VP BUILDINGS

VARCO PRUDEN

a division of BlueScope Buildings North America, Inc.

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DRAWING RELEASE HISTORY		
TYPE	DATE	DESCRIPTION
Anchor Rod Drawings Rev 0	2/13/2024	FOR CONSTRUCTION
Permit Drawings Rev 0	2/13/2024	PERMIT SET- For Building Dept. Approval

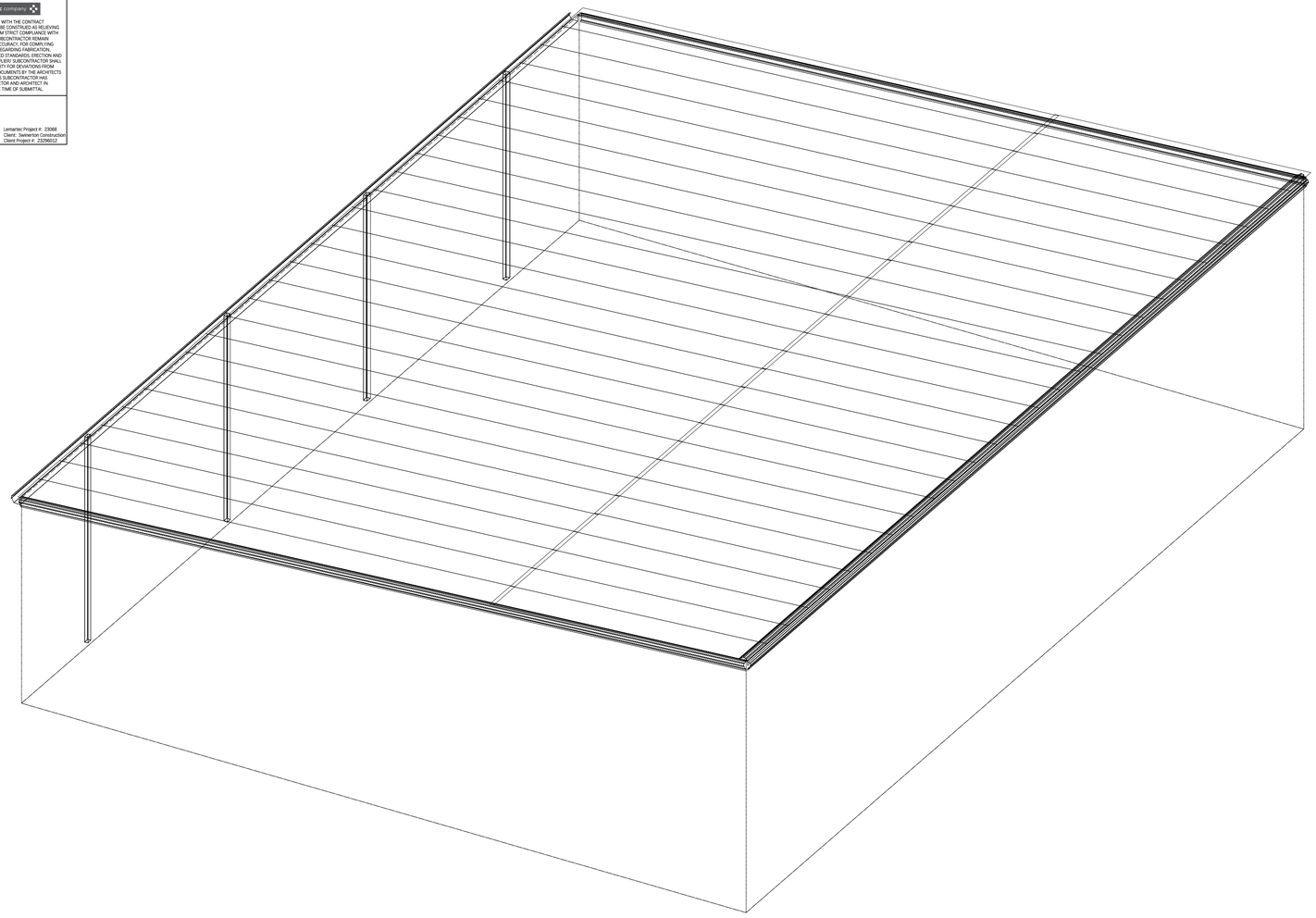
Clemartec
a MasTec company

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE SUPPLIER / SUBCONTRACTOR FROM STRICT COMPLIANCE WITH SUCH DOCUMENTS. THE SUPPLIER / SUBCONTRACTOR REMAIN RESPONSIBLE FOR THE DETAILS AND ACCURACY, FOR COMPLYING WITH ALL DIMENSIONS ON THE INDIVIDUAL SHOP DRAWINGS, FOR ASSEMBLY, COORDINATION OF THEM & USED STANDARDS, ERECTION AND INSTALLATION PROCEDURES. THE SUPPLIER/ SUBCONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE ARCHITECTS APPROVAL OF THIS SUBMITTAL UNLESS SUBCONTRACTOR HAS SPECIFICALLY INFORMED THE CONTRACTOR AND ARCHITECT IN WRITING OF SUCH DEVIATIONS AT THE TIME OF SUBMITTAL.

☑ REVIEWED
☐ REVIEWED AS NOTED
☐ REVISE & RESUBMIT
☐ REJECTED

By: Don Moore
Date: 02-25-2024

Lemartec Project #: 23068
Client: Swinerton Construction
Client Project #: 23296012



VP Buildings 3200 Players Club Circle Memphis TN 38125

GENERAL NOTES

MATERIALS

	ASTM DESIGNATION	
3 PLATE WELDED SECTIONS	A529, A572, A1011, A1018	GRADE 55
COLD FORMED LIGHT GAGE SHAPES	A653, A1011	GRADE 60
BRACE RODS	A572, A510	GRADE 50
HOT ROLLED MILL SHAPES	A36, A529, A572, A588, A992	GRADE 36 OR 50
HOT ROLLED ANGLES	A529, A572, A588, A992	GRADE 50
HOLLOW STRUCTURAL SECTION (HSS)	A500	GRADE B
CLADDING	A653, A792	GRADE 50 OR GRADE 80

HIGH STRENGTH BOLT TIGHTENING REQUIREMENTS

IT IS THE RESPONSIBILITY OF THE ERECTOR TO ENSURE PROPER BOLT TIGHTNESS IN ACCORDANCE WITH APPLICABLE REGULATIONS. SEE RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS FOR MORE INFORMATION. SEE ERECTION GUIDE FOR BOLT TIGHTENING INSTRUCTIONS. THE FOLLOWING CRITERIA MAY BE USED TO DETERMINE THE BOLT TIGHTNESS (I.E.-SNUG TIGHT OR PRE-TENSION) UNLESS REQUIRED OTHERWISE BY LOCAL JURISDICTION OR CONTRACT.

ALL A490 BOLTS SHALL BE "PRE-TENSIONED". A325 BOLTS IN PRIMARY FRAMING AND BRACING CONNECTIONS MAY BE "SNUG-TIGHT" EXCEPT AS FOLLOWS;

PRE-TENSION A325 BOLTS IF BUILDING SUPPORTS A CRANE GREATER THAN 5 TON CAPACITY.

PRE-TENSION A325 BOLTS IF BUILDING SUPPORTS MACHINERY THAT CREATES VIBRATION, IMPACT, OR STRESS REVERSALS ON CONNECTIONS.

PRE-TENSION A325 BOLTS IF LOCATED IN HIGH SEISMIC AREAS. FOR IBC BASED CODES; HIGH SEISMIC IS DESIGN CATEGORY D, E OR F. SEE CODES AND LOADS SECTION BELOW FOR DETAILS.

PRE-TENSION ANY CONNECTION WITH DESIGNATION A325-SC. SLIP CRITICAL (SC) CONNECTIONS MUST BE FREE OF PAINT, OIL OR OTHER MATERIALS THAT REDUCE FRICTION AT CONTACT SURFACES. GALVANIZED OR LIGHTLY RUSTED SURFACES ARE ACCEPTABLE.

IN CANADA, ALL A325 AND A490 BOLTS SHALL BE "PRE-TENSIONED", EXCEPT FOR SECONDARY MEMBERS AND FLANGE BRACES.

SECONDARY MEMBERS AND FLANGE BRACE CONNECTIONS ARE ALWAYS "SNUG TIGHT", UNLESS INDICATED OTHERWISE IN ERECTION DRAWING DETAILS.

INSPECTION AND TESTING

SPECIAL INSPECTIONS AND TESTING REQUIRED BY AUTHORITY HAVING JURISDICTION (AHJ) DURING CONSTRUCTION AND/OR STEEL FABRICATION IS THE RESPONSIBILITY OF THE OWNER OR OWNERS AUTHORIZED AGENT. WHEN REQUIRED, THE OWNER SHALL EMPLOY A QUALITY ASSURANCE AGENCY (QAA) APPROVED BY THE AHJ. THE BUILDER IS RESPONSIBLE TO COORDINATE BETWEEN THE QAA FIRM AND BBNA FABRICATION FACILITIES. THE TYPE AND EXTENT OF SPECIAL INSPECTIONS AND NDT WELD TESTING MUST BE SPECIFICALLY STIPULATED IN CONTRACT DOCUMENTS OR BBNA WILL ASSUME SPECIAL INSPECTIONS AND/OR NDT TESTING ARE WAIVED AS PERMITTED BY THE BUILDING CODE BASED ON BBNA FACILITIES IAS AC472 ACCREDITATION.

NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.

Reviewed for Code Compliance

03/07/2025

Harnett COUNTY NORTH CAROLINA

This document has been electronically signed and sealed by W. Jason Clymer, PE using my Digital Signature with PE seal affixed. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copy.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

IAS ACCREDITED Metal Building Systems AC 472

D

COVER SHEET

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS VARCO PRUDEN

VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN / CHECK	MB WJC
PAGE	1

Codes and Loads
WHEN MULTIPLE BUILDINGS ARE INVOLVED, SPECIFIC LOAD FACTORS FOR DIFFERING OCCUPANCIES, BUILDING DIMENSIONS,
HEIGHTS, FRAMING SYSTEMS, ROOF SLOPES, ETC., MAY RESULT IN DIFFERENT LOAD APPLICATION FACTORS THAN
INDICATED BELOW. SEE CALCULATIONS FOR FURTHER DETAILS. WIND LOADS ARE APPLIED TO OVERALL BUILDING ENVELOPE.
COMMON WALLS BETWEEN CONNECTED SHAPES ARE NOT SUBJECT TO EXTERNAL WIND LOADS.
City: Dunn County: Harnett State: North Carolina Country: United States

Building Code
Building Code: 2018 North Carolina Building Code
Based on Building Code: 2015 International Building Code
Building Risk/Occupancy Category: II (Standard Occupancy Structure)
Structural: 10AISC - ASD Rainfall: I: 12.00 inches per hour
Cold Form: 12AISI - ASD f'c: 3000.00 psi Concrete

Dead and Collateral Loads
Collateral Gravity:5.00 psf
Collateral Uplift: 0.00 psf

Material Dead Weight
Roof Covering + Second. Dead Load: 3.29 psf
Frame Weight (assumed for seismic):2.50 psf

Roof Live Load
Roof Live Load: 20.00 psf Reducible

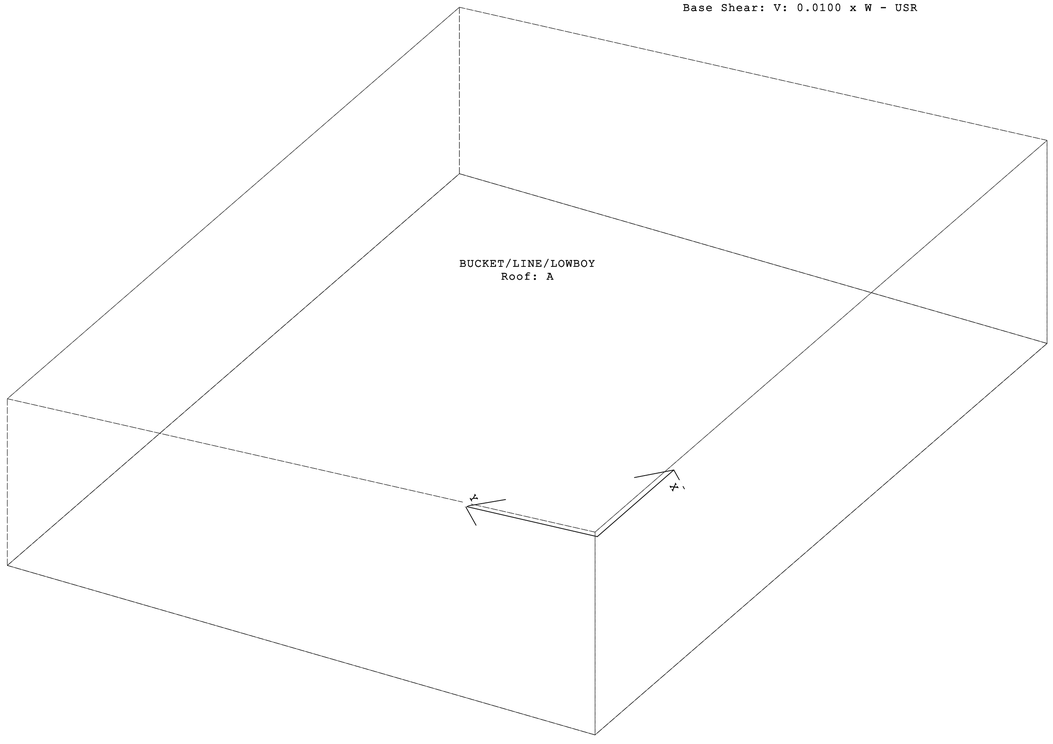
Wind Load
Wind Speed: Vult: 119.00 (Vasd: 92.18) mph
The 'All Heights' Method is Used - User Modified
Wind Exposure: C - Kz: 0.891
Parts Wind Exposure Factor: 0.891
Wind Enclosure: Free Roof - Clear/Obstr
Topographic Factor: Kzt: 1.0000
Hurricane Prone Region
NOT Windborne Debris Region
Base Elevation: 0/0/0
Primary Zone Strip Width: 2a: 18/10/8
Parts / Portions Zone Strip Width: a: 6/0/0
Velocity Pressure: qz: 27.45 psf

Snow Load
Ground Snow Load: pg: 10.00 psf
Flat Roof Snow: pf: 7.56 psf
Design Snow (Sloped): ps: 7.56 psf
Rain Surcharge: 0.00
Specified Minimum Roof Snow: 10.00 psf (Code)
Exposure Factor: 1 Fully Exposed - Ce: 0.90
Snow Importance: Is: 1.000
Thermal Factor: Unheated - Ct: 1.20
Ground / Roof Conversion: 0.70
Unobstructed, Slippery

Seismic Load
Lateral Force Resisting Systems using Equivalent Force Procedure
Mapped MCE Acceleration: Ss: 17.90 %g
Mapped MCE Acceleration: S1: 8.40 %g
Site Class: Stiff soil (D)
Seismic Importance: Ie: 1.000
Design Acceleration Parameter: Sds: 0.1909
Design Acceleration Parameter: Sd1: 0.0000
Seismic Design Category:: C
Seismic Snow Load: 0.00 psf
% Snow Used in Seismic: 0.00
Diaphragm Condition: Rigid
Fundamental Period Height Used: 18/10/8

Transverse Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.0000
R-Factor: 3.00
Overstrength Factor: Omega: 3.00
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W - USR

Longitudinal Direction Parameters
System NOT detailed for Seismic
Redundancy Factor: Rho: 1.00
Fundamental Period: Ta: 0.0000
R-Factor: 3.00
Overstrength Factor: Omega: 3.00
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.0100 x W - USR



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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER
02/13/2024

PERMIT SET- For Building Dept. Approval

D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:32:43

CODES AND LOADS

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
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BUILDER/CONTRACTOR RESPONSIBILITIES

VP Buildings follows the guidelines as outlined in the AISC and MBMA Codes of Standard Practice. VP Buildings standard product specifications, design, fabrication, quality criteria shall govern all work unless stipulated otherwise in the contract documents. In case of discrepancies between VP Buildings structural plans and plans for other trades, VP Buildings structural plans shall govern.

It is the responsibility of the Builder to obtain approvals and permits from all governing agencies and jurisdictions as required. Approval of VP Buildings drawings constitutes the builders acceptance of VP interpretation of the contract purchase order. Unless specific design criteria concerning interface design and details are furnished as part of the contract, VP Buildings design assumptions shall govern.

VP engineers are not Project Engineers or Engineer of Record for the overall project. VP engineering supply sealed engineering design data and drawings for VP supplied material as part of the overall project for use by others to obtain permits, approvals, and coordinate with other trades. All interface and/or compatibility of any materials not furnished by VP are to be considered and coordinated by the builder or A/E firm.

CONSTRUCTION & ERECTION RESPONSIBILITY

The Builder is responsible for construction in strict accordance with VP Buildings "FOR CONSTRUCTION" drawings and all applicable product installation guides. VP is not responsible for work done from any other VP drawings that are not marked "FOR CONSTRUCTION", nor any drawings prepared by others.

As erected field assemblies of members shall be as specified in MBMA Code of Standard Practice (in Canada - CSA S16), which require L/500 tolerance of installed members. Occasional field work including shimming, cutting, coping, and drilling for final fit-up are considered part of erection. Specified field work and field welding conditions indicated on these drawings shall also be included in the erectors scope of work. See Erection Guide for shimming procedure. For building with top riding bridge cranes see Crane Data drawing for column plumb tolerance.

The building erector shall be properly licensed and experienced in erecting metal building systems. The Builder is responsible for having knowledge of, and shall comply with, all OSHA requirements and all other governing site safety criteria. The builder is responsible for designing, supplying, locating and installing temporary supports and bracing during erection of the building. VP bracing is designed for code required loads after building completion and shall not be considered as adequate erection bracing. See Erection Guide.

Shimming of steel buildings during erection may be required to accomodate allowable tolerances during fabrication and erection. Special care should be taken by the building erector to shim connections where key dimensions must be maintained for building performance as even small tolerances can have a significant impact on critical dimensions such as height, clearances and plumbness, especially as the size of the member or building increases. Conditions where shimming should be expected can include but are not limited to large door openings, critical clear height requirements, cranes, buildings greater than 45 feet in height, clear spans greater than 125 feet and adjacent frames with different characteristics (like clear span frames adjacent to an endwall or modular frame). Shims are normally provided by the erector, but may be ordered upon request by contacting your Project Manager.

EXISTING STRUCTURES

VP must be advised of any structure that is within 20 ft. of VP's building. Load effects from snow drifting, wind effects, and seismic separation must be considered for both the new and existing structures. VP has designed the new VP building for these effects. The owner/builder are responsible for employing a Professional Engineer to review and verify the existing structure for all load effects from the adjacent VP building.

BRACING

Tension brace rods work in pairs to balance forces caused by initial tensioning. Care must be taken while tightening brace rods so as not to cause accidental or misalignment of components. All rods must be installed loose and then tightened. Rods should not exhibit excessive sag. For long or heavy rods, or angles it may be necessary to support the rods at mid-bay by suspending them from secondary members.

Bracing for seismic or wind loading of objects or equipment that are not a part of the VP structure must be designed by a qualified professional to deliver lateral loads to primary frames and rod bracing struts. Equipment bracing and suspension connections must not impose torsion or minor axis loads, or cause local distortion in any VP components. VP accepts no responsibility for design or installation of bracing systems not furnished by VP.

FIELD WELDING

All field welding shall be done at the direction of a design professional, and done in accordance with governing requirements (AWS in USA, CWB in Canada) by welders qualified to perform the welding as directed by the applicable welding procedure specification (WPS). A WPS shall be prepared by the contractor for each welding variation specified. The contractor is responsible for any special welding inspection as required by local jurisdiction. Filler metal shall be 70 ksi (480 MPa) tensile strength. For welds in high seismic force resisting system (Seismic Cat D, E or F), minimum Charpy V-Notch toughness shall meet AISC-341 criteria (20 ft-lbs min @ 0Deg F). Interpass temperatures shall not exceed 550Deg F (300Deg C).

DELIVERIES

It is the responsibility of the builder to have adequate equipment available at the job site to unload trucks in a safe and timely manner. The Builder will be responsible for all retention charges from carriers as a result of job site unloading delays.

SIGNAGE

The Builder is responsible for furnishing signs as required by Code and the Building Department, including but not limited to, exits, occupancy limits, floor loading limits, and bulk storage limits. Floor loading signs shall clearly indicate maximum floor live load permitted.
Bulk storage facilities shall have signs clearly posted on all loaded walls indicating the type of commodity stored and the maximum storage height. Signs shall be clearly visible when building is fully loaded to design level. Overloading of floors or walls may result in failure.

Claims for damage or shorts MUST be noted on the Bill-of-Lading or delivery receipt and filed against the carrier by the consignee as per VP's Terms of Sales (F.O.B. Plant) under the Uniform Commercial Code. It is critical that damages or shorts be noted on the Bill-of-Lading or you have little recourse with the carrier. Immediately upon delivery of material, material quantities are verified by the Builder against quantities billed on the shipping document. Neither the Manufacturer nor the carrier is responsible for material shortages against quantities billed on the shipping document if such shortages are not noted on the shipping documents upon delivery of material and acknowledged by the carriers agent. For materials concealed in bundles, boxes, or crates, shortages must be reported immediately upon unpacking. Should products get wet, bundled and crated materials must be unpacked and unbundled immediately to provide drainage of trapped moisture. See Erection Guide for proper job site storage procedure.

SEALANTS

Sealants shall be applied in strict accordance with VP details or weather tightness will be compromised. Sealant must be applied in temperatures and weather conditions consistent with labeling.

INDEPENDENT MEZZANINES

Independent mezzanines must be designed by a professional engineer. The engineer must ensure that proper isolation from the VP building has been provided to avoid structural damage due to differential movements, or inadvertently apply loads to the VP structure. VP accepts no responsibility for the design of the independent mezzanine.

FIRE CODE COMPLIANCE

It is the responsibility of the project design professional and builder to comply with local fire code regulations including consideration of, but not limited to, building use and occupancy, all building construction materials, separation requirements, egress requirements, fire protection systems, etc. Builder shall advise VP of any special requirements to be furnished by VP.

FIELD MODIFICATIONS

Modifications to this building from details and instructions contained on these drawings must be approved in writing by VP Buildings engineers, or other licensed structural engineer. This includes, but is not limited to, removal of roof or wall cladding, removing or moving any flange braces or rod braces, cutting of openings for doors, windows or RTU's, correction of fabrication errors, etc. The owner shall not impose loads to this structure beyond what is specified for this building in the contract documents. VP Buildings accepts no responsibility for the consequences of any unauthorized additions, alterations, or added loads to this structure.

If the builder intends to invoice VP Buildings for modifications in excess of $1000, The builder must notify VP Buildings immediately, and obtain a Work Authorization from VP Buildings prior to proceeding. All final claims must be submitted to VP Buildings with all supporting documentation within 30 days of the building completion. Claims submitted without work authorizations, or after 30 days will not be accepted. Correction of minor misfits, shimming and plumbing, moderate amount of reaming, drilling, chipping / cutting and minor welding are considered by Code of Standard Practice to be part of erection are not subject to claim reimbursement.

CONCRETE/MASONRY/CONVENTIONAL STUD WALLS

The engineer responsible for the design of the wall system is responsible for coordinating with, or specifying to VP Buildings, any wall to steel compatibility issues such as drift and deflection compatibility, special base details, and wall to VP steel connections. All fasteners, sealant and counter flashing of wall systems are to be provided by contractor. The engineer responsible for the wall shall design the anchorage to VP supporting elements consistent with Code required forces.

PANELS

Oil canning is an inherent characteristic of cold formed steel panels. It is the result of several factors that include induced stresses in the raw material delivered to VP, fabrication methods, installation procedures, and post installation thermal forces. Thru fastened panels will exhibit some dimpling when installed, especially when insulation is installed between panels and secondary supports. Dimpling can be minimized by careful installation, taking care not to over drive fasteners.

Roof rumble is a phenomenon that is caused by wind gusts lifting up on the roof panels and then springing back into place. All panels experience this action to some degree, especially with concealed clip Standing Seam panels. Roof rumble noise may be minimized by providing a layer of blanket insulation between the panels and any hard support surface such as steel secondary members, substrates such as plywood, steel decking, or rigid board insulation. A minimum of 3 inch thick blanket is recommended over steel secondary members, or 2 inch over substrates.

Oil canning, dimpling, and roof rumble do not affect the structural integrity or weather tightness of the panels and is not grounds for rejection of panels.

The Standing Seam joint detail is designed with an interlocking feature for ease of installation. However, it is imperative that installed Standing Seam panels be secured to the secondary structural members and properly seamed prior to departure from the job site each day.

SKYLIGHTS

Local building departments may require added fall restraint due to conditions that may affect the skylight structural integrity. It is the responsibility of the builder to determine and provide any added fall restraint under the skylight as may be required by your building department.

RAIN WATER RUNOFF

Drainage systems must be designed by the project professional to comply with code requirements. VP is not responsible for drainage designs, overflow scuppers, down piping, etc. The project professional and contractor are responsible to ensure that primary drains and overflow devices such as scuppers and auxiliary drains are provided as required for the required rain intensity at the building perimeter and at valley conditions to prevent ponding.

STEEL SHOP COAT

The purpose of VP's shop coat is to provide protection for the steel members during transportation, during temporary job site storage and during erection. Standard shop formulation is not designed to perform as a finish coat when exposed to environmental conditions. Members shall be kept free of the ground and properly drained during job site storage. It is the Builder's responsibility to ensure that if a finish coat is being applied over VP shop coat that the painting contractor verifies compatibility between his finish coat and VP's shop coat.

VP BUILDINGS ACCREDITATIONS AND APPROVALS

Fabricator Approvals

IAS AC472 Approvals: (www.iasonline.org/services/metal-building-inspection)
Listed under BlueScope Buildings North America, Inc.
City of Los Angeles, CA #FB00031; City of Houston, TX 767 & 429;
City of Phoenix, AZ C19-02008; Clark County, NV 43 & 833, San Bernardino County, CA 289
State of Utah, City of Richmond, CA.

Design Approvals

IAS AC472 Approvals: (www.iasonline.org/services/metal-building-inspection)
Listed under Varco Pruden Buildings, a Division of BlueScope Buildings North America, Inc.

Canadian CSA A660 Certifications

(www.cwbgroup.org)
Listed under BlueScope Buildings North America, Inc.

Engineering Certifications of Authorization

USA--AL#CA-5589-E; AZ#22225-0; AR#576; FL#30427; GA#PEF007551; ID#C-2470; IL#184-002649;
KS#E-29; KY#4490; LA#EF6722; MS#E-0592; MO#E-2010007736; NC#F-0998; ND#1579PE;
NJ#24GA28318800; NV#20437; OH#05898; OK#CA4170PE; RI#8838; SC#6206; SD#C-1787; TX#F4828;
VA#0411001520; VA#0411001518; WA#4119; WV#C03059-00
CAN--AB#P08900; NB#F0951; NL#D0044; NS#30123; NT#P062; ON#100148796; and YT#PP134

ICC Evaluation Reports (www.icc-es.org)

SSR Roof System - #ESR-2527

State of Florida Product Approvals (www.floridabuilding.org)

Approved Products Listed Under VP Buildings, Inc.

VP TextureClad - See Transamerican Structuroc, Inc.

Dade Co. Product Approval (www.miamidade.gov/buildingcode)

Approved Products Listed Under Varco Pruden Buildings, Inc.

VP TextureClad - See Transamerican Structuroc, Inc.

Underwriter's Laboratory Approvals (Available only when specified in contract)

SSR Roof-UL#TGKX-113; SSR Composite Roof Class 90-UL#TGKX-113A;

SSR Roof w/Super Block; Class 90-UL#TGKX-328;

Panel Rib Roof UL Class 60-UL#TGKX-60; Panel Rib Roof UL Class 90-UL#TGKX-64;

VP SLR II Roof Class 90-UL#TGKX-90, -180, -435, -435A, -176, -238, -238A, -238B

Factory Mutual Approved Assemblies (Available only when specified in contract)

SSR Roof Systems are approved in various type applications and listed in FM Approval Guide.

24 Ga SSR (0.0227" Nominal), is available in Class 1-60, 1-75, 1-90. 22Ga SSR (0.0277" Nominal), is available in Class 1-75, 1-90-, 1-120.

SLR II Roof Systems are approved in various type applications and listed in FM Approval Guide.

24 Ga SLR II (0.0227" Nominal), is available in Class 1-75 and 1-120.

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

THE VP ENGINEER'S SEAL APPLIES ONLY TO THE WORK PRODUCT OF VP AND DESIGN AND PERFORMANCE REQUIREMENTS SPECIFIED BY VP. THE VP ENGINEER'S SEAL DOES NOT APPLY TO THE PERFORMANCE OR DESIGN OF ANY OTHER PRODUCT OR COMPONENT FURNISHED BY VP EXCEPT TO ANY DESIGN OR PERFORMANCE REQUIREMENTS SPECIFIED BY VP.

THE GENERAL CONTRACTOR AND/OR ERECTOR IS SOLELY RESPONSIBLE FOR ACCURATE GOOD QUALITY WORKMANSHIP IN ERECTING THIS BUILDING IN ACCORDANCE WITH THIS DRAWING, DETAILS REFERENCED IN THIS DRAWING, ALL APPLICABLE VP BUILDINGS ERECTION GUIDES, AND INDUSTRY STANDARDS PERTAINING TO PROPER ERECTION, INCLUDING THE CORRECT USE OF TEMPORARY BRACING.

D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:32:44

ERECTION NOTES

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

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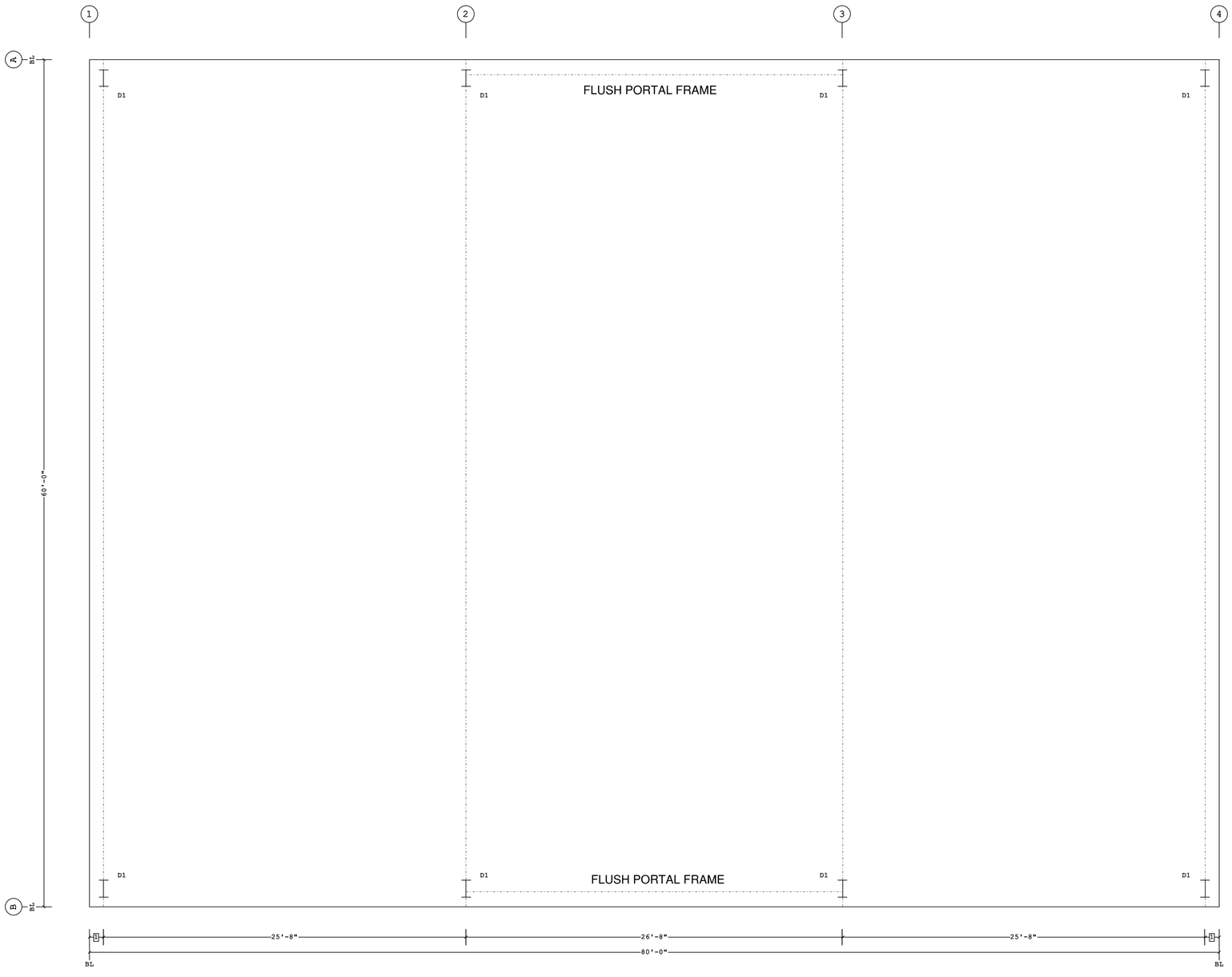

ANCHOR ROD PLAN

1 1'-0"
Dimension Key

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

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Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

<*> THE BUILDING IS DESIGNED WITH BRACING DIAGONALS IN THE DESIGNATED BAYS. COLUMN BASE REACTIONS, BASE PLATES AND ANCHOR RODS ARE AFFECTED BY THIS BRACING AND DIAGONALS MAY NOT BE RELOCATED WITHOUT CONSULTING THE BUILDING SUPPLIERS ENGINEER.

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VP Buildings
3200 Players Club Circle Memphis TN 38125

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NTS

2/12/2024 15:32:45

ANCHOR ROD PLAN

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
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BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

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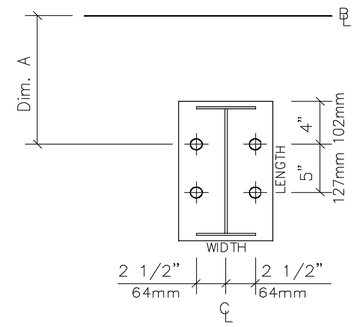
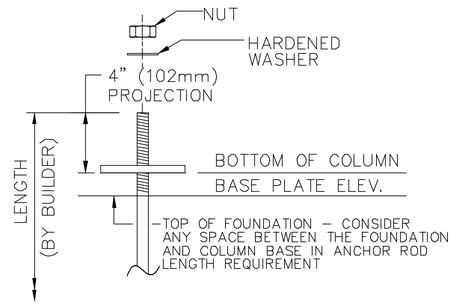
PAGE	4



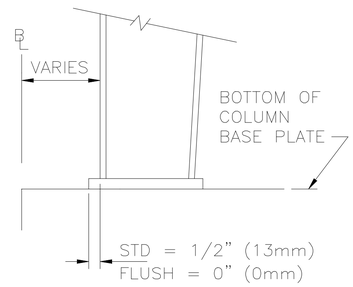
D1 (4)1" Dia.
Plate W=9", L=1'-3"
Dim: A=1'-0"
Elev.=100'-0"



THE 4" PROJECTION ABOVE THE BOTTOM OF THE BASE PLATE IS A SUGGESTED MINIMUM TO ENSURE ADEQUATE ANCHOR ROD LENGTH. A DIFFERENT PROJECTION MAY BE REQUIRED BY THE FOUNDATION DESIGNER.

THE ANCHOR ROD PROJECTION MAY NEED TO BE CUT OFF IF THERE IS INTERFERENCE WITH OTHER PARTS.

SUGGESTED ANCHOR ROD PROJECTION



TYPICAL COLUMN BASE PLATE DETAIL

1. ANCHOR RODS, NUTS, HARDENED WASHERS AND ANY OTHER EMBEDDED ITEMS ARE TO BE FURNISHED BY CONTRACTOR.
2. ANCHOR ROD DIAMETERS WERE DETERMINED BY ALLOWABLE SHEAR AND TENSION PER AISC SPECIFICATIONS (FY=36KSI). (ASTM F1554 GRADE 36) ANCHOR ROD LENGTH, EFFECTS OF EMBEDDED ANCHOR ROD EDGE DIMENSIONS AND METHOD OF TRANSFERRING FORCES FROM ANCHOR RODS TO FOOTINGS ARE TO BE DETERMINED BY OTHERS.
3. UNLESS OTHERWISE SPECIFIED, ANCHOR RODS ARE DESIGNED AND DETAILED AS "CAST-IN-PLACE" ANCHOR RODS WITH "SNUG TIGHT" CONNECTIONS.
4. FOUNDATION MUST BE LEVEL, SQUARE AND SMOOTH. ANCHOR RODS MUST BE ACCURATELY PLACED AS SHOWN ON THIS DRAWING OR STEEL WILL NOT FIT. THE BUILDER IS RESPONSIBLE FOR ACCURATE SETTING OF ANCHOR RODS PER AISC CODE OF STANDARD PRACTICE, SEC 7.5 VARIATIONS ARE SUMMARIZED BELOW;
   a. CENTERS OF ANY TWO AR'S WITHIN A COLUMN BASE GROUP; +-1/8"
   b. CENTERS OF ADJACENT AR GROUPS; +-1/4"
   c. TOPS OF AR'S; +-1/2"
   d. ACCUMULATED DIM BETWEEN CENTERS OF AR GROUPS ALONG COLUMN LINE; +-1/4" PER 100FT., NOT TO EXCEED 1" TOTAL.
   e. DIM FROM CENTER OF ANY AR GROUP FROM COLUMN LINE; +-1/4"
5. DESIGN LOADS AND REACTIONS ARE FURNISHED IN THE REACTIONS REPORT.

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

<*> THE BUILDING IS DESIGNED WITH BRACING DIAGONALS IN THE DESIGNATED BAYS. COLUMN BASE REACTIONS, BASE PLATES AND ANCHOR RODS ARE AFFECTED BY THIS BRACING AND DIAGONALS MAY NOT BE RELOCATED WITHOUT CONSULTING THE BUILDING SUPPLIERS ENGINEER.

THE VP ENGINEER'S SEAL APPLIES ONLY TO THE WORK PRODUCT OF VP AND DESIGN AND PERFORMANCE REQUIREMENTS SPECIFIED BY VP. THE VP ENGINEER'S SEAL DOES NOT APPLY TO THE PERFORMANCE OR DESIGN OF ANY OTHER PRODUCT OR COMPONENT FURNISHED BY VP EXCEPT TO ANY DESIGN OR PERFORMANCE REQUIREMENTS SPECIFIED BY VP.

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

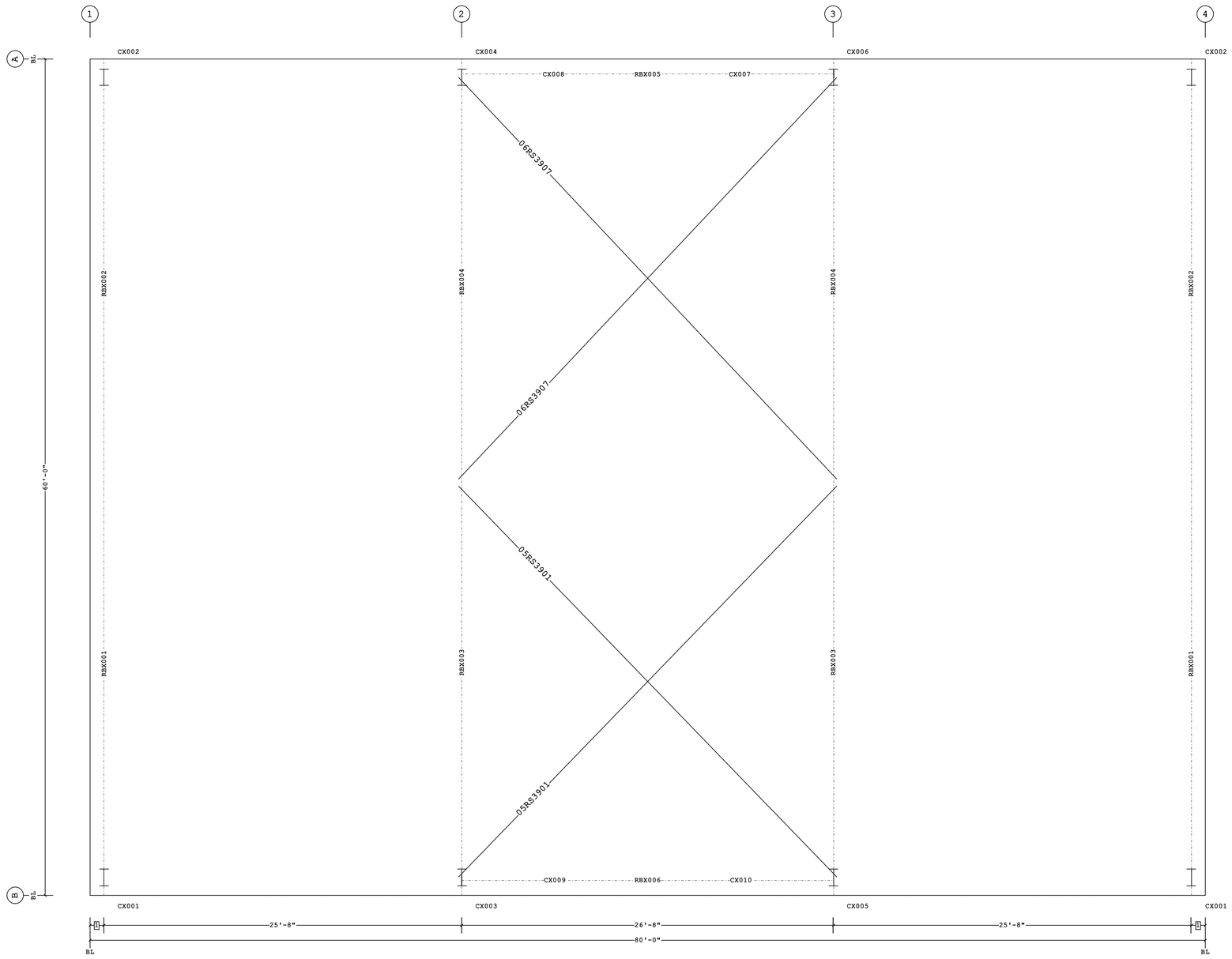
2/12/2024 15:33:10

ANCHOR ROD DETAILS

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	5



PRIMARY AND ROOF BRACING PLAN

Bracing Part Schedule

Part	Qty	Length	Detail
05RS3901	2	39'-1"	BR01G2
06RS3907	2	39'-7"	BR01G2

1 1'-0"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:38

PRIMARY AND ROOF BRACING PLAN

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	6

Frame Member Schedule

Part	Mem	Width	Thick	WebThk.	Depth1	Depth2	Approx.Lgth	Approx.Weight
CX007	1	6.0000	.2500	.1345	1'-8"	1'-8"	15'-9 7/16"	330#
RBX005	2-3	8.0000	.2500	.1345	1'-4"	1'-4"	23'-2 1/2"	527#
CX008	4	6.0000	.2500	.1345	1'-8"	1'-8"	15'-9 7/16"	330#

Bolt Connection & Plate Schedule

Id	Qty	Grade	Bolt Dia.	Bolt Length	Plate Thick.	Rows Out	Rows In	PartNo
A	8	A325	3/4"	2 1/2"	1/2"	2	2	0097284

Frame Clearances
Horiz. Clearance between members 1(CX007) and 4(CX008): 23'-3"
Vert. Clearance at member 1(CX007): 14'-3 13/16"
Vert. Clearance at member 4(CX008): 14'-3 13/16"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

PORTAL FRAME ELEVATION ALONG A

2 1'-2 1/2"
1 1/2"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY Wall 2, Frame 2

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.

REV	DATE	BY	DESCRIPTION
D			

NTS

2/12/2024 15:38:39

VP Buildings
3200 Players Club Circle Memphis TN 38125

PORTAL FRAME ELEVATION ALONG A

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	7

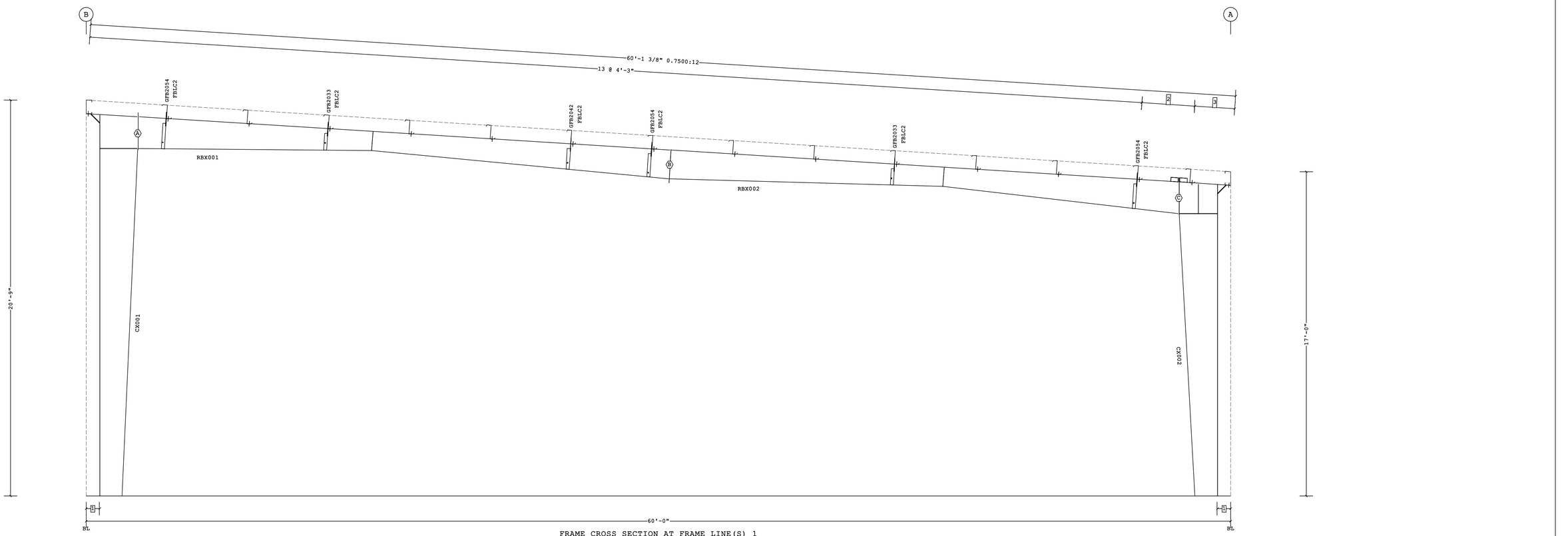
Frame Member Schedule

Part	Mem	Width	Thick	WebThk.	Depth1	Depth2	Approx.Lgth	Approx.Weight
CX001	1	8.0000	.3750	.1345	1'-2"	2'-0"	19'-11 15/16"	647#
RBX001	2	5.0000	.3750	.1644	1'-8"	1'-0"	27'-11 3/4"	539#
	3	5.0000	.1875	.1875	1'-0"	1'-6"		
RBX002	4	5.0000	.2500	.1644	1'-6"	1'-0"	26'-9 7/16"	485#
	5	5.0000	.3125	.1345	1'-0"	1'-8"		
CX002	6	8.0000	.2500	.1345	1'-2"	2'-0"	16'-5 1/2"	422#

Bolt Connection & Plate Schedule

Id	Qty	Grade	Bolt Dia.	Bolt Length	Plate Thick.	Rows Out	Rows In	PartNo
A	8	A325	3/4"	2 1/2"	1/2"	3	1	0097284
B	6	A325	3/4"	2 1/2"	3/8"	1	2	0097284
C	8	A325	3/4"	2 1/2"	3/8"	3	1	0097284

Frame Clearances
Horiz. Clearance between members 1(CX001) and 6(CX002): 54'-7"
Vert. Clearance at member 1(CX001): 18'-1 15/16"
Vert. Clearance at member 6(CX002): 14'-9"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



FRAME CROSS SECTION AT FRAME LINE(S) 1

3 2'-1 3/16"
2 2'-9 3/16"
1 8 1/2"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY Wall 4, Frame 1

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:41

FRAME CROSS SECTION AT FRAME LINE(S) 1

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	8

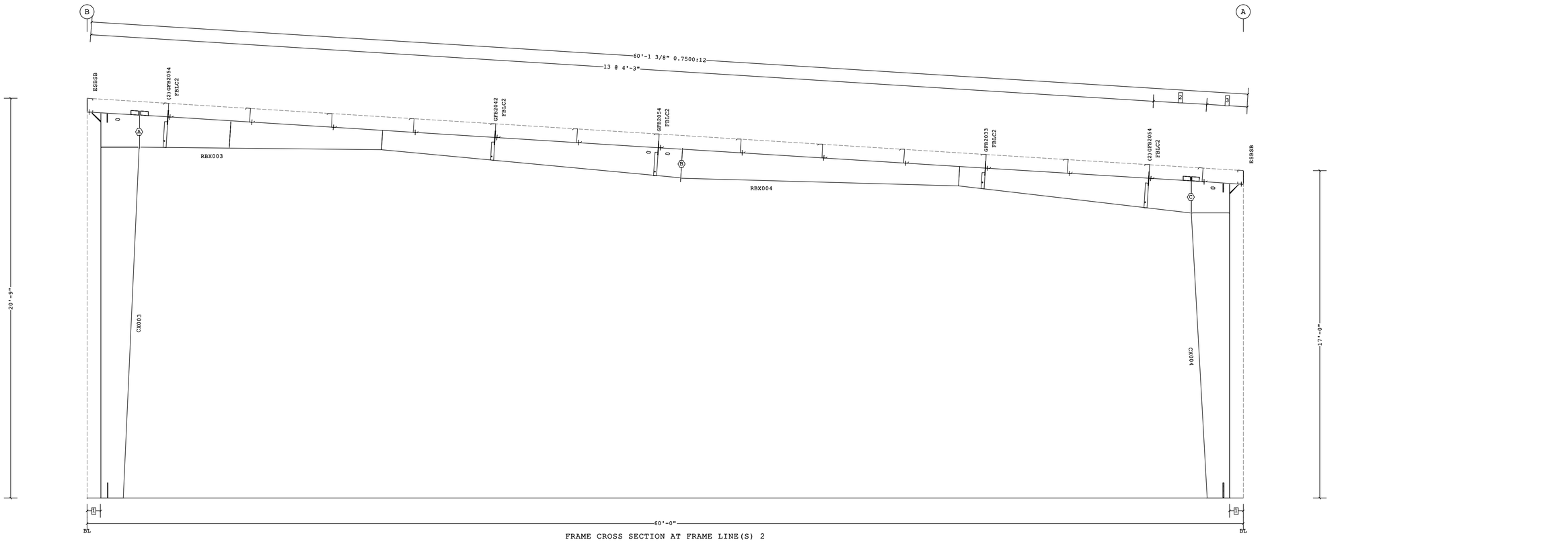
Frame Member Schedule

Part	Mem	Width	Thick	WebThk.	Depth1	Depth2	Approx.Lgth	Approx.Weight
CX003	1	8.0000	.5000	.1644	1'-2"	2'-0"	19'-11 15/16"	855#
RBX003	2	6.0000	.6250	.1644	1'-8"	1'-0"	28'-2 3/4"	810#
	3	6.0000	.3750	.1345	1'-0"	1'-6"		
RBX004	4	6.0000	.5000	.1345	1'-6"	1'-0"	26'-6 9/16"	771#
	5	6.0000	.5000	.1644	1'-0"	1'-8"		
CX004	6	8.0000	.5000	.1644	1'-2"	2'-0"	16'-5 7/16"	710#

Bolt Connection & Plate Schedule

Id	Qty	Grade	Bolt Dia.	Bolt Length	Plate Thick.	Rows Out	Rows In	PartNo
A	12	A325	3/4"	2 1/2"	5/8"	4	2	0097284
B	6	A325	3/4"	2 1/2"	1/2"	1	2	0097284
C	10	A325	3/4"	2 1/2"	1/2"	4	1	0097284

Frame Clearances
Horiz. Clearance between members 1(CX003) and 6(CX004): 54'-7"
Vert. Clearance at member 1(CX003): 18'-1 15/16"
Vert. Clearance at member 6(CX004): 14'-9"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



FRAME CROSS SECTION AT FRAME LINE(S) 2

3 2'-1 3/16"
2 2'-9 3/16"
1 8 1/2"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY Wall 4, Frame 2

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER
02/13/2024

PERMIT SET- For Building Dept. Approval

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:42

FRAME CROSS SECTION AT FRAME LINE(S) 2

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	9

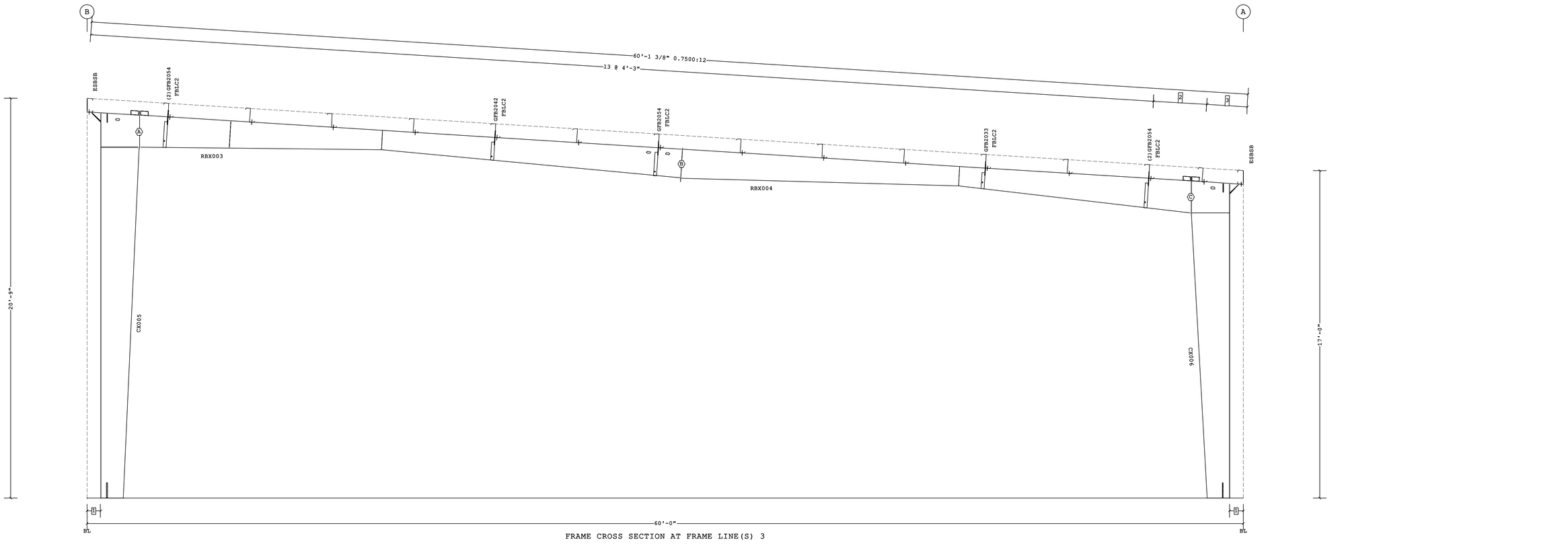
Frame Member Schedule

Part	Mem	Width	Thick	WebThk.	Depth1	Depth2	Approx.Lgth	Approx.Weight
CX005	1	8.0000	.5000	.1644	1'-2"	2'-0"	19'-11 15/16"	855#
RBX003	2	6.0000	.6250	.1644	1'-8"	1'-0"	28'-2 3/4"	810#
	3	6.0000	.3750	.1345	1'-0"	1'-6"		
RBX004	4	6.0000	.5000	.1345	1'-6"	1'-0"	26'-6 9/16"	771#
	5	6.0000	.5000	.1644	1'-0"	1'-8"		
CX006	6	8.0000	.5000	.1644	1'-2"	2'-0"	16'-5 7/16"	710#

Bolt Connection & Plate Schedule

Id	Qty	Grade	Bolt Dia.	Bolt Length	Plate Thick.	Rows Out	Rows In	PartNo
A	12	A325	3/4"	2 1/2"	5/8"	4	2	0097284
B	6	A325	3/4"	2 1/2"	1/2"	1	2	0097284
C	10	A325	3/4"	2 1/2"	1/2"	4	1	0097284

Frame Clearances
Horiz. Clearance between members 1(CX005) and 6(CX006): 54'-7"
Vert. Clearance at member 1(CX005): 18'-1 15/16"
Vert. Clearance at member 6(CX006): 14'-9"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



FRAME CROSS SECTION AT FRAME LINE(S) 3

3 2'-1 3/16"
2 2'-9 3/16"
1 8 1/2"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY Wall 4, Frame 3

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER
02/13/2024

PERMIT SET- For Building Dept. Approval

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:44

FRAME CROSS SECTION AT FRAME LINE(S) 3

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	10

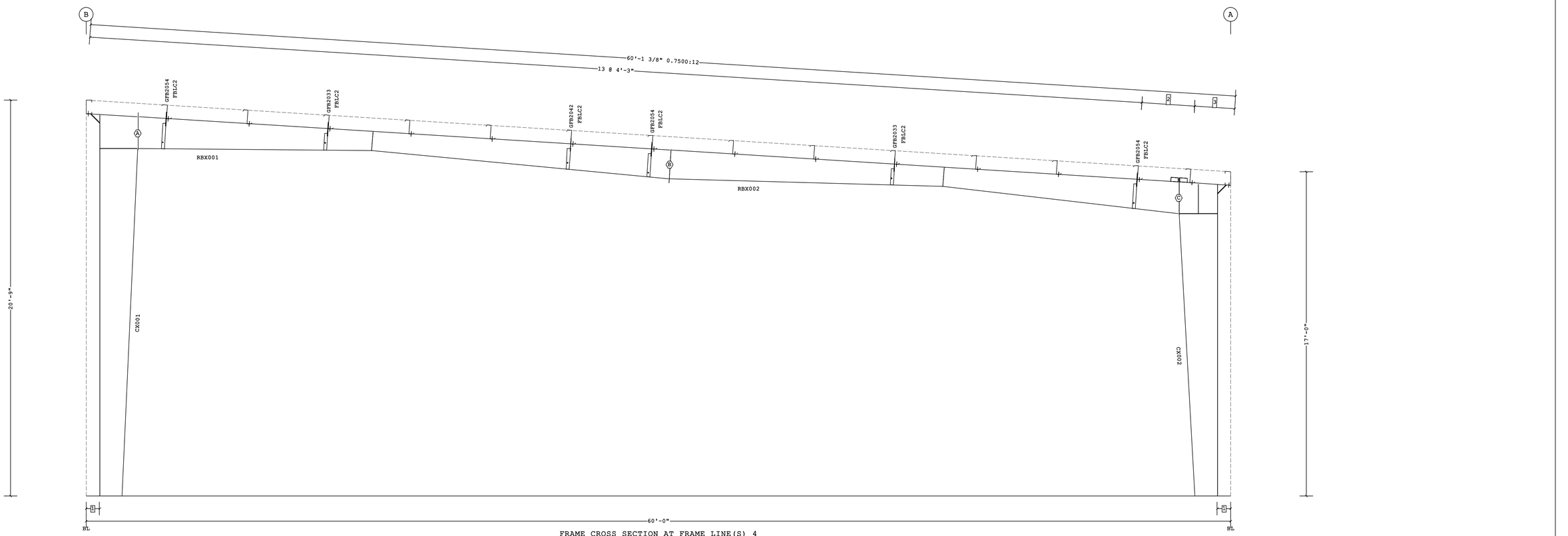
Frame Member Schedule

Part	Mem	Width	Thick	WebThk.	Depth1	Depth2	Approx.Lgth	Approx.Weight
CX001	1	8.0000	.3750	.1345	1'-2"	2'-0"	19'-11 15/16"	647#
RBX001	2	5.0000	.3750	.1644	1'-8"	1'-0"	27'-11 3/4"	539#
	3	5.0000	.1875	.1875	1'-0"	1'-6"		
RBX002	4	5.0000	.2500	.1644	1'-6"	1'-0"	26'-9 7/16"	485#
	5	5.0000	.3125	.1345	1'-0"	1'-8"		
CX002	6	8.0000	.2500	.1345	1'-2"	2'-0"	16'-5 1/2"	422#

Bolt Connection & Plate Schedule

Id	Qty	Grade	Bolt Dia.	Bolt Length	Plate Thick.	Rows Out	Rows In	PartNo
A	8	A325	3/4"	2 1/2"	1/2"	3	1	0097284
B	6	A325	3/4"	2 1/2"	3/8"	1	2	0097284
C	8	A325	3/4"	2 1/2"	3/8"	3	1	0097284

Frame Clearances
Horiz. Clearance between members 1(CX001) and 6(CX002): 54'-7"
Vert. Clearance at member 1(CX001): 18'-1 15/16"
Vert. Clearance at member 6(CX002): 14'-9"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



FRAME CROSS SECTION AT FRAME LINE(S) 4

3 2'-1 3/16"
2 2'-9 3/16"
1 8 1/2"
Dimension Key

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY Wall 4, Frame 4

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:45

FRAME CROSS SECTION AT FRAME LINE(S) 4

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	11

Frame Member Schedule

Part	Mem	Width	Thick	WebThk.	Depth1	Depth2	Approx.Lgth	Approx.Weight
CX009	1	8.0000	.2500	.1345	1'-7"	1'-7"	19'-4 13/16"	458#
RBX006	2-3	8.0000	.2500	.1345	1'-6"	1'-6"	23'-4 3/4"	549#
CX010	4	8.0000	.2500	.1345	1'-7"	1'-7"	19'-4 13/16"	458#

Bolt Connection & Plate Schedule

Id	Qty	Grade	Bolt Dia.	Bolt Length	Plate Thick.	Rows Out	Rows In	PartNo
A	20	A325	3/4"	2 1/2"	3/8"	4	4	0097284

Frame Clearances
Horiz. Clearance between members 1(CX009) and 4(CX010): 23'-5"
Vert. Clearance at member 1(CX009): 17'-9 3/16"
Vert. Clearance at member 4(CX010): 17'-9 3/16"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

PORTAL FRAME ELEVATION ALONG B

2 1'-2 1/2"
1 1/2"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY Wall 4, Frame 2

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER
02/13/2024

PERMIT SET- For Building Dept. Approval

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:47

PORTAL FRAME ELEVATION ALONG B

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
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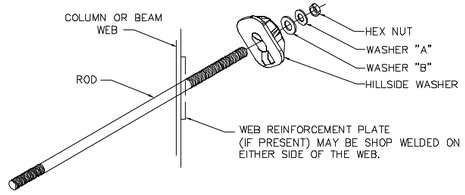
PAGE	12

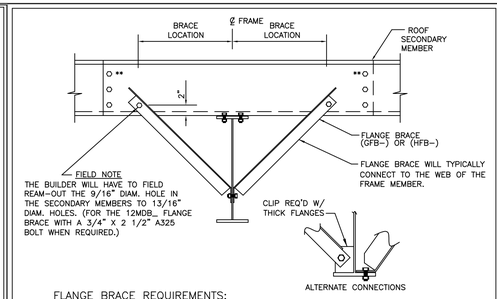


DESCRIPTION/PART NO				
ROD DIAM	NUT	HARD STEEL ROUND WASHER A	HARD STEEL WASHER B	HILLSIDE WASHER
3/8"	95321	3/8" FLAT WASHER (96408)	1/2" BEVEL SQUARE WASHER (46040)	543334
1/2"	95230	1/2" FLAT WASHER (95872)	3/4" FLAT ROUND WASHER (95946)	
5/8"	95233	5/8" FLAT WASHER (95945)		
3/4"	95235	3/4" FLAT WASHER (95946)	1" FLAT ROUND WASHER (95948)	543335
7/8"	95237	7/8" FLAT WASHER (95947)		
1"	95238	1" FLAT WASHER (95948)	1 1/8" FLAT ROUND WASHER (95949)	543336
1 1/8"	95239	1 1/8" FLAT WASHER (95949)		

REV. DATE:08/02/17 | REV. NO. 04

BR01G2

ROD BRACE
WEB SLOT ASSEMBLY



FLANGE BRACE REQUIREMENTS:

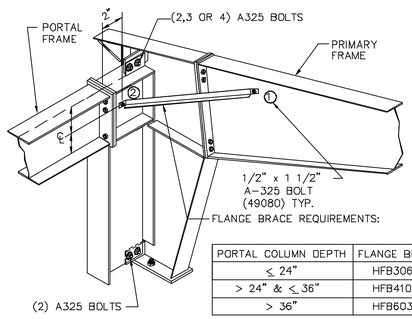
RULE#1– ALL FLANGE BRACES ON CROSS SECTIONS MUST BE INSTALLED.
RULE#2– SINGLE FLANGE BRACES ARE REQUIRED WHEN PART MARK ON CROSS SECTION IS NOT ACCOMPANIED BY (2).
RULE#3– FLANGE BRACES ARE REQUIRED BOTH SIDES OF THE FRAME WEB WHEN PART MARK IS ACCOMPANIED BY (2).
RULE#4– WHENEVER POSSIBLE, PLACE SINGLE BRACES TOWARD THE CENTER OF THE BUILDING.
RULE#5– WHENEVER POSSIBLE, PLACE ALL SINGLE BRACES ON THE SAME SIDE OF THE FRAME WEB.

** 10" & 11 1/2" PURLINS REQUIRE 3 BOLTS AT EACH END OF PURLIN LAP.

REV. DATE:05/08/18 | REV. NO. 02

BR06AE

TYPICAL FLANGE BRACE CONNECTIONS
CONT. PURLIN LAP SHOWN, CONT. GIRT & SIMPLE PURLIN



PORTAL COLUMN DEPTH	FLANGE BRACE
≤ 24"	HFB3060
> 24" & ≤ 36"	HFB4106
> 36"	HFB6032

NOTES:
1. FIELD DRILL 9/16" HOLES IN PRIMARY AND PORTAL FRAME WEBS FOR FLANGE BRACE CONNECTIONS.
2. DRILL 9/16" HOLE IN PORTAL FRAME COLUMN WEB APPROX. 2" FROM BOLTING PLATE ⊕ BEAM ℄.

REV. DATE:03/17/16 | REV. NO. 03

BR12K1

FLUSH PORTAL FRAME CONNECTION
FLANGE BRACE CONNECTION AND LOCATION

F = FEET G = GAGE
I = INCHES O = OPERATION
E = EIGHTHS C = FIN/COLOR

PANEL/COVERING
W 1 3 1 1 7 2 6 1 K T D
* F F I I E G G O C C C
LENGTH CODE

INSULATION
I B 1 3 0 1 0 3 6 0 3 0 W V
* * F F F I I I I I I E C C
LENGTH WIDTH THK CODE

SECONDARY (STANDARD)
O B Z 1 9 1 1 4 1 7 – – – – –
* * * F F I I E G G * * * * *
DEPTH LENGTH SHAPE GAGE ADJUST.CODES

SECONDARY (SPECIAL)
0 0 1 0 8 Z 1 9 1 1 4 1 7 – – –
* * * * * * F F I I E G G * * *
COUNTER DEPTH& SHAPE LENGTH GAGE ADJUST.CODES

ROD BRACING
O 3 R S 2 5 1 0
I E * * F F I I
DIA LENGTH

RS = THREADS BOTH ENDS
RT = THREADS ONE END – CLEVIS ONE END
RU = CLEVIS BOTH ENDS
RP = THREAD BOTH ENDS – NO HILLSIDES

CX*** = COLUMN (PLATE)
CGX*** = COLUMN (GAGE)
WCX*** = COLUMN (HOTROLL)

RBX*** = RAFTER (PLATE)
BGX*** = RAFTER (GAGE)
WRX*** = RAFTER (HOTROLL)
TRX*** = TRUSS RAFTER

ICX*** = INTERIOR COLUMN
PCX*** = PIPE COLUMN
TCX*** = TUBE COLUMN

EPX*** = ENDPOST (PLATE)
EGX*** = ENDPOST (GAGE)

CBX*** = CANOPY (PLATE)
CBX*** = PIGGYBACK CANOPY

DCC*** = 8 1/2" GAGE POST
DCE*** = 10" GAGE POST

REV. DATE:08/29/12 | REV. NO. 01

EN50B1

MARK NUMBER KEY
COMMON GENERATED MARK NUMBERS

BASIC ERECTION GUIDE REQUIRED FOR THIS PROJECT:

REFER TO:

VARCO PRUDEN BUILDINGS

BASIC ERECTION GUIDE

The Field Guide for correctly storing and erecting Varco Pruden Metal Building Systems

BACK COVER: 4001 BASIC ERECTION GUIDE

REV. DATE:01/30/14 | REV. NO. 00

ENV002

BASIC ERECTION GUIDE – STRUCTURAL

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 SEDSheet 15:38:47

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VP Buildings
3200 Players Club Circle Memphis TN 38125

PRIMARY BRACING SED'S

BUILDER Lemartec Corporation
CUSTOMER Duke Energy
LOCATION Dunn, North Carolina
PROJECT Duke Energy Dunn Operations Center - 60x80
BUILDERS PO# 23068 - 60x80
FILENAME: Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO 23-015996-01
DATE 02/13/2024
DRAWN/CHECK MB WJC
PAGE 13

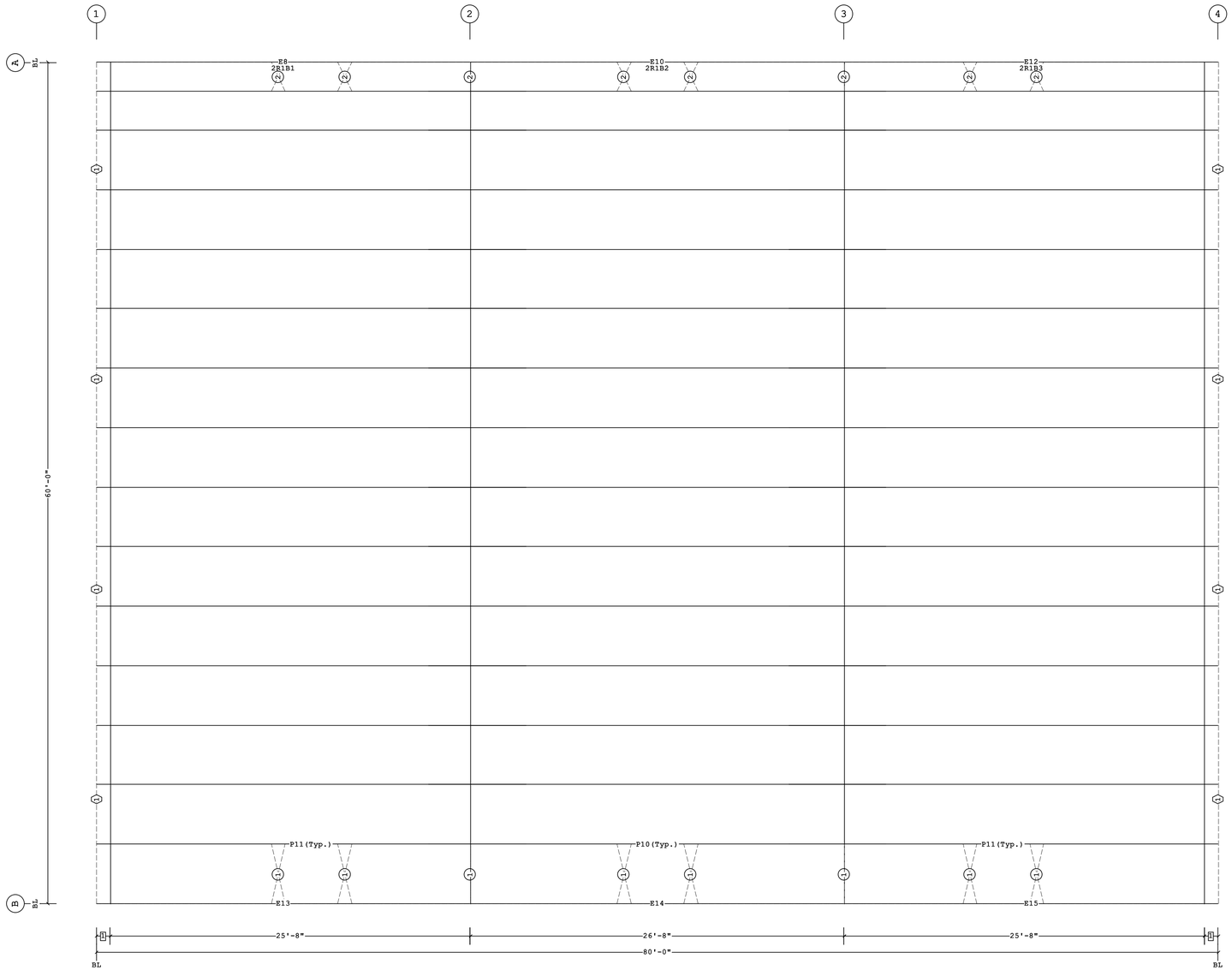
Secondary Part Schedule

Mark	Part	Thick.	Depth	Lap	Detail
E10	08E2607417DDB01	0.0600	8 1/2"		RS12PA
E12	00208ES2607417B01	0.0600	8 1/2"		RS12PH,RS12PA
E13	00108HS2607414B01	0.0790	8 1/2"		BR09W2,BR09Y2
E14	08H2607414DDB01	0.0790	8 1/2"		BR09W2,BR09Y2
E15	00208HS2607414B01	0.0790	8 1/2"		BR09W2,BR09Y2
E8	00108ES2607417B01	0.0600	8 1/2"		RS12PH,RS12PA
P10	08Z320741644B0	0.0680	8 1/2"	2'-10 1/2"	RS01T1
P11	08Z3007414A5B0	0.0790	8 1/2"	3'-10 1/2"	RS02T1,RS01T1

Secondary Bracing Schedule

Id	Qty	Mark No	Spacing
1	14	PBA0406(Typ.)	4'-3"
2	14	PBA0205	2'-1 3/16"

See SED:
BR09K5, BR09JG, BR09RY, BR09RZ, BR09K2



ROOF SECONDARY PLAN

Part Mark Key
1 RCHB15

1 1'-0"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY

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02/13/2024

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2. FLANGE BRACES ARE AN INTEGRAL PART OF THE STABILITY OF THE STRUCTURAL SYSTEM AND MUST BE PROPERLY INSTALLED PRIOR TO ERECTION OF WALL AND ROOF SHEETS.
3. REMOVAL OR ALTERATION OF ANY COMPONENT IS PROHIBITED.

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VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:49

ROOF SECONDARY PLAN

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
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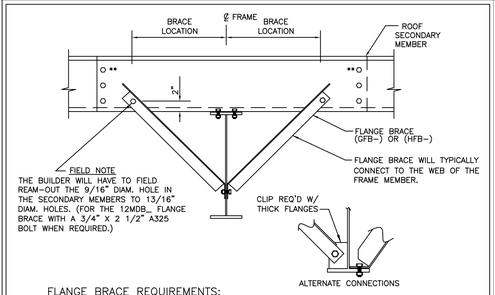
PAGE	14



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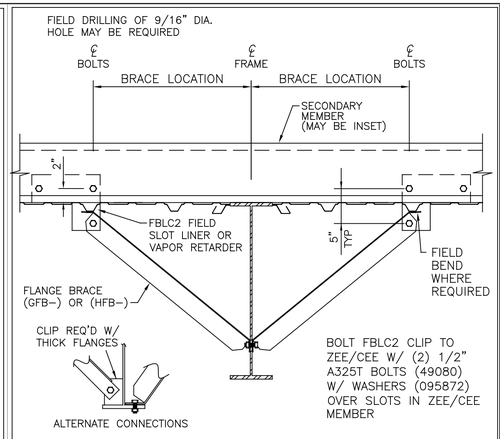
** 10" & 11 1/2" PURLINS REQUIRE 3 BOLTS AT EACH END OF PURLIN LAP.

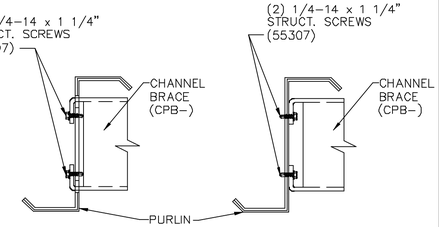
REV. DATE:05/08/18	REV. NO. 02	TYPICAL FLANGE BRACE CONNECTIONS
BR06AE		CONT. PURLIN LAP SHOWN, CONT. GIRT & SIMPLE PURLIN



REV. DATE:06/09/22	REV. NO. 04	ROOF/WALL FLANGE BRACING
BR06J3		PURLIN/GIRT WITH LINER OR INSUL. VAPOR RETARDER

ERECTION NOTE:

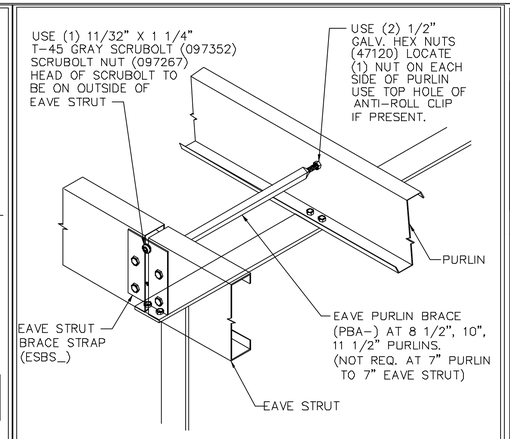
WHEN A CHANNEL BRACE DOES NOT LINE UP WITH ANOTHER CHANNEL BRACE OR THE SLOTS IN THE PURLIN WEB FOR A DROP PIN CONNECTION BEND THE CHANNEL TABS TOWARD THE PURLIN WEB AND USE A SELF–DRILLER (55307) TO ATTACH.



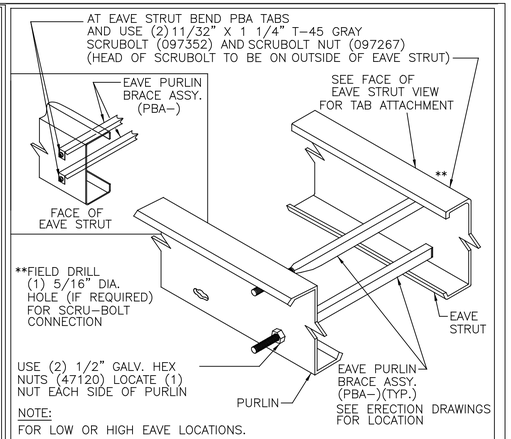
USE WHEN CHANNEL BRACE DOES LINE UP WITH THE SLOTS IN THE PURLIN WEB.

USE WHEN CHANNEL BRACE DOES NOT LINE UP WITH THE SLOTS IN THE PURLIN WEB.

REV. DATE:04/01/11	REV. NO. 01	CHANNEL BRACE ENDING AT PURLIN WEB
BR09JG		SELF–DRILLER WITH BENT TABS

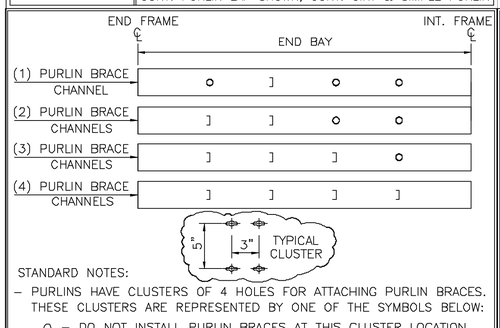


REV. DATE:07/20/16	REV. NO. 05	EAVE BRACE STRAP AND EAVE PURLIN BRACE
BR09K2		LOCATED AT EAVE – CENTERLINE OF FRAME



NOTE:
FOR LOW OR HIGH EAVE LOCATIONS.

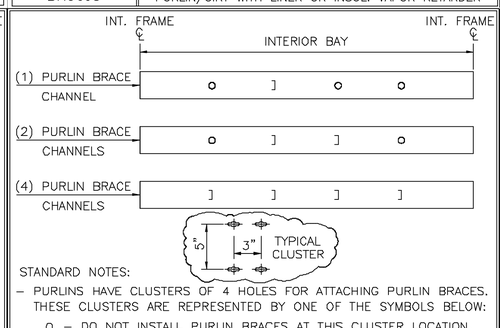
REV. DATE:02/22/22	REV. NO. 05	EAVE STRUT BRACE
BR09K5		



STANDARD NOTES:

- PURLINS HAVE CLUSTERS OF 4 HOLES FOR ATTACHING PURLIN BRACES. THESE CLUSTERS ARE REPRESENTED BY ONE OF THE SYMBOLS BELOW:
  - O – DO NOT INSTALL PURLIN BRACES AT THIS CLUSTER LOCATION.
  -] – INSTALL PURLIN BRACES AT THIS CLUSTER LOCATION. SEE SECONDARY ROOF DRAWING FOR BRACE REQUIREMENTS.
- INSTALL PURLIN BRACES AT THE RIDGE AND WORK TOWARD THE EAVE.
- CHANNEL BRACE MAY BE LOCATED IN EITHER SET OF SLOTS IN CLUSTER PROVIDED THEY ARE ALIGNED FROM EAVE TO EAVE IN A GIVEN BAY.

REV. DATE:07/01/09	REV. NO. 00	PURLIN BRACE CLUSTER LOCATION
BR09RY		END BAY CHANNEL LOCATION



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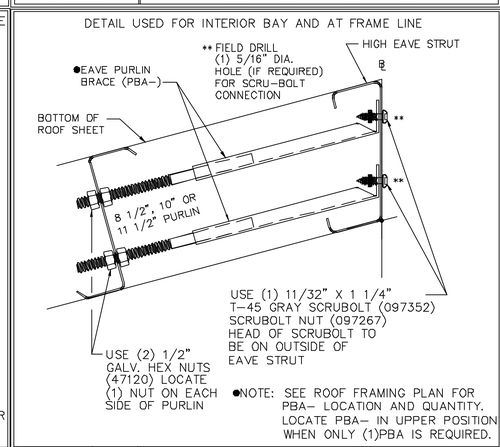
- INSTALL PURLIN BRACES AT THE RIDGE AND WORK TOWARD THE EAVE.
- CHANNEL BRACE MAY BE LOCATED IN EITHER SET OF SLOTS IN CLUSTER PROVIDED THEY ARE ALIGNED FROM EAVE TO EAVE IN A GIVEN BAY.

REV. DATE:07/01/09	REV. NO. 00	PURLIN BRACE CLUSTER LOCATION
BR09RZ		INTERIOR BAY CHANNEL LOCATION

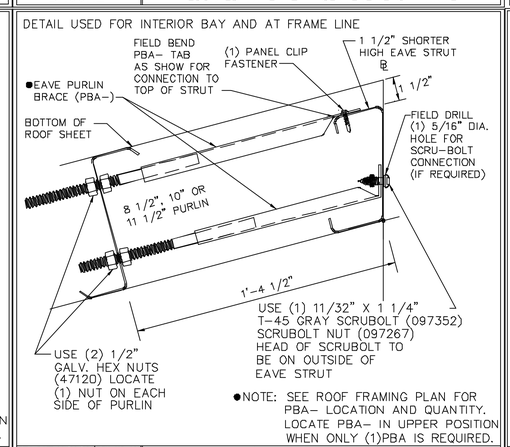
DETAIL USED FOR INTERIOR BAY AND AT FRAME LINE



●NOTE: SEE ROOF FRAMING PLAN FOR PBA– LOCATION AND QUANTITY. LOCATE PBA– IN UPPER POSITION WHEN ONLY (1)PBA IS REQUIRED.

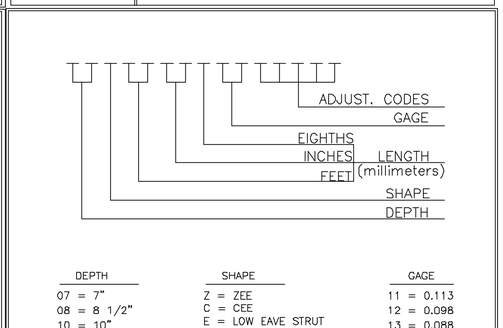
REV. DATE:11/26/12	REV. NO. 01	HIGH EAVE PURLIN BRACE
BR09W2		ALL WALL PANEL TYPE

DETAIL USED FOR INTERIOR BAY AND AT FRAME LINE



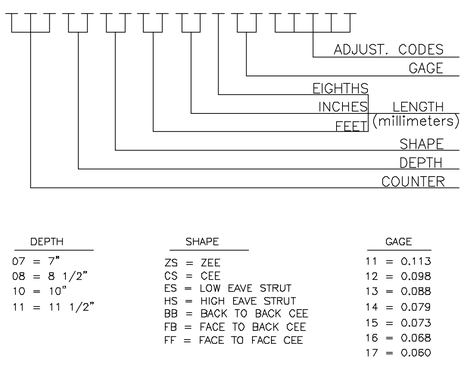
●NOTE: SEE ROOF FRAMING PLAN FOR PBA– LOCATION AND QUANTITY. LOCATE PBA– IN UPPER POSITION WHEN ONLY (1)PBA IS REQUIRED.

REV. DATE:04/26/16	REV. NO. 02	SSR/SLR HIGH EAVE STRUT
BR09Y2		ALL WALL PANEL TYPE



DEPTH	SHAPE	GAGE
07 = 7"	Z = ZEE	11 = 0.113
08 = 8 1/2"	C = CEE	12 = 0.098
10 = 10"	E = LOW EAVE STRUT	13 = 0.088
11 = 11 1/2"	H = HIGH EAVE STRUT	14 = 0.079
		15 = 0.073
		16 = 0.068
		17 = 0.060

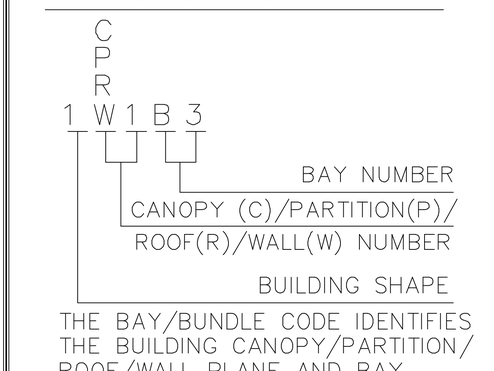
REV. DATE:07/01/09	REV. NO. 00	SECONDARY PART MARK NUMBER
EN51B1		COMMON GENERATED MARK NUMBERS



DEPTH	SHAPE	GAGE
07 = 7"	ZS = ZEE	11 = 0.113
08 = 8 1/2"	CS = CEE	12 = 0.098
10 = 10"	ES = LOW EAVE STRUT	13 = 0.088
11 = 11 1/2"	HS = HIGH EAVE STRUT	14 = 0.079
	BB = BACK TO BACK CEE	15 = 0.073
	FB = FACE TO BACK CEE	16 = 0.068
	FF = FACE TO FACE CEE	17 = 0.060

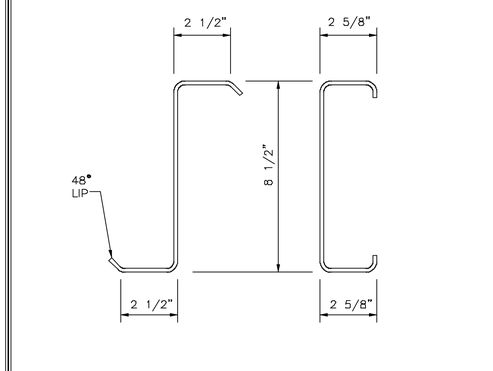
REV. DATE:07/01/09	REV. NO. 00	SPECIAL SECONDARY PART MARK KEY
EN51B2		COMMON GENERATED MARK NUMBERS

ERECTION DRAWING PART MARK

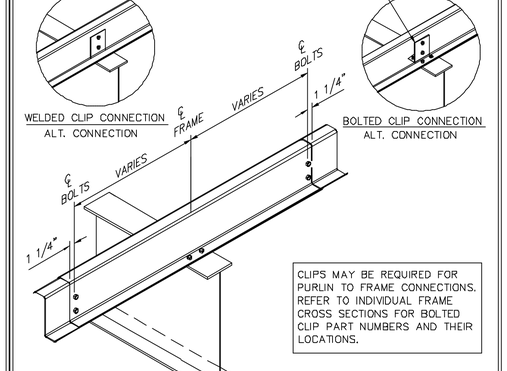


THE BAY/BUNDLE CODE IDENTIFIES THE BUILDING CANOPY/PARTITION/ ROOF/WALL PLANE AND BAY

REV. DATE:01/31/13	REV. NO. 01	SECONDARY BUNDLE LOCATION KEY
EN51B3		ALL SECONDARY DEPTHS



REV. DATE:07/01/09	REV. NO. 00	PURLIN AND GIRT SIZES
EN53F1		8 1/2" 216mm



CLIPS MAY BE REQUIRED FOR PURLIN TO FRAME CONNECTIONS. REFER TO INDIVIDUAL FRAME CROSS SECTIONS FOR BOLTED CLIP PART NUMBERS AND THEIR LOCATIONS.

REV. DATE:06/17/15	REV. NO. 02	PURLIN CONNECTION AT INTERIOR FRAME
RS01T1		CONTINUOUS PURLINS

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

1. UNLESS NOTED, USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS.
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3. REMOVAL OR ALTERATION OF ANY COMPONENT IS PROHIBITED.

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REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 SEDSheet 15:38:49

D

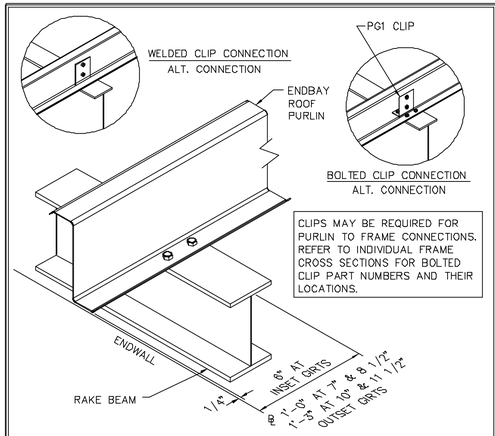
VP Buildings
3200 Players Club Circle Memphis TN 38125

ROOF SECONDARY SED'S (a)

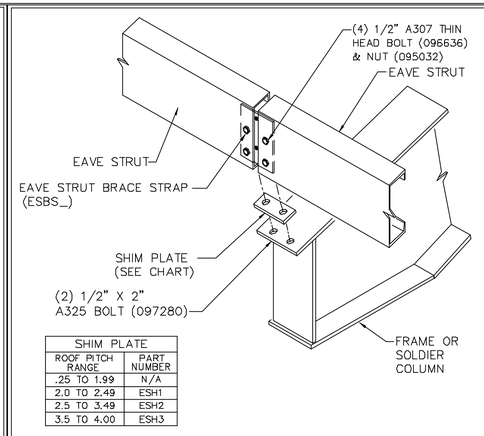
BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	15

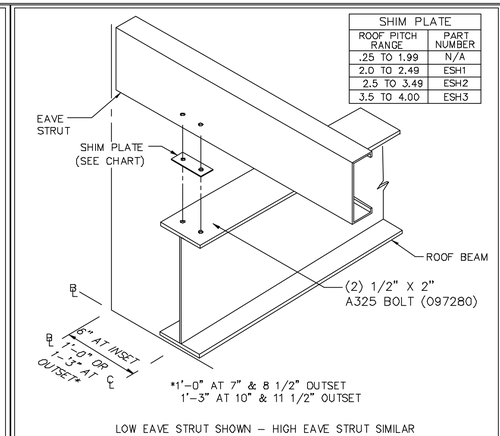


REV. DATE:06/17/15	REV. NO. 02
RS02T1	PURLIN CONNECTION TO END FRAME CONTINUOUS PURLINS



SHIM PLATE	
ROOF PITCH RANGE	PART NUMBER
.25 TO 1.99	N/A
2.0 TO 2.49	ESH1
2.5 TO 3.49	ESH2
3.5 TO 4.00	ESH3

REV. DATE:07/20/16	REV. NO. 03
RS12PA	EAVE STRUT CONNECTION AT INTERIOR FRAME



SHIM PLATE	
ROOF PITCH RANGE	PART NUMBER
.25 TO 1.99	N/A
2.0 TO 2.49	ESH1
2.5 TO 3.49	ESH2
3.5 TO 4.00	ESH3

LOW EAVE STRUT SHOWN – HIGH EAVE STRUT SIMILAR

REV. DATE:03/26/15	REV. NO. 01
RS12PH	EAVE STRUT CONNECTION AT END FRAME

1. UNLESS NOTED, USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS.
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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

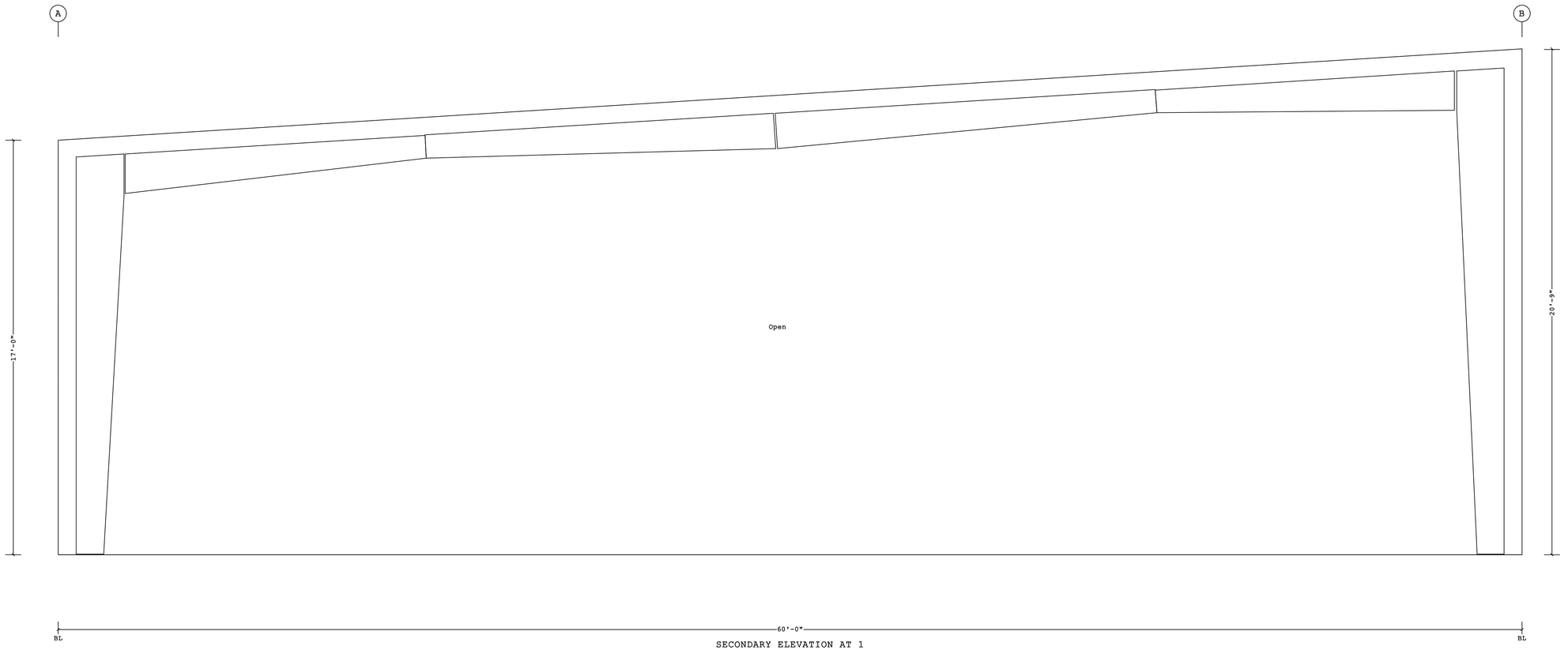
PERMIT SET- For Building Dept. Approval

D	VP Buildings 3200 Players Club Circle Memphis TN 38125		ROOF SECONDARY SED'S (b)
REV	DATE	BY	DESCRIPTION
NTS			
2/12/2024 SEDSheet 15:38:51			

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	16



SECONDARY ELEVATION AT 1

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040258 JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY, Wall = 1

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

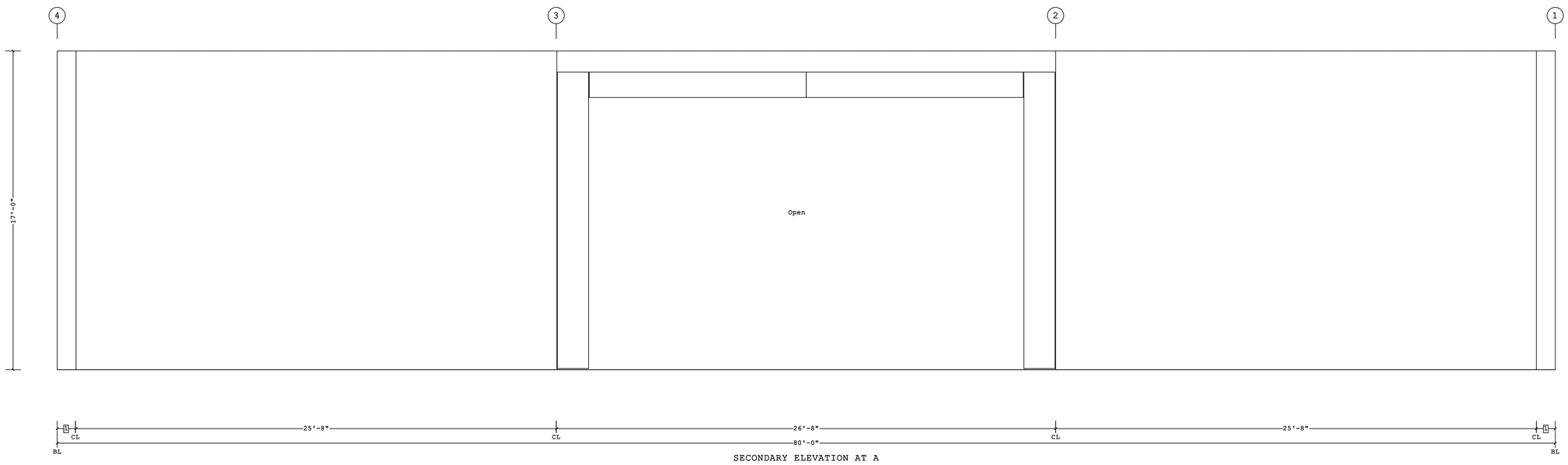
2/12/2024 15:38:54

SECONDARY ELEVATION AT 1

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	17



SECONDARY ELEVATION AT A

1 1'-0"
Dimension Key

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040258 JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY, Wall = 2

1. UNLESS NOTED, USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS.
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VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

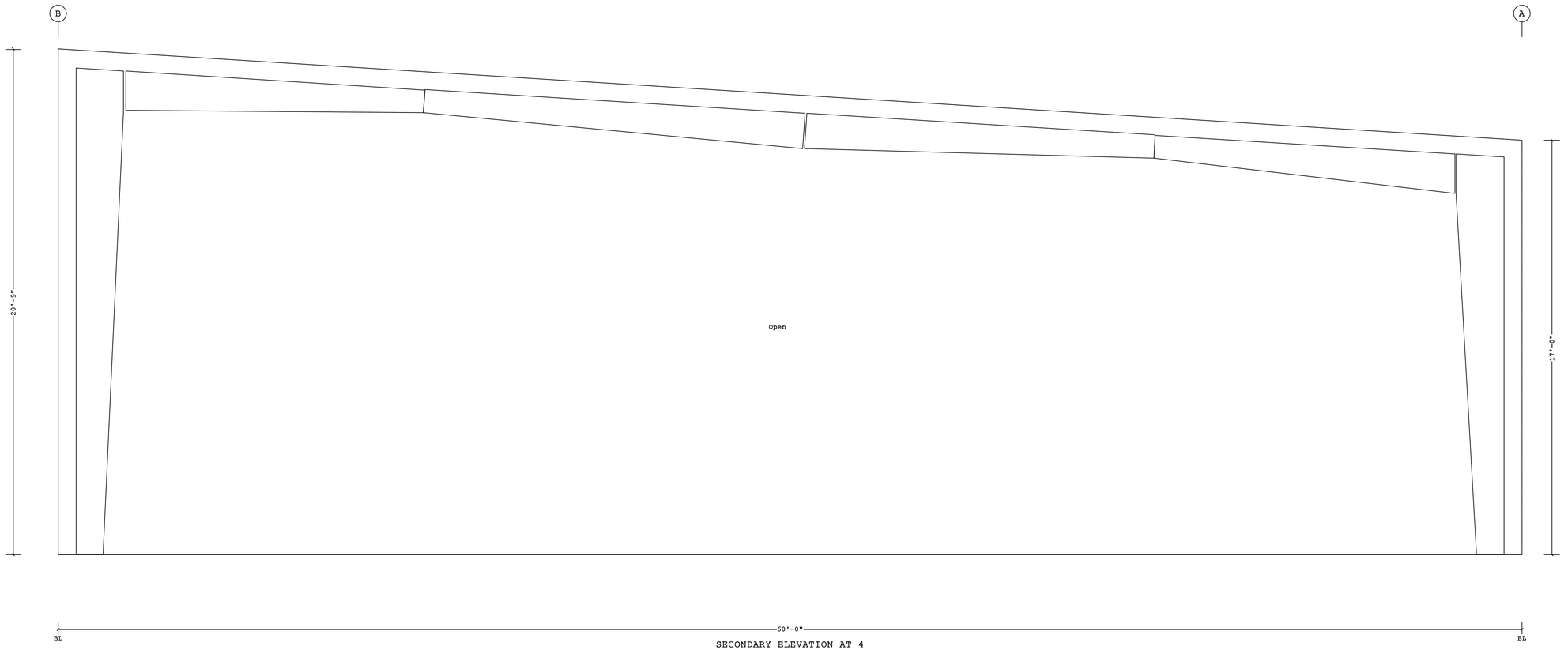
2/12/2024 15:38:55

SECONDARY ELEVATION AT A

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	18



SECONDARY ELEVATION AT 4

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY, Wall = 3

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VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

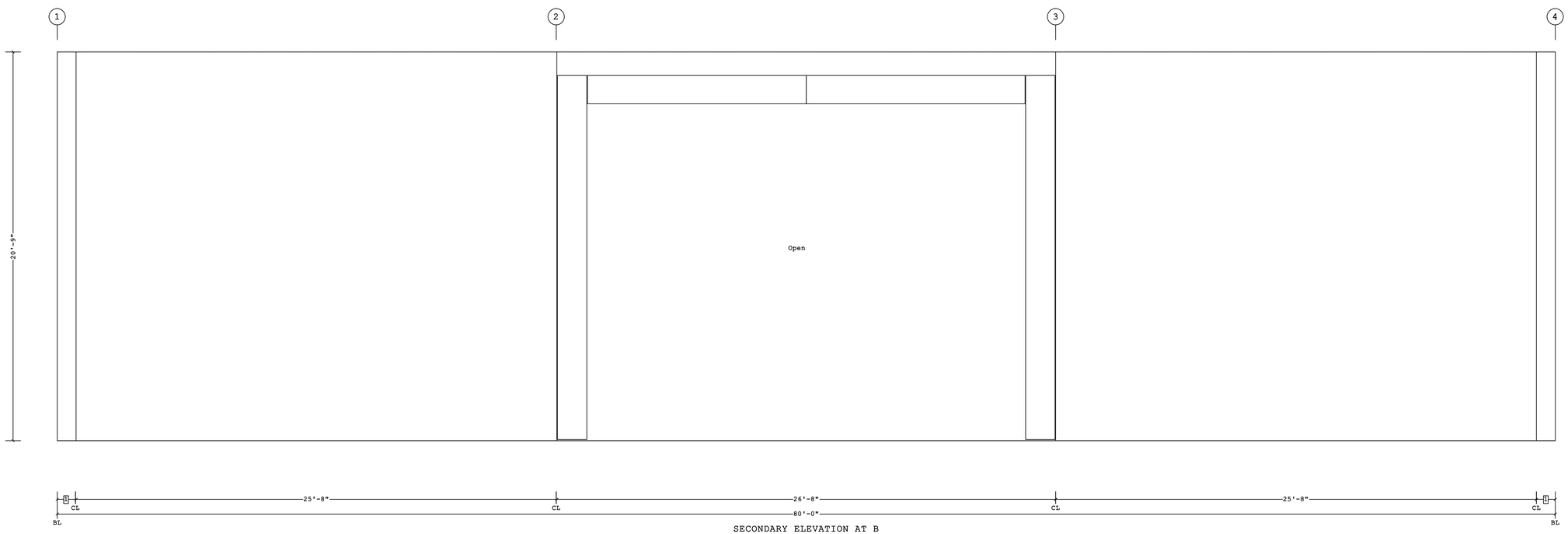
2/12/2024 15:38:56

SECONDARY ELEVATION AT 4

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	19



SECONDARY ELEVATION AT B

1 1'-0"
Dimension Key

Shape Name = BUCKET/LINE/LOWBOY, Wall = 4

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VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

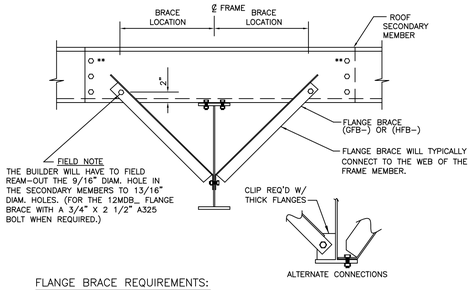
2/12/2024 15:38:57

SECONDARY ELEVATION AT B

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	20

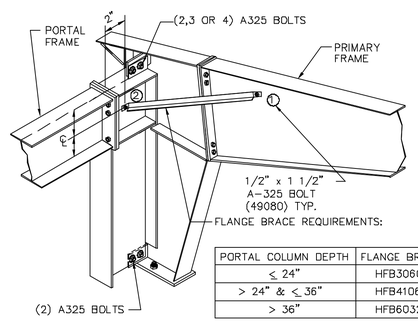


FLANGE BRACE REQUIREMENTS:

RULE#1– ALL FLANGE BRACES ON CROSS SECTIONS MUST BE INSTALLED.
RULE#2– SINGLE FLANGE BRACES ARE REQUIRED WHEN PART MARK ON CROSS SECTION IS NOT ACCOMPANIED BY (2).
RULE#3– FLANGE BRACES ARE REQUIRED BOTH SIDES OF THE FRAME WEB WHEN PART MARK IS ACCOMPANIED BY (2).
RULE#4– WHENEVER POSSIBLE, PLACE SINGLE BRACES TOWARD THE CENTER OF THE BUILDING.
RULE#5– WHENEVER POSSIBLE, PLACE ALL SINGLE BRACES ON THE SAME SIDE OF THE FRAME WEB.

** 10" & 11 1/2" PURLINS REQUIRE 3 BOLTS AT EACH END OF PURLIN LAP.

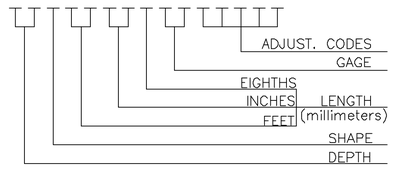
REV. DATE:05/08/18	REV. NO. 02	TYPICAL FLANGE BRACE CONNECTIONS
BR06AE		CONT. PURLIN LAP SHOWN, CONT. GIRT & SIMPLE PURLIN



PORTAL COLUMN DEPTH	FLANGE BRACE
≤ 24"	HFB3060
> 24" & ≤ 36"	HFB4106
> 36"	HFB6032

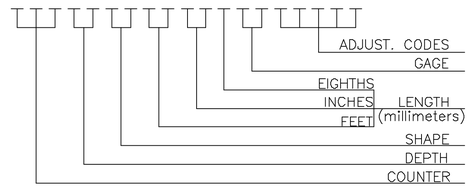
NOTES:
① FIELD DRILL 9/16" HOLES IN PRIMARY AND PORTAL FRAME WEBS FOR FLANGE BRACE CONNECTIONS.
② DRILL 9/16" HOLE IN PORTAL FRAME COLUMN WEB APPROX. 2" FROM BOLTING PLATE ⊕ BEAM ℄.

REV. DATE:03/17/18	REV. NO. 03	FLUSH PORTAL FRAME CONNECTION
BR12K1		FLANGE BRACE CONNECTION AND LOCATION



DEPTH	SHAPE	GAGE
07 = 7"	Z = ZEE	11 = 0.113
08 = 8 1/2"	C = CEE	12 = 0.098
10 = 10"	E = LOW EAVE STRUT	13 = 0.088
11 = 11 1/2"	H = HIGH EAVE STRUT	14 = 0.079
		15 = 0.073
		16 = 0.068
		17 = 0.060

REV. DATE:07/01/09	REV. NO. 00	SECONDARY PART MARK NUMBER
EN51B1		COMMON GENERATED MARK NUMBERS



DEPTH	SHAPE	GAGE
07 = 7"	ZS = ZEE	11 = 0.113
08 = 8 1/2"	CS = CEE	12 = 0.098
10 = 10"	ES = LOW EAVE STRUT	13 = 0.088
11 = 11 1/2"	HS = HIGH EAVE STRUT	14 = 0.079
	BB = BACK TO BACK CEE	15 = 0.073
	FB = FACE TO BACK CEE	16 = 0.068
	FF = FACE TO FACE CEE	17 = 0.060

REV. DATE:07/01/09	REV. NO. 00	SPECIAL SECONDARY PART MARK KEY
EN51B2		COMMON GENERATED MARK NUMBERS

ERECTION DRAWING PART MARK

C
P
R
1 W 1 B 3

BAY NUMBER
CANOPY (C)/PARTITION(P)/ ROOF(R)/WALL(W) NUMBER
BUILDING SHAPE

THE BAY/BUNDLE CODE IDENTIFIES THE BUILDING CANOPY/PARTITION/ ROOF/WALL PLANE AND BAY

REV. DATE:01/31/13	REV. NO. 01	SECONDARY BUNDLE LOCATION KEY
EN51B3		ALL SECONDARY DEPTHS

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02/13/2024

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VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 SEDSheet 15:38:57

WALL SECONDARY SED'S

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	21

Covering Schedule

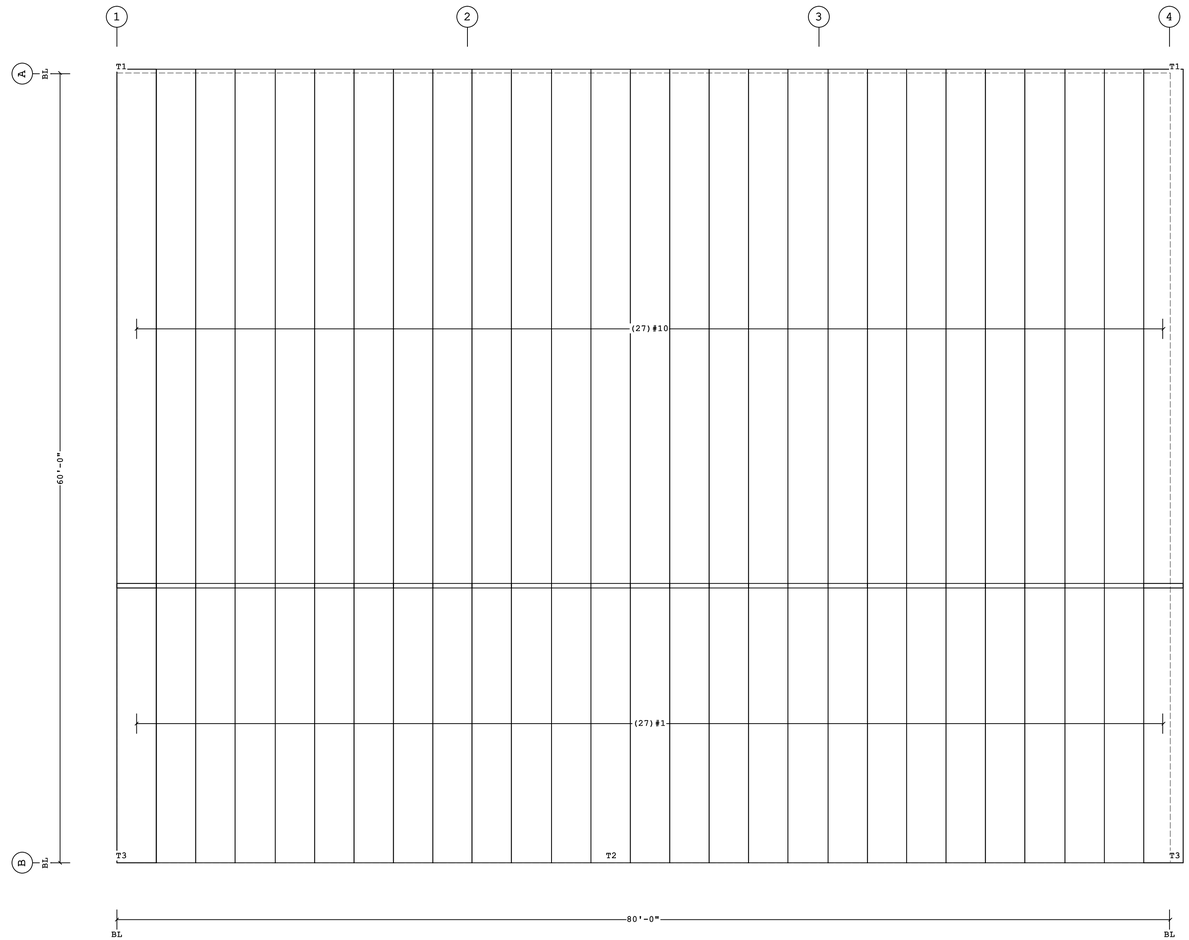
Id	Qty	Length	Type	Gage	OP	Fin.	Color	Direction
#10	27	39'-5 7/8"	PR	24	1	G	TD	Left to Right
#1	27	21'-2 3/4"	PR	24	1	G	TD	Left to Right

Oper. Code:1=SQ,SQ
Finish:G=Galvalume
Color:TD=Standard Color

Trim Schedule

Id	Parts
T1	BS1,FPRF1,GGC1,MCC1
T2	(8)1SF11,(4)PKF20A
T3	MCC1

Color	Details
Cool Zinc Gray	RC38N1
Cool Zinc Gray	EN52A1,ENV003,RC00A1,RC03B1,RC04B3,RCV018
Cool Zinc Gray	RC38AJ



ROOF COVERING PLAN

Roof Covering Notes
detailed for a UL90 rating Construction #64 or 253
- The roof panels on this project has been"

Fastener Schedule

Part	Description
0097584UNPNTD	(T-2) #12-14 x 1 1/4", 5/16" Hex Hd, SS Cap w/Washer
0097584-116	(T-2) #12-14 x 1 1/4", 5/16" Hex Hd, SS Cap w/Washer
0097581UNPNTD	(T-1) 1/4-14 x 7/8", 5/16" Hex Hd, SS Cap w/Washer

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040258 JASON CLYMER
02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY

1. PRE-DRILLING 1/8 DIAMETER HOLES FOR STRUCTURAL FASTENERS MAY BE REQUIRED FOR HEAVY GAGE NESTED ZEE's AND/OR FASTENERS TO STRUCTURAL BEAMS
2. STEEL PANELS ARE AN INTEGRAL PART OF THE STRUCTURAL SYSTEM. REMOVAL OR ALTERATION WITHOUT PRIOR AUTHORIZATION IS PROHIBITED.
3. DUE TO MANUFACTURING LIMITATIONS SHORT PANELS MAY REQUIRE FIELD CUTTING, SEE THE COVERING SCHEDULE FOR CUT LENGTHS.
4. SEE JOB DETAILS FOR COVERING AND TRIM FASTENER SPECIFICATION.

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:38:59

ROOF COVERING PLAN

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	22

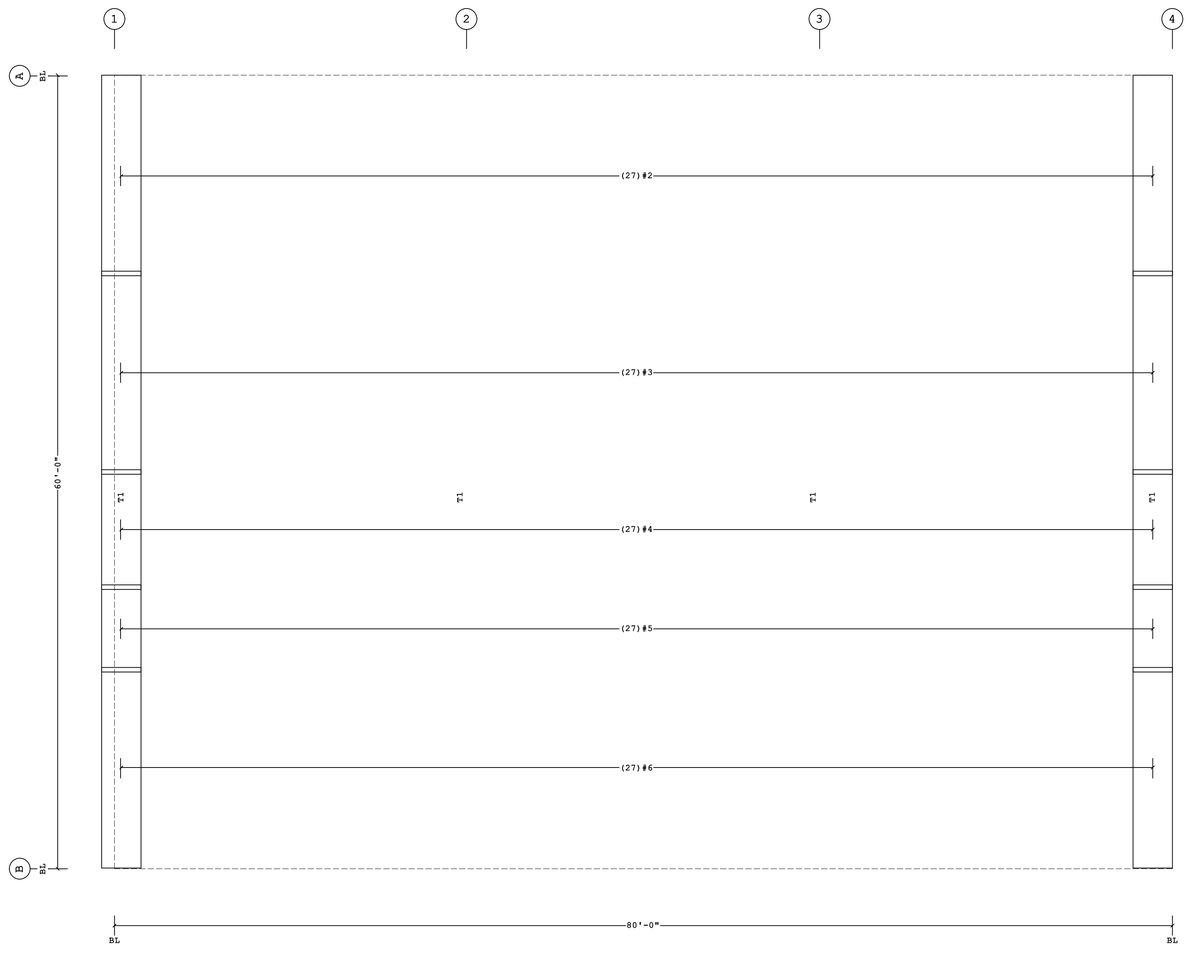
Liner/Soffit Schedule

Id	Qty	Type	Length	Gage	OP	Finish	Color	Direction	Cut
#2	27	DLN	15'-2 3/8"	26	1	K	OW	Left to Right	
#3	27	DLN	15'-4"	26	2	K	OW	Left to Right	
#4	27	DLN	9'-1"	26	2	K	OW	Left to Right	
#5	27	DLN	6'-7"	26	2	K	OW	Left to Right	
#6	27	DLN	15'-2"	26	2	K	OW	Left to Right	

Oper. Code:1=SQ,SQ
Oper. Code:2=SQ,SQ
Finish:K=KXL (Kynar)
Color:OW=Cool Cotton White

Liner Trim Schedule

Id	Parts	Color	Details
T1	(11)LPJT	Match Roof Color	WLV015



ROOF LINER PLAN
(View from outside Building)

Shape Name = BUCKET/LINE/LOWBOY

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:39:00

ROOF LINER PLAN

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	23

Trim Schedule

Id	Parts	Color	Details
T1	(4)RKF16,(7)STC10A	Cool Zinc Gray	RC30BQ,RS10R1

COVERING ELEVATION AT 1

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY, Wall = 1

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:39:01

COVERING ELEVATION AT 1

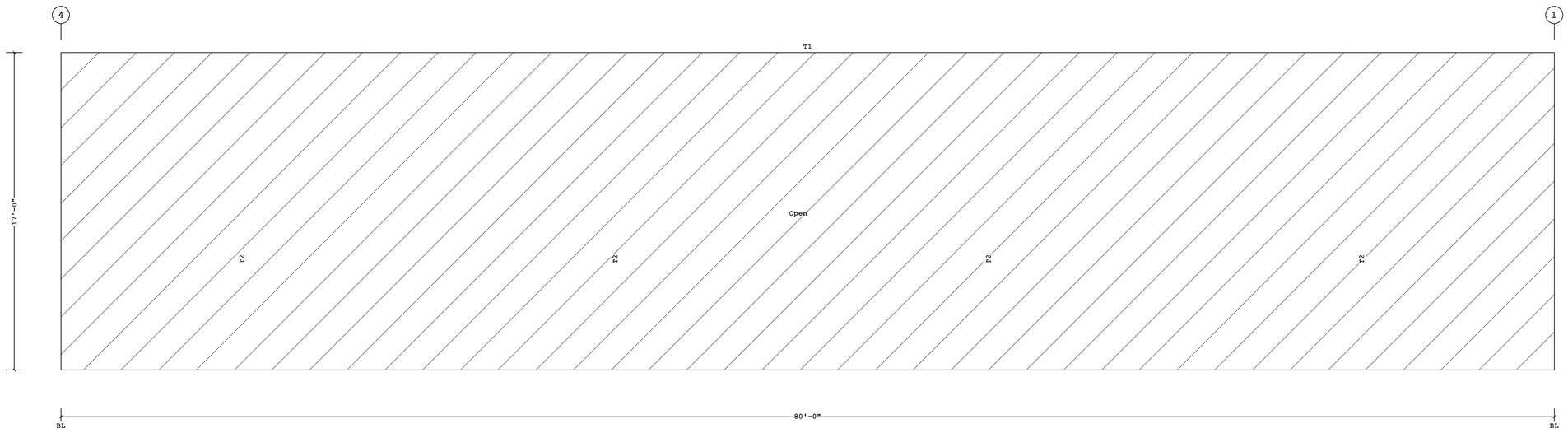
BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	24

Trim Schedule

Id	Parts	Color	Details
T1	(8)1SF21,(4)EG201,(28)STR2	Cool Zinc Gray	RC03B1,RC04B1,RC39A2,RC61B6,RCV047,RCV324
T2	(2)5CE45,5CE75,(2)CP510,DN1,(4)DST1	Cool Zinc Gray	RC38R2



COVERING ELEVATION AT A

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY, Wall = 2

1. PRE-DRILLING 1/8 DIAMETER HOLES FOR STRUCTURAL FASTENERS MAY BE REQUIRED FOR HEAVY GAGE NESTED ZEE's AND/OR FASTENERS TO STRUCTURAL BEAMS
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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:39:02

COVERING ELEVATION AT A

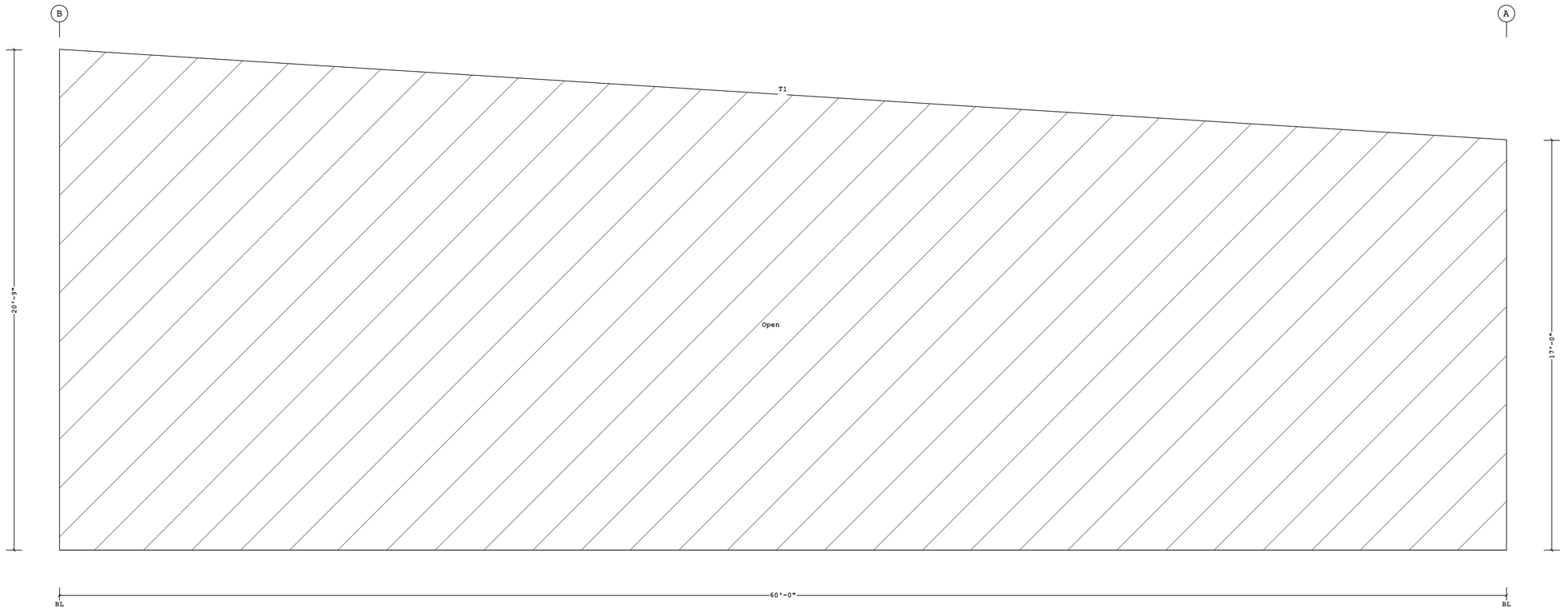
BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	25

Trim Schedule

Id	Parts	Color	Details
T1	(4)RKF16,(7)STC10A	Cool Zinc Gray	RC30BQ,RS10R1



COVERING ELEVATION AT 4

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

Shape Name = BUCKET/LINE/LOWBOY, Wall = 3

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:39:03

COVERING ELEVATION AT 4

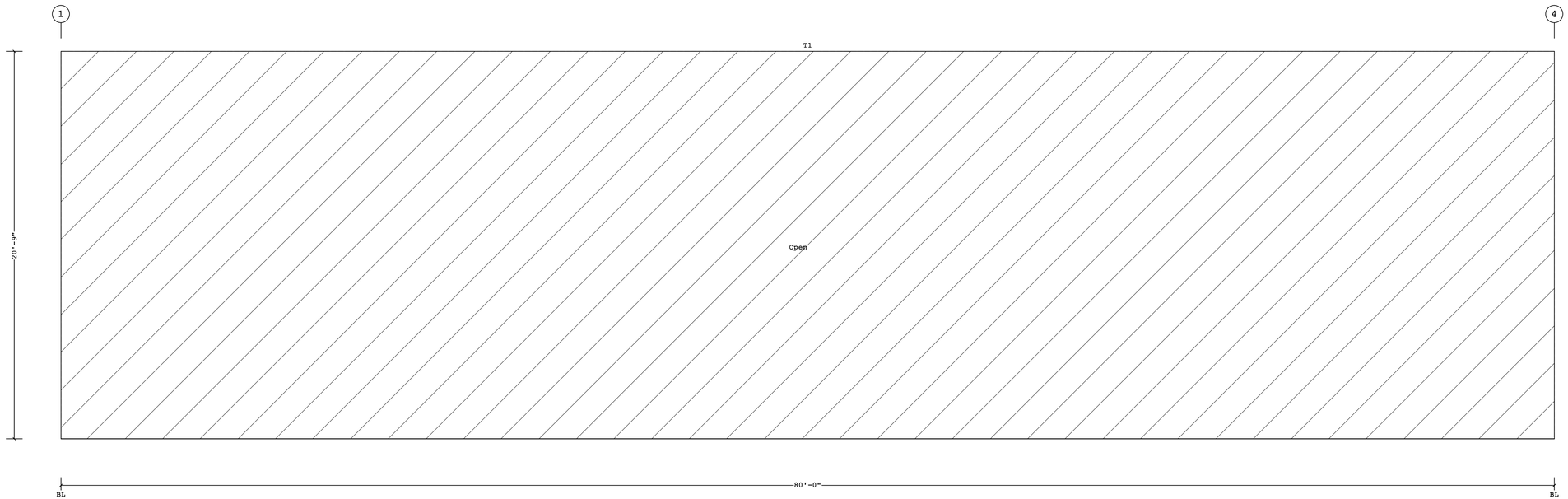
BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	26

Trim Schedule

Id	Parts	Color	Details
T1	(8)1SF11,(4)PKF20A	Cool Dark Bronze	EN52A1,ENV003,RC00A1,RC03B1,RC04B3,RCV018



COVERING ELEVATION AT B

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02/13/2024

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D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 15:39:04

COVERING ELEVATION AT B

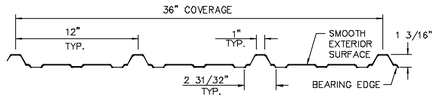
BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	27

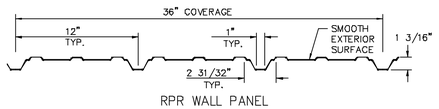
PR WALL PANEL MARK NO.: W F F I I E G G O C C C
LENGTH CODE
PR ROOF PANEL MARK NO.: R F F I I E G G O C C C
LENGTH CODE
PR RIDGE PANEL MARK NO.: P F F I I E G G O C C C
LENGTH CODE

F = FEET
I = INCHES
E = EIGHTHS
G = GAGE
O = OPERATION
C = FIN/COLOR



PANEL RIB ROOF AND WALL PANEL (PR)

RPR WALL PANEL MARK NO.: R R F F I I E G G O C C C
LENGTH CODE



RPR WALL PANEL

REV. DATE:11/17/17 | REV. NO. 01 | EN52A1 | PR ROOF & PR/RPR WALL PANELS

PANEL ERECTION GUIDE REQUIRED FOR THIS PROJECT:

REFER TO:

VARCO PRUDEN BUILDINGS

BASIC PANELS & ACCESSORIES

The field guide for correct installation of Varco Pruden's Wall and Roof Systems, Tuff-Lites, Wallites, Doors, Windows, Gutters and Trim.

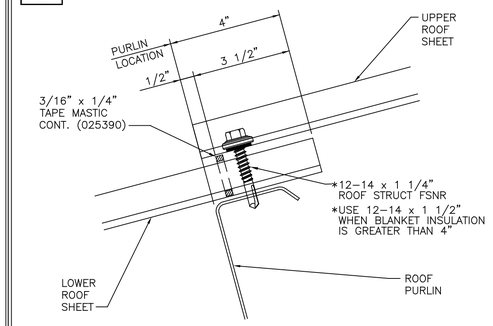
BACK COVER: 4003 BASIC PANELS AND ACCESSORIES

REV. DATE:01/30/14 | REV. NO. 00 | ENV003 | BASIC PANEL AND ACCESSORIES
CONTAINS: PR ROOF – WALLS: PR, RPR, VR

1. STANDARD ERECTION DETAILS (SED) SUPERSEDE SIMILAR DETAILS FOUND IN THE ERECTION GUIDES. REFER TO THE ERECTION GUIDES FOR OTHER DETAILS, INSTALLATION PROCEDURES AND ACCESSORIES NOT DESCRIBED IN THE SED'S.
2. ALL PANEL AND TRIM SURFACES MUST BE FREE OF DIRT AND OIL AT MASTIC AND SEALANT LOCATIONS.

REV. DATE: 07/01/09 | REV. NO. 00 | RC00A1 | NOTES

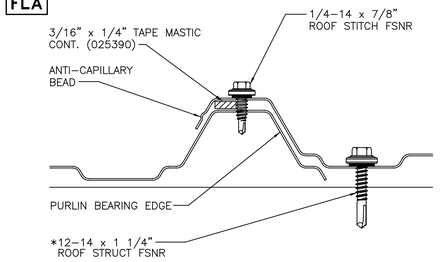
FLA



DETAILS QUALIFY FOR AIR INFILTRATION/WATER PENETRATION RATED ASSEMBLIES.

REV. DATE: 06/26/19 | REV. NO. 04 | RC02B1 | PANEL RIB ROOF–STANDARD
PANEL ENDLAP

FLA

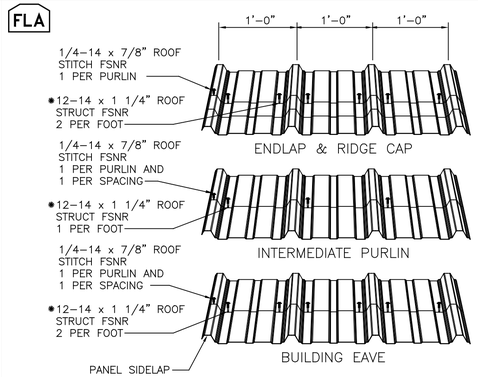


SEE RC04B1 FOR STD FASTENER PATTERN
SEE RC04B3 FOR UL90 FASTENER PATTERN
SEE RC04B2 FOR ICE DAMMING FASTENER PATTERN
SEE RC04B4 FOR UL90/ICE DAMMING FASTENER PATTERN

DETAILS QUALIFY FOR AIR INFILTRATION/WATER PENETRATION RATED ASSEMBLIES.

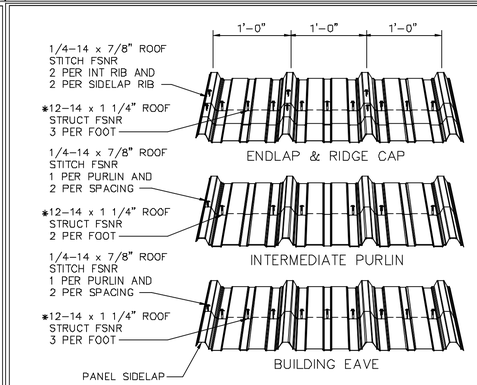
REV. DATE: 06/26/19 | REV. NO. 05 | RC03B1 | PANEL RIB ROOF–STANDARD
PANEL SIDELAP

FLA



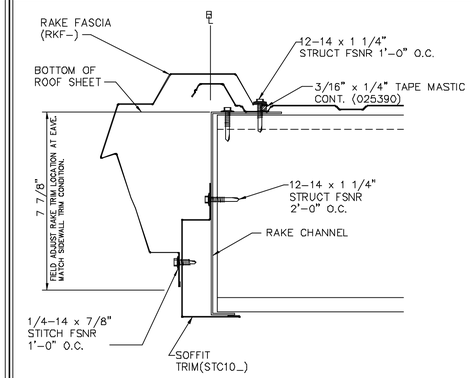
*USE 12-14 x 1 1/2" FASTENER WHEN BLANKET INSULATION THICKNESS IS GREATER THAN 4"

REV. DATE: 09/10/20 | REV. NO. 02 | RC04B1 | PANEL RIB ROOF FSNR PATTERNS
STANDARD



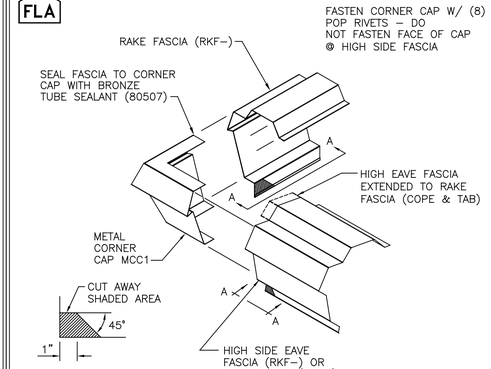
*USE 12-14 x 1 1/2" FASTENER WHEN BLANKET INSULATION THICKNESS IS GREATER THAN 4"

REV. DATE: 11/13/13 | REV. NO. 01 | RC04B3 | PANEL RIB ROOF FSNR PATTERN
U.L. 90 RATED



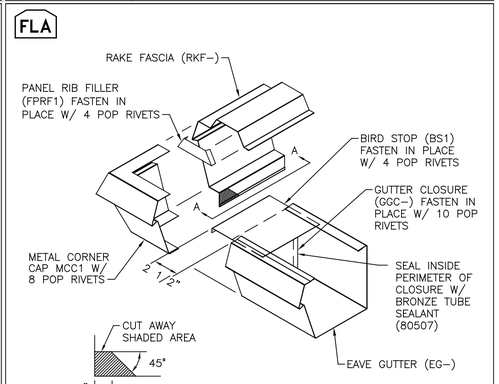
REV. DATE: 04/02/13 | REV. NO. 00 | RC30BQ | PANEL RIB ROOF RAKE
OPEN WALL

FLA

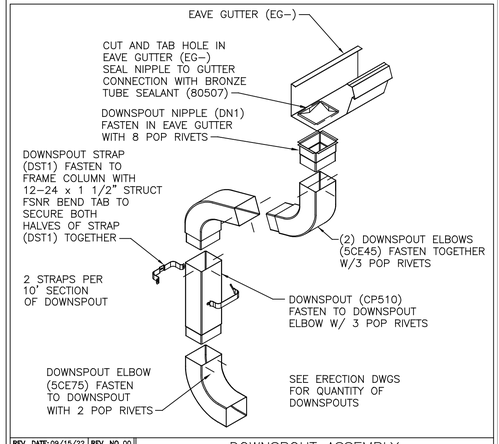


REV. DATE: 06/26/19 | REV. NO. 05 | RC38AJ | HIGH EAVE CORNER ASSEMBLY
ALL WALL SYSTEMS (SSR, PANEL RIB ROOFS)

FLA

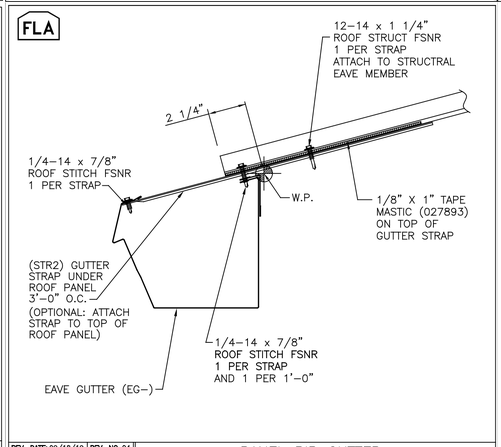


REV. DATE: 06/26/19 | REV. NO. 04 | RC38N1 | EAVE GUTTER CORNER ASSEMBLY
ALL SYSTEMS



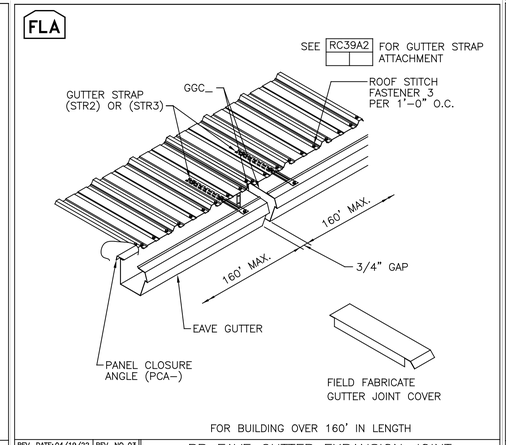
REV. DATE: 09/15/22 | REV. NO. 00 | RC38R2 | DOWNSPOUT ASSEMBLY
ALL SYSTEM (OPEN WALLS)

FLA



REV. DATE: 09/18/19 | REV. NO. 04 | RC39A2 | PANEL RIB GUTTER
STRAP ATTACHMENT

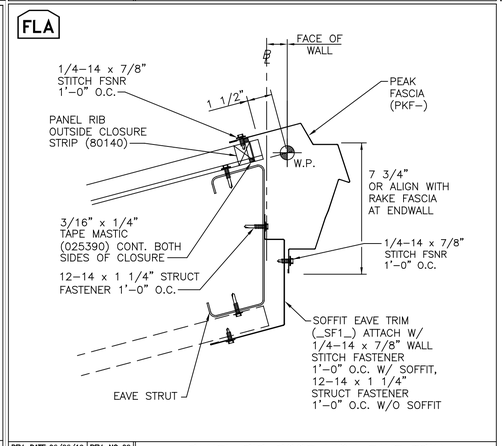
FLA



FOR BUILDING OVER 160' IN LENGTH

REV. DATE: 04/19/22 | REV. NO. 03 | RC61B6 | PR EAVE GUTTER EXPANSION JOINT
FOR BUILDING OVER 160' IN LENGTH

FLA



REV. DATE: 06/26/19 | REV. NO. 02 | RCV018 | PANEL RIB ROOF HIGH EAVE TRIM
AT OPEN WALL OR RAKE EXT. AT WALL

This document has been electronically signed and sealed by W. Jason Clymer, PE using my Digital Signature with PE seal affixed. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copy.

NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER
02/13/2024

PERMIT SET- For Building Dept. Approval

THE VP ENGINEER'S SEAL APPLIES ONLY TO THE WORK PRODUCT OF VP AND DESIGN AND PERFORMANCE REQUIREMENTS SPECIFIED BY VP. THE VP ENGINEER'S SEAL DOES NOT APPLY TO THE PERFORMANCE OR DESIGN OF ANY OTHER PRODUCT OR COMPONENT FURNISHED BY VP EXCEPT TO ANY DESIGN OR PERFORMANCE REQUIREMENTS SPECIFIED BY VP.

THE GENERAL CONTRACTOR AND/OR ERECTOR IS SOLELY RESPONSIBLE FOR ACCURATE GOOD QUALITY WORKMANSHIP IN ERECTING THIS BUILDING IN ACCORDANCE WITH THIS DRAWING, DETAILS REFERENCED IN THIS DRAWING, ALL APPLICABLE VP BUILDINGS ERECTION GUIDES, AND INDUSTRY STANDARDS PERTAINING TO PROPER ERECTION, INCLUDING THE CORRECT USE OF TEMPORARY BRACING.

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 SEDSheet 15:39:09

D

VP Buildings
3200 Players Club Circle Memphis TN 38125

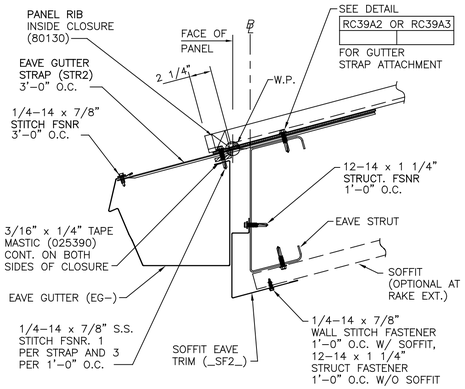
COVERING & TRIM SED'S (a)

BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

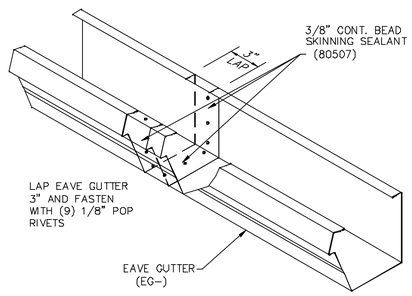
VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO 23-015996-01
DATE 02/13/2024
DRAWN/CHECK MB WJC
PAGE 28

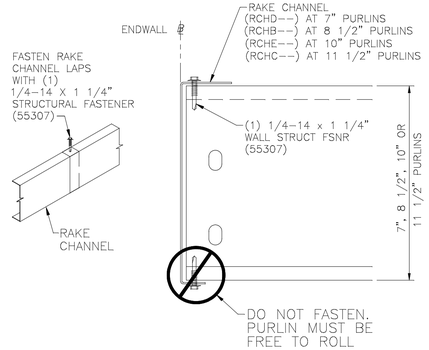
FLA



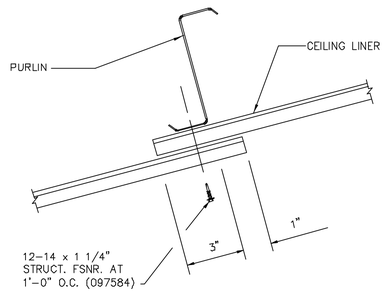
REV. DATE: 04/19/22	REV. NO. 02	PANEL RIB ROOF W/ EAVE GUTTER AT OPEN WALL OR RAKE EXT. AT WALL
RCV047		



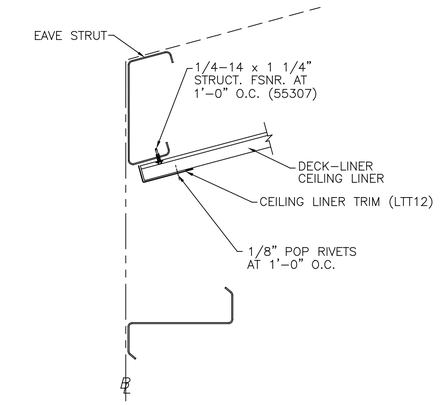
REV. DATE: 03/03/15	REV. NO. 00	TRIM SPLICES EAVE GUTTER SPLICE
RCV324		



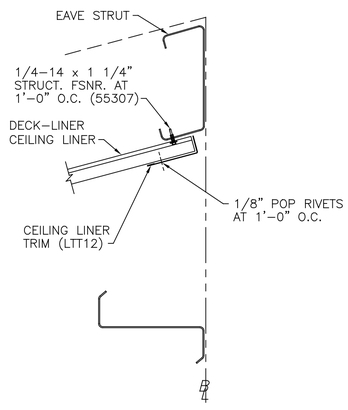
REV. DATE: 08/17/23	REV. NO. 01	PR ROOF RAKE CHANNEL TO PURLIN ALL PURLIN DEPTHS (ALL WALL PANEL)
RS10R1		



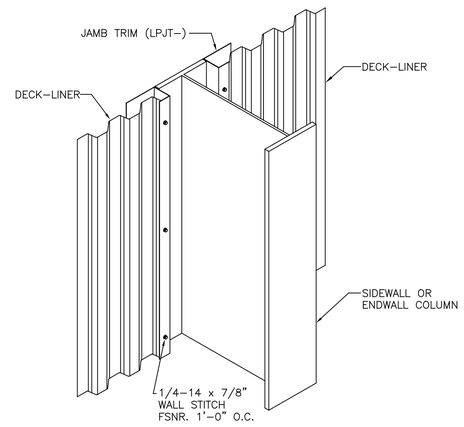
REV. DATE: 04/09/15	REV. NO. 02	CEILING LINER PANEL LAP
WC61ED		



REV. DATE: 06/24/22	REV. NO. 01	LINER PANEL ATTACHMENT LOW EAVE CEILING LINER
WCV024		



REV. DATE: 06/24/22	REV. NO. 01	LINER PANEL ATTACHMENT HIGH EAVE CEILING LINER
WCV027		



REV. DATE: 10/28/19	REV. NO. 00	DECK-LINER PANEL ATTACHMENT TRIM AT COLUMN; OUTSET WALL
WLV015		

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NORTH CAROLINA PROFESSIONAL SEAL 040258 ENGINEER JASON CLYMER

02/13/2024

PERMIT SET- For Building Dept. Approval

D

VP Buildings
3200 Players Club Circle Memphis TN 38125

REV	DATE	BY	DESCRIPTION

NTS

2/12/2024 SEDSheet 15:39:10

COVERING & TRIM SED'S (b)

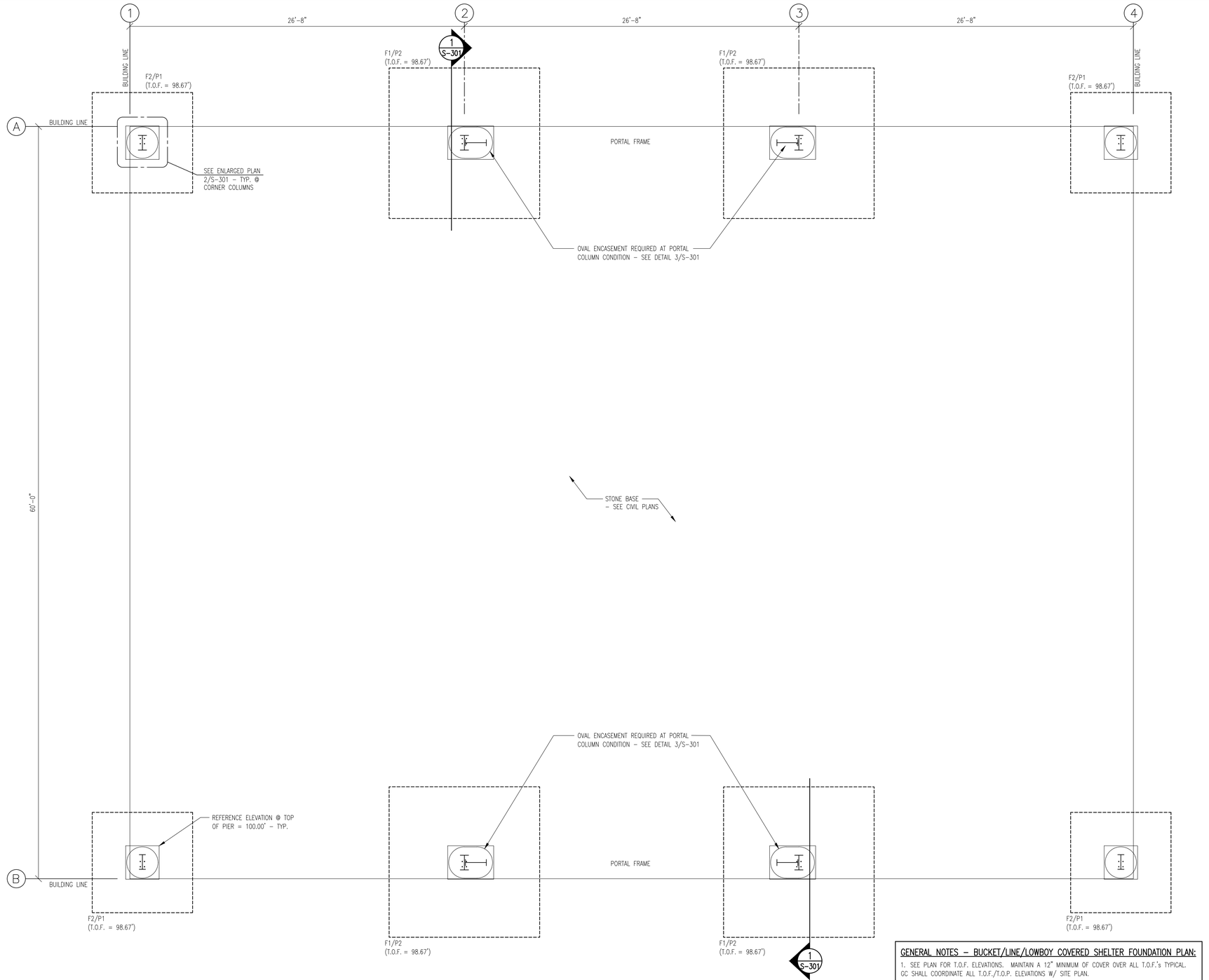
BUILDER	Lemartec Corporation
CUSTOMER	Duke Energy
LOCATION	Dunn, North Carolina
PROJECT	Duke Energy Dunn Operations Center - 60x80
BUILDERS PO#	23068 - 60x80
FILENAME:	Duke Energy - Bucket-Line-Lowboy Covered Shelters

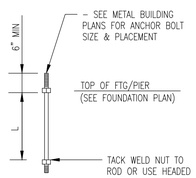
VP BUILDINGS
VARCO PRUDEN
A BlueScope Steel Company
VPC VERSION: 2023.4a

JOBNO	23-015996-01
DATE	02/13/2024
DRAWN/CHECK	MB WJC
PAGE	29

STRUCTURAL ABBREVIATIONS

@ = AT
A.B. = ANCHOR BOLTS
ABC = AGGREGATE BASE COARSE
A.E.F.F.E. = ABOVE EXISTING FINISHED FLOOR ELEVATION
A.F.F.E. = ABOVE FINISHED FLOOR ELEVATION
A.R.F.F.E. = ABOVE REFERENCED FINISHED FLOOR ELEVATION
ALT. = ALTERNATE
ARCH. = ARCHITECTURAL
B.F.F.E. = BELOW FINISHED FLOOR ELEVATION
B.M.B.M. = BY METAL BUILDING MANUFACTURE
B.R.F.F.E. = BELOW REFERENCED FINISHED FLOOR ELEVATION
BLDG. = BUILDING
BOT. = BOTTOM
B.O.W. = BOTTOM OF WALL
BRG. = BEARING
C.J. = CONSTRUCTION/CONTROL JOINT
CL = CENTER LINE
CLR. = CLEAR
CMU = CONCRETE MASONRY UNIT
COL. = COLUMN
CONC.= CONCRETE
CONN. = CONNECTION
CONST. = CONSTRUCTION
CONT. = CONTINUOUS
COOR. = COORDINATE
DET. = DETAIL
DIA. = DIAMETER
DIM. = DIMENSION
DWGS. = DRAWINGS
DWL. = DOWEL
E.A. = EACH
E.F.F.E. = EXISTING FINISHED FLOOR ELEVATION
E.J. = EXPANSION JOINT
ELEV. = ELEVATION
E.W. = EACH WAY
EXP. = EXPANSION
EXIST. = EXISTING
EXT. = EXTENSION
FLR. = FLOOR
FD = FLOOR DRAIN
FND. = FOUNDATION
FP = FULL PENETRATION
FTG. = FOOTING
HK. = HOOK
HORIZ. = HORIZONTAL
HSS = HOLLOW STRUCTURAL SECTION (TUBE OR PIPE)
INT. = INTERIOR
JT. = JOINT
K = KIP (1000 lbs)
LLH = LONG LEG HORIZONTAL
LLV = LONG LEG VERTICAL
MANUF. = MANUFACTURER
MAS. = MASONRY
MAX. = MAXIMUM
MECH. = MECHANICAL
MIN. = MINIMUM
NOM. = NOMINAL
O.C. = ON CENTER SPACING
OPNG. = OPENING
PC. = PRECAST
PL. = PLATE
REINF. = REINFORCEMENT
REQD. = REQUIRED
R.F.F.E. = REFERENCED FINISHED FLOOR ELEVATION
SC. = SLIP CRITICAL
SCHD. = SCHEDULE
SECT. = SECTION
T&B = TOP AND BOTTOM
T.O.F. = TOP OF FOOTING
T.O.P. = TOP OF PIER
T.O.S. = TOP OF STEEL
T.O.W. = TOP OF WALL
TYP. = TYPICAL
U.N.O. = UNLESS NOTED OTHERWISE
VERT. = VERTICAL
W = WIDE FLANGE MEMBER
W/ = WITH
WWF = WELDED WIRE FABRIC
* = COORD. WITH SITE PLAN





L=12" - FOR 1"ø ANCHOR BOLTS
F1554 GRADE 55 - SEE METAL BUILDING DRAWINGS FOR SIZE AND QUANTITY - MIN. OF 4 PER COL. (¾" MIN. ø)

SECTION NO.		SCALE
TYPICAL	ANCHOR BOLT DETAIL	NO SCALE

FOUNDATION SCHEDULE

MARK	SIZE	REINFORCEMENT
F1	12'-0"x12'-0"x3'-0"	24-#6 BARS E.W. BOT. & 9-#4 BARS E.W. TOP
F2	8'-0"x8'-0"x3'-0"	15-#6 BARS E.W. BOT. & 6-#4 BARS E.W. TOP

f'c = 3500psi

BUCKET/LINE/LOWBOY COVERED SHELTER FOUNDATION PLAN

SCALE: ¼" = 1'-0"

GENERAL NOTES - BUCKET/LINE/LOWBOY COVERED SHELTER FOUNDATION PLAN:

1. SEE PLAN FOR T.O.F. ELEVATIONS. MAINTAIN A 12" MINIMUM OF COVER OVER ALL T.O.F.'s TYPICAL. GC SHALL COORDINATE ALL T.O.F./T.O.P. ELEVATIONS W/ SITE PLAN.

2. GC SHOULD AVOID LEAVING OPEN TRENCH EXCAVATIONS FOR THE FOOTINGS FOR LONG PERIODS WHEN INCLEMENT WEATHER IS ANTICIPATED. IN GENERAL ALL EXCAVATIONS MADE SHOULD BE POURED ON THE DAY OF THE EXCAVATION IF INCLEMENT WEATHER IS EXPECTED.

3. CONTRACTOR SHALL COORDINATE FOR LOCAL INSPECTING AUTHORITY TO REVIEW AND APPROVE ALL FOOTING TRENCHES PRIOR TO THE PLACEMENT OF ANY FOOTING CONCRETE. IF FOOTINGS FAIL INSPECTION CONTRACTOR SHALL CONTACT THE ENGINEER FOR RECOMMENDATIONS.

6. FOUNDATION DESIGN BASED ON A SOIL BEARING PRESSURE OF 2500 PSF. SEE S&ME PROJECT NO. 22050344 FOR GEOTECHNICAL INFORMATION. ANY AREAS DETERMINED NOT TO PROVIDE THIS STATED SOIL BEARING PRESSURE SHALL BE BROUGHT TO THE ENGINEERS ATTENTION.

7. FOUNDATION DESIGN BASED ON VARCO PRUDEN PRE-ENGINEERED METAL BUILDING DRAWINGS DATED 2-13-2024. IF REVISIONS ARE MADE TO THE REFERENCED PRE-ENGINEERED METAL BUILDING DRAWINGS, CONTACT ENGINEER FOR FOUNDATION DESIGN REVIEW.

MOOREFIELD ENGINEERING, PC
MEPC
STRUCTURAL ENGINEERS
University Commercial Center
7990 North Point Blvd., Suite 209
Winston-Salem, NC 27106
T: 336-593-9623
F: 336-593-3912
email: office@mepc-consultants.com
www.mepc-consultants.com

SEAL:

REVISIONS

PROGRESS REVIEW #1:	9-17-24
PROGRESS REVIEW #2:	
PROGRESS REVIEW #3:	
ISSUE FOR CONST.:	9-18-24
REVISION #1:	
REVISION #2:	
REVISION #3:	
REVISION #4:	

Elemartec
a MasTec company

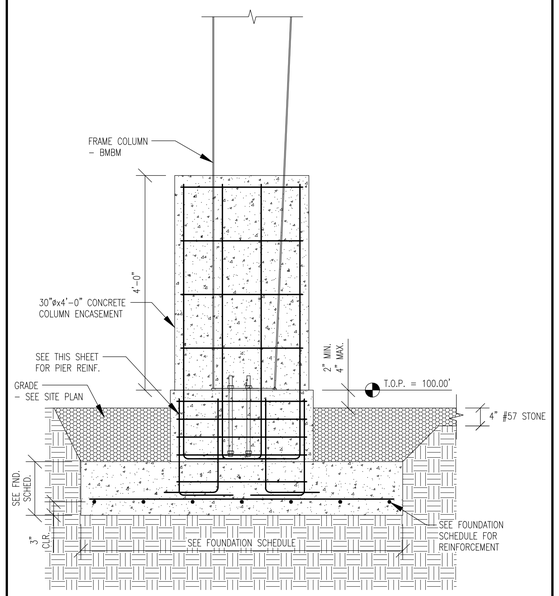
PROJECT NAME:
DUKE ENERGY
NEW BUCKET/LINE/LOWBOY
COVERED SHELTER
1269 JONESBORO RD
DUNN, NORTH CAROLINA

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

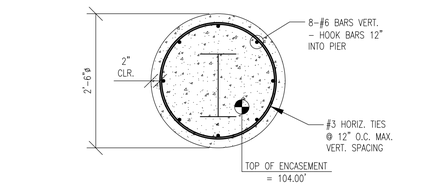
FOUNDATION PLAN

MEPC PROJECT NO.:	115-24
DATE:	9-18-24
DESIGN BY:	JWM/PCC
DRAWN BY:	JBL
CHECKED BY:	JWM

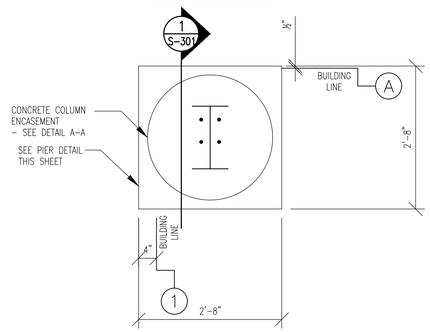
S-101



SECTION NO.			SCALE
1	S-301	SECTION	¾" = 1'-0"

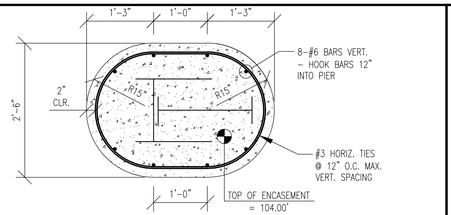


DETAIL A–A

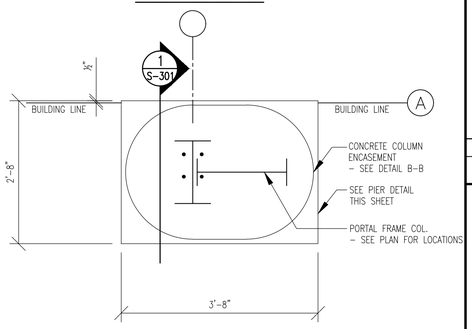


NOTE: THIS CONDITION APPLIES TO GRID LINES 1/A. SIMILAR CONDITIONS OCCUR @ GIRD LINES 4/A, 1/B, & 4/B.

SECTION NO.			SCALE
2	S-301	ENLARGED PLAN	¾" = 1'-0"



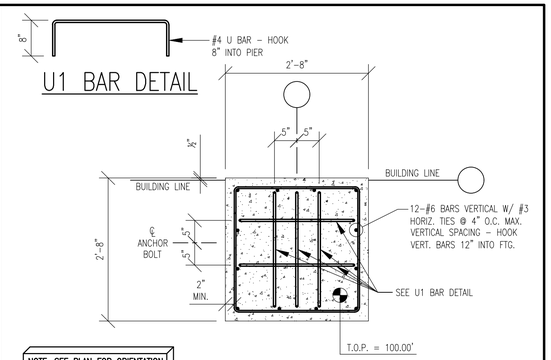
DETAIL B–B



NOTE: THIS CONDITION APPLIES TO GRID LINES 2/A. SIMILAR CONDITIONS OCCUR @ GIRD LINES 3/A, 2/B, & 3/B.

SECTION NO.			SCALE
3	S-301	ENLARGED PLAN	¾" = 1'-0"

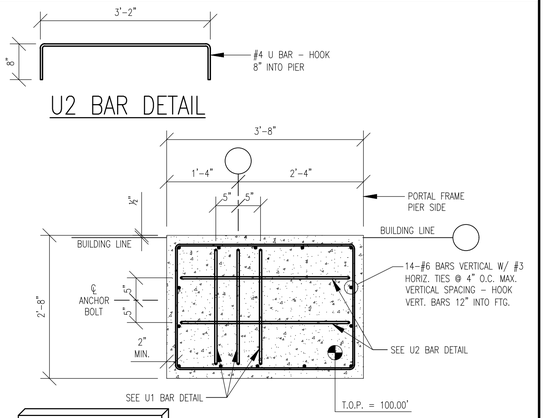
U1 BAR DETAIL



NOTE: SEE PLAN FOR ORIENTATION

SECTION NO.		SCALE
TYPICAL	P1 – PIER DETAIL	NO SCALE

U2 BAR DETAIL



NOTE: SEE PLAN FOR ORIENTATION

SECTION NO.		SCALE
TYPICAL	P2 – PIER DETAIL	NO SCALE

SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

I. GENERAL

A. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCES.

B. THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE. APPLICATIONS OF CONSTRUCTION LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE. DURING ERECTION AND UNTIL ALL PERMANENT ARE MADE, THE CONTRACTOR MUST PROVIDE TEMPORARY BRACING FOR THE STRUCTURE IN ALL DIRECTIONS.

C. THE GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND GRADE CONDITIONS (BOTH NEW AND EXISTING), REPORTING ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH ANY PHASE OF THE WORK.

D. DO NOT SCALE DIMENSIONS FROM DRAWINGS. THE CONTRACTOR SHALL REQUEST, FROM THE ENGINEER, NECESSARY DIMENSIONS SHOWN ON THE DRAWINGS.

E. WHERE ANY DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, STRUCTURAL GENERAL NOTES, AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.

II. CODES, SPECIFICATIONS AND STANDARDS

A. APPLICABLE BUILDING CODE: THE CONTRACT DOCUMENTS ARE BASED ON THE REQUIREMENTS OF THE:
1. 2018 NORTH CAROLINA BUILDING CODE
2. BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318–14)
3. 2010 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (ANSI/AISC 360–10)

III. DESIGN LOADS (NCBC 2018):
A. FLOOR LIVE LOAD: SECTION 1607.10
1. SLAB ON GRADE = N/A PSF
B. ROOF LIVE LOAD: SECTION 1607.12
1. ROOF = 20 PSF
C. ROOF SNOW LOAD DATA: SECTION 1608
1. FLAT ROOF SNOW LOAD, P_f = 7.56 PSF
2. SNOW EXPOSURE FACTOR, C_e = 0.9
3. SNOW IMPORTANCE FACTOR, I_s = 1.0
4. ROOF THERMAL FACTOR, C_t = 1.2
D. WIND DESIGN DATA: SECTION 1609
1. ULTIMATE DESIGN WIND SPEED, V_{ult} = 119 MPH
2. RISK CATEGORY = II
3. WIND EXPOSURE CATEGORY = C
4. COMPONENTS & CLADDING DESIGN PRESSURES (ULTIMATE):
a. ROOF INTERIOR ZONES = 31 PSF
b. ROOF EDGE ZONES = 37 PSF
c. ROOF CORNER ZONES = 50 PSF
d. WALL INTERIOR ZONES = 28 PSF
e. WALL EDGE ZONES = 35 PSF
E. EARTHQUAKE DESIGN DATA: SECTION 1613
1. RISK CATEGORY = II
2. SEISMIC IMPORTANCE FACTOR, I_e = 1.0
3. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS:
a. SHORT PERIOD, S_s = 0.179
b. 1 SECOND PERIOD, S_1 = 0.084
4. SITE CLASS = D
5. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS:
a. SHORT PERIOD, S_{DS} = 0.1909
b. 1 SECOND PERIOD, S_{D1} = 0.135
6. SEISMIC DESIGN CATEGORY = C
7. BASIC SEISMIC FORCE–RESISTING SYSTEM: STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
8. DESIGN BASE SHEAR
a. V_x = X
b. V_y = X
9. SEISMIC RESPONSE COEFFICIENT, CS = 0.064
10. RESPONSE MODIFICATION COEFFICIENT, R = 3.0
11. ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE (1613)

IV. SUBMITTALS

A. SHOP DRAWINGS AND SUBMITTALS SHALL BE SUBMITTED TO THE ENGINEER BEFORE BEGINNING CONSTRUCTION.
B. CLEARLY SPECIFY AND DEVIATIONS FROM THE CONTRACT DOCUMENTS ON ALL SUBMITTALS.
C. THE CONTRACTOR SHALL REVIEW EACH SUBMITTAL BEFORE SUBMITTING TO THE ENGINEER.
D. THE FOLLOWING SUBMITTALS ARE RECOMMENDED FOR THIS PROJECT:
1. CAST–IN–PLACE CONCRETE
a. COMPLY WITH SUBMITTAL REQUIREMENTS IN ACI 301/318
b. PRODUCT DATA
c. DESIGN MIXTURES (HISTORICAL DATA OR TRIAL BATCH)
d. REBAR SHOP DRAWING
e. SHOP DRAWINGS FOR THE DESIGN, ERECTION, AND REMOVAL OF FORMWORK, SHORES, AND RESHORES APPROVED BY A QUALIFIED PROFESSIONAL ENGINEER WHO APPROVED THE SHOP DRAWINGS.

DIVISION 2 – FOUNDATIONS

I. GEOTECHNICAL REPORT – FOUNDATION DESIGN IS BASED ON A PRESUMPTIVE SOIL BEARING PRESSURE OF 2000 PSF (TO BE VERIFIED BY THE GENERAL CONTRACTOR AT THE TIME OF CONSTRUCTION).

II. SOIL EXCAVATION AND REPLACEMENT
A. REMOVE ALL LOOSE FILL MATERIAL WITH DEBRIS EXTENDING 5 FOOT BEYOND BUILDING FOOTPRINT TO THE MORE CONSOLIDATED MATERIAL AS APPROVED BY THE GEOTECHNICAL ENGINEER. REPLACE WITH SELECT FILL MATERIAL IN 8" TO 10" LOOSE LIFTS AS DIRECTED BY GEOTECHNICAL ENGINEER. COMPACT SELECT FILL MATERIAL TO 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY ACCORDING TO ASTM D 698.

B. REVIEW SOIL REPORT BORING HOLES FOR INITIAL ESTIMATES OF EXCAVATION DEPTHS. THE GEOTECHNICAL ENGINEER SHALL APPROVE FINAL EXCAVATIONS OF FOOTING AND DRILLED PIER BEARING STRATA.

III. SPREAD FOOTINGS
A. FOOTING EXCAVATION – FOOTINGS SHALL BE NEAT EXCAVATED WHERE POSSIBLE WITH SIDES AND TOP EDGES FREE OF LOOSE OR WET MATERIALS. WHERE NEAT EXCAVATION IS NOT POSSIBLE, FOOTINGS EXCAVATION SHALL BE OPEN CUT WITH EDGES FORMED AND BRACED. ALL FOOTINGS WITH FORMED EDGES SHALL BE BACKFILLED WITH LEAN CONCRETE, CEMENT STABILIZED SAND OR SELECT FILL MATERIAL PLACED IN 8" LIFTS AND COMPACTED TO 95% OF MODIFIED STANDARD PROCTOR MAXIMUM DENSITY OF EACH LIFT. THE BOTTOM EXCAVATION SHALL BE CLEAN AND DRY WITH ALL LOOSE MATERIAL REMOVED FOR AN ESSENTIALLY FLAT BEARING SURFACE. EXCAVATIONS SHALL NOT BE LEFT OVERNIGHT UNLESS A 2" UNREINFORCED SEAL (MUD) SLAB IS PLACED AT THE BOTTOM OF THE FOOTING EXCAVATION.

DIVISION 3

I. CAST–IN–PLACE CONCRETE

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. SUBMIT CONCRETE MIX DESIGNS.

B. COMPLY WITH ASTM C 94; ACI 301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"; ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"; AND CRSI'S "MANUAL OF STANDARD PRACTICE."

PART 2 – PRODUCTS

2.1 MATERIALS

A. DEFORMED REINFORCING BARS: ASTM A 615, GRADE 60.

B. WELDED STEEL WIRE FABRIC: ASTM A 185, FLAT SHEETS, NOT ROLLS.

C. PORTLAND CEMENT: ASTM C 150, TYPE 1.

D. FLY ASH: ASTM C 618, TYPE F.

E. AGGREGATES: ASTM C 33, CLASS 4S.

F. FIBER REINFORCEMENT: NOT ALLOWED

G. AIR–ENTRAINING ADMIXTURE: ASTM C 260.

H. CHEMICAL ADMIXTURES: ASTM C 494, WATER REDUCING.

I. WATER STOPS: FLAT DUMBBELL OR CENTER–BULB TYPE, OF EITHER RUBBER (CRD C 513) OR PVC (CRD C 572).

2.2 MIXES

A. PROPORTION NORMAL–WEIGHT CONCRETE MIXES TO PROVIDE THE FOLLOWING PROPERTIES:

1. COMPRESSIVE STRENGTH: 3500 PSI (24.13 MPA) AT 28 DAYS.
2. SLUMP LIMIT: 4 INCHES (100 MM) AT POINT OF PLACEMENT.
3. WATER–CEMENT RATIO: 0.50 MAXIMUM AT POINT OF PLACEMENT.
4. AIR CONTENT: 5.5 TO 7.0 PERCENT FOR CONCRETE EXPOSED TO FREEZING AND THAWING, 2 TO 4 PERCENT ELSEWHERE.

PART 3 – EXECUTION

3.1 CONCRETING

A. CONSTRUCT FORMWORK AND MAINTAIN TOLERANCES AND SURFACE IRREGULARITIES WITHIN ACI 117 LIMITS OF CLASS A FOR CONCRETE EXPOSED TO VIEW AND CLASS C FOR OTHER CONCRETE SURFACES.

B. SET WATER STOPS WHERE INDICATED TO ENSURE JOINT WATERTIGHTNESS.

C. PLACE VAPOR RETARDER ON PREPARED SUBGRADE, WITH JOINTS LAPPED 6 INCHES (150 MM) AND SEALED.

D. ACCURATELY POSITION, SUPPORT, AND SECURE REINFORCEMENT.

E. INSTALL CONSTRUCTION, ISOLATION, AND CONTROL JOINTS.

F. PLACE CONCRETE IN A CONTINUOUS OPERATION AND CONSOLIDATE USING MECHANICAL VIBRATING EQUIPMENT.

G. PROTECT CONCRETE FROM PHYSICAL DAMAGE OR REDUCED STRENGTH DUE TO WEATHER EXTREMES DURING MIXING, PLACING, AND CURING.

H. FORMED SURFACE FINISH: SMOOTH–FORMED FINISH FOR CONCRETE EXPOSED TO VIEW, COATED, OR COVERED BY WATERPROOFING OR OTHER DIRECT–APPLIED MATERIAL; ROUGH–FORMED FINISH ELSEWHERE.

I. UNFORMED SLAB FINISHES: SCRATCH FINISH FOR SURFACES TO RECEIVE MORTAR SETTING BEDS FLOAT FINISH SURFACES FOR INTERIOR STEPS AND RAMPS AND SURFACES TO RECEIVE WATERPROOFING, ROOFING, OR OTHER DIRECT–APPLIED MATERIAL TROWELED FINISH FOR FOOR SURFACES AND FLOORS TO RECEIVE FLOOR COVERINGS, PAINT, OR OTHER THIN FILM–FINISH COATINGS TROWEL AND FINE BROOM FINISH FOR SURFACES TO RECEIVE THIN–SET TILE NONSLIP BROOM FINISH TO EXTERIOR CONCRETE PLATFORMS, STEPS, AND RAMPS.

J. CURE FORMED SURFACES BY MOIST CURING UNTIL FORMS ARE REMOVED.

K. BEGIN CURING UNFORMED CONCRETE AFTER FINISHING. APPLY MEMBRANE–FORMING CURING COMPOUND TO CONCRETE.

L. PROTECT CONCRETE FROM DAMAGE. REPAIR SURFACE DEFECTS IN CONCRETE.

MOOREFIELD ENGINEERING, PC
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STRUCTURAL ENGINEERS
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7990 North Point Blvd., Suite 209
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email: office@mepc–consultants.com
www.mepc–consultants.com

SEAL:

REVISIONS

PROGRESS REVIEW #1:	9–17–24
PROGRESS REVIEW #2:	
PROGRESS REVIEW #3:	
ISSUE FOR CONST.:	9–18–24
REVISION #1:	
REVISION #2:	
REVISION #3:	
REVISION #4:	

Elemartec
a MasTec company

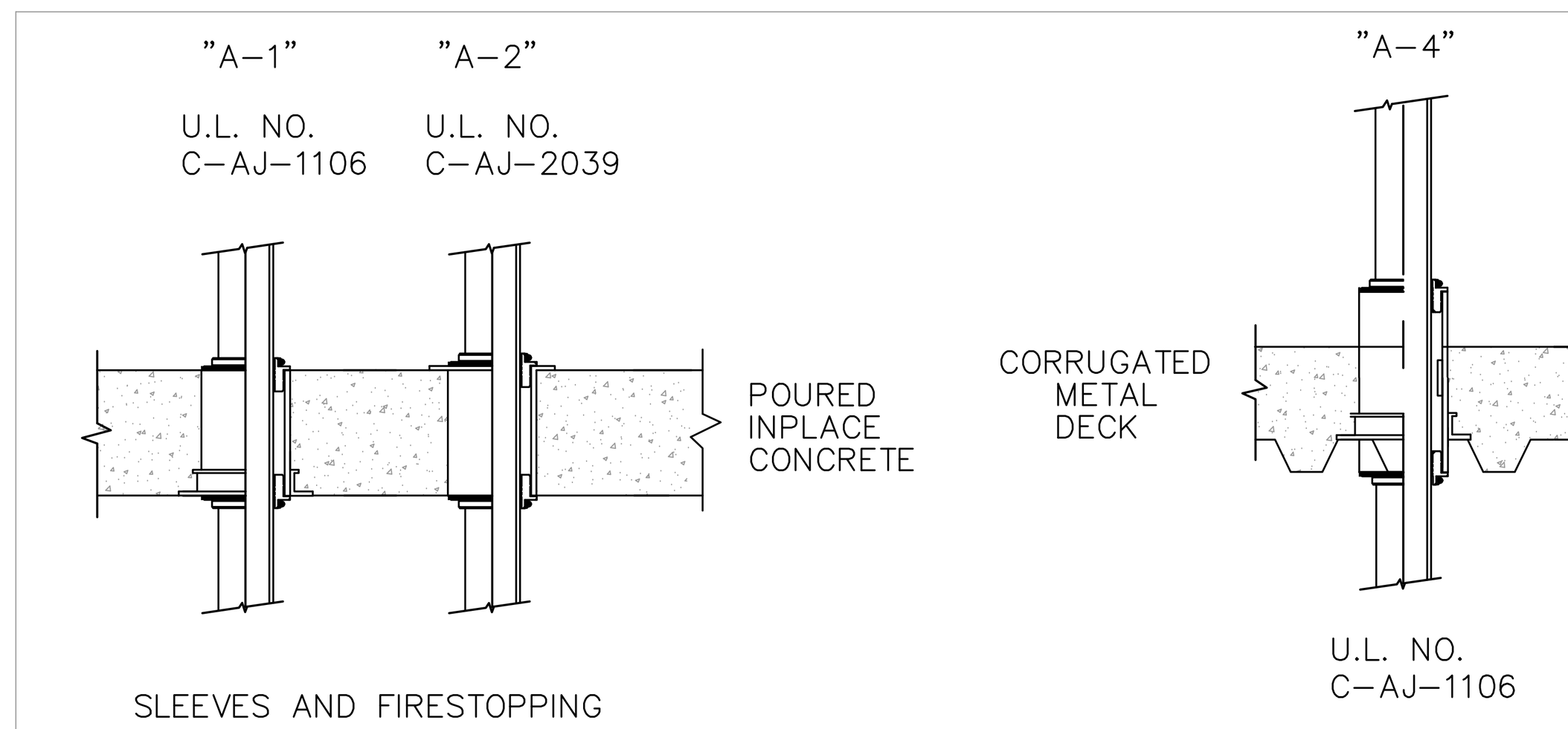
PROJECT NAME:
DUKE ENERGY
NEW BUCKET/LINE/LOWBOY
COVERED SHELTER
1269 JONESBORO RD
DUNN, NORTH CAROLINA

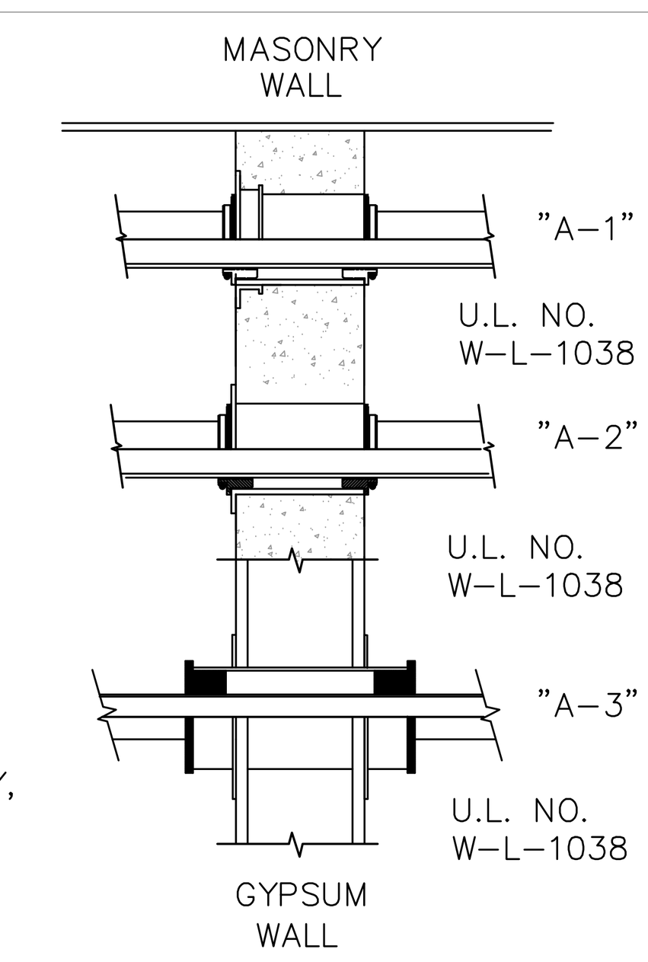
SCALE: 3/4" = 1'-0"

SECTIONS, DETAILS & SPECIFICATIONS

MEPC PROJECT NO.:	115-24
DATE:	9-18-24
DESIGN BY:	JWM/PCC
DRAWN BY:	JBL
CHECKED BY:	JWM

S-301





SLEEVES AND FIRESTOPPING

USE PROSET "FIRESTOP PENETRATORS". U.L. CLASSIFIED IN THE BUILDING MATERIALS DIRECTORY, TESTED BY ASTM E-814. USE FOR ALL APPLICABLE PIPE PENETRATIONS THROUGH FIRE RATED FLOORS, WALLS OR FLOOR/CEILING ASSEMBLIES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

A. SYSTEM "A" PENETRATORS FOR WATER LINES, HEATING AND COOLING LINES, FIRE STANDPIPE AND SPRINKLER LINES, TEMPERATURE CONTROL, ACID WASTE GLASS PIPE AND ELECTRIC AND COMMUNICATION CONDUIT PENETRATING FLOORS OR WALLS.

1. CAST-IN-COUPLING PENETRATORS FOR POURED-IN-PLACE CONCRETE ON STEEL OR WOOD FORMS IN FLOORS OR WALLS.
2. CORED HOLE COUPLING PENETRATORS FOR CORED HOLES THROUGH PRECAST OR EXISTING CONCRETE IN FLOORS OR WALLS.
3. SPLIT WALL SLEEVE PENETRATORS FOR PIPES PASSING THROUGH GYPSUM WALLS OR FLOOR / CEILING ASSEMBLIES.
4. SLIP FLANGE CM COUPLING FOR POURED-IN-PLACE CONCRETE ON CORRUGATED METAL DECK.

FIRESTOP PENETRATOR DETAILS

WELDSHOP ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance
Prescriptive __X__ Performance ______ Energy Cost Budget ________

Provide a standard riser diagram which indicates designated points for check metering. Provide a standard panel schedule description which idenifies different enduse loads.

Standard riser diagram is on Sheet – E-004
Standard panel schedules are on – E-004

Lighting Schedule

lamp type required in fixture	N/A
number of lamps in fixture	N/A
ballast type used in the fixture	N/A
number of ballasts in fixture	N/A
total wattage per fixture	N/A

total interior wattage specified vs. allowed
Workshop Occupancy: gross area of 841.00 sq. ft.
Per 2018 North Carolina Energy Code:

	Allowable	Specified
WORKSHOP	(0.91 X 841.00 SQFT) = 765.31 WATTS	410 WATTS

total exterior wattage specified vs. allowed
N/A

Equipment schedules with motors (not used for mechanical systems)

motor horsepower	NONE
number of phases	N/A
minimum efficiency	N/A
motor type	N/A
# of poles	N/A

ELECTRICAL DESIGNER STATEMENT
I hereby certify that the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2018 North Carolina Energy Code.

signed *Elle Barile* date 2/12/2025

Name Elle Barile

Title Project Engineer

SHED ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance
Prescriptive __X__ Performance ______ Energy Cost Budget ________

Provide a standard riser diagram which indicates designated points for check metering. Provide a standard panel schedule description which idenifies different enduse loads.

Standard riser diagram is on Sheet – E-004
Standard panel schedules are on – E-004

Lighting Schedule

lamp type required in fixture	N/A
number of lamps in fixture	N/A
ballast type used in the fixture	N/A
number of ballasts in fixture	N/A
total wattage per fixture	N/A

total interior wattage specified vs. allowed
Warehouse Occupancy: gross area of 3,995.41 sq. ft.
Per 2018 North Carolina Energy Code:

	Allowable	Specified
WAREHOUSE	(0.45 X 3995.41 SQFT) = 1797.93 WATTS	1764.00 WATTS

total exterior wattage specified vs. allowed

ZONE 3 = 500 WATTS	360 WATTS

Equipment schedules with motors (not used for mechanical systems)

motor horsepower	NONE
number of phases	N/A
minimum efficiency	N/A
motor type	N/A
# of poles	N/A

ELECTRICAL DESIGNER STATEMENT
I hereby certify that the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2018 North Carolina Energy Code.

signed *Elle Barile* date 2/12/2025

Name Elle Barile

Title Project Engineer

ELECTRICAL GENERAL NOTES

1. ALL WORK THIS DIVISION SHALL COMPLY WITH ALL LOCAL BUILDING CODES, LAWS, REGULATIONS, ORDINANCES, AND THE REQUIREMENTS OF THE 2023 NATIONAL ELECTRICAL CODE. ALL WORK SHALL COMPLY WITH BASE BUILDING SPECIFICATIONS. OBTAIN A COPY OF SPECIFICATIONS FROM BUILDING MANAGER IF NECESSARY.
2. THE CONTRACTOR SHALL KEEP A RECORD OF THE CHANGES WHICH ARE IN CONFLICT WITH THESE DRAWINGS AND SPECIFICATIONS. AT THE COMPLETION OF HIS WORK HE SHALL SUBMIT "AS BUILT" PRINTS TO THE OWNER.
3. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING AND DETAIL. ALL WORK SHALL BE INSTALLED SO THAT JUNCTION BOXES AND COMPONENTS WILL BE ACCESSIBLE FOR SERVICE.
4. ALL SYSTEMS, EQUIPMENT, COMPONENTS, WORK, ETC. PROVIDED UNDER THIS DIVISION SHALL BE COVERED BY A ONE YEAR GUARANTEE STARTING AT THE TIME OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. ANY DEFECTS IN THE WORK, SYSTEMS, EQUIPMENT, OR COMPONENTS FOUND DURING THIS YEAR SHALL BE CORRECTED AT NO CHARGE. THE GUARANTEE SHALL INCLUDE PROVIDING ALL NECESSARY CUTTING, PATCHWORK, REPAINTING, ETC. TO MAKE THE WORK COMPLETE AND NEW.
5. ALL CONDUIT MUST BE CONCEALED IN THE WALLS OR ABOVE THE CEILING UNLESS OTHERWISE NOTED. MINIMUM CONDUIT SIZE IS 1/2".
6. ALL CONDUCTORS SHALL BE COPPER WITH TYPE "THW" OR "THHN" INSULATION AND THE MINIMUM WIRE SIZE SHALL BE #12 A.W.G. WITH A 167 DEGREE TEMPERATURE RATING.
7. ALL WORK MUST BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER ACCORDING TO GENERALLY ACCEPTED PRINCIPALS OF FIRST CLASS WORKMANSHIP.
8. FASTEN ALL RECESSED LIGHTING FIXTURES TO STRUCTURE OR GRID PER N.E.C. 410.36.
9. RECESSED INCANDESCENT FIXTURES SHALL BE SUPPORTED IN COMPLIANCE WITH N.E.C. 410.36.
10. ALL PENETRATIONS THRU RATED WALLS, FLOORS AND CEILINGS SHALL BE FIRE STOPPED PER N.E.C. 300.21.
11. PROVIDE ALL GROUNDING AS REQUIRED BY N.E.C.
12. DEVICE MOUNTING HEIGHTS ARE TO BE MEASURED TO THE DEVICE CENTERLINE.
13. ALL SWITCHES FOR FANS, LIGHTS, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL SHARE A MULTI-GANG COVER PLATE AS REQUIRED.
14. ALL CONDUIT SHALL BE 1/2" EMT WITH 2#12,1#12G AWG CONDUCTORS UNLESS OTHERWISE NOTED.
15. PROVIDE #12AWG GND. FOR ALL MECHANICAL EQUIPMENT UNLESS SHOWN OTHERWISE. ALL EQUIPMENT SHALL BE GROUNDED AT THE PANEL WHICH FEEDS THE EQUIPMENT.
16. COORDINATE RECEPTACLE NEMA TYPE AND VOLTAGE WITH COPIERS AND EQUIPMENT.
17. PROVIDE A NEW DIRECTORY FOR ALL PANELS. CORRECTLY LABEL ALL CIRCUITS, SPARES AND SPACES IN ACCORDANCE WITH N.E.C. 408.4(A).
18. PROVIDE A SEPARATE GREEN, INSULATED, #12AWG EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH THE BRANCH CIRCUIT HOMERUN CONDUCTORS.
19. WHERE WORK BY THE GENERAL CONTRACTOR (WALL REMOVAL, NEW OR RELOCATED WALL OPENING, ETC.) RESULTS IN THE REMOVAL, RELOCATION OF REFEEDING OF ELECTRICAL DEVICES OR LIGHTING FIXTURES, THE ELEC. CONTRACTOR SHALL DISCONNECT OR RECONNECT AS REQUIRED ALL ACTIVE DEVICES REMAINING ON THAT CIRCUIT SYSTEM.
20. DEVICE BOXES IN RATED WALLS SHALL MEET STANDARD BUILDING CODE SECTION 706.4.
21. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE LABEL LISTED BY A NORTH CAROLINA APPROVED THIRD PARTY TESTING AGENCY.
22. ALL RECEPTACLES TO RECEIVE VISUAL DESIGNATION.
23. OUTLET BOX SHALL NOT BE MOUNTED BACK TO BACK.
24. BLANK FACEPLATES ARE NOT ALLOWED, U.N.O.. ANY EXISTING OUTLET OR TELE/DATA LOCATION NOT USED OR SHOWN WITHIN THE SCOPE OF WORK IN THESE PLANS SHOULD BE REMOVED, PATCHED, AND REPAIRED.
25. MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS PER N.E.C. 210.4(B).
26. MULTIWIRE BRANCH CIRCUITS SUPPLYING POWER TO PERMANENTLY CONNECTED FREESTANDING PARTITIONS SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANEL BOARD WHERE THE BRANCH CIRCUIT ORIGINATES PER N.E.C. 605.8.
27. ARC-FLASH HAZARD WARNING SHALL BE PROVIDED ON ALL EQUIPMENT IN AFFECTED ELECTRICAL ROOMS PER N.E.C. 110.16.
28. PROVIDE PLASTIC NAMEPLATE ON ALL PANELS (NEW AND EXISTING) INDICATING PANEL NAME AND SOURCE PER N.E.C 408.4(B).
29. ALL WIRING TERMINATIONS ARE ASSUMED TO BE 75DEG C RATED, UNLESS NOTED OTHERWISE. ALL WIRING UNDER 100A IS BASED ON A 60DEG C TERMINATION.

PROJECT TYPE

[X] New Construction (C405) [ ] Addition (C502) [ ] Alterations (C503)

When 'New Construction' is selected, indicate NCECC Section C406 method of compliance below. If project is other than 'New Construction', compliance with referenced section is 'N/A'.

Unless specifically exempt below, the contractor shall obtain the services of a NC licensed engineering professional to perform all required commissioning services of all lighting and lighting control systems in the project scope in compliance with NCECC Section C408.

NCECC 2018 SECTION C406 – COMPLIANCE STATEMENT

Method of Compliance

a. C406.1.1 More Efficient HVAC Performace	
b. C406.1.2 Reduced Lighting Power Density	X
c. C406.1.3 Enhanced Lighting Controls	
d. C406.1.4 On-Site Supply of Renewable Energy	
e. C406.1.5 Dedicated Outdoor Air System	
f. C406.1.6 Higher Efficiency Service Water Heating	

Refer to the following sheet for demonstration of compliance:
N/A

NCECC 2018 SECTION C408 – SYSTEM COMMISSIONING

[ ] Exempt (For Alterations only per NCECC C503.1 Exception 2.g.)

Refer to 2018 NCECC Appendix C1 for required statement of system commissioning to be presented to the AHJ at final inspections.

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	ON CENTER MTG. HT.
	CONCEALED CONDUIT IN CEILING OR WALL	
	CONCEALED CONDUIT IN FLOOR OR UNDERGROUND	
	CIRCUIT HOMERUN TO PANEL; EACH ARROWHEAD = 1 CIRCUIT	
	NO. OF CONDUCTORS IN CONDUIT; EACH CROSSHATCH = 1 WIRE	
	FLEXIBLE CONDUIT OR S.O. CORD	
	EXPOSED CONDUIT	
	CONDUIT STUBBED UP OR TURNED DOWN	
	PLYWOOD BACKBOARD	
	SURFACE MOUNTED RACEWAY	
	MULTI OUTLET SURFACE MOUNTED RACEWAY	
	WALL MOUNTED SINGLE RECEPTACLE OUTLET	18"
	WALL MOUNTED DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED DUPLEX RECEPTACLE OUTLET – ABOVE COUNTER	AS REQUIRED
	WALL MOUNTED G.F.C.I. DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED G.F.C.I. DUPLEX RECEPTACLE OUTLET – ABOVE COUNTER	AS REQUIRED
IG	WALL MOUNTED ISOLATED GROUND DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED DOUBLE DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED SPECIAL RECEPTACLE OUTLET	18"
J	JUNCTION BOX	
	WALL MOUNTED COMBINATION DATA/VOICE OUTLET. PROVIDE JUNCTION BOX WITH 3/4" CONDUIT TO ABOVE CEILING.	18"
	WALL MOUNTED VOICE OUTLET. PROVIDE JUNCTION BOX WITH 3/4" CONDUIT TO ABOVE CEILING.	18"
	WALL MOUNTED DATA OUTLET. PROVIDE JUNCTION BOX WITH 3/4" CONDUIT TO ABOVE CEILING.	18"
TV	JUNCTION BOX FOR TV. PROVIDE JUNCTION BOX WITH 3/4" CONDUIT TO ABOVE CEILING.	
AV	2-GANG JUNCTION BOX FOR AV, LOW-VOLTAGE WIRING BY OTHERS. PROVIDE JUNCTION BOX WITH 1-1/4" CONDUIT TO ABOVE CEILING. U.N.O.	
CR	JUNCTION BOX FOR CARD READER. PROVIDE JUNCTION BOX WITH 3/4" CONDUIT TO ABOVE CEILING.	42"
CAM	DOME CAMERA (PROVIDED BY SECURITY CONTRACTOR)	
WAP	WIRELESS ACCESS POINT, CEILING MOUNTED (BY OTHERS)	
SPK	SPEAKER LOCATION (BY OTHERS)	
	FLOOR BOX DEVICES WITH POWER, TELE/DATA, AV PER PLANS (SEE DRAWINGS FOR MODEL#)	
	FLOOR BOX DEVICES WITH POWER AND TELE/DATA PER PLANS (SEE DRAWINGS FOR MODEL#)	
	FLOOR BOX DEVICES WITH QUAD RECEPT & TELE/DATA OUTLETS (SEE DRAWINGS FOR MODEL#)	
AV	FLOOR BOX DEVICES WITH DUPLEX RECEPT & TELE/DATA/AV OUTLETS (SEE DRAWINGS FOR MODEL#)	
AV	FLOOR BOX DEVICES WITH ONLY TELE/DATA/AV OUTLETS (SEE DRAWINGS FOR MODEL#)	
P D	FLOOR BOX DEVICE TO MODULAR FURNITURE	
PJ #	JUNCTION BOX FOR POWER CONNECTION TO MODULAR FURNITURE. COORD. EXACT LOCATION WITH ARCH. PROVIDE ALL REQ. CONNECTIONS (THE # OF WORKSTATIONS TO BE POWERED ARE DENOTED BY A NUMBER NEXT TO THE POWER JUNCTION)	18"
T/DJ	JUNCTION BOX FOR TELE/DATA CONNECTION TO MODULAR FURN. COORD. EXACT LOCATION WITH ARCH. PROVIDE 1-1/4" EMPTY CONDUIT WITH PULLSTRING TO ABOVE ACCESSIBLE CEILING.	18"
J PP #	PROVIDE AND INSTALL JUNCTION BOX ABOVE CEILING TO SUPPLY POWER WHICH SHALL SUPPLY EACH WORKSTATION WITH TWO (2) DUPLEX AND ONE (1) VOICE DATA. POWER POLE TO BE SUPPLIED BY TENANT AND INSTALLED BY E.C. (THE # OF WORKSTATIONS TO BE POWERED ARE DENOTED BY A NUMBER NEXT TO THE POWER POLE)	
	277/480 VOLT PANELBOARD	
	120/208 VOLT PANELBOARD	
	RECESSED MOUNTED 120/208 VOLT PANELBOARD	
T	TRANSFORMER	
	LIGHT FIXTURE	
	EXIT SIGN – CEILING,WALL MT.	
	LIGHT FIXTURE ON EMERGENCY CIRCUIT	
	LIGHT FIXTURE ON BATTERY BACKUP (90MIN, 1100 LUMEN)	
S	WALL MOUNTED S.P.S.T. TOGGLE SWITCH	42"
S 3	WALL MOUNTED 3-WAY TOGGLE SWITCH	42"
S 4	WALL MOUNTED 4-WAY TOGGLE SWITCH	42"
S D	WALL MOUNTED DIMMER SWITCH (WATTAGE AS REQUIRED)	42"
S T	WALL MOUNTED TIMER SWITCH	
S OV	WALL MOUNTED MANUAL OVERRIDE SWITCH (TO OVERRIDE CIRCUIT DESIGNATED AT LIGHTING CONTACTOR PANEL)	42"
	MOTION DETECTOR SWITCH W/ MANUAL OVERIDE – WALL MOUNTED.	42"
	MOTION DETECTOR – CEILING MOUNTED	
DL	DAYLIGHT SENSOR	
S M	MOTOR RATED TOGGLE SWITCH	AS REQ'D.
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH	
S (30/3)	DISCONNECT SWITCH (FRAME/POLES/FUSE-IF REQUIRED)	
2	MOTOR – NUMBER INDICATES HORSEPOWER (F=FRACTIONAL)	
	FIRE ALARM ADA APPROVED VISUAL ALARM – WALL MOUNTED	80" A.F.F.
	FIRE ALARM ADA APPROVED VISUAL ALARM – CEILING MOUNTED	
F	FIRE ALARM ADA APPROVED AUDIO/VISUAL ALARM – WALL MOUNTED	80" A.F.F.
F	FIRE ALARM ADA APPROVED AUDIO/VISUAL ALARM – CEILING MOUNTED	
F	FIRE ALARM PULL STATION	48" A.F.F.
D	SMOKE DETECTOR – CEILING MOUNTED	
D	DUCT MOUNTED SMOKE DETECTOR	
M	MAGNETIC DOOR HOLD DEVICE TO INTERLOCK WITH FIRE ALARM SYSTEM	
T	TAMPER SWITCH – FIRE ALARM	
F	FLOW SWITCH – FIRE ALARM	
H	HEAT DETECTOR – FIRE ALARM	
F.B.O.	FURNISHED BY OTHERS	
AFF/AFG	ABOVE FINISHED FLOOR/ABOVE FINISHED GRADE	
BC	BELOW CEILING	
AC	ABOVE COUNTER	
WP	WEATHER PROOF	
E,EX/RE/N	EXISTING/RELOCATED/NEW	
GFI	GROUND FAULT INTERRUPTING CIRCUIT	
E.C.	EMPTY CONDUIT (PROVIDE PULLSTRING IN ALL EMPTY CONDUIT)	
FPMR	FUSE PER MANUFACTURER'S RECOMMENDATION	
IG	ISOLATED GROUND	

NOTES:
1. COORDINATE LOCATION AND SPECIFIC MOUNTING HEIGHT WITH ARCHITECT.
2. MOUNTING HEIGHTS SHALL BE AS INDICATED IN THE LEGEND UNLESS OTHERWISE NOTED ON THE PLANS.

DRAWING NO.
CFD-XXXX-E-0001-41CC2B

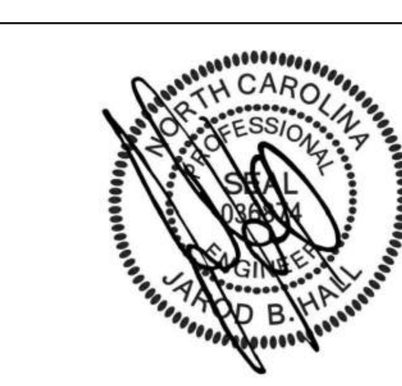
DUKE ENERGY®

MAILING ADDRESS:
P.O. BOX 1007
CHARLOTTE, NC 28201

Safety Expectations:
ILLNESS ZERO INJURY
Reduce Risk
Remove Exposures to Hazards
Reinforce Safe Behavior

BW&A Barrett, Woodyard and Associates, Inc.
License # C-2226
420 Minuet LN.
Charlotte, North Carolina 28217
(p) 704-357-9333 (f) 704-357-9385

BWA JOB # 2022-0632



SEAL 02/12/2025

DUNN OPERATIONS CENTER

OPS CENTER OUTBUILDINGS

MARK	DATE	DRN BY	REVISION
0	02.12.2025		ISSUED FOR CONSTRUCTION
1			
2			
3			
4			
5			
6			
7			
8			
9			

PROJECT NO:

DRAWING NUMBER
CFD-XXXX-E-0001-41CC2B

ELECTRONIC FILE NAME:

DRAWN BY: SEB 2/12/25

CHK'D BY: XXX XXX

E-MAIL: jhall@barrettwoodyard.com

SHEET TITLE:
LEGEND, NOTES, AND DETAILS - ELECTRICAL

SHEET NO.
E-001

SECTION 260010

ELECTRICAL GENERAL

1.0 GENERAL

1.01 SCOPE

A. Division 26 includes all Specifications in the 260000 series and the accompanying Electrical Drawings. Provide all labor, materials and equipment, and all necessary operations to provide the complete scope of the electrical systems intended under this Division. Division 26 is not a stand–alone document, but a part of the complete Project Documents.

B. Attention is called to the fact that there are many interfaces between the work required in this Division and the work required in other Divisions. Provide the necessary interface and coordination with other Divisions to provide a complete project.

1.02 EXISTING CONDITIONS

A. Attention is called to the fact that the work is to be performed within an existing, operational facility. Prior to the submission of bids, each bidder shall visit the project site, thoroughly investigate and be familiar with all existing conditions, which will affect their work; especially the work to be performed above the existing ceilings.

B. When this project is finished, the work under this Division shall be complete in every respect, completely integrated with all the existing systems, and left in perfect operating condition. The electrical service to the building shall not be interrupted at any time without written coordination of the building's Owner. All existing electrical equipment removed during the project shall be removed from the site after inspection of the building's Owner. All existing electrical systems required to be operating at the project's completion or required to remain in use during the project shall be reconnected, replaced, rerouted or otherwise made to fit with proper workmanship techniques and left in safe working order.

C. Connect new work to existing work in a neat and workmanlike manner. Where an existing structure must be cut or existing utilities interfere, such obstructions shall be bypassed, removed, replaced or relocated, patched and repaired. Work disturbed or damaged shall be replaced or repaired to its prior condition.

1.03 CODES AND REGULATIONS

A. All work under this Division shall comply with all local building codes, laws, regulations, ordinances and the requirements of the 2023 National Electrical Code.

B. Where conflicts of installation requirements occur between the aforementioned codes, regulations or the Contract Documents, the most restrictive shall govern.

C. Obtain all permits and licenses and pay all fees required by local authorities. Arrange for all necessary inspections required by the authorities having jurisdiction and provide written certificates of approval to the project Owner or his designated representative.

1.04 DEFINITIONS

A. Contract Documents: The complete set of project Drawings and Specifications.

B. Provide: Furnish, install and connect.

C. Work: All materials installed, including all labor to provide complete system.

D. Wiring or Wired: All wire or cable installed in conduit from panelboard to equipment and connected at both ends with all required boxes, connectors, couplings, etc.

E. Conduit: Rigid steel conduit intermediate metal conduit (I.M.C.), electrical metallic tubing (EMT) plastic conduit (PVC), or flexible steel conduit.

1.05 DRAWINGS AND SPECIFICATIONS

A. The Drawings and Specifications together are to be considered as the Contract Documents. Any work shown in one and not shown in the other, or implied by either, shall be provided to give a complete project.

B. Should any conflicts exist between the Drawings and Specifications or there is an item shown/called for which is not clearly defined, immediately submit a request for clarification. No additional monies will be granted later when a conflict is resolved or an item is more clearly defined.

C. The Drawings are schematic and are not intended to show the exact location outlets, etc. or the routing of conduit.

D. The exact location of equipment requiring electrical connections (mechanical equipment, elevators, lights, etc.) shall be as located by other Divisions of the Contract Documents. Refer to the Architectural, Structural and Mechanical Documents for dimensions and details of building construction and provide work described in this Division so that it conforms to the details of the project. The right is reserved to relocate any receptacle, switch or other outlet a maximum of 10'–0" before it is permanently installed without incurring additions to the Contract amount.

1.06 SITE VISIT

A. Visit the site and become familiar with all aspects of the site and existing conditions before submitting Contract price.

B. No allowance will be made for lack of knowledge of existing conditions.

1.07 DEVIATIONS

A. No deviations from the Contract Documents shall be made without the full knowledge and written consent of the Architect.

B. If the existing conditions make it desirable to modify the Contract Documents in regard to any item, provide a written request to the Architect.

2.0 PRODUCTS

2.01 STANDARDS FOR MATERIALS AND WORKMANSHIP

A. All materials used shall be new and shall be stamped with the label of Underwriters Laboratories, Inc. (UL).

B. All materials shall meet the standards of the following associations and institutes where applicable:

1. National Fire Protection Association (NFPA)
2. American Society of Testing Materials (ASTM)
3. American National Standards Institute (ANSI)
4. National Electrical Manufacturer's Association (NEMA)
5. Institute of Electrical and Electronic Engineers (IEEE)

C. Manufacturers names and catalog numbers specified herein are intended to describe the material and set the standard of quality. All bids shall be based on material specified. Requests for approval of material not specified shall be considered if the request is in written form and submitted to the Architect no later than fourteen (14) days before bid date. All requests shall conform with the provisions of the general and supplementary conditions.

D. Samples of materials requested to be substituted shall be furnished upon the request of the Architect.

2.02 SHOP DRAWINGS AND SUBMITTAL

A. The Engineer's review of shop drawings or submittals is a cursory review to check for general compliances of submittals with the design intent of the Contract Documents. The Engineer's review does not relieve the Contractor of his responsibility of complying with the Contract Documents. All coordination of the work in strict compliance with the Contract Documents is the sole responsibility of the Contractor.

B. The following items shall be submitted for review:

1. Conduit and wire
2. Devices
3. Coverplates
4. Panelboards
5. Fuses
6. Overcurrent devices
7. Disconnect switches
8. Lighting fixtures
9. Lighting control system
10. Dimming system
11. Life safety system
12. Motor starters

C. All shop drawings and submittals shall be submitted in compliance with the requirements of the general and supplementary conditions. All submittals are to be received electronically in .pdf format only.

D. All submittals shall bear the name of the manufacturer to be used, along with all associated options and specific input/output requirements clearly marked.

E. All shop drawings and submittals shall include a stamped indication signifying that the submittal has been reviewed for compliance with the Contract Documents by the Contractor. This stamped indication also represents the fact that the Contractor has checked this submittal for its interaction with all other Divisions and certifies by his signature or initials that all coordination has taken place. The stamp shall include the date, name of the Contracting Firm, the signature of the Contractor, certification of compliance and approval. This stamp shall be on the submittal before the Engineer will review it.

F. The engineer will review an individual submittal not more than twice. If the submittal is rejected again on the second review, the contractor will bare all responsibility for paying for the engineer's time for additional reviews. Such payments to the engineer shall be withheld from the next monthly pay application.

2.03 RECORD (AS–BUILT) DRAWINGS AND MAINTENANCE MANUALS

A. At job completion, submit to the Architect, an electronic set of the latest plans, in .pdf format, showing all deviations from the Contract Documents. The Drawings shall also have dimensions locating all underground conduits.

B. At job completion, submit to the Architect, three (3) hardcopy sets of maintenance and instruction manuals for all equipment furnished on the project. Also provide an electronic copy in .pdf format. Coordinate file delivery method with the architect.

3.0 EXECUTION

3.01 COORDINATION

A. Coordinate all space requirements with all other Divisions before installing any work. Install work such that adequate space will be allotted for all other work from other Divisions to be installed and also will allow room for future access for repair and maintenance.

B. Any work installed without proper coordination shall be relocated at the Architect's direction without increasing the Contract price.

C. During the bidding process or the pricing for a guaranteed maximum price, coordinate with all other Divisions for the total amount of work required in Division 26. Any work shown or implied in another Division requiring work in Division 26 shall be included in the Contract price regardless of whether or not it is addressed in Division 26.

3.02 PROTECTION OF MATERIALS

A. All equipment shall have the original finish when the building is turned over to the Owner.

B. Protect equipment during construction from dirt, water, chemical, mechanical damage, etc. Protect all conduit openings so that no foreign material will enter the conduit.

3.03 TESTS, DEMONSTRATION AND INSTRUCTIONS

A. Functional Testing:

1. Test all systems described in this Division in the presence of the Owner or a designated representative upon completion of the work. Demonstrate that the installation is in accordance with Contract Documents.
2. For all new lighting and lighting control systems within the Contract Documents, the contractor shall obtain the services of a licensed professional engineer (registered to the state this project is within) to perform system commissioning in compliance with local energy conservation codes. The contractor shall demonstrate in the presence of the commissioning agent that the installation of such systems are in accordance with the Contract Documents.

B. Any work found not to be in compliance with the Contract Documents shall be repaired or replaced without incurring any additions to the Contract price.

C. Provide to the Owner and System Commissioning Agent, all instruction on maintenance and operation of all systems and equipment provided under this Division. Provide all necessary tools and personnel to thoroughly present these instructions. The documentation shall include the following, at minimum:

1. Submittal data indicating all selected options.
2. Operation and maintenance manual for all equipment and systems. Include routine maintenance actions and cleaning procedures.
3. A schedule for inspecting and recalibrating, where applicable.
4. A narrative of how each system is intended to operate, including any recommended set points where adjustment is available.

D. At project completion, prior to obtaining Certificate of Occupancy, present at final inspection to the jurisdiction's AHJ a signed and dated statement of system commissioning for all lighting and lighting control systems. The format of the statement of system commissioning shall be in the form required by the state's energy conservation codes and/or AHJ requirements. The document shall be signed by the contractor's licensed professional engineer representative.

3.04 GUARANTEE

A. All systems, equipment, components, work, etc. provided under this Division shall be covered by a one year guarantee starting at the time of final acceptance of the work by the Owner. Any defects in the work, systems, equipment or components found during this year shall be corrected at no charge. The guarantee shall include providing all necessary cutting, patchwork, repainting, etc. to make the work complete and new.

B. Present this guarantee and any additional warranties or guarantees on furnished equipment or systems to the Architect. All equipment or system guarantees are in addition to the general guarantee.

END OF SECTION

SECTION 261000

ELECTRICAL BASIC MATERIALS & METHODS

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 260010.

B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

2.0 PRODUCTS

2.01 CONDUIT

A. Galvanized rigid steel conduit shall be low carbon, hot–dipped galvanized both inside and out with threaded joints.

B. Intermediate metal conduit (IMC) shall be steel, galvanized both inside and out with threaded joints.

C. Electrical metallic tubing (EMT) shall be steel, galvanized both inside and out.

D. Plastic conduit (PVC) shall be schedule 40 PVC heavy wall type. A grounding conductor shall be provided.

E. Flexible metal conduit shall be flexible steel conduit tubing and shall meet Underwriters Laboratories Standard for Flexible Steel Conduit.

F. Liquid–tight flexible metal conduit and liquid–tight non–metallic conduits shall be liquid–tight and sunlight resistant.

G. Steel conduit approved manufacturers are Allied, Triangle and Republic.

H. PVC conduit approved manufacturers are Carlon and Triangle.

2.02 CONDUIT FITTINGS

A. Rigid conduit and IMC conduit fittings shall be zinc–coated, ferrous metal and taper threaded type.

B. EMT fittings shall be zinc–coated steel and hexnut compression or set–screw type. EMT connectors shall have insulated throats.

C. PVC fittings, elbows and cement shall be produced by the same manufacturer. All joints shall be solvent welded in accordance with the manufacturer's recommendations.

D. Conduit connections to switchboards, motor control centers, transformers, panel cabinets, and pull boxes shall have grounding wedge lugs between the bushing and the box or locknuts designed to bite into the metal.

E. Each conduit end shall be provided with either an insulated throat connector or separate locknut and insulated bushing. Bushing shall be installed before any wire is pulled.

F. Conduit fittings approved manufacturers are Raco, Steel City, O.Z. Gedney, Thomas & Betts and Appleton.

G. Expansion fittings shall be provided in all conduit which crosses and expansion joint.

2.03 CONDUCTORS

A. Conductors shall be copper of 98% conductivity, 600 volt insulation. Sizes specified are AWG gauge for No. 4/0 and smaller and circular mils (MCM) for all sizes larger than no. 4/0. Conductors No. 10 and smaller shall be solid and type "THHN" or "THWN" insulation. No. 8 and larger shall be stranded and type "THW" or "XHHW" insulation.

2.04 OUTLETS

A. Outlet boxes and covers shall be of such form and dimensions as to be adapted to their specified usage, locations, size and quantity of conduit, and size and quantity of conductors entering the boxes. In special "Fire Rated" partitions, outlets shall comply with ASTM No. E119.

B. Flush ceiling outlets for surface or pendant mounted lighting fixtures shall be one–piece 4" square or octagonal pressed steel boxes. Boxes for devices in unfinished masonry walls or stud walls shall be pressed steel, square corner, sectional switch boxes, or shall be 4" square box with a square cornered tile wall cover, set flush with masonry construction. Boxes in concrete ceiling slab shall be octagonal, shallow concrete boxes. Welded boxes are not acceptable.

C. All outlet boxes in plaster or masonry walls or ceiling shall be provided with plaster rings.

D. Junction boxes and all outlets not indicated as containing wiring devices or lighting fixtures shall have covers. Covers for outlets in walls shall be as specified for wall switches and receptacles.

E. Outlet boxes exposed to the weather and outlet boxes for vaportight lighting fixtures and devices shall be of cast iron corrosion resistant type.

F. Outlet box approved manufacturers are Appleton, Raco, Steel City or Crouse–Hinds.

2.05 DISCONNECT SWITCHES

A. Disconnect switches shall be "heavy–duty" type, enclosed switches of quick–make, quick–break construction. Switches shall be horsepower rated for 600 volts AC as required. Lugs shall be UL listed for copper and aluminum.

B. Padlocking provisions shall be provided for padlocking in the OFF position.

C. Switches shall be furnished in NEMA 1 General purpose enclosure unless noted otherwise. Switches located on the exterior of the building or in "wet" locations shall have NEMA 3R enclosures.

D. Fused disconnect switches shall have rejection type fuse clips with dual element, current limiting fuses of rating shown.

E. Disconnect switches shall be mounted to structure. Disconnect switches shall not be mounted to mechanical equipment or ductwork.

2.06 NAMEPLATES

A. Nameplates shall have 3/8" high engraved letters.

B. 120 or 208 volts: white core laminated bakelite with black finish.

C. 277 or 480 or higher volts: white core laminated bakelite with red finish.

D. Nameplate shall indicate the panel name and the name of the device or equipment where the power supply/feeder originates.

2.07 WALL SWITCHES

A. Wall switches shall be plastic, totally enclosed, quiet type, self–grounding, 277 volts and 20A rating and shall match existing if possible and equal the following:
Single Pole: Hubbell No. CS1221, or equal by Leviton, P&S or Cooper.
Double Pole: Hubbell No. CS1222, or equal by Leviton, P&S or Cooper.
Three–Way: Hubbell No. CS1223, or equal by Leviton, P&S or Cooper.
Four–Way: Hubbell No. CS1224, or equal by Leviton, P&S or Cooper.

B. Color shall be as selected by architect.

C. Flush motor switches with red pilot light and with overload protection for fractional horsepower motors shall be Hubbell No. HBL1221PL.

D. Key switches shall be Hubbell No. HBL1221L 20A Series or approved equal by P&S or Leviton.

2.08 WALL MOUNTED OCCUPANCY SWITCHES

A. The passive infrared sensor shall be a completely self–contained control system that replaces a standard toggle switch. Sensor shall have ground wire for safety. Switching mechanism shall be a latching air gap relay, compatible with electronic ballasts, compact fluorescent and inductive loads. Triac and other harmonic generating devices shall not be allowed.

B. Sensor shall cover up to 1000 sq. ft. for walking motion, with a field of view of 180 degrees.

C. Sensor shall have system which provides superior 180 degree coverage.

D. Sensor shall operate at 120 VAC or 277 VAC.

E. Sensor shall have no minimum load requirement and shall be capable of switching from 0 to 500 watt incandescent; 0 to 800 watts fluorescent or 1/6 hp @ 120 VAC, 60 Hz; and 0 to 1200 watts fluorescent or 1/3 hp @ 277 VAC, 60 Hz.

F. For accuracy and consistency, sensor shall have a DIP switch controlled, digital time delay adjustable from 15 seconds to 30 minutes.

G. Sensor shall have standard 5 year warranty and shall be UL and CUL listed.

H. Sensor shall be Wattstopper WI Series, Leviton Decora Series or approved equal by engineer.

2.09 RECEPTACLES

A. Duplex receptacles shall be plastic, two–pole, three wire, self–grounding, side wired, 125 volts and 15A rating and shall match existing if possible and be equal to the following: Duplex receptacles shall be Hubbell No. CR5262 Series, or equal by Leviton, P&S or Cooper. Isolated ground type shall be Hubbell No. CR5252IG Series, or equal by Leviton, P&S or Cooper.

B. Single receptacles shall be two–pole, three wire, self–grounding, side wired, 125 volts and 20A rating and shall be equal to the following: Single receptacles shall be Hubbell No. HBL5361 Series, or equal by Leviton, P&S or Cooper. Isolated ground type to be Hubbell No. IG–5361 Series, or equal by Leviton, P&S or Cooper.

C. Ground fault circuit interrupt (GFI) receptacles shall be Hubbell GFR5352, or equal by P&S, Leviton or Cooper.

D. Color shall be as selected by the Architect.

2.10 COVERPLATES

A. Coverplates for flush mounted devices shall be standard size (color or finish to be selected by the architect), Hubbell "P" Series or equal by Leviton, P&S or Cooper.

B. Telephone outlet coverplates shall have same finish as above and have a bushed hole in the center.

C. Coverplates for exterior devices shall be self–closing, die cast aluminum Hubbell WP8M or equal by Leviton, P&S or Cooper.

2.11 PLYWOOD BACKBOARDS

A. Provide plywood backboards where shown. Backboards shall be minimum 3/4" thick and sized as shown or to accommodate equipment indicated to be mounted thereon.

B. Secure plywood to the building structure and paint with two coats of gray paint.

2.12 SMOKE AND FIRE STOP FITTINGS

A. Smoke and Fire Stop Fittings shall be UL listed for that purpose. The fittings used to seal conduit either on the outside of the conduit, busway or cable or internally shall have heat activated intumescent material, which expands to fill all voids. Smoke and fire stop fittings shall be O.Z./Gedney "FIRE–SEAL" or Dow Corning silicone RTV foam with an hourly fire–rating equal to or higher than the rating of the floor, ceiling or wall through which the cable or conduit passes. The seals for conduit shall be of the flanged type.

2.13 FUSES

A. Provide all fuses. All fuses shall be of the same manufacturer. All fuses shall be of the high interrupting rating (200,000 Amps), current limiting type and manufactured by Bussmann. Fuses shall be provided for each fuse cutout and the specified quantity of fuses shall be furnished for spares.

B. Circuits 0 to 600 ampere shall be protected by rejection type, current limiting BUSSMANN LOWPEAK Dual Element Fuses LPN–RK (250 volts) or LPS–RK (600 volts). All dual–element fuses shall have separate overload and short–circuit clearing chamber. The fuse must hold 500% of rated current for a minimum of 10 seconds and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes RMS symmetrical. The fuses shall be UL Class RK–1.

C. Circuits 601 to 6000 ampere shall be protected by current limiting BUSSMANN HI–CAP Time–Delay Fuses KRP–C. Fuses shall employ "O" rings as positive seals between the end bells and the glass melamine fuse barrel. The terminals shall be opened. Fuses shall be time–delay and must hold 500% of rated current for a minimum of 4 seconds, clear 20 times rated current in 0.1 seconds or less and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes RMS symmetrical. The fuses shall be UL Class L.

D. Furnish and turn over to the Owner a minimum of one (1) set of spare fuses (set consisting of three fuses) for each type and rating of fuse used. When the number of fuse sets of the same type and rating actually installed exceeds five (5) sets, furnish an additional spare set of fuses for each five (5) or fraction thereof.

E. Provide a cabinet in which to store all spare fuses, Bussman Catalog No. SFC

F. Acceptable manufacturers are Bussman or equal by Littlefuse.

3.0 EXECUTION

3.01 CONDUIT

A. Rigid steel (or IMC) shall be used for service entrance and all feeders and branch circuits where exposed to damage.

B. EMT shall be used for branch circuits, fire alarm and telephone when not underground or in concrete in contact with the earth.

C. Schedule 40 PVC may be used for all underground feeders, service entrance conductors when encased in 4" of concrete on all sides, or under the lowest floor slab.

D. Conduit shall be continuous from outlet to outlet, from outlet to cabinet, junction box and pull box. Conduit shall enter and be secured to all boxes, etc., in such a manner that each system will be electrically continuous from service to all outlets such that a good ground is provided. All conduit from cabinets and junction boxes shall terminate in approved outlet boxes or conduit fittings. Conduit connections to any box which has no threaded hub shall be double locknutted.

E. Provide junction boxes or pull boxes where shown and where necessary to avoid excessive runs or too many bends between outlets. The conduit sizes shown may increase if desired to facilitate the pulling of cables.

F. All conduit shall be concealed unless indicated otherwise. Install exposed conduit parallel with or at right angles to the building walls and support from walls or ceilings at intervals required by Code with approved galvanized iron clamps or hangers. Concealed conduit above the ceiling shall be supported independent of ceiling construction. Where ceilings of lay–in type are used, conduit must be installed high enough to permit removal of ceiling panels and lighting fixtures. Use threaded rods and hangers for supporting single conduit. Use trapeze hangers consisting of double–nutted threaded rods and "Unistrut" channels or angles of 12 gauge minimum steel for supporting multiple conduit.

G. Minimum size conduit for branch circuits shall not be smaller than 1/2". Home runs shall extend from outlets shown to panel designated. Home runs shown shall not be combined. Home run conduit shall not be smaller than 3/4".

H. At couplings, conduit ends shall be threaded so that they meet in the coupling. Right and left hand couplings shall not be used; conduit couplings of the Erikson Type shall be used at locations requiring such joints.

I. All conduit for future use, for telephone wire, or for data communication cable, shall be left with No. 16 gauge wire pulled in them or a pull line as manufactured by Ideal, and the ends securely corked or capped.

J. Expansion fittings shall be installed in all conduit which pass through the cross–sectional area of expansion joints.

K. Provide non–hardening elastic type duct seal compound, Neer No. DC., 3M Co. "Scotchfil", or Gardner Bender duct seal, for each conduit entering the building from outside and for each conduit passing from one space into another which is normally at a lower temperature.

L. Provide watertight conduit hubs on conduit terminating in a box or cabinet exposed to the weather.

M. Space in sleeves or around conduit that pass through fire resistive or fire rated walls, partitions, floors or ceilings shall be closed by packing with an unlabeled fire resistive material that will maintain the rating of the barrier penetrated.

3.02 FLEXIBLE CONDUIT

A. PVC extruded cover flexible conduit shall be used in making short flexible connections to rotating or vibrating machinery or equipment. The flexible conduit at these locations shall be as short as possible, but shall have a minimum length of 12".

B. A green stranded bonding jumper shall be installed outside of all flexible conduit that extends directly from a non–flex conduit to a rotating or vibrating machine. Where a junction box is used, the green stranded bonding jumper shall be installed inside the flexible conduit and attached to the junction box and to the machine. When the bonding jumper is installed outside of the flexible conduit, plastic wire straps shall be used 6" o.c. to secure the jumper to the flexible conduit.

C. Flexible metal (MC) conduit system may be utilized where concealed in walls and/or millwork only. MC Cable shall run from point of exit from wall or millwork to nearest structurally support junction box. MC cable will not be permitted to be installed in the above ceiling space and shall not pass through a fire rated partition. Conductor colors of the MC cable shall comply with 261000 3.03 D.

1. MC cable shall be constructed to have an insulated, copper ground conductor. Sheathing with a bare aluminum conductor shall not be used as the ground.

3.03 WIRING

A. All conductors shall be installed in conduit. No conductors shall be pulled into the conduit until the conduit system is complete and plaster had dried. Wire pulling lubricants shall be Gardner–Bender "Wireaide" or Ideal "Yellow 77".

B. Conductors shall be continuous from outlet to outlet and from outlet to junction box or pull box. All splices and joints shall be carefully and securely made to be mechanically and electrically solid with pressure type connectors, Gardner Bender "Winggard" or Ideal "Wingnut". Tape shall be "Scotch" No. 33 for indoor and No. 88 for outdoor or Gardner Bender No. 95–661. Where connection is made to any terminals of more than 30 amperes capacity and where conductors larger than No. 10 are connected to any terminal, copper terminal lugs shall be bolted to the conductors. Where multiple connections are made to the same terminal, individual lugs for each conductor shall be used. Aluminum conductors, if used for service conductors, shall be made with high compression lugs as manufactured by Square D, Ideal or MAC.

C. Each conduit shall have a minimum of two (2) conductors pulled in unless that particular conduit is noted as being for systems other than electrical circuitry and/or future use or unless noted otherwise.

D. Conductors for lighting and receptacle circuits shall have color coded jackets. The wiring shall be color coded with the same color used with its respective phase through the entire job as follows:

208/120 Volt System	480/277 Volt System
Phase A – Black	Phase A – Brown
Phase B – Red	Phase B – Orange
Phase C – Blue	Phase C – Yellow
Neutral – White	Neutral – Gray
Ground – Green	Ground – Green

E. The feeder and service entrance conductors shall be color coded by the use of colored plastic tape applied within 6" of each conductor end.

F. Branch circuit conductors shall not be smaller than No. 12 and where the home run from center of load exceeds 100'–0", the conductors from home run outlet to panel shall be No. 10 minimum.

G. For branch circuits terminating in outlet without device, leave minimum of 12" of slack wire coiled for connection of equipment. All conductors shall be identified with proper circuit numbers at terminals, junction boxes at panelboards within 6" of conductor ends.

3.04 OUTLETS

A. Provide galvanized steel or cast type boxes for all outlets.

B. Where outlet boxes are used to support lighting fixtures, the outlet box shall be anchored to the structural members of the building per NEC 314.27.

C. Outlet boxes shall be flush mounted unless they are specifically shown as being used with exposed conduit or are located above a ceiling.

D. Where outlets are supplied from conduit run in or below floor slabs, the conduit shall be stubbed up at the location shown and the wall built up around the conduit.

E. Cuts for outlet boxes in masonry walls shall be made so that the coverplate will completely cover the cut. The mounting height of switch, receptacle and other outlets may be varied slightly, with the Architects approvals, so that the outlet box, top or bottom, will occur at a masonry joint.

F. The edge of all outlet boxes shall be flush with the surface in which they are recessed. The devices that fit into the outlet boxes shall be screwed tight before the coverplate is installed and the coverplate shall not be used as a means of tightening the devices in place.

G. Where outlets are shown as being adjacent and different mounting heights are specified for each, they shall be mounted one directly over the other, on the centerline of the group.

3.05 NAMEPLATES

A. Provide specified nameplates on the main switchboard, distribution panels, feeder switches, feeder breakers, panelboards motor control centers, disconnect switches, contactors, starters, transformers, start–stop push buttons and motor switches.

B. Provide nameplates on every device in the main switchboard, distribution panels and motor control centers.

C. Nameplates for surface mounted equipment shall be installed on the exterior of equipment with sheetmetal screws. Nameplates for flush or recessed mounted equipment shall be installed on the inside of the panel door or cover with epoxy cement.

3.06 WALL SWITCHES AND RECEPTACLES

A. Where more than one device is indicated at a location, the devices shall be gang–mounted in combined multi–gang boxes and covered jointly by a common coverplate. Provide barriers as required by the devices and voltages being used.

3.07 COVERPLATES

A. All junction boxes, outlet boxes, multi–gang switch boxes, utility boxes, etc., shall be covered with a coverplate. The coverplate

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DUNN OPERATIONS CENTER

OPS CENTER OUTBUILDINGS

MARK	DATE	DRN BY	REVISION
0	02.12.2025		ISSUED FOR CONSTRUCTION

PROJECT NO:

DRAWING NUMBER
CFD-XXXX-E-0002-41CC2B

ELECTRONIC FILE NAME:

DRAWN BY: SEB 2/12/25

CHK'D BY: XXX XXX

E-MAIL: jhall@barrettwoodyard.com

SHEET TITLE:
SPECIFICATIONS - ELECTRICAL

SHEET NO.
E-002

shall be a finished plate as specified unless designated otherwise.

B. Coverplates shall be mounted vertically unless designated otherwise.

3.08 GROUNDING

A. Ground connections shall be in accordance with the National Electrical Code.

B. Provide an insulated green bonding jumper from the grounding lug of all receptacles to a Steel City "GEE" clip or a machine screw per NEC 250.8 in the outlet box. The ground wire installed behind the device mounting screws will not be acceptable.

C. Provide 1 #6–3/4" conduit from the system ground to the telephone company main distribution frame or service cabinet and to each telephone backboard.

3.09 TELEPHONE CONDUIT SYSTEM

A. Telephone service shall include wood backboards and equipment cabinets with service entrance conduit as shown.

B. Telephone service entrance cable, all branch cabling and telephone instruments shall be provided by the telephone equipment vendor.

C. Provide an outlet and conduit system for the telephones as shown and leave the same in readiness for wiring by others. Provide pull line in all telephone conduit. Terminate all conduit at a uniform height with smooth insulated bushings at the telephone wood backboards.

D. Telephone wall outlets shall be pressed steel sectional switch boxes, wall mounted at the locations indicated. Coverplate shall have a bushed hole.

E. Telephone floor outlets shall be floor boxes as specified at the locations indicated.

3.10 CONNECTION TO EQUIPMENT

A. Equipment furnished by the Owner or under other Sections, such as mechanical equipment, elevators, escalators, signs, kitchen equipment, etc., will be installed by others. Provide electrical service and make the electrical circuit connection to this equipment.

B. Provide PVC insulated flexible cord sets for all cord and plug connected building appliances and equipment. Cords shall be sized in accordance with electrical circuits indicated. Multiple conductor cords shall be "SO" cable with PVC jacket and green insulated ground conductor.

3.11 CORING, CUTTING AND PATCHING

A. Set sleeves for conduit accurately before the concrete floors are poured, or set boxes on the forms so as to leave openings in the floors in which the required sleeves can be subsequently located. Fill in the voids around the sleeves with concrete.

B. Should the performance of this preliminary work be neglected and should cutting be required in order to install conduit, then the expense of the cutting and restoring of surfaces to their original conditions shall be accomplished without incurring additions to the Contract.

3.12 EQUIPMENT ANCHORING

A. All items of electrical equipment, such as switchboards, motor control centers, transformers, standby generator, etc., shall be securely anchored to the building structure. The anchoring shall be accomplished by utilizing a minimum size of 3/8" steel anchor bolts in the structure and to the item of equipment. A minimum of two (2) anchor bolts shall be provided on each side of each item of equipment with the following exceptions:

Exception No. 1: If the equipment manufacturer includes more than two (2) anchor Holes per side in the base or base frame of the equipment item, then there shall be one anchor for each anchor hole.

Exception No. 2: If the equipment manufacturer recommends a particular quantity greater than two (2) per side, then that quantity of anchors shall be provided.

END OF SECTION

SECTION 262000

SERVICE AND DISTRIBUTION

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 16010.

B. Provide a complete electrical distribution system. The system shall include the service entrance, main switchboard, feeders, transformers, distribution panels, panelboards, busway, remote control switches, contactors, etc., to provide a complete system.

C. All distribution switchgear (branch circuit panelboards, switchboard, distribution panelboards, transformers, busway, etc.) shall be the unit responsibility of one manufacturer. All component parts of the above listed items shall be of the same manufacturer except where a written request for deviation from this requirement has been approved prior to bid date.

D. Shop drawings for equipment specified in this Section shall show that all specified requirements have been incorporated.

E. All floor mounted distribution equipment shall be mounted on a 4" high concrete pad.

2.0 PRODUCTS

2.01 BRANCH CIRCUIT PANELBOARDS

A. Panelboards (panels) shall be general purpose enclosures and shall be surface or flush mounted as indicated. Panels shall be of the automatic circuit breaker type, factory assembled by the manufacturer of the circuit breakers. Panels shall be for the voltage indicated with the quantity of poles and ampacity of circuit breakers shown.

B. Boxes and trim shall be made from code gauge steel. Boxes shall be sufficient size to provide a minimum gutter space of 4" on all sides. Boxes shall be minimum 20" width and 5 3/4" depth.

C. Hinged door covering all device handles shall be included in all panel trim. Doors shall have flush–type cylinder lock and catch, except that doors over 48" in height shall have auxiliary fasteners at top and bottom of door in addition to flush–type cylinder lock and catch. Door hinges shall be concealed. All locks shall be keyed alike. Directory frame and card having a transparent cover shall be furnished each panel door.

D. Trims for flush panels shall overlap the box by at least 3/4" all around. Surface trims shall have the same width and height as the box. Trims shall be mountable by a screwdriver without the need for special tools. After installation, trim mounting mechanism or hardware shall not be accessible when panel door is closed and locked.

E. All exterior and interior steel surfaces of the trim shall be cleaned and finished with gray paint over a rust–inhibiting phosphatized coating.

F. All interiors shall be completely factory assembled with protective devices, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti–turn solderless type and all shall be suitable for copper or aluminum wire.

G. Interiors shall be so designed that devices can be replaced without disturbing adjacent units and without removing the main bus connectors, and shall be so designed that devices may be changed without machining, drilling or tapping.

H. Bus bars for the mains shall be of copper sized in accordance with U.L. standards. Full size bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices.

I. Phase bussing shall be full height without reduction. Cross and center connectors shall be of the same material as the bus.

J. The neutral bus shall utilize setscrews to bond the neutral wire to the neutral bus through holes drilled in the neutral bar. A sheet copper neutral bus utilizing flathead screws to hold the neutral wires will not be acceptable.

K. Spaces for future devices shall be included as indicated and shall be bussed for the maximum rated device that can be fitted into them.

L. All circuit breakers shall be manually operated, thermal–magnetic, automatic, of the ampacity and poles as indicated. They shall be quick–make, quick–break, both on manual and automatic operation. Breakers shall be over–the–center toggle operating type, with the handle going to a position between ON and OFF to indicate automatic tripping. All multi–pole breakers shall have internal common trip. Breakers shall have a minimum of 10,000 RMS symmetrical amperes interrupting capacity unless designated otherwise. The breakers furnished shall be determined by the specifications and by the minimum U.L. labeled RMS symmetrical amperes interrupting capacity at circuit voltage. All circuit breakers shall be bolted on and rigidly braced.

M. Panels having sub–feed lugs for feeding through shall have 8" minimum extra gutter space at the lug end and on one side.

N. Each panel as a complete unit shall have a short–circuit current rating equal to or greater than the equipment rating indicated.

O. Panels shall be as manufactured by General Electric, Square D, or Cutler–Hammer.

2.03 TRANSFORMERS

A. Branch circuit and distribution transformers shall be the dry type and shall have the ratings indicated.

B. Single phase transformers shall be 480 volt primary and 120/208 volt secondary. Three phase transformers shall be 480 volt delta primary and 120/208 volt grounded type secondary. Transformers 25 KVA and larger shall have a minimum of 4 1/2% full capacity primary taps.

C. Transformers shall have a U.L. recognized 220 degree insulation system and shall be designed so that under full load, the average conductor temperature rise does not exceed 115 degree C. rise above a 40 degree C. ambient and the enclosure does not exceed a 50 degree C. rise at any point.

D. Transformer coils shall be of the continuous wound construction and shall be impregnated with non–hygroscopic, thermosetting varnish. All cores to be constructed of high grade, non–aging silicon steel with high magnetic permeability, and low hystersesis and eddy current losses. Magnetic flux densities shall be kept well below the saturation point. The core laminations shall be clamped together with structural steel angles. The completed core and coil shall then be bolted to the base of the enclosure but isolated therefrom by means of rubber, vibration–absorbing mounts. There shall be no metal–to–metal contact between the core and coil and the enclosure. On transformers 500 KVA and smaller, the vibration isolating system shall be designed to provide a permanent fastening of the core and coil to the enclosure. Sound isolating systems requiring the complete removal of all fastening devices will not be acceptable. Sound levels shall be guaranteed by the manufacturer not to exceed the following: 25 to 50 KVA – 45 DB; 51 to 150 KVA – 50 DB; 151 to 300 KVA – 55 DB; 301 to 500 KVA – 60 DB.

E. Transformers 24 KVA and larger shall be in a heavy gauge, sheet steel, ventilated enclosure. The ventilating openings shall be designed to prevent accidental access to live parts in accordance with UL, NEMA, and National Electrical Code standard for ventilated enclosures. Transformers 25 KVA through 112.5 KVA shall be designed so that they can be either floor or wall mounted. Above 112.5 KVA, they shall be floor–mounted design. The entire transformer enclosure shall be degreased, cleaned, phosphatized, primed and finished with a gray, baked enamel.

F. Transformers shall be Energy Efficient TP–1 compliant.

G. Transformers that are of the floor–mounted type shall be mounted on Korfund Vibration Eliminators of the pad type.

H. Transformers shall be as manufactured by General Electric, Square D, or Cutler–Hammer.

3.0 EXECUTION

3.01 INSTALLATION

A. Provide a typewritten directory under plastic for all panelboards with spares marked in pencil.

B. Provide all necessary hardware to level and secure the switchgear as required by the manufacturer's instructions. Make all electrical connections for supply and load circuits and leave in operating condition.

C. Clean enclosure of all switchgear of all foreign matter, including dust.

D. Remove all rust marks and repaint to leave switchgear in new condition.

END OF SECTION

SECTION 263000

LIGHTING

1.0 GENERAL

1.01 DESCRIPTION

A. All work in this Section shall comply with the provisions of Section 260010.

B. Provide all lighting fixtures and lamps as specified herein and as shown.

C. All lamps shall be operating at the time of the final inspection and for a period of six (6) months after the final acceptance of the project by the Owner.

D. Confirm exact locations of all lighting fixtures by coordination with the Architects Reflected Ceiling Plans and mechanical equipment above or on the ceiling.

E. Confirm all ceiling types before ordering lighting fixtures.

F. Each lighting fixture shall have been tested and certified for proper operation by the fixture manufacturer for the type mounting and ceiling on/in, which it is installed.

2.0 PRODUCTS

2.01 LIGHTING FIXTURES

A. Each lighting fixture shall be as specified in the Lighting Fixture Schedule corresponding with its fixture type indication (letter).

B. Most lighting outlets are lettered or groups of outlets are indicated by a letter.

C. Each lighting fixture shall have a manufacturer's label affixed and shall comply with the requirements of all authorities having jurisdiction.

D. The lighting fixtures that are indicated by the letters shall be as indicated on the Lighting Fixture Schedule.

2.02 LAMPS

A. The type lamps shall be as specified for each lighting fixture in the lighting fixture schedule.

B. The lamp catalog number is the catalog number is generally for Sylvania Lighting and is given as a standard of the quality and performance required. Equal lamps by General Electric or Philips will be acceptable. When a lamp manufacturer's name is used along with the catalog number in the lighting fixture schedule, it is considered unequaled by any other lamp and shall not be substituted for. The lamp performance with energy conserving ballasts furnished under this Section shall be certified by a nationally recognized independent testing laboratory.

C. Fluorescent lamps shall be as specified in the Lighting Fixture Schedule.

D. Incandescent lamps shall be as specified in Lighting Fixture Schedule.

E. All incandescent lamps, except quartz tubes, shall be rated for 130 volt operation.

F. High Intensity Discharge (HID) lamps shall be as specified in the Lighting Fixture Schedule.

2.03 BALLASTS

A. Fluorescent ballast shall be electronic type manufactured by Motorola, Magnetek or Advance.

B. Ballast shall operate lamps at a frequency or 25 KHz or higher with less than 2% lamp flicker.

C. Ballast shall operate at an input voltage of 108 – 132 Vac (120V line) or 249 – 305 Vac (277V line) at an input frequency of 60 Hz. Light output shall remain constant for line voltage fluctuation of + 5%.

D. Ballast shall comply with EMI and RFI limits set by the FCC (CFR 47 part 18) for non–residential applications and not interfere with normal electrical equipment.

E. Ballast shall withstand transients as specified by ANSI C.62.41 for location category A3 in the normal mode and location category A1 in the common mode.

F. Ballast shall meet applicable ANSI standards.

G. Ballast shall have a minimum power factor of 0.99.

H. Ballast shall not be potted or weigh more than 1.3 pounds.

I. Ballast shall have less than 10% Total Harmonic Distortion.

J. Ballast shall have less than 6% Third Harmonic Distortion.

K. Ballast height shall be less than or equal to 1.5 inches.

L. Ballast shall have a poke–in wiretrap connector.

M. Ballast shall meet sound rating "A".

N. Ballast must be Underwriters Laboratories (UL) listed Class P, Type 1 Outdoor.

O. Ballast shall provide normal rated lamp life as stated by lamp manufacturers.

P. Rapid start ballasts are series wired and shall maintain full cathode heat during operation.

Q. Rapid start ballast shall have less than a 1.5 Lamp Current Crest Factor (LCCF) and instant start ballasts have less than a 1.7 LCCF.

R. Instant start ballast shall have parallel lamp operation.

S. Ballast factor standard is .875+0.025 on all normal light output products.

T. Ballasts for "PL" fluorescent lamps shall be coordinated with lamps and 2–pin or 4–pin configuration ballasts shall be provided to match lamps. Manufacturer for "PL" fluorescent fixtures shall be Advance, Roberson, Lightolier or Lutron.

U. Ballasts for High Intensity Discharge (HID) lamps shall be Constant Wattage Autotransformer (CWA) type or equal type with minimum power factor of 0.9.

2.04 DIFFUSERS

A. Unless specified otherwise, all prismatic diffusers for fluorescent lighting fixtures shall be prismatic acrylic KSH K12 with a thickness of 0.125", measured from the back side to the peak of the prism.

B. All wraparound lenses shall be virgin acrylic, one–piece and injection molded.

2.05 LIGHT FIXTURE TRIM

A. Each recessed lighting fixture shall have a trim to match the type of ceiling (plaster, exposed grid, concealed spline, exposed panel, etc.) in which it is being installed, regardless of catalog number given. Coordinate with the Architect's reflected ceiling plan to provide the right trim for the type of ceiling the fixture is to be installed in.

B. Each lighting fixture recessed in a plastered ceiling of any type shall have a plaster frame.

2.06 RECESSED INCANDESCENT FIXTURES

A. All recessed incandescent fixtures shall comply with Article 410–110, C of the N.E.C.

2.07 FLUORESCENT FIXTURES

A. All indoor fluorescent fixtures utilizing double ended lamps or that are supplied from multi–wire branch circuits, shall have a disconnecting means that complies with Article 410.130, G of the N.E.C.

2.08 LED LIGHTING FIXTURES

A. LED lamps for interior use shall be 3500K, CRI 80 (min.), unless noted otherwise. Color temperature chromaticity over the lifetime of the product shall be within 0.007 on the CIE 1976 (u',v') diagram.

B. System shall be rated at a minimum for 50,000 hours (min.) at 70% lumen maintenance (L80).

C. System shall comply with the following:

1. ENERGY STAR® SSL Requirements for Luminaires
2. IESNA LM–16
3. IESNA LM–58–94
4. IESNA LM–79
5. IESNA LM–80
6. ANSI C82.2–2002
7. ANSI C82.77–2002
8. ANSI C78.377–2008
9. CIE 13.3–1995
10. CIE 15–2002
11. ANSI/UL 153
12. UL 1598
13. NEMA 410–2011

D. LED drivers shall be electronic, thermally protected and have an input voltage at 120/277VAC, 60Hz with a power factor of >0.90.

E. LED boards and drivers shall be provided with plug–in connections for tool–less replacement of components.

F. Compatibility of dimming switches for control of dimmable LED drivers shall be confirmed with LED fixture manufacturer.

3.0 EXECUTION

3.01 SUPPORT OF LIGHTING FIXTURES

A. All lighting shall be supported from the building structure. The fixtures shall be supported in a manner that will insure the fixture weight being equally distributed from each support and the fixture remaining in a level position.

B. Fluorescent fixtures installed recessed in a suspended ceiling system shall be supported from the building structure with four (4) 12 gauge wires on each corner of the fixture. In addition, the fixture shall be clipped to members of the ceiling suspension system.

C. Fluorescent fixtures installed in or on any ceiling other than a suspended ceiling system specifically mentioned above shall be supported with concealed steel rods. Rods shall be 1/4" diameter minimum and shall be located where recommended by the fixture manufacturer. Provide a minimum of two (2) supports for each 4' or 8' fixture chassis. Supports shall be maximum of 48" centers. For incandescent fixtures, steel hanging wire may be used by attaching the wire to the fixture mounting frame.

D. Pendant mounted incandescent fixtures shall be stem supported by a fixture stud mounted in the outlet box. Suspended fluorescent fixtures shall have mounting stems located as per the manufacturer's recommendations, but in no case shall have less than two (2) stems per chassis.

3.02 AIMING OF ADJUSTABLE LIGHT FIXTURES

A. All fixtures with lamp position, tilt, shutters, rotation, or other types of adjustments during the final inspection. Fixtures serving areas where day lighting is predominant will be adjusted after sunset.

3.03 LIGHTING FIXTURES IN MILLWORK

A. Special attention shall be given to lighting fixtures indicated to be mounted within, under, on or otherwise incorporated into millwork or cabinetry.

B. Refer to the Architectural drawings and details for specific dimensions. This coordination shall occur prior to ordering fixtures to assure fixtures will fit the space limitations of the millwork.

C. This requirement is intended to preclude incurring additions to the Contract due to fixtures being too small or too large for the space.

3.04 FINAL PREPARATION

A. All plastic covers shall be removed from fluorescent fixtures.

B. Clean all lens and reflectors from debris, fingerprints, dust, etc.

END OF SECTION

SECTION 269200

MOTOR CONTROLS AND WIRING

1.0 GENERAL

1.01 SCOPE

A. All work specified in this Section shall comply with the provisions of Section 260010.

B. All motors shall be provided under Division 22 and 23.

C. A motor starter shall be provided under this Section for each motor except for those specified in Division 22 or 23 to be furnished with integral starters. Motor starters shall be installed either in a Motor Control Center or separately mounted adjacent to the motor served.

D. Motor power wiring is defined as those conductors between the energy source and the motor. This power wiring shall be terminated at the motor terminals.

E. All control wiring required for automatic starting and stopping of motors shall be provided under Division 22 or 23 unless specifically shown on the electrical drawings.

F. Power wiring shall be connected through all line voltage control devices such as firestats and thermostats.

2.0 PRODUCTS

2.01 MOTOR STARTERS

A. Starters for motors 1/3 horsepower or smaller shall be manual unless remote or automatic starting is required, in which case the starters shall be magnetic, full voltage, non–reversing, single–speed, unless otherwise indicated. All other starters shall be magnetic.

B. Each starter for a three–phase motor shall be furnished with three (3) overload relays sized for the full load running current of the motor actually provided. Provide an external "HAND–OFF–AUTO" selector switch with green "RUNNING" light. Provide a red pilot light to indicate motor "STOPPED". Each pilot light shall have a legend plate indicating reason for signal.

C. Each overload relay shall have a normally open alarm contact which will close only when actuated by an overload (not to be confused with N.O. or N.C. auxiliary contacts). These contacts shall be properly wired to their respective blue pilot light provided on the starter front cover and having a "TRIPPED" legend plate.

D. Individually mounted motor starters shall be in a NEMA Type 1 general purpose enclosure in unfinished areas and shall be flush mounted in all finished areas. All starters mounted in exterior areas shall have a NEMA 3R enclosure. Each starter shall have a laminated nameplate to indicate Division 22 or 23 unit number, function and circuit number.

E. A control power transformer shall be provided at each motor starter for connection to the controls provided under Division 22 or 23. The control power transformer shall be mounted inside the motor starter enclosure. All control transformers at 50 VA or greater shall have primary fusing. Coordinate all control equipments with Division 22 or 23 and equipment manufacturers.

F. All motor starters, push buttons and pilot lights shall be of the same manufacturer as the switchboard and shall be General Electric, Square D, Siemens I.T.E, Joslyn Clark Controls or Westinghouse.

2.02 COMBINATION STARTERS

A. Combination starters shall consist of a circuit breaker and a motor starter mounted in a common NEMA Type 1 general purpose enclosure.

B. The motor starter components shall be as specified in paragraph 2.01 for motor starters.

C. The circuit breaker component shall be a minimum 22,000 RMS interrupting capacity and shall be as required in Section 262000.

3.0 EXECUTION

3.01 INSTALLATION

A. Provide power wiring to and install all motor starters, unless integrally factory mounted on a piece of equipment.

B. Provide power wiring to all motors except packaged units that are prewired between the starter and motor.

C. Where line voltage control devices are mounted at, on or inside a unit, such as aquastats, firestat for single phase devices, etc., the power wiring to the unit shall be connected through such a control device.

D. On final inspection, it shall be demonstrated to the Architect or his representative, that each overload relay control circuit is properly wired and functioning correctly by manually tripping each overload relay individually, one at a time. This inspection procedure shall not involve removing any wiring or disconnecting any current carrying parts.

END OF SECTION

DRAWING NO.
CFD-XXXX-E-0003-41CC2B

DUKE ENERGY
MAILING ADDRESS:
P.O. BOX 1007
CHARLOTTE, NC 28201

Safety Expectations:
ILLNESS ZERO INJURY
Reduce Risk
Remove Exposures to Hazards
Reinforce Safe Behavior

BW &A Barrett, Woodyard and Associates, Inc.
License # C–2226
420 Minuet LN.
Charlotte, North Carolina 28217
(p) 704–357–9333 (f) 704–357–9385

BWA JOB # 2022–0632

SEAL 02/12/2025

DUNN OPERATIONS CENTER

OPS CENTER OUTBUILDINGS

MARK	DATE	DRN BY	REVISION
0	02.12.2025		ISSUED FOR CONSTRUCTION
1			
2			
3			
4			
5			
6			
7			
8			
9			

PROJECT NO:
DRAWING NUMBER
CFD-XXXX-E-0003-41CC2B
ELECTRONIC FILE NAME:
DRAWN BY: SEB 2/12/25
CHK'D BY: XXX XXX
E-MAIL: jhall@barrettwoodyard.com

SHEET TITLE:
SPECIFICATIONS -ELECTRICAL

SHEET NO.
E-003

LIGHTING FIXTURE SCHEDULE

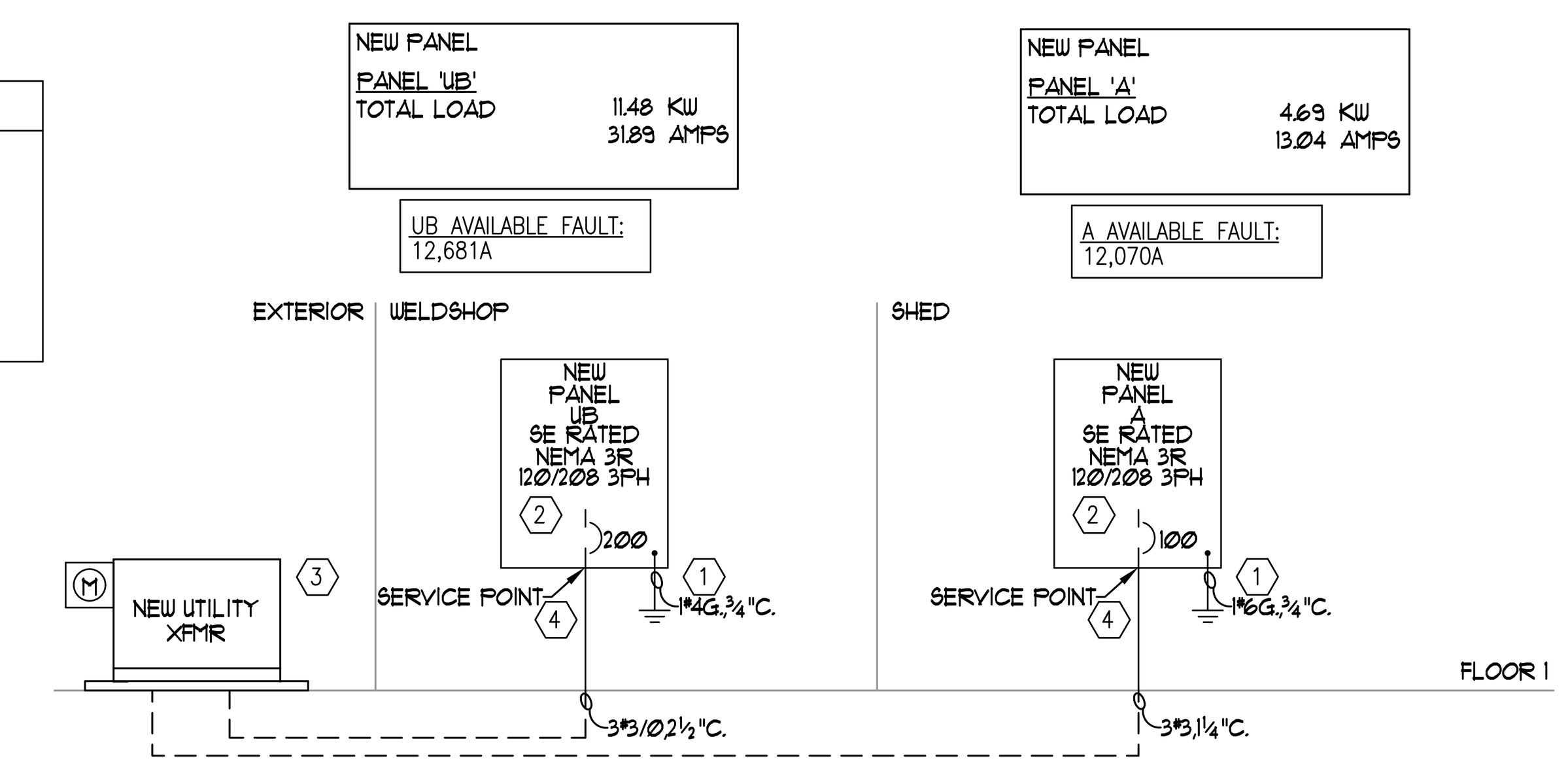
FIXTURE TYPE	MANUFACTURER AND CATALOG INFORMATION	LAMPS QTY.	LAMPS TYPE	LAMPS WATTS	DRIVER QTY.	DRIVER TYPE	TOTAL WATTS	DESCRIPTION	MOUNTING
A	HIGH BAY FIXTURE. METALUX UHB LED SERIES OR APPROVED EQUAL.	–	LED 13627LUM 4000K	100W	1	DRIVER 0–10V	100W	HIGH BAY FIXTURE. METALUX UNIVERSAL VOLTAGE.	SUSPENDED
AE	SAME AS TYPE 'A' EXCEPT PROVIDE WITH EMERGENCY 90 MINUTE BATTERY PACK.								
B	HIGH BAY FIXTURE. METALUX UHB LED SERIES ORR APPROVED EQUAL.	–	LED 19607LUM 5000K	147W	1	DRIVER 0–10V	147W	HIGH BAY FIXTURE. METALUX UHB LED SERIES. UNIVERSAL VOLTAGE.	SUSPENDED
BE	SAME AS TYPE 'B' EXCEPT PROVIDE WITH EMERGENCY 90 MINUTE BATTERY PACK.								
C	EXTERIOR WALL PACK. COOPER LUMARK WP LED SERIES. OR APPROVED EQUAL.	–	LED 3500LUM 4000K	60W	1	DRIVER 0–10V	60W	LED WALL PACK LIGHT. COOPER LUMARK SERIES. UNIVERSAL VOLTAGE.	WALL
REM	RECESSED EMERGENCY FIXTURE. COOPER AEL2 SERIES OR APPROVED EQUAL. PROVIDED WITH 90 MINUTE BATTERY PACK.	–	LED 3500LUM 4000K	5W	1	–	5W	EMERGENCY FIXTURE. UNIVERSAL VOLTAGE.	WALL
X	EMERGENCY EXIT FIXTURE. SURE LITE SERIES.	–	LED 3500LUM 4000K	5W	1	–	5W	EMERGENCY EXIT FIXTURE. UNIVERSAL VOLTAGE.	SUSPENDED

LIGHT FIXTURE SCHEDULE NOTES:

1. ALL FINISH TYPES SHOULD BE COORDINATED WITH THE ARCHITECT/INTERIOR DESIGNER(S).
2. ALL TRIMS AND INSTALLATION REQUIREMENTS SHALL BE COORDINATED WITH THE CEILING TYPE IN WHICH IT IS TO BE INSTALLED. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT CEILING TYPE FOR WHICH THE FIXTURE IS TO BE INSTALLED.
3. FIXTURE TYPES NOTED ON PLAN WITH SUFFIX 'E' INDICATES FIXTURE TO BE PROVIDED WITH 90 MINUTE MINIMUM BATTERY BACK-UP. (E.G. L1E, L2E, ETC...)

AVAILABLE SHORT CIRCUIT FAULT CURRENT

BASED ON INFORMATION PROVIDED BY THE UTILITY COMPANY, THE CALCULATED MAXIMUM FAULT CURRENT AVAILABLE AT THE POINT OF SERVICE IS 56,523 AMPS. ALL EQUIPMENT SHALL BE COORDINATED AND RATED NO LESS THAN THE AVAILABLE FAULT CURRENT AS CALCULATED.



1 / E-003 POWER RISER DIAGRAM
NO SCALE

LEGEND NOTES:
(APPLY TO THIS SHEET ONLY)

1. GROUND PER NEC 250.
2. PROVIDE ARC-FLASH HAZARD WARNING PER NEC 110.16.
3. PAD MOUNT UTILITY TRANSFORMER PROVIDED BY UTILITY COMPANY. COORDINATE EXACT LOCATION WITH LOCAL UTILITY AND CIVIL. MAINTAIN SUFFICENET DISTANCE BETWEEN TRANSFORMER AND BUILDING AS REQUIRED TO MEET LOCAL CODES. PROVIDE REINFORCED CONCRETE PAD PER POWER CO. SPECIFICATIONS ON LEVEL GRADE. EXCAVATE, FILL, AND COMPACT EARTH TO ESTABLISH A SECURE LEVEL FOUNDATION WHILE MAINTAINING WORKING CLEARANCES. PAD SHALL HAVE PARTITION BETWEEN LOW VOLTAGE AND HIGH VOLTAGE WIRING COMPARTMENTS. REFER TO DETAL XXX FOR ADDITIONAL INFORMATION. PROVIDE DUKE ENERGY COMPLIANT METER ADJACENT TO TRANSFORMER. COORDINATE ALL REQUIREMENTS FOR PERMANIENT POWER WITH DUKE ENERGY.
4. SERVICE POINT LOCATION. CONDUCTORS INDICATED FROM THE SERVICE POINT BACK TO THE PAD MOUNTED TRANSFORMER ARE TO BE PROVIDED/EXTENDED BY THE UTILITY COMPANY UNLESS OTHERWISE DETERMINED BY THE CONTRACTOR IN CONVERSATION WITH THE UTILITY.

NEW PANEL UB — SECTION 1

10K AIC, SE RATED, NEMA 3R
VOLTAGE: 120/208 PHASE: 3 AMP: 200 MAIN: MCB

DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION
PANEL REC	0.18	20/1	1	A	2	20/1	0.3	EF-1
REC	0.72	20/1	3	B	4	20/1	0.41	LTS INTERIOR
NEMA 6-30R	1.2	30/2	5	C	6	20/1	0.4	OVERHEAD DOOR
-----	1.2	---	7	A	8	---	0	SPACE
NEMA 6-30R	1.2	30/2	9	B	10	---	0	SPACE
-----	1.2	---	11	C	12	---	0	SPACE
NEMA 6-30R	1.2	30/2	13	A	14	---	0	SPACE
-----	1.2	---	15	B	16	---	0	SPACE
NEMA 6-30R	1.2	30/2	17	C	18	---	0	SPACE
-----	1.2	---	19	A	20	---	0	SPACE
SPACE	0	---	21	B	22	---	0	SPACE
SPACE	0	---	23	C	24	---	0	SPACE
SPACE	0	---	25	A	26	---	0	SPACE
SPACE	0	---	27	B	28	---	0	SPACE
SPACE	0	---	29	C	30	---	0	SPACE
SPACE	0	---	31	A	32	---	0	SPACE
SPACE	0	---	33	B	34	---	0	SPACE
SPACE	0	---	35	C	36	---	0	SPACE
SPACE	0	---	37	A	38	---	0	SPACE
SPACE	0	---	39	B	40	---	0	SPACE
SPACE	0	---	41	C	42	---	0	SPACE

A TOTAL	4.08
B TOTAL	3.53
C TOTAL	4.00
CONN. kW	11.61
CONN. Amps	32.23

VLL	PH
208	3

0.90	RECEPTACLES
0.00	HEATING
0.70	AC/MOTORS
0.41	LIGHTING
9.60	MISC.
0.00	WATER HEATERS
0.00	ELEVATORS
0.00	KITCHEN EQUIP

TOTAL DEMAND LOAD

RECEPTS: 100% 1ST 10 KW + 50% REMAINING:	=	0.9 KVA
HEAT: 100% :	=	0 KVA
AC/MOTORS: 125% LARGEST + 100% REMAINING:	=	0.7 KVA
LIGHTING: 125%:	=	0.5125 KVA
MISC: 100%:	=	9.6 KVA
WATER HEATER: 125%:	=	0 KVA
ELEVATORS: PER NEC:	=	0 KVA
KITCHEN EQUIP: PER NEC :		0 KVA
TOTAL DEMAND LOAD KW:	=	11.7125 KVA
TOTAL DEMAND LOAD AMPS:	=	32.51 AMP

NEW PANEL A — SECTION 1

10K AIC, SE RATED, NEMA 3R
VOLTAGE: 120/208 PHASE: 3 AMP: 100 MAIN: MCB

DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION
DED REC	0.18	20/1	1	A	2	20/1	0.88	LTS INTERIOR
DED REC	0.18	20/1	3	B	4	20/1	0.88	LTS INTERIOR
DED REC	0.36	20/1	5	C	6	20/1	0.36	LTS EXTERIOR
DED REC	0.36	20/1	7	A	8	---	0	SPACE
DED REC	0.36	20/1	9	B	10	---	0	SPACE
DED REC	0.36	20/1	11	C	12	---	0	SPACE
DED REC	0.18	20/1	13	A	14	---	0	SPACE
DED REC	0.18	20/1	15	B	16	---	0	SPACE
SPACE	0	---	17	C	18	---	0	SPACE
SPACE	0	---	19	A	20	---	0	SPACE
SPACE	0	---	21	B	22	---	0	SPACE
SPACE	0	---	23	C	24	---	0	SPACE
SPACE	0	---	25	A	26	---	0	SPACE
SPACE	0	---	27	B	28	---	0	SPACE
SPACE	0	---	29	C	30	---	0	SPACE
SPACE	0	---	31	A	32	---	0	SPACE
SPACE	0	---	33	B	34	---	0	SPACE
SPACE	0	---	35	C	36	---	0	SPACE
SPACE	0	---	37	A	38	---	0	SPACE
SPACE	0	---	39	B	40	---	0	SPACE
SPACE	0	---	41	C	42	---	0	SPACE

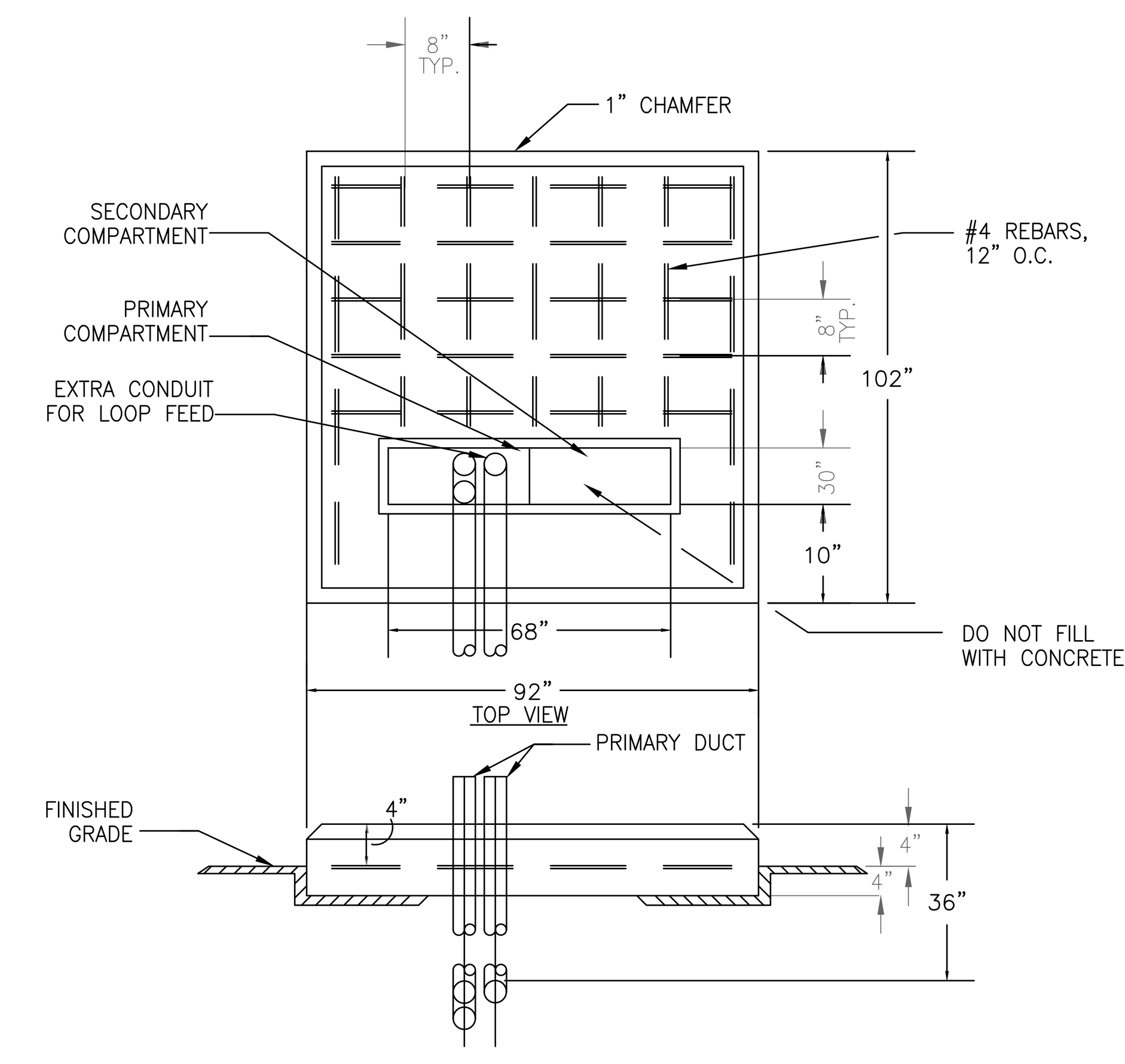
A TOTAL	1.60
B TOTAL	1.60
C TOTAL	1.08
CONN. kW	4.28
CONN. Amps	11.88

VLL	PH
208	3

2.16	RECEPTACLES
0.00	HEATING
0.00	AC/MOTORS
2.12	LIGHTING
0.00	MISC.
0.00	WATER HEATERS
0.00	ELEVATORS
0.00	KITCHEN EQUIP

TOTAL DEMAND LOAD

RECEPTS: 100% 1ST 10 KW + 50% REMAINING:	=	2.16 KVA
HEAT: 100% :	=	0 KVA
AC/MOTORS: 125% LARGEST + 100% REMAINING:	=	0 KVA
LIGHTING: 125%:	=	2.65 KVA
MISC: 100%:	=	0 KVA
WATER HEATER: 125%:	=	0 KVA
ELEVATORS: PER NEC:	=	0 KVA
KITCHEN EQUIP: PER NEC :		0 KVA
TOTAL DEMAND LOAD KW:	=	4.81 KVA
TOTAL DEMAND LOAD AMPS:	=	13.35 AMP



2 / E-008 TRANSFORMER PAD DETAIL
NOT TO SCALE

GENERAL NOTES:
(APPLIES ONLY TO THIS DETAIL 2/E-002)

1. CONFIRM DIMENSIONS WITH POWER COMPANY, DUKE ENERGY.
2. SERVICE DUCT SHALL BE LOCATED IN THE EXTREME RIGHT SIDE OF THE SECONDARY COMPARTMENT
3. PRIMARY DUCT SHALL EXTEND BEYOND EDGE OF PAD IN DIRECTION OF INCOMING CABLES.
4. MATERIAL FOR PRIMARY DUCT SHALL BE FURNISHED BY POWER COMPANY.
5. THE PAD SHALL HAVE A MINIMUM CLEARANCE OF 10' FROM ALL BUILDINGS.
6. CONCRETE SHALL HAVE A MINIMUM ULTIMATE 28 DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 POUNDS. PAD SHALL BE CURED NOT LESS THAN 72 HOURS.
7. SOIL UNDERNEATH PADS SHALL BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS AND BE THOROUGHLY TAMPED TO PREVENT WASHING. EXCERSISE CARE IN BACKFILLING AND GRADING AROUND PAD.
8. USE FIRE ANT CONTROL (CN 9220092158) UNDER ENTIRE PAD INCLUDING OPENINGS.
9. OTHER UTILITIES ARE NOT TO BE INSTALLED UNDER TRANSFORMER PAD.

LIGHTING CONTROLS — SPACE TYPES

LIGHTING CONTROLS		CLASSROOM/LECTURE/TRAINING ROOMS	LARGE CONFERENCE ROOM/MEETING/MULTIPURPOSE ROOMS	SMALL CONFERENCE ROOM	COPY/PRINT ROOMS	LOUNGES/BREAK ROOM/PANTRY	STAIRWELLS	PRIVATE OFFICES	OPEN OFFICES	RESTROOMS	STORAGE ROOMS	JANITORIAL CLOSETS	EQUIPMENT ROOM (COMPUTER SERVER ROOMS)	MECHANICAL, ELECTRICAL ROOMS, SIMILAR EQUIPMENT ROOMS	ELEVATOR LOBBIES	CORRIDOR	FITNESS / EXERCISE	WAREHOUSES	EXTERIOR LIGHTING (PARKING LOT, PARKING DECK, LANDSCAPE LIGHTING)	MALLS, ARCADES, AUDITORIUMS, SINGLE TENANT RETAIL SPACE, INDUSTRIAL FACILITIES, ARENAS	SPACES WITH ONLY ONE LUMINAIRE (< 100 WATTS)	SPACES WITH < 0.6 WATTS PER SQUARE FOOT
AUTOMATIC CONTROL	OCCUPANCY SENSOR (AUTOMATIC ON/OFF)			●	●	●		●			●											
AUTOMATIC CONTROL	VACANCY SENSOR (MANUAL ON/AUTOMATIC OFF)																					
AUTOMATIC CONTROL	TIME OF DAY																					
AUTOMATIC CONTROL	TIMER SWITCH																					
AUTOMATIC CONTROL	PHOTOCELL CONTROL																					
MANUAL CONTROL	ON/OFF															●					●	
MANUAL CONTROL	LIGHTING REDUCTION (ON/OFF)																					
MANUAL CONTROL	STEP-DIMMING																					
MANUAL CONTROL	DIMMING																					
MANUAL CONTROL	MULTI-ZONE DIMMING																					
MANUAL CONTROL	SCENE-CONTROL																					
MANUAL CONTROL	TIME OF DAY OVERRIDE SWITCH																					
MANUAL CONTROL	KEY SWITCH																					
DAYLIGHT CONTROL																						
DAYLIGHT CONTROL																						

NOTE:
1. LIGHTING CONTROLS ARE NOT REQUIRED AREAS DESIGNATED FOR SECURITY OR EMERGENCY, INTERIOR EXIT RAMPS, STAIRWAYS, AND PASSAGEWAYS, AND EMERGENCY EGRESS LIGHTING THAT IS NORMALLY OFF.
2. OCCUPANT SENSORS AT THE MINIMUM SHALL AUTOMATICALLY TURN OFF LIGHTS WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.
3. MANUAL CONTROL SHALL BE READY ACCESSIBLE TO OCCUPANTS, AND SHALL BE LOCATED WHERE THE CONTROLLED LIGHTS ARE VISIBLE, OR SHALL IDENTIFY THE AREA SERVED BY THE LIGHTS AND INDICATE THEIR STATUS.

DRAWING NO.
CFD-XXXX-E-0004-41CC2B

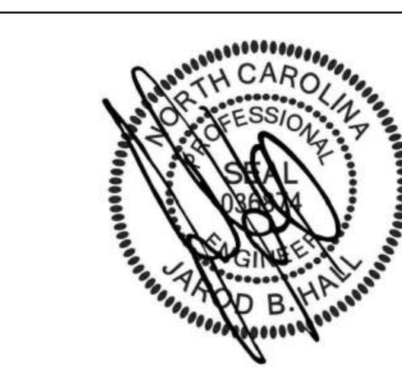
DUKE ENERGY

MAILING ADDRESS:
P.O. BOX 1007
CHARLOTTE, NC 28201

Safety Expectations:
ILLNESS ZERO INJURY
Reduce Risk
Remove Exposures to Hazards
Reinforce Safe Behavior

BW&A Barrett, Woodyard and Associates, Inc.
License # C-2226
420 Minuet LN.
Charlotte, North Carolina 28217
(p) 704-357-9333 (f) 704-357-9385

BWA JOB # 2022-0632



SEAL 02/12/2025

DUNN OPERATIONS CENTER

OPS CENTER OUTBUILDINGS

MARK	DATE	DRN BY	REVISION
9			
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0	02.12.2025		ISSUED FOR CONSTRUCTION

PROJECT NO:

DRAWING NUMBER
CFD-XXXX-E-0004-41CC2B

ELECTRONIC FILE NAME:

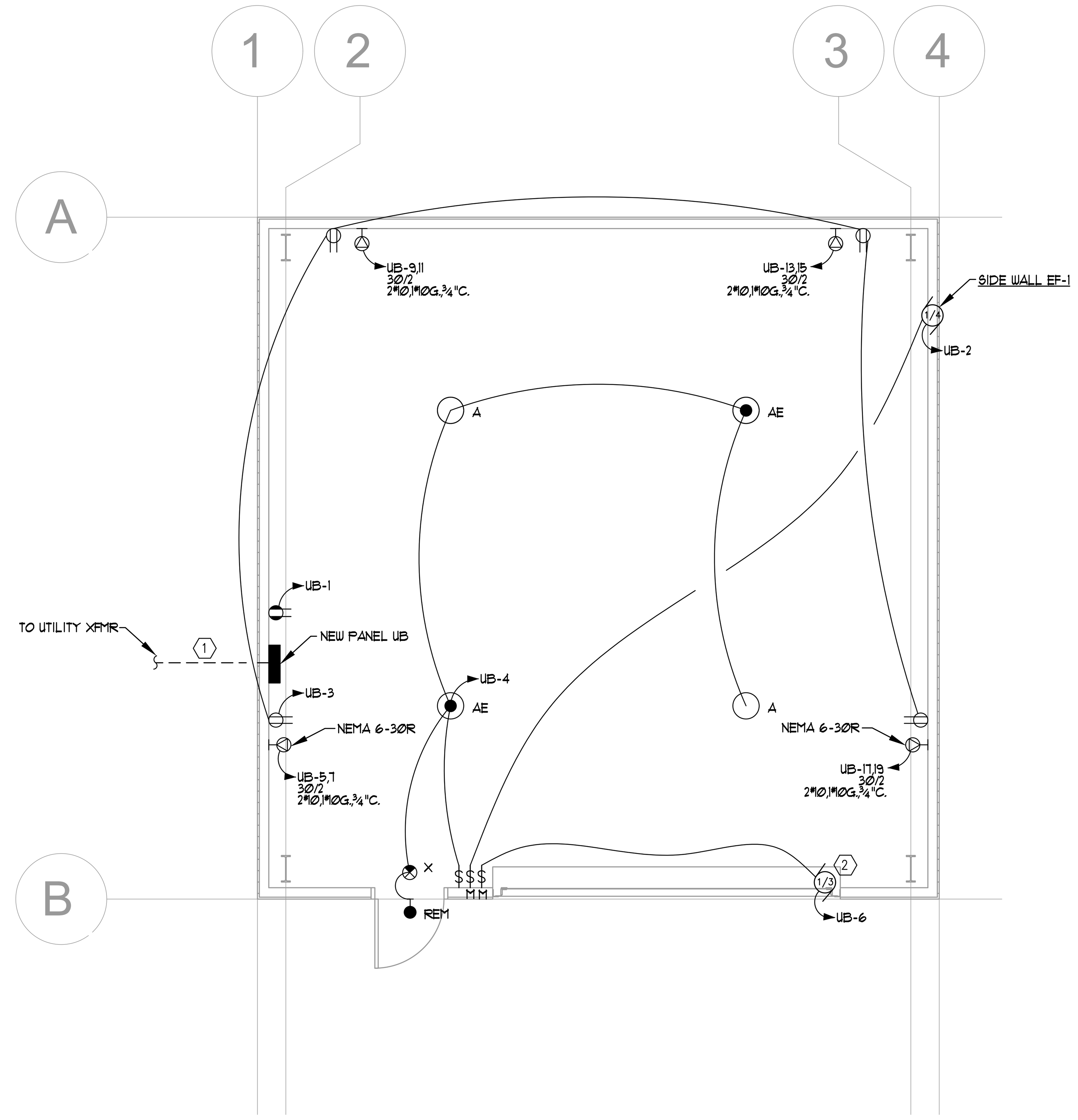
DRAWN BY: SEB 2/12/25

CHK'D BY: XXX XXX

E-MAIL: jhall@barrettwoodyard.com

SHEET TITLE:
POWER RISER DIAGRAM, AND PANEL SCHEDULE

SHEET NO.
E-004



WELDSHOP POWER PLAN

1 / E-101 — 1/4"=1'-0"

LEGEND NOTES:
(APPLY THIS SHEET ONLY)

1. UNDERGROUND SERVICE ENTRANCE CONDUCTORS FROM UTILITY TRANSFORMER TO SERVICE ENTRANCE RATED PANEL A. REFER TO RISER DIAGRAM 1/E-003 FOR FEEDER SIZE AND ADDITIONAL INFORMATION. COORDINATE EXACT ROUTING FROM UTILITY TRANSFORMER TO METER WITH CIVIL AND UTILITY COMPANY.
2. MOTORIZED DOOR LOCATION. COORDINATE EXACT LOCATION AND CONNECTION POINT WITH DOOR INSTALLER.

GENERAL NOTES:
(APPLY THIS SHEET ONLY)

1. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, DETAILS, AND LIGHTING NOTES FOR FURTHER INFORMATION OF DEVICE PLACEMENT AND OTHER RELEVANT INFORMATION.
2. SEE ELECTRICAL SYSTEM AND EQUIPMENT SCHEDULE FOR LIGHTING POWER DENSITY INFORMATION.
3. ALL LIGHT FIXTURES CONTAINING BATTERY PACK FOR EMERGENCY LIGHTING SHALL BE CONTROLLED WITH THE GENERAL LIGHTING IN THE ROOM/AREA. PROVIDE AN ADDITIONAL UNSWITCHED "HOT" CONDUCTOR TO THESE LIGHTING FIXTURES.
4. ALL SWITCHES FOR LIGHTS, SHADES, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL BE GANGED TOGETHER AND SHARE A MULTI-GANG COVER PLATE WHERE POSSIBLE.
5. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR PRIOR TO INSTALLATION.
6. DEDICATED OUTLETS SHALL BE 20A RATED.
7. RECEPTACLES SHALL BE INSTALLED PER ANSI A117.1.
8. LABEL ALL OUTLETS AND JUNCTION BOXES WITH THE CORRESPONDING CIRCUIT DESIGNATION. LABEL TO BE TYPEWRITTEN; BLACK LETTERS ON WHITE BACKGROUND.
9. ALL RECEPTACLES WITHIN 6'-0" OF ANY WATER SOURCE SHALL BE 'GFCI' TYPE.

DRAWING NO:
CFD-XXXX-E-0110-41CC2B

DUKE ENERGY

MAILING ADDRESS:
P.O. BOX 1007
CHARLOTTE, NC 28201

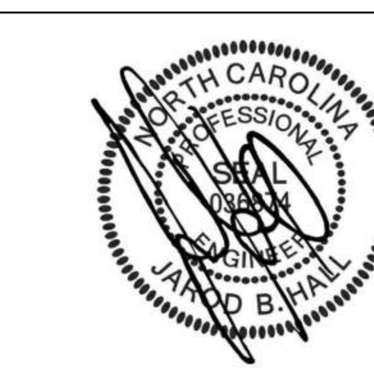
Safety Expectations:

ILLNESS ZERO INJURY

- Reduce Risk
- Remove Exposures to Hazards
- Reinforce Safe Behavior

BW &A Barrett, Woodyard and Associates, Inc.
License # C-2226
420 Minuet LN.
Charlotte, North Carolina 28217
(p) 704-357-9333 (f) 704-357-9385

BWA JOB # 2022-0632



SEAL 02/12/2025

DUNN OPERATIONS CENTER

OPS CENTER OUTBUILDINGS

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PROJECT NO:

DRAWING NUMBER
CFD-XXXX-E-0110-41CC2B

ELECTRONIC FILE NAME:

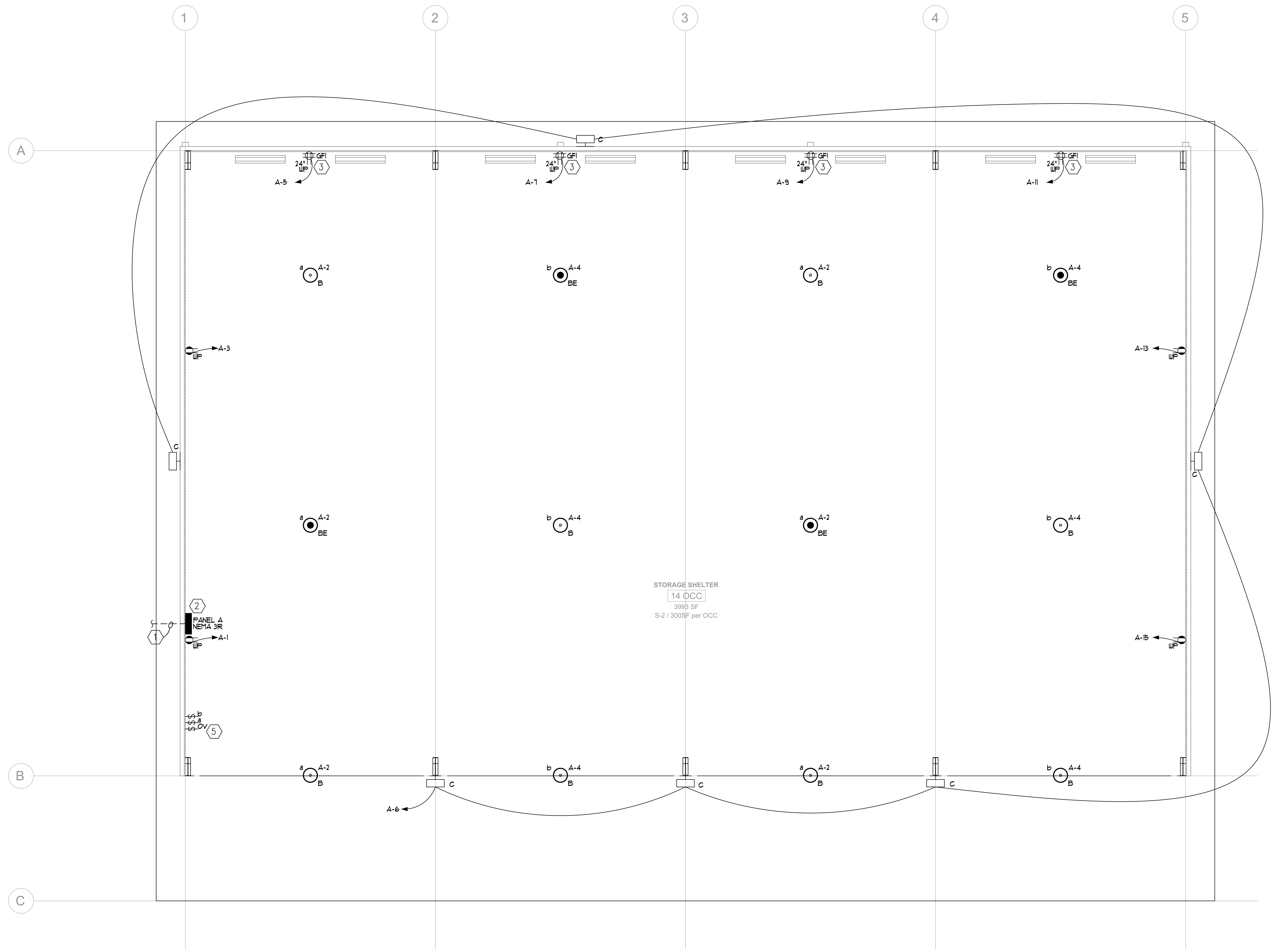
DRAWN BY: SEB 2/12/25

CHK'D BY: XXX XXX

E-MAIL: jhall@barrettwoodyard.com

SHEET TITLE:
WELDSHOP POWER PLAN - ELECTRICAL

SHEET NO.
E-101



SHED POWER PLAN

1 / E-101a — 1/4"=1'-0"

LEGEND NOTES:
(APPLY THIS SHEET ONLY)

1. UNDERGROUND SERVICE ENTRANCE CONDUCTORS FROM UTILITY TRANSFORMER TO SERVICE ENTRANCE RATED PANEL A. REFER TO RISER DIAGRAM 1/E-003 FOR FEEDER SIZE AND ADDITIONAL INFORMATION. COORDINATE EXACT ROUTING FROM UTILITY TRANSFORMER TO METER WITH CIVIL AND UTILITY COMPANY.
2. PROVIDE NEW 100A NEMA 3R WEATHER PROOF ELECTRICAL PANEL. COORDINATE EXACT LOCATION WITH OWNER.
3. PROVIDE DEDICATED WEATHER PROOF WHILE IN USE OUTLET AT THIS LOCATION. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH OWNER.
4. COORDINATE ALL LOCATIONS OF ELECTRICAL RECEPTACLES AND SWITCHES WITH OWNER PRIOR TO INSTALLATION.
5. MANUAL OVERRIDE SWITCH FOR PHOTOCELL CONTROLLED WALL PACK TYPE B FIXTURE. COORDINATE EXACT SWITCH LOCATION WITH OWNER PRIOR TO BEGINNING WORK.

GENERAL NOTES:
(APPLY THIS SHEET ONLY)

1. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, DETAILS, AND LIGHTING NOTES FOR FURTHER INFORMATION OF DEVICE PLACEMENT AND OTHER RELEVANT INFORMATION.
2. SEE ELECTRICAL SYSTEM AND EQUIPMENT SCHEDULE FOR LIGHTING POWER DENSITY INFORMATION.
3. ALL LIGHT FIXTURES CONTAINING BATTERY PACK FOR EMERGENCY LIGHTING SHALL NOT BE CONTROLLED BUT TURN ON WITH LOSS OF POWER. PROVIDE UNSWITCHED "HOT" CONDUCTOR TO THESE LIGHTING FIXTURES.
4. ALL SWITCHES FOR LIGHTS, SHADES, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL BE GANGED TOGETHER AND SHARE A MULTI-GANG COVER PLATE WHERE POSSIBLE.
5. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR PRIOR TO INSTALLATION.
6. DEDICATED OUTLETS SHALL BE 20A RATED.
7. RECEPTACLES SHALL BE INSTALLED PER ANSI A117.1.
8. LABEL ALL OUTLETS AND JUNCTION BOXES WITH THE CORRESPONDING CIRCUIT DESIGNATION. LABEL TO BE TYPEWRITTEN; BLACK LETTERS ON WHITE BACKGROUND.
9. ALL RECEPTACLES WITHIN 6'-0" OF ANY WATER SOURCE SHALL BE 'GFCI' TYPE.

DRAWING NO.
CFD-XXXX-E-0110a-41CC2B

DUKE ENERGY

MAILING ADDRESS:
P.O. BOX 1007
CHARLOTTE, NC 28201

Safety Expectations:
ILLNESS ZERO INJURY
Reduce Risk
Remove Exposures to Hazards
Reinforce Safe Behavior

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License # C-2226
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Charlotte, North Carolina 28217
(p) 704-357-9333 (f) 704-357-9385

BWA JOB # 2022-0632

SEAL 02/12/2025

DUNN OPERATIONS CENTER

OPS CENTER OUTBUILDINGS

MARK	DATE	DRN BY	REVISION
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PROJECT NO:

DRAWING NUMBER
CFD-XXXX-E-0110a-41CC2B

ELECTRONIC FILE NAME:

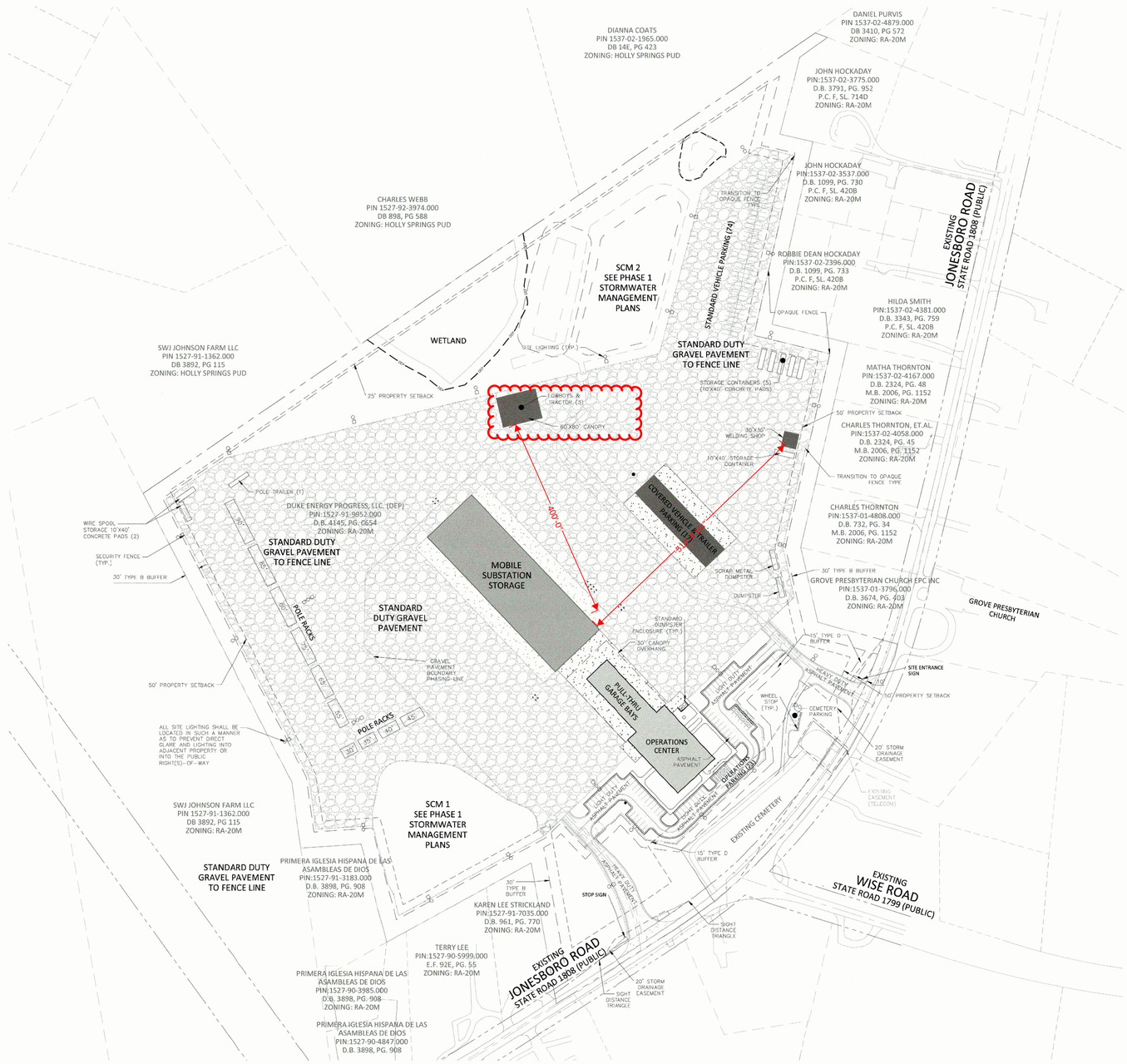
DRAWN BY: SEB 2/12/25

CHK'D BY: XXX XXX

E-MAIL: jhall@barrettwoodyard.com

SHEET TITLE:
SHED POWER PLAN - ELECTRICAL

SHEET NO.
E-101a



SITE NOTES

1. LOCATION AND TOPOGRAPHICAL INFORMATION WAS TAKEN FROM TOPOGRAPHIC SURVEY PERFORMED BY MCADAMS FEBRUARY 07,2022. ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL (GROUND) DISTANCES AND VERTICAL DATUM IS NAVD 88. COORDINATES AS SHOWN ARE NC STATE PLANE GRID NAD 83 (2011).
2. THE PROPERTY IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE AS DEFINED BY FEMA FIRM COMMUNITY PANEL #3720152700J AND 3720153700L DATED JANUARY 05, 2007.
3. PROJECT SITE IS LOCATED IN THE CAPE FEAR RIVER BASIN AND IS NOT SUBJECT TO RIPARIAN BUFFERS.
4. ALL INFORMATION OUTSIDE OF SURVEY LIMITS PROVIDED BY DUKE ENERGY PROGRESS. CONTRACTOR SHALL LOCATE FEATURES AS NECESSARY TO COORDINATE WORK WITH THIS PROJECT.
5. ALL MATERIALS, CONSTRUCTION, WORKMANSHIP, SHALL MEET HARNETT COUNTY, DUKE ENERGY PROGRESS, LLC (DEP), AND NCDOT (WHERE APPLICABLE) SPECIFICATIONS, STANDARDS AND DESIGN.
6. CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY AGC OF AMERICA, INC., AND THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
7. NOT ALL EXISTING UTILITIES ARE SHOWN. LOCATIONS SHOWN ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCURATELY LOCATE BOTH HORIZONTALLY AND VERTICALLY ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY NC811 OR THEIR SUCCESSOR AT 800-632-4949 PRIOR TO EXCAVATION. CONTRACTOR SHALL NOTIFY DUKE ENERGY PROGRESS, INC. IMMEDIATELY IN THE EVENT OF ENCOUNTERING ANY UNDERGROUND OBSTACLE REQUIRING DEVIATION FROM THE PLAN. COST TO REPAIR DAMAGED UTILITIES SHALL BE BORNE BY THE CONTRACTOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY PAVEMENT OR EXISTING UTILITIES THAT MAY BE DAMAGED DUE TO CONSTRUCTION ACTIVITY. EXERCISE CAUTION.
9. SHOULD ANY GROUNDING BE CUT OR UNEARTHED, THE GROUNDING WILL NEED TO BE REPAIRED AND RECONNECTED. THE GROUNDING SHOULD BE BETWEEN 18" TO 24" DEPTH.
10. ALL UTILITIES SHALL BE PROTECTED AND REMAIN ACTIVE UNLESS OTHERWISE NOTED. CONTRACTOR SHALL NOT DISTURB UTILITY POLES, GUY WIRES, OR ANCHORS WITHOUT PERMISSION FROM DUKE ENERGY PROGRESS, INC.
11. EXISTING IMPROVEMENTS SLATED TO REMAIN THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THEIR ORIGINAL CONDITION OR TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
12. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST DUKE ENERGY SPECIFICATIONS, HARNETT COUNTY SPECIFICATIONS AND NCDOT STANDARDS AND SPECIFICATIONS, AS APPLICABLE.
13. ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF OFF-SITE IN A STATE PERMITTED LINED LANDFILL OR AS DIRECTED BY DEP REPRESENTATIVE.
14. EQUIPMENT AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED PROVIDED APPROVAL HAS BEEN OBTAINED FROM THE OWNER IN WRITING PRIOR TO ORDERING OR INSTALLATION. THE CONTRACTOR SHALL WAIVE ANY CLAIM FOR ADDITIONAL COST RELATED TO THE SUBSTITUTION OF ALTERNATE EQUIPMENT.
15. OSHA MINIMUM EQUIPMENT APPROACH DISTANCE FOR NON-QUALIFIED ELECTRICAL WORKERS IS 20 FEET FROM ENERGIZED CONDUCTORS.
16. THERE SHALL BE NO SEEDING OR FILL IN WETLANDS OR OTHER BUFFERS.
17. A TYPE B BUFFER MUST BE INSTALLED ADJACENT TO ALL RESIDENTIAL DEVELOPED PROPERTIES ALONG THE NORTHEASTERN TO THE SOUTHERN PORTION OF JONESBORO ROAD.
18. SOLID WASTE AND HAZARDOUS WASTES SHALL BE DISPOSED OF ACCORDING TO THE APPLICABLE FEDERAL AND STATE REGULATIONS. SOLID AND HAZARDOUS WASTE SHALL BE COLLECTED BY LICENSED SOLID WASTE COLLECTORS AS DEFINED IN HARNETT COUNTY SOLID WASTE MANAGEMENT ORDINANCE, ADOPTED JULY 23, 1990.
19. THE OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE PARKING AREAS, DRIVE AISLES, AND ALL LANDSCAPE BUFFERING.
20. THIS DEVELOPMENT IS WITHIN ONE MILE OF A VOLUNTARY AGRICULTURAL DISTRICT
21. SITE LIGHTING TO BE LOCATED IN SUCH A MANNER TO PREVENT DIRECT GLARE AND LIGHTING ONTO ADJACENT PROPERTY OR INTO THE PUBLIC RIGHT(S)-OF-WAY. ALL FLOOD LIGHTS SHALL BE INSTALLED IN SUCH THAT THE FIXTURE SHALL BE AIMED DOWN AT LEAST 45 DEGREES FROM VERTICAL.
22. SITE LIGHTING TO BE MCGRAW-EDISON GLEON GALLEON LIGHTS

SITE LEGEND

- LIGHT POLE (BY OTHERS)
- PROPERTY LINE
- PROPERTY SETBACK
- LANDSCAPING BUFFER
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- CENTERLINE
- SECURITY FENCE
- DEP PROTECTIVE BUFFER (20' FROM SURFACE WATERS)
- CONCRETE PAVEMENT
- STANDARD DUTY GRAVEL PAVEMENT
- ASPHALT PAVEMENT

RELEASED FOR CONSTRUCTION

DRAWING NO.
CFD-XXXX-XX-XXXX

DUKE ENERGY®

MAILING ADDRESS:
MARK B. FRANKLIN
JLL - DUKE ENERGY ACCOUNT
410 S. WILMINGTON STREET
RALEIGH, NORTH CAROLINA 27602

Safety Expectations:

ILLNESS ZERO INJURY

- Reduce Risk
- Remove Exposures to Hazards
- Reinforce Safe Behavior

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: 32983

www.mcadamsco.com

MCADAMS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032740 CLAUDIA A. PRADO 8/1/24

SEAL

DUNN TRANSMISSION OPERATIONS CENTER

1269 JONESBORO RD
DUNN, NC. 28334, HARNETT COUNTY

DUNN OPERATION CENTER

MARK	DATE	DRN BY	REVISION
0	08/01/24	DML	ISSUED FOR CONSTRUCTION

PROJECT NO:

DRAWING NUMBER
CFD-XXXX-X-XXXX

ELECTRONIC FILE CS0110.DWG
DRAWN BY: SMP 08/01/2023
CHK'D BY: KAS
E-MAIL: COVIL@MCADAMSCO.COM

SHEET TITLE:

OVERALL SITE PLAN

SHEET NO.

C2.00

E1 SIZE DWG: PLOT SIZE (30x42)