

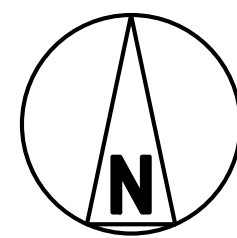
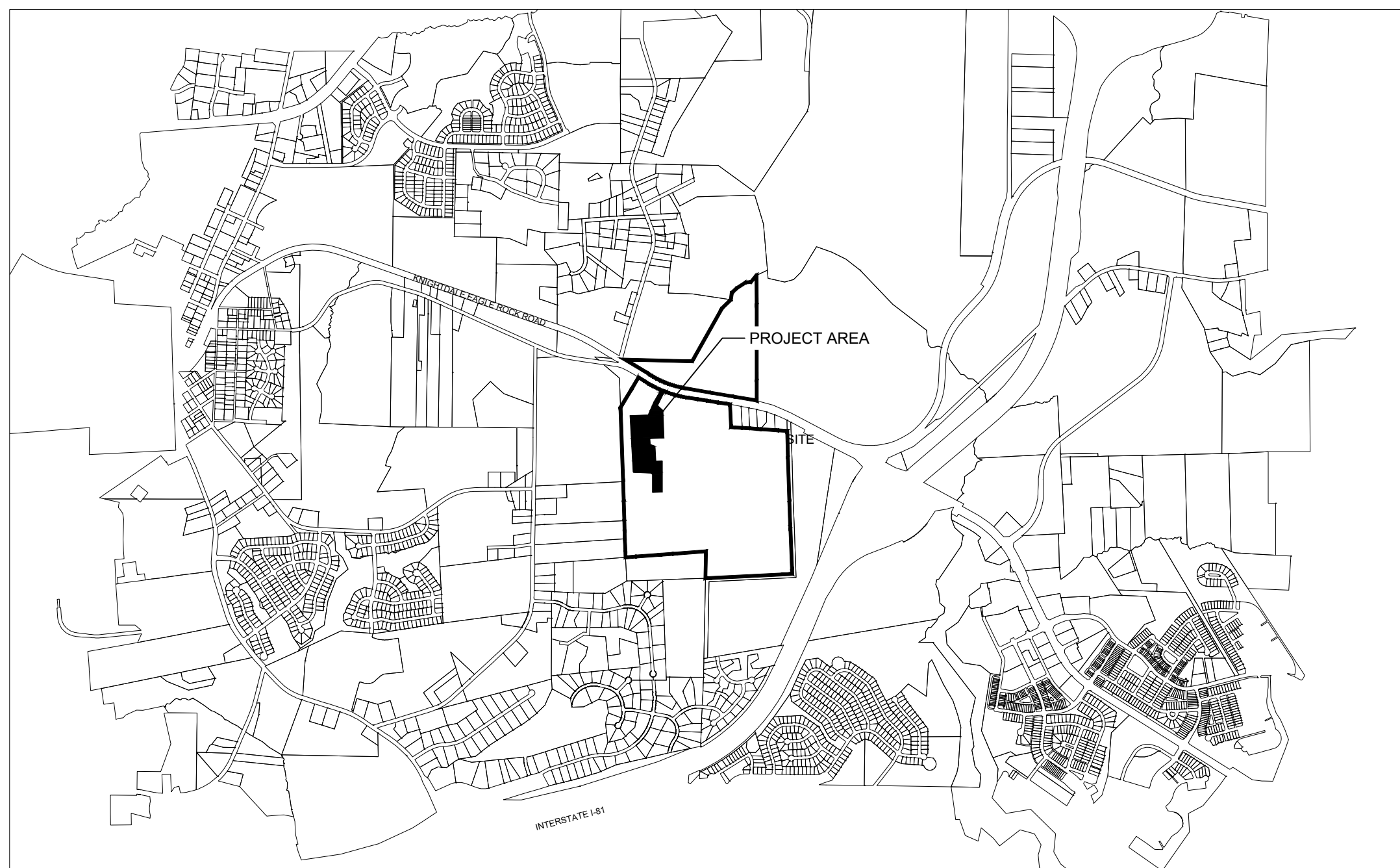
KNIGHTDALE PROPOSED BATTERY ENERGY STORAGE FACILITY

5201 KNIGHTDALE EAGLE ROCK ROAD

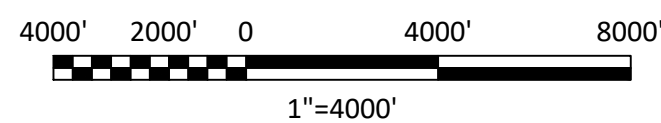
KNIGHTDALE, NC 27545 TOK PROJECT # ZCP-3-23

| SITE DATA TABLE | |
|----------------------------------|---|
| TOTAL SITE AREA | 201.3 ACRES |
| PROJECT LOCATION | 5201 KNIGHTDALE EAGLE ROCK ROAD, MARKS CREEK, WAKE COUNTY, NORTH CAROLINA |
| KNIGHTDALE ZONING | DUKE ENERGY PROGRESS; ZONING: MI |
| EXISTING ZONING | MI |
| EXISTING LAND USE | UTILITIES - CLASS 1 & 2 (SUBSTATION) |
| PROPOSED LAND USES | UTILITIES - CLASS 1 & 2 (BATTERY STORAGE FACILITY) |
| RIVER BASIN | NEUSE RIVER |
| RECEIVING WATER | MARK'S CREEK |
| WATERSHED CLASSIFICATION | C; NSW |
| PROPOSED BATTERY UNITS | 60 |
| INFRASTRUCTURE | TOTAL 201.3 ACRES, BESS FACILITY 11.3 ACRES |
| IMPERVIOUS AREA | 4.7 ACRES |
| DISTURBED AREA | 11.4 ACRES |
| PROPERTY OWNER 1 | DUKE ENERGY PROGRESS INC. |
| SITE PARKING | SUBSTATION YARD OR OUTSIDE THE GATE |
| SETBACK TO WEST PROPERTY LINE | 150'-0" |
| SETBACK TO NORTHERN RIGHT OF WAY | 450'-0" |
| PHASING AND TIMETABLE | |
| TREE CUTTING START DATE | 01-NOV-24 |
| SITE CIVIL WORK START DATE | 02-DEC-24 |
| PLANNED STATE OF COMPLETION | 30-SEP-25 |

| CONTACT LIST | | |
|----------------------------------|---------------------------|---|
| CONTACTS | NAME | ADDRESS |
| OWNER | DUKE ENERGY PROGRESS, LLC | 7804 FAIRVIEW ROAD, SUITE C BOX 214, CHARLOTTE, NC 28226 ATTN: GREG MCELMURRY, PHONE: 704-264-9879 |
| ELECTRICAL ENGINEER (SUBSTATION) | ETHAN BROWN | 175 REGENCY WOODS PLACE, SUITE 300, CARY, NC 24515-0000 |
| ELECTRICAL ENGINEER (BESS) | OLUFEMI OYEBANJO | 920 MEMORIAL CITY WAY, SUITE 600, HOUSTON, TX 77024 |
| CIVIL ENGINEER | HANNAH ULRICH | 11401 LAMAR AVENUE, OVERLAND PARK, KS 66211 |



SITE VICINITY MAP



| TOWN OF KNIGHTDALE CONSTRUCTION SHEET LIST | | |
|--|---|--|
| DRAWING NUMBER: | DRAWING NAME: | DRAWING SET: |
| KND01-CV-C-SI-CS-01 | COVER SHEET | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-SI-PL-02 | ENVIRONMENTAL SURVEY | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-SI-PL-01 | SITE PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-AD-A-YD.00.PL-02 | LANDSCAPE PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-LT-E-PL-01 | BESS ELECTRICAL LIGHTING PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-LT-E-PL-02 | ELECTRICAL LIGHTING STUDY OVERALL BESS SITE | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-LT-E-SD-01 | ELECTRICAL LIGHTING DETAILS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND00-LT-E-SY.00.PL-01 | ELECTRICAL LIGHTING PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND00-LT-E-SY.00.SD-01 | ELECTRICAL LIGHTING DETAILS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-FE-PL-01 | SURFACING AND FENCING PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-FE-SD-01 | FENCING DETAILS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-GR-SD-01 | SURFACING DETAILS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-GR-SD-02 | GRADING DETAILS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-GR-SD-04 | GRADING DETAILS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-AD-A-YD.00.PL-01 | ARCHITECTURAL PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-AD-A-YD.00.SD-01 | ARCHITECTURAL ELEVATION AND SECTIONS | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-AD-A-YD.00.SD-02 | DIGITAL MATERIALS BOARD | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-VEN-LG-E-SD-01 | BESS CONTAINER ARCHITECTURAL PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-VEN-LG-E-SD-02 | MVT SKID ARCHITECTURAL PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-VEN-LG-AE.00.SD-03 | SITE CONTROL CENTER ARCHITECTURAL PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND00-GA-M-SY.00.EV-01 | SUBSTATION CONTROL ENCLOSURE ARCHITECTURAL PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-UG-E-PL-01 | ELECTRICAL UNDERGROUND CONDUIT BESS OVERALL | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-GR-PL-01 | STORMWATER MANAGEMENT PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-GR-PL-02 | STORMWATER MANAGEMENT PLAN | TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS |
| KND01-CV-C-SI-CS-01 | COVER SHEET | NCDEQ APPROVED |
| KND01-CV-C-SI-PL-02 | ENVIRONMENTAL SURVEY | NCDEQ APPROVED |
| KND01-CV-C-SI-PL-01 | SITE PLAN | NCDEQ APPROVED |
| KND01-CV-C-GR-PL-01 | GRADING & DRAINAGE PLAN | NCDEQ APPROVED |
| KND01-CV-C-GR-PL-02 | GRADING & DRAINAGE PLAN | NCDEQ APPROVED |
| KND01-CV-C-EC-PL-01 | EROSION & SEDIMENT CONTROL PLAN | NCDEQ APPROVED |
| KND01-CV-C-EC-PL-02 | EROSION & SEDIMENT CONTROL PLAN | NCDEQ APPROVED |
| KND01-CV-C-EC-SD-01 | EROSION & SEDIMENT CONTROL DETAILS | NCDEQ APPROVED |
| KND01-CV-C-EC-SD-02 | EROSION & SEDIMENT CONTROL DETAILS | NCDEQ APPROVED |
| KND01-CV-C-EC-SD-03 | EROSION & SEDIMENT CONTROL NOTES | NCDEQ APPROVED |
| KND01-CV-C-EC-SD-04 | EROSION & SEDIMENT CONTROL NOTES | NCDEQ APPROVED |
| KND01-CV-C-FE-PL-01 | FENCING PLAN | NCDEQ APPROVED |

NOTE: DRAWINGS DESIGNATED "NCDEQ APPROVED" ARE ISSUED FOR REFERENCE ONLY TO SHOW THE APPROVED DESIGN OF EROSION AND SEDIMENT CONTROL MEASURES. TOWN OF KNIGHTDALE CONSTRUCTION DRAWINGS INCLUDE MORE RECENT REVISIONS AND CONTROL FOR CONSTRUCTION OF ALL PERMANENT FACILITIES WHILE MAINTAINING COMPLIANCE WITH NCDEQ APPROVAL OF TEMPORARY EROSION CONTROL MEASURES.

TOWN CERTIFICATION

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

BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

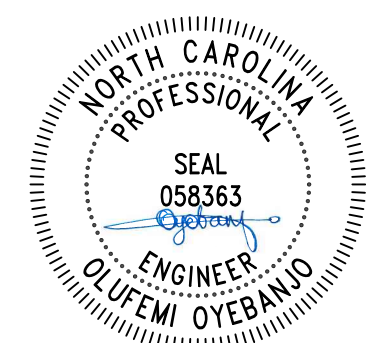
THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

SUPPLEMENTAL REGULATIONS 5.10.H - GRID SCALE BATTERY STORAGE FACILITIES (UNIFIED DEVELOPMENT ORDINANCE)

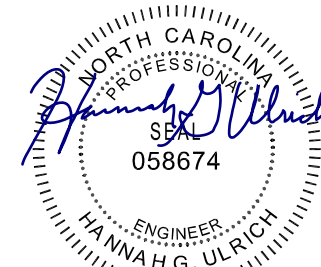
- NO GRID-SCALE BATTERY STORAGE FACILITY SHALL BE LOCATED WITHIN A ONE HUNDRED (100) FOOT RADIUS OF THE FOOTPRINT OF ANY PRE-EXISTING ADJACENT RESIDENTIAL DWELLING.
- GRID-SCALE BATTERY STORAGE FACILITIES SHALL ONLY BE PERMITTED WHEN CO-LOCATED ON A SITE WITH A SUBSTATION FACILITY.
- A TYPE D BUFFER YARD SHALL BE REQUIRED ON ALL SIDES OF A GRID-SCALE BATTERY STORAGE FACILITY ADJACENT TO A RESIDENTIAL ZONING DISTRICT. ALL OTHER REQUIRED BUFFER YARDS SHALL BE CONSISTENT WITH SECTION 7.4 (1)(1).
- ALL SIDES OF A GRID-SCALE BATTERY STORAGE FACILITY SHALL BE SCREENED FROM OFF-SITE VIEW BY USE OF A FENCE OR MASONRY WALL. THE MATERIALS OF THE FENCE OR MASONRY WALL SHALL BE CONSISTENT WITH THOSE LISTED IN SECTION 7.6 (C). THE HEIGHT OF ANY FENCE OR MASONRY WALL SHALL BE CONSISTENT WITH THE HEIGHT OF THE ENERGY STORAGE CONTAINER. THE MAXIMUM HEIGHT OF SUCH FENCE OR MASONRY WALL SHALL NOT EXCEED 8 FEET IN HEIGHT REGARDLESS OF THE HEIGHT OF THE ENERGY STORAGE CONTAINER.
- THE GRID-SCALE BATTERY STORAGE FACILITY SHALL HAVE AT LEAST ONE ENTRANCE OF SUFFICIENT DESIGN TO ALLOW FOR THE PROVISION OF EMERGENCY SERVICES, AS APPROVED BY THE KNIGHTDALE FIRE DEPARTMENT.
- PRIOR TO CONSTRUCTION DRAWING APPROVAL, A THIRD-PARTY NOISE ANALYSIS SHALL BE SUBMITTED ESTABLISHING THAT THE GRID-SCALE BATTERY STORAGE FACILITY AS DESIGNED WILL NOT EXCEED NOISE LEVEL LIMITS AT THE PROPERTY LINE(S) SET FORTH IN THE APPLICABLE NOISE ORDINANCE.
- THE NOISE LEVEL LIMITS APPLICABLE TO THE GRID-SCALE BATTERY STORAGE FACILITY SHALL BE DETERMINED BY THE LOCATION OF THE FACILITY. IF THE FACILITY IS LOCATED IN TOWN LIMITS, THE NOISE LEVEL LIMITS SET FORTH IN THE TOWN'S CODE OF ORDINANCES (KNIGHTDALE NOISE ORDINANCE) SHALL APPLY. IF THE FACILITY IS LOCATED OUTSIDE OF TOWN LIMITS BUT WITHIN THE TOWN'S EXTRA-TERRITORIAL JURISDICTION, THE NOISE LEVEL LIMITS SET FORTH IN WAKE COUNTY'S CODE OF ORDINANCES SHALL APPLY.
- AN ADDITIONAL NOISE ANALYSIS SHALL BE REQUIRED IF THE FACILITY EXCEEDS THE APPLICABLE NOISE LEVEL LIMITS. IF WARRANTED BY THE NOISE ANALYSIS, NOISE DAMPENING MEASURE SHALL BE INSTALLED IN ANY AREA THAT PRODUCES EXCESSIVE NOISE.

TOWN APPROVED STANDARDS SHALL CONTROL

IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN THESE CONSTRUCTION DRAWING AND THE TOWN OF KNIGHTDALE'S APPROVED STANDARDS FOR THIS PROJECT, THE APPROVED STANDARDS SHALL CONTROL. TOWN OF KNIGHTDALE APPROVED STANDARDS SHALL MEAN ALL DEVELOPMENT DOCUMENTS NECESSARY FOR APPROVAL FOR THE PROPERTY INCLUDING, BUT NOT LIMITED TO, ANY SPECIAL USE PERMIT, SUBDIVISION PLAN, SITE PLAN, SUBDIVISION PLAT(S), PHASING SCHEDULE, DEVELOPMENT AGREEMENT, UTILITY ALLOCATION AGREEMENT, ANNEXATION AGREEMENT, THE TOWN OF KNIGHTDALE STANDARD SPECIFICATION AND DETAILS MANUAL AND APPLICABLE PROVISIONS OF THE NORTH CAROLINA STATE BUILDING CODE.



PROFESSIONAL DESIGN ENGINEER CERTIFICATION: BESS ELECTRICAL
THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE. I, OLUFEMI OYEBANJO, 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 TOWN STANDARDS HAVE BEEN PREVIOUSLY APPROVED BY THE TOWN OF KNIGHTDALE AND SAID EXCEPTIONS ARE SHOWN ON SHEET(S) _____ OF THESE DRAWINGS.



PROFESSIONAL DESIGN ENGINEER CERTIFICATION: CIVIL
THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE. I, HANNAH ULRICH, 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 TOWN STANDARDS HAVE BEEN PREVIOUSLY APPROVED BY THE TOWN OF KNIGHTDALE AND SAID EXCEPTIONS ARE SHOWN ON SHEET(S) _____ OF THESE DRAWINGS.



PROFESSIONAL DESIGN ENGINEER CERTIFICATION: SUBSTATION ELECTRICAL
THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE. I, ETHAN BROWN, 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 TOWN STANDARDS HAVE BEEN PREVIOUSLY APPROVED BY THE TOWN OF KNIGHTDALE AND SAID EXCEPTIONS ARE SHOWN ON SHEET(S) _____ OF THESE DRAWINGS.

| | | | | | | | |
|---|-------------|-----------------------|-----------------|----|-------------|-------------------------------|---------------------|
| J | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC/MJM/HGU/WL | E | 27/SEP/2024 | ISSUED FOR PERMITTING | CLC/MJM/HGU/SLD |
| I | 20/DEC/2024 | ISSUED FOR PERMITTING | CLC/MJM/HGU/WL | D | 24/SEP/2024 | ISSUED FOR PERMITTING | CLC/MJM/HGU/SLD |
| H | 21/NOV/2024 | 90% SUBMITTAL | CLC/MJM/HGU/WL | C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC/MJM/HGU/SLD |
| G | 18/NOV/2024 | ISSUED FOR PERMITTING | CLC/MJM/HGU/WL | B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC/MJM/HGU/SLD |
| F | 25/OCT/2024 | ISSUED FOR PERMITTING | CLC/MJM/HGU/SLD | NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN/DES/CHK/PDE/APP |

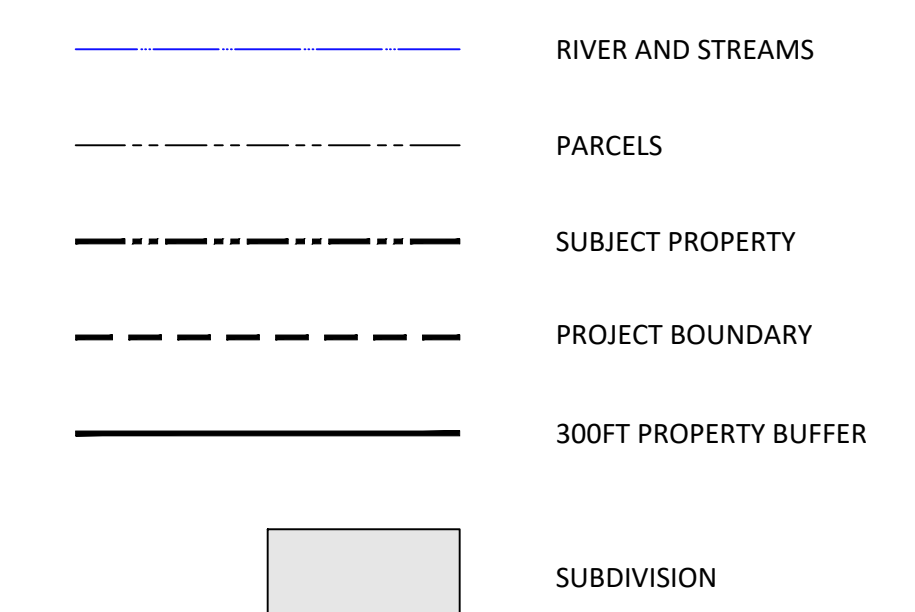
| | | | |
|--|-----|--|-------------|
| BLACK & VEATCH Building a world of difference® | | DUKE ENERGY KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | |
| DESIGNER | MJM | DRAWN | CLC |
| CHECKED | HGU | DATE | 13/JAN/2025 |

| | | | | | | | |
|--|--|---------|--------|----------------|---------------------|-----|---|
| DUKE ENERGY KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | | PROJECT | 419596 | DRAWING NUMBER | KND01-CV-C-SI-CS-01 | REV | J |
| COVER SHEET 5201 KNIGHTDALE EAGLE ROCK ROAD KNIGHTDALE, NC 27545 | | CODE | | AREA | | | |

NOTES

1. THE INFORMATION ON THIS SHEET WAS PREPARED BY ERM NC, INCL. ON 05/09/2023 AND MODIFIED BY BLACK & VEATCH.
2. ENTIRE SITE AND WORK AREA IS WITHIN THE EXTRA-TERRITORIAL JURISDICTION OF THE TOWN OF KNIGHTDALE, WAKE COUNTY.
3. LANDSCAPED AREAS REQUIRED BY CHAPTER 7 OF THE UDO SHALL NOT CONTAIN ANY DEVELOPMENT, IMPERVIOUS SURFACES, OR SITE FEATURES THAT DO NOT FUNCTION TO MEET THE APPLICABLE STANDARDS FOR THAT AREA OR THAT REQUIRE REMOVAL OF EXISTING SIGNIFICANT VEGETATION [UDO, SEC. 7.4.E.1].
4. NO GRADING, DEVELOPMENT, OR LAND-DISTURBING ACTIVITIES SHALL OCCUR WITHIN A BUFFER YARD IF FOREST CANOPY, SPECIMEN TREES, OR SIGNIFICANT VEGETATION EXISTS WITHIN THESE AREAS, UNLESS APPROVED BY THE LAND USE ADMINISTRATOR. IF GRADING WITHIN A BUFFER YARD IS PROPOSED, SLOPES OF 1:3 OR LESS ARE ENCOURAGED TO ENSURE THE PROPER TRANSITION OF GRADES TO THE ADJACENT PROPERTY AND TO FACILITATE LANDSCAPING AND MAINTENANCE [UDO, SEC. 7.4.E.2].
5. ALL AREAS WITHIN REQUIRED BUFFER YARDS, STREAM BUFFERS, SLOPE AREAS GREATER THAN 25%, AND WETLANDS ARE TREE SAVE AREAS AND ALL VEGETATION AND SOIL IS TO REMAIN UNDISTURBED [UDO, SEC. 7.4.H.1].
6. ALL TREES GREATER THAN 12" DBH WITHIN FRONT SETBACK AREAS, STREET TREE PLANTING STRIP, AND SLOPE AREAS OF 15-25% ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. REQUIRED STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].
7. ALL TREES GREATER THAN 24" DBH ON-SITE ARE TO REMAIN UNDISTURBED OR REPLACEMENT TREES ARE REQUIRED AT A RATE OF 1 TREE PER 12" DBH, AND SHOULD BE INCORPORATED INTO OPEN SPACE AMENITIES/PUBLIC GATHERING AREAS/PEDESTRIAN PLAZA WHEREVER POSSIBLE. REQUIRED STREET TREES, PARKING LOT LANDSCAPING, AND BUFFER YARD PLANTINGS ARE NOT TO BE COUNTED TOWARDS REPLACEMENT REQUIREMENTS [UDO, SEC. 7.4.H.1].

LEGEND

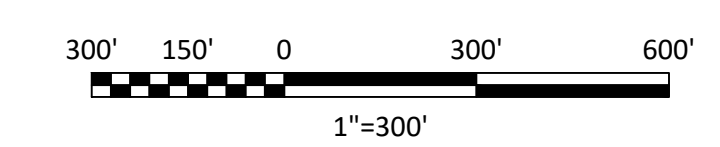
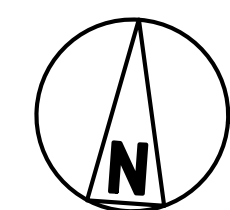


TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEW BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
TOWN ENGINEER

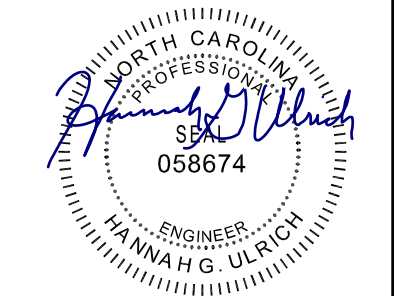
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: _____ DATE: _____
LAND USE ADMINISTRATOR



ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



Civil 3D 2022 Imperial
ANSI D 3622
8/24/2024 4:40:07 PM
Full Size 1=1"

| J | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC MJM/HGU/WL | E | 27/SEP/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLLD |
|---|-------------|-----------------------|------------------|----|-------------|-------------------------------|---------------------|
| I | 20/DEC/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/WL | D | 27/SEP/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLLD |
| H | 21/NOV/2024 | 90% SUBMITTAL | CLC MJM/HGU/WL | C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLLD |
| G | 18/NOV/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/WL | B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC MJM/HGU/SLLD |
| F | 25/OCT/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLLD | NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN/DES/CHK/PDE/APP |

DESIGNER: MJM DRAWN: CLC
CHECKED: HGU DATE: 13/JAN/2025

DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM
ENVIRONMENTAL SURVEY
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-SI-PL-02 | | J |
| CODE | | |
| AREA | | |

NOTES

- TREE CLEARING SHALL BE LIMITED TO THE LIMITS OF DISTURBANCE AS SHOWN ON THIS PLAN.
- UPON THE TOWN OF KNIGHTDALE REQUEST, DUKE SHALL MEET TOWN INSPECTORS AT THE SITE AND ACCOMPANY THE INSPECTORS FOR TOWN INSPECTION OF THE SCMs.

HORIZONTAL DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT
 *STATE PLANE COORDINATES WERE ESTABLISHED BASED IN NGS MONUMENTS "ROSE" AND "TOMB".

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988

BENCHMARK: PROJECT LOCALIZATION POINT 'NAIL'
 N: 740,484.141'
 E: 2,163,003.135'
 ELV: 291.02'

LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- HIGH POWERED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- RIP RAP

TOWN CERTIFICATION

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

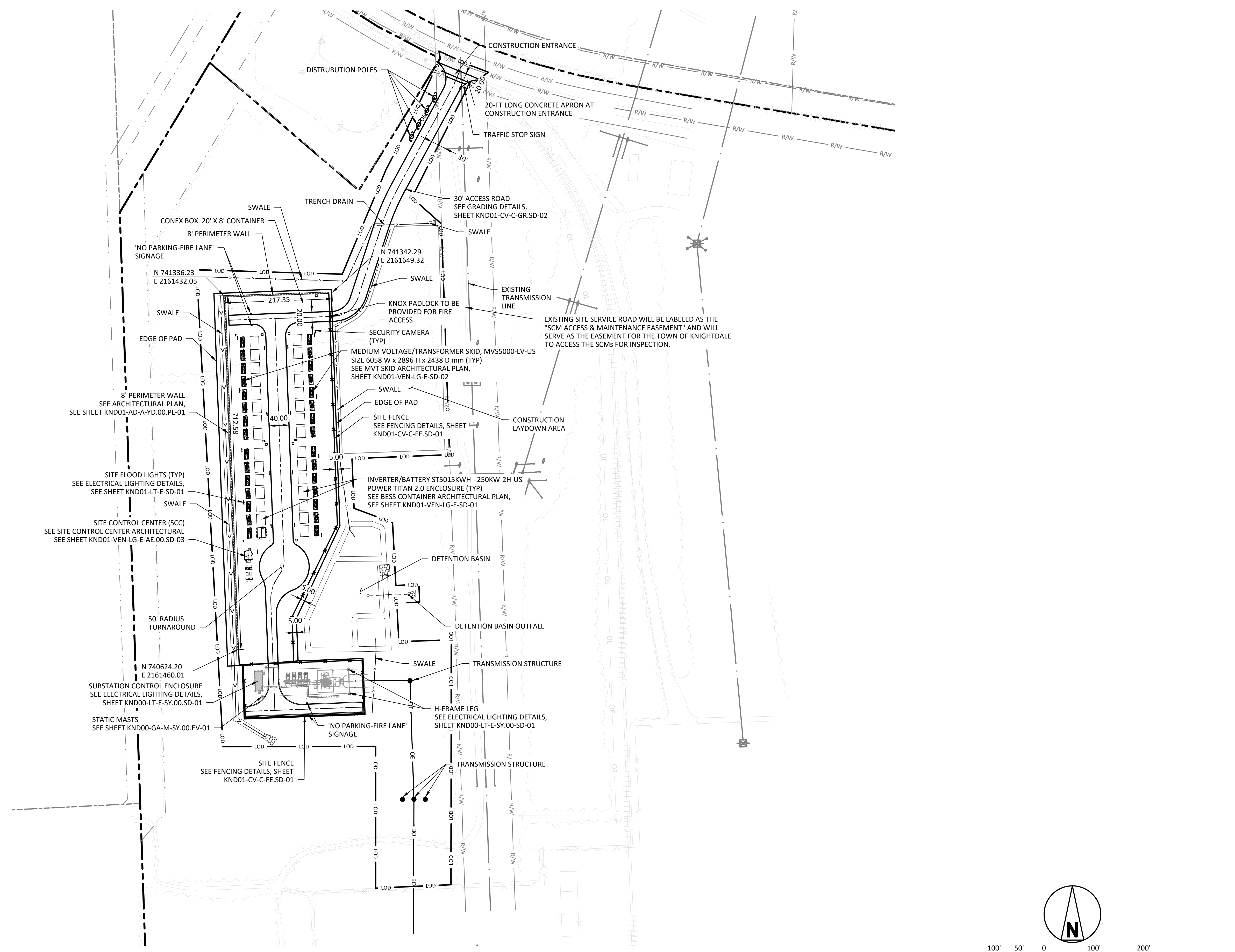
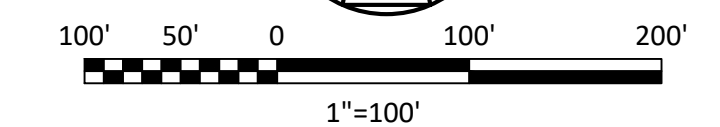
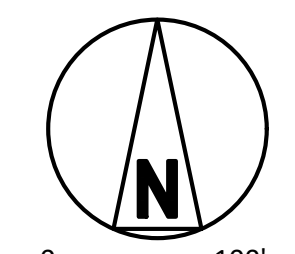
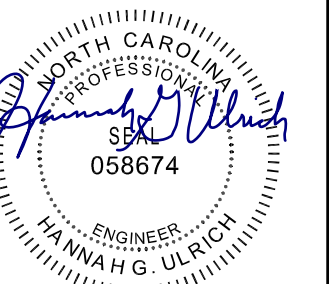
BY: _____ DATE: _____
 TOWN ENGINEER

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

BY: _____ DATE: _____
 LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



| NO | DATE | REVISIONS AND RECORD OF ISSUE |
|----|-------------|-------------------------------|
| J | 28/JAN/2025 | ISSUED FOR PERMITTING |
| I | 13/JAN/2025 | ISSUED FOR PERMITTING |
| H | 20/DEC/2024 | ISSUED FOR PERMITTING |
| G | 18/NOV/2024 | ISSUED FOR PERMITTING |
| F | 25/OCT/2024 | ISSUED FOR PERMITTING |
| E | 27/SEP/2024 | ISSUED FOR PERMITTING |
| D | 24/SEP/2024 | ISSUED FOR PERMITTING |
| C | 12/SEP/2024 | ISSUED FOR PERMITTING |
| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW |
| NO | DATE | REVISIONS AND RECORD OF ISSUE |

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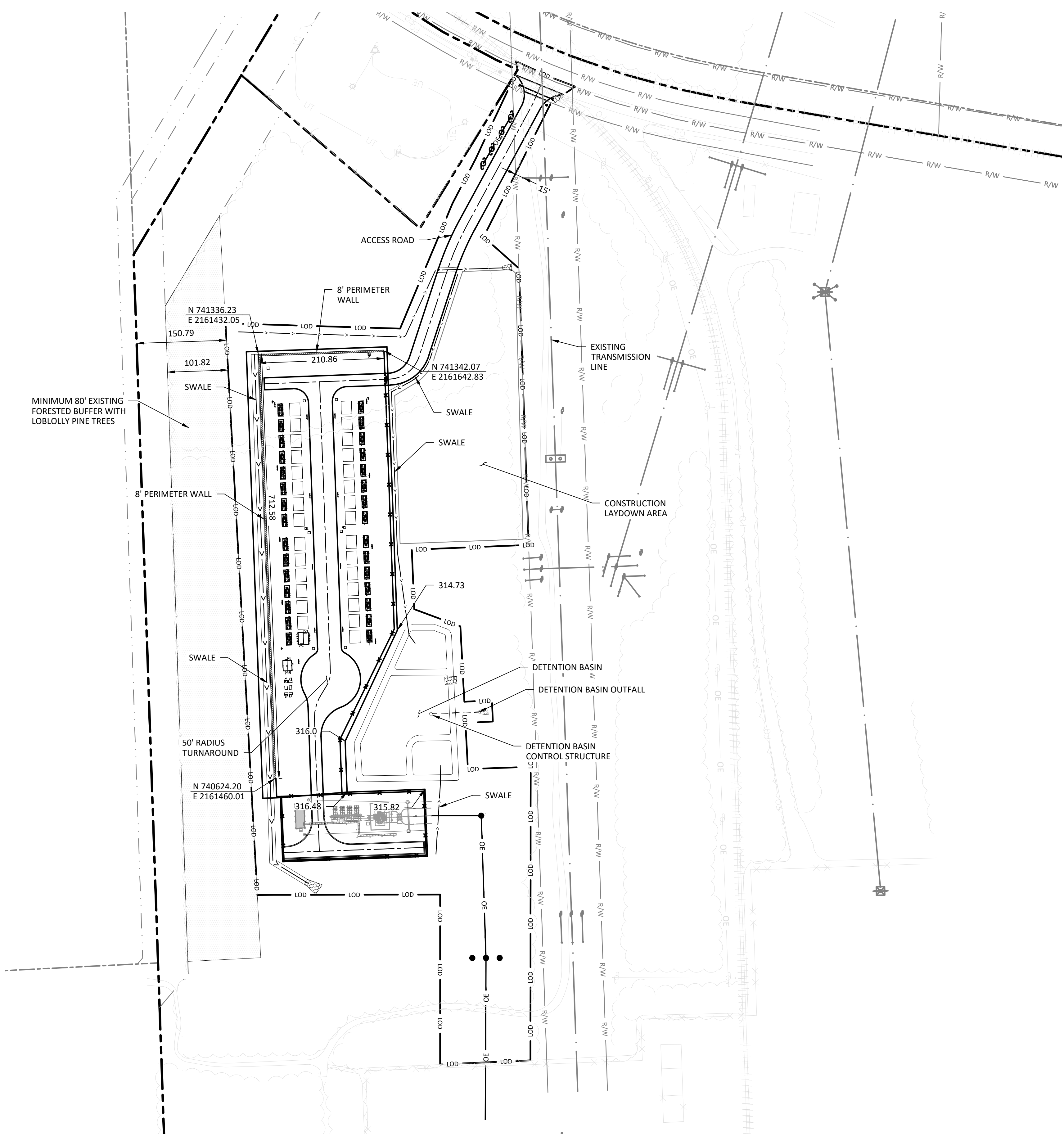
DESIGNER: MJM DRAWN: CLC
 CHECKED: HGU DATE: 28/JAN/25

DUKE ENERGY
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

SITE PLAN
 5201 KNIGHTDALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-SI.PL-01 | J | |
| CODE | AREA | |

Civil 3D 2022 Imperial
 ANS I D 344-2
 9/15/2024 7:29 AM



LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- HIGH POWERED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- RIP RAP
- BUFFER AREA

NOTE:
THE LAND USE ADMINISTRATOR RESERVES THE RIGHT TO REQUIRE ADDITIONAL VEGETATION TO BE PLANTED PRIOR TO CERTIFICATE OF OCCUPANCY TO MEET THE PERFORMANCE STANDARDS OF THE TYPE D BUFFER.

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

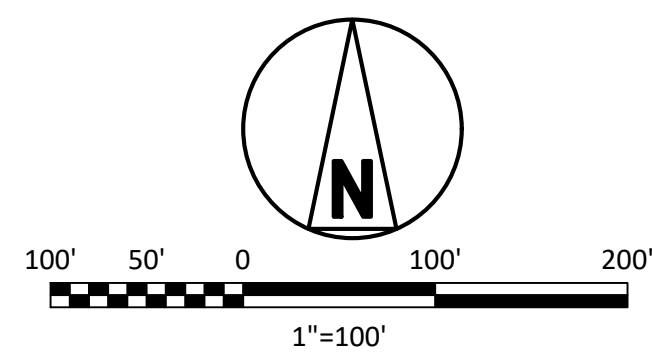
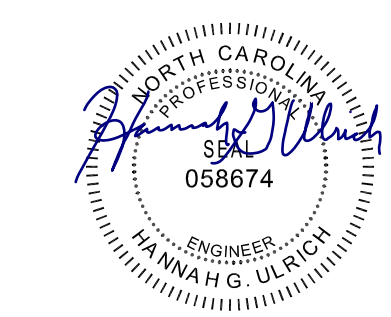
BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



Civil 3D 2022 Imperial
ANSI D 34x22
9/15/2024 7:29 AM

| | | | | | | | |
|---|-------------|-----------------------|-----------------|----|-------------|-------------------------------|---------------------|
| J | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC MJM/HGU WL | E | 27/SEP/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLD |
| I | 20/DEC/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU WL | D | 25/SEP/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU WL BLC |
| H | 21/NOV/2024 | 90% SUBMITTAL | CLC MJM/HGU WL | C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLD |
| G | 18/NOV/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU WL | B | 30/AUG/2024 | ISSUED FOR 60% REVIEW | CLC MJM/HGU/SLD |
| F | 25/OCT/2024 | ISSUED FOR PERMITTING | CLC MJM/HGU/SLD | NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN/DES/CHK/PDE/APP |

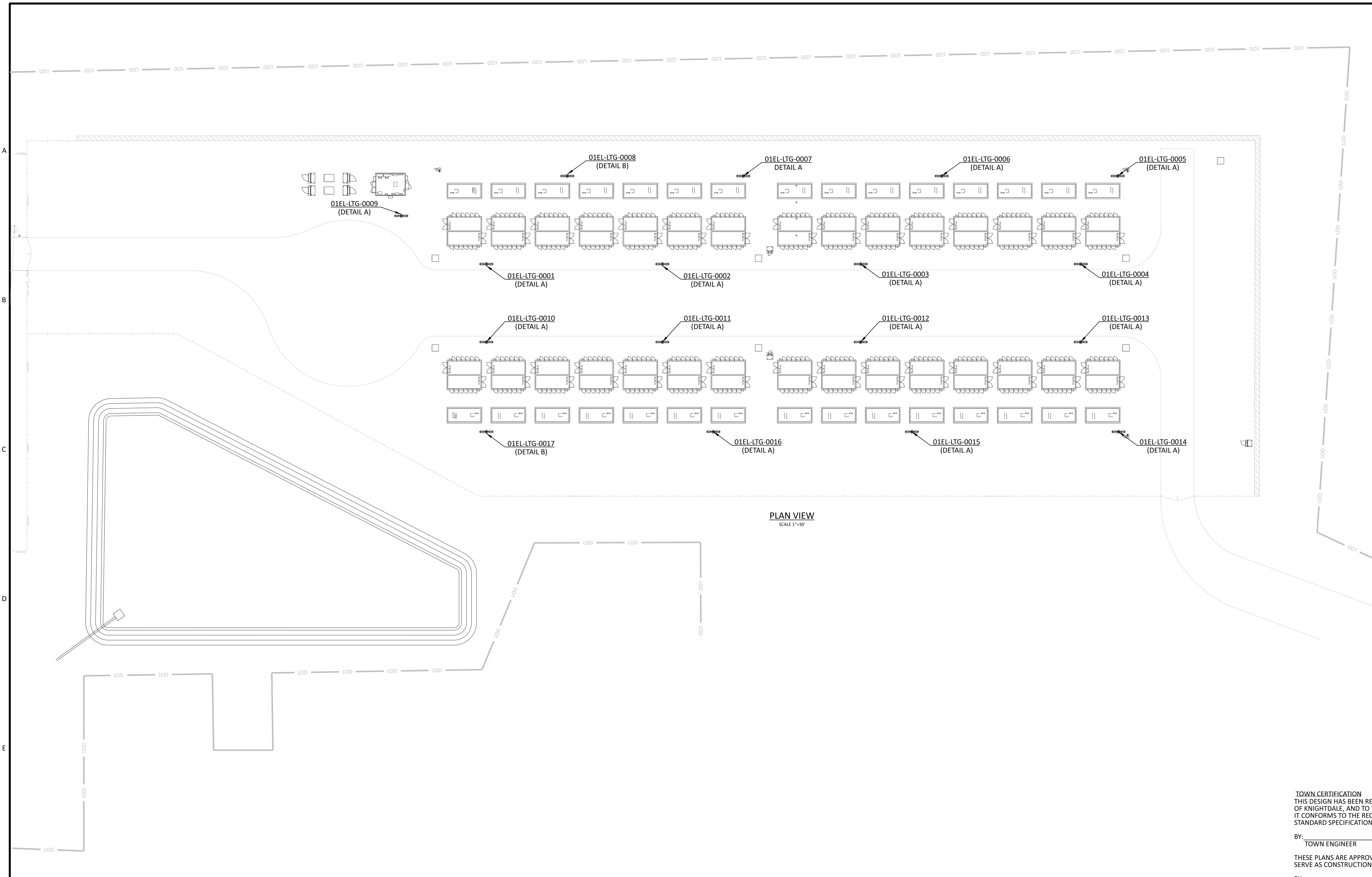
BLACK & VEATCH
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DESIGNER MJM DRAWN CLC
CHECKED HGU DATE 13/JAN/25

DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

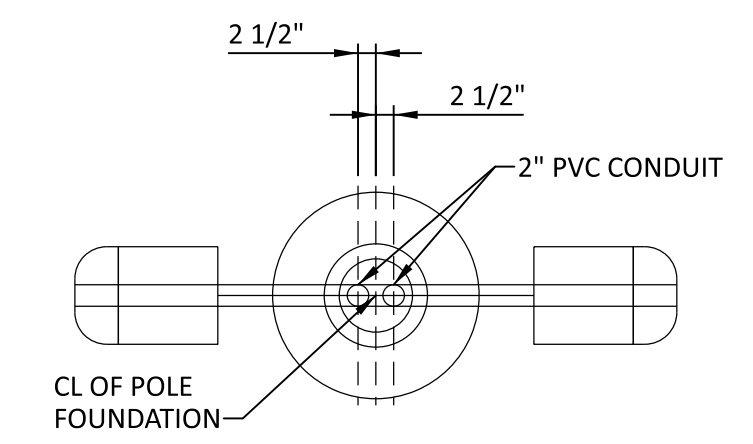
LANDSCAPE PLAN
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| | | |
|--|-------------------------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| DUKE ENERGY KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | 419596 KND01-AD-A-YD.00.PL-02 | J |
| CODE | AREA | |

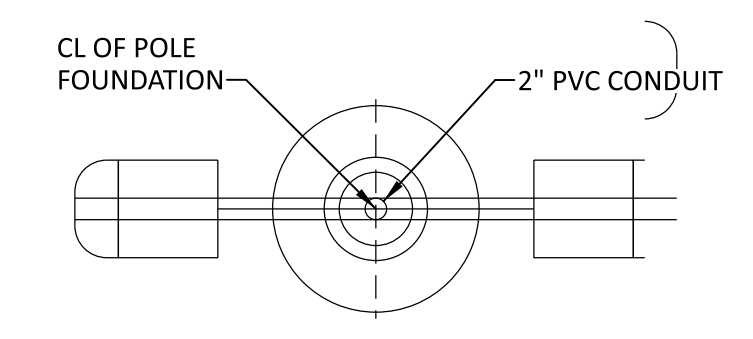


PLAN VIEW
SCALE 1"=30'

- NOTES:
- SEE DWG KND01-CV-C-SI-PL-01 FOR CIVIL SITE PLAN.
 - SEE DWG KND01-CV-C-FD-03 FOR CAMERA & LIGHT POLE FOUNDATION PLAN AND DETAILS.
 - SEE DWG KND01-CV-C-FD-PL-01 AND KND01-CV-C-FD-PL-02 FOR BESS AND MVT STRUCTURAL FOUNDATION LAYOUT.
 - SEE DWG KND01-CV-C-FD-PL-01 FOR OVERALL BESS FOUNDATION ARRANGEMENT OVERALL.
 - SEE DWG KND01-EN-E-EG-01 FOR ELECTRICAL GRAPHIC SYMBOLS AND GENERAL NOTES.
 - SEE SERIES DWG KND01-LG-E-PL-01 FOR BESS ELECTRICAL ARRANGEMENT.
 - SEE SERIES DWG KND01-UG-PL-01 THRU 09 FOR UNDERGROUND CONDUIT.
 - SEE SERIES DWG KND01-GD-E-PL-01 THRU 07 FOR SITE GROUNDING.
 - SEE SERIES DWG KND01-EL-E-CA-01 FOR CIRCUIT LIST AND KND01-EL-E-CA-02 FOR RACEWAY LIST AND DESCRIPTION.



DETAIL A - TYPICAL LIGHT POLE TWO CONDUITS STUB UP
NOT TO SCALE



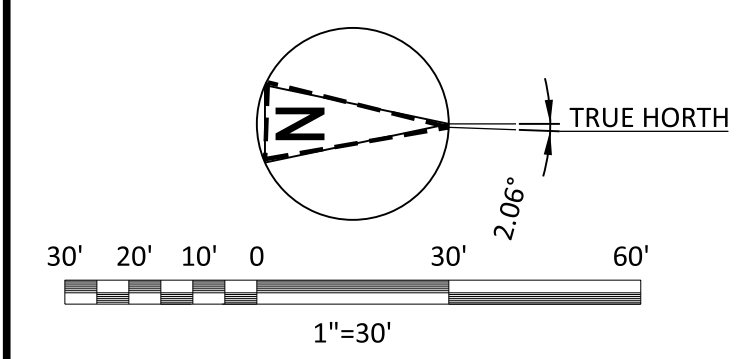
DETAIL B - TYPICAL LIGHT POLE SINGLE CONDUITS STUB UP
NOT TO SCALE

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

BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR



- REFERENCE DRAWINGS:
- KND00-LT-E-SY.00.PL-01 34.5KV - 230KV SUBSTATION LIGHTING PLAN
 - KND01-LT-E-PL-02 BESS ELECTRICAL LIGHTING SURVEY
 - KND01-LT-E-SD-01 BESS ELECTRICAL LIGHTING DETAILS



ISSUED FOR PERMITTING
THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

B&V PROJECT NUMBER: 419596

A1122837
 ANS D 34622
 12/18/2024 03:40 PM
 MicroStation v23.00.01.44
 Full Size 1 = 1

| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
|----|-----------|-------------------------------|-----|-----|-----|-----|-----|
| D | 25/OCT/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| C | 13/SEP/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| B | 03/SEP/24 | ISSUED FOR CLIENT 60% REVIEW | BCA | BCA | OOO | OOO | BC |
| A | 23/AUG/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| G | 18/DEC/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| F | 22/NOV/24 | ISSUED FOR 90% REVIEW | BCA | BCA | OOO | OOO | BC |
| E | 15/NOV/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |

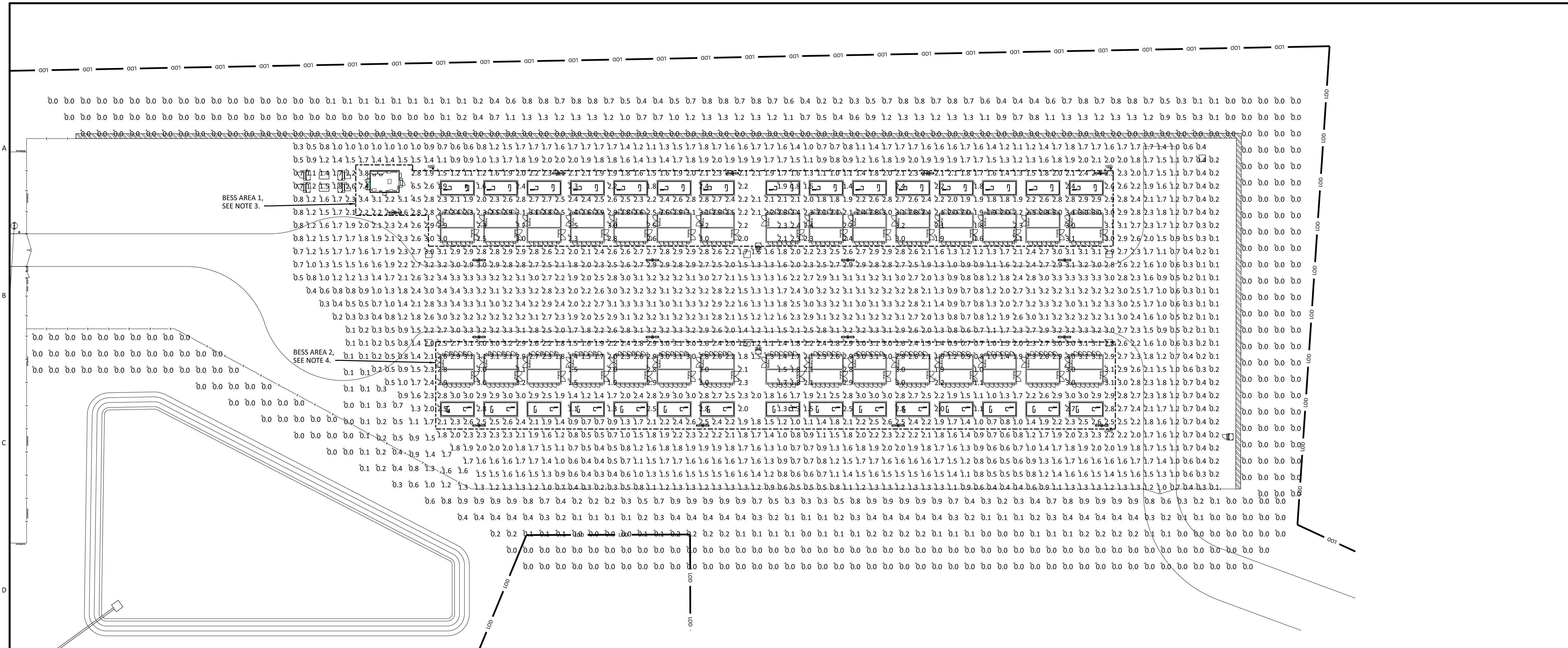
BLACK & VEATCH
11401 LAMAR AVENUE
OVERLAND PARK, KANSAS 66211

DESIGNER: BCA
DRAWN: BCA
CHECKED: OOO
DATE: 03/SEP/24

DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

BESS ELECTRICAL LIGHTING PLAN
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| | | |
|------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| KND01-LT-E-PL-01 | | G |
| CODE | AREA | |



PHOTOMETRIC CALCULATION DISCLAIMER:
LIGHTING CALCULATIONS HAVE BEEN PERFORMED IN ACCORDANCE WITH IES RECOMMENDED PROCEDURES USING AGI32-V20.1. DIFFERENCES BETWEEN CALCULATED VALUES AND POST INSTALLATION VALUES MAY OCCUR DUE TO VARIATIONS WITH FINAL INSTALLATION, PHYSICAL AND/OR ENVIRONMENTAL FACTORS.

LIGHT FIXTURE LIST NOTES:

- 1. POLE SHALL BE ROUND TAPERED ALUMINUM 25' TO BE MOUNTED ON SITE BUILT CONC. FOUNDATIONS. NAFCO# VA-RTAA-25-7040-F-AB-FP-BK-PD-NECHH-FST OR ENGINEER APPROVED SIMILAR. POLES REQUIRE A FESTOON BOX LOCATED ON THE SAME SIDE AS THE HAND HOLE, AND 36" ABOVE BASE. PROVIDE GFCl RECEPTACLE AND WATERPROOF IN USE COVER TO FIT HUBBELL #GFRTW20W WITH TAYMAC #HBLSS26WIS COVER OR ENGINEER APPROVED ALTERNATE. SEE STRUCTURAL DRAWING KND01-CV-C-FD-XX FOR POLE BASE DETAIL. WIND LOADING SHALL BE CONFIRMED BY MANUFACTURER BEFORE SHIPPING TO SUPPORT LIGHT FIXTURES IN 125 MPH WITH (2) 55 LB 1.2 SQ FT FIXTURES INSTALLED.
2. PHOTOMETRIC CALCULATION NUMBERS (WHERE SHOWN, ARE IN FOOTCANDLES (FC) SPACED AT 10' X 10'. CALCULATION STATISTICS, WITHIN FENCED AREA: ILLUMINANCE (FC) AVERAGE = 1.91 MAXIMUM = 7.4 MINIMUM = 0.1 AVG/MIN RATIO = 1.91:0.1 MIN/MAX RATIO = 0.01 MAX/AVG RATIO = 3.87 COEFF. OF VARIATION = 0.46
3. CALCULATION STATISTICS, WITHIN BESS AREA 1: ILLUMINANCE (FC) AVERAGE = 2.54 MAXIMUM = 7.4 MINIMUM = 1.4 AVG/MIN RATIO = 2.54:1.4 MIN/MAX RATIO = 0.19 MAX/AVG RATIO = 2.91
4. CALCULATION STATISTICS, WITHIN BESS AREA 2: ILLUMINANCE (FC) AVERAGE = 2.22 MAXIMUM = 3.2 MINIMUM = 0.7 AVG/MIN RATIO = 2.22:0.7 MIN/MAX RATIO = 0.22 MAX/AVG RATIO = 1.44

REFERENCE DRAWINGS:

- KND00-LT-E-SY.00.PL-01 34.5KV - 230KV SUBSTATION LIGHTING PLAN
KND01-LT-E-PL-01 BESS ELECTRICAL LIGHTING PLAN
KND01-LT-E-SD-01 BESS ELECTRICAL LIGHTING DETAILS

Table with 7 columns: SYMBOL, TYPE, FIXTURE DESCRIPTION / PART NUMBER, INPUT WATTS, VOLTAGE, TOTAL LUMENS, TOTAL LLF, MOUNTING, QTY. Includes entries for XTOR2B-Y-BK and LP1 fixtures.

PHOTOMETRIC CALCULATION DISCLAIMER:
LIGHTING CALCULATIONS HAVE BEEN PERFORMED IN ACCORDANCE WITH IES RECOMMENDED PROCEDURES USING AGI32-V20.1. DIFFERENCES BETWEEN CALCULATED VALUES AND POST INSTALLATION VALUES MAY OCCUR DUE TO VARIATIONS WITH FINAL INSTALLATION, PHYSICAL AND/OR ENVIRONMENTAL FACTORS.

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

BY: _____ DATE: _____
TOWN ENGINEER

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

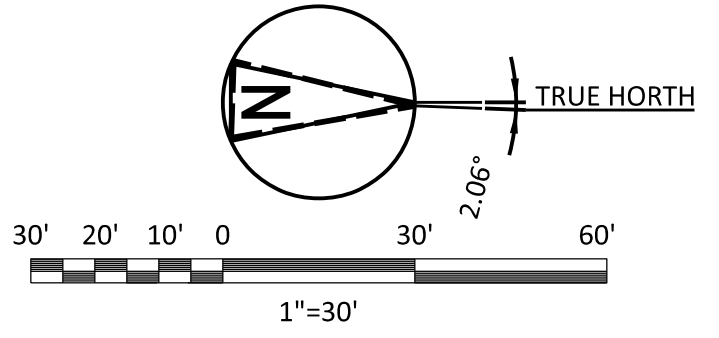
BY: _____ DATE: _____
LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

B&V PROJECT NUMBER: 419596

MicroStation v23.00.01.44
ANSI D 34622
12/19/2024 05:16 PM



Revision table with columns: NO, DATE, REVISIONS AND RECORD OF ISSUE, and a grid for approval signatures (DESIGNER, CHECKED, DRAWN, DATE).

BLACK & VEATCH logo and contact information: 1501 LAMAR AVENUE, OVERLAND PARK, KANSAS 66211

DUKE ENERGY logo and project name: KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

Project information table with columns: PROJECT, DRAWING NUMBER, REV, CODE, AREA.



| | | |
|----------------|---------------------|--|
| Catalog Number | Mongoose Medium LED | |
| Notes | Type | |

MGLEDM Mongoose Medium LED



The Mongoose Medium LED street lighting fixture provides significant energy and maintenance savings vs. HLD luminaires. It offers the ultimate in application flexibility with a uniquely designed advanced optical system and attractive appearance. This combined with multiple lighting distribution mounting options and the ability to tilt the fixture offers unequalled performance in a diverse set of applications ranging from interstates and parking lots.

Mechanical

- Rugged grade A360 diecast aluminum (<1% copper)
- Tool-less access with stainless steel latches
- Terminal block in arm
- Rigorous 5-stage pretreatment polyester topcoat to ensure maximum durability that achieves a scribe creepage rating of 8 after 5,000 hours of salt spray
- Removable "power tray" facilitates maintenance
- Corrosion resistant stainless steel latches ensure secure closure over the long fixture life
- Horizontal mast arms or vertical tenon (VH) and universal mounting to round and square poles (UN) options
- Universal mount mates to all major manufacturer's hole patterns
- All Mountings are 3G vibration rated per ANSI C136.31
- Adjustable fixture tilt from 0-45 degrees provides flexibility to optimize lighting performance

Electrical

- Standard surge protection is 20kV/10kA "Extreme Level" per ANSI C136.2
- LED light engines are rated > 100,000 at 25°C, L70
- Electronic driver has an expected life of > 100,000 hours at 25°C
- Rated for -40°C / (-40°F) minimum ambient
- Programmable electronic driver with > 100 control leads
- Driver voltage options: 120-277V 50/60 Hz and 347 50/60 Hz and 480V 50/60 Hz
- Luminaire ship with a 0-10v dimmable driver. Luminaire is continuous and step dimming capable via AO option or controls installed on P7 photocontrol receptacle option.

Optical

- Performance is comparable to 150-400 watt HPS or 175-1,000 watt MH
- IP65 rated borosilicate glass optics ensure longevity and minimize dirt depreciation
- Modded Silicone optics: Area (Type 5) (AR), Forward Throw (FT), Medium Roadway (MG), Narrow Roadway (NR) and Wide Roadway (WR)
- Borosilicate glass refractor optics: Area (AG), Forward Throw (FG), Medium Roadway (MG), Narrow Roadway (NR) and Wide Roadway (WR)
- 2700K, 3000K, 4000K and 5000K CCT, 70 CRI
- Optional UpLight Skirt (US) when used with refractor ensures zero uplight above 90°
- House side shield (HSS), light trespass shield and option available
- Wire guard kit option available

Controls

- The Acuity designed ANSI 7-pin receptacle is available which supports traditional locking style photocontrols such as the Extreme long-life solid-state locking style photocontrol - PCLL (20-year rated life).
- Optional onboard Adjustable Output module allows the light output and input voltage to be modified to meet site specific requirements, and also can allow a single fixture to be flexibly applied in many different applications.
- The DC Connect option is a factory embedded low voltage dusk to dawn photocontrol that increases longevity vs. line voltage controls and also eliminates the need to separately inventory controls.
- Integral Night CSGR control is also available to provide local or network on/off dim control plus robust outdoor motion detection and response at up to 40' mounting heights.
- The LocalConnect option provides a simple means to collect luminaire attribute data, asset location information and create point-to-point on/off dim commands via secure Bluetooth link using smartphone platforms.
- The GlobalConnect option enabled thru selection of receptacles and controls provides a smart city enabled solution utilizing long range network nodes to enable remote monitoring and control. Additionally, it can be equipped with sensor-ready technology to support 3rd party sensors.
- Cell Connect is an embedded network photocontrol with cellular communication. It provides digital switching, precise dimming, and revenue-grade metrology. Cell Connect leverages 4G/LTE drivers to communicate real time data to Ubiquiti, a cloud-based asset management system.

Certification & Standards

- CSA Certified to US and Canadian standards
- Suitable for operation in an ambient temperature up to 40°C

Government Procurement

- BAA - Buy American(n) Act: Product qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product also qualifies as manufactured in the United States under DOT Buy America regulations.
- BABA - Build America Buy America: Product qualifies as produced in the United States under the definitions of the Build America, Buy America Act.

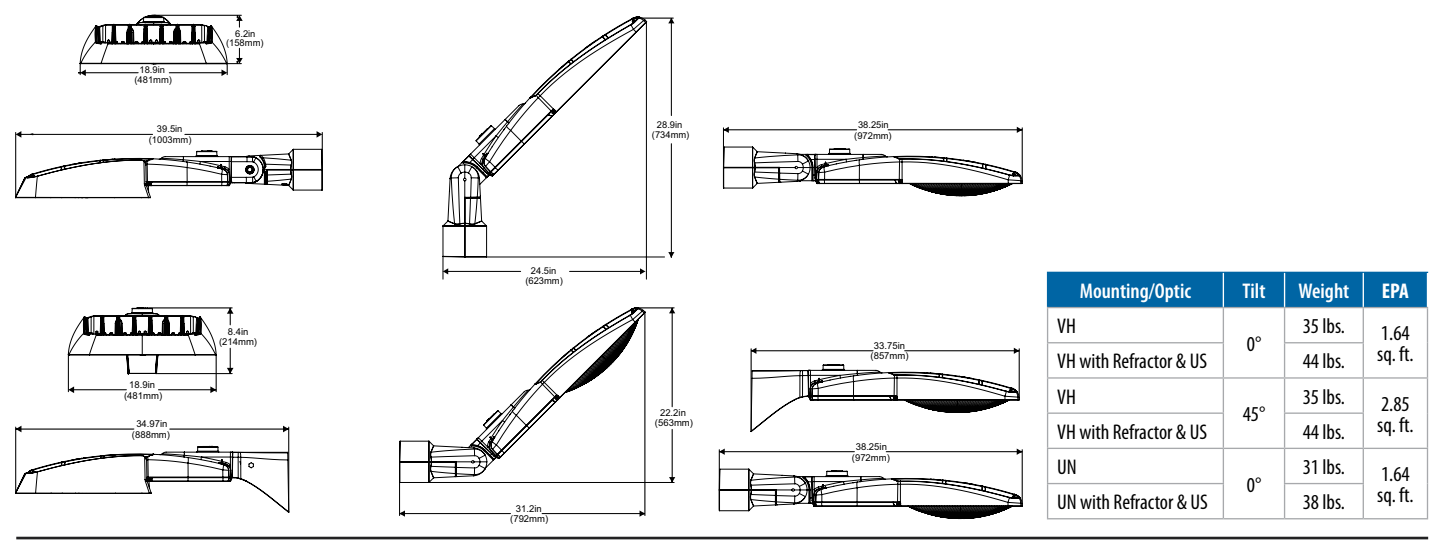
Warranty

5-year limited warranty. This is the only warranty provided and in no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.holophane.com/support/warranty/terms-and-conditions

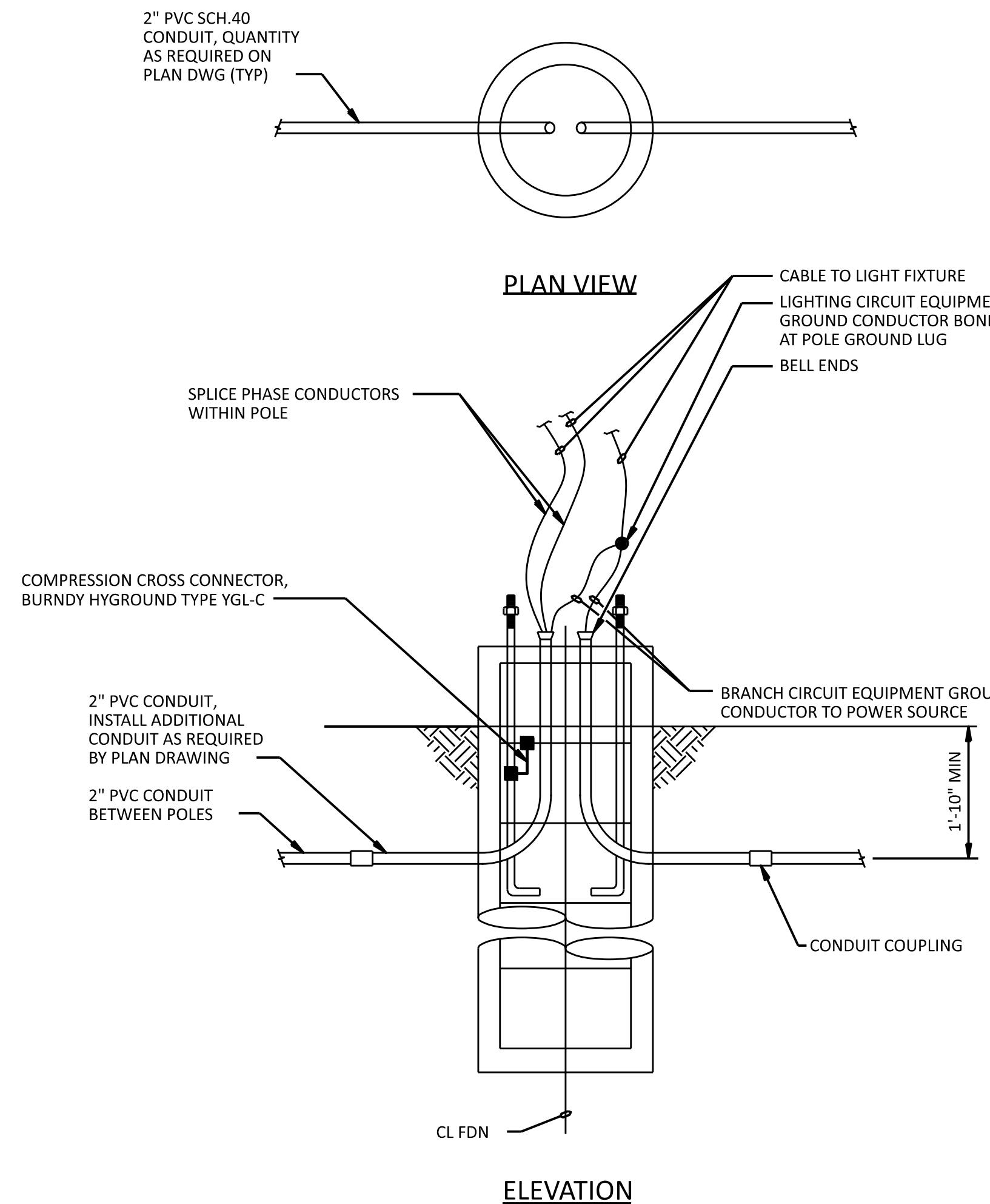
Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25°C



DIMENSIONAL DATA



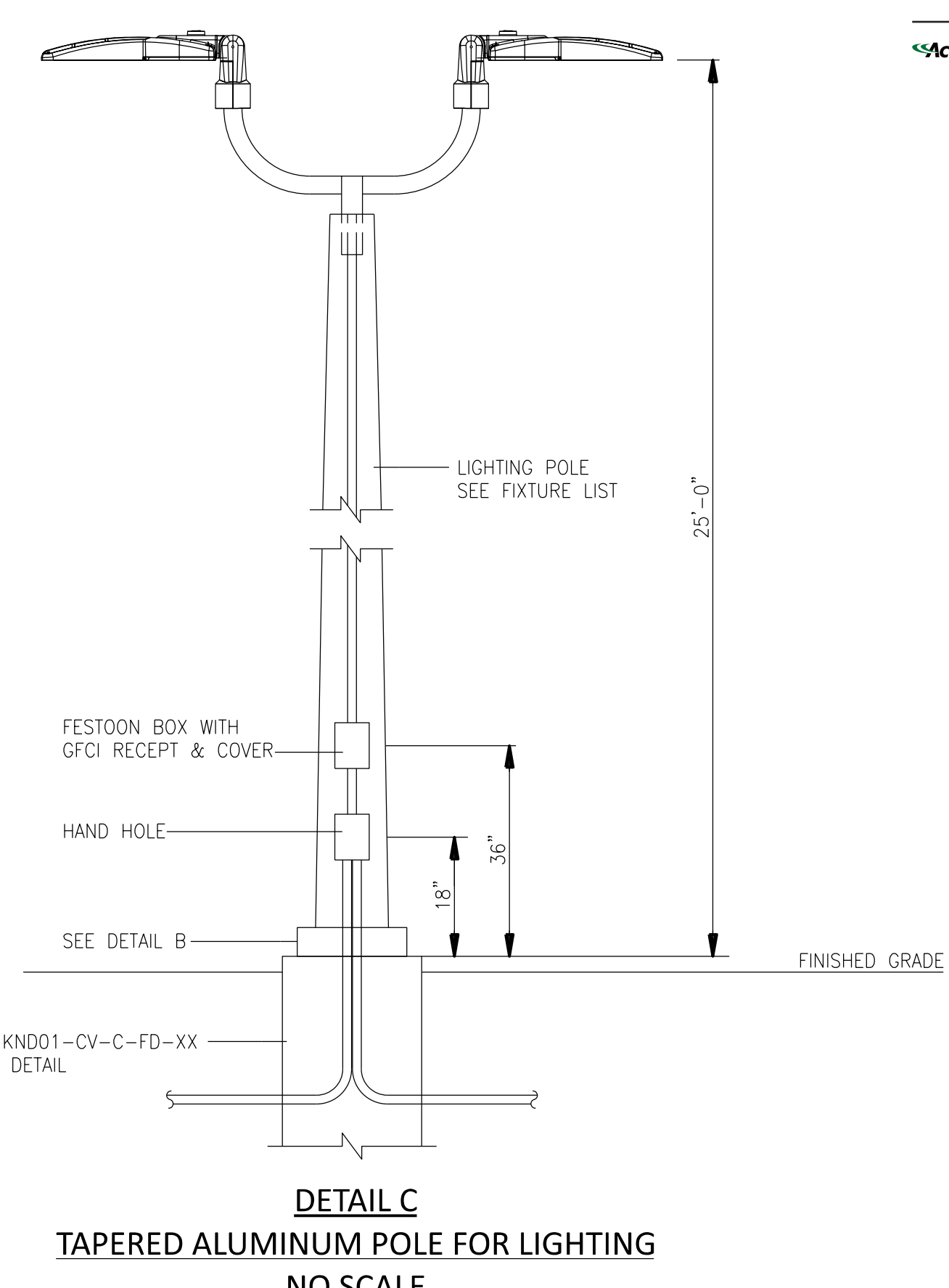
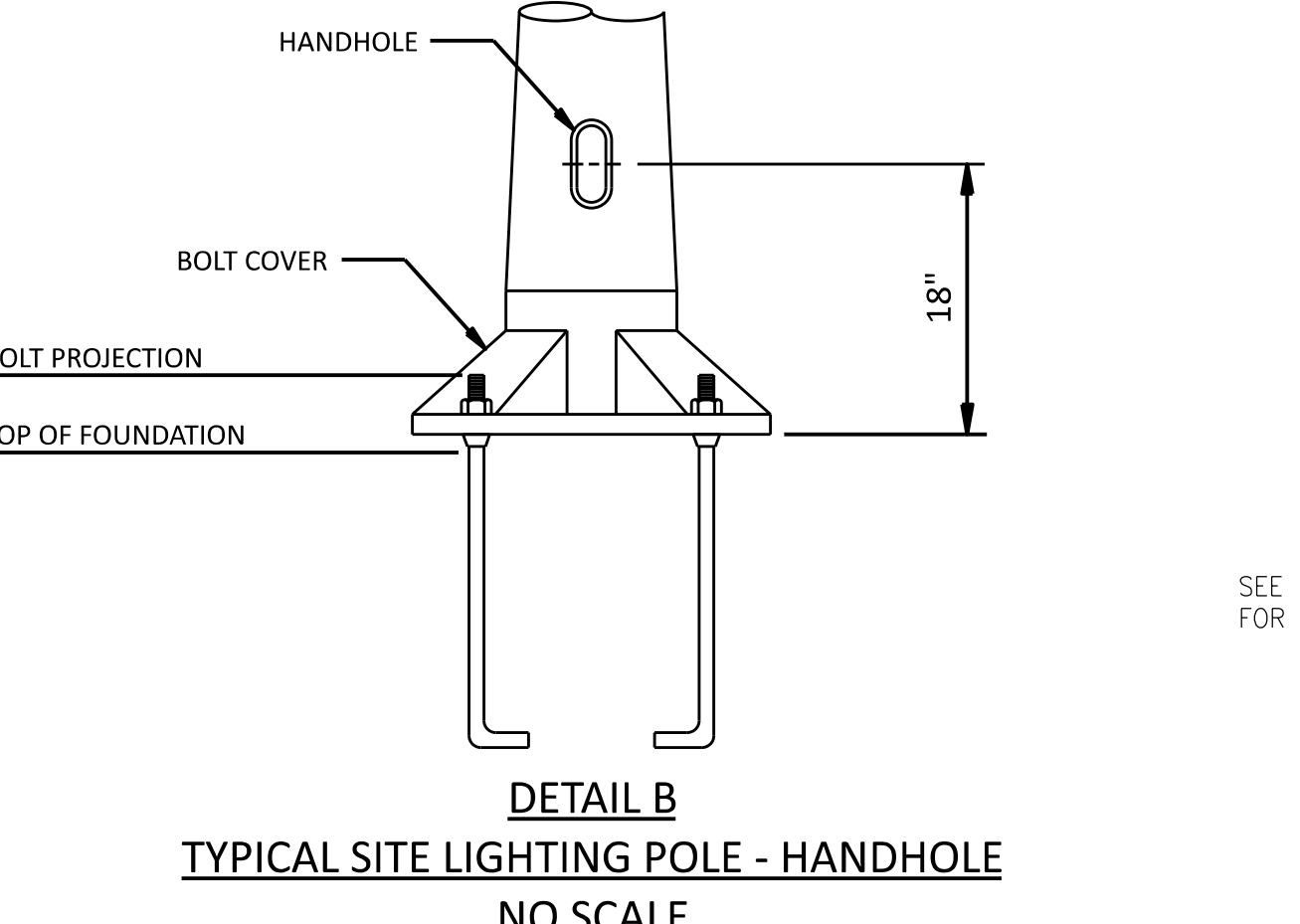
Holophane | One Lithonia Way, Conyers, Ga 30012 | Phone: 866-HOLOPHANE | www.holophane.com
 © 2019-2024 Acuity Brands Lighting, Inc. All rights reserved. Rev. 11/25/24 Specifications are subject to change without notice. MGLEDM Page 1 of 11



TYPICAL SITE LIGHTING POLE CONCRETE FOUNDATION NO SCALE

NOTES:

- FOR FOUNDATION INSTALLATION SEE CIVIL DRAWING KND01-CV-C-FD-XX.



- NOTES:
- FOR ELECTRICAL GRAPHIC SYMBOLS, SEE DRAWING KND01-EN-E-EG-01.
 - ALL ELEVATIONS REFER TO THE BOTTOM OF THE LIGHTING FIXTURE.
 - ALL LIGHTING SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND SECTION 7.7 OF THE TOWN OF KNIGHTDALE UDO.
 - ALL ABOVE GRADE CONDUITS SHALL BE RIGID GALVANIZED STEEL. ALL BELOW GRADE CONDUITS SHALL BE PVC SCHEDULE 40.
 - ALL ABOVE GRADE LIGHTING CONDUITS SHALL BE FIELD ROUTED BY THE CONTRACTOR. ALL BELOW GRADE LIGHTING CONDUITS WERE INSTALLED UNDER THE UNDERGROUND RACEWAY DRAWING AND ARE LABELED IN LIGHTING PLAN DRAWING.
 - ALL SL FIXTURE BRANCH CIRCUIT CONDUCTORS SHALL BE SIZE #10 AWG, UNLESS OTHERWISE NOTED.
 - ALL SWL FIXTURE CONDUCTORS BETWEEN POLES AND CONTACTOR SHALL BE #10 AWG MINIMUM, UNLESS OTHERWISE NOTED. ALL LIGHTING CIRCUIT CONDUCTORS WITHIN THE LIGHTING POLES SHALL BE #12 AWG MINIMUM, UNLESS OTHERWISE NOTED.
 - CONNECTIONS BETWEEN THE UNDERGROUND LIGHTING CONDUCTORS AND THE LIGHTING CONDUCTORS WITHIN THE LIGHTING POLES SHALL BE INSTALLED, SIZE AS RECOMMENDED BY THE FIXTURE MANUFACTURER.
 - ALL GROUNDING CONDUCTORS SHALL BE GREEN.
 - ONLY HOME RUNS TO PANEL ARE SHOWN ON THE DRAWING. THE CONTRACTOR SHALL INSTALL ALL LIGHTING CIRCUITING TO LIGHTING FIXTURES AND RECEPTACLES FOR AN OPERATING SYSTEM. ALL AC CIRCUITS SHALL HAVE A GROUND CONDUCTOR.
 - THE SITE LUMINAIRE SELECTED HAS BEEN CHANGED TO MGLEDM-30K-MVOLT-AR-HSS-US-LT-VT-GRD-SH-A AND THE ADDITION OF UP-SKIRT SHIELDING REDUCES THE SOURCE LUMEN FROM 16,415 TO 8,424 WHICH IS BELOW 9000 LUMEN THRESHOLD.

REFERENCE DRAWINGS:
 KND01-LT-E-PL-01 SITE LIGHTING PLAN



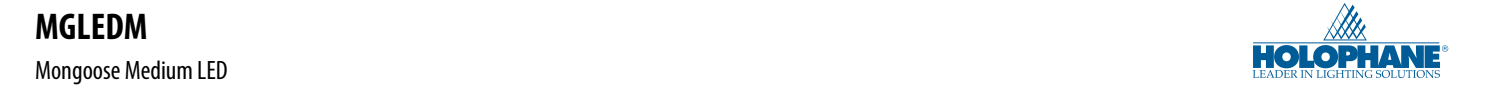
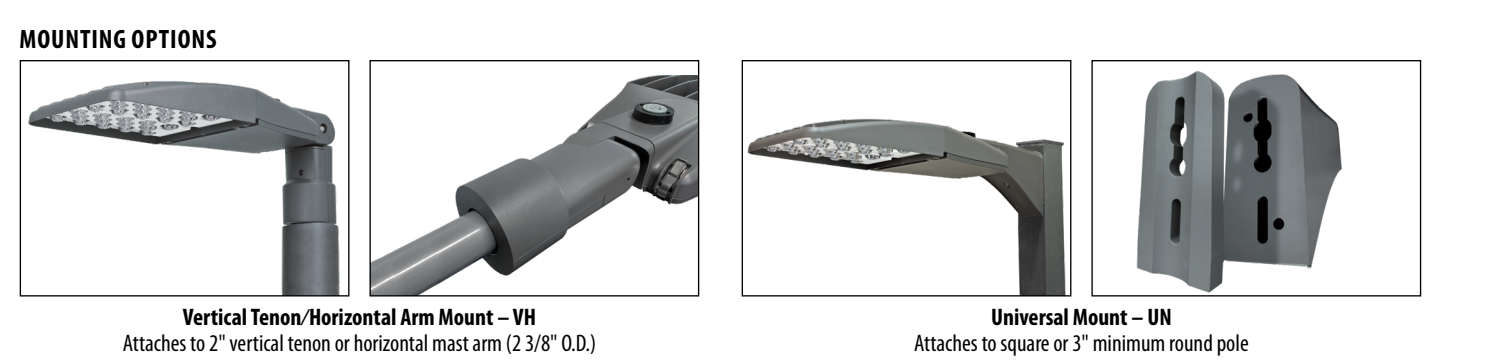
ORDERING INFORMATION

| Series | LED performance package | Color temperature | Voltage | Driver | |
|--------|-------------------------|---------------------|-----------|-------------------------------------|-----------------------|
| MGLEDM | Mongoose Medium | 27K | 2700K CCT | Auto-sensing voltage (120 thru 277) | |
| | P11 | 9500 Lumen Package | 27K | 2700K CCT | ZT Zero to Ten Driver |
| | P12 | 11500 Lumen Package | 30K | 3000K CCT | D4i D4i Driver |
| | P13 | 13000 Lumen Package | 40K | 4000K CCT | |
| | P14 | 15200 Lumen Package | 50K | 5000K CCT | |
| | P15 | 18500 Lumen Package | | | |
| | P16 | 22000 Lumen Package | | | |
| | P17 | 26000 Lumen Package | | | |
| | P18 | 40500 Lumen Package | | | |
| | P19 | 44000 Lumen Package | | | |
| P20 | 51000 Lumen Package | | | | |

| Optics | Mounting | Super Durable Paint | Options |
|----------------------------------|----------------------------------|---------------------|---|
| AG Area with Refractor | VH Vertical Tenon/Horizontal Arm | GRSD Gray | Top Receptacle |
| AR | UN Universal (Rd. & Sq) | GRSD Graphite | ZBT Zhaga receptacle on top of fixture |
| FG Forward Throw with Refractor | | GRSD Black | PRZ 7 pin photocontrol receptacle |
| FT Forward Throw | | GRSD Green | NTR No top receptacle |
| MG Medium Roadway with Refractor | | WHSD White | Receptacle Bottom |
| MR Medium Roadway with Refractor | | BRSD Bronze | ZBS Zhaga receptacle on bottom of fixture |
| NR Narrow Roadway with Refractor | | DBSD Dark Bronze | NBR No bottom receptacle |
| WR Wide Roadway with Refractor | | | Adjustable/Programmable Options |
| | | | AD Field Adjustable Output |
| | | | Control Options |
| | | | PCLL DTL Extreme Long Life Twilight Photocontrol for Solid State (20-year rated life) |
| | | | DOP Low Voltage Zhaga photocontrol |
| | | | Embedded Control |
| | | | DOC DC Connect photocontrol. Requires D4i Driver and NBR |
| | | | RSGR Light Air Circ. and daylight sensor |
| | | | ALEB Local Connect Basic. Requires D4i driver & NBR |
| | | | ALEF Local Connect Full. Requires D4i driver & NBR |
| | | | ALECC Local Connect Custom. Requires D4i driver & NBR |
| | | | UBC Cellular Network Lighting Control. Requires D4i driver & NTR |

Accessories: Order as separate catalog number.

| Accessories | Control Training |
|--|--|
| Wire Guard Kit | Control Training |
| MGLEDM WG Mongoose Medium Wire Guard Kit | Local Connect Remote Training: 1 day training provided by Acuity Services Team |
| Light Trespass Shield | |
| MGLEDM LTS Mongoose Medium Light Trespass Shield | |
| Uplight Skirt | |
| MGLEDM US Mongoose Medium Uplight Skirt, Gray | |
| MGLEDM US GRSD Mongoose Medium Uplight Skirt, Graphite | |
| MGLEDM US BRSD Mongoose Medium Uplight Skirt, Black | |
| MGLEDM US GRSD Mongoose Medium Uplight Skirt, Green | |
| MGLEDM US WHSD Mongoose Medium Uplight Skirt, White | |
| MGLEDM US BRSD Mongoose Medium Uplight Skirt, Bronze | |
| MGLEDM US DBSD Mongoose Medium Uplight Skirt, Dark Bronze | |
| MGLEDM HSS L1E Mongoose Medium House Side Shield, 1 Light Engine | |
| MGLEDM HSS 2LE Mongoose Medium House Side Shield, 2 Light Engine | |



PERFORMANCE DATA

| Performance Package | Distribution | Input Watts | 27K (2700K CCT, 70 CRI) | | | | 30K (3000K CCT, 70 CRI) | | | | 40K (4000K CCT, 70 CRI) / 50K (5000K CCT, 70 CRI) | | | | LLD @ 25°C | | | | | |
|---------------------|--------------|-------------|-------------------------|-------|---|---|-------------------------|--------|-------|---|---|---|--------|-------|------------|---|---|-----------|-----------|------------|
| | | | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | 50k Hours | 75k Hours | 100k Hours |
| P14 | AG | 105 | 14,783 | 141.2 | 4 | 2 | 2 | 15,443 | 147.5 | 4 | 2 | 2 | 16,008 | 152.9 | 4 | 2 | 2 | 0.96 | 0.95 | 0.94 |
| | | | 15,714 | 150.1 | 4 | 0 | 2 | 16,415 | 156.8 | 4 | 0 | 2 | 17,015 | 162.5 | 4 | 0 | 2 | | | |
| | FG | | 12,888 | 123.1 | 2 | 3 | 3 | 13,462 | 128.6 | 2 | 3 | 3 | 13,955 | 133.3 | 2 | 3 | 3 | | | |
| | | | 13,705 | 130.9 | 2 | 0 | 3 | 14,317 | 136.8 | 2 | 0 | 3 | 14,840 | 141.8 | 2 | 0 | 3 | | | |
| | MG | | 14,000 | 133.7 | 2 | 2 | 2 | 14,625 | 139.7 | 2 | 2 | 2 | 15,160 | 144.8 | 2 | 2 | 2 | | | |
| | | | 14,830 | 141.7 | 2 | 0 | 2 | 15,491 | 148.0 | 2 | 0 | 2 | 16,058 | 153.4 | 2 | 0 | 2 | | | |
| | NR | | 14,098 | 134.7 | 3 | 2 | 2 | 14,726 | 140.7 | 3 | 2 | 2 | 15,265 | 145.8 | 3 | 2 | 2 | | | |
| | | | 14,802 | 141.4 | 3 | 0 | 2 | 15,462 | 147.3 | 3 | 0 | 2 | 16,027 | 153.1 | 3 | 0 | 2 | | | |
| | WG | | 13,235 | 126.4 | 3 | 2 | 3 | 13,825 | 132.1 | 3 | 2 | 3 | 14,331 | 136.9 | 3 | 2 | 3 | | | |
| | | | 13,908 | 132.8 | 3 | 0 | 2 | 14,528 | 138.8 | 3 | 0 | 3 | 15,059 | 143.8 | 3 | 0 | 3 | | | |

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

BY: _____ DATE: _____
 TOWN ENGINEER

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

BY: _____ DATE: _____
 LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

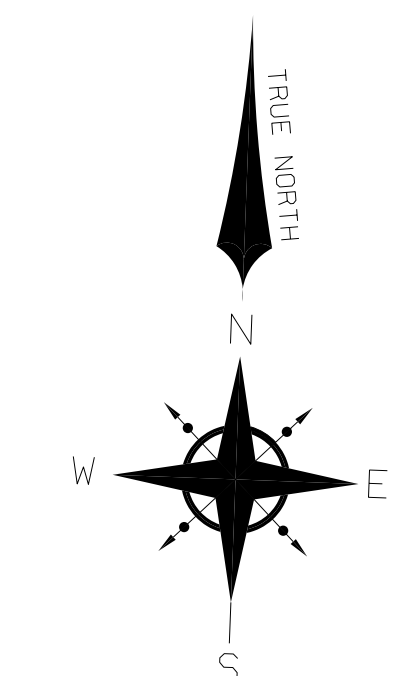
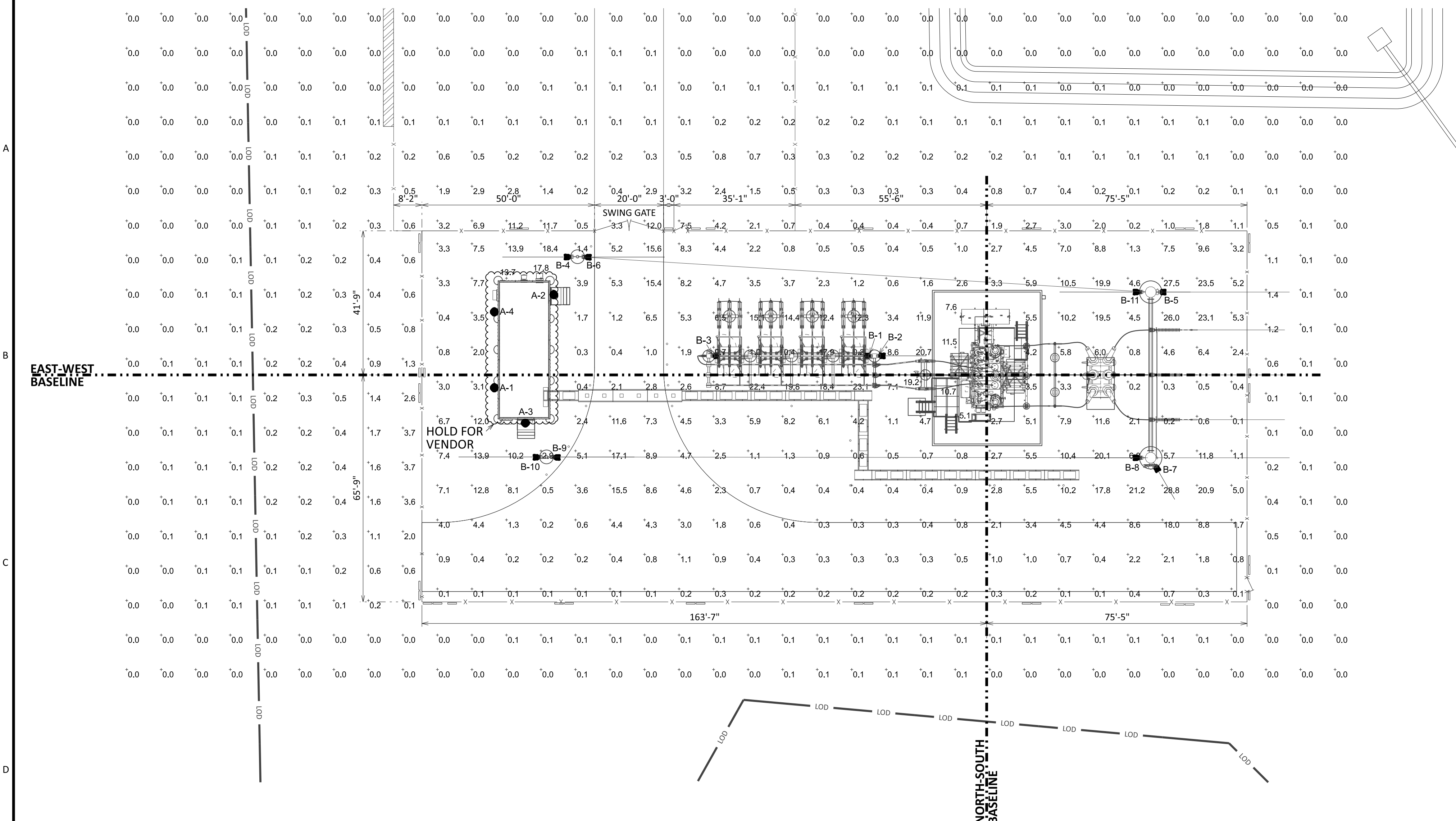
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SEAL 058363
 NORTH CAROLINA PROFESSIONAL ENGINEER OYEBAYO

B&V PROJECT NUMBER: 419596

| | | | | | | |
|-----------------|-------------------|---|--|---|------------------------------------|----------|
| | | | | PROJECT KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | DRAWING NUMBER KND01-LT-E-SD-01 | REV E |
| DESIGNER BCA | DRAWN BCA | BESS ELECTRICAL LIGHTING DETAILS 5201 KNIGHTDALE EAGLE ROCK ROAD KNIGHTDALE, NC 27545 | | CODE AREA | | |
| CHECKED OOO | DATE 03/SEP/24 | | | | | |

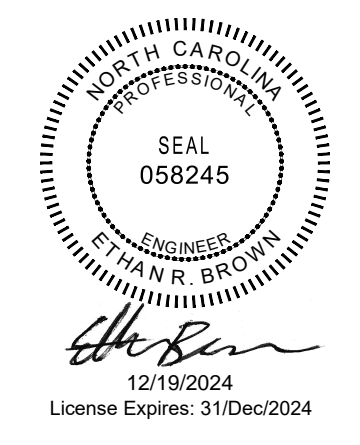
| | | | | | | | | |
|--|---|-----------|-------------------------------|-----|-----|-----|-----|-----|
| | D | 15/NOV/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| | C | 20/SEP/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| | B | 03/SEP/24 | ISSUED FOR CLIENT 60% REVIEW | BCA | BCA | OOO | OOO | BC |
| | A | 23/AUG/24 | ISSUED FOR PERMIT | BCA | BCA | OOO | OOO | BC |
| | | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |



| Luminaire Locations | | | |
|---------------------|-------|--------|-------|
| No. | Label | MH | Tilt |
| 1 | A | 10'-6" | 0.00 |
| 2 | A | 10'-6" | 0.00 |
| 3 | A | 10'-6" | 0.00 |
| 4 | A | 10'-6" | 0.00 |
| 1 | B | 23'-6" | 30.00 |
| 2 | B | 23'-6" | 30.00 |
| 3 | B | 23'-6" | 25.00 |
| 4 | B | 23'-9" | 40.00 |
| 5 | B | 23'-0" | 20.00 |
| 6 | B | 23'-9" | 45.00 |
| 7 | B | 23'-0" | 25.00 |
| 8 | B | 23'-0" | 45.00 |
| 9 | B | 23'-9" | 45.00 |
| 10 | B | 23'-9" | 45.00 |
| 11 | B | 23'-0" | 45.00 |

| Schedule | | | | | | | | | | | | | |
|----------|-------|----------|---|--------------------------------|--|--------------|------------------------------------|-----------------|------------------|-------------------|------------|---------|--------------|
| Symbol | Label | Quantity | Manufacturer | Catalog Number | Description | Number Lamps | Filename | Lumens Per Lamp | Lumen Multiplier | Light Loss Factor | Efficiency | Wattage | Distribution |
| | A | 4 | COOPER LIGHTING SOLUTIONS - LUMARK (FORMERLY EATON) | XTOR2B-Y | CROSSTOUR WALL MOUNT LED | 1 | XTOR2B-Y.ies | 1997 | 1 | 0.85 | 100% | 18.2 | |
| | B | 11 | American Electric Lighting | ACPOLED P40 XXXXX 55 ACPOLEDFV | ACP Small LED Floodlight with P40 Performance Package, Flood (5x5) (formally FL), 4000K CCT, 70CRI with Full Visor | 1 | ACPOLED P40 XXXXX 55 ACPOLEDFV.ies | Absolute | 1 | 0.85 | 100% | 154 | 5 X 5 |

| Statistics | | | | | |
|-------------|--------|---------|--------|--------|-----------------------------|
| Description | Symbol | Max | Min | Avg | AVERAGE TO MINIMUM FC RATIO |
| Substation | + | 28.8 fc | 0.1 fc | 5.2 fc | 52 |
| Perimeter | + | 12.0 fc | 0.0 fc | 0.4 fc | - |



NOTE:
1. FIELD TO CONFIRM SUFFICIENT LIGHT ORIENTATION AND ILLUMINATION LEVELS WITH DUKE PERSONNEL.

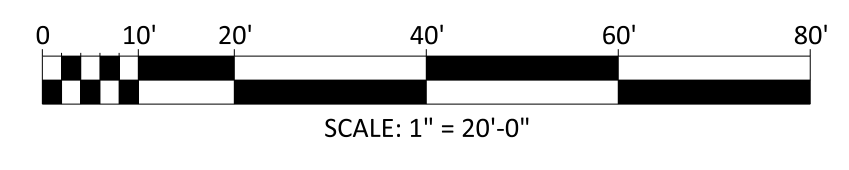
TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEW BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING
THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



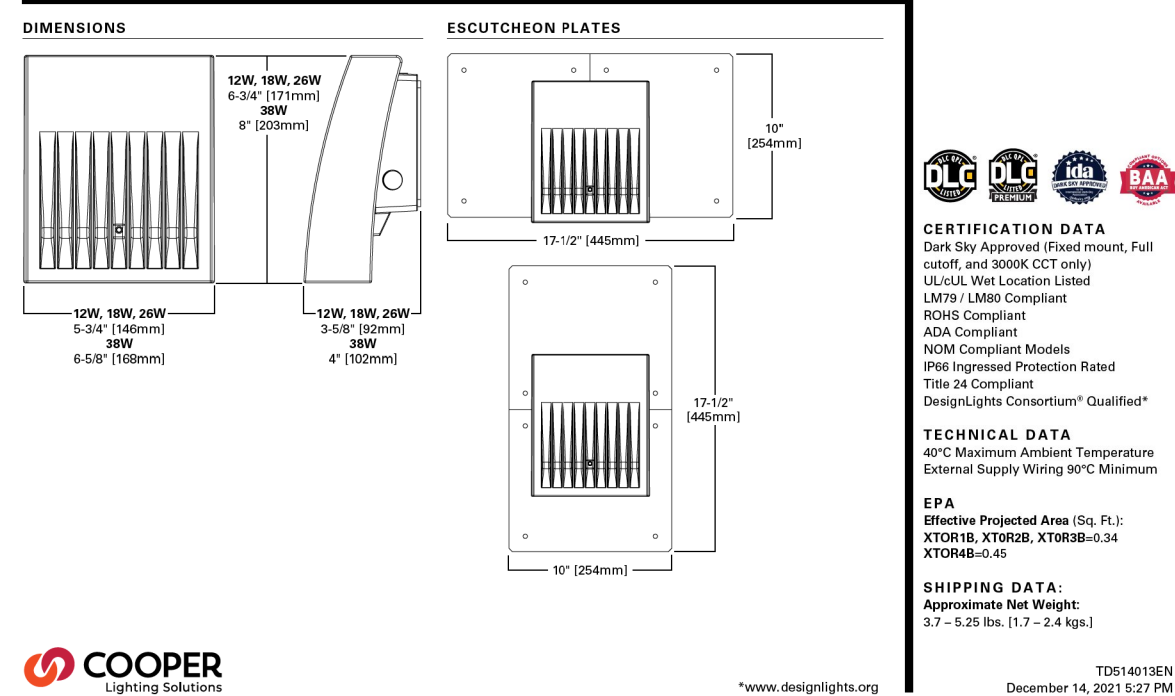
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 MicroStation v23.00.01.44
 Full Size 1 = 1

| | | | | | | | | | | | | | | | |
|-----------|-----------|-----------------------|-----|-----|----|-----|-----|----|------|-------------------------------|-----|-----|-----|-----|-----|
| 18/DEC/24 | | ISSUED FOR PERMIT | BCA | BCA | VC | BCA | ERR | NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
| D | 5/DEC/24 | ISSUED FOR 90% REVIEW | BCA | BCA | VC | BCA | ERR | | | | | | | | |
| C | 15/NOV/24 | ISSUED FOR PERMIT | BCA | BCA | VC | BCA | ERR | | | | | | | | |
| B | 29/AUG/24 | ISSUED FOR 60% REVIEW | BCA | BCA | VC | BCA | ERR | | | | | | | | |
| A | 23/AUG/24 | ISSUED FOR PERMIT | BCA | BCA | VC | BCA | ERR | | | | | | | | |

| | | | |
|-----------------|-------------------|---|-----------------------------------|
| | | DUKE ENERGY KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | PROJECT KND00-LT-E-SY.00.PL-01 |
| DESIGNER BCA | DRAWN BCA | ELECTRICAL LIGHTING PLAN 5201 KNIGHTDALE EAGLE ROCK ROAD KNIGHTDALE, NC 27545 | REV E |
| CHECKED VC | DATE 23/AUG/24 | CODE | AREA |

DESCRIPTION
The patented Lumark Crosstour™ LED Wall Pack Series of luminaires provides an architectural style with super bright, energy efficient LEDs. The low profile, rugged die-cast aluminum construction, universal back box, stainless steel hardware along with a sealed and gasketed internal compartment make the Crosstour impervious to contaminants. The Crosstour luminaire is ideal for wall/surface, inverted mount for facade/canopy illumination, post/obstacle, site lighting, floodlight and low level pathway illumination including stairs. Typical applications include building entrances, multi-use facilities, apartment buildings, institutions, schools, stairways and loading docks.

CONSTRUCTION
Slim, low-profile LED design with rugged one-piece, die-cast aluminum housing. Removable door and back box. Matching housing styles incorporate both a small and medium design. The small design is available in 12W, 18W and 26W. The medium housing is available in the 36W model. Patented secure lock hinge feature allows for safe and easy tool-less electrical connections with the supplied push-in connectors. Back box includes three half-inch, NPT threaded conduit entry points. The universal back box supports both the small and medium forms and models to standard 3-1/2" to 4" round and octagonal, 4" square, single gang and masonry junction boxes. Key hole gasket allows for adaptation to junction box or wall. External fin design extracts heat from the fixture surface. One-piece silicone gasket seals door and back box. Minimum 5" wide pool for site lighting application. Not recommended for car wash applications.



TECHNICAL DATA
40°C Maximum Ambient Temperature
External Supply Wiring 90°C Minimum
EPA Effective Projected Area (See P.1)
XTOR18, XTOR26, XTOR36-34
XTOR48-48

POWER AND LUMENS BY FIXTURE MODEL
LED Information XTOR18 XTOR18-W XTOR18-Y XTOR26 XTOR26-W XTOR26-Y XTOR36 XTOR36-W XTOR36-Y XTOR48 XTOR48-W XTOR48-Y

ORDERING INFORMATION
Sample Number: XTOR26-W-WT-PC1
Series 1
XTOR18-Small Door, 12W
XTOR18-Medium Door, 18W
XTOR18-Large Door, 26W

NOTES
1. DesignLight Consortium™ Qualified and classified for both DLC Qualified and DLC Premium, refer to www.designlights.org for details.

STOCK ORDERING INFORMATION
Domestic Preference 12W Series
BAA-Buy American Act
EPA Effective Projected Area (See P.1)

ACOPOLED Series American Compact LED Floodlight

PERFORMANCE PACKAGES
Performance Package Distribution Input Watts Lumens LPW
ACOPOLED P40 P50 P60

GRADING INFORMATION
Series LED Performance Package Voltage Status Color Temperature

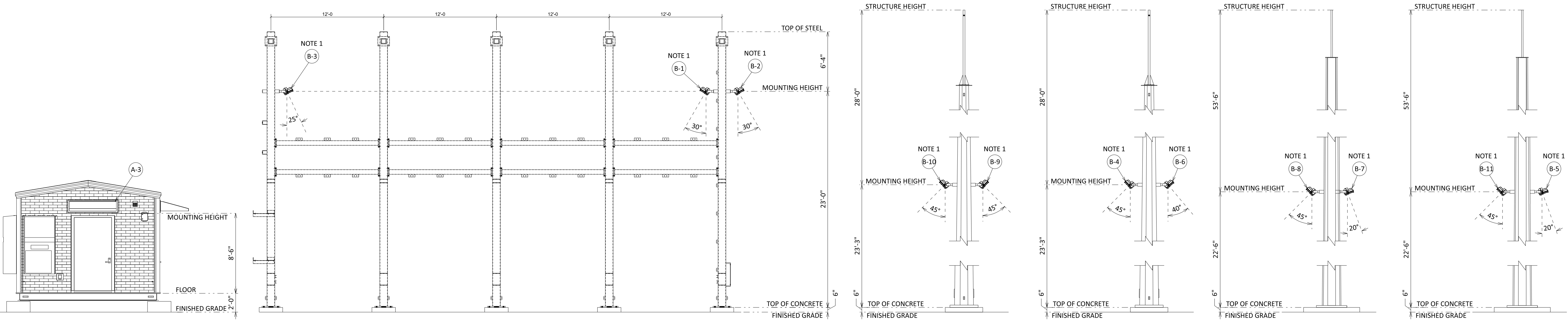
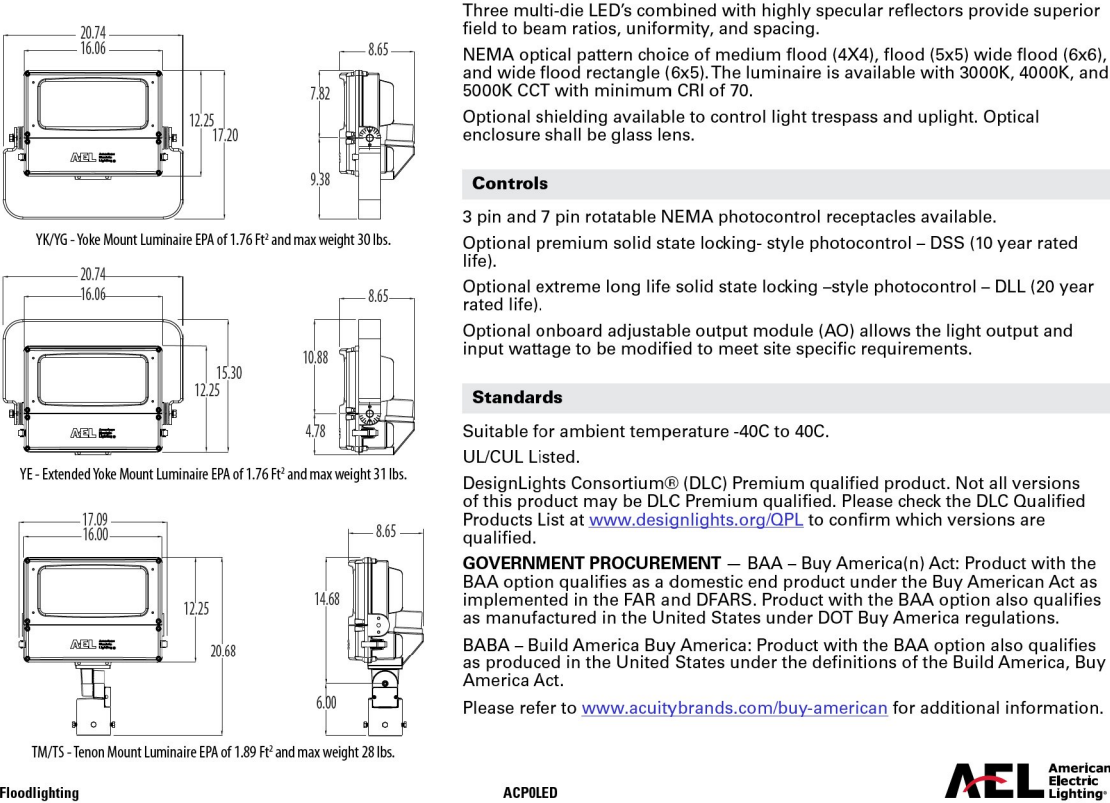
Mounting Methods Color Surge Protection Options/Controls Cord Length
ACOPOLED T1 T2 T3 T4 T5 T6 T7 T8 T9 T10

Accessories (Shipped Separately)
ACOPOLED B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18 B19 B20 B21 B22 B23 B24 B25 B26 B27 B28 B29 B30 B31 B32 B33 B34 B35 B36 B37 B38 B39 B40 B41 B42 B43 B44 B45 B46 B47 B48 B49 B50 B51 B52 B53 B54 B55 B56 B57 B58 B59 B60 B61 B62 B63 B64 B65 B66 B67 B68 B69 B70 B71 B72 B73 B74 B75 B76 B77 B78 B79 B80 B81 B82 B83 B84 B85 B86 B87 B88 B89 B90 B91 B92 B93 B94 B95 B96 B97 B98 B99 B100



Features:
Mechanical
Low copper content die cast aluminum housings has integral heat sink fins to optimize thermal management through conductive and convective cooling.
Electrical
LED light engine is rated for > 100,000 hours at 25C, 70. Electronic driver has an expected life of 100,000 hours at a 25C ambient.

Applications:
Auto dealerships Shopping centers
Schools Parking lots
Churches Substations
Industrial sites Building facades



CONTROL ENCLOSURE DETAIL
REF. DWG. KND00-LT-E-SY.00.PL-01

34.5kV BAY DETAIL
REF. DWG. KND00-LT-E-SY.00.PL-01

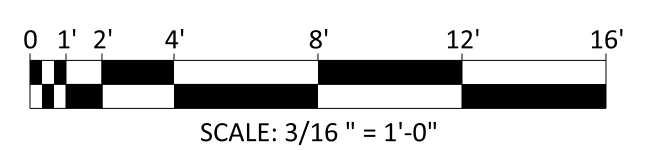
SOUTH STATIC MAST DETAIL
REF. DWG. KND00-LT-E-SY.00.PL-01

NORTH STATIC MAST DETAIL
REF. DWG. KND00-LT-E-SY.00.PL-01

SOUTH H-FRAME LEG DETAIL
REF. DWG. KND00-LT-E-SY.00.PL-01

NORTH H-FRAME LEG DETAIL
REF. DWG. KND00-LT-E-SY.00.PL-01

LEGEND:
XX LIGHT NO. SEE DWG KND00-LT-E-SY.00.PL-01
NOTES:
1. FLOODLIGHTS TO BE INSTALLED WITH FULL VISORS.
2. ALL FIXTURES ARE AIMED FACING DOWN AT LEAST 45 DEGREES FROM HORIZONTAL.



TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEW 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: TOWN ENGINEER DATE:
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: LAND USE ADMINISTRATOR DATE:

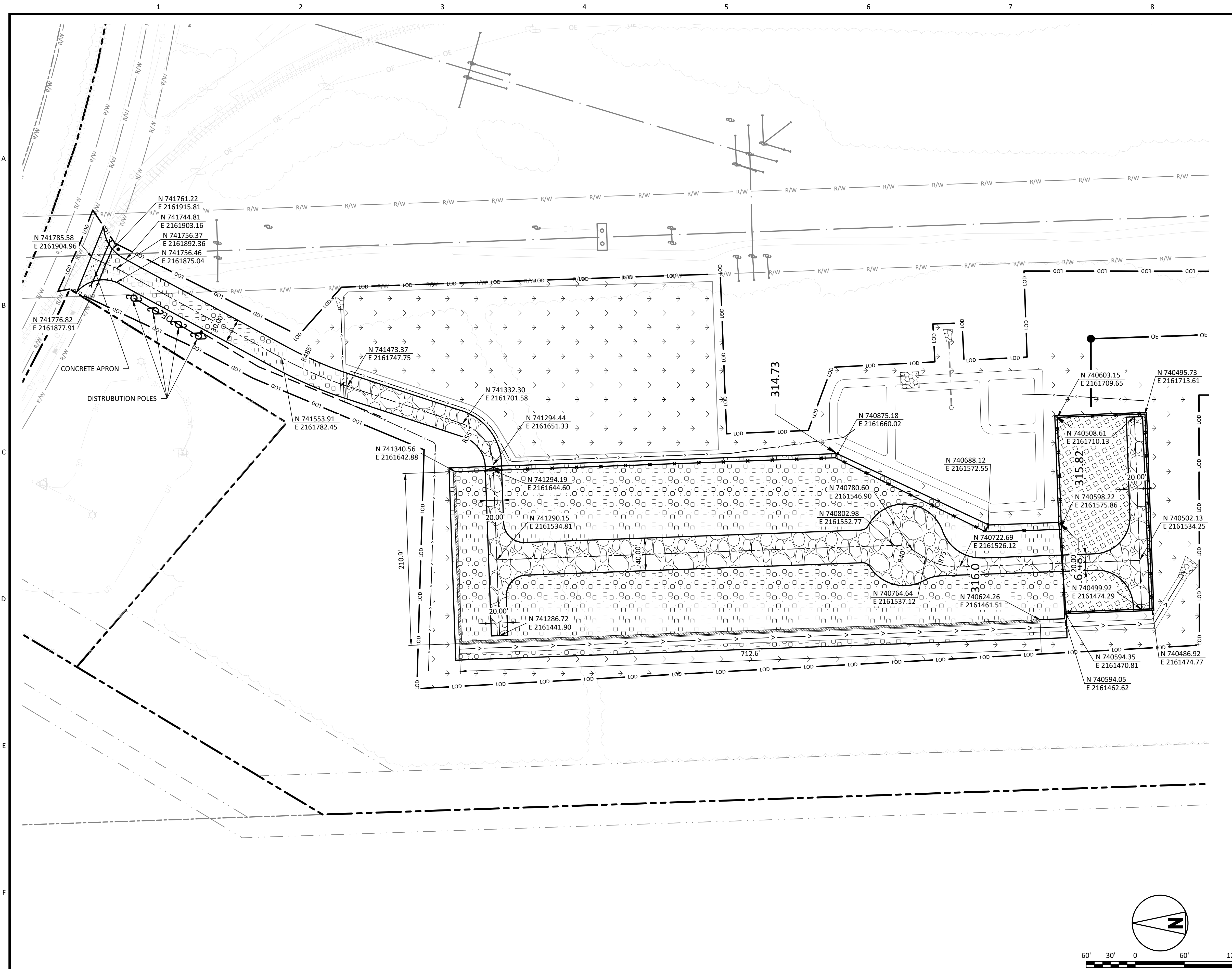
ISSUED FOR PERMITTING
THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

Revision table with columns for Date, Description, and Revisions and Record of Issue. Includes entries for 5/DEC/24, 15/NOV/24, 20/SEP/24, 23/AUG/24, and 18/DEC/24.

BLACK & VEATCH logo and contact information.

DUKE ENERGY logo and address: 5201 KNIGHTDALE EAGLE ROCK ROAD, KNIGHTDALE, NC 27545.

Project and Drawing Information table with fields for Project, Drawing Number, Rev, Code, and Area.



NOTES

1. BARBED WIRE OR CHAIN LINK FENCES ARE RESTRICTED TO THE REAR YARD, SHALL NOT BE VISIBLE FROM A STREET RIGHT-OF-WAY, AND SHALL NOT BE ADJACENT TO ANY LOT IN OR ZONED FOR RESIDENTIAL USE PER SECTION 7.6.C OF THE UDO.

LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- RIP RAP
- GRASS SURFACING
- ABC PER SECTION 2 SHEET KND01-CV-C-FE.SD-01
- #57 STONE PER SECTION 3 SHEET KND01-CV-C-FE.SD-01
- #57 Stone pattern symbol"/> #57 STONE PER SECTION 4 SHEET KND01-CV-C-FE.SD-01

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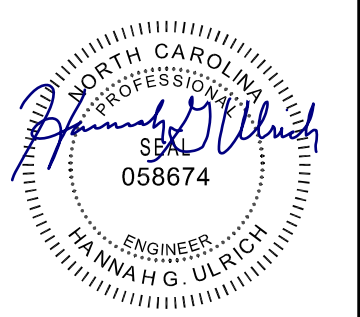
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BY: _____ DATE: _____
 LAND USE ADMINISTRATOR

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| C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |
| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | WL | |
| A | 22/AUG/2024 | ISSUED FOR PERMIT | CLC | MJM | HGU | WL | |
| F | 18/NOV/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |
| G | 20/DEC/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |
| H | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |

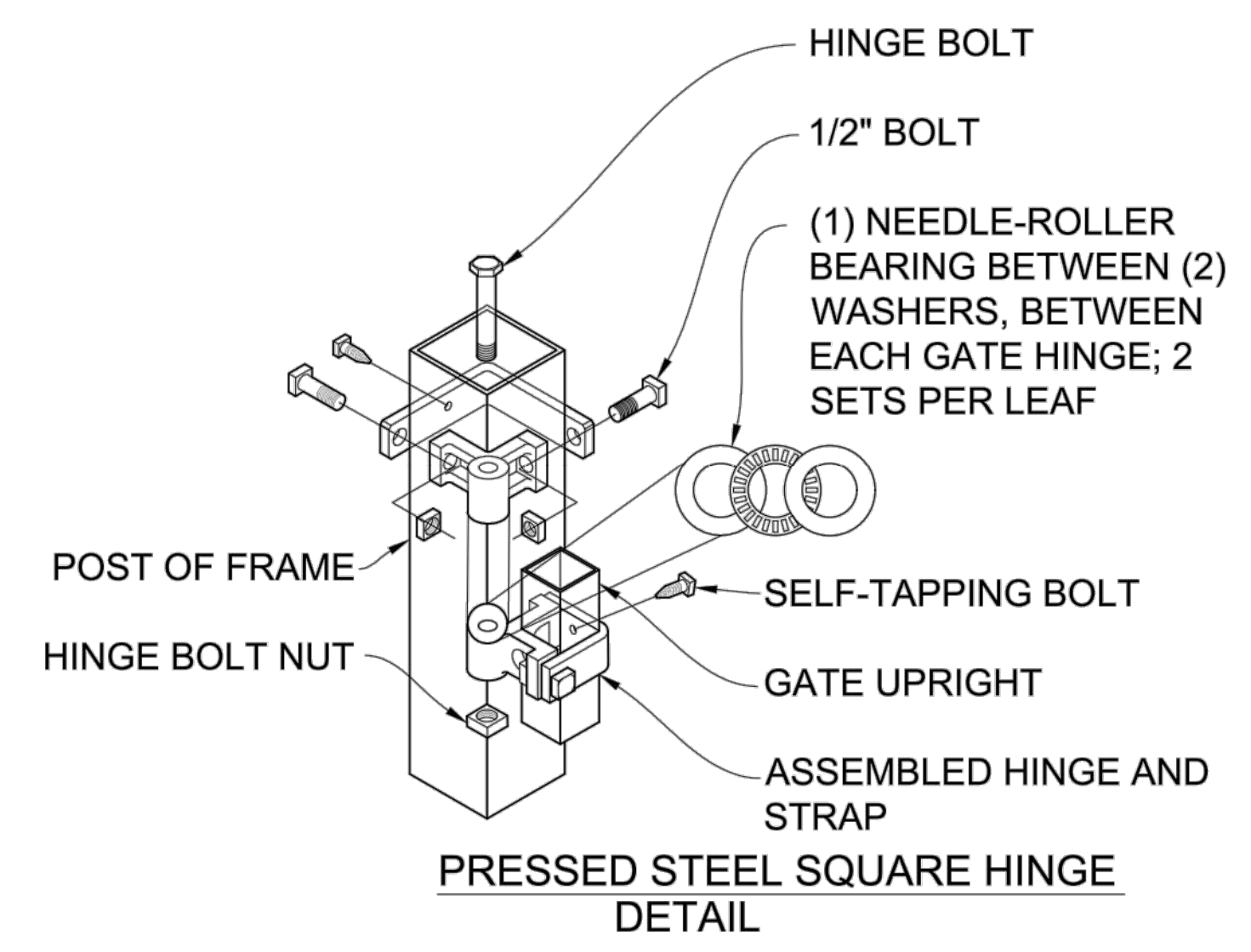
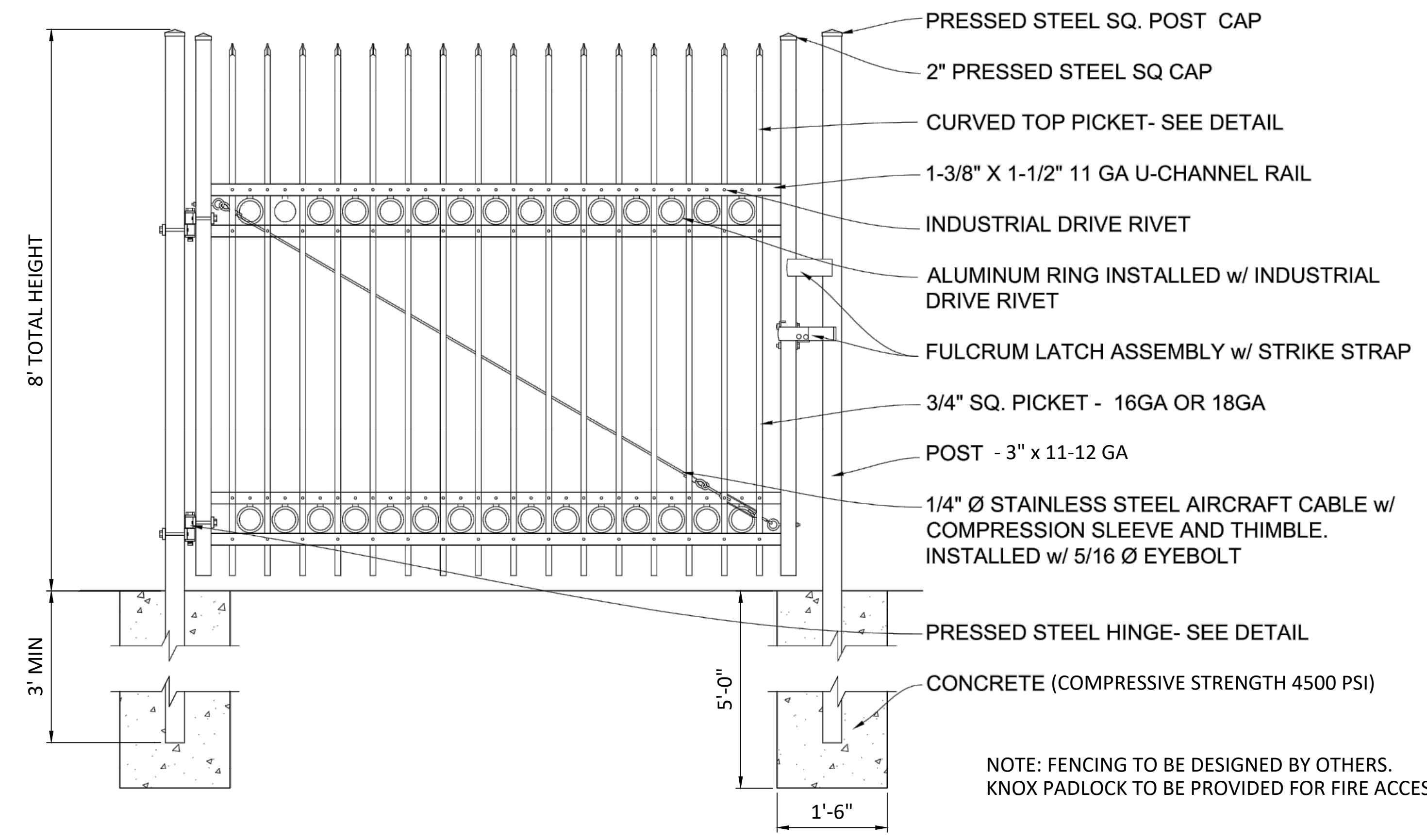
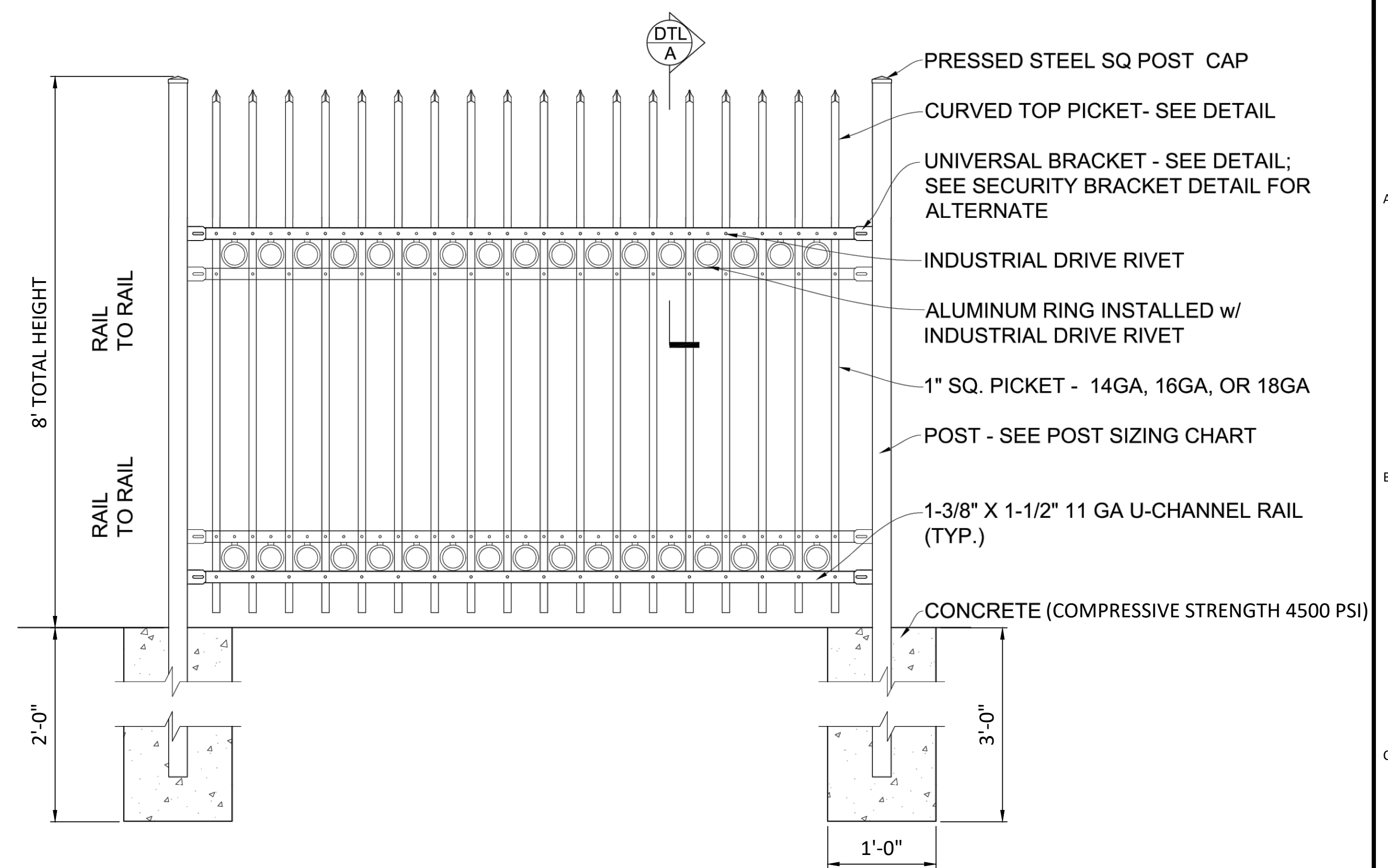
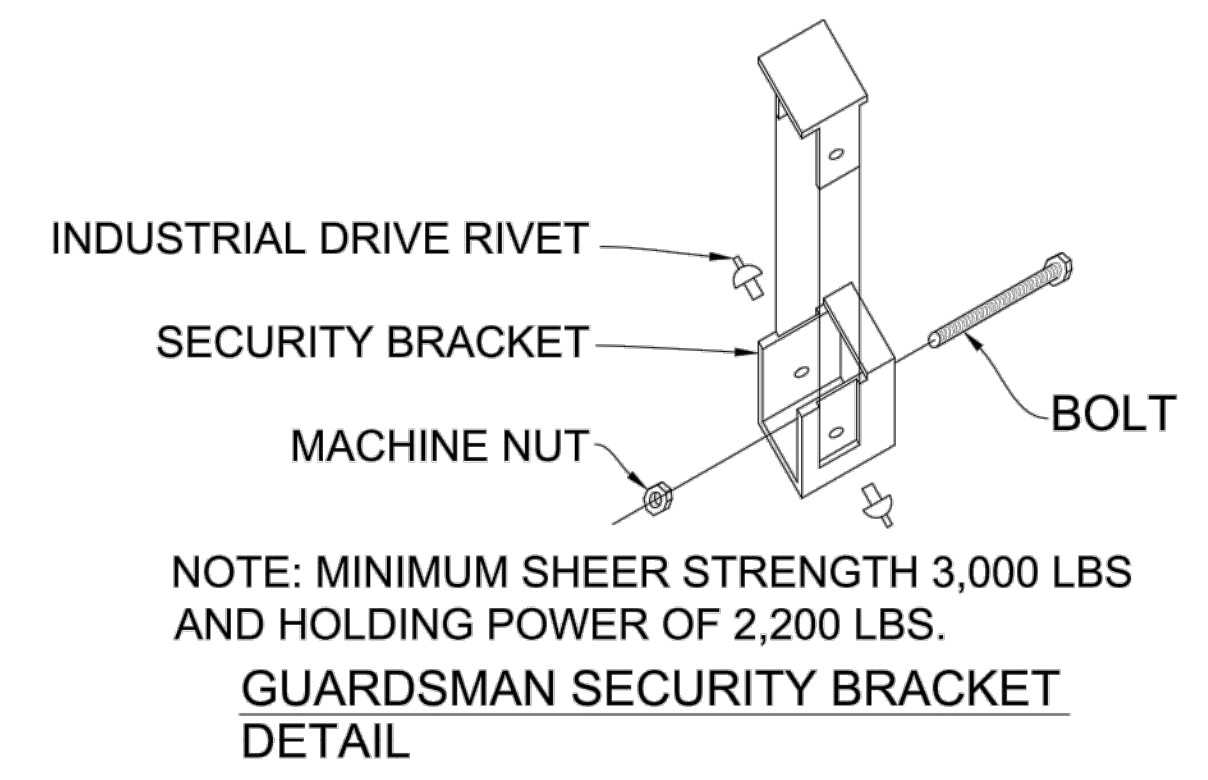
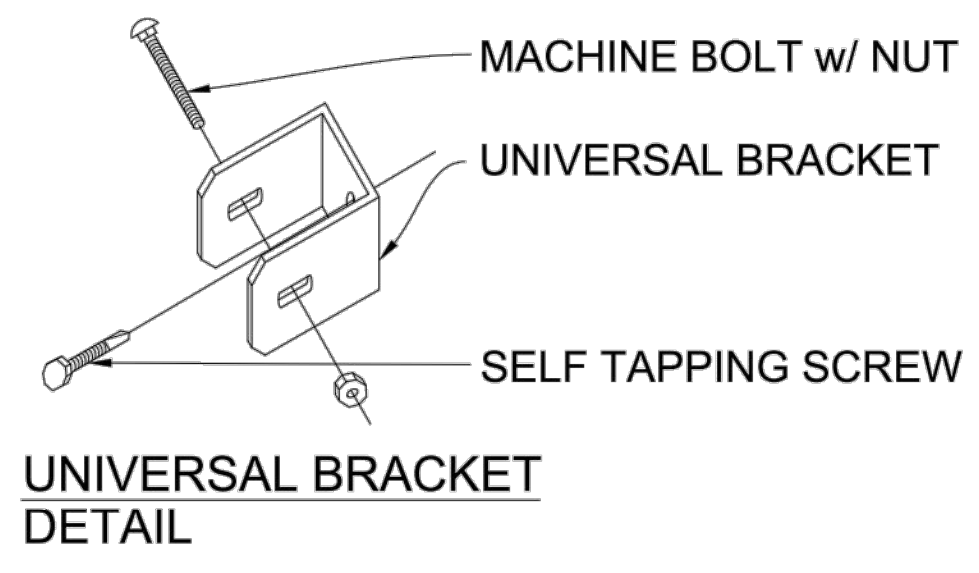
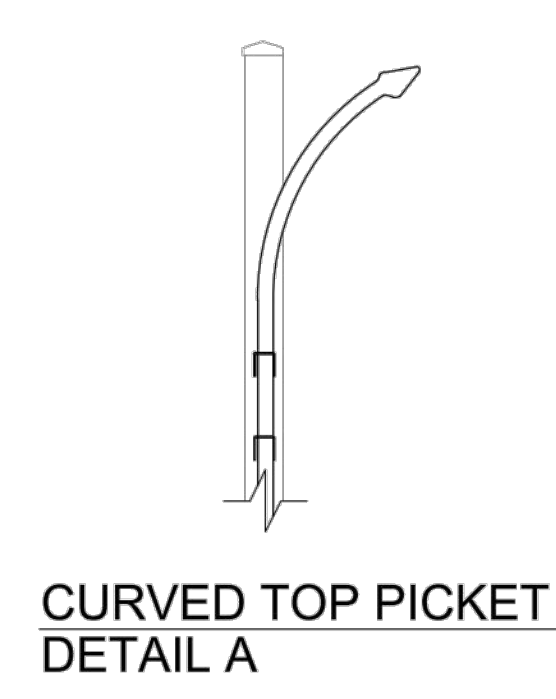
BLACK & VEATCH
 Building a world of difference®

DESIGNER: MJM DRAWN: CLC
 CHECKED: HGU DATE: 13/JAN/25

DUKE ENERGY
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

DUKE ENERGY
 SURFACING AND FENCING PLAN
 5201 KNIGHTDALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-FE.PL-01 | H | |
| CODE | AREA | |



TOWN CERTIFICATION
THIS DESIGN HAS BEEN REVIEW BY THE ENGINEER FOR THE TOWN OF
KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT
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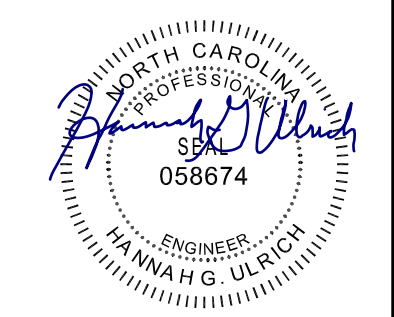
BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

NOTE: FENCING TO BE DESIGNED BY OTHERS.
KNOX PADLOCK TO BE PROVIDED FOR FIRE ACCESS.

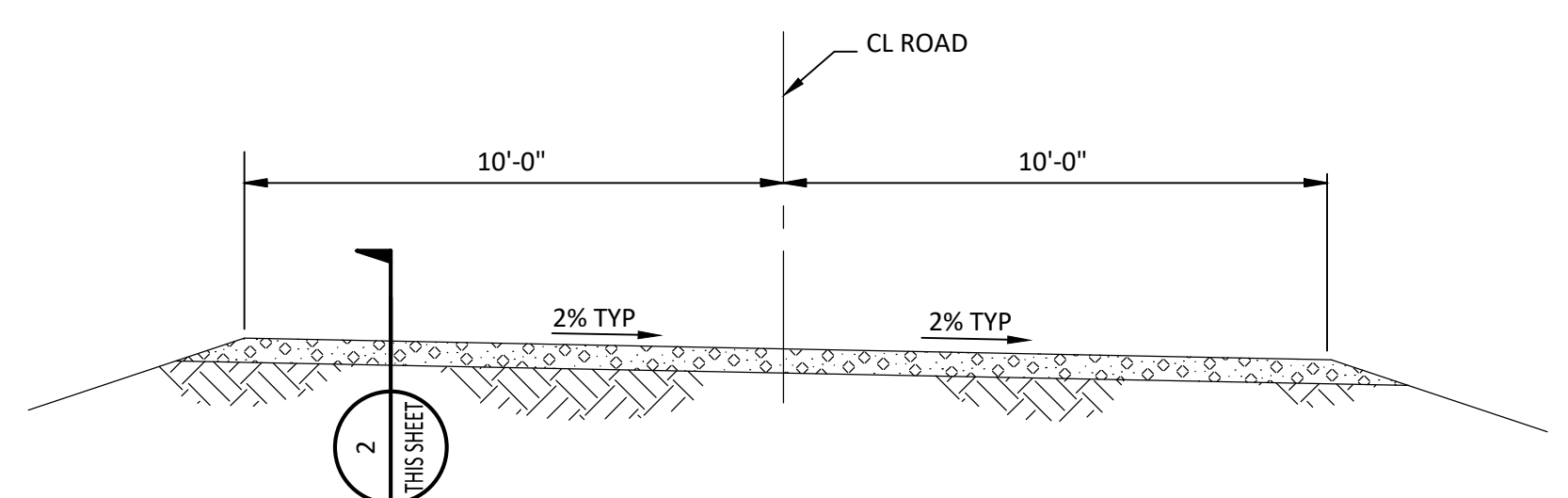
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TRACEABILITY OF THIS DRAWING TO THE LATEST
CONTROLLED VERSION.



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| | | | | | | | | | | | | | | |
|---|-------------|-----------------------|-----|-----|-----------|------------------------------|-----|-----------|-------------------------------|-----|-----|-----|-----|-----|
| | | | | D | 21/NOV/24 | 90% SUBMITTAL | CLC | MJM | HGU | WL | | | | |
| | | | | C | 18/NOV/24 | ISSUED FOR 90% CLIENT REVIEW | CLC | MJM | HGU | WL | | | | |
| | | | | B | 27/SEP/24 | ISSUED FOR PERMITTING | CLC | MJM | HGU | SLD | | | | |
| F | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC | MJM | HGU | SLD | A | 04/SEP/24 | ISSUED FOR 60% PERMIT | CLC | MJM | HGU | SLD | |
| E | 20/DEC/24 | ISSUED FOR PERMITTING | CLC | MJM | HGU | SLD | NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |

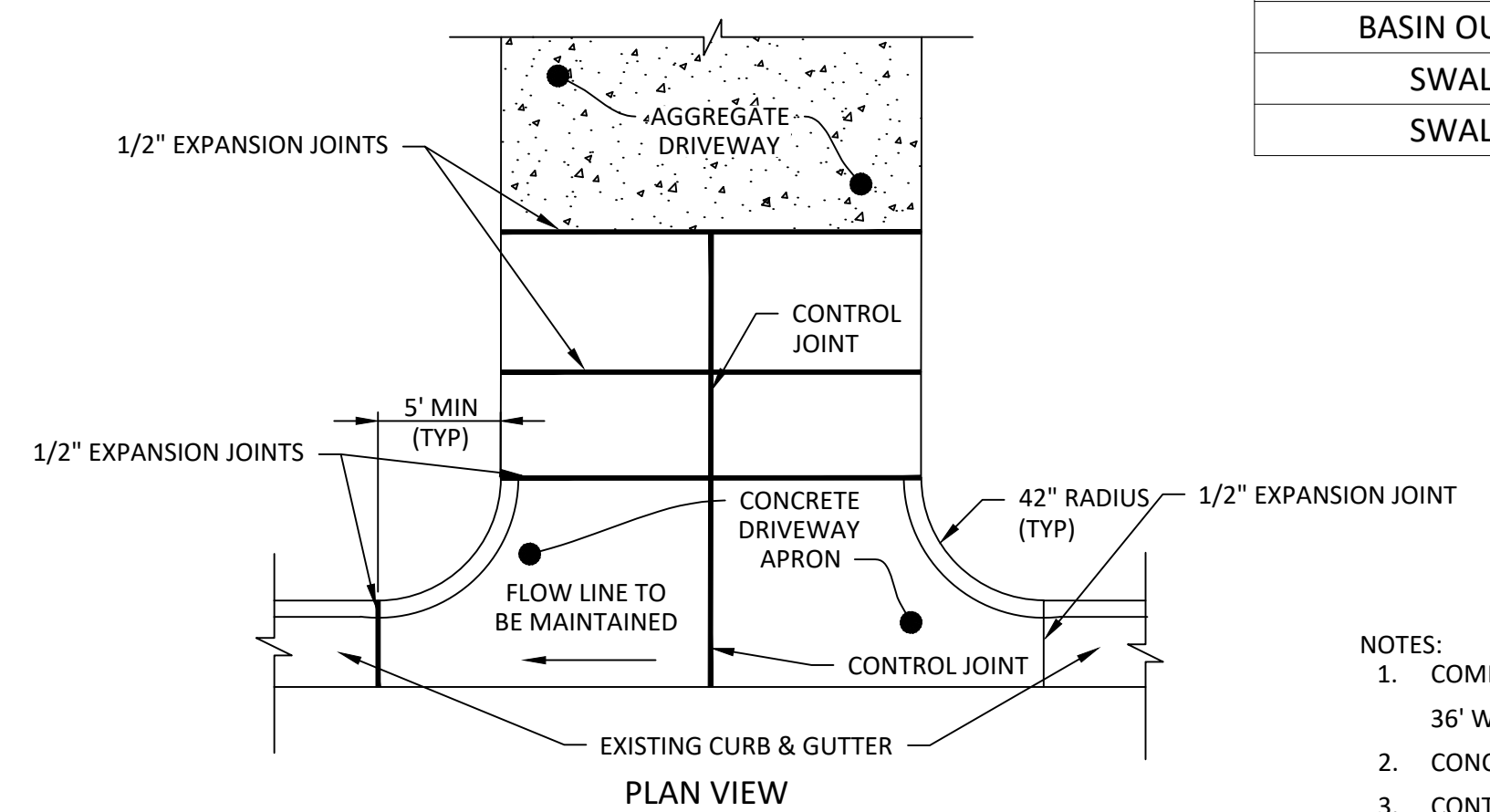
| | | | | | |
|-------------------------------|-------------------------------|--|----------------------------|----------------|-----|
| | | DUKE ENERGY KIGHTDALE BATTERY ENERGY STORAGE SYSTEM | PROJECT | DRAWING NUMBER | REV |
| | | FENCING DETAILS 5201 KNIGHTDALE EAGLE ROCK ROAD KNIGHTDALE, NC 27545 | 419596 KND01-CV-C-FE.SD-01 | F | |
| DESIGNER: MJM CHECKED: HGU | DRAWN: CLC DATE: 13/JAN/25 | CODE: - AREA: - | | | |



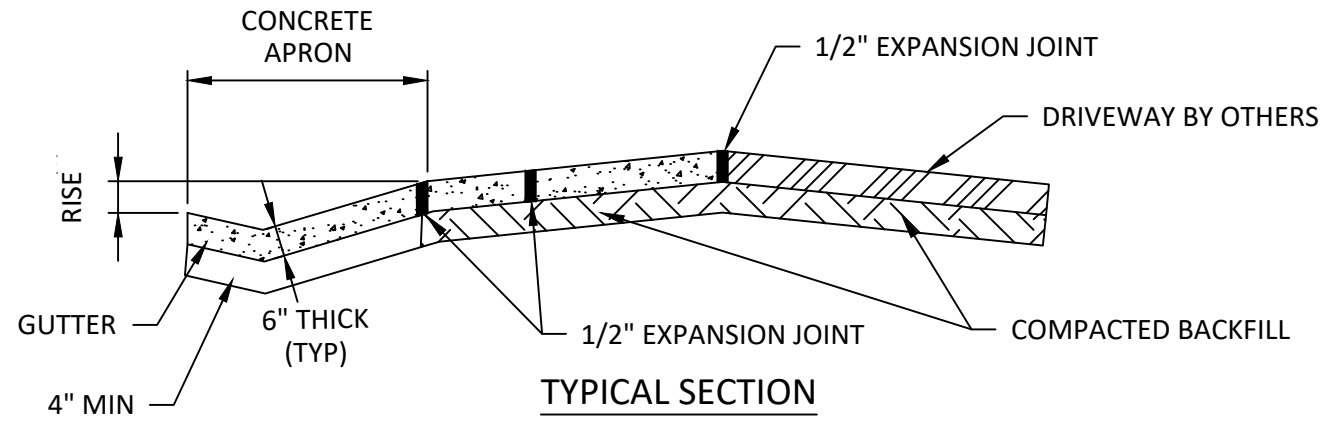
SECTION 1 - TRANSVERSE AGGREGATE SURFACE ROAD SECTION
NO SCALE

| DITCH NO. | COORDINATES | | | | LENGTH (FT) | START INV ELV | END INV ELV | SLOPE (FT/FT) | LINING | DESIGN LIFE | REMARKS |
|-----------|-------------|------------|-----------|------------|-------------|---------------|-------------|---------------|------------|-------------|-------------------|
| | START | | END | | | | | | | | |
| | NORTHING | EASTING | NORTHING | EASTING | | | | | | | |
| S-1 | 741373.79 | 2161398.82 | 741481.42 | 2161843.09 | 518 | 327.15 | 319.19 | VARIES | | PERMANENT | OFFSITE DIVERSION |
| S-2 | 741336.08 | 2161426.57 | 740448.39 | 2161516.95 | 916 | 317.17 | 313.17 | 0.005 | GRASS | PERMANENT | OFFSITE DIVERSION |
| S-3 | 741469.83 | 2161766.32 | 740851.99 | 2161706.11 | 736 | 320.67 | 305.46 | 0.005 | GRASS | PERMANENT | CONVEYANCE |
| S-4A | 740495.88 | 2161719.25 | 740649.74 | 2161713.76 | 110 | 316.20 | 315.82 | 0.003 | GRASS | PERMANENT | CONVEYANCE |
| S-4B | 740497.37 | 2161730.03 | 740650.30 | 2161739.52 | 44 | 311.87 | 305.38 | 0.237 | RIPRAP | PERMANENT | CONVEYANCE |
| D-1 | 741471.43 | 2161846.77 | 740863.24 | 2161711.88 | 763 | 318.00 | 305.38 | 0.010 | EC BLANKET | TEMPORARY | CONVEYANCE |
| D-2 | 740415.74 | 2161746.18 | 740204.10 | 2161744.09 | 212 | 309.00 | 303.00 | 0.005 | EC BLANKET | TEMPORARY | OFFSITE DIVERSION |

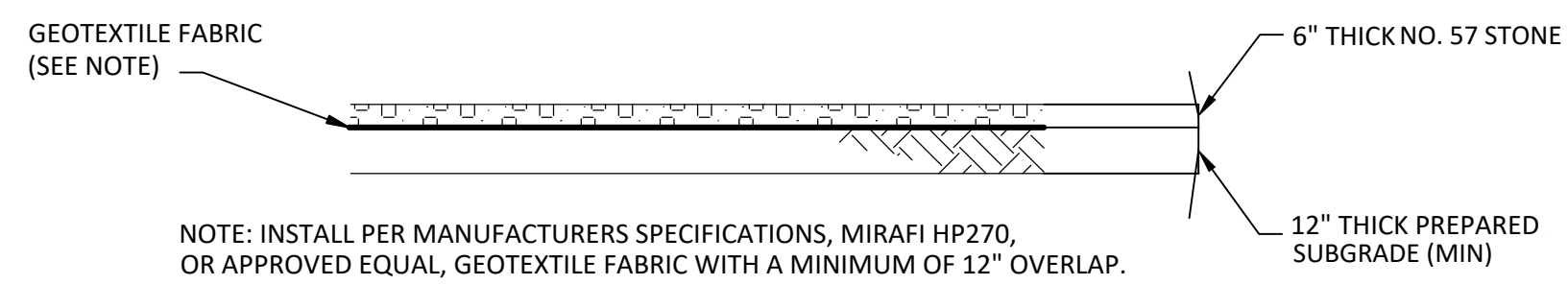
| RIPRAP SCHEDULE | | | | | | | |
|-----------------|----------|--------|--------|---------|---------|----------|---------|
| OUTLET | SHEET | L (FT) | T (FT) | W1 (FT) | W2 (FT) | D50 (FT) | REMARKS |
| BASIN OUTFALL | GR.PL-02 | 14 | 0.5 | 4.5 | 16.0 | 0.5 | |
| SWALE 1 | GR.PL-01 | 8 | 0.5 | 3.0 | 9.0 | 0.5 | |
| SWALE 2 | GR.PL-02 | 14 | 0.5 | 4.0 | 16.0 | 0.5 | |



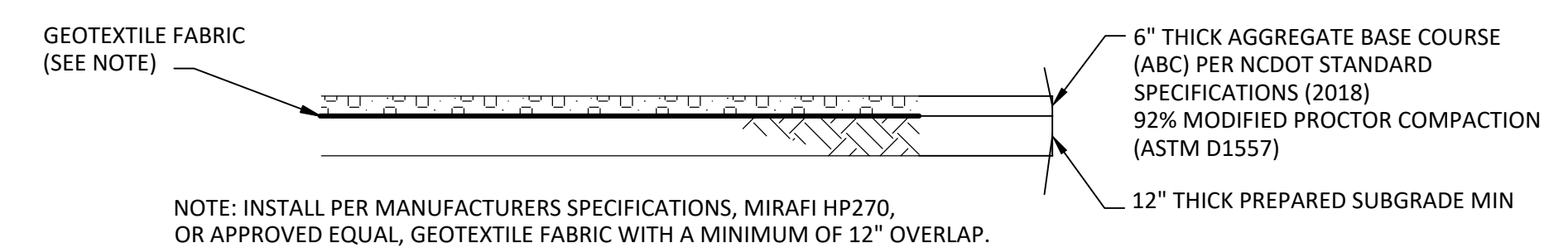
PLAN VIEW



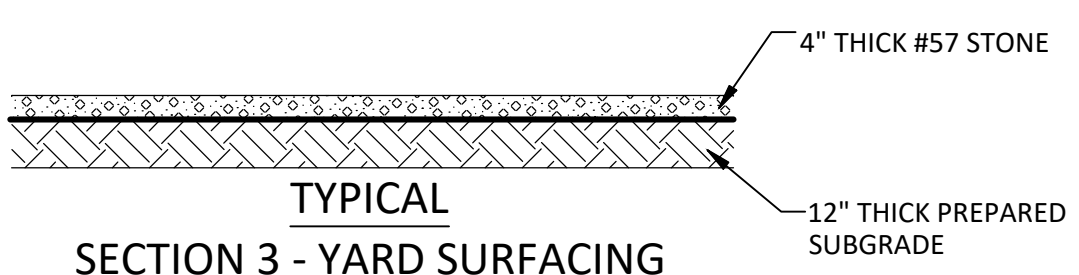
STANDARD DRIVEWAY APRON
NO SCALE



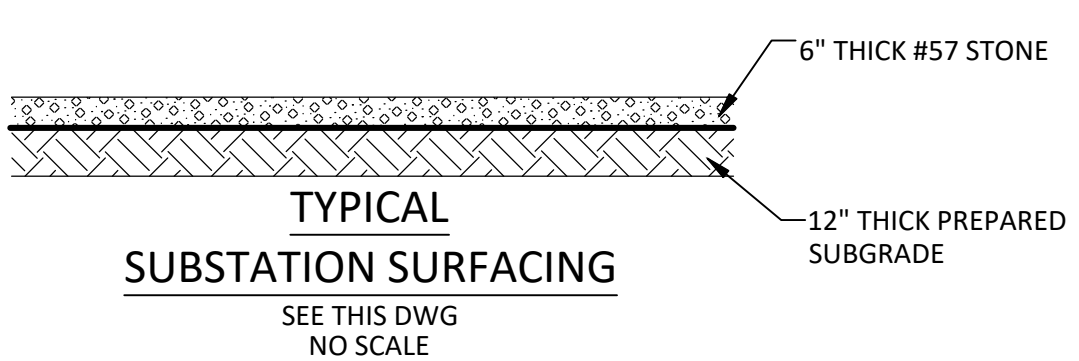
ACCESS ROAD SECTION AT SITE
ENTRANCE
SEE THIS DWG
NO SCALE



SECTION 2
SEE THIS DWG
NO SCALE

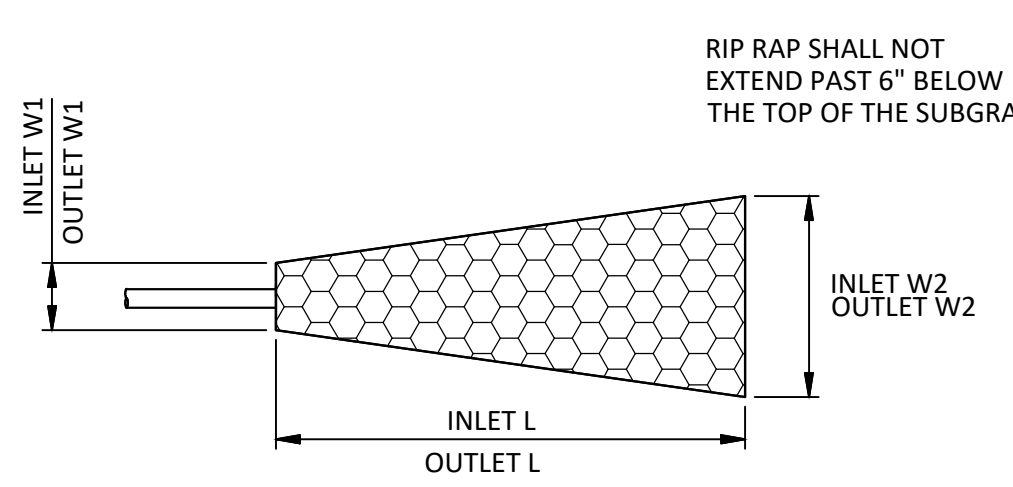


TYPICAL SECTION 3 - YARD SURFACING
SEE THIS DWG
NO SCALE

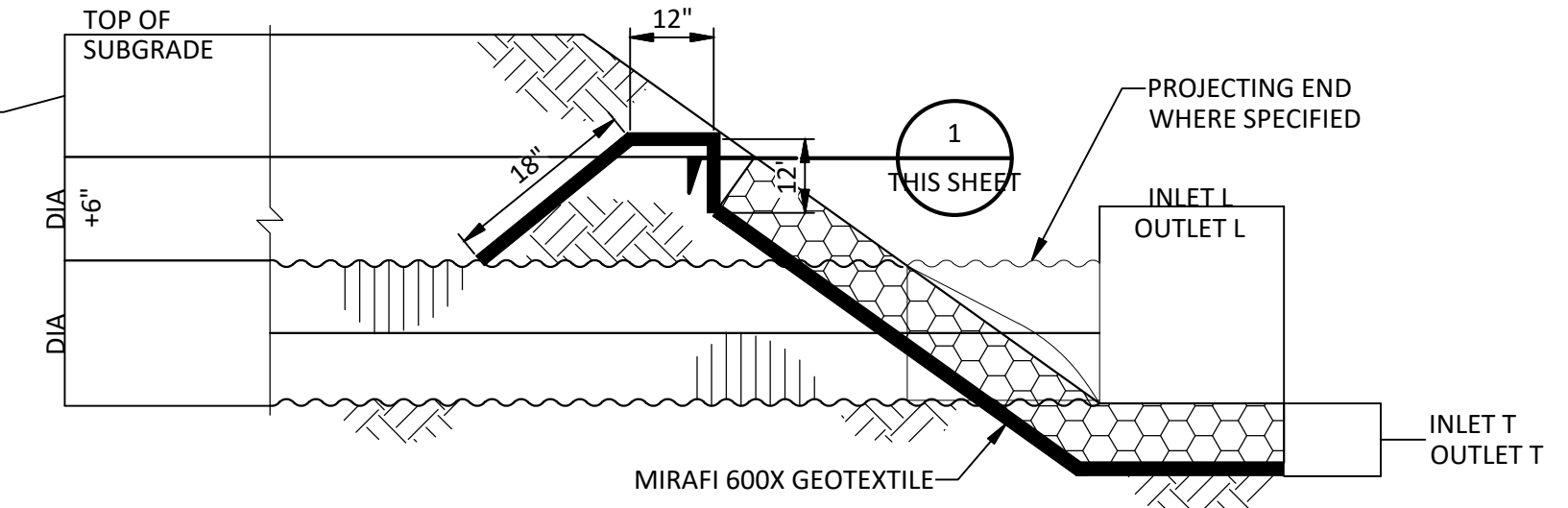


TYPICAL SUBSTATION SURFACING
SEE THIS DWG
NO SCALE

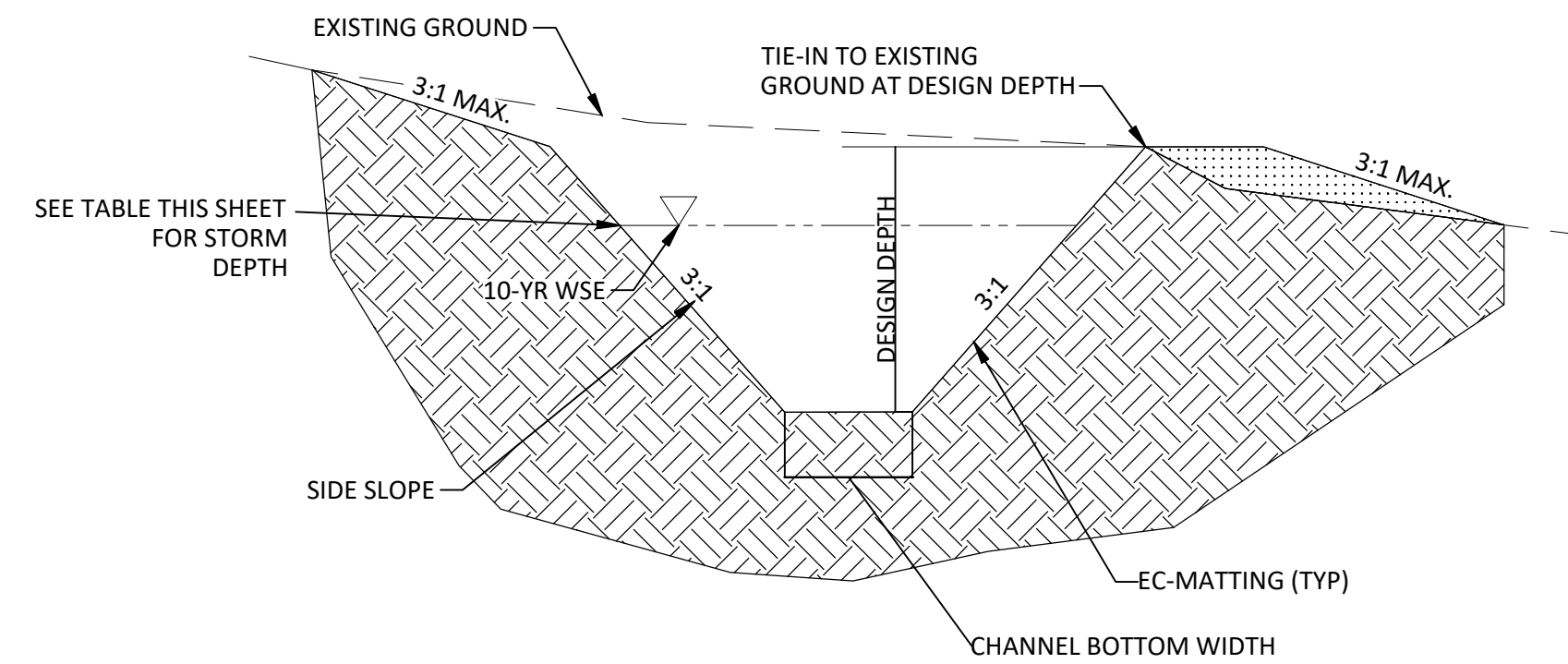
NOTE: SUBGRADE PREPARATION SHALL INCLUDE COMPACTION TO 95% STANDARD PROCTOR AND PROOF ROLLING



SECTION 1
NO SCALE



TYPICAL CULVERT RIP RAP INLET/OUTLET END
NO SCALE
SEE RIP RAP TABLE



STORMWATER CONVEYANCE CHANNEL/GRASS CHANNEL
NO SCALE

NOTE: SEE DITCH SCHEDULE THIS SHEET

- NOTES:
1. COMMERCIAL DRIVEWAYS TO BE A MAXIMUM OF 36' WIDE AT RIGHT-OF-WAY.
 2. CONCRETE SHALL BE 3000 PSI.
 3. CONTROL JOINTS NOT TO EXCEED 10' ON CENTER.
 4. CURB RADIUS SHALL NOT RISE MORE THAN 1-INCH.

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

BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

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 Civil 3D 2022 Imperial
 Full Size 1=1

| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
|----|-------------|-------------------------------|-----|-----|-----|------|-----|
| D | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |
| C | 20/DEC/24 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |
| B | 21/NOV/2024 | 90% SUBMITTAL | CLC | MJM | HGU | WL | |
| A | 15/NOV/2024 | ISSUED FOR PERMIT | CLC | MJM | HGU | PSLD | - |
| E | 28/JAN/2025 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | NO |

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DESIGNER: MJM DRAWN: CLC
CHECKED: HGU DATE: 28/JAN/25

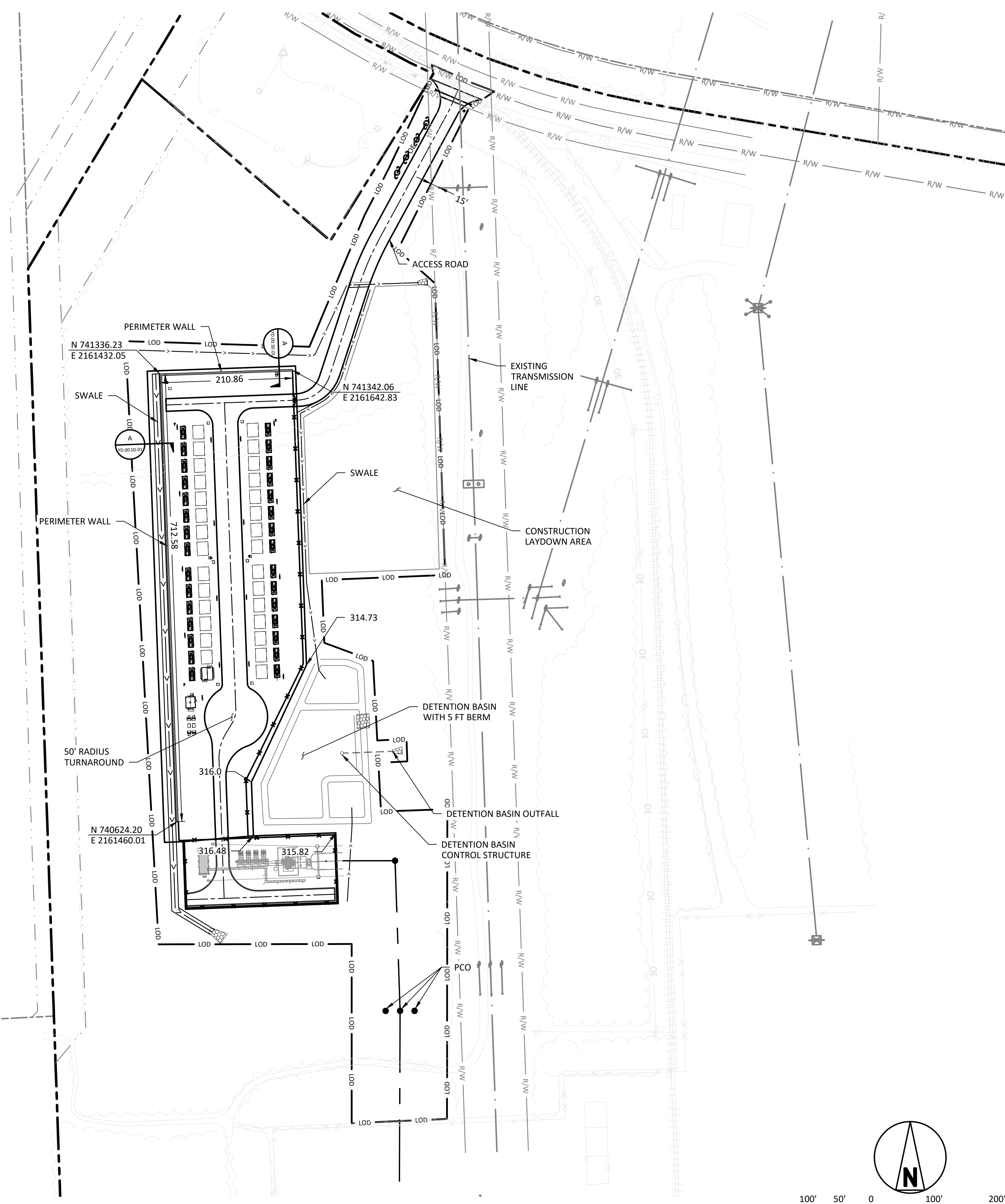
DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE FACILITY

SURFACING DETAILS
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| PROJECT | DRAWING NUMBER | REV |
|----------------------------|----------------|-----|
| 419596 KND01-CV-C-GR.SD-01 | | E |
| CODE | | |
| AREA | | |

A
B
C
D
E
F

Civil 3D 2022 Imperial
ANSI D 344.2
9/15/2024 7:29 AM



LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PERIMETER WALL
- PROPOSED UNDERGROUND ELECTRIC LINES
- RIGHT OF WAY

HORIZONTAL DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT
*STATE PLANE COORDINATES WERE ESTABLISHED
BASED IN NGS MONUMENTS "ROSE" AND "TOMB".

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988

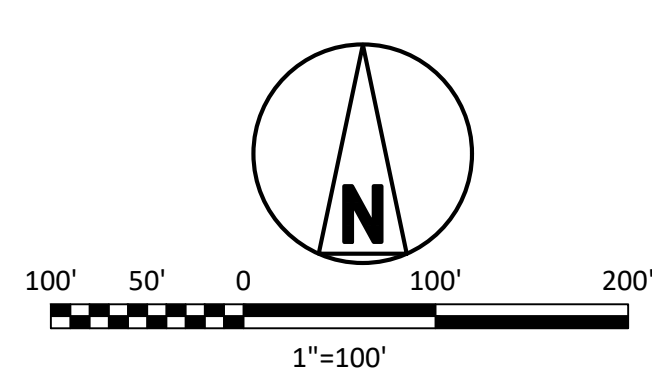
BENCHMARK: PROJECT LOCALIZATION POINT 'NAIL'
N: 740,484.141'
E: 2,163,003.135'
ELV: 291.02'

TOWN CERTIFICATION
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KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT
CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD
SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
TOWN ENGINEER

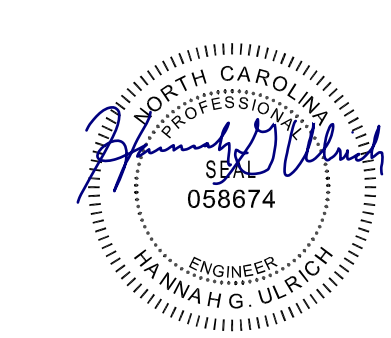
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE
AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: _____ DATE: _____
LAND USE ADMINISTRATOR



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| C | 25/OCT/2024 | ISSUED FOR PERMITTING | CLC | DSD | HGU | WL | - | | |
| B | 27/SEP/2024 | ISSUED FOR PERMITTING | CLC | DSD | HGU | DSD | - | | |
| A | 26/AUG/2024 | ISSUED FOR PERMITTING | CLC | DSD | HGU | DSD | - | | |
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CHECKED: HGU DATE: 13/JAN/25

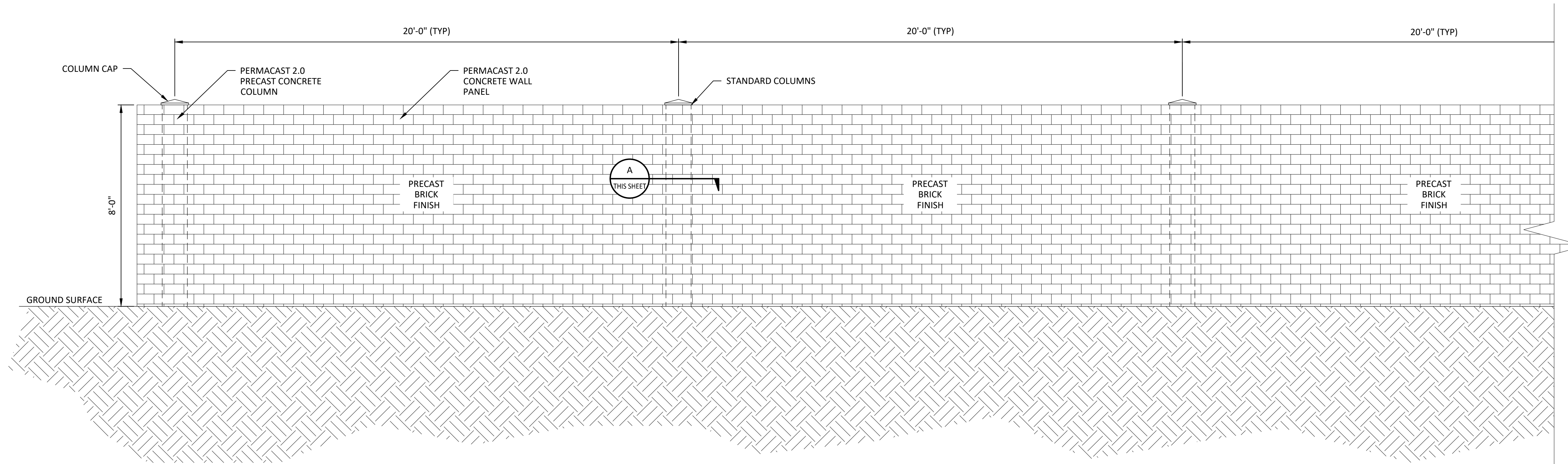
DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

ARCHITECTURAL PLAN
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

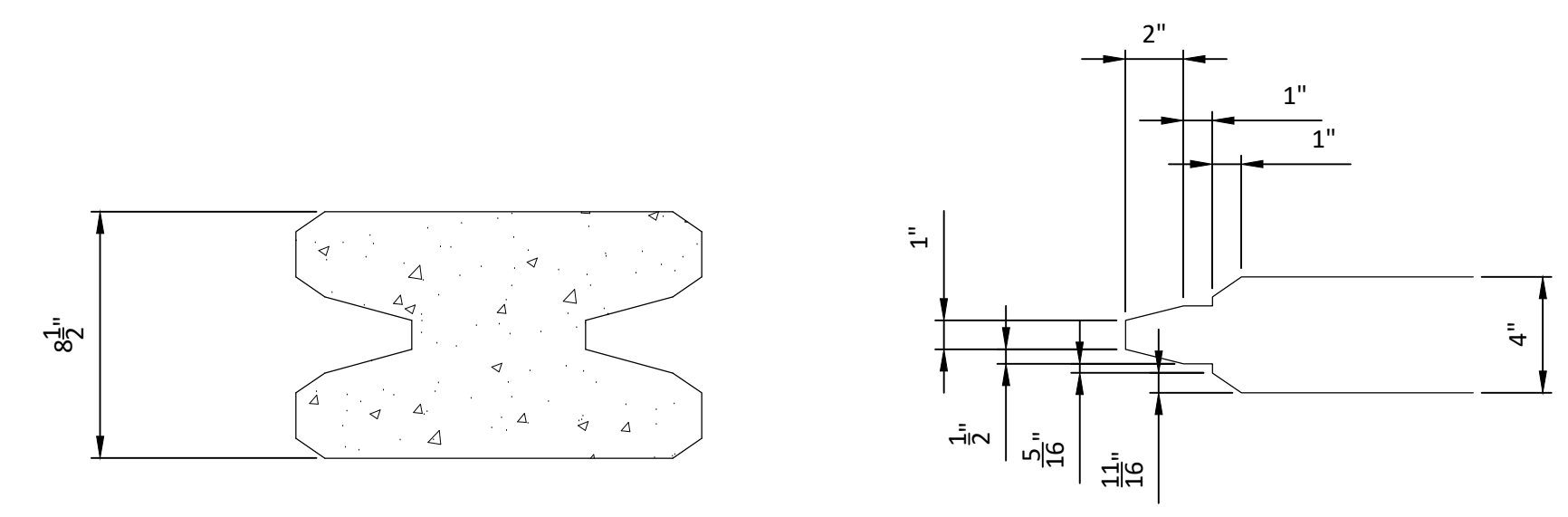
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| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-AD-A-YD.00.PL-01 | G | |
| CODE | AREA | |

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PREPARED BY ME OR UNDER MY DIRECT SUPER-
VISION AND THAT I AM A DULY REGISTERED PRO-
FESSIONAL ENGINEER UNDER THE LAWS OF THE
STATE OF _____

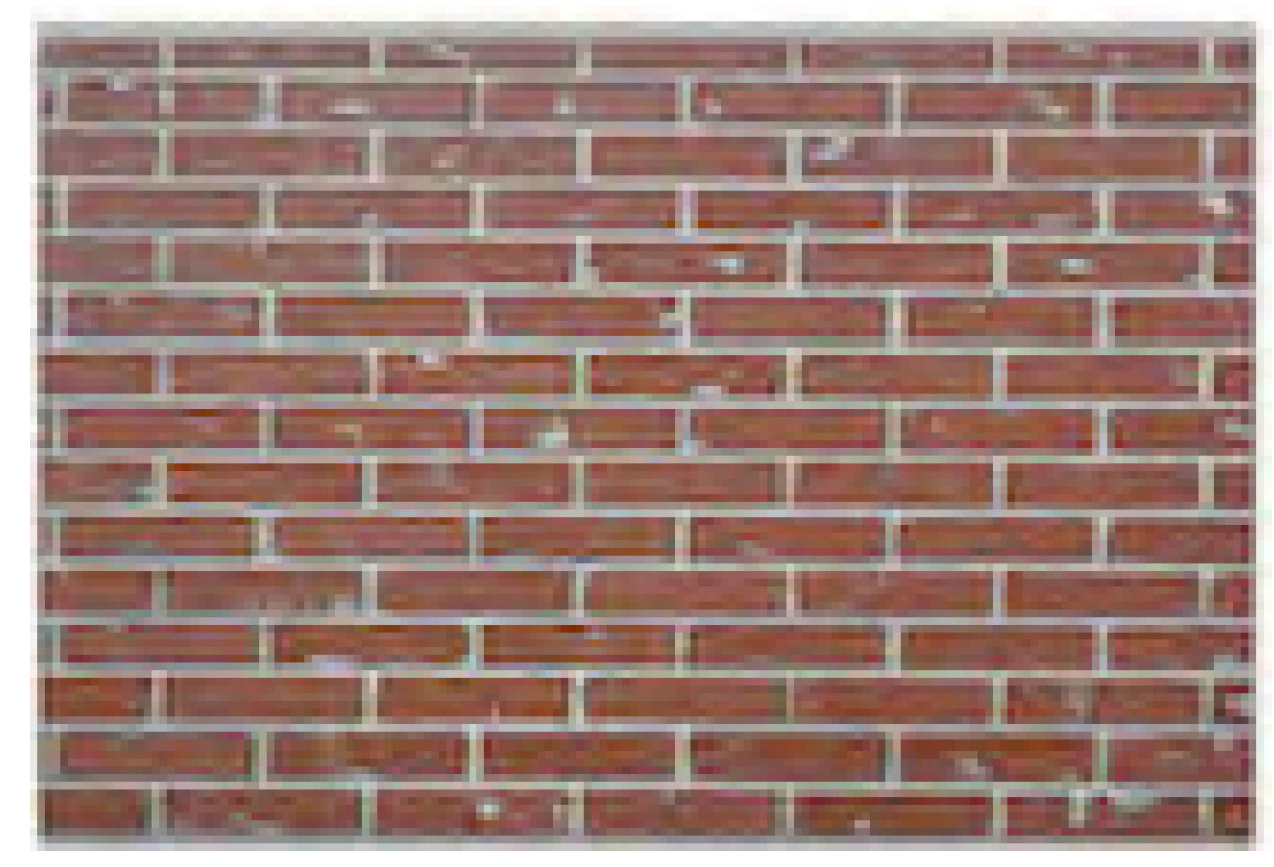
SIGNED _____
DATE _____ REG. NO. _____



ELEVATION A - TYPICAL 8 FT. X 20 FT WALL ELEVATION
SCALE: 1" = 30'-0"



SECTION A
TYPICAL PANEL / POST CONNECTION
SCALE: 1" = 6"



BRICK FINISH

NOTE:
1. THE DECORATIVE WALL WITH FOUNDATION WILL BE DESIGNED BY THE MANUFACTURER.

TOWN CERTIFICATION
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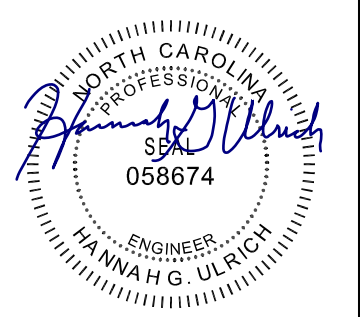
BY: _____ DATE: _____
TOWN ENGINEER

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ANSI D 34x22
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| D | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | - |
| C | 20/DEC/2024 | ISSUED FOR PERMITTING | JCB | WL | HGU | WL | - |
| B | 21/NOV/24 | 90% SUBMITTAL | JCB | WL | - | - | - |
| A | 26/AUG/24 | ISSUE FOR PERMITTING | DCV | - | DSD | DSD | - |

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SIGNED _____
DATE _____ REG. NO. _____

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DESIGNER: _____ DRAWN: DCV
CHECKED: HGU DATE: 13/JAN/25

DUKE ENERGY
DUKE ENERGY
KNIGHTDALE EPC

ARCHITECTURAL ELEVATION AND SECTIONS

| PROJECT | DRAWING NUMBER | REV |
|-------------------------------|----------------|-----|
| 419596 KND01-AD-A-YD.00.SD-01 | | D |
| CODE | AREA | |

ST5015UX-2H-US ST5015UX-4H-US

PowerTitan 2.0 Liquid Cooled Energy Storage System

NEW



| Product name | ST5015UX-2H-US | ST5015UX-4H-US |
|------------------------------------|---|------------------------|
| DC side | | |
| Cell type | LFP | |
| Battery configuration | 3.2 V / 314 AH | |
| Nominal capacity | 48632P | |
| Nominal voltage range | 5015 kWh | |
| AC side | | |
| Nominal AC power | 210 kVA * 12 | 210 kVA * 6 |
| AC current distortion rate | < 3% (Nominal Power) | |
| DC component | < 0.5% | |
| Nominal AC voltage | 690 V | |
| AC voltage range | 607 V ~ 759 V | |
| Termination (LV) | 352 A * 3 Phase * 6 | 352 A * 3 Phase * 3 |
| Power factor | > 0.99 (Nominal Power) | |
| Adjustable range of reactive power | -100% ~ 100% | |
| Nominal frequency | 60 Hz | |
| Isolation method | Transformerless | |
| System parameter | | |
| Dimension (W * H * D) | 6058 mm * 2896 mm * 2438 mm | |
| Weight | 42500 kg / 93696.5 lbs | 42000 kg / 92594.0 lbs |
| Degree of protection | Type 3S | |
| Anti-corrosion degree | C4 | |
| Operation temperature range | -30 °C ~ 50 °C (> 45 °C Derating) | |
| Operation humidity range | -22 °F ~ 122 °F (> 113 °F Derating) | |
| Max. operation altitude | 3000 m / 9842.5 ft | |
| Temperature control method | Intelligent Liquid Cooling | |
| Fire suppression system | Default: NFPA 68 compliance vent panel, smoke and heat, detectors, Mini FACP Optional: Sprinkler, sound beacon, NFPA 69, compliance ventilation system, Flammable gas detector | |
| Communication | Ethernet | |
| Standard | UL 9540A, NFPA 855, NFPA 68, NFPA 69 (optional) IEEE 1547, UL 1973, UL 1741SB, UL 9540 | |

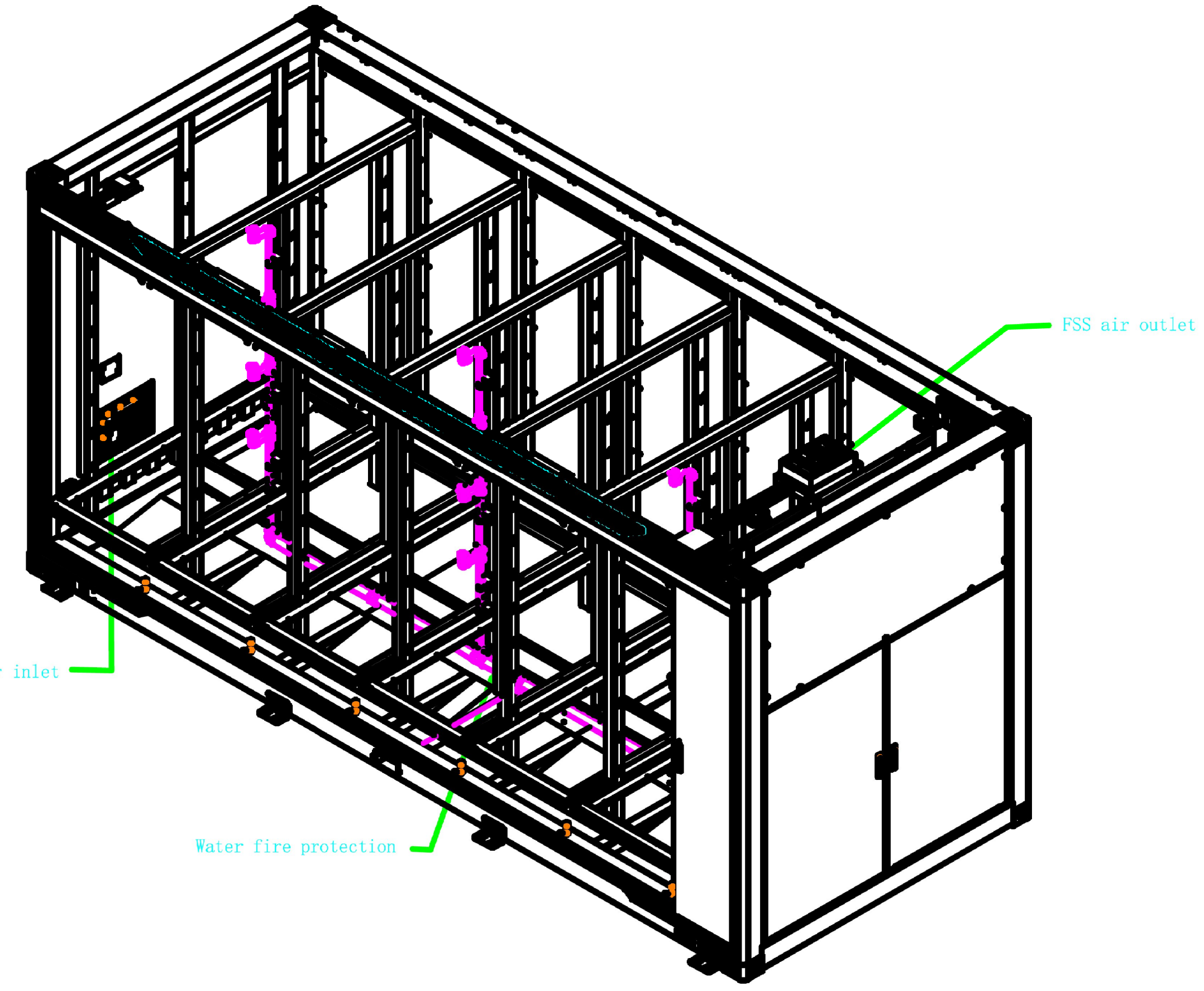


Front View

- OPTIMAL COST**
 - Intelligent liquid-cooled temperature control system to optimize the auxiliary power consumption
 - Pre-assembled, no battery module handling on site, transportation of complete system
- EFFICIENT AND FLEXIBLE**
 - High-efficiency heat dissipation, increase battery life and system discharge capacity
 - Front single-door-open design, supporting back to back layout drawing
 - Function test in factory, limited on-site work, accelerate commissioning process
- SAFE AND RELIABLE**
 - Electrical safety management, overcurrent fast breaking and arc extinguishing protection
 - The electrical cabinet and battery cabinet are separated to prevent thermal runaway
- CONVENIENT O&M**
 - One-click system upgrade
 - Automatic coolant refilling design
 - Online intelligent monitoring

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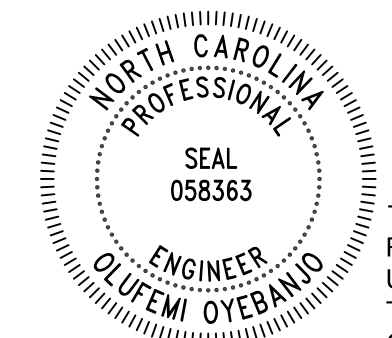


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BY: _____ DATE: _____
TOWN ENGINEER

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BY: _____ DATE: _____
LAND USE ADMINISTRATOR

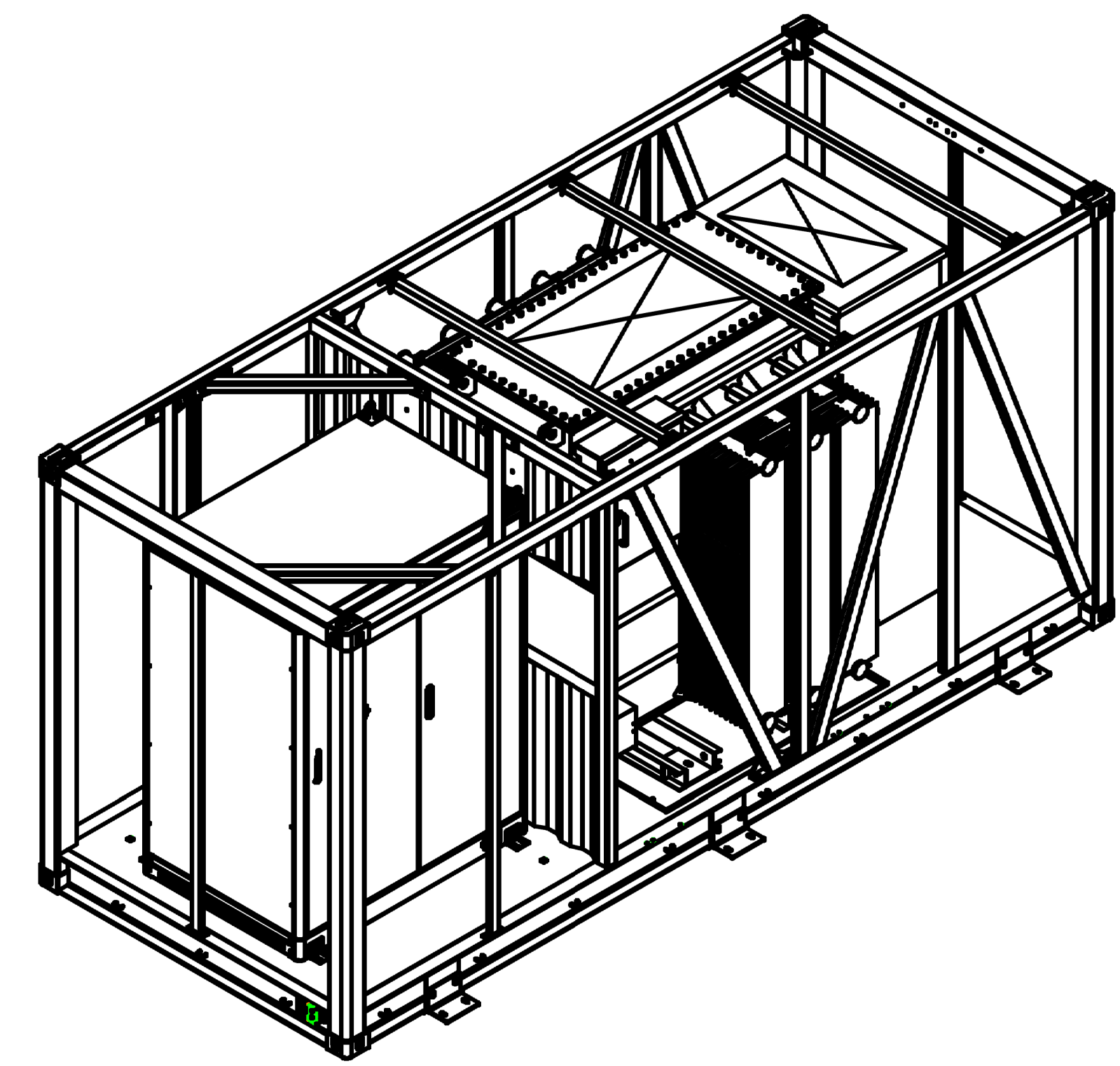
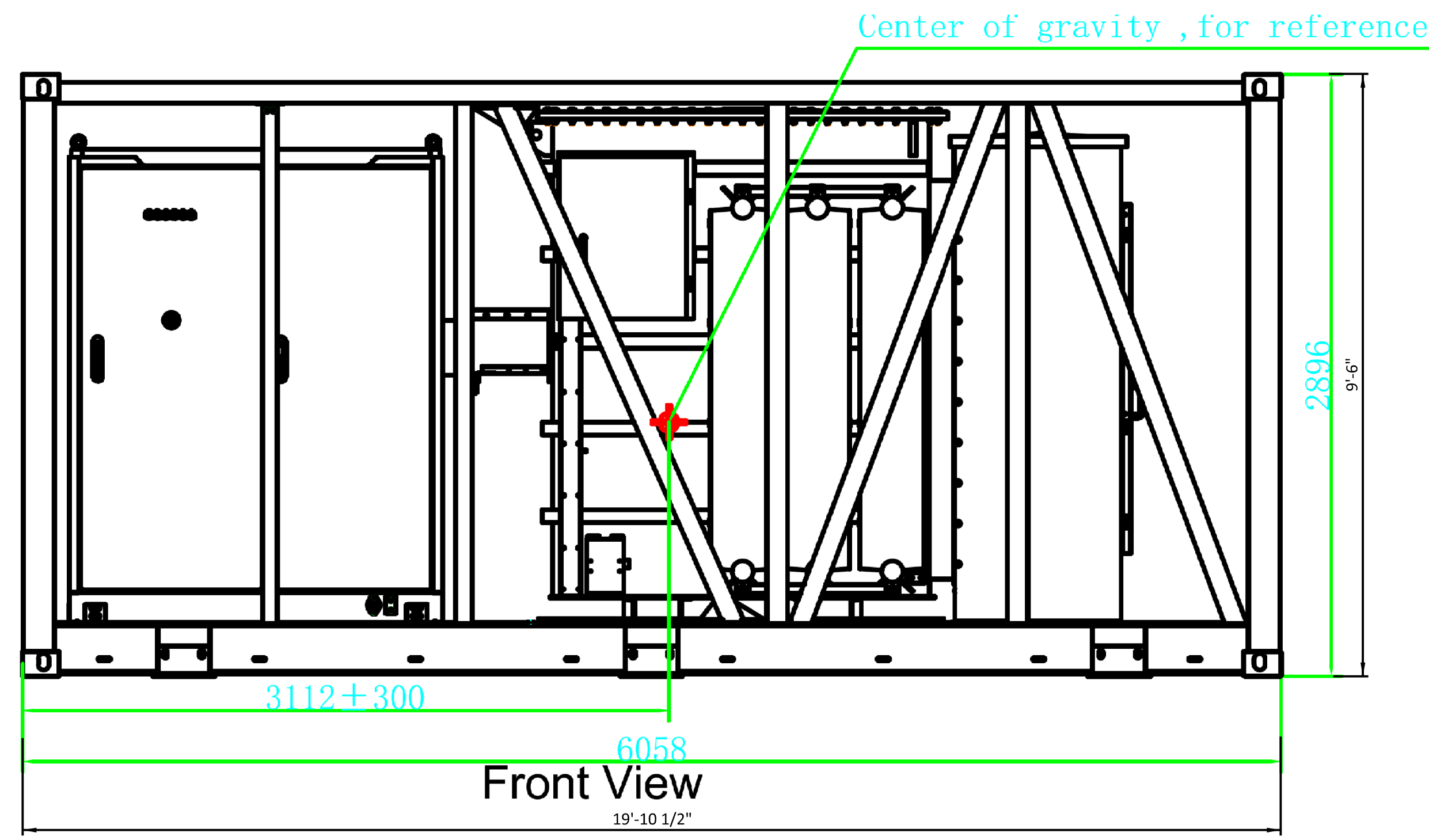


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B&V PROJECT NUMBER: 419596

MicroStation v23.00.01.44
ANSI D 34622
Full Size 1 = 1
2/23/2024 03:30 PM

| | | | | | | | | | | | | | | | | | |
|----------|--|-----------|--|---------|--|-----------|--|---|--|--|--|---|--|--|--|----------|--|
| DESIGNER | | DRAWN | | CHECKED | | DATE | | | | | | PROJECT KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | | DRAWING NUMBER KND01-VEN-LG-E-SD-01 | | REV B | |
| BCA | | RSN | | OOO | | 23/AUG/24 | | 17401 LAMAR AVENUE OVERLAND PARK, KANSAS 66211 | | BESS CONTAINER ARCHITECTURAL PLAN 5201 KNIGHTDALE EAGLE ROCK ROAD KNIGHTDALE, NC 27545 | | CODE AREA | | | | | |
| NO | | DATE | | DRN | | DES | | CHK | | PDE | | APP | | REVISIONS AND RECORD OF ISSUE | | | |
| B | | 15/NOV/24 | | RSN | | BCA | | OOO | | OOO | | BC | | ISSUED FOR PERMIT | | | |
| A | | 23/AUG/24 | | RSN | | BCA | | OOO | | OOO | | BC | | ISSUED FOR PERMIT | | | |



SUNGROW
Clean power for all

MVS5140-LS-US

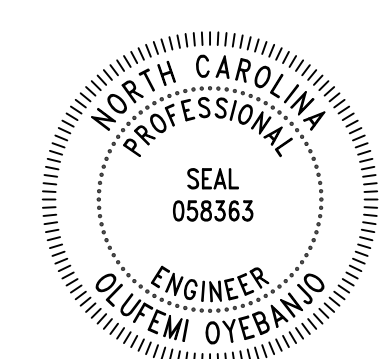
MV Turnkey Solution for **PowerTitan 2.0** MVS Liquid Cooling Energy Storage System

NEW

| Product Name | MVS5140-LS-US |
|---------------------------------|---|
| MV transformer | |
| Rated power | 5140 kVA |
| MV / LV voltage | 34.5 kV / 0.69 kV |
| Transformer vector | Dy1 |
| Windings | 2 windings |
| Rated frequency | 60 Hz |
| Impedance | 9 % (± 7.5 % , IEEE tolerance) |
| Efficiency standard | 99 % @ 100 % load |
| Material of winding (MV / LV) | Aluminum / Aluminum |
| Legged core design | 3 Legged core Design |
| High voltage configuration | Loop-feed, Dead Front |
| Overcurrent protection | Expulsion fuses in series with Partial-Range Current-Limiting Fuses |
| Cooling method | KNAN |
| Insulation fluid | Degradable oil |
| Smart control cabinet | |
| Protection | AC Breaker |
| Surge protection | Type II |
| AC Insulation detection | Support |
| Cooling Method | Air cooling and HVAC |
| UPS | 15 min (Default) 2 / 3 / 4 h (Optional) |
| General data | |
| Dimensions (W * H * D) | 6058 mm * 2896 mm * 2438 mm 238.5" * 114.0" * 96.0" |
| Weight | 15300 kg 33730 lbs |
| Cable entry | Bottom entry |
| Degree of protection | Type 3S |
| Anti-corrosion degree | C4 |
| Operation temperature range | -40 °C ~ 60 °C -40 °F ~ 140 °F |
| Operation humidity range | > 40 °C (104 °F) derating (Default) > 45 °C (113 °F) derating (Optional) |
| Max. operating altitude | 3000 m 9842.5 ft |
| Communication | Ethernet, Optical fiber, RS485 |
| Standard | UL 891, IEEE C57.12.00, IEEE C57.12.80, IEEE C57.12.90 |

* 15min UPS only supplies power for the control and communication devices in the MVS
 ** 2/3/4 h UPS supplies power for the control and communication devices in the the MVS, and the ventilation system in the battery container

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BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

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| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
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| A | 23/AUG/24 | ISSUED FOR PERMIT | RSN | BCA | 000 | 000 | BC |

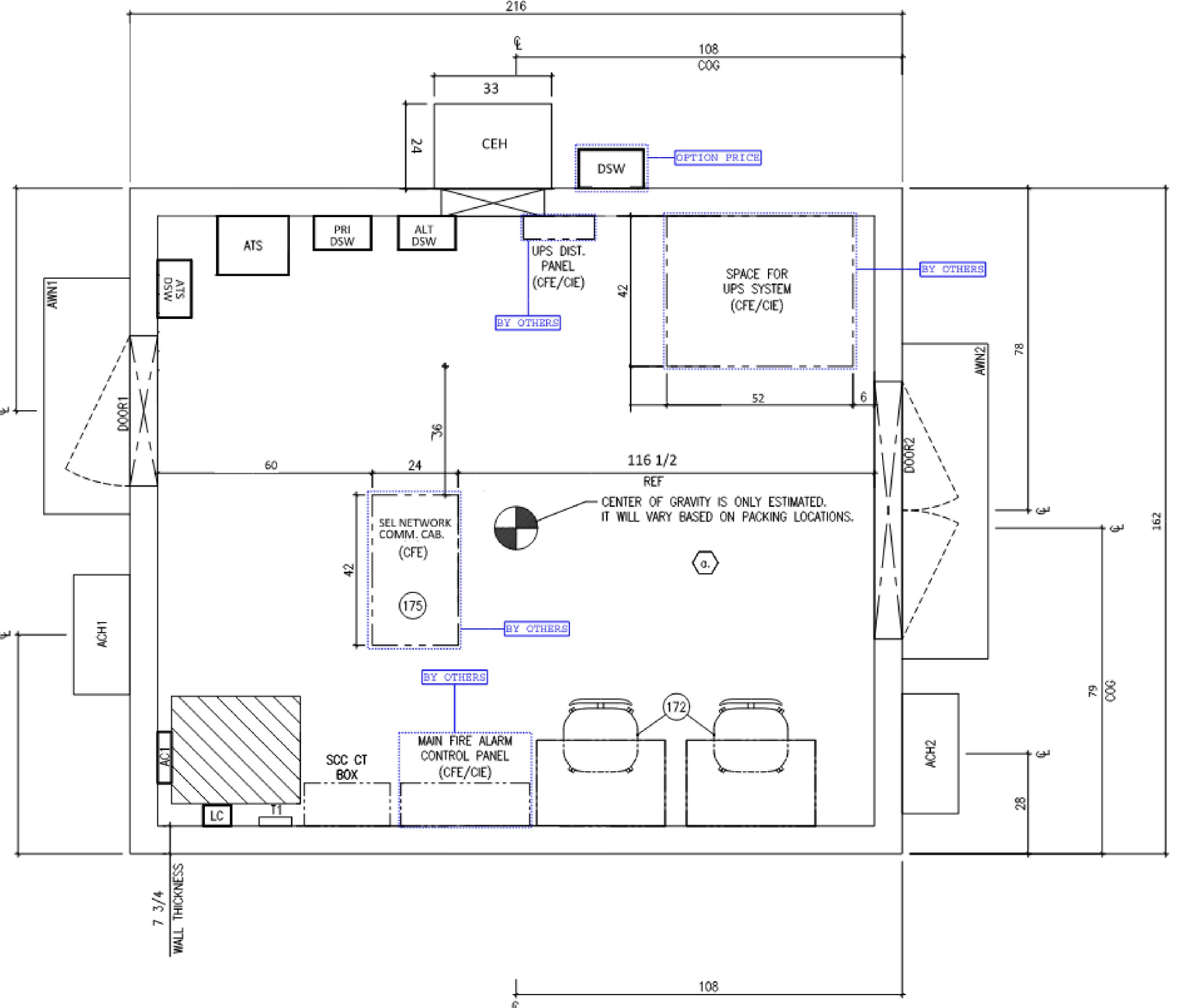
BLACK & VEATCH
15401 LAMAR AVENUE
OVERLAND PARK, KANSAS 66211

DESIGNER: BCA DRAWN: RSN
CHECKED: 000 DATE: 23/AUG/24

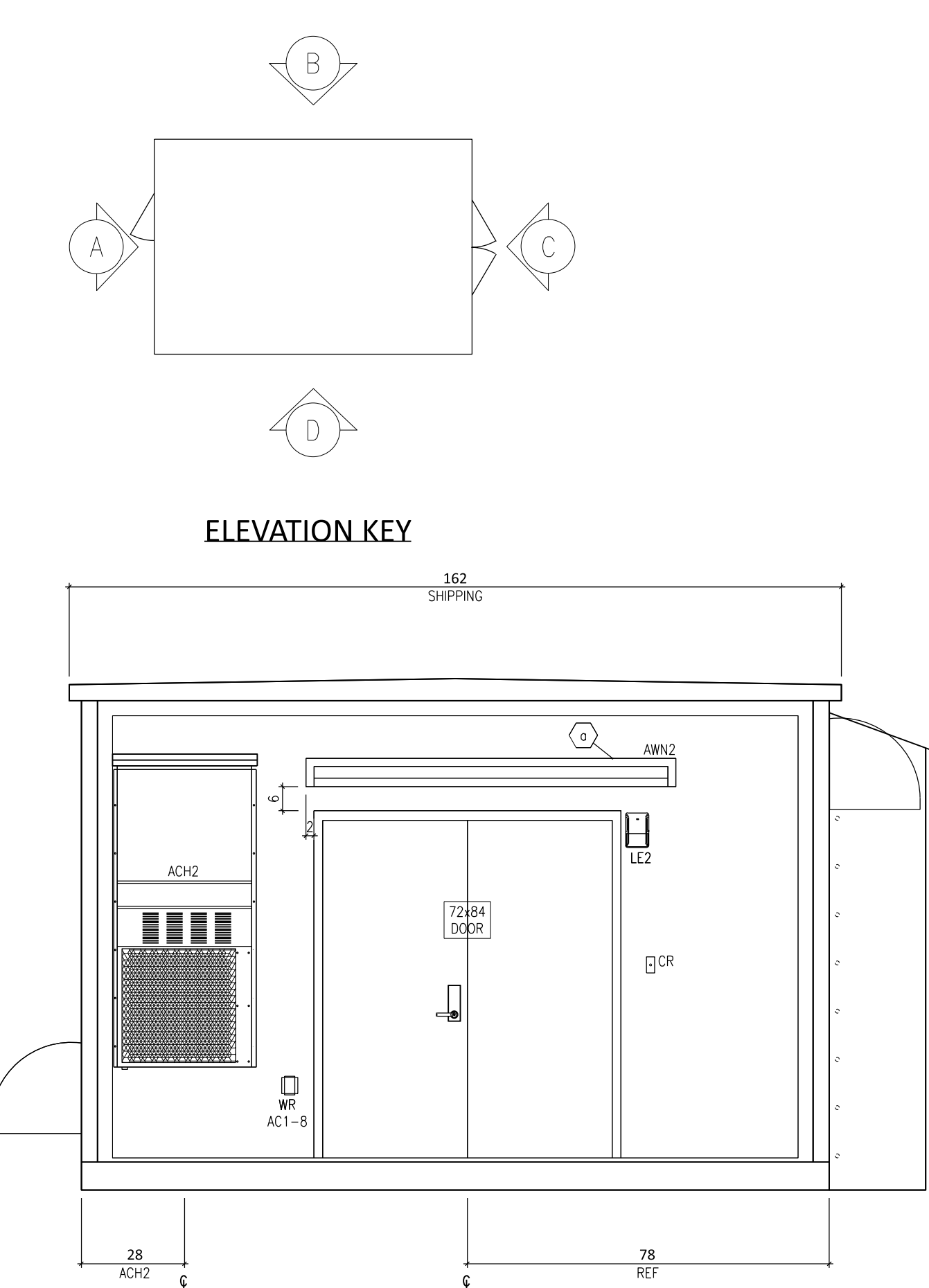
DUKE ENERGY
MVT SKID LAYOUT

MVT SKID ARCHITECTURAL PLAN
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

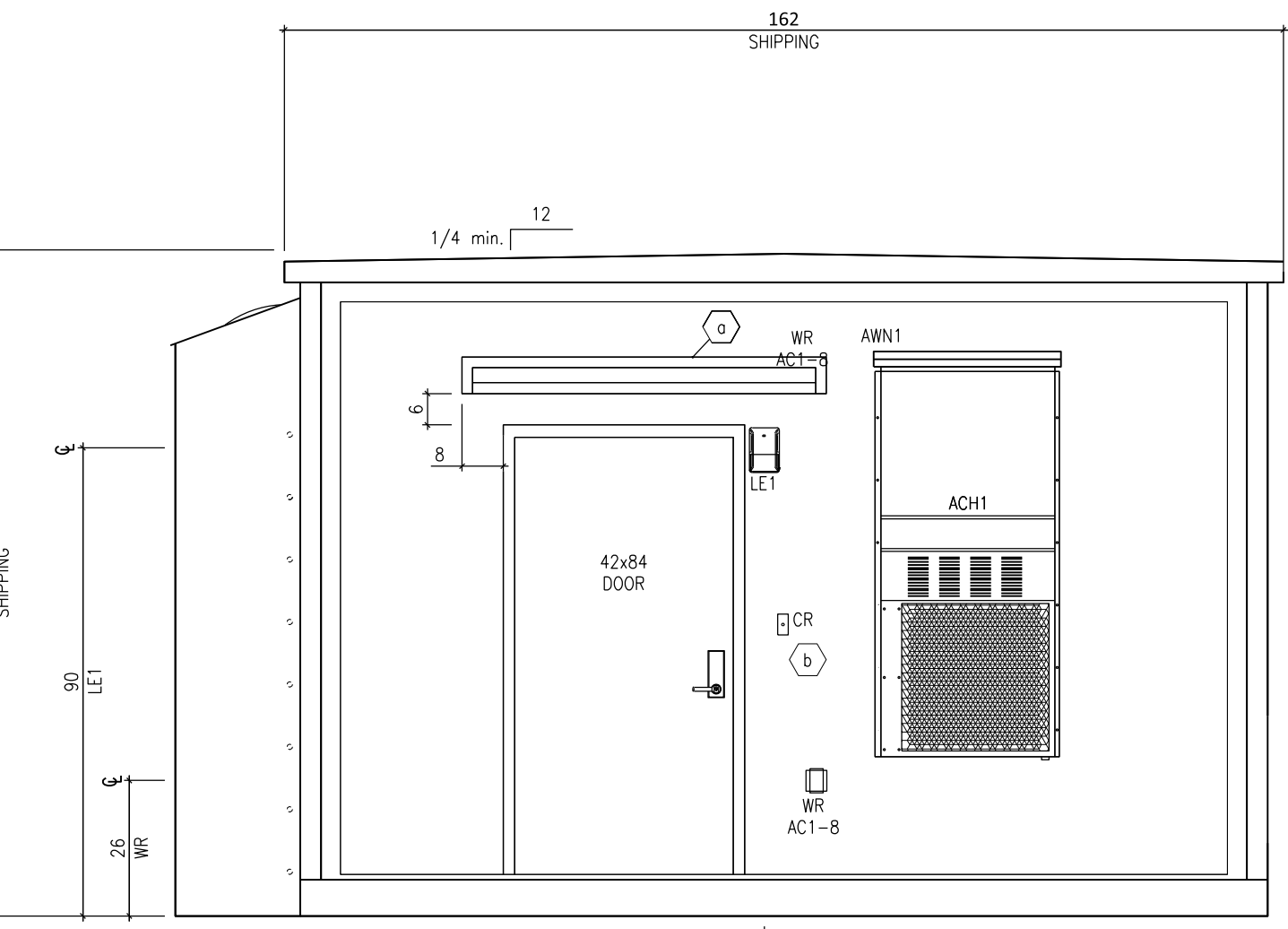
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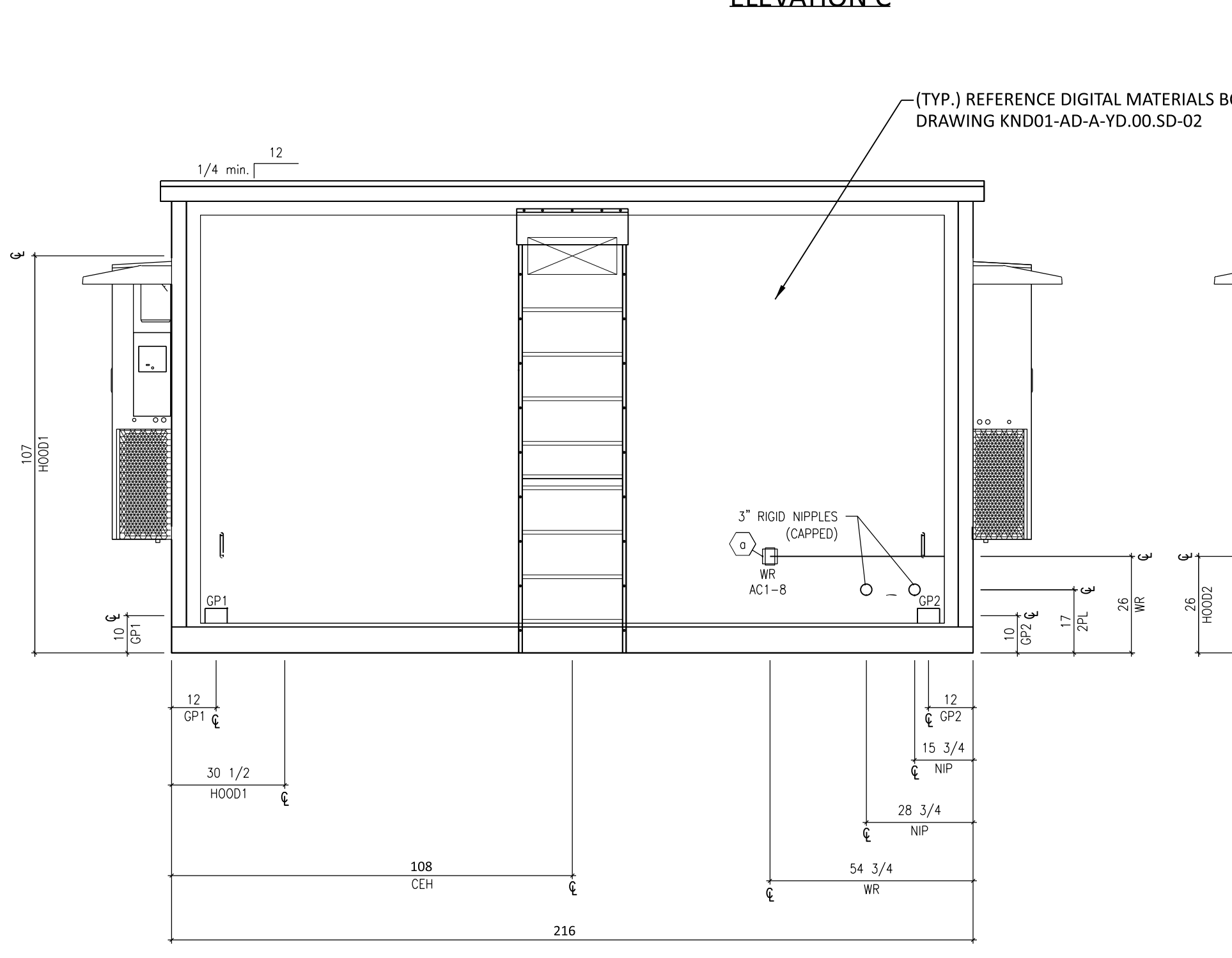
PLAN VIEW



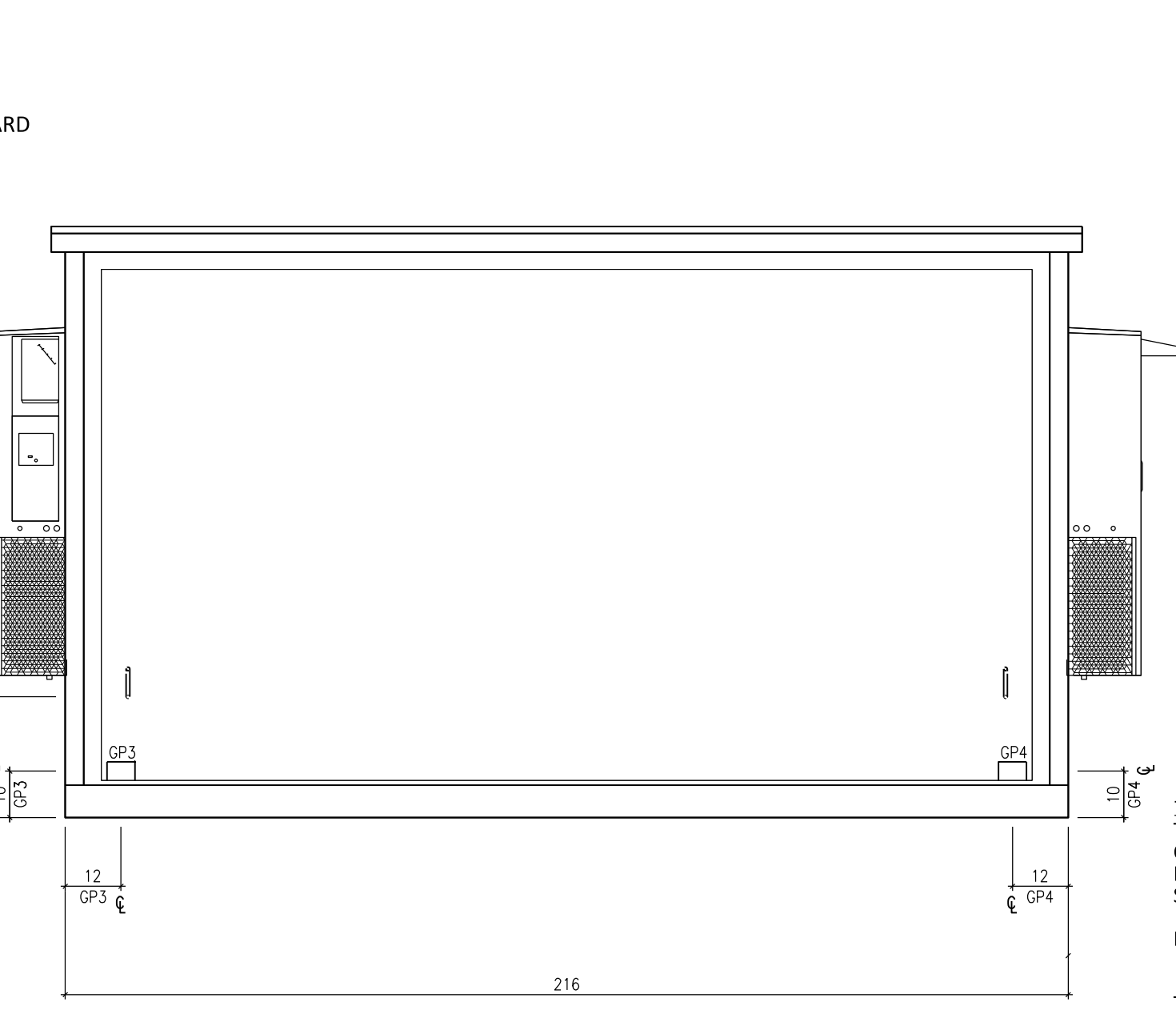
ELEVATION KEY



ELEVATION A



ELEVATION B



ELEVATION C

ELEVATION D

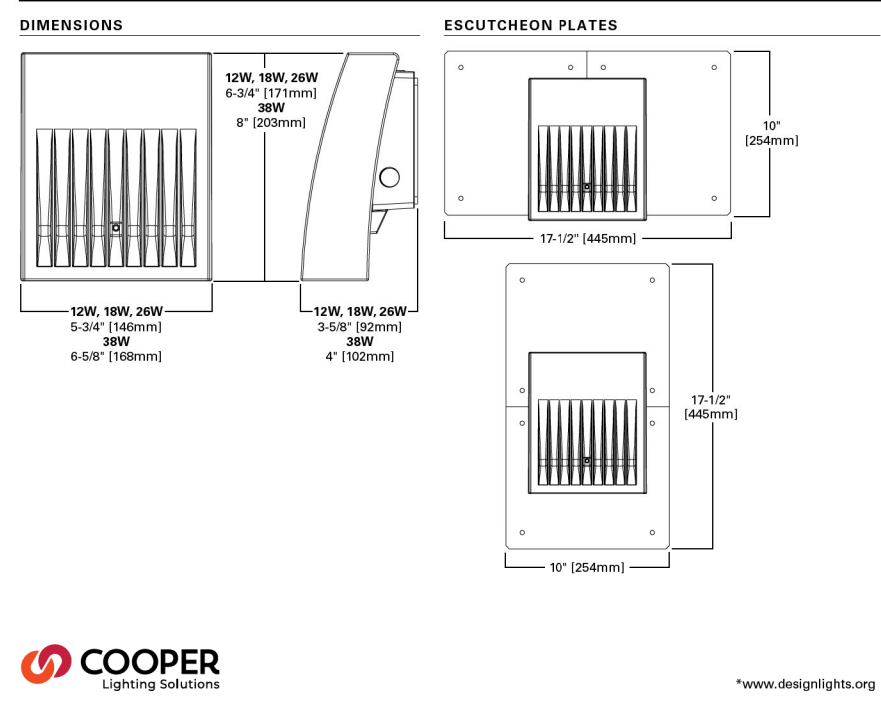
Table with 3 columns: Category #, Project, Comments, and Date.

Lumark

DESCRIPTION: The patented Lumark Crosstour™ LED Wall Pack Series of luminaires provides an architectural style with super bright, energy efficient LEDs.



XTOR CROSSTOUR LED



CERTIFICATION DATA: Dark Sky Approved (Flood mount, Full cutoff, and 5000 CCT only).

TECHNICAL DATA: 40°C Maximum Ambient Temperature, 5000K, 120V PC, Carbon Bronze.

SHIPPING DATA: Approximate Net Weight: 3.7 - 5.5 lbs. (1.7 - 2.4 kg)

Table with columns: LED Information, Project, Comments, Date, and various luminaire models.

ORDERING INFORMATION

Table with columns: Series, LED Color, Housing Color, Options, and Accessories.

NOTES: 1. DesignLights Consortium™ Qualified and classified for both DLC Standard and DLC Premium.

STOCK ORDERING INFORMATION

Table with columns: Domestic Preference, 12W Series, 19W Series, 26W Series, and 36W Series.

NOTES: 1. Only product configurations with these designated prefixes are built to comply with the Buy American Act of 1933 (BAA).

MicroStation v23.00.01.44 ANI D 34622 12/28/2024 11:55 AM

Table with columns: NO, DATE, REVISIONS AND RECORD OF ISSUE.

BLACK & VEATCH logo and contact information.

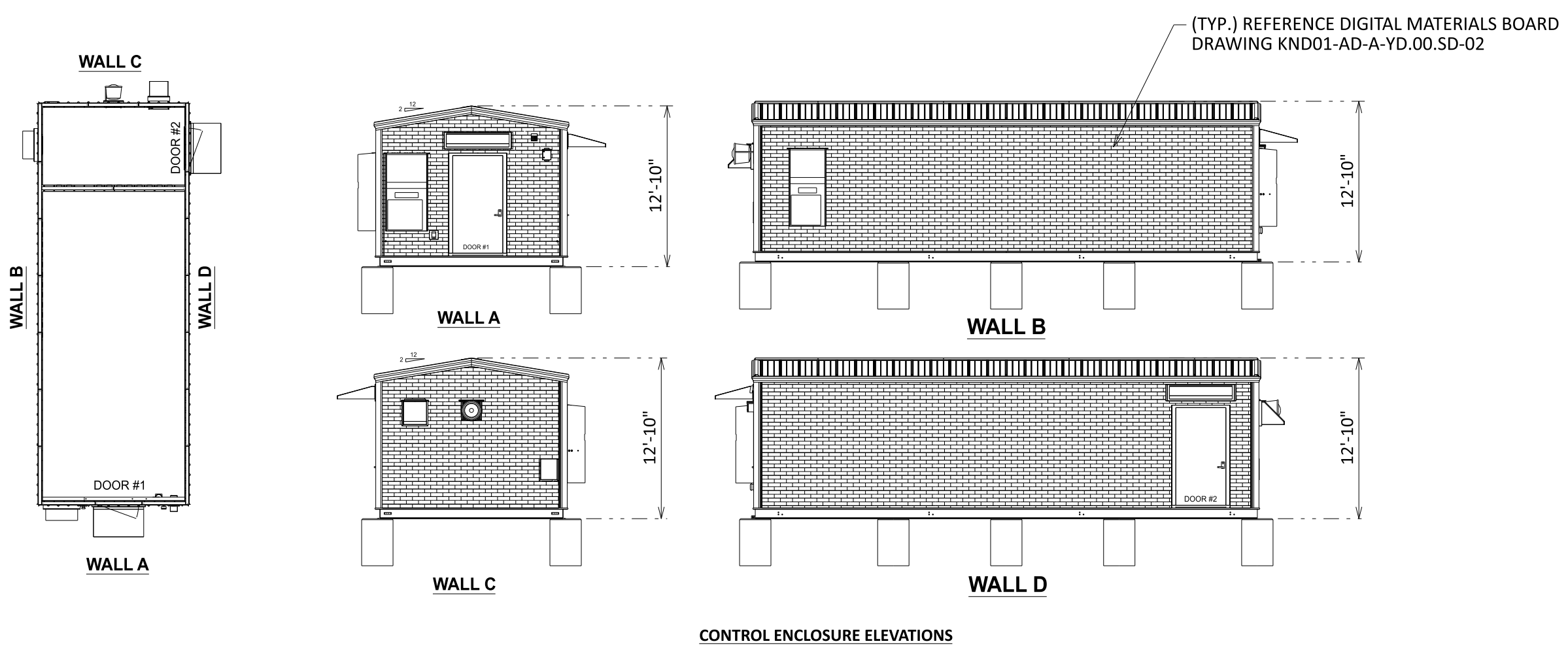
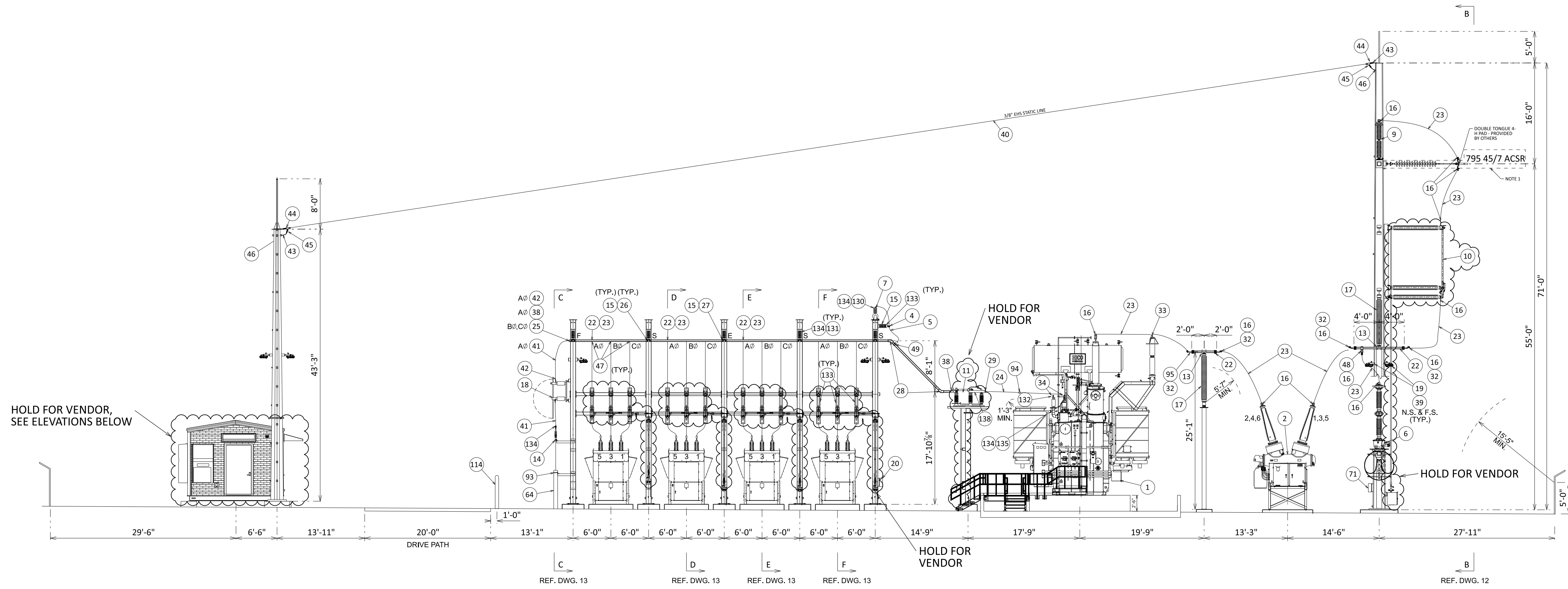
DUKE ENERGY logo and address: 5201 KNIGHTDALE EAGLE ROCK ROAD, KNIGHTDALE, NC 27545.

PROJECT: KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM, DRAWING NUMBER: KND01-VEN-LG-E-SD-03.



ISSUED FOR PERMITTING: THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED.

Table with columns: PROJECT, DRAWING NUMBER, REV, CODE, AREA.



- LEGEND:**
- (XX) BOM ITEM NO. SEE REFERENCE DWG #7, #8 AND #9
 - F FIXED BUS SUPPORT
 - S SLIP BUS SUPPORT
 - E EXPANSION BUS SUPPORT
 - N.S. NEAR SIDED
 - F.S. FAR SIDED

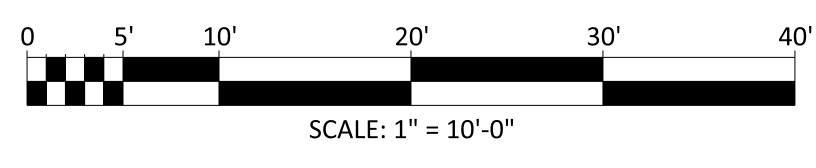
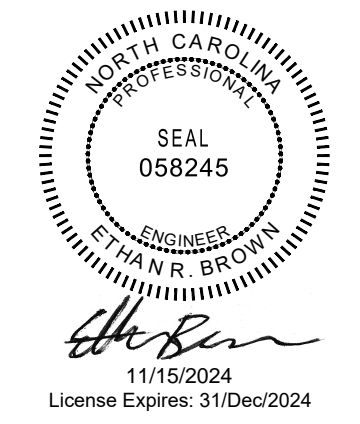
- NOTES:**
1. INCOMING LINE AND DEAD END EQUIPMENT PROCURED AND INSTALLED BY OTHERS.
 2. ALL VERTICAL DIMENSIONS ARE FROM BOTTOM OF STEEL.
 3. MAINTAIN 8'-6" CLEARANCE FROM THE BOTTOM OF BREAKER BUSHING TO THE TOP OF CONCRETE.

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

BY: _____ DATE: _____
 TOWN ENGINEER

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

BY: _____ DATE: _____
 LAND USE ADMINISTRATOR



A1122837
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 11/15/2024 12:00 PM
 MicroStation v23.00.01.44
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| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
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| C | 15/NOV/24 | ISSUED FOR PERMIT | BCA | BCA | VC | BCA | ERB |
| B | 29/AUG/24 | ISSUED FOR 60% REVIEW | BCA | BCA | VC | BCA | ERB |
| A | 23/AUG/24 | ISSUED FOR PERMIT | BCA | BCA | VC | BCA | ERB |

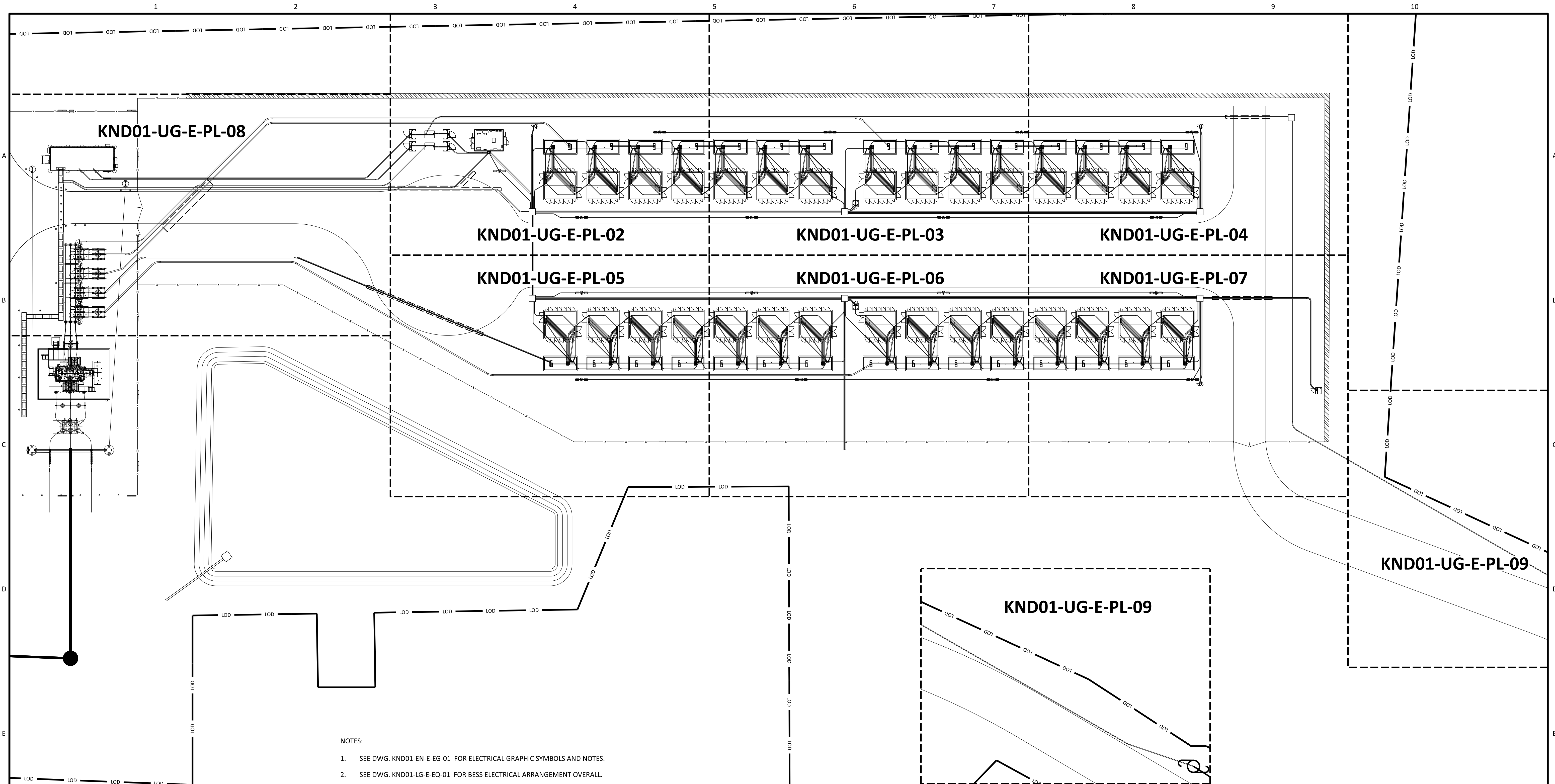
BLACK & VEATCH

DESIGNER: BCA DRAWN: BCA
 CHECKED: VC DATE: 23/AUG/24

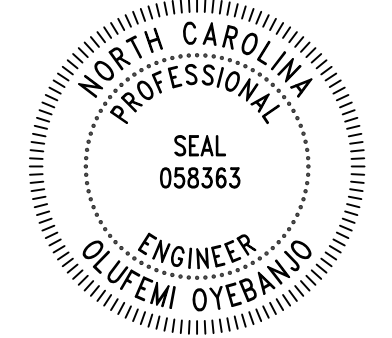
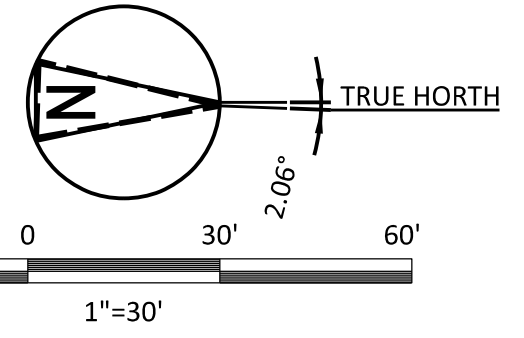
DUKE ENERGY
 KNIGHTDALE BESS

STATION CONTROL ENCLOSURE ARCHITECTURAL PLAN
 5201 KNIGHTDALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|-------------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND00-GA-M-SY.00.EV-01 | C | |
| CODE | AREA | |



- NOTES:
- SEE DWG. KND01-EN-E-EG-01 FOR ELECTRICAL GRAPHIC SYMBOLS AND NOTES.
 - SEE DWG. KND01-LG-E-EQ-01 FOR BESS ELECTRICAL ARRANGEMENT OVERALL.
 - SEE DWG. KND01-GD-E-PL-01 FOR GROUNDING BESS PLANT OVERALL.
 - SEE DWG. KND01-CV-C-FD-XX FOR EQUIPMENT FOUNDATION PLAN AND DETAILS.
 - ALL CONDUITS CROSSING THE ROADWAY SHALL BE COVERED IN CONCRETE PRIOR TO BACKFILL. CONCRETE ENCASEMENT SHALL EXTEND 5' FROM EACH SIDE OF THE ROAD AND INCLUDE THE WIDTH OF THE TRENCH.
 - POLYWATER J LUBRICANT SHALL BE USED FOR ALL MEDIUM VOLTAGE CABLE PULL WITHIN UNDERGROUND CONDUITS.



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

BY: _____ DATE: _____
 TOWN ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: _____ DATE: _____
 LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

B&V PROJECT NUMBER: 419596

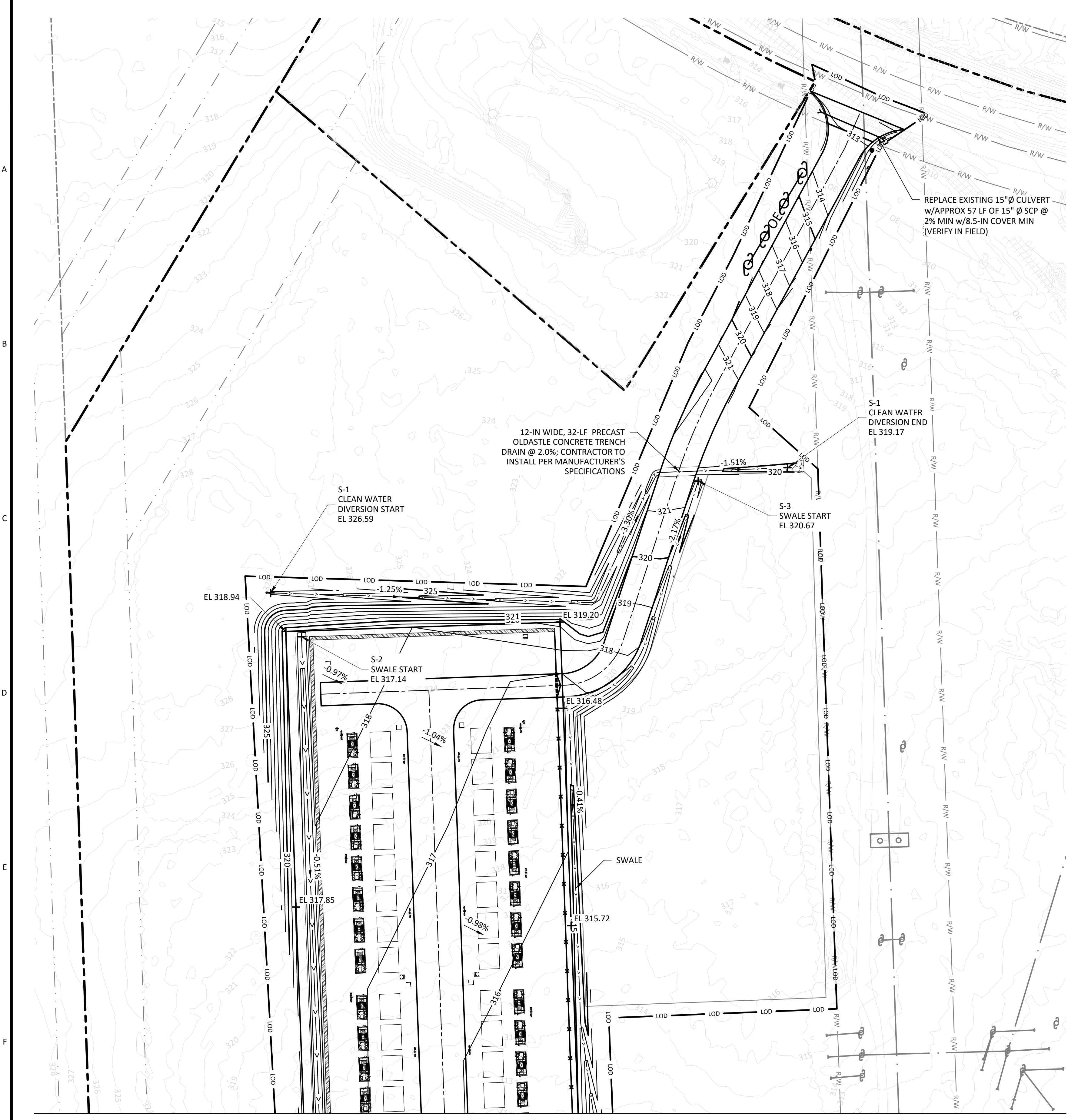
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 ANS D 34622
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 MicroStation v23.00.01.44
 Full Size 1 = 1

| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
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| D | 15/NOV/24 | ISSUED FOR PERMIT | RSN | RSN | OOO | OOO | BC |
| C | 13/SEP/24 | ISSUED FOR PERMIT | RSN | RSN | OOO | OOO | BC |
| B | 03/SEP/24 | ISSUED FOR CLIENT 60% REVIEW | RSN | RSN | OOO | OOO | BC |
| A | 23/AUG/24 | ISSUED FOR PERMIT | RSN | RSN | OOO | OOO | BC |

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|---------------------------|-----|--------------------|-----------|
| BLACK & VEATCH | | DUKE ENERGY | |
| DESIGNER | RSN | DRAWN | RSN |
| CHECKED | OOO | DATE | 03/SEP/24 |

DUKE ENERGY
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM
 ELECTRICAL UNDERGROUND CONDUIT BESS
 5201 KNIGHTDALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|-----------------|-----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| KN01-UG-E-PL-01 | KN01-UG-E-PL-01 | F |
| CODE | AREA | |



CONSTRUCTION SEQUENCE:

1. FOR EROSION CONTROL CONSTRUCTION SEQUENCE, SEE SHEET KND01-CV-C-GR-SD-01.
2. SCHEDULE AN ONSITE PRE-CONSTRUCTION MEETING WITH THE TOWN OF KNIGHTDALE TO INSPECT THE INSTALLED PERIMETER CONTROLS PER THE EROSION CONTROL PLAN.
3. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ONSITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
4. BEGIN CLEARING AND GRUBBING. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED PER THE EROSION AND SEDIMENT CONTROL PLAN.
5. INSTALL STORMWATER CONVEYANCE MEASURES. PERFORM MASS GRADING ACTIVITIES.
6. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE ELEVATIONS IN ACCORDANCE WITH THE EROSION CONTROL PLAN.
7. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL EROSION CONTROL INSPECTOR FOR AN INSPECTION.
8. IF SITE IS APPROVED, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES. CONVERT SEDIMENT BASIN TO WET POND. SEE SHEET KND01-CV-C-SD.04 FOR CONVERSION SEQUENCE.
9. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL INSPECTION BY THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATE OF COMPLETION.

REQUIRED SCM INSPECTIONS SEQUENCE:

WHEN SCHEDULING INSPECTIONS, PLEASE CALL THE PUBLIC WORKS ADMINISTRATIVE ASSISTANT AT (919) 217-2250.
PLEASE NOTE: THE FOLLOWING PERSONNEL MUST BE PRESENT AT ALL INSPECTIONS:
 1) SITE SUPERVISOR
 2) GEOTECH
 3) AS-BUILT CERTIFYING ENGINEER OR SOMEONE UNDER THEIR SUPERVISION

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

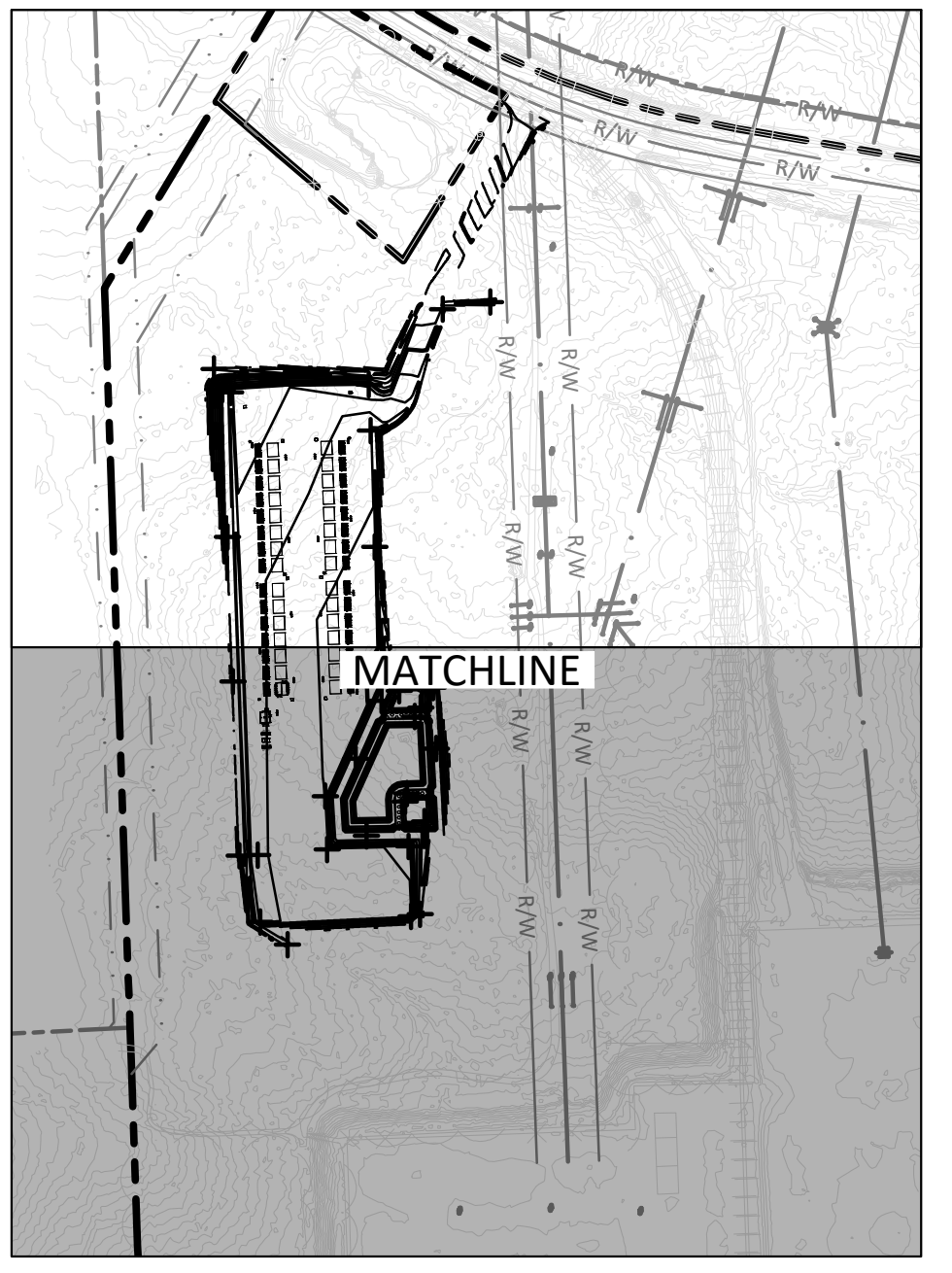
1. KEY TRENCH EXCAVATION
2. PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
 - a. CONCRETE CRADLE
 - b. ANTI-SEEP COLLAR
 - c. SEEPAGE DIAPHRAGM
3. OUTLET STRUCTURE
4. ANTI-FLOTATION BALLAST
5. ANY SITE-CONSTRUCTED REINFORCED CONCRETE STRUCTURES

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

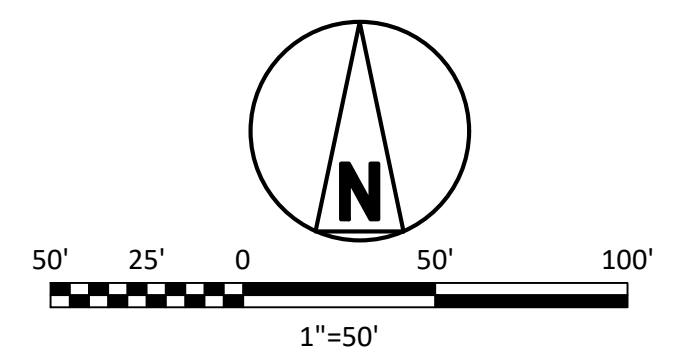
- a. SUBGRADE OR CONSTRUCTED FOUNDATION
- b. OUTLET OR RISER IN COMBINATION WITH CONNECTING UNDERDRAINS
- c. FILTER MEDIA
- d. DAM ITEMS ON PREVIOUS LIST IF APPLICABLE

GEOTECHNICAL TESTING AND CERTIFICATION
 ALL REPORTS ARE TO BE SUBMITTED WITHIN 30-DAYS OF DAM COMPLETION
 REQUIRED GEOTECHNICAL RECORDS INCLUDE:

1. DAM EMBANKMENT MATERIAL COMPOSITION AND DENSITY TESTING
2. MAP THAT LABELS ALL POINTS WHERE THE DAM AND DAM FOUNDATION AREAS WERE TESTED
3. DIGITAL PHOTOS SHOWING THE DAM FOUNDATION AREAS, THE RISER, THE PRINCIPLE SPILLWAY PIPE, THE CONCRETE CRADLE, THE SEEPAGE DIAPHRAM, RELIEF DRAINS, ETC., BEING INSTALLED.



KEY PLAN



NOTES

1. SPOT ELEVATIONS AND CONTOURS ON THESE DRAWINGS ARE TOP OF FINAL SURFACE GRADE (SEE TYPICAL AGGREGATE SURFACING SECTIONS ON KND01-CV-C-GR-SD-01). SUBTRACT AGGREGATE SURFACING THICKNESS TO OBTAIN TOP OF CONSTRUCTION WORKING SURFACE AND TOP OF SUBGRADE.
 2. GRADE PLANS SHALL SLOPE UNIFORMLY BETWEEN FINISH SPOT ELEVATIONS AND CONTOURS SHOWN ON THE PLANS.
 3. UNLESS NOTED OTHERWISE, SLOPES SHALL BE 3:1 (H:V).
 4. SLOPE GRADE TO DRAIN IN DIRECTION OF FLOW ARROWS.
 5. PERFORM FIELD IN-PLACE DENSITY TESTS ACCORDING TO ASTM D695 (NUCLEAR METHOD), 98% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR STRUCTURAL/SUBBASE AND BASE BACKFILL, 95% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR NON-STRUCTURAL/ON-SITE FILL MATERIAL BACKFILL.
 6. PREVENT SURFACE WATER AND SUBSURFACE OR GROUNDWATER FROM ENTERING EXCAVATIONS, FROM PONDING ON PREPARED SUBGRADES, AND FROM FLOODING PROJECT SITE & SURROUNDING AREA. PROTECT SUBGRADES AND FOUNDATION SOILS FROM SOFTENING AND DAMAGE BY RAIN OR WATER ACCUMULATION.
 7. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY APPROPRIATE COMPACTION EQUIPMENT AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND OPERATED TAMPERS.
 8. FILL MATERIALS SHALL BE IMPORTED FROM A MINE OR SITE APPROVED BY THE NCDEQ FOR PROPER EROSION CONTROL.
 9. HORIZONTAL CONTROL IS BASED ON NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NAD83. VERTICAL CONTROL IS BASED ON NAVD88.
 10. SURVEY PROVIDED BY THE JOHN R. MCADAMS COMPANY, INC ON 03/26/2024. BEYOND LIMITS OF SURVEY, ELEVATION DATA SHOWN IS BASED ON PUBLICLY AVAILABLE DATA. CONTRACTOR TO FIELD VERIFY ELEVATIONS BEYOND LIMITS OF SURVEY.
 11. DEMOLISH EXISTING CULVERT AT NEW CONSTRUCTION ENTRANCE, REPLACE WITH N-12 WT 15 INCH CULVERT PIPE, WITH MINIMUM 1' OF COVER. COVER TO BE CLASS III MATERIAL TO 95% PROCTOR DENSITY OR CLASS II BACKFILL MATERIAL TO 90% STANDARD PROCTOR DENSITY AROUND THE PIPE AND STUCTURAL BACKFILL TO THE CROWN OF THE PIPE
- **REQUIRED SCM INSPECTION NOTE:**
 THE TOWN OF KNIGHTDALE REQUIRES THAT ALL INFRASTRUCTURE INSTALLATION BE OBSERVED BY SOMEONE OPERATING UNDER THE DESIGN ENGINEERS AUTHORITY, A LICENSED GEOTECH, AND A REPRESENTATIVE FROM THE TOWN OF KNIGHTDALE. REFERENCE THE DETAILED SCM INSPECTIONS SEQUENCE.

LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- HIGH POWERED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- EXISTING MINOR CONTOUR LINES
- EXISTING MAJOR CONTOUR LINES
- MINOR CONTOUR LINES
- MAJOR CONTOUR LINES
- RIP RAP

TOWN CERTIFICATION
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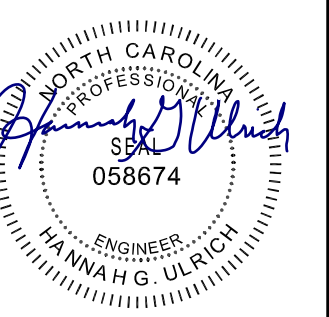
BY: _____ DATE: _____
 TOWN ENGINEER

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

BY: _____ DATE: _____
 LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



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| NO | DATE | REVISIONS AND RECORD OF ISSUE |
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| I | 13/JAN/2025 | ISSUED FOR PERMITTING |
| H | 20/DEC/2024 | ISSUED FOR PERMITTING |
| G | 18/NOV/24 | ISSUED FOR PERMITTING |
| F | 30/OCT/2024 | ISSUED FOR 90% CLIENT REVIEW |
| E | 27/SEP/2024 | ISSUED FOR PERMITTING |
| D | 25/SEP/24 | ISSUED FOR PERMITTING |
| C | 12/SEP/24 | ISSUED FOR PERMITTING |
| B | 30/AUG/2024 | ISSUED FOR 60% REVIEW |
| A | 22/AUG/2024 | ISSUED FOR PERMIT |

BLACK & VEATCH
 Building a world of difference®

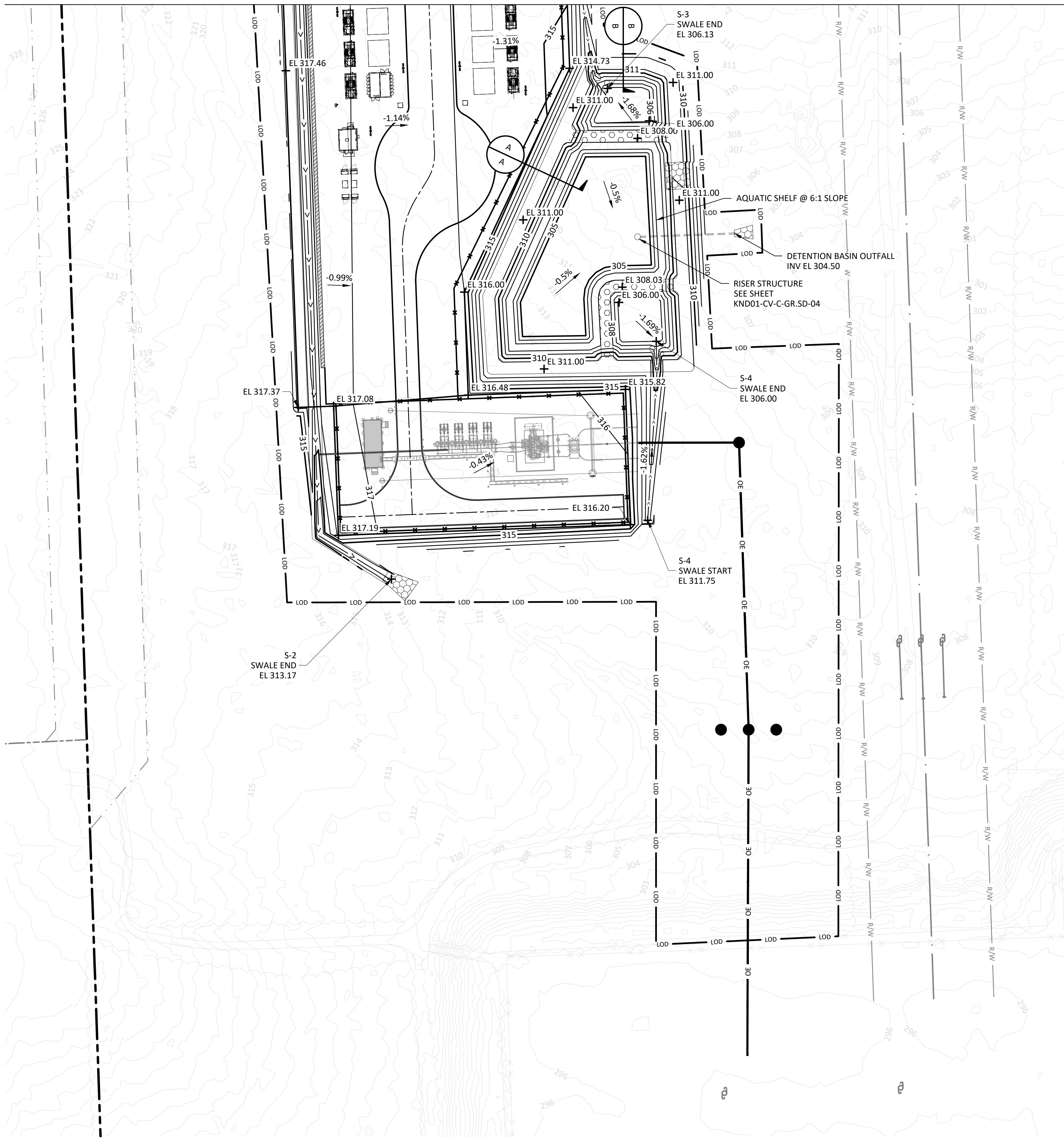
DESIGNER: MIM DRAWN: CLC
 CHECKED: HGU DATE: 13/JAN/25

DUKE ENERGY DUKE KNIGHTDALE EPC
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

STORMWATER MANAGEMENT PLAN
 5201 KNIGHTALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-GR.PL-01 | | I |
| CODE | AREA | |

MATCHLINE



CONSTRUCTION SEQUENCE:

1. FOR EROSION CONTROL CONSTRUCTION SEQUENCE, SEE SHEET KND01-CV-C-GR-SD-01.
2. SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE TOWN OF KNIGHTDALE TO INSPECT THE INSTALLED PERIMETER CONTROLS PER THE EROSION CONTROL PLAN.
3. CALL TOWN OF KNIGHTDALE EROSION CONTROL INSPECTOR TO SCHEDULE AN ON-SITE INSPECTION AND OBTAIN A CERTIFICATE OF COMPLIANCE.
4. BEGIN CLEARING AND GRUBBING. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED PER THE EROSION AND SEDIMENT CONTROL PLAN.
5. INSTALL STORMWATER CONVEYANCE MEASURES. PERFORM MASS GRADING ACTIVITIES.
6. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE ELEVATIONS IN ACCORDANCE WITH THE EROSION CONTROL PLAN.
7. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL EROSION CONTROL INSPECTOR FOR AN INSPECTION.
8. IF SITE IS APPROVED, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES. CONVERT SEDIMENT BASIN TO WET POND. SEE SHEET KND01-CV-C-SD.04 FOR CONVERSION SEQUENCE.
9. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL INSPECTION BY THE EROSION CONTROL INSPECTOR. OBTAIN A CERTIFICATE OF COMPLETION.

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

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

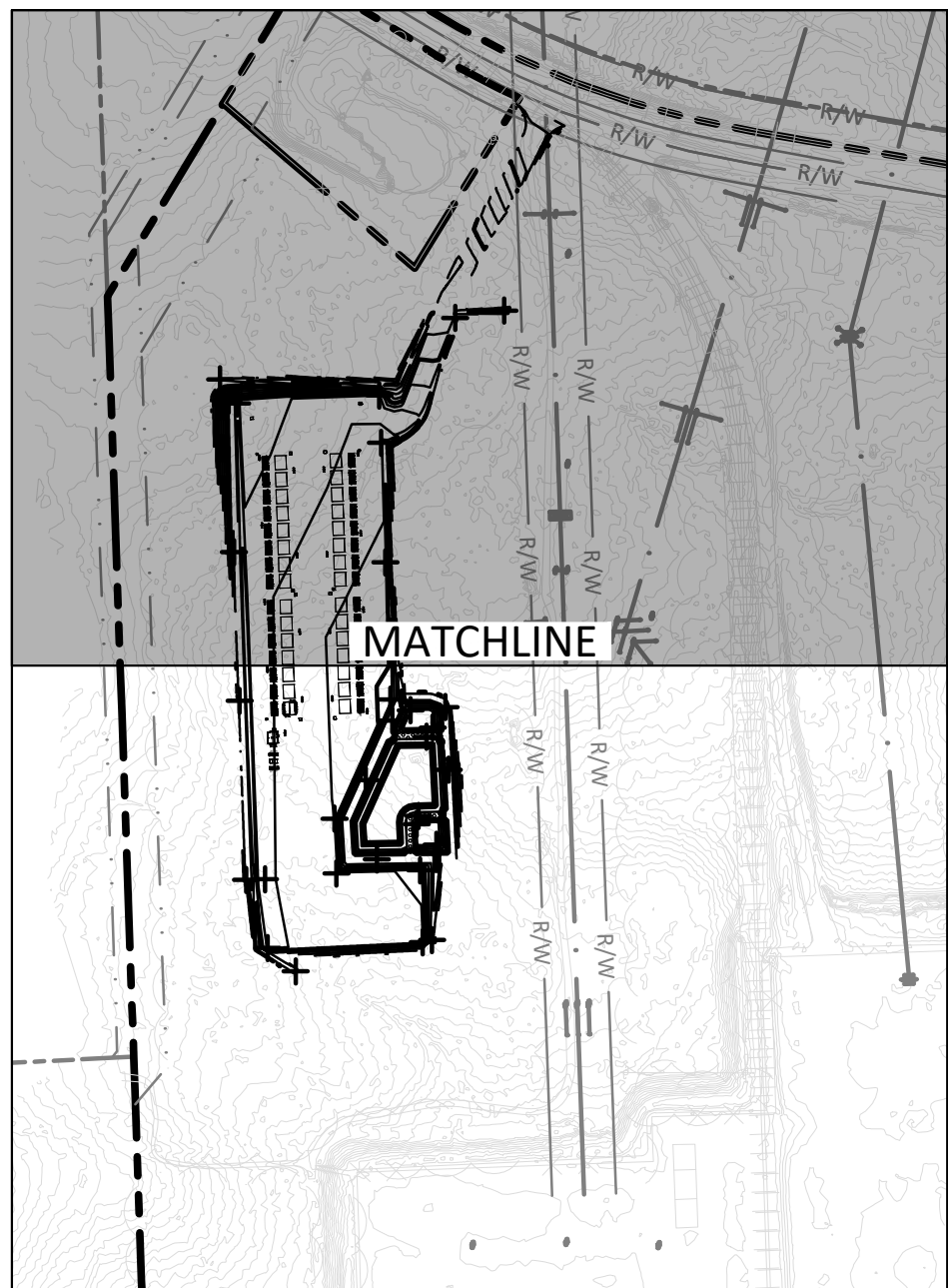
1. KEY TRENCH EXCAVATION
2. PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
 - a. CONCRETE CRADLE
 - b. ANTI-SEEP COLLAR
 - c. SEEPAGE DIAPHRAGM
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4. ANTI-FLOTATION BALLAST
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THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SAND FILTERS OR BIORETENTION DEVICES

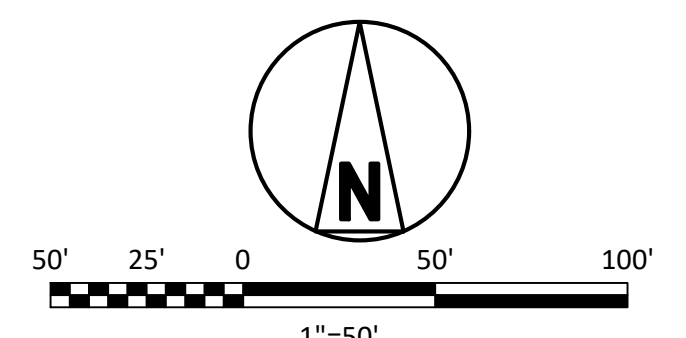
- a. SUBGRADE OR CONSTRUCTED FOUNDATION
- b. OUTLET OR RISER IN COMBINATION WITH CONNECTING UNDERDRAINS
- c. FILTER MEDIA
- d. DAM ITEMS ON PREVIOUS LIST IF APPLICABLE

GEOTECHNICAL TESTING AND CERTIFICATION

ALL REPORTS ARE TO BE SUBMITTED WITHIN 30-DAYS OF DAM COMPLETION
 REQUIRED GEOTECHNICAL RECORDS INCLUDE:
 1. DAM EMBANKMENT MATERIAL COMPOSITION AND DENSITY TESTING
 2. MAP THAT LABELS ALL POINTS WHERE THE DAM AND DAM FOUNDATION AREAS WERE TESTED
 3. DIGITAL PHOTOS SHOWING THE DAM FOUNDATION AREAS, THE RISER, THE PRINCIPLE SPILLWAY PIPE, THE CONCRETE CRADLE, THE SEEPAGE DIAPHRAM, RELIEF DRAINS, ETC., BEING INSTALLED.



KEY PLAN



NOTES

1. SPOT ELEVATIONS AND CONTOURS ON THESE DRAWINGS ARE TOP OF FINAL SURFACE GRADE (SEE TYPICAL AGGREGATE SURFACING SECTIONS ON KND01-CV-C-GR-SD-01). SUBTRACT AGGREGATE SURFACING THICKNESS TO OBTAIN TOP OF CONSTRUCTION WORKING SURFACE AND TOP OF SUBGRADE.
 2. GRADE PLANS SHALL SLOPE UNIFORMLY BETWEEN FINISH SPOT ELEVATIONS AND CONTOURS SHOWN ON THE PLANS.
 3. UNLESS NOTED OTHERWISE, SLOPES SHALL BE 3:1 (H:V).
 4. SLOPE GRADE TO DRAIN IN DIRECTION OF FLOW ARROWS.
 5. PERFORM FIELD IN-PLACE DENSITY TESTS ACCORDING TO ASTM D695 (NUCLEAR METHOD), 98% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR STRUCTURAL/SUBBASE AND BASE BACKFILL, 95% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR NON-STRUCTURAL/ON-SITE FILL MATERIAL BACKFILL.
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 10. SURVEY PROVIDED BY THE JOHN R. MCADAMS COMPANY, INC ON 03/26/2024. BEYOND LIMITS OF SURVEY. ELEVATION DATA SHOWN IS BASED ON PUBLICLY AVAILABLE DATA. CONTRACTOR TO FIELD VERIFY ELEVATIONS BEYOND LIMITS OF SURVEY.
 11. DEMOLISH EXISTING CULVERT AT NEW CONSTRUCTION ENTRANCE, REPLACE WITH N-12 WT 15 INCH CULVERT PIPE, WITH MINIMUM 1' OF COVER. COVER TO BE CLASS III MATERIAL TO 95% PROCTOR DENSITY OR CLASS II BACKFILL MATERIAL TO 90% STANDARD PROCTOR DENSITY AROUND THE PIPE AND STUCTURAL BACKFILL TO THE CROWN OF THE PIPE
- **REQUIRED SCM INSPECTION NOTE:**
 THE TOWN OF KNIGHTDALE REQUIRES THAT ALL INFRASTRUCTURE INSTALLATION BE OBSERVED BY SOMEONE OPERATING UNDER THE DESIGN ENGINEERS AUTHORITY, A LICENSED GEOTECH, AND A REPRESENTATIVE FROM THE TOWN OF KNIGHTDALE. REFERENCE THE DETAILED SCM INSPECTIONS SEQUENCE.

LEGEND

| | |
|--|--------------------------------------|
| | ADJACENT PARCEL BOUNDARY |
| | PROPOSED SECURITY FENCE |
| | EXISTING FENCE |
| | PROPOSED ROAD |
| | EXISTING TREE LIMITS |
| | EXISTING RAILROAD |
| | EXISTING OVERHEAD LINE |
| | PROPERTY BOUNDARY |
| | PROPOSED OVERHEAD ELECTRIC LINES |
| | HIGH POWERED OVERHEAD ELECTRIC LINES |
| | EXISTING RIGHT-OF-WAY |
| | EXISTING FIBER OPTIC CABLE |
| | LIMITS OF DISTURBANCE |
| | PROPOSED PERIMETER WALL |
| | PROPOSED VEGETATED SWALE |
| | EXISTING MINOR CONTOUR LINES |
| | EXISTING MAJOR CONTOUR LINES |
| | MINOR CONTOUR LINES |
| | MAJOR CONTOUR LINES |
| | RIP RAP |

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

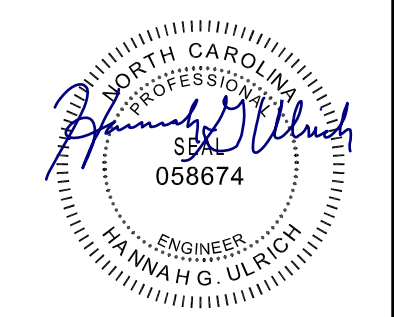
BY: _____ DATE: _____
 TOWN ENGINEER

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

BY: _____ DATE: _____
 LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



Civil 3D 2022 Imperial
 ANS1 D 34x22
 2/14/2022 4:09 PM

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|---|-------------|------------------------------|-----|-----|-----|-----|----|-------------|-------------------------------|-----|-----|-----|-----|-----|
| J | 13/JAN/2025 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | E | 27/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSL | |
| I | 20/DEC/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | D | 18/NOV/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | |
| H | 21/NOV/2024 | 90% SUBMITTAL | CLC | MJM | HGU | WL | C | 25/OCT/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSL | |
| G | 15/NOV/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL | B | 30/AUG/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | DSL | |
| F | 30/OCT/2024 | ISSUED FOR 90% CLIENT REVIEW | CLC | MJM | HGU | DSL | NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |

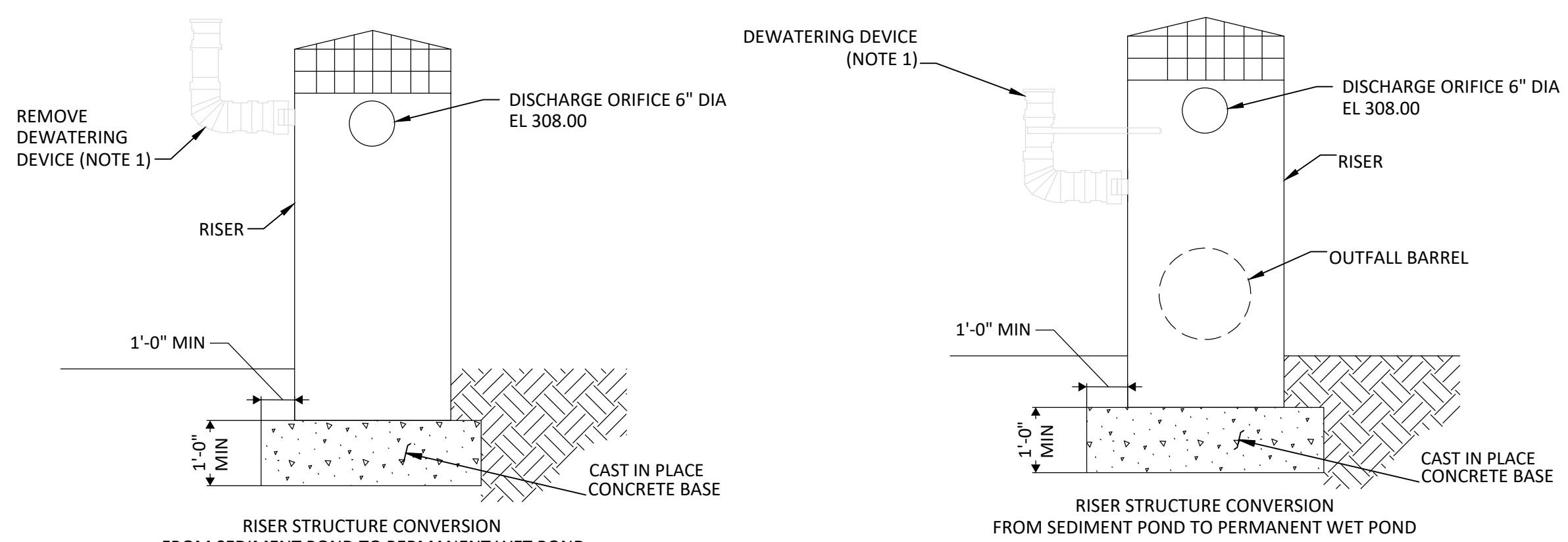
BLACK & VEATCH
 Building a world of difference®

DESIGNER: MJM DRAWN: CLC
 CHECKED: HGU DATE: 13/JAN/25

DUKE ENERGY DUKE KNIGHTDALE EPC
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

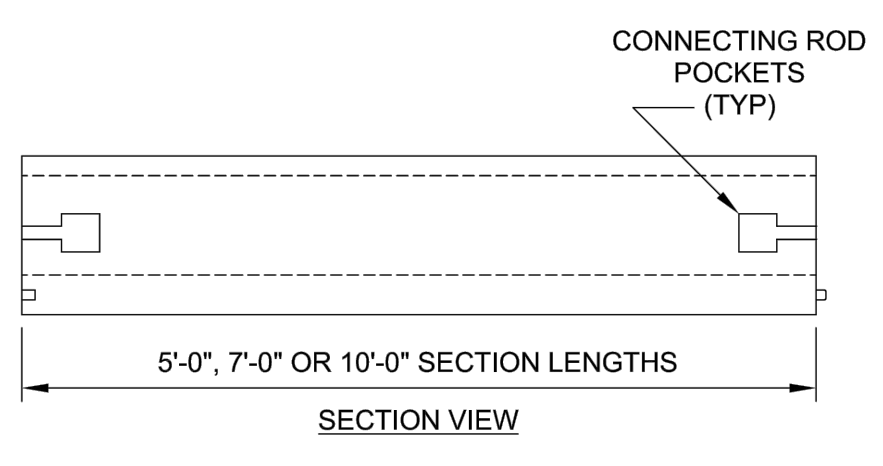
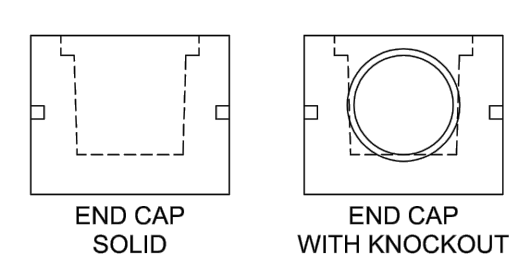
STORMWATER MANAGEMENT PLAN
 5201 KNIGHTALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-GR.PL-02 | J | |
| CODE | AREA | |

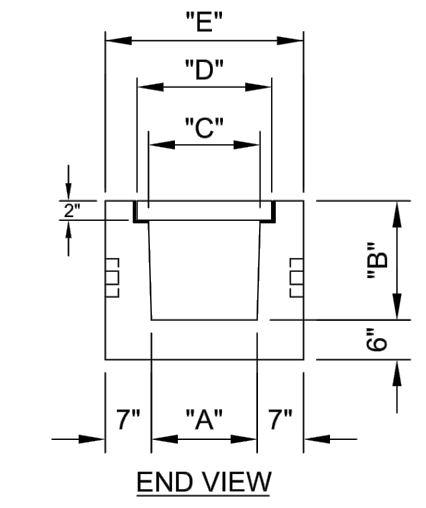


- NOTE**
- REMOVE DEWATERING DEVICE FROM SEDIMENT BASIN AND PROVIDE WATER TIGHT PLUG TO HOLE.
 - REMOVE PLATE AND INSTALL DOWN-TURN ELBOW PER THE METAL ORIFICE PLATE DETAIL. FILL PLATE MOUNTING HOLES WITH NON-SHRINK GROUT.
 - CONCRETE SHALL BE 3000 PSI.

RISER CONVERSION FROM TEMPORARY SEDIMENT BASIN TO PERMANENT WET POND
NOT TO SCALE



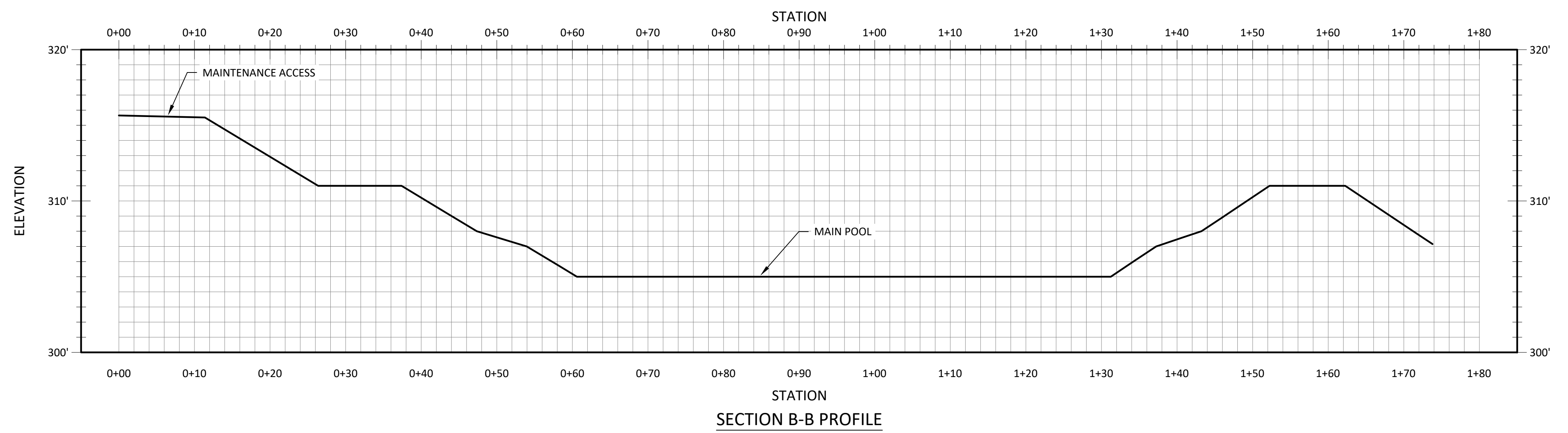
TRENCH DRAIN DETAIL
NOT TO SCALE



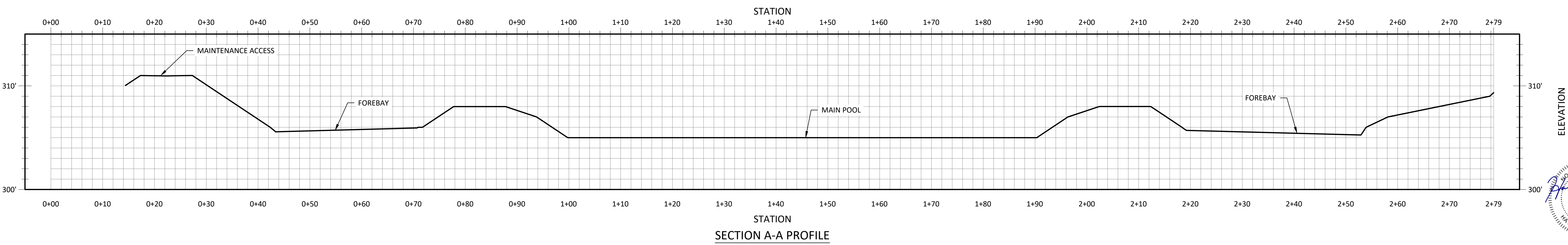
| "A" | "B" | "C" | "D" | "E" |
|-----|-----|---------|---------|-----|
| 12" | 16" | 13" | 16-5/8" | 26" |
| 16" | 18" | 16-7/8" | 20-3/4" | 30" |
| 16" | 24" | 17-1/4" | 20-3/4" | 30" |
| 24" | 18" | 24-7/8" | 28-3/4" | 38" |
| 24" | 24" | 25-1/4" | 28-3/4" | 38" |
| 26" | 18" | 26-7/8" | 30-3/4" | 40" |
| 26" | 24" | 27-1/4" | 30-3/4" | 40" |

"D" = GRATE WIDTH

- NOTES:**
- CONCRETE STRENGTH: 4000 PSI MIN @ 28 DAYS
 - REINFORCING CONFORMS TO ASTM A615 & A185
 - DESIGN: HS-25 TRAFFIC LOADING
 - GRATE DESIGN: HS-25 TRAFFIC LOADING



SECTION B-B PROFILE



SECTION A-A PROFILE

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

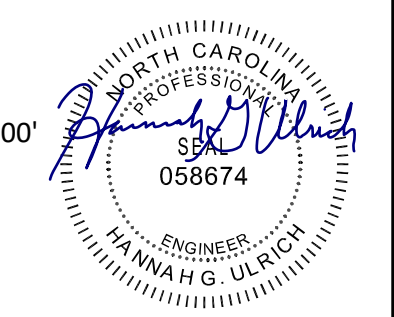
BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

THE DISTRIBUTION AND USE OF THE NATIVE FORMAT CAD FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.



Civil 3D 2022 Imperial
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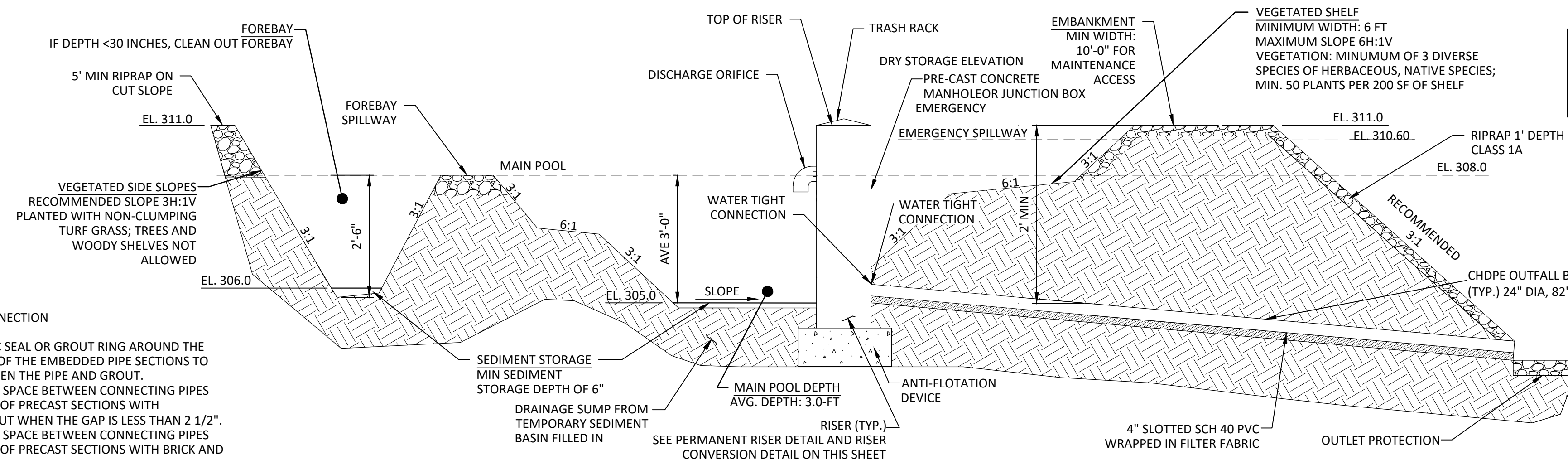
| | | | | | | | | | |
|--|-----|-------|-----------|--|--|---|----------------------------|----------------|-----|
| DESIGNER | MJM | DRAWN | RAR | | | DUKE KNIGHTDALE EPC KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM | PROJECT | DRAWING NUMBER | REV |
| CHECKED | HGU | DATE | 13/JAN/25 | | | | 419596 KND01-CV-C-GR.SD-02 | E | |
| GRADING DETAILS 5201 KNIGHTDALE EAGLE ROCK ROAD KNIGHTDALE, NC 27545 | | | | | | | CODE | | |
| | | | | | | | AREA | | |

| NO | DATE | REVISIONS AND RECORD OF ISSUE |
|----|-----------|-------------------------------|
| D | 20/DEC/24 | ISSUED FOR PERMITTING |
| C | 18/NOV/24 | ISSUED FOR PERMITTING |
| B | 30/OCT/24 | ISSUED FOR 90% CLIENT REVIEW |
| A | 20/JUN/24 | ISSUED FOR PERMITTING |

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF _____

SIGNED _____
DATE _____ REG. NO. _____

E 13/JAN/2025 ISSUED FOR PERMITTING CLC MJM HGU WL



| MAXIMUM WSE | |
|-------------|--------|
| 1-YEAR | 309.49 |
| 2-YEAR | 309.78 |
| 10-YEAR | 310.54 |

- NOTES:
1. WATERTIGHT RIGID CONNECTION
 2. PLACE A HYDROPHILIC SEAL OR GROUT RING AROUND THE OUTSIDE PERIMETER OF THE EMBEDDED PIPE SECTIONS TO ACT AS A SEAL BETWEEN THE PIPE AND GROUT.
 3. COMPLETELY FILL THE SPACE BETWEEN CONNECTING PIPES AND THE RISER WALL OF PRECAST SECTIONS WITH NON-SHRINKING GROUT WHEN THE GAP IS LESS THAN 2 1/2".
 4. COMPLETELY FILL THE SPACE BETWEEN CONNECTING PIPES AND THE RISER WALL OF PRECAST SECTIONS WITH BRICK AND GROUT WHEN THE GAP IS GREATER THAN 2 1/2".

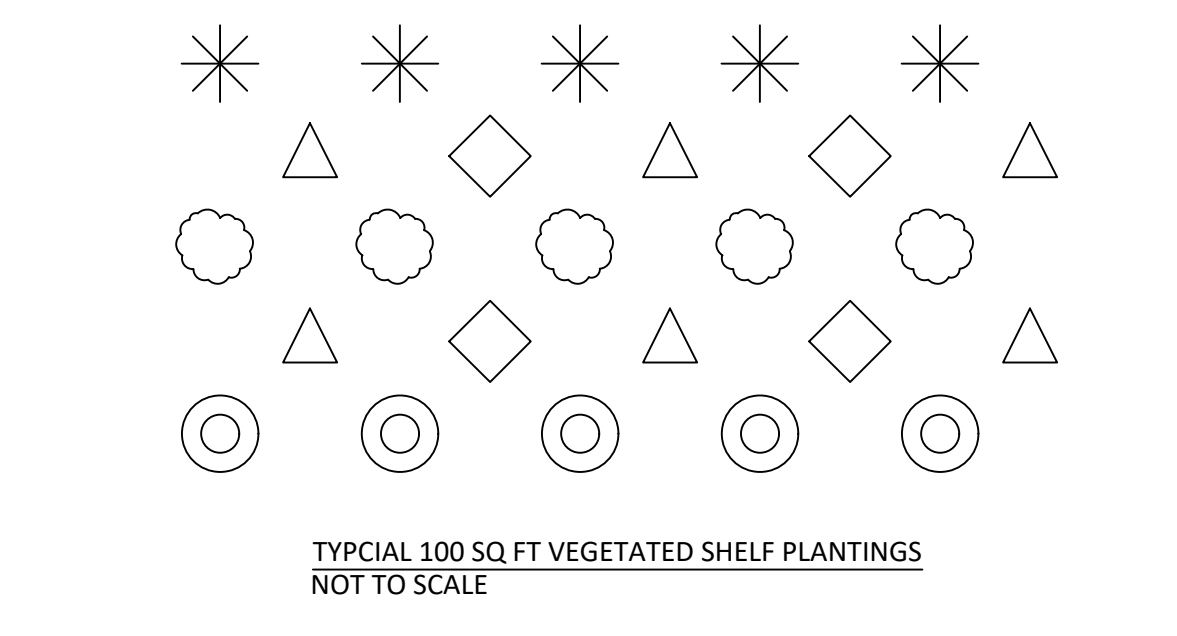
- TEMPORARY SEDIMENT BASIN TO PERMANENT STORMWATER POND CONVERSION NARRATIVE:**
1. BASINS MAY NOT BE CONVERTED TO PERMANENT PONDS UNTIL APPROVAL HAS BEEN OBTAINED FROM THE NCDEQ EROSION CONTROL INSPECTOR.
 2. EXISTING EROSION CONTROL MEASURES TO REMAIN IN PLACE AND BE RE-INSTALLED IF IN NEED OF REPAIR.
 3. CONVERT TEMPORARY SEDIMENT BASIN INTO PERMANENT POND PER DETAILS BELOW:
- OBTAIN APPROVAL FROM THE NCDEQ EROSION CONTROL INSPECTOR.
- A. CONTRACTOR TO NOTIFY NCDEQ EROSION CONTROL INSPECTOR PRIOR TO PUMPING DOWN THE BASIN. PUMPING METHOD MUST BE DEEMED ACCEPTABLE BY THE NCDEQ EROSION CONTROL INSPECTOR PRIOR TO BEGINNING THE PUMPING PROCESS. ANY DISCHARGES FROM ANY PUMPING OPERATION MUST BE DISCHARGED THROUGH AN APPROPRIATE EROSION AND SEDIMENT CONTROL DEVICE.
 - B. TEMPORARY SEDIMENT BASIN SHALL BE DESILTED AND REGRADED AS NECESSARY TO THE PROPOSED DESIGN DIMENSIONS.
 - C. REMOVE TEMPORARY PERFORATED DEWATERING PIPE AND PLUG HOLE WITH NON-SHRINK GROUT AS REQUIRED. ALL PLUG APPLICATIONS SHALL BE WATERTIGHT. REMOVE PLUG FOR PERMANENT ORIFICE TO BE EXPOSED.
 - D. FINE GRADE THE DRY DETENTION BASIN AND APPLY TOPSOIL TO ALL POND AREAS THAT WILL BE STABILIZED WITH VEGETATION AND APPLY PERMANENT SEEDING.
 - E. ALLOW FOR PERMANENT SEEDING TO BECOME ESTABLISHED SUFFICIENT TO DETER EROSION.
 - F. RIPRAP OUTLET PROTECTION IS TO REMAIN IN PLACE FOR THE PERMANENT STORMWATER PONDS. CLEAN SEDIMENT OUT OF RIPRAP OUTLET PROTECTION AND RESTORE TO ORIGINAL DESIGN DIMENSIONS AS NEEDED.
4. NO EROSION CONTROL MEASURES CAN BE REMOVED WITHOUT APPROVAL FROM THE NCDEQ EROSION CONTROL INSPECTOR.

- TOWN OF KNIGHTDALE SCM PLANTING NOTES:**
1. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS OR SOD. (CENTIPEDE/HYBRID-BERMUDA) 90% GERMINATION OF NON-CLUMPING TURF WILL BE REQUIRED PRIOR TO FINAL CERTIFICATION FROM THE TOWN.
 2. THE VEGETATED SHELF SHALL BE PLANTED WITH A MINIMUM OF THREE DIVERSE SPECIES OF HERBACEOUS, NATIVE VEGETATION AT A MINIMUM DENSITY OF 50 PLANTS PER 200 FEET OF SHELF AREA.
 3. CONTRACTOR TO WORK WITH SOILS SCIENTIST TO ENSURE SOILS ARE ADEQUATE TO SUPPORT PROPER ESTABLISHMENT AND GROWTH OF THE AQUATIC PLANTINGS. CONTRACTOR TO AMEND SOILS AND INSTALL SOILS IN PLANT, SHRUB, AND TREE AREAS PER DETAILS, SOIL SPECIFICATIONS, NCDEQR SPECIFICATION, AND SOIL SCIENTIST RECOMMENDATIONS.
 4. ALL AQUATIC PLANTINGS ARE TO BE INSTALLED DURING THE APPROPRIATE TIME OF YEAR TO ENSURE SURVIVABILITY. (LAST SPRING FROST AND THE FIRST FALL FROST)
 5. ALL DISTURBED AREAS AROUND THE OUTSIDE OF THE DEVICE SHALL BE SEEDING WITH A LAWN AREA SEED MIX (PER SEEDING SPECIFICATIONS) NATIVE GRASSES, LEGUMES, CLOVERS, AND WILDFLOWERS.
 6. IF THE DEVICE WAS USED DURING CONSTRUCTION AS A SEDIMENT BASIN OR TRAP, THE BASIN MUST BE CLEANED OUT, GRADED, APPROPRIATE AREAS COVERED WITH 4" OF TOPSOIL AS SPECIFIED IN NOTE #2 ABOVE, AND VEGETATED WITHIN 14 DAYS OF THE COMPLETION OF CONSTRUCTION.
 7. CONTRACTOR SHALL WATER ALL VEGETATION AND GRASS ON A WEEKLY BASIS AS NEEDED TO ENSURE GRASS AND PLANT SURVIVAL UNTIL AFTER THE SCM IS CERTIFIED AND ACCEPTED BY THE TOWN.

VEGETATED SHELF PLANTINGS

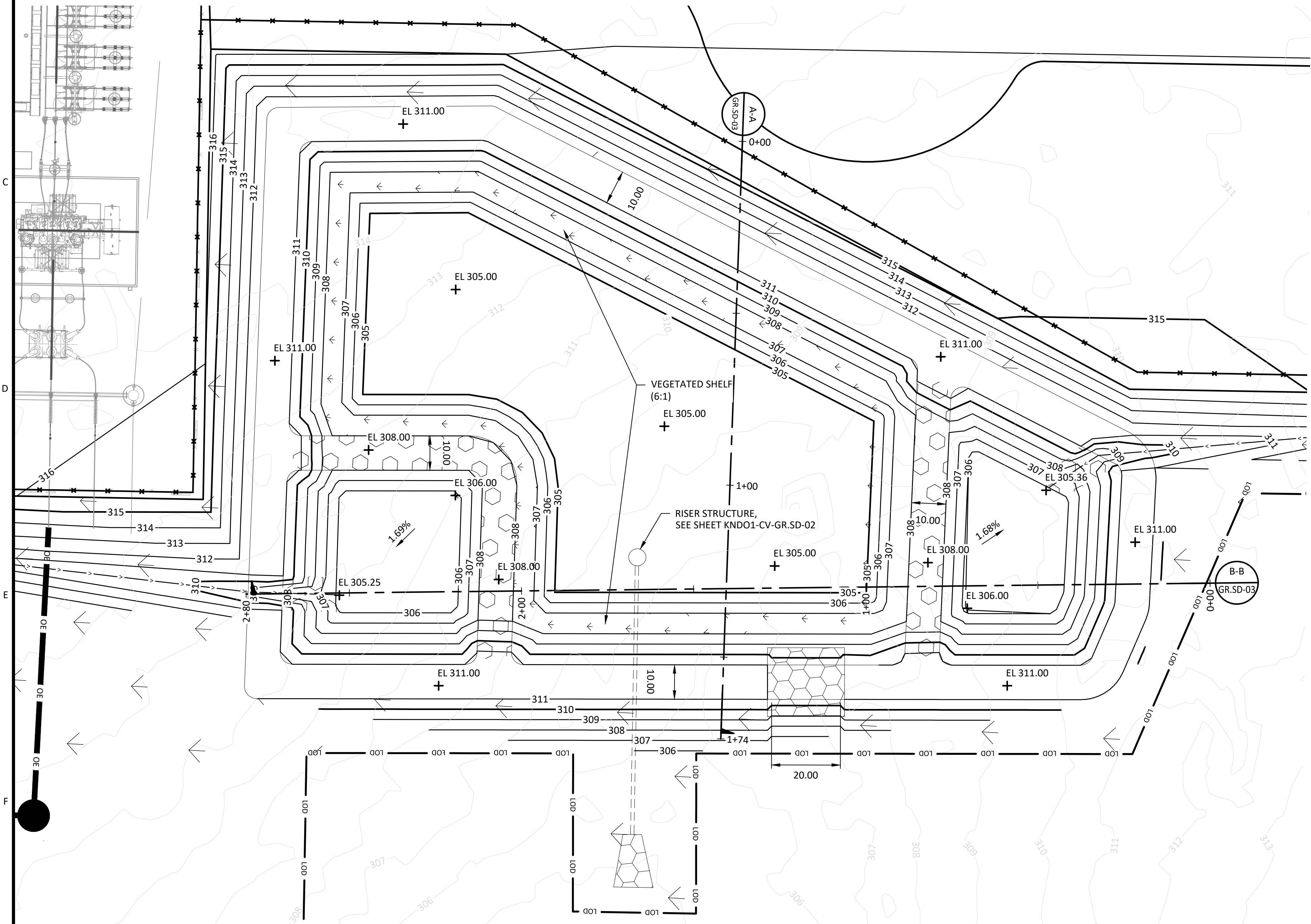
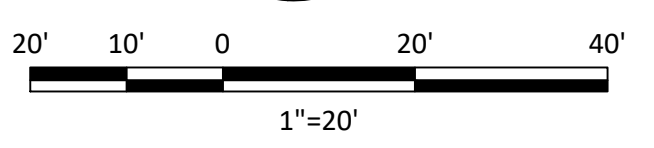
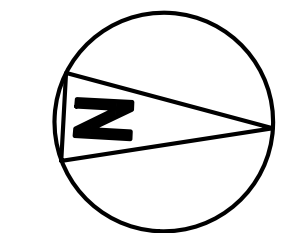
| SYMBOL | TOTAL | BOTANICAL NAME | COMMON NAME |
|--------|-------|----------------------------|------------------------|
| △ | 165 | CARTEX TENERA | QUILL SLEDGE |
| ○ | 165 | LOBELIA CARDINALIS | CARDINAL FLOWER |
| ◇ | 165 | EUPATORIADELPHUS MACULATUS | SPOTTED TRUMPETWEED |
| ✱ | 165 | EUPATORIUM PURPUREUM | JOE-PYE WEED |
| ⊙ | 165 | HIBISCUS LAEVIS | HALBERDLEAF ROSEMALLOW |

- REQUIRED SCM INSPECTIONS SEQUENCE:**
- WHEN SCHEDULING INSPECTIONS, PLEASE CALL THE PUBLIC WORKS ADMINISTRATIVE ASSISTANT AT (919) 217-2250.
- PLEASE NOTE: THE FOLLOWING PERSONNEL MUST BE PRESENT AT ALL INSPECTIONS:**
- 1) SITE SUPERVISOR
 - 2) GEOTECH
 - 3) AS-BUILT CERTIFYING ENGINEER OR SOMEONE UNDER THEIR SUPERVISION
- THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SCM WITH DAM:**
1. KEY TRENCH EXCAVATION
 2. PRINCIPAL SPILLWAY PIPE AND ASSOCIATED COMPONENTS:
 - a. CONCRETE CRADLE
 - b. ANTI-SEEP COLLAR
 - c. SEEPAGE DIAPHRAGM
 3. OUTLET STRUCTURE
 4. ANTI-FLOTATION BALLAST
 5. ANY SITE-CONSTRUCTED REINFORCED CONCRETE STRUCTURES
- THE FOLLOWING ITEMS MUST BE INSPECTED BY TOK STAFF DURING THE INSTALLATION OF ANY SAND FILTERS OR BIORETENTION DEVICES**
- a. SUBGRADE OR CONSTRUCTED FOUNDATION
 - b. OUTLET OR RISER IN COMBINATION WITH CONNECTING UNDERDRAINS
 - c. FILTER MEDIA
 - d. DAM ITEMS ON PREVIOUS LIST IF APPLICABLE



| | |
|------------------------|------------------------------------|
| AREA OF SHELF | 3300 SF |
| REQUIRED PLANTING RATE | 50 PLANTS PER 200 SF OF SHELF AREA |
| PLANTINGS REQUIRED | 825 |

NOTES:
ALL PLUGS SHALL BE SPACED 2 FT APART; QUART SIZE CONTAINERS (4 INCH) SHALL BE SPACED 3 FT APART; GALLON SIZE CONTAINERS SPACED 5 FT APART. RECOMMEND SOIL ANALYSIS BE CONDUCTED PRIOR TO PLANTING. RECOMMENDED THAT AQUATIC SHELF VEGETATION BE PLANTED BETWEEN MARCH 15 - JUNE 30.



Civil 3D 2022 Imperial
Full Size 1=1
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| NO | DATE | REVISIONS AND RECORD OF ISSUE | CLC | MJM | HGU | WL |
|----|-----------|-------------------------------|------|-----|-----|-----|
| B | 13/JAN/25 | ISSUED FOR PERMITTING | CLC | MJM | HGU | WL |
| A | 20/DEC/24 | ISSUED FOR 30% REVIEW | RARM | MJM | HGU | WL |
| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE |

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DESIGNER: MJM DRAWN: CLC
CHECKED: HGU DATE: 13/JAN/25

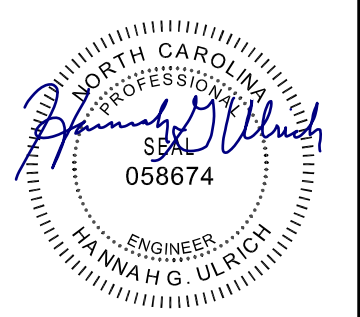
DUKE ENERGY DUKE KNIGHTDALE EPC
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

GRADING DETAILS
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| PROJECT | DRAWING NUMBER | REV |
|----------------------------|----------------|-----|
| 419596 KND01-CV-C-GR.SD-04 | B | |
| CODE | AREA | |

ISSUED FOR PERMITTING

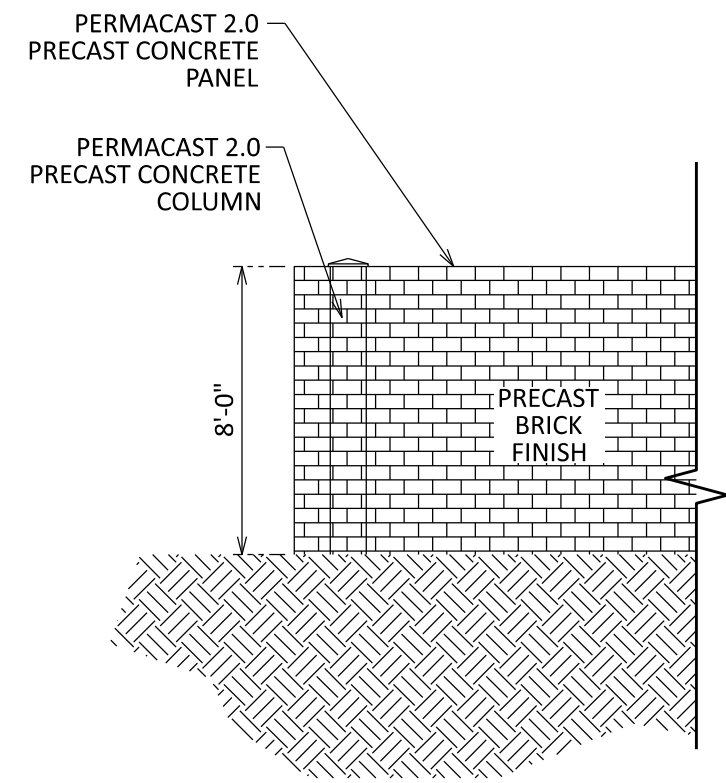
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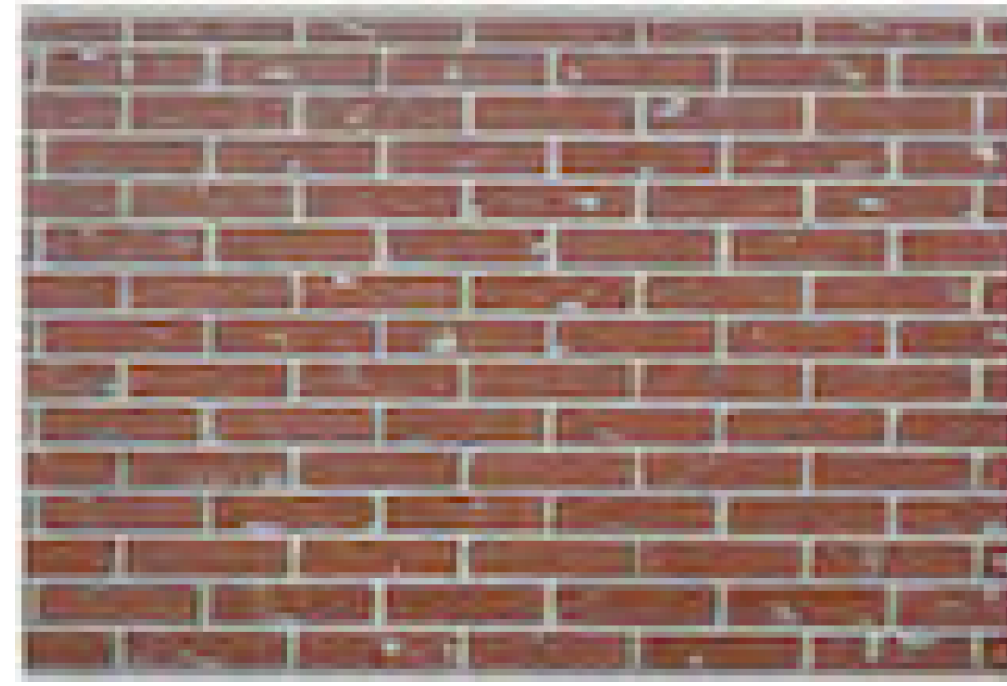
BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

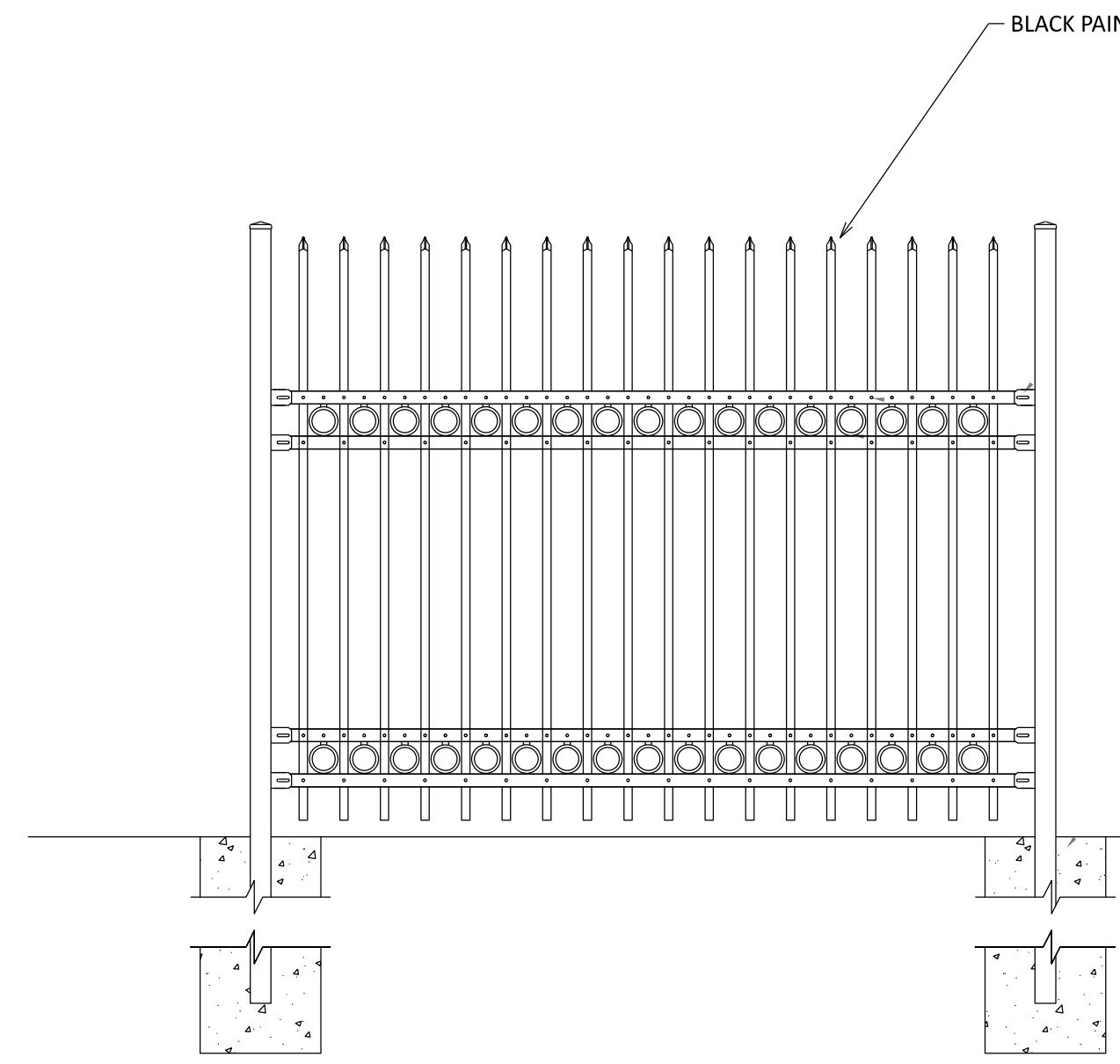


WALL ELEVATION

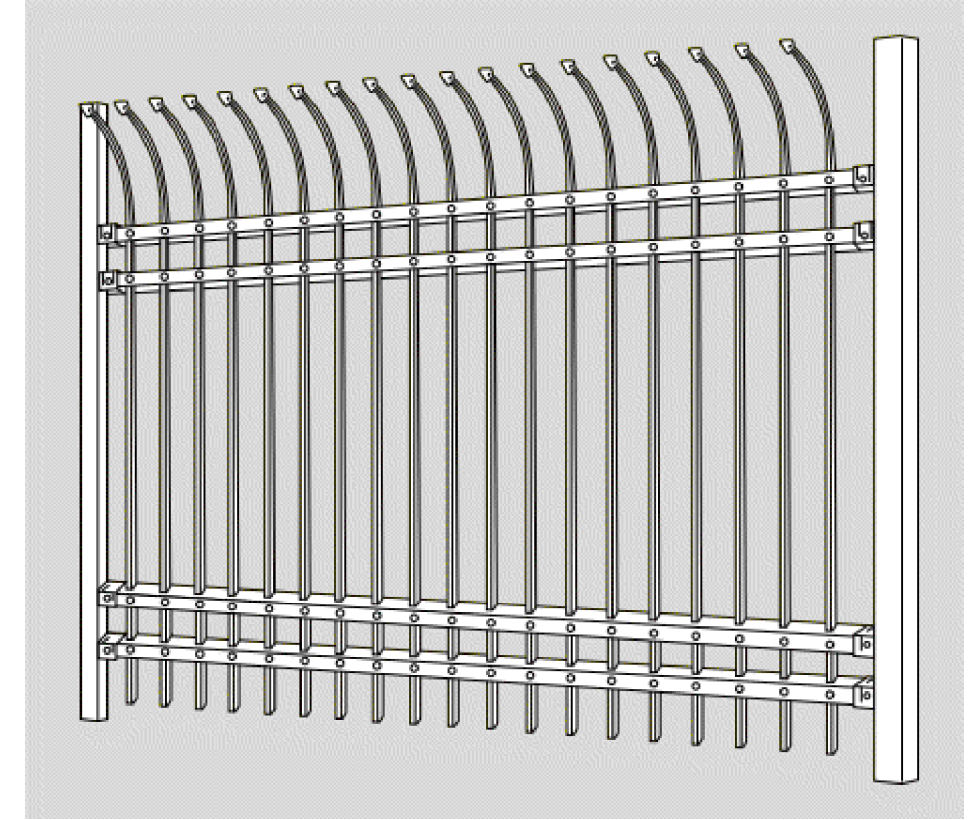


BRICK FINISH

WALL INFO:
MANUFACTURER: PERMACAST
PRODUCT: 8' HIGH PERMAWALL 2.0

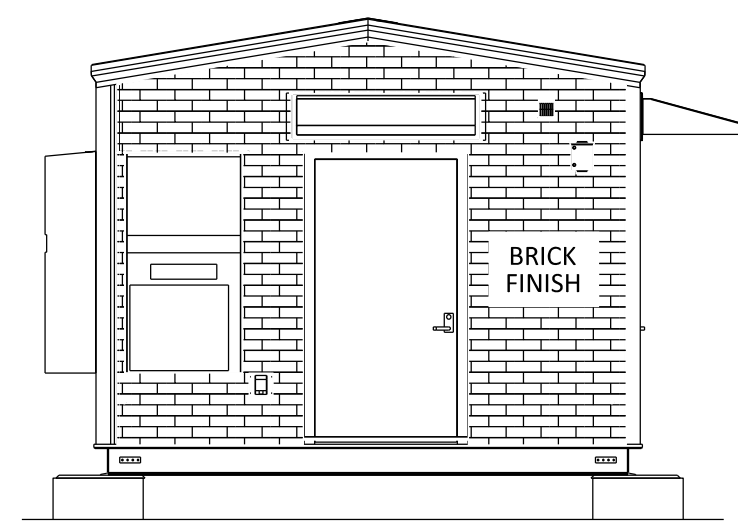


GUARDSMAN PANEL - CURVE TOP ELEVATION

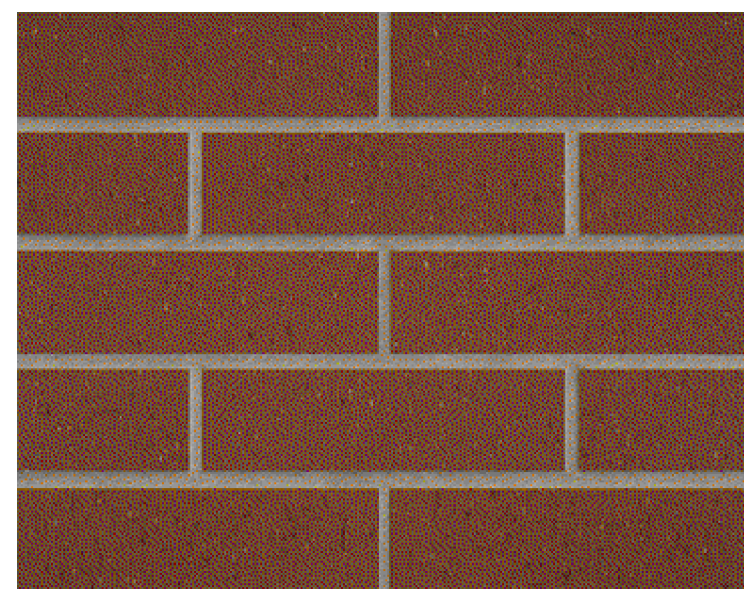


BLACK PAINTED FENCE

FENCE INFO:
MANUFACTURER: GUARDSMAN
PRODUCT: 4 RAIL CURVED TOP
COLOR: BLACK
OPTION: WITH DECORATIVE RINGS

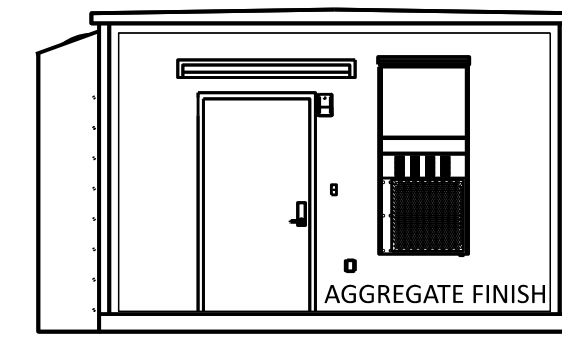


CONTROL ENCLOSURE ELEVATION



BRICK FINISH

BRICK FINISH INFO:
MANUFACTURER: SUMMITVILLE
PRODUCT: THIN BRICK
COLOR: 14 ALEXANDRIA
SIZE: 3 5/8" x 11 5/8" x 9/16"



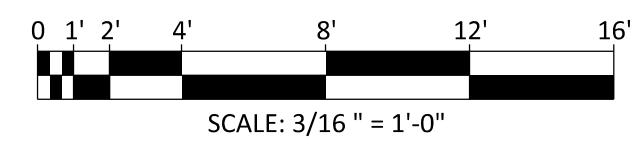
SITE CONTROL CENTER ELEVATION



AGGREGATE FINISH

AGGREGATE FINISH INFO:
COMPOSITION: CONCRETE
COLOR: TAN

VOLUMETRIC MIX APPROXIMATE RATIO:
STONE: 37%
SAND: 31%
WATER: 16%
CEMENT: 10%
ENTRAPPED AIR: 6%



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

BY: _____ DATE: _____
TOWN ENGINEER

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

BY: _____ DATE: _____
LAND USE ADMINISTRATOR

ISSUED FOR PERMITTING

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Full Size 1 = 1

| NO | DATE | REVISIONS AND RECORD OF ISSUE | DRN | DES | CHK | PDE | APP |
|----|-----------|-------------------------------|-----|-----|-----|-----|-----|
| A | 15/NOV/24 | ISSUED FOR PERMIT | BCA | BCA | HGU | BCA | BC |

BLACK & VEATCH

DESIGNER: BCA
DRAWN: BCA
CHECKED: HGU
DATE: 15/NOV/24

DUKE ENERGY
KNIGHTDALE BESS

DIGITAL MATERIALS BOARD
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

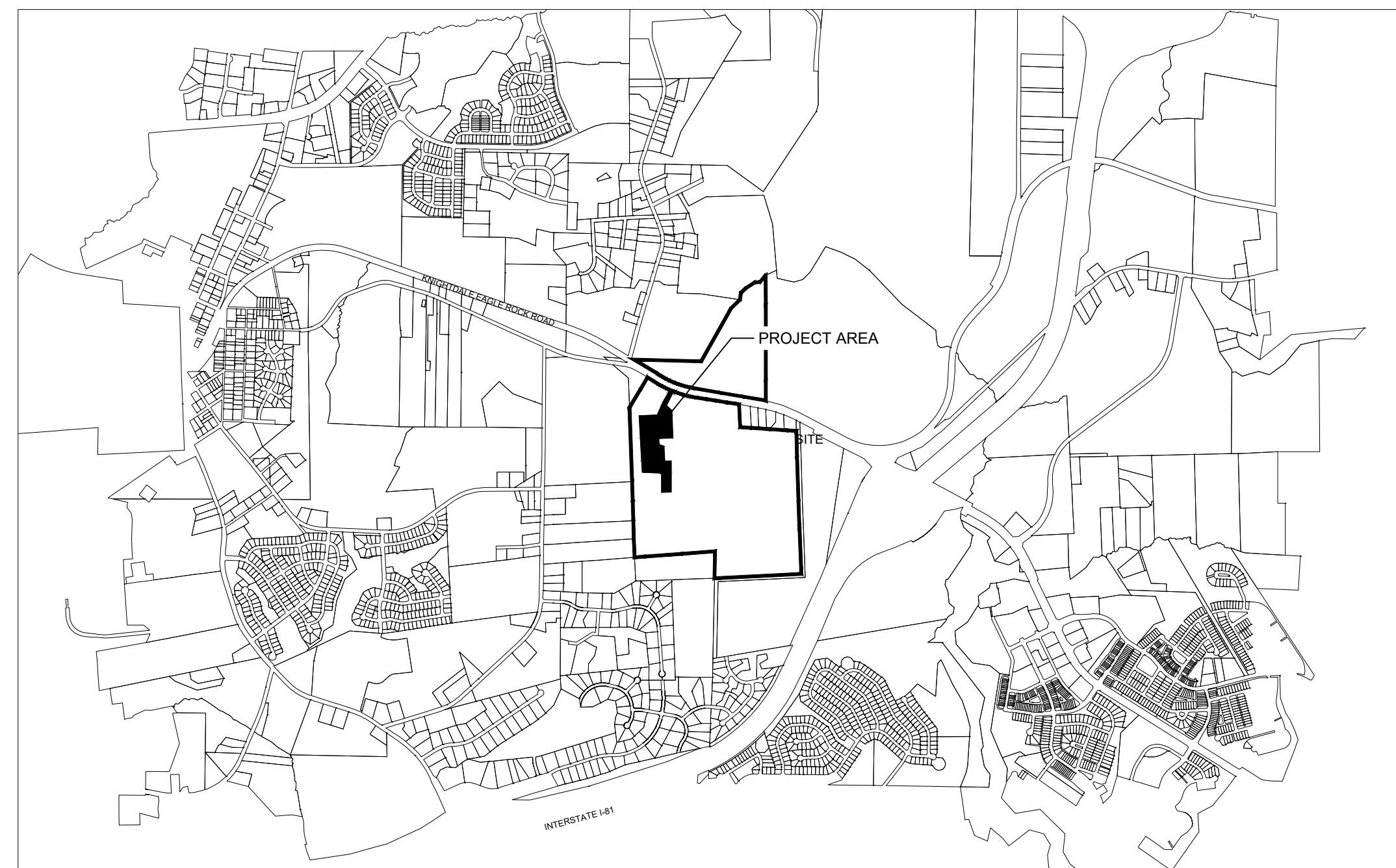
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| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-AD-A-YD.00.SD-02 | | A |
| CODE | AREA | |

KNIGHTDALE PROPOSED BATTERY ENERGY STORAGE FACILITY

5201 KNIGHTDALE EAGLE ROCK ROAD

KNIGHTDALE, NC 27545

TOK PROJECT # ZCP-3-23



| SITE DATA TABLE | |
|--------------------------|---|
| TOTAL SITE AREA | 201.3 ACRES |
| PROJECT LOCATION | 5201 KNIGHTDALE EAGLE ROCK ROAD, MARKS CREEK, WAKE COUNTY, NORTH CAROLINA |
| KNIGHTDALE ZONING | DUKE ENERGY PROGRESS; ZONING: MI |
| PROPOSED ZONING | MI |
| EXISTING LAND USE | UTILITIES - CLASS 1 & 2 (SUBSTATION) |
| PROPOSED LAND USES | UTILITIES - CLASS 1 & 2 (BATTERY STORAGE FACILITY) |
| RIVER BASIN | NEUSE RIVER |
| RECEIVING WATER | MARK'S CREEK |
| WATERSHED CLASSIFICATION | C; NSW |
| PROPOSED UNITS | 60 |
| INFRASTRUCTURE | TOTAL 201.3 ACRES, BESS FACILITY 11.3 ACRES |
| IMPERVIOUS AREA | 4.7 ACRES |
| DISTURBED AREA | 11.4 ACRES |
| PROPERTY OWNER 1 | DUKE ENERGY PROGRESS INC. |
| SITE PARKING | SUBSTATION YARD OR OUTSIDE THE GATE |

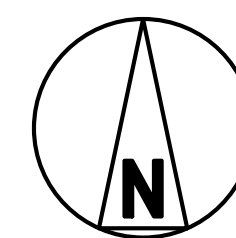
| PHASING AND TIMETABLE | |
|-----------------------------|-----------|
| TREE CUTTING START DATE | 01-NOV-24 |
| SITE CIVIL WORK START DATE | 02-DEC-24 |
| PLANNED STATE OF COMPLETION | 30-SEP-25 |

| CONTACT LIST | | |
|----------------------------------|-----------------------------|---|
| CONTACTS | NAME | ADDRESS |
| OWNER | DUKE ENERGY PROGRESS, LLC | 7804 FAIRVIEW ROAD, SUITE C BOX 214, CHARLOTTE, NC 28226 ATTN: GREG MCELMURRY, PHONE: 704-264-9879 |
| ELECTRICAL ENGINEER (SUBSTATION) | ETHAN BROWN | 175 REGENCY WOODS PLACE, SUITE 300, CARY, NC 24515-0000 |
| ELECTRICAL ENGINEER (BESS) | OLUFEMI OYEBANJO | 920 MEMORIAL CITY WAY, SUITE 600, HOUSTON, TX 77024 |
| STRUCTURAL ENGINEER | DIVYA SRI LAKSHIMI DINAVAHU | 2880 ZANKER RD STE 203, SAN JOSE, CA 95134 |
| CIVIL ENGINEER | HANNAH ULRICH | 11401 LAMAR AVENUE, OVERLAND PARK, KS 66211 |

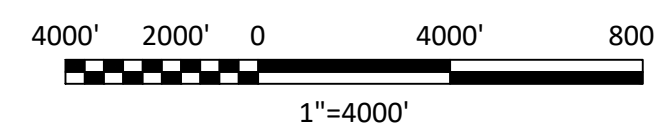
SUPPLEMENTAL REGULATIONS 5.10.H – GRID SCALE BATTERY STORAGE FACILITIES (UNIFIED DEVELOPMENT ORDINANCE)

- NO GRID-SCALE BATTERY STORAGE FACILITY SHALL BE LOCATED WITHIN A ONE HUNDRED (100) FOOT RADIUS OF THE FOOTPRINT OF ANY PRE-EXISTING ADJACENT RESIDENTIAL DWELLING
- GRID-SCALE BATTERY STORAGE FACILITIES SHALL ONLY BE PERMITTED WHEN CO-LOCATED ON A SITE WITH A SUBSTATION FACILITY.
- A TYPE D BUFFER YARD SHALL BE REQUIRED ON ALL SIDES OF A GRID-SCALE BATTERY STORAGE FACILITY ADJACENT TO A RESIDENTIAL ZONING DISTRICT. ALL OTHER REQUIRED BUFFER YARDS SHALL BE CONSISTENT WITH SECTION 7.4 (D)(1).
- ALL SIDES OF A GRID-SCALE BATTERY STORAGE FACILITY SHALL BE SCREENED FROM OFF-SITE VIEW BY USE OF A FENCE OR MASONRY WALL. THE MATERIALS OF THE FENCE OR MASONRY WALL SHALL BE CONSISTENT WITH THOSE LISTED IN SECTION 7.6 (C). THE HEIGHT OF ANY FENCE OR MASONRY WALL SHALL BE CONSISTENT WITH THE HEIGHT OF THE ENERGY STORAGE CONTAINER. THE MAXIMUM HEIGHT OF SUCH FENCE OR MASONRY WALL SHALL NOT EXCEED 8 FEET IN HEIGHT REGARDLESS OF THE HEIGHT OF THE ENERGY STORAGE CONTAINER.
- THE GRID-SCALE BATTERY STORAGE FACILITY SHALL HAVE AT LEAST ONE ENTRANCE OF SUFFICIENT DESIGN TO ALLOW FOR THE PROVISION OF EMERGENCY SERVICES, AS APPROVED BY THE KNIGHTDALE FIRE DEPARTMENT.
- PRIOR TO CONSTRUCTION DRAWING APPROVAL, A THIRD-PARTY NOISE ANALYSIS SHALL BE SUBMITTED ESTABLISHING THAT THE GRID-SCALE BATTERY STORAGE FACILITY AS DESIGNED WILL NOT EXCEED NOISE LEVEL LIMITS AT THE PROPERTY LINE(S) SET FORTH IN THE APPLICABLE NOISE ORDINANCE.
- THE NOISE LEVEL LIMITS APPLICABLE TO THE GRID-SCALE BATTERY STORAGE FACILITY SHALL BE DETERMINED BY THE LOCATION OF THE FACILITY. IF THE FACILITY IS LOCATED IN TOWN LIMITS, THE NOISE LEVEL LIMITS SET FORTH IN THE TOWN'S CODE OF ORDINANCES (KNIGHTDALE NOISE ORDINANCE) SHALL APPLY. IF THE FACILITY IS LOCATED OUTSIDE OF TOWN LIMITS BUT WITHIN THE TOWN'S EXTRA-TERRITORIAL JURISDICTION, THE NOISE LEVEL LIMITS SET FORTH IN WAKE COUNTY'S CODE OF ORDINANCES SHALL APPLY.
- AN ADDITIONAL NOISE ANALYSIS SHALL BE REQUIRED IF THE FACILITY EXCEEDS THE APPLICABLE NOISE LEVEL LIMITS. IF WARRANTED BY THE NOISE ANALYSIS, NOISE DAMPENING MEASURE SHALL BE INSTALLED IN ANY AREA THAT PRODUCES EXCESSIVE NOISE.

NOTE: THE INFORMATION ON THIS SHEET WAS PREPARED BY ERM NC, INC. ON 05/09/2023 AND MODIFIED BY BLACK & VEATCH



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Full Size 1=1

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| C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | SLD | |
| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | SLD | |
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DESIGNER: MJM DRAWN: CLC
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DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM






COVER SHEET
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

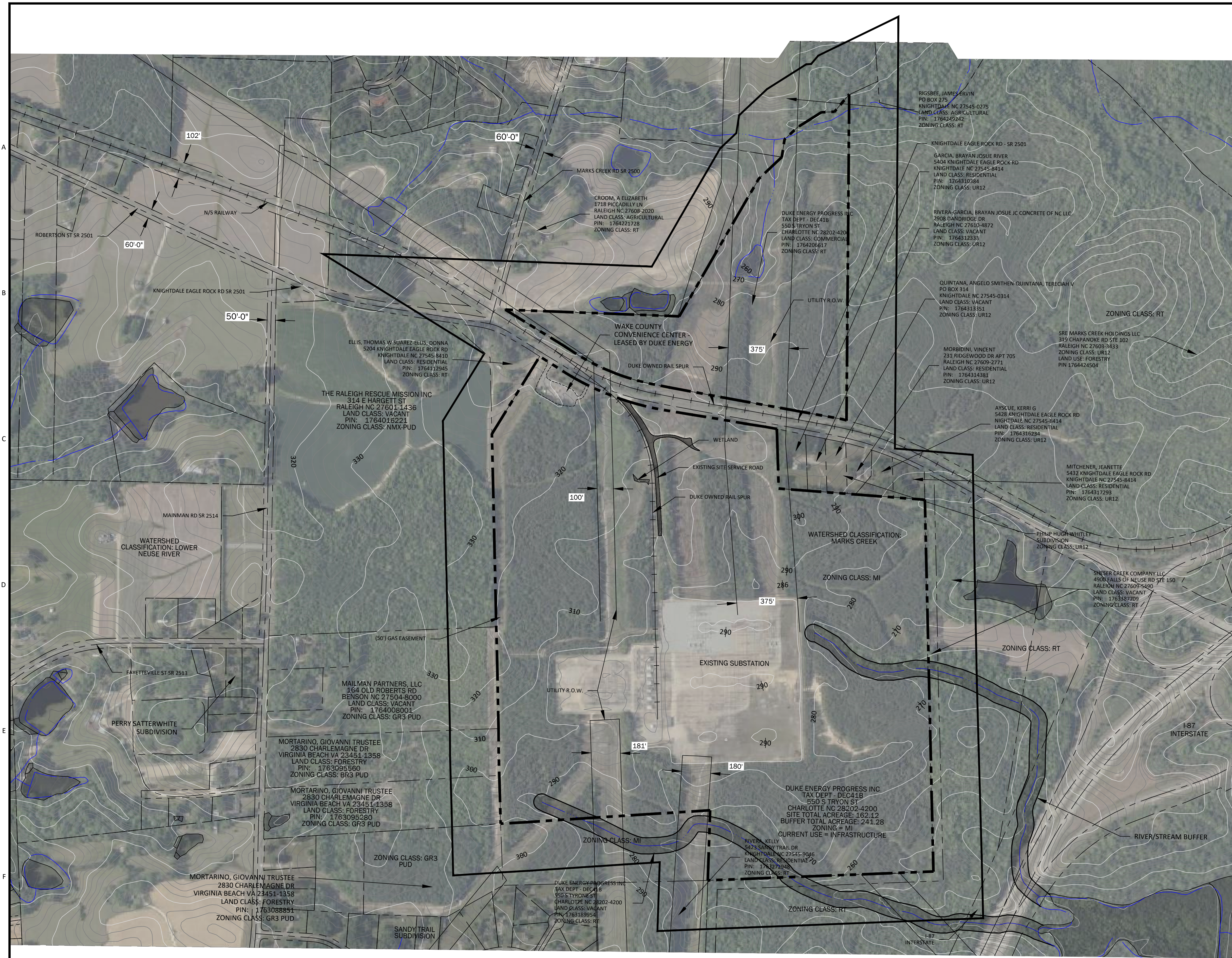
| PROJECT | DRAWING NUMBER | REV |
|----------------------------|----------------|-----|
| 419596 KND01-CV-C-SI-CS-01 | | D |
| CODE | AREA | |

NOTES

1. THE INFORMATION ON THIS SHEET WAS PREPARED BY ERM NC, INCL. ON 05/09/2023 AND MODIFIED BY BLACK & VEATCH.
2. ENTIRE SITE AND WORK AREA IS WITHIN THE EXTRA-TERRITORIAL JURISDICTION OF THE TOWN OF KNIGHTDALE, WAKE COUNTY.

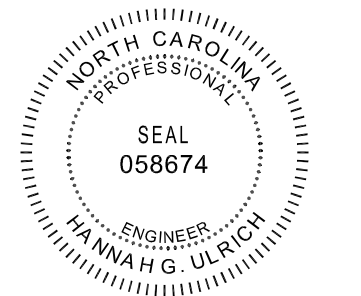
LEGEND

-  RIVER AND STREAMS
-  PARCELS
-  SUBJECT PROPERTY
-  300FT PROPERTY BUFFER
-  SUBDIVISION



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| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | | | | | |
| A | 08/22/2024 | ISSUED FOR PERMITTING | | | | | |

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DESIGNER: MJM DRAWN: CLC
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DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

ENVIRONMENTAL SURVEY
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-SI.PL-02 | | C |
| CODE | | |
| AREA | | |

NOTES









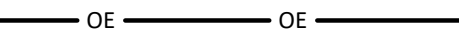






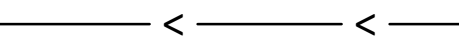
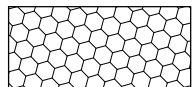
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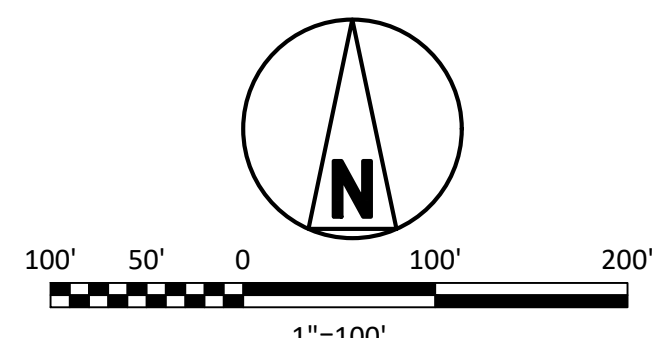
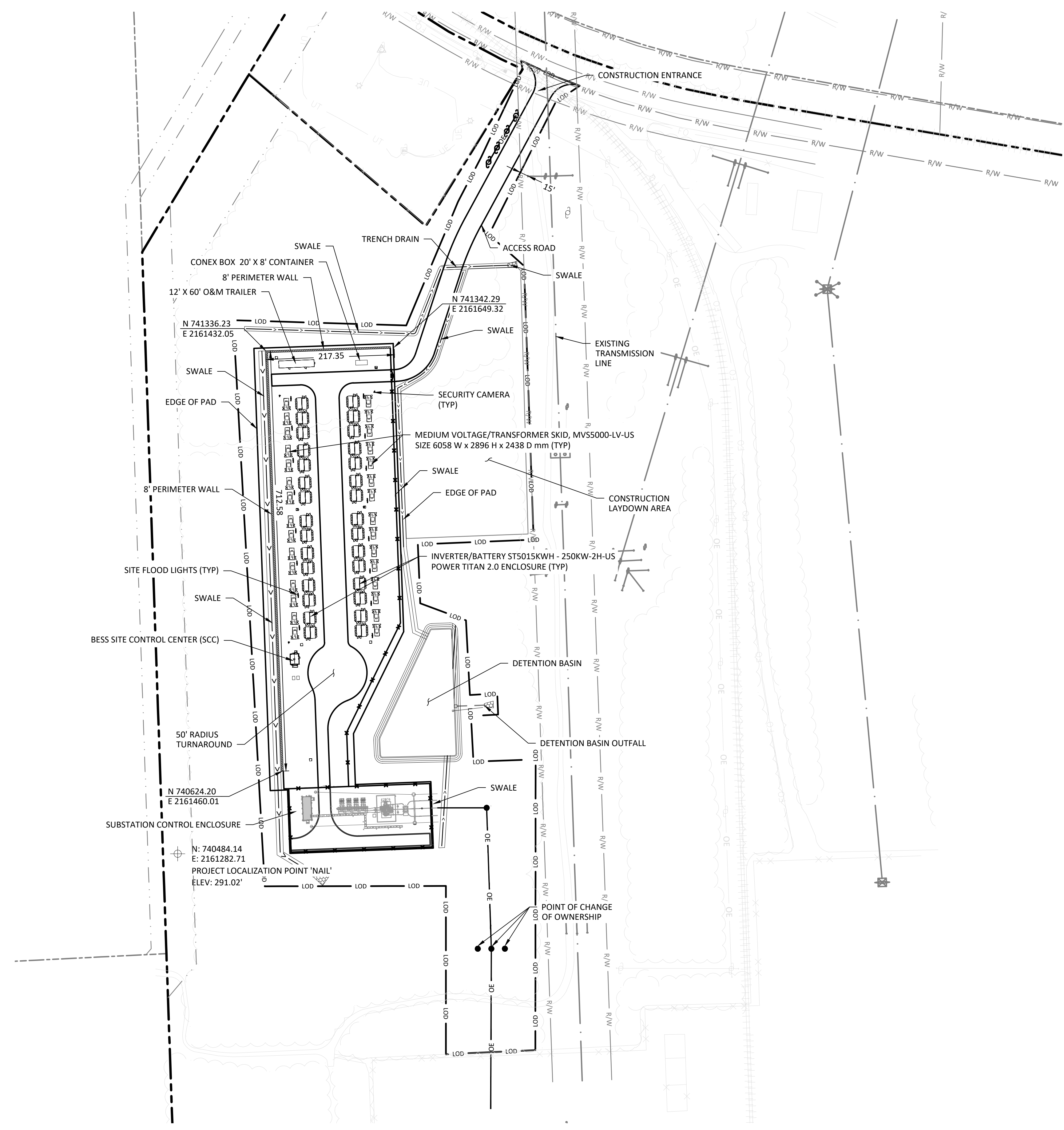
HORIZONTAL DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT
 *STATE PLANE COORDINATES WERE ESTABLISHED BASED IN NGS MONUMENTS "ROSE" AND "TOMB".

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988

BENCHMARK: PROJECT LOCALIZATION POINT 'NAIL'
 N: 740,484.141'
 E: 2,163,003.135'
 ELV: 291.02'

LEGEND

-  ADJACENT PARCEL BOUNDARY
-  PROPOSED SECURITY FENCE
-  EXISTING FENCE
-  PROPOSED ROAD
-  EXISTING TREE LIMITS
-  EXISTING RAILROAD
-  EXISTING OVERHEAD LINE
-  PROPERTY BOUNDARY
-  PROPOSED OVERHEAD ELECTRIC LINES
-  HIGH POWERED OVERHEAD ELECTRIC LINES
-  EXISTING RIGHT-OF-WAY
-  EXISTING FIBER OPTIC CABLE
-  LIMITS OF DISTURBANCE
-  EXISTING TREE LINE
-  PROPOSED PERIMETER WALL
-  PROPOSED VEGETATED SWALE
-  RIP RAP



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| C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSLD | |
| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | DSLD | |
| A | 22/AUG/2024 | ISSUED FOR PERMIT | CLC | MJM | HGU | DSLD | |

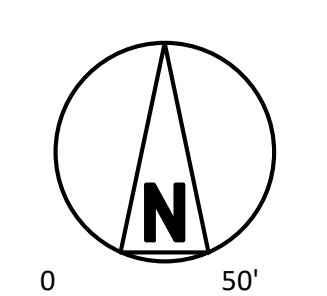
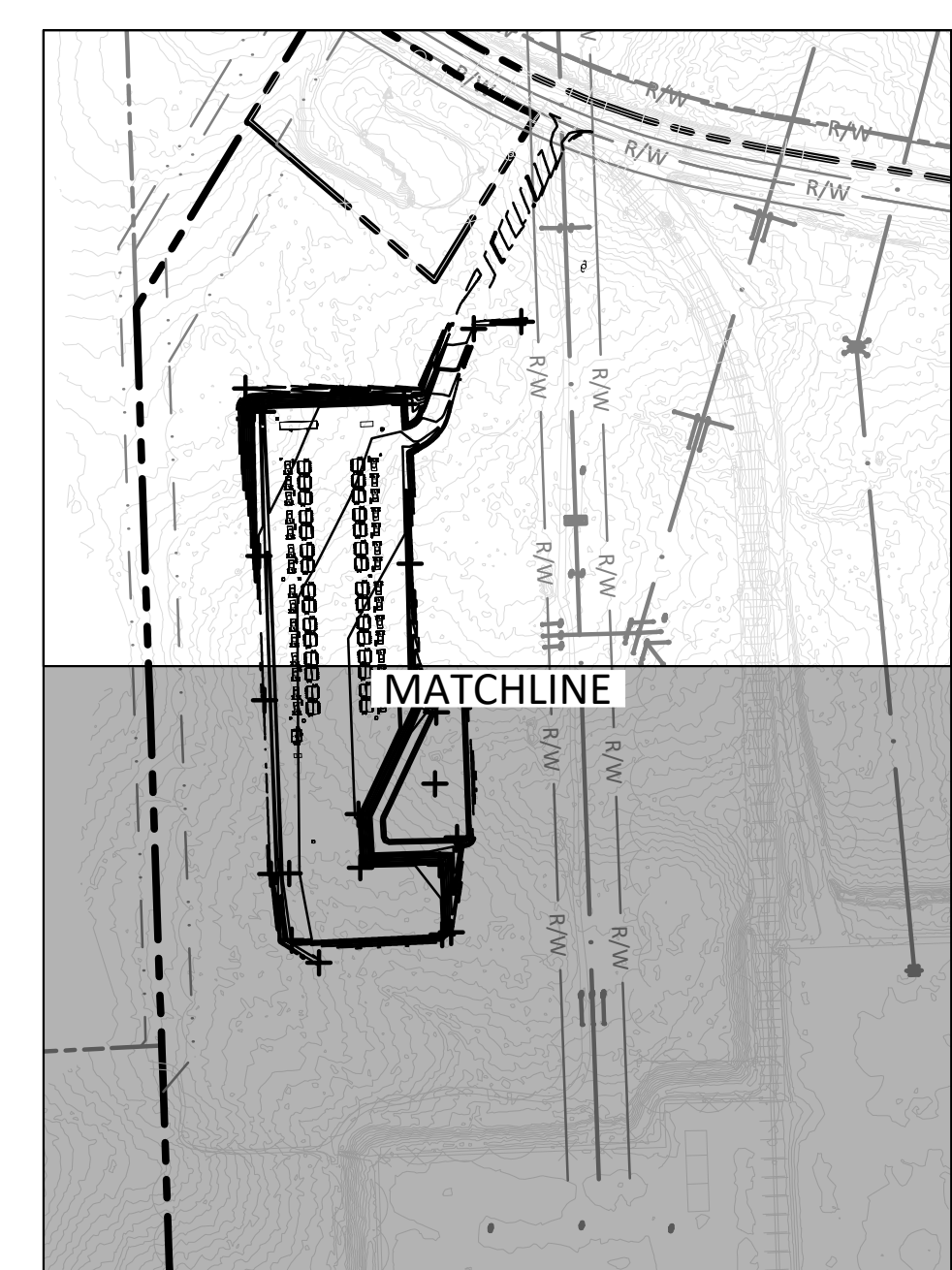
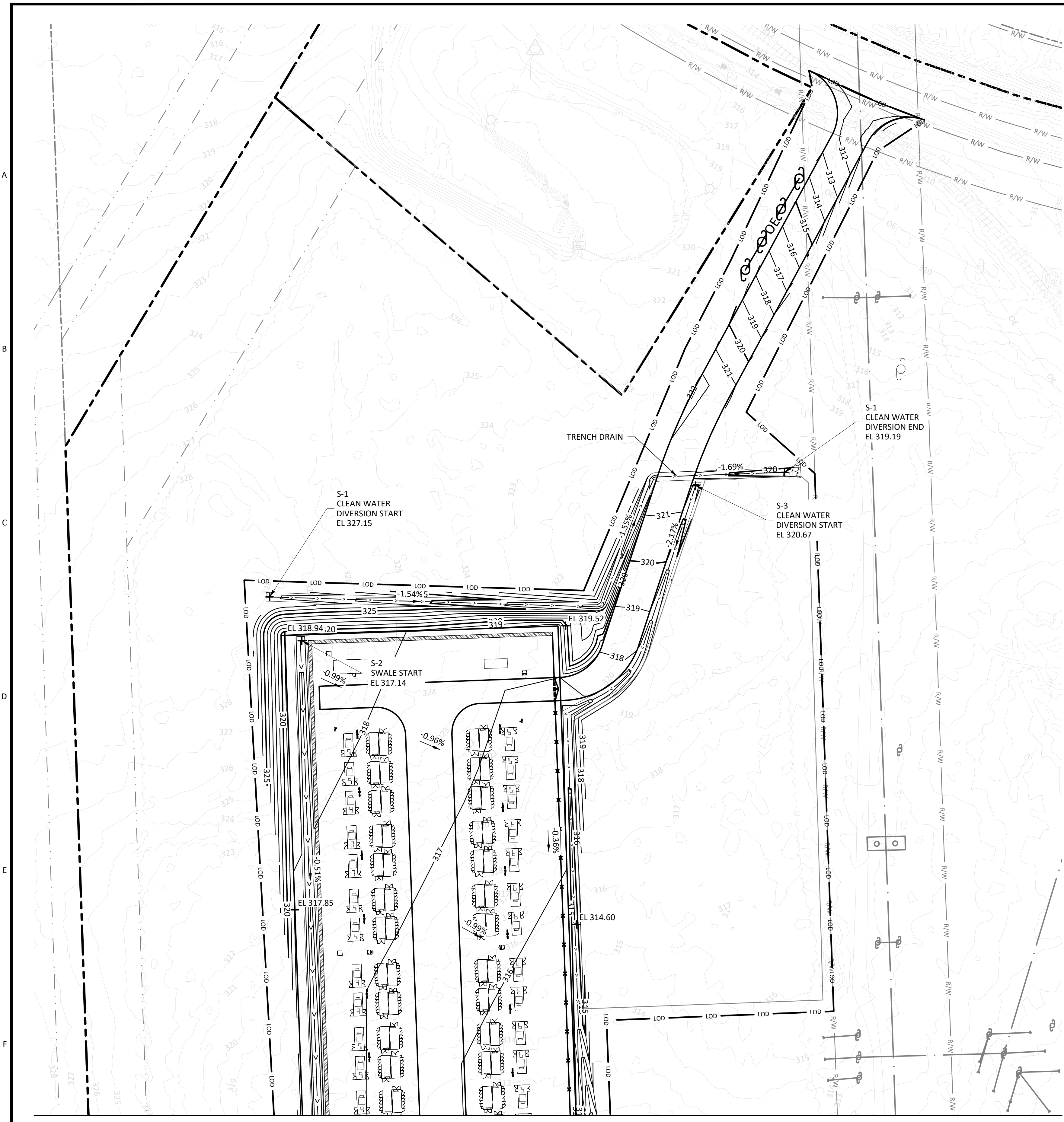
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DESIGNER: MJM DRAWN: CLC
 CHECKED: HGU DATE: 25/SEP/24

DUKE ENERGY
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

SITE PLAN
 5201 KNIGHTDALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-SI.PL-01 | | D |
| CODE | | |
| AREA | | |



NOTES

1. SPOT ELEVATIONS AND CONTOURS ON THESE DRAWINGS ARE TOP OF FINAL SURFACE GRADE (SEE TYPICAL AGGREGATE SURFACING SECTIONS ON KND01-CV-C-GR.SD-01). SUBTRACT AGGREGATE SURFACING THICKNESS TO OBTAIN TOP OF CONSTRUCTION WORKING SURFACE AND TOP OF SUBGRADE.
2. GRADE PLANS SHALL SLOPE UNIFORMLY BETWEEN FINISH SPOT ELEVATIONS AND CONTOURS SHOWN ON THE PLANS.
3. UNLESS NOTED OTHERWISE, SLOPES SHALL BE 3:1 (H:V).
4. SLOPE GRADE TO DRAIN IN DIRECTION OF FLOW ARROWS.
5. PERFORM FIELD IN-PLACE DENSITY TESTS ACCORDING TO ASTM D695 (NUCLEAR METHOD), 98% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR STRUCTURAL/SUBBASE AND BASE BACKFILL, 95% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR NON-STRUCTURAL/ON-SITE FILL MATERIAL BACKFILL.
6. PREVENT SURFACE WATER AND SUBSURFACE OR GROUNDWATER FROM ENTERING EXCAVATIONS, FROM PONDING ON PREPARED SUBGRADES, AND FROM FLOODING PROJECT SITE & SURROUNDING AREA. PROTECT SUBGRADES AND FOUNDATION SOILS FROM SOFTENING AND DAMAGE BY RAIN OR WATER ACCUMULATION.
7. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY APPROPRIATE COMPACTION EQUIPMENT AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND OPERATED TAMPERS.
8. FILL MATERIALS SHALL BE IMPORTED FROM A MINE OR SITE APPROVED BY THE NCDEQ FOR PROPER EROSION CONTROL.
9. HORIZONTAL CONTROL IS BASED ON NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NAD83. VERTICAL CONTROL IS BASED ON NAVD88.
10. SURVEY PROVIDED BY THE JOHN R. MCADAMS COMPANY, INC ON 03/26/2024. BEYOND LIMITS OF SURVEY, ELEVATION DATA SHOWN IS BASED ON PUBLICLY AVAILABLE DATA. CONTRACTOR TO FIELD VERIFY ELEVATIONS BEYOND LIMITS OF SURVEY.

LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- HIGH POWERED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- EXISTING MINOR CONTOUR LINES
- EXISTING MAJOR CONTOUR LINES
- MINOR CONTOUR LINES
- MAJOR CONTOUR LINES
- RIP RAP

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| C | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSLD | |
| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | DSLD | |
| A | 22/AUG/2024 | ISSUED FOR PERMIT | CLC | MJM | HGU | DSLD | |

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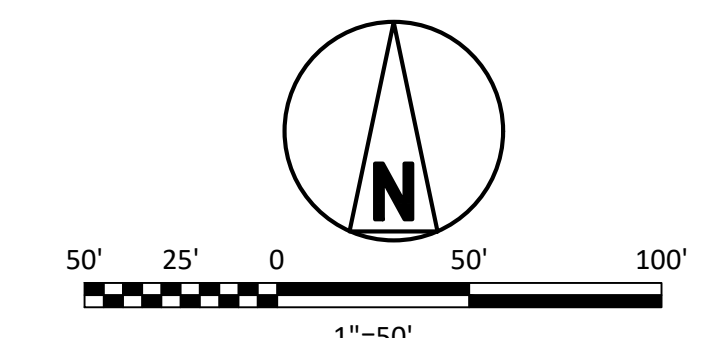
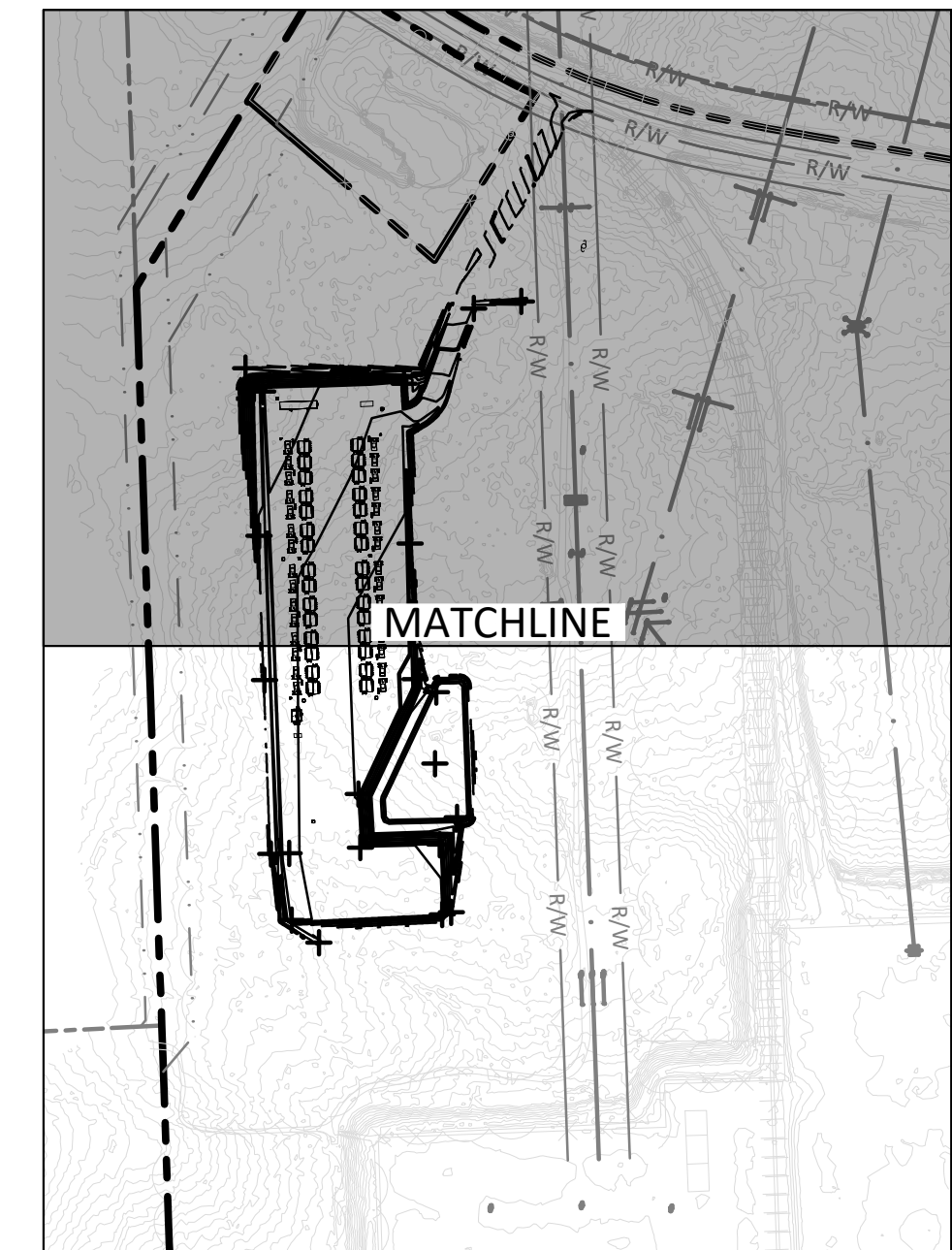
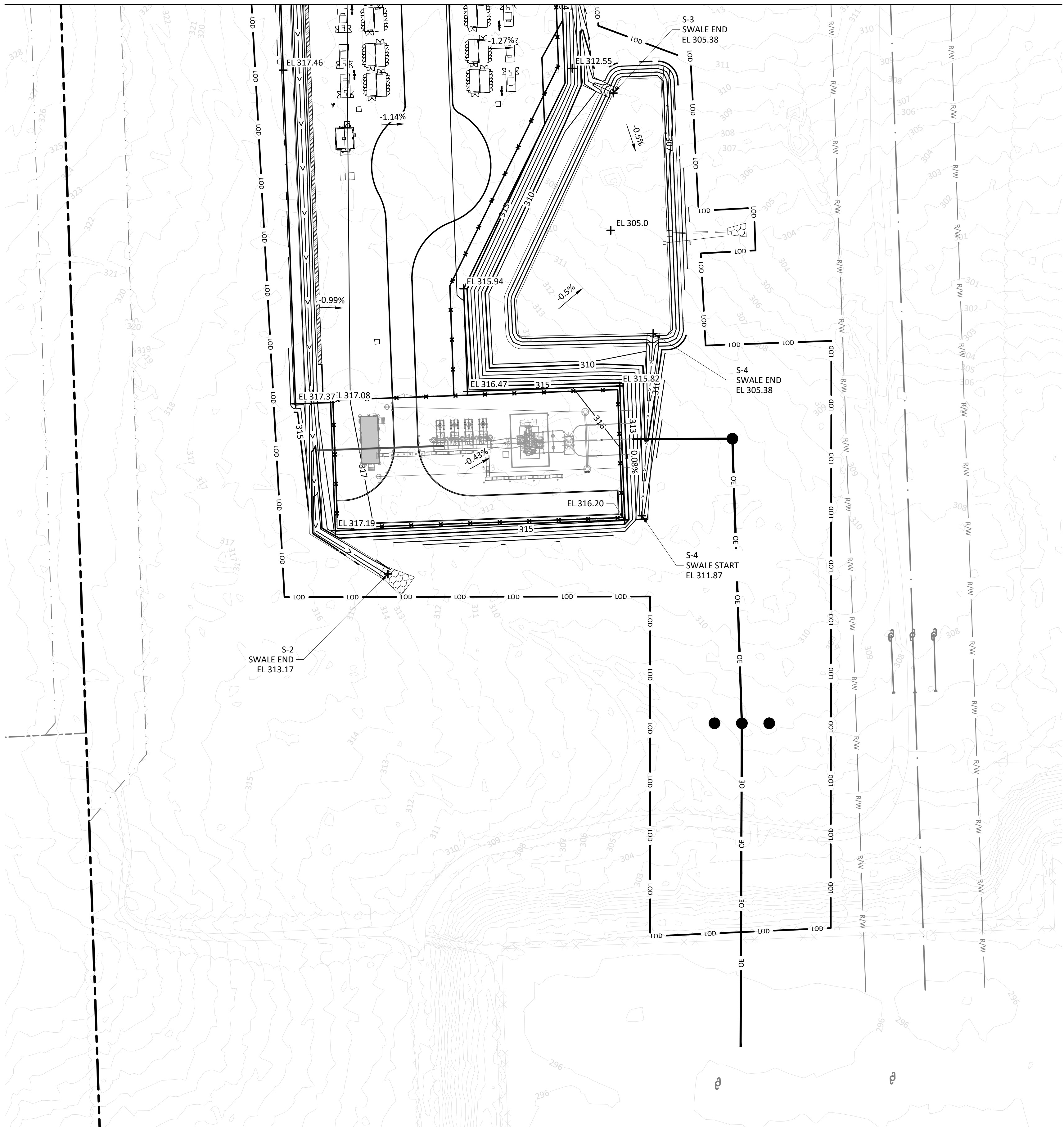
DESIGNER: MJM DRAWN: CLC
CHECKED: HGU DATE: 25/SEP/24

DUKE ENERGY DUKE KNIGHTDALE EPC
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

GRADING AND DRAINAGE PLAN
5201 KNIGHTALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| | | |
|----------------------------|----------------|-----|
| PROJECT | DRAWING NUMBER | REV |
| 419596 KND01-CV-C-GR.PL-01 | D | |
| CODE | AREA | |

MATCHLINE



NOTES

1. SPOT ELEVATIONS AND CONTOURS ON THESE DRAWINGS ARE TOP OF FINAL SURFACE GRADE (SEE TYPICAL AGGREGATE SURFACING SECTIONS ON KND01-CV-C-GR.SD-01). SUBTRACT AGGREGATE SURFACING THICKNESS TO OBTAIN TOP OF CONSTRUCTION WORKING SURFACE AND TOP OF SUBGRADE.
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4. SLOPE GRADE TO DRAIN IN DIRECTION OF FLOW ARROWS.
5. PERFORM FIELD IN-PLACE DENSITY TESTS ACCORDING TO ASTM D695 (NUCLEAR METHOD), 98% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR STRUCTURAL/SUBBASE AND BASE BACKFILL, 95% STANDARD PROCTOR MAXIMUM DRY DENSITY FOR NON-STRUCTURAL/ON-SITE FILL MATERIAL BACKFILL.
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10. SURVEY PROVIDED BY THE JOHN R. MCADAMS COMPANY, INC ON 03/26/2024. BEYOND LIMITS OF SURVEY, ELEVATION DATA SHOWN IS BASED ON PUBLICLY AVAILABLE DATA. CONTRACTOR TO FIELD VERIFY ELEVATIONS BEYOND LIMITS OF SURVEY.

LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- HIGH POWERED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- EXISTING MINOR CONTOUR LINES
- EXISTING MAJOR CONTOUR LINES
- MINOR CONTOUR LINES
- MAJOR CONTOUR LINES
- RIP RAP

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| B | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSLD | |
| A | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | DSLD | |

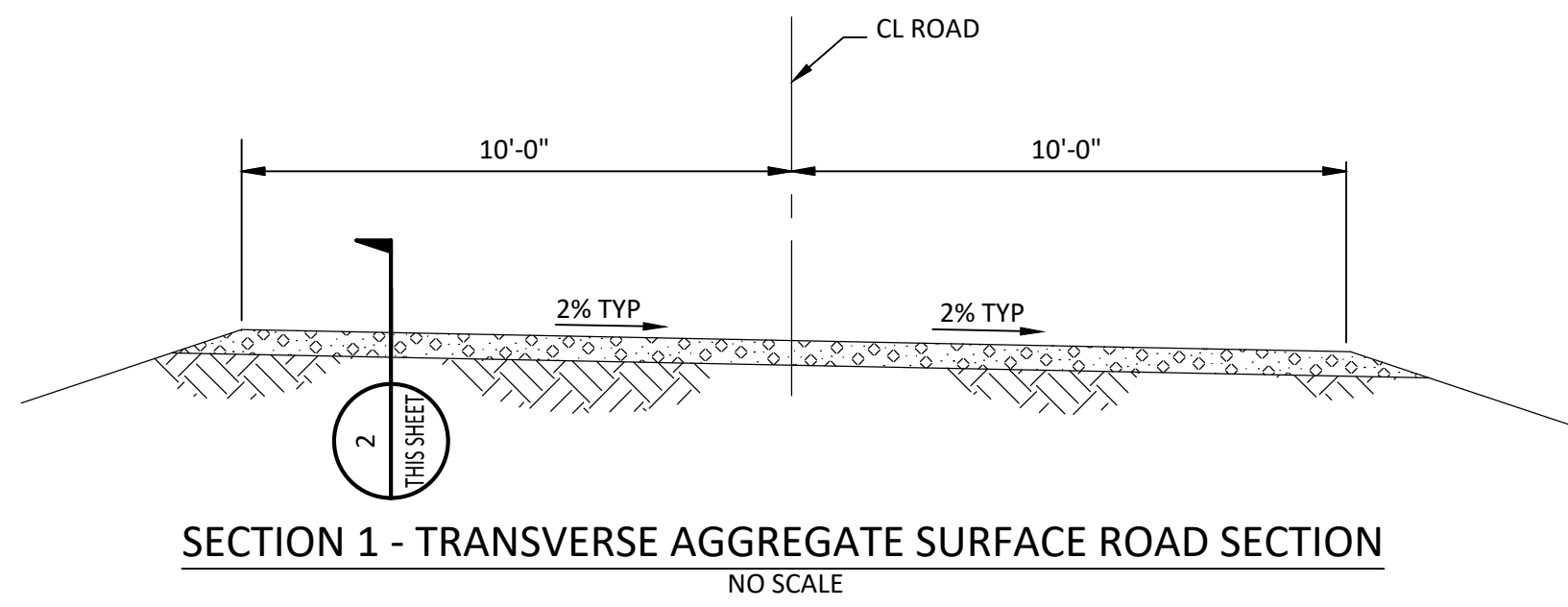
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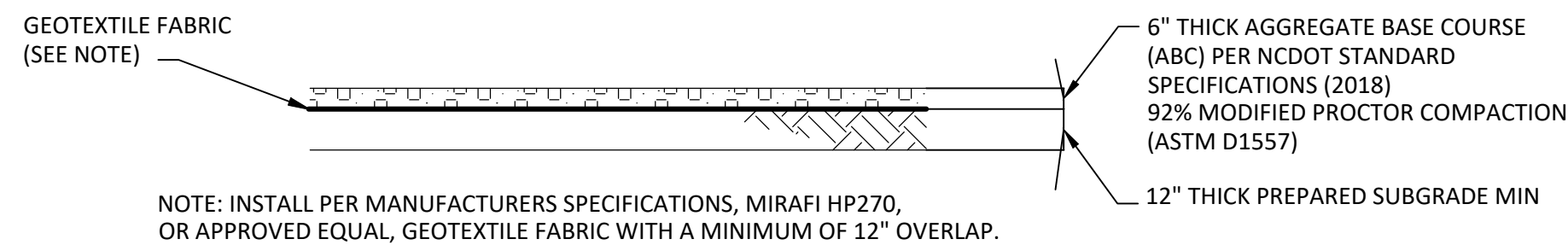
DUKE ENERGY DUKE KNIGHTDALE EPC
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

GRADING AND DRAINAGE PLAN
5201 KNIGHTALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

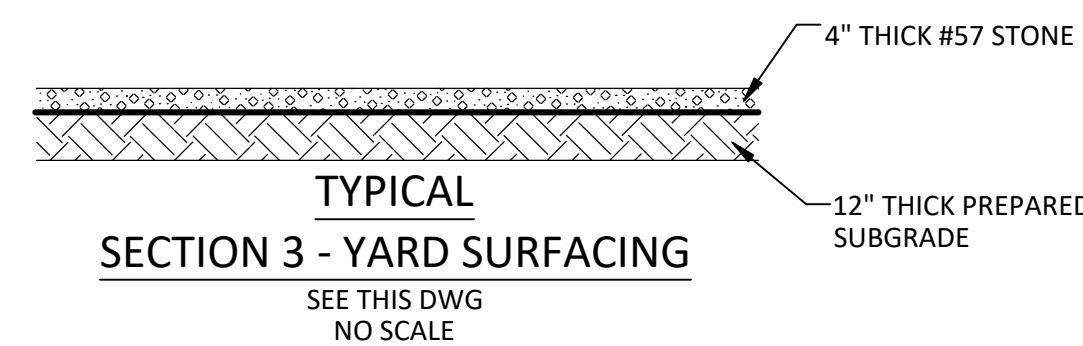
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| CODE | AREA | |



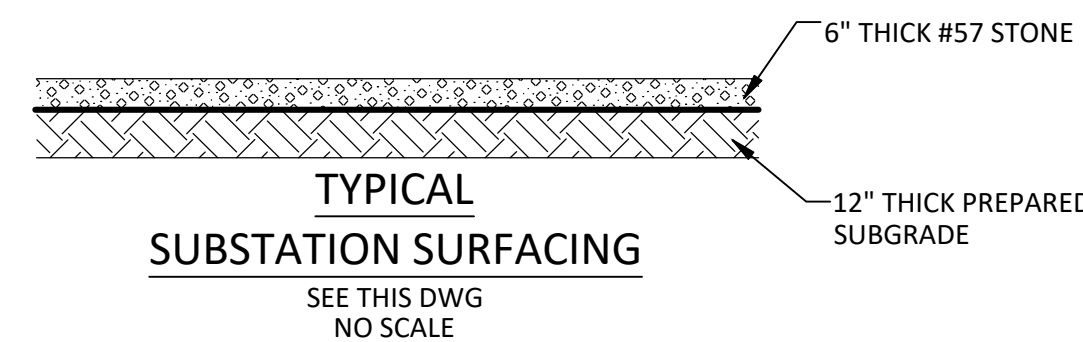
| RIPRAP SCHEDULE | | | | | | | |
|-----------------|----------|--------|--------|---------|---------|----------|---------|
| OUTLET | SHEET | L (FT) | T (FT) | W1 (FT) | W2 (FT) | D50 (FT) | REMARKS |
| BASIN OUTFALL | GR.PL-02 | 14 | 0.5 | 4.5 | 16.0 | 0.50 | |
| SWALE 1 | GR.PL-01 | 8 | 0.5 | 3.0 | 9.0 | 5 | |
| SWALE 2 | GR.PL-02 | 14 | 0.5 | 4.0 | 16.0 | 0.5 | |



SECTION 2
SEE THIS DWG
NO SCALE

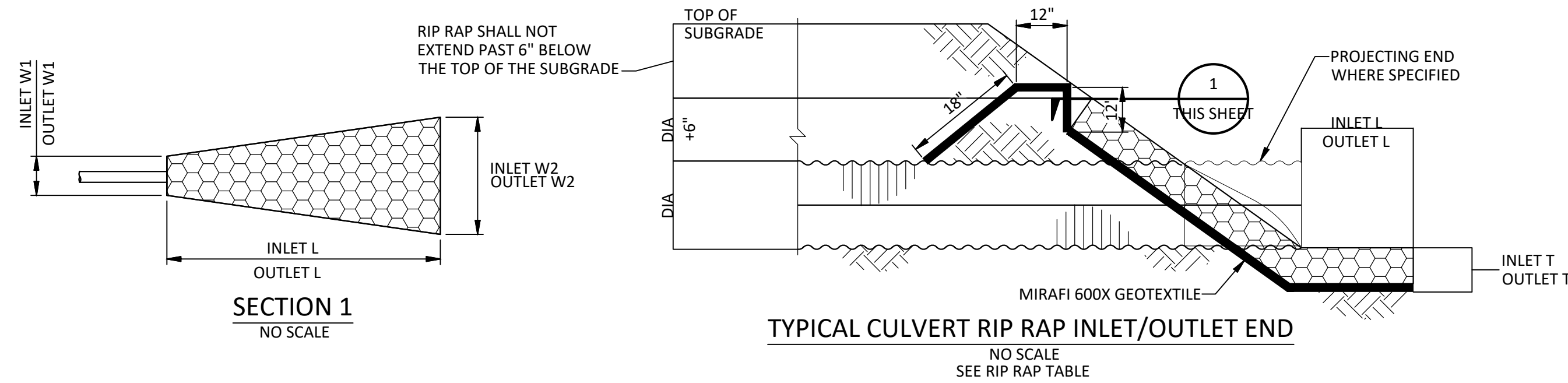


TYPICAL
SECTION 3 - YARD SURFACING
SEE THIS DWG
NO SCALE



TYPICAL
SUBSTATION SURFACING
SEE THIS DWG
NO SCALE

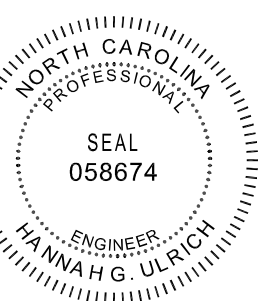
| DITCH NO. | COORDINATES | | | | LENGTH (FT) | START INV ELV | END INV ELV | SLOPE (FT/FT) | LINING | DESIGN LIFE | REMARKS |
|-----------|-------------|------------|-----------|------------|-------------|---------------|-------------|---------------|------------|-------------|-------------------|
| | START | | END | | | | | | | | |
| | NORTHING | EASTING | NORTHING | EASTING | | | | | | | |
| S-1 | 741373.79 | 2161398.82 | 741481.42 | 2161843.09 | 518 | 327.15 | 319.19 | VARIES | | PERMANENT | OFFSITE DIVERSION |
| S-2 | 741336.08 | 2161426.57 | 740448.39 | 2161516.95 | 916 | 317.17 | 313.17 | 0.005 | GRASS | PERMANENT | OFFSITE DIVERSION |
| S-3 | 741469.83 | 2161766.32 | 740851.99 | 2161706.11 | 736 | 320.67 | 305.46 | 0.005 | GRASS | PERMANENT | CONVEYANCE |
| S-4A | 740495.88 | 2161719.25 | 740649.74 | 2161713.76 | 110 | 316.20 | 315.82 | 0.003 | GRASS | PERMANENT | CONVEYANCE |
| S-4B | 740497.37 | 2161730.03 | 740650.30 | 2161739.52 | 44 | 311.87 | 305.38 | 0.237 | RIPRAP | PERMANENT | CONVEYANCE |
| D-1 | 741471.43 | 2161846.77 | 740863.24 | 2161711.88 | 763 | 318.00 | 305.38 | 0.010 | EC BLANKET | TEMPORARY | CONVEYANCE |
| D-2 | 740415.74 | 2161746.18 | 740204.10 | 2161744.09 | 212 | 309.00 | 303.00 | 0.005 | EC BLANKET | TEMPORARY | OFFSITE DIVERSION |



SECTION 1
NO SCALE

TYPICAL CULVERT RIP RAP INLET/OUTLET END
NO SCALE
SEE RIP RAP TABLE

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| B | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | SDS | LD |
| A | 22/AUG/2024 | ISSUED FOR PERMIT | CLC | MJM | HGU | SDS | LD |

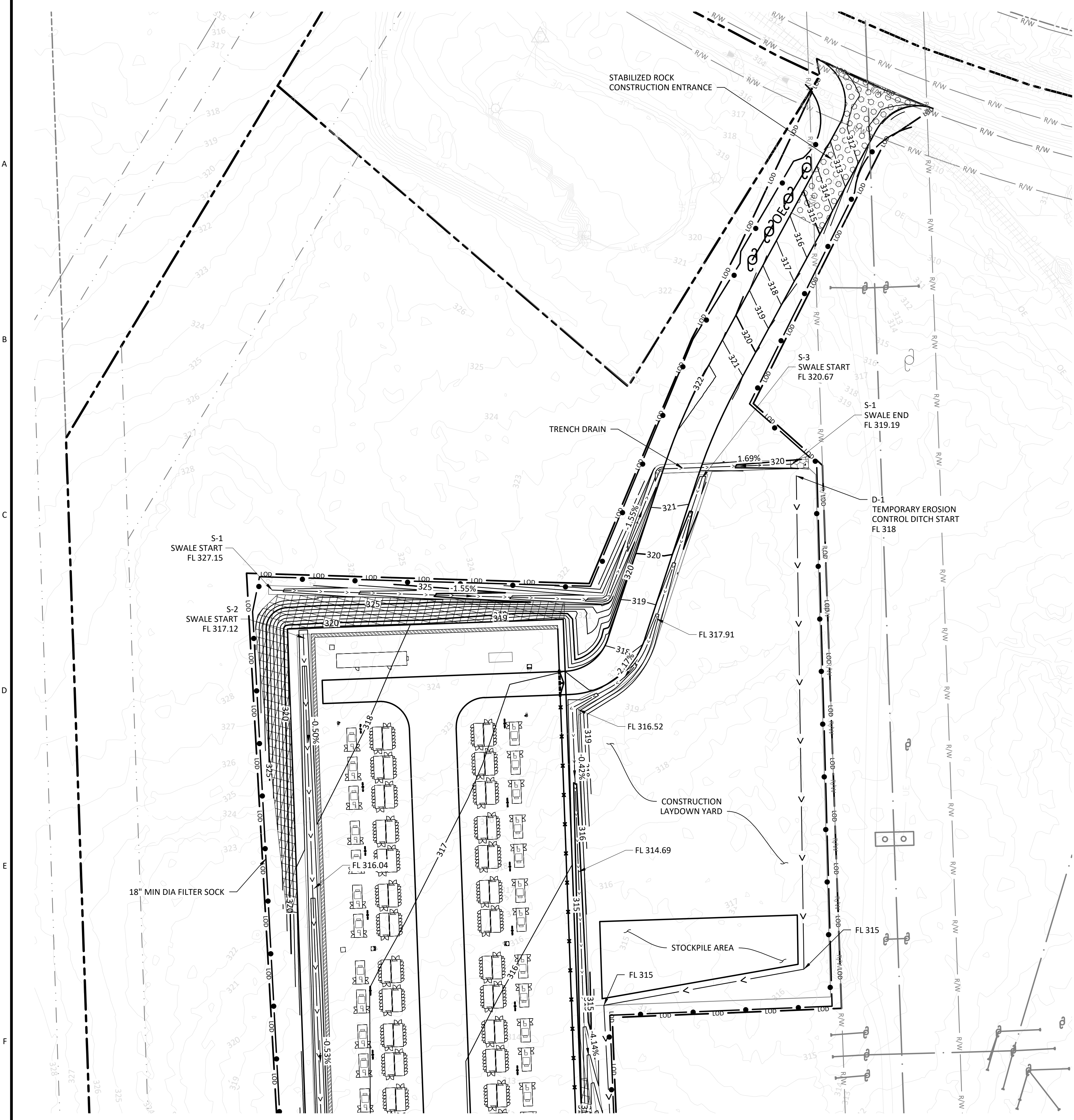
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DESIGNER: MJM, DRAWN: CLC
CHECKED: HGU, DATE: 25/SEP/2024

DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE FACILITY

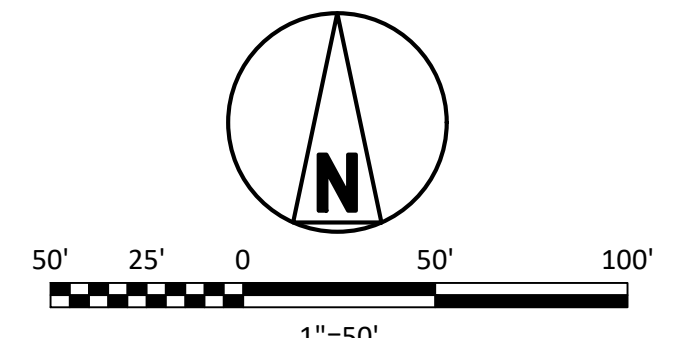
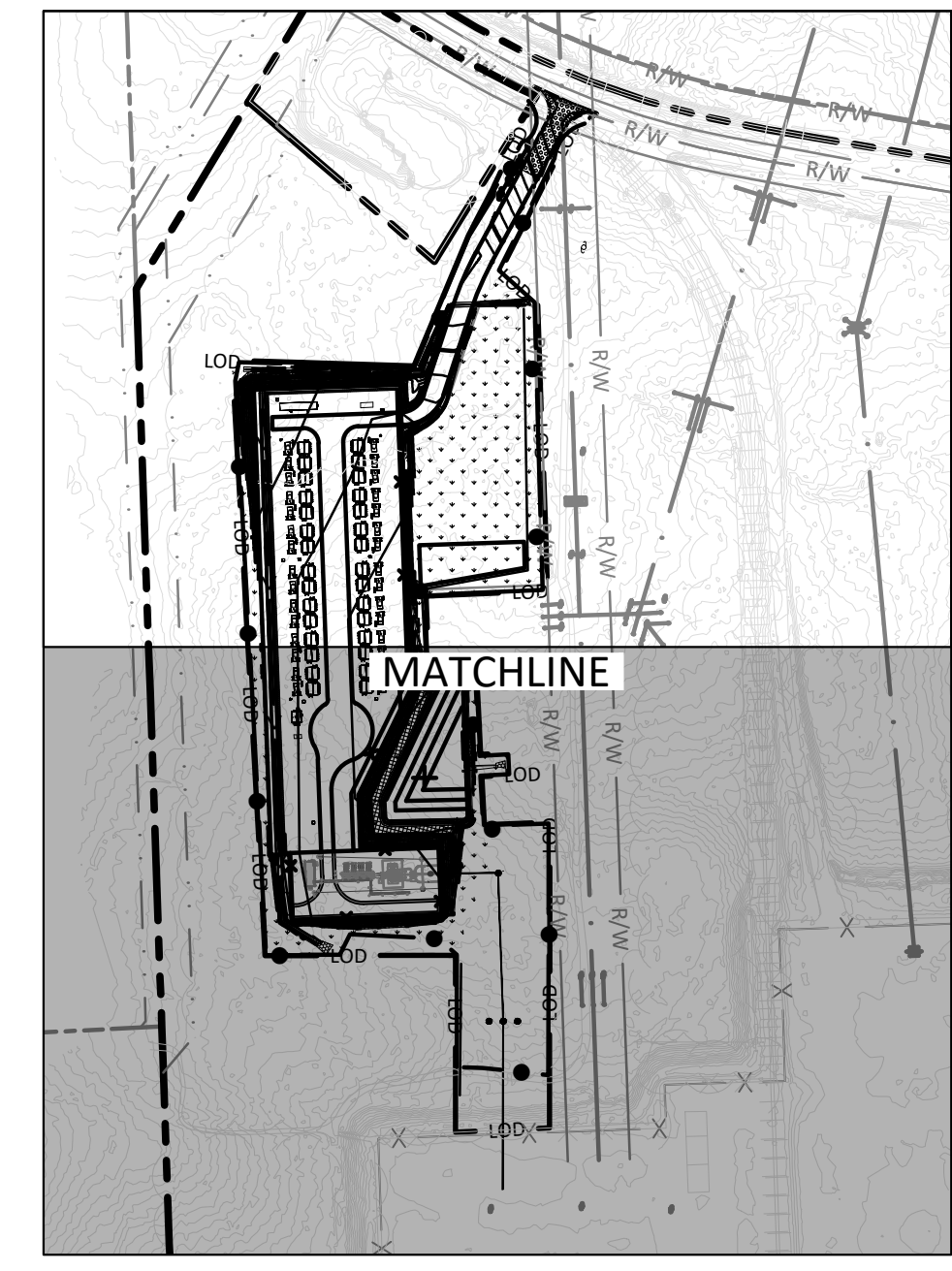
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5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

| PROJECT | DRAWING NUMBER | REV |
|----------------------|----------------------|-----|
| KNND01-CV-C-GR.SD-01 | KNND01-CV-C-GR.SD-01 | D |
| CODE | AREA | |
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- EROSION CHECKS**
1. TEMPORARY PERVIOUS BARRIERS USING RIPRAP OR SILT FENCE, SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO CHECK EROSION AND REDUCE SEDIMENTATION IN AREAS DEEMED APPROPRIATE DURING CONSTRUCTION.
 2. ALL EROSION CHECKS SHALL BE MAINTAINED UNTIL ADJACENT AREAS ARE STABILIZED.
- SEDIMENT & EROSION CONTROL PLAN NOTES:**
- GENERAL:**
3. THESE GUIDELINES SHALL APPLY TO ALL WORK CONSISTING OF ANY AND ALL TEMPORARY AND/OR PERMANENT MEASURES TO CONTROL WATER POLLUTION AND SOIL EROSION, AS MAY BE REQUIRED, DURING THE CONSTRUCTION OF THE PROJECT.
 4. IN GENERAL, ALL CONSTRUCTION ACTIVITIES SHALL PROCEED IN SUCH A MANNER SO AS NOT TO POLLUTE ANY WETLANDS, WATERCOURSE, WATERBODY, AND CONDUIT CARRYING WATER, ETC. THE CONTRACTOR SHALL LIMIT, INSOFAR AS POSSIBLE, THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION METHODS AND IMMEDIATELY PROVIDE PERMANENT AND TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT WETLANDS, WATERCOURSES, AND WATERBODIES, AND TO PREVENT, INSOFAR AS POSSIBLE, EROSION ON THE SITE.
 5. CONTRACTOR SHALL IMPLEMENT AND MAINTAIN BEST MANAGEMENT PRACTICES AT ALL TIMES DURING CONSTRUCTION TO PREVENT SILTATION AND TURBID DISCHARGES IN EXCESS OF THE APPLICABLE PROVISIONS OF THE SITE CERTIFICATION APPLICATION AND THE CONDITIONS OF THE CERTIFICATION. METHODS SHALL INCLUDE, BUT ARE NOT LIMITED TO THE USE OF STAKED HAY BALES, STAKED FILTER SOCK, SODDING, SEEDING, AND MULCHING; STAGED CONSTRUCTION; AND THE INSTALLATION OF TURBIDITY SCREENS AROUND THE IMMEDIATE PROJECT SITE.
 6. FILTER SOCK SHALL INITIALLY BE PLACED CONTINUOUSLY ALONG LIMITS OF DISTURBANCE. AFTER RIPRAP APRONS AND SEDIMENT BASINS ARE INSTALLED AND STABILIZED, REMOVE FILTER SOCK ALONG LIMITS OF DISTURBANCE AT THE OUTLETS AND EXTEND ALONG EDGE OF RIPRAP APRONS TO ALLOW DRAINAGE FROM SKIMMER AND EMERGENCY SPILLWAY.
 7. SURVEY PROVIDED BY THE JOHN R. MCADAMS COMPANY, INC ON 03/26/2024. BEYOND LIMITS OF SURVEY, ELEVATION DATA SHOWN IS BASED ON PUBLICLY AVAILABLE DATA. CONTRACTOR TO FIELD VERIFY ELEVATIONS BEYOND LIMITS OF SURVEY.
 8. SITE MANAGER: DALLAS BIGHAM, 913-458-3915
- SEEDING**
1. TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE NCDEQ EROSION & SEDIMENT CONTROL MANUAL, SECTION 6.10.1 AND 6.10.2. SEE SHEET KND01-C-CV-EC-SD-03 FOR STABILIZATION NOTES.

| LEGEND | |
|--------|---------------------------------------|
| | ADJACENT PARCEL BOUNDARY |
| | PROPOSED SECURITY FENCE |
| | EXISTING FENCE |
| | PROPOSED ROAD |
| | EXISTING TREE LIMITS |
| | EXISTING RAILROAD |
| | EXISTING OVERHEAD LINE |
| | PROPERTY BOUNDARY |
| | PROPOSED OVERHEAD ELECTRIC LINES |
| | HIGH POWERED OVERHEAD ELECTRIC LINES |
| | EXISTING RIGHT-OF-WAY |
| | EXISTING FIBER OPTIC CABLE |
| | LIMITS OF DISTURBANCE |
| | EXISTING TREE LINE |
| | PROPOSED PERIMETER WALL |
| | PROPOSED VEGETATED SWALE |
| | FILTER SOCK |
| | EXISTING MINOR CONTOUR LINES |
| | EXISTING MAJOR CONTOUR LINES |
| | MINOR CONTOUR LINES |
| | MAJOR CONTOUR LINES |
| | RIP RAP |
| | STABILIZED CONSTRUCTION ENTRANCE/EXIT |
| | EROSION CONTROL BLANKET |



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| C | 25/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSLD | |
| B | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | DSLD | |
| A | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | DSLD | |

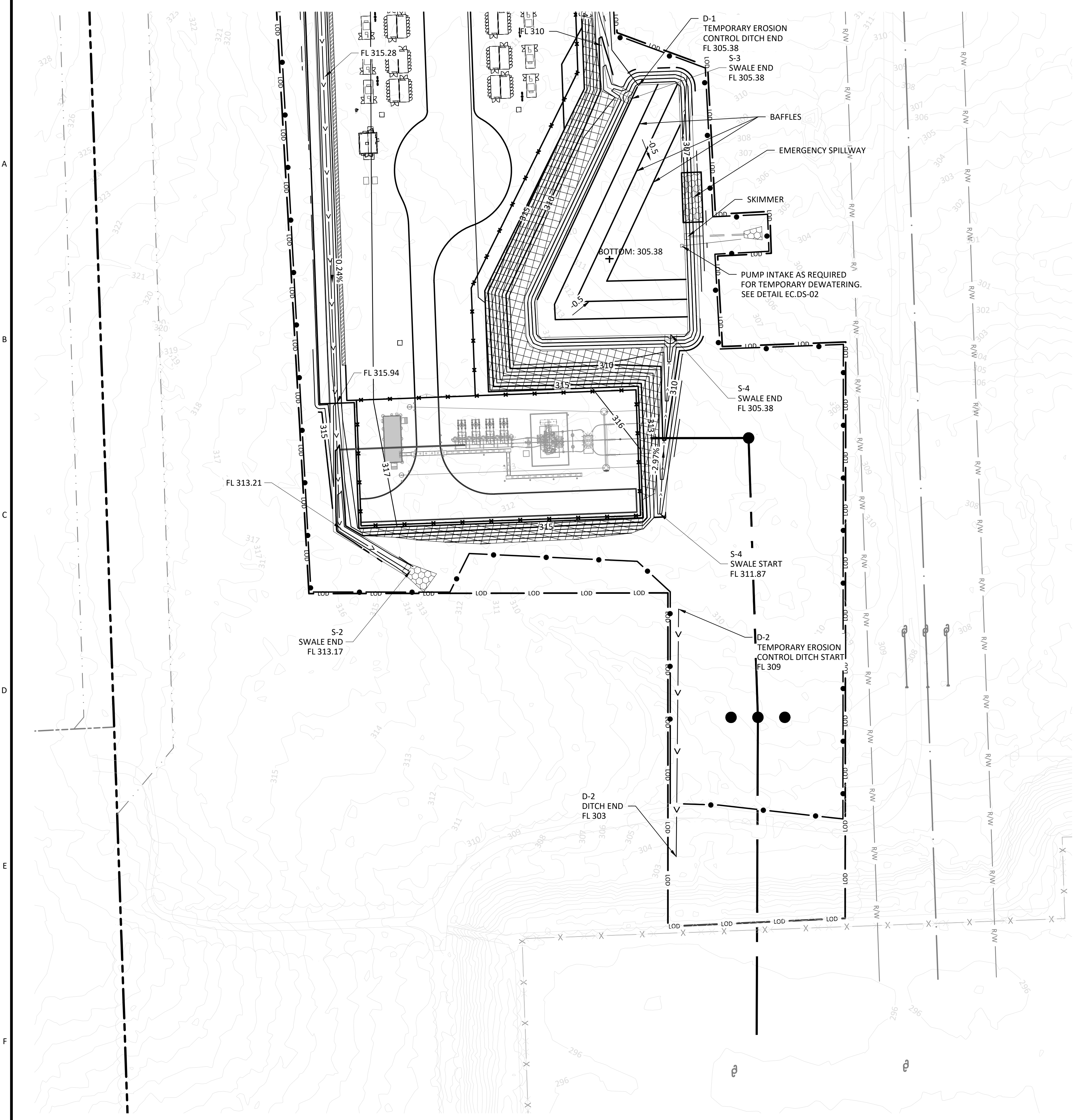
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DESIGNER: MJM DRAWN: CLC
 CHECKED: HGU DATE: 25/SEP/24

DUKE ENERGY DUKE KNIGHTDALE EPC
 KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

EROSION CONTROL PLAN
 5201 KNIGHTDALE EAGLE ROCK ROAD
 KNIGHTDALE, NC 27545

| | | |
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| PROJECT | DRAWING NUMBER | REV |
| | 419596 KND01-CV-C-EC.PL-01 | C |
| CODE | AREA | |



EROSION CHECKS

- TEMPORARY PERVIOUS BARRIERS USING RIPRAP OR SILT FENCE, SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO CHECK EROSION AND REDUCE SEDIMENTATION IN AREAS DEEMED APPROPRIATE DURING CONSTRUCTION.
- ALL EROSION CHECKS SHALL BE MAINTAINED UNTIL ADJACENT AREAS ARE STABILIZED.

SEDIMENT & EROSION CONTROL PLAN NOTES:

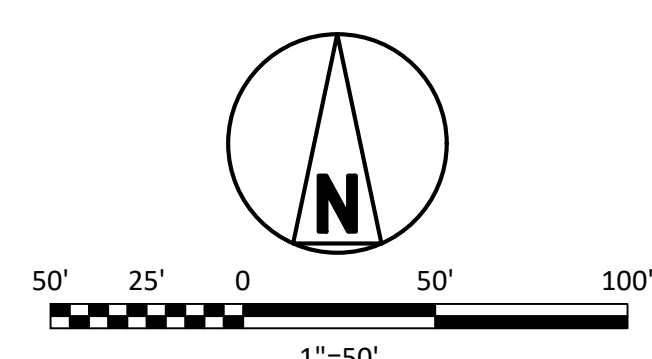
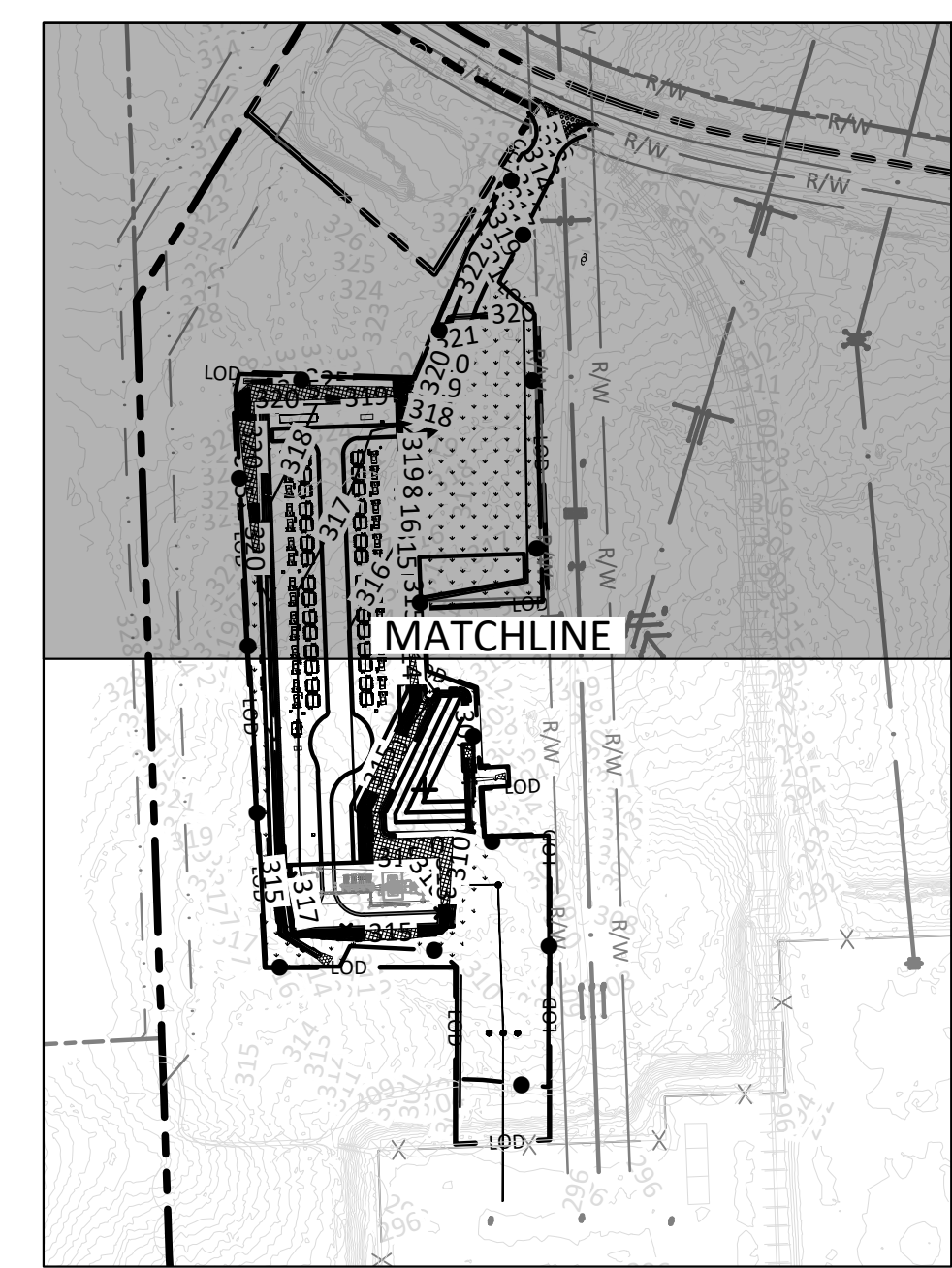
GENERAL:

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- SITE MANAGER: DALLAS BIGHAM, 913-458-3915

SEEDING

- TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE NCDEQ EROSION & SEDIMENT CONTROL MANUAL, SECTION 6.10.1 AND 6.10.2. SEE SHEET KND01-C-CV-EC-SD-03 FOR STABILIZATION NOTES.

| LEGEND | |
|--------|---------------------------------------|
| | ADJACENT PARCEL BOUNDARY |
| | PROPOSED SECURITY FENCE |
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| | EXISTING MINOR CONTOUR LINES |
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| | MINOR CONTOUR LINES |
| | MAJOR CONTOUR LINES |
| | RIP RAP |
| | STABILIZED CONSTRUCTION ENTRANCE/EXIT |
| | EROSION CONTROL BLANKET |



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| B | 12/SEP/2024 | ISSUED FOR PERMITTING | CLC | MJM | HGU | PSLD | |
| A | 4/SEP/2024 | ISSUED FOR 60% REVIEW | CLC | MJM | HGU | PSLD | |

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DESIGNER: MJM DRAWN: CLC
CHECKED: HGU DATE: 25/SEP/24

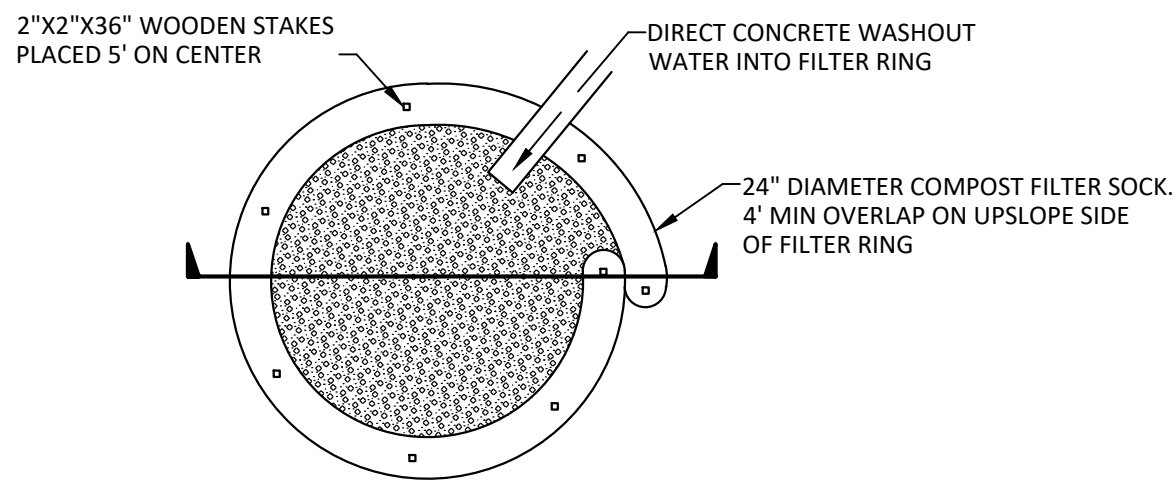
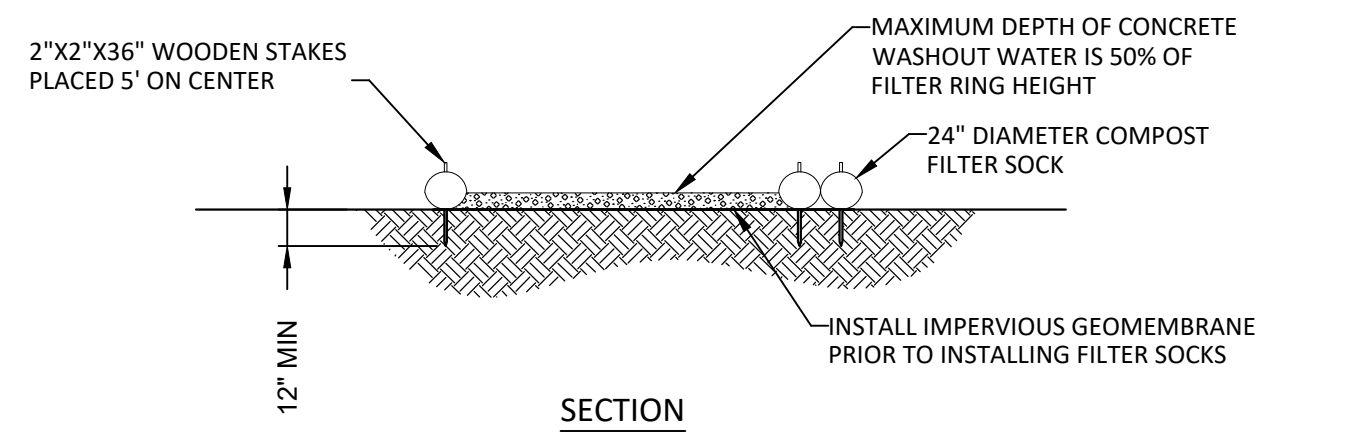
DUKE ENERGY DUKE KNIGHTDALE EPC
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

EROSION CONTROL PLAN
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

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| PROJECT | DRAWING NUMBER | REV |
| | 419596 KND01-CV-C-EC.PL-02 | C |
| CODE | AREA | |

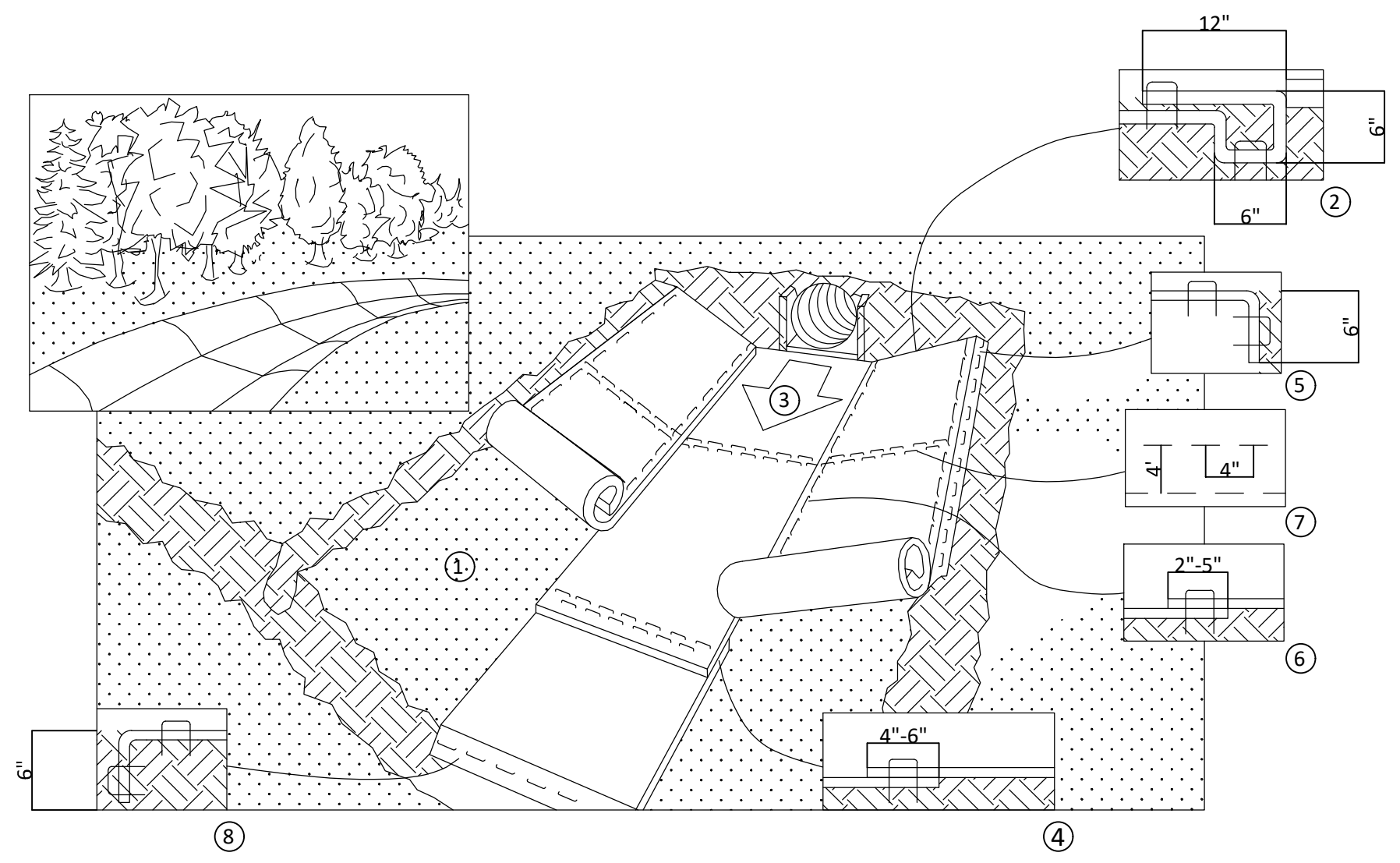
CONSTRUCTION SEQUENCE

- EROSION CONTROL PLAN IS APPROVED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ)
- CONTRACTOR SHALL SUBMIT NOI TO NCDEQ FOR APPROVAL.
- ONCE THE CERTIFICATE OF COVERAGE IS RECEIVED FROM NCDEQ, THE LIMITS OF DISTURBANCE (LOD) SHALL BE FIELD MARKED PRIOR TO INSTALLATION OF SEDIMENT CONTROL MEASURES, OR OTHER LAND DISTURBING ACTIVITIES.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE.
- INSTALL PERIMETER FILTER SOCK PRIOR TO ANY OTHER LAND DISTURBING ACTIVITIES.
- PERFORM CLEARING AND GRUBBING AS REQUIRED AND INSTALL SEDIMENT BASIN AND EROSION CONTROL DITCHES, INCLUDING OUTLET PIPE AND RIPRAP PADS.
- PERFORM SITE CLEARING.
INSTALL DIVERSION DITCHES. ONCE ALL DIVERSION DITCHES HAVE BEEN INSTALLED, UPSLOPE FILTER SOCK SHALL NO LONGER BE REQUIRED. CONTRACTOR SHALL MAINTAIN DOWNSLOPE FILTER SOCK UNTIL FINAL STABILIZATION.
- PERFORM MASS GRADING ACTIVITIES.
- UPON FINAL STABILIZATION RECEIVE FINAL APPROVAL FROM THE EROSION AND SEDIMENT CONTROL INSPECTOR. CONTRACTOR SHALL SUBMIT N.O.T. AFTER FINAL APPROVAL. ONCE N.O.T. IS APPROVED, CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.

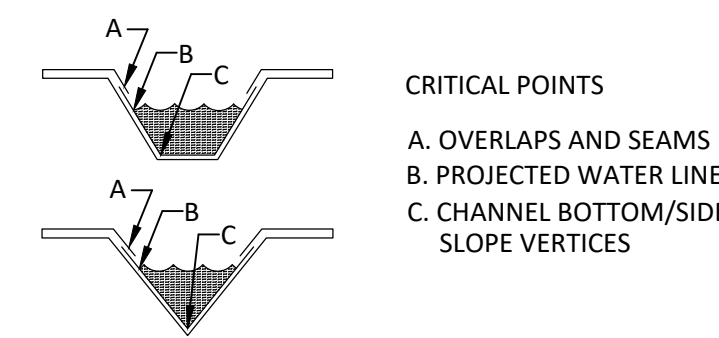


- NOTES:
- INSTALL IMPERVIOUS GEOMEMBRANE PRIOR TO INSTALLING FILTER SOCKS.
 - INSTALL ON FLAT GRADE FOR OPTIMAL PERFORMANCE.
 - 18" DIAMETER FILTER SOCK MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.

COMPOST SOCK WASHOUT INSTALLATION DETAIL
NOT TO SCALE

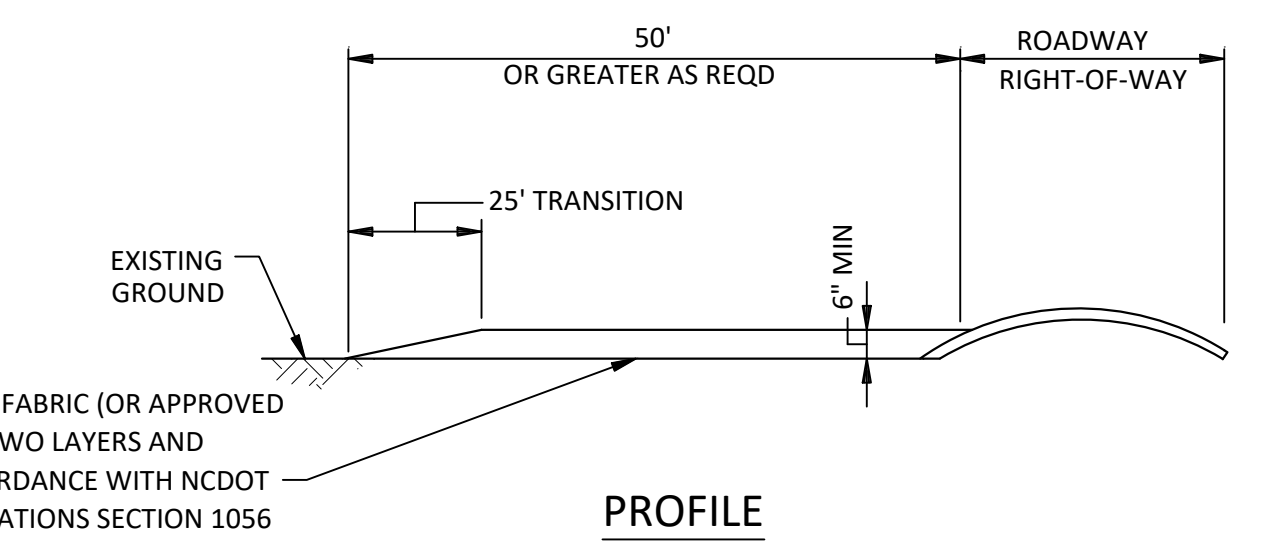
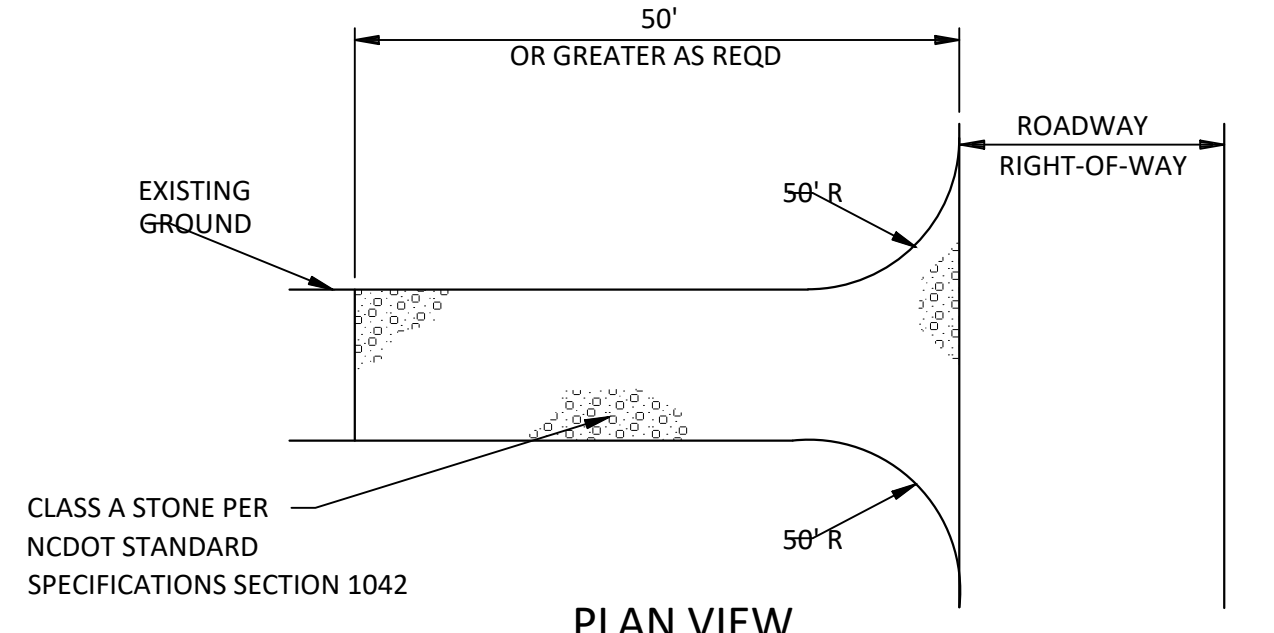


- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED, NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM TM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE BLANKETS.
- FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPE MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (DEPENDING ON BLANKET TYPE) AND STAPLED. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
- IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
- THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

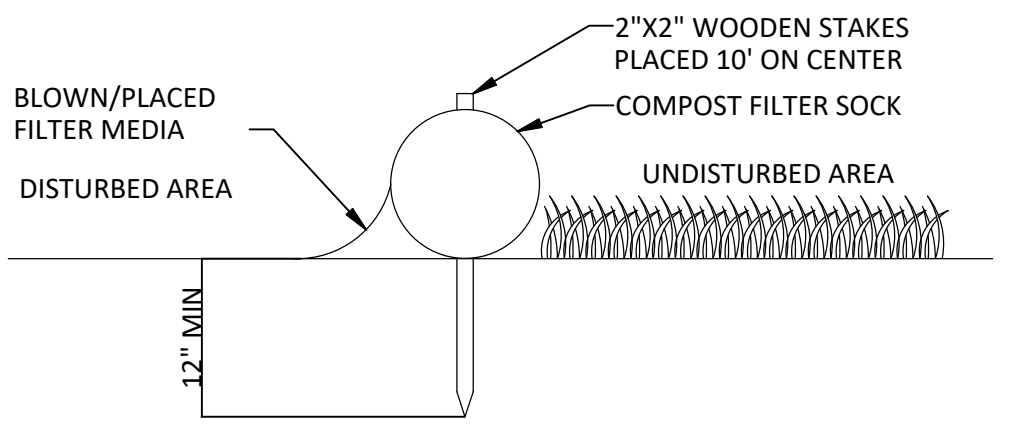


SC150 OR C125 EROSION BLANKET INSTALLATION (DITCH SLOPES ONLY)
NOT TO SCALE

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.



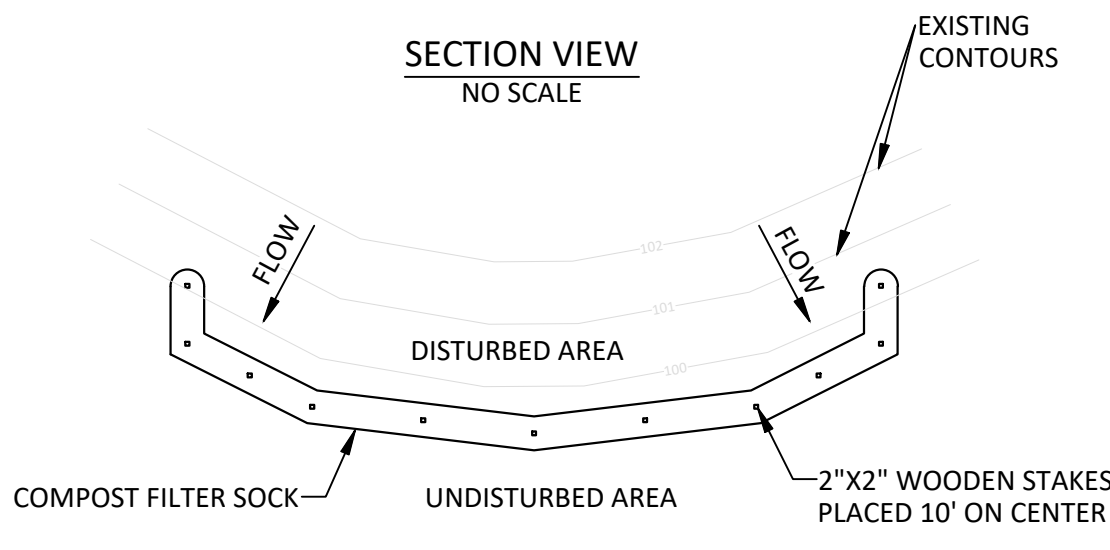
TYPICAL STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



- NOTES:
- COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 15 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT.
 - TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
 - BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER 6 MONTHS. PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 - UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

COMPOST STANDARDS

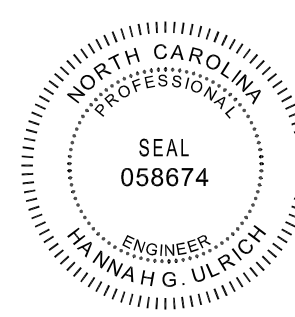
ORGANIC MATTER CONTENT = 80%-100% (DRY WEIGHT BASIS)
PARTICLE SIZE = 98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION = 5.0 dS MAXIMUM
ORGANIC PORTION = FIBROUS AND ELONGATED
pH = 5.5 - 8.0
MOISTURE CONTENT = 35% - 55%



COMPOST FILTER SOCK INSTALLATION DETAIL
NOT TO SCALE

ISSUED FOR PERMITTING

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DESIGNER: MJM DRAWN: CLC
CHECKED: HGU DATE: 25/SEP/24

DUKE ENERGY
KIGHTDALE BATTERY ENERGY STORAGE SYSTEM

EROSION & SEDIMENT CONTROL DETAILS
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27544

| | | |
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| PROJECT | DRAWING NUMBER | REV |
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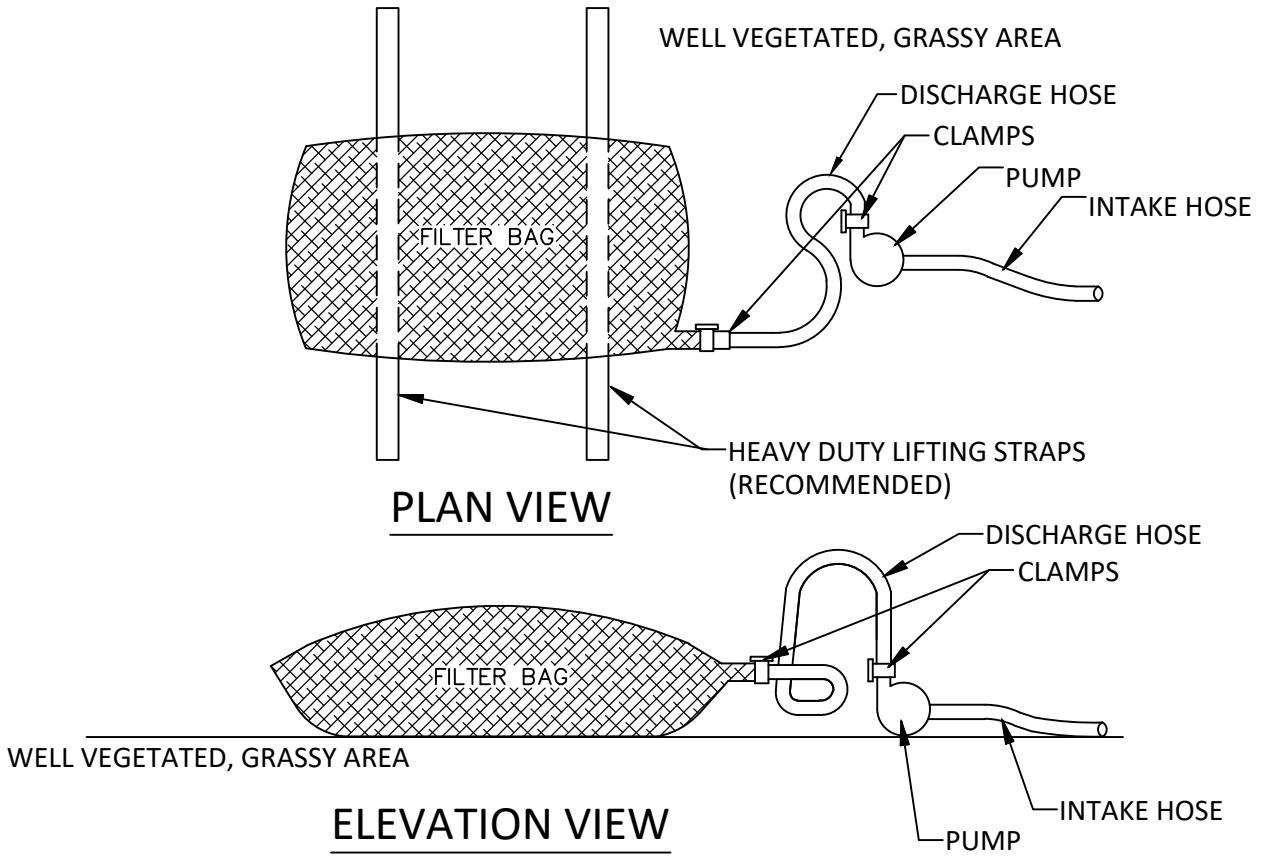
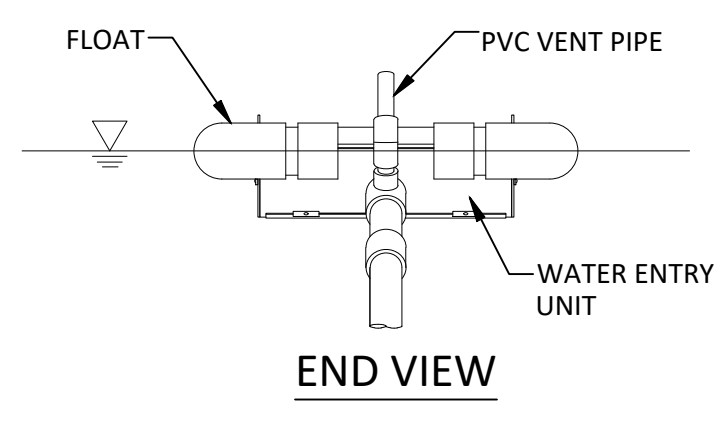
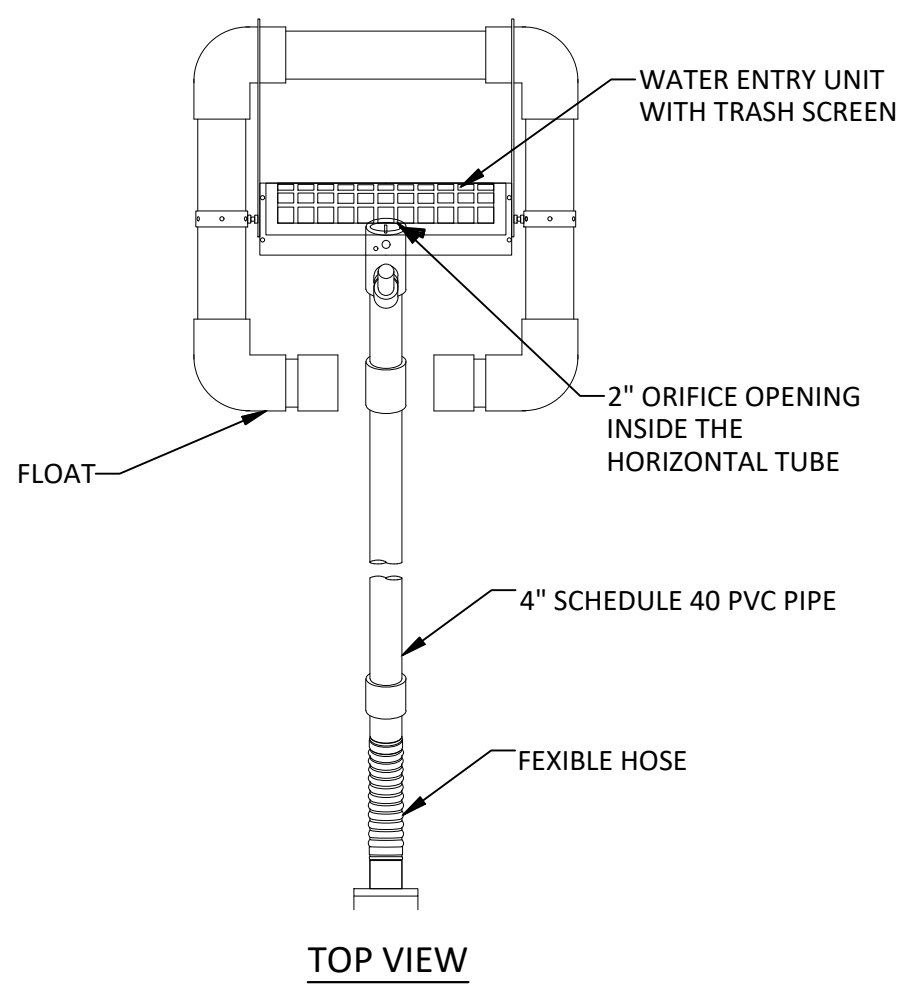
SKIMMER MAINTENANCE NOTES

- INSPECT SKIMMER SEDIMENT BASINS WEEKLY AND AFTER EACH SIGNIFICANT (ONE-HALF INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH IT CAN BE EXCAVATED. EXCAVATE THE SEDIMENT FROM THE ENTIRE BASIN, NOT JUST AROUND THE SKIMMER OR THE FIRST CELL. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER.
- IF THE SKIMMER IS CLOGGED WITH TRASH AND THERE IS WATER IN THE BASIN, USUALLY JERKING ON THE ROPE WILL MAKE SKIMMER BOB UP AND DOWN AND DISLODGE THE DEBRIS AND RESTORE FLOW. IF THIS DOES NOT WORK, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN TO REMOVE DEBRIS. ALSO CHECK THE ORIFICE INSIDE THE SKIMMER TO SEE IF IT IS CLOGGED; IF SO REMOVE THE DEBRIS.
- IF THE SKIMMER ARM OR BARREL PIPE IS CLOGGED, THE ORIFICE CAN BE REMOVED AND THE OBSTRUCTION CLEARED WITH A PLUMBER'S SNAKE OR BY FLUSHING WITH WATER. BE SURE TO REPLACE THE ORIFICE BEFORE REPOSITIONING THE SKIMMER.
- FREEZING WEATHER CAN RESULT IN ICE FORMING IN THE BASIN. SOME SPECIAL PRECAUTIONS SHOULD BE TAKEN IN THE WINTER TO PREVENT THE SKIMMER FROM PLUGGING WITH ICE.
- CONTROLS MUST BE INSPECTED EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A 1-INCH RAINFALL IN A 24-HOUR PERIOD.
- INSPECT BAFFLES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
- BE SURE TO MAINTAIN ACCESS TO THE BAFFLES. SHOULD THE FABRIC OF A BAFFLE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
- REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL, TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE BAFFLES. TAKE CARE TO AVOID DAMAGING THE BAFFLES DURING CLEANOUT, AND REPLACE IF DAMAGED DURING CLEANOUT OPERATIONS. SEDIMENT DEPTH SHOULD NEVER EXCEED HALF THE DESIGNED STORAGE DEPTH.
- AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED, REMOVE ALL BAFFLE MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, AND ENSURE THE SEED & EROSION CONTROL MATTING MEET PERMANENT STABILIZATION REQUIREMENTS.
- POND WILL BE DEWATERED VIA A PUMP FOR MAINTENANCE.

- SKIMMER REMOVAL NOTES:**
- REMOVE SEDIMENT & SCARIFY BOTTOM OF BASIN
 - REMOVE TIMBER PAD AND FILL IN SUMP
 - REMOVE SKIMMER & ORIFICE PLUGS
 - PLUG SKIMMER DISCHARGE PIPE WITH GROUT

NOTES

- PREVENT THE SKIMMING DEVICE FROM SETTLING BY PROVIDING A TIMBER SUPPORT UNDER THE SKIMMER.
- AT THE COMPLETION OF CONSTRUCTION REMOVE SKIMMER AND PLUG DISCHARGE PIPE WITH GROUT.
- ASSEMBLE THE SKIMMER FOLLOWING THE MANUFACTURER'S INSTRUCTIONS. POSITION THE SKIMMER OVER THE TIMBER SUPPORT PAD. BE SURE TO ATTACH A ROPE TO THE SKIMMER AND ANCHOR IT TO THE SIDE OF THE BASIN. THIS WILL BE USED TO PULL THE SKIMMER TO THE SIDE FOR MAINTENANCE.
- GRADE BASIN SO THAT THE BOTTOM IS LEVEL FRONT TO BACK AND SIDE TO SIDE.
- INSTALL THE COIR FIBER BAFFLES IMMEDIATELY UPON EXCAVATION OF THE BASINS.
- STEEL POSTS SHOULD BE DRIVEN TO A DEPTH OF 24 INCHES AND SPACED A MAXIMUM OF 4 FEET APART. THE TOP OF THE FABRIC SHOULD BE A MINIMUM OF 6 INCHES HIGHER THAN THE INVERT OF THE SPILLWAY. TOPS OF BAFFLES SHOULD BE A MINIMUM OF 2 INCHES LOWER THAN THE TOP OF THE EARTHEN EMBANKMENT.
- ATTACH A 9 GAUGE HIGH TENSION WIRE STRAND TO THE STEEL POSTS AT A HEIGHT OF 6 INCHES ABOVE THE SPILLWAY ELEVATION WITH PLASTIC TIES OR WIRE FASTENERS TO PREVENT SAGGING. DO NOT SPLICE THE FABRIC, BUT USE A CONTINUOUS PIECE ACROSS THE BASIN. ADJUSTMENTS MAY BE REQUIRED IN THE STAPLING REQUIREMENTS TO FIT INDIVIDUAL SITE CONDITIONS.
- INSTALL THREE (3) COIR FIBER BAFFLES IN BASINS AT DRAINAGE OUTLETS SPACED AS SHOWN ON LIE02-EC-C-PL-01.
- BUILD RIDGE HIGHER THAN DESIGN AND COMPACT WITH WHEELS OF CONSTRUCTION EQUIPMENT. COMPACTED RIDGE MUST BE AT OR ABOVE DESIGN GRADE AT ALL POINTS.
- VEGETATE DITCH AND BERM IMMEDIATELY AFTER CONSTRUCTION. STABILIZATION METHOD SHALL BE SEED SUPPLEMENTED WITH DEGRADABLE COIR (COCONUT FIBER) BLANKETS.
- INSPECT ROLLED EROSION CONTROL PRODUCTS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH ARE GREATER) RAINFALL EVENT. REPAIR IMMEDIATELY. MONITOR AND REPAIR THE ROLLED EROSION CONTROL BLANKET AS NECESSARY UNTIL GROUND COVER IS ESTABLISHED.
- WHEN WATERSHED AREA HAS BEEN STABILIZED AND ALL CONSTRUCTION DISTURBANCE HAS CEASED, REMOVE RIDGE AND FILL CHANNEL TO BLEND WITH NATURAL GRAND. STABILIZE DISTURBED AREA.



NOTES:
 LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

| PROPERTY | TEST METHOD | MINIMUM STANDARD |
|--------------------------|-------------|------------------|
| AVG. WIDE WIDTH STRENGTH | ASTM D-4884 | 60 LB/IN |
| GRAB TENSILE | ASTM D-4632 | 205 LB |
| PUNCTURE | ASTM D-4833 | 110 LB |
| MULLEN BURST | ASTM D-3786 | 350 PSI |
| UV RESISTANCE | ASTM D-4355 | 70% |
| AOS % RETAINED | ASTM D-4751 | 80 SIEVE |

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

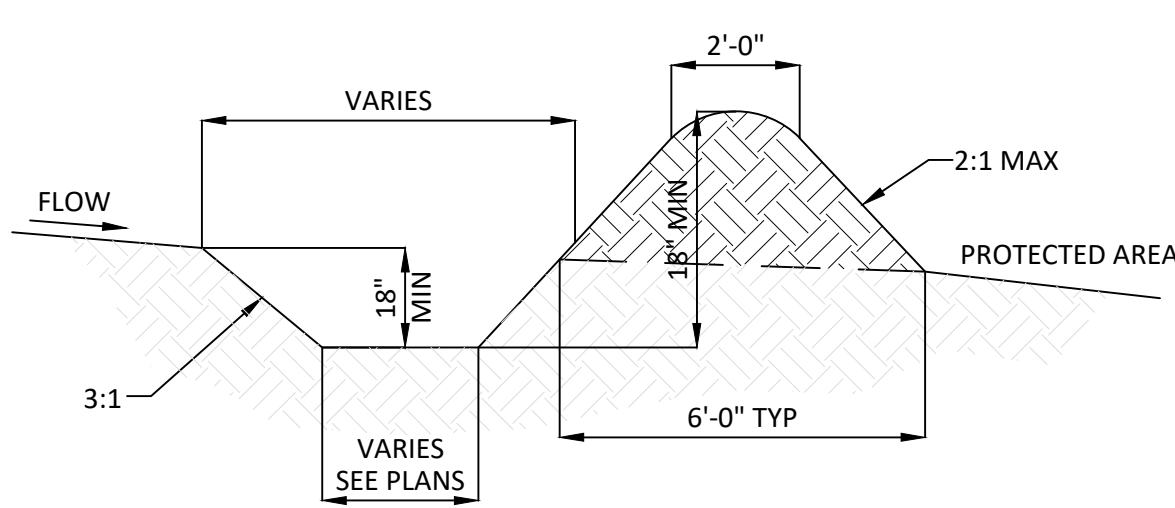
BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

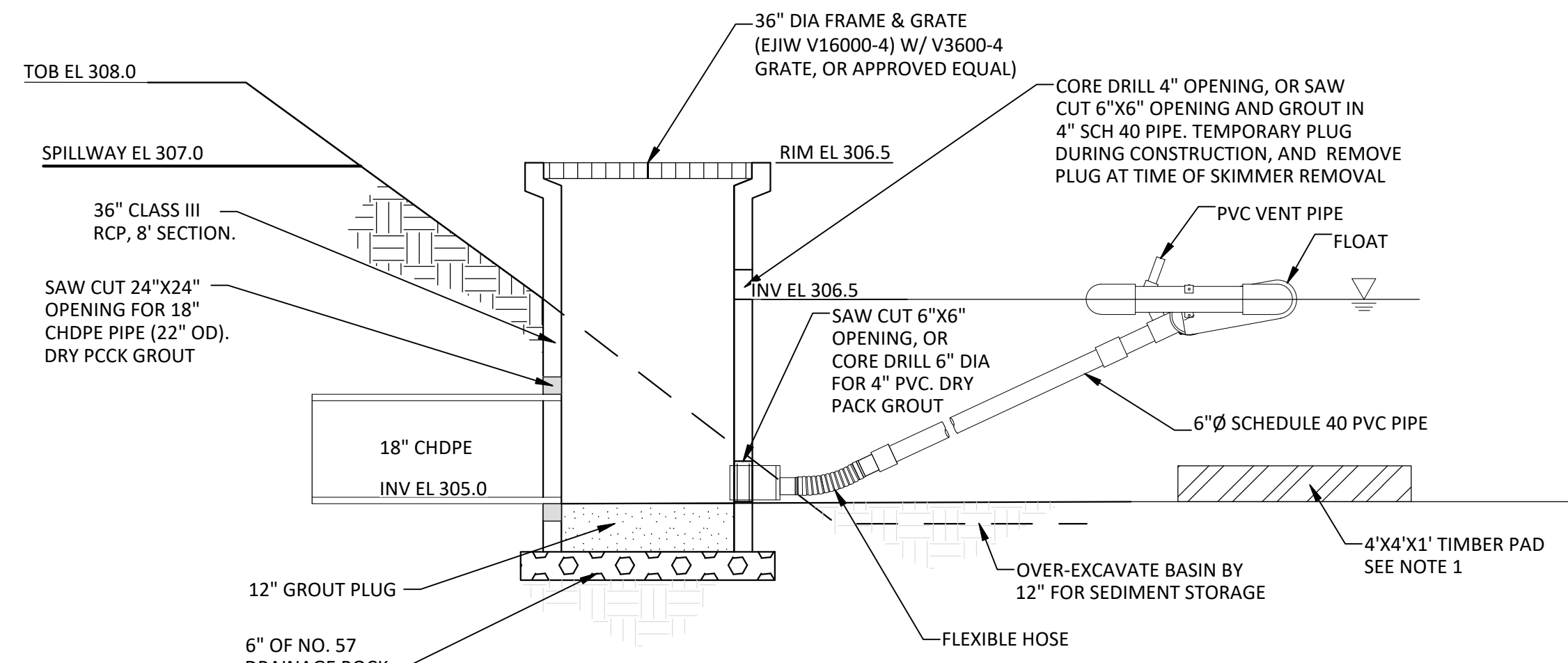
THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

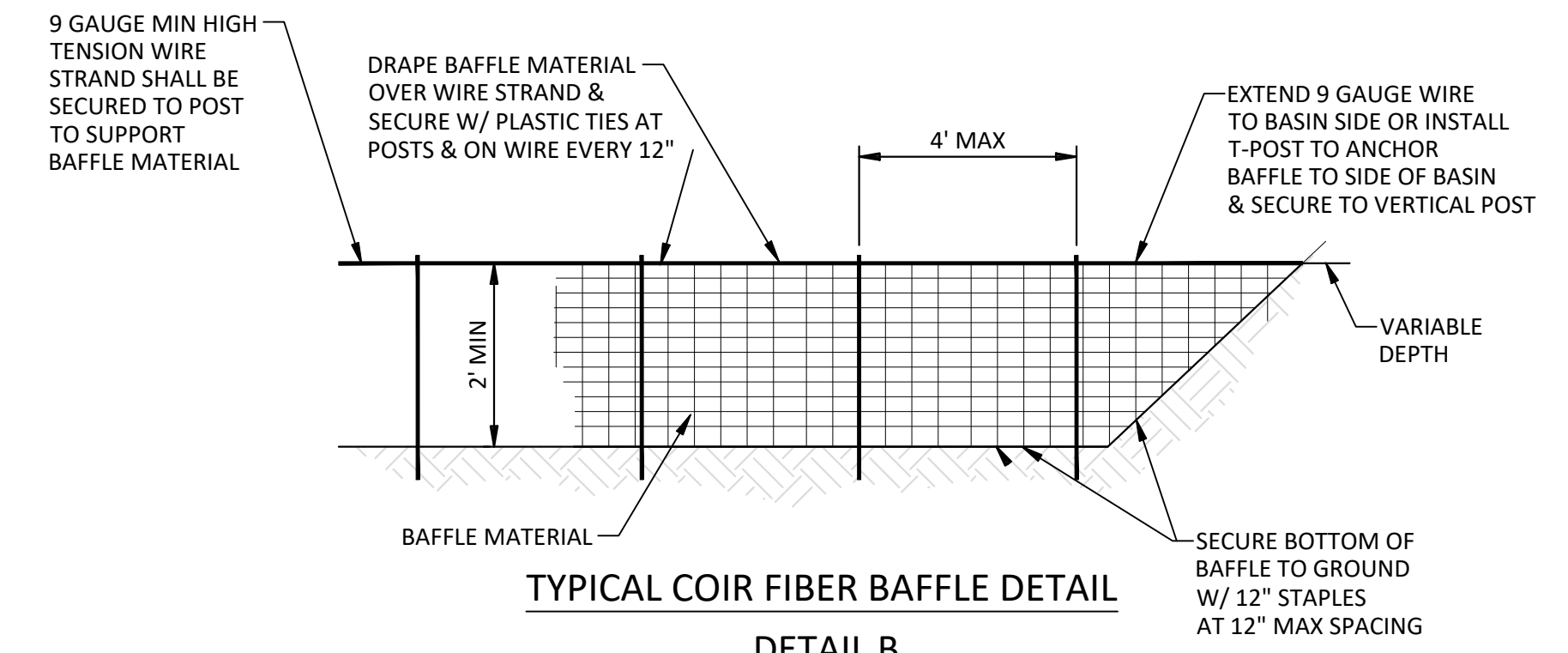


TYPICAL TEMPORARY DIVERSION DITCH
 NO SCALE
 SEE NOTES 9 - 12



SKIMMER DEWATERING DEVICE DETAIL A
 NO SCALE
 SEE MAINTENANCE NOTES 1-4
 SEE NOTES 1-3

NOTE: AFTER SAW CUTTING/CORE DRILLING, COAT EXPOSED REINFORCING WITH BITUMASTIC COAL TAR EPOXY

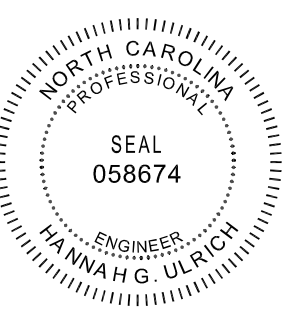


TYPICAL COIR FIBER BAFFLE DETAIL
 NO SCALE
 SEE MAINTENANCE NOTES 5-8
 SEE NOTES 6-10

| COIR FIBER BAFFLE MATERIAL PROPERTY REQUIREMENTS | |
|--|-------------------------|
| THICKNESS | 0.30" MINIMUM |
| TENSILE STRENGTH (WET) | 900 X 680 LB/FT MINIMUM |
| ELONGATION (WET) | 69% X 34% MAXIMUM |
| FLOW VELOCITY | 10-12 FT/SEC |
| WEIGHT | 20 OZ/SY MINIMUM |
| MINIMUM WIDTH | 6.5 FEET |
| OPEN AREA | 50% MAXIMUM |

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 5201 KNIGHTDALE EAGEL ROCK ROAD
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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

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

SECTION E: GROUND STABILIZATION

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

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

GROUND STABILIZATION SPECIFICATION

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

| Temporary Stabilization | Permanent Stabilization |
|---|--|
| <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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

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

EQUIPMENT AND VEHICLE MAINTENANCE

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

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

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

PAINT AND OTHER LIQUID WASTE

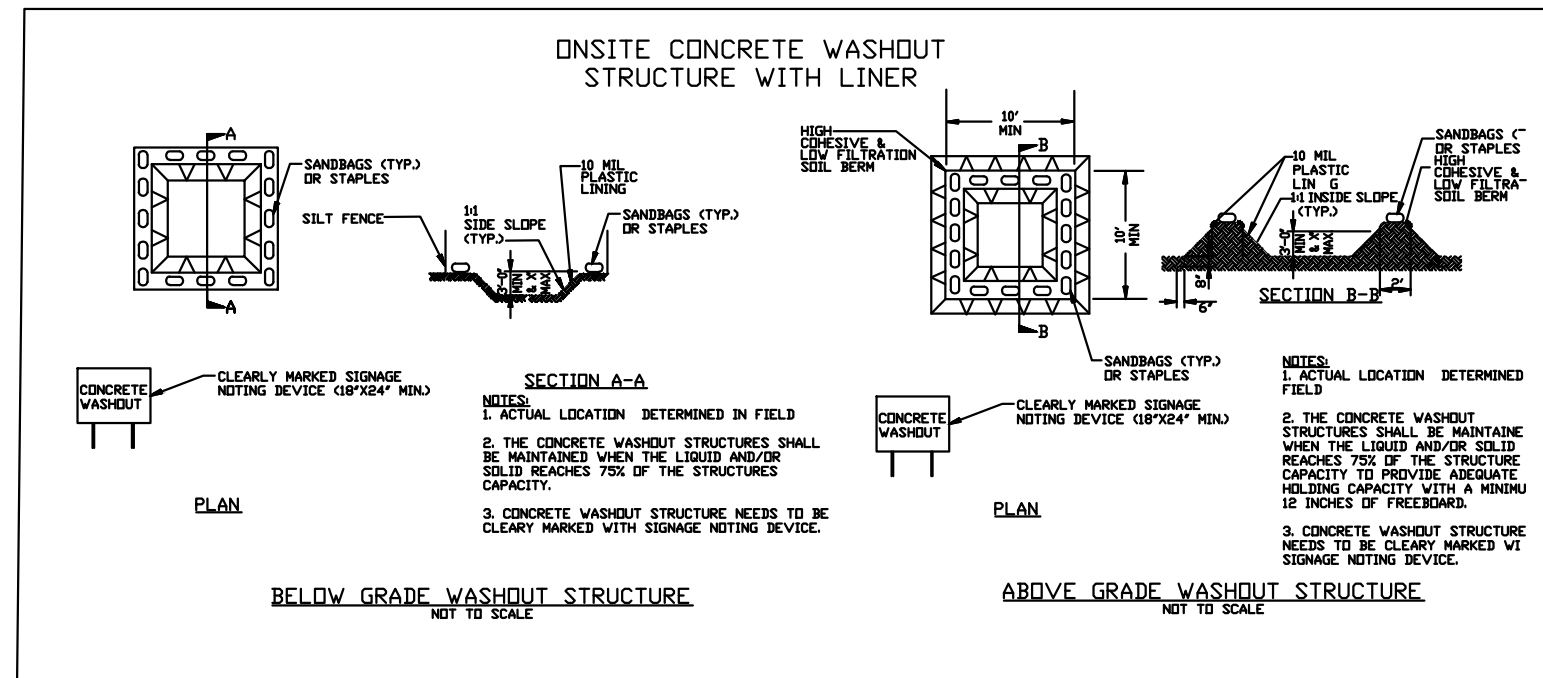
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled,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

PORTABLE TOILETS

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

EARTHEN STOCKPILE MANAGEMENT

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



CONCRETE WASHOUTS

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

HERBICIDES, PESTICIDES AND RODENTICIDES

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

HAZARDOUS AND TOXIC WASTE

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

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

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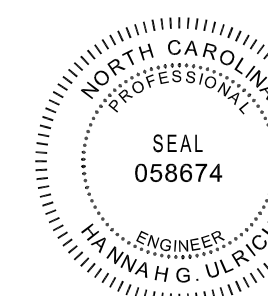
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PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

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.

Table with 3 columns: Inspect, Frequency (during normal business hours), Inspection records must include: (1) Rain gauge maintained in good working order, (2) E&SC Measures, (3) Stormwater discharge outfalls (SDCs), (4) Perimeter of site, (5) Streams or wetlands onsite or offsite, (6) Ground stabilization measures.

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.

Table with 2 columns: 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. (b) A phase of grading has been completed. (c) Ground cover is located and installed in accordance with the approved E&SC plan. (d) The maintenance and repair requirements for all E&SC measures have been performed. (e) Corrective actions have been taken to E&SC measures.

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.

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.

Table with 2 columns: Occurrence, Reporting Timeframes (After Discovery) and Other Requirements. (a) Visible sediment deposition in a stream or wetland. (b) Oil spills and release of hazardous substances per Item 1(b)-(c) above. (c) Anticipated bypasses [40 CFR 122.41(m)(3)]. (d) Unanticipated bypasses [40 CFR 122.41(m)(3)]. (e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(l)(7)].



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).

- (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. (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. (d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above. (e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and (f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

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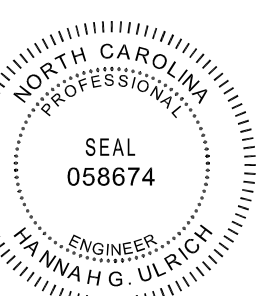


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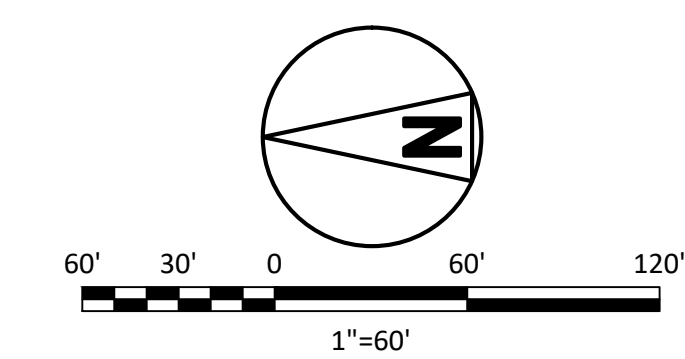
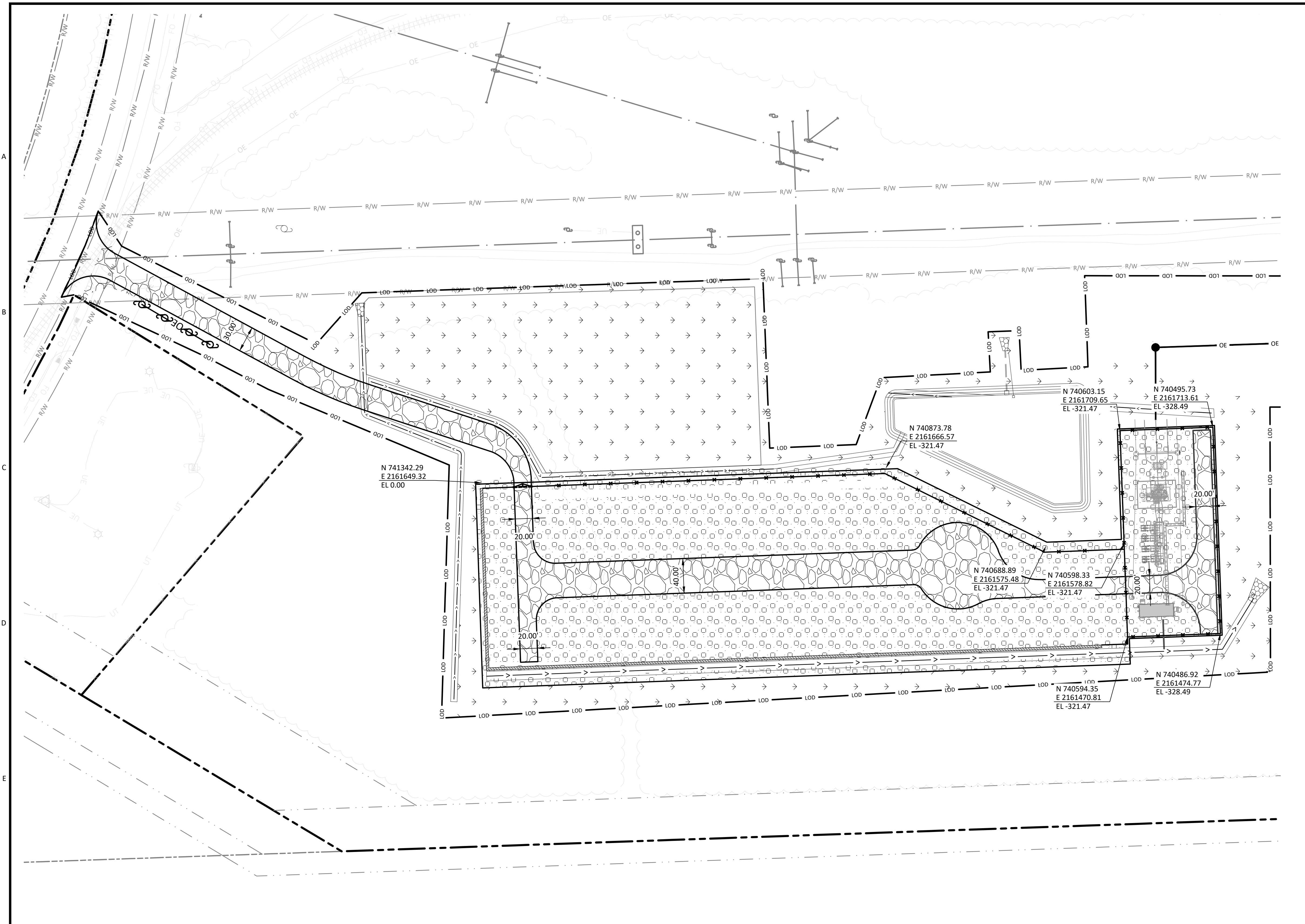
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NOTES

1. BARBED WIRE OR CHAIN LINK FENCES ARE RESTRICTED TO THE REAR YARD, SHALL NOT BE VISIBLE FROM A STREET RIGHT-OF-WAY, AND SHALL NOT BE ADJACENT TO ANY LOT IN OR ZONED FOR RESIDENTIAL USE PER SECTION 7.6.C OF THE UDO."

LEGEND

- ADJACENT PARCEL BOUNDARY
- PROPOSED SECURITY FENCE
- EXISTING FENCE
- PROPOSED ROAD
- EXISTING TREE LIMITS
- EXISTING RAILROAD
- EXISTING OVERHEAD LINE
- PROPERTY BOUNDARY
- PROPOSED OVERHEAD ELECTRIC LINES
- EXISTING RIGHT-OF-WAY
- EXISTING FIBER OPTIC CABLE
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED PERIMETER WALL
- PROPOSED VEGETATED SWALE
- RIP RAP
- GRASS SURFACING
- ABC PER NCDOT SPECIFICATIONS (2018)
- #57 Stone pattern symbol"/> #57 STONE PER NCDOT SPECIFICATIONS (2018)



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DUKE ENERGY
KNIGHTDALE BATTERY ENERGY STORAGE SYSTEM

SURFACING AND FENCING PLAN
5201 KNIGHTDALE EAGLE ROCK ROAD
KNIGHTDALE, NC 27545

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