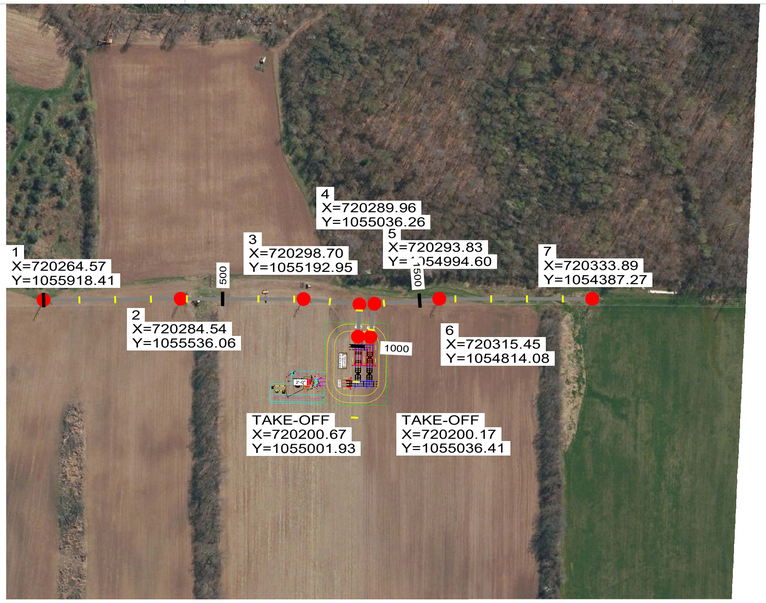
PLS-CADD DRAWING



REV.	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
A	07/09/2020	PRELIMINARY - NOT FOR CONSTRUCTION	KVP	JDJ	-	S&L

200.0 FT. HORIZ. SCALE

40.0 FT. VERT. SCALE

Sargent & Lundy LLC

55 EAST MONROE ST., CHICAGO, IL

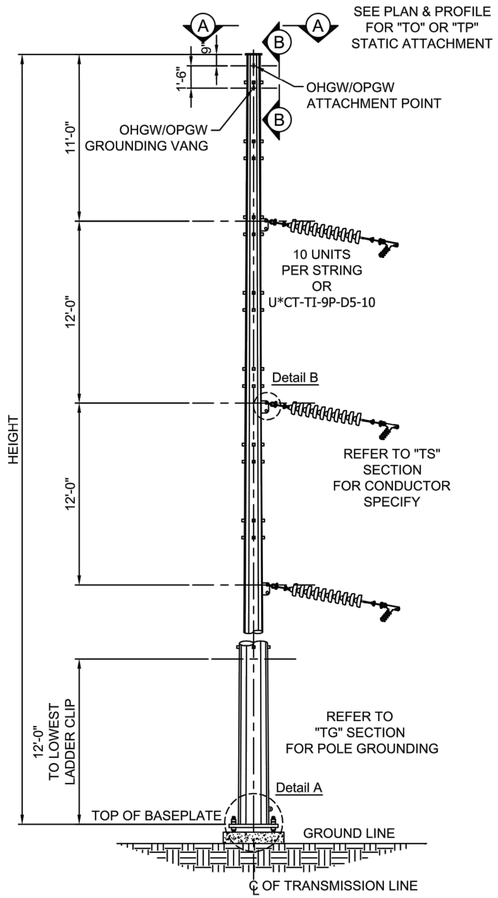
ANY MODIFICATION OR ADDDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY

PREP:	KVP	CHKD:	JDJ
APPD:	-	DATE:	07/09/2020

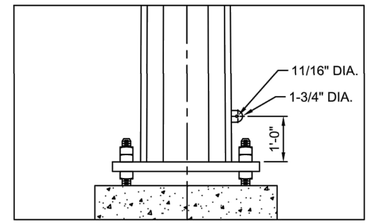
NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINAR SOLAR ENERGY CENTER, LLC
115 KV TRANSMISSION LINE
PLAN & PROFILES

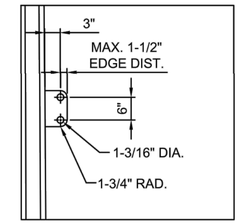
13666-052-T1-0100



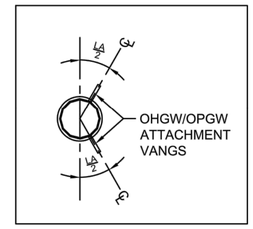
VERTICAL DEADEND - 60° AND GREATER
TYPE SCDB



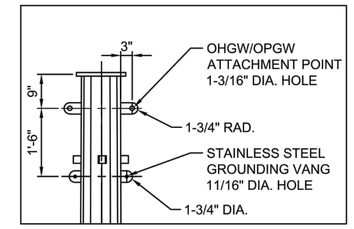
Detail 'A'
STRUCTURE GROUNDING VANG -
STAINLESS STEEL



Detail 'B'
DEADEND INSULATOR
ATTACHMENT VANG



Section A-A
POLE TOP WITH OHGW/OPGW
ATTACHMENTS



Section 'B-B'
OHGW/OPGW ATTACHMENT VANG
MAX. THICKNESS 3/4"

CU FUNCTION: TL69 FOR 34KV & 46KV, TG69 FOR 69KV THRU 344KV, T345 FOR 345KV & GREATER.

FOR CORRECT CU: SUBSTITUTE 2 FOR NYSEG, 3 FOR CMP OR 4 FOR RG&E IN PLACE OF ASTERISK (U*_).

NOTE A: OTHER STANDARD DRAWINGS REQUIRED:
- TD FOUNDATION & BACKFILL
- TE STEEL STRUCTURE INFORMATION
- TG GROUNDING & GROUND ROD DETAIL
- TK MARKINGS
- TM CONDUCTOR ATTACHMENT DETAILS STEEL STRUCTURES
- TO OPGW ATTACHMENT DETAILS
- TP STATIC WIRE ATTACHMENT DETAILS
- TS CONDUCTOR SPECIFIES

NOTE B: ALL HOLES SHALL BE CHAMFERED BOTH SIDES

NOTE C: LADDER CLIPS SHALL BE POSITIONED SUCH THAT TRANSIT TO ALL SIDES OF THE POLE IS POSSIBLE AROUND ALL CONDUCTOR AND ARM CONNECTIONS.

NOTE D: GROUNDING VANGS SHALL BE STAINLESS STEEL WITH A THICKNESS OF 1/2"

NOTE E: MAXIMUM VANG PLATE THICKNESS SHALL NOT BE GREATER THAN 3/4"

NOTE F: REFER TO SECTION "TS" FOR CONDUCTOR ASSEMBLIES

NOTE G: IF CONDUCTOR NESC HEAVY LOADING TENSION IS LESS THAN 10,000#, USE STRAIN CLAMPS; IF NESC HEAVY LOADING TENSION IS 10,000# OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

ANSI B 11" X 17"

Drawn. By:	Date Dr.:
D. Fredrick/RUE	11/7/2019

Contact Processes & Technologies - Electric Network Standards - Electric Transmission Standards for the creation/revision of transmission standards & CUs.

Drawing Scale: N/A

AVANGRID

ELECTRIC OH TRANSMISSION CONSTRUCTION STANDARDS MANUAL TM2.23.00

STRUCTURE STANDARDS - STEEL
115kV SINGLE POLE SINGLE CIRCUIT
VERTICAL DEADEND - 60° AND GREATER
TYPE SCDB

Revision: 02
DATE: 11/29/2017

Checked By:	Date Ck.:	Approved By:	Date App.:	File Name:	Sheet
G. Prem/RUE	12/05/2019	J. Moser/RUE	12/10/2019	TES1CO	1 of 3

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NT	KVP	KVP	S&L
A	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NJM	JTB	KVP	S&L

SCALE: NONE

PREP: NJM CHKD: JTB
APPD: KVP DATE: 04/01/2020

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

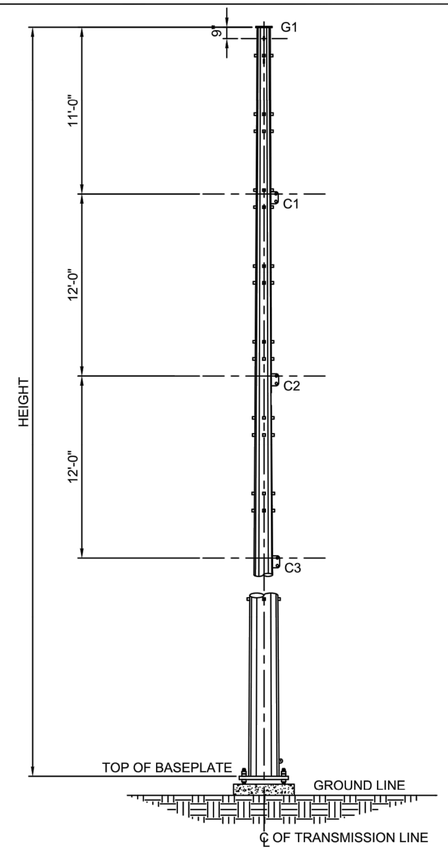
NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115 kV TRANSMISSION LINE
TRANSMISSION LINE LOADING & FRAMING

13666-052-T1-0200

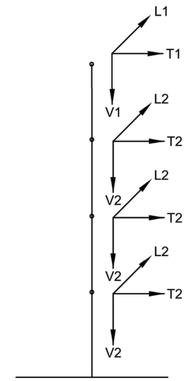
THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

ANSI B 11" X 17"

Drawn. By: D. Fredrick/RUE | Date Dr.: 11/7/2019



VERTICAL DEADEND - 60° AND GREATER
TYPE SCDB



LOAD TREE

HEIGHT (FT)
80
85
90
95
100
105
110
115
120

TABLE A: LINE INFORMATION

WIRE DESIGNATION				DESIGN LINE TENSIONS (LBS)							
WIRE	TYPE	DIA (INCHES)	WEIGHT (LBS/FT)	NESC HEAVY	NESC HIGH WIND	NESC WIND & ICE	HEAVY ICE	CONSTRUCTION/ MAINTENANCE	CONSTRUCTION/ STRINGING	EVERYDAY/ DEFLECTION	DIFFERENTIAL ICE, 1" ICE/ NO ICE
C1-C3	(2) 795 "DRAKE" ACSR	1.108	1.094	8000	7540	11010	12330	4560	5390	3520	9900/5360
G1	DNO-8230 OPGW	0.913	0.908	7750	6910	10810	12100	4280	5180	3270	9620/5150

TABLE B: DESIGN CRITERIA

STRUCTURE TYPE	LINE ANGLE, θ (DEG.)	DESIGN RULING SPAN (FT)	DESIGN WIND SPAN (FT)	DESIGN WEIGHT SPAN (FT)
DEADEND	60 - 90	450	500	700

TABLE C: OVERLOAD FACTORS

WEATHER CASE	TEMPERATURE, °F	WIND PRESSURE (PSF)	RADIAL ICE (IN)	OVERLOAD FACTORS		
				WIND	TENSION	VERTICAL
NESC HEAVY, ALL WIRES INTACT (RULE 250B)	0	4	0.5	2.50	1.65	1.50
NESC HIGH WIND, ALL WIRES INTACT (RULE 250C)	60	30	0	1.00	1.00	1.00
NESC CONCURRENT WIND/ICE, ALL WIRES INTACT (RULE 250D)	-5	9.2	1	1.00	1.00	1.00
HEAVY ICE, ALL WIRES INTACT	32	0	1.5	1.00	1.00	1.00
CONSTRUCTION/MAINTENANCE	30	0	1.5	1.50	1.50	1.50
CONSTRUCTION/STRINGING	0	2	0	1.00	1.00	1.50
EVERYDAY/DEFLECTION	60	0	0	1.00	1.00	1.00

TABLE D: WIRE LOADS (LBS) (SEE NOTE 1)

WIRE	LOAD DIRECTION	1. NESC HEAVY	2. NESC HIGH WIND	3. NESC WIND & ICE	4. HEAVY ICE	5A. CONSTRUCTION/ MAINTENANCE (SEE NOTE 9)	5B. CONSTRUCTION/ MAINTENANCE (SEE NOTE 9)	6. CONSTRUCTION/ STRINGING
G1	V1	2630	1140	2800	4290	9200	1700	4160
	T1	18700	10600	16100	17200	9160	9160	9140
	L1	0	0	0	0	0	0	3890
C1-C3	V2	5750	2390	6130	9300	13400	3590	8700
	T2	38600	23300	32900	34900	19600	19600	15400
	L2	0	0	0	0	0	0	5460
		7. EVERYDAY/ DEFLECTION	8. DIFFERENTIAL ICE	9. NESC HEAVY, ANGLE DEADEND	10. NESC HIGH WIND, ANGLE DEADEND	11. NESC WIND & ICE, ANGLE DEADEND	12. HEAVY ICE, ANGLE DEADEND	13. NESC HEAVY, MIN ANGLE DEADEND
G1	V1	1140	2470	1690	820	1650	2390	1690
	T1	4620	10500	9240	5170	7920	8560	6740
	L1	0	3160	9240	5170	7920	8560	11100
C1-C3	V2	2390	5230	3550	1630	3530	5130	3550
	T2	9960	21600	19200	11400	16200	17500	14000
	L2	0	6420	19200	11400	16200	17500	22900

NOTES:

1. ALL LOADS ARE ULTIMATE VALUES AND INCLUDE OVERLOAD FACTORS. VERTICAL LOADS INCLUDE THE WEIGHT OF INSULATORS AND HARDWARE WITH AN ADDITIONAL 500 LB WORKING LOAD (EXCEPT FOR THE EVERYDAY LOAD CASE). UNLESS NOTED OTHERWISE LOADS ARE DERIVED FROM MAXIMUM LINE ANGLE.
2. STRUCTURES ARE TO BE DESIGNED IN ACCORDANCE WITH ASCE/SEI 48-11, OR LATEST EDITION, AND TECHNICAL MANUAL (TM2.22.01) "TUBULAR STEEL POLE SPECIFICATION". IN CASE OF CONFLICT, THE MORE STRINGENT DOCUMENT SHALL BE USED.
3. FOR STRUCTURE FINISH (I.E. GALVANIZING, WEATHERING, PAINTED) REFER TO TM2.22.01, PART 5.
4. WIND PRESSURE SHOWN IN TABLE C SHALL BE APPLIED IN THE WORST CASE DIRECTION FOR THE CORRESPONDING LOAD CASE. THE EXTREME WIND (NESC HIGH WIND) LOAD CASE SHALL ALSO BE APPLIED TO THE STRUCTURE WITHOUT WIRE LOADS APPLIED. THE FOLLOWING SHAPE FACTORS SHALL BE USED: 1.0 FOR 12 OR 16-SIDED, 1.4 FOR 6 OR 8-SIDED, 2.0 FOR SQUARE/FLAT.
5. HORIZONTAL STRUCTURE DEFLECTION SHALL BE LIMITED TO 1% OF POLE HEIGHT ABOVE GROUND LINE. RAKING/CAMBERING IS NOT PERMITTED.
6. MCGREGOR STYLE LADDERS AND LADDER CLIPS SHALL BE SUPPLIED FOR EACH POLE.
7. WORKING HOLES SHALL BE DESIGNED FOR A MINIMUM LOAD OF 60 KIPS APPLIED IN ANY DIRECTION..
8. ANCHOR BOLT EMBEDMENT DEPTH SHALL BE CALCULATED IN ACCORDANCE WITH ACI 318, DETERMINED USING ULTIMATE BOND STRESS VALUES BASED ON 4,000 PSI CONCRETE COMPRESSIVE STRENGTH.
9. FOR CONSTRUCTION/MAINTENANCE CASE "A", LOADS SHALL BE APPLIED TO ONE ATTACHMENT POINT AT A TIME WHILE REMAINING ATTACHMENT POINTS USE LOADS FROM CORRESPONDING LOAD CASE "B".

Contact Processes & Technologies - Electric Network Standards - Electric Transmission Standards for the creation/revision of transmission standards & CUs.

Drawing Scale: N/A

AVANGRID

ELECTRIC OH TRANSMISSION CONSTRUCTION STANDARDS MANUAL TM2.23.00

STRUCTURE STANDARDS - STEEL
115kV SINGLE POLE SINGLE CIRCUIT
VERTICAL DEADEND - 60° AND GREATER
TYPE SCDB

Revision 02
DATE 11/29/2017

Checked By:	Date Ck.:	Approved By:	Date App.:	File Name:	Sheet
G. Prem/RUE	12/05/2019	J. Moser/RUE	12/10/2019	TES1CO	2 of 3

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NT	KVP	KVP	S&L
A	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NJM	JTB	KVP	S&L

SCALE: NONE

PREP: NJM CHKD: JTB
APPD: KVP DATE: 04/01/2020

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

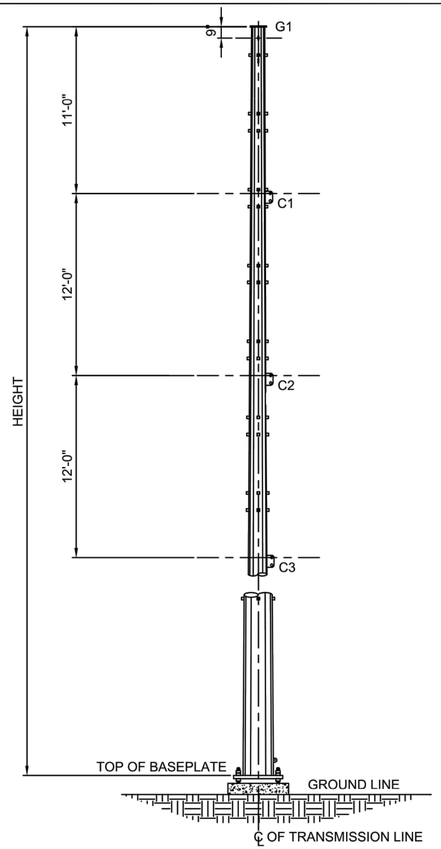
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

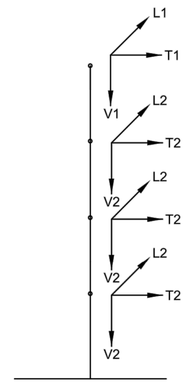
NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115 kV TRANSMISSION LINE
TRANSMISSION LINE LOADING & FRAMING

13666-052-T1-0201



VERTICAL DEADEND - 60° AND GREATER
TYPE SCDB



LOAD TREE

HEIGHT (FT)
80
85
90
95
100
105
110
115
120

TABLE A: LINE INFORMATION

WIRE DESIGNATION				DESIGN LINE TENSIONS (LBS)							
WIRE	TYPE	DIA (INCHES)	WEIGHT (LBS/FT)	NESC HEAVY	NESC HIGH WIND	NESC WIND & ICE	HEAVY ICE	CONSTRUCTION/ MAINTENANCE	CONSTRUCTION/ STRINGING	EVERYDAY/ DEFLECTION	DIFFERENTIAL ICE, 1" ICE/ NO ICE
C1-C3	(2) 795 "DRAKE" ACSR	1.108	1.094	11200	10730	14740	16440	7240	8270	5360	13440/8230
G1	DNO-8230 OPGW	0.913	0.908	10530	9460	14240	15980	6440	7500	4760	12800/7460

TABLE B: DESIGN CRITERIA

STRUCTURE TYPE	LINE ANGLE, θ (DEG.)	DESIGN RULING SPAN (FT)	DESIGN WIND SPAN (FT)	DESIGN WEIGHT SPAN (FT)
DEADEND	60 - 90	650	700	950

TABLE C: OVERLOAD FACTORS

WEATHER CASE	TEMPERATURE, °F	WIND PRESSURE (PSF)	RADIAL ICE (IN)	OVERLOAD FACTORS		
				WIND	TENSION	VERTICAL
NESC HEAVY, ALL WIRES INTACT (RULE 250B)	0	4	0.5	2.50	1.65	1.50
NESC HIGH WIND, ALL WIRES INTACT (RULE 250C)	60	30	0	1.00	1.00	1.00
NESC CONCURRENT WIND/ICE, ALL WIRES INTACT (RULE 250D)	-5	9.2	1	1.00	1.00	1.00
HEAVY ICE, ALL WIRES INTACT	32	0	1.5	1.00	1.00	1.00
CONSTRUCTION/MAINTENANCE	30	0	1.5	1.50	1.50	1.50
CONSTRUCTION/STRINGING	0	2	0	1.00	1.00	1.50
EVERYDAY/DEFLECTION	60	0	0	1.00	1.00	1.00

TABLE D: WIRE LOADS (LBS) (SEE NOTE 1)

WIRE	LOAD DIRECTION	1. NESC HEAVY	2. NESC HIGH WIND	3. NESC WIND & ICE	4. HEAVY ICE	5A. CONSTRUCTION/ MAINTENANCE (SEE NOTE 9)	5B. CONSTRUCTION/ MAINTENANCE (SEE NOTE 9)	6. CONSTRUCTION/ STRINGING
G1	V1	3300	1360	3620	5640	9540	2040	5600
	T1	25400	14600	21300	22600	13800	13800	10800
	L1	0	0	0	0	0	0	3890
C1-C3	V2	7320	2940	7990	12300	15100	4410	12300
	T2	54100	33100	44100	46500	31000	31000	19500
	L2	0	0	0	0	0	0	5460

WIRE	LOAD DIRECTION	7. EVERYDAY/ DEFLECTION	8. DIFFERENTIAL ICE	9. NESC HEAVY, ANGLE DEADEND	10. NESC HIGH WIND, ANGLE DEADEND	11. NESC WIND & ICE, ANGLE DEADEND	12. HEAVY ICE, ANGLE DEADEND	13. NESC HEAVY, MIN ANGLE DEADEND
G1	V1	1360	2990	2020	930	2060	3070	2020
	T1	6730	14400	12600	7090	10500	11300	9170
	L1	0	3780	12600	7090	10500	11300	15100
C1-C3	V2	2940	6430	4330	1900	4460	6620	4330
	T2	15200	30700	26800	16200	21700	23300	19600
	L2	0	7370	26800	16200	21700	23300	32100

NOTES:

1. ALL LOADS ARE ULTIMATE VALUES AND INCLUDE OVERLOAD FACTORS. VERTICAL LOADS INCLUDE THE WEIGHT OF INSULATORS AND HARDWARE WITH AN ADDITIONAL 500 LB WORKING LOAD (EXCEPT FOR THE EVERYDAY LOAD CASE). UNLESS NOTED OTHERWISE LOADS ARE DERIVED FROM MAXIMUM LINE ANGLE.
2. STRUCTURES ARE TO BE DESIGNED IN ACCORDANCE WITH ASCE/SEI 48-11, OR LATEST EDITION, AND TECHNICAL MANUAL (TM2.22.01) "TUBULAR STEEL POLE SPECIFICATION". IN CASE OF CONFLICT, THE MORE STRINGENT DOCUMENT SHALL BE USED.
3. FOR STRUCTURE FINISH (I.E. GALVANIZING, WEATHERING, PAINTED) REFER TO TM2.22.01, PART 5.
4. WIND PRESSURE SHOWN IN TABLE C SHALL BE APPLIED IN THE WORST CASE DIRECTION FOR THE CORRESPONDING LOAD CASE. THE EXTREME WIND (NESC HIGH WIND) LOAD CASE SHALL ALSO BE APPLIED TO THE STRUCTURE WITHOUT WIRE LOADS APPLIED. THE FOLLOWING SHAPE FACTORS SHALL BE USED: 1.0 FOR 12 OR 16-SIDED, 1.4 FOR 6 OR 8-SIDED, 2.0 FOR SQUARE/FLAT.
5. HORIZONTAL STRUCTURE DEFLECTION SHALL BE LIMITED TO 1% OF POLE HEIGHT ABOVE GROUND LINE. RAKING/CAMBERING IS NOT PERMITTED.
6. MCGREGOR STYLE LADDERS AND LADDER CLIPS SHALL BE SUPPLIED FOR EACH POLE.
7. WORKING HOLES SHALL BE DESIGNED FOR A MINIMUM LOAD OF 60 KIPS APPLIED IN ANY DIRECTION..
8. ANCHOR BOLT EMBEDMENT DEPTH SHALL BE CALCULATED IN ACCORDANCE WITH ACI 318, DETERMINED USING ULTIMATE BOND STRESS VALUES BASED ON 4,000 PSI CONCRETE COMPRESSIVE STRENGTH.
9. FOR CONSTRUCTION/MAINTENANCE CASE "A", LOADS SHALL BE APPLIED TO ONE ATTACHMENT POINT AT A TIME WHILE REMAINING ATTACHMENT POINTS USE LOADS FROM CORRESPONDING LOAD CASE "B".

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

ANSI B 11" X 17"

Drawn. By: D. Fredrick/RUE | Date Dr.: 11/7/2019

Contact Processes & Technologies - Electric Network Standards - Electric Transmission Standards for the creation/revision of transmission standards & CUs.

Drawing Scale: N/A

AVANGRID

ELECTRIC OH TRANSMISSION CONSTRUCTION STANDARDS MANUAL TM2.23.00

STRUCTURE STANDARDS - STEEL
115kV SINGLE POLE SINGLE CIRCUIT
VERTICAL DEADEND - 60° AND GREATER
TYPE SCDB

Revision 02
DATE 11/29/2017

Checked By:	Date Ck.:	Approved By:	Date App.:	File Name:	Sheet
G. Prem/RUE	12/05/2019	J. Moser/RUE	12/10/2019	TES1CO	3 of 3

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NT	KVP	KVP	S&L
A	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NJM	JTB	KVP	S&L

SCALE: NONE

PREP: NJM CHKD: JTB
APPD: KVP DATE: 04/01/2020

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

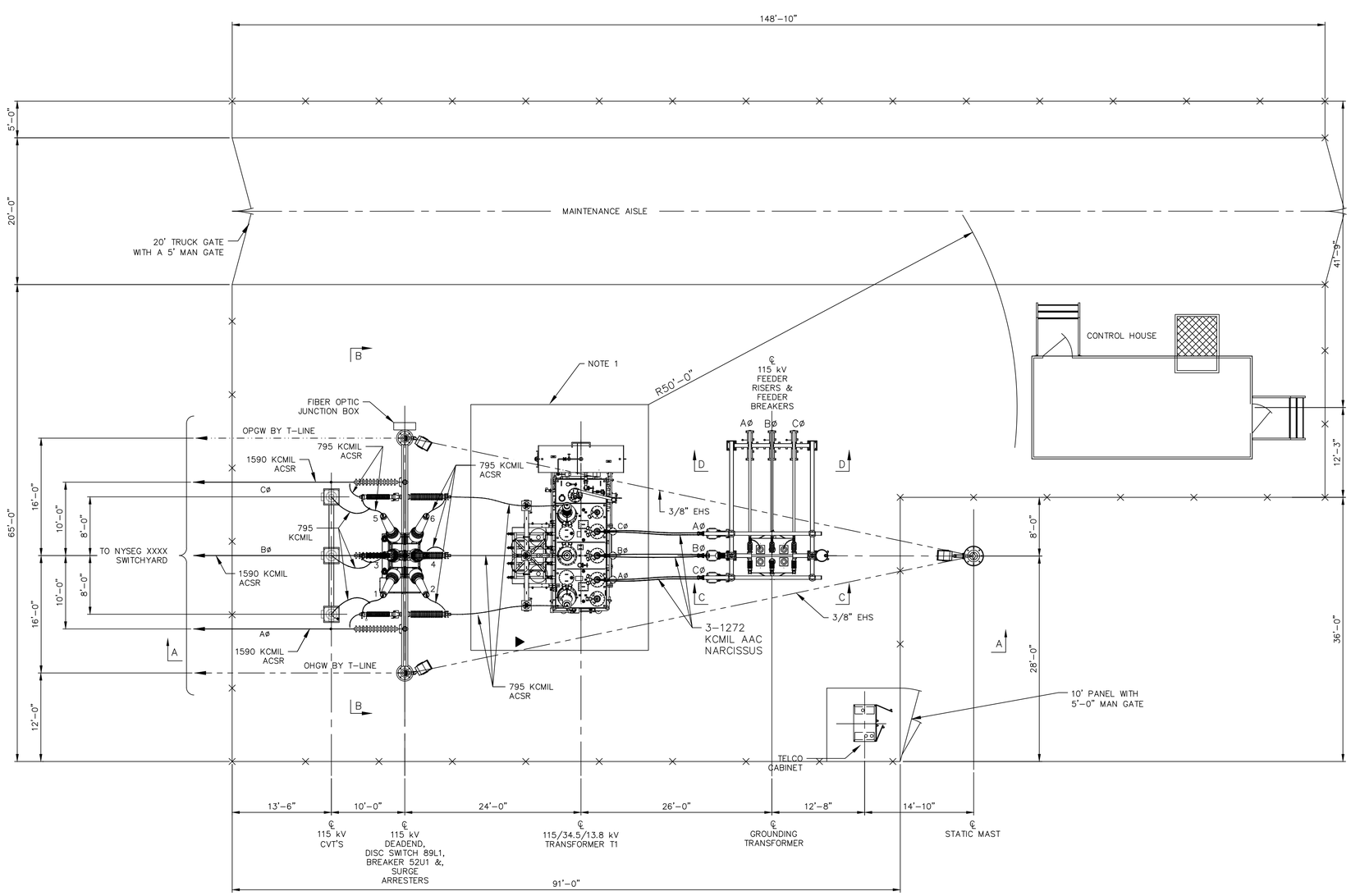
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115 kV TRANSMISSION LINE
TRANSMISSION LINE LOADING & FRAMING

13666-052-T1-0202



LEGEND

EXP	EXPANSION BUS FITTING
F	FIXED BUS FITTING
S	SLIP BUS FITTING
▼	SWITCH OPERATOR (MANUAL)
	STRUCTURE MOUNTED YARD LIGHTING
	SUBSTATION FENCE
	OPGW
	SHIELD WIRE

REFERENCE DRAWING

13666-052-E1-1000	SWITCHING DIAGRAM
13666-052-E1-0011	DRAWING LIST
13666-052-E1-0101	SECTIONS A-A AND B-B
13666-052-E1-0102	SECTIONS C-C, D-D & E-E

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	RYZ	KVP	--	S&L
A	04/06/2020	PRELIMINARY - ISSUED FOR REVIEW	RYZ	KVP	---	S&L

SCALE: 1/8" = 1'-0"

0 8'-0" 16'-0"

PREP: RG CHKD: FPH

APPD: - DATE: 03/24/2017

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

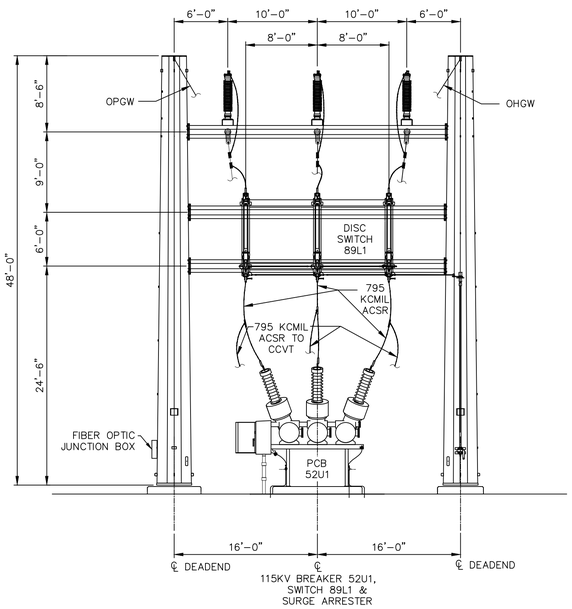
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

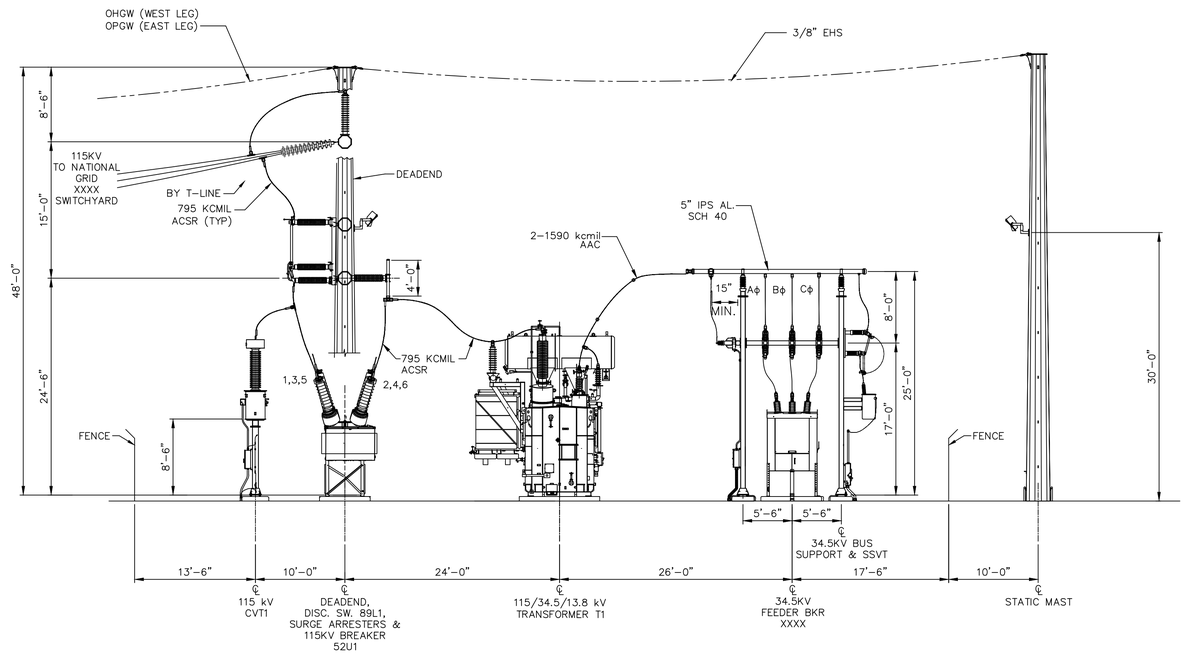
NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
ULTIMATE ELECTRICAL PLAN

13666-052-E1-0100



SECTION B–B
(13139–044–E1–0100)



SECTION A–A
(13139–044–E1–0100)

LEGEND

EXP	EXPANSION BUS FITTING
F	FIXED BUS FITTING
S	SLIP BUS FITTING
— — — — — —	SHIELD WIRE
— · — · — · —	OPGW

HOLD FOR VENDOR DRAWINGS

PRELIMINARY
NOT FOR CONSTRUCTION

REFERENCE DRAWING

13666–052–E1–1000	SWITCHING DIAGRAM
13666–052–E1–0100	ULTIMATE ELECTRICAL PLAN
13666–052–E1–0102	SECTIONS C–C, D–D & E–E

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
B	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	RYZ	KVP	--	S&L
A	04/06/2020	PRELIMINARY - ISSUED FOR REVIEW	RYZ	KVP	---	S&L

SCALE: 1/8" = 1'-0"

0 8'–0" 16'–0"

PREP: RG CHKD: FPH

APPD: - DATE: 09/01/2017

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

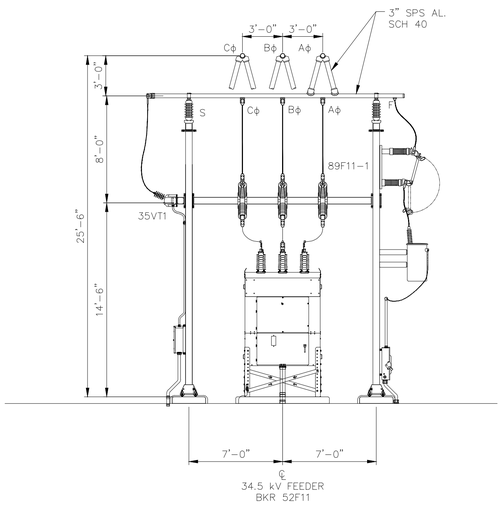
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

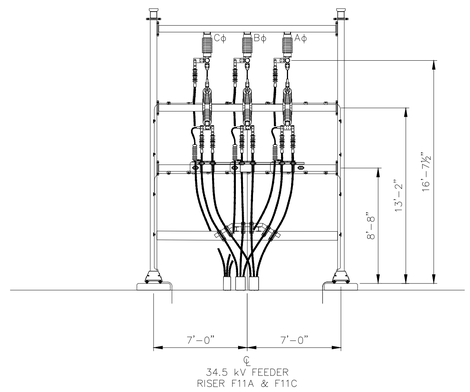
NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
SECTIONS A-A AND B-B

13666-052-E1-0101



SECTION C-C
(13139-044-E1-0100)



SECTION D-D
(13139-044-E1-0100)

LEGEND

EXP	EXPANSION BUS FITTING
F	FIXED BUS FITTING
S	SLIP BUS FITTING

HOLD FOR VENDOR DRAWINGS

PRELIMINARY
NOT FOR CONSTRUCTION

REFERENCE DRAWING

13666-052-E1-1000	SWITCHING DIAGRAM
13666-052-E1-0100	ULTIMATE ELECTRICAL PLAN
13666-052-E1-0101	SECTIONS A-A AND B-B

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
B	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	RYZ	KVP	--	S&L
A	04/06/2020	PRELIMINATY - ISSUED FOR REVIEW	RYZ	KVP	--	S&L

SCALE:
3/16" = 1'-0"
0 4'-0" 8'-0"

PREP: RG CHKD: FPH
APPD: - DATE: 03/24/2017

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

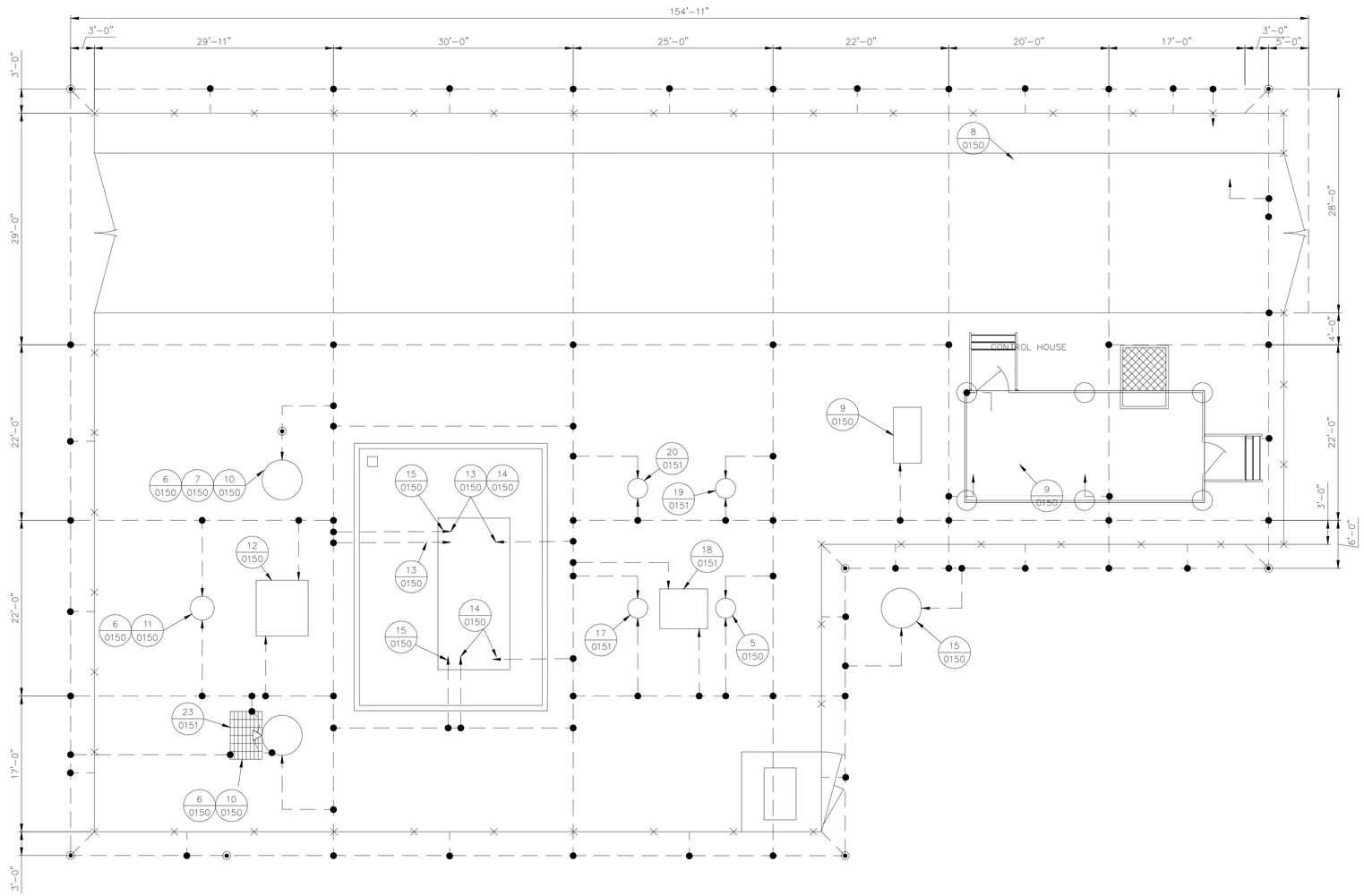
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
SECTIONS C-C, D-D AND E-E

13666-052-E1-0102



HOLD:
GROUND CONDUCTOR LAYOUT ON HOLD PENDING SOIL RESISTIVITY TESTING DATA.

LEGEND

- #4/0 S.D. COPPER GROUND CONDUCTOR
- GROUND CONDUCTOR STUB-UP PIGTAIL
- GROUND CONDUCTOR BOND CONNECTION, CADWELD OR EQUAL
- 3/4" x 10' COPPER CLAD GROUND ROD
- FENCE GROUND (CONNECT CONDUCTOR TO INSIDE OF FENCE & GATE POST AND MAKE SINGLE GROUND ROD CONNECTION).
- SWITCH OPERATOR PLATFORM (6'x4')
- OPERATOR HANDLE
- INDICATES DETAIL NUMBER / INDICATES DRAWING NUMBER IN WHICH DETAIL APPEARS

GROUND GRID CRITERIA

GROUNDING SYSTEM DESIGN IS BASED ON THE FOLLOWING PARAMETERS:
- 7487 AMP, 34.5 kV SINGLE PHASE TO GROUND FAULT
- NO EARTH CURRENT SPLIT FACTOR
- 0.250 SECOND FAULT CLEARING TIME
- MAINTAINED 4 INCHES OF 3000 OHM-METER SURFACING MATERIAL
- THREE LAYER SOIL MODEL

LAYER	RESISTIVITY	THICKNESS
TOP LAYER:	182.25 OHM-METERS	1.13 FEET
SECOND LAYER:	37.33 OHM-METERS	71.95 FEET
THIRD LAYER:	211.44 OHM-METERS	INFINITE

UPON COMPLETION OF STATION GROUNDING SYSTEM, THE RESISTANCE OF MAT TO EARTH SHALL BE DETERMINED BY A THREE-ELECTODE TEST METHOD. IF THE RESISTANCE TO REMOTE EARTH IS GREATER THAN 0.4095 OHMS, ADDITIONAL GROUNDING FACILITIES MAY BE REQUIRED.

GROUND GRID FIELD MEASURMENT .xx OHMS

DATE TAKEN 00/00/00

CONSTRUCTION NOTES & DETAILS

1. FOR GROUNDING NOTES AND DETAILS SEE DWG 13666-052-E1-0150 & 13666-052-E1-0151.
2. CONTROL BUILDING GROUND TO BE CONNECTED TO GROUND GRID THROUGH PULL BOX GROUND.
3. SEE FENCE GROUNDING DETAILS FOR GROUNDING GATES, POSTS, WIRE, FABRIC, ETC.
4. BURIAL DEPTH OF GROUND GRID SHALL BE 18" BELOW SUBGRADE.
5. ARRESTER GROUNDING CONNECTIONS SHALL BE LOOPED FORMING TWO PATHS TO THE GROUND GRID
6. FENCE TRUCK GATE GROUND LOOP SHALL EXTEND 11 FEET BEYOND FENCE GATE POSTS. HOLD

REFERENCE DRAWING

13666-052-E1-0100	ULTIMATE ELECTRICAL PLAN
13666-052-E1-0150	GROUNDING DETAILS
13666-052-E1-0151	GROUNDING DETAILS

HOLD FOR VENDOR DRAWINGS

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
B	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	RYZ	KVP	--	S&L
A	04/06/2020	PRELIMINARY - ISSUED FOR REVIEW	RYZ	KVP	---	S&L

SCALE: 1/8" = 1'-0"
0 8'-0" 16'-0"

PREP: RG CHKD: FPH
APPD: - DATE: 08/03/2017

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

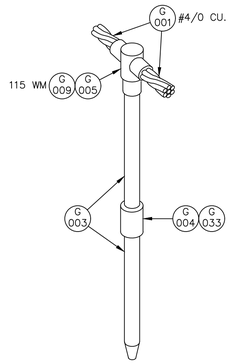
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

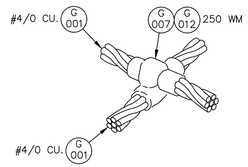
NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
GROUNDING PLAN

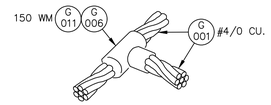
13666-052-E1-0145



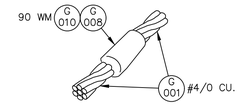
CABLE TO 3/4" x 20' GROUND ROD CONNECTION DETAIL (1/0145)
SCALE: N.T.S.



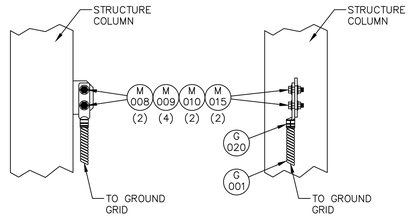
CABLE CROSS CONNECTION DETAIL (2/0145)
SCALE: N.T.S.



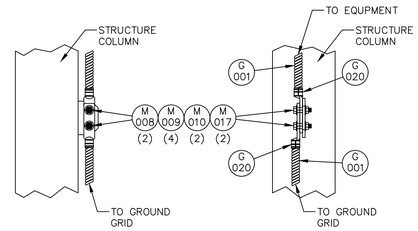
CABLE TEE CONNECTION DETAIL (3/0145)
SCALE: N.T.S.



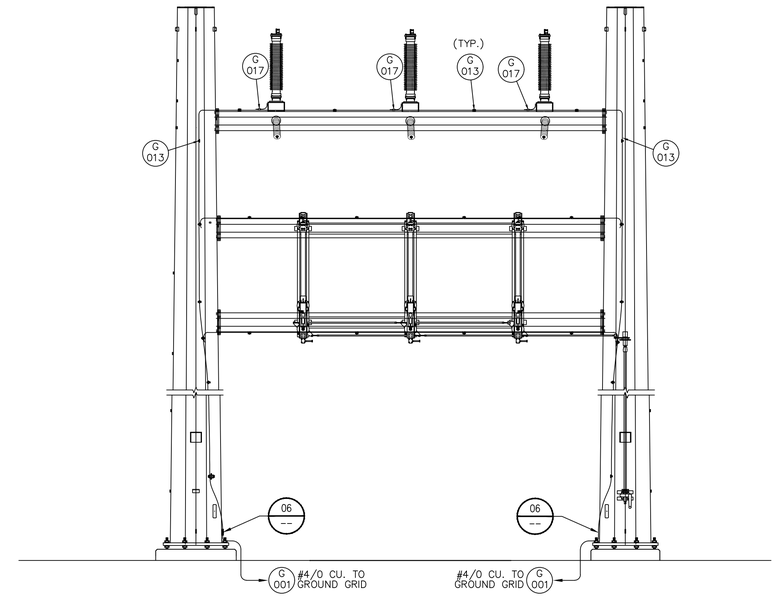
CABLE SPLICE CONNECTION DETAIL (4/0145)
SCALE: N.T.S.



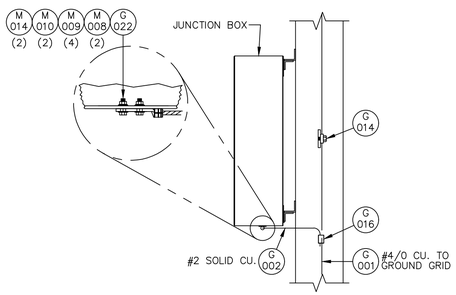
STRUCTURE GROUNDING (5/0145)
SCALE: N.T.S.



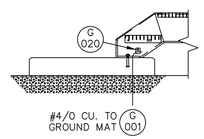
STRUCTURE GROUNDING TO EQUIPMENT (6/0145)
SCALE: N.T.S.



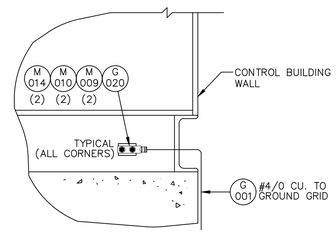
115 kV ARRESTERS GROUNDING DETAIL (10/0145)
SCALE: N.T.S.



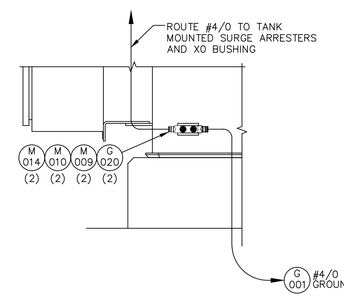
EQUIPMENT JUNCTION BOX GROUNDING DETAIL (7/0145)
SCALE: N.T.S.



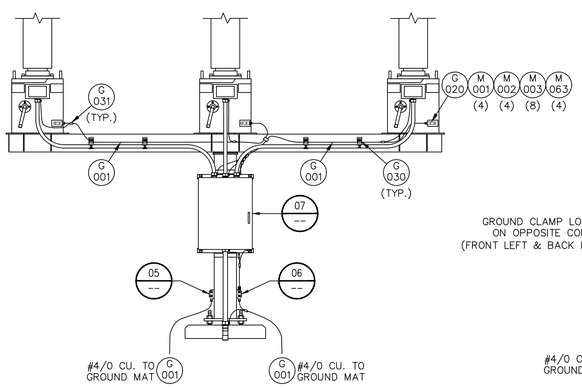
CONTROL ENCLOSURE STAIRS (8/0145)
SCALE: N.T.S.



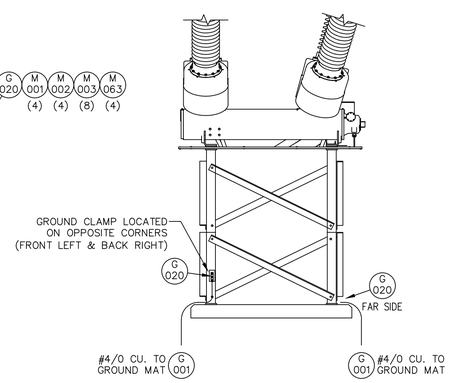
CONTROL BUILDING GROUNDING DETAIL (9/0145)
SCALE: N.T.S.



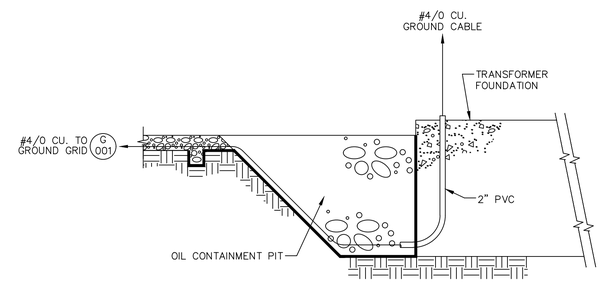
TRANSFORMER TANK GROUNDING DETAIL (13/0145)
SCALE: N.T.S.



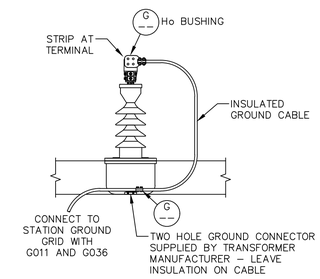
115 kV CVTs (11/0145)
SCALE: N.T.S.



115 kV CIRCUIT BREAKER (12/0145)
SCALE: N.T.S.



115/34.5 kV TRANSFORMER GROUNDING DETAIL (14/0145)
SCALE: N.T.S.



TRANSFORMER Ho BUSHING (15/0145)
SCALE: N.T.S.

HOLD FOR VENDOR DRAWINGS

PRELIMINARY
NOT FOR CONSTRUCTION

REFERENCE DRAWING

13666-052-E1-0145	GROUNDING PLAN
13666-052-E1-0151	GROUNDING DETAILS

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
C	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NT	KVP	KVP	S&L
B	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	RYZ	KVP	--	S&L
A	04/06/2020	PRELIMINARY - ISSUED FOR REVIEW	RYZ	KVP	---	S&L

SCALE: NOT TO SCALE

PREP: RG CHKD: FPH
APPD: -- DATE: 09/01/2017

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

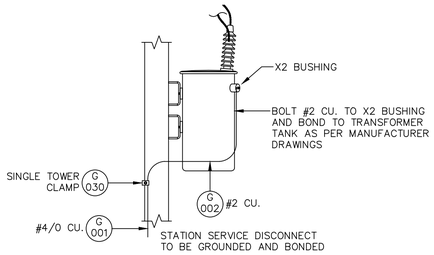
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

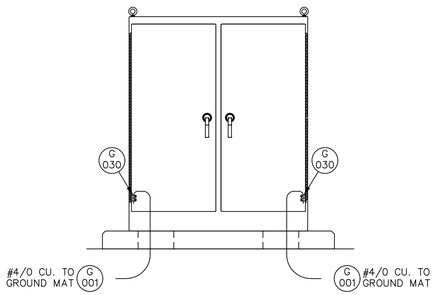
NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
GROUNDING DETAILS

13666-052-E1-0150



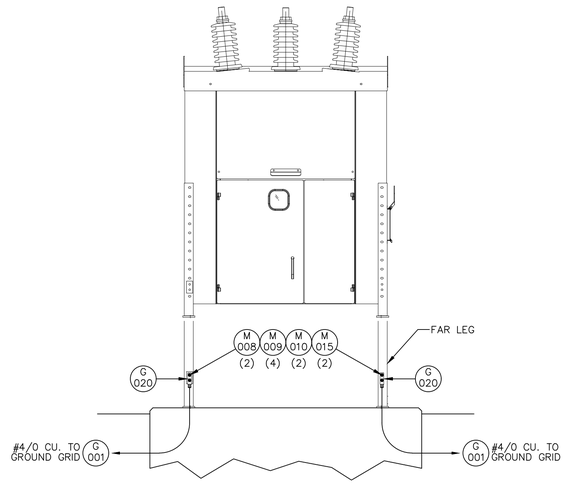
STATION SERVICE TRANSFORMER GROUND DETAIL 17 0145

SCALE: N.T.S.



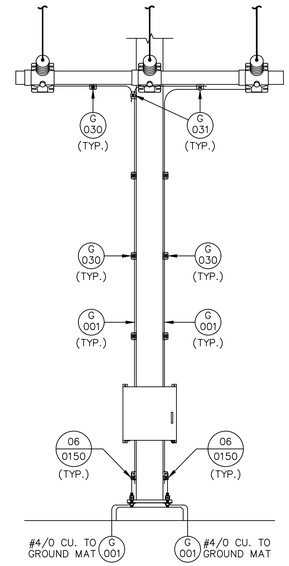
TELCO CABINET INSTALLATION 21 0145

SCALE: N.T.S.



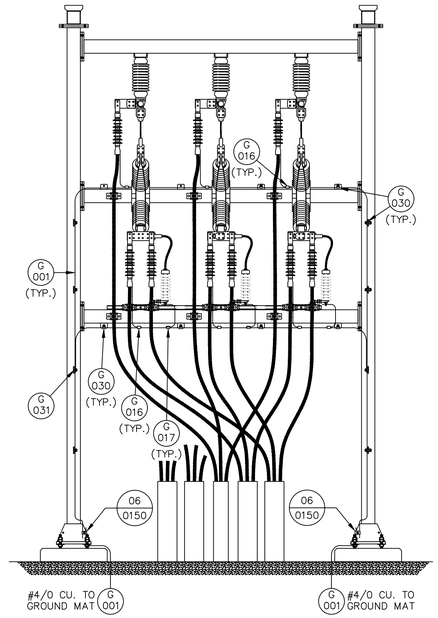
34.5 kV BREAKER GROUNDING DETAIL 18 0145

SCALE: N.T.S.



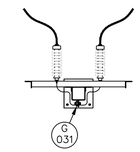
34.5 kV BUS VTs 19 0145

SCALE: N.T.S.

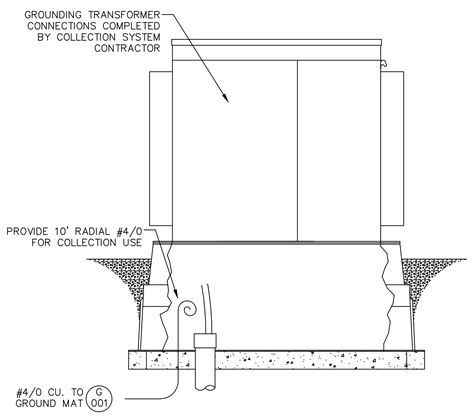


EQUIPMENT ON COLLECTION FEEDER RISER 20 0145

SCALE: N.T.S.

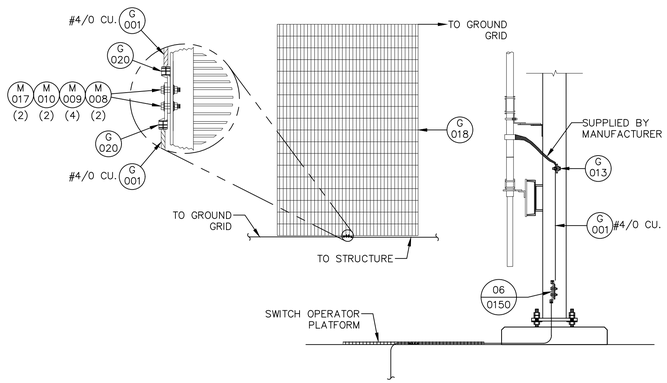


S.A. MOUNTING DETAIL



GROUNDING TRANSFORMER 22 0145

SCALE: N.T.S.



115 kV SWITCH OPERATOR PLATFORM – MANUAL OPERATOR GROUNDING 23 0145

SCALE: N.T.S.

HOLD FOR VENDOR DRAWINGS

PRELIMINARY
NOT FOR CONSTRUCTION

REFERENCE DRAWING

13666–051–E1–0145 GROUNDING PLAN
13666–051–E1–0150 GROUNDING DETAILS

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
--						
A	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	SV	JGO	KVP	S&L

SCALE: NOT TO SCALE

PREP: RG CHKD: FPH

APPD: -- DATE: 09/01/2017

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

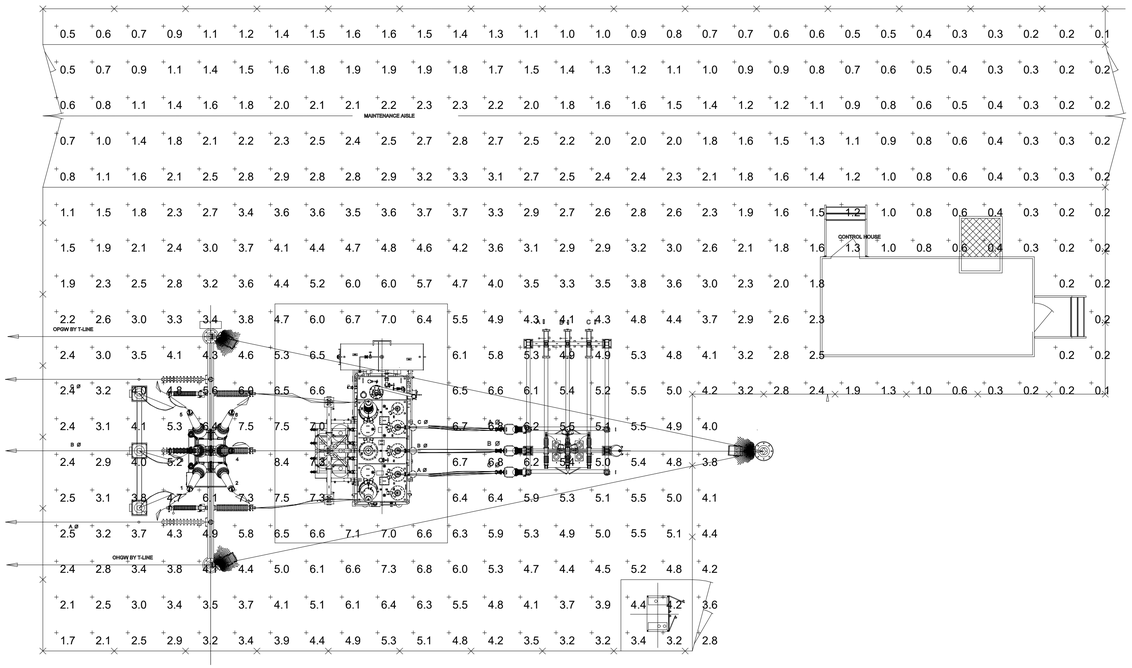
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
GROUNDING DETAILS

13666-052-E1-0151

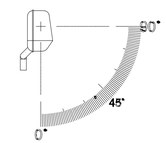


YARD LIGHTING SCHEDULE

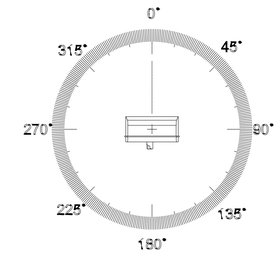
LIGHT NO.	TYPE	WATTAGE	MOUNTING HGT.	OREIENTATION	TILT	PNL/CCT
1	GE EVOLVE	170W	30Ft	45	60	--
2	GE EVOLVE	170W	30Ft	135	60	--
3	GE EVOLVE	170W	30Ft	90	60	--

STATISTICS - OVERALL SITE

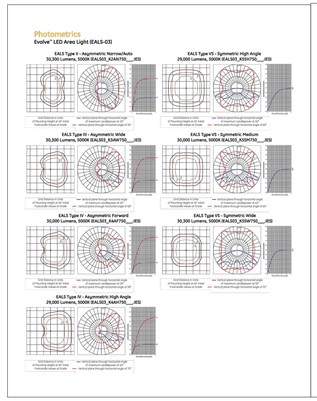
DESCRIPTION	SYMBOL	AVERAGE	MAXIMUM	MINIMUM	MAX/MIN	AVERAGE /MIN
SITE	+	2.1 fc	8.4 fc	0.1 fc	84 : 1	21 : 1



YARD LIGHT TILT



YARD LIGHT ORIENTATION ANGLE



PRELIMINARY
NOT FOR CONSTRUCTION

REFERENCE DRAWING

13666-052-E1-0042 BILL OF MATERIALS - CONDUIT
13666-052-E1-0100 ULTIMATE ELECTRICAL PLAN
13666-052-E1-0155 CONDUIT PLAN

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NT	KVP	KVP	S&L
A	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	JR	KVP	--	S&L

SCALE: NONE

PREP: AU CHKD: FN
APPD: KVP DATE: 06/14/2019

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

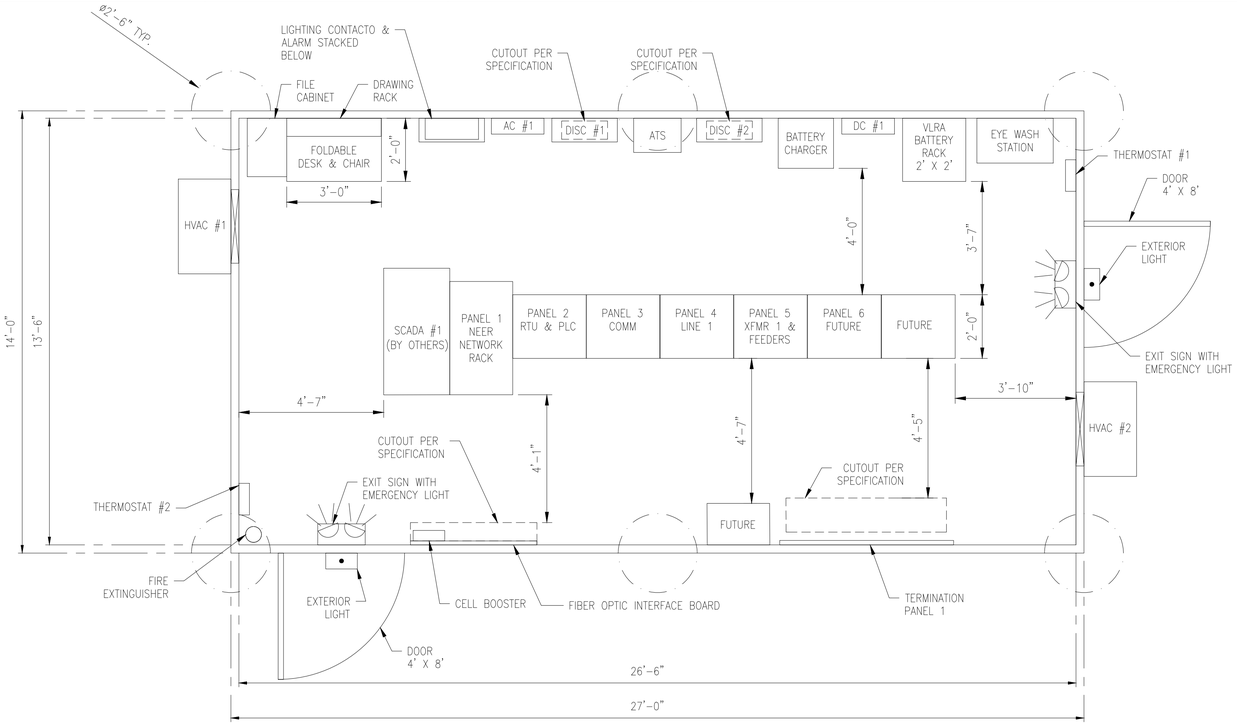
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

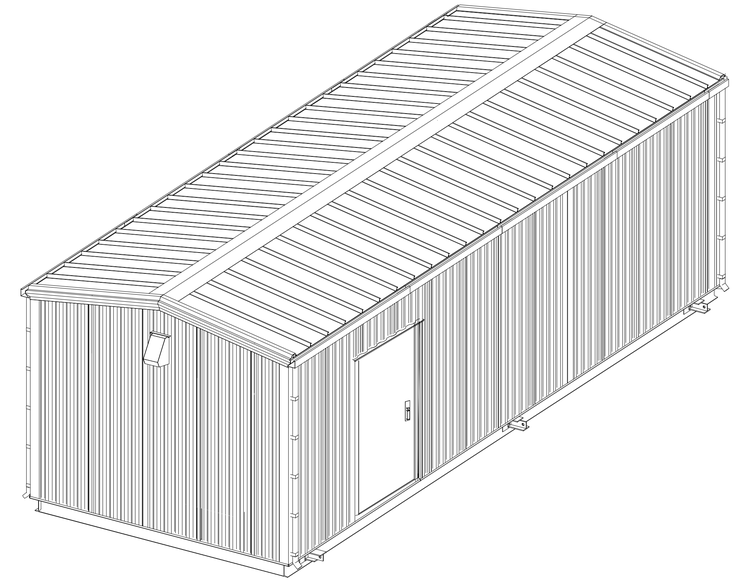
Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

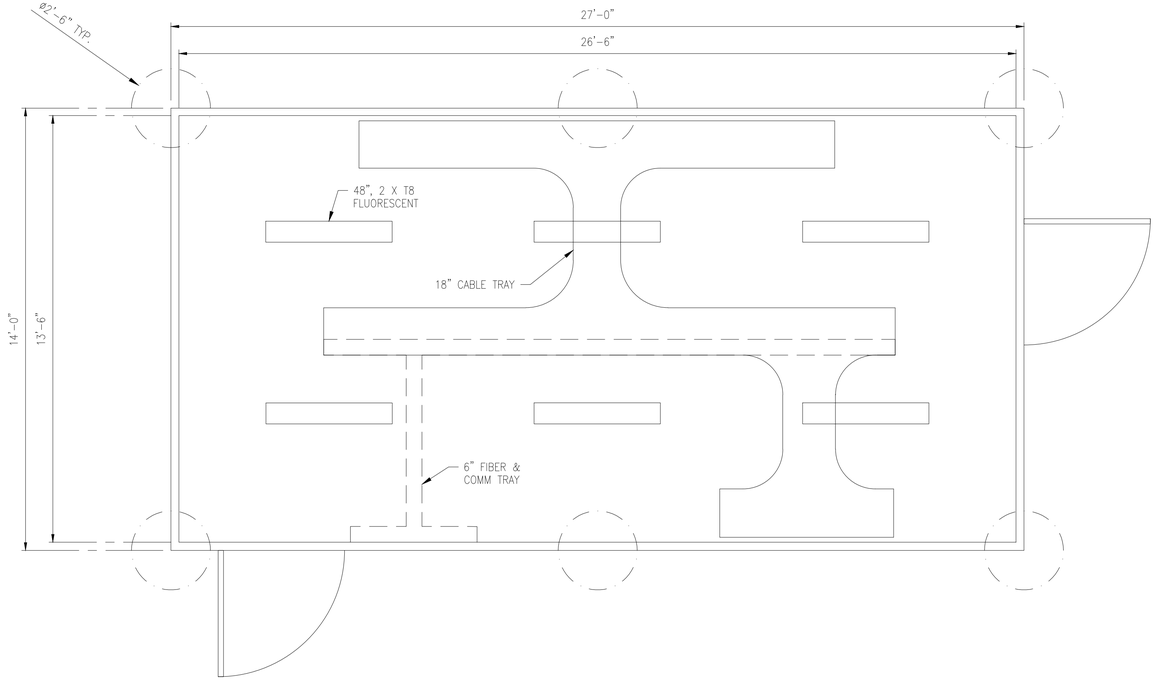
NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115/34.5 kV SUBSTATION
LIGHTING PLAN

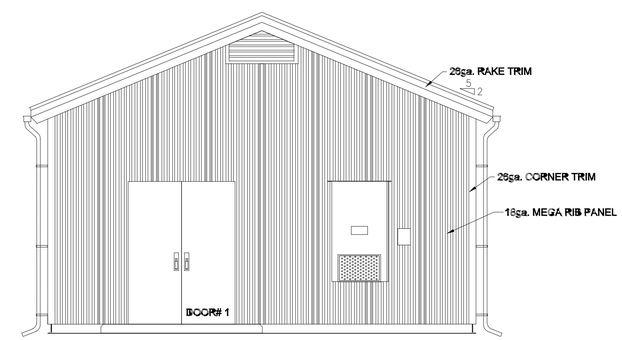
13666-052-E1-0165





ISO VIEW





SECTION VIEW

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	06/22/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NT	KVP	KVP	S&L
A	04/30/2020	PRELIMINARY - NOT FOR CONSTRUCTION	NJM	JTB	KVP	S&L

SCALE: NONE

PREP: NJM CHKD: JTB
APPD: KVP DATE: 04/01/2020

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

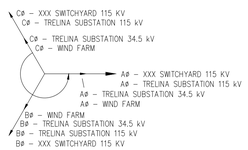
Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR ENERGY CENTER, LLC
115 kV SUBSTATION
CONTROL HOUSE PLAN

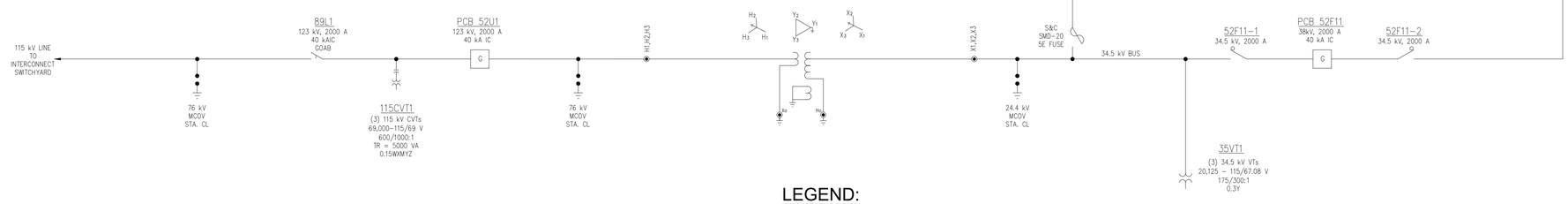
13666-052-E1-0300

HOLD



VOLTAGE PHASORS

HOLD



LEGEND:

- GROUP OPERATED DISCONNECT SWITCH
- HOOK OPERATED DISCONNECT SWITCH
- CAPACITIVE VOLTAGE TRANSFORMER
- POTENTIAL TRANSFORMER
- GROUNDING TRANSFORMER
- GAS CIRCUIT BREAKER
- SURGE ARRESTER
- CABLE TERMINATOR
- 34.5kV POWER FUSE

NOTES:

* – ON XFMR SIDE

** – ON FENCE SIDE

PRELIMINARY
NOT FOR CONSTRUCTION

REV	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
B	06/11/20	PRELIMINARY - CONCEPTUAL REVIEW	TAA	JGO	KVP	S&L
A	05/01/20	PRELIMINARY - CONCEPTUAL REVIEW	AM	JGO	KVP	S&L

SCALE: NONE

PREP: XX CHKD: XX

APPD: KP DATE: 03/27/2020

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

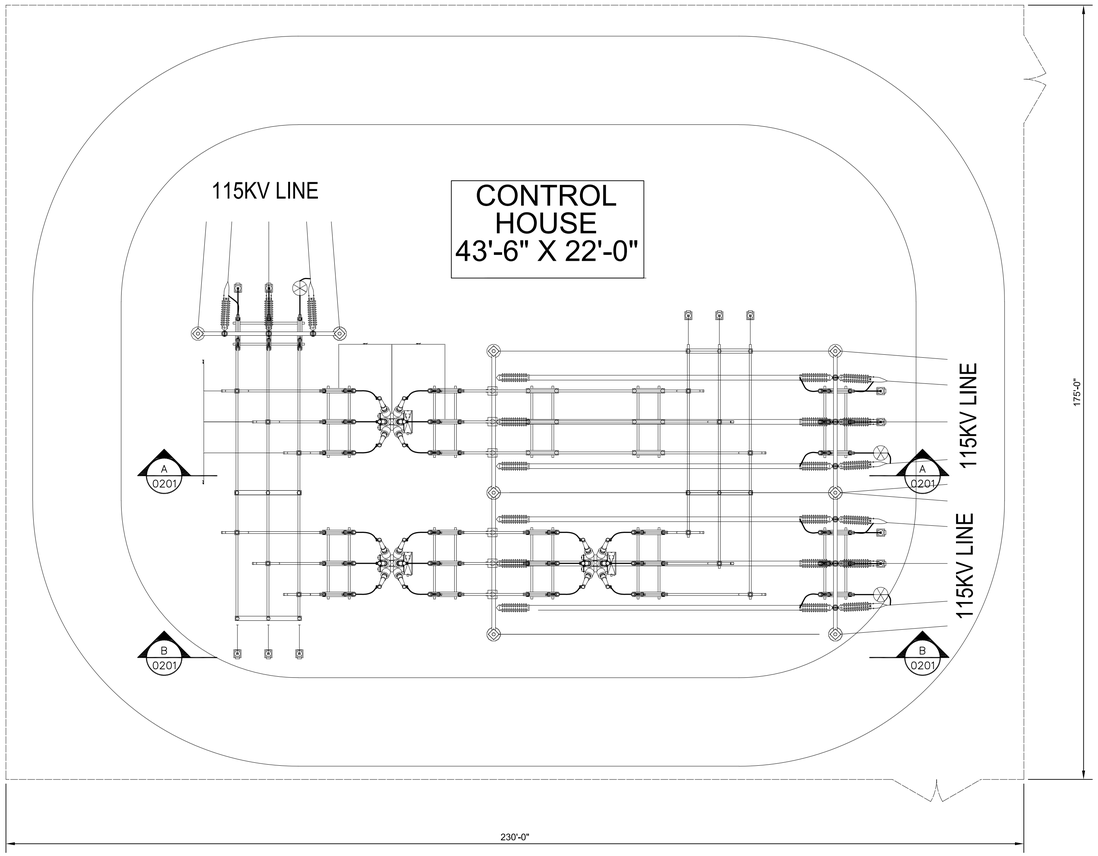
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

TRELINA SOLAR ENERGY CENTER
SENECA COUNTY, NY
115/34.5 kV SUBSTATION
ONE LINE DIAGRAM

13666-052-E1-1000



REFERENCE DRAWINGS:

TM2.73.09	POWER ONE LINE DIAGRAM
TM2.73.10	GENERAL ARRANGEMENT PLAN
TM2.73.11	GENERAL ARRANGEMENT ELEVATIONS & SECTIONS
TM2.73.12	YARD ERECTION MATERIAL LIST

NOTES:

1. POWER TRANSFORMERS SHOWN ARE ILLUSTRATIVE ONLY, ACTUAL SIZE WILL VARY BY OPCO & PROJECT REQUIREMENTS. TRANSFORMER SPACING & SEPARATION TO BE IN COMPLIANCE WITH IEEE 979 WHICH MAY INCLUDE A FIRE BARRIER WALL.
2. BUS SPANS SHALL INCLUDE INTERNAL DAMPENING CABLE TACK WELDED TO BOTTOM INSIDE SURFACE OF TUBULAR BUS SPAN TO ELIMINATE AEOLIAN VIBRATION IN ACCORDANCE WITH TM2.71.53.
3. LOCATIONS & SYMBOLS FOR BUS SUPPORTS & CONNECTION TYPES ARE SHOWN AND INDICATED AS:
   - S - SLIP SUPPORT
   - F - FIXED SUPPORT
   - EX - EXPANSION SUPPORT
4. WIRE CONDUCTOR MINIMUM BEND RADIUS SHALL BE INSTALLED NO LESS THAN 15 TIMES THE CONDUCTOR DIAMETER IN ACCORDANCE WITH TM2.71.53.
5. ELECTRICAL BUS & CONDUCTOR CLEARANCES SHOULD BE AS SHOWN BUT NOT LESS THAN RECOMMENDED CLEARANCES OF ANSI C37.32 TABLE 5 AND IN ACCORDANCE WITH TM2.71.54.
6. MINIMUM CLEARANCES ABOVE ANY PERMANENT SUPPORTING SURFACE FOR PERSONNEL TO THE LOWEST UNGROUNDED PART OF HIGH VOLTAGE EQUIPMENT SHALL BE A MINIMUM OF 8'-6" PER NESC. FULL VOLTAGE LIVE PART CLEARANCE SHALL BE IN ACCORDANCE WITH TABLE 124-1 FOR THE FOLLOWING VOLTAGE CLASSES AS APPLICABLE:
   - 230KV - 13'-9"
   - 115KV - 11'-7"
   - 34.5KV - 9'-6"
7. PHASING FOR NEW CONSTRUCTION SHALL BE A B C, ELECTRICAL SYSTEM PHASE RELATIONSHIP TO BE:

A	B	C
3	1	2
BLUE	RED	WHITE

8. FENCE SHOWN IS ILLUSTRATIVE ONLY. PROJECT DESIGNS SHOULD PROVIDE AMPLE SPACE FOR VEHICULAR TRAFFIC, TYPICALLY 30-40 FT. & SHOULD WELL EXCEED THE MINIMUM CLEARANCE REQUIREMENTS OF NESC RULE 110.
9. IF THERE ARE ANY ADJACENT BUILDINGS WITHIN 30'-0" OF THE CONTROL HOUSE, THE CONTROL HOUSE SHALL MEET THE FIRE RESISTANCE RATING REQUIREMENTS OF IBC 2009 SECTION 602 (MAINE) AND 2010 NYSBC SECTION 602 (NEW YORK).
10. YARD LIGHTING SHOWN IS A REPRESENTATION ONLY. A LIGHTING STUDY SHALL BE CONDUCTED DURING DETAILED DESIGN IN ACCORDANCE WITH TM2.71.11.
11. SEPARATION FROM POWER TRANSFORMER TO CONTROL HOUSE & CABLE TRENCH SHALL BE IN ACCORDANCE WITH IEEE 979. IF SEPARATION CANNOT BE MET. FIRE RATED ASSEMBLIES SHALL BE USED AS REQUIRED.
12. THE STANDARD BUS SCHEME SHALL BE BREAKER-AND-A-HALF UNLESS INITIAL DESIGN REQUIRES (4) BREAKER RING BUS, PHYSICAL LAYOUT SHALL BE DESIGNED FOR FUTURE BREAKER-AND-A-HALF.
13. 115KV BUS PHASE SPACING AS SHOWN IS ACCEPTABLE FOR FAULT CURRENT VALUES UP TO 25KA USING PORCELAIN STATION POST INSULATORS. ALTERNATE BUS SPACING OR INSULATOR TYPES WILL NEED TO BE CONSIDERED FOR STATIONS WITH HIGHER FAULT VALUES AS REQUIRED.
14. LIGHTNING MASTS SHOWN ARE REPRESENTATIVE ONLY. A DIRECT STROKE PROTECTION PLAN SHALL BE CONDUCTED DURING DETAILED DESIGN IN ACCORDANCE WITH TM2.71.10.
15. SWITCH STAND HEIGHTS REPRESENTED ON ELEVATIONS AND SECTIONS ARE BASED ON DIMENSIONAL INFORMATION FROM SOUTHERN STATES FOR 230KV SWITCHES AND CLEAVLAND-PRICE FOR 115KV SWITCHES. ADJUSTMENTS TO THE SWITCH STAND HEIGHT MAY BE NECESSARY FOR OTHER SWITCH MANUFACTURERS TO ACHIEVE THE REQUIRED BUS CENTERLINE HEIGHT.

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
--						
A	07/09/2020	PRELIMINARY - NOT FOR CONSTRUCTION	BZ	JGO	KVP	S&L

SCALE: 1/16"=1'-0"

PREP: RG CHKD:
APPD: -- DATE:

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

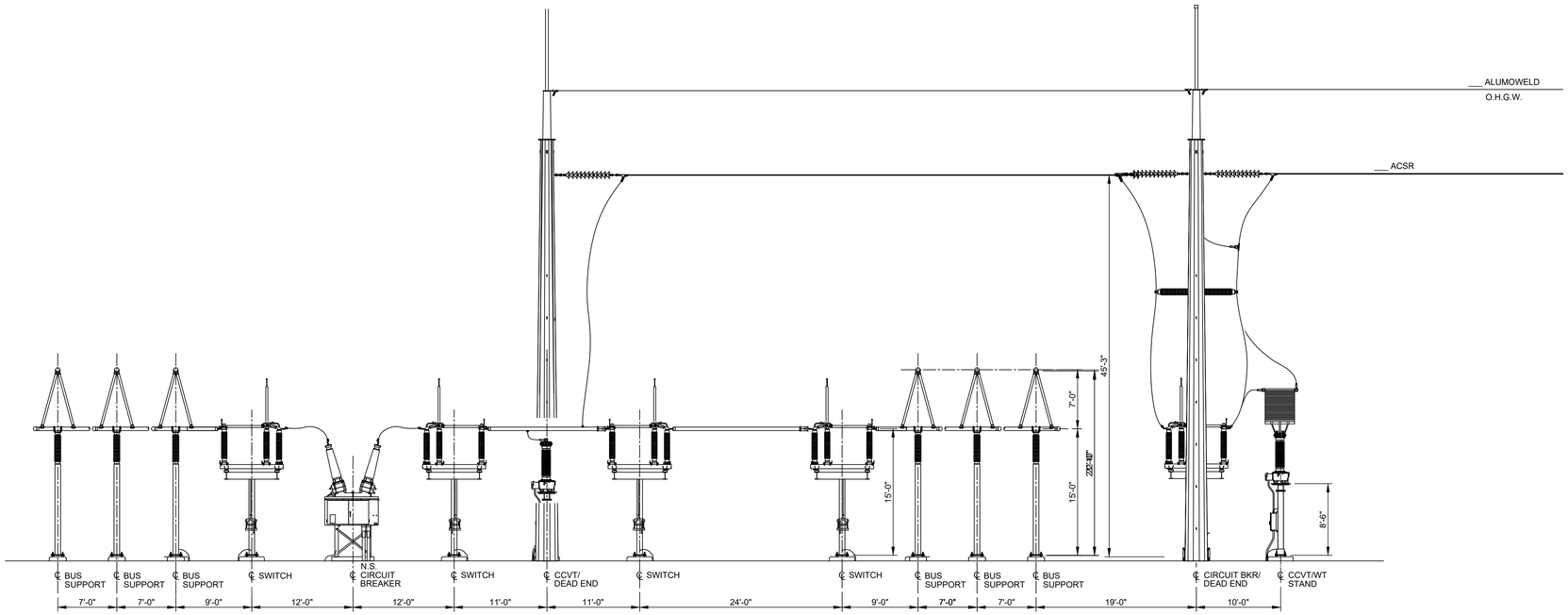
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

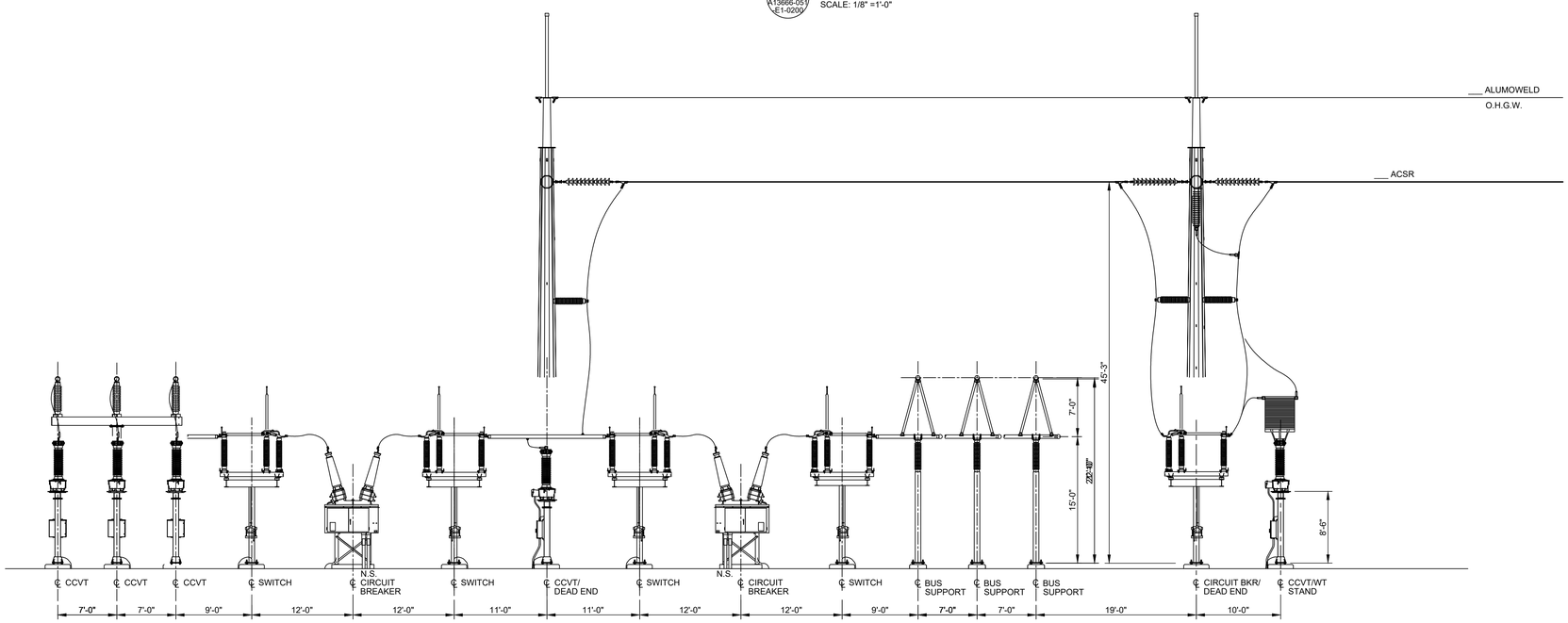
NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR, LLC
115 kV SWITCHYARD
GENERAL ARRANGEMENT PLAN

13666-052-E1-0200



A-A
A13666-051
E1-0200
SECTION
SCALE: 1/8" =1'-0"



B-B
A13666-051
E1-0200
SECTION
SCALE: 1/8" =1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
--						
A	XX/XX/2020	PRELIMINARY RELASE			---	S&L

SCALE: 1/8"=1'-0"

PREP: CHKD:

APPD: -- DATE:

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S //INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

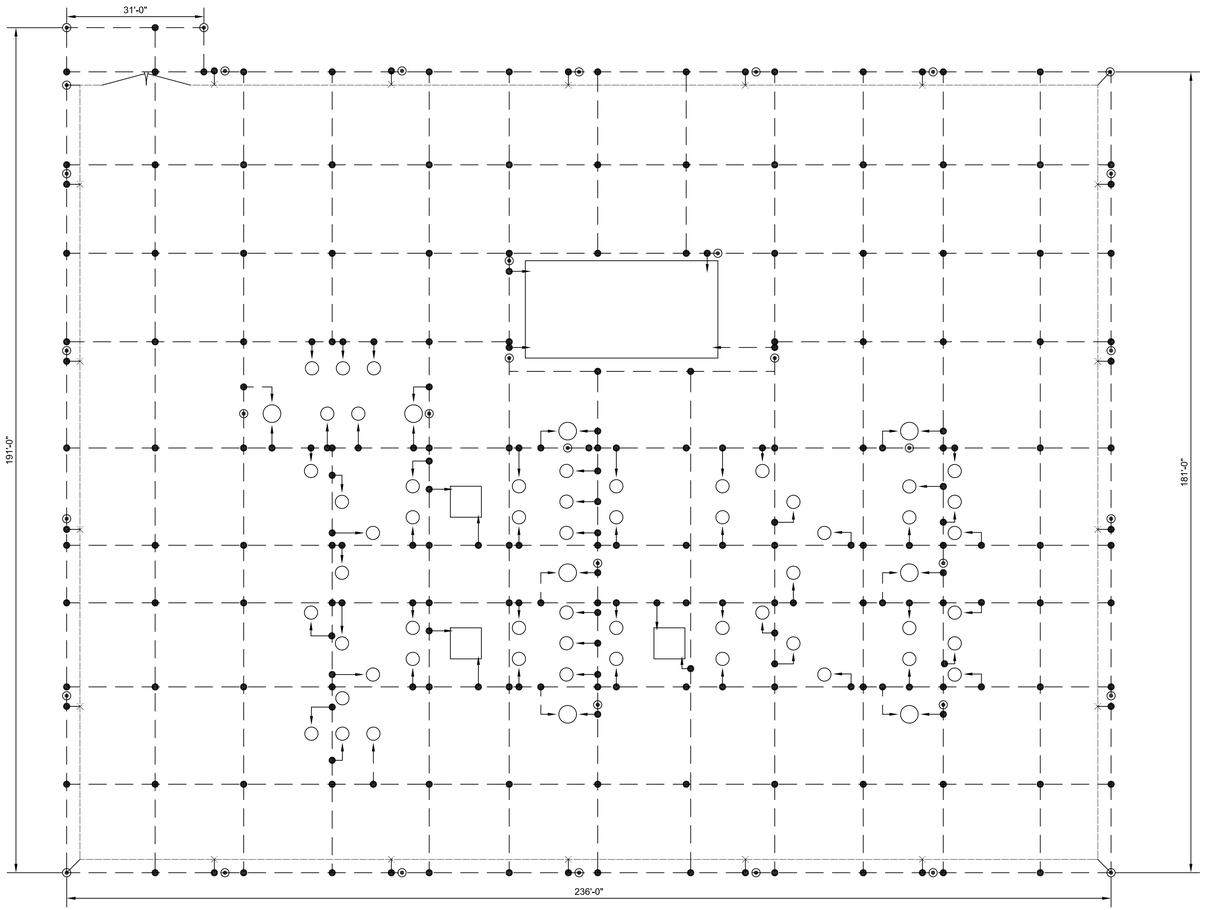
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR, LLC
115 kV SWITCHYARD
SECTIONS A-A & B-B

13666-052-E1-0202



LEGEND

- #4/0 S.D. COPPER GROUND CONDUCTOR
- GROUND CONDUCTOR STUB-UP PIGTAIL
- GROUND CONDUCTOR BOND CONNECTION, CADWELD OR EQUAL
- 5/8" x 10' COPPER CLAD GROUND ROD
- FENCE GROUND (CONNECT CONDUCTOR TO INSIDE OF FENCE & GATE POST AND MAKE SINGLE GROUND ROD CONNECTION).
- SWITCH OPERATOR PLATFORM (6'x4')
- MANUAL SWITCH OPERATOR
- INDICATES DETAIL NUMBER / INDICATES DRAWING NUMBER IN WHICH DETAIL APPEARS

GROUND GRID CRITERIA

GROUNDING SYSTEM DESIGN IS BASED ON THE FOLLOWING PARAMETERS:
- 7487 AMP, 34.5 kV SINGLE PHASE TO GROUND FAULT
- NO EARTH CURRENT SPLIT FACTOR
- 0.250 SECOND FAULT CLEARING TIME
- MAINTAINED 4 INCHES OF 3000 OHM-METER SURFACING MATERIAL
- THREE LAYER SOIL MODEL

LAYER	RESISTIVITY	THICKNESS
TOP LAYER:	182.25 OHM-METERS	1.13 FEET
SECOND LAYER:	37.33 OHM-METERS	71.95 FEET
THIRD LAYER:	211.44 OHM-METERS	INFINITE

UPON COMPLETION OF STATION GROUNDING SYSTEM, THE RESISTANCE OF MAT TO EARTH SHALL BE DETERMINED BY A THREE-ELECTODE TEST METHOD. IF THE RESISTANCE TO REMOTE EARTH IS GREATER THAN 0.4095 OHMS, ADDITIONAL GROUNDING FACILITIES MAY BE REQUIRED.

FIELD TO PROVIDE — GROUND GRID FIELD MEASURMENT .xx OHMS

DATE TAKEN 00/00/00

CONSTRUCTION NOTES & DETAILS

1. FOR GROUNDING NOTES AND DETAILS SEE DWG 13139-056-E1-0150 & 13139-056-E1-0151.
2. CONTROL BUILDING GROUND TO BE CONNECTED TO GROUND GRID THROUGH PULL BOX GROUND.
3. SEE FENCE GROUNDING DETAILS FOR GROUNDING GATES, POSTS, WIRE, FABRIC, ETC.
4. BURIAL DEPTH OF GROUND GRID SHALL BE 18" BELOW SUBGRADE.
5. ARRESTER GROUNDING CONNECTIONS SHALL BE LOOPED FORMING TWO PATHS TO THE GROUND GRID
6. FOR NEUTRAL BUSHING GROUNDING USE 350 KCMIL 600 V INSULATED CU CABLE WITH EXOTHERMIC MOLD, ITEM G040.

REFERENCE DRAWING

13139-051-E1-0100	ULTIMATE ELECTRICAL PLAN
13139-051-E1-0xxx	GROUNDING DETAILS
13139-051-E1-0xxx	GROUNDING DETAILS

PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
--						
A	07/09/2020	PRELIMINARY - NOT FOR CONSTRUCTION	BZ	JGO	KVP	S&L

SCALE: 1/16"=1'-0"

PREP: CHKD:
APPD: -- DATE:

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

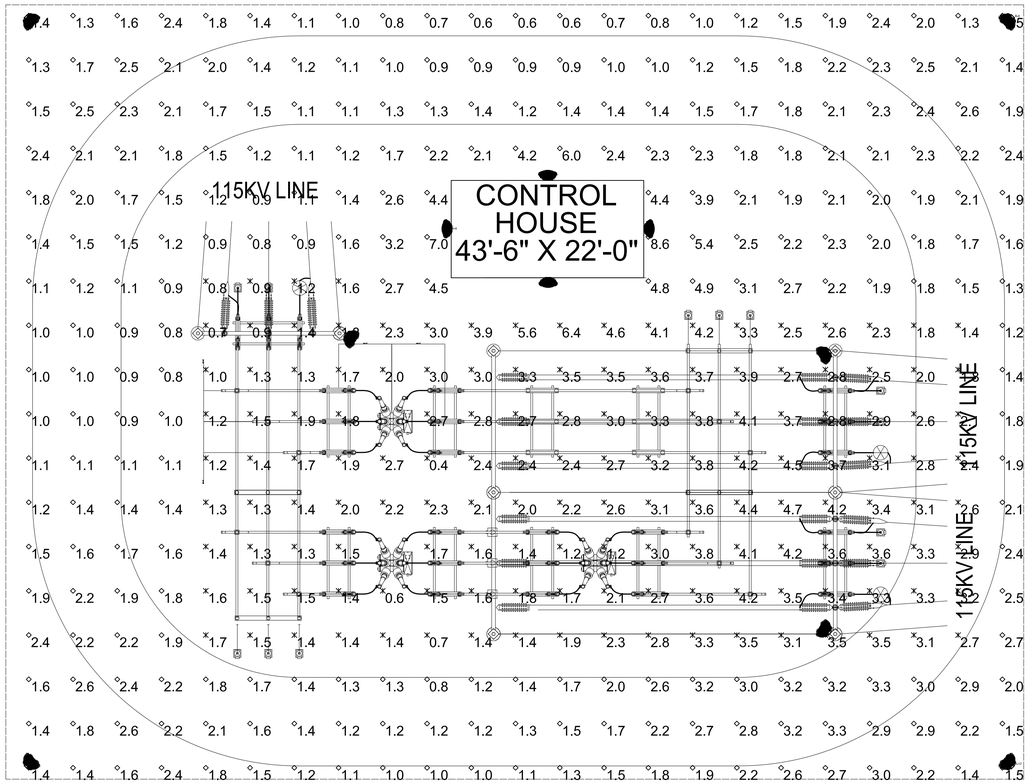
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR, LLC
115 kV SWITCHYARD
GROUNDING PLAN

13666-052-E1-0245

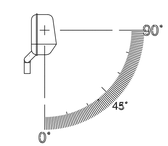


YARD LIGHTING SCHEDULE

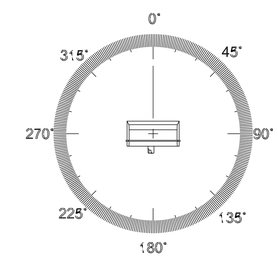
LIGHT NO.	TYPE	WATTAGE	MOUNTING HGT.	OREIENTATION	TILT	PNL/CCT
1	GE EVOLVE	170W	30Ft	135	60	--
2	GE EVOLVE	170W	30Ft	225	60	--
3	GE EVOLVE	170W	30Ft	315	60	--
4	GE EVOLVE	170W	30Ft	45	60	--
5	GE EVOLVE	170W	30Ft	135	60	--
6	GE EVOLVE	170W	30Ft	225	60	--
7	GE EVOLVE	170W	30Ft	315	60	--

STATISTICS - OVERALL SITE

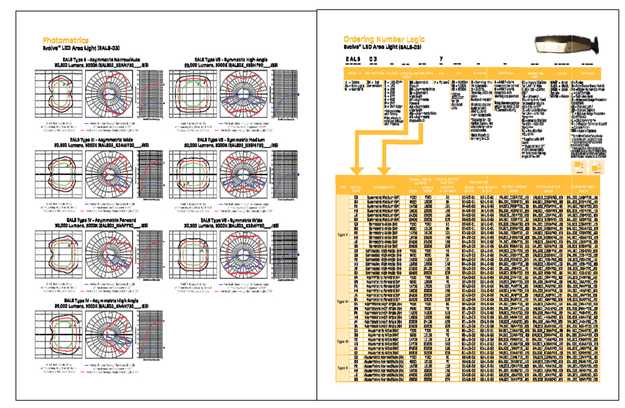
DESCRIPTION	SYMBOL	AVERAGE	MAXIMUM	MINIMUM	MAX/MIN	AVERAGE /MIN
SITE	+	2.1 fc	8.6 fc	0.6 fc	14:1	3.5:1



YARD LIGHT TILT



YARD LIGHT ORIENTATION ANGLE



PRELIMINARY
NOT FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
--						
A					---	S&L

SCALE: 1/16"=1'-0"

PREP: CHKD:

APPD: -- DATE:

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy
55 EAST MONROE ST., CHICAGO, ILL.

NEXTera ENERGY RESOURCES

NEXTERA ENERGY RESOURCES, LLC
TRELINA SOLAR, LLC
115 kV SWITCHYARD
LIGHTING PLAN

13666-052-E1-0260