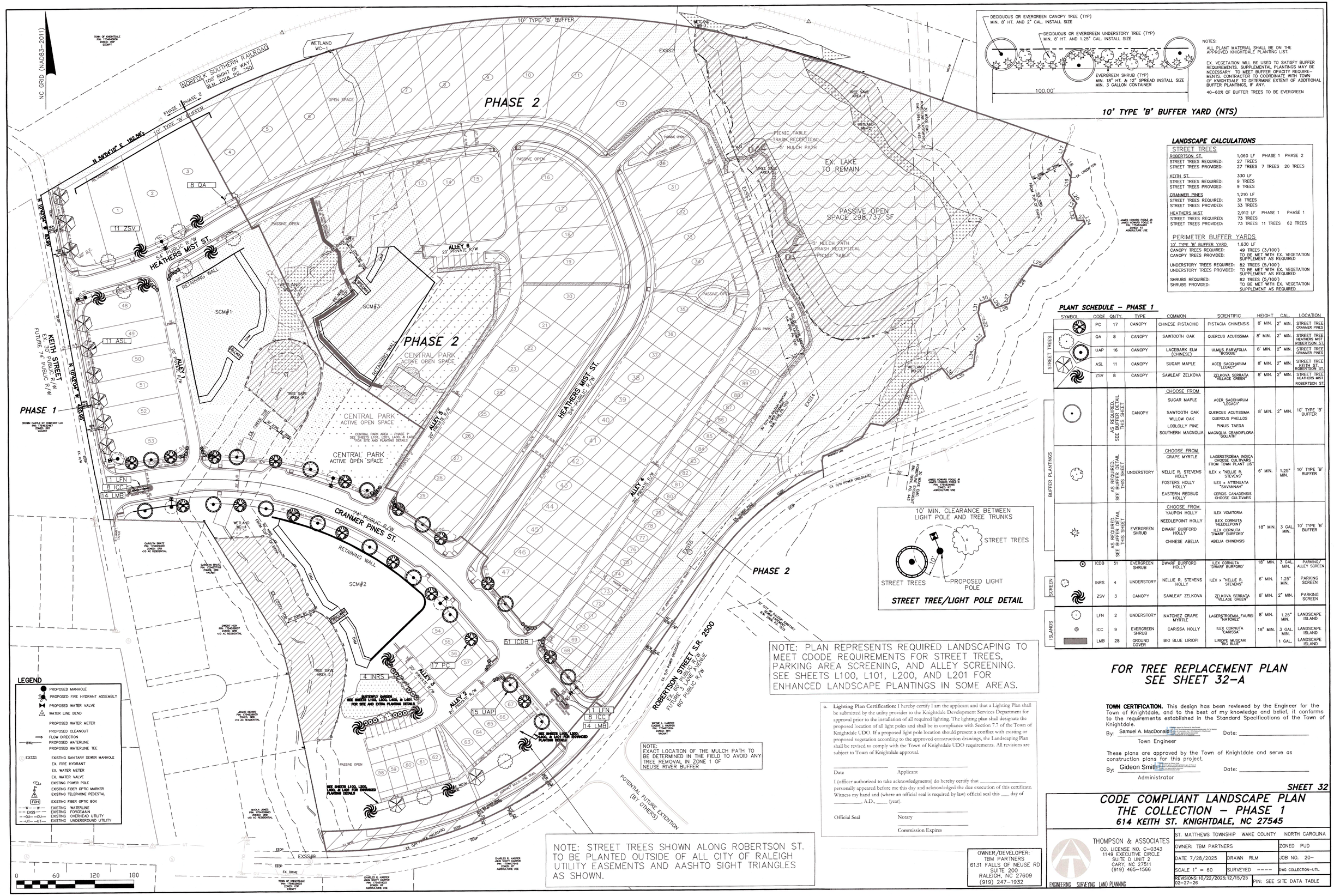
Pedestrian Crossing Traffic Sign
W11-2

Left Diagonal Arrow Plaque
W16-7pL

RIGHT Diagonal Arrow Plaque
W16-7pR

NC GRID (NAD83-2011)

0 40 80 120



10' TYPE 'B' BUFFER YARD (NTS)

LANDSCAPE CALCULATIONS

STREET TREES			
ROBERTSON ST.	1,060 LF	PHASE 1	PHASE 2
STREET TREES REQUIRED:	27 TREES		
STREET TREES PROVIDED:	27 TREES	7 TREES	20 TREES
KEITH ST.	330 LF		
STREET TREES REQUIRED:	9 TREES		
STREET TREES PROVIDED:	9 TREES		
CRANMER PINES	1,210 LF		
STREET TREES REQUIRED:	31 TREES		
STREET TREES PROVIDED:	33 TREES		
HEATHERS MIST	2,912 LF	PHASE 1	PHASE 1
STREET TREES REQUIRED:	73 TREES		
STREET TREES PROVIDED:	73 TREES	11 TREES	62 TREES

PERIMETER BUFFER YARDS	
10' TYPE 'B' BUFFER YARD	1,630 LF
CANOPY TREES REQUIRED:	49 TREES (3/100')
CANOPY TREES PROVIDED:	TO BE MET WITH EX. VEGETATION SUPPLEMENT AS REQUIRED
UNDERSTORY TREES REQUIRED:	82 TREES (5/100')
UNDERSTORY TREES PROVIDED:	TO BE MET WITH EX. VEGETATION SUPPLEMENT AS REQUIRED
SHRUBS REQUIRED:	82 TREES (5/100')
SHRUBS PROVIDED:	TO BE MET WITH EX. VEGETATION SUPPLEMENT AS REQUIRED

PLANT SCHEDULE - PHASE 1

	SYMBOL	CODE	QNTY.	TYPE	COMMON	SCIENTIFIC	HEIGHT	CAL.	LOCATION
STREET TREES		PC	17	CANOPY	CHINESE PISTACHIO	PISTACIA CHINENSIS	8' MIN.	2" MIN.	STREET TREE CRANMER PINES
		QA	8	CANOPY	SAWTOOTH OAK	QUERCUS ACUTISSIMA	8' MIN.	2" MIN.	STREET TREE HEATHERS MIST ROBERTSON ST.
		UAP	16	CANOPY	LACEBARK ELM (CHINESE)	ULMUS PARVIFOLIA 'BOSQUE'	8' MIN.	2" MIN.	STREET TREE CRANMER PINES
		ASL	11	CANOPY	SUGAR MAPLE	ACER SACCHARUM 'LEGACY'	8' MIN.	2" MIN.	STREET TREE KEITH ST ROBERTSON ST.
		ZSV	8	CANOPY	SAWLEAF ZELKOVA	ZELKOVA SERRATA 'VILLAGE GREEN'	8' MIN.	2" MIN.	STREET TREE HEATHERS MIST ROBERTSON ST.
BUFFER PLANTINGS		AS REQUIRED. SEE BUFFER DETAIL THIS SHEET		CANOPY	CHOOSE FROM: SUGAR MAPLE, SAWTOOTH OAK, WILLOW OAK, LOBLOLLY PINE, SOUTHERN MAGNOLIA	ACER SACCHARUM 'LEGACY', QUERCUS ACUTISSIMA, QUERCUS PHELLOS, PINUS TAEDA, MAGNOLIA GRANDIFLORA 'GOLIATH'	8' MIN.	2" MIN.	10' TYPE 'B' BUFFER
		AS REQUIRED. SEE BUFFER DETAIL THIS SHEET		UNDERSTORY	CHOOSE FROM: CRAPE MYRTLE, NELLIE R. STEVENS HOLLY, FOSTERS HOLLY, EASTERN REDBUD HOLLY	LAGERSTROEMA INDICA CHOOSE CULTIVARS FROM TOWN PLANT LIST, ILEX x 'NELLIE R. STEVENS', ILEX x ATTENUATA 'SAVANNAH', CERCIS CANADENSIS CHOOSE CULTIVARS	6' MIN.	1.25" MIN.	10' TYPE 'B' BUFFER
		AS REQUIRED. SEE BUFFER DETAIL THIS SHEET		EVERGREEN SHRUB	CHOOSE FROM: YAUPON HOLLY, NEEDLEPOINT HOLLY, DWARF BURFORD HOLLY, CHINESE ABELIA	ILEX VOMITORIA, ILEX CORNUTA 'NEEDLEPOINT', ILEX CORNUTA 'DWARF BURFORD', ABELIA CHINENSIS	18" MIN.	3 GAL. MIN.	10' TYPE 'B' BUFFER
SCREEN		ICDB	51	EVERGREEN SHRUB	DWARF BURFORD HOLLY	ILEX CORNUTA 'DWARF BURFORD'	18" MIN.	3 GAL. MIN.	PARKING/ ALLEY SCREEN
		INRS	4	UNDERSTORY	NELLIE R. STEVENS HOLLY	ILEX x 'NELLIE R. STEVENS'	6' MIN.	1.25" MIN.	PARKING SCREEN
		ZSV	3	CANOPY	SAWLEAF ZELKOVA	ZELKOVA SERRATA 'VILLAGE GREEN'	8' MIN.	2" MIN.	PARKING SCREEN
ISLANDS		LFN	2	UNDERSTORY	NATCHEZ CRAPE MYRTLE	LAGERSTROEMA FAUREI 'NATCHEZ'	8' MIN.	1.25" MIN.	LANDSCAPE ISLAND
		ICC	9	EVERGREEN SHRUB	CARISSA HOLLY	ILEX CORNUTA 'CARISSA'	18" MIN.	3 GAL. MIN.	LANDSCAPE ISLAND
		LMB	28	GROUND COVER	BIG BLUE LIRIOPI	LIRIOPE MUSCARI 'BIG BLUE'		1 GAL.	LANDSCAPE ISLAND

STREET TREE/LIGHT POLE DETAIL

NOTE: PLAN REPRESENTS REQUIRED LANDSCAPING TO MEET CDODE REQUIREMENTS FOR STREET TREES, PARKING AREA SCREENING, AND ALLEY SCREENING. SEE SHEETS L100, L101, L200, AND L201 FOR ENHANCED LANDSCAPE PLANTINGS IN SOME AREAS.

NOTE: EXACT LOCATION OF THE MULCH PATH TO BE DETERMINED IN THE FIELD TO AVOID ANY TREE REMOVAL IN ZONE 1 OF NEUSE RIVER BUFFER

NOTE: STREET TREES SHOWN ALONG ROBERTSON ST. TO BE PLANTED OUTSIDE OF ALL CITY OF RALEIGH UTILITY EASEMENTS AND AASHTO SIGHT TRIANGLES AS SHOWN.

a. **Lighting Plan Certification:** I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Development Services Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with Section 7.7 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

Date _____ Applicant _____

I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ___ day of _____, A.D., ____ (year).

Official Seal _____ Notary _____

Commission Expires _____

OWNER/DEVELOPER:
TBM PARTNERS
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

FOR TREE REPLACEMENT PLAN SEE SHEET 32-A

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

SHEET 32

CODE COMPLIANT LANDSCAPE PLAN
THE COLLECTION - PHASE 1
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA	
OWNER: TBM PARTNERS		ZONED PUD	
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-	
SCALE 1" = 60	SURVEYED ----	DWG COLLECTION-UTIL	
REVISIONS: 10/22/2025; 12/15/25 02-27-26		PIN: SEE SITE DATA TABLE	

NC GRID (NAD83-2011)

NOTES:

TREE LOCATIONS FROM AN ENVIRONMENTAL/ TREE SURVEY BY SAGE ECOLOGICAL SERVICES DATED AUG. 6, 2019 REPORT FROM SAGE ECOLOGICAL INCLUDED WITH CONSTRUCTION PLAN SUBMITTAL.

A TREE SURVEY SHALL BE PERFORMED PRIOR TO THE FINAL PLAT APPROVAL TO ENSURE THAT ALL REPLACEMENT TREES HAVE BEEN PLANTED.

LEGEND:

○73	24"> DBH TREE LOCATION
⊗96	24"> DBH TREE REMOVED

TREE REPLACEMENT CALCS.

REMOVED TREE NUMBER	DBH	REMOVED TREE NUMBER	DBH
1	39	60	28
2	29	61	24
3	32	62	26
4	37	64	26
5	38	66	24
6	26	69	28
7	38		
8	32	70	34
		71	24
17	24	74	24
18	25	75	32
		76	24
20	24	77	26
21	24	78	28
22	24	79	28
35	24	81	34
		82	24
40	25	90	30
41	24	91	30
42	26	92	24
		93	70
55	34	94	30
56.1	24	95	30
58	56	96	28
59	27	97	28
		98	28
		100	24
		101	38

TOTAL DBH TO BE REMOVED 1427
2" CAL. REPLACEMENT TREES REQUIRED: 119

ALL REMOVED 24" OR GREATER DBH TREES TO BE REPLACED WITH (1) 2" CAL. 8' HT TREE PER EVERY 12" DBH REMOVED. 1427 TOTAL DBH REMOVED/12 DBH = 118.92 (119) TREES TO BE REPLANTED REPLANTING AREAS SHOWN ON THIS SHEET.

TREE REPLANTING LIST 117 TREES REQUIRED

CHOOSE FROM	SCIENTIFIC	CALIPER	HEIGHT
SUGAR MAPLE	ACER SACCARUM "LEGACY"	2"	8'
SAWTOOTH OAK	QUERCUS ACUTISSIMA	2"	8'
RIVER BIRCH	BETULA NIGRA "HERITAGE"	2"	8'
LOBLOLLY PINE	PINUS TAEDA	2"	8'

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TBM PARTNERS
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

CONSTRUCTION PLANS SHEET 32A

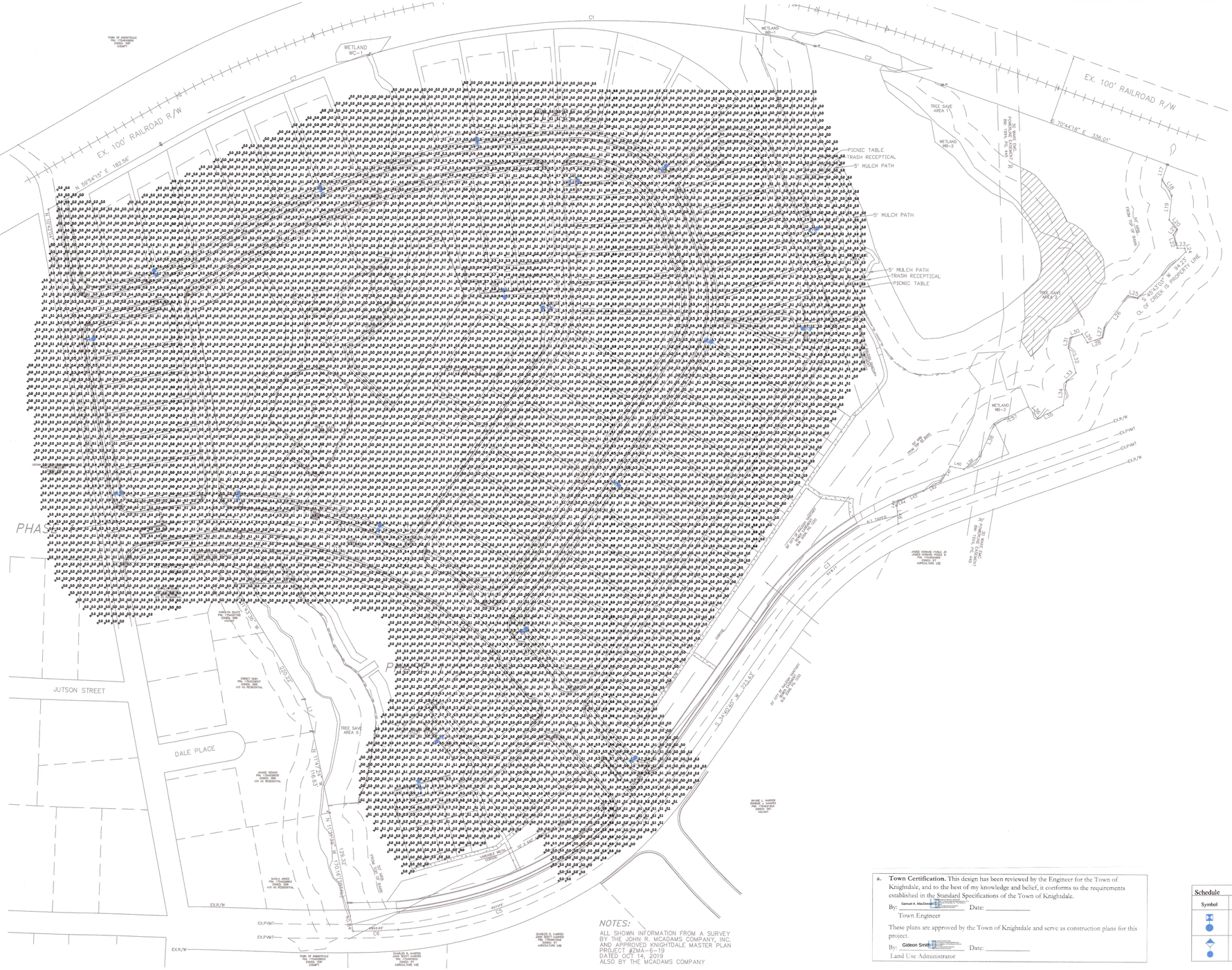
TREE REPLACEMENT PLAN – PHASE 1
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

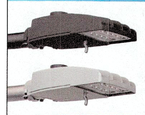
ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA	
OWNER: TCTBM, LLC		ZONED PUD	
DATE 10/17/2025	DRAWN RLM	JOB NO. 20–	
SCALE 1" = 60	SURVEYED ----	DWG:COLLECTION–GRADE	
REVISIONS: 12-15-25 02-27-26		PIN: SEE SITE DATA TABLE	

LEGEND
- PROPOSED MANHOLE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED WATER VALVE
- WATER LINE BEND
- PROPOSED WATER METER
- PROPOSED CLEANOUT
- FLOW DIRECTION
- PROPOSED WATERLINE
- PROPOSED WATERLINE TEE
- EXSS1 EXISTING SANITARY SEWER MANHOLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. WATER VALVE
- EXISTING POWER POLE
- EXISTING FIBER OPTIC MARKER
- EXISTING TELEPHONE PEDESTAL
- FOH EXISTING FIBER OPTIC BOX
- W W EXISTING WATERLINE
- EXSS EXISTING FORCEMAIN
- OU OU EXISTING OVERHEAD UTILITY
- UT UT EXISTING UNDERGROUND UTILITY

0 60 120 180



Outdoor Lighting



MICRO LED ROADWAY
(Meets Dark Sky Criteria)

LED (Light-emitting diode)	50 watts
Mounting height	20', 25', 35'
Color	Gray | Black
Pole	Fiberglass Metal Wood
Applications	Neighborhoods Parks Streets

Light source: LED (white)
Wattage: 50 watts, 70 watts
Lumens: 5,232 – 8,170
Light pattern: IESNA Type II, III, V
IESNA cutoff classification: Full-cutoff
BUG rating: Type II = B1U0G2 (50w)
B2U0G2 (70w)
Type III = B1U0G1
Type V = B3U0G1 (50w only)
Color temperature: 3,000K **4,000K**



light distribution patterns

POLE AVAILABLE	MOUNTING HEIGHT	COLOR
Fiberglass	25', 30', 35'	Gray, Black (additional cost)
Wood	25', 30', 35'	Standard
Metal (Special conditions)	25', 30', 35'	Galvanized

FEATURES	BENEFITS
Turnkey operation	Provides hassle-free installation and service
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance, electricity & warranty included	Eliminates high and unexpected repair bills
One low monthly cost on your electric bill	Convenience and savings for you

For additional information, contact us at: DELCarolinas@duke-energy.com.

DUKE ENERGY. PROGRESS

BUILDING A SMARTER ENERGY FUTURE ®

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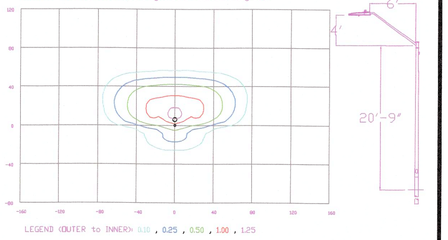
ISOFOOTCANDLE CURVES

FIXTURE: LED 50W ROADWAY
MOUNTING HEIGHT: 25 FT
LIGHT SOURCE: LED, 3000K, 70 CRI
LUMENS - 5342
PATTERN: TYPE III, B1-U0-G1(zero light at or above 90 degrees)

ASSY# LFIX-RW-LED-50-GRAY-III-3000K-___-P
POLE ASSY# LPOLE-DB-FG-25FT-GRAY-___-P (GRAY)



LEGEND (OUTER to INNER): 0.10 , 0.25 , 0.50 , 1.00 , 1.25

a. **Lighting Plan Certification:** I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Development Services Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with Section 7.7 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

Date _____ Applicant _____

I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ___ day of _____, A.D., ____ (year).

Official Seal _____ Notary _____

Commission Expires _____

a. **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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Land Use Administrator

Schedule

Symbol	Label	Quantity	Description	Lumens Per Lamp	Light Loss Factor
	A	12	LED 50w Roadway - Type III - 3000K - Street	5312	0.85
	B	7	LED 50w Roadway - Type III - 3000K - Parking	5312	0.85

NO.	DATE	REVISION	BY
REV C	01/29/26	UPDATED SITE PLAN.	NJ
REV B	08/09/21	TOWN REQUESTED INCREASED SPACING.	NJ

DISTANCE CALIBRATION (INCHES)
0 0.5 1.0 2.0 3.0 4.0

LIGHTING DESIGN TOLERANCE

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

DUKE ENERGY. PROGRESS

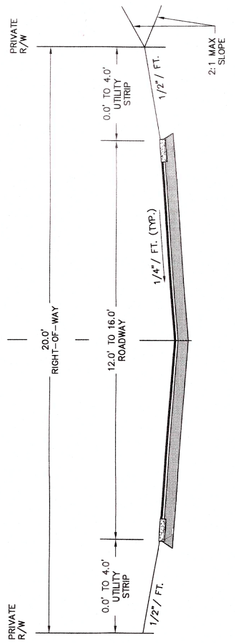
PROPRIETARY & CONFIDENTIAL

This document together with the concepts and designs presented herein, presented as an instrument of service, is the sole property of Duke Energy, and is intended only for the specific purpose and prospective client as stated in the title block of this drawing. Any use, copying, reproduction or disclosure of the drawing, design or any information contained herein by the prospective customer or other entities, including without limitation, architects, engineers, or equipment manufacturers is hereby expressly prohibited and shall not be permitted absent prior written consent from, and payment of compensation to Duke Energy. Duke Energy disclaims any liability or responsibility for any unauthorized use of or reliance on this document.

THE COLLECTION
KNIGHTDALE, NC
SITE LIGHTING ARRANGEMENT

Designed by DUKE ENERGY PROGRESS LIGHTING SOLUTIONS
Reviewed by N. Johnson Scale 1" = 70'
Date 01/29/2026 Size Drawing size "D"
Description LED ROADWAY
Drawing No. 21-0112C

SHEET 33A



NO SCALE

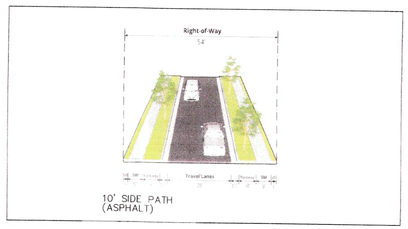
STREET FEATURES:
STREET WIDTH OF 12 FT. MINIMUM, 16 FT. DESIRABLE
RESERVED 20 FT. OF RIGHT-OF-WAY
UTILITY LOCATION UNDERGROUND
TWO TO SIX BLOCKS LONG
AVERAGE SPEED OF 10 MPH

BUILDINGS & LAND USE:
RESIDENTIAL – PRIMARILY SINGLE FAMILY
COMMERCIAL

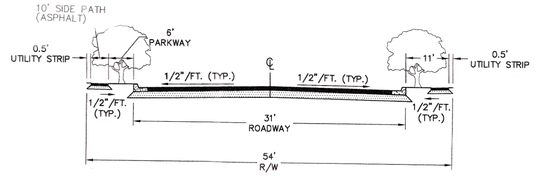
MINIMUM PAVEMENT DESIGN:
BITUMINOUS SURFACE COURSE: 2-½" S 9.5A
BASE COURSE: 8" ABC

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	ALLEY SECTION	STD. NO. 3.01-1



10' SIDE PATH (ASPHALT)



NO SCALE

MINIMUM PAVEMENT DESIGN:

BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

STREET FEATURES:

FLEXIBLE STREET DESIGN
COORDINATE STREET DESIGN ELEMENTS WITH TOWN STAFF
STREET WIDTH OF 20 FT. FOR ONE-WAY
STREET WIDTH OF 31 FT. FOR TWO-WAY
CURB & GUTTER
INFORMAL PARKING – ONE SIDE ONLY
PARKWAY – 6 FT. ON EACH SIDE
SIDEWALK – 5 FT. ON EACH SIDE
UTILITY STRIP – 0.5 FT. ON EACH SIDE
REQUIRES 47 FT. OF RIGHT-OF-WAY FOR ONE-WAY
REQUIRES 54 FT. OF RIGHT-OF-WAY FOR TWO-WAY
UTILITY LOCATION UNDERGROUND
AVERAGE SPEED 20 MPH
STREET TREES LOCATED IN PARKWAY

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	KEITH STREET LOCAL STREET - 2 LANES SIDEWALKS	STD. NO. 3.02-1

Type 4 Object Markers (end of roadway)



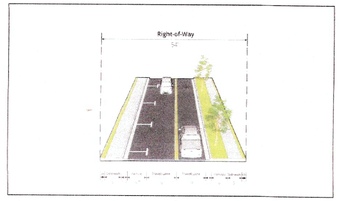
OM4–1, OM4–2, and OM4–3 are shown labeled as end–of–roadway markers (end of roadway):

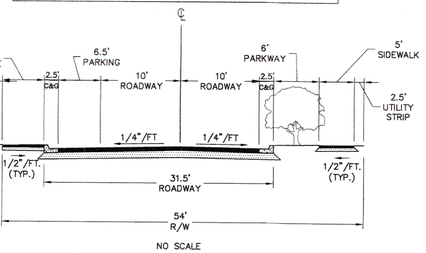
OM4–1 is shown as a red diamond shape with nine red circles denoting red retroreflectors mounted symmetrically in three diagonal rows on the marker.

OM4–2 is shown as a black diamond shape with nine red circles denoting red retroreflectors, mounted symmetrically in three diagonal rows on the marker.

OM4–3 is shown as an all–red diamond shape.

The minimum mounting height, measured vertically from the bottom of a Type 4 object marker to the elevation of the near edge of the traveled way, shall be 4 feet.





NO SCALE

MINIMUM PAVEMENT DESIGN:

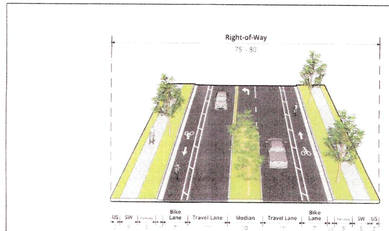
BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

STREET FEATURES:

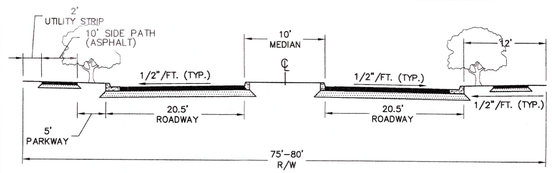
FLEXIBLE STREET DESIGN
COORDINATE STREET DESIGN ELEMENTS WITH TOWN STAFF
TRAVEL LANES OF 10 FT.
CURB & GUTTER
STRIPED PARALLEL PARKING – ONE SIDE ONLY
PARKWAY – 6 FT. ON ONE SIDE
SIDEWALK – 6 FT. ON PARKING SIDE; 5 FT. ON OPPOSING SIDE
REQUIRES 54 FT. OF RIGHT-OF-WAY
UTILITY LOCATION UNDERGROUND
AVERAGE SPEED 20 MPH
STREET TREES LOCATED IN PARKWAY
STREET TREES LOCATED ON PARKING SIDE OF STREET WILL BE PLACED IN CURB BULB OUT OR BACK OF SIDEWALK

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	LOCAL STREET - ON STREET PARKING ONE SIDE ONLY	STD. NO. 3.02-2



10' SIDE PATH (ASPHALT)



NO SCALE

MINIMUM PAVEMENT DESIGN:

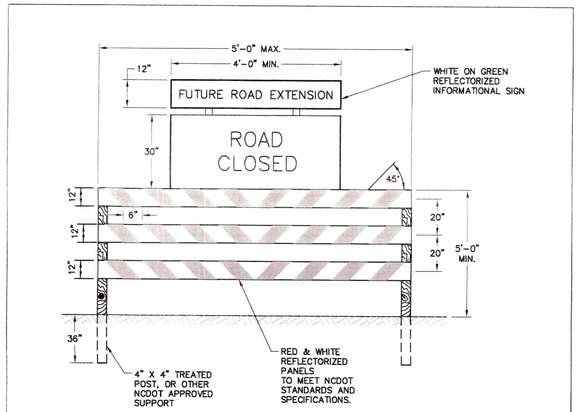
BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

STREET FEATURES:

MEDIAN OF 10 FT.
TRAVEL LANES OF 11 FT.
BIKE LANE OF 7 FT.
CURB & GUTTER
PARKWAY – 5 FT. ON EACH SIDE
SIDEWALKS – 5 FT. ON EACH SIDE
REQUIRES 75 FT. OF RIGHT-OF-WAY
WHEN UDO APPENDIX B CALLS FOR A 10 FT. SIDEPATH, RIGHT-OF-WAY WIDTH INCREASES TO 80 FT.
UTILITY LOCATION UNDERGROUND OR ALLEY
AVERAGE SPEED 35–45 MPH
STREET TREES LOCATED IN PARKWAY
UTILITY LOCATION BEHIND CURB ON NCDOT FACILITIES
BICYCLE FACILITY PAVEMENT MARKINGS SHALL ADHERE TO MUTCD STANDARDS
PROVIDE ELEMENTS PER URBAN STREETSCAPE DESIGN FEATURES DETAIL

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	ROBERTSON STREET AVENUE - 3 LANES BUFFERED BIKE LANES	STD. NO. 3.05



NOTES:

1. BARRICADE(S) TO BE ERECTED ACROSS ENTIRE ROADWAY INCLUDING CURB & GUTTER.
2. ADVANCE WARNING SIGN W14–1 (DEAD END) SHALL BE PLACED JUST AFTER LAST INTERSECTING STREET.
3. MARKINGS FOR BARRICADE RAILS SHALL BE REFLECTIVE AND ALTERNATE RED AND WHITE STRIPS.
4. "ROAD CLOSED" SIGN SHALL MEET SPECIFICATIONS OF M.U.T.C.D R11–2 AND BE REQUIRED ATOP EACH BARRICADE USED.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TEMPORARY BARRICADE FOR DEAD END ROADS	STD. NO. 3.18

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

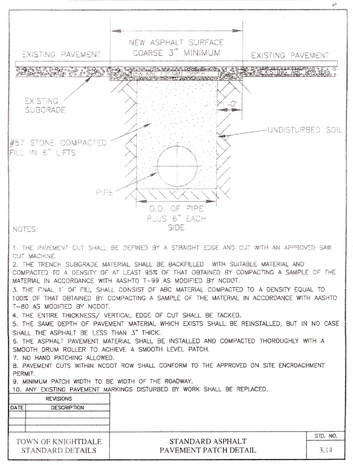
OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247–1932

SHEET 34

TYPICAL ROADWAY SECTIONS AND DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C–0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465–1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA			
OWNER: TCTBM, LLC			ZONED PUD
DATE 7/28/2025	DRAWN RLM		JOB NO. 20–
NO SCALE	SURVEYED ----		DWG COLLECTION–SITE
REVISIONS: 10–17–2025		PIN: SEE SITE DATA TABLE	



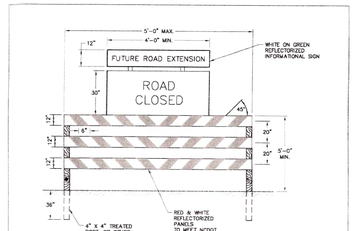
NOTES:

1. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROVED SAW CUT MACHINE.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1' OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-180 AS MODIFIED BY NCDOT.
4. THE ENTIRE THICKNESS/ VERTICAL EDGE OF CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
7. NO HAND PATCHING ALLOWED.
8. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.
9. MINIMUM PATCH WIDTH TO BE WIDTH OF THE ROADWAY.
10. ANY EXISTING PAVEMENT MARKINGS DISTURBED BY WORK SHALL BE REPLACED.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD ASPHALT PAVEMENT PATCH DETAIL | STD. NO. 3.14



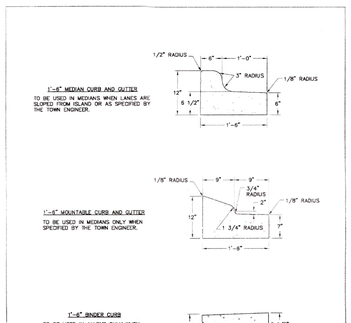
NOTES:

1. BARRICADE(S) TO BE ERECTED ACROSS ENTIRE ROADWAY INCLUDING CURB & GUTTER.
2. ADVANCE WARNING SIGN W14-1 (DEAD END) SHALL BE PLACED JUST AFTER LAST INTERSECTING STREET.
3. MARKINGS FOR BARRICADE RAILS SHALL BE REFLECTIVE AND ALTERNATE RED AND WHITE STRIPS.
4. "ROAD CLOSED" SIGN SHALL MEET SPECIFICATIONS OF M.U.T.C.D 911-2 AND BE REQUIRED ATOP EACH BARRICADE USED.

REVISIONS

DATE	DESCRIPTION

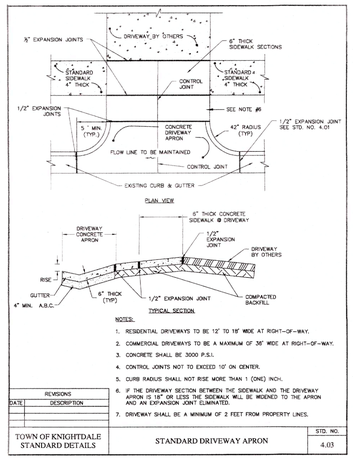
TOWN OF KNIGHTDALE STANDARD DETAILS | TEMPORARY BARRICADE FOR DEAD END ROADS | STD. NO. 3.18



REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | CURB AND GUTTER | 2 of 3 | STD. NO. 4.01



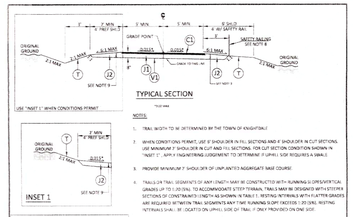
NOTES:

1. RESIDENTIAL DRIVEWAYS TO BE 12' TO 18' WIDE AT RIGHT-OF-WAY.
2. COMMERCIAL DRIVEWAYS TO BE A MAXIMUM OF 36' WIDE AT RIGHT-OF-WAY.
3. CONCRETE SHALL BE 3000 P.S.I.
4. CONTROL JOINTS NOT TO EXCEED 10' ON CENTER.
5. CURB RADIUS SHALL NOT RISE MORE THAN 1 (ONE) INCH.
6. IF THE DRIVEWAY SECTION BETWEEN THE SIDEWALK AND THE DRIVEWAY APRON IS 18" OR LESS THE SIDEWALK WILL BE WIDENED TO THE APRON AND AN EXPANSION JOINT ELIMINATED.
7. DRIVEWAY SHALL BE A MINIMUM OF 2 FEET FROM PROPERTY LINES.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD DRIVEWAY APRON | STD. NO. 4.03



USE "INSET 1" WHEN CONDITIONS PERMIT

PAVEMENT SCHEDULE

C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF-9.5B AT AN AVERAGE RATE OF 200 LBS. PER SQ. YD. OR 100 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
J1	5" AGGREGATE BASE COURSE
J2	VARIABLE DEPTH AGGREGATE BASE COURSE
T	EARTH MATERIAL
V1	GEOTEXTILE FOR PAVEMENT STABILIZATION

TABLE 1 - MAXIMUM RUNNING SLOPE AND TRAIL SEGMENT LENGTH

RUNNING SLOPE	MAX LENGTH OF SEGMENT
5.00 (5%)	200 FT
1:12.68 (8%)	30 FT

NOTES:

1. TRAIL WIDTH TO BE DETERMINED BY THE TOWN OF KNIGHTDALE
2. WHEN CONDITIONS PERMIT, USE 5' SHOULDER IN FILL SECTIONS AND 5' SHOULDER IN CUT SECTIONS. USE MINIMUM 3' SHOULDER IN CUT AND FILL SECTIONS. FOR CUT SECTION CONDITION SHOWN IN "INSET 1", APPLY ENGINEERING JUDGMENT TO DETERMINE IF UPHILL SIDE REQUIRES A SWALE.
3. PROVIDE MINIMUM 3' SHOULDER OF UNPAVED AGGREGATE BASE COURSE.
4. TRAILS OR TRAIL SEGMENTS OF ANY LENGTH MAY BE CONSTRUCTED WITH RUNNING SLOPES/VERTICAL GRADES UP TO (-20.0%). TO ACCOMMODATE STEEP TERRAIN, TRAILS MAY BE DESIGNED WITH SYSTEMS SECTIONS OF CONSTRAINED LENGTH AS SHOWN IN TABLE 1. RESTING INTERVALS WITH FLATTER GRADES ARE REQUIRED BETWEEN TRAIL SEGMENTS ANY TIME RUNNING SLOPE EXCEEDS 1:20 (5%). RESTING INTERVALS SHALL BE LOCATED ON UPHILL SIDE OF TRAIL IF ONLY PROVIDED ON ONE SIDE.
5. TO ENSURE THAT A TRAIL IS NOT DESIGNED AS A SERIES OF STEEP SEGMENTS, NO MORE THAN 30% OF THE TOTAL LENGTH OF TRAIL MAY HAVE A RUNNING SLOPE/VERTICAL GRADE OF 7.0% (8.33% OR 1:12 MAX). RESTING INTERVALS MUST BE PROVIDED FREQUENTLY AS THE RUNNING SLOPE INCREASES.
6. RUNNING SLOPE/VERTICAL GRADE RECOMMENDATIONS MAY NOT BE ABLE TO BE ACHIEVED FOR TRAIL REPLACEMENT PROJECTS. FOR THESE TYPE OF PROJECTS, REPLACEMENT OF EXISTING CONDITION IN KIND IS SUFFICIENT.
7. TYPICAL CROSS SLOPE SHALL BE 2.0% (1.0MIN OR 1.4MAX). CROSS SLOPE DIRECTION VARIES. SLOPE SHOULDERS FOR POSITIVE DRAINAGE WHICH MAY REQUIRE CONTINUING PAVEMENT OR SHOULDER SLOPE UNTIL TIE-IN WITH NATURAL GROUND. SEE PLAN SHEETS AND CROSS SECTIONS.
8. WHEN CONDITIONS PERMIT, SHOULDERS TO MATCH CROSS SLOPE OF TRAIL AND SLOPE IS DEMED TO BE 8:1 OR FLATTER.
9. PROVIDE A SWITTER WAS FOR THE FOLLOWING CIRCUMSTANCES WITHIN 8' OF THE EDGE OF PAVEMENT: 1) SLOPE > 8:1 AND DROP OF 5', 2) SLOPE > 3:1 AND DROP OF 3', 3) SLOPE > 1:1 AND DROP OF 1'.
10. CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED DURING CONSTRUCTION.
11. PROOF ROLLING SHALL OCCUR IN PRESENCE OF THE OWNER OR THE OWNER'S TESTING AGENCY AT THE FOLLOWING STAGES: 1) PRIOR TO PLACING FILL IN LOW AREAS, 2) AFTER THE PREPARATION OF SUBGRADE PRIOR TO PLACING ABC, 3) AFTER THE PLACEMENT OF ABC PRIOR TO PAVING.
12. PAVEMENT EDGE SLOPES ARE 2:1 UNLESS OTHERWISE NOTED.
13. NO ABOVE-GROUND UTILITIES OR UTILITY SURFACE COVERS/PLATES/MANHOLES SHALL BE LOCATED WITHIN THE TRAIL AND SHALL BE A MINIMUM OF 2' FROM THE EDGE OF TRAIL. RAISED MANHOLES SHALL BE A MINIMUM OF 6' FROM THE EDGE OF TRAIL.

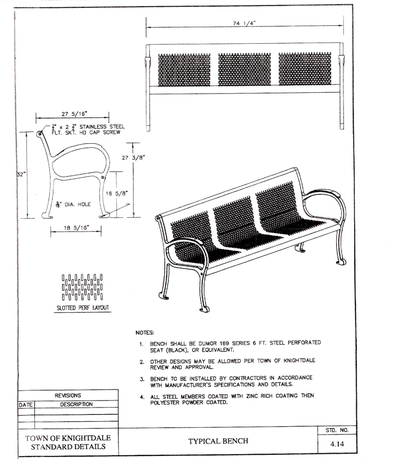
TABLE 1 - MAXIMUM RUNNING SLOPE AND TRAIL SEGMENT LENGTH

RUNNING SLOPE	MAX LENGTH OF SEGMENT
5.00 (5%)	200 FT
1:12.68 (8%)	30 FT

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | ASPHALT TYPICAL GREENWAY SECTION VARIABLE WIDTH (10' MIN) | STD. NO. 4.09-1



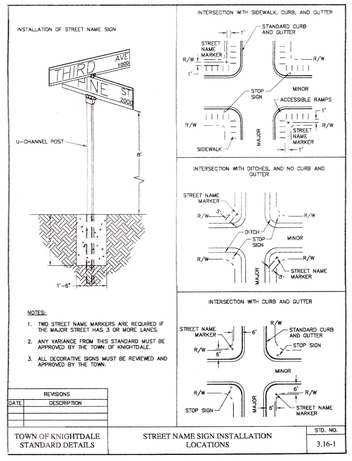
NOTES:

1. BENCH SHALL BE DUMOR 169 SERIES 6 FT. STEEL PERFORATED SEAT (BLACK), OR EQUIVALENT.
2. OTHER DESIGNS MAY BE ALLOWED PER TOWN OF KNIGHTDALE REVIEW AND APPROVAL.
3. BENCH TO BE INSTALLED BY CONTRACTORS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.
4. ALL STEEL MEMBERS COATED WITH ZINC RICH EPOXY COATING THEN POLYESTER POWDER COATED.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TYPICAL BENCH | STD. NO. 4.14



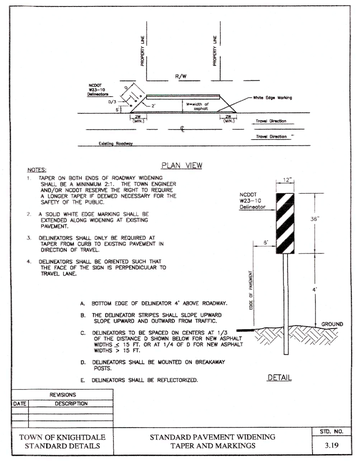
NOTES:

1. TWO STREET NAME MARKERS ARE REQUIRED IF THE MAJOR STREET HAS 3 OR MORE LANES.
2. ANY VARIANCE FROM THIS STANDARD MUST BE APPROVED BY THE TOWN OF KNIGHTDALE.
3. ALL DECORATIVE SIGNS MUST BE REVIEWED AND APPROVED BY THE TOWN.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STREET NAME SIGN INSTALLATION LOCATIONS | STD. NO. 3.16-1



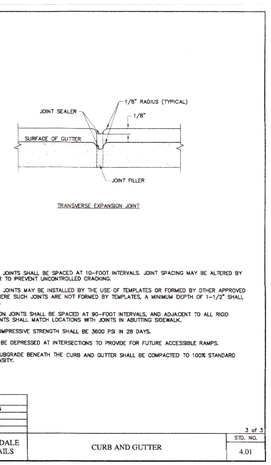
NOTES:

1. TAPER ON BOTH ENDS OF ROADWAY WIDENING SHALL BE A MINIMUM 2:1. THE TOWN ENGINEER AND/OR NCDOT RESERVE THE RIGHT TO REQUIRE A LONGER TAPER IF DEEMED NECESSARY FOR THE SAFETY OF THE PUBLIC.
2. A SOLID WHITE EDGE MARKING SHALL BE EXTENDED ALONG WIDENING AT EXISTING PAVEMENT.
3. DELINEATORS SHALL ONLY BE REQUIRED AT TAPER FROM CURB TO EXISTING PAVEMENT IN DIRECTION OF TRAVEL.
4. DELINEATORS SHALL BE ORIENTED SUCH THAT THE FACE OF THE SIGN IS PERPENDICULAR TO TRAVEL LANE.
   A. BOTTOM EDGE OF DELINEATOR 4' ABOVE ROADWAY.
   B. THE DELINEATOR STRIPES SHALL SLOPE UPWARD SLOPE UPWARD AND OUTWARD FROM TRAFFIC.
   C. DELINEATORS TO BE SPACED ON CENTERS AT 1/3 OF THE DISTANCE SHOWN BELOW FOR NEW ASPHALT WIDTHS ≤ 15 FT. OR AT 1/4 OF D FOR NEW ASPHALT WIDTHS > 15 FT.
   D. DELINEATORS SHALL BE MOUNTED ON BREAKAWAY POSTS.
   E. DELINEATORS SHALL BE REFLECTORIZED.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD PAVEMENT WIDENING TAPER AND MARKINGS | STD. NO. 3.19



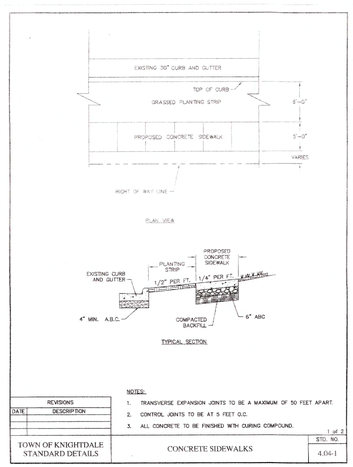
NOTES:

1. CONTRACTION JOINTS SHALL BE SPACED AT 10-FOOT INTERVALS. JOINT SPACING MAY BE ALTERED BY THE ENGINEER TO PREVENT UNCONTROLLED CRACKING.
2. CONTRACTION JOINTS MAY BE INSTALLED BY THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. WHERE SUCH JOINTS ARE NOT FORMED BY TEMPLATES, A MINIMUM DEPTH OF 1-1/2" SHALL BE OBTAINED.
3. ALL EXPANSION JOINTS SHALL BE SPACED AT 80-FOOT INTERVALS, AND ADJACENT TO ALL RIGID OBJECTS. JOINTS SHALL MATCH LOCATIONS WITH JOINTS IN ABUTTING SIDEWALK.
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI IN 28 DAYS.
5. CURB SHALL BE DEPRESSED AT INTERSECTIONS TO PROVIDE FOR FUTURE ACCESSIBLE RAMPS.
6. TOP 8" OF SUBGRADE BENEATH THE CURB AND GUTTER SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | CURB AND GUTTER | 3 of 3 | STD. NO. 4.01



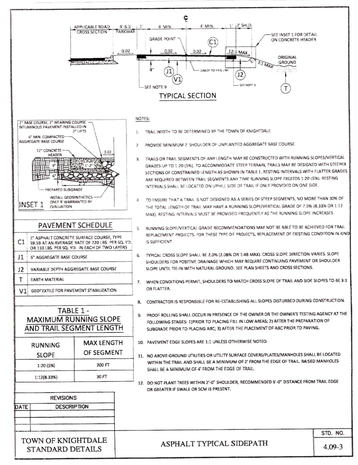
NOTES:

1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET APART.
2. CONTROL JOINTS TO BE AT 5 FEET O.C.
3. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | CONCRETE SIDEWALKS | 1 of 2 | STD. NO. 4.04-1



C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF-9.5B AT AN AVERAGE RATE OF 200 LBS. PER SQ. YD. OR 100 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
J1	5" AGGREGATE BASE COURSE
J2	VARIABLE DEPTH AGGREGATE BASE COURSE
T	EARTH MATERIAL
V1	GEOTEXTILE FOR PAVEMENT STABILIZATION

TABLE 1 - MAXIMUM RUNNING SLOPE AND TRAIL SEGMENT LENGTH

RUNNING SLOPE	MAX LENGTH OF SEGMENT
5.00 (5%)	200 FT
1:12.68 (8%)	30 FT

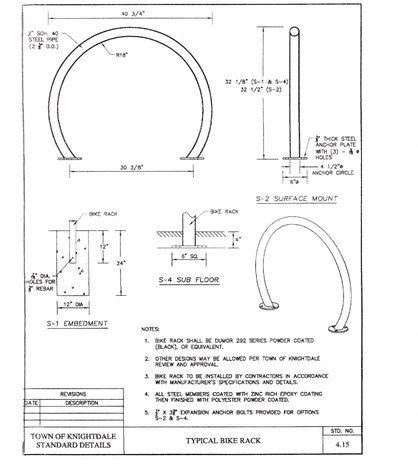
NOTES:

1. TRAIL WIDTH TO BE DETERMINED BY THE TOWN OF KNIGHTDALE
2. PROVIDE MINIMUM 3' SHOULDER OF UNPAVED AGGREGATE BASE COURSE.
3. TRAILS OR TRAIL SEGMENTS OF ANY LENGTH MAY BE CONSTRUCTED WITH RUNNING SLOPES/VERTICAL GRADES UP TO (-20.0%). TO ACCOMMODATE STEEP TERRAIN, TRAILS MAY BE DESIGNED WITH SYSTEMS SECTIONS OF CONSTRAINED LENGTH AS SHOWN IN TABLE 1. RESTING INTERVALS WITH FLATTER GRADES ARE REQUIRED BETWEEN TRAIL SEGMENTS ANY TIME RUNNING SLOPE EXCEEDS 1:20 (5%). RESTING INTERVALS SHALL BE LOCATED ON UPHILL SIDE OF TRAIL IF ONLY PROVIDED ON ONE SIDE.
4. TO ENSURE THAT A TRAIL IS NOT DESIGNED AS A SERIES OF STEEP SEGMENTS, NO MORE THAN 30% OF THE TOTAL LENGTH OF TRAIL MAY HAVE A RUNNING SLOPE/VERTICAL GRADE OF 7.0% (8.33% OR 1:12 MAX). RESTING INTERVALS MUST BE PROVIDED FREQUENTLY AS THE RUNNING SLOPE INCREASES.
5. RUNNING SLOPE/VERTICAL GRADE RECOMMENDATIONS MAY NOT BE ABLE TO BE ACHIEVED FOR TRAIL REPLACEMENT PROJECTS. FOR THESE TYPE OF PROJECTS, REPLACEMENT OF EXISTING CONDITION IN KIND IS SUFFICIENT.
6. TYPICAL CROSS SLOPE SHALL BE 2.0% (1.0MIN OR 1.4MAX). CROSS SLOPE DIRECTION VARIES. SLOPE SHOULDERS FOR POSITIVE DRAINAGE WHICH MAY REQUIRE CONTINUING PAVEMENT OR SHOULDER SLOPE UNTIL TIE-IN WITH NATURAL GROUND. SEE PLAN SHEETS AND CROSS SECTIONS.
7. WHEN CONDITIONS PERMIT, SHOULDERS TO MATCH CROSS SLOPE OF TRAIL AND SLOPE IS DEMED TO BE 8:1 OR FLATTER.
8. CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED DURING CONSTRUCTION.
9. PROOF ROLLING SHALL OCCUR IN PRESENCE OF THE OWNER OR THE OWNER'S TESTING AGENCY AT THE FOLLOWING STAGES: 1) PRIOR TO PLACING FILL IN LOW AREAS, 2) AFTER THE PREPARATION OF SUBGRADE PRIOR TO PLACING ABC, 3) AFTER THE PLACEMENT OF ABC PRIOR TO PAVING.
10. PAVEMENT EDGE SLOPES ARE 2:1 UNLESS OTHERWISE NOTED.
11. NO ABOVE-GROUND UTILITIES OR UTILITY SURFACE COVERS/PLATES/MANHOLES SHALL BE LOCATED WITHIN THE TRAIL AND SHALL BE A MINIMUM OF 2' FROM THE EDGE OF TRAIL. RAISED MANHOLES SHALL BE A MINIMUM OF 6' FROM THE EDGE OF TRAIL.
12. DO NOT PLANT TREES WITHIN 2'-0" SHOULDER, RECOMMENDED 6'-0" DISTANCE FROM TRAIL EDGE OR GREATER IF SWALE OR SCM IS PRESENT.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | ASPHALT TYPICAL SIDEPATH | STD. NO. 4.09-3



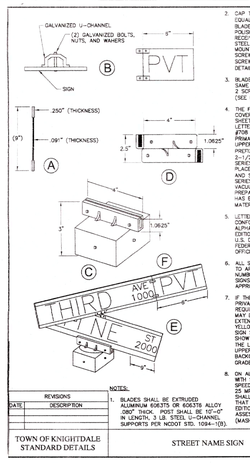
NOTES:

1. BIKE RACK SHALL BE DUMOR 232 SERIES POWDER COATED (BLACK), OR EQUIVALENT.
2. OTHER DESIGNS MAY BE ALLOWED PER TOWN OF KNIGHTDALE REVIEW AND APPROVAL.
3. BIKE RACK TO BE INSTALLED BY CONTRACTORS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.
4. ALL STEEL MEMBERS COATED WITH ZINC RICH EPOXY COATING THEN FINISHED WITH POLYESTER POWDER COATED.
5. 1/2" Ø EXPANSION ANCHOR BOLTS PROVIDED FOR OPTIONS S-2 & S-4.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TYPICAL BIKE RACK | STD. NO. 4.15



2. CAP TO BE ALUMINUM #380 ALLOY OR EQUAL SLOTTED FOR .25" EXTRUDED BLADE; 3.375" LONG. BASE TO BE CAST AND MACHINED ALUMINUM #356 ALLOY TO RECEIVE AND INCLUDE 3 STAINLESS STEEL SET SCREWS FOR POST MOUNTING AND 2 STAINLESS STEEL SET SCREWS FOR BLADE MOUNTING. SET SCREWS TO HAVE ALLEN HEADS (SEE DETAIL C).
3. BLADE SPACER BRACKET SHALL MEET SAME SPECIFICATIONS AS THE CAP WITH 2 SCREWS TO EACH BLADE MOUNTING (SEE DETAIL D).
4. THE FACE OF ALL BLADES SHALL MEET COVERED WITH ENGINEERING GRADE SHEETING WITH #2290 WHITE DIE CUT LETTERS WITH REVERSED SCREENED #708 TRANSPARENT GREEN. THE PRIMARY LETTERS SHALL BE 6" HIGH UPPER CASE, FHWA SERIES C. BLOCK NUMBERS AND SUFFIXES SHALL BE 2-1/2" HIGH, UPPER CASE, FHWA SERIES C. BLOCK NUMBERS SHALL BE PLACED IN THE LOWER RIGHT CORNER AND SHALL BE 2-1/2" HIGH, FHWA SERIES C. ALL MATERIALS TO BE VACUUM AND HEAT APPLIED TO A CLEAN, DEGREASED BLADE AFTER HAS BEEN CLEANED AND ALL FOREIGN MATERIAL REMOVED (SEE DETAIL E).
5. LETTERS, NUMBERS AND SPACING SHALL CONFORM TO THE STANDARDS ALPHABETS FOR HIGHWAYS, 1966 EDITION, REPRINT MAY 1972 BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, OFFICE OF TRAFFIC OPERATION.
6. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE TOWN. BLOCK NUMBERS SHALL BE PROVIDED ON SIGNS AND CORRESPOND TO OFFICIALLY APPROVED ADDRESSES.
7. IF THE STREET IS INTENDED TO BE PRIVATE, A SUPPLEMENTAL PLATE IS REQUIRED. THE SUPPLEMENTAL PLATE MAY BE ATTACHED TO THE SIGN OR AN EXTENDED BLADE WITH BLACK ON YELLOW SHEETING MAY BE USED. THE SUPPLEMENTAL PLATE SHALL BE 6" THAT SHOW PVT TO STAND FOR PRIVATE. THE LETTERS SHALL BE 2-1/2" HIGH, UPPER CASE, FHWA SERIES C, ON A BACKGROUND OF YELLOW ENGINEERING GRADE SHEETING. (SEE DETAIL F).
8. ON ALL ROADWAYS EXCEPT STREETS WITH STANDARD CURB AND GUTTER AND SPEED LIMITS EQUAL TO OR LESS THAN 25 MPH, ALL SIGNS WITHIN CLEAR ZONE SHALL BE OF A BREAKAWAY DESIGN AS SPECIFIED IN THE LATEST EDITION OF AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)AND NCHRP REPORT 350.

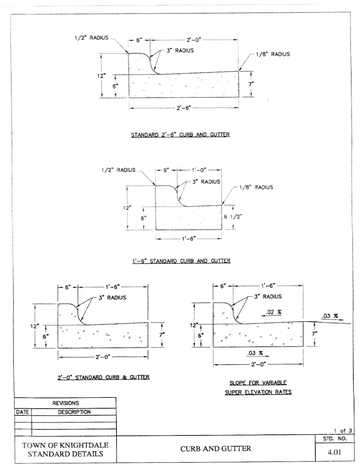
NOTES:

1. BLADES SHALL BE EXTRUDED ALUMINUM 6063T5 OR 6063T6 ALLOY .080" THICK. POST SHALL BE 10'-0" IN LENGTH, 3 LB. STEEL U-CHANNEL. SUPPORTS PER NCDOT STD. 1094-1(B).

REVISIONS

DATE	DESCRIPTION

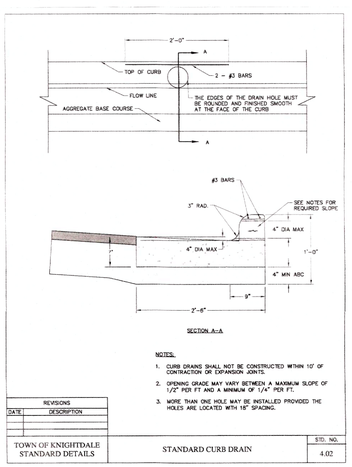
TOWN OF KNIGHTDALE STANDARD DETAILS | STREET NAME SIGN | STD. NO. 3.16-2



REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | CURB AND GUTTER | 1 of 3 | STD. NO. 4.01



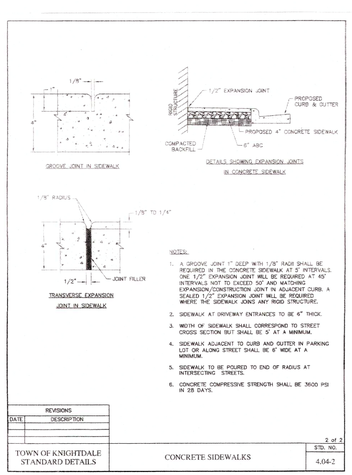
NOTES:

1. CURB DRAINS SHALL NOT BE CONSTRUCTED WITHIN 10' OF CONTRACTION OR EXPANSION JOINTS.
2. OPENING GRADE MAY VARY BETWEEN A MAXIMUM SLOPE OF 1/2" PER FT AND A MINIMUM OF 1/4" PER FT.
3. MORE THAN ONE HOLE MAY BE INSTALLED PROVIDED THE HOLES ARE LOCATED WITH 18" SPACING.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD CURB DRAIN | STD. NO. 4.02



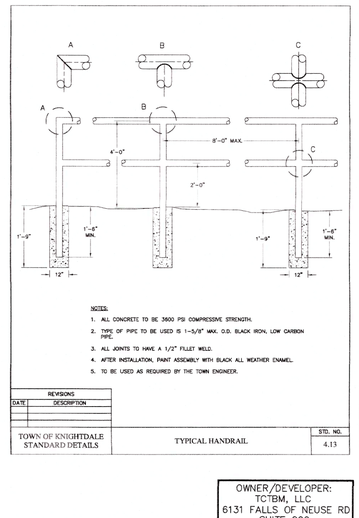
NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45 INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
3. WIDTH OF SIDEWALK SHALL CORRESPOND TO STREET CROSS SECTION BUT SHALL BE 5' AT A MINIMUM.
4. SIDEWALK ADJACENT TO CURB AND GUTTER IN PARKING LOT OR ALONG STREET SHALL BE 6" WIDE AT A MINIMUM.
5. SIDEWALK TO BE POURED TO END OF RADIUS AT INTERSECTING STREETS.
6. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI IN 28 DAYS.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | CONCRETE SIDEWALKS | 2 of 2 | STD. NO. 4.04-2



NOTES:

1. ALL CONCRETE TO BE 3600 PSI COMPRESSIVE STRENGTH.
2. TYPE OF PIPE TO BE USED IS 1-5/8" MAX. O.D. BLACK IRON, LOW CARBON PIPE.
3. ALL JOINTS TO HAVE A 1/2" FILLET WELD.
4. AFTER INSTALLATION, PAINT ASSEMBLY WITH BLACK ALL WEATHER ENAMEL.
5. TO BE USED AS REQUIRED BY THE TOWN ENGINEER.

REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TYPICAL HANDRAIL | STD. NO. 4.13

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

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: Samuel A. MacDonald Date: _____

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____

Administrator

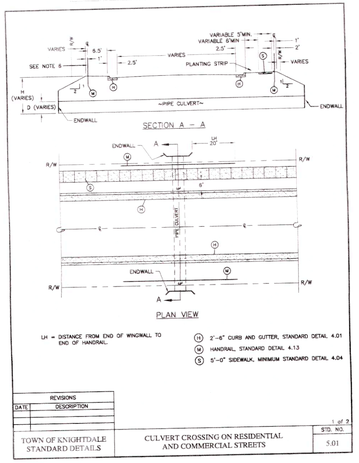
SHEET 35

TOWN OF KNIGHTDALE SITE DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566

ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA	
OWNER:

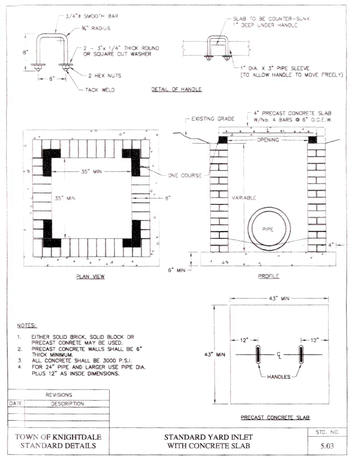


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

CULVERT CROSSING ON RESIDENTIAL AND COMMERCIAL STREETS

1 of 3 | STD. NO. 5.01



NOTES:

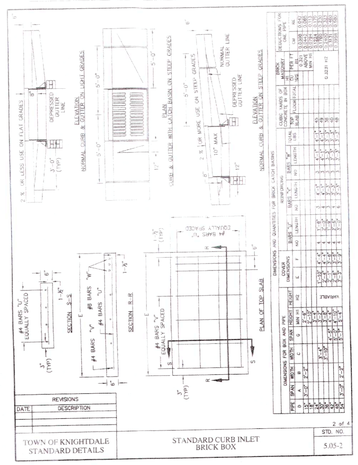
1. EITHER SOLID BRICK, SOLID BLOCK OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I.
4. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 12" AS INSIDE DIMENSIONS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD YARD INLET WITH CONCRETE SLAB

STD. NO. 5.03

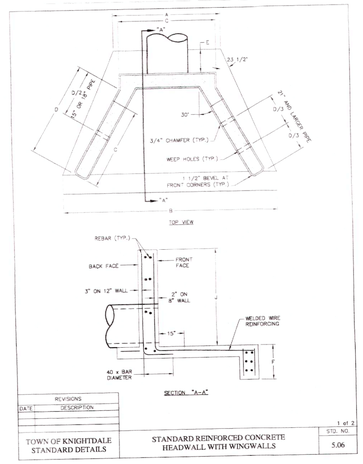


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD CURB INLET BRICK BOX

2 of 4 | STD. NO. 5.05-2

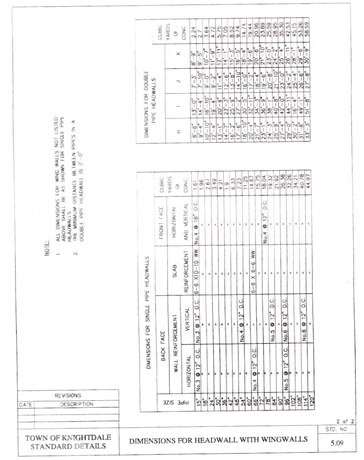


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD REINFORCED CONCRETE HEADWALL WITH WINGWALLS

1 of 2 | STD. NO. 5.06



NOTE:

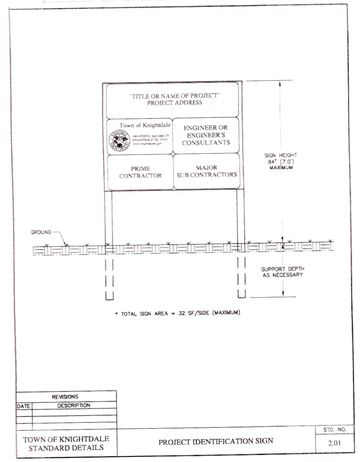
1. ALL DIMENSIONS FOR WINGWALLS NOT LISTED ARE THE SAME AS THE SINGLE PIPE HEADWALLS. THE HEADWALL DISTANCE IN BETWEEN POINTS A IS 7'-0" FOR DOUBLE PIPE HEADWALLS.
2. ---

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

DIMENSIONS FOR HEADWALL WITH WINGWALLS

2 of 2 | STD. NO. 5.09



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

PROJECT IDENTIFICATION SIGN

STD. NO. 2.01

NOTES:

1. UNLESS OTHERWISE DETERMINED BY THE TOWN ENGINEER, THE MEASURES ILLUSTRATED SHALL BE USED WHERE THE DESIGN SPEED IS 35 MPH OR LESS. THE TOWN ENGINEER SHALL DETERMINE WHEN THE DIFFERENCE IN ELEVATION BETWEEN THE CULVERT INVERT AND THE TOP OF SLOPE, H, IS GREATER THAN OR EQUAL TO 5 FEET.
2. INSTALLATION OF 2'-6" CURB AND GUTTER MAY NOT BE REQUIRED WHEN AN ADEQUATE CLEAR ZONE IS PROVIDED FOR VEHICLES WITH A MAXIMUM OF 10:1 SLOPE (SEE TABLE 1).
3. INSTALLATION OF HANDRAIL MAY NOT BE REQUIRED WHEN A 10-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE SIDEWALK WITH A MAXIMUM OF 6:1 SLOPE, WHERE NO SIDEWALK IS REQUIRED, PEDESTRIAN TRAFFIC IS ACCOMMODATED WITHIN A 10-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
4. FOR CULVERT CROSSINGS WITHOUT ENDWALLS, UH SHALL BE MEASURED FROM THE OUTSIDE OF THE HIGHEST WALL OF THE CULVERT BARREL.
5. WHEN NECESSARY, AS DETERMINED BY THE TOWN ENGINEER, ADDITIONAL MEASURES MAY BE REQUIRED.
6. INSTALLATION OF HANDRAIL IS REQUIRED ON BOTH SIDES OF STREET IF SIDEWALK IS REQUIRED ON BOTH SIDES.
7. INSTALLATION OF HANDRAIL IS REQUIRED ON BOTH SIDES OF STREET IF NO SIDEWALK IS REQUIRED EXCEPT WHEN A 10-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
8. INSTALLATION OF HANDRAIL IS REQUIRED ON THE SIDEWALK SIDE OF STREET IF SIDEWALK IS ONLY REQUIRED ON ONE SIDE OF STREET.
9. DESIGN ADT IS CALCULATED ASSUMING A TRIP GENERATION OF 10 DAILY TRIPS PER SINGLE FAMILY DWELLING UNIT.

TABLE 1.
CLEAR ZONE DISTANCES
LOCAL, COLLECTOR, AND COMMERCIAL STREETS

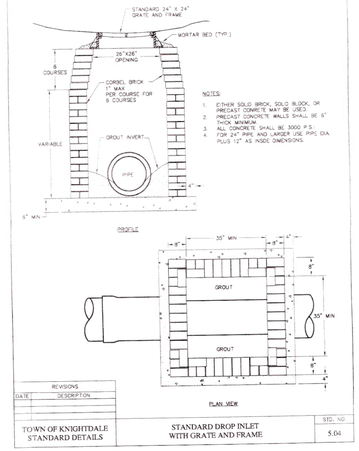
DESIGN ADT	CLEAR ZONE FROM EDGE OF PAVEMENT	
	TANGENT SECTION	CURVE (WITHIN 125' OF CULVERT)
UNDER 750	10'	15'
750 – 1500	12'	18'
1501 – 6000	14'	21'
OVER 6000	16'	24'

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

CULVERT CROSSING ON RESIDENTIAL AND COMMERCIAL STREETS

2 of 3 | STD. NO. 5.01



NOTES

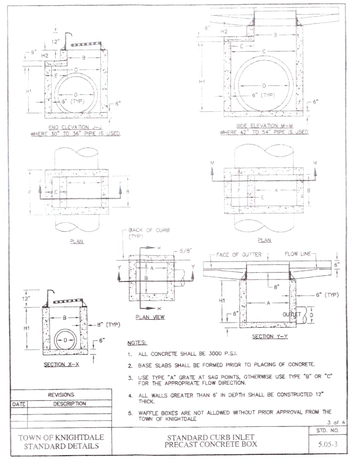
1. EITHER SOLID BRICK, SOLID BLOCK, OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I.
4. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 12" AS INSIDE DIMENSIONS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD DROP INLET WITH GRATE AND FRAME

STD. NO. 5.04



NOTES:

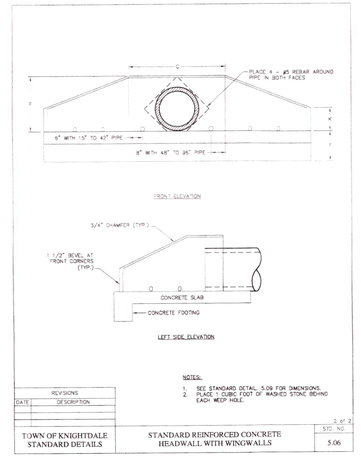
1. ALL CONCRETE SHALL BE 3000 P.S.I.
2. BASE SLABS SHALL BE FORMED PRIOR TO PLACING OF CONCRETE.
3. USE TYPE "A" GRATE AT SAG POINTS, OTHERWISE USE TYPE "B" OR "C" FOR THE APPROPRIATE FLOW DIRECTION.
4. ALL WALLS GREATER THAN 6' IN DEPTH SHALL BE CONSTRUCTED 12" THICK.
5. WAFFLE BOXES ARE NOT ALLOWED WITHOUT PRIOR APPROVAL FROM THE TOWN OF KNIGHTDALE

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD CURB INLET PRECAST CONCRETE BOX

3 of 4 | STD. NO. 5.05-3



NOTES:

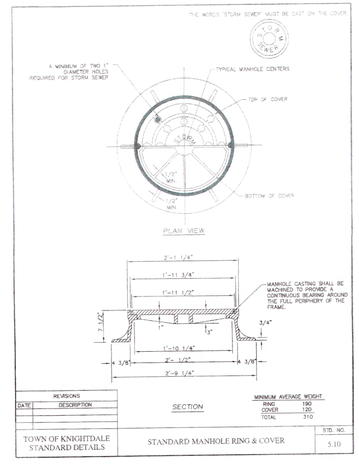
1. SEE STANDARD DETAIL 5.09 FOR DIMENSIONS.
2. PLACE 1 CUBIC FOOT OF WASHED STONE BEHIND EACH WEEP HOLE.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD REINFORCED CONCRETE HEADWALL WITH WINGWALLS

2 of 2 | STD. NO. 5.06



MINIMUM AVERAGE WEIGHT

RING	190
COVER	120
TOTAL	310

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD MANHOLE RING & COVER

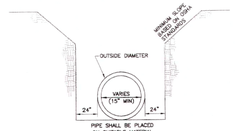
STD. NO. 5.10



MAIL KIOSK DETAIL

NOTES:

1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6" UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES UNTIL THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS OR VIBRATORY COMPACTORS. LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
3. THE FINAL 24" OF BACKFILL MATERIAL SHALL BE COMPACTED TO 100% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
4. ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
5. BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.

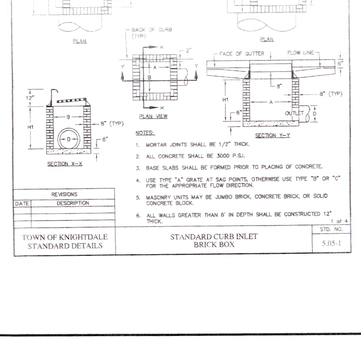


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

TRENCH FOR STORM DRAIN PIPES

STD. NO. 5.02



NOTES:

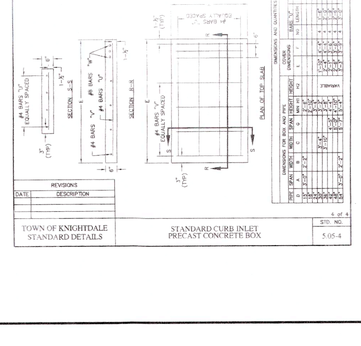
1. MORTAR JOINTS SHALL BE 1/2" THICK.
2. ALL CONCRETE SHALL BE 3000 P.S.I.
3. BASE SLABS SHALL BE FORMED PRIOR TO PLACING OF CONCRETE.
4. USE TYPE "A" GRATE AT SAG POINTS, OTHERWISE USE TYPE "B" OR "C" FOR THE APPROPRIATE FLOW DIRECTION.
5. MASONRY UNITS MAY BE JUMBO BRICK, CONCRETE BRICK, OR SOLID CONCRETE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

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD CURB INLET BRICK BOX

1 of 4 | STD. NO. 5.05-1

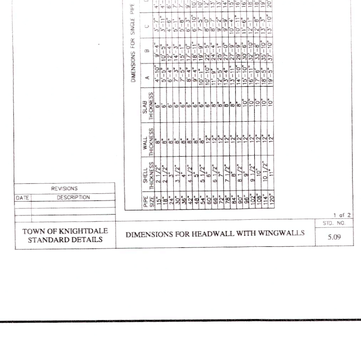


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

STANDARD CURB INLET PRECAST CONCRETE BOX

4 of 4 | STD. NO. 5.05-4

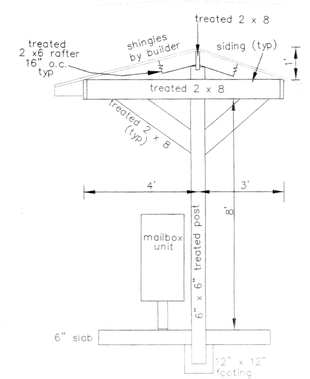


REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS

DIMENSIONS FOR HEADWALL WITH WINGWALLS

1 of 2 | STD. NO. 5.09



MAILBOX KIOSK COVER

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: Samuel A. MacDonald Date: _____

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____

Administrator

SHEET 36

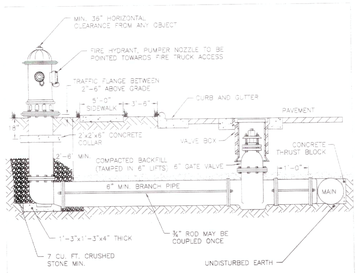
TOWN OF KNIGHTDALE SITE DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566

ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP	WAKE COUNTY	NORTH CAROLINA
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
NO SCALE	SURVEYED ----	DWG COLLECTION-SITE
REVISIONS:10-17-2025		PIN: SEE SITE DATA TABLE

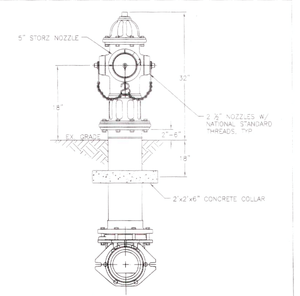


NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY OR CLOW.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150.
3. 6" GATE VALVE SHALL BE AWWA C500 OPEN LEFT.
4. RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
6. RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
7. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2.5 FOOT EASEMENT (ON ALL SIDES OF HYDRANT) FOOT EASEMENT ADJACENT TO ROW.
8. ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE (SYSTEM)	NOT TO SCALE
		STANDARD FIRE HYDRANT INSTALLATION (RESTRAINT RODS)

W-4A

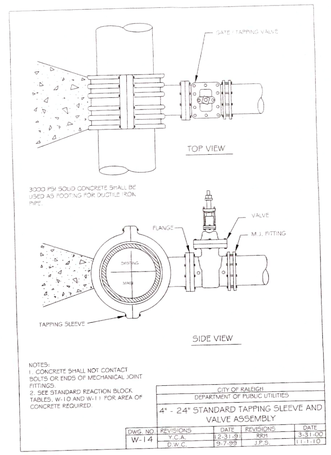


NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.
2. ALL PRIVATE FIRE HYDRANTS SHALL BE RED.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE (YR/MO/DY)	NOT TO SCALE
		STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE

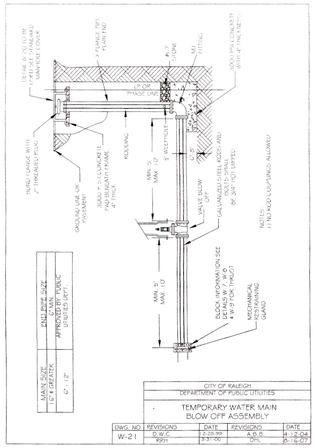
W-5



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK TABLES: W-1.0 AND W-1.1 FOR AREA OF CONCRETE REQUIRED.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

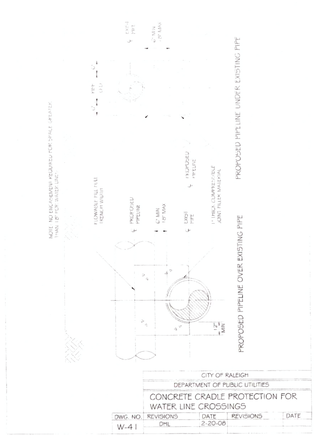
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-1.4	V.C.A.	2-21-97	RRH	3-31-00
	12" D.I.P.	10-7-98	J.P.S.	1-11-10



NOTES:
1. NO MJ X MJ COUPLINGS ALLOWED
2. NO MJ X PE COUPLINGS ALLOWED

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TEMPORARY WATER MAIN BLOW OFF ASSEMBLY

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2.1	D.W.C.	2-20-99	A.B.B.	4-12-04
	RRH	3-31-00	V.C.A.	6-16-07



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
CONCRETE CRADLE PROTECTION FOR WATER LINE CROSSINGS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4.1	ORL	2-20-08		

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS — STANDARD HYDRANT LOCATION — STD. NO. 6.03

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-6	RRH	3-31-00	ORL	2-20-08
	A.B.B.	4-13-04	J.P.S.	1-11-10

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
VALVE BOX INSTALLATION AND EXTENSION DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-1.7	D.W.C.	9-7-95	A.B.B.	4-15-04
	RRH	3-31-00	ORL	2-16-07

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD 3/4" & 1" WATER SERVICE INSTALLATION

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2.5	D.W.C.	4-6-04	RKV	7/23/19
		10-19-05		

NOTES:
CONCRETE MIX - 3,000 P.S.I. W/ 5% ± 1.5% TO BE COATED WITH BITUMINOUS COAL TAR COATING
BOLTS AND LIDS MUST BE MANUFACTURED FROM SAME DOMESTIC FOUNDRY

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
WATER METER BOX DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2.5	R.K.V.	8-28-13	J.P.S.	1-4-10

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	D.W.C.	9-3-99	A.B.B.	2-15-05
	RRH	3-31-00	J.P.S.	10-29-10

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD VERTICAL BEND

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-1.2	ABB	4-14-04	J.P.S.	1-11-10
	D.W.C.	6-28-06		

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
5 1/4" VALVE BOX DROP LID WITH 4" SKIRT

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-1.8				

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2.4	V.C.A.	12-3-13	D.M.S.	10/1906
	ABB	4-7-04	J.J.S.	7/24/19

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval supersedes all previously issued. Any modification to this approval once issued will invalidate this approval.
Cydney Terry
2026.04.14 15:22:21-04'00'

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041R2

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926R

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: Gideon Smith Date: _____
Administrator

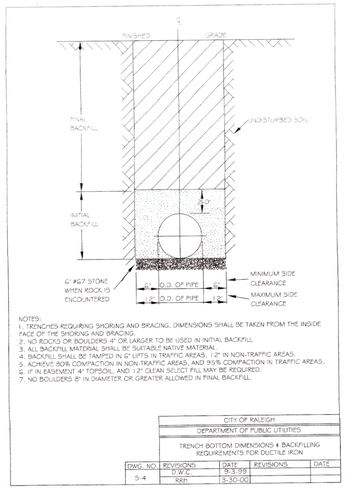
CONSTRUCTION PLANS **SHEET 37**

UTILITY DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

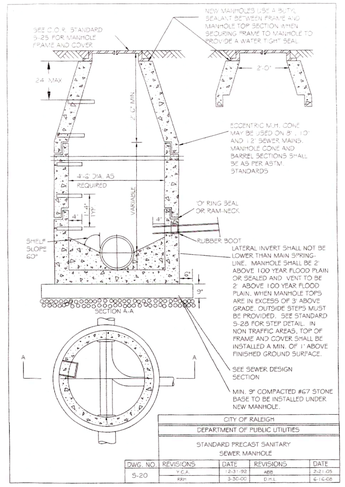
ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA		
OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20–
NO SCALE	SURVEYED ----	DWG COLLECTION-SITE
REVISIONS: 10-17-2025		PIN: SEE SITE DATA TABLE



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 12" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 90% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. 9" IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

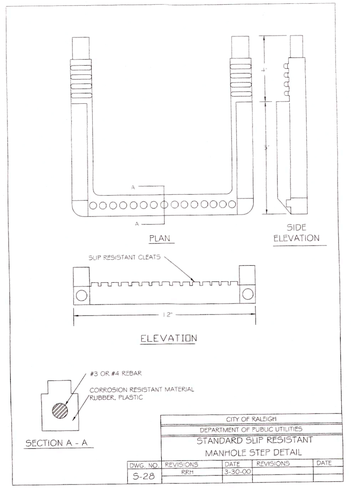
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C.	3-3-99		
	RRH	3-30-00		



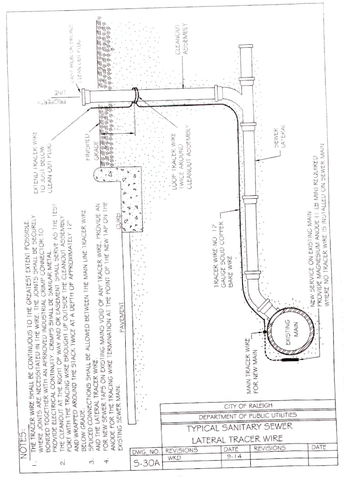
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD PRECAST SANITARY SEWER MANHOLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20	T.C.K.	12-1-99	ABB	3-21-05
	RRH	3-30-00	BWL	6-16-08



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL

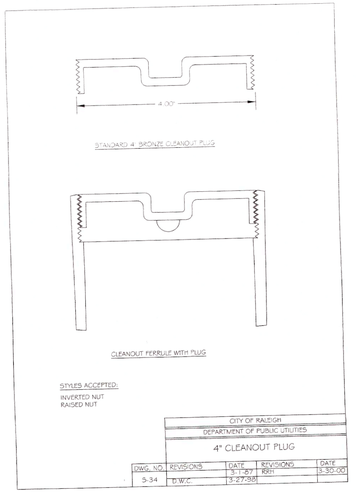
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-28	RRH	3-30-00		



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE LATERAL INSTALLATIONS EXCEED THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE, TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. PROVIDE ELECTRICAL CONTINUITY OF ANY AND ALL UNDERGROUND SERVICE LINES WITH THE TRACER WIRE. ALL SPLICES SHALL BE MADE USING MECHANICAL TAPPING JOINT WITH THE TRACER WIRE LOOPED INTO THE STRUCTURE AND EXTENDED TO GRADE AT A DEPTH OF APPROXIMATELY 12".
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNERS REPRESENTATIVE.
4. ALL SPLICES AND CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
5. CONTRACTOR SHALL REPAIR ANY BREAK OR LOSS OF CONTINUITY FOUND DURING VOID OF ANY TRACER WIRE. PROVIDE AN ACCESS POINT FOR THE TRACING WIRE (TERMINATION AT THE FRONT OF THE NEW MANHOLE ABOVE FINISHED GRADE).

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER LATERAL TRACER WIRE

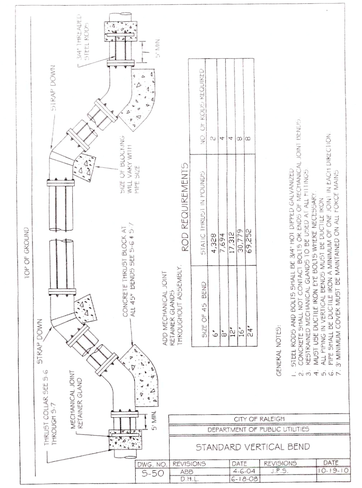
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30A	WRD	9-14		



STYLES ACCEPTED:
INVERTED NUT
RAISED NUT

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" CLEANOUT PLUG

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-34	D.W.C.	3-1-87	RRH	3-30-00
		3-27-08		



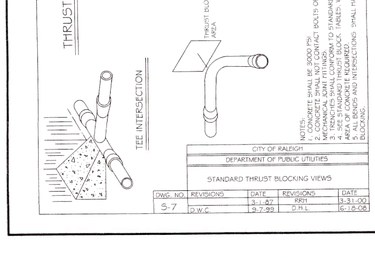
ROD REQUIREMENTS

SIZE OF 45° BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,283	2
8"	7,615	4
12"	17,316	4
16"	30,815	6
24"	69,252	10

GENERAL NOTES:
1. SIZES, RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT RETAINER GLANDS. PROVIDE 1/2" CLEARANCE AT ALL BOLT LOCATIONS.
3. MUST USE DUCTILE IRON DYE BOLTS WHERE NECESSARY.
4. ALL BOLTS SHALL BE TIGHTENED EQUALLY TO ASSURE EVEN SEATING.
5. PIPE SHALL BE DUCTILE IRON A MINIMUM OF ONE JOINT IN EACH DIRECTION.
6. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL CONCRETE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD VERTICAL BEND

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-50	ABB	4-6-04	J.P.S.	10-19-10
	D.H.L.	6-16-08		

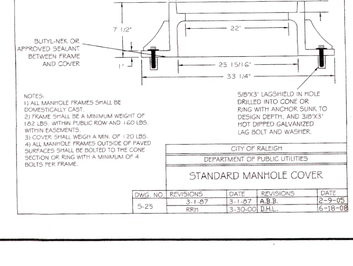


TYPICAL TRENCH BOTTOM DIMENSIONS FOR SDR 35 PVC GRAVITY PIPE

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

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN

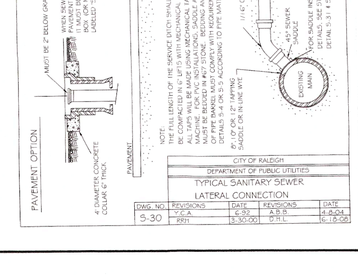
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-5	TO NOTES	3-1-87	D.W.C.	9-3-99
		7-2-92	RRH	3-30-00



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

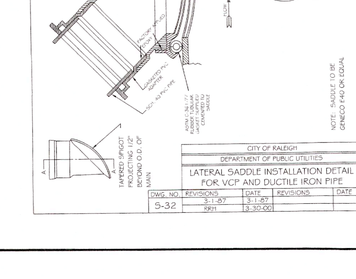
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A	MID	09-14		



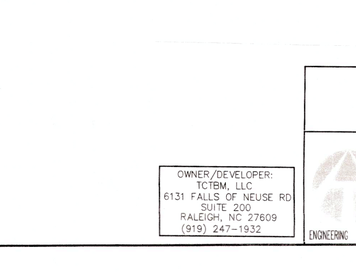
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN PAVED SURFACES

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-29	Y.C.A.	12-31-97	ABB	9-20-04
	RRH	3-30-00	DHL	1-29-07



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-31		3-1-87		
	RRH	3-30-00		



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

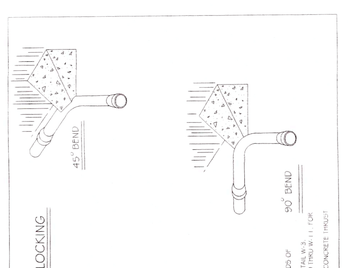
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-49	DHL	2-20-08		



NOTES:
1. PVC FOR INSIDE DROP SHALL BE SDR 35 PVC CONFORMING TO ASTM SPECIFICATION D3034.
2. BOTTOM BEND TO BE 90° SHORT BEND, WILL SPIGOT OF SDR 35 PVC. USE PVC FITTINGS ONLY. NO GLUED JOINTS. USE RUBBER GASKET CONNECTION ARRANGEMENT THROUGH FROM DROP STUBBED TO MAIN CHANNEL.
3. CORE HOLE WELL OF PVC DROP TO ACCEPT D.I.P. SPIGOT AS SHOWN.
4. LOCATE STRAPS AT PVC BELL AND ABOVE WELL OF BOT BEND AS SHOWN. ADD EXTRA STRAPS AS NECESSARY TO MAINTAIN MAXIMUM 10' SPACING ON PIPE.
5. HOLE IN MANHOLE WALL TO BE MADE WITH A CORING MACHINE. INSTALL FLEXIBLE RUBBER COUPLING.
6. STEPS TO BE REMOVED IN CORE HOLE SECTION.
7. STEPS SHALL BE RELOCATED IF THEY CONFLICT WITH INSIDE DROP.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
INSIDE DROP MANHOLE

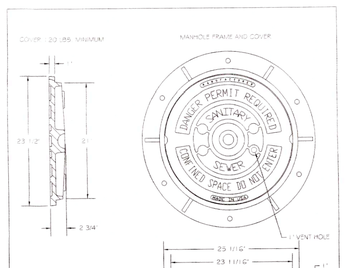
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-53	MAB	1-14-13		



NOTES:
1. CONCRETE SHALL BE 3000 PSI
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT RETAINER GLANDS.
3. TRENCHES SHALL CONFORM TO STANDARD DETAIL NO. 5-1.
4. ALL BENDS AND TEES SHALL BE RESTRAINED WITH 3/4" I.D.R. AREA OF CONCRETE REQUIRED.
5. ALL CONCRETE BEARING SURFACES SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCKING VIEWS

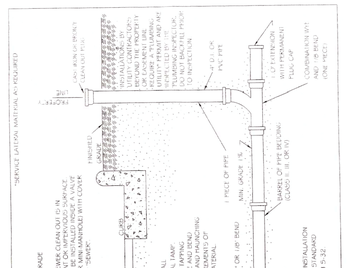
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-7		3-1-87	RRH	3-31-00
	D.W.C.	3-7-99	D.H.L.	6-16-08



NOTES:
1) ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2) FRAME SHALL BE A MINIMUM WEIGHT OF 1,150 LBS. WITHIN PUBLIC ROW AND 1,400 LBS. WITHIN EASEMENTS.
3) COVER SHALL WEIGH A MIN. OF 1 20 LBS.
4) ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

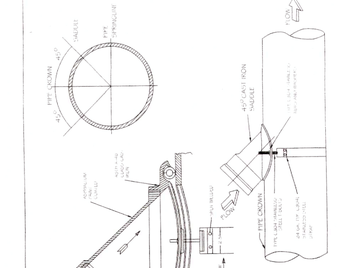
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE COVER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25		3-1-87	A.S.B.	2-9-05
	RRH	3-30-00	D.H.L.	6-16-08



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER LATERAL CONNECTION

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30	Y.C.A.	6-92	A.B.B.	4-8-04
	RRH	3-30-00	D.H.L.	6-16-08



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
LATERAL SADDLE INSTALLATION DETAIL FOR VCP AND DUCTILE IRON PIPE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-32		3-1-87		
	RRH	3-30-00		

SITE PERMITTING APPROVAL

WATER AND SEWER PERMITS

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-5041

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S **PUBLIC WATER SYSTEM** 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-3926

RALEIGH WATER - PLANS AUTHORIZED FOR CONSTRUCTION
Any work authorized by this approval must proceed in accordance with the plans. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

Cydney Terry
2026.04.14 15:22:26-04'00'

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

CONSTRUCTION PLANS **SHEET 38**

UTILITY DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA

OWNER: TCTBM, LLC		ZONED PUD
DATE 7/28/2025	DRAWN RLM	JOB NO. 20-
NO SCALE	SURVEYED ----	DWG COLLECTION-SITE
REVISIONS: 10-17-2025		PIN: SEE SITE DATA TABLE

SEEDING SCHEDULE		
MAXIMUM SLOPE 3:1		
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACRE)
AUGUST 15 – NOVEMBER 01	TALL FESCUE	300
NOVEMBER 01 – MARCH 01	TALL FESCUE AND	300
	ABRUZZI RYE	25
MARCH 01 – APRIL 15	TALL FESCUE	300
APRIL 15 – JUNE 30	HULLED COMMON BERMUDAGRASS	25
JULY 01 – AUGUST 15	TALL FESCUE AND	120
	*BROWNTOP MILLET OR	35
	*SORGHUM–SUDAN HYBRIDS	30
SLOPES 2:1 TO 3:1		
MARCH 01 – JUNE 01	SERICEA LESPEDEZA (SCARIFIED) AND	50
MARCH 01 – APRIL 15	TALL FESCUE OR	120
MARCH 01 – JUNE 30	WEEPING LOVEGRASS OR	10
	HULLED COMMON BERMUDAGRASS	25
JUNE 01 – SEPTEMBER 01	*TALL FESCUE AND	120
	*BROWNTOP MILLET OR	35
	*SORGHUM–SUDAN HYBRIDS	30
SEPTEMBER 01 – MARCH 01	SERICEA LESPEDEZA (UNHULLED, USCARIFIED) AND	70
	TALL FESCUE OR	120
NOVEMBER 01 – MARCH 01	ABRUZZI RYE	25

*TEMPORARY – RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING, OTHERWISE FESCUE MAY BE SHADED OUT. CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

GROUND COVER – WHEREVER LAND DISTURBING ACTIVITY IS UNDERTAKEN ON A TRACT COMPRISING MORE THAN ONE (1) ACRE, A GROUND COVER SUFFICIENT TO RESTRAIN EROSION MUST BE PLANTED OR PROVIDED WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS.

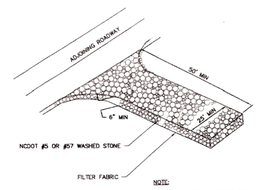
GRADED SLOPES AND FILLS – WITHIN 15 WORKING DAYS OR 30 CALENDAR DAYS, OR COMPLETION OF ANY PHASE OF GRADING, WHICHEVER PERIOD IS SHORTER, SLOPES SHALL BE PLANTED OR OTHERWISE PROVIDED WITH GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | SEEDING SCHEDULE | STD. NO. 2.01

NOTES:

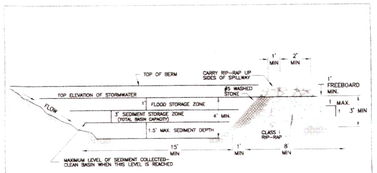
1. NCDOT #5 OR #57 WASHED STONE SHALL BE USED. PAD TO BE 50'L X 20'W X 6" D AT A MINIMUM.
2. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.
3. ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
4. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY. KEEP SOME HANDY.
5. ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD MUST BE CLEANED UP IMMEDIATELY.



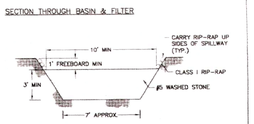
NOTE:
APPLICABLE AT ALL POINTS OF INGRESS & EGRESS UNTIL SITE IS STABILIZED. FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.

REVISIONS	
DATE	DESCRIPTION

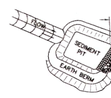
TOWN OF KNIGHTDALE STANDARD DETAILS | TEMPORARY CONSTRUCTION ENTRANCE/EXIT | STD. NO. 2.04



SECTION THROUGH BASIN & FILTER



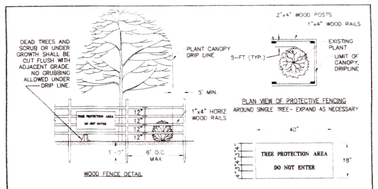
SECTION THROUGH BERM & FILTER



PERSPECTIVE VIEW

REVISIONS	
DATE	DESCRIPTION

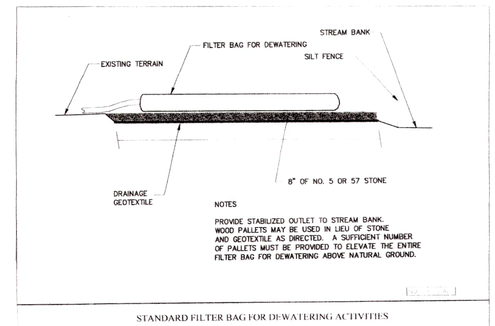
TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD SEDIMENT BASIN | STD. NO. 2.07



NOTES:
1. REMOVE ALL BARRIERS UPON COMPLETION OF PROJECT.
2. LANDSCAPING PLANS SHALL SHOW LOCATIONS OF ALL TREE PROTECTION FENCES.
3. ALL PLANTS TO BE SAVED SHALL BE PROTECTED BY FENCING AS SHOWN IN THIS DETAIL.
4. CONTRACTOR SHALL INSTALL FENCING PRIOR TO BEGINNING ANY CONSTRUCTION OR GRADING ACTIVITY.
5. CONTRACTOR SHALL CALL FOR INSPECTION AND APPROVAL OF PROTECTIVE FENCING PRIOR TO BEGINNING ANY CONSTRUCTION OR GRADING.
6. PROTECTIVE FENCING SHALL BE LOCATED 5' OUTSIDE DRIPLINE OF TREES AND 1' MINIMUM OUTSIDE SHRUBS OR OTHER PLANTS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | PLANT PROTECTIVE FENCING | STD. NO. 2.10

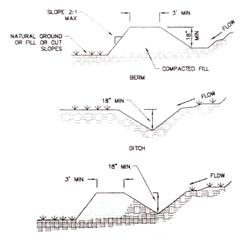


NOTES
PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.

STANDARD FILTER BAG FOR DEWATERING ACTIVITIES

NOTES:

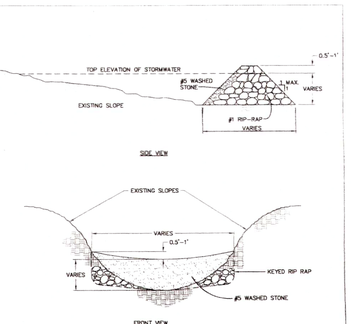
1. MACHINE COMPACTION OF ALL FILL IS REQUIRED. DIVERSIONS SUFFICIENT TO DIRECT ALL SEDIMENT–LADEN STORMWATER INTO A SEDIMENT CONTROL DEVICE MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING OF THE AREA (OR IN CONJUNCTION WITH THIS OPERATION IF SEDIMENT CONTROLS AND DIVERSIONS ARE INSTALLED AS EACH CRITICAL POINT IS REACHED).
2. DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS.
3. DIVERSIONS SHOULD BE SEEDED AND MULCHED IF THEY ARE TO REMAIN IN PLACE OVER 30 DAYS.
4. CHECK DEVICE AFTER EACH RAIN, BUT ONCE A WEEK REGARDLESS. REPAIR AS NECESSARY.



NOTE:
POSITIVE GRADE MUST BE PROVIDED TO ASSURE PROPER FLOW. IF SLOPE EXCEEDS 5%, STEP AND MULCH DIVERSION. TRY NOT TO EXCEED 8% DUE TO VELOCITIES RESULTS. MAXIMUM DRAINAGE AREA = 5 ACRES WITHOUT SUPPORTING CALCS. DIVERSIONS AT THE TOP OF SLOPES MUST EMPTY INTO AN APPROVED SLOPE DRAIN. BERM/DITCH IS MOST COMMONLY USED.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TEMPORARY DIVERSION BERM/DITCH | STD. NO. 2.02



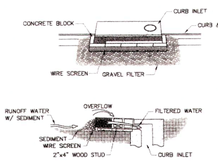
DESIGN OF SPILLWAYS

DRAINAGE AREA (ACRES)	MINIMUM WEIR LENGTH (FT)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

NOTES:
1. HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
2. KEY RIP RAP INTO THE DAM FOR STABILIZATION.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD CHECK DAM | STD. NO. 2.05



BLOCK & GRAVEL CURB INLET SEDIMENT FILTER

SPECIFIC APPLICATION:

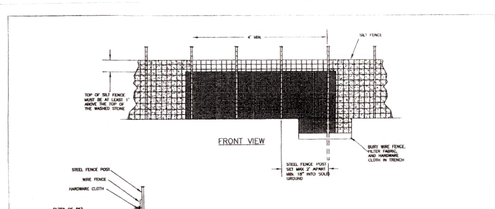
THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

MAINTENANCE:

1. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
2. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
3. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
4. STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

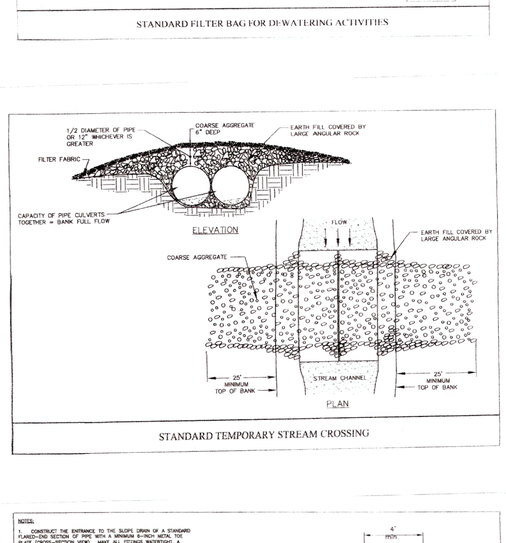
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | CURB INLET SEDIMENT FILTER | STD. NO. 2.08



NOTES:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

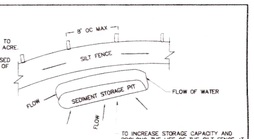
STANDARD SILT FENCE OUTLET



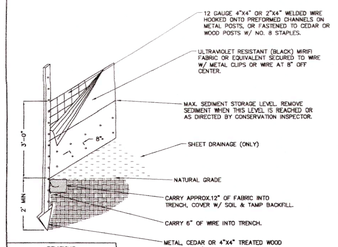
STANDARD TEMPORARY STREAM CROSSING

NOTES:

1. TOTAL DRAINAGE AREA FLOWING TO SILT FENCE MAY NOT EXCEED 1 ACRE.
2. SILT FENCES SHOULD NOT BE USED AT PIPE OUTLETS OR IN AREAS OF CONCENTRATED FLOW (CREEKS, DITCHLINES, SWELLS ETC.)

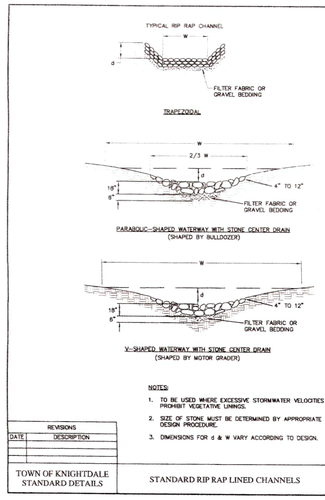


TO INCREASE STORAGE CAPACITY AND PROLONG THE LIFE OF THE SILT FENCE, IT IS GENERALLY ADVISABLE TO DIG A SEDIMENT PIT IN FRONT OF YOUR SILT FENCE WHENEVER POSSIBLE.



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TEMPORARY SILT FENCE | STD. NO. 2.03

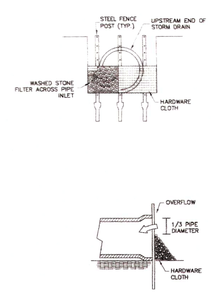


NOTES:
1. TO BE USED WHERE EXCESSIVE STORMWATER VELOCITIES PROHIBIT VEGETATIVE LININGS.
2. SIZE OF STONE MUST BE DETERMINED BY APPROPRIATE DESIGN PROCEDURE.
3. DIMENSIONS FOR d & W VARY ACCORDING TO DESIGN.

REVISIONS	
DATE	DESCRIPTION

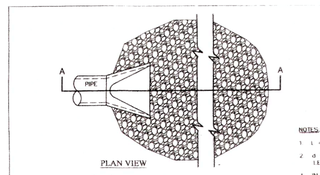
TOWN OF KNIGHTDALE STANDARD DETAILS | STANDARD RIP RAP LINED CHANNELS | STD. NO. 2.06

NOTE:
ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DRAWINGS.



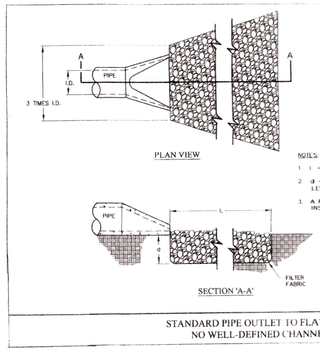
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | PIPE INLET PROTECTION | STD. NO. 2.09



NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER (BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL–DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION

STANDARD PIPE OUTLET TO WELL–DEFINED CHANNEL

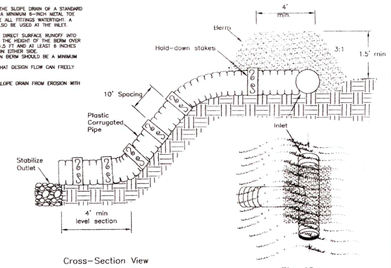


NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER (BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION

STANDARD PIPE OUTLET TO FLAT AREA NO WELL–DEFINED CHANNEL

NOTES:

1. CONSTRUCT THE ENTRANCE TO THE SLOPE DRAIN OF A STANDARD FLARED–END SECTION OF PIPE WITH A MINIMUM 6–INCH METAL TOE PLATE (CROSS–SECTION VIEW). MAKE ALL FITTINGS WATERTIGHT. A STANDARD T–SECTION FITTING MAY ALSO BE USED AT THE INLET.
2. USE AN EARTHEN DIVERSION TO DIRECT SURFACE RUNOFF INTO THE TEMPORARY SLOPE DRAIN. MAKE THE HEIGHT OF THE BERM OVER THE TEMPORARY SLOPE DRAIN AT LEAST 1.2 TIMES THE DEPTH HIGHER THAN THE ADJOINING BERM ON EITHER SIDE. MAKE THE LOWEST POINT OF THE DIVERSION BERM SHOULD BE A MINIMUM OF 1 FT ABOVE THE TOP OF THE DRAIN SO THAT DIVERSION FLOW CAN FREELY ENTER THE PIPE.
3. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION WITH RIPRAP DISSIPATOR.



STANDARD TEMPORARY SLOPE DRAIN

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247–1932

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

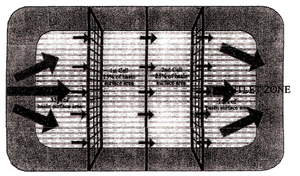
By: Gideon Smith Date: _____
Administrator

CONSTRUCTION PLANS *SHEET 39*

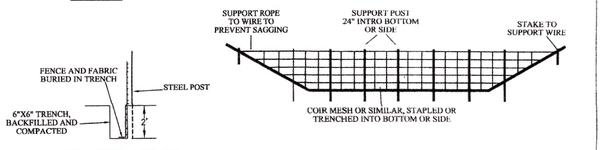
EROSION CONTROL DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C–0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465–1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA			
OWNER: TCTBM, LLC			ZONED PUD
DATE 7/28/2025	DRAWN RLM		JOB NO. 20–
NO SCALE	SURVEYED ----		DWG COLLECTION–SITE
REVISIONS: 10–17–2025			PIN: SEE SITE DATA TABLE



PLAN VIEW

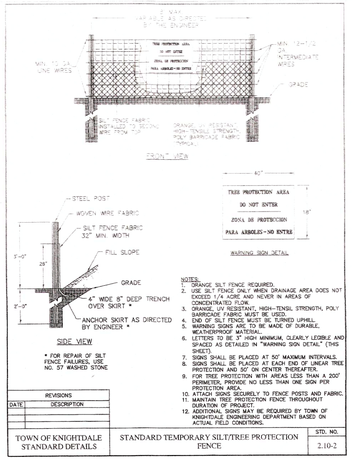


CROSS SECTION

SECTION VIEW AT OPENING

NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 700 G/M2 COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL

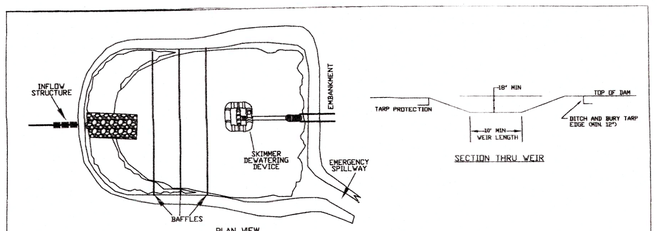
STANDARD BAFFLES DETAIL



NOTES:
1. DRAINAGE SILT FENCE REQUIRED.
2. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
3. FABRIC SHALL BE WOVEN, HIGH-TENSIL STRENGTH, POLY SUNPROOF FABRIC MUST BE USED.
4. END OF SILT FENCE MUST BE TURNED UPHILL.
5. WARNING SIGNS ARE TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
6. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED IN "WARNING SIGN DETAIL" (THIS SHEET).
7. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
8. SIGNS SHALL BE PLACED AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
9. FOR TREE PROTECTION WITH AREAS LESS THAN A 200' PERIMETER, PROVIDE NO LESS THAN ONE SIGN FOR PROTECTION AREA.
10. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
11. MAINTAIN TREE PROTECTION FENCE THROUGHOUT CONSTRUCTION PERIOD.
12. ADDITIONAL SIGNS MAY BE REQUIRED BY TOWN OF KNIGHTDALE ENGINEERING DEPARTMENT BASED ON ACTUAL FIELD CONDITIONS.

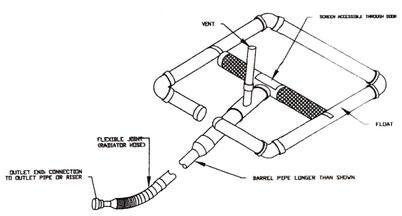
REVISIONS	
DATE:	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD TEMPORARY SILT/TREE PROTECTION FENCE	STD. NO. 2.10-2



NOTES:
1) BASIN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12' TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE SO MIL HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR U.V. RESISTANCE.
3) PROVIDE A MINIMUM OF THREE POROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) DURING THE CONSTRUCTION PHASE OF THE PROJECT, PERMANENT STORMWATER RISER SHALL ONLY DEWATER FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

STANDARD SKIMMER BASIN



STANDARD SKIMMER DETAIL

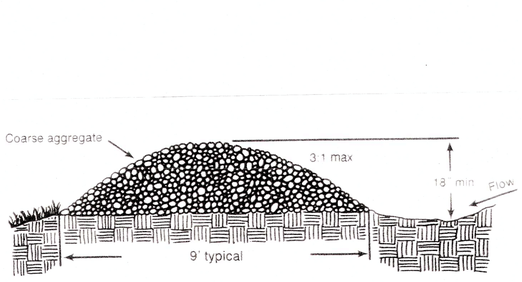
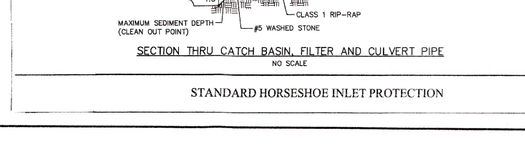


Figure 6.20b Temporary gravel diversion dike for vehicle crossing (modified from Va SWCC).

DETAIL FOR TEMPORARY VEHICLE CROSSING AT TEMPORAY DIVERSION DITCH
as per figure 6.20b – NCDEQ
(9' wide berm w/ coarse aggregate)



STANDARD HORSESHOE INLET PROTECTION

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

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

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended 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 measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the 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	If visible sedimentation is found outside site 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) Streams or wetlands onsite 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	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) 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

1. E&SC Plan Documentation
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 locations, 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:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) 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 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:
(a) Visible sediment deposition in a stream or wetland.

(b) DR 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).

(c) 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.

(d) Anticipated bypasses and unanticipated bypasses.

(e) 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, they 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	• *Within 24 hours*, an oral or electronic notification. • *Within 7 calendar days*, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• *Within 24 hours*, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• *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.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• *Within 24 hours*, an oral or electronic notification. • *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(l)(7)]	• *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 reoccurrence of the noncompliance. [40 CFR 122.41(l)(6)]. • Division staff may waive the requirement for a written report on a case-by-case basis.

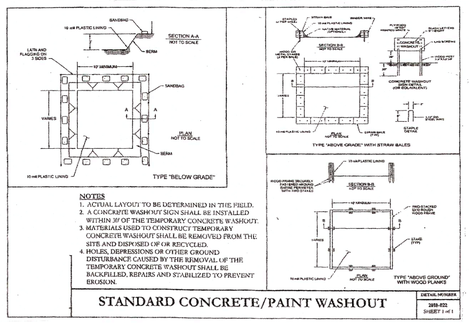
PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

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:

(a) 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,
(b) 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,
(c) 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,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dans, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) 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



NOTES
1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 50' OF THE TEMPORARY CONCRETE WASHOUT.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT SHALL BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT SHALL BE BACKFILLED, REPAIRS AND STABILIZED TO PREVENT EROSION.

STANDARD CONCRETE/PAINT WASHOUT	DETAIL NUMBER 2610-022, SHEET 1 of 1

Required Town of Knightdale SCM Basin Removal Sequence

1. Schedule a site meeting with the Town of Knightdale Erosion Control Inspector 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. Contact NCDEQ - Raleigh Regional Office (919) 791-4200 to determine the Division of Energy, Mineral and Land Resources contact person to receive dewatering notification. At least 24 days prior to beginning dewatering activity, send Email to NCDEQ.DEWR.contact.person and copy Environmental Consultant that matches Email. The email should include E&SC subdivision Town of Knightdale, Project Name, Number, and Location (Town), Environmental Consultant Name, and address the following: a) Reason for Dewatering, b) Basin # c) Dewatering Method, and d) a site location map. (Reference Part III, Section B of the NCG01, Email should be used for monitoring documentation).
3. After receiving positive confirmation from NCDEQ-DEWR that you may remove the basin OR in + Day 31, whichever is sooner, Remove Baffle(s) and associated temporary diversion ditches. If pipes need to be removed perform this operation at this time. This grade line is temporary for sediment basin.
4. Perform needed preparation, seed, mulch and anchor any resulting bare areas immediately using Non-clumping Turf-grass Compost - Hybrid Bermuda.
5. Install velocity dissipators and/or level spreaders as required on the Erosion Control Plan.
6. When site is fully stabilized, call Erosion Control Inspector for approval of removing remaining temporary erosion control measures and advise on when site can be issued a Certificate of Completion. **Note: A meeting should also be scheduled with the Erosion Control Inspector and Stormwater Technician to determine when a basin may be converted for stormwater use.**

Town of Knightdale SCM Planting Notes

1. THE DAM STRUCTURE, INCLUDING FRONT AND BACK (IMPERMANENT SLOPES OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF-GRASS OR SOD. CENTIPEDE/HYBRID-BERMUDA) **80% GERMINATION OF NON-CLUMPING TURF WILL BE REQUIRED PRIOR TO FINAL CERTIFICATION FORM THE TOWN.**
2. THE VEGETATED SHELF SHALL BE PLANTED WITH A MINIMUM OF THREE DIVERSE SPECIES OF HERBACEOUS, NATIVE VEGETATION AT A MINIMUM DENSITY OF 10 PLANTS PER 200 FEET OF SHELF AREA.
3. CONTRACTOR TO WORK WITH SOILS SCIENTIST TO ENSURE SOILS ARE ADEQUATE TO SUPPORT PROPER ESTABLISHMENT AND GROWTH OF THE AQUATIC PLANTING. CONTRACTOR TO AMEND SOIL AND INSTALL SOILS IN PLANT SHELF AND TEST AREAS PER DETAILS, SOIL SPECIFICATIONS, MODERN SPECIFICATION, AND SOIL SCIENTIST RECOMMENDATIONS.
4. ALL AQUATIC PLANTINGS ARE TO BE INSTALLED DURING THE APPROPRIATE TIME OF YEAR TO ENSURE SURVIVABILITY. (LAST SPRING FROST AND THE FIRST FALL FROST.
5. ALL DISTURBED AREAS AROUND THE OUTSIDE OF THE DEVICE SHALL BE SEEDED WITH A LAWN AREA SEED MIX (PER SEEDING SPECIFICATIONS) NATIVE GRASSES, LEGUMES, CLOVERS, AND WILDFLOWERS.
6. IF THE DEVICE WAS USED DURING CONSTRUCTION AS A SEDIMENT BASIN OR TRAP, THE BASIN MUST BE CLEANED OUT, GRADED APPROPRIATE AREAS COVERED WITH 4"-20" TOPSOIL AS SPECIFIED IN NOTE AT ABOVE, AND VEGETATED WITHIN 14 DAYS OF THE COMPLETION OF CONSTRUCTION.
7. CONTRACTOR SHALL WATER ALL VEGETATION AND GRASS ON A WEEKLY BASIS AS NEEDED TO ENSURE GRASS AND PLANT SURVIVAL UNTIL AFTER THE SCM IS CERTIFIED AND ACCEPTED BY THE TOWN.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCDEQ CONSTRUCTION GENERAL PERMIT

Failure to properly select, implement, and maintain BMPs (on plan sheet) will result in the construction activities being inconsistent compliance with the Ground Stabilization with Materials Handling sections of the NCDEQ Construction General Permit (sections 5 and 7, respectively). The permittee shall comply with the Sediment and Sediment Control plan supervised by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply to all construction sites and locations and the delegated authority has the discretion to require additional measures.

SECTION E: GROUND STABILIZATION

Site Area Description	Required Ground Stabilization Timeframes: Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 50' 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. 14 days are allowed with slopes 4:1 or flatter
(e) Areas with slopes flatter than 4:1	14	10 days for Falls Lake Watershed Zones 14 days for Falls Lake Watershed Zones 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones

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 more 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:

• Mulching • Temporary grass seed • Permanent grass seed • Mulch blowing	• Straw or other mulches • Hydraulic mulches such as permanent soil tackifiers • Rolled erosion control products without plastic netting • Appropriately applied straw or other mulch	• Crimped straw with straw crimping machine • Asphalt binders such as cutback asphalts and emulsified asphalts • Wood cellulose fiber mulch • Tackifiers such as permanent soil tackifiers • Synthetic binders such as acrylics, vinyls and elastomers • Blankets and turf reinforcement mats • Rolled erosion control products with grass seed

FILTER BARRIERS (FABRIC) AND DIKES/BERMS

1. Select filter/dike materials that are appropriate for the soils being exposed during construction, selected from the NC DEQ list of Approved Sediment Control Products.
2. Install silt fence, compost filter socks, or other filter barriers per the manufacturer's instructions.
3. Apply filters/dikes at the non-stormwater discharge locations specified in the SCP/SPPP (List of Approved Products/Standards) and in accordance with the manufacturer's instructions.
4. Provide grounding wire for containment of treated Stormwater Runoff before discharging offsite.
5. Store filters/dikes in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharges of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose, as hazardous waste (recycle when possible).
5. Remove spills as soon as possible. Use dry cleanup measures (sand, sawdust) for small spills. Do not hose down surfaces to a storm drain.
6. Bring used tools, lubricants, materials, hydraulic fluids and other petroleum products to a recycling or disposal center that accepts these materials.

SOLID, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Provide trash or litter waste. Place litter and debris in approved waste containers.
2. Do not allow littering by employees or contractors. Secure trash receptacles so they do not tip over or lose their contents.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and that drain away from storm drain inlets and surface waters.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint or other liquid waste into storm drains, streams or wetlands.
2. Waste paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a container that will not leak.
4. Containment must be labeled, stored and placed appropriately for the needs of use.
5. Dispose of contents and containers in accordance with other applicable waste items.

PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams, wetlands or surface waters, unless no other alternatives are available. Make efforts to not offshade, provide adequate ventilation for portable toilet bathed into floors or place on a gravel pad and surround with sand bags.
2. Secure portable toilets to prevent tipping or falling over during periods of high winds or in high traffic areas.
3. Maintain portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove holding tanks and replace with properly operating unit.

CONCRETE WASHOUTS

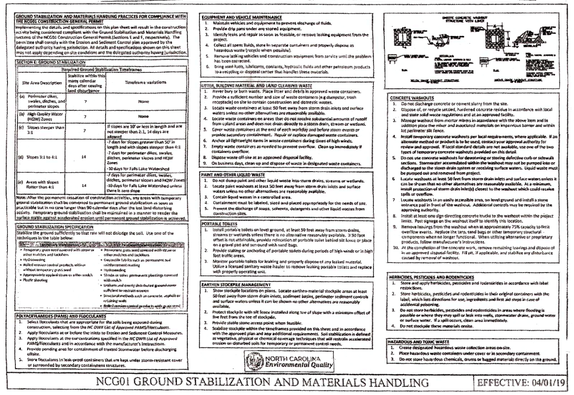
1. Do not discharge concrete or cement slurry from the site.
2. Wash out concrete trucks in designated areas only. Locate washouts in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and to prevent the release of mortar and associated materials on impervious barrier and within an impervious area.
4. Install temporary concrete washouts per local requirements, where applicable. If no alternate method or product is to be used, contact your approved authority for review and approval. If local standard details are not available, use one of the two following options or a combination of both options:
   a. Excavate a hole, backfill for decentralized or overlay ditches curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped less or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped from the washout and properly disposed.
   b. Elevate a temporary form SO feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. As a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflows.
5. Locate washouts in a readily accessible area, on level ground and install a more extensive pad in front of the washout. Additional controls may be required by the governing authority.
6. Install at least one sign directing concrete trucks to the washout within the project limits. Install signs at each washout area available to concrete trucks.
7. Remove hardened concrete waste and dispose of properly.
- 3a. Provide temporary washouts for decentralized or overlay ditches curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped less or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped from the washout and properly disposed.
- 3b. At the completion of the concrete work, remove remaining lovenge and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in their original containers with the label instructions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which has directions for use, ingredients and first aid steps in case of accidental exposure.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface waters. Do not apply these chemicals if rain is immediately.
4. Do not evaluate these materials waste.

HAZARDOUS AND TOXIC WASTE

1. Dispose of hazardous waste in accordance with manufacturer's recommendations.
2. Store hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.



NORTH CAROLINA Environmental Quality

OWNER/DEVELOPER:
TCTBM, LLC
6131 FALLS OF NEUSE RD
SUITE 200
RALEIGH, NC 27609
(919) 247-1932

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

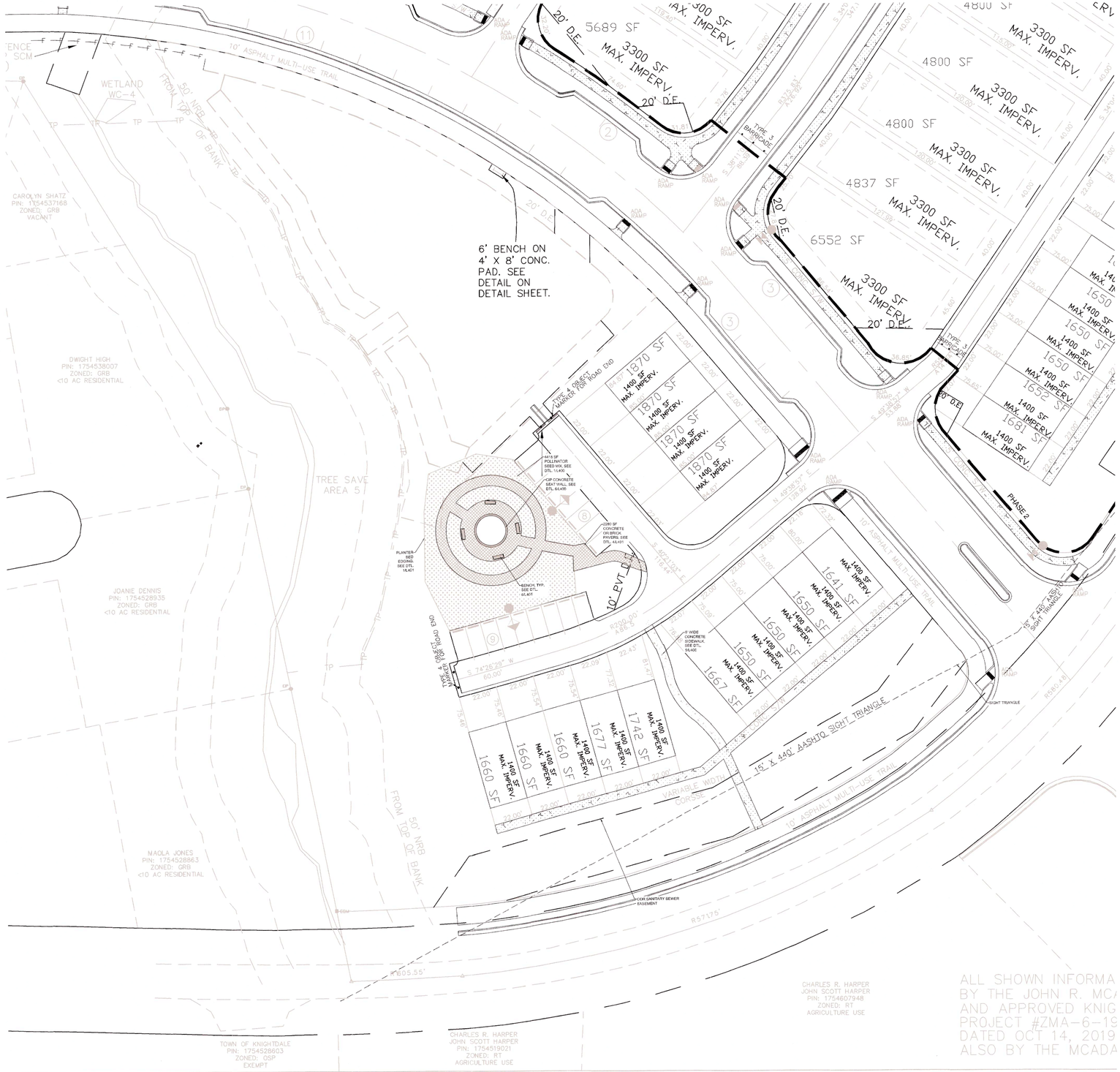
By: Gideon Smith Date: _____
Administrator

CONSTRUCTION PLANS *SHEET 40*

EROSION CONTROL DETAILS
THE COLLECTION
614 KEITH ST. KNIGHTDALE, NC 27545

THOMPSON & ASSOCIATES
CO. LICENSE NO. C-0343
1149 EXECUTIVE CIRCLE
SUITE D UNIT 2
CARY, NC 27511
(919) 465-1566
ENGINEERING SURVEYING LAND PLANNING

ST. MATTHEWS TOWNSHIP WAKE COUNTY NORTH CAROLINA			
OWNER: TCTBM, LLC			ZONED PUD
DATE 7/28/2025	DRAWN RLM		JOB NO. 20-
NO SCALE	SURVEYED ----		DWG COLLECTION-SITE
REVISIONS: 10-17-2025			PIN: SEE SITE DATA TABLE



a. **Lighting Plan Certification:** I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Development Services Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with Section 7.7 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

_____ _____
Date Applicant

I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ___ day of _____, A.D., ____ (year).

_____
Official Seal Notary

_____
Commission Expires

0 30 60 feet
1" = 30'

NORTH

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

General Notes

No.	Revision/Issue	Date
5	PH 1: SITE PLAN RESUB 4	2026/02/03
4	SITE PLAN RESUBMITTAL 3	2025/12/19
3	SITE PLAN RESUBMITTAL 2	2025/10/17
2	SITE PLAN DRAFT	2025/10/07
1	SITE PLAN RESUBMITTAL	2025/09/26

Designed By:
PROSPECT LANDSCAPE ARCHITECTURE, PLLC
227 GLASCOCK STREET
RALEIGH, NC 27604
919-607-0025
JENWAGNERLANDSCAPE@GMAIL.COM
WWW.PROSPECT-LA.COM

PROSPECT LANDSCAPE ARCHITECTURE, PLLC

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1731 JENNIFER L. WAGNER

02/03/2026

Project/Client:
TBM PARTNERS

THE COLLECTION RESIDENTIAL

614 KEITH STREET
KNIGHTDALE, NC

Project: THE COLLECTION	Sheet: COMMUNTY GARDEN SITE PLAN
Date: 2026/02/03	L100
Scale: 1"=30'	



0 30 60 feet

1" = 30'

NORTH

a. **Lighting Plan Certification:** I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Development Services Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with Section 7.7 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

Date _____ Applicant _____

I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ___ day of _____, A.D., ____ (year).

Official Seal _____ Notary

_____ Commission Expires

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: Samuel A. MacDonald Date: _____

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____

Administrator

General Notes

No.	Revision/Issue	Date
5	PH 1: SITE PLAN RESUB 4	2026/02/03
4	SITE PLAN RESUBMITTAL 3	2025/12/19
3	SITE PLAN RESUBMITTAL 2	2025/10/17
2	SITE PLAN DRAFT	2025/10/07
1	SITE PLAN RESUBMITTAL	2025/09/26

Designed By:
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PROSPECT LANDSCAPE ARCHITECTURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1791 JENNIFER L. WAGNER

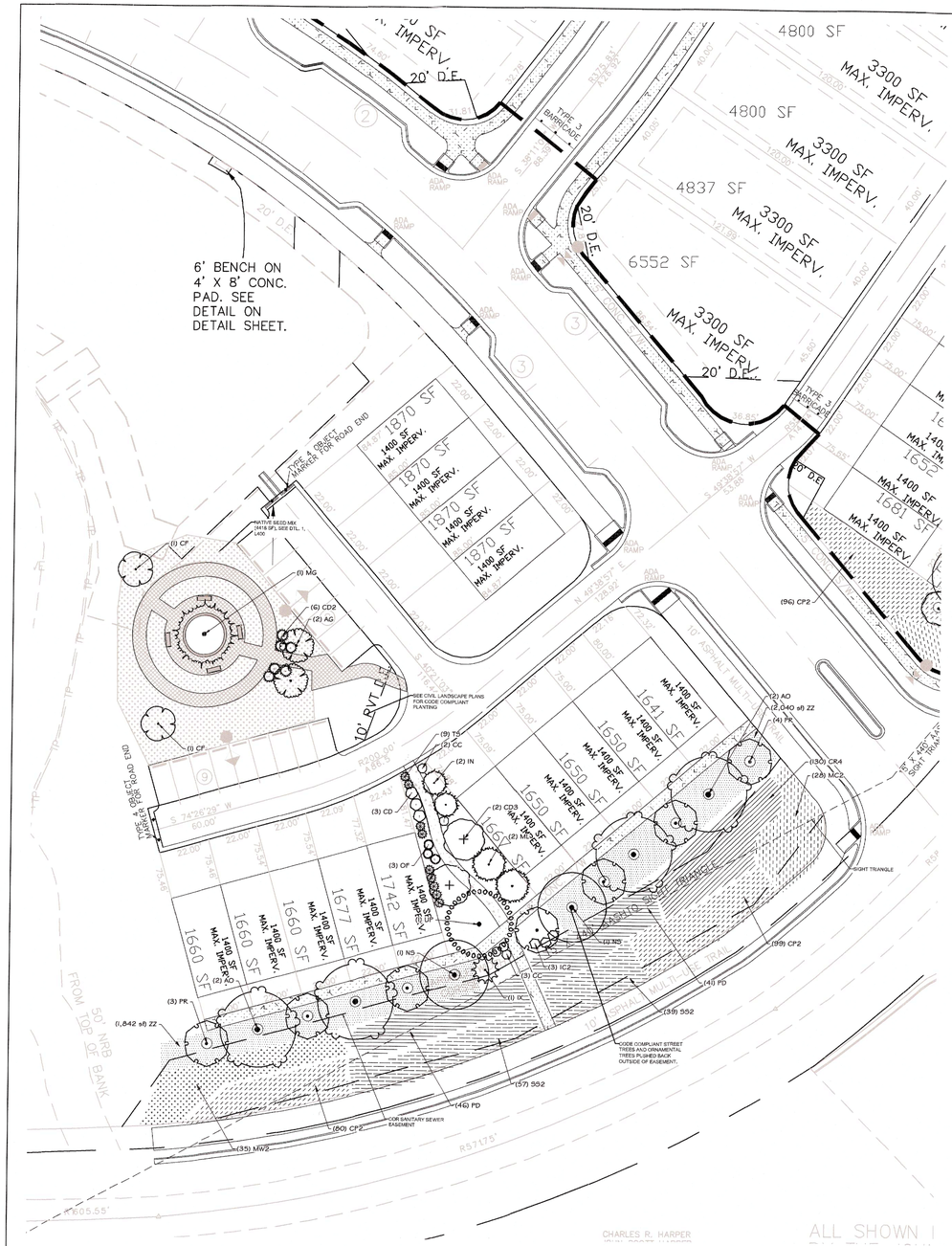
02/03/2026

Project/Client:
TBM PARTNERS

THE COLLECTION RESIDENTIAL

614 KEITH STREET
KNIGHTDALE, NC

Project	Sheet
THE COLLECTION	CENTRAL PARK SITE PLAN
Date: 2026/02/03	L101
Scale: 1"=30'	



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_____
Official Seal Notary

_____
Commission Expires

PLANT SCHEDULE COMMUNITY GARDEN

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	INSTALL HEIGHT	MATURE HEIGHT	QTY	REMARKS
TREES									
	AO	Acer rubrum 'October Glory'	October Glory Red Maple	3" Cal.		14'		4	
	IX	Ilex x 'Magden'	Golden Oakland® Holly	7 gal.	Pot		15'x12'	1	yellow-green variegated foliage
	IN	Ilex x 'Nellie R. Stevens'	Nellie R. Stevens Holly	---	B&B	8`	15-20`	2	
SHADE TREES									
	MG	Metasequoia glyptostroboides	Dawn Redwood	3" Cal.	B&B	10` min.	60-80`	1	
	NS	Nyssa sylvatica `Wildfire`	Black Gum	3" Cal.	B&B	10` min.	60`	2	
	UP	Ulmus americana 'Princeton'	Princeton American Elm	3" Cal.	B&B	10` min.	60-80`	1	
UNDERSTORY TREES									
	AG	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Apple Serviceberry	1.5" Cal.	Pot			2	for buffer
	CD3	Chionanthus virginicus `Dirr`	Dirr White Fringetree	1.5" Cal.	Pot			2	
	CF	Cornus florida	Flowering Dogwood	1" Cal.	Pot			2	for buffer
	ML	Magnolia grandiflora 'Little Gem'	Little Gem Dwarf Southern Magnolia	8` Ht.	Pot			2	evergreen
	PR	Pistacia chinensis `Red Push`	Red Push Chinese Pistache	1.5" Cal.	B&B			7	single-stem

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	INSTALL HEIGHT	MATURE SIZE	QTY	REMARKS
SHRUBS									
	CD	Camellia japonica 'Debutante'	Debutante Camellia	3 gal.	Pot			3	
	CC	Camellia sasanqua 'Dwarf Shishi'	Dwarf Shishi Camellia	3 gal.	Pot			5	
	CD2	Cephalotaxus harringtonia 'Duke Gardens'	Duke Gardens Plum Yew	3 gal.	Pot			6	
	IC2	Ilex crenata 'Compacta'	Dwarf Japanese Holly	5 gal.	Pot	30"	5`x5`	3	
	OF	Osmanthus fragrans 'Fudingzhu'	Fudingzhu Sweet Olive	7 gal.	Pot			3	
	TS	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	7 gal.	Pot			9	

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	QTY	REMARKS
GROUND COVERS								
	CR4	Carex buchananii 'Red Rooster'	Red Rooster Leather Leaf Sedge	4"	FLAT	40" o.c.	130	plant 2' o.c.
	CP2	Carex testacea 'Prairie Fire'	Prairie Fire Orange Sedge	1 gal.	Pot	42" o.c.	179	
	MC2	Muhlenbergia capillaris	Pink Muhly Grass	1 gal.	Pot	72" o.c.	28	
	MW2	Muhlenbergia capillaris 'White Cloud'	White Cloud Muhly Grass	1 gal.	Pot	72" o.c.	35	
	PD	Panicum virgatum 'Dallas Blues'	Dallas Blues Switch Grass	4"	Plug	60" o.c.	87	for large area north of bldg
	SS2	Schizachyrium scoparium 'Standing Ovation'	Standing Ovation Little Bluestem	4"	FLAT	54" o.c.	96	
	ZZ	Zoysia x Zeon®	Zeon® Zoysia	sod			3,882 sf	

ALL PLANTER BEDS TO RECEIVE 3-4" TRIPLE SHREDDED HARDWOOD MULCH

PLANTING NOTES ON L400.

0 30 60 feet
1" = 30'

NORTH

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By: Samuel A. MacDonald Date: _____
Town Engineer

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By: Gideon Smith Date: _____
Administrator

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PROSPECT LANDSCAPE ARCHITECTURE, PLLC

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 3791 JENNIFER L. WAGNER

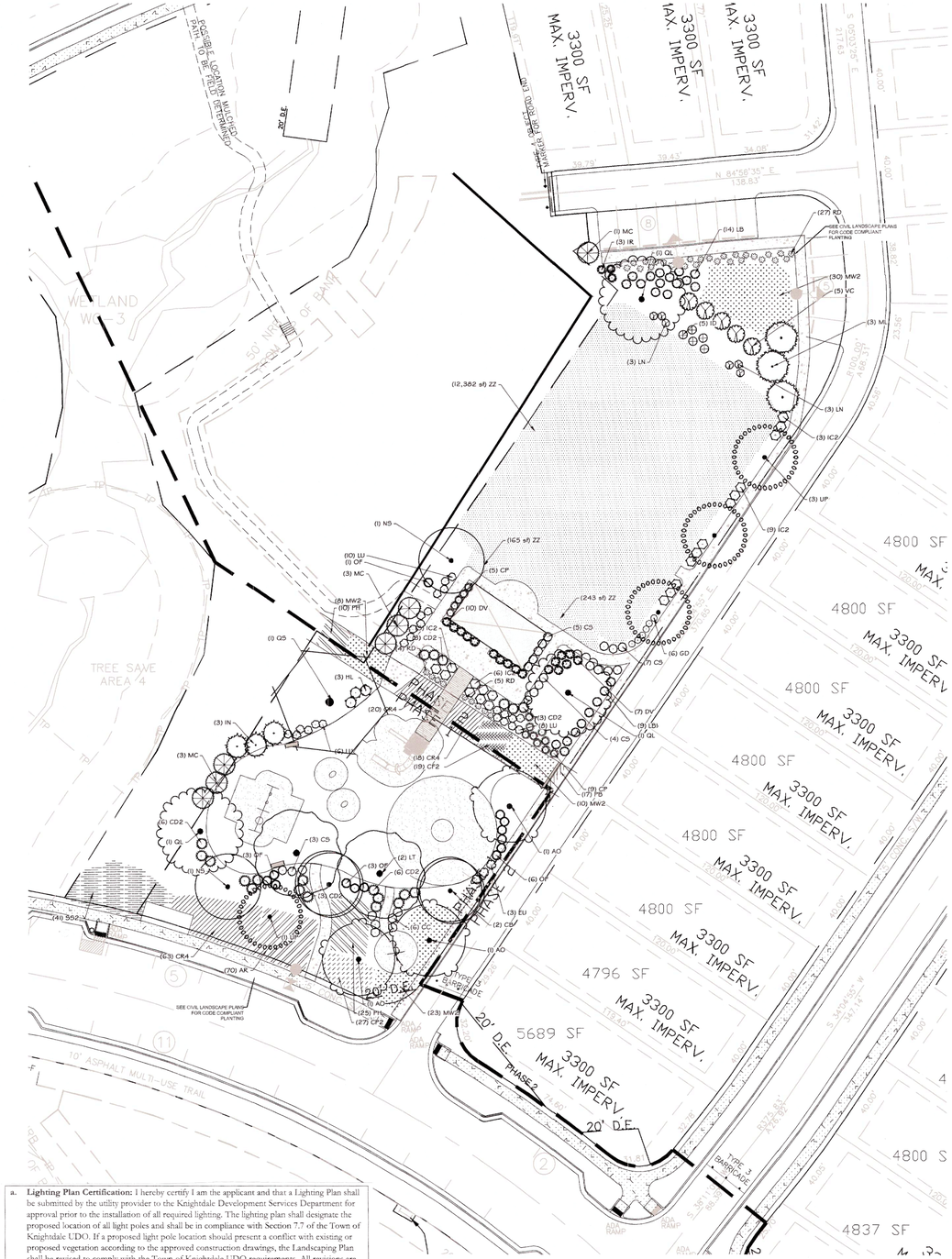
02/03/2026

Project/Client:
TBM PARTNERS

THE COLLECTION RESIDENTIAL

614 KEITH STREET
KNIGHTDALE, NC

Project	Sheet
THE COLLECTION	COMMUNITY GARDEN & STREETSCAPE PLANTING PLAN
Date: 2026/02/03	L200
Scale: 1"=30'	



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Official Seal _____ Notary _____

Commission Expires _____

ALL PLANTER BEDS TO RECEIVE 3-4" TRIPLE SHREDDED HARDWOOD MULCH

PLANTING NOTES ON L400.

0 30 60 feet

1" = 30'

NORTH

PLANT SCHEDULE CENTRAL PARK

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	INSTALL HEIGHT	MATURE HEIGHT	QTY	REMARKS
TREES									
	AO	Acer rubrum 'October Glory'	October Glory Red Maple	3" Cal.		14'		3	
	IN	Ilex x 'Nellie R. Stevens'	Nellie R. Stevens Holly	---	B&B	8`	15-20`	3	
SHADE TREES									
	CB	Carpinus betulus	European Hornbeam	3" Cal.	B&B	10` min.	40-50`	2	
	LT	Liriodendron tulipifera	Tulip Poplar	3" Cal.	B&B			2	
	NS	Nyssa sylvatica `Wildfire`	Black Gum	3" Cal.	B&B	10` min.	60`	2	
	QL	Quercus lyrata	Overcup Oak	3" Cal.	B&B	10` min.	60-80`	3	matching
	QS	Quercus shumardii	Shumard Oak	3" Cal.	B&B	10-12'	40-60'	1	
	UP	Ulmus americana 'Princeton'	Princeton American Elm	3" Cal.	B&B	10` min.	60-80`	4	
UNDERSTORY TREES									
	ML	Magnolia grandiflora 'Little Gem'	Little Gem Dwarf Southern Magnolia	8` Ht.	Pot			3	evergreen

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	INSTALL HEIGHT	MATURE SIZE	QTY	REMARKS
SHRUBS									
	CS	Camellia sasanqua 'Autumn Moon'	Sasanqua Camellia	5 gal.	Pot			19	
	CC	Camellia sasanqua 'Dwarf Shishi'	Dwarf Shishi Camellia	3 gal.	Pot			6	
	CD2	Cephalotaxus harringtonia 'Duke Gardens'	Duke Gardens Plum Yew	3 gal.	Pot			21	
	CP	Cephalotaxus harringtonia 'Prostrata'	Prostrate Plum Yew	1 gal.	Pot		2`x4`	14	
	DV	Distylium x `Vintage Jade`	Vintage Jade Distylium	3 gal.	Pot			17	
	EU	Euonymus japonicus 'Green Spire'	Green Spire Japanese Euonymus	---		30"		3	
	GD	Gardenia radicans	Dwarf Gardenia	3 gal.	Pot			6	
	HL	Hydrangea paniculata `Limelight`	Limelight Panicle Hydrangea	5 gal.	Pot			3	
	IC2	Ilex crenata 'Compacta'	Dwarf Japanese Holly	5 gal.	Pot	30"	5`x5`	21	
	IR	Ilex verticillata `Red Sprite`	Red Sprite Winterberry	3 gal.	Pot		3`x5`	3	
	ID	Ilex vomitoria `Schillings Dwarf`	Schillings Dwarf Yaupon Holly	3 gal.	Pot	12-15"	4'x4'	5	
	LB	Loropetalum chinense 'Blush'	Blush Fringe Flower	3 gal.	Pot	18" HEIGHT MIN	6'x4'	23	
	LN	Loropetalum chinense rubrum 'PIILC-I'	Crimson Fire™ Fringe Flower	3 gal.	Pot			6	
	LU	Loropetalum chinense rubrum 'PIILC-III'	Purple Daydream® Dwarf Loropetalum	3 gal.		24" MIN.		24	
	MC	Myrica cerifera	Wax Myrtle	5 gal.	Pot	36"	10`x10`	7	Evergreen
	OF	Osmanthus fragrans 'Fudingzhu'	Fudingzhu Sweet Olive	7 gal.	Pot			13	
	RD	Rosmarinus officinalis 'Prostratus'	Dwarf Rosemary	1 gal.	Pot			37	
	VC	Viburnum awabuki 'Chindo'	Chindo Sweet Viburnum	---			12`X8`	5	

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	QTY	REMARKS
GROUND COVERS								
	AR	Andropogon gerardii 'Red October'	Red October Big Bluestem	4"	Plug	36" o.c.	70	
	CR4	Carex buchananii 'Red Rooster'	Red Rooster Leather Leaf Sedge	4"	FLAT	40" o.c.	101	plant 2' o.c.
	CP2	Carex testacea 'Prairie Fire'	Prairie Fire Orange Sedge	1 gal.	Pot	42" o.c.	27	
	CF2	Carex x 'ET CRX01'	Feather Falls Japanese Sedge	4"	FLAT	40" o.c.	19	
	MW2	Muhlenbergia capillaris 'White Cloud'	White Cloud Muhly Grass	1 gal.	Pot	72" o.c.	71	
	PH	Panicum virgatum 'Heavy Metal'	Heavy Metal Switch Grass	4"	FLAT	50" o.c.	35	
	PB	Pennisetum alopecuroides 'Burgundy Bunny'	Burgundy Bunny Dwarf Fountain Grass	4"	FLAT	18" o.c.	17	
	SS2	Schizachyrium scoparium 'Standing Ovation'	Standing Ovation Little Bluestem	4"	FLAT	54" o.c.	41	
	ZZ	Zoysia x Zeon®	Zeon® Zoysia	sod			12,790 sf	

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: Samuel A. MacDonald Date: _____
Town Engineer

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PROSPECT LANDSCAPE ARCHITECTURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1791 JENNIFER L. WAGNER

02/03/2026

Project/Client:
TBM PARTNERS

THE COLLECTION RESIDENTIAL

614 KEITH STREET
KNIGHTDALE, NC

Project	Sheet
THE COLLECTION	CENTRAL PARK PLANTING PLAN
Date: 2026/02/03	
Scale: 1"=30'	L201

NATIVE SEED MIXES NOTED ON PLANTING PLAN (APPROX.9700 SF TOTAL)

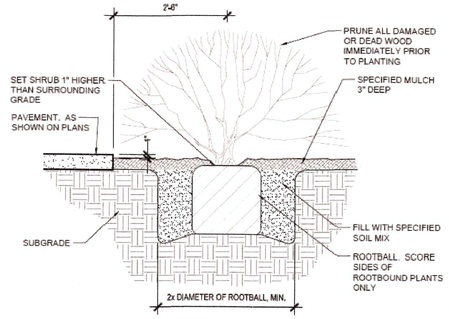
Potential Seed providers and seed mixes:
Ernst Conservation Seeds
8884 Mercer Pike,
Meadville, PA 16335
(800) 873-3321
sales@ernstseed.com
VA Southern Piedmont UPL Meadow Mix, Item Number: ERNMX-861 -20 lbs acre

Eden Brothers
2099 Brevard road
Arden, NC 28704
edenbrothers.com
Perennial Pollinator Wildflower Mix - 25 lbs/more than acre

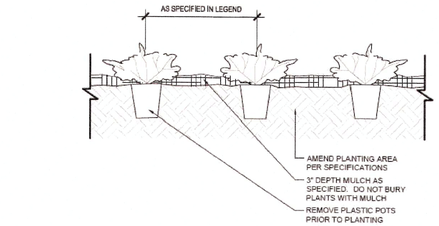
Garrett Wildflower Seed Farm
NC
919-989-3031
garrettseed.com
Pollinator Mix - 20 lbs/acre

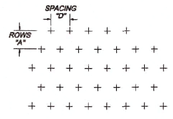
ALL OTHER UNPLANTED, DISTURBED AREAS TO BE SEEDED WITH A TALL FESCUE/MICRO-CLOVER MIX.

DETAIL 1 - SEED MIX



DETAIL 2 - SHRUB PLANTING





PLANT SPACING CHART

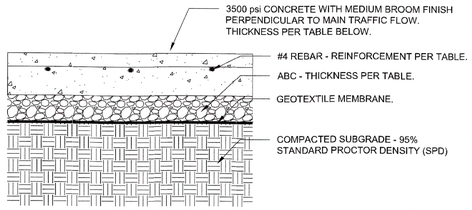
SPACING "D"	ROW "A"	PLANTS /s.f.
6" o.c.	5.20" o.c.	4.61
8" o.c.	6.93" o.c.	2.60
10" o.c.	8.66" o.c.	1.66
12" o.c.	10.39" o.c.	1.15
15" o.c.	12.99" o.c.	0.74
18" o.c.	15.60" o.c.	0.51
24" o.c.	20.80" o.c.	0.29

DETAIL 3 - GROUNDCOVER PLANTING

PLANTING NOTES

1. ALL DISTURBED AREAS NOT SHOWN WITH PLANTS SHALL BE PLANTED WITH ZEON ZOYSIA
2. ROUGH GRADING SHALL BE COMPLETED PRIOR TO THE START OF PLANT INSTALLATION.
3. CONTRACTOR RESPONSIBLE FOR LOCATING ALL UTILITIES AND ALL OTHER UNDERGROUND STRUCTURES PRIOR TO PLANTING.
4. PLANTING SHOULD OCCUR IMMEDIATELY AFTER CONSTRUCTION TO STABILIZE AREAS OF BARE SOIL.
5. ALL DEBRIS, ROCKS, ETC. LARGER THAN .5 INCH ARE TO BE REMOVED PRIOR TO SEEDING/SODDING OR PLANTING.
6. MULCH SHALL BE TRIPLED SHREDDED HARDWOOD MULCH, FREE OF WEEDS.
7. DO NOT STAKE TREES EXCEPT WHERE SPECIFIED OR ON SLOPES.
8. FOR PLANTER BEDS: RECEIVE A MINIMUM OF 4" OF APPROVED TOPSOIL. TILL IN SOIL AMENDMENTS TO A DEPTH OF 6" AND WHERE PLANTS SHARE ROOT SPACE - TILL THE ENTIRE AREA, NOT JUST THE PLANT HOLES. FOR SEEDING/SOD: ALL AREAS TO RECEIVE A MINIMUM OF 2" OF APPROVED TOPSOIL TILLED INTO A DEPTH OF 4" TO ENSURE INTEGRATION WITH EXISTING SOIL.
9. FOR CONTAINER GROWN PLANTS, USE FINGERS OR SMALL HAND TOOLS TO GENTLY PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL AND CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
10. BEFORE PLANTING, ADD 3-4" OF WELL COMPOSTED LEAVES, RECYCLED YARD WASTE OR OTHER COMPOST AND TILL INTO TOP 4-6" OF PREPARED SOIL. ADD COMPOST AT 20-35% BY VOLUME TO BACKFILL.
11. DO NOT PLACE MULCH IN CONTACT WITH TRUNK.
12. PROVIDE GATOR BAGS FOR TREES WHERE IRRIGATION IS NOT PROVIDED. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
13. PLANTS SHALL BE REPRESENTATIVE OF THEIR SPECIES AND MEET ANSI STANDARD Z60.
14. LANDSCAPE ARCHITECT OR OWNER MAINTAINS THE RIGHT TO REJECT ANY PLANT DUE TO AESTHETICS OR STRUCTURAL DEFICIENCY AT ANY TIME.
15. QUANTITIES SHOWN ON THE PLANT LEGEND ARE FOR THE CONTRACTOR'S CONVENIENCE. IF DISCREPANCIES OCCUR, THE PLANS SHALL OVERRULE THE PLANT LEGEND.
16. IF ANY PLANT SUBSTITUTIONS ARE REQUESTED BY THE CONTRACTOR, SUGGESTED ACCEPTABLE REPLACEMENTS SHALL BE PRESENTED AND A MINIMUM OF 72-HOURS SHALL BE GIVEN TO THE LANDSCAPE ARCHITECT PRIOR TO ORDERING DATE FOR FINAL DECISION.
17. BALLED AND BURLAPPED TREES SHALL BE PLANTED PRIOR TO CONTAINER OR BEDDING PLANTS.
18. STREET TREES SHALL BE 10' AWAY FROM STORMWATER PIPES, WITH A MINIMUM OF 5' FROM STORMWATER STRUCTURES.
19. LARGE TREES SHALL BE NO CLOSER THAN 20' FROM ANY STRUCTURE WITH AT LEAST 350 SF OF NON-PAVED AREA AROUND THE TRUNK.
20. SMALL TREES SHALL BE NO CLOSER THAN 10' FROM ANY STRUCTURE WITH AT LEAST 250 SF OF NON-PAVED AREA AROUND THE TRUNK.
21. ALL BUILDINGS SHALL BE SET BACK 10' AND ALL VEHICULAR USE AREAS SHALL BE SET BACK FIVE FEET FROM ANY AREA DESIGNATED AS RCA.

DETAIL 4 - PLANTING NOTES



PAVEMENT TYPE	ABC	REINFORCEMENT	CONCRETE
SIDEWALKS AT DRIVE LANES	0'-4"	#4 @ 12" O.C. B.W.	0'-8"
CONCRETE AT SERVICE AREAS	0'-4"	#4 @ 12" O.C. B.W.	0'-6"
MOUNTABLE CURB	0'-4"	#4 @ 12" O.C. B.W.	0'-6"
ACCESSIBLE PARKING SPACES	0'-4"	#4 @ 12" O.C. B.W.	0'-6"
PEDESTRIAN SIDEWALKS	0'-4"	NONE	4"-5"

1. CONTRACTOR TO CONTACT LANDSCAPE ARCHITECT TO REVIEW FORMS PRIOR TO POURING.
2. SEE PLANS FOR JOINT LOCATIONS.

DETAIL 5 - PEDESTRIAN CONCRETE

PICNIC SHELTERS
1. LARGE SHELTER: ENWOOD "THE WILMINGTON" 20'X40'.

ENWOOD
10224 DURANT ROAD
SUITE 201
RALEIGH, NC 27614
800.777.8648
zenecar@enwood.com
www.enwood.com

POURED IN PLACE RUBBER SURFACING
SEE LIMITS ON SHEETS L101; APPROX. 4489 SF TOTAL

COLOR AND FINAL LIMITS TO BE DETERMINED. USE SURFACE AMERICA FOR PRODUCT AND INSTALL OR SIMILAR PRODUCT. DEPTH TO BE DETERMINED BY PLAYGROUND MANUFACTURER.

Surface America, Inc.
45 Earhart Drive, Suite 102-A
Williamsville, NY 14221
Phone: 716-632-8413
Toll-Free: 800-999-0555

ENGINEERED WOOD FIBER SURFACING
FINAL LIMITS TO BE DETERMINED; APPROX. 4025 SF TOTAL

USE FIBAR OR SIMILAR PRODUCT. DEPTH TO BE DETERMINED BY PLAYGROUND MANUFACTURER.

FIBAR
80 Business Park Drive
Armonk NY 10504
(800) 342-2721

DETAIL 6 - BASIS OF DESIGN PRODUCTS

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: Samuel A. MacDonald Date: _____
Town Engineer

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PROSPECT LANDSCAPE ARCHITECTURE PLLC

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1791 JENNIFER L. WAGNER
02/03/2026

Project/Client:
TBM PARTNERS

THE COLLECTION RESIDENTIAL

614 KEITH STREET
KNIGHTDALE, NC

Project	Sheet
THE COLLECTION	PLANTING & SITE DETAILS
Date: 2026/02/03	L400
Scale:	

Crisp-Edge

SureLoc CrispEdge profiles are ultra-thin functional edging is primarily used in residential and light commercial applications where greater flexibility is desired and offers years of proven performance.

CrispEdge is the edging of choice specified by landscape Architects and Designers and preferred by landscape contractors and homeowners who refuse to compromise.

MADE IN THE U.S.A.
FROM RECYCLED MATERIAL

1/8" x 4" (3.2mm x 102mm)

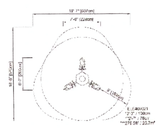
Primarily used in residential and light commercial applications where greater flexibility is desired. Prolonged straight runs are possible but will require additional labor due to flexibility differences compared to 3/16" thick material. Applications include, but are not limited to, planting beds, tree rings, paver walkways and patios. 16 foot edging sections are packaged 15 pieces (240') per box. 8 foot edging sections are packaged 15 pieces (120') per box.

1. AT PLANTER BED EDGES WHERE THERE IS NO HARDSCAPE AS AN EDGE.
2. SURE-LOC 'CRISP EDGE' PRODUCT OR SIMILAR.
3. ALUMINUM EDGING:BRONZE PAINT COLOR.
4. 3/16" X 4" SIZE.
5. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

DETAIL 1 - PLANTER EDGING

Blazer

KOMPAN





Blazer

KOMPAN





KOMPAN
www.kompan.com
605 W Howard Lane, Suite 101 Austin, TX 78753
800-426-9788

OWNER RESERVES THE RIGHT TO CHANGE MANUFACTURERS AND PRODUCTS PENDING FINAL BUDGET DECISIONS.

DETAIL 2 - ART/PLAY SCULPTURE

SkyTwister, Physical

KOMPAN



MAIN PLAY STRUCTURE:

KOMPAN - SKY TWISTER, Physical, PE Slide

include bridge over slope connecting to top of structure, slides and stairs and net climbing for entries and exits.

ADDITIONAL EQUIPMENT:

1. SWING, 8ft H, 1 Rope Seat, KSW92011 (21'11" X 6' X 8'4" tall, fall zone: 33' 11" x 31' 8")
2. SPINNER: SATURN CAROUSEL (10'4" diameter, fall zone: 50' 9" diameter)
3. SPRINGERS: SPRING BOARD (3'x2'9", fall zone: 14'9"x14'6") and BEE SPRINGER (2'6"x2'3", fall zone: 14'6"x13'7")

Bee Springer, Oak

KOMPAN



Spring Board

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Swing, 8 ft H, 1 Rope Seat

KOMPAN



Saturn 4 Carousel

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DETAIL 3 - PLAYGROUND EQUIPMENT

1. CONCRETE PAVERS BY HANOVER, BELGARD OR UNILOCK.
2. MIXTURE OF 3"X6", 6"X6", 6"X9".
3. COLOR: TBD
4. INSTALL IN ASHLAR/FRENCH PATTERN. DRY LAID WITH POLYMERIC SAND BETWEEN 1/4" JOINTS.
5. INSTALL ON 4" CABC BASE.

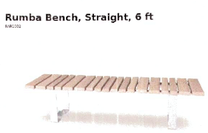


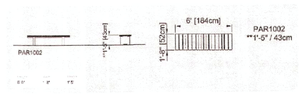
DETAIL 4 - CONCRETE PAVERS

DETAIL 5 - NOT USED

Rumba Bench, Straight, 6 ft

KOMPAN





BENCH
6' BENCH, STRAIGHT, OPTIONAL BACKREST

OWNER RESERVES THE RIGHT TO CHANGE EQUIPMENT MANUFACTURERS AND PRODUCTS PENDING FINAL BUDGET DECISIONS.

DETAIL 6 - BENCH

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: Samuel A. MacDonald Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____
Administrator

General Notes

No.	Revision/Issue	Date
5	PH 1: SITE PLAN RESUB 4	2026/02/03
4	SITE PLAN RESUBMITTAL 3	2025/12/19
3	SITE PLAN RESUBMITTAL 2	2025/10/17
2	SITE PLAN DRAFT	2025/10/07
1	SITE PLAN RESUBMITTAL	2025/09/26

Designed By:
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919-607-0025
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PROSPECT LANDSCAPE ARCHITECTURE

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1791 JENNIFER L. WAGNER

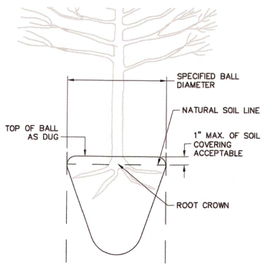
02/03/2026

Project/Client:
TBM PARTNERS

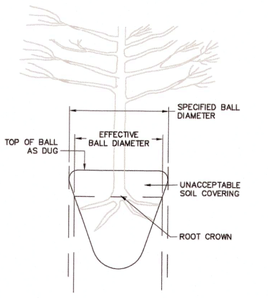
THE COLLECTION RESIDENTIAL

614 KEITH STREET
KNIGHTDALE, NC

Project	Sheet
THE COLLECTION	PLANTING & SITE DETAILS
Date: 2026/02/03	
Scale	L401



ACCEPTABLE CONDITION



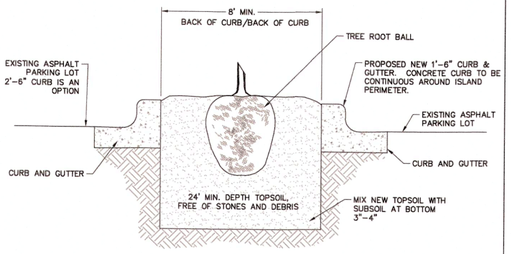
UNACCEPTABLE CONDITION

NOTE:

A ROOT COLLAR EXCAVATION FOR ALL TREES SPECIFIED WILL BE DONE BY THE TOWN TO ENSURE THAT TREES WERE NOT PLANTED/GROWN TOO DEEPLY AT SOURCE (NURSERY). LANDSCAPE CONTRACTOR SHALL HAVE SUPPLIER MARK GROUND LEVEL LINE ABOVE ROOT BALL. IF TOWN DETERMINES THAT THERE IS EXCESSIVE SOIL OVER THE ROOT CROWN, THESE TREES WILL BE REJECTED.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	ROOT CROWN DEPTHS	STD. NO. 3.21



NOTES:

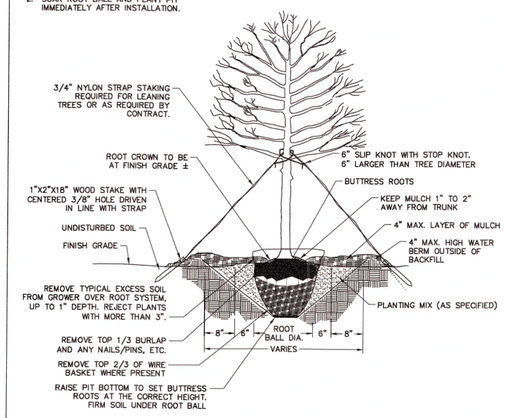
1. 300 SF MIN. TOTAL REQUIRED AREA PER TREE.
2. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL SUB-BASE AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES.
3. REMOVE COMPACTED SOIL AND ADD 24" NEW OR TOPSOIL/PLANTING MIX OR UNCOMPACT AND AMEND TOP 24" OF EXISTING SOIL TO MEET TOPSOIL/PLANTING MIX STANDARDS FOR TREES.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TREE PLANTING ISLAND IN PARKING LOTS	STD. NO. 3.23

NOTES:

1. REMOVE WIRE OR NYLON TWINE FROM BALL.
2. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.



ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (AMSI, 1990, PART 1, "SHADE AND FLOWERING TREES")

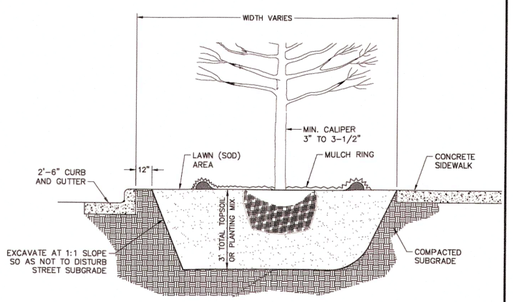
FOR EXAMPLE: CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
2"	12-14'	16'	24"	16"
3"	14-16'	18'	32"	21"

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TREE PLANTING (FOR SINGLE AND MULTI-STEM TREES)	STD. NO. 3.25

NOTES:

1. MEANT TO PROVIDE GUIDANCE ON STREET TREE PLANTING. REFERENCE SPECIFIC CROSS SECTION FOR PLANTING LOCATION AND WIDTH.
2. 6 FT. PLANTING WIDTH PREFERRED, WHERE POSSIBLE.
3. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL, SUB-BASE, AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES.
4. REMOVE COMPACTED SOIL AND ADD 24" NEW TOPSOIL WITH PLANT MIX OR UNCOMPACT AND AMEND TO 24" OF EXISTING SOIL TO MEET TOPSOIL WITH PLANTING MIX STANDARDS FOR TREES.
5. MULCH SHALL NOT BE STACKED AGAINST BASE OF PLANTING.



REVISIONS	
DATE	DESCRIPTION
	07.01.2024

TOWN OF KNIGHTDALE STANDARD DETAILS	STREET TREE PLANTING	STD. NO. 3.26

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: Samuel A. MacDonald Date: _____

Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: Gideon Smith Date: _____

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Project	Sheet
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Date: 2026/02/03	L402
Scale	