Construction Drawings

Issued for	Approval
Date Issued	January 17, 2025
Latest Issue	December 15, 2025

Lyndon Oaks Phases 1 and 2

Old Faison Rd
Knightdale, NC

ZONING #: ZMA-2-23
LAND DISTURBANCE #: SEC-000002-2025

Developer
DR Horton
7208 Falls of Neuse Rd Suite 201
Raleigh, NC 27615
Contact: Patty Harrell-Hilburn
Telephone: 984.383.8629
Email: PEHarrellHilburn@drhorton.com

Engineer
VHB Engineering NC, P.C.
940 Main Campus Drive Suite 500
Raleigh, NC 27606
Contact: Charles Townsend, PE
Telephone: 919.741.5567
Email: ctownsend@vhb.com

Surveyor
Bateman Civil Survey Company
2524 Reliance Ave.
Apex, NC 27539
919.577.1080

Engineer (Dam Breach)
Soil & Environmental Consultants, Inc.
North Quarter Office Park
8412 Falls of Neuse Road, Suite 104
Raleigh, NC 27615
Office (919) 846-5900

Town of Knightdale
Knightdale Public Works
919-217-2250
swengineer@knightdalenc.gov

John Stover
Inspections Manager, ToK Public Works
919-349-2521
john.stover@knightdalenc.gov

Town ESC Construction Inspector
919-919-2254

Ike Archer
Stormwater Manager, ToK Public Works
919-217-2255
ike.archer@knightdalenc.gov

Stormwater Tech, Public Works
919-217-2256

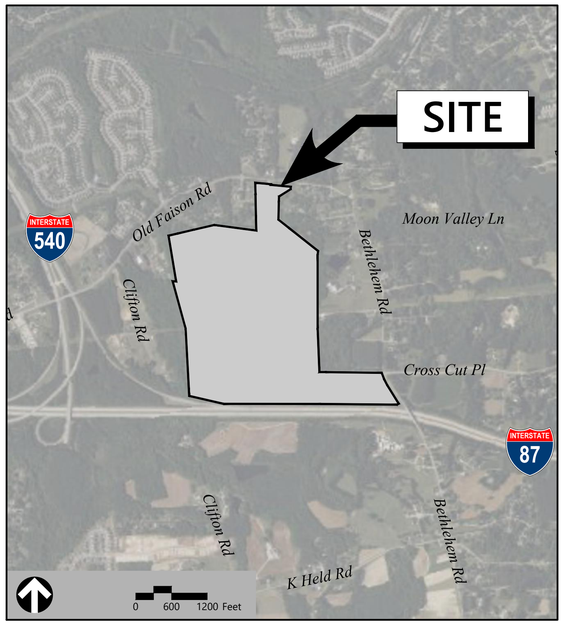
Donovan Applewhite
Code Enforcement Officer, DS
919-217-2248
donovan.applewhite@knightdalenc.gov

WATER ALLOCATION POLICY POINTS

KEY	TYPE	CATEGORY	MAJOR SUBDIVISION	POINTS	PHASE
	BASE		MAJOR SUBDIVISION BASE POINTS	15	ALL
1	BONUS	2	CONSERVATION OF NATURAL HABITAT	7	ALL
2	BONUS	2	CONSTRUCT A FOUNTAIN WITHIN IN THE BMP	4	PHASE 2
3	BONUS	2	ON-STREET PARKING	4	ALL
	BONUS	2	RESIDENTIAL ARCHITECTURAL STANDARDS	15	ALL
4	BONUS	4	3,000' OR MORE OF A 6-FT WIDE PATH	3	ALL
5	BONUS	4	RESORT STYLE POOL	2	PHASE 2
6	BONUS	4	DECK/PATIO (2,000 SF MIN)	2	PHASE 2
7	BONUS	4	CLUBHOUSE (NO MEETING SPACE, BATHROOMS * CHANGING ROOMS ONLY)	3	PHASE 2
8	BONUS	4	IPEMA CERTIFIED PLAYGROUND EQUIPMENT	4	PHASE 2
9	BONUS	4	PICKLEBALL COURTS	5	PHASE 3
10	BONUS	3	OUTDOOR DISPLAY OF PUBLIC ART	4	PHASE 2
MAJOR SUBDIVISION TOTAL				68 PTS	

KEY	TYPE	CATEGORY	MAJOR SUBDIVISION	POINTS
	BASE		SINGLE USE RETAIL BASE POINTS	41
A	BONUS	3	CONSTRUCTION OF GATEWAY LANDSCAPING	5
B	BONUS	4	DECK/PATIO (2,000 SF MIN)	2
C	BONUS	3	OUTDOOR DISPLAY OF PUBLIC ART	3
SINGLE RETAIL TOTAL				52 PTS

NOTE: WATER ALLOCATION POLICY TABLE REFLECTS MASTER PLAN DESIGN. SINGLE USE RETAIL WATER ALLOCTION POLICY POINTS ARE PRELIMINARY AND SUBJECT TO CHANGE WHEN THE DEVELOPER OF THE OUTPARCEL SUBMITS A SITE PLAN.



SITE DATA		
PROJECT NAME:	LYNDON OAKS	
SITE ADDRESS:	OLD FASION RD KNIGHTDALE, NC	
COUNTY:	WAKE COUNTY	
PARCEL PIN #:	1743953683, 1743971085, 1753071583, 1743976575, 1743989384, 1743986356, 1753152116	
PARCEL OWNERS:	TERRY L FERRELL RANDALL H FERRELL TIMOTHY C FERRELL; N/F WAYNE L HARPER EUGENE J HARPER; DEBORAH J TART MILTON E TART JR; MILTON E TART III JANET S TART; LEE T ALFORD; MILTON E TART JR PATSY P TART; TERRY L FERRELL RANDALL H FERRELL TIMOTHY C FERRELL	
PARCEL AREA:	171.88 AC	
CURRENT ZONING:	RMX-PUD (ZMA-2-23)	
EXISTING LAND USE:	RESIDENTIAL AND AGRICULTURAL	
PROPOSED LAND USE:	RESIDENTIAL AND COMMERIAL OUTPARCEL	
RIVER BASIN:	NEUSE RIVER BASIN	
CONSTRUCTION TYPE:	TOWNHOME AND SINGLE FAMILY	
MAX BUILDING HEIGHT:	42 FT / 3 STORIES	
PROPOSED BUILDING HEIGHT:	MAX 42 FT / 3 STORIES	
OPEN SPACE AREA:		
REQUIRED	17.30 AC (OVERALL MASTER PLAN)	
PROVIDED	21.26 AC (PHASES 1-4)	
	SEE C0.04 FOR SUMMARY BY PHASE	
TREE PRESERVATION AREA:		
REQUIRED	287,840 SF (6.61 AC) (OVERALL MASTER PLAN)	
PROVIDED	±1,275,000 SF (29.27 AC) - PHASES 1-4	
	SEE C1.01 FOR SUMMARY BY PHASE	

	PHASE 1A	PHASE 1B	PHASE 2	PHASE 3	PHASE 4	TOTAL
TOTAL LIMITS OF DISTURBANCE:	1,921,971 SF (44.1 AC)		1,476,176 SF (33.9 AC)	1,210,677 SF (27.8 AC)	892,197 SF (20.5 AC)	5,501,021 (126.3 AC)
EXISTING IMPERVIOUS AREA:	74,000 SF (1.7 AC)		34,600 SF (0.79 AC)	0 SF (0.00 AC)	128,902 SF (2.96 AC)	237,502 SF (5.45 AC)
PROPOSED IMPERVIOUS AREA:	976,565 SF (22.4 AC)		685,866 SF (15.8 AC)	547,758 SF (12.58 AC)	344,128 SF (7.9 AC)	2,554,317 SF (58.64 AC)
TOTAL LOTS:	UP TO 500 RESIDENTIAL LOTS, 1 COMMERCIAL LOT PLUS CLUBHOUSE (OVERALL MASTER PLAN)					
	PHASE 1A	PHASE 1B	PHASE 2	PHASE 3	PHASE 4	TOTAL
NO. RESIDENTIAL LOTS	112	89	109	102	71	483
DENSITY:	2.8 DU UNITS/AC (OVERALL MASTER PLAN)					
PARKING DATA:	COMMERCIAL PARCEL: 58 SPACES (15,000SF = MIN 45 / MAX 90)					
	PHASE 1A	PHASE 1B	PHASE 2	PHASE 3	PHASE 4	TOTAL
RESIDENTIAL	224	178	218	204	142	966 SPACES (2/UNIT)
AMENITY CENTER	0	0	47	0	0	47 SPACES
PERMANENT MAIL KIOSK	N/A	N/A	8	N/A	N/A	8 SPACES
VISITOR PARKING	42	17	53	42	14	172 SPACES
SUBTOTAL	266	195	326	246	156	1,193 SPACES
SETBACKS:	FRONT	SIDE	CORNER	REAR		
SINGLE-FAMILY DETATCHED (REAR-LOADED)	10'	3'	10'	10'		
SINGLE-FAMILY DETACHED (FRONT-LOADED)	10'	5'	10'	20'		
TOWNHOMES/DUPLEXES (REAR LOADED)	0' (MIN) 25' (MAX)	10'	0	15'		
CLUBHOUSE	10'	6'	-	0'		
COMMERCIAL	10'	6'	-	0'		

DISTRIBUTION OF USES

USE AREAS

USE AREAS	PHASE 1a	PHASE 1b	PHASE 2	PHASE 3	PHASE 4	TYP. LOT SIZE (SF)	MAX IMP (SF)	#OF LOTS	TOTAL AREA (SF)	ACRES
SINGLE FAMILY										
30' LOT	18	4	14	10	0	3,600	3,000	46	165,600	3.80
35' LOT	13	5	8	0	3	4,200	3,200	29	121,800	2.80
40' LOT	9	3	16	5	1	4,800	3,200	34	163,200	3.75
60' LOT	16	0	5	26	16	7,200	3,500	63	453,600	10.41
70' LOT	5	0	0	13	9	8,400	3,500	27	226,800	5.21
80' LOT	1	0	0	5	1	9,600	4,500	6	57,600	1.32
TOTAL SINGLE FAMILY	62	12	43	59	30			206	**1,188,600**	**27.29**
DUPLEX/TOWNHOUSE										
20' TH	24	33	28	21	15	1,800	1,900	121	217,800	5.00
22' TH	24	44	28	22	18	1,980	1,900	136	269,280	6.18
24' DUPLEX	2	0	10	0	8	2,160	1,900	20	43,200	0.99
TOTAL DUPLEX/TOWNHOUSE	50	77	66	43	41			273	**530,280**	**12.17**
TOTAL LOTS	112	89	109	102	71			483	**1,718,880**	**39.46**
COMM/RETAIL							65,300	1	**80,647**	**1.85**

DISTRIBUTION OF USES

	ACRES
GROSS SITE AREA (PER SURVEY)	171.8
DEDICATED RECREATIONAL OPEN SPACE	21.58
PUBLIC R/W	26.84
PUBLIC NCDOT R/W	4.34
NET AREA***	119.04

USE TYPE	PROP. (AC)	MIN.-MAX. DISTRIBUTION(%)	PROV. DIST. (%)
SINGLE FAMILY	27.29	15%-60%	22.9%
DUPLEX/TOWNHOUSE	12.17	10%-40%	10.2%
COMMERCIAL/RETAIL	1.85	5%-20%	1.6%

Sheet Index

No.	Drawing Title	Latest Issue
C0.01	Legend and General Notes	December 15, 2025
C0.02	Town of Knightdale UDO Amendment	December 15, 2025
C0.03	Overall Phase Limits Plan	December 15, 2025
C0.04	Overall Open Space Plan	December 15, 2025
C1.00	Overall Existing Conditions and Demolition Plan	December 15, 2025
C1.01	Overall Environmental Survey	December 15, 2025
C1.02-C1.11	Environmental Survey	December 15, 2025
C2.00	Overall Site Plan	December 15, 2025
C2.01-C2.10	Site Plan	December 15, 2025
C2.11-C2.20	Pavement Marking and Signage Plan	December 15, 2025
C2.21-C2.22	Parcel Tables	December 15, 2025
C3.00	Overall Grading and Drainage Plan	December 15, 2025
C3.01-C3.10	Grading and Drainage Plan	December 15, 2025
C3.11-C3.12	Storm Drainage Structure and Pipe Tables	December 15, 2025
C3.13	SCM 1 Plan and Profile Phase 1	December 15, 2025
C3.14	SCM 1 Details and Planting Phase 1	December 15, 2025
C3.15	SCM 2 Plan and Profile Phase 2	December 15, 2025
C3.16	SCM 2 Details and Planting Phase 2	December 15, 2025
C3.17	SCM 3 Plan and Profile Phase 2	December 15, 2025
C3.18	SCM 3 Details and Planting Phase 2	December 15, 2025
C3.19	SCM 3A Plan and Profile Phase 2	December 15, 2025
C3.20	SCM 3A Details and Planting Phase 2	December 15, 2025
C3.21	Stream Crossing Detail Lyndon Stream Parkway Station 127+23.25	December 15, 2025
C3.22	Stream Crossing Detail Lyndon Stream Parkway Station 110+27.05	December 15, 2025
C4.00	Overall Utility Plan	December 15, 2025
C4.01-C4.10	Utility Plan	December 15, 2025
C4.11	Overall Sanitary Sewer Plan	December 15, 2025
C4.12-C4.17	Sanitary Sewer Off-Site Plan and Profile	December 15, 2025
C4.18-C4.19	Sanitary Sewer Structure and Pipe Tables	December 15, 2025
C4.20-C4.29	Fire Apparatus Access Plan	December 15, 2025
C5.00	Overall Erosion and Sediment Control Stage 1 Plan	December 15, 2025
C5.01-C5.10	Erosion and Sediment Control Stage 1	December 15, 2025
C5.11	Overall Erosion and Sediment Control Stage 2 Plan	December 15, 2025
C5.12-C5.21	Erosion and Sediment Control Stage 2	December 15, 2025
C5.22	Overall Erosion and Sediment Control Stage 3 Plan	December 15, 2025
C5.23-C5.32	Erosion and Sediment Control Stage 3	December 15, 2025
C5.33	Stream Crossing Conversion	December 15, 2025
C5.34	Overall Erosion Control Stage 1 Plan Off-Site	December 15, 2025
C5.35-C5.37	Erosion Control Phase 1 Plan Off-Site	December 15, 2025
C5.38-C5.39	NPDES Stabilization Plan	December 15, 2025
C6.00-C6.01	Ferrell House Drive Plan and Profile	December 15, 2025
C6.02	Light Vista Alley Plan and Profile	December 15, 2025
C6.03-C6.04	New Tart Street Plan and Profile	December 15, 2025
C6.05	Alley V and Alley DD Plan and Profile	December 15, 2025
C6.06	Alley V Plan and Profile	December 15, 2025
C6.07	Faison Forest Lane - Alley W and Alley EE Plan and Profile	December 15, 2025
C6.08-C6.09	Alley X - Wide Stream Alley Plan and Profile	December 15, 2025
C6.10-C6.12	Lyndon Stream Parkway - Ph1 Plan and Profile	December 15, 2025
C6.13-C6.15	Alley R Plan and Profile	December 15, 2025
C6.16	Alley S - Fun Walk Alley Plan and Profile	December 15, 2025
C6.17	Tan Harvest Alley and Low Farm Alley and Safe Pond Alley Plan & Profile	December 15, 2025
C6.18	Alley Q and Nature View Alley Plan and Profile	December 15, 2025
C6.19-C6.20	Lyn Green Way Plan and Profile	December 15, 2025
C6.21-C6.23	Lyndon Stream Parkway - Ph2 Plan and Profile	December 15, 2025
C6.24	Top Run Alley - Blue Glen Alley and Short Oak Alley Plan and Profile	December 15, 2025
C6.25	Top Run Alley - Blue Glen Alley Plan and Profile	December 15, 2025
C6.26	Harper Vista Lane Plan and Profile	December 15, 2025
C6.27	Alley E - Alley I Plan and Profile	December 15, 2025
C6.28-C6.29	Lyndon Oaks Drive Plan and Profile	December 15, 2025
C6.30-C6.31	Alley F Plan and Profile	December 15, 2025
C6.32	Alley B - Alley H Plan and Profile	December 15, 2025
C6.33	Alley C - Alley G Plan and Profile	December 15, 2025
C7.00-C7.10	Details	December 15, 2025

INFRASTRUCTURE INSPECTION TABLE

	PHASE 1a	PHASE 1b	PHASE 2	TOTAL
KNIGHTDALE				
NUMBER OF LOTS (RESIDENTIAL)	112	89	109	310
LOT NUMBER BY PHASE	1-112	113-201,500	202-310, 501	
NUMBER OF UNITS	112	89	109	310
LIVABLE BUILDINGS	75	34	62	171
OPEN SPACE (AC)	1.55	2.73	8.61	12.89
NUMBER OF OPEN SPACE LOTS	1	7	9	17
PUBLIC STREETS (LF)	5,485	0	5,089	10,574
PUBLIC ALLEYS (LF)	0	1,849	1,758	3,607
PUBLIC SIDEWALKS (LF)	8,420	0	8,283	16,703
CURB & GUTTER (LF)	9,778	1,575	11,781	23,134
PUBLIC MULTI-USE PATH (LF)	836	0	0	836
PUBLIC STORMDRAIN (LF)	10,565	3,168	11,490	25,222
NUMBER OF STORMWATER CONTROL MEASURES	1	0	3	4
STREET SIGNS (LF)	16	11	24	51
RALEIGH DPU				
NUMBER OF LOTS (RESIDENTIAL)	112	89	109	310
NUMBER OF UNITS	112	89	109	310
PUBLIC WATER (LF)	3,892	1,601	6,403	11,896
PUBLIC SEWER (LF)	9,813	1,264	5,363	16,439
PUBLIC FORCE MAIN (LF)	0	0	0	0
PRIVATE SEWER (LF)	0	0	0	0
WATER SERVICE STUBS	172	31	121	324
SEWER SERVICE STUBS	112	89	120	321
AVERAGE DAILY SEWER FLOW (GPD)	25,200	20,025	24,525	69,750
UNITS X 3 BEDROOMS X 75 GPD/BEDROOM				
CLUBHOUSE 3000SF (50GPD PER 100SF)			1500	
COMMERCIAL PROJECTS WITH SINGLE WATER AND SEWER				
FIRE SERVICE (SIZE)		N/A	N/A	
DOMESTIC METER SIZE		N/A	N/A	
IRRIGATION METER SIZE		N/A	N/A	
AVERAGE DAILY SEWER FLOW PER PHASE (GPD)**		N/A	N/A	9,688

* SEWER MAINS AND MANHOLES AS PART OF A COLLECTION SYSTEM.

** ENTIRE PROJECT FLOW. BASED ON 75GPD PER BEDROOM FOR RESIDENTIAL (APARTMENTS, SIGNLE 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).

Sheet Index

No.	Drawing Title	Latest Issue
C7.11-C7.12	Skimmer Basin Design	December 15, 2025
C7.13-C7.15	Diversion Ditch Design	December 15, 2025
L1.00	Overall Tree and Buffer Planting Plan	December 15, 2025
L1.01-L1.10	Tree and Buffer Planting Plan	December 15, 2025
L1.20-L1.22	Planting Details	December 15, 2025
L2.00	Open Space Key Plan	December 15, 2025
L2.01	Roundabout Entry Site Plan	December 15, 2025
L2.02	Pocket Park #4 Site Plan	December 15, 2025
L2.03-L2.04	Benches & Landscape Area Site Plan	December 15, 2025
L2.05	Multi-Purpose Field 1 Site Plan	December 15, 2025
L2.06	Benches & Landscape Area 3 Site Plan	December 15, 2025
L2.07	Village Green Site Plan	December 15, 2025
L2.08-L.209	Public Greenway Site Plan	December 15, 2025
L2.10	Clubhouse & Pool Site Plan	December 15, 2025
L2.11-L2.12	Pond Overlook Site Plan	December 15, 2025
L2.13	Public Art Display Site Plan	December 15, 2025
L2.14	Pollinator Gardens & Pond Site Plan	December 15, 2025
L2.15	Pocket Park #3 Site Plan	December 15, 2025
L2.16	Bench Swing Park Site Plan	December 15, 2025
L2.17-L2.18	Entry Monument & Enhanced Roadside Site Plan	December 15, 2025
L3.00-L3.04	Hardscape Details	December 15, 2025
L4.01	Clubhouse Parking Lot Buffer A Planting Enlargement	December 15, 2025
L4.02	Enhanced Entry at Bethlehem Rd Planting Enlargement	December 15, 2025
L4.03	Enhanced Entry at Old Faison Rd Planting Enlargement	December 15, 2025

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Reference Drawings

No.	Drawing Title	Latest Issue
1 of 4	ALTA/NSPS/Land Title Survey (Bateman)	January 27, 2023
2 of 4	ALTA/NSPS/Land Title Survey (Bateman)	January 27, 2023
3 of 4	ALTA/NSPS/Land Title Survey (Bateman)	January 27, 2023
4 of 4	ALTA/NSPS/Land Title Survey (Bateman)	January 27, 2023
LS-1.0	Site Lighting Plan (Duke Energy)	September 24, 2025

ATTENTION CONTRACTORS

The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Inspector at 919-996-3245 or https://cityworks.raleighnc.gov/pwcontractors/New and schedule a Pre-construction meeting prior to beginning any construction.
Raleigh Water must be contacted at (919) 996-4540 at least twenty-four hours prior to beginning any work activity around critical water and sewer infrastructure.

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

Failure to call for Inspection, install a downstream plug, have permitted plans on the jobsite, or any other violation of City of Raleigh Standards will result in a fine and possible exclusion from future work in the City of Raleigh.

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

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, Charles D. Townsend, 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) C0.02 of these drawings.
Seal By: _____, PE
Date: 12/15/2025

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Know what's below. Call before you dig.

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

VHB Project : 39510.05 DR Horton Lyndon Oaks CDs Phases 1 & 2
Issued for : Approval 12/15/2025

C:\AMS\ACCDOCS\VHB\39510.05 DR HORTON-LYNDON OAKS - \PROJECT FILES\5_WORK\CAD\LD\PLANSET\CD\PH1-2\39510.05-CV 19 December 2025

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
BLSF		BORDERING LAND SUBJECT TO FLOODING
BZ		WETLAND BUFFER ZONE
NDZ		NO DISTURB ZONE
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BC	BC	BITUMINOUS CURB
CC	CC	CONCRETE CURB
CG	CG	CURB AND GUTTER
CC	ECC	EXTRUDED CONCRETE CURB
CC	MCC	MONOLITHIC CONCRETE CURB
CC	PCC	PRECAST CONC. CURB
SGE	SGE	SLOPED GRAN. EDGING
VGC	VGC	VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
		BUILDING
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
D	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		TREE LINE
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		STREAM / POND / WATER COURSE
		DETENTION BASIN
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WASHTTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC×	27.35 TC×	TOP OF CURB ELEVATION
26.85 BC×	26.85 BC×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW× 38.5 BW	45.0 TW× 38.5 FG	TOP OF WALL & FINISHED GRADE AT BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
	2"DW	DOMESTIC WATER
3"G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CURB INLET
		DROP INLET
		DOUBLE CURB INLET
		YARD INLET
		YARD INLET
		DRAIN MANHOLE
TD		TRENCH DRAIN
E	E	PLUG OR CAP
CO	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
S		SEWER MANHOLE CONCENTRIC
S		SEWER MANHOLE ECCENTRIC
CS	CS	CURB STOP & BOX
		WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		FIRE DEPARTMENT CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
GG	GG	GAS GATE
GM	GM	GAS METER
E	TMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
T	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
B-B	BACK OF CURB TO BACK OF CURB
BIT	BITUMINOUS
BOC	BACK OF CURB
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EV	ELECTRIC VEHICLE CHARGING SPACE
EX	EXISTING
F-F	FACE OF CURB TO FACE OF CURB
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FPE	FINISHED PAD ELEVATION
FOC	FACE OF CURB
GRAN	GRANITE
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
ROW	RIGHT OF WAY
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UP	UTILITY POLE
CORSEE	CITY OF RALEIGH SANITARY SEWER EASEMENT
CORWLE	CITY OF RALEIGH WATER LINE EASEMENT

Notes

General

1. THE "NORTH CAROLINA 811 LAW" REQUIRES FOR THE CONTRACTOR TO CALL 811 AT LEAST 3 WORKING DAYS IN ADVANCE OF THE PLANNED WORK TO ALLOW TIME FOR MARKING, THAT THE MARKS BE RESPECTED AND PROTECTED, AND THAT EXCAVATION BE COMPLETED CAREFULLY.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
4. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) OTHERWISE SPECIFIED HEREIN, SHALL FOLLOW THE NPDES SPECIFICATIONS FOR SITE SPECIFIC SEEDING MIXTURES.
5. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
6. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
9. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
10. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
11. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
12. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
13. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
14. DESIGN OF THE ACCESS IMPROVEMENTS AT THE INTERSECTIONS OF THE SITE WITH BETHLEHEM ROAD AND OLD FAISON ROAD IS BY DRMP AND IS SHOWN HEREON FOR REFERENCE ONLY

Utilities

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
3. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
4. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, TOPSOIL AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
5. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
6. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
7. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
   A. WATER PIPES SHALL BE DUCTILE IRON PIPE (DIP).
   B. SANITARY SEWER PIPES SHALL BE DUCTILE IRON PIPE (DIP) OR POLYVINYL CHLORIDE (PVC) SEWER PIPE.
   C. STORM DRAINAGE PIPES SHALL BE REINFORCED CONCRETE PIPE (RCP) AND HIGH DENSITY POLYETHYLENE (HDPE), OR APPROVED EQUIVALENT. HDPE PIPE MAY BE USED WHEN COVER FROM SUBGRADE IS A MINIMUM OF TWO NOMINAL PIPE DIAMETERS.
8. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
9. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
10. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.
11. LOCATION OF FITTINGS SHOWN HEREON ARE APPROXIMATE ONLY. CONTRACTOR SHALL DETERMINE ALL FITTING REQUIREMENTS AND LOCATIONS FROM ACTUAL FIELD CONDITIONS.
12. PIPE LENGTHS SHOWN HEREON ARE FROM CENTERLINE TO CENTERLINE OF STRUCTURE AND ARE APPROXIMATE. CONTRACTOR SHALL DETERMINE ACTUAL PIPE LENGTHS FROM FIELD CONDITIONS.
13. INVERTS CONTROL ELEVATIONS AT ALL STRUCTURES, SLOPES AND LENGTHS ARE APPROXIMATE ONLY.
14. REFER TO SHEET C4.00 FOR CITY OF RALEIGH UTILITY NOTES.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 3 FEET TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE 30" CONCRETE CURB AND GUTTER WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LAND SURVEYOR.
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
7. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
8. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES IN THE DUKE ENERGY ELECTRIC EASEMENTS SHALL REMAIN. OTHER EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4. THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. THIS SURVEY MAP IS INTENDED TO REPRESENT THE EXISTING CONDITIONS/TOPOGRAPHY ON A PORTION OF THE PROPERTY AND ALL ENCUMBRANCES UPON THE PROPERTY MAY NOT BE SHOWN.
2. HORIZONTAL DATUM IS NAD 83-2011 AND VERTICAL DATUM IS NAVD88.
3. THIS DRAWING DOES NOT CONFORM TO N.C. GS47-30 AND THEREFORE IS NOT FOR RECORDATION.
4. SURVEY INFORMATION BASED ON ALTA/NSPS SURVEY COMPLETED ON 01/27/2023 BY BATEMAN CIVIL SURVEY COMPANY.
5. TREES SHOWN HEREON MAY NOT REPRESENT ALL VEGETATION ON THE SUBJECT PROPERTY.
6. THE SUBJECT PROPERTY LIES IN ZONES X (AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE AND FUTURE CONDITIONS 1% ANNUAL CHANCE FLOODPLAIN). BASED ON THE FLOOD INSURANCE RATE MAP COMMUNITY MAP NUMBERS 3720174300K AND 3720175300K DATED JULY 19, 2022.
7. 4.18 AC WETLANDS HAVE BEEN IDENTIFIED BY SAGE ECOLOGICAL SERVICES AND REVISED WETLAND SKETCH MAP DATED FEBRUARY 6, 2024 WITHIN THE PROJECT OR PARCEL SHOWN ON EXISTING CONDITIONS SHEET C1.00. ALSO INDICATED IN THE ALTA/NSPS SURVEY COMPLETED ON JANUARY 27, 2023, AND REVISED ON DECEMBER 6, 2025, BY BATEMAN CIVIL SURVEY COMPANY.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

Know what's **below.**
Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Concrete	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: **January 17, 2025**

Drawing Title: **Legend and General Notes**

ZMA-2-23 — Drawing Number: **C0.01**

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 2 of 224

Project Number: **39510.05**

Saved Monday, December 15, 2025 11:10:46 AM MMEZA Plotted Monday, December 15, 2025 1:55:50 PM Walker Johnson

c:\AMS\ACCDocs\VHB\39510.05 dr horton-lyndon oaks -\project files\5_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-LG.dwg

TOWN OF KNIGHTDALE
950 Steeple Square Court
Knightdale, NC 27545
KnightdaleNC.gov

ORDINANCE #24-07-17-002
AN ORDINANCE TO AMEND THE UNIFIED DEVELOPMENT ORDINANCE OF THE TOWN OF KNIGHTDALE WHICH INCLUDES THE ZONING DISTRICT MAP

ZMA-2-23 Lyndon Oaks Planned Unit Development

WHEREAS, the Town of Knightdale has received a petition to amend the zoning of the property to Residential Mixed-Use Planned Unit Development; 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 such as expanding the roadway and greenway network and providing new connections, utilizing compact development patterns, creating a unique community design, and providing expanded home choices for current and future Knightdale residents. Further, it is consistent with the Plan's Growth & Conservation Map's designation as a Mixed-Density Neighborhood Place Type, the Growth Framework Map's designation as a Target Investment Area, the Roadway Network Plan, the Sidepaths & Greenways Plan, and the Mixed-Density Residential Focus Area Study; and

WHEREAS, the request is also reasonable and in the public interest as it aids in developing a vibrant, sustainable, and safe community design which achieves the spirit and intent of the Town's vision for growth;

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 ±171.88 acres consisting of seven tracts of land located at 940 Bethlehem Road and Wake County PINs 1743-95-3683, 1743-97-1085, 1753-07-1583, 1743-97-6575, 1753-15-2116, 1743-98-9384, and 1743-98-6356, from Rural Transition and GR3 to Residential Mixed-Use Planned Unit Development to allow for the construction of up to 500 residential lots and approximately 15,000 square feet of neighborhood serving commercial uses.

SECTION 2. That the additional conditions contained within the application identified as ZMA-2-23 and PUD document, and listed below apply as additional zoning conditions to the parcel of land identified above:

1. Front-loaded single-family lots shall be a minimum of 60-feet wide and shall have a minimum driveway length of 25-feet.
2. Rear-loaded single-family lots, including townhome and duplex lots, shall be a minimum of 20-feet wide and shall have a minimum driveway length of 20-feet
3. All 80-foot-wide lots shall not be mass graded and shall remain undisturbed.
4. Uses within the development shall be distributed as follows: 9.5% of the development shall be townhomes/duplexes, 25.4% shall be single-family lots, and 1.4% shall be dedicated towards commercial uses.
5. The setbacks for all building types are as follows:

Minimum Setbacks				
	Front	Side	Corner	Rear
Single-Family Detached (Rear-Loaded)	10'	3'	10'	10'
Single-Family Detached (Front-Loaded)	10'	5'	10'	20'
Townhomes/Duplexes (Rear-Loaded)	0' (min.); 25' (max)	10'	--	15'
Clubhouse	10'	6'	--	0'
Commercial	10'	6'	--	0'

6. A signalized intersection shall be constructed at the intersection of Old Faison Road and Bethlehem Road, as required by the Transportation Impact Analysis. A mast arm signal design shall be provided. Additional gateway features desired by the Town, including landscaping and/or gateway signage in the right-of-way provided such upgrades fit within the right-of-way required for the signal, do not require additional right-of-way or easements to be acquired, and are approved by NCDOT and Town Staff. The total cost of such gateway features to the Developer shall not exceed $40,000.
7. Site Access A/Tart Farm Road shall be constructed to meet the Urban Avenue – Wide Sidewalk roadway cross-section standards.
8. The intersection of the Urban Main Street (currently Tart Farm Road) and future Widewaters Parkway shall be constructed as a four-way stop with traffic calming measures such as bump-outs, high-visibility crosswalks, stamped concrete, Rectangular Rapid Flashing Beacons (RRFBs), and pedestrian refuge islands in the Widewaters Parkway median.
9. All local street cross-sections shall be constructed as designed and depicted on the Master Plan.
10. Road 6, as shown on the Master Plan, shall not be required to be built to a collector road standard. In lieu of this, a two-way local street shall be constructed as depicted on the Master Plan.
11. Certain alleys, as shown on the Master Plan, shall be permitted to be designated as 32-foot public rights-of-way to provide utilities to rear-loaded homes that either front public open space rather than a public right-of-way, or do not directly front a public right-of-way. A wider public alley right-of-way may be approved administratively if 32-feet is deemed impractical by the Land Use Administrator on the basis of infrastructure or other identified constraints.
12. In lieu of the required fifty feet of open space frontage on at least one public street, a minimum of 34-feet of frontage on either a public street or alley shall be permitted. Sidewalks, benches, and landscaping shall be provided on the front of the units facing these areas, providing a direct connection to the open space.
13. Private Greenways shall be credited as active open space, provided that the privately maintained greenways are indistinguishable from the publicly maintained greenways in terms of design, easement area, and included amenities.
14. Prior to approval of construction drawings for the first phase of the development, the Developer shall offer a minimum of 100 square feet of site area as a non-exclusive, permanent easement area to be dedicated to the Town for construction, maintenance, and repair of footings for a future pedestrian bridge over I-87.
15. At least one of the stormwater control measures located in and around the main amenity center shall include alternative SCM infrastructure, such as cisterns, bioswales, or planted wetlands, along with educational signage.
16. The following uses shall be permitted by-right in the 15,000 square foot commercial outparcel building. All other uses listed in UDO Section 3.1.C shall be prohibited. The development of this outparcel shall be subject to all UDO standards unless specified in the PUD Book.
    a. Child/Adult Day Care Center (6 or more people)
    b. Personal Services
    c. Professional Services
    d. Medical Services
    e. Neighborhood Retail/Restaurant (2,000 square feet or less)
    f. Accessory Uses Permitted in the RMX zoning district as listed in UDO Section 3.1.C.9
    g. Bar/Tavern/Microbrewery
    h. Studio (arts, dance, martial arts, music)
17. The proposed use standards will restrict certain uses otherwise permitted in the RMX zoning district. These standards are intended to encourage more neighborhood oriented and small businesses to better serve residents. The following conditions apply to the commercial outparcel:
    a. Businesses with operating hours of 24 hours per day are not permitted.
    b. Vape, Tobacco, and CBD Stores, or businesses that sell these products are not permitted.
    c. Developer shall stub potable water, sanitary sewer, and storm drainage to commercial outparcel prior to plat recordation.
    d. Developer shall construct curb, gutter, and sidewalk improvements along commercial outparcel prior to plat recordation.
    e. The commercial outparcel shall not be owned by the Homeowners Association.
    f. Developer is responsible for maintaining the commercial outparcel in a manner consistent with Lyndon Oaks Homeowners Association properties, until the commercial property is developed and/or sold by developer.
    g. A 10-foot landscape buffer shall be planted adjacent to residential lots prior to plat recordation.
    h. Parking lots shall contain vegetative screening in accordance with Knightdale's UDO.
    i. Buildings shall be permitted up to two (2) stories.
    j. Buildings shall meet the design standards for mixed-use buildings in UDO Section 6.8.
    k. All infrastructure on the residential portion of the project shall be sized appropriately to accommodate a two-story commercial building.
    l. Development of the proposed retail outparcel shall be completed within the term of the Development Agreement between the Developer and the Town of Knightdale.
    m. Food trucks shall be permitted if a Food Truck Permit has been issued by the Town of Knightdale.
    n. Temporary uses, such as seasonal sales, or other temporary uses and special events like farmers' markets, produce stands, or special social events, shall be permitted for up to forty-five (45) days with a zoning compliance permit approved by the Land Use Administrator.
18. Architectural Standards are provided for all buildings as indicated in the PUD document.
19. The submitted Planned Unit Development document and submitted Master Plan will serve as the site-specific development plan. The Applicant must submit Construction Drawings to the Town that conform to the approved conditions of the RMX-PUD zoning district, Master Plan comments, the Unified Development Ordinance, and comments from the December 14, 2023 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. 160D-605 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 17th day of July, 2024

Jessica Day, Mayor

Heather Smith, Town Clerk

AMENITIES STRUCTURES REQUIRING PERMITS SUCH AS, BUT NOT LIMITED TO, THE MAIL KIOSK, CLUBHOUSE, AND PUBLIC ART WILL BE SIMILAR TO THE CONCEPT IMAGES PROVIDED IN THE APPROVED PUD AND MASTER PLAN. THE DEVELOPER WILL CONTINUE TO WORK WITH THE TOWN REGARDING THE GENERAL DESIGN OF AMENITY STRUCTURES REQUIRING TOWN OF KNIGHTDALE REVIEW AT THE BUILDING PERMIT APPLICATION STAGE.

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Town of Knightdale UDO Amendment

ZMA-2-23

Drawing Number
C0.02

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 3 of 224

Project Number
39510.05

Saved Monday, December 15, 2025 11:10:46 AM MMEZA Plotted Monday, December 15, 2025 1:55:59 PM Walker Johnson



Site Notes

1. CONSTRUCTION DRAWINGS SHALL BE SUBMITTED AND APPROVED BY THE TOWN OF KNIGHTDALE PRIOR TO CONSTRUCTION.
2. SEE SHEET C0.01 FOR GENERAL AND SITE NOTES.
3. REFER TO SHEETS C7.00-C7.01 FOR SITE DETAILS.
4. PERMANENT AND TEMPORARY SIGNAGE REQUIRES AN APPROVED SIGN PERMIT PRIOR TO INSTALLATION. SIGNAGE IS A SEPARATE SUBMITTAL, REVIEW, AND APPROVAL.
5. SUBDIVISION LOTS MUST BE LOT OF RECORD PRIOR TO RECEIVING A BUILDING PERMIT .
6. PRIOR TO OBTAINING BUILDING PERMITS, CONTRACTOR TO SCHEDULE A PRECONSTRUCTION MEETING THROUGH TOWN OF KNIGHTDALE.
7. TOWN OF KNIGHTDALE WILL BE RESPONSIBLE FOR PAYMENT OF THE MONTHLY COSTS FOR PUBLIC STREET LIGHTING AND THE DEVELOPER WILL BE RESPONSIBLE FOR ALL INITIAL FEES CHARGED WITH THE LIGHT INSTALLATION. ALL INSTALLATION FEES ARE REQUIRED TO BE PAID UP FRONT AT THE TIME OF INSTALLATION.
8. PHASE 3 AND PHASE 4 WILL BE DESIGNED IN FUTURE CONSTRUCTION DRAWING SUBMITTAL.

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 100 200 400Feet

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title: Overall Phase Limits Plan

ZMA-2-23

Drawing Number: C0.03

Sheet 4 of 224

Project Number: 39510.05

811 Know what's below. Call before you dig.

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Town Engineer

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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025



Open Space Calculations

TOTAL SITE AREA:	±171.88 ACRES
DWELLING UNITS:	483 DU PROP. TOTAL (UP TO 500 DU ALLOWED)
SINGLE FAM. DETACHED:	206 DU
TOWNHOMES/DUPLEXES:	277 DU
DENSITY:	2.8 DU/AC
RECREATIONAL OPEN SPACE DEDICATION:	
PROXIMITY ZONE:	OUTSIDE ¼ MILE
BEDROOM ESTIMATE:	
SINGLE FAM. DETACHED:	206 DU X 3 BEDS = 351 BEDS
TOWNHOMES/DUPLEXES:	277 DU X 3 BEDS = 579 BEDS
DEDICATION RATE*:	520
SINGLE FAM. DETACHED:	618 BEDS X 520 SF = 321,360 SF
TOWNHOMES/DUPLEXES:	831 BEDS X 520 SF = 432,120 SF
CALCS:	321,360 SF + 432,120 SF = 753,480 SF + 753,480 SF (17.30 AC) TOTAL OPEN SPACE REQ.
REQ. OPEN SPACE:	17.30 AC TOTAL (REQUIRED)
REQ. ACTIVE:	8.65 AC (50% OF REQ. OPEN SPACE)
REQ. PASSIVE:	8.65 AC (50% OF REQ. OPEN SPACE)
PROP. OPEN SPACE:	21.26 AC TOTAL (PROPOSED)
PROP. ACTIVE:	9.06 AC ACTIVE SPACE PROPOSED
REQUIRED:	8.65 AC (TO MEET 50% OF TOTAL REQ. OPEN SPACE)
CREDIT:	2.16 AC CREDIT DUE TO PROP. NEIGHBORHOOD AMENITIES**
REQ. AFTER CREDIT:	6.49 AC REQUIRED AFTER CREDIT
PROP. (W/CREDIT):	9.07 AC ACTIVE OPEN SPACE PROPOSED
NET:	2.58 AC EXTRA PROVIDED
PROP. PASSIVE:	12.20 AC PASSIVE OPEN SPACE PROPOSED
REQUIRED:	8.65 AC (TO MEET 50% OF TOTAL REQ. OPEN SPACE)
CREDIT:	2.16 AC CREDIT DUE TO PROP. NEIGHBORHOOD AMENITIES**
REQ. AFTER CREDIT:	6.49 AC REQ. AFTER CREDIT
PROP. (W/CREDIT):	12.19 AC PASSIVE OPEN SPACE PROPOSED
NET:	5.70 AC EXTRA PROVIDED

* PER DEDICATION MATRIX LOCATED IN TOWN OF KNIGHTDALE UDO SEC. 11.2.C.4

** PER TOWN OF KNIGHTDALE UDO SEC. 11.2.D.3. "DEVELOPMENTS THAT PROVIDE NEIGHBORHOOD AMENITY FACILITIES WILL RECEIVE A CREDIT OF TWENTY-FIVE (25) PERCENT OF THE REQUIRED PASSIVE OPEN SPACE, AND TWENTY-FIVE (25) PERCENT OF THE REQUIRED ACTIVE OPEN SPACE TO BE EQUALLY DIVIDED.

ACTIVE OPEN SPACE TABLE

NAME	PHASE 1		PHASE 2		PHASE 3		PHASE 4		TOTAL	
	SF	AC	SF	AC	SF	AC	SF	AC	SF	AC
PEDESTRIAN PLAZA (COMMERCIAL LOT)	2,640	0.06	0	0.00	0	0.00	0	0.00	2,640	0.06
CLUBHOUSE & POOL*	0	0.00	28,863	0.66	0	0.00	0	0.00	28,863	0.66
PICKLEBALL COURTS & FITNESS AREA	0	0.00	13730	0.32	0	0.00	0	0.00	13,730	0.32
PLAYGROUND	0	0.00	21,207	0.49	0	0.00	0	0.00	21,207	0.49
WORKOUT STATION #1	0	0.00	0	0.00	974	0.02	0	0.00	974	0.02
WORKOUT STATION #2	0	0.00	0	0.00	401	0.01	0	0.00	401	0.01
WORKOUT STATION #3	216	0.00	0	0.00	0	0.00	0	0.00	216	0.00
PUBLIC GREENWAY TRAIL 1	0	0.00	0	0.00	17,390	0.40	8,241	0.19	25,631	0.59
PUBLIC GREENWAY TRAIL 2	0	0.00	0	0.00	0	0.00	9,940	0.23	9,940	0.23
PUBLIC GREENWAY TRAIL 3	30,426	0.70	0	0.00	9,515	0.22	0	0.00	39,941	0.92
PRIVATE GREENWAY TRAIL 1	0	0.00	0	0.00	49,534	1.14	0	0.00	49,534	1.14
PRIVATE GREENWAY TRAIL 2	0	0.00	0	0.00	19,600	0.45	0	0.00	19,600	0.45
MULTI-PURPOSE FIELD 1	20139	0.46	0	0.00	0	0.00	0	0.00	20,139	0.46
MULTI-PURPOSE FIELD 2	0	0.00	0	0.00	34,198	0.79	0	0.00	34,198	0.79
DISC GOLF	0	0.00	33,374	0.77	0	0.00	0	0.00	33,374	0.77
OPEN SPACE CREDIT									94,185	2.16
TOTAL	53,421	1.23	97,174	2.23	131,612	3.02	18,181	0.42	394,573	9.06

PASSIVE OPEN SPACE TABLE

NAME	PHASE 1 AREA		PHASE 2 AREA		PHASE 3 AREA		PHASE 4 AREA		TOTAL AREA	
	SF	AC	SF	AC	SF	AC	SF	AC	SF	AC
SCM W/FOUNTAIN & POLLINATOR GARDENS	0	0.00	77,053	1.77	0	0.00	0	0.00	77,053	1.77
PRIVATE GREENWAY, SCM W/FOUNTAIN, OVERLOOK & GAZEBO	0	0.00	47,910	1.10	0	0.00	0	0.00	47,910	1.10
VILLAGE GREEN	67,591	1.55	0	0.00	0	0.00	0	0.00	67,591	1.55
BENCHES & LANDSCAPE AREA 1	0	0.00	3,694	0.08	0	0.00	0	0.00	3,694	0.08
BENCHES & LANDSCAPE AREA 2	0	0.00	5,354	0.12	0	0.00	0	0.00	5,354	0.12
BENCHES & LANDSCAPE AREA 3	14,822	0.34	0	0.00	0	0.00	0	0.00	14,822	0.34
BENCHES & LANDSCAPE AREA 4	4,000	0.09	0	0.00	0	0.00	0	0.00	4,000	0.09
BENCHES & LANDSCAPE AREA 5	4,000	0.09	0	0.00	0	0.00	0	0.00	4,000	0.09
BENCHES & LANDSCAPE AREA 6	4,000	0.09	0	0.00	0	0.00	0	0.00	4,000	0.09
BENCHES & LANDSCAPE AREA 7	3,731	0.09	0	0.00	0	0.00	0	0.00	3,731	0.09
BENCHES & LANDSCAPE AREA 8	3,964	0.09	0	0.00	0	0.00	0	0.00	3,964	0.09
BENCHES & LANDSCAPE AREA 9	4,859	0.11	0	0.00	0	0.00	0	0.00	4,859	0.11
POCKET PARK 1	0	0.00	0	0.00	0	0.00	4,334	0.10	4,334	0.10
POCKET PARK 2	0	0.00	0	0.00	0	0.00	3,848	0.09	3,848	0.09
POCKET PARK 3	0	0.00	75,150	1.73	0	0.00	0	0.00	75,150	1.73
POCKET PARK 4 / DOG PARK	19,421	0.45	0	0.00	0	0.00	0	0.00	19,421	0.45
OPTIONAL PARK	7,935	0.18	0	0.00	0	0.00	0	0.00	7,935	0.18
BENCH SWING PARK	0	0.00	19,951	0.46	0	0.00	16,462	0.38	36,413	0.84
PUBLIC DISPLAY OF ART	0	0.00	7,736	0.18	0	0.00	0	0.00	7,736	0.18
ENTRY MONUMENT & LANDSCAPING 1	0	0.00	11,396	0.26	0	0.00	0	0.00	11,396	0.26
ENTRY MONUMENT & LANDSCAPING 2	0	0.00	30,009	0.69	0	0.00	0	0.00	30,009	0.69
OPEN SPACE CREDIT									94,185	2.16
TOTAL	134,324	3.08	278,254	6.39	0	0.00	24,645	0.57	531,407	12.20

TOTAL OPEN SPACE = 9.06 AC + 12.20 AC = 21.26 AC

Water Allocation Policy Points

KEY	TYPE	CATEGORY	MAJOR SUBDIVISION	POINTS	PHASE
	BASE		MAJOR SUBDIVISION BASE POINTS	15	ALL
(1)	BONUS	2	CONSERVATION OF NATURAL HABITAT	7	ALL
(2)	BONUS	2	CONSTRUCT A FOUNTAIN WITHIN IN THE BMP	4	PHASE 2
(3)	BONUS	2	ON-STREET PARKING	4	ALL
	BONUS	2	RESIDENTIAL ARCHITECTURAL STANDARDS	15	ALL
(4)	BONUS	4	3,000' OR MORE OF A 6-FT WIDE PATH	3	ALL
(5)	BONUS	4	RESORT STYLE POOL	2	PHASE 2
(6)	BONUS	4	DECK/PATIO (2,000 SF MIN)	2	PHASE 2
(7)	BONUS	4	CLUBHOUSE (NO MEETING SPACE, BATHROOMS * CHANGING ROOMS ONLY)	3	PHASE 2
(8)	BONUS	4	IPEMA CERTIFIED PLAYGROUND EQUIPMENT	4	PHASE 2
(9)	BONUS	4	PICKLEBALL COURTS	5	PHASE 3
(10)	BONUS	4	OUTDOOR DISPLAY OF PUBLIC ART	3	PHASE 2
MAJOR SUBDIVISION TOTAL				68 PTS	

KEY	TYPE	CATEGORY	MAJOR SUBDIVISION	POINTS
	BASE		SINGLE USE RETAIL BASE POINTS	41
A	BONUS	3	CONSTRUCTION OF GATEWAY LANDSCAPING	5
B	BONUS	4	DECK/PATIO (2,000 SF MIN)	2
C	BONUS	3	OUTDOOR DISPLAY OF PUBLIC ART	3
SINGLE RETAIL TOTAL				52 PTS

NOTE: WATER ALLOCATION POLICY TABLE REFLECT MASTER PLAN DESIGN. SINGLE-USE RETAIL WATER ALLOCATION POLICY POINTS ARE PRELIMINARY AND SUBJECT TO CHANGE WHEN THE DEVELOPER OF THE OUTPARCEL SUBMITS A SITE PLAN.

Know what's below. Call before you dig.

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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: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Open Space Legend

- ACTIVE OPEN SPACE
- PASSIVE OPEN SPACE

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title: Overall Open Space Plan

ZMA-2-23

Drawing Number: C0.04

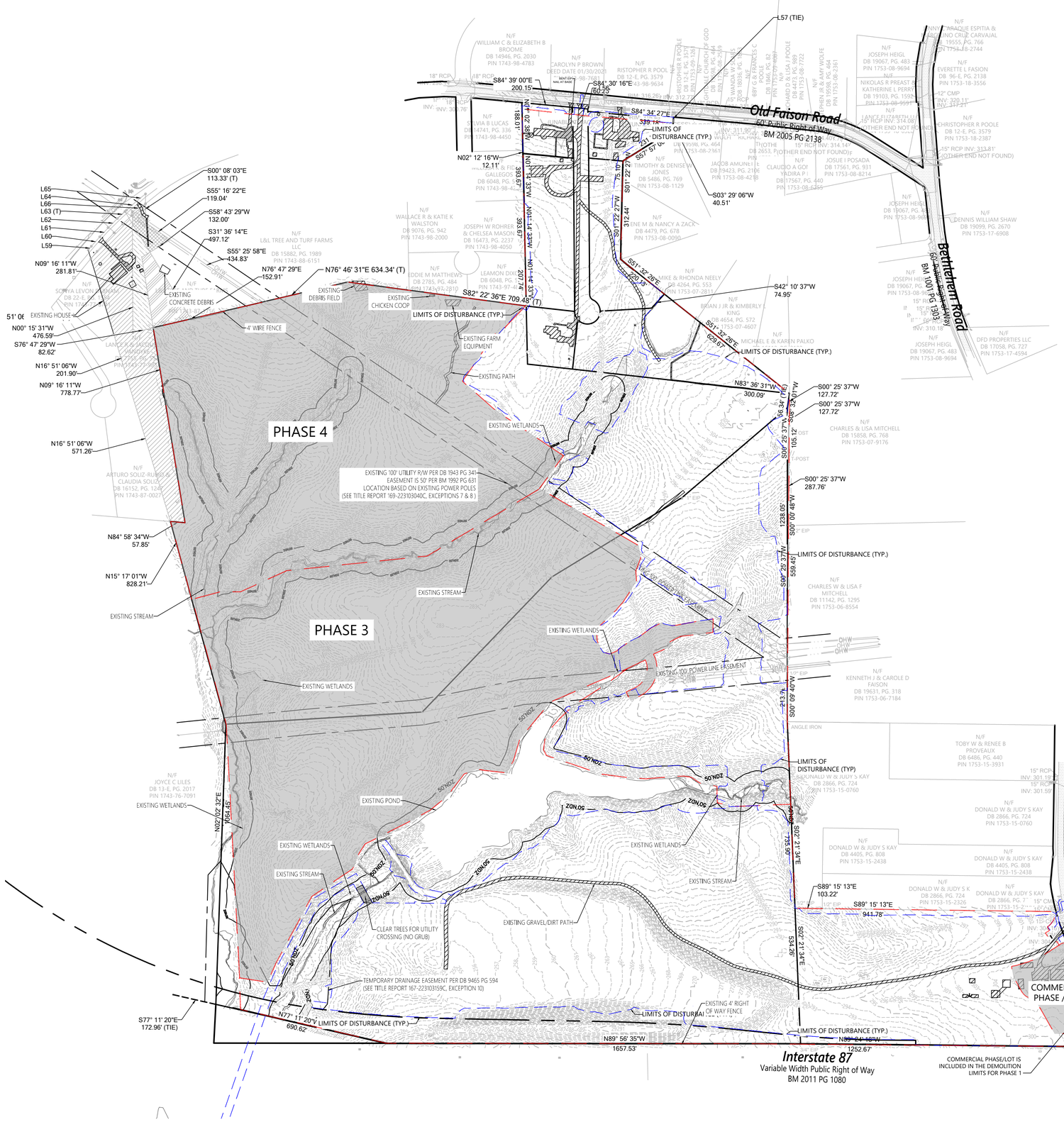
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 5 of 224

Project Number: 39510.05

Saved Thursday, December 18, 2025 1:39:21 PM WSHERRILL Plotted Friday, December 19, 2025 12:19:55 PM Marco Meza



Site Notes

1. NO DEMOLITION/REMOVAL WILL OCCUR UNTIL EROSION CONTROL MEASURES ARE IN PLACE.
2. CLEAR AND GRUB WITHIN LIMITS OF DISTURBANCE AS SHOWN ON PLAN.
3. LANDSCAPED AREAS REQUIRED BY CHAPTER 7 OF THE UDO SHALL NOT CONTAIN ANY DEVELOPMENT, IMPERVIOUS SURFACES, OR SITE FEATURES THAT DO NOT FUNCTION TO MEET THE APPLICABLE STANDARDS FOR THAT AREA OR THAT REQUIRE REMOVAL OF EXISTING SIGNIFICANT VEGETATION [UDO, SEC. 7.4.E.1].
4. NO GRADING, DEVELOPMENT, OR LAND-DISTURBING ACTIVITIES SHALL OCCUR WITHIN A BUFFER YARD IF FOREST CANOPY, SPECIMEN TREES, OR SIGNIFICANT VEGETATION EXISTS WITHIN THESE AREAS, UNLESS APPROVED BY THE LAND USE ADMINISTRATOR. IF GRADING WITHIN A BUFFER YARD IS PROPOSED, SLOPES OF 1:3 OR LESS ARE ENCOURAGED TO ENSURE THE PROPER TRANSITION OF GRADES TO THE ADJACENT PROPERTY AND TO FACILITATE LANDSCAPING AND MAINTENANCE [UDO, SEC. 7.4.E.2].
5. ALL AREAS WITHIN FLOODWAYS, REQUIRED STREAM BUGGERS, REQUIRED BUFFER YARDS, SLOPE AREAS GREATER THAN 25%, AND WETLANDS ARE TREE SAVE AREAS AND ALL VEGETATION AND SOIL IS TO REMAIN UNDISTURBED [UDO, SEC. 7.4.H.1].
6. ALL TREES GREATER THAN 12" DBH WITHIN 100-YEAR FLOOD PLAINS, FRONT SETBACK AREAS, STREET TREE PLANTING STRIP, REQUIRED OPEN SPACE, AND SLOPE AREAS OF 15-25% ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. REQUIRED STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
7. ALL TREES GREATER THAN 24" DBH ON-SITE ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
8. THROUGH THE PROTECTION OF TREES AND EXISTING VEGETATION, THE TOWN ENCOURAGES NEW DEVELOPMENT TO BE CREATIVE IN DESIGN AND PLACEMENT OF BUILDINGS, STRUCTURES, PARKING, AND OTHER IMPERVIOUS SURFACES AS TO PRESERVE NATURAL FEATURES AND TO COMPLEMENT THE EXISTING TOPOGRAPHY WHEN PRACTICAL. NO TREE GREATER THAN TWELVE (12) INCHES IN DIAMETER AT BREAST HEIGHT (DBH: MEASURED AT 4.5 FEET ABOVE GRADE) LOCATED ON PUBLIC PROPERTY OR WITHIN A REQUIRED TREE PROTECTION AREA (SECTION 7.4) SHALL BE REMOVED FOR THE PURPOSE OF SURVEYING WITHOUT APPROVAL FROM THE LAND USE ADMINISTRATOR (UDO, SEC. 7.4.D.4.a.ii.a).
9. TREE PROTECTION FENCES SHALL BE PLACED AROUND ALL PROTECTED TREES DESIGNATED TO BE SAVED PRIOR TO THE START OF DEVELOPMENT ACTIVITIES OR GRADING IN ACCORDANCE WITH STANDARD 2.10 OF THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS MANUAL. TREE PROTECTION FENCES SHALL REMAIN IN PLACE UNTIL DEVELOPMENT ACTIVITIES ARE COMPLETED. TO PREVENT UNINTENDED COMPACTION OF SOIL, THE AREA WITHIN THE PROTECTIVE BARRICADE SHALL REMAIN FREE OF ALL BUILDING MATERIALS, DIRT OR OTHER CONSTRUCTION DEBRIS, CONSTRUCTION TRAFFIC, STORAGE OF VEHICLES AND MATERIALS, AND MASS GRADING (UDO, SEC. 7.4.D.a.ii.b).
10. EXCEPT FOR DRIVEWAY ACCESS POINTS, SIDEWALKS, CURB, AND GUTTER; NO PAVING WITH CONCRETE OR OTHER IMPERVIOUS MATERIALS WITHIN FIVE (5) FEET OF A TREE DRIP LINE SHALL BE ALLOWED UNLESS OTHERWISE APPROVED. WHERE GRADING WITHIN A TREE DRIPLINE CANNOT BE AVOIDED, CUT AND FILL SHALL BE LIMITED TO ONE-QUARTER (¼) TO ONE-HALF (½) OF THE AREA WITHIN THE DRIPLINE, AND TREE ROOTS MUST BE PRUNED WITH CLEAN CUTS AT THE EDGE OF THE DISTURBED AREA. NO FILL SHALL BE PLACED WITHIN THE DRIPLINE OF A TREE WITHOUT VENTING TO ALLOW AIR AND WATER TO REACH THE ROOTS [UDO, SEC. 7.4.D.4.a.ii.c].

LINE TABLE		
LINE#	DIRECTION	LENGTH
L56	S01° 05' 59"E	10.07'
L57	S03° 29' 06"W	9.56'
L58	N84° 58' 28"W	135.68'

LINE TABLE		
LINE#	DIRECTION	LENGTH
L59	N40° 26' 43"E	18.62'
L60	N41° 41' 39"E	49.97'
L61	N43° 09' 47"E	50.01'
L62	N44° 37' 45"E	50.02'
L63	N47° 05' 10"E	50.00'
L64	N48° 40' 18"E	49.99'
L65	N50° 32' 01"E	47.79'
L66	N58° 56' 59"E	60.70'

CURVE TABLE				
CURVE#	LENGTH	RADIUS	BEARING	CHORD
C21	27.23'	25.00'	S31° 34' 11"E	25.90'
C22	54.05'	50.00'	N31° 56' 37"W	51.46'
C23	122.14'	50.00'	N68° 58' 19"E	93.96'
C24	35.74'	50.00'	S21° 05' 20"E	34.98'

Legend

AREA OF UTILITIES/SIDEWALK/CURB & GUTTER TO BE REMOVED

Site Legend

WETLANDS
50' NEUSE RIVER BUFFER
PROPERTY LINE
LIMITS OF DISTURBANCE
PHASE LIMITS

811 Know what's below. Call before you dig.

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Land Use Administrator

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Corp. # C-3705

0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
Overall Existing Conditions and Demolition Plan

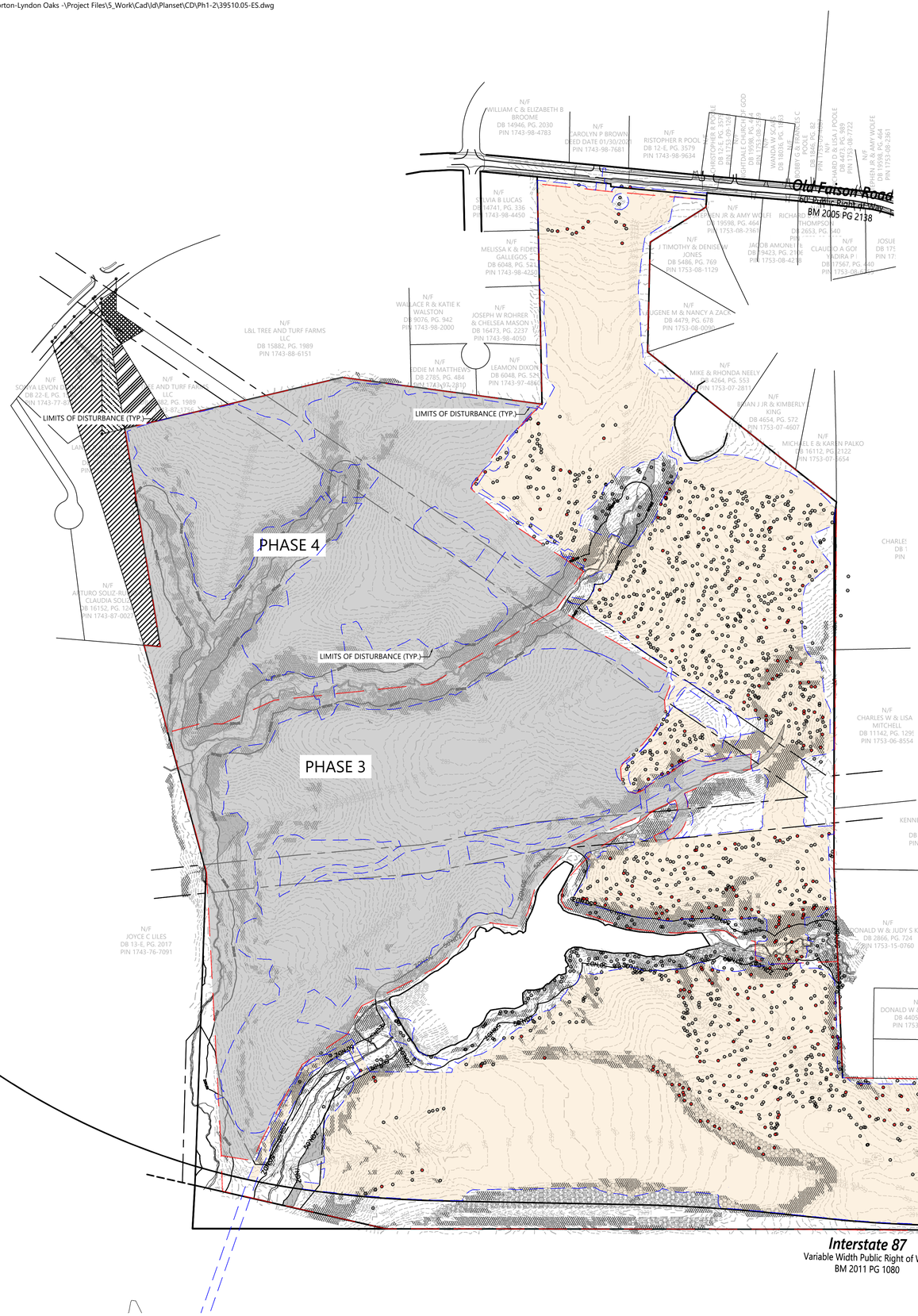
ZMA-2-23

Drawing Number
C1.00

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 6 of 224

Project Number 39510.05



Site Notes

1. TREES 24" DBH AND ABOVE PER LYNDON OAKS TREE SURVEY REPORT BY D.R. HORTON DATED 09/18/2024
2. LANDSCAPED AREAS REQUIRED BY CHAPTER 7 OF THE UDO SHALL NOT CONTAIN ANY DEVELOPMENT, IMPERVIOUS SURFACES, OR SITE FEATURES THAT DO NOT FUNCTION TO MEET THE APPLICABLE STANDARDS FOR THAT AREA OR THAT REQUIRE REMOVAL OF EXISTING SIGNIFICANT VEGITATION [UDO, SEC. 7.4.E.1].
3. NO GRADING, DEVELOPMENT, OR LAND-DISTURBING ACTIVITIES SHALL OCCUR WITHIN A BUFFER YARD IF FOREST CANOPY, SPECIMEN TREES, OR SIGNIFICANT VEGETATION EXISTS WITHIN THESE AREAS, UNLESS APPROVED BY THE LAND USE ADMINISTRATOR, IF GRADING WITHIN A BUFFER YARD IS PROPOSED, SLOPES OF 1:3 OR LESS ARE ENCOURAGED TO ENSURE THE PROPER TRANSITION OF GRADES TO THE ADJACENT PROPERTY AND TO FACILITATE LANDSCAPING AND MAINTENANCE [UDO, SEC. 7.4.E.2].
4. ALL AREAS WITHIN FLOODWAYS, REQUIRED STREAM BUGGERS, REQUIRED BUFFER YARDS, SLOPE AREAS GREATER THAN 25%, AND WETLANDS ARE TREE SAVE AREAS AND ALL VEGETATION AND SOIL IS TO REMAIN UNDISTURBED [UDO, SEC. 7.4.H.1].
5. ALL TREES GREATER THAN 12" DBH WITHIN 100-YEAR FLOOD PLAINS, FRONT SETBACK AREAS, STREET TREE PLANTING STRIP, REQUIRED OPEN SPACE, AND SLOPE AREAS OF 15-25% ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. REQUIRED STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
6. ALL TREES GREATER THAN 24" DBH ON-SITE ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
7. THROUGH THE PROTECTION OF TREES AND EXISTING VEGETATION, THE TOWN ENCOURAGES NEW DEVELOPMENT TO BE CREATIVE IN DESIGN AND PLACEMENT OF BUILDINGS, STRUCTURES, PARKING, AND OTHER IMPERVIOUS SURFACES AS TO PRESERVE NATURAL FEATURES AND TO COMPLEMENT THE EXISTING TOPOGRAPHY WHEN PRACTICAL. NO TREE GREATER THAN TWELVE (12) INCHES IN DIAMETER AT BREAST HEIGHT (DBH: MEASURED AT 4.5 FEET ABOVE GRADE) LOCATED ON PUBLIC PROPERTY OR WITHIN A REQUIRED TREE PROTECTION AREA (SECTION 7.4) SHALL BE REMOVED FOR THE PURPOSE OF SURVEYING WITHOUT APPROVAL FROM THE LAND USE ADMINISTRATOR (UDO, SEC. 7.4.D.4.a.ii.a].
8. TREE PROTECTION FENCES SHALL BE PLACED AROUND ALL PROTECTED TREES DESIGNATED TO BE SAVED PRIOR TO THE START OF DEVELOPMENT ACTIVITIES OR GRADING IN ACCORDANCE WITH STANDARD 2.10 OF THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS MANUAL. TREE PROTECTION FENCES SHALL REMAIN IN PLACE UNTIL DEVELOPMENT ACTIVITIES ARE COMPLETED. TO PREVENT UNINTENDED COMPACTION OF SOIL, THE AREA WITHIN THE PROTECTIVE BARRICADE SHALL REMAIN FREE OF ALL BUILDING MATERIALS, DIRT OR OTHER CONSTRUCTION DEBRIS, CONSTRUCTION TRAFFIC, STORAGE OF VEHICLES AND MATERIALS, AND MASS GRADING (UDO, SEC. 7.4.D.a.ii.b].
9. EXCEPT FOR DRIVEWAY ACCESS POINTS, SIDEWALKS, CURB, AND GUTTER; NO PAVING WITH CONCRETE OR OTHER IMPERVIOUS MATERIALS WITHIN FIVE (5) FEET OF A TREE DRIP LINE SHALL BE ALLOWED UNLESS OTHERWISE APPROVED. WHERE GRADING WITHIN A TREE DRIPLINE CANNOT BE AVOIDED, CUT AND FILL SHALL BE LIMITED TO ONE-QUARTER (¼) TO ONE-HALF (½) OF THE AREA WITHIN THE DRIPLINE, AND TREE ROOTS MUST BE PRUNED WITH CLEAN CUTS AT THE EDGE OF THE DISTURBED AREA. NO FILL SHALL BE PLACED WITHIN THE DRIPLINE OF A TREE WITHOUT VENTING TO ALLOW AIR AND WATER TO REACH THE ROOTS [UDO, SEC. 7.4.D.4.a.ii.c].

OVERALL TREE CANOPY/TREE PRESERVATION (UDO SEC 7.4.M)
- REQUIRED:
  A TREE COVER AREA EQUAL TO THE PERIMETER OF THE DEVELOPMENT IN FEET MULTIPLIED BY 20 SHALL BE MAINTAINED ON SITE.
  (14,392 LF)(20) = 287,840 SF (6.61 AC) REQUIRED
  6.61 AC / 171.88 AC = 3.8% OF SITE
- PROVIDED:
  29.27 AC OF TREE CANOPY/TREE PRESERVATION
  159,082 (3.65 AC) OF PERIMETER BUFFER TREE PRESERVATION
  763,092 (17.52 AC) OF TREE PRESERVATION IN STREAM BUFFERS
  352,841 (8.10 AC) OF ESTIMATED ADDITIONAL UNDISTURBED TREE AREA
  PROVIDED TREE PRESERVATION CALCULATIONS EXCLUSIVE OF TREES REMOVED FOR DAM REMOVAL / STREAM RESTORATION

TREE REMOVAL

	REPLACEMENT TREES PROVIDED		
	UDO 7.4 H (1)	PHASE 1	PHASE 2
TIER 1 : TREES WITHIN FLOODWAYS, REQUIRED STREAM BUFFERS, REQUIRED BUFFER YARD, SLOPE AREAS GREATER THAN 25%, AND WETLANDS	LIMITED DISTURBANCE SUBJECT TO NECESSARY APPROVALS	SEE PLAN FOR LIMIT OF DISTURBANCE	SEE PLAN FOR LIMIT OF DISTURBANCE
TIER 2 : TREES WITHIN 100 YEAR FLOODPLAINS AND SLOPE AREAS OF 15-25%	TREES GREATER THAN 12" TO BE REMOVED SHALL BE PLANTED AT A RATE OF 1 TREE PER 12DBH AND SHOULD BE INCORPORATED INTO OR IN SPACE AMENITIES WHEREVER POSSIBLE	785 DBH OF 12" OR LARGER TREES REMOVED X 1 TREE / 12 DBH = 65 REPLACEMENT TREES ---- **65 REPLACEMENT TREES**	1422 DBH OF 12" OR LARGER TREES REMOVED X 1 TREE / 12 DBH = 119 REPLACEMENT TREES ---- **119 REPLACEMENT TREES**
TIER 3 : ALL OTHER LOCATIONS	TREES GREATER THAN 24"DBH TO BE REMOVED SHALL BE REPLACED AT A RATE OF 1 TREE PER 12 DBH AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES WHEREVER POSSIBLE	1334 DBH OF 24" OR LARGER TREES REMOVED X 1 TREE / 12 DBH = 111 REPLACEMENT TREES ---- **111 REPLACEMENT TREES**	2007 DBH OF 24" OR LARGER TREES REMOVED X 1 TREE / 12 DBH = 167 REPLACEMENT TREES ---- **169 REPLACEMENT TREES**

464 REPLACEMENT TREES REQUIRED IN ADDITION TO REQUIRED STREET TREES, RESIDENTIAL LANDSCAPING AND BUFFER YARD PLANTINGS

464 REPLACEMENT TREES PROVIDED. SEE LA PLANS, L1.01-L1.10

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

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940 Main Campus Drive
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919.829.0328
Corp. # C-3705

Legend

- SLOPES GREATER THAN 25%
- SLOPES BETWEEN 15% - 25%
- TREE REMOVAL AREA
- TREE TO BE REPLACED

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS

0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title: Environmental Survey

ZMA-2-23

Drawing Number: C1.01

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 7 of 224

Project Number: 39510.05

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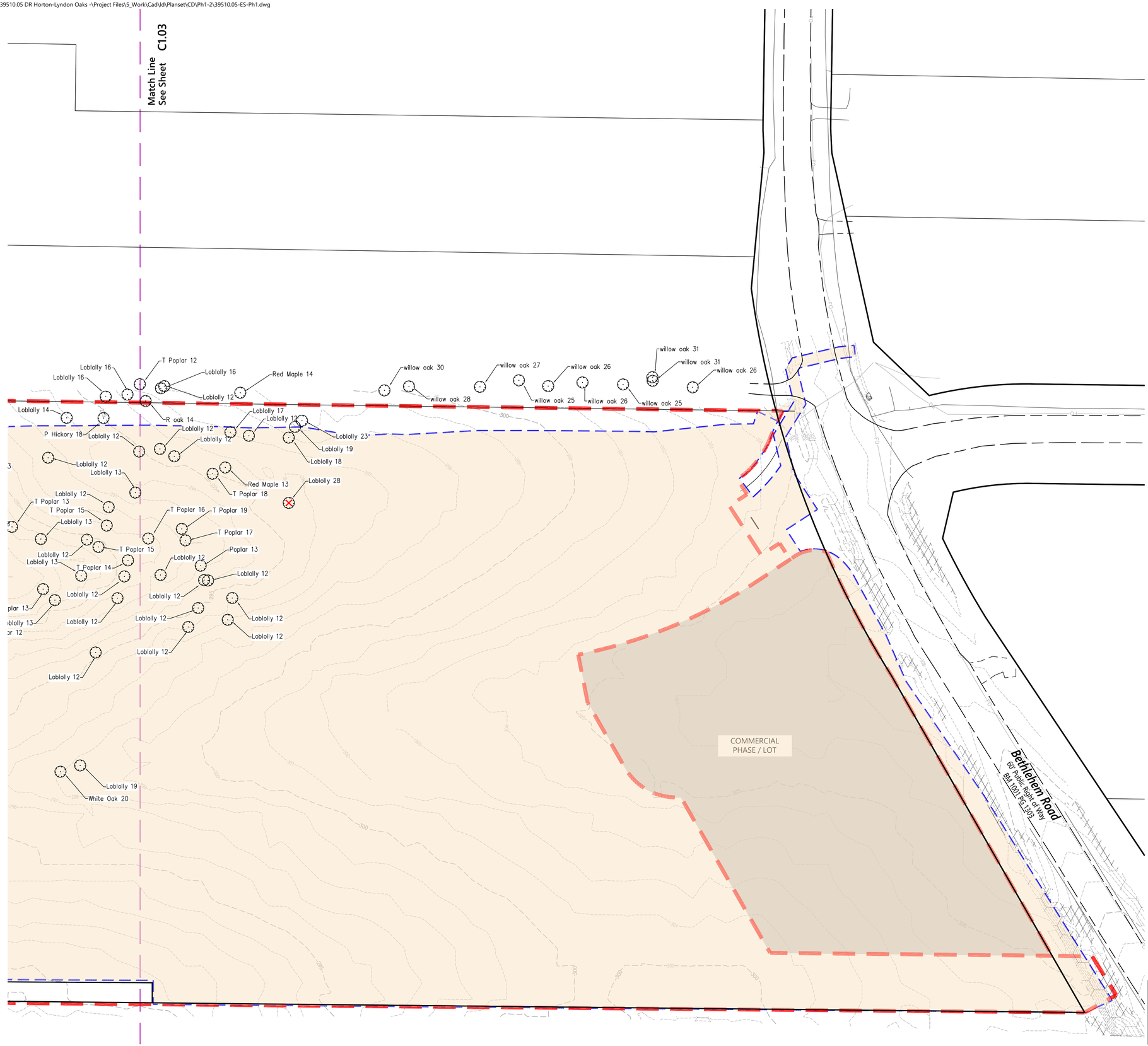

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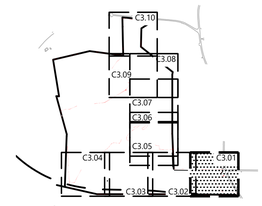

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- SLOPE AREAS 12-25%
- SLOPE AREAS >25%
- TREE REMOVAL AREA
- TREE TO BE REPLACED

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS

Issued for: Review
Date: January 17, 2025

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Environmental Survey Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C1.02

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 8 of 204

Project Number 39510.05

Saved Tuesday, December 16, 2025 11:20:07 AM MMEZA Plotted Wednesday, December 17, 2025 5:00:55 PM Nicholas Smith

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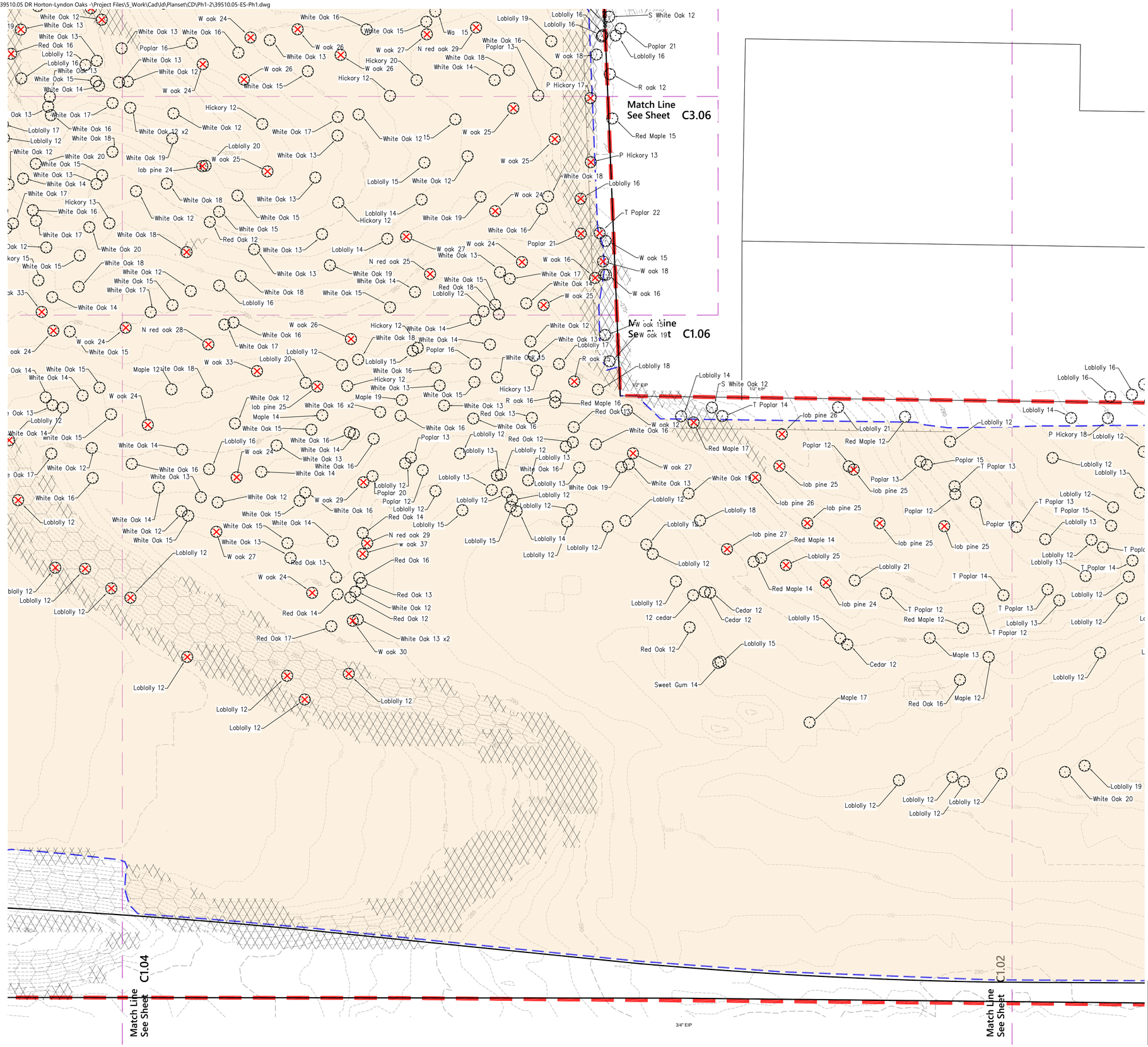

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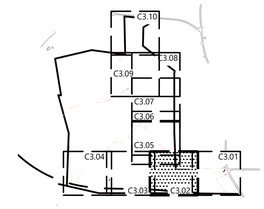

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- SLOPE AREAS 12-25%
- SLOPE AREAS >25%
- TREE REMOVAL AREA
- TREE TO BE REPLACED

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS

Issued for: Review
Date: January 17, 2025

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Environmental Survey Phase 1 (2 of 5)

ZMA-2-23

Drawing Number
C1.03

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 9 of 204

Project Number 39510.05

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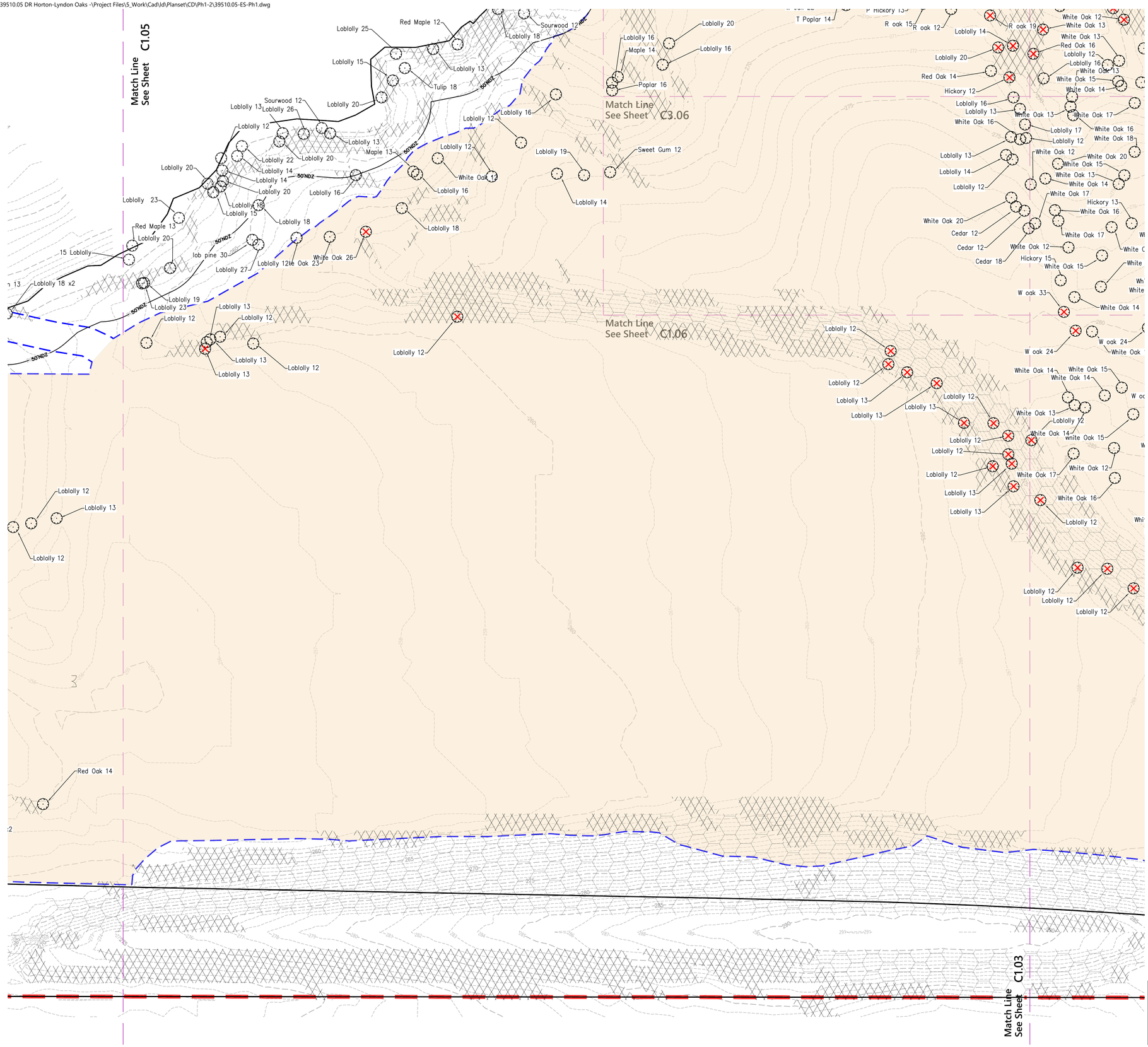
Match Line
See Sheet C1.05
Match Line
See Sheet C3.06
Match Line
See Sheet C1.06
Match Line
See Sheet C1.03
50'NDZ
Loblolly 25
Red Maple 12
Sourwood 12
Loblolly 18
Loblolly 15
Loblolly 13
Tulip 18
Loblolly 20
Sourwood 12
Loblolly 26
Loblolly 13
Loblolly 12
Loblolly 13
Maple 13
Loblolly 22
Loblolly 20
Loblolly 14
Loblolly 14
Loblolly 20
Loblolly 20
Loblolly 23
Loblolly 18
Loblolly 15
Loblolly 18
Red Maple 13
Loblolly 20
15 Loblolly
lob pine 30
Loblolly 27
Loblolly 12
te Oak 23
White Oak 26
Loblolly 18 x2
Loblolly 19
Loblolly 23
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Loblolly 12
Loblolly 16
Maple 14
Loblolly 20
Loblolly 16
Poplar 16
Loblolly 12
Loblolly 16
Loblolly 19
Sweet Gum 12
Loblolly 14
Loblolly 12
White Oak 1
Loblolly 16
Loblolly 18
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Red Oak 14
T Poplar 14
P Hickory 15
R oak 15
R oak 12
R oak 19
Loblolly 14
Loblolly 20
Red Oak 14
Hickory 12
Loblolly 16
Loblolly 13
White Oak 16
Loblolly 13
Loblolly 14
Loblolly 12
White Oak 12
Cedar 12
Cedar 12
Cedar 18
White Oak 20
White Oak 12
Hickory 15
White Oak 15
W oak 33
W oak 24
White Oak 12
White Oak 13
Red Oak 16
Loblolly 12
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White Oak 16
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Hickory 13
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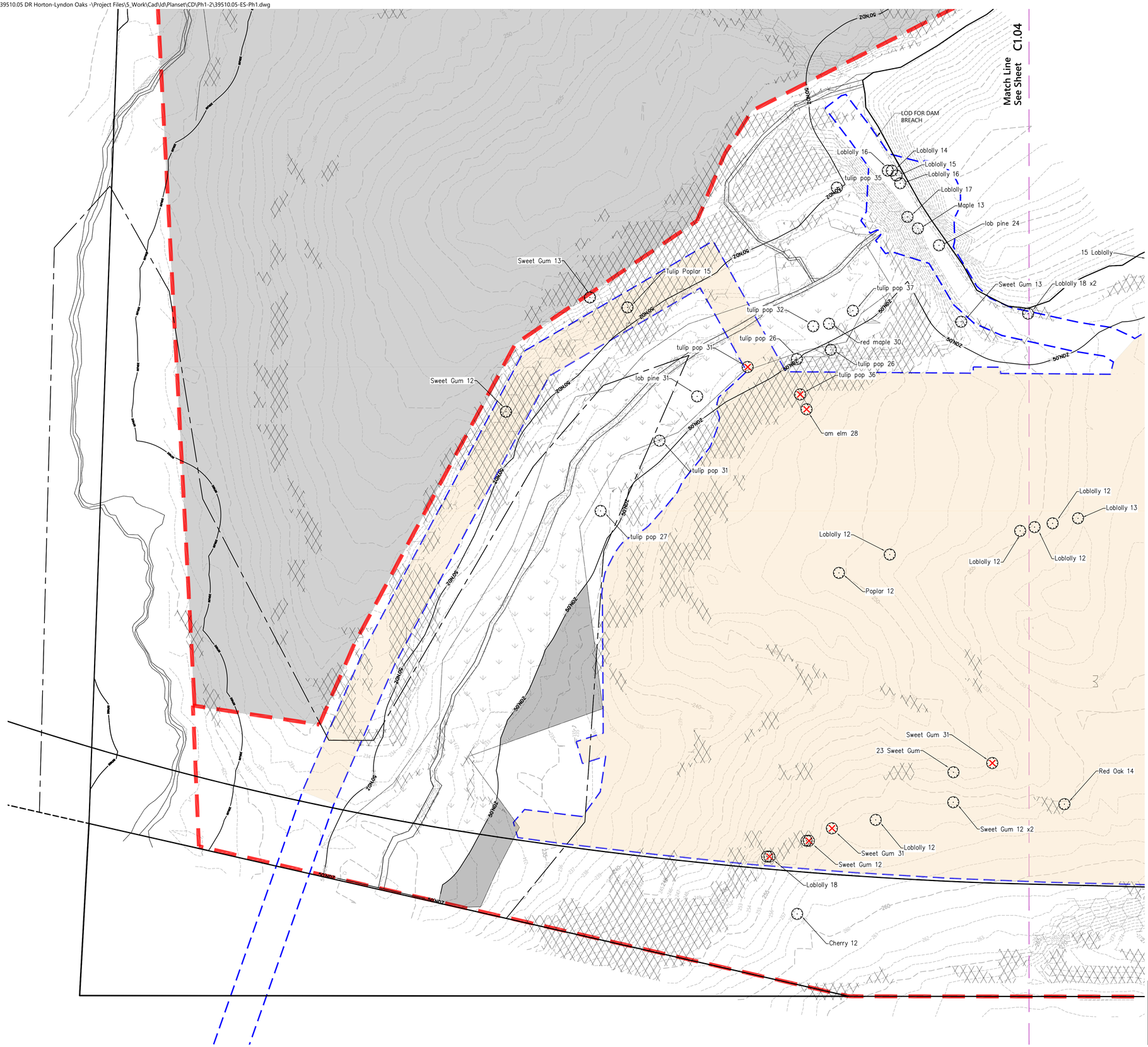

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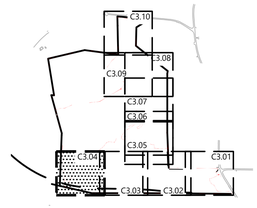

Site Legend

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- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- SLOPE AREAS 12-25%
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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS

Issued for: Review
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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Environmental Survey Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C1.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 11 of 204

Project Number 39510.05

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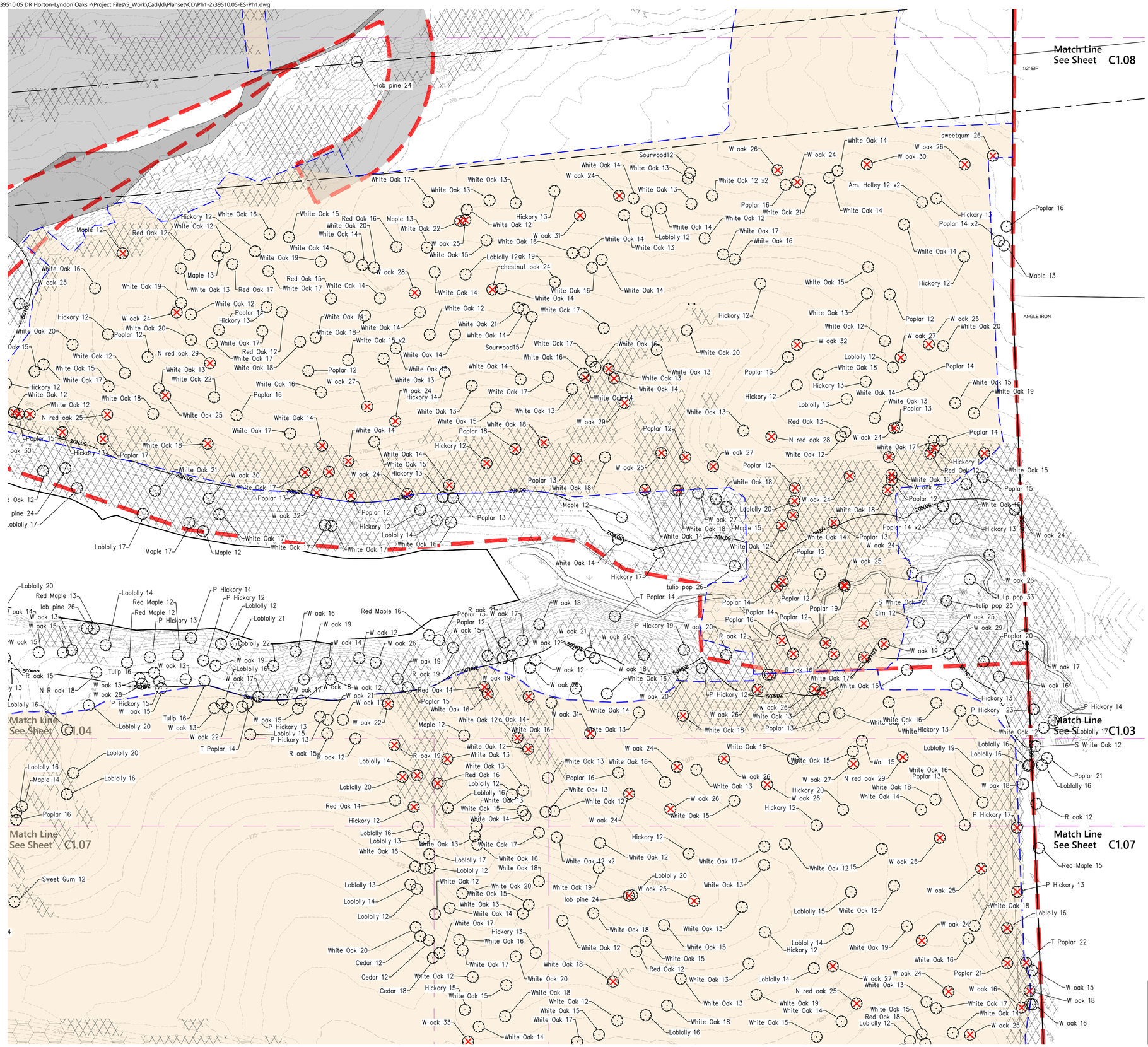

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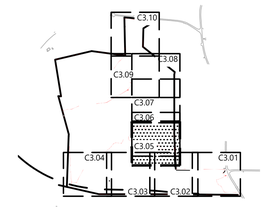

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0 20 40 80 Feet

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Designed by	Checked by
VHB	CT, KS

Issued for: **Review** — Date: **January 17, 2025**

Drawing Title
Environmental Survey Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C1.06

Sheet 12 of 204

Project Number
39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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Land Use Administrator

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12/15/2025

Saved Tuesday, December 16, 2025 11:20:07 AM MMEZA Plotted Wednesday, December 17, 2025 5:01:38 PM Nicholas Smith

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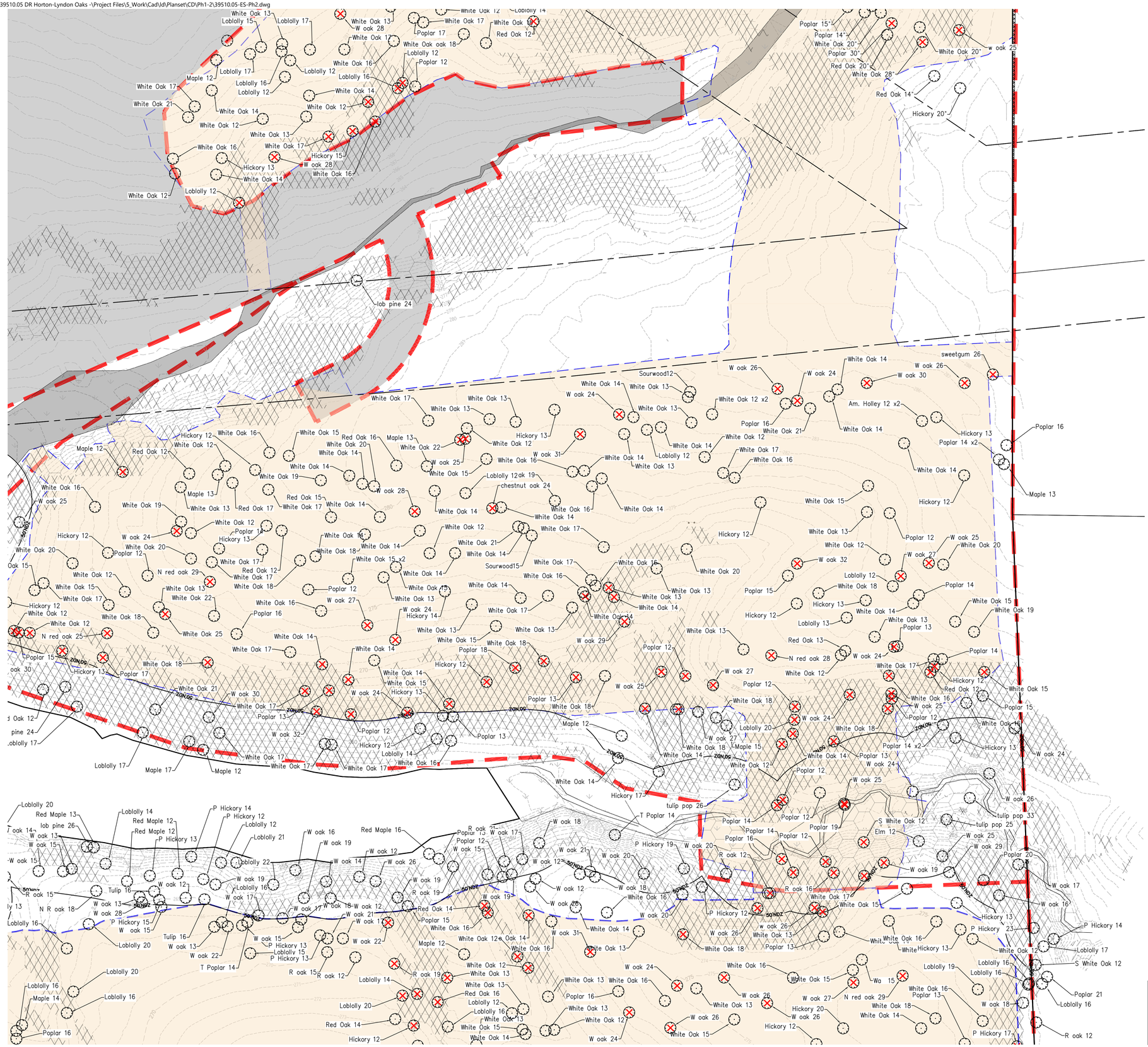

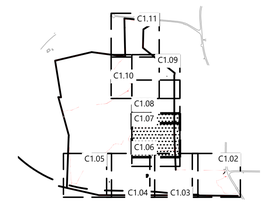

Key

1" = 1,500'

Site Legend

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- SLOPE AREAS >25%
- TREE REMOVAL AREA
- TREE TO BE REPLACED

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS

Issued for: Review — Date: January 17, 2025

Drawing Title
Environmental Survey Phase 2 (1 of 5)

ZMA-2-23 — Drawing Number

C1.07

Sheet 13 of 204

Project Number 39510.05

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Corp. # C-3705

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By: _____ Date: _____
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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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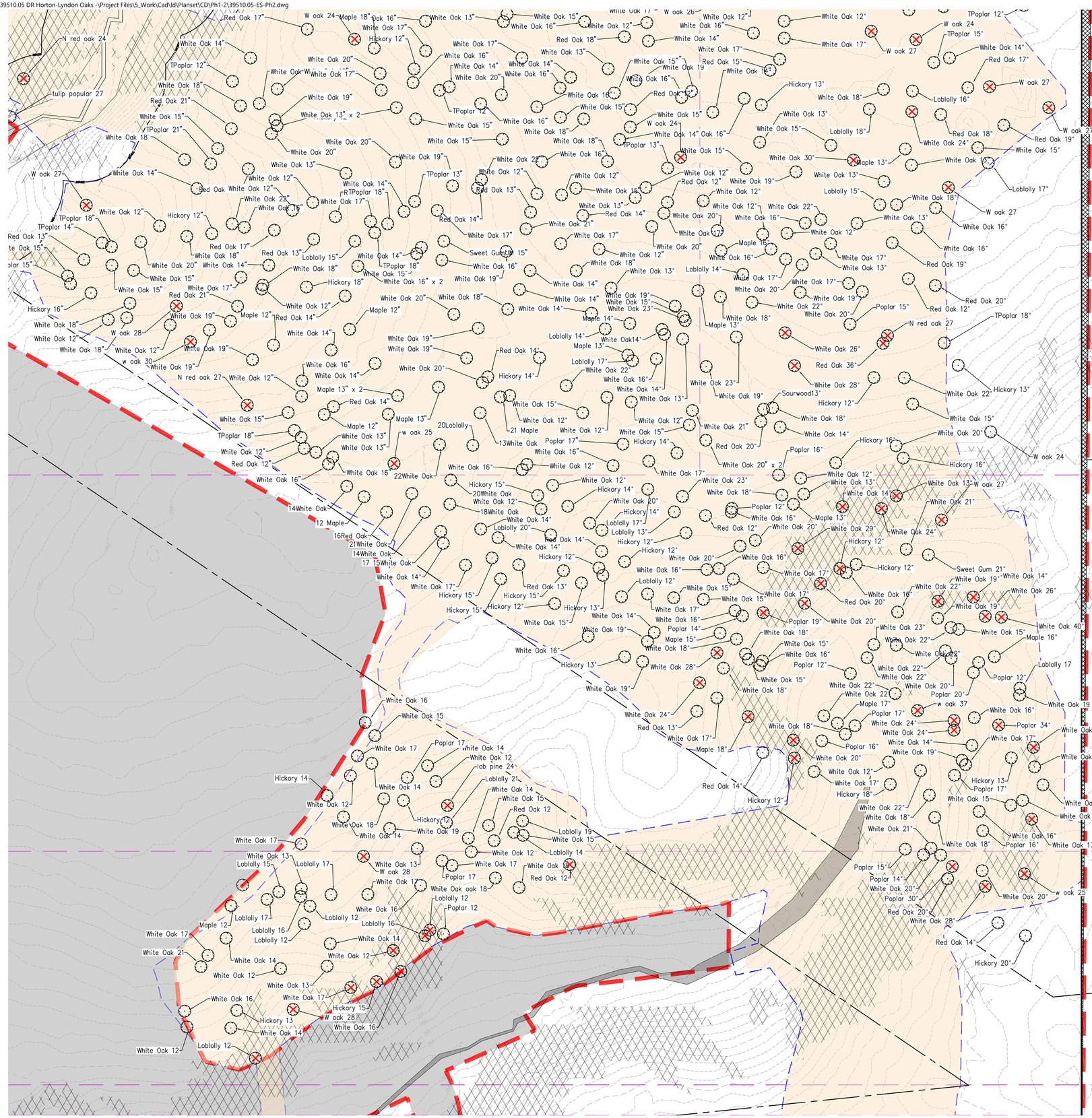

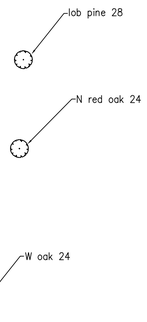

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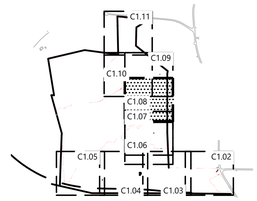

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- SLOPE AREAS 12-25%
- SLOPE AREAS >25%
- TREE REMOVAL AREA
- TREE TO BE REPLACED

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS

Issued for: Review — Date: January 17, 2025

Drawing Title
Environmental Survey Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C1.08

Sheet 14 of 204

Project Number
39510.05

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NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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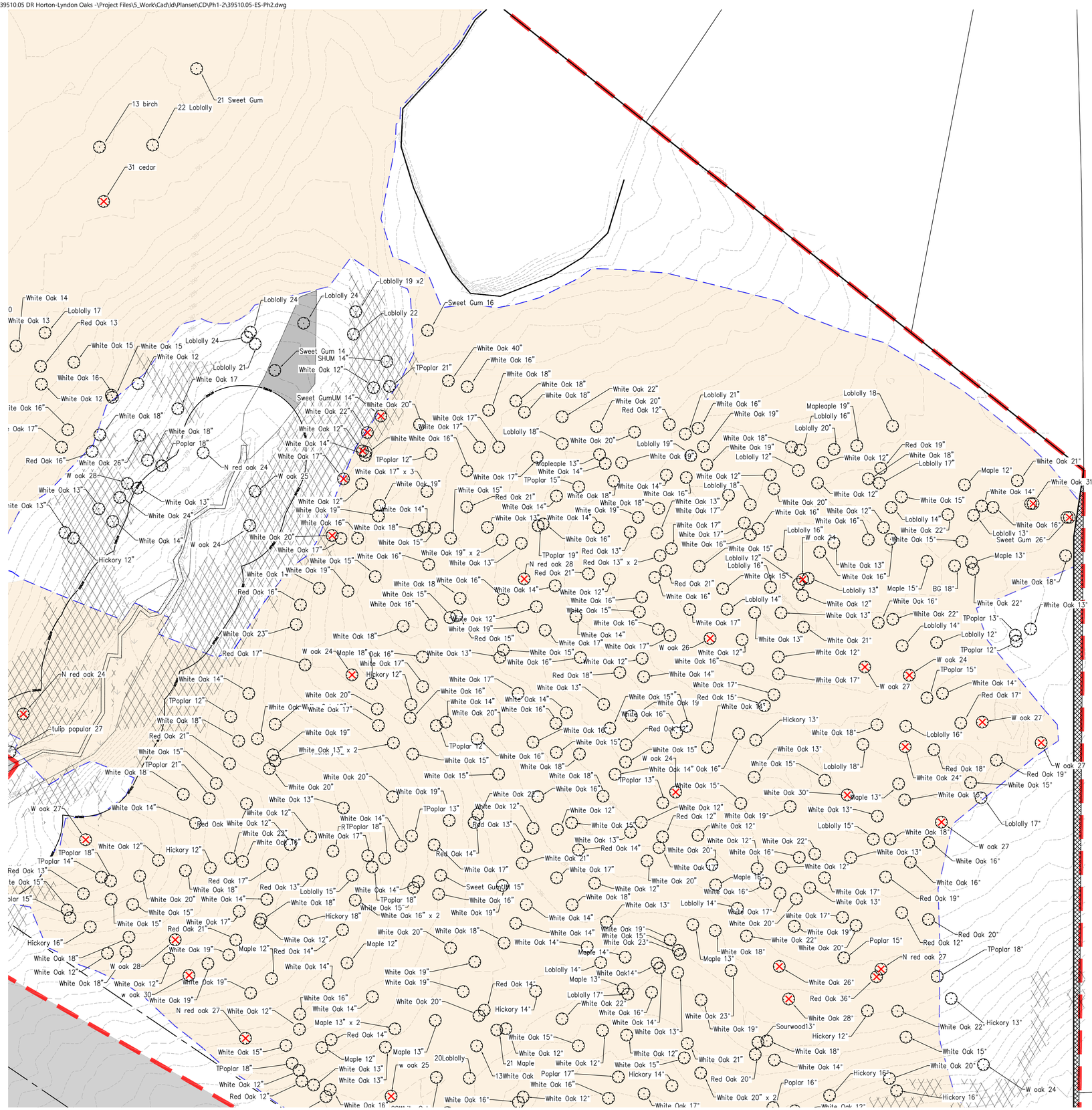
13 birch
22 Loblolly
21 Sweet Gum
31 cedar
Loblolly 19 x2
Loblolly 24
Loblolly 24
Loblolly 22
Sweet Gum 16
White Oak 14
Loblolly 17
White Oak 13
Red Oak 13
White Oak 15
White Oak 15
White Oak 12
Loblolly 24
Loblolly 21
Sweet Gum 14
SHUM 14
White Oak 12
TPoplar 21
White Oak 40"
White Oak 16"
White Oak 16
White Oak 17
White Oak 12
White Oak 18"
White Oak 18"
White Oak 22"
White Oak 20"
Red Oak 12"
Loblolly 21"
White Oak 16"
White Oak 19"
Loblolly 18
Mapleaple 19"
Loblolly 16"
Loblolly 20"
Red Oak 19"
White Oak 18"
Loblolly 17"
White Oak 21"
White Oak 31"
White Oak 16"
White Oak 18"
White Oak 18"
Poplar 18"
White Oak 26"
Red Oak 16"
W oak 28
W oak 25
N red oak 24
White Oak 13"
White Oak 13"
White Oak 24"
White Oak 14"
Hickory 12"
W oak 24
White Oak 20"
White Oak 17"
White Oak 15"
White Oak 16"
White Oak 14"
White Oak 19"
White Oak 23"
Red Oak 17"
White Oak 14"
White Oak 18"
White Oak 12"
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TPoplar 19"
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White Oak 26"
Red Oak 36"
White Oak 28"
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Hickory 12"
Hickory 13"
White Oak 22"
White Oak 18"
White Oak 15"
White Oak 20"
Hickory 16"
W oak 24
Hickory 16"
White Oak 20" x 2
Poplar 16"
Red Oak 20"
Poplar 17"
Hickory 14"
White Oak 16"
White Oak 12"
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White Oak 12"
White Oak 13"
White Oak 16"
White Oak 22

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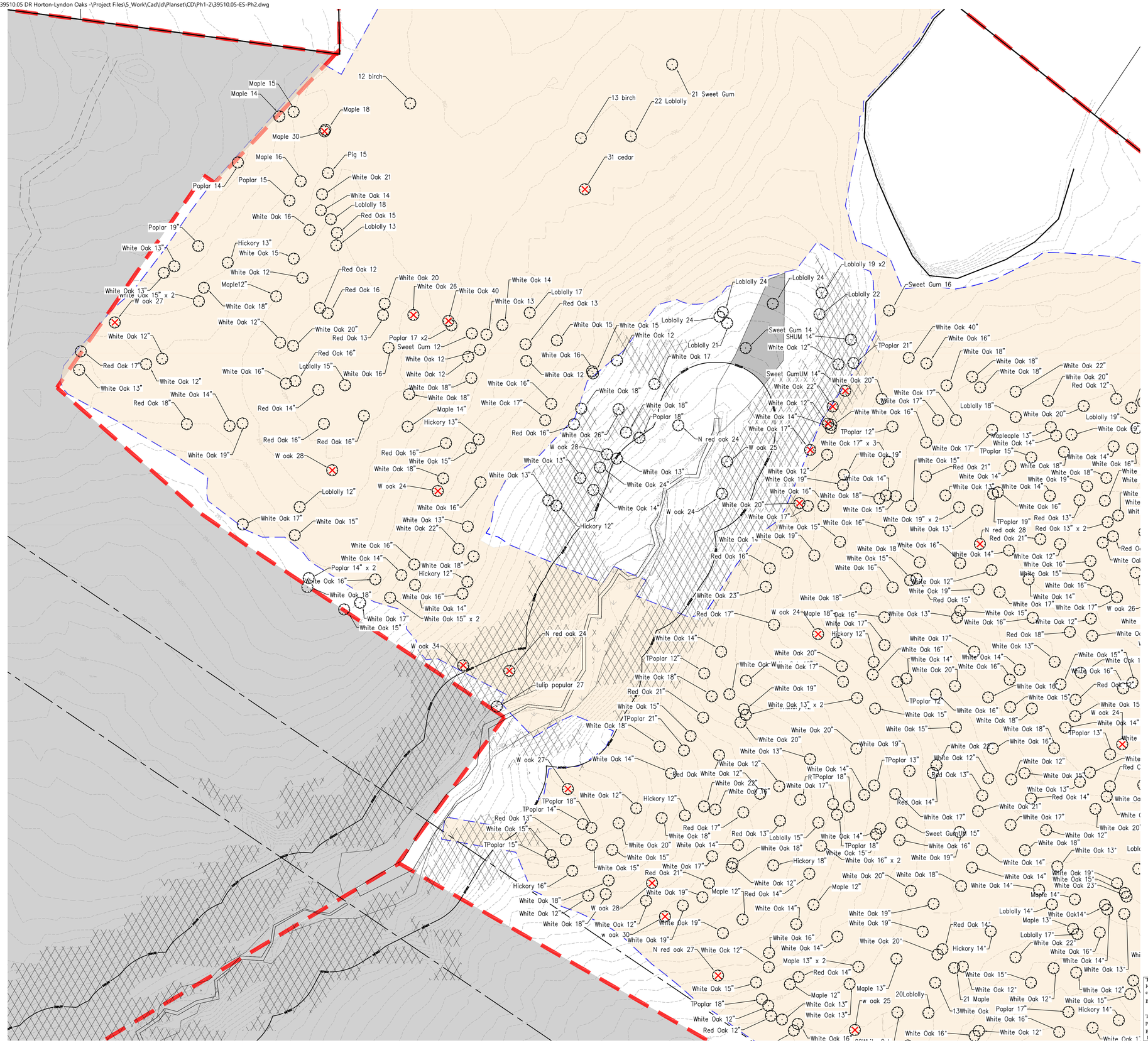

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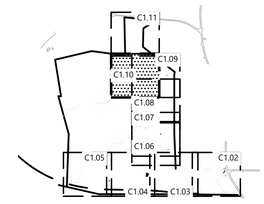

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Lyndon Oaks Phases 1 & 2

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Land Use Administrator

Drawing Title: **Environmental Survey Phase 1 (4 of 5)**

ZMA-2-23

Drawing Number: **C1.10**

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 16 of 204

Project Number: 39510.05

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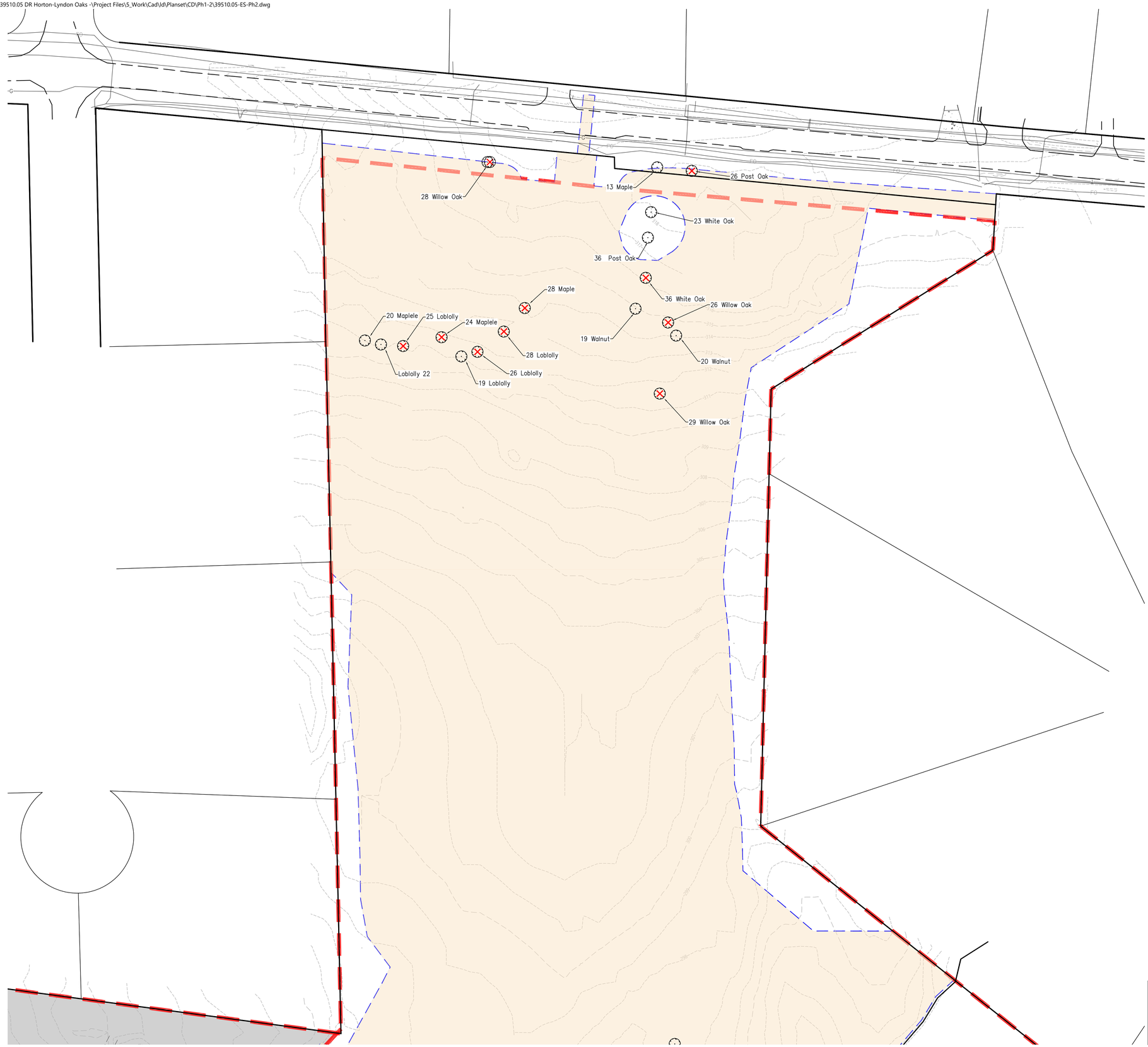

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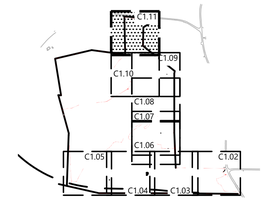

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Drawing Title
Environmental Survey Phase 2 (5 of 5)

ZMA-2-23

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Drawing Number
C1.11

Sheet 17 of 204

Project Number
39510.05

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DISTRIBUTION OF USES									
USE AREAS									
USE AREAS	PHASE 1a	PHASE 1b	PHASE 2	PHASE 3	PHASE 4	TYP. LOT SIZE (SF)	MAX IMP (SF)	#OF LOTS	TOTAL AREA (SF)	ACRES
SINGLE FAMILY										
30' LOT	18	4	14	10	0	3,600	3,000	46	165,600	3.80
35' LOT	13	5	8	0	3	4,200	3,200	29	121,800	2.80
40' LOT	9	3	16	5	1	4,800	3,200	34	163,200	3.75
60' LOT	16	0	5	26	16	7,200	3,500	63	453,600	10.41
70' LOT	5	0	0	13	9	8,400	3,500	27	226,800	5.21
80' LOT	1	0	0	5	1	9,600	4,500	6	57,600	1.32
TOTAL SINGLE FAMILY	62	12	43	59	30			206	1,188,600	27.29
DUPLEX/TOWNHOUSE										
20' TH	24	33	28	21	15	1,800	1,900	121	217,800	5.00
22' TH	24	44	28	22	18	1,980	1,900	136	269,280	6.18
24' DUPLEX	2	0	10	0	8	2,160	1,900	20	43,200	0.99
TOTAL DUPLEX/TOWNHOUSE	50	77	66	43	41			277	530,280	12.17
TOTAL LOTS	112	89	109	102	71			488	1,718,880	39.46
COMM/RETAIL							65,300	1	80,647	1.85

DISTRIBUTION OF USES										
										ACRES
GROSS SITE AREA (PER SURVEY)										171.8
DEDICATED RECREATIONAL OPEN SPACE										21.58
PUBLIC R/W										26.84
PUBLIC NCDOT R/W										4.34
NET AREA***										119.04
USE TYPE						PROP. (AC)			MIN.-MAX. DISTRIBUTION(%)	PROV. DIST. (%)
SINGLE FAMILY						27.29			15%-60%	22.9%
DUPLEX/TOWNHOUSE						12.17			10%-40%	10.2%
COMMERCIAL/RETAIL						1.85			5%-20%	1.6%



STREET/ALLEY CLASSIFICATION

TYPE	ROW	WIDTH	SPEED
PRIVATE ALLEY	20'	20' (BOC-BOC)	10 MPH
PUBLIC ALLEY	32'	18' (FOC-FOC)	10 MPH
LOCAL STREET	54'	28'-41' (FOC-FOC)	20-25 MPH
MAIN STREET	70'	47' (FOC-FOC)	20-25 MPH
URBAN MAIN STREET (WIDE SIDEWALK)	72'	48' (BOC-BOC)	20-25 MPH
AVENUE-3 LANE DIVIDED (LYNDON STREAM PARKWAY)	75'	VARIES	20-25 MPH*
CUL-DE-SAC**	61.5' RADIUS	48' (BOC-BOC)	N/A
ROUNDABOUT	VARIES	N/A	20-25 MPH

* WITH TRAFFIC CALMING 250' CURVE WILL BE SIGNED FOR 20 MPH
** 200' MAX LENGTH

NOTE: TYPICAL STREET CROSS SECTIONS CAN BE FOUND IN SHEETS C7.00-C7.01.

STREET TABLE

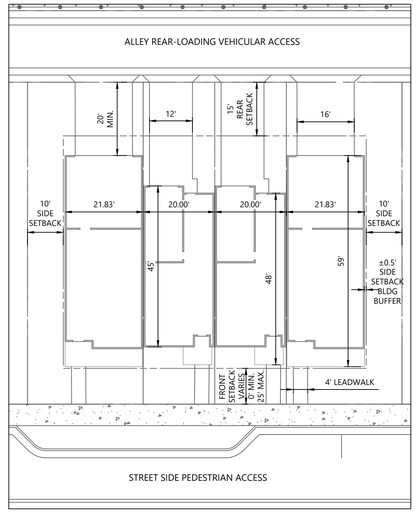
STREET NAME	TYPE
LYNDON OAKS AVENUE	LOCAL STREET
HARPER VISTA AVENUE	LOCAL STREET
LYN GREEN WAY (NORTH OF ROUNDABOUT)	MAIN STREET
LYN GREEN WAY (SOUTH OF ROUNDABOUT)	TWO-WAY LOCAL STREET
NEW TART STREET	LOCAL STREET
FAISON FOREST LANE	LOCAL STREET
LYNDON OAKS DRIVE	URBAN MAIN STREET (WIDE SIDEWALK)
LYNDON STREAM PARKWAY	AVENUE-3 LANE DIVIDED (LYNDON STREAM PARKWAY)

ALLEY TABLE

STREET NAME	TYPE
ALLEY B	PRIVATE ALLEY
ALLEY C	PRIVATE ALLEY
ALLEY E	PRIVATE ALLEY
ALLEY F	PRIVATE ALLEY
ALLEY G	PRIVATE ALLEY
ALLEY H	PRIVATE ALLEY
ALLEY I	PRIVATE ALLEY
TOP RUN ALLEY	PUBLIC ALLEY
BLUE GLEN ALLEY	PUBLIC ALLEY
NATURE VIEW ALLEY	PUBLIC ALLEY
ALLEY Q	PRIVATE ALLEY
ALLEY R	PRIVATE ALLEY
ALLEY S	PRIVATE ALLEY
ALLEY T	PRIVATE ALLEY
LIGHT VISTA ALLEY	PUBLIC ALLEY
ALLEY V	PRIVATE ALLEY
ALLEY W	PRIVATE ALLEY
ALLEY X	PRIVATE ALLEY
WIDE STREAM ALLEY	PUBLIC ALLEY
TAN HARVEST ALLEY	PUBLIC ALLEY
FUN WALK ALLEY	PUBLIC ALLEY
LOW FARM ALLEY	PUBLIC ALLEY
SAFE POND ALLEY	PUBLIC ALLEY
ALLEY DD	PRIVATE ALLEY
ALLEY EE	PRIVATE ALLEY
SHORT OAK ALLEY	PUBLIC ALLEY

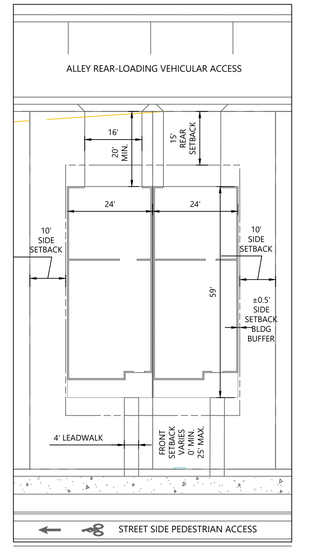
Site Notes

1. CONSTRUCTION DRAWINGS SHALL BE SUBMITTED AND APPROVED BY THE TOWN OF KNIGHTDALE PRIOR TO CONSTRUCTION.
2. SEE SHEET C0.01 FOR GENERAL AND SITE NOTES.
3. REFER TO SHEETS C7.00-C7.02 FOR SITE DETAILS.
4. PERMANENT AND TEMPORARY SIGN REQUIRES AN APPROVED SIGN PERMIT PRIOR TO INSTALLATION. SIGNAGE IS A SEPARATE SUBMITTAL, REVIEW, AND APPROVAL.
5. SUBDIVISION LOTS MUST BE LOTS OF RECORD PRIOR TO RECEIVING A BUILDING PERMIT.
6. PRIOR TO OBTAINING BUILDING PERMITS, CONTRACTOR TO SCHEDULE A PRECONSTRUCTION MEETING THROUGH TOWN OF KNIGHTDALE.
7. TOWN OF KNIGHTDALE WILL BE RESPONSIBLE FOR PAYMENT OF THE MONTHLY COSTS FOR PUBLIC STREET LIGHTING AND THE DEVELOPER WILL BE RESPONSIBLE FOR ALL INITIAL FEES CHARGED WITH THE LIGHT INSTALLATION. ALL INSTALLATION FEES ARE REQUIRED TO BE PAID UP FRONT AT THE TIME OF INSTALLATION.
8. PUBLIC STREET LIGHTING WILL BE REQUIRED FOR ALL PUBLIC STREETS.
9. PARALLEL PARKING SPACES ALONG PROPOSED PUBLIC STREET WILL BE PRIVATELY MAINTAINED.
10. ALL RETAINING WALLS AND AREA OUTSIDE OF THE LOTS WILL BE MAINTAINED BY THE COMMUNITY H.O.A.
11. PRIOR TO RELEASE OF THE CERTIFICATE OF OCCUPANCY, THE OWNER/ BUILDER MUST SUPPLY THE TOWN WITH A FINAL LETTER OF CERTIFICATION FROM LIGHTING ENGINEER, LIGHTING MANUFACTURER.
12. TREE PROTECTION FENCE AND SILT FENCE CANNOT SHARE THE SAME POLE/POSTS.
13. IF THE RETAINING WALL IS GREATER THAN 4' IN HEIGHT, A SEPARATE BUILDING PERMIT WILL BE REQUIRED.
14. IF RETAINING WALL(S) ARE GREATER THAN 3' IN HEIGHT THEY MUST HAVE SAFETY RAIL.
16. CLUSTER MAILBOXES TO BE LOCATED IN THE VICINITY OF THE CLUBHOUSE SERVING THE ENTIRE PROJECT. KIOSK LOCATION SHALL BE APPROVED BY USPS PRIOR TO SUBDIVISION APPROVAL. A TEMPORARY LOCATION SERVING PHASE 1A IS REQUIRED - APPROVAL OF THE PROPOSED TEMPORARY LOCATION SHALL BE RECEIVED BY USPS. MAIL KIOSK WILL HAVE ADA COMPLIANT RAMPS AND PARKING SPACES.
17. A HOMEOWNER'S ASSOCIATION (HOA) WILL OWN AND MAINTAIN ALL OPEN SPACE PARCELS, PRIVATE ALLEYS, AND WILL BE RESPONSIBLE FOR MAINTAINING ALL LANDSCAPING REQUIRED BY TOWN OF KNIGHTDALE UNIFIED DEVELOPMENT ORDINANCE (UDO)
18. PER UDO CH 10.5.H.2, ALL UTILITIES SHALL BE PLACED UNDERGROUND



Typ. Quadplex Townhome Lot 2/2025

1" = 20' Source: VHB



Typ. Duplex Townhome Lot 2/2025

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Viewport Number	Sheets
1	C2.01, C2.11
2	C2.02, C2.12
3	C2.03, C2.13
4	C2.04, C2.14
5	C2.05, C2.15
6	C2.06, C2.16
7	C2.07, C2.17
8	C2.08, C2.18
9	C2.09, C2.19
10	C2.10, C2.20

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- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 100 200 400Feet

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Overall Site Plan

ZMA-2-23 Drawing Number

C2.00

Sheet 18 of 224

Project Number 39510.05

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12/15/2025

Saved Tuesday, December 16, 2025 1:31:02 PM MMEZA Plotted Friday, December 19, 2025 2:14:20 PM Marco Meza

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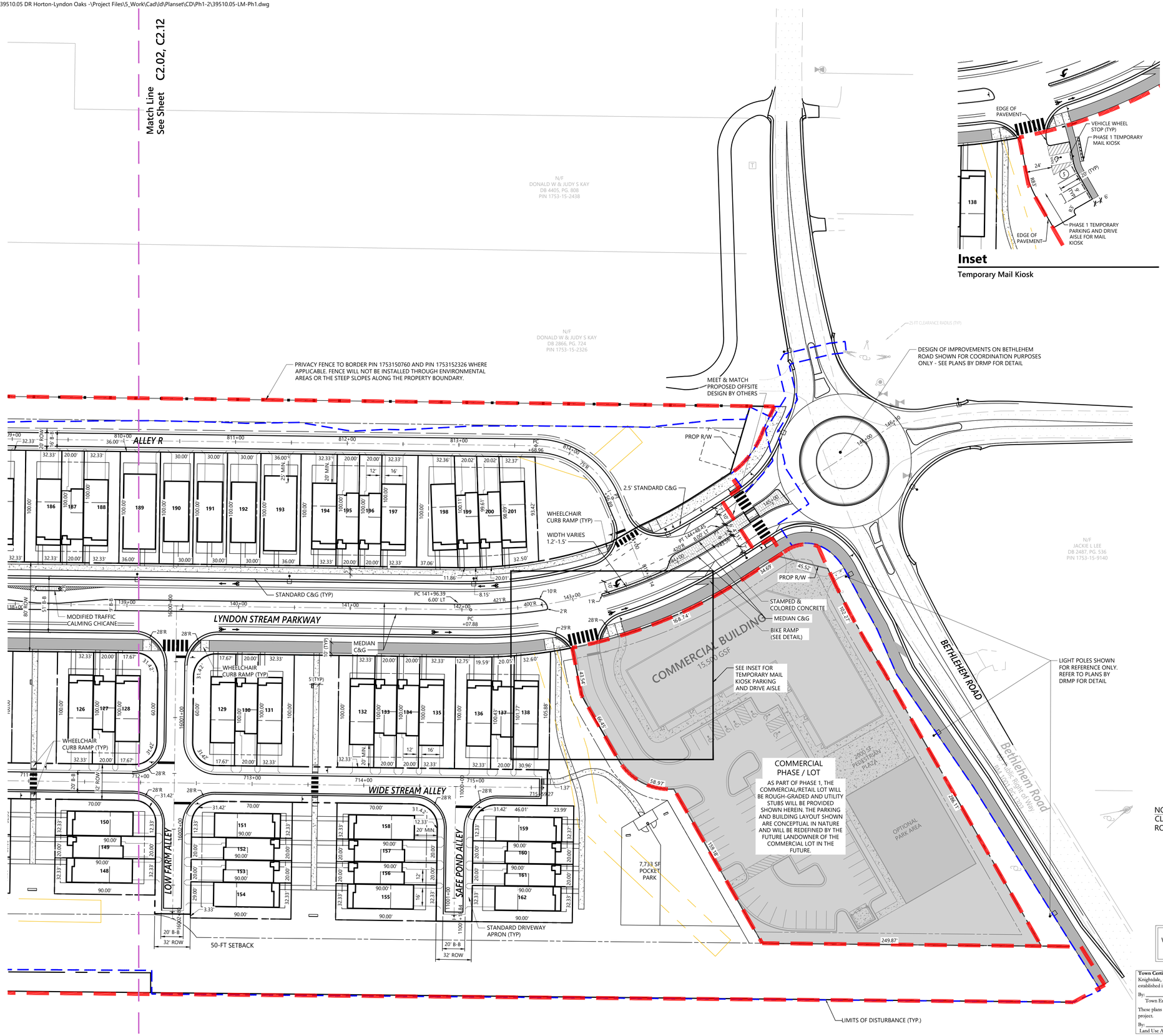
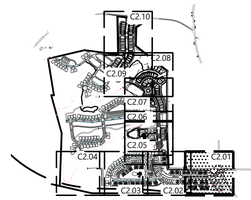


Inset

Temporary Mail Kiosk



Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

NOTE: REFER TO SHEET C2.00 FOR STREET CLASSIFICATIONS AND SHEET C7.00 FOR ROADWAY SECTIONS DETAIL

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Land Use Administrator

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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Apprv'd
1	Town of Knightdale Comments	04/02/2025	CT/KS
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3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Site Plan Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C2.01

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

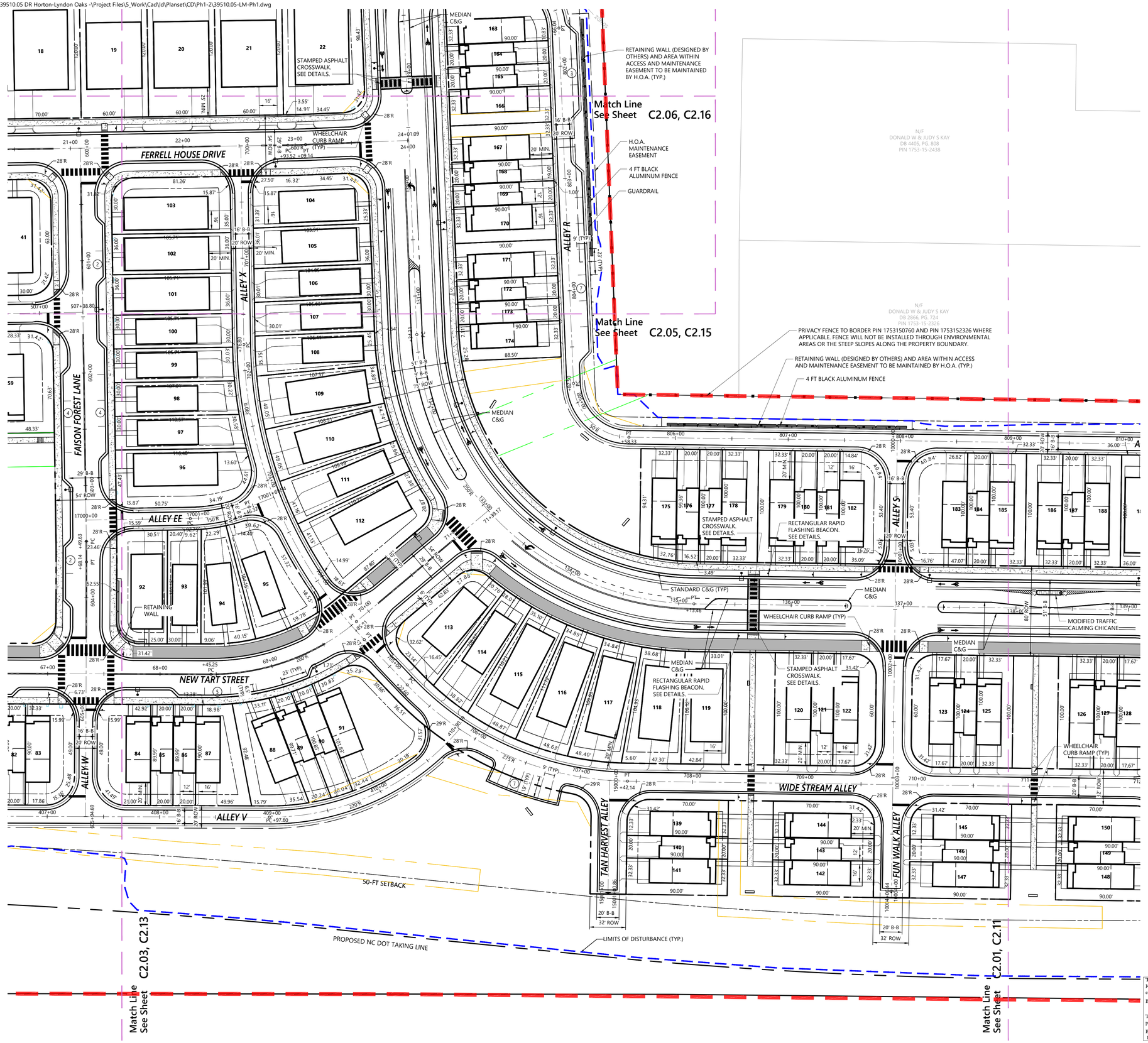
12/15/2025

Sheet 19 of 224

Project Number 39510.05

Saved Friday, December 19, 2025 11:48:25 AM WSHERRILL Plotted Friday, December 19, 2025 12:05:25 PM Trent Rogers

Saved Thursday, December 18, 2025 11:13:39 AM NSMITH Plotted Thursday, December 18, 2025 11:15:18 AM Nicholas Smith



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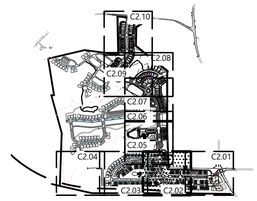

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title: **Site Plan Phase 1 (2 of 5)**

ZMA-2-23

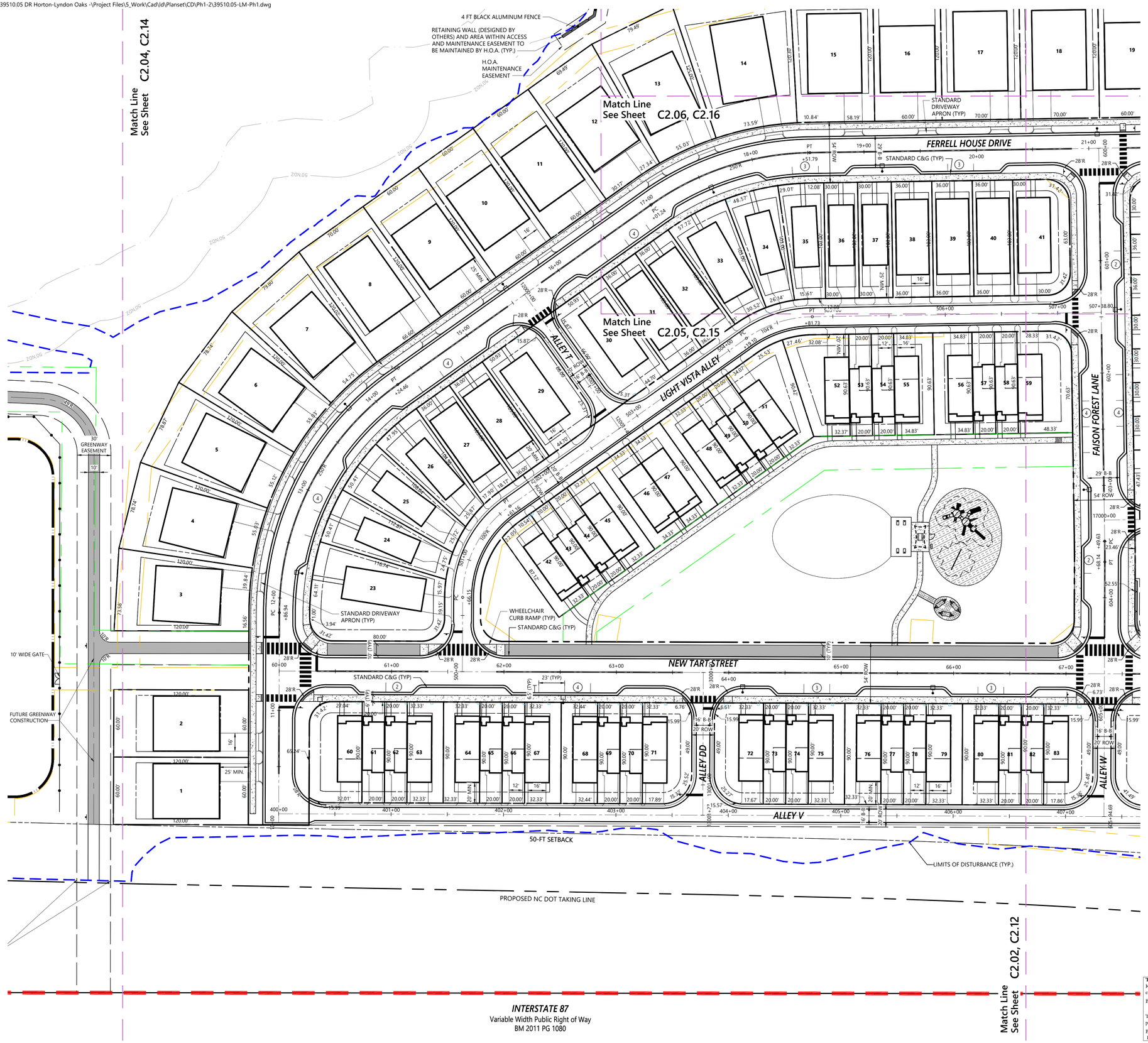
Drawing Number: **C2.02**

Sheet 20 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025



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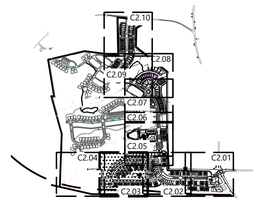

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: January 17, 2025

Drawing Title: **Site Plan Phase 1 (3 of 5)**

ZMA-2-23

Drawing Number: **C2.03**

Sheet 21 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 11:13:39 AM NSMITH Plotted Thursday, December 18, 2025 11:15:42 AM Nicholas Smith

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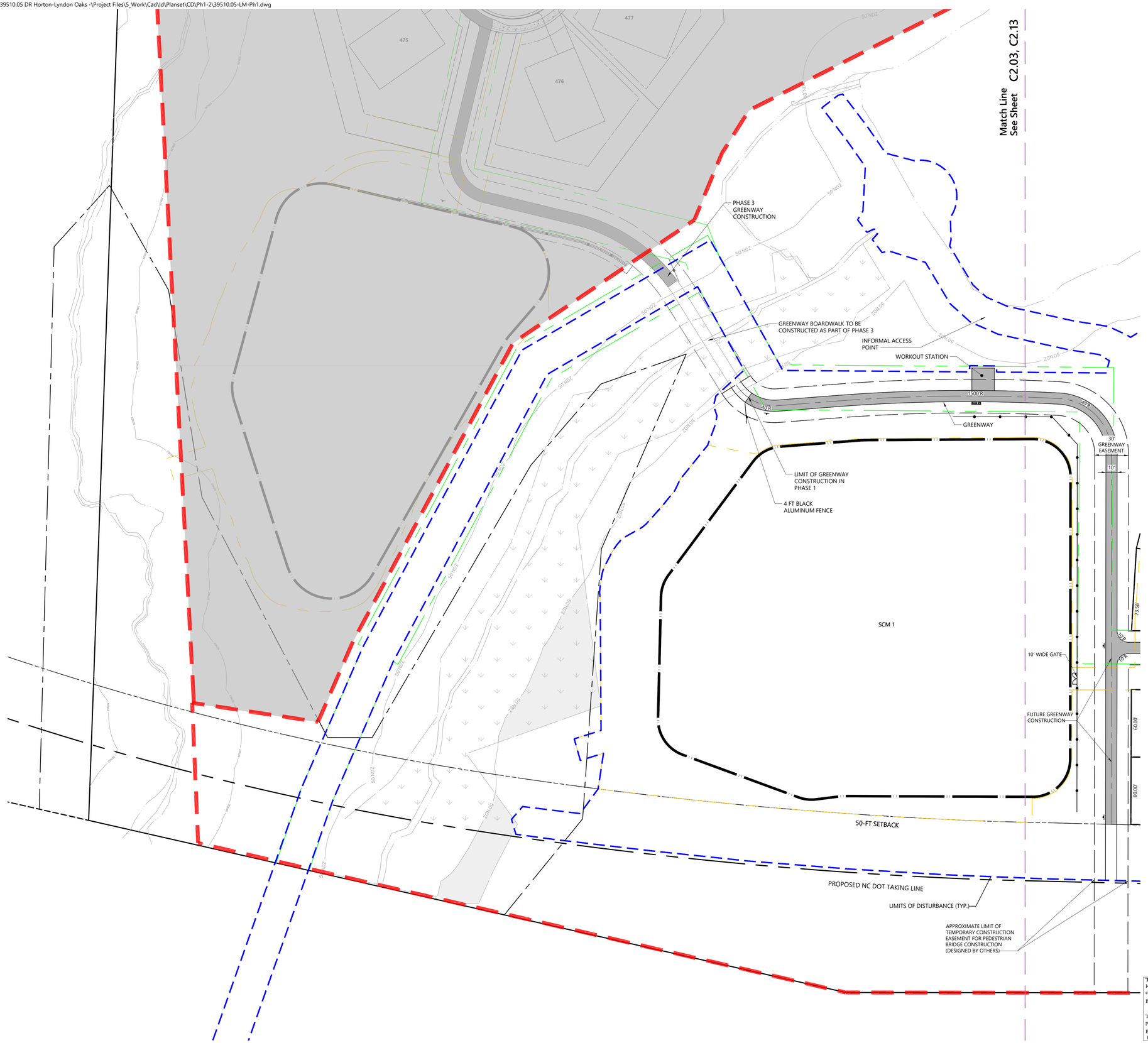

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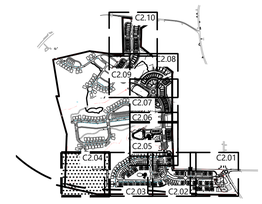

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Site Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C2.04

Sheet 22 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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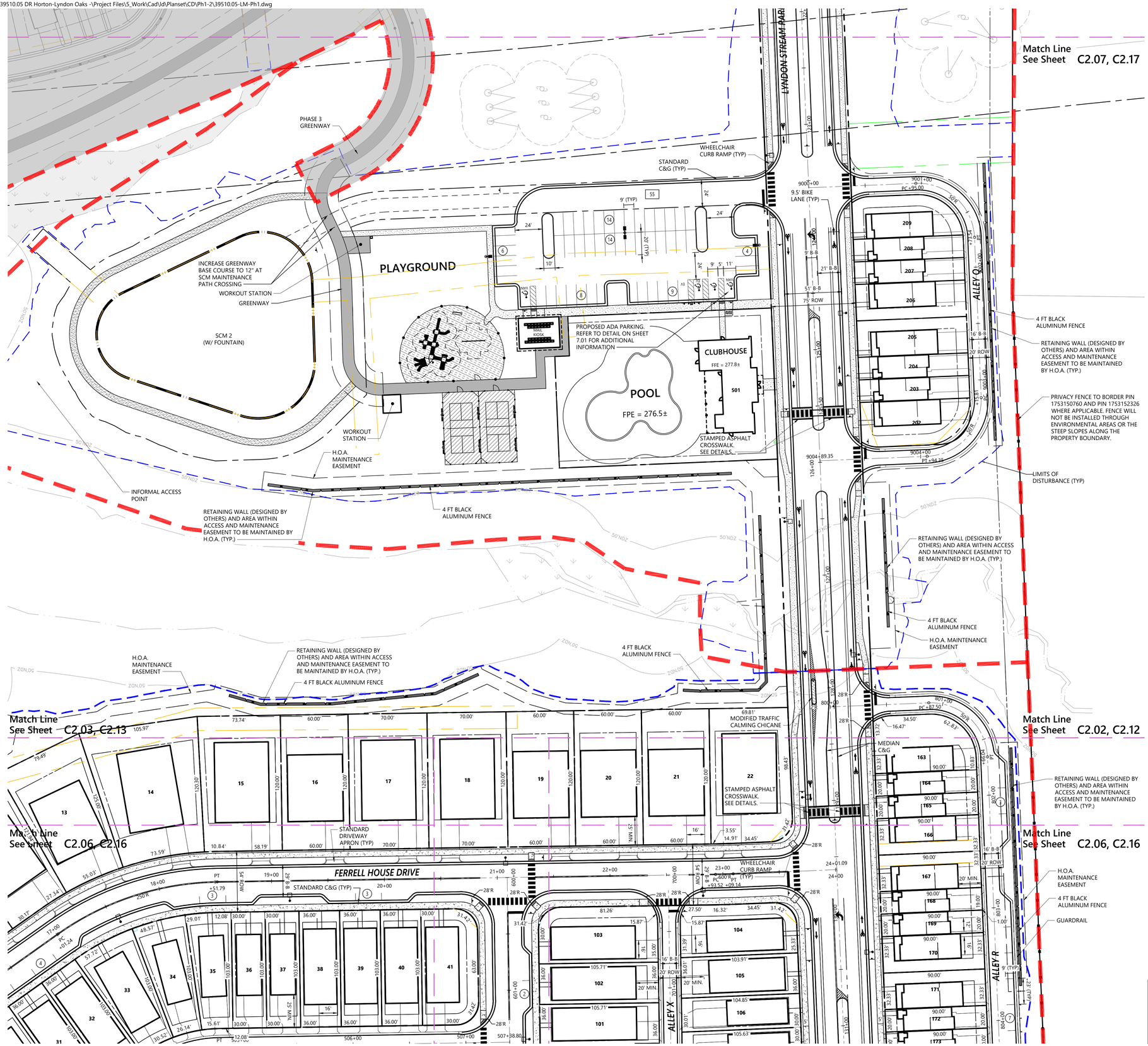

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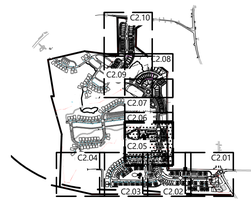

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: Site Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number: C2.05

Sheet 23 of 224

Project Number: 39510.05

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12/15/2025

Saved Friday, December 19, 2025 12:06:18 PM TROGERS Plotted Friday, December 19, 2025 2:18:48 PM Marco Meza

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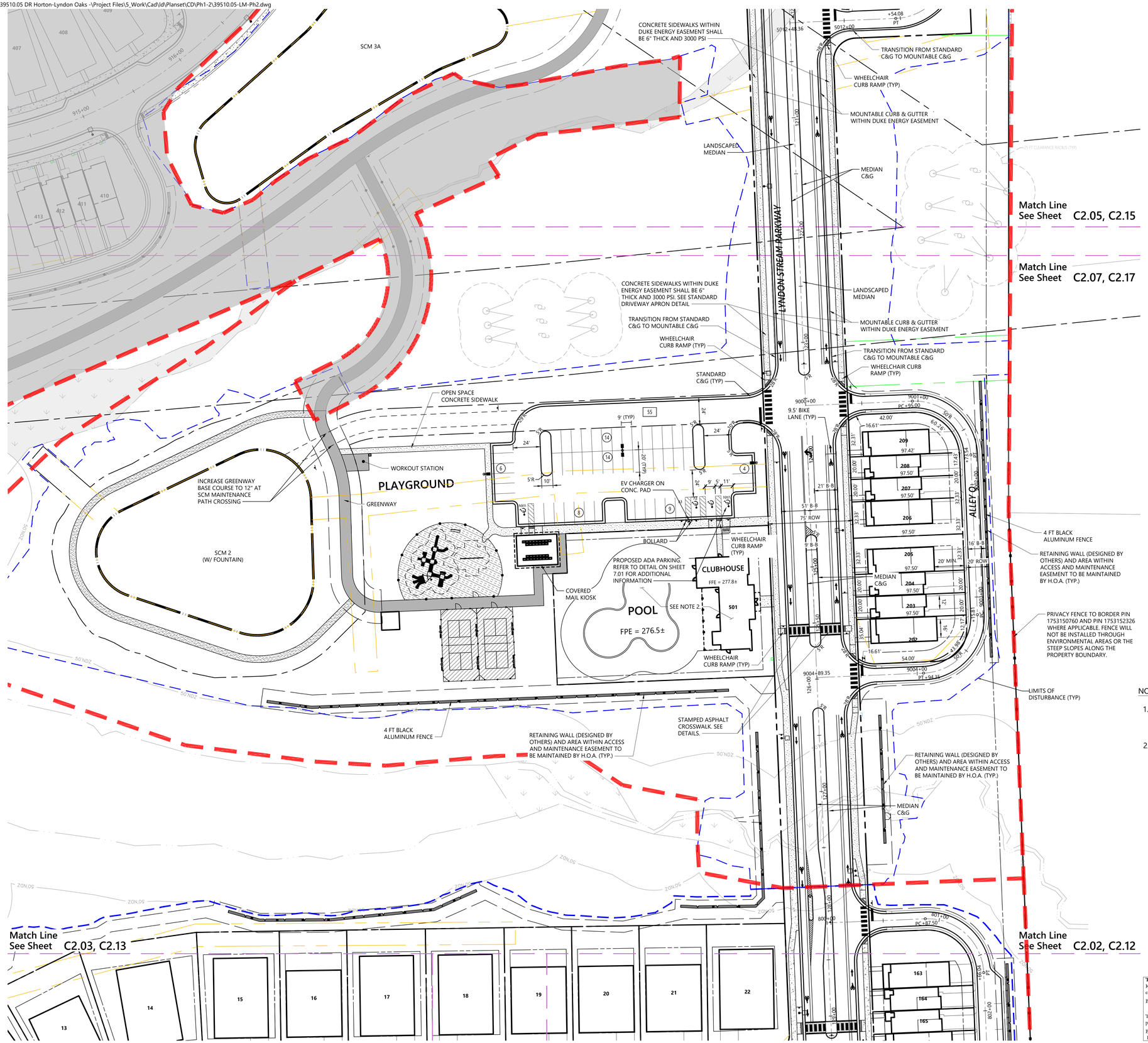

NOTE:

1. REFER TO SHEET C2.01 FOR STREET CLASSIFICATIONS AND SHEET C7.00 FOR ROADWAY SECTIONS DETAIL
2. CLUBHOUSE FOOTPRINT AND POOL/PATIO PROVIDED HEREIN TO SHOW INTENT OF PROPOSED APPROACH. AMENITIES STRUCTURES REQUIRING PERMITS SUCH AS, BUT NOT LIMITED TO, THE MAIL KIOSK, CLUB HOUSE, AND PUBLIC ART WILL BE SIMILAR TO THE CONCEPT IMAGES PROVIDED IN THE APPROVED PUD AND MASTER PLAN. THE DEVELOPER WILL CONTINUE TO WORK WITH THE TOWN REGARDING THE GENERAL DESIGN OF AMENITY STRUCTURES REQUIRING TOWN OF KNIGHTDALE REVIEW AT THE BUILDING PERMIT APPLICATION STAGE.

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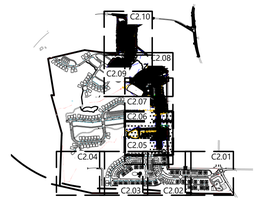

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Site Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number
C2.06

Sheet 24 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 11:45:55 AM NSMITH Plotted Thursday, December 18, 2025 11:46:55 AM Nicholas Smith

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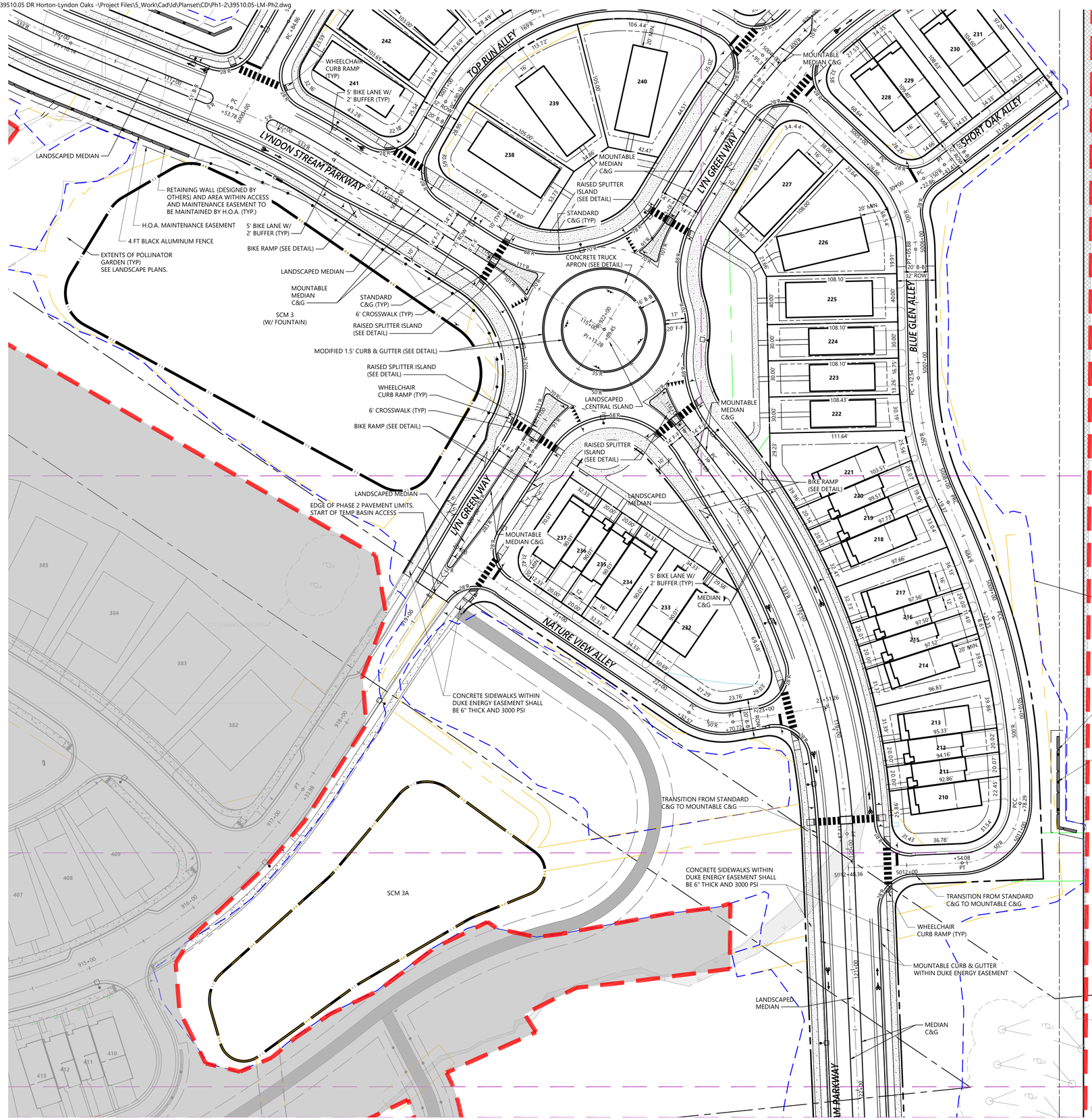

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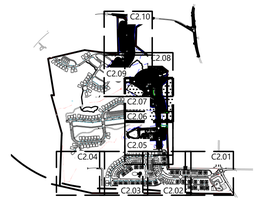

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
Site Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C2.07

Sheet 25 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 11:45:55 AM NSMITH Plotted Thursday, December 18, 2025 11:47:19 AM Nicholas Smith

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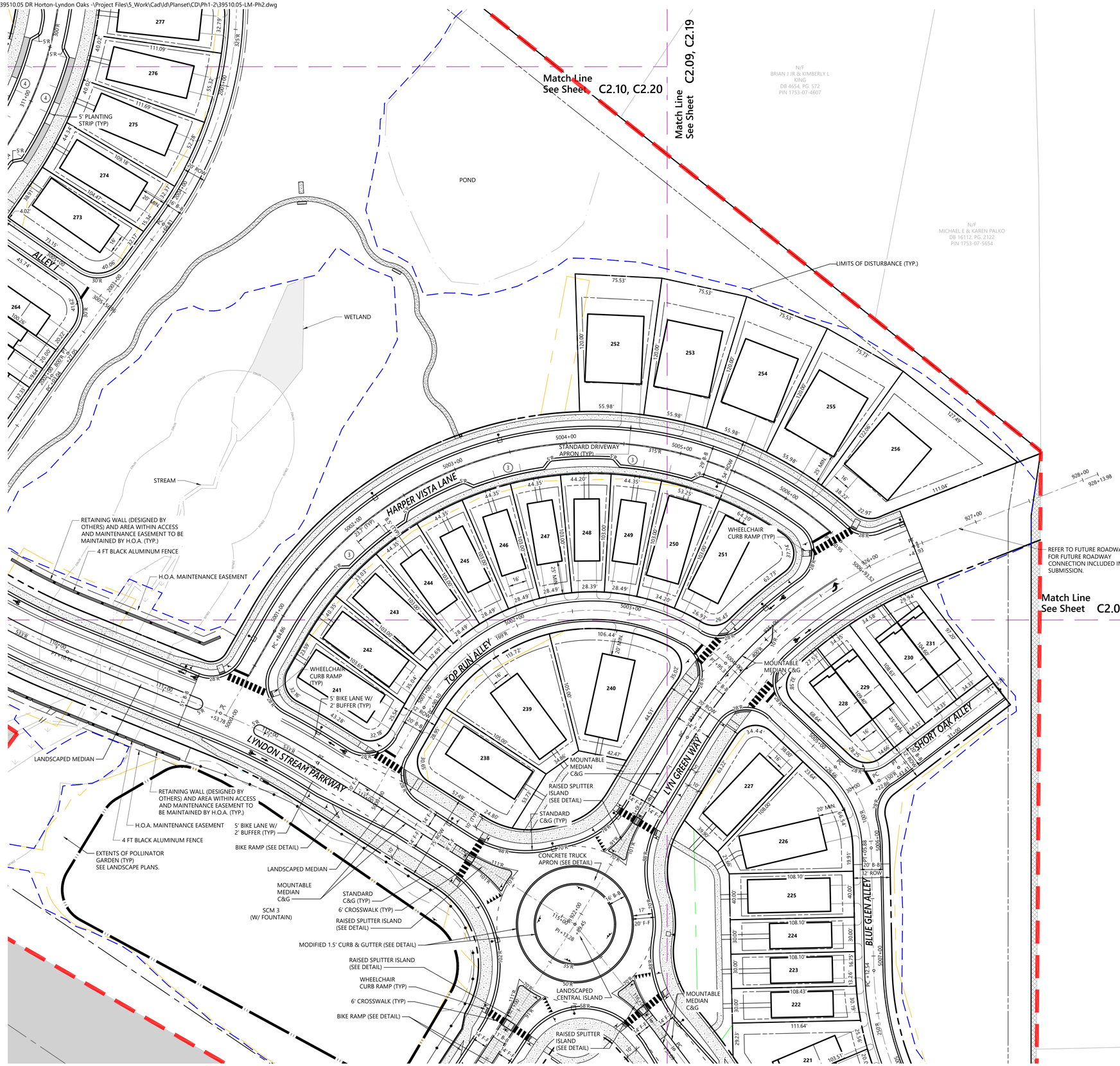

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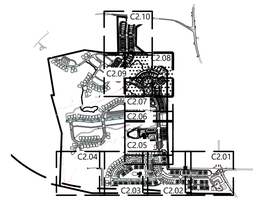

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- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: Site Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number: C2.08

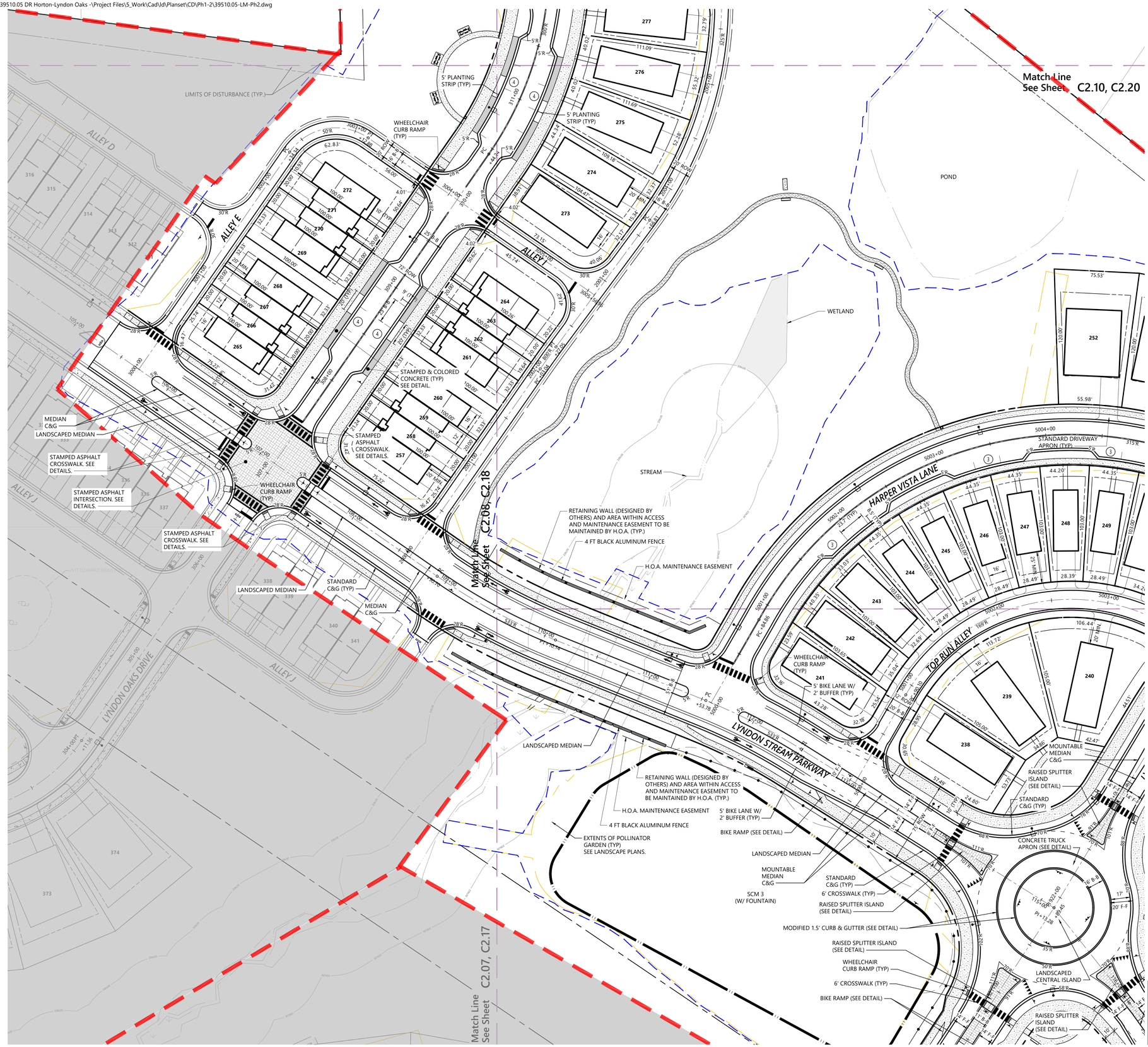
Sheet 26 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 11:45:55 AM NSMITH Plotted Thursday, December 18, 2025 11:47:38 AM Nicholas Smith



NOTES:

1. REFER TO SHEET C2.01 FOR STREET CLASSIFICATIONS AND SHEET C7.00 FOR ROADWAY SECTIONS DETAIL
2. FOR STAMPED ASPHALT INTERSECTION MAINTENANCE, CONTACT WELLONS CONSTRUCTION, INC. (910) 892-6630.

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
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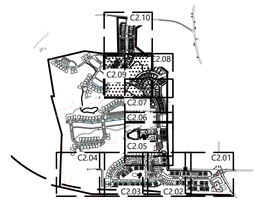
Corp. # C-3705



Key

1" = 1,500'

Site Legend

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- 50' NEUSE RIVER BUFFER
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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Site Plan Phase 2 (4 of 5)

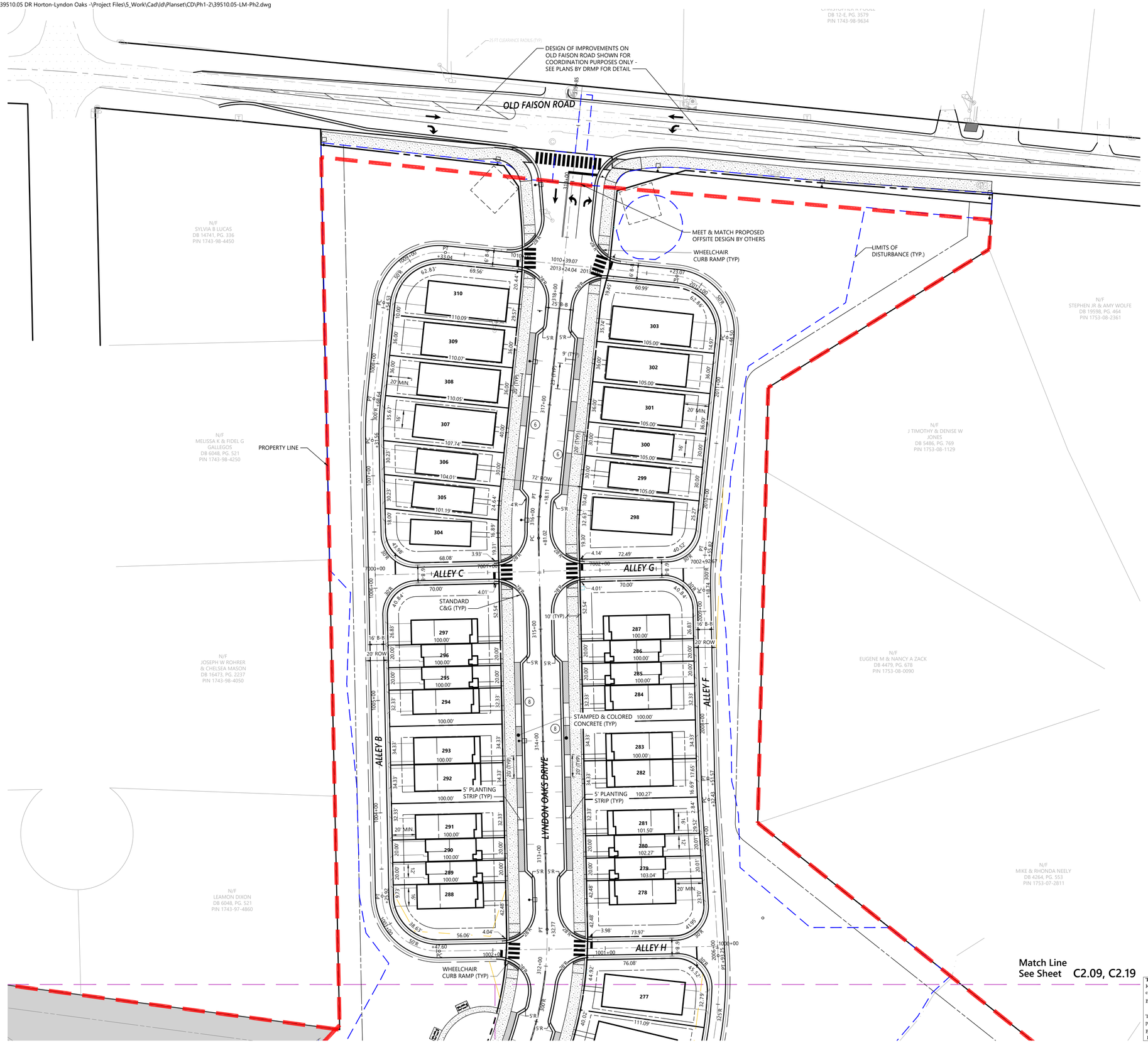
ZMA-2-23 (Drawing Number)

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet **C2.09** of 27 224

Project Number **39510.05**

Saved Thursday, December 18, 2025 11:45:55 AM NSMITH Plotted Thursday, December 18, 2025 11:47:58 AM Nicholas Smith



NOTE: REFER TO SHEET C2.01 FOR STREET CLASSIFICATIONS AND SHEET C7.00 FOR ROADWAY SECTIONS DETAIL

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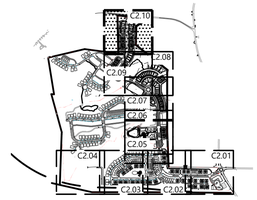

Key

1" = 1,500'

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: Site Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number: C2.10

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

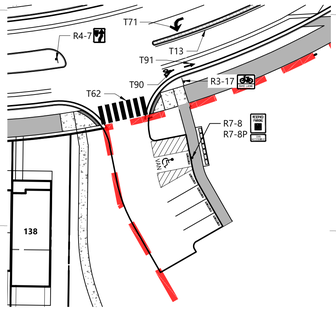
12/15/2025

Sheet 28 of 224

Project Number: 39510.05

C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\S_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-PM-Ph1.dwg

Match Line
See Sheet C2.02, C2.12



Inset
Temporary Mail Kiosk

Sign Summary

Number	Specification Width	Specification Height	Desc.
R2-1 (25 MPH)	24	30"	SPEED LIMIT 25

Sign Summary

Number	Specification Width	Specification Height	Desc.
R1-1	30"	30"	STOP
R1-3P	18"	6"	ALL WAY
W11-2	30"	30"	
W16-7PL	30"	18"	
R6-1R	36"	12"	ONE WAY
R6-1L	36"	12"	ONE WAY
R5-1	24"	24"	DO NOT ENTER
R7-8	12"	18"	RESERVED PARKING
R7-8P	12"	6"	VAN ACCESSIBLE
R1-2	36"	36"	YIELD
R3-17	24"	18"	BIKE LANE
R3-17BP	24"	8"	ENDS
OM1-3	18"	18"	
OM4-3	18"	18"	
W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	
OM-3L	12"	36"	

Symbol	Description	Material
T1	WHITE EDGE LINE (4", 90 MIL)	THERMO
T2	WHITE SOLID LANE LINE (4", 90 MIL)	THERMO
T4	3 FT. - 9 FT./SP WHITE MINISKIP (12" 90 MIL)	THERMO
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T62	WHITE CROSSWALK LINE (24", 90 MIL)	THERMO
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T71	RIGHT TURN ARROW (90 MIL)	THERMO
T72	STRAIGHT ARROW (90 MIL)	THERMO
T75	COMBO. LEFT/RIGHT ARROW (90 MIL)	THERMO
T90	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)	THERMO
T91	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)	THERMO
T101	HANDICAP PARKING (90 MIL)	THERMO
T103	YIELD LINE TRIANGLES (90 MIL)	THERMO

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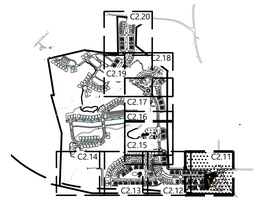

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
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- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for	Date
Approval	January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 1 (1 of 5)

ZMA-2-23

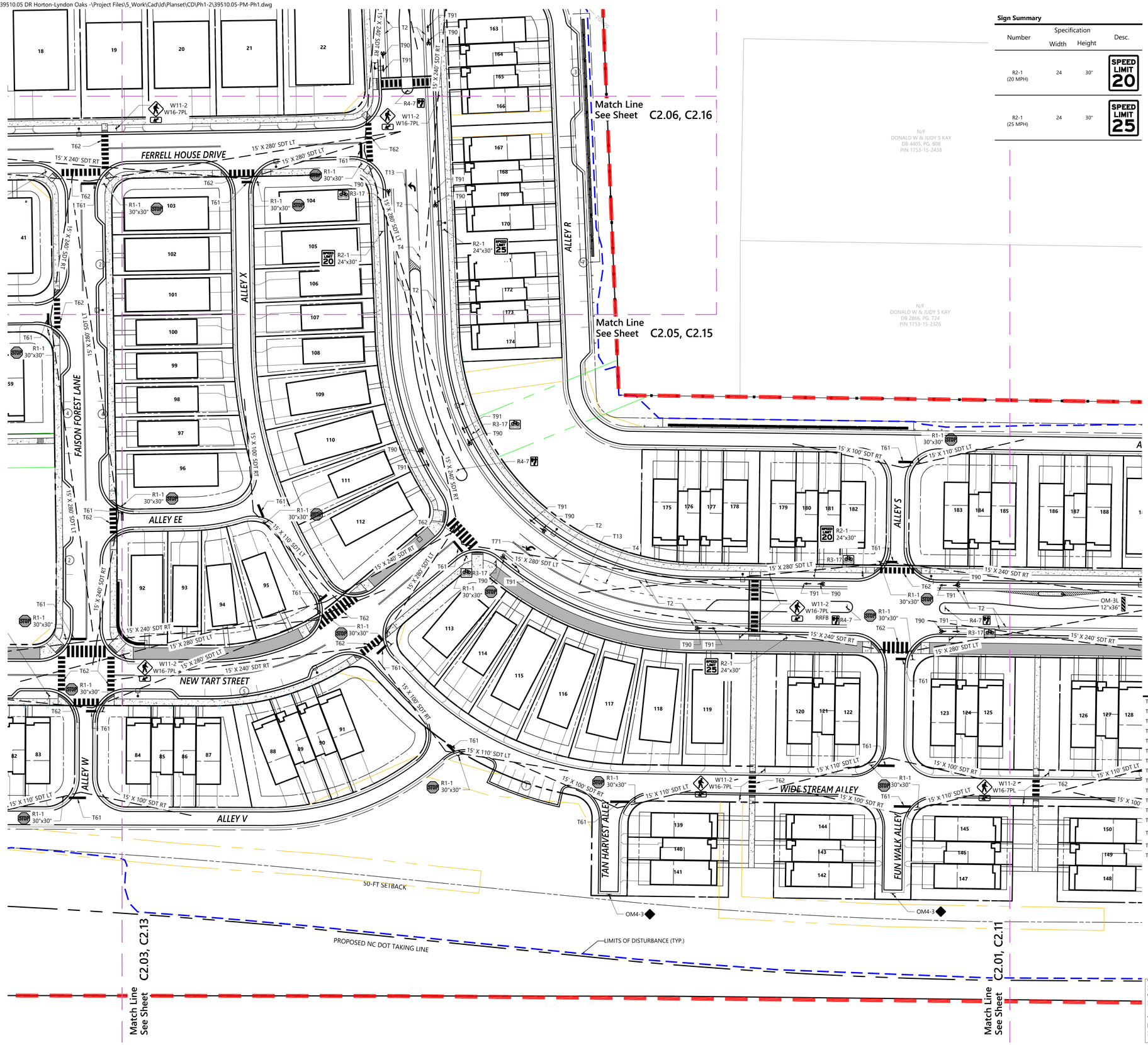
Drawing Number
C2.11

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNEND
12/15/2025

Sheet 29 of 224

Project Number
39510.05

Saved Thursday, December 18, 2025 5:00:24 PM WSHERRILL Plotted Thursday, December 18, 2025 5:01:19 PM Will Sherrill



Sign Summary

Number	Specification Width	Specification Height	Desc.
R2-1 (20 MPH)	24	30"	SPEED LIMIT 20
R2-1 (25 MPH)	24	30"	SPEED LIMIT 25

Sign Summary

Number	Specification Width	Specification Height	Desc.
R1-1	30"	30"	STOP
R1-3P	18"	6"	ALL WAY
W11-2	30"	30"	
W16-7PL	30"	18"	
R6-1R	36"	12"	ONE-WAY
R6-1L	36"	12"	ONE-WAY
R5-1	24"	24"	DO NOT ENTER
R7-8	12"	18"	RESERVED PARKING
R7-8P	12"	6"	VAN ACCESSIBLE
R1-2	36"	36"	YIELD
R3-17	24"	18"	BIKE LANE
R3-17BP	24"	8"	ENDS
OM1-3	18"	18"	
OM4-3	18"	18"	
W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	FOUR WAY STOP
OM-3L	12"	36"	

Symbol	Description	Material
T1	WHITE EDGE LINE (4", 90 MIL)	THERMO
T2	WHITE SOLID LANE LINE (4", 90 MIL)	THERMO
T4	3 FT. - 9 FT./SP WHITE MINISKIP (12" 90 MIL)	THERMO
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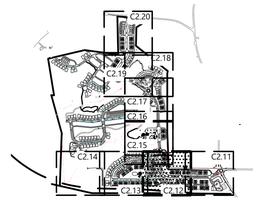

Key

1" = 1,500'

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 1 (2 of 5)

ZMA-2-23

Drawing Number
C2.12

Sheet 30 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNEND
12/15/2025

Saved Wednesday, December 17, 2025 4:32:56 PM NSMITH Plotted Wednesday, December 17, 2025 4:33:52 PM Nicholas Smith

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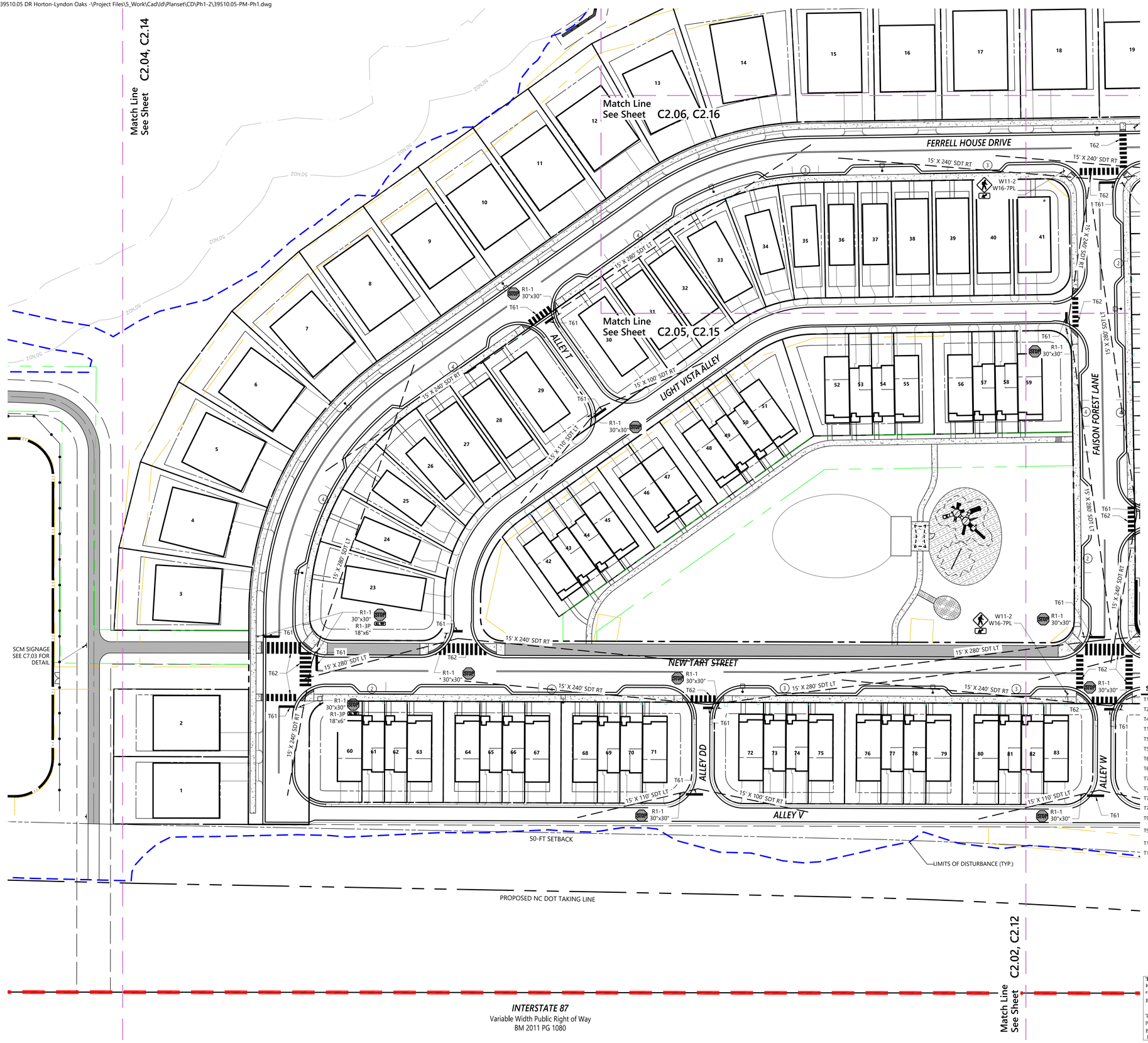

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W11-2	30"	30"	
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R6-1R	36"	12"	ONE WAY
R6-1L	36"	12"	ONE WAY
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R7-8	12"	18"	RESERVED PARKING
R7-8P	12"	6"	VAN ACCESSIBLE
R1-2	36"	36"	YIELD
R3-17	24"	18"	BIKE LANE
R3-17BP	24"	8"	ENDS
OM1-3	18"	18"	
OM4-3	18"	18"	
W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	STOP LOOK LEFT RIGHT AHEAD
OM-3L	12"	36"	

Symbol	Description	Material
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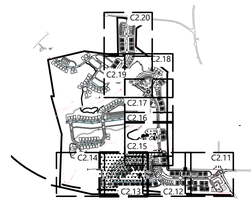

Key

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- 6 FT WHITE VINYL PRIVACY FENCE

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Lyndon Oaks Phases 1 & 2

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 1 (3 of 5)

ZMA-2-23

Drawing Number
C2.13

Sheet 31 of 224

Project Number 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 4:33:14 PM NSMITH Plotted Thursday, December 18, 2025 1:48:36 PM Will Sherrill

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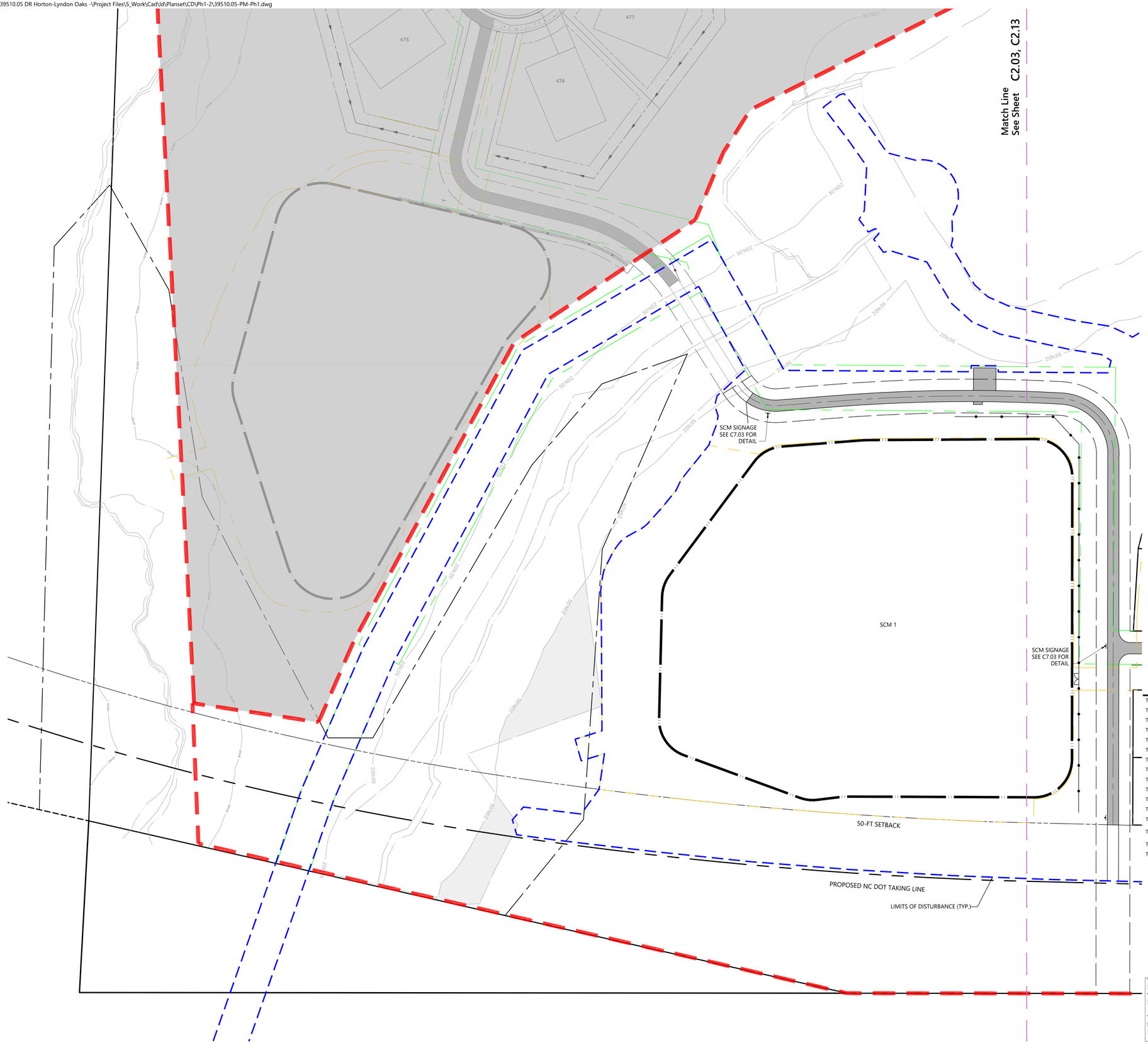

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OM4-3	18"	18"	
W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	RIGHT TURN YIELD TO PEDS
OM-3L	12"	36"	

Symbol	Description	Material
T1	WHITE EDGE LINE (4", 90 MIL.)	THERMO
T2	WHITE SOLID LANE LINE (4", 90 MIL.)	THERMO
T4	3 FT. - 9 FT./SP WHITE MINISKIP (12" 90 MIL.)	THERMO
T13	YELLOW DOUBLE CENTER (4", 90 MIL.)	THERMO
T53	WHITE SOLID LANE LINE (12" 90 MIL.)	THERMO
T55	3 FT. - 3 FT./SP WHITE MINISKIP (12" 90 MIL.)	THERMO
T61	WHITE STOPBAR (24", 90 MIL.)	THERMO
T62	WHITE CROSSWALK LINE (24", 90 MIL.)	THERMO
T70	LEFT TURN ARROW (90 MIL.)	THERMO
T71	RIGHT TURN ARROW (90 MIL.)	THERMO
T72	STRAIGHT ARROW (90 MIL.)	THERMO
T75	COMBO. LEFT/RIGHT ARROW (90 MIL.)	THERMO
T90	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL.)	THERMO
T91	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL.)	THERMO
T101	HANDICAP PARKING (90 MIL.)	THERMO
T103	YIELD LINE TRIANGLES (90 MIL.)	THERMO

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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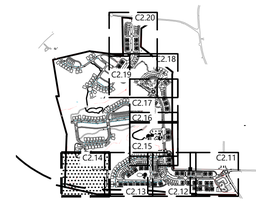
919.829.0328
Corp. # C-3705



Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C2.14

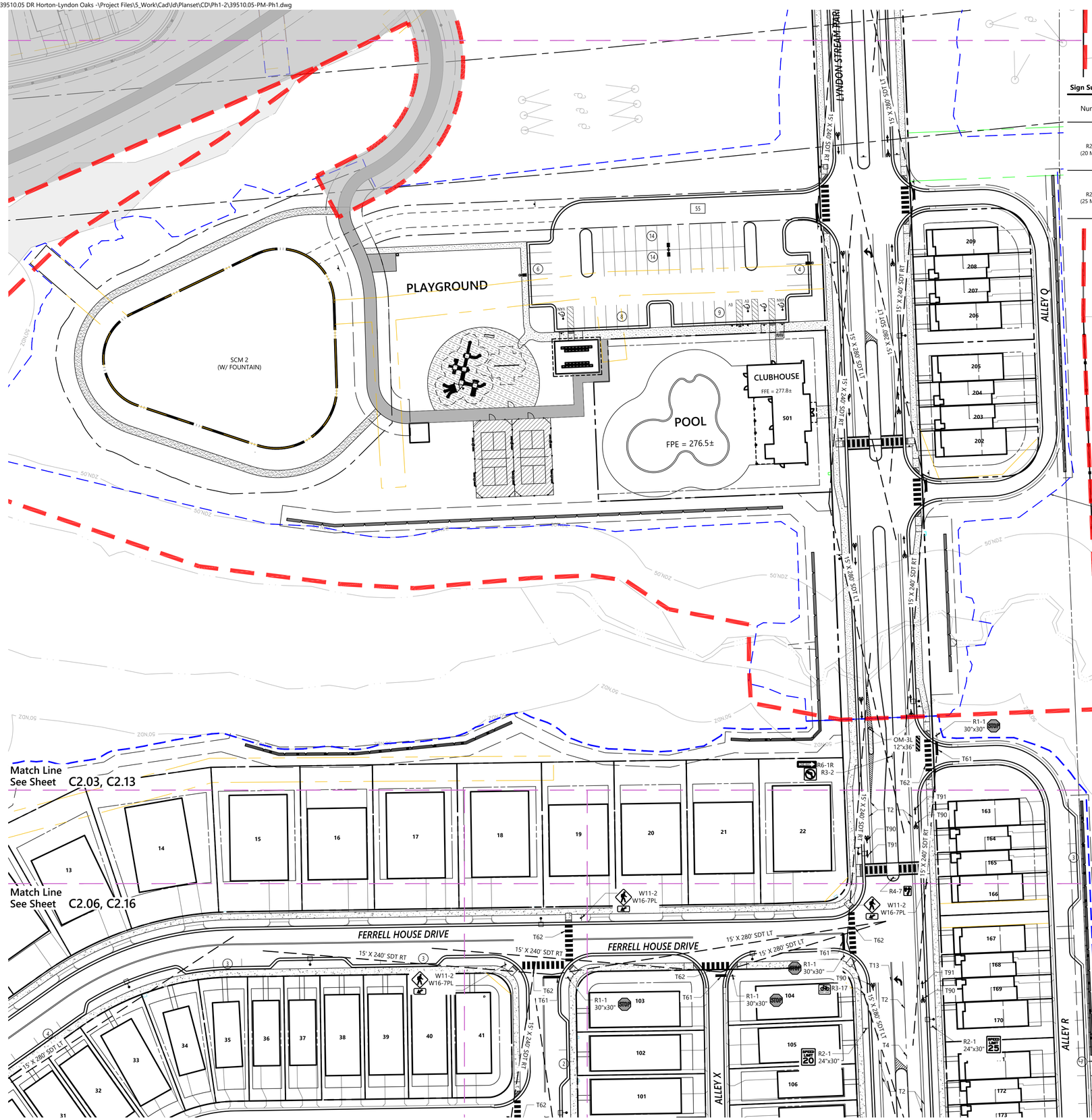
Sheet 32 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 4:33:14 PM NSMITH Plotted Thursday, December 18, 2025 1:49:59 PM Will Sherrill



Match Line
See Sheet C2.07, C2.17

Match Line
See Sheet C2.03, C2.13

Match Line
See Sheet C2.06, C2.16

Match Line
See Sheet C2.02, C2.12

Match Line
See Sheet C2.06, C2.16

LIMITS OF DISTURBANCE (TYP)

Sign Summary

Number	Specification Width	Height	Desc.
R2-1 (20 MPH)	24	30"	SPEED LIMIT 20
R2-1 (25 MPH)	24	30"	SPEED LIMIT 25

Sign Summary

Number	Specification Width	Height	Desc.
R1-1	30"	30"	STOP
R1-3P	18"	6"	ALL WAY
W11-2	30"	30"	
W16-7PL	30"	18"	
R6-1R	36"	12"	ONE WAY
R6-1L	36"	12"	ONE WAY
R5-1	24"	24"	DO NOT ENTER
R7-8	12"	18"	RESERVED PARKING
R7-8P	12"	6"	VAN ACCESSIBLE
R1-2	36"	36"	YIELD
R3-17	24"	18"	BIKE LANE
R3-17BP	24"	8"	ENDS
OM1-3	18"	18"	
OM4-3	18"	18"	
W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	ROAD CLOSED TO THRU TRAFFIC
OM-3L	12"	36"	

Symbol	Description	Material
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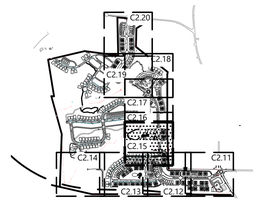

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- TPF — TREE PROTECTION FENCE
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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C2.15

Sheet 33 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 4:32:56 PM NSMITH Plotted Wednesday, December 17, 2025 4:34:47 PM Nicholas Smith

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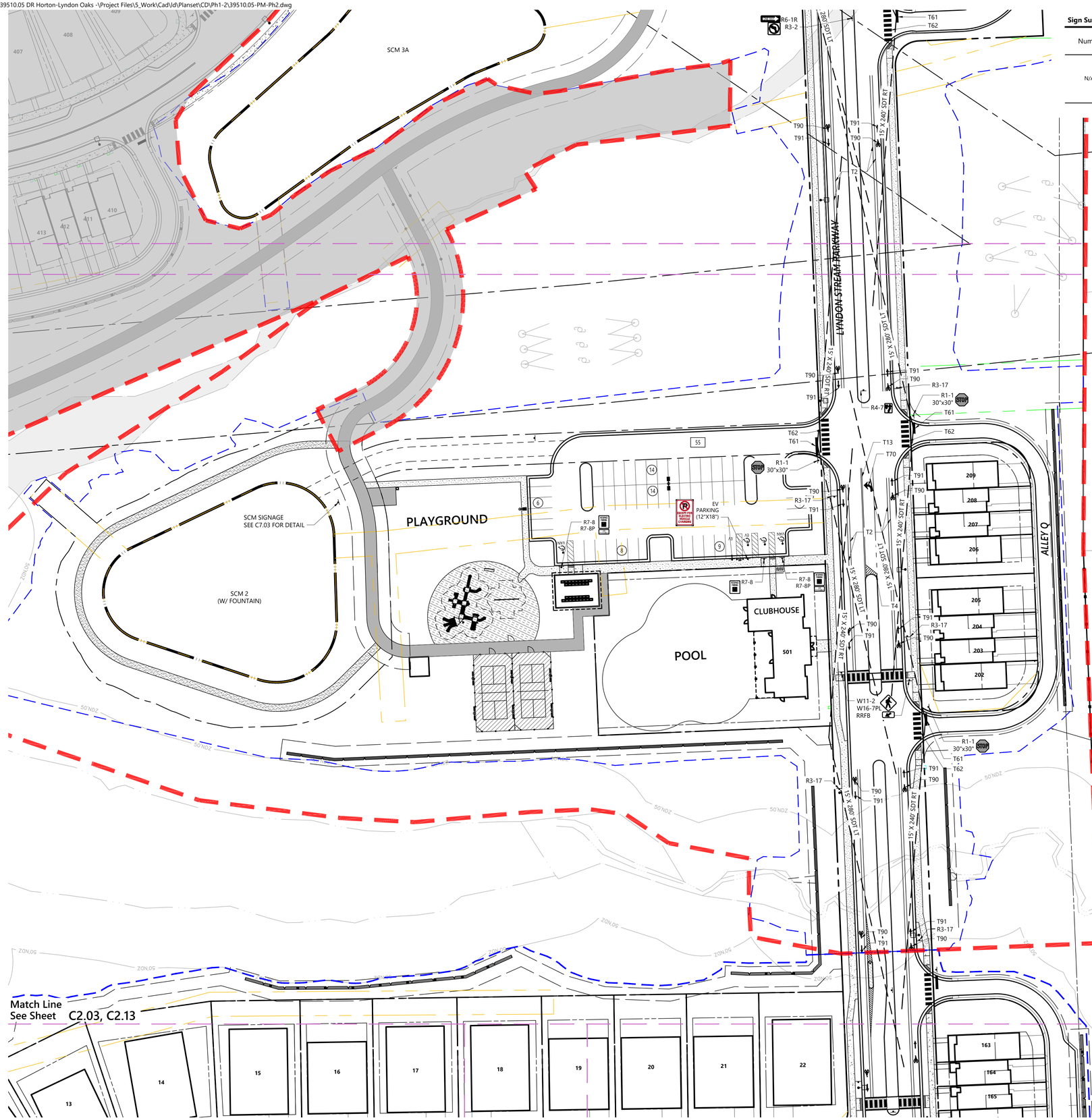

Sign Summary

Number	Specification Width	Specification Height	Desc.
N/A	12"	18"	EXCEPT FOR ELECTRIC VEHICLE CHARGING

Sign Summary

Number	Specification Width	Specification Height	Desc.
R1-1	30"	30"	STOP
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R3-17	24"	18"	BIKE LANE
R3-17BP	24"	8"	ENDS
OM1-3	18"	18"	
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R3-2	24"	24"	
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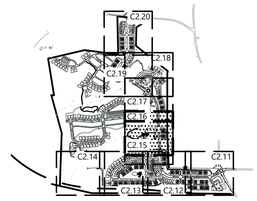

Key

1" = 1,500'

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number
C2.16

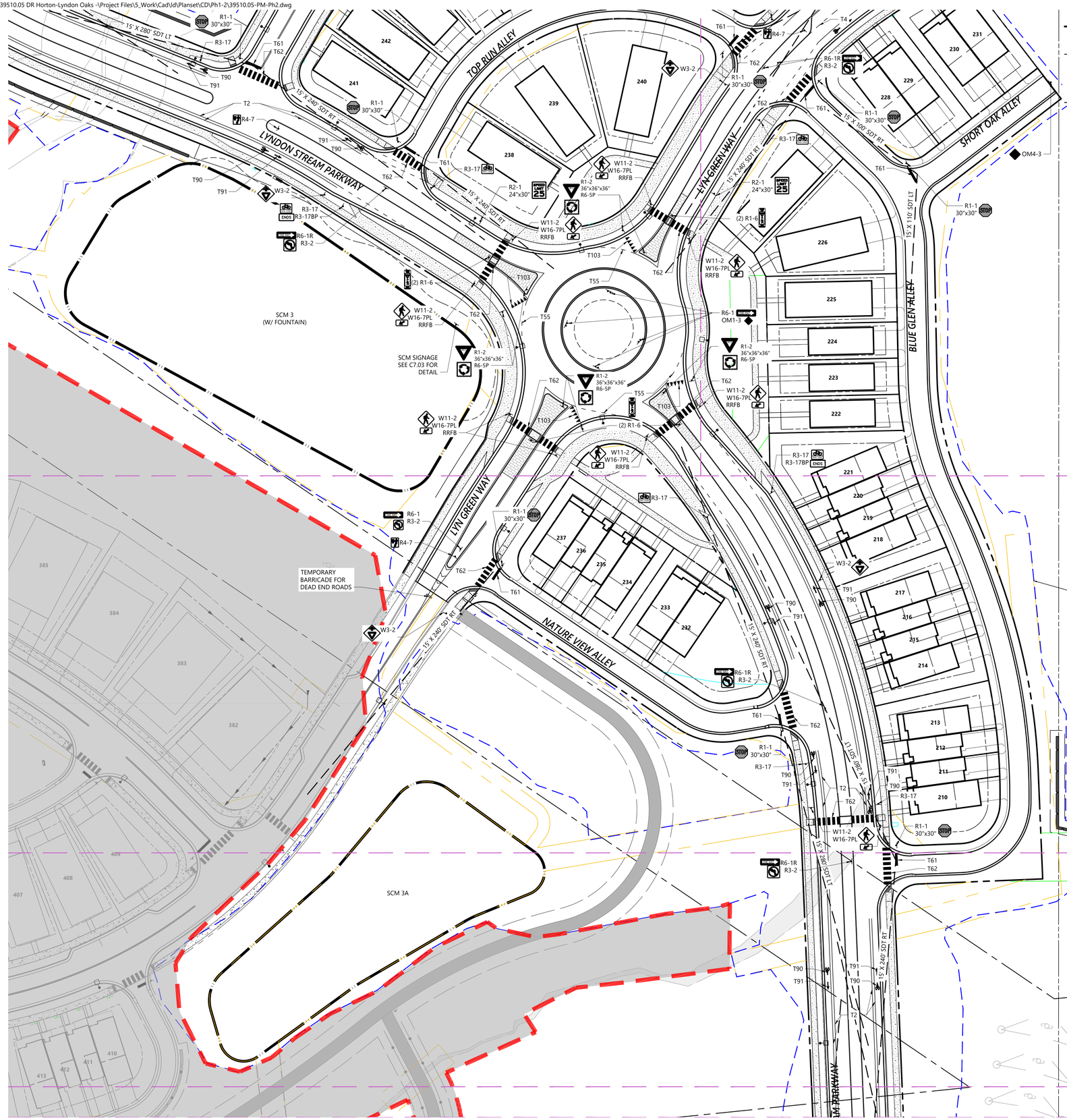
Sheet 34 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 4:47:16 PM NSMITH Plotted Wednesday, December 17, 2025 4:47:50 PM Nicholas Smith



Sign Summary

Number	Specification Width	Height	Desc.
R2-1 (25 MPH)	24"	30"	SPEED LIMIT 25

Sign Summary

Number	Specification Width	Height	Desc.
R1-1	30"	30"	STOP
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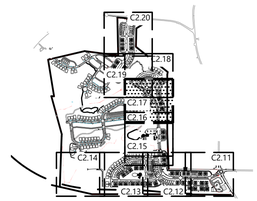

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- TPF — TREE PROTECTION FENCE
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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C2.17

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 35 of 224

Project Number 39510.05

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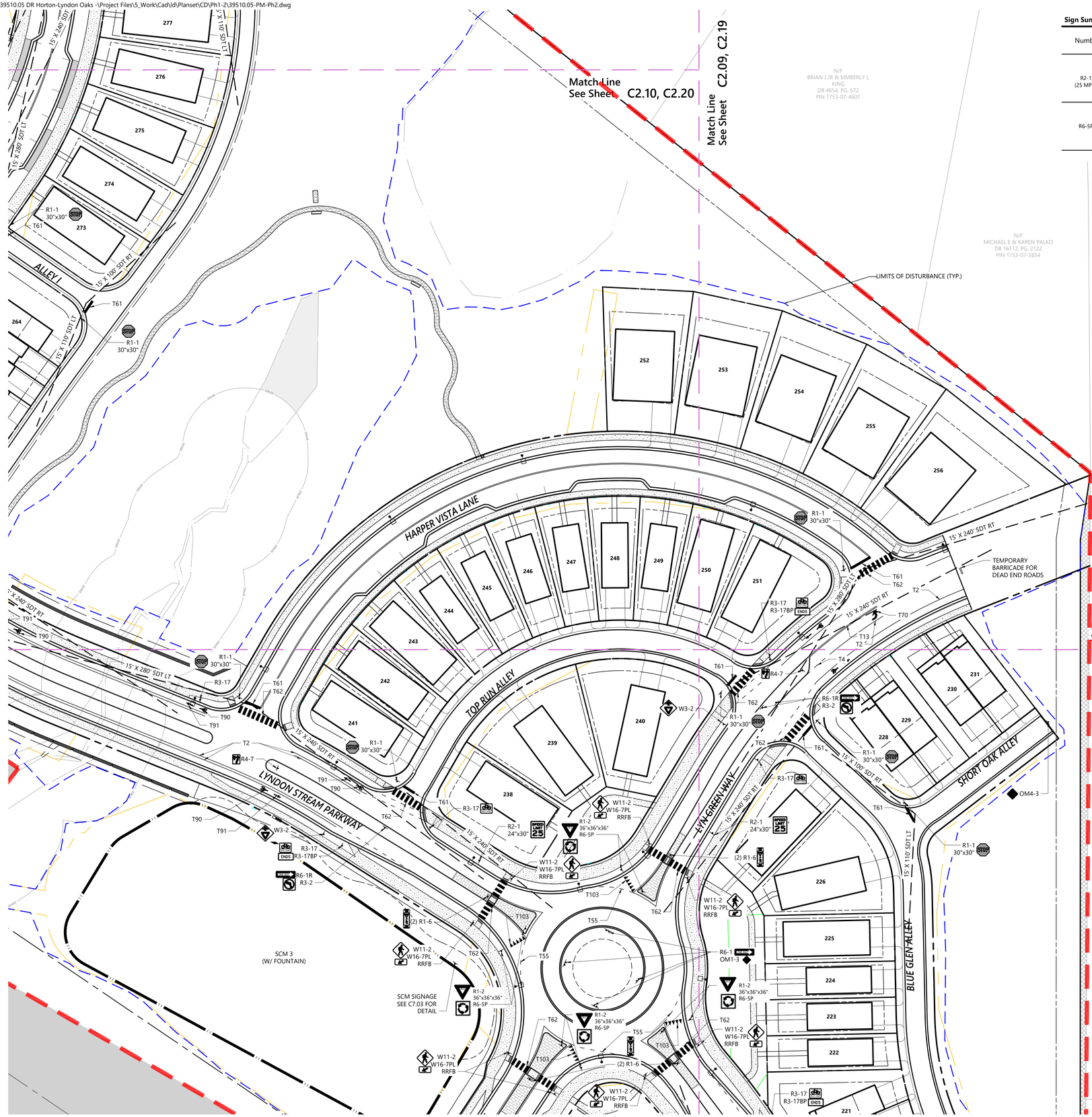

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W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	STOP HERE FOR PEDESTRIANS
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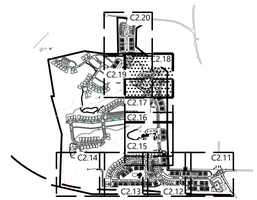

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Designed by	Checked by
VHB	CT, KS, JB, RB

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Drawing Title
Pavement Marking and Signage Plan Phase 2 (3 of 5)

ZMA-2-23

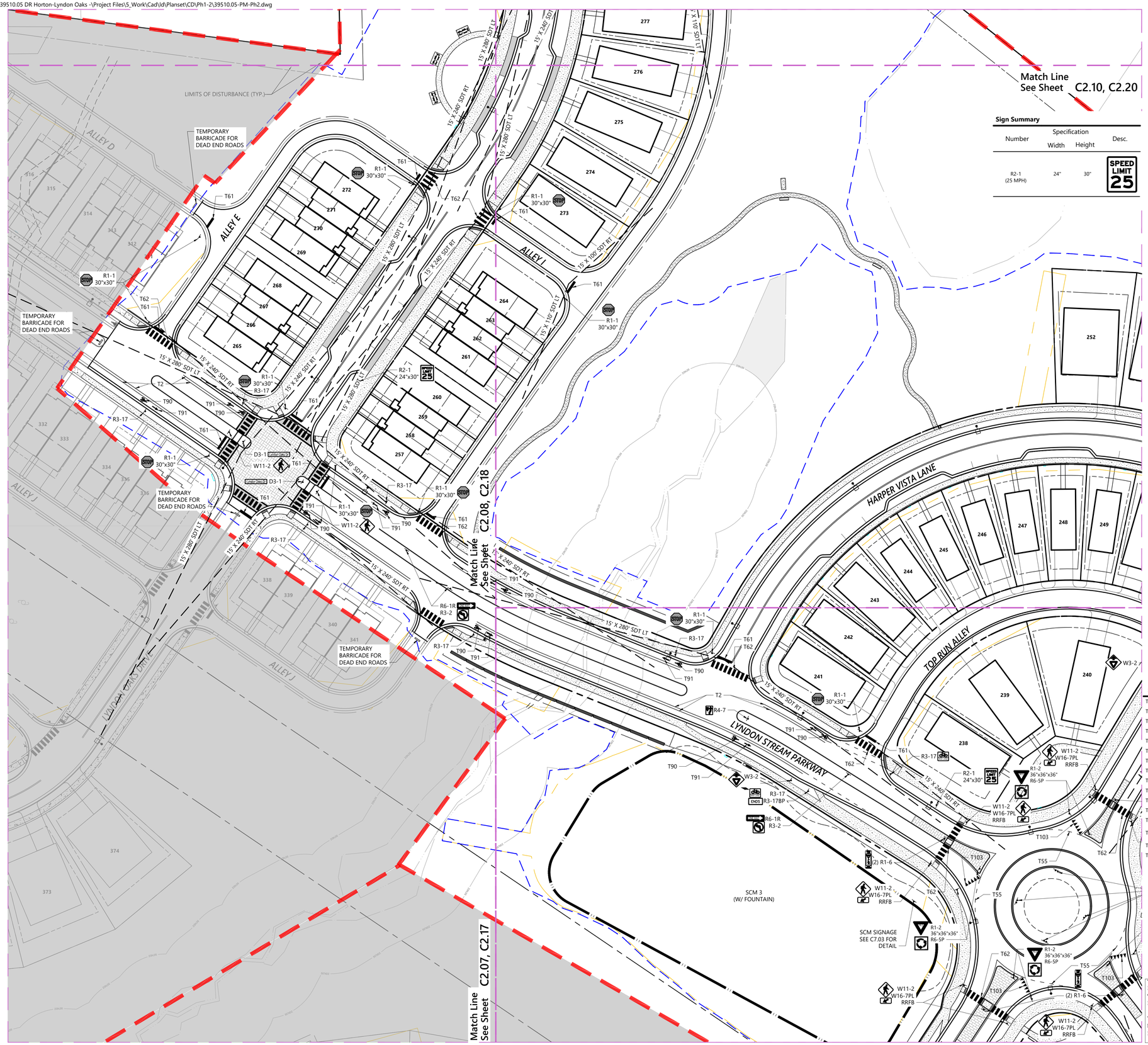
Drawing Number
C2.18

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 36 of 224

Project Number
39510.05

Saved Wednesday, December 17, 2025 4:47:16 PM NSMITH Plotted Wednesday, December 17, 2025 4:48:25 PM Nicholas Smith



Sign Summary

Number	Specification Width	Height	Desc.
R2-1 (25 MPH)	24"	30"	SPEED LIMIT 25

Sign Summary

Number	Specification Width	Height	Desc.
R1-1	30"	30"	STOP
R1-3P	18"	6"	ALL WAY
W11-2	30"	30"	
W16-7PL	30"	18"	
R6-1R	36"	12"	ONE-WAY
R6-1L	36"	12"	ONE-WAY
R5-1	24"	24"	DO NOT ENTER
R7-8	12"	18"	RESERVED PARKING
R7-8P	12"	6"	VAN ACCESSIBLE
R1-2	36"	36"	YIELD
R3-17	24"	18"	BIKE LANE
R3-17BP	24"	8"	ENDS
OM1-3	18"	18"	
OM4-3	18"	18"	
W3-2	36"	36"	
R4-7	24"	30"	
R3-2	24"	24"	
R1-6	12"	36"	STOP LINE
OM-3L	12"	36"	

Symbol	Description	Material
T1	WHITE EDGE LINE (4", 90 MIL.)	THERMO
T2	WHITE SOLID LANE LINE (4", 90 MIL.)	THERMO
T4	3 FT. - 9 FT./SP WHITE MINISKIP (12" 90 MIL.)	THERMO
T13	YELLOW DOUBLE CENTER (4", 90 MIL.)	THERMO
T53	WHITE SOLID LANE LINE (12" 90 MIL.)	THERMO
T55	3 FT. - 3 FT./SP WHITE MINISKIP (12" 90 MIL.)	THERMO
T61	WHITE STOPBAR (24", 90 MIL.)	THERMO
T62	WHITE CROSSWALK LINE (24", 90 MIL.)	THERMO
T70	LEFT TURN ARROW (90 MIL.)	THERMO
T71	RIGHT TURN ARROW (90 MIL.)	THERMO
T72	STRAIGHT ARROW (90 MIL.)	THERMO
T75	COMBO. LEFT/RIGHT ARROW (90 MIL.)	THERMO
T90	BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL.)	THERMO
T91	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL.)	THERMO
T101	HANDICAP PARKING (90 MIL.)	THERMO
T103	YIELD LINE TRIANGLES (90 MIL.)	THERMO

Know what's **below.** **Call** before you dig.

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
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919.829.0328
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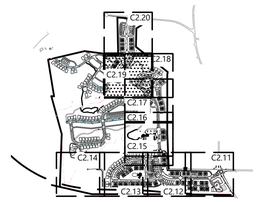


Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 2 (4 of 5)

ZMA-2-23

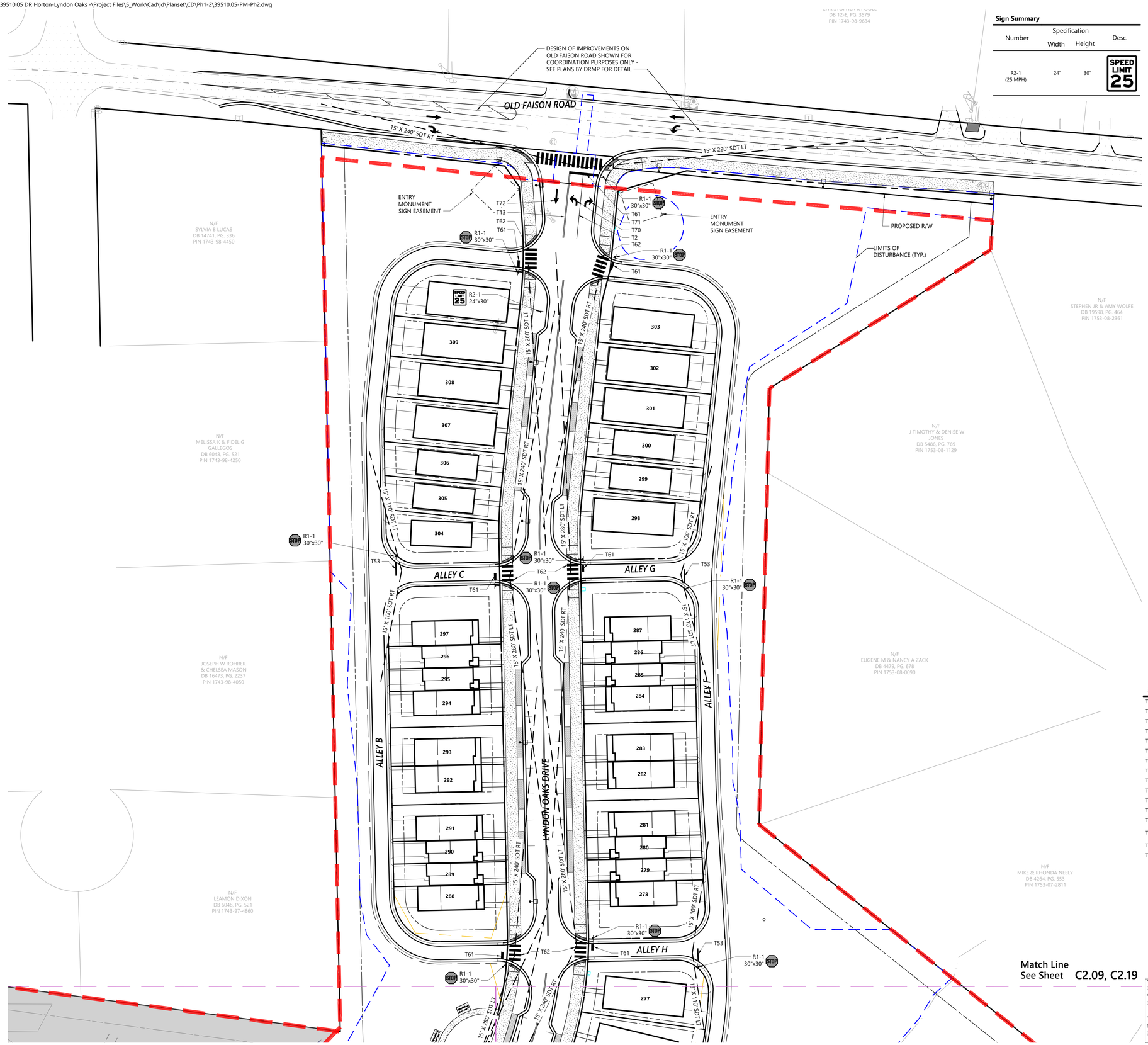
Drawing Number
C2.19

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 37 of 224

Project Number 39510.05

Saved Wednesday, December 17, 2025 4:47:16 PM NSMITH Plotted Wednesday, December 17, 2025 4:48:42 PM Nicholas Smith



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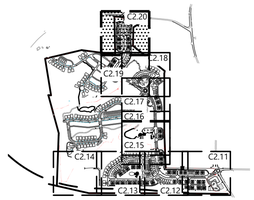

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0 20 40 80 Feet

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Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: January 17, 2025

Drawing Title
Pavement Marking and Signage Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number
C2.20

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 38 of 224

Project Number 39510.05

Parcel Table

Lot #	SF	Acerage
1	7200.00 s.f.	0.17
2	7200.00 s.f.	0.17
3	7730.74 s.f.	0.18
4	7931.57 s.f.	0.18
5	7944.40 s.f.	0.18
6	7931.57 s.f.	0.18
7	7974.43 s.f.	0.18
8	8400.04 s.f.	0.19
9	7200.00 s.f.	0.17
10	7200.00 s.f.	0.17
11	7200.00 s.f.	0.17
12	7637.61 s.f.	0.18
13	8204.48 s.f.	0.19
14	10775.37 s.f.	0.25
15	8567.00 s.f.	0.20
16	7200.00 s.f.	0.17
17	8400.00 s.f.	0.19
18	8400.00 s.f.	0.19
19	7200.00 s.f.	0.17
20	7200.00 s.f.	0.17
21	7200.00 s.f.	0.17
22	8428.63 s.f.	0.19
23	8406.96 s.f.	0.19

Parcel Table

Lot #	SF	Acerage
24	4298.17 s.f.	0.10
25	4196.87 s.f.	0.10
26	3913.16 s.f.	0.09
27	3716.18 s.f.	0.09
28	3708.00 s.f.	0.09
29	5611.54 s.f.	0.13
30	5611.54 s.f.	0.13
31	3708.00 s.f.	0.09
32	3708.00 s.f.	0.09
33	4596.01 s.f.	0.11
34	3847.71 s.f.	0.09
35	3541.71 s.f.	0.08
36	3090.00 s.f.	0.07
37	3090.00 s.f.	0.07
38	3708.00 s.f.	0.09
39	3708.00 s.f.	0.09
40	3708.00 s.f.	0.09
41	4978.32 s.f.	0.11
42	2889.24 s.f.	0.07
43	1800.00 s.f.	0.04
44	1800.00 s.f.	0.04
45	2910.00 s.f.	0.07
46	3089.99 s.f.	0.07

Parcel Table

Lot #	SF	Acerage
47	3090.00 s.f.	0.07
48	2909.99 s.f.	0.07
49	1800.00 s.f.	0.04
50	1800.00 s.f.	0.04
51	4139.79 s.f.	0.10
52	4163.84 s.f.	0.10
53	1812.61 s.f.	0.04
54	1812.61 s.f.	0.04
55	3156.96 s.f.	0.07
56	3156.96 s.f.	0.07
57	1812.61 s.f.	0.04
58	1812.61 s.f.	0.04
59	4294.63 s.f.	0.10
60	4123.46 s.f.	0.09
61	1800.00 s.f.	0.04
62	1800.00 s.f.	0.04
63	2910.04 s.f.	0.07
64	2909.94 s.f.	0.07
65	1800.00 s.f.	0.04
66	1800.00 s.f.	0.04
67	2910.04 s.f.	0.07
68	2919.68 s.f.	0.07
69	1800.00 s.f.	0.04

Parcel Table

Lot #	SF	Acerage
70	1800.00 s.f.	0.04
71	3780.50 s.f.	0.09
72	3764.03 s.f.	0.09
73	1800.00 s.f.	0.04
74	1800.00 s.f.	0.04
75	2910.09 s.f.	0.07
76	2909.90 s.f.	0.07
77	1800.00 s.f.	0.04
78	1800.00 s.f.	0.04
79	2910.09 s.f.	0.07
80	2909.90 s.f.	0.07
81	1800.00 s.f.	0.04
82	1800.00 s.f.	0.04
83	3777.71 s.f.	0.09
84	4121.69 s.f.	0.09
85	1799.88 s.f.	0.04
86	1799.90 s.f.	0.04
87	3715.30 s.f.	0.09
88	3988.58 s.f.	0.09
89	2005.89 s.f.	0.05
90	2027.05 s.f.	0.05
91	6631.35 s.f.	0.15
92	4429.53 s.f.	0.10

Parcel Table

Lot #	SF	Acerage
93	3043.75 s.f.	0.07
94	3689.81 s.f.	0.08
95	5017.81 s.f.	0.12
96	5924.94 s.f.	0.14
97	3399.81 s.f.	0.08
98	3257.94 s.f.	0.07
99	3185.16 s.f.	0.07
100	3171.33 s.f.	0.07
101	3805.49 s.f.	0.09
102	3805.49 s.f.	0.09
103	5178.08 s.f.	0.12
104	4597.59 s.f.	0.11
105	3757.75 s.f.	0.09
106	3157.23 s.f.	0.07
107	3180.66 s.f.	0.07
108	3515.49 s.f.	0.08
109	4487.71 s.f.	0.10
110	4530.30 s.f.	0.10
111	3907.12 s.f.	0.09
112	6532.24 s.f.	0.15
113	4907.06 s.f.	0.11
114	3622.63 s.f.	0.08
115	4668.99 s.f.	0.11

Parcel Table

Lot #	SF	Acerage
116	4635.61 s.f.	0.11
117	4465.78 s.f.	0.10
118	4654.75 s.f.	0.11
119	4148.71 s.f.	0.10
120	3233.33 s.f.	0.07
121	2000.00 s.f.	0.05
122	3594.98 s.f.	0.08
123	3594.98 s.f.	0.08
124	2000.00 s.f.	0.05
125	3233.33 s.f.	0.07
126	3233.33 s.f.	0.07
127	2000.00 s.f.	0.05
128	3594.98 s.f.	0.08
129	3594.98 s.f.	0.08
130	2000.00 s.f.	0.05
131	3233.33 s.f.	0.07
132	3233.33 s.f.	0.07
133	2000.00 s.f.	0.05
134	2000.00 s.f.	0.05
135	3233.32 s.f.	0.07
136	3236.16 s.f.	0.07
137	2020.57 s.f.	0.05
138	3350.61 s.f.	0.08

Parcel Table

Lot #	SF	Acerage
139	2824.16 s.f.	0.06
140	1800.00 s.f.	0.04
141	2910.00 s.f.	0.07
142	2910.00 s.f.	0.07
143	1800.00 s.f.	0.04
144	2824.16 s.f.	0.06
145	2824.16 s.f.	0.06
146	1800.00 s.f.	0.04
147	2910.00 s.f.	0.07
148	2910.00 s.f.	0.07
149	1800.00 s.f.	0.04
150	2824.16 s.f.	0.06
151	2824.16 s.f.	0.06
152	1800.00 s.f.	0.04
153	1800.00 s.f.	0.04
154	2910.00 s.f.	0.07
155	2910.00 s.f.	0.07
156	1800.00 s.f.	0.04
157	1800.00 s.f.	0.04
158	2824.16 s.f.	0.06
159	2824.55 s.f.	0.06
160	1800.00 s.f.	0.04
161	1800.00 s.f.	0.04

Parcel Table

Lot #	SF	Acerage
162	2910.00 s.f.	0.07
163	4207.86 s.f.	0.10
164	1800.00 s.f.	0.04
165	1800.00 s.f.	0.04
166	2910.00 s.f.	0.07
167	2909.99 s.f.	0.07
168	1800.00 s.f.	0.04
169	1800.00 s.f.	0.04
170	2910.00 s.f.	0.07
171	2909.99 s.f.	0.07
172	1800.00 s.f.	0.04
173	1800.00 s.f.	0.04
174	2897.39 s.f.	0.07
175	3144.75 s.f.	0.07
176	1996.47 s.f.	0.05
177	2000.00 s.f.	0.05
178	3233.33 s.f.	0.07
179	3233.33 s.f.	0.07
180	2000.00 s.f.	0.05
181	2000.00 s.f.	0.05
182	3904.38 s.f.	0.09
183	5102.23 s.f.	0.12
184	2000.00 s.f.	0.05

Parcel Table

Lot #	SF	Acerage
185	3233.33 s.f.	0.07
186	3233.33 s.f.	0.07
187	2000.00 s.f.	0.05
188	3233.33 s.f.	0.07
189	3600.00 s.f.	0.08
190	3000.00 s.f.	0.07
191	3000.00 s.f.	0.07
192	3000.00 s.f.	0.07
193	3600.00 s.f.	0.08
194	3233.33 s.f.	0.07
195	2000.00 s.f.	0.05
196	2000.00 s.f.	0.05
197	3233.33 s.f.	0.07
198	3471.06 s.f.	0.08
199	1998.61 s.f.	0.05
200	1978.86 s.f.	0.05
201	3103.98 s.f.	0.07
500	80647.05 s.f.	1.85

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Designed by	Checked by
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Issued for: Approval
Date: January 17, 2025

Drawing Title
Parcel Table Phase 1

ZMA-2-23
Drawing Number

C2.21

Sheet 39 of 224

Project Number
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12/15/2025

Saved Monday, October 6, 2025 5:42:28 PM NSMITH Plotted Monday, December 15, 2025 2:27:27 PM Walker Johnson

c:\AMS\ACCDocs\VHB\39510.05 dr horton-lyndon oaks -\project files\5_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-PT.dwg

Parcel Table

Lot #	SF	Acerage
202	3722.93 s.f.	0.09
203	1950.00 s.f.	0.04
204	1950.00 s.f.	0.04
205	3152.49 s.f.	0.07
206	3152.50 s.f.	0.07
207	1950.00 s.f.	0.04
208	1950.00 s.f.	0.04
209	3456.00 s.f.	0.08
210	4245.33 s.f.	0.10
211	1870.42 s.f.	0.04
212	1895.10 s.f.	0.04
213	3424.34 s.f.	0.08
214	3466.40 s.f.	0.08
215	1950.17 s.f.	0.04
216	1950.48 s.f.	0.04
217	3357.11 s.f.	0.08
218	3417.24 s.f.	0.08
219	1963.33 s.f.	0.05
220	2026.38 s.f.	0.05
221	5127.89 s.f.	0.12

Parcel Table

Lot #	SF	Acerage
222	3292.45 s.f.	0.08
223	3244.47 s.f.	0.07
224	3243.01 s.f.	0.07
225	4324.01 s.f.	0.10
226	7305.71 s.f.	0.17
227	5426.30 s.f.	0.12
228	4189.77 s.f.	0.10
229	3752.10 s.f.	0.09
230	3669.92 s.f.	0.08
231	3474.16 s.f.	0.08
232	6749.30 s.f.	0.15
233	3090.26 s.f.	0.07
234	2910.24 s.f.	0.07
235	1800.15 s.f.	0.04
236	1800.14 s.f.	0.04
237	2824.38 s.f.	0.06
238	6233.05 s.f.	0.14
239	7920.04 s.f.	0.18
240	9040.25 s.f.	0.21
241	5039.84 s.f.	0.12

Parcel Table

Lot #	SF	Acerage
242	3889.23 s.f.	0.09
243	4299.91 s.f.	0.10
244	3751.32 s.f.	0.09
245	3751.32 s.f.	0.09
246	3751.32 s.f.	0.09
247	3751.32 s.f.	0.09
248	3738.49 s.f.	0.09
249	3751.32 s.f.	0.09
250	4503.55 s.f.	0.10
251	6504.74 s.f.	0.15
252	7817.58 s.f.	0.18
253	7817.58 s.f.	0.18
254	7817.58 s.f.	0.18
255	7895.08 s.f.	0.18
256	10844.00 s.f.	0.25
257	4014.14 s.f.	0.09
258	2000.00 s.f.	0.05
259	2000.00 s.f.	0.05
260	3233.33 s.f.	0.07
261	3233.33 s.f.	0.07

Parcel Table

Lot #	SF	Acerage
262	2000.00 s.f.	0.05
263	2001.74 s.f.	0.05
264	4988.68 s.f.	0.11
265	4014.14 s.f.	0.09
266	2000.00 s.f.	0.05
267	2000.00 s.f.	0.05
268	3233.33 s.f.	0.07
269	3233.33 s.f.	0.07
270	2000.00 s.f.	0.05
271	2000.00 s.f.	0.05
272	4749.36 s.f.	0.11
273	5565.61 s.f.	0.13
274	4906.22 s.f.	0.11
275	5618.07 s.f.	0.13
276	5693.31 s.f.	0.13
277	5684.30 s.f.	0.13
278	5098.11 s.f.	0.12
279	2053.07 s.f.	0.05
280	2037.74 s.f.	0.05
281	3261.93 s.f.	0.07

Parcel Table

Lot #	SF	Acerage
282	3434.85 s.f.	0.08
283	3433.33 s.f.	0.08
284	3233.33 s.f.	0.07
285	2000.00 s.f.	0.05
286	2000.00 s.f.	0.05
287	5137.87 s.f.	0.12
288	4636.92 s.f.	0.11
289	2000.00 s.f.	0.05
290	2000.00 s.f.	0.05
291	3233.33 s.f.	0.07
292	3433.33 s.f.	0.08
293	3433.33 s.f.	0.08
294	3233.33 s.f.	0.07
295	2000.00 s.f.	0.05
296	2000.00 s.f.	0.05
297	5137.87 s.f.	0.12
298	5720.27 s.f.	0.13
299	3150.00 s.f.	0.07
300	3150.00 s.f.	0.07
301	3780.00 s.f.	0.09

Parcel Table

Lot #	SF	Acerage
302	3780.00 s.f.	0.09
303	5403.44 s.f.	0.12
304	4106.20 s.f.	0.09
305	3071.89 s.f.	0.07
306	3176.29 s.f.	0.07
307	4373.79 s.f.	0.10
308	3962.11 s.f.	0.09
309	3962.92 s.f.	0.09
310	5158.20 s.f.	0.12
501	25497.15 s.f.	0.59

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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administratoe

Drawing Title: Parcel Table Phase 2

ZMA-2-23

Drawing Number: C2.22

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 40 of 224

Project Number: 39510.05

Saved Monday, October 6, 2025 5:42:28 PM NSMITH Plotted Monday, December 15, 2025 2:27:44 PM Walker Johnson



Site Notes

1. SEE SHEET C0.01 FOR FOR GENERAL AND GRADING NOTES.
2. ALL PERMITS SHALL BE OBTAINED FROM THE TOWN OF KNIGHTDALE, WAKE COUNTY, NCDOT, NCDEQ, AND USACE AS APPLICABLE PRIOR TO BEGINNING CONSTRUCTION.
3. AT THE CONCLUSION OF THE PROJECT ALL SCMS INSTALLED ON-SITE MUST BE CERTIFIED BY A DESIGN PROFESSIONAL AND THE TOWN OF KNIGHTDALE ENGINEERING DIVISION MUST RECEIVE ALL AS-BUILT DRAWINGS PRIOR TO RECEIVING THE CERTIFICATE OF OCCUPANCY.
4. ALL SLOPES TO BE VEGETATED WITH GRASS SHALL BE A MAXIMUM OF 3:1, ANY SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH MATTING AND A MAINTENANCE FREE VEGETATION.
5. ALL ROOF DRAINS SHALL BE DIRECTED TO THE STORM DRAIN SYSTEM
6. AT THE CONCLUSION OF THE PROJECT ALL SCMS INSTALLED ON-SITE MUST BE CERTIFIED BY A DESIGN PROFESSIONAL AND THE TOWN OF KNIGHTDALE ENGINEERING DIVISION MUST RECEIVE ALL AS-BUILT DRAWINGS PRIOR TO RECEIVING THE PROJECT CLOSEOUT.
7. TOTAL DISTURBED AREA IS 3,398,147 SF (78.0 AC)

Viewport Number	Sheets
1	C3.01
2	C3.02
3	C3.03
4	C3.04
5	C3.05
6	C3.06
7	C3.07
8	C3.08
9	C3.09
10	C3.10

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
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- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 100 200 400Feet

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Overall Grading and Drainage Plan

ZMA-2-23

Drawing Number
C3.00

Sheet 41 of 224

Project Number
39510.05

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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Match Line
See Sheet C3.02

N/F
DONALD W & JUDY S KAY
DB 4405, PG. 808
PIN 1753-15-2438

N/F
DONALD W & JUDY S KAY
DB 2866, PG. 724
PIN 1753-15-2326

N/F
JACKIE LEE
DB 2487, PG. 536
PIN 1753-15-9140

HUNDON STREAM PARKWAY

WIDE STREAM ALLEY

COW PATH ALLEY

SAFE PASS ALLEY

BETHLEHEM ROAD

Bethlehem Road
60' Public Right-of-Way
L. BM1001 PG.1303

COMMERCIAL BUILDING
FFE= TBD

2000 SF PEDESTRIAN PLAZA

OPTIONAL PARK AREA

7734 SF POCKET PARK

CONTRACTOR TO ROUGH-GRADE LOT FOR FUTURE CONSTRUCTION

SEE INSET FOR TEMPORARY MAIL KIOSK PARKING AND DRIVE AISLE

COMMERCIAL PHASE / LOT

MEET & MATCH PROPOSED OFFSITE GRADING

MEET & MATCH PROPOSED OFFSITE GRADING (TYP)

LIMITS OF DISTURBANCE (TYP.)

15-FT CLEARANCE RADIUS (TYP)

Inset
Temporary Mail Kiosk

COMMERCIAL PHASE / LOT

AS PART OF PHASE 1, THE COMMERCIAL/RETAIL LOT WILL BE ROUGH-GRADED AND UTILITY STUBS WILL BE PROVIDED SHOWN HEREIN. THE PARKING AND BUILDING LAYOUT SHOWN ARE CONCEPTUAL IN NATURE AND WILL BE REDEFINED BY THE FUTURE LANDOWNER OF THE COMMERCIAL LOT IN THE FUTURE.

PHASE 1 TEMPORARY MAIL KIOSK

PHASE 1 TEMPORARY PARKING AND DRIVE AISLE FOR MAIL KIOSK

Key
1" = 1,500'

Site Legend

- WETLANDS
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- PROPERTY LINE
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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

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Land Use Administrator

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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Grading and Drainage Plan
Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C3.01

Sheet 42 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Thursday, December 18, 2025 10:48:33 AM MMEZA Plotted Thursday, December 18, 2025 10:49:34 AM Marco Meza

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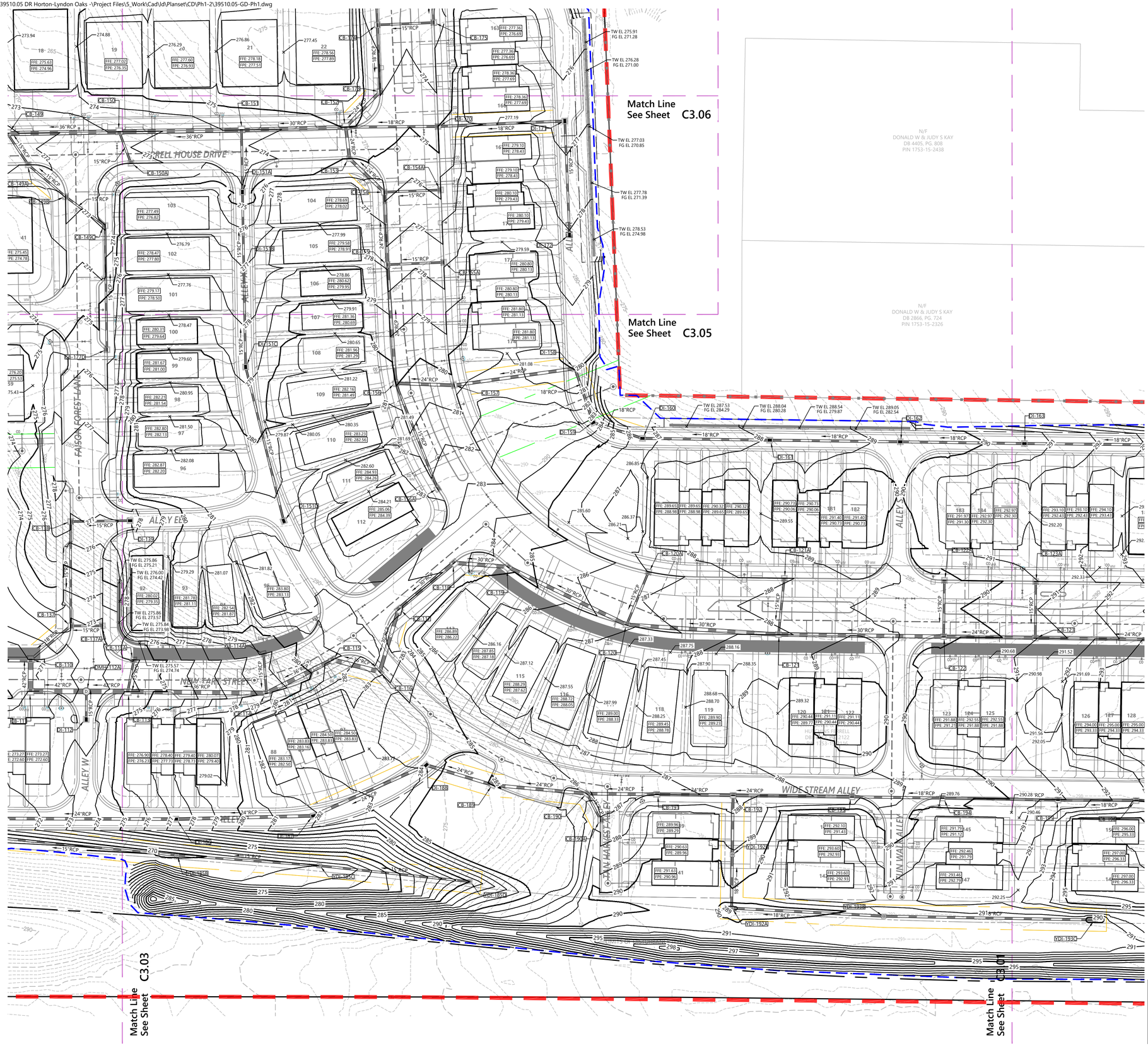

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Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
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- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Grading and Drainage Plan Phase 1 (2 of 5)

ZMA-2-23

Drawing Number: C3.02

Sheet 43 of 224

Project Number: 39510.05

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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Land Use Administrator

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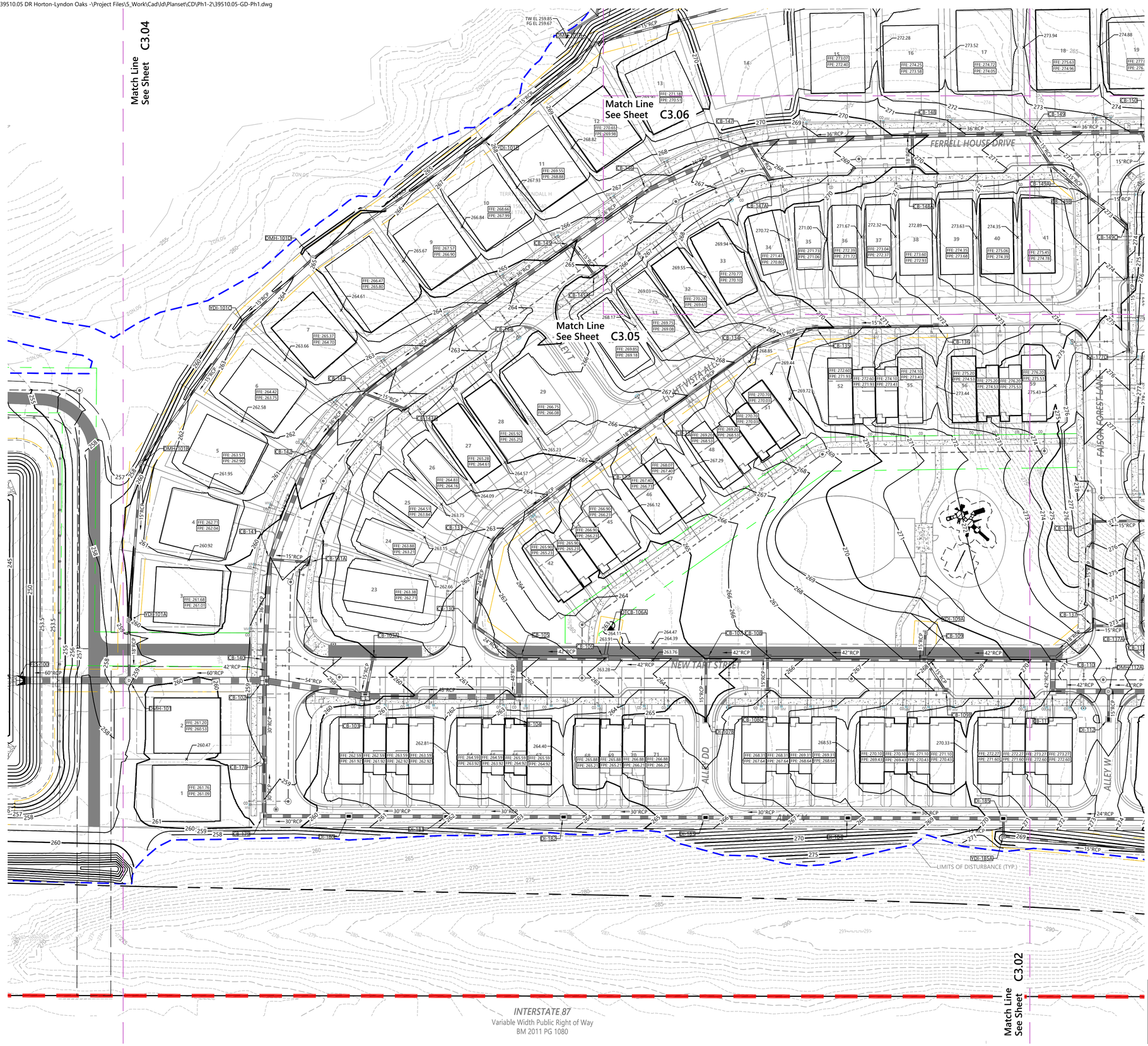
12/15/2025

Saved Thursday, December 18, 2025 10:48:33 AM MMEZA Plotted Thursday, December 18, 2025 10:50:09 AM Marco Meza



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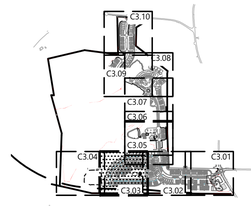

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Grading and Drainage Plan Phase 1 (3 of 5)

ZMA-2-23
Drawing Number

C3.03

Sheet 44 of 224

Project Number 39510.05

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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Town Engineer

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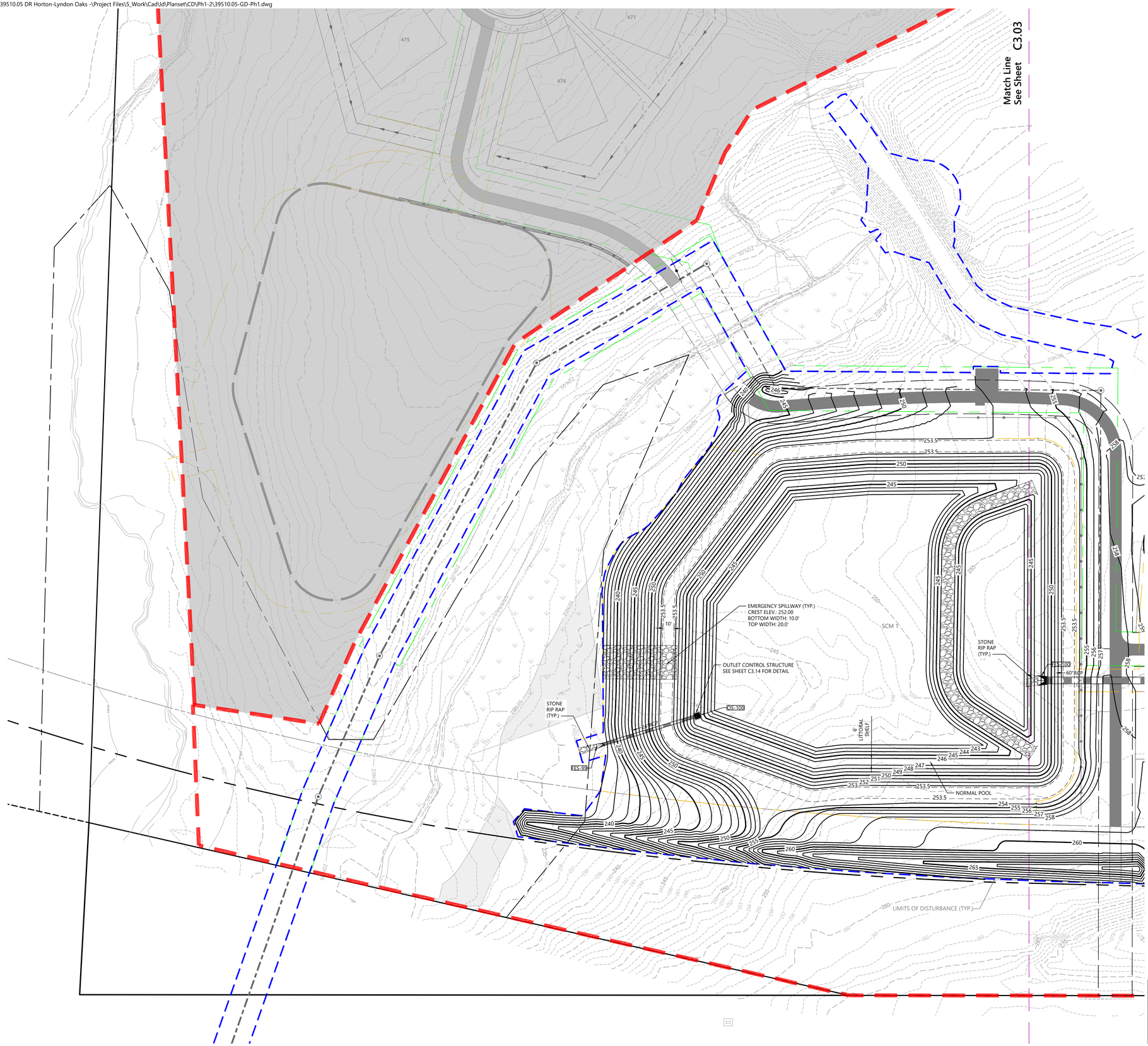
By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025



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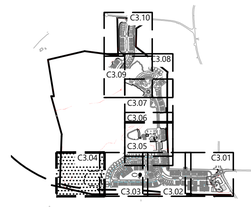

Site Legend

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

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By: _____ Date: _____
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By: _____ Date: _____
Land Use Administrator

Drawing Title
Grading and Drainage Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C3.04

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 45 of 224

Project Number 39510.05

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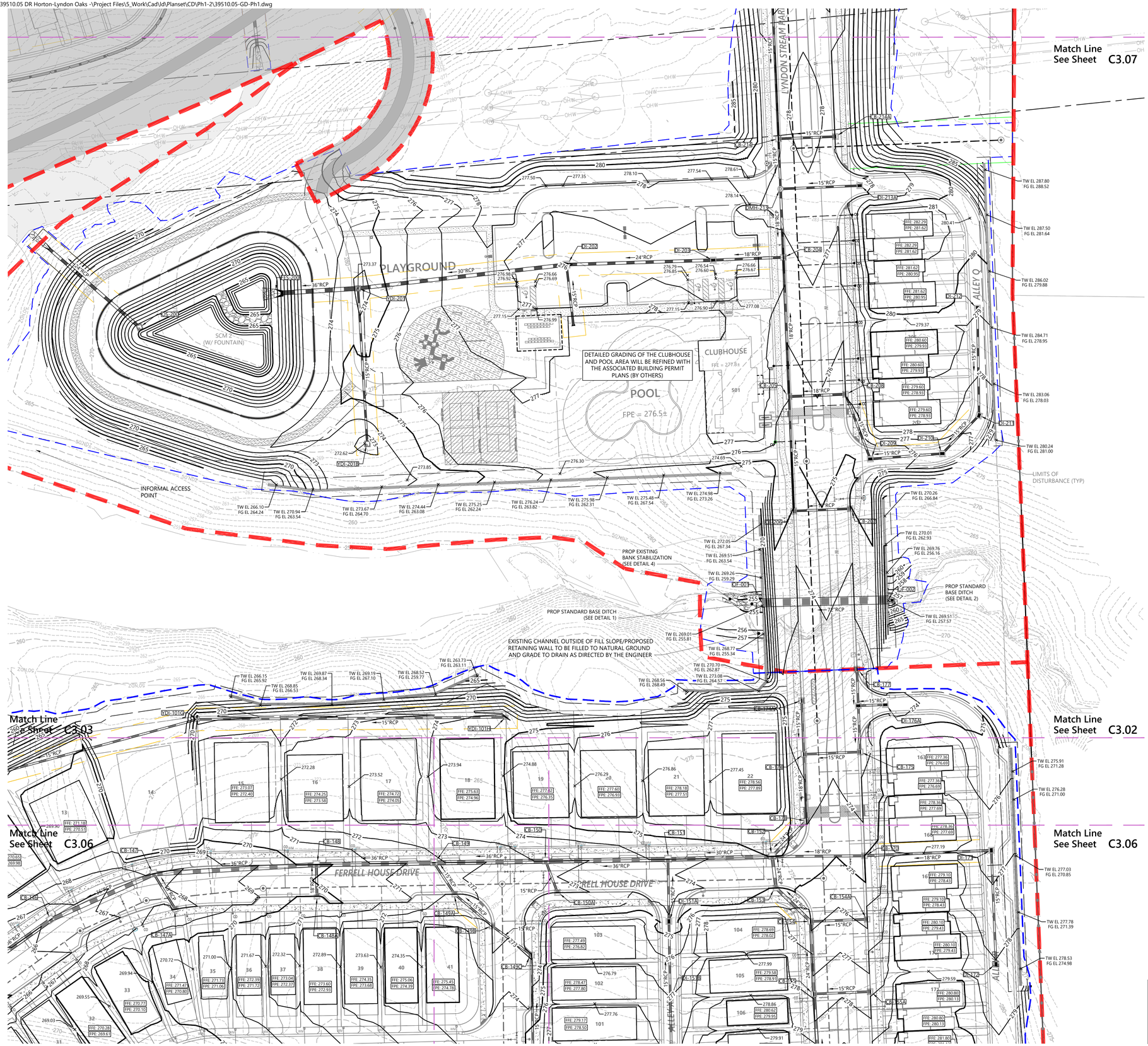

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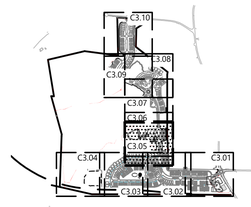

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Grading and Drainage Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C3.05

Sheet 46 of 224

Project Number
39510.05

811 Know what's below. Call before you dig.

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 5:42:43 PM MSHERRILL Plotted Friday, December 19, 2025 1:49:06 PM Marco Meza

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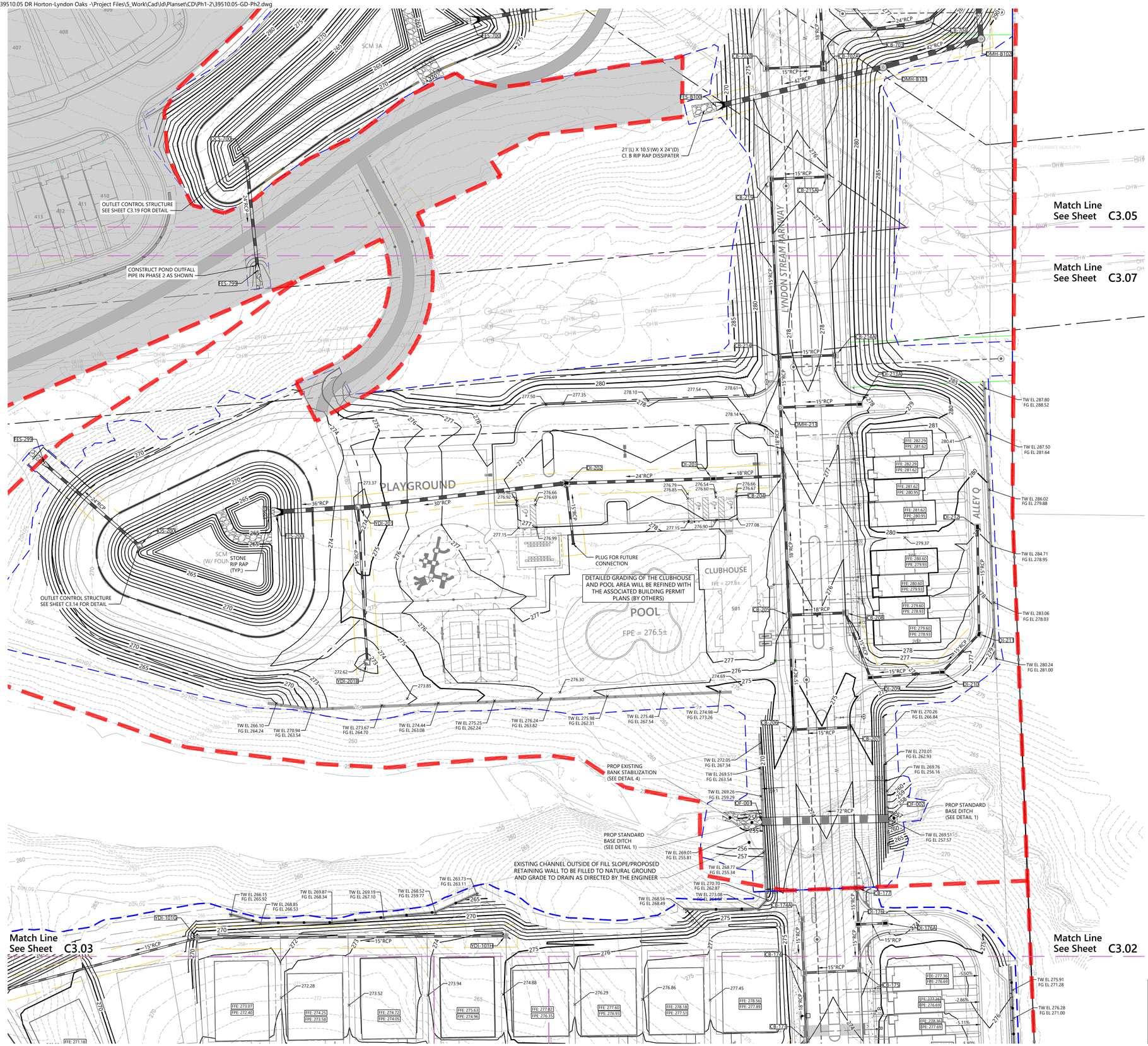

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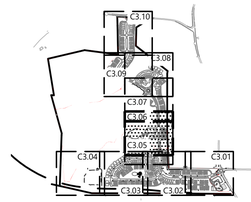

Key

1" = 1,500'

Site Legend

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- PROPERTY LINE
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0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Grading and Drainage Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number
C3.06

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 47 of 224

Project Number
39510.05

Saved Thursday, December 18, 2025 10:52:40 AM MMEZA Plotted Friday, December 19, 2025 2:37:49 PM Marco Meza

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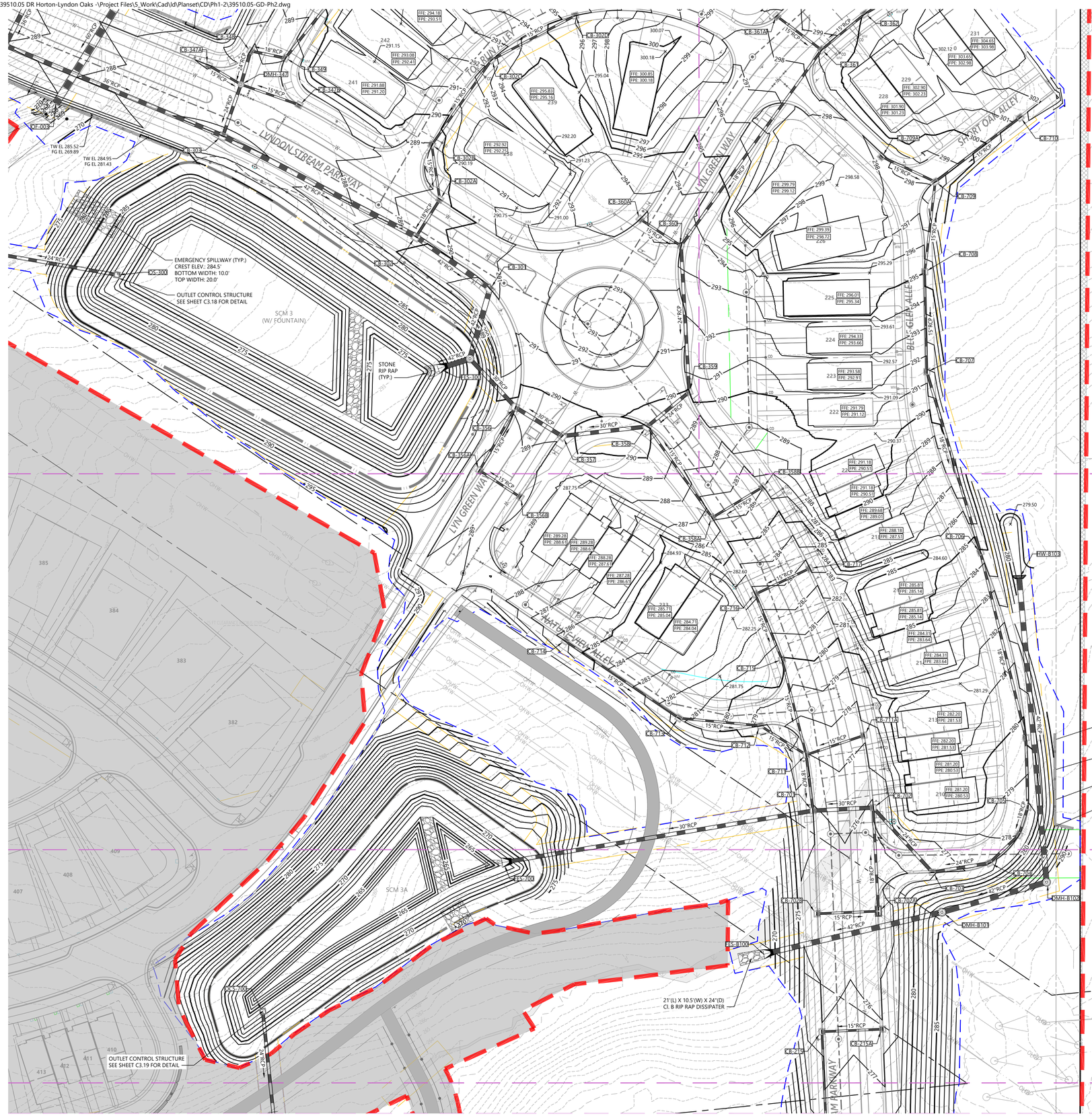

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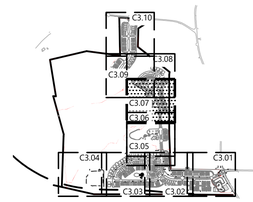

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title

Grading and Drainage Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number

C3.07

Sheet 48 of 224

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Project Number: 39510.05

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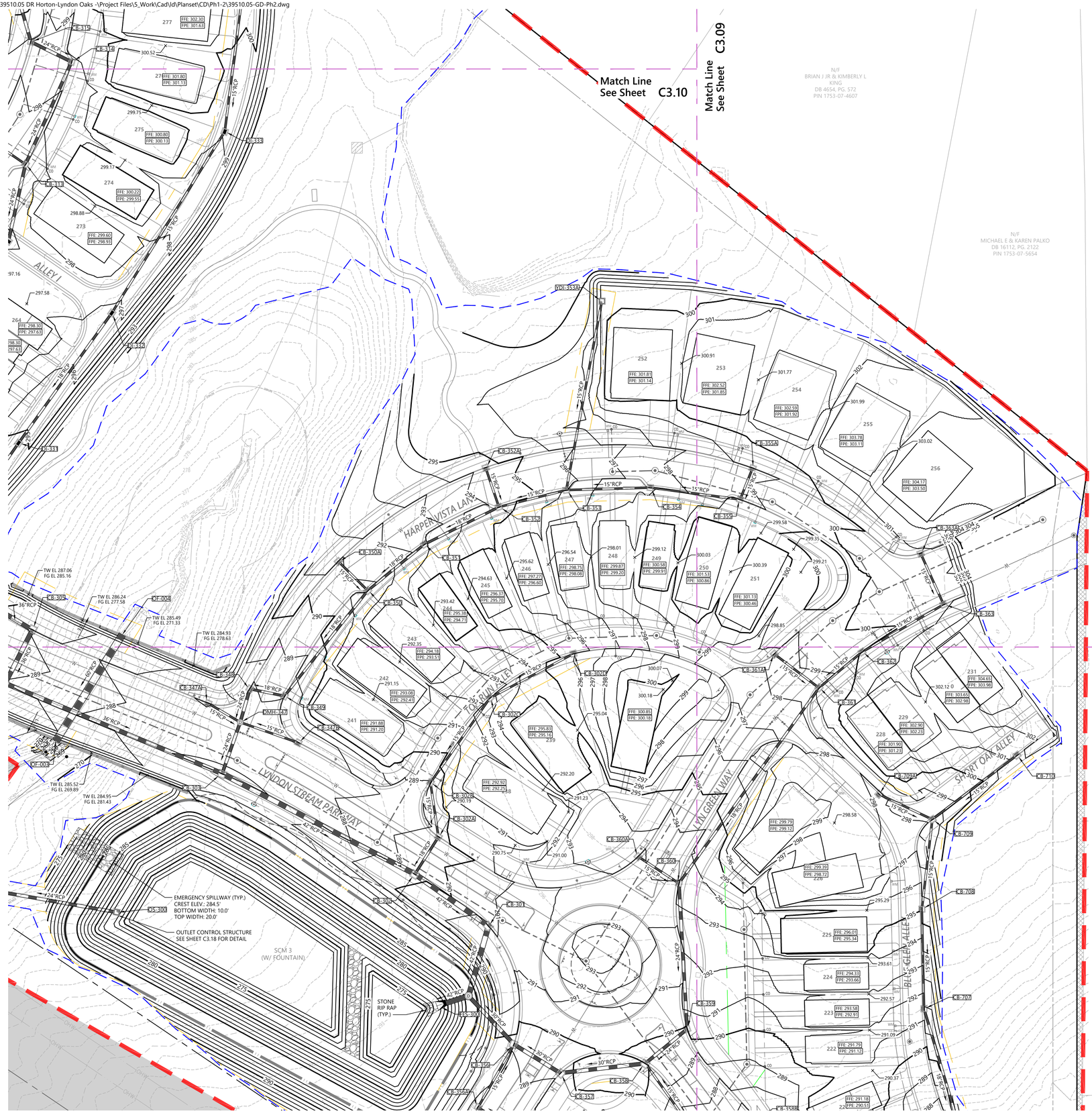

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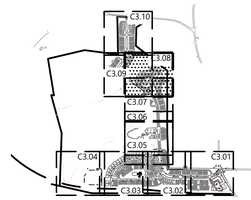

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
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- MATCH LINE
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- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Grading and Drainage Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number
C3.08

Sheet 49 of 224

Project Number
39510.05

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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Corp. # C-3705



Key

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Site Legend

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- PHASE LIMITS
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- GREENWAY
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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Grading and Drainage Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C3.09

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 50 of 224

Project Number
39510.05



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Corp. # C-3705



Key

1" = 1,500'

Site Legend

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Grading and Drainage Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number
C3.10

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 51 of 224

Project Number 39510.05

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
CB-102	258.568	249.81 (54") 250.52 (42") 251.40 (30")	248.60 (60")	DMH-101
CB-103	259.730	251.27 (48") 253.30 (15")	251.17 (54")	CB-102
CB-103A	259.980		253.60 (15")	CB-103
CB-104	262.065	253.90 (48")	253.80 (48")	CB-103
CB-105	262.198	255.24 (24") 255.32 (42")	254.25 (48")	CB-104
CB-106	263.493	256.10 (42") 257.81 (24")	256.00 (42")	CB-105
CB-107	264.535	256.71 (42") 259.79 (15")	256.61 (42")	CB-106
CB-108	265.957	260.74 (15") 257.87 (42")	257.77 (42")	CB-107
CB-108C	265.957		261.00 (15")	CB-108
CB-109	268.333	263.16 (15") 262.96 (15") 260.56 (42")	260.46 (42")	CB-108
CB-109B	268.468		263.50 (15")	CB-109
CB-110	271.074	265.98 (18") 263.40 (42")	263.30 (42")	CB-109
CB-111	270.780	263.64 (42")	263.54 (42")	CB-110
CB-113	274.075	269.05 (15") 267.50 (36")	266.70 (42")	DMH-112A
CB-113A	274.288		269.26 (15")	CB-113
CB-114	278.807	271.59 (36") 273.50 (15")	271.49 (36")	CB-113
CB-114A	279.146		273.76 (15")	CB-114
CB-115	280.827	273.99 (36")	273.89 (36")	CB-114
CB-116	282.825	274.95 (30")	274.85 (36")	CB-115
CB-117	282.935	276.21 (30")	276.11 (30")	CB-116
CB-118	283.517	277.59 (30")	277.49 (30")	CB-117
CB-119	284.848	278.55 (30")	278.45 (30")	CB-118
CB-120	286.898	281.60 (15") 279.92 (30")	279.82 (30")	CB-119
CB-120A	286.982		282.00 (15")	CB-120
CB-121	287.868	282.90 (15") 281.37 (30")	281.27 (30")	CB-120
CB-121A	288.000		283.40 (15")	CB-121
CB-122	289.336	284.38 (15") 284.00 (24")	282.83 (30")	CB-121
CB-122A	289.834		284.75 (15")	CB-122
CB-123	290.973	285.62 (15") 285.28 (24")	285.18 (24")	CB-122
CB-123A	290.968		286.00 (15")	CB-123
CB-124	294.991	288.60 (24") 289.80 (15")	288.50 (24")	CB-123
CB-124A	295.001		290.18 (15")	CB-124
CB-125	297.570	291.13 (24")	291.03 (24")	CB-124
CB-126	299.382	293.92 (15") 292.94 (24")	292.84 (24")	CB-125
CB-126A	299.048		294.30 (15")	CB-126
CB-127	301.973	297.21 (15") 297.30 (15") 293.94 (24")	293.84 (24")	CB-126
CB-127A	302.519		297.60 (15")	CB-127
CB-128	304.434	298.99 (15")	298.89 (15")	CB-127
CB-129	305.987		300.73 (15")	CB-128
CB-130	261.588	256.16 (24")	255.60 (24")	CB-105
CB-131	262.887	258.02 (18")	257.45 (24")	CB-130
CB-132	265.581	259.87 (18")	259.77 (18")	CB-131
CB-133	266.894	261.64 (18")	261.54 (18")	CB-132
CB-134	268.913	264.36 (15")	264.20 (18")	CB-133
CB-135	270.146	265.61 (15")	265.51 (15")	CB-134
CB-136	272.286		267.75 (15")	CB-135
CB-137	273.000	268.54 (15") 267.79 (15")	267.69 (18")	CB-110
CB-137A	273.000		268.00 (15")	CB-137
CB-138	277.278	272.10 (15")	272.00 (15")	CB-137
CB-140	258.595	250.71 (36")	250.61 (42")	CB-102
CB-141	259.000	251.70 (36") 254.07 (15")	251.60 (36")	CB-140
CB-141A	259.415		254.25 (15")	CB-141
CB-142	260.885	253.19 (36")	253.09 (36")	CB-141
CB-143	261.960	254.76 (36") 256.90 (15")	254.66 (36")	CB-142
CB-143A	262.015		257.10 (15")	CB-143

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
CB-144	263.437	256.24 (36")	256.14 (36")	CB-143
CB-145	265.000	258.44 (36") 259.47 (15")	257.84 (36")	CB-144
CB-145A	265.000		260.16 (15")	CB-145
CB-146	266.655	259.80 (36")	259.70 (36")	CB-145
CB-147	268.000	260.80 (36") 262.99 (15")	260.70 (36")	CB-146
CB-147A	268.173		263.18 (15")	CB-147
CB-148	270.000	263.14 (36") 264.10 (18")	263.04 (36")	CB-147
CB-148A	270.000		264.40 (18")	CB-148
CB-149	271.865	265.10 (36") 266.70 (15")	265.00 (36")	CB-148
CB-149A	272.119	267.13 (15")	267.03 (15")	CB-149
CB-149B	272.989	267.67 (15")	267.57 (15")	CB-149A
CB-149C	273.414	268.20 (15")	268.10 (15")	CB-149B
CB-150	273.116	265.69 (36") 267.84 (15")	265.59 (36")	CB-149
CB-150A	273.000		268.00 (15")	CB-150
CB-151	274.000	266.38 (30") 268.06 (15")	266.28 (36")	CB-150
CB-152	275.041	267.50 (24") 266.97 (24") 268.35 (18")	266.87 (30")	CB-151
CB-153	275.062	268.60 (24")	268.50 (24")	CB-152
CB-154	276.290	269.70 (24") 270.75 (15")	269.60 (24")	CB-153
CB-154A	276.000		271.00 (15")	CB-154
CB-155	277.898	271.81 (24") 272.70 (15")	271.71 (24")	CB-154
CB-155A	277.898		272.95 (15")	CB-155
CB-156	280.442	272.75 (24") 275.50 (15")	272.65 (24")	CB-155
CB-156A	282.742		277.40 (15")	CB-156
CB-157	280.712	273.23 (24")	273.13 (24")	CB-156
CB-170	275.006	269.26 (18")	269.16 (18")	CB-152
CB-173	274.448	267.29 (18")	267.19 (24")	CB-152
CB-174	273.820	267.68 (15") 267.68 (15")	267.58 (18")	CB-173
CB-174A	273.200		267.92 (15")	CB-174
CB-175	273.820	268.03 (15")	267.93 (15")	CB-174
CB-177	273.709		268.51 (15")	DI-176
CB-177D	275.737		270.40 (15")	CB-149C
CB-178	258.961	251.88 (30")	251.78 (30")	CB-102
CB-179	259.716	252.87 (30")	252.77 (30")	CB-178
CB-189	284.930	278.91 (24")	278.81 (24")	DI-188
CB-190	286.257	280.68 (24") 281.50 (15")	280.58 (24")	CB-189
CB-190A	287.455		281.76 (15")	CB-190
CB-191	287.000	281.40 (24")	281.30 (24")	CB-190
CB-192	287.787	282.64 (24") 283.00 (18")	282.54 (24")	CB-191
CB-193	288.837	283.33 (18")	283.23 (24")	CB-192
CB-194	289.565	284.43 (18")	284.33 (18")	CB-193
CB-195	291.342	285.82 (18")	285.72 (18")	CB-194
CB-196	293.080	287.64 (18")	287.54 (18")	CB-195
CB-197	295.475	289.75 (18")	289.65 (18")	CB-196
CB-198	297.176	291.57 (18") 291.57 (15")	291.47 (18")	CB-197
CB-199	300.682		294.19 (18")	CB-198
DI-107B	265.039		260.20 (15")	CB-107
DI-112	272.562		267.19 (15")	DMH-112A
DI-139	277.536		272.50 (15")	CB-138
DI-151A	274.309	269.72 (15")	269.62 (15")	CB-151
DI-151B	277.020	271.70 (15")	271.60 (15")	DI-151A
DI-151C	278.692	273.32 (15")	273.22 (15")	DI-151B
DI-151D	281.433		275.78 (15")	DI-151C
DI-158	279.955	274.60 (18")	274.05 (24")	CB-157
DI-159	283.328	275.41 (18")	275.31 (18")	DI-158
DI-160	286.508	276.43 (18")	276.33 (18")	DI-159

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
DI-161	288.061	278.79 (18")	278.69 (18")	DI-160
DI-162	289.237	281.20 (18")	281.10 (18")	DI-161
DI-163	290.465	283.50 (18")	283.40 (18")	DI-162
DI-164	293.139	285.86 (15")	285.76 (18")	DI-163
DI-165	295.840	288.71 (15")	288.61 (15")	DI-164
DI-166	298.813	291.06 (15")	290.96 (15")	DI-165
DI-167	301.963	293.65 (15")	293.55 (15")	DI-166
DI-168	303.821	295.10 (15")	295.10 (15")	DI-167
DI-171	276.544	270.49 (15")	270.39 (18")	CB-170
DI-172	278.060		271.50 (15")	DI-171
DI-176	273.183	268.34 (15") 268.34 (15")	268.24 (15")	CB-175
DI-176A	273.543		268.46 (15")	DI-176
DI-180	260.499	254.10 (30")	254.00 (30")	CB-179
DI-181	261.919	255.50 (30")	255.40 (30")	DI-180
DI-182	263.623	257.15 (30")	257.05 (30")	DI-181
DI-183	265.687	259.14 (30")	259.04 (30")	DI-182
DI-184	267.758	261.13 (30")	261.03 (30")	DI-183
DI-185	270.363	263.30 (24") 263.85 (15")	263.20 (30")	DI-184
DI-186	277.213	270.31 (24")	270.21 (24")	DI-185
DI-187	281.883	275.28 (24")	275.18 (24")	DI-186
DI-188	284.111	277.58 (24")	277.48 (24")	DI-187
DMH-101	258.839	248.00 (60") 251.68 (18")	248.00 (60")	FES-100
DMH-101B	258.651	254.37 (15")	254.27 (15")	YDI-101A
DMH-101D	264.857	258.15 (15")	258.05 (15")	YDI-101C
DMH-101F	267.842	263.06 (15")	262.96 (15")	YDI-101E
DMH-112A	272.208	264.86 (42") 267.00 (15")	264.76 (42")	CB-111
FES-99	238.750	236.00 (24")		
FES-100	253.500	247.50 (60")		
OF-001	260.642	253.70 (72")		
OF-002	261.942		255.00 (72")	OF-001
OS-100	251.250		242.00 (24")	FES-99
OTCB-106A	263.000		258.00 (24")	CB-106
OTCB-127D	299.317		295.83 (24")	YDI-127C
YD-127B	302.694	294.61 (24")	294.51 (24")	CB-127
YDI-101A	259.470	252.17 (15")	252.07 (18")	DMH-101
YDI-101C	263.151	256.79 (15")	256.69 (15")	DMH-101B
YDI-101E	266.973	261.00 (15")	260.90 (15")	DMH-101D
YDI-101G	270.647	265.90 (15")	265.80 (15")	DMH-101F
YDI-101H	273.908		270.00 (15")	YDI-101G
YDI-109A	269.100		263.08 (15")	CB-109
YDI-127C	302.178	295.04 (24")	294.94 (24")	YD-127B
YDI-169	302.328		295.50 (15")	DI-168
YDI-185A	268.562	264.03 (15")	263.93 (15")	DI-185
YDI-185B	269.823	265.00 (15")	264.90 (15")	YDI-185A
YDI-185C	271.000	265.73 (15")	265.63 (15")	YDI-185B
YDI-185D	280.000		271.10 (15")	YDI-185C
YDI-192A	289.000	283.85 (18")	283.75 (18")	YDI-192B
YDI-192B	286.352	283.39 (18")	283.29 (18")	CB-192
YDI-193B	291.930	284.96 (18")	284.86 (18")	YDI-192A
YDI-193C	292.327		286.37 (18")	YDI-193B
YDI-198A	295.000		291.71 (15")	CB-198

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
CB-102	DMH-101	60	RCP	119.875	0.50%	248.60	248.00
CB-103	CB-102	54	RCP	90.414	1.50%	251.17	249.81
CB-103A	CB-103	15	RCP	35.206	0.85%	253.60	253.30
CB-104	CB-103	48	RCP	136.577	1.86%	253.80	251.27
CB-105	CB-104	48	RCP	34.500	1.00%	254.25	253.90
CB-106	CB-105	42	RCP	75.691	0.90%	256.00	255.32
CB-107	CB-106	42	RCP	89.559	0.57%	256.61	256.10
CB-108	CB-107	42	RCP	54.512	1.94%	257.77	256.71
CB-108C	CB-108	15	RCP	28.000	0.92%	261.00	260.74
CB-109	CB-108	42	RCP	138.777	1.86%	260.46	257.87
CB-109B	CB-109	15	RCP	33.853	1.02%	263.50	263.16
CB-110	CB-109	42	RCP	114.179	2.40%	263.30	260.56
CB-111	CB-110	42	RCP	27.977	0.50%	263.54	263.40
CB-113	DMH-112A	42	RCP	36.688	5.02%	266.70	264.86
CB-113A	CB-113	15	RCP	28.517	0.75%	269.26	269.05
CB-114	CB-113	36	RCP	122.942	3.24%	271.49	267.50
CB-114A	CB-114	15	RCP	34.944	0.75%	273.76	273.50
CB-115	CB-114	36	RCP	65.683	3.50%	273.89	271.59
CB-116	CB-115	36	RCP	43.121	2.00%	274.85	273.99
CB-117	CB-116	30	RCP	57.860	2.00%	276.11	274.95
CB-118	CB-117	30	RCP	64.090	2.00%	277.49	276.21
CB-119	CB-118	30	RCP	47.990	1.80%	278.45	277.59
CB-120	CB-119	30	RCP	117.018	1.08%	279.82	278.55
CB-120A	CB-120	15	RCP	50.784	0.79%	282.00	281.60
CB-121	CB-120	30	RCP	134.860	1.00%	281.27	279.92
CB-121A	CB-121	15	RCP	50.091	1.00%	283.40	282.90
CB-122	CB-121	30	RCP	146.396	1.00%	282.83	281.37
CB-122A	CB-122	15	RCP	49.870	0.75%	284.75	284.38
CB-123	CB-122	24	RCP	81.262	1.45%	285.18	284.00
CB-123A	CB-123	15	RCP	50.001	0.75%	286.00	285.62
CB-124	CB-123	24	RCP	170.521	1.89%	288.50	285.28
CB-124A	CB-124	15	RCP	50.012	0.75%	290.18	289.80
CB-125	CB-124	24	RCP	97.093	2.50%	291.03	288.60
CB-126	CB-125	24	RCP	68.234	2.50%	292.84	291.13
CB-126A	CB-126	15	RCP	50.472	0.75%	294.30	293.92
CB-127	CB-126	24	RCP	119.936	0.75%	293.84	292.94
CB-127A	CB-127	15	RCP	51.885	0.75%	297.60	297.21
CB-128	CB-127	15	RCP	79.669	2.00%	298.89	297.30
CB-129	CB-128	15	RCP	86.765	2.00%	300.73	298.99
CB-130	CB-105	24	RCP	48.507	0.75%	255.60	255.24
CB-131	CB-130	24	RCP	78.098	1.65%	257.45	256.16
CB-132	CB-131	18	RCP	117.061	1.50%	259.77	258.02
CB-133	CB-132	18	RCP	66.613	2.50%	261.54	259.87
CB-134	CB-133	18	RCP	102.429	2.50%	264.20	261.64
CB-135	CB-134	15	RCP	57.428	2.00%	265.51	264.36
CB-136	CB-135	15	RCP	107.007	2.00%	267.75	265.61
CB-137	CB-110	18	RCP	46.427	3.69%	267.69	265.98
CB-137A	CB-137	15	RCP	27.968	0.75%	268.00	267.79
CB-138	CB-137	15	RCP	92.503	3.75%	272.00	268.54
CB-140	CB-102	42	RCP	18.898	0.50%	250.61	250.52
CB-141	CB-140	36	RCP	88.826	1.00%	251.60	250.71
CB-141A	CB-141	15	RCP	34.712	0.52%	254.25	254.07
CB-142	CB-141	36	RCP	97.353	1.43%	253.09	251.70
CB-143	CB-142	36	RCP	73.902	1.99%	254.66	253.19
CB-143A	CB-143	15	RCP	39.622	0.50%	257.10	256.90
CB-144	CB-143	36	RCP	123.103	1.12%	256.14	254.76
CB-145	CB-144	36	RCP	103.171	1.55%	257.84	256.24
CB-145A	CB-145	15	RCP	34.462	2.00%	260.16	259.47
CB-146	CB-145	36	RCP	82.321	1.53%	259.70	258.44
CB-147	CB-146	36	RCP	99.866	0.90%	260.70	259.80
CB-147A	CB-147	15	RCP	36.594	0.53%	263.18	262.99
CB-148	CB-147	36	RCP	144.306	1.55%	263.04	260.80
CB-148A	CB-148	18	RCP	27.954	1.07%	264.40	264.10
CB-149	CB-148	36	RCP	104.174	1.78%	265.00	263.14
CB-149A	CB-149	15	RCP	33.260	1.00%	267.03	266.70
CB-149B	CB-149A	15	RCP	43.600	1.00%	267.57	267.13
CB-149C	CB-149B	15	RCP	43.364	1.00%	268.10	267.67
CB-150	CB-149	36	RCP	99.134	0.50%	265.59	265.10
CB-150A	CB-150	15	RCP	29.672	0.53%	268.00	267.84
CB-151	CB-150	36	RCP	108.313	0.55%	266.28	265.69
CB-152	CB-151	30	RCP	92.409	0.52%	266.87	266.38
CB-153	CB-152	24	RCP	28.086	3.56%	268.50	267.50
CB-154	CB-153	24	RCP	42.793	2.34%	269.60	268.60
CB-154A	CB-154	15	RCP	49.976	0.50%	271.00	270.75
CB-155	CB-154	24	RCP	64.347	3.13%	271.71	269.70
CB-155A	CB-155	15	RCP	50.000	0.50%	272.95	272.70
CB-156	CB-155	24	RCP	105.450	0.79%	272.65	271.81
CB-156A	CB-156	15	RCP	100.642	1.88%	277.40	275.50
CB-157	CB-156	24	RCP	51.662	0.73%	273.13	272.75
CB-170	CB-152	18	RCP	81.739	1.00%	269.16	268.35
CB-173	CB-152	24	RCP	43.792	0.50%	267.19	266.97
CB-174	CB-173	18	RCP	59.182	0.50%	267.58	267.29
CB-174A	CB-174	15	RCP	47.584	0.50%	267.92	267.68
CB-175	CB-174	15	RCP	50.000	0.50%	267.93	267.68
CB-177	DI-176	15	RCP	32.500	0.53%	268.51	268.34
CB-177D	CB-149C	15	RCP	109.995	2.00%	270.40	268.20
CB-178	CB-102	30	RCP	70.476	0.54%	251.78	251.40
CB-179	CB-178	30	RCP	49.557	1.79%	252.77	251.88
CB-189	DI-188	24	RCP	61.471	2.00%	278.81	277.58
CB-190	CB-189	24	RCP	83.763	2.00%	280.58	278.91

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
CB-190A	CB-190	15	RCP	26.398	1.00%	281.76	281.50
CB-191	CB-190	24	RCP	61.903	1.00%	281.30	280.68
CB-192	CB-191	24	RCP	67.761	1.68%	282.54	281.40
CB-193	CB-192	24	RCP	105.400	0.56%	283.23	282.64
CB-194	CB-193	18	RCP	80.043	1.25%	284.33	283.33
CB-195	CB-194	18	RCP	102.559	1.25%	285.72	284.43
CB-196	CB-195	18	RCP	69.151	2.50%	287.54	285.82
CB-197	CB-196	18	RCP	80.182	2.50%	289.65	287.64
CB-198	CB-197	18	RCP	68.788	2.50%	291.47	289.75
CB-199	CB-198	18	RCP	104.780	2.50%	294.19	291.57
DI-107B	CB-107	15	RCP	54.161	0.75%	260.20	259.79
DI-112	DMH-112A	15	RCP	24.866	0.75%	267.19	267.00
DI-139	CB-138	15	RCP	52.778	0.75%	272.50	272.10
DI-151A	CB-151	15	RCP	55.043	2.84%	269.62	268.06
DI-151B	DI-151A	15	RCP	68.227	2.75%	271.60	269.72
DI-151C	DI-151B	15	RCP	86.889	1.75%	273.22	271.70
DI-151D	DI-151C	15	RCP	140.644	1.75%	275.78	273.32
DI-158	CB-157	24	RCP	108.304	0.76%	274.05	273.23
DI-159	DI-158	18	RCP	50.692	1.39%	275.31	274.60
DI-160	DI-159	18	RCP	45.901	2.02%	276.33	275.41
DI-161	DI-160	18	RCP	112.763	2.00%	278.69	276.43
DI-162	DI-161	18	RCP	115.727	2.00%	281.10	278.79
DI-163	DI-162	18	RCP	110.030	2.00%	283.40	281.20
DI-164	DI-163	18	RCP	112.995	2.00%	285.76	283.50
DI-165	DI-164	15	RCP	112.942	2.43%	288.61	285.86
DI-166	DI-165	15	RCP	112.669	2.00%	290.96	288.71
DI-167	DI-166	15	RCP	113.026	2.20%	293.55	291.06
DI-168	DI-167	15	RCP	65.711	2.20%	295.10	293.65
DI-171	CB-170	18	RCP	112.500	1.00%	270.39	269.26
DI-172	DI-171	15	RCP	101.107	1.00%	271.50	270.49
DI-176	CB-175	15	RCP	41.000	0.50%	268.24	268.03
DI-176A	DI-176	15	RCP	23.942	0.50%	268.46	268.34
DI-180	CB-179	30	RCP	75.204	1.50%	254.00	252.87
DI-181	DI-180	30	RCP	86.483	1.50%	255.40	254.10
DI-182	DI-181	30	RCP	103.881	1.50%	257.05	255.50
DI-183	DI-182	30	RCP	125.768	1.50%	259.04	257.15
DI-184	DI-183	30	RCP	126.168	1.50%	261.03	259.14
DI-185	DI-184	30	RCP	137.689	1.50%	263.20	261.13
DI-186	DI-185	24	RCP	172.663	4.00%	270.21	263.30
DI-187	DI-186	24	RCP	121.955	4.00%	275.18	270.31
DI-188	DI-187	24	RCP	109.693	2.00%	277.48	275.28
DMH-101	FES-100	60	RCP	99.949	0.50%	248.00	247.50
DMH-101B	YDI-101A	15	RCP	139.776	1.50%	254.27	252.17
DMH-101D	YDI-101C	15	RCP	83.570	1.50%	258.05	256.79
DMH-101F	YDI-101E	15	RCP	130.240	1.50%	262.96	261.00
DMH-112A	CB-111	42	RCP	49.522	2.26%	264.76	263.64
OF-002	OF-001	72	RCP	112.017	1.16%	255.00	253.70
OS-100	FES-99	24	RCP	93.184	6.44%	242.00	236.00
OTCB-106A	CB-106	24	RCP	25.913	0.75%	258.00	257.81
OTCB-127D	YDI-127C	24	RCP	154.864	0.52%	295.83	295.04
YD-127B	CB-127	24	RCP	110.543	0.52%	294.51	293.94
YDI-101A	DMH-101	18	RCP	53.148	0.74%	252.07	251.68
YDI-101C	DMH-101B	15	RCP	154.789	1.50%	256.69	254.37
YDI-101E	DMH-101D	15	RCP	183.710	1.50%	260.90	258.15
YDI-101G	DMH-101F	15	RCP	182.665	1.50%	265.80	263.06
YDI-101H	YDI-101G	15	RCP	273.644	1.50%	270.00	265.90
YDI-109A	CB-109	15	RCP	23.516	0.54%	263.08	262.96
YDI-127C	YD-127B	24	RCP	64.157	0.52%	294.94	294.61
YDI-169	DI-168	15	RCP	38.994	1.04%	295.50	295.10
YDI-185A	DI-185	15	RCP	15.754	0.50%	263.93	263.85
YDI-185B	YDI-185A	15	RCP	174.077	0.50%	264.90	264.03
YDI-185C	YDI-185B	15	RCP	126.515	0.50%	265.63	265.00
YDI-185D	YDI-185C	15	RCP	134.276	4.00%	271.10	265.73
YDI-192A	YDI-192B	18	RCP	47.525	0.75%	283.75	283.39
YDI-192B	CB-192	18	RCP	52.520	0.56%	283.29	283.00
YDI-193B	YDI-192A	18	RCP	135.007	0.75%	284.86	283.85
YDI-193C	YDI-193B	18	RCP	187.359	0.75%	286.37	284.96
YDI-198A	CB-198	15	RCP	29.081	0.50%	291.71	291.57

vhb.com

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Storm Drainage Structure and Pipes Table Phase 1

ZMA-2-23

Drawing Number
C3.11

Sheet 52 of 224

Project Number
39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, October 14, 2025 11:33:57 AM WSHERRILL Plotted Friday, December 19, 2025 12:50:55 PM Marco Meza

SCM-02

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
CB-204	277.178	268.26 (18") 268.66 (18")	268.06 (18")	DI-203
CB-205	276.025	269.48 (18") 268.98 (15")	268.88 (18")	CB-204
CB-206	274.980	269.59 (15")	269.49 (15")	CB-205
CB-207	274.980		269.84 (15")	CB-206
CB-208	276.025	269.83 (15")	269.73 (18")	CB-205
CB-214	278.062	272.62 (15") 270.06 (15")	269.96 (15")	DMH-213
CB-214A	278.243		273.00 (15")	CB-214
CB-215	276.635	270.95 (15")	270.85 (15")	CB-214
CB-215A	276.485		271.20 (15")	CB-215
DI-202	275.949	267.00 (24") 267.08 (15")	266.90 (30")	YDI-201
DI-203	276.195	267.75 (18")	267.65 (24")	DI-202
DI-209	275.228	270.24 (15")	270.14 (15")	CB-208
DI-210	276.409	271.63 (15")	271.53 (15")	DI-209
DI-211	277.314	272.62 (15")	272.52 (15")	DI-210
DI-212	279.077		274.64 (15")	DI-211
DI-213A	277.696		273.03 (15")	DMH-213
DMH-213	277.495	269.71 (15") 272.35 (15")	269.02 (18")	CB-204
FES-200	269.333	265.50 (36")		
FES-299	262.750	260.00 (24")		
OS-200	272.000		261.00 (24")	FES-299
YDI-201	273.366	265.97 (30") 266.07 (15")	265.87 (36")	FES-200
YDI-201B	272.689		267.11 (15")	YDI-201

SCM-02

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
	DI-202	15	RCP	54.150	0.50%	267.35	267.08
CB-204	DI-203	18	RCP	62.212	0.50%	268.06	267.75
CB-205	CB-204	18	RCP	123.559	0.50%	268.88	268.26
CB-206	CB-205	15	RCP	101.619	0.50%	269.49	268.98
CB-207	CB-206	15	RCP	50.000	0.50%	269.84	269.59
CB-208	CB-205	18	RCP	50.000	0.50%	269.73	269.48
CB-214	DMH-213	15	RCP	44.483	0.55%	269.96	269.71
CB-214A	CB-214	15	RCP	50.506	0.75%	273.00	272.62
CB-215	CB-214	15	RCP	158.265	0.50%	270.85	270.06
CB-215A	CB-215	15	RCP	50.445	0.50%	271.20	270.95
DI-202	YDI-201	30	RCP	185.934	0.50%	266.90	265.97
DI-203	DI-202	24	RCP	130.122	0.50%	267.65	267.00
DI-209	CB-208	15	RCP	61.513	0.50%	270.14	269.83
DI-210	DI-209	15	RCP	63.962	2.01%	271.53	270.24
DI-211	DI-210	15	RCP	46.945	1.90%	272.52	271.63
DI-212	DI-211	15	RCP	95.080	2.13%	274.64	272.62
DI-213A	DMH-213	15	RCP	70.182	0.96%	273.03	272.35
DMH-213	CB-204	18	RCP	60.708	0.59%	269.02	268.66
OS-200	FES-299	24	RCP	111.709	0.90%	261.00	260.00
YDI-201	FES-200	36	RCP	74.415	0.50%	265.87	265.50
YDI-201B	YDI-201	15	RCP	137.966	0.75%	267.11	266.07

SCM-03A

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
CB-701	276.356	270.63 (18") 269.56 (30")	268.46 (30")	FES-700
CB-702	276.000	270.68 (24") 269.91 (18")	269.81 (30")	CB-701
CB-702A	275.690	270.44 (15")	270.34 (18")	CB-702
CB-702B	275.690		270.70 (15")	CB-702A
CB-703	276.725	271.15 (24")	271.05 (24")	CB-702
CB-704	277.381	271.66 (18")	271.56 (24")	CB-703
CB-704A	278.498	272.44 (18")	272.34 (18")	CB-704
CB-705	278.439	272.92 (18")	272.82 (18")	CB-704A
CB-705A	280.000	274.54 (18")	274.44 (18")	CB-705
CB-706	284.906	278.42 (18")	278.32 (18")	CB-705A
CB-707	291.921	285.56 (15")	285.46 (18")	CB-706
CB-708	295.135	289.40 (15")	289.30 (15")	CB-707
CB-709	298.272	292.88 (15") 293.00 (15")	292.78 (15")	CB-708
CB-709A	297.853		293.40 (15")	CB-709
CB-710	301.736		296.86 (15")	CB-709
CB-711	277.000	272.22 (15") 272.12 (15") 272.38 (15")	272.02 (18")	CB-701
CB-711A	277.364		272.50 (15")	CB-711
CB-712	279.000	274.06 (15")	273.96 (15")	CB-711
CB-713	281.692	276.55 (15")	276.45 (15")	CB-712
CB-714	286.000		280.56 (15")	CB-713
CB-715	280.333	275.41 (15")	275.31 (15")	CB-711
CB-716	283.096	277.86 (15")	277.76 (15")	CB-715
CB-717	283.169		278.20 (15")	CB-716
FES-700	269.792	266.50 (30")		
FES-799	263.750	261.00 (24")		

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
OCS-700	269.000		262.00 (24")	FES-799

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
CB-701	FES-700	30	RCP	261.910	0.75%	268.46	266.50
CB-702	CB-701	30	RCP	49.983	0.50%	269.81	269.56
CB-702A	CB-702	18	RCP	86.203	0.50%	270.34	269.91
CB-702B	CB-702A	15	RCP	51.000	0.50%	270.70	270.44
CB-703	CB-702	24	RCP	72.871	0.51%	271.05	270.68
CB-704	CB-703	24	RCP	47.959	0.85%	271.56	271.15
CB-704A	CB-704	18	RCP	33.912	2.02%	272.34	271.66
CB-705	CB-704A	18	RCP	24.320	1.56%	272.82	272.44
CB-705A	CB-705	18	RCP	57.489	2.63%	274.44	272.92
CB-706	CB-705A	18	RCP	158.882	2.38%	278.32	274.54
CB-707	CB-706	18	RCP	156.478	4.50%	285.46	278.42
CB-707	CB-708	15	RCP	83.057	4.50%	285.56	289.30
CB-708	CB-709	15	RCP	75.306	4.50%	289.40	292.78
CB-709A	CB-709	15	RCP	49.199	0.81%	293.40	293.00
CB-710	CB-709	15	RCP	88.525	4.49%	296.86	292.88
CB-711	CB-701	18	RCP	46.728	2.98%	272.02	270.63
CB-711A	CB-711	15	RCP	50.500	0.74%	272.50	272.12
CB-712	CB-711	15	RCP	45.214	3.51%	273.96	272.38
CB-713	CB-712	15	RCP	67.829	3.51%	276.45	274.06
CB-714	CB-713	15	RCP	114.259	3.51%	280.56	276.55
CB-715	CB-711	15	RCP	81.629	3.78%	275.31	272.22
CB-716	CB-715	15	RCP	58.718	4.00%	277.76	275.41
CB-717	CB-716	15	RCP	49.999	0.69%	278.20	277.86
OCS-700	FES-799	24	RCP	98.371	1.02%	262.00	261.00

SCM-03

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
CB-301	290.999	277.78 (42")	277.68 (42")	DMH-300
CB-302	289.781	282.97 (18") 278.37 (42")	278.27 (42")	CB-301
CB-302A	289.272	283.34 (15")	283.24 (18")	CB-302
CB-302B	288.932	283.78 (15")	283.68 (15")	CB-302A
CB-302C	292.665	287.33 (15")	287.23 (15")	CB-302B
CB-302D	295.854		290.48 (15")	CB-302C
CB-303	287.340	280.91 (24") 279.51 (36")	279.42 (42")	CB-302
CB-304	289.117	282.35 (36") 283.38 (18")	281.02 (36")	CB-303
CB-305	289.363	282.94 (36")	282.60 (36")	CB-304
CB-306	290.333	283.69 (36")	283.59 (36")	CB-305
CB-308	291.484	285.21 (30")	285.11 (30")	DI-307
CB-309	292.322	286.44 (30")	286.34 (30")	CB-308
CB-310	293.786	287.55 (30") 287.66 (15")	287.45 (30")	CB-309
CB-310A	293.905		287.80 (15")	CB-310
CB-311	294.409	288.10 (24") 288.21 (15")	288.00 (30")	CB-310
CB-311A	294.403		288.49 (15")	CB-311
CB-312A	296.385	289.52 (24")	289.42 (24")	CB-311
CB-313	297.596	290.66 (24") 292.18 (15")	290.56 (24")	DI-312
CB-313A	297.113		292.45 (15")	CB-313
CB-314	298.829	292.07 (24")	291.58 (24")	CB-313
CB-315	298.930	292.46 (24")	292.36 (24")	CB-314
CB-317	300.859	295.43 (18")	295.33 (18")	DI-316
CB-318	300.859	295.90 (15")	295.65 (18")	CB-317
CB-319	304.309	298.75 (15") 298.76 (15")	298.65 (15")	CB-318
CB-319A	304.217		299.00 (15")	CB-319
CB-320	307.914	302.68 (15") 302.68 (15")	302.58 (15")	CB-319
CB-320A	307.672		302.90 (15")	CB-320
CB-321	315.250	309.20 (15") 308.40 (15")	308.30 (15")	CB-320
CB-321A	314.914		309.38 (15")	CB-321
CB-322	317.311	311.80 (15")	311.70 (15")	CB-321
CB-322A	317.805		312.80 (15")	CB-322
CB-339	292.329	286.40 (15")	286.30 (18")	CB-304
CB-340	293.672	286.98 (15") 288.45 (15")	286.88 (15")	CB-339
CB-340A	293.672		288.70 (15")	CB-340
CB-341	292.658	287.85 (15")	287.75 (15")	CB-340
CB-342	293.119	288.41 (15")	288.10 (15")	CB-341
CB-343	294.029	288.71 (15")	288.61 (15")	CB-342
CB-347A	287.434		282.60 (15")	DMH-347
CB-347B	287.518		282.80 (15")	DMH-347
CB-348	288.329	282.60 (18")	282.50 (24")	DMH-347
CB-349	288.551	283.29 (18")	283.19 (18")	CB-348
CB-350	291.227	285.63 (15") 285.63 (18")	285.53 (18")	CB-349
CB-350A	291.075		285.89 (15")	CB-350
CB-351	292.830	287.41 (18")	287.31 (18")	CB-350
CB-352	294.158	289.42 (15") 289.33 (15")	289.32 (18")	CB-351
CB-352A	294.748		289.59 (15")	CB-352
CB-353	295.918	291.11 (15") 291.11 (15")	291.01 (15")	CB-352
CB-354	297.837	293.13 (15")	293.03 (15")	CB-353

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
CB-355	299.155	293.99 (15")	293.70 (15")	CB-354
CB-355A	299.209		294.20 (15")	CB-355
CB-356	289.553	279.13 (30") 279.13 (15")	279.03 (30")	DMH-300
CB-356A	288.879	279.68 (15")	279.58 (15")	CB-356
CB-356B	288.879		279.99 (15")	CB-356A
CB-357	289.153	279.51 (30")	279.41 (30")	CB-356
CB-358	289.657	283.15 (24") 280.42 (15")	279.94 (30")	CB-357
CB-358A	286.109	281.40 (15")	280.94 (15")	CB-358
CB-358B	286.258		281.80 (15")	CB-358A
CB-359	289.962	284.15 (24")	284.05 (24")	CB-358
CB-360	292.964	288.00 (15") 286.68 (18")	286.58 (24")	CB-359
CB-360A	293.141		288.30 (15")	CB-360
CB-361	298.559	293.80 (15") 293.57 (15")	292.70 (18")	CB-360
CB-361A	298.331		293.80 (15")	CB-361
CB-362	299.969	294.86 (15")	294.76 (15")	CB-361
CB-363	300.910	295.55 (15")	295.45 (15")	CB-362
CB-363A	300.910		295.90 (15")	CB-363
DI-307	291.018	286.00 (18") 284.78 (30")	284.00 (36")	CB-306
DI-312	296.837	289.97 (24")	289.87 (24")	CB-312A
DI-316	299.948	294.77 (18") 294.69 (18")	294.40 (24")	CB-315
DI-323	300.806	296.00 (18")	295.90 (18")	DI-316
DI-324	301.317	296.66 (15")	296.56 (18")	DI-323
DI-325	302.538	297.63 (15")	297.53 (15")	DI-324
DI-326	303.450	298.38 (15")	298.28 (15")	DI-325
DI-327	304.518	299.10 (15")	299.00 (15")	DI-326
DI-328	308.334	303.25 (15")	303.15 (15")	DI-327
DI-329	311.442	306.52 (15")	306.42 (15")	DI-328
DI-330	314.242		309.40 (15")	DI-329
DI-331	294.790	288.60 (18")	288.50 (18")	DI-307
DI-332	296.783	291.20 (15")	291.10 (18")	DI-331
DI-333	299.055	294.20 (15")	294.10 (15")	DI-332
DI-334	300.529	295.79 (15")	295.69 (15")	DI-333
DI-335	302.221	296.56 (15")	296.46 (15")	DI-334
DI-336	304.125	297.39 (15")	297.29 (15")	DI-335
DI-337	307.856	302.71 (15")	302.61 (15")	DI-336
DI-338	314.291		308.66 (15")	DI-337
DI-344	294.300	289.63 (15")	289.53 (15")	CB-343
DI-345	295.843		291.23 (15")	DI-344
DMH-300	285.001	277.28 (42") 278.70 (30")	277.18 (42")	FES-300
DMH-347	287.469	281.92 (24") 282.37 (15") 282.42 (15")	281.82 (24")	CB-303
FES-300	281.875	277.00 (42")		
FES-399	274.750	272.00 (24")		
OS-300	283.000		273.00 (24")	FES-399
YDI-353A	299.178		292.20 (15")	CB-353

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
CB-301	DMH-300	42	RCP	60.661	0.65%	277.68	277.28
CB-302	CB-301	42	RCP	75.009	0.65%	278.27	277.78
CB-302A	CB-302	18	RCP	36.632	0.75%	283.24	282.97
CB-302B	CB-302A	15	RCP	45.837	0.75%	283.68	283.34
CB-302C	CB-302B	15	RCP	86.264	4.00%	287.23	283.78
CB-302D	CB-302C	15	RCP	78.725	4.00%	290.48	287.33
CB-303	CB-302	42	RCP	181.149	0.58%	279.42	278.37
CB-304	CB-303	36	RCP	195.826	0.77%	281.02	279.51
CB-305	CB-304	36	RCP	49.968	0.50%	282.60	282.35
CB-306	CB-305	36	RCP	64.544	1.00%	283.59	282.94
CB-308	DI-307	30	RCP	44.878	0.75%	285.11	284.78
CB-309	CB-308	30	RCP	56.844	1.98%	286.34	285.21
CB-310	CB-309	30	RCP	50.326	2.00%	287.45	286.44
CB-310A	CB-310	15	RCP	23.998	0.58%	287.80	287.66
CB-311	CB-310	30	RCP	57.489	0.79%	288.00	287.55
CB-311A	CB-311	15	RCP	37.003	0.75%	288.49	288.21
CB-312A	CB-311	24	RCP	134.902	0.98%	289.42	288.10
CB-313	DI-312	24	RCP	65.748	0.91%	290.56	289.97
CB-313A	CB-313	15	RCP	36.917	0.75%	292.45	292.18
CB-314	CB-313	24	RCP	93.557	0.98%	291.58	290.66
CB-315	CB-314	24	RCP	37.714	0.75%	292.36	292.07
CB-317	DI-316	18	RCP	78.252	0.71%	295.33	294.77
CB-318	CB-317	18	RCP	37.000	0.59%	295.65	295.43
CB-319	CB-318	15	RCP	225.446	1.22%	298.65	295.90
CB-319A	CB-319	15	RCP	23.995	1.00%	299.00	298.76
CB-320	CB-319	15	RCP	109.374	3.50%	302.58	298.75
CB-320A	CB-320	15	RCP	36.980	0.60%	302.90	302.68
CB-321	CB-320	15	RCP	160.667	3.50%	308.30	302.68
CB-321A	CB-321	15	RCP	24.191	0.75%	309.38	309.20
CB-322	CB-321	15	RCP	88.861	3.71%	311.70	308.40
CB-322A	CB-322	15	RCP	48.161	2.09%	312.80	311.80
CB-339	CB-304	18	RCP	199.962	1.46%	286.30	283.38
CB-340	CB-339	15	RCP	97.350	0.50%	286.88	286.40
CB-340A	CB-340	15	RCP	50.000	0.50%	288.70	288.45
CB-341	CB-340	15	RCP	137.156	0.56%	287.75	286.98
CB-342	CB-341	15	RCP	50.534	0.50%	288.10	287.85
CB-343	CB-342	15	RCP	39.124	0.50%	288.61	288.41
CB-347A	DMH-347	15	RCP	31.015	0.75%	282.60	282.37
CB-347B	DMH-347	15	RCP	51.252	0.75%	282.80	282.42
CB-348	DMH-347	24	RCP	28.953	2.00%	282.50	281.92
CB-349	CB-348	18	RCP	29.481	2.00%	283.19	282.60
CB-350	CB-349	18	RCP	111.967	2.00%	285.53	283.29
CB-350A	CB-350	15	RCP	34.475	0.75%	285.89	285.63
CB-351	CB-350	18	RCP	60.908	2.75%	287.31	285.63
CB-352	CB-351	18	RCP	69.471	2.75%	289.32	287.41
CB-352A	CB-352	15	RCP	34.476	0.75%	289.59	289.33
CB-353	CB-352	15	RCP	57.916	2.75%	291.01	289.42
CB-354	CB-353	15	RCP	70.009	2.75%	293.03	291.11

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
CB-355	CB-354	15	RCP	75.541	0.75%	293.70	293.13
CB-355A	CB-355	15	RCP	28.039	0.75%	294.20	293.99
CB-356	DMH-300	30	RCP	55.527	0.60%	279.03	278.70
CB-356A	CB-356	15	RCP	60.345	0.75%	279.58	279.13
CB-356B	CB-356A	15	RCP	40.378	0.75%	279.99	279.68
CB-357	CB-356	30	RCP	45.171	0.62%	279.41	279.13
CB-358	CB-357	30	RCP	71.454	0.60%	279.94	279.51
CB-358A	CB-358	15	RCP	92.982	0.56%	280.94	280.42
CB-358B	CB-358A	15	RCP	49.232	0.81%	281.80	281.40
CB-359	CB-358	24	RCP	45.023	2.00%	284.05	283.15
CB-360	CB-359	24	RCP	121.609	2.00%	286.58	284.15
CB-360A	CB-360	15	RCP	40.597	0.75%	288.30	288.00
CB-361	CB-360	18	RCP	200.418	3.00%	292.70	286.68
CB-361A	CB-361	15	RCP	46.622	0.50%	293.80	293.57
CB-362	CB-361	15	RCP	46.678	2.06%	294.76	293.80
CB-363	CB-362	15	RCP	78.679	0.75%	295.45	294.86
CB-363A	CB-363	15	RCP	46.527	0.75%	295.90	295.55
DI-307	CB-306	36	RCP	41.830	0.75%	284.00	283.69
DI-312	CB-312A	24	RCP	47.627	0.74%	289.87	289.52
DI-316	CB-315	24	RCP	60.299	3.22%	294.40	292.46
DI-323	DI-316	18	RCP	80.449	1.50%	295.90	294.69
DI-324	DI-323	18	RCP	46.775	1.19%	296.56	296.00
DI-325	DI-324	15	RCP	116.283	0.75%	297.53	296.66
DI-326	DI-325	15	RCP	86.814	0.75%	298.28	297.63
DI-327	DI-326	15	RCP	82.798	0.75%	299.00	298.38
DI-328	DI-327	15	RCP	89.891	4.50%	303.15	299.10
DI-329	DI-328	15	RCP	70.580	4.50%	306.42	303.25
DI-330	DI-329	15	RCP	82.147	3.50%	309.40	306.52
DI-331	DI-307	18	RCP	101.364	2.47%	288.50	286.00
DI-332	DI-331	18	RCP	133.335	1.87%	291.10	288.60
DI-333	DI-332	15	RCP	178.069	1.63%	294.10	291.20
DI-334	DI-333	15	RCP	137.314	1.09%	295.69	294.20
DI-335	DI-334	15	RCP	133.523	0.50%	296.46	295.79
DI-336	DI-335	15	RCP	146.290	0.50%	297.29	296.56
DI-337	DI-336	15	RCP	115.831	4.50%	302.61	297.39
DI-338	DI-337	15	RCP	132.353	4.50%	308.66	302.71
DI-344	CB-343	15	RCP	65.706	1.25%	289.53	288.71
DI-345	DI-344	15	RCP	127.926	1.25%	291.23	289.63
DMH-300	FES-300	42	RCP	27.684	0.65%	277.18	277.00
DMH-347	CB-303	24	RCP	45.353	2.00%	281.82	280.91
OS-300	FES-399	24	RCP	111.815	0.89%	273.00	272.00
YDI-353A	CB-353	15	RCP	160.251	0.68%	292.20	291.11

STREAM CROSSINGS & OUTFALLS

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
DI-202	275.949	267.00 (24") 267.08 (15")	266.90 (30")	YDI-201
DI-203	276.195	267.75 (18")	267.65 (24")	DI-202
FES-200	269.333	265.50 (36")		
FES-299	262.750	260.00 (24")		
OS-200	272.000		261.00 (24")	FES-299
YDI-201	273.366	265.97 (30") 266.07 (15")	265.87 (36")	FES-200
YDI-201B	272.689		267.11 (15")	YDI-201

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
OF-001	260.642	253.70 (72")		
OF-002	261.942		255.00 (72")	OF-001

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
OF-002	OF-001	72	RCP	112.017	1.16%	255.00	253.70

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
DMH-B101	284.125	269.36 (42")	269.26 (42")	FES-B100
DMH-B102	276.879	272.50 (42")	269.84 (42")	DMH-B101
FES-B100	272.875	268.50 (42")		
HW-B103	278.275		273.90 (42")	DMH-B102
OF-003	272.500	266.70 (60")		
OF-004	275.500		269.70 (60")	OF-003

vhb.com

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Storm Drainage Structure and Pipe Tables Phase 2

ZMA-2-23

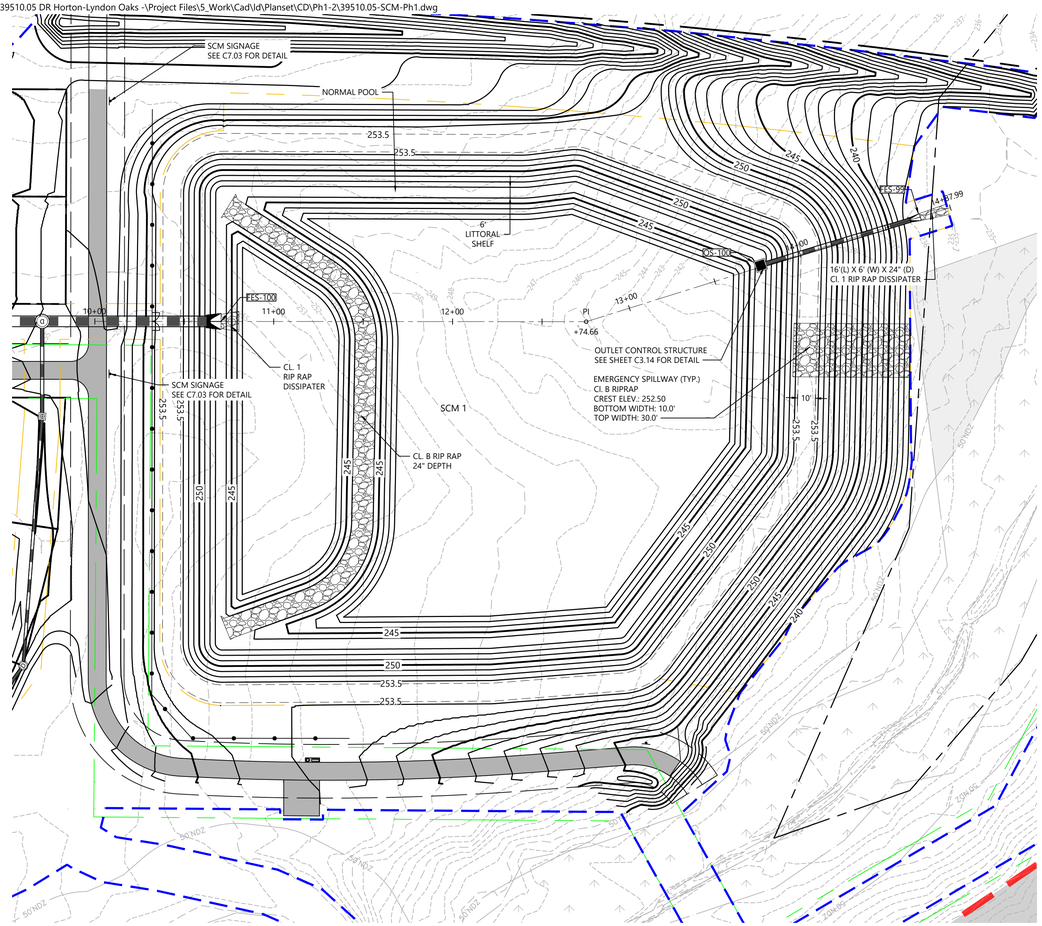
Drawing Number
C3.12

Sheet 53 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, October 14, 2025 11:33:57 AM WSHERRILL Plotted Friday, December 19, 2025 12:51:36 PM Marco Meza



CONVERSION OF PERMANENT SCM DEVICES:

1) BASINS CANNOT BE CONVERTED TO PERMANENT SCM DEVICE UNTIL THE FOLLOWING CONDITIONS HAVE BEEN MET
   a. FOR RESIDENTIAL DEVELOPMENTS: 75% OF PARCELS LOCATED IN BASINS DRAINAGE AREA HAVE RECEIVED A FULL CERTIFICATE OF OCCUPANCY, ALL OPEN AREAS AND ROWS HAVE ACHIEVED AT LEAST 85% STABILIZATION
   b. FOR COMMERCIAL: 85% STABILIZATION HAS BEEN ACHIEVED IN THE BASINS DRAINAGE AREA
2) ONCE ALL CONDITIONS HAVE BEEN MET, SCHEDULE AN ONSITE MEETING WITH ESC INSPECTORS TO DETERMINE IF TEMPORARY ESC MEASURES CAN BE CONVERTED TO PERMANENT CONFIGURATION
3) IF APPROVED, PROCEED WITH CLEANING OUT AND REGRADING DEVICE, INSTALLING SLOPES AND SHELF IN ACCORDANCE WITH THE APPROVED CDS
4) ONCE THE DEVICE HAS BEEN CONFIGURED AND STABILIZED, SCHEDULE SURVEY CREW AND ENGINEER TO COMPLETE THE FINAL AS-BUILT SURVEY
5) ONCE APPROVED BY THE ENGINEER, SCHEDULE THE CCTV CAPTURE OF ALL SW CONVEYANCES WITHIN THE DRAINAGE AREA, INCLUDING SCMS
6) HAVE ENGINEER SUBMIT COMPLETE AS-BUILT DRAWING PACKAGE WHICH INCLUDES THE FOLLOWING:
   a. EXECUTED AS-BUILT CERTIFICATION FORM
   b. FINAL RECORDED O&M AGREEMENT FOR EACH DEVICE
   c. FIELD SURVEYED AS-BUILT PLANS
   d. GEOTECHNICAL REPORTS FOR
      i. DAM EMBANKMENT
      ii. KEY TRENCH
      iii. RISER STRUCTURE (INCLUDING ANTI-FLOATATION AND COLLAR/CRADLE)
      iv. PIPE
   e. CCTV FOOTAGE OF ALL SW CONVEYANCES, INCLUDING SCMS
   f. APPROVED LANDSCAPING AND PLANTING PLAN
7) ONCE THE AS-BUILT PACKAGE HAS BEEN APPROVED BY THE TOWN, STAFF WILL SCHEDULE AN ONSITE AUDIT INSPECTION TO CONFIRM SCM MEETS ORIGINAL DESIGN AND DRAWINGS
8) ONCE APPROVED, THE TOWN WILL SCHEDULE AN ONSITE HANDOFF MEETING TO GO OVER FUTURE MAINTENANCE RESPONSIBILITIES. THIS MEETING WILL GENERATE A FORMAL HANDOFF DOCUMENT WHICH WILL NEED TO BE RECORDED AS AN ADDENDUM TO THE ORIGINAL O&M AGREEMENT.
9) ONCE THE DOCUMENT HAS BEEN SIGNED AND RECORDED, THE TOWN WILL ISSUE THE FINAL CERTIFICATION LETTER, CLOSING OUT THE CONSTRUCTION CYCLE ON EACH SCM
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2) GEOTECH
3) AS-BUILT CERTIFYING ENGINEER OR SOMEONE UNDER THEIR SUPERVISION

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SCM WITH DAM:

1) KEY TRENCH EXCAVATION
2) PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
   a. CONCRETE CRADLE
   b. ANTI-SEEP COLLAR
   c. SEEPAGE DIAPHRAGM
3) OUTLET STRUCTURE
4) ANTI-FLOTATION BALLAST
5) ANY SITE-CONSTRUCTED REINFORCED CONCRETE STRUCTURES

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c. FILTER MEDIA
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REQUIRED GEOTECHNICAL RECORDS INCLUDE:
1) DAM EMBANKMENT MATERIAL COMPOSITION AND DENSITY TESTING WITH A PASSING COMPACTION OF 95% OR GREATER
2) MAP THAT LABELS ALL POINTS WHERE THE DAM AND DAM FOUNDATION AREAS WERE TESTED
3) DIGITAL PHOTOS SHOWING THE DAM FOUNDATION AREAS, THE RISER, THE PRINCIPLE SPILLWAY PIPE, THE CONCRETE CRADLE, THE SEEPAGE DIAPHRAM, RELIEF DRAINS, ETC. BEING INSTALLED.

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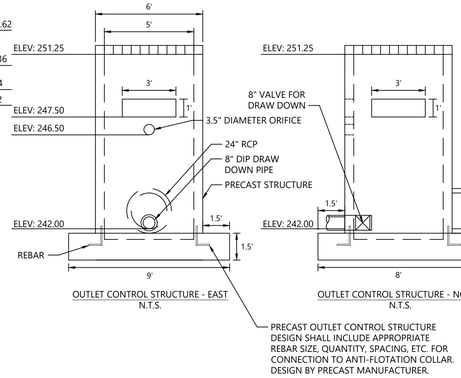
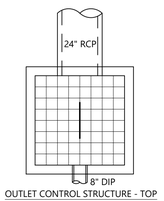
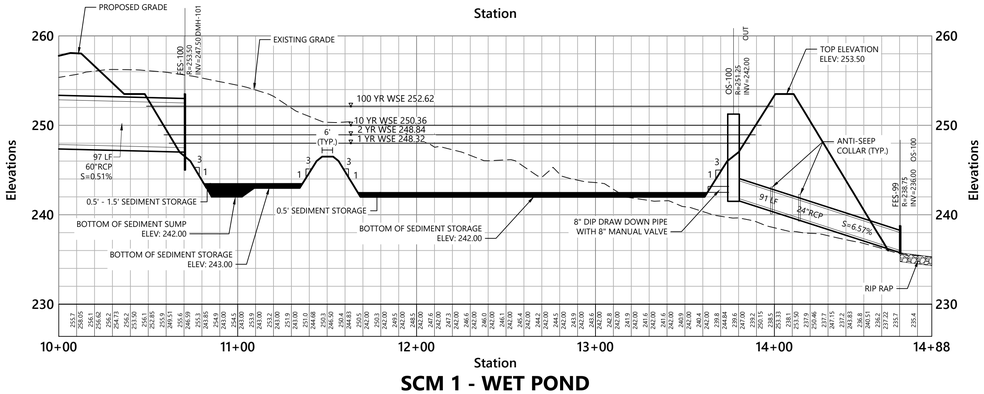
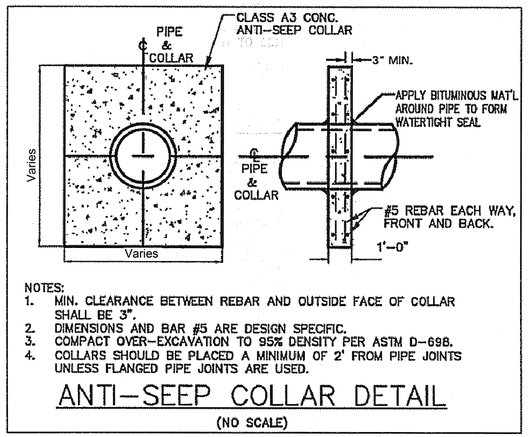






SCM 1 - WET POND



Anti-Seep Collar

N.T.S. Source: VHB

811 Know what's below. Call before you dig.

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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2	Town of Knightdale Comments	08/06/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: SCM 1 Plan and Profile Phase 1

ZMA-2-23

Drawing Number: C3.13

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 54 of 224

Project Number: 39510.05

Saved Thursday, December 18, 2025 9:31:16 AM WSHERRILL Plotted Thursday, December 18, 2025 10:56:02 AM Will Sherrill

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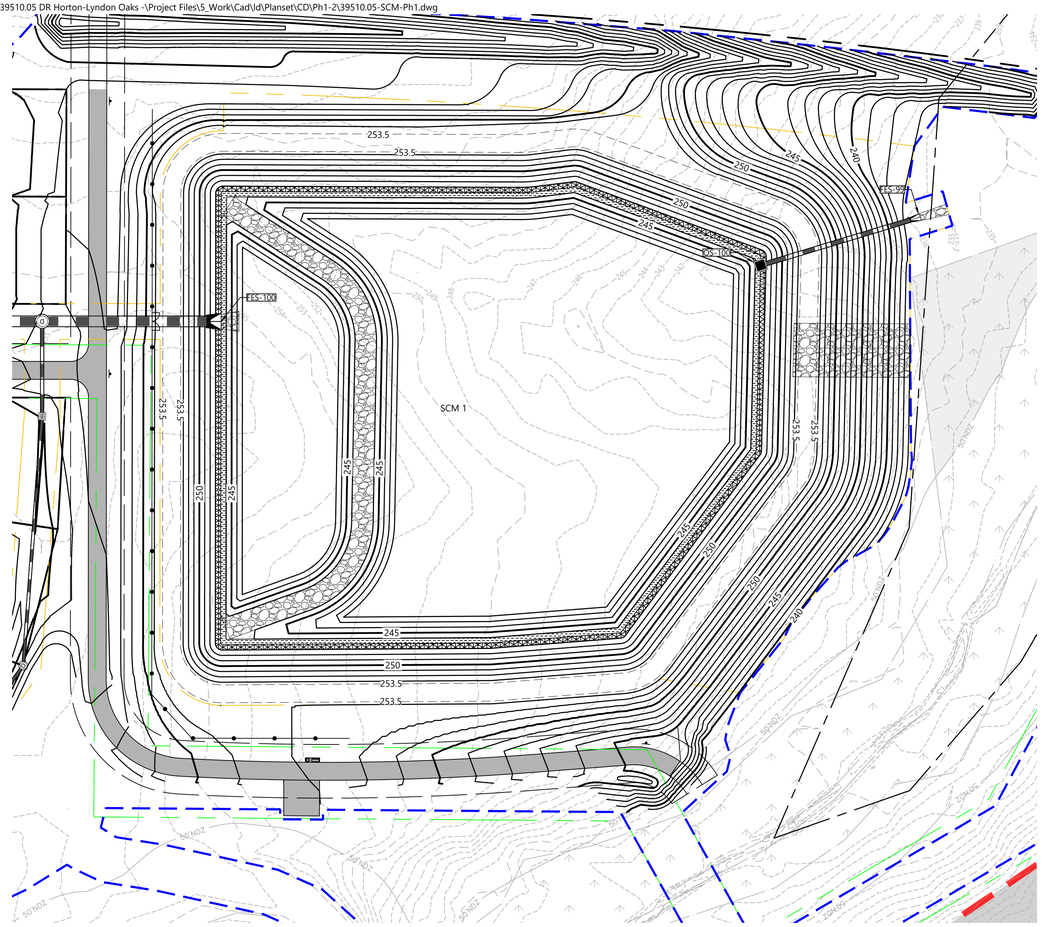

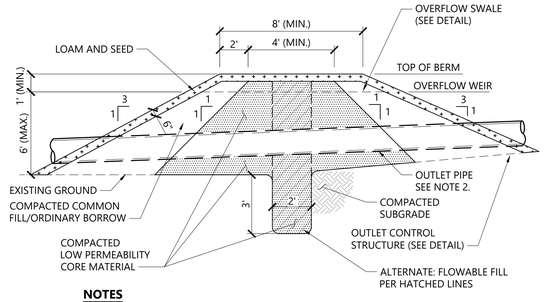

NOTES

1. LOW PERMEABILITY CORE MATERIAL IS CONTINUOUS FOR THE FULL LENGTH OF THE EMBANKMENT.
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Detention Basin Berm Section

12/20

N.T.S. Source: VHB LD_160

Town of Knightdale SCM Planting Notes

1. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS OR SOD. (CENTIPEDE/HYBRID-BERMUDA) **90% GERMINATION OF NON-CLUMPING TURF WILL BE REQUIRED PRIOR TO FINAL CERTIFICATION FROM 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 50 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 PLANTINGS. CONTRACTOR TO AMEND SOILS AND INSTALL SOILS IN PLANT, SHRUB, AND TREE AREAS PER DETAILS, SOIL SPECIFICATIONS. NCDENR 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" OF TOPSOIL AS SPECIFIED IN NOTE #2 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.

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VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
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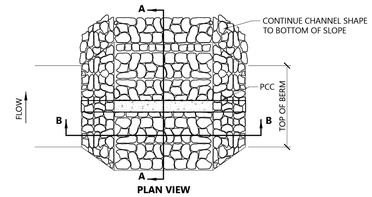
Corp. # C-3705

RETENTION POND PLANTINGS

VEGETATED SHELF (UN-SUBMERGED) 3,091 sf
Swamp Milkweed
Scarlet Rosemallow
Dwarf Joe Pye Weed
White Turtlehead

VEGETATED SHELF (SUBMERGED) 3,032 sf
Swamp Milkweed
Scarlet Rosemallow
Joe Py Weed
White Turtlehead



Emergency Spillway

1/16

N.T.S. Source: VHB LD_652

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
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- GREENWAY
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- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

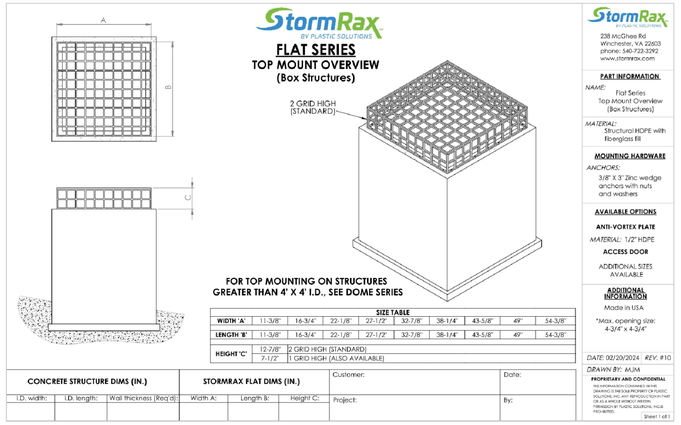
0 20 40 80 Feet

OS-A Bouyancy Calc

Project Name:	Lyndon Oaks			Project #:	39510.05
City/State:	Raleigh, NC			Date:	10/14/25
SCM #1 - Stormwater Wet Pond Design					
OS-A Anti-Flotation Sizing Calculations					
Outlet Structure Dimension					
Inside Riser Width:	5	ft	Outside Riser Width:	6	ft
Wall Thickness:	6	in			
Top Elevation:	251.25	ft			
Invert Elevation:	242	ft			
Bottom Elevation:	240.5	ft			
Extended Base:	18	in	Extended Base Width:	9	ft
Displaced Volume:	387	cu ft			
Displaced Weight:	24149	lbs			
Volume of Actual Structure:	102	cu ft			
Weight of Concrete Structure:	15263	lbs			
Weight of Earth with Extended Base:	22894	lbs			
Weight of Extra Depth:	8100	lbs			
Total Weight of Structure:	46256	lbs			
Factor of Safety:	1.9	OK			

Anti-Float Calculation

N.T.S. Source: VHB



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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
SCM 1 Details and Planting Plan Phase 1

ZMA-2-23

Drawing Number
C3.14

Sheet 55 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

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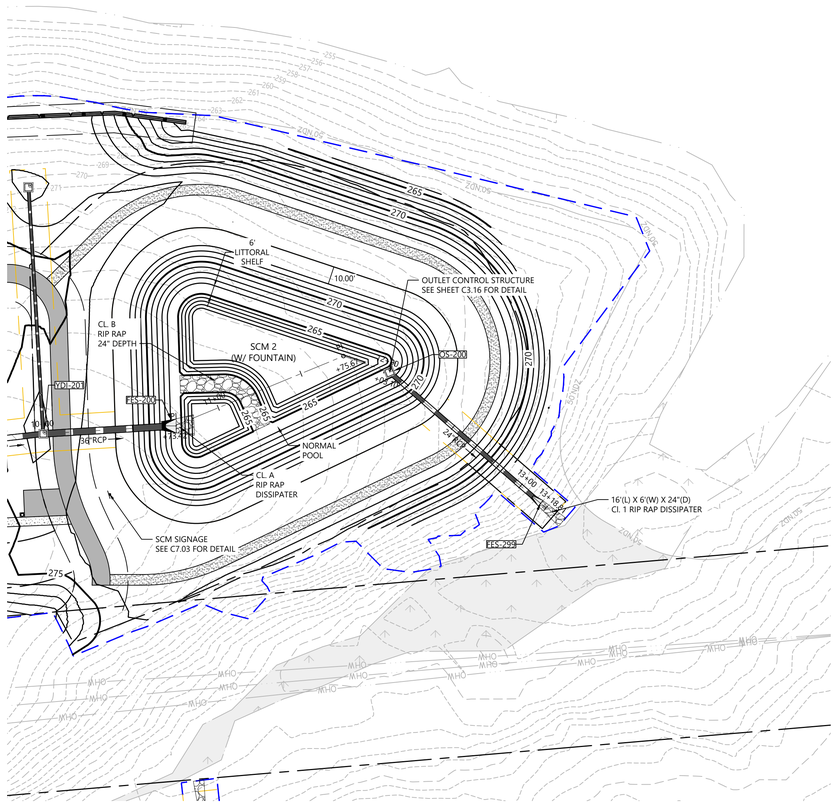

CONVERSION OF PERMANENT SCM DEVICES:

1) BASINS CANNOT BE CONVERTED TO PERMANENT SCM DEVICE UNTIL THE FOLLOWING CONDITIONS HAVE BEEN MET
   a. FOR RESIDENTIAL DEVELOPMENTS: 75% OF PARCELS LOCATED IN BASINS DRAINAGE AREA HAVE RECEIVED A FULL CERTIFICATE OF OCCUPANCY, ALL OPEN AREAS AND ROWS HAVE ACHIEVED AT LEAST 85% STABILIZATION
   b. FOR COMMERCIAL: 85% STABILIZATION HAS BEEN ACHIEVED IN THE BASINS DRAINAGE AREA

2) ONCE ALL CONDITIONS HAVE BEEN MET, SCHEDULE AN ONSITE MEETING WITH ESC INSPECTORS TO DETERMINE IF TEMPORARY ESC MEASURES CAN BE CONVERTED TO PERMANENT CONFIGURATION

3) IF APPROVED, PROCEED WITH CLEANING OUT AND REGRADING DEVICE, INSTALLING SLOPES AND SHELF IN ACCORDANCE WITH THE APPROVED CDS

4) ONCE THE DEVICE HAS BEEN CONFIGURED AND STABILIZED, SCHEDULE SURVEY CREW AND ENGINEER TO COMPLETE THE FINAL AS-BUILT SURVEY

5) ONCE APPROVED BY THE ENGINEER, SCHEDULE THE CCTV CAPTURE OF ALL SW CONVEYANCES WITHIN THE DRAINAGE AREA, INCLUDING SCMS

6) HAVE ENGINEER SUBMIT COMPLETE AS-BUILT DRAWING PACKAGE WHICH INCLUDES THE FOLLOWING:
   a. EXECUTED AS-BUILT CERTIFICATION FORM
   b. FINAL RECORDED O&M AGREEMENT FOR EACH DEVICE
   c. FIELD SURVEYED AS-BUILT PLANS
   d. GEOTECHNICAL REPORTS FOR
      i. DAM EMBANKMENT
      ii. KEY TRENCH
      iii. RISER STRUCTURE (INCLUDING ANTI-FLOATATION AND COLLAR/CRADLE)
      iv. PIPE
   e. CCTV FOOTAGE OF ALL SW CONVEYANCES, INCLUDING SCMS
   f. APPROVED LANDSCAPING AND PLANTING PLAN

7) ONCE THE AS-BUILT PACKAGE HAS BEEN APPROVED BY THE TOWN, STAFF WILL SCHEDULE AN ONSITE AUDIT INSPECTION TO CONFIRM SCM MEETS ORIGINAL DESIGN AND DRAWINGS

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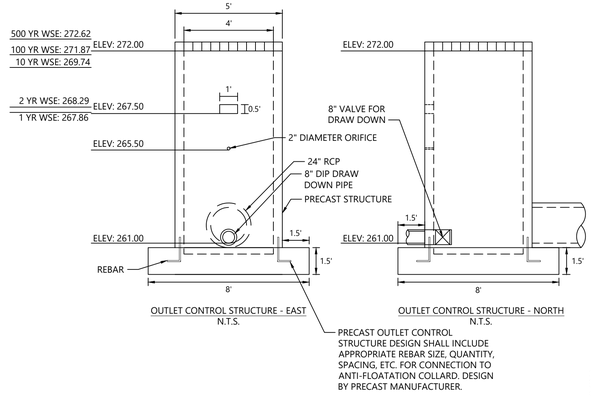

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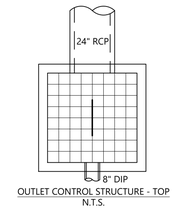

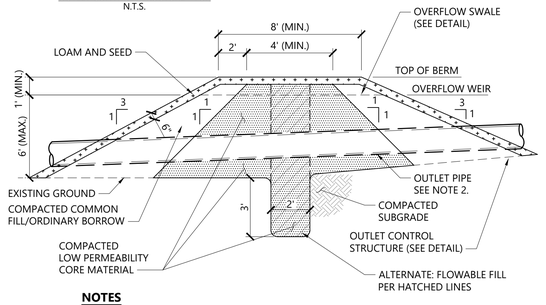

NOTES

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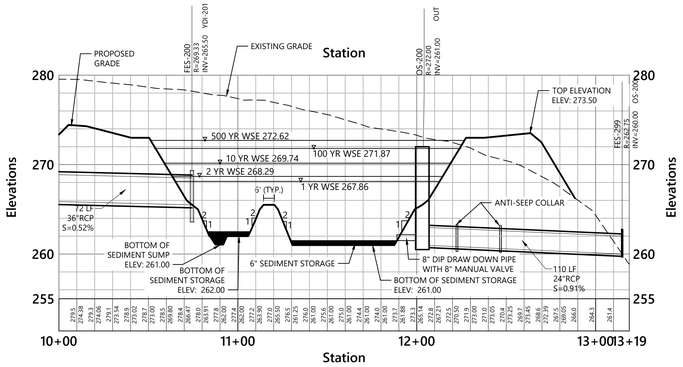
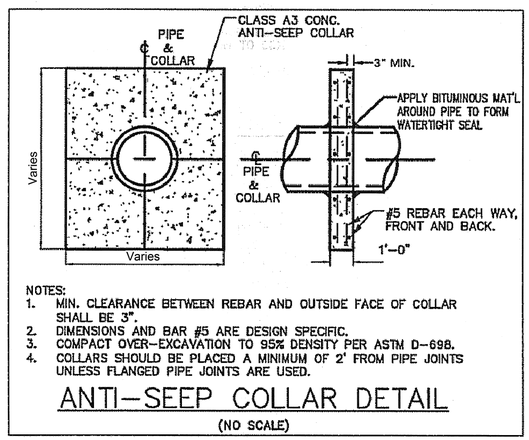
Detention Basin Berm Section

N.T.S. Source: VHB 12/20 LD_160



SCM 2 - WET POND



Anti-Seep Collar

N.T.S. Source: VHB

vhb.com

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Vert. 0 4 8 16 Feet
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Lyndon Oaks Phases 1 & 2

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
SCM 2 Plan and Profile Phase 2

ZMA-2-23
Drawing Number: C3.15

Sheet 56 of 224

Project Number: 39510.05

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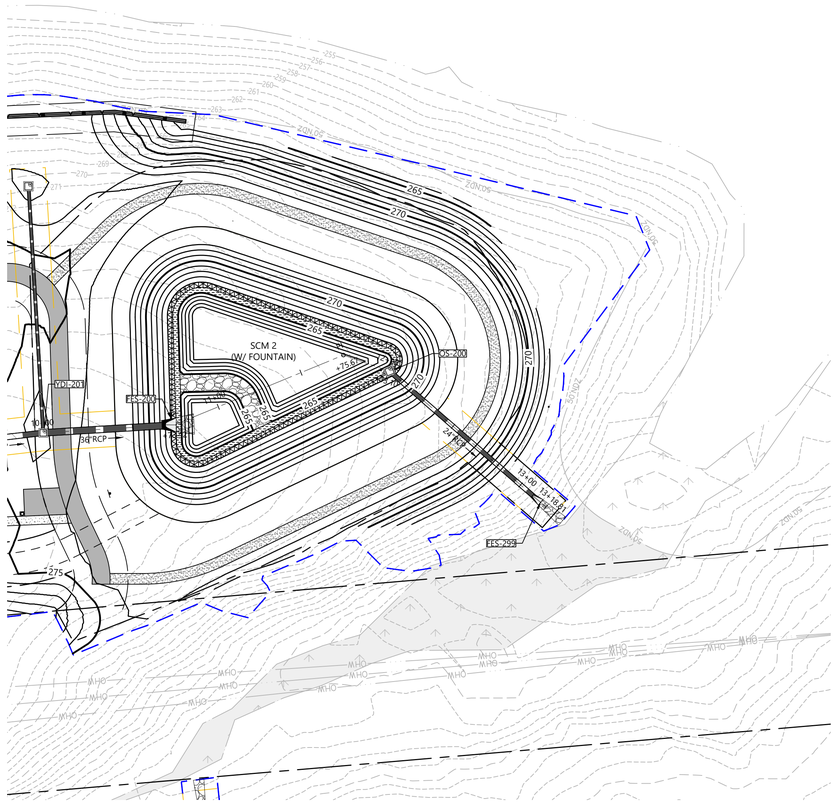
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 10:50:24 AM WSHERRILL Plotted Thursday, December 18, 2025 10:57:18 AM Will Sherrill



RETENTION POND PLANTINGS

VEGETATED SHELF (UN-SUBMERGED) 2,124 sf
Swamp Milkweed
Scarlet Rosemallow
Dwarf Joe Pye Weed
White Turtlehead

VEGETATED SHELF (SUBMERGED) 2,059 sf
Swamp Milkweed
Scarlet Rosemallow
Joe Py Weed
White Turtlehead

Town of Knightdale SCM Planting Notes

1. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS OR SOD. (CENTIPEDE/HYBRID-BERMUDA) **90% GERMINATION OF NON-CLUMPING TURF WILL BE REQUIRED PRIOR TO FINAL CERTIFICATION FROM 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 50 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 PLANTINGS. CONTRACTOR TO AMEND SOILS AND INSTALL SOILS IN PLANT, SHRUB, AND TREE AREAS PER DETAILS, SOIL SPECIFICATIONS. NCDENR 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" OF TOPSOIL AS SPECIFIED IN NOTE #2 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.

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940 Main Campus Drive
Suite 500
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919.829.0328
Corp. # C-3705

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

vhb

OS-A Bouyancy Calc

Project Name: Lyndon Oaks
City/State: Raleigh, NC

Project #: 39510.05
Date: 7/21/25

SCM #2 - Stormwater Wet Pond Design

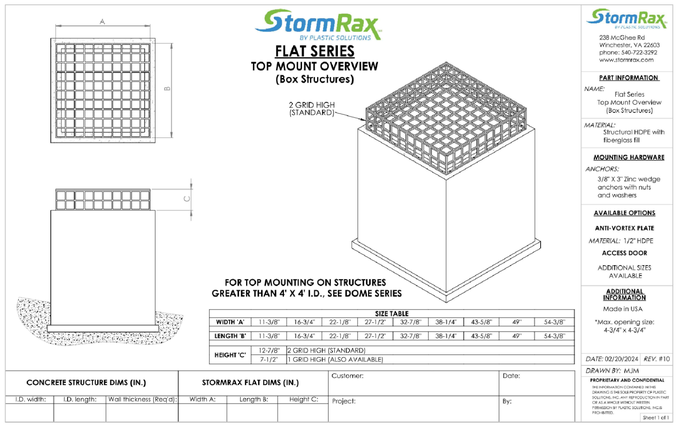
OS-A Anti-Flotation Sizing Calculations

Outlet Structure Dimension

Inside Riser Width:	4 ft	Outside Riser Width:	5 ft
Wall Thickness:	6 in		
Top Elevation:	272 ft		
Invert Elevation:	261 ft		
Bottom Elevation:	259.5 ft		
Extended Base:	18 in	Extended Base Width	8 ft
Displaced Volume:	313 cu ft		
Displaced Weight:	19500 lbs		
Volume of Actual Structure:	99 cu ft		
Weight of Concrete Structure:	14850 lbs		
Weight of Earth with Extended Base:	23595 lbs		
Weight of Extra Depth:	5625 lbs		
Total Weight of Structure:	44070 lbs		
Factor of Safety:	2.3 OK		

Anti-Float Calculation

N.T.S. Source: VHB



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By: _____ Date: _____
Town Engineer

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Land Use Administrator

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
SCM 2 Details and Planting Plan Phase 2

ZMA-2-23

Drawing Number
C3.16

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 57 of 224

Project Number 39510.05

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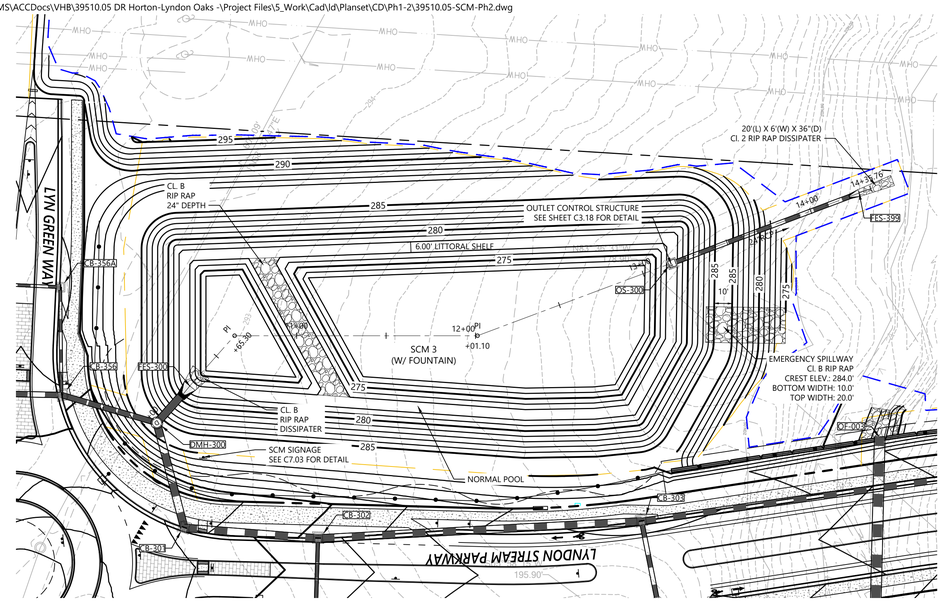
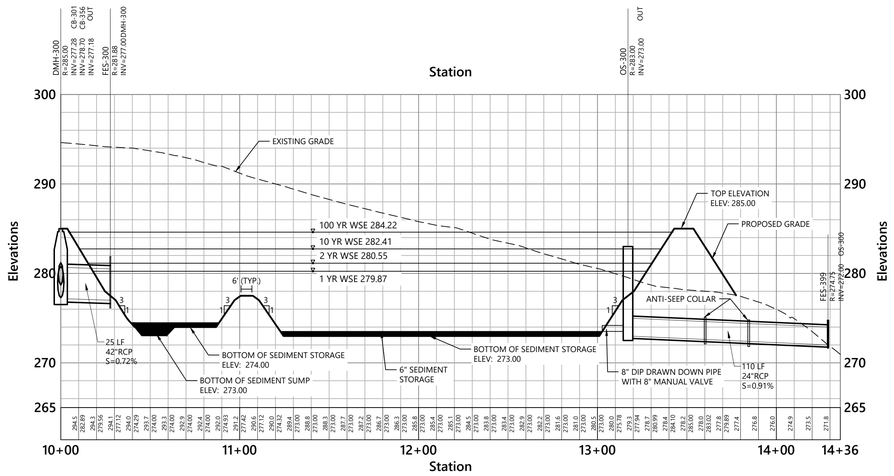




SCM 3 - WET POND (DMH-1 - FES 299)

CONVERSION OF PERMANENT SCM DEVICES:

1) BASINS CANNOT BE CONVERTED TO PERMANENT SCM DEVICE UNTIL THE FOLLOWING CONDITIONS HAVE BEEN MET
   a. FOR RESIDENTIAL DEVELOPMENTS: 75% OF PARCELS LOCATED IN BASINS DRAINAGE AREA HAVE RECEIVED A FULL CERTIFICATE OF OCCUPANCY, ALL OPEN AREAS AND ROWS HAVE ACHIEVED AT LEAST 85% STABILIZATION
   b. FOR COMMERCIAL: 85% STABILIZATION HAS BEEN ACHIEVED IN THE BASINS DRAINAGE AREA
2) ONCE ALL CONDITIONS HAVE BEEN MET, SCHEDULE AN ONSITE MEETING WITH ESC INSPECTORS TO DETERMINE IF TEMPORARY ESC MEASURES CAN BE CONVERTED TO PERMANENT CONFIGURATION
3) IF APPROVED, PROCEED WITH CLEANING OUT AND REGRADING DEVICE, INSTALLING SLOPES AND SHELF IN ACCORDANCE WITH THE APPROVED CDS
4) ONCE THE DEVICE HAS BEEN CONFIGURED AND STABILIZED, SCHEDULE SURVEY CREW AND ENGINEER TO COMPLETE THE FINAL AS-BUILT SURVEY
5) ONCE APPROVED BY THE ENGINEER, SCHEDULE THE CCTV CAPTURE OF ALL SW CONVEYANCES WITHIN THE DRAINAGE AREA, INCLUDING SCMS
6) HAVE ENGINEER SUBMIT COMPLETE AS-BUILT DRAWING PACKAGE WHICH INCLUDES THE FOLLOWING:
   a. EXECUTED AS-BUILT CERTIFICATION FORM
   b. FINAL RECORDED O&M AGREEMENT FOR EACH DEVICE
   c. FIELD SURVEYED AS-BUILT PLANS
   d. GEOTECHNICAL REPORTS FOR
      i. DAM EMBANKMENT
      ii. KEY TRENCH
      iii. RISER STRUCTURE (INCLUDING ANTI-FLOATATION AND COLLAR/CRADLE)
      iv. PIPE
   e. CCTV FOOTAGE OF ALL SW CONVEYANCES, INCLUDING SCMS
   f. APPROVED LANDSCAPING AND PLANTING PLAN
7) ONCE THE AS-BUILT PACKAGE HAS BEEN APPROVED BY THE TOWN, STAFF WILL SCHEDULE AN ONSITE AUDIT INSPECTION TO CONFIRM SCM MEETS ORIGINAL DESIGN AND DRAWINGS
8) ONCE APPROVED, THE TOWN WILL SCHEDULE AN ONSITE HANDOFF MEETING TO GO OVER FUTURE MAINTENANCE RESPONSIBILITIES, THIS MEETING WILL GENERATE A FORMAL HANDOFF DOCUMENT WHICH WILL NEED TO BE RECORDED AS AN ADDENDUM TO THE ORIGINAL O&M AGREEMENT.
9) ONCE THE DOCUMENT HAS BEEN SIGNED AND RECORDED, THE TOWN WILL ISSUE THE FINAL CERTIFICATION LETTER, CLOSING OUT THE CONSTRUCTION CYCLE ON EACH SCM
10) THE FUTURE MAINTENANCE OF THE DEVICE WILL BE THE RESPONSIBILITY OF THE PARTIES OUTLINED IN THE RECORDED O&M AGREEMENT.

REQUIRED SCM INSPECTIONS SEQUENCE - SCM INSTALLATION

WHEN SCHEDULING INSPECTIONS, PLEASE CALL THE PUBLIC WORKS ADMINISTRATIVE ASSISTANT AT (919) 217-2250.

PLEASE NOTE: THE FOLLOWING PERSONNEL MUST BE PRESENT AT ALL INSPECTIONS:

1) SITE SUPERVISOR
2) GEOTECH
3) AS-BUILT CERTIFYING ENGINEER OR SOMEONE UNDER THEIR SUPERVISION

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SCM WITH DAM:

1) KEY TRENCH EXCAVATION
2) PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
   a. CONCRETE CRADLE
   b. ANTI-SEEP COLLAR
   c. SEEPAGE DIAPHRAGM
3) OUTLET STRUCTURE
4) ANTI-FLOTATION BALLAST
5) ANY SITE-CONSTRUCTED REINFORCED CONCRETE STRUCTURES

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SAND FILTERS OR BIORETENTION DEVICES

a. SUBGRADE OR CONSTRUCTED FOUNDATION
b. OUTLET OR RISER IN COMBINATION WITH CONNECTING UNDERDRAINS
c. FILTER MEDIA
d. DAM ITEMS ON PREVIOUS LIST IF APPLICABLE

GEOTECHNICAL TESTING AND CERTIFICAITON

ALL REPORTS ARE TO BE SUBMITTED WITHIN 30-DAYS OF DAM COMPLETION

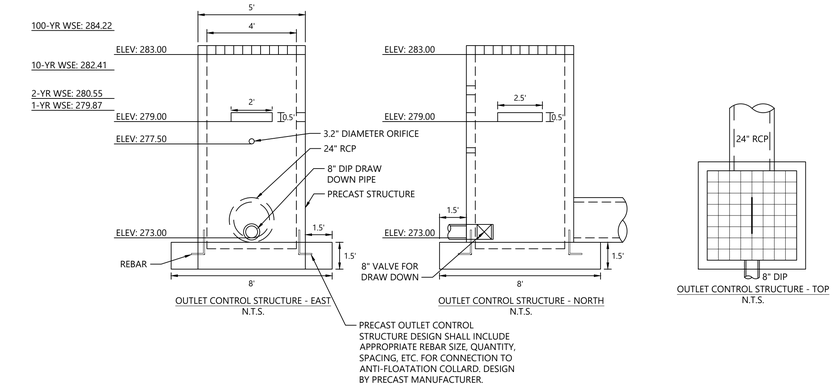
REQUIRED GEOTECHNICAL RECORDS INCLUDE:
1) DAM EMBANKMENT MATERIAL COMPOSITION AND DENSITY TESTING WITH A PASSING COMPACTION OF 95% OR GREATER
2) MAP THAT LABELS ALL POINTS WHERE THE DAM AND DAM FOUNDATION AREAS WERE TESTED
3) DIGITAL PHOTOS SHOWING THE DAM FOUNDATION AREAS, THE RISER, THE PRINCIPLE SPILLWAY PIPE, THE CONCRETE CRADLE, THE SEEPAGE DIAPHRAM, RELIEF DRAINS, ETC. BEING INSTALLED.

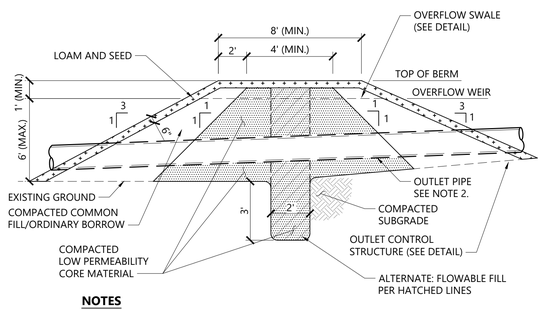
SCM CONVERSION THRESHOLD

WHERE SEDIMENT BASINS ARE TO BE CONVERTED TO STORM WATER CONTROL MEASURES, BASIN CONVERSION SHALL NOT TAKE PLACE UNTIL 75% OF UNITS HAVE RECEIVED A CERTIFICATE OF OCCUPANCY. ALL BASIN COMPONENTS (SKIMMER, BAFFLES, INLETS, STONE PAD, GROUND COVER, ETC.) AND THE MAINTENANCE OF THE BASIN WILL NEED TO CONTINUE UNTIL THE CONVERSION THRESHOLD IS MET.

REQUIRED SCM INSPECTIONS NOTE:

THE TOWN OF KNIGHTDALE REQUIRES THAT ALL INFRASTRUCTURE INSTILLATION BE OBSERVED BY SOMEONE OPERATING UNDER THE DESIGN ENGINEERS AUTHORITY, A LICENSED GEOTECH, AND A REPRESENTATIVE FROM THE TOWN OF KNIGHTDALE. REFERENCE THE DETAILED SCM INSPECTIONS SEQUENCE. WHEN PREPARING FOR THESE INSTALLATIONS, SCHEDULE AN INSPECTION BY CALLING THE PUBLIC WORKS OFFICE AT (919) 217-2250.





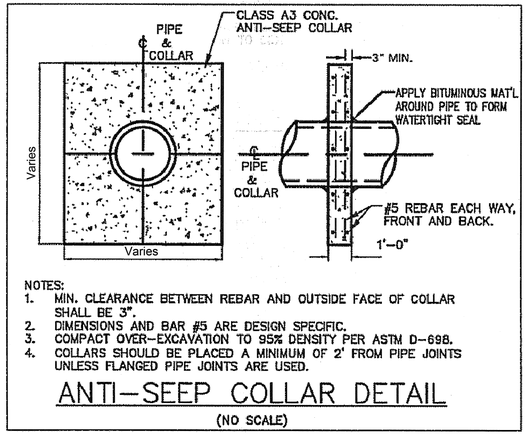
NOTES

1. LOW PERMEABILITY CORE MATERIAL IS CONTINUOUS FOR THE FULL LENGTH OF THE EMBANKMENT.
2. WHERE PIPES PENETRATE THE LOW PERMEABILITY CORE, PIPE SHALL BE BEDDED IN THE LOW PERMEABILITY CORE MATERIAL.
3. THE BERM SECTION IS SUBJECT TO CHANGE AND WILL BE BASED ON THE RESULTS OF FURTHER GEOTECHNICAL INVESTIGATIONS.

Detention Basin Berm Section

12/20

N.T.S. Source: VHB LD_160



Anti-Seep Collar

N.T.S. Source: VHB

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- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title: SCM 3 Plan and Profile Phase 2

ZMA-2-23

Drawing Number: C3.17

Sheet 58 of 224

Project Number: 39510.05

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

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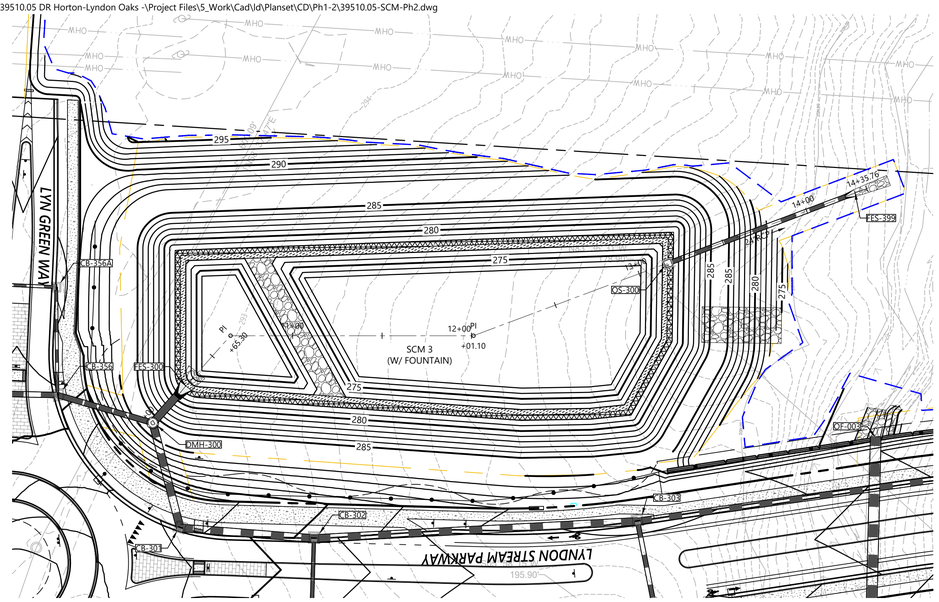

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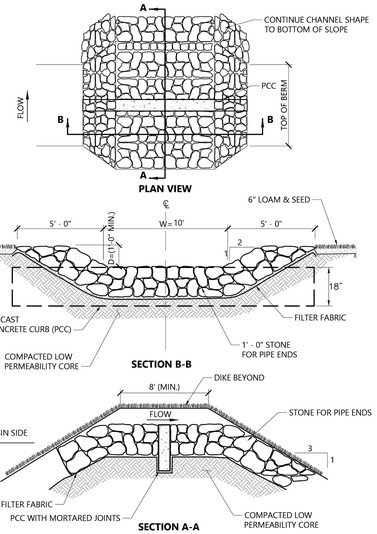

Emergency Spillway

N.T.S. Source: VHB LD_652

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vhb.

OS-A Bouyancy Calc

Project Name: Lyndon Oaks — Project #: 39510.05
City/State: Raleigh, NC — Date: 7/21/25

SCM #3 - Stormwater Wet Pond Design

OS-A Anti-Flotation Sizing Calculations

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Total Weight of Structure:	40575 lbs		
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Anti-Float Calculation

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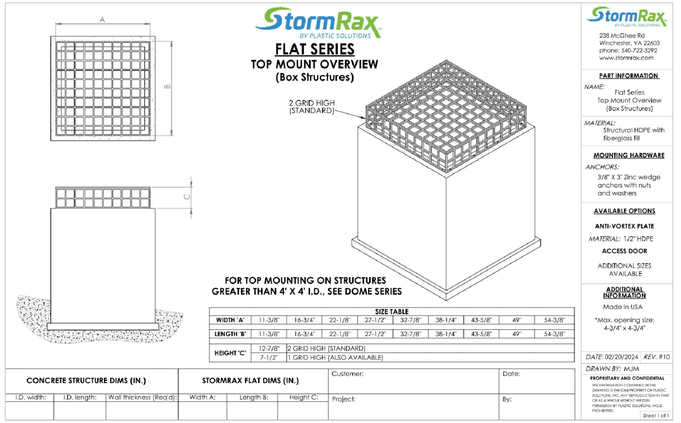

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Lyndon Oaks Phases 1 & 2

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Designed by: VHB — Checked by: CT, KS, JB, RB
Issued for: Approval — Date: January 17, 2025

Drawing Title
SCM 3 Details and Planting Plan Phase 2

ZMA-2-23 — Drawing Number C3.18

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 59 of 224

Project Number 39510.05

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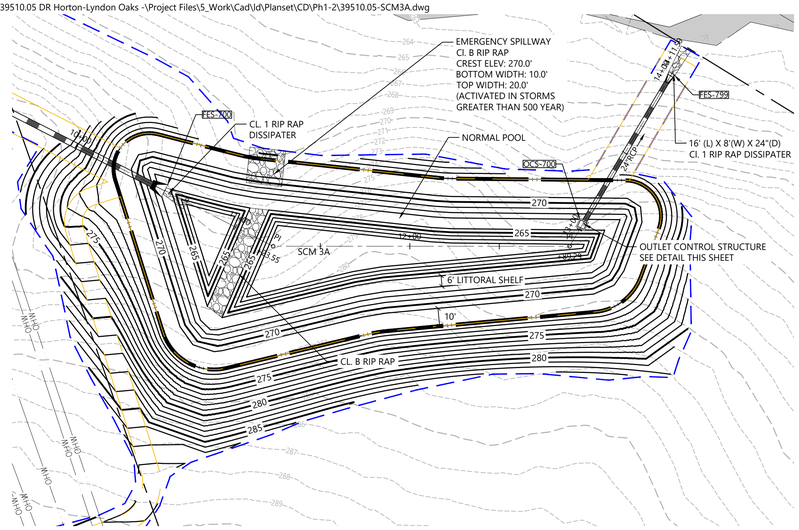

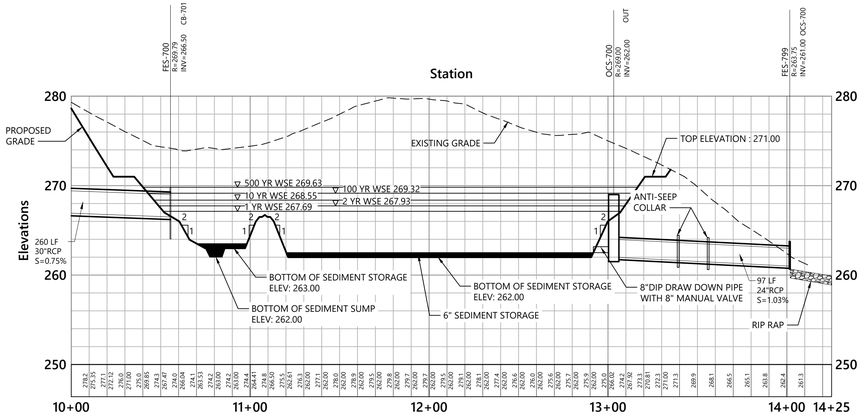

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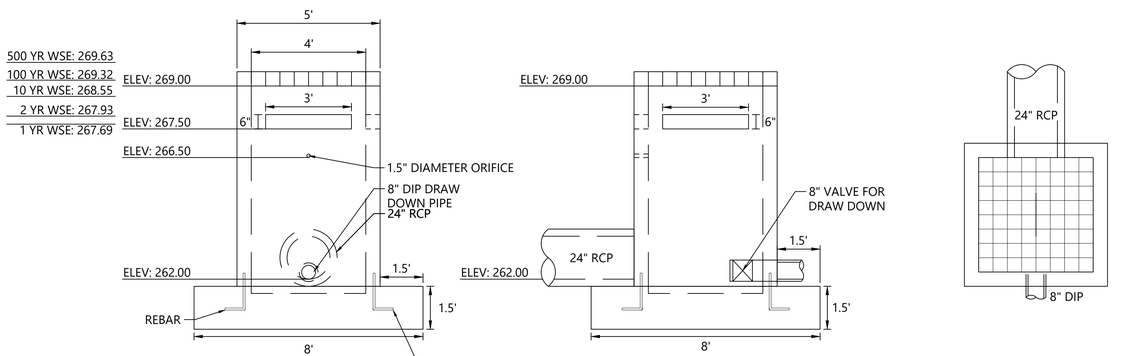

OUTLET CONTROL STRUCTURE - SOUTH

PRECAST OUTLET CONTROL STRUCTURE DESIGN SHALL INCLUDE APPROPRIATE REBAR SIZE, QUANTITY, SPACING, ETC. FOR CONNECTION TO ANTI-FLOATATION COLLARD. DESIGN BY PRECAST MANUFACTURER.

OUTLET CONTROL STRUCTURE - EAST
N.T.S.

OUTLET CONTROL STRUCTURE - TOP
N.T.S.

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   b. FOR COMMERCIAL: 85% STABILIZATION HAS BEEN ACHIEVED IN THE BASINS DRAINAGE AREA

2) ONCE ALL CONDITIONS HAVE BEEN MET, SCHEDULE AN ONSITE MEETING WITH ESC INSPECTORS TO DETERMINE IF TEMPORARY ESC MEASURES CAN BE CONVERTED TO PERMANENT CONFIGURATION

3) IF APPROVED, PROCEED WITH CLEANING OUT AND REGRADING DEVICE, INSTALLING SLOPES AND SHELF IN ACCORDANCE WITH THE APPROVED CDS

4) ONCE THE DEVICE HAS BEEN CONFIGURED AND STABILIZED, SCHEDULE SURVEY CREW AND ENGINEER TO COMPLETE THE FINAL AS-BUILT SURVEY

5) ONCE APPROVED BY THE ENGINEER, SCHEDULE THE CCTV CAPTURE OF ALL SW CONVEYANCES WITHIN THE DRAINAGE AREA, INCLUDING SCMS

6) HAVE ENGINEER SUBMIT COMPLETE AS-BUILT DRAWING PACKAGE WHICH INCLUDES THE FOLLOWING:
   a. EXECUTED AS-BUILT CERTIFICATION FORM
   b. FINAL RECORDED O&M AGREEMENT FOR EACH DEVICE
   c. FIELD SURVEYED AS-BUILT PLANS
   d. GEOTECHNICAL REPORTS FOR
      i. DAM EMBANKMENT
      ii. KEY TRENCH
      iii. RISER STRUCTURE (INCLUDING ANTI-FLOATATION AND COLLAR/CRADLE)
      iv. PIPE
   e. CCTV FOOTAGE OF ALL SW CONVEYANCES, INCLUDING SCMS
   f. APPROVED LANDSCAPING AND PLANTING PLAN

7) ONCE THE AS-BUILT PACKAGE HAS BEEN APPROVED BY THE TOWN, STAFF WILL SCHEDULE AN ONSITE AUDIT INSPECTION TO CONFIRM SCM MEETS ORIGINAL DESIGN AND DRAWINGS

8) ONCE APPROVED, THE TOWN WILL SCHEDULE AN ONSITE HANDOFF MEETING TO GO OVER FUTURE MAINTENANCE RESPONSIBILITIES. THIS MEETING WILL GENERATE A FORMAL HANDOFF DOCUMENT WHICH WILL NEED TO BE RECORDED AS AN ADDENDUM TO THE ORIGINAL O&M AGREEMENT.

9) ONCE THE DOCUMENT HAS BEEN SIGNED AND RECORDED, THE TOWN WILL ISSUE THE FINAL CERTIFICATION LETTER, CLOSING OUT THE CONSTRUCTION CYCLE ON EACH SCM

10) THE FUTURE MAINTENANCE OF THE DEVICE WILL BE THE RESPONSIBILITY OF THE PARTIES OUTLINED IN THE RECORDED O&M AGREEMENT.

REQUIRED SCM INSPECTIONS SEQUENCE - SCM INSTALLATION

WHEN SCHEDULING INSPECTIONS, PLEASE CALL THE PUBLIC WORKS ADMINISTRATIVE ASSISTANT AT (919) 217-2250.

PLEASE NOTE: THE FOLLOWING PERSONNEL MUST BE PRESENT AT ALL INSPECTIONS:

1) SITE SUPERVISOR
2) GEOTECH
3) AS-BUILT CERTIFYING ENGINEER OR SOMEONE UNDER THEIR SUPERVISION

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SCM WITH DAM:

1) KEY TRENCH EXCAVATION
2) PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
   a. CONCRETE CRADLE
   b. ANTI-SEEP COLLAR
   c. SEEPAGE DIAPHRAGM
3) OUTLET STRUCTURE
4) ANTI-FLOTATION BALLAST
5) ANY SITE-CONSTRUCTED REINFORCED CONCRETE STRUCTURES

THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SAND FILTERS OR BIORETENTION DEVICES

a. SUBGRADE OR CONSTRUCTED FOUNDATION
b. OUTLET OR RISER IN COMBINATION WITH CONNECTING UNDERDRAINS
c. FILTER MEDIA
d. DAM ITEMS ON PREVIOUS LIST IF APPLICABLE

GEOTECHNICAL TESTING AND CERTIFICAITON

ALL REPORTS ARE TO BE SUBMITTED WITHIN 30-DAYS OF DAM COMPLETION

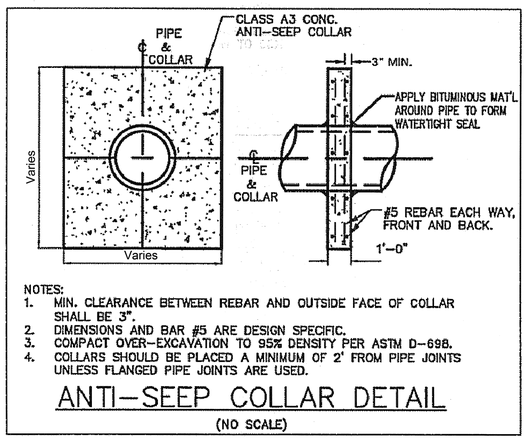
REQUIRED GEOTECHNICAL RECORDS INCLUDE:
1) DAM EMBANKMENT MATERIAL COMPOSITION AND DENSITY TESTING WITH A PASSING COMPACTION OF 95% OR GREATER
2) MAP THAT LABELS ALL POINTS WHERE THE DAM AND DAM FOUNDATION AREAS WERE TESTED
3) DIGITAL PHOTOS SHOWING THE DAM FOUNDATION AREAS, THE RISER, THE PRINCIPLE SPILLWAY PIPE, THE CONCRETE CRADLE, THE SEEPAGE DIAPHRAM, RELIEF DRAINS, ETC. BEING INSTALLED.

SCM CONVERSION THRESHOLD

WHERE SEDIMENT BASINS ARE TO BE CONVERTED TO STORM WATER CONTROL MEASURES, BASIN CONVERSION SHALL NOT TAKE PLACE UNTIL 75% OF UNITS HAVE RECEIVED A CERTIFICATE OF OCCUPANCY. ALL BASIN COMPONENTS (SKIMMER, BAFFLES, INLETS, STONE PAD, GROUND COVER, ETC.) AND THE MAINTENANCE OF THE BASIN WILL NEED TO CONTINUE UNTIL THE CONVERSION THRESHOLD IS MET.

REQUIRED SCM INSPECTIONS NOTE:

THE TOWN OF KNIGHTDALE REQUIRES THAT ALL INFRASTRUCTURE INSTILLATION BE OBSERVED BY SOMEONE OPERATING UNDER THE DESIGN ENGINEERS AUTHORITY, A LICENSED GEOTECH, AND A REPRESENTATIVE FROM THE TOWN OF KNIGHTDALE. REFERENCE THE DETAILED SCM INSPECTIONS SEQUENCE. WHEN PREPARING FOR THESE INSTALLATIONS, SCHEDULE AN INSPECTION BY CALLING THE PUBLIC WORKS OFFICE AT (919) 217-2250.



Anti-Seep Collar

N.T.S. Source: VHB

Know what's below. Call before you dig.

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

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VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
SCM 3A Plan and Profile
Phase 2

ZMA-2-23

Drawing Number
C3.19

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 60 of 224

Project Number
39510.05

Saved Thursday, December 18, 2025 10:49:18 AM WSHERRILL Plotted Thursday, December 18, 2025 10:59:08 AM Will Sherrill

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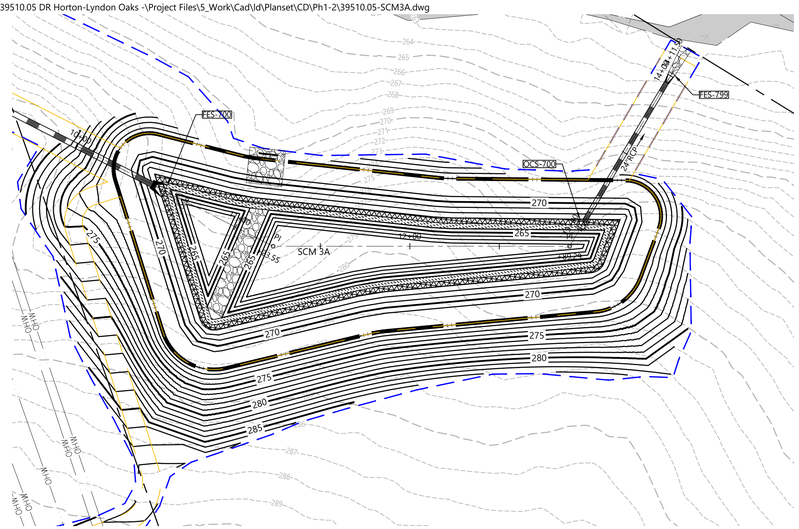

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OS-A Bouyancy Calc

Project Name: Lyndon Oaks
City/State: Raleigh, NC

Project #: 39510.05
Date: 7/21/25

SCM #3A - Stormwater Wet Pond Design

OS-A Anti-Flotation Sizing Calculations

Outlet Structure Dimension

Inside Riser Width:	4 ft	Outside Riser Width:	5 ft
Wall Thickness:	6 in		
Top Elevation:	269 ft		
Invert Elevation:	262 ft		
Bottom Elevation:	260.5 ft		
Extended Base:	18 in	Extended Base Width	8 ft
Displaced Volume:	213 cu ft		
Displaced Weight:	13260 lbs		
Volume of Actual Structure:	63 cu ft		
Weight of Concrete Structure:	9450 lbs		
Weight of Earth with Extended Base:	15015 lbs		
Weight of Extra Depth:	5625 lbs		
Total Weight of Structure:	30090 lbs		
Factor of Safety:	2.3 OK		

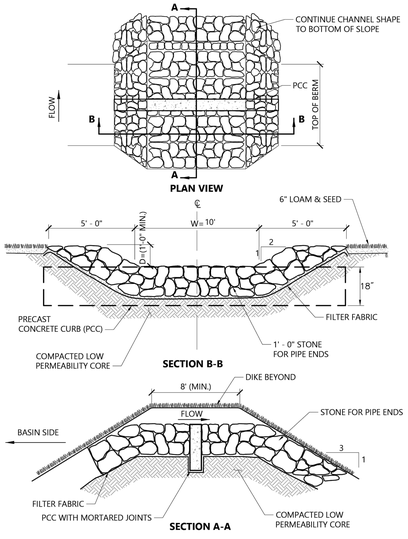
Anti-Float Calculation

N.T.S. Source: VHB

RETENTION POND PLANTINGS

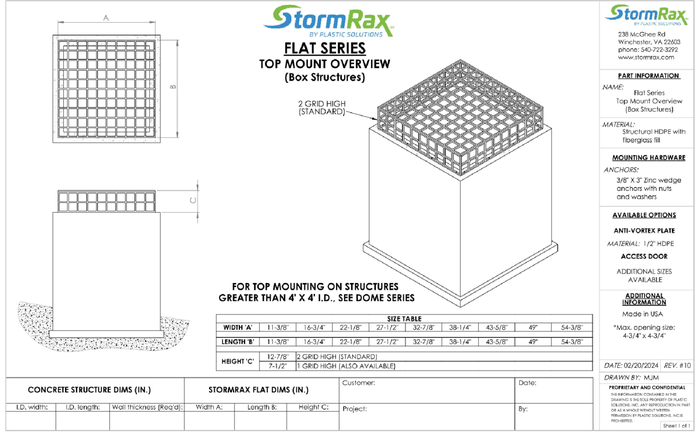
VEGETATED SHELF (UN-SUBMERGED) 1,783 sf
Swamp Milkweed
Scarlet Rosemallow
Dwarf Joe Pye Weed
White Turtlehead

VEGETATED SHELF (SUBMERGED) 1,704 sf
Swamp Milkweed
Scarlet Rosemallow
Joe Py Weed
White Turtlehead



Emergency Spillway

N.T.S. Source: VHB 1/16 LD_652



Town of Knightdale SCM Planting Notes

1. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS OR SOD. (CENTIPEDE/HYBRID-BERMUDA) **90% GERMINATION OF NON-CLUMPING TURF WILL BE REQUIRED PRIOR TO FINAL CERTIFICATION FROM 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 50 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 PLANTINGS. CONTRACTOR TO AMEND SOILS AND INSTALL SOILS IN PLANT, SHRUB, AND TREE AREAS PER DETAILS, SOIL SPECIFICATIONS. NCDENR 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" OF TOPSOIL AS SPECIFIED IN NOTE #2 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.

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Site Legend

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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
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Land Use Administrator

Drawing Title
SCM 3A Details and Planting Plan Phase 2

ZMA-2-23

Drawing Number
C3.20

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 61 of 224

Project Number
39510.05

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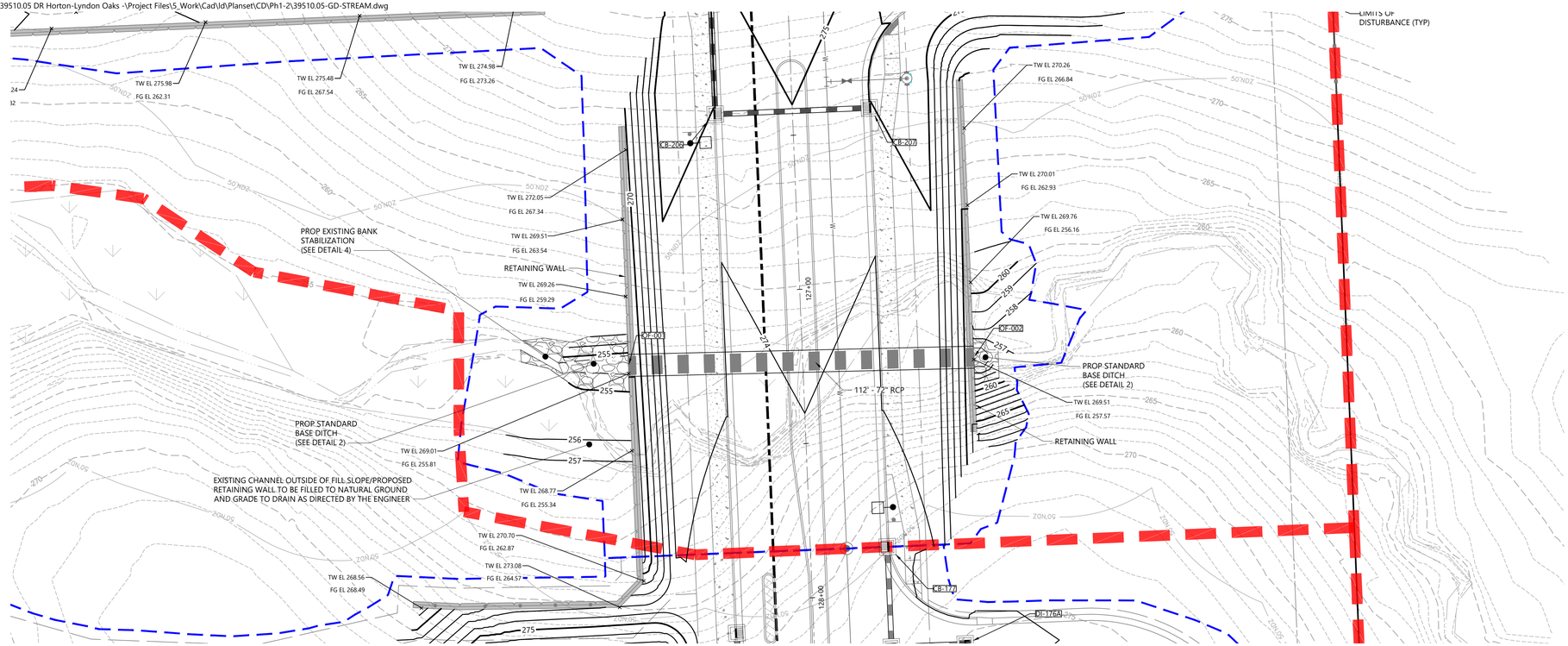

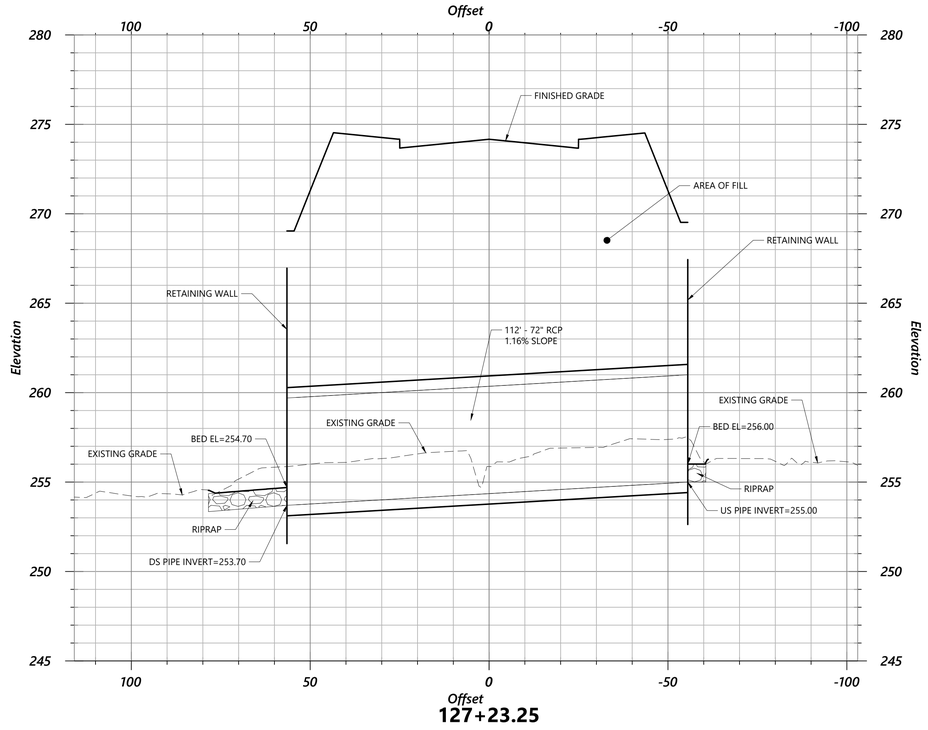

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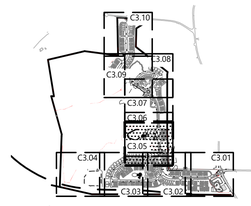

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Lyndon Oaks Phases 1 & 2

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Land Use Administrator

Drawing Title

Stream Crossing Detail
Lyndon Stream Parkway
Station 127+23.25

ZMA-2-23

Drawing Number

C3.21

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 62 of 224

Project Number 39510.05

Saved Monday, October 6, 2025 10:35:10 AM MMEZA Plotted Tuesday, December 16, 2025 3:19:59 PM Marco Meza

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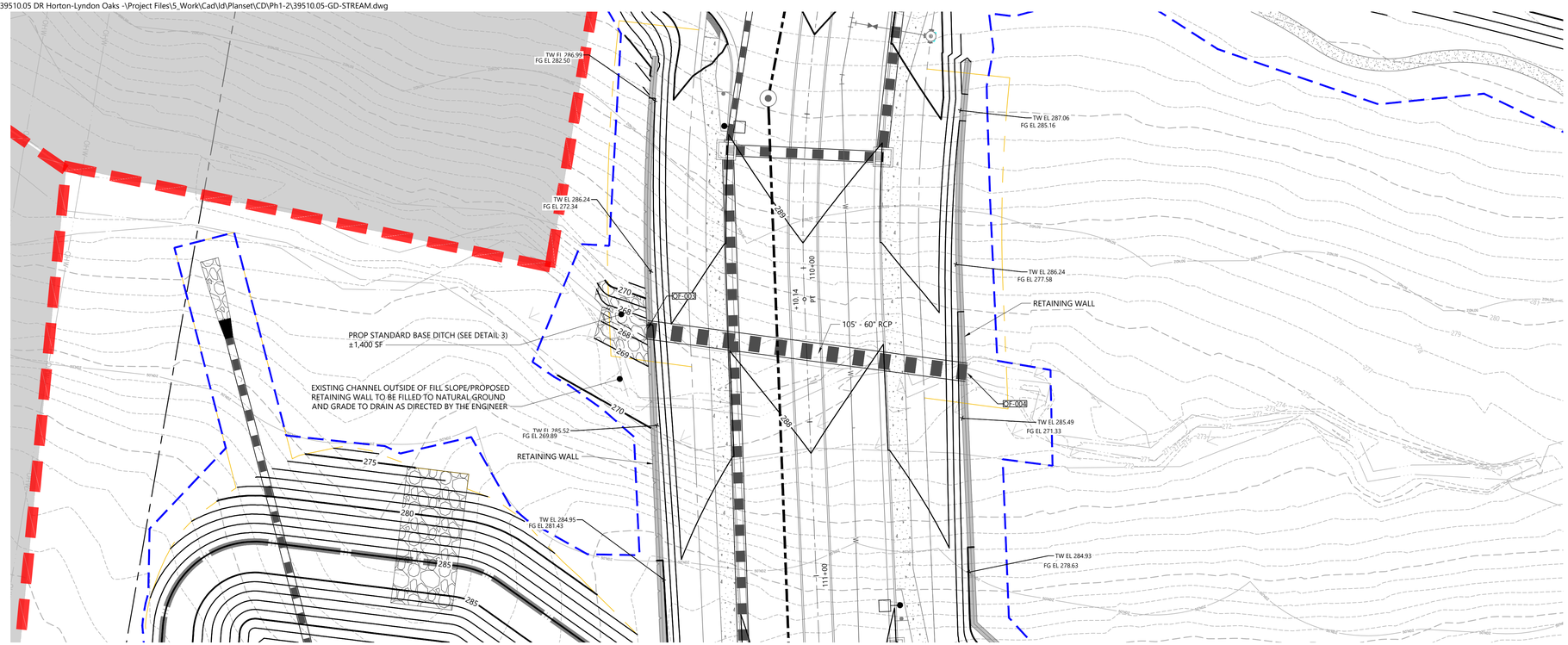

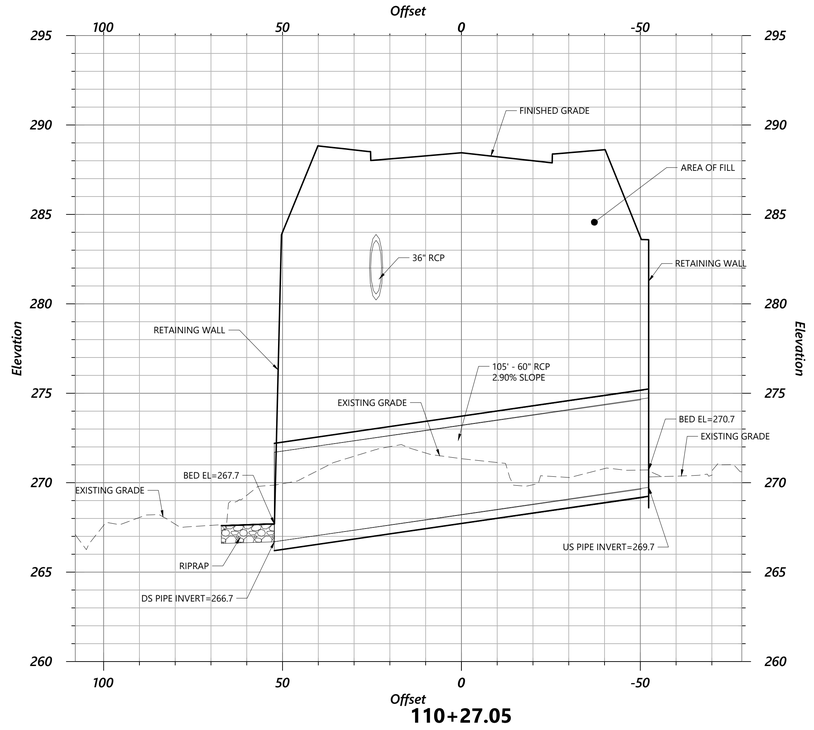

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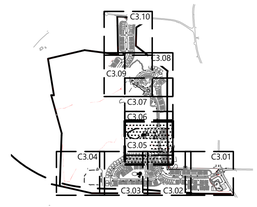

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Stream Crossing Detail
Lyndon Stream Parkway
Station 110+27.05

ZMA-2-23

Drawing Number: C3.22

Sheet 63 of 224

Project Number: 39510.05

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12/15/2025

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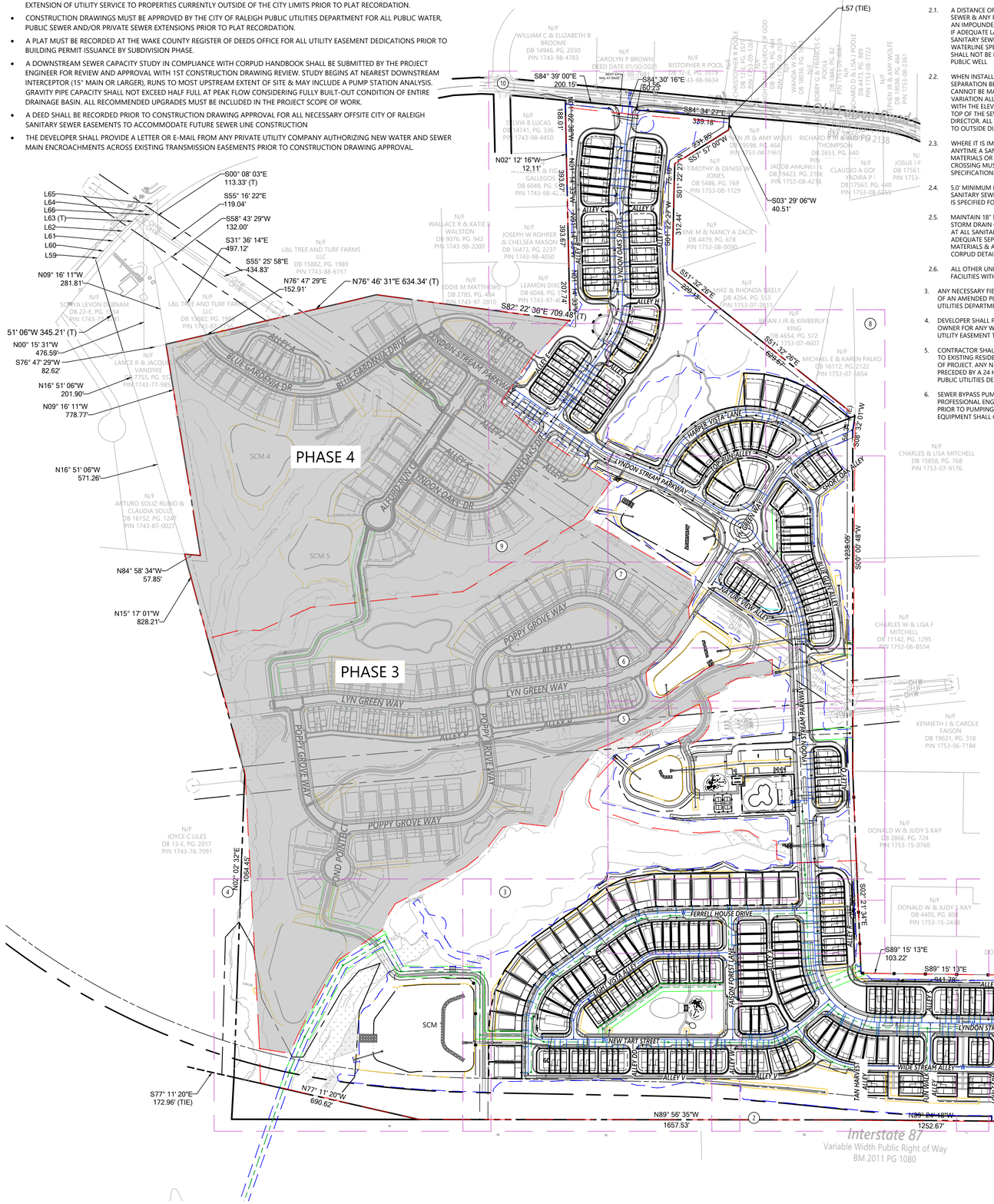
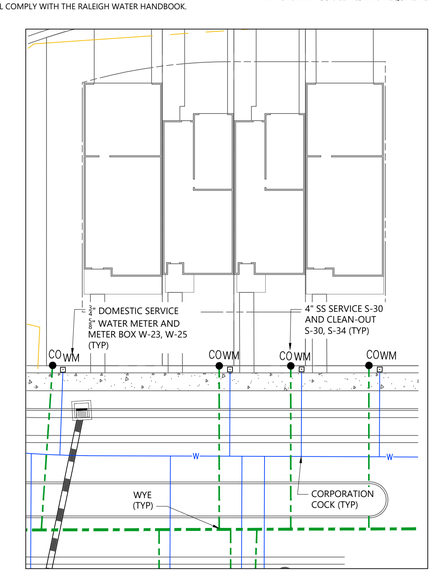
CITY OF RALEIGH, RALEIGH WATER CONDITIONS OF APPROVAL:

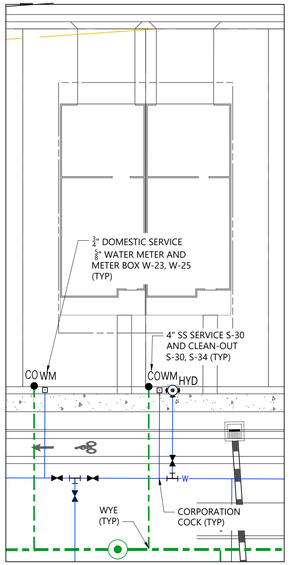
- ALL WATER, SANITARY SEWER AND REUSE FACILITIES WITHIN EACH SUBDIVISION PHASE SHALL BE INSTALLED, INSPECTED, TESTED, AND ACCEPTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT FOR OPERATIONS AND MAINTENANCE PRIOR TO 1ST CO FOR THAT SUBDIVISION PHASE.
- A PETITION FOR ANNEXATION INTO THE KNIGHTDALE'S ETJ SHALL BE SUBMITTED IN ACCORDANCE WITH CITY COUNCIL POLICY FOR EXTENSION OF UTILITY SERVICE TO PROPERTIES CURRENTLY OUTSIDE OF THE CITY LIMITS PRIOR TO PLAT RECORDATION.
- CONSTRUCTION DRAWINGS MUST BE APPROVED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT FOR ALL PUBLIC WATER, PUBLIC SEWER AND/OR PRIVATE SEWER EXTENSIONS PRIOR TO PLAT RECORDATION.
- A PLAT MUST BE RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS OFFICE FOR ALL UTILITY EASEMENT DEDICATIONS PRIOR TO BUILDING PERMIT ISSUANCE BY SUBDIVISION PHASE.
- A DOWNSTREAM SEWER CAPACITY STUDY IN COMPLIANCE WITH CORPUD HANDBOOK SHALL BE SUBMITTED BY THE PROJECT ENGINEER FOR REVIEW AND APPROVAL WITH 1ST CONSTRUCTION DRAWING REVIEW. STUDY BEGINS AT NEAREST DOWNSTREAM INTERCEPTOR (15" MAIN OR LARGER), RUNS TO MOST UPSTREAM EXTENT OF SITE & MAY INCLUDE A PUMP STATION ANALYSIS. GRAVITY PIPE CAPACITY SHALL NOT EXCEED HALF FULL AT PEAK FLOW CONSIDERING FULLY BUILT-OUT CONDITION OF ENTIRE DRAINAGE BASIN. ALL RECOMMENDED UPGRADES MUST BE INCLUDED IN THE PROJECT SCOPE OF WORK.
- A DEED SHALL BE RECORDED PRIOR TO CONSTRUCTION DRAWING APPROVAL FOR ALL NECESSARY OFFSITE CITY OF RALEIGH SANITARY SEWER EASEMENTS TO ACCOMMODATE FUTURE SEWER LINE CONSTRUCTION
- THE DEVELOPER SHALL PROVIDE A LETTER OR E-MAIL FROM ANY PRIVATE UTILITY COMPANY AUTHORIZING NEW WATER AND SEWER MAIN ENCROACHMENTS ACROSS EXISTING TRANSMISSION EASEMENTS PRIOR TO CONSTRUCTION DRAWING APPROVAL.



Utility Notes

1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION)
2. UTILITY SEPARATION REQUIREMENTS:
   - 2.1. A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS, HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL
   - 2.2. WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER
   - 2.3. WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS
   - 2.4. 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER
   - 2.5. MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)
   - 2.6. ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED
3. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION
4. DEVELOPER SHALL PROVIDE 30 DAYS ADVANCE WRITTEN NOTICE TO OWNER FOR ANY WORK REQUIRED WITHIN AN EXISTING CITY OF RALEIGH UTILITY EASEMENT TRAVERSING PRIVATE PROPERTY
5. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT
6. SEWER BYPASS PUMPING - A BYPASS PLAN SEALED BY AN NC PROFESSIONAL ENGINEER SHALL BE PROVIDED TO RALEIGH WATER PRIOR TO PUMPING OPERATIONS FOR APPROVAL. THE OPERATIONS AND EQUIPMENT SHALL COMPLY WITH THE RALEIGH WATER HANDBOOK.
7. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCEMAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS
8. IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE
9. INSTALL ¾" COPPER* WATER SERVICES WITH METERS CENTERED ON THE ROW OR WITHIN A 2'X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE
10. INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE. PRIVATE DISTRIBUTION SYSTEM WILL BE INSPECTED AS PART OF THE INFRASTRUCTURE PERMIT.
11. PRIVATE SEWER MAINS AS PART OF A COLLECTION SYSTEM ARE PERMITTED AND INSPECTED UNDER THE PRIVATE INFRASTRUCTURE PERMIT FOR SEWER.
12. ANY WATER OR SEWER SERVICES ON PRIVATE PROPERTY THAT WILL BE INSTALLED UNDER CONSTRUCTION DRAWINGS MAY REQUIRE A PLUMBING UTILITY PERMIT IN THE CITY OF RALEIGH.
13. INSTALL SEWER SERVICES WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED PER THE CURRENT NC PLUMBING CODE.
14. PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0 ABOVE THE NEXT UPSTREAM MANHOLE.
15. ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
16. NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION
17. GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE RW FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A UC AND/OR BUILDING PERMIT. CONTACT (919) 996-4516 OR FOG@RALEIGHNC.GOV FOR MORE INFORMATION.
18. CROSS-CONNECTION REQUIREMENTS:
    - 18.1. CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON THE DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA.
    - 18.2. THE DEVICES SHALL MEET THE AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS AND BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST.
    - 18.3. THE DEVICE AND INSTALLATION SHALL MEET THE GUIDELINES OF APPENDIX A - GUIDELINES AND REQUIREMENTS FOR THE CROSS CONNECTION PROGRAM IN RALEIGH'S SERVICE AREA.
    - 18.4. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH, INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT CROSS.CONNECTION@RALEIGHNC.GOV FOR MORE INFORMATION.
19. NOTICE FOR PROJECTS THAT INVOLVE AN OVERSIZED MAIN OR URBAN MAIN REPLACEMENT. ANY CITY REIMBURSEMENT GREATER THAN $250,000.00 MUST UNDERGO THE PUBLIC BIDDING PROCESS.
20. PRIVATE SUB-METERING - NO RESALE OF WATER SHALL OCCUR WITHOUT APPROVAL OF THE NORTH CAROLINA UTILITY COMMISSION. SUB-METERING SHALL BE IN ACCORDANCE WITH SECTION 1400 OF THE SAFE DRINKING WATER ACT".
21. HYDRANTS NOT LOCATED WITHIN THE PUBLIC RIGHT OF WAY SHALL HAVE A 3'X3' CORUPD WATER EASEMENT CENTERED ON THE HYDRANT EXTENDING FROM THE PROPERTY LINE





WATER METERS NOT LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL HAVE A 2FT X 2FT CITY OF RALEIGH WATERLINE EASEMENT CENTERED ON THE WATER METER EXTENDING FROM THE PROPERTY LINE

Typ. Quadplex Townhome Lot 2/2025

1" = 20' Source: VHB

Typ. Duplex Townhome Lot 2/2025

1" = 20' Source: VHB

Viewport Number	Sheets
1	C4.01, C4.20
2	C4.02, C4.21
3	C4.03, C4.22
4	C4.04, C4.23
5	C4.05, C4.24
6	C4.06, C4.25
7	C4.07, C4.26
8	C4.08, C4.27
9	C4.09, C4.28
10	C4.10, C4.29

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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: _____ Date: _____
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- 6 FT WHITE VINYL PRIVACY FENCE

0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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2	Town of Knightdale Comments	08/06/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: Overall Utility Plan

ZMA-2-23

Drawing Number: C4.00

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 64 of 224

Project Number: 39510.05

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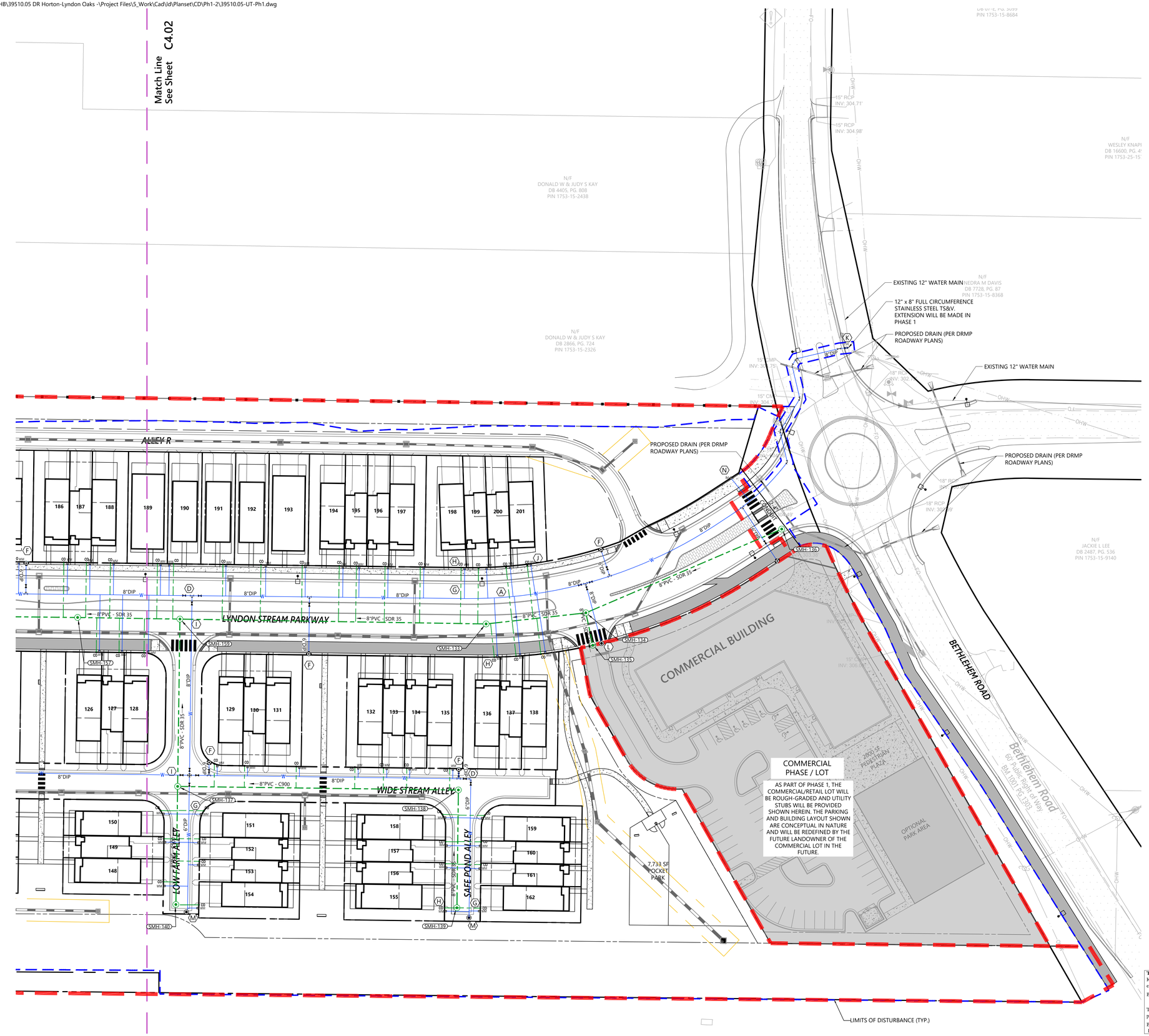

Utility Notes Keyed To Plan

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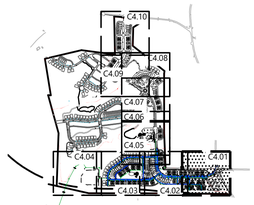

Key

1" = 1,500'

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Utility Plan Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C4.01

Sheet 65 of 224

Project Number 39510.05

Know what's **below.** **Call** before you dig.

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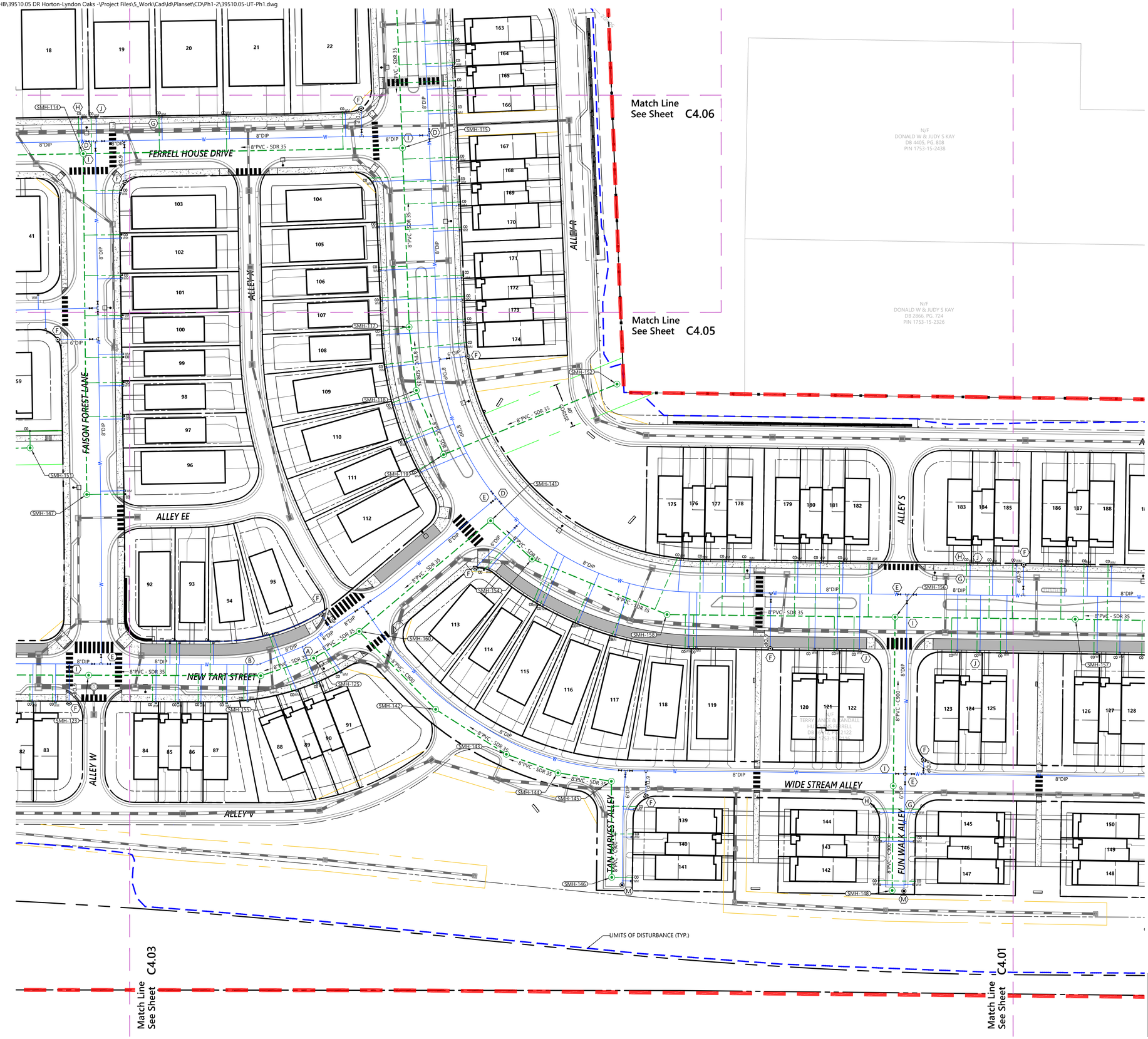
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 12:48:58 PM MMEZA Plotted Thursday, December 18, 2025 1:11:00 PM Marco Meza



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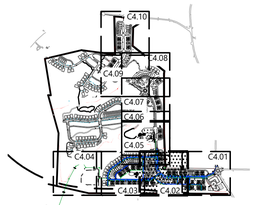

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Utility Plan Phase 1 (2 of 5)

ZMA-2-23

Drawing Number
C4.02

Sheet 66 of 224

Project Number
39510.05

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12/15/2025

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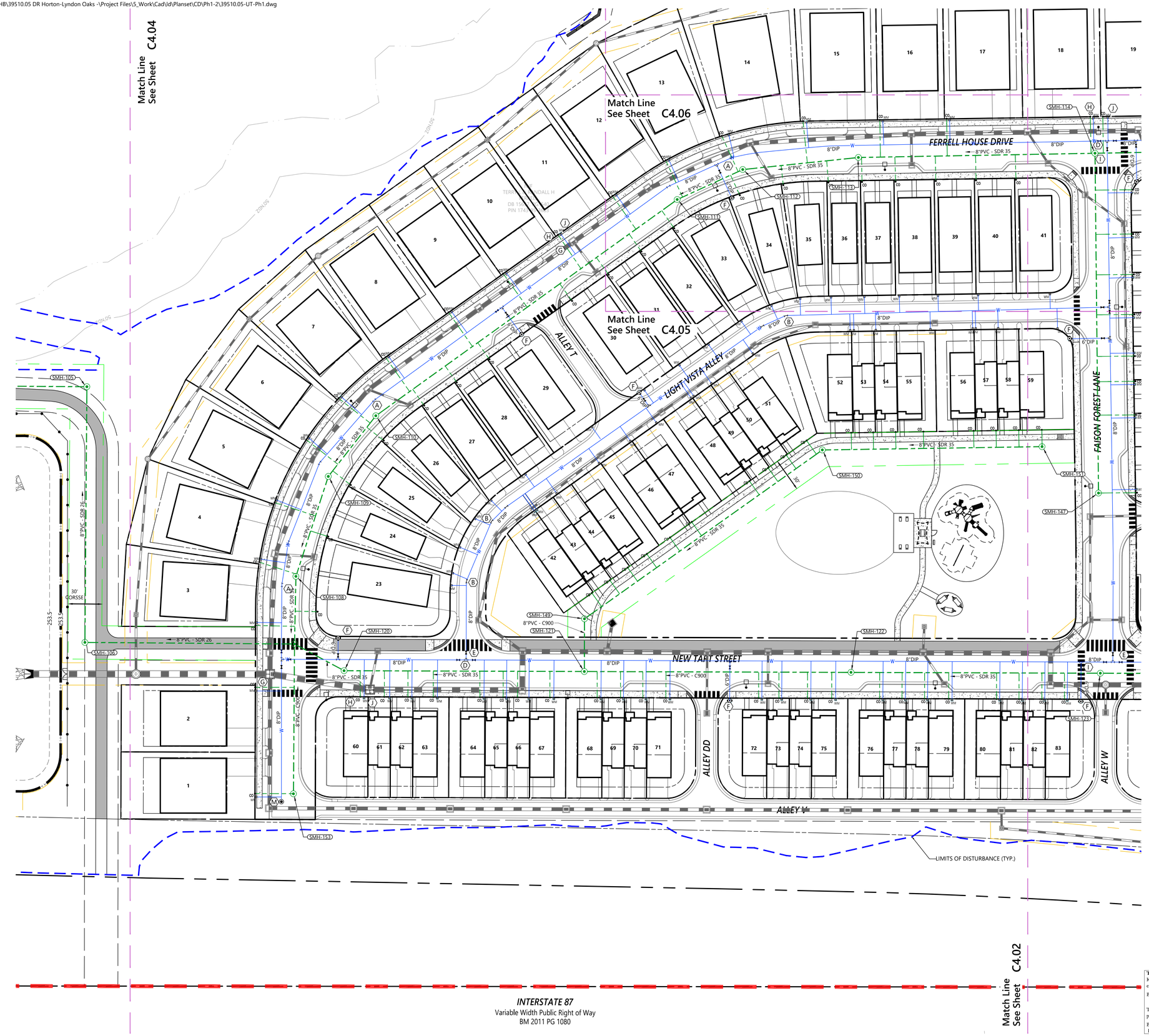

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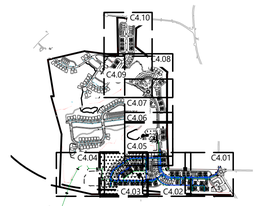

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title: Utility Plan Phase 1 (3 of 5)

ZMA-2-23

Drawing Number: C4.03

Sheet 67 of 224

Project Number: 39510.05

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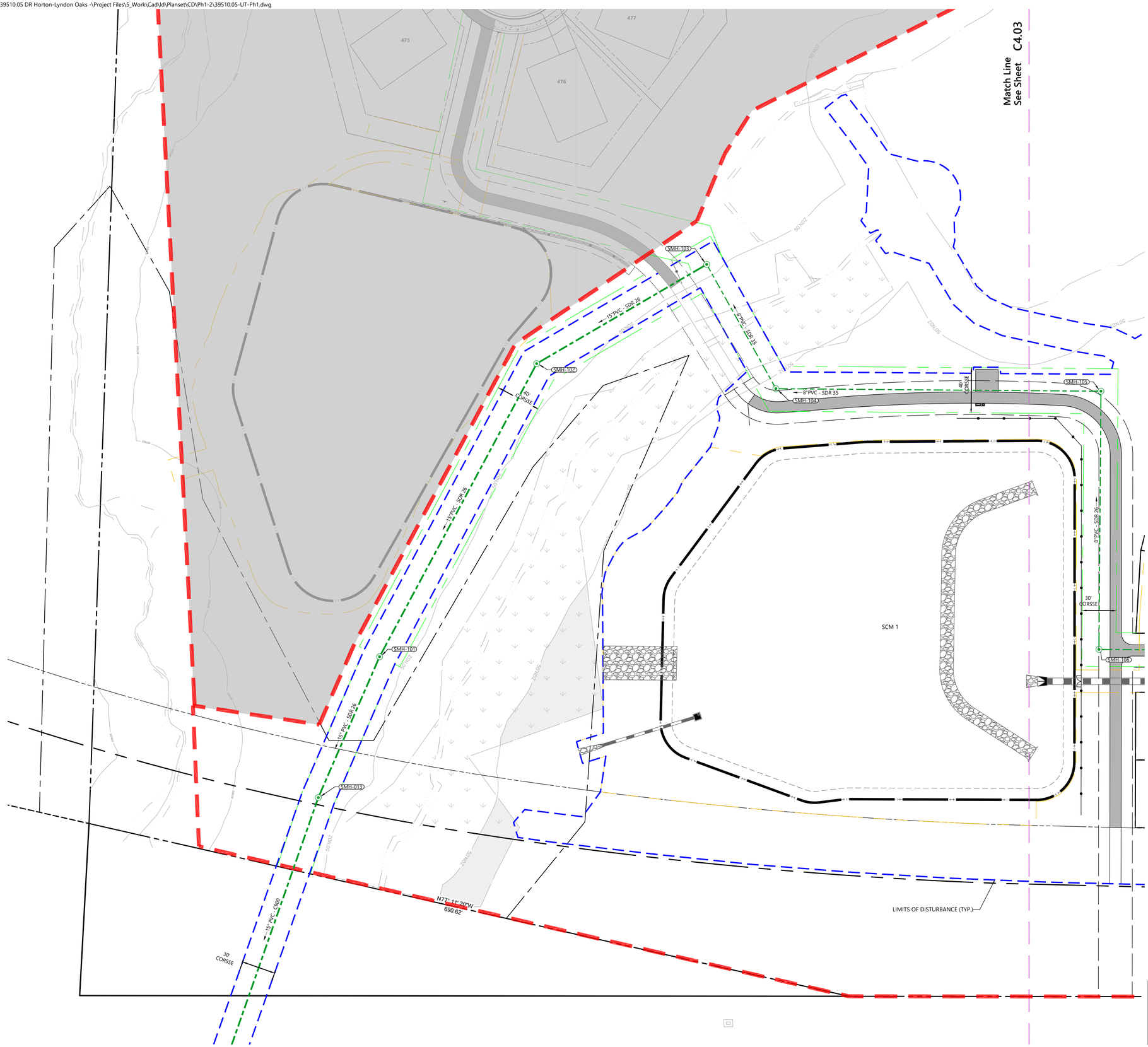

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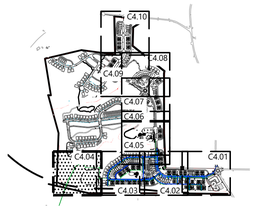

Key

1" = 1,500'

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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2	Town of Knightdale Comments	08/06/2025	CT/KS
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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Utility Plan Phase 1 (4 of 5)

ZMA-2-23

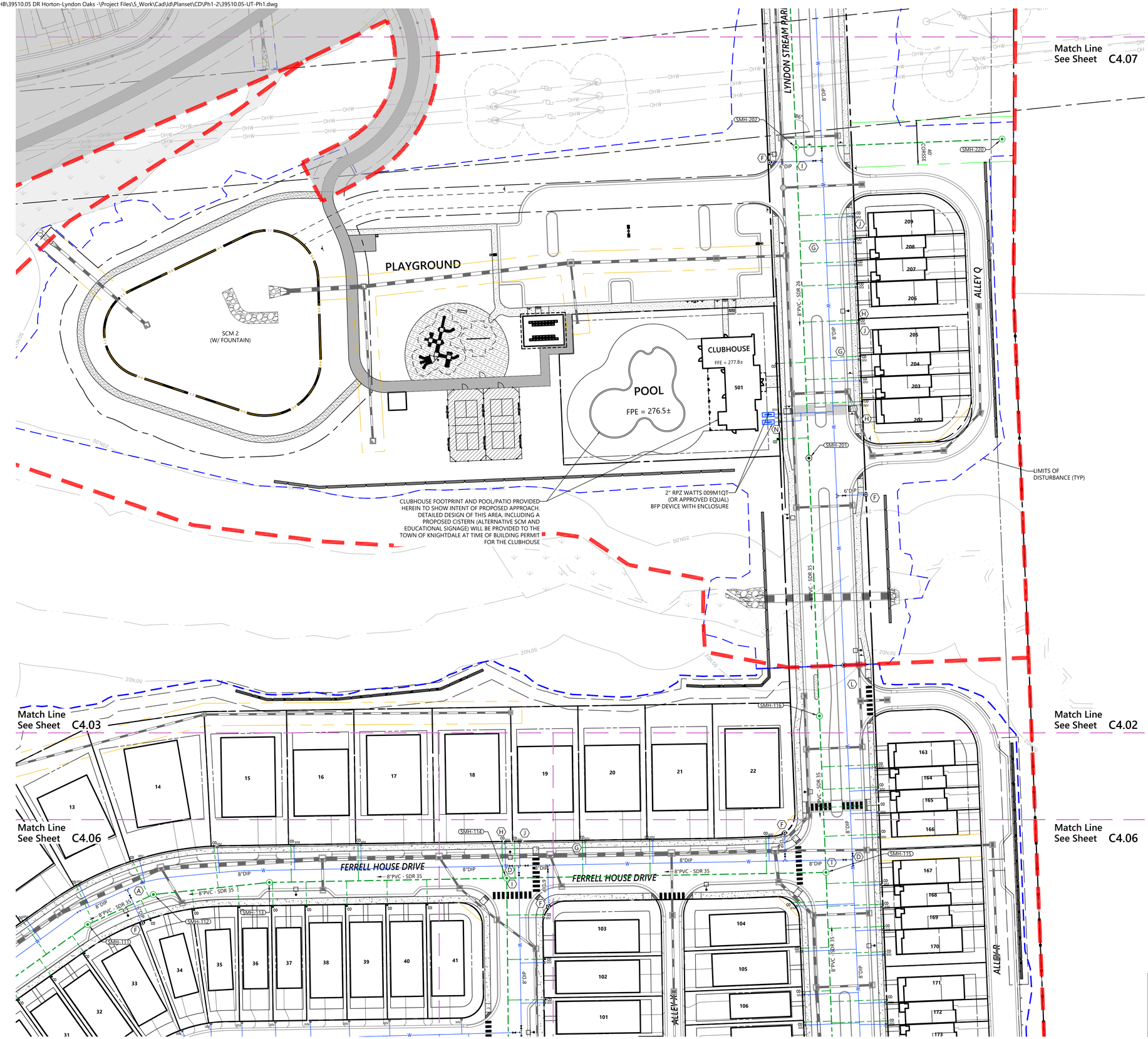
Drawing Number
C4.04

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 68 of 224

Project Number 39510.05



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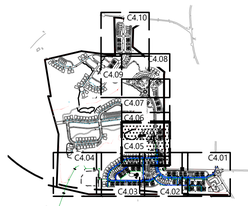

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title: Utility Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number: C4.05

Sheet 69 of 224

Project Number: 39510.05

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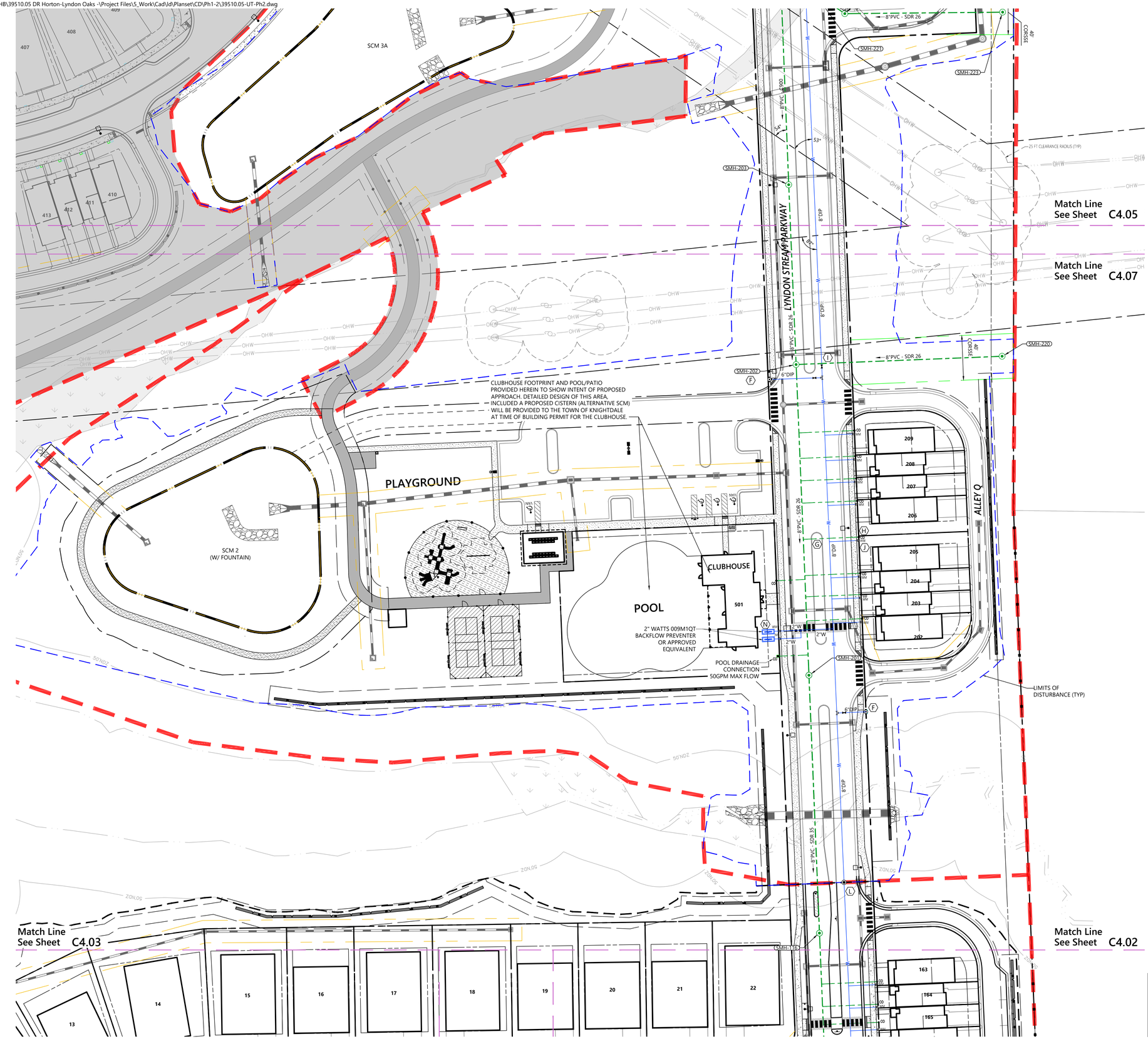
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 1:25:54 PM MMEZA Plotted Friday, December 19, 2025 2:41:05 PM Marco Meza



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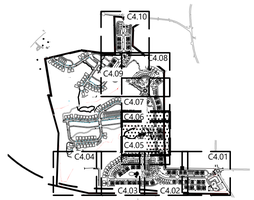

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Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	**Date**
Approval	January 17, 2025

Drawing Title
Utility Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number
C4.06

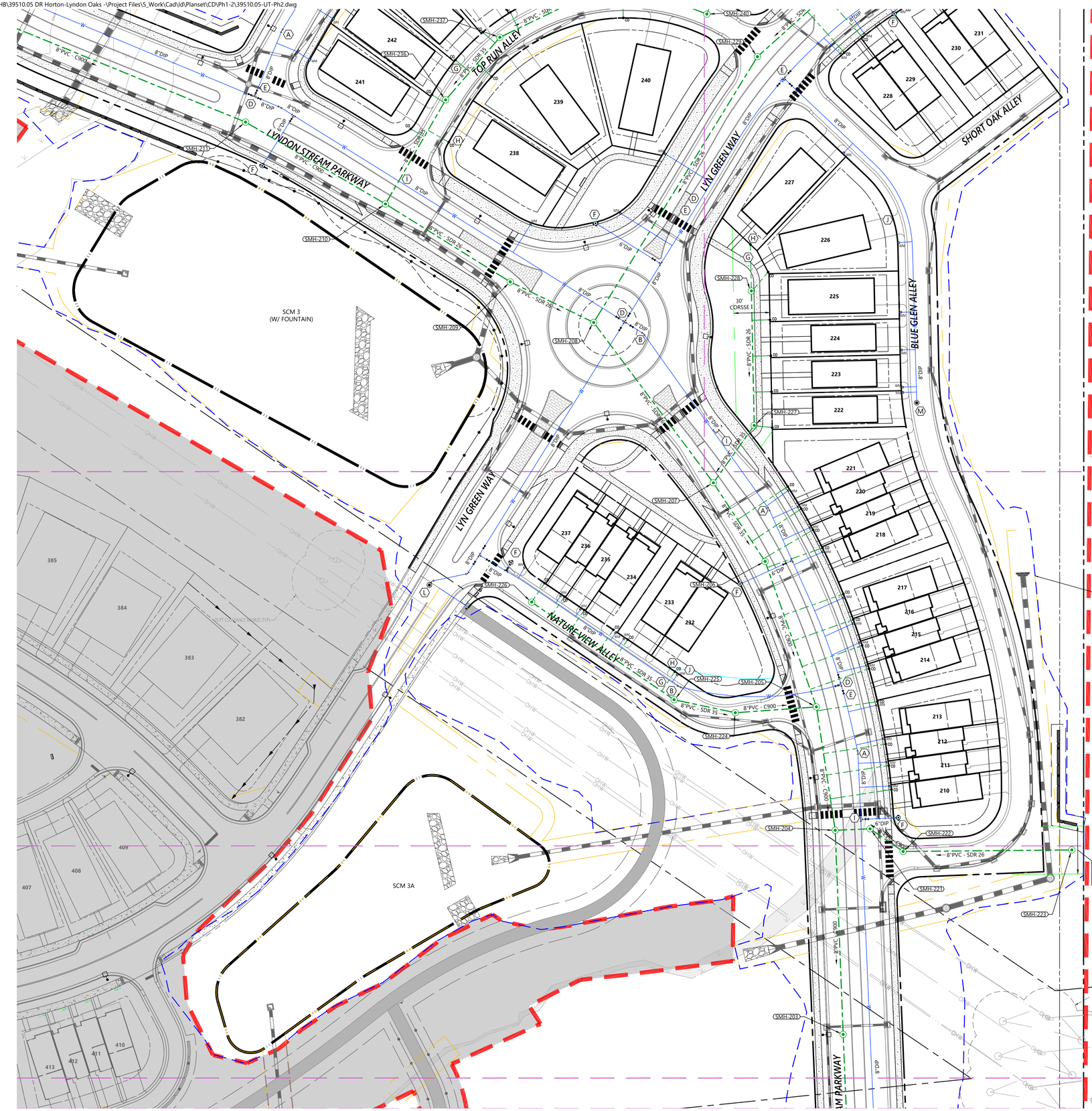
Sheet 70 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Friday, December 19, 2025 7:52:12 AM MMEZA Plotted Friday, December 19, 2025 7:53:25 AM Marco Meza



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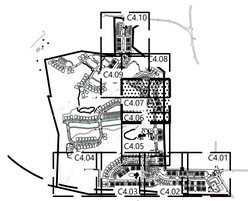

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Lyndon Oaks Phases 1 & 2

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VHB	CT, KS, JB, RB
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Drawing Title
Utility Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C4.07

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

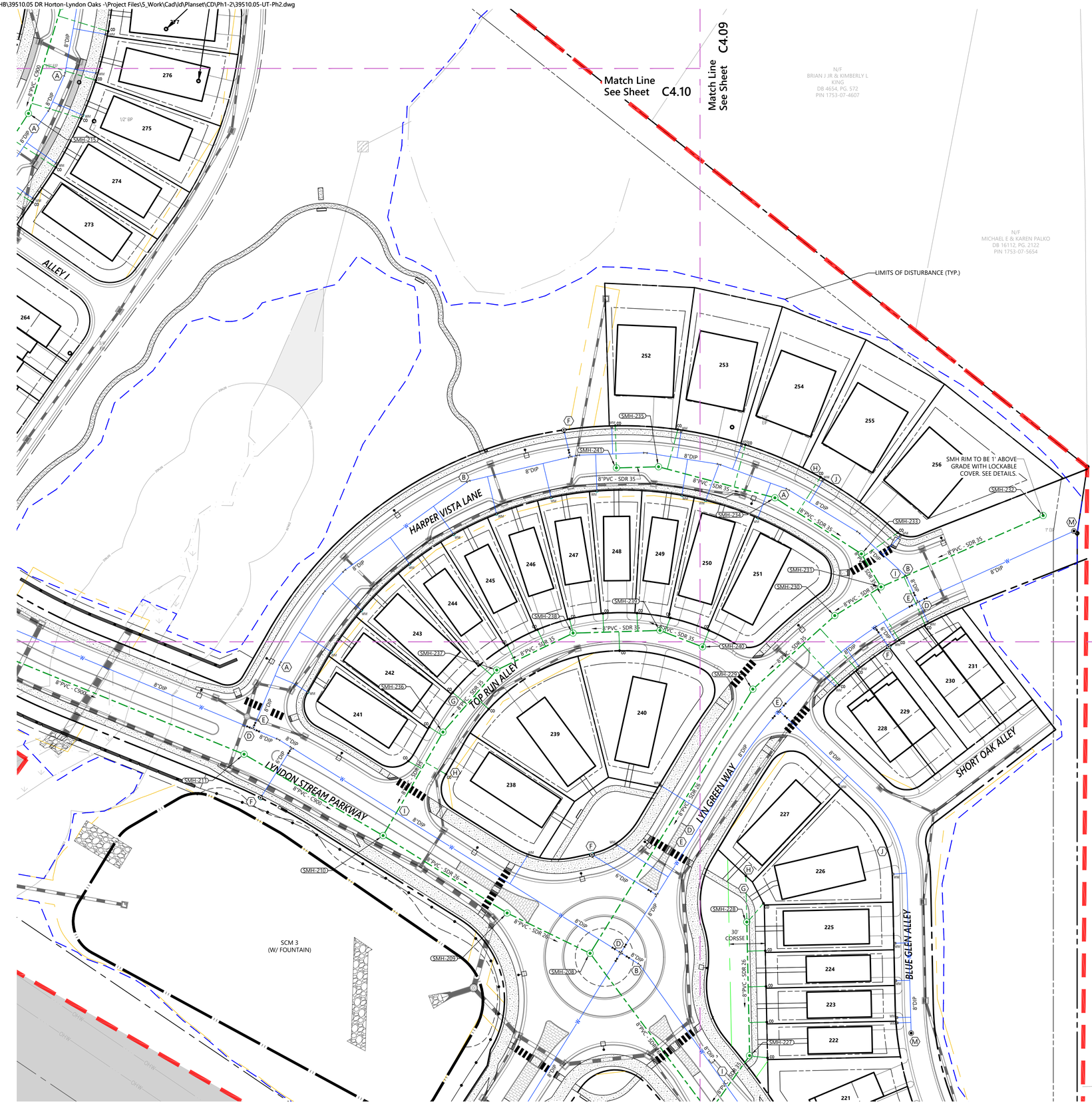
12/15/2025

Sheet 71 of 224

Project Number 39510.05

Saved Friday, December 19, 2025 7:56:30 AM MMEZA Plotted Friday, December 19, 2025 8:27:12 AM Marco Meza

C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\S_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-UT-Ph2.dwg



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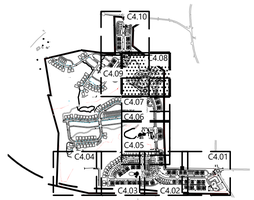

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: **January 17, 2025**

Drawing Title
Utility Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number
C4.08

Sheet 72 of 224

Project Number
39510.05

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12/15/2025

Saved Friday, December 19, 2025 7:56:30 AM MMEZA Plotted Friday, December 19, 2025 8:29:46 AM Marco Meza



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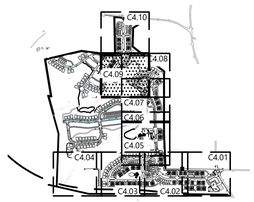

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- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Utility Plan Phase 2 (4 of 5)

ZMA-2-23 (Drawing Number)

C4.09

Sheet 73 of 224

Project Number 39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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By: _____ Date: _____
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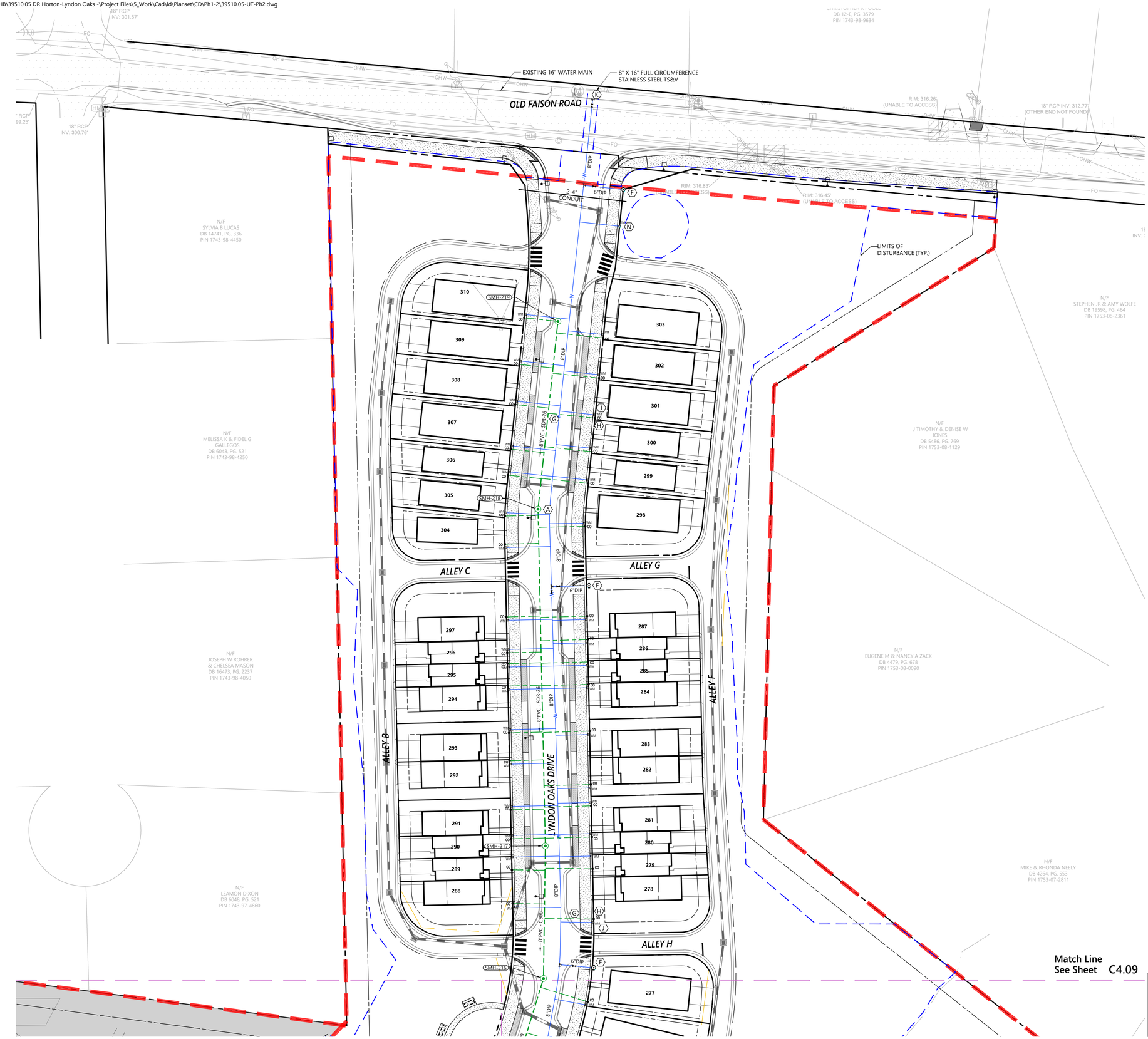
By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Friday, December 19, 2025 8:34:34 AM MMEZA Plotted Friday, December 19, 2025 8:35:47 AM Marco Meza

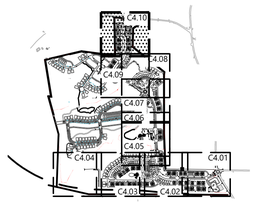
C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\S_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-UT-Ph2.dwg



Match Line
See Sheet C4.09

Utility Notes Keyed To Plan

- (A) 8" 11.25° BEND W/ CONC. BLOCKING (TYP.)
- (B) 8" 22.5° BEND W/ CONC. BLOCKING (TYP.)
- (C) 8" 45° BEND W/ CONC. BLOCKING (TYP.)
- (D) 8" TEE W/CONC. BLOCKING (TYP.)
- (E) 8" VALVE (TYP.)
- (F) FIRE HYDRANT ASSEMBLY WITH 6" VALVE (TYP.)
- (G) PROPOSED 4" PVC SEWER SERVICE LATERAL (@1.00% MIN) (TYP.)
- (H) PROPOSED 4" SANITARY SEWER CLEANOUT (TYP.)
- (I) WATER/SANITARY SEWER CROSSING (TYP.)
- (J) 3/4" WATER SERVICE AND 5/8" METER (TYP.)
- (K) STAINLESS STEEL TAPPING SLEEVE AND VALVE (TYP.)
- (L) TEMPORARY BLOW-OFF ASSEMBLY (TYP.)
- (M) PERMANENT BLOW-OFF ASSEMBLY (TYP.)
- (N) IRRIGATION WATER METER W/ BACKFLOW PREVENTION (TYP.)



Key

1" = 1,500'

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Corp. # C-3705

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Utility Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number
C4.10

Sheet 74 of 224

Project Number
39510.05

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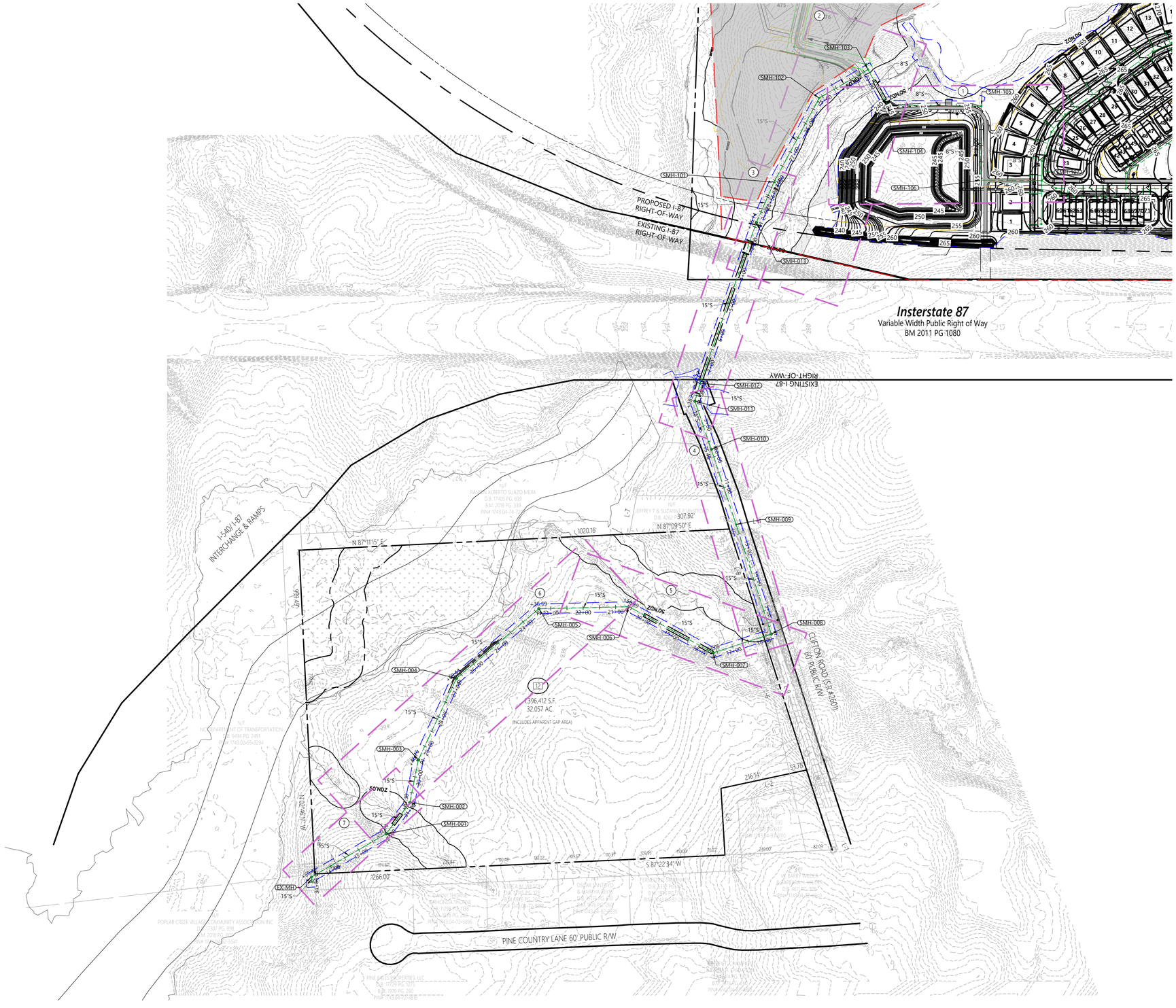
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Friday, December 19, 2025 8:34:34 AM MMEZA Plotted Friday, December 19, 2025 8:38:13 AM Marco Meza



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- 6 FT WHITE VINYL PRIVACY FENCE

0 75 150 300Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

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Land Use Administrator

Drawing Title
Overall Off-Site Sanitary Sewer Plan

ZMA-2-23

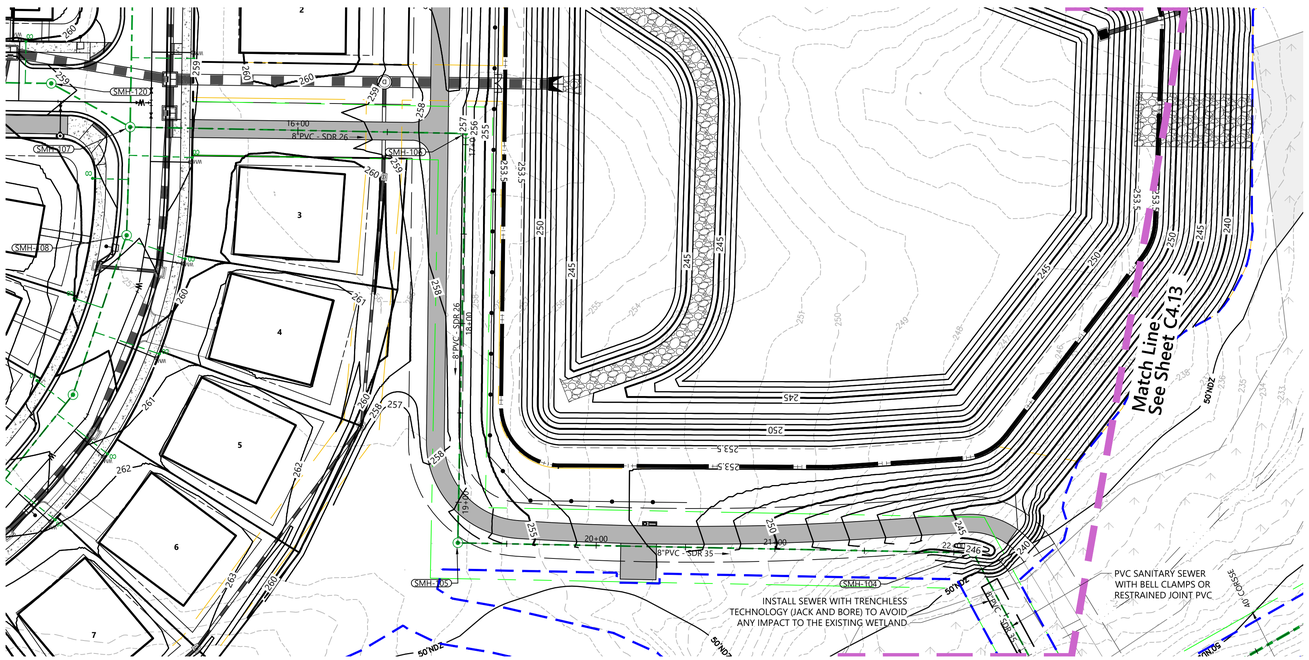
Drawing Number
C4.11

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

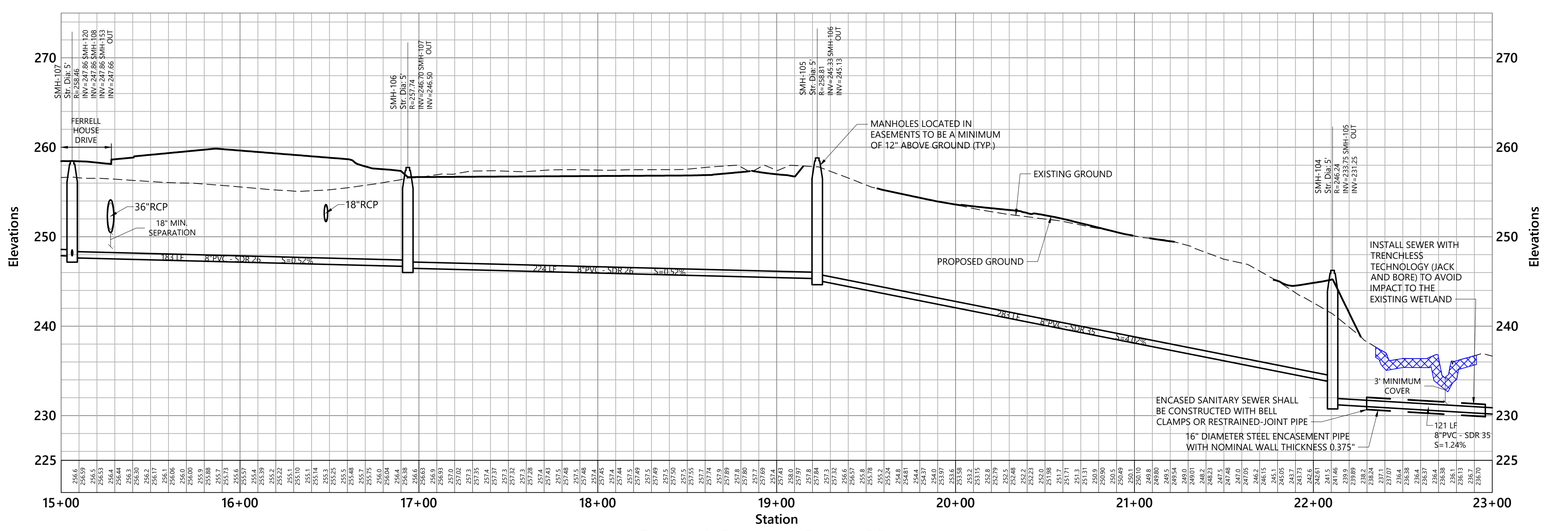
12/15/2025

Sheet 75 of 224

Project Number
39510.05



Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet



Phase 1 Sanitary Sewer Main

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Corp. # C-3705

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Land Use Administrator

Drawing Title
Sanitary Sewer Plan and Profile (1 of 6)

ZMA-2-23

Drawing Number
C4.12

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 76 of 224

Project Number
39510.05

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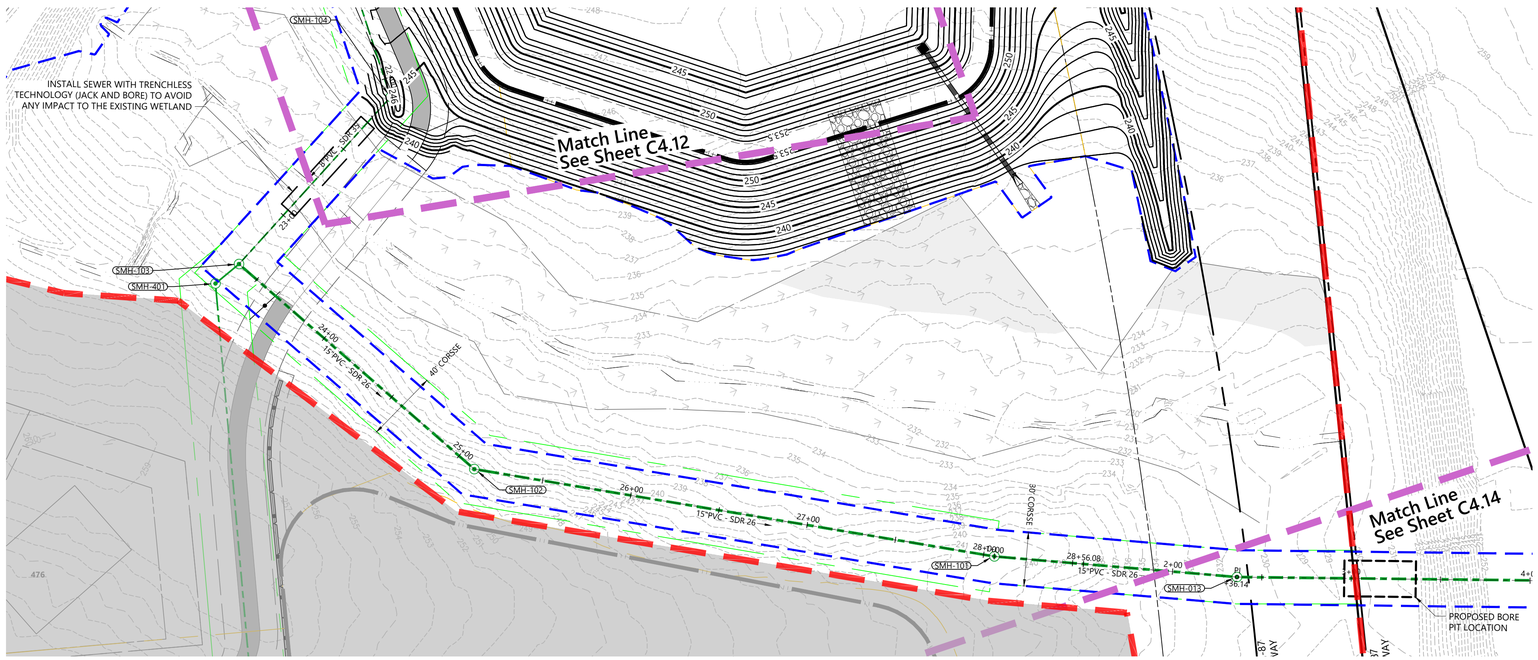

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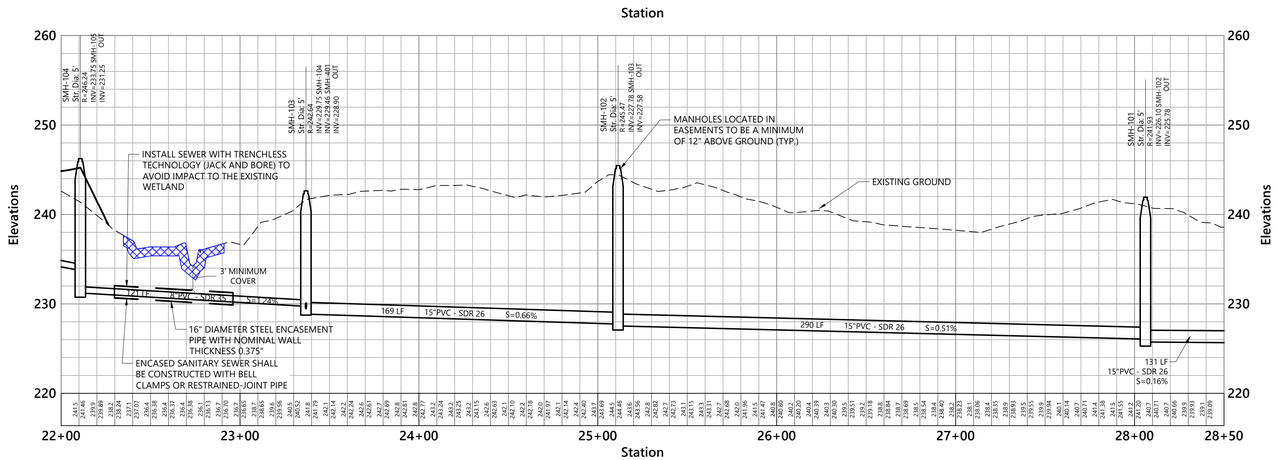
Horiz. 0 20 40 80 Feet



Phase 1 Sanitary Sewer Main

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BUILDING SETBACK
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Lyndon Oaks Phases 1 & 2

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Checked by: CT, KS, JB, RB
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Land Use Administrator

Drawing Title
Sanitary Sewer Plan and Profile (2 of 6)

ZMA-2-23

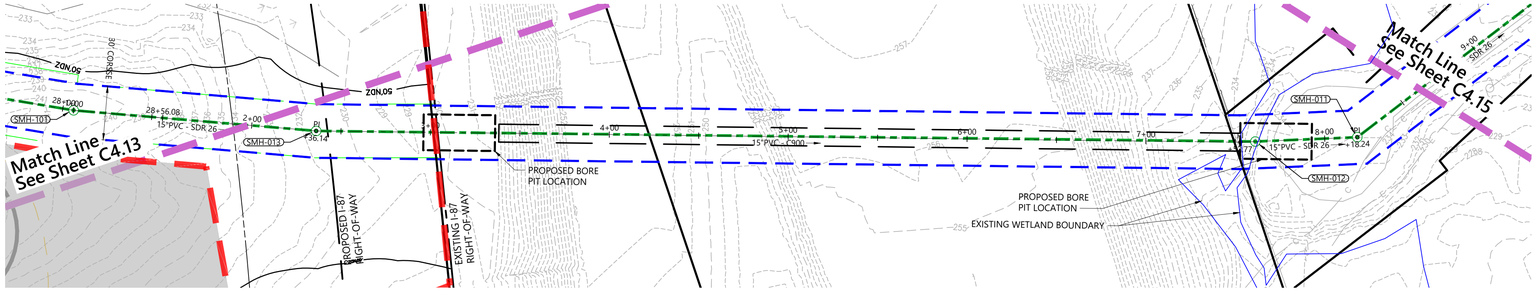
Drawing Number
C4.13

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 77 of 224

Project Number 39510.05



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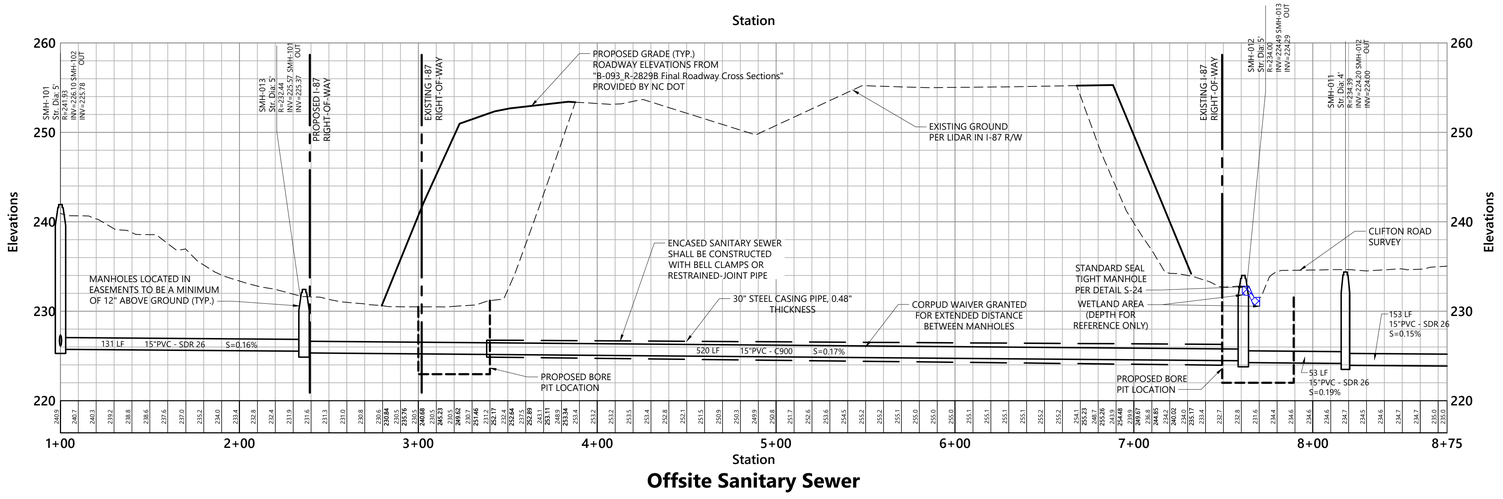

Offsite Sanitary Sewer

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Designed by	Checked by
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Drawing Title
Sanitary Sewer Off-Site Plan and Profile (3 of 6)

ZMA-2-23 — Drawing Number

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

C4.14

Sheet 78 of 224

Project Number 39510.05

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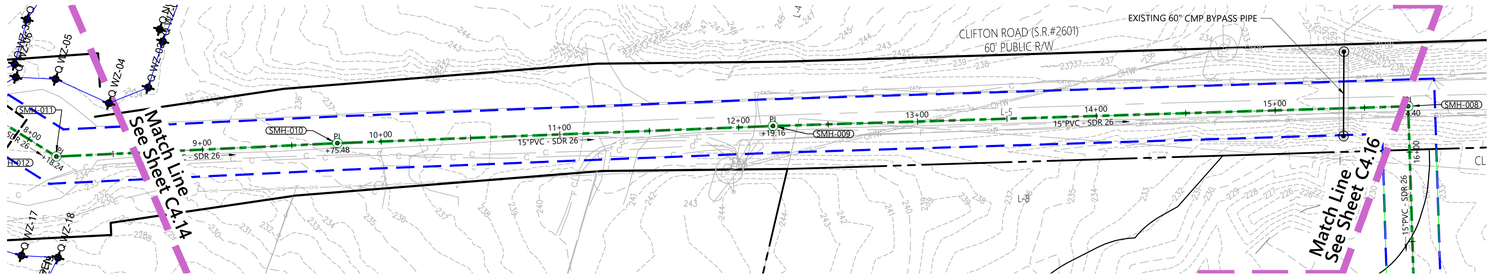



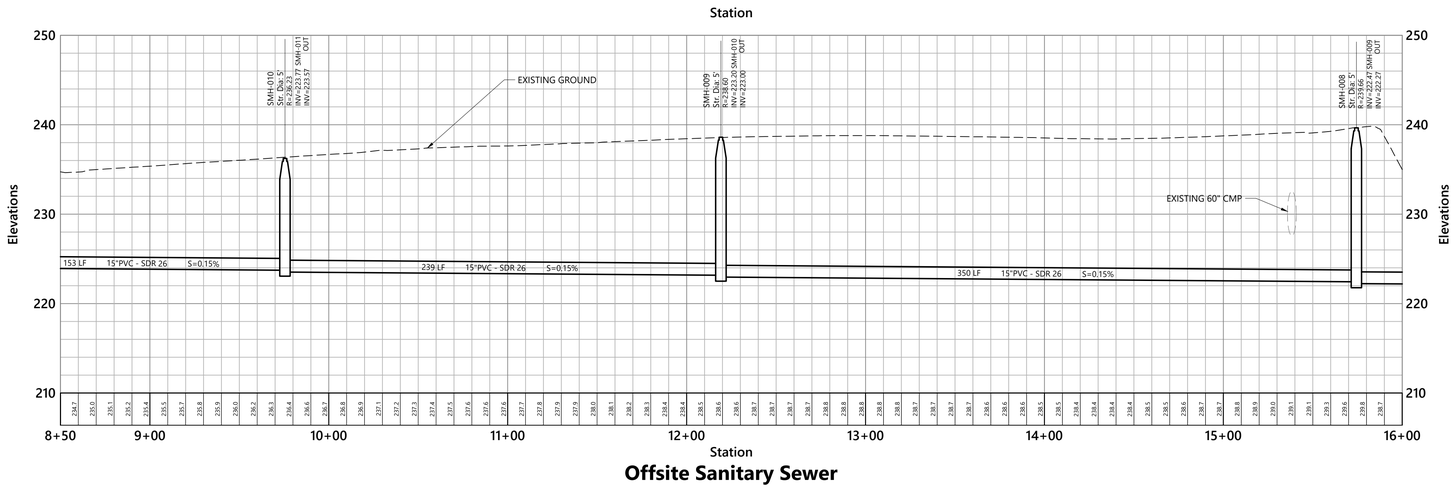

Offsite Sanitary Sewer

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Sanitary Sewer Off-Site Plan and Profile (4 of 6)

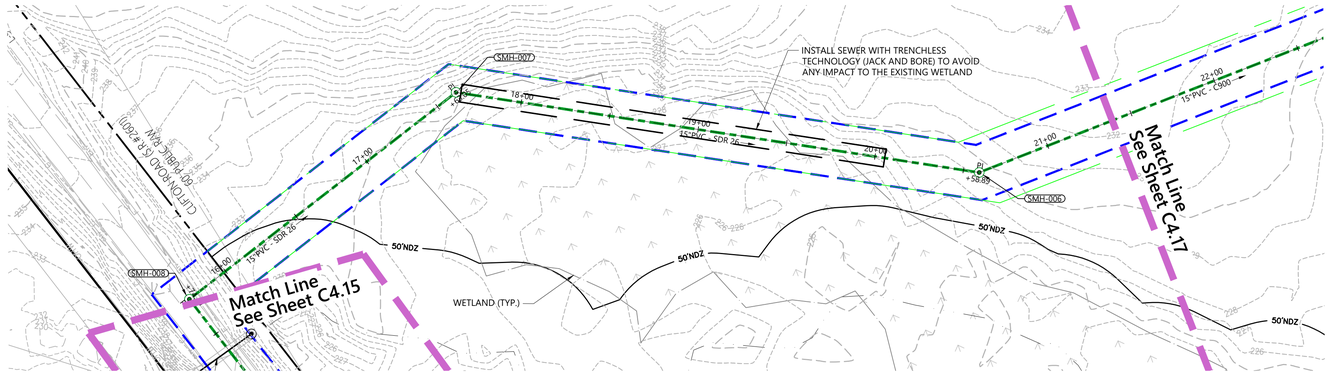
ZMA-2-23
Drawing Number
C4.15

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

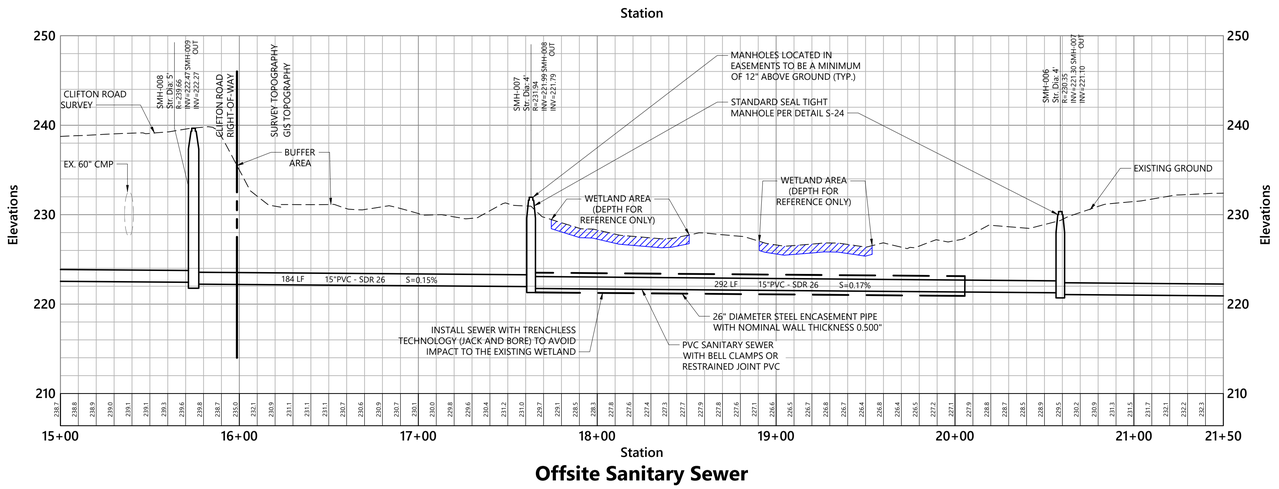
Sheet 79 of 224

Project Number 39510.05



Vert. 0 4 8 16 Feet

Horiz. 0 20 40 80 Feet



Offsite Sanitary Sewer

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

ATTENTION CONTRACTORS

The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Inspector at 919-996-3245 or https://cityworks.raleighnc.gov/pucontractors/New and schedule a Pre-construction meeting prior to beginning any construction.
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Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

811 Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Sanitary Sewer Off-Site Plan and Profile (5 of 6)

ZMA-2-23

Drawing Number
C4.16

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 80 of 224

Project Number 39510.05

Saved Friday, December 19, 2025 11:37:56 AM MMEZA Plotted Friday, December 19, 2025 11:55:43 AM Marco Meza

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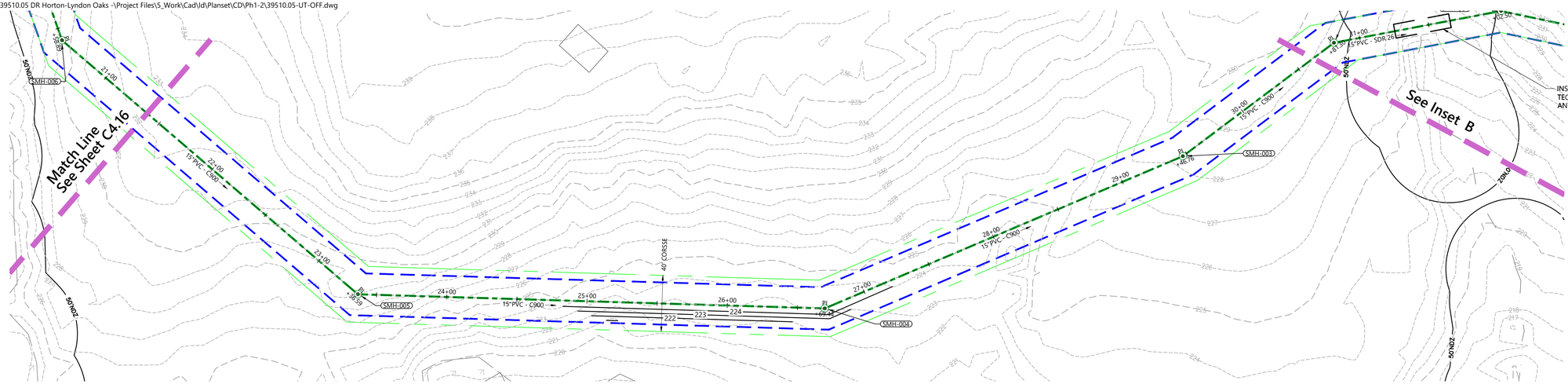
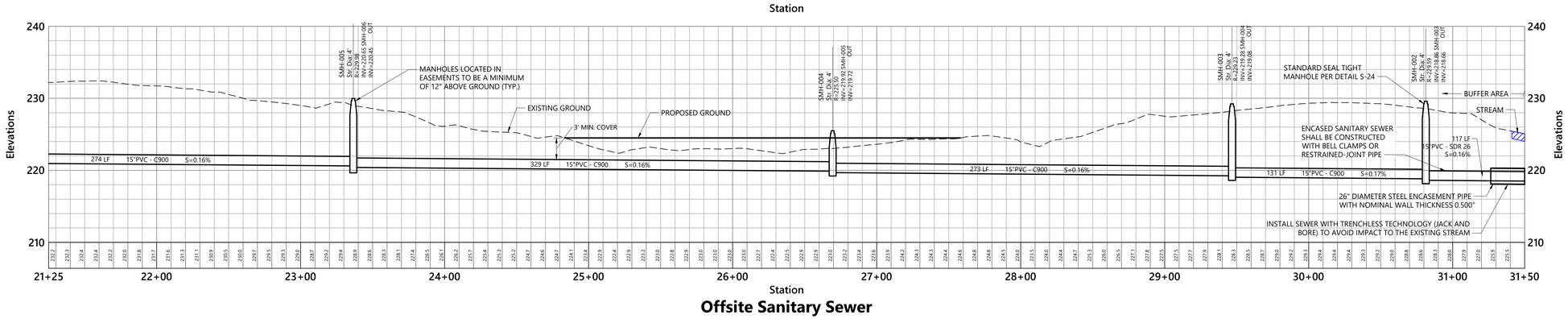
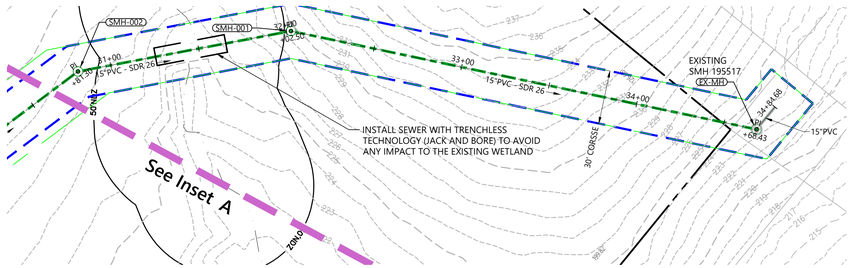


INSET A

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

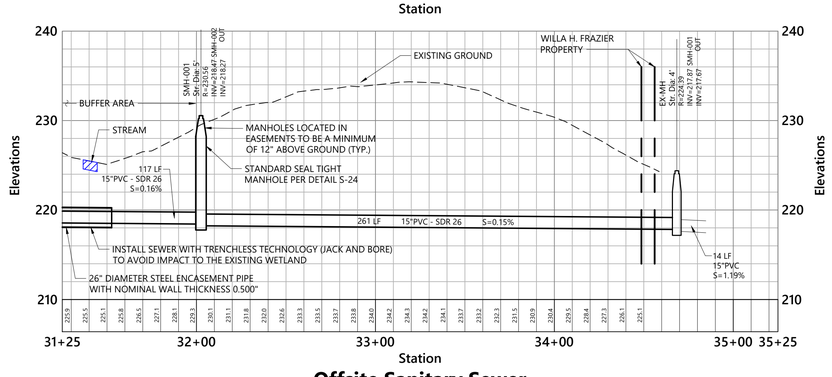


Offsite Sanitary Sewer



INSET B

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet



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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
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By: _____ Date: _____
Town Engineer

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Land Use Administrator

Drawing Title
Sanitary Sewer Off-Site Plan and Profile (6 of 6)

ZMA-2-23 — Drawing Number

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

C4.17

Sheet 81 of 224

Project Number 39510.05

Saved Friday, December 19, 2025 11:57:31 AM MMEZA Plotted Friday, December 19, 2025 12:48:58 PM Marco Meza

OFFSITE SANITARY SEWER

Sanitary Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
EX-MH	224.394	217.87 (15")	217.67 (15")	
SMH-001	230.556	218.47 (15")	218.27 (15")	EX-MH
SMH-002	229.595	218.86 (15")	218.66 (15")	SMH-001
SMH-003	229.235	219.28 (15")	219.08 (15")	SMH-002
SMH-004	225.500	219.92 (15")	219.72 (15")	SMH-003
SMH-005	229.983	220.65 (15")	220.45 (15")	SMH-004
SMH-006	230.348	221.30 (15")	221.10 (15")	SMH-005
SMH-007	231.939	221.99 (15")	221.79 (15")	SMH-006
SMH-008	239.655	222.47 (15")	222.27 (15")	SMH-007
SMH-009	238.597	223.20 (15")	223.00 (15")	SMH-008
SMH-010	236.226	223.77 (15")	223.57 (15")	SMH-009
SMH-011	234.390	224.20 (15")	224.00 (15")	SMH-010
SMH-012	234.000	224.49 (15")	224.29 (15")	SMH-011
SMH-013	232.444	225.57 (15")	225.37 (15")	SMH-012

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
		60	CMP	47.081	1.83%	228.15	227.29
EX-MH		15	PVC	16.253	1.05%	217.67	217.50
SMH-001	EX-MH	15	PVC - SDR 26	265.926	0.15%	218.27	217.87
SMH-002	SMH-001	15	PVC - SDR 26	121.199	0.16%	218.66	218.47
SMH-003	SMH-002	15	PVC - C900	134.548	0.16%	219.08	218.86
SMH-004	SMH-003	15	PVC - C900	277.314	0.16%	219.72	219.28
SMH-005	SMH-004	15	PVC - C900	332.856	0.16%	220.45	219.92
SMH-006	SMH-005	15	PVC - C900	277.700	0.16%	221.10	220.65
SMH-007	SMH-006	15	PVC - SDR 26	295.832	0.17%	221.79	221.30
SMH-008	SMH-007	15	PVC - SDR 26	188.656	0.15%	222.27	221.99
SMH-009	SMH-008	15	PVC - SDR 26	355.233	0.15%	223.00	222.47
SMH-010	SMH-009	15	PVC - SDR 26	243.688	0.15%	223.57	223.20
SMH-011	SMH-010	15	PVC - SDR 26	157.234	0.15%	224.00	223.77
SMH-012	SMH-011	15	PVC - SDR 26	57.094	0.17%	224.29	224.20
SMH-013	SMH-012	15	PVC - C900	525.000	0.17%	225.37	224.49
SMH-101	SMH-013	15	PVC - SDR 26	136.136	0.15%	225.78	225.57

PHASE 1 SANITARY SEWER

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
SMH-101	241.929	226.10 (15")	225.78 (15")	SMH-013
SMH-102	245.468	227.78 (15")	227.58 (15")	SMH-101
SMH-103	242.642	229.75 (8") 229.46 (8")	228.90 (15")	SMH-102
SMH-104	246.238	233.75 (8")	231.25 (8")	SMH-103
SMH-105	258.813	245.33 (8")	245.13 (8")	SMH-104
SMH-106	257.743	246.70 (8")	246.50 (8")	SMH-105
SMH-107	258.458	247.86 (8") 247.86 (8") 247.86 (8")	247.66 (8")	SMH-106
SMH-108	258.846	248.37 (8")	248.17 (8")	SMH-107
SMH-109	260.341	249.45 (8")	249.25 (8")	SMH-108
SMH-110	261.416	251.14 (8")	250.94 (8")	SMH-109
SMH-111	266.514	256.64 (8")	256.44 (8")	SMH-110
SMH-112	267.558	257.56 (8")	257.36 (8")	SMH-111
SMH-113	269.203	258.29 (8")	258.09 (8")	SMH-112
SMH-114	272.333	259.57 (8") 259.57 (8")	259.37 (8")	SMH-113
SMH-115	275.159	261.22 (8") 261.22 (8")	261.02 (8")	SMH-114
SMH-116	273.446	262.19 (8")	261.99 (8")	SMH-115
SMH-117	279.089	269.42 (8")	269.22 (8")	SMH-115
SMH-118	280.430	270.19 (8")	269.99 (8")	SMH-117
SMH-119	281.979	271.01 (8")	270.81 (8")	SMH-118
SMH-120	259.172	247.96 (8")	247.76 (8")	SMH-107

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
SMH-121	262.850	249.50 (8") 251.80 (8")	249.30 (8")	SMH-120
SMH-122	266.934	255.08 (8")	254.88 (8")	SMH-121
SMH-123	272.233	261.00 (8")	260.80 (8")	SMH-122
SMH-125	280.222	268.98 (8")	268.78 (8")	SMH-155
SMH-133	300.833	289.11 (8")	288.91 (8")	SMH-159
SMH-134	303.114	290.21 (8") 290.21 (8")	290.01 (8")	SMH-133
SMH-135	303.109		291.69 (8")	SMH-134
SMH-136	307.380		299.58 (8")	SMH-134
SMH-137	293.752	286.36 (8") 286.36 (8")	286.16 (8")	SMH-159
SMH-138	301.290	291.30 (8")	291.10 (8")	SMH-137
SMH-139	303.197		293.00 (8")	SMH-138
SMH-140	295.705		288.06 (8")	SMH-137
SMH-141	283.737	273.98 (8")	273.78 (8")	SMH-160
SMH-142	284.487	274.20 (8")	274.00 (8")	SMH-160
SMH-143	285.323	276.45 (8")	276.25 (8")	SMH-142
SMH-144	285.804	277.14 (8")	276.94 (8")	SMH-143
SMH-145	286.313	277.74 (8")	277.54 (8")	SMH-144
SMH-146	289.451		279.12 (8")	SMH-145
SMH-147	277.453		269.60 (8")	SMH-114
SMH-148	292.588		282.28 (8")	SMH-161

Storm Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
SMH-149	264.728	254.36 (8")	254.16 (8")	SMH-121
SMH-150	269.726	263.70 (8")	263.50 (8")	SMH-149
SMH-151	275.176		270.58 (8")	SMH-150
SMH-152	285.190		272.00 (8")	SMH-119
SMH-153	259.372		248.54 (8")	SMH-107
SMH-154	284.863	275.48 (8")	274.48 (8")	SMH-141
SMH-155	278.254	266.58 (8")	266.38 (8")	SMH-123
SMH-156	289.149	279.63 (8")	279.43 (8") 279.63 (8")	SMH-158 SMH-157
SMH-157	291.390	281.21 (8") 281.41 (8")		
SMH-158	287.028	276.98 (8")	276.78 (8")	SMH-154
SMH-159	293.575	283.89 (8") 283.89 (8")	283.69 (8")	SMH-157
SMH-160	281.664	271.26 (8") 271.26 (8")	271.06 (8")	SMH-125
SMH-161	288.799	281.11 (8")	280.91 (8")	SMH-156
SMH-201	267.522		261.25 (8")	SMH-116

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
SMH-102	SMH-101	15	PVC - SDR 26	294.782	0.50%	227.58	226.10
SMH-103	SMH-102	15	PVC - SDR 26	174.452	0.64%	228.90	227.78
SMH-104	SMH-103	8	PVC - SDR 35	126.104	1.19%	231.25	229.75
SMH-105	SMH-104	8	PVC - SDR 35	288.067	3.95%	245.13	233.75
SMH-106	SMH-105	8	PVC - SDR 26	228.875	0.51%	246.50	245.33
SMH-107	SMH-106	8	PVC - SDR 26	187.628	0.51%	247.66	246.70
SMH-108	SMH-107	8	PVC - SDR 35	60.589	0.51%	248.17	247.86
SMH-109	SMH-108	8	PVC - SDR 35	94.034	0.94%	249.25	248.37
SMH-110	SMH-109	8	PVC - SDR 35	68.975	2.16%	250.94	249.45
SMH-111	SMH-110	8	PVC - SDR 35	332.085	1.60%	256.44	251.14
SMH-112	SMH-111	8	PVC - SDR 35	64.473	1.11%	257.36	256.64
SMH-113	SMH-112	8	PVC - SDR 35	104.130	0.51%	258.09	257.56
SMH-114	SMH-113	8	PVC - SDR 35	211.826	0.51%	259.37	258.29
SMH-115	SMH-114	8	PVC - SDR 35	285.022	0.51%	261.02	259.57
SMH-116	SMH-115	8	PVC - SDR 35	139.820	0.55%	261.99	261.22
SMH-117	SMH-115	8	PVC - SDR 35	159.933	5.00%	269.22	261.22
SMH-118	SMH-117	8	PVC - SDR 35	56.894	1.00%	269.99	269.42
SMH-119	SMH-118	8	PVC - SDR 35	62.288	1.00%	270.81	270.19
SMH-120	SMH-107	8	PVC - SDR 35	50.410	-0.20%	247.76	247.86
SMH-121	SMH-120	8	PVC - SDR 35	215.045	0.62%	249.30	247.96

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
SMH-122	SMH-121	8	PVC - C900	238.740	2.25%	254.88	249.50
SMH-123	SMH-122	8	PVC - SDR 35	223.189	2.56%	260.80	255.08
SMH-125	SMH-155	8	PVC - SDR 35	49.740	4.42%	268.78	266.58
SMH-133	SMH-159	8	PVC - SDR 35	274.121	1.83%	288.91	283.89
SMH-134	SMH-135	8	PVC - SDR 35	29.687	5.00%	290.21	291.69
SMH-134	SMH-136	8	PVC - SDR 35	190.703	4.92%	290.21	299.58
SMH-134	SMH-133	8	PVC - SDR 35	89.820	1.00%	290.01	289.11
SMH-137	SMH-159	8	PVC - SDR 35	149.814	1.51%	286.16	283.89
SMH-138	SMH-137	8	PVC - C900	251.343	1.89%	291.10	286.36
SMH-139	SMH-138	8	PVC - SDR 35	105.503	1.61%	293.00	291.30
SMH-140	SMH-137	8	PVC - C900	105.762	1.60%	288.06	286.36
SMH-141	SMH-160	8	PVC - SDR 35	153.339	1.65%	273.78	271.26
SMH-142	SMH-160	8	PVC - C900	97.480	2.81%	274.00	271.26
SMH-143	SMH-142	8	PVC - SDR 35	74.789	2.74%	276.25	274.20
SMH-144	SMH-143	8	PVC - SDR 35	48.968	1.00%	276.94	276.45
SMH-145	SMH-144	8	PVC - SDR 35	48.260	0.83%	277.54	277.14
SMH-146	SMH-145	8	PVC - C900	85.735	1.61%	279.12	277.74
SMH-147	SMH-114	8	PVC - SDR 35	304.232	3.30%	269.60	259.57
SMH-148	SMH-161	8	PVC - C900	93.424	1.25%	282.28	281.11
SMH-149	SMH-121	8	PVC - C900	47.175	5.00%	254.16	251.80

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
SMH-150	SMH-149	8	PVC - SDR 35	261.137	3.50%	263.50	254.36
SMH-151	SMH-150	8	PVC - SDR 35	196.720	3.50%	270.58	263.70
SMH-152	SMH-119	8	PVC - SDR 35	167.097	0.59%	272.00	271.01
SMH-153	SMH-107	8	PVC - C900	134.089	0.51%	248.54	247.86
SMH-154	SMH-141	8	PVC - SDR 35	50.406	1.00%	274.48	273.98
SMH-155	SMH-123	8	PVC - SDR 35	153.712	3.50%	266.38	261.00
SMH-156	SMH-158	8	PVC - SDR 35	203.529	1.20%	279.43	276.98
SMH-157	SMH-156	8	PVC - SDR 35	160.764	-0.98%	281.21	279.63
SMH-158	SMH-154	8	PVC - SDR 35	130.267	1.00%	276.78	275.48
SMH-159	SMH-157	8	PVC - SDR 35	91.572	2.49%	283.69	281.41
SMH-160	SMH-125	8	PVC - SDR 35	47.111	4.42%	271.06	268.98
SMH-161	SMH-156	8	PVC - C900	150.552	0.85%	280.91	279.63
SMH-201	SMH-116	8	PVC - SDR 35	230.355	-0.41%	261.25	262.19
SMH-401	SMH-103	8	PVC - SDR 35	14.272	3.47%	229.95	229.46

vhb.com

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Sanitary Sewer Structure and Pipe Tables Phase 1

ZMA-2-23

Drawing Number
C4.18

Sheet 82 of 224

Project Number
39510.05

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

City of Raleigh
Public Utilities Department Permit # S-5625
Authorization to Construct See digital signature

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

By: _____ Date: _____
Town Engineer

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, October 7, 2025 2:44:29 PM WSHERRILL Plotted Friday, December 19, 2025 12:11:57 PM Marco Meza

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

PHASE 2 SANITARY SEWER

Sanitary Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
SMH-116	273.446	262.19 (8")		
SMH-201	275.175	263.78 (8")	263.58 (8")	SMH-116
SMH-202	277.952	265.39 (8") 265.39 (8")	265.19 (8")	SMH-201
SMH-203	276.515	266.41 (8")	266.21 (8")	SMH-202
SMH-204	275.866	267.48 (8") 267.48 (8")	267.28 (8")	SMH-203
SMH-205	278.287	268.72 (8") 268.72 (8")	268.52 (8")	SMH-204
SMH-206	283.927	271.51 (8")	271.30 (8")	SMH-205
SMH-207	287.370	273.28 (8") 275.58 (8")	273.08 (8")	SMH-206
SMH-208	293.114	277.25 (8") 279.25 (8")	277.05 (8")	SMH-207
SMH-209	291.097	277.84 (8")	277.64 (8")	SMH-208
SMH-210	288.583	278.77 (8") 278.67 (8")	278.47 (8")	SMH-209
SMH-211	287.166	279.66 (8")	279.46 (8")	SMH-210
SMH-212	289.419	281.19 (8")	280.99 (8")	SMH-211
SMH-213	293.070	283.88 (8")	283.68 (8")	SMH-212
SMH-214	296.390	287.96 (8")	287.76 (8")	SMH-213
SMH-215	297.806	288.67 (8")	288.47 (8")	SMH-214
SMH-216	299.148	290.63 (8")	290.44 (8")	SMH-215
SMH-217	300.823	293.20 (8")	293.00 (8")	SMH-216
SMH-218	306.731	297.19 (8")	296.99 (8")	SMH-217
SMH-219	314.269		306.61 (8")	SMH-218

Sanitary Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
SMH-220	290.656		271.33 (8")	SMH-202
SMH-221	275.749	267.83 (8")	267.63 (8")	SMH-204
SMH-222	276.186	268.20 (8")	268.00 (8")	SMH-221
SMH-223	290.451		269.61 (8")	SMH-222
SMH-224	279.885	270.96 (8")	270.76 (8")	SMH-205
SMH-225	281.862	272.72 (8")	272.52 (8")	SMH-224
SMH-226	287.517		277.77 (8")	SMH-225
SMH-227	288.817	278.97 (8")	278.77 (8")	SMH-207
SMH-228	294.145		286.89 (8")	SMH-227
SMH-229	297.393	288.62 (8")	288.36 (8")	SMH-208
SMH-230	299.694	289.45 (8")	289.25 (8")	SMH-229
SMH-231	300.237	289.88 (8") 289.89 (8")	289.68 (8")	SMH-230
SMH-232	305.617		295.00 (8")	SMH-231
SMH-233	300.204	290.25 (8")	290.05 (8")	SMH-231
SMH-234	299.191	290.89 (8")	290.69 (8")	SMH-233
SMH-235	297.734	291.61 (8")	291.41 (8")	SMH-234
SMH-236	290.513	282.39 (8")	282.19 (8")	SMH-210
SMH-237	293.061	284.83 (8")	284.63 (8")	SMH-236
SMH-238	295.690	287.35 (8")	287.15 (8")	SMH-237
SMH-239	298.388	289.92 (8")	289.72 (8")	SMH-238

Sanitary Sewer Structure Schedule

Str. Name	Rim Elev.	Inv. In	Inv. Out	Downstr. Str.
SMH-240	299.219		292.00 (8")	SMH-239
SMH-241	296.839		291.84 (8")	SMH-235
SMH-322	293.570		288.80 (8")	STUB-321
STUB-321	283.830	283.10 (8")		

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
SMH-201	SMH-116	8	PVC - SDR 35	230.355	0.60%	263.58	262.19
SMH-202	SMH-201	8	PVC - SDR 26	277.619	0.51%	265.19	263.78
SMH-203	SMH-202	8	PVC - SDR 26	160.631	0.51%	266.21	265.39
SMH-204	SMH-203	8	PVC - C900	170.558	0.51%	267.28	266.41
SMH-205	SMH-204	8	PVC - C900	104.186	1.00%	268.52	267.48
SMH-206	SMH-205	8	PVC - C900	128.799	2.00%	271.30	268.72
SMH-207	SMH-206	8	PVC - SDR 35	78.551	2.00%	273.08	271.51
SMH-208	SMH-207	8	PVC - SDR 26	167.052	2.25%	277.05	273.28
SMH-209	SMH-208	8	PVC - SDR 26	77.466	0.51%	277.64	277.25
SMH-210	SMH-209	8	PVC - SDR 26	122.840	0.51%	278.47	277.84
SMH-211	SMH-210	8	PVC - C900	135.314	0.51%	279.46	278.77
SMH-212	SMH-211	8	PVC - C900	219.583	0.61%	280.99	279.66
SMH-213	SMH-212	8	PVC - C900	237.660	1.05%	283.68	281.19
SMH-214	SMH-213	8	PVC - C900	285.246	1.36%	287.76	283.88
SMH-215	SMH-214	8	PVC - SDR 35	100.167	0.51%	288.47	287.96
SMH-216	SMH-215	8	PVC - C900	94.025	1.88%	290.44	288.67
SMH-217	SMH-216	8	PVC - C900	118.265	2.00%	293.00	290.63
SMH-218	SMH-217	8	PVC - SDR-26	300.677	1.26%	296.99	293.20
SMH-219	SMH-218	8	PVC - SDR-26	168.607	5.58%	306.61	297.19
SMH-220	SMH-202	8	PVC - SDR 26	183.992	3.23%	271.33	265.39

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
SMH-221	SMH-204	8	PVC - C900	29.136	0.51%	267.63	267.48
SMH-222	SMH-221	8	PVC - C900	33.458	0.51%	268.00	267.83
SMH-223	SMH-222	8	PVC - SDR 26	140.897	1.00%	269.61	268.20
SMH-224	SMH-205	8	PVC - C900	67.844	3.00%	270.76	268.72
SMH-225	SMH-224	8	PVC - SDR 35	52.229	3.00%	272.52	270.96
SMH-226	SMH-225	8	PVC - SDR 35	144.218	3.50%	277.77	272.72
SMH-227	SMH-207	8	PVC - SDR 35	58.862	5.42%	278.77	275.58
SMH-228	SMH-227	8	PVC - SDR 26	112.271	7.05%	286.89	278.97
SMH-229	SMH-208	8	PVC - SDR 26	260.651	3.50%	288.36	279.25
SMH-230	SMH-229	8	PVC - SDR 35	92.470	0.68%	289.25	288.62
SMH-231	SMH-230	8	PVC - SDR 35	45.780	0.51%	289.68	289.45
SMH-232	SMH-231	8	PVC - SDR 35	148.820	3.44%	295.00	289.88
SMH-233	SMH-231	8	PVC - SDR 35	32.276	0.51%	290.05	289.89
SMH-234	SMH-233	8	PVC - SDR 35	86.605	0.51%	290.69	290.25
SMH-235	SMH-234	8	PVC - SDR 35	101.154	0.51%	291.41	290.89
SMH-236	SMH-210	8	PVC - SDR 35	100.409	3.51%	282.19	278.67
SMH-237	SMH-236	8	PVC - SDR 35	69.022	3.25%	284.63	282.39
SMH-238	SMH-237	8	PVC - SDR 35	71.231	3.25%	287.15	284.83
SMH-239	SMH-238	8	PVC - SDR 35	73.004	3.25%	289.72	287.35
SMH-240	SMH-239	8	PVC - SDR 35	38.346	5.42%	292.00	289.92

Sanitary Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
SMH-241	SMH-235	8	PVC - SDR 35	35.401	0.66%	291.84	291.61
SMH-322	STUB-321	8	PVC - C900	142.029	4.01%	288.80	283.10

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Sanitary Sewer Structure and Pipe Tables Phase 2

ZMA-2-23

Drawing Number
C4.19

Sheet 83 of 224

Project Number
39510.05

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

City of Raleigh
Public Utilities Department Permit # S-5625

Authorization to Construct See digital signature

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 040995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, October 7, 2025 2:44:29 PM WSHERRILL Plotted Friday, December 19, 2025 12:13:19 PM Marco Meza

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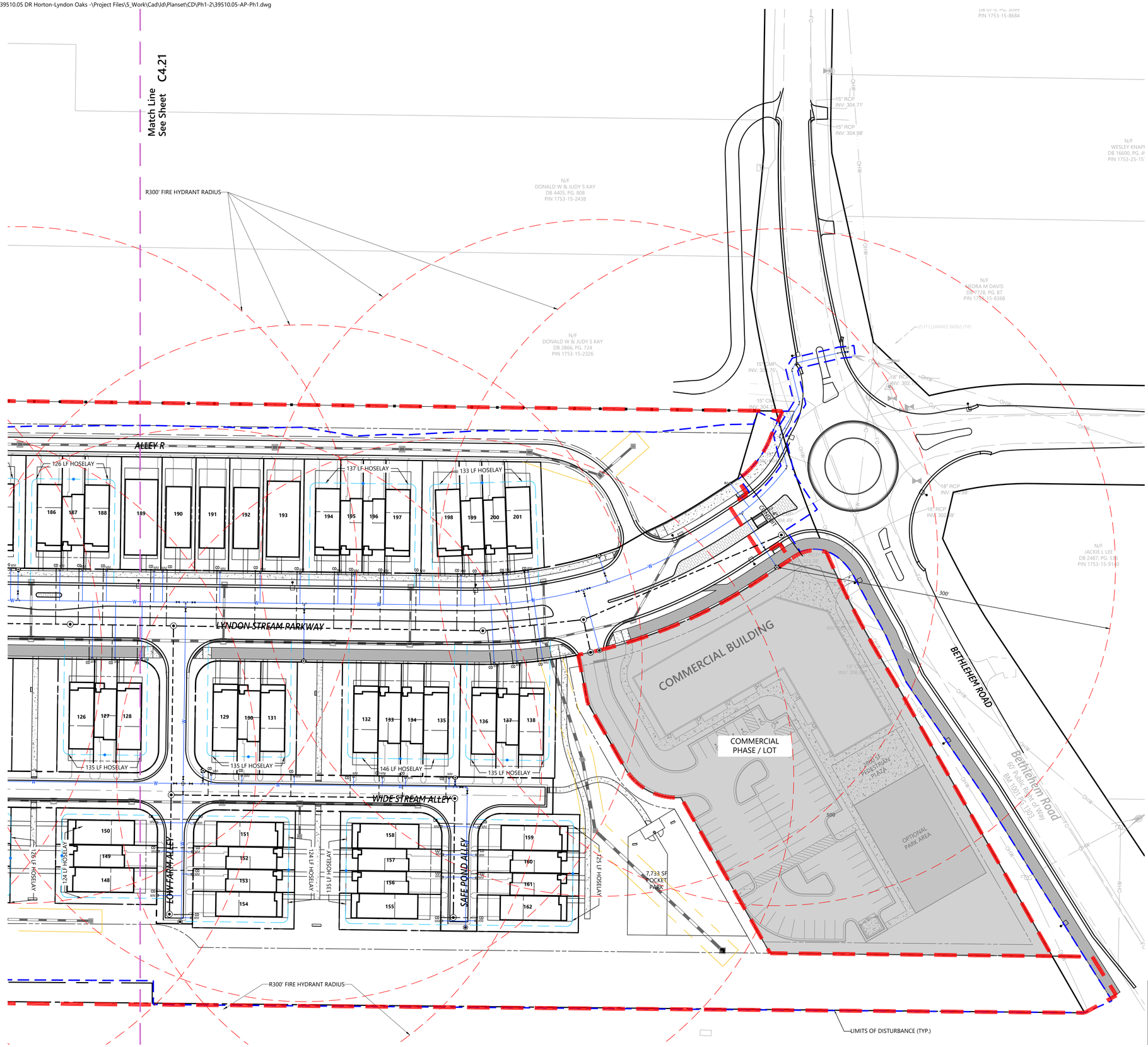

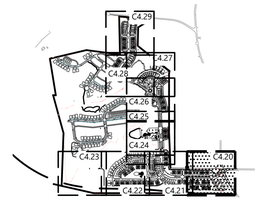

Key

1" = 1,500'

Fire Apparatus Legend

- FIRE HYDRANT RADIUS
- HOSELAY

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Fire Apparatus Access Plan Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C4.20

Sheet 84 of 224

Project Number
39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 3:45:47 PM NSMITH Plotted Wednesday, December 17, 2025 3:46:17 PM Nicholas Smith

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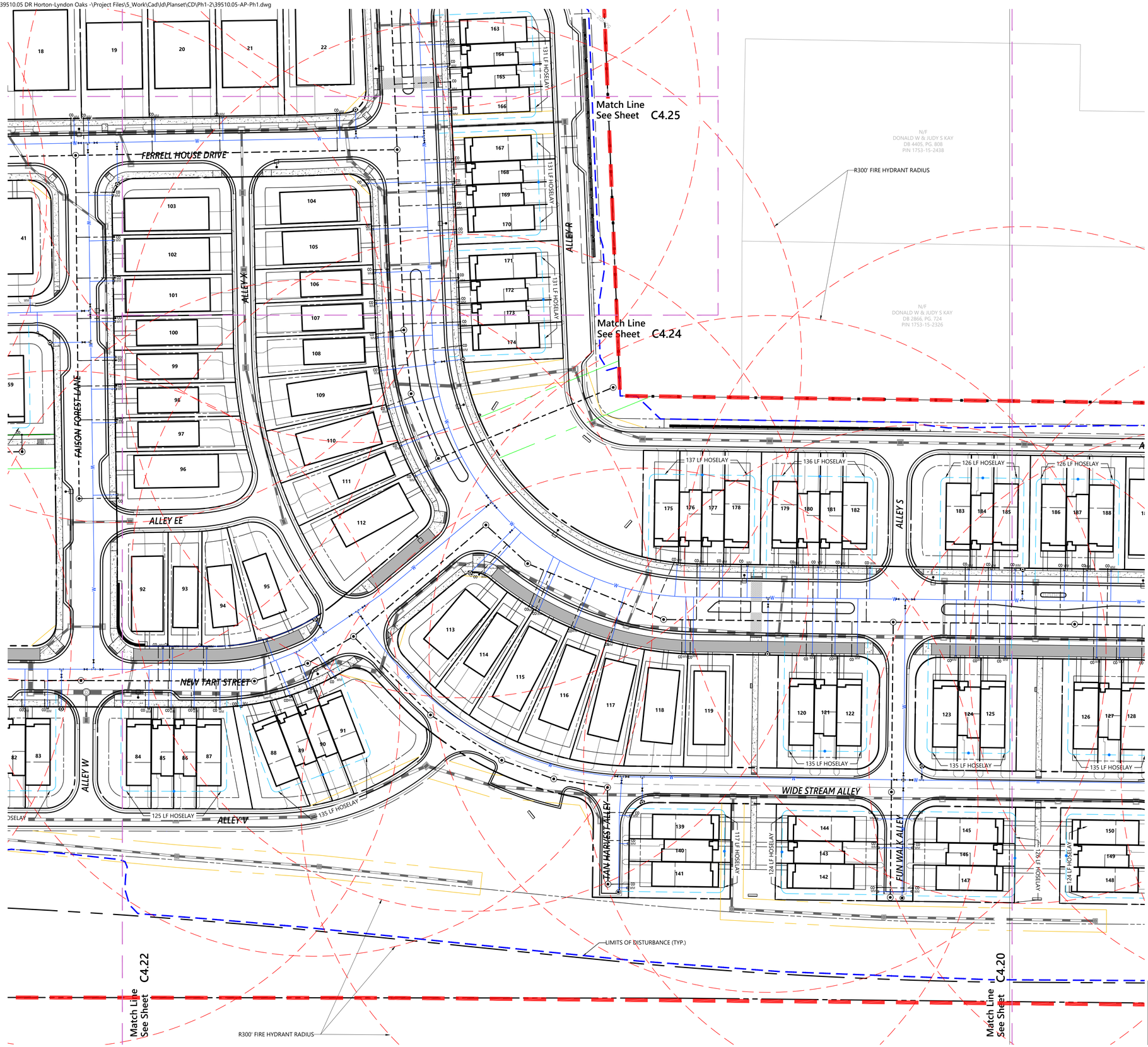

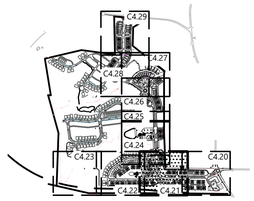

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Fire Apparatus Access Plan Phase 1 (2 of 5)

ZMA-2-23

Drawing Number: C4.21

Sheet 85 of 224

Project Number: 39510.05

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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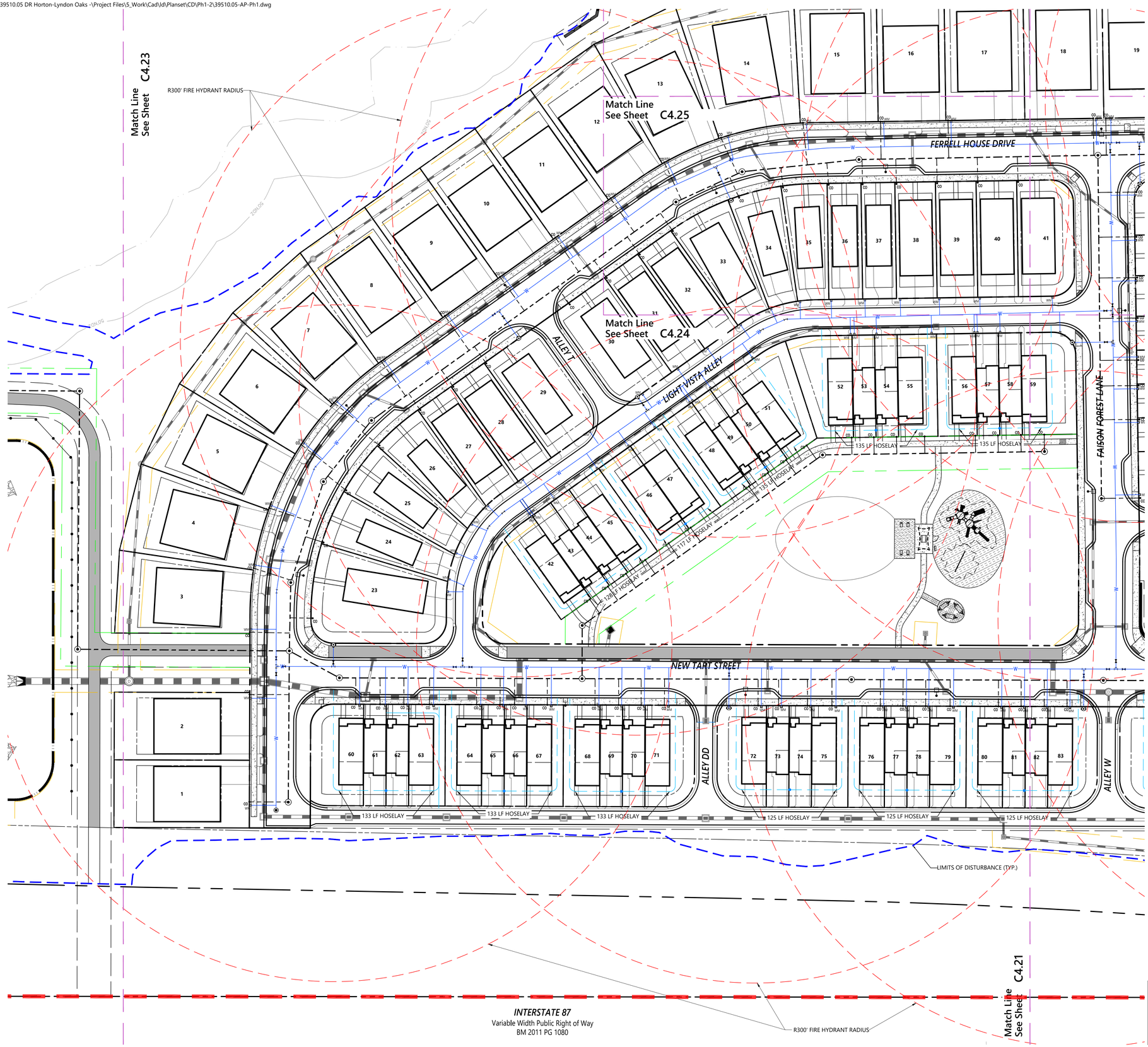

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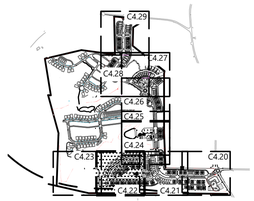

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Fire Apparatus Access Plan Phase 1 (3 of 5)

ZMA-2-23

Drawing Number
C4.22

Sheet 86 of 224

Project Number
39510.05

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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: _____ Date: _____
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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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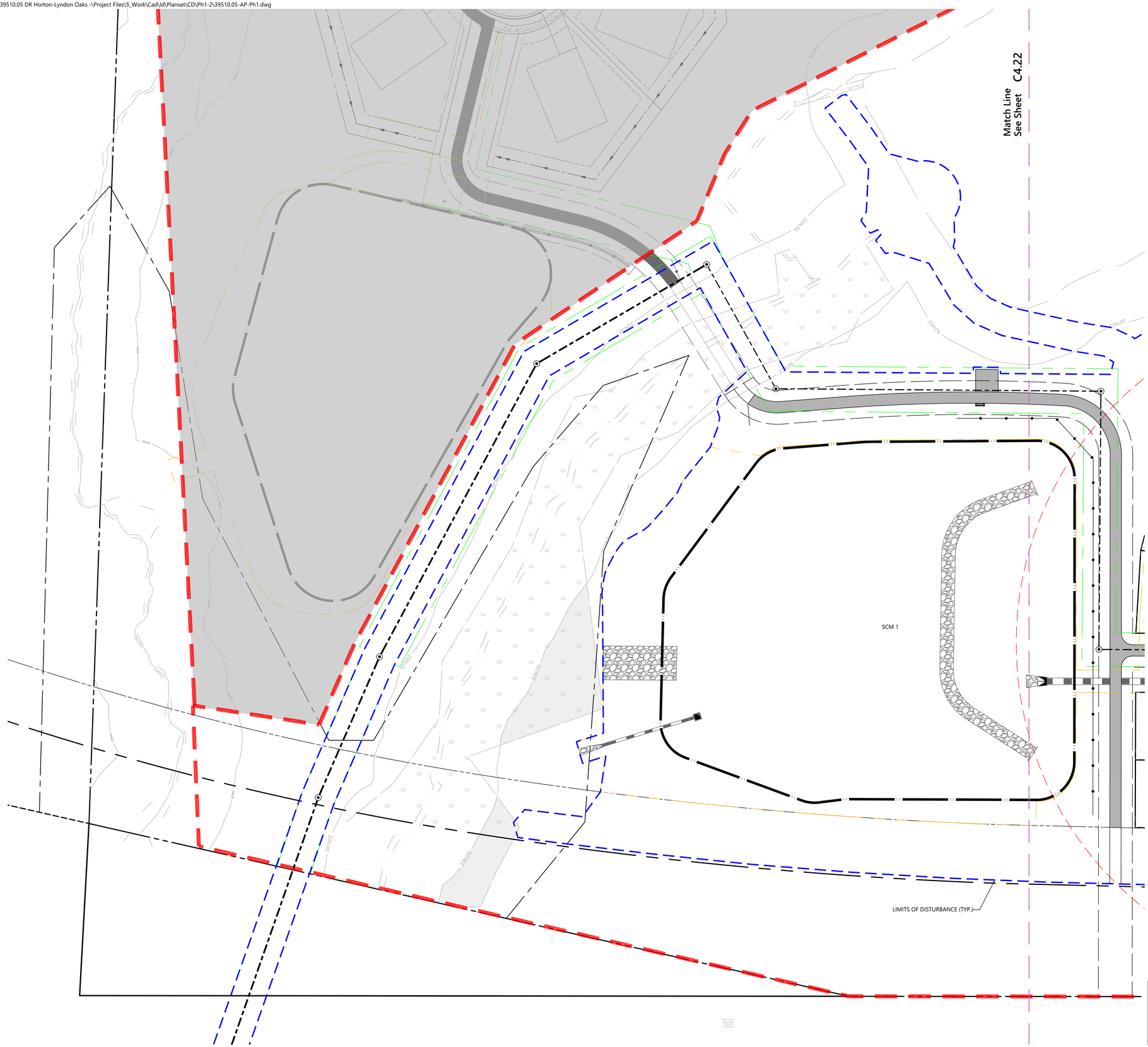

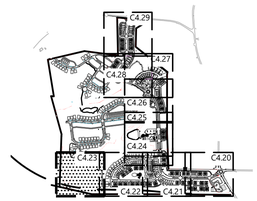

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0 20 40 80 Feet

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Fire Apparatus Access Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number: C4.23

Sheet 87 of 224

Project Number: 39510.05

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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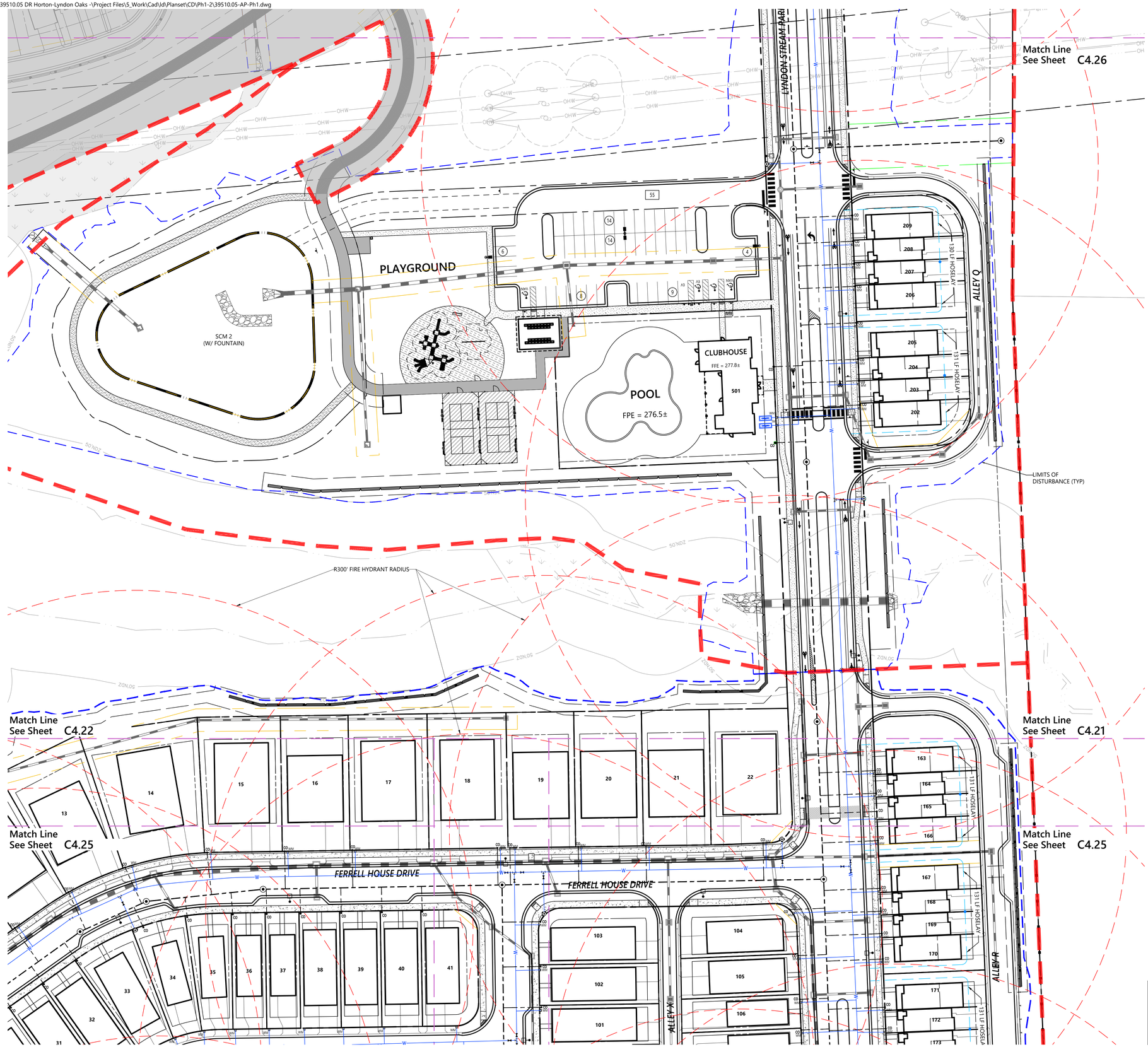

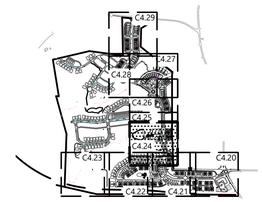

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0 20 40 80 Feet

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Raleigh, NC 27606
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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Fire Apparatus Access Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C4.24

Sheet 88 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 3:45:47 PM NSMITH Plotted Wednesday, December 17, 2025 3:47:43 PM Nicholas Smith

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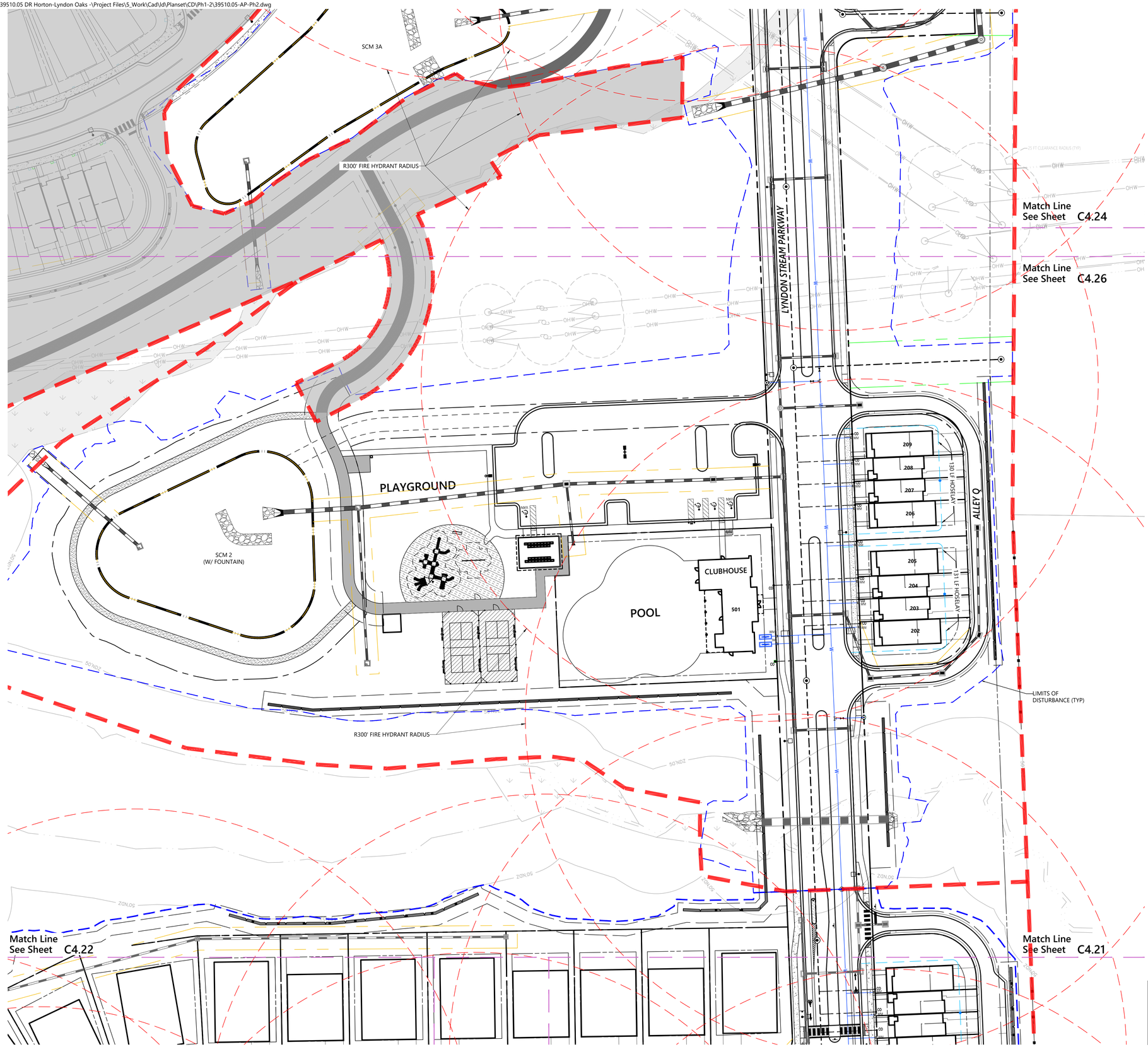

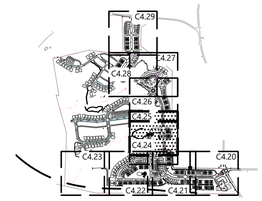

Key

1" = 1,500'

Fire Apparatus Legend

- FIRE HYDRANT RADIUS
- HOSELAY

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

Fire Apparatus Access Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number

C4.25

Sheet 89 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 4:00:06 PM NSMITH Plotted Wednesday, December 17, 2025 4:00:35 PM Nicholas Smith

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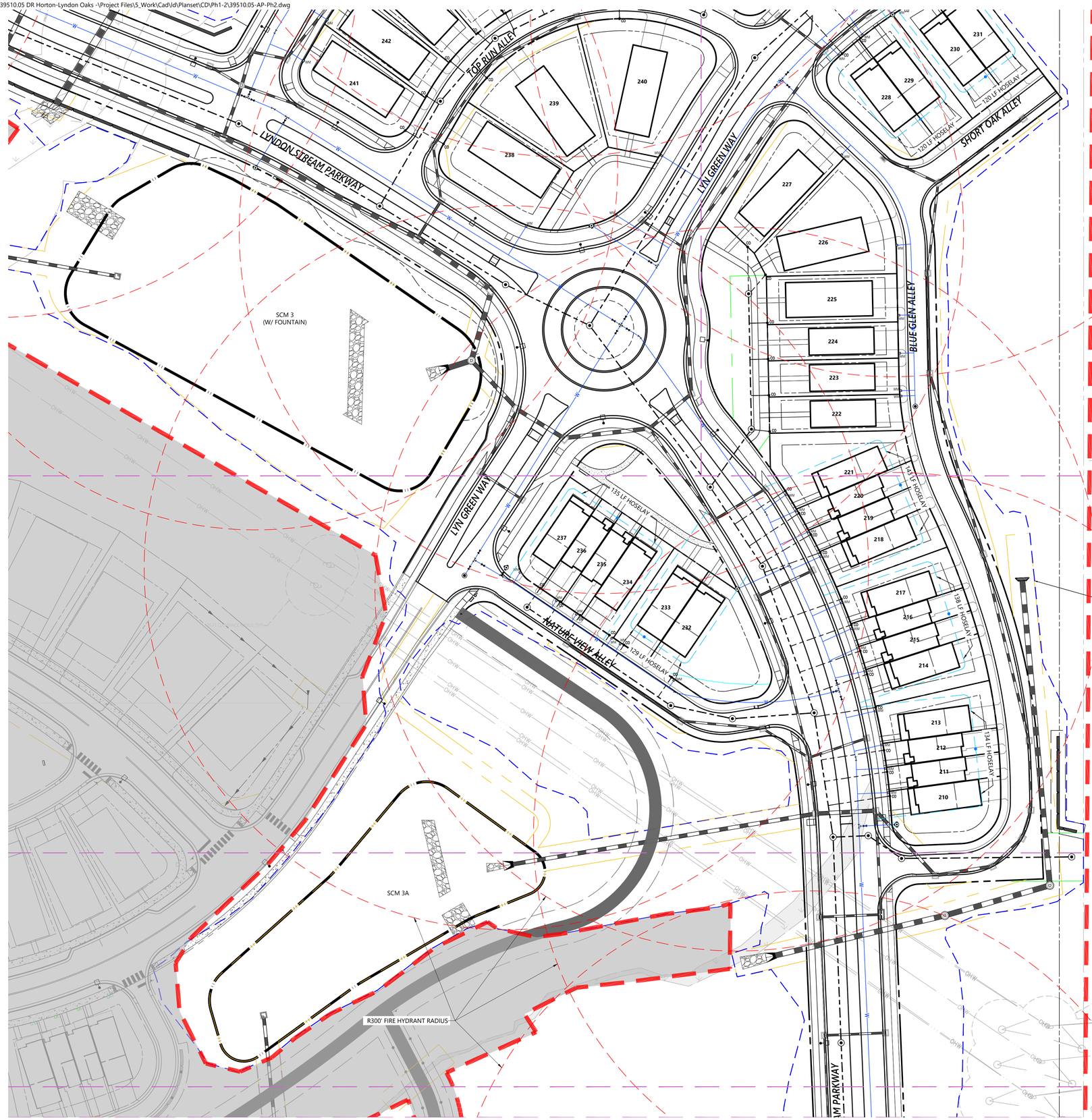

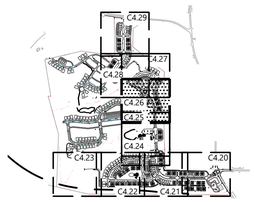

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0 20 40 80 Feet

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Fire Apparatus Access Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C4.26

Sheet 90 of 224

Project Number
39510.05

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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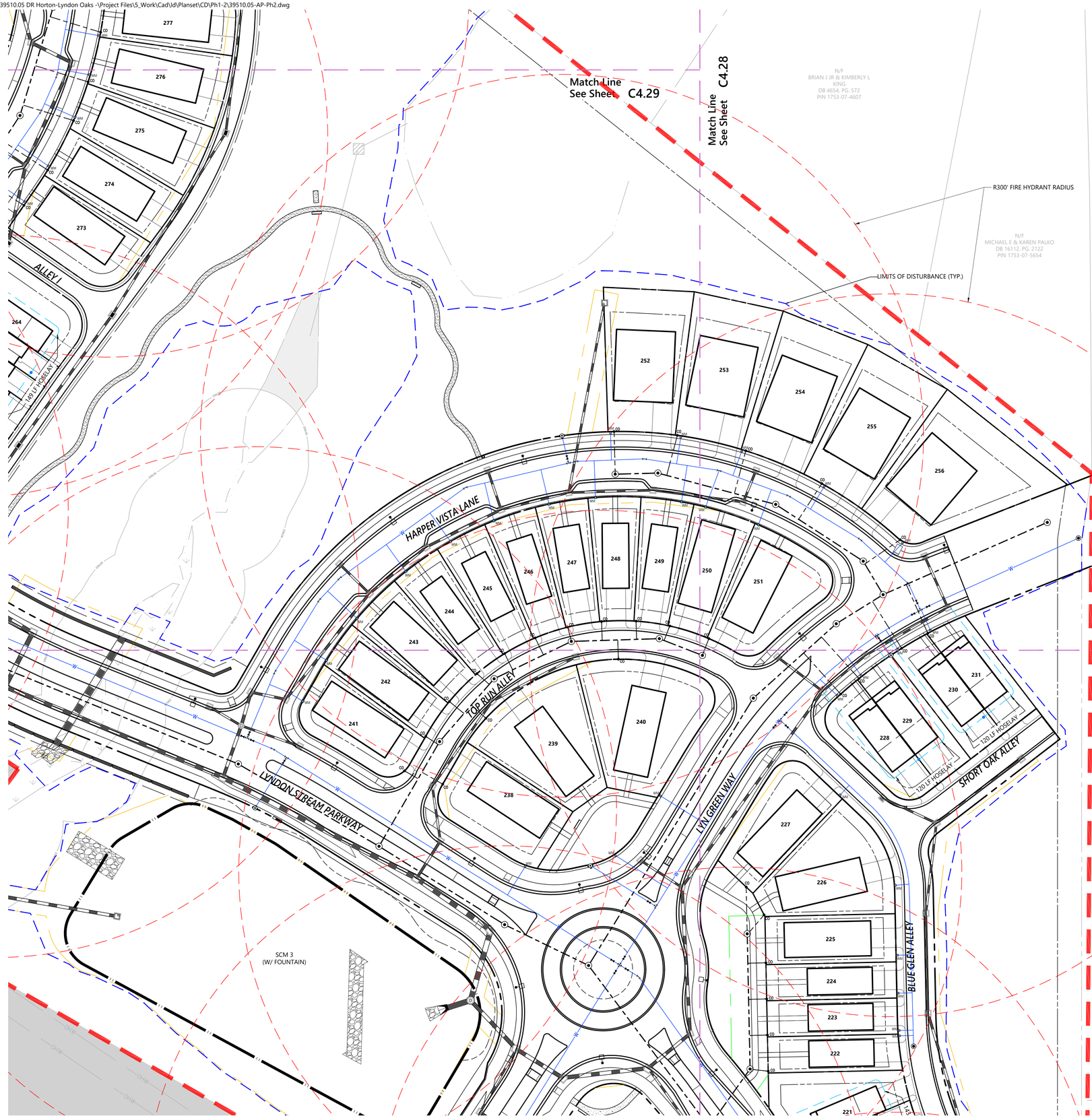

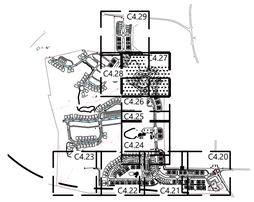

Key

1" = 1,500'

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0 20 40 80 Feet

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

Fire Apparatus Access Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number

C4.27

Sheet 91 of 224

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Project Number
39510.05

Saved Wednesday, December 17, 2025 4:00:06 PM NSMITH Plotted Wednesday, December 17, 2025 4:01:13 PM Nicholas Smith

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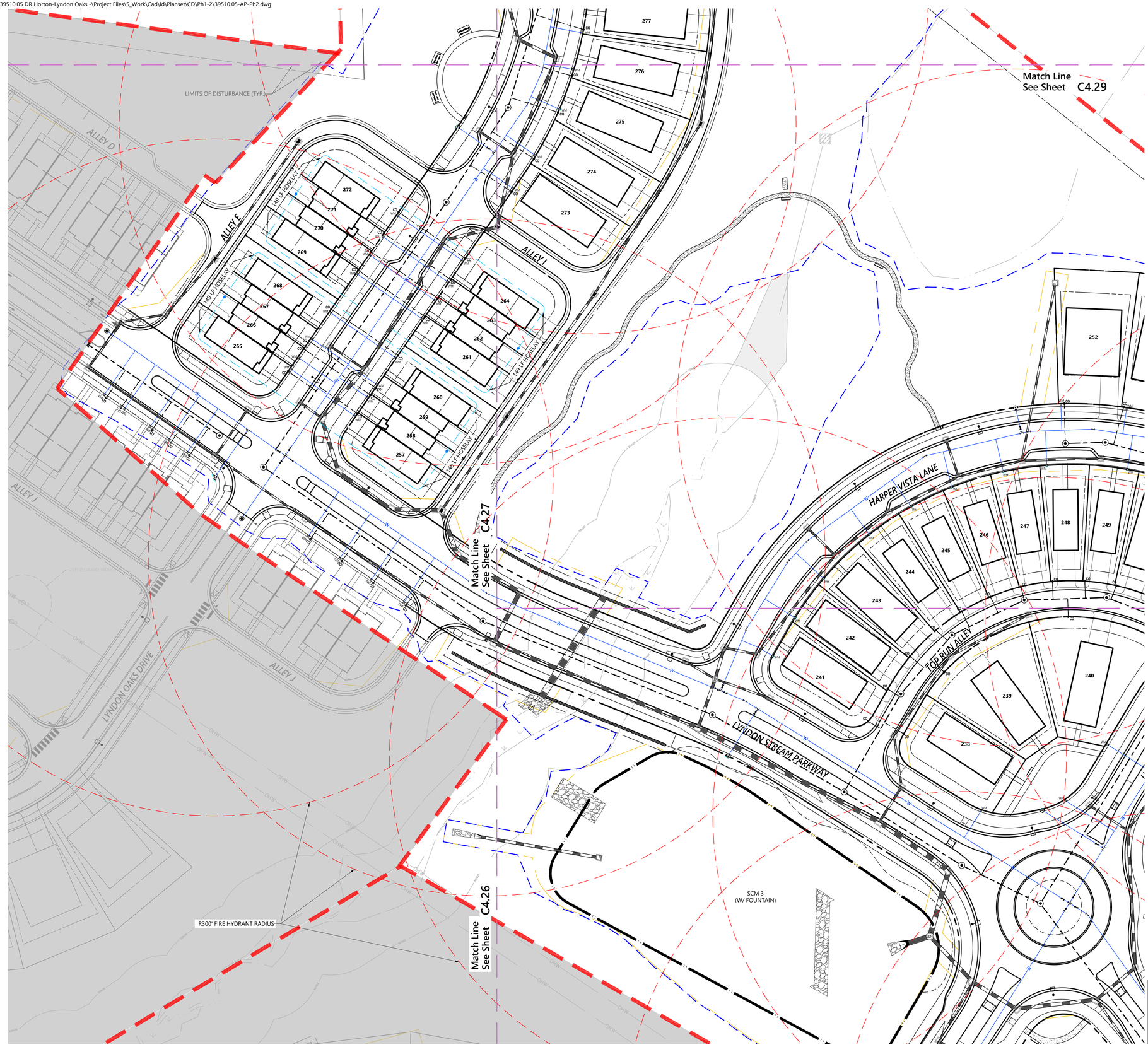

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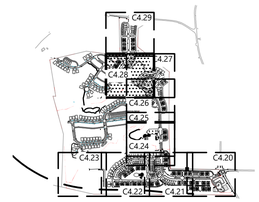

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Fire Apparatus Access Plan Phase 2 (4 of 5)

ZMA-2-23

Drawing Number
C4.28

Sheet 92 of 224

Project Number 39510.05

811 Know what's below. Call before you dig.

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12/15/2025

Saved Thursday, December 18, 2025 4:50:54 PM WSHERRILL Plotted Thursday, December 18, 2025 4:51:30 PM Will Sherrill

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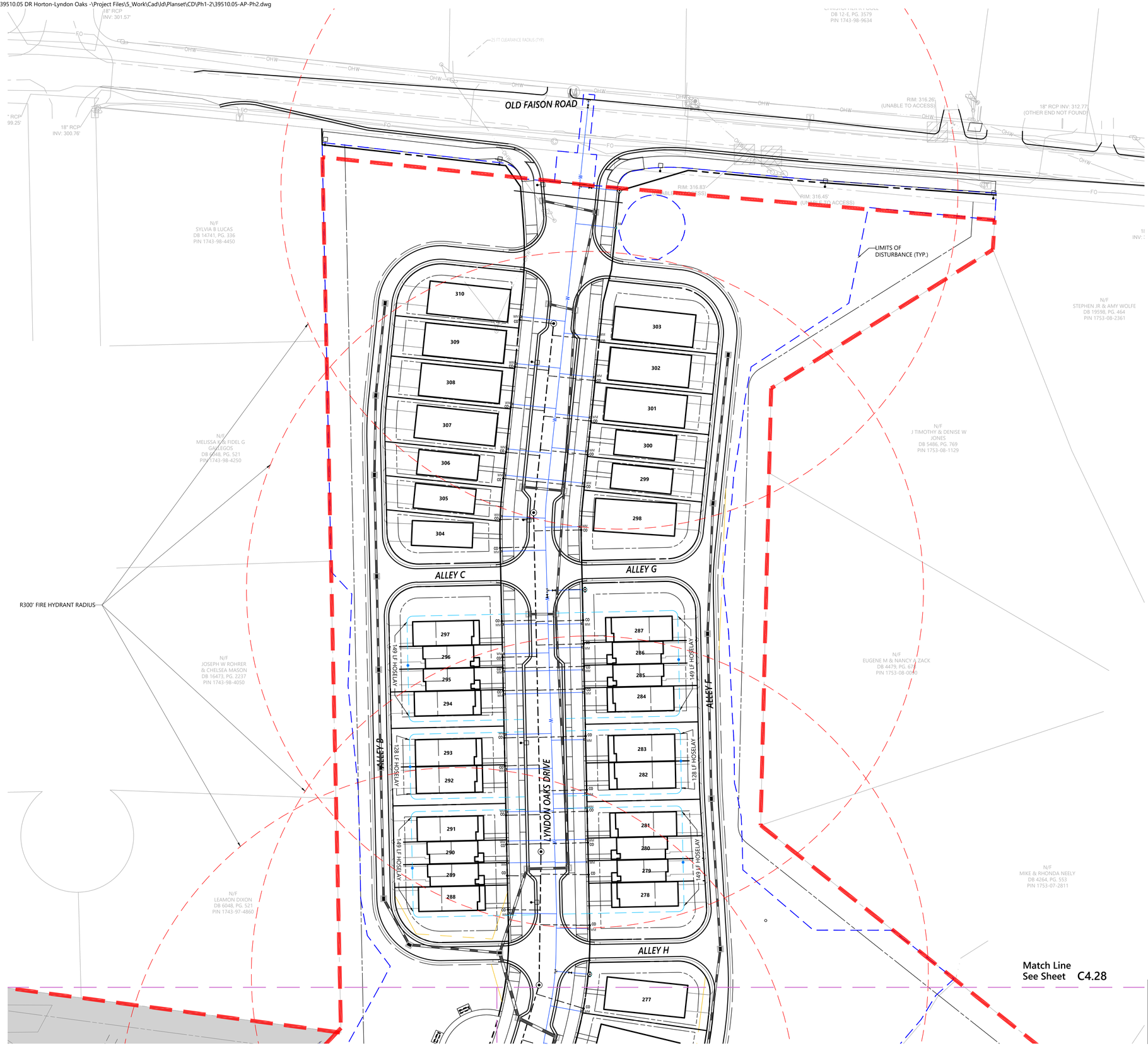

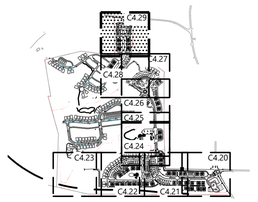

Key
1" = 1,500'

Site Legend

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- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Fire Apparatus Access Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number
C4.29

Sheet 93 of 224

Project Number 39510.05

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12/15/2025

Saved Friday, November 21, 2025 3:04:02 PM MMEZA Plotted Wednesday, December 17, 2025 10:06:39 AM Walker Johnson

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Stage 1 Erosion Control 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 THE APPROVED PLANS, CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. CLEARING SHOULD BE LIMITED TO A MAXIMUM 35' "RIBBON" AROUND PERIMETER TO INSTALL CONTROLS. NO GRADING OR EXCAVATION SHOULD OCCUR.
3. SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING WITH TOWN OF KNIGHTDALE TO INSPECT THE PERIMETER CONTROLS.
4. IF APPROVED, PROCEED WITH INSTALLING GRAVEL CONSTRUCTION PADS, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS AND OTHER MEASURES AS SHOWN ON THE APPROVED PLANS. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS, AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
5. GROUND COVER SHALL BE PROVIDED AS FOLLOWS:
   - 5.1. STABILIZE BASINS WITH GROUND COVER IMMEDIATELY AFTER INSTALLATION.
   - 5.2. STABILIZE DIVERSION DITCHES INTENDED TO BE IN SERVICE FOR 20 DAYS OR MORE WITH TEMPORARY SEEDING AND EROSION CONTROL NETTING.
   - 5.3. FOR ALL AREAS OF MODERATE AND/OR STEEP SLOPES, PROVIDE TEMPORARY GROUND COVER IF THE SLOPE HAS NOT BEEN DISTURBED FOR A PERIOD OF FOURTEEN (14) CALENDAR DAYS.
   - 5.4. PROVIDED GROUND COVER SUFFICIENT TO RESTRAIN EROSION ON ANY PORTION OF THE SITE UPON WHICH FURTHER LAND-DISTURBING ACTIVITY IS NOT BEING UNDERTAKEN WITHIN FOURTEEN (14) CALENDAR DAYS OF TEMPORARILY OR PERMANENTLY SUSPENDING LAND DISTURBING ACTIVITY.
   - 5.5. ESTABLISH PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION WITHIN FOURTEEN (14) CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OF DEVELOPMENT AND/OR PRIOR TO FINAL INSPECTION.
6. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ONSITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
7. BEGIN CLEARING AND GRUBBING.
8. CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
9. PROCEED TO STAGE 2 EROSION CONTROL PLAN.
10. EROSION CONTROL SEQUENCE SHALL FOLLOW REQUIRED TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE AS APPLICABLE.

Erosion Control Notes

1. ALL SKIMMER BASIN RIPRAP TO BE CLASS B AND 24" THICK UNLESS OTHERWISE NOTED

Viewport Number	Sheets
1	C5.01
2	C5.02
3	C5.03
4	C5.04
5	C5.05
6	C5.06
7	C5.07
8	C5.08
9	C5.09
10	C5.10

STABILIZATION TIMEFRAMES (Effective Aug. 2, 2044)		
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
- IP — INLET PROTECTION
- SFO — SILT FENCE OUTLET
- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Overall Erosion Control Plan Stage 1

ZMA-2-23

Drawing Number
C5.00

Sheet 94 of 224

Project Number
39510.05

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12/15/2025

Saved Tuesday, December 16, 2025 12:09:12 PM WSHERRILL Plotted Wednesday, December 17, 2025 2:52:10 PM Will Sherrill

Diversion Ditch Calculations

ID	Type *	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD1	S75 Unvegetated	4.59	7.27	16.69 cfs	3.58 ft/s	0.96 ft	0.033	1.6 lbs/ft2	0.79 lbs/ft2	2.03	STABLE	D
DD1A	Unvegetated	0.00	0.00	0 cfs	0 ft/s	0 ft	0	0.37 lbs/ft2	0 lbs/ft2	0	STABLE	D

* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE ABOVE, OR THEIR APPROVED EQUIVALENT

Phase 1 Erosion Control Sequence

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5. GROUND OVER SHALL BE PROVIDED AS FOLLOWS:
   - 5.1. STABILIZE BASINS WITH GROUND COVER IMMEDIATELY AFTER INSTALLATION.
   - 5.2. STABILIZE DIVERSION DITCHES INTENDED TO BE IN SERVICE FOR 20 DAYS OR MORE WITH TEMPORARY SEEDING AND EROSION CONTROL NETTING.
   - 5.3. FOR ALL AREAS OF MODERATE AND/OR STEEP SLOPES, PROVIDE TEMPORARY GROUND COVER IF THE SLOPE HAS NOT BEEN DISTURBED FOR A PERIOD OF FOURTEEN (14) CALENDAR DAYS.
   - 5.4. PROVIDED GROUND COVER SUFFICIENT TO RESTRAIN EROSION ON ANY PORTION OF THE SITE UPON WHICH FURTHER LAND-DISTURBING ACTIVITY IS NOT BEING UNDERTAKEN WITHIN FOURTEEN (14) CALENDAR DAYS OF TEMPORARILY OR PERMANENTLY SUSPENDING LAND DISTURBING ACTIVITY.
   - 5.5. ESTABLISH PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION WITHIN FOURTEEN (14) CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OF DEVELOPMENT AND/OR PRIOR TO FINAL INSPECTION.
6. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ONSITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
7. BEGIN CLEARING AND GRUBBING.
8. CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
9. PROCEED TO PHASE 2 EROSION CONTROL PLAN.
10. EROSION CONTROL SEQUENCE SHALL FOLLOW REQUIRED TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE AS APPLICABLE.

Match Line See Sheet C5.02

N/F DONALD W & JUDY S KAY DB 4405, PG. 808 PIN 1753-15-2438

N/F DONALD W & JUDY S KAY DB 2866, PG. 724 PIN 1753-15-2326

N/F NEDRA M DAVIS DB 7728, PG. 87 PIN 1753-15-8368

N/F WESLEY KNAPP DB 16600, PG. 4 PIN 1753-25-15

N/F JACKIE L LEE DB 2487, PG. 536 PIN 1753-15-9140

25-FT CLEARANCE RADIUS (TYP)

COMMERCIAL PHASE / LOT

Bethlehem Road 60' Public Right of Way SR# 1001 / SR# 1393

NCG01 SELF INSPECTION PERMIT BOX

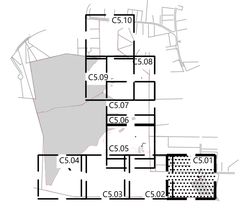
50.00'

25.00'

24" TEMPORARY SLOPE DRAIN (TYP.)

10'X10' DEWATERING BAG FOR PUMPING/DEWATERING

LIMITS OF DISTURBANCE (TYP.)



Key

1" = 1,500'

Erosion Control Legend

- SF SILT FENCE
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- IP INLET PROTECTION
- SFO SILT FENCE OUTLET
- CE CONSTRUCTION ENTRANCE
- CD ROCK CHECK DAM
- TPF TREE PROTECTION FENCE
- DB DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (effective Aug 1, 2019)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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940 Main Campus Drive
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919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C5.01

Sheet 95 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 8:39:06 AM WSHERRILL Plotted Wednesday, December 17, 2025 2:53:01 PM Will Sherrill

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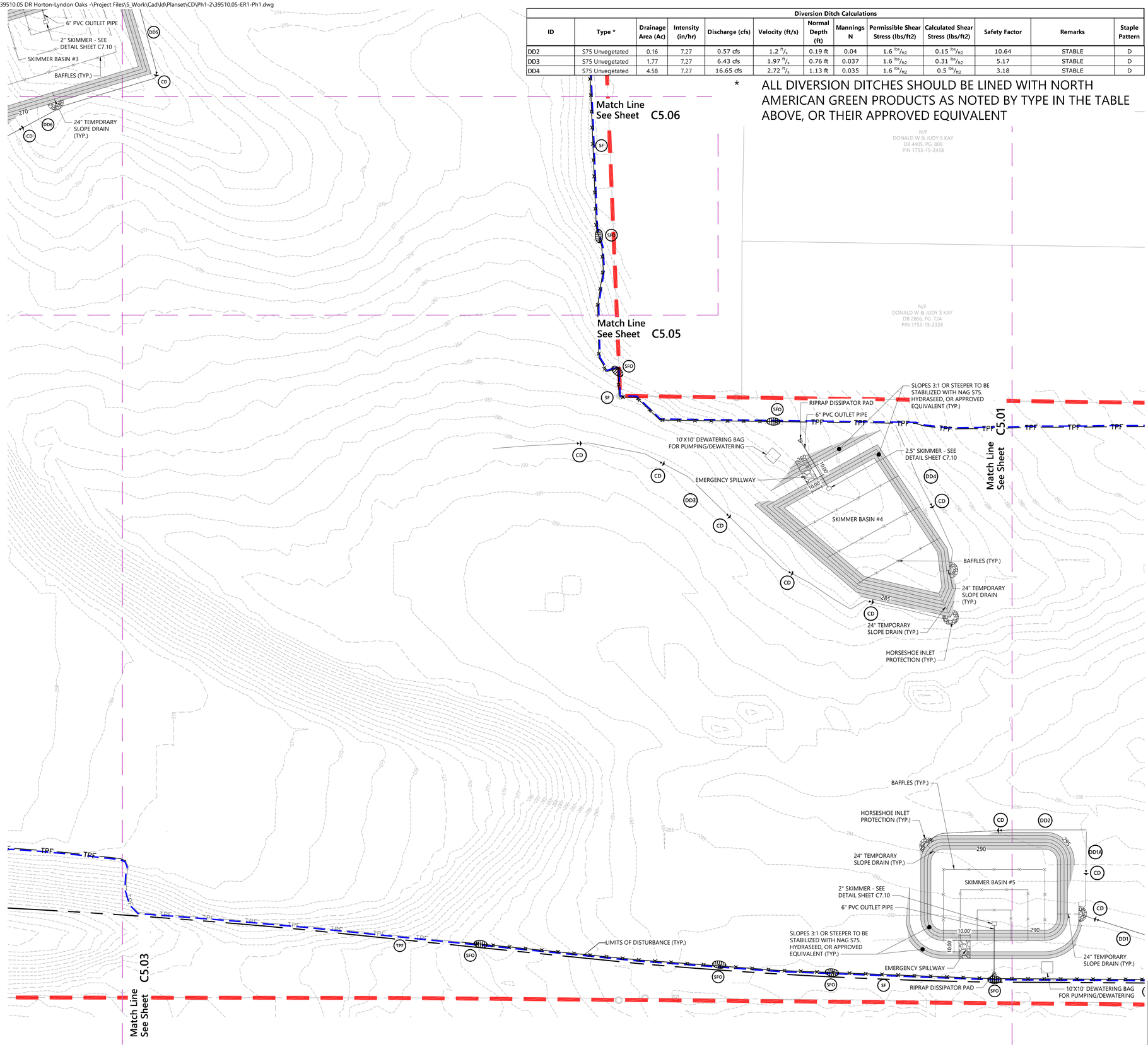
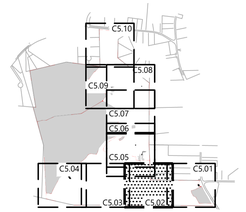
Diversion Ditch Calculations

ID	Type *	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD2	S75 Unvegetated	0.16	7.27	0.57 cfs	1.2 ft/s	0.19 ft	0.04	1.6 lbs/ft2	0.15 lbs/ft2	10.64	STABLE	D
DD3	S75 Unvegetated	1.77	7.27	6.43 cfs	1.97 ft/s	0.76 ft	0.037	1.6 lbs/ft2	0.31 lbs/ft2	5.17	STABLE	D
DD4	S75 Unvegetated	4.58	7.27	16.65 cfs	2.72 ft/s	1.13 ft	0.035	1.6 lbs/ft2	0.5 lbs/ft2	3.18	STABLE	D

* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE ABOVE, OR THEIR APPROVED EQUIVALENT





Key
1" = 1,500'

Erosion Control Legend

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- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
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- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Monday-Aug 1, 2011)		
Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 1 (2 of 5)

ZMA-2-23

Drawing Number: C5.02

Sheet 96 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 8:39:06 AM WSHERRILL Plotted Wednesday, December 17, 2025 2:53:13 PM Will Sherrill

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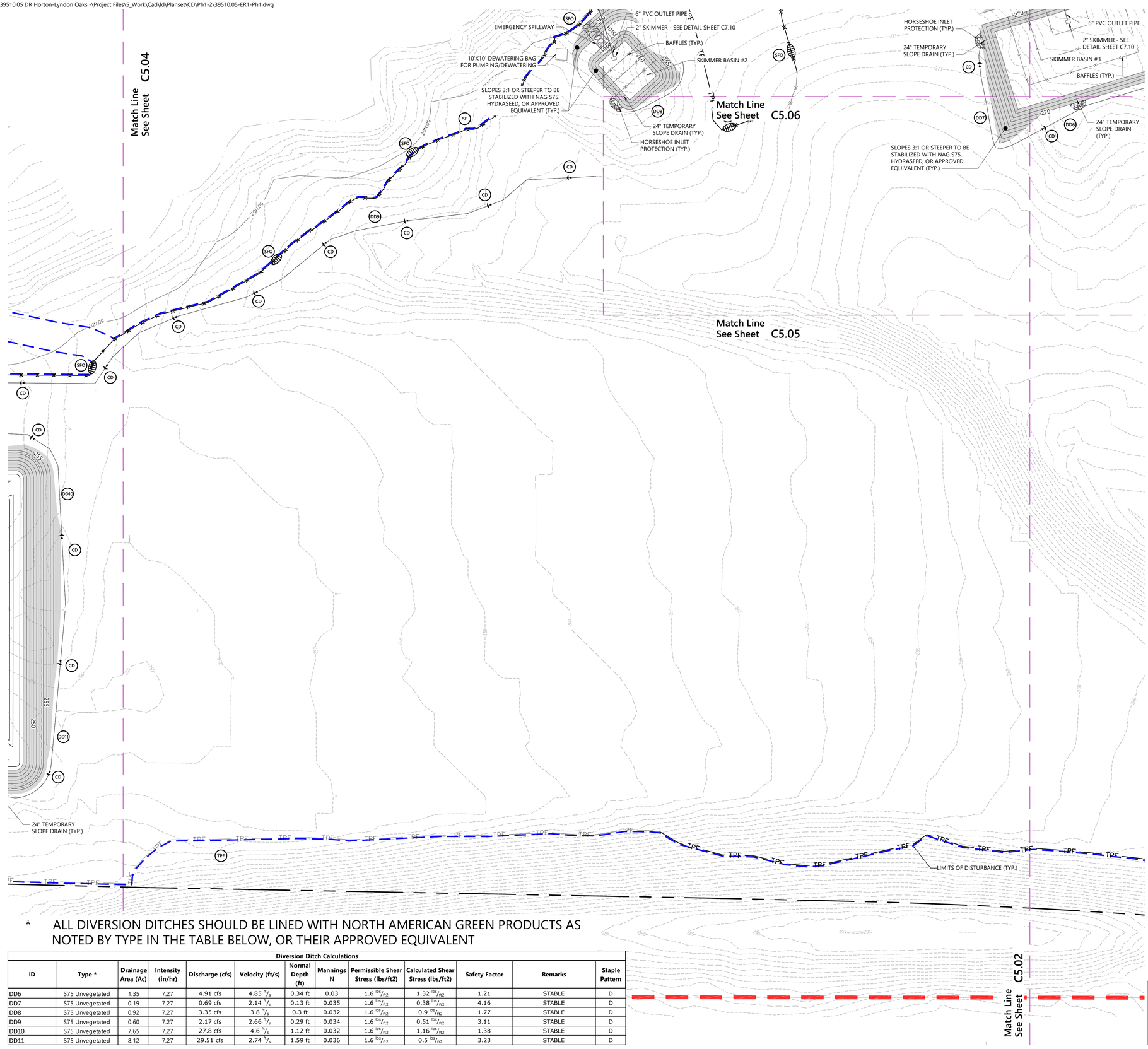

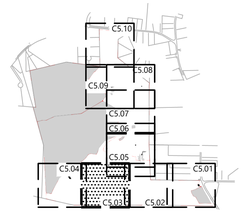

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Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
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- PHASE LIMITS
- MATCH LINE

* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE BELOW, OR THEIR APPROVED EQUIVALENT

Diversion Ditch Calculations

ID	Type *	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD6	S75 Unvegetated	1.35	7.27	4.91 cfs	4.85 ft/s	0.34 ft	0.03	1.6 lbs/ft2	1.32 lbs/ft2	1.21	STABLE	D
DD7	S75 Unvegetated	0.19	7.27	0.69 cfs	2.14 ft/s	0.13 ft	0.035	1.6 lbs/ft2	0.38 lbs/ft2	4.16	STABLE	D
DD8	S75 Unvegetated	0.92	7.27	3.35 cfs	3.8 ft/s	0.3 ft	0.032	1.6 lbs/ft2	0.9 lbs/ft2	1.77	STABLE	D
DD9	S75 Unvegetated	0.60	7.27	2.17 cfs	2.66 ft/s	0.29 ft	0.034	1.6 lbs/ft2	0.51 lbs/ft2	3.11	STABLE	D
DD10	S75 Unvegetated	7.65	7.27	27.8 cfs	4.6 ft/s	1.12 ft	0.032	1.6 lbs/ft2	1.16 lbs/ft2	1.38	STABLE	D
DD11	S75 Unvegetated	8.12	7.27	29.51 cfs	2.74 ft/s	1.59 ft	0.036	1.6 lbs/ft2	0.5 lbs/ft2	3.23	STABLE	D

STABILIZATION TIMEFRAMES
(Effective Aug 1, 2019)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 1 (3 of 5)

ZMA-2-23

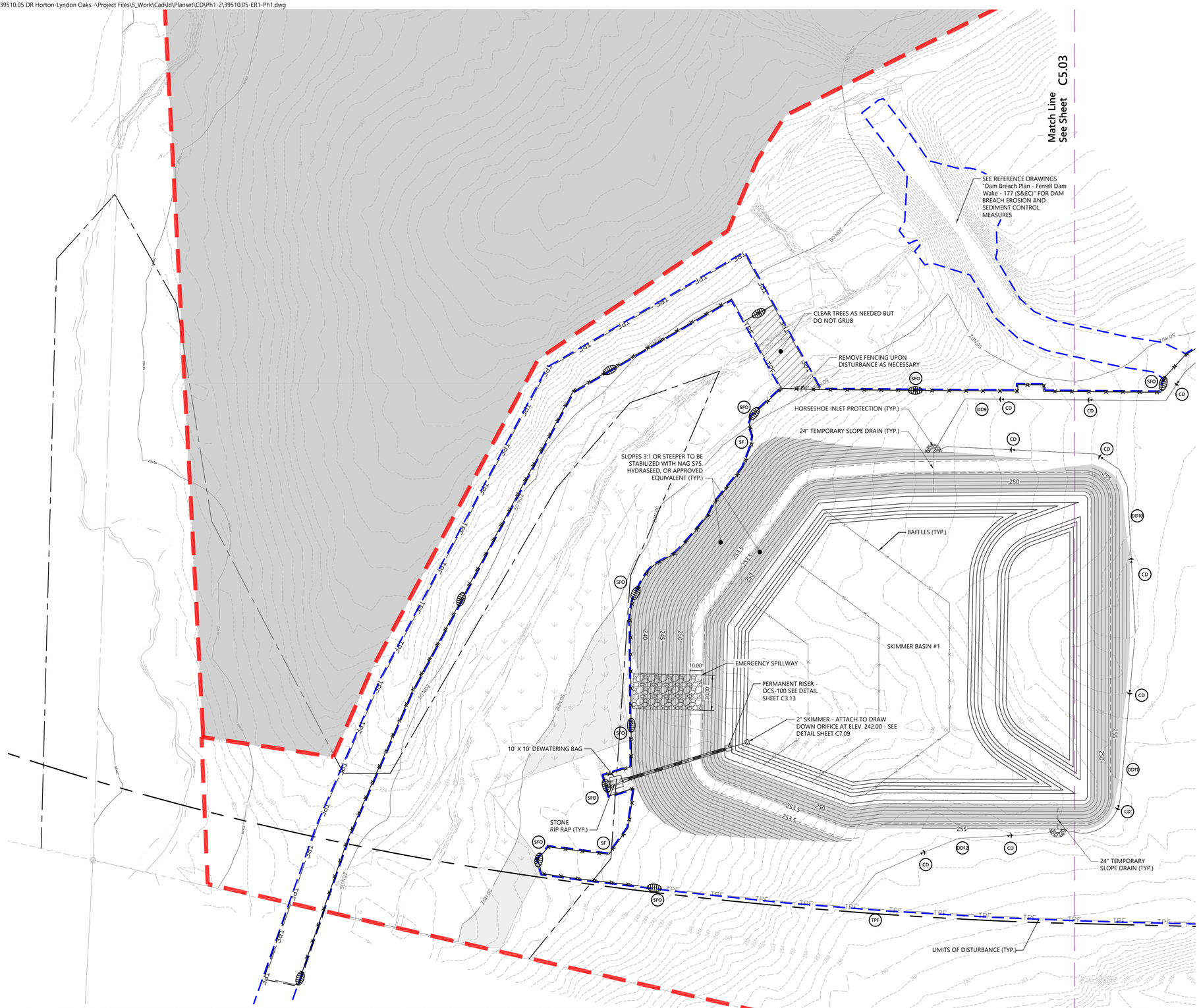
Drawing Number
C5.03

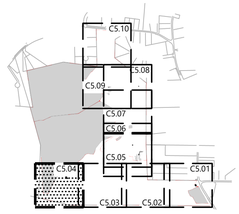
Sheet 97 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Wednesday, December 17, 2025 8:39:06 AM WSHERRILL Plotted Wednesday, December 17, 2025 2:53:23 PM Will Sherrill





Key
1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

0 20 40 80 Feet

* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE BELOW, OR THEIR APPROVED EQUIVALENT

Diversion Ditch Calculations

ID	Type *	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD12	S75 Unvegetated	0.76	7.27	2.76 cfs	1.83 ft/s	0.45 ft	0.037	1.6 lbs/ft3	1.6 lbs/ft3	5.7	STABLE	D

STABILIZATION TIMEFRAMES
(Effective Aug. 1, 2019)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 1 (4 of 5)

ZMA-2-23
Drawing Number

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

C5.04

Sheet 98 of 224

Project Number 39510.05

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6" PVC OUTLET PIPE

10' X 10' DEWATERING BAG FOR PUMPING/ DEWATERING

1.5" SKIMMER- ATTACH TO DRAW DOWN ORIFICE AT ELEV. 261.00 - SEE DETAIL SHEET C7.09

24" TEMPORARY SLOPE DRAIN (TYP.)

PERMANENT RISER - OCS-200 SEE DETAIL SHEET C3.15

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

SKIMMER BASIN #9

BAFFLES (TYP.)

EMERGENCY SPILLWAY

HORSE SHOE INLET PROTECTION (TYP.)

Match Line See Sheet C5.07

LIMITS OF DISTURBANCE (TYP)

STREAM CROSSING - SEE DETAIL ON SHEET C5.33

RIPRAP DISSIPATOR PAD

EMERGENCY SPILLWAY

10'X10' DEWATERING BAG FOR PUMPING/DEWATERING

HORSESHOE INLET PROTECTION (TYP.)

6" PVC OUTLET PIPE

2" SKIMMER - SEE DETAIL SHEET C7.10

SKIMMER BASIN #3

BAFFLES (TYP.)

24" TEMPORARY SLOPE DRAIN (TYP.)

SKIMMER BASIN #2

Match Line See Sheet C5.03

Match Line See Sheet C5.06

Match Line See Sheet C5.02

Match Line See Sheet C5.06

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

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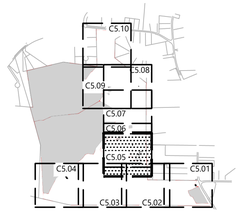
DD5	S75 Unvegetated	3.52	7.27	12.81 cfs	2.93 $^{ft}/_{s}$	0.92 ft	0.034	1.6 $^{lbs}/_{ft2}$	0.57 $^{lbs}/_{ft2}$	2.79	STABLE	D



Key

1" = 1,500'

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CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
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	SLOPE STABILIZATION

Site Legend

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 1
Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C5.05

Sheet 99 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

4" SKIMMER - ATTACH TO DRAW DOWN ORIFICE AT ELEV. 262.00 - SEE DETAIL SHEET C7.09

PERMANENT RISER - OCS-700 SEE DETAIL SHEET C3.19

EMERGENCY SPILLWAY

6" PVC OUTLET PIPE

10' X 10' DEWATERING BAG FOR PUMPING/ DEWATERING

BAFFLES (TYP.)

24" TEMPORARY SLOPE DRAIN (TYP.)

HORSE SHOE INLET PROTECTION (TYP.)

Match Line See Sheet C5.05

Match Line See Sheet C5.07

1.5" SKIMMER- ATTACH TO DRAW DOWN ORIFICE AT ELEV. 261.00 - SEE DETAIL SHEET C7.09

10' X 10' DEWATERING BAG FOR PUMPING/ DEWATERING

24" TEMPORARY SLOPE DRAIN (TYP.)

PERMANENT RISER - OCS-200 SEE DETAIL SHEET C3.15

6" PVC OUTLET PIPE

SKIMMER BASIN #9

BAFFLES (TYP.)

EMERGENCY SPILLWAY

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

HORSE SHOE INLET PROTECTION (TYP.)

STREAM CROSSING - SEE DETAIL ON SHEET C5.33

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

LIMITS OF DISTURBANCE (TYP)

RIPRAP DISSIPATOR PAD

EMERGENCY SPILLWAY

10'X10' DEWATERING BAG FOR PUMPING/DEWATERING

HORSESHOE INLET PROTECTION (TYP.)

24" TEMPORARY SLOPE DRAIN (TYP.)

6" PVC OUTLET PIPE

2" SKIMMER - SEE DETAIL SHEET C7.10

SKIMMER BASIN #3

BAFFLES (TYP.)

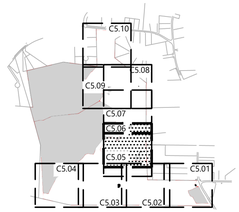
Match Line See Sheet C5.03

Match Line See Sheet C5.02

ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE BELOW, OR THEIR APPROVED EQUIVALENT

Diversion Ditch Calculations

ID	Type *	Drainage Area	Intensity	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
DD9	S75 Unvegetated	2.65 Acres	7.27 in/hr	9.63 cfs	2.44 ft/s	0.86 ft	0.036	1.6 lbs/ft^2	0.43 lbs/ft^2	3.72	STABLE	D
DD10	Unvegetated	0.02 Acres	7.27 in/hr	0.07 cfs	0.86 ft/s	0.04 ft	0.04	0.37 lbs/ft^2	0.1 lbs/ft^2	3.6	STABLE	D
DD11	Unvegetated	0.01 Acres	7.27 in/hr	0.04 cfs	0.54 ft/s	0.03 ft	0.044	0.37 lbs/ft^2	0.05 lbs/ft^2	7.26	STABLE	D



Key
1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES
(Effective Aug. 1, 2019)

Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number
C5.06

Sheet 100 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, December 16, 2025 12:09:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 2:54:42 PM Will Sherrill

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Diversion Ditch Calculations											
ID	Type	Drainage Area	Intensity	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
DD4	S75 Unvegetated	1.32 Acres	7.27 in/hr	4.80 cfs	2.12 ft/s	0.60 ft	0.036	1.6 lbs/ft²	0.35 lbs/ft²	4.57	STABLE	D
DD5	Unvegetated	0.12 Acres	7.27 in/hr	0.44 cfs	1.3 ft/s	0.14 ft	0.039	0.37 lbs/ft²	0.15 lbs/ft²	2.54	STABLE	D
DD6	S75 Unvegetated	0.81 Acres	7.27 in/hr	2.94 cfs	4 ft/s	0.26 ft	0.031	1.6 lbs/ft²	0.99 lbs/ft²	1.62	STABLE	D
DD7	S75 Unvegetated	2.23 Acres	7.27 in/hr	8.11 cfs	4.69 ft/s	0.5 ft	0.031	1.6 lbs/ft²	1.24 lbs/ft²	1.29	STABLE	D
DD8	S75 Unvegetated	6.06 Acres	7.27 in/hr	20.03 cfs	2.66 ft/s	1.29 ft	0.036	1.6 lbs/ft²	0.48 lbs/ft²	3.32	STABLE	D

* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE ABOVE, OR THEIR APPROVED EQUIVALENT

STREAM CROSSING - SEE DETAIL ON SHEET C5.33

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

EMERGENCY SPILLWAY

HORSE SHOE INLET PROTECTION (TYP.)

24" TEMPORARY SLOPE DRAIN (TYP.)

SKIMMER BASIN #7

BAFFLES (TYP.)

PERMANENT RISER - OCS-300 SEE DETAIL SHEET C3.17

2" SKIMMER - ATTACH TO DRAW DOWN ORIFICE AT ELEV. 273.00 - SEE DETAIL SHEET C7.09

LIMITS OF DISTURBANCE (TYP.)

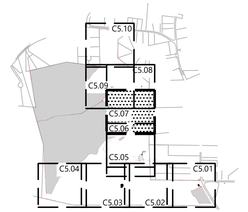
Match Line See Sheet C5.08

Match Line See Sheet C5.06

Match Line See Sheet C5.05

4" SKIMMER - ATTACH TO DRAW DOWN ORIFICE AT ELEV. 262.00 - SEE DETAIL SHEET C7.09

6" PVC OUTLET PIPE



Key
1" = 1,500'

Erosion Control Legend

- SF SILT FENCE
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- IP INLET PROTECTION
- SFO SILT FENCE OUTLET
- CE CONSTRUCTION ENTRANCE
- CD ROCK CHECK DAM
- TPF TREE PROTECTION FENCE
- DB DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug. 2, 2021)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C5.07

Sheet 101 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, December 16, 2025 12:09:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 2:55:01 PM Will Sherrill

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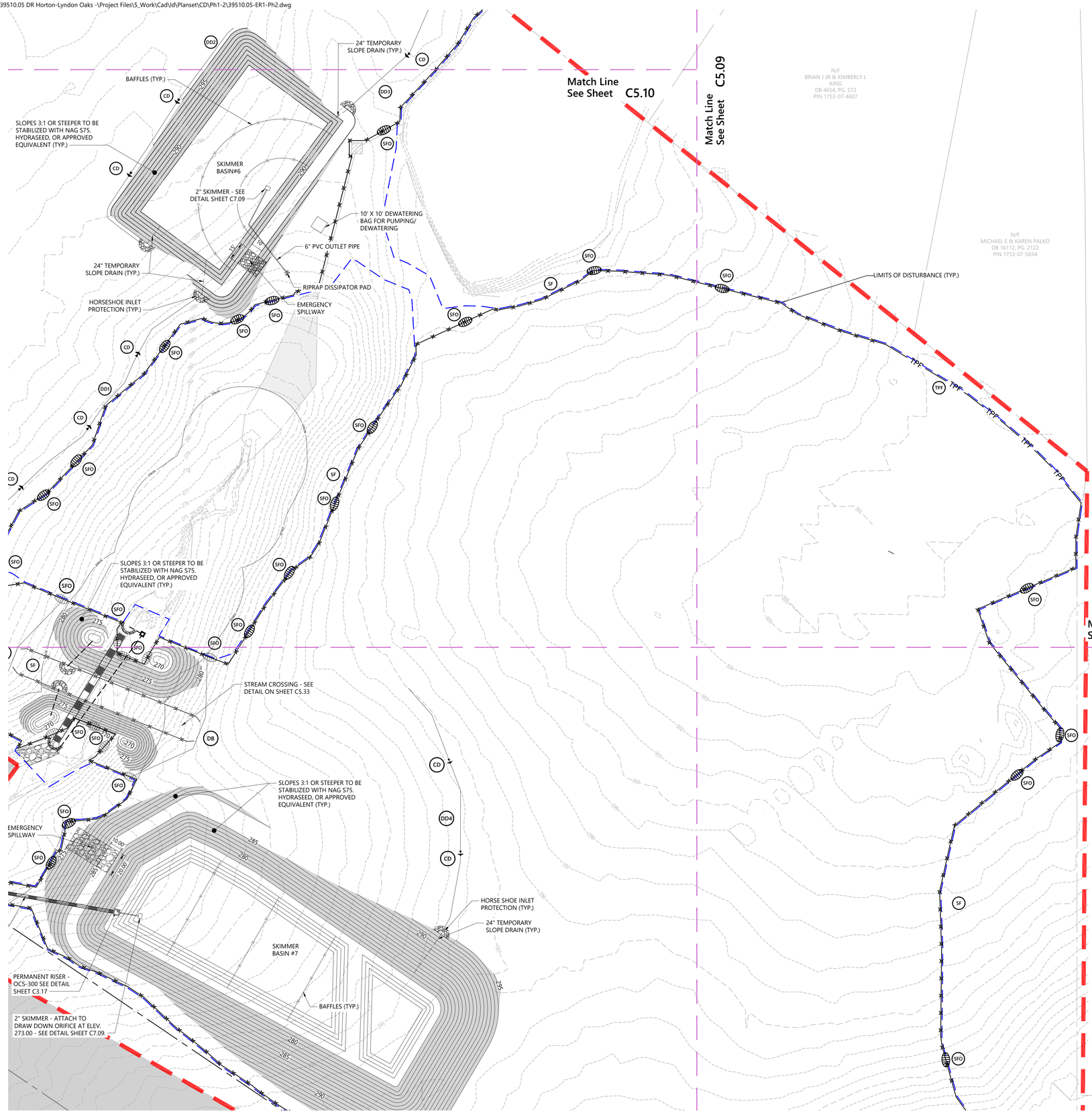
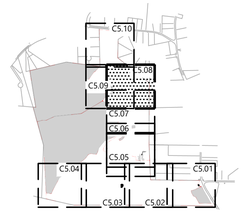




Key

1" = 1,500'

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
- IP — INLET PROTECTION
- SFO — SILT FENCE OUTLET
- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug. 3, 2009)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number
C5.08

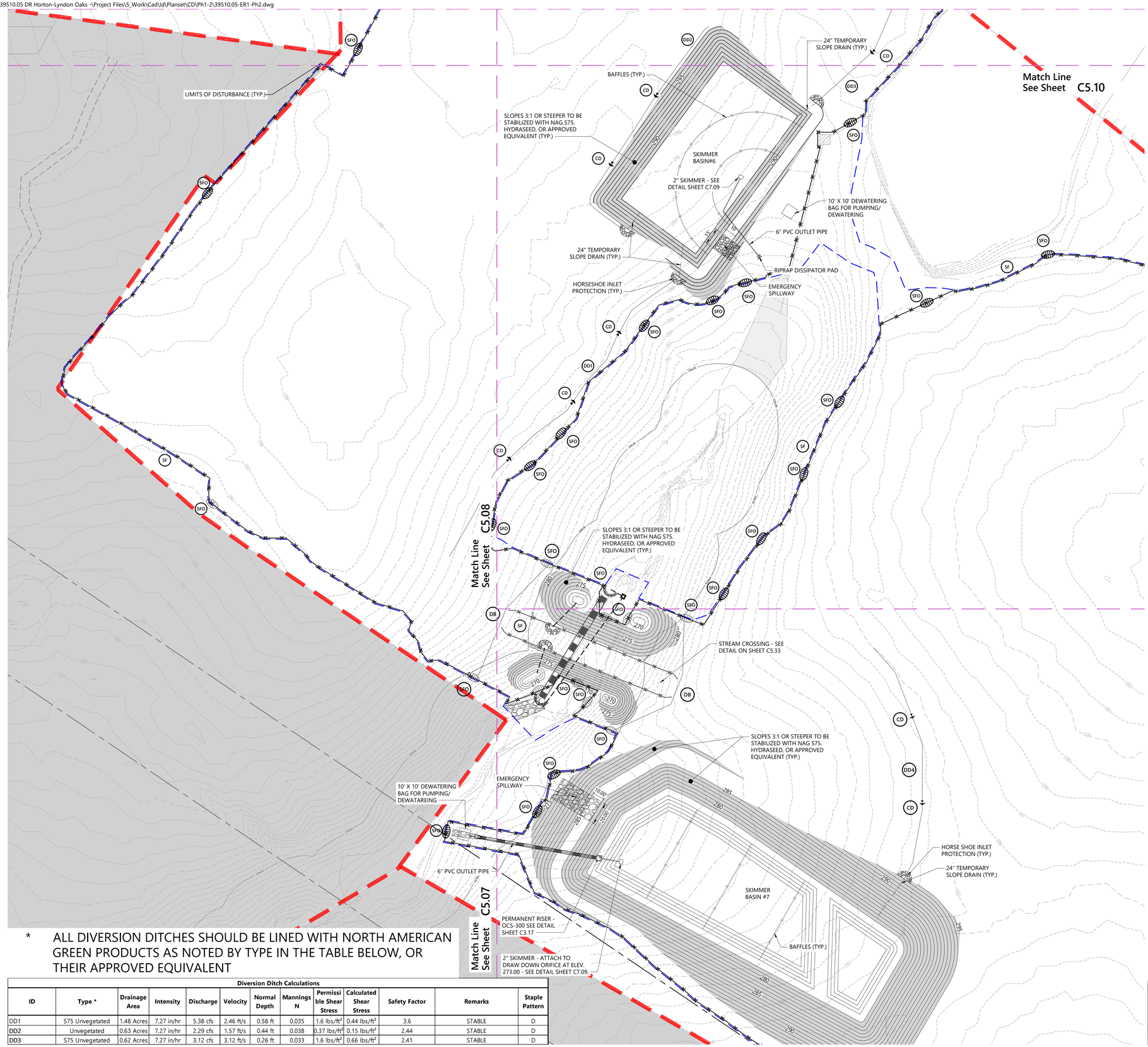
Sheet 102 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

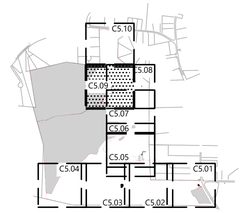
Saved Tuesday, December 16, 2025 12:09:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 2:55:18 PM Will Sherrill



* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE BELOW, OR THEIR APPROVED EQUIVALENT

Diversion Ditch Calculations

ID	Type *	Drainage Area	Intensity	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
DD1	S75 Unvegetated	1.48 Acres	7.27 in/hr	5.38 cfs	2.46 ft/s	0.58 ft	0.035	1.6 lbs/ft^2	0.44 lbs/ft^2	3.6	STABLE	D
DD2	Unvegetated	0.63 Acres	7.27 in/hr	2.29 cfs	1.57 ft/s	0.44 ft	0.038	0.37 lbs/ft^2	0.15 lbs/ft^2	2.44	STABLE	D
DD3	S75 Unvegetated	0.62 Acres	7.27 in/hr	3.12 cfs	3.12 ft/s	0.26 ft	0.033	1.6 lbs/ft^2	0.66 lbs/ft^2	2.41	STABLE	D



Key
1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES
(Effective Aug. 1, 2019)

Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 10' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 2 (4 of 5)

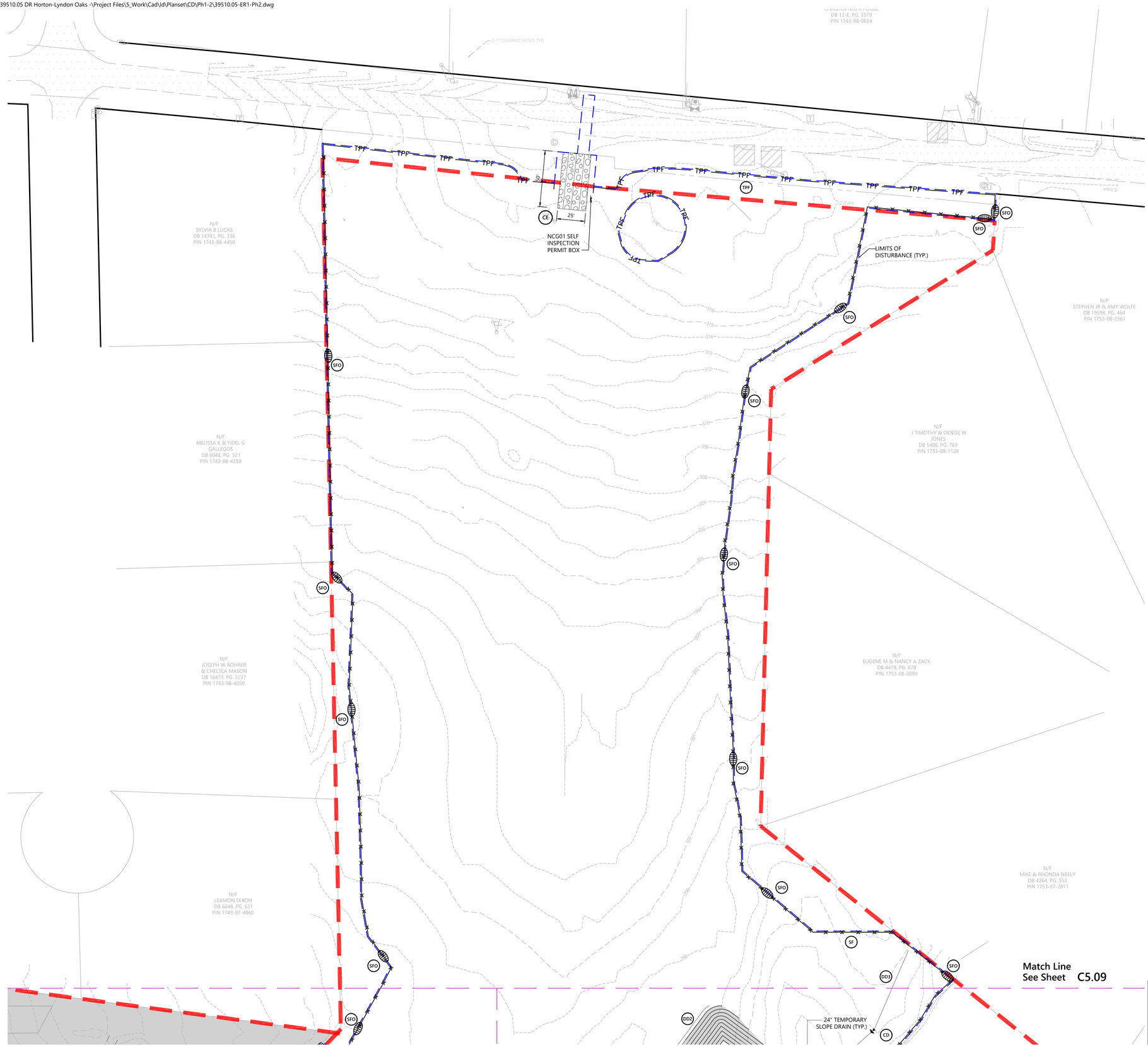
ZMA-2-23

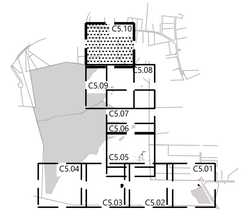
Drawing Number
C5.09

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 103 of 224

Project Number
39510.05





Key

1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug 1, 2019)		
Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 5:1	7 days	If slopes are 50' or less in length and are not steeper than 3:1, 14 days are allowed.
Slopes 5:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 1 Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number
C5.10

Sheet 104 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, December 16, 2025 12:09:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 2:55:48 PM Will Sherrill

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Old Faison Road
50' Public Right of Way
BM 2008 PG 2138
Bethlehem Road
50' Public Right of Way
BM 1993 PG 1303
Interstate 87
Variable Width Public Right of Way
BM 2011 PG 1080
PHASE 4
PHASE 3
COMMERCIAL PHASE / LOT
LIMITS OF DISTURBANCE (TYP.)
TPF
N/F
WILLIAM C & ELIZABETH B BROOME
DB 14946, PG. 2030
PIN 1743-98-4783
CAROLYN P BROWN
DEED DATE 01/30/2021
PIN 1743-98-7681
RISTOPHER R POOL
DB 12-E, PG. 3579
PIN 1743-98-9634
SYLVIA B LUCAS
DB 14741, PG. 336
PIN 1743-98-4450
MELISSA K & FIDEL GALLEGOS
DB 6048, PG. 521
PIN 1743-98-4254
WALLACE R & KATIE L WALSTON
DB 9076, PG. 942
PIN 1743-98-2000
JOSEPH W ROHRER & CHELSEA MASON V
DB 16473, PG. 2237
PIN 1743-98-4050
L&L TREE AND TURF FARMS LLC
DB 15882, PG. 1989
PIN 1743-88-6151
SOMYA LEVON DEBNAM
DB 22-E, PG. 1354
PIN 1743-77-8741
L&L TREE AND TURF FARMS LLC
DB 13082, PG. 1989
PIN 1743-87-1757
LANCE R & JACQUELINE VANDYKE
DB 7755, PG. 552
PIN 1743-77-9825
ARTURO SOLIZ-RUBIO & CLAUDIA SOLIZ
DB 16152, PG. 1247
PIN 1743-87-0027
JOYCE C LILES
DB 13-E, PG. 2017
PIN 1743-76-7091
EDDIE M MATTHEWS
DB 2785, PG. 484
PIN 1743-97-2810
LEAMON DIXON
DB 6048, PG. 521
PIN 1743-97-4864
EUGENE M & NANCY A ZACK
DB 4479, PG. 678
PIN 1753-08-0090
J TIMOTHY & DENISE W JONES
DB 5486, PG. 769
PIN 1753-08-1129
STEPHEN JR & AMY WOLFE
DB 19598, PG. 464
PIN 1753-08-2361
JACOB AMUNI I LE
DB 19423, PG. 2106
PIN 1753-08-4218
RICHARD P JR & DORIS THOMPSON
DB 2653, PG. 540
PIN
CLAUDIO A GOI YADIRA P I
DB 17567, PG. 440
PIN 1753-08-6355
JOSUE I POSADA
DB 17561, PG. 931
PIN 1753-08-8214
MIKE & RHONDA REELY
DB 4264, PG. 553
PIN 1753-07-2811
BRIAN J JR & KIMBERLY L KING
DB 4654, PG. 572
PIN 1753-07-4607
MICHAEL E & KAREN PALKO
DB 16112, PG. 2122
PIN 1753-07-5654
CHARLES & LISA MITCHELL
DB 15858, PG. 768
PIN 1753-07-9176
CHARLES W & LISA F MITCHELL
DB 11142, PG. 1295
PIN 1753-06-8554
KENNETH J & CAROLE D FAISON
DB 19631, PG. 318
PIN 1753-06-7184
DONALD W & JUDY S KAY
DB 2866, PG. 724
PIN 1753-15-0760
DONALD W & JUDY S KAY
DB 4405, PG. 808
PIN 1753-15-2438
DONALD W & JUDY S K
DB 2866, PG. 724
PIN 1753-15-2326
TOBY W & RENEE B PROVEAUX
DB 6486, PG. 440
PIN 1753-15-3931
TIMOTHY G & SHARON B WESTER
DB 4838, PG. 4814
PIN 1753-15-9849
I AM OUTREACH MINISTRIES LLC
DB 17069, PG. 2560
PIN 1753-25-7803
PHILLIP A III DIXON
DB 07-E, PG. 3068
PIN 1753-15-1
NEDRA M DAVIS
DB 7728, PG. 87
PIN 1753-15-8368
WESLEY KNAPP
DB 16600, PG. 49
PIN 1753-25-157
WESLEY KNAPP
DB 16600, PG. 495
PIN 1753-25-1574
JACKIE L LEE
DB 2487, PG. 536
PIN 1753-15-9140
CATHERINE N LEE
DB 18352, PG. 600
PIN 1753-24-8811
JENNY C ARAQUE ESPITIA & MARCELINO CRUZ CARVAJAL
DB 19555, PG. 766
PIN 1753-18-2744
JOSEPH HEIGL
DB 19067, PG. 483
PIN 1753-08-9694
EVERETTE L FASION
DB 96-E, PG. 2138
PIN 1753-18-3556
NIKOLAS R PREAST & KATHERINE L PERRY
DB 19103, PG. 1592
PIN 1753-08-3931
LANCE ELIZABETH LLC
DB 18476, PG. 474
PIN 1753-18-0328
CHRISTOPHER R POOLE
DB 12-E PG. 3579
PIN 1753-18-2387
DENNIS WILLIAM SHAW
DB 19099, PG. 2670
PIN 1753-17-6908
DFD PROPERTIES LLC
DB 17058, PG. 727
PIN 1753-17-4594
ANGLE IRON
ROD
ANGLE IRON
ROD
ANGLE IRON
ROD

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Diversion Ditch Calculations

ID	Type *	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD13	S75 Unvegetated	6.96	7.27	25.29 cfs	2.62 $^{ft}/_{s}$	1.49 ft	0.036	1.6 $^{lbs}/_{ft2}$	0.46 $^{lbs}/_{ft2}$	3.45	STABLE	D

* ALL DIVERSION DITCHES SHOULD BE LINED WITH NORTH AMERICAN GREEN PRODUCTS AS NOTED BY TYPE IN THE TABLE ABOVE, OR THEIR APPROVED EQUIVALENT

Match Line
See Sheet C5.13

N/F
DONALD W & JUDY S KAY
DB 4405, PG. 808
PIN 1753-15-2438

N/F
DONALD W & JUDY S KAY
DB 2866, PG. 724
PIN 1753-15-2326

N/F
WESLEY KNAPI
DB 16600, PG. 4
PIN 1753-25-15

N/F
NEDRA M DAVIS
DB 7728, PG. 87
PIN 1753-15-8368

N/F
JACKIE L LEE
DB 2487, PG. 536
PIN 1753-15-9140

Bethlehem Road
60 Public Right of Way
SR# 1001 (SR 1393)

COMMERCIAL
PHASE / LOT

NCG01 SELF
INSPECTION
PERMIT BOX

24" TEMPORARY
SLOPE DRAIN (TYP.)

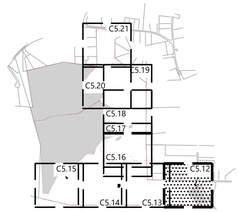
10'X10' DEWATERING BAG
FOR PUMPING/DEWATERING

LIMITS OF DISTURBANCE (TYP.)

75-FT CLEARANCE RADIUS (TYP)

50.00'

34.00'



Key
1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug 1, 2019)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 1 (1 of 5)

ZMA-2-23
Drawing Number: C5.12

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 106 of 224

Project Number: 39510.05

Saved Tuesday, December 16, 2025 12:31:14 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:01:22 PM Will Sherrill

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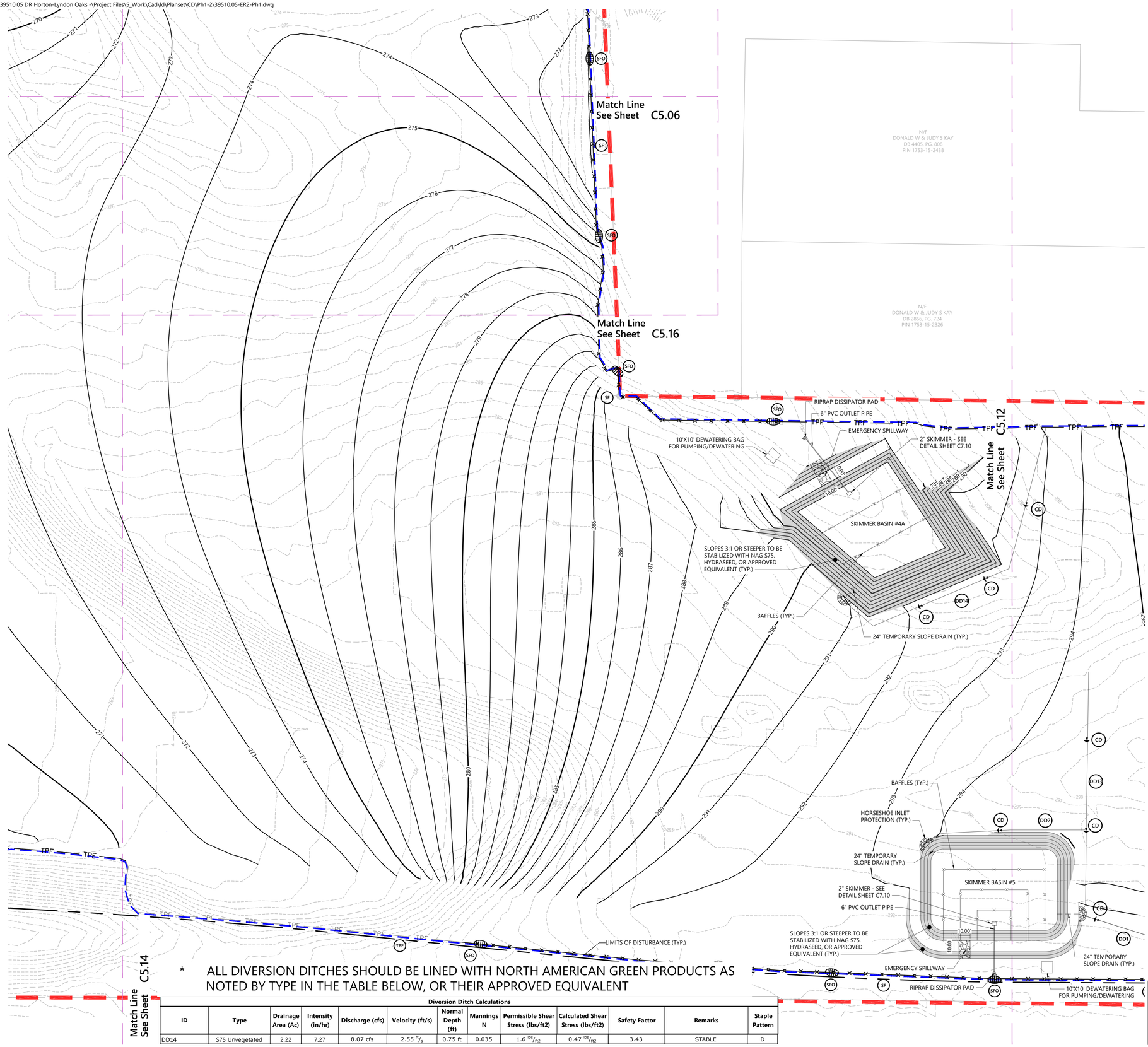

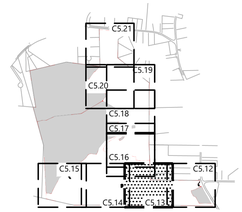

Key

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Diversion Ditch Calculations

ID	Type	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD14	S75 Unvegetated	2.22	7.27	8.07 cfs	2.55 $^{ft}/_{s}$	0.75 ft	0.035	1.6 $^{lbs}/_{ft2}$	0.47 $^{lbs}/_{ft2}$	3.43	STABLE	D

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2009)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or Flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 1 (2 of 5)

ZMA-2-23

Drawing Number
C5.13

Sheet 107 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, December 16, 2025 12:31:14 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:01:37 PM Will Sherrill

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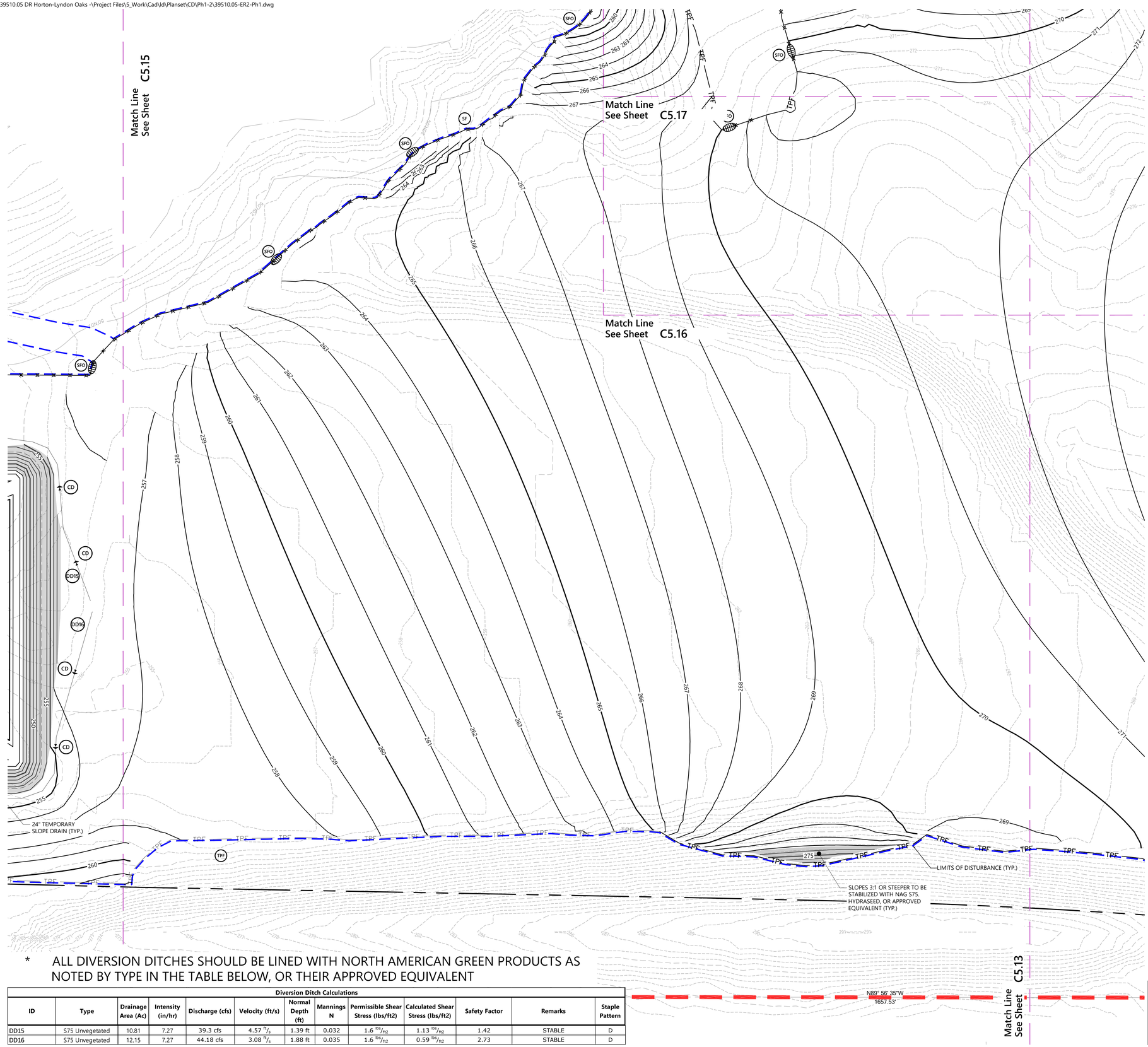

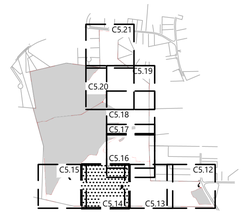

Key

1" = 1,500'

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
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- SFO — SILT FENCE OUTLET
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- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

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Diversion Ditch Calculations

ID	Type	Drainage Area (Ac)	Intensity (in/hr)	Discharge (cfs)	Velocity (ft/s)	Normal Depth (ft)	Mannings N	Permissible Shear Stress (lbs/ft2)	Calculated Shear Stress (lbs/ft2)	Safety Factor	Remarks	Staple Pattern
DD15	S75 Unvegetated	10.81	7.27	39.3 cfs	4.57 ft/s	1.39 ft	0.032	1.6 lbs/ft2	1.13 lbs/ft2	1.42	STABLE	D
DD16	S75 Unvegetated	12.15	7.27	44.18 cfs	3.08 ft/s	1.88 ft	0.035	1.6 lbs/ft2	0.59 lbs/ft2	2.73	STABLE	D

STABILIZATION TIMEFRAMES
(Effective Aug 3, 2009)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 1 (3 of 5)

ZMA-2-23

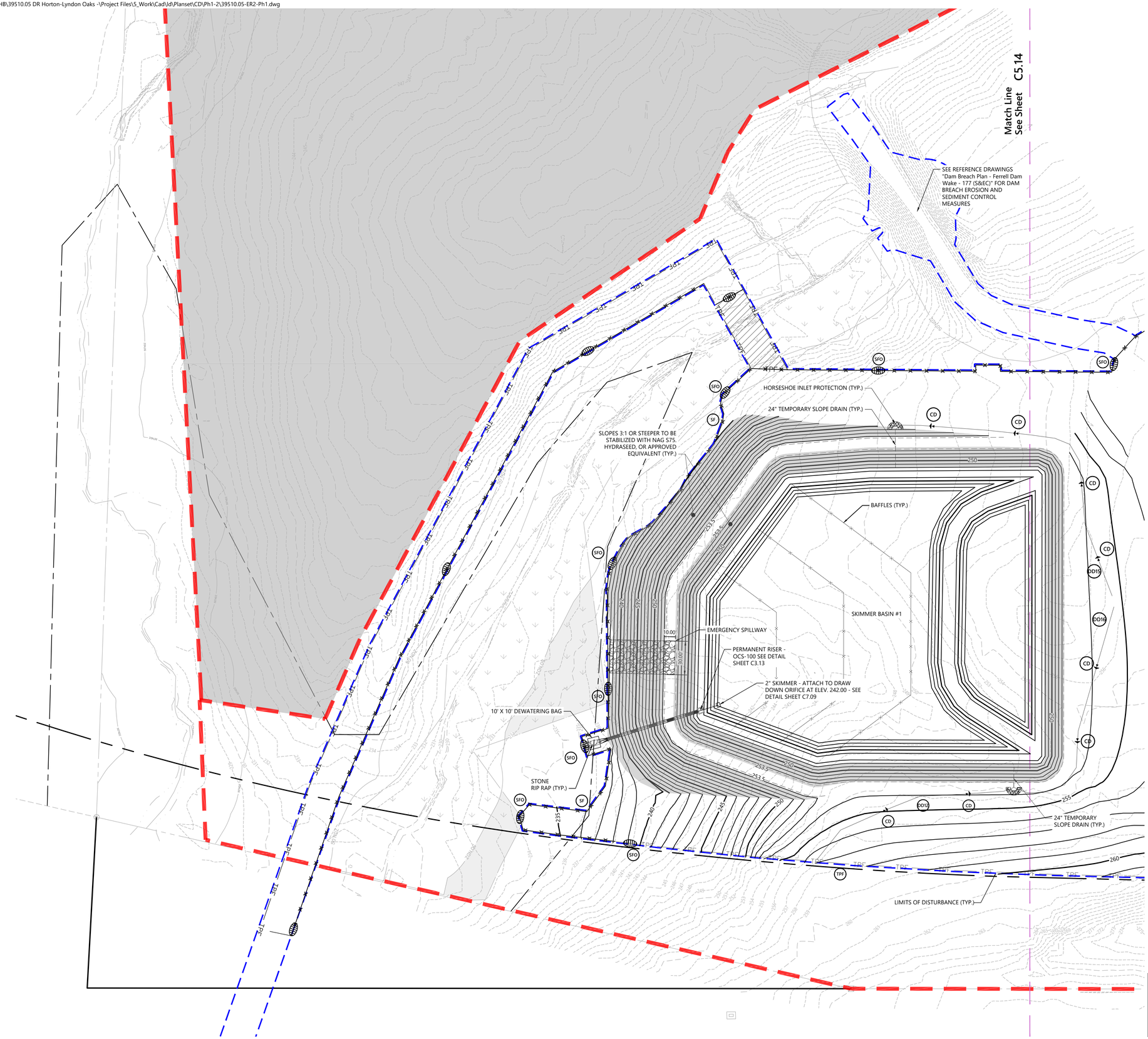
Drawing Number
C5.14

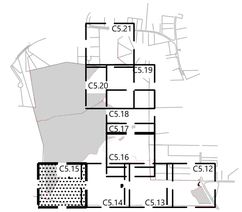
Sheet 108 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, December 16, 2025 12:31:14 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:01:51 PM Will Sherrill





Key
1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (effective Aug. 1, 2019)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C5.15

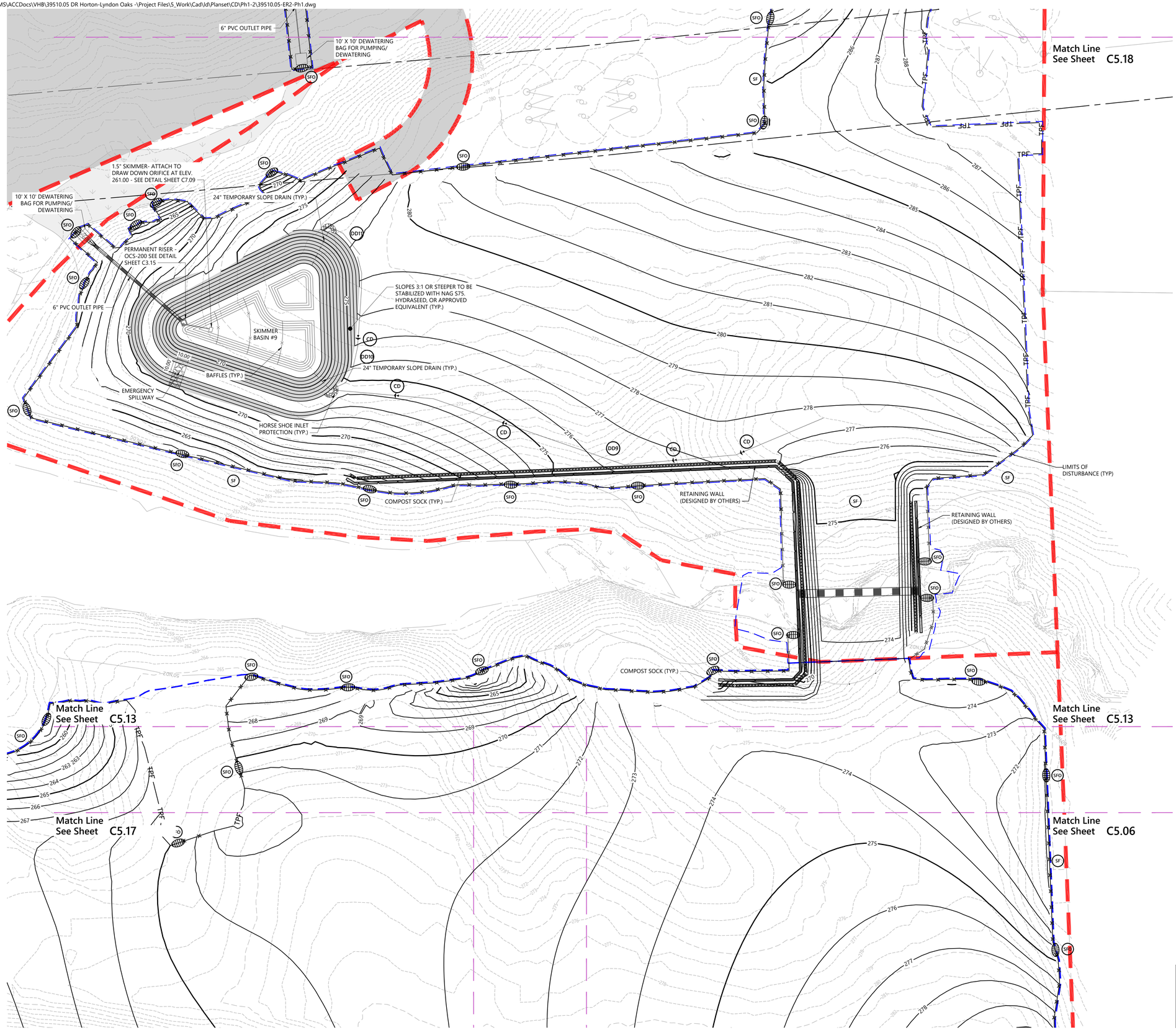
Sheet 109 of 224

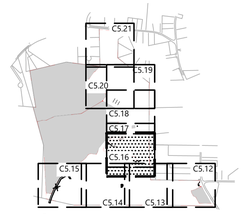
Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 3:53:37 PM WSHERRILL Plotted Thursday, December 18, 2025 3:55:15 PM Will Sherrill





Key

1" = 1,500'

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- CE CONSTRUCTION ENTRANCE
- CD ROCK CHECK DAM
- TPF TREE PROTECTION FENCE
- DB DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug. 2, 2021)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C5.16

Sheet 110 of 224

Project Number 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

BAFFLES (TYP.)

24" TEMPORARY SLOPE DRAIN (TYP.)

HORSE SHOE INLET PROTECTION (TYP.)

4" SKIMMER - ATTACH TO DRAW DOWN ORIFICE AT ELEV. 262.00 - SEE DETAIL SHEET C7.09

PERMANENT RISER - OCS-700 SEE DETAIL SHEET C3.19

EMERGENCY SPILLWAY

6" PVC OUTLET PIPE

10' X 10' DEWATERING BAG FOR PUMPING/ DEWATERING

1.5" SKIMMER- ATTACH TO DRAW DOWN ORIFICE AT ELEV. 261.00 - SEE DETAIL SHEET C7.09

PERMANENT RISER - OCS-200 SEE DETAIL SHEET C3.15

SKIMMER BASIN #9

COMPOST SOCK (TYP.)

RETAINING WALL (DESIGNED BY OTHERS)

LIMITS OF DISTURBANCE (TYP)

72"RCP

42"RCP

DMH-B101

DMH-B102

FES-B101

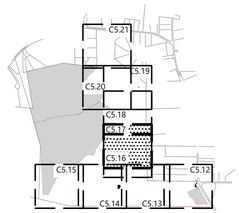
Match Line See Sheet C5.17

Match Line See Sheet C5.18

Match Line See Sheet C5.13

Culvert Construction Sequence

1. INSTALL COFFER DAM ON UPSTREAM AND DOWNSTREAM ENDS OF STREAM CROSSING. INSTALL BYPASS PUMP, FLEXIBLE HOSE, AND RIP RAP PAD.
2. PUMP STREAM BOTTOM DRY UTILIZING A STILLING BASIN (SILT BAG).
3. INSTALL CULVERT.
4. BACKFILL AROUND CULVERT PIPE TO FINISH GRADE.
5. INSTALL PUMPS AT EACH CORNER OF CULVERT IMPACT TO COLLECT FLOW PRIOR TO DISCHARGING THROUGH SILT FENCE/SILT FENCE OUTLET.
6. INSTALL SILT FENCE, HORSESHOE INLET PROTECTION AND PIPE SLOPE DRAINS ALONG EACH SIDE OF ROADWAY TO HELP CONVEY RUNOFF DOWN SIDE SLOPES.
7. STABILIZE ALL SLOPES.
8. REMOVE COFFER DAMS, PUMP, FLEXIBLE HOSE AND TEMPORARY RIP RAP PAD.
9. INSTALL PERMANENT RIP RAP PAD.



Key

1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug. 1, 2019)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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By: _____ Date: _____
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By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number: C5.17

Sheet 111 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, December 16, 2025 1:01:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:04:13 PM Will Sherrill

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RETAINING WALL (DESIGNED BY OTHERS)

COMPOST SOCK (TYP.)

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

EMERGENCY SPILLWAY

SKIMMER BASIN #7

BAFFLES (TYP.)

PERMANENT RISER - OCS-300 SEE DETAIL SHEET C3.17

2" SKIMMER - ATTACH TO DRAW DOWN ORIFICE AT ELEV. 273.00 - SEE DETAIL SHEET C7.09

HORSE SHOE INLET PROTECTION (TYP.)

24" TEMPORARY SLOPE DRAIN (TYP.)

Match Line See Sheet C5.19

LIMITS OF DISTURBANCE (TYP.)

Match Line See Sheet C5.16

SLOPES 3:1 OR STEEPER TO BE STABILIZED WITH NAG S75. HYDRASEED, OR APPROVED EQUIVALENT (TYP.)

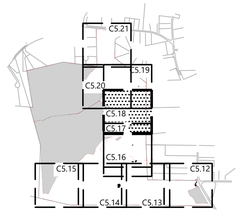
4" SKIMMER - ATTACH TO DRAW DOWN ORIFICE AT ELEV. 262.00 - SEE DETAIL SHEET C7.09

PERMANENT RISER - OCS-700 SEE DETAIL SHEET C3.19

EMERGENCY SPILLWAY

6" PVC OUTLET PIPE

Match Line See Sheet C5.17



Key

1" = 1,500'

Erosion Control Legend

- SF SILT FENCE
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- IP INLET PROTECTION
- SFO SILT FENCE OUTLET
- CE CONSTRUCTION ENTRANCE
- CD ROCK CHECK DAM
- TPF TREE PROTECTION FENCE
- DB DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug 1, 2019)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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By: _____ Date: _____
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Land Use Administrator

vhb.com

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940 Main Campus Drive
Suite 500
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919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C5.18

Sheet 112 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, December 16, 2025 1:01:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:04:36 PM Will Sherrill

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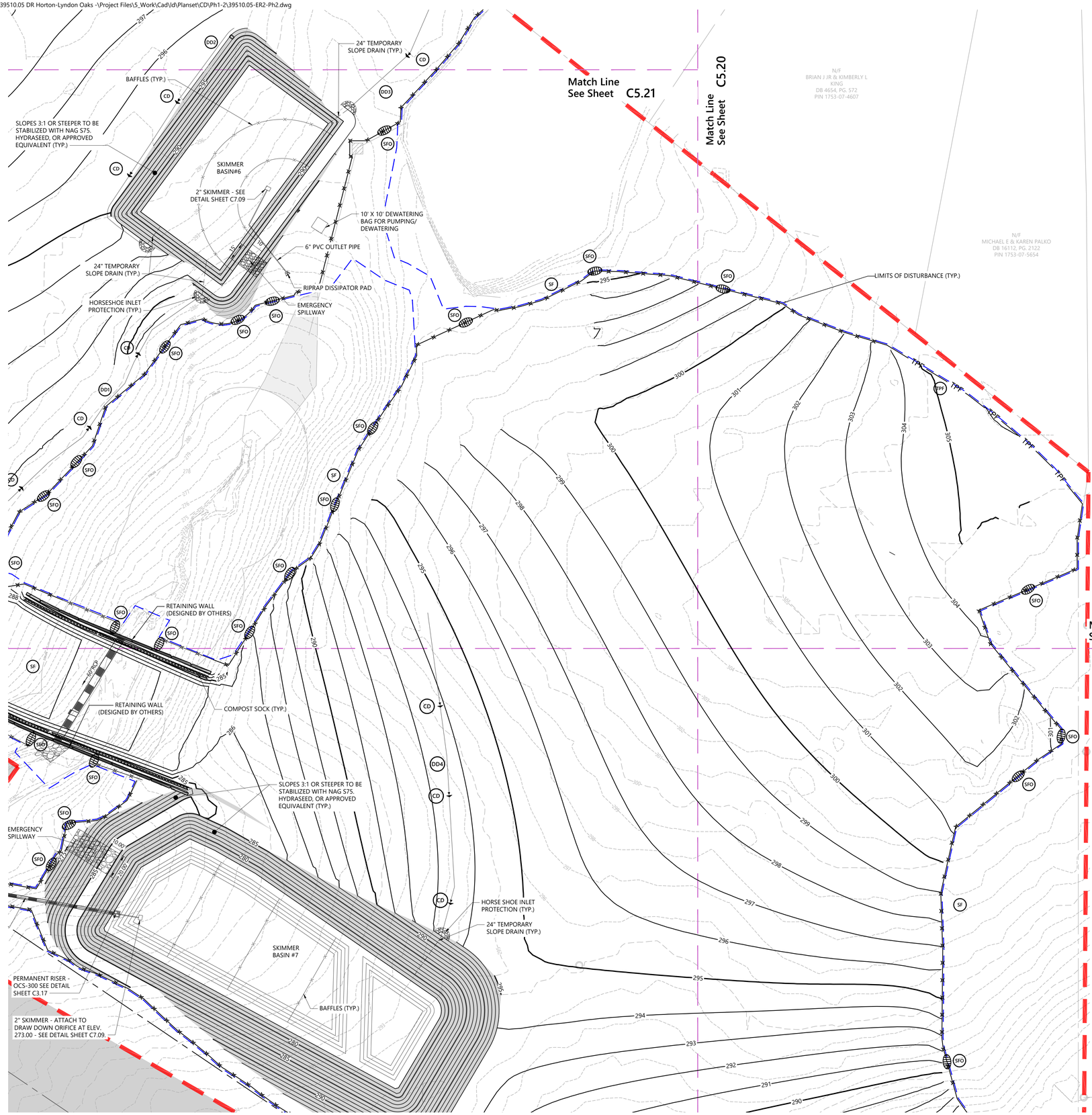

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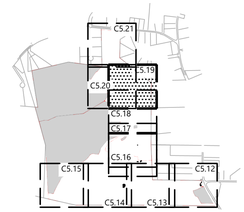

Key

1" = 1,500'

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
- IP — INLET PROTECTION
- SFO — SILT FENCE OUTLET
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- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2009)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High-Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
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Land Use Administrator

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number
C5.19

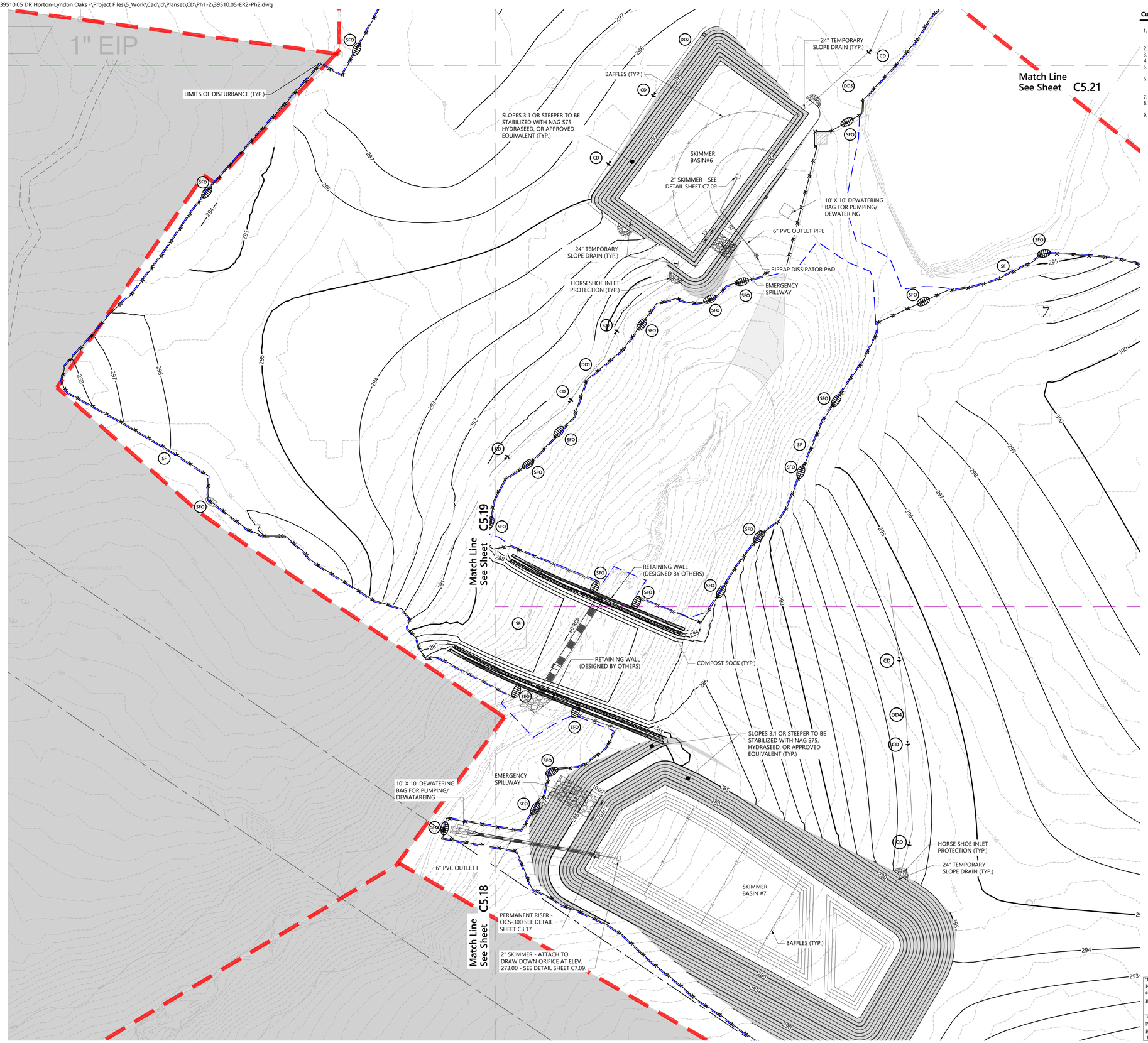
Sheet 113 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

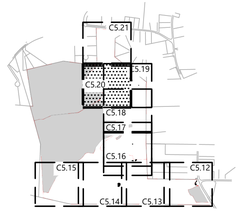
12/15/2025

Saved Tuesday, December 16, 2025 1:01:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:04:53 PM Will Sherrill



Culvert Construction Sequence

1. INSTALL COFFER DAM ON UPSTREAM AND DOWNSTREAM ENDS OF STREAM CROSSING. INSTALL BYPASS PUMP, FLEXIBLE HOSE, AND RIP RAP PAD.
2. PUMP STREAM BOTTOM DRY UTILIZING A STILLING BASIN (SILT BAG).
3. INSTALL CULVERT.
4. BACKFILL AROUND CULVERT PIPE TO FINISH GRADE.
5. INSTALL PUMPS AT EACH CORNER OF CULVERT IMPACT TO COLLECT FLOW PRIOR TO DISCHARGING THROUGH SILT FENCE/SILT FENCE OUTLET.
6. INSTALL SILT FENCE, HORSESHOE INLET PROTECTION AND PIPE SLOPE DRAINS ALONG EACH SIDE OF ROADWAY TO HELP CONVEY RUNOFF DOWN SIDE SLOPES.
7. STABILIZE ALL SLOPES.
8. REMOVE COFFER DAMS, PUMP, FLEXIBLE HOSE AND TEMPORARY RIP RAP PAD.
9. INSTALL PERMANENT RIP RAP PAD.



Key

1" = 1,500'

Erosion Control Legend

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CF	CONSTRUCTION FENCE
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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: Erosion Control Stage 2 Plan Phase 2 (4 of 5)

ZMA-2-23

Drawing Number: C5.20

Sheet 114 of 224

Project Number: 39510.05

STABILIZATION TIMEFRAMES
(Effective Aug. 1, 2019)

Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
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All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, December 16, 2025 1:01:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:05:15 PM Will Sherrill

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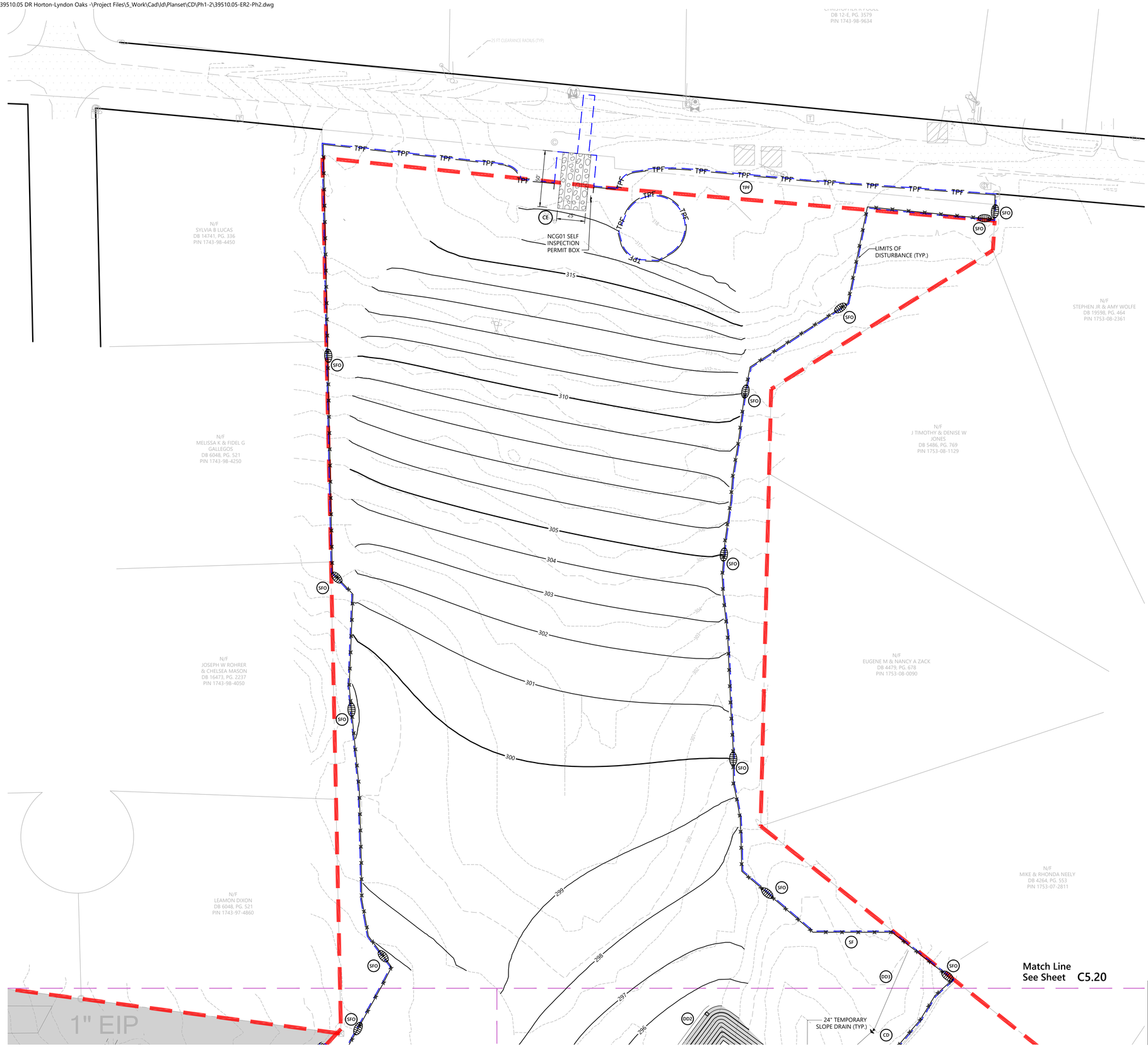

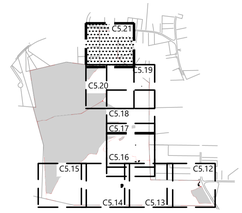

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Site Legend

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- 50' NEUSE RIVER BUFFER
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STABILIZATION TIMEFRAMES
(Effective Aug. 1, 2019)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High-Quality Water (HQW) Zones	7 days	None
Slopes steeper than 5:1	7 days	If slopes are 50' or less in length and are not steeper than 3:1, 14 days are allowed.
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919.829.0328
Corp. # C-3705

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 2 Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number
C5.21

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 115 of 224

Project Number 39510.05

Saved Tuesday, December 16, 2025 1:01:23 PM WSHERRILL Plotted Wednesday, December 17, 2025 3:05:33 PM Will Sherrill


PHASE 4
PHASE 3
COMMERCIAL PHASE / LOT
OLD FAISON ROAD
Old Faison Road
Beth Haven Church Road
INTERSTATE 87
Variable Width Public Right of Way
BM 2011 PG 1080
Interstate 87
Variable Width Public Right of Way
BM 2011 PG 1080
N/F WILLIAM C & ELIZABETH B BROOME DB 14946, PG. 2030 PIN 1743-98-4783
N/F CAROLYN P BROWN DEED DATE 01/30/2021 PIN 1743-98-7681
N/F RISTOPHER R POOL DB 12-E, PG. 3579 PIN 1743-98-9634
N/F SONIA B LUCAS DB 14741, PG. 336 PIN 1743-98-4450
N/F MELISSA K & FIDEL GALLEGOS DB 6048, PG. 521 PIN 1743-98-4251
N/F WALLACE R & KATIE L WALSTON DB 9076, PG. 942 PIN 1743-98-2000
N/F JOSEPH W ROHRER & CHELSEA MASON V DB 16473, PG. 2237 PIN 1743-98-4050
N/F L&L TREE AND TURF FARMS LLC DB 15882, PG. 1989 PIN 1743-88-6151
N/F SONYA LEVON DEBNAM DB 22-E, PG. 1354 PIN 1743-77-8741
N/F L&L TREE AND TURF FARMS LLC DB 13082, PG. 1989 PIN 1743-87-1752
N/F LANCE R & JACQUELINE VANDYKE DB 7755, PG. 552 PIN 1743-77-9835
N/F ARTURO SOLIZ-RUBIO & CLAUDIA SOLIZ DB 16152, PG. 1247 PIN 1743-87-0027
N/F JOYCE C LILES DB 13-E, PG. 2017 PIN 1743-76-7091
N/F EDDIE M MATTHEWS DB 2785, PG. 484 PIN 1743-97-2810
N/F LEAMON DIXON DB 6048, PG. 521 PIN 1743-97-4867
N/F J TIMOTHY & DENISE W JONES DB 5486, PG. 769 PIN 1753-08-1129
N/F EUGENE M & NANCY A ZACK DB 4479, PG. 678 PIN 1753-08-0090
N/F MIKE & RHONDA REELY DB 4264, PG. 553 PIN 1753-07-2811
N/F BRIAN J JR & KIMBERLY L KING DB 4654, PG. 572 PIN 1753-07-4607
N/F MICHAEL E & KAREN PALKO DB 16112, PG. 2122 PIN 1753-07-5654
N/F CHARLES & LISA MITCHELL DB 15858, PG. 768 PIN 1753-07-9176
N/F CHARLES W & LISA F MITCHELL DB 11142, PG. 1295 PIN 1753-06-8554
N/F KENNETH J & CAROLE D FAISON DB 19631, PG. 318 PIN 1753-06-7184
N/F TOBY W & RENEE B PROVEAUX DB 6486, PG. 440 PIN 1753-15-3931
N/F DONALD W & JUDY S KAY DB 2866, PG. 724 PIN 1753-15-0760
N/F DONALD W & JUDY S KAY DB 4405, PG. 808 PIN 1753-15-2438
N/F DONALD W & JUDY S K DB 2866, PG. 724 PIN 1753-15-2326
N/F TIMOTHY G & SHARON B WESTER DB 4838, PG. 4814 PIN 1753-15-9849
N/F AM OUTREACH MINISTRIES LLC DB 17069, PG. 2560 PIN 1753-25-7803
N/F PHILLIP A III DIXON DB 07-E, PG. 3068 PIN 1753-15-1
N/F WESLEY KNAPP DB 16600, PG. 49 PIN 1753-25-157
N/F WESLEY KNAPP DB 16600, PG. 495 PIN 1753-25-1574
N/F NEDRA M DAVIS DB 7728, PG. 67 PIN 1753-15-8368
N/F JACKIE L LEE DB 2487, PG. 536 PIN 1753-15-9140
N/F CATHERINE N LEE DB 18352, PG. 600 PIN 1753-24-8811
N/F JOSEPH HEIGL DB 19067, PG. 483 PIN 1753-08-9694
N/F NIKOLAS R PREAST & KATHERINE L PERRY DB 19103, PG. 1592 PIN 1753-08-9591
N/F LANCE ELIZABETH LL DB 18476, PG. 474 PIN 1753-18-0328
N/F JOSUE I POSADA DB 17561, PG. 931 PIN 1753-08-8214
N/F CLAUDIO A GOI YADIRA P I DB 17567, PG. 440 PIN 1753-08-6355
N/F JOSEPH HEIGL DB 19067, PG. 483 PIN 1753-08-9694
N/F JOSEPH HEIGL DB 19067, PG. 483 PIN 1753-08-9694
N/F JOSEPH HEIGL DB 19067, PG. 483 PIN 1753-08-9694
N/F DFD PROPERTIES LLC DB 17058, PG. 727 PIN 1753-17-4594
N/F DENNIS WILLIAM SHAW DB 19099, PG. 2670 PIN 1753-17-6908
N/F CHRISTOPHER R POOLE DB 12-E PG. 3579 PIN 1753-18-2387
N/F EVERETTE L FASION DB 96-E, PG. 2138 PIN 1753-18-3556
N/F ANNA PRAQUE ESPITIA & ORLANDO CRUZ CARVAJAL DB 19555, PG. 766 PIN 1753-18-2744
N/F RICHARD P JR & DEBRA THOMPSON DB 2653, PG. 540 PIN
N/F JACOB AMUNI I LL DB 19423, PG. 2106 PIN 1753-08-4218
N/F STEPHEN JR & AMY WOLFE DB 19598, PG. 464 PIN 1753-08-2361
N/F STEPHEN JR & AMY WOLFE DB 19598, PG. 464 PIN 1753-08-2361
N/F RICHARD P JR & DEBRA POOLE DB 8473, PG. 389 PIN 1753-08-7722
N/F WANDA W SCARS DB 18038, PG. 1853 PIN 1753-08-2539
N/F CHURCH OF GOD
N/F BOBBY G & FRANCES C POOLE DB 2866, PG. 82 PIN 1753-08-3697
N/F CHRISTOPHER R POOLE DB 12-E, PG. 3579 PIN 1753-08-5318
N/F CHRISTOPHER R POOLE DB 12-E, PG. 3579 PIN 1753-09-1263
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N/F CHRISTOPHER R POOLE DB 12-E, PG. 3579 PIN 1753-09-3311
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N/F CHRISTOPHER R POOLE DB 12-E, PG. 3579 PIN 1753-09-6501
N/F CHRISTOPHER R POOLE DB 12-E, PG. 3579 PIN 1753-09-8506
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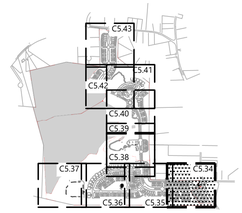

Key

1" = 1,500'

STABILIZATION TIMEFRAMES (Effective Aug. 1, 2013)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Know what's **below.**
Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

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VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Erosion Control Stage 3 Plan Phase 1 (1 of 5)

ZMA-2-23

Drawing Number
C5.23

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 117 of 224

Project Number
39510.05

Saved Tuesday, December 16, 2025 3:24:20 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:42:24 PM Will Sherrill

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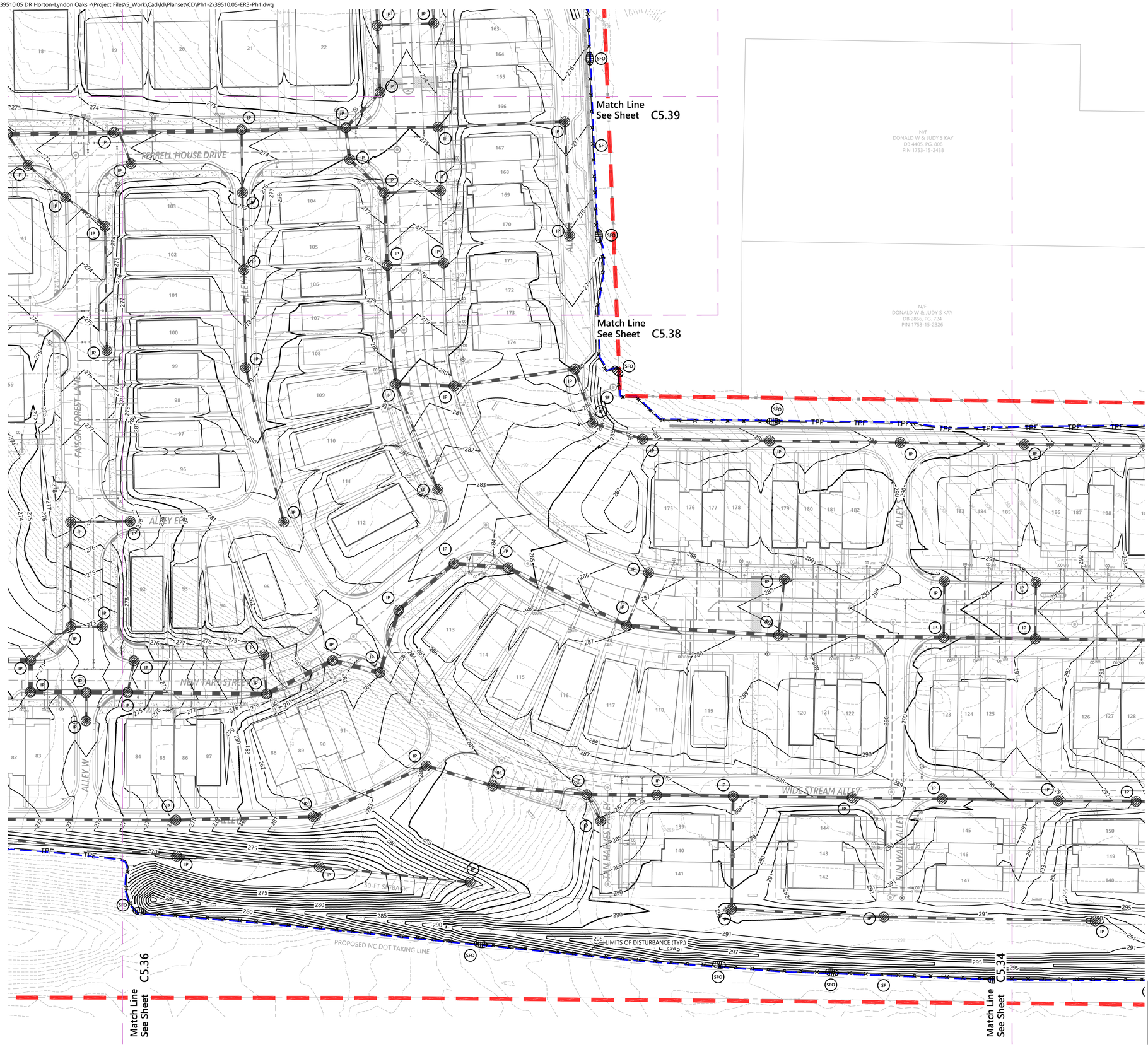



Key

1" = 1,500'

Erosion Control Legend

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- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

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- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
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0 20 40 80 Feet

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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

STABILIZATION TIMEFRAMES
(Effective Aug. 1, 2019)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title

Erosion Control Stage 3 Plan Phase 1 (2 of 5)

ZMA-2-23

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Drawing Number

C5.24

Sheet 118 of 224

Project Number 39510.05

Saved Tuesday, December 16, 2025 3:24:20 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:42:48 PM Will Sherrill

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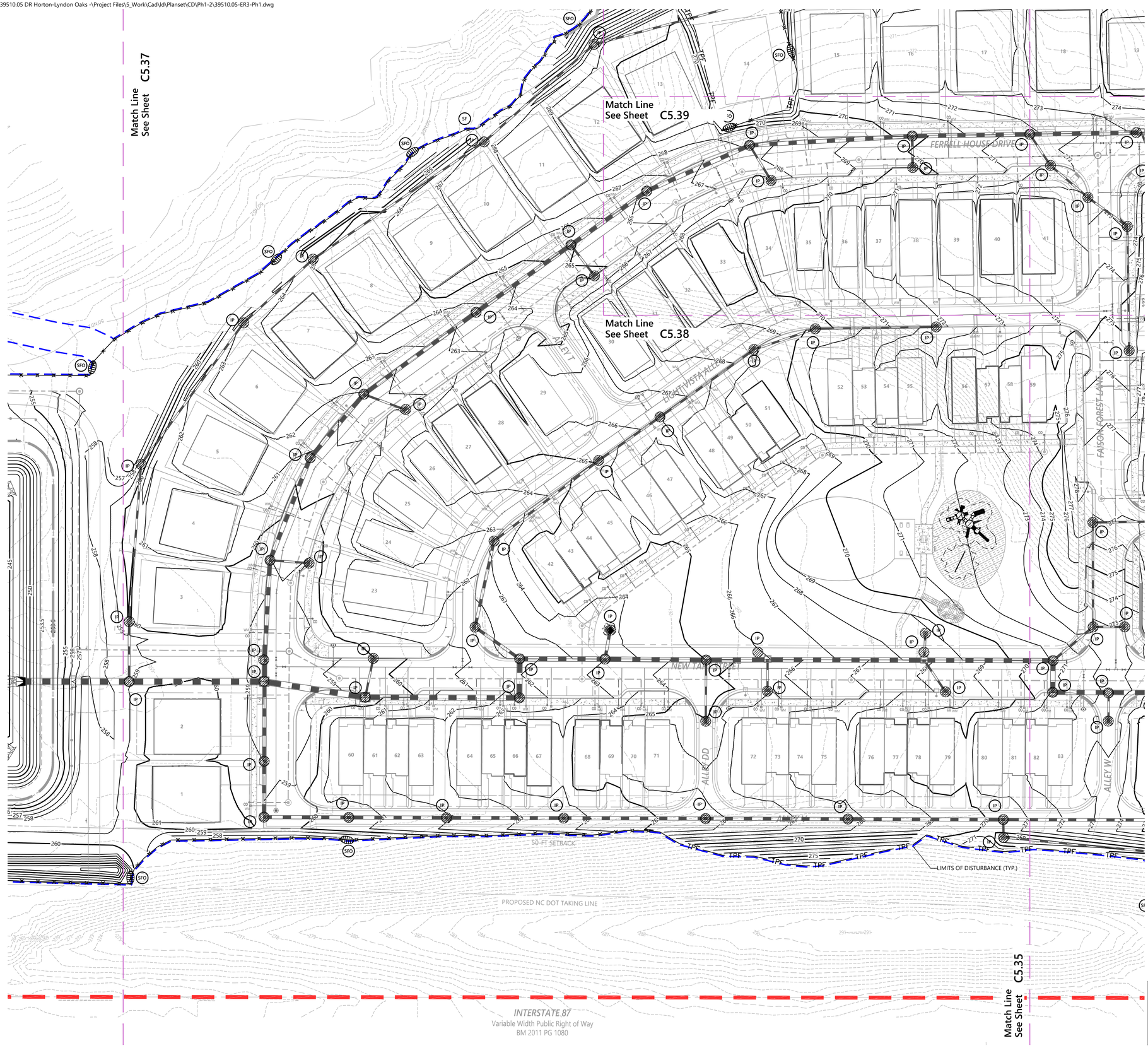

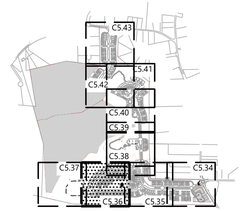

Key

1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

STABILIZATION TIMEFRAMES (Effective Aug. 3, 2021)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Land Use Administrator

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Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 3 Plan Phase 1 (3 of 5)

ZMA-2-23

Drawing Number
C5.25

Sheet 119 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Tuesday, December 16, 2025 3:24:20 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:43:13 PM Will Sherrill

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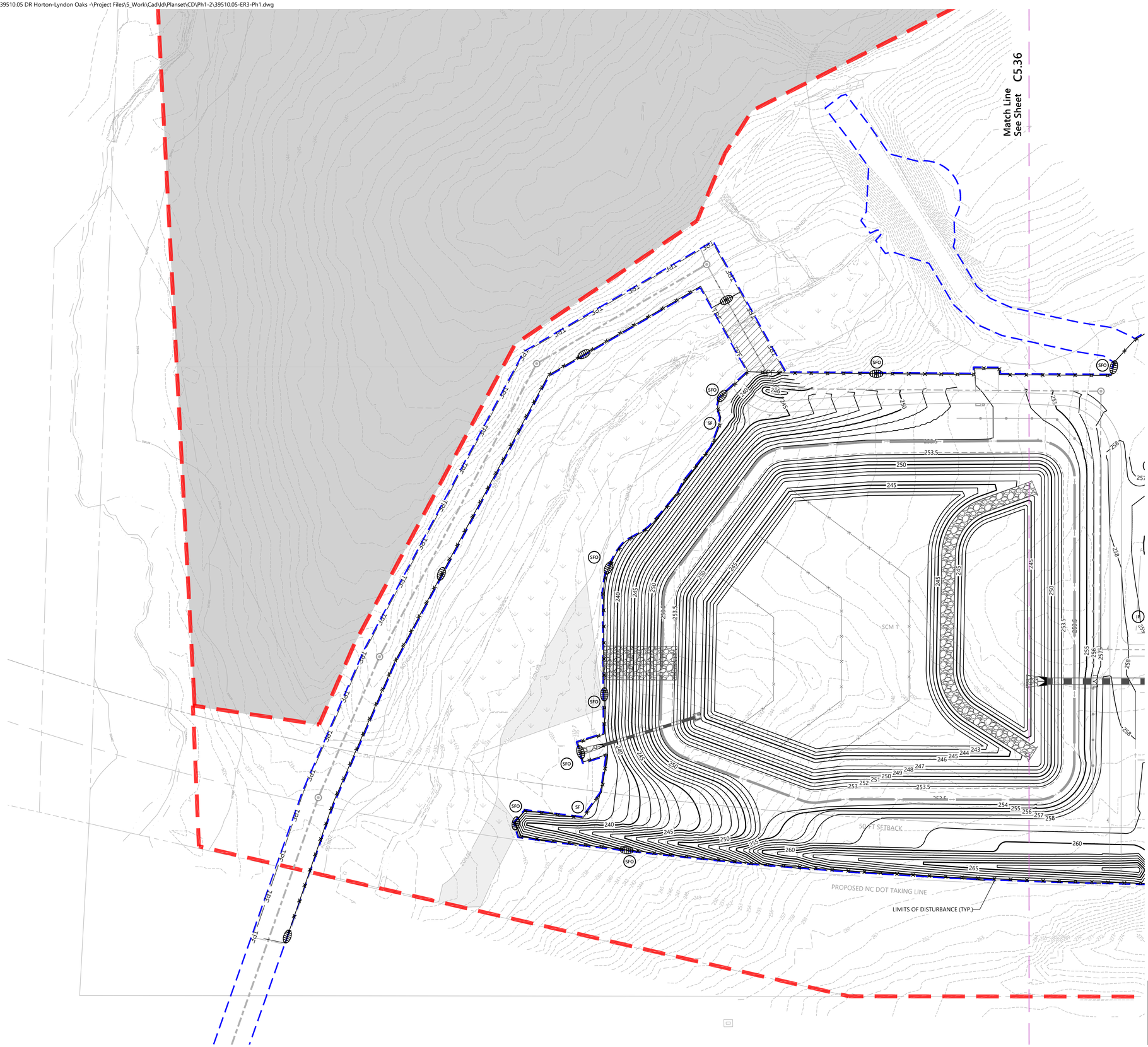

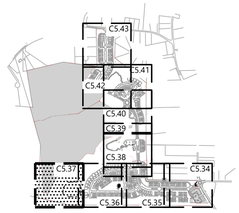

Key

1" = 1,500'

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
- IP — INLET PROTECTION
- SFO — SILT FENCE OUTLET
- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- CONSTRUCTION EASEMENT
- PHASE LIMITS
- MATCHLINE
- EXISTING SIDEWALK
- GREEN SPACE
- SCM MAINTENANCE & ACCESS EASEMENT
- SIDEWALK EASEMENT
- PUBLIC UTILITY EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT
- BUILDING SETBACK
- LIMITS OF DISTURBANCE
- TPF — TREE PROTECTION FENCE
- PHASE LIMITS
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

STABILIZATION TIMEFRAMES (effective Aug 1, 2019)		
Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Land Use Administrator

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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 3 Plan Phase 1 (4 of 5)

ZMA-2-23

Drawing Number
C5.26

Sheet 120 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, December 16, 2025 3:24:20 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:43:41 PM Will Sherrill

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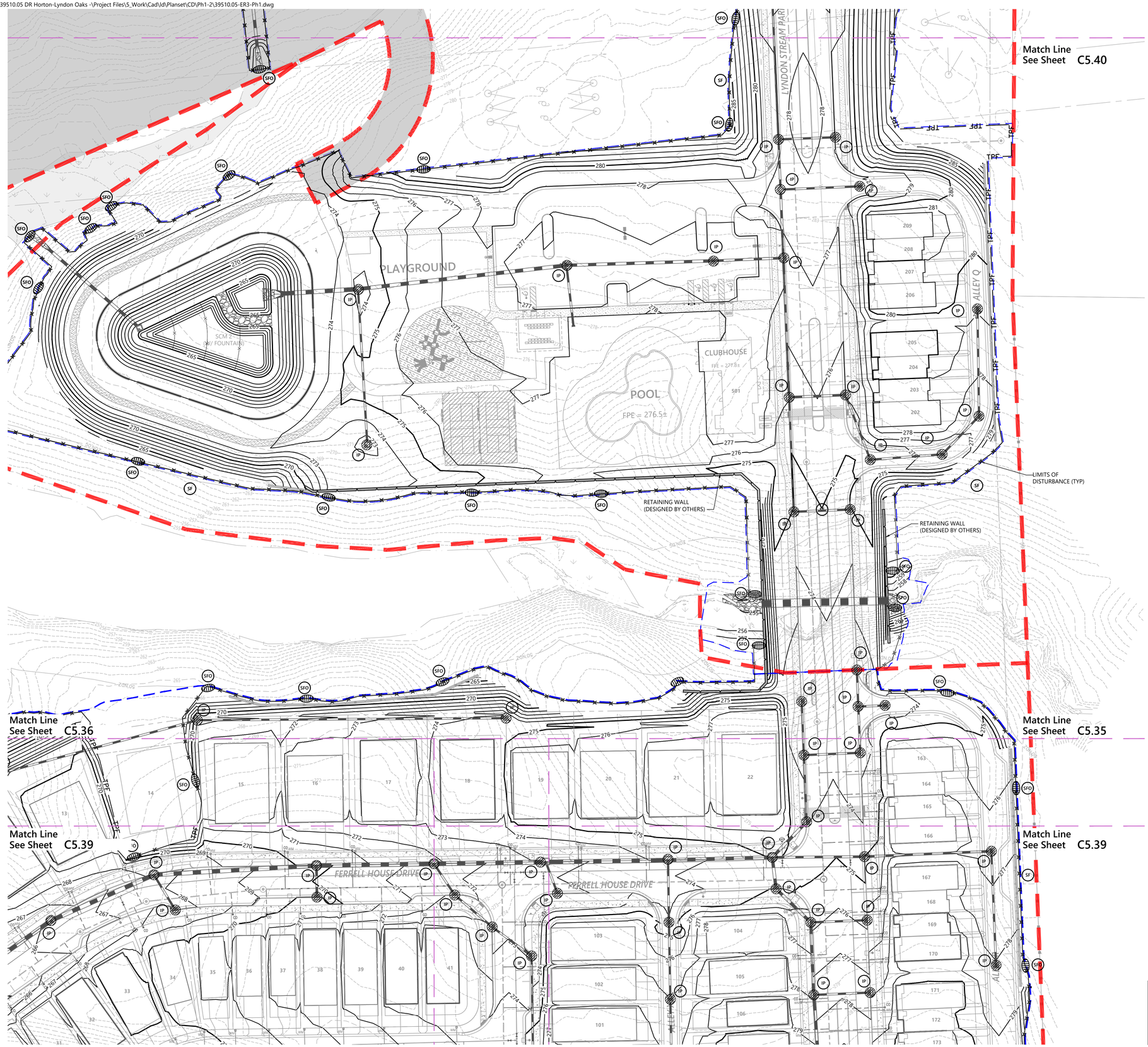

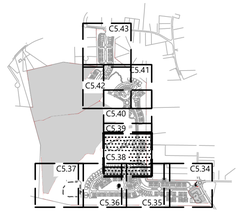

Key

1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
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TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
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- GREENWAY
- RIP-RAP
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- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
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- BUILDING SETBACK
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0 20 40 80 Feet

STABILIZATION TIMEFRAMES (Effective Aug. 3, 2021)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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Land Use Administrator

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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Stage 3 Plan Phase 1 (5 of 5)

ZMA-2-23

Drawing Number
C5.27

Sheet 121 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved: Tuesday, December 16, 2025 3:24:20 PM WSHERRILL Plotted: Wednesday, December 17, 2025 4:44:09 PM Will Sherrill

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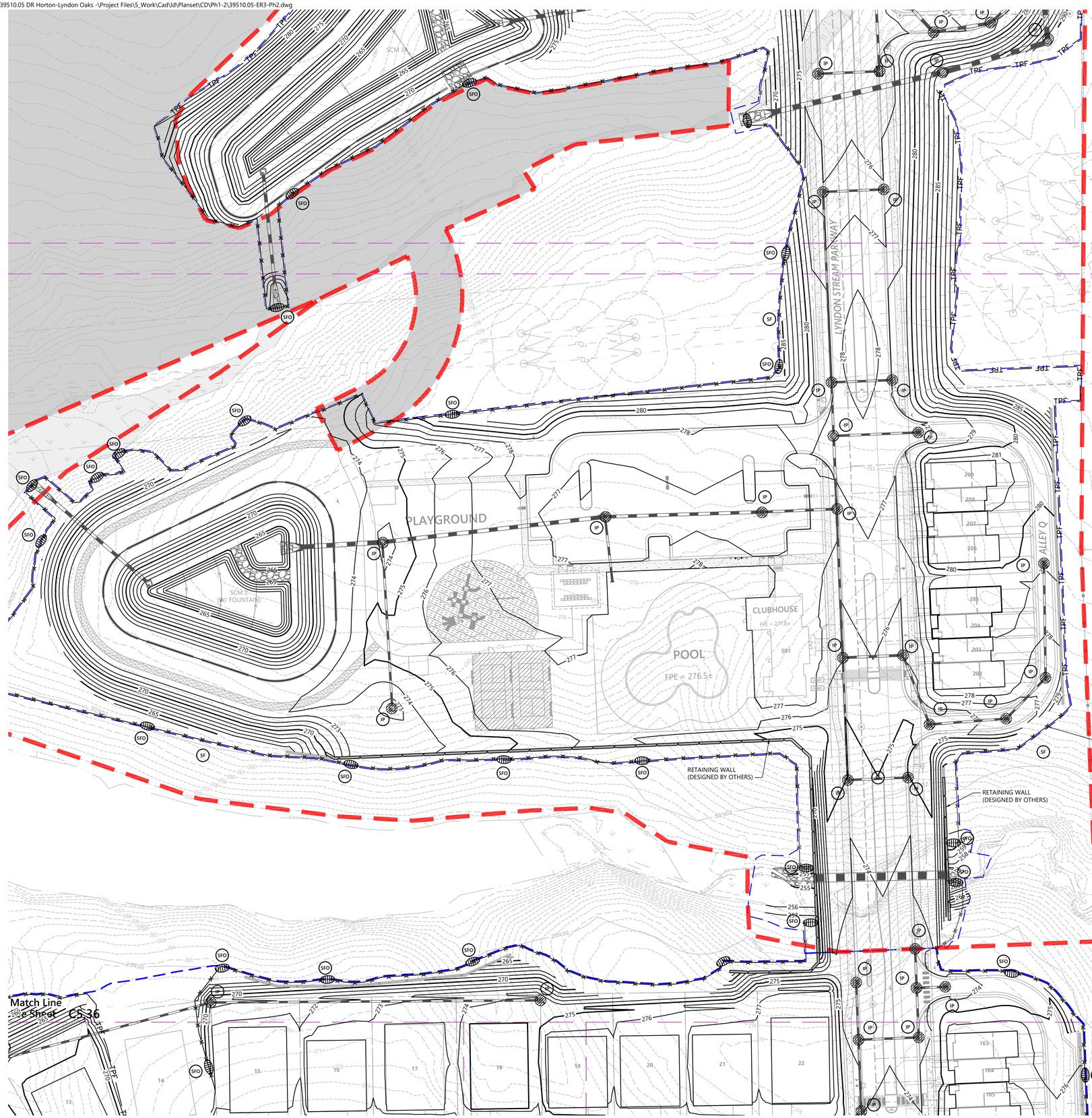

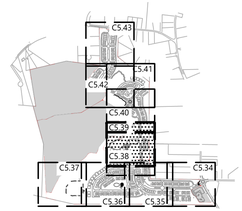

Key

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Erosion Control Legend

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- TPF — TREE PROTECTION FENCE
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0 20 40 80 Feet

STABILIZATION TIMEFRAMES (Effective Aug 3, 2009)		
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Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
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Land Use Administrator

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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 3
Plan Phase 2 (1 of 5)

ZMA-2-23

Drawing Number
C5.28

Sheet 122 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 12:57:01 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:47:37 PM Will Sherrill

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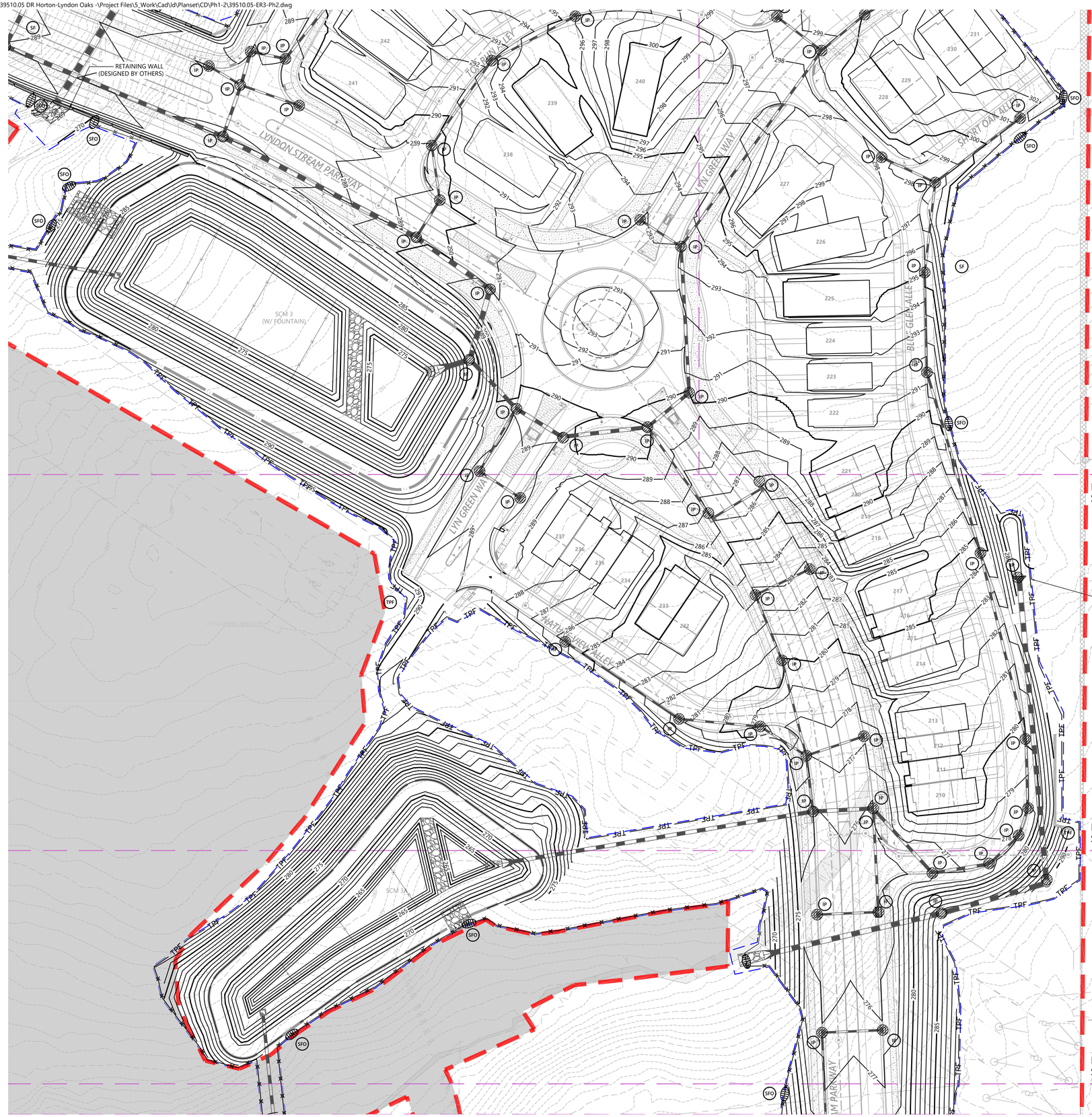

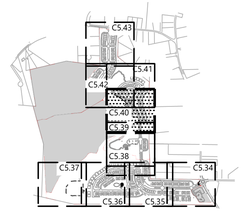

Key
1" = 1,500'

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- DD — DIVERSION DITCH
- IP — INLET PROTECTION
- SFO — SILT FENCE OUTLET
- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

STABILIZATION TIMEFRAMES (Effective Aug. 3, 2009)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: January 17, 2025

Drawing Title
Erosion Control Stage 3 Plan Phase 2 (2 of 5)

ZMA-2-23

Drawing Number
C5.29

Sheet 123 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Wednesday, December 17, 2025 12:57:01 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:48:08 PM Will Sherrill

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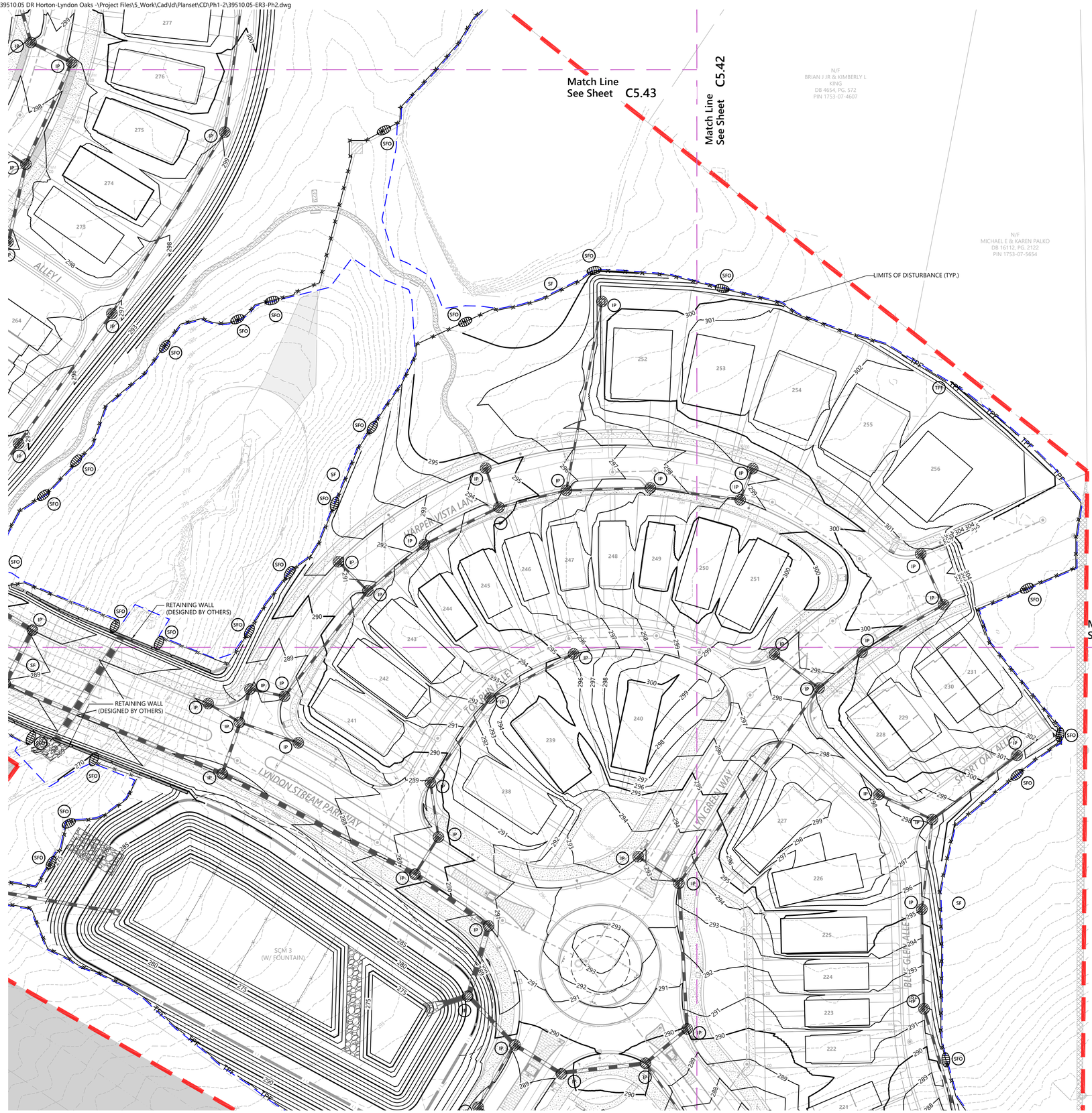

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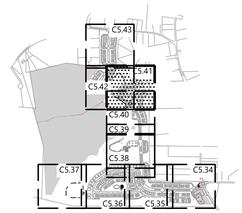

Key
1" = 1,500'

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2021)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Erosion Control Stage 3 Plan Phase 2 (3 of 5)

ZMA-2-23

Drawing Number
C5.30

Sheet 124 of 224

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Project Number
39510.05

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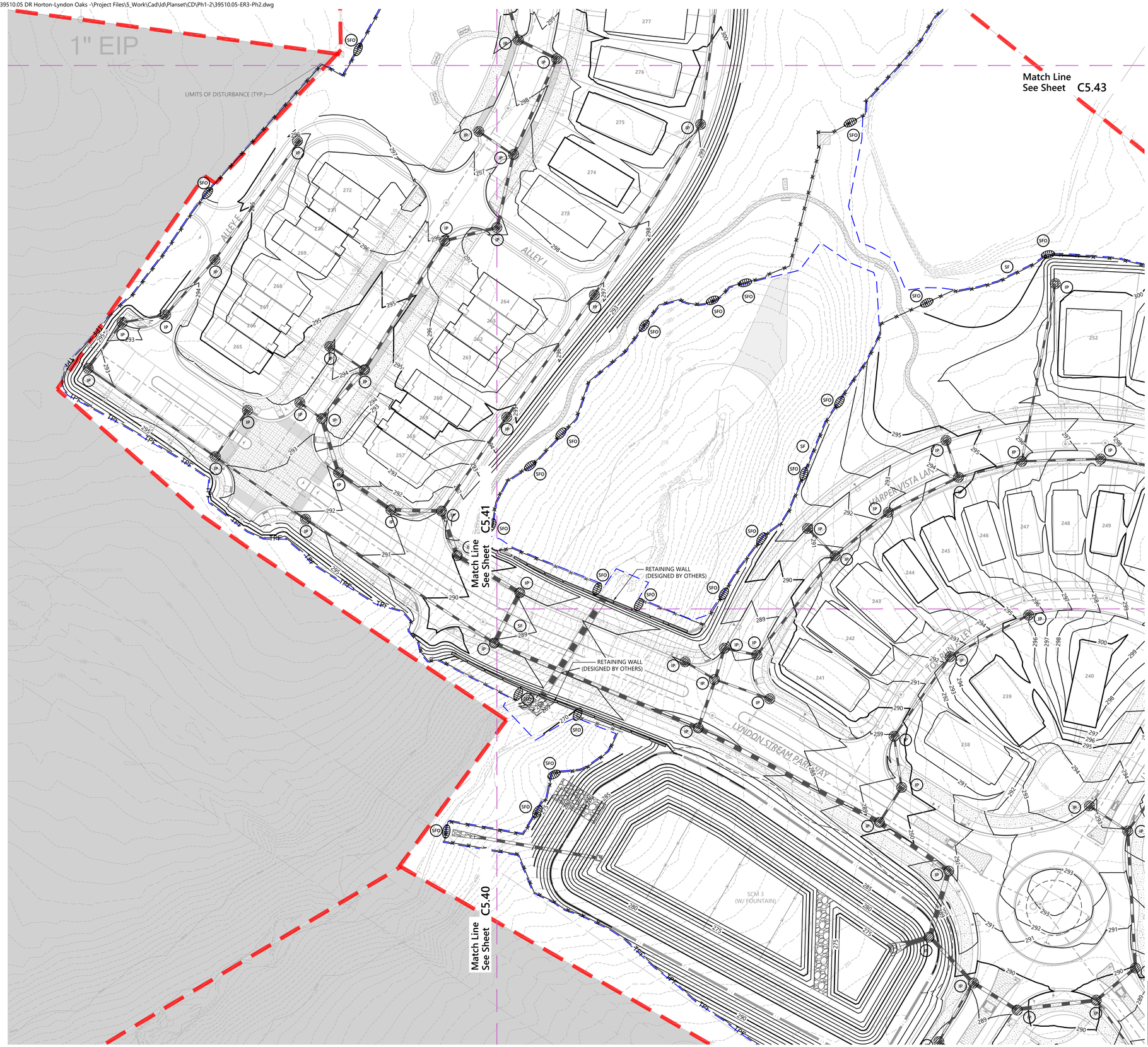

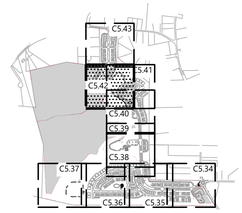

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- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

STABILIZATION TIMEFRAMES
effective Aug 1, 2019

SCM Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or Flatter	14 days	7 days for slopes greater than 50' in length.
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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Erosion Control Stage 3 Plan Phase 2 (4 of 5)

ZMA-2-23

Drawing Number
C5.31

Sheet 125 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Wednesday, December 17, 2025 12:57:01 PM WSHERRILL Plotted Wednesday, December 17, 2025 4:49:07 PM Will Sherrill

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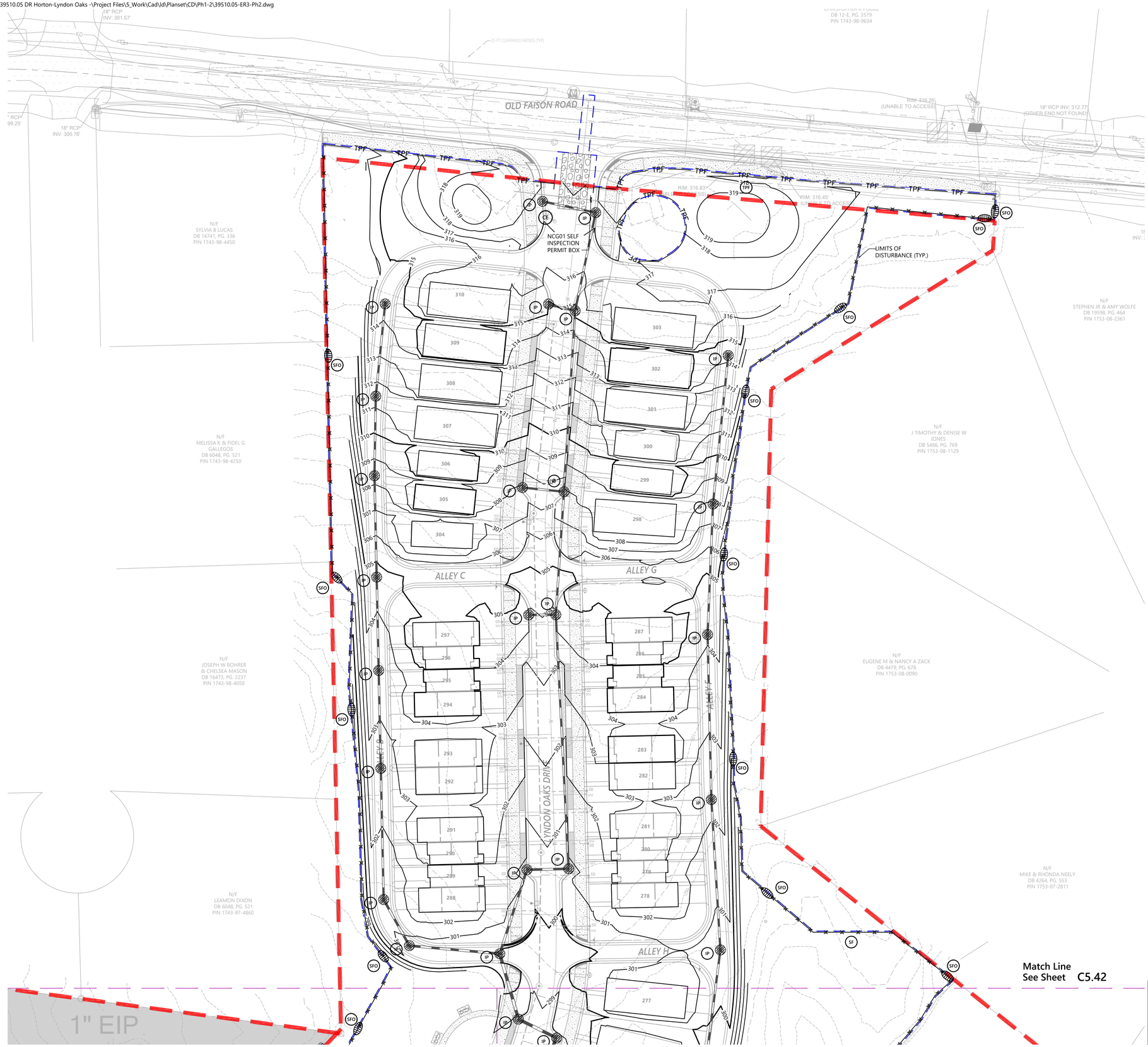

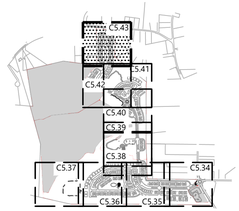

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0 20 40 80 Feet

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Site Area Description	Stabilization	Timeframe Exceptions
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High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
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All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Lyndon Oaks Phases 1 & 2

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Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: Erosion Control Stage 3 Plan Phase 2 (5 of 5)

ZMA-2-23

Drawing Number: C5.32

Sheet 126 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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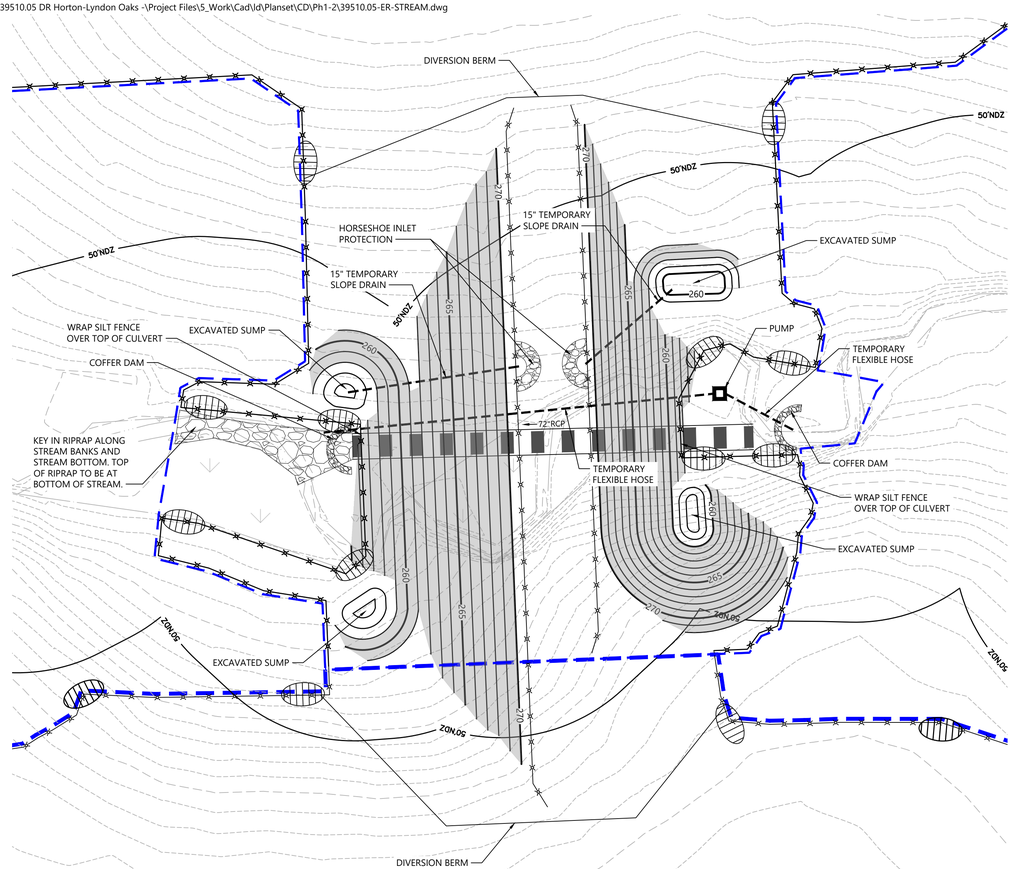
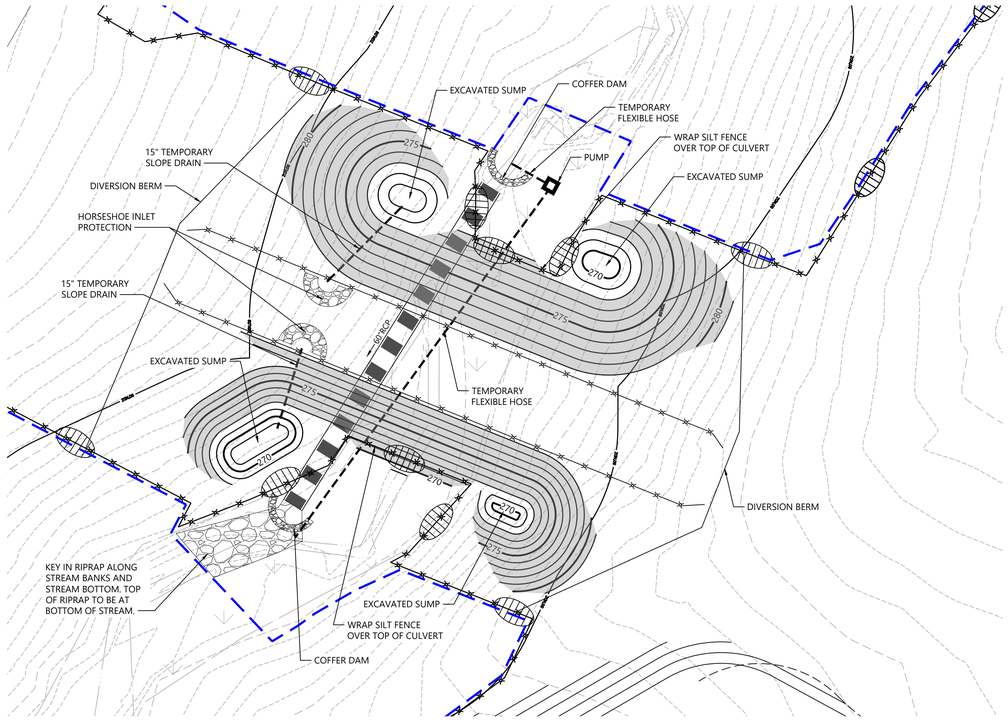
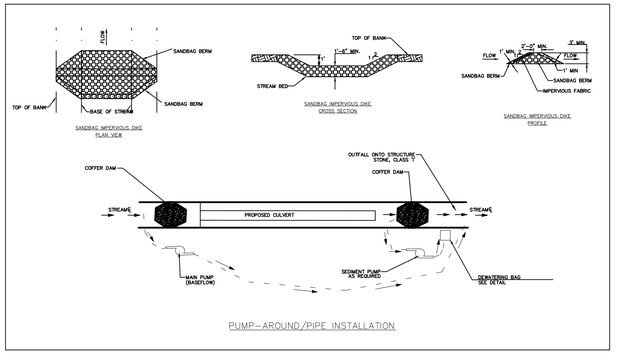


Stream Crossing - South



Stream Crossing - North



PUMP – AROUND / PIPE INSTALLATION

Stream Crossing Construction Sequence

1. INSTALL COFFER DAM ON UPSTREAM AND DOWNSTREAM ENDS OF STREAM CROSSING. INSTALL BYPASS PUMP, FLEXIBLE HOSE, AND RIP RAP PAD.
2. PUMP STREAM BOTTOM DRY UTILIZING A STILLING BASIN (SILT BAG).
3. INSTALL CULVERT.
4. BACKFILL AROUND CULVERT PIPE TO FINISH GRADE.
5. INSTALL PUMPS AT EACH CORNER OF CULVERT IMPACT TO COLLECT FLOW PRIOR TO DISCHARGING THROUGH SILT FENCE/SILT FENCE OUTLET.
6. INSTALL SILT FENCE, HORSESHOE INLET PROTECTION AND PIPE SLOPE DRAINS ALONG EACH SIDE OF ROADWAY TO HELP CONVEY RUNOFF DOWN SIDE SLOPES.
7. STABILIZE ALL SLOPES.
8. REMOVE COFFER DAMS, PUMP, FLEXIBLE HOSE AND TEMPORARY RIP RAP PAD.
9. INSTALL PERMANENT RIP RAP PAD.

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2009)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Stream Crossing Conversion

ZMA-2-23

Drawing Number
C5.33

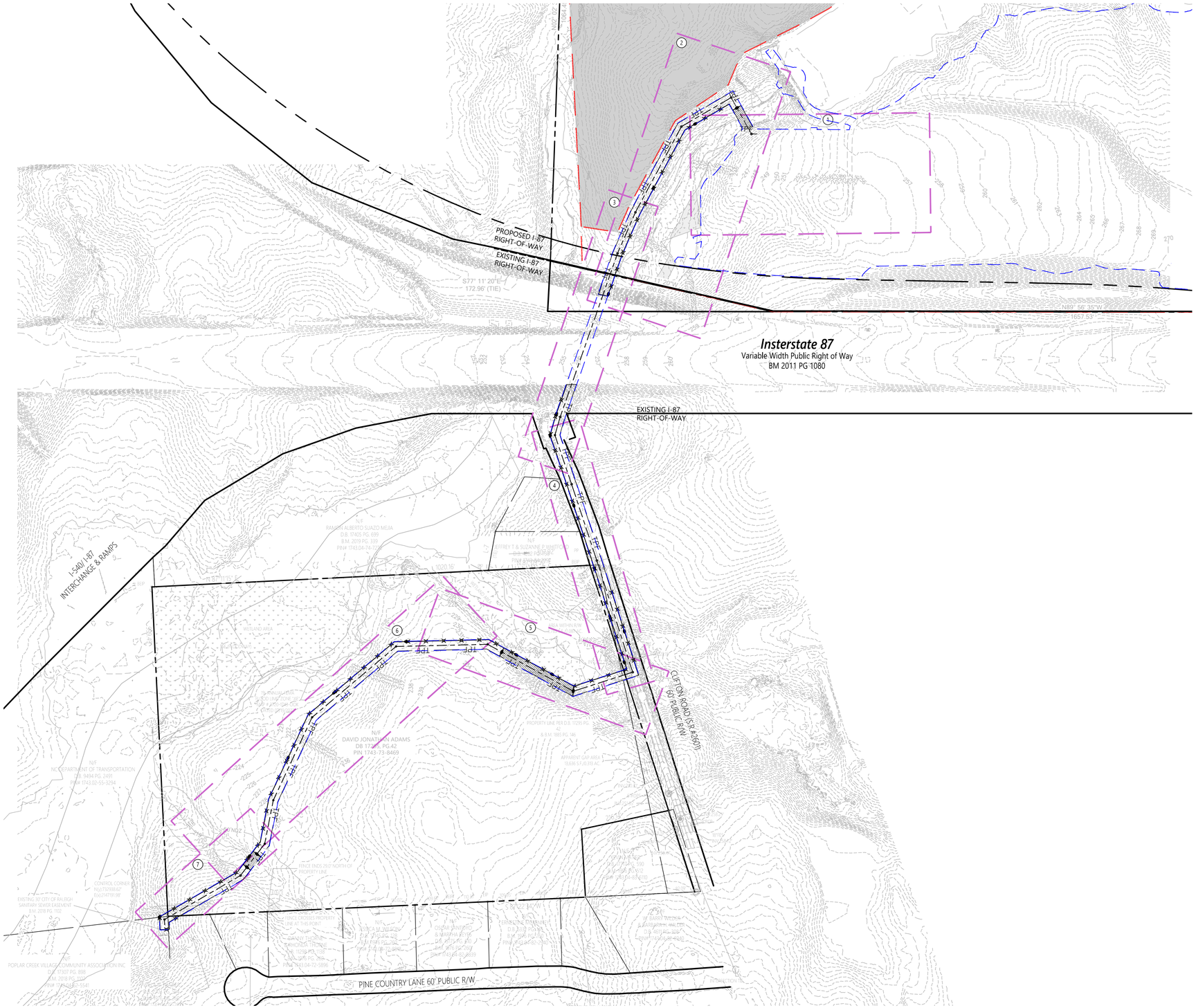
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 127 of 224

Project Number 39510.05

Saved Wednesday, October 8, 2025 9:38:05 AM WSHERRILL Plotted Wednesday, December 17, 2025 5:04:54 PM Will Sherrill



Phase 1 Erosion Control 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 THE APPROVED PLANS, CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. CLEARING SHOULD BE LIMITED TO A MAXIMUM 35' "RIBBON" AROUND PERIMETER TO INSTALL CONTROLS. NO GRADING OR EXCAVATION SHOULD OCCUR.
3. SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING WITH TOWN OF KNIGHTDALE TO INSPECT THE PERIMETER CONTROLS.
4. IF APPROVED, PROCEED WITH INSTALLING GRAVEL CONSTRUCTION PADS, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS AND OTHER MEASURES AS SHOWN ON THE APPROVED PLANS. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS, AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
5. GROUND OVER SHALL BE PROVIDED AS FOLLOWS:
   - 5.1. STABILIZE BASINS WITH GROUND COVER IMMEDIATELY AFTER INSTALLATION.
   - 5.2. STABILIZE DIVERSION DITCHES INTENDED TO BE IN SERVICE FOR 20 DAYS OR MORE WITH TEMPORARY SEEDING AND EROSION CONTROL NETTING.
   - 5.3. FOR ALL AREAS OF MODERATE AND/OR STEEP SLOPES, PROVIDE TEMPORARY GROUND COVER IF THE SLOPE HAS NOT BEEN DISTURBED FOR A PERIOD OF FOURTEEN (14) CALENDAR DAYS.
   - 5.4. PROVIDED GROUND COVER SUFFICIENT TO RESTRAIN EROSION ON ANY PORTION OF THE SITE UPON WHICH FURTHER LAND-DISTURBING ACTIVITY IS NOT BEING UNDERTAKEN WITHIN FOURTEEN (14) CALENDAR DAYS OF TEMPORARILY OR PERMANENTLY SUSPENDING LAND DISTURBING ACTIVITY.
   - 5.5. ESTABLISH PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION WITHIN FOURTEEN (14) CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OF DEVELOPMENT AND/OR PRIOR TO FINAL INSPECTION.
6. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ONSITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
7. BEGIN CLEARING AND GRUBBING.
8. CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
9. PROCEED TO PHASE 2 EROSION CONTROL PLAN.
10. EROSION CONTROL SEQUENCE SHALL FOLLOW REQUIRED TOWN OF KNIGHTDALE CONSTRUCTION SEQUENCE AS APPLICABLE.

Viewport Number	Sheets
1, 2	C5.45
3, 4, 5	C5.46
6, 7	C5.47

vhb.com

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- CE — CONSTRUCTION ENTRANCE
- CD — ROCK CHECK DAM
- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES (Effective Aug. 3, 2021)		
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Overall Erosion Control Plan Sanitary Sewer Off-Site

ZMA-2-23

Drawing Number: C5.34

Sheet 128 of 224

Project Number: 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 4:38:04 PM WSHERRILL Plotted Thursday, December 18, 2025 4:38:42 PM Will Sherrill

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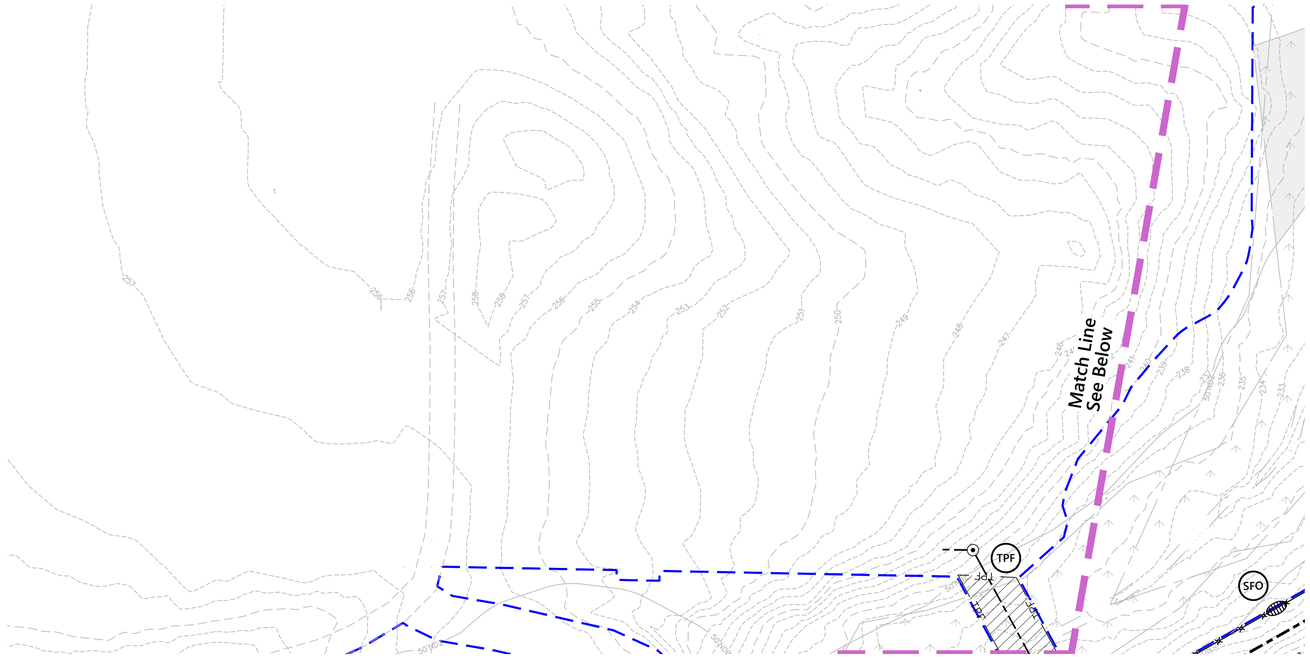

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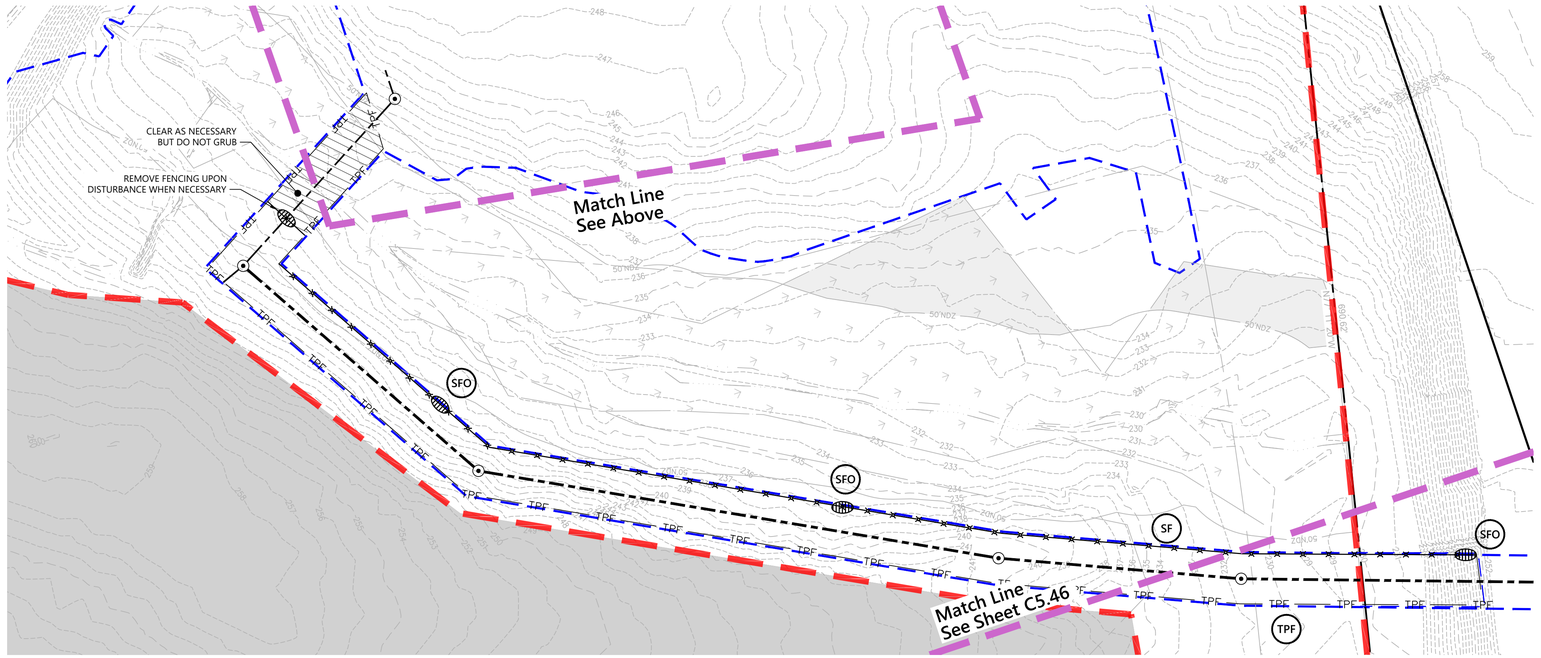

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VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Erosion Control Legend

SF	SILT FENCE
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
SFO	SILT FENCE OUTLET
CE	CONSTRUCTION ENTRANCE
CD	ROCK CHECK DAM
TPF	TREE PROTECTION FENCE
DB	DIVERSION BERM
	SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES
(Effective Aug 1, 2019)

Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
Erosion Control Phase 1 Plan Off-Site (1 of 3)

ZMA-2-23

Drawing Number
C5.35

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 129 of 224

Project Number 39510.05

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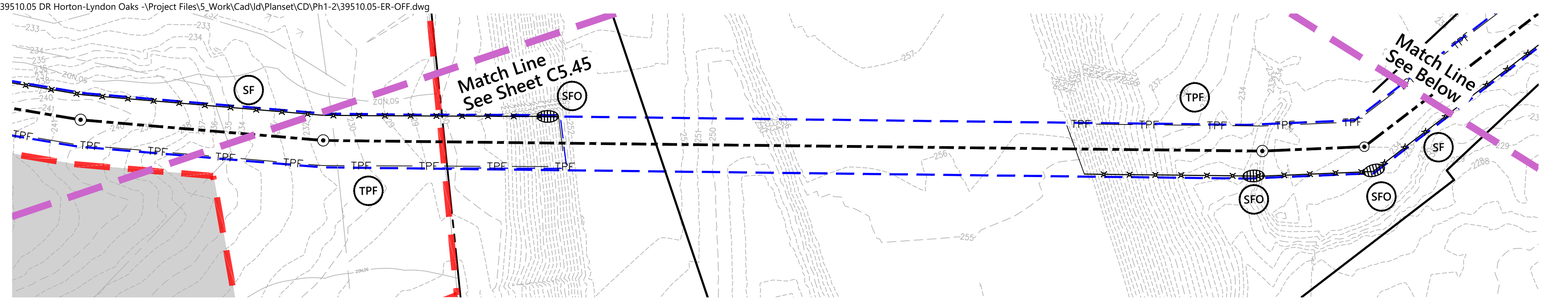

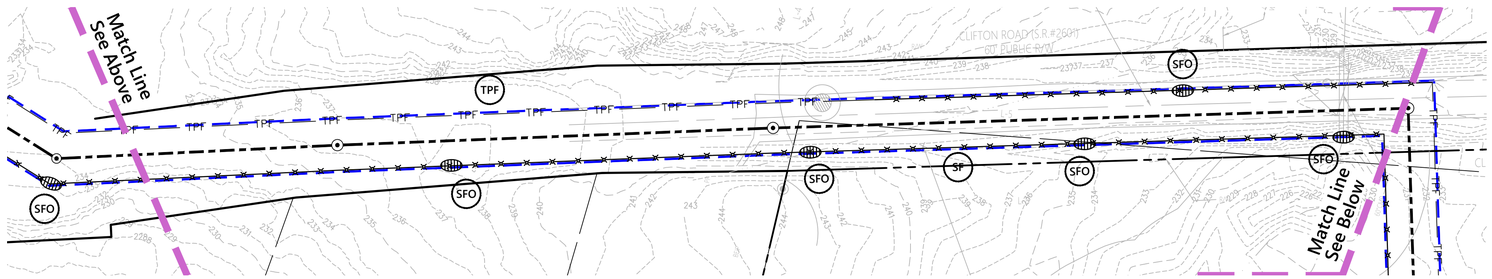

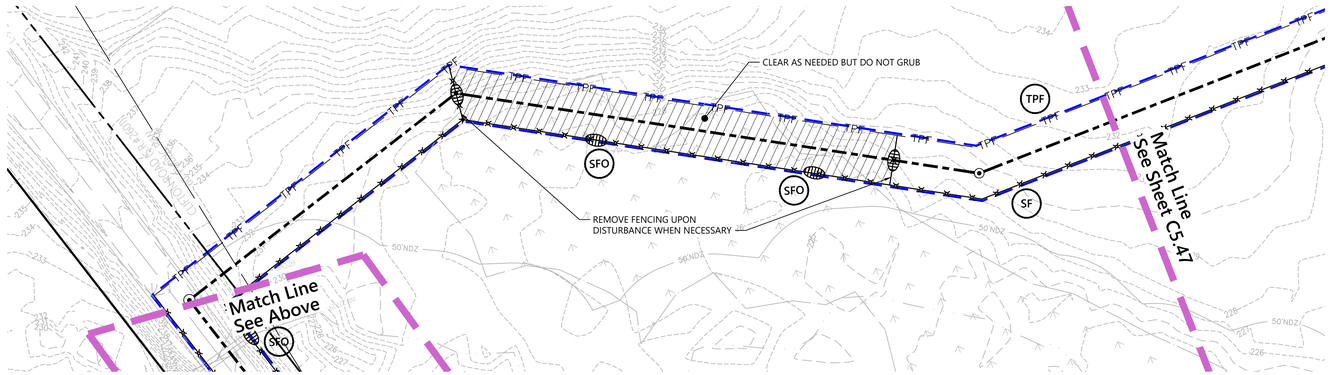

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940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Erosion Control Legend

- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
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Site Legend

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- LIMITS OF DISTURBANCE
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- MATCH LINE

STABILIZATION TIMEFRAMES (effective Aug 1, 2019)		
Site Area Description	Stabilization	Temporary Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
Erosion Control Phase 1 Plan Off-Site (2 of 3)

ZMA-2-23

Drawing Number
C5.36

Sheet 130 of 224

Project Number 39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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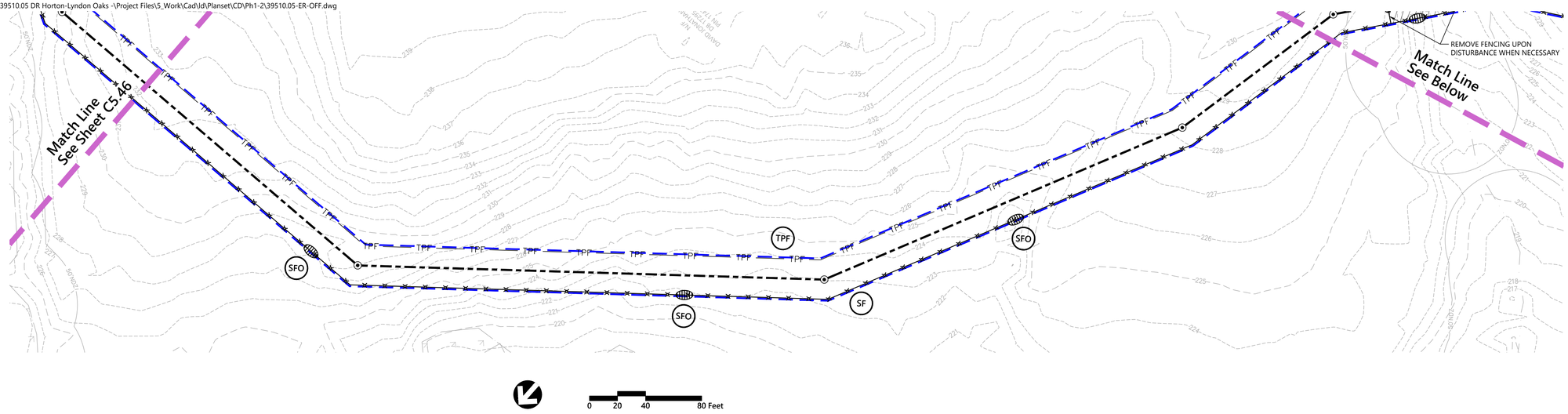

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940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
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Erosion Control Legend

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- TPF — TREE PROTECTION FENCE
- DB — DIVERSION BERM
- SLOPE STABILIZATION

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE

STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2009)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 50' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

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Town Engineer

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Land Use Administrator

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Phase 1 Plan Off-Site (3 of 3)

ZMA-2-23

Drawing Number
C5.37

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 131 of 224

Project Number
39510.05

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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

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

SECTION E: GROUND STABILIZATION

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

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

GROUND STABILIZATION SPECIFICATION

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

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

EQUIPMENT AND VEHICLE MAINTENANCE

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

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

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

PAINT AND OTHER LIQUID WASTE

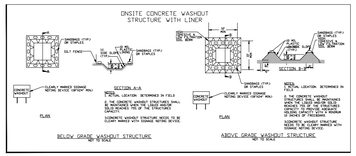
1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled,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

PORTABLE TOILETS

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

EARTHEN STOCKPILE MANAGEMENT

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



CONCRETE WASHOUTS

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

HERBICIDES, PESTICIDES AND RODENTICIDES

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

HAZARDOUS AND TOXIC WASTE

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

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING | EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

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

Inspect	**Frequency (during normal business hours)**	**Inspection records must include:**
(1) Rain gauge maintained 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 G, 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 will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

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

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(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, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	**Reporting Timeframes (After Discovery) and Other Requirements**
(a) Visible sediment deposition in a stream or wetland	• ***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 dams, 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

Saved Thursday, October 2, 2025 2:30:38 PM WSHERRILL Plotted Monday, December 15, 2025 4:02:29 PM Walker Johnson

Erosion Control Narrative

THE PROPOSED PROJECT IS LOCATED IN THE TOWN OF KNIGHTDALE. THE SCOPE OF WORK INCLUDES GRADING, PAVING INSTALLATION OF EROSION CONTROL DEVICES, CONSTRUCTION OF RESIDENTIAL LOTS, AND ASSOCIATED INFRASTRUCTURE.

THE CONTRACTOR SHALL FAITHFULLY FOLLOW THE CONSTRUCTION SEQUENCE AND MAINTAIN ALL EROSION CONTROL MEASURES AND DEVICES. THE ENGINEER, OWNER, OR TOWN OF GARNER MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES TO BE IMPLEMENTED DURING CONSTRUCTION IF WARRANTED.

CONTRACTOR SHALL CONTACT THE TOWN OF GARNER ENGINEERING DEPARTMENT PRIOR TO CONVERSION OF ANY SCM ONSITE FROM AN EROSION CONTROL DEVICE TO A STORMWATER CONTROL MEASURE.

DISTURBED AREA: 78.0± ACRES

Town of Knightdale Construction Sequence

REQUIRED CONSTRUCTION SEQUENCE – GENERAL

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 THE APPROVED PLANS. CLEAR ONLY AS NECCESARY TO INSTALL THESE DEVICES. CLEARING SHOULD BE LIMITED TO A MAXIMUM 35' "RIBBON" AROUND PERIMETER TO INSTALL CONTROLS. NO GRADING OR EXCAVATION SHOULD OCCUR.
3. SCHEDULE AN ONSITE PRE-CONSTRUCTION MEETING WITH THE TOWN OF KNIGHTDALE TO INSPECT THE INSTALLED PERIMETER CONTROLS
4. IF APPROVED, PROCEED WITH INSTALLING GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLANS. CLEAR ONLY AS NECCESARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS, AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
5. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ONSITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
6. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
7. INSTALL STORM SEWER. IF SHOWN, AND PROTECT INLETS WITH BLOCK AND GRAVEL CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN IN THE APPROVED PLAN. BEING CONSTRUCTION, BUILDING, ETC.
8. 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.
9. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL EROSION CONTROL INSPECTOR FOR AN INSPECTION.
10. IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
11. WHEN VEGETATION HAS BECOME ESTABLISHED (90% GERMINATION), CALL FOR A FINAL INSPECTION BE THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATE OF COMPLETION.

Erosion Control Special Notes

IT IS THE CONTRACTOR RESPONSIBILITY TO SEE THAT THE CONSTRUCTION ENTRANCE PADS ARE PROPERLY MAINTAINED SO THAT MUD IN NOT TRACKED ONTO ADJACENT STREETS. IN THE EVENT THAT THE GRAVEL CONSTRUCTION ENTRANCES ARE NOT PROPERLY MAINTAINED OTHERWISE INEFFECTIVE, THE CITY OF RALEIGH, OWNER, OR ENGINEER MAY ISSUE A STOP WORK ORDER WHICH SHALL REMAIN IN EFFECT UNTIL SUCH TIME AS THE PADS ARE RESTORED AND REPLENISHED AND UNTIL ANY RESULTING MUD AND DEBRIS HAS BEEN SATISFACTORILY REMOVED FROM THE ADJACENT STREETS BY THE CONTRACTOR.

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 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: Town of Knightdale, TOK 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 preparation for seeding.
4. Perform seedbed preparation, 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.**

vhb.com

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Drawing Title: NPDES Stabilization Plan (1 of 2)

ZMA-2-23

Drawing Number: C5.38

Sheet 132 of 224

Project Number: 39510.05

TOWN OF KNIGHTDALE PUBLIC WORKS CONDITIONS OF APPROVAL NOTES

Town of Knightdale Required ESC Plan Maintenance Notes
Insert the following text block on to the first erosion and sediment control device detail sheets.

1. Provide a plan detail, construction specifications, and specific maintenance requirements for all proposed sediment and erosion control structures included on the plan. Recommend placing maintenance requirements with the associated construction detail.
2. Maintenance and/or clean out, is necessary anytime the device is at 50% capacity. All sediment storage measures will remain on site and functional until all grading and final landscaping of the project is complete.
3. As designated by NCDEQ NCG01 permitting, self-inspections for erosion and sedimentation control measures are to be performed at least once every seven calendar days and within 24 hours of every rain event of 1 inch or greater. Any needed repairs shall be made immediately to maintain measures as designed.
4. Provide the minimum maintenance standards as specified below:

SURVEYOR FLAGS/TAPE/STAKES:
- ☐ Replace identifies if damaged or knocked down during development.
- ☐ Ensure key environmental and/or cultural resources maintain identifiers.
- ☐ Colors should adhere to the APWA Uniform Color Code. Use accepted survey symbols and ensure operators understand designations. Utility line owners/operators shall identify the designating firm.

PERMITS/NCGO1 INSPECTIONS BOX:
- ☐ Confirm box is securely fashions to a post or wall in a visible location in proximity to the construction entrance.
- ☐ Maintain relevant identification on the exterior of the box.
- ☐ Ensure paper documents remain dry / legible (lamination, ticket holders, binders, etc.)
- ☐ Replace any missing documents immediately, Consider placing ties or fasteners if necessary.

RAIN GUAGE:
- ☐ Check and remove any items from the rain funnel and the debris filter (e.g., dust, bugs and other debris).
- ☐ Open the rain gauge and remove any foreign objects.
- ☐ Perform routine maintenance as specified by the manufacturer.
- ☐ Check that the gauge is not being obstructed from rain capture and is level before and after reassembly.

TREE PROTECTION FENCE:
- ☐ Prune any damaged trees. (If) damage to protected trees occurs, repair any damage to the crown, trunk, or root system immediately.
- ☐ Repair roots by cutting off the damaged areas and painting them with tree paint. Spread peat moss or moist topsoil over exposed roots.
- ☐ Repair damage to bark by trimming around the damaged area, taper the cut to provide drainage and paint with tree paint.
- ☐ Cut off all damaged tree limbs above the tree collar at the trunk or main branch. Use three separate cuts to avoid peeling bark from healthy areas of the tree.

SILT FENCE:
- ☐ Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
- ☐ Remove sediment deposits as necessary to provide adequate storage volume for the next rain and reduce pressure on the fence. Take care to avoid undermining the fence during cleanouts.
- ☐ Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

SILT FENCE OUTLET:
- ☐ Freshen stone when sediment accumulation exceeds 6 inches.
- ☐ Keep mesh free of debris to provide adequate flow and replace stone as needed to facilitate de-watering.

CONSTRUCTION ENTRANCE:
- ☐ Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic topdressing with 2-inch stone.
- ☐ Immediately remove all objectionable materials spilled, washed, or tracked onto public roadways.

SKIMMER:
- ☐ Confirm skimmer is functional, installed in the correct orientation and has mobility to float on top of the water column.
- ☐ Ensure rock pad stabilization is present under the skimmer.
- ☐ Repair any structural deficiencies (e.g., orifice disk, flex hose connection, vent functioning, cracked PVC)

SEDIMENT BASIN
- ☐ Basin requires maintenance when the inlet zone (1st quadrant) has been filled with sediment.
- ☐ Baffle material shall be maintained in good condition for the life of the pond until removal or conversion.

SEDIMENT BASIN / ROLLED EROSION CONTROL PRODUCT:
- ☐ Inspect initial channel anchoring has been installed correctly, confirm segments are rolled in correct orientation.
- ☐ Any areas that are damaged or not in close contact with the ground shall be repaired and stapled.
- ☐ Monitor and repair the RECP as necessary until ground cover is established.

BASIN CONVEYANCES / SLOPE DRAIN / RIP-RAP LINED CHANEL
- ☐ Any erosion of the slope, berm or outlet should be repaired immediately to prevent head cutting back into the slope.
- ☐ Conveyance should be refreshed if pore space has been compromised. Clogged drains should be flushed out or replaced.
- ☐ Additional performance measures may be required at conveyance entrance to slow water entering the basin.

FILTER BAG / DEWATERING ACTIVITIES
- ☐ Ensure the dewatering pad is in a good stabilized condition.
- ☐ Prior to use inspect bags for any defects. Ensure pump hoe is secure and a floating intake is being used (when possible).
- ☐ Follow all manufacturer recommendations for inspection and maintenance guidelines. Replace when trapped sediment has accumulated to 50% of the bag capacity or in accordance with the manufacturer's recommendations.

TEMPORARY DIVERSION DITCHES / ROLLED EROSION CONTROL PRODUCT:
- ☐ Any areas that are damaged or not in close contact with the ground shall be repaired and stapled.
- ☐ Monitor and repair the RECP as necessary until ground cover is established.
  - WITH WATTLES / SILT SOCKS
    - o Remove sediment accumulation behind measure as necessary to prevent damage to channel vegetation.
    - o Replace wattle/sock if clogged or torn. Reinstall per detail if damaged or dislodged.
    - o If ponding becomes excessive, replace with a larger diameter wattle/sock or a different measure.
  - WITH CHECK DAMS
    - o Remove sediment accumulation behind measure as necessary to prevent damage to channel vegetation.
    - o Check for erosion, piping, rock displacement, and correct stone branch. Repair immediately.
    - o Confirm weir present and located at the center of the device.

INLET PROTECTIONS (PIPE / YARD / DROP / CURB)
- ☐ Inspect inlet protection and remove sediment after each rain event.
- ☐ Keep free of debris to provide adequate flow and if present replace stone as needed to facilitate de-watering.

Required Town of Knightdale SCM Basin Removal Sequence

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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: Town of Knightdale, TOK 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 preparation for seeding.
4. Perform seedbed preparation, 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.

PERMITTING AND ENVIRONMENTAL REGULATION NOTES

1. ESC Permitting and Inspections:
   a. Once the Erosion and Sediment Control (ESC) plan has been reviewed and accepted by the Town of Knightdale (TOK), a formal plan approval letter will be issued to the FRP and applicants. Note: an ESC approval letter DOES NOT indicate permit issuance.
   b. An NCG01 CERTIFICATE OF COVERAGE must be obtained from the North Carolina Department of Environmental Quality (NCDEQ). The maintenance permit can be obtained by filling out the electronic Notice of Intent (e-NOI) form at deq.nc.gov/NCG01. Please note, the e-NOI form may only be completed once ESC plans have been approved (a).
   c. The Town of Knightdale Stormwater Department requires an on-site preconstruction (PreCon) meeting prior to issuing a development permit. This meeting is an opportunity to go over site management expectations and discuss any project concerns.
   d. Once the PreCon meeting has been held and all fees paid, the LAND DEVELOPMENT PERMIT (LDP) will be issued for the project.
   e. Following site mobilization, routine "CONSTRUCTION SITE INSPECTIONS" by TOK staff will occur as outlined in the TOK Erosion and Sediment Control Enforcement Tree. To note, "Compliant/Satisfactory" inspections will need to occur following:
      i. Installation of initial ESC perimeter controls (SF, SF/TP, SFOs) only clearing the perimeter ribbon (25' max) - "PERIMETER CONTROL INSPECTION".
      ii. Installation of ALL Phase 1 ESC measures including engineered structures - "CERTIFICATE OF COMPLANCE INSPECTION".
      It is the responsibility of the site manager to formally request these types of inspections by contacting TOK Public Works. Clearing/grubbing outside of the limited areas required to complete the above items will result in enforcement action by the TOK.
   f. Following the completion of the items above - the site can be cleared and developed in accordance with the approved plan.
2. Permits Box Contents – A copy of the TOK Land Development Permit, the NCG01 Certificate of Coverage (COC) and regular NPDES inspections, a copy of the approved/revised ESC plan, and (when obtained) the TOK Certificate of Compliance – must be kept on site, preferably in a permits box, and accessible during inspection. Locate a rain gauge on site for facilitation of inspections and record keeping.
3. 401/404 Permits - Approval of this erosion and sedimentation control plan does not authorize impacts to wetlands, coastal marsh, streams, or other waters of the State or United States or supersede any other permitting requirement of any Federal, State or Local agency.
   a. If applicable, provide a copy of the USACE 404 permit and DWR 401 certifications. Provide a copy of the DWR Buffer Authorization.
      i. Submit documentation with maps showing location and extent of impacts to streams and wetlands with any special conditions pertaining to erosion and sediment control and restoration of affected areas.
      ii. Identify the streams, wetlands, and buffers on the plan sheets. Include any additional measures, construction specifications, maintenance requirements and construction sequencing as required by the 404/401/Buffer Determination and Buffer Authorization on the plan sheets.
      iii. Follow ALL conditions outlined in the certifications, specifically reporting any discharges outside of the permitted scope of work.
   4. Areas of Environmental Concern and Cultural Resources – Before any site work occurs, adequately identify key environmental and/or cultural resources by using appropriate identifiers in the field (tree protection fencing, flagging, etc.).
   5. Fill/Borrow - Any off-site borrow and/or fill required for this project must come from a site with an approved erosion control plan, a site regulated under the Mining Act of 1971, or a landfill regulated by the NC Division of Solid Waste Management. Trash/debris from demolition activities or generated by any activities on site must be disposed of at a facility regulated by the NC Division of Solid Waste Management, or per NC Division of Solid Waste Management or NC Division of Water Resources rules and regulations.

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940 Main Campus Drive
Suite 500
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919.829.0328
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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
NPDES Stabilization Plan (2 of 2)

ZMA-2-23

Drawing Number
C5.39

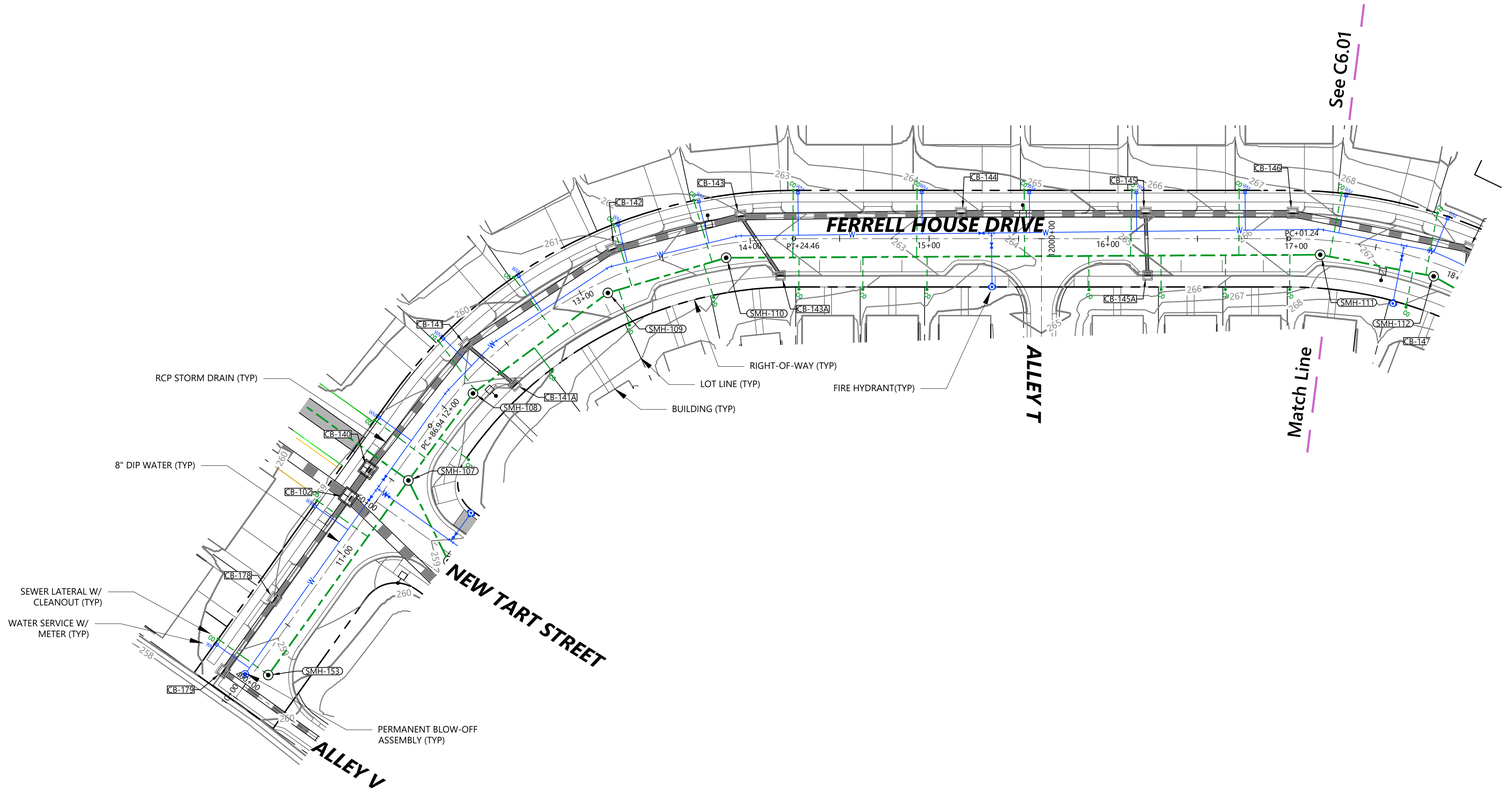
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

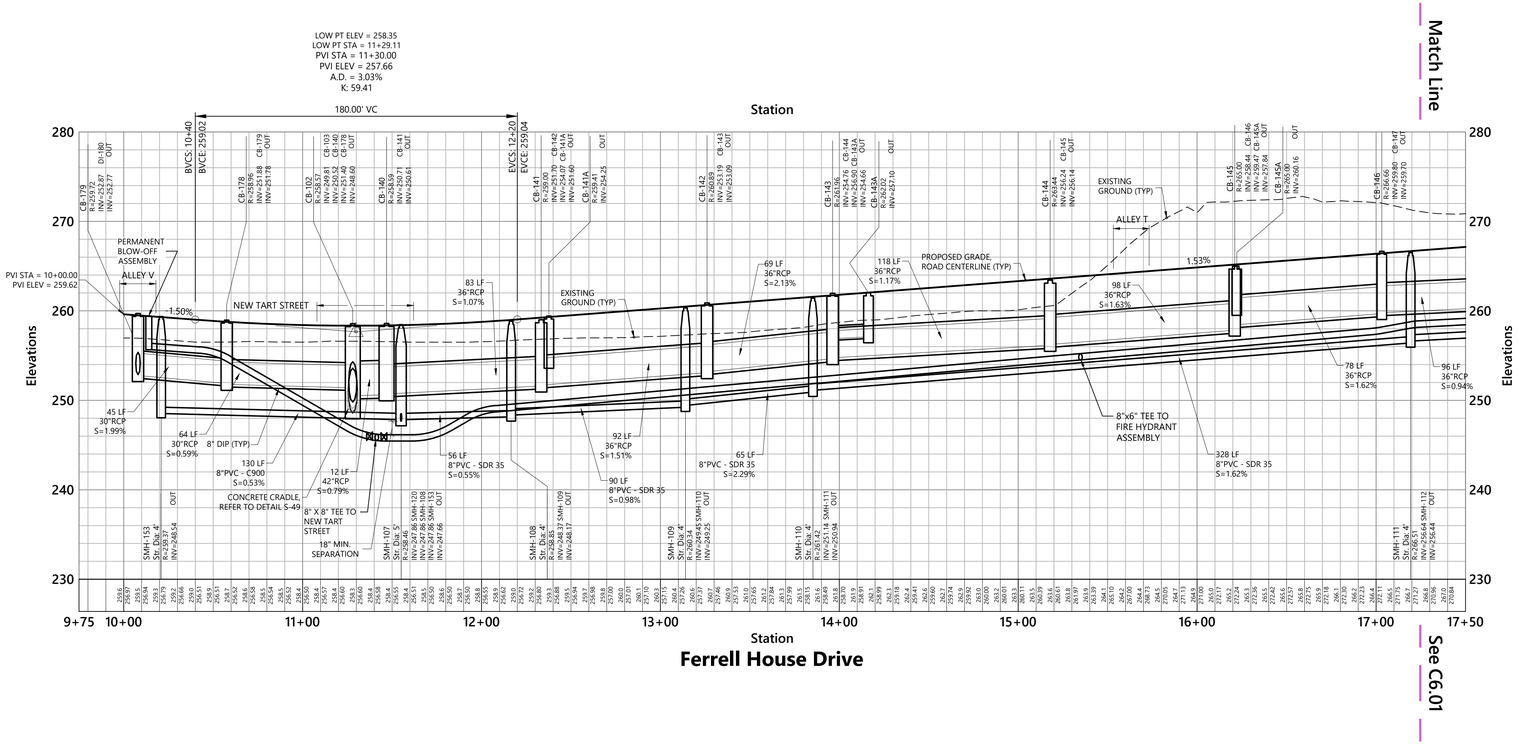
12/15/2025

Sheet 133 of 224

Project Number
39510.05

Saved Thursday, October 2, 2025 2:30:38 PM WSHERRILL Plotted Monday, December 15, 2025 4:02:40 PM Walker Johnson





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ATTENTION CONTRACTORS

The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Inspector at 919-996-3245 or https://cityworks.raleighnc.gov/pucontractors/New and schedule a Pre-construction meeting prior to beginning any construction.
Raleigh Water must be contacted at (919) 996-4540 at least twenty-four hours prior to beginning any work activity around critical water and sewer infrastructure.

Failure to notify the Divisions 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.

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Ferrell House Drive Plan and Profile (1 of 2)

ZMA-2-23

Drawing Number
C6.00

Sheet 134 of 224

Project Number
39510.05

811 Know what's below. Call before you dig.

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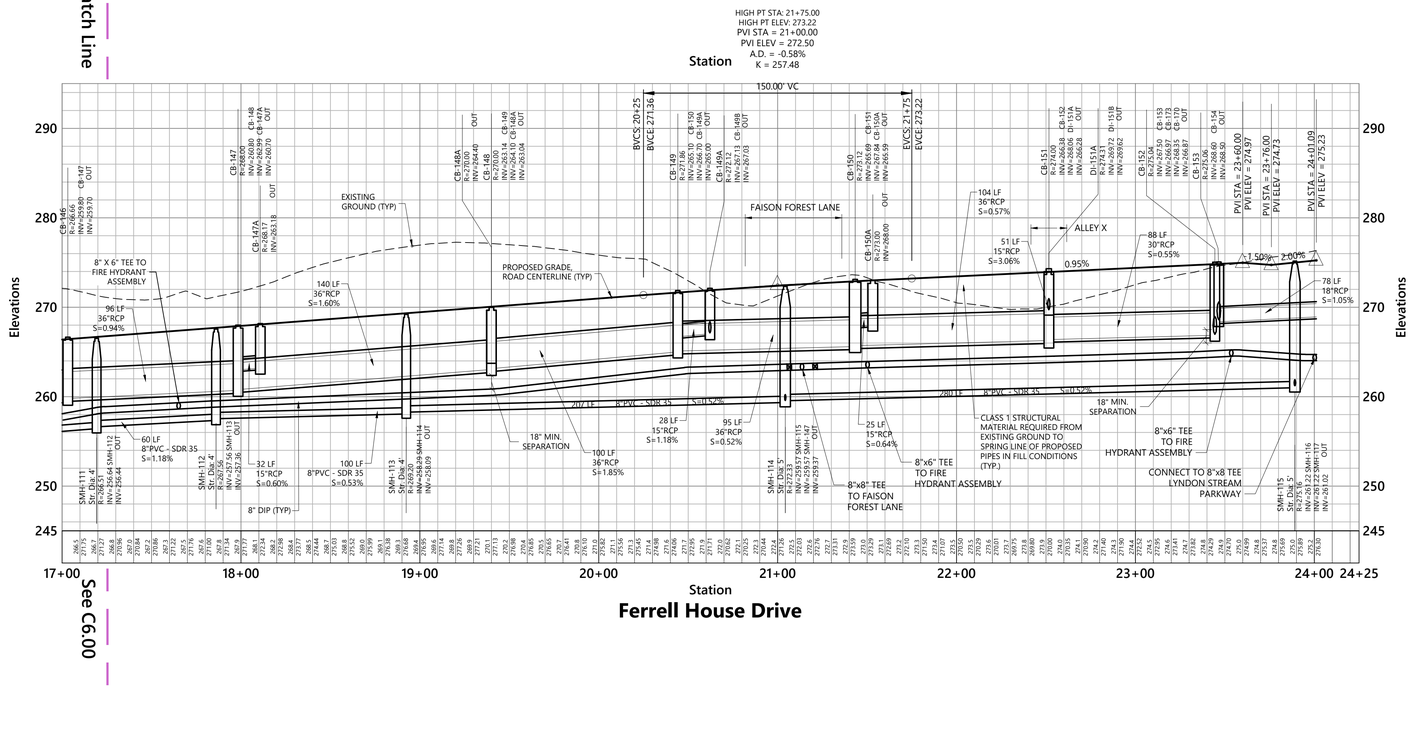
12/15/2025





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Corp. # C-3705

ATTENTION CONTRACTORS

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- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
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- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: January 17, 2025

Drawing Title
Ferrell House Drive
Plan and Profile (2 of 2)

ZMA-2-23

Drawing Number
C6.01

Sheet 135 of 224

Project Number
39510.05

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ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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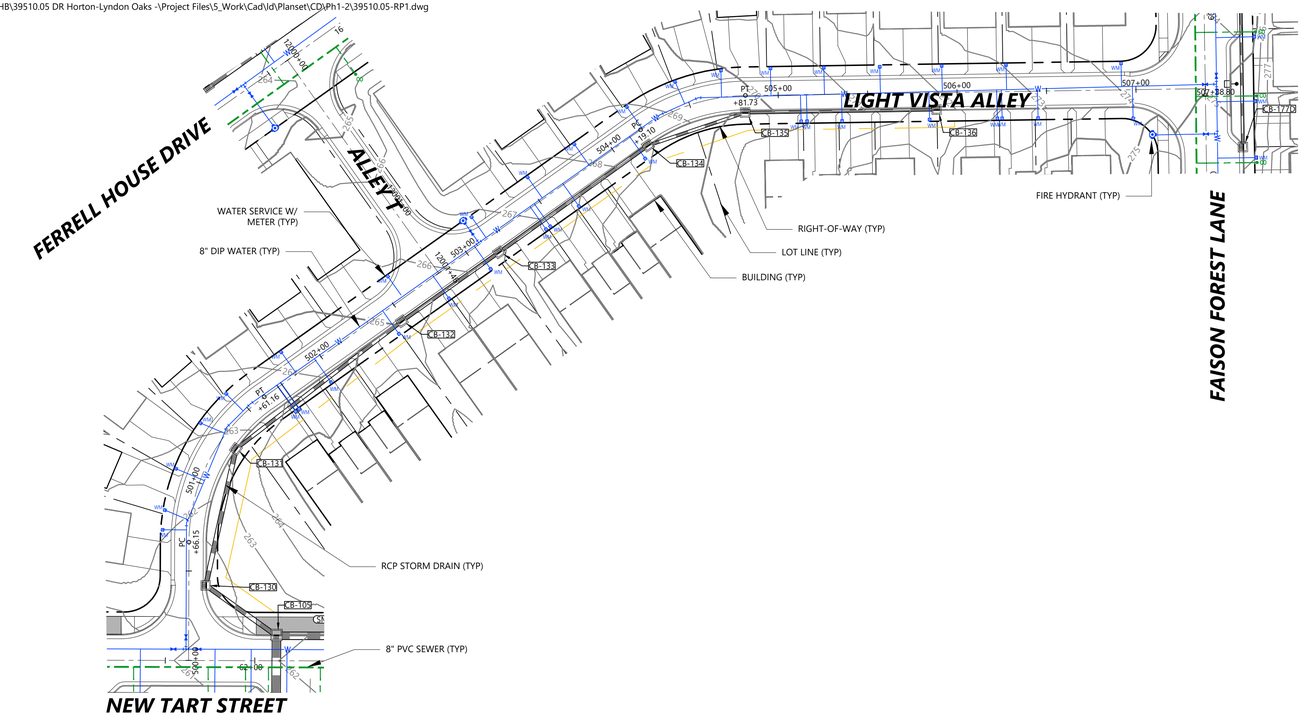

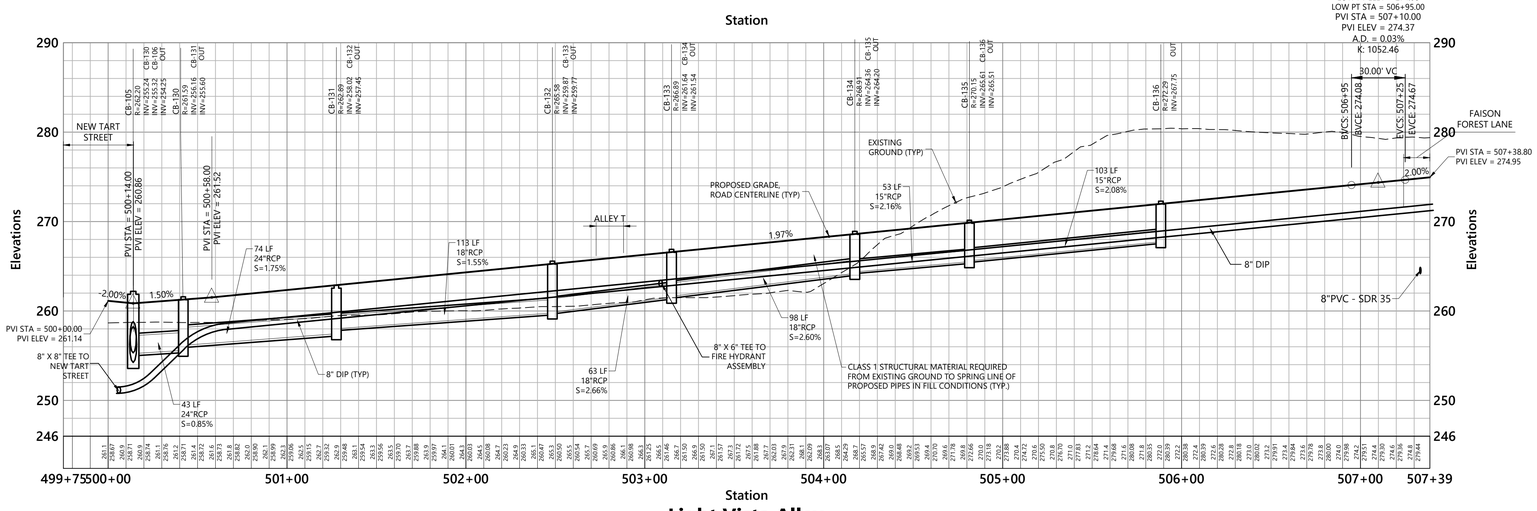

Light Vista Alley

Saved Monday, October 6, 2025 2:41:33 PM WSHERRILL Plotted Tuesday, December 16, 2025 4:34:16 PM Marco Meza

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Corp. # C-3705

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Lyndon Oaks Phases 1 & 2

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NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Drawing Title
Light Vista Alley
Plan and Profile

ZMA-2-23 — Drawing Number

C6.02

Sheet 136 of 224

Project Number 39510.05

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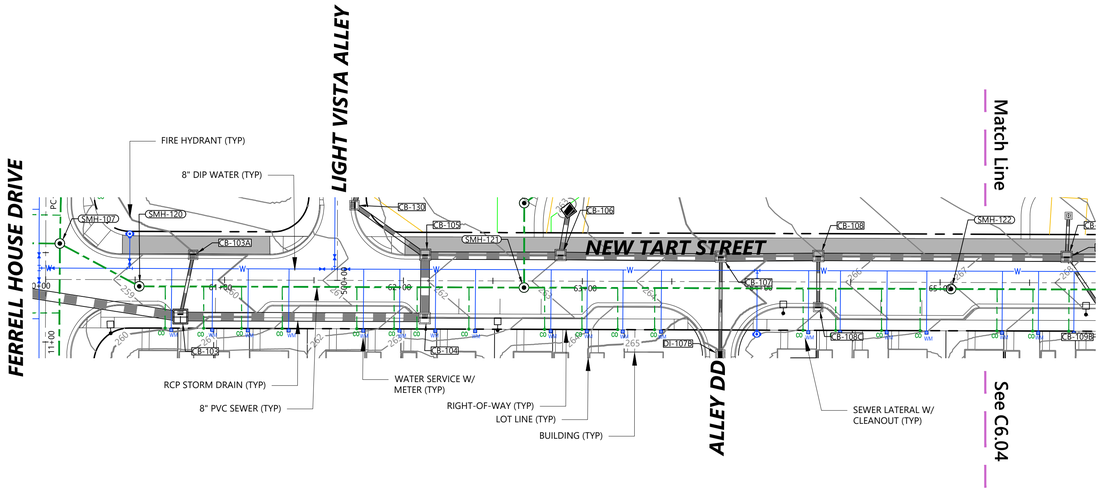

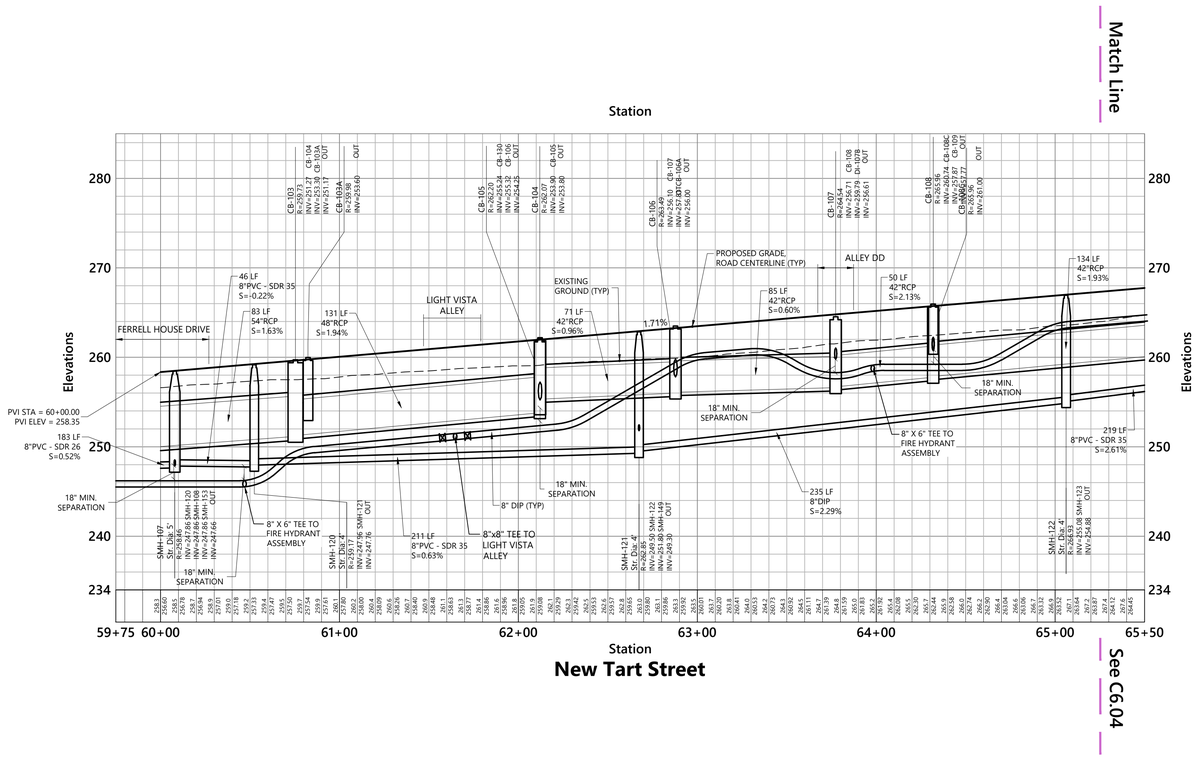

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Land Use Administrator

Drawing Title
New Tart Street
Plan and Profile (1 of 2)

ZMA-2-23

Drawing Number
C6.03

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 137 of 224

Project Number
39510.05

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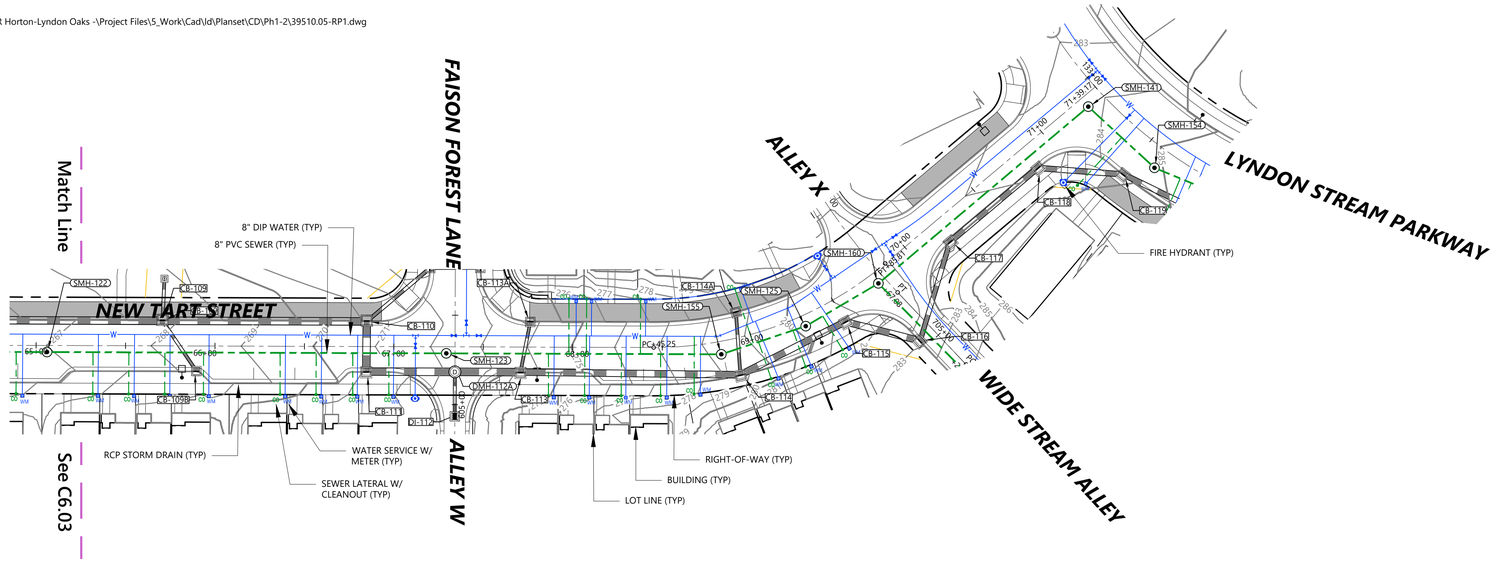

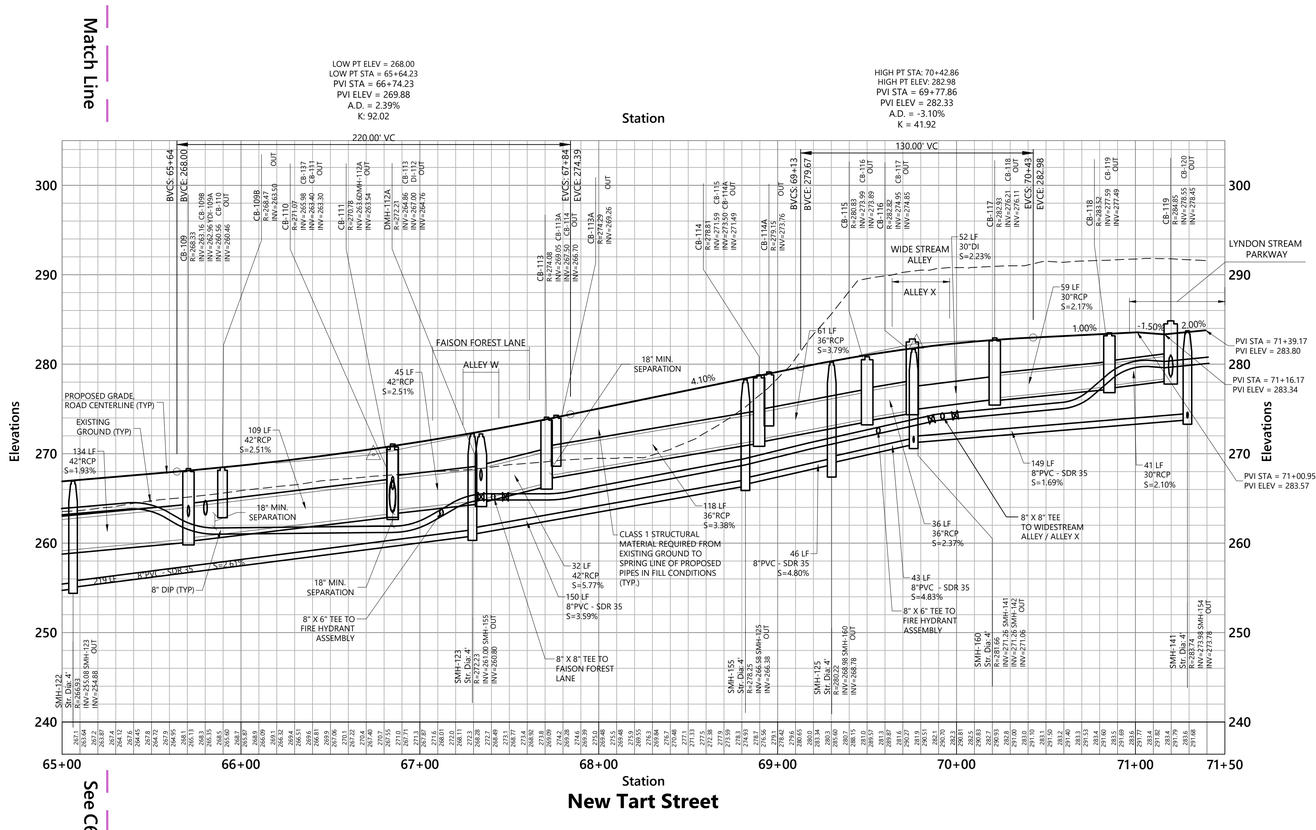

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Lyndon Oaks Phases 1 & 2

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Drawing Title
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Plan and Profile (2 of 2)

ZMA-2-23
Drawing Number

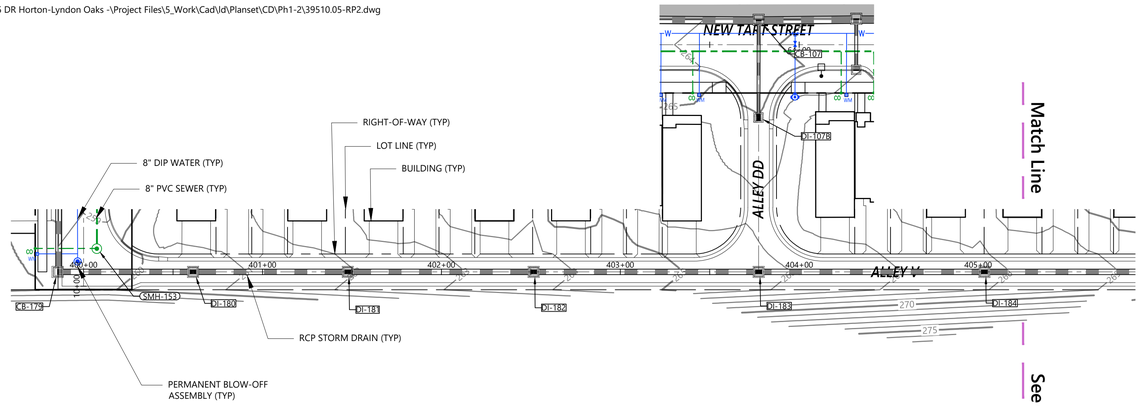
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

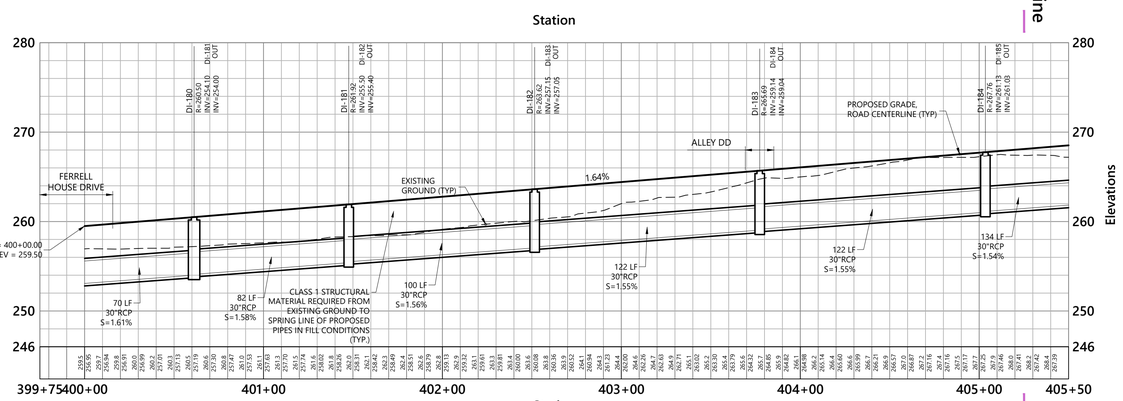
12/15/2025

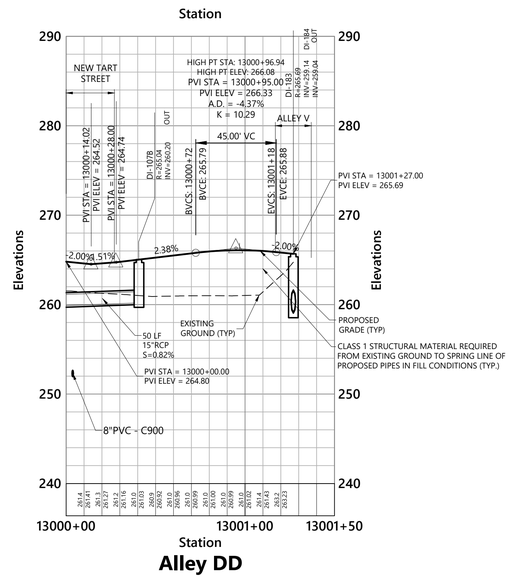
C6.04

Sheet 138 of 224

Project Number 39510.05







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Lyndon Oaks Phases 1 & 2

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Drawing Title
Alley V - Alley DD
Plan and Profile (1 of 2)

ZMA-2-23

Drawing Number
C6.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 139 of 224

Project Number
39510.05

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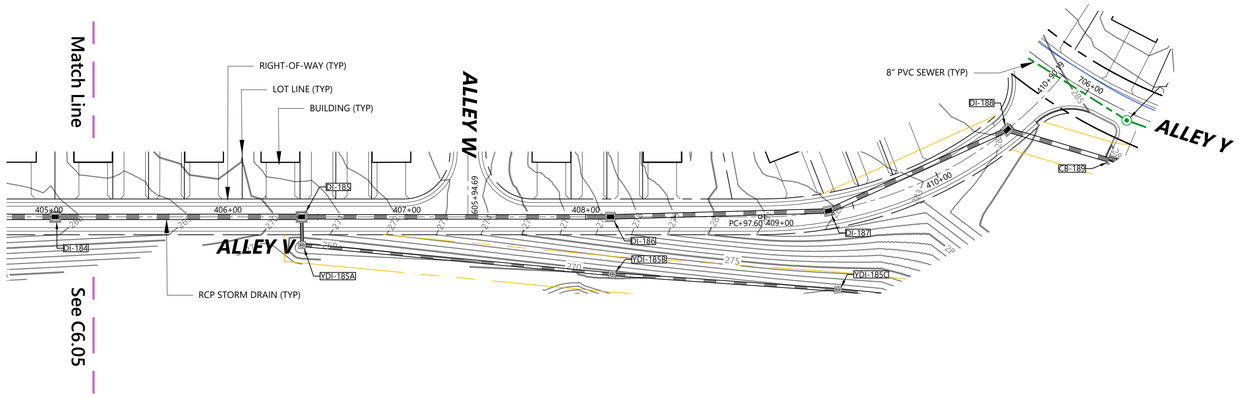

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Drawing Title
Alley V
Plan and Profile (2 of 2)

ZMA-2-23
Drawing Number

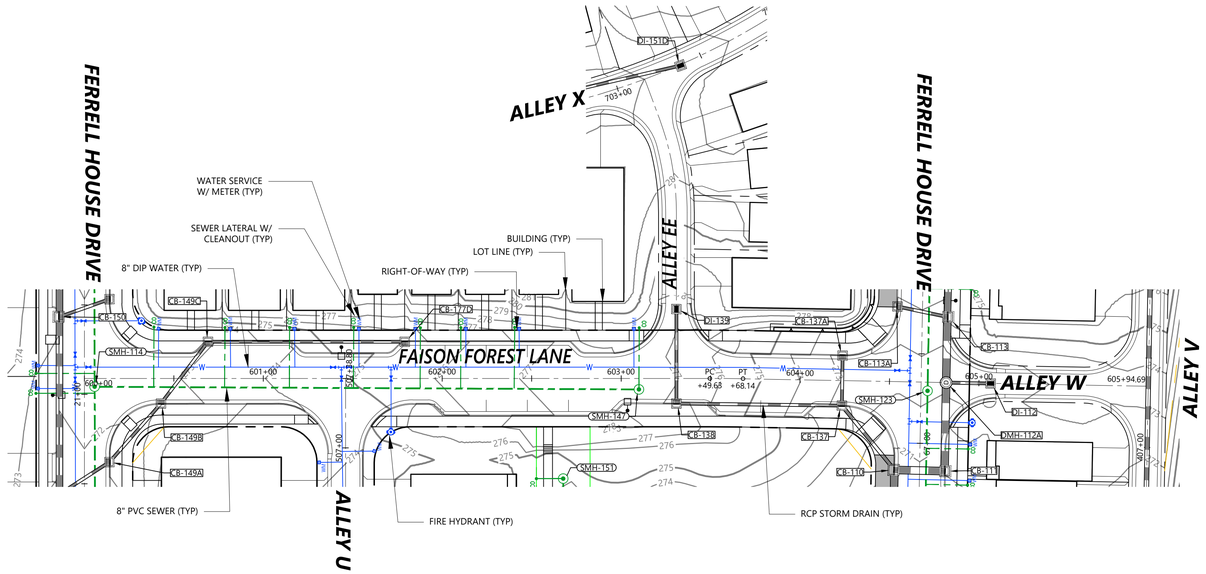
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

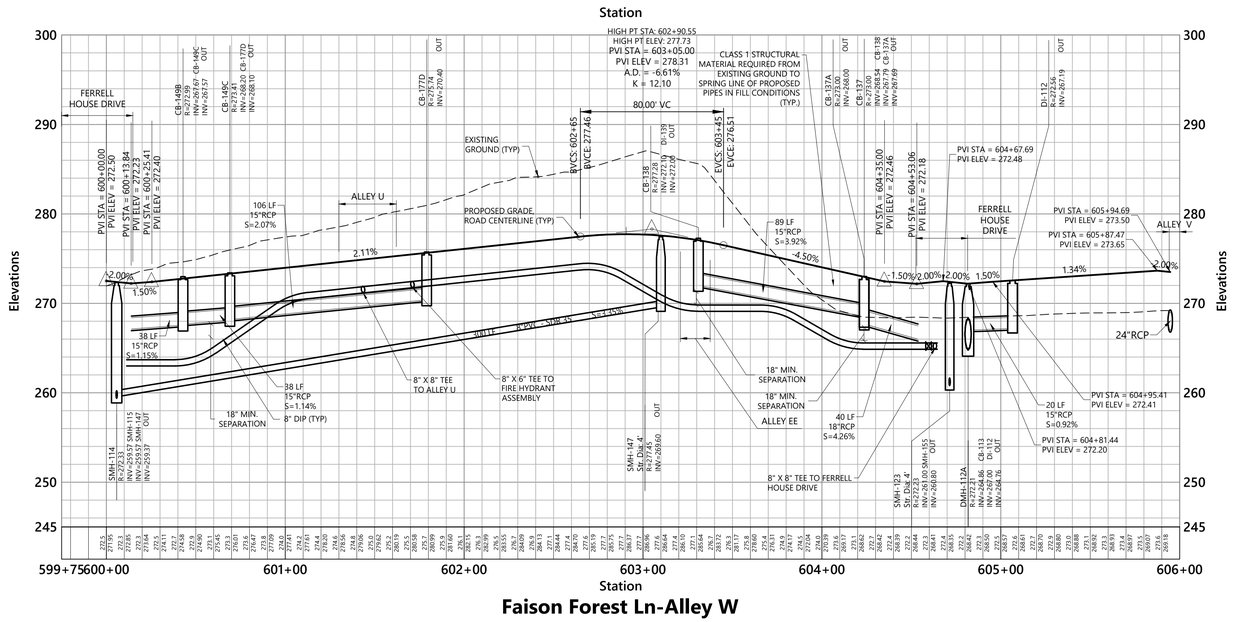
12/15/2025

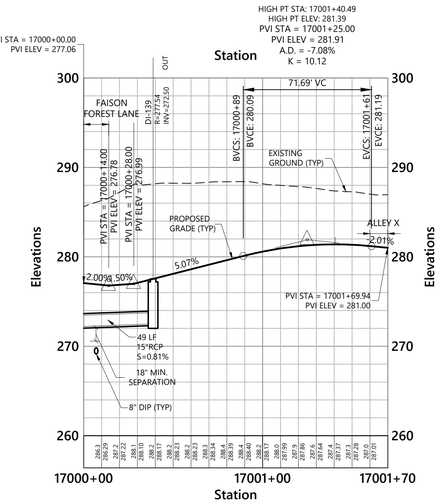
C6.06

Sheet 140 of 224

Project Number 39510.05







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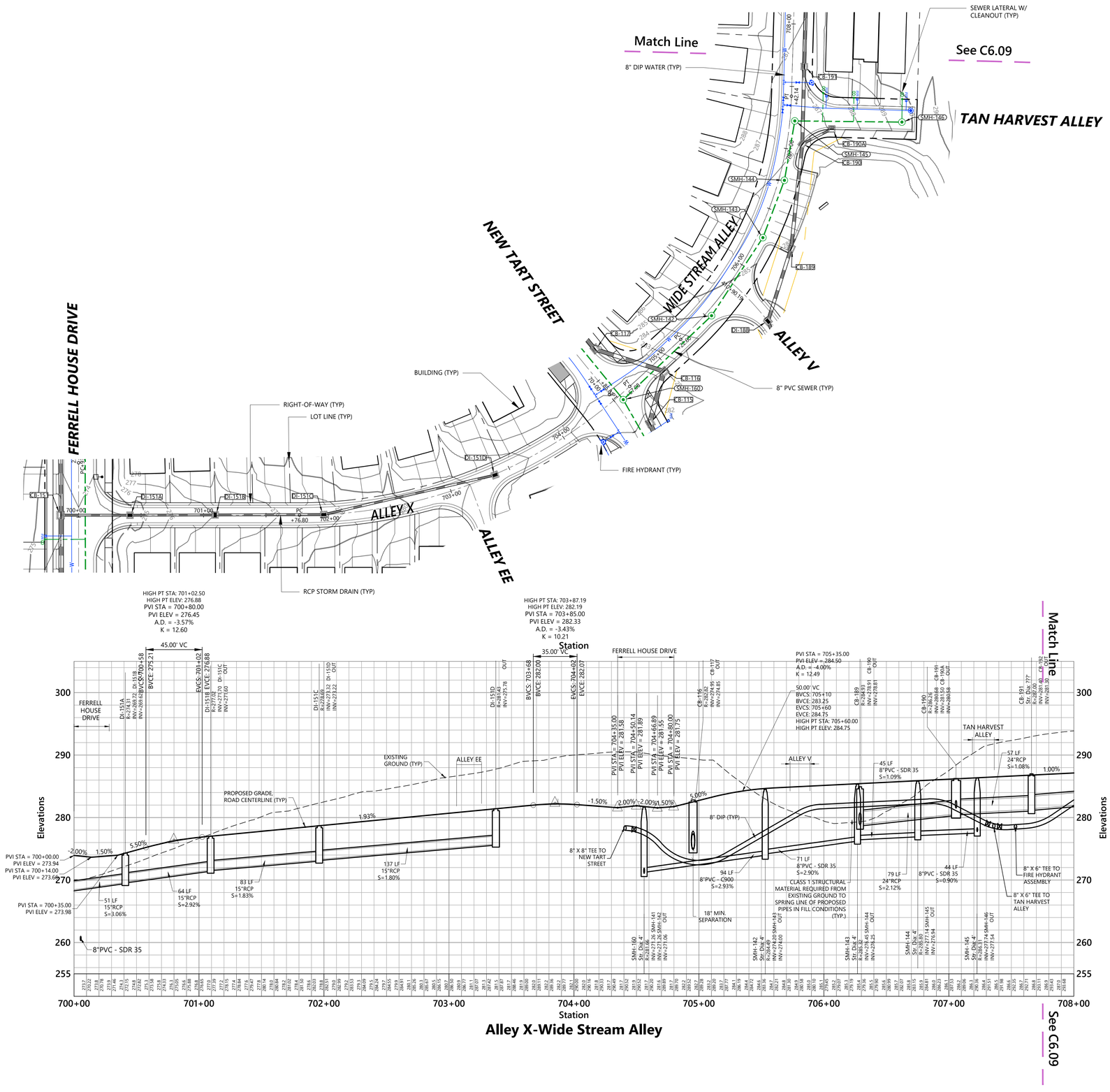
12/15/2025

Drawing Title
Faison Forest Lane and Alley EE Plan and Profile

ZMA-2-23
Drawing Number
C6.07
Sheet 141 of 224

Project Number
39510.05

Saved Wednesday, October 8, 2025 3:04:54 PM MMEZA Plotted Tuesday, December 16, 2025 4:06:10 PM Walker Johnson



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Corp. # C-3705

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- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

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Land Use Administrator

Drawing Title
Alley X - Wide Stream Alley Plan and Profile (1 of 2)

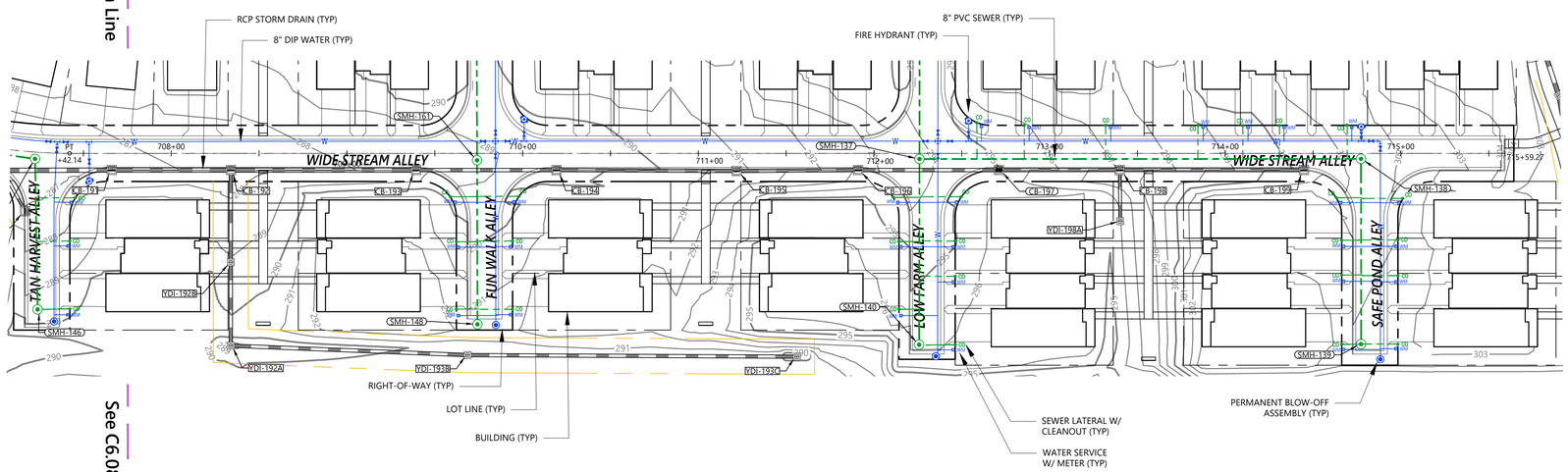
ZMA-2-23
Drawing Number

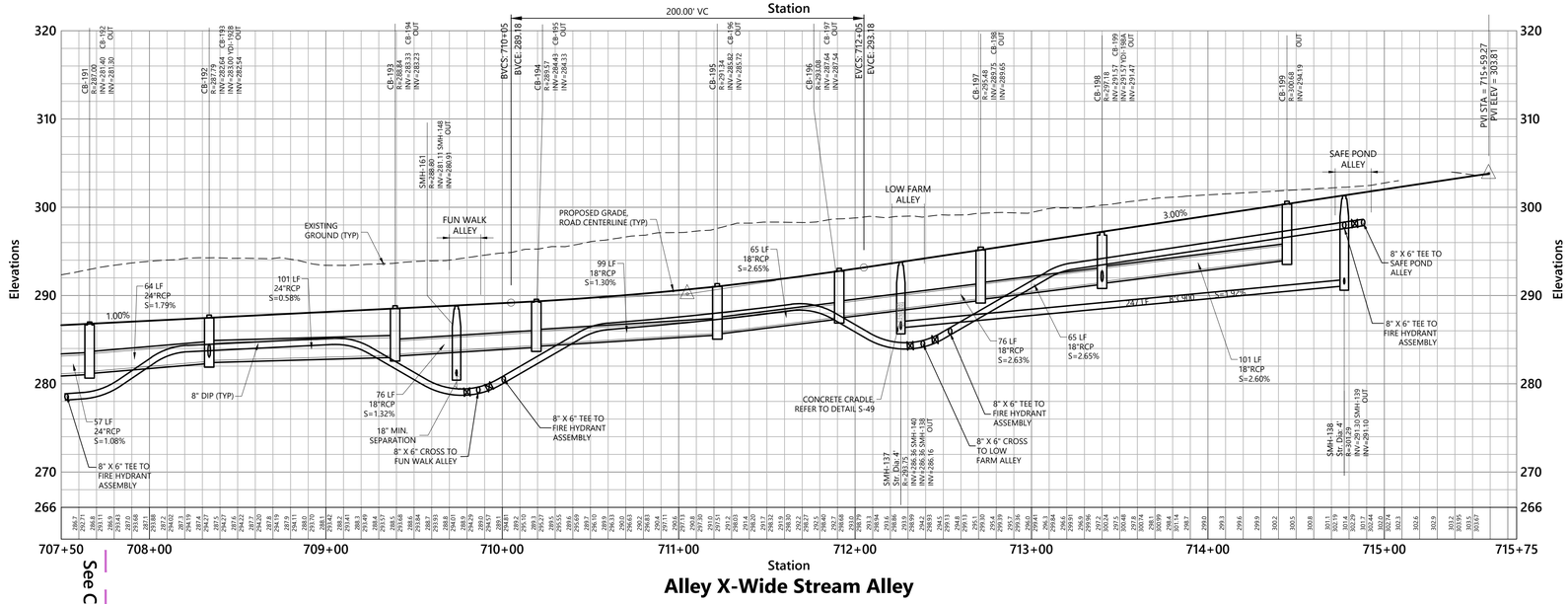
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

C6.08

Sheet 142 of 224

Project Number 39510.05





See C6.08

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VHB	CT, KS, JB, RB

Issued for: Approval
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Drawing Title
Alley X - Wide Stream Alley Plan and Profile (2 of 2)

ZMA-2-23

Drawing Number
C6.09

Sheet 143 of 224

Project Number 39510.05

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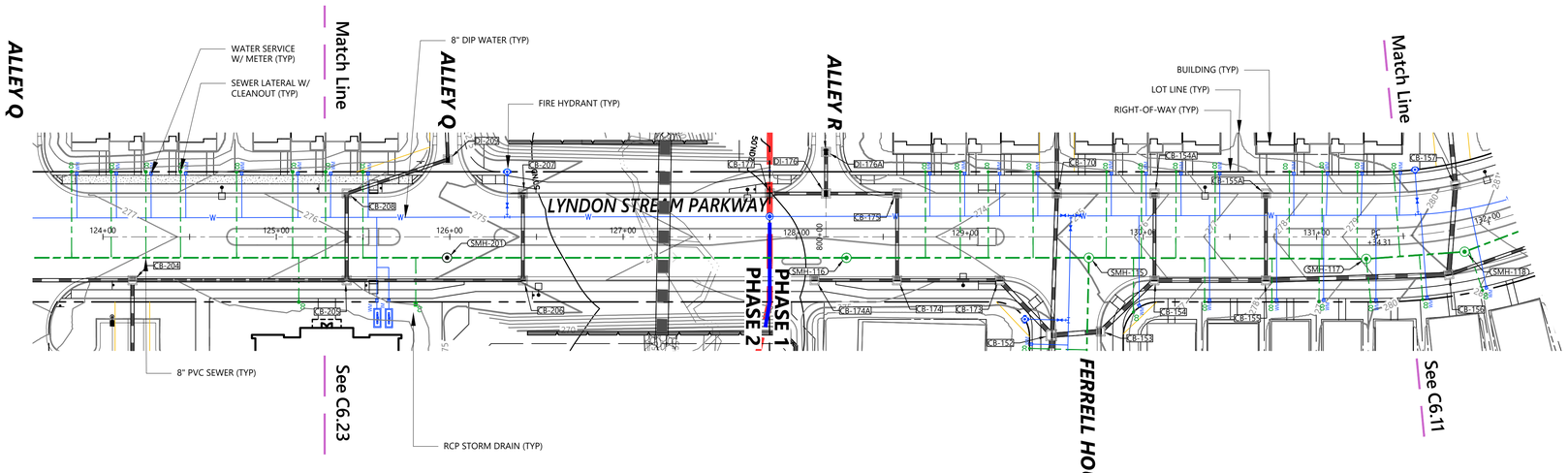
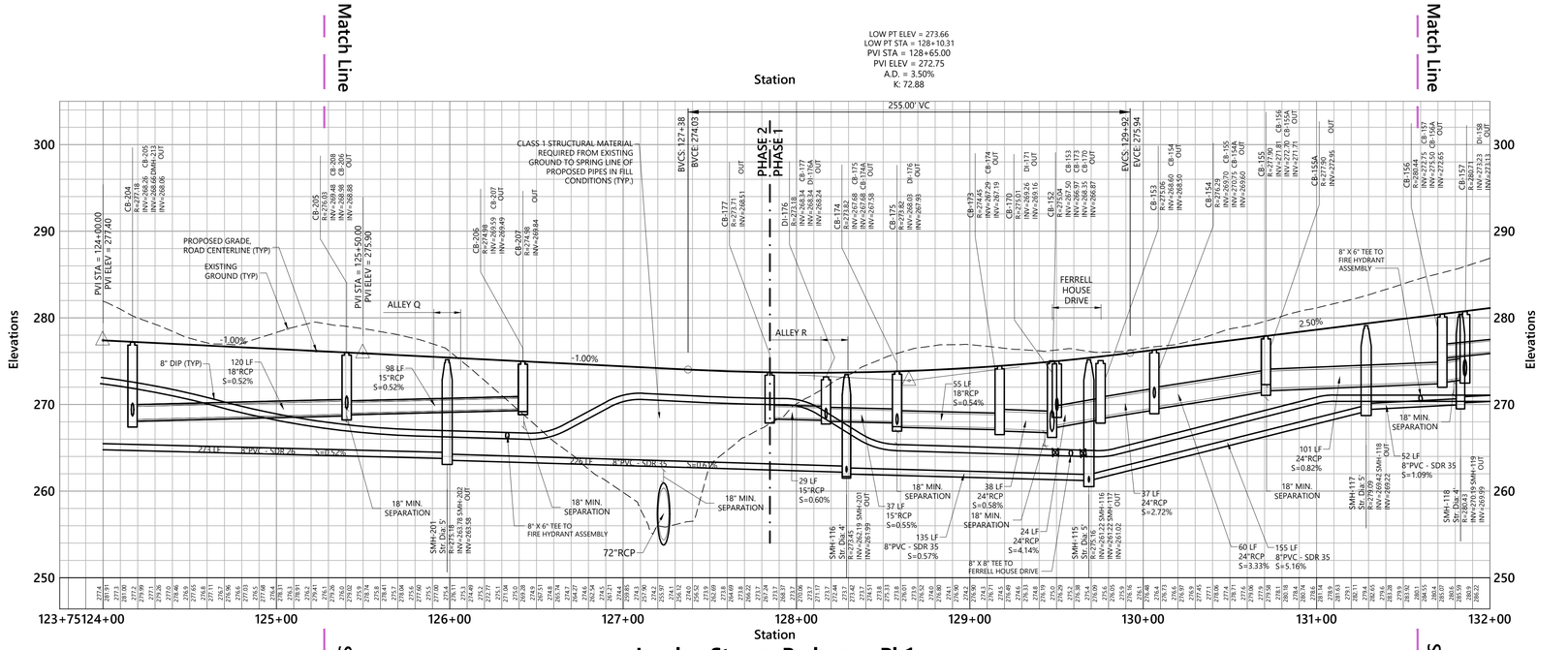
12/15/2025





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Drawing Title: Lyndon Stream Pkwy - Ph1 Plan and Profile (1 of 3)

ZMA-2-23

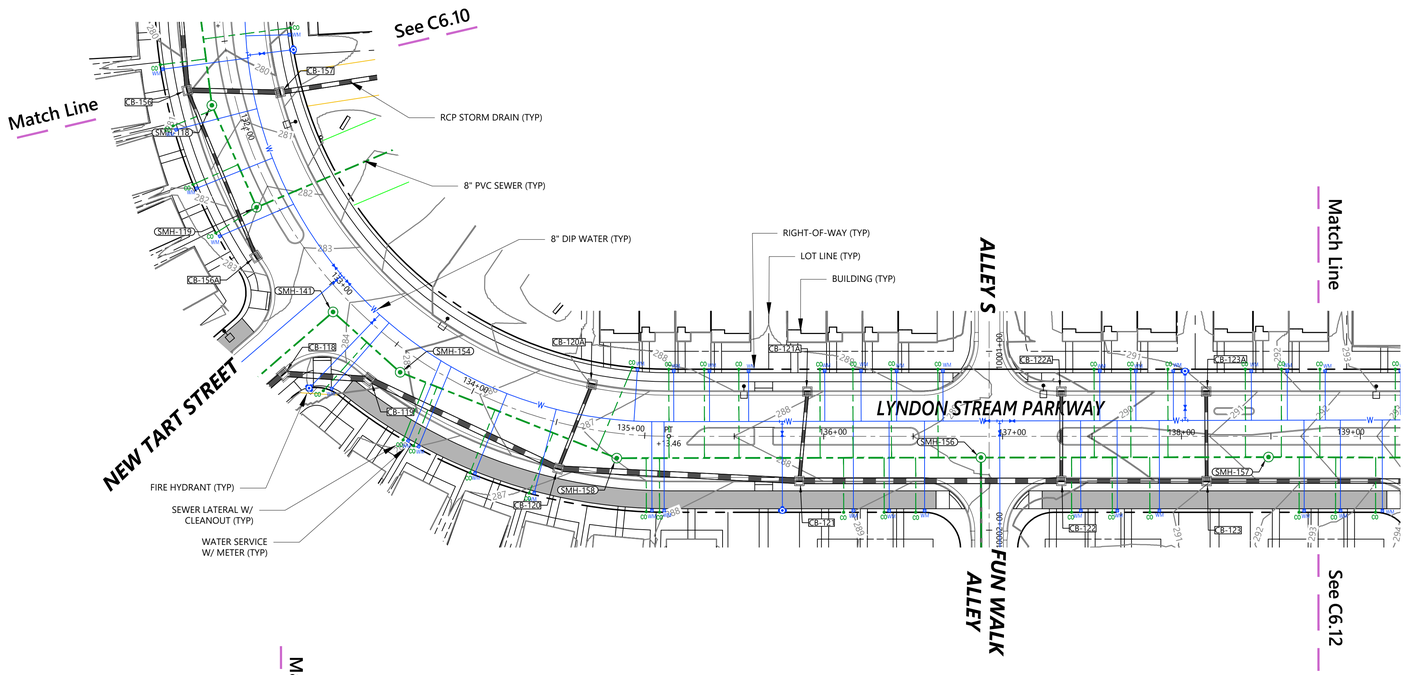
Drawing Number: C6.10

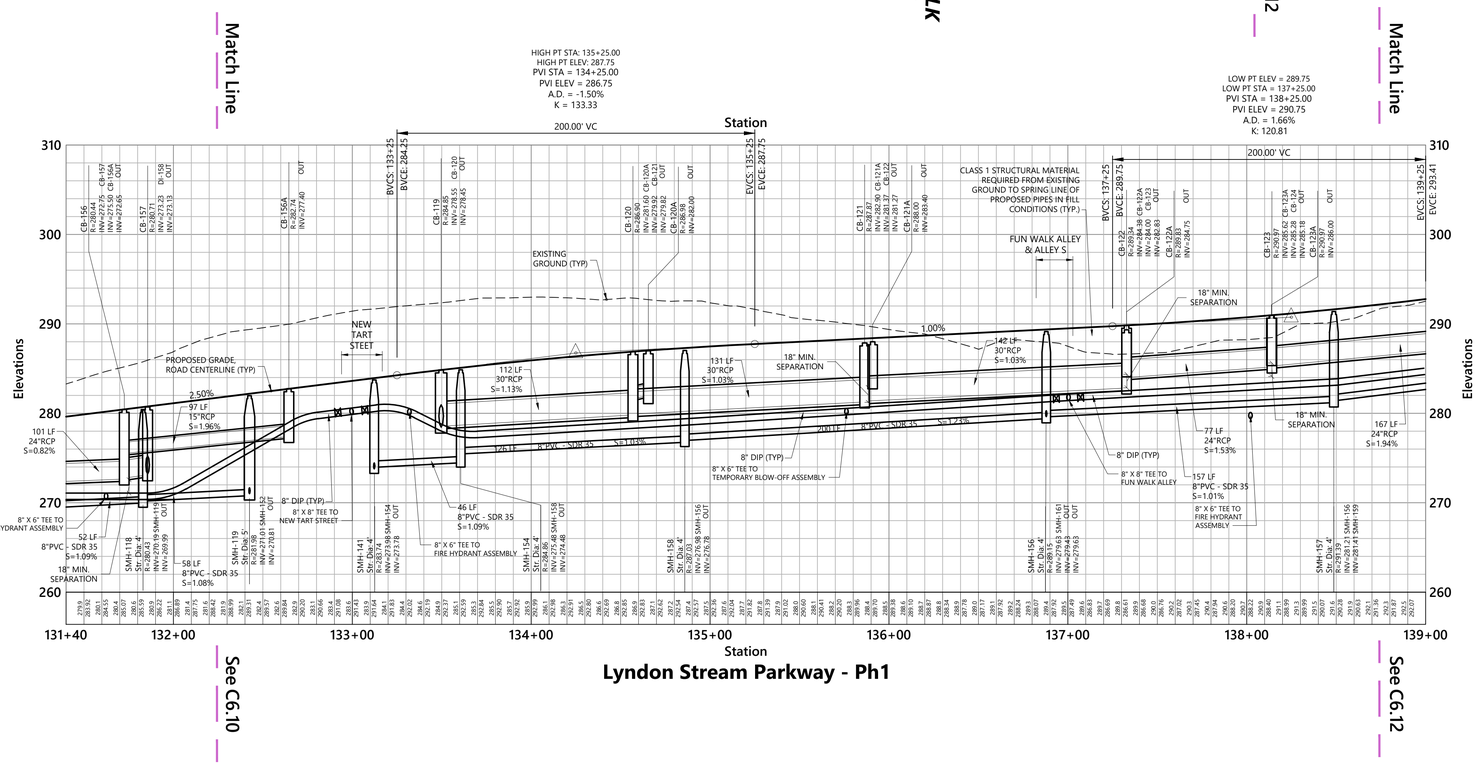
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 144 of 224

Project Number: 39510.05





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Lyndon Oaks Phases 1 & 2

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12/15/2025

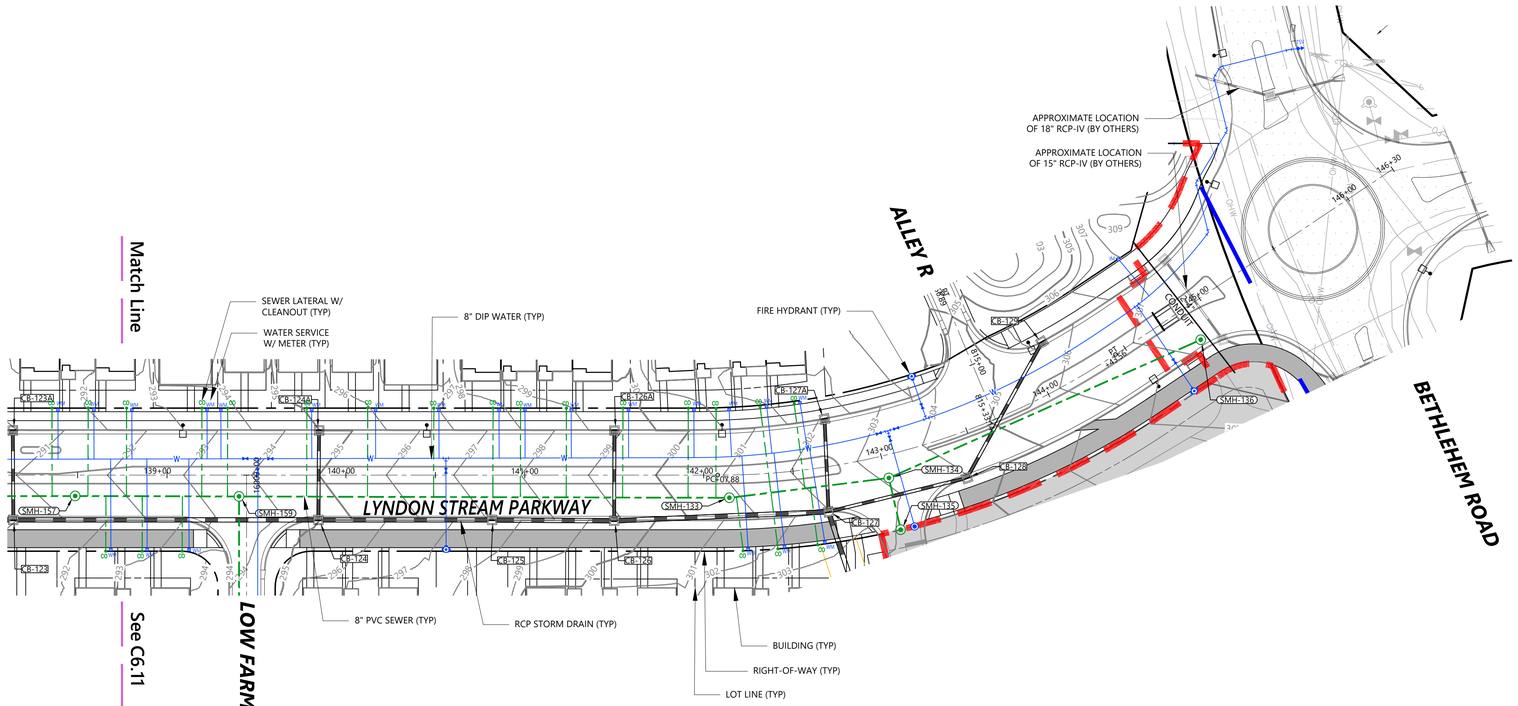
Drawing Title
Lyndon Stream Pkwy - Ph1 Plan and Profile (2 of 3)

ZMA-2-23

Drawing Number
C6.11

Sheet 145 of 224

Project Number
39510.05



Saved Wednesday, December 17, 2025 10:00:04 AM MMEZA Plotted Thursday, December 18, 2025 3:22:27 PM Trent Rogers

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Lyndon Oaks Phases 1 & 2

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Lyndon Stream Pkwy - Ph1 Plan and Profile (3 of 3)

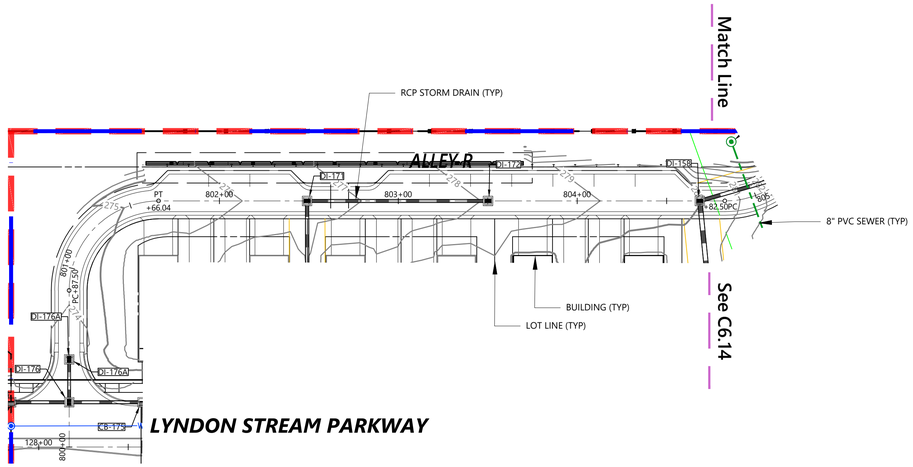
ZMA-2-23

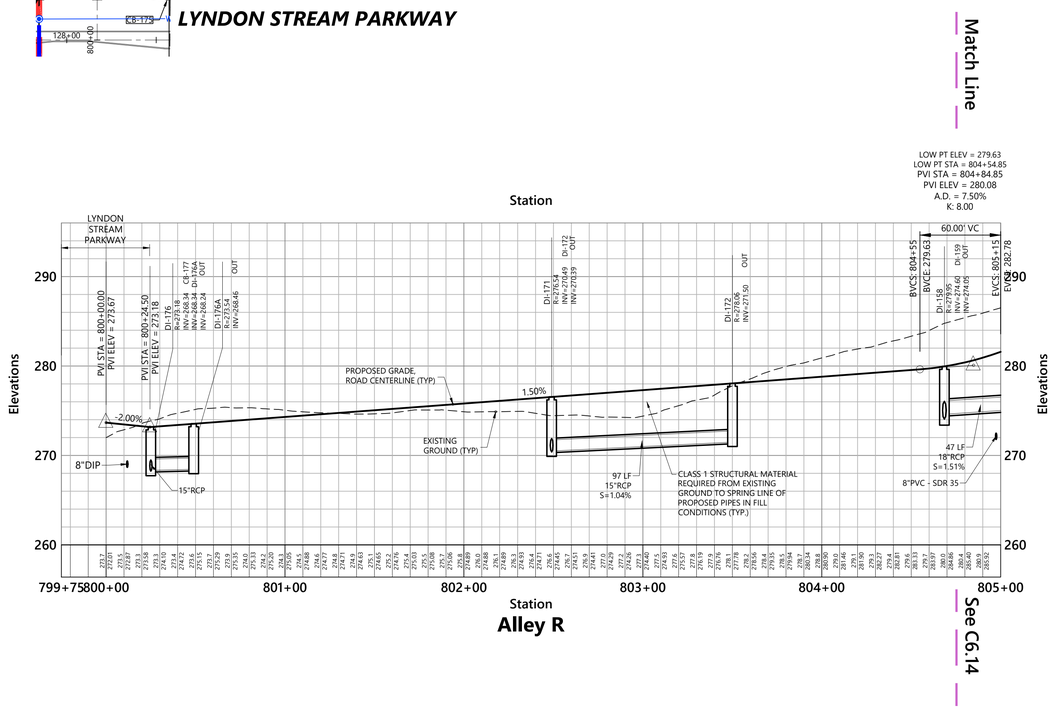
Drawing Number
C6.12

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 146 of 224

Project Number 39510.05





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Drawing Title
Alley R
Plan and Profile (1 of 3)

ZMA-2-23

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Drawing Number
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Sheet 147 of 224

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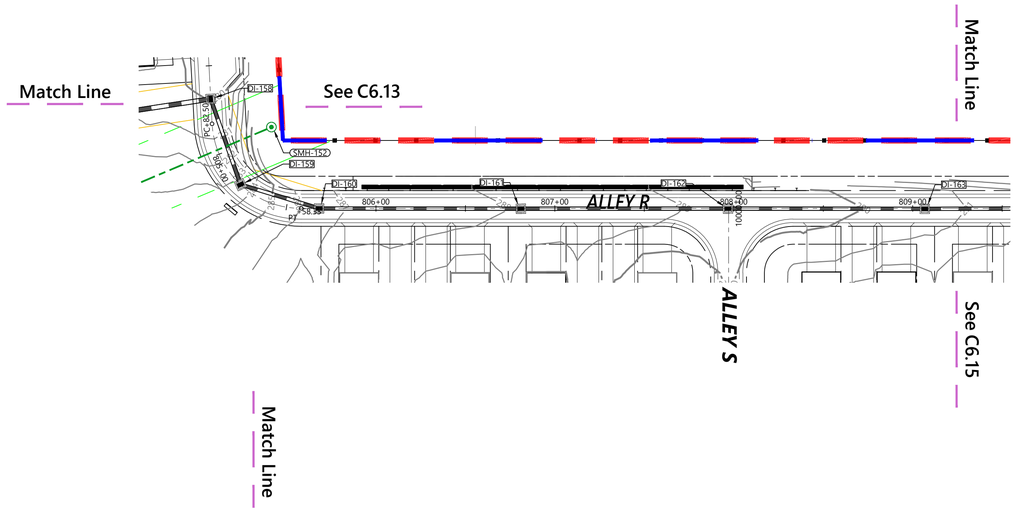

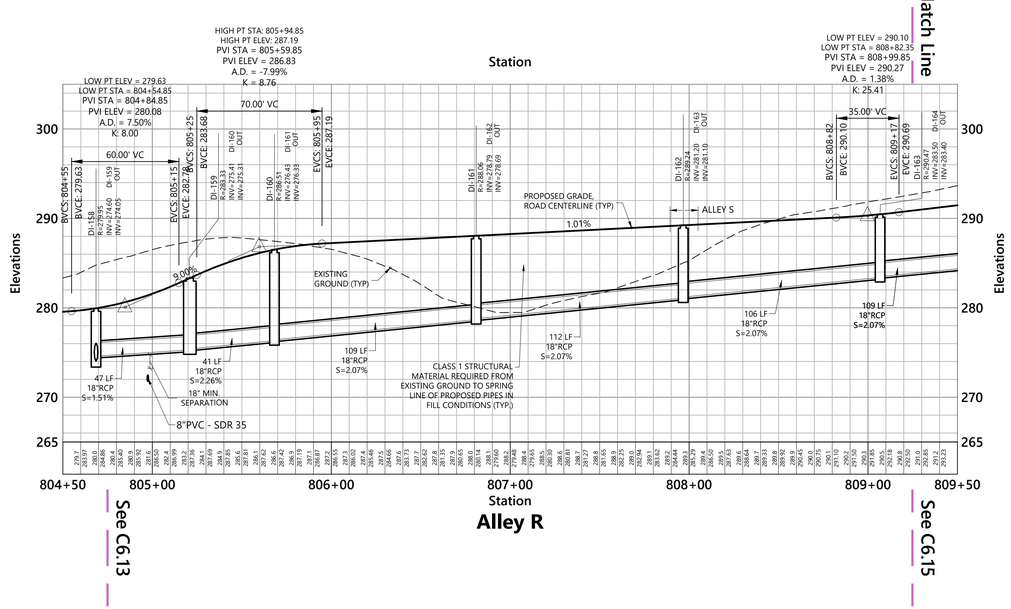

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Drawing Title
Alley R
Plan and Profile (2 of 3)

ZMA-2-23
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NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

C6.14

Sheet 148 of 224

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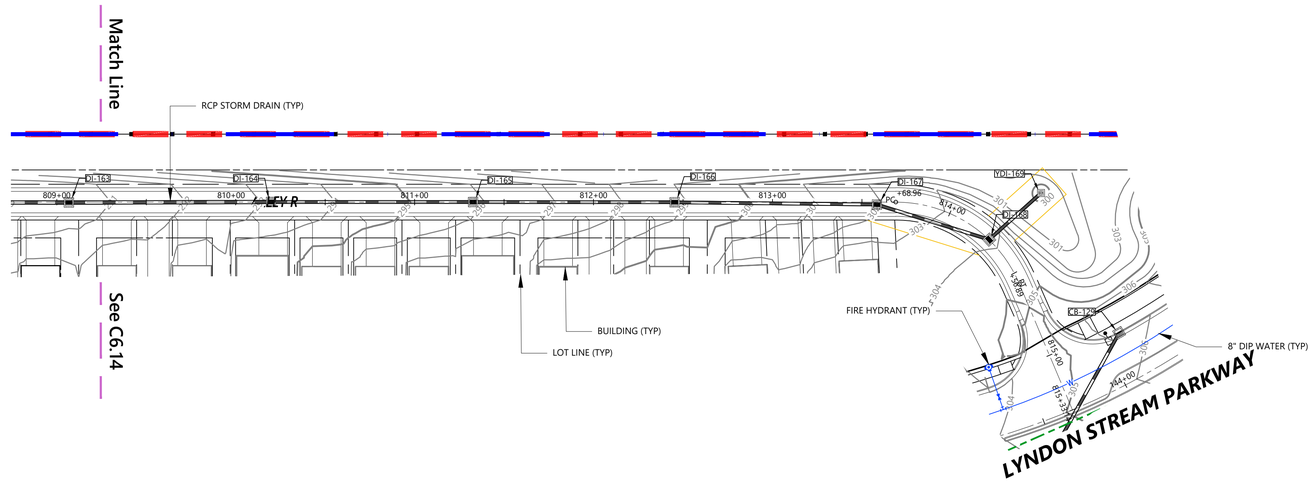

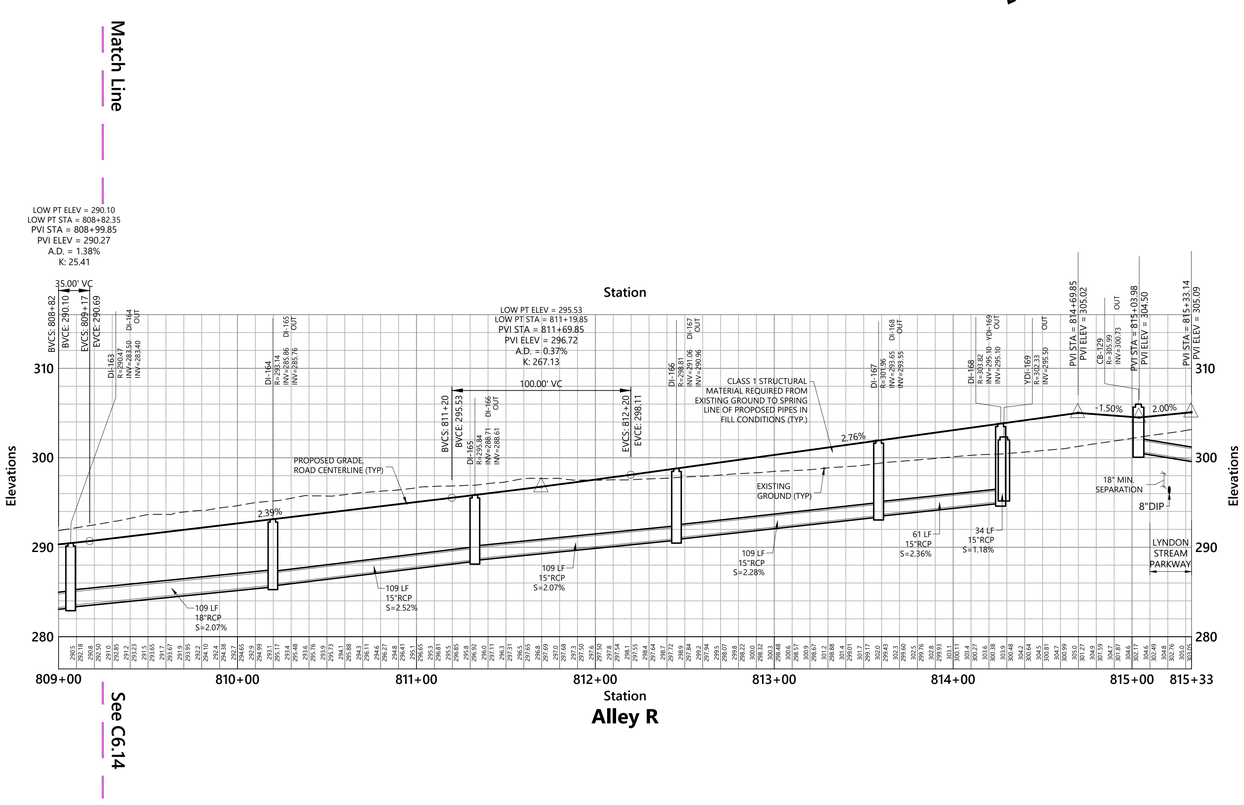

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919.829.0328
Corp. # C-3705

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- GREENWAY
- RIP-RAP
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- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Alley R
Plan and Profile (3 of 3)

ZMA-2-23
Drawing Number

C6.15

Sheet 149 of 224

Project Number 39510.05

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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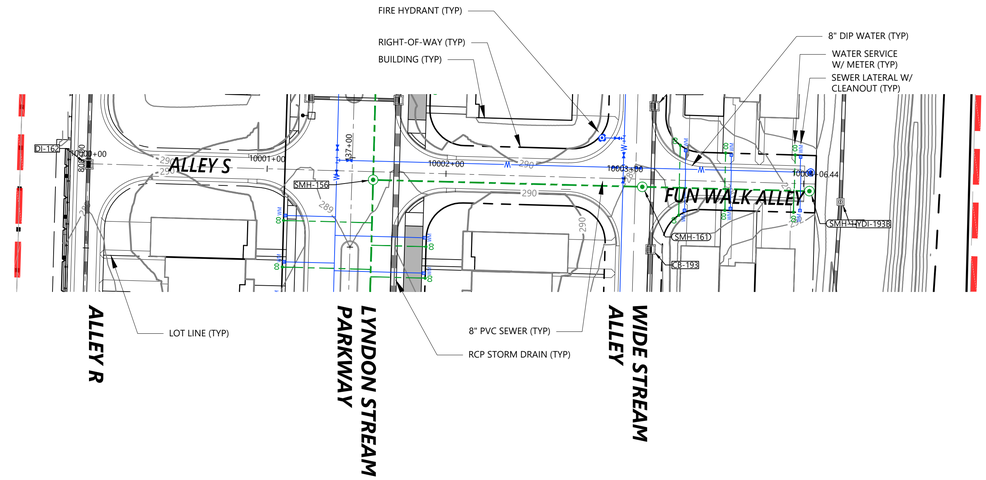
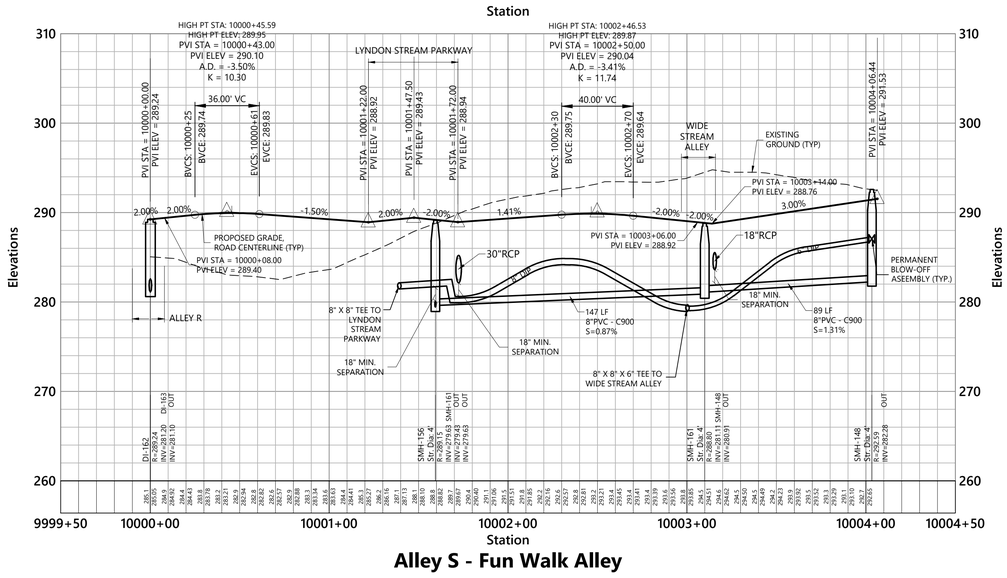
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025





Alley S - Fun Walk Alley

vhb.com

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940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

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Lyndon Oaks Phases 1 & 2

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Land Use Administrator

Drawing Title
Alley S - Fun Walk Alley Plan and Profile

ZMA-2-23

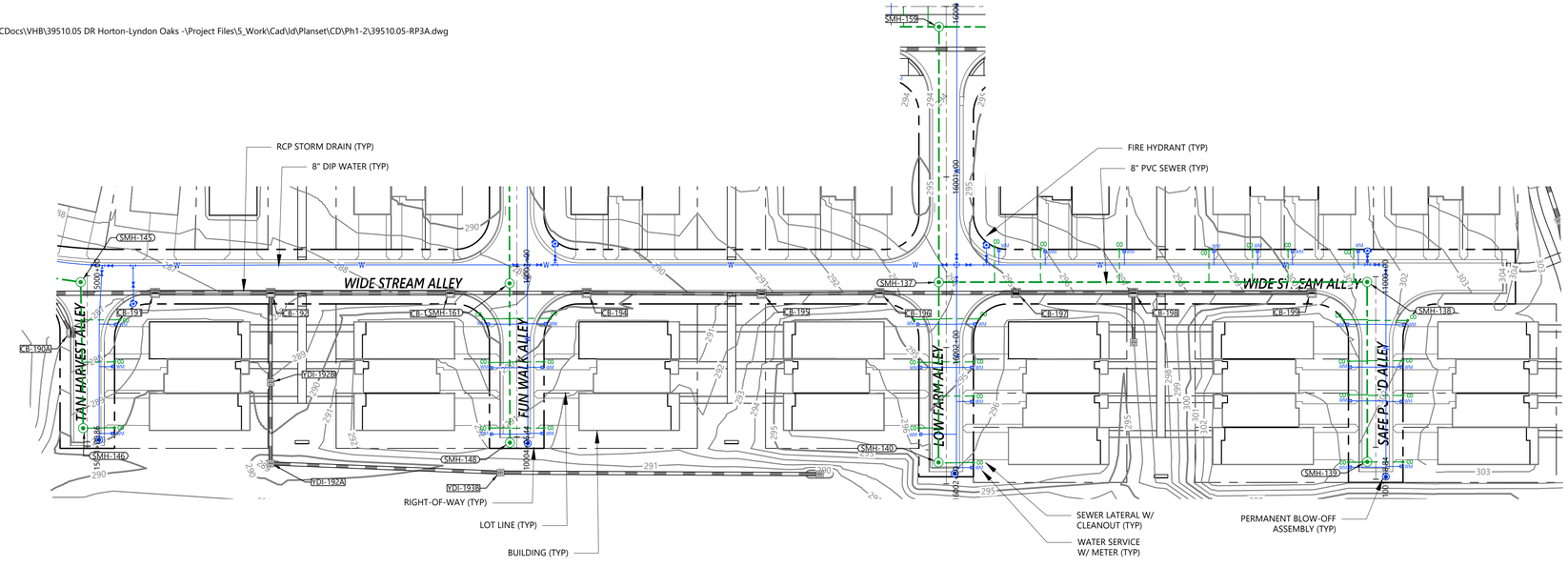
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

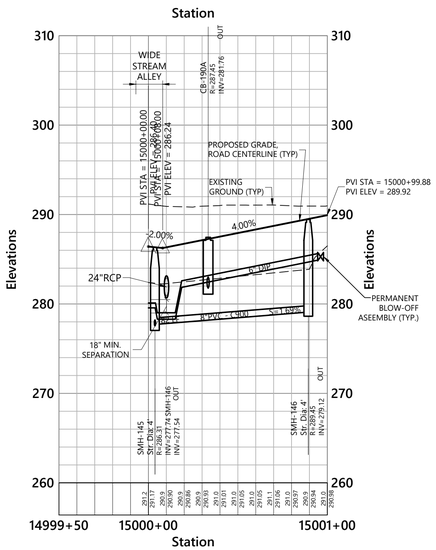
12/15/2025

Drawing Number
C6.16

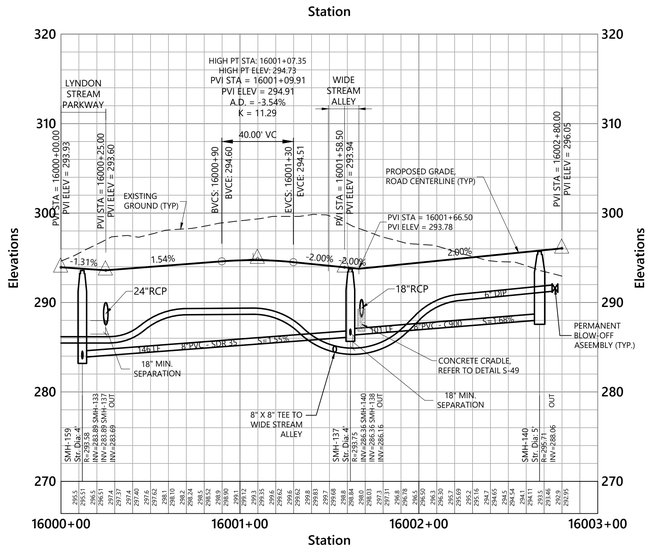
Sheet 150 of 224

Project Number
39510.05

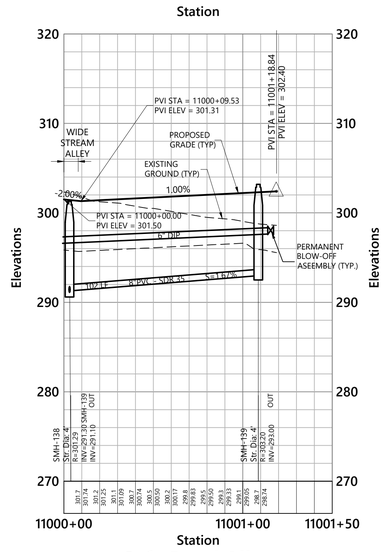




Tan Harvest Alley



Low Farm Alley



Safe Pond Alley

vhb.com

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940 Main Campus Drive
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Raleigh, NC 27606
919.829.0328
Corp. # C-3705

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Tan Harvest Alley and Low Farm Alley and Safe Pond Alley Plan and Profile

ZMA-2-23
Drawing Number
C6.17
Sheet 151 of 224
Project Number 39510.05

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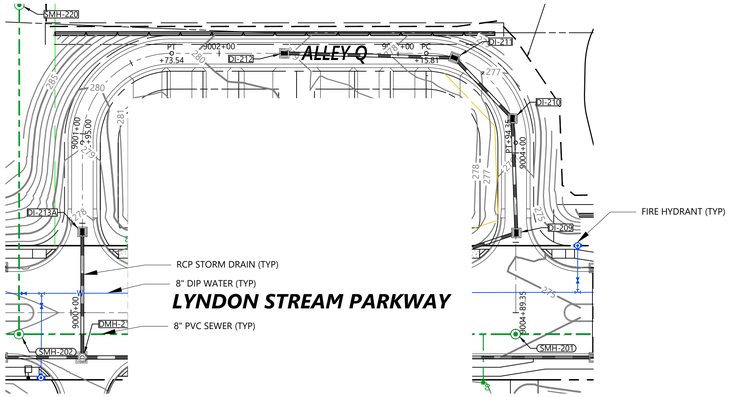
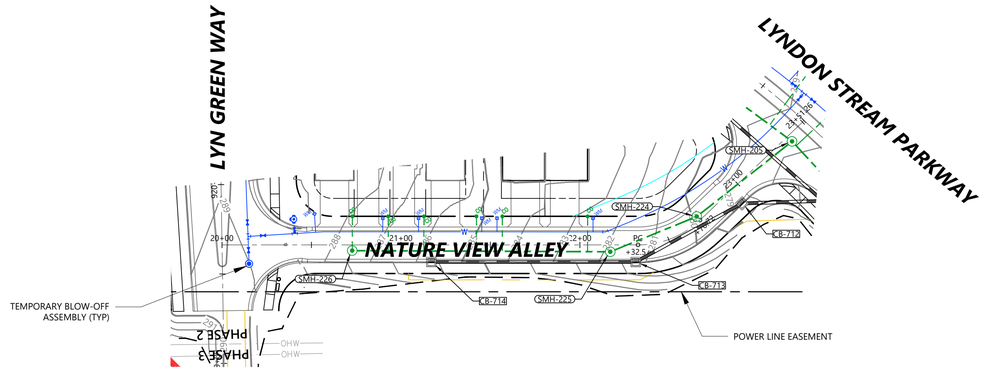
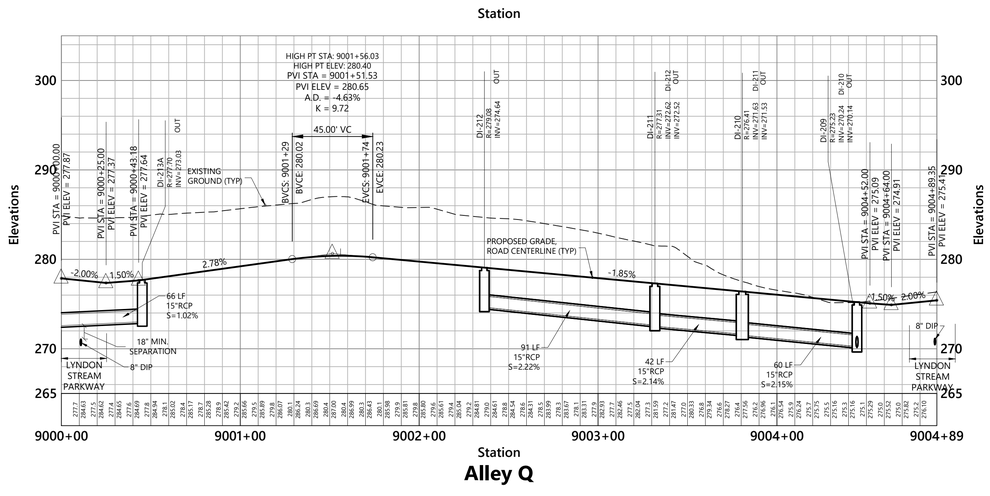
Land Use Administrator

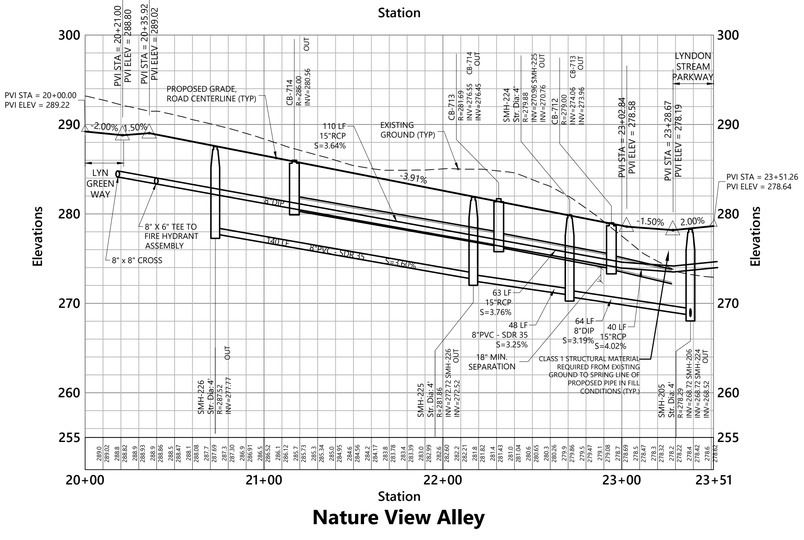
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Friday, November 21, 2025 10:31:49 AM MMEZA Plotted Wednesday, December 17, 2025 4:04:01 PM Walker Johnson









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Checked by: CT, KS, JB, RB
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Land Use Administrator

Drawing Title
Alley Q and Nature View Alley Plan and Profile

ZMA-2-23

Drawing Number
C6.18

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 152 of 224

Project Number
39510.05

Saved Tuesday, September 30, 2025 4:52:35 PM NSMITH Plotted Friday, December 19, 2025 7:14:36 AM Trent Rogers

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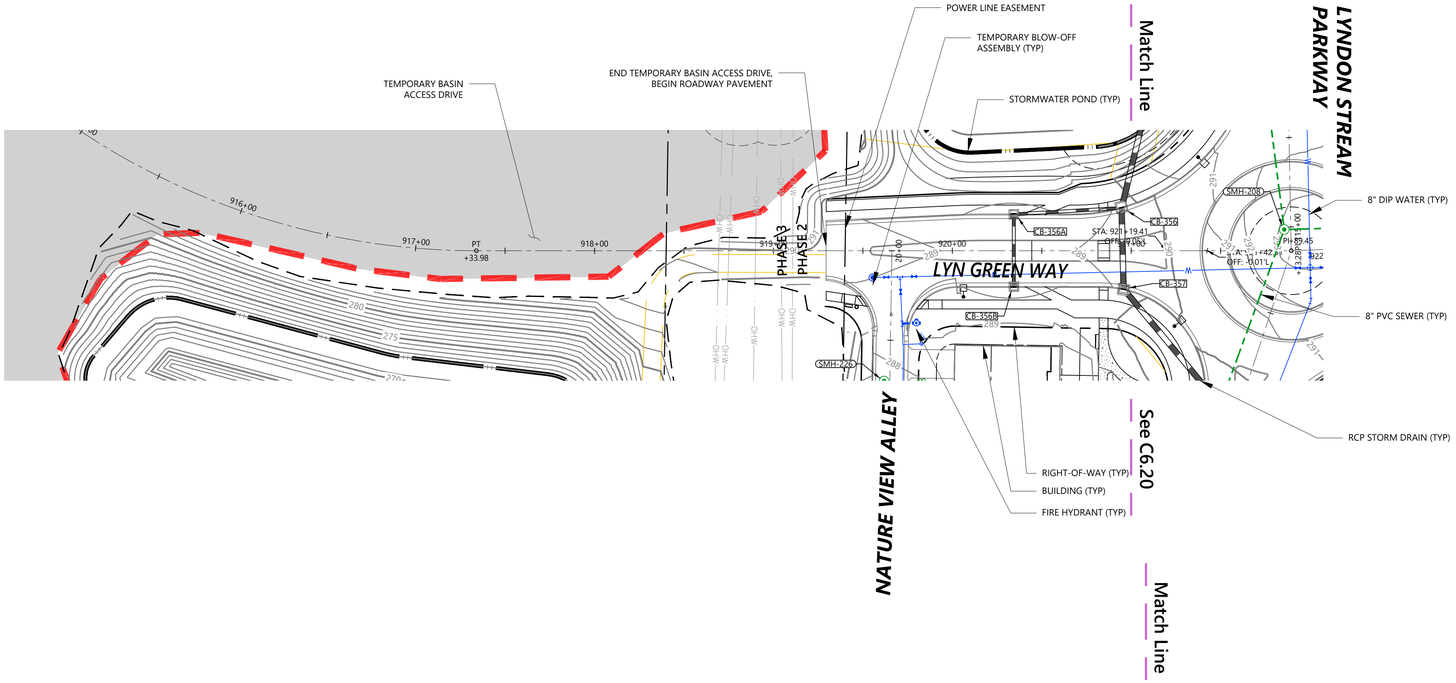

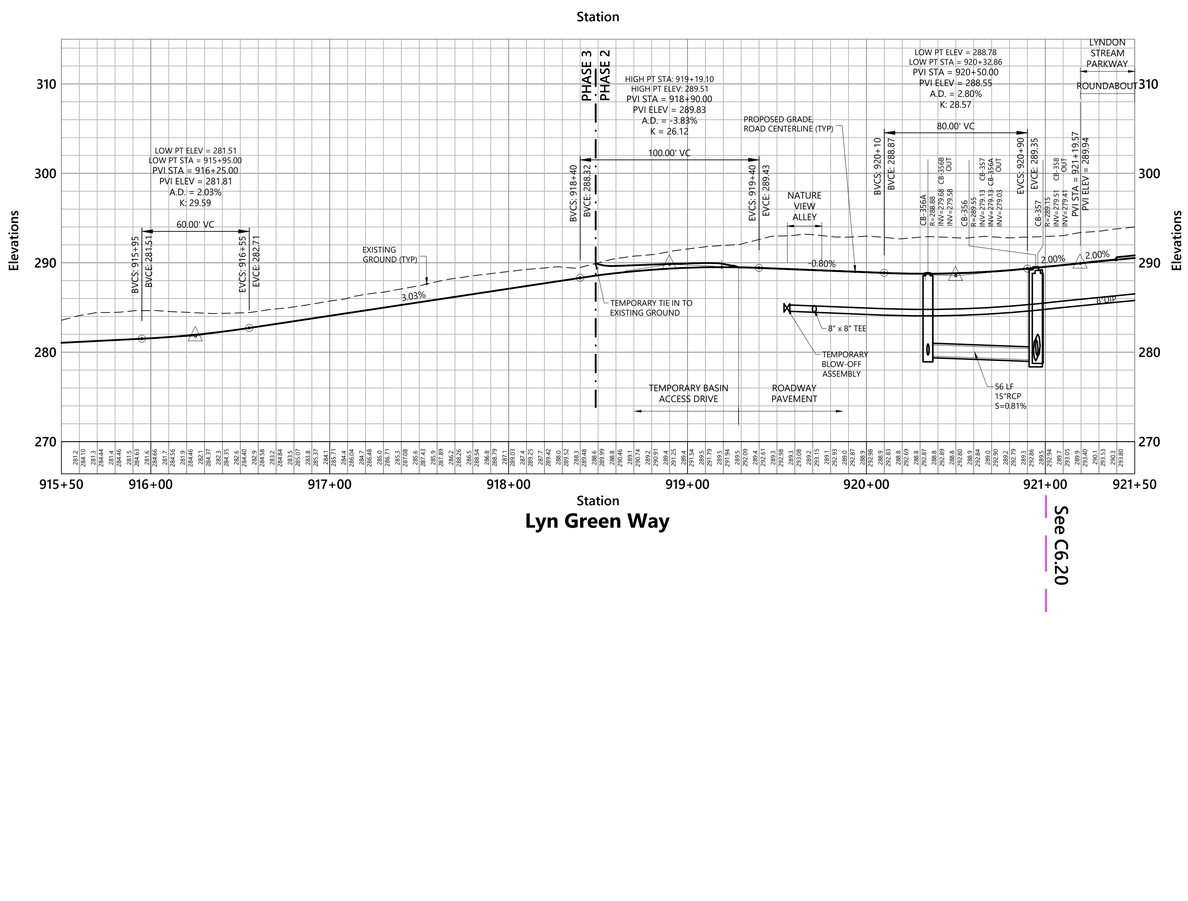

Saved Tuesday, September 30, 2025 4:52:35 PM NSMITH Plotted Tuesday, December 16, 2025 4:33:04 PM Walker Johnson

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Land Use Administrator

Drawing Title
Lyn Green Way
Plan and Profile (1 of 2)

ZMA-2-23
Drawing Number

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

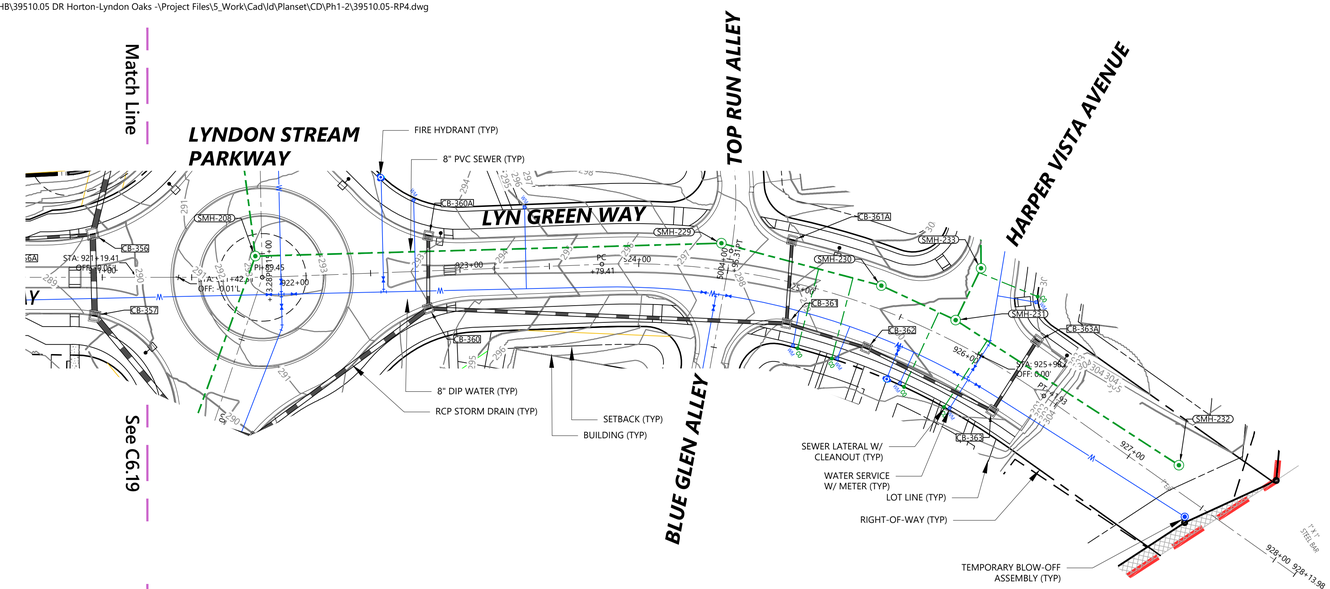
12/15/2025

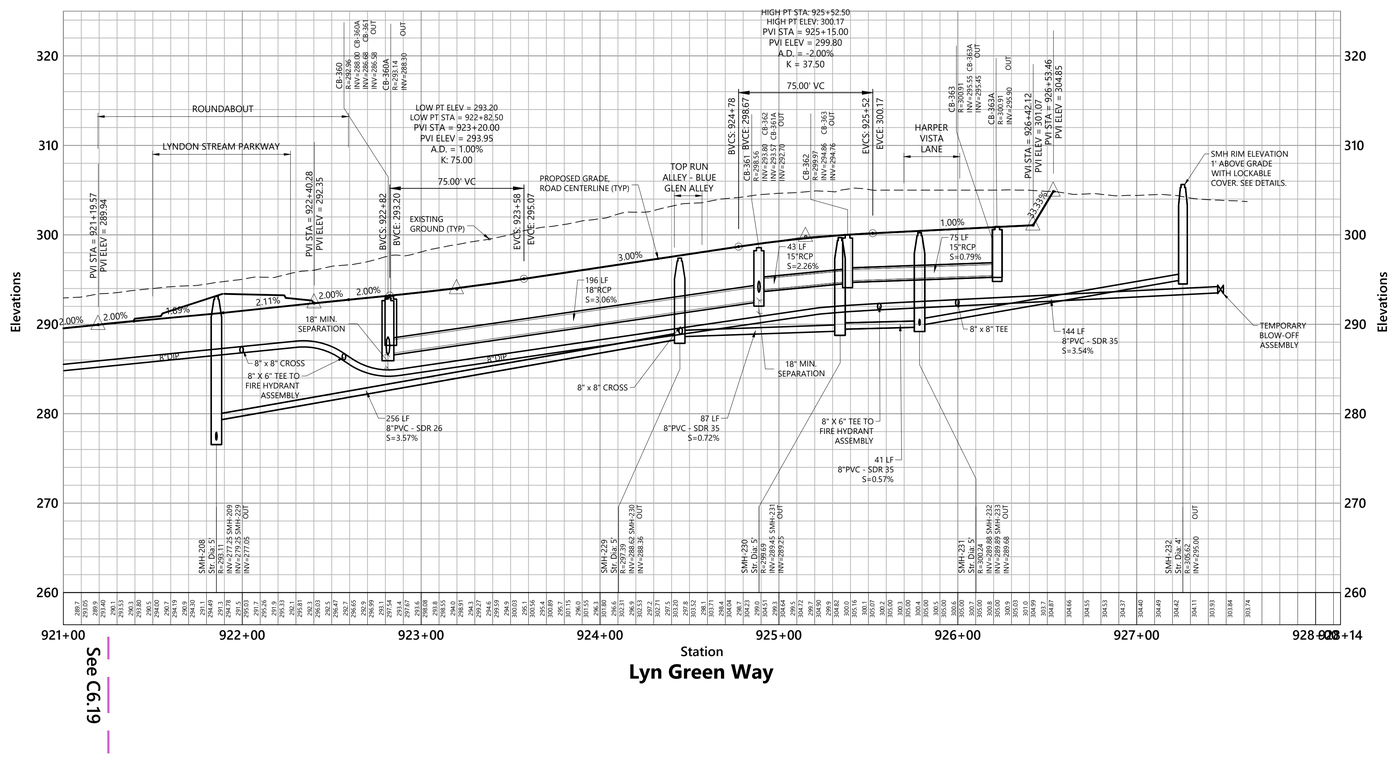
C6.19

Sheet 153 of 224

Project Number 39510.05

C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\S_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-RP4.dwg





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Drawing Title
Lyn Green Way
Plan and Profile (2 of 2)

ZMA-2-23

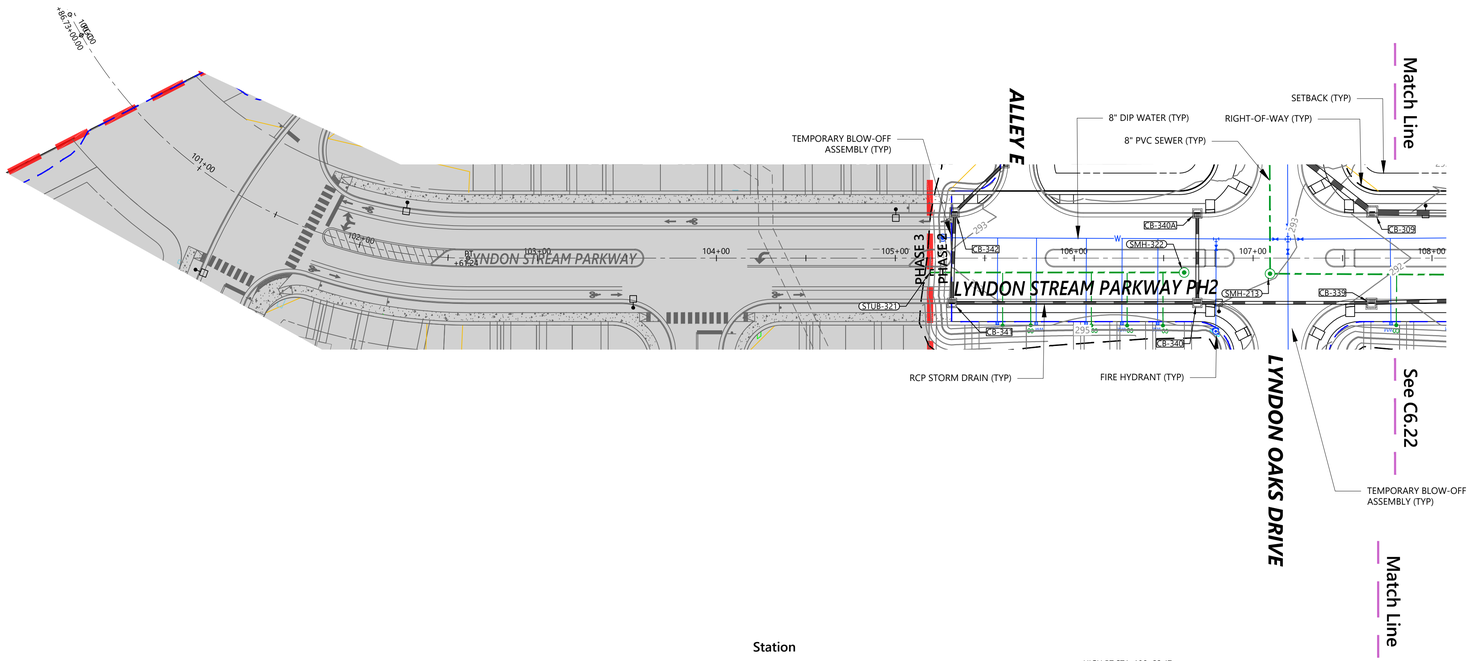
Drawing Number
C6.20

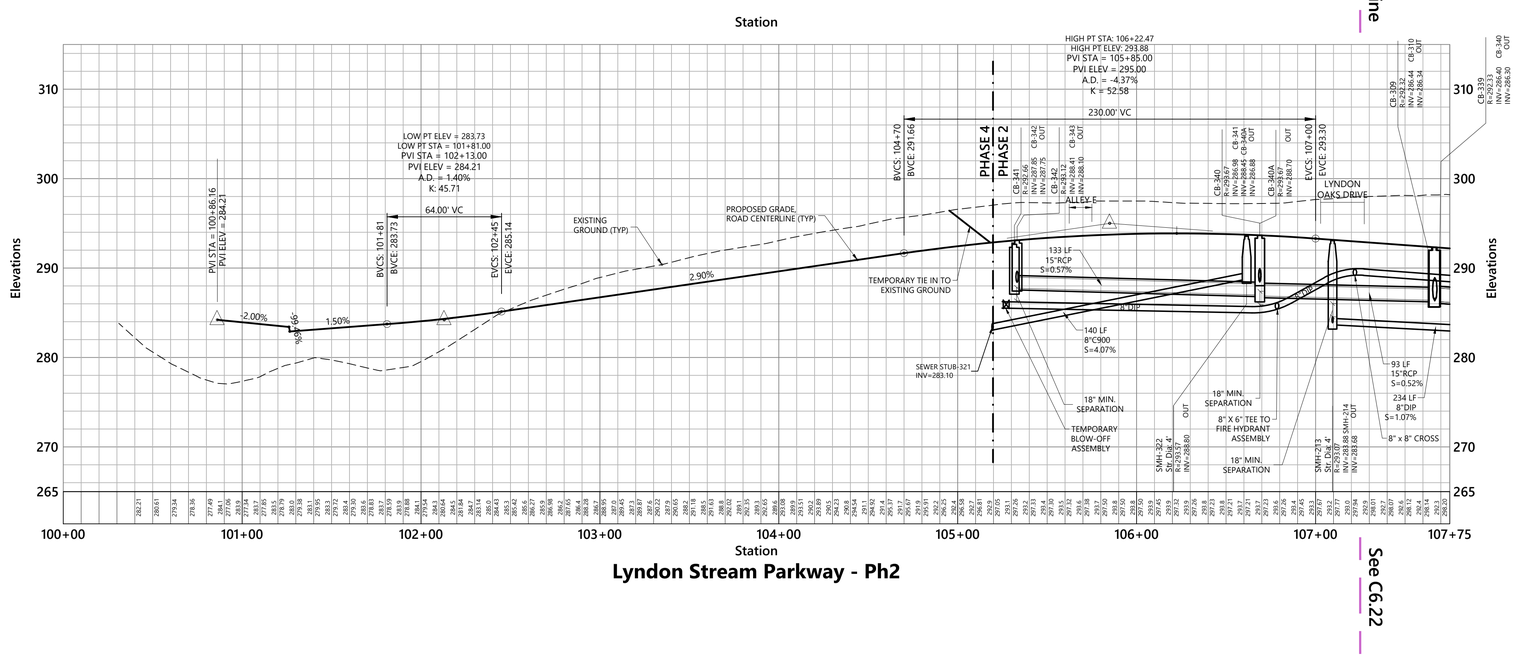
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 154 of 224

Project Number 39510.05





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Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Lyndon Stream Parkway Ph 2 Plan and Profile (1 of 3)

ZMA-2-23

Drawing Number
C6.21

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D TOWNSEND

12/15/2025

Sheet 155 of 224

Project Number
39510.05

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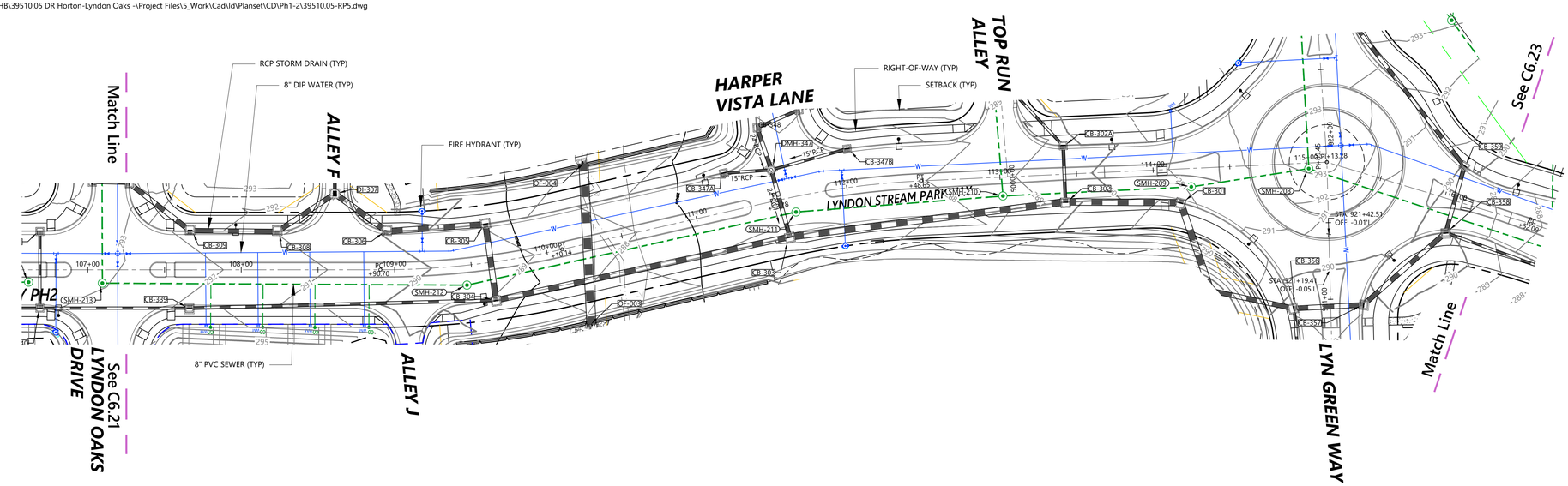

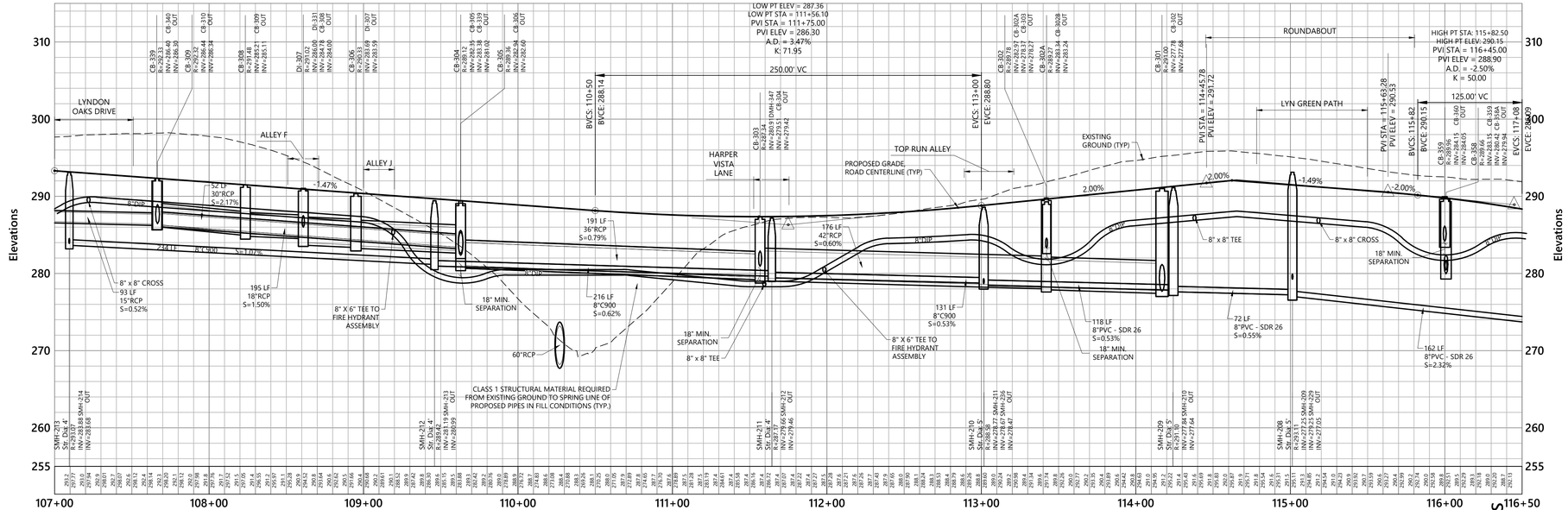

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919.829.0328
Corp. # C-3705

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
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Drawing Title
Lyndon Stream Parkway Ph 2 Plan and Profile (2 of 3)

ZMA-2-23

Drawing Number
C6.22

Sheet 156 of 224

Project Number 39510.05

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Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Friday, November 21, 2025 11:04:44 AM MMEZA Plotted Friday, December 19, 2025 7:31:09 AM Trent Rogers

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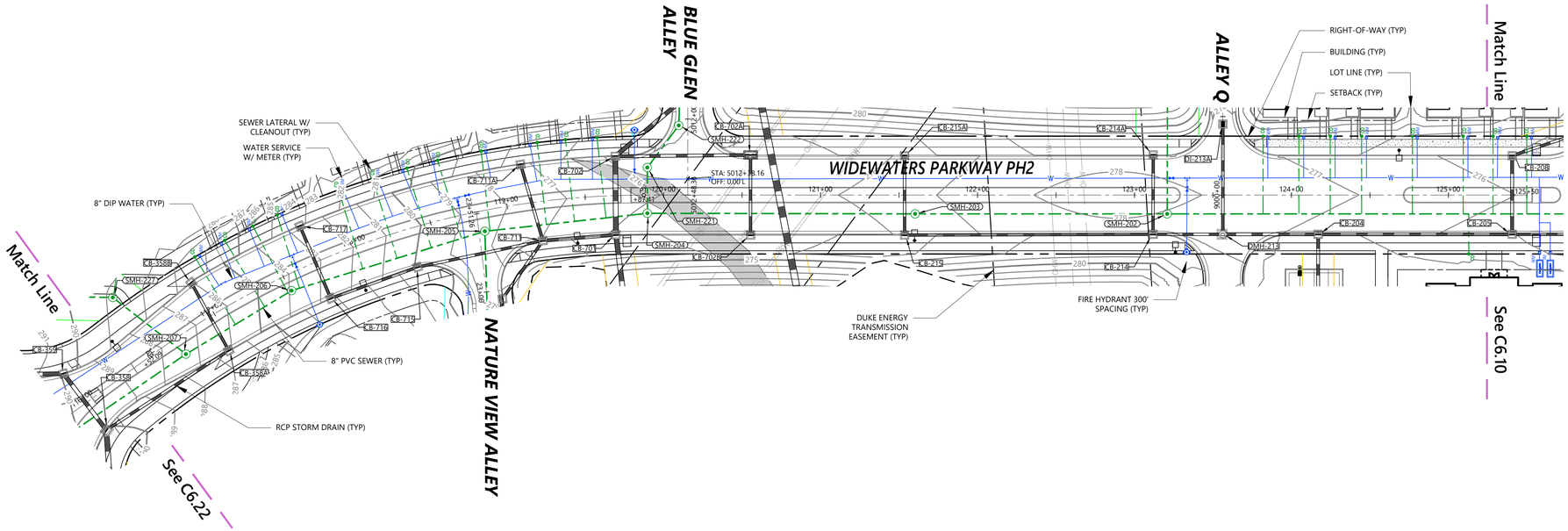

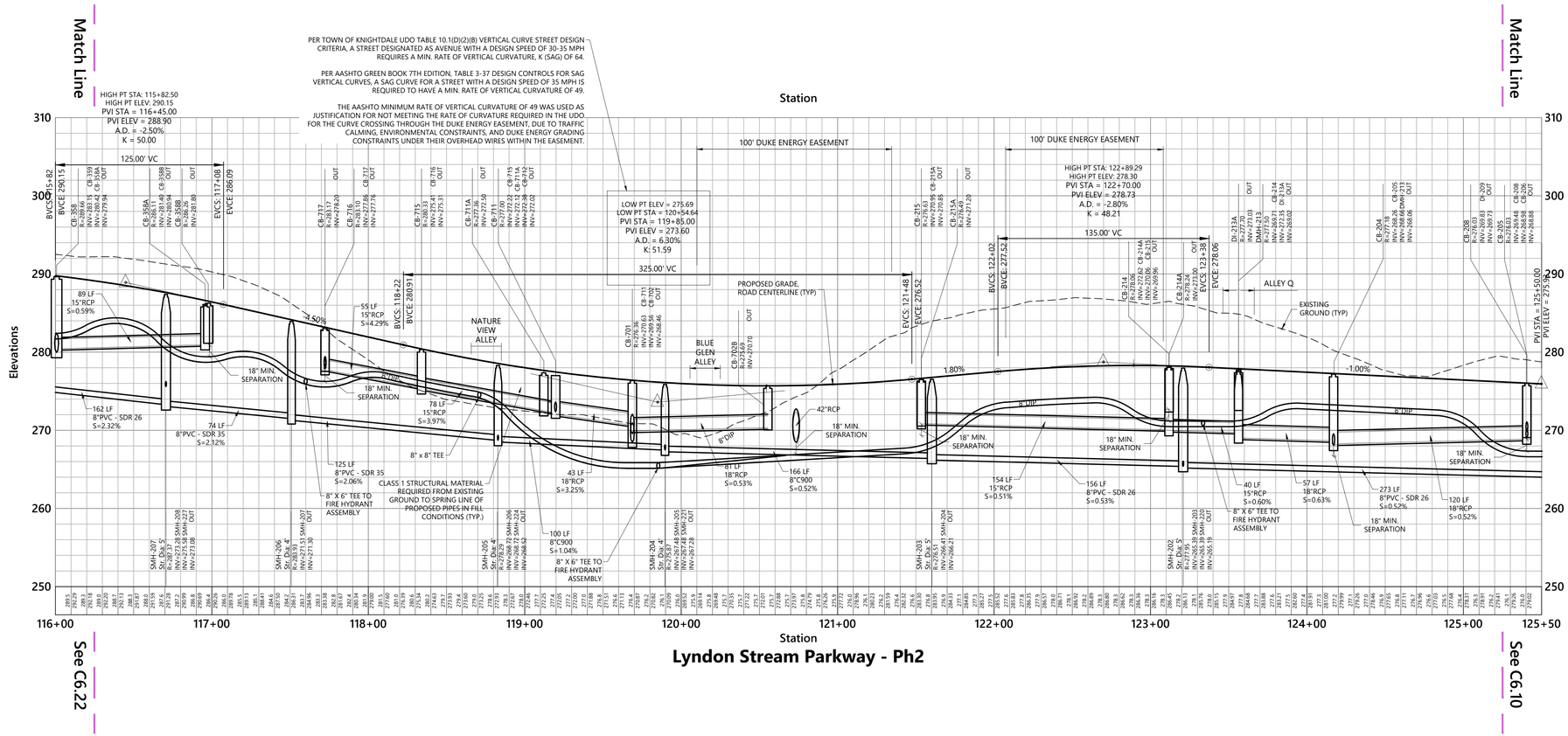

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Lyndon Stream Parkway
Ph 2
Plan and Profile (3 of 3)

ZMA-2-23

Drawing Number
C6.23

Sheet 157 of 224

Project Number
39510.05

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NORTH CAROLINA PROFESSIONAL SEAL 040995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

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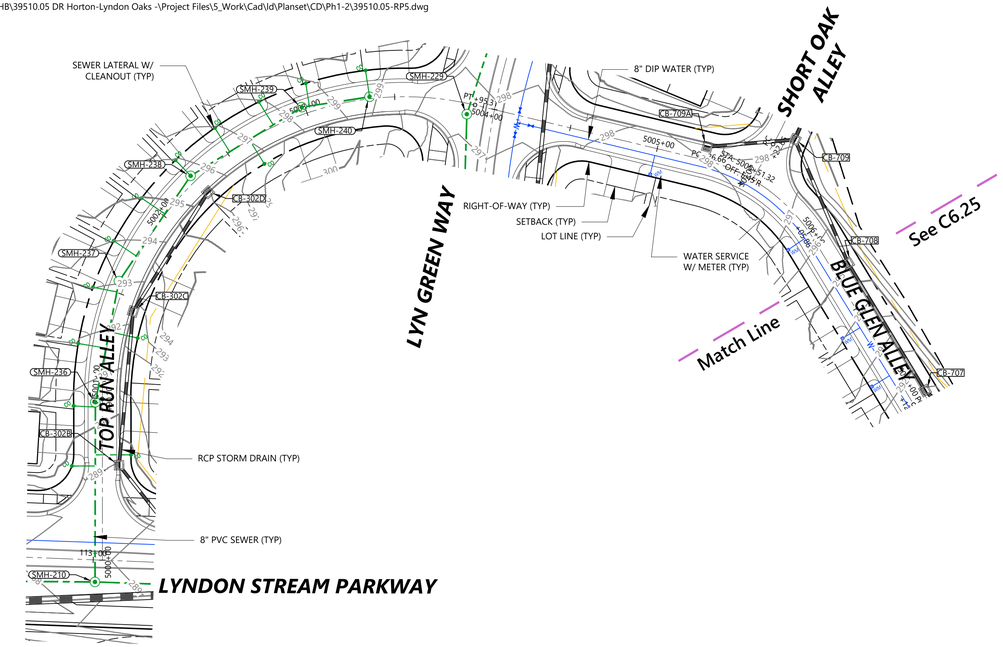

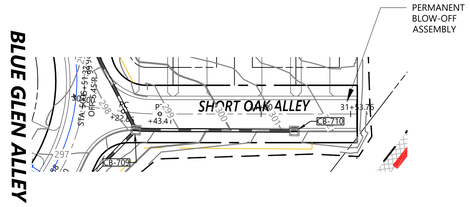

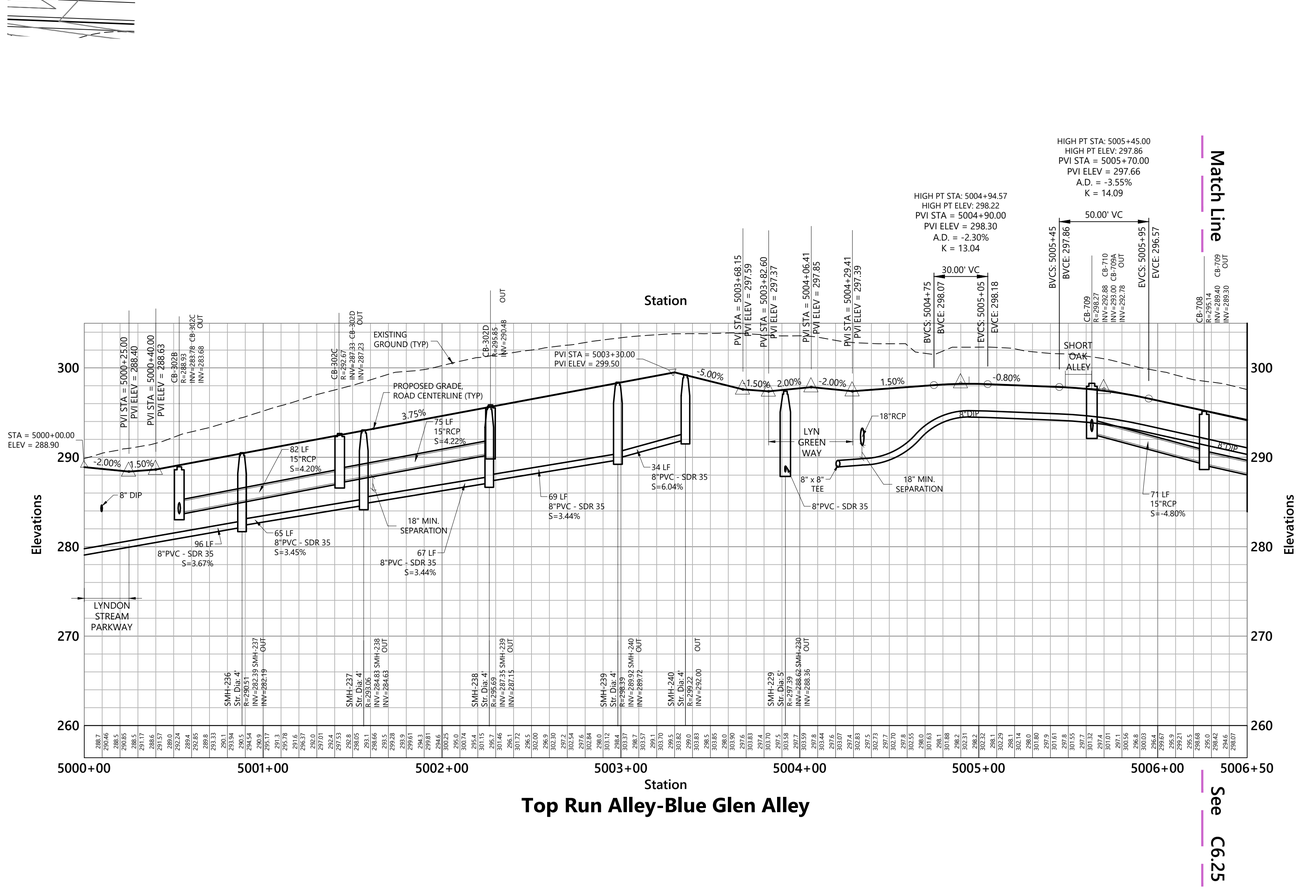

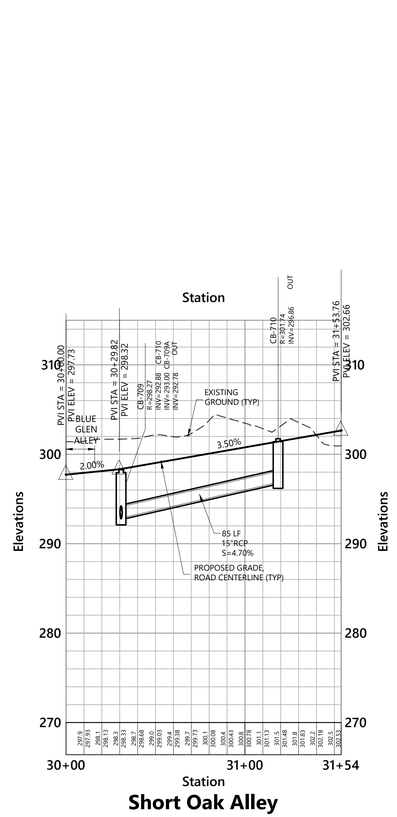

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Top Run Alley - Blue Glen Alley and Short Oak Alley Plan and Profile (1 of 2)

ZMA-2-23

Drawing Number
C6.24

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 158 of 224

Project Number 39510.05

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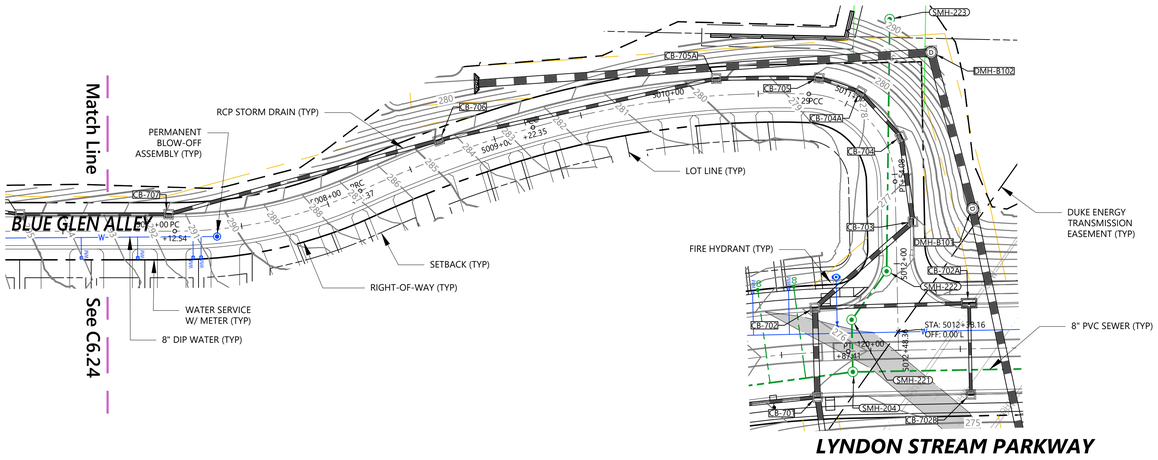

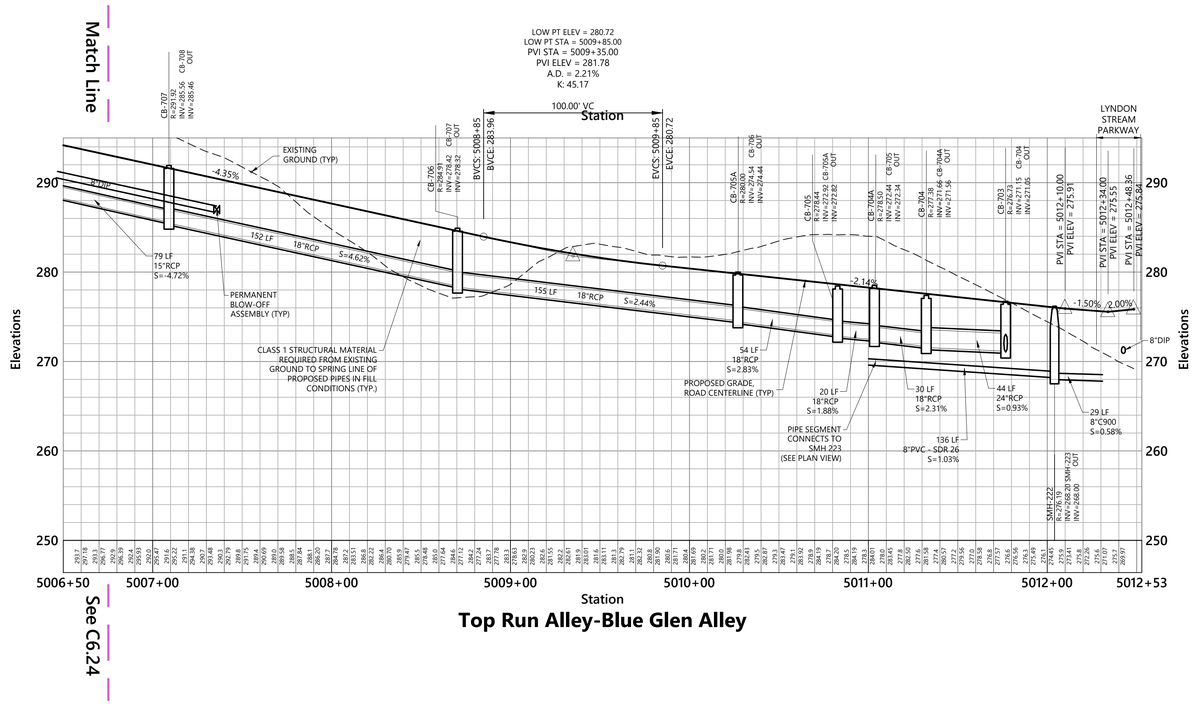

Top Run Alley-Blue Glen Alley

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Top Run Alley - Blue Glen Alley
Plan and Profile (2 of 2)

ZMA-2-23

Drawing Number
C6.25

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12/15/2025

Sheet 159 of 224

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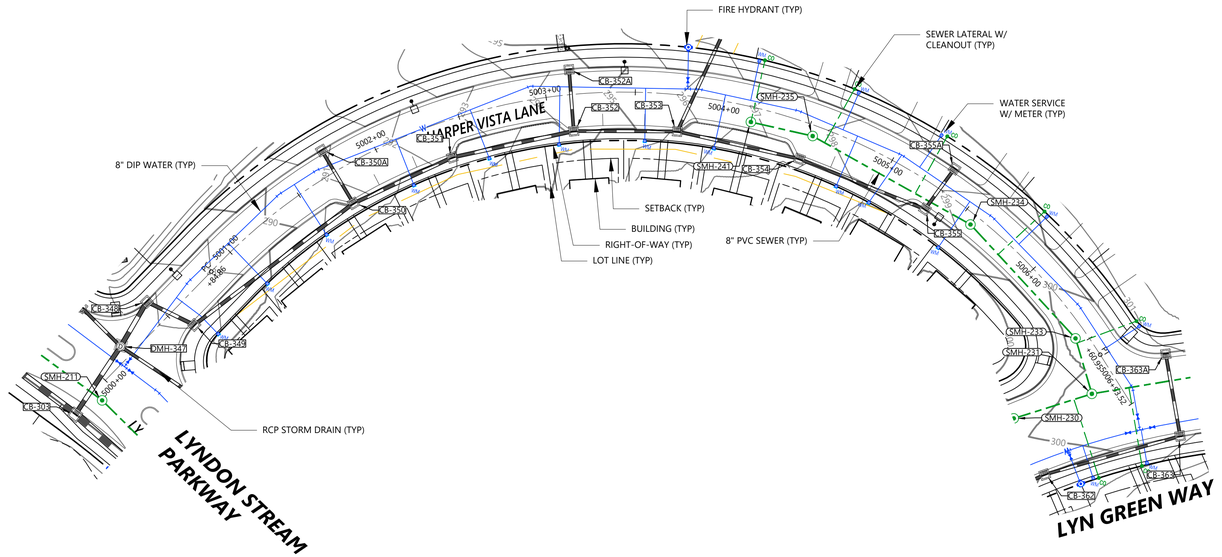

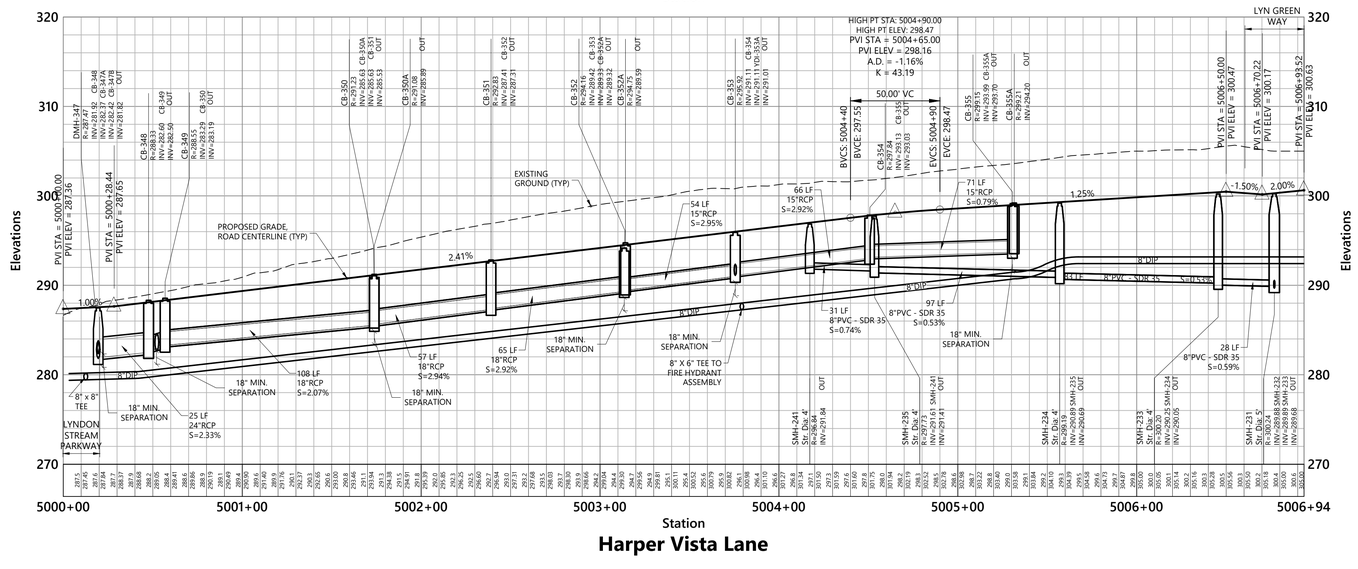

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Drawing Title
Harper Vista Lane Plan and Profile

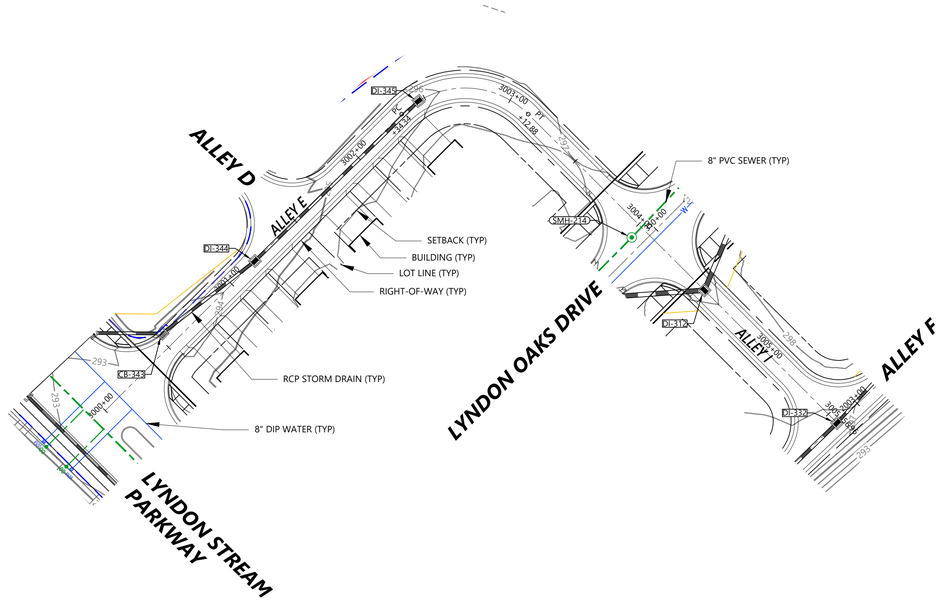
ZMA-2-23 — Drawing Number

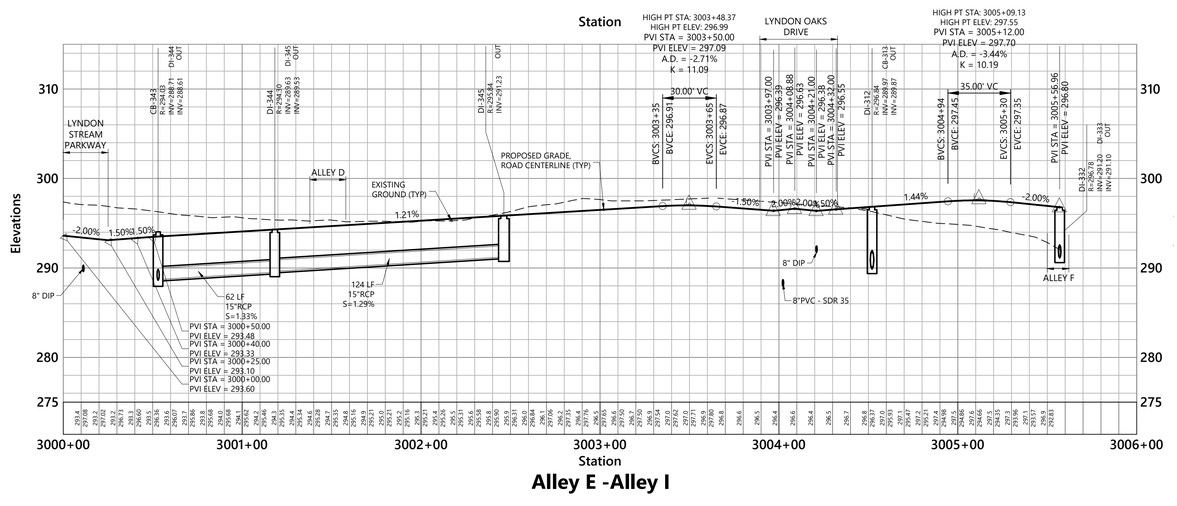
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

C6.26

Sheet 160 of 224

Project Number 39510.05





Alley E -Alley I

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Drawing Title
Alley E-Alley I
Plan and Profile

ZMA-2-23

Drawing Number
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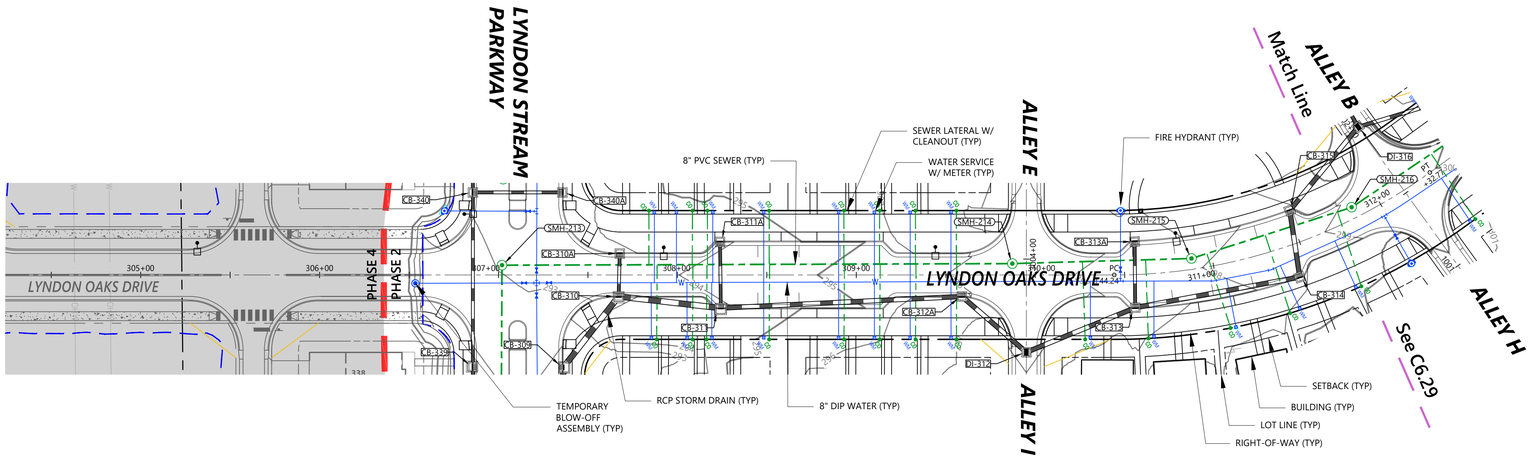
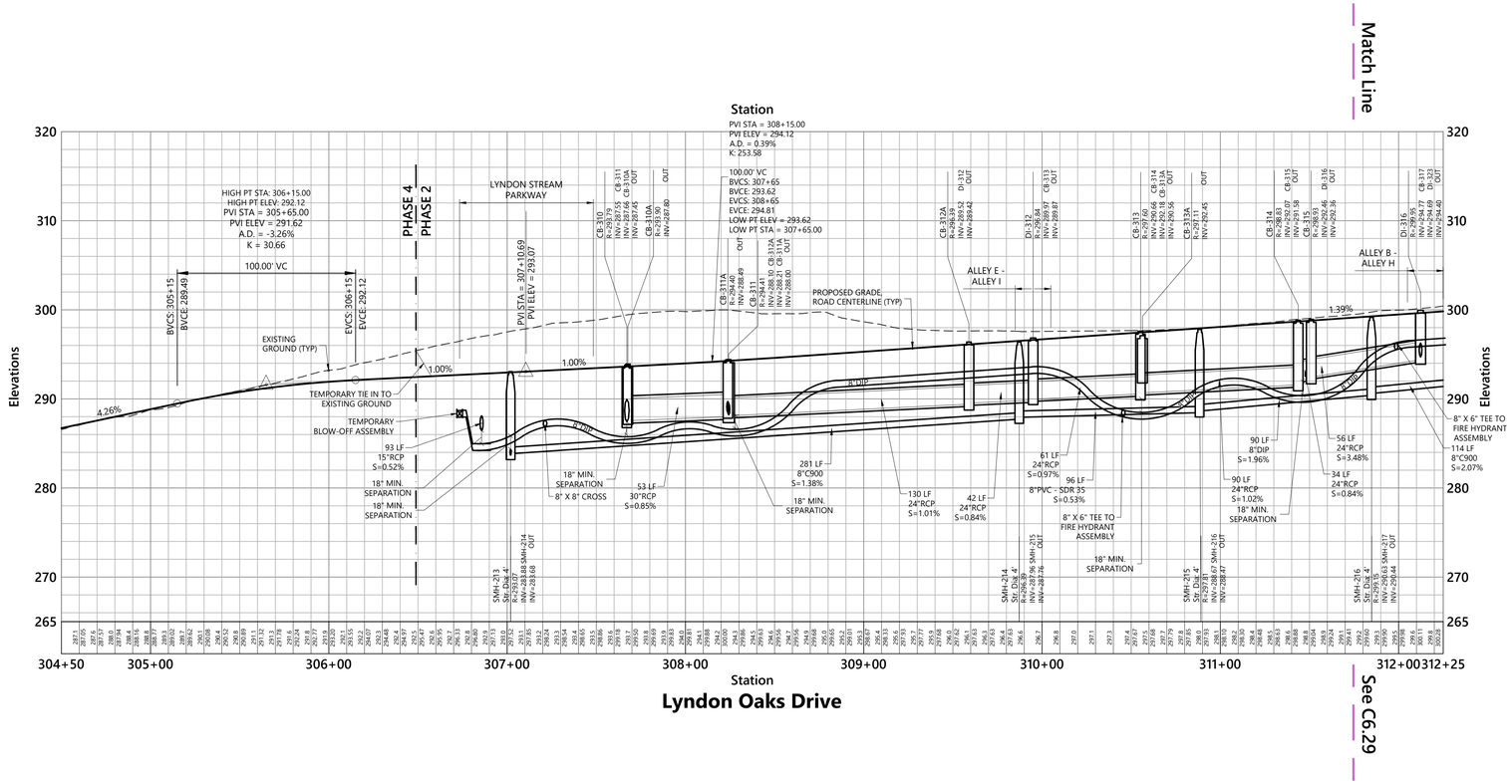
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 161 of 224

Project Number 39510.05





VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

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Site Legend

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- PHASE LIMITS
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- RIP-RAP
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- SCM MAINTENANCE & ACCESS EASEMENT
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- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

Vert. 0 4 8 16 Feet
Horiz. 0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Lyndon Oaks Drive Plan and Profile (1 of 2)

ZMA-2-23

Drawing Number
C6.28

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 162 of 224

Project Number 39510.05

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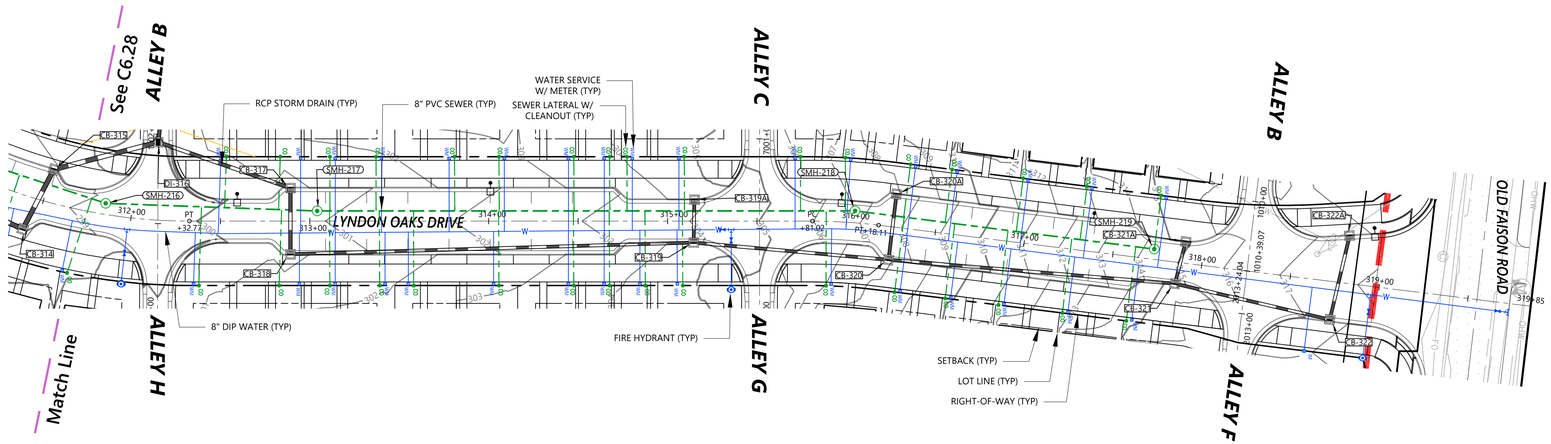

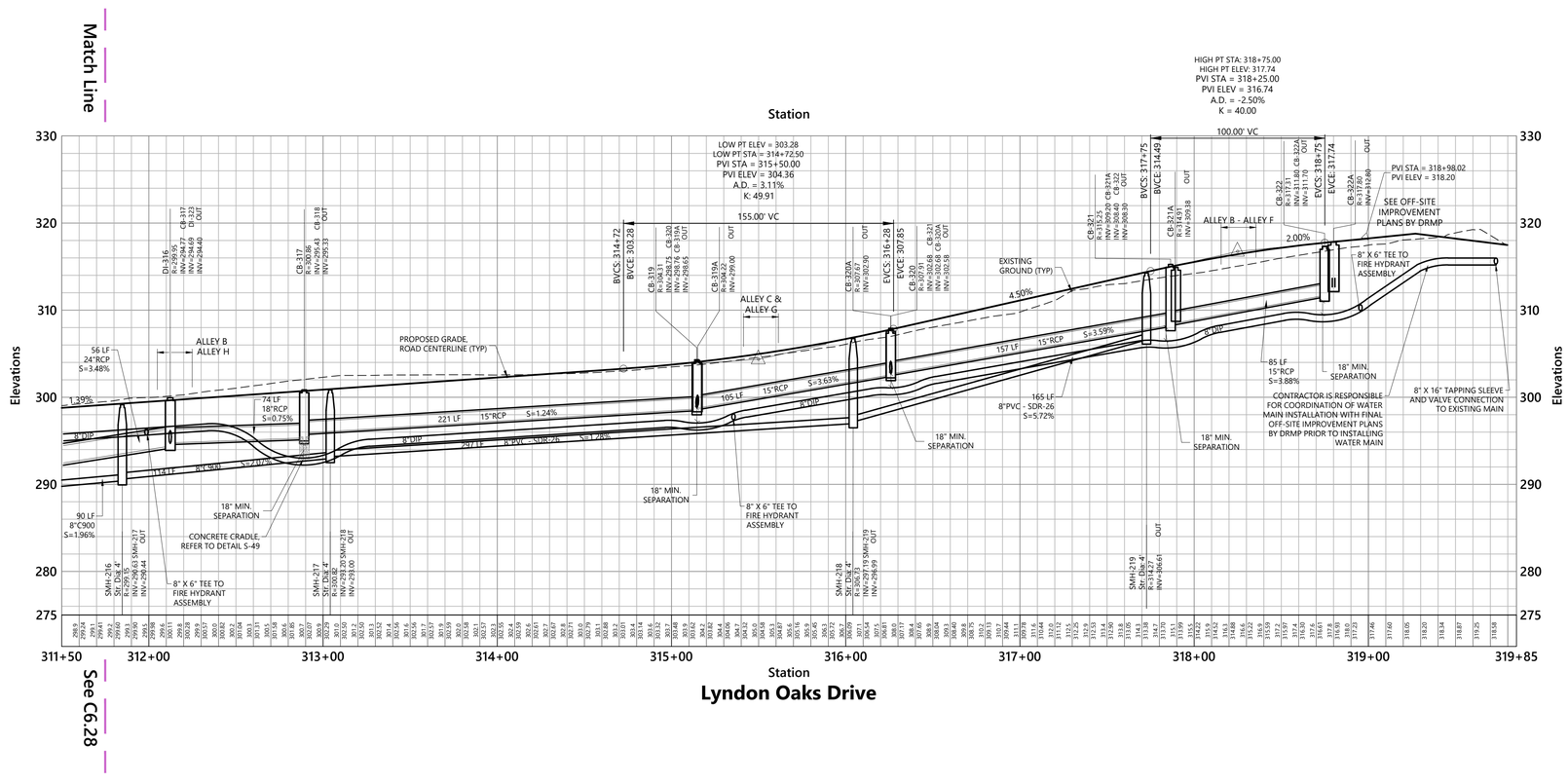

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

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Land Use Administrator

Drawing Title
Lyndon Oaks Drive Plan and Profile (2 of 2)

ZMA-2-23 — Drawing Number C6.29

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Sheet 163 of 224

Project Number 39510.05

Saved Monday, October 6, 2025 4:12:59 PM WSHERRILL Plotted Friday, December 19, 2025 8:45:19 AM Trent Rogers

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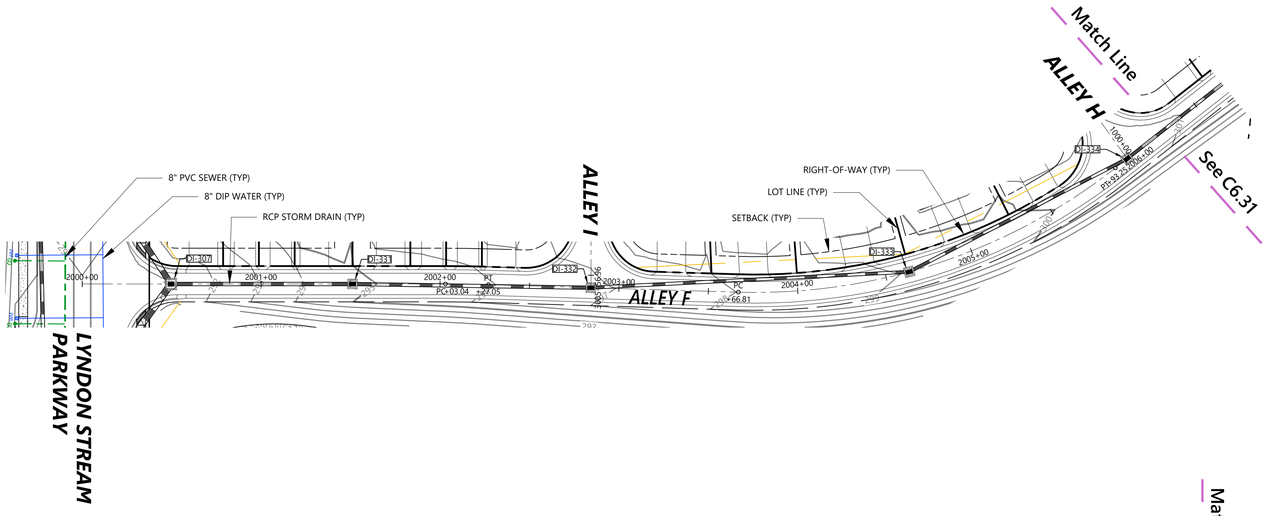

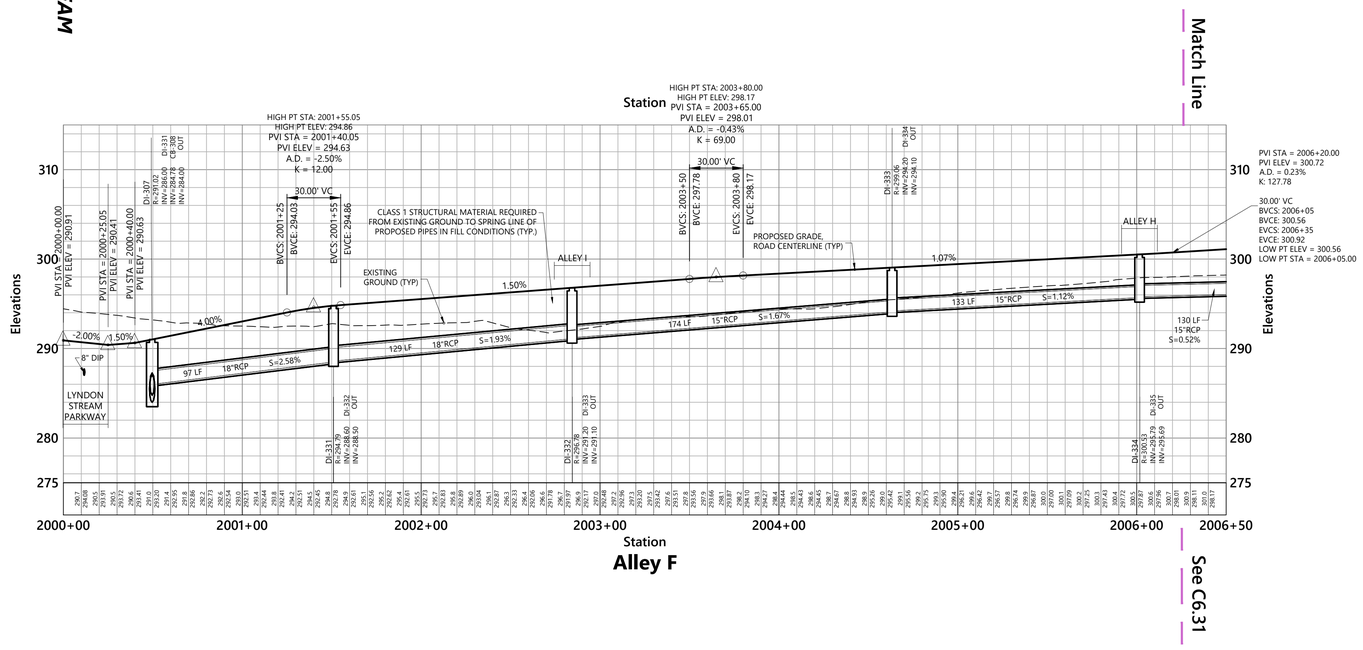

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Lyndon Oaks Phases 1 & 2

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

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Land Use Administrator

Drawing Title
Alley F
Plan and Profile (1 of 2)

ZMA-2-23 (Drawing Number)

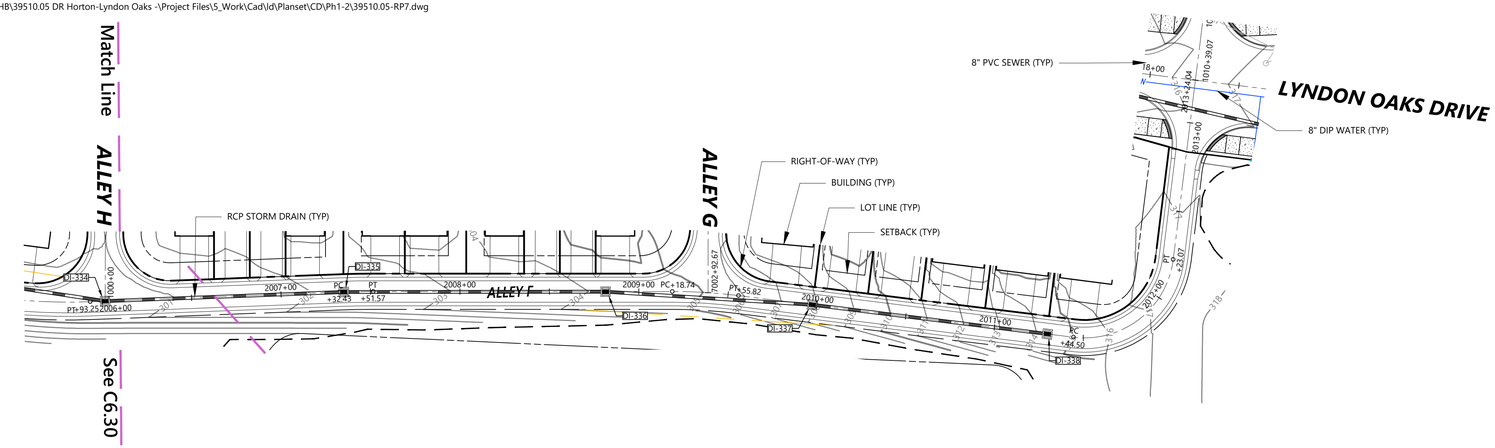
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

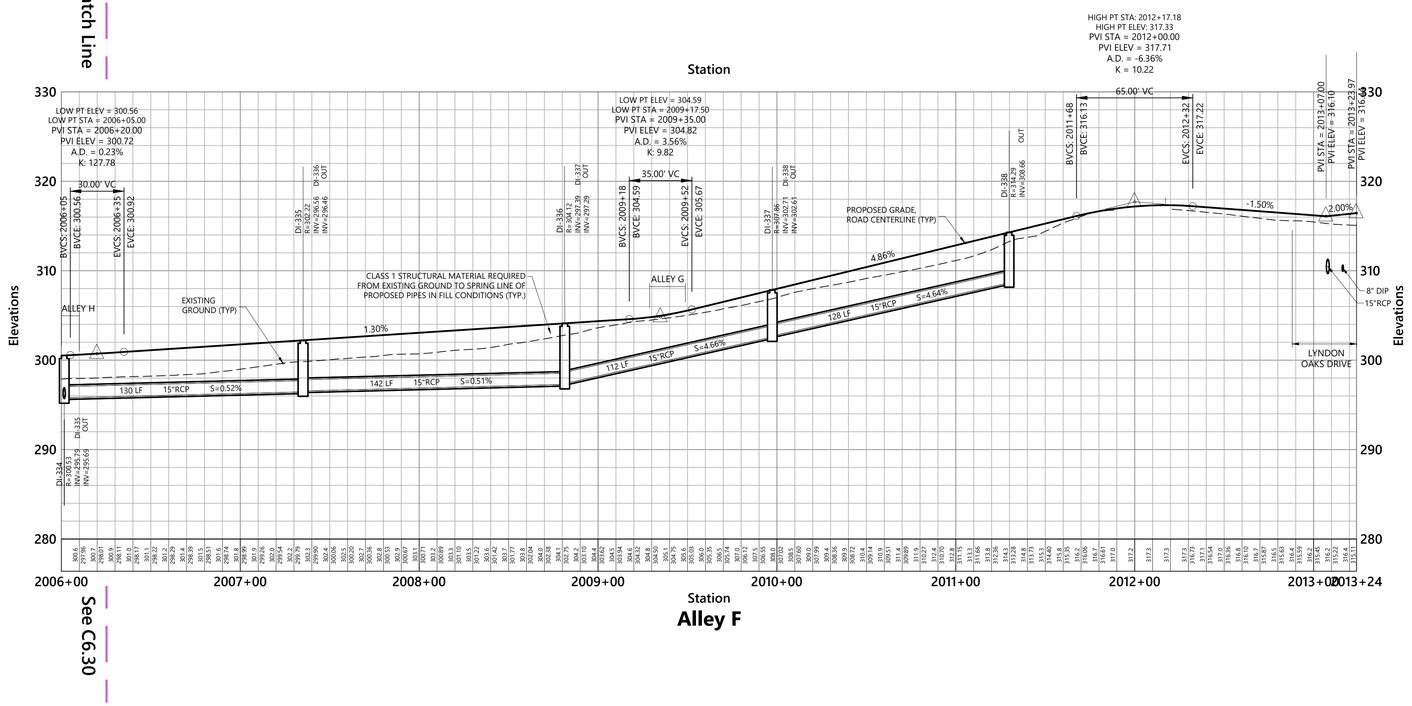
C6.30

Sheet 164 of 224

Project Number 39510.05

Saved Tuesday, September 30, 2025 4:26:03 PM NSMITH Plotted Tuesday, December 16, 2025 3:58:19 PM Marco Meza





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Lyndon Oaks Phases 1 & 2

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Drawing Title
Alley F
Plan and Profile (2 of 2)

ZMA-2-23

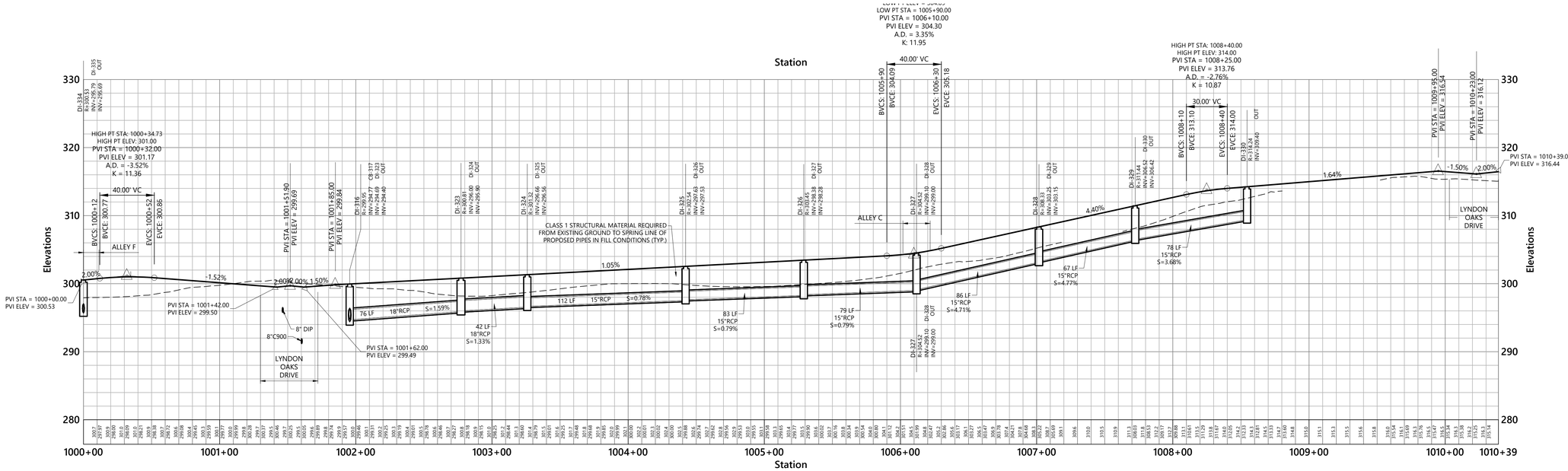
Drawing Number
C6.31

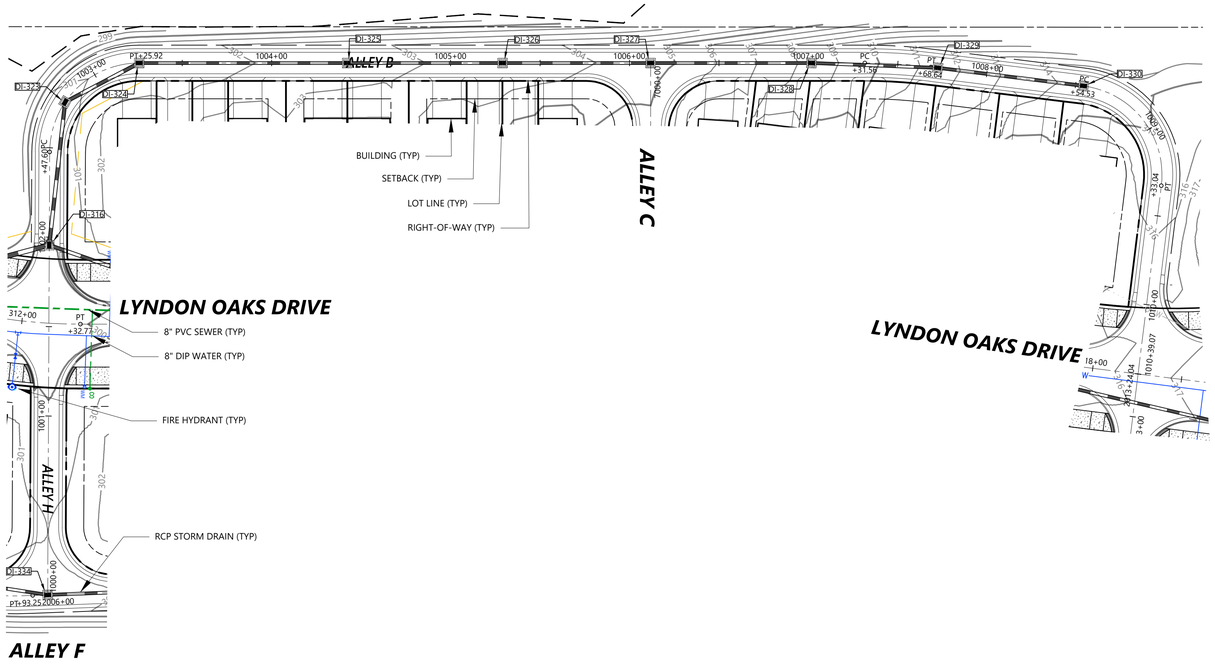
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Sheet 165 of 224

Project Number
39510.05





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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Alley B - Alley H
Plan and Profile

ZMA-2-23 (Drawing Number)

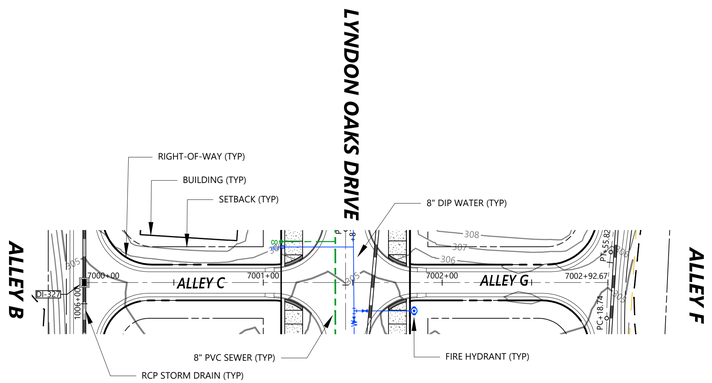
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

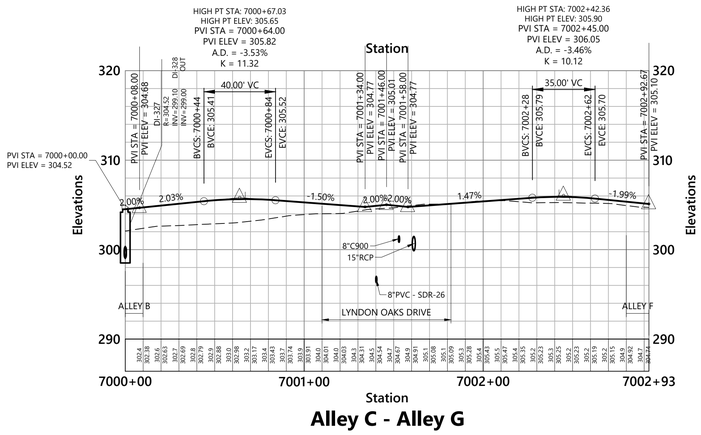
12/15/2025

Sheet **C6.32** of 166 224

Project Number 39510.05

Saved Tuesday, December 16, 2025 4:02:13 PM MMEZA Plotted Friday, December 19, 2025 9:27:09 AM Trent Rogers





Station

Alley C - Alley G

vhb.com

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Checked by: CT, KS, JB, RB
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Land Use Administrator

Drawing Title
Alley C - Alley G
Plan and Profile

ZMA-2-23

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

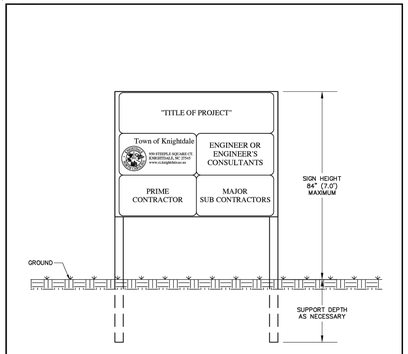
12/15/2025

Drawing Number
C6.33

Sheet 167 of 224

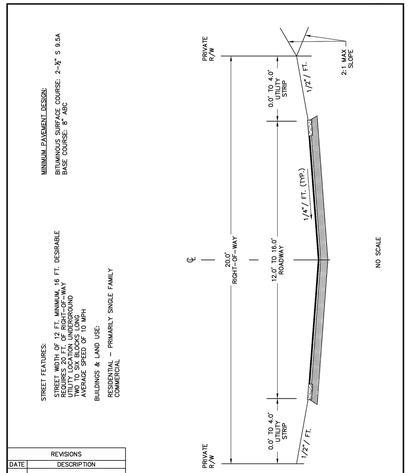
Project Number
39510.05

Saved Tuesday, December 16, 2025 4:02:13 PM MMEZA Plotted Friday, December 19, 2025 9:35:35 AM Trent Rogers



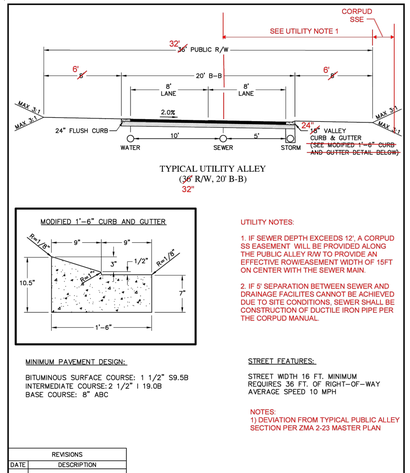
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	PROJECT IDENTIFICATION SIGN	STD. NO. 2.01



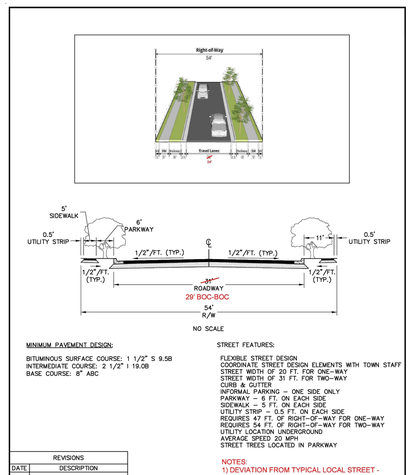
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	ALLEY SECTION PRIVATE ALLEY PER MASTER PLAN	STD. NO. 3.01-1



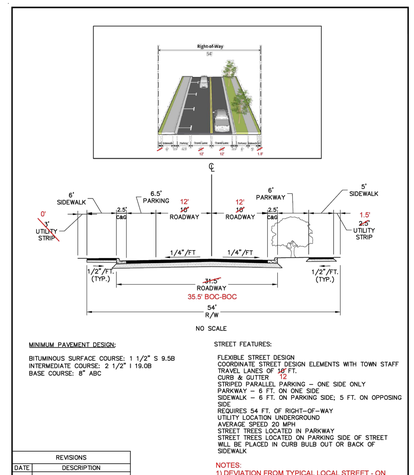
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	PUBLIC ALLEY SECTION	1 of 1 STD. NO. 3.01-2



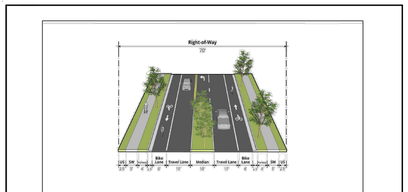
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	LOCAL STREET - 2 LANES SIDEWALKS	STD. NO. 3.02-1



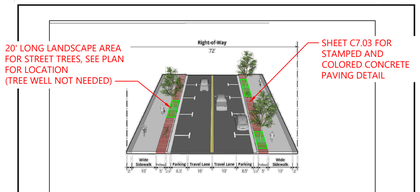
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	LOCAL STREET - ON STREET PARKING ONE SIDE ONLY	STD. NO. 3.02-2



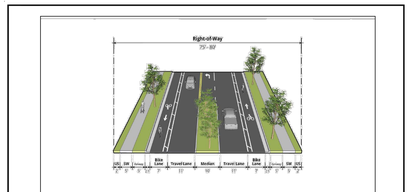
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	MAIN STREET - 3 LANES BIKE LANES	STD. NO. 3.03



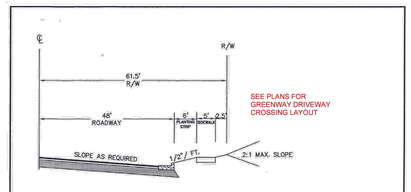
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	URBAN MAIN STREET - 2 LANES WIDE SIDEWALK	STD. NO. 3.04-2



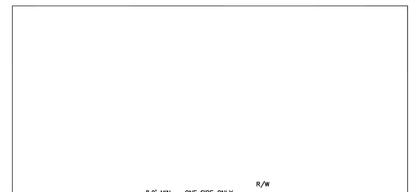
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	AVENUE - 3 LANES BUFFERED BIKE LANES	STD. NO. 3.05



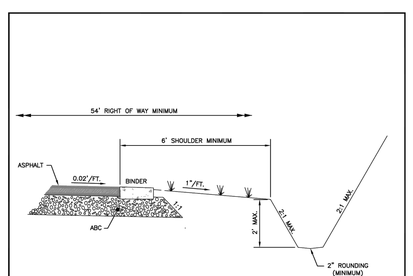
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CUL DE SAC SECTION	STD. NO. 3.08



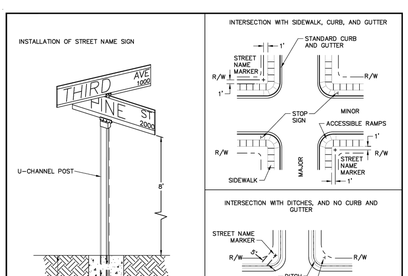
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD SHOULDER SECTION WITHOUT SIDEWALK	STD. NO. 3.09



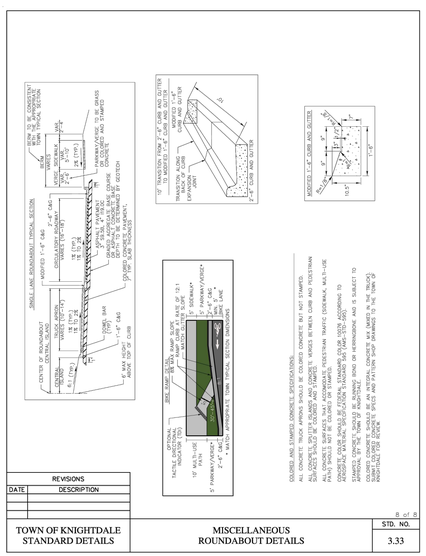
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD SHOULDER SECTION WITHOUT CURB & GUTTER	STD. NO. 3.10



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STREET NAME SIGN INSTALLATION LOCATIONS	STD. NO. 3.16-1



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	MISCELLANEOUS ROUNDABOUT DETAILS	STD. NO. 3.33



LOCAL STREET PARKING - GREENWAY CONNECTOR SECTION

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title: Site Details (1 of 3)

ZMA-2-23

Drawing Number: C7.00

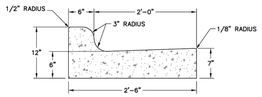
Sheet 168 of 224

Project Number: 39510.05

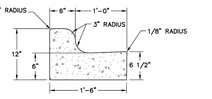
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

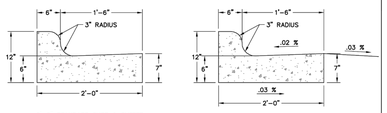
Saved Monday, December 1, 2025 11:28:53 AM MMEZA Plotted Monday, December 15, 2025 4:05:54 PM Walker Johnson



STANDARD 2'-6" CURB AND GUTTER



1'-6" STANDARD CURB AND GUTTER



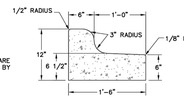
2'-0" STANDARD CURB & GUTTER

SLOPE FOR VARIABLE SUPER ELEVATION RATES

REVISIONS	
DATE	DESCRIPTION

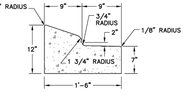
1 of 3

TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01



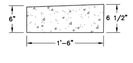
1'-6" MEDIAN CURB AND GUTTER

TO BE USED IN MEDIANS WHEN LANES ARE SLOPED FROM ISLAND OR AS SPECIFIED BY THE TOWN ENGINEER.



1'-6" MOUNTABLE CURB AND GUTTER

TO BE USED IN MEDIANS ONLY WHEN SPECIFIED BY THE TOWN ENGINEER.



1'-6" BINDER CURB

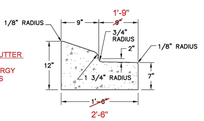
TO BE USED IN ALLEYS ONLY WHEN SPECIFIED BY THE TOWN ENGINEER.

1'-6" STANDARD CURB AND GUTTER

REVISIONS	
DATE	DESCRIPTION

2 of 3

TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01



2'-6" MODIFIED MOUNTABLE CURB AND GUTTER

TO BE USED WITHIN LIMITS OF DUKE ENERGY EASEMENT AND AS NOTED ON THE PLANS

REVISIONS	
DATE	DESCRIPTION

2 of 3

TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01

1. KNIGHTDALE STANDARD CURB RAMPS HAVE BEEN DEVELOPED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND PUBLIC RIGHT OF WAY ACCESS GUIDELINES (PROWAG).
2. CURB RAMPS SHALL BE PROVIDED AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. SIDEWALK ACCESS RAMPS SHALL BE LOCATED AS INDICATED IN THE DETAIL, HOWEVER, THE LOCATION MAY BE ADJUSTED IN COORDINATION WITH THE TOWN OF KNIGHTDALE WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT.
3. DOUBLE WHEELCHAIR RAMPS ARE TO BE INSTALLED AT ALL PUBLIC STREET INTERSECTIONS WHERE SIDEWALK IS REQUIRED.
4. THE WALKING SURFACE SHALL BE SLIP RESISTANT. THE COLOR FOR THE DETECTABLE WARNING AREA SHALL BE YELLOW FOR CONTRAST.
5. NO SLOPE ON THE SIDEWALK ACCESS RAMP SHALL EXCEED 1":FT (12:1) IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. ALL RAMPS SHALL BE INSTALLED THE SAME WIDTH AS THE SIDEWALK. IN NO CASE SHALL THE WIDTH OF THE SIDEWALK ACCESS RAMP BE LESS THAN 48".
7. USE CLASS A (3000 PSI) CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NONSKID SURFACE.
8. A 1/2" EXPANSION JOINT INSTALLED FULL DEPTH WILL BE REQUIRED WHERE THE CONCRETE SIDEWALK ACCESS RAMP JOINS THE CURB AND ALSO WHERE NEW CONCRETE ABUTS EXISTING CONCRETE.
9. CURB RAMPS SHOULD BE PLACED PARALLEL TO THE DIRECTION OF TRAVEL.

REVISIONS	
DATE	DESCRIPTION

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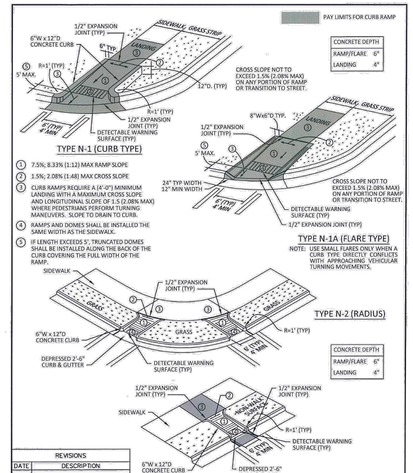
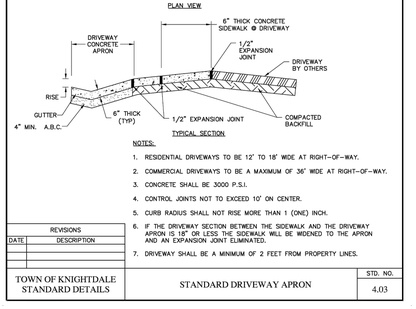
TOWN OF KNIGHTDALE STANDARD DETAILS	WHEELCHAIR CURB RAMP NOTES	STD. NO. 4.06-7



REVISIONS	
DATE	DESCRIPTION

1 of 8

TOWN OF KNIGHTDALE STANDARD DETAILS	WHEELCHAIR CURB RAMPS (NEW DEVELOPMENT)	STD. NO. 4.06-1



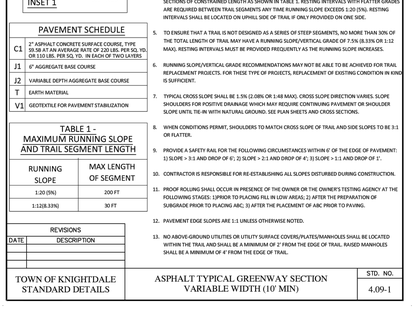
NOTES:

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

1 of 2

TOWN OF KNIGHTDALE STANDARD DETAILS	CONCRETE SIDEWALKS	STD. NO. 4.04-1



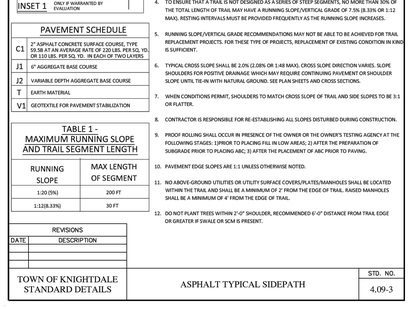
NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' 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

2 of 2

TOWN OF KNIGHTDALE STANDARD DETAILS	CONCRETE SIDEWALKS	STD. NO. 4.04-2



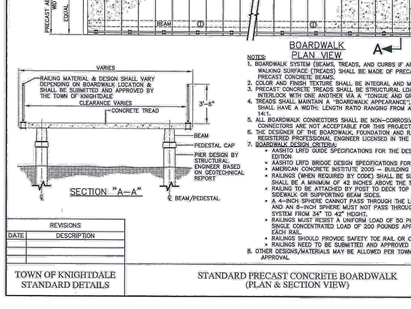
NOTES:

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 50-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 6" OF SUBGRADE BENEATH THE CURB AND GUTTER SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.

REVISIONS	
DATE	DESCRIPTION

3 of 3

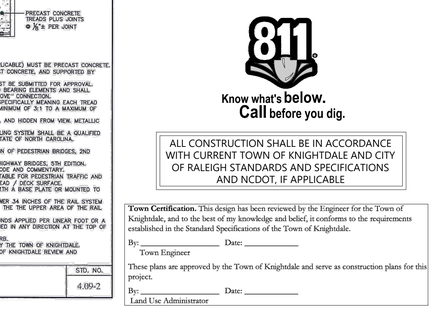
TOWN OF KNIGHTDALE STANDARD DETAILS	CURB AND GUTTER	STD. NO. 4.01



REVISIONS	
DATE	DESCRIPTION

2 of 8

TOWN OF KNIGHTDALE STANDARD DETAILS	WHEELCHAIR CURB RAMPS (NEW DEVELOPMENT)	STD. NO. 4.06-2



REVISIONS	
DATE	DESCRIPTION

6 of 8

TOWN OF KNIGHTDALE STANDARD DETAILS	SHARED CURB RAMPS/FLARED (REFROFIT)	STD. NO. 4.06-6

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

PAVEMENT SCHEDULE	
C1	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 220 LBS. PER SQ. YD. OR 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
J1	6" AGGREGATE BASE COURSE
J2	VARIABLE DEPTH AGGREGATE BASE COURSE
T	EARTH MATERIAL
V1	GEOTEXTILE FOR PAVEMENT STABILIZATION

TABLE 1 - MAXIMUM RUNNING SLOPE AND LENGTH SEGMENT LENGTH

RUNNING SLOPE	MAX LENGTH OF SEGMENT
1:20 (5%)	200 FT
1:12(8.33%)	30 FT

NOTES:

1. TRAIL WIDTH TO BE DETERMINED BY THE TOWN OF KNIGHTDALE
2. WHEN CONDITIONS PERMIT, USE 6' SHOULDER IN FILL SECTIONS AND 4' SHOULDER IN CUT SECTIONS. USE MINIMUM 2' SHOULDER IN CUT AND FILL SECTIONS. FOR CUT SECTION CONDITION SHOWN IN "INSET 1", APPLY ENGINEERING JUDGEMENT TO DETERMINE IF UPHILL SIDE REQUIRES A SWALE.
3. PROVIDE MINIMUM 2' SHOULDER OF UNPLANTED AGGREGATE BASE COURSE.
4. TRAILS ON TRAIL SEGMENTS OF ANY LENGTH MAY BE CONSTRUCTED WITH RUNNING SLOPES/VERTICAL GRADES UP TO 1:20 (5%). TO ACCOMMODATE STEEP TERRAIN, TRAILS MAY BE DESIGNED WITH STEEPER 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 7.5% (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 1.5% (2.08% OR 1:48 MAX). 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 SIDE SLOPES TO BE 3:1 OR FLATTER.
9. PROVIDE A SAFETY RAIL FOR THE FOLLOWING CIRCUMSTANCES WITHIN 6' OF THE EDGE OF PAVEMENT: 1) SLOPE > 3:1 AND DROP OF 6'; 2) SLOPE > 2:1 AND DROP OF 4'; 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 1:1 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 4' FROM THE EDGE OF TRAIL.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	ASPHALT TYPICAL GREENWAY SECTION VARIABLE WIDTH (10' MIN)	STD. NO. 4.09-1

PAVEMENT SCHEDULE	
C1	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 220 LBS. PER SQ. YD. OR 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
J1	6" AGGREGATE BASE COURSE
J2	VARIABLE DEPTH AGGREGATE BASE COURSE
T	EARTH MATERIAL
V1	GEOTEXTILE FOR PAVEMENT STABILIZATION

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RUNNING SLOPE	MAX LENGTH OF SEGMENT
1:20 (5%)	200 FT
1:12(8.33%)	30 FT

NOTES:

1. TRAIL WIDTH TO BE DETERMINED BY THE TOWN OF KNIGHTDALE
2. PROVIDE MINIMUM 2' SHOULDER OF UNPLANTED AGGREGATE BASE COURSE.
3. TRAILS OR TRAIL SEGMENTS OF ANY LENGTH MAY BE CONSTRUCTED WITH RUNNING SLOPES/VERTICAL GRADES UP TO 1:20 (5%). TO ACCOMMODATE STEEP TERRAIN, TRAILS MAY BE DESIGNED WITH STEEPER 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 7.5% (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% (2.08% OR 1:48 MAX). 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 SIDE SLOPES TO BE 3:1 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 3:1 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 4' 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. BOARDWALK SYSTEM (BEAMS, TREADS, AND CURBS IF APPLICABLE) MUST BE PRECAST CONCRETE. WALKING SURFACE (TREADS) SHALL BE MADE OF PRECAST CONCRETE, AND SUPPORTED BY PRECAST CONCRETE BEAMS.
2. COLOR AND FINISH TEXTURE SHALL BE INTEGRAL AND MUST BE SUBMITTED FOR APPROVAL.
3. TREADS SHALL BE DESIGNED TO BE SELF-ALIGNING AND SELF-BEARING ELEMENTS AND SHALL INTERLOCK WITH ONE ANOTHER VIA A TONGUE AND GROOVE.
4. TREADS SHALL MAINTAIN A "BOARDWALK APPEARANCE", SPECIFICALLY MEANING EACH TREAD SHALL HAVE A WIDTH: LENGTH RATIO RANGING FROM A MINIMUM OF 3:1 TO A MAXIMUM OF 14:1.
5. ALL BOARDWALK CONNECTORS SHALL BE NON-CORROSIVE, AND HIDDEN FROM VIEW. METALLIC CONNECTORS ARE NOT ACCEPTABLE FOR THIS PROJECT.
6. THE DESIGNER OF THE BOARDWALK, FOUNDATION AND RAILING SYSTEM SHALL BE A QUALIFIED REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA.
7. BOARDWALK DESIGN SHALL:
   - ADHERE TO AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2ND EDITION
   - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES, 5TH EDITION.
   - AMERICAN CONCRETE INSTITUTE 2005 – BUILDING CODE AND COMMENTARY.
   - RAILINGS (WHEN REQUIRED BY CODE) SHALL BE SUITABLE FOR PEDESTRIAN TRAFFIC AND SHALL BE A MINIMUM OF 42 INCHES ABOVE THE TREAD / DECK SURFACE.
   - RAILING TO BE ATTACHED BY POST TO DECK TOP WITH A BASE PLATE OR MOUNTED TO SIDEWALK OF SUPPORTING BEAM SIDES.
   - POST SPACING SHALL NOT EXCEED 6' THROUGH THE LOWER 34 INCHES OF THE RAIL SYSTEM AND AN 8-INCH SPHERE SHALL NOT PASS THROUGH THE THE UPPER AREA OF THE RAIL SYSTEM FROM 34" TO 42" HEIGHT.
   - RAILINGS MUST RESIST A UNIFORM LOAD OF 50 POUNDS APPLIED PER LINEAR FOOT OR A SINGLE CONCENTRATED LOAD OF 200 POUNDS APPLIED IN ANY DIRECTION AT THE TOP OF EACH RAIL.
   - RAILINGS SHOULD PROVIDE SAFETY TOE RAIL OR CURB.
   - RAILINGS NEED TO BE SUBMITTED AND APPROVED BY THE TOWN OF KNIGHTDALE.
8. OTHER DESIGNS/MATERIALS MAY BE ALLOWED PER TOWN OF KNIGHTDALE REVIEW AND APPROVAL.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD PRECAST CONCRETE BOARDWALK (PLAN & SECTION VIEW)	STD. NO. 4.09-2

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for
Approval

Date
January 17, 2025

Drawing Title
Site Details (2 of 3)

ZMA-2-23
Drawing Number

C7.01

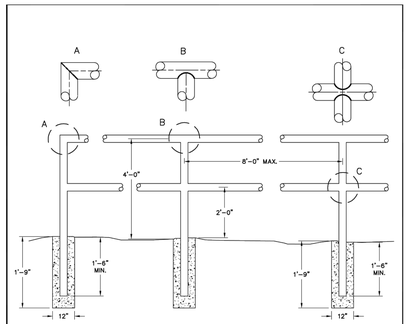
Sheet 169 of 224

Project Number
39510.05

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, December 18, 2025 2:58:58 PM VSHERRILL Plotted Thursday, December 18, 2025 2:59:19 PM Will Sherrill

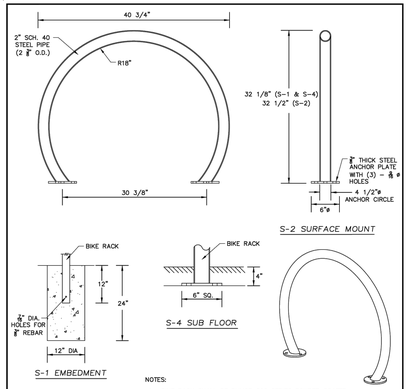


NOTES:

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

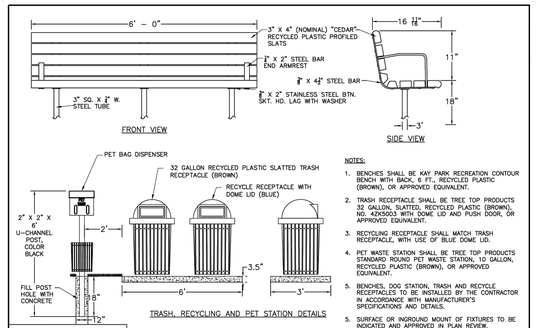


NOTES:

1. BIKE RACK SHALL BE DUMOR 292 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" X 3 3/4" 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

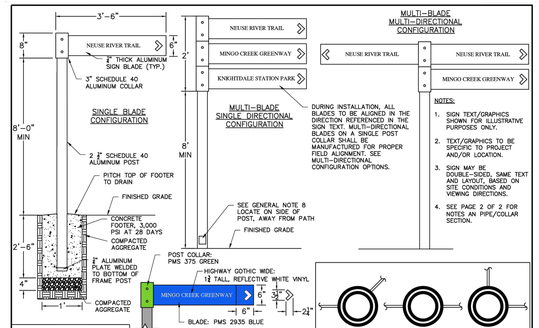


NOTES:

1. BENCHES SHALL BE KAY PARK RECREATION CONTOUR BENCH WITH BACK, 6 FT., RECYCLED PLASTIC (BROWN), OR APPROVED EQUIVALENT.
2. TRASH RECEPTACLE SHALL BE TREE TOP PRODUCTS 32 GALLON, SLATTED, RECYCLED PLASTIC (BROWN), NO. 4293003 WITH DOME LID AND PUSH DOOR, OR APPROVED EQUIVALENT.
3. RECYCLING RECEPTACLE SHALL MATCH TRASH RECEPTACLE, WITH USE OF BLUE DOME LID.
4. PET WASTE STATION SHALL BE TREE TOP PRODUCTS STANDARD ROUND PET WASTE STATION, 10 GALLON, RECYCLED PLASTIC (BROWN), OR APPROVED EQUIVALENT.
5. BENCHES, DOG STATION, TRASH AND RECYCLE RECEPTACLES TO BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.
6. SURFACE OR INGROUND MOUNT OF FIXTURES TO BE INDICATED AND APPROVED IN PLAN REVIEW.
7. AMENITIES TO BE PLACED IN ACCORDANCE WITH UDO AND APPROVED CONSTRUCTION PLANS.

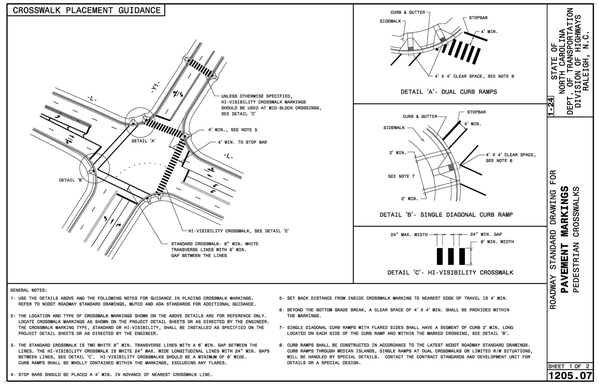
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	PUBLIC GREENWAY AMENITIES (BENCH, TRASH, RECYCLING, PET STATION)	STD. NO. 4.09-4



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	GREENWAY DIRECTIONAL SIGNAGE	1 OF 2 STD. NO. 4.09-5



GENERAL NOTES:

1- USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.

2- THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALLED AS SPECIFIED ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.

3- THE STANDARD CROSSWALK IS TWO WHITE 6" WIDE, TRANSVERSE LINES WITH A 6' MIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" MAX. WIDE LONGITUDINAL LINES WITH 24" MIN. GAPS BETWEEN LINES, SEE DETAIL 'C'. HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 6' WIDE. CURB RAMPS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARES.

4- STOP BARS SHOULD BE PLACED A 4' MIN. IN ADVANCE OF NEAREST CROSSWALK LINE.

5- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.

6- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' X 4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.

7- SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.

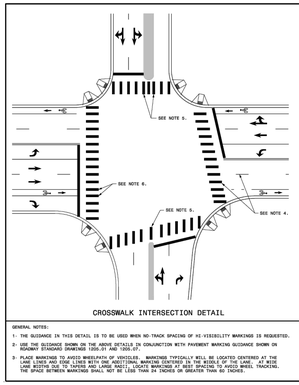
8- CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR DETAILS ON A SPECIAL DESIGN.

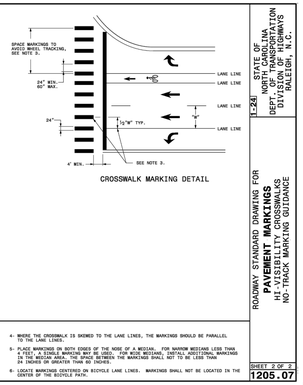
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** PEDESTRIAN CROSSWALKS

SHEET 1 OF 2 **1205.07**





GENERAL NOTES:

1- THE GUIDANCE IN THIS DETAIL IS TO BE USED WHEN NO-TRACK SPACING OF HI-VISIBILITY MARKINGS IS REQUESTED.

2- USE THE GUIDANCE SHOWN ON THE ABOVE DETAILS IN CONJUNCTION WITH PAVEMENT MARKING GUIDANCE SHOWN ON ROADWAY STANDARD DRAWINGS 1205.01 AND 1205.07.

3- PLACE MARKINGS TO AVOID WHEELPATH OF VEHICLES. MARKINGS TYPICALLY WILL BE LOCATED CENTERED AT THE LANE LINES AND EDGE LINES WITH ONE ADDITIONAL MARKING CENTERED IN THE MIDDLE OF THE LANE. AT WIDE LANES, MARKINGS MAY BE PLACED TO ACCOMMODATE BICYCLES OUTSIDE OF THE MOTOR VEHICLE WHEEL TRACKING. THE SPACE BETWEEN MARKINGS SHALL NOT BE LESS THAN 24 INCHES OR GREATER THAN 80 INCHES.

4- WHERE THE CROSSWALK IS SKEWED TO THE LANE LINES, THE MARKINGS SHOULD BE PARALLEL TO THE LANE LINES.

5- PLACE MARKINGS ON BOTH EDGES OF THE NOSE OF A MEDIAN. FOR NARROW MEDIANS LESS THAN 6 FEET WIDE, PLACE MARKINGS AT THE NOSE OF THE MEDIAN. IF THERE ARE NO MARKINGS IN THE MEDIAN AREA, THE SPACE BETWEEN THE MARKINGS SHALL NOT TO BE LESS THAN 24 INCHES OR GREATER THAN 80 INCHES.

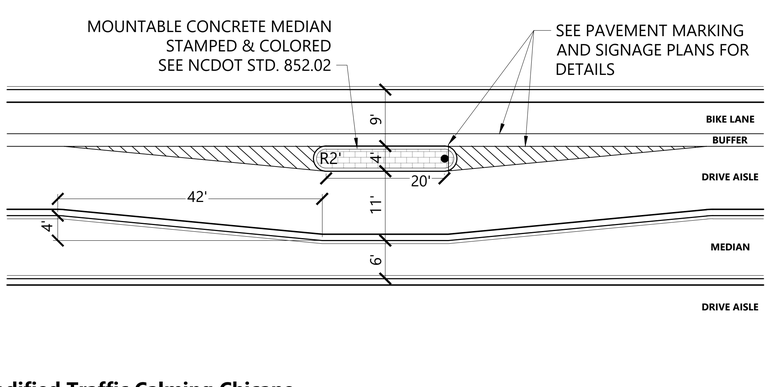
6- LOCATE MARKINGS CENTERED ON BICYCLE LANE LINES. MARKINGS SHALL NOT BE LOCATED IN THE CENTER OF THE BICYCLE PATH.

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

1-24

ROADWAY STANDARD DRAWING FOR **PAVEMENT MARKINGS** HI-VISIBILITY CROSSWALKS NO-TRACK MARKING GUIDANCE

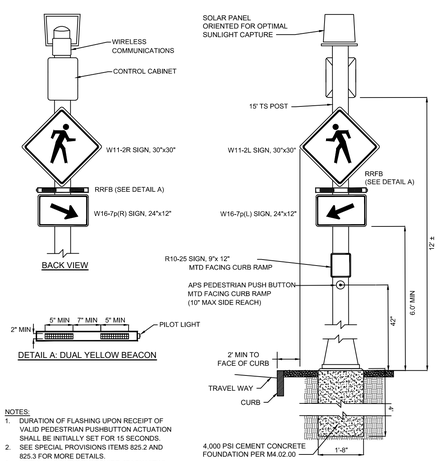
SHEET 2 OF 2 **1205.07**



Modified Traffic Calming Chicane

4/2025

N.T.S. Source: VHB

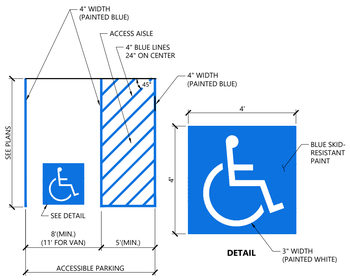


NOTES:

1. DURATION OF FLASHING UPON RECEIPT OF VALID PEDESTRIAN PUSHBUTTON ACTUATION SHALL BE INITIALLY SET FOR 15 SECONDS.
2. SEE SPECIAL PROVISIONS ITEMS 825.2 AND 825.3 FOR MORE DETAILS.
3. NOT ALL LOCATIONS REQUIRE "BACK VIEW" SET-UP. SEE PLANS.

RECTANGULAR RAPID FLASHING BEACON (SOLAR)

SCALE: NTS DWG: PM-20 DATE: OCT 2025



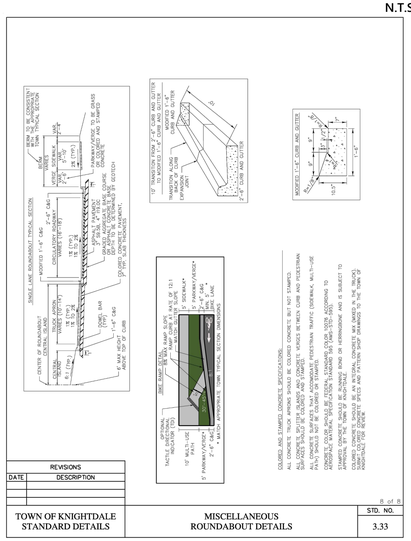
NOTES

1. ALL DIMENSIONS TO CENTER OF 4" PAVEMENT STRIPING.
2. ALL SLOPES THROUGHOUT THE ACCESSIBLE PARKING AND AISLE AREAS SHALL NOT EXCEED 1.5%.

Accessible Parking Space

12/19

N.T.S. Source: VHB LD_552A



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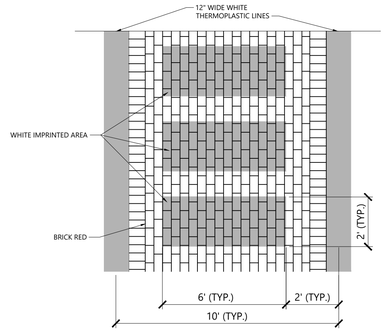


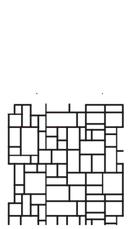
NOTES

1. TWELVE INCH (12") LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6 INCH LINES) WILL BE ACCEPTED.
2. PRODUCT: TRAFFICPATTERNS XD - IMPRESSED SURFACE SYSTEM OR APPROVED EQUAL
   PATTERN: OFFSET BRICK WITH SINGLE SOLDIER COURSE BORDER
   COLOR: BRICK RED AND WHITE AS SHOWN ABOVE
   MANUFACTURER: ENNIS-FLINT
3. INSTALL IMPRINTED TO LIMITS AS SHOWN ON PLANS.
   INSTALL PER MANUFACTURER RECOMMENDATIONS.

Stamped Asphalt Crosswalk

1/16

N.T.S. | Source: VHB | REV | LD_425



Slate
Brick Size: 3" to 16"
(7.6cm to 40.56cm)

KHAKI

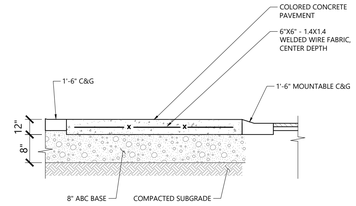
NOTE

1. PRODUCT: TRAFFICPATTERNS XD - IMPRESSED SURFACE SYSTEM OR APPROVED EQUAL.
   PATTERN: SLATE
   COLOR: KHAKI
   MANUFACTURER: ENNIS-FLINT
2. INSTALL IMPRINTED TO LIMITS AS SHOWN ON PLANS.
   INSTALL PER MANUFACTURER RECOMMENDATIONS.

Stamped Asphalt Intersection

1/16

N.T.S. | Source: VHB | REV | LD_425



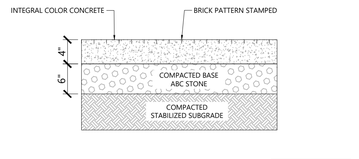
NOTES

1. CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH 3000 PSI, NCDOT TYPE A CONC.

Concrete Truck Apron - RAB

9/25

N.T.S. | Source: VHB | REV | LD_442



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
4. PATTERN: BRICK
   COLOR: BAJA RED

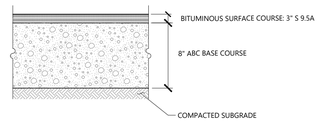


BRICK PATTERN

Stamped and Colored Concrete Paving

6/23

N.T.S. | Source: VHB | LD_430



STANDARD DUTY FLEXIBLE PAVEMENT

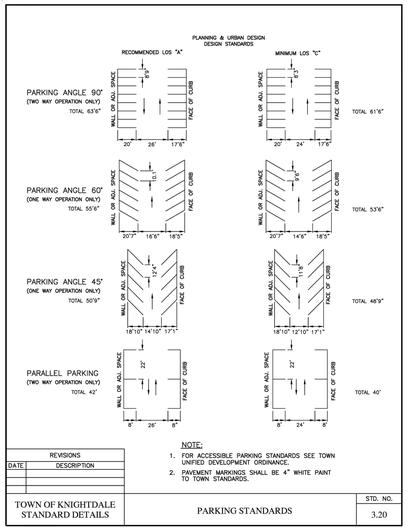
NOTE

1. FOR USE IN THE AMENITY CENTER PARKING LOT.

Bituminous Concrete Pavement Section

6/23

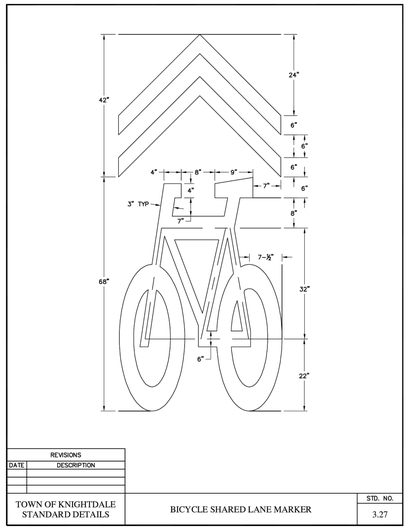
N.T.S. | Source: VHB | REV | LD_430



NOTE:
1. FOR ACCESSIBLE PARKING STANDARDS SEE TOWN UNIFIED DEVELOPMENT ORDINANCE.
2. PAVEMENT MARKINGS SHALL BE 4" WHITE PAINT TO TOWN STANDARDS.

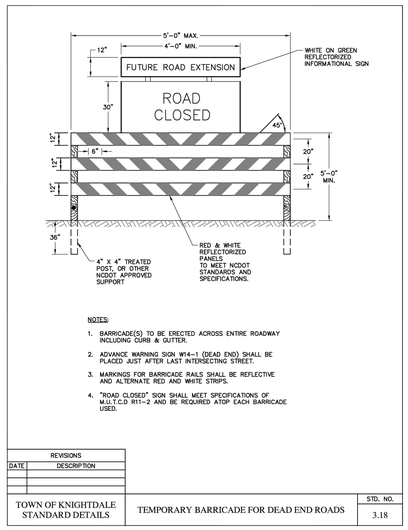
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | PARKING STANDARDS | STD. NO. 3.20



REVISIONS	
DATE	DESCRIPTION

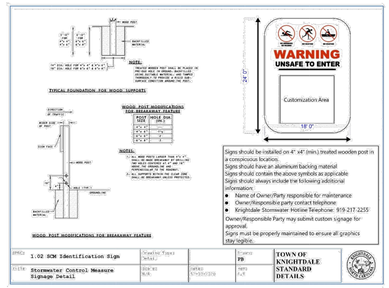
TOWN OF KNIGHTDALE STANDARD DETAILS | BICYCLE SHARED LANE MARKER | STD. NO. 3.27

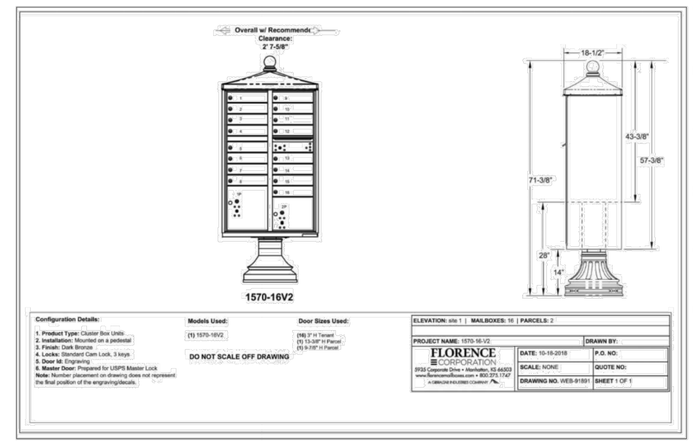


NOTES:
1. BARRICADE(S) TO BE ERECTED ACROSS ENTIRE ROADWAY INCLUDING CURB & GUTTER.
2. ADVANCE WARNING SIGN W14-1 (DEAD END) SHALL BE PLACED JUST AFTER LAST INTERSECTING STREET.
3. MARKINGS FOR BARRICADE RAILS SHALL BE REFLECTIVE AND ALTERNATE RED AND WHITE STRIPS.
4. "ROAD CLOSED" SIGN SHALL MEET SPECIFICATIONS OF M.U.T.C.D R11-2 AND BE REQUIRED ATOP EACH BARRICADE USED.

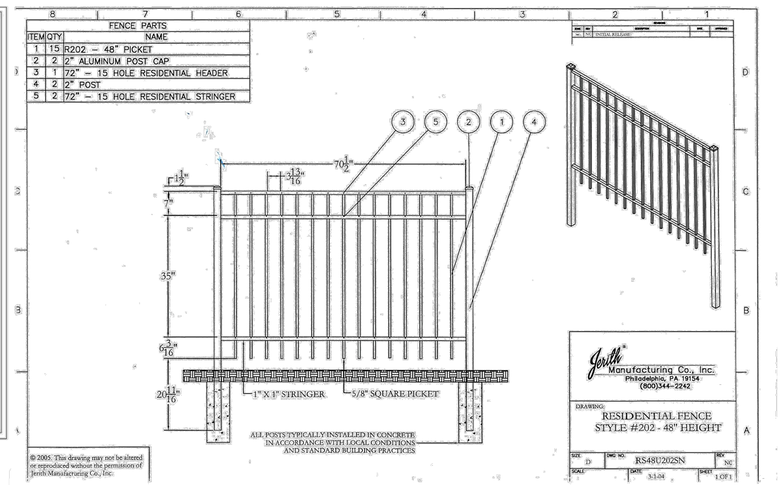
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS | TEMPORARY BARRICADE FOR DEAD END ROADS | STD. NO. 3.18





4 L-1 CLUSTER BOX UNIT DETAIL
NTS



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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title: Site Details (4 of 4)

ZMA-2-23 (Drawing Number)

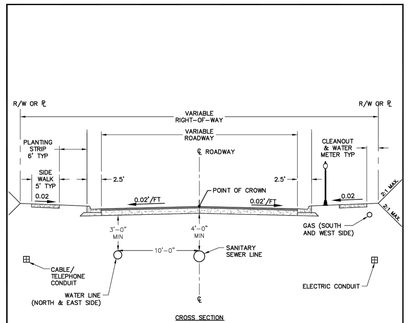
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

C7.03

Sheet 171 of 224

Project Number: 39510.05

Saved Monday, December 1, 2025 11:28:53 AM MMEZA Plotted Monday, December 15, 2025 4:06:52 PM Walker Johnson



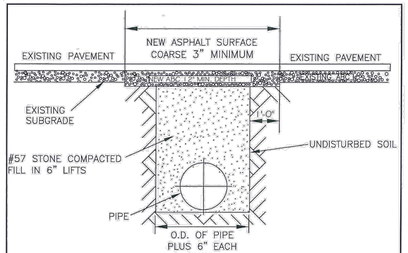
CROSS SECTION

NOTES:

1. THERE SHALL BE AN 18-INCH VERTICAL SEPARATION BETWEEN WATER AND SEWER LINES.
2. WATER AND/OR SANITARY SEWER LINES SHALL BE A MINIMUM OF TWO (2) FEET FROM THE EDGE OF THE CURB AND GUTTER.
3. ENCROACHMENT ONTO TOWN MAINTAINED RIGHT OF WAY SHALL FOLLOW CONDITIONS OF THE APPLICABLE ENCROACHMENT AGREEMENT OR FRANCHISE AGREEMENT.
4. STREET LAMPS SHALL BE PLACED SUCH THAT THERE ARE NO CONFLICTS WITH STREET TREES.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD UTILITY LOCATION IN STREET	STD. NO. 3.13

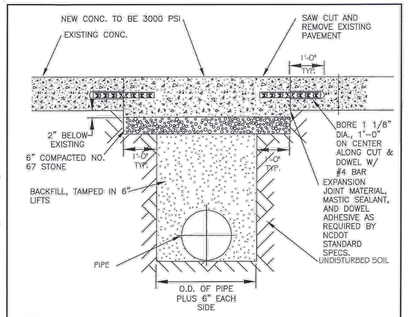


NOTES:

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-80 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:

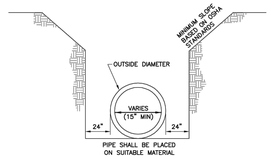
1. SEE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS FOR STORM DRAINAGE AND STANDARD DETAIL 5.02: "TRENCH FOR STORM DRAIN PIPES" FOR ADDITIONAL DETAILS.
2. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.
3. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROVED SAW CUT MACHINE.
4. 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.
5. THE FINAL 6" 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-80 AS MODIFIED BY NCDOT.
6. ANY EXISTING PAVEMENT MARKINGS DISTURBED BY WORK SHALL BE REPLACED.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD CONCRETE PAVEMENT PATCH DETAIL	STD. NO. 3.15

NOTES:

1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6". UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF AT LEAST 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:

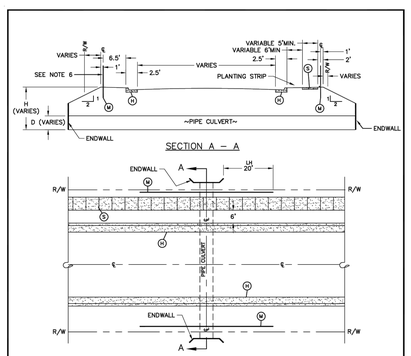
1. UNLESS OTHERWISE DETERMINED BY THE TOWN ENGINEER, THE MEASURES ILLUSTRATED SHALL BE USED WHEN CULVERT DIAMETER, D, IS GREATER THAN OR EQUAL TO 24 INCHES AND WHEN THE DIFFERENCE IN ELEVATION BETWEEN THE CULVERT INVERT AND THE TOP OF SLOPE, H, IS GREATER THAN OR EQUAL TO 5 FEET.
2. INSTALLATION OF 2'-6" CURB AND GUTTER MAY NOT BE REQUIRED WHEN AN ADEQUATE CLEAR ZONE IS PROVIDED FOR VEHICLES WITH A MAXIMUM OF 6:1 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. INSTALLATION OF HANDRAIL MAY NOT BE REQUIRED WHEN A 15-FOOT PEDESTRIAN CLEAR ZONE IS PROVIDED BEHIND THE CURB WITH A MAXIMUM OF 6:1 SLOPE.
4. FOR CULVERT CROSSINGS WITHOUT ENDWALLS, LH SHALL BE MEASURED FROM THE OUTSIDE OF THE NEAREST 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 15-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 13 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'

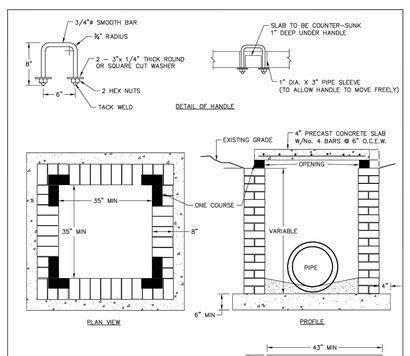
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CULVERT CROSSING ON RESIDENTIAL AND COMMERCIAL STREETS	2 of 2 STD. NO. 5.01



REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	CULVERT CROSSING ON RESIDENTIAL AND COMMERCIAL STREETS	1 of 2 STD. NO. 5.01

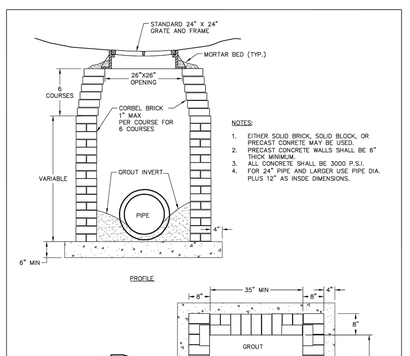


NOTES:

1. EITHER SOLID BRICK, SOLID BLOCK OR PRECAST CONRETE 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 INSDE DIMENSIONS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD YARD INLET WITH CONCRETE SLAB	STD. NO. 5.03

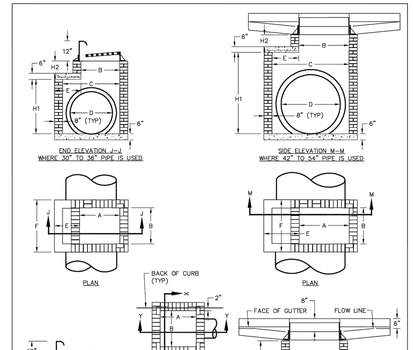


NOTES:

1. EITHER SOLID BRICK, SOLID BLOCK, OR PRECAST CONRETE 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 INSDE DIMENSIONS.

REVISIONS	
DATE	DESCRIPTION

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

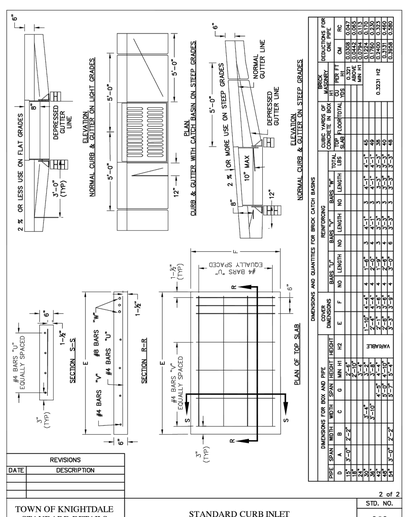


NOTES:

1. MORTAR JOINTS SHALL BE 1/2" THICK.
2. ALL CONCRETE SHALL BE 3000 P.S.I.
3. BASE SLABS SHALL BE FORMED PRIOR TO PLACING OF CONCRETE.
4. USETYPE "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

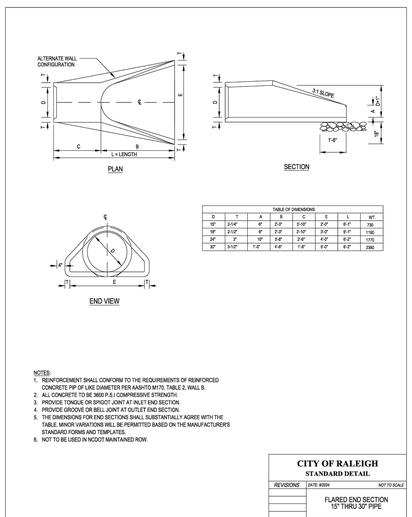
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD CURB INLET	1 of 2 STD. NO. 5.05



REVISIONS	
DATE	DESCRIPTION

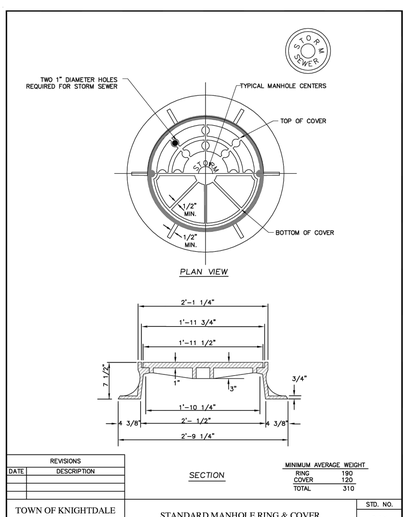
TOWN OF KNIGHTDALE STANDARD DETAILS	STANDARD CURB INLET	2 of 2 STD. NO. 5.05



NOTES:

1. REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF REINFORCED CONCRETE PIP OF LIKE DIAMETER PER AASHTO M170, TABLE 2, WALL B.
2. ALL CONCRETE TO BE 3800 P.S.I COMPRESSIVE STRENGTH.
3. PROVIDE TONGUE OR SPIGOT JOINT AT INLET END SECTION.
4. PROVIDE GROOVE OR BELL JOINT AT OUTLET END SECTION.
5. THE DIMENSIONS FOR END SECTIONS SHALL SUBSTANTIALLY AGREE WITH THE TABLE. MINOR VARIATIONS WILL BE PERMITTED BASED ON THE MANUFACTURER'S STANDARD FORMS AND TEMPLATES.
6. NOT TO BE USED IN NCDOT MAINTAINED ROW.

CITY OF RALEIGH STANDARD DETAIL		
REVISIONS	DATE: 8/2004	NOT TO SCALE
	FLARED END SECTION 15" THRU 30" PIPE	
	SW-10.03	



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

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval**

Date: **January 17, 2025**

Drawing Title: **Drainage Details (1 of 2)**

ZMA-2-23

Drawing Number: **C7.03**

Sheet 172 of 224

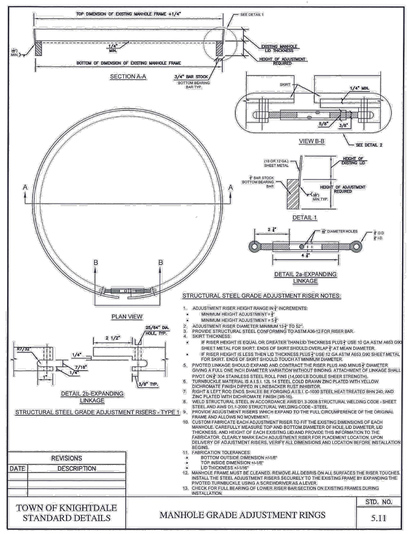
Project Number: **39510.05**

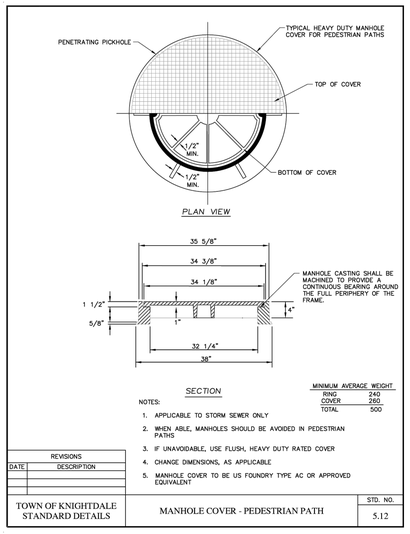
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Tuesday, November 11, 2025 11:26:13 AM WSHERRILL Plotted Tuesday, December 16, 2025 3:55:45 PM Walker Johnson

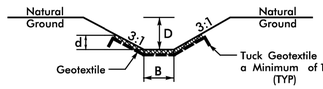
C:\AMS\ACCDocs\VHB\39510.05 dr horton-lyndon oaks -\project files\5_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-GD-DT.dwg





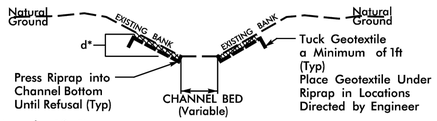
Sta. 127 + 20, Lyndon Stream Pkwy.

DETAIL 1
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.5Ft.
d = 1.5 Ft.
B = 6 Ft.
Type of Liner = Class I Rip–Rap

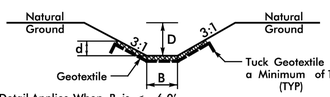
DETAIL 4
EXISTING BANK STABILIZATION
(Not to Scale)



Length = 10 Ft.
d = 2 Ft.
Est. = 14 Tons of Class 1 Rip–Rap, Keyed–In
*Rip–Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

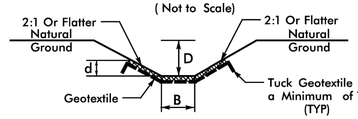
Sta. 110 + 27, Lyndon Stream Pkwy.

DETAIL 3
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D = 1 Ft.
d = 1 Ft.
B = 5 Ft.
Type of Liner = Class I Rip–Rap

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.5Ft.
d = 1.5 Ft.
B = 6 Ft.
Type of Liner = Class I Rip–Rap

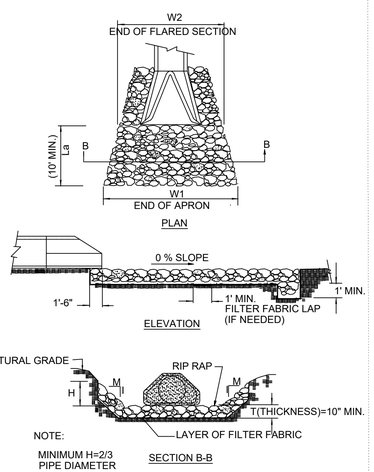
vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

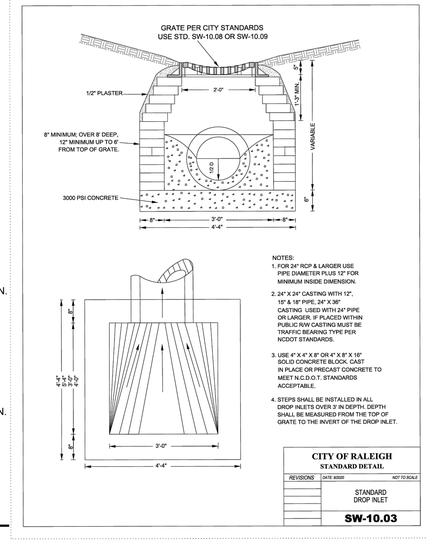
Riprap Apron at Pipe Outfalls

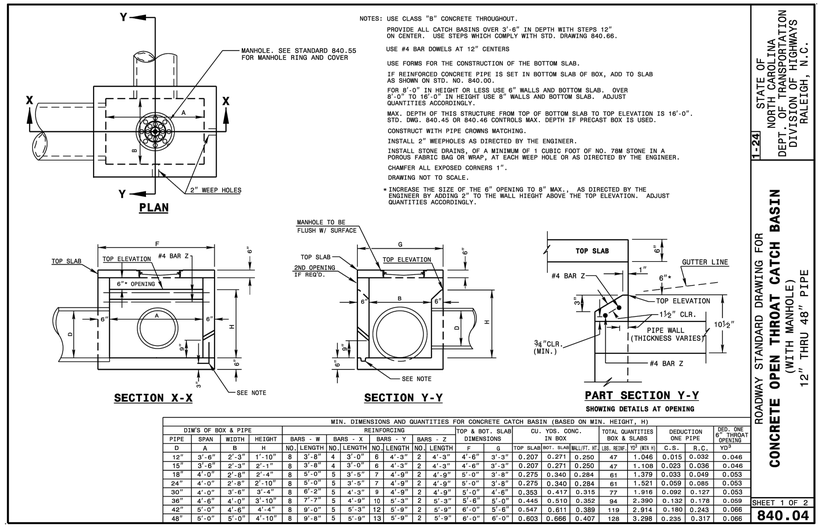
N.T.S.

NOTES:

1. CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE AS SHOWN ON THE PLANS.
2. RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.
3. THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIPRAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL. THE APRON SHALL HAVE A CUTOFF OR TOE WALL AT THE DOWNSTREAM END.
4. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1.
5. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
6. THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.
7. NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.
8. FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
9. ANY DISTURBED AREA FROM END OF APRON TO RECEIVING CHANNEL MUST BE STABILIZED.







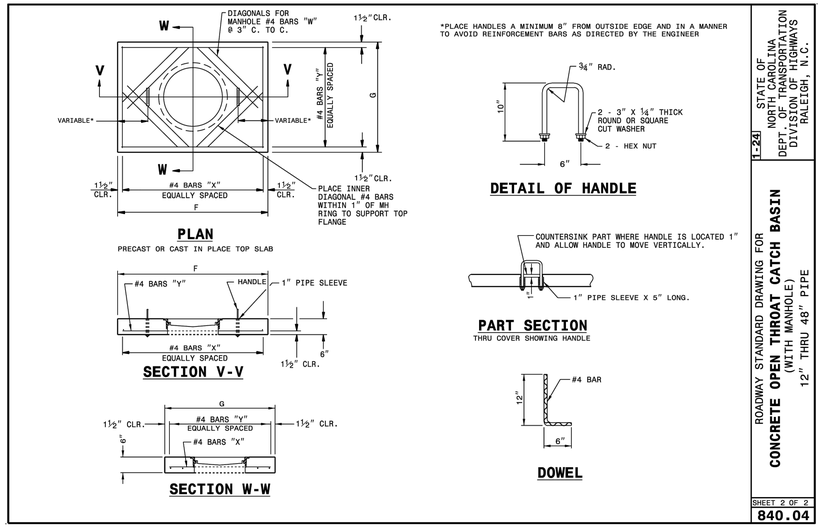
WIN. DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON WIN. HEIGHT, H)

DIMS OF BOX & PIPE				REINFORCING						TOP & BOT. SLAB DIMENSIONS		CU. YDS. CONC. IN BOX		TOTAL QUANTITIES BOX & SLABS		DEDUCTION ONE PIPE		DED. ONE 6" THROAT OPENING
PIPE D	SPAN A	WIDTH B	HEIGHT H	BARS - W NO.	BARS - W LENGTH	BARS - X NO.	BARS - X LENGTH	BARS - Y NO.	BARS - Y LENGTH	BARS - Z NO.	BARS - Z LENGTH	F	G	TOP SLAB	BOT. SLAB	WALLS	LIN.FT.	LBS. SCW	10" WIN H	C.S.	R.C.	YD³
12"	3'-6"	2'-3"	1'-10"	8	3'-8"	4	3'-0"	6	4'-3"	2	4'-3"	4'-6"	3'-3"	0.207	0.271	0.250	47	1,046	0.015	0.032		0.046
15"	3'-6"	2'-3"	2'-1"	8	3'-8"	4	3'-0"	6	4'-3"	2	4'-3"	4'-6"	3'-3"	0.207	0.271	0.250	47	1,108	0.023	0.036		0.046
18"	4'-0"	2'-8"	2'-4"	8	5'-0"	5	3'-5"	7	4'-9"	2	4'-9"	5'-0"	3'-8"	0.275	0.340	0.284	61	1,379	0.033	0.049		0.053
24"	4'-0"	2'-8"	2'-10"	8	5'-0"	5	3'-5"	7	4'-9"	2	4'-9"	5'-0"	3'-8"	0.275	0.340	0.284	61	1,521	0.059	0.085		0.053
30"	4'-0"	3'-6"	3'-4"	8	6'-2"	5	4'-3"	9	4'-9"	2	4'-9"	5'-0"	4'-6"	0.353	0.417	0.315	77	1,916	0.092	0.127		0.053
36"	4'-6"	4'-0"	3'-10"	8	7'-7"	5	4'-9"	10	5'-3"	2	5'-3"	5'-6"	5'-0"	0.445	0.510	0.352	94	2,390	0.132	0.178		0.059
42"	5'-0"	4'-6"	4'-4"	8	9'-0"	5	5'-3"	12	5'-9"	2	5'-9"	6'-0"	5'-6"	0.547	0.611	0.389	119	2,914	0.180	0.243		0.066
48"	5'-0"	5'-0"	4'-10"	8	9'-8"	5	5'-9"	13	5'-9"	2	5'-9"	6'-0"	6'-0"	0.603	0.666	0.407	126	3,298	0.235	0.317		0.066

1-24 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
(WITH MANHOLE)
12" THRU 48" PIPE

SHEET 1 OF 2
840.04



1-24 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
(WITH MANHOLE)
12" THRU 48" PIPE

SHEET 2 OF 2
840.04

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Drainage Details (2 of 2)

ZMA-2-23
Drawing Number

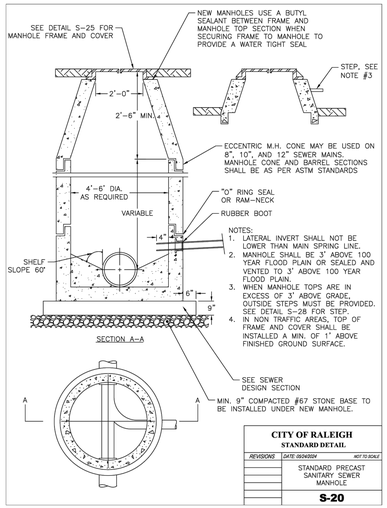
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

C7.05

Sheet 173 of 224

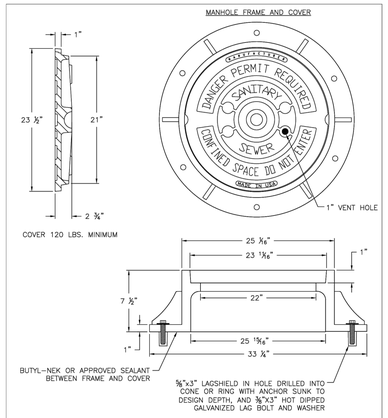
Project Number 39510.05

Saved Tuesday, November 11, 2025 11:26:13 AM WSHERRILL Plotted Tuesday, December 16, 2025 8:42:16 AM Walker Johnson



CITY OF RALEIGH
STANDARD DETAIL

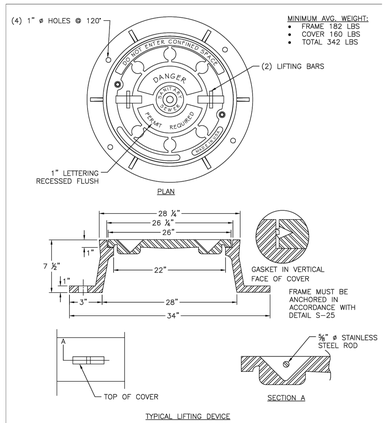
REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	STANDARD PRECAST SANITARY SEWER MANHOLE	
	S-20	



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

CITY OF RALEIGH
STANDARD DETAIL

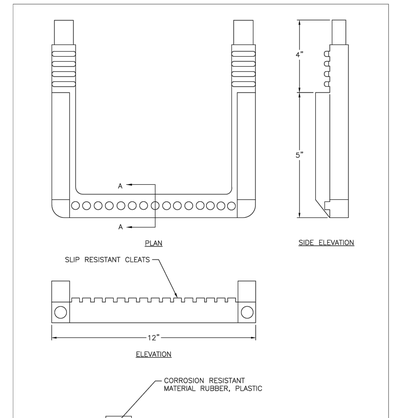
REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	STANDARD MANHOLE COVER	
	S-25	



TYPICAL LIFTING DEVICE

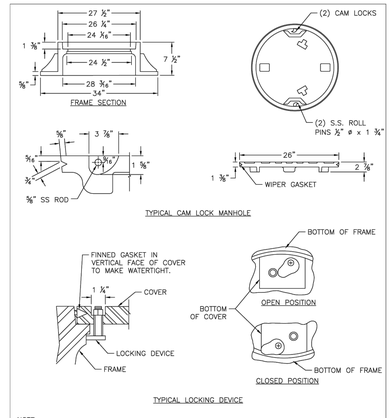
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	MANHOLE FRAME AND WATERTIGHT COVER	
	S-26	



CITY OF RALEIGH
STANDARD DETAIL

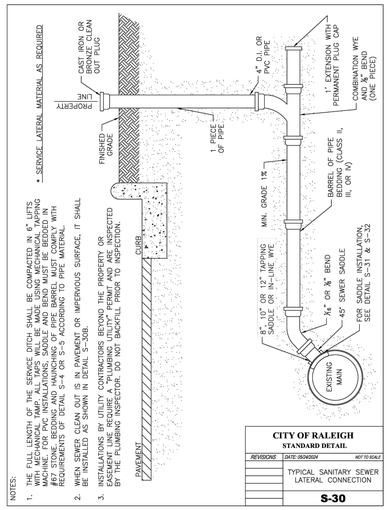
REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	STANDARD SLIP RESISTANT MANHOLE STEP DETAIL	
	S-28	



NOTE:
1. WHEN WATERTIGHT NOT SPECIFIED, TOP SHALL HAVE ONE 1" VENT HOLE.
2. STANDARD: PENTAGON HEAD S.S. OPTIONAL: S.S. HEX HEAD BOLT.
3. RING MUST BE ANCHORED IN ACCORDANCE WITH DETAIL S-25.

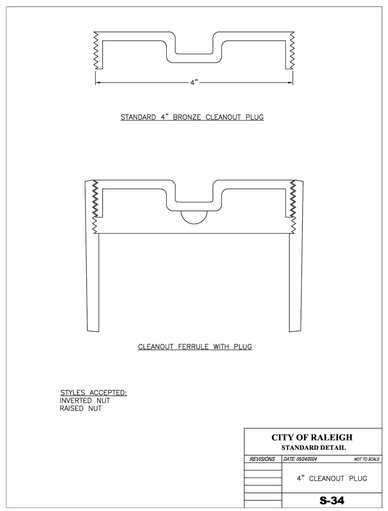
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	WATERTIGHT MANHOLE FRAME WITH CAM LOCK COVER	
	S-27	



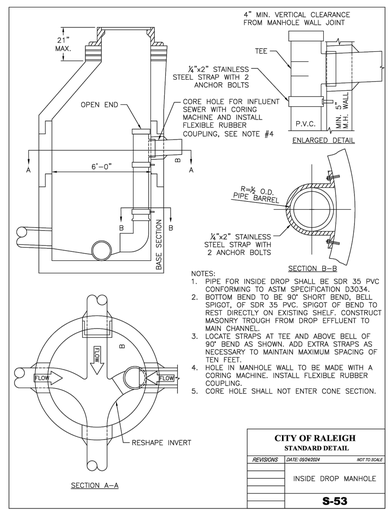
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	TYPICAL SANITARY SEWER LATERAL CONNECTION	
	S-30	



CITY OF RALEIGH
STANDARD DETAIL

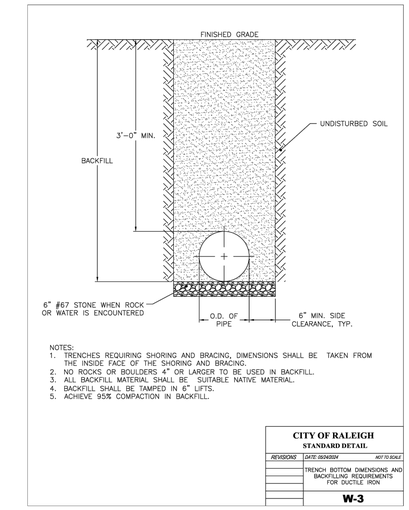
REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	4" CLEANOUT PLUG	
	S-34	



NOTES:
1. PIPE FOR INSIDE DROP SHALL BE SDR 35 PVC CONFORMING TO ASTM SPECIFICATION D3034.
2. BOTTOM BEND TO BE 90° SHORT BEND, BELL SPIGOT, OF SDR 35 PVC. SPIGOT OF BEND TO REST DIRECTLY ON EXISTING SHELF. CONSTRUCT MASONRY TROUGH FROM DROP EFFLUENT TO MAIN CHANNEL.
3. LOCATE STRAPS AT TEE AND ABOVE BELL OF 90° BEND AS SHOWN. ADD EXTRA STRAPS AS NECESSARY TO MAINTAIN MAXIMUM SPACING OF TEN FEET.
4. HOLE IN MANHOLE WALL TO BE MADE WITH A CORING MACHINE. INSTALL FLEXIBLE RUBBER COUPLING.
5. CORE HOLE SHALL NOT ENTER CONE SECTION.

CITY OF RALEIGH
STANDARD DETAIL

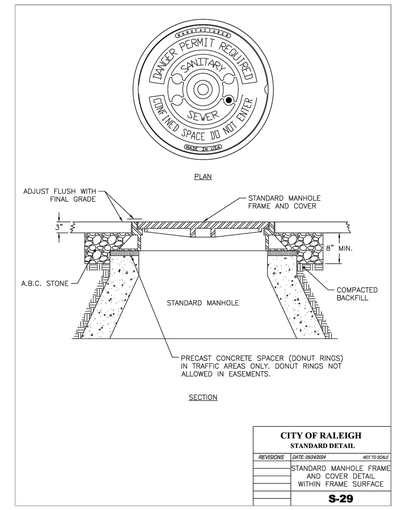
REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	INSIDE DROP MANHOLE	
	S-53	



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

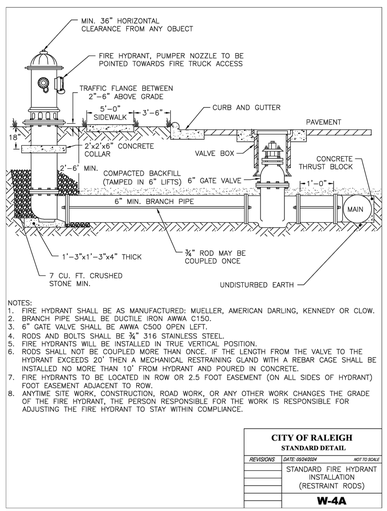
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR DUCTILE IRON	
	W-3	



CITY OF RALEIGH
STANDARD DETAIL

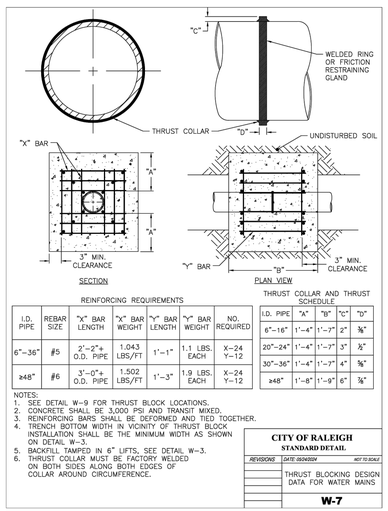
REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN FRAME SURFACE	
	S-29	



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: 05/04/2004	NOT TO SCALE
	STANDARD FIRE HYDRANT INSTALLATION (RESTRAINT RODS)	
	W-4A	



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6"–36"	#5	2'-2"± O.D. PIPE	1.043 LBS./FT	1'-1"	1.1 LBS. EACH	X–24 Y–12
≥48"	#6	3'-0"± O.D. PIPE	1.502 LBS./FT	1'-3"	1.9 LBS. EACH	X–24 Y–12

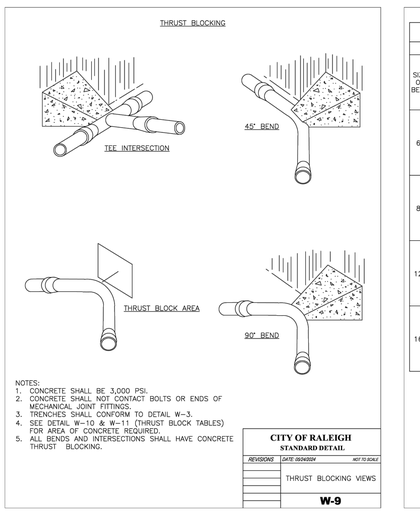
THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"	"D"
6"–16"	1'-4"	1'-7"	2"	⅜"
20"–24"	1'-4"	1'-7"	3"	½"
30"–36"	1'-4"	1'-7"	4"	⅝"
≥48"	1'-8"	1'-9"	6"	¾"

NOTES:
1. SEE DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3,000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS, SEE DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	THRUST BLOCKING DESIGN DATA FOR WATER MAINS	
	W-7	



NOTES:
1. CONCRETE SHALL BE 3,000 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO DETAIL W-3.
4. SEE DETAIL W-10 & W-11 (THRUST BLOCK TABLES) FOR AREA OF CONCRETE REQUIRED.
5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	THRUST BLOCK VIEWS	
	W-9	

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 PSI

ALL AREAS GIVEN IN SQUARE FEET

SIZE OF BEND	DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4,000 LBS/FT²	SOFT CLAY 2,000 LBS/FT²	1,600 LBS/FT² GRAVEL/ COARSE SAND	8,000 LBS/FT² DRY CLAY (ALWAYS DRY)	SAND, COMPACT FIRM 8,000 LBS/FT²	SAND–CLEAN DRY 4,000 LBS/FT²	SOIL 1,000 LBS/FT² QUICKSAND (VERY POOR)	ROCK–POOR 10,000 LBS/FT²
6"	11 ¼°	1,108	1	1	1	1	1	1	2	1
	22 ½°	2,207	1	2	2	1	1	1	3	1
	45°	4,328	2	3	3	1	1	2	5	1
	90°	7,996	2	4	5	1	1	2	8	1
	PLUG	5,655	2	3	4	1	1	2	6	1
8"	11 ¼°	1,970	1	1	2	1	1	1	2	1
	22 ½°	3,922	1	2	3	1	1	1	4	1
	45°	7,694	2	4	5	1	1	2	8	1
	90°	14,215	4	8	9	2	2	4	15	2
	PLUG	10,053	3	5	6	2	2	3	10	1
12"	11 ¼°	4,433	2	3	3	1	1	2	5	1
	22 ½°	8,826	3	5	6	2	2	3	9	1
	45°	17,312	5	9	11	3	3	5	18	2
	90°	31,983	8	16	19	4	4	8	32	4
	PLUG	22,619	6	12	14	3	3	6	23	3
16"	11 ¼°	7,881	2	4	5	1	1	2	8	1
	22 ½°	15,691	4	8	10	2	2	4	16	2
	45°	30,779	8	16	19	4	4	8	31	4
	90°	56,861	15	29	35	8	8	15	57	6
	PLUG	40,213	10	21	25	5	5	10	41	5

NOTES:
1. REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. USE 6" 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/04/2004	NOT TO SCALE
	THRUST BLOCKING DESIGN QUANTITY TABLE	
	W-10	

Know what's **below.** **Call** before you dig.

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title: Utility Details (1 of 3)

ZMA-2-23

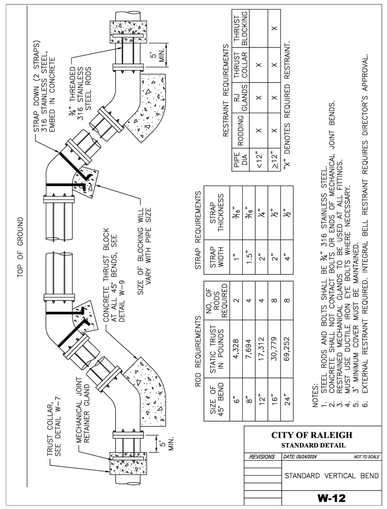
Drawing Number: C7.06

Sheet 174 of 224

Project Number: 39510.05

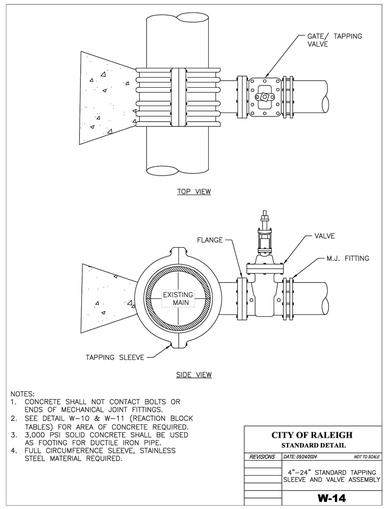
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Thursday, November 6, 2025 2:49:33 PM MMEZA Plotted Tuesday, December 16, 2025 8:43:53 AM Walker Johnson



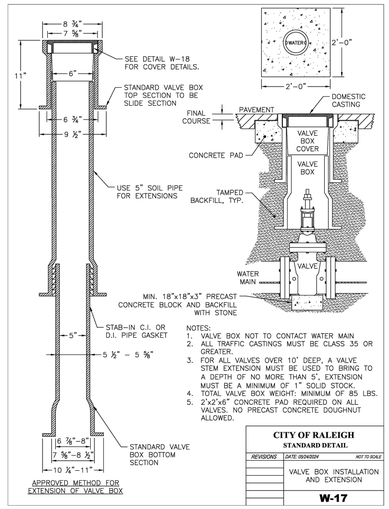
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	STANDARD VERTICAL BEND	
	W-12	



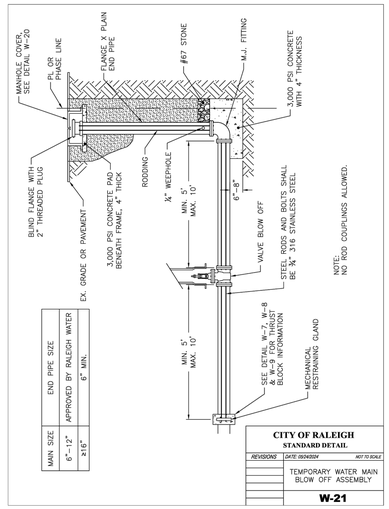
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	4"–24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY	
	W-14	



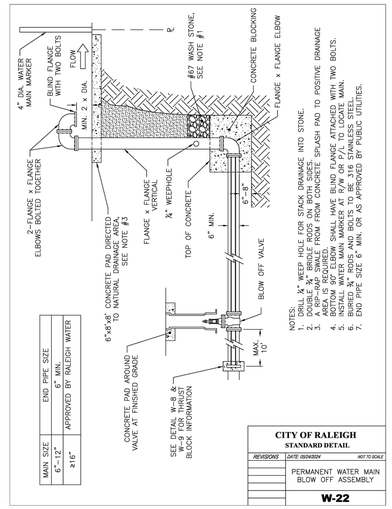
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	VALVE BOX INSTALLATION AND EXTENSION	
	W-17	



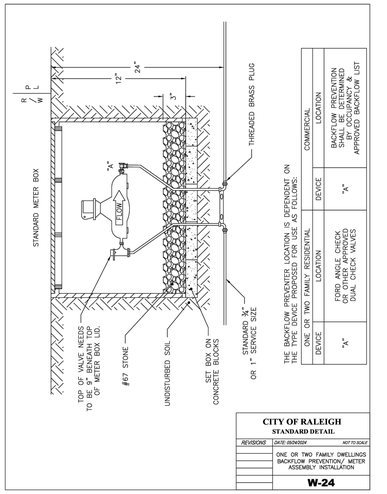
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	TEMPORARY WATER MAIN BLOW OFF ASSEMBLY	
	W-21	



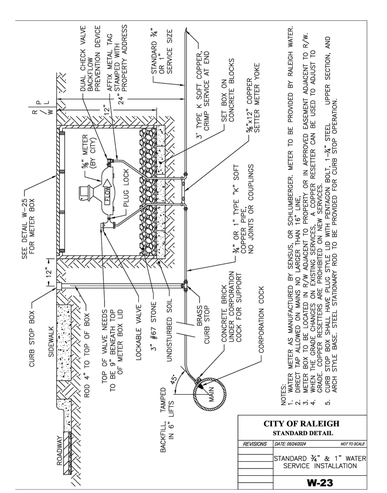
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	PERMANENT WATER MAIN BLOW OFF ASSEMBLY	
	W-22	



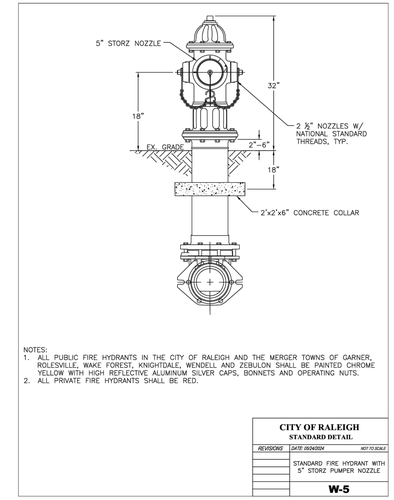
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	TYPICAL 4"–8" DOMESTIC WATER METER BYPASS INSTALLATION	
	W-29	



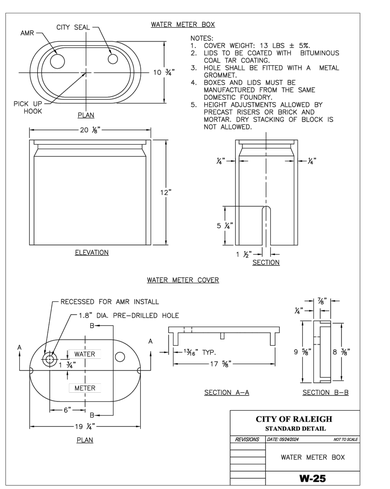
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	TYPICAL 6"–10" FIRE SERVICE AND DOMESTIC METER W/ BYPASS	
	W-30	



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	TYPICAL 4" WATER METER VAULT	
	W-32	



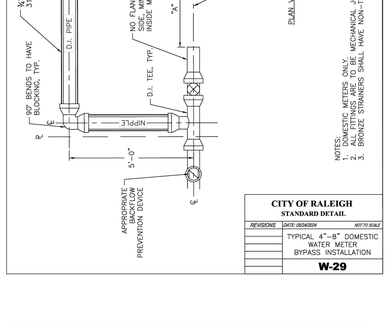
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	TYPICAL 6" THRU 10" WATER METER VAULT	
	W-33	



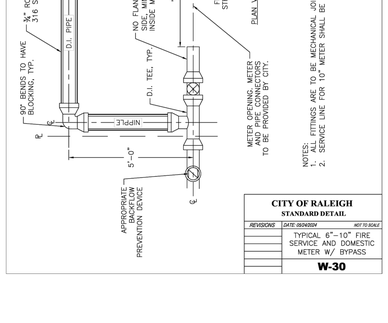
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	FIRE, DOMESTIC & IRRIGATION OPTIONS SCHEMATIC	
	W-34	



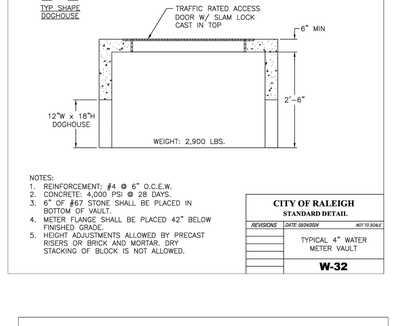
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	ONE OR TWO FAMILY DWELLINGS BACKFLOW PREVENTION/ METER ASSEMBLY INSTALLATION	
	W-24	



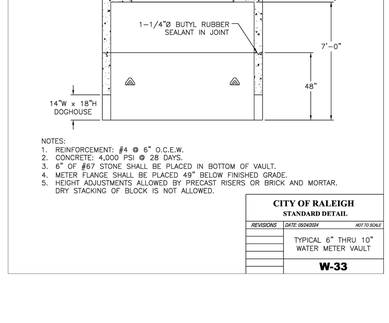
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	STANDARD ¾" & 1" WATER SERVICE INSTALLATION	
	W-23	



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE	
	W-5	



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	WATER METER BOX	
	W-25	

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title: **Utility Details (2 of 3)**

ZMA-2-23 (Drawing Number)

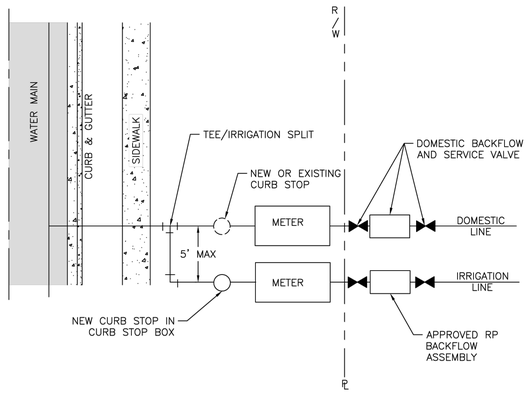
NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

C7.07

Sheet 175 of 224

Project Number: 39510.05

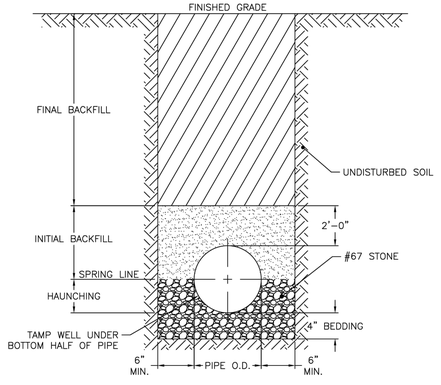
Saved Thursday, November 6, 2025 2:49:33 PM MMEZA Plotted Tuesday, December 16, 2025 8:44:30 AM Walker Johnson



NOTES:
1. IRRIGATION METER SHALL BE LOCATED ON THE SIDE OF DOMESTIC METER WITH INCREASING ADDRESSES.
2. REQUIRED CONTAINMENT BACKFLOWS ARE TO BE INSTALLED WITHIN 50 LINEAR PIPING FEET OF THE METER OR RIGHT–OF–WAY FOR FIRE SERVICE LINES AND MEET INSTALLATION REQUIREMENTS AS LISTED IN APPENDIX A: GUIDELINES AND REQUIREMENTS OF THE CROSS CONNECTION AND HYDRANT METER PROGRAM.
3. BACKFLOW RISER/STANDPIPE SHALL BE OF COPPER OR BRASS.
4. THE RP RELIEF VALVE SHALL BE A MINIMUM OF 12" ABOVE ANY MATERIAL (MULCH INCLUDED) OR GRADE.
5. A SERVICE VALVE IS REQUIRED BEFORE AND AFTER THE BACKFLOW ASSEMBLY FOR MAINTENANCE AND REPLACEMENT PURPOSES.
6. ENCLOSURE MUST BE ASSE 1060 APPROVED AND HAVE ADEQUATE DRAINAGE.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	IRRIGATION TAP ON NEW AND EXISTING SERVICES	
	W-35	

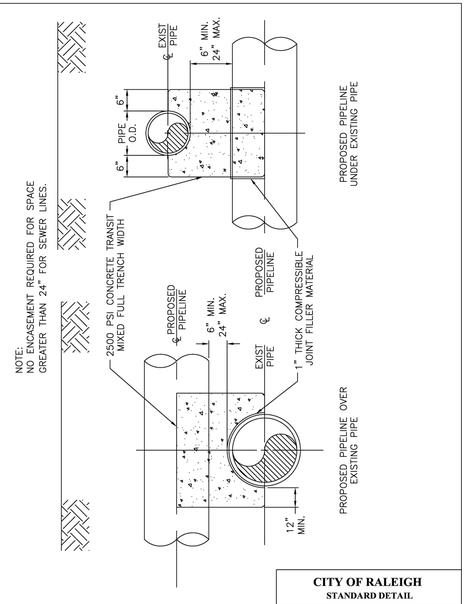


TYPICAL TRENCH BOTTOM DIMENSIONS FOR SDR 35 PVC GRAVITY PIPE

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.

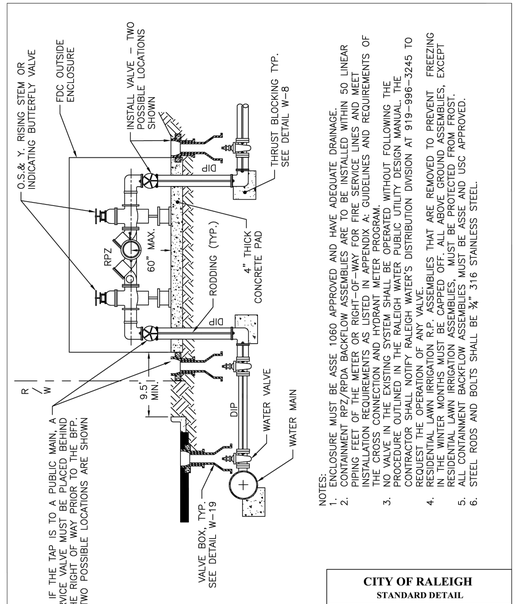
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN	
	S-5	



CITY OF RALEIGH
STANDARD DETAIL

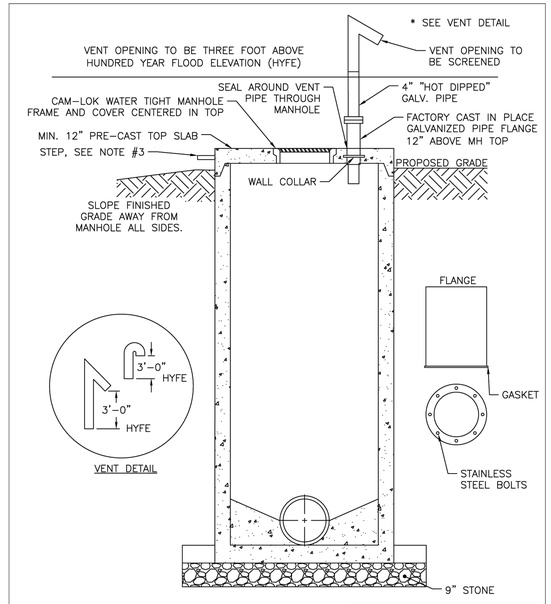
REVISIONS	DATE: 05/24/2024	NOT TO SCALE
	CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS	
	S-49	



NOTES:
1. ENCLOSURE MUST BE ASSE 1060 APPROVED AND HAVE ADEQUATE DRAINAGE.
2. CONTAINMENT RPZ/RPDA BACKFLOW ASSEMBLIES ARE TO BE INSTALLED WITHIN 50 LINEAR PIPING FEET OF THE METER OR RIGHT–OF–WAY FOR FIRE SERVICE LINES AND MEET INSTALLATION REQUIREMENTS AS LISTED IN APPENDIX A: GUIDELINES AND REQUIREMENTS OF THE CROSS CONNECTION AND HYDRANT METER PROGRAM.
3. NO VALVE IN THE EXISTING SYSTEM SHALL BE OPERATED WITHOUT FOLLOWING THE PROCEDURE OUTLINED IN THE BUILDING WATER SYSTEMS MANUAL. THE CONTRACTOR SHALL NOTIFY RALEIGH WATER'S DISTRIBUTION DIVISION AT 919–996–3245 TO REQUEST THE OPERATION OF ANY VALVE.
4. RESIDENTIAL LAWN IRRIGATION R.P. ASSEMBLIES THAT ARE REMOVED TO PREVENT FREEZING IN THE WINTER MONTHS MUST BE CAPPED OFF ALL ABOVE GROUND ASSEMBLIES, EXCEPT IN THE INSTALLATION OF A FREEZE PROOF ENCLOSURE. ALL CONTAINMENT BACKFLOW ASSEMBLIES MUST BE ASSE AND USC APPROVED.
5. STEEL RODS AND BOLTS SHALL BE ¾" 316 STAINLESS STEEL.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	REDUCED PRESSURE ZONE AND REDUCED PRESSURE DETECTOR ASSEMBLY	
	W-36	



NOTES:
1. VENT MUST BE FACTORY WELDED, FABRICATED, AND "HOT DIPPED" GALVANIZED.
2. HYFE– HUNDRED YEAR FLOOD ELEVATION.
3. WHEN MANHOLE TOPS ARE IN EXCESS OF 3' ABOVE GRADE, OUTSIDE STEPS MUST BE PROVIDED. SEE DETAIL S–28 FOR STEP.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 01/18/2025	NOT TO SCALE
	STANDARD SEAL TIGHT MANHOLE WITH VENTED STACK	
	S-24	

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval**
Date: **January 17, 2025**

Drawing Title
Utility Details (3 of 3)

ZMA-2-23 (Drawing Number)

Know what's **below.** **Call** before you dig.

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

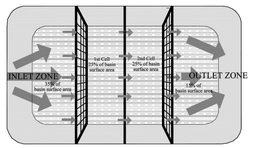
12/15/2025

C7.08

Sheet 176 of 224

Project Number: **39510.05**

Saved Thursday, November 6, 2025 2:49:33 PM MMEZA Plotted Tuesday, December 16, 2025 8:45:03 AM Walker Johnson

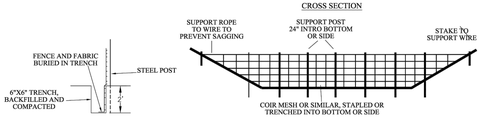


PLAN VIEW

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.

MAINTENANCE NOTES:
1. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH 1" RAINFALL.
2. MAINTAIN ACCESS TO BAFFLES AND MAKE ANY REPAIRS IMMEDIATELY.
3. REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL.
4. AVOID DAMAGING BAFFLES DURING CLEANOUT AND REPLACE IF DAMAGED.
5. REMOVE BAFFLES AND SEDIMENT DEPOSITS AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.

CROSS SECTION



SECTION VIEW AT OPENING

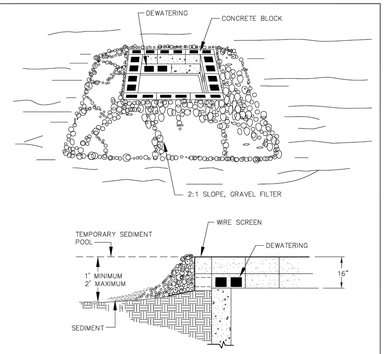
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD BAFFLES DETAIL

CONSTRUCTION SPECIFICATIONS

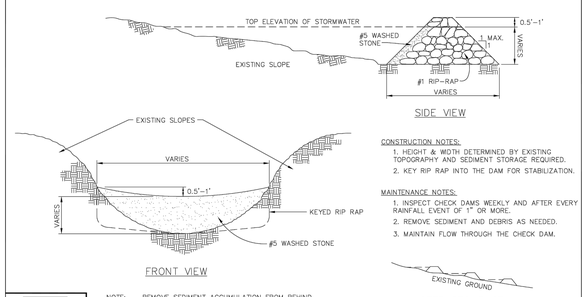
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL, 3/4 TO 1/2 INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #57 WASHED STONE IS RECOMMENDED.

MAINTENANCE NOTES:
1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH 1" RAIN EVENT.
2. REMOVE SEDIMENT WHEN VOLUME OF THE BASIN IS REDUCED BY ONE-HALF.
3. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD BLOCK & GRAVEL DROP INLET PROTECTION



CONSTRUCTION NOTES:
1. HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
2. KEY RIP RAP INTO THE DAM FOR STABILIZATION.

MAINTENANCE NOTES:
1. INSPECT CHECK DAMS WEEKLY AND AFTER EVERY RAINFALL EVENT OF 1" OR MORE.
2. REMOVE SEDIMENT AND DEBRIS AS NEEDED.
3. MAINTAIN FLOW THROUGH THE CHECK DAM.

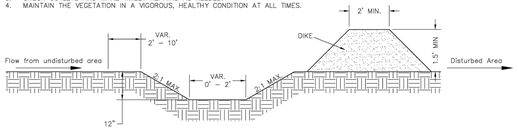
NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD CHECK DAM

NOTES:
1. DIVERSION TO BE USED UPSLOPE OF A CONSTRUCTION SITE TO PREVENT STORM RUNOFF FROM ENTERING THE DISTURBED AREA.
2. IMMEDIATELY LINE AND STABILIZE BEFORE ANY DOWNSLOPE GRADING BEGINS (STABILIZATION MUST OCCUR BEFORE ISSUANCE OF A CERTIFICATE OF COMPLIANCE). STABILIZATION METHOD IS BASED ON VELOCITY OF OFFSITE DRAINAGE.
3. DIVERSIONS SHOULD ONLY BE USED FOR DRAINAGES 5 ACRES OR LESS.
4. ANY SEDIMENT LADEN WATER PRIOR TO STABILIZATION OF THE DIVERSION MUST BE DIVERTED INTO AN APPROVED EROSION AND SEDIMENT CONTROL BMP. CLEAN WATER SHOULD EMPTY INTO AN APPROVED OUTLET DEVICE.

MAINTENANCE NOTES:
1. INSPECT AFTER EVERY RAINFALL DURING THE CONSTRUCTION OPERATION.
2. IMMEDIATELY REMOVE ANY OBSTRUCTIONS FROM THE FLOW AREA, AND REPAIR DIVERSION RIDGE.
3. CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED.
4. MAINTAIN THE VEGETATION IN A VIGOROUS, HEALTHY CONDITION AT ALL TIMES.



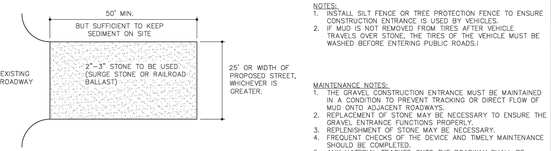
CROSS SECTIONAL VIEW

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD CLEAN WATER DIVERSION

NOTES:
1. INSTALL SILT FENCE OR TREE PROTECTION FENCE TO ENSURE CONSTRUCTION ENTRANCE IS USED BY VEHICLES.
2. IF MUD IS NOT REMOVED FROM TIRES AFTER VEHICLE TRAVELS OVER STONE, THE TIRES OF THE VEHICLE MUST BE WASHED BEFORE ENTERING PUBLIC ROADS.)

MAINTENANCE NOTES:
1. THE GRAVEL CONSTRUCTION ENTRANCE MUST BE MAINTAINED IN A CONDITION TO PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO ADJACENT ROADWAYS.
2. REPLACEMENT OF STONE MAY BE NECESSARY TO ENSURE THE GRAVEL ENTRANCE FUNCTIONS PROPERLY.
3. REPLENISHMENT OF STONE MAY BE NECESSARY.
4. FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE SHOULD BE COMPLETED.
5. ANY MATERIAL TRACKED ONTO THE ROADWAY SHALL BE CLEANED UP IMMEDIATELY.



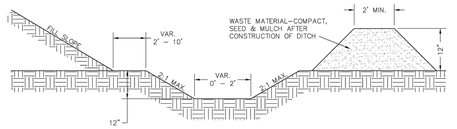
CROSS SECTION

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD CONSTRUCTION ENTRANCE

NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.

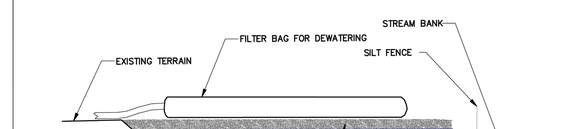
MAINTENANCE NOTES:
1. INSPECT ONCE A WEEK AND AFTER EVERY 1" RAINFALL.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED.
5. AFTER DRAINAGE AREA IS PERMANENTLY STABILIZED, PLACE WASTE MATERIAL IN DITCH TO BLEND WITH NATURAL GROUND AND STABILIZE.



CROSS SECTIONAL VIEW

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD TEMPORARY DIVERSION DITCH



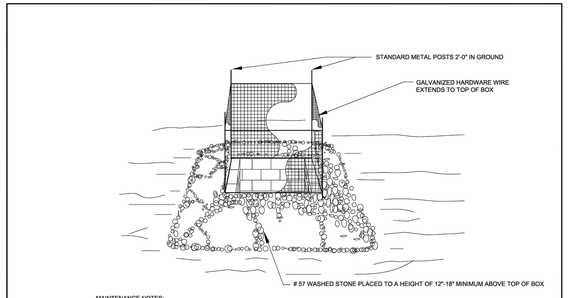
NOTES
1. PROVIDE STABILIZED OUTLET TO STREAM BANK.
2. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.

MAINTENANCE NOTES:
1. REPLACE AND DISPOSE OF FILTER BAG(S) WHEN IT IS ¾ FULL OF SEDIMENT OR WHEN IT IS IMPRCTICAL FOR BAG TO FILTER SEDIMENT.
2. PROVIDE A SUFFICEINT QUANTITY OF FILTER BAGS TO CONTAIN SILT FROM PUMPED EFFLUENT.

NOT TO SCALE

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

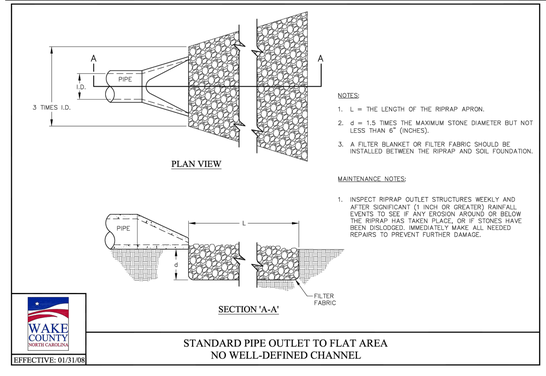
STANDARD FILTER BAG FOR DEWATERING ACTIVITIES



MAINTENANCE NOTES:
1. REMOVE SEDIMENT WHEN HALF HEIGHT OF STONE AND CLEAR HARDWARE OF DEBRIS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS, TAKING CARE NOT TO DAMAGE OR UNDERCUT HARDWARE DURING SEDIMENT REMOVAL.
2. REPLACE STONE AS NEEDED.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD GRAVEL YARD INLET PROTECTION

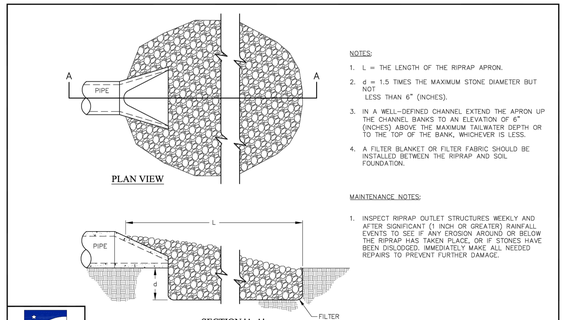


NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

MAINTENANCE NOTES:
1. INSPECT RIPRAP OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (1 INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL

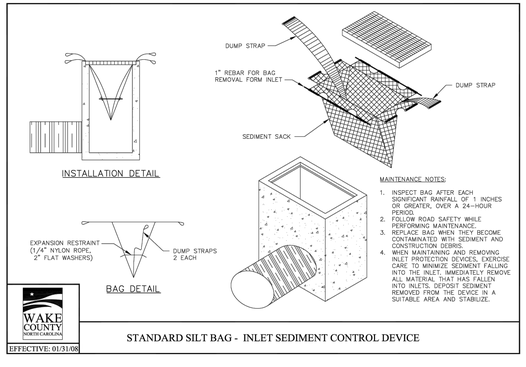


NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

MAINTENANCE NOTES:
1. INSPECT RIPRAP OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (1 INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

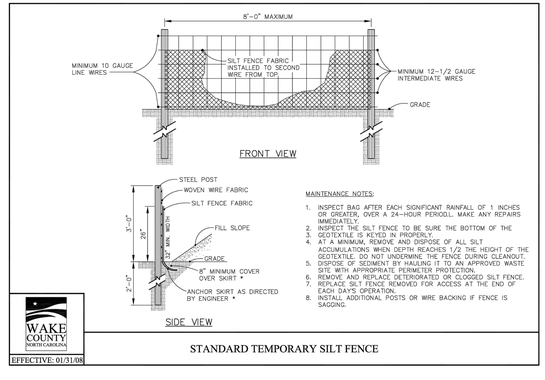
STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL



MAINTENANCE NOTES:
1. INSPECT BAG AFTER EACH SIGNIFICANT RAINFALL OF 1 INCHES OR GREATER, OVER A 24-HOUR PERIOD.
2. FOLLOW ROAD SAFETY WHILE PERFORMING MAINTENANCE.
3. REPLACE BAG WHEN THEY BECOME CONTAMINATED WITH SEDIMENT AND CONSTRUCTION DEBRIS.
4. WHEN MAINTAINING AND REMOVING INLET PROTECTION DEVICES, EXERCISE CARE TO MINIMIZE SEDIMENT FALLING INTO THE INLET. IMMEDIATELY REMOVE ALL SEDIMENT THAT DOES FALL INTO INLETS. DISPOSE SEDIMENT REMOVED FROM THE DEVICE IN A SUITABLE AREA AND STABILIZE.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE



MAINTENANCE NOTES:
1. INSPECT BAG AFTER EACH SIGNIFICANT RAINFALL OF 1 INCHES OR GREATER, OVER A 24-HOUR PERIOD.
2. INSPECT THE SILT FENCE TO BE SURE THE BOTTOM OF THE
3. GEOTEXTILE IS KEYED IN PROPERLY.
4. AT A MINIMUM, REMOVE AND DISPOSE OF ALL SILT ACCUMULATIONS WHEN DEPTH REACHES 1/2 THE HEIGHT OF THE GEOTEXTILE. DO NOT UNDERMINE THE FENCE DURING CLEANOUT.
5. DISPOSE OF SEDIMENT BY HAULING IT TO AN APPROVED WASTE SITE WITH APPROPRIATE PERIMETER PROTECTION.
6. REMOVE AND REPLACE DETERIORATED OR CLOGGED SILT FENCE.
7. REPLACE SILT FENCE REMOVED FOR ACCESS AT THE END OF EACH DAY'S OPERATION.
8. INSTALL ADDITIONAL POSTS OR WIRE BACKING IF FENCE IS SAGGING.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD TEMPORARY SILT FENCE

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title: Erosion Control Details (1 of 2)

ZMA-2-23 (Drawing Number)

C7.09

Sheet 177 of 224

Project Number: 39510.05

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

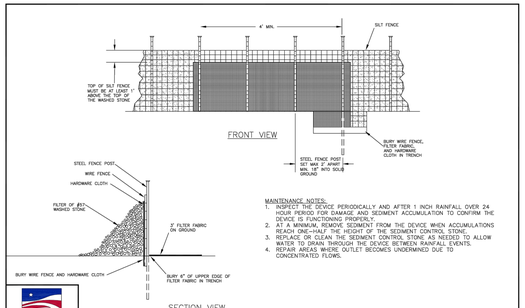
By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNEND

12/15/2025

Saved Thursday, November 6, 2025 10:11:08 AM MMEZA Plotted Tuesday, December 16, 2025 8:46:29 AM Walker Johnson

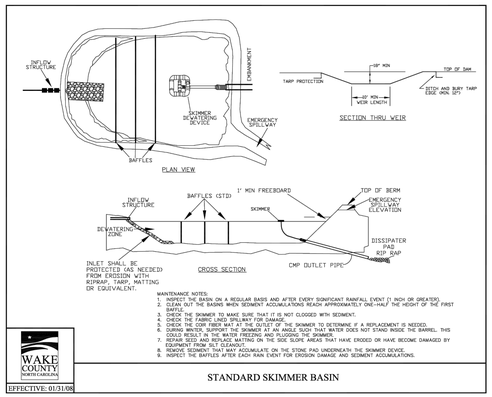
C:\AMS\ACCDocs\VHB\39510.05 dr horton-lyndon oaks -\project files\5_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-ER-DT.dwg



MAINTENANCE NOTES:
1. INSPECT THE DEVICE PERIODICALLY AND AFTER 1 INCH RAINFALL OVER 24 HOUR PERIOD FOR DAMAGE AND SEDIMENT ACCUMULATION TO CONFIRM THE DEVICE IS FUNCTIONING PROPERLY.
2. AT A MINIMUM, REMOVE SEDIMENT FROM THE DEVICE WHEN ACCUMULATIONS REACH ONE-HALF THE HEIGHT OF THE SEDIMENT CONTROL STONE.
3. REPLACE OR CLEAN THE SEDIMENT CONTROL STONE AS NEEDED TO ALLOW WATER TO DRAIN THROUGH THE DEVICE BETWEEN RAINFALL EVENTS.
4. REPAIR AREAS WHERE OUTLET BECOMES UNDERMINED DUE TO CONCENTRATED FLOWS.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SILT FENCE OUTLET

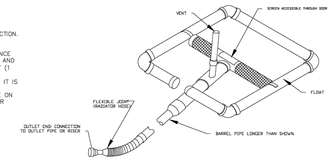


MAINTENANCE NOTES:
1. INSPECT THE BASIN ON A REGULAR BASIS AND AFTER EVERY SIGNIFICANT RAINFALL EVENT (1 INCH OR GREATER).
2. CLEAN OUT THE BASINS WHEN SEDIMENT ACCUMULATIONS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE FIRST BAFFLE.
3. CHECK THE SKIMMER TO MAKE SURE THAT IT IS NOT CLOGGED WITH SEDIMENT.
4. CHECK THE TARP TO MAKE SURE IT IS NOT TORN.
5. CHECK THE COIR FIBER MAT AT THE OUTLET OF THE SKIMMER TO DETERMINE IF A REPLACEMENT IS NEEDED.
6. DURING WINTER, SUPPORT THE SKIMMER AT AN ANGLE SUCH THAT WATER DOES NOT STAND INSIDE THE BARREL. THIS WILL PREVENT ICE FROM FORMING AND CAUSING DAMAGE.
7. REPAIR SEED AND REPLACE MATTING ON THE SIDE SLOPE AREAS THAT HAVE ERODED OR HAVE BECOME DAMAGED BY EQUIPMENT FROM SILT CLEANOUT.
8. REMOVE SEDIMENT THAT MAY ACCUMULATE ON THE STONE PAD UNDERNEATH THE SKIMMER DEVICE.
9. INSPECT THE BAFFLES AFTER EACH RAIN EVENT FOR EROSION DAMAGE AND SEDIMENT ACCUMULATIONS.

WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SKIMMER BASIN

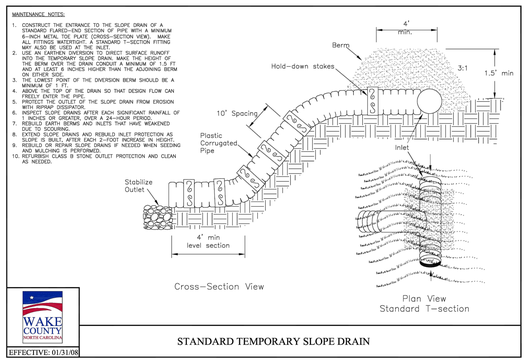
MAINTENANCE NOTES:
1. INSTALL A PAD FOR SKIMMER TO REST ON STONE OR WOOD PALLETS OR H-BEAM SECTION.
2. INSTALL SKIMMER AND PAD AWAY FROM BAFFLES.
3. ATTACH ROPE TO SKIMMER FOR MAINTENANCE.
4. INSPECT THE BASIN ON A REGULAR BASIS AND AFTER EVERY SIGNIFICANT RAINFALL EVENT (1 INCH OR GREATER).
5. CHECK THE SKIMMER TO MAKE SURE THAT IT IS NOT CLOGGED WITH SEDIMENT.
6. REMOVE SEDIMENT THAT MAY ACCUMULATE ON THE STONE PAD UNDERNEATH THE SKIMMER DEVICE.



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD SKIMMER DETAIL

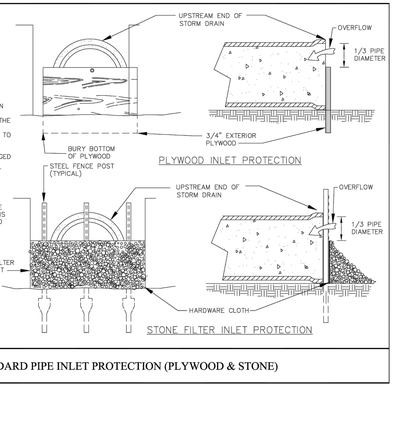
MAINTENANCE NOTES:
1. CONSTRUCT THE ENTRANCE TO THE SLOPE DRAIN OF A STANDARD FLARED-END SECTION OF PIPE WITH A MINIMUM 6-INCH METAL TOE PLATE (CROSS-SECTION VIEW). MAKE CONNECTIONS WITH WATERTIGHT BANDS. A STANDARD T-SECTION FITTING MAY ALSO BE USED AT THE INLET.
2. USE AN EARTHEN DIVERSION TO DIRECT SURFACE RUNOFF INTO THE TEMPORARY SLOPE DRAIN. MAKE THE HEIGHT OF THE DIVERSION BERM EQUAL TO THE DEPTH OF THE PIPE PLUS 6" AND AT LEAST 8 INCHES HIGHER THAN THE ADJOINING BERM ON EITHER SIDE.
3. THE LOWEST POINT OF THE DIVERSION BERM SHOULD BE A MINIMUM OF 1' FROM THE TOP OF THE DRAIN SO THAT DESIGN FLOW CAN FREELY ENTER THE PIPE.
4. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION WITH RIPRAP DISSIPATOR.
5. INSPECT SLOPE DRAINS AFTER EACH SIGNIFICANT RAINFALL OF 1 INCH OR GREATER OVER A 24-HOUR PERIOD FOR DAMAGE.
6. REBUILD EARTH BERMS AND INLETS THAT HAVE WEAKENED DUE TO SCOURING.
7. REMOVE SILT TRAPS AND REBUILD INLET PROTECTION AS SLOPE IS BUILT, AFTER EACH 2-FOOT INCREASE IN HEIGHT.
8. REBUILD OR REPAIR SLOPE DRAINS IF NEEDED WHEN SEEDING AND MULCHING IS PERFORMED.
9. REFURBISH CLASS B STONE OUTLET PROTECTION AND CLEAN AS NEEDED.



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

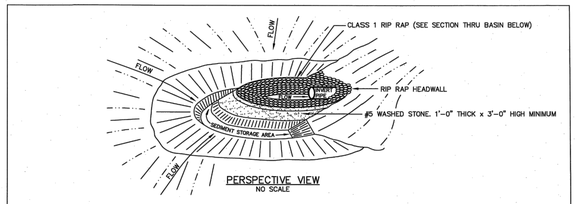
STANDARD TEMPORARY SLOPE DRAIN

MAINTENANCE NOTES:
1. INSPECT THE DEVICE AFTER1 INCHES OR GREATER, OVER A 24-HOUR PERIOD FOR DAMAGE, SEDIMENT ACCUMULATION AND PROPER FUNCTION.
2. REMOVE SEDIMENT FROM THE DEVICE WHEN ACCUMULATIONS REACH ONE-HALF THE HEIGHT OF THE BASIN AREA FORMED BY THE DEVICE.
3. REPLACE THE WASHED STONE AS NEEDED TO ALLOW WATER TO DRAIN THROUGH THE DEVICE BETWEEN RAINFALL EVENTS.
4. CLEAN OUT THE DEVICE WHEN IT IS CLOGGED WITH DEBRIS.
5. CHECK PLYWOOD IF DAMAGED. REPLACE IF NEEDED.
6. IF THE DEVICE IS TO REMAIN ON THE PROJECT AT THE COMPLETION OF CONSTRUCTION ACTIVITIES, THE DEVICE SHOULD BE CLEAN AND IN PROPER SHAPE AT THE TIME OF FINAL INSPECTION. IF IT IS REMOVED, ALL ACCUMULATED SILT SHOULD BE REMOVED AND THE AREA SEEDED.



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

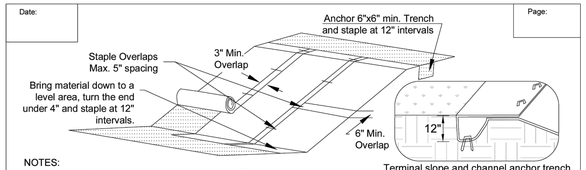
STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)



WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08

STANDARD HORSESHOE INLET PROTECTION

Date: | Page:



NOTES:
1. Lime, fertilizer and seed before installation. Planting of shrubs,trees, etc. should occur after installation
2. Slope surface shall be smooth before placement for proper soil contact.
3. For installation on a slope, place RECP 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the RECP at 1 foot intervals along the bottom of the trench, backfill and compact. Unroll the RECP down the slope maintaining direct contact between the soil and RECP.
4. Pin RECP to the ground using staples or pins in a 3 foot center-to-center pattern.
5. Design velocities exceeding 2 feet/second require temporary blankets, mats or similar liners to protect seed and soil until vegetation becomes established.
6. If there is a berm at the top of slope, anchor upslope of the berm.
7. Staking or stapling layout per manufacturers specification.
8. 11 gauge, at least 6 inch by 1 inch staples or 12 inch minimum length wooden stakes are recommended for anchoring.
9. Do not stretch blankets/matting tight, allow the rolls to conform to any irregularities.
10. For slopes less than 3H:1V, rolls may be placed in horizontal strips.

MAINTENANCE:
1. Inspect Rolled Erosion Control Products at least weekly and after each rain 1.0 inch or greater; repair immediately.
2. Good contact with the ground must be maintained, and erosion must not occur beneath the RECP.
3. Any areas of the RECP that are damaged or not in close contact with the ground shall be repaired and stapled.
4. If erosion occurs due to poorly controlled drainage, the problem shall be fixed and eroded area protected.
5. Monitor and repair the RECP as necessary until ground cover is established.

NORTH CAROLINA Environmental Quality
EFFECTIVE DATE:11/12/2020

ROLLED EROSION CONTROL PRODUCTS (RECP) FOR SLOPES

vhb.com
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Erosion Control Details (2 of 2)

ZMA-2-23

Drawing Number
C7.10

Sheet 178 of 224

Project Number
39510.05

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND
12/15/2025

Saved Thursday, November 6, 2025 10:11:08 AM MMEZA Plotted Tuesday, December 16, 2025 8:47:00 AM Walker Johnson

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin #1 Design

Sed. Basin ID: Skimmer Basin #1 **Basin Location:** Phase 1

Flowrate to Basin #1:

Flowrate Q = CiA

Basin Drainage Area "A": 17.13 AC

Runoff Coefficient "C":

Disturbed earth =	17.13	AC @ c=	0.55
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.55

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	731	lf
High Point =	307	ft
Low Point =	290	ft
Change in elevation of drainage area (H) =	17	ft

Tc = 5.33 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 68.59 cfs

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin #2 Design

Sed. Basin ID: Skimmer Basin #2 **Basin Location:** Phase 1

Flowrate to Skimmer Basin #2:

Flowrate Q = CiA

Basin Drainage Area "A": 0.92 AC

Runoff Coefficient "C":

Disturbed earth =	0.92	AC @ c=	0.50
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	405	lf
High Point =	281	ft
Low Point =	263	ft
Change in elevation of drainage area (H) =	18	ft

Tc = 2.64 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 3.35 cfs

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin #3 Design

Sed. Basin ID: Skimmer Basin #3 **Basin Location:** Phase 1

Flowrate to Skimmer Basin #3:

Flowrate Q = CiA

Basin Drainage Area "A": 5.06 AC

Runoff Coefficient "C":

Disturbed earth =	5.06	AC @ c=	0.50
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	750	lf
High Point =	292	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	25	ft

Tc = 4.73 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 18.42 cfs

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin #4 Design

Sed. Basin ID: Skimmer Basin #4 **Basin Location:** Phase 1

Flowrate to Skimmer Basin #4:

Flowrate Q = CiA

Basin Drainage Area "A": 6.35 AC

Runoff Coefficient "C":

Disturbed earth =	6.35	AC @ c=	0.50
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	915	lf
High Point =	307	ft
Low Point =	281	ft
Change in elevation of drainage area (H) =	26	ft

Tc = 5.87 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 23.11 cfs

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin #5 Design

Sed. Basin ID: Skimmer Basin #5 **Basin Location:** Phase 1

Flowrate to Skimmer Basin #5:

Flowrate Q = CiA

Basin Drainage Area "A": 4.75 AC

Runoff Coefficient "C":

Disturbed earth =	4.75	AC @ c=	0.50
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	731	lf
High Point =	307	ft
Low Point =	290	ft
Change in elevation of drainage area (H) =	17	ft

Tc = 5.33 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 17.29 cfs

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #1 **Basin Location:** Phase 1

Skimmer Basin 1 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 61,668 cf
Surface Area Required = 29,836 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	6	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	264	ft	
Bottom Length =	312	ft	
Surface Width =	300	ft	
Surface Length =	348	ft	
Bottom Area =	82368	sf	
Volume Provided =	**560,304**	**cf**	OK
Surface Area Provided =	**104,400**	**sf**	OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #2 **Basin Location:** Phase 1

Skimmer Basin 2 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 3,312 cf
Surface Area Required = 1,457 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	3	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	32	ft	
Bottom Length =	42	ft	
Surface Width =	50	ft	
Surface Length =	60	ft	
Bottom Area =	1344	sf	
Volume Provided =	**6,516**	**cf**	OK
Surface Area Provided =	**3,000**	**sf**	OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #3 **Basin Location:** Phase 1

Skimmer Basin 3 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 18,216 cf
Surface Area Required = 8,012 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	3	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	72	ft	
Bottom Length =	132	ft	
Surface Width =	90	ft	
Surface Length =	150	ft	
Bottom Area =	9504	sf	
Volume Provided =	**34,506**	**cf**	OK
Surface Area Provided =	**13,500**	**sf**	OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #4 **Basin Location:** Phase 1

Skimmer Basin 4 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 22,860 cf
Surface Area Required = 10,055 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	3	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	115	ft	
Bottom Length =	70	ft	
Surface Width =	133	ft	
Surface Length =	88	ft	
Bottom Area =	8050	sf	
Volume Provided =	**29,631**	**cf**	OK
Surface Area Provided =	**11,704**	**sf**	OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #5 **Basin Location:** Phase 1

Skimmer Basin 5 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 17,100 cf
Surface Area Required = 7,521 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	3	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	72	ft	
Bottom Length =	112	ft	
Surface Width =	90	ft	
Surface Length =	130	ft	
Bottom Area =	8064	sf	
Volume Provided =	**29,646**	**cf**	OK
Surface Area Provided =	**11,700**	**sf**	OK

Skimmer Basin #1 Summary

Bottom Width =	**264**	**ft**
Bottom Length =	**312**	**ft**
Top Width =	**309**	**ft**
Top Length =	**357**	**ft**
Storage Depth =	**6**	**ft**
Dam Height =	**7.5**	**ft**
Sideslopes =	**3**	**:1**

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Skimmer Basin #2 Summary

Bottom Width =	**32**	**ft**
Bottom Length =	**42**	**ft**
Top Width =	**59**	**ft**
Top Length =	**69**	**ft**
Storage Depth =	**3**	**ft**
Dam Height =	**4.5**	**ft**
Sideslopes =	**3**	**:1**

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Skimmer Basin #3 Summary

Bottom Width =	**72**	**ft**
Bottom Length =	**132**	**ft**
Top Width =	**99**	**ft**
Top Length =	**159**	**ft**
Storage Depth =	**3**	**ft**
Dam Height =	**4.5**	**ft**
Sideslopes =	**3**	**:1**

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Skimmer Basin #4 Summary

Bottom Width =	**115**	**ft**
Bottom Length =	**70**	**ft**
Top Width =	**142**	**ft**
Top Length =	**97**	**ft**
Storage Depth =	**3**	**ft**
Dam Height =	**4.5**	**ft**
Sideslopes =	**3**	**:1**

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Skimmer Basin #5 Summary

Bottom Width =	**72**	**ft**
Bottom Length =	**112**	**ft**
Top Width =	**99**	**ft**
Top Length =	**139**	**ft**
Storage Depth =	**3**	**ft**
Dam Height =	**4.5**	**ft**
Sideslopes =	**3**	**:1**

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #1 **Basin Location:** Phase 1

Spillway Design - Skimmer Outlet

Volume Required = 61,668 cf

Discharge per day (Qd) = 20556 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	4.67	in
Skimmer Size =	**2**	**in**
Head on Skimmer =	0.167	ft
Orifice Size =	**4.5**	**in** (1/4 inch increments)
Dewatering Time (days)	3.2	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 68.59 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	30	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5

Provided Capacity = 90.00 cfs OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #2 **Basin Location:** Phase 1

Spillway Design - Skimmer Outlet

Volume Required = 3,312 cf

Discharge per day (Qd) = 1104 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	1.08	in
Skimmer Size =	**2**	**in**
Head on Skimmer =	0.167	ft
Orifice Size =	**1**	**in** (1/4 inch increments)
Dewatering Time (days)	3.5	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 3.35 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	10	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5

Provided Capacity = 30.00 cfs OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #3 **Basin Location:** Phase 1

Skimmer Basin - Skimmer Outlet

Volume Required = 18,216 cf

Discharge per day (Qd) = 6072 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	2.54	in
Skimmer Size =	**2**	**in**
Head on Skimmer =	0.167	ft
Orifice Size =	**2.5**	**in** (1/4 inch increments)
Dewatering Time (days)	3.1	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 18.42 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	10	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5

Provided Capacity = 30.00 cfs OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #4 **Basin Location:** Phase 1

Spillway Design - Skimmer Outlet

Volume Required = 22,860 cf

Discharge per day (Qd) = 7620 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	2.69	in
Skimmer Size =	**2.5**	**in**
Head on Skimmer =	0.208	ft
Orifice Size =	**2.5**	**in** (1/4 inch increments)
Dewatering Time (days)	3.5	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 23.11 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	10	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5

Provided Capacity = 30.00 cfs OK

Project Name: Lyndon Oaks | By: WS | Revised:
Project Number: 39510.05 | Date: 08/04/25 | Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #5 **Basin Location:** Phase 1

Spillway Design - Skimmer Outlet

Volume Required = 17,100 cf

Discharge per day (Qd) = 5700 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	2.46	in
Skimmer Size =	**2**	**in**
Head on Skimmer =	0.167	ft
Orifice Size =	**2.25**	**in** (1/4 inch increments)
Dewatering Time (days)	3.6	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 17.29 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	10	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5

Provided Capacity = 30.00 cfs OK

vhb.com

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB | Checked by: CT, KS, JB, RB
Issued for: Approval | Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Drawing Title: Phase 1 Skimmer Basin Design

ZMA-2-23

Drawing Number: C7.11

Sheet 179 of 224

Project Number: 39510.05

Saved Thursday, November 6, 2025 10:11:08 AM MMEZA Plotted Tuesday, December 16, 2025 8:48:16 AM Walker Johnson

Project Name: Lyndon Oaks By: WS Revised:
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin #6 Design

Sed. Basin ID: Skimmer Basin #6 **Basin Location:** North

Flowrate to Basin #6:

Flowrate Q = CiA

Basin Drainage Area "A": 2.73 AC

Runoff Coefficient "C":

Disturbed earth =	2.73	AC @ c=	0.55
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.55

Rainfall Intensity "I": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	370.0	lf
High Point =	302.5	ft
Low Point =	288.0	ft
Change in elevation of drainage area (H) =	14.50	ft

Tc = 2.58 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 10.93 cfs

Project Name: Lyndon Oaks By: WS Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date: 01/00/00

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #6 **Basin Location:** North

Skimmer Basin 6 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 9,828 cf
Surface Area Required = 4,755 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	3	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	82	ft	
Bottom Length =	152	ft	
Surface Width =	100	ft	
Surface Length =	170	ft	
Bottom Area =	12464	sf	
Volume Provided =	**44,196**	**cf**	OK
Surface Area Provided =	**17,000**	**sf**	OK

Skimmer Basin #6 Summary

Bottom Width =	82	ft
Bottom Length =	152	ft
Top Width =	109	ft
Top Length =	179	ft
Storage Depth =	3	ft
Dam Height =	4.5	ft
Sideslopes =	3	:1

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Project Name: Lyndon Oaks By: WS Revised:
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin #7 Design

Sed. Basin ID: Skimmer Basin #7 **Basin Location:** Phase 2

Flowrate to Basin #7:

Flowrate Q = CiA

Basin Drainage Area "A": 1.32 AC

Runoff Coefficient "C":

Disturbed earth =	1.32	AC @ c=	0.55
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.55

Rainfall Intensity "I": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	500.0	lf
High Point =	305.0	ft
Low Point =	278.0	ft
Change in elevation of drainage area (H) =	27.00	ft

Tc = 2.88 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 5.29 cfs

Project Name: Lyndon Oaks By: WS Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #7 **Basin Location:** Phase 2

Skimmer Basin 7 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 4,752 cf
Surface Area Required = 2,299 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	7	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	100	ft	
Bottom Length =	285	ft	
Surface Width =	145	ft	
Surface Length =	325	ft	
Bottom Area =	28500	sf	
Volume Provided =	**264,688**	**cf**	OK
Surface Area Provided =	**47,125**	**sf**	OK

Skimmer Basin #7 Summary

Bottom Width =	100	ft
Bottom Length =	285	ft
Top Width =	154	ft
Top Length =	334	ft
Storage Depth =	7	ft
Dam Height =	8.5	ft
Sideslopes =	3	:1

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Project Name: Lyndon Oaks By: WS Revised:
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin #8 Design

Sed. Basin ID: Skimmer Basin #8 **Basin Location:** Phase 2

Flowrate to Basin #8:

Flowrate Q = CiA

Basin Drainage Area "A": 9.22 AC

Runoff Coefficient "C":

Disturbed earth =	9.22	AC @ c=	0.55
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.55

Rainfall Intensity "I": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	1115.0	lf
High Point =	305.0	ft
Low Point =	267.0	ft
Change in elevation of drainage area (H) =	38.00	ft

Tc = 6.37 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 36.92 cfs

Project Name: Lyndon Oaks By: WS Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #8 **Basin Location:** Phase 2

Skimmer Basin 8 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 33,192 cf
Surface Area Required = 16,059 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	4	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	44	ft	
Bottom Length =	243	ft	
Surface Width =	80	ft	
Surface Length =	265	ft	
Bottom Area =	10692	sf	
Volume Provided =	**63,784**	**cf**	OK
Surface Area Provided =	**21,200**	**sf**	OK

Skimmer Basin #8 Summary

Bottom Width =	44	ft
Bottom Length =	243	ft
Top Width =	89	ft
Top Length =	274	ft
Storage Depth =	4	ft
Dam Height =	5.5	ft
Sideslopes =	3	:1

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Project Name: Lyndon Oaks By: MW Revised:
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin #9 Design

Sed. Basin ID: Skimmer Basin #9 **Basin Location:** Phase 2

Flowrate to Basin #9:

Flowrate Q = CiA

Basin Drainage Area "A": 2.68 AC

Runoff Coefficient "C":

Disturbed earth =	2.68	AC @ c=	0.55
Gravel =	0.00	AC @ c=	0.90
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Impervious =	0.00	AC @ c=	0.95

Composite C value = 0.55

Rainfall Intensity "I": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** (L^3/H)^0.385 / 128

Flow Length (L) =	600.0	lf
High Point =	286.0	ft
Low Point =	267.0	ft
Change in elevation of drainage area (H) =	19.00	ft

Tc = 4.07 min minimum = 5 min

i = 7.28 in/hr

Flow "Q = CiA" 10.73 cfs

Project Name: Lyndon Oaks By: MW Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date: 01/00/00

Skimmer Basin Design (cont.)

Skimmer. Basin ID Skimmer Basin #9 **Basin Location:** Phase 2

Skimmer Basin 9 Volume

Minimum Required Volume = 3600 cf/acre drainage area per year
Minimum Required Surface Area = 435 sf/cfs of Q10 peak inflow

Volume Required = 9,648 cf
Surface Area Required = 4,668 sf

Shape is assumed to be Trapezodial - excavation may be required

Depth of Basin =	7	ft	
Sideslopes =	3	:1	(2:1 minimum)
Bottom Width =	80	ft	
Bottom Length =	120	ft	
Surface Width =	125	ft	
Surface Length =	165	ft	
Bottom Area =	9600	sf	
Volume Provided =	**105,788**	**cf**	OK
Surface Area Provided =	**20,625**	**sf**	OK

Skimmer Basin #9 Summary

Bottom Width =	80	ft
Bottom Length =	120	ft
Top Width =	134	ft
Top Length =	174	ft
Storage Depth =	7	ft
Dam Height =	8.5	ft
Sideslopes =	3	:1

Note: All Calculations are based on a 10 year return rainfall and in accordance with the North Carolina Erosion and Sedimentation Planning and Design Manual.

Project Name: Lyndon Oaks By: WS Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #6 **Basin Location:** North

Spillway Design - Skimmer Outlet

Volume Required = 9,828 cf

Discharge per day (Qd) = 3276 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	1.86	in
Skimmer Size =	2	**in**
Head on Skimmer =	0.167	ft
Orifice Size =	1.75	**in** (1/4 inch increments)
Dewatering Time (days)	3.4	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 10.93 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	15	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5
Provided Capacity = 45.00 cfs OK

Project Name: Lyndon Oaks By: WS Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #7 **Basin Location:** Phase 2

Spillway Design - Skimmer Outlet

Volume Required = 4,752 cf

Discharge per day (Qd) = 1584 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	1.30	in
Skimmer Size =	2	**in**
Head on Skimmer =	0.167	ft
Orifice Size =	1.25	**in** (1/4 inch increments)
Dewatering Time (days)	3.2	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 5.29 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	20	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5
Provided Capacity = 60.00 cfs OK

Project Name: Lyndon Oaks By: WS Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date:

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #8 **Basin Location:** Phase 2

Spillway Design - Skimmer Outlet

Volume Required = 33,192 cf

Discharge per day (Qd) = 11064 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	2.88	in
Skimmer Size =	4	**in**
Head on Skimmer =	0.333	ft
Orifice Size =	2.75	**in** (1/4 inch increments)
Dewatering Time (days)	3.3	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 36.92 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	10	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5
Provided Capacity = 30.00 cfs NO

Project Name: Lyndon Oaks By: MW Revised: 0
Project Number: 39510.05 Date: 08/07/25 Date: 01/00/00

Skimmer Basin Design (cont.)

Sed. Basin ID: Skimmer Basin #9 **Basin Location:** Phase 2

Spillway Design - Skimmer Outlet

Volume Required = 9,648 cf

Discharge per day (Qd) = 3216 cf/day (assume 3 days)

Orifice Eq'n: Q = Cd * (pi/4) * D^2 * SQRT(2*g*h)

Orifice Coeffient (Cd) =	0.6	
Gavitational constatnt (g) =	32.2	ft/s2
Desired orifice Dia. (D) =	1.98	in
Skimmer Size =	1.5	**in**
Head on Skimmer =	0.125	ft
Orifice Size =	2	**in** (1/4 inch increments)
Dewatering Time (days)	3.0	(Suggest about 3 days)

Emergency Spillway Design

Required Capacity = Peak Flow from a 10 yr storm event.
Required Capacity = 10.73 cfs

Discharge capacity of stone outlet:

C =	3		
Bottom Width (L) =	10	ft	min = 10ft
Depth of flow (h) =	1	ft	(1' added for larger storms)

Basin Weir Eq'n: Q= C * L * h^1.5
Provided Capacity = 30.00 cfs OK

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VHB Engineering NC, P.C.
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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Phase 2 Skimmer Basin Design

ZMA-2-23

Drawing Number
C7.12

Sheet 180 of 224

Project Number
39510.05

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, November 6, 2025 10:11:08 AM MMEZA Plotted Tuesday, December 16, 2025 8:48:56 AM Walker Johnson

DD1

Flowrate Q = CiA

Ditch Drainage Area "A": 4.59 AC

Runoff Coefficient "C":

Disturbed earth =	4.59	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	942 lf
High Point =	307 ft
Low Point =	293 ft
Change in elevation of drainage area (H) =	14 ft

Tc = 7.70 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 16.69 cfs

DD2

Flowrate Q = CiA

Ditch Drainage Area "A": 0.16 AC

Runoff Coefficient "C":

Disturbed earth =	0.16	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	211 lf
High Point =	299 ft
Low Point =	293 ft
Change in elevation of drainage area (H) =	6 ft

Tc = 1.90 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 0.57 cfs

DD3

Flowrate Q = CiA

Ditch Drainage Area "A": 1.77 AC

Runoff Coefficient "C":

Disturbed earth =	1.77	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	314 lf
High Point =	294 ft
Low Point =	281 ft
Change in elevation of drainage area (H) =	13 ft

Tc = 2.23 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 6.43 cfs

DD4

Flowrate Q = CiA

Ditch Drainage Area "A": 4.58 AC

Runoff Coefficient "C":

Disturbed earth =	4.58	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	913 lf
High Point =	307 ft
Low Point =	281 ft
Change in elevation of drainage area (H) =	26 ft

Tc = 5.85 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 16.65 cfs

DD5

Flowrate Q = CiA

Ditch Drainage Area "A": 3.52 AC

Runoff Coefficient "C":

Disturbed earth =	3.52	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	732 lf
High Point =	293 ft
Low Point =	270 ft
Change in elevation of drainage area (H) =	23 ft

Tc = 4.75 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 12.81 cfs

DD6

Flowrate Q = CiA

Ditch Drainage Area "A": 1.35 AC

Runoff Coefficient "C":

Disturbed earth =	1.35	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	470 lf
High Point =	290 ft
Low Point =	270 ft
Change in elevation of drainage area (H) =	20 ft

Tc = 3.01 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 4.91 cfs

DD7

Flowrate Q = CiA

Ditch Drainage Area "A": 0.19 AC

Runoff Coefficient "C":

Disturbed earth =	0.19	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	234 lf
High Point =	279 ft
Low Point =	271 ft
Change in elevation of drainage area (H) =	8 ft

Tc = 1.91 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 0.69 cfs

DD8

Flowrate Q = CiA

Ditch Drainage Area "A": 0.92 AC

Runoff Coefficient "C":

Disturbed earth =	0.92	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	405 lf
High Point =	281 ft
Low Point =	263 ft
Change in elevation of drainage area (H) =	18 ft

Tc = 2.64 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 3.35 cfs

DD9

Flowrate Q = CiA

Ditch Drainage Area "A": 0.60 AC

Runoff Coefficient "C":

Disturbed earth =	0.60	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	721 lf
High Point =	271 ft
Low Point =	251 ft
Change in elevation of drainage area (H) =	20 ft

Tc = 4.93 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 2.17 cfs

DD10

Flowrate Q = CiA

Ditch Drainage Area "A": 7.65 AC

Runoff Coefficient "C":

Disturbed earth =	7.65	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	1819 lf
High Point =	293 ft
Low Point =	251 ft
Change in elevation of drainage area (H) =	42 ft

Tc = 10.79 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 27.80 cfs

DD11

Flowrate Q = CiA

Ditch Drainage Area "A": 8.12 AC

Runoff Coefficient "C":

Disturbed earth =	8.12	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	1670 lf
High Point =	293 ft
Low Point =	255 ft
Change in elevation of drainage area (H) =	38 ft

Tc = 10.16 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 29.51 cfs

DD12

Flowrate Q = CiA

Ditch Drainage Area "A": 0.76 AC

Runoff Coefficient "C":

Disturbed earth =	0.76	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	181 lf
High Point =	273 ft
Low Point =	248 ft
Change in elevation of drainage area (H) =	25 ft

Tc = 0.92 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 2.76 cfs

DD13

Flowrate Q = CiA

Ditch Drainage Area "A": 6.96 AC

Runoff Coefficient "C":

Disturbed earth =	6.96	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	942 lf
High Point =	306 ft
Low Point =	293 ft
Change in elevation of drainage area (H) =	13 ft

Tc = 7.92 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 25.29 cfs

DD14

Flowrate Q = CiA

Ditch Drainage Area "A": 2.22 AC

Runoff Coefficient "C":

Disturbed earth =	2.22	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: $Tc = \frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	900 lf
High Point =	304 ft
Low Point =	281 ft
Change in elevation of drainage area (H) =	23 ft

Tc = 6.03 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 8.07 cfs

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: **Phase 1 Diversion Ditch Design (1 of 2)**

ZMA-2-23

Drawing Number: **C7.13**

Sheet 181 of 224

Project Number: 39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

C:\AMS\ACCDocs\VHB\39510.05 dr horton-lyndon oaks -\project files\5_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-ER-DT.dwg

DD15

Flowrate Q = CiA

Ditch Drainage Area "A": 10.81 AC

Runoff Coefficient "C":

Disturbed earth =	10.81 AC @ c=	0.50
Undisturbed, wooded areas =	0.00 AC @ c=	0.25
Undisturbed, grassy areas =	0.00 AC @ c=	0.30
Other areas =	0.00 AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	2300 lf
High Point =	293 ft
Low Point =	251 ft
Change in elevation of drainage area (H) =	42 ft

Tc = 14.15 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 39.30 cfs

DD16

Flowrate Q = CiA

Ditch Drainage Area "A": 12.15 AC

Runoff Coefficient "C":

Disturbed earth =	12.15 AC @ c=	0.50
Undisturbed, wooded areas =	0.00 AC @ c=	0.25
Undisturbed, grassy areas =	0.00 AC @ c=	0.30
Other areas =	0.00 AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	1900 lf
High Point =	293 ft
Low Point =	254 ft
Change in elevation of drainage area (H) =	39 ft

Tc = 11.67 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 44.18 cfs

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Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: **Phase 1 Diversion Ditch Design (2 of 2)**

ZMA-2-23

Drawing Number: C7.14

Sheet 182 of 224

Project Number: 39510.05

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 048995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, November 6, 2025 10:11:08 AM WWJOHNSON Plotted Tuesday, December 16, 2025 9:22:45 AM Walker Johnson

DD1

Flowrate Q = CiA

Ditch Drainage Area "A": 1.48 AC

Runoff Coefficient "C":

Disturbed earth =	1.48	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	391	lf
High Point =	300	ft
Low Point =	288	ft
Change in elevation of drainage area (H) =	12	ft

Tc = 2.96 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 5.38 cfs

DD2

Flowrate Q = CiA

Ditch Drainage Area "A": 0.63 AC

Runoff Coefficient "C":

Disturbed earth =	0.63	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	757	lf
High Point =	310	ft
Low Point =	291	ft
Change in elevation of drainage area (H) =	19	ft

Tc = 5.32 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 2.29 cfs

DD3

Flowrate Q = CiA

Ditch Drainage Area "A": 0.62 AC

Runoff Coefficient "C":

Disturbed earth =	0.62	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	370	lf
High Point =	303	ft
Low Point =	288	ft
Change in elevation of drainage area (H) =	15	ft

Tc = 2.55 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 2.25 cfs

DD4

Flowrate Q = CiA

Ditch Drainage Area "A": 1.32 AC

Runoff Coefficient "C":

Disturbed earth =	1.32	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	452	lf
High Point =	305	ft
Low Point =	293	ft
Change in elevation of drainage area (H) =	12	ft

Tc = 3.50 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 4.80 cfs

DD5

Flowrate Q = CiA

Ditch Drainage Area "A": 0.12 AC

Runoff Coefficient "C":

Disturbed earth =	0.12	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	188	lf
High Point =	295	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	28	ft

Tc = 0.92 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 0.44 cfs

DD6

Flowrate Q = CiA

Ditch Drainage Area "A": 0.81 AC

Runoff Coefficient "C":

Disturbed earth =	0.81	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	355	lf
High Point =	295	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	28	ft

Tc = 1.91 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 2.94 cfs

DD7

Flowrate Q = CiA

Ditch Drainage Area "A": 2.23 AC

Runoff Coefficient "C":

Disturbed earth =	2.23	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	823	lf
High Point =	305	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	38	ft

Tc = 4.49 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 8.11 cfs

DD8

Flowrate Q = CiA

Ditch Drainage Area "A": 6.06 AC

Runoff Coefficient "C":

Disturbed earth =	6.06	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	1117	lf
High Point =	305	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	38	ft

Tc = 6.38 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 22.03 cfs

DD9

Flowrate Q = CiA

Ditch Drainage Area "A": 2.65 AC

Runoff Coefficient "C":

Disturbed earth =	2.65	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	800	lf
High Point =	288	ft
Low Point =	274	ft
Change in elevation of drainage area (H) =	14	ft

Tc = 6.38 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 9.63 cfs

DD10

Flowrate Q = CiA

Ditch Drainage Area "A": 0.02 AC

Runoff Coefficient "C":

Disturbed earth =	0.02	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	180	lf
High Point =	280	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	13	ft

Tc = 1.17 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 0.07 cfs

DD11

Flowrate Q = CiA

Ditch Drainage Area "A": 0.01 AC

Runoff Coefficient "C":

Disturbed earth =	0.01	AC @ c=	0.50
Undisturbed, wooded areas =	0.00	AC @ c=	0.25
Undisturbed, grassy areas =	0.00	AC @ c=	0.30
Other areas =	0.00	AC @ c=	0.95

Composite C value = 0.50

Rainfall Intensity "i": i= g/(h+Tc)

Time of Concentration (Tc) Kirpich equation: **Tc =** $\frac{(L^3/H)^{0.385}}{128}$

Flow Length (L) =	124	lf
High Point =	280	ft
Low Point =	267	ft
Change in elevation of drainage area (H) =	13	ft

Tc = 0.76 min minimum = 5 min

i = 7.27 in/hr

Flow "Q = CiA" 0.04 cfs

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title: **Phase 2 Diversion Ditch Design**

ZMA-2-23

Drawing Number: C7.15

Sheet 183 of 224

Project Number: 39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA PROFESSIONAL SEAL 046995 ENGINEER CHARLES D. TOWNSEND

12/15/2025

Saved Thursday, November 6, 2025 10:11:08 AM WWJOHNSON Plotted Tuesday, December 16, 2025 9:23:17 AM Walker Johnson

Buffer Areas

		PHASE 1 (SF)	PHASE 2 (SF)	PHASE 3 (SF)	PHASE 4 (SF)	TOTAL
Type B Buffer	New Plantings	4,166	19,500	–	9,109	32,774
	Tree Save	23,605	47,134	–	35,203	105,942
	Total	27,771	66,634	–	44,312	138,717
Type D Buffer	New Plantings	119,083	–	–	–	119,083
	Tree Save	53,140	–	–	–	53,140
	Total	172,223	–	–	–	172,223
Total Buffer Area		199,994	66,634	0	44,312	310,939



Tree Protection

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
3. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.

Plant Maintenance Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF THE LAWNS AND PLANTINGS. NO IRRIGATION IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR NEW LAWNS AND PLANTINGS DURING THE ONE YEAR PLANT GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
3. WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
4. WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
5. CONTRACTOR SHALL REPLACE DEAD OR DYING PLANTS AT THE END OF THE ONE YEAR GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.

Planting Notes

1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
10. AREAS DESIGNATED "LOAM & SEED" SHALL RECEIVE MINIMUM 6" OF LOAM AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC.
11. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE LOAM AND SEEDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
12. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.

General Notes

1. SEE SHEET L1.20-L1.22 FOR LANDSCAPE DETAILS.
2. THE PRUNING OF VISTA SCREENING SHRUBS SHALL ALLOW FOR LATERAL GROWTH OF BRANCHES SO AS TO FORM A HEDGE.
3. ALL LANDSCAPE ISLANDS SHALL BE GRADED FOR POSITIVE DRAINAGE WITH NO LOW SPOTS ALLOWING WATER TO BE TRAPPED.
4. ANY TREES POTENTIALLY IN CONFLICT WITH ANY FENCE WILL BE LIMBED UP TO ABOVE FENCE HEIGHT.
5. FINAL LOCATION OF TREES TO BE COORDINATED WITH UTILITY LINES.
6. TREES PROPOSED IN THE RIGHT OF WAY AND OUTSIDE THE RIGHT OF WAY AND IN A 5 FT X 5 FT EASEMENT AS SHOWN HEREON ARE STREET TREES PER THE UDO. ANY TREES SHOWN HEREON THAT ARE NEITHER STREET TREES NOR BUFFER TREES ARE "REPLACEMENT TREES."

TREE PLACEMENT UNDER OVERHEAD POWERLINES

FOR STREET TREES, WHERE OVERHEAD UTILITIES EXIST PRIOR TO DEVELOPMENT, UNDERSTORY TREES MAY BE SUBSTITUTED FOR REQUIRED CANOPY TREES, AS APPROVED BY THE LAND USE ADMINISTRATOR [UDO, SEC. 7.4.L.3]. ADDITIONAL LOCATIONAL REQUIREMENTS AS THEY RELATE TO SPECIFIC ROADWAY TYPES THROUGHOUT THE DEVELOPMENT CAN BE FOUND IN SECTION 10.4.A OF THE UDO. IN GENERAL, WHERE OVERHEAD POWERLINES ARE PRESENT, 2 UNDERSTORY TREES CAN BE PLANTED IN LIEU OF THE REQUIRED ONE CANOPY TREE.

Landscape Requirements

BUFFER YARD TYPE B (PERIMETER BUFFER)

- BUFFER TYPE: B
- WIDTH REQ'D: 20' MIN.
- WIDTH PROV: 20'
- LENGTH: ± 12,730 LF TOTAL
- REQUIRED PLANTINGS:
  - CANOPY TREES: 3 TREES/100 LF
    (12,730 LF/ 100 LF)(3) = 382 CANOPY TREES REQ'D
  - UNDERSTORY TREES: 5 TREES/100 LF
    (12,730 LF/ 100 LF)(5) = 637 UNDERSTORY TREES REQ'D
  - SHRUBS: 20 SHRUBS/100 LF
    (12,730 LF/ 100 LF)(20) = 2,546 SHRUBS REQ'D
- PROPOSED PLANTINGS:
  - EXISTING PLANT MATERIAL IN BUFFERS TO REMAIN AND BE SUPPLEMENTED TO MEET REQUIREMENTS AS STATED ABOVE
  - THE LAND USE ADMINISTRATOR RESERVES THE RIGHT TO REQUIRE ADDITIONAL VEGETATION TO BE PLANTED PRIOR TO CERTIFICATE OF OCCUPANCY TO MEET THE PERFORMANCE STANDARDS OF THE REQUIRED BUFFERS.

BUFFER YARD TYPE D (PERIMETER BUFFER)

- BUFFER TYPE: D
- WIDTH REQ'D: 50' MIN.
- WIDTH PROV: 50'
- LENGTH: ± 3,486 LF
- MINIMUM 6' HIGH BERM
- REQUIRED PLANTINGS:
  - CANOPY TREES: 5 TREES/100 LF
    (3,486 LF/ 100 LF)(5) = 175 CANOPY TREES REQ'D
  - UNDERSTORY TREES: 8 TREES/100 LF
    (3,486 LF/ 100 LF)(8) = 279 UNDERSTORY TREES REQ'D
  - SHRUBS: 35 SHRUBS/100 LF
    (3,486 LF/ 100 LF)(35) = 1,221 SHRUBS REQ'D
- PROPOSED PLANTINGS:
  - EXISTING PLANT MATERIAL IN BUFFERS TO REMAIN AND BE SUPPLEMENTED TO MEET REQUIREMENTS AS STATED ABOVE

STREET TREES

- SPACING: 40' O.C. (CANOPY)
  30' O.C. (UNDERSTORY)
- SPECIES:
  - SPECIES OF EVERY OTHER TREE ALONG THE STREET FRONTAGE SHALL ALTERNATE.

OVERALL TREE CANOPY/TREE PRESERVATION (UDO SEC 7.4.M)

- REQUIRED:
  - A TREE COVER AREA EQUAL TO THE PERIMETER OF THE DEVELOPMENT IN FEET MULTIPLIED BY 20 SHALL BE MAINTAINED ON SITE.
  - (14,392 LF)(20) = 287,840 SF (6.61 AC) REQUIRED
    6.61 AC / 171.88 AC = 3.8% OF SITE
- PROVIDED: 29.27 AC OF TREE CANOPY/TREE PRESERVATION
  - 3.65 AC OF PERIMETER BUFFER TREE PRESERVATION
  - 17.52 AC OF STREAM BUFFER STREAM PRESERVATION
  - 8.10 AC OF ESTIMATED ADDITIONAL UNDISTURBED TREE AREA

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

vhb.com

VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
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- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
Overall Tree and Buffer Planting Plan

ZMA-2-23

Drawing Number
L1.00

Sheet 184 of 224

Project Number
39510.05

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Wednesday, December 17, 2025 8:35:16 AM KMCNINCH Plotted Friday, December 19, 2025 11:54:11 AM Kathleen McNinch

C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\S_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-LA-Ph1.dwg

Saved Friday, December 19, 2025 11:20:46 AM KMCNINCH Plotted Friday, December 19, 2025 11:47:00 AM Kathleen McNinch

Match Line See Sheet L1.02

N/F
DONALD W & JUDY S KAY
DB 4405, PG. 808
PIN 1753-15-2438

N/F
DONALD W & JUDY S KAY
DB 2866, PG. 724
PIN 1753-15-2326

N/F
NEDRA M DAVIS
DB 7728, PG. 87
PIN 1753-15-8368

N/F
JACKIE L LEE
DB 2487, PG. 536
PIN 1753-15-9140

DB 07-2, PG. 3099
PIN 1753-15-8684

20' TYPE B BUFFER

1008'

(5) NATCHEZ CRAPE MYRTLE

(2) OCTOBER GLORY RED MAPLE
(3) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(1) WHITE OAK

(7) ALLEE® LACEBARK ELM
(4) SATOMI KOUSA DOGWOOD
(4) HIGHTOWER® WILLOW OAK
(2) HIGHTOWER® WILLOW OAK
(2) ALLEE® LACEBARK ELM

(2) HIGHTOWER® WILLOW OAK
(1) WILDFIRE TUPELO

(1) WILDFIRE TUPELO

(3) NATCHEZ CRAPE MYRTLE

(3) ROYAL STAR MAGNOLIA
(4) SPRING GLORY® CANADIAN SERVICEBERRY

(3) WHITE FRINGETREE
(1) HIGHTOWER® WILLOW OAK
(1) ALLEE® LACEBARK ELM

(2) WILDFIRE TUPELO
(3) NATCHEZ CRAPE MYRTLE
(1) GREEN VASE JAPANESE ZELKOVA

(1) GREEN VASE JAPANESE ZELKOVA
(2) ALLEE® LACEBARK ELM

(2) WILDFIRE TUPELO
(2) HIGHTOWER® WILLOW OAK
(3) WHITE FRINGETREE
(2) ALLEE® LACEBARK ELM
(8) WHITE FRINGETREE
(1) OCTOBER GLORY RED MAPLE

(1) ALLEE® LACEBARK ELM
(1) SATOMI KOUSA DOGWOOD
(1) HIGHTOWER® WILLOW OAK
(1) SOURWOOD TREE
(1) STREETWISE® TRIDENT MAPLE

(15) SPRING GLORY® CANADIAN SERVICEBERRY
(17) ROYAL STAR MAGNOLIA

(1) WHITE FRINGETREE
(1) SWEETBAY MAGNOLIA
(2) OCTOBER GLORY RED MAPLE
(2) AUTUMN BRILLIANCE APPLE SERVICEBERRY

COMMERCIAL PHASE / LOT

(1) CHINESE PISTACHE
(1) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(2) SOURWOOD TREE
(1) OCTOBER GLORY RED MAPLE
(1) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(2) WHITE OAK
(1) WHITE OAK

(2) WHITE FRINGETREE
(1) COLUMNAR TULIP POPLAR
(2) OCTOBER GLORY RED MAPLE

(2) COLUMNAR TULIP POPLAR
(2) WHITE FRINGETREE
(1) COLUMNAR TULIP POPLAR
(5) SATOMI KOUSA DOGWOOD
(10) SATOMI KOUSA DOGWOOD

(3) SOUTHERN MAGNOLIA
(2) OCTOBER GLORY RED MAPLE

(2) SATOMI KOUSA DOGWOOD
(2) OCTOBER GLORY RED MAPLE
(2) SWEETBAY MAGNOLIA
(1) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(1) ALLEE® LACEBARK ELM

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(1) AUTUMN BRILLIANCE APPLE SERVICEBERRY
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(3) SWEETBAY MAGNOLIA
(3) SOUTHERN MAGNOLIA

PLACEMENT OF TREES ALONG BETHLEHEM ROAD ARE SUBJECT TO NCDOT APPROVAL.

ENTRY ENHANCEMENT PLANTINGS AT BETHLEHEM RD; SEE SHEET L4.02

10' TYPE A BUFFER

LIMITS OF DISTURBANCE (TYP.)

50' TYPE D BUFFER

826'

LYNDON STREAM PARKWAY

WIDE STREAM ALLEY

LOW FARM PARKWAY

BETHLEHEM ROAD

Bethlehem Road
Varies Public Right of Way
(ALTADENA LLC 13/03)

50 FT SETBACK

15" RCP
INV: 304.71'

15" RCP
INV: 304.98'

18" RCP
INV: 304.75'

18" RCP
INV: 302.

18" RCP
INV: 305.

18" RCP
INV: 305.09'

(5 FT CLEARANCE RADIUS (TYP.)

General Notes

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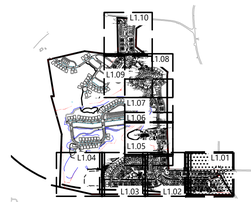

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
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- 5'x5' EASEMENT TO BE PROVIDED FOR "STREET TREES" LOCATED OUTSIDE THE STREET R/W. EASEMENTS TO BE DEFINED DURING THE PLATTING PROCESS.

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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2	Town of Knightdale Comments	08/06/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for — Date

Approval — January 17, 2025

Drawing Title

TREE AND BUFFER PLANTING PLAN PHASE 1 (1 of 5)

ZMA-2-23

Drawing Number

L1.01

Sheet 185 of 224

Project Number 39510.05

811 Know what's below. Call before you dig.

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES



General Notes

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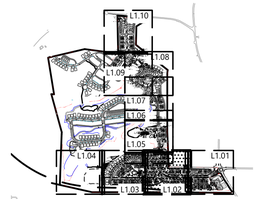

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

TREE AND BUFFER PLANTING PLAN PHASE 1 (2 of 5)

ZMA-2-23

Drawing Number

L1.02

Sheet 186 of 224

Project Number 39510.05

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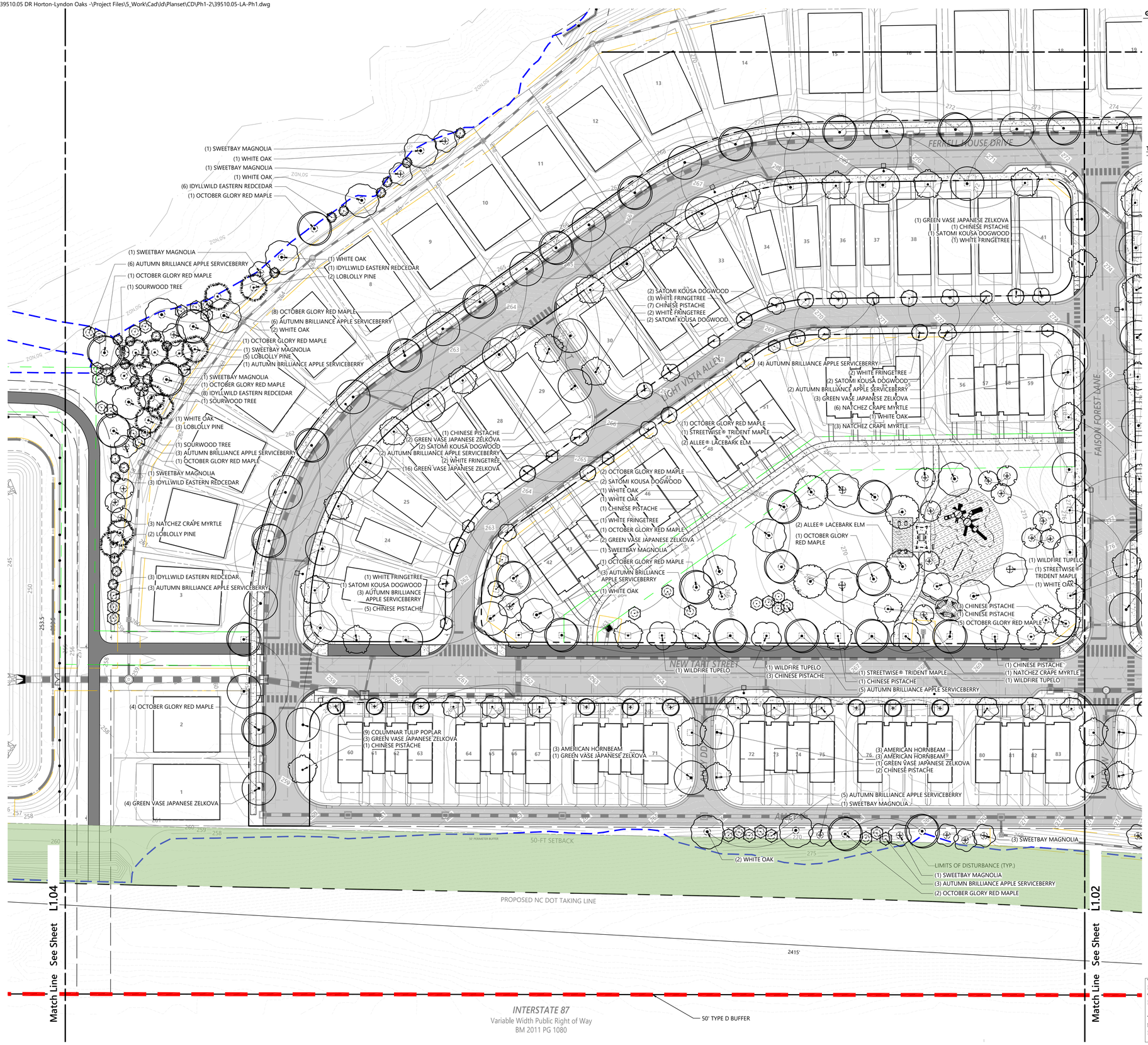
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/15/25

Saved Monday, December 15, 2025 12:20:08 PM JESSIBARNES Plotted Wednesday, December 17, 2025 12:24:22 PM Jessi Barnes



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- FOR STREET TREES, WHERE OVERHEAD UTILITIES EXIST PRIOR TO DEVELOPMENT, UNDERSTORY TREES MAY BE SUBSTITUTED [FOR REQUIRED CANOPY TREES], AS APPROVED BY THE LAND USE ADMINISTRATOR [UDO, SEC. 7.4.L.3]. ADDITIONAL LOCATIONAL REQUIREMENTS AS THEY RELATE TO SPECIFIC ROADWAY TYPES THROUGHOUT THE DEVELOPMENT CAN BE FOUND IN SECTION 10.4.A OF THE UDO. IN GENERAL, WHERE OVERHEAD POWERLINES ARE PRESENT, 2 UNDERSTORY TREES CAN BE PLANTED IN LIEU OF THE REQUIRED ONE CANOPY TREE.

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940 Main Campus Drive
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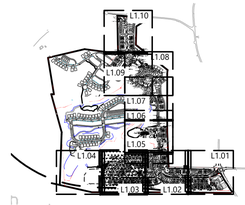

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
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- STORM DRAINAGE EASEMENT
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- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE
- 5'x5' EASEMENT TO BE PROVIDED FOR "STREET TREES" LOCATED OUTSIDE THE STREET R/W. EASEMENTS TO BE DEFINED DURING THE PLATTING PROCESS.

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
TREE AND BUFFER PLANTING PLAN PHASE 1 (3 of 5)

ZMA-2-23 (Drawing Number)

L1.03

Sheet 187 of 224

Project Number: 39510.05

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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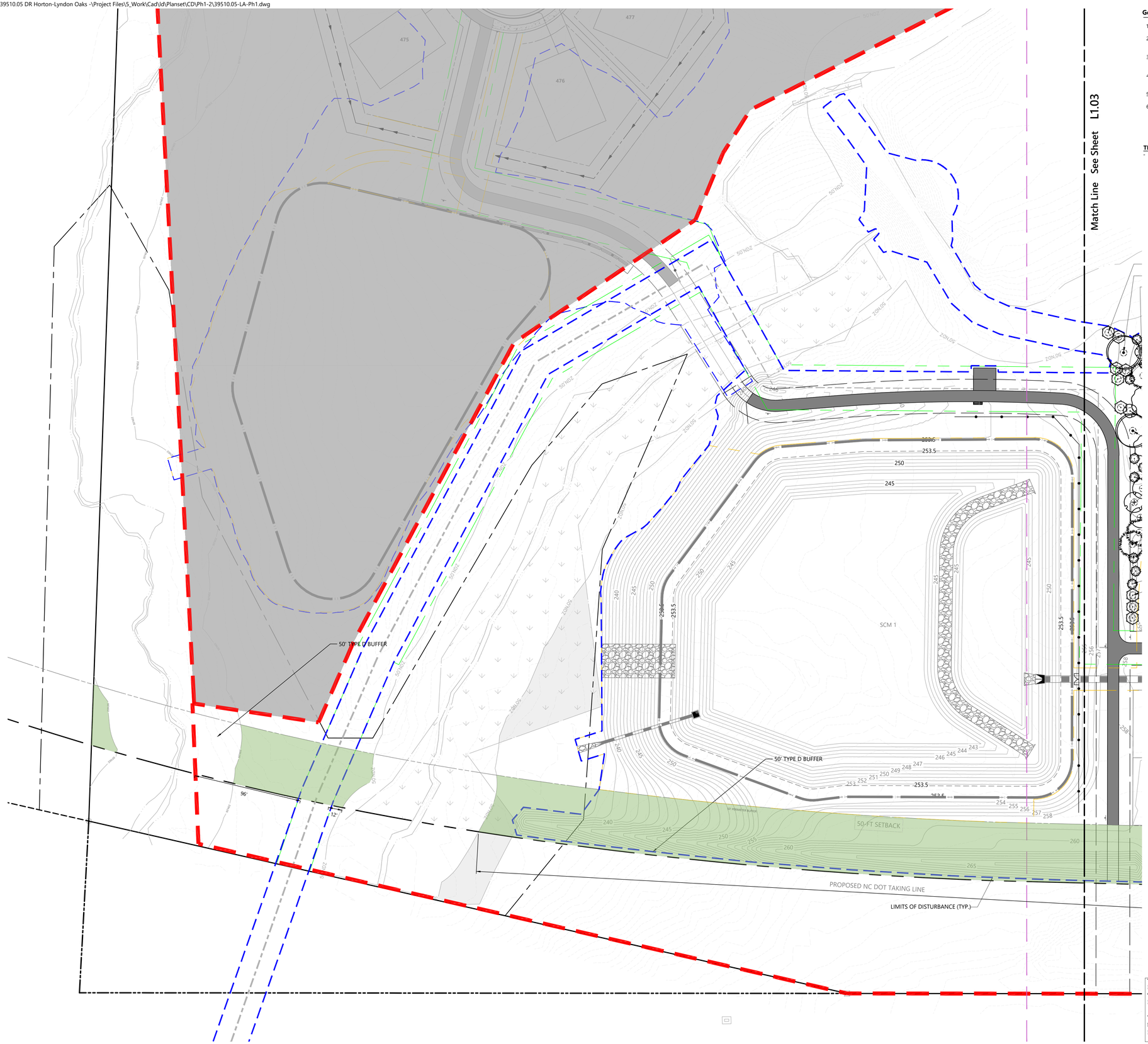
By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/15/25

Saved Friday, December 19, 2025 11:20:46 AM KMCNINCH Plotted Friday, December 19, 2025 11:45:56 AM Kathleen McNinch

C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\5_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-LA-Ph1.dwg



General Notes

1. SEE SHEET L2.00-2.02 FOR LANDSCAPE DETAILS.
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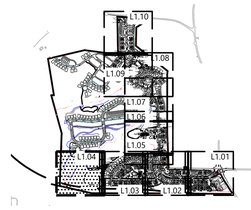

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

TREE AND BUFFER PLANTING PLAN PHASE 1 (4 of 5)

ZMA-2-23

Drawing Number

L1.04

Sheet 188 of 224

Project Number 39510.05

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/15/25

Saved Friday, December 19, 2025 11:20:46 AM KMCNINCH Plotted Friday, December 19, 2025 11:44:52 AM Kathleen McNinch

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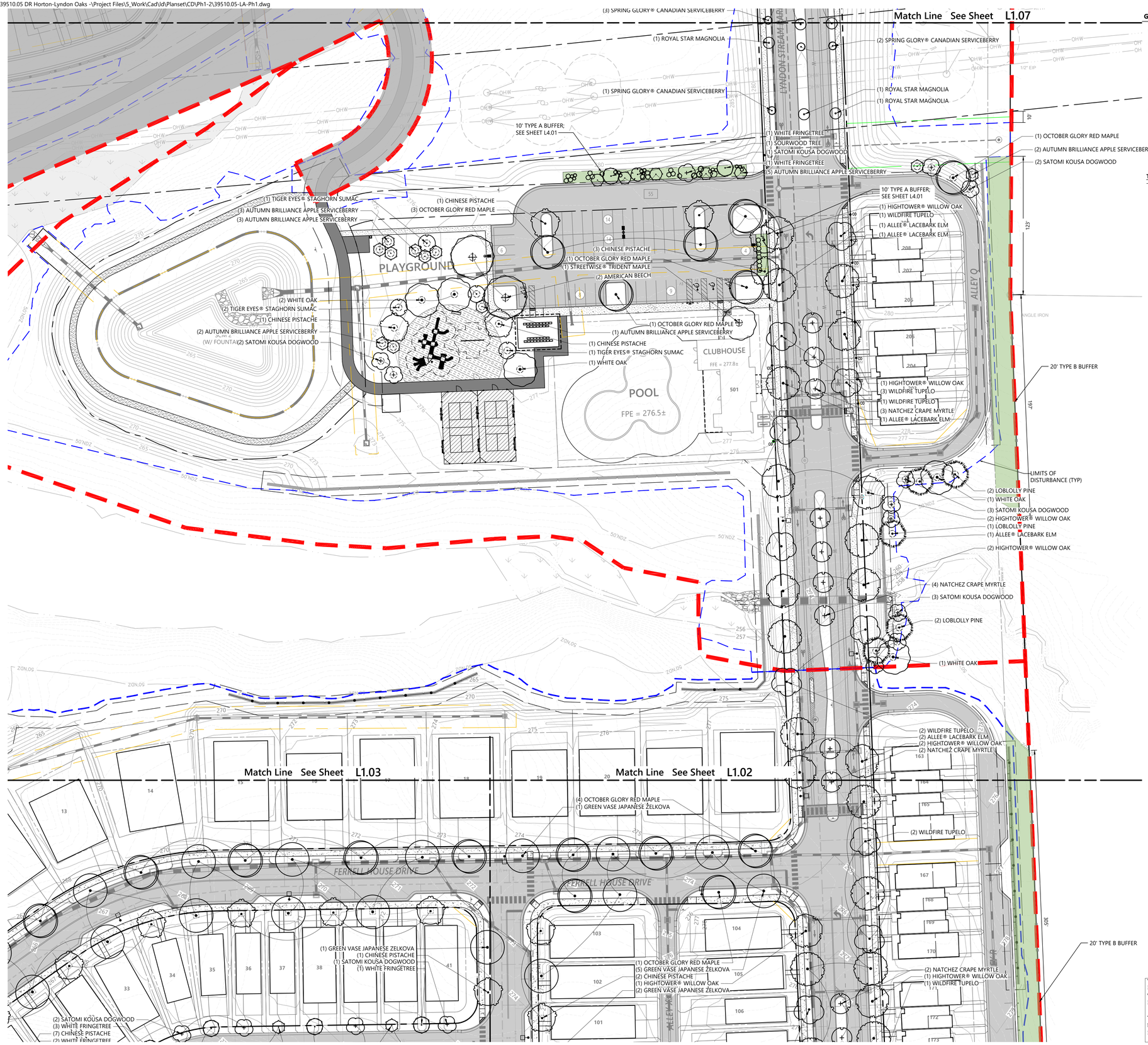

General Notes

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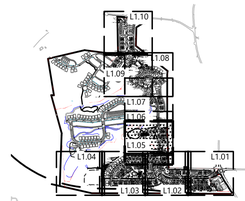

Key

1" = 1,500'

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
TREE AND BUFFER PLANTING PLAN PHASE 1 (5 of 5)

ZMA-2-23

Drawing Number
L1.05

Sheet 189 of 224

Project Number
39510.05

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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By: _____ Date: _____
Town Engineer

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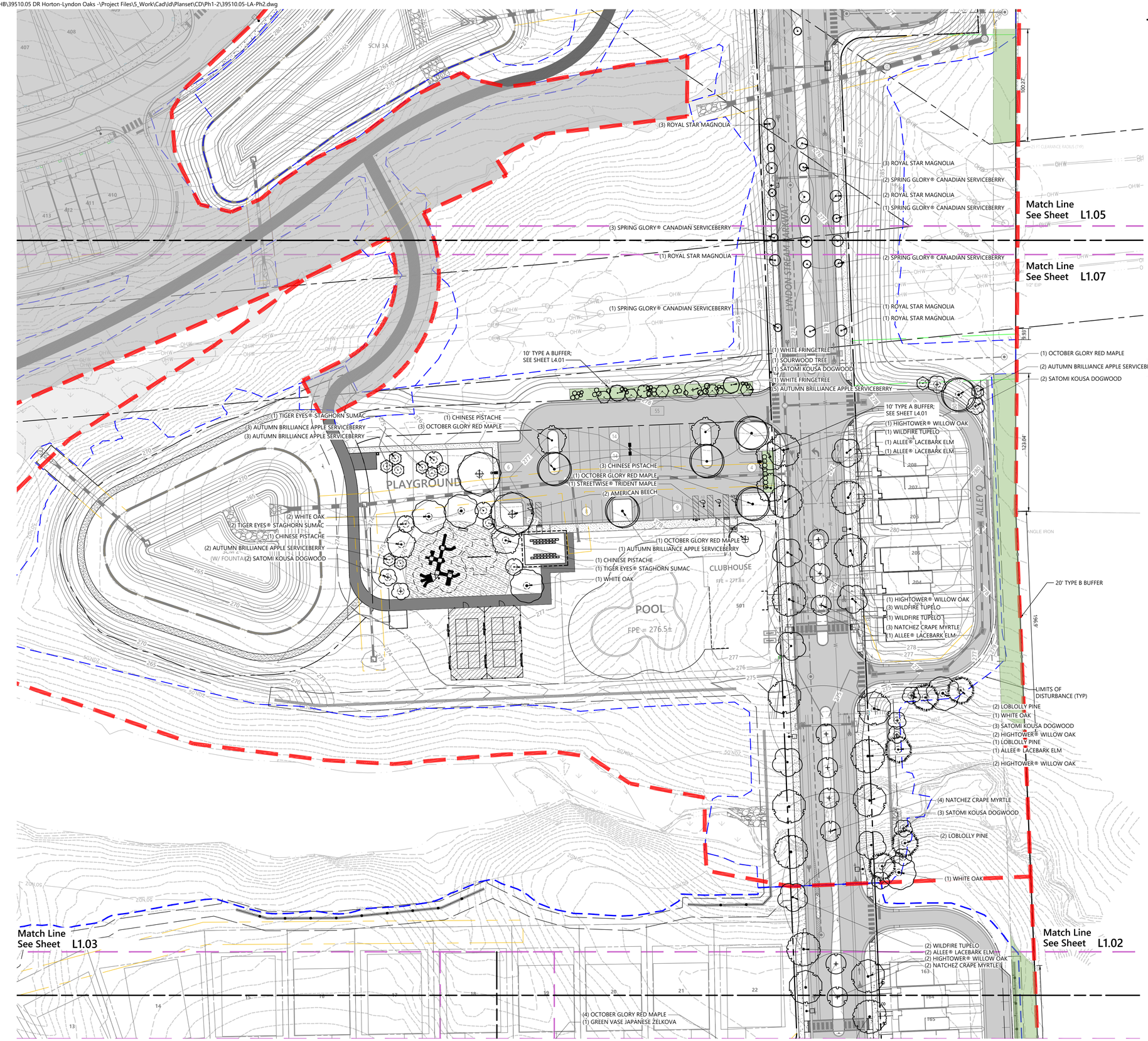
Land Use Administrator

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/15/25



General Notes

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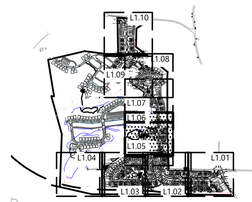

Key

1" = 1,500'

Site Legend

- WETLANDS
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- PROPERTY LINE
- LIMITS OF DISTURBANCE
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- BUILDING SETBACK
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- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

TREE AND BUFFER PLANTING PLAN PHASE 2 (1 of 5)

ZMA-2-23

Drawing Number

L1.06

Sheet 190 of 224

Project Number 39510.05

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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 REGISTERED JESSICA LEE BARNES

Saved Friday, December 19, 2025 11:34:44 AM KMCNINCH Plotted Friday, December 19, 2025 11:41:26 AM Kathleen McNinch

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General Notes

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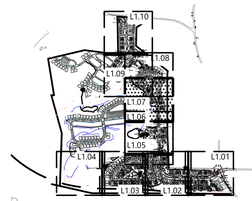

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0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
TREE AND BUFFER PLANTING PLAN PHASE 2 (2 of 5)

ZMA-2-23

Drawing Number
L1.07

Sheet 191 of 224

Project Number
39510.05

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Saved Friday, December 19, 2025 11:34:44 AM KMCNINCH Plotted Friday, December 19, 2025 11:40:36 AM Kathleen McNinch

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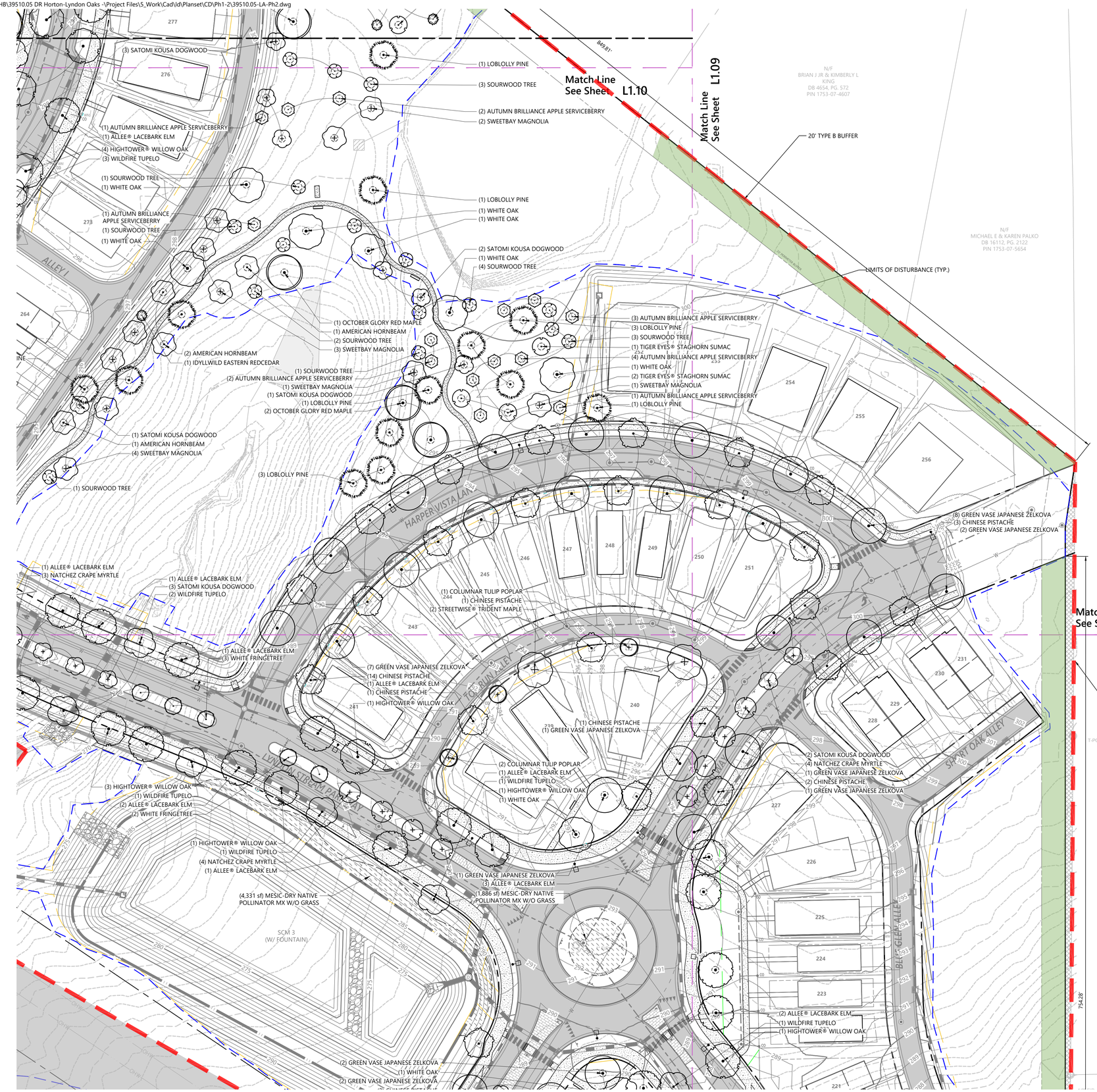

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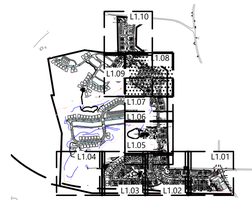

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2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
TREE AND BUFFER PLANTING PLAN PHASE 2 (3 of 5)

ZMA-2-23

Drawing Number
L1.08

Sheet 192 of 224

Project Number
39510.05

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Friday, December 19, 2025 11:34:44 AM KMCNINCH Plotted Friday, December 19, 2025 11:39:43 AM Kathleen McNinch

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General Notes

1. SEE SHEET L1.20-L1.22 FOR LANDSCAPE DETAILS.
2. THE PRUNING OF VISTA SCREENING SHRUBS SHALL ALLOW FOR LATERAL GROWTH OF BRANCHES SO AS TO FORM A HEDGE.
3. ALL LANDSCAPE ISLANDS SHALL BE GRADED FOR POSITIVE DRAINAGE WITH NO LOW SPOTS ALLOWING WATER TO BE TRAPPED.
4. ANY TREES POTENTIALLY IN CONFLICT WITH ANY FENCE WILL BE LIMBED UP TO ABOVE FENCE HEIGHT.
5. FINAL LOCATION OF TREES TO BE COORDINATED WITH UTILITY LINES.
6. TREES PROPOSED IN THE RIGHT OF WAY AND OUTSIDE THE RIGHT OF WAY AND IN A 5 FT X 5 FT EASEMENT AS SHOWN HEREON ARE STREET TREES PER THE UDO. ANY TREES SHOWN HEREON THAT ARE NEITHER STREET TREES NOR BUFFER TREES ARE "REPLACEMENT TREES."

TREE PLACEMENT UNDER OVERHEAD POWERLINES

FOR STREET TREES, WHERE OVERHEAD UTILITIES EXIST PRIOR TO DEVELOPMENT, UNDERSTORY TREES MAY BE SUBSTITUTED FOR REQUIRED CANOPY TREES, AS APPROVED BY THE LAND USE ADMINISTRATOR [UDO, SEC. 7.4.L.3]. ADDITIONAL LOCATIONAL REQUIREMENTS AS THEY RELATE TO SPECIFIC ROADWAY TYPES THROUGHOUT THE DEVELOPMENT CAN BE FOUND IN SECTION 10.4.A OF THE UDO. IN GENERAL, WHERE OVERHEAD POWERLINES ARE PRESENT, 2 UNDERSTORY TREES CAN BE PLANTED IN LIEU OF THE REQUIRED ONE CANOPY TREE.

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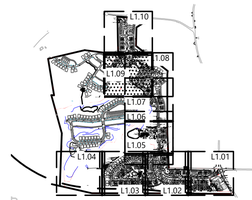
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705



Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 20 40 80 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

TREE AND BUFFER PLANTING PLAN PHASE 2 (4 of 5)

ZMA-2-23

Drawing Number

L1.09

Sheet 193 of 224

Project Number 39510.05

Know what's below. Call before you dig.

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C:\AMS\ACCDocs\VHB\39510.05 DR Horton-Lyndon Oaks -\Project Files\S_Work\Cad\ld\Planset\CD\Ph1-2\39510.05-LA-Ph2.dwg

Saved Friday, December 19, 2025 11:34:44 AM KMCNINCH Plotted Friday, December 19, 2025 11:36:30 AM Kathleen McNinch

OLD FAISON ROAD

ENTRY ENHANCEMENT PLANTINGS AT OLD FAISON RD; SEE SHEET L4.02

(3) HIGHTOWER® WILLOW OAK
(2) ALLEE® LACEBARK ELM
(3) SATOMI KOUSA DOGWOOD
(2) OCTOBER GLORY RED MAPLE
(3) SATOMI KOUSA DOGWOOD
(2) WHITE OAK
(3) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(3) LOBLOLLY PINE
(1) SATOMI KOUSA DOGWOOD
(2) SWEETBAY MAGNOLIA
(4) WHITE OAK
LIMITS OF DISTURBANCE (TYP.)
(1) IDYLLWILD EASTERN REDCEDAR
(3) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(2) OCTOBER GLORY RED MAPLE
(4) SATOMI KOUSA DOGWOOD
(1) IDYLLWILD EASTERN REDCEDAR
(3) IDYLLWILD EASTERN REDCEDAR
(5) ALLEE® LACEBARK ELM
(5) HIGHTOWER® WILLOW OAK
(1) ALLEE® LACEBARK ELM
(1) WILDFIRE TUPELO
(5) HIGHTOWER® WILLOW OAK
(3) ALLEE® LACEBARK ELM
(1) WILDFIRE TUPELO
(5) ALLEE® LACEBARK ELM
(1) WILDFIRE TUPELO
(1) WILDFIRE TUPELO
(3) HIGHTOWER® WILLOW OAK
(3) HIGHTOWER® WILLOW OAK
(1) WILDFIRE TUPELO
(1) LOBLOLLY PINE
(1) SOURWOOD TREE
(1) WILDFIRE TUPELO
(1) HIGHTOWER® WILLOW OAK
(1) ALLEE® LACEBARK ELM
(1) AMERICAN HORNBEAM
(1) OCTOBER GLORY RED MAPLE
(3) SOUTHERN MAGNOLIA
(1) SATOMI KOUSA DOGWOOD
(1) TIGER EYES® STAGHORN SUMAC
(4) IDYLLWILD EASTERN REDCEDAR
(1) LOBLOLLY PINE
(1) OCTOBER GLORY RED MAPLE
(1) SOURWOOD TREE
(2) LOBLOLLY PINE
(1) WHITE OAK
(1) AUTUMN BRILLIANCE APPLE SERVICEBERRY
(1) SATOMI KOUSA DOGWOOD
(3) SATOMI KOUSA DOGWOOD
(1) LOBLOLLY PINE

20' TYPE B BUFFER

ALLEY C
ALLEY G
ALLEY B
ALLEY F
LYNDON OAKS DRIVE

N/F SYLVIA B LUCAS DB 14741, PG. 336 PIN 1743-98-4450
N/F MELISSA K & FIDEL G GALLEGOS DB 6048, PG. 521 PIN 1743-98-4250
N/F JOSEPH W ROHRER & CHELSEA MASON DB 16473, PG. 2237 PIN 1743-98-4050
N/F LEAMON DIXON DB 6048, PG. 521 PIN 1743-97-4860
N/F CHRISTOPHER R OGLE DB 12-E, PG. 3579 PIN 1743-98-9634
N/F STEPHEN JR & AMY WOLFE DB 19598, PG. 464 PIN 1753-08-2361
N/F J TIMOTHY & DENISE W JONES DB 5486, PG. 769 PIN 1753-08-1129
N/F EUGENE M & NANCY A ZACK DB 4479, PG. 678 PIN 1753-08-0090
N/F MIKE & RHONDA NEELY DB 4264, PG. 553 PIN 1753-07-2811

Match Line See Sheet L1.09

General Notes

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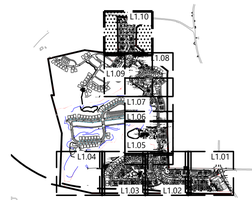

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0 20 40 80 Feet

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title
TREE AND BUFFER PLANTING PLAN PHASE 2 (5 of 5)

ZMA-2-23

Drawing Number: L1.10

Sheet 194 of 224

Project Number: 39510.05

811 Know what's below. Call before you dig.

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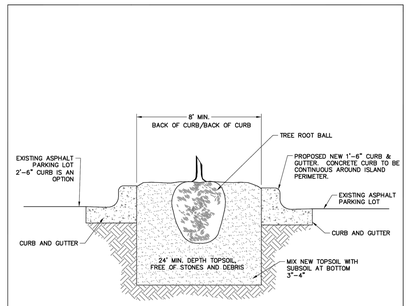
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES



NOTES:

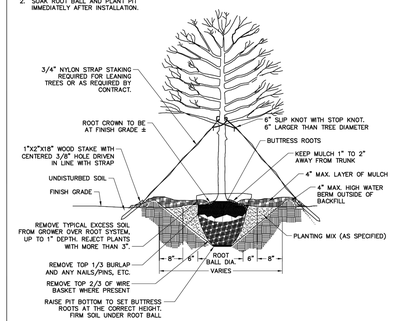
1. 300 SF MIN. TOTAL REQUIRED AREA PER TREE.
2. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL SUB-BASE AND CONSTRUCTION DEBRIS BEFORE PREPARING SOIL AND PLANTING TREES.
3. REMOVE COMPACTED SOIL AND ADD 24" NEW OR TOPSOIL/PLANTING MIX OR UNCOMPACT AND AMEND TOP 24" OF EXISTING SOIL TO MEET TOPSOIL/PLANTING 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")

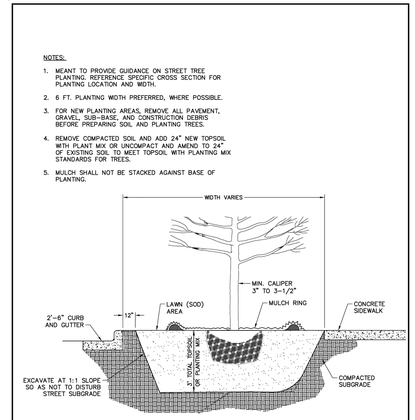
FOR EXAMPLE: CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
2"	12--14'	16'	24"	16"
3"	14--16'	18'	32"	21"

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TREE PLANTING (FOR SINGLE AND MULTI-STEM TREES)	STD. NO. 3.25

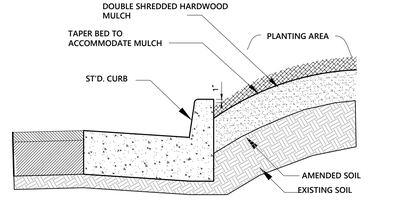
NOTES:

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

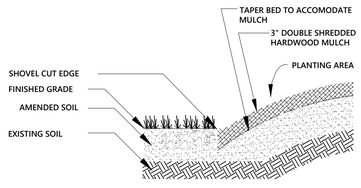
TOWN OF KNIGHTDALE STANDARD DETAILS	STREET TREE PLANTING	STD. NO. 3.26



3 Curb-Bed Edging Detail

1/16

N.T.S. Source: VHB REV

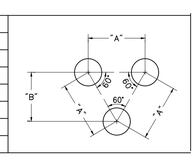


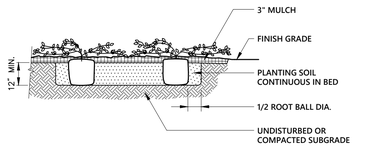
4 Shovel Cut Edging Detail

1/16

N.T.S. Source: VHB REV

PLANT SPACING ("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8-1/2 IN. O.C.
12 IN. O.C.	10-1/2 IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.





5 Ground Cover Planting

11/23

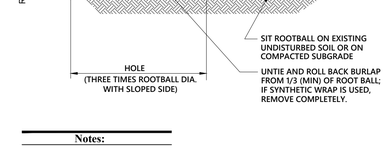
N.T.S. Source: VHB LP_#15

EXCAVATE SHRUB BED TO REQUIRED DEPTH AND BACKFILL WITH SPECIFIED SOIL MIX. SOIL MIX SHALL BE CONTINUOUS WITHIN EACH SHRUB BED.

3" DOUBLE SHREDDED HARD WOOD MULCH DO NOT COVER STEMS OR TRUNK

TOP OF ROOT BALL 1 INCH ABOVE FINISH GRADE

SLOPE TO FORM SAUCER.



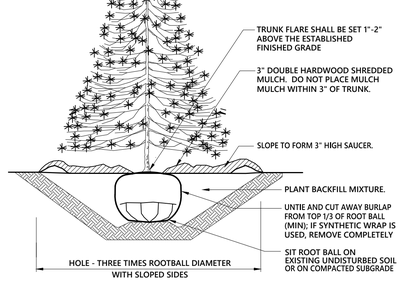
Notes:

1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

6 Shrub Bed Planting

6/25

N.T.S. Source: VHB REV LP_#01



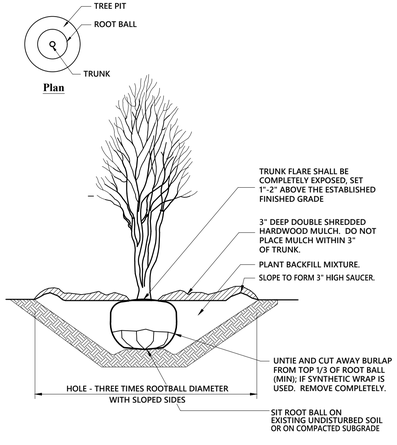
7 Evergreen Tree Planting

6/25

N.T.S. Source: VHB REV LP_#04

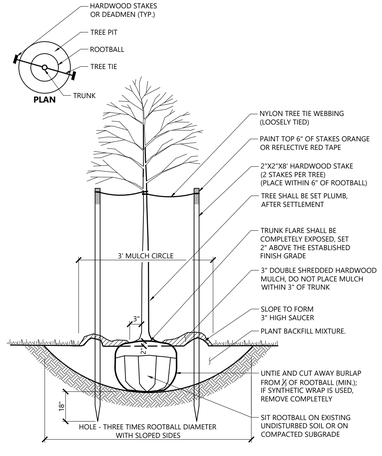
Notes:

1. STAKING IS NOT REQUIRED FOR TREES UNDER 10' HIGH.
2. PAINT TOP OF STAKES ORANGE OR REFLECTIVE RED TAPE.



8 Multistem Tree Planting

N.T.S. Source: VHB

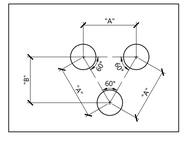


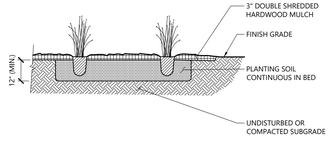
9 Tree Planting (For Trees Under 4" Caliper)

1/12

N.T.S. Source: VHB LP_#02

PLANT SPACING	
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8½ IN. O.C.
12 IN. O.C.	10½ IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.
30 IN. O.C.	26 IN. O.C.
36 IN. O.C.	30 IN. O.C.
48 IN. O.C.	42 IN. O.C.
54 IN. O.C.	48 IN. O.C.
60 IN. O.C.	54 IN. O.C.

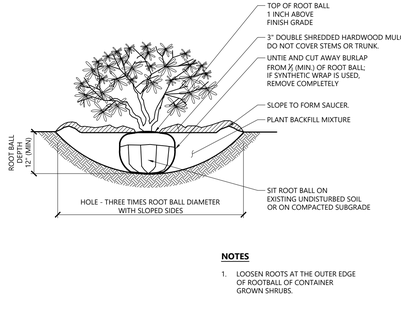




10 Perennial and Ornamental Grass Planting

1/12

N.T.S. Source: VHB LP_#03



NOTES

1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

11 Shrub Planting

1/12

N.T.S. Source: VHB LP_#03

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
PLANTING DETAILS (1 of 3)

ZMA-2-23 (Drawing Number)

L1.20

Sheet 195 of 224

Project Number 39510.05

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

811 Know what's below. Call before you dig.

Saved Monday, December 15, 2025 12:00:40 PM KMCNINCH Plotted Wednesday, December 17, 2025 12:34:15 PM Jessi Barnes

PLANT SCHEDULE BUFFER B

BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES				
CARPINUS CAROLINIANA / AMERICAN HORNBEAM	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
FAGUS GRANDIFOLIA / AMERICAN BEECH	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
GYMNOCLADUS DIOICUS / KENTUCKY COFFEETREE	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
EVERGREEN TREES				
PINUS TAEDA / LOBLOLLY PINE	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
MULTI-STEMMED TREES				
CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
MAGNOLIA STELLATA 'PINK STARDUST' / PINK STARDUST STAR MAGNOLIA	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES				
CASTANEA PUMILA / CHINKAPIN	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
PRUNUS SERRULATA 'SNOW GOOSE' / SNOW GOOSE CHERRY	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	SPACING	REMARKS
DECIDUOUS SHRUBS					
ABELIA X GRANDIFLORA 'KALEIDOSCOPE' / KALEIDOSCOPE GLOSSY ABELIA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
CALLICARPA AMERICANA / AMERICAN BEAUTYBERRY	#3	24" MIN	24" MIN	48" o.c.	FULL & DENSE
FOTHERGILLA GARDENII / DWARF FOTHERGILLA	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
ILEX VERTICILLATA 'JIM DANDY' / JIM DANDY WINTERBERRY	#3	24" MIN	24" MIN	72" o.c.	FULL & DENSE
ILEX VERTICILLATA 'RED SPRITE' / RED SPRITE WINTERBERRY	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
SPIRAEA JAPONICA 'GOLDMOUND' / GOLDMOUND JAPANESE SPIREA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
EVERGREEN SHRUBS					
ILEX CRENATA 'GREEN LUSTRE' / GREEN LUSTER JAPANESE HOLLY	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
JUNIPERUS X 'GREY OWL' / GREY OWL JUNIPER	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
PERENNIALS					
ASCLEPIAS INCARNATA / MILKWEED	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE

PLANT SCHEDULE TYPE A BUFFER - DOG PARK

QTY	BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES					
4	ACER RUBRUM 'OCTOBER GLORY' / OCTOBER GLORY RED MAPLE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
1	PISTACIA CHINENSIS / CHINESE PISTACHE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
1	QUERCUS ALBA / WHITE OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
1	QUERCUS PHELLOS 'QPSTA' / HIGHTOWER® WILLOW OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
2	ULMUS PARVIFOLIA 'ALLEE' / ALLEE® LACEBARK ELM	B&B	2" CAL	8 FT, MIN	FULL & DENSE
MULTI-STEMMED TREES					
3	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE APPLE SERVICEBERRY	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
2	CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES					
1	ACER BUERGERIANUM 'STREETWISE' / STREETWISE® TRIDENT MAPLE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
1	CORNUS KOUSA 'SATOMI' / SATOMI KOUSA DOGWOOD	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
1	OXYDENDRUM ARBOREUM / SOURWOOD TREE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	SPACING	REMARKS
DECIDUOUS SHRUBS						
14	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' / KALEIDOSCOPE GLOSSY ABELIA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
11	CALLICARPA AMERICANA / AMERICAN BEAUTYBERRY	#3	24" MIN	24" MIN	48" o.c.	FULL & DENSE
6	FOTHERGILLA GARDENII / DWARF FOTHERGILLA	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
1	ILEX VERTICILLATA 'JIM DANDY' / JIM DANDY WINTERBERRY	#3	24" MIN	24" MIN	72" o.c.	FULL & DENSE
9	ILEX VERTICILLATA 'RED SPRITE' / RED SPRITE WINTERBERRY	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
9	SPIRAEA JAPONICA 'GOLDMOUND' / GOLDMOUND JAPANESE SPIREA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
EVERGREEN SHRUBS						
3	ILEX CRENATA 'GREEN LUSTRE' / GREEN LUSTER JAPANESE HOLLY	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
1	JUNIPERUS X 'GREY OWL' / GREY OWL JUNIPER	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
PERENNIALS						
9	ASCLEPIAS INCARNATA / MILKWEED	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE

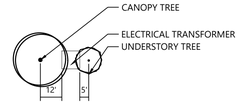
PLANT SCHEDULE BUFFER D

BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES				
FAGUS GRANDIFOLIA / AMERICAN BEECH	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
GYMNOCLADUS DIOICUS / KENTUCKY COFFEETREE	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA' / ROUND-LOBED SWEET GUM	B&B	2" CAL	8 FT, MIN	FULL & DENSE
QUERCUS ACUTISSIMA / SAWTOOTH OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
EVERGREEN TREES				
JUNIPERUS VIRGINIANA 'IDYLLWILD' / IDYLLWILD EASTERN REDCEDAR	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
PINUS TAEDA / LOBLOLLY PINE	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
MULTI-STEMMED TREES				
CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
MAGNOLIA STELLATA 'PINK STARDUST' / PINK STARDUST STAR MAGNOLIA	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES				
ACER BUERGERIANUM 'STREETWISE' / STREETWISE® TRIDENT MAPLE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
CASTANEA PUMILA / CHINKAPIN	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
PRUNUS SERRULATA 'SNOW GOOSE' / SNOW GOOSE CHERRY	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

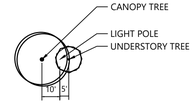
BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	SPACING	REMARKS
DECIDUOUS SHRUBS					
ABELIA X GRANDIFLORA 'KALEIDOSCOPE' / KALEIDOSCOPE GLOSSY ABELIA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
CALLICARPA AMERICANA / AMERICAN BEAUTYBERRY	#3	24" MIN	24" MIN	48" o.c.	FULL & DENSE
FOTHERGILLA GARDENII / DWARF FOTHERGILLA	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
ILEX VERTICILLATA 'JIM DANDY' / JIM DANDY WINTERBERRY	#3	24" MIN	24" MIN	72" o.c.	FULL & DENSE
ILEX VERTICILLATA 'RED SPRITE' / RED SPRITE WINTERBERRY	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
SPIRAEA JAPONICA 'GOLDMOUND' / GOLDMOUND JAPANESE SPIREA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
EVERGREEN SHRUBS					
ILEX CRENATA 'GREEN LUSTRE' / GREEN LUSTER JAPANESE HOLLY	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
JUNIPERUS X 'GREY OWL' / GREY OWL JUNIPER	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
PERENNIALS					
ASCLEPIAS INCARNATA / MILKWEED	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE

PLANT SCHEDULE POLLINATOR GARDENS - PHASE 2

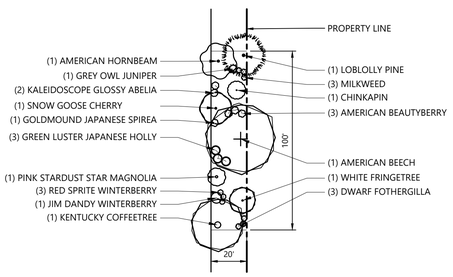
QTY	BOTANICAL / COMMON NAME	CONT	SPACING	REMARKS
GROUND COVERS				
6,217 SF	ERNMX- 125 / MESIC-DRY NATIVE POLLINATOR MX W/O GRASS	SEED		



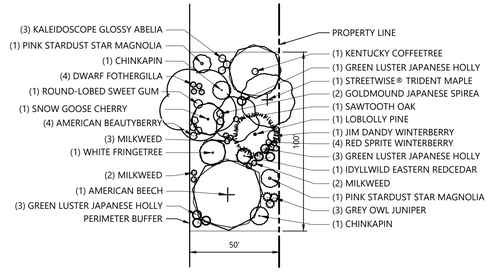
TYPICAL PLANTING AT ELECTRICAL TRANSFORMER
SCALE: 1" = 40'-0"



TYPICAL PLANTING AT LIGHT POLE
SCALE: 1" = 40'-0"



TYPICAL TYPE B BUFFER
SCALE: 1" = 40'-0"



TYPICAL TYPE D BUFFER
SCALE: 1" = 40'-0"

NOTE: WHEN BUFFERS ABUT DUKE ENERGY EASEMENT, ALL TREE SHALL BE LOCATED A MINIMUM OF PLANTS MATURE HEIGHT PLUS AN ADDITIONAL 5' AWAY FROM EASEMENT LINE.

Figure 7.4: Type A Buffer Yard Standards

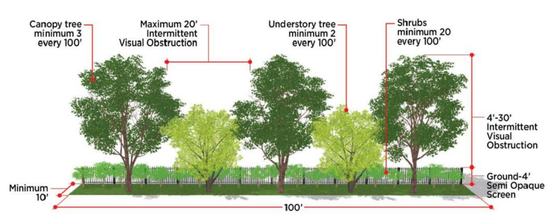


Figure 7.5: Type B Buffer Yard Standards

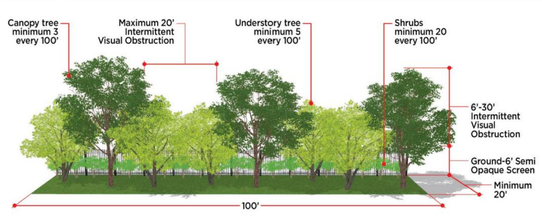
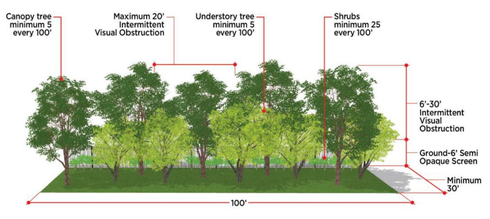


Figure 7.6: Type D Buffer Yard Standards



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VHB Engineering NC, P.C.
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919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
PLANTING DETAILS
(2 of 3)

ZMA-2-23 (Drawing Number)

L1.21

Sheet 196 of 224

Project Number 39510.05

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Monday, December 15, 2025 12:00:40 PM KMCNINCH Plotted Wednesday, December 17, 2025 12:35:00 PM Jess Barnes

PLANT SCHEDULE REPLACEMENT TREES - PHASE 1

QTY	BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES					
21	ACER RUBRUM 'OCTOBER GLORY' / OCTOBER GLORY RED MAPLE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
1	NYSSA SYLVATICA 'WILDFIRE' / WILDFIRE TUPELO	B&B	2" CAL	8 FT, MIN	FULL & DENSE
5	PISTACIA CHINENSIS / CHINESE PISTACHE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
19	QUERCUS ALBA / WHITE OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
7	ULMUS PARVIFOLIA 'ALLEE' / ALLEE® LACEBARK ELM	B&B	2" CAL	8 FT, MIN	FULL & DENSE
EVERGREEN TREES					
24	JUNIPERUS VIRGINIANA 'IDYLLWILD' / IDYLLWILD EASTERN REDCEDAR	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
12	MAGNOLIA GRANDIFLORA / SOUTHERN MAGNOLIA	B&B	2" CAL	8 FT, MIN	FULL & DENSE
12	PINUS TAEDA / LOBLOLLY PINE	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
MULTI-STEMMED TREES					
41	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE APPLE SERVICEBERRY	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
24	CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
18	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' / NATCHEZ CRAPE MYRTLE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE; WHITE FLOWERING
22	MAGNOLIA VIRGINIANA / SWEETBAY MAGNOLIA	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
1	RHUS TYPHINA 'BAILTIGER' / TIGER EYES® STAGHORN SUMAC	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES					
6	ACER BUERGERIANUM 'STREETWISE' / STREETWISE® TRIDENT MAPLE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
41	CORNUS KOUSA 'SATOMI' / SATOMI KOUSA DOGWOOD	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
5	OXYDENDRUM ARBOREUM / SOURWOOD TREE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

PLANT SCHEDULE REPLACEMENT TREES - PHASE 2

QTY	BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES					
12	ACER RUBRUM 'OCTOBER GLORY' / OCTOBER GLORY RED MAPLE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
7	CARPINUS CAROLINIANA / AMERICAN HORNBEAM	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
2	FAGUS GRANDIFOLIA / AMERICAN BEECH	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
2	PISTACIA CHINENSIS / CHINESE PISTACHE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
22	QUERCUS ALBA / WHITE OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
5	ULMUS PARVIFOLIA 'ALLEE' / ALLEE® LACEBARK ELM	B&B	2" CAL	8 FT, MIN	FULL & DENSE
3	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE JAPANESE ZELKOVA	B&B	2" CAL	8 FT, MIN	FULL & DENSE
EVERGREEN TREES					
10	JUNIPERUS VIRGINIANA 'IDYLLWILD' / IDYLLWILD EASTERN REDCEDAR	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
3	MAGNOLIA GRANDIFLORA / SOUTHERN MAGNOLIA	B&B	2" CAL	8 FT, MIN	FULL & DENSE
32	PINUS TAEDA / LOBLOLLY PINE	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
MULTI-STEMMED TREES					
32	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE APPLE SERVICEBERRY	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
13	MAGNOLIA VIRGINIANA / SWEETBAY MAGNOLIA	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
8	RHUS TYPHINA 'BAILTIGER' / TIGER EYES® STAGHORN SUMAC	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES					
1	ACER BUERGERIANUM 'STREETWISE' / STREETWISE® TRIDENT MAPLE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
30	CORNUS KOUSA 'SATOMI' / SATOMI KOUSA DOGWOOD	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
23	OXYDENDRUM ARBOREUM / SOURWOOD TREE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

PLANT SCHEDULE STREET TREES - PHASE 1

NOTE: STREET TREES ARE LOCATED IN THE R/W OR DESIGNATED WITH A 5'X5' EASEMENT.

QTY	BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES					
31	ACER RUBRUM 'OCTOBER GLORY' / OCTOBER GLORY RED MAPLE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
15	CARPINUS CAROLINIANA / AMERICAN HORNBEAM	B&B	2" CAL	8 FT, MIN	FULL & DENSE; LIMB UP TO 5 FT
27	LIRIODENDRON TULIPIFERA 'FASTIGIATUM' / COLUMNAR TULIP POPLAR	B&B	2" CAL	8 FT, MIN	FULL & DENSE
27	NYSSA SYLVATICA 'WILDFIRE' / WILDFIRE TUPELO	B&B	2" CAL	8 FT, MIN	FULL & DENSE
36	PISTACIA CHINENSIS / CHINESE PISTACHE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
26	QUERCUS PHELLOS 'QPSTA' / HIGHTOWER® WILLOW OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
34	ULMUS PARVIFOLIA 'ALLEE' / ALLEE® LACEBARK ELM	B&B	2" CAL	8 FT, MIN	FULL & DENSE
56	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE JAPANESE ZELKOVA	B&B	2" CAL	8 FT, MIN	FULL & DENSE
MULTI-STEMMED TREES					
11	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE APPLE SERVICEBERRY	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
30	CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
18	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' / NATCHEZ CRAPE MYRTLE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE; WHITE FLOWERING
20	MAGNOLIA STELLATA 'ROYAL STAR' / ROYAL STAR MAGNOLIA	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES					
2	ACER BUERGERIANUM 'STREETWISE' / STREETWISE® TRIDENT MAPLE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
19	AMELANCHIER CANADENSIS 'SPRIZAM' / SPRING GLORY® CANADIAN SERVICEBERRY	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
15	CORNUS KOUSA 'SATOMI' / SATOMI KOUSA DOGWOOD	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

PLANT SCHEDULE STREET TREES - PHASE 2

NOTE: STREET TREES ARE LOCATED IN THE R/W OR DESIGNATED WITH A 5'X5' EASEMENT.

QTY	BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES					
5	ACER RUBRUM 'OCTOBER GLORY' / OCTOBER GLORY RED MAPLE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
3	LIRIODENDRON TULIPIFERA 'FASTIGIATUM' / COLUMNAR TULIP POPLAR	B&B	2" CAL	8 FT, MIN	FULL & DENSE
33	NYSSA SYLVATICA 'WILDFIRE' / WILDFIRE TUPELO	B&B	2" CAL	8 FT, MIN	FULL & DENSE
27	PISTACIA CHINENSIS / CHINESE PISTACHE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
47	QUERCUS PHELLOS 'QPSTA' / HIGHTOWER® WILLOW OAK	B&B	2" CAL	8 FT, MIN	FULL & DENSE
44	ULMUS PARVIFOLIA 'ALLEE' / ALLEE® LACEBARK ELM	B&B	2" CAL	8 FT, MIN	FULL & DENSE
22	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE JAPANESE ZELKOVA	B&B	2" CAL	8 FT, MIN	FULL & DENSE
EVERGREEN TREES					
5	JUNIPERUS VIRGINIANA 'IDYLLWILD' / IDYLLWILD EASTERN REDCEDAR	B&B	2" CAL	6 FT, MIN	FULL & DENSE; SINGLE, STRAIGHT LEADER
MULTI-STEMMED TREES					
12	CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
23	LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' / NATCHEZ CRAPE MYRTLE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE; WHITE FLOWERING
13	MAGNOLIA STELLATA 'ROYAL STAR' / ROYAL STAR MAGNOLIA	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES					
2	ACER BUERGERIANUM 'STREETWISE' / STREETWISE® TRIDENT MAPLE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
11	AMELANCHIER CANADENSIS 'SPRIZAM' / SPRING GLORY® CANADIAN SERVICEBERRY	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
11	CORNUS KOUSA 'SATOMI' / SATOMI KOUSA DOGWOOD	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

PLANT SCHEDULE ENTRY ENHANCEMENT PLANTING AT BETHLEHEM RD

QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	SPACING	REMARKS
DECIDUOUS SHRUBS						
25	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' / KALEIDOSCOPE GLOSSY ABELIA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
13	SPIRAEA JAPONICA 'GOLDMOUND' / GOLDMOUND JAPANESE SPIREA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
EVERGREEN SHRUBS						
23	JUNIPERUS X 'GREY OWL' / GREY OWL JUNIPER	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE

PLANT SCHEDULE ENTRY ENHANCEMENT PLANTING AT OLD FAISON RD

QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	SPACING	REMARKS
DECIDUOUS SHRUBS						
44	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' / KALEIDOSCOPE GLOSSY ABELIA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
55	SPIRAEA JAPONICA 'GOLDMOUND' / GOLDMOUND JAPANESE SPIREA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
EVERGREEN SHRUBS						
40	JUNIPERUS X 'GREY OWL' / GREY OWL JUNIPER	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE

PLANT SCHEDULE TYPE A BUFFER - PHASE 2

QTY	BOTANICAL / COMMON NAME	CONT	SIZE	HEIGHT	REMARKS
TREES					
2	PISTACIA CHINENSIS / CHINESE PISTACHE	B&B	2" CAL	8 FT, MIN	FULL & DENSE
MULTI-STEMMED TREES					
5	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE APPLE SERVICEBERRY	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
2	CHIONANTHUS VIRGINICUS / WHITE FRINGETREE	B&B		8 FT, MIN	MULTI-STEM, MIN. THREE (3) STEMS; FULL & DENSE
UNDERSTORY TREES					
1	CORNUS KOUSA 'SATOMI' / SATOMI KOUSA DOGWOOD	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE
1	OXYDENDRUM ARBOREUM / SOURWOOD TREE	B&B	1.25" CAL	6 FT, MIN	FULL & DENSE

QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	SPACING	REMARKS
DECIDUOUS SHRUBS						
13	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' / KALEIDOSCOPE GLOSSY ABELIA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
6	CALLICARPA AMERICANA / AMERICAN BEAUTYBERRY	#3	24" MIN	24" MIN	48" o.c.	FULL & DENSE
6	FOTHERGILLA GARDENII / DWARF FOTHERGILLA	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
1	ILEX VERTICILLATA 'JIM DANDY' / JIM DANDY WINTERBERRY	#3	24" MIN	24" MIN	72" o.c.	FULL & DENSE
3	ILEX VERTICILLATA 'RED SPRITE' / RED SPRITE WINTERBERRY	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE
2	SPIRAEA JAPONICA 'GOLDMOUND' / GOLDMOUND JAPANESE SPIREA	#3	18" MIN	18" MIN	48" o.c.	FULL & DENSE
EVERGREEN SHRUBS						
3	ILEX CRENATA 'GREEN LUSTRE' / GREEN LUSTER JAPANESE HOLLY	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
1	JUNIPERUS X 'GREY OWL' / GREY OWL JUNIPER	#3	24" MIN	24" MIN	60" o.c.	FULL & DENSE
PERENNIALS						
6	ASCLEPIAS INCARNATA / MILKWEED	#3	18" MIN	18" MIN	36" o.c.	FULL & DENSE

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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: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 REGISTERED JESSICA LEE BARNES 12/15/25

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940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
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3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval** — Date: **January 17, 2025**

Drawing Title
PLANTING DETAILS (3 of 3)

ZMA-2-23

Drawing Number: **L1.22**

Sheet 197 of 224

Project Number: **39510.05**

Saved Monday, December 15, 2025 12:00:40 PM KMCNINCH Plotted Wednesday, December 17, 2025 12:35:30 PM Jessi Barnes

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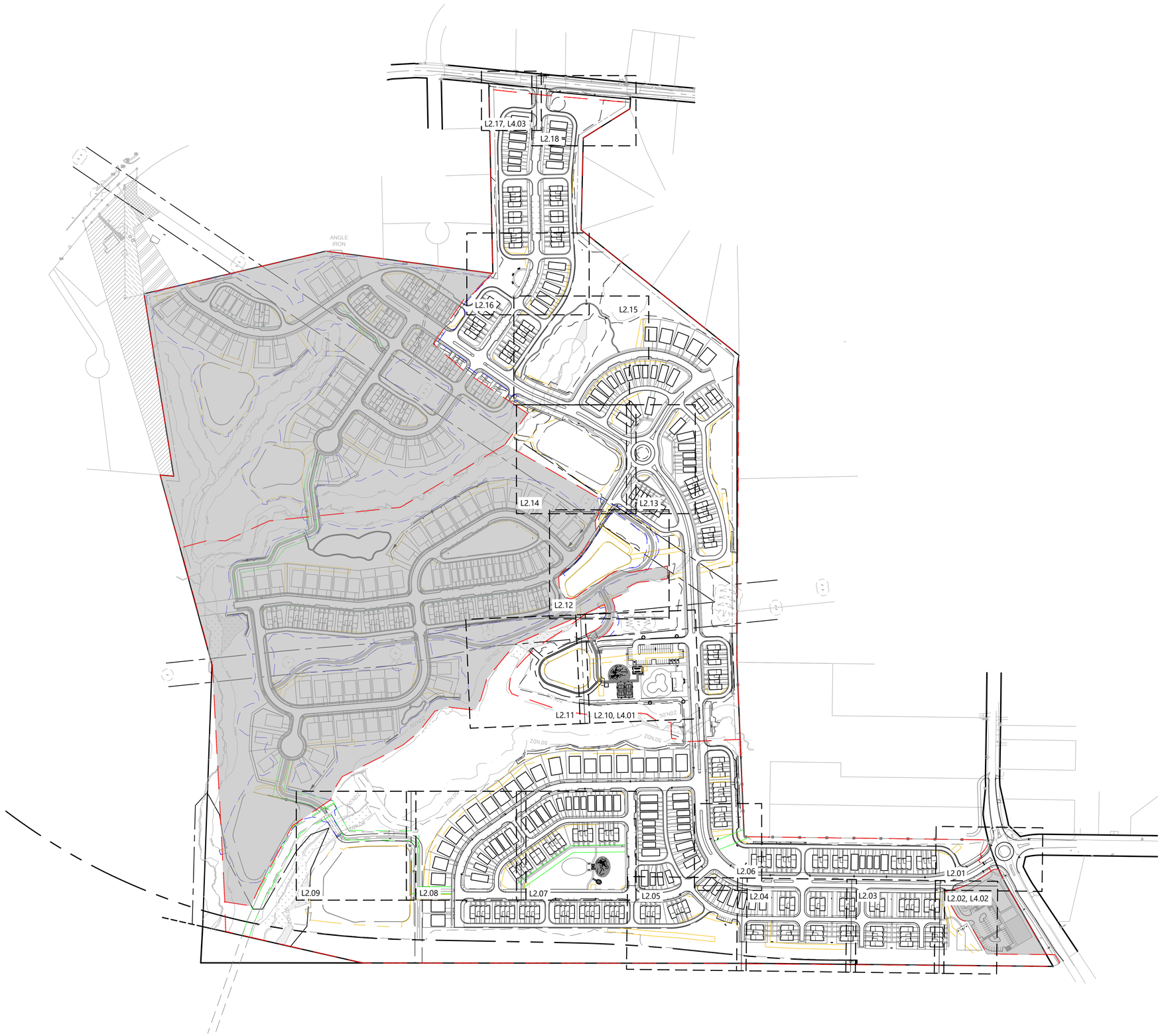

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Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
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- PHASE LIMITS
- MATCH LINE
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- GREENWAY
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- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 100 200 400Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval**

Date: **January 17, 2025**

Drawing Title: **Open Space Key Plan**

ZMA-2-23

Drawing Number: **L2.00**

Sheet 198 of 224

Project Number: **39510.05**

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Land Use Administrator

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/16/25

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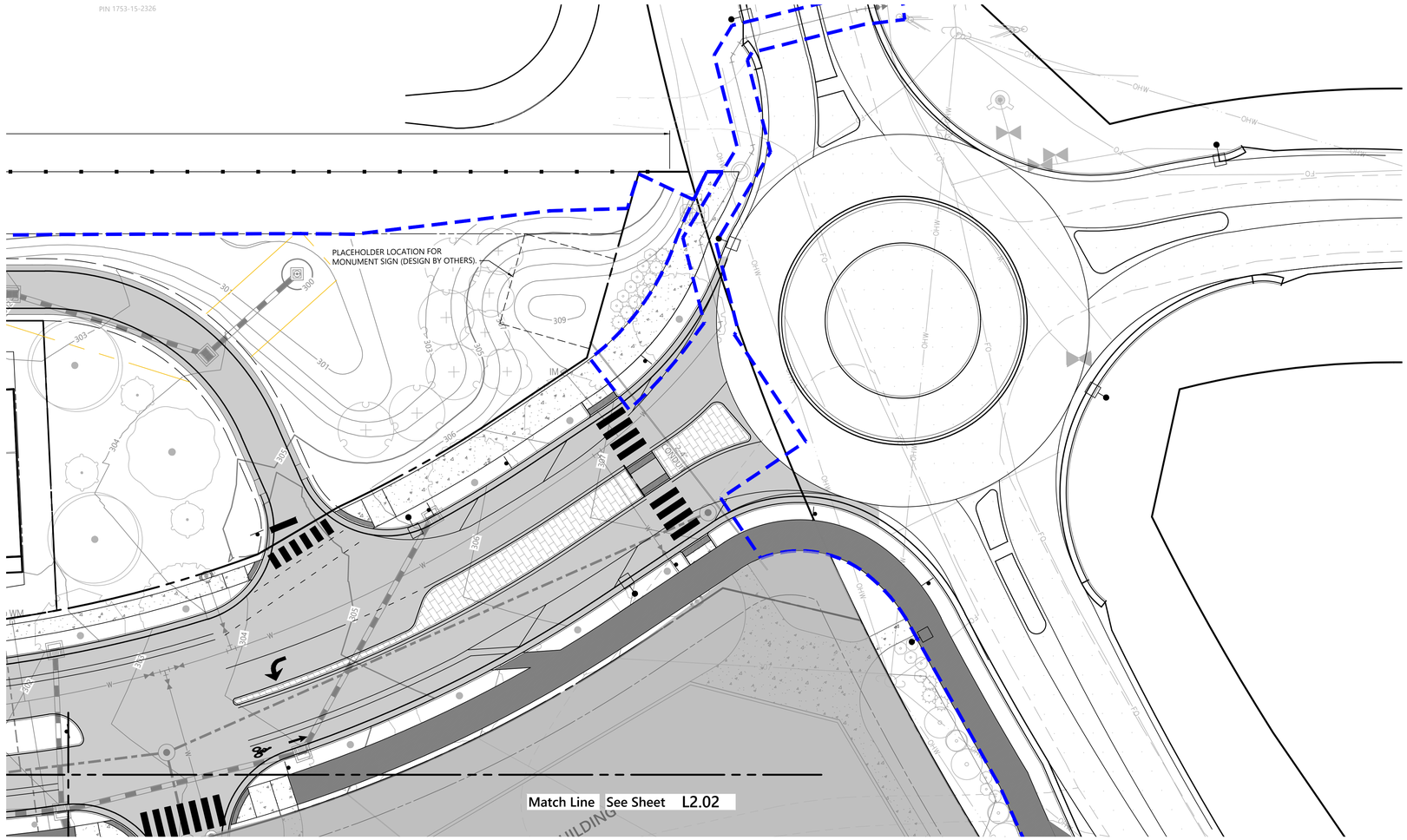

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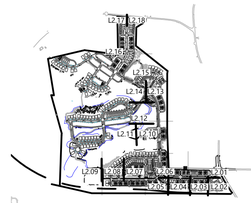

Key

1" = 1,500'

Site Legend

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- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Roundabout Entry Site Plan

ZMA-2-23

Drawing Number
L2.01

Sheet 199 of 224

Project Number
39510.05

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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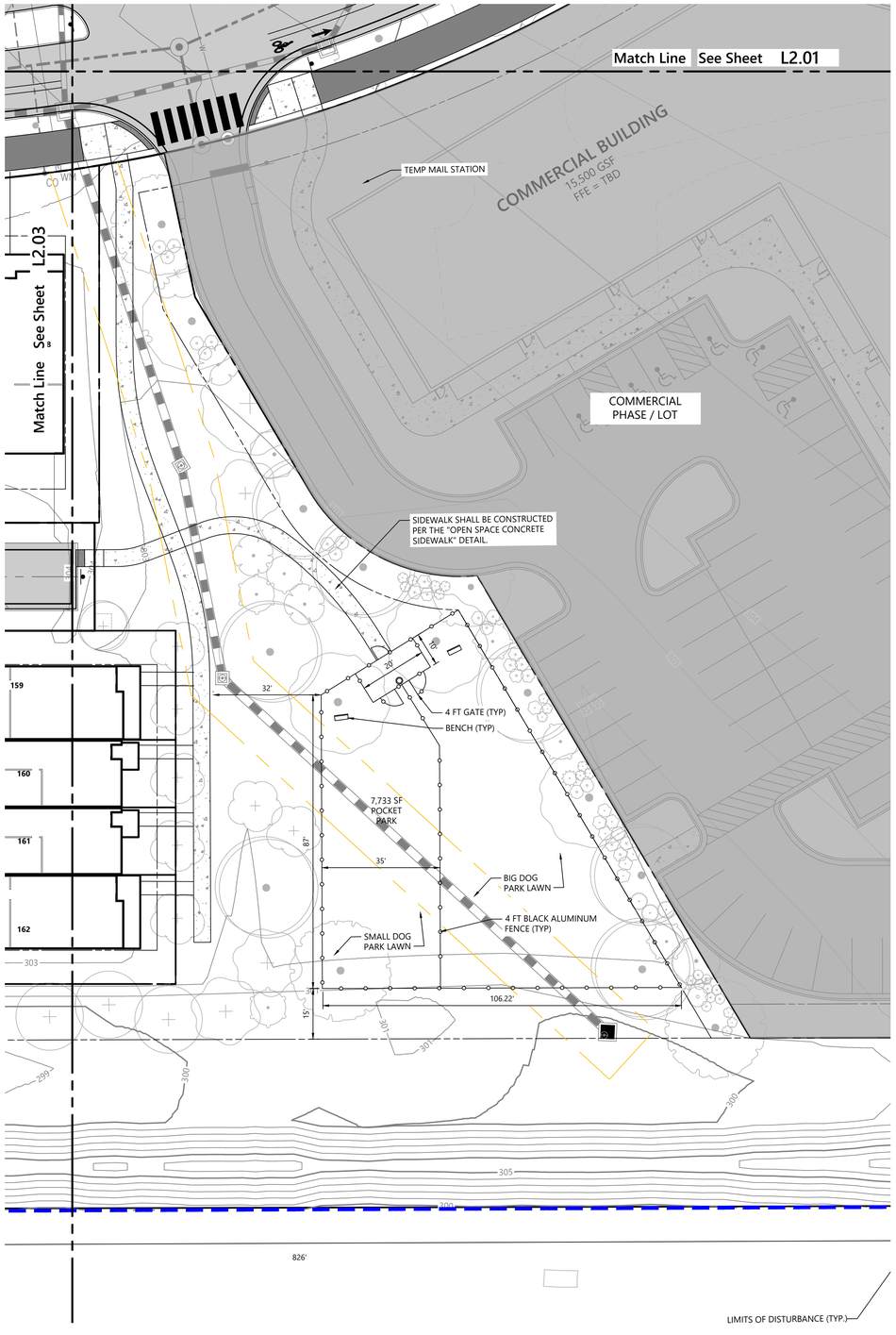

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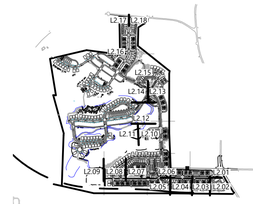

Key

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Pocket Park #4
Site Plan

ZMA-2-23

Drawing Number
L2.02

Sheet 200 of 224

Project Number
39510.05

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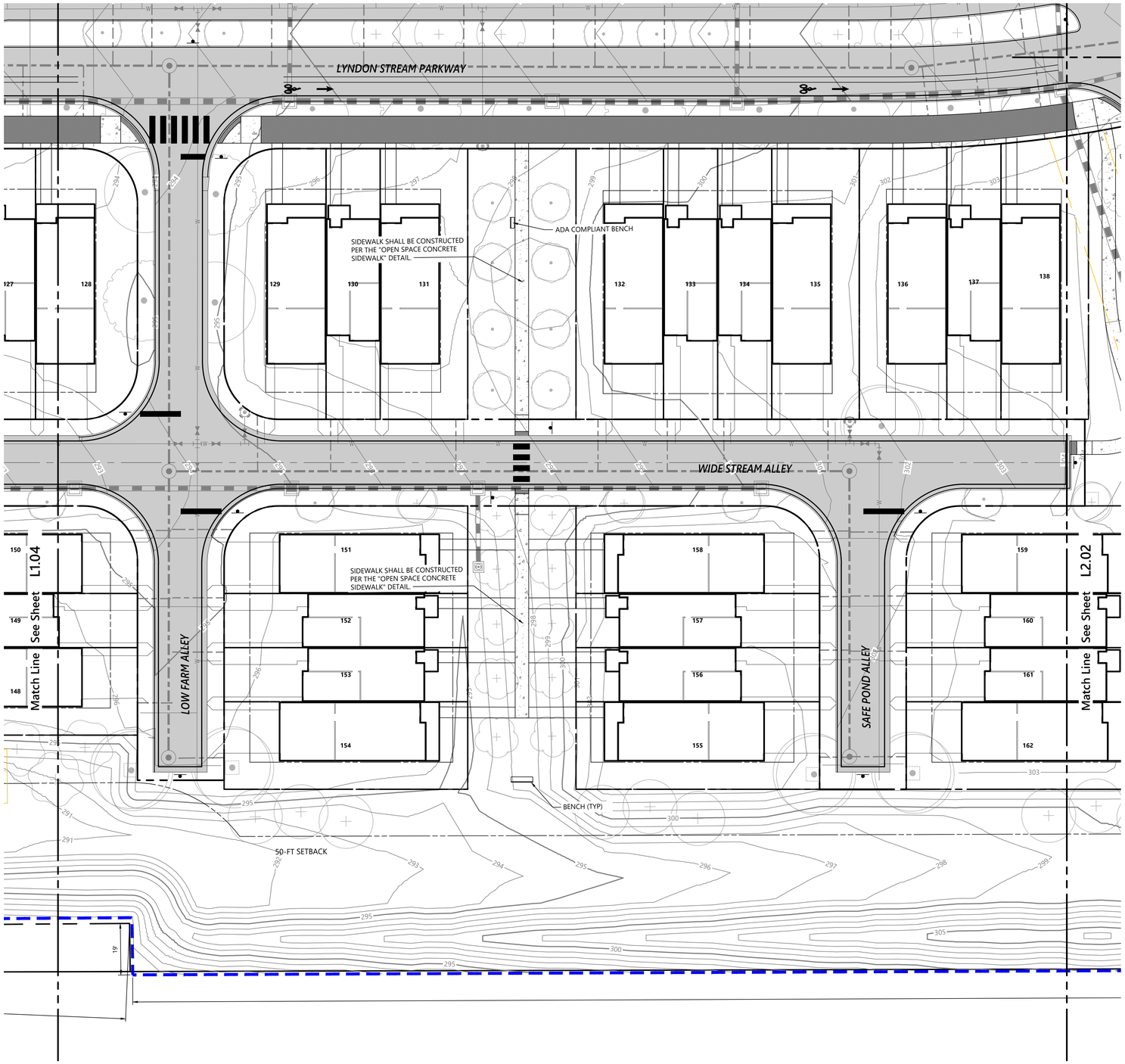

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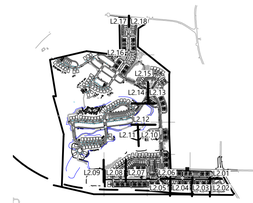

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Benches & Landscape Area 6 & 9 Site Plan

ZMA-2-23

Drawing Number
L2.03

Sheet 201 of 224

Project Number
39510.05

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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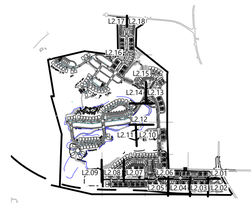

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title

Benches & Landscape Area 4, 5, 7, & 8 Site Plan

ZMA-2-23

Drawing Number

L2.04

Sheet 202 of 224

Project Number 39510.05

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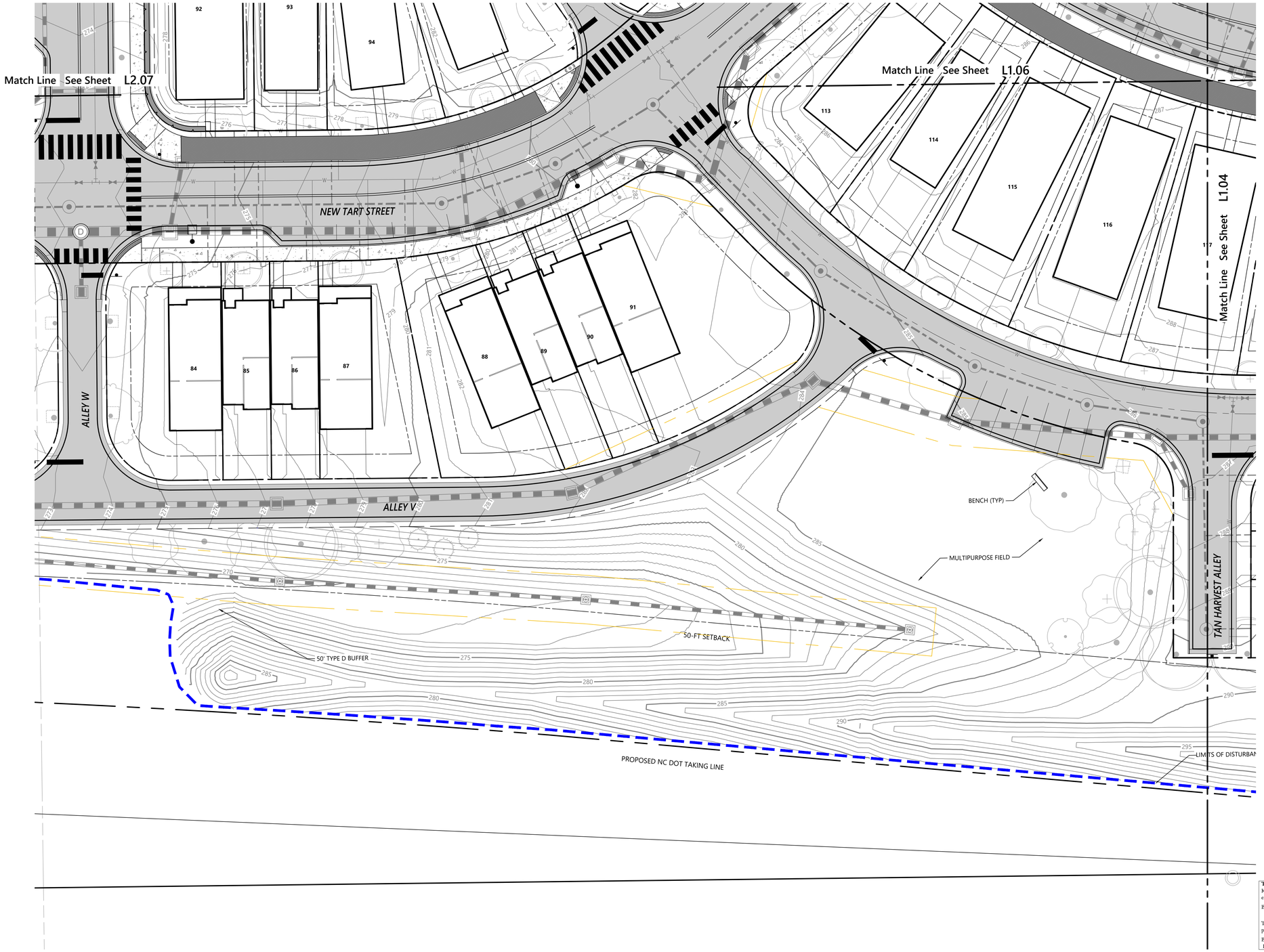

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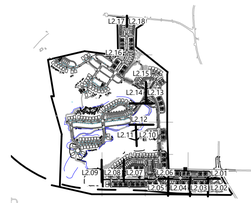

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Drawing Title
Multi-purpose Field 1 Site Plan

ZMA-2-23 (Drawing Number)

L2.05

Sheet 203 of 224

Project Number 39510.05

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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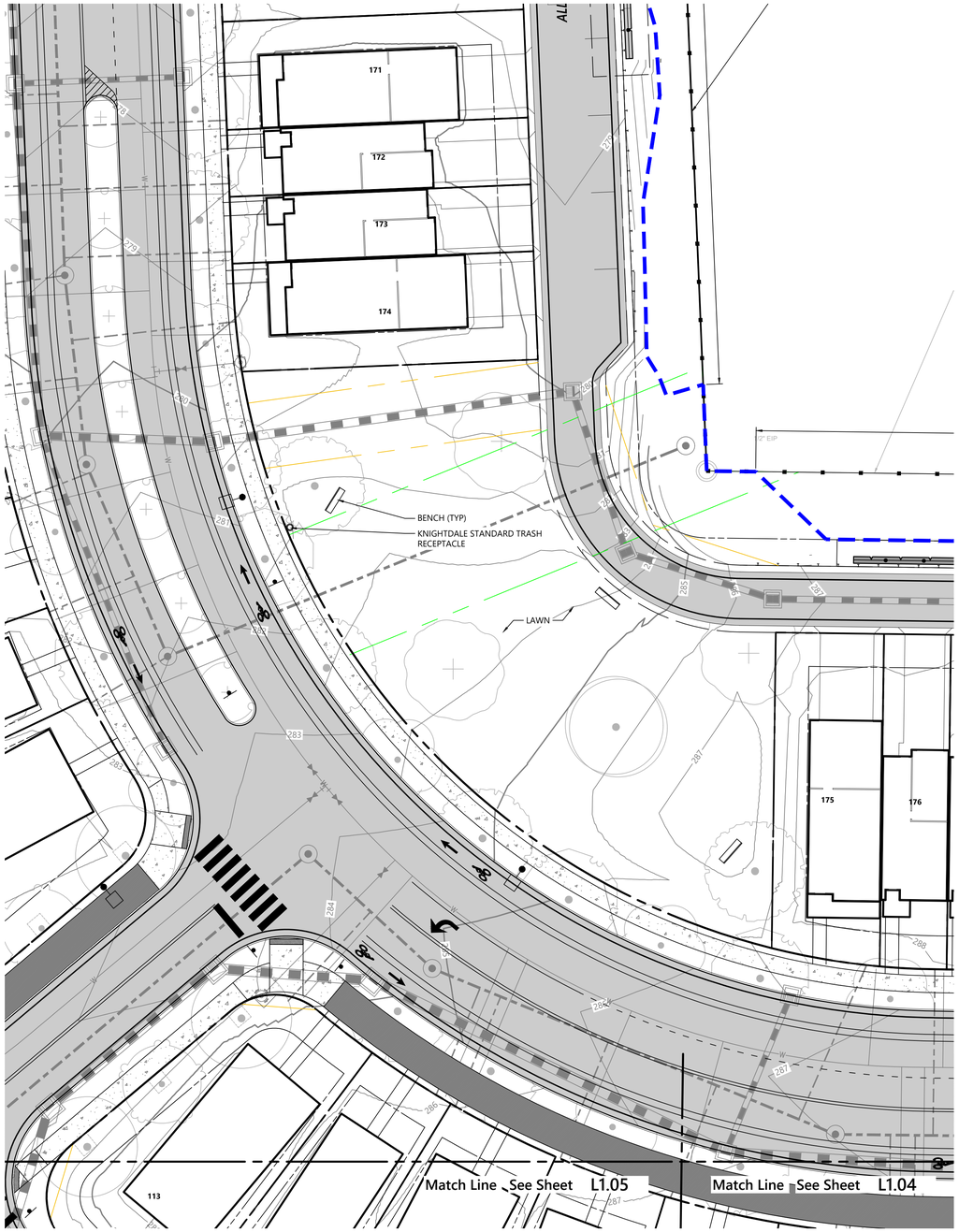

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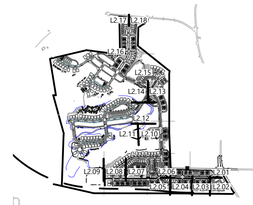

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Apprvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

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By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Benches & Landscape Area 3 Site Plan

ZMA-2-23

Drawing Number
L2.06

Sheet 204 of 224

Project Number 39510.05

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Wednesday, December 17, 2025 1:18:32 PM KMCNINCH Plotted Wednesday, December 17, 2025 1:27:41 PM Kathleen McNinch

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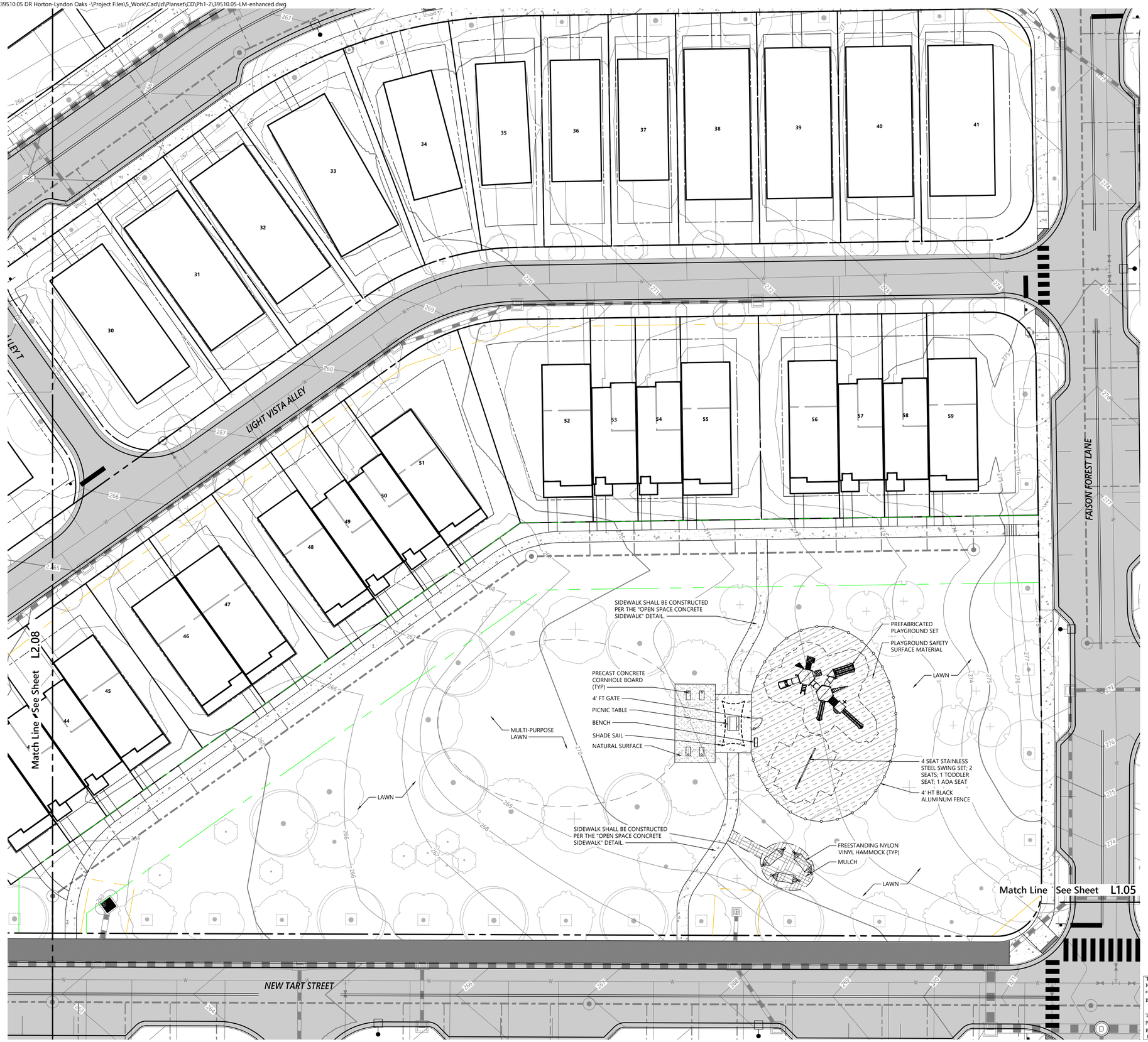

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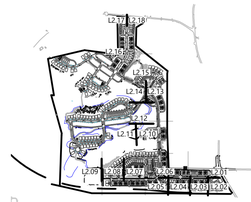

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
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- SCM MAINTENANCE & ACCESS EASEMENT
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- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title
Village Green
Site Plan

ZMA-2-23

Drawing Number
L2.07

Sheet 205 of 224

Project Number
39510.05

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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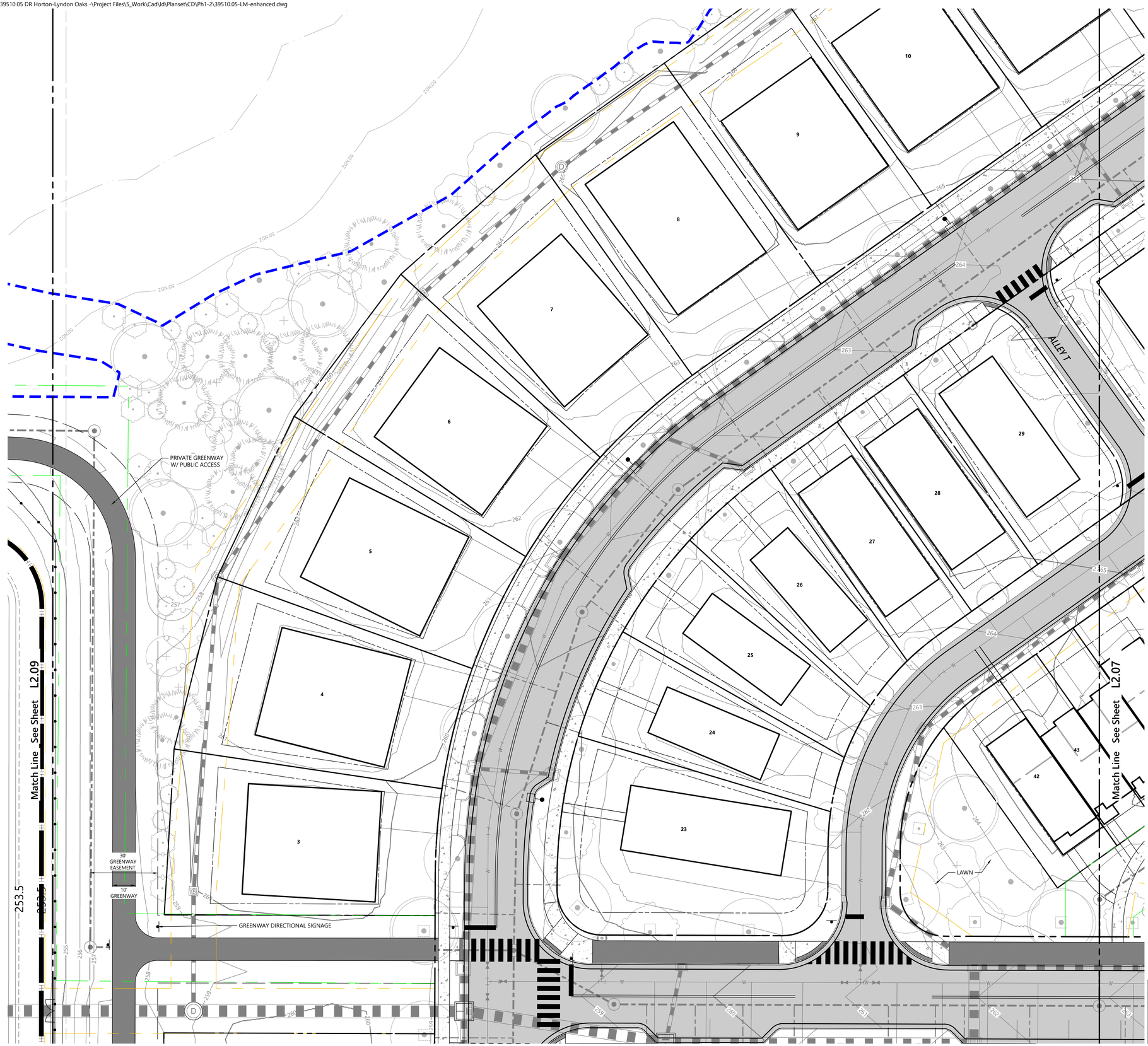

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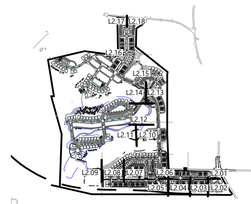

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Designed by	Checked by
VHB	CT, KS, JB, RB

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Public Greenway Site Plan

ZMA-2-23

Drawing Number
L2.08

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Sheet 206 of 224

Project Number
39510.05

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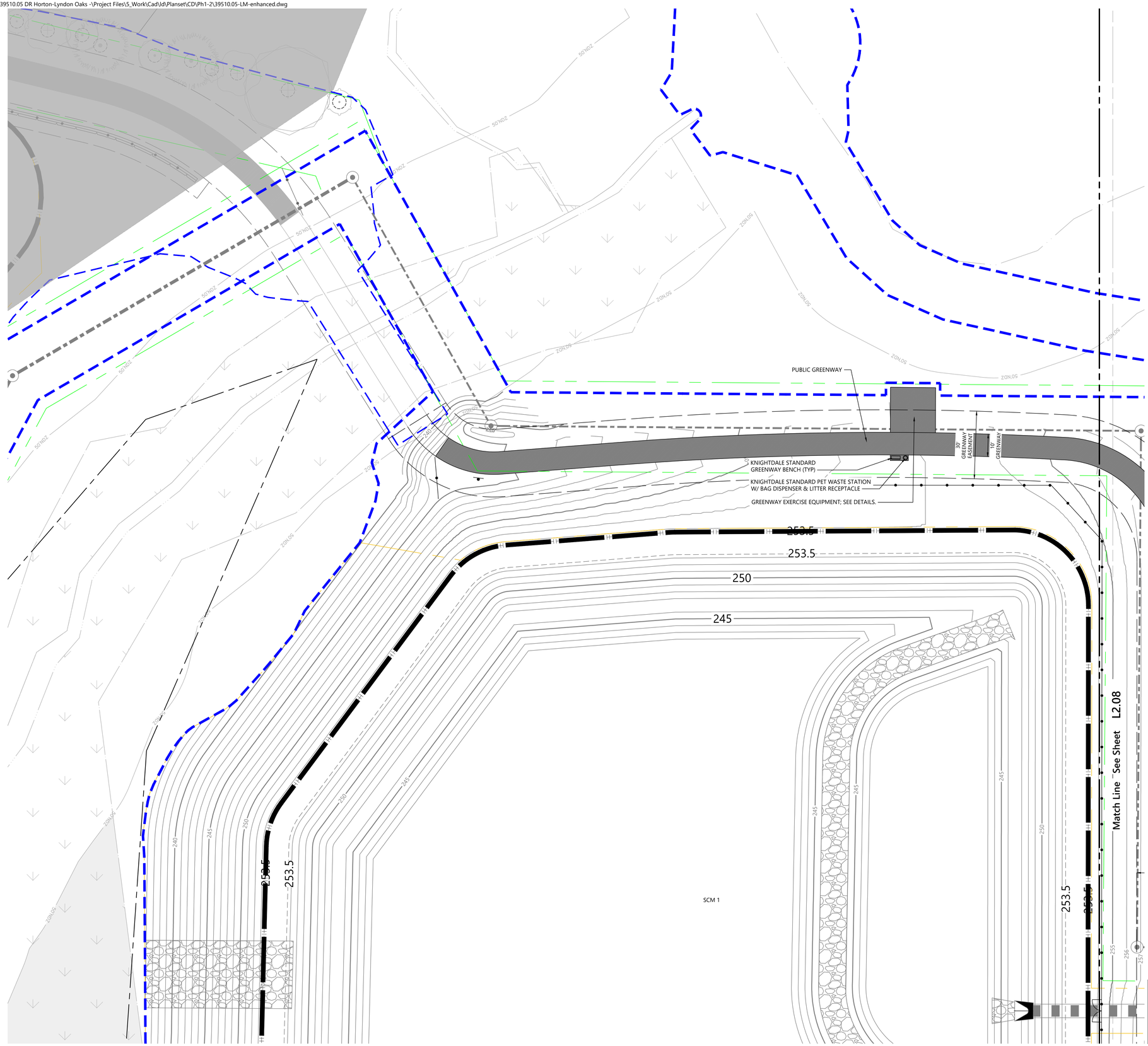

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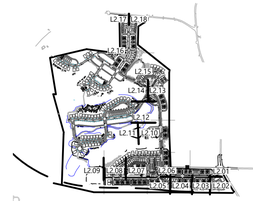

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Public Greenway Site Plan

ZMA-2-23

Drawing Number
L2.09

Sheet 207 of 224

Project Number
39510.05

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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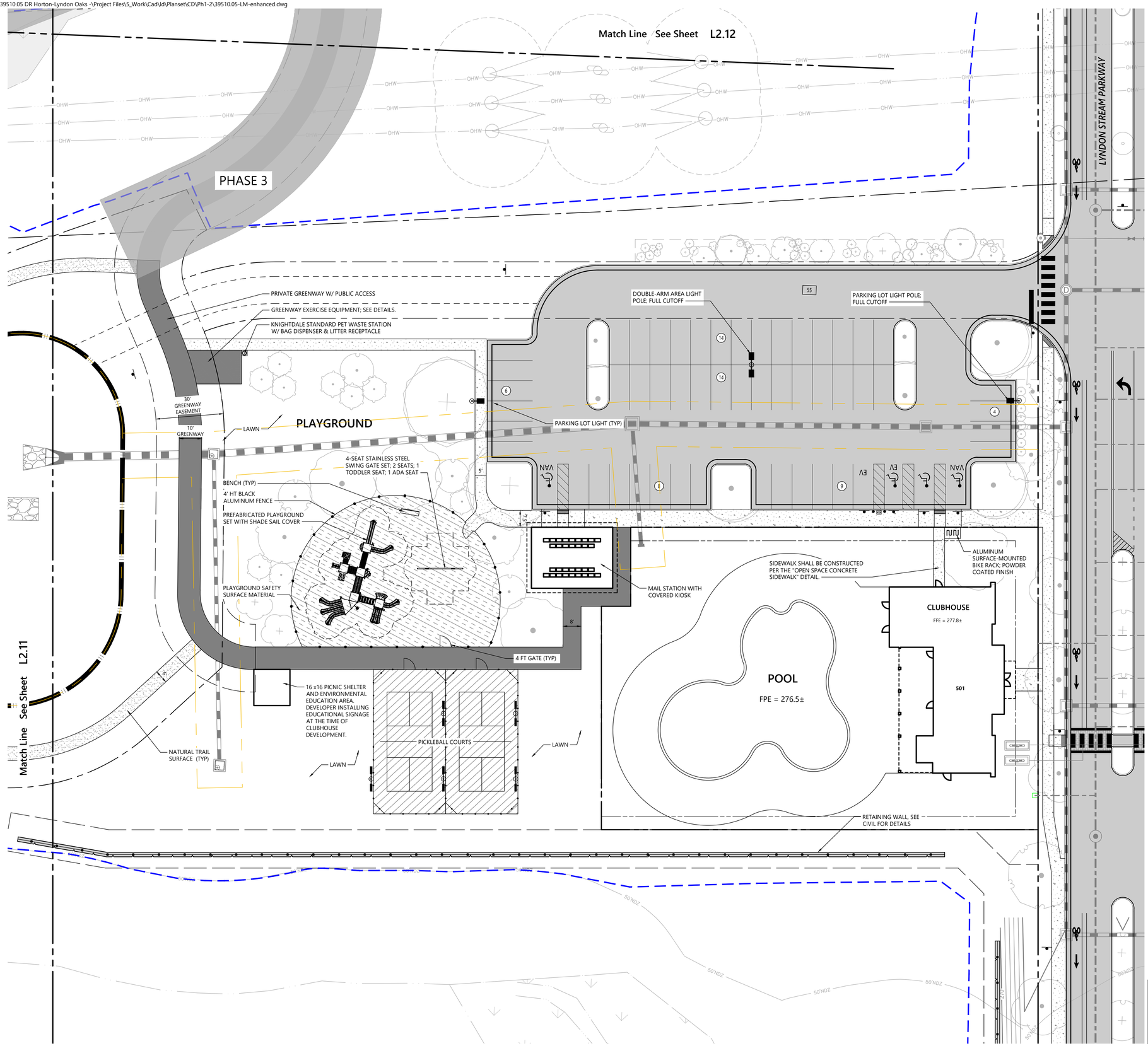

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Land Use Administrator

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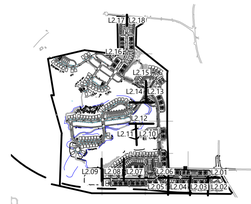

Key

1" = 1,500'

Site Legend

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- 50' NEUSE RIVER BUFFER
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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: **Approval**

Date: **January 17, 2025**

Drawing Title: **Clubhouse & Pool Site Plan**

ZMA-2-23

Drawing Number: **L2.10**

Sheet 208 of 224

Project Number: **39510.05**

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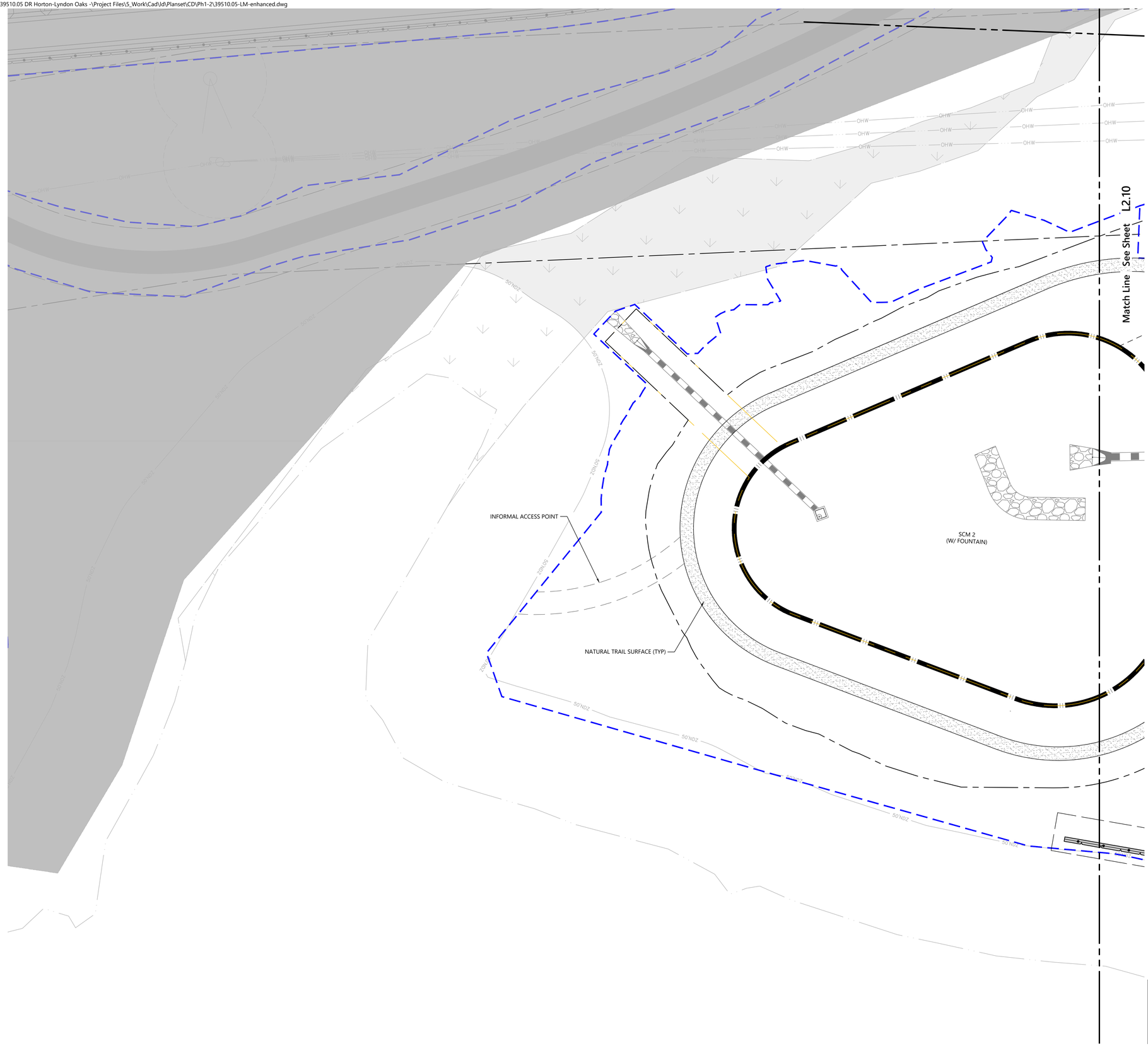

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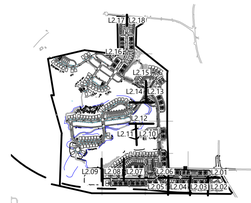

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Pond Overlook Site Plan

ZMA-2-23

Drawing Number: L2.11

Sheet 209 of 224

Project Number: 39510.05

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By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/16/25

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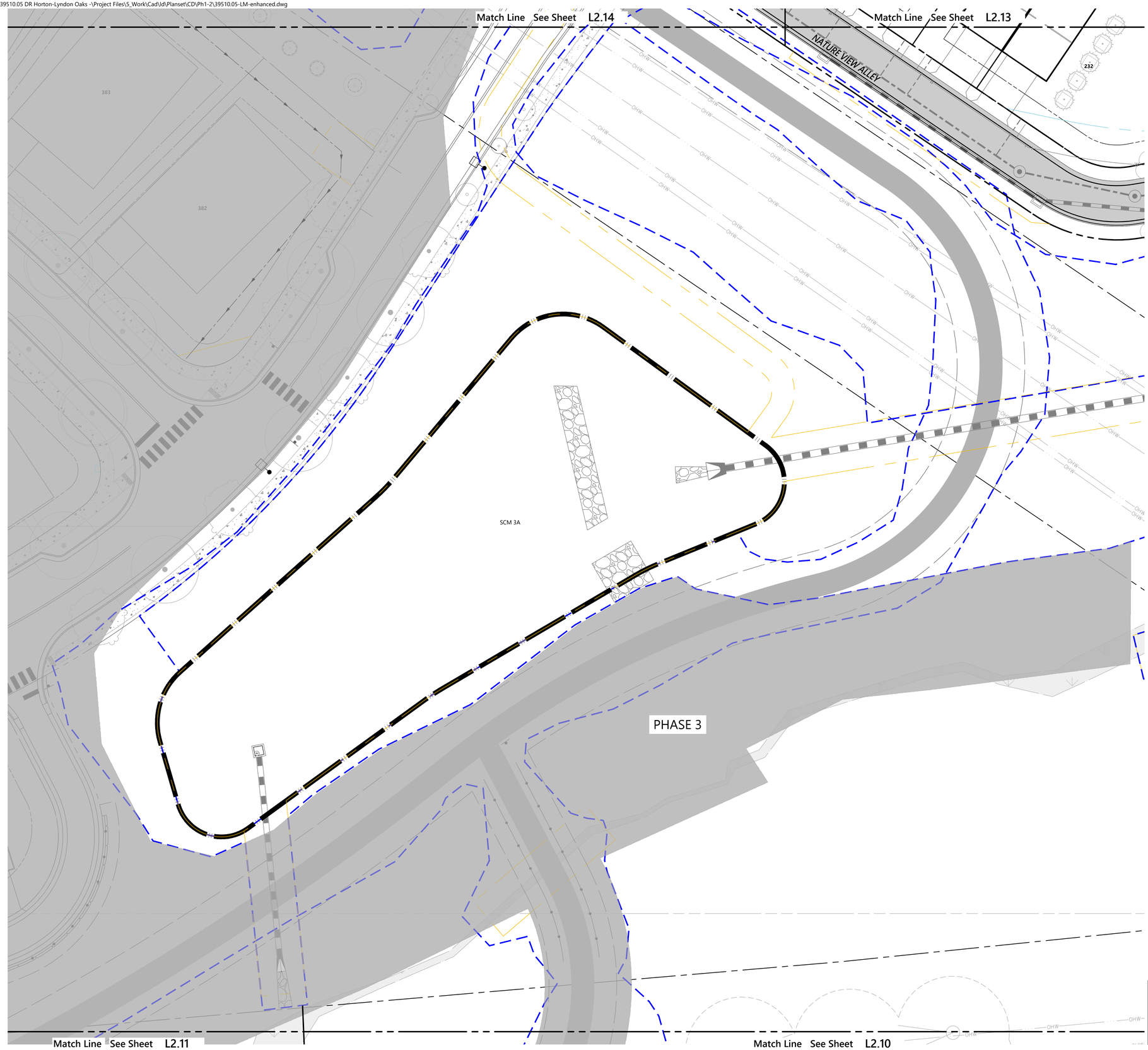

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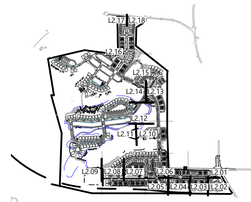

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Lyndon Oaks Phases 1 & 2

Old Faison Road
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Land Use Administrator

Drawing Title
Pond Overlook Site Plan

ZMA-2-23

Drawing Number
L2.12

Sheet 210 of 224

Project Number
39510.05

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 REGISTERED JESSICA LEE BARNES

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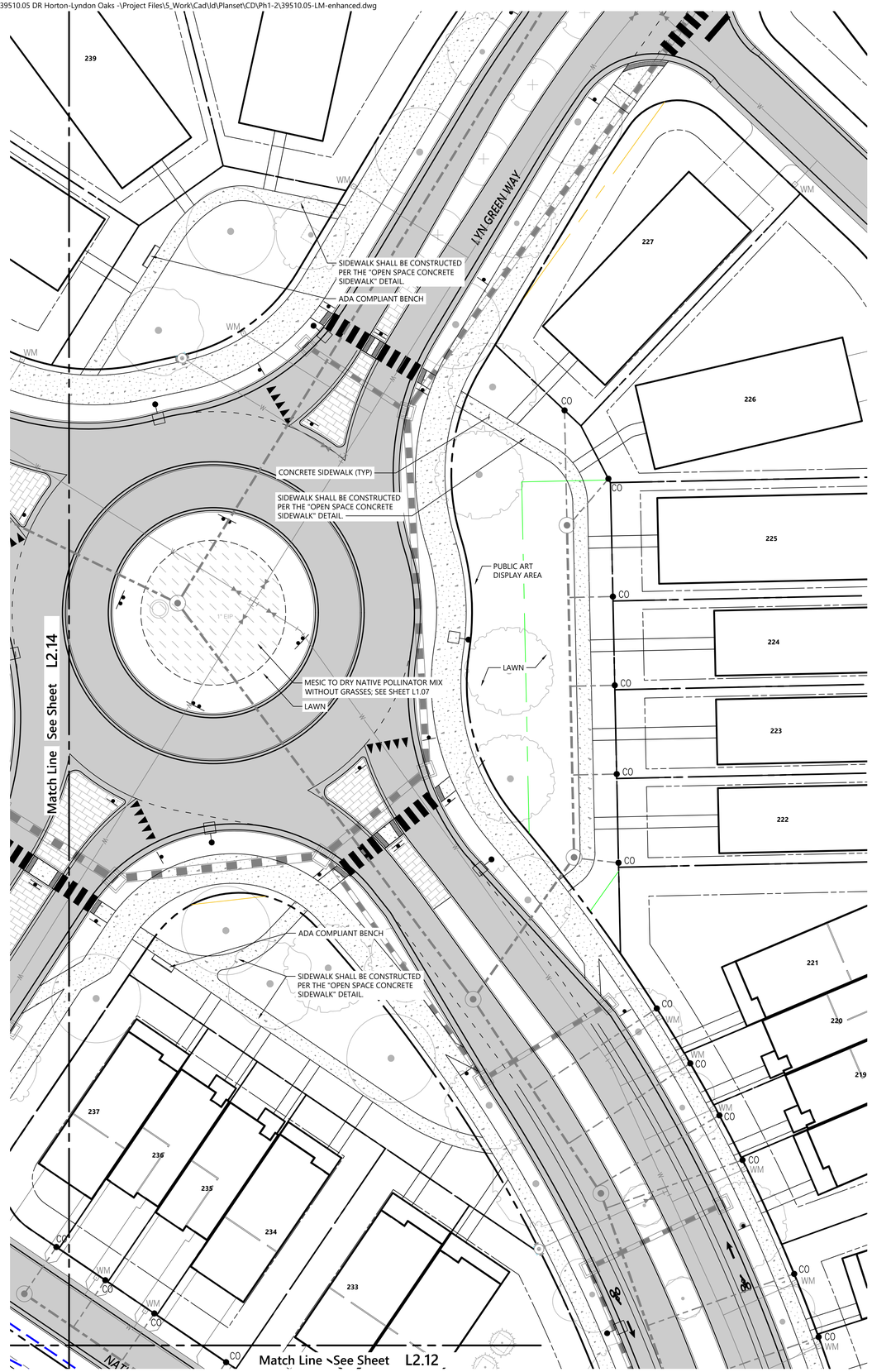

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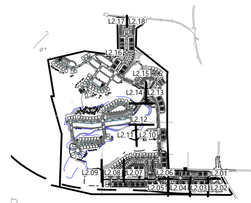

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Lyndon Oaks Phases 1 & 2

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Land Use Administrator

Drawing Title
Public Art Display Site Plan

ZMA-2-23

Drawing Number
L2.13

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 REGISTERED JESSICA LEE BARNES

Sheet	of
211	224

Project Number
39510.05

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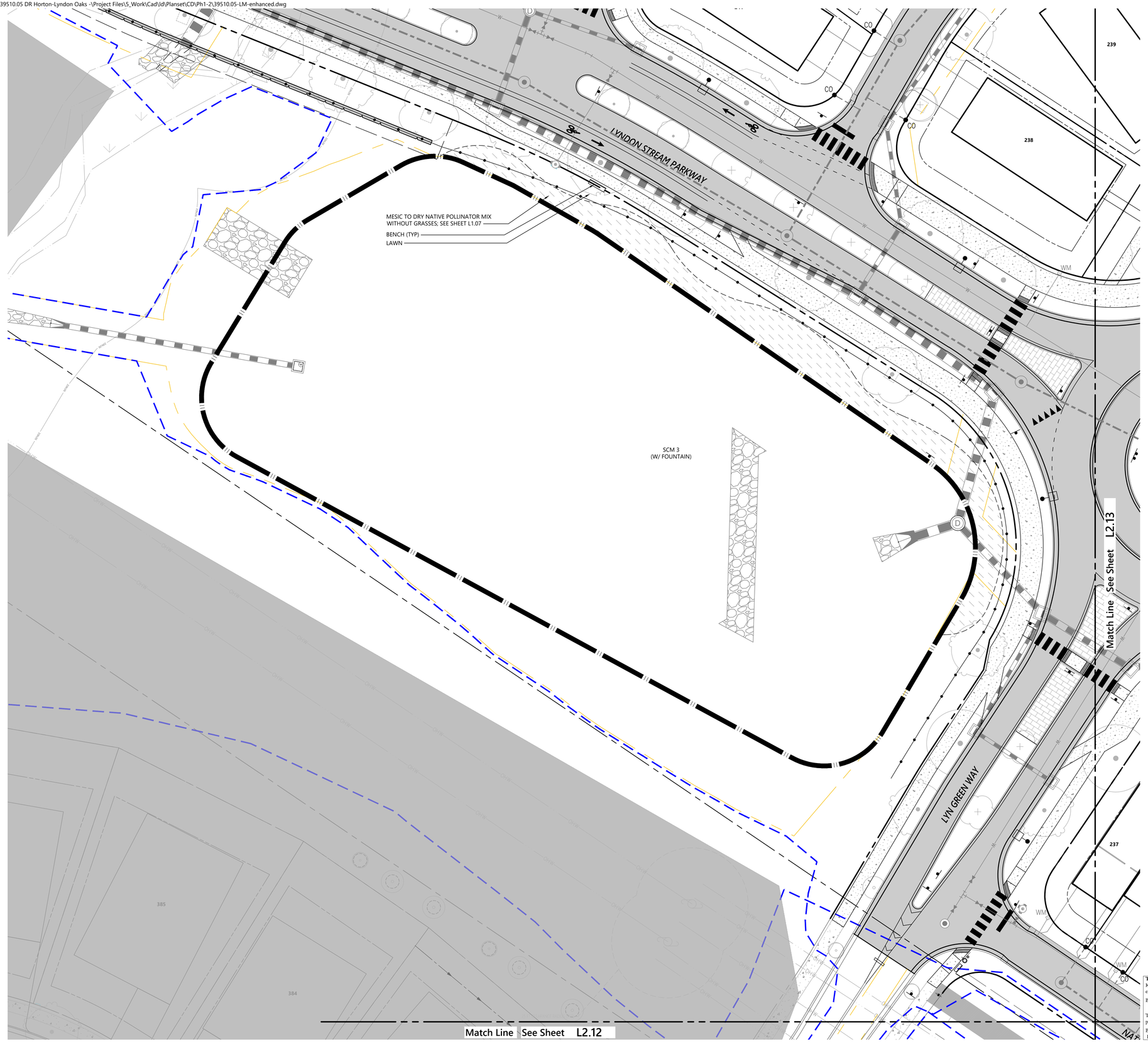

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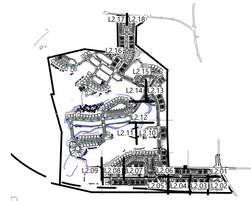

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE

0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Know what's **below.** **Call** before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Pollinator Gardens & Pond Site Plan

ZMA-2-23

Drawing Number
L2.14

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/15/25

Sheet 212 of 224

Project Number 39510.05

Saved Wednesday, December 17, 2025 1:18:32 PM KMCNINCH Plotted Wednesday, December 17, 2025 1:32:11 PM Kathleen McNinch

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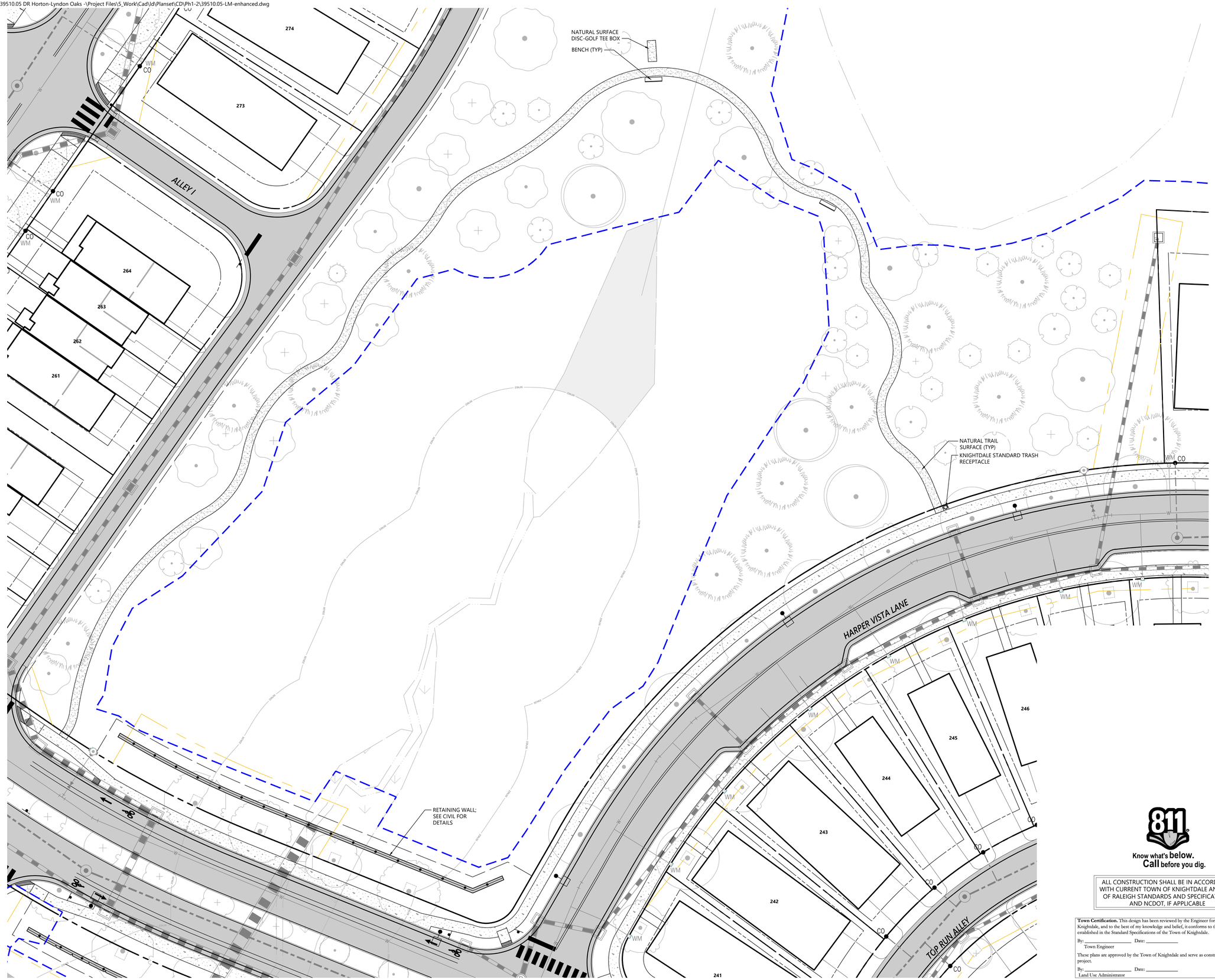

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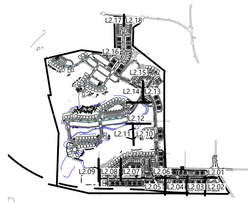

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Pocket Park #3 Site Plan

ZMA-2-23

Drawing Number: L2.15

Sheet 213 of 224

Project Number: 39510.05

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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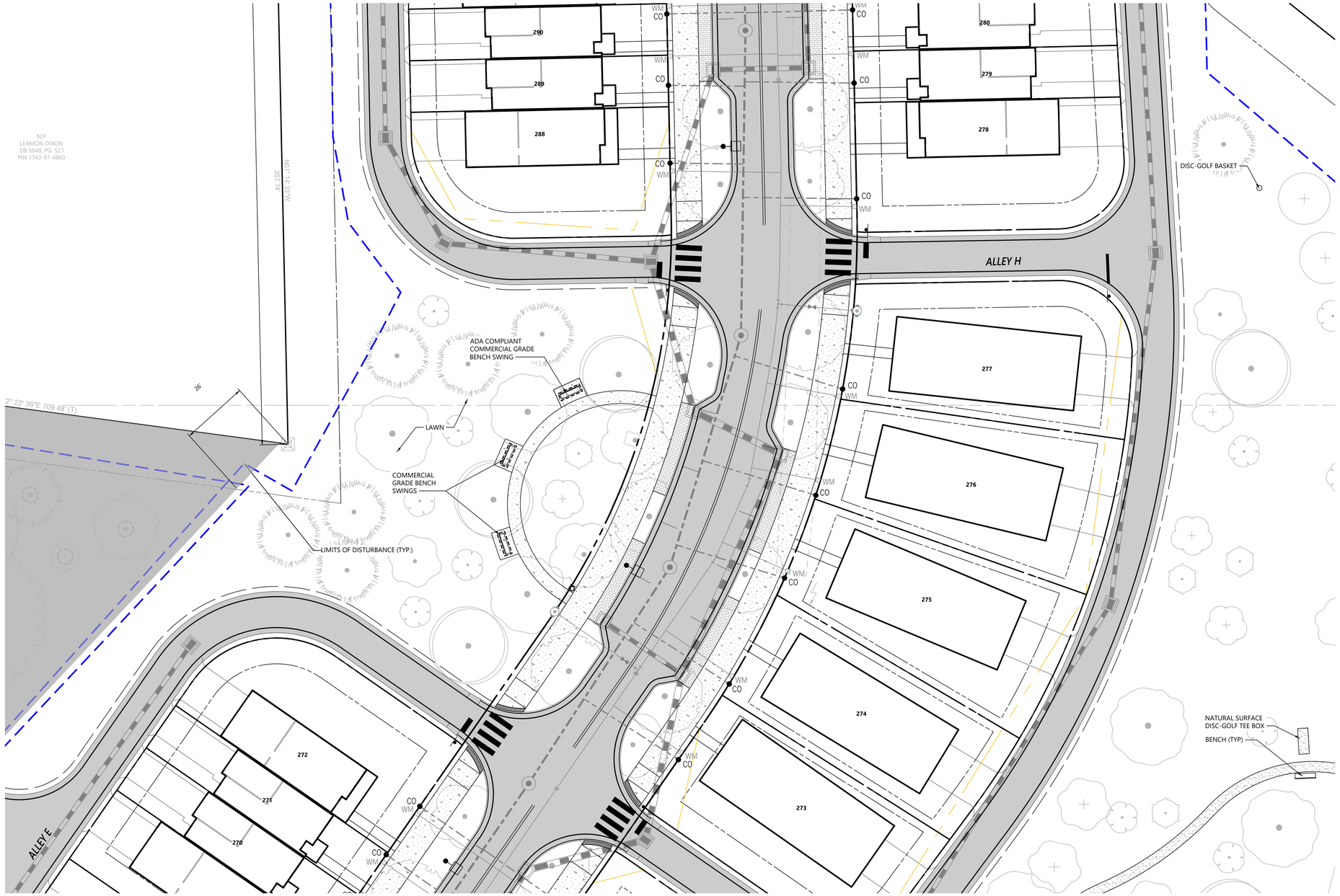

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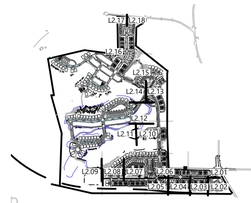

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- 6 FT WHITE VINYL PRIVACY FENCE

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval

Date: January 17, 2025

Drawing Title

Bench Swing Park Site Plan

ZMA-2-23

Drawing Number: L2.16

Sheet 214 of 224

Project Number: 39510.05

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

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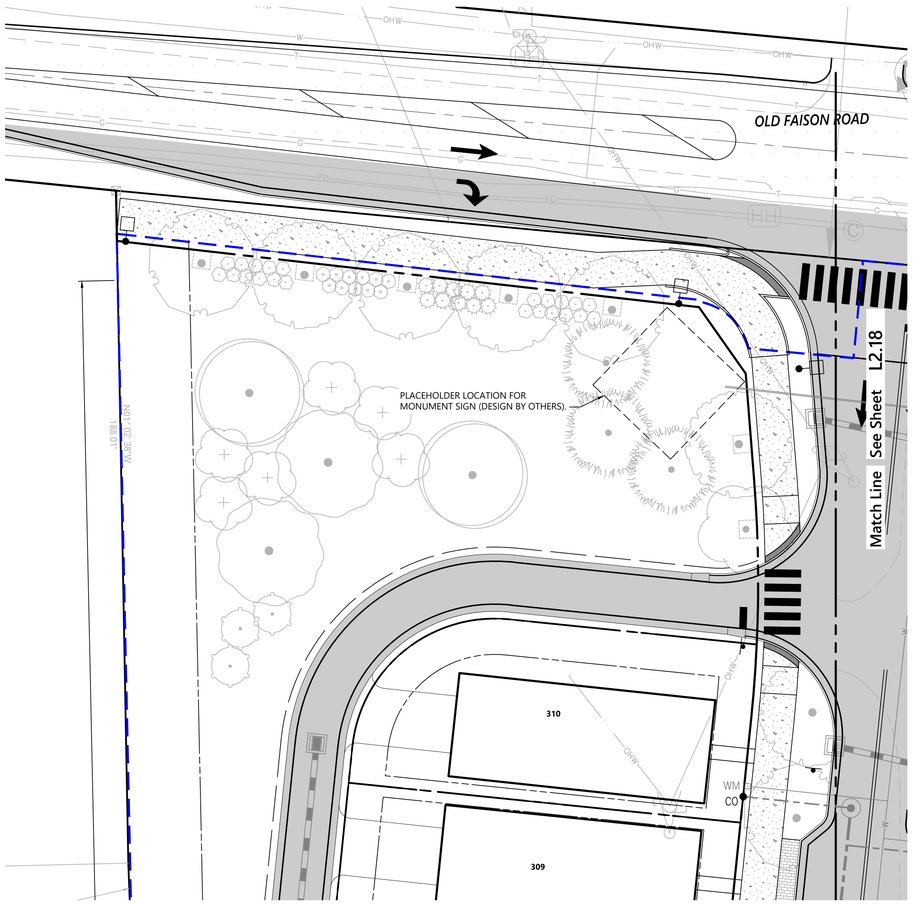

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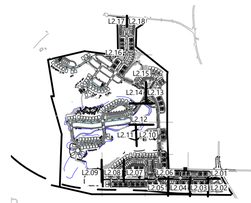

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
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Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

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Land Use Administrator

Drawing Title
Entry Monument & Enhanced Roadside Site Plan

ZMA-2-23

Drawing Number
L2.17

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Sheet 215 of 224

Project Number
39510.05

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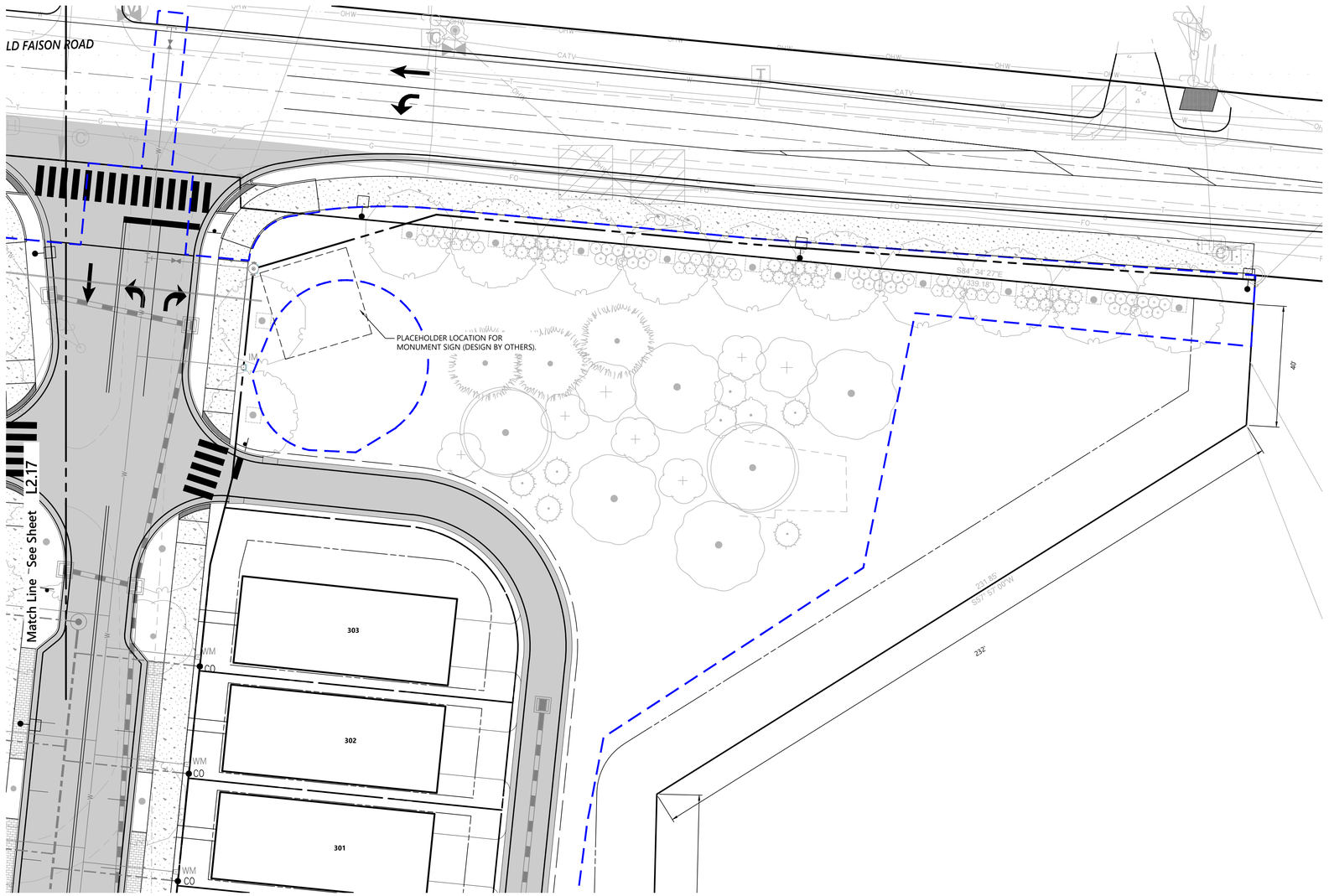

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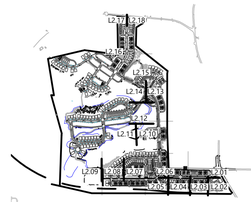

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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Entry Monument & Enhanced Roadside Site Plan

ZMA-2-23

Drawing Number
L2.18

Sheet 216 of 224

Project Number 39510.05

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Wednesday, December 17, 2025 1:18:32 PM KMCNINCH Plotted Wednesday, December 17, 2025 1:34:20 PM Kathleen McNinch

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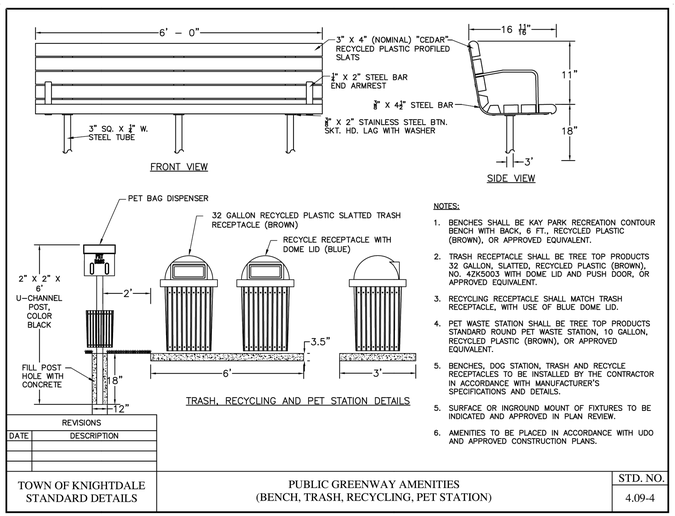
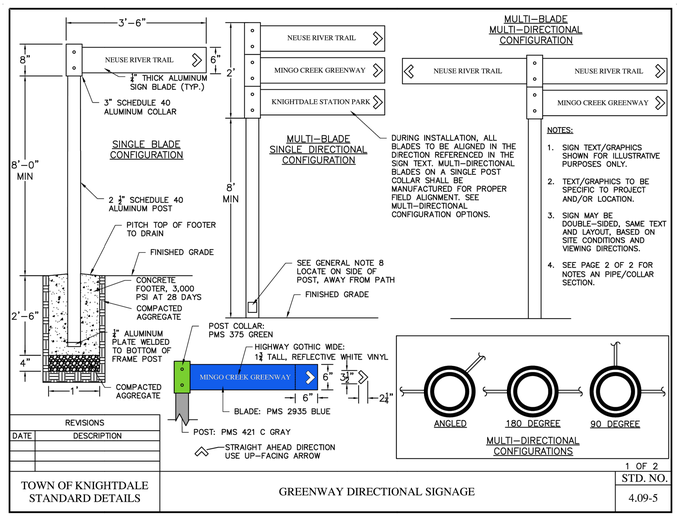


NOTES:

1. BENCHES SHALL BE KAY PARK RECREATION CONTOUR BENCH WITH BACK, 6 FT., RECYCLED PLASTIC (BROWN), OR APPROVED EQUIVALENT.
2. TRASH RECEPTACLE SHALL BE TREE TOP PRODUCTS 32 GALLON, SLATTED, RECYCLED PLASTIC (BROWN), NO. 4ZK5003 WITH DOME LID AND PUSH DOOR, OR APPROVED EQUIVALENT.
3. RECYCLING RECEPTACLE SHALL MATCH TRASH RECEPTACLE, WITH USE OF BLUE DOME LID.
4. PET WASTE STATION SHALL BE TREE TOP PRODUCTS STANDARD ROUND PET WASTE STATION, 10 GALLON, RECYCLED PLASTIC (BROWN), OR APPROVED EQUIVALENT.
5. BENCHES, DOG STATION, TRASH AND RECYCLE RECEPTACLES TO BE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND DETAILS.
5. SURFACE OR INGROUND MOUNT OF FIXTURES TO BE INDICATED AND APPROVED IN PLAN REVIEW.
6. AMENITIES TO BE PLACED IN ACCORDANCE WITH UDO AND APPROVED CONSTRUCTION PLANS.

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	PUBLIC GREENWAY AMENITIES (BENCH, TRASH, RECYCLING, PET STATION)	STD. NO. 4.09-4



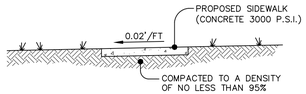
NOTES:

1. SIGN TEXT/GRAPHICS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.
2. TEXT/GRAPHICS TO BE SPECIFIC TO PROJECT AND/OR LOCATION.
3. SIGN MAY BE DOUBLE-SIDED, SAME TEXT AND LAYOUT, BASED ON SITE CONDITIONS AND VIEWING DIRECTIONS.
4. SEE PAGE 2 OF 2 FOR NOTES AN PIPE/COLLAR SECTION.

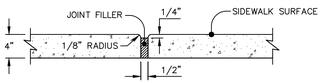
REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	GREENWAY DIRECTIONAL SIGNAGE	1 OF 2 STD. NO. 4.09-5

NOTE:
1. COLOR CHOICES AND FINISHES TO BE APPROVED BY OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL PROVIDE FURNISHINGS AS INDICATED OR APPROVED EQUAL. ALL PRODUCTS MUST BE APPROVED BY OWNER'S REPRESENTATIVE.



TYPICAL SECTION



TRANSVERSE EXPANSION JOINT

NOTES:

1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET.
2. CONTROL JOINTS TO BE AT 5 FEET O.C.
3. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.
4. CONTROL JOINTS TO BE AT 5 FEET O.C.
5. A 6 INCH DEPTH IS REQUIRED AT LOCATIONS OF DRIVEWAY CROSSINGS, AT STREET INTERSECTIONS (ALONG THE LENGTH OF RADIUS CURB RETURNS), AND IN THE HANDICAP RAMPS.

Open Space Concrete Sidewalk

3/20

N.T.S. LD_420

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Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Saved Wednesday, December 17, 2025 12:41:39 PM KMCNINCH Plotted Wednesday, December 17, 2025 11:16:03 PM Jessi Barnes

Training Day

Product Specifications

Model number: PFT102
Age Range: 13 years +
Unit Size: 13' x 30'
Product Type: Fitness Course
Muscle Group: Full Body

Product Options



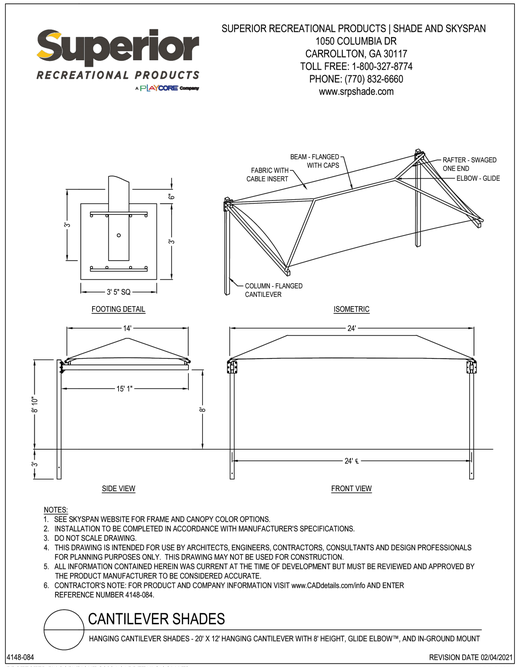
NOTE:
1. ONE PIECE OF EQUIPMENT WILL BE PROVIDED AT EACH OF THE GREENWAY EXERCISE STATIONS.

MEETS NATIONAL STANDARDS FOR: ASTM F1487-21 CPSC GUIDELINES #325

Similar Products

- Ditch Plains
- Jumping Jaguar
- Get Physical Series Straight Rung Vertical…
- Solid Top Round Portable Picnic Table with…
- Maximum Series Chain Climber
- Spark Series Short Bones Bridge
- Hidden Oak Orange Playground Set: A Fun…
- Perforated Steel Square Patio Table
- 7 Foot Sectional Spiral Slide | PSL028
- Secret Stronghold | PCT008 | PlaygroundE-…

Elite Play Equipment
Nancy Bascietto 919-201-7471
8801 Fast Park Drive #301
Raleigh NC 27617



NOTES:
1. SEE SKYSPAN WEBSITE FOR FRAME AND CANOPY COLOR OPTIONS.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
6. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 4148-084.

CANTILEVER SHADES

HANGING CANTILEVER SHADES - 20' X 12' HANGING CANTILEVER WITH 8' HEIGHT, GLIDE ELBOW™, AND IN-GROUND MOUNT

4148-084 REVISION DATE 02/04/2021

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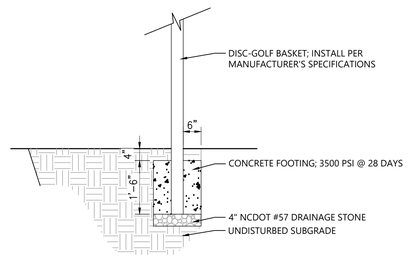

DISC-GOLF BASKET FOOTING

3/4" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

Drawing Title
Hardscape Details

ZMA-2-23 Drawing Number

L3.00

Sheet 217 of 224

Project Number 39510.05

Augusta

Product Specifications

Model number: PMF019
Age Range: 2-12 years
Safety Zone: 46' 6" x 51' 5"
Child Capacity: 69-79
Fall Height: 84"
Post Diameter: 4.5-inch
Product Type: Maximum

ADA Accessibility

Elevated: 11 components
Ground Level: 5 components



ADA COMPLIANT

Product Options



MEETS NATIONAL STANDARDS FOR: ASTM F1487-21 CPSC GUIDELINES #325

Similar Products

- Pikes Peak
- Burbank
- Mandrake Mangrove
- Maximum Series Wavy PE Rock Climbing…
- Spinnaker Cove | Spark Play Systems | Play-…
- 32 Gallon Rain Bonnet Top
- La Crosse | PKP263
- Friar's Fealty Ð PCT004 Ð PlaygroundEquip-…
- Traveling Troubadour | PCT071 | Playground-…
- Rover's Rest | PKP314P | PlaygroundEquip-…

Elite Play Equipment
Nancy Bascietto 919-201-7471
8801 Fast Park Drive #301
Raleigh NC 27617

Product Description

With two huge hexagon platforms covered by Hex Roofs and joined by Incline Tube Bridges, the Augusta is a structure where kids can explore to their heart's content. Getting down from the structure is made even more fun with a combination of slides including a Straight Slide, a Wave Slide, a Double Wave Slide designed for competing with friends, and a covered Tube Slide for an extra special sensory experience. Climbing up is made super fun too and children can choose to use the twisty Cyclone Climber Attachment to reach the top, an Inverted Arch Ladder which requires careful balance, a Ribbon Climber and a Twisted Arch Ladder which challenges their sense of perception. The structure also inspires imagination with a Sea Creature Climber featuring underwater animals, a Store Panel so they can pretend to go shopping like adults as well as a Car Panel so they can drive to the store or head off on a road trip across the playground.

7/8 feet high Elite Cantilever Swing - 1 Bay 2 Cantilevers

Product Specifications

Model number: PSW120WSPB
Safety Zone: 32' x 31' 11"
Fall Height: 96"
Post Diameter: 5-inch
Product Type: Swing Sets

Product Options

Select your chain and seat:
Chains with Seats
Select your color: Cobalt Blue



MEETS NATIONAL STANDARDS FOR: ASTM F1487-21 CPSC GUIDELINES #325

Similar Products

- Royal Triple Station Chest Press
- Blackburn
- Get Physical Series Pebble Bridge
- Stump Window Panel
- 5-inch Swing Hanger with Clevis Pendulum
- 6 Pods Free Standing Pod Climber | Play-…
- Steamboat Springs | Play Systems | Play-…
- Single Post Tilted Pebble Bridge | Playground-…
- Curved Ladder Climber | PFS074 | Play-…
- Hidden Hallows | PCT078

Elite Play Equipment
Nancy Bascietto 919-201-7471
8801 Fast Park Drive #301
Raleigh NC 27617

Product Description

The swing has to be the classic piece of playground equipment and park managers or school principals can let kids experience the fullness of childhood with the addition of this 7/8 feet high Elite Cantilever Swing with 1 Bay and 2 Cantilevers to the playground. As this set comes with or without the chains and seat, it's possible to mix and match with other seats on our website to create your ideal look. If you purchase it as it comes, with two belt seats and two bucket seats, you're providing the opportunity for children of all ages to experience the swing set. The 7/8 feet high Elite Cantilever Swing with 1 Bay and 2 Cantilevers benefits from higher swings in the bay and lower swings on the cantilevered sections so that independent children can swing high and fast whereas the motion on the end sections are more controlled. The end sections allow easy access to the child in the bucket seat to put them in or take them out, and the bucket seats have a high back and front so that a child feels secure and will not tip out when swinging.

Royal Troon

Product Specifications

Model number: PMF050
Age Range: 2-12 years
Safety Zone: 47' 4" x 62' 7"
Child Capacity: 60-72
Fall Height: 72"
Post Diameter: 4.5-inch
Product Type: Maximum

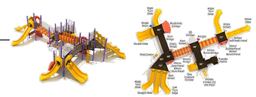
ADA Accessibility

Elevated: 16 components
Ground Level: 7 components



ADA COMPLIANT

Product Options



MEETS NATIONAL STANDARDS FOR: ASTM F1487-21 CPSC GUIDELINES #325

Similar Products

- Columbia
- Admirals Cove | Spark Play Systems | Play-…
- Spark Series Twist Arch Ladder
- Carolina Woods | Maximum Play Systems |…
- Rhythm Group of Three
- 8 feet high Elite Arch Post Swing - 3 Bays
- AeroSpinner | PFS056
- 15 Foot Spiral Tube Slide - Slide and Mounts…
- 14 Foot Spiral Tube Slide - Slide and Mounts…
- Paw Print Grooming Deck | PDP012NB

Elite Play Equipment
Nancy Bascietto 919-201-7471
8801 Fast Park Drive #301
Raleigh NC 27617

Product Description

Looking for an elaborate play structure for your playground to maximize entertainment and exercise for kids? With 8 slides and 2 Bones Bridges, the Royal Troon gives kids ample room to run around, be agile, and socialize with other young explorers. It has decks elevated to the size of 6 feet with different slides. The Royal Troon has wide walkways so kids won't bump into each other when exploring the play structure. Named after a Scottish golf club, this play structure also has a Half Math Panel for kids to work on their academic skills. It also has a 3D Climber, Sea Creature Climber, and Pebble Climber with Rails for active skill-building. Minimizing the risk of collisions among children, the Royal Troon has ample room where kids can just sit comfortably. They can engage in imaginative play on its many bridges and stairs. With amenities for sliding fun, kids can have a space for social interaction and pretend play with friends.

leisure craft INC.
P.O. Box 1700 • Hendersonville, NC 28793 • Tel: (800) 633-8241 • (828) 693-8241
Fax: (828) 693-8777 • www.leisurecraftinc.com • sales@leisurecraftinc.com

SPEC SHEET: T6XPP

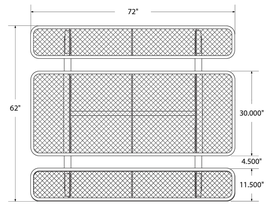
6' STD EXP PICNIC TABLE *portable*

Wt. 210 lbs

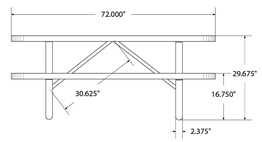
photo



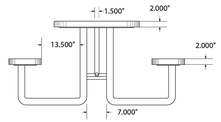
top view



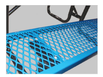
front view



side view



product details



Coated Surfaces:
- Thermoplastic coated
- Copolymer-based, environmentally safe
- Does not fade, crack, peel or warp
- Applied at a thickness of 25-30 mils.
- 5 Year warranty on coating



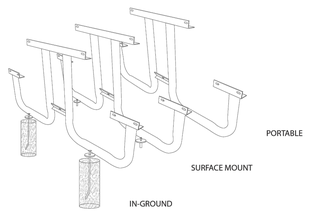
Construction:
- Seats and tops - 9 gauge steel
- 2 ⅞" tubular understructure
- Understructure - galvanized steel
- Understructure finish - black polyester powder coated
- Nuts, washers and bolts - galvanized steel

mounting types

P = Portable : no mount

SM = Surface Mount: concrete anchors through discs welded to legs

IG= In-Ground: J-rods set in concrete through discs welded to legs



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VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title: Hardscape Details
Drawing Number: ZMA-2-23

Sheet: L3.01
of: 218 224

Project Number: 39510.05

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Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Wednesday, December 17, 2025 12:41:39 PM KMCNINCH Plotted Wednesday, December 17, 2025 1:16:10 PM Jessi Barnes

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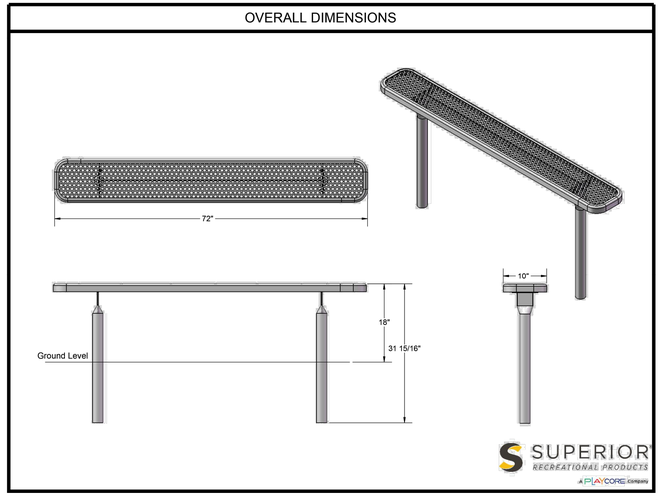

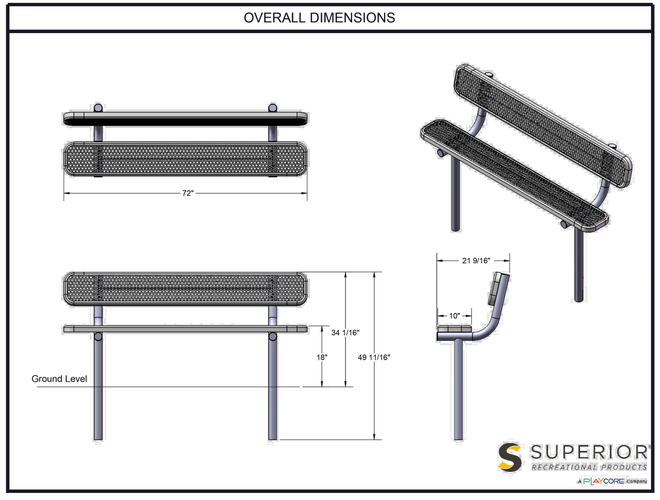

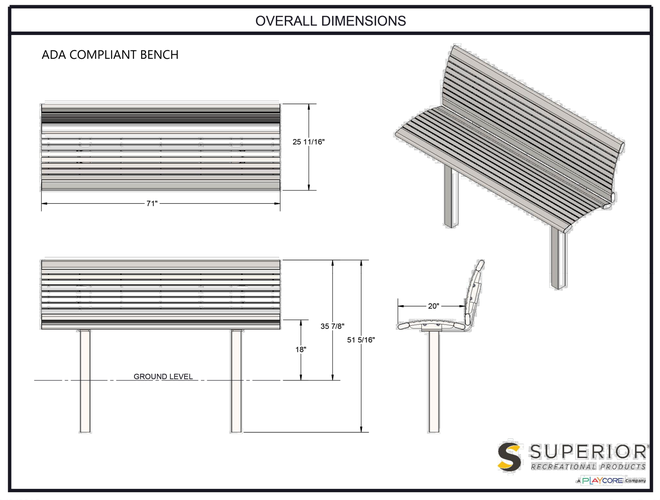

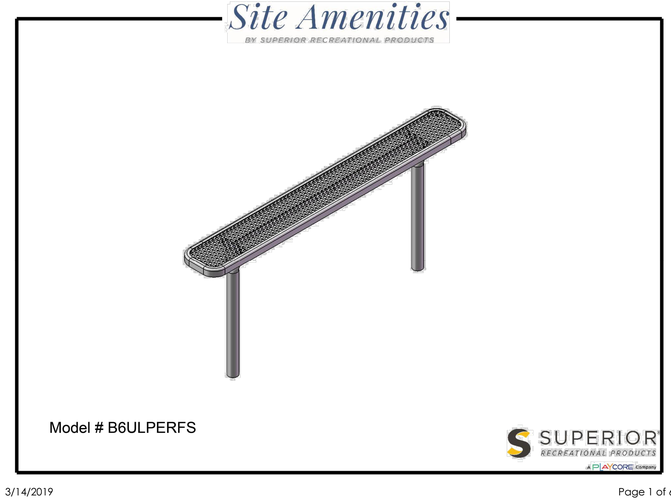





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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by: VHB
Checked by: CT, KS, JB, RB
Issued for: Approval
Date: January 17, 2025

Drawing Title: Hardscape Details

ZMA-2-23

Drawing Number: L3.02

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 2548 JESSICA LEE BARNES 12/15/25

Sheet 219 of 224

Project Number: 39510.05

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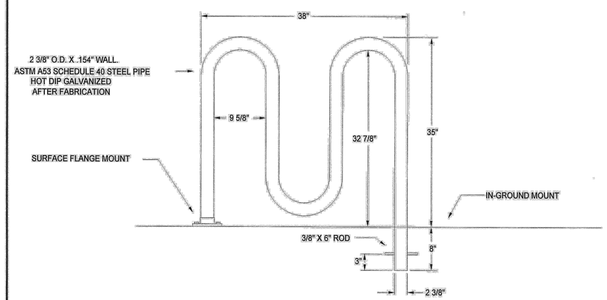
2 3/8" O.D. LOOP STYLE BIKE RACK



5 SPACES, 3 LOOPS

KAY PARK			
MODEL: 623G-IG/SM		WT: 50 #	
DRAWN BY: LCB	DATE: 10/15/08	SCALE: NONE	

FILE NO. 623G

Hammock with Galvanized Posts

PCM805



Children can sway slowly or quickly, lie down, be seated or even stand in the Rope Hammock. Children of all abilities take joy in the responsiveness and social interaction of the hammock. Pushing and pulling friends from side to side is fun and also builds arm strength. The swaying motion supports important motor skills such as the sense of balance and the sense of space. The rhythmic movements support the understanding of rhythm. In combination, these three skills assist the child's ability to navigate space securely, for instance when judging distances and speed in traffic. The sense of balance is fundamental for all other motor skills and helps the child's motor stability: preventing falls and being able to sit still for longer periods of time.

Data is subject to change without prior notice.

KOMPAN Let's play

Item no. PCM805-1001	
General Product Information	
Dimensions LxWxH	13'0"x2'6"x4'8"
Age group	5 - 12
Play capacity (users)	2
Color options	





Hammock with Galvanized Posts

PCM805

KOMPAN Let's play



The two posts are made of hot dip galvanized steel with aluminum top caps and optionally with anthracite grey powder coated top finish.



Hammock is made of steel reinforced single braided 16 mm UV-stabilized PES rope strands. The polyester yarn is made from +95% post-consumer materials and is inductively melted onto each strand. PES has high strength with excellent resistance to abrasion and UV radiation. The rope loops are connected by nylon (PA6) connectors providing a smooth and comfortable hammock.



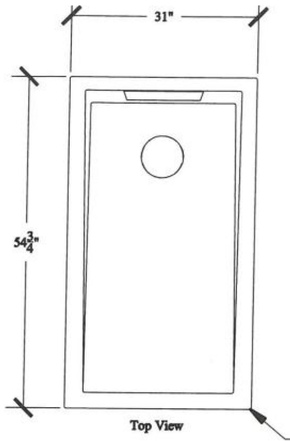
The swing hangers are made of stainless steel brackets and can move over two axis. The flange bearings are silicone enriched to make the suspension maintenance free. At the rope fixation there is a turnable anti twist functions that prevents winding up the ropes.

Item no. PCM805-1001	
Installation Information	
Max. fall height	4'2"
Safety surfacing area	294ft²
Total installation time	1.6 hours
Excavation volume	2.62yd³
Concrete volume	1.8yd³
Footing depth (standard)	3'3"
Shipment weight	124lbs
Anchoring options	In-ground ✓
Warranty Information	
EcoCore HDPE	Lifetime
Hot dip galvanized steel	Lifetime
Ropes & nets	10 Years
Spare Parts Availability	10 Years
Swing hangers	5 Years

Elevated activities 0	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	1	1
Required	0	1	1

ASTM F1487 compliant

Data is subject to change without prior notice.



Size: 55″L x 31″ W
Weight: 633 lbs. each 1266 per set
FEATURES
1. Heavy concrete construction.
2. Concrete is polished and sealed for great bag slide.
3. Regulation ACA board size and slope.
4. Sloped bag drop area for easy bag removal.
5. Sloped area will not hold water or harbor animals.
6. Optional accessories available.

1 Scale: 1-1/2"=1'-0"

SKU: KPBT

Weight: 633 lbs. / Piece

KAY PARK RECREATION
MAKING PLACES PEOPLE FRIENDLY • SINCE 1954

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Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

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Designed by	Checked by
VHB	CT, KS, JB, RB
Issued for	Date
Approval	January 17, 2025

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NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 REGISTERED JESSICA LEE BARNES

Drawing Title
Hardscape Details

ZMA-2-23
Drawing Number

L3.03

Sheet 220 of 224

Project Number
39510.05

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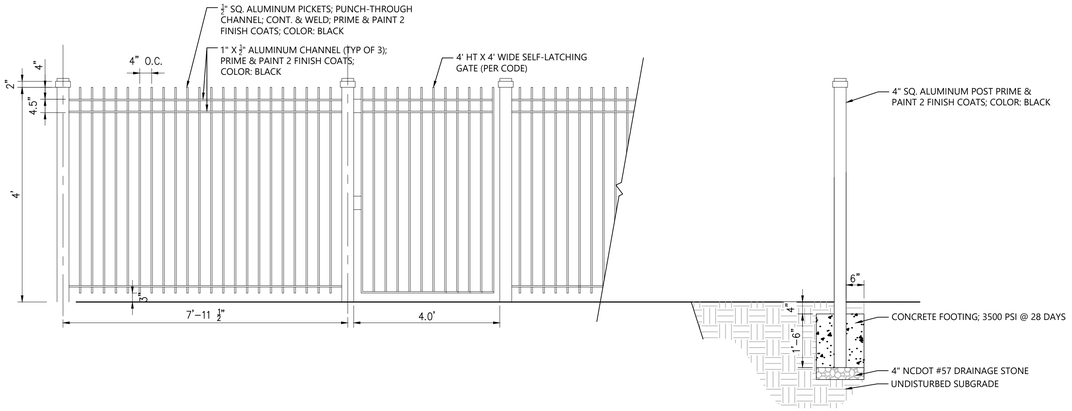
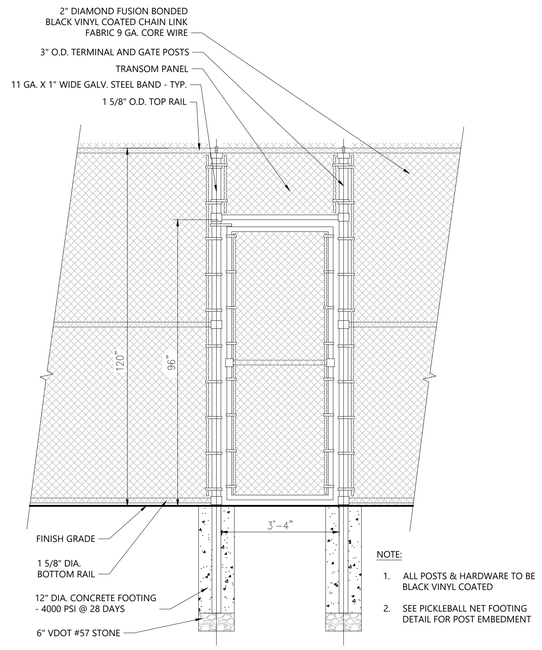


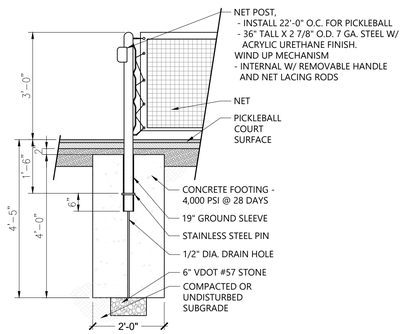
ALUMINUM FENCE

3/4" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION



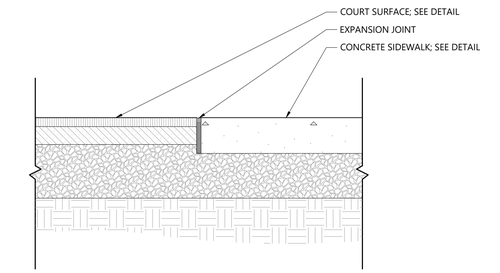
PICKLEBALL GATE

1/2" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION



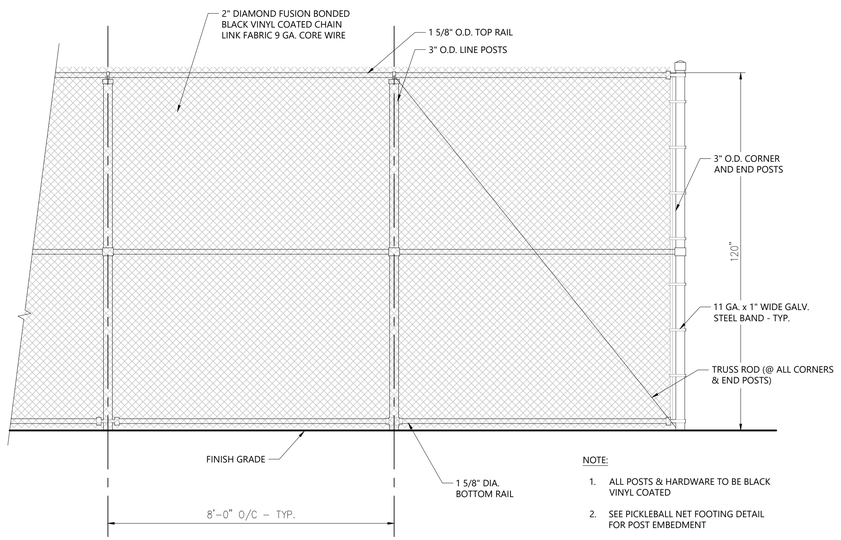
PICKLEBALL NET FOOTING

1/2" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION



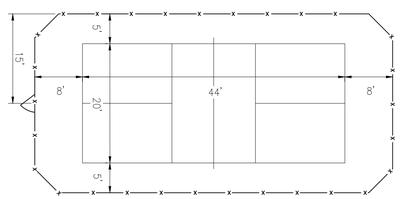
CONCRETE SIDEWALK @ COURT

1 1/2" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION



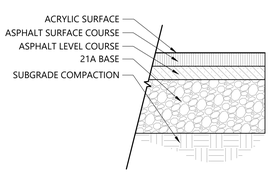
10'-0" PICKLEBALL FENCE

1/2" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION



PICKLEBALL COURT

1/2" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION



NOTE: ACRYLIC SURFACE TO CONSIST OF THE FOLLOWING:
- 2 COATS OF ACRYLIC RESURFACER
- 1 TEXTURED COLOR FILLER COAT
- 1 TEXTURED COLOR FINISH COAT

PICKLEBALL COURT SURFACE

1 1/2" = 1'-0" Source: VHB, NOT FOR CONSTRUCTION

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Lyndon Oaks Phases 1 & 2

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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title: Hardscape Details

ZMA-2-23

Drawing Number: L3.04

Sheet 221 of 224

Project Number: 39510.05

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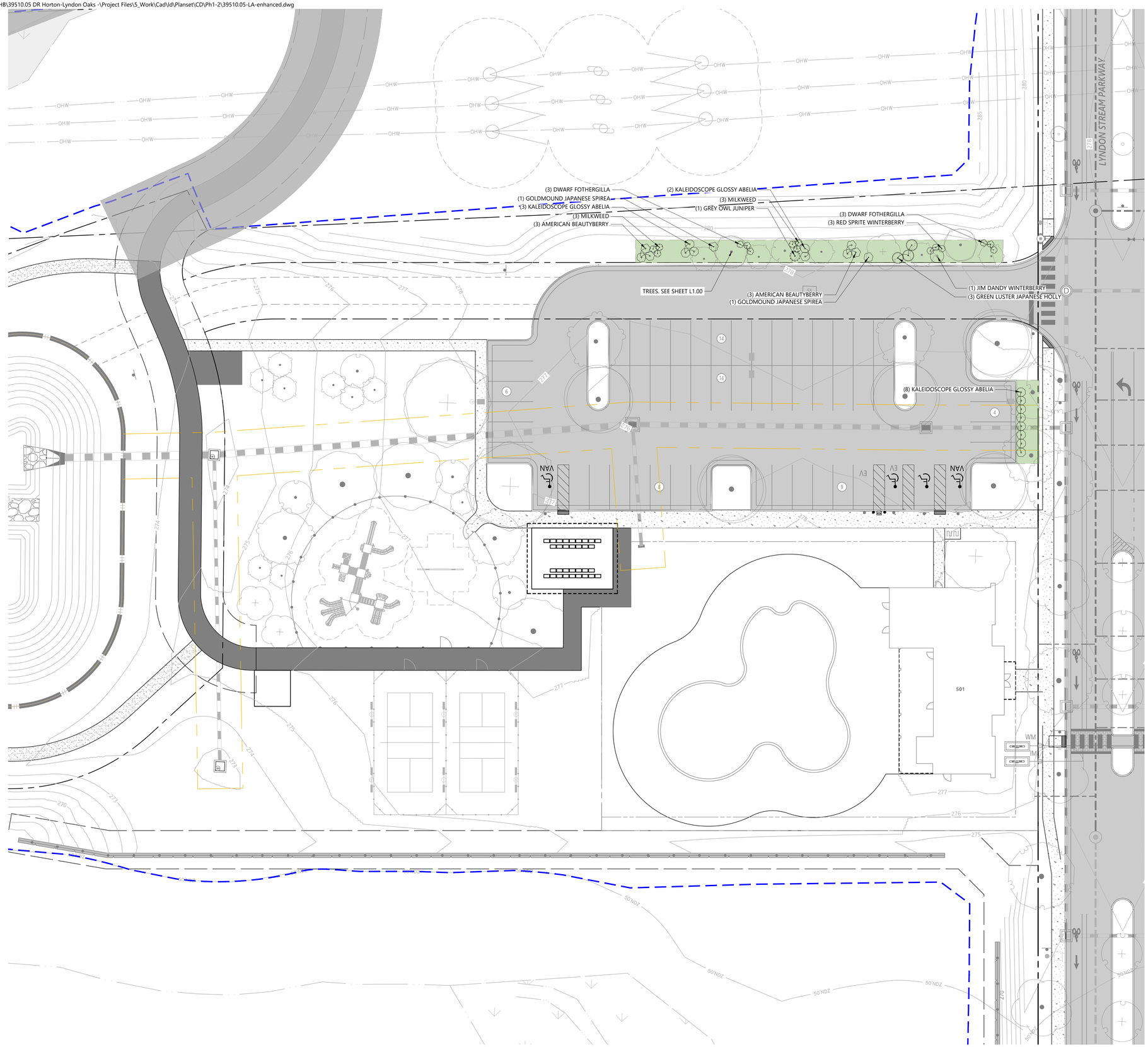

General Notes

1. SEE SHEET L1.20-L1.22 FOR LANDSCAPE DETAILS.
2. THE PRUNING OF VISTA SCREENING SHRUBS SHALL ALLOW FOR LATERAL GROWTH OF BRANCHES SO AS TO FORM A HEDGE.
3. ALL LANDSCAPE ISLANDS SHALL BE GRADED FOR POSITIVE DRAINAGE WITH NO LOW SPOTS ALLOWING WATER TO BE TRAPPED.
4. ANY TREES POTENTIALLY IN CONFLICT WITH ANY FENCE WILL BE LIMBED UP TO ABOVE FENCE HEIGHT.
5. FINAL LOCATION OF TREES TO BE COORDINATED WITH UTILITY LINES.
6. TREES PROPOSED IN THE RIGHT OF WAY AND OUTSIDE THE RIGHT OF WAY AND IN A 5 FT X 5 FT EASEMENT AS SHOWN HEREON ARE STREET TREES PER THE UDO. ANY TREES SHOWN HEREON THAT ARE NEITHER STREET TREES NOR BUFFER TREES ARE "REPLACEMENT TREES."

TREE PLACEMENT UNDER OVERHEAD POWERLINES

FOR STREET TREES, WHERE OVERHEAD UTILITIES EXIST PRIOR TO DEVELOPMENT, UNDERSTORY TREES MAY BE SUBSTITUTED FOR REQUIRED CANOPY TREES, AS APPROVED BY THE LAND USE ADMINISTRATOR [UDO, SEC. 7.4.L.3]. ADDITIONAL LOCATIONAL REQUIREMENTS AS THEY RELATE TO SPECIFIC ROADWAY TYPES THROUGHOUT THE DEVELOPMENT CAN BE FOUND IN SECTION 10.4.A OF THE UDO. IN GENERAL, WHERE OVERHEAD POWERLINES ARE PRESENT, 2 UNDERSTORY TREES CAN BE PLANTED IN LIEU OF THE REQUIRED ONE CANOPY TREE.

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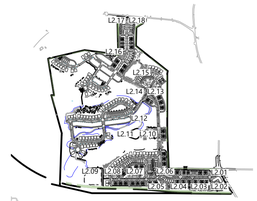
VHB Engineering NC, P.C.
940 Main Campus Drive
Suite 500
Raleigh, NC 27606
919.829.0328
Corp. # C-3705



Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
- MATCH LINE
- CONCRETE SIDEWALK
- GREENWAY
- RIP-RAP
- SIDEWALK EASEMENT
- SCM MAINTENANCE & ACCESS EASEMENT
- CITY OF RALEIGH SANITARY SEWER EASEMENT (CORSSE)
- STORM DRAINAGE EASEMENT
- CITY OF RALEIGH WATER LINE EASEMENT (CORWLE)
- BUILDING SETBACK
- TPF — TREE PROTECTION FENCE
- 6 FT WHITE VINYL PRIVACY FENCE
- 5'x5' EASEMENT TO BE PROVIDED FOR "STREET TREES" LOCATED OUTSIDE THE STREET R/W. EASEMENTS TO BE DEFINED DURING THE PLATTING PROCESS.

0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
2	Town of Knightdale Comments	08/06/2025	CT/KS
3	Town of Knightdale Comments	10/01/2025	CT/KS
4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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

By: _____ Date: _____
Land Use Administrator

Drawing Title
Clubhouse Parking Lot Buffer A Planting Enlargement

ZMA-2-23

Drawing Number
L4.01

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 REGISTERED JESSICA LEE BARNES

Sheet 222 of 224

Project Number 39510.05

Saved Friday, December 19, 2025 12:33:30 PM JESSIBARNES Plotted Friday, December 19, 2025 12:43:26 PM Jessi Barnes



General Notes

1. SEE SHEET L1.20-L1.22 FOR LANDSCAPE DETAILS.
2. THE PRUNING OF VISTA SCREENING SHRUBS SHALL ALLOW FOR LATERAL GROWTH OF BRANCHES SO AS TO FORM A HEDGE.
3. ALL LANDSCAPE ISLANDS SHALL BE GRADED FOR POSITIVE DRAINAGE WITH NO LOW SPOTS ALLOWING WATER TO BE TRAPPED.
4. ANY TREES POTENTIALLY IN CONFLICT WITH ANY FENCE WILL BE LIMBED UP TO ABOVE FENCE HEIGHT.
5. FINAL LOCATION OF TREES TO BE COORDINATED WITH UTILITY LINES.
6. TREES PROPOSED IN THE RIGHT OF WAY AND OUTSIDE THE RIGHT OF WAY AND IN A 5 FT X 5 FT EASEMENT AS SHOWN HEREON ARE STREET TREES PER THE UDO. ANY TREES SHOWN HEREON THAT ARE NEITHER STREET TREES NOR BUFFER TREES ARE "REPLACEMENT TREES."

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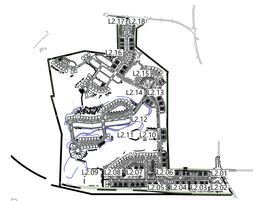

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
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- CONCRETE SIDEWALK
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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
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4	Town of Knightdale Comments	12/15/2025	CT/KS

Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval
Date: January 17, 2025

Drawing Title
Enhanced Entry at Bethlehem Rd Planting Enlargement

ZMA-2-23

Drawing Number
L4.02

Sheet 223 of 224

Project Number
39510.05

811 Know what's below. Call before you dig.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS AND NCDOT, IF APPLICABLE

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

By: _____ Date: _____
Town Engineer

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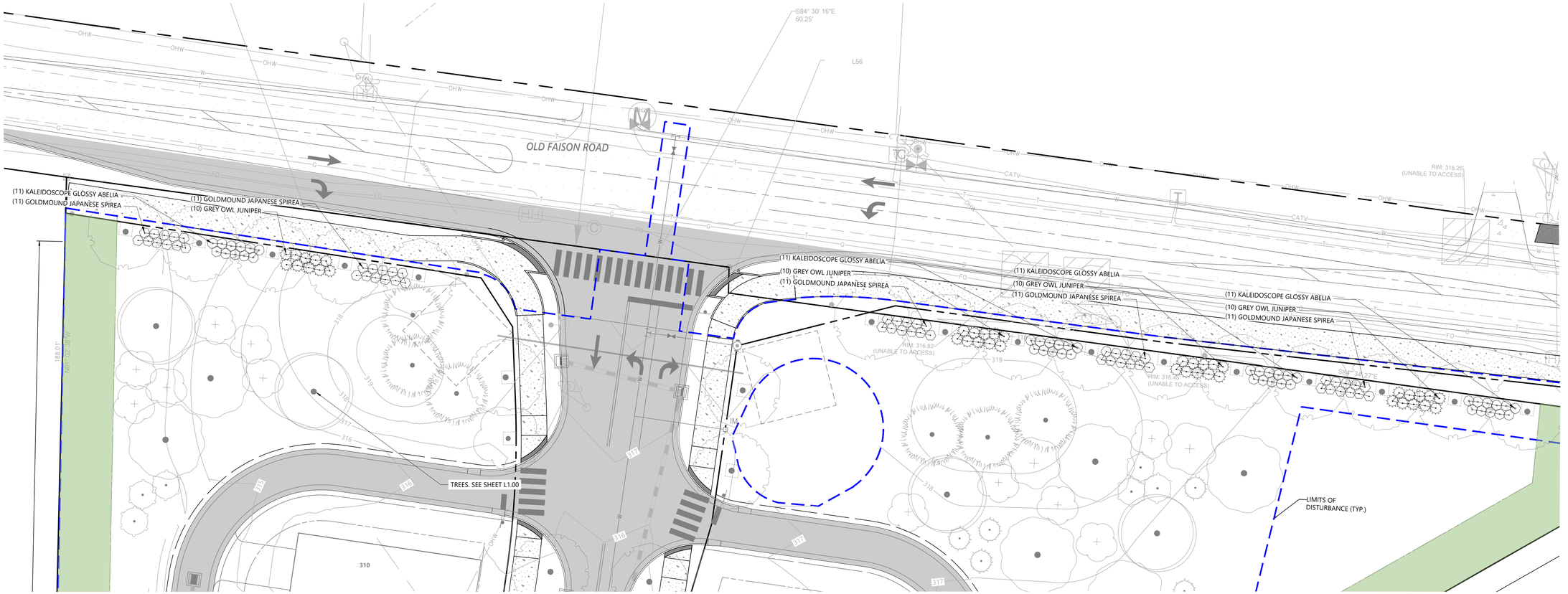
By: _____ Date: _____
Land Use Administrator

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Saved Tuesday, October 14, 2025 4:41:23 PM KMCNINCH Plotted Wednesday, December 17, 2025 1:21:09 PM Jessi Barnes



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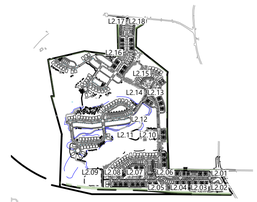

Key

1" = 1,500'

Site Legend

- WETLANDS
- 50' NEUSE RIVER BUFFER
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- PHASE LIMITS
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- CONCRETE SIDEWALK
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0 10 20 40 Feet

Lyndon Oaks Phases 1 & 2

Old Faison Road
Knightdale, NC 27545

No.	Revision	Date	Appvd.
1	Town of Knightdale Comments	04/02/2025	CT/KS
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Designed by	Checked by
VHB	CT, KS, JB, RB

Issued for: Approval — Date: January 17, 2025

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By: _____ Date: _____
Town Engineer

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By: _____ Date: _____
Land Use Administrator

Drawing Title
Enhanced Entry at Old Faison Rd Planting Enlargement

ZMA-2-23

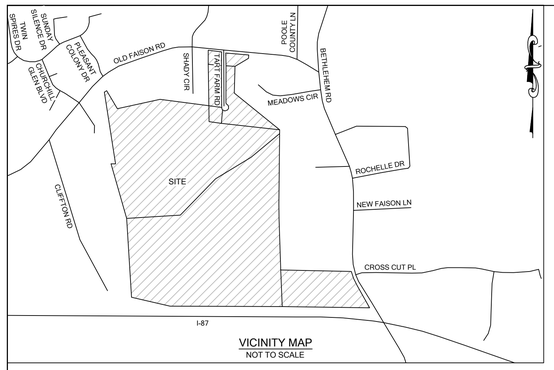
Drawing Number
L4.03

NORTH CAROLINA LANDSCAPE ARCHITECT 2548 12/15/25 JESSICA LEE BARNES

Sheet 224 of 224

Project Number
39510.05

Saved Friday, December 19, 2025 12:33:30 PM JESSIBARNES Plotted Friday, December 19, 2025 12:34:11 PM Jessi Barnes



VICINITY MAP
NOT TO SCALE

LEGEND

- EXISTING BOUNDARY CORNER FOUND
- BOUNDARY CORNER SET (3/4" IPS UNLESS OTHERWISE NOTED)
- COMPUTED POINT
- CONCRETE MONUMENT FOUND
- CLEAN OUT
- TRANSFORMER / ELECTRIC BOX
- LIGHT POLE
- UTILITY POLE
- WATER METER
- FIRE HYDRANT
- UTILITY VALVE
- TELEPHONE PEDESTAL
- CABLE PEDESTAL
- CATCH BASIN
- DROP INLET
- UTILITY MANHOLE
- UTILITY HAND HOLE
- AIR CONDITIONING UNIT
- WELL
- SIGN
- F — UNDERGROUND FIBER
- T — UNDERGROUND TELEPHONE
- GAS — UNDERGROUND GAS
- E — UNDERGROUND ELECTRIC
- SD — STORM DRAIN
- OHE — OVERHEAD UTILITY
- GUY WIRE
- BURIED UTILITY MARKER

EIP	EXISTING IRON PIPE
EIR	EXISTING IRON REBAR
IPS	IRON PIPE SET
PKS	PK NAIL SET
PKF	PK NAIL FOUND
SSMH	SANITARY SEWER MANHOLE
N	NORTH
E	EAST
S	SOUTH
W	WEST
NE	NORTHEAST
SE	SOUTHEAST
SW	SOUTHWEST
NW	NORTHWEST
DB	DEED BOOK
PG	PAGE
BM	BOOK OF MAPS
R/W	RIGHT OF WAY
POB	POINT OF BEGINNING
(T)	TOTAL
⟷	TIE (INDICATES TWO PARTS OF THE SAME PARCEL)

NOTES

1. THE PROPERTY LIES IN ZONE "X" PER NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 3720174300K, DATED 07/19/2022.
2. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES AND ALL BEARINGS ARE BASED ON GPS OBSERVATIONS, NAD 83/NSRS 2011/SPC UNLESS OTHERWISE SHOWN.
3. SITE ZONED "RT" AND "GR3" FOR THE TOWN OF KNIGHTDALE PER WAKE COUNTY GIS.
4. AREAS COMPUTED BY COORDINATE METHOD.
5. THIS SURVEY WAS PREPARED BY BATEMAN CIVIL SURVEY COMPANY, UNDER THE SUPERVISION OF JOSHUA R. DAVIDSON, PLS.
6. THIS MAP HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS.
7. NO CEMETERIES OR GRAVES WERE OBSERVED AS A RESULT OF THIS SURVEY.
8. WETLANDS SHOWN PER FLAGGING SET BY SAGE ECOLOGICAL SERVICES AND REVISED WETLAND SKETCH MAP DATED FEBRUARY 6, 2024

TO: DHI TITLE OF NORTH CAROLINA, AND D. R. HORTON, INC., A DELAWARE CORPORATION

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS OF TABLE A THEREOF (NONE SELECTED). THE FIELDWORK WAS COMPLETED ON OCTOBER 3RD, 2022.

PRELIMINARY

JOSHUA R. DAVIDSON, PLS — DATE
NC LICENSE NO. 5350

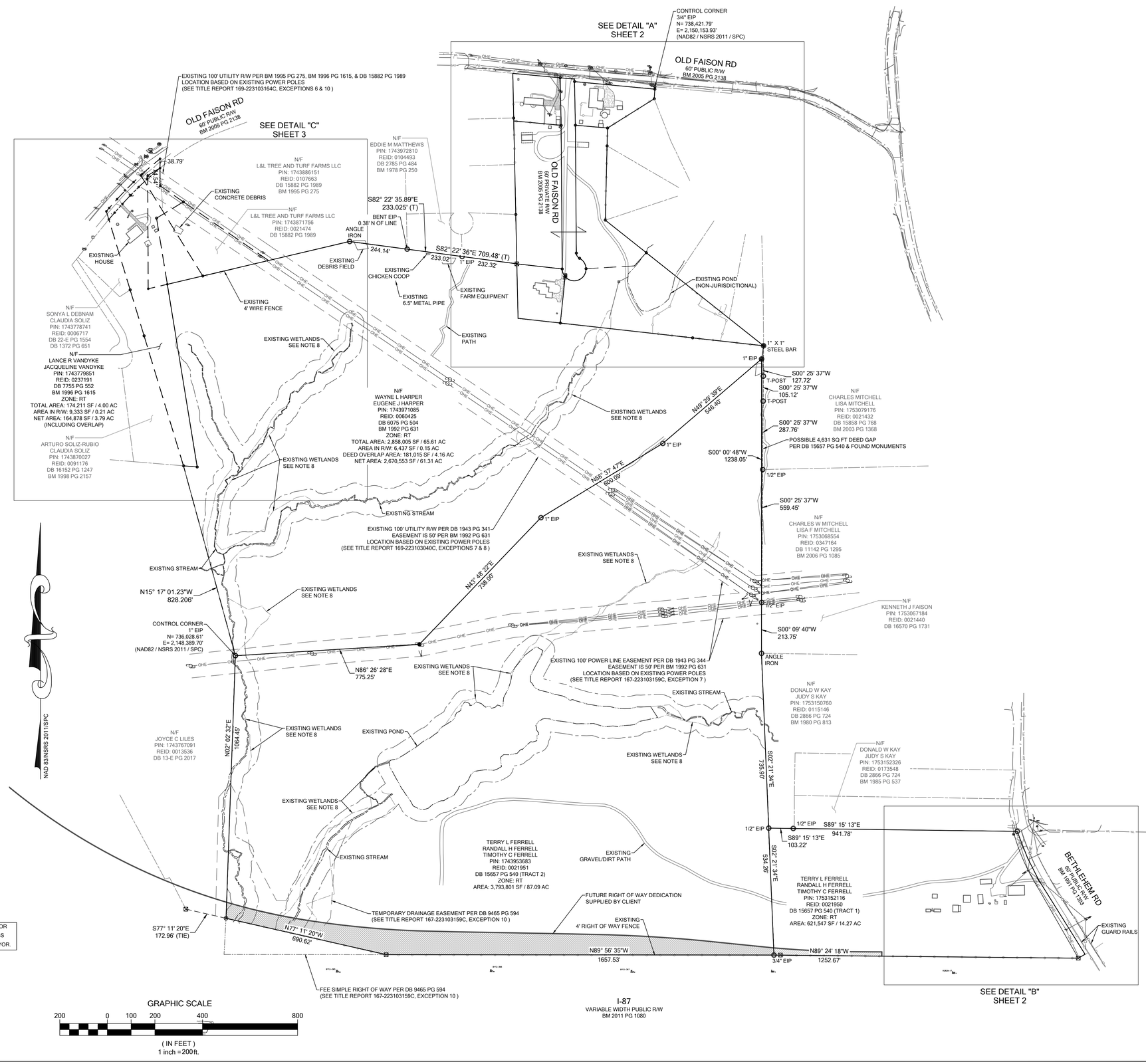
I, JOSHUA R. DAVIDSON, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED REFERENCES AS SHOWN IN TITLE BLOCK); THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AS SHOWN HERE ON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1: 10,000 + ; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS _____ DAY OF _____, A.D., 2024.

I, FURTHER THAT IN ACCORDANCE WITH G.S. 47-30-F-11-C-1; CERTIFY THAT THE SURVEY IS OF AN EXISTING PARCEL OR PARCELS OF LAND OR ONE OR MORE EXISTING EASEMENTS AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET. FOR THE PURPOSES OF THIS SUBSECTION, AN "EXISTING PARCEL" OR " EXISTING EASEMENT" IS AN AREA OF LAND DESCRIBED IN A SINGLE, LEGAL DESCRIPTION OR LEGALLY RECORDED SUBDIVISION THAT HAS BEEN OR MAY BE LEGALLY CONVEYED TO A NEW OWNER BY DEED IN ITS EXISTING CONFIGURATION.

PRELIMINARY

JOSHUA R. DAVIDSON, PLS
NC LICENSE NO. 5350

THIS MAP IS CONSIDERED PRELIMINARY, NOT FOR RECORDATION, CONVEYANCE OR SALES UNLESS SIGNED AND SEALED BY THE LICENSED SURVEYOR.



BATEMAN CIVIL SURVEY COMPANY
ENGINEERS • SURVEYORS • PLANNERS
2524 RELIANCE AVENUE, APEX, NC 27539
PHONE: (919) 577-1080 FAX: (919) 577-1081
INFO@BATEMANCIVILSURVEY.COM
NCBELS FIRM# C-2378

ALTA/NSPS/LAND TITLE SURVEY

EXCLUSIVELY FOR: DR HORTON

PROPERTY PINS: 1753152116, 1743953683, 1743971085, 1743986356, 1743989384, 1753071583, 1743976575 & 1743779851

AS RECORDED IN: DB 15657 PG 540, DB 2253 PG 285, DB 15474 PG 755, BM 2000, PG 1887, DB 9018 PG 621, DB 6075 PG 504 & DB 7755 PG 552

ST MATTHEW'S TOWNSHIP - WAKE COUNTY - NORTH CAROLINA

REVISIONS

1. REVISED WETLANDS 2/23/24
2. ADDED FIELD DATA 12/06/24
3.
4.

DESIGNED BY:	N/A
DRAWN BY:	ELS
CHECKED BY:	JRD
SCALE:	1" = 200'
DATE:	1/27/2023
JOB NUMBY:	220655

SHEET 1 OF 4

P:\2022 Projects\220655 Old Faison ALTA - DR Horton\DWG\220655 Old Faison ALTA Revised (with x section topo).dwg, 12/6/2024 1:59:14 PM

LEGEND

- EXISTING BOUNDARY CORNER FOUND
- BOUNDARY CORNER SET (3/4" IPS UNLESS OTHERWISE NOTED)
- COMPUTED POINT
- CONCRETE MONUMENT FOUND
- CLEAN OUT
- TRANSFORMER / ELECTRIC BOX
- LIGHT POLE
- UTILITY POLE
- WATER METER
- FIRE HYDRANT
- UTILITY VALVE
- TELEPHONE PEDESTAL
- CABLE PEDESTAL
- CATCH BASIN
- DROP INLET
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- GUY WIRE
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SSMH	SANITARY SEWER MANHOLE
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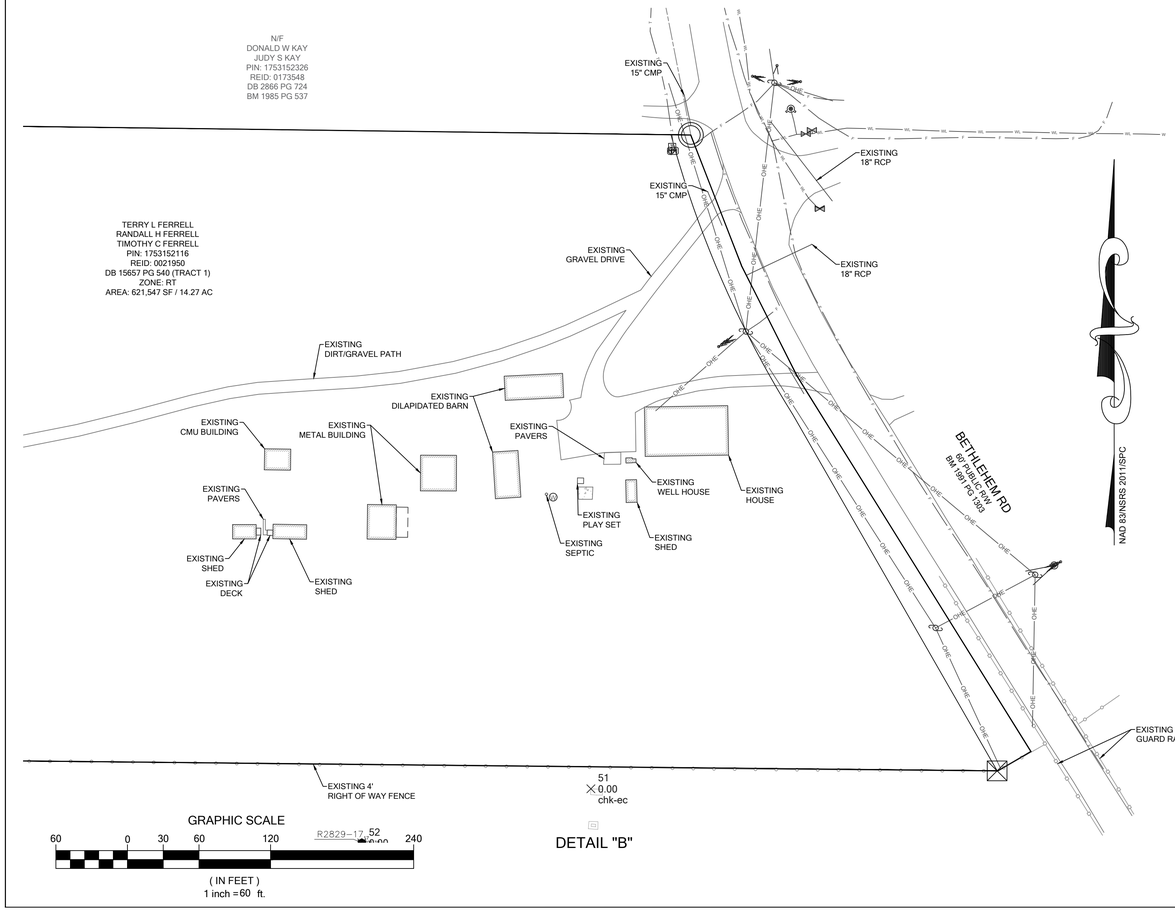
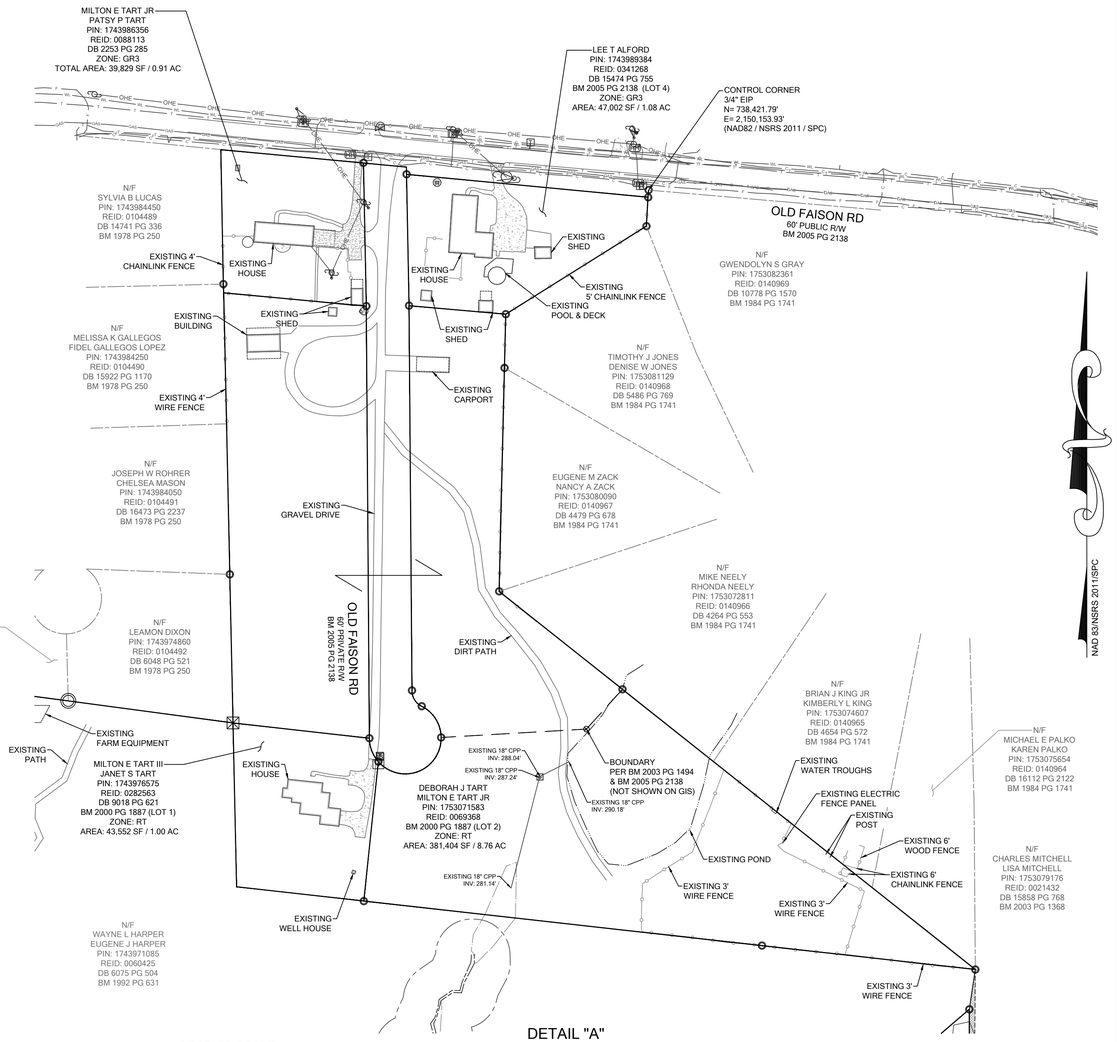
DB	DEED BOOK
PG	PAGE
BM	BOOK OF MAPS
R/W	RIGHT OF WAY
POB	POINT OF BEGINNING
(T)	TOTAL
	TIE (INDICATES TWO PARTS OF THE SAME PARCEL)

THIS MAP IS CONSIDERED PRELIMINARY, NOT FOR RECORDATION, CONVEYANCE OR SALES UNLESS SIGNED AND SEALED BY THE LICENSED SURVEYOR.





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ALTA/NSPS/LAND TITLE SURVEY

EXCLUSIVELY FOR: DR HORTON

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AS RECORDED IN: DB 15657 PG 540, DB 2253 PG 285, DB 15474 PG 755, BM 2000, PG 1887, DB 9018 PG 621, DB 6075 PG 504 & DB 7755 PG 552

ST MATTHEW'S TOWNSHIP - WAKE COUNTY - NORTH CAROLINA

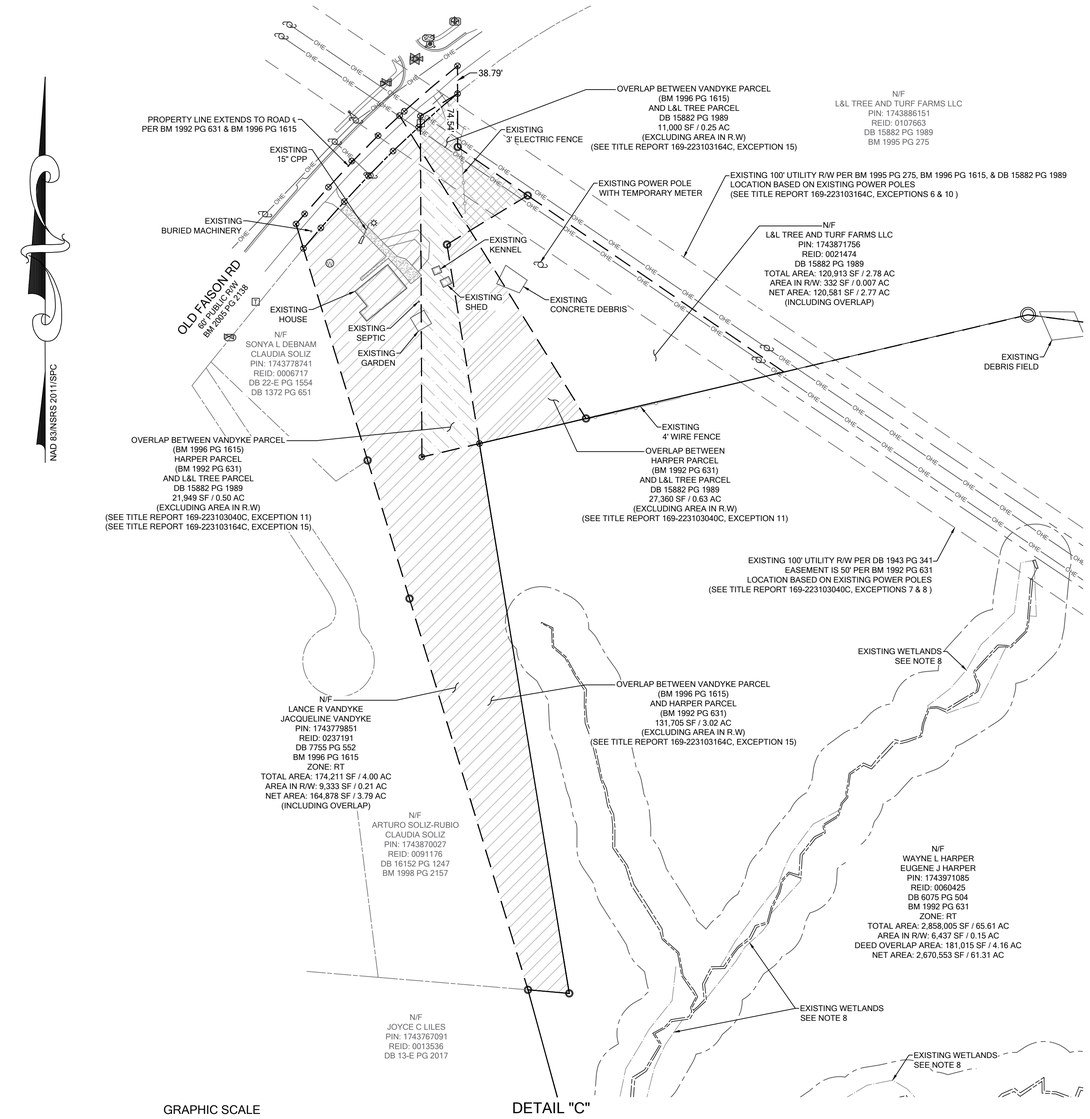
REVISIONS

1. REVISED WETLANDS 2/23/24
2. ADDED FIELD DATA 12/06/24
3.
4.

DESIGNED BY:	N/A
DRAWN BY:	ELS
CHECKED BY:	JRD
SCALE:	VARIES
DATE:	1/27/2023
JOB NUMBER:	220655

SHEET 2 OF 4

P:\2022 Project\220655 Old Faison ALTA - DR Horton\DWG\220655 Old Faison ALTA Revised (with x section topo).dwg, 12/6/2024 15:16 PM



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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LEGEND

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	FIRE HYDRANT
	UTILITY VALVE
T	TELEPHONE PEDESTAL
	CABLE PEDESTAL
	CATCH BASIN
	DROP INLET
	UTILITY MANHOLE
HH	UTILITY HAND HOLE
AC	AIR CONDITIONING UNIT
	WELL
	SIGN
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T	UNDERGROUND TELEPHONE
GAS	UNDERGROUND GAS
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SD	STORM DRAIN
OHE	OVERHEAD UTILITY
	GUY WIRE
	BURIED UTILITY MARKER
EIP	EXISTING IRON PIPE
EIR	EXISTING IRON REBAR
IPS	IRON PIPE SET
PKS	PK NAIL SET
PKF	PK NAIL FOUND
SSMH	SANITARY SEWER MANHOLE
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E	EAST
S	SOUTH
W	WEST
NE	NORTHEAST
SE	SOUTHEAST
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DB	DEED BOOK
PG	PAGE
BM	BOOK OF MAPS
R/W	RIGHT OF WAY
POB	POINT OF BEGINNING
(T)	TOTAL
	TIE (INDICATES TWO PARTS OF THE SAME PARCEL)

SURVEY COMMENTS
SURVEY MADE BY BATEMAN CIVIL SURVEY COMPANY
DATED 12/12/2022, JOB NO. 220655

SCHEDULE A

ISSUING OFFICE: DHI TITLE OF NORTH CAROLINA, 12276 SAN JOSE BLVD, SUITE 739, JACKSONVILLE, FL 32223
COMMITMENT NO.: 167-223103159C
PROPERTY ADDRESS: LOT ACQUISITION FERRELL; MASTER, N/A, NC 00000

1. COMMITMENT DATE: NOVEMBER 8, 2022 AT 09:00 AM

2. POLICY TO BE ISSUED:
(A) ALTA OWNER'S POLICY (06-16-07)
PROPOSED INSURED: D.R. HORTON, INC., A DELAWARE CORPORATION
PROPOSED POLICY AMOUNT: $10,000.00

3. THE ESTATE OR INTEREST IN THE LAND DESCRIBED OR REFERRED TO IN THIS COMMITMENT IS:
FEE SIMPLE

4. THE TITLE IS, AT THE COMMITMENT DATE, VESTED IN:
TIMOTHY CLARENCE FERRELL, RANDALL HUTCHINS FERRELL, AND TERRY LANCE FERRELL AND CHERYL ANNE FERRELL, TRUSTEES OF THE TERRY LANCE FERRELL AND CHERYL ANN FERRELL FAMILY TRUST DATED JULY 26, 2018

5. THE LAND IS DESCRIBED AS FOLLOWS:
LYING AND BEING IN WAKE COUNTY, NORTH CAROLINA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

FIRST TRACT:
LOCATED ON THE WEST SIDE OF PAVED ROAD NO. 2049 AND BEGINNING AT POINT IN CENTER OF SAID ROAD BEING THE SOUTHEAST CORNER OF TRACT NO. 2 ON MAP HEREINAFTER REFERRED TO, AND RUNS THENCE SOUTH 29 DEG. 00 MIN. EAST 632 FEET TO CORNER IN SAID ROAD; THENCE NORTH 85 DEG. 33. MIN. WEST 1350 FEET TO CORNER; THENCE NORTH 00 DEG. 48 MIN. EAST 551 FEET TO THE SOUTHWEST CORNER OF THE NORTH PORTION OF TRACT NO. L; THENCE A DIVIDING LINE BETWEEN THE NORTH AND SOUTH PORTIONS OF TRACT NO. L, SOUTH 85 DEG. 33 MIN. EAST 1045 FEET TO THE POINT OF BEGINNING, AND BEING THE SOUTH PORTION OF TRACT NO. L OF THE PROPERTY OF THE J. I. FERRELL HEIRS AS SHOWN ON MAP PREPARED BY SMITH AND SMITH, APEX N. C. FROM DEEDS NOTED ON SAID MAP. CONTAINS 14 ½ ACRES MORE OR LESS.

SECOND TRACT:
BOUNDED ON THE NORTH BY A ROAD; ON THE EAST BY THE FAISON AND FERRELL LAND; ON THE SOUTH BY A. C. SPARKS AND ON THE WEST BY A BRANCH, AND DESCRIBED AS FOLLOWS; BEGINNING AT A FENCE POST, CORNER BETWEEN J. I. FERRELL AND A.C. SPARKS, AND RUNS THENCE NORTH 86 DEG, WEST 2331 FEET TO A BRANCH, SAID POINT BEING WITNESSED BY A STAKE AND POINTERS; THENCE ALONG SAID BRANCH IN A NORTHERLY DIRECTION 1100 FEET TO A ROAD; THENCE ALONG SAID ROAD THE FOLLOWING COURSES AND DISTANCES, N. 88 DEG. 30 MIN. EAST 770 FEET; N. 48 DEG. 10 MIN. E. 758 FEET; N. 53 DEG. E. 600 FEET; N. 53 DEG 50 MIN. E. 548.3 FEET TO A STAKE IN FAISON'S LINE ON SOUTH SIDE OF SAID ROAD; THENCE ALONG FAISON'S LINE S. 4 DEG. 40 MIN. W. 1238.7 FEET TO A STAKE, A CORNER BETWEEN THE FAISON AND FERRELL LANDS; THENCE ALONG THE FERRELL LINE S. L DEG. 45 MIN W. 1295 FEET TO THE BEGINNING, CONTAINING 82 ACRES MORE OR LESS ACCORDING TO A SURVEY AND MAP MADE BY PITTMAN STELL, C.S. DATED DEC. 14, 1944, AND BEING THE NORTHERN END OF TRACT NO. 13 OF "THE OAKS FARM", SEE SURVEY AND MAP MADE G. SAM ROWE, C.E. DATED NOVEMBER 1944.

LESS AND EXCEPT THAT PROPERTY DESCRIBED IN THE CONSENT JUDGMENT WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION OF RECORD IN BOOK 9465, PAGE 594, WAKE COUNTY REGISTRY.

COMMITMENT NO.: 167-223103159C

SCHEDULE B, PART II
EXCEPTIONS

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

THE POLICY WILL NOT INSURE AGAINST LOSS OR DAMAGE RESULTING FROM THE TERMS AND PROVISIONS OF ANY LEASE OR EASEMENT IDENTIFIED IN SCHEDULE A, AND WILL INCLUDE THE FOLLOWING EXCEPTIONS UNLESS CLEARED TO THE SATISFACTION OF THE COMPANY:

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I - REQUIREMENTS ARE MET.
(NO MATTER OF SURVEY)

2. TAXES AND ASSESSMENTS FOR THE YEAR 2023, A LIEN NOW DUE AND PAYABLE AND SUBSEQUENT YEARS, A LIEN NOT YET DUE AND PAYABLE.
(NO MATTER OF SURVEY)

3. TITLE TO ANY AREAS WITHIN STREET, HIGHWAY OR RAILROAD RIGHTS OF WAY, IF ANY.
(NO MATTER OF SURVEY)

4. THE CREATION OR LOSS OF LAND BY NATURAL OR ARTIFICIAL CHANGES ALONG WATER FORMING PART OF THE BOUNDARY OF THE LAND; AND/OR TITLE TO LAND LYING BELOW THE HIGHER OF THE MEAN HIGH WATER MARK AND/OR THE NORMAL BOUNDS OF ANY BODY OF WATER; AND/OR RIPARIAN RIGHTS INCIDENT TO ANY BRANCHES, CREEKS, STREAMS, LAKES OR OTHER WATERS COURSING OR ABUTTING THE LAND.
(NO MATTER OF SURVEY)

5. ANY DISCREPANCY, CONFLICT, ACCESS, SHORTAGE IN AREA OR BOUNDARY LINES, ENCROACHMENT, ENCUMBRANCE, VIOLATION, OVERLAP, SETBACK, EASEMENT OR CLAIMS OF EASEMENT, RIPARIAN RIGHT, AND TITLE TO LAND WITHIN ROADS, WAYS, RAILROADS, WATERCOURSES, BURIAL GROUNDS, MARSHES, DREDGED OR FILLED AREAS OR LAND BELOW THE MEAN HIGHWATER MARK OR WITHIN THE BOUNDS OF ANY ADJOINING BODY OF WATER, OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY A CURRENT INSPECTION AND ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
(AS SHOWN HEREON)

6. ALL DEFERRED TAXES
(NO MATTER OF SURVEY)

7. EASEMENTS TO CAROLINA POWER & LIGHT RECORDED IN BOOK 1828, PAGE 340; BOOK 1943, PAGE 344; AND BOOK 4023, PAGE 701, WAKE COUNTY REGISTRY.
(AS SHOWN HEREON)

8. MEMORANDUM OF CONTRACT DATED JULY 14, 2022, RECORDED IN BOOK 19098, PAGE 869, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

9. THE CORRECTNESS OF THE SQUARE FOOTAGE/ACREAGE COMPUTATION CONTAINED IN THE DESCRIPTION OF THE LAND IS NOT INSURED.
(NO MATTER OF SURVEY)

10. CONSENT JUDGMENT IN FAVOR OF THE DEPARTMENT OF TRANSPORTATION FOR 1.193 ACRES, WAKE COUNTY CIVIL ACTION 01-CVS-3306, RECORDED IN BOOK 9465, PAGE 594, WAKE COUNTY REGISTRY.
(AS SHOWN HEREON)

11. UTILITY EASEMENTS AFFECTING THE LAND.
(NO DOCUMENTS CITED)

12. ACCESS TO SECOND TRACT THE LAND IS AVAILABLE ONLY BY MEANS OF ACCESS OVER FIRST TRACT, AND IS CONDITIONED UPON OWNERSHIP OF SAID ADJOINING PARCEL BY THE INSURED.
(NO MATTER OF SURVEY)

13. ACCESS BY WAY OF INTERSTATE 87, A CONTROLLED ACCESS HIGHWAY, IS NOT INSURED.
(NO MATTER OF SURVEY)

14. NO CLOSING SERVICES INSURANCE: AS TO THE TRANSACTION FOR WHICH THIS COMMITMENT IS ISSUED, THE COMPANY DOES NOT AFFORD INSURED CLOSING PROTECTION/CLOSING SERVICES INSURANCE ABSENT REVISION OF THIS COMMITMENT TO INCLUDE A STATEMENT THAT COVERAGE IS AFFORDED TO THOSE PARTIES IDENTIFIED IN A SEPARATE CLOSING PROTECTION LETTER ISSUED SIMULTANEOUSLY WITH REVISION OF THE COMMITMENT. ANY CLOSING PROTECTION COVERAGE OR LETTER WHICH HERETOFORE MAY HAVE BEEN ISSUED IS HEREBY RESCINDED AND SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION. ANY CLOSING PROTECTION LETTER SUBSEQUENTLY ISSUED SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION ABSENT THE ACCOMPANYING REQUISITE REVISION OF THIS COMMITMENT.
(NO MATTER OF SURVEY)

BATEMAN CIVIL SURVEY COMPANY
ENGINEERS ● SURVEYORS ● PLANNERS
2524 RELIANCE AVENUE, APEX, NC 27539
PHONE: (919) 577-1080 FAX: (919) 577-1081
INFO@BATEMANCIVILSURVEY.COM
NCBELS FIRM# C-2378

ALTA/NSPS/LAND TITLE SURVEY

EXCLUSIVELY FOR: DR HORTON

PROPERTY PINS: 1753152116, 1743953683, 1743971085, 1743986356, 1743989384, 1753071583, 1743976575 & 1743779851

AS RECORDED IN: DB 15657 PG 540, DB 2255 PG 285, DB 15474 PG 755, BM 2000, PG 1887, DB 9018 PG 621, DB 6075 PG 504 & DB 7755 PG 552

ST MATTHEW'S TOWNSHIP - WAKE COUNTY - NORTH CAROLINA

REVISIONS

1. REVISED WETLANDS 2/23/24

2. ADDED FIELD DATA 12/06/24

3.

4.

DESIGNED BY: N/A

DRAWN BY: ELS

CHECKED BY: JRD

SCALE: 1" = 100'

DATE: 1/27/2023

JOB NUMBER: 220655

P:\2022 Projects\220655 Old Faison ALTA - DR Horton\DWG\220655 Old Faison ALTA Revised (with x section topo).dwg, 12/6/2024 1:59:18 PM

SURVEY COMMENTS
SURVEY MADE BY BATEMAN CIVIL SURVEY COMPANY
DATED 12/12/2022, JOB NO. 220655

SCHEDULE A

ISSUING OFFICE: DHI TITLE OF NORTH CAROLINA, 12276 SAN JOSE BLVD, SUITE 739, JACKSONVILLE, FL 32223
COMMITMENT NO.: 169-223103040C
PROPERTY ADDRESS: LOT ACQUISITION TRACT 12, N/A, NC 00000

1. COMMITMENT DATE: OCTOBER 28, 2022 AT 12:00 AM

2. POLICY TO BE ISSUED:
(A) ALTA OWNER'S POLICY (06-16-07)
PROPOSED INSURED: D.R. HORTON, INC., A DELAWARE CORPORATION
PROPOSED POLICY AMOUNT: $10,000.00

3. THE ESTATE OR INTEREST IN THE LAND DESCRIBED OR REFERRED TO IN THIS COMMITMENT IS:
FEE SIMPLE

4. THE TITLE IS, AT THE COMMITMENT DATE, VESTED IN:
WAYNE L. HARPER AND EUGENE J. HARPER

5. THE LAND IS DESCRIBED AS FOLLOWS:

ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, CONTAINING 61.35 ACRES MORE OR LESS, AND BEING MORE PARTICULARLY SHOWN ON THAT CERTAIN PLAT OF SURVEY TITLED, "SURVEY OF TRACT #12 OF THE OAKS FARM IN THE D.J. ROBERTSON ESTATE", BY TALLEY AND ASSOCIATES, WHICH PLAT IS RECORDED IN BOOK OF MAPS 1992, PAGE 631, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

COMMITMENT NO.: 169-223103040C

SCHEDULE B, PART II
EXCEPTIONS

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

THE POLICY WILL NOT INSURE AGAINST LOSS OR DAMAGE RESULTING FROM THE TERMS AND PROVISIONS OF ANY LEASE OR EASEMENT IDENTIFIED IN SCHEDULE A, AND WILL INCLUDE THE FOLLOWING EXCEPTIONS UNLESS CLEARED TO THE SATISFACTION OF THE COMPANY:

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I - REQUIREMENTS ARE MET.
(NO MATTER OF SURVEY)

2. TAXES AND ASSESSMENTS FOR THE YEAR 2023, A LIEN NOW DUE AND PAYABLE AND SUBSEQUENT YEARS, A LIEN NOT YET DUE AND PAYABLE.
(NO MATTER OF SURVEY)

3. TITLE TO ANY AREAS WITHIN STREET, HIGHWAY OR RAILROAD RIGHTS OF WAY, IF ANY.
(NO MATTER OF SURVEY)

4. THE CREATION OR LOSS OF LAND BY NATURAL OR ARTIFICIAL CHANGES ALONG WATER FORMING PART OF THE BOUNDARY OF THE LAND; AND/OR TITLE TO LAND LYING BELOW THE HIGHER OF THE MEAN HIGH WATER MARK AND/OR THE NORMAL BOUNDS OF ANY BODY OF WATER; AND/OR RIPARIAN RIGHTS INCIDENT TO ANY BRANCHES, CREEKS, STREAMS, LAKES OR OTHER WATERS COURSING OR ABUTTING THE LAND.
(NO MATTER OF SURVEY)

5. ANY DISCREPANCY, CONFLICT, ACCESS, SHORTAGE IN AREA OR BOUNDARY LINES, ENCROACHMENT, ENCUMBRANCE, VIOLATION, OVERLAP, SETBACK, EASEMENT OR CLAIMS OF EASEMENT, RIPARIAN RIGHT, AND TITLE TO LAND WITHIN ROADS, WAYS, RAILROADS, WATERCOURSES, BURIAL GROUNDS, MARSHES, DREDGED OR FILLED AREAS OR LAND BELOW THE MEAN HIGHWATER MARK OR WITHIN THE BOUNDS OF ANY ADJOINING BODY OF WATER, OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY A CURRENT INSPECTION AND ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
(AS SHOWN HEREON)

6. ALL DEFERRED TAXES.
(NO MATTER OF SURVEY)

7. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK OF MAPS 1992, AT PAGE 631 AND MATTERS SHOWN THEREON.
(AS SHOWN HEREON)

8. RIGHT OF WAY TO CAROLINA POWER AND LIGHT OF RECORD IN BOOK 1943, PAGE 341, BOOK 4945, PAGE 929, WAKE COUNTY REGISTRY.
(AS SHOWN HEREON)

9. RIGHT OF WAY TO THE NC STATE HIGHWAY COMMISSION OF RECORD IN BOOK 1445, PAGE 577, WAKE COUNTY REGISTRY.
(NO PLOTTABLE DESCRIPTION FOUND)

10. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK OF MAPS 1996, AT PAGE 1615 AND MATTERS SHOWN THEREON.
(AS SHOWN HEREON)

11. SUBJECT TO THE CLAIMS OF L&L TREE AND TURF FARMS, LLC BASED UPON THE DEED INTO L&L TREE AND TURF FARMS, LLC IN BOOK 15882, PAGE 1989 (TRACT 3).
(AS SHOWN HEREON)

12. THE CORRECTNESS OF THE SQUARE FOOTAGE/ACREAGE COMPUTATION CONTAINED IN THE DESCRIPTION OF THE LAND IS NOT INSURED.
(NO MATTER OF SURVEY)

13. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK OF MAPS _____, AT PAGE ____ AND MATTERS SHOWN THEREON.
(NO DOCUMENT CITED)

14. NO CLOSING SERVICES INSURANCE: AS TO THE TRANSACTION FOR WHICH THIS COMMITMENT IS ISSUED, THE COMPANY DOES NOT AFFORD INSURED CLOSING PROTECTION/CLOSING SERVICES INSURANCE ABSENT REVISION OF THIS COMMITMENT TO INCLUDE A STATEMENT THAT COVERAGE IS AFFORDED TO THOSE PARTIES IDENTIFIED IN A SEPARATE CLOSING PROTECTION LETTER ISSUED SIMULTANEOUSLY WITH REVISION OF THE COMMITMENT. ANY CLOSING PROTECTION COVERAGE OR LETTER WHICH HERETOFORE MAY HAVE BEEN ISSUED IS HEREBY RESCINDED AND SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION. ANY CLOSING PROTECTION LETTER SUBSEQUENTLY ISSUED SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION ABSENT THE ACCOMPANYING REQUISITE REVISION OF THIS COMMITMENT.
(NO MATTER OF SURVEY)

THIS MAP IS CONSIDERED PRELIMINARY, NOT FOR RECORDATION, CONVEYANCE OR SALES UNLESS SIGNED AND SEALED BY THE LICENSED SURVEYOR.

SURVEY COMMENTS
SURVEY MADE BY BATEMAN CIVIL SURVEY COMPANY
DATED 12/12/2022, JOB NO. 220655

SCHEDULE A

ISSUING OFFICE: DHI TITLE OF NORTH CAROLINA, 12276 SAN JOSE BLVD, SUITE 739, JACKSONVILLE, FL 32223
COMMITMENT NO.: 167-223103038C
PROPERTY ADDRESS: FOUR TRACTS IN WAKE COUNTY TO BE KNOWN AS TART, N/A, NC 00000

1. COMMITMENT DATE: OCTOBER 27, 2022 AT 12:00 AM

2. POLICY TO BE ISSUED:
(A) ALTA OWNER'S POLICY (06-16-07)
PROPOSED INSURED: D.R. HORTON, INC., A DELAWARE CORPORATION
PROPOSED POLICY AMOUNT: $1,800,000.00

3. THE ESTATE OR INTEREST IN THE LAND DESCRIBED OR REFERRED TO IN THIS COMMITMENT IS:
FEE SIMPLE

4. THE TITLE IS, AT THE COMMITMENT DATE, VESTED IN:
TRACT 1
DEBORAH JANE TART AND MILTON E. TART, JR. AS TENANTS IN COMMON

TRACT 2
MILTON EDWARD TART, III AND WIFE, JANET STANLEY TART

TRACT 3
MILTON EDWARD TART, JR. AND WIFE, PATSY PRICE TART

TRACT 4
LEE T. ALFORD

5. THE LAND IS DESCRIBED AS FOLLOWS:

TRACT 1
PARCEL 1
ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, CONTAINING 2.694 ACRES MORE OR LESS, AND BEING MORE PARTICULARLY SHOWN AS LOT 2 ON THAT CERTAIN PLAT OF SURVEY ENTITLED, " FINAL PLAT MINOR FAMILY SUBDIVISION GLADYS F. TART", BY GIL CLARK SURVEYING, WHICH PLAT IS RECORDED IN BOOK OF MAPS 2003, PAGE 1494, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

PARCEL 2
ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, CONTAINING 3.896 ACRES MORE OR LESS, AND BEING MORE PARTICULARLY SHOWN AS LOT 5 ON THAT CERTAIN PLAT OF SURVEY BY GIL CLARK SURVEYING, WHICH PLAT IS RECORDED IN BOOK OF MAPS 2003, PAGE 1494, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

PARCEL 3
ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, CONTAINING 2.166 ACRES MORE OR LESS, AND BEING MORE PARTICULARLY SHOWN AS LOT 3 ON THAT CERTAIN PLAT OF SURVEY BY GIL CLARK SURVEYING, WHICH PLAT IS RECORDED IN BOOK OF MAPS 2005, PAGE 2138, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

PARCEL 4
ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, SHOWN AS "TART FARM RD. NEW 6' PRIVATE R/W" ON THAT CERTAIN PLAT OF SURVEY BY GIL CLARK SURVEYING, WHICH PLAT IS RECORDED IN BOOK OF MAPS 2000, PAGE 1877, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

TRACT 2
ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, CONTAINING 1.000 ACRE MORE OR LESS, AND BEING MORE PARTICULARLY SHOWN AS LOT 1 ON THAT CERTAIN PLAT OF SURVEY BY GIL CLARK SURVEYING, WHICH PLAT IS RECORDED IN BOOK OF MAPS 2000, PAGE 1877, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

TRACT 3
BEGINNING AT A NAIL AND CAP IN THE CENTER OF FAISON ROAD (STATE ROAD 2515) AND THE NORTHEASTERN CORNER OF THE PROPERTY OF JAMES R. FAISON, SOUTHERN LINE OF THE PROPERTY HERETOFORE BELONGING TO OLLIE W. FAISON AND WIFE DAISY P. FAISON AND FROM THE POINT AND PLACE OF BEGINNING SOUTH 00 DEGREES 19 MINUTES WEST 230.74 FEET TO A STAKE IN THE EASTERN LINE OF THE PROPERTY OF JAMES R. FAISON AND THE WESTERN LINE OF GLADYS FAISON TART; THENCE SOUTH 83 DEGREES 4 MINUTES EAST 200 FEET TO A STAKE; THENCE NORTH 00 DEGREES 19 MINUTES EAST 230.74 FEET TO A NAIL AND CAP LOCATES IN THE CENTER OF FAISON ROAD (STATE ROAD 2515); THENCE WITH THE CENTER OF SAID ROAD NORTH 83 DEGREES 4 MINUTES WEST 200 FEET TO THE POINT AND PLACE OF BEGINNING CONTAINING 1.05 ACRES MORE OR LESS INCLUSIVE OF THE RIGHT OF WAY OF FAISON ROAD (STATE ROAD 2515).

TRACT 4
ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING IN SAINT MATTHEWS TOWNSHIP, WAKE COUNTY, NORTH CAROLINA, CONTAINING 1.079 ACRES MORE OR LESS, AND BEING MORE PARTICULARLY SHOWN AS LOT 4 ON THAT CERTAIN PLAT OF SURVEY BY GIL CLARK SURVEYING, WHICH PLAT IS RECORDED IN BOOK OF MAPS 2005, PAGE 2138, WAKE COUNTY REGISTRY, AND IS BY REFERENCE, INCORPORATED HEREIN AS A PART OF THIS DESCRIPTION.

COMMITMENT NO.: 167-223103038C

SCHEDULE B, PART II
EXCEPTIONS

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

THE POLICY WILL NOT INSURE AGAINST LOSS OR DAMAGE RESULTING FROM THE TERMS AND PROVISIONS OF ANY LEASE OR EASEMENT IDENTIFIED IN SCHEDULE A, AND WILL INCLUDE THE FOLLOWING EXCEPTIONS UNLESS CLEARED TO THE SATISFACTION OF THE COMPANY:

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I - REQUIREMENTS ARE MET.
(NO MATTER OF SURVEY)

2. TAXES AND ASSESSMENTS FOR THE YEAR 2023, A LIEN NOW DUE AND PAYABLE AND SUBSEQUENT YEARS, A LIEN NOT YET DUE AND PAYABLE.
(NO MATTER OF SURVEY)

3. TITLE TO ANY AREAS WITHIN STREET, HIGHWAY OR RAILROAD RIGHTS OF WAY, IF ANY.
(NO MATTER OF SURVEY)

4. THE CREATION OR LOSS OF LAND BY NATURAL OR ARTIFICIAL CHANGES ALONG WATER FORMING PART OF THE BOUNDARY OF THE LAND; AND/OR TITLE TO LAND LYING BELOW THE HIGHER OF THE MEAN HIGH WATER MARK AND/OR THE NORMAL BOUNDS OF ANY BODY OF WATER; AND/OR RIPARIAN RIGHTS INCIDENT TO ANY BRANCHES, CREEKS, STREAMS, LAKES OR OTHER WATERS COURSING OR ABUTTING THE LAND.
(NO MATTER OF SURVEY)

5. ANY DISCREPANCY, CONFLICT, ACCESS, SHORTAGE IN AREA OR BOUNDARY LINES, ENCROACHMENT, ENCUMBRANCE, VIOLATION, OVERLAP, SETBACK, EASEMENT OR CLAIMS OF EASEMENT, RIPARIAN RIGHT, AND TITLE TO LAND WITHIN ROADS, WAYS, RAILROADS, WATERCOURSES, BURIAL GROUNDS, MARSHES, DREDGED OR FILLED AREAS OR LAND BELOW THE MEAN HIGHWATER MARK OR WITHIN THE BOUNDS OF ANY ADJOINING BODY OF WATER, OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY A CURRENT INSPECTION AND ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
(AS SHOWN HEREON)

6. ALL DEFERRED TAXES
(NO MATTER OF SURVEY)

7. TRACT 1:
A. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIURCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK MAP 2003, AT PAGE 1494 AND BOOK MAP 2005, PAGE 2138 AND MATTERS SHOWN THEREON.
(AS SHOWN HEREON)

8. TRACTS 1 AND 2:
A. EASEMENTS TO CAROLINA POWER & LIGHT COMPANY OF RECORD IN BOOK 1946, PAGE 168; BOOK 4327, PAGE 198; AND BOOK 9483, PAGE 792, WAKE COUNTY REGISTRY.
(LOCATION CANNOT BE DETERMINED FROM RECORD DOCUMENTS)

B. ORDER GRANTING A VARIANCE BY THE KNIGHTDALE BOARD OF ADJUSTMENT, DATED JULY 19, 2000, OF RECORD IN BOOK 8647, PAGE 1755, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

C. ROAD MAINTENANCE AGREEMENT FOR TART FARM ROAD BETWEEN GLADYS F. TART, MILTON EDWARD TART, JR., AND MILTON EDWARD TART, III, OF RECORD IN BOOK 8692, PAGE 161, AND RE-RECORDED IN BOOK 8710, PAGE 2779, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

D. MEMORANDUM OF CONTRACT WITH D.R. HORTON, INC. OF RECORD IN BOOK 19098, PAGE 791, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

9. TRACT 2:
A. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIURCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK MAP 2000, AT PAGE 1877 AND MATTERS SHOWN THEREON.
(AS SHOWN HEREON)

10. TRACTS 3 AND 4:
A. RIGHT OF WAY AGREEMENT BETWEEN MILTON E. TART, GLADYS F. TART, AND THE STATE HIGHWAY COMMISSION FOR SR# 2515, RECORDED IN BOOK 1445, PAGE 579, WAKE COUNTY REGISTRY.
(NO PLOTTABLE DESCRIPTION FOUND)

B. EASEMENTS TO CAROLINA POWER AND LIGHT RECORDED IN BOOK 1946, PAGE 168; BOOK 4327, PAGE 199; AND BOOK 9483, PAGE 790, WAKE COUNTY REGISTRY.
(LOCATION CANNOT BE DETERMINED FROM RECORD DOCUMENTS)

C. ROAD MAINTENANCE AGREEMENT FOR TART FARM ROAD BETWEEN GLADYS F. TART, MILTON EDWARD TART, JR., AND MILTON EDWARD TART, III, OF RECORD IN BOOK 8692, PAGE 161, AND RE-RECORDED IN BOOK 8710, PAGE 2779, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

D. MEMORANDUM OF CONTRACT WITH D.R. HORTON, INC., DATED JULY 13, 2022, OF RECORD IN BOOK 19098, PAGE 791, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

E. ORDER GRANTING A VARIANCE BY THE KNIGHTDALE BOARD OF ADJUSTMENT, DATED JULY 19, 2000, OF RECORD IN BOOK 8647, PAGE 1755, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

11. TRACT 4:
A. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIURCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK MAP 2005, AT PAGE 2138 AND MATTERS SHOWN THEREON.
(AS SHOWN HEREON)

12. THE CORRECTNESS OF THE SQUARE FOOTAGE/ACREAGE COMPUTATION CONTAINED IN THE DESCRIPTION OF THE LAND IS NOT INSURED.
(NO MATTER OF SURVEY)

13. NO CLOSING SERVICES INSURANCE: AS TO THE TRANSACTION FOR WHICH THIS COMMITMENT IS ISSUED, THE COMPANY DOES NOT AFFORD INSURED CLOSING PROTECTION/CLOSING SERVICES INSURANCE ABSENT REVISION OF THIS COMMITMENT TO INCLUDE A STATEMENT THAT COVERAGE IS AFFORDED TO THOSE PARTIES IDENTIFIED IN A SEPARATE CLOSING PROTECTION LETTER ISSUED SIMULTANEOUSLY WITH REVISION OF THE COMMITMENT. ANY CLOSING PROTECTION COVERAGE OR LETTER WHICH HERETOFORE MAY HAVE BEEN ISSUED IS HEREBY RESCINDED AND SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION. ANY CLOSING PROTECTION LETTER SUBSEQUENTLY ISSUED SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION ABSENT THE ACCOMPANYING REQUISITE REVISION OF THIS COMMITMENT.
(NO MATTER OF SURVEY)

SURVEY COMMENTS
SURVEY MADE BY BATEMAN CIVIL SURVEY COMPANY
DATED 12/12/2022, JOB NO. 220655

SCHEDULE A

ISSUING OFFICE: DHI TITLE OF NORTH CAROLINA, 12276 SAN JOSE BLVD, SUITE 739, JACKSONVILLE, FL 32223
COMMITMENT NO.: 169-223103164C
PROPERTY ADDRESS: ACQUISITION TRACT 4, ED PLUMMER ESTATE PROPERTY, N/A, NC 00000

1. COMMITMENT DATE: NOVEMBER 8, 2022 AT 12:00 AM

2. POLICY TO BE ISSUED:
(A) ALTA OWNER'S POLICY (06-16-07)
PROPOSED INSURED: D.R. HORTON, INC., A DELAWARE CORPORATION
PROPOSED POLICY AMOUNT: $1,400,000.00

3. THE ESTATE OR INTEREST IN THE LAND DESCRIBED OR REFERRED TO IN THIS COMMITMENT IS:
FEE SIMPLE

4. THE TITLE IS, AT THE COMMITMENT DATE, VESTED IN:
LANCE R. VANDYKE AND WIFE, JACQUELINE VANDYKE

5. THE LAND IS DESCRIBED AS FOLLOWS:

BEING ALL OF TRACT 4 OF THE ED PLUMMER ESTATE PROPERTY ON OLD FAISON RD. AS DEPICTED IN MAP BOOK 1996, PAGE 1615, WAKE COUNTY REGISTRY.

COMMITMENT NO.: 169-223103164C

SCHEDULE B, PART II
EXCEPTIONS

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE,COLOR, RELIGION, SEX,SEXUAL ORIENTATION, GENDER IDENTITY,HANDICAP, FAMILIAL STATUS,OR NATIONAL ORIGIN.

THE POLICY WILL NOT INSURE AGAINST LOSS OR DAMAGE RESULTING FROM THE TERMS AND PROVISIONS OF ANY LEASE OR EASEMENT IDENTIFIED IN SCHEDULE A, AND WILL INCLUDE THE FOLLOWING EXCEPTIONS UNLESS CLEARED TO THE SATISFACTION OF THE COMPANY:

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I-REQUIREMENTS ARE MET.
(NO MATTER OF SURVEY)

2. TAXES AND ASSESSMENTS FOR THE YEAR 2022 AND SUBSEQUENT YEARS, NOT YET DUE AND PAYABLE.
(NO MATTER OF SURVEY)

3. TITLE TO ANY AREAS WITHIN STREET, HIGHWAY OR RAILROAD RIGHTS OF WAY, IF ANY.
(NO MATTER OF SURVEY)

4. THE CREATION OR LOSS OF LAND BY NATURAL OR ARTIFICIAL CHANGES ALONG WATER FORMING PART OF THE BOUNDARY OF THE LAND; AND/OR TITLE TO LAND LYING BELOW THE HIGHER OF THE MEAN HIGH WATER MARK AND/OR THE NORMAL BOUNDS OF ANY BODY OF WATER; AND/OR RIPARIAN RIGHTS INCIDENT TO ANY BRANCHES, CREEKS, STREAMS, LAKES OR OTHER WATERS COURSING OR ABUTTING THE LAND.
(NO MATTER OF SURVEY)

5. ANY DISCREPANCY, CONFLICT, ACCESS, SHORTAGE IN AREA OR BOUNDARY LINES, ENCROACHMENT, ENCUMBRANCE, VIOLATION, OVERLAP, SETBACK, EASEMENT OR CLAIMS OF EASEMENT, RIPARIAN RIGHT, AND TITLE TO LAND WITHIN ROADS, WAYS, RAILROADS, WATERCOURSES, BURIAL GROUNDS, MARSHES, DREDGED OR FILLED AREAS OR LAND BELOW THE MEAN HIGHWATER MARK OR WITHIN THE BOUNDS OF ANY ADJOINING BODY OF WATER, OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY A CURRENT INSPECTION AND ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
(AS SHOWN HEREON)

6. ANY RIGHT, EASEMENT, SETBACK, INTEREST, CLAIM, ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATIONS OR OTHER ADVERSE CIRCUMSTANCE AFFECTING THE TITLE DISCLOSED BY PLAT(S) RECORDED IN BOOK OF MAPS 1996, AT PAGE 1615, OF THE WAKE COUNTY REGISTRY.
(AS SHOWN HEREON)

7. EASEMENT FOR ROADWAY DATED 11/10/1945 IN BOOK 930, PAGE 590, WAKE COUNTY REGISTRY
(NO PLOTTABLE DESCRIPTION FOUND)

8. RIGHT OF WAY EASEMENT DATED 4/11/1949 IN BOOK 1018, PAGE 553, WAKE COUNTY REGISTRY.
(EASEMENT HAS TERMINATED PER TERMS)

9. EASEMENT TO CAROLINA POWER AND LIGHT DATED 9/13/1956 OF RECORD IN BOOK 1252, PAGE 485, WAKE COUNTY REGISTRY.
(EASEMENT IS BLANKET IN NATURE)

10. RIGHT OF WAY AGREEMENT DATED 12/7/1960 TO THE STATE HIGHWAY COMMISSION IN BOOK 1445, PAGE 575, WAKE COUNTY REGISTRY.
(NO PLOTTABLE DESCRIPTION FOUND)

11. EASEMENT TO CAROLINA POWER AND LIGHT DATED 7/14/1970 OF RECORD IN BOOK 1939, PAGE 230, WAKE COUNTY REGISTRY.
(AS SHOWN HERON)

12. EASEMENT TO CAROLINA POWER AND LIGHT DATED 1/13/1972 OF RECORD IN BOOK 2052, PAGE 131, WAKE COUNTY REGISTRY.
(EASEMENT IS BLANKET IN NATURE)

13. EQUITY LINE DEED OF TRUST TO COASTAL FEDERAL CREDIT UNION DATED 2/14/2022 OF RECORD IN BOOK 18924, PAGE 945, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

14. MEMORANDUM OF CONTRACT WITH DR HORTON, INC. OF RECORD IN BOOK 19098, PAGE 653, WAKE COUNTY REGISTRY.
(NO MATTER OF SURVEY)

15. SUBJECT TO THE CLAIMS OF PROPERTY OWNERS TO THE EAST BASED UPON THE MAP IN BM 1996, PAGE 1615, WHICH CREATES AN OVERLAP AND SHOWS THE ADJACENT TRACT WITH NO ACCESS AND NOT ADJACENT TO THE PUBLIC ROAD
(AS SHOWN HEREON)

16. NO CLOSING SERVICES INSURANCE: AS TO THE TRANSACTION FOR WHICH THIS COMMITMENT IS ISSUED, THE COMPANY DOES NOT AFFORD INSURED CLOSING PROTECTION/CLOSING SERVICES INSURANCE ABSENT REVISION OF THIS COMMITMENT TO INCLUDE A STATEMENT THAT COVERAGE IS AFFORDED TO THOSE PARTIES IDENTIFIED IN A SEPARATE CLOSING PROTECTION LETTER ISSUED SIMULTANEOUSLY WITH REVISION OF THE COMMITMENT. ANY CLOSING PROTECTION COVERAGE OR LETTER WHICH HERETOFORE MAY HAVE BEEN ISSUED IS HEREBY RESCINDED AND SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION. ANY CLOSING PROTECTION LETTER SUBSEQUENTLY ISSUED SHALL NOT BE EFFECTIVE AS TO THIS TRANSACTION ABSENT THE ACCOMPANYING REQUISITE REVISION OF THIS COMMITMENT.
(NO MATTER OF SURVEY)

BATEMAN CIVIL SURVEY COMPANY
ENGINEERS ● SURVEYORS ● PLANNERS
2524 RELIANCE AVENUE, APEX, NC 27539
PHONE: (919) 577-1080 FAX: (919) 577-1081
INFO@BATEMANCIVILSURVEY.COM
NCBELS FIRM# C-2378

ALTA/NSPS/LAND TITLE SURVEY

EXCLUSIVELY FOR: DR HORTON

PROPERTY PINS: 1753152116, 1743953683, 1743971085, 1743986356, 1743893384, 1753071583, 1743976575 & 1743779851

AS RECORDED IN: DB 15657 PG 540, DB 2253 PG 285, DB 15474 PG 755, BM 2000, PG 1887, DB 9018 PG 621, DB 6075 PG 504 & DB 7755 PG 552

ST MATTHEW'S TOWNSHIP - WAKE COUNTY - NORTH CAROLINA

REVISIONS

1. REVISED WETLANDS 2/23/24

2. ADDED FIELD DATA 12/06/24

3.

4.

DESIGNED BY: N/A

DRAWN BY: ELS

CHECKED BY: JRD

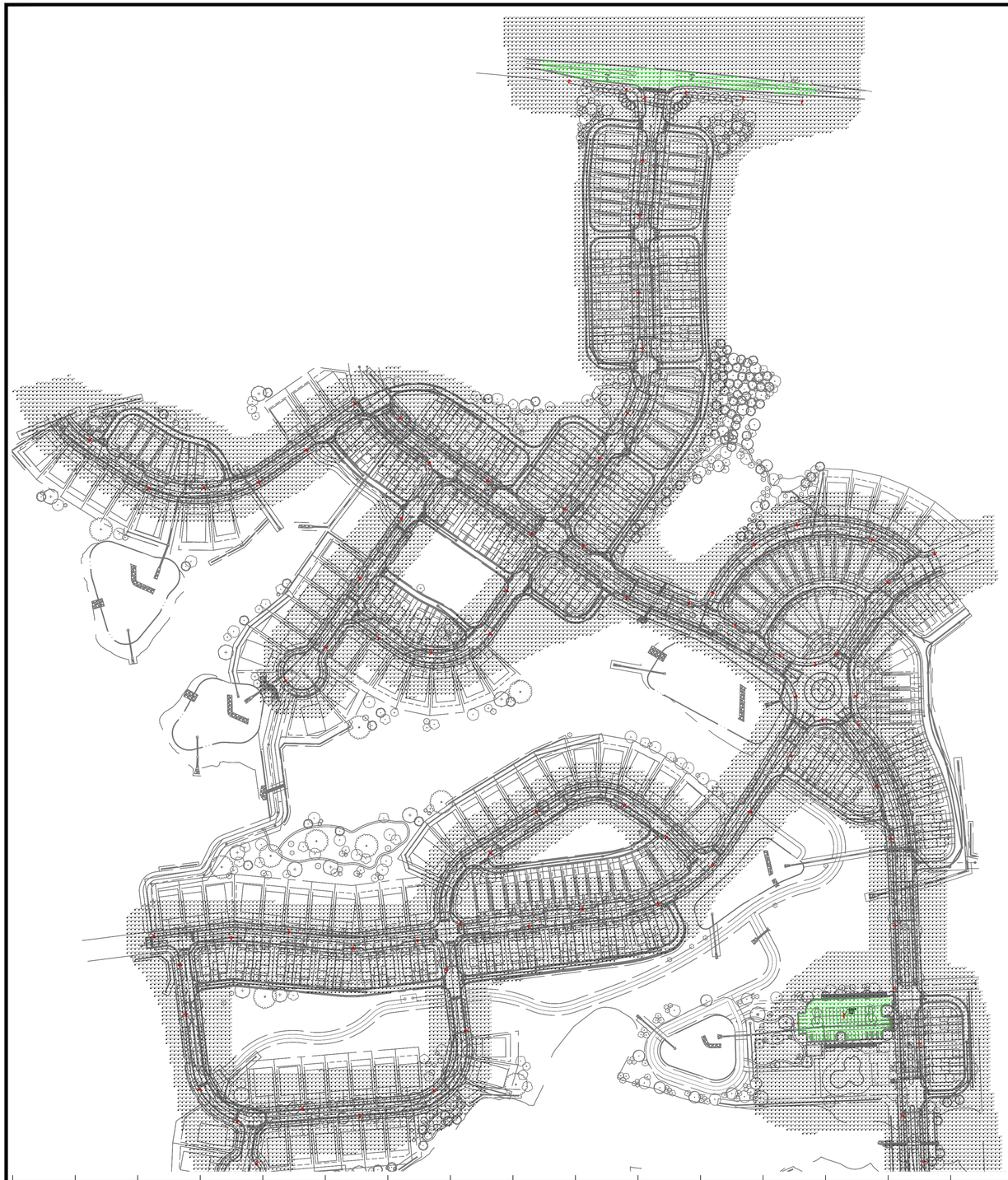
SCALE: VARIES

DATE: 1/27/2023

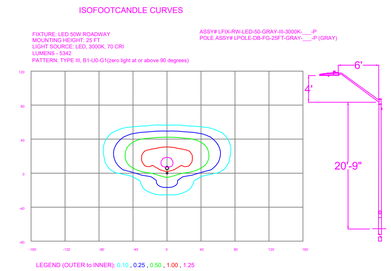
JOB NUMBER: 220655

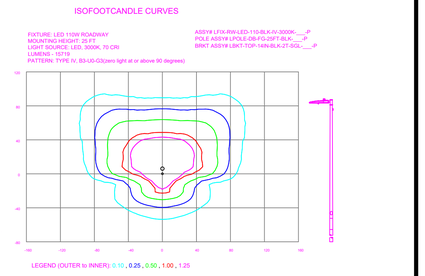
SHEET 4 OF 4

P:\2022 Projects\220655 Old Faison ALTA - DR Horton\DWG\220655 Old Faison ALTA Revised (with x section topo).dwg, 12/6/2024 1:59:18 PM



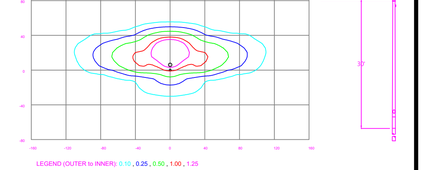






NOTES

1) All LIGHT LOCATIONS ALONG DOT STREETS ARE SUBJECT TO CHANGE PENDING DOT REVIEW.



Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Club House Parking	+	1.6 fc	5.2 fc	0.6 fc	8.7:1	2.7:1
Old Faison Road	+	0.4 fc	1.0 fc	0.1 fc	10.0:1	4.0:1
Bethlehem Rd	+	0.7 fc	1.4 fc	0.2 fc	7.0:1	3.5:1

Schedule

Symbol	Label	QTY	Description	Number Lamps	Lamp Output	LLF
	A	8	LED 70w Roadway - Type II - 3000K - Bethlehem Road	1	7776	0.85
	B	105	LED 50w Roadway - Type III - 3000K	1	5312	0.85
	C	2	LED 110w Roadway - Type IV - 3000K - Clubhouse	1	15719	0.85
	D	1	LED 110w Roadway - Type IV - 3000K - Clubhouse	1	15719	0.85

NO.	DATE	REVISION	BY
REV C	09/24/25	ADDED BETHLEHEM ROAD	NJ
REV B	09/15/25	CUSTOMER REQUESTED LOCATIONS.	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

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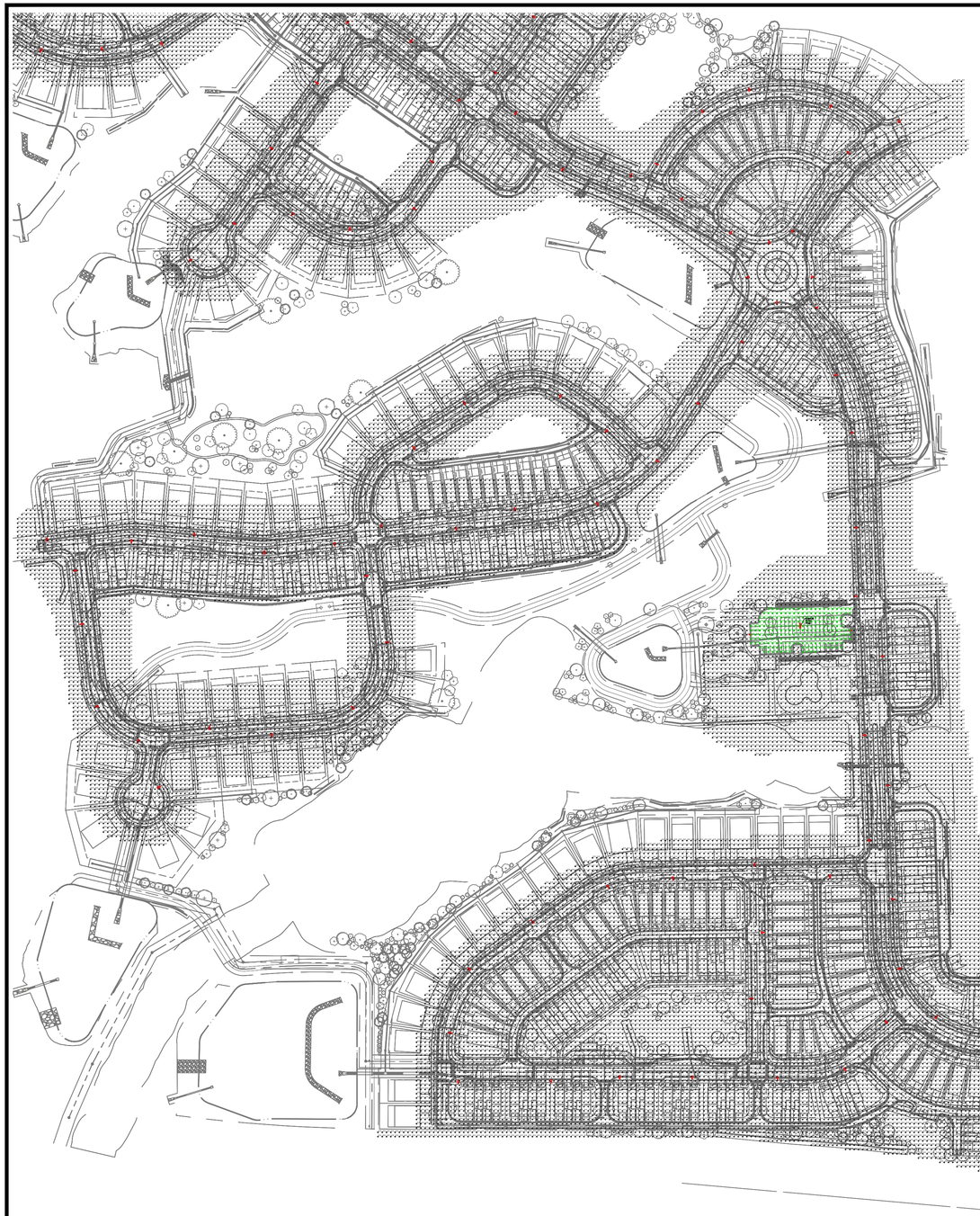
LYNDON OAKS
KNIGHTDALE, NC
STREET LIGHTING ARRANGEMENT
Designed by DUKE ENERGY PROGRESS LIGHTING SOLUTIONS
Reviewed by N. Johnson Scale 1" = 150'
Date 09/24/2025 Size Drawing size "D"
Description LED ROADWAY
Drawing No. 25-0121C Sht. 1 OF 2



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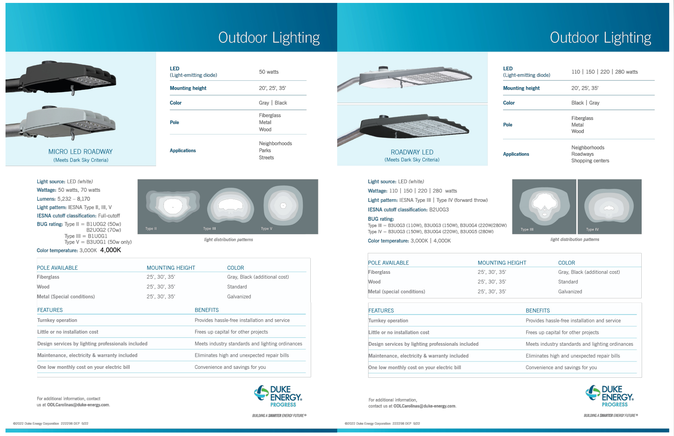
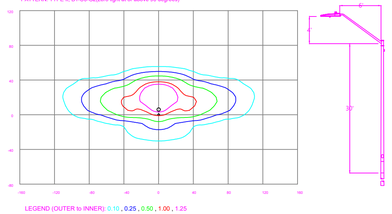


ISOFOOTCANDLE CURVES

FIXTURE: LED 70W ROADWAY
MOUNTING HEIGHT: 35 FT
LIGHT SOURCE: LED, 3000K, 70 CRI
LUMENS - 7800
PATTERN: TYPE II, B1-U0-G2(zero light at or above 90 degrees)

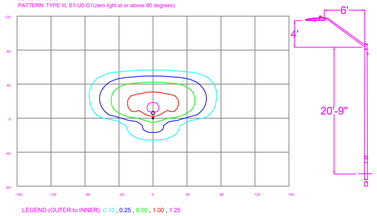
ASSY# LFIX-RW-LED-70-GRAY-II-3000K-___-P
POLE ASSY# LPOLE-DB-FG-35FT-GRAY-___-P (GRAY)



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)

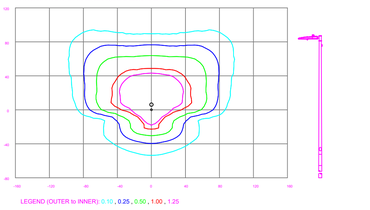
ASSY# LFIX-RW-LED-50-GRAY-III-3000K-___-P
POLE ASSY# LPOLE-DB-FG-25FT-GRAY-___-P (GRAY)



ISOFOOTCANDLE CURVES

FIXTURE: LED 110W ROADWAY
MOUNTING HEIGHT: 25 FT
LIGHT SOURCE: LED, 3000K, 70 CRI
LUMENS – 15719
PATTERN: TYPE IV, B3-U0-G3(zero light at or above 90 degrees)

ASSY# LFIX-RW-LED-110-BLK-IV-3000K-___-P
POLE ASSY# LPOLE-DB-FG-25FT-BLK-___-P
BRKT ASSY# LBKT-TOP-14IN-BLK-2T-SQ___-P



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NO.	DATE	REVISION	BY
REV C	09/24/25	ADDED BETHLEHEM ROAD	NJ
REV B	09/15/25	CUSTOMER REQUESTED LOCATIONS	NJ

DISTANCE CALIBRATION (INCHES)
0 0.5 1.0 2.0 3.0 4.0

LIGHTING DESIGN TOLERANCE

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DUKE ENERGY® PROGRESS

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