

DRAWING INDEX

DRAWING NUMBER	SEQUENCE NUMBER	DRAWING DESCRIPTION	ISSUE DATE	LAST REVISION DATE	REVISED THIS PRINT
TS 1.1		TITLE SHEET	06.22.20	08.31.20	DELETE
CS 1.1.1	1	COVER SHEET - DRAWING INDEX	05.22.20	10.16.20	X
CS 1.1.2	2	GENERAL NOTES	05.22.20	10.16.20	X
CS 1.1.3	3	PROJECT DATA	10.16.20		NEW
CS 1.2.1	4	CODE SUMMARY - APARTMENT BUILDING	05.22.20	10.16.20	X
CS 1.2.2	5	CODE SUMMARY - OUTPARCEL BUILDING	08.31.20	10.16.20	X
CS 1.2.3	6	CODE SUMMARY - GARAGE BUILDINGS	08.31.20	10.16.20	X
CS 1.3.1	7	LIFE SAFETY PLANS - GROUND FLOOR	05.22.20	10.16.20	X
CS 1.3.2	8	LIFE SAFETY PLANS - FIRST FLOOR	05.22.20	10.16.20	X
CS 1.3.3	9	LIFE SAFETY PLANS - SECOND FLOOR	05.22.20	10.16.20	X
CS 1.3.4	10	LIFE SAFETY PLANS - THIRD FLOOR	05.22.20	10.16.20	X
CS 1.3.5	11	LIFE SAFETY PLANS - FOURTH FLOOR	05.22.20	10.16.20	X
CS 1.3.6	12	OCCUPANT LOAD - GROUND FLOOR	05.22.20	10.16.20	X
CS 1.3.7	13	OCCUPANT LOAD - FIRST FLOOR	05.22.20	10.16.20	X
CS 1.3.8	14	OCCUPANT LOAD - SECOND FLOOR	05.22.20	10.16.20	X
CS 1.3.9	15	OCCUPANT LOAD - THIRD FLOOR	05.22.20	10.16.20	X
CS 1.3.10	16	OCCUPANT LOAD - FOURTH FLOOR	05.22.20	10.16.20	X
CS 1.4.1A	17	UL DETAIL - U305	05.22.20	10.16.20	X
CS 1.4.1B	18	UL DETAIL - U305 (cont.)	05.22.20	10.16.20	X
CS 1.4.2	19	UL DETAIL - U376	05.22.20	10.16.20	X
CS 1.4.3A	20	UL DETAIL - L528	05.22.20	10.16.20	X
CS 1.4.3B	21	UL DETAIL - L528 (cont.)	05.22.20	10.16.20	X
CS 1.4.3C	22	UL DETAIL - L528 (cont.)	05.22.20	10.16.20	X
CS 1.4.4A	23	UL DETAIL - P522	05.22.20	10.16.20	X
CS 1.4.4B	24	UL DETAIL - P522 (cont.)	05.22.20	10.16.20	X
CS 1.4.5	25	UL DETAIL - U375	05.22.20	10.16.20	X
CS 1.4.6	26	UL DETAIL - U319	05.22.20	10.16.20	X
CS 1.4.7	27	UL DETAIL - U905	05.22.20	10.16.20	X
CIVIL					
C0.0	28	COVER SHEET	05.22.20	10.16.20	X
C0.1	29	NOTES	05.22.20	10.16.20	X
D1.0	30	DEMOLITION PLAN	05.22.20	10.16.20	X
C1.0	31	SITE PLAN	05.22.20	10.16.20	X
C1.0A	32	SIGNAGE & PAVEMENT MARKING PLAN	08.05.20	10.16.20	X
C1.1	33	GRADING & DRAINAGE PLAN	05.22.20	10.16.20	X
C1.2	34	UTILITY PLAN	05.22.20	10.16.20	X
C1.3	35	UTILITY DETAILS	05.22.20	10.16.20	X
C1.4A	36	CONSTRUCTION DETAILS	05.22.20	10.16.20	X
C1.4B	37	CONSTRUCTION DETAILS	05.22.20	10.16.20	X
C1.4C	38	CONSTRUCTION DETAILS	08.05.20	10.16.20	X
C1.4D	39	CONSTRUCTION DETAILS	08.05.20	10.16.20	X
C1.5A	40	STORMWATER MANAGEMENT DETAILS	05.22.20	10.16.20	X
C1.5B	41	STORMWATER MANAGEMENT DETAILS	05.22.20	10.16.20	X
C1.5C	42	STORMWATER MANAGEMENT DETAILS	05.22.20	10.16.20	X
C1.6A	43	INITIAL EROSION CONTROL PLAN	05.22.20	10.16.20	X
C1.6B	44	GRADING PHASE EROSION CONTROL PLAN	05.22.20	10.16.20	X
C1.7A	45	NC GENERAL PERMIT (NCGO1) NOTES	05.22.20	10.16.20	X
C1.7B	46	EROSION CONTROL DETAILS	05.22.20	10.16.20	X
C1.8	47	LANDSCAPE PLAN	05.22.20	10.16.20	X
1 OF 1	48	LIGHTING PLAN	05.22.20	10.16.20	X
SITE 2.1	49	SITE DETAILS	05.22.20	10.16.20	X
SITE 2.2	50	SITE DETAILS	08.05.20	10.16.20	X
STRUCTURAL					
S 0.1	51	FOUNDATION PLAN GROUND LEVEL	05.22.20	10.16.20	X
S 0.2	52	FOUNDATION PLAN 1ST FLOOR LEVEL	05.22.20	10.16.20	X
S 0.3	53	OUTPARCEL BLDG. FOUNDATION PLAN	05.22.20	10.16.20	X
S 0.4	54	GARAGE BLDGS. FOUNDATION PLAN	05.22.20	10.16.20	X
S 1.1	55	1ST FLOOR FRAMING PLAN	05.22.20	10.16.20	X
S 2.1	56	2ND FLOOR FRAMING PLAN	05.22.20	10.16.20	X
S 2.2	57	2ND FLOOR FRAMING PLAN	05.22.20	10.16.20	X
S 3.1	58	3RD FLOOR FRAMING PLAN	05.22.20	10.16.20	X
S 3.2	59	3RD FLOOR FRAMING PLAN	05.22.20	10.16.20	X
S 4.1	60	4TH FLOOR/LOW ROOF FRAMING PLAN	05.22.20	10.16.20	X
S 4.2	61	4TH FLOOR/LOW ROOF FRAMING PLAN	05.22.20	10.16.20	X
S 5.1	62	UPPER ROOF FRAMING PLAN	05.22.20	10.16.20	X
S 5.2	63	OUTPARCEL BLDG. ROOF FRAMING PLAN	05.22.20	10.16.20	X
S 5.3	64	GARAGE BLDGS. ROOF PLAN	05.22.20	10.16.20	X
S 6.1	65	STRUCTURAL FOUNDATION DETAILS	05.22.20	10.16.20	X
S 6.2	66	STRUCTURAL FOUNDATION DETAILS	05.22.20	10.16.20	X
S 6.3	67	STRUCTURAL FOUNDATION DETAILS	05.22.20	10.16.20	X
S 7.1	68	STRUCTURAL FRAMING DETAILS	05.22.20	10.16.20	X
S 7.2	69	STRUCTURAL FRAMING DETAILS	05.22.20	10.16.20	X
S 7.3	70	STRUCTURAL FRAMING DETAILS	05.22.20	10.16.20	X
S 7.4	71	STRUCTURAL FRAMING DETAILS	05.22.20	10.16.20	X
S 7.5	72	STRUCTURAL FRAMING DETAILS	05.22.20	10.16.20	X
S 7.6	73	STRUCTURAL FRAMING DETAILS	05.22.20	10.16.20	X
S 8.1	74	STRUCTURAL GENERAL NOTES & SPECS.	05.22.20	10.16.20	X

DRAWING NUMBER	SEQUENCE NUMBER	DRAWING DESCRIPTION	ISSUE DATE	LAST REVISION DATE	REVISED THIS PRINT
ARCHITECTURAL					
A 0.1	75	OVERALL ROOF PLAN	05.22.20	10.16.20	X
A 1.0.0	76	OVERALL BLDG. PLAN - GROUND FLOOR	05.22.20	10.16.20	X
A 1.0.1	77	OVERALL BLDG. PLAN - 1ST FLOOR	05.22.20	10.16.20	X
A 1.0.2	78	OVERALL BLDG. PLAN - 2ND FLOOR	05.22.20	10.16.20	X
A 1.0.3	79	OVERALL BLDG. PLAN - 3RD FLOOR	05.22.20	10.16.20	X
A 1.0.4	80	OVERALL BLDG. PLAN - 4TH FLOOR	05.22.20	10.16.20	X
A 1.0.5	81	GARAGE PLANS - TYPE 1	05.22.20	10.16.20	X
A 1.0.6	82	GARAGE PLANS - TYPE 2	05.22.20	10.16.20	X
A 1.0.7	83	GARAGE PLANS - TYPE 3	05.22.20	10.16.20	X
A 1.0.8	84	OUTPARCEL BUILDING PLANS	05.22.20	10.16.20	X
A 1.1.0	85	ENLARGED PLAN - GROUND FLOOR	05.22.20	10.16.20	X
A 1.1.1	86	ENLARGED PLAN - 1ST FLOOR SOUTH WING	05.22.20	10.16.20	X
A 1.1.2	87	ENLARGED PLAN - 1ST FLOOR NORTH WING	05.22.20	10.16.20	X
A 1.2.1	88	ENLARGED PLAN - 2ND FLOOR SOUTH WING	05.22.20	10.16.20	X
A 1.2.2	89	ENLARGED PLAN - 2ND FLOOR NORTH WING	05.22.20	10.16.20	X
A 1.3.1	90	ENLARGED PLAN - 3RD FLOOR SOUTH WING	05.22.20	10.16.20	X
A 1.3.2	91	ENLARGED PLAN - 3RD FLOOR NORTH WING	05.22.20	10.16.20	X
A 1.4.1	92	ENLARGED PLAN - 4TH FLOOR NORTH WING	05.22.20	10.16.20	X
A 3.1.1	93	EXT. ELEVATIONS - NORTH, WEST, & SOUTH	05.22.20	10.16.20	X
A 3.1.2	94	EXT. ELEVATIONS - EAST & COURTYARD	05.22.20	10.16.20	X
A 3.2.1	95	EXT. ELEVATION - GARAGE TYPE 1	05.22.20	10.16.20	X
A 3.2.2	96	EXT. ELEVATION - GARAGE TYPE 2	05.22.20	10.16.20	X
A 3.2.3	97	EXT. ELEVATION - GARAGE TYPE 3	05.22.20	10.16.20	X
A 3.3.1	98	EXT. ELEVATION - OUTPARCEL BUILDING	05.22.20	10.16.20	X
A 4.1.1	99	ENLARGED UNIT PLANS - 1 BEDROOM	05.22.20	10.16.20	X
A 4.1.2	100	ENLARGED UNIT PLANS - 2 BEDROOM	05.22.20	10.16.20	X
A 4.2.1	101	ENLRGD. COMMON AREA PLANS- GROUND FLOOR	05.22.20	10.16.20	X
A 4.2.2	102	ENLRGD. COMMON AREA PLANS- GROUND FLOOR	05.22.20	10.16.20	X
A 4.3.1	103	ENLRGD. COMMON AREA PLANS- 1ST FLOOR	05.22.20	10.16.20	X
A 4.4.1	104	ENLRGD. COMMON AREA PLANS- 2ND FLOOR	05.22.20	10.16.20	X
A 4.5.1	105	ENLRGD. COMMON AREA PLANS- 3RD FLOOR	05.22.20	10.16.20	X
A 4.6.1	106	ENLRGD. COMMON AREA PLANS- 4TH FLOOR	05.22.20	10.16.20	X
A 5.1.1	107	SCHEMATIC BUILDING SECTIONS	05.22.20	10.16.20	X
A 5.1.2	108	SCHEMATIC BUILDING SECTIONS	05.22.20	10.16.20	X
A 5.2.1	109	TYPICAL WALL SECTIONS	05.22.20	10.16.20	X
A 5.2.2	110	TYPICAL WALL SECTIONS	05.22.20	10.16.20	X
A 5.3.1	111	SECTION AT STAIR AND ELEVATOR	05.22.20	10.16.20	X
A 5.2.4	112	SECTION AT ELEVATOR SHAFT & DETAILS	05.22.20	10.16.20	X
A 5.2.5	113	ELEVATOR & STAIR PLAN DETAILS	05.22.20	10.16.20	X
A 5.2.6	114	STAIR PLAN DETAILS	05.22.20	10.16.20	X
A 5.2.7	115	DETAILS	05.22.20	10.16.20	X
A 5.3.1	116	GENERAL DETAILS	05.22.20	10.16.20	X
A 5.3.2	117	GENERAL DETAILS	05.22.20	10.16.20	X
A 5.3.3	118	DETAILS	05.22.20	10.16.20	X
A 5.3.4	119	WALL DETAILS	05.22.20	10.16.20	X
A 5.3.5	120	WINDOW & DOOR FLASHING	05.22.20	10.16.20	X
A 6.1.1	121	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.1.2	122	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.1.3	123	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.1.4	124	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.2.1	125	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.2.2	126	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.2.3	127	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 6.3.1	128	INTERIOR ELEVATIONS	05.22.20	10.16.20	X
A 7.1	129	DOOR SCHEDULE SCHEDULE	05.22.20	10.16.20	X
A 7.2	130	WINDOW ELEV. & SCHEDULE, SIGNAGE DETAILS	05.22.20	10.16.20	X
A 7.3	131	FINISH SCHEDULE	08.31.20	10.16.20	X

ARCHITECTURAL
Ross/Deckard Architects, P.A.
4010 Wake Forest Rd.
Raleigh, North Carolina 27609
Phone #: 919.875.0001
Fax #: 919.875.9200

CIVIL ENGINEERING
Triangle Site Design, Inc
4004 Barrett Drive, Suite 101
Raleigh, North Carolina 27609
Phone #: 919.553.6570
Fax # :

CONTRACTOR
Innovative Green Building, INC
Contact: Dennis Tharrington
Email: dennis@gibninc.com
Phone #: 252.432.1445

OWNER
The Lawson, LLC
430 Woodland Road
Henderson, North Carolina 27536
Phone #: 252.432.9126
Fax # :

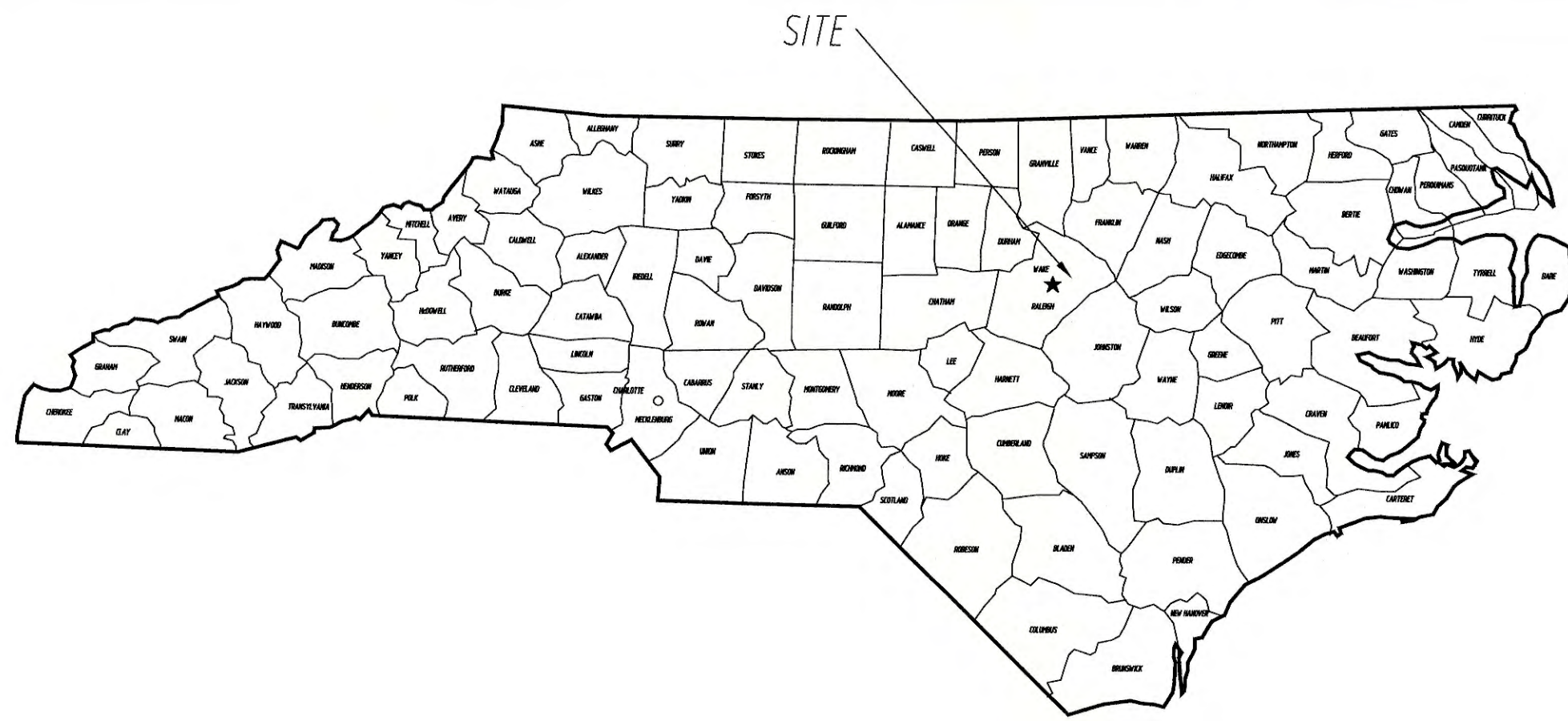
STRUCTURAL ENGINEERING
Hauser-Creech, Inc.
4506 Peaches Rd.
Raleigh, North Carolina 27579
Phone #: 919.404.2427
Fax # :

MORTGAGE COMPANY
Walker & Dunlop
Contact: Kristin Layden
Email: klayden@walkerdunlop.com
Phone #: 615.224.7808

MEP ENGINEERING
Melling Engineering, P.A.
8824 Gatherstone Court
Zebulon, North Carolina 27615
Phone #: 919.610.3851
Fax # :

BONDING COMPANY
Carolina Indemnity Group
Contact: Matthew Clarke
Email: mc@sigbonds.com
Phone #: 843.212.5254

DRAWING NUMBER	SEQUENCE NUMBER	DRAWING DESCRIPTION	ISSUE DATE	LAST REVISION DATE	REVISED THIS PRINT
PLUMBING					
P 1.1	132	GROUND FLOOR PLUMBING PLAN	05.22.20	10.16.20	X
P 1.2	133	FIRST FLOOR LOWER PLUMBING PLAN	05.22.20	10.16.20	X
P 1.3	134	FIRST FLOOR UPPER PLUMBING PLAN	05.22.20	10.16.20	X
P 1.4	135	SECOND FLOOR LOWER PLUMBING PLAN	05.22.20	10.16.20	X
P 1.5	136	SECOND FLOOR UPPER PLUMBING PLAN	05.22.20	10.16.20	X
P 1.6	137	THIRD & FOURTH FLOOR PLUMBING PLANS	05.22.20	10.16.20	X
P 2.1	138	TYPICAL 1 BEDROOM PLUMBING PLANS	05.22.20	10.16.20	X
P 2.2	139	TYPICAL 2 BEDROOM PLUMBING PLANS	05.22.20	10.16.20	X
P 3.1	140	COMMON AREAS RISER DIAGRAMS	05.22.20	10.16.20	X
P 3.2	141	TYP. APARTMENTS WATER RISER DIAGRAMS	05.22.20	10.16.20	X
P 4.1	142	OUTPARCEL BLDG. PLUMBING PLAN	05.22.20	10.16.20	X
PME1	143	PENETRATION DETAILS	05.22.20	10.16.20	X
PME2	144	PENETRATION DETAILS	05.22.20	10.16.20	X
MECHANICAL					
M 1.0	145	MECHANICAL SCHEDULES & DETAILS	05.22.20	10.16.20	X
M 1.1	146	GROUND FLOOR MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.2	147	FIRST FLOOR LOWER MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.3	148	FIRST FLOOR UPPER MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.4	149	SECOND FLOOR LOWER MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.5	150	SECOND FLOOR UPPER MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.6	151	THIRD FLOOR LOWER MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.7	152	THIRD FLOOR UPPER MECHANICAL PLAN	05.22.20	10.16.20	X
M 1.8	153	FOURTH FLOOR MECHANICAL PLAN	05.22.20	10.16.20	X
M 2.1	154	TYPICAL UNITS MECHANICAL PLANS	05.22.20	10.16.20	X
ELECTRICAL					
E 1.0	155	ELECTRICAL SCHEDULES & DETAILS	05.22.20	10.16.20	X
E 1.1	156	GROUND FLOOR ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.2	157	FIRST FLOOR LOWER ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.3	158	FIRST FLOOR UPPER ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.4	159	SECOND FLOOR LOWER ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.5	160	SECOND FLOOR UPPER ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.6	161	THIRD FLOOR LOWER ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.7	162	THIRD FLOOR UPPER ELECTRICAL PLAN	05.22.20	10.16.20	X
E 1.8	163	FOURTH FLOOR ELECTRICAL PLAN	05.22.20	10.16.20	X
E 2.1	164	TYPICAL UNITS ELECTRICAL PLANS	05.22.20	10.16.20	X
E 3.1	165	ELECTRICAL RISER DIAGRAM	05.22.20	10.16.20	X
E 3.2	166	ELECTRICAL PANEL SCHEDULES	05.22.20	10.16.20	X
E 4.1	167	GARAGE ELECTRICAL PLANS	05.22.20	10.16.20	X



Town of Knightdale Project ZCP-1-19

The Lawson of Knightdale

Mulford Court
Knightdale, NC
Wake County

Table 2: Site Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Multifamily Housing (Mid-Rise) (221)	100 units	550	9	25	27	17
Medical-Dental Office Building (720)	9,000 s.f.	320	20	5	9	22
Total Trips		870	29	30	36	39

DEVELOPMENT DATA

PROPERTY IDENTIFICATION # (PIN):	1754-14-3714, 1754-14-4670 & 1754-14-4638
ZONING DISTRICTS:	NEIGHBORHOOD MIXED USE (NMX)
OVERLAY DISTRICT:	NONE
WATERSHED:	NEUSE RIVER
RECEIVING STREAM:	MANGO CREEK
STREAM CLASSIFICATION:	C, MSW
STREAM INDEX:	27-32
TOTAL SITE ACRES:	240.87 SF (5.51 AC)
INSIDE TOWN LIMITS:	YES
EXISTING USE:	VACANT
PROPOSED BUILDING USE:	MEDICAL OFFICE, SENIOR LIVING FACILITY (81 UNITS) & FUTURE OFFICE
PROPOSED TOTAL BUILDING AREA:	9,000 SF MEDICAL OFFICE & 140,750 SF SENIOR LIVING FACILITY
MAX. BUILDING HEIGHT:	4 STORY
MIN LOT AREA:	N/A
MIN LOT WIDTH:	32 FT (COMMERCIAL)
FRONT SETBACK:	0 FT MIN, 10 FT MAX (COMMERCIAL)
REAR SETBACK:	0 FT MIN, 25 FT MAX (APARTMENT)
SIDE SETBACK:	0 FT
SETOBACK:	0 FT OR 5 FT (COMMERCIAL)
PARKING LOT SCREENING:	10 FT APARTMENT
OFF-STREET PARKING:	10 FT TYPE A BUFFER (PARKING BUFFER)
MAXIMUM PARKING SPACES:	50 (MEDICAL SERVICES: 5.5 SPACES PER 1,000 SF GROSS FLOOR AREA) (9,000 SF ± 5.5 / 1,000-50 SPACES) 80 (SENIOR LIVING FACILITY: 1 SPACE PER UNIT) (81 UNITS ± 81 SPACES) 81 TOTAL SPACES
MINIMUM PARKING SPACES:	75 (MAXIMUM)
TOTAL PROVIDED:	46 MEDICAL SERVICES SPACES 80 RESIDENTIAL SPACES (16 GARAGE SPACES & 64 SURFACE SPACES)
ACCESSIBLE SPACES PROVIDED:	7
BICYCLE SPACES REQUIRED:	7
BICYCLE SPACES PROVIDED:	7
PARKING SPACE DIMENSIONS:	9'x18' MIN
LOADING AREA:	1 PROVIDED
PROJECTED WATER/SEWER USAGE:	25,815 GPD MEDICAL OFFICE = 25 GPD PER PERSON PER SHIFT (ESTIMATE 43 PEOPLE PER DAY) 1575 GPD (25 GPD x 63 PEOPLE) SENIOR LIVING FACILITY = 81 UNITS @ 240 GPD/UNIT 24,240 GPD
NUMBER OF NEW WATER/SEWER STUBS:	2
WATER METER SIZE:	4" & 6"
SEWER CONNECTION SIZE:	8" & 4"
LF NEW PUBLIC SIDEWALK:	1016'
NEW PUBLIC CURB & GUTTER:	0
LF NEW PUBLIC STREETS:	0
STORMWATER:	BIO-RETENTION POND

VAR-5-18 CONDITIONS

SECTION 16.301(VI) OF THE TOWN OF KNIGHTDALE UNIFIED DEVELOPMENT ORDINANCE (UDO) TO ALLOW FOR THE SITE TO CONTAIN UP TO 800 PARKING SPACES FOR A STRUCTURE CONTAINING 800 UNITS TO BE USED FOR "HOUSING SERVICES FOR THE ELDERLY."

WATER ALLOCATION NOTE:

THE DEVELOPER IS PROPOSING TO MEET THE REQUIREMENTS OF THE TOWN OF KNIGHTDALE WATER ALLOCATION POLICY BY PROVIDING A BIO-RETENTION STORMWATER MANAGEMENT FACILITY AND BY PROVIDING A PUBLIC DISPLAY OF ART

POINTS REQUIRED:	50
POINTS PROVIDED:	41 (HOUSING SERVICES FOR THE ELDERLY) 5 (STORMWATER - BIO-RETENTION) 4 (OUTDOOR DISPLAY OF PUBLIC ART) 50 (TOTAL POINTS)

UTILITY NOTE:

PROPOSED:	8,000 SF MEDICAL OFFICE BUILDING 81 UNIT SENIOR LIVING FACILITY
SANITARY SEWER FLOW CALCULATIONS:	
EXISTING CONDITIONS:	0 GPD (VACANT)
PROPOSED:	25 GPD PER PERSON PER SHIFT ESTIMATE 43 PEOPLE PER DAY 1575 GPD (25 GPD x 63 PEOPLE) 81 UNITS @ 240 GPD/UNIT 24,240 GPD NET INCREASE: 25,815 GPD

IMPERVIOUS AREA SUMMARY

SITE AREA = 240,870 SF (5.51 AC) AFTER PROPERTY RECONFIGURATION				
BUILDINGS	45,378 SF	1.04 ACRES	18.87 %	
PAVEMENT	81,747 SF	1.88 ACRES	34.03 %	
SIDEWALK	15,046 SF	0.34 ACRES	6.26 %	
EXISTING IMPERVIOUS AREA:	0 SF	0.00 ACRES	0.0 %	
TOTAL IMPERVIOUS AREA	142,172 SF	3.26 ACRES	59.17 %	
GREEN/OPEN SPACE	98,675 SF	2.25 ACRES	40.83 %	
INCREASE IN IMPERVIOUS AREA:	142,172 SF	3.26 ACRES		

DEVELOPER

The Lawson, LLC
Attn. Daniel Tharrington
252-432-1172
349 Ruin Creek Road
Henderson, NC 27536
daniel@igbinc.com
www.igbinc.com

CIVIL ENGINEER

Triangle Site Design, PLLC
4004 Barrett Drive
Suite 101
Raleigh, NC 27609
(919)553-6570
mlower@trianglesitedesign.com
NC LICENSE#P-0619



CURRENT PROPERTY OWNER

The Lawson, LLC
Attn. Daniel Tharrington
252-432-1172
349 Ruin Creek Road
Henderson, NC 27536

EROSION AND SEDIMENT CONTROL

APPROVED PLAN

DATE 10/24/20

PERMIT NO. SEC-044024-2020

WAKE COUNTY ENVIRONMENTAL SERVICES
SEDIMENTATION & EROSION CONTROL
919-856-7400

Matthew Lowder
ENVIRONMENTAL CONSULTANT SIGNATURE

ATTENTION CONTACTORS

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

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

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

PLAT NOTE

A plat of all necessary right-of-way dedication and CORWLEs must be submitted to CORPUD for review, comments, and approval prior to the issuance of building permits from the Town of Knightdale.

Recombination plat will also be required for the project - all plats to be submitted to the Town of Knightdale to be reviewed and distributed to City of Raleigh and any other applicable departments.

Town Approved Standards Shall Control:

In the event of conflict or inconsistency between these construction drawing 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, subdivision plat(s), phasing schedule, 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.

Town Certification:

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

By: *Matthew Lowder* Date: 1-28-2021
Development Services Engineer
By: *WJL* Date: 1-28-21
Administrator

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

Seal:
By: Matthew Lowder, PE
Date: 12/4/20



INDEX OF DRAWINGS

C0.0	COVER SHEET
C0.1	NOTES
D1.0	DEMOLITION PLAN
C1.0	SITE PLAN
C1.0A	SIGNAGE & PAVEMENT MARKING PLAN
C1.1	GRADING & DRAINAGE PLAN
C1.2	UTILITY PLAN
C1.3	UTILITY DETAILS
C1.4A	CONSTRUCTION DETAILS
C1.4B	CONSTRUCTION DETAILS
C1.4C	CONSTRUCTION DETAILS
C1.4D	CONSTRUCTION DETAILS
C1.5A	STORMWATER MANAGEMENT DETAILS
C1.5B	STORMWATER MANAGEMENT DETAILS
C1.5C	STORMWATER MANAGEMENT DETAILS
C1.6A	INITIAL EROSION CONTROL PLAN
C1.6B	GRADING PHASE EROSION CONTROL PLAN
C1.7A	NORTH CAROLINA GENERAL PERMIT (NCGO1) NOTES
C1.7B	EROSION CONTROL DETAILS
C1.8	LANDSCAPE PLAN
1 OF 1	LIGHTING PLAN



Know what's below
Call before you dig



TRIANGLE SITE DESIGN

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE# P-0619
mlower@trianglesitedesign.com



OWNER/DEVELOPER:
The Lawson, LLC
Attn. Daniel Tharrington
252-432-1172
349 Ruin Creek Road
Henderson, NC 27536
daniel@igbinc.com
www.igbinc.com

The Lawson of Knightdale

Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REV	DATE	DESCRIPTION
1	10/24/20	ISSUED FOR TOWN REVIEW
2	10/24/20	ADAPTED FOR TOWN REVIEW
3	10/24/20	ADAPTED FOR TOWN REVIEW
4	10/24/20	ADAPTED FOR TOWN REVIEW

Drawn Checked Approved

Project No. 000001
Date: December 4, 2020
Title

COVER
SHEET

Sheet No.

C0.0

GENERAL NOTES

1. THE CONTRACTOR SHALL EMPLOY ALL NECESSARY BARRICADES, SIGNS, FENCES, FLASHING LIGHTS, FLAGMEN, ETC. FOR MAINTENANCE AND PROTECTION OF TRAFFIC AS REQUIRED BY TOWN OF KNIGHTDALE AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, FOR DETAILS OF TRAFFIC CONTROL STANDARDS AND DEVICES.
2. THE CONTRACTOR SHALL PROTECT ALL MONUMENTS, IRON PINS, AND PROPERTY CORNERS DURING CONSTRUCTION.
3. APPROVAL OF THESE PLANS IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED FROM THE AFFECTED PROPERTY OWNERS.
4. COORDINATE ALL CURB AND STREET GRADES IN INTERSECTIONS WITH INSPECTOR.
5. NON-STANDARD ITEMS (I.E. PAVERS, IRRIGATION SYSTEMS, ETC.) IN THE RIGHT-OF-WAY REQUIRE A RIGHT-OF-WAY ENCROACHMENT AGREEMENT WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION BEFORE INSTALLATION.
6. ALL SITE DIMENSIONS ARE REFERENCED TO THE FACE OF CURBS OR EDGE OF PAVING UNLESS OTHERWISE NOTED. ALL BUILDING DIMENSIONS ARE REFERENCED TO THE OUTSIDE FACE OF THE STRUCTURE.
7. EXISTING SITE CONDITIONS, GRADES, CONTOURS, UTILITIES AND OTHER EXISTING FEATURES FROM A SURVEY PREPARED BY ANGLE RIGHT LAND SURVEYING, PLLC.
8. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "STANDARD DETAILS AND SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND APPLICABLE TOWN OF KNIGHTDALE CODES AND ORDINANCES. THE CONTRACTOR SHALL MAINTAIN A CURRENT EDITION OF THE STATE AND LOCAL CODES, ORDINANCES, STANDARD SPECIFICATION AND STANDARD DETAILS ON THE PROJECT SITE FOR REFERENCE DURING CONSTRUCTION OF THE PROJECT.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND SHALL REPORT ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS TO THE OWNER OR OWNER'S REPRESENTATIVE IMMEDIATELY. CONTRACTOR SHALL WAIT FOR INSTRUCTION PRIOR TO PROCEEDING WITH WORK.
10. THE CONTRACTOR SHALL PROVIDE SMOOTH TRANSITIONS FROM PROPOSED FEATURES TO EXISTING FEATURES AS NECESSARY.
11. THE CONTRACTOR SHALL SEAL THE EDGE OF EXISTING ASPHALT PAVEMENT WITH TACK COAT IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS WHERE NEW PAVEMENT JOINS EXISTING PAVEMENT.
12. THE CONTRACTOR SHALL REPAIR, RESURFACE, RECONSTRUCT OR REBURISH ANY AREAS DAMAGED DURING CONSTRUCTION BY THE CONTRACTOR, HIS SUBCONTRACTORS OR SUPPLIERS AT NO ADDITIONAL COST TO THE OWNER.
13. ALL PAVEMENT JOINTS SHALL BE SAW-CUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
14. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF TRUCK DOCKS, EXIT DOORS, SIDEWALKS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
15. ALL PAINT STRIPING, PAVEMENT MARKINGS, AND SIGNAGE SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" OR AS OTHERWISE SPECIFIED. ALL REFERENCED SIGN STANDARDS ARE TAKEN FROM THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". ALL NEW SIGNS SHALL BE MOUNTED ON GALVANIZED POSTS AND IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.
16. CONTRACTOR SHALL INSTALL ACCESSIBLE RAMPS PER LOCAL MUNICIPALITY AND ADA STANDARDS AT ALL DRIVE AND BUILDING LOCATIONS AS REQUIRED.
17. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. AT LEAST 48 HOURS PRIOR TO ANY DEMOLITION, GRADING, OR CONSTRUCTION ACTIVITY THE CONTRACTOR SHALL NOTIFY THE TOWN OF KNIGHTDALE & CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENTS FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE PROJECT SITE.
18. PROOF ROLL BUILDING AND ALL PARKING AREAS. NOTIFY OWNER OF ANY UNACCEPTABLE AREAS.
19. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES AND STORM DRAINAGE) TO OWNER PRIOR TO COMPLETION OF CONSTRUCTION.

TRAFFIC CONTROL NOTES

THE DISTRICT OFFICE OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO CONSTRUCTION.

TRAFFIC MUST BE MAINTAINED AT ALL TIMES AND CONSTRUCTION MUST COMPLY WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND WITH THE CURRENT EDITION OF THE NCDOT STANDARDS AND SPECIFICATIONS.

ALL LANES OF TRAFFIC ARE TO BE OPEN DURING THE HOURS OF 6:00 AM TO 9:00 AM AND FROM 4:00 PM TO 6:00 PM. A MINIMUM OF ONE 12-FOOT LANE SHALL BE MAINTAINED AT ALL TIMES.

ALL ROADWAY SIGNS WHICH ARE TO BE REMOVED DURING CONSTRUCTION ARE TO BE REINSTALLED AS SOON AS POSSIBLE.

DURING NON-WORKING HOURS, EQUIPMENT IS TO BE PARKED AS CLOSE TO THE RIGHT OF WAY LINE AS POSSIBLE AND BE PROPERLY BARRICADED IN ORDER TO PREVENT ANY EQUIPMENT OBSTRUCTION WITHIN THE TRAVEL LANE.

ALL CONTRACTORS DOING WORK WITHIN STATE RIGHT OF WAY ARE TO HAVE A COPY OF THESE PLANS ON THE JOB SITE.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WITHIN 5' OF AN OPEN TRAVEL LANE, THE CONTRACTOR SHALL CLOSE THE OPEN TRAVEL LANE ADJACENT TO THE WORK AREA USING APPROPRIATE TRAFFIC CONTROL MEANS AND METHODS UNLESS WORK IN THAT AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

THE CONTRACTOR SHALL NOT WORK SIMULTANEOUSLY ON BOTH SIDES OF AN OPEN TRAVEL WAY WITHIN THE SAME LOCATION ON A TWO-LANE, TWO-WAY ROAD.

THE MAXIMUM LENGTH OF A LANE CLOSURE ON THE PROJECT SHALL BE ONE MILE, MEASURED FROM THE BEGINNING OF THE MERGE TAPER TO THE END OF THE LANE CLOSURE.

THE CONTRACTOR SHALL BACKFILL AT 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS A DROP-OFF OF MORE THAN 3'.

WHEN BACKFILL IS REQUIRED, IT SHALL BE AT NO EXPENSE TO THE OWNER.

THE MAXIMUM DIFFERENCE IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC SHALL BE 2".

WHEN LANE CLOSURES ARE NOT IN EFFECT, CHANNELIZING DEVICES IN WORK AREAS SHALL BE SPACED NO GREATER THAN TWICE THE POSTED SPEED LIMIT, EXCEPT BY ON-CENTER IN RADI, AND SHALL BE SET 3' OFF THE EDGE OF AN OPEN TRAVELWAY.

DURING INSTALLATION, PROPER TRAFFIC CONTROL DEVICES, SIGNS, ETC. BE INSTALLED TO ENSURE PUBLIC SAFETY IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S STANDARDS AND SPECIFICATIONS.

ALL DISTURBED AREAS ARE TO BE FULLY RESTORED TO NCDOT MINIMUM ROADWAY STANDARDS.

MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE NCDOT ROADWAY STANDARDS AND SPECIFICATIONS (LATEST EDITION).

DRAINAGE NOTES

1. ALL DRAINAGE STRUCTURES SHALL BE PIPE-CAST.
2. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY.
3. CATCH BASINS, MANHOLES, FRAMES, GRATES, ETC. SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD DETAILS AND SPECIFICATIONS.
4. STORM PIPE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
TYPE 1: RCP, CLASS IV PER ASTM C-76, WITH FLEXIBLE PLASTIC BITUMEN GASKETS AT JOINTS.
TYPE 2: HIGH DENSITY POLYETHYLENE PIPE (HDPE) - AASHTO DESIGNATION M252 TYPE S, M24, TYPE S AND M27-97 TYPE S, SMOOTH INTERIOR/ANNUAR EXTERIOR. ONLY PERMITTED WHEN SPECIFICALLY INDICATED ON THE CONSTRUCTION DRAWINGS. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTALLATION GUIDELINES. PIPE JOINTS AND FITTINGS SHALL CONFORM TO AASHTO M252 AND M24.
TYPE 3: RCP, CLASS IV PER ASTM C-76, WITH FLEXIBLE PLASTIC BITUMEN GASKETS AT JOINTS.
5. ALL STORM DRAINAGE WITHIN THE PUBLIC RIGHT-OF-WAY OR PUBLIC EASEMENTS SHALL BE CLASS IV REINFORCED CONCRETE PIPE PER ASTM C-76, WITH FLEXIBLE PLASTIC BITUMEN GASKETS AT JOINTS.
6. A MINIMUM GRADE OF 0.50% SHALL BE MAINTAINED ON ALL PIPES, UNLESS OTHERWISE NOTED.
7. ALL PIPE LENGTHS AND SLOPES ARE APPROXIMATE.
8. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
9. EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED, AND EXISTING PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS.
10. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
A. NO MORE THAN 500 LF OF TRENCH MAY BE OPENED AT ONE TIME.
B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPBELL SIDE OF TRENCHES.
C. EFFLUENT FROM DE-WATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTTLE, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
D. MATERIAL USED FOR BACK-FILLING TRENCHED SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
E. DESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL REGULATIONS.
F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
11. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
12. ALL STORM PIPES ENTERING STRUCTURES SHALL BE GROUDED OR SEALED TO MANUFACTURE'S SPECIFICATIONS TO ASSURE CONNECTION AT STRUCTURE IS WATER TIGHT.
13. ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT FROM INVERT IN TO INVERT OUT.
14. ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT, AND SHALL HAVE TRAFFIC BEARING RING & COVERS. MANHOLES IN UNPAVED AREAS SHALL BE 6" ABOVE FINISH GRADE. LOS SHALL BE LABELED "STORM SEWER".
15. STRUCTURE TOP ELEVATIONS SHOWN HERE ARE APPROXIMATE. CONTRACTOR SHALL ADJUST AS NECESSARY.
16. RIM ELEVATIONS AS NOTED ARE TO THE GUTTER FLOW LINE.

GRADING NOTES

1. REFER TO THE SITE PLAN FOR RELATED NOTES.
2. ALL CONTOURS AND SPOT ELEVATIONS REFLECT FINISHED GRADES.
3. ALL ELEVATIONS ARE IN REFERENCE TO THE BENCHMARK, AND THIS MUST BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO GRADING BEGINNING.
4. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO OWNER ANY DISCREPANCIES FOUND BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION DOCUMENTS AND SHALL WAIT FOR INSTRUCTION PRIOR TO PROCEEDING.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES, AND SHALL REPAIR ALL DAMAGE TO EXISTING UTILITIES THAT OCCUR DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY TO TRANSITION BACK TO EXISTING GRADE.
7. LIMITS OF CLEARING SHOWN ON GRADING PLAN ARE BASED UPON THE APPROXIMATE CUT AND FILL SLOPE LIMITS, OR OTHER GRADING REQUIREMENTS.
8. THE PROPOSED CONTOURS SHOWN IN DRIVES AND PARKING LOTS AND SIDEWALKS ARE FINISHED ELEVATIONS INCLUDING ASPHALT. REFER TO PAVEMENT CROSS SECTION DATA TO ESTABLISH CORRECT SUBBASE OR AGGREGATE BASE COURSE ELEVATIONS TO BE COMPLETED UNDER THIS CONTRACT.
9. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE, SO THAT RUNOFF WILL DRAIN BY GRAVITY FLOW ACROSS NEW PAVEMENT AREAS TO NEW OR EXISTING DRAINAGE INLETS OR SHEET OVERLAND.
10. ANY GRADING, BEYOND THE LIMITS OF CONSTRUCTION AS SHOWN ON THE GRADING PLAN, IS SUBJECT TO A FINE.
11. GRADING WITHOUT AN APPROVED EROSION CONTROL PLAN IS SUBJECT TO A FINE.
12. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON OPENED AREAS AND ESPECIALLY WHEN THE CONSTRUCTION SEQUENCE REQUIRES IT.
13. ALL GRADED SLOPES ARE TO BE SEEDDED OR LANDSCAPED WITHIN 15 DAYS OF COMPLETION OF GRADING. ALL REMAINING AREAS ARE TO BE SEEDDED WITHIN 30 DAYS.
14. EXISTING GRADES, CONTOURS, UTILITIES AND OTHER EXISTING FEATURES FROM FIELD ROUN SURVEY.
15. THE CONTRACTOR SHALL INCLUDE IN THE CONTRACT PRICE ANY DEWATERING NECESSARY TO CONSTRUCT THE PROJECT AS SHOWN ON THE PLANS.
16. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL SHEETING, SHORING, BRACING AND SPECIAL EXCAVATION MEASURES REQUIRED TO MEET USUAL, FEDERAL, STATE, AND LOCAL REGULATIONS PURSUANT TO THE INSTALLATION OF THE WORK INDICATED ON THESE DRAWINGS. THE DESIGN ENGINEER ACCEPTS NO RESPONSIBILITY FOR THE DESIGNER'S TO INSTALL SAID ITEMS.
17. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATION, ELEVATION, AND DIMENSIONS OF EXIT DOORS, RAMPS, BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
18. ALL FILL MATERIALS, EXISTING BUILDING FOUNDATIONS, PAVEMENT AND UTILITY STRUCTURES, TOPSOIL, AND ANY OTHER DELETERIOUS MATERIALS SHALL BE COMPLETELY REMOVED FROM WITHIN THE BEARING ZONE BELOW THE STRUCTURE.
19. ALL FOUNDATION EXCAVATION SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL REPRESENTATIVE TO DETERMINE WHETHER UNSATURABLE MATERIAL MUST BE REMOVED. ALL UNSATURABLE MATERIAL SHALL BE REMOVED, BACKFILLED AND COMPACTED AS REQUIRED BY THE GEOTECHNICAL REPRESENTATIVE.
20. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED OR DEPICTED.
21. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE GENERAL N.P.D.E.S. PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
22. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
23. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
24. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER.
25. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.

SEDIMENT & EROSION CONTROL NOTES

1. THE EROSION AND SEDIMENTATION CONTROL MEASURES (EMPS) WERE DESIGNED USING THE NORTH CAROLINA NCEC & WAKE COUNTY REQUIREMENTS AND SHALL BE INSTALLED ACCORDINGLY. CONTRACTOR SHALL PERFORM ALL ACTIVITIES IN STRICT COMPLIANCE WITH THE NORTH CAROLINA NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (GENERAL PERMIT).
2. REFER TO THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS FOR EROSION CONTROL DETAILS AND DESIGN TABLES FOR SEDIMENT BASINS, DIVERSION DITCHES, AND CULVERTS, SLOPE DRAINS, RIP-RAP APPROXS AND OTHER EROSION CONTROL MEASURES.
3. EXISTING BOUNDARIES, TOPOGRAPHY, 100-YR FLOODPLAIN, UTILITY AND ROAD INFORMATION TAKEN FROM AN EXISTING CONDITIONS SURVEY. ALL EXISTING INFORMATION IS TO BE FIELD VERIFIED BY THE CONTRACTOR.
4. SEE THE LANDSCAPE PLAN FOR LOCATIONS OF PROPOSED PLANTINGS AND FINAL STABILIZATION.
5. TEMPORARY DIVERSION DITCHES AND BERMS SHALL BE MAINTAINED AS THE SITE IS BROUGHT TO GRADE.
6. DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES TO MINIMIZE EROSION. THE CONTRACTOR SHALL MAINTAIN CLOSE CONTACT WITH THE EROSION CONTROL INSPECTORS SO THAT PERIODIC INSPECTIONS CAN BE PERFORMED AT APPROPRIATE STAGES OF CONSTRUCTION.
7. SEE THE GENERAL NOTES SHEET AND THE GRADING AND DRAINAGE PLAN FOR OTHER NOTES REGARDING GRADING ACTIVITIES.
8. SEE SITE PLAN, GRADING AND DRAINAGE PLAN, UTILITY PLAN, PLANTING PLAN AND OTHER PLAN SHEETS FOR DETAILED DESIGN INFORMATION OF PERMANENT SITE APPEARANCES SHOWN ON THIS SHEET.
9. WHERE THE LIMITS OF DISTURBANCE AND TEMPORARY FENCE (SF, SF-PF, OR PF) LIMITS ARE ADJACENT, THE TEMPORARY FENCE LINE IS THE LIMITS OF DISTURBANCE. THE LINE TYPES ARE SHOWN SEPARATED FOR ILLUSTRATIVE PURPOSES ONLY.
10. CONTRACTOR SHALL NOT DISTURB ANY EXISTING VEGETATIVE GROUND COVER OR TREES OUTSIDE OF THE LIMITS OF DISTURBANCE OR WITHIN ANY REQUIRED BUFFER LIMITS UNLESS OTHERWISE NOTED OR ILLUSTRATED.
11. PROVIDE CONTROLS OF POLLUTANTS, INCLUDING, BUT NOT LIMITED TO DUST CONTROL, DE-WATERING, SOLID WASTE DISPOSAL, AND HAZARDOUS MATERIALS.
12. CLEAR ONLY AS REQUIRED TO INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES. MASS CLEARING AND GRUBBING CAN BEGIN ONE MONTH AFTER ALL DOWNSTREAM MEASURES HAVE BEEN INSTALLED.
13. USE ROCK OR WASHED STONE TO BRING CONSTRUCTION EXIT TO GRADE. IMPLEMENT WHEEL WASHES AS NECESSARY THROUGHOUT ALL PHASES OF CONSTRUCTION.
14. DIVERT STORM WATER RUNOFF OFF THE FACE OF THE SEDIMENT BASIN SLOPES USING DIVERSION DITCHES AND SLOPE DRAINS. CONTRACTOR SHALL MAINTAIN AND RELOCATE DIVERSION DITCHES AND SLOPE DRAINS TO ENSURE STORM WATER RUNOFF DOES NOT ERODE THE FACE OF FINAL SLOPES.
15. MAINTAIN POSITIVE FLOW TO THE SEDIMENT BASINS THROUGHOUT ALL PHASES OF CONSTRUCTION. PLACE EXCAVATED SOILS ALONG DOWNSTREAM EDGE OF THE DIVERSION DITCHES TO PROVIDE ADDITIONAL CAPACITY.
16. REFER TO THE GRADING AND DRAINAGE PLAN FOR FINAL SITE AND PAVEMENT GRADES AND ELEVATIONS OF THE PROPOSED STORM SEWER SYSTEMS.
17. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE APPROVED EROSION AND SEDIMENT CONTROL DRAWINGS DURING CONSTRUCTION OPERATIONS.
18. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
19. ALL WORK SHALL BE CONFINED TO PERMIT LIMITS SHOWN ON PLANS UNLESS OTHERWISE NOTED; THE SITE PLAN PROPERTY LIMITS SHALL BE CONSIDERED THE PERMIT LIMITS.
20. SUFFICIENT EROSION CONTROL PRACTICES MUST BE INSTALLED AND MAINTAINED TO RETAIN SEDIMENT WITHIN THE BOUNDARIES OF THE SITE.
21. ADDITIONAL EROSION CONTROL MEASURES OR SILT BARRIERS TO BE PLACED AS SHOWN AND/OR DIRECTED BY THE PROJECT ENGINEER AND/OR LOCAL JURISDICTIONAL INSPECTOR.
22. FOR ALL CONSTRUCTION ALONG AND/OR ACROSS WATERWAYS, BANK PROTECTION AND STABILIZATION SHALL BE REQUIRED AS PER LOCAL JURISDICTIONAL EROSION CONTROL LAWS.
23. ALL TREE PROTECTION AND EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION AND SHALL BE MAINTAINED IN PROPER WORKING ORDER UNTIL ALL DISTURBED AREAS ARE STABILIZED AND GROUND COVER IS ESTABLISHED. CONSTRUCTION ENTRANCE PADS SHALL BE INSTALLED BY THE CONTRACTOR AT CONSTRUCTION ACCESS POINTS PRIOR TO LAND DISTURBANCE.
24. ALL EASEMENTS DISTURBED MUST BE DRESSED AND GRASSED TO CONTROL EROSION IN ACCORDANCE WITH EASEMENT PLAYS PRIOR TO ACCEPTANCE.
25. CONSTRUCTION LIMITS SHALL NOT BE EXCEEDED WITHOUT THE APPROVAL OF WAKE COUNTY OR NCEC.

WAKE COUNTY STOCKPILE NOTES

- DESIGN CRITERIA
- A 25-FOOT TEMPORARY MAINTENANCE AND ACCESS EASEMENT SHALL BE SHOWN AROUND ALL PROPOSED STOCKPILES (EROSION CONTROL MEASURES SURROUNDING THE STOCKPILE SHALL BE SHOWN AT THE OUTER LIMIT OF THIS EASEMENT).
 - STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
 - A NOTE SHALL BE PROVIDED ON THE APPROVED PLAN THAT STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
 - STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
 - APPROVED BMPs SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.
 - STOCKPILING MATERIALS ADJACENT TO A DITCH, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM BUFFER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS DEMONSTRATED TO BE UNAVAILABLE.
 - ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.
 - OFF-SITE SPILL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDD AND STATE REGULATIONS. ALL SPILL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY WAKE COUNTY OF ANY OFFSITE DISPOSAL OF SOIL, PRIOR TO DISPOSAL. FILL OF FEMA FLOODWAYS AND NON-ENCROACHMENT AREAS ARE PROHIBITED EXCEPT AS OTHERWISE PROVIDED BY SUBSECTION 19-2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).
- MAINTENANCE REQUIREMENTS TO BE NOTED ON THE PLAN
- SEEDING OR COVERING STOCKPILES WITH TAPPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TAPPS SHOULD BE KEPT IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
 - IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
 - THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.
 - ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

GENERAL NOTES

1. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL INSPECTIONS, CERTIFICATIONS, EQUIPMENT, ETC. THAT MAY BE REQUIRED.
2. THE CONTRACTOR SHALL NOTE THAT THE DRAWINGS ARE SCHEMATIC IN NATURE AND DO NOT SHOW EVERY OFFSET, TRANSITION, FITTING, ETC. THAT MAY BE REQUIRED FOR A COMPLETE AND WORKING SYSTEM.
3. THE ENGINEER AND/OR OWNER DISCLAIM ANY ROLE IN THE CONSTRUCTION MEANS AND METHODS ASSOCIATED WITH THE PROJECT AS SET FORTH IN THESE PLANS.
4. CONTRACTOR SHALL MAINTAIN AN "AS BUILT" SET OF DRAWINGS TO RECORD THE EXACT LOCATION OF ALL PIPING PRIOR TO CONEALMENT. DRAWINGS SHALL BE GIVEN TO THE ENGINEER UPON COMPLETION OF THE PROJECT WITH A COPY OF THE TRANSMITTAL LETTER TO THE OWNER.
5. IF DEPARTURES FROM THE SPECIFICATIONS OR DRAWINGS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEPARTURES AND REASONS THEREOF SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. NO DEPARTURES FROM THE CONTRACT DOCUMENTS SHALL BE MADE WITHOUT THE WRITTEN PERMISSION OF THE OWNER.
6. THE CONTRACTOR MUST, AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY HIM, HIS EMPLOYEES OR HIS WORK. ALL DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE ON A DAILY BASIS.

WAKE COUNTY CONSTRUCTION SEQUENCE

1. SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER, ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560 OBTAIN A LAND-DISTURBING PERMIT.
2. INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SHOWER BASINS, WAKE COUNTY SHOWER BASIN OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
3. CALL ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560 FOR AN ONSITE INSPECTION BY THE WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE.
4. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
5. INSTALL STORM SEWER IN SHOWN, AND PROTECT CATCH BASIN CURB INLETS WITH BLOCK AND GRAVEL INLET CONTROLS, PROTECT AREA DRAINWAY INLETS WITH STANDARD INLET PROTECTION, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION, BUILDING, ETC.
6. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. PREPARE A SEEDBED, FERTILIZE, LIME, SEED, MULCH AND ASPHALT TACK ALL DENDED AREAS WITHIN NPDES STABILIZATION TIMEFRAME OF COMPLETION OF ANY PHASE OF CONSTRUCTION OR STOPPAGE OF WORK ON ANY PHASE OF CONSTRUCTION.
7. CONTRACTOR TO CONTACT PROJECT ENGINEER BETWEEN SEDIMENT AND EROSION CONTROL PHASES OF DEVELOPMENT AND FOR THE REMOVAL OR CONVERSION OF SEDIMENT AND EROSION CONTROL MEASURES.
8. WAKE COUNTY OR JURISDICTIONAL MUNICIPALITY MUST GRANT PERMISSION TO CONVERT THE SEDIMENT BASIN OVER TO STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
9. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560 FOR AN INSPECTION BY THE WATERSHED MANAGER.
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, CALL FOR A FINAL SITE INSPECTION BY THE WATERSHED MANAGER, ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560, OBTAIN A CERTIFICATE OF COMPLETION.

EROSION CONTROL NOTES

1. TOTAL SITE AREA = S.O. ACRES
TOTAL AREA DISTURBED = S.O. ACRES
2. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE NCEC EROSION AND SEDIMENT CONTROL HANDBOOK.
3. THE CONTRACTOR SHALL INSTALL AND MAINTAIN THROUGHOUT THE PROJECT CONSTRUCTION ALL EROSION CONTROL MEASURES SHOWN WITHIN THESE PLANS IN ACCORDANCE WITH APPLICABLE NORTH CAROLINA EROSION AND SEDIMENT CONTROL REGULATIONS.
4. CONSTRUCTION WORK SHALL BE IN COMPLIANCE WITH REGULATIONS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER GENERAL PERMIT.
5. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO CLEARING AND/OR LAND DISTURBANCE.
6. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND PERMIT SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
7. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES TO MINIMIZE EROSION. THE CONTRACTOR SHALL MAINTAIN CLOSE CONTACT WITH THE NCEC & WAKE COUNTY EROSION CONTROL INSPECTOR SO THAT PERIODIC INSPECTIONS CAN BE PERFORMED AT APPROPRIATE STAGES OF CONSTRUCTION.
8. APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED FROM THE AFFECTED PROPERTY OWNERS. A REVISED PLAN SHOWING OFF-SITE IMPACTS SHOULD BE SUBMITTED AND APPROVED PRIOR TO ANY OFF-SITE GRADING. CONTACT PROJECT ENGINEER AND PROJECT EROSION CONTROL INSPECTOR TO ENSURE ADDITIONAL EROSION CONTROL MEASURES ARE INSTALLED PRIOR TO OFF-SITE GRADING.
9. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO OFF-SITE BORROW OR WASTE AREAS, STAGING OR STORAGE AREAS), THE CONTRACTOR SHALL PREPARE AND SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND TO NCEC & WAKE COUNTY FOR APPROVAL. CONTRACTOR SHALL PAY ALL FEES REQUIRED AND SHALL INSTALL NECESSARY MEASURES AT NO SEPARATE PAYMENT. THE CONTRACTOR SHALL PROVIDE THE OWNER AND THE ENGINEER A COPY OF THE AMENDED PERMIT.
10. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY, AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDING AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RE-SEED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
11. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. ALL DISTURBED AREAS WHICH ARE NOT OTHERWISE STABILIZED SHALL BE TOP SOILED AND SEEDDED, TEMPORARILY OR PERMANENTLY IN ACCORDANCE WITH THE NCEC & WAKE COUNTY SEDIMENT CONTROL REGULATIONS. PERMANENT SEEDING AND GRASS ESTABLISHMENT IS REQUIRED PRIOR TO PROJECT COMPLETION AND ACCEPTANCE.
12. WHEN A CRUSHED STONE CONSTRUCTION ENTRANCE HAS BEEN COVERED WITH SOIL OR HAS BEEN PUSHED INTO THE SOIL BY CONSTRUCTION TRAFFIC, IT SHALL BE REPLACED WITH A DEPTH OF STONE EQUAL TO THAT OF THE ORIGINAL APPLICATION.
13. TEMPORARY GRAVEL CONSTRUCTION ENTRANCE SHALL BE REQUIRED AT ALL CONSTRUCTION STAGING AREA ENTRANCES AND ALL CONSTRUCTION ACCESS LOCATIONS INTO NON-PAVED AREA. SIX INCHES OF STONE SHALL BE USED FOR THE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE.
14. ALL DRAINAGE INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
15. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UP-SLOPE LAND DISTURBANCE TAKES PLACE.
16. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS COMPLETED.
17. DURING DE-WATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE PRIOR TO DISCHARGE TO RECEIVING OUTLET.
18. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

TREE PROTECTION NOTES

1. THE CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS OUTSIDE OF CUT/FILL LINES, IN ADDITION TO THOSE THAT RECEIVE TREE/SHRUB PROTECTION BARRIERS. THE CONTRACTOR IS ALSO REQUESTED TO SAVE ALL OTHER EXISTING TREES AND SHRUBS WHERE POSSIBLE.
2. WHEN ROOT PRUNING IS NECESSARY, CUT ROOTS CLEANLY USING A DISC TRENCHER AND IMMEDIATELY COVER ALL ROOT CUT SURFACES LARGER THAN TWO INCHES IN DIAMETER WITH TREE WOUND DRESSING. USE PLWOOD FORMS WHEN TREE ROOTS ARE ADJACENT TO PROPOSED CURB & GUTTER OR SIDEWALK.
3. NO SOIL DISTURBANCE OR COMPACTION, CONSTRUCTION MATERIALS, TRAFFIC, BURIAL PITS, TRENCHING OR OTHER LAND DISTURBING ACTIVITY ALLOWED IN THE TREE PROTECTION ZONE. TREE BARRICADES MUST BE INSTALLED BEFORE ANY DEMOLITION, GRADING OR CONSTRUCTION BEGINS, AND NOT REMOVED UNTIL FINAL INSPECTION.
4. NO GRUBBING WITHIN TREE PROTECTION ZONE. LEAVE SOIL AND LEAF LITTER UNDISTURBED. SUPPLEMENT WITH 1-2 INCHES OF MULCH. RE-SEED WITH GRASS ONLY IN DISTURBED/GRADED AREAS.
5. TREE BARRICADES MUST BE INSTALLED BEFORE ANY DEMOLITION, CLEARING, GRADING OR CONSTRUCTION BEGINS AND IS NOT TO BE REMOVED UNTIL AFTER CONSTRUCTION.
6. TREE PROTECTION FENCE IS TO BE LOCATED 1 FOOT PER TREE DIAMETER INCH AWAY FROM THE TREE.

NORTH CAROLINA CONSTRUCTION GENERAL PERMIT NOTE

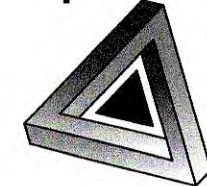
As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (NOI) form requesting a Certificate of Coverage (COC) under the NCG010000 Construction Stormwater General Permit. This form MUST be submitted prior to the commencement of any land disturbing activity on the above named project. The NOI form may be accessed at deq.nc.gov/NCG01. Please direct questions about the NOI form to Annette Lucas at Annette.lucas@ncdenr.gov or Paul Clark at Paul.clark@ncdenr.gov.

After you submit a complete and correct NOI Form, a COC will be emailed to you within three business days. Initially, DCEMR will not charge a fee for coverage under the NCG01 permit. However, on or after May 1, 2019, a \$100 fee will be charged annually. This fee is to be sent to the DCEMR Stormwater Central Office staff in Raleigh.

Title 15A NCAC 48. 0118(a) and the NCG01 permit require that the following documentation be kept on file at the job site:

1. The approved EDCS plan as well as any approved deviation.
2. The NCG01 permit and the COC, once it is received.
3. Records of inspections made during the previous 30 days.

TRIANGLE
SITE
DESIGN



CONSULTANT:

TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609

(919) 553-6570

NC LICENSE# P-0619

mlover@trianglesitedesign.com



Matthew E. Lovelace

OWNER/DEVELOPER:

The Lawson, LLC

Attn: Daniel Tharrington

252-432-1172

349 Rain Creek Road

Henderson, NC 27536

daniel@igbnc.com

www.igbnc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:

053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS	No.	Date	Desc.
	1	8/28/19	REVISED PER TOWN REVIEW
	2	8/28/19	ADJUSTED SITE GRADING
	3	9/10/19	ADJUSTED PER TOWN & WAKE COUNTY REVIEW
	4	9/10/19	ADJUSTED PER TOWN REVIEW

Drawn

Checked

Approved

Project No.

Date:

Title

DEMOLITION NOTES

1. ALL WORK TO BE ACCOMPLISHED IN STRICT ACCORDANCE WITH ALL LOCAL ORDINANCES, CITY OR STATE.
2. WITHIN THE SUBJECT PROPERTY, THE INTENT IS TO HAVE A CLEAN, CLEAR SITE, FREE OF ALL EXISTING ITEMS NOTED TO BE REMOVED IN ORDER TO PERMIT THE CONSTRUCTION OF THE NEW PROJECT.
3. ALL ITEMS NOTED TO BE REMOVED BY THE SELLER SHALL BE ACCOMPLISHED PRIOR TO THE CLOSING OF THE REAL ESTATE TRANSACTION. ALL OTHER ITEMS NOTED TO BE REMOVED SHALL BE DONE SO AS PART OF THE CONTRACT FOR GENERAL CONSTRUCTION.
4. REMOVE AND DISPOSE OF ANY SIDEWALKS, FENCES, STAIRS, WALLS, DEBRIS AND RUBBISH REQUIRING REMOVAL FROM THE WORK AREA IN AN APPROVED OFF-SITE LANDFILL.
5. THE CONTRACTOR SHALL SECURE ALL PERMITS FOR HIS DEMOLITION AND DISPOSAL OF HIS DEMOLITION MATERIAL TO BE REMOVED FROM THE SITE. THE CONTRACTOR SHALL POST BONDS AND PAY PERMIT FEES AS REQUIRED. BUILDING DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE FOR PERMITS AND DISPOSAL OF BUILDING DEMOLITION DEBRIS.
6. THE DETAILED PLANS MAY NOT REFLECT ALL UTILITIES ON THE SITE OR SURROUNDING STREETS AND PROPERTIES. THE CONTRACTOR SHALL VERIFY LOCATIONS AND EXISTENCE OF UTILITY SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL UTILITY LOCATE, 72 HOURS PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR TO REMOVE ALL UTILITIES TO EXISTING STRUCTURES WHETHER SHOWN OR NOT OR ARRANGE FOR THE APPROPRIATE UTILITY COMPANY TO CUT AND CAP SERVICE PIPING AT THE PROPERTY LINE OR MAIN (AS REQUIRED). ALL SERVICES MAY NOT BE SHOWN ON THIS PLAN.
8. FOR ALL ITEMS NOTED TO BE REMOVED - REMOVE NOT ONLY THE ABOVE-GROUND ELEMENTS, BUT ALL UNDERGROUND ELEMENTS AS WELL INCLUDING BUT NOT NECESSARILY LIMITED TO: FOUNDATIONS, GRAVEL PILLS, TREE ROOTS, OLD PIPES, ETC.
9. BACK-FILL ALL EXCAVATIONS RESULTING FROM THE DEMOLITION WORK TO MEET THE REQUIREMENTS FOR FILL OUTLINED IN THE GEOTECHNICAL REPORT.
10. THE CONTRACTOR SHALL PROTECT ALL IRON PINS, MONUMENTS AND PROPERTY CORNERS DURING CONSTRUCTION. ANY CONTRACTOR DISTURBED PINS, MONUMENTS, ETC. SHALL BE RESET BY A LICENSED LAND SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.
11. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPES, PAVEMENT, CURBS, SIDEWALKS OR LANDSCAPED AREAS DISTURBED DURING DEMOLITION TO THEIR ORIGINAL CONDITION TO THE SATISFACTION.
12. ALL BUILDINGS, FOUNDATION WALLS AND FOOTINGS INDICATED ON THIS PLAN TO BE REMOVED FROM SITE. CONTRACTOR SHALL SECURE ANY PERMITS AND PAY ALL FEES AND PERFORM CLEARING AND GRUBBING AND DEBRIS REMOVAL PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.
13. ALL BUILDINGS, FOUNDATION WALLS AND FOOTINGS INDICATED ON THIS PLAN TO BE REMOVED FROM SITE. CONTRACTOR SHALL SECURE ANY PERMITS AND PAY ALL FEES AND PERFORM CLEARING AND GRUBBING AND DEBRIS REMOVAL PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.
14. ASBESTOS AND ANY OTHER HAZARDOUS MATERIAL SHALL BE REMOVED BY THE GENERAL CONTRACTOR USING A LICENSED HAZARDOUS MATERIAL CONTRACTOR.

DEMOLITION LEGEND

- BUILDINGS TO BE REMOVED
- PAVEMENT TO BE REMOVED
- UTILITIES TO BE REMOVED
- TREES TO BE REMOVED - REFER TO ENVIRONMENTAL SURVEY NOTE & TREE REPLACEMENT NOTE THIS SHEET

EXISTING TREE NOTE

ALL EXISTING TREES THAT ARE NOTED TO REMAIN SHALL BE MONITORED AFTER CONSTRUCTION BEGINS TO ENSURE THAT THE TREE'S HEALTH HAS NOT BEEN COMPROMISED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY TREES THAT FAIL TO MAINTAIN GOOD HEALTH AFTER CONSTRUCTION BEGINS.



ACCESS MONUMENT "TOWERED" #1 4" IRON PILE 2" DIAMETER 2000000 LBS. COMBINED SCALE FACTOR 0.0000014

PIN 1754-05-2651 WALMART REAL ESTATE BUSINESS TRUST 12.25 AC. ZONING: HB LAND USE: SHOPPING CENTER

PIN 1754-05-2637 KNIGHT VENTURES LLC 2.55 AC. ZONING: HB LAND USE: SHOPPING CENTER

PIN 1754-05-0889 MOBILE PROPERTIES USA LLC 15.0 AC. ZONING: HB LAND USE: SHOPPING CENTER

PIN 1754-05-0889 MOBILE PROPERTIES USA LLC 15.0 AC. ZONING: HB LAND USE: VACANT

REMANANT OF TRACT 2 REMOVED BY BNY PER PG 872 DB 8535, PG 1259 AREA= 2500.19 SF, 0.06 AC

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

CAUTIONARY NOTE

THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THIS DRAWING ARE BASED ON ABOVE GROUND EVIDENCE OR INFORMATION GATHERED DURING THE FIELD SURVEY PORTION OF THIS PROJECT. AS SUCH, THIS INFORMATION IS SPECULATIVE IN NATURE. ONLY AND SHOULD NOT BE CONSIDERED AS FACT. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF ANY AND ALL CONSTRUCTION.

EROSION CONTROL NOTES:

AN EROSION AND SEDIMENTATION CONTROL PERMIT SHALL BE REQUIRED BY WAKE COUNTY PRIOR TO START OF CONSTRUCTION.

SURVEY NOTE:

ALL EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A LAND SURVEY PREPARED BY: ANGLE RIGHT LAND SURVEYING, PLLC

STREAM/WETLAND NOTE:

THERE ARE NO JURISDICTIONAL STREAM AND/OR WETLAND FEATURES ON THE PROPOSED DEVELOPMENT PARCEL.

FLOOD ZONE NOTE:

SUBJECT PROPERTY IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE PER FEMA FLOOD INSURANCE RATE MAP (FIRM) 8320705400L, EFFECTIVE DATE: MAY 2, 2006. FEMA FIRMS SUBJECT TO CHANGE.

DEMOLITION NOTE

SIDEWALKS TO REMAIN SHALL BE REPAIRED IF DAMAGED DURING CONSTRUCTION

N/F STATE EMPLOYEES CREDIT UNION DB 6171, PG 654 DB 2009, PG 529 PIN 1754-03-24-0002

PIN 1754-04-0638 THE LAWSON, LLC DB 87704, PG 6059 ZONING: MPO LAND USE: RESIDENTIAL

PIN 1754-04-5382 PATNESS SLADE 15.4 AC. ZONING: MPO LAND USE: OFFICE

PIN 1754-04-2364 PAT 10905 1.96 AC. ZONING: MPO LAND USE: POST OFFICE

N/F KNIGHTDALE PROFESSIONAL CENTER, LTD. ET AL DB 10002, PG 449 DB 2005, PG 872 DB 1999, PG 2262 COMD FILE 352, PG 41-47 PIN 1754-04-1468 1.26 AC. ZONING: MPO LAND USE: OFFICE

ENVIRONMENTAL SURVEY

THE LOCATIONS OF EXISTING TREES IS BASED ON A FIELD SURVEY OF THE PROPERTY AS SHOWN ON THE DEMOLITION PLAN. THERE ARE 39 OAK TREES, 1 PINE TREE, AND 20 MAPLE TREES IDENTIFIED ON THE SITE THAT ARE LARGER THAN 24" DBH. 30 OF THE OAK TREES, THE PINE TREE, AND 19 MAPLE TREES ARE NOTED TO BE REMOVED AND THE REMAINING 10 TREES ARE SHOWN TO REMAIN. EXISTING TREES BEING REMOVED MUST BE REPLACED IN ACCORDANCE WITH TABLE 1.000 SECTION 8.5A - SEE CHART THIS SHEET. THE EXISTING WOODED AREAS HAVE A MIXTURE OF DECIDUOUS AND EVERGREEN TREES. THE LIMITS OF GRADING WILL BE LIMITED TO THE EXTENT PRACTICAL TO PRESERVE THE EXISTING WOODED AREAS ON THE SITE. NO ENDANGERED SPECIES ARE LOCATED ON THE SITE. NO HISTORIC STRUCTURES ARE LOCATED ON THE SITE. THERE ARE NO STREAM AND/OR WETLAND FEATURES ON THE PROPERTY AND THE PROPERTY IS OUTSIDE ANY FEMA FLOOD ZONES.

TREE REPLACEMENT CALCULATION

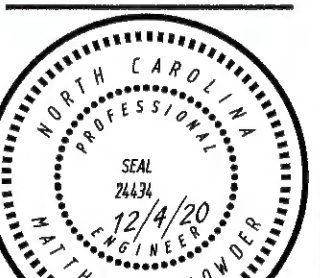
PER TABLE 8.5A OF THE TOWN OF KNIGHTDALE, I.D.D.	
# OF EXISTING TREES = 24" DBH TO BE REMOVED =	47
REPLACED AT 1 TREE PER 12" DBH =	47 TREES REQUIRED
# OF EXISTING TREES = 36" DBH TO BE REMOVED =	3
REPLACED AT 1 TREE PER 12" DBH =	9 TREES REQUIRED
TOTAL # OF REPLACEMENT TREES REQUIRED =	57
# OF REPLACEMENT TREES PROVIDED =	57

EXISTING WELL OR SEPTIC SYSTEM NOTE:

ANY EXISTING WELLS OR SEPTIC SYSTEMS ENCOUNTERED ON THE PROJECT PARCEL ARE TO BE REMOVED PER WAKE COUNTY STANDARD PROCEDURES. THERE ARE NO KNOWN WELLS OR SEPTIC SYSTEMS LOCATED ON THE PROJECT PARCEL.



CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE # P-0619
mowder@trianglesitedesign.com



Matt Ford

OWNER/DEVELOPER:

The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Rain Creek Road
Henderson, NC 27536
daniel@thlnc.com
www.igbnc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:

053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS	No.	Date	Desc.
	1	11/25/20	REVISED OWNER REVIEW
	2	11/25/20	REVISED SITE GRADING
	3	11/25/20	REVISED SITE PLAN & LAND CONVEYANCE
	4	11/25/20	REVISED TREE REMOVAL

Drawn
Checked
Approved

Project No. 000001
Date: December 4, 2020

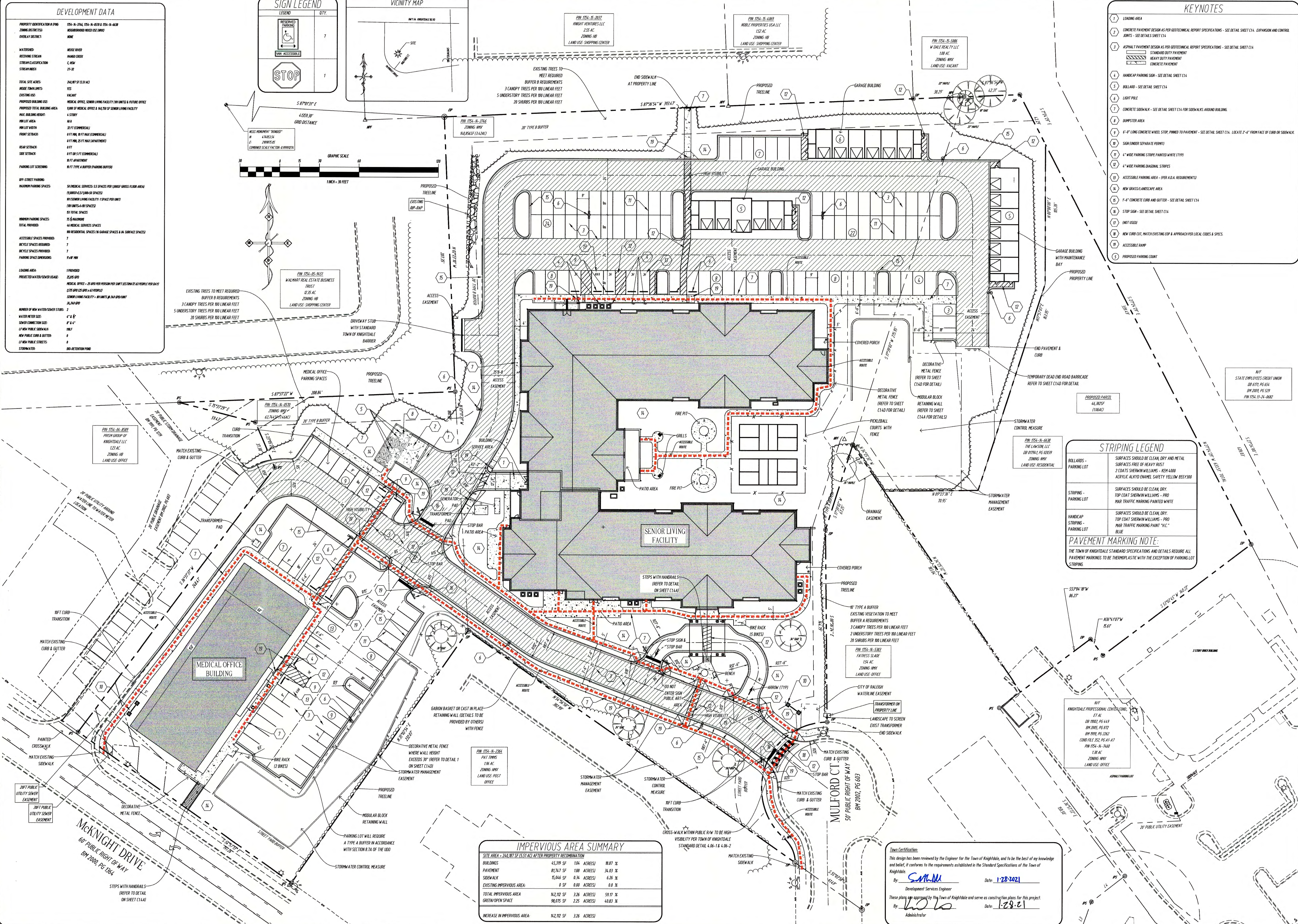
Title

DEMOLITION

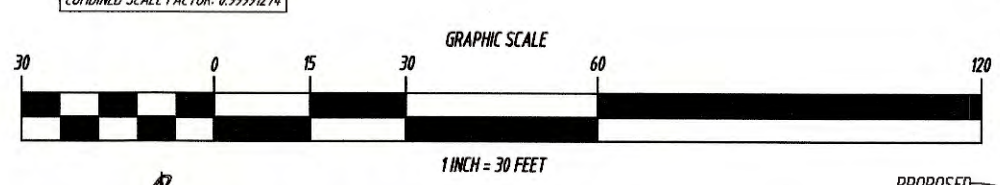
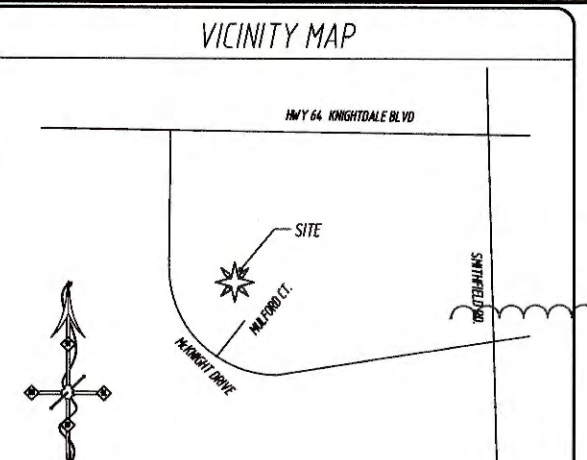
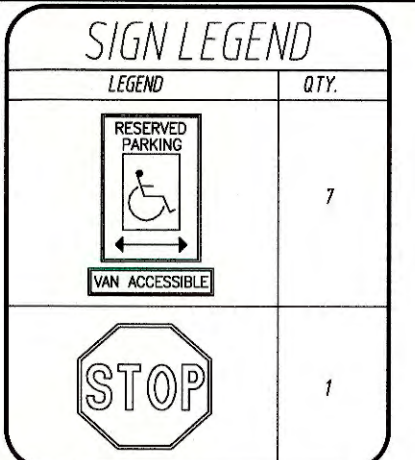
PLAN

Sheet No.

D1.0



DEVELOPMENT DATA	
PROPERTY IDENTIFICATION # (PIN)	1754-15-2021, 1754-15-4639 & 1754-15-4638
ZONING DISTRICT	1754-15-2021, 1754-15-4639 & 1754-15-4638
OVERLAY DISTRICT	NONE
WATERSHED	NEUSE RIVER
RETAINING STREAM	NEUSE RIVER
STREAM CLASSIFICATION	C, NON
STREAM NUMBER	21-28
TOTAL SITE ACRES	24.877 SF (0.51 AC)
MOORE TOWN LIMITS	YES
EXISTING USE	VACANT
PROPOSED BUILDING USE	MEDICAL OFFICE, SENIOR LIVING FACILITY (1 UNIT) & FUTURE OFFICE
PROPOSED TOTAL BUILDING AREA	1,000 SF MEDICAL OFFICE & 1,500 SF SENIOR LIVING FACILITY
MAX BUILDING HEIGHT	4 STORY
MAX LOT AREA	N/A
MAX LOT WIDTH	30 FT (COMMERCIAL)
FRONT SETBACK	0 FT (MIN, 25 FT MAX (COMMERCIAL))
REAR SETBACK	0 FT
SIDE SETBACK	0 FT (OR 5 FT (COMMERCIAL))
PARKING LOT SCREENING	10 FT TYPE A BUFFER (PARKING BUFFER)
OFF-STREET PARKING	50 MEDICAL SERVICES, 55 SPACES PER 1,000 GROSS FLOOR AREA (LANDSCAPED) (LAND-55 SPACES)
MAXIMUM PARKING SPACES	101 (50 MEDICAL SERVICES, 51 SPACE PER UNIT) (101 UNITS @ 81 SPACES)
MINIMUM PARKING SPACES	75 (6 HANDICAP)
TOTAL PARKING	44 MEDICAL SERVICES SPACES
ACCESSIBLE SPACES PROVIDED	7
BICYCLE SPACES PROVIDED	7
PARKING SPACE DIMENSIONS	9'x18' MIN
LOADING AREA	1 PROVIDED
PROTECTED WATER/SEWER USAGE	25,000 GPD
MEDICAL OFFICE - 25,000 GPD PER PERSON PER DAY (ESTIMATE 60 PEOPLE PER DAY)	
SENIOR LIVING FACILITY - 15,000 GPD PER PERSON PER DAY (ESTIMATE 60 PEOPLE PER DAY)	
NUMBER OF NEW WATER/SEWER STUBS	2, 1/4" DIA
WATER METER SIZE	4" & 6"
SEWER CONNECTION SIZE	8" & 12"
17' MIN PUBLIC SIDEWALK	N/A
NEW PUBLIC CURB & GUTTER	0
17' MIN PUBLIC SIDEWALK	0
STORMWATER	DRY-RETENTION POND



- ### KEYNOTES
- LOADING AREA
 - CONCRETE PAVEMENT DESIGN AS PER GEOTECHNICAL REPORT SPECIFICATIONS - SEE DETAIL SHEET C14. EXPANSION AND CONTROL JOINTS - SEE DETAIL SHEET C14
 - ASPHALT PAVEMENT DESIGN AS PER GEOTECHNICAL REPORT SPECIFICATIONS - SEE DETAIL SHEET C14
 - HANDICAP PARKING SIGN - SEE DETAIL SHEET C14
 - BOLLARD - SEE DETAIL SHEET C14
 - LIGHT POLE
 - CONCRETE SIDEWALK - SEE DETAIL SHEET C14 FOR SIDEWALKS AROUND BUILDING
 - DUMPSTER AREA
 - 6'-0" LONG CONCRETE WHEEL STOP, PINNED TO PAVEMENT - SEE DETAIL SHEET C14. LOCATE 2'-6" FROM FACE OF CURB OR SIDEWALK
 - SIGN (UNDER SEPARATE POINT)
 - 4'-0" WIDE PARKING STRIPE PAINTED WHITE (TYP)
 - 4'-0" WIDE PARKING DIAGONAL STRIPE
 - ACCESSIBLE PARKING AREA - (PER A.D.A. REQUIREMENTS)
 - NEW GRASS/LANDSCAPE AREA
 - 1'-6" CONCRETE CURB AND GUTTER - SEE DETAIL SHEET C14
 - STOP SIGN - SEE DETAIL SHEET C14
 - (NOT USED)
 - NEW CURB CUT, MATCH EXISTING EOP & APPROACH PER LOCAL CODES & SPECS
 - ACCESSIBLE RAMP
 - PROPOSED PARKING COUNT

STRIPING LEGEND	
BOLLARDS - PARKING LOT	SURFACES SHOULD BE CLEAN, DRY AND METAL SURFACES FREE OF HEAVY RUST 2 COATS SHERWIN WILLIAMS - PRO ACRYLIC ALUMINUM ENAMEL SAFETY YELLOW B55300
STRIPING - PARKING LOT	SURFACES SHOULD BE CLEAN, DRY. TOP COAT SHERWIN WILLIAMS - PRO MAR TRAFFIC MARKING PAINTED WHITE
HANDICAP STRIPING - PARKING LOT	SURFACES SHOULD BE CLEAN, DRY. TOP COAT SHERWIN WILLIAMS - PRO MAR TRAFFIC MARKING PAINT "H.C." BLUE
PAVEMENT MARKING NOTE: THE TOWN OF KNOXDALE STANDARD SPECIFICATIONS AND DETAILS REQUIRE ALL PAVEMENT MARKINGS TO BE THERMOPLASTIC WITH THE EXCEPTION OF PARKING LOT STRIPING.	

IMPERVIOUS AREA SUMMARY			
SITE AREA = 24.877 SF (0.51 AC) AFTER PROPERTY RECOMBINATION			
BUILDINGS	45,379 SF	1.04 ACRES	18.87 %
PAVEMENT	18,747 SF	0.42 ACRES	7.54 %
SIDEWALK	15,044 SF	0.34 ACRES	6.06 %
EXISTING IMPERVIOUS AREA	0 SF	0.00 ACRES	0.0 %
TOTAL IMPERVIOUS AREA	79,170 SF	1.80 ACRES	32.47 %
GREEN/OPEN SPACE	16,707 SF	0.38 ACRES	6.73 %
INCREASE IN IMPERVIOUS AREA	79,170 SF	1.80 ACRES	32.47 %

Town Certification:
This design has been reviewed by the Engineer for the Town of Knightdale, and to be the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: *[Signature]* Date: 1-28-2021
Development Services Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: *[Signature]* Date: 1-28-21
Administrator

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-4570
NC LICENSE # P-0619
mowder@trianglesitedesign.com

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Rain Creek Road
Henderson, NC 27536
daniel@tharrington.com
www.tharrington.com

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and/or reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS	No.	Date	Desc.
	1	1-28-21	REVISED PER TOWN REVIEW
	2	1-28-21	REVISED PER TOWN REVIEW
	3	1-28-21	REVISED PER TOWN REVIEW
	4	1-28-21	REVISED PER TOWN REVIEW

Drawn: *[Signature]*
Checked: *[Signature]*
Approved: *[Signature]*

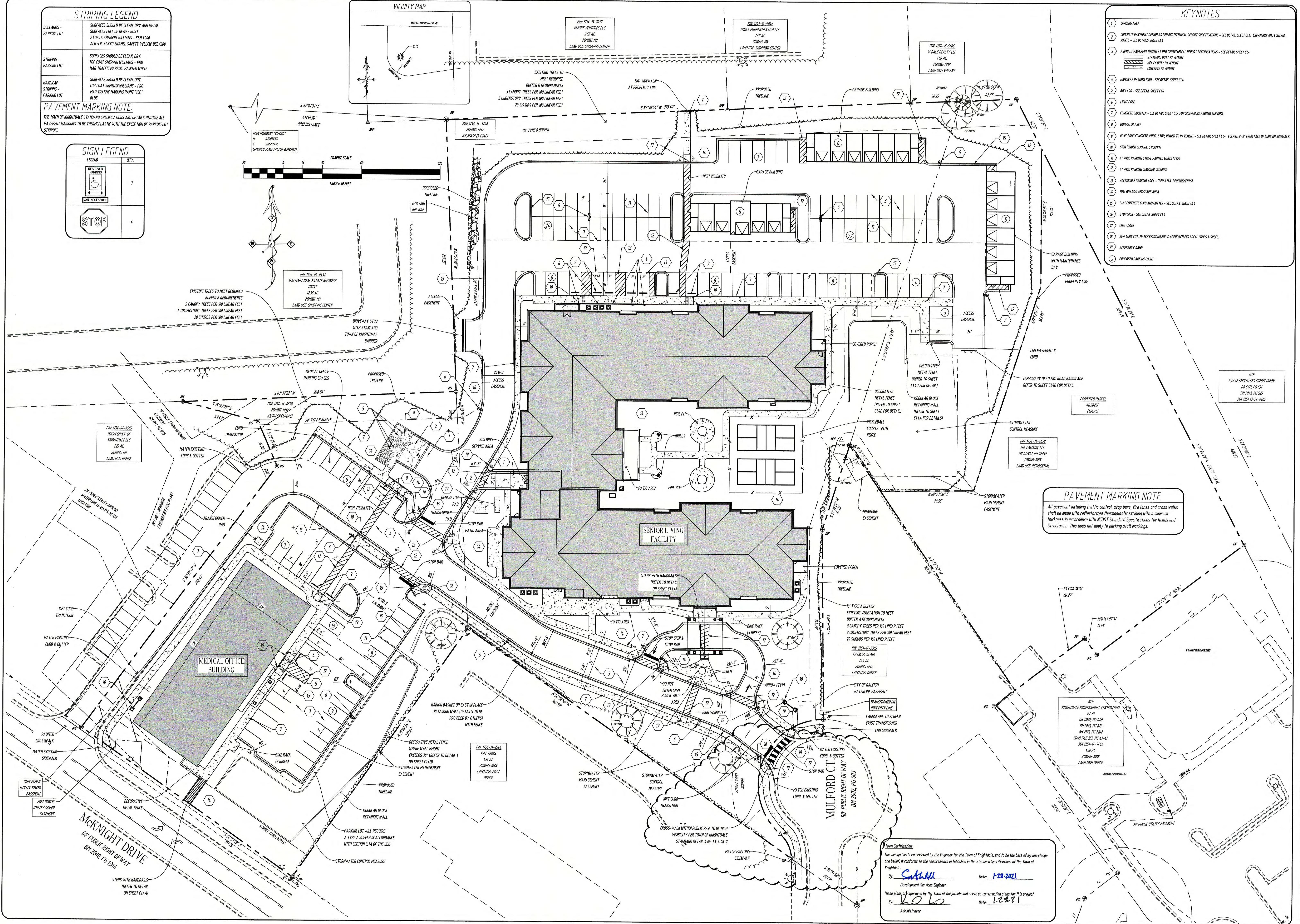
Project No. 008001
Date: December 4, 2020
Title: **SITE PLAN**

Sheet No. **C1.0**

STRIPING LEGEND	
BOLLARDS - PARKING LOT	SURFACES SHOULD BE CLEAN, DRY AND METAL SURFACES FREE OF HEAVY RUST 2 COATS SHERWIN WILLIAMS - KEN 4000 ACRYLIC ALKYL ENAMEL SAFETY YELLOW BSS700
STRIPING - PARKING LOT	SURFACES SHOULD BE CLEAN, DRY TOP COAT SHERWIN WILLIAMS - PRO MAR TRAFFIC MARKING PAINTED WHITE
HANDICAP STRIPING - PARKING LOT	SURFACES SHOULD BE CLEAN, DRY TOP COAT SHERWIN WILLIAMS - PRO MAR TRAFFIC MARKING PAINT "1C" BLUE

SIGN LEGEND	
LEGEND	QTY.
	7
	4

PAVEMENT MARKING NOTE:	
THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS REQUIRE ALL PAVEMENT MARKINGS TO BE THERMOPLASTIC WITH THE EXCEPTION OF PARKING LOT STRIPING.	



TRIANGLE SITE DESIGN

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE # P-0619
mclawson@trianglesitedesign.com

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Run Creek Road
Henderson, NC 27536
daniel@lbcinc.com
www.lbcinc.com

Seal:

Matthew R. S. S.

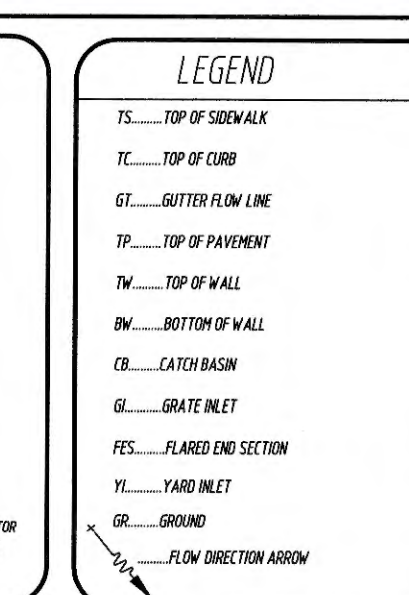
HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REV.	DATE	DESCRIPTION
1	1/28/21	ISSUED FOR TOWN REVIEW
2	1/28/21	ADDED SITE GRADING
3	1/28/21	ADDED SITE GRADING
4	1/28/21	ADDED SITE GRADING

Drawn: Checked: Approved:

Project No: 008001
Date: December 4, 2020
Title: SIGNAGE & PAVEMENT MARKING PLAN
Sheet No: C10A



TRIANGLE
SITE DESIGN



Matthew Lind

OWNER/DEVELOPER:

The Lawson, LLC
Aftn. Daniel Tharrington
252-432-1172
349 Ruin Creek Road
Henderson, NC 27536
daniel@igbinc.com
www.igbinc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

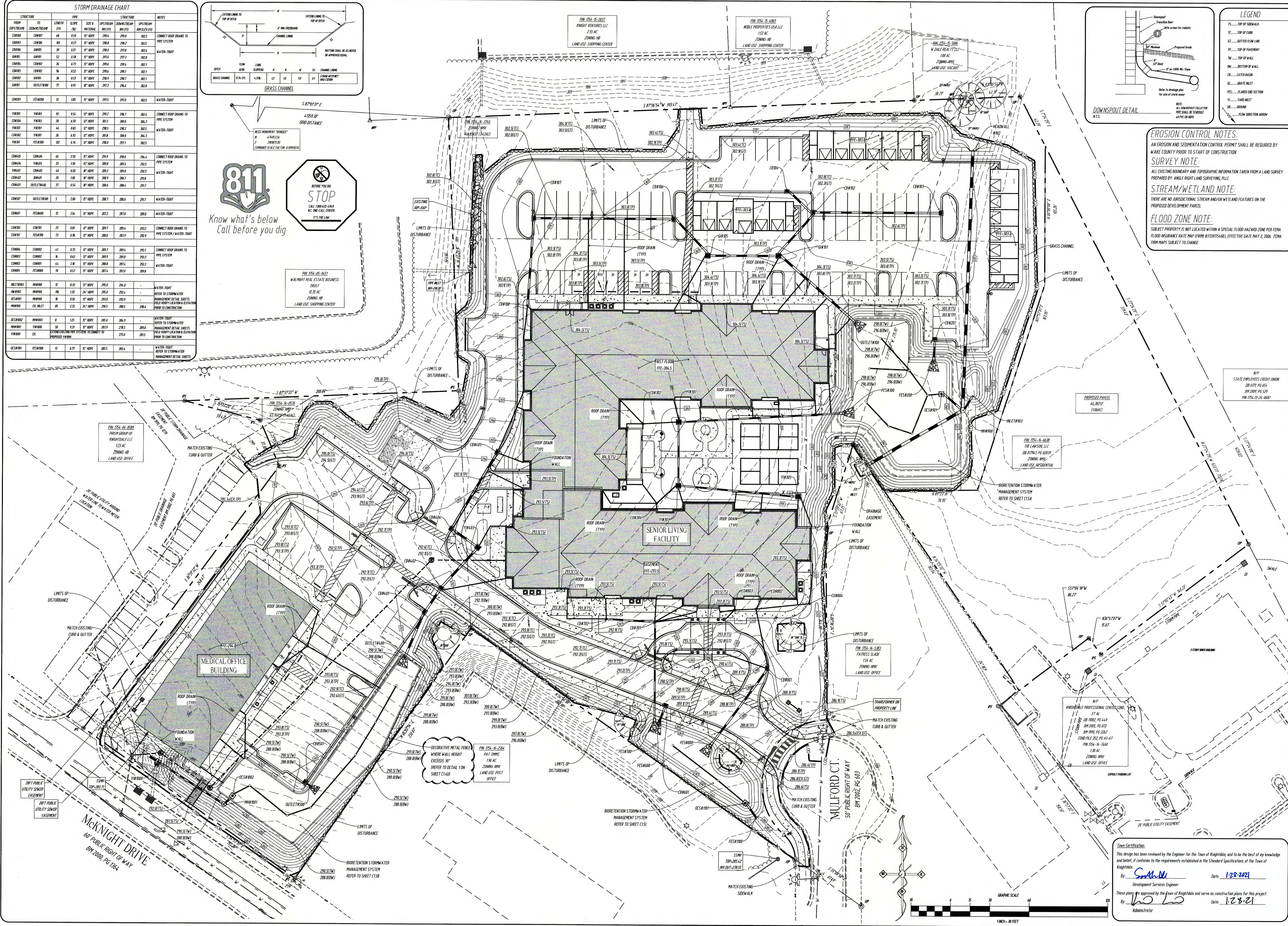
REVISIONS		Date	Desc.
1	AS-B		REFUSED FOR TOWN REVIEW
2	AS-B		ADJUSTED SITE GRAD
3	AS-B		ADJUSTED FOR TOWN & MALE COUNTY REVIEW
4	AS-B		ADJUSTED FOR TOWN REVIEW

Checked
Approved

Project No. 008001
Date: December 4, 2020

Title GRADING &
DRAINAGE
PLAN

Sheet No. C11



WATER SERVICE
GENERAL CONTRACTOR TO PROVIDE AND INSTALL WATER SERVICE LINE FROM EXISTING MAIN TO BUILDING FOR PRINCIPAL REQUIREMENTS
CONTACT: CITY OF RALEIGH UTILITY DEPARTMENT
TELEPHONE: 800-857-4450

ELECTRIC SERVICE
GENERAL CONTRACTOR TO PROVIDE UNDERGROUND SERVICE, GENERAL CONTRACTOR TO PROVIDE AND INSTALL TWO (2) 50A CONDUITS W/ PULL WIRE TO UTILITY COMPANY PORT OF CONNECTION
CONTACT: DAVE PROGRESS ENERGY
TELEPHONE: 800-775-9090

TELEPHONE SERVICE
TELEPHONE C/O TO PROVIDE NEW UNDERGROUND SERVICE, GENERAL CONTRACTOR TO PROVIDE AND INSTALL A 1" DIA. PVC CONDUIT W/ PULL WIRE FROM PHONE PANEL BOARD TO UTILITY COMPANY PORT OF CONNECTION
CONTACT: AT&T
TELEPHONE: 888-944-0447

SANITARY SEWER
GENERAL CONTRACTOR TO PROVIDE AND INSTALL A SANITARY SEWER FROM EXISTING SEWER TO LAST CLEAN OUT OFFSHORE OR BUILDING (WHN IN SLOPE). PROVIDE CLEAN OUTS EVERY 25' (TYPICAL)
CONTACT: CITY OF RALEIGH UTILITY DEPARTMENT
TELEPHONE: 800-857-4450

NATURAL GAS
GENERAL CONTRACTOR TO COORDINATE WITH NATURAL GAS UTILITY FOR SERVICE LINE TO PROPOSED BUILDING
CONTACT: PSC ENERGY
TELEPHONE: 919-561-7600

	NEW POWER POLE
	NEW WATER METER
	NEW GAS METER
	NEW ELECTRIC METER
_____ F W _____	NEW WATER SERVICE
_____ GAS _____	NEW GAS SERVICE
_____ S E W _____	NEW SANITARY SEWER
	NEW SANITARY SEWER CLEANOUT
_____ E P _____	NEW UNDERGROUND POWER SERVICE
_____ T E _____	NEW UNDERGROUND TELEPHONE SERVICE

NOTE:

1. CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING & APPLYING FOR UTILITY SERVICE WITH EACH UTILITY COMPANY PRIOR TO STARTING CONSTRUCTION.
2. CONTRACTOR TO BE RESPONSIBLE FOR STREET BORE, IF REQUIRED BY CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.

PROPOSED:	3,000 SF MEDICAL OFFICE BUILDING
	101 UNIT SENIOR LIVING FACILITY
SANITARY SEWER FLOW CALCULATIONS:	
EXISTING CONDITIONS	0 GPD (VACANT)
PROPOSED:	25 GPD PER PERSON PER SHIFT
	ESTIMATE 63 PEOPLE PER DAY
	1,575 GPD (25 GPD x 63 PEOPLE)
	101 UNITS @ 240 GPD/UNIT
	24,240 GPD
NET INCREASE	25,815 GPD

A CERTIFICATE OF COMPLIANCE FOR ALL BACKFLOWS WILL NEED TO BE DIGITALLY AFFIXED TO THE BUILDING SUBMITTAL PRIOR TO THE ISSUANCE OF BUILDING PERMITS. CONTACT CROSS.CONNECTIONS@RALEIGHNC.GOV FOR MORE INFORMATION.

CONTRACTOR TO COORDINATE WITH CITY OF RALEIGH PUBLIC UTILITIES
DEPARTMENT FOR WATER METER & BACKFLOW PREVENTION
REQUIREMENTS

PIA: 1754-15-2037
 KNIGHT VENTURES LLC
 2.55 AC.
 ZONING: HB
 LAND USE: SHOPPING CENTER

PIN: 1754-15-4069
MOBILE PROPERTIES USA LLC
152 AC.
ZONING: HB
LAND USE: SHOPPING CENTER

PHN: 1754-15-5086
W DALE REALTY LLC
1.00 AC.
ZONING: NMX
LAND USE: VACANT

1 ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH CITY OF RALEIGH STANDARD DRAWINGS AND SPECIFICATIONS.

2 IN THE EVENT THAT A UTILITY ITEM IS NOT COVERED BY THESE PLANS, THEN THE STANDARDS AND SPECIFICATIONS

3 CONTAINED IN THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT HANDBOOK CONTAINED HEREIN SHALL APPLY.

4

5 CLEAR-OUT SYMBOLS SHOWN ON THESE PLANS REPRESENT LOCATION OF SURFACE ACCESS POINT. CONTRACTOR SHALL

6 LOCATE WYE APPROPRIATELY BASED ON PIPE DEPTH.

7

8 ALL MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF RALEIGH STANDARDS. MANHOLE DIAMETER SHALL

9 VARY DEPENDING ON PIPE DIAMETER AND DEPTH. PER CITY OF RALEIGH STANDARDS.

10

11 LOCATIONS AND TYPES OF EXISTING UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM MAPS PREPARED BY OTHERS. THE

12 CONTRACTOR IS SOLELY RESPONSIBLE FOR FIELD LOCATING ALL UTILITIES AND FOR DAMAGES RESULTING FROM FAILURE TO DO

13 SO.

14

15 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING RECORD DRAWINGS TO THE ENGINEER SHOWING THE LOCATION OF

16 WATER AND SEWER SERVICES AND ANY DEVIATIONS FROM PLANS MADE DURING CONSTRUCTION. THE ENGINEER WILL PROVIDE

17 THESE RECORD DRAWINGS TO THE OWNER.

18

19 ALL UNDERGROUND UTILITIES AND FIRE HYDRANTS MUST BE FUNCTIONALLY APPROVED PRIOR TO STRUCTURAL CONSTRUCTION.

20

21 THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, AND FIRE HYDRANTS.

22

23 DIMENSIONS SHOWN ARE TO CENTERLINE OF PIPE OR FITTING.

24

25 ALL WATER AND SANITARY LINES TO BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL

26 BE PROVIDED WITH A TEMPORARY PLUG AT END.

27

28 ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS. MINIMUM

29 TRENCH WIDTH SHALL BE 18".

30

31 GENERAL CONTRACTOR SHALL HAVE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER THIS SYSTEM PRIOR

32 TO INSTALLATION.

33

34 ALL FIELD MATERIALS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.

35

36 CONTRACTOR SHALL NOTIFY THE WATER AUTHORITY INSPECTORS 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.

37

38 ALL UTILITIES SHOULD BE KEPT TEN (10') APART (PARALLEL) OR WHEN CROSSING "X" VERTICAL CLEARANCE (OUTSIDE EDGE

39 OF PIPE TO OUTSIDE EDGE OF PIPE).

40

41 PRESSURE REDUCING VALVES WILL BE REQUIRED ON THE DOMESTIC WATER MAINS IF THE STATIC PRESSURE AT THE BUILDING

42 EXCEEDS 80PSI.

43

44 DRAWINGS DO NOT PORTRAY TO SHOW ALL EXISTING UTILITIES. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR

45 TO INSTALLATION OF ANY NEW LINES.

46

47 CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF RALEIGH WITH

48 REGARDS TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.

49

50 THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES OR UTILITIES

51 BY OTHERS AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE,

52 MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE

53 CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST

54 FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING

55 UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

56

57 ALL CONSTRUCTION METHODS & MATERIALS SHALL CONFORM WITH THE CURRENT SPECIFICATIONS AND STANDARDS OF THE

58 AMERICAN WATER WORKS ASSOCIATION (AWWA). THE AWWA CONSTRUCTION STANDARDS ARE SET FORTH IN THEIR

59 CONSTRUCTION SPECIFICATIONS AND STANDARD FOR WATER AND SANITARY SEWERAGE FACILITIES, A COPY OF WHICH IS

60 PURCHASED FROM THE AWWA BY THE CONTRACTOR AND KEPT AT THE JOB SITE AT ALL TIMES. REFERENCE TO AWWA

61 STANDARDS SHALL MEAN THE CURRENT STANDARDS AND/OR SPECIFICATIONS OF THE NORTH CAROLINA DEPARTMENT OF

62 TRANSPORTATION.

63

64 THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE BELOW PLAN GRADE ANY MATERIALS WHICH ARE UNSUITABLE FOR

65 FOUNDATIONS, SUB GRADES, PIPE TRENCH BOTTOMS OR OTHER PURPOSES AND BACKFILL THESE AREAS WITH AN APPROVED

66 MATERIAL. THE EXTENT OF UNDERDIGGING AND BACKFILLING SHALL BE DETERMINED BY THE CITY OF RALEIGH AS TO AREAS

67 WITHIN STREET RIGHT-OF-WAY AND THE ENGINEER OR OTHER AGENCIES. COMPENSATION SHALL BE AS SET FORTH IN THE

68 CONTRACT DOCUMENTS.

69

70 ALL WATER LINES SHALL HAVE BURIED WITH THE PIPE W/ 1 COATED ELECTRIC WIRE AND BROUGHT UP INTO THE METER BOXES.

71

72 THE CONTRACTOR SHALL PROVIDE A SURVEY AS-BUILT RECORD DRAWING OF THE SANITARY SEWER SYSTEM AND THE WATER

73 DISTRIBUTION SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF RALEIGH UTILITY DEPARTMENT.

All materials & construction methods shall be in accordance with City of Raleigh design standards, details & specifications (reference: CORPUD Handbook, current edition)

- a) A distance of RCP shall be maintained between sanitary sewer & any private or public utility source such as a pond, reservoir, stream, or other water body. If adequate lateral separation cannot be achieved, a sanitary sewer pipe shall be specified & installed to ventline specifications. However, the minimum separation shall not be less than 25' from a private well & 50' from a public well
 - b) When installing water &/or sewer main, 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
 - c) Where it is impossible to achieve proper separation, or if any sanitary sewer passes over a waterline, DP, materials, or steel encasement extended 18" on each side of crossing must be specified & installed to waterline specifications
 - d) 50' minimum horizontal separation is required between all sanitary sewer & storm sewer facilities, unless DIP material is specified for sanitary sewer
 - e) Maintain 18" min. vertical separation of all waterline & RCP storm drain crossings; maintain 24" min. vertical separation of all sanitary sewer & RCP storm drain crossings. Where adequate separations cannot be achieved, specify DIP material & a concrete corbel having a min. clearance per CDPHD details W-1115 & W-1116
 - f) All other underground utilities shall cross water & sewer facilities with 18" min. vertical separation
3. Any necessary field revisions are subject to review & approval of an independent RFP or pre-approve by the City of Raleigh Public Utilities Department prior to construction
4. 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
- a) 3.6' minimum cover is required on all water & sewer force mains. 4' min. sewer cover is required on all reuse mains
 - b) Is the developer's responsibility to washout or remove existing water & sewer services and bring up and redevelopment of a site within 14 days of the start of construction. The developer shall provide a written schedule indicating top of main & install of service from RWM or as-needed per CDPHD Handbook procedure
 - c) RCP & PVC water services with meters located 18" below a 12" Waterline Encasement immediately adjacent. NOTE: It is the contractor's responsibility to properly place the water service for each connection to provide adequate flow & pressure
 - d) Install 1" PVC & sewer service at 2.0X minimum depth with cleanouts located 18" from RWM or easement line & spaced every 75' linear feet maximum
 - e) Pressure reducing valves are required on all water services exceeding 80' b/c; backwater valves are required on all sanitary sewer services having building drains taller than 10' above the next upstream manhole
 - f) All environmental permits and/or approvals shall be obtained from NCEM, USACE &/or FERA for any stream bank, wetland R/W, floodplain impacts (respectively) prior to construction
 - g) NCDOT / Railroad Encroachment Agreements are required for any utility work (mainline extensions & service tap) within state or railroad R/W prior to construction
 - h) Grease Interceptor / Oil Water Separator & building catchments & installation specifications shall be approved by the CDPHD FSD Program Coordinator prior to issuance of a building Permit. Contact Tim Binsley at 1970-255-7825 or timothy.binsley@rlslogi.org for more information
 - i) Cross-connection control prevention devices are required based on degree of health hazard involved as listed in Appendix-4 of the Baltimore Sanitary Code. These devices are the minimum requirements. The devices shall meet American Society of Health Engineers (ASSE) standards or be on the University of Southern California approved list. The devices shall be installed and tested (both initial and periodic testing thereafter) in accordance with the manufacturer's recommendations or the local cross-connection control program, whichever is more stringent. Contact Joanie Healey at 1970-212-0522 or joanie.healey@rlslogi.org for more information.

THE PROPOSED RESIDENTIAL SENIOR LIVING BUILDING WILL HAVE A FIRE SPRINKLER SYSTEM.

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

City of Raleigh Development Approval

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

By: S. Allen Date: 1-28-2021
Development Services Engineer

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

By: [Signature] Date: 1-28-21
Administrator

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE# P-0619
mlowder@trianglesitedesign.com



The Lawson, LLC
Attn. Daniel Tharrington
252-432-1172
349 Ruin Creek Road
Henderson, NC 27536
daniel@igbinc.com
www.igbinc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #
053-38011

This document, together with the concepts and designs presented herein as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS		
No.	Date	Desc.
1	8/25/20	REVISED PER TOWN RETURN
2	8/26/20	ADJUSTED SITE GRADERS
3	10/25/20	ADJUSTED PER TOWN & WAKE COUNTY RETURN
4	10/27/20	ADJUSTED PER TOWN RETURN

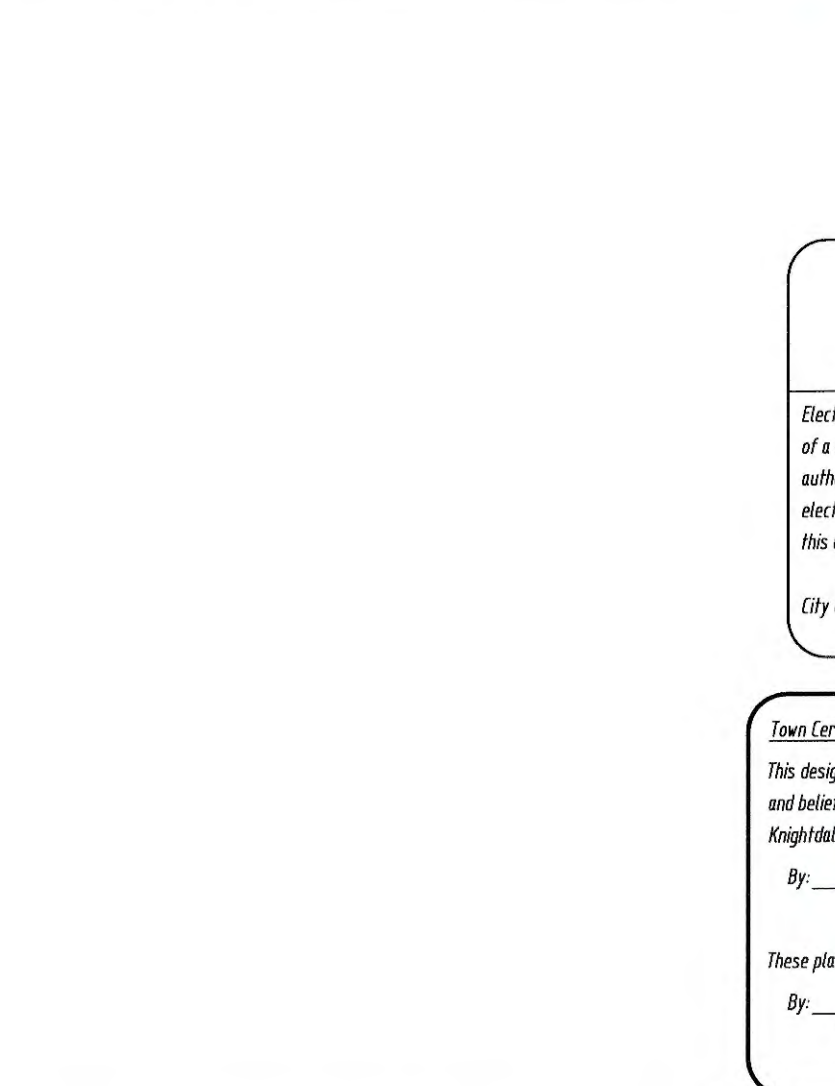
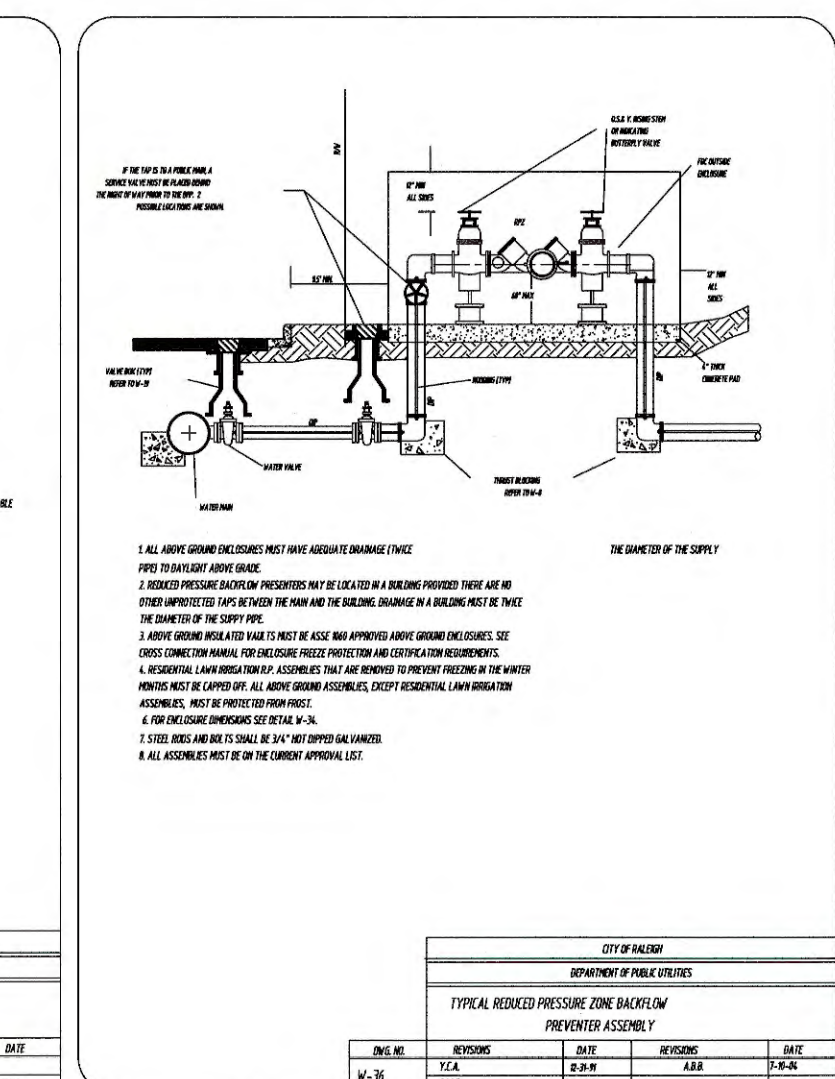
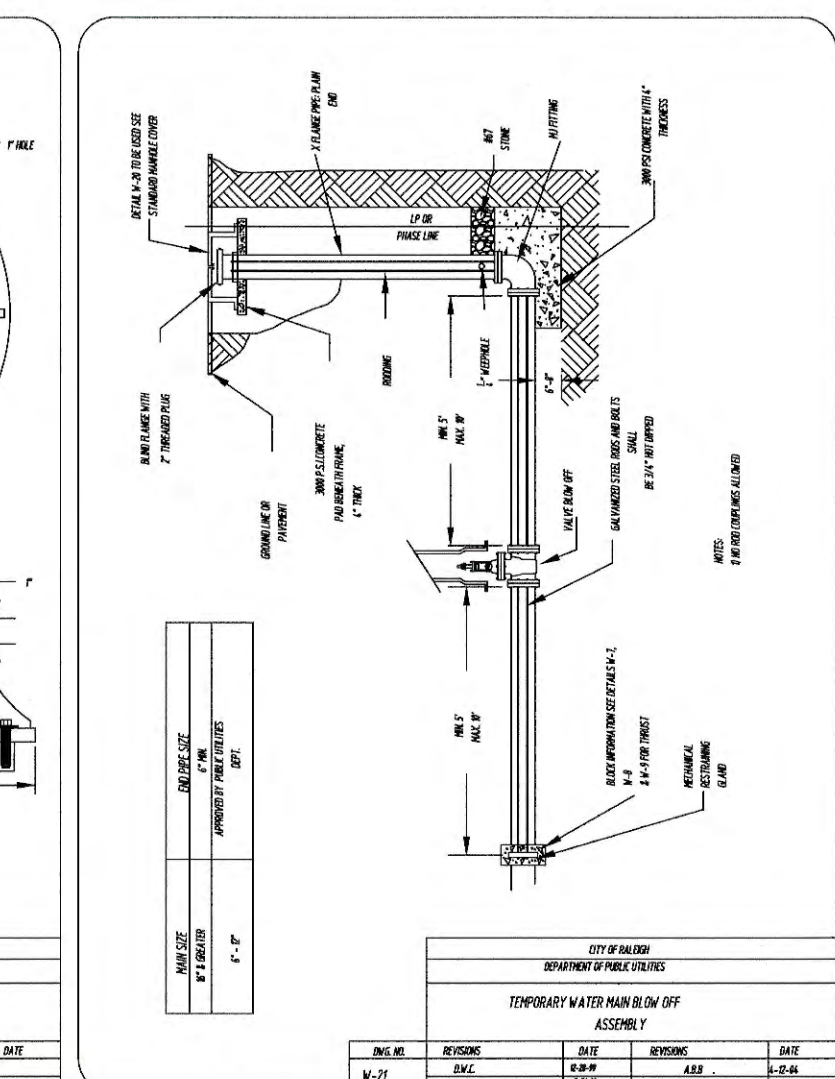
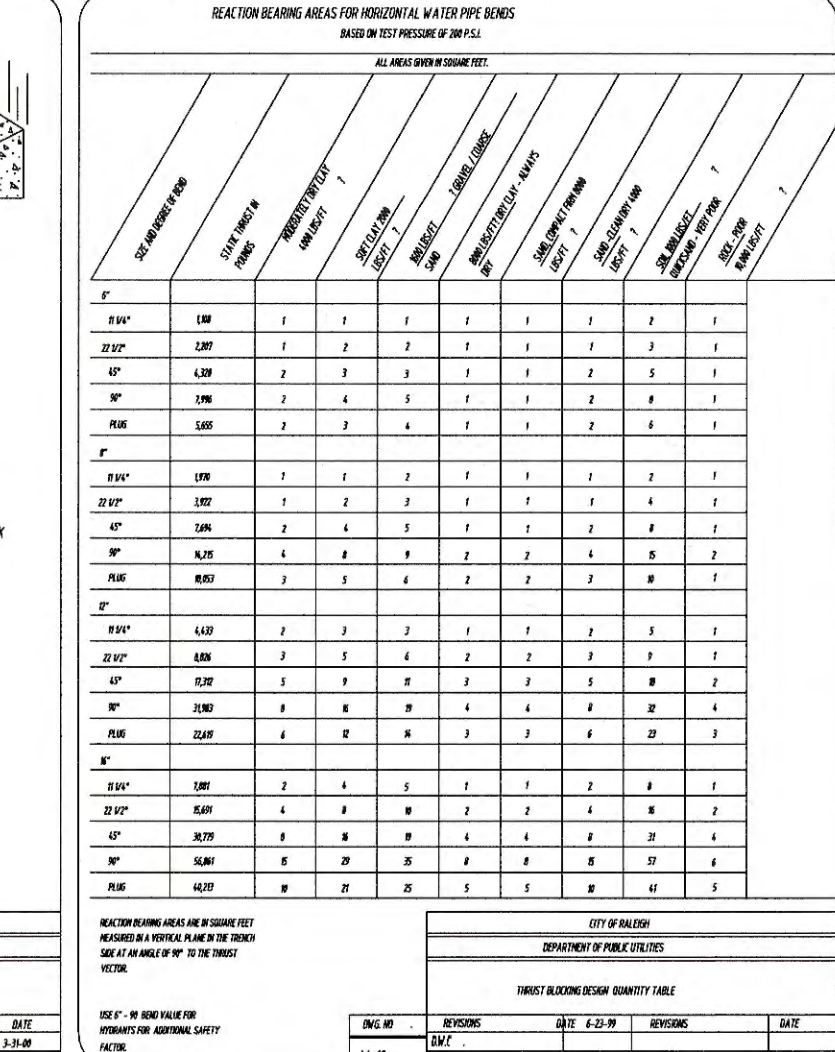
Drawn _____
Checked _____
Approved _____

Project No. 008001
Date: December 4, 2020
Title _____

UTILITY
PLAN

Sheet No.

[12]



TRIANGLE SITE DESIGN



CONSULTANT:
 TRIANGLE SITE DESIGN, PLLC
 4004 BARRETT DR, STE 101
 RALEIGH, NC 27609
 (919) 553-6570
 NC LICENSE # P-0619
 ntdesign@trianglesitedesign.com



Matthew Landon

OWNER/DEVELOPER:
 The Lawson, LLC
 Attn: Daniel Thorington
 252-432-1172
 34.9 Bain Creek Road
 Henderson, NC 27536
 daniel@ibncc.com
 www.ibncc.com

The Lawson of Knightdale

Mulford Court
 Knightdale, North Carolina
 Wake County

HUD PROJECT #: 053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

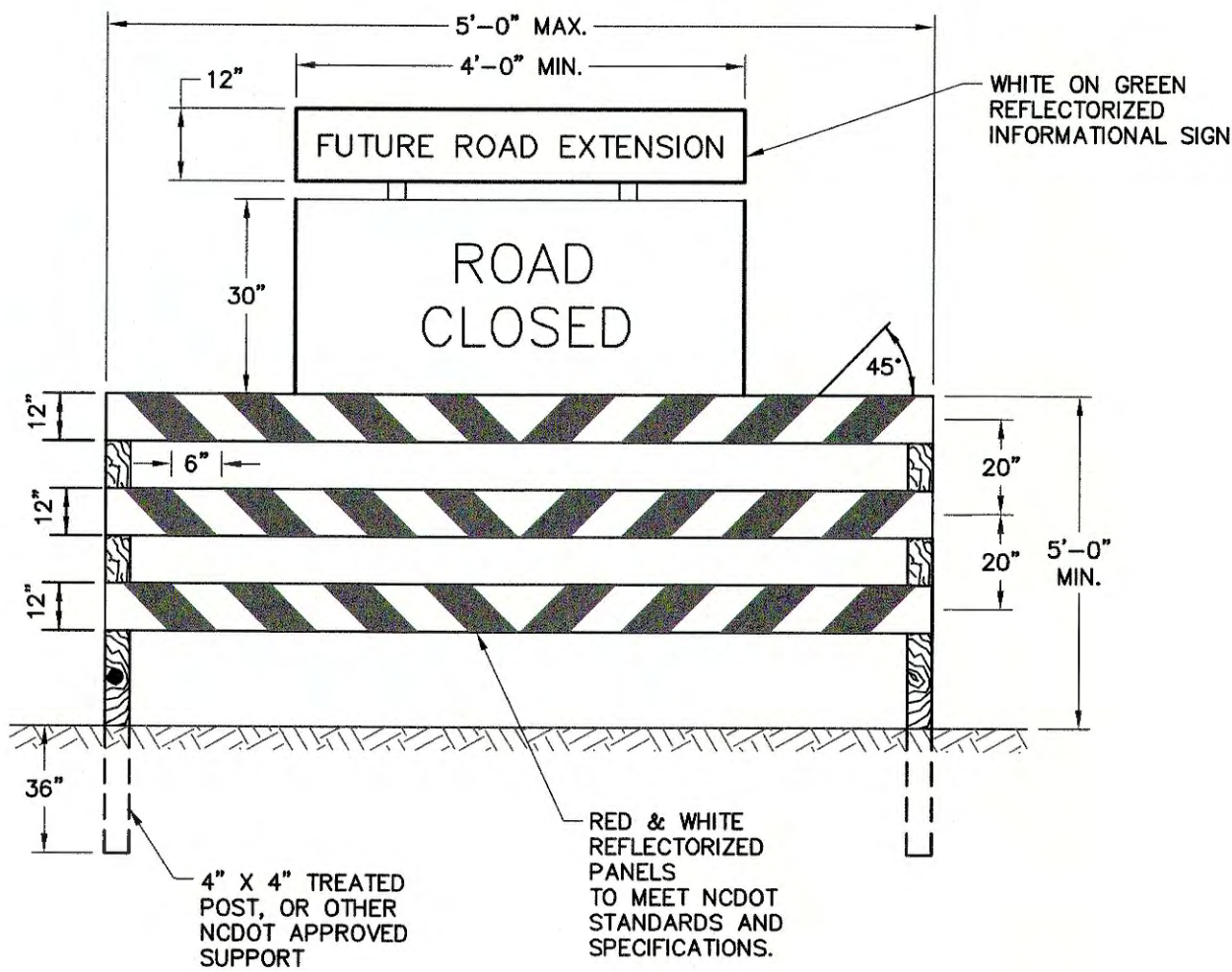
REVISIONS		Desc.
No.	Date	
1	05/20/20	ADJUSTED PER OWNER REVIEW
2	05/20/20	ADJUSTED SITE GRADING
3	05/20/20	ADJUSTED PER TOWN & HANIC COUNTY REVIEW
4	05/24/20	ADJUSTED PER OWNER REVIEW

Drawn _____
 Checked _____
 Approved _____

Project No. 008001
 Date: December 4, 2020
 Title _____

CONSTRUCTION DETAILS

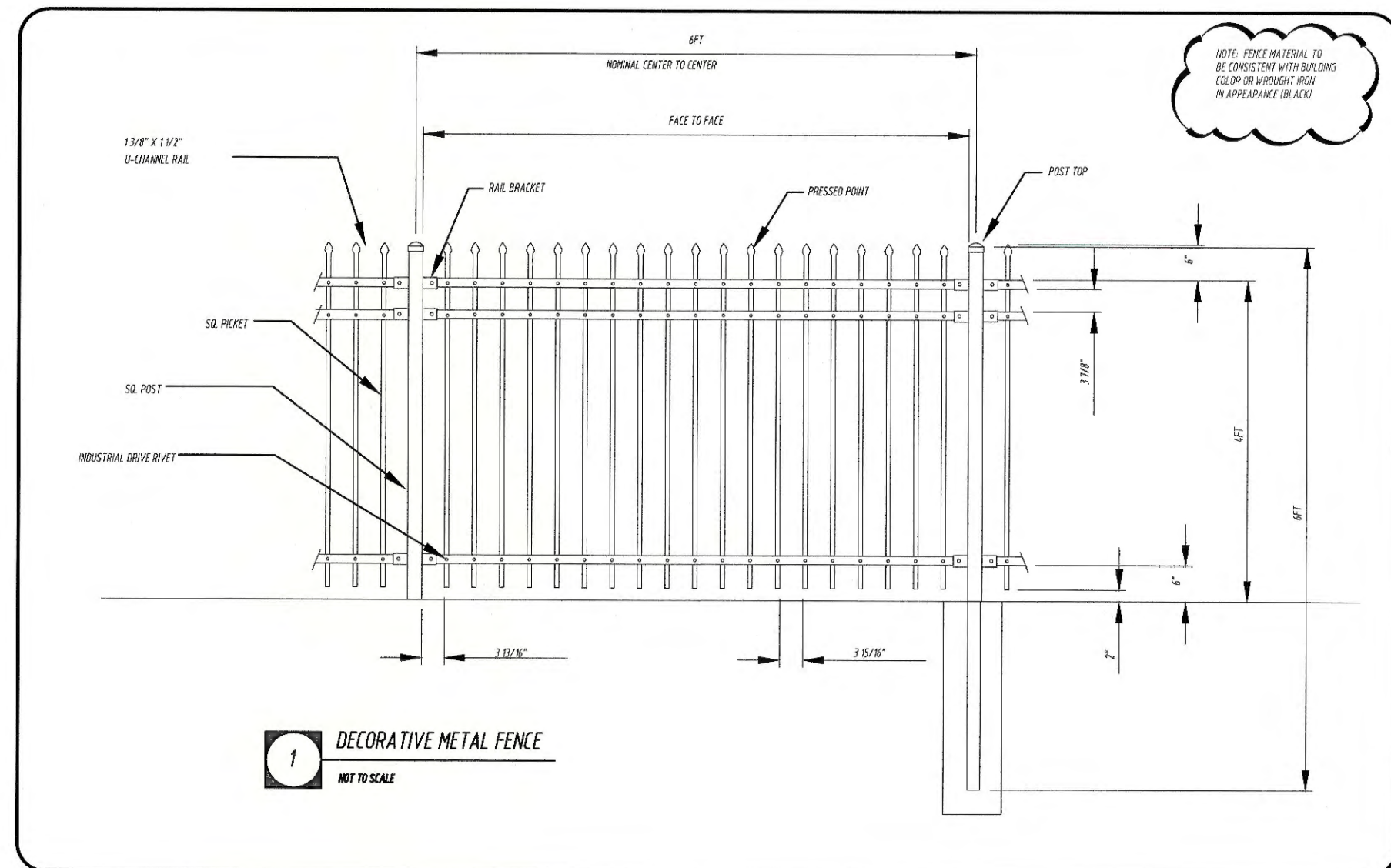
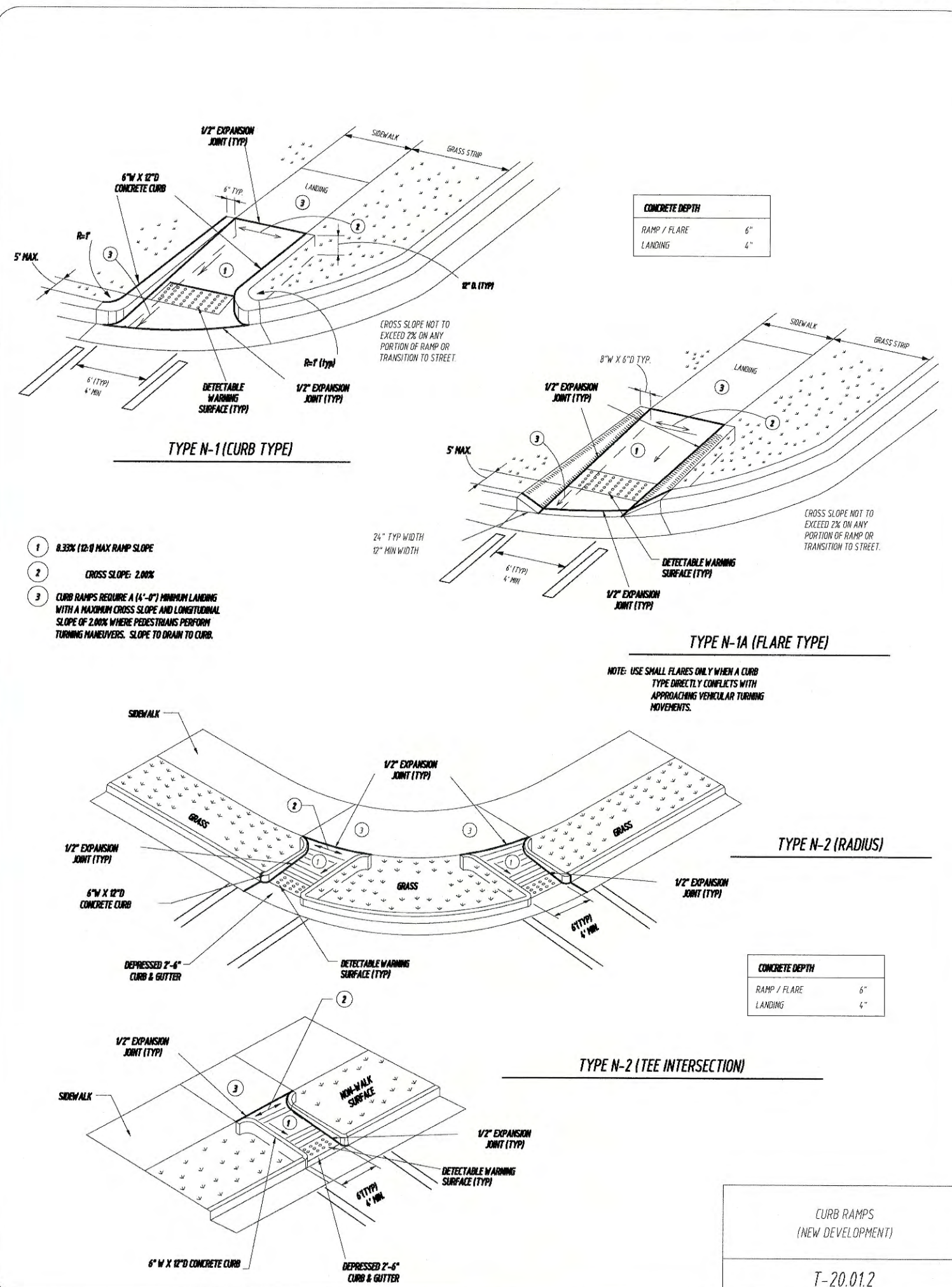
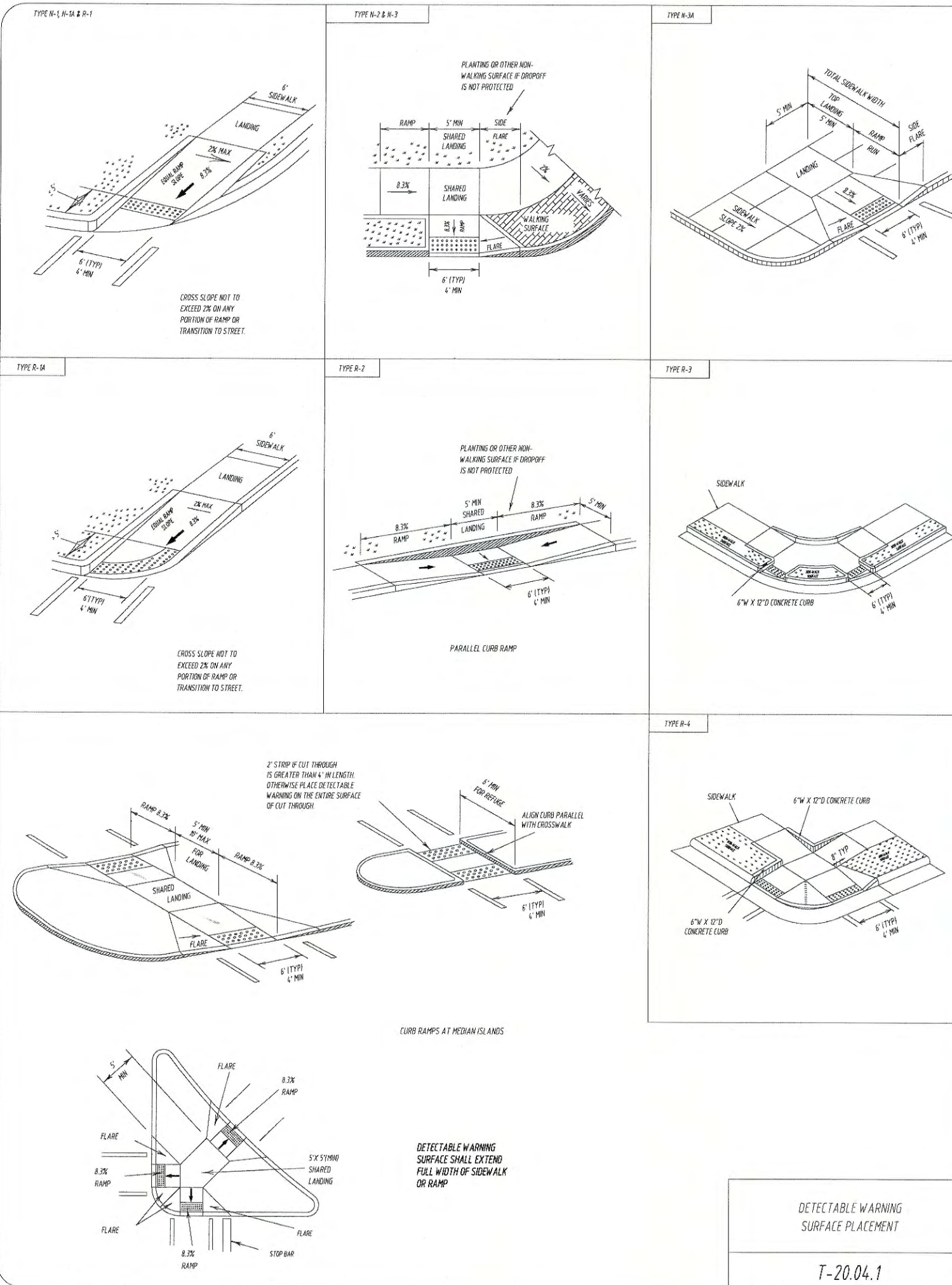
Sheet No. C14B



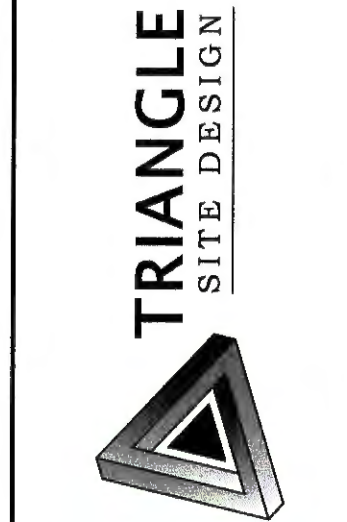
NOTES:

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		STD. NO.
DATE	DESCRIPTION	
TOWN OF KNIGHTDALE STANDARD DETAILS		TEMPORARY BARRICADE FOR DEAD END ROADS
		3.18



Town Certification:
This design has been reviewed by the Engineer for the Town of Knightdale, and to be the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: S. Smith Date: 1-28-2021
Development Services Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: W. G. G. Date: 1-28-2021
Administrator



CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
1919) 553-0570
NC LICENSE# P-0619
mlawder@trianglesitedesign.com



Matt Lind

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Rain Creek Road
Henderson, NC 27536
daniel@sgbinc.com
www.sgbinc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS	Desc.	Date
1	DESIGN	1-28-2021
2	DESIGN	1-28-2021
3	DESIGN	1-28-2021
4	DESIGN	1-28-2021
5	DESIGN	1-28-2021
6	DESIGN	1-28-2021
7	DESIGN	1-28-2021
8	DESIGN	1-28-2021
9	DESIGN	1-28-2021
10	DESIGN	1-28-2021

Drawn
Checked
Approved
Project No. 008001
Date: December 4, 2020
Title

CONSTRUCTION
DETAILS

Sheet No.
C1.4D

BNP element	Potential problem	How I will remediate the problem
The entire bio-retention cell	Trash/debris is present.	Remove the trash/debris.
The perimeter of the bio-retention cell	Areas of bare soil and/or erosion gullies have formed.	Degrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide line and a one-time fertilizer application.
The inlet	Blockage/clogging?	Using the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged (if applicable).	Replace or repair the pipe.
	Erosion is occurring in the swale (if applicable).	Degrade the swale if necessary and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment if applicable.	Remove sediment and clogged stone and replace with clean stone.
The pretreatment system	No-grade if necessary to route all flow to the pretreatment area. Reestablish the area after grading.	
	Sediment has accumulated to a depth greater than three inches.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and reestablish the pretreatment area.
	Erosion has occurred.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand.
Plant material	Best professional practices show that grading is needed to maintain optimal plant health.	Prune according to best professional practices. Maintain lines of sight between 2'-6'.
	Plants are dead, diseased or dying.	Determine the source of the problem: salts, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer or lime application to establish the ground cover if a soil test indicates it is necessary.
	Weeds are present.	Remove the weeds, preferably by hand. If an herbicide is used, wipe it on the plants rather than spraying.
Bio-retention cell: vegetation	Best professional practices show that grading is needed to maintain optimal plant health.	Prune according to best professional practices. Maintain lines of sight.
	Plants are dead, diseased or dying.	Determine the source of the problem: salts, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if a soil test indicates it is necessary. If soil was used, check to see that it was not grown in city or impermeable soils. Replace soil if necessary.
	Tree stakes/wires are present six months after planting.	Remove tree stakes/wires (which can kill the tree if not removed).
Bio-retention cell: mulch and weeds	Mulch is breaking down or has floated away.	Spot mulch if there are only random weed areas. Replace whole mulch layer if necessary. Remove the remaining mulch and replace with triple shredded hard wood mulch at a maximum depth of four inches.
	Soils and/or mulch are clogged with sediment.	Determine the extent of the clogging - remove and replace either just the top layers or the entire media as needed. Dispose of the soil in an appropriate off-site location. Use triple shredded hard wood mulch at a maximum depth of four inches. Search for the source of the sediment and remedy the problem if possible.
	An annual soil test shows that pH has dropped or heavy metals have accumulated in the soil media.	Dolomitic lime shall be applied as recommended per the soil test and toxic soils shall be removed, disposed of properly and replaced with new planting material.
The underdrain, filter fabric element, and outlet system	Clogging has occurred.	Wash out the underdrain system.
	Clogging has occurred.	Clean out the drop inlet. Dispose of the sediment off-site.
	The drop inlet is damaged.	Repair or replace the drop inlet.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Resources.

NOTE:
A PERMEABILITY SOIL REPORT SHALL BE PROVIDED AFTER BIO-RETENTION SOIL MIXTURE IS IN PLACE - REFER TO STORMWATER MANAGEMENT NOTES FOR REQUIREMENTS.

GRASS NOTE:
GRASS SHALL BE EITHER HYBRID BERMOUDA GRASS OR CENTIPEDE.

BIO-RETENTION SOIL MIXTURE:

Bio-retention Soil Mixture (BSM) shall be placed and graded using low ground-contact pressure equipment or by excavators and/or backhoes operating on the ground adjacent to the bio-retention facility. No heavy equipment shall be used within the perimeter of the bio-retention facility before, during, or after the placement of the BSM. The BSM shall be placed in horizontal layers and not exceed 12 inches for the entire area of the bio-retention facility. The BSM shall be compacted by saturating the entire area of the bio-retention facility after each lift of BSM is placed until water flows from the under-drain. Water for saturation shall be applied by spraying or sprinkling. An appropriate sediment control device shall be used to treat any sediment-laden water discharged from the under-drain. If the BSM becomes contaminated during the construction of the facility, the contaminated material shall be removed and replaced with uncontaminated material at no additional cost to the Administration. Final grading of the BSM shall be performed after a 24-hour settling period. Final elevations shall be within 2 inches of elevations shown on the Contract Plans.

The Bio-retention Soil Mixture (BSM) shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bio-retention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations.

Prior to placing the under-drain and the BSM, the bottom of the excavation shall be refo-filled to a minimum depth of 6 inches to alleviate any compaction of the facility bottom. Any subsurface method for refo-filling must be approved by the Engineer prior to use. Any pointed water shall be removed from the bottom of the facility and the soil shall be friable before refo-filling.

Once the BSM has been placed the entire bio-retention area shall be sodded with grass that has been grown in sandy soils or that has the roots washed clean of any clay or other materials that could clog the function of the bio-retention system.

OPERATION AND MAINTENANCE

North Carolina storm water rules require annual inspections by the regulating agency of bio-retention areas as a minimum. More frequent inspections by the land owner or system operator are strongly encouraged to ensure the proper operation of bio-retention areas.

- A. Initial Event**
- Inspect the basin after every runoff-producing rainfall event.
- B. Monthly Inspection**
- Inspect the basin monthly.
 - Check the bio-retention area side slopes, remove trash and repair eroded areas before the next rainfall event.
 - Check the vegetative and rock filters for sediment accumulation, erosion and proper operation of the flow spreader mechanism and repair as necessary.
 - Visually inspect and repair soil erosion as a monthly basis.
 - Remove any weed areas whenever necessary. Replacement of mulch layers may be necessary every two or three years. mulch should be replaced in the spring. When the mulch layer is replaced, the previous layer should be removed first.
 - Remove and replace of dead and diseased vegetation considered beyond treatment. This should be done twice a year, once in the spring and once in the fall. Treat all diseased trees and shrubs that are not beyond treatment as needed.
- C. Quarterly Inspection**
- Inspect the collection system (i.e. catch basin, pipes and grass swales) for proper functioning. Clear accumulated trash from basin grates and basin bottoms. Check piping for obstructions.
 - Check good inlet pipes for undercutting, replace rip-rap and repair broken pipes.
 - Disposed grassed swales, including the vegetated filter if applicable, twice a year as necessary. Repair eroded areas immediately.
- D. Six Month Inspection**
- Remove accumulated sediment from the bottom of the outlet structure or other areas where accumulated sediment is noted.
 - Inspect the embankment taking note of any wet areas where water may be seeping through the soil.
- E. General Inspection**
- Maximum grass height is to be 6in.
 - No woody vegetation shall be allowed to grow in the bio-retention area.
 - Debris shall be removed from blocking the inlet and outlet structures and from areas of potential clogging.
 - Periodic removal of dead vegetation shall be accomplished.
 - All components of the bio-retention system must be kept in good working order.

BIO-RETENTION DETAILS
N.T.S.

STORMWATER MANAGEMENT DESIGN BIO-RETENTION POND

DRAINAGE BASIN: NEUSE
RECEIVING STREAM: MANGO CREEK
STREAM INDEX: 27-32
STREAM CLASS: C, NSM

POND DESIGN SUMMARY

DRAINAGE AREA TO POND: 2.26 ACRES
SITE IMPERVIOUS AREA TO POND: 1.72 ACRES
OFF-SITE DESIGN IMPERVIOUS AREA TO POND: 0.0 ACRES
TOTAL DESIGN IMPERVIOUS AREA TO POND: 1.72 ACRES

	PRE-DEVELOPED OVERALL	POST-DEVELOPED TO POND	POST DEVELOPED THROUGH POND
DRAINAGE AREA:	2.26 AC	2.26 AC	0
CURVE NUMBER:	77.0	93.1	0
TIME OF CONCENTRATION:	12.4 MIN	5 MIN	0
1" STORM EVENT:	0.935 CFS	0.935 CFS	0.935 CFS
1-YEAR STORM EVENT:	3.173 CFS	1.988 CFS	1.988 CFS
2-YEAR STORM EVENT:	4.592 CFS	3.000 CFS	2.954 CFS
10-YEAR STORM EVENT:	8.935 CFS	6.515 CFS	6.378 CFS
100-YEAR STORM EVENT:	16.36 CFS	23.48 CFS	19.33 CFS

STAGE/STORAGE TABLE

STAGE (FT)	ELEVATION (FT)	CONTOUR AREA (SQ)	INCREMENTAL STORAGE (CF)	TOTAL STORAGE (CF)
0.0	290.0	6375	0	0
0.2	290.2	6505	4535	4535
0.4	290.4	7120	718	5253
0.6	290.6	7728	3630	8883

- NOTES:**
- ALL BIO-RETENTION SHALL HAVE AN ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY.
 - ALL DRAINAGE AREAS TO A BIO-RETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SOILS OR GRASS SOIL.
 - WRAP PERFORATED UNDERDRAIN WITH FILTER FABRIC PRIOR TO BACKFILLING.
 - UNDERDRAIN PIPE SHOULD HAVE 3/4" PERFORATIONS SPACED AT 6" CENTERS, MIN. 4 HOLES PER ROW. MAX SPACING OF UNDERDRAIN PIPE IS 10 FEET ON CENTER.
 - UNDERDRAIN CLEANOUTS MUST EXTEND A MIN. OF 6 INCHES ABOVE TOP SURFACE OF GRASS LAYER, PROBABLY TO THE TOP OF DESIGN MAXIMUM PONDING DEPTH IN THE BIO-RETENTION BASIN.

BIO-RETENTION SOIL MIXTURE

ITEM	PERCENT BY VOLUME	MATERIAL
SAND	75%-85%	MEDIUM TO COARSE WASHED SAND
FINES	0%-5%	FINES (SILT AND CLAY)
ORGANIC MATTER	5%-10%	ORGANIC MATTER (FINE BARK FINES)
PERMEABILITY	THE PERMEABILITY SHOULD FALL BETWEEN 1 AND 6 INCHES PER HOUR, AND 1-2 INCHES PER HOUR IS PREFERRED.	
PHOSPHOROUS INDEX	RANGE BETWEEN 10 AND 30 (CONFORM WITH SOIL ANALYSIS REPORT FROM MEDIA LAB)	

BIO-RETENTION CONSTRUCTION SEQUENCE

STEP 1. CONSTRUCTION OF THE BIORETENTION AREA MAY ONLY BEGIN AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED. IT MAY BE NECESSARY TO BLOCK CERTAIN CURBS OR OTHER INLETS WHILE THE BIORETENTION AREA IS BEING CONSTRUCTED. THE PROPOSED SITE SHOULD BE CHECKED FOR EXISTING UTILITIES PRIOR TO ANY EXCAVATION.

STEP 2. TEMPORARY EROSION CONTROLS ARE NEEDED DURING CONSTRUCTION OF THE BIORETENTION AREA TO DIVERT STORMWATER AWAY FROM THE BIORETENTION AREA UNTIL IT IS COMPLETED. MAINTAIN EROSION CONTROL MEASURES IN PLACE UNTIL BIORETENTION AREA HAS BEEN COMPLETED. SPECIAL PROTECTION MEASURES SUCH AS EROSION CONTROL FABRICS MAY BE NEEDED TO PROTECT VULNERABLE SIDE SLOPES FROM EROSION DURING THE CONSTRUCTION PROCESS.

STEP 3. EXCAVATIONS OR BACKFILLS SHOULD WORK FROM THE SIDES TO DEWATER THE BIORETENTION AREA TO ITS APPROPRIATE DESIGN DEPTH AND UNDERDRAIN. EXCAVATING EQUIPMENT SHOULD HAVE SCUMPS WITH ADEQUATE REACH SO THEY DO NOT HAVE TO SET INSIDE THE FOOTPRINT OF THE BIORETENTION AREA. CONTRACTORS SHOULD USE A CELL CONSTRUCTION APPROACH IN LARGER BIORETENTION BASINS, WHEREBY THE BASIN IS SPLIT INTO SOIL TO LOAD SOIL. TEMPORARY CELLS WITH A 10-15 FOOT EARTH WEDGE IN BETWEEN, SO THAT CELLS CAN BE EXCAVATED FROM THE SIDE.

STEP 4. IT MAY BE NECESSARY TO RIP THE BOTTOM SOILS TO A DEPTH OF 6 TO 12 INCHES TO PROMOTE GREATER INFILTRATION.

STEP 5. PLACE GEOTEXTILE FABRIC ON THE SIDES OF THE BIORETENTION AREA WITH A 6-INCH OVERLAP ON THE SIDES. PLACE THE APPROPRIATE DEPTH OF STONE ON THE BOTTOM, INSTALL THE PERFORATED UNDERDRAIN PIPE, PLACE STONE ABOVE THE UNDERDRAIN PIPE, AND ADD SAND LAYER BETWEEN THE UNDERDRAIN AND THE SOIL MEDIA LAYER.

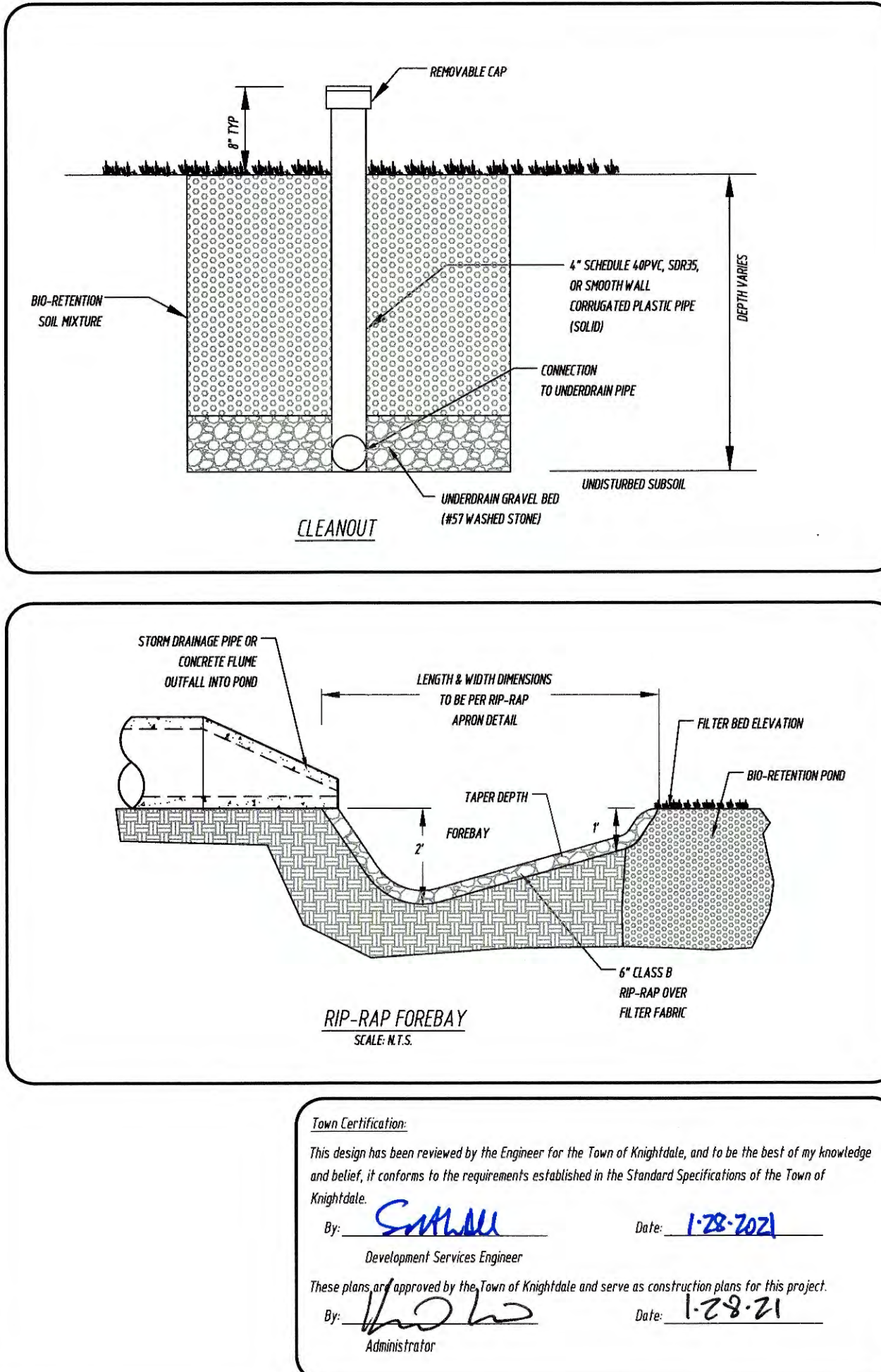
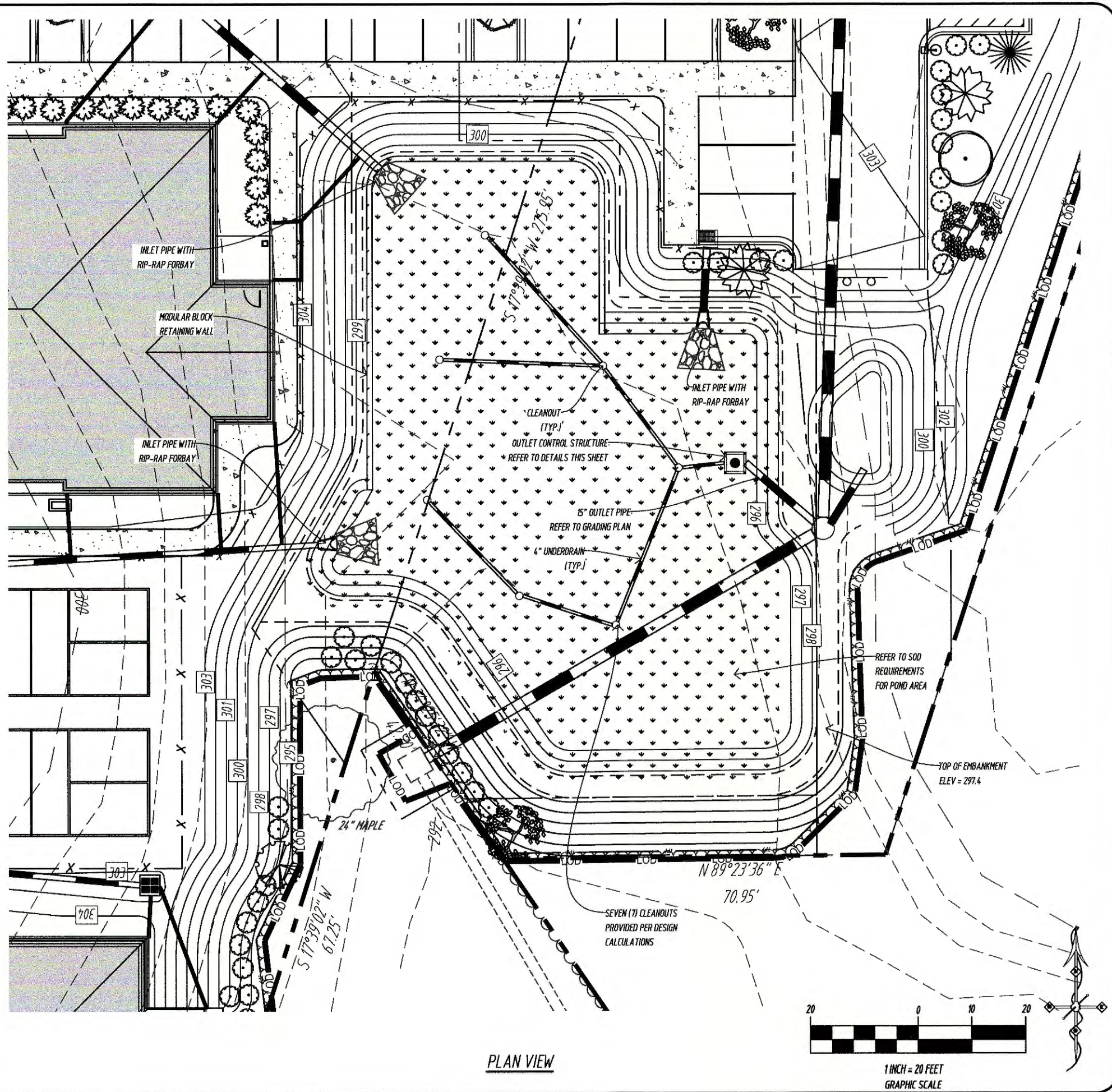
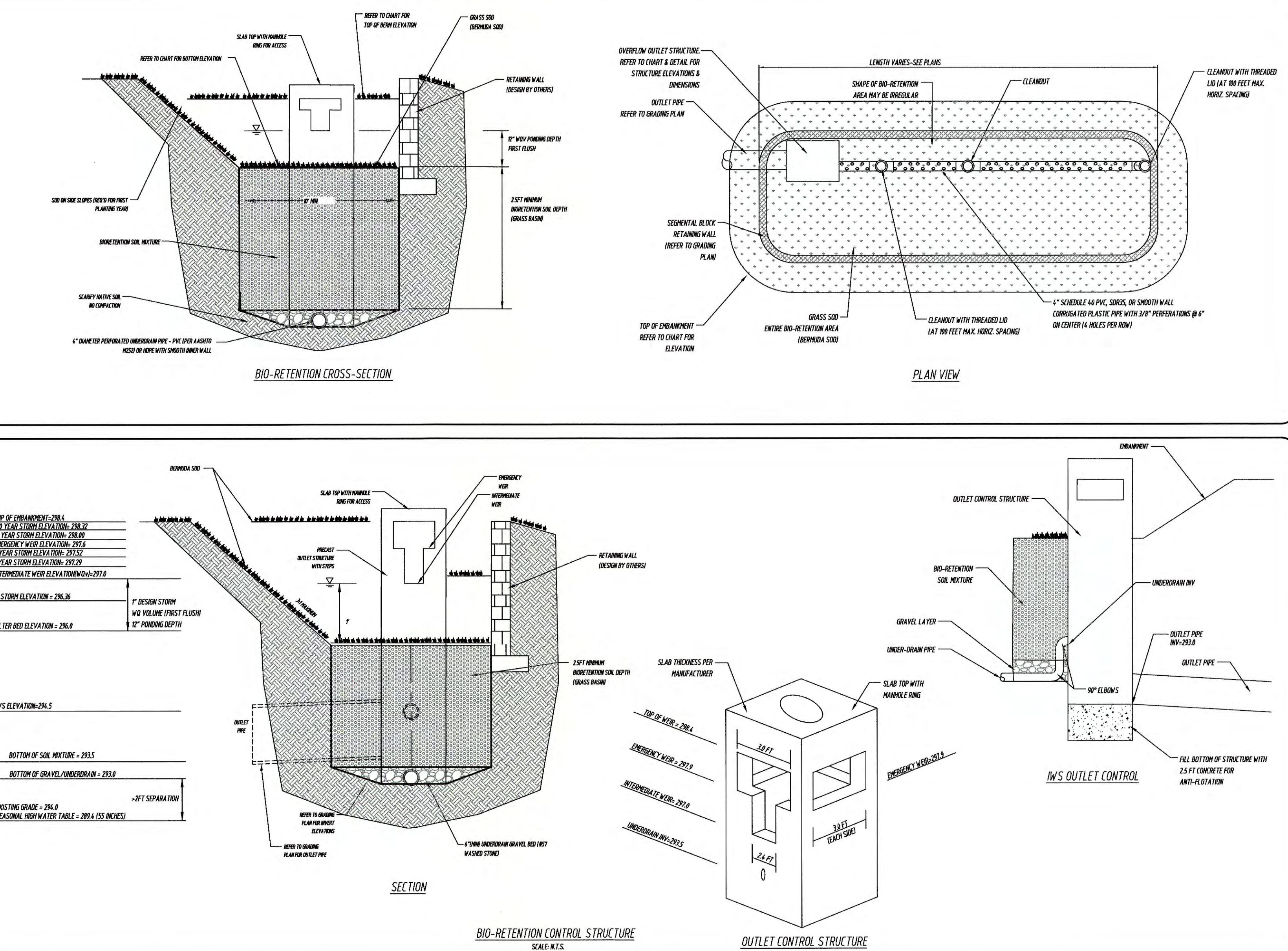
STEP 6. DELIVER THE SOIL MEDIA FROM AN APPROVED VENDOR, AND STORE IT ON AN ADJACENT PREVIOUSLY AREAS OR PLASTIC DIRTING. APPLY THE MEDIA IN 12-INCH LIFTS UNTIL THE DESIRED TOP ELEVATION OF THE BIORETENTION AREA IS ACHIEVED. WAIT A FEW DAYS TO CHECK FOR SETTLEMENT, AND ADD ADDITIONAL MEDIA, AS NEEDED, TO ACHIEVE THE DESIRED ELEVATION. CONTRIBUTING DRAINAGE AREA TO BIO-RETENTION POND TO BE STABILIZED PRIOR TO INSTALLING BIO-RETENTION SOIL MEDIA.

STEP 7. INSTALL THE VEGETATION AND WATER ACCORDINGLY.

STEP 8. COORDINATE WITH INSPECTOR AND ENGINEER TO CONDUCT THE FINAL CONSTRUCTION INSPECTION. UPON COMPLETION OF BIORETENTION FACILITY REMOVE TEMPORARY EROSION CONTROL MEASURES AND COMPLETE FINAL STABILIZATION OF THE PROJECT.

STORMWATER MANAGEMENT NOTES

- THE DEVELOPER OR HIS AGENT SHALL CONTACT THE ENGINEER WHEN THE BEST MANAGEMENT PRACTICES ARE CONSTRUCTED AND ABOUT TO BECOME OPERATIONAL, SO A FINAL INSPECTION CAN BE PERFORMED TO DETERMINE COMPLIANCE WITH THE APPROVED PLAN CAN BE PERFORMED.
- PRIOR TO CONSTRUCTION, A SOIL TEST OF THE BIO-RETENTION FILTER MEDIA SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD WITH A COPY SENT TO THE ENGINEER. THE TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR pH, PHOSPHOROUS, PHOSPHATE AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER AND SOLUBLE SALTS. ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY. THE NC DEPARTMENT OF AGRICULTURE (NCDA) IS THE PREFERRED TESTING FACILITY. SHOULD THE APPLICANT, OUT OF THE ACCEPTABLE RANGE, IT MAY BE REQUIRED TO REWORK WITH LINE OR CLEARED WITH BARE SOIL PLATE TEST SECTION OR AS DIRECTED BY THE MEDIA OR ENGINEER.
- PRIOR TO CONSTRUCTION A COMPOSITION TEST OF THE BIO-RETENTION FILTER MEDIA SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD WITH A COPY SENT TO THE ENGINEER. THE TEST MEDIA SHALL CONFORM TO THE FOLLOWING: 75-85% MEDIUM TO COARSE WASHED SAND, JUSTICE, ALSO TO INCLUDE, ASTM C591, ALSO TO INCLUDE, OR THE EQUIVALENT, 8-12% FINES (SILT AND CLAY), AND 5-10% ORGANIC MATTER (FINE BARK FINES) BY WEIGHT.
- FOR EACH PLACE GEOTEXTILE FABRIC ON THE SIDES OF THE BIORETENTION AREA WITH A 6-INCH OVERLAP ON THE SIDES. PLACE THE APPROPRIATE DEPTH OF STONE ON THE BOTTOM, INSTALL THE PERFORATED UNDERDRAIN PIPE, PLACE STONE ABOVE THE UNDERDRAIN PIPE, AND ADD SAND LAYER BETWEEN THE UNDERDRAIN AND THE SOIL MEDIA LAYER.
- ANNUAL MAINTENANCE INSPECTION AND REPORT REQUIRED - THE OWNER OF A PERMITTED STREET SHALL, ANNUALLY, SUBMIT A MAINTENANCE AND INSPECTION REPORT FOR EACH YEAR TO THE STORMWATER ADMINISTRATION. ANNUAL INSPECTIONS SHALL BEGIN WITH ONE YEAR OF THE RECORDATION OF ANY DECREASES SHOWING STORMWATER IMPROVEMENT, STREET FLOODS.
- UPON COMPLETION OF THE PROJECT, AND BEFORE A CERTIFICATE OF OCCUPANCY SHALL BE GRANTED, THE ENGINEER OF RECORD SHALL CERTIFY THAT THE COMPLETED PROJECT IS IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGEMENT PLANS AND DESIGNS.
- A FINAL INSPECTION OF THE SITE AND STORMWATER MANAGEMENT IMPROVEMENTS SHALL BE SCHEDULED WITH AND COMPLETED BY THE ENGINEER & INSPECTOR.
- THE ENGINEER'S CERTIFICATION OF COMPLETION SHALL BE REQUIRED PRIOR TO THE FINAL PLAT OR CERTIFICATE OF OCCUPANCY. THE STORMWATER CONTROL IS TO BE INSPECTED TO ENSURE IT IS FUNCTIONING AS DESIGNED AND HAS FULL DESIGN FLOWLINE PRIOR TO SIGNATURE OF THE FINAL CERTIFICATE OF OCCUPANCY.



CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE# P-0619
mowder@trianglesitedesign.com

Matthew R. Lind

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Rain Creek Road
Henderson, NC 27536
daniel@thlnc.com
www.thlnc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, is an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS	Date	Desc
1	1/28/2021	ADJUSTED FOR TOWN AND COUNTY REVIEW
2	1/28/2021	ADJUSTED FOR TOWN AND COUNTY REVIEW
3	1/28/2021	ADJUSTED FOR TOWN AND COUNTY REVIEW
4	1/28/2021	ADJUSTED FOR TOWN AND COUNTY REVIEW

Drawn: [Signature]
Checked: [Signature]
Approved: [Signature]

Project No. 008001
Date: December 4, 2020
Title: STORMWATER MANAGEMENT DETAILS
Sheet No. C15A

BMP element: The entire bio-retention cell	Anticipated problem: Trash/debris is present.	How I will remediate the problem: Remove the trash/debris.
The perimeter of the bio-retention cell	Areas of bare soil and/or erosion gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-line fertilizer application.
The inlet	Blockage/Clogging? The pipe is cracked or otherwise damaged (if applicable). Erosion is occurring in the swale (if applicable).	Unclog the pipe. Dispose of the sediment off-site. Replace or repair the pipe. Regrade the swale if necessary and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and clogged stone and replace with clean stone.
The pretreatment system	Flow is bypassing pretreatment area and/or gullies have formed. Sediment has accumulated to a depth greater than three inches. Erosion has occurred.	Re-grade if necessary to route all flow to the pretreatment area. Restabilize the area after grading. Search for the source of the sediment and remedy the problem if possible. Remove the sediment and restabilize the pretreatment area. Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand.
Plant material	Best professional practices show that pruning is needed to maintain optimal plant health. Plants are dead, diseased or dying.	Prune according to best professional practices. Maintain lines of sight between 2'-4'. Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-line fertilizer or lime application to establish the ground cover if a soil test indicates it is necessary.
	Weeds are present.	Remove the weeds, preferably by hand. If an herbicide is used, wipe it on the plants rather than spraying.
Bio-retention cell: vegetation	Best professional practices show that pruning is needed to maintain optimal plant health. Plants are dead, diseased or dying.	Prune according to best professional practices. Maintain lines of sight. Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-line fertilizer or lime application to establish the ground cover if a soil test indicates it is necessary. If not used, check to see that it was not grown on clay or impermeable soils. Replace soil if necessary.
	Tree stakes/wires are present six months after planting.	Remove tree stakes/wires (which can kill the tree if not removed).
Bio-retention cell: mulch and media	Mulch is breaking down or has flattened away. Soils and/or mulch are clogged with sediment.	Spot mulch if there are only random void areas. Replace whole mulch layer if necessary. Remove the remaining mulch and replace with triple shredded hard wood mulch at a maximum depth of four inches. Determine the extent of the clogging - remove and replace either just the top layer or the entire media as needed. Dispose of the soil in an appropriate off-site location. Use triple shredded hard wood mulch at a maximum depth of four inches. Search for the source of the sediment and remedy the problem if possible.
	An annual soil test shows that pH has dropped or heavy metals have accumulated in the soil media.	Detonate lime shall be applied as recommended per the soil test and truck soils shall be removed, disposed of properly and replaced with new planting material.
The underdrain, filter fabric element, and outlet system	Clogging has occurred. Clogging has occurred. The drop inlet is damaged.	Wash out the underdrain system. Clean out the drop inlet. Dispose of the sediment off-site. Repair or replace the drop inlet.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Resources.

NOTE:
A PERMEABILITY SOIL REPORT SHALL BE PROVIDED AFTER BIO-RETENTION SOIL MIXTURE IS IN PLACE - REFER TO STORMWATER MANAGEMENT NOTES FOR REQUIREMENTS.

GRASS NOTE:
GRASS SHALL BE EITHER HYBRID BERBERA GRASS OR CENTPEDE.

BIO-RETENTION SOIL MIXTURE:
Bio-retention Soil Mixture (BSM) shall be placed and graded using low ground-contact pressure equipment or by excavators and/or backhoes operating on the ground adjacent to the bio-retention facility. No heavy equipment shall be used within the perimeter of the bio-retention facility before, during, or after the placement of the BSM. The BSM shall be placed in horizontal layers not to exceed 12 inches for the entire area of the bio-retention facility. The BSM shall be compacted by saturating the entire area of the bio-retention facility after each lift of BSM is placed until water flows from the under-drains. Water for saturation shall be applied by spraying or sprinkling. An appropriate sediment control device shall be used to treat any sediment-laden water discharged from the under-drains. If the BSM becomes contaminated during the construction of the facility, the contaminated material shall be removed and replaced with uncontaminated material at an additional cost to the Administration. Final grading of the BSM shall be performed after a 24-hour settling period. Final elevations shall be within 1/2 inches of elevations shown on the Contract Plans.

The Bio-retention Soil Mixture (BSM) shall be a uniform mix, free of stones, shrapnel, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bio-retention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations.

Prior to placing the under-drain and the BSM, the bottom of the excavation shall be retro-filled to a minimum depth of 6 inches to alleviate any compaction of the facility bottom. Any subgrade method for retro-filling must be approved by the Engineer prior to use. Any ponded water shall be removed from the bottom of the facility and the soil shall be friable before retro-filling.

Once the BSM has been placed the entire bio-retention area shall be soded with grass that has been grown in sandy soils or that has the roots washed clean of any clay or other materials that could clog the function of the bio-retention system.

OPERATION AND MAINTENANCE

North Carolina storm water rules require annual inspections by the regulating agency of bio-retention areas as a minimum. More frequent inspections by the land owner or system operator are strongly encouraged to ensure the proper operation of bio-retention areas.

A. Rainfall Event

1. Inspect the basin after every runoff-producing rainfall event.

B. Monthly Inspection

1. Inspect the basin monthly.
2. Check the bio-retention area side slopes; remove trash and repair eroded areas before the next rainfall event.
3. Check the vegetative and rock filters for sediment accumulation, erosion and proper operation of the flow spreader mechanism and repair as necessary.
4. Visually inspect and repair soil erosion on a monthly basis.
5. Remove any void areas whenever necessary. Replacement of mulch layers may be necessary every two or three years. Mulch should be replaced in the spring. When the mulch layer is replaced, the previous layer should be removed first.
6. Remove and replace all dead and diseased vegetation considered beyond treatment. This should be done twice a year; once in the spring and once in the fall. Treat all diseased trees and shrubs that are not beyond treatment as needed.

C. Quarterly Inspection

1. Inspect the collection system (i.e. catch basins, pipes and grass swales) for proper functioning. Clear accumulated trash from basin grates and basin before. Check piping for obstructions.
2. Check good inlet pipes for undersizing, replace rip-rap and repair broken pipes.
3. Reassess grassed swales, including the vegetated filter if applicable, twice a year as necessary. Repair eroded areas immediately.

D. Six Month Inspection

1. Remove accumulated sediment from the bottom of the outlet structure or other areas where accumulated sediment is noted.
2. Inspect the replacement of any wet areas where water may be seeping through the soil.

E. General Inspection

1. Maximum grass height is to be six.
2. No woody vegetation shall be allowed to grow in the bio-retention area.
3. Debris shall be removed from blocking the inlet and outlet structures and from areas of potential clogging.
4. Periodic removal of dead vegetation shall be accomplished.
5. All components of the bio-retention system must be kept in good working order.

BIO-RETENTION DETAILS

N.T.S.

STORMWATER MANAGEMENT DESIGN BIO-RETENTION POND

RIVER BASIN:	NEUSE
RECEIVING STREAM:	MANGO CREEK
STREAM INDEX:	27-32
STREAM CLASS:	C, NSM

POND DESIGN SUMMARY

DRAINAGE AREA TO POND:	1.63 ACRES
SITE IMPERVIOUS AREA TO POND:	1.0 ACRES
DESIGN-DESIGN IMPERVIOUS AREA TO POND:	0.9 ACRES
TOTAL DESIGN IMPERVIOUS AREA TO POND:	1.0 ACRES

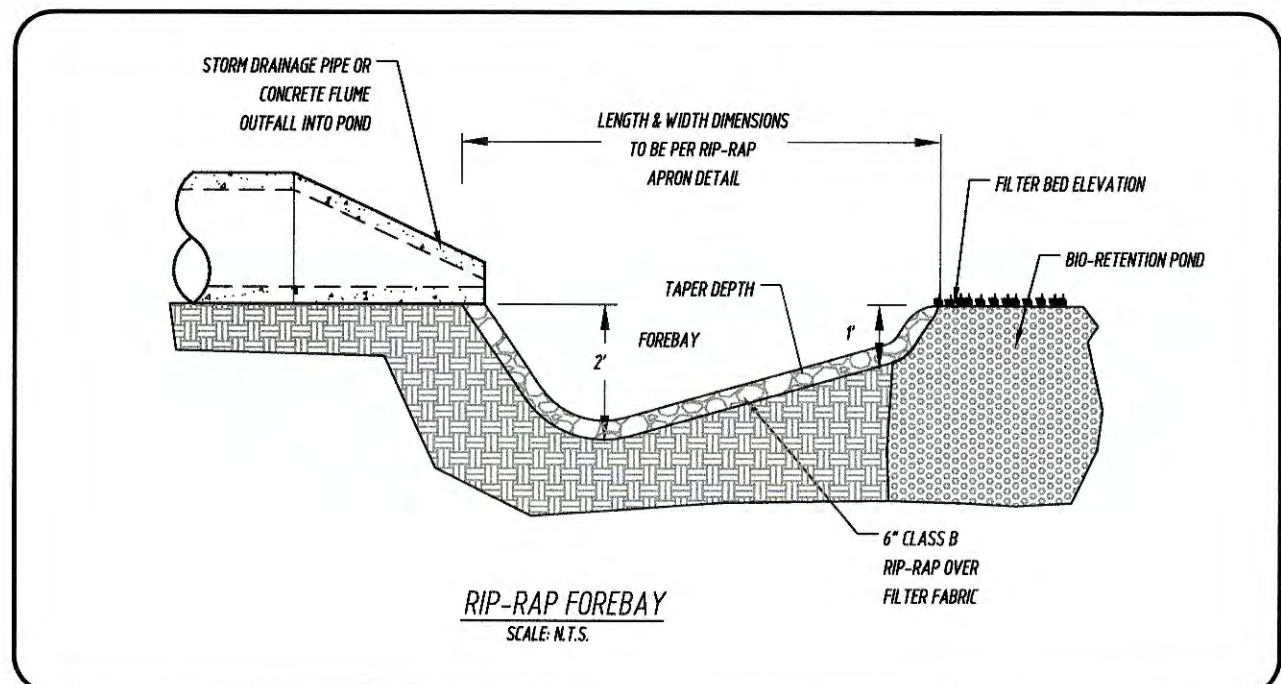
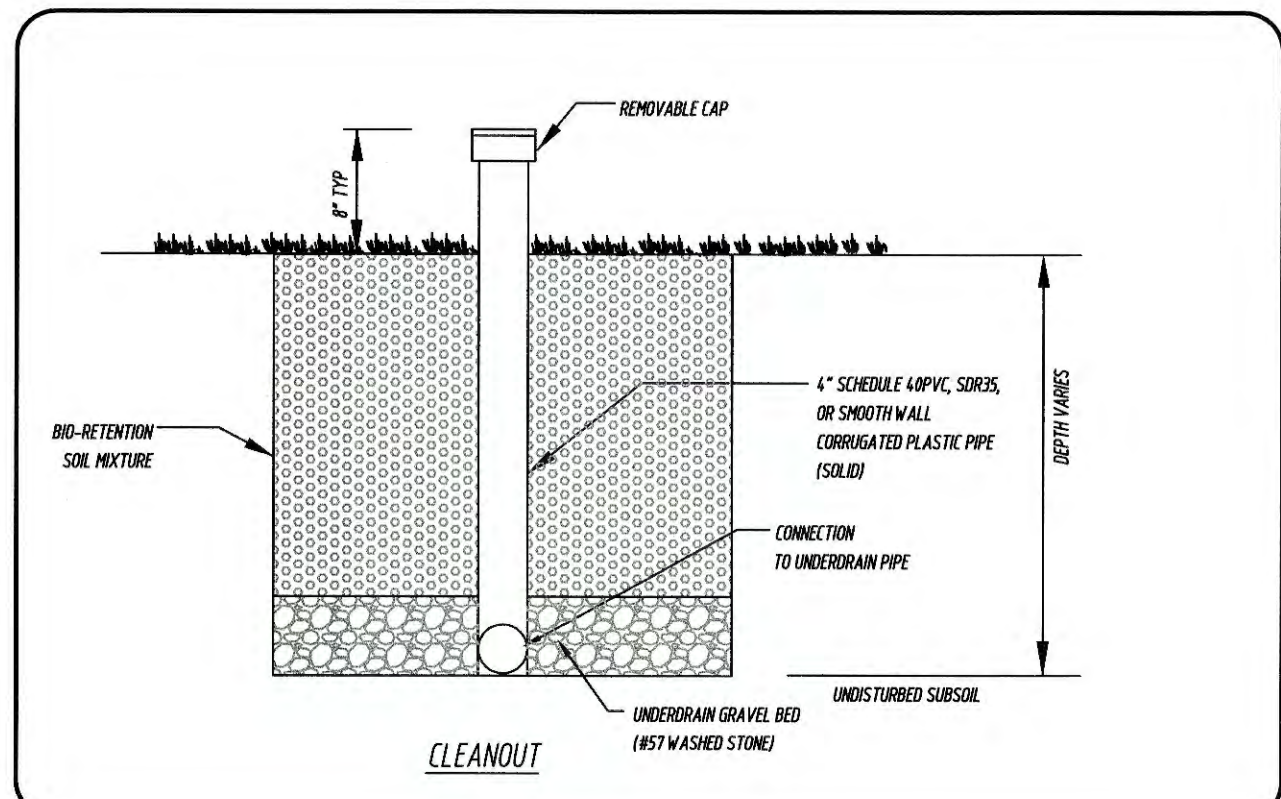
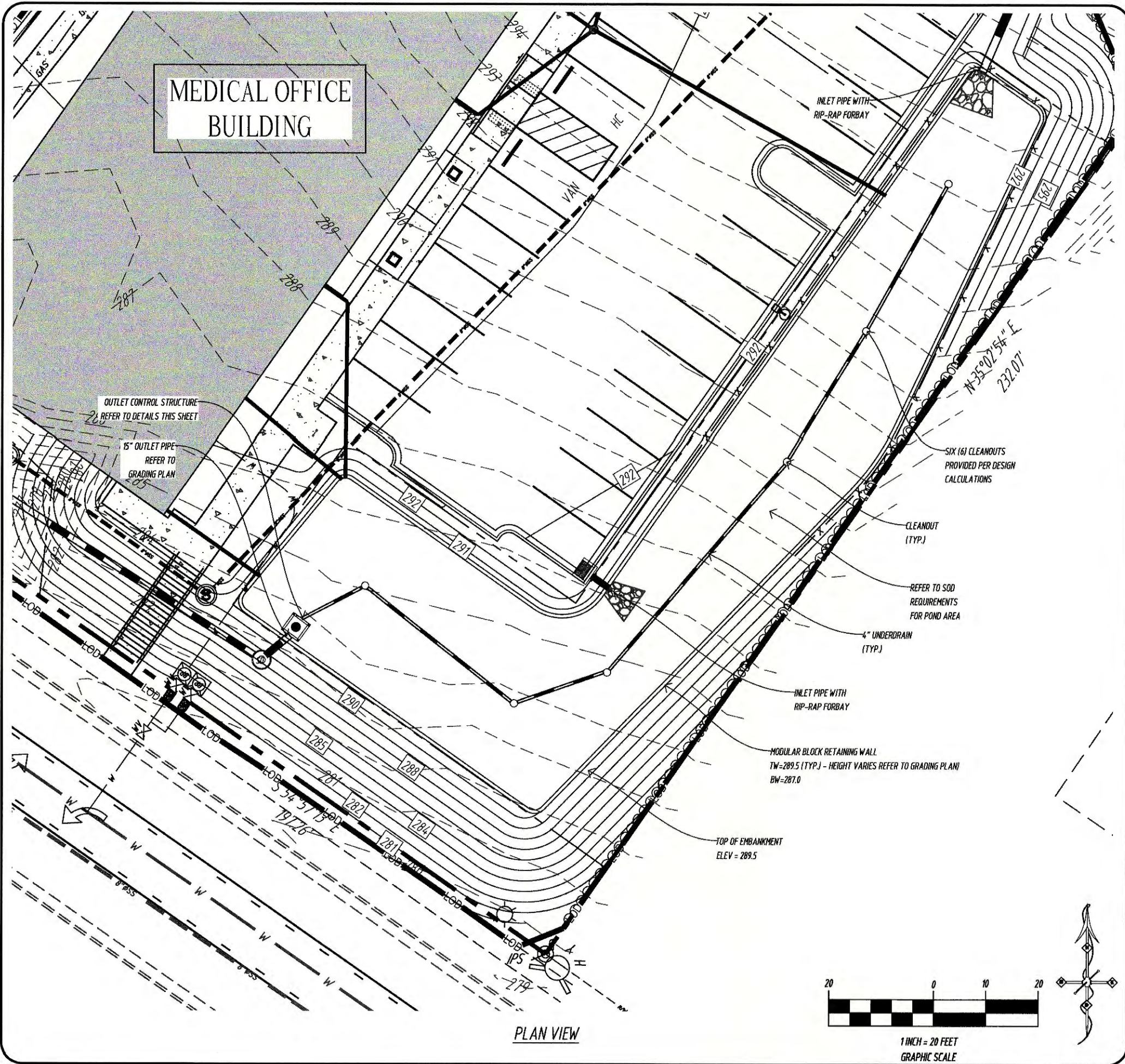
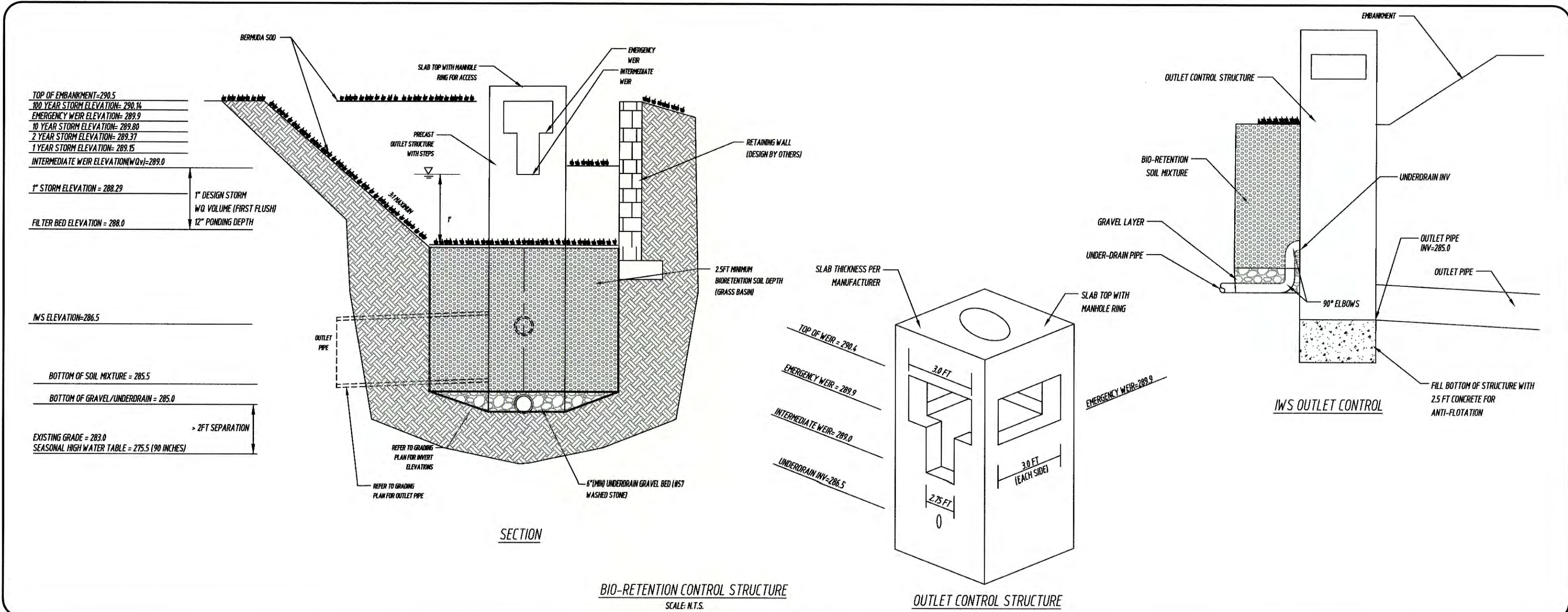
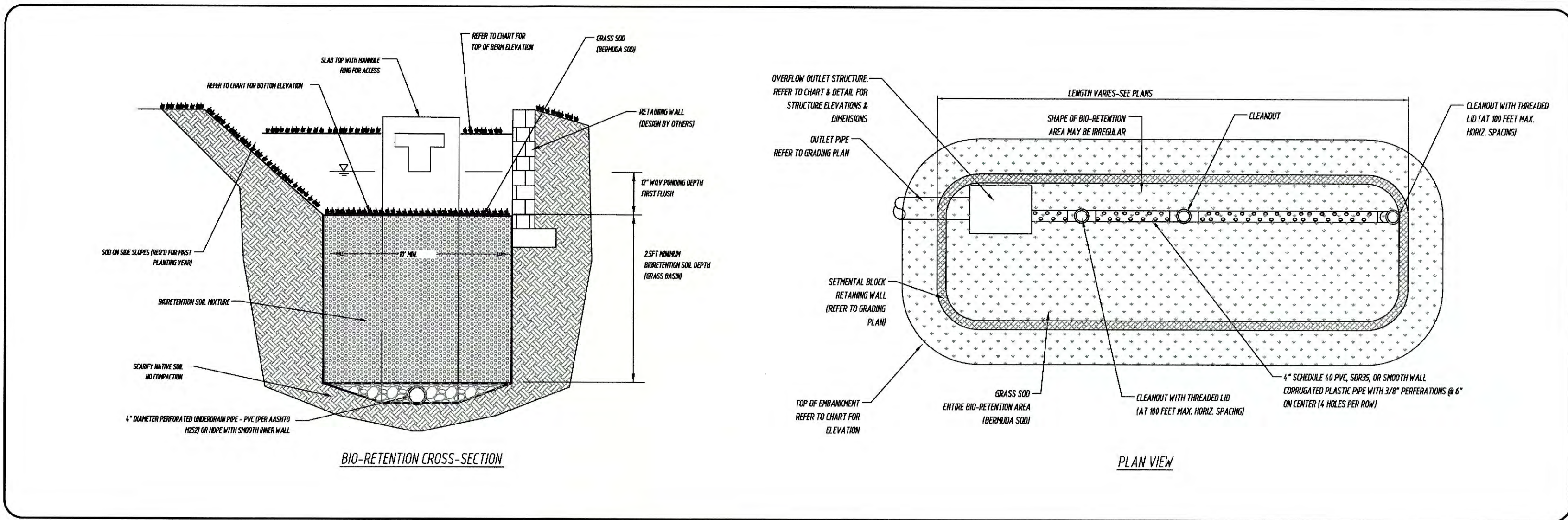
	PRE-DEVELOPED OVERALL	POST-DEVELOPED TO POND	POST DEVELOPED THROUGH POND
DRAINAGE AREA:	1.63 AC	1.63 AC	
CURVE NUMBER:	77.0	92.5	
TIME OF CONCENTRATION:	11 MIN	5 MIN	

1" STORM EVENT:	0.580 CFS	0.660 CFS
1-YEAR STORM EVENT:	2.288 CFS	5.534 CFS
2-YEAR STORM EVENT:	3.370 CFS	6.942 CFS
10-YEAR STORM EVENT:	6.430 CFS	10.75 CFS
100-YEAR STORM EVENT:	10.80 CFS	16.79 CFS

STAGE (FT)	ELEVATION (FT)	CONTOUR AREA (SQ FT)	INCREMENTAL STORAGE (CF)	TOTAL STORAGE (EST)
0.0	290.0	\$255	0	0
1.0	290.0	\$255	\$255	\$255 (100%)
2.0	290.0	\$255	\$255	\$510
2.5	290.5	\$570	\$286	\$796

NOTES:

1. ALL BIO-RETENTION SHALL HAVE AN ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY.
2. ALL DRAINAGE AREAS TO A BIO-RETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SOILS OR GRASS SOIL.
3. WRAP PERFORATED UNDERDRAIN WITH FILTER FABRIC PRIOR TO BACKFILLING.
4. UNDERDRAIN PIPE SHOULD HAVE 3/4" PERFORATIONS SPACED AT 4" CENTERS, MIN. 4 HOLES PER ROW. MAX SPACING OF UNDERDRAIN PIPE IS 10 FEET ON CENTER.
5. UNDERDRAIN CLEANOUTS MUST EXTEND A MIN. OF 6 INCHES ABOVE TOP SURFACE OF GRASS LAYER, PREFERABLY TO THE TOP OF DESIGN MAXIMUM PONDING DEPTH IN THE BIO-RETENTION BASIN.



Drawn

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

By: *SMALL*

Development Services Engineer

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

By: *LS*

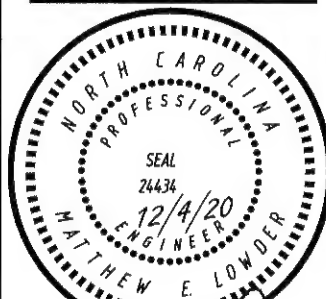
Administrator

Date: 1-28-2021

Date: 1-28-21



CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR., STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE# P-0619
mldw@trianglestedsign.com



Matthew R. Lind

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Rain Creek Road
Henderson, NC 27536
daniel@tharrington.com
www.igbnc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS	Date	Revised By	Revised For
1	1/28/21	SMALL	ADDED SITE CHANGES
2	1/28/21	SMALL	ADDED SITE CHANGES
3	1/28/21	SMALL	ADDED SITE CHANGES
4	1/28/21	SMALL	ADDED SITE CHANGES
5	1/28/21	SMALL	ADDED SITE CHANGES

Drawn
Checked
Approved

Project No. 008001
Date: December 4, 2020

STORMWATER
MANAGEMENT
DETAILS

Sheet No.

C1.5B

BMP element: The entire bio-retention cell	Potential problem: Trash/debris is present.	How I will remediate the problem: Remove the trash/debris.
The perimeter of the bio-retention cell	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide line and a one-time fertilizer application.
The inlet	Blockage/Clogging? The pipe is cracked or otherwise damaged (if applicable). Erosion is occurring in the swale (if applicable).	Unclog the pipe. Dispose of the sediment off-site. Replace or repair the pipe. Regrade the swale if necessary and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
The pretreatment system	Flow is bypassing pretreatment area and/or gullies have formed. Sediment has accumulated to a depth greater than three inches. Erosion has occurred.	Re-grade if necessary to route all flow to the pretreatment area. Restabilize the area after grading. Search for the source of the sediment and remedy the problem if possible. Remove the sediment and restabilize the pretreatment area. Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
Plant material	Weeds are present.	Remove the weeds, preferably by hand.
	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices. Maintain lines of sight between 2'-6'.
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer or lime application to establish the ground cover if a soil test indicates it is necessary.
	Weeds are present.	Remove the weeds, preferably by hand. If an herbicide is used, wipe it on the plants rather than spraying.
Bio-retention cell: vegetation	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices. Maintain lines of sight.
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if a soil test indicates it is necessary. If soil was used, check to see that it was not grown on clay or impermeable soils. Replace soil if necessary.
	Tree stakes/wires are present six months after planting.	Remove tree stakes/wires (which can kill the tree if not removed).
Bio-retention cell: mulch and media	Mulch is breaking down or has finished away.	Spot mulch if there are only random void areas. Replace whole mulch layer if necessary. Remove the remaining mulch and replace with triple shredded hard wood mulch of a maximum depth of four inches.
	Soils and/or mulch are clogged with sediment.	Determine the extent of the clogging - remove and replace either just the top layers or the entire media as needed. Dispose of the soil in an appropriate off-site location. Use triple shredded hard wood mulch of a maximum depth of four inches. Search for the source of the sediment and remedy the problem if possible.
	An annual soil test shows that pH has dropped or heavy metals have accumulated in the soil media.	Delonite line shall be applied as recommended per the soil test and toxic soils shall be removed, disposed of properly and replaced with new planting media.
The underdrain, filter fabric element, and outlet system	Clogging has occurred.	Wash out the underdrain system.
	Clogging has occurred.	Clean out the drop inlet. Dispose of the sediment off-site.
	The drop inlet is damaged.	Repair or replace the drop inlet.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Resources.

NOTE:
A PERMEABILITY SOIL REPORT SHALL BE PROVIDED AFTER BIO-RETENTION SOIL MIXTURE IS IN PLACE - REFER TO STORMWATER MANAGEMENT NOTES FOR REQUIREMENTS.

GRASS NOTE:
GRASS SHALL BE EITHER HYBRID BERMUDA GRASS OR CENTAUDE

BIO-RETENTION SOIL MIXTURE:

Bio-retention Soil Mixture (BSM) shall be placed and graded using low ground-contact pressure equipment or by excavators and/or backhoes operating on the ground adjacent to the bio-retention facility. No heavy equipment shall be used within the perimeter of the bio-retention facility before, during, or after the placement of the BSM. The BSM shall be placed in horizontal layers not to exceed 12 inches for the entire area of the bio-retention facility. The BSM shall be compacted by saturating the entire area of the bio-retention facility after each lift of BSM is placed until water flows from the under-drain. Water for saturation shall be applied by spraying or sprinkling. An appropriate sediment control device shall be used to treat any sediment-laden water discharged from the under-drain. If the BSM becomes contaminated during the construction of the facility, the contaminated material shall be removed and replaced with uncontaminated material at no additional cost to the Administrator. Final grading of the BSM shall be performed after a 24-hour settling period. Final elevations shall be within 2 inches of elevations shown on the Contract Plans.

The Bio-retention Soil Mixture (BSM) shall be a uniform mix, free of stones, shrap, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bio-retention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations.

Prior to placing the under-drain and the BSM, the bottom of the excavation shall be ruts-bladed to a minimum depth of 6 inches to alleviate any compaction of the facility bottom. Any substitute method for ruts-blading must be approved by the Engineer prior to use. Any ponded water shall be removed from the bottom of the facility and the soil shall be friable before ruts-blading.

Once the BSM has been placed the entire bio-retention area shall be seeded with grass that has been grown in sandy soils or that has the roots washed clean of any clay or other materials that could clog the function of the bio-retention system.

OPERATION AND MAINTENANCE

North Carolina storm water rules require annual inspections by the regulating agency of bio-retention areas as a minimum. More frequent inspections by the land owner or system operator are strongly encouraged to ensure the proper operation of bio-retention areas.

- A. Rainfall Event**
- Inspect the basin after every runoff-producing rainfall event.
- B. Monthly Inspection**
- Inspect the basin weekly.
 - Check the bio-retention area side slopes; remove trash and repair eroded areas before the next rainfall event.
 - Check the vegetative and rock filters for sediment accumulation, erosion and proper operation of the flow spreader mechanism and repair as necessary.
 - Visually inspect and repair soil erosion on a monthly basis.
 - Remove any void areas whenever necessary. Replacement of mulch layers may be necessary every two or three years. Mulch should be replaced in the spring. When the mulch layer is replaced, the previous layer should be removed first.
 - Remove and replace all dead and diseased vegetation considered beyond treatment. This should be done twice a year, once in the spring and once in the fall. Treat all diseased trees and shrubs that are not beyond treatment as needed.
- C. Quarterly Inspection**
- Inspect the collection system (i.e. catch basin, pipes and grass swales) for proper functioning. Clear accumulated trash from basin grates and basin baffles. Check piping for obstructions.
 - Check pond inlet pipes for undershifting, replace rip-rap and repair broken pipes.
 - Re-seat grassed swales, including the vegetated filter if applicable, twice a year as necessary. Repair eroded areas immediately.
- D. Six Month Inspection**
- Remove accumulated sediment from the bottom of the outlet structure or other areas where accumulated sediment is noted.
 - Inspect the embankment taking note of any wet areas where water may be seeping through the soil.
- E. General Inspection**
- Maximum grass height is to be 6 in.
 - No woody vegetation shall be allowed to grow in the bio-retention area.
 - Debris shall be removed from blocking the inlet and outlet structures and from areas of potential clogging.
 - Periodic removal of dead vegetation shall be accomplished.
 - All components of the bio-retention system must be kept in good working order.

1 BIO-RETENTION DETAILS N.T.S.

STORMWATER MANAGEMENT DESIGN BIO-RETENTION POND

RIVER BASIN:	NEUSE
RECEIVING STREAM:	MANCO CREEK
STREAM INDEX:	27-32
STREAM CLASS:	C, NSM

POND DESIGN SUMMARY

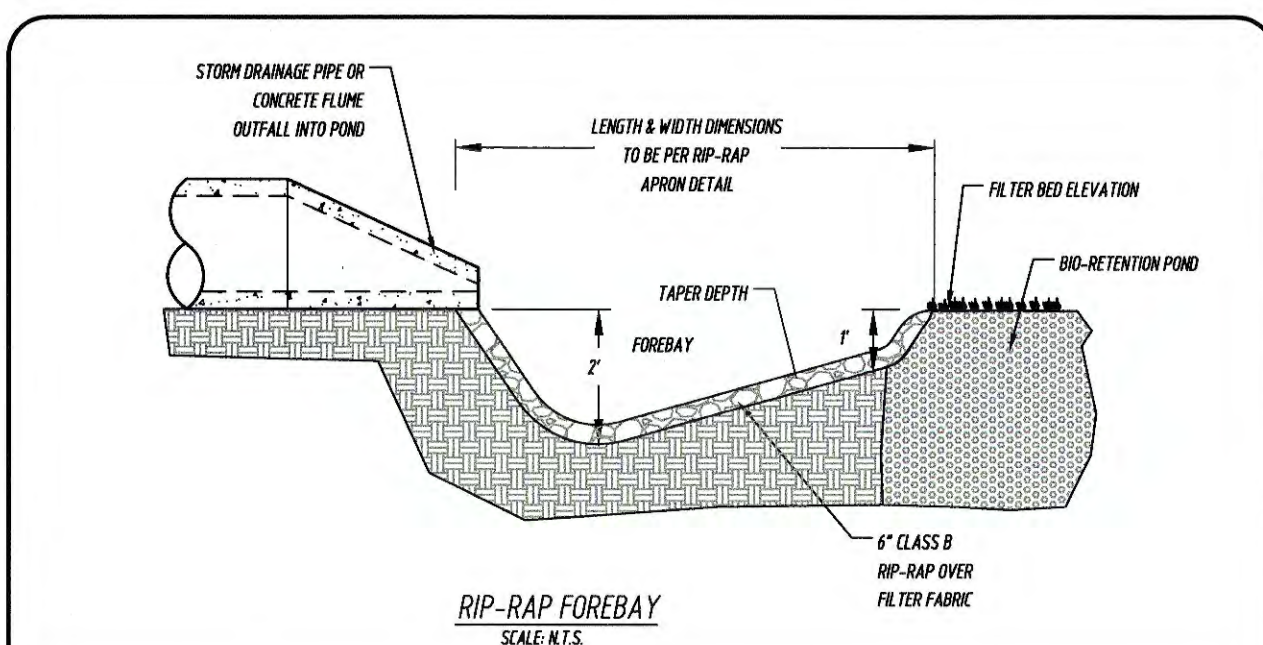
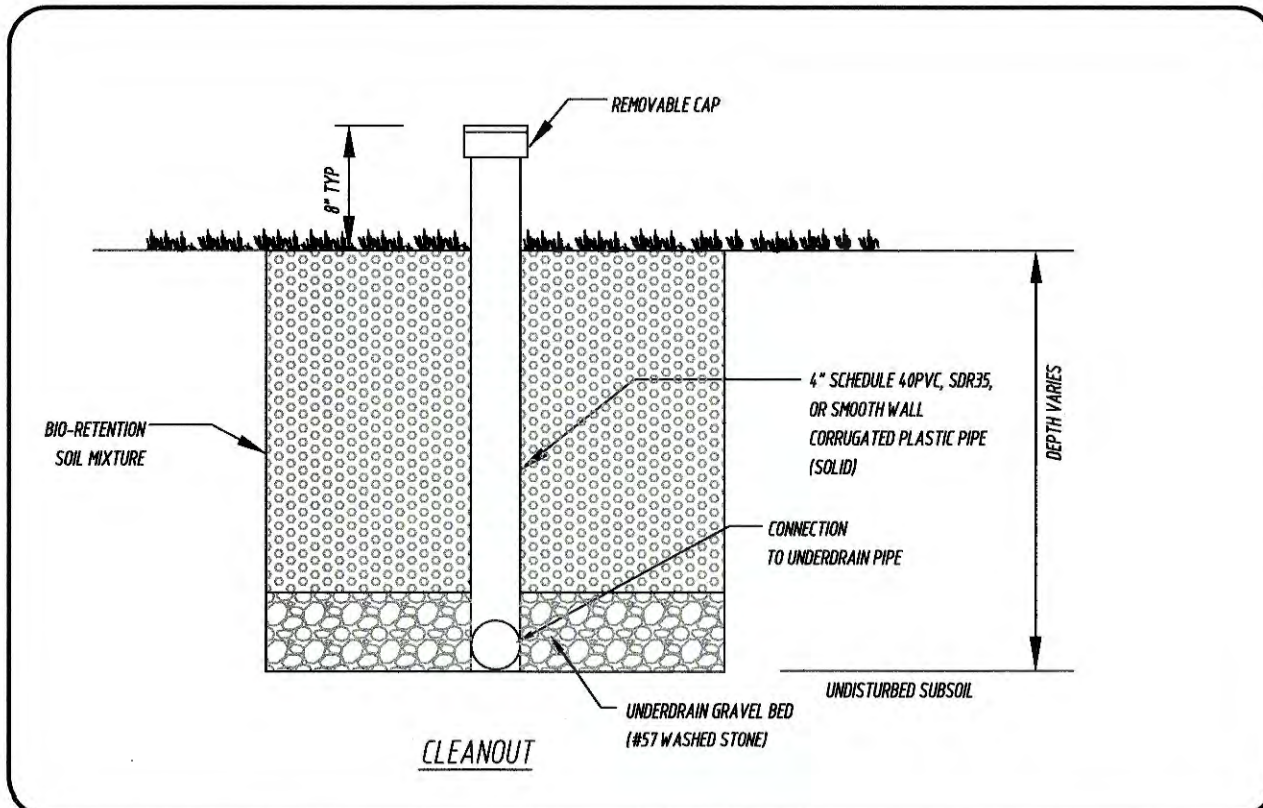
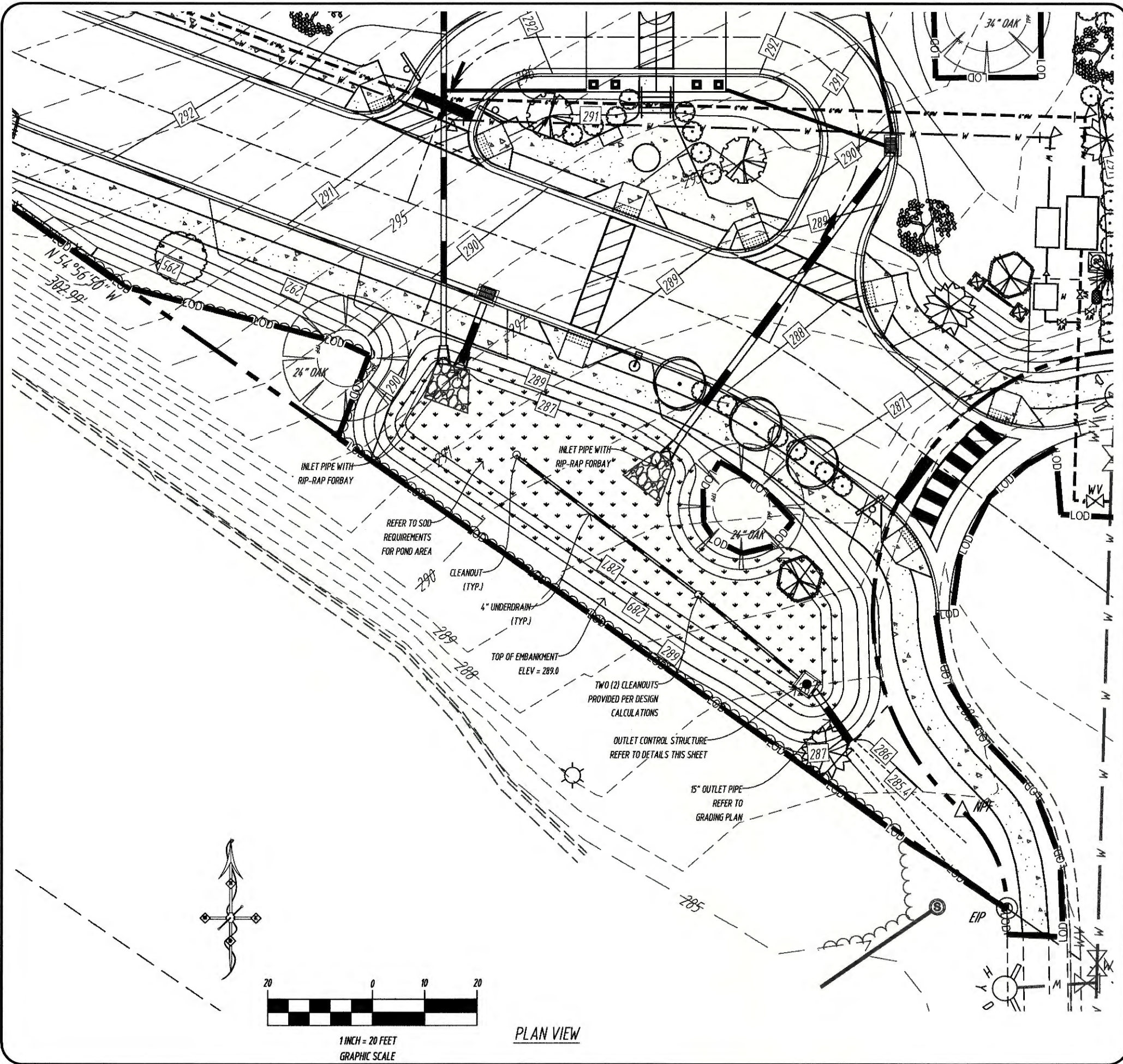
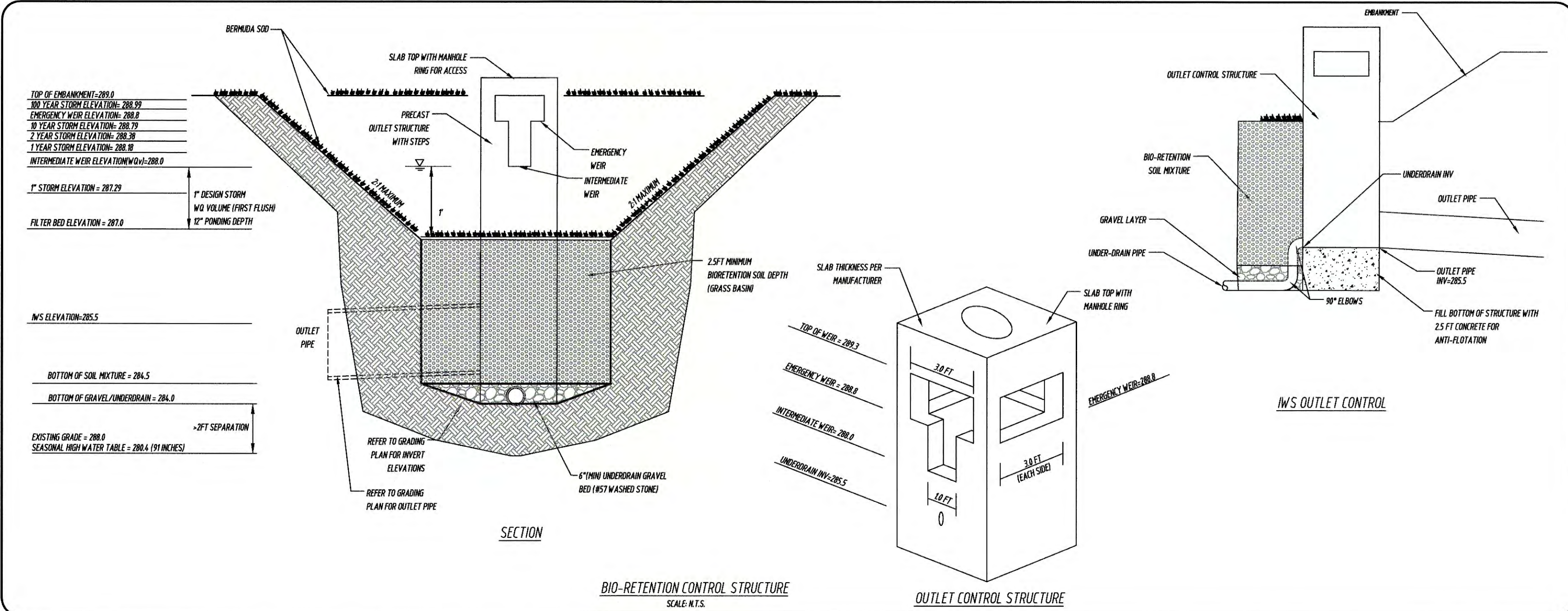
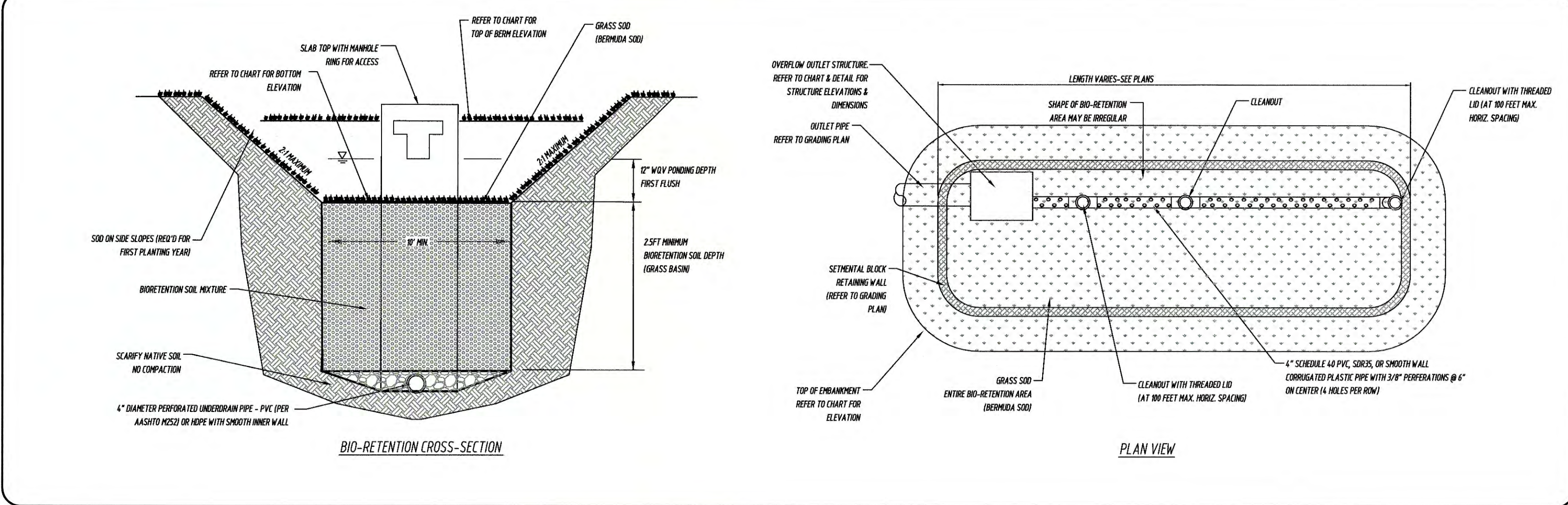
DRAINAGE AREA TO POND:	0.62 ACRES
SITE IMPERVIOUS AREA TO POND:	0.140 ACRES
OFF-SITE DESIGN IMPERVIOUS AREA TO POND:	0.0 ACRES
TOTAL DESIGN IMPERVIOUS AREA TO POND:	0.140 ACRES

	PRE-DEVELOPED OVERALL	POST-DEVELOPED TO POND	POST-DEVELOPED THROUGH POND
DRAINAGE AREA:	0.62 AC	0.62 AC	
CURVE NUMBER:	77.0	91.6	
TIME OF CONCENTRATION:	10 MIN	5 MIN	
1" STORM EVENT:		0.09 CFS	0.00 CFS
1-YEAR STORM EVENT:	0.070 CFS	2.042 CFS	0.255 CFS
2-YEAR STORM EVENT:	1.268 CFS	2.579 CFS	0.761 CFS
10-YEAR STORM EVENT:	2.444 CFS	4.824 CFS	2.275 CFS
100-YEAR STORM EVENT:	4.488 CFS	6.362 CFS	5.893 CFS

STAGE (FT)	ELEVATION (FT)	CONTOUR AREA (SQ FT)	INCREMENTAL STORAGE (CU FT)	TOTAL STORAGE (CU FT)
0.0	287.0	505	0	0
1.0	286.0	960	1233	1233 (INV-0)
2.0	285.0	2440	2200	3633

NOTES:

- ALL BIO-RETENTION SHALL HAVE AN ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY.
- ALL DRAINAGE AREAS TO A BIO-RETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SOILS OR GRASS SOIL.
- WRAP PERFORATED UNDERDRAIN WITH FILTER FABRIC PRIOR TO BACKFILLING.
- UNDERDRAIN PIPES SHOULD HAVE 3/4" PERFORATIONS SPACED AT 6" CENTERS, MIN. 4 HOLES PER ROW. MAX SPACING OF UNDERDRAIN PIPES IS 10 FEET ON CENTER.
- UNDERDRAIN CLEANOUTS MUST EXTEND A MIN. OF 6 INCHES ABOVE TOP SURFACE OF GRASS LAYER, PREFERABLY TO THE TOP OF DESIGN MAXIMUM PONDING DEPTH IN THE BIO-RETENTION BASIN.



Town Certification:
This design has been reviewed by the Engineer for the Town of Knightdale, and to be the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: *[Signature]* Date: *1-28-2021*
Development Services Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: *[Signature]* Date: *1-28-21*
Administrator

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
NC LICENSE# P-0619
mlowder@trianglestedsign.com

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 RAIN CREEK ROAD
HENDERSON, NC 27536
dtnie@thlpc.com
www.ighnc.com

The Lawson of Knightdale

Mulford Court

Knightdale, North Carolina

Wake County

HUD PROJECT #:

053-38011

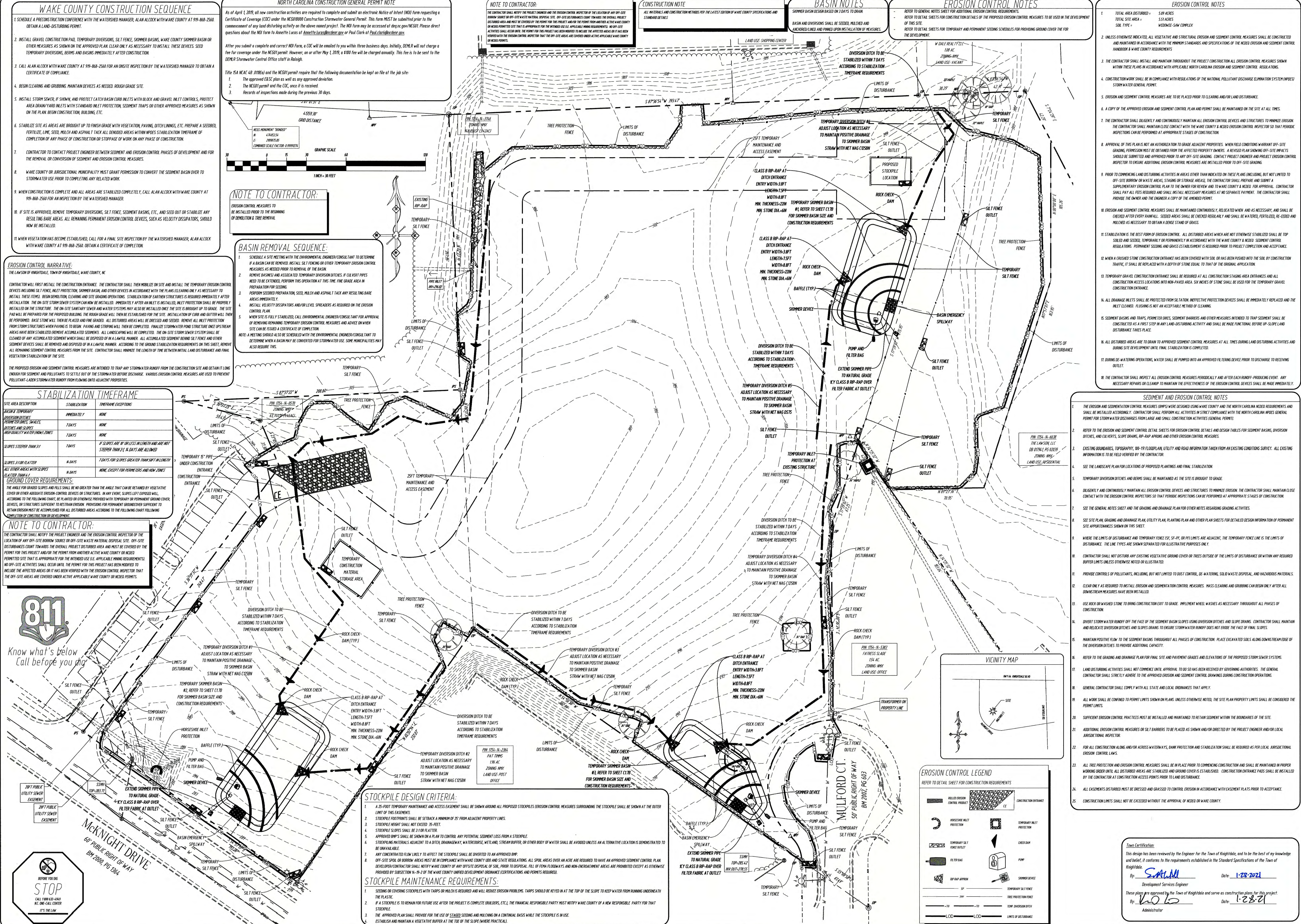
This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

NO.	DATE	REVISION	BY	CHKD	APP'D
1	1/28/21	ADDED SITE GRASS	ML		
2	1/28/21	ADDED RIP-RAP FOREBAY	ML		
3	1/28/21	ADDED FILTER FABRIC	ML		
4	1/28/21	ADDED FILTER FABRIC	ML		

Drawn
Checked
Approved

Project No. 008001
Date: December 4, 2020

Title: STORMWATER MANAGEMENT DETAILS
Sheet No. C15C



TRIANGLE
SITE DESIGN

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-6570
MLCENSE# P-0619
mlawson@trianglesitedesign.com

Seal
12/14/20
Professional Engineer
Matthew E. Lawson
Matthew E. Lawson

OWNER/DEVELOPER:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Rohn Creek Road
Henderson, NC 27536
daniel@thlnc.com
www.thlnc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

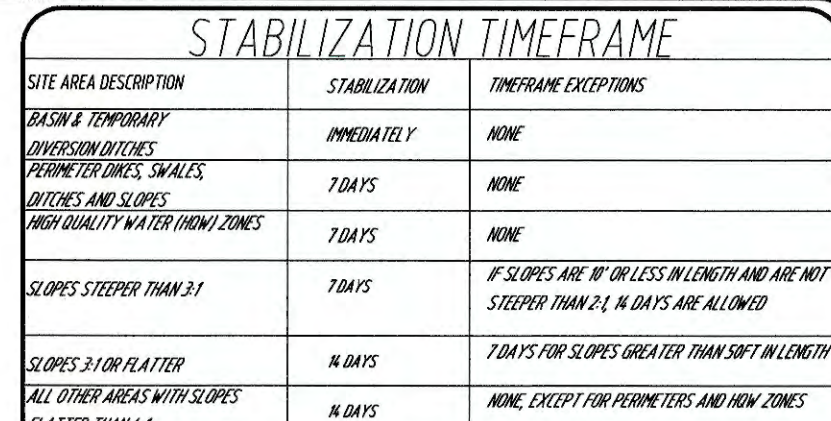
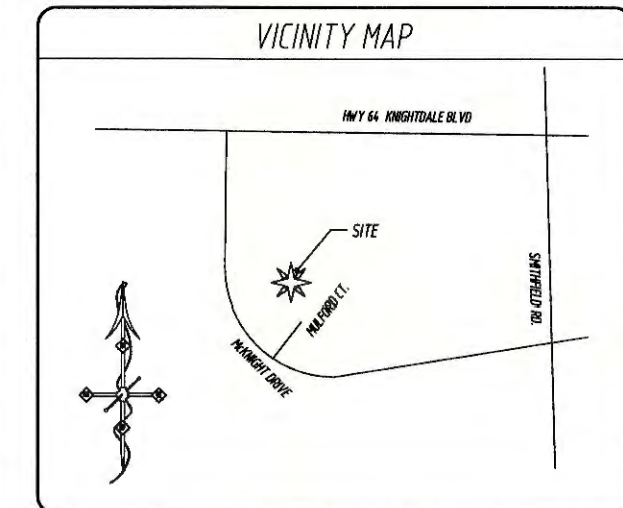
This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REV.	DATE	DESC.	APPROVED BY	DATE
1	12/14/20	INITIAL EROSION CONTROL PLAN	MLC	12/14/20
2	12/14/20	ADDITIONAL EROSION CONTROL MEASURES	MLC	12/14/20
3	12/14/20	ADDITIONAL EROSION CONTROL MEASURES	MLC	12/14/20
4	12/14/20	ADDITIONAL EROSION CONTROL MEASURES	MLC	12/14/20

Drawn
Checked
Approved

Project No. 008001
Date: December 4, 2020
Title
INITIAL EROSION CONTROL PLAN
Sheet No. C16A

1. OBTAIN A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER, ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560. SCHEDULE A 1-2 HOUR DISTURBING PERMIT.
2. INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SKIMMER BASINS, WAKE COUNTY SKIMMER BASIN OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
3. CALL ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560 FOR AN ONSITE INSPECTION BY THE WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE.
4. BEGIN CLEARING AND GRUBBING, MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
5. INSTALL STORM SEWER, IF SHOWN, AND PROTECT CATCH BASIN CURB INLETS WITH BLOCK AND GRAVEL INLET CONTROLS, PROTECT AREA DRAIN/YARD INLETS WITH STANDARD INLET PROTECTION, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION BUILDING, ETC.
6. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. PREPARE A SEEDBED, FERTILIZE, FENCE, SEED, MULCH AND ANCHOR IT. TAKE ALL EXPOSED AREAS WITH NPDES STABILIZATION FRAMEWORK OF CONSTRUCTION, USE SEED, MULCH AND CONSTRUCTION OR STORPAGE OF WORK ON ANY PHASE OF CONSTRUCTION.
7. CONTRACTOR TO CONTACT PROJECT ENGINEER BETWEEN SEDIMENT AND EROSION CONTROL PHASES OF DEVELOPMENT AND FOR THE REMOVAL OR CORRECTION OF SEDIMENT AND EROSION CONTROL MEASURES.
8. WAKE COUNTY OR JURISDICTIONAL MUNICIPALITY MUST GRANT PERMISSION TO CONVERT THE SEDIMENT BASIN OVER TO STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
9. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560 FOR AN INSPECTION BY THE WATERSHED MANAGER.
10. IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING TIE AREAS, ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VDOT DISSIPATORS, SHOULD NOW BE INSTALLED.
11. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE WATERSHED MANAGER, ALAN ALCOCK WITH WAKE COUNTY AT 919-868-2560, OBTAIN A CERTIFICATE OF COMPLETION.



1. APPROXIMATE TEMPORARY MAINTENANCE AND ACCESS EASEMENTS SHALL BE SHOWN AROUND ALL PAVED-TO-FIELD LOCATIONS (DRAINAGE CONTROL) MEASURES SURROUNDING THE STOCKPILE SHALL BE SHOWN IN THE OUTLET OF THE EASEMENT.
2. STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTIES.
3. STOCKPILE HEIGHT SHALL NOT EXCEED 35- FEET.
4. STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
5. APPROVED BMP'S SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEPTIC LOSS FROM A STOCKPILE.
6. STOCKPILE MATERIALS ADJACENT TO A GUTTER, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM, RIVER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS IDENTIFIED TO BE AVAILABLE.
7. ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.
8. OFF-ROAD, SIDE OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDD AND STATE REGULATIONS. ALL AREAS BEYOND AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEPTIC DISPOSAL PLAN DEVELOPED BY/CONTRASTOR SHALL NOTIFY WAKE COUNTY OF ANY OFFSITE DISPOSAL OF SOLIDS, POTENTIAL DISCHARGE OF AIR FROM FLOODED AREAS AND WAKE COUNTY SHALL BE AWARE OF ANY ACREAGE USED AS OTHERWISE PROVIDED BY SUBSECTION 10-19-2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).

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

awson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS		Desc.	Date
1	1/25/20	ADJUSTED PER TOWN REVIEW	
2	4/25/20	ADJUSTED SITE DRAWS	
3	10/15/20	ADJUSTED PER TOWN & MAINE COUNTY REVIEW	
4	10/14/20	ADJUSTED PER TOWN REVIEW	

Checked
Approved

Project No. 008001
Date: December 4, 2020

Title

GRADING PHASE
EROSION CONTROL
PLAN

Sheet No.

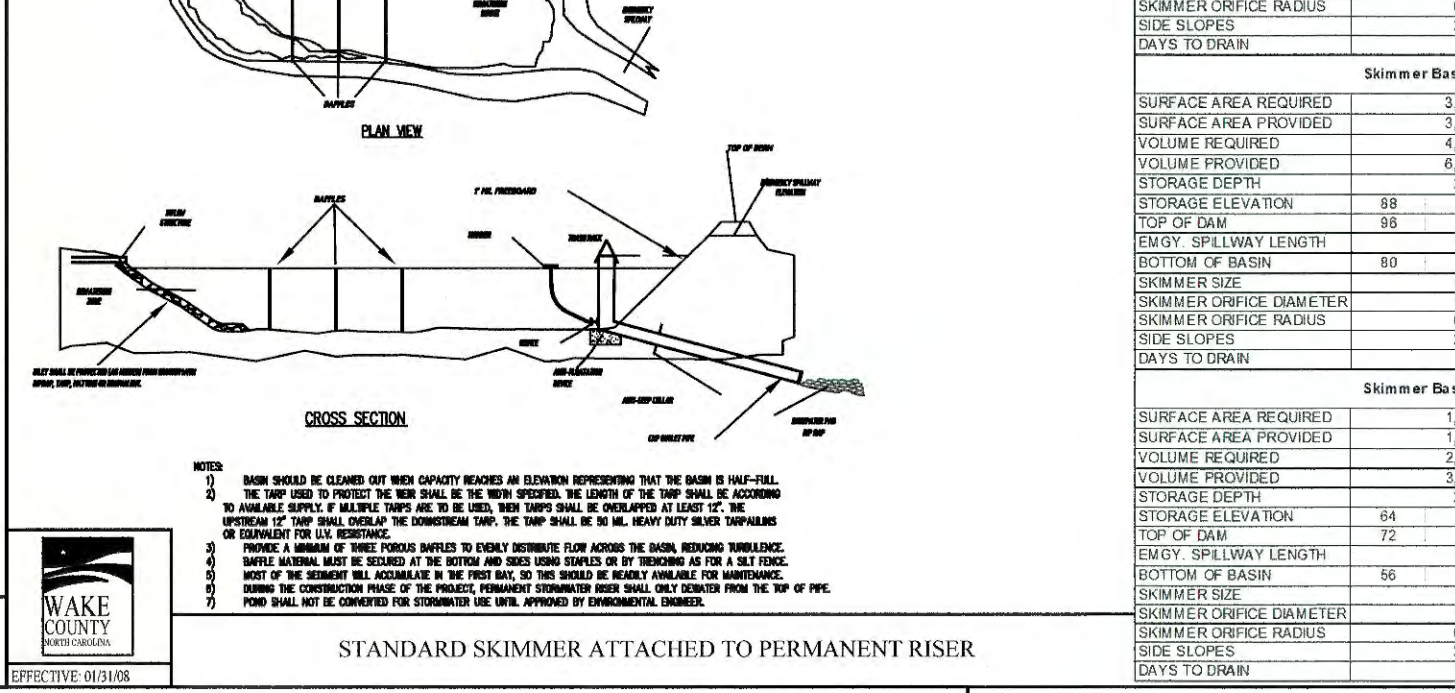
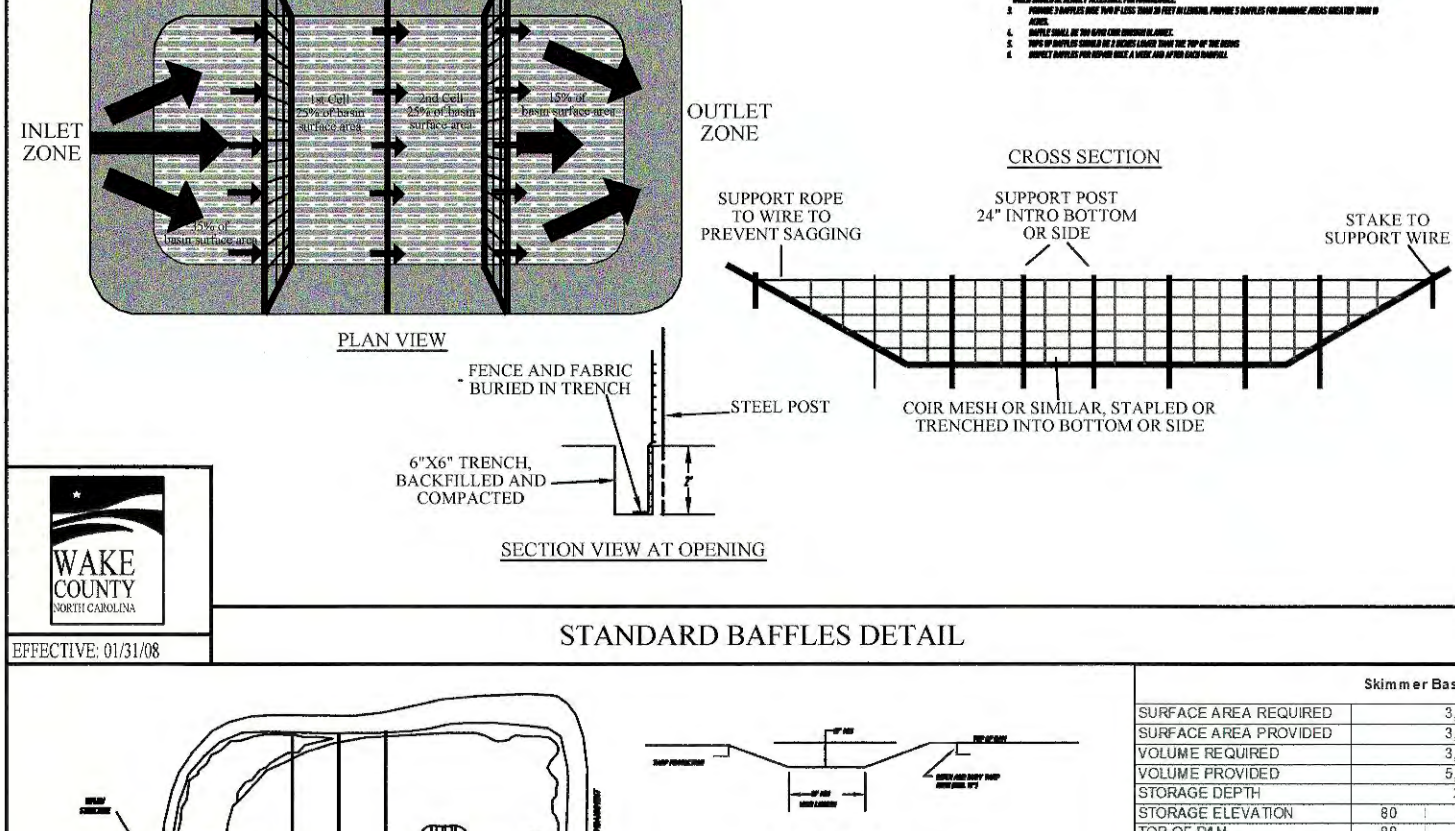
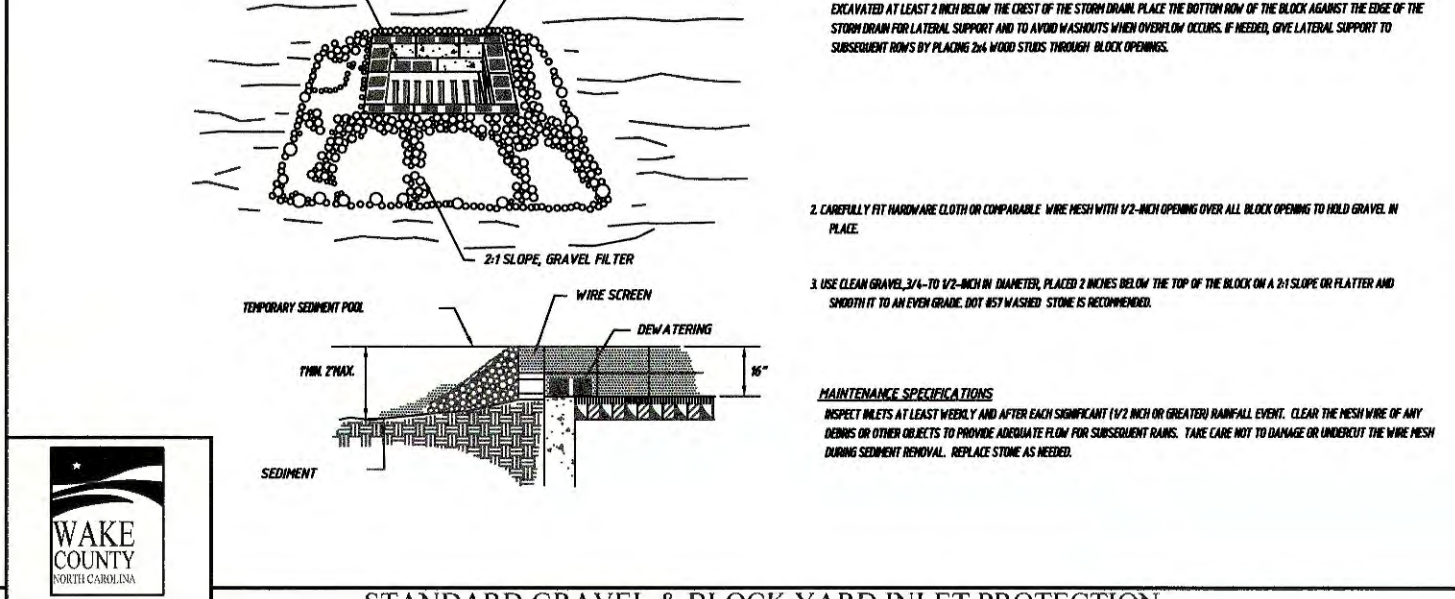
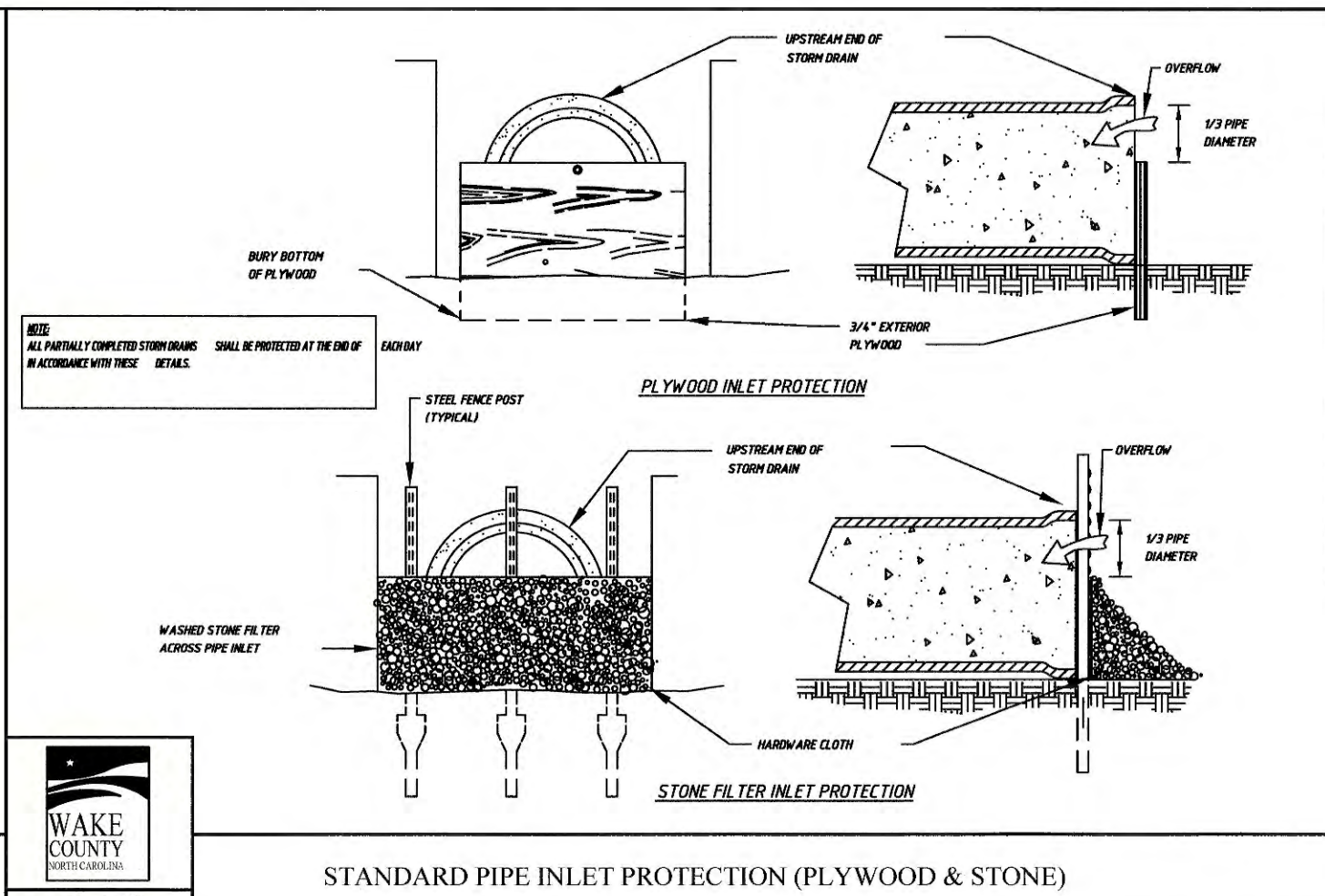
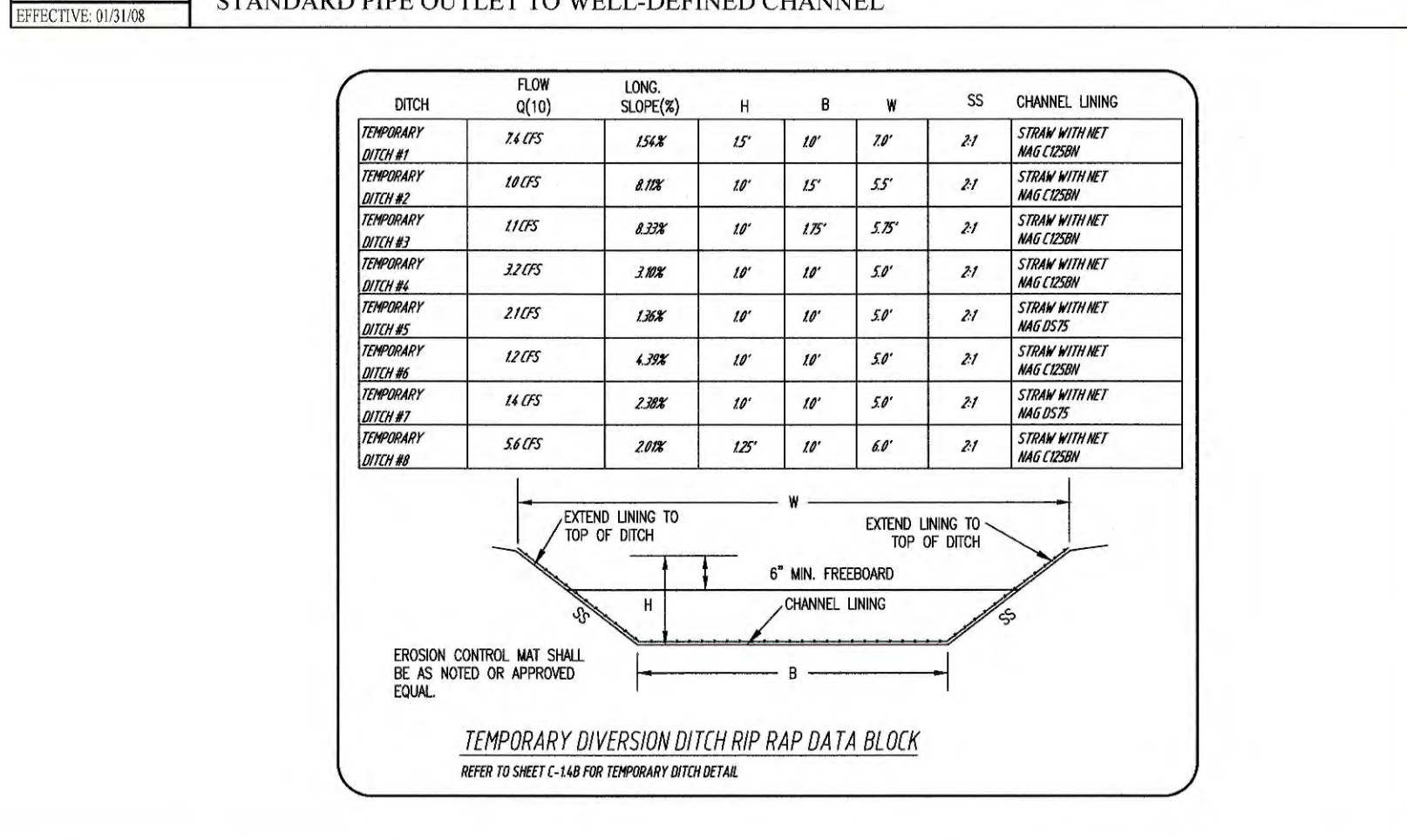
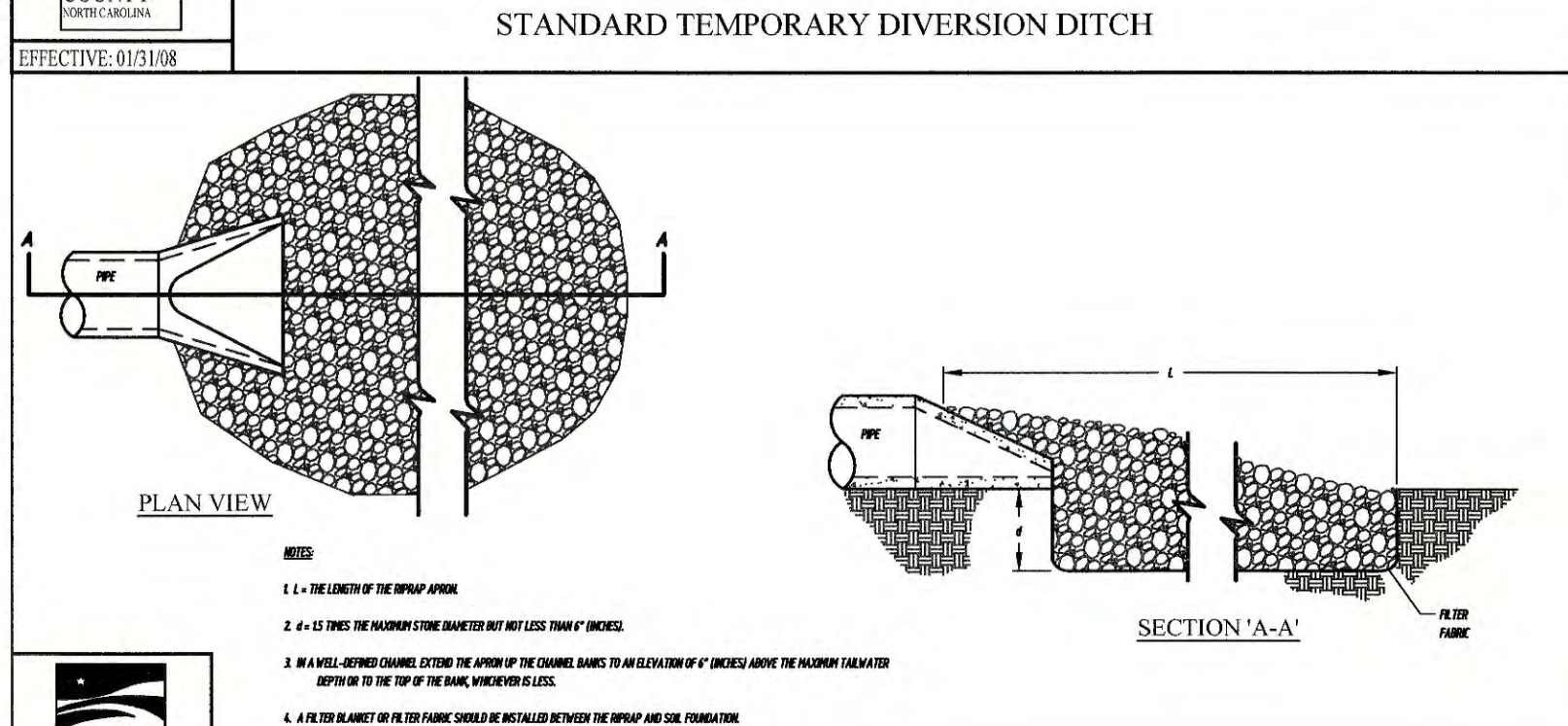
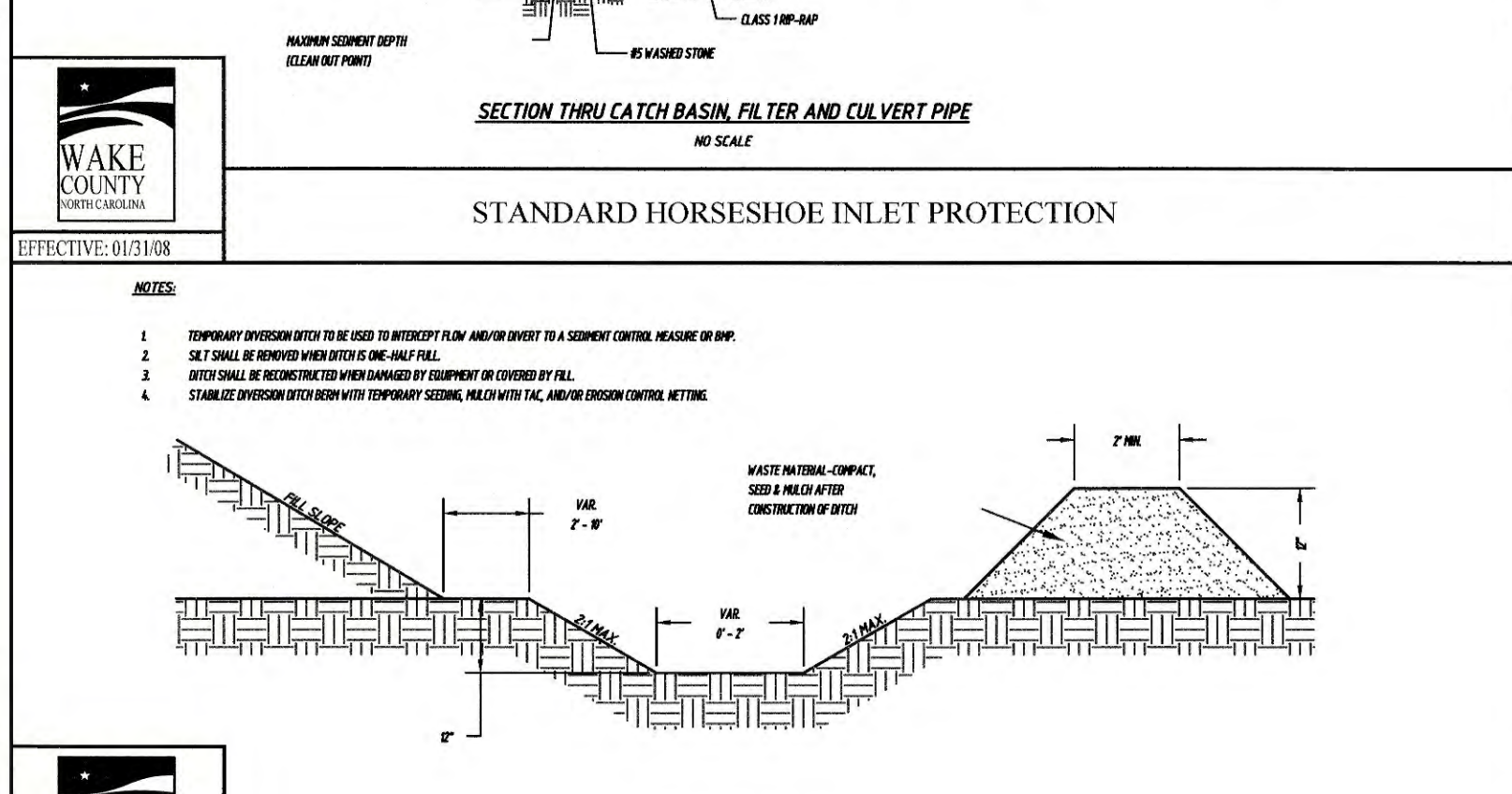
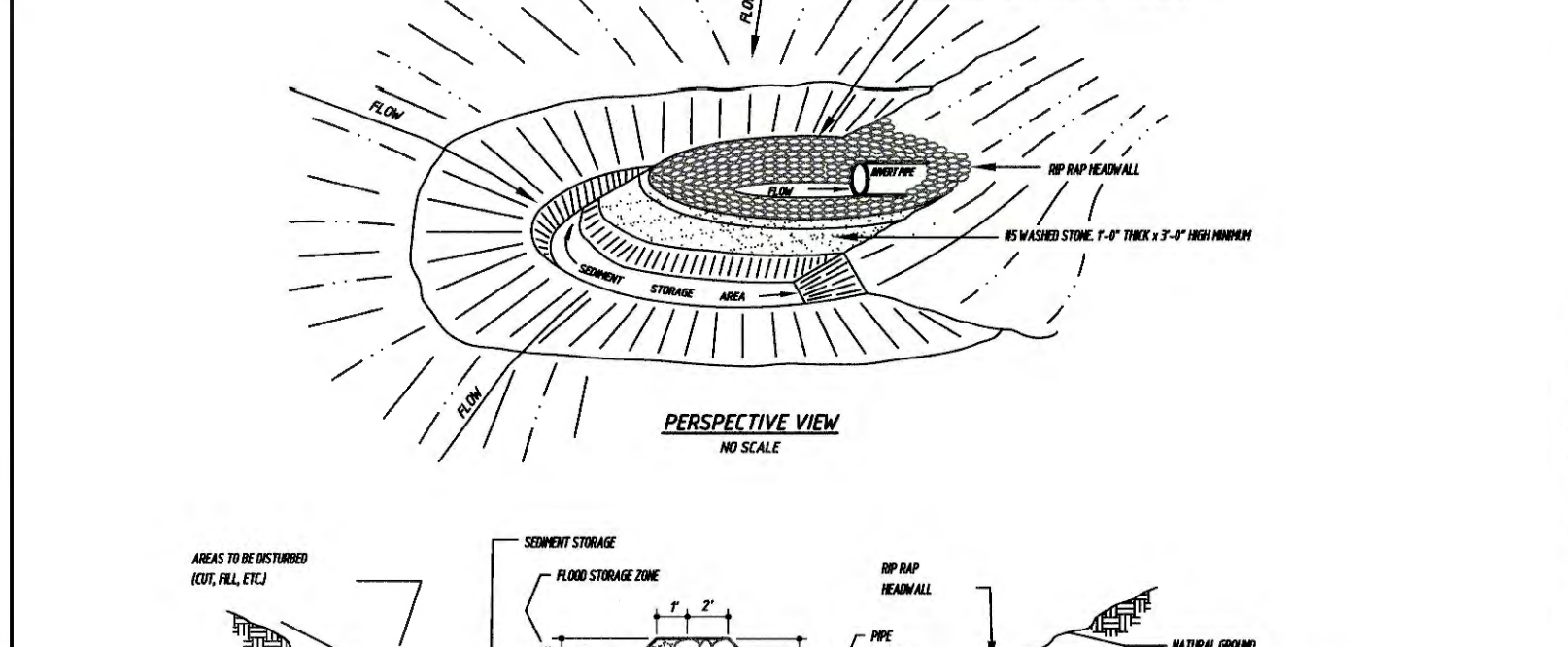
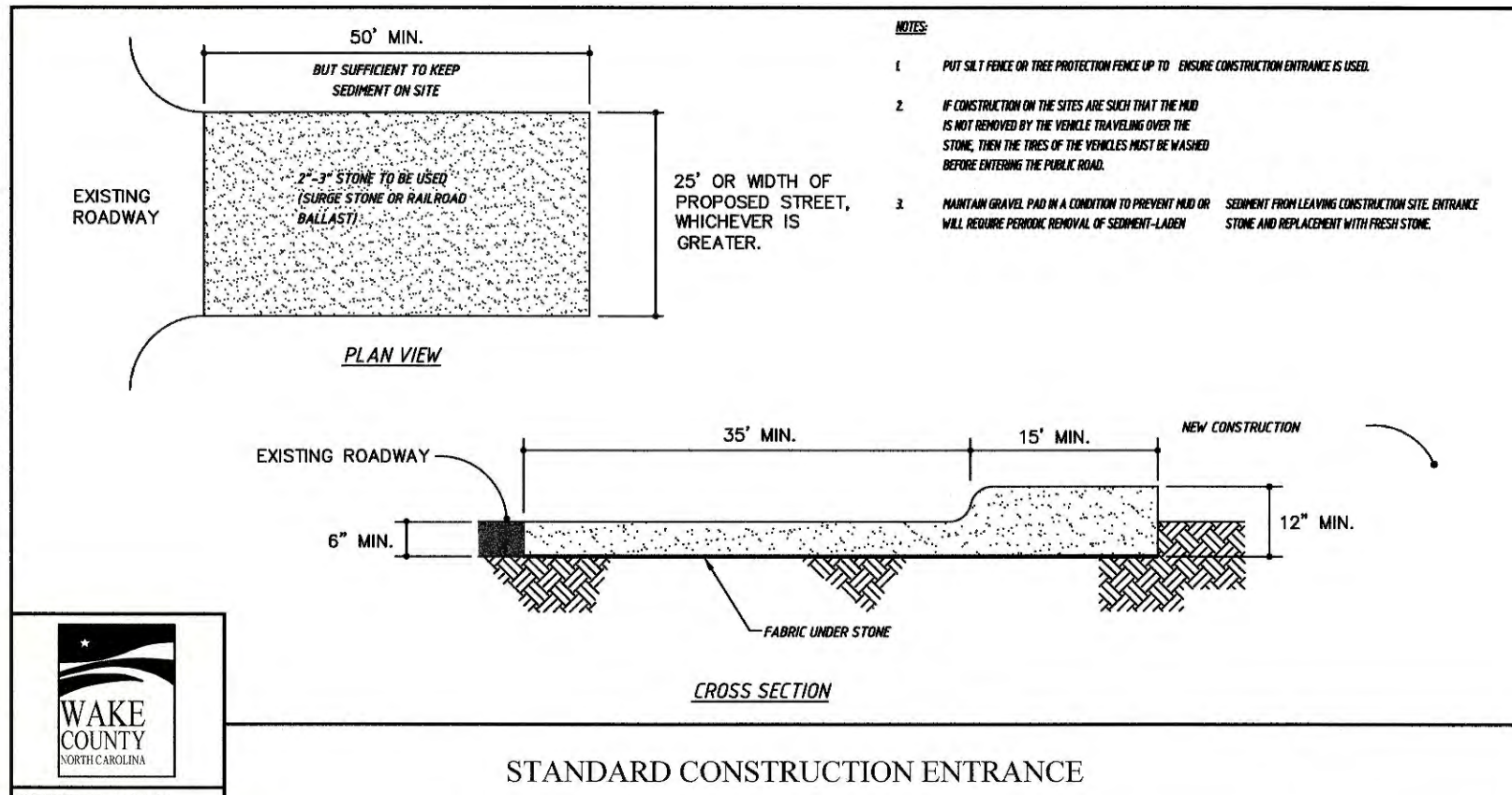
C1.6B



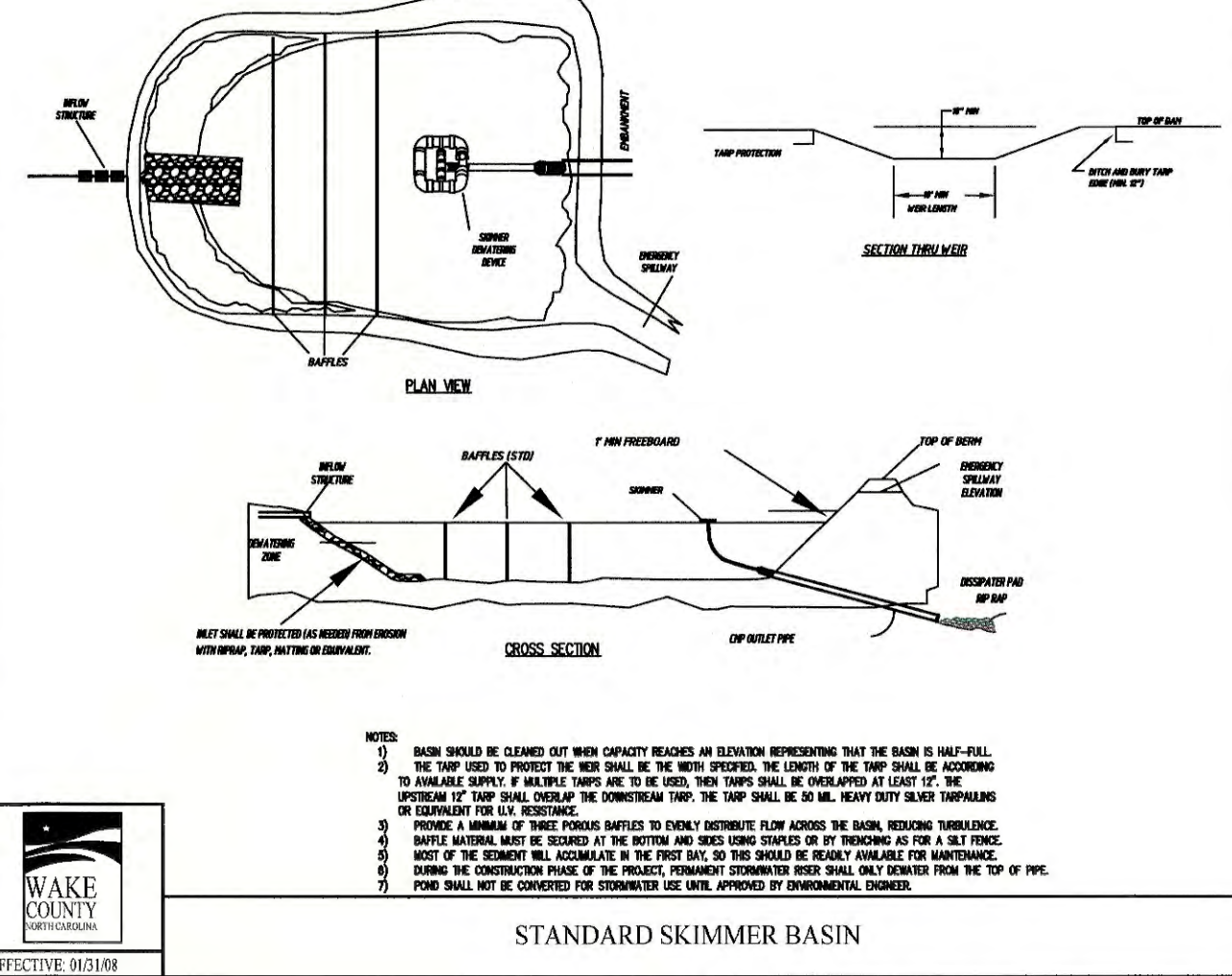
DETAILS

Know what's below
Call before you dig

1. SCHEDULE A MEETING WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SINKING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. REMOVE BASINS AND ASSOCIATED TEMPORARY DIVERSION DITCHES, IF COLLECT PIPES ARE NOT EXTENDED PENDING THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
3. PERFORM SEEDING, PREPARATION, SOIL, MULCH AND ASPHALT LAY ON THESE TYPICAL BASE AREAS IMMEDIATELY.
4. INSTALL VEGETATION DISPERSAL AND/OR LEVEE SPREADERS TO PROTECT THE EROSION CONTROL PLAN.
5. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF A PERMANENT TEMPORARY EROSION CONTROL MEASURES AND AGREE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.
- NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE. SOME MUNICIPALITIES MAY ALSO REQUIRE THIS.



Rip-Rap Apron#1				Rip-Rap Apron#5			
		DIMENSIONS				DIMENSIONS	
ENTRY WIDTH	4.5	FT		ENTRY WIDTH	3.8	FT	
LENGTH	9.0	FT		LENGTH	7.5	FT	
EXIT WIDTH	10.8	FT		EXIT WIDTH	8.6	FT	
MIN. THICKNESS	22	IN		MIN. THICKNESS	22	IN	
MIN. STONE DIAMETER	6	IN		MIN. STONE DIAMETER	6	IN	
STONE CLASS	B			STONE CLASS	B		
Rip-Rap Apron#2				Rip-Rap Apron#6			
		DIMENSIONS				DIMENSIONS	
ENTRY WIDTH	5.8	FT		ENTRY WIDTH	5.8	FT	
LENGTH	3.5	FT		LENGTH	7.5	FT	
EXIT WIDTH	8.8	FT		EXIT WIDTH	5.8	FT	
MIN. THICKNESS	22	IN		MIN. THICKNESS	22	IN	
MIN. STONE DIAMETER	6	IN		MIN. STONE DIAMETER	22	IN	
STONE CLASS	B			STONE CLASS	B		
Rip-Rap Apron#3				Rip-Rap Apron#7			
		DIMENSIONS				DIMENSIONS	
ENTRY WIDTH	3.0	FT		ENTRY WIDTH	6.0	FT	
LENGTH	6.0	FT		LENGTH	6.0	FT	
EXIT WIDTH	7.0	FT		EXIT WIDTH	7.0	FT	
MIN. THICKNESS	22	IN		MIN. THICKNESS	22	IN	
MIN. STONE DIAMETER	6	IN		MIN. STONE DIAMETER	6	IN	
STONE CLASS	B			STONE CLASS	B		
Rip-Rap Apron#4				Rip-Rap Apron#8			
		DIMENSIONS				DIMENSIONS	
ENTRY WIDTH	4.5	FT		ENTRY WIDTH	3.8	FT	
LENGTH	9.0	FT		LENGTH	7.5	FT	
EXIT WIDTH	10.8	FT		EXIT WIDTH	8.6	FT	
MIN. THICKNESS	22	IN		MIN. THICKNESS	22	IN	
MIN. STONE DIAMETER	6	IN		MIN. STONE DIAMETER	6	IN	
STONE CLASS	B			STONE CLASS	B		



GENERAL LANDSCAPE NOTES

1. ANY DISTURBED AREAS NOT SCHEDULED FOR HANDSAPLANT, PLANTINGS, OR MULCH SHALL BE SEEDING LAWN.
2. NO PLANT SUBSTITUTIONS ARE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE AND TOWN OF KENNESHA.
3. ALL PLANT AND BED LAYOUTS MUST BE STAGED IN THE FIELD AND APPROVED BY THE TOWN OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
4. ALL PLANTINGS SHALL BE INSTALLATION WITH THE SPECIFIED LAYER OF MULCH. REFERENCE DETAILS AND SPECIFICATIONS FOR DEPTH AND TYPE OF MULCH. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS AND SHALL BE SEPARATED FROM TURF GRASS AREAS.
5. GRASS COVERAGE TO EXTEND FROM PROPERTY LINES TO BLACKTOP CITY SIDEWALKS AND/OR CURBS.
6. AT TIME OF INSTALLATION, LANDSCAPE TREES SHALL BE MINIMUM 8" CALIPER AND 10' HEIGHT; UNDERSTORY TREES SHALL BE A MINIMUM OF 1 1/4" CALIPER AND 6' HEIGHT; AND SHRUBS SHALL BE AT LEAST 8" IN HEIGHT AND 3 GALLON CONTAINER SIZE.
7. ALL STRIPPING AND TOP 2" OF WORK BASECUT MUST BE REMOVED AND RECOVERED FROM ROOT BALL TOPS TO RECYCLING PLANTING PIT. MUST MEET TOP OF PIT TO MEET FOOTPRINT.
8. FOR NEW PLANTING AREAS, REMOVE ALL ROOTBALL, GRAVE, SUB-BASE AND CONSTRUCTION DIRT, BEFORE COMPACTING SOIL. AND ADD 8" NEW TOPSOIL, OF TILL AND ARMO TOP 10" OF 8" OF EXISTING SOIL. TO MEET TOPSOIL PLANTING MIN. STANDARDS FOR TREES.
9. LARGE PLANTING TREES MUST NOT BE PLANTED WHERE THERE ARE OVERHEAD DISTRIBUTION OR TRANSMISSION LINES. IT MUST COMPLY WITH POWER LINES AND CARRY LOADS FOR TREES TO BE PLANTED TO AVOID BEING PLANTING.
10. ADJUST TREE PLANTING LOCATIONS TO AVOID UNDERGROUND UTILITIES. PLANT IS FROM ALL UNDERGROUND UTILITIES (SEWER AND STORM DRAINAGE, GAS, WATER, PHONE, AND ELECTRICAL LINES).
11. ATTENTION LANDSCAPE UPGRADE OWNER OF ANY SIDEWALK, LANE, OR OTHER CONCRETE PRIOR TO PLANTING NEW TREES.
12. ANY ABOVE GROUND UTILITIES HAVE TO BE SCHEDULED IN ACCORDANCE WITH LOCAL SECTION 8.7.
13. ANY STREET TREES SHALL BE PLANTED TO ACCORD WITH LOCAL SECTION 8.7 INSIDE THE ROW LINE OR PRIVATE PROPERTY.

LANDSCAPING LEGEND

EXISTING VEGETATION

PROPOSED CANOPY TREES

PROPOSED UNDERSTORY TREES

PROPOSED SHRUBS

TREE SAVE FENCE

PROPOSED VEGETATION AND COUNT

SEEDBED PREPARATION

CHISEL COMPACTED AREAS AND SPECIAL TOPDRESS. THREE INCHES DEEP OVER ADVISORY SOIL CONDITIONS, IF AVAILABLE.

RIP THE ENTIRE AREA TO SIX INCHES DEEP.

REMOVE ALL LOGS, ROCKS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.

APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE SEEDING INSTRUCTIONS).

CONTINUE LIME/TOTAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE SEEDING INSTRUCTIONS).

SEED ON A PREPARED PRESURIZED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CLAY PLUCK AFTER SEEDING.

MIX/COMBUSTION AFTER SEEDING AND ANCHOR MIX/IN.

INSPECT ALL SEEDING AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE.

IF STORMS OR WINDS MORE THAN SIX INCHES CHANGING, RE-SEEDING FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING PATTERNS.

CHECK & SOIL IMPROVEMENT, ENGINEERS & MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

LANDSCAPING NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING ALL REQUIRED LANDSCAPING FOR THE ENTIRE SITE, TO INCLUDE BUT NOT LIMITED TO: SODDED SEEDING AREAS, SHRUB BEDS, FARRING LOTS/CLASSES, ROADSIDE SIGN BASES AND MONUMENT PLANTERS
2. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE ORDINANCES, ORDINANCES REGARDING LANDSCAPING.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A HEALTHY STAND OF GRASS ON ALL SEEDER AREAS.
4. IN THE EVENT THAT PLANTING BEES AND MULCH ARE REQUIRED, THE CONTRACTOR SHALL INSTALL BLACK PLASTIC WOOD BLOCK LANDSCAPE MESH UNDER THE MULCH TO PREVENT WEED GROWTH.
5. CONTRACTOR SHALL PROVIDE NATURAL TORSIDE THAT IS FERTILE, FIRMABLE, WITHOUT MIXTURE OF SILTSSUS, MATERIALS, AND OBTAINED FROM A WELL DRAINING, AVAILABLE SITE. IT SHALL NOT CONTAIN SUBSTANCES WHICH MAY BE HARMFUL TO PLANT GROWTH. TORSIDE SHALL BE SCREENED AND FREE FROM CLAY, LUMPS, STONES, ROOTS, PLANTS, OR SIMILAR SUBSTANCES. IT SHALL COME IN 4"X6"X12" OR 6"X8"X12" OR OTHER OBJECTS WHOSE WEIGHT MAY BE AN OBSTACLE TO PLANTING OPERATIONS. TORSIDE SHALL BE AT LEAST 4"X6"X12" OR OTHER OBJECTS WHOSE WEIGHT MAY BE AN OBSTACLE TO PLANTING OPERATIONS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND THE MAINTENANCE OF ALL LANDSCAPED AREAS UNTIL THE DATE: (a) THIRTY (30) DAYS FOLLOWING THE PLANTING OF THE GRASS AND SHRUBS, OR (b) THE DATE THAT DOLLAR GENERAL OPENS FOR BUSINESS TO THE PUBLIC.
7. GENERAL CONTRACTOR SHALL TO CLEANLY ENTIRE SITE OF ALL CONSTRUCTION DEBRIS AND RAKE ALL GRASS AREAS.
8. PROVIDE LANDSCAPE PLANS TO DOLLAR GENERAL AND AS REQUIRED BY LOCAL JURISDICTION TO THE BULG BUDGET FOR REVIEW AND APPROVAL PRIOR TO START OF WORK.
9. ALL LANDSCAPING, TREES, SHRUBS, ETC. SHALL NOT INTERFERE WITH THE VISIBILITY OF DOLLAR GENERAL SIGNAGE.
10. CONTRACTOR TO VERIFY QUANTITIES PRIOR TO COMMENCING WORK.
11. OPEN AREAS WITH PLANTING BEES SHALL BE MULCHED.

[illegible]

1. REMOVE WIRE OR NYLON TWINE FROM BALL.

2. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.

3/4" NYLON STRAP STANDING REQUIRED FOR LEANING TREES OR AS REQUIRED BY CONTRACT.

ROOT CROWN TO BE AT FINISH GRADE ±

0" SLIP KNOT WITH STOP KNOT, 8" LARGER THAN TREE DIAMETER

BUTTRUSS ROOTS

KEEP NYLON 1" TO 2" AWAY FROM TRUNK

4" MAX. LAYER OF MULCH

4" MAX. HIGH WATER BERM OUTSIDE OF ROOTBALL

1 1/2"x12" WOOD STAKE WITH CENTERED 3/8" HOLE DRIVEN IN LINE WITH STRAP

UNDISTURBED SOIL

FINISH GRADE

REMOVE TYPICAL EXCESS SOIL FROM GRADENER OVER ROOT SYSTEM, UP TO 1" DEPTH. REJECT PLANTS WITH MORE THAN 3".

REMOVE TOP 1/3 BURLAP AND ANY NAILS/PINS, ETC.

REMOVE TOP 2/3 OF WIRE BASKET WHERE PRESENT

RAISE PIT BOTTOM TO SET BUTTRUSS ROOTS AT THE CORRECT HEIGHT, FIRM SOIL UNDER ROOT BALL

8" 6" 6" 6" 8"

ROOT BALL DIA. VARIES

PLANTING MIX (AS SPECIFIED)

ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI, 1990, PART 1, "SHADE AND FLOWERING TREES")

FOR EXAMPLE:

CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DIA.	MIN. ROOT BALL DIA.
3"	12-14'	16'	24"	24"	24"
2"	14-18'	18'	36"	36"	36"
1 1/2"	14-18'	18'	36"	36"	36"

REVISIONS		TOWN OF KNIGHTDALE STANDARD DETAILS	TREE PLANTING (FOR SINGLE AND MULTI-STEM TREES)	STD. NO. 3.23
DATE	DESCRIPTION			

SEEDING SCHEDULE		
MAXIMUM SEEDS 3:1		
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACR)
AUGUST 15 – NOVEMBER 01	TALL FESCUE	300
	TALL FESCUE AND	300
NOVEMBER 01 – MARCH 01	ABRUZZI RYE	25
MARCH 01 – APRIL 15	TALL FESCUE	300
APRIL 15 – JUNE 30	HULLED CORN ON BERMUDAGRASS	25
	TALL FESCUE AND	120
JULY 01 – AUGUST 15	*BROWNTOP MILLET OR	35
	*SORGHUM-SUDAN HYBRIDS	30
SLOPES 2:1 TO 3:1		
MARCH 01 – JUNE 01	SEEDS/LA ESPIDIZA (SCARIFIED)	60
MARCH 01 – APRIL 15	TALL FESCUE OR	120
MARCH 01 – JUNE 30	WEEDING LOVEGRASS OR	10
	HULLED CORN ON BERMUDAGRASS	25
	FTALL FESCUE AND	120
JUNE 01 – SEPTEMBER 01	*BROWNTOP MILLET OR	35
	*SORGHUM-SUDAN HYBRIDS	30
SEPTEMBER 01 – MARCH 01	SEEDS/LA ESPIDIZA (UNHULLED, UNSCARIFIED) AND	70
	TALL FESCUE OR	120
NOVEMBER 01 – MARCH 01	ABRUZZI RYE	25

*TEMPORARY - PERSEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12 IN HEIGHT BEFORE MOWING, OTHERWISE PESTS MAY BE SHADDED OUT. CONSULT CONSERVATION ENGINEER OR AGRICULTURAL EXTENSION SERVICE FOR SEEDING RECOMMENDATIONS. SEEDING OF PASTURES FOR VEGETATION OF DEGRADED AREAS. THE ABOVE VEGETATION ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS. OTHER SEEDING RATE CONDITIONS ARE POSSIBLE.

GROUND COVER - WHEREVER LAND DISTURBING ACTIVITY IS UNDERTAKEN ON A TRACT OF LAND, THERE MUST BE A PLAN TO REPAIR THE DISTURBED AREAS. PROVISION MUST BE MADE TO PLANT OR PROVIDE WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS.

GRADED SLOPES AND FILLS - WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS, OR COMPLETION OF ANY PHASE OF GRADING, WHATEVER PERIOD IS SHORTER, SLOPES SHALL BE COVERED OR OTHERWISE PROTECTED WITH GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

REVISIONS		TOWN OF KNIGHTDALE STANDARD DETAILS	SEEDING SCHEDULE	STD. NO. 2.01
DATE	DESCRIPTION			

A/C UNITS, TRANSFORMERS AND OTHER ABOVE GROUND UTILITY STRUCTURES SHALL BE SCREENED FROM VIEW FROM THE RIGHT-OF-WAY WITH LANDSCAPING

EXISTING TREE NOTE

ALL EXISTING TREES THAT ARE NOTED TO REMAIN SHALL BE MONITORED AFTER CONSTRUCTION BEGINS TO ENSURE THAT THE TREE'S HEALTH HAS NOT BEEN COMPROMISED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY TREES THAT FAIL TO MAINTAIN GOOD HEALTH AFTER CONSTRUCTION BEGINS.

ALL CANOPY TREES AND UNDERSTORY TREES SHALL HAVE 40%-60% EVERGREEN PER UDO SECTION 8.6

ALL LANDSCAPING SHALL BE SUFFICIENT SIZE UPON INSTALLATION SO THAT MATURE APPEARANCE WILL BE ACHIEVED WITHIN THREE (3) YEARS FOR SHRUBS AND FIVE (5) YEARS FOR TREES DED 2 1/2"

FOR TREES PER B.I.G.

MASTER BUFFER: TYPE B TOTAL BUFFER YARD LENGTH = 60 LF PROVIDED: CANOPY TREES (3'x100 LF) = 2 UNDERSTORY TREES (5'x100 LF) = 3 BS (24'x100 LF) = 12 NOTED: 2 PROPOSED CANOPY TREES = 150K EVERGREEN 3 PROPOSED UNDERSTORY TREES = 67K EVERGREEN 12 PROPOSED BS = 180K EVERGREEN MIN SIZE OF PROPERTY: TYPE B TOTAL BUFFER YARD LENGTH = 85 LF PROVIDED: CANOPY TREES (3'x100 LF) = 26 UNDERSTORY TREES (5'x100 LF) = 43 BS (24'x100 LF) = 171 NOTED: 12 EVERGREEN PROPOSED / 12 DECIDUOUS TREES TO REMAIN 50K EVERGREEN 171K EVERGREEN 171 PROPOSED BS	EAST SIDE OF PROPERTY: TYPE A TOTAL BUFFER YARD LENGTH = 255 - PROPERTY LINE EAST SIDE OF SENIOR-LIVING FACILITY PROVIDED: CANOPY TREES (3'x100 LF) = 8 UNDERSTORY TREES (2'x100 LF) = 6 SHRUBS (24'x100 LF) = 51 NOTED: 4 PROPOSED CANOPY TREES = 17 EXISTING MAPLE 6 PROPOSED UNDERSTORY TREES = 150K EVERGREEN 51 PROPOSED SHRUBS = 180K EVERGREEN EAST SIDE OF PROPERTY: TYPE A TOTAL BUFFER YARD LENGTH = NO PARKING AREA ONLY MEDICAL OFFICE PARKING LOT) PROVIDED: CANOPY TREES (3'x100 LF) = 5 UNDERSTORY TREES (5'x100 LF) = 4 SHRUBS (24'x100 LF) = 30 NOTED: 4 PROPOSED CANOPY TREES = 167K EVERGREEN 4 PROPOSED UNDERSTORY TREES = 150K EVERGREEN 30 PROPOSED SHRUBS = 180K EVERGREEN
---	---

TYPE	KEY	QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SPECIFICATION			
						CALIPER	HEIGHT	ROOT	SPACING
NOPY TREE	ID	29		<i>Ilex opaca</i>	American Holly	2"	8' MIN	B&B	AS SHOWN
	DA	5		<i>Quercus austriana</i>	Sawtooth Oak	2"	8' MIN	B&B	AS SHOWN
	ZS	17		<i>Zelkova serrata</i> 'Village Green'	Village Green Zelkova	2"	8' MIN	B&B	AS SHOWN
	BN	16		<i>Betula nigra</i>	River Birch	2"	8' MIN	B&B	AS SHOWN
	IF	31		<i>Ilex x Foster's No. 2</i>	Foster's No. 2 Holly	1-1/4"	6' MIN	B&B	AS SHOWN
	LI	4		<i>Lagerflaetras indica</i> 'Catalpa'	Catalpa Crupe Myrtle	8" (3 STEM)	6' MIN	B&B	AS SHOWN
DECIDUOUS TREE	AG	12		<i>Acer glabrum</i>	Ash Maple	1-1/4"	6' MIN	B&B	AS SHOWN
	IV	235		<i>Ilex vomitoria</i> 'Shalings'	Shilling's Holly	8" MIN HEIGHT AT PLANTING	3 gal	CONTAINER	36" O.C.
SHRUBS	RI	270		<i>Rhipsalis umbellata</i> 'Miss'	Indian Hawthorn	8" MIN HEIGHT AT PLANTING	3 gal	CONTAINER	36" O.C.

PER TABLE 8.5A OF THE TOWN OF KNIGHTDALE (ADOPTED 2011)	
# OF EXISTING TREES $\geq$ 24" DBH TO BE REMOVED =	47
REPLACED AT 1 TREE PER 12" DBH =	47 TREES REQUIRED
# OF EXISTING TREES $\geq$ 36" DBH TO BE REMOVED =	3
REPLACED AT 1 TREE PER 12" DBH =	6 TREES REQUIRED
TOTAL # OF REPLACEMENT TREES REQUIRED =	53
# OF NEW PLANTING TREES PROVIDED =	53

CONSULTANT:
TRIANGLE SITE DESIGN, PLLC
4004 BARRETT DR, STE 101
RALEIGH, NC 27609
(919) 553-4570
NC LICENSE# P-0619
mlawder@trianglesitedesign.com

Matthew L. Lawson

OWNER/OWNER-OPERATOR:
The Lawson, LLC
Attn: Daniel Tharrington
252-432-1172
349 Ruin Creek Road
Henderson, NC 27536
daniel@tgcinc.com
www.tgcinc.com

The Lawson of Knightdale
Mulford Court
Knightdale, North Carolina
Wake County

HUD PROJECT #:
053-38011

This document, together with the concepts and designs presented herein, as an instrument of services, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Triangle Site Design, PLLC shall be without liability to Triangle Site Design, PLLC.

REVISIONS				
No.	Date	Desc.		
1	01/25/20	ADJUSTED PER TOWN REVIEW		
2	01/29/20	ADJUSTED SITE GRADINGS		
3	01/25/20	ADJUSTED PER TOWN & WAJIMA COUNTY REVIEW		
4	02/16/20	ADJUSTED PER TOWN REVIEW		

Drawn _____
 Checked _____
 Approved _____

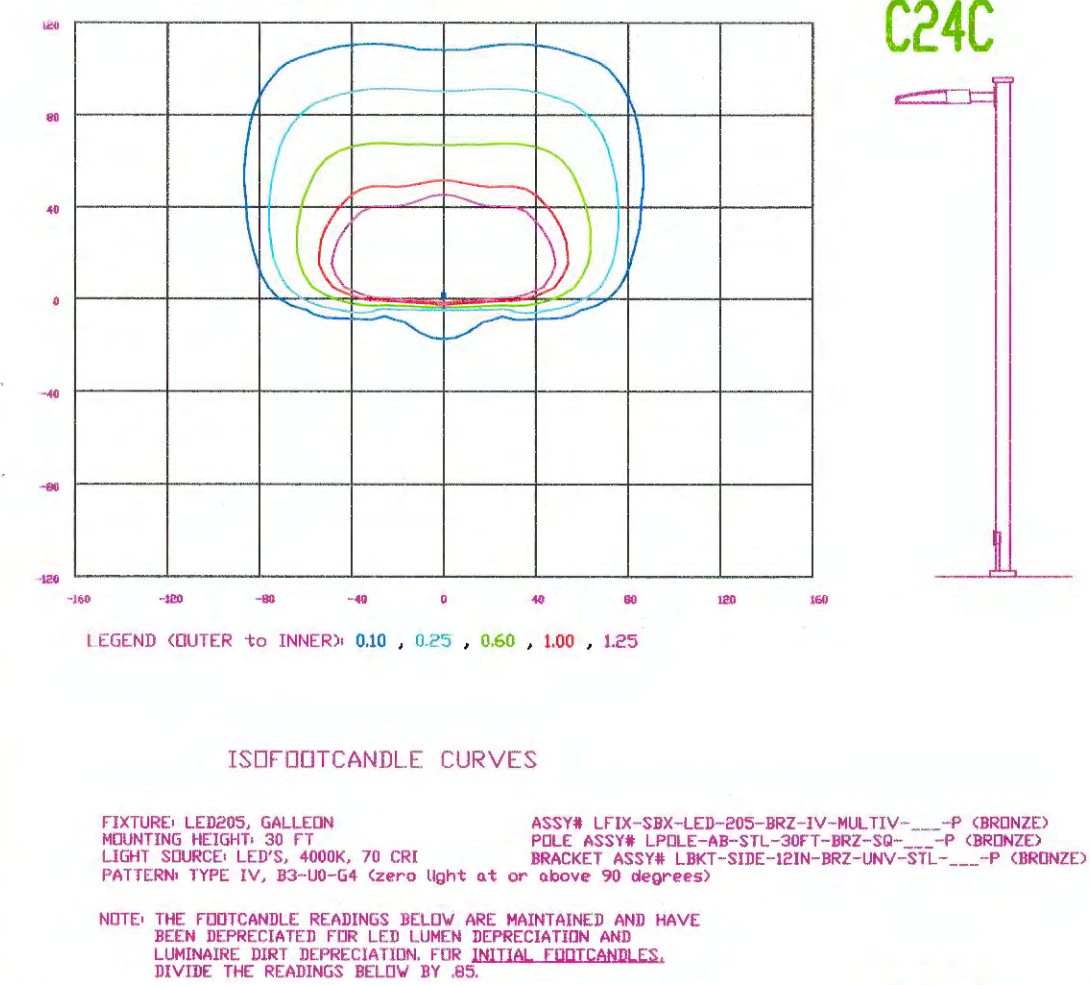
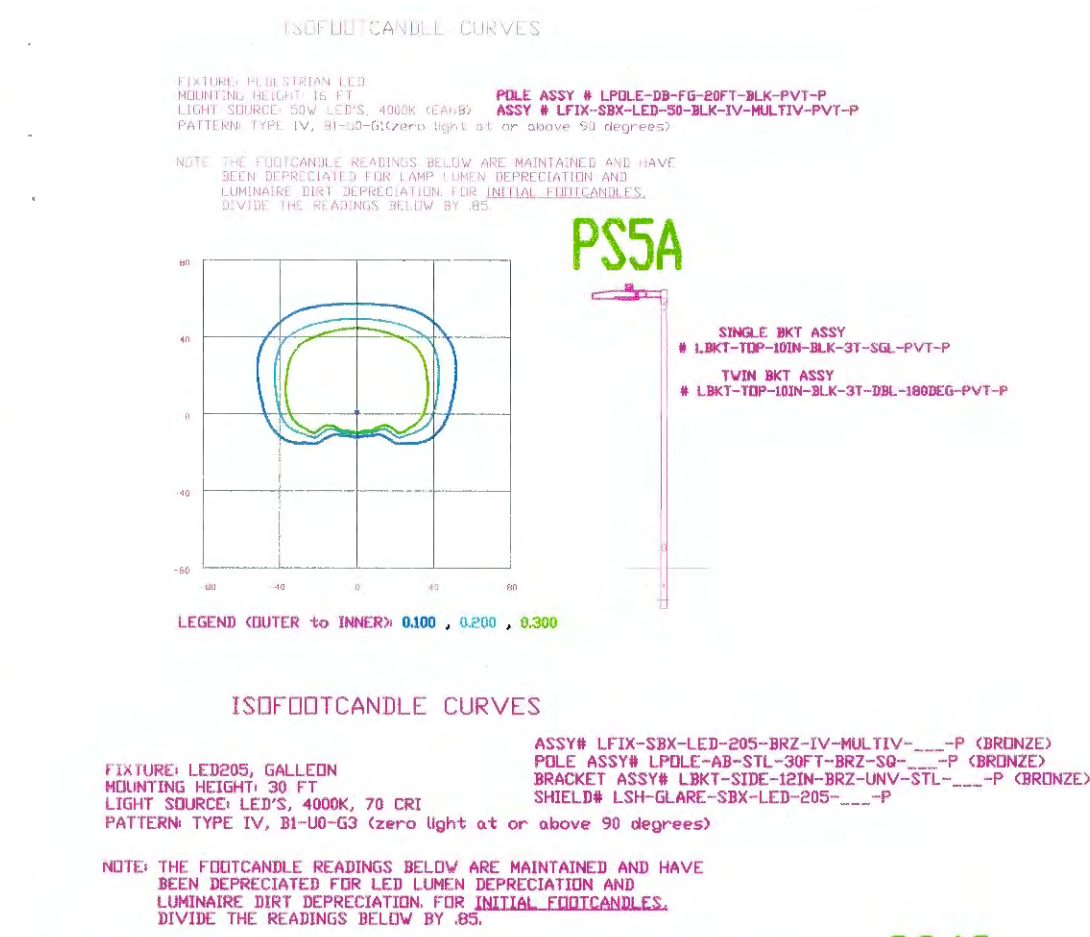
Project No. 008001
 Date: December 4, 2020

Title _____

LANDSCAPE
 PLAN

Sheet No. _____

C1.8



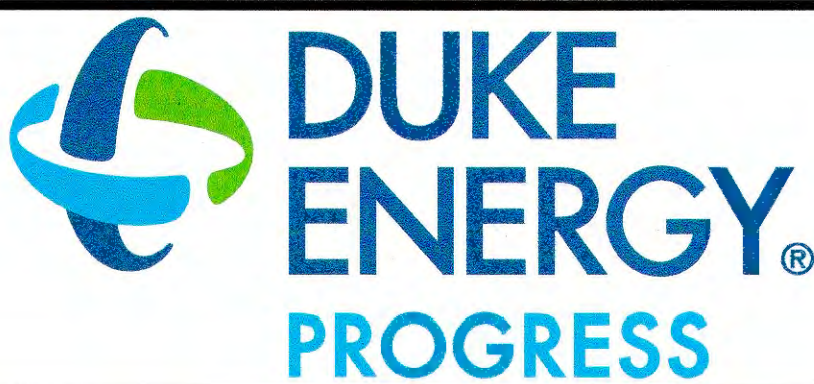
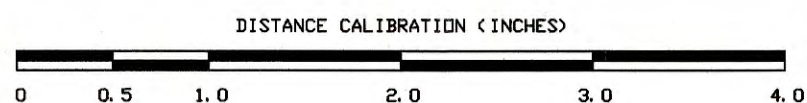
CALCULATION SUMMARY										
AREA NAME	DIMENSIONS	GRID / TYPE	# PTS	SPAC	GROUP	Avg	MAX	MIN	MAX/MIN	Avg/Min
New Area	1242.75x915.81ft	Parking Property Line	660	10.00	(+)	1.43	3.94	0.41	9.72	3.52
			543	10.00	(#)	0.09	0.41	0.00	376.58	77.91

The Lawson of Knightdale (19-0026) LUMINAIRE SCHEDULE						
TYP	SYMBOL	DESCRIPTION	LAMP	LUMENS	MOUNTING/BALLAST	LLF QTY
C24A	⬢	COOPER 205w Type IV Shoebox 4000K (1) "C204" CP205_4_1-4/PDLE	(64) LED 4000K	20555	30" MT HT Cooper SB	0.85 3
C24B	⬢	COOPER 205w Type IV Shoebox 4000K (2) "C204" CP205_4_1-4/PDLE	(128) LED 4000K	20555	32" MT HT Cooper SB	0.85 3
C24C	⬢	Cooper 205w Type IV Shoebox 4k HSS (1) "C245" CP205_4_1_Shield	(64) LED 4000K	17673	30" MT HT Cooper SB	0.85 2
PS5A	⬢	GE Style S 50w Shoebox Type III (1) "PS50" PS_LED50_1-2/PDST	(1) LED 4000K	4313	16" MT HT Ped Shoebox	0.85 1

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 Progress. 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.

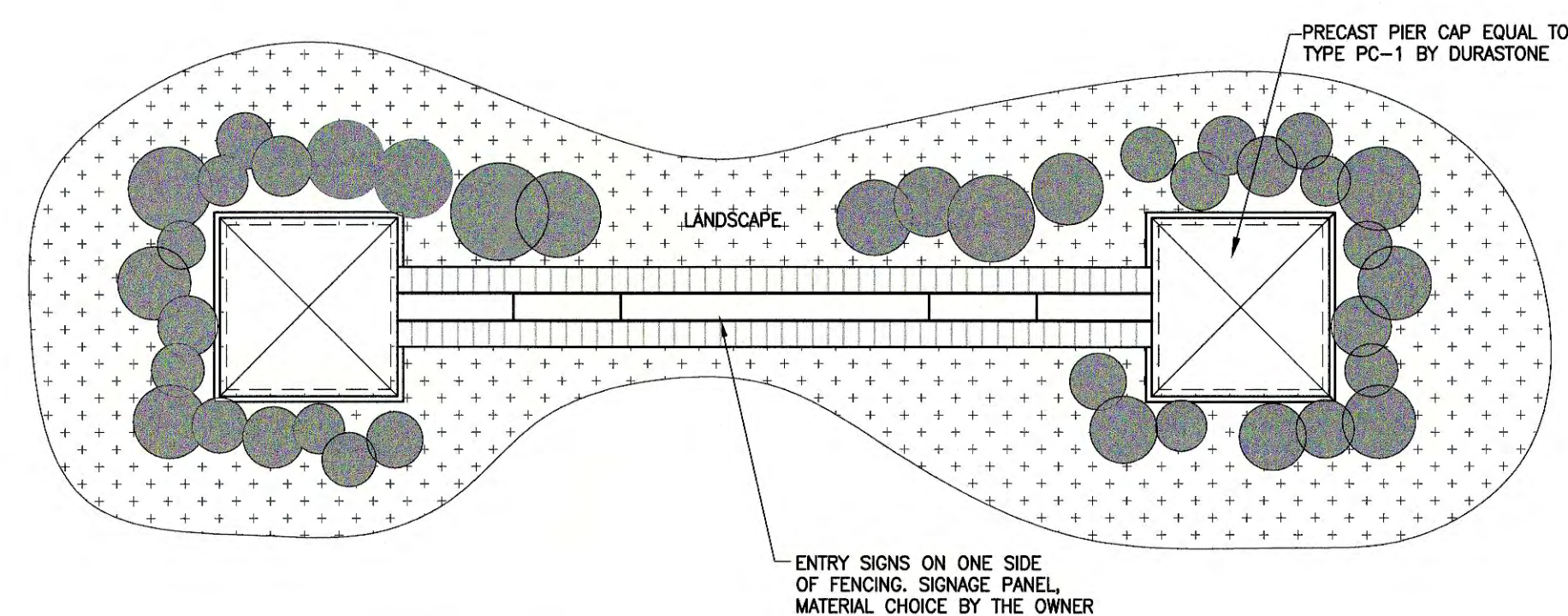
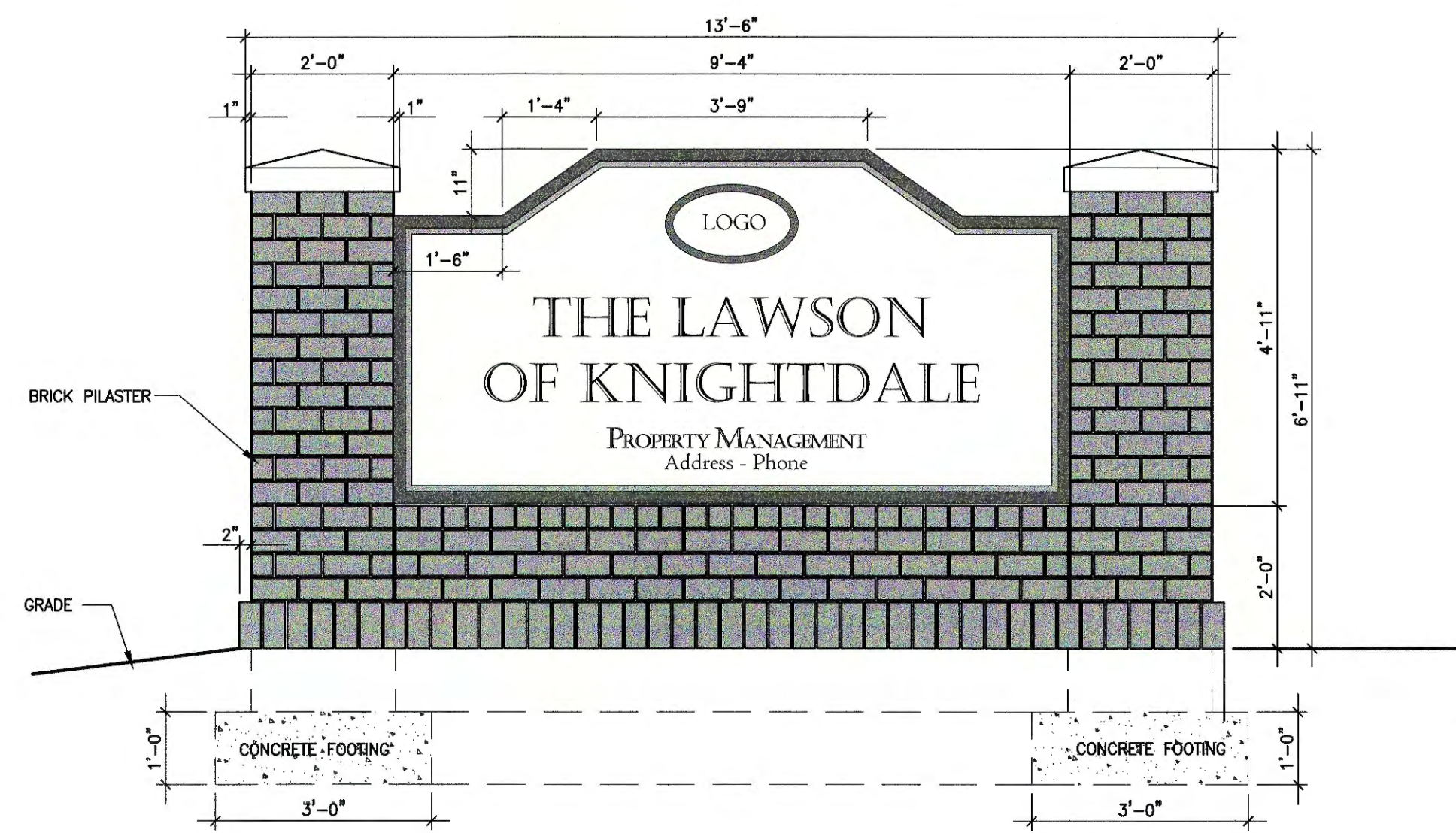
Customer approval _____ Date _____



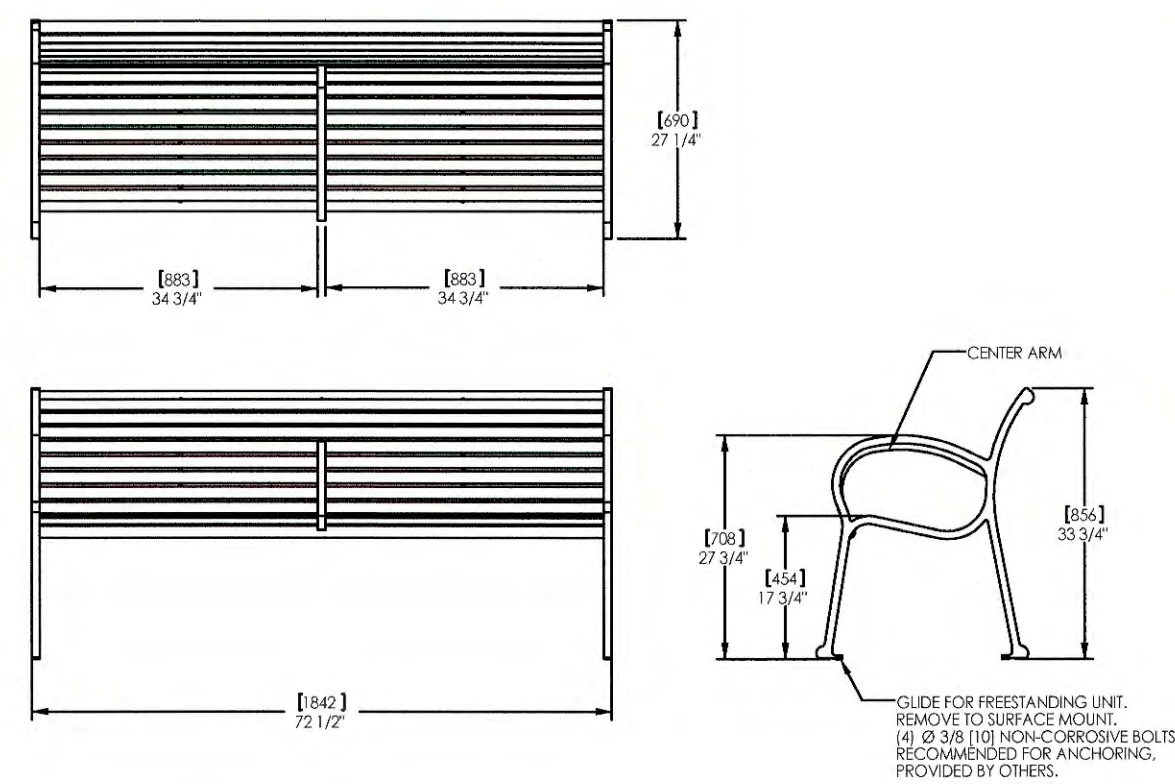
PROPRIETARY & CONFIDENTIAL

This document together with the concepts and designs presented herein, presented as an instrument of service, is the sole property of Duke Energy Progress, and is intended only for the specific purpose and prospective client as stated in the title block of this drawing. Any use, copying, reproduction or disclosure of the drawing, design or any information contained herein by the prospective customer or other entities, including without limitation, architects, engineers, or equipment manufacturers is hereby expressly prohibited and shall not be permitted absent prior written consent from, and payment of compensation to Duke Energy Progress. Duke Energy Progress disclaims any liability or responsibility for any unauthorized use of or reliance on this document.

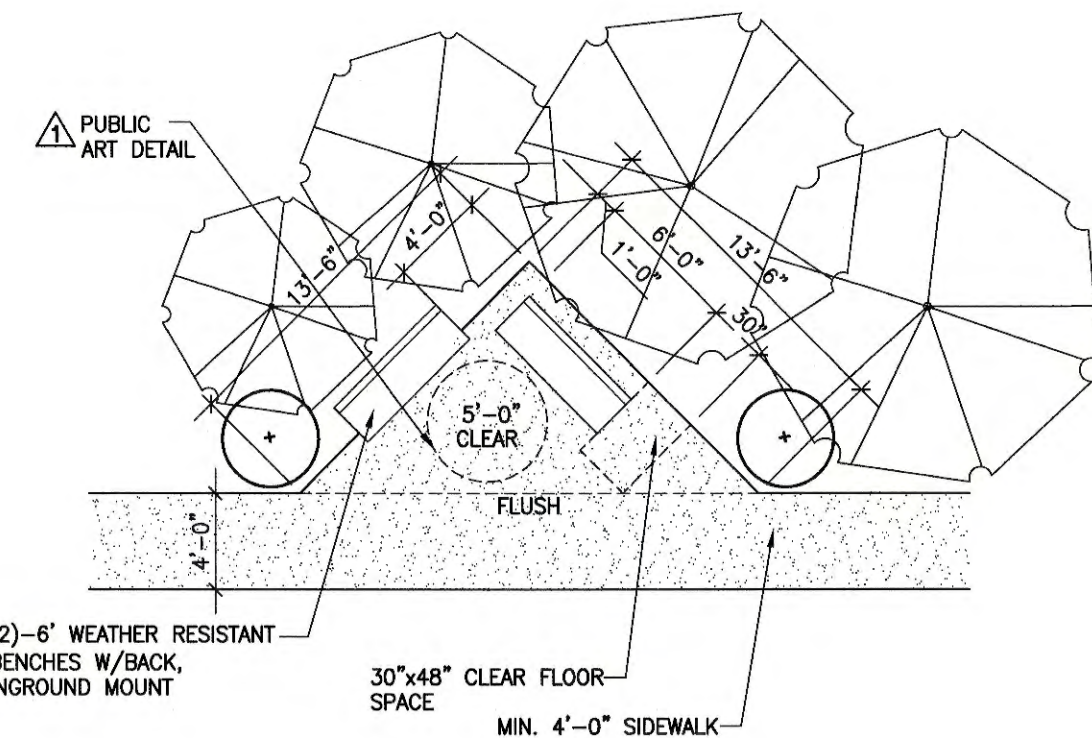
THE LAWSON OF KNIGHTDALE	
KNIGHTDALE, NC	
SITE LIGHTING PLAN	
Designed by	DEP LIGHTING SOLUTIONS
Reviewed by	N. Johnson Scale 1" = 40'
Date	01/15/2020 size "Arch D"
Description	LED 205w Shoebox
Drawing No.	19-0026C Sht. 1 OF 1



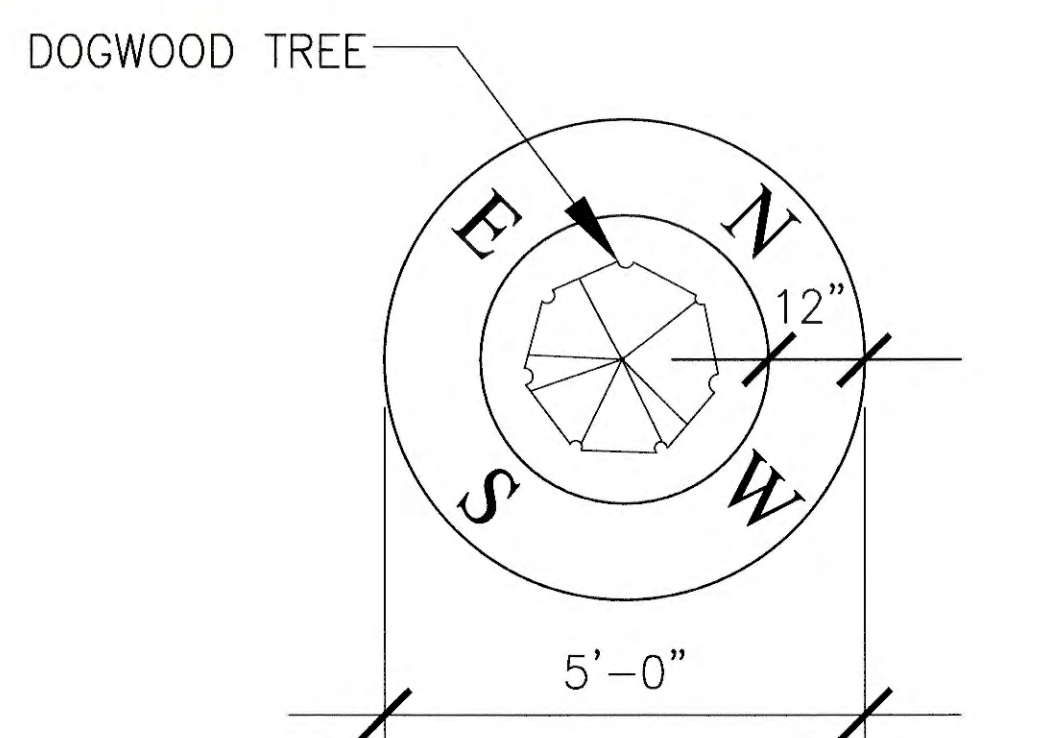
1 Entry Sign
Scale: 1/2"=1'-0"



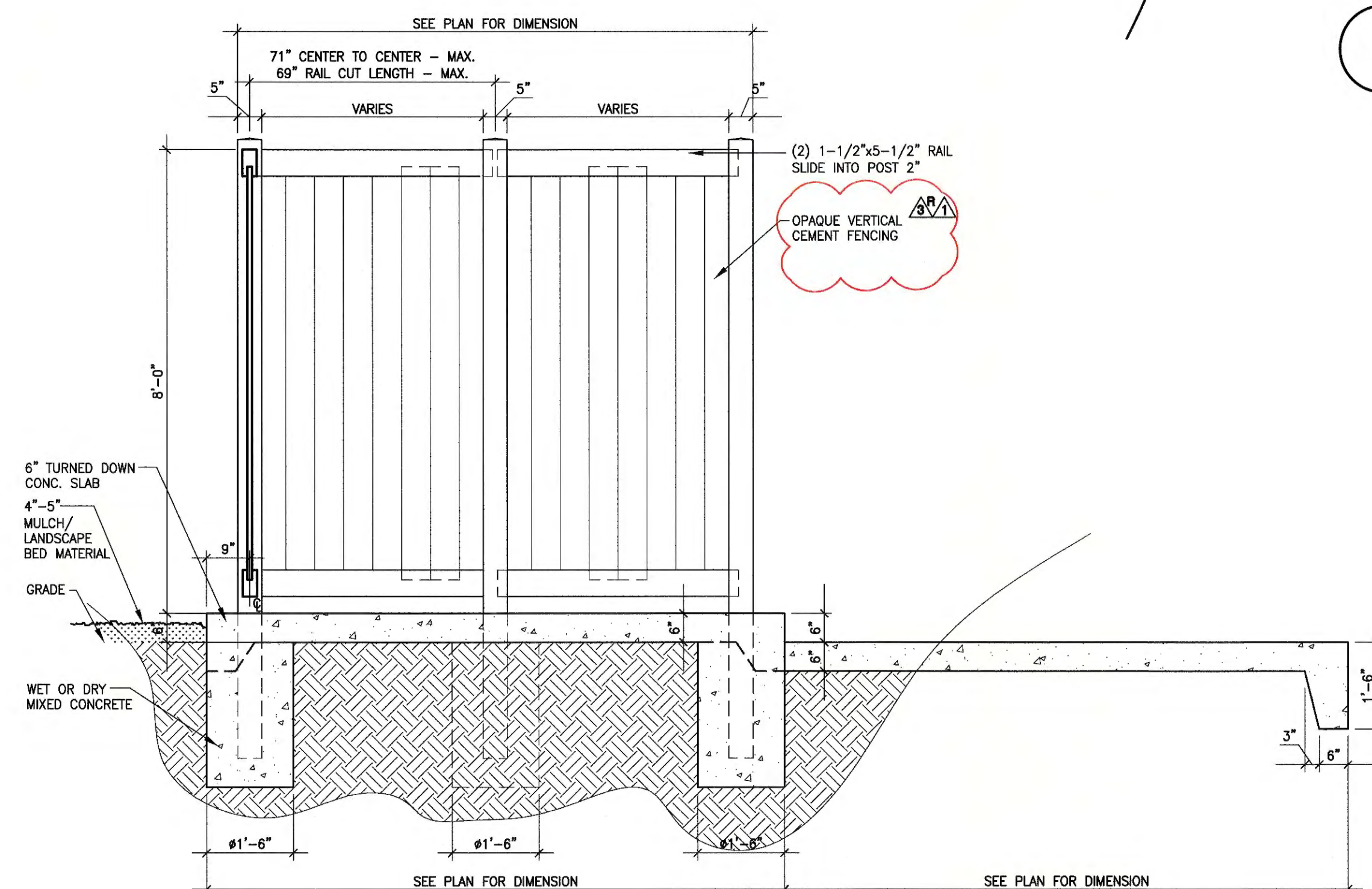
3B Bench Detail
Scale: 1/2"=1'-0"



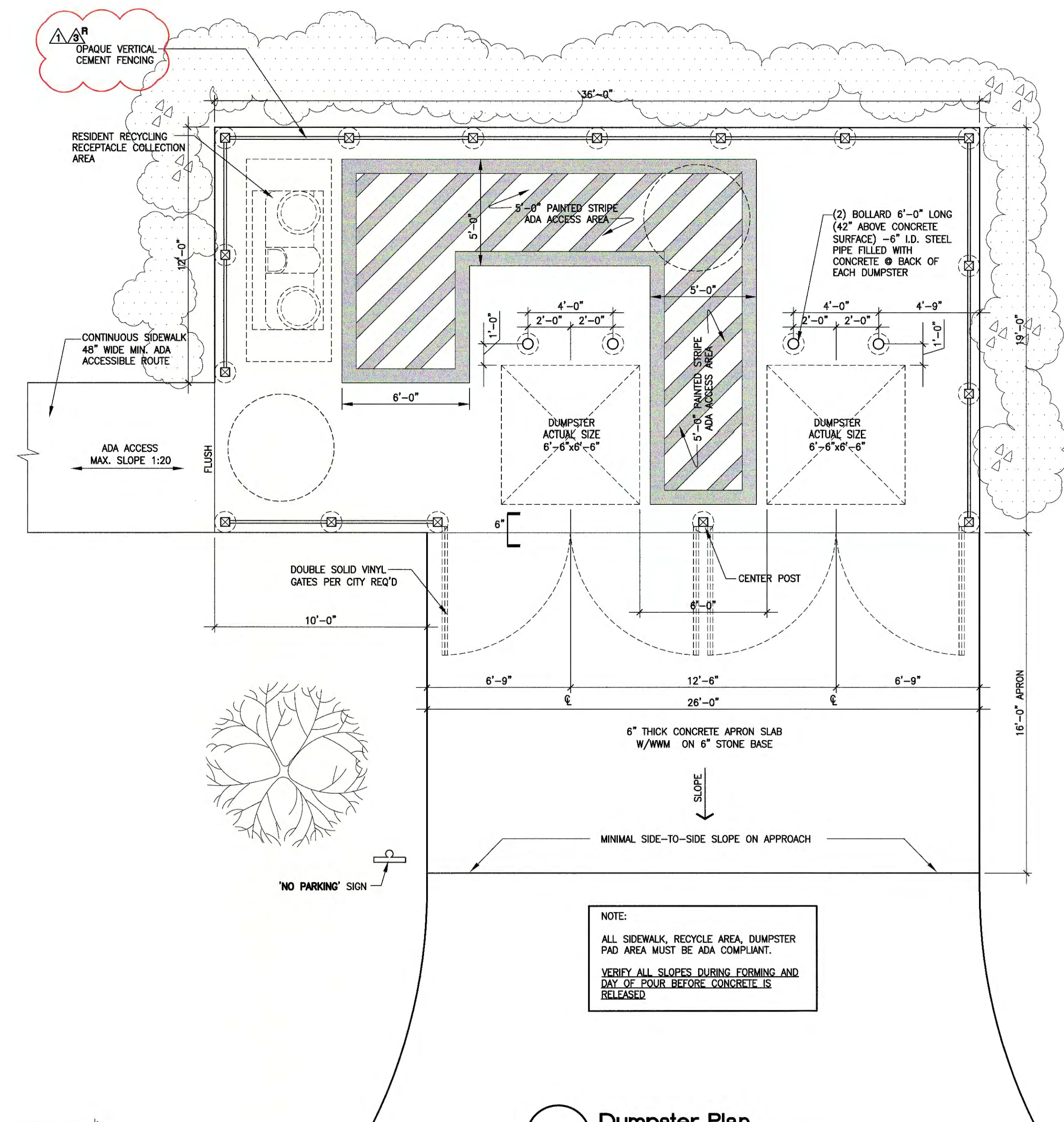
3A Outdoor Seating Area
Scale: 1/8"=1'-0"



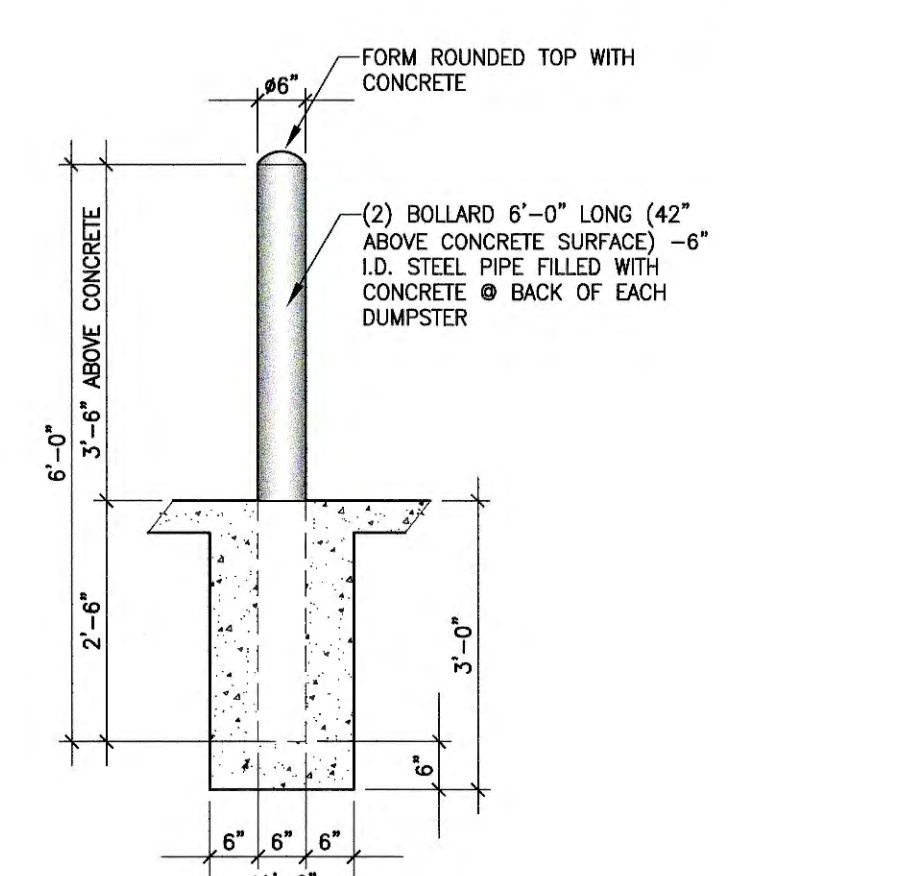
3C Public Art Detail
Scale: 1/2"=1'-0"



2 Dumpster Enclosure Plan
Scale: 1/2"=1'-0"



4 Dumpster Plan
Scale: 1/8"=1'-0"



5 Dumpster Ballard
Scale: 1/2"=1'-0"



HUD PROJECT
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

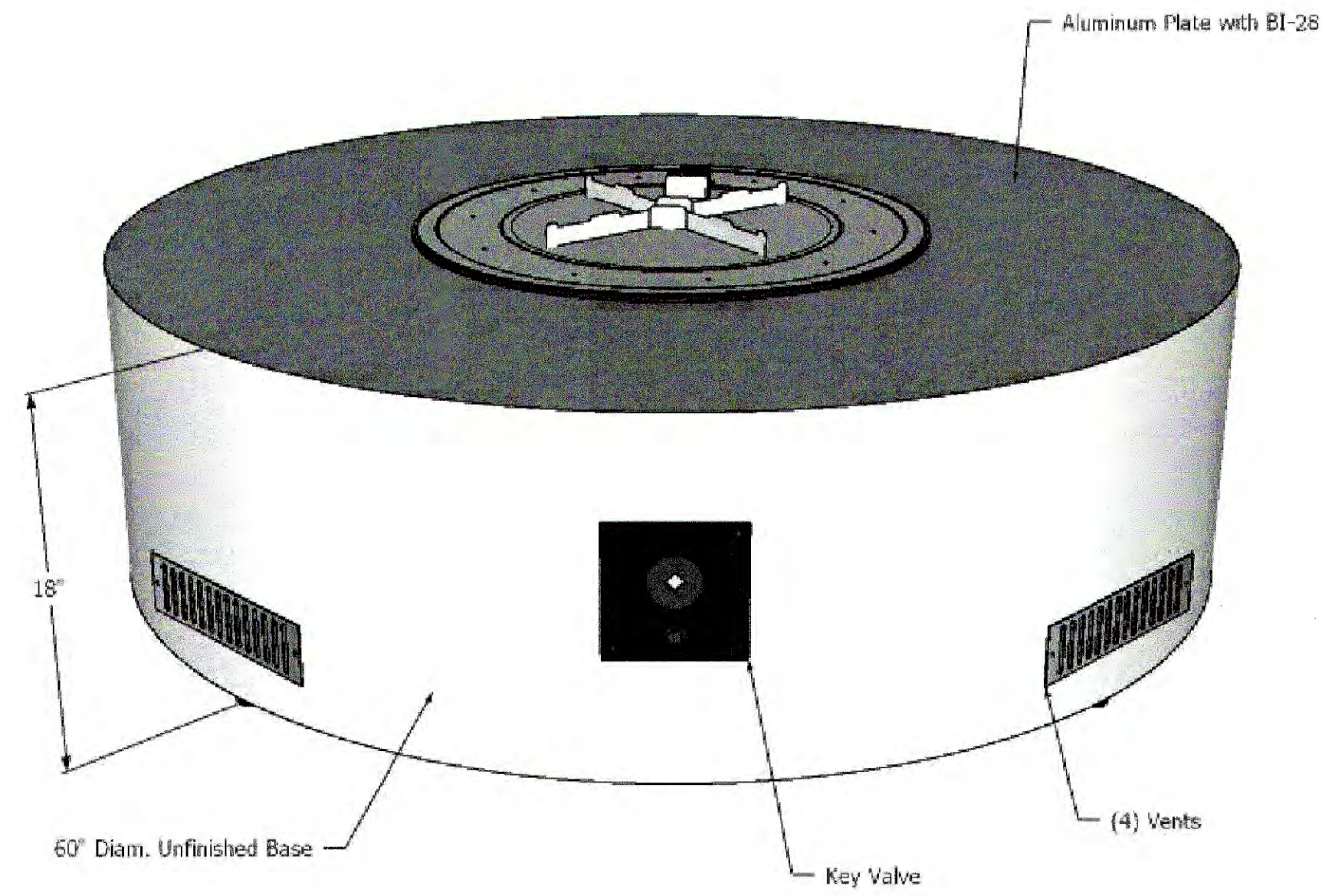
December 04, 2020
City Comments
October 16, 2020
ASB 42
August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION PERMIT

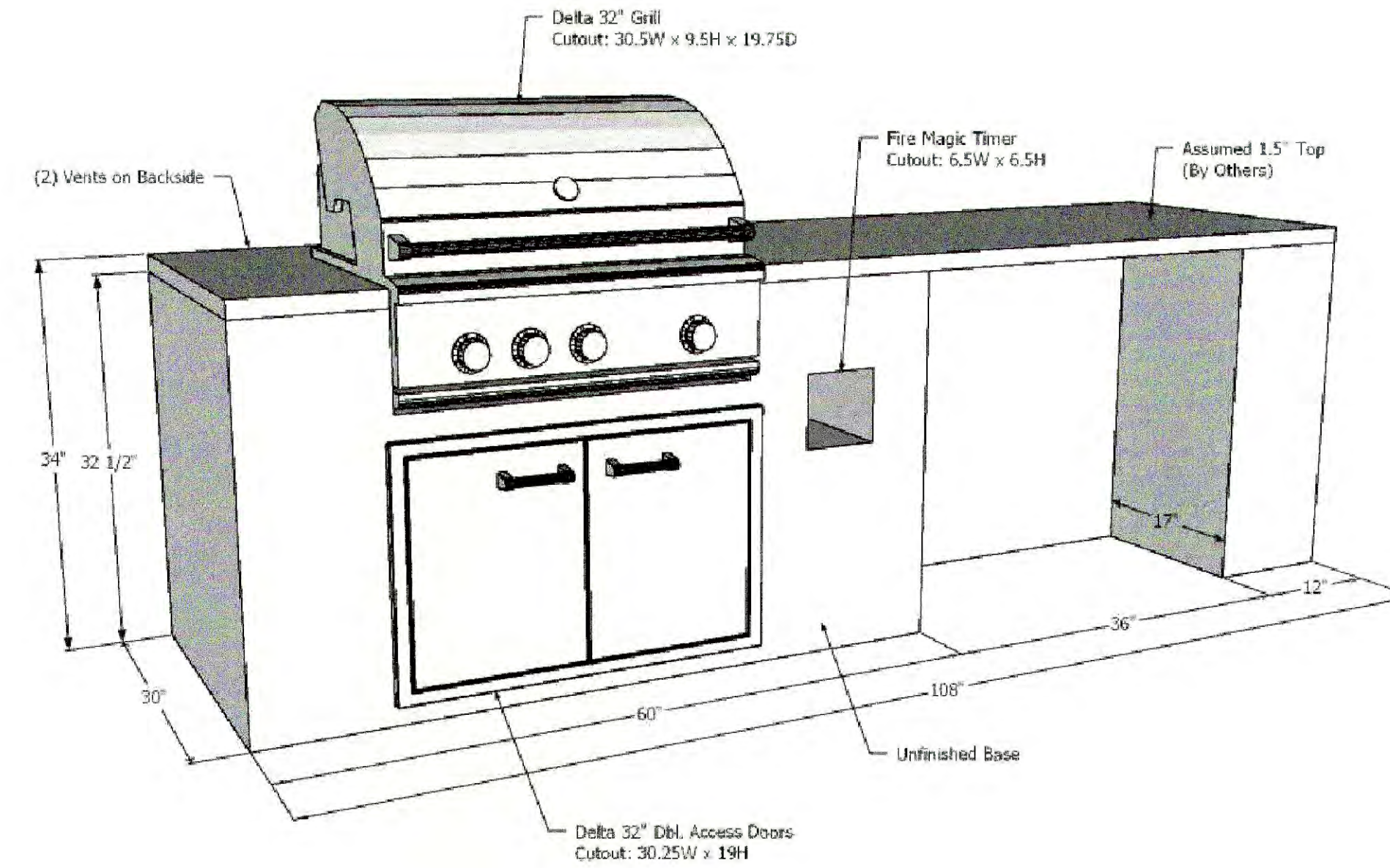
Site Details

Site 2.1

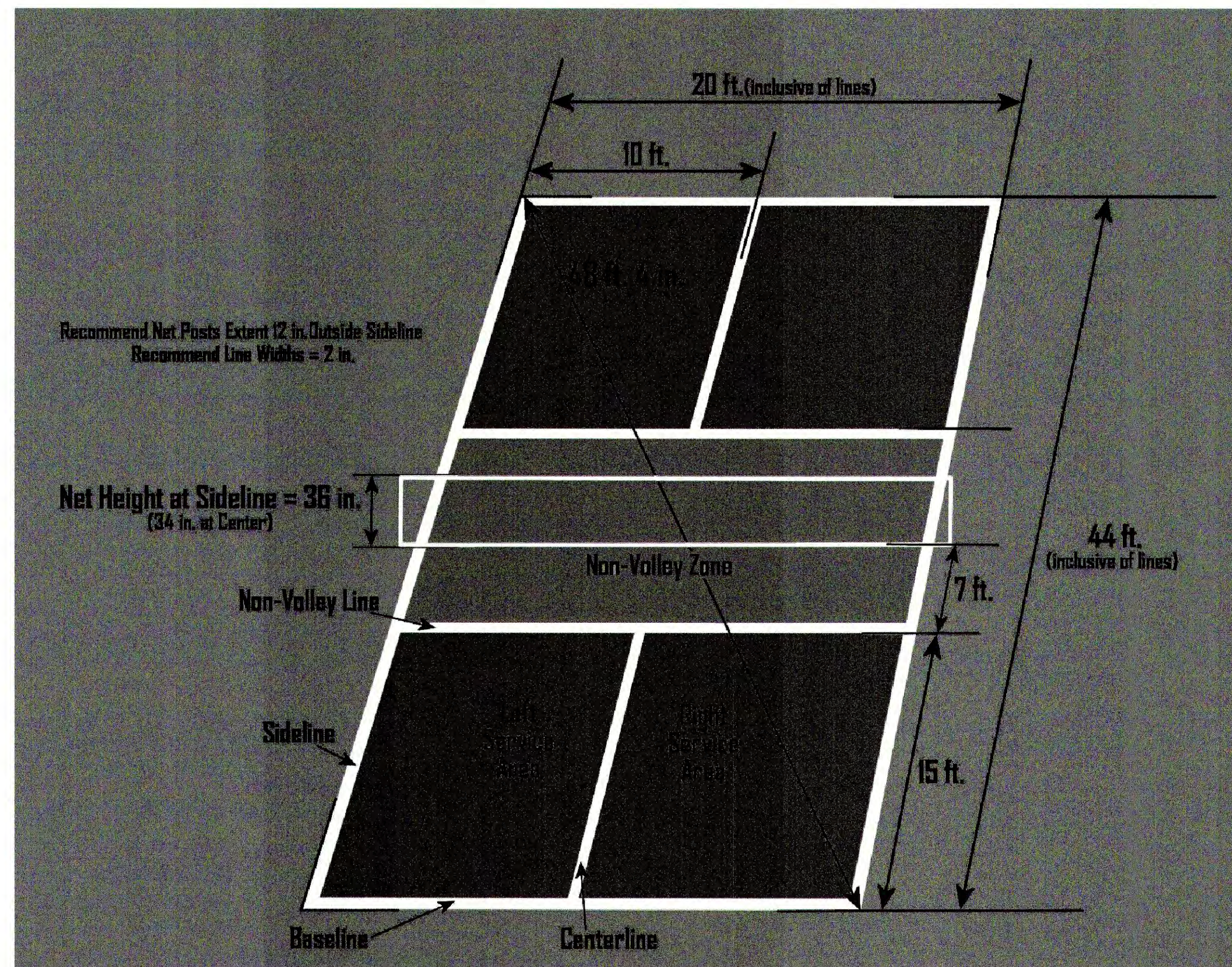
SHEET OF DRAWN BY: KEK
TOTAL SHEETS IN SET: CHECKED BY: JMR



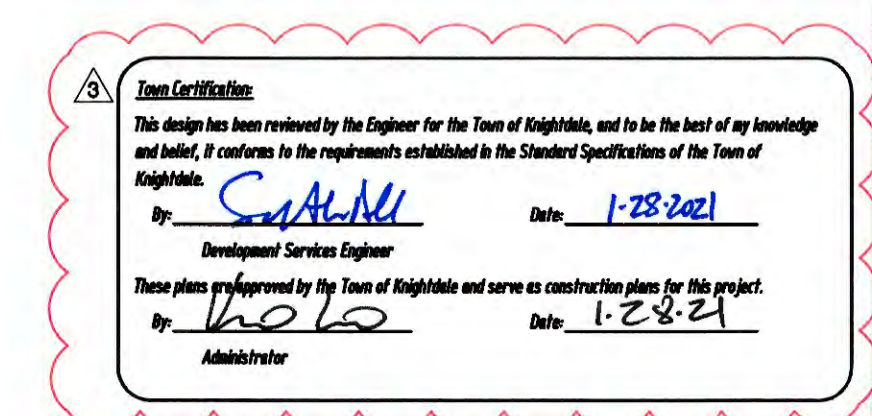
1 Fire Table Scale: NTS



2 Grill Scale: NTS



3 Pickle Ball Court Scale: NTS



HUD PROJECT
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

December 04, 2020
City Comments
October 16, 2020
ASR #2

August 31, 2020
ASR #1

DATE: AUGUST 05, 2020
ISSUED FOR: CONSTRUCTION/PERMIT

Site Details

Site 2.2

SHEET OF DRAWN BY: KEC
TOTAL SHEETS IN SET: CHECKED BY: JMR

ELEVATION KEY

- MARK (M1) ROOF
OC WEATHERED WOOD COLOR (OR SIMILAR)
30 YEAR ARCHITECTURAL, DIMENSIONAL
ANTI-FUNGAL ASPHALT SHINGLES, ON ONE LAYER
OF 15# BUILDING FELT ON 7/16" OSB TYP.
- MARK (M2) FIBER CEMENT BOARD SIDING
LAP SIDING - DOUBLE 5" EXPOSURE
- MARK (M3) FIBER CEMENT BOARD SIDING
VERTICAL SIDING
- MARK (M4) BRICK VENEER
BRICK VENEER WITH MASONRY TIES @ 1'-4" O.C.
BOTH DIRECTIONS
- MARK (M5) METAL ROOF
COPPER FINISH STANDING SEAM METAL ROOF
(@ COMMUNITY BUILDING)
- MARK (M6) FIBER CEMENT BOARD SIDING
SHINGLE SIDING

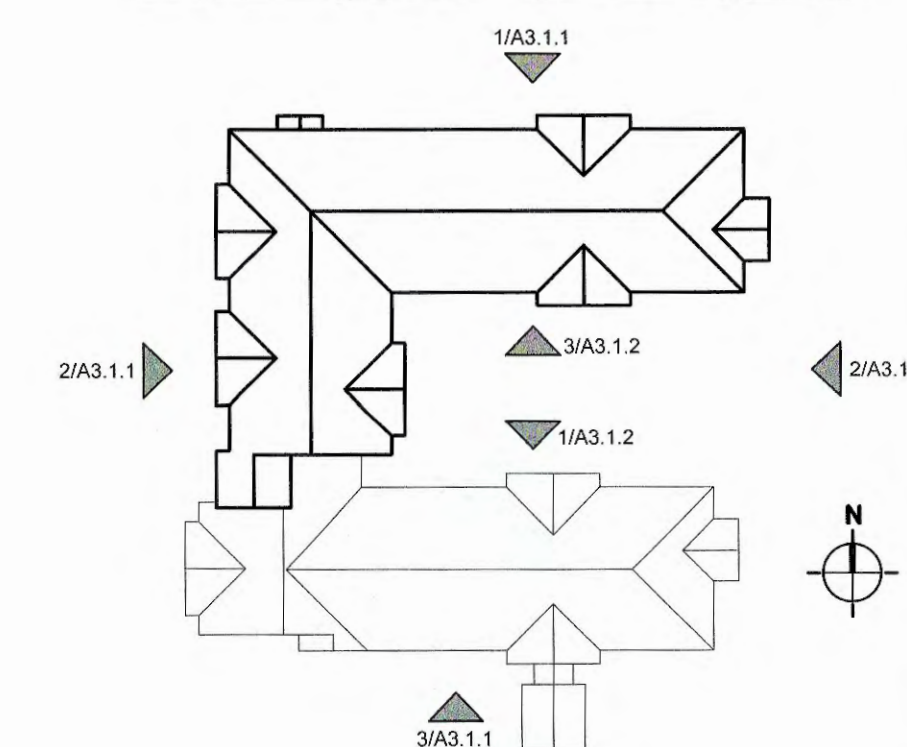
ELEVATION NOTES

- 1 RIDGE VENT. TYP. REFER TO SHEET A 0.1 FOR LOCATIONS.
- 2 DECORATIVE PVC BRACKET
- 3 WOOD GRAINED ALUMINUM RAKE FASCIA TRIM, VINYL TRIM,
PRE-FINISH WITH ALUM. ROOF EDGE
- 4 ALUMINUM GUTTER/DOWNSPOUTS SYSTEM. (NOT SHOWN FOR
CLARITY). REFER TO ROOF PLAN SHEET A.01 FOR GUTTER AND
DOWNSPOUT LOCATIONS.
- 5 4" VINYL CORNER TRIM, TYP.
- 6 INSULATED VINYL WINDOW. SEE A7.X FOR SCHEDULE.
- 7 SOLID VINYL SHUTTERS
- 8 BRICK ROWLOCK COURSE ON TOP OF BRICK SOLDIER COURSE
- 9 BUILDING NUMBER ON 18"x24" EMBOSSED ADDRESS PLAQUE AT
±10' AND 14'-6" ABOVE GRADE. (SEE ELEVATIONS), AND
IDENTIFICATION SIGNAGE MUST BE WELL LIT FROM DUSK TILL
DAWN, TYP. BUILDING FRONT ONLY
- 10 APPROX. FINISH GRADE. SLOPE AWAY FROM BUILDING TO
SWALES AND STORM DRAINS
- 11 MECHANICAL WALL CAP FOR DRYER, BATHROOM, AND RANGE.
SEE MECHANICAL DWGS FOR DETAILS.

GENERAL ELEVATION NOTES

1. NO OR VERY LOW MAINTENANCE MATERIALS ARE USED FOR EXTERIOR
BUILDING COVERINGS, INCLUDE HIGH QUALITY FIBER CEMENT SIDING
AND BRICK.
2. ALL BUILDINGS TO HAVE SEAMLESS GUTTERS AND ALUMINUM DRIP
EDGE THROUGHOUT.
3. ALL BUILDING FOUNDATIONS MUST HAVE A MINIMUM OF 12 INCHES
EXPOSED BRICK VENEER ABOVE FINISHED GRADE LEVEL (AFTER
LANDSCAPING).
4. BUILDINGS AND UNITS TO BE IDENTIFIED USING CLEARLY VISIBLE
SIGNAGE AND NUMBERS. BUILDING AND UNIT IDENTIFICATION SIGNAGE
TO BE WELL LIT FROM DUSK TILL DAWN.
5. EXTERIOR RAILINGS SHALL BE MADE OF VINYL.
6. SLOPE GRADE AWAY FROM FOUNDATION (TYP.).
7. ALL EXTERIOR TRIM, INCLUDING FASCIA AND SOFFITS, WINDOW AND
DOOR TRIM, GABLE VENTS, ETC. TO BE CONSTRUCTED OF NO OR
VERY LOW MAINTENANCE MATERIALS.

KEY PLAN



Team Certification:
This design has been reviewed by the Engineer for the Town of Knightdale, and to be the best of my knowledge
and belief, it conforms to the requirements established in the Standard Specifications of the Town of
Knightdale.
By: CAH/ML Date: 1-28-2021
Development Services Engineer
These plans are prepared by the Town of Knightdale and serve as construction plans for this project.
By: WLB Date: 1-28-21
Administrator



HUD PROJECT △
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

△ December 04, 2020
City Comments
△ October 16, 2020
ASI #2

△ August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION PERMIT

Exterior Elevations
-North
-South
-West

A 3.1.1

SHEET OF DRAWN BY: KEC
TOTAL SHEETS IN SET CHECKED BY: JMR

Architecture
Planning
Interiors
Ross/Deckard Architects



1 North Elevation
Scale: 3/32" = 1'-0"



2 West Elevation
Scale: 3/32" = 1'-0"



3 South Elevation
Scale: 3/32" = 1'-0"

ELEVATION KEY

- MARK (M1) ROOF
0C WEATHERED WOOD COLOR (OR SIMILAR)
30 YEAR ARCHITECTURAL, DIMENSIONAL
ANTI-FUNGAL ASPHALT SHINGLES, ON ONE LAYER
OF 15# BUILDING FELT ON 7/16" OSB TYP.
- MARK (M2) FIBER CEMENT BOARD SIDING
LAP SIDING - DOUBLE 5" EXPOSURE
- MARK (M3) FIBER CEMENT BOARD SIDING
VERTICAL SIDING
- MARK (M4) BRICK VENEER
BRICK VENEER WITH MASONRY TIES @ 1'-4" O.C.
BOTH DIRECTIONS
- MARK (M5) METAL ROOF
COPPER FINISH STANDING SEAM METAL ROOF
(@ COMMUNITY BUILDING)
- MARK (M6) FIBER CEMENT BOARD SIDING
SHINGLE SIDING

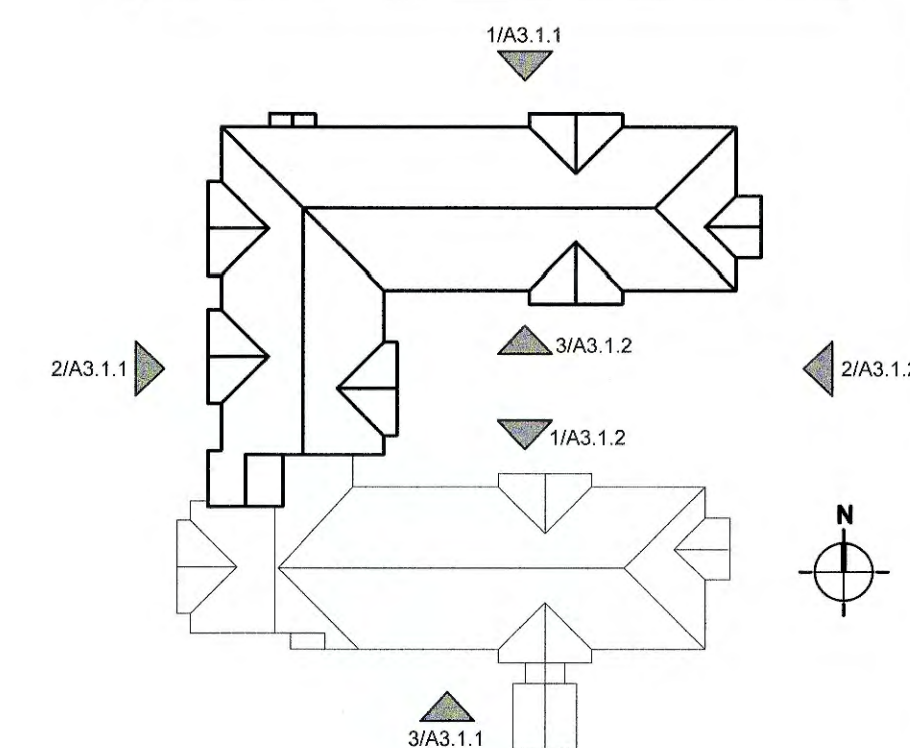
ELEVATION NOTES

- 1 RIDGE VENT. TYP. REFER TO SHEET A.01 FOR LOCATIONS.
- 2 DECORATIVE PVC BRACKET
- 3 WOOD GRAINED ALUMINUM RAKE FASCIA TRIM, VINYL TRIM,
PRE-FINISH WITH ALUM. ROOF EDGE
- 4 ALUMINUM GUTTER/DOWNSPOUTS SYSTEM. (NOT SHOWN FOR
CLARITY). REFER TO ROOF PLAN SHEET A.01 FOR GUTTER AND
DOWNSPOUT LOCATIONS.
- 5 4" VINYL CORNER TRIM, TYP.
- 6 INSULATED VINYL WINDOW. SEE A7.X FOR SCHEDULE.
- 7 SOLID VINYL SHUTTERS
- 8 BRICK ROWLOCK COURSE ON TOP OF BRICK SOLDIER COURSE
- 9 BUILDING NUMBER ON 18"x24" EMBOSSED ADDRESS PLAQUE AT
±10' AND 14'-6" ABOVE GRADE (SEE ELEVATIONS), AND
IDENTIFICATION SIGNAGE MUST BE WELL LIT FROM DUSK TILL
DAWN, TYP. BUILDING FRONT ONLY
- 10 APPROX. FINISH GRADE. SLOPE AWAY FROM BUILDING TO
SWALES AND STORM DRAINS
- 11 MECHANICAL WALL CAP FOR DRYER, BATHROOM, AND RANGE.
SEE MECHANICAL DWGS FOR DETAILS.

GENERAL ELEVATION NOTES

1. NO OR VERY LOW MAINTENANCE MATERIALS ARE USED FOR EXTERIOR
BUILDING COVERINGS, INCLUDE HIGH QUALITY FIBER CEMENT SIDING
AND BRICK.
2. ALL BUILDINGS TO HAVE SEAMLESS GUTTERS AND ALUMINUM DRIP
EDGE THROUGHOUT.
3. ALL BUILDING FOUNDATIONS MUST HAVE A MINIMUM OF 12 INCHES
EXPOSED BRICK VENEER ABOVE FINISHED GRADE LEVEL (AFTER
LANDSCAPING).
4. BUILDINGS AND UNITS TO BE IDENTIFIED USING CLEARLY VISIBLE
SIGNAGE AND NUMBERS. BUILDING AND UNIT IDENTIFICATION SIGNAGE
TO BE WELL LIT FROM DUSK TILL DAWN.
5. EXTERIOR RAILINGS SHALL BE MADE OF VINYL.
6. SLOPE GRADE AWAY FROM FOUNDATION (TYP.)
7. ALL EXTERIOR TRIM, INCLUDING FASCIA AND SOFFITS, WINDOW AND
DOOR TRIM, GABLE VENTS, ETC., TO BE CONSTRUCTED OF NO OR
VERY LOW MAINTENANCE MATERIALS.

KEY PLAN



Professional Seal
This design has been reviewed by the Engineer for the Town of Knightdale, and to be the best of my knowledge
and belief, it conforms to the requirements established in the Standard Specifications of the Town of
Knightdale.
By: S. J. J. J. Date: 1-28-2021
Development Services Engineer
These plans were approved by the Town of Knightdale and serve as construction plans for this project.
By: [Signature] Date: 1-28-21
Administrator

1 Courtyard Elevation

Scale: 3/32" = 1'-0"



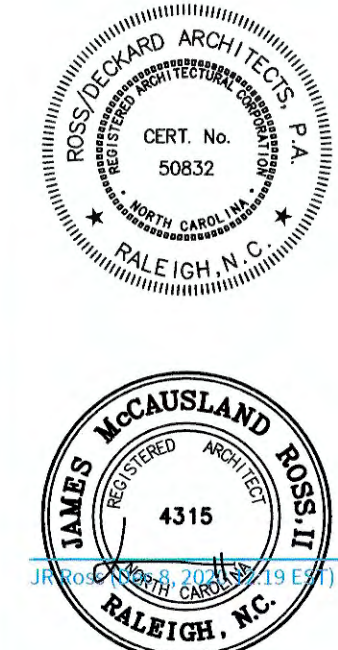
2 East Elevation

Scale: 3/32" = 1'-0"



3 Courtyard Elevation

Scale: 3/32" = 1'-0"



HUD PROJECT
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

December 04, 2020
City Comments
October 16, 2020
ASR #2

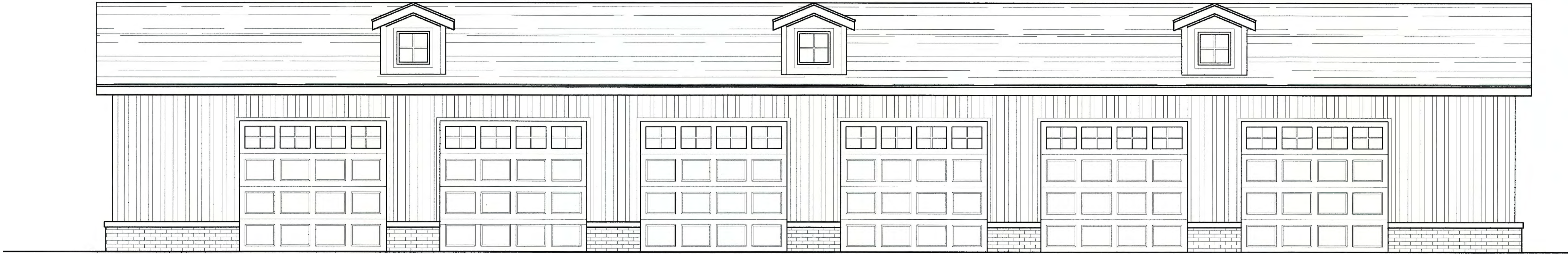
August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION PERMIT

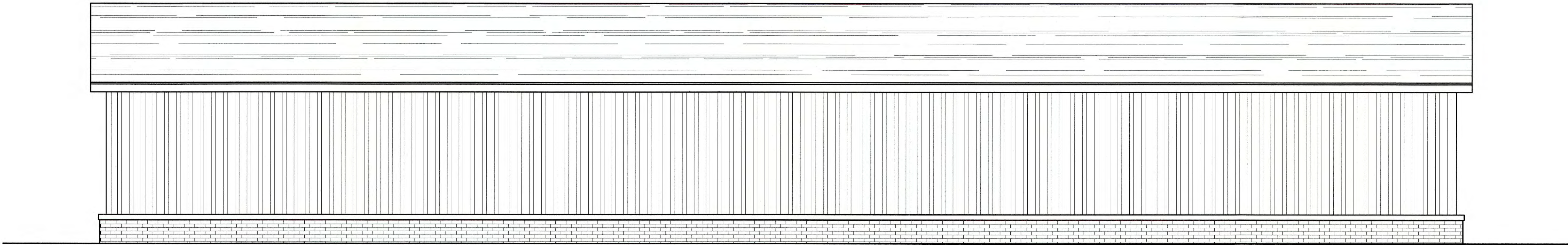
Exterior Elevations
-East
-Courtyard

A 3.1.2

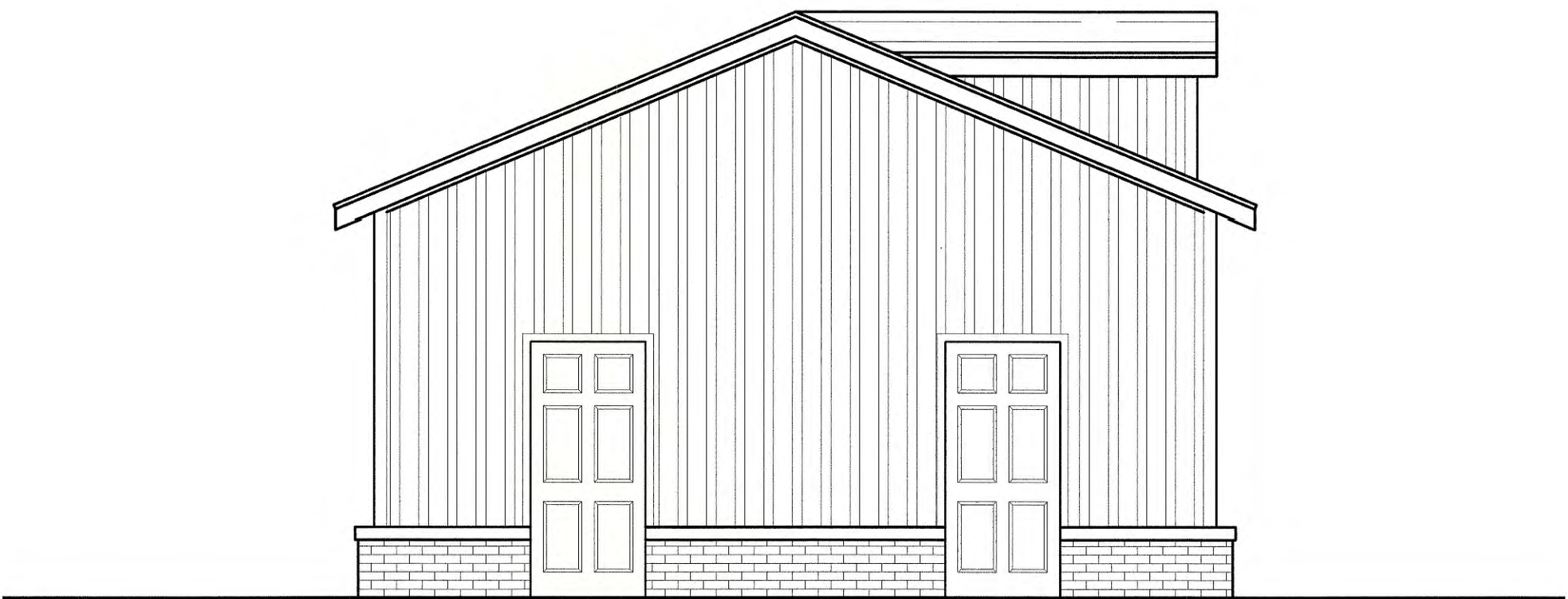
SHEET OF DRAWN BY: KEC
TOTAL SHEETS IN SET: CHECKED BY: JMR



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



2 Rear Elevation
Scale: 1/4" = 1'-0"



3 Left Elevation
Scale: 1/4" = 1'-0"



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

ELEVATION KEY

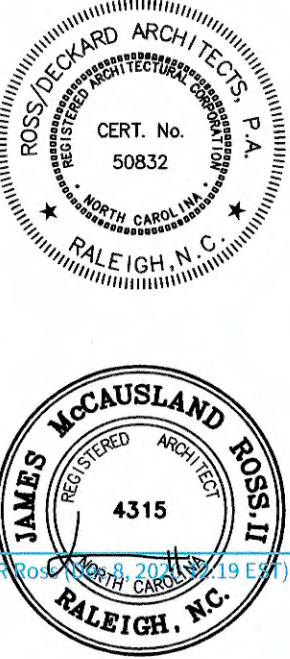
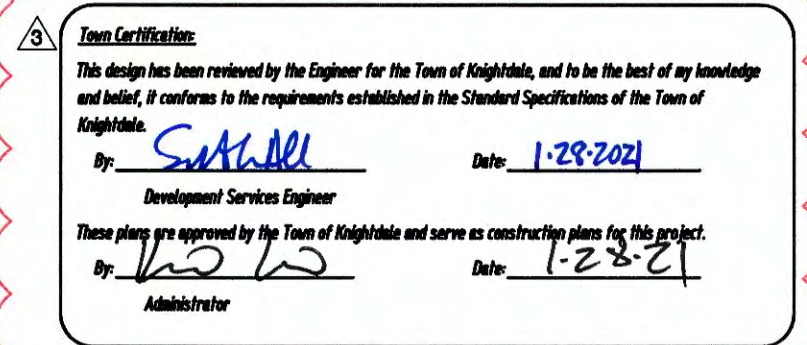
- MARK (M1) ROOF
OC WEATHERED WOOD COLOR (OR SIMILAR)
30 YEAR ARCHITECTURAL, DIMENSIONAL
ANTI-FUNGAL ASPHALT SHINGLES, ON ONE LAYER
OF 15# BUILDING FELT ON 7/16" OSB TYP.
- MARK (M2) FIBER CEMENT BOARD SIDING
LAP SIDING - DOUBLE 5" EXPOSURE
- MARK (M3) FIBER CEMENT BOARD SIDING
VERTICAL SIDING
- MARK (M4) BRICK VENEER
BRICK VENEER WITH MASONRY TIES @ 1'-4" O.C.
BOTH DIRECTIONS
- MARK (M5) METAL ROOF
COPPER FINISH STANDING SEAM METAL ROOF
(@ COMMUNITY BUILDING)
- MARK (M6) FIBER CEMENT BOARD SIDING
SHINGLE SIDING

ELEVATION NOTES

- 1 RIDGE VENT. TYP. REFER TO SHEET A 0.1 FOR LOCATIONS.
- 2 DECORATIVE PVC BRACKET
- 3 WOOD GRAINED ALUMINUM RAKE FASCIA TRIM, VINYL TRIM,
PRE-FINISH WITH ALUM. ROOF EDGE
- 4 ALUMINUM GUTTER/DOWNSPOUTS SYSTEM. (NOT SHOWN FOR
CLARITY). REFER TO ROOF PLAN SHEET A.01 FOR GUTTER AND
DOWNSPOUT LOCATIONS.
- 5 4" VINYL CORNER TRIM, TYP
- 6 INSULATED VINYL WINDOW. SEE A7.X FOR SCHEDULE.
- 7 SOLID VINYL SHUTTERS
- 8 BRICK ROWLOCK COURSE ON TOP OF BRICK SOLDIER COURSE
- 9 BUILDING NUMBER ON 18"x24" EMBOSSED ADDRESS PLAQUE AT
±10" AND 14"-6" ABOVE GRADE (SEE ELEVATIONS), AND
IDENTIFICATION SIGNAGE MUST BE WELL LIT FROM DUSK TILL
DAWN, TYP. BUILDING FRONT ONLY
- 10 APPROX. FINISH GRADE. SLOPE AWAY FROM BUILDING TO
SWALES AND STORM DRAINS
- 11 MECHANICAL WALL CAP FOR DRYER, BATHROOM, AND RANGE.
SEE MECHANICAL DWGS FOR DETAILS.

GENERAL ELEVATION NOTES

1. NO OR VERY LOW MAINTENANCE MATERIALS ARE USED FOR EXTERIOR
BUILDING COVERINGS, INCLUDE HIGH QUALITY FIBER CEMENT SIDING
AND BRICK.
2. ALL BUILDINGS TO HAVE SEAMLESS GUTTERS AND ALUMINUM DRIP
EDGE THROUGHOUT.
3. ALL BUILDING FOUNDATIONS MUST HAVE A MINIMUM OF 12 INCHES
EXPOSED BRICK VENEER ABOVE FINISHED GRADE LEVEL (AFTER
LANDSCAPING).
4. BUILDINGS AND UNITS TO BE IDENTIFIED USING CLEARLY VISIBLE
SIGNAGE AND NUMBERS. BUILDING AND UNIT IDENTIFICATION SIGNAGE
TO BE WELL LIT FROM DUSK TILL DAWN.
5. EXTERIOR RAILINGS SHALL BE MADE OF VINYL.
6. SLOPE GRADE AWAY FROM FOUNDATION (TYP.)
7. ALL EXTERIOR TRIM, INCLUDING FASCIA AND SOFFITS, WINDOW AND
DOOR TRIM, GABLE VENTS, ETC., TO BE CONSTRUCTED OF NO OR
VERY LOW MAINTENANCE MATERIALS.



HUD PROJECT 
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

 December 04, 2020
City Comments

 October 16, 2020
ASI #2

 August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION/PERMIT

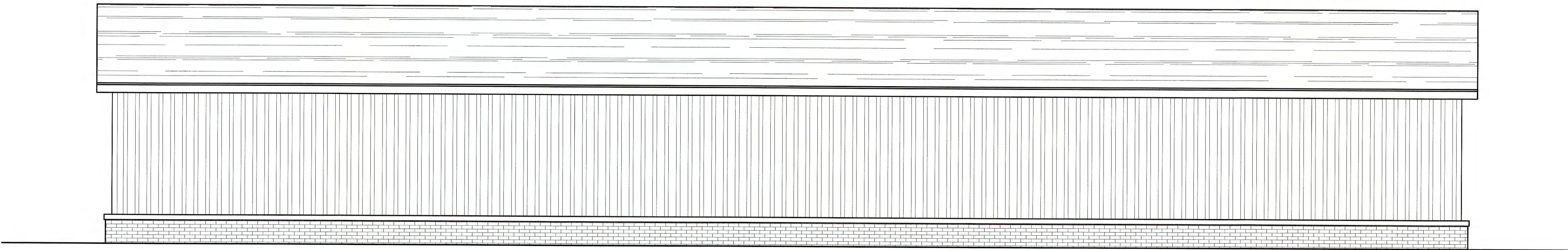
Exterior Elevations
-Garage Type 1

A 3.2.1

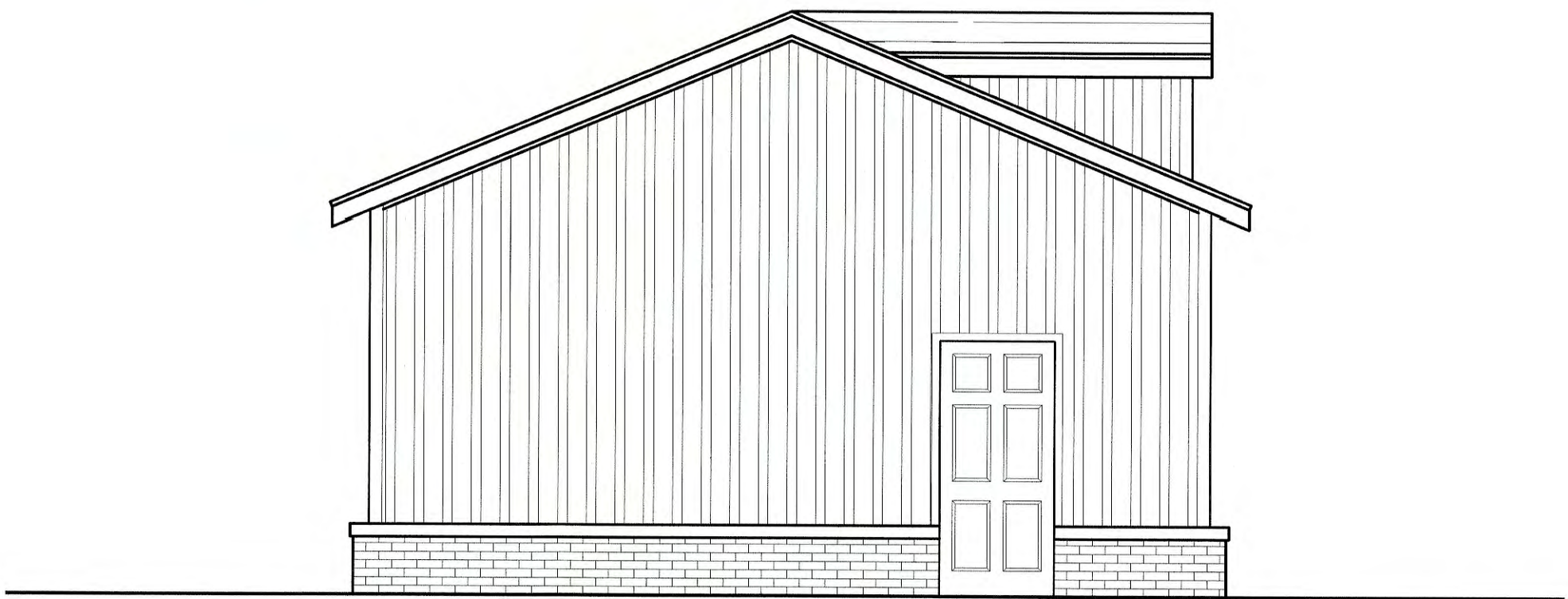
SHEET OF DRAWN BY: KEC
TOTAL SHEETS IN SET: CHECKED BY: JMR



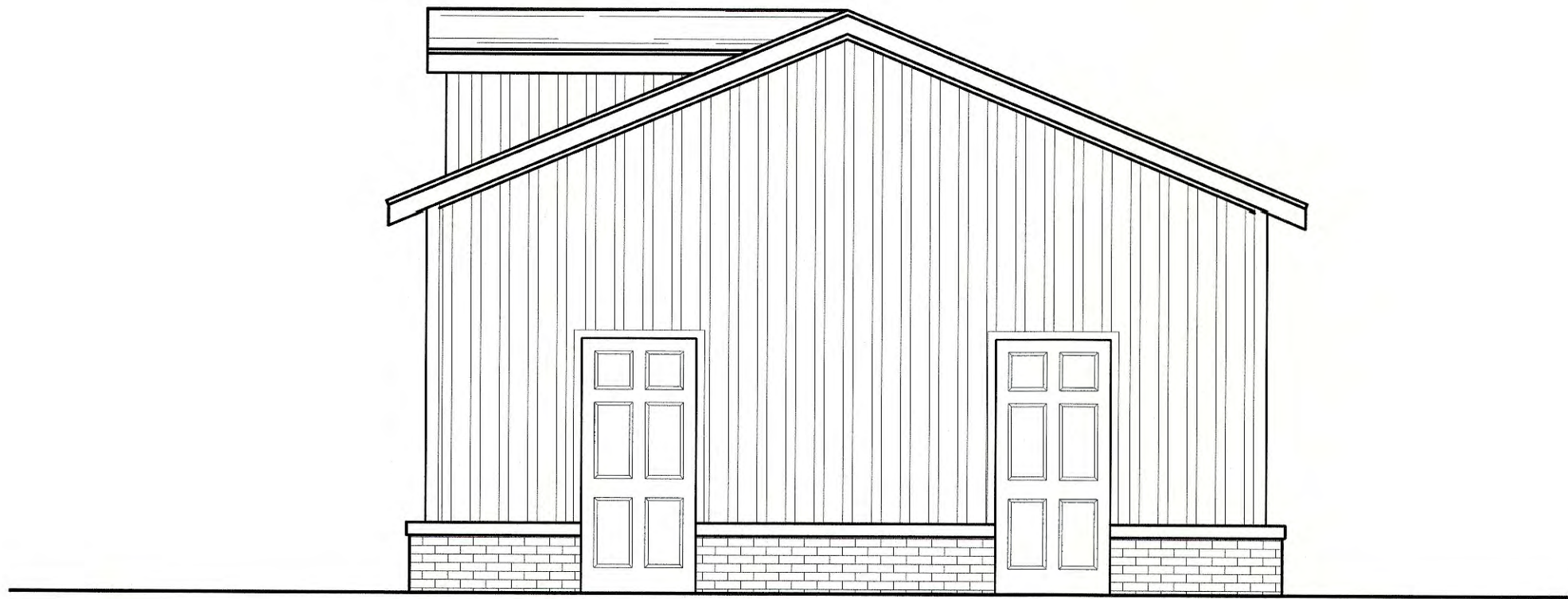
1 Front Elevation
Scale: 1/4" = 1'-0"



2 Rear Elevation
Scale: 1/4" = 1'-0"



3 Left Elevation
Scale: 1/4" = 1'-0"



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

ELEVATION KEY

- MARK (M1) ROOF
0C WEATHERED WOOD COLOR (OR SIMILAR)
30 YEAR ARCHITECTURAL DIMENSIONAL
ANTI-FUNGAL ASPHALT SHINGLES, ON ONE LAYER
OF 15# BUILDING FELT ON 7/16" OSB TYP.
- MARK (M2) FIBER CEMENT BOARD SIDING
LAP SIDING - DOUBLE 5" EXPOSURE
- MARK (M3) FIBER CEMENT BOARD SIDING
VERTICAL SIDING
- MARK (M4) BRICK VENEER
BRICK VENEER WITH MASONRY TIES @ 1'-4" O.C.
BOTH DIRECTIONS
- MARK (M5) METAL ROOF
COPPER FINISH STANDING SEAM METAL ROOF
(@ COMMUNITY BUILDING)
- MARK (M6) FIBER CEMENT BOARD SIDING
SHINGLE SIDING

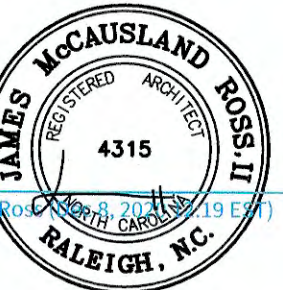
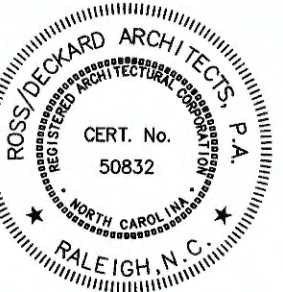
ELEVATION NOTES

- 1 RIDGE VENT. TYP. REFER TO SHEET A 0.1 FOR LOCATIONS.
- 2 DECORATIVE PVC BRACKET
- 3 WOOD GRAINED ALUMINUM RAKE FASCIA TRIM, VINYL TRIM,
PRE-FINISH WITH ALUM. ROOF EDGE
- 4 ALUMINUM GUTTER/DOWNSPOUTS SYSTEM. (NOT SHOWN FOR
CLARITY). REFER TO ROOF PLAN SHEET A.01 FOR GUTTER AND
DOWNSPOUT LOCATIONS.
- 5 4" VINYL CORNER TRIM, TYP
- 6 INSULATED VINYL WINDOW. SEE A7.X FOR SCHEDULE.
- 7 SOLID VINYL SHUTTERS
- 8 BRICK ROWLOCK COURSE ON TOP OF BRICK SOLDIER COURSE
- 9 BUILDING NUMBER ON 18"x24" EMBOSSED ADDRESS PLAQUE AT
±10' AND 14'-6" ABOVE GRADE (SEE ELEVATIONS), AND
IDENTIFICATION SIGNAGE MUST BE WELL LIT FROM DUSK TILL
DAWN, TYP. BUILDING FRONT ONLY.
- 10 APPROX. FINISH GRADE. SLOPE AWAY FROM BUILDING TO
SWALES AND STORM DRAINS
- 11 MECHANICAL WALL CAP FOR DRYER, BATHROOM, AND RANGE.
SEE MECHANICAL DWGS FOR DETAILS.

GENERAL ELEVATION NOTES

1. NO OR VERY LOW MAINTENANCE MATERIALS ARE USED FOR EXTERIOR
BUILDING COVERINGS, INCLUDE HIGH QUALITY FIBER CEMENT SIDING
AND BRICK.
2. ALL BUILDINGS TO HAVE SEAMLESS GUTTERS AND ALUMINUM DRIP
EDGE THROUGHOUT.
3. ALL BUILDING FOUNDATIONS MUST HAVE A MINIMUM OF 12 INCHES
EXPOSED BRICK VENEER ABOVE FINISHED GRADE LEVEL (AFTER
LANDSCAPING).
4. BUILDINGS AND UNITS TO BE IDENTIFIED USING CLEARLY VISIBLE
SIGNAGE AND NUMBERS. BUILDING AND UNIT IDENTIFICATION SIGNAGE
TO BE WELL LIT FROM DUSK TILL DAWN.
5. EXTERIOR RAILINGS SHALL BE MADE OF VINYL.
6. SLOPE GRADE AWAY FROM FOUNDATION (TYP.)
7. ALL EXTERIOR TRIM, INCLUDING FASCIA AND SOFFITS, WINDOW AND
DOOR TRIM, GABLE VENTS, ETC. TO BE CONSTRUCTED OF NO OR
VERY LOW MAINTENANCE MATERIALS.

From Certification:
This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge
and belief, it conforms to the requirements established in the Standard Specifications of the Town of
Knightdale.
By: [Signature] Date: 1-28-2021
Development Services Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: [Signature] Date: 1-28-21
Administrator



HUD PROJECT 
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

 December 04, 2020
City Comments
 October 16, 2020
AS #2

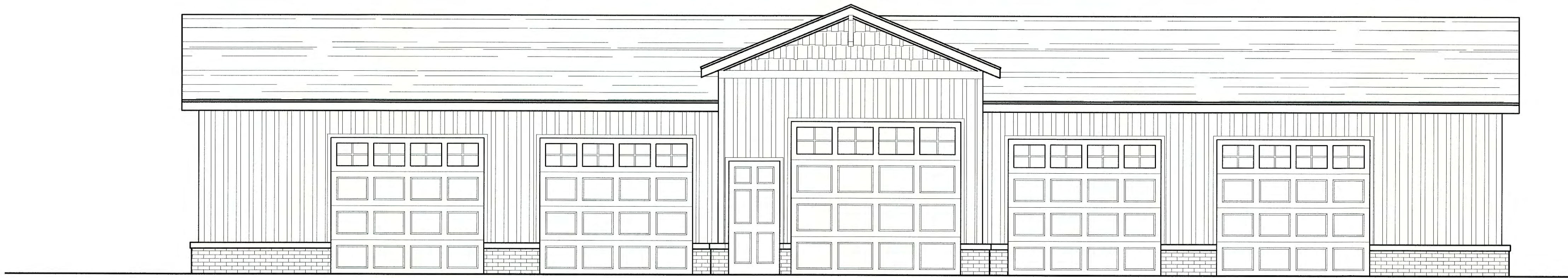
 August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION/PERMIT

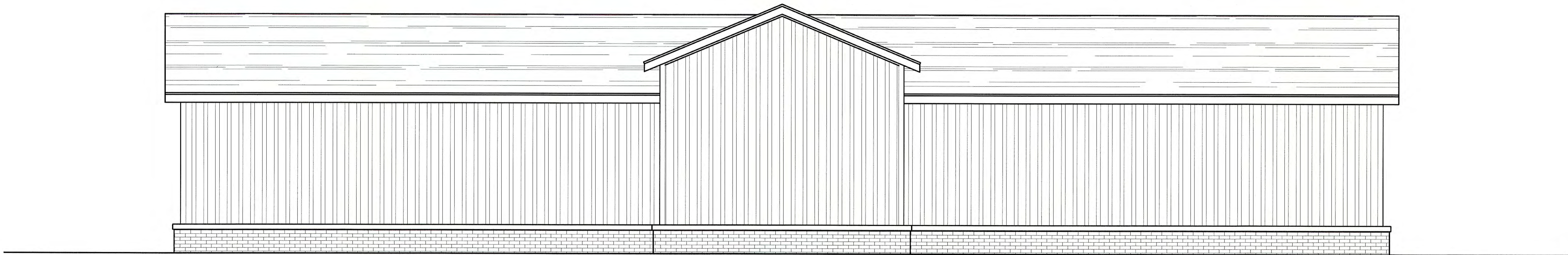
Garage Type 2
Exterior Elevations

A 3.2.2

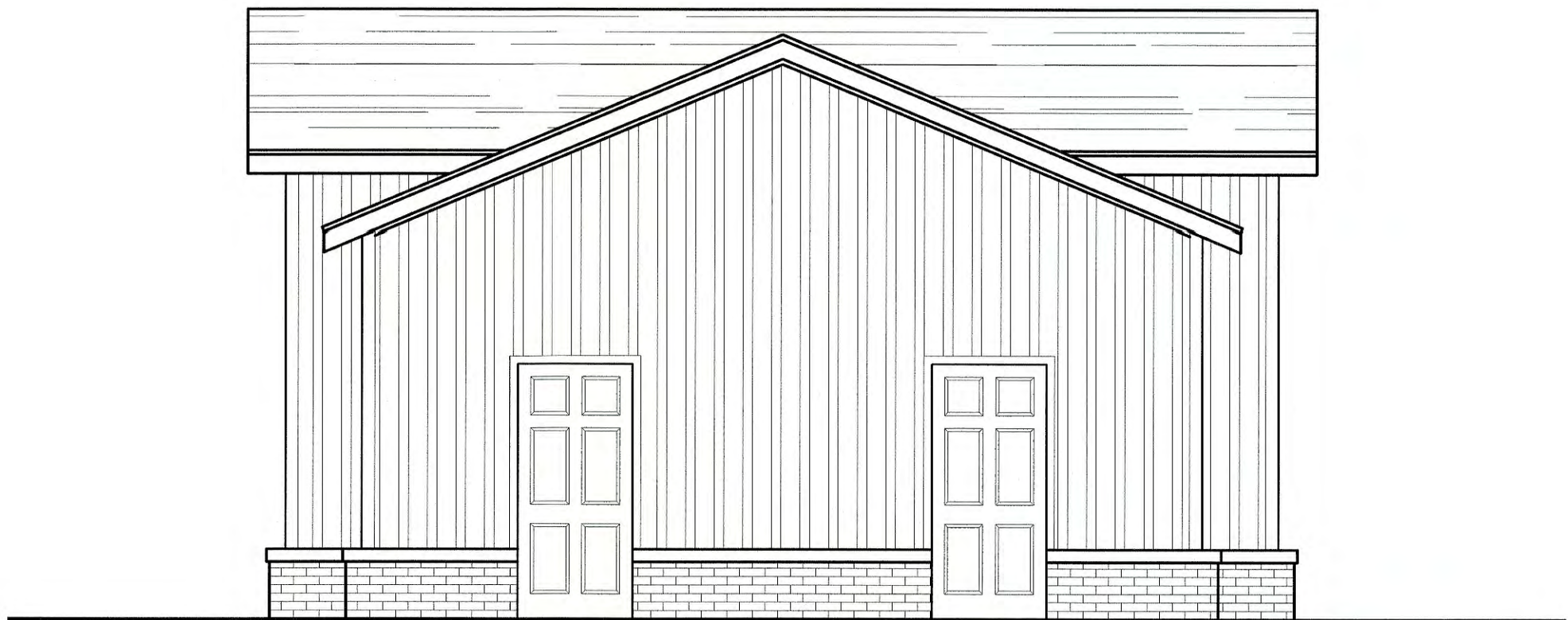
SHEET OF DRAWN BY: KEG
TOTAL SHEETS IN SET: CHECKED BY: JMR



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



2 Rear Elevation
Scale: 1/4" = 1'-0"



3 Left Elevation
Scale: 1/4" = 1'-0"



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

ELEVATION KEY

- MARK (M1) ROOF
0C WEATHERED WOOD COLOR (OR SIMILAR)
30 YEAR ARCHITECTURAL, DIMENSIONAL
ANTI-FUNGAL ASPHALT SHINGLES, ON ONE LAYER
OF 15# BUILDING FELT ON 7/16" OSB TYP.
- MARK (M2) FIBER CEMENT BOARD SIDING
LAP SIDING - DOUBLE 5" EXPOSURE
- MARK (M3) FIBER CEMENT BOARD SIDING
VERTICAL SIDING
- MARK (M4) BRICK VENEER
BRICK VENEER WITH MASONRY TIES @ 1'-4" O.C.
BOTH DIRECTIONS
- MARK (M5) METAL ROOF
COPPER FINISH STANDING SEAM METAL ROOF
(@ COMMUNITY BUILDING)
- MARK (M6) FIBER CEMENT BOARD SIDING
SHINGLE SIDING

ELEVATION NOTES

- 1 RIDGE VENT. TYP. REFER TO SHEET A 0.1 FOR LOCATIONS.
- 2 DECORATIVE PVC BRACKET
- 3 WOOD GRAINED ALUMINUM RAKE FASCIA TRIM, VINYL TRIM,
PRE-FINISH WITH ALUM. ROOF EDGE
- 4 ALUMINUM GUTTER/DOWNSPOUTS SYSTEM. (NOT SHOWN FOR
CLARITY). REFER TO ROOF PLAN SHEET A.01 FOR GUTTER AND
DOWNSPOUT LOCATIONS.
- 5 4" VINYL CORNER TRIM, TYP
- 6 INSULATED VINYL WINDOW. SEE A7.X FOR SCHEDULE.
- 7 SOLID VINYL SHUTTERS
- 8 BRICK ROWLOCK COURSE ON TOP OF BRICK SOLDIER COURSE
- 9 BUILDING NUMBER ON 18"x24" EMBOSSED ADDRESS PLAQUE AT
±10' AND 14'-6" ABOVE GRADE (SEE ELEVATIONS), AND
IDENTIFICATION SIGNAGE MUST BE WELL LIT FROM DUSK TILL
DAWN, TYP. BUILDING FRONT ONLY
- 10 APPROX. FINISH GRADE. SLOPE AWAY FROM BUILDING TO
SWALES AND STORM DRAINS
- 11 MECHANICAL WALL CAP FOR DRYER, BATHROOM, AND RANGE.
SEE MECHANICAL DWGS FOR DETAILS.

GENERAL ELEVATION NOTES

1. NO OR VERY LOW MAINTENANCE MATERIALS ARE USED FOR EXTERIOR
BUILDING COVERINGS, INCLUDE HIGH QUALITY FIBER CEMENT SIDING
AND BRICK.
2. ALL BUILDINGS TO HAVE SEAMLESS GUTTERS AND ALUMINUM DRIP
EDGE THROUGHOUT.
3. ALL BUILDING FOUNDATIONS MUST HAVE A MINIMUM OF 12 INCHES
EXPOSED BRICK VENEER ABOVE FINISHED GRADE LEVEL (AFTER
LANDSCAPING).
4. BUILDINGS AND UNITS TO BE IDENTIFIED USING CLEARLY VISIBLE
SIGNAGE AND NUMBERS. BUILDING AND UNIT IDENTIFICATION SIGNAGE
TO BE WELL LIT FROM DUSK TILL DAWN.
5. EXTERIOR RAILINGS SHALL BE MADE OF VINYL.
6. SLOPE GRADE AWAY FROM FOUNDATION (TYP.)
7. ALL EXTERIOR TRIM, INCLUDING FASCIA AND SOFFITS, WINDOW AND
DOOR TRIM, GABLE VENTS, ETC. TO BE CONSTRUCTED OF NO OR
VERY LOW MAINTENANCE MATERIALS.

Town Certification:
This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge
and belief, it conforms to the requirements established in the Standard Specifications of the Town of
Knightdale.
By: [Signature] Date: 1-28-2021
Development Services Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: [Signature] Date: 1-28-21
Administrator



HUD PROJECT 
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

 December 04, 2020
City Comments
 October 16, 2020
ASB #2

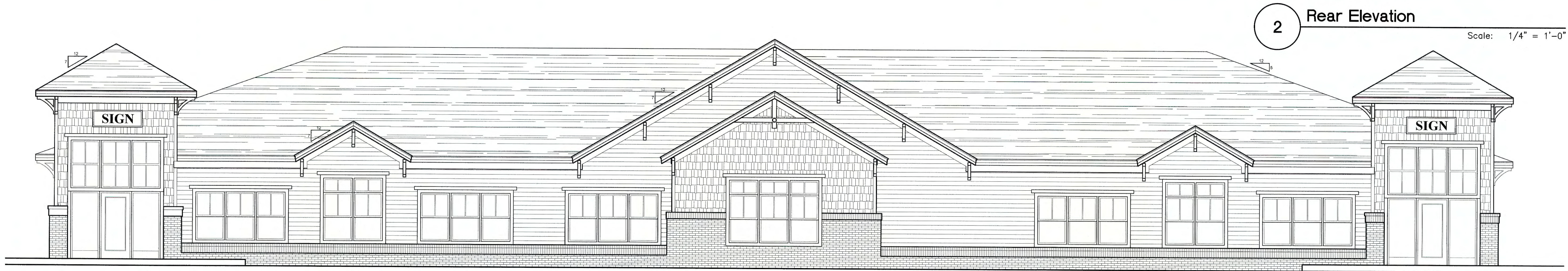
 August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION PERMIT

Garage Type 3
Exterior Elevations

A 3.2.3

SHEET OF DRAWN BY: KEK
TOTAL SHEETS IN SET: CHECKED BY: JMR



GENERAL ELEVATION NOTES

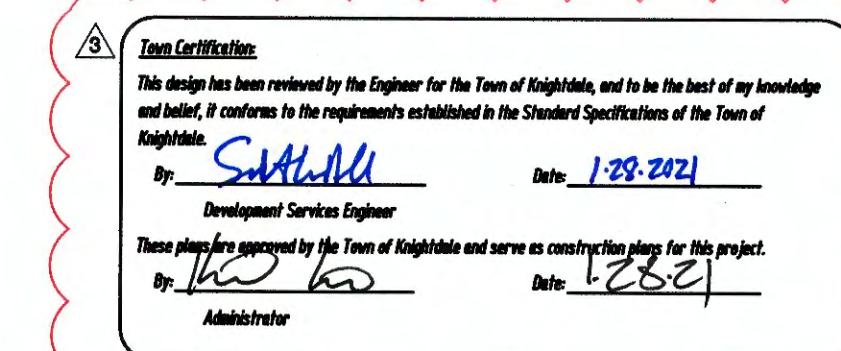
1. NO OR VERY LOW MAINTENANCE MATERIALS ARE USED FOR EXTERIOR BUILDING COVERINGS, INCLUDE HIGH QUALITY FIBER CEMENT SIDING AND BRICK.
2. ALL BUILDINGS TO HAVE SEAMLESS GUTTERS AND ALUMINUM DRIP EDGE THROUGHOUT.
3. ALL BUILDING FOUNDATIONS MUST HAVE A MINIMUM OF 12 INCHES EXPOSED BRICK VENEER ABOVE FINISHED GRADE LEVEL (AFTER LANDSCAPING).
4. BUILDINGS AND UNITS TO BE IDENTIFIED USING CLEARLY VISIBLE SIGNAGE AND NUMBERS. BUILDING AND UNIT IDENTIFICATION SIGNAGE TO BE WELL LIT FROM DUSK TILL DAWN.
5. EXTERIOR RAILINGS SHALL BE MADE OF VINYL.
6. SLOPE GRADE AWAY FROM FOUNDATION (TYP.)
7. ALL EXTERIOR TRIM, INCLUDING FASCIA AND SOFFITS, WINDOW AND DOOR TRIM, GABLE VENTS, ETC., TO BE CONSTRUCTED OF NO OR VERY LOW MAINTENANCE MATERIALS.

ELEVATION KEY

- MARK (M1) ROOF
0C WEATHERED WOOD COLOR (OR SIMILAR)
30 YEAR ARCHITECTURAL, DIMENSIONAL
ANTI-FUNGAL ASPHALT SHINGLES, ON ONE LAYER
OF 15# BUILDING FELT ON 7/16" OSB TYP.
- MARK (M2) FIBER CEMENT BOARD SIDING
LAP SIDING - DOUBLE 5" EXPOSURE
- MARK (M3) FIBER CEMENT BOARD SIDING
VERTICAL SIDING
- MARK (M4) BRICK VENEER
BRICK VENEER WITH MASONRY TIES @ 1'-4" O.C.
BOTH DIRECTIONS
- MARK (M5) METAL ROOF
COPPER FINISH STANDING SEAM METAL ROOF
(@ COMMUNITY BUILDING)
- MARK (M6) FIBER CEMENT BOARD SIDING
SHINGLE SIDING

ELEVATION NOTES

- 1 RIDGE VENT, TYP. REFER TO SHEET A.01 FOR LOCATIONS.
- 2 DECORATIVE PVC BRACKET
- 3 WOOD GRAINED ALUMINUM RAKE FASCIA TRIM, VINYL TRIM, PRE-FINISH WITH ALUM. ROOF EDGE
- 4 ALUMINUM GUTTER/DOWNSPOUTS SYSTEM, (NOT SHOWN FOR CLARITY). REFER TO ROOF PLAN SHEET A.01 FOR GUTTER AND DOWNSPOUT LOCATIONS.
- 5 4" VINYL CORNER TRIM, TYP
- 6 INSULATED VINYL WINDOW. SEE A7.X FOR SCHEDULE.
- 7 SOLID VINYL SHUTTERS
- 8 BRICK ROWLOCK COURSE ON TOP OF BRICK SOLDIER COURSE
- 9 BUILDING NUMBER ON 18"x24" EMBOSSED ADDRESS PLAQUE AT ±1'0" AND 14"-6" ABOVE GRADE (SEE ELEVATIONS), AND IDENTIFICATION SIGNAGE MUST BE WELL LIT FROM DUSK TILL DAWN, TYP. BUILDING FRONT ONLY
- 10 APPROX. FINISH GRADE. SLOPE AWAY FROM BUILDING TO SWALES AND STORM DRAINS
- 11 MECHANICAL WALL CAP FOR DRYER, BATHROOM, AND RANGE. SEE MECHANICAL DWGS FOR DETAILS.



HUD PROJECT
053-38011

The Lawson, LLC

The Lawson of
Knightdale

Knightdale,
North Carolina

18-416.00

December 04, 2020
City Comments
October 16, 2020
ASI #2

August 05, 2020
City Comments

DATE: MAY 22, 2020
ISSUED FOR: CONSTRUCTION PERMIT

Exterior Elevations
-Outparcel Bldg.

A 3.3.1

SHEET OF DRAWN BY: JEC
TOTAL SHEETS IN SET: CHECKED BY: JMR