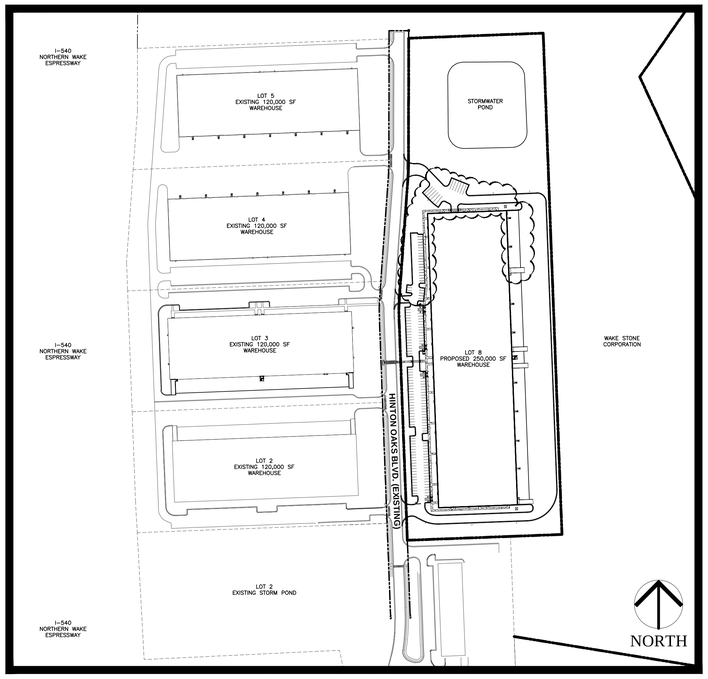
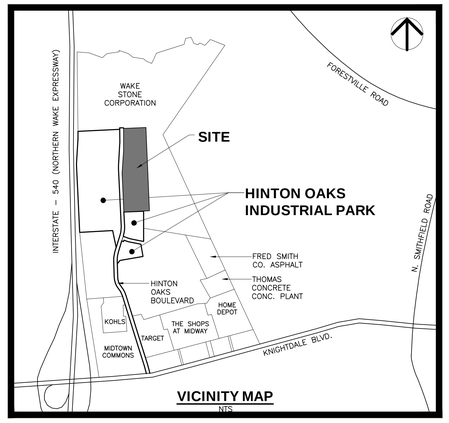
HINTON OAKS INDUSTRIAL PARK
LOT 8, BUILDING 5
CONSTRUCTION PLANS FOR

KNIGHTDALE, NORTH CAROLINA
ZMA-7-21



VICINITY MAP SCALE: 1"=200



VICINITY MAP
NTS

STORMWATER COMPLIANCE NOTE

THE SITE WILL INCORPORATE A WET DETENTION POND. THIS WET POND IS DESIGNED TO TREAT THE RUNOFF TO MEET TOWN OF KNIGHTDALE STORMWATER CONTROL REQUIREMENTS.

CITY OF RALEIGH STANDARD UTILITY NOTES

STANDARD UTILITY NOTES (AS APPLICABLE):

1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD HANDBOOK, CURRENT EDITION).

2. UTILITY SEPARATION REQUIREMENTS:
   A) A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLEDTO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATIONSHALL NOT BE LESS THAN 25'FROM A PRIVATE WELL OR 50'FROM A PUBLIC WELL.
   B) WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18"ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR.
      ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER
   C) WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10'ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS
   D) 5.0' 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 AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)
   F) ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.

3. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.

4. 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.

5. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCEMAINS. 4.0'MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.

6. IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.

7. INSTALL COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2'WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.

8. INSTALL PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.

9. PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.

10. ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.

11. NCDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.

12. GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUD FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

13. CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION'S APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

AASHTO INTERSECTION SIGHT DISTANCE SUMMARY

STOP SIGN CONTROL - LEFT & RIGHT TURNS FROM MINOR STREET ONTO A 2-LANE ROADWAY

STREET NAME (THROUGH TRAFFIC)	STREET NAME (APPROACHING STREET, STOP CONDITION)	DESIGN SPEED OF THROUGH STREET, MPH	GRADE OF APPROACH STREET, %	LEFT TURN TIME GAP (SEC.)	RIGHT TURN TIME GAP (SEC.)	CALCULATED LEFT TURN SIGHT DISTANCE (FT.)	CALCULATED RIGHT TURN SIGHT DISTANCE (FT.)
HINTON OAKS BLVD	NORTH DRIVEWAY	30	-2.0±	7.50	6.50	331	287
HINTON OAKS BLVD	MIDDLE DRIVEWAY	30	-2.0±	7.50	6.50	331	287
HINTON OAKS BLVD	SOUTH DRIVEWAY	30	-2.0±	7.50	6.50	331	287

ADDITIONAL USE STANDARDS

USE	CONDITION
WHOLESALING AND DISTRIBUTION	ALL VEHICLE STORAGE AREAS SHALL BE ENCLOSED BY AN OPAQUE FENCE OR WALL, RESTRICTED TO THE REAR YARD, AND SCREENED FROM OFF-SITE VIEW OF A PUBLIC RIGHT-OF-WAY BY A TYPE-A BUFFER YARD.
	NO OUTDOOR PUBLIC ADDRESS SYSTEM SHALL BE PERMITTED WHICH CAN BE HEARD BEYOND THE BOUNDARIES OF THE PROPERTY.
STORAGE-WAREHOUSE, INDOOR STORAGE	AN INDOOR STORAGE FACILITY IS LIMITED TO 5,000 SQUARE FEET PER FLOOR IN THE TC AND RR DISTRICTS.
	OUTDOOR STORAGE IS NOT PERMITTED.
	IN THE RR DISTRICT, ALL AREAS SHALL BE SCREENED FROM ANY PRE-EXISTING ADJACENT RESIDENCE (OTHER THAN THE OWNER'S) BY A TYPE-A BUFFER YARD (SECTION 8.6B(1)).
AGRIBUSINESS	ACCESSORY BUILDINGS PERMITTED UNDER SECTION 4.6 AND AREAS USED FOR SALES, STORAGE, THE KEEPING OF MATERIALS OR THE CARE OF ANIMALS SHALL NOT BE LOCATED WITHIN A 200-FOOT RADIUS OF THE FOOTPRINT OF ANY PRE-EXISTING ADJACENT RESIDENTIAL DWELLING (OTHER THAN THE OWNER'S).
	ACCESSORY BUILDINGS PERMITTED UNDER SECTION 4.6 AND AREAS USED FOR STORAGE OR KEEPING OF MATERIALS AND/OR ANIMALS SHALL HAVE ADEQUATE MEANS OF VENTILATION AND SHALL NOT CREATE OBJECTIONABLE FUMES, ODOR OR DUST TO THE SURROUNDING AREA.
LABORATORY-MEDICAL, ANALYTICAL, RESEARCH & DEVELOPMENT	NONE
MANUFACTURING, LIGHT	ALL MATERIALS OR EQUIPMENT SHALL BE STORED WITHIN AN ENCLOSED BUILDING, OR STORED WITHIN AN OUTDOOR STORAGE AREA ENCLOSED BY AN OPAQUE FENCE OR WALL THAT MEETS THE REQUIREMENTS OF SECTION 4.7 AND IS RESTRICTED TO THE REAR YARD.
	ANY OPERATION WHICH RESULTS IN THE CREATION OF NOXIOUS VIBRATIONS, ODORS, DUST, GLARE OR SOUND IS PROHIBITED.
MANUFACTURING, NEIGHBORHOOD	ALL MATERIALS OR EQUIPMENT SHALL BE STORED WITHIN AN ENCLOSED BUILDING
	ANY OPERATION WHICH RESULTS IN THE CREATION OF NOXIOUS VIBRATIONS, ODORS, DUST, GLARE OR SOUND IS PROHIBITED.
MANUFACTURING, HEAVY	NONE
MEDIA PRODUCTION	NONE
RESEARCH AND DEVELOPMENT	ALL MATERIALS OR EQUIPMENT SHALL BE STORED WITHIN AN ENCLOSED BUILDING, OR STORED WITHIN AN OUTDOOR STORAGE AREA ENCLOSED BY AN OPAQUE FENCE OR WALL THAT MEETS THE REQUIREMENTS OF SECTION 4.7 AND IS RESTRICTED TO THE REAR YARD.
	ANY OPERATION WHICH RESULTS IN THE CREATION OF NOXIOUS VIBRATIONS, ODORS, DUST, GLARE OR SOUND IS PROHIBITED.

SITE DATA

1. PROJECT NAME:	HINTON OAKS INDUSTRIAL PARK – LOT 8 – BLDG #5
2. STREET ADDRESS:	0 HINTON OAKS BOULEVARD KNIGHTDALE, NORTH CAROLINA
3. SITE AREA:	TOTAL AREA: 18.13 AC.
4. ZONING:	MI-CD
5. PROPOSED BUILDING USE:	250,120 SF, STORAGE – WAREHOUSE, INDOOR STORAGE
6. PIN	1744-58-0927
7. CURRENT LAND USE:	VACANT
8. WATERSHED CLASSIFICATION:	NEUSE RIVER BASIN
9. BUILDING USE / PARKING SUMMARY	(245,120 SF WAREHOUSE) MAXIMUM PARKING PERMITTED (WAREHOUSE) = 0.7 SP /1,000 SF = 245,120/1,000 x 0.7 = 172 SPACES (5,000 SF OFFICE) MAXIMUM PARKING PERMITTED (OFFICE) = 4.0 SP /1,000 SF = 5,000/1,000 x 4.0 = 20 SPACES MINIMUM PARKING REQUIRED = 1/2 OF MAXIMUM = 96 SPACES REQUIRED 147 PARKING SPACES PROVIDED
10. ACREAGE IN PARKS:	0
11. ACERAGE IN NON-RESIDENTIAL UNITS:	0
12. TOTAL NUMBER OF HOUSING UNITS:	0
13. REQUIRED/PROVIDED RECREATIONAL OPEN SPACE:	0
14. TOWNSHIP/COUNTY/STATE:	ST. MATHEWS TOWNSHIP, WAKE COUNTY, NC
15. TREE CANOPY AREA:	REQUIRED=4,217 LF PERIMITER X 20'= 84,340 SF PROVIDED=115,000 SF
16. PUBLIC INFRASTRUCTURE SUMMARY:	LENGTH OF ROADS CONSTRUCTED – 0 LF LENGTH OF SIDEWALK CONSTRUCTED – 0 LF LENGTH OF CURB & GUTTER CONSTRUCTED – 0 LF LENGTH OF STORM DRAIN CONSTRUCTED – 0 LF
17. IMPERVIOUS AREA:	10.9 AC
18. OWNER:	WAKE STONE PROPERTY COMPANY P.O. BOX 190 KNIGHTDALE, NORTH CAROLINA 27545 919/266-1100
19. TREE PROTECTION FENCE COMBINATION SILT FENCE/TREE PROTECTION FENCE	480 LF 480 LF 960 LF TOTAL
20. CONTACT PERSON:	PIEDMONT LAND DESIGN, LLP ATTN. MIKE SCHNEIDER 8522-204 SIX FORKS ROAD RALEIGH, NORTH CAROLINA 27615 (919) 845-7600 (PHONE) (919) 845-7703 (FAX) MIKES@PIEDMONTLANDDESIGN.COM (E-MAIL)

SHEET INDEX:

SITE 1	COVER SHEET
SITE 2	EXISTING CONDITIONS PLAN
SITE 3	SITE PLAN
SITE 4	GRADING AND DRAINAGE PLAN
SITE 5	UTILITY PLAN
SITE 6	LANDSCAPE PLAN
SITE 7	PHASE 1 EROSION CONTROL
SITE 8	PHASE 2 EROSION CONTROL
SITE 9	SCM DETAILS
SITE 10	DETAILS
SITE 11	DETAILS
SITE 12	DETAILS
SITE 13	DETAILS
SITE 14	DETAILS
L-1	LIGHTING PLAN
A101	FLOOR PLAN
A201	ELEVATIONS
A553	RAMP DETAILS
A554	RAMP DETAILS
A555	RAMP DETAILS
A556	RAMP DETAILS
ES1	ELECTRICAL SITE PHOTOMETRIC PLAN

CITY OF RALEIGH PUBLIC IMPROVEMENT QUANTITY SUMMARY

PUBLIC WATER (LF)	– 0 LF
PUBLIC SEWER (LF)	– 0 LF
WATER SERVICE STUBS	– 2
SEWER SERVICE STUBS	– 1

GENERAL NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE, THE CITY OF RALEIGH AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR SHALL HAVE NORTH CAROLINA ONE CALL (1-800-632-4949) LOCATE ALL EXIST. UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
4. BOUNDARY AND SURVEY INFORMATION ON THESE PLANS IS FROM A SURVEY BY ROBINSON & PLANTE, P.C. VERTICAL DATUM FROM NAVD 88. HORIZONTAL DATUM FROM NAD 83.
5. ALL CONSTRUCTION SHALL CONFORM TO NORTH CAROLINA STATE BUILDING AND HANDICAPPED ACCESSIBILITY CODE AND A.D.A. STANDARDS
6. WITHIN THE SIGHT TRIANGLES SHOWN ON THIS PLAN, NO OBSTRUCTION BETWEEN TWO (2) FEET AND EIGHT (8) FEET IN HEIGHT ABOVE THE CURB LINE ELEVATION OR THE NEAREST TRAVELED WAY, IF NO CURBING EXISTS.
7. ESTIMATED PROJECT COMPLETION DATE IS MARCH 2022.
8. ON SITE FENCES & GATES SHALL NOT EXCEED SIX FEET (6') IN THE FRONT YARD AND EIGHT FEET (8) IN THE SIDE AND REAR YARDS
9. OUTDOOR STORAGE OF MATERIALS IS PROHIBITED.
10. THE TOWN OF KNIGHTDALE HAS DETERMINED THAT THIS PROJECT MEETS THE REQUIREMENTS FOR THE WATER ALLOCATION POLICY.
11. THIS PROJECT IS PART OF THE "KNIGHTDALE INDUSTRIAL PARK UTILITY ALLOCATION AND DEVELOPMENT AGREEMENT" (BM015866, PG01153-01203 & BM017641, PG00587-00595)

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon 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 approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval — Cydney S. Terry — Digitally signed by Cydney S. Terry Date: 2022.04.18 09:05:09-04'00'
Raleigh Water Review Office

ATTENTION CONTRACTORS

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

Failure to 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.*

EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

APPROVED

EROSION CONTROL ☐ S-_____
STORMWATER MGMT. ☐ S-_____
FLOOD STUDY ☐ S-_____
DATE _____

ENVIRONMENTAL CONSULTANT SIGNATURE

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

By: Samuel A. MacDonald Digitally signed by Samuel A. MacDonald DN: C=US, S=North Carolina, L=Raleigh, O=Kimley-Horn and Associates, Inc., OU=Engineering, CN=Samuel A. MacDonald, E=Sam.MacDonald@kimley-horn.com Reason: I am approving this document Date: 2022.04.18 09:03:49-04'00' Date: _____
Town Engineer

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

By: Kevin Lewis Digitally signed by Kevin Lewis DN: C=US, E=Kevin.Lewis@knightdalenc.gov, O=Town of Knightdale, CN=Kevin Lewis Reason: I am approving this document Location: Date: 2022.04.19 08:39:39-04'00' Date: _____
Administrator

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

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

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

Seal By: _____, PE
Date: _____

PLD
PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030856 ENGINEER MICHAEL L. SCHNEIDER
04/04/22

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1. 16 JULY 2021 PER TOWN COMMENTS
2. 21 JULY 2021 PER TOWN COMMENTS
3. 24 AUG 2021 PER TOWN COMMENTS
4. 09 SEPT 2021 PER TOWN COMMENTS
5. 13 JAN 2022 PER PARKING & BUILDING REVISIONS
6. 28 FEB 2021 PER TOWN COMMENTS
7. 04 APR 2022 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

COVER SHEET

DWG. NO. **SITE 1**

F:\Projects\WSHOIPB5L8\Drawings\Site\WSHOIPB5L8_Base.dwg - 1 COVER SHEET Apr 04, '22 - 10:06am

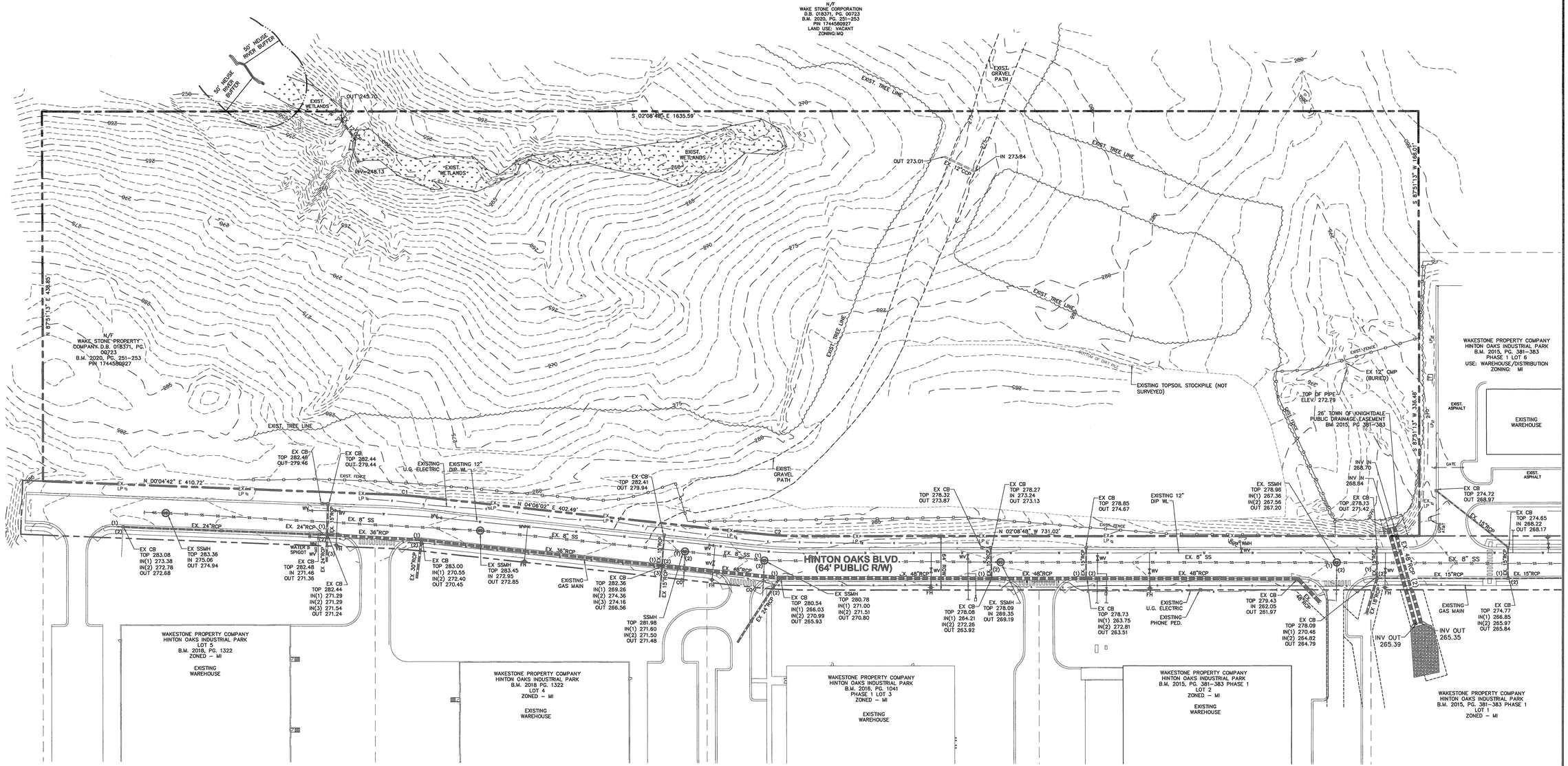
EXISTING VEGETATION NOTE:

WOODED AREAS PRIMARILY CONTAIN MATURE, DECIDUOUS HARDWOOD TREES. THE DOMINANT SPECIES IS OAK, HOWEVER, SWEETGUM, POPLAR, HICKORY, AND PINES ALSO EXIST. UNDERSTORY VEGETATION IS TYPICAL OF WOODED AREAS IN THIS REGION AND CONTAINS PRIVET, BAMBOO, AND HOLLY SPECIES.

EXISTING CONDITIONS/DEMOLITION NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR SHALL HAVE NORTH CAROLINA ONE CALL (1-800-632-4949) LOCATE ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
4. CONTRACTOR IS RESPONSIBLE FOR REMOVING OR RELOCATING ALL UTILITIES IN CONFLICT WITH NEW CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES PRIOR TO DISTURBANCE.
5. CONTRACTOR SHALL DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH ALL LOCAL AND STATE REGULATIONS.

CURVE TABLE						
CURVE	DELTA	RADIUS	ARC	CHORD	TANGENT	CHORD BRG.
C1	4°01'20"	565.00'	39.66'	39.66'	19.84'	N 02°05'22" E
C2	6°14'49"	501.00'	54.62'	54.60'	27.34'	S 00°58'37" W



NORTH

0 50 100 150

SCALE IN FEET

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

By: _____ Date: 10-12-2021
Town Engineer

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

By: _____ Date: 10.13.21
Administrator

PLD

PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030855 ENGINEER MICHAEL L. SCHLICHTER

7/21/21

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: 26 MAY 2021

REVISIONS:

1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS

DRAWN BY: JET
CHECKED BY: MLS

PROJECT: WSHOIPB5L8

EXISTING CONDITIONS PLAN

DWG. NO. SITE 2

F:\Projects\WSHOIPB5L8\Drawings\Site\WSHOIPB5L8_Base.dwg - 2 EXISTING CONDITIONS PLAN JUL 21, '21 - 12:47pm

SITE PLAN NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF TURNED DOWN WALK, EDGE OF PAVING, BUILDING WALL FACE OR PROPERTY LINE.
2. PARKING SPACES ARE 9.0' WIDE MINIMUM EXCEPT HANDICAP SPACES WHICH ARE 8.0' WIDE MINIMUM WITH 5.0' AISLES (8.0' AISLES – VAN).
3. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS OF THE BUILDING.
4. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DIMENSIONAL CONFLICTS PRIOR TO THE BEGINNING OF CONSTRUCTION.
5. ALL CURB AND GUTTER ONSITE SHALL BE 24" WIDE. ALL CURB AND GUTTER IN THE ADJACENT STREETS SHALL BE 30" WIDE. PROVIDE 10' TRANSITION ON–SITE.
6. ALL ONSITE PAVEMENT MARKINGS SHALL BE THERMOPLASTIC WITH THE EXCEPTION OF PARKING STALL STRIPES WHICH MAY BE PAINTED.
7. AT INTERSECTIONS WITH WHEEL CHAIR RAMPS, THE CURB SHALL BE PLACED SUCH THAT THE CROSS SLOPE OF THE WHEEL CHAIR RAMP DOES NOT EXCEED 2%.

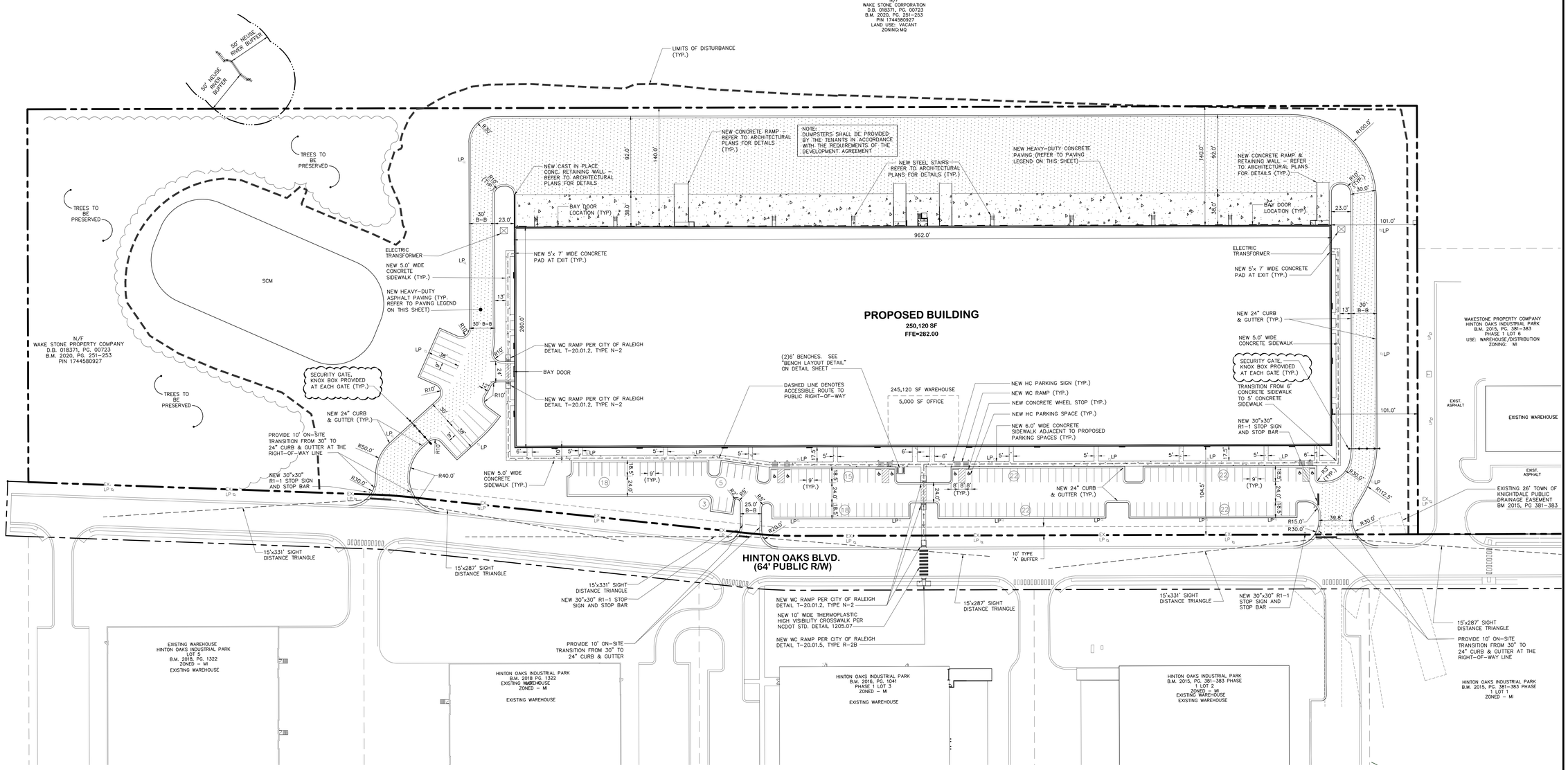
PAVING LEGEND

STANDARD DUTY ASPHALT PAVING:
2" SF9.5A ON
6" ABC

HEAVY DUTY ASPHALT PAVING:
1" SF9.5A ON
2" SB.5B ON
8" ABC

HEAVY DUTY CONCRETE:
6" THICK 4,000 PSI CONCRETE W/6x6 $^{W_0}/_{W_0}$
W.W.F. ON 4" ABC

CONCRETE SIDEWALK:
4" THICK 3,000 PSI CONCRETE



NORTH

0 50 100 150

SCALE IN FEET

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

By: Samuel A. MacDonald Date: _____
Town Engineer

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

By: Kevin Lewis Date: _____
Administrator

PLD

PIEDMONT LAND DESIGN, LLP
8522–204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F–0843

NORTH CAROLINA PROFESSIONAL SEAL 030856 ENGINEER MICHAEL L. SCHNEIDER
04/04/22

HINTON OAKS INDUSTRIAL PARK
LOT 8, BUILDING 5
550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:

1. 16 JULY 2021 PER TOWN COMMENTS
2. 21 JULY 2021 PER TOWN COMMENTS
3. 24 AUG 2021 PER TOWN COMMENTS
4. 29 DEC 2021 PER CLIENT REQUEST
5. 13 JAN 2022 PER PARKING & BUILDING REVISIONS
6. 04 APR 2022 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

SITE PLAN

DWG. NO. **SITE 3**

F:\Projects\WSHOIPB5L8\Drawings\Site\WSHOIPB5L8_Base.dwg – 3 SITE PLAN Apr 04, '22 – 10:12am

STRUCTURE SCHEDULE		
STRUCTURE	RIM	STRUCTURE TYPE
1	N/A	HW
2	280.20	CB
3	279.70	CB
4	276.00	DI
5	279.90	CB
6	276.40	CB
7	276.00	CB
8	276.00	CB
9	276.00	CB
10	276.00	CB
11	276.00	CB
12	279.10	CB
13	280.30	CB
14	280.30	CB
15	280.00	DI
15A	279.20	DI

STRUCTURE SCHEDULE		
STRUCTURE	RIM	STRUCTURE TYPE
15B	280.40	CB
16	279.10	CB
17	279.10	CB
18	279.10	CB
19	279.10	CB
20	279.10	CB
21	280.00	JB
23	N/A	HW
24	280.00	JB
26	N/A	HW
27	271.41	DI
28	256.79	HW
OUTLET STRUCTURE	N/A	OUTLET STRUCTURE

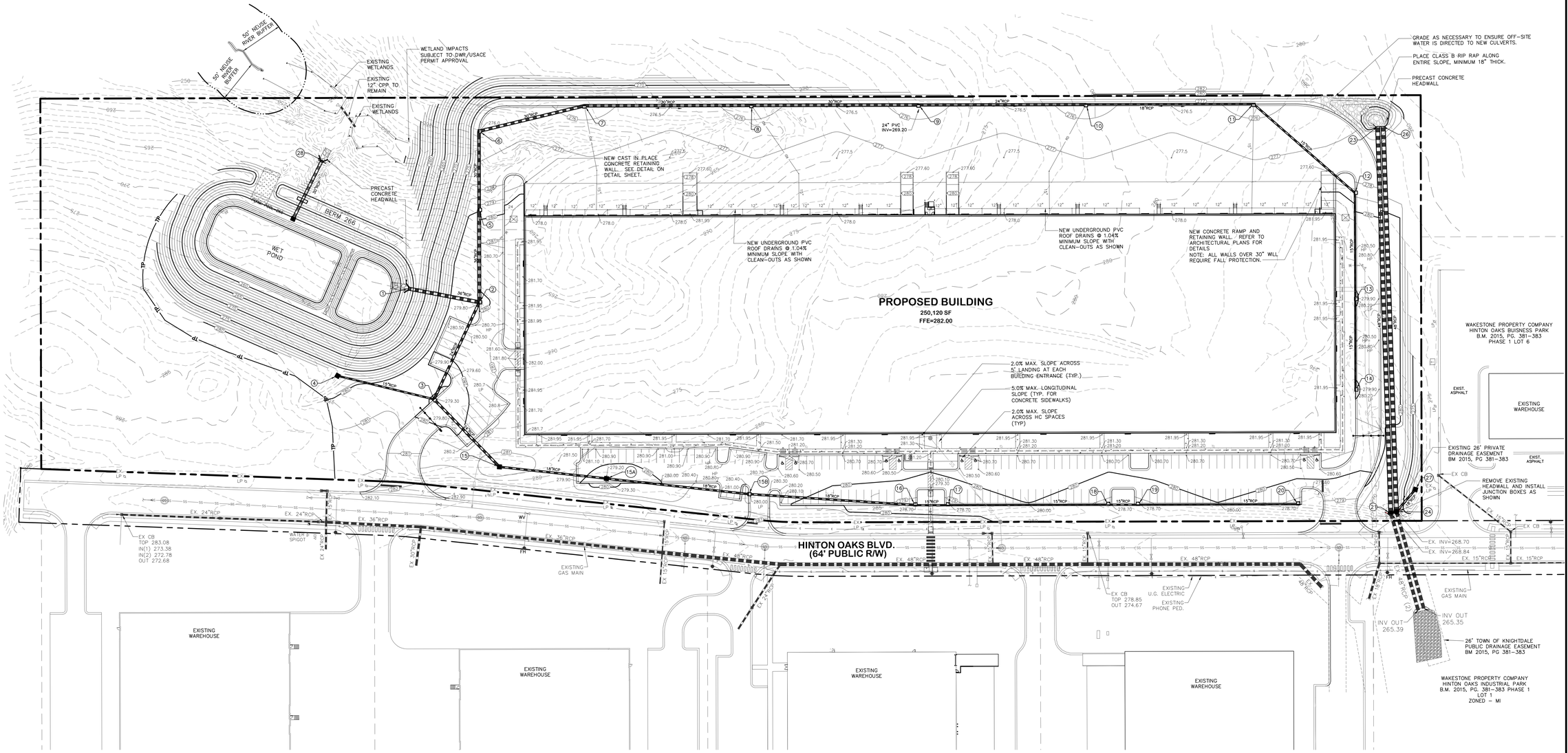
PIPE SCHEDULE							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	UPSTREAM INVERT	DOWNSTREAM INVERT	SIZE (IN)	LENGTH (FT)	SLOPE	MATERIAL
OUTLET STRUCTURE	28	253.90	253.50	30	77	0.52%	CLASS III RCP
2	1	261.00	260.00	36	86	1.17%	CLASS III RCP
3	2	267.50	266.40	24	127	0.87%	CLASS III RCP
4	3	272.00	271.00	15	118	0.85%	CLASS III RCP
5	2	265.30	264.70	36	109	0.55%	CLASS III RCP
6	5	265.90	265.40	30	93	0.54%	CLASS III RCP
7	6	266.70	266.00	30	129	0.54%	CLASS III RCP
8	7	267.90	266.80	30	198	0.56%	CLASS III RCP
9	8	269.10	268.00	30	198	0.56%	CLASS III RCP
10	9	270.70	269.20	24	198	0.76%	CLASS III RCP
11	10	271.90	270.80	18	199	0.55%	CLASS III RCP
12	11	273.20	272.00	15	160	0.75%	CLASS III RCP
13	12	274.30	273.60	15	126	0.56%	CLASS III RCP
14	13	275.00	274.40	15	107	0.56%	CLASS III RCP
15B	15A	270.00	269.10	18	169	0.53%	CLASS III RCP

PIPE SCHEDULE							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	UPSTREAM INVERT	DOWNSTREAM INVERT	SIZE (IN)	LENGTH (FT)	SLOPE	MATERIAL
15A	15	269.00	268.30	18	128	0.55%	CLASS III RCP
15	3	268.20	267.60	24	111	0.54%	CLASS III RCP
16	15B	271.20	270.10	18	198	0.55%	CLASS III RCP
17	16	271.50	271.30	15	39	0.52%	CLASS III RCP
18	17	272.60	271.60	15	190	0.53%	CLASS III RCP
19	18	272.90	272.70	15	35	0.57%	CLASS III RCP
20	19	274.00	273.00	15	190	0.53%	CLASS III RCP
23	21	271.30	269.00	48	458	0.50%	CLASS III RCP
26	24	271.30	269.00	48	457	0.50%	CLASS III RCP
27	24	269.20	269.00	18	35	0.58%	CLASS III RCP

NOTES:
1. ALL PIPE SHALL BE CLASS III RCP
2. RIM ELEVATIONS ARE TO TOP OF CURB FOR CB'S, TOP OF GRATE FOR DI'S.
3. "CB" DESIGNATES CURB INLET PER TOK STD. NO. 5.05 1/2 AND 2/2 ON DETAIL SHEET.
4. "DI" DESIGNATES DROP INLET PER TOK STD. NO. 5.04 ON DETAIL SHEET.
5. "JB" DESIGNATES JUNCTION BOX PER NCDOT STD. DETAIL 840.32 WITH TOK STD. MANHOLE RING AND COVER PER TOK STD. NO. 5.10 ON DETAIL SHEET.
6. "HW" DESIGNATES PRECAST CONCRETE HEADWALL
7. STEPS SHALL BE PROVIDED IN ALL STRUCTURES WITH A DEPTH OF 3.0' OR GREATER. STEPS SHALL BE CONSTRUCTED USING ½ INCH DIAMETER REINFORCING STEEL ENCAPSULATED IN POLYPROPYLENE MATERIAL. STEPS SHALL BE DESIGNED AND INSTALLED TO ACCOMMODATE A VERTICAL LOAD OF NOT LESS THAN 400 POUNDS AND A HORIZONTAL PULLOUT LOAD OF AT LEAST 1,000 POUNDS. STEPS SHALL HAVE A CLEAR WIDTH OF 12 INCHES AND SPACING OF 15 INCHES. REFER TO NCDOT STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS.

GRADING NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. ALL CURB INLET, DROP INLET, MANHOLE, AND CLEAN-OUT FRAMES AND COVERS/GRATES SHALL BE PAINTED BLACK SEMI-GLOSS ENAMEL AFTER INSTALLATION.
3. ALL CLEAN-OUTS SHALL BE PROVIDED IN CAST IRON FRAME AND COVER SIMILAR TO A WATER VALVE BOX. PROVIDE HEAVY DUTY FRAME AND COVER IN PAVED AREAS.
4. AT INTERSECTIONS WITH WHEEL CHAIR RAMPS, THE CURB SHALL BE PLACED SUCH THAT THE CROSS SLOPE OF THE WHEEL CHAIR RAMP DOES NOT EXCEED 2%.



NORTH

0 50 100 150

SCALE IN FEET

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

By: Samuel A. MacDonald Date: _____
Town Engineer

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

By: Kevin Lewis Date: _____
Administrator

PLD

PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
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919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030856 ENGINEER SAMUEL A. MACDONALD
04/04/22

PROPOSED WAREHOUSE HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1. 16 JULY 2021 PER TOWN COMMENTS
2. 21 JULY 2021 PER TOWN COMMENTS
3. 24 AUG 2021 PER TOWN COMMENTS
4. 29 DEC 2021 PER CLIENT REQUEST
5. 13 JAN 2022 PER PARKING & BUILDING REVISIONS
6. 28 FEB 2022 PER TOWN COMMENTS
7. 04 APR 2022 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

GRADING AND DRAINAGE PLAN

DWG. NO. **SITE 4**

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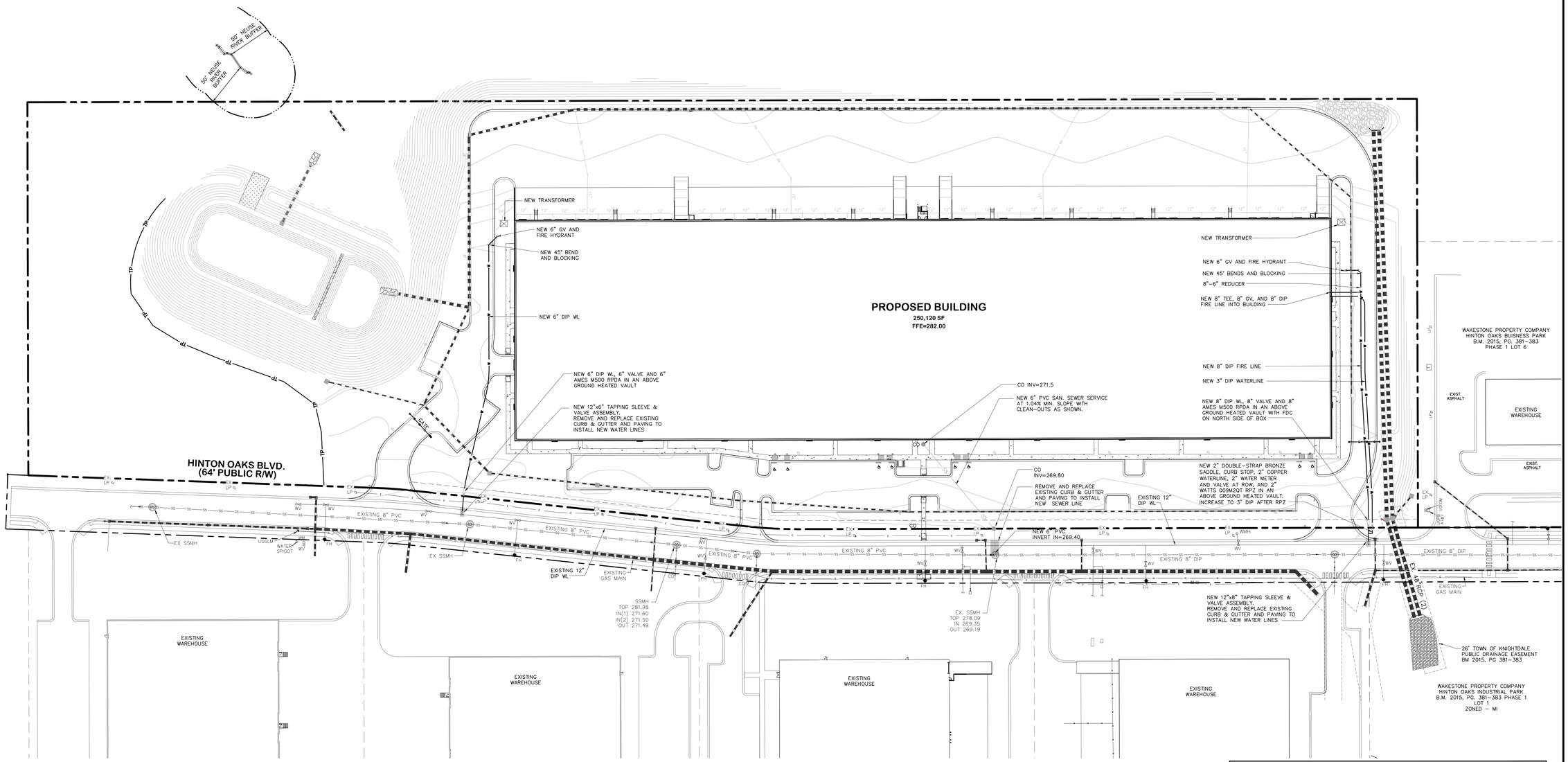
UTILITY NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF RALEIGH AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR SHALL HAVE NORTH CAROLINA ONE CALL (1-800-632-4949) LOCATE ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
4. CONTRACTOR SHALL COORDINATE THE LOCATION OF THE ELECTRIC, GAS, AND TELEPHONE SERVICE WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL PROVIDE CONDUITS AS REQUIRED FOR THESE UTILITIES UNDER PAVED AREAS.
5. THIS PLAN IS DIAGRAMMATIC AND REPRESENTS THE APPROXIMATE LOCATION OF UTILITIES UNLESS SPECIFICALLY DIMENSIONED. THE CONTRACTOR SHALL COORDINATE THE ACTUAL AND PROPOSED LOCATION OF UTILITIES TO AVOID CONFLICTS.
6. CONTRACTOR SHALL COORDINATE THE LOCATION OF THE WATER AND SEWER SERVICE TO THE BUILDINGS WITH THE BUILDING PLUMBING CONTRACTOR AND THE BUILDING PLANS.
7. ALL CLEAN-OUTS SHALL BE PROVIDED IN CAST IRON FRAME AND COVER SIMILAR TO WATER VALVE BOX. PROVIDE HEAVY DUTY FRAME AND COVER IN PAVED AREAS.
8. ALL MANHOLE AND CLEAN OUT FRAMES AND COVERS/GRATES SHALL BE PAINTED BLACK SEMI-GLOSS ENAMEL AFTER INSTALLATION.
9. CONTRACTOR SHALL PROVIDE CONDUITS FOR IRRIGATION LINES UNDER PAVED AREAS.
10. IRRIGATION METER, REDUCED PRESSURE ZONE DEVICE, AND SERVICE SHALL BE PROVIDED. (DESIGN-BUILD.)
11. CONTRACTOR SHALL PROVIDE PVC CONDUIT(S) UNDER PAVED AREAS FOR POWER TO LIGHT POLES AND MONUMENT SIGN.



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon 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 approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval: Cydney S. Terry — Digitally signed by Cydney S. Terry, Date: 2022.04.18 09:05:27-04'00'
Raleigh Water Review Office

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

By: Samuel A. MacDonald — Date: _____
Town Engineer

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

By: Kevin Lewis — Date: _____
Administrator

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ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030856 ENGINEER MICHAEL L. SCHNEIDER
04/04/22

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1. 16 JULY 2021 PER TOWN COMMENTS
2. 21 JULY 2021 PER TOWN COMMENTS
3. 24 AUG 2021 PER TOWN COMMENTS
4. 9 SEPT 2021 PER TOWN COMMENTS
5. 1 OCT PER CITY COMMENTS
6. 13 JAN 2022 PER PARKING & BUILDING REVISIONS
7. 04 APR 2022 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

UTILITY PLAN

DWG. NO. **SITE 5**

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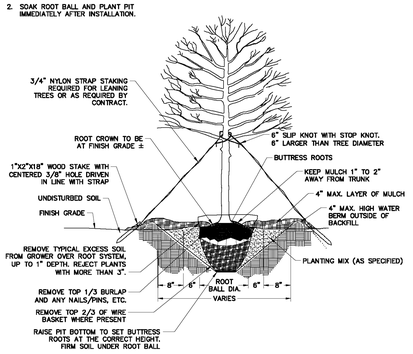
NOTES:

1. REMOVE WIRE OR NYLON TWINE FROM BALL.
2. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.



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

FOR EXAMPLE: CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
2"	12–14'	16'	24"	16"
3"	14–16'	18'	32"	21"

REVISIONS	
DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS	TREE PLANTING (FOR SINGLE AND MULTI-STEM TREES)	STD. NO. 3.25

PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	QUAN.	CAL.	HT.	ROOT	REMARKS
TREES							
AB	Acer buergerianum	Trident Maple	21	1 1/4"	6'	B&B	UNDERSTORY TREE
CC	Carpinus caroliniana	American Hornbeam	11	2"	8'	B&B	CANOPY TREE
LI	Lagerstroemia indica x fauriei "Tuscarora"	Crape Myrtle	25	N/A	6'	B&B	MULTI-STEM TREE
UP	Ulmus parvifolia 'Emer II'	Chinese Lacebark Elm	23	2"	8'	B&B	STREET TREE
SHRUBS							
BM	Buxus microphylla japonica 'Wintergreen'	Japanese Boxwood	67	3 GAL	18"		
ICB	Ilex cornuta 'Burfordii Nana'	Chinese Holly	190	3 GAL	18"		
LCB	Loropetalum chinense 'Blush'	Chinese Witchhazel	42	3 GAL	18"		
LCR	Loropetalum chinense 'Ruby'	Chinese Witchhazel	64	3 GAL	18"		
TO	Thuja occidentalis 'Emerald'	Emerald Arborvitae	32	7 GAL	30"		
VINE							
GS	Gelsemium sempervirens	Carolina Jessamine	48	3 GAL	18"		

SYMBOLS: B&B = BALLED & BURLAPPED; B.R. = BARE ROOT; CONT. = CONTAINER; O.C. = ON-CENTER; GAL = GALLON

LANDSCAPE NOTES

1. ALL PLANTS MUST BE HEALTHY, VIGOROUS MATERIAL, FREE OF PESTS AND DISEASE.
2. ALL PLANTS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE, DURING, AND AFTER INSTALLATION.
3. ALL TREES MUST BE GUYED OR STAKED AS SHOWN IN THE DETAILS.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY AND ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE LANDSCAPE CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK.
6. THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING (INCLUDING BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZING, ETC.) OF THE PLANTING AREAS AND LAWN UNTIL THE WORK IS ACCEPTED IN TOTAL BY THE OWNER.
7. THE CONTRACTOR SHALL COMPLETELY GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR (OR AS INDICATED IN THE LANDSCAPE SPECIFICATIONS) BEGINNING ON THE DATE OF TOTAL ACCEPTANCE. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS BEFORE OR AT THE END OF THE GUARANTEE PERIOD.
8. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
9. ALL NEW TREES ARE TO BE COMPLETELY COVERED WITH HARDWOOD SHREDDED MULCH TO A MINIMUM DEPTH OF FOUR (4) INCHES BY (5) FIVE FOOT DIAMETER.
10. CONTRACTOR SHALL SEED ONSITE DISTURBED AREAS THAT ARE NOT SCHEDULED TO BE PLANTED WITH TREES AND SHRUBS. WATER AS NEEDED FROM A SOURCE APPROVED BY THE TOWN OF KNIGHTDALE AND WAKE COUNTY TO ENSURE THAT SEED GERMINATES AND ESTABLISHES. ADDITIONAL SEEDING MAY BE REQUIRED IN BARE AREAS IF ORIGINAL SEED DOES NOT ESTABLISH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT SEEDED AREAS ARE FULLY COVERED WITH MATURE GRASSES ONE YEAR AFTER INITIAL DISTRIBUTION OF SEED.

PERMANENT LAWN NOTES:

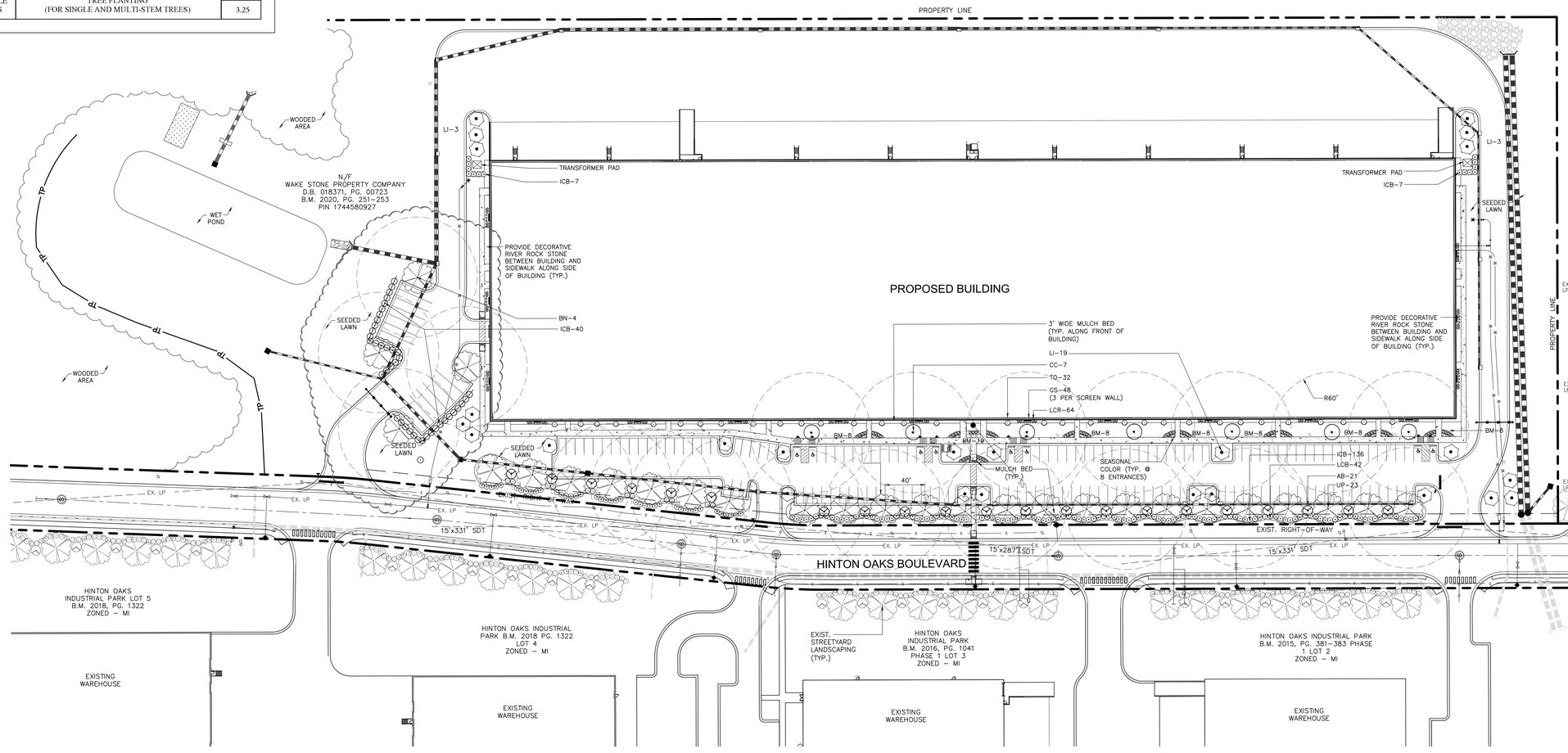
SEEDED LAWN AREAS

SEEDING SHALL BE AT THE FOLLOWING RATE:
PER 1000 S.F. OF LAWN AREA:

3 LBS. TURF TYPE FESCUE "TYPE A"
3 LBS. TURF TYPE FESCUE "TYPE B"

(TWO DIFFERENT FESCUES TO BE SELECTED FROM VARIETIES RECOMMENDED FOR PROJECT AREA)

1 LB. KENTUCKY BLUE GRASS



EXISTING VEGETATION NOTE:

WOODED AREAS PRIMARILY CONTAIN MATURE, DECIDUOUS HARDWOOD TREES. THE DOMINANT SPECIES IS OAK, HOWEVER, SWEETGUM, POPLAR, HICKORY, AND PINES ALSO EXIST. UNDERSTORY VEGETATION IS TYPICAL OF WOODED AREAS IN THIS REGION AND CONTAIN PRIVET, BAMBOO, AND HOLLY SPECIES.

0 50 100 150
SCALE IN FEET

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

By: Samuel A. MacDonald Date: _____
Town Engineer

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By: Kevin Lewis Date: _____
Administrator

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ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034774 CHRISTOPHER R. POPE

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS
3 24 AUG 2021 PER TOWN COMMENTS
4 28 FEB 2022 PER OWNER

DRAWN BY: **CRP**
CHECKED BY: **CRP**

PROJECT: **WSHOIPB5L8**

LANDSCAPE PLAN

DWG. NO. **SITE 6**

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SEDIMENT BASIN SCHEDULE

BASIN	GOVERNING DRAINAGE AREA (ACRES)	RATIONAL "C" VALUE	Q(10) (CFS)	REQUIRED SURFACE AREA (BASED ON (435 X Q10) (SF)	REQUIRED VOLUME (BASED ON 1800 CF/ACRE) (CF)	SURFACE AREA PROVIDED (SF)	VOLUME PROVIDED (CF)	WEIR LENGTH (FT)	SKIMMER DATA	
									SKIMMER DIA (IN)	ORIFICE DIA (IN)
BASIN #1	10.0	0.5	36.1	15,704	18,000	22,866 @ ELEV=260.0	111,380 @ ELEV=260.0	20' @ ELEV=263.5	3.0	3.0
BASIN #2	1.7	0.5	6.14	2,670	3,060	2,770 @ ELEV=252.0	5,200 @ ELEV=252.0	10' @ ELEV=252.0	1.5	1.5

TEMPORARY DIVERSION DITCH DIMENSIONS

TEMPORARY DIVERSION DITCH #	BOTTOM WIDTH (FT)	DEPTH (FT)	LINING TYPE
1	2.0	1.5	SINGLE–NET EXCELSIOR
2	2.0	2.0	SINGLE–NET EXCELSIOR

SOIL STOCKPILE NOTES

1. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEYED IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
2. IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY IF 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).
5. HEIGHT SHALL NOT EXCEED 35'

GENERAL EROSION CONTROL NOTES

1. ALL SEDIMENT BASINS SHALL HAVE A 15' MAINTENANCE EASEMENT, WHICH IS TO BE IN EFFECT ONLY UNTIL THE BASIN IS REMOVED.
2. SEDIMENT SHALL BE REMOVED FROM BASINS WHEN SEDIMENT STORAGE REACHES 50%. SEDIMENT BASINS ARE TO REMAIN IN PLACE DURING THE HOME CONSTRUCTION PHASE OF THE PROJECT AND ONLY REMOVED WITH APPROVAL FROM THE WAKE COUNTY WATERSHED MANAGER.
3. ALL SEDIMENT BASINS REQUIRE BAFFLES INSTALLED PER DETAILS ON DETAIL SHEET.
4. DIVERSIONS SHALL BE MODIFIED AS NEEDED TO ENSURE SEDIMENT LADEN WATER GOES INTO THE APPROPRIATE BASIN AT ALL TIMES.
5. THE WATERSHED MANAGER MAY DETERMINE THAT FLOCCULANTS WILL BE REQUIRED DURING CONSTRUCTION, IF NECESSARY.

STABILIZATION NOTES

SLOPE	STABILIZATION
3:1 AND FLATTER	GRASS
3:1 TO 2:1 SLOPE	SLOPE ADAPTIVE PLANTS (SHRUBS AND VINES)
2:1 TO 1.5:1	RIP-RAP (OR AS APPROVED BY GEO-TECH)
STEEPER THAN 1.5 TO 1	RETAINING WALL

* SLOPES OF 2:1 OR STEEPER TO BE STABILIZED IMMEDIATELY WITH EXCELSIOR NETTING OR EQUAL

*EROSION CONTROL MATTING IS REQUIRED FOR:

1. ALL SLOPES GREATER THAN 3:1 AND SLOPES GREATER THAN 5' TALL.
2. ALL SLOPES GREATER THAN 8' TALL

USE NORTH AMERICAN GREEN S75BN EROSION CONTROL BLANKET (OR APPROVED EQUAL)

BASIN REMOVAL SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
3. ** BASIN DEWATERING NOTE: BASIN SHALL BE DEWATERED FROM THE TOP OF THE WATER SURFACE OR DIRECTLY INTO A DEWATERING/SILT BAG.
3. PERFORM SEEDBED PREPARATION, SEED, MULCH, AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
4. INSTALL VELOCITY DISSIPATERS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
5. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVISE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

CONSTRUCTION SCHEDULE

1. SCHEDULE A PRE–CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919–796–8769), OBTAIN LAND–DISTURBING PERMIT.
2. INSTALL CLEAN WATER DIVERSION. REFER TO DETAIL ON DETAIL SHEET FOR SPECIFICATIONS.
3. INSTALL GRAVEL CONSTRUCTION PADS, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS 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.
4. CALL FOR ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919–796–8769)TO OBTAIN CERTIFICATE OF COMPLIANCE.
5. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. PERFORM MASS GRADING.

* INSTALL NEW CULVERTS PRIOR TO CLEARING OF THE EXISTING DRAINAGE WAY. EXISTING DRAINAGE WAY SHALL REMAIN UNDISTURBED DURING CULVERT INSTALLATION. CLEAR ONLY AS NECESSARY TO INSTALL NEW CULVERTS, AND PROCEED WITH CULVERT INSTALLATION.
START INSTALLATION AT THE UPSTREAM END, SO THAT THE EXISTING CHANNEL AT THE DOWNSTREAM END CAN REMAIN UNDISTURBED AND ALLOW PASSAGE OF STORMWATER. CLEAR THIS AREA AND COMPLETE CULVERT INSTALLATION LAST, AND DURING A PERIOD OF DRY WEATHER.

UPON COMPLETION, DIRECT OFF–SITE STORMWATER INTO THE NEW CULVERTS. CLEARING/GRADING OF THE EXISTING DRAINAGE WAY MAY PROCEED.

5. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES. * PROMPT SEEDING, PARTICULARLY WHEN MOVING FROM ONE PHASE TO THE NEXT, WILL BE STRICTLY ENFORCED *
6. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL FOR INSPECTION BY THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919–796–8769)
7. 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 DISSIPATERS SHOULD BE INSTALLED NOW.

8. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919–796–8769) TO OBTAIN A CERTIFICATE OF COMPLETION.

1) Ground Stabilization*

Site Area Description	Stabilization Time Frame	Stabilization Time Frame Exceptions
• Perimeter dikes, swales, ditches and slopes	7 days	None
• High Quality Water (HQW) Zones	7 days	None
• Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
• Slopes 3:1 or flatter	14 days	7-days for slopes greater than 50 feet in length
• All other areas with slopes flatter than 4:1	14 days	None (except for perimeters and HQW Zones)

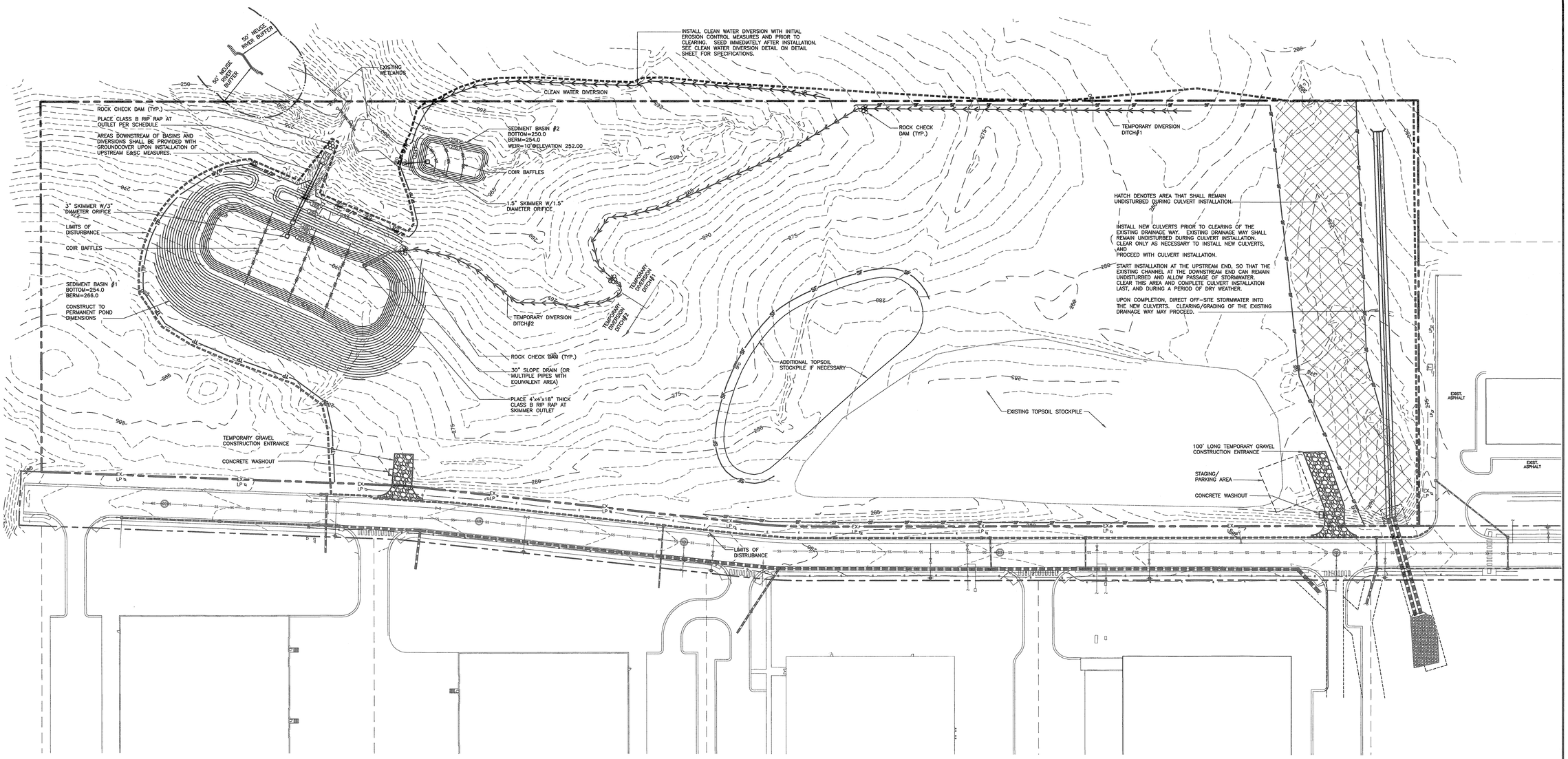
* "Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable." (Section II.B(2)(ii))

EROSION CONTROL LEGEND

- LIMITS OF DISTURBANCE
- TEMPORARY DIVERSION DITCH
- SF — SILT FENCE
- SILT FENCE OUTLET
- TP — TREE PROTECTION FENCE
- SF/TP — COMBINATION SILT/TREE PROTECTION FENCE
- XX XX — COIR BAFFLES
- CHECK DAM

DISTURBED AREA = 16.0 AC

ENERGY DISSIPATER SCHEDULE				
DOWNSTREAM STRUCTURE	SIZE (IN)	VELOCITY (FPS)	RIP RAP TYPE	L X W X THK
1	36	10.22	CLASS B	18' x 9' x 18"
28	30	6.03	CLASS B	15' x 8' x 18"



NORTH

0 50 100 150

SCALE IN FEET

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

By: _____ Date: 11-12-2021
Town Engineer

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

By: _____ Date: 10.13.21
Administrator

PLD
PIEDMONT LAND DESIGN, LLP
8522–204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F–0843

NORTH CAROLINA PROFESSIONAL SEAL 030868 ENGINEER MICHAEL L SCHEIDT
7/21/21

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS

DRAWN BY: JET
CHECKED BY: MLS

PROJECT: **WSHOIPB5L8**

PHASE ONE EROSION CONTROL PLAN

DWG. NO. **SITE 7**

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SEDIMENT BASIN SCHEDULE

BASIN	GOVERNING DRAINAGE AREA (ACRES)	RATIONAL "C" VALUE	Q(10) (CFS)	REQUIRED SURFACE AREA (BASED ON (435 X Q10) (SF)	REQUIRED VOLUME (BASED ON 1800 CF/ACRE) (CF)	SURFACE AREA PROVIDED (SF)	VOLUME PROVIDED (CF)	WEIR LENGTH (FT)	SKIMMER DATA	
									SKIMMER DIA (IN)	ORIFICE DIA (IN)
BASIN #1	10.0	0.5	36.1	15,704	18,000	22,866 @ ELEV=260.0	111,380 @ ELEV=260.0	20' @ ELEV=263.5	3.0	3.0
BASIN #2	1.7	0.5	6.14	2,670	3,060	2,770 @ ELEV=252.0	5,200 @ ELEV=252.0	10' @ ELEV=252.0	1.5	1.5

TEMPORARY DIVERSION DITCH DIMENSIONS

TEMPORARY DIVERSION DITCH #	BOTTOM WIDTH (FT)	DEPTH (FT)	LINING TYPE
1	2.0	1.5	SINGLE-NET EXCELSIOR
2	2.0	2.0	SINGLE-NET EXCELSIOR

SOIL STOCKPILE NOTES

1. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEYED IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
2. IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY. IF 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).
5. HEIGHT SHALL NOT EXCEED 35'

GENERAL EROSION CONTROL NOTES

1. ALL SEDIMENT BASINS SHALL HAVE A 15' MAINTENANCE EASEMENT, WHICH IS TO BE IN EFFECT ONLY UNTIL THE BASIN IS REMOVED.
2. SEDIMENT SHALL BE REMOVED FROM BASINS WHEN SEDIMENT STORAGE REACHES 50%. SEDIMENT BASINS ARE TO REMAIN IN PLACE DURING THE HOME CONSTRUCTION PHASE OF THE PROJECT AND ONLY REMOVED WITH APPROVAL FROM THE WAKE COUNTY WATERSHED MANAGER.
3. ALL SEDIMENT BASINS REQUIRE BAFFLES INSTALLED PER DETAILS ON DETAIL SHEET.
4. DIVERSIONS SHALL BE MODIFIED AS NEEDED TO ENSURE SEDIMENT LADEN WATER GOES INTO THE APPROPRIATE BASIN AT ALL TIMES.
5. THE WATERSHED MANAGER MAY DETERMINE THAT FLOCCULANTS WILL BE REQUIRED DURING CONSTRUCTION, IF NECESSARY.

STABILIZATION NOTES

SLOPE	STABILIZATION
3:1 AND FLATTER	GRASS
3:1 TO 2:1 SLOPE	SLOPE ADAPTIVE PLANTS (SHRUBS AND VINES)
2:1 TO 1.5:1	RIP-RAP (OR AS APPROVED BY GEO-TECH)
STEEPER THAN 1.5 TO 1	RETAINING WALL

* SLOPES OF 2:1 OR STEEPER TO BE STABILIZED IMMEDIATELY WITH EXCELSIOR NETTING OR EQUAL

*EROSION CONTROL MATTING IS REQUIRED FOR:

1. ALL SLOPES GREATER THAN 3:1 AND SLOPES GREATER THAN 5' TALL.
2. ALL SLOPES GREATER THAN 8' TALL.

USE NORTH AMERICAN GREEN S75BN EROSION CONTROL BLANKET (OR APPROVED EQUAL)

BASIN REMOVAL SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.

** BASIN DEWATERING NOTE: BASIN SHALL BE DEWATERED FROM THE TOP OF THE WATER SURFACE OR DIRECTLY INTO A DEWATERING/SILT BAG.

3. PERFORM SEEDBED PREPARATION, SEED, MULCH, AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
4. INSTALL VELOCITY DISSIPATERS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
5. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVISE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

CONSTRUCTION SCHEDULE

1. SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919-796-8769), OBTAIN LAND-DISTURBING PERMIT.
2. INSTALL CLEAN WATER DIVERSION. REFER TO DETAIL ON DETAIL SHEET FOR SPECIFICATIONS.
3. INSTALL GRAVEL CONSTRUCTION PADS, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS 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.
4. CALL FOR ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919-796-8769)TO OBTAIN CERTIFICATE OF COMPLIANCE.
5. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. PERFORM MASS GRADING.

* INSTALL NEW CULVERTS PRIOR TO CLEARING OF THE EXISTING DRAINAGE WAY. EXISTING DRAINAGE WAY SHALL REMAIN UNDISTURBED DURING CULVERT INSTALLATION. CLEAR ONLY AS NECESSARY TO INSTALL NEW CULVERTS, AND PROCEED WITH CULVERT INSTALLATION. START INSTALLATION AT THE UPSTREAM END, SO THAT THE EXISTING CHANNEL AT THE DOWNSTREAM END CAN REMAIN UNDISTURBED AND ALLOW PASSAGE OF STORMWATER. CLEAR THIS AREA AND COMPLETE CULVERT INSTALLATION LAST, AND DURING A PERIOD OF DRY WEATHER.

UPON COMPLETION, DIRECT OFF-SITE STORMWATER INTO THE NEW CULVERTS. CLEARING/GRADING OF THE EXISTING DRAINAGE WAY MAY PROCEED.

5. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES. *** PROMPT SEEDING, PARTICULARLY WHEN MOVING FROM ONE PHASE TO THE NEXT, WILL BE STRICTLY ENFORCED ***
6. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL FOR INSPECTION BY THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919-796-8769)
7. 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 DISSIPATERS SHOULD BE INSTALLED NOW.

8. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT, KARYN PAGEAU (919-796-8769) TO OBTAIN A CERTIFICATE OF COMPLETION.

1) Ground Stabilization*

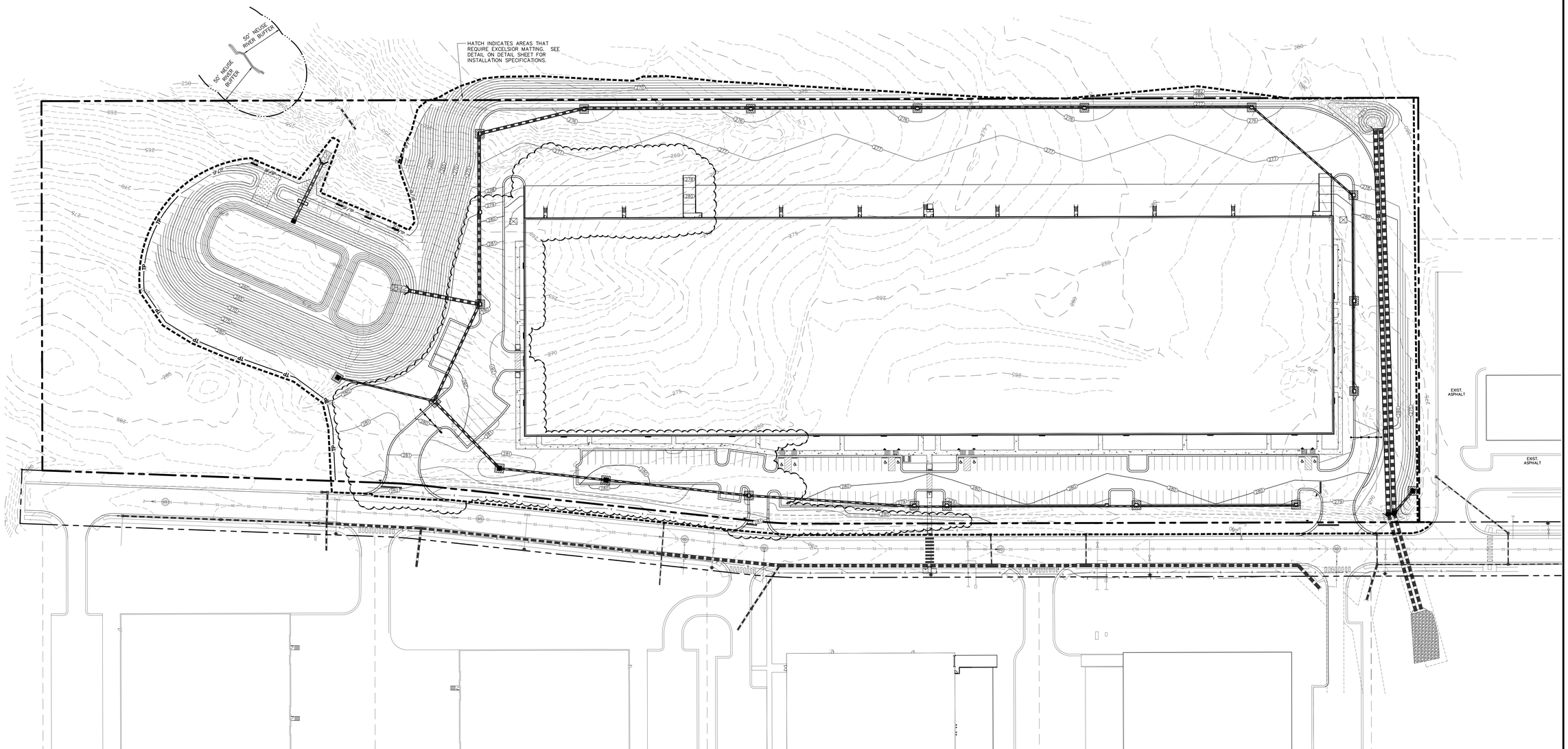
Site Area Description	Stabilization Time Frame	Stabilization Time Frame Exceptions
• Perimeter dikes, swales, ditches and slopes	7 days	None
• High Quality Water (HQW) Zones	7 days	None
• Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
• Slopes 3:1 or flatter	14 days	7-days for slopes greater than 50 feet in length
• All other areas with slopes flatter than 4:1	14 days	None (except for perimeters and HQW Zones)

* "Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable." (Section II.B(2)(b))

EROSION CONTROL LEGEND

- LIMITS OF DISTURBANCE
- TEMPORARY DIVERSION DITCH
- SF — SILT FENCE
- SILT FENCE OUTLET
- TP — TREE PROTECTION FENCE
- SF/TP — COMBINATION SILT/TREE PROTECTION FENCE
- XX XX — COIR BAFFLES
- CHECK DAM

DISTURBED AREA = 16.0 AC



NORTH

0 50 100 150

SCALE IN FEET

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

By: Samuel A. MacDonald Date: _____

Town Engineer

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

By: Kevin Lewis Date: _____

Administrator

PLD

PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030856 MICHAEL L. SCHMITT 1/13/22

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:

1. 16 JULY 2021 PER TOWN COMMENTS
2. 21 JULY 2021 PER TOWN COMMENTS
3. 13 DEC 2021 PER CLIENT REQUEST
4. 13 JAN 2022 PER PARKING & BUILDING REVISIONS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

PHASE TWO EROSION CONTROL PLAN

DWG. NO. **SITE 8**

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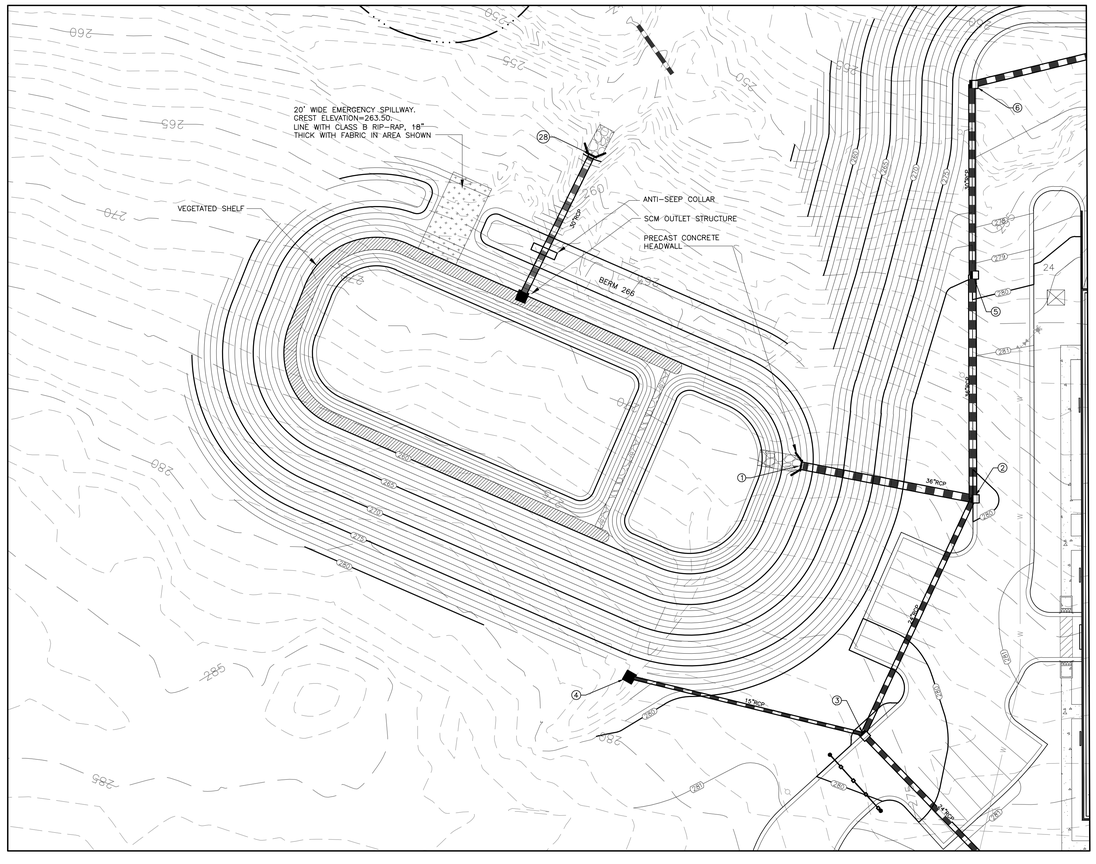
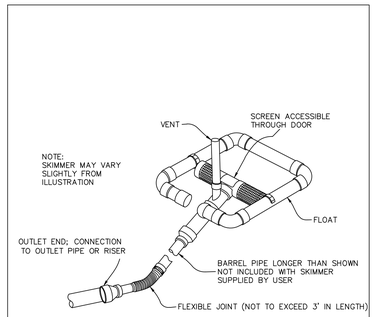
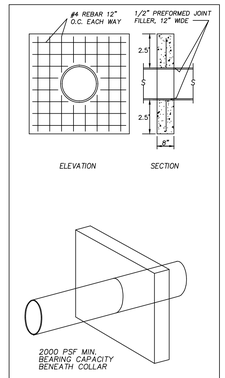




TEMPORARY SEDIMENT DEVICE DEWATERING SKIMMER DETAIL

NTS



TYPICAL ANTI-SEEP COLLAR

NTS

SCM PLANT SCHEDULE

REQUIRED PLANTS BASED ON 2,537 S.F. = 50 PLANTS / 200 S.F. = 635 PLANTS

PLANT TYPE	QTY	BOTANICAL NAME	COMMON NAME	ROOT	SPACING
	211	ASCLEPIAS INCARNATA	SWAMP MILKWEED	2" PLUG	2' O.C.
	212	CAREX TENERA	QUILL SEDGE	2" PLUG	2' O.C.
	212	CHELONE GLABRA	WHITE TURTLEHEAD	2" PLUG	2' O.C.

SCM PLANTING/ACCEPTANCE NOTES:

THE FINAL SCM SHALL BE INSTALLED AND STABILIZED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

THE APPLICANT SHALL CERTIFY THAT THE COMPLETED PROJECT IS IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGEMENT PLANS AND DESIGNS AND SHALL SUBMIT ACTUAL AS BUILT PLANS FOR ALL STORMWATER MANAGEMENT FACILITIES OR PRACTICES AFTER FINAL CONSTRUCTION IS COMPLETED.

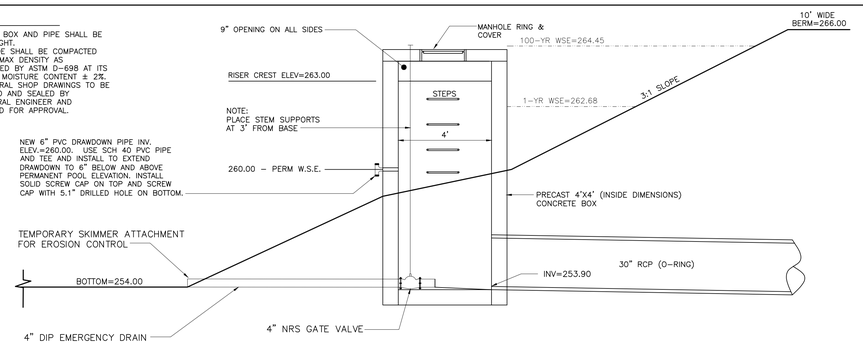
PRIOR TO CONVERTING THE SCM, SCHEDULE AN INSPECTION WITH THE APPROPRIATE TOWN/COUNTY REPRESENTATIVE TO OBTAIN APPROVAL TO BEGIN THE CONVERSION.

90% GERMINATION OF NON-CLUMPING TURF GRASS BE ESTABLISHED ON ALL SLOPES AND EMBANKMENTS PRIOR TO FINAL ACCEPTANCE BY THE TOWN.

AQUATIC VEGETATION SHALL BE INSTALLED PER THE PLANTING SCHEDULE ON THIS SHEET PROIR TO FINAL ACCEPTANCE.

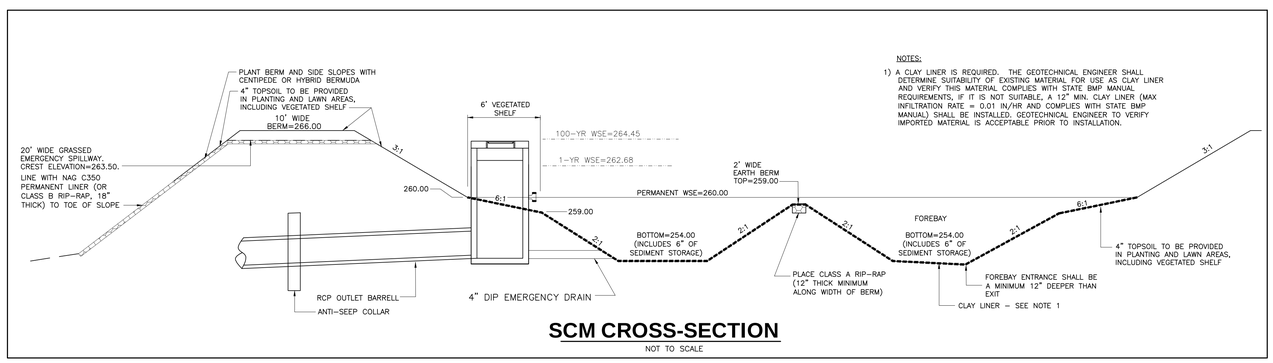
NOTES:

1. PRECAST BOX AND PIPE SHALL BE WATER TIGHT.
2. SUBGRADE SHALL BE COMPACTED TO 95% MAX DENSITY AS DETERMINED BY ASTM D-698 AT ITS OPTIMUM MOISTURE CONTENT ± 2%.
3. STRUCTURAL SHOP DRAWINGS TO BE PREPARED AND SEALED BY STRUCTURAL ENGINEER AND SUBMITTED FOR APPROVAL.



SCM OUTLET STRUCTURE

NOT TO SCALE



SCM CROSS-SECTION

NOT TO SCALE

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

By: Samuel A. MacDonald Date: _____
Town Engineer

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

By: Kevin Lewis Date: _____
Administrator

PLD
PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
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919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030856 ENGINEER MICHAEL L. SCHNEIDER
04/04/22

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:

1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS
3 24 AUG 2021 PER TOWN COMMENTS
4 13 JAN 2022 PER PARKING & BUILDING REVISIONS
5 04 APR 2022 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

SCM DETAIL

DWG. NO. **SITE 9**

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NPDES Stormwater Discharge Permit for Construction Activities (NCGO1)
NCDENR/Division of Water Quality

NEW STABILIZATION TIMEFRAMES (Effective Aug. 3, 2011)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

Seedbed Preparation:

1. Chisel compacted areas and spread topsoil three inches deep over adverse soil conditions, if available.
2. Rip the entire area to six inches deep.
3. Remove all loose rock, roots and other obstructions, leaving surface reasonably smooth and uniform.
4. Apply agricultural lime, fertilizer and superphosphate uniformly and mix with soil (see mixture below).
5. Continue tillage until a well-pulverized, firm, reasonably uniform seedbed is prepared four to six inches deep.
6. Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or cultipack after seeding.
7. Mulch immediately after seeding and anchor mulch.
8. Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be more than 60% damaged, re-establish following the original lime, fertilizer and seeding rates.
9. Consult S&EC Environmental Engineers on maintenance treatment and fertilization after permanent cover is established.

Mixture

Agricultural Limestone	2 tons/acre (3 tons/acre in clay soils)
Fertilizer	1,000 lbs/acre – 10-10-10
Superphosphate	500 lbs/acre – 20% analysis
Mulch	2 tons/acre – small grain straw
Anchor	Asphalt emulsion at 300 gals/acre

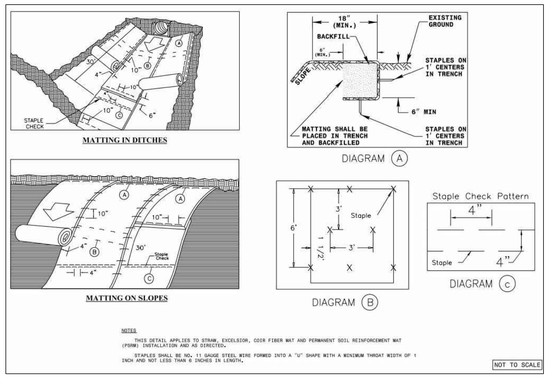
Seeding Schedule

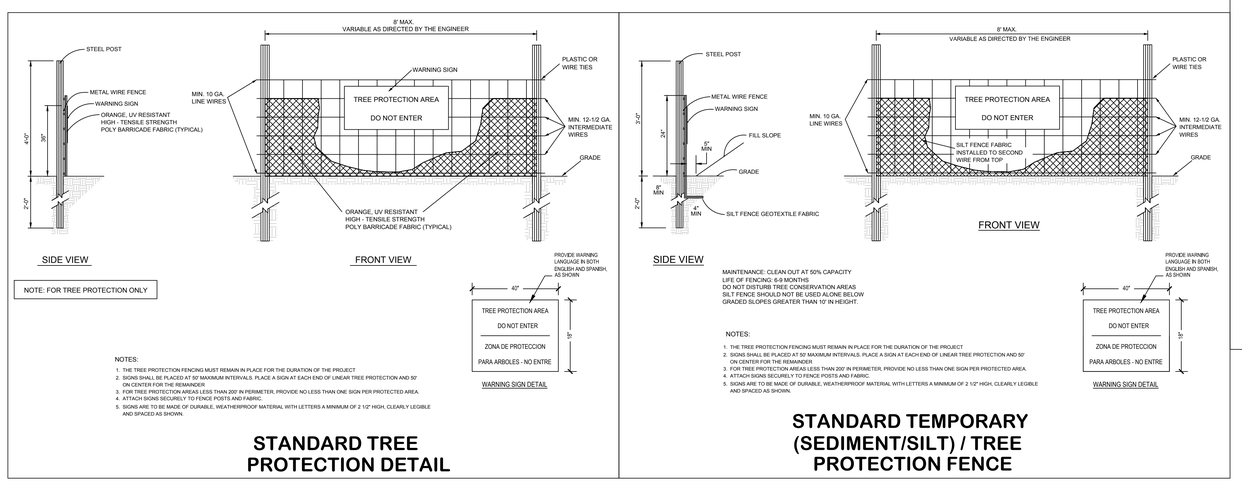
For Shoulders, Side Ditches, Slopes (Max 3:1):

Date	Type	Planting Rate
Aug 15– Nov 1	Tall Fescue	300 lbs/acre
Nov 1– Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1–Apr 15	Tall Fescue	300 lbs/acre
Apr 15– Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1– Aug 15	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	125 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum-Sudan Hybrids)

For Shoulders, Side Ditches, Slopes (3:1 to 2:1):

Date	Type	Planting Rate
Mar 1– Jun 1	Sericea Lespedeza (scarified) and use the following combinations:	50 lbs/acre (Sericea Lespedeza);
Mar 1– Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1– Jun 30	Or add Weeping Love grass	10 lbs/acre
Mar 1– Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1– Sept 1	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	120 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum-Sudan Hybrids)
Sept 1– Mar 1	Sericea Lespedeza (unhulled – unscarified) AND Tall Fescue	70 lbs/acre (Sericea Lespedeza); 120 lbs/acre (Tall Fescue)
Nov 1– Mar 1	AND Abruzzi Rye	25 lbs/acre





STANDARD TREE PROTECTION DETAIL

STANDARD TEMPORARY (SEDIMENT/SILT) / TREE PROTECTION FENCE

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

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

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

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

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

GROUND STABILIZATION SPECIFICATION

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

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

EQUIPMENT AND VEHICLE MAINTENANCE

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

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

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

PAINT AND OTHER LIQUID WASTE

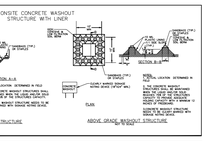
1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled,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

PORTABLE TOILETS

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

EARTHEN STOCKPILE MANAGEMENT

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



CONCRETE WASHOUTS

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

HERBICIDES, PESTICIDES AND RODENTICIDES

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

HAZARDOUS AND TOXIC WASTE

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

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

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

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

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

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

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

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

2. Additional Documentation to be Kept on Site

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

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

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

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

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

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours,*** an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible.*** The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6)]. • Division staff may waive the requirement for a written report on a case-by-case basis.

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

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

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

NORTH CAROLINA *Environmental Quality*

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

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

By: Samuel A. MacDonald Date: _____
Town Engineer

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

By: Kevin Lewis Date: _____
Administrator

PLD
PIEDMONT LAND DESIGN, LLP
8522–204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030855 ENGINEER MICHAEL L. SCHWEITZER
7/21/21

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

DETAILS

DWG. NO. **SITE 10**

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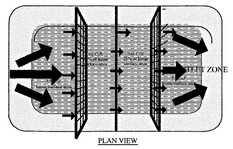
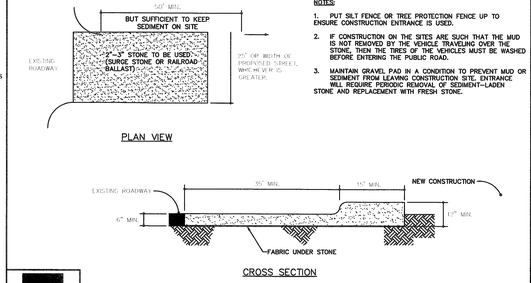


NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 70% GMZ COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL.

EFFECTIVE: 01/31/08

STANDARD BAFFLES DETAIL

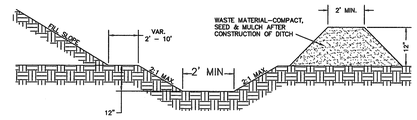


NOTES:
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.

EFFECTIVE: 01/31/08

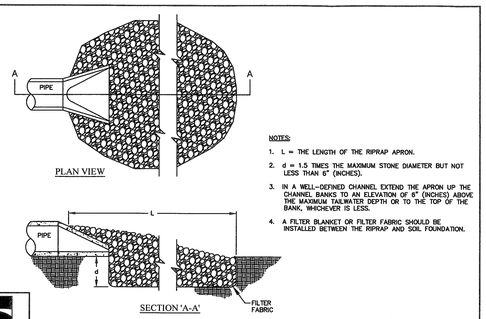
STANDARD CONSTRUCTION ENTRANCE

NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.



EFFECTIVE: 01/31/08

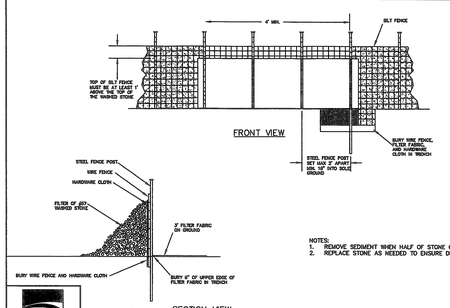
STANDARD TEMPORARY DIVERSION DITCH



NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

EFFECTIVE: 01/31/08

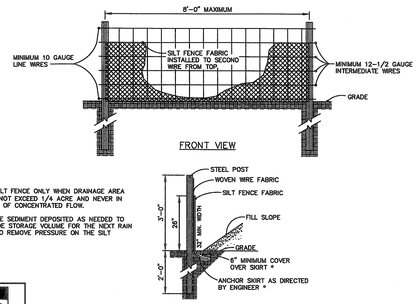
STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL



NOTES:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

EFFECTIVE: 01/31/08

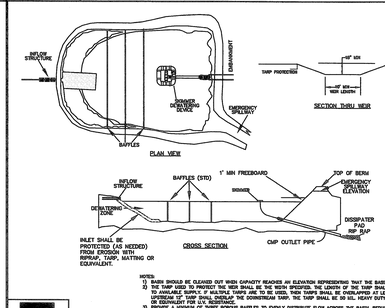
STANDARD SILT FENCE OUTLET



NOTE:
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.

EFFECTIVE: 01/31/08

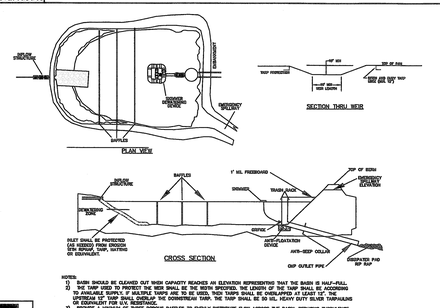
STANDARD TEMPORARY SILT FENCE



NOTES:
1) BARN SHOULD BE CLEANED OUT WHEN CAPACITY REACHES AN ELEVATION REPRESENTING THAT THE BASIN IS HALF-FULL.
2) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE. DUE TO AVAILABLE SUPPLY IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12", THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP, THE TARP SHALL BE 20 MIL. HEAVY DUTY SILVER TARPAULINS OR EQUIVALENT FOR U.V. RESISTANCE.
3) PROVIDE A MINIMUM OF THREE POROUS BAFFLES TO EVENLY DISTRIBUTE FLOW ACROSS THE BASIN, REDUCING TURBULENCE.
4) BAFFLE MATERIAL MUST BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR A SILT FENCE.
5) MOST OF THE SEDIMENT WILL ACCUMULATE IN THE FIRST BAY, SO THIS SHOULD BE READILY AVAILABLE FOR MAINTENANCE.
6) DURING THE CONSTRUCTION PHASE OF THE PROJECT, PERMANENT STORMWATER RISER SHALL ONLY DEWATER FROM THE TOP OF PIPE.
7) POND SHALL NOT BE CONVERTED FOR STORMWATER USE UNTIL APPROVED BY ENVIRONMENTAL ENGINEER.

EFFECTIVE: 01/31/08

STANDARD SKIMMER BASIN



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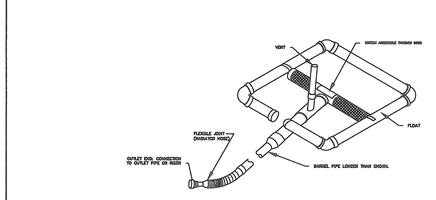
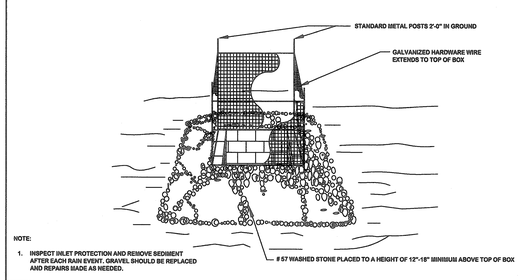
EFFECTIVE: 01/31/08

STANDARD SKIMMER ATTACHED TO PERMANENT RISER



EFFECTIVE: 01/31/08

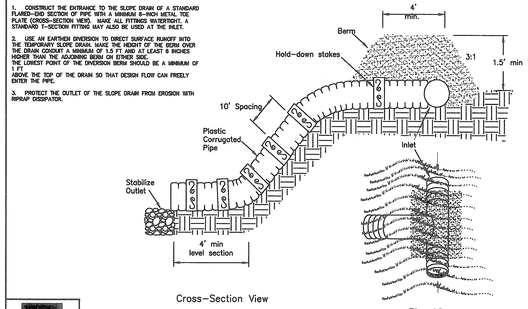
STANDARD SKIMMER DETAIL



NOTE:
1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

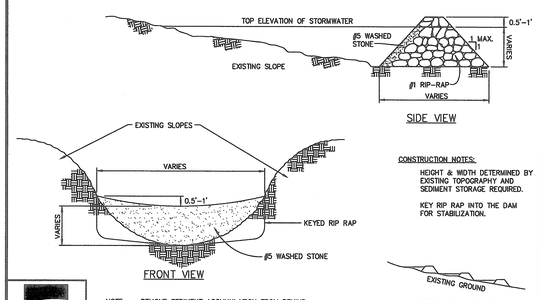
EFFECTIVE: 01/31/08

STANDARD GRAVEL YARD INLET PROTECTION



EFFECTIVE: 01/31/08

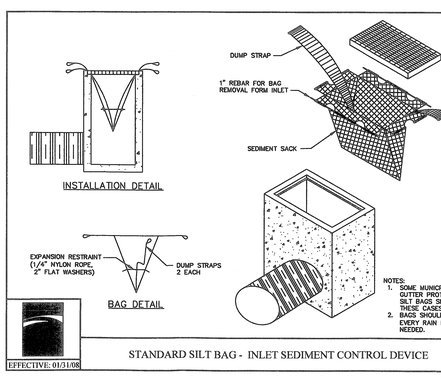
STANDARD TEMPORARY SLOPE DRAIN



NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

EFFECTIVE: 01/31/08

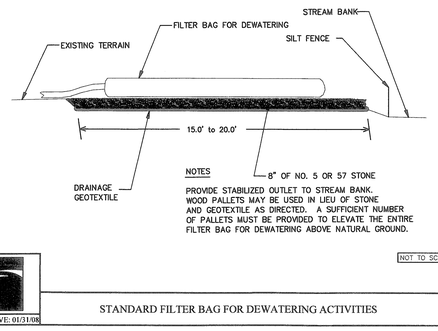
STANDARD CHECK DAM



NOTES:
1. SOME MUNICIPALITIES DO NOT ALLOW GUTTER PROTECTION ON PUBLIC ROADS. SILT BAGS SHOULD BE USED WITH THESE CASES.
2. BAGS SHOULD BE CLEANED OUT AFTER EVERY RAIN EVENT AND/OR AS NEEDED.

EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE

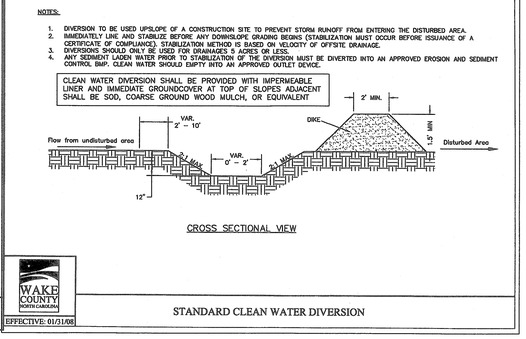


PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.

NOT TO SCALE

EFFECTIVE: 01/31/08

STANDARD FILTER BAG FOR DEWATERING ACTIVITIES



NOTES:
1. DIVERSION TO BE USED UPSLOPE OF A CONSTRUCTION SITE TO PREVENT STORM RUNOFF FROM ENTERING THE DISTURBED AREA.
2. IMMEDIATELY LINE AND STABILIZE BEFORE ANY DOWNSLOPE GRADING BEGINS (STABILIZATION MUST OCCUR BEFORE ISSUANCE OF A CERTIFICATE OF COMPLIANCE). STABILIZATION METHOD IS BASED ON VELOCITY OF OFFSITE DRAINAGE.
3. DIVERSIONS SHOULD ONLY BE USED FOR DRAINAGES 5 ACRES OR LESS.
4. ANY SEDIMENT LADEN WATER PRIOR TO STABILIZATION OF THE DIVERSION MUST BE DIVERTED INTO AN APPROVED EROSION AND SEDIMENT CONTROL BMP. CLEAN WATER SHOULD EMPTY INTO AN APPROVED OUTLET DEVICE.

CLEAN WATER DIVERSION SHALL BE PROVIDED WITH IMPERMEABLE LINER AND IMMEDIATE GROUNDCOVER AT TOP OF SLOPES ADJACENT SHALL BE SOD, COARSE GROUND WOOD MULCH, OR EQUIVALENT

EFFECTIVE: 01/31/08

STANDARD CLEAN WATER DIVERSION

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

By: _____ Date: 10-12-2021
Town Engineer

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

By: _____ Date: 10.13.21
Administrator

PLD
PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 030855 ENGINEER MICHAEL L. SCHINKEL
7/21/21

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: 26 MAY 2021

REVISIONS:
1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS

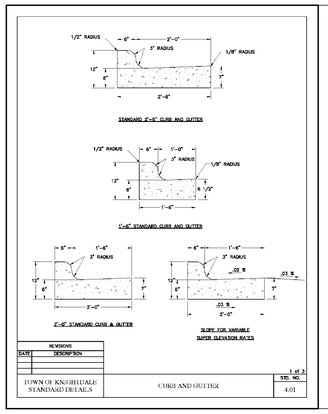
DRAWN BY: JET
CHECKED BY: MLS

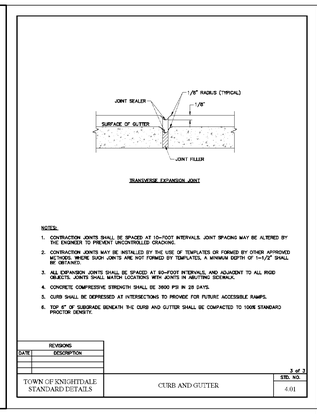
PROJECT: WSHOIPB5L8

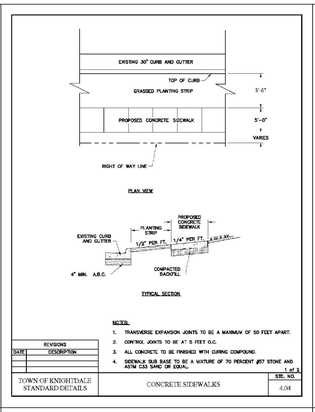
DETAILS

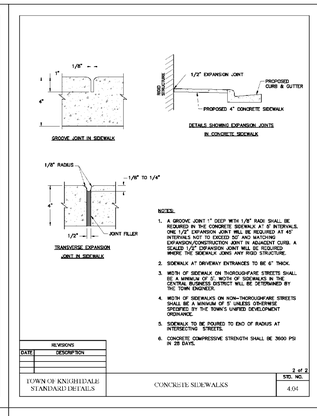
DWG. NO. SITE 11

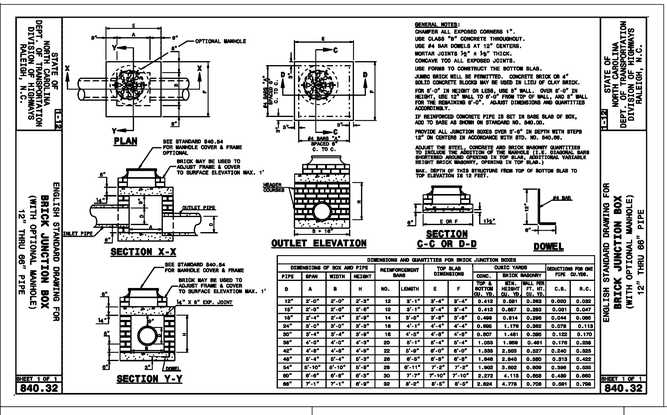
F:\Projects\WSHOIPB5L8\Drawings\Site\WSHOIPB5L8_Base.dwg - 10- DETAILS Jul 21, '21 - 1:34pm

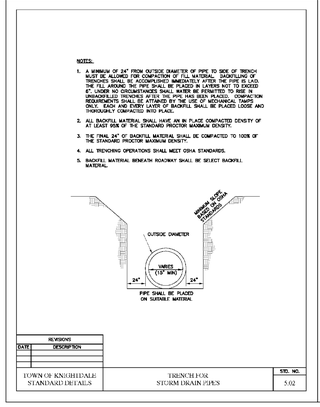


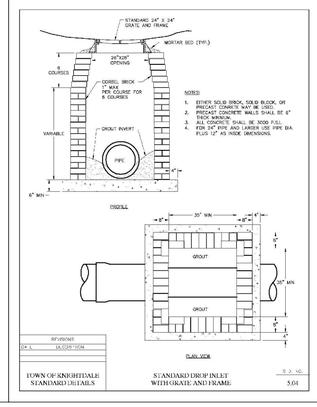


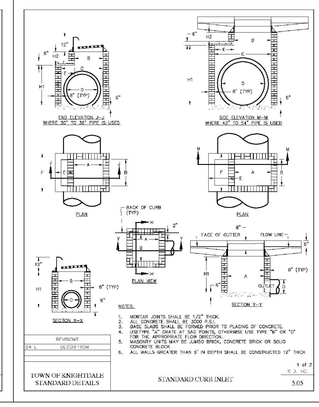


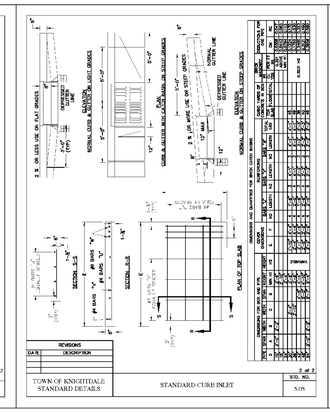


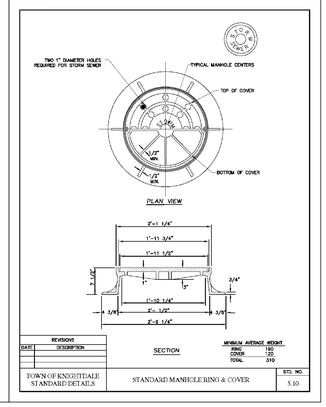


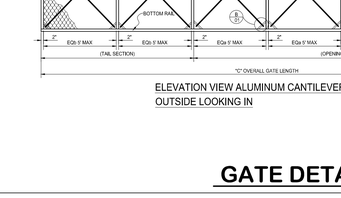






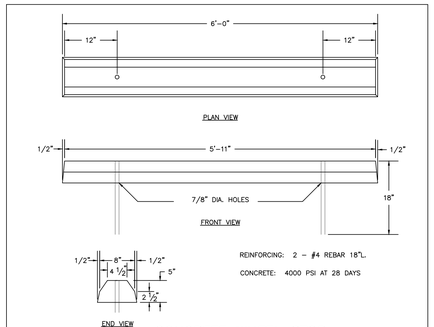






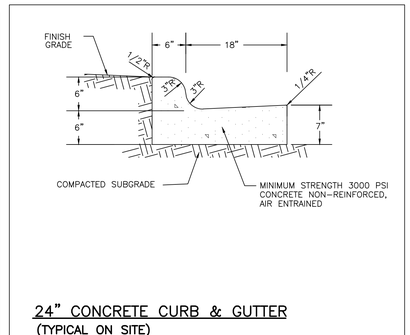
HANDICAP PARKING LAYOUT

N.T.S.



CONCRETE WHEEL STOP

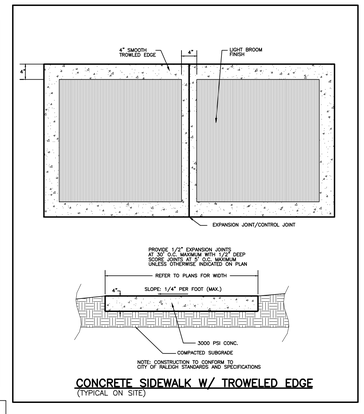
NO SCALE



24" CONCRETE CURB & GUTTER

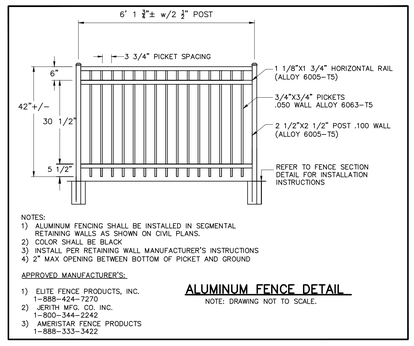
(TYPICAL ON SITE)

NTS



CONCRETE SIDEWALK W/ TROWELED EDGE

(TYPICAL ON SITE)



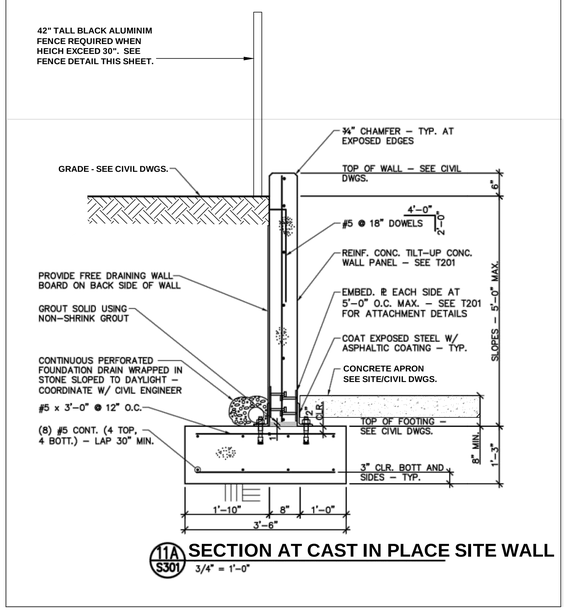
NOTES:
1) ALUMINUM FENCING SHALL BE INSTALLED IN SEGMENTAL RETAINING WALLS AS SHOWN ON CIVIL PLANS.
2) COLOR SHALL BE BLACK
3) INSTALL PER RETAINING WALL MANUFACTURER'S INSTRUCTIONS
4) 2" MAX OPENING BETWEEN BOTTOM OF PICKET AND GROUND

APPROVED MANUFACTURER'S:

1) ELITE FENCE PRODUCTS, INC. 1-888-424-7270
2) JERITH MFG. CO. INC. 1-800-344-2242
3) AMERISTAR FENCE PRODUCTS 1-888-333-3422

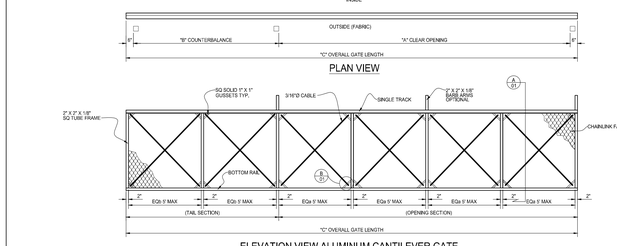
ALUMINUM FENCE DETAIL

NOTE: DRAWING NOT TO SCALE.



11A S301 SECTION AT CAST IN PLACE SITE WALL

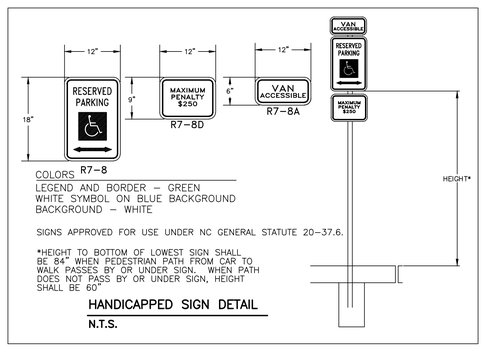
3/4" = 1'-0"



ELEVATION VIEW ALUMINUM CANTILEVER GATE

OUTSIDE LOOKING IN

GATE DETAIL



COLORS R7-8

LEGEND AND BORDER - GREEN

WHITE SYMBOL ON BLUE BACKGROUND

BACKGROUND - WHITE

SIGNS APPROVED FOR USE UNDER NC GENERAL STATUTE 20-37.6.

*HEIGHT TO BOTTOM OF LOWEST SIGN SHALL BE 84" WHEN PEDESTRIAN PATH FROM CAR TO WALK PASSES BY OR UNDER SIGN. WHEN PATH DOES NOT PASS BY OR UNDER SIGN, HEIGHT SHALL BE 60"

HANDICAPPED SIGN DETAIL

N.T.S.

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

By: Samuel A. MacDonald Date: _____

Town Engineer

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

By: Kevin Lewis Date: _____

Administrator

PLD
PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030856 L. BOWMAN

3/3/22

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:

1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS
3 3 MARCH 2022 PER TOWN COMMENTS

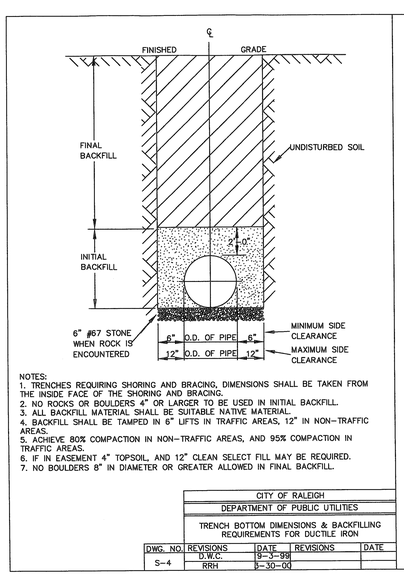
DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

DETAILS

DWG. NO. **SITE 12**

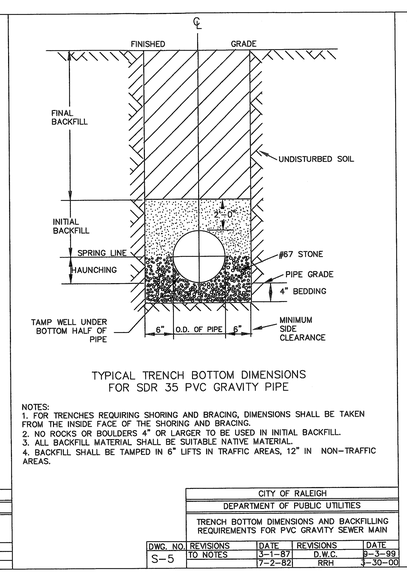
F:\Projects\WSHOIPB5L8\Drawings\Site\WSHOIPB5L8_Base.dwg - 10- DETAILS Mar 04, '22 - 8:15am



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 80% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. IF IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C.	9-3-99		
	RRH	9-30-00		

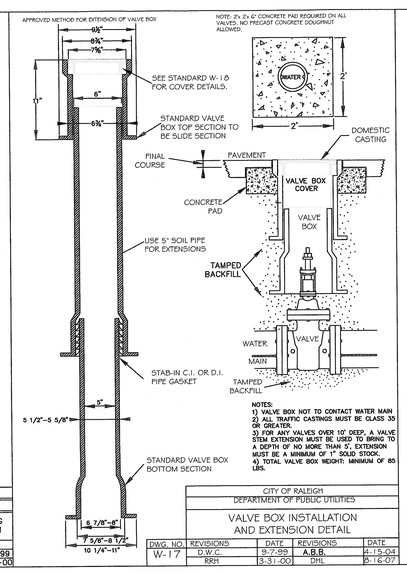


TYPICAL TRENCH BOTTOM DIMENSIONS
FOR SDR 35 PVC GRAVITY PIPE

NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN

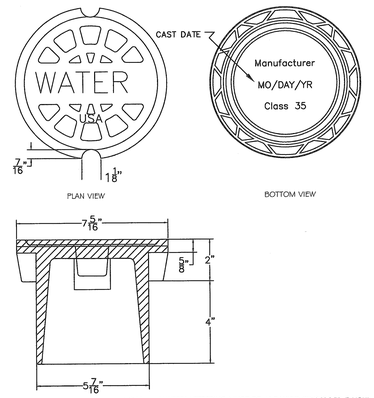
DWG. NO.	REVISIONS TO NOTES	DATE	REVISIONS	DATE
S-5		5-1-87	D.W.C.	9-3-99
		7-2-82	RRH	3-30-00



NOTES:
1) VALVE BOX NOT TO CONTACT WATER MAIN
2) ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
3) FOR ANY VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5', EXTENSION MUST BE A MINIMUM OF 1" SOLID STOCK.
4) TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
VALVE BOX INSTALLATION AND EXTENSION DETAIL

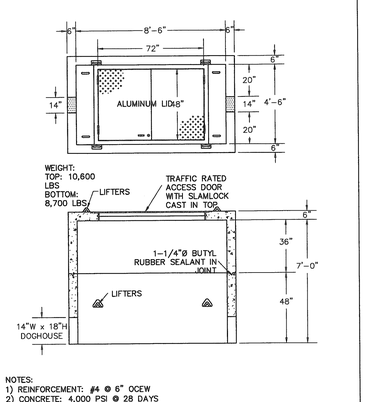
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-17	D.W.C.	9-7-95	A.B.B.	4-15-04
	RRH	3-31-00	DHL	5-16-07



NOTE 1 - "WATER" LETTERING MUST BE .1" RAISED (RECESSED FLUSH)
NOTE 2 - VALVE COVER SHALL BE DOMESTICALLY CAST.
NOTE 3 - COVER MUST HAVE A MINIMUM WEIGHT OF 25 POUNDS.
NOTE 4 - COVER MUST BE CLASS 35 OR GREATER.
NOTE 5 - COVER MUST MEET OR EXCEED AASHTO H-20 LOAD REQUIREMENTS.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
5 1/4" VALVE BOX DROP LID WITH 4" SKIRT

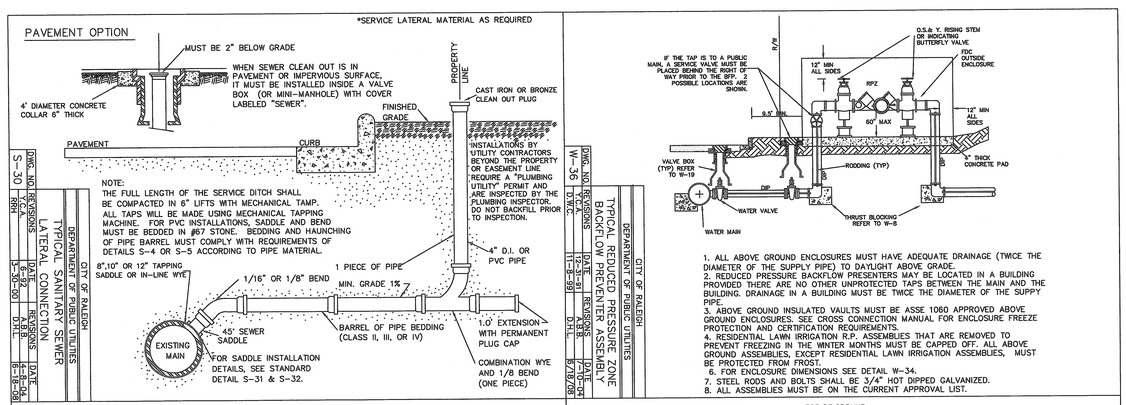
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-18				



NOTES:
1) REINFORCEMENT: #4 @ 6" OCEW
2) CONCRETE: 4,000 PSI @ 28 DAYS
3) 6" OF #67 STONE SHALL BE PLACED IN BOTTOM OF VAULT
4) METER FLANGE SHALL BE PLACED 49 " BELOW FINISHED GRADE

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL 6" THRU 10" WATER METER VAULT

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-33	A.B.B.	8-26-04		
	D.H.L.	6-18-08		



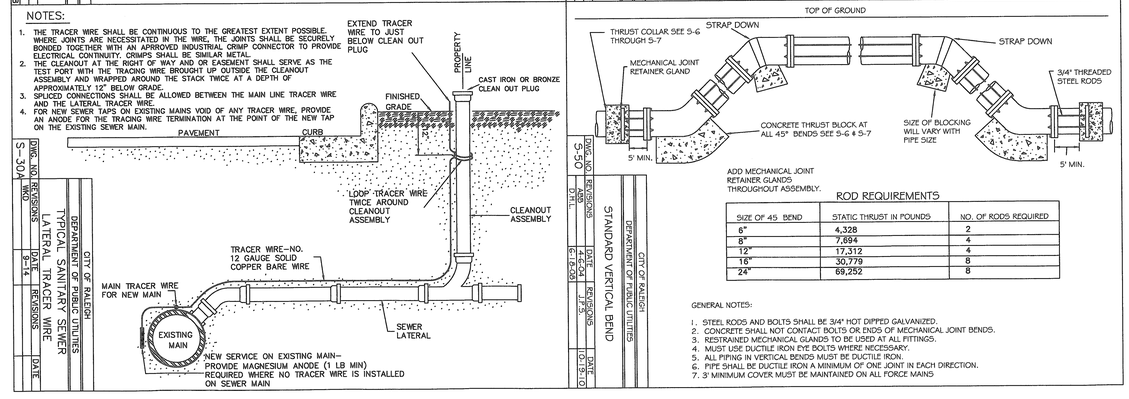
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER LATERAL CONNECTION

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30	A.B.B.	8-26-04		
	D.H.L.	6-18-08		

1. ALL ABOVE GROUND ENCLOSURES MUST HAVE ADEQUATE DRAINAGE (TWICE THE DIAMETER OF THE SUPPLY PIPE) TO DAYLIGHT ABOVE GRADE.
2. REDUCED PRESSURE BACKFLOW PRESENTERS MAY BE LOCATED IN A BUILDING PROVIDED THERE ARE NO OTHER UNPROTECTED TAPS BETWEEN THE MAIN AND THE BUILDING. DRAINAGE IN A BUILDING MUST BE TWICE THE DIAMETER OF THE SUPPY PIPE.
3. ABOVE GROUND INSULATED VAULTS MUST BE ASSE 1060 APPROVED ABOVE GROUND ENCLOSURES. SEE CROSS CONNECTION MANUAL FOR ENCLOSURE FREEZE PROTECTION AND CERTIFICATION REQUIREMENTS.
4. RESIDENTIAL LAWN IRRIGATION R.P. ASSEMBLIES THAT ARE REMOVED TO PREVENT FREEZING IN THE WINTER MONTHS MUST BE CAPPED OFF. ALL ABOVE GROUND ASSEMBLIES, EXCEPT RESIDENTIAL LAWN IRRIGATION ASSEMBLIES, MUST BE PROTECTED FROM FROST.
6. FOR ENCLOSURE DIMENSIONS SEE DETAIL W-34.
7. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
8. ALL ASSEMBLIES MUST BE ON THE CURRENT APPROVAL LIST.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-36	D.W.C.	11-8-98	R.R.S.	4-10-01
			D.H.L.	6/18/08



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE JOINTS ARE NECESSITATED IN THE WIRE, THE JOINTS SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CRIMP CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CRIMPS SHALL BE SIMILAR METAL.
2. THE CLEANOUT AT THE RIGHT OF WAY AND OR EASEMENT SHALL SERVE AS THE TEST PORT WITH THE TRACING WIRE BROUGHT UP OUTSIDE THE CLEANOUT ASSEMBLY AND WRAPPED AROUND THE STACK TWICE AT A DEPTH OF APPROXIMATELY 12" BELOW GRADE.
3. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
4. FOR NEW SEWER TAPS ON EXISTING MAINS VOID OF ANY TRACER WIRE, PROVIDE AN ANODE FOR THE TRACING WIRE TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER MAIN.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TYPICAL SANITARY SEWER LATERAL TRACER WIRE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30A	MKD	9-14		

ADD MECHANICAL JOINT RETAINER GLANDS THROUGHOUT ASSEMBLY.

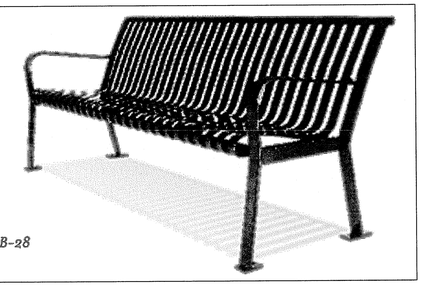
ROD REQUIREMENTS

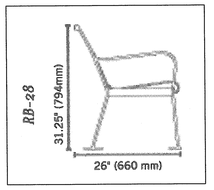
SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

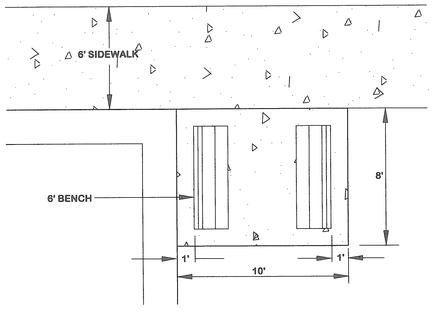
GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. ALL PIPING IN VERTICAL BENDS MUST BE DUCTILE IRON.
6. PIPE SHALL BE DUCTILE IRON A MINIMUM OF ONE JOINT IN EACH DIRECTION.
7. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL FORCE MAINS

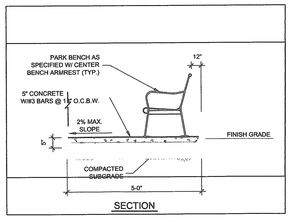
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD VERTICAL BEND

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30	A.B.B.	4-26-04		
	J.P.S.	5-18-10		









BENCH LAYOUT DETAIL

NTS

GENERAL NOTES:
1. BENCH PAD AND ADJACENT ACCESSIBLE AREA TO HAVE A CROSS SLOPE NOT TO EXCEED 2% IN ANY DIRECTION.
2. UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATIONS, ALL BENCHES TO BE 6'-0" STEELSITES SERIES RB-28 WITH CENTER ARMREST BY VICTOR STANLEY OR APPROVED EQUAL. COLOR SHALL BE RAL 6009.
3. SURFACE MOUNT BENCH TO SLAB W/ CONCRETE ANCHOR PER MANUFACTURER SPECIFICATIONS.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon 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 approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval: Cydney S. Terry (Digitally signed by Cydney S. Terry, Date: 2021.10.04 14:45:53-04'00')
Raleigh Water Review Office

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

By: _____ Date: 10-12-2021
Town Engineer

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

By: _____ Date: 10-13-21
Administrator

PLD
PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL SEAL 039858 ENGINEER MARK L. SCHINDLER
9/9/21

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: 26 MAY 2021

REVISIONS:
1 16 JULY 2021 PER TOWN COMMENTS
2 21 JULY 2021 PER TOWN COMMENTS
3 9 SEPT 2021 PER TOWN COMMENTS

DRAWN BY: JET
CHECKED BY: MLS

PROJECT: WSHOIPB5L8

DETAILS

DWG. NO. SITE 13

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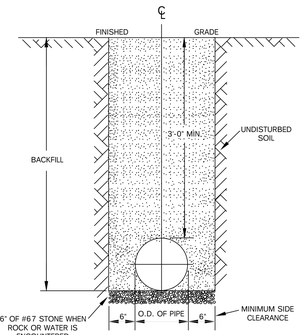
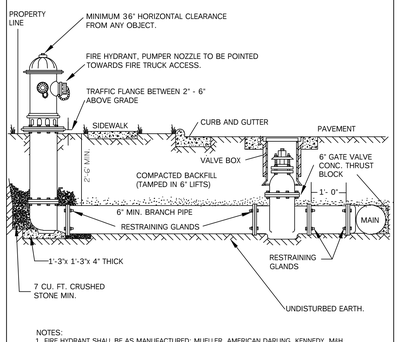


NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	D.W.C.	9-3-99	ABB	2-15-05
	RRH	3-31-00	J.P.S.	10-29-10

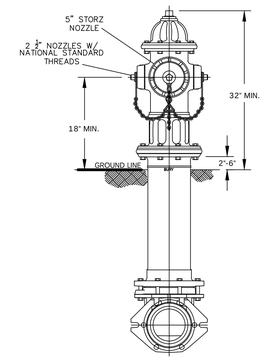


NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, M&H, WATEROUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
3. 6" GATE VALVE SHALL BE AWWA C500-86 OPEN LEFT
4. STEEL RODS AND BOLTS SHALL BE 3' HOT DIPPED GALVANIZED
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
   RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
   FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW

ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT INSTALLATION DETAIL

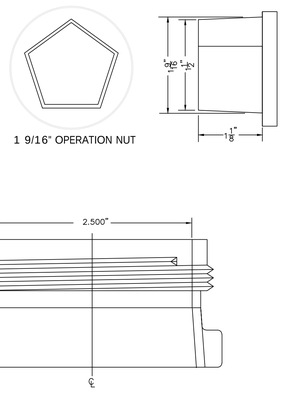
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	ABB	4-6-04	PAP	2/17/09
	DHL	2/14/08		



NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.
2. ALL PRIVATE FIRE HYDRANTS SHALL BE RED.

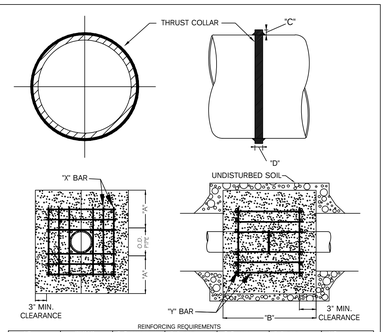
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
RALEIGH, GARNER, KNIGHTDALE, ROLESVILLE, WAKE FOREST, WENDELL & ZEBULON
STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-5	MAB	6-30-16		
	KAT	9-15-17		



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-6	RRH	3-31-00	DHL	2-18-08
	A.B.B	4-13-04	J.P.S	11-1-10



REINFORCING REQUIREMENTS

I.D.	REBAR	"X" BAR	"X" BAR	"Y" BAR	"Y" BAR	NO.
8"-24"	#5	24.09" O.D.	10.031 LENGTH	11'-2"	11.781 LBS. EACH	X-12, Y-12
48" & 60"	#6	58.6" + O.D.	13.992 LBS. EACH	1'-3"	1.97 LBS. EACH	X-24, Y-12

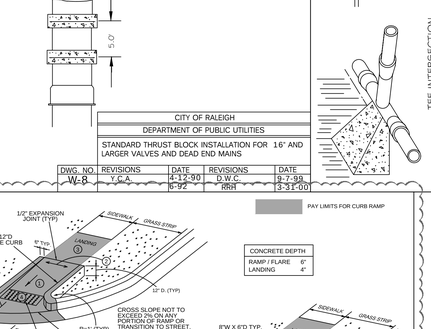
THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"	"D"
6" - 16"	1'-4"	1'-7"	2"	3/8"
20" - 24"	1'-4"	1'-7"	3"	1/2"
30" - 36"	1'-4"	1'-7"	4"	5/8"
48" & greater	1'-8"	1'-9"	6"	7/8"

NOTES:
1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

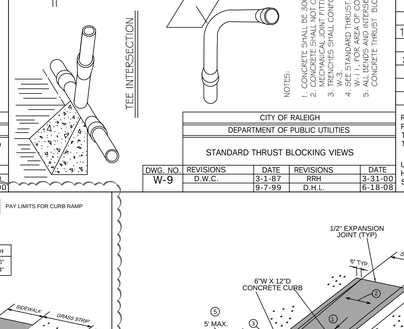
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN DATA FOR WATER MAINS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-7	RRH	1-21-00	J.P.S.	
	D.H.L.	6-18-08	11-1-10	



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCK INSTALLATION FOR 16" AND LARGER VALVES AND DEAD END MAINS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-8	Y.C.A.	4-12-90	D.W.C.	9-7-99
		6-92	RRH	3-31-00



NOTES:
1. CONCRETE SHALL BE 3000 PSI
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO STANDARD DETAIL W-3.
4. SIZE STANDARD THRUST BLOCK TABLES, W-10 THRU W-11, FOR AREA OF CONCRETE REQUIRED.
5. ALL BENDS AND FITTINGS SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCKING VIEWS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-9	D.W.C.	3-1-87	RRH	3-31-00
		9-7-99	D.H.L.	6-18-08

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET

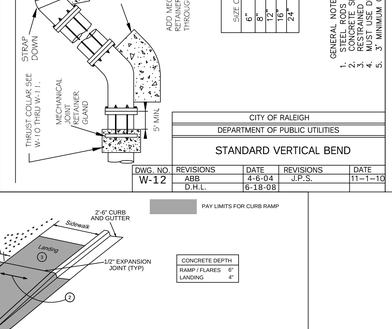
SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	UNDISTURBED EARTH LBS/FT² CLAY 4000	SOFT CLAY 2000 LBS/FT²	GOOD CLAY 4000 LBS/FT² GRAVEL AND COARSE SAND	ROCK, SHALE, SOFT CONGLOMERATE, DRY CLAY LBS/FT²	SAND, COMPACT, FIRM 8000 LBS/FT²	SAND, CLEAN, DRY 4000 LBS/FT²	SOIL, MUD, LBS/FT² BACKWATER	PEAT, POOR 10,000 LBS/FT²	POOR 1000 LBS/FT²
6"										
11 1/4°	1,108	1	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	1	3	1	
45°	4,328	2	3	3	1	1	2	5	1	
90°	7,996	2	4	5	1	1	2	8	1	
PLUG	5,655	2	3	4	1	1	2	6	1	
8"										
11 1/4°	1,970	1	1	2	1	1	1	2	1	
22 1/2°	3,922	1	2	3	1	1	1	4	1	
45°	7,694	2	4	5	1	1	2	8	1	
90°	14,215	4	8	9	2	2	4	15	2	
PLUG	10,053	3	5	6	2	2	3	10	1	
12"										
11 1/4°	4,433	2	3	3	1	1	2	5	1	
22 1/2°	8,826	3	5	6	2	2	3	9	1	
45°	17,312	5	9	11	3	3	5	18	2	
90°	31,983	8	16	19	4	4	8	32	4	
PLUG	22,619	6	12	14	3	3	6	23	3	
16"										
11 1/4°	7,881	2	4	5	1	1	2	8	1	
22 1/2°	15,691	4	8	10	2	2	4	16	2	
45°	30,779	8	16	19	4	4	8	31	4	
90°	56,861	15	29	35	8	8	15	57	6	
PLUG	40,213	10	21	25	5	5	10	41	5	

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6' - 90 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	D.W.C.	6-23-99		



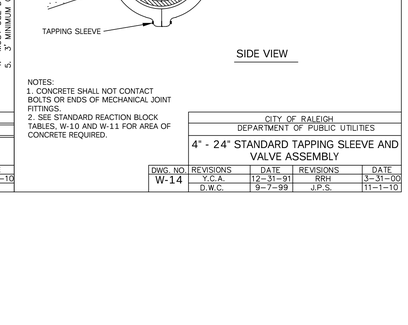
ROD REQUIREMENTS

SIZE OF 45° BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	6
16"	30,779	8
24"	69,252	

GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. USE STEEL RODS AT ALL MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL WATER MAINS

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD VERTICAL BEND

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-12	ABB	4-6-04	J.P.S.	11-1-10
	D.H.L.	6-18-08		



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	Y.C.A.	12-31-91	RRH	3-31-00
	D.W.C.	9-7-99	J.P.S.	11-1-10

PAY LIMITS FOR CURB RAMP

CONCRETE DEPTH
RAMP / FLARE 6"
LANDING 4"

TYPE N-1 (CURB TYPE)

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.
4. RAMPS AND DOMES SHALL BE INSTALLED THE SAME WIDTH AS THE SIDEWALK.
5. IF LENGTH EXCEEDS 5', TRUNCATED DOMES SHALL BE INSTALLED ALONG THE BACK OF THE CURB COVERING THE FULL WIDTH OF THE RAMP.

TYPE N-1A (FLARE TYPE)

NOTE: USE SMALL FLARES ONLY WHEN A CURB TYPE DIRECTLY CONFLICTS WITH APPROACHING VEHICULAR TURNING MOVEMENTS.

CONCRETE DEPTH
RAMP / FLARE 6"
LANDING 4"

TYPE N-2 (RADIUS)

TYPE N-2 (TEE INTERSECTION)

SHEET 2 OF 8

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 9/2020	NOT TO SCALE
	CURB RAMPS (NEW DEVELOPMENT)	
	T-20.01.2	

PAY LIMITS FOR CURB RAMP

TYPE N-4

1. SLOPE TO MEET GRADE, 15' MAXIMUM.
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.
4. RAMPS AND DOMES SHALL BE INSTALLED THE SAME WIDTH AS THE SIDEWALK.
5. IF LENGTH EXCEEDS 5', TRUNCATED DOMES SHALL BE INSTALLED ALONG THE BACK OF THE CURB COVERING THE FULL WIDTH OF THE RAMP.

CONCRETE DEPTH
RAMP 6"
LANDING 4"

TYPE N-4A

SHEET 4 OF 8

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 9/2020	NOT TO SCALE
	CURB RAMPS (NEW DEVELOPMENT)	
	T-20.01.4	

PAY LIMITS FOR CURB RAMP

CONCRETE DEPTH
RAMP / FLARES 6"
LANDING 4"

TYPE R-1

TYPE R-2

(USE ONLY WHERE WATER WILL NOT POND WITHIN LANDING)

TYPE R-2A

TYPE R-2B

CONCRETE DEPTH
RAMP / FLARES 6"
LANDING 4"

SHEET 5 OF 8

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 9/2020	NOT TO SCALE
	CURB RAMPS (RETROFIT)	
	T-20.01.5	

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon 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 approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval: Cydney S. Terry (Digitally signed by Cydney S. Terry, Date: 2022.04.18 09:05:30-04'00')
Raleigh Water Review Office

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

By: Samuel A. MacDonald (Digitally signed by Samuel A. MacDonald, DN: CN=Samuel A. MacDonald, O=Town of Knightdale, OU=Engineering, C=US, Reason: I am the author of this document, Location: your signing location here, Date: 2022.04.18 09:05:30-04'00') Date: _____
Town Engineer

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

By: Kevin Lewis Date: _____
Administrator

PLD

PIEDMONT LAND DESIGN, LLP
8522-204 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27615
919.845.7600 PHONE
919.845.7703 FAX
ENGR. FIRM LICENSE #F-0843

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030856 SAMUEL A. MACDONALD 04/04/22

PROPOSED WAREHOUSE
HINTON OAKS INDUSTRIAL PARK

550 HINTON OAKS BOULEVARD
KNIGHTDALE, NORTH CAROLINA

ISSUED: **26 MAY 2021**

REVISIONS:
1. 16 JULY 2021 PER TOWN COMMENTS
2. 21 JULY 2021 PER TOWN COMMENTS
3. 9 SEPT 2021 PER TOWN COMMENTS
4. 28 FEB 2021 PER TOWN COMMENTS
5. 04 APR 2022 PER TOWN COMMENTS

DRAWN BY: **JET**
CHECKED BY: **MLS**

PROJECT: **WSHOIPB5L8**

DETAILS

DWG. NO. **SITE 14**

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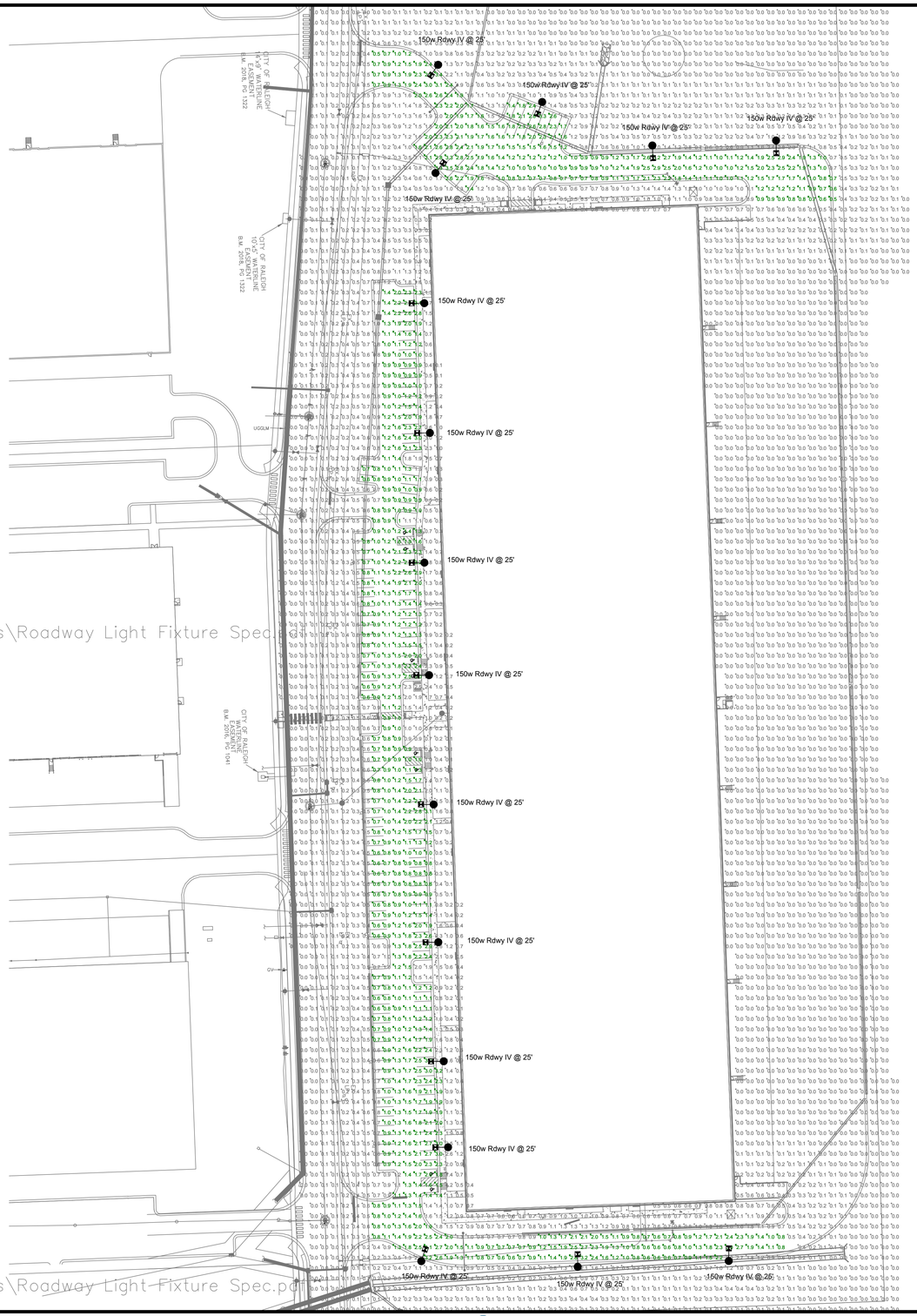


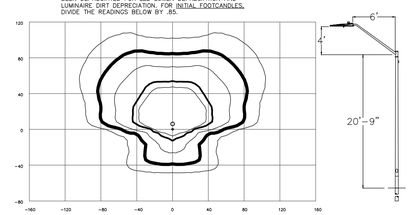
Missing or invalid reference
File: R:\Proj\Tony\Hinton Oaks 8-Knightdale\Exports\Roadway Light Fixture Spec.p
Sheet: 1

Missing or invalid reference
File: R:\Proj\Tony\Hinton Oaks 8-Knightdale\Exports\Roadway Light Fixture Spec.p
Sheet: 2

ISOFOOTCANDLE CURVES

FIXTURE: LED 150 - AEL
MOUNTING HEIGHT: 25 FT
LIGHT SOURCE: 40 LED'S, 4000K, 70 CRI
LUMENS = 16461
PATTERN: TYPE IV, B3-U0-G3(zero light at or above 90 degrees)
NOTE: THE FOOTCANDLE READINGS BELOW ARE MAINTAINED AND HAVE BEEN DEPRECIATED FOR LED LUMEN DEPRECIATION AND LUMINAIRE DIRT DEPRECIATION. FOR INITIAL FOOTCANDLES, DIVIDE THE READINGS BELOW BY .85.

ASSY# LFIX-RW-LED-150-GRAY-IV-MULTV-____-P
POLE ASSY# LPOLE-DB-FG-30FT-GRAY-____-P (GRAY)



LEGEND (OUTER to INNER): 0.10 , 0.25 , 0.50 , **1.00** , 1.25

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking	+	1.4 fc	3.5 fc	0.5 fc	7.0:1	2.8:1

Schedule

Symbol	Label	Quantity	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor
■ ●	150w Rdwy IV	16	LED 150w Roadway - Type IV - 4000K	1	16462	0.85

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

By: Samuel A. MacDonald Date: _____
Town Engineer

Digitally signed by Samuel A. MacDonald
DN: C=US, E=samacdonald@wakegov.com, O=A. Thomas & Associates, Inc., CN=Samuel A. MacDonald
Reason: I am approving this document
Location: Wake County, North Carolina
Date: 2022.01.10 12:40:40-05'00'

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

By: Kevin Lewis Date: _____
Administrator

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_____

DISTANCE CALIBRATION (INCHES)

0 0.5 1.0 2.0 3.0 4.0

DUKE ENERGY® PROGRESS

PROPRIETARY & CONFIDENTIAL

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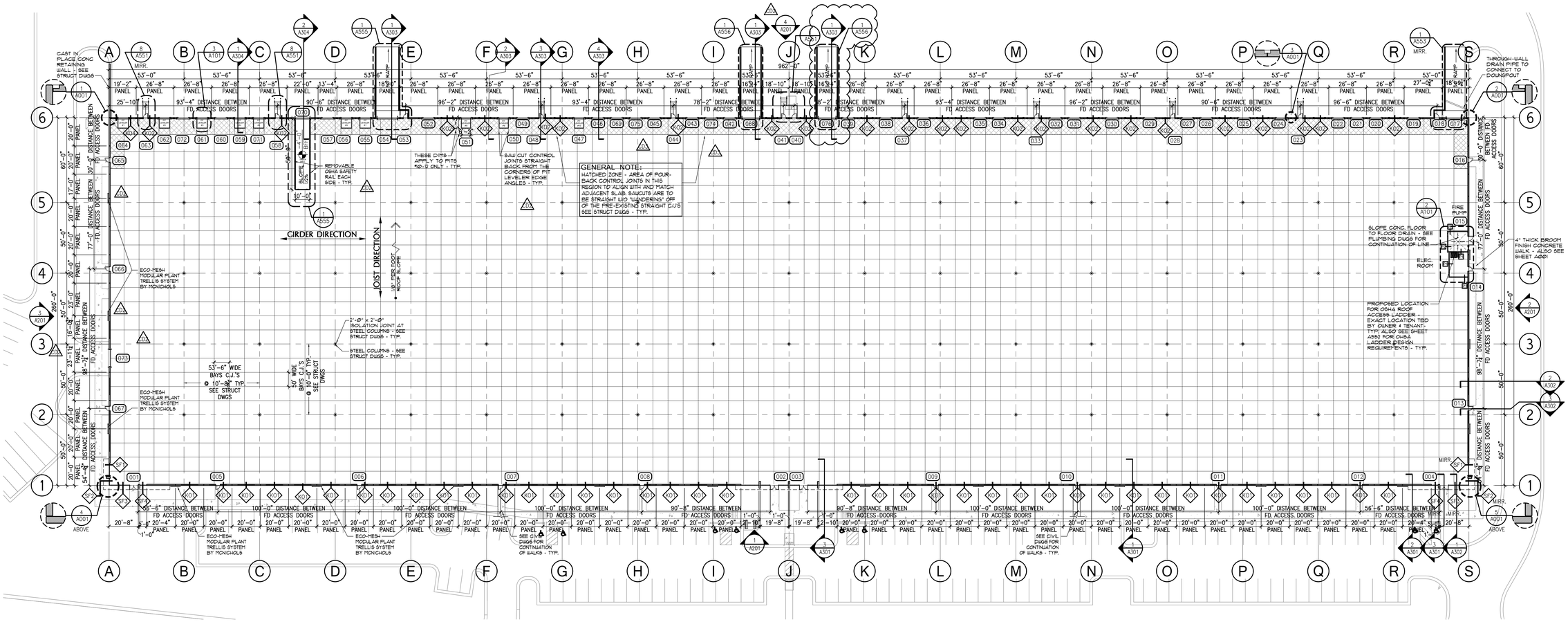
HINTON OAKS 8
Knightdale, NC
SITE LIGHTING PLAN
Designed by DEP LIGHTING SOLUTIONS
Reviewed by N. Johnson Scale 1" = 60'
Date 01/10/2022 Size "Arch D"
Description LED 150w Roadway
Drawing No. 21-0137C Sht. 1 OF 1



1 FLOOR PLAN

SCALE: 1" = 30'-0"

FOR SITE APPROVAL ONLY

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

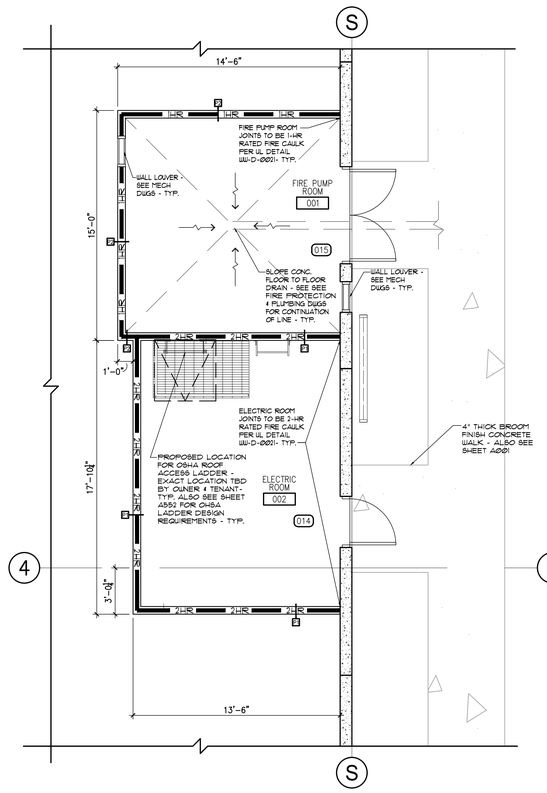
By: Samuel A. MacDonald
Development Services Engineer

Date: _____

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

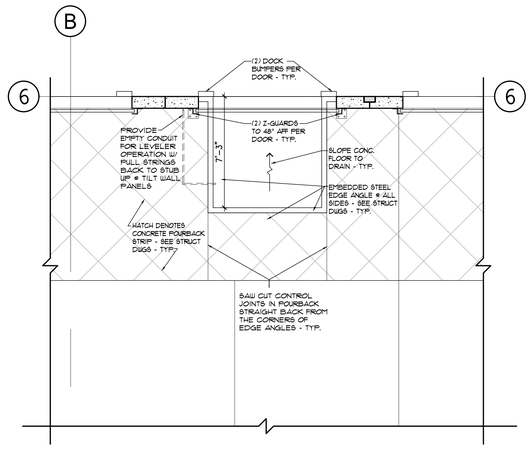
By: Kevin Lewis
Administrator

Date: _____



2 FIRE PUMP ROOM PLAN

SCALE: 1/4" = 1'-0"



3 PIT LEVELER PLAN

SCALE: 1/4" = 1'-0" TYP. FOR PITS #1-7 ONLY

03

SERCO®

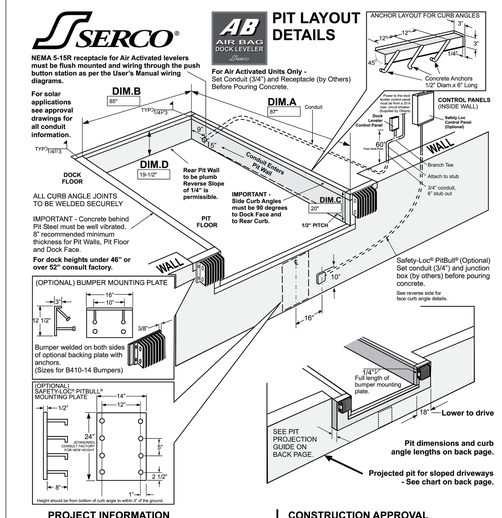
NEMA 5-15R receptacle for Air Activated levelers must be flush mounted and wiring through the push button station as per the User's Manual wiring diagrams.

For solar applications see approval drawings for all conduit information.

AB AIR BAG DOCK LEVELER

PIT LAYOUT DETAILS

For Air Activated Units Only - Set Conduit (3/4") and Receptacle (by Others) Before Pouring Concrete.



PROJECT INFORMATION

Job Name Daltile

Address _____

General Contractor _____

Serco Distributor DuraServ Corp

Quantity _____ Voltage 120/1PH

Dock Leveler Model 7Wx8L 45K-20 LIP

CONSTRUCTION APPROVAL

Company _____

Address _____

By _____

Date _____

July 2010 826-010F

NOTICE

Pit Dimensional Tolerances are +/- 1/8" on squareness, Depth, Width and Length.
SERCO Assumes No Liability for Deviations beyond this Tolerance.

AB AIR BAG DOCK LEVELER

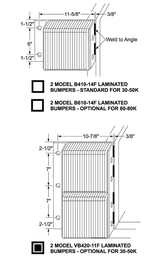
DIMENSIONS BELOW ARE FOR ALL AB PIT TYPE LEVELERS OF 30-45K CAPACITIES.
DIM "C" IS 24" AND DIM "D" IS 23 1/2" FOR 5', 6' & 8' LONG LEVELERS PLACED IN 24" DEEP PITS WITH OPTIONAL RISER KIT.

MODEL	PIT DIMENSIONS				CURB ANGLE LENGTHS				
	DIM "A"	DIM "B"	DIM "C"	DIM "D"	REAR (1)	FRONT (1)	SIDE (2)	FACE	BUMPER
6' x 6'	63"	73"	20"	19-1/2"	79"	79"	60"	17"	21"
8' x 6'	87"	73"	20"	19-1/2"	79"	79"	84"	17"	21"
10' x 6'	111"	73"	24"	23-1/2"	79"	79"	108"	21"	21"
6' x 6'6"	63"	79"	20"	19-1/2"	85"	85"	60"	17"	21"
8' x 6'6"	87"	79"	20"	19-1/2"	85"	85"	84"	17"	21"
10' x 6'6"	111"	79"	24"	23-1/2"	85"	85"	108"	21"	21"
6' x 7'	63"	85"	20"	19-1/2"	91"	91"	60"	17"	21"
8' x 7'	87"	85"	20"	19-1/2"	91"	91"	84"	17"	21"
10' x 7'	111"	85"	24"	23-1/2"	91"	91"	108"	21"	21"

*NOTE - CURB ANGLES SUPPLIED BY OTHERS

PIT PROJECTION GUIDE FOR DECLINE DRIVE CONDITIONS

PERCENTAGE OF DRIVEWAY GRADE	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
PIT PROJECTION	0"	2"	3"	4"	5"	6"	8"	9"	10"	11"	12"



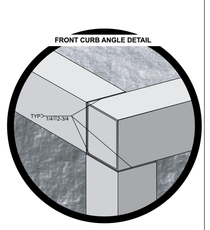
2 MODEL B410-14F LAMINATED BUMPERS - STANDARD FOR 30-50K

2 MODEL B610-14F LAMINATED BUMPERS - OPTIONAL FOR 60-80K

2 MODEL VB425-11F LAMINATED BUMPERS - OPTIONAL FOR 30-50K

2 MODEL VB625-11F LAMINATED BUMPERS - OPTIONAL FOR 60-80K

FRONT CURB ANGLE DETAIL



DISTRIBUTED BY:

July 2010 826-010F

4 PIT LEVELER GUIDE (FOR REFERENCE ONLY)

SCALE: NONE TYP. FOR PITS #1-7 ONLY

01

MIN. 36' CLEAR UNDER STRUCTURE - TYP.

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605 LEXINGTON AVENUE
SUITE 300
CHARLOTTE, NC 28203
704.377.1177
704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION 1982 CERT. NO. 00785 NORTH CAROLINA CHARLOTTE, N.C.

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 NORTH CAROLINA CHARLOTTE 03/30/22

SPECULATIVE WAREHOUSE
KNIGHTDALE - 5
550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :
- PRELIMINARY NOT FOR CONSTRUCTION
- ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

MARK	DATE	DESCRIPTION
C04	03/30/22	TENANT SHELL CHANGES #3
C03	07/07/22	ADD'L TENANT SHELL CHANGES
C02	05/14/22	TENANT SHELL CHANGES
C01	04/09/21	ISSUED FOR CONSTRUCTION

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE : FLOOR PLAN

SHEET : A101

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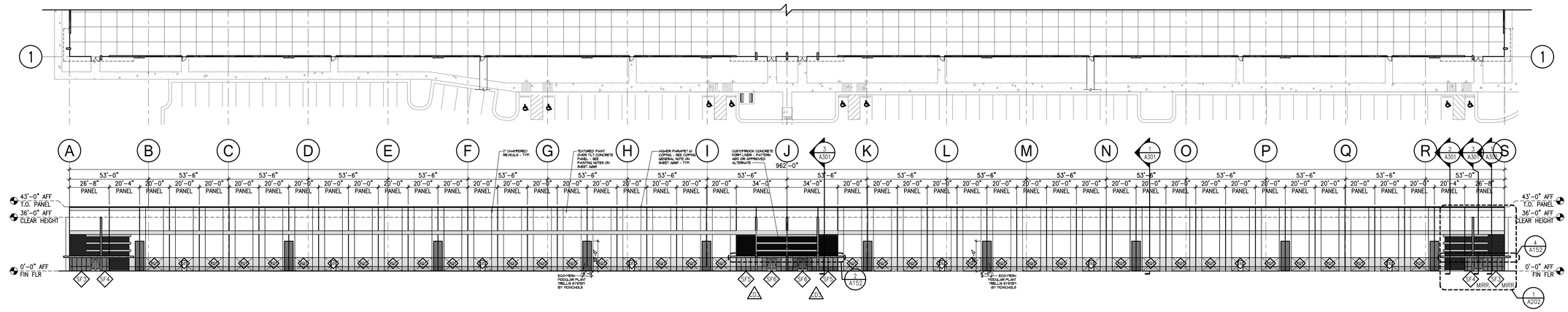
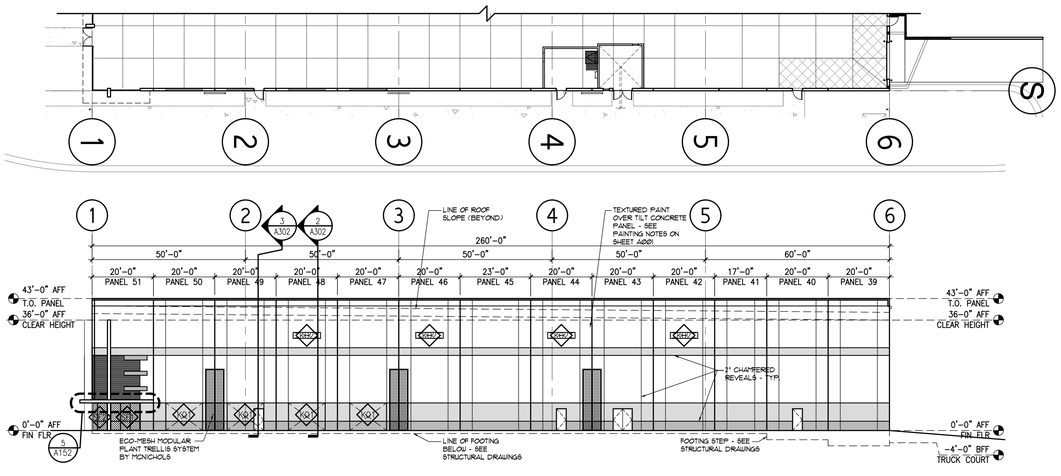
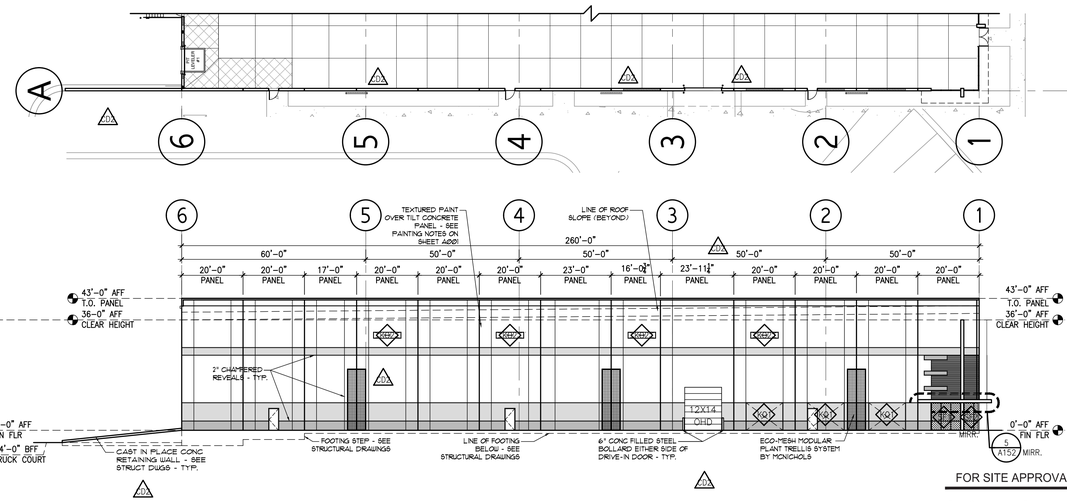


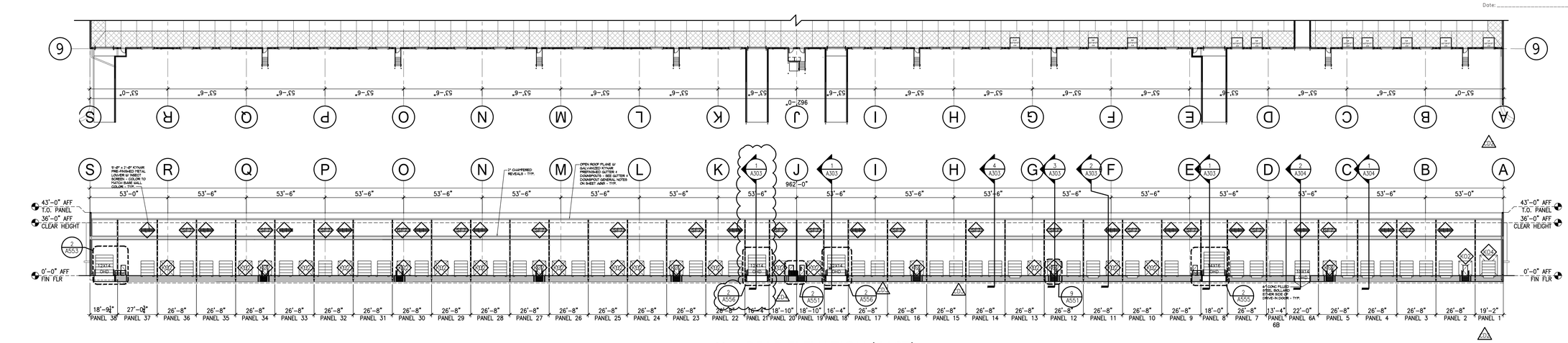
1 FRONT ELEVATION (WEST)
SCALE: 1" = 30'-0"



2 SIDE ELEVATION (SOUTH)
SCALE: 1" = 20'-0"



3 SIDE ELEVATION (NORTH)
SCALE: 1" = 20'-0"



4 REAR ELEVATION (EAST)
SCALE: 1" = 30'-0"

MIN. 36' CLEAR UNDER STRUCTURE - TYP.

FOR SITE APPROVAL ONLY

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

By: Samuel A. MacDonald
Development Services Engineer

Date:

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

By: Kevin Lewis
Administrator

Date:

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merriman schmitt
architecture · planning
interior design
605 LEXINGTON AVENUE
SUITE 300
CHARLOTTE, NC 28203
704.377.1177
704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION NORTH CAROLINA CHARLOTTE, N.C. CERT. NO. 50785

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 CHARLOTTE 03/30/22

SPECULATIVE WAREHOUSE
KNIGHTDALE
550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :
- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

MARK	DATE	DESCRIPTION
01	04/09/21	ISSUED FOR CONSTRUCTION
02	02/14/22	TENANT SHELL CHANGES
03	03/02/22	A03.1 TENANT SHELL CHANGES
04	03/30/22	TENANT SHELL CHANGES #4

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE : ELEVATIONS

SHEET : A201

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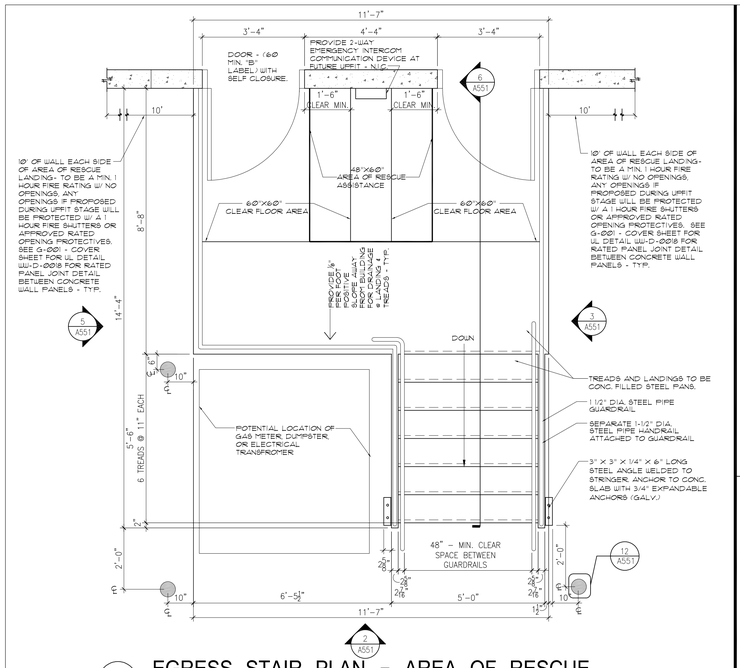
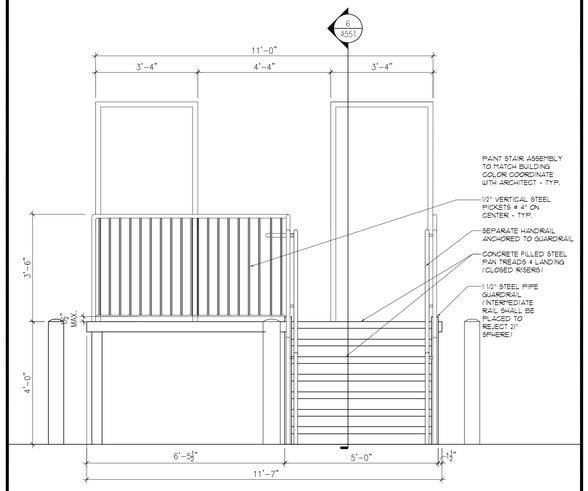


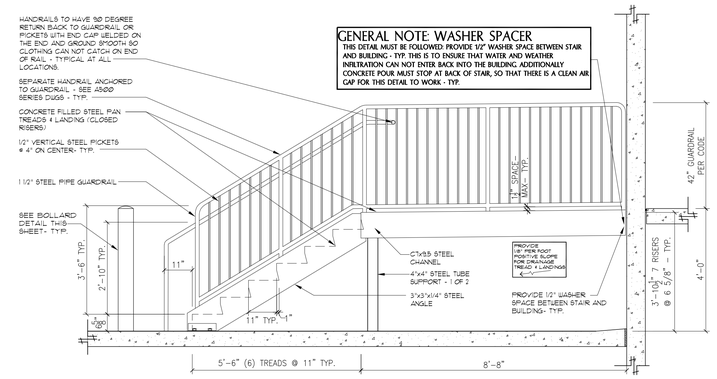
1 EGRESS STAIR PLAN - AREA OF RESCUE

SCALE: 1/2"=1'-0



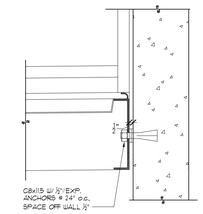
2 EGRESS STAIR ELEVATION

SCALE: 1/2"=1'-0



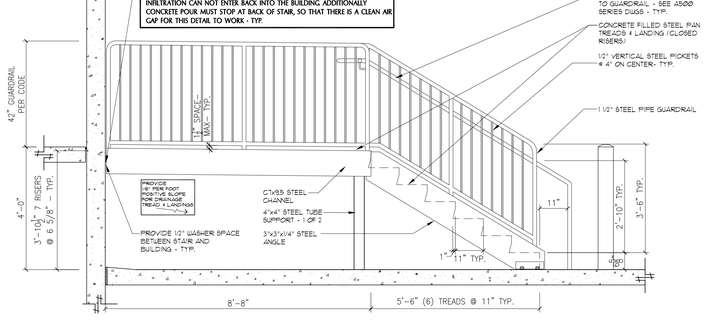
3 EGRESS STAIR ELEVATION

SCALE: 1/2"=1'-0



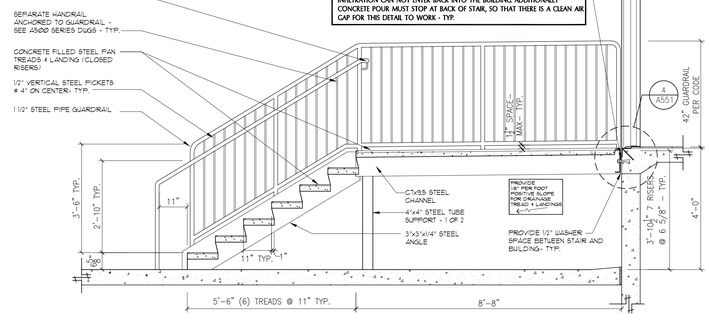
4 DOOR SILL DETAIL

SCALE: 1 1/2"=1'-0



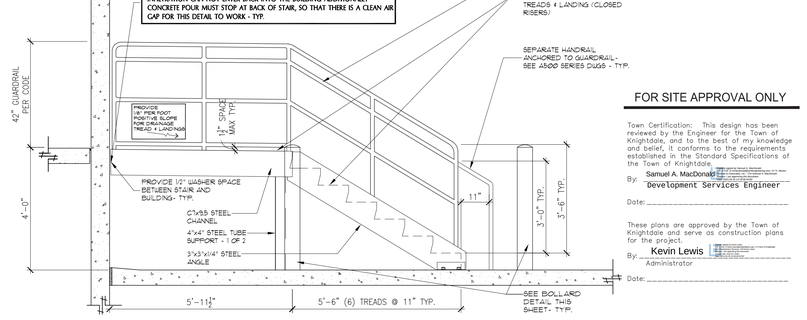
5 EGRESS STAIR ELEVATION

SCALE: 1/2"=1'-0



6 EGRESS STAIR SECTION

SCALE: 1/2"=1'-0



7 STRAIGHT STAIR ELEVATION

SCALE: 1/2"=1'-0

FOR SITE APPROVAL ONLY

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

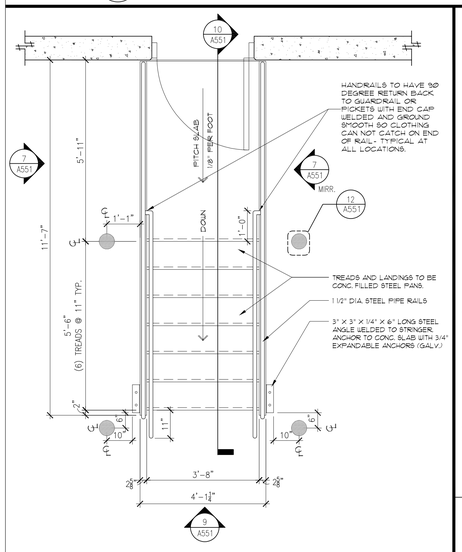
By: Samuel A. MacDonald
Development Services Engineer

Date: _____

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

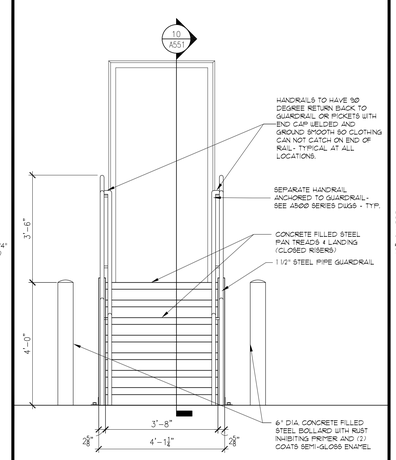
By: Kevin Lewis
Administrator

Date: _____



8 STRAIGHT STAIR PLAN

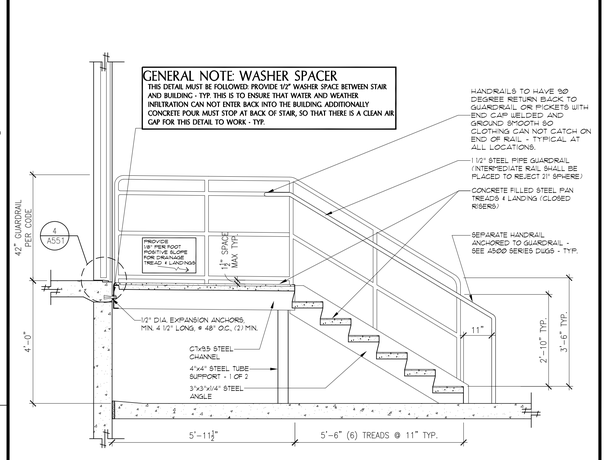
SCALE: 1/2"=1'-0



9 STRAIGHT STAIR ELEVATION

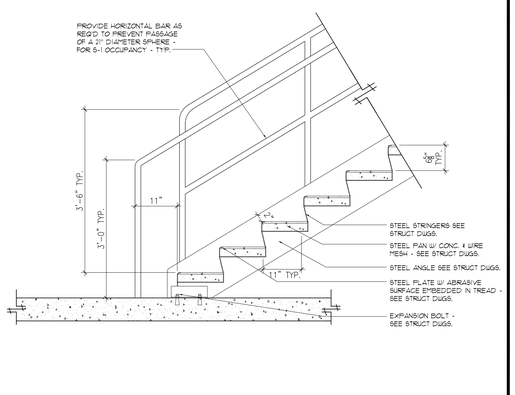
SCALE: 1/2"=1'-0

GENERAL NOTE: GALVANIZED METALS
ALL EXTERIOR STAIRS & HANDRAILS TO BE GALVANIZED METAL W/O A PAINT FINISH - TYP.



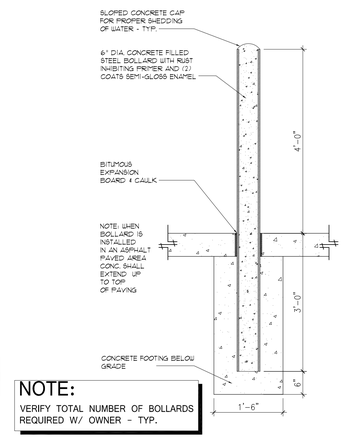
10 STRAIGHT STAIR SECTION

SCALE: 1/2"=1'-0



11 TYPICAL STAIR DETAIL

SCALE: 3/4"=1'-0



NOTE:
VERIFY TOTAL NUMBER OF BOLLARDS REQUIRED W/ OWNER - TYP.

12 TYPICAL BOLLARD DETAIL

SCALE: 3/4"=1'-0

MIN. 32' CLEAR UNDER STRUCTURE - TYP.

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SUITE 300
CHARLOTTE, NC 28203
704.377.1177
704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION NORTH CAROLINA CHARLOTTE, N.C. CERT. NO. 50785

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 NORTH CAROLINA CHARLOTTE 08/09/21

SPECULATIVE WAREHOUSE - 5

KNIGHTDALE

550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :

- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

BASE	DATE	DESCRIPTION
CDI	08/09/21	ISSUED FOR CONSTRUCTION

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE : STAIR DETAILS

SHEET : A551

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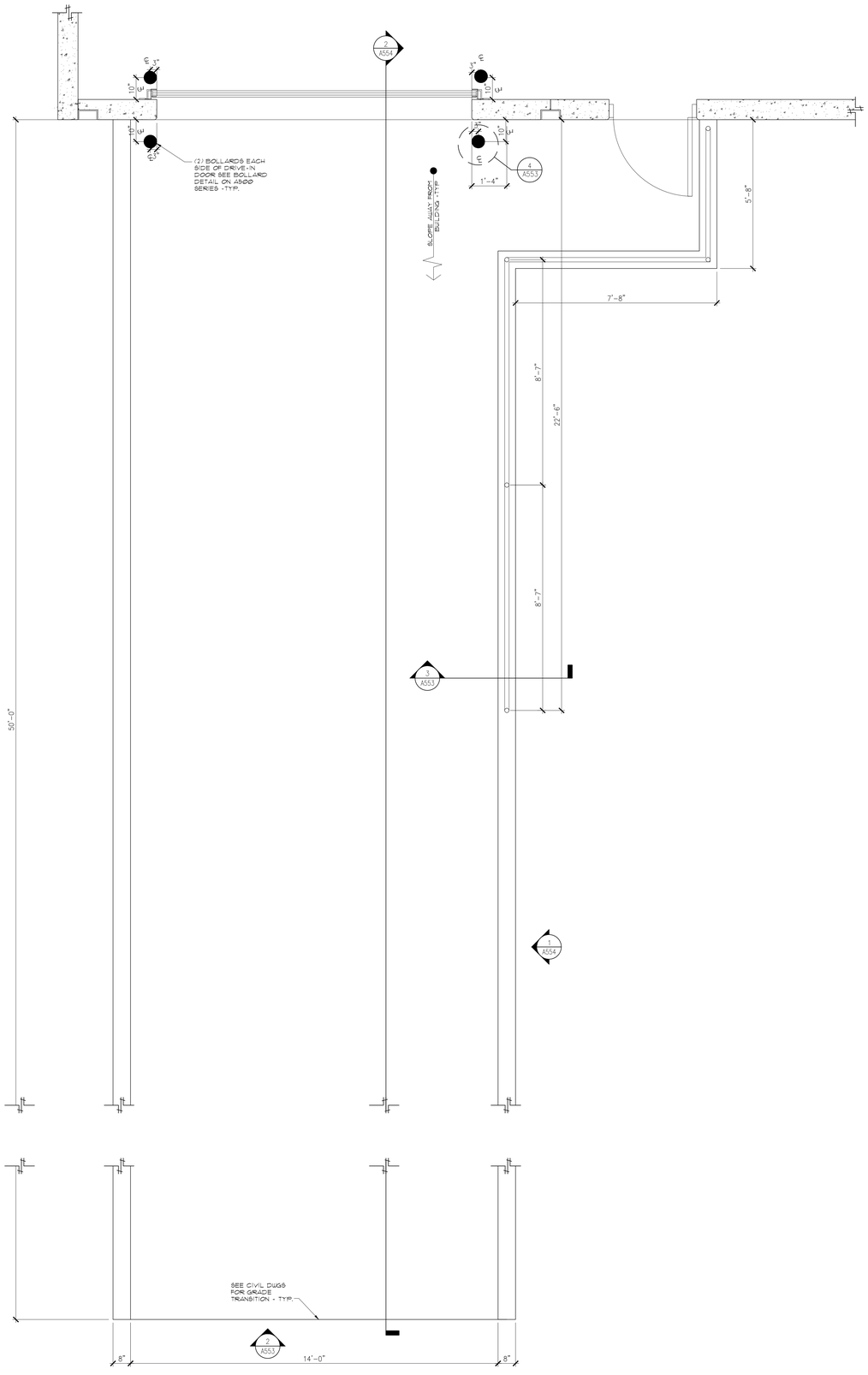


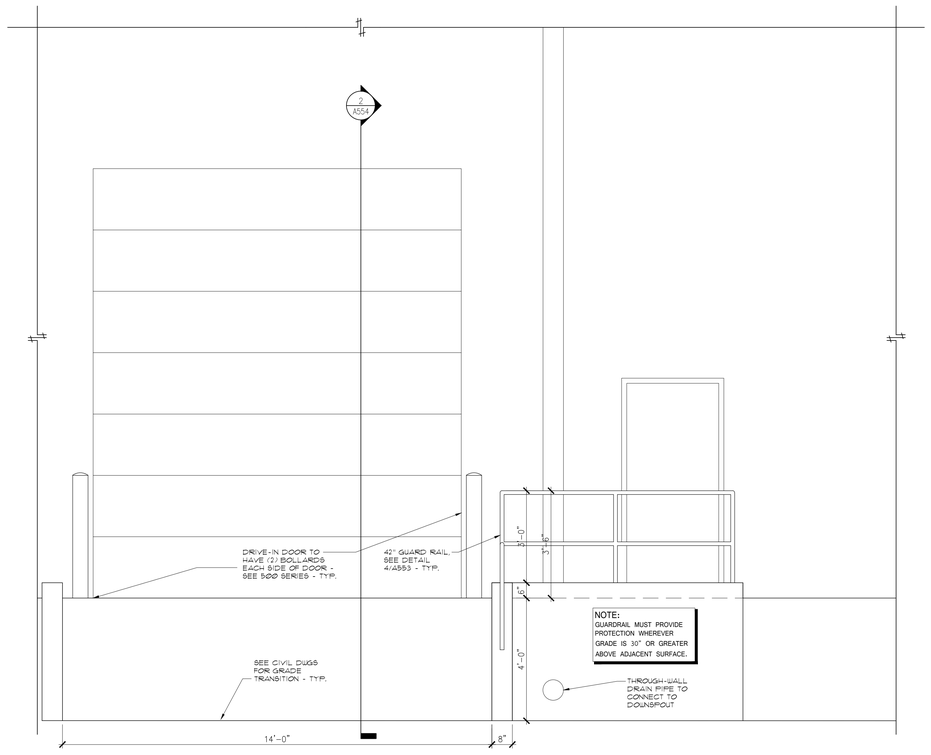
1 RETAINING WALL & GUARDRAIL DETAILS

SCALE: 1/2"=1'-0

OPPOSITE RAMP MIRRORED - TYP.

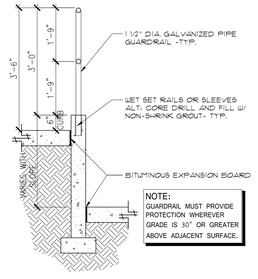
GENERAL NOTE: PAINTING OF METALS

ALL EXPOSED METALS TO BE PAINTED ENTIRELY WITH RUST INHIBITING GRAY PRIMER AND (2) COATS OF SEMI GLOSS EPOXY - COLOR AS SELECTED BY ARCHITECT - TYP.



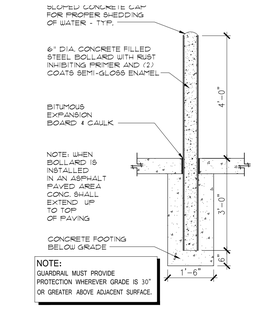
2 RAMP ELEVATION

SCALE: 1/2"=1'-0



3 GUARD RAIL DETAIL

SCALE: 1/2"=1'-0



4 BOLLARD DETAIL

SCALE: 1/2"=1'-0

FOR SITE APPROVAL ONLY

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

By: Samuel A. MacDonald
Development Services Engineer

Date:

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By: Kevin Lewis
Administrator

Date:

MIN. 32' CLEAR UNDER STRUCTURE - TYP.

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SUITE 300
CHARLOTTE, NC 28203
704.377.1177
704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL COMPANY CERT. NO. 50785 NORTH CAROLINA CHARLOTTE, N.C.

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 NORTH CAROLINA 07/12/21

SPECULATIVE WAREHOUSE
KNIGHTDALE - 5
550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :

- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

MARK	DATE	DESCRIPTION
2	07/12/21	CIVIL PLAN SUBMITTAL

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE : DRIVE-IN RAMP DETAILS

SHEET : A553

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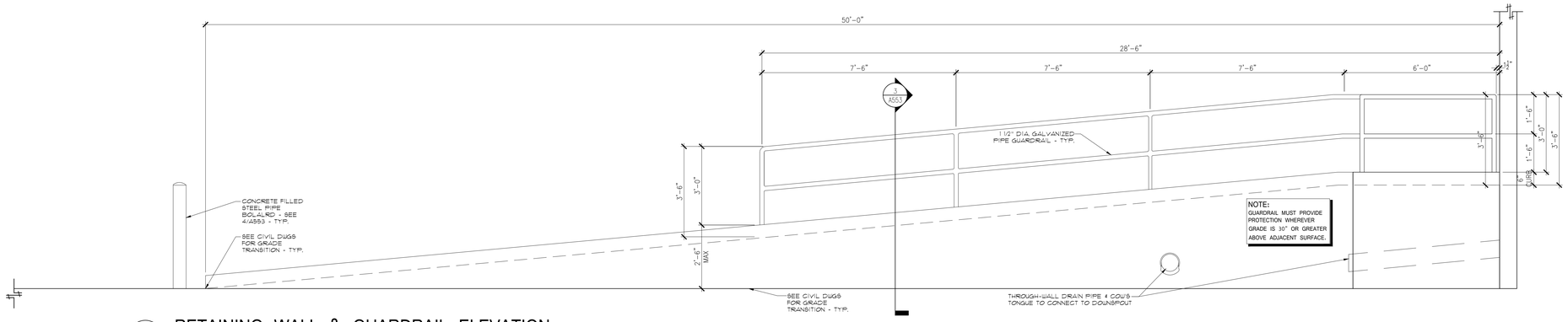
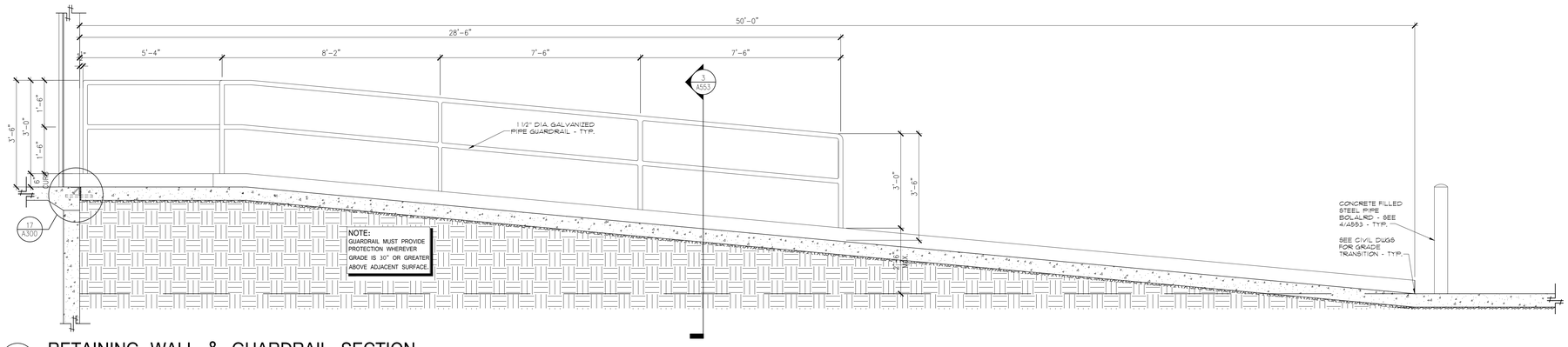


1 RETAINING WALL & GUARDRAIL ELEVATION

SCALE: 1/2"=1'-0 OPPOSITE RAMP MIRRORED - TYP.

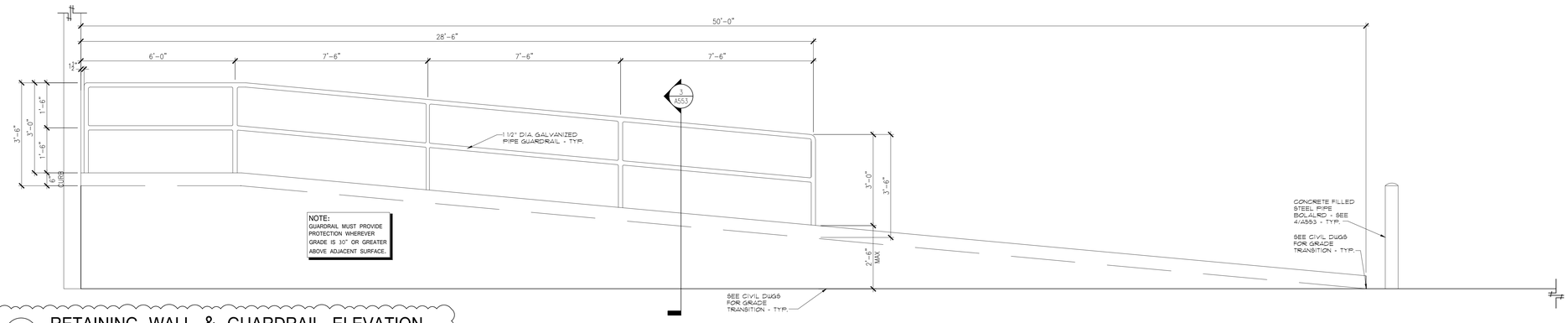
GENERAL NOTE: PAINTING OF METALS

ALL EXPOSED METALS TO BE PAINTED ENTIRELY WITH RUST INHIBITING GRAY PRIMER AND (2) COATS OF SEMI GLOSS EPOXY - COLOR AS SELECTED BY ARCHITECT - TYP.



2 RETAINING WALL & GUARDRAIL SECTION

SCALE: 1/2"=1'-0



10 3 RETAINING WALL & GUARDRAIL ELEVATION

SCALE: 1/2"=1'-0 OPPOSITE SIDE MIRRORED - TYP.

FOR SITE APPROVAL ONLY

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

By: Samuel A. MacDonald
Development Services Engineer

Date:

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

By: Kevin Lewis
Administrator

Date:

MIN. 36' CLEAR UNDER STRUCTURE - TYP.

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704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50785 NORTH CAROLINA CHARLOTTE, N.C.

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 NORTH CAROLINA CHARLOTTE 02/14/22

SPECULATIVE WAREHOUSE 5
KNIGHTDALE - I -
550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :

- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

MARK	DATE	DESCRIPTION
CD2	02/14/22	TENANT SHELL CHANGES
CD1	04/09/21	ISSUED FOR CONSTRUCTION

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE : DRIVE-IN RAMP DETAILS

SHEET : A554

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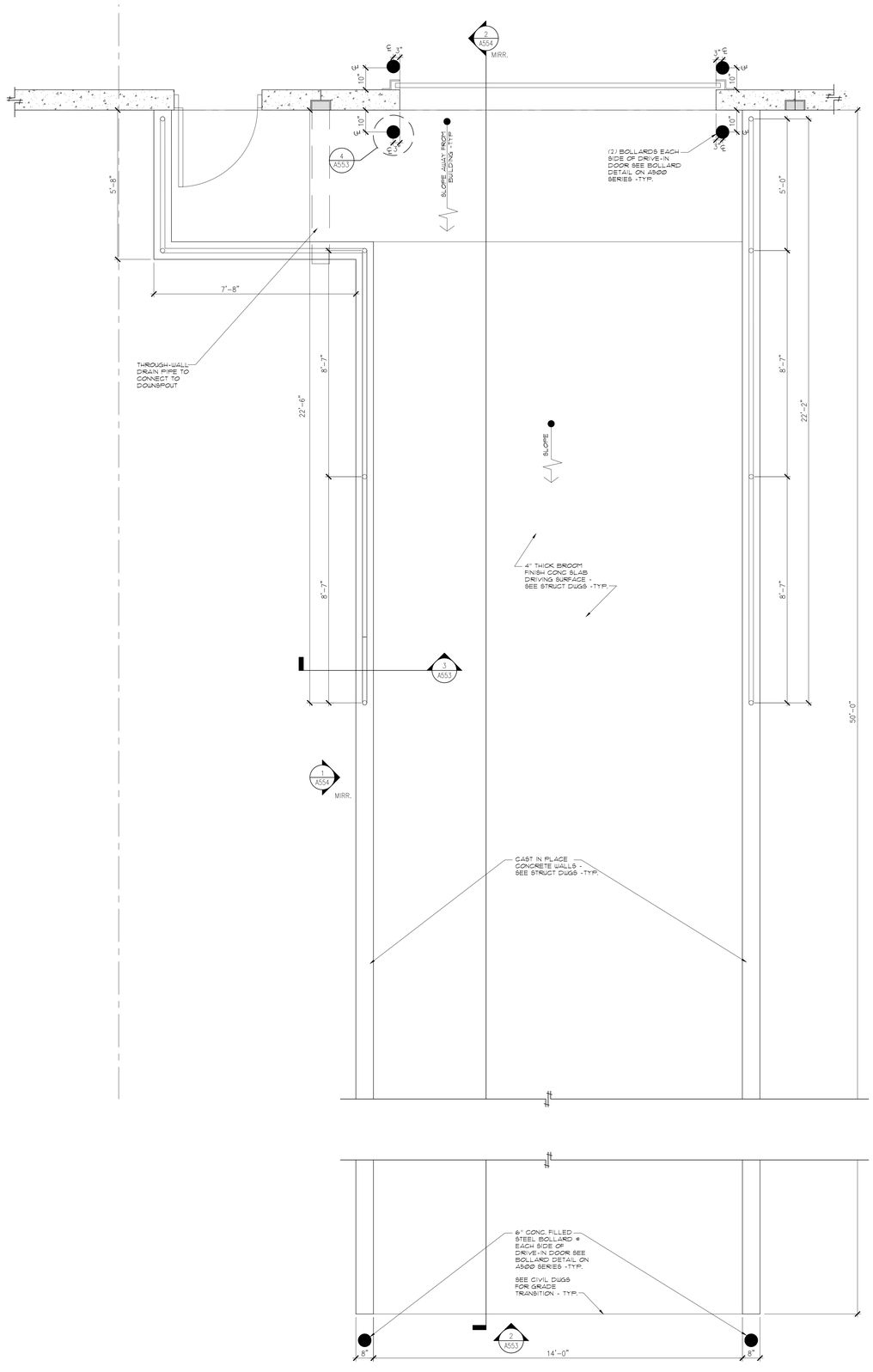
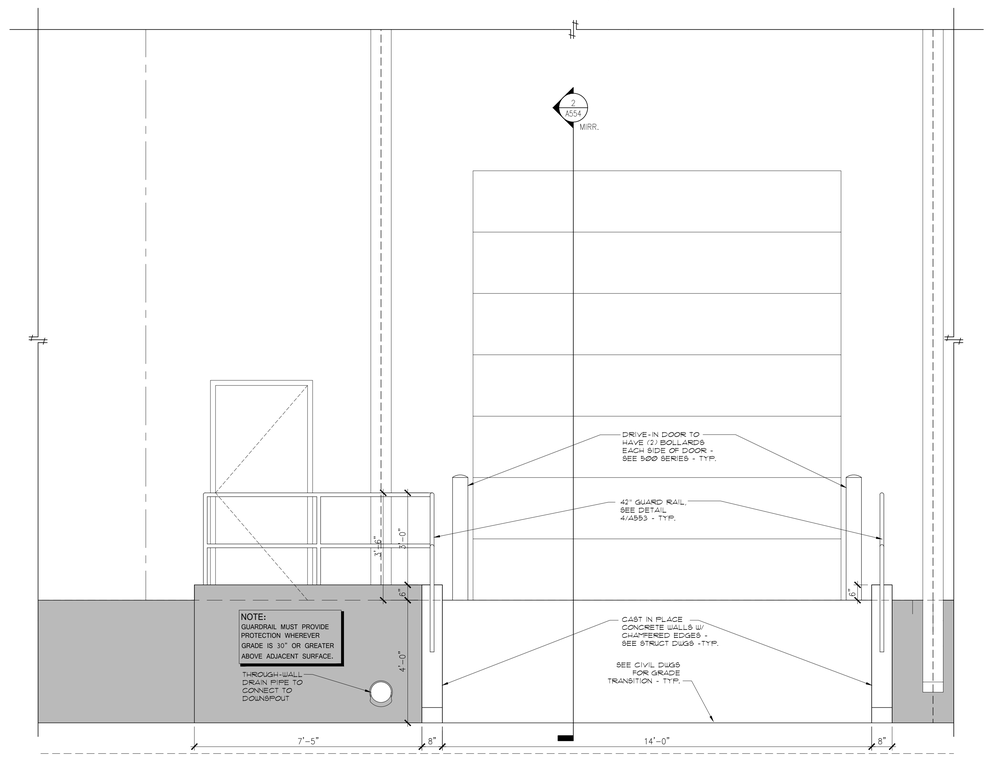


1 RETAINING WALL & GUARDRAIL DETAILS

SCALE: 1/2"=1'-0 OPPOSITE RAMP MIRRORED - TYP.

GENERAL NOTE: PAINTING OF METALS

ALL EXPOSED METALS TO BE PAINTED ENTIRELY WITH RUST INHIBITING GRAY PRIMER AND (2) COATS OF SEMI GLOSS EPOXY - COLOR AS SELECTED BY ARCHITECT - TYP.



2 RAMP ELEVATION

SCALE: 1/2"=1'-0

FOR SITE APPROVAL ONLY

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

By: Samuel A. MacDonald Development Services Engineer

Date:

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

By: Kevin Lewis Administrator

Date:

MIN. 36' CLEAR UNDER STRUCTURE - TYP.

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704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION NORTH CAROLINA CHARLOTTE, N.C. CERT. NO. 50785

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 CHARLOTTE, N.C. 01/25/22

SPECULATIVE WAREHOUSE
KNIGHTDALE - 5
550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :

- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

MARK	DATE	DESCRIPTION
CO1	01.25.22	TENANT SHELL CHANGES

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE : DRIVE-IN RAMP DETAILS

SHEET : A555

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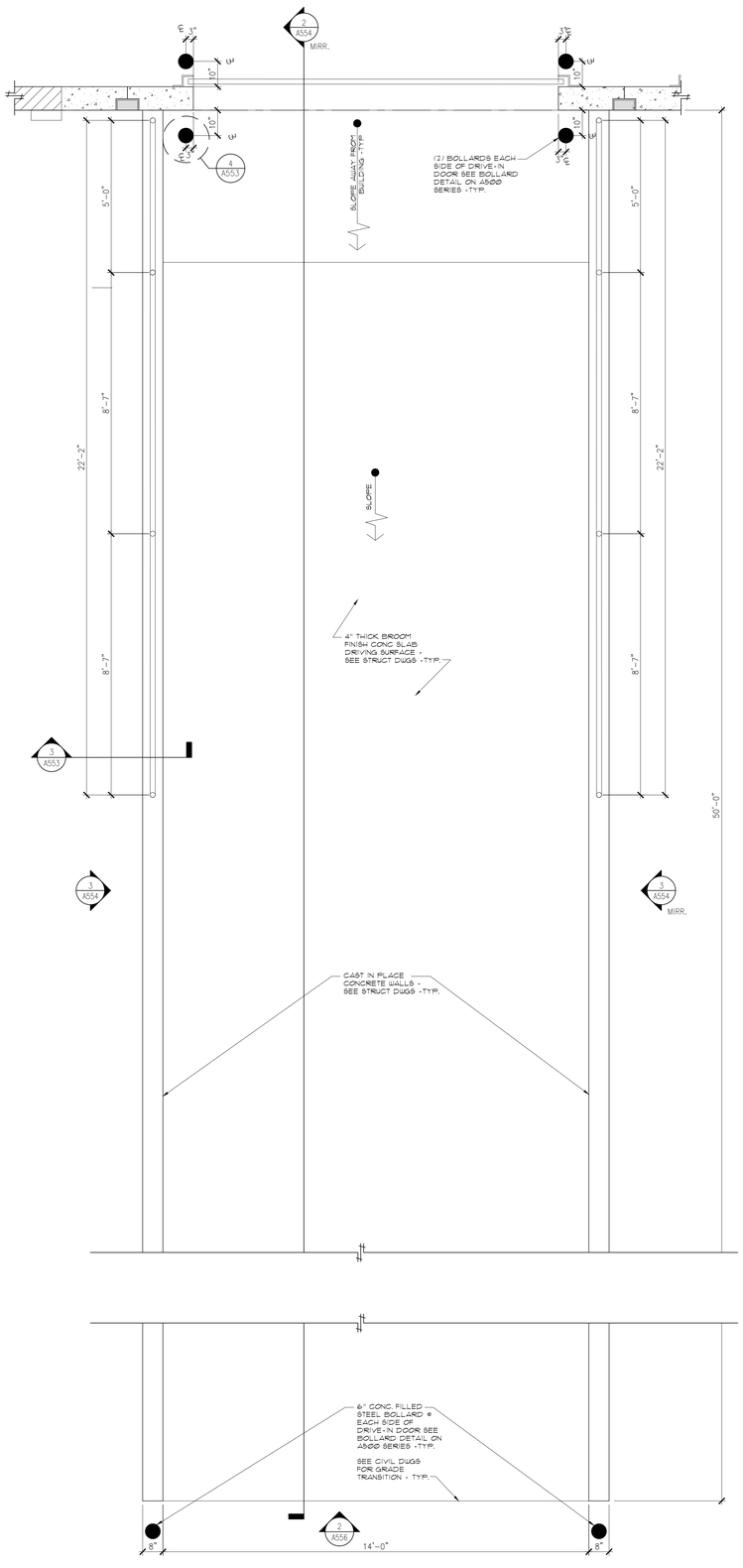

1 RETAINING WALL & GUARDRAIL DETAILS

SCALE: 1/2"=1'-0

OPPOSITE RAMP MIRRORED - TYP.

GENERAL NOTE: PAINTING OF METALS

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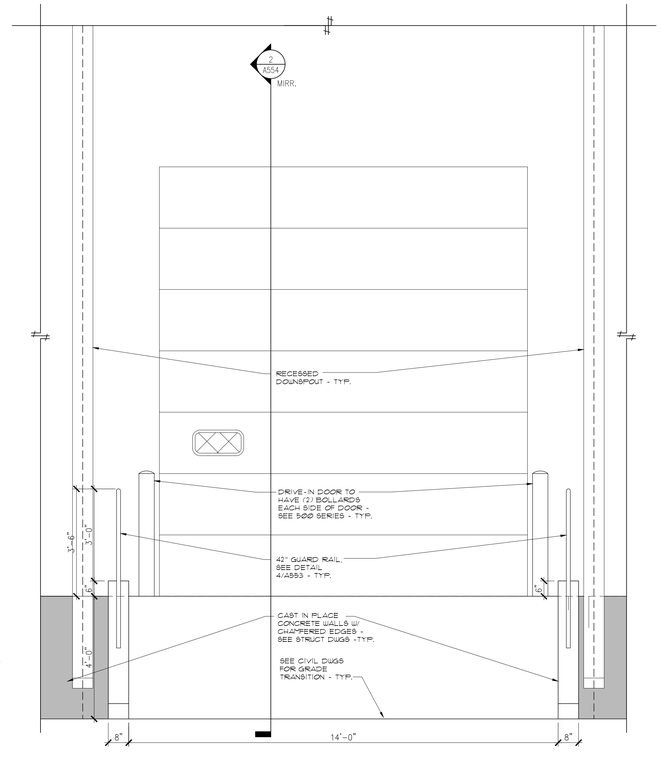

NOTE:
GUARDRAIL MUST PROVIDE PROTECTION WHEREVER GRADE IS 30" OR GREATER ABOVE ADJACENT SURFACE.

2 RAMP ELEVATION

SCALE: 1/2"=1'-0

FOR SITE APPROVAL ONLY

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

By: Samuel A. MacDonald
Development Services Engineer

Date: _____

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

By: Kevin Lewis
Administrator

Date: _____

MIN. 36' CLEAR UNDER STRUCTURE - TYP.

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DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

MERRIMAN SCHMITT ARCHITECTS, INC. REGISTERED ARCHITECTURAL COMPANY CERT. NO. 50785 NORTH CAROLINA CHARLOTTE, N.C.

STEPHEN A. SCHMITT REGISTERED ARCHITECT 6479 CHARLOTTE, N.C. 02/14/22

SPECULATIVE WAREHOUSE
KNIGHTDALE - 5
550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :

- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

MARK	DATE	DESCRIPTION
CD	01/25/22	TENANT SHELL CHANGES

FILE NAME :

PROJECT NO.:
C21041

SHEET TITLE :
DRIVE-IN RAMP DETAILS

SHEET :
A556

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FIXTURE: LED 150 - AEL
MOUNTING HEIGHT: 25 FT
LIGHT SOURCE: 40 LED'S, 4000K, 70 CRI
LUMENS - 16461
PATTERN: TYPE IV, B3-LIO-G3 (zero light at or above 90 degrees)

NOTE: THE FOOTCANDLE READINGS ARE MAINTAINED AND HAVE BEEN DEPRECIATED FOR LED LUMEN DEPRECIATION AND LUMINAIRE DIRT DEPRECIATION. FOR INITIAL FOOTCANDLES, DIVIDE THE READINGS BELOW BY .85.

DUKE ENERGY® PROGRESS

Outdoor Lighting

Roadway LED

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

LED *(Light Emitting Diode)*	50 | 75 | 105 | 150 | 215 | 280 watts
Mounting heights	25', 30', 35'
Color	Gray, Black
Poles	Fiberglass Metal *(special conditions)* Wood

For additional information, visit us at
duke-energy.com/OutdoorLighting
or call us toll free at **866.769.6417**.

DUKE ENERGY® PROGRESS

Outdoor Lighting

Roadway LED

Light source: LED *(white)*
Lumens: 4,807 – 25,050 *(fixture dependent)*

Wattage	Light Pattern	IESNA Backlight-Uplight – Glare (BUG) Rating
LED 50	IESNA Type III *(medium oval)*	B1-U0-G1
LED 75	IESNA Type II *(long oval)*	B1-U0-G2
LED 105	IESNA Type II *(long oval)*	B2-U0-G3
LED 150	IESNA Type III *(medium oval)*	B2-U0-G2
LED 215	IESNA Type III *(medium oval)*	B3-U0-G3
LED 280	IESNA Type III *(medium oval)*	B3-U0-G4

light distribution pattern

Color temperature: 4,000K
Warm-up and restrike time: Instant on *(no warm-up or restrike time)*

Poles available:

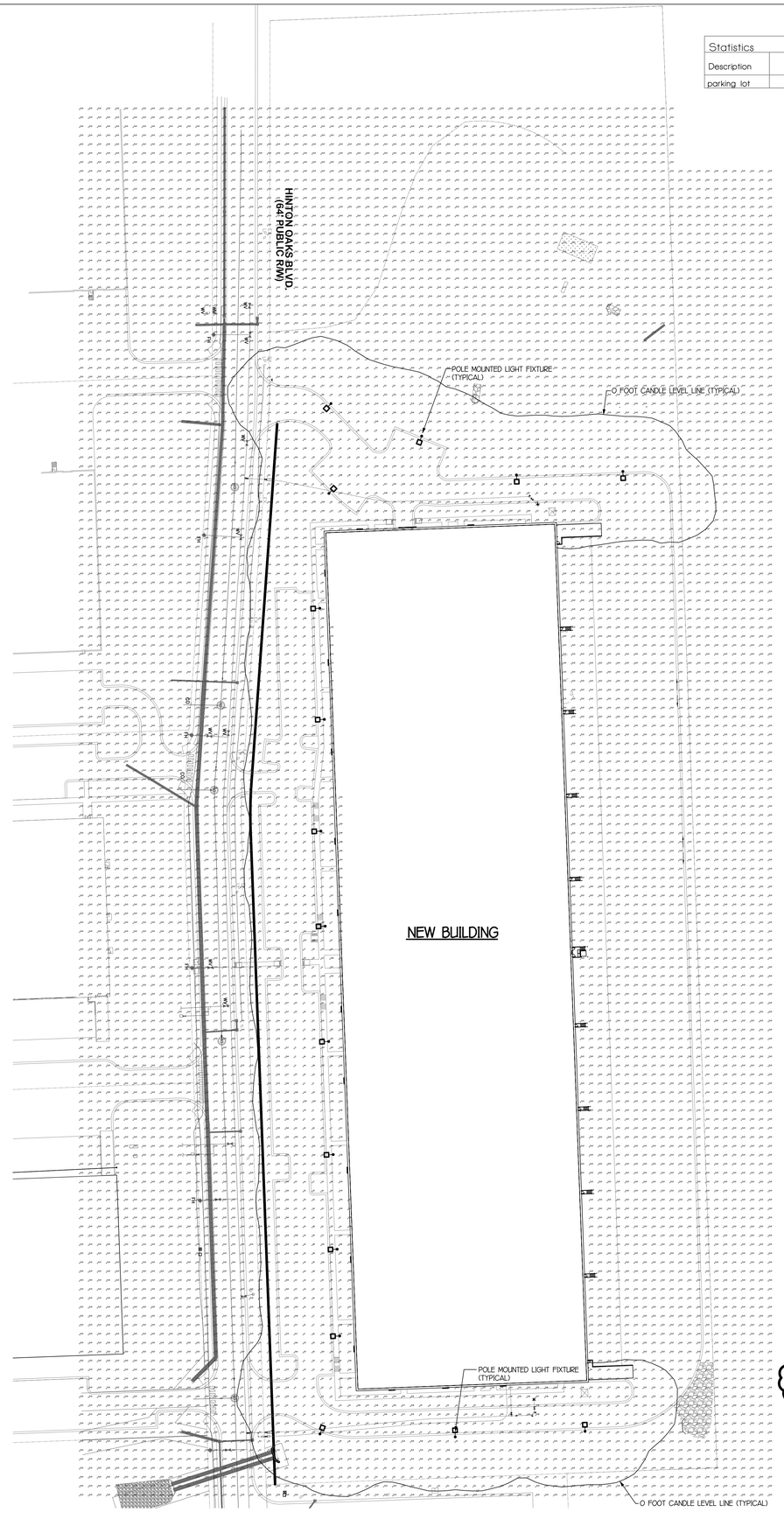
Name	*Mounting height*	*Color*
Fiberglass	25', 30', 35'	Gray
Fiberglass	25', 30', 35'	Black *(additional cost)*
Wood	25', 30', 35'	Standard
Metal *(special conditions)**	25', 30', 35'	Gray

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

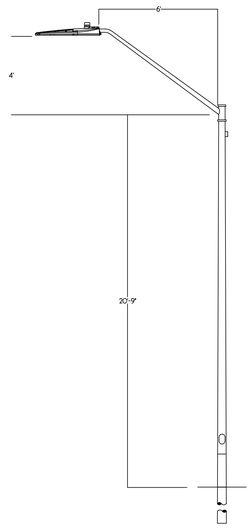
**2 raised foundation available when required.*

©2015 Duke Energy Corporation 151307 7/15

Statistics						
Description		Avg	Max	Min	Max/Min	Avg/Min
parking lot		1.4 fc	3.5 fc	0.5 fc	7.0:1	2.8:1



ELECTRICAL SITE PHOTOMETRIC PLAN
SCALE: 1"=60'-0"



ASSY#
LFIX-RW-LED-150-GRAY-IV-MULTIV-____-P
POLE ASSY#
LPOLE-DB-FG-30FT-GRAY-____-P (GRAY)

FOR SITE APPROVAL ONLY

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

By: Samuel A. MacDonald
Development Services Engineer

Date: _____

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

By: Kevin Lewis
Administrator

Date: _____

TOTAL SITE PLAN CHANGE

HAAS & KENNEDY ENGINEERS, P.A.
ELECTRICAL ENGINEERS
NC FIRM LICENSE NO. C-0675
212 N. McDOWELL – SUITE 100
P.O. BOX 37291
CHARLOTTE, NORTH CAROLINA 28237
(704) 333-6590 FAX (704) 343-0075
DRAWN BY: R. ANNAS
CHECKED BY: H. KENNEDY
PROJECT NO: 21319

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SUITE 300
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704.377.1177
704.377.3060 (fax)

DEVELOPER / OWNER:

GENERAL CONTRACTOR

SEALS :

NORTH CAROLINA PROFESSIONAL SEAL 19065 01/24/22 ENGINEER HUBERT C. KENNEDY, JR.

SPECULATIVE WAREHOUSE 5

KNIGHTDALE - I

550 HINTON OAKS BLVD.
KNIGHTDALE, NC

DRAWING STATUS :
- ○ PRELIMINARY NOT FOR CONSTRUCTION
- ○ ISSUED FOR BIDDING
- ● ISSUED FOR CONSTRUCTION

OWNER / CLIENT SIGNATURE :

DATE :

NUMB	DATE	DESCRIPTION
C02	01/24/22	SITE PLAN CHANGE
C01	08/09/21	ISSUED FOR CONSTRUCTION

FILE NAME :

PROJECT NO.: C21041

SHEET TITLE :
ELECTRICAL SITE PHOTOMETRIC PLAN

SHEET :
ES1

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