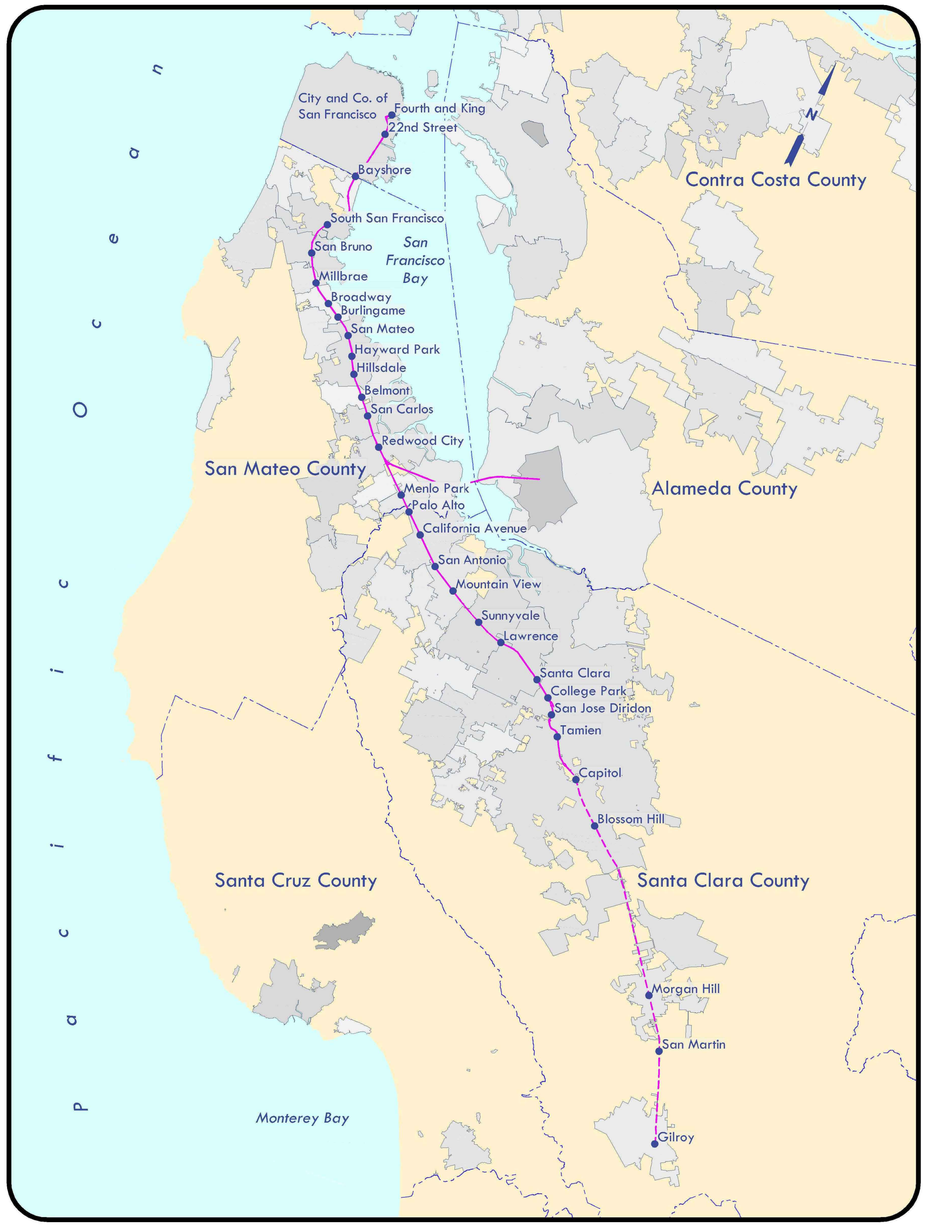
CALTRAIN CORRIDOR



ELECTRIFICATION STANDARD DRAWINGS

PENINSULA CORRIDOR JOINT POWERS BOARD

OVERHEAD CONTACT SYSTEM
BASIC DESIGN: ASSEMBLIES

JANUARY 01, 2026

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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

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ENGINEERING STANDARD DRAWINGS

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OVERHEAD CONDUCTOR RAIL

SD–W7001	TYPICAL TUNNEL TRANSITION STRUCTURE
SD–W7002	CANTILEVER EXTENSION SUPPORT
SD–W7003	TYPICAL ANCHOR STRUCTURE DETAILS
SD–W7004	TYPICAL TUNNEL CROSS SECTION
SD–W7005	TYPICAL TUNNEL SUPPORT
SD–W7006	TYPICAL EXPANSION JOINT ARRANGEMENT
SD–W7007	TYPICAL EXPANSION JOINT DETAILS
SD–W7008	TYPICAL MID–POINT ANCHOR ARRANGEMENT

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

BASIC DESIGN ASSEMBLIES
INDEX OF DRAWINGS
SHEET 4 OF 4

CADD FILE NAME: SD–W0015

REV: | EDITION: SECOND

SCALE:

STANDARD DRAWING NO.: SD–W0015

GENERAL NOTES

1. DRAWINGS SHALL BE INTERPRETED ALONG WITH CALTRAIN ELECTRIFICATION STANDARD CRITERIA FOR ALL SHEETS SHOWN WITHIN THIS OCS BASIC DESIGN SET.
2. THE OCS DESIGN, MATERIALS, FABRICATION, INSTALLATION, TESTING, AND DOCUMENTATION SHALL COMPLY WITH THE CALTRAIN'S STANDARD DESIGN CRITERIA, APPLICABLE INTERNATIONAL, NATIONAL, STATE/LOCAL STANDARDS, AND THE PROJECT DRAWINGS. WHERE CONFLICTS ARISE, THE CALTRAIN'S DESIGN CRITERIA AND REFERENCED STANDARDS, WHICHEVER CONTAINS THE MORE STRINGENT REQUIREMENT, SHALL GOVERN UNLESS A WRITTEN DESIGN VARIANCE REPORT (DVR) IS APPROVED BY CALTRAIN.
3. THE OCS SHALL BE DESIGNED AND INSTALLED TO SUPPORT THE SPECIFIED OPERATIONS, MAINTAINABILITY, AND SAFETY REQUIREMENTS OF CALTRAIN, INCLUDING COORDINATION WITH TRACTION POWER, SIGNALING, COMMUNICATIONS, AND FACILITIES INTERFACES.
4. OCS SHALL BE CONFIGURED TO SUPPORT SAFE OPERATIONS AND MAINTENANCE, INCLUDING ACCESS, SWITCHING, LOCKOUT/TAGOUT PROVISIONS, AND HAZARD CONTROLS CONSISTENT WITH CALTRAIN'S SAFETY REQUIREMENTS.
5. UNLESS OTHERWISE SPECIFIED BY CALTRAIN, OCS DESIGN SHALL CONFORM TO APPLICABLE PROVISIONS OF AREMA, EN STANDARDS, AND NESC (LATEST EDITIONS) FOR THE OVERHEAD CONTACT SYSTEM CONCERNING GENERAL ARRANGEMENTS, TOLERANCES, LOADS, STRUCTURES, AND FOUNDATIONS, SUPPLEMENTED BY CALTRAIN SPECIFIC DESIGN CRITERIA AND U.S. INDUSTRY STANDARD PRACTICES FOR AC ELECTRIFICATION SYSTEMS.
6. OCS DESIGN SOLUTIONS SHALL REFLECT TECHNICAL, ECONOMIC, OPERATIONAL, MAINTENANCE, AND LOCAL CLIMATIC CONSIDERATIONS TO ENSURE LIFECYCLE PERFORMANCE AND PANTOGRAPH SECURITY.
7. THE OCS DESIGN SHALL MEET THE SYSTEM PERFORMANCE REQUIREMENTS CONSIDERING PANTOGRAPH STATIC AND DYNAMIC ENVELOPES, CONTACT FORCE LIMITS, UPLIFT, STAGGER, AND DYNAMIC INTERACTION FOR THE SPECIFIED ROLLING STOCK FOR THE RATED TRACK SPEEDS.
8. WHERE REQUIRED BY CALTRAIN TRAIN SERVICE PLAN OR STANDARD, THE OCS SHALL BE DESIGNED FOR OPERATION WITH TWO PANTOGRAPHS FOR A DOUBLE CONSIST AND THE APPLICABLE MEAN CONTACT FORCE UPPER DESIGN LIMIT PER THE GOVERNING SPECIFICATION. THE OCS DESIGNER SHALL TAKE INTO CONSIDERATION OCS STRUCTURE AND WIRE REGRISTRATIONS SPACING TO REDUCE CONTACT LINE HARMONIC DISTURBANCES. THE OCS SHALL BE DESIGNED TO BE FREE FROM ARCING OR REDUCED SYSTEM PERFORMANCE ALONG ANY PART OF THE RAIL LINE.
9. PROVIDE OCS SECTIONALIZATION, TIE–INS, AND ISOLATION DEVICES AT LOCATIONS SHOWN AND AS REQUIRED FOR OPERATIONS, MAINTENANCE, AND FAULT MANAGEMENT, INCLUDING CLEAR IDENTIFICATION AND ACCESS FOR SAFE SWITCHING.
10. PROTECTIVE DEVICES, SURGE PROTECTION, AND ASSOCIATED GROUNDING ARRANGEMENTS SHALL FOLLOW CALTRAIN REQUIREMENTS, AND SURGE ARRESTERS SHALL NOT BE LOCATED IN PASSENGER PLATFORM AREAS UNLESS EXPLICITLY APPROVED BY CALTRAIN.
11. OCS STRUCTURES, APPURTENANCES, AND EQUIPMENT GROUNDING SHALL CONFORM TO CALTRAIN GROUNDING REQUIREMENTS AND APPLICABLE STANDARDS; PROVIDE CLARIFIED OCS POLE GROUNDING DETAILS AND SEPARATE GROUNDING FOR SURGE ARRESTERS WHERE SPECIFIED.
12. BONDING, RETURN CURRENT PATHS, ARC FLASH PLATES AND PROTECTIVE SCREENING SHALL BE COORDINATED WITH TRACTION POWER RETURN AND EMI/EMC PROVISIONS DEFINED BY THE GROUNDING AND BONDING STANDARD DRAWINGS AND STANDARD DESIGN CRITERIA.
13. MAINTAIN OVERHEAD ELECTRICAL AND STRUCTURAL CLEARANCES PER CALTRAIN CRITERIA AND APPLICABLE CODES, INCLUDING SPECIFIED MINIMUMS TO STRUCTURES, UTILITIES, AND WAYSIDE EQUIPMENT, AND APPLY CONTACT WIRE GRADIENT LIMITS CONSISTENT WITH CALTRAIN STANDARDS.
14. TURNOUT, CROSSING, OVERLAP, AND SPAN ARRANGEMENTS SHALL FOLLOW STANDARD OCS PRACTICES FOR GEOMETRY AND TOLERANCES, WITH SPECIAL PROVISIONS AS REQUIRED BY EN 50119 AND CALTRAIN STANDARD DETAILS.
15. DESIGN AND FIELD–ADJUST THE OCS CONSIDERING SPECIFIED CLIMATIC CONDITIONS AND TEMPERATURE RANGES, INCLUDING THERMAL ANALYSIS WHERE REQUIRED TO CONFIRM TENSIONING, SAG, AND COMPONENT MOVEMENTS UNDER WORST–CASE SCENARIOS.
16. LOCAL ENVIRONMENTAL CONDITIONS, MAINTAINABILITY, AND EQUIPMENT OPERATING RANGES SHALL BE ACCOUNTED FOR IN SELECTING ASSEMBLIES, LOCATIONS, AND SETTINGS.
17. PROVIDE TENSIONING SYSTEMS AND HARDWARE PER CALTRAIN STANDARDS, INCLUDING SPRING OR OTHER SPECIFIED TENSIONERS, WITH SETTINGS ESTABLISHED TO MAINTAIN THE REQUIRED CONTACT AND MESSENGER TENSIONS OVER THE DESIGN TEMPERATURE RANGE.
18. SPLICES IN CONTACT AND/OR MESSENGER CONDUCTORS ARE PROHIBITED UNLESS EXPRESSLY APPROVED BY CALTRAIN, AND IF APPROVED SHALL COMPLY WITH THE SPECIFIED LOCATIONS, METHODS, AND INSPECTION REQUIREMENTS.
19. MATERIALS, FINISHES, AND CORROSION PROTECTION SHALL FOLLOW CALTRAIN REQUIREMENTS FOR OCS HARDWARE AND STRUCTURES, INCLUDING SPECIFIED COATINGS FOR STEELWORK AND COMPATIBLE MATERIALS FOR CONNECTORS AND INSULATED ASSEMBLIES.
20. INSULATORS, HANGERS, AND COMPOSITE COMPONENTS SHALL CONFORM TO CALTRAIN STANDARD ASSEMBLIES AND ENVIRONMENTAL RATINGS FOR THE RAIL CORRIDOR.
21. YARD AND SHOP OCS SHALL BE DESIGNED TO THE SPECIFIC OPERATIONAL NEEDS, INCLUDING SPEED DEFINITIONS, ISOLATION, AND MAINTENANCE ACCESS WHERE APPLICABLE.
22. SPECIAL TRACKWORK AND CONSTRAINED GEOMETRY LOCATIONS SHALL APPLY CALTRAIN DETAILS FOR OVERLAPS, CROSSOVERS, AND CONTACT TRANSITIONS TO MAINTAIN SAFE PANTOGRAPH INTERACTION.
23. MAINTAIN CONDUCTOR TYPES AND DESIGN STEADY STATE TENSIONS FOR ALL OCS CONDUCTORS UNLESS OTHERWISE NOTED.
24. MAINTAIN REFERENCE TENSIONING EQUIPMENT TEMPERATURE RANGES AND GEOMETRY PER THE TENSIONING DIAGRAMS.
25. HARDWARE AND METALLIC COMPONENTS SHALL BE HOT-DIP GALVANIZED STEEL UNLESS OTHERWISE NOTED; PROVIDE STAINLESS STEEL WHERE INDICATED IN THE BILL-OF-MATERIAL CALLOUTS ON THE DETAIL SHEETS.
26. ALL DIMENSIONAL STANDARDS, STEEL SHAPES, AND FABRICATION REFERENCES LISTED ON THE SHEETS (E.G., DIN/EN PROFILES AND FASTENER STANDARDS) SHALL APPLY TO THE CORRESPONDING DETAILED COMPONENTS UNLESS SUPERSEDED BY PROJECT SPECIFICATIONS.
27. ANY ITEM LABELED "FOR MAINTENANCE USE ONLY – NOT FOR NEW CONSTRUCTION" IN THIS OCS BASIC DESIGN SET SHALL NOT BE INCLUDED IN THE DESIGN OR CONSTRUCTION UNLESS SPECIFICALLY AUTHORIZED BY CALTRAIN.
28. PROPOSED OCS GENERAL ARRANGEMENT ALTERNATES OR SUBSTITUTIONS SHALL DEMONSTRATE FULL COMPLIANCE WITH PERFORMANCE AND MAINTAINABILITY REQUIREMENTS AND SHALL NOT BE IMPLEMENTED WITHOUT WRITTEN APPROVAL BY CALTRAIN.
29. THE OCS DESIGN SHALL MEET THE FORM, FIT, AND FUNCTION FOR THE GIVEN APPLICATION PER CALTRAIN STANDARD DOCUMENTS. THE OCS DESIGNER/CONTRACTOR SHALL PROVIDE ARRANGEMENTS THAT CLOSELY MATCH THE SHOWN ASSEMBLIES FOR EASE OF SYSTEM MAINTAINABILITY BY CALTRAIN. OCS STANDARD DRAWINGS INDICATE DESIGN INTENT ONLY FOR FINAL DESIGN ADEQUACY. ALL MEANS AND METHODS, SAFETY, INTEGRATION, FIELD SETTINGS, AND AS-BUILTS ARE THE SOLE RESPONSIBILITY OF THE ENGINEER OF RECORD/CONTRACTOR. DEVIATIONS OR SUBSTITUTIONS REQUIRE PRIOR WRITTEN APPROVAL BY CALTRAIN AND DO NOT RELIEVE THE RESPONSIBILITY OF THE ENGINEER OF RECORD/CONTRACTOR IN PROVIDING A COMPLETE FUNCTIONAL ELECTRIFICATION SYSTEM

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

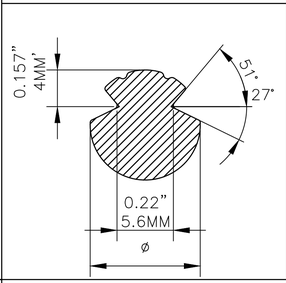
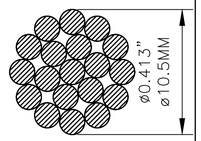
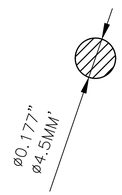
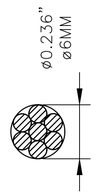
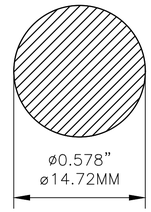
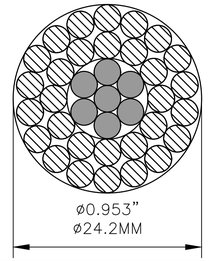
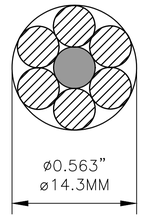
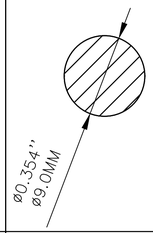
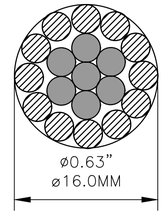
BASIC DESIGN ASSEMBLIES
GENERAL NOTES

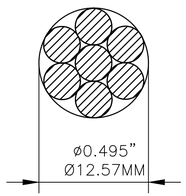
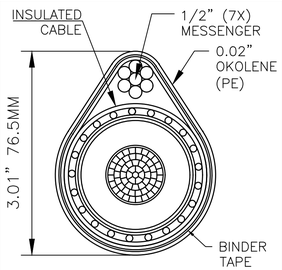
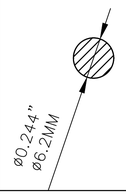
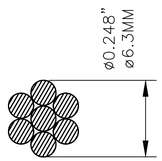
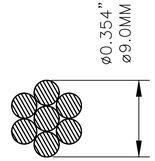
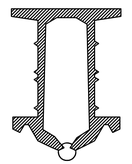
CADD FILE NAME: SD–W0016

REV: | EDITION: SECOND

SCALE:

STANDARD DRAWING NO.: SD–W0016

	CONTACT WIRE AC 107	MESSENGER WIRE BZ II 70/19	DROPPER WIRE BZ II 10/49	CANTILEVER DROPPER WIRE 6.0–SE–BK1570	JUMPER WIRE E–CU 95X259	REINFORCEMENT CONDUCTOR AND BYPASS FEEDER EAGLE ACSR 556	STATIC WIRE PENGUIN ACSR 4/0	ELECTRICAL CONNECTION E–CU 35X133	SHUNT WIRE DORKING ACSR 96
									
MATERIAL	CU AG 01	BZ–II	BZ–II	STAINLESS STEEL	E–CU	AL/ST	AL/ST	E–CU	AL/ST
CROSS–SECTIONAL AREA MM² (IN²)	107 (0.166)	65.81 (0.1)	9.6 (0.01)	16 (0.02)	99.7 (0.15)	347.81 (0.539)	125.1 (0.194)	35 (0.054)	152.81 (0.237)
DIAMETER MM (IN)	ø12.3 (0.484)	ø10.5 (0.413)	ø4.5 (0.177)	ø6 (0.236)	ø14.7 (0.578)	ø24.2 (0.953)	ø14.3 (0.563)	ø9 (0.354)	ø16.0 (0.63)
WIRES (N°–ø)	1–12.3 (0.484)	19	49–0.5	7	259–0.7	30/7–3.46MM/3.46MM 30/7–0.1362IN/0.1362IN	6/1–4.77MM/4.77MM 6/1–0.1878IN/0.1878IN	133–0.6	12/7–3.2/3.2
WEIGHT N/M (LB/FT)	9.5 (0.65)	5.96 (0.41)	0.89 (0.061)	1.38 (0.0946)	9.35 (0.641)	12.7 (0.871)	4.25 (0.291)	3.53 (0.242)	6.95 (0.476)
NOMINAL FORCE KN (LB)	37.45 (8419)	38.64 (8687)	–	19.64 (4415.25)	–	123.66 (27800)	37.14 (8350)	–	83.21 (18706.349)
MOD. ELAST. KN/MM² (LB/IN²)	–	105 (14753025)	–	–	–	80.4 ($11.6x10^6$)	79.46 ($11.5x10^6$)	–	103.26 (14508675)
COEF. OF THERMAL EXPANSION 10^{-6}/K (1/F)	17.0 ($9.44x10^{-6}$)	17.0 ($9.44x10^{-6}$)	–	–	–	17.8 ($9.9x10^{-6}$)	19.1 ($10.6x10^{-6}$)	–	15.3 ($8.50x10^{-6}$)
NORM	EN 50149	DIN 48201	DIN 43138	EN 12385–4	DIN 43138	ASTM B 232	ASTM B 232	DIN 43138	ASTM B 232

	MESSENGER FOR FEEDER CABLE EHS 7–STRAND GALV. STEEL WIRE	1/C 750 KCMIL, 46KV CU, CABLE BOUND TO 1/2" MESS. WIRE	HEAD SPAN DROPPER BZ II 16/84	SPAN WIRE DROPPER WITH SINGLE SPAN WIRE BZ II 25/7	SPAN WIRE DROPPER WITH TWO SPAN WIRE BZ II 50/7	OVERHEAD CONDUCTOR RAIL TUNNELS
						
MATERIAL	GALV. STEEL	COPPER	BZ–II	BZ–II	BZ–II	AL ALLOY EXTRUDED RAIL 6060 T6 OR 6106 T5
SECC. MM² (IN²)	96.58 (0.150)	380 (0.5890) CU	16.3 (0.025)	24.25 (0.038)	49.48(0.077)	110mmx85mm
DIAMETER MM (IN)	ø12.57 (0.495)	ø76.45 (3.01) OD	ø6.2 (0.244)	ø6.3 (0.248)	ø9.0 (0.354)	–
WIRES (N°–ø)	7 STRAND	61	84–0.5	7	7	–
WEIGHT N/M (LB/FT)	7.54 (0.517)	78.586 (5.383)	1.52 (0.104)	2.18 (0.149)	4.46 (0.306)	6 kg/m
NOMINAL FORCE KN (LB)	119.6 (26900)	–	–	14.24 (3201)	28.58 (6425)	–
MOD. ELAST. KN/MM² (LB/IN²)	206.843 ($30x10^6$)	–	–	–	–	69 GPa
COEF. OF THERMAL EXPANSION 10^{-6}/K (1/F)	$12.3x10^{-6}$ ($6.83x10^{-6}$)	–	–	–	–	24X10^(–6)PER C.
NORM	ASTM A475	AEIC CS8 & ICEA S–93–639/S–97–682	DIN 43138	DIN 48201	DIN 48201	–

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PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CONDUCTOR PARTICULARS

CADD FILE NAME: SD–W6001

REV: | EDITION: SECOND

SCALE: NTS

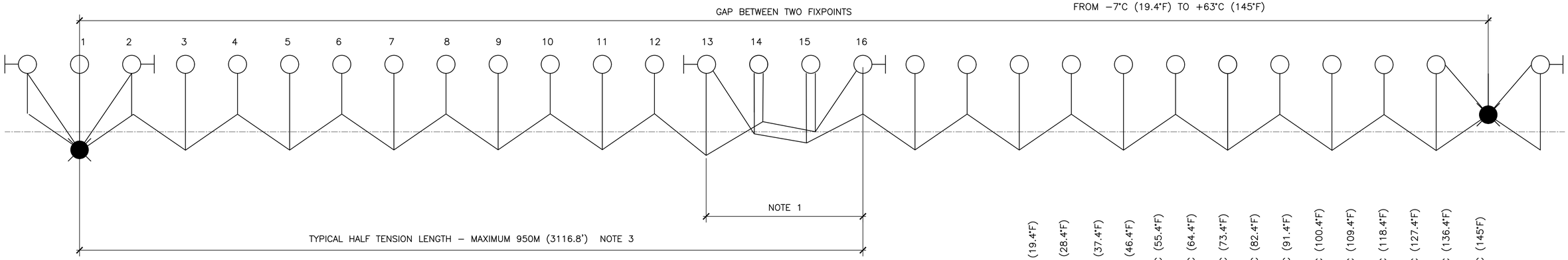
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NOTES:

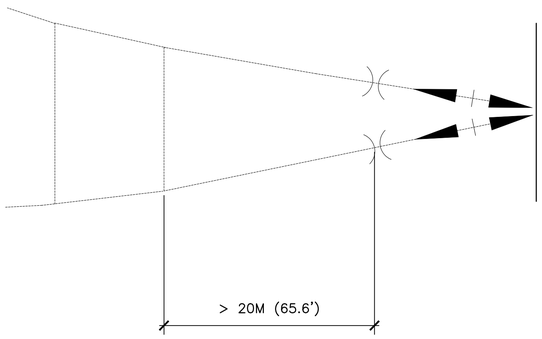
1. OVERLAP TYPES: 3–SPAN NON INSULATED
   3–SPAN INSULATED
   5–SPAN NON INSULATED – IF NECESSARY
   5–SPAN INSULATED – IF NECESSARY

2. MAXIMUM ELONGATION BY THERMAL EXPANSION: 0.000017/K X 70K X 950M = 1.1305M (44.51'')
   – alpha = 0,000017/K FACTOR OF THERMAL EXPANSION (9.44 X 10^{-6} /F)
   – TEMPERATURE RANGE 70 K (–7°C TO 63°C) (20°F TO 145°F)
   – MAXIMUM HALF TENSION LENGTH 950M (3116.8')

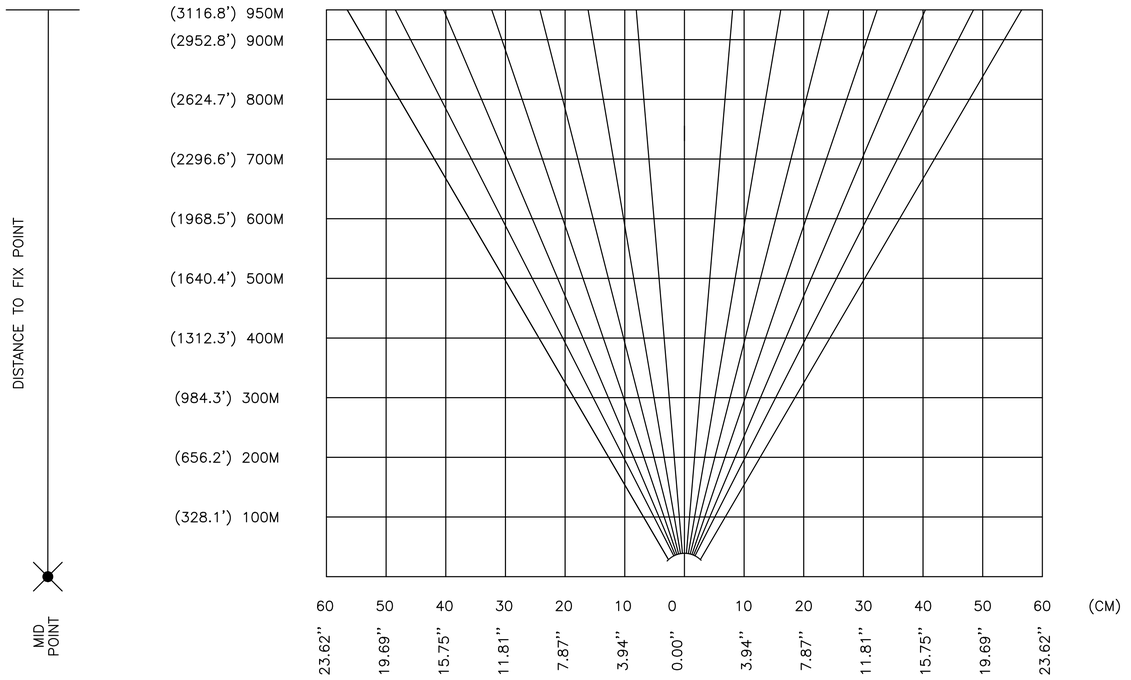
3. A MAXIMUM HALF TENSION LENGTH OF 3116.8' WILL BE USED.
   THE MOVEMENT OF HINGED CANTILEVERS AND OF TENSION WHEEL
   IS ACCEPTABLE, BECAUSE OF RELATIVELY SMALL TEMPERATURE RANGE
   FROM –7°C (19.4°F) TO +63°C (145°F)



TYPICAL FULL TENSION LENGTH
PLAN
NTS



END SECTION OF TYPICAL FULL TENSION LENGTH
ELEVATION
NTS



ADJUSTMENT SCHEMATIC

REV	DATE	BY	CHK	APP	DESCRIPTION
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PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

TYPICAL TENSION LENGTH

CADD FILE NAME: SD–W6002

REV: | EDITION: SECOND

SCALE: NTS

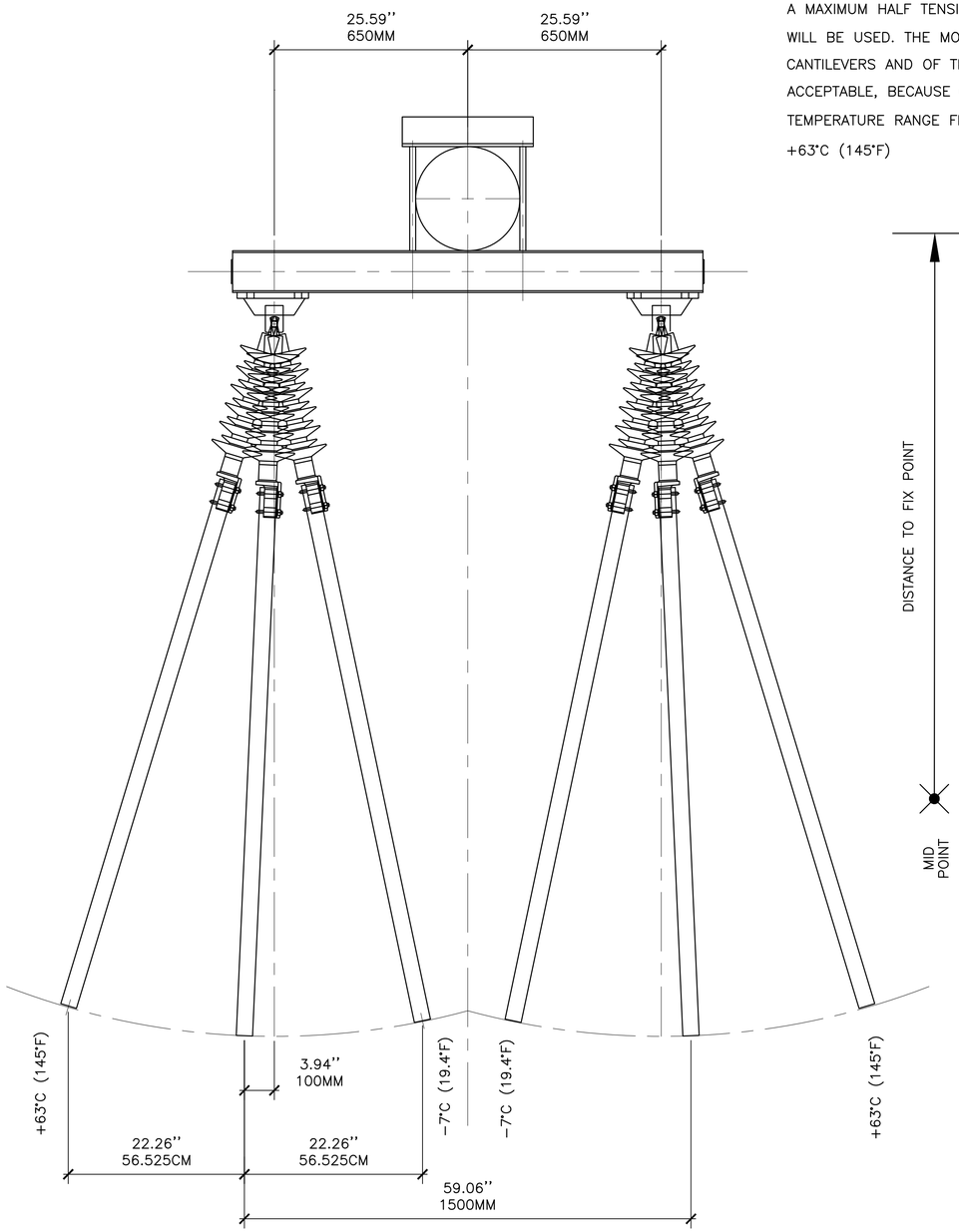
STANDARD DRAWING NO.: SD–W6002

NOTE 2:

A MAXIMUM HALF TENSION LENGTH OF 3116.8' WILL BE USED. THE MOVEMENT OF HINGED CANTILEVERS AND OF TENSION WHEEL IS ACCEPTABLE, BECAUSE OF RELATIVELY SMALL TEMPERATURE RANGE FROM −7°C (19.4°F) TO +63°C (145°F)

NOTE 1:

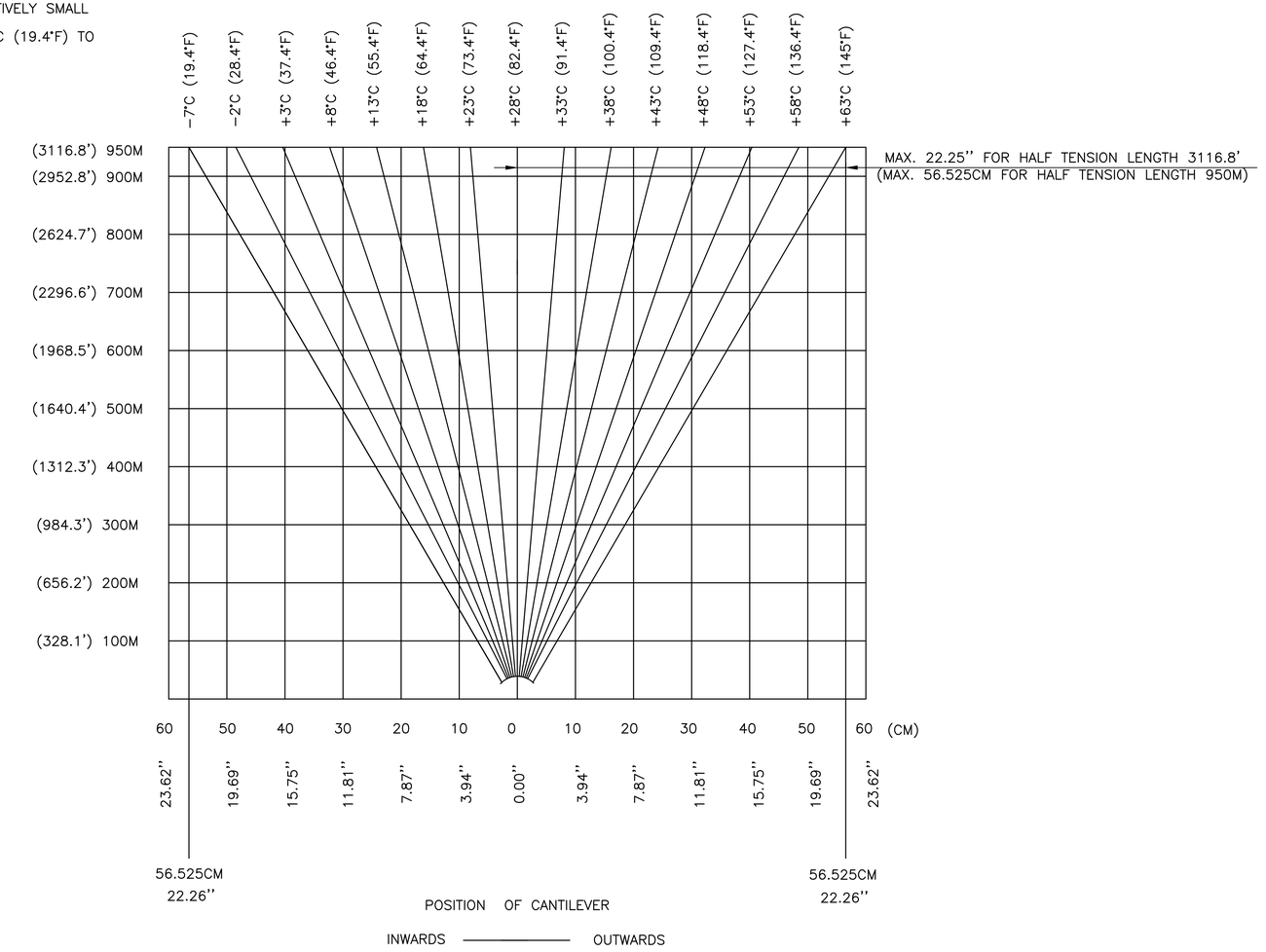
WHEN THE TEMPERATURE RAISES, THE OVERLAP CANTILEVERS HAVE TO MOVE APART FROM EACH OTHER



MIDDLE POSITION OF CANTILEVERS / MOVED POSITION

PLAN

NTS



ADJUSTMENT SCHEMATIC

NTS

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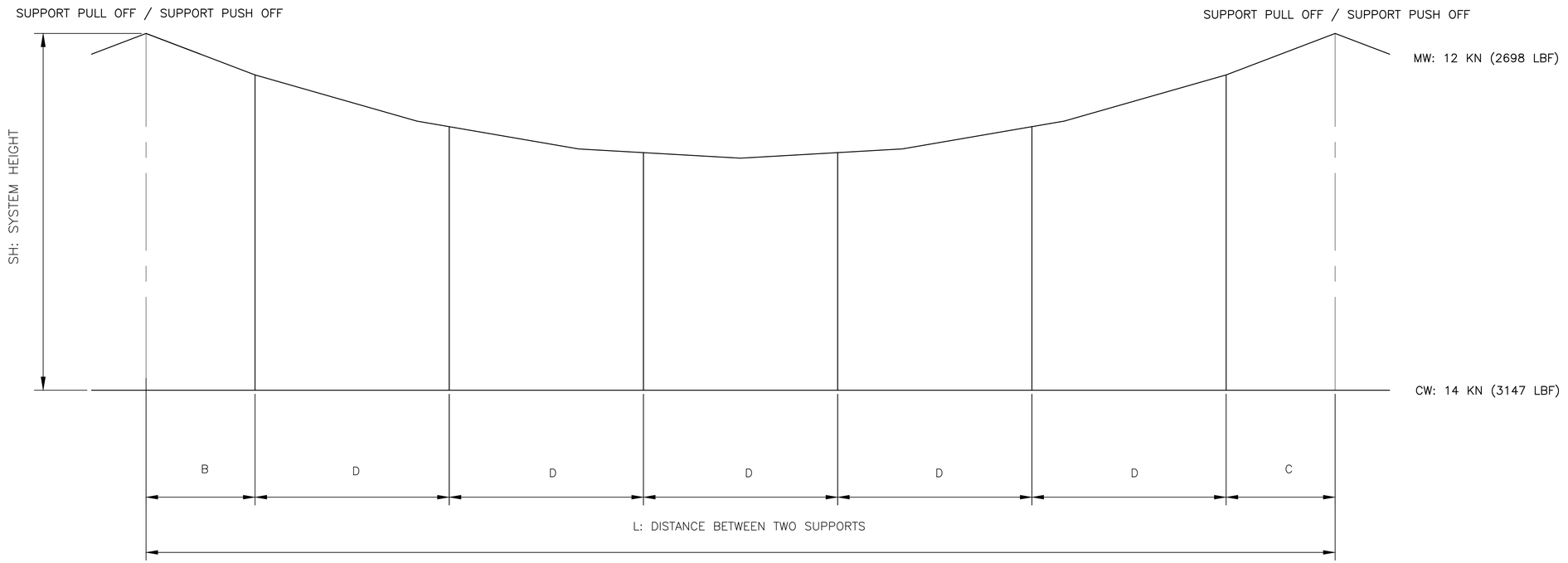
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

POSITION OF CANTILEVER

CADD FILE NAME:	SD−W6003
REV:	EDITION: SECOND
SCALE:	NTS
STANDARD DRAWING NO.:	SD−W6003



NOTES:

1. MAX. DISTANCE OF DROPPER D = 12M (39.4')
2. NUMBER OF DROPPERS: 2 OR 4 OR 6 OR 8 (EXAMPLE DRAWN WITH 6 DROPPERS)
3. DROPPER SPACING B AND C DEPENDS ON THE RADIAL LOAD AT THE SUPPORT. CHOOSE FROM TABLE BELOW.
4. DISTANCE D – DISTANCE BETWEEN DROPPERS
5. DISTANCE B/C – DISTANCE BETWEEN SUPPORT AND FIRST/LAST DROPPER
6. DISTANCE D DEPENDS ON L AND B AND C – MUST BE CALCULATED CONSIDERING L / B / C
7. TABLE 1 AND TABLE 2 CAN BE USED INTERCHANGEABLY, HOWEVER, IN SITUATIONS WHERE RUNS CONTAIN HIGHER RADIAL LOADS, TABLE 2 SHOULD BE USED EXCLUSIVELY.

TENSION IN REGISTRATION ARM	TO 150 N (33.72 LBF)	TO 200 N (44.96 LBF)	TO 240 N (53.95 LBF)	TO 400 N (89.92 LBF)	TO 650 N (146.13 LBF)	TO 850 N (191.09 LBF)	TO 1100 N (247.29 LBF)	TO 1200 N (269.77 LBF)
B AND C	2 M (6.56')	2.5 M (8.20')	4M (13.12')	5M (16.40')	7M (22.97')	8M (26.25')	10M (32.81')	12M (39.37')

FIELD / SPAN LENGTH AND DROPPER DISTANCE

TABLE 1

NTS

TENSION IN REGISTRATION ARM	TO 110 N (24.729 LBF)	TO 150 N (33.72 LBF)	TO 200 N (44.96 LBF)	TO 240 N (53.95 LBF)	TO 400 N (89.92 LBF)	TO 650 N (146.13 LBF)	TO 850 N (191.09 LBF)	TO 1000 N (224.81 LBF)	TO 1100 N (247.29 LBF)	TO 1200 N (269.77 LBF)	TO 1800 N (404.656 LBF)
B AND C	2M (6.56')	3.0M (9.84'')	4M (13.12')	5M (16.40')	6M (19.68')	7M (22.97')	8M (26.25')	9M (29.53')	10M (32.81')	11M (36.09')	12M (39.37')

FIELD / SPAN LENGTH AND DROPPER DISTANCE FOR HIGH RADIAL LOAD UP TO 1800 N (404.656 LBF)

TABLE 2

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

TYPICAL SPAN LENGTH

CADD FILE NAME: SD–W6004

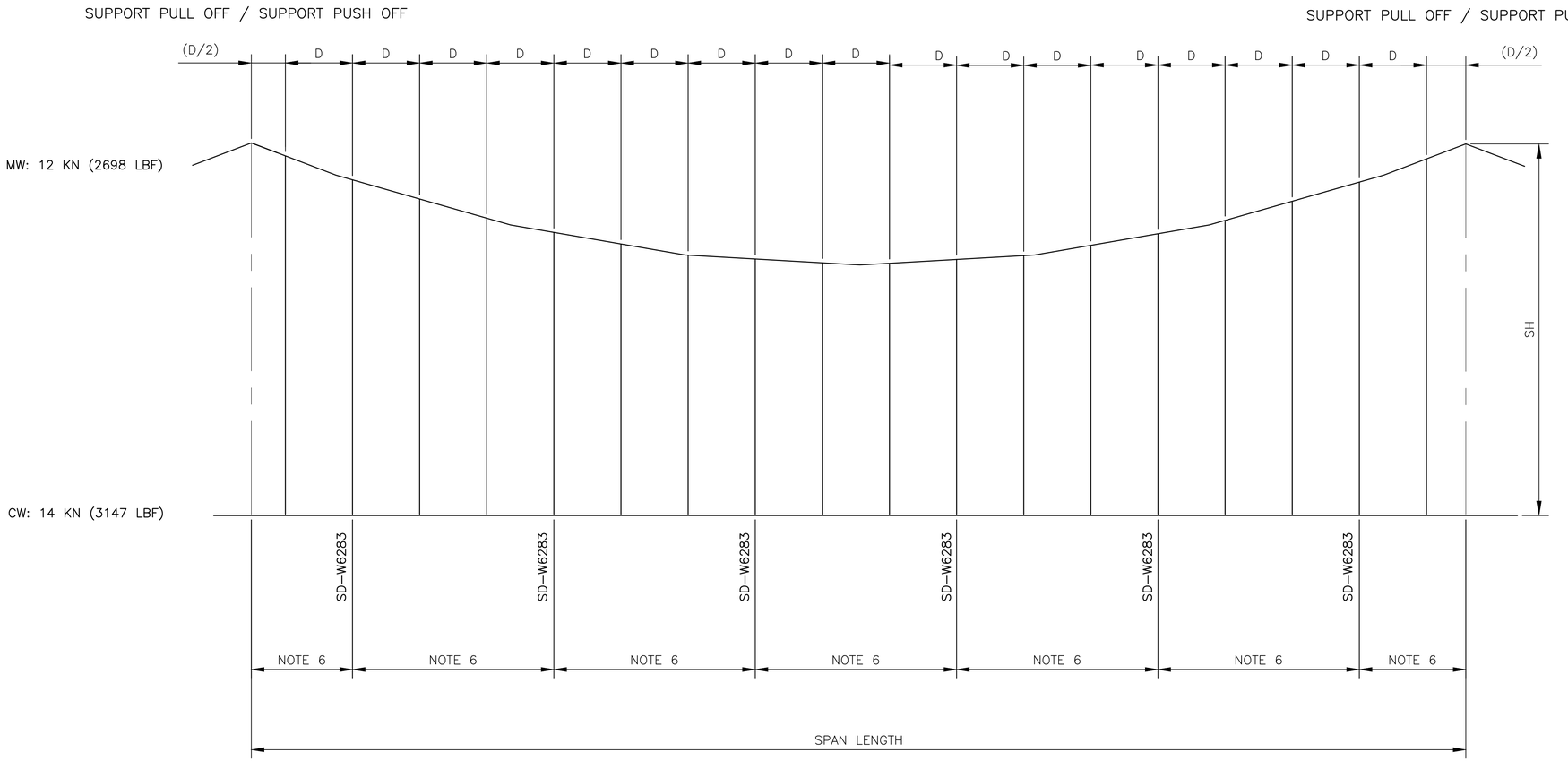
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6004

NOTES:

1. SYSTEM HEIGHT IN STATION DEPENDS ON STRUCTURE AND DETAIL DESIGN.
2. STANDARD SYSTEM HEIGHT: 1.60M (63").
3. NUMBER OF DROPPERS DEPENDS ON SPAN LENGTH.
4. DROPPER ACCORDING TO DRAWING SD–W6283.
5. MAX. DROPPER DISTANCE D: FOR CWH 22' = 22'–10' = 12' (3.66M)
   FOR CWH 18' = 18'–10' = 8' (2.44M)
   FOR CWH 17' = 17'–10' = 7' (2.13M)
6. STANDARD CURRENT CARRYING HANGERS REQUIRED TO ACHIEVE NECESSARY ELECTRIC PERFORMANCE. INSTALLED IN TENSION TO CARRY FULL CONTACT WIRE WEIGHT. DRAWING REFERENCE SD–W6283.
7. SAFETY HANGERS ARE REQUIRED IN AREAS LEGALLY ACCESSIBLE TO THE PUBLIC TO ACHIEVE MINIMUM 10' CLEARANCE FROM TOP OF RAIL TO THE FALLEN TAIL OF BROKEN CONTACT WIRE. THESE HANGERS ARE TO BE INSTALLED WITH ZERO TENSION.



FIELD / SPAN LENGTH AND DROPPER DISTANCE – PUBLIC AREA

ELEVATION

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TYPICAL SPAN LENGTH ACCESSIBLE TO THE PUBLIC

CADD FILE NAME: SD–W6005

REV: EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6005

MINIMUM ELECTRICAL CLEARANCES (PHASE TO GROUND)	
MINIMUM ELECTRICAL CLEARANCE	TYPE OF CLEARANCE
508 MM 20 INCHES	STATIC
305 MM 12 INCHES	DYNAMIC

MINIMUM ELECTRICAL CLEARANCES (PHASE TO PHASE)	
ELECTRICAL CLEARANCE	TYPE OF CLEARANCE
762 MM 30 INCHES	NORMAL
560 MM 22 INCHES	WORST CASE MINIMUM

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

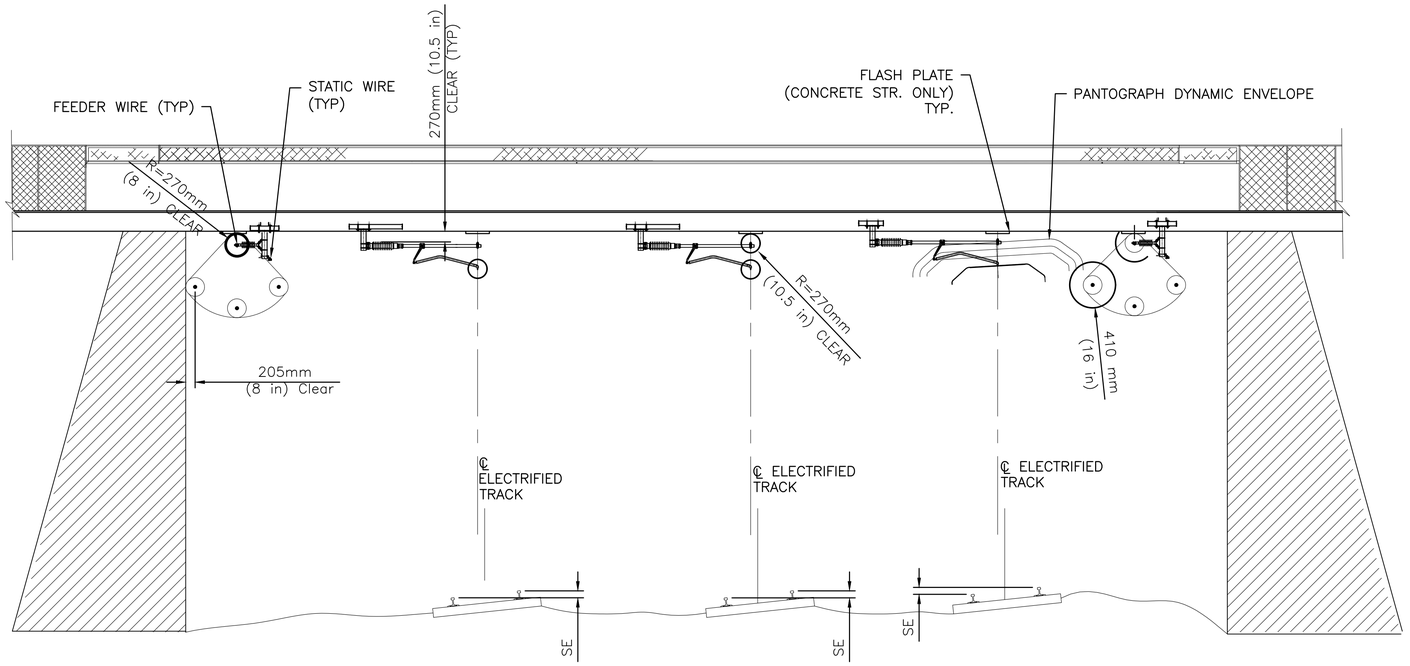
ELECTRICAL CLEARANCE
25 KV AC

CADD FILE NAME: SD-W6006

REV: | EDITION: SECOND

SCALE: NO SCALE

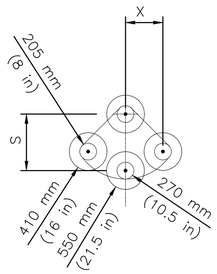
STANDARD DRAWING NO.: SD-W6006



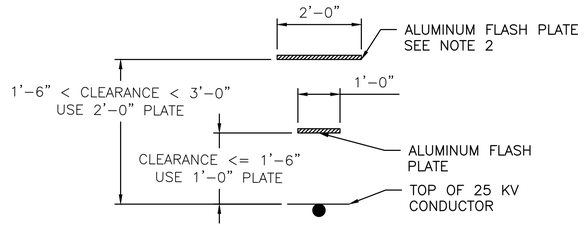
NOTES

1. ELECTRICAL CLEARANCE FROM ENERGIZED PARTS OF THE OCS OR VEHICLE TO GROUNDED STRUCTURES SHALL BE AS RECOMMENDED BY AREMA CHAPTER 33, TABLE 33–2–2, WHICH REQUIRES A NORMAL MINIMUM STATIC CLEARANCE OF 270mm (10.5 IN) FOR 25KV AC. FOR CONCRETE STRUCTURES ONLY, A FLASH PLATE SHALL BE PROVIDED ABOVE LIVE PARTS WHEN THE SEPARATION OF THE OCS TO THE BOTTOM OF BRIDGE IS LESS THAN 0.914m (3 FT).
2. FLASH PLATES TO BE INSTALLED CENTERED OVER CATENARY AND FEEDER WIRES. INSTALL FLASH PLATES AS REQUIRED TO BUTT TOGETHER AND MAINTAIN CONDUCTORS CENTERED UNDERNEATH. BUTT JOINT BETWEEN PLATES TO BE ALIGNED WITH JOINT BETWEEN BRIDGE BEAMS.
3. STRUT INSERTS SHALL BE CAST IN PLACE TO SUPPORT FLASH PLATES FOR ALL NEW BRIDGES. FOR EXISTING CONCRETE BRIDGES, MECHANICAL INSERTS SHALL BE INSTALLED.
4. PROVIDE (4) ANCHORS MINIMUM PER PLATE ALONG THE ENTIRE LENGTH OF THE FLASH PLATE.
5. EACH ALUMINUM FLASH PLATE SHALL BE JUMPERED TO THE NEXT. THE END PLATE SHALL BE TAPPED TO THE BONDING LOOP.
6. NORMAL MINIMUM STATIC CLEARANCE BETWEEN 25 KV FEEDER AND ENERGIZED CATENARY OR PANTOGRAPH SHALL BE 550mm (21.5 IN) AS REQUIRED BY EN–50119, TABLE 3, EDITION 2009.
7. THE NORMAL CLEARANCE FOR OVERHEAD BRIDGES (TOP OF RAIL ELEVATION TO BOTTOM OF BRIDGE ELEVATION) – SHALL BE CALCULATED AS REQUIRED BY AREMA CHAPTER 33, FIGURE 33–2–3.
8. MAXIMUM SAG AND BLOW OFF MUST BE CONSIDERED, WHEN DETERMINING CLEARANCE TO CONDUCTORS IN SPAN.
9. SITE SPECIFIC EVALUATIONS SHALL BE PERFORMED FOR EACH BRIDGE LOCATION.

OVERHEAD BRIDGE CLEARANCE



CONDUCTOR SAG AND SWAY BETWEEN SUPPORTS FIGURE 2



FLASH PLATE SIZING

ABBREVIATIONS:

S = MAXIMUM VERTICAL SAG OF FEEDER.

X = MAXIMUM HORIZONTAL SWAY OF FEEDER DUE TO WIND.

SE = SUPERELEVATION

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

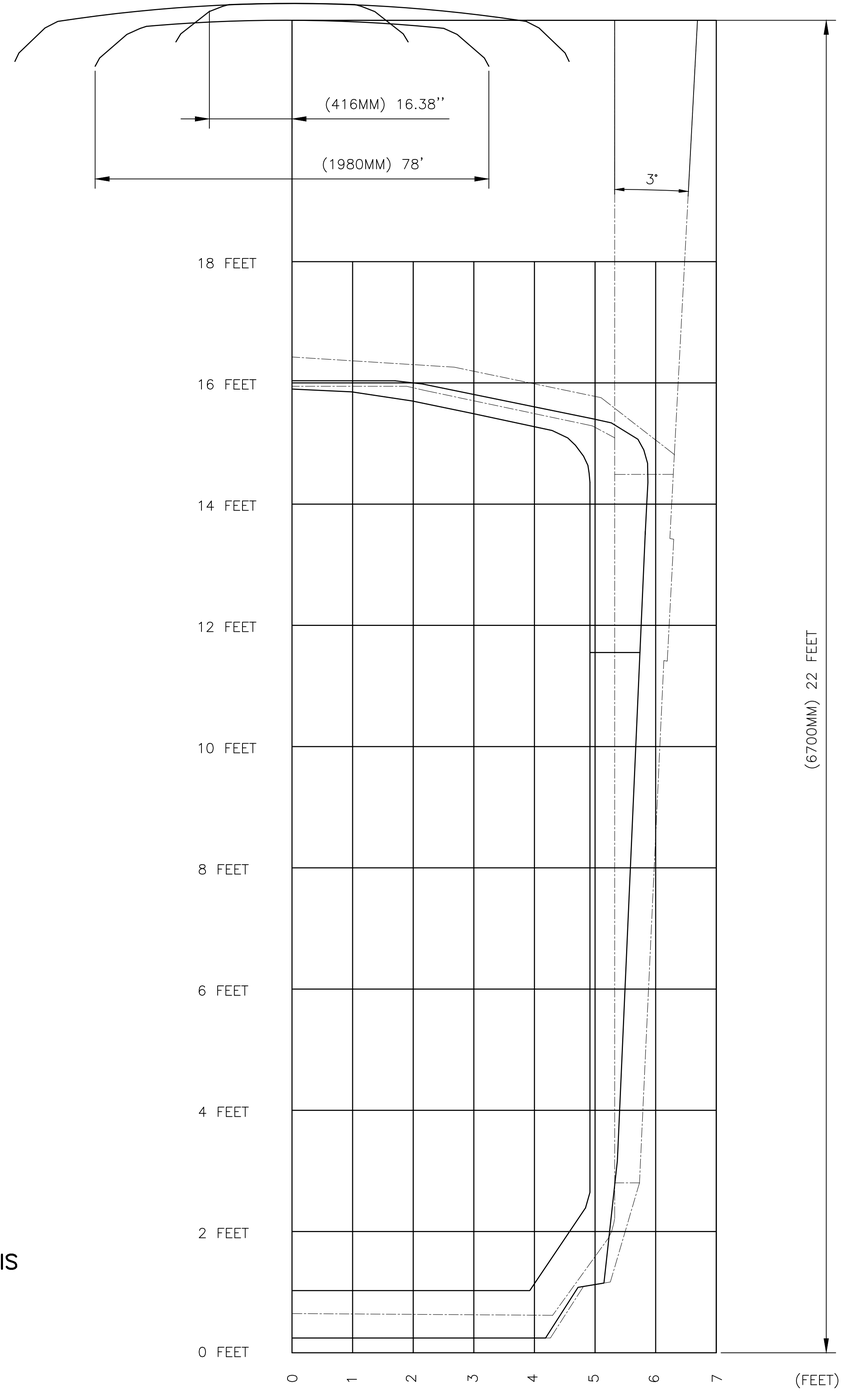
OVERHEAD BRIDGE CLEARANCE

CADD FILE NAME: SD–W6006A

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6006A



PANTOGRAPH ANALYSIS

ELEVATION

NTS

STATIC/DYNAMIC CALTRAIN ENVELOPE

LATERAL MOVEMENT STADLER 100%:	16.38''	(41.6 CM)
LATERAL MOVEMENT STADLER 70%:	11.46''	(29.12 CM)

ADOPTION:

PANTOGRAPH SWAY:	1.8''	(4.57 CM)
POLE & FOUNDATION DEFLECTION:	2.1''	(5.33 CM)
CW STAGGER ERECTION TOLERANCE:	1''	(2.54 CM)
STAGGER EFFECT:	1''	(2.54 CM)
TOTAL 100%:	22.28''	(56.58 CM)
TOTAL 70%:	17.36''	(44.1 CM)
DISTANCE TO EDGE OF PANTOGRAPH:	3''	(7.62 CM)
TOTAL 100%:	25.28''	(64.2 CM)
TOTAL 70%:	20.36''	(51.72 CM)

REMAINING PLACE FOR WIND DEVIATION:

39'' – 25.28'' =	13.72''	(34.85 CM)	100%
39'' – 20.36'' =	18.64''	(47.4 CM)	70%

WIND LOAD ON CATENARY: 9 N/M (0.0514 LBF/INCH)

CTRL_POINT

CITY

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

PANTOGRAPH ANALYSIS

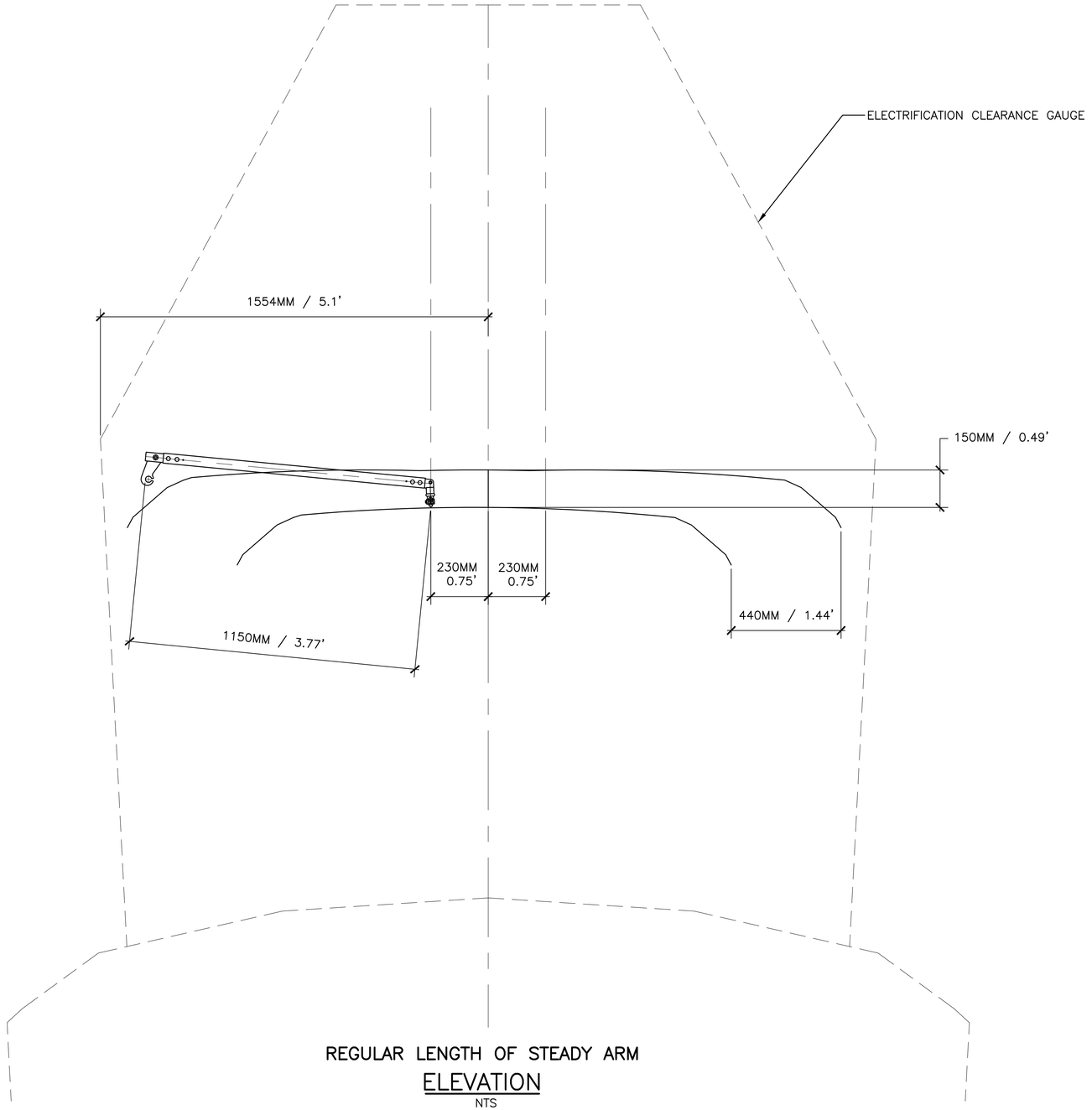
CADD FILE NAME: SD–W6007

REV:

EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6007



REGULAR LENGTH OF STEADY ARM

ELEVATION

NTS

NOTE:
DIMENSION: MM / FEET

LENGTH OF STEADY ARM	STAGGER
1050MM (3.445')	330MM (1.083')
1150MM (3.773')	230MM (0.754')
1200MM (3.937')	200MM (0.656')
1250MM (4.101')	150MM (0.492')
1300MM (4.265')	100MM (0.328')
1350MM (4.429')	50MM (0.164')
1400MM (4.593')	0MM (0')

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

ANALYSIS OF REGULAR LENGTH STEADY ARM

CADD FILE NAME: SD-W6008

REV:

EDITION: SECOND

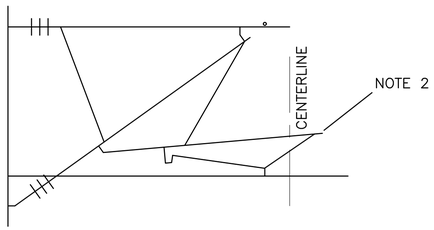
SCALE: NTS

STANDARD DRAWING NO.: SD-W6008

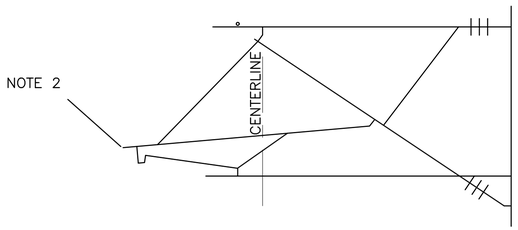
NOTES:

1. POSITIONING OF STEADY ARM
   THE POSITION OF THE STEADY ARM MUST GUARANTEE A SUFFICIENT UPLIFT OF THE CONTACT WIRE AT THE CANTILEVER.
   THE UPLIFT IS SUFFICIENT IF THE DISTANCE "D" BETWEEN THE STEADY ARM END HOOK CLAMP AND THE STOP OF THE DROP BRACKET CLAMP DOES NOT UNDERSTEP THE VALUES IN THE TABLE.
2. GRADIENT OF REGISTRATION TUBE
   THE GRADIENT OF THE REGISTRATION TUBES DEPENDS ON THE DIFFERENT TYPES OF SUPPORT
   – CANTILEVER, PULL OFF 150 MM/M (5.91''/39.37'');
     GRADIENT 0 TO 150 MM/M TO CENTERLINE RISING (ZERO TO 5.91''/39.37'')
   – CANTILEVER, PUSH OFF 150 MM/M (5.91''/39.37'');
     GRADIENT 0 TO 150 MM/M TO CENTERLINE FALLING (ZERO TO 5.91''/39.37'')

CANTILEVER PULL OFF



CANTILEVER PUSH OFF

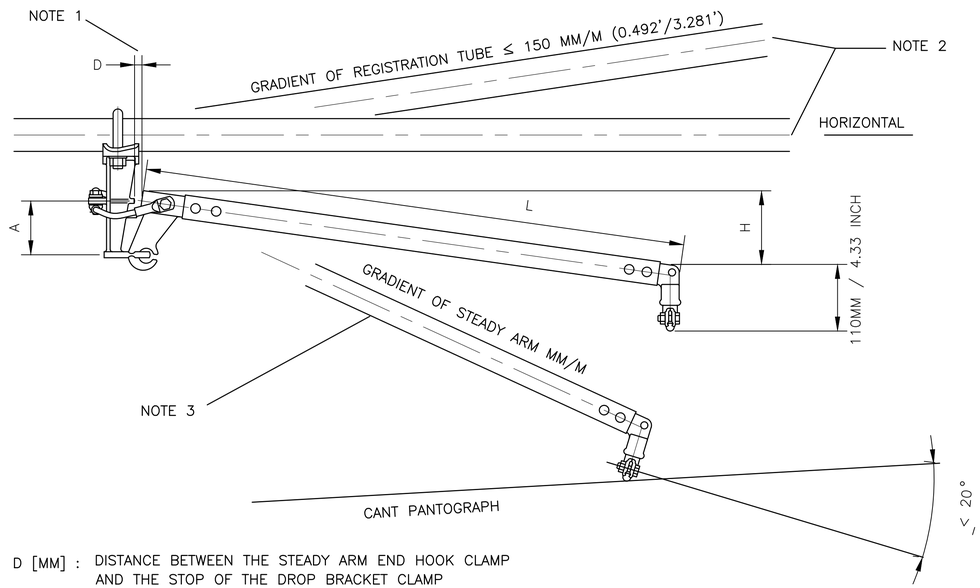


3. GRADIENT OF STEADY ARM
   IN ORDER TO AVOID CONTACT BETWEEN THE COLLECTOR STRIPS OF THE PANTOGRAPH AND THE BOLT OF THE CONTACT WIRE CLAMP OF THE STEADY ARM EVEN WITH WORN CONTACT WIRE THE GRADIENT MUST BE LIMITED. THE MAX. ANGLE IS 20 DEGREES.
   TAKING THE CANT OF THE TRACK INTO CONSIDERATION THE GRADIENT OF THE STEADY ARM IN REGARD TO THE HORIZONTAL LINE MUST BE NOT ABOVE THE VALUES SHOWN IN THE TABLE.

NOTE 3 MAXIMUM GRADIENT OF STEADY ARM IN CONSIDERATION OF THE CANT U OF THE TRACK

CANT U [MM]	MAX. GRADIENT OF STEADY ARM IN MM/M (0.0394''/39.37'')	
	INSIDE CURVE	OUTSIDE CURVE
0	510 (20.08''/39.37'') 27.0DEGREE	510 (20.08''/39.37'') 27.0DEGREE
20 (0.787'')	492 (19.37''/39.37'') 26.2DEGREE	527 (20.75''/39.37'') 27.8DEGREE
40 (1.575'')	475 (18.70''/39.37'') 25.4DEGREE	545 (21.46''/39.37'') 28.6DEGREE
60 (2.362'')	458 (18.03''/39.37'') 24.6DEGREE	563 (22.17''/39.37'') 29.4DEGREE
80 (3.149'')	442 (17.40''/39.37'') 23.8DEGREE	582 (22.91''/39.37'') 30.2DEGREE
100 (3.937'')	425 (16.73''/39.37'') 23.0DEGREE	601 (23.66''/39.37'') 31.0DEGREE
120 (4.724'')	409 (16.10''/39.37'') 22.2DEGREE	620 (24.41''/39.37'') 31.8DEGREE
140 (5.512'')	–	640 (25.20''/39.37'') 32.6DEGREE
160 (6.299'')	–	660 (25.98''/39.37'') 33.4DEGREE
170 (6.693'')	–	670 (26.38''/39.37'') 33.8DEGREE

CANT U IS THE TRACK SUPERELEVATION



D [MM] : DISTANCE BETWEEN THE STEADY ARM END HOOK CLAMP AND THE STOP OF THE DROP BRACKET CLAMP

H [MM] : UPLIFT, MAX. 225 MM (8.86'')

A [MM] : DISTANCE BETWEEN THE STOP OF THE DROP BRACKET CLAMP AND THE EYE OF THE DROP BRACKET CLAMP, 90 MM (3.54'')

L [MM] : LENGTH OF STEADY ARM

NECESSARY TEST PIN:

	L [MM]					
	950 (37.40'')	1050 (41.34'')	1150 (45.28'')	1250 (49.21'')	1350 (53.15'')	1450 (57.09'')
D [MM]	19.0 (0.748'')	17.3 (0.681'')	15.8 (0.622'')	14.5 (0.571'')	13.5 (0.531'')	12.5 (0.492'')
ø TEST PIN MM	19 (0.748'')	17 (0.67'')	16 (0.63'')	15 (0.591'')	14 (0.551'')	13 (0.512'')

STEADY ARM / REGISTRATION TUBE POSITION

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
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POSITION OF STEADY ARM

CADD FILE NAME: SD–W6009

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6009

CANT (INCH) \ RADIUS (FEET)	16404.20	8202.10	4101.05	2723.10	2050.52	1640.42	1361.55	1181.10	1017.06	918.64	820.21	721.78	656.17	590.55
0.00	21.57	21.54	21.50	21.46	21.42	21.38	21.34	21.30	21.26	21.22	21.18	21.14	21.10	21.02
0.39	21.18	21.18	21.14	21.10	21.06	21.02	20.98	20.94	20.87	20.87	20.83	20.75	20.71	20.67
0.79	20.83	20.79	20.75	20.71	20.67	20.63	20.59	20.55	20.51	20.47	20.43	20.39	20.35	20.28
1.06	20.55	20.51	20.47	20.43	20.39	20.35	20.31	20.31	20.24	20.24	20.16	20.12	20.08	20.04
1.10	20.51	20.51	20.47	20.43	20.39	20.35	20.31	20.28	20.20	20.20	20.16	20.08	20.04	20.00
1.14	20.47	20.47	20.43	20.39	20.35	20.31	20.28	20.24	20.20	20.16	20.12	20.04	20.00	19.96
1.18	20.43	20.43	20.39	20.35	20.31	20.28	20.24	20.20	20.16	20.12	20.08	20.00	19.96	19.92
1.22	20.39	20.39	20.35	20.31	20.28	20.24	20.20	20.16	20.12	20.08	20.04	19.96	19.92	19.88
1.26	20.35	20.35	20.31	20.28	20.24	20.20	20.16	20.12	20.08	20.04	20.00	19.92	19.88	19.84
1.30	20.31	20.31	20.28	20.24	20.20	20.16	20.12	20.08	20.04	20.00	19.96	19.88	19.84	19.80
1.34	20.28	20.28	20.24	20.20	20.16	20.12	20.08	20.04	20.00	19.96	19.92	19.88	19.80	19.76
1.38	20.24	20.24	20.20	20.16	20.12	20.08	20.04	20.00	19.96	19.92	19.88	19.84	19.76	19.72
1.42	20.20	20.20	20.16	20.12	20.08	20.04	20.00	19.96	19.92	19.88	19.84	19.80	19.72	19.69
1.46	20.20	20.16	20.12	20.08	20.04	20.00	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.65
1.50	20.16	20.12	20.08	20.04	20.00	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.61
1.54	20.12	20.08	20.04	20.00	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.57
1.57	20.08	20.04	20.00	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.61	19.53
1.61	20.04	20.00	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.61	19.57	19.49
1.65	20.00	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.61	19.57	19.53	19.45
1.69	19.96	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.61	19.57	19.53	19.49	19.41
1.73	19.92	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.61	19.57	19.53	19.49	19.45	19.41
1.77	19.88	19.84	19.80	19.76	19.72	19.69	19.65	19.65	19.57	19.57	19.49	19.45	19.41	19.37
1.81	19.84	19.84	19.80	19.76	19.72	19.69	19.65	19.61	19.53	19.53	19.49	19.41	19.37	19.33
1.85	19.80	19.80	19.76	19.72	19.69	19.65	19.61	19.57	19.53	19.49	19.45	19.37	19.33	19.29
1.89	19.76	19.76	19.72	19.69	19.65	19.61	19.57	19.53	19.49	19.45	19.41	19.33	19.29	19.25
1.93	19.72	19.72	19.69	19.65	19.61	19.57	19.53	19.49	19.45	19.41	19.37	19.29	19.25	19.21
1.97	19.69	19.69	19.65	19.61	19.57	19.53	19.49	19.45	19.41	19.37	19.33	19.25	19.21	19.17
2.01	19.65	19.65	19.61	19.57	19.53	19.49	19.45	19.41	19.37	19.33	19.29	19.21	19.17	19.13
2.05	19.61	19.61	19.57	19.53	19.49	19.45	19.41	19.37	19.33	19.29	19.25	19.17	19.13	19.09
2.09	19.57	19.57	19.53	19.49	19.45	19.41	19.37	19.33	19.29	19.25	19.21	19.17	19.09	19.06
2.13	19.53	19.53	19.49	19.45	19.41	19.37	19.33	19.29	19.25	19.21	19.17	19.13	19.06	19.02
2.17	19.53	19.49	19.45	19.41	19.37	19.33	19.29	19.25	19.21	19.17	19.13	19.09	19.06	18.98
2.20	19.49	19.45	19.41	19.37	19.33	19.29	19.25	19.21	19.17	19.13	19.09	19.06	19.02	18.94
2.24	19.45	19.41	19.37	19.33	19.29	19.25	19.21	19.17	19.13	19.09	19.06	19.02	18.98	18.90
2.28	19.41	19.37	19.33	19.29	19.25	19.21	19.17	19.13	19.09	19.06	19.02	18.98	18.94	18.86
2.32	19.37	19.33	19.29	19.25	19.21	19.17	19.13	19.09	19.06	19.02	18.98	18.94	18.90	18.82
2.36	19.33	19.29	19.25	19.21	19.17	19.13	19.09	19.06	19.02	18.98	18.94	18.90	18.86	18.78
2.76	18.94	18.94	18.90	18.86	18.82	18.78	18.74	18.70	18.66	18.62	18.58	18.50	18.46	18.43
3.15	18.58	18.54	18.50	18.46	18.43	18.39	18.35	18.31	18.27	18.23	18.19	18.15	18.11	18.07
3.54	18.19	18.19	18.15	18.11	18.07	18.03	17.99	17.95	17.91	17.87	17.83	17.80	17.72	17.68
3.94	17.83	17.83	17.80	17.72	17.72	17.68	17.60	17.60	17.52	17.52	17.48	17.40	17.36	17.32
4.33	17.48	17.44	17.40	17.36	17.32	17.28	17.24	17.20	17.17	17.13	17.09	17.05	17.01	16.93
4.72	17.09	17.09	17.05	17.01	16.97	16.93	16.89	16.85	16.81	16.77	16.73	16.65	16.61	16.57
5.12	16.73	16.69	16.65	16.61	16.57	16.54	16.50	16.46	16.42	16.38	16.34	16.30	16.26	16.18
5.51	16.34	16.34	16.30	16.26	16.22	16.18	16.14	16.10	16.06	16.02	15.98	15.91	15.87	15.83
5.91	15.98	15.94	15.91	15.87	15.83	15.79	15.75	15.71	15.67	15.63	15.59	15.55	15.51	15.43
6.30	15.59	15.59	15.55	15.51	15.47	15.43	15.39	15.35	15.31	15.28	15.24	15.16	15.12	15.08
6.69	15.24	15.20	15.16	15.12	15.08	15.04	15.00	14.96	14.92	14.88	14.84	14.80	14.76	14.69
7.09	14.84	14.84	14.80	14.76	14.72	14.69	14.65	14.61	14.57	14.53	14.49	14.45	14.37	14.33

ALLOWED WIND DEVIATION (INCH)

ALLOWED WIND DEVIATION (INCH)

BASIC DATA:

PANTOGRAPH WIDTH 78 INCH
COLLECTOR STRIP WIDTH 43.31 INCH (2 X 21.654 INCH)

KINEMATIC ENVELOPE:

ACCORDING TO TSI SPECIFICATION FOR INTEROPERABILITY 2008
ADAPTATION TO PANTOGRAPH WIDTH 78 INCH AND 21.654 INCH
HALF COLLECTOR STRIP WIDTH

NOTE:

ACCORDING TO PANTOGRAPH ANALYSIS DRAWING (SD–W6007) THE VALUES OF THE ALLOWED WIND DEVIATION (REFER TO TABLE) MUST BE REDUCED ABOUT 2.91" (DIFFERENCE BETWEEN 21.57" AND 18.64")

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

ALLOWED WIND DEVIATION (INCH)

CADD FILE NAME: SD–W6010

REV: | EDITION: SECOND

SCALE: N/A

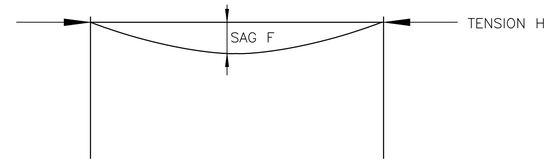
STANDARD DRAWING NO.: SD–W6010

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
59.1'	2581 lbf	1888 lbf	1122 lbf	735 lbf	558 lbf	461 lbf	400 lbf	360 lbf	348 lbf
	1.57"	2.36"	3.94"	6.30"	8.27"	9.84"	11.42"	12.60"	12.99"
62.3'	2581 lbf	1895 lbf	1147 lbf	764 lbf	585 lbf	486 lbf	423 lbf	378 lbf	366 lbf
	1.97"	2.76"	4.33"	6.69"	8.66"	10.63"	12.20"	13.39"	13.78"
65.6'	2581 lbf	1904 lbf	1171 lbf	791 lbf	609 lbf	508 lbf	443 lbf	396 lbf	384 lbf
	2.36"	2.76"	4.72"	7.09"	9.06"	11.02"	12.60"	14.17"	14.57"
68.9'	2581 lbf	1913 lbf	1196 lbf	821 lbf	634 lbf	531 lbf	463 lbf	416 lbf	402 lbf
	2.36"	3.15"	5.12"	7.48"	9.84"	11.81"	13.39"	14.96"	15.35"
72.2'	2572 lbf	1913 lbf	1214 lbf	843 lbf	659 lbf	551 lbf	481 lbf	434 lbf	420 lbf
	2.76"	3.54"	5.51"	7.87"	10.24"	12.20"	14.17"	15.75"	16.14"
75.4'	2552 lbf	1906 lbf	1227 lbf	866 lbf	681 lbf	571 lbf	501 lbf	450 lbf	438 lbf
	2.76"	3.94"	5.91"	8.66"	11.02"	12.99"	14.96"	16.54"	16.93"
78.7'	2531 lbf	1897 lbf	1239 lbf	886 lbf	701 lbf	591 lbf	519 lbf	468 lbf	454 lbf
	3.15"	4.33"	6.69"	9.06"	11.42"	13.78"	15.75"	17.32"	17.72"
82.0'	2513 lbf	1891 lbf	1252 lbf	906 lbf	722 lbf	611 lbf	537 lbf	486 lbf	472 lbf
	3.54"	4.72"	7.09"	9.84"	12.20"	14.17"	16.14"	18.11"	18.50"
85.3'	2493 lbf	1884 lbf	1263 lbf	926 lbf	742 lbf	629 lbf	555 lbf	501 lbf	488 lbf
	3.94"	5.12"	7.48"	10.24"	12.99"	14.96"	16.93"	18.90"	19.29"
88.6'	2473 lbf	1877 lbf	1275 lbf	944 lbf	762 lbf	650 lbf	573 lbf	517 lbf	504 lbf
	4.33"	5.51"	7.87"	11.02"	13.39"	15.75"	17.72"	19.69"	20.47"
91.9'	2453 lbf	1868 lbf	1286 lbf	962 lbf	780 lbf	668 lbf	591 lbf	535 lbf	522 lbf
	4.33"	5.91"	8.66"	11.42"	14.17"	16.54"	18.50"	20.47"	21.26"
95.1'	2430 lbf	1861 lbf	1295 lbf	980 lbf	798 lbf	686 lbf	607 lbf	551 lbf	537 lbf
	4.72"	6.30"	9.06"	12.20"	14.96"	17.32"	19.29"	21.65"	22.05"
98.4'	2410 lbf	1855 lbf	1306 lbf	996 lbf	816 lbf	704 lbf	625 lbf	567 lbf	553 lbf
	5.12"	6.69"	9.84"	12.60"	15.35"	18.11"	20.08"	22.44"	22.83"
101.7'	2390 lbf	1848 lbf	1315 lbf	1012 lbf	834 lbf	722 lbf	641 lbf	582 lbf	567 lbf
	5.51"	7.48"	10.24"	13.39"	16.14"	18.90"	20.87"	23.23"	23.62"
105.0'	2369 lbf	1841 lbf	1324 lbf	1027 lbf	852 lbf	737 lbf	659 lbf	598 lbf	582 lbf
	5.91"	7.87"	11.02"	14.17"	16.93"	19.69"	22.05"	24.02"	24.80"
108.3'	2349 lbf	1834 lbf	1333 lbf	1043 lbf	868 lbf	755 lbf	674 lbf	614 lbf	598 lbf
	6.69"	8.27"	11.42"	14.57"	17.72"	20.47"	22.83"	24.80"	25.59"
111.5'	2329 lbf	1828 lbf	1342 lbf	1059 lbf	886 lbf	771 lbf	690 lbf	627 lbf	614 lbf
	7.09"	9.06"	12.20"	15.35"	18.50"	21.26"	23.62"	25.98"	26.38"
114.8'	2309 lbf	1823 lbf	1351 lbf	1072 lbf	901 lbf	787 lbf	706 lbf	643 lbf	627 lbf
	7.48"	9.45"	12.60"	16.14"	19.29"	22.05"	24.41"	26.77"	27.56"
118.1'	2289 lbf	1816 lbf	1358 lbf	1086 lbf	917 lbf	803 lbf	719 lbf	659 lbf	643 lbf
	7.87"	9.84"	13.39"	16.93"	19.69"	22.83"	25.20"	27.56"	28.35"
121.4'	2271 lbf	1810 lbf	1367 lbf	1099 lbf	931 lbf	818 lbf	735 lbf	672 lbf	656 lbf
	8.66"	10.63"	14.17"	17.32"	20.47"	23.62"	25.98"	28.74"	29.13"
124.7'	2250 lbf	1805 lbf	1374 lbf	1113 lbf	946 lbf	832 lbf	749 lbf	686 lbf	670 lbf
	9.06"	11.42"	14.96"	18.11"	21.26"	24.41"	27.17"	29.53"	30.31"
128.0'	2232 lbf	1798 lbf	1380 lbf	1124 lbf	960 lbf	848 lbf	764 lbf	701 lbf	683 lbf
	9.45"	11.81"	15.35"	18.90"	22.44"	25.20"	27.95"	30.31"	31.10"
131.2'	2214 lbf	1794 lbf	1387 lbf	1138 lbf	973 lbf	861 lbf	778 lbf	715 lbf	697 lbf
	10.24"	12.60"	16.14"	19.69"	23.23"	25.98"	28.74"	31.50"	32.28"
134.5'	2196 lbf	1789 lbf	1394 lbf	1149 lbf	987 lbf	875 lbf	791 lbf	728 lbf	710 lbf
	10.63"	13.39"	16.93"	20.47"	24.02"	27.17"	29.92"	32.28"	33.07"
137.8'	2178 lbf	1785 lbf	1401 lbf	1160 lbf	1000 lbf	890 lbf	805 lbf	742 lbf	724 lbf
	11.42"	13.78"	17.72"	21.26"	24.80"	27.95"	30.71"	33.46"	34.25"
141.1'	2160 lbf	1780 lbf	1407 lbf	1171 lbf	1014 lbf	901 lbf	818 lbf	755 lbf	737 lbf
	12.20"	14.57"	18.50"	22.05"	25.59"	28.74"	31.89"	34.25"	35.04"
144.4'	2145 lbf	1774 lbf	1414 lbf	1183 lbf	1027 lbf	915 lbf	832 lbf	767 lbf	751 lbf
	12.60"	15.35"	19.29"	22.83"	26.38"	29.53"	32.68"	35.43"	36.22"
147.6'	2129 lbf	1772 lbf	1419 lbf	1194 lbf	1039 lbf	928 lbf	845 lbf	780 lbf	764 lbf
	13.39"	16.14"	20.08"	24.02"	27.56"	30.71"	33.46"	36.61"	37.40"
151.0'	2113 lbf	1767 lbf	1425 lbf	1203 lbf	1050 lbf	942 lbf	859 lbf	794 lbf	776 lbf
	14.17"	16.93"	20.87"	24.80"	28.35"	31.50"	34.65"	37.40"	38.19"

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
154.2'	2097 lbf	1763 lbf	1430 lbf	1212 lbf	1063 lbf	953 lbf	870 lbf	805 lbf	789 lbf
	14.96"	17.72"	21.65"	25.59"	29.13"	32.68"	35.83"	38.58"	39.37"
157.5'	2084 lbf	1758 lbf	1434 lbf	1223 lbf	1075 lbf	967 lbf	884 lbf	818 lbf	800 lbf
	15.35"	18.50"	22.44"	26.38"	30.31"	33.46"	36.61"	39.76"	40.55"
160.8'	2068 lbf	1754 lbf	1441 lbf	1232 lbf	1086 lbf	978 lbf	895 lbf	830 lbf	812 lbf
	16.14"	19.29"	23.23"	27.56"	31.10"	34.65"	37.80"	40.55"	41.73"
164.0'	2055 lbf	1751 lbf	1446 lbf	1241 lbf	1095 lbf	989 lbf	906 lbf	841 lbf	823 lbf
	16.93"	20.08"	24.41"	28.35"	31.89"	35.43"	38.58"	41.73"	42.52"
167.3'	2041 lbf	1747 lbf	1450 lbf	1250 lbf	1106 lbf	1000 lbf	917 lbf	852 lbf	836 lbf
	17.72"	20.87"	25.20"	29.13"	33.07"	36.61"	39.76"	42.91"	43.70"
170.6'	2030 lbf	1745 lbf	1455 lbf	1257 lbf	1117 lbf	1012 lbf	931 lbf	863 lbf	848 lbf
	18.90"	21.65"	25.98"	30.31"	33.86"	37.40"	40.94"	44.09"	44.88"
173.9'	2017 lbf	1740 lbf	1459 lbf	1266 lbf	1126 lbf	1023 lbf	940 lbf	875 lbf	859 lbf
	19.69"	22.83"	27.17"	31.10"	35.04"	38.58"	42.13"	45.28"	46.06"
177.2'	2005 lbf	1738 lbf	1464 lbf	1275 lbf	1138 lbf	1032 lbf	951 lbf	886 lbf	870 lbf
	20.47"	23.62"	27.95"	32.28"	36.22"	39.76"	42.91"	46.06"	47.24"
180.4'	1994 lbf	1733 lbf	1468 lbf	1281 lbf	1147 lbf	1043 lbf	962 lbf	897 lbf	879 lbf
	21.26"	24.41"	29.13"	33.07"	37.01"	40.55"	44.09"	47.24"	48.43"
183.7'	1983 lbf	1731 lbf	1470 lbf	1288 lbf	1156 lbf	1054 lbf	973 lbf	908 lbf	890 lbf
	22.05"	25.59"	29.92"	34.25"	38.19"	41.73"	45.28"	48.43"	49.61"
187.0'	1972 lbf	1729 lbf	1475 lbf	1297 lbf	1165 lbf	1063 lbf	982 lbf	917 lbf	901 lbf
	23.23"	26.38"	31.10"	35.04"	39.37"	42.91"	46.46"	49.61"	50.79"
190.3'	1963 lbf	1727 lbf	1479 lbf	1304 lbf	1174 lbf	1072 lbf	994 lbf	928 lbf	910 lbf
	24.02"	27.56"	31.89"	36.22"	40.16"	44.09"	47.64"	50.79"	51.97"
193.6'	1951 lbf	1722 lbf	1481 lbf	1311 lbf	1183 lbf	1084 lbf	1003 lbf	940 lbf	922 lbf
	25.20"	28.35"	33.07"	37.40"	41.34"	45.28"	48.82"	51.97"	53.15"
196.8'	1942 lbf	1720 lbf	1486 lbf	1317 lbf	1191 lbf	1093 lbf	1014 lbf	949 lbf	931 lbf
	25.98"	29.53"	33.86"	38.58"	42.52"	46.46"	50.00"	53.15"	54.33"
200.0'	1933 lbf	1718 lbf	1488 lbf	1324 lbf	1198 lbf	1102 lbf	1023 lbf	958 lbf	942 lbf
	27.17"	30.31"	35.04"	39.37"	43.70"	47.64"	51.18"	54.72"	55.51"
203.4'	1924 lbf	1715 lbf	1493 lbf	1331 lbf	1207 lbf	1111 lbf	1032 lbf	969 lbf	951 lbf
	27.95"	31.50"	36.22"	40.55"	44.88"	48.82"	52.36"	55.91"	56.69"
206.7'	1918 lbf	1713 lbf	1495 lbf	1335 lbf	1214 lbf	1120 lbf	1041 lbf	978 lbf	960 lbf
	29.13"	32.68"	37.40"	41.73"	46.06"	50.00"	53.54"	57.09"	57.87"
210.0'	1909 lbf	1711 lbf	1499 lbf	1342 lbf	1223 lbf	1129 lbf	1050 lbf	987 lbf	969 lbf
	30.31"	33.46"	38.58"	42.91"	47.24"	51.18"	54.72"	58.27"	59.45"
213.3'	1900 lbf	1709 lbf	1502 lbf	1349 lbf	1230 lbf	1135 lbf	1059 lbf	996 lbf	980 lbf
	31.10"	34.65"	39.37"	44.09"	48.43"	52.36"	55.91"	59.45"	60.63"
216.5'	1893 lbf	1706 lbf	1504 lbf	1353 lbf	1236 lbf	1144 lbf	1068 lbf	1005 lbf	989 lbf
	32.28"	35.83"	40.55"	45.28"	49.61"	53.54"	57.48"	61.02"	61.81"
219.8'	1886 lbf	1704 lbf	1506 lbf	1360 lbf	1243 lbf	1151 lbf	1077 lbf	1014 lbf	998 lbf
	33.46"	37.01"	41.73"	46.46"	50.79"	54.72"	58.66"	62.20"	63.39"
223.1'	1879 lbf	1704 lbf	1511 lbf	1365 lbf	1250 lbf	1160 lbf	1086 lbf	1023 lbf	1005 lbf
	34.65"	38.19"	42.91"	47.64"	51.97"	55.91"	59.84"	63.39"	64.57"
226.4'	1873 lbf	1702 lbf	1513 lbf	1369 lbf	1257 lbf	1167 lbf	1093 lbf	1032 lbf	1014 lbf
	35.83"	39.37"	44.09"	48.82"	53.15"	57.48"	61.02"	64.96"	65.75"
229.7'	1866 lbf	1700 lbf	1515 lbf	1376 lbf	1263 lbf	1176 lbf	1102 lbf	1041 lbf	1023 lbf
	37.01"	40.55"	45.28"	50.00"	54.33"	58.66"	62.60"	66.14"	67.32"

ACSR EAGLE 556

DIAMETER : 24.2 MM (0.953 IN)
CROSS SECTION: 347.8 MM^2 (0.539 IN^2)
MODULUS OF ELASTICITY: 80.4 KN/MM^2 (11.66 x 10^6 LB/IN^2)
COEFF. OF THERM. EXP.: 0.0000178 1/KELVIN (9.9 x 10^{-6} 1/F)
WEIGHT: 12.71 N/M (0.871 LB / FT)



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

STANDARD SAG OF
ACSR EAGLE 556
FIXED TERMINATION (INCH)

CADD FILE NAME: SD-W6011

REV: | EDITION: SECOND

SCALE: N/A

STANDARD DRAWING NO.: SD-W6011

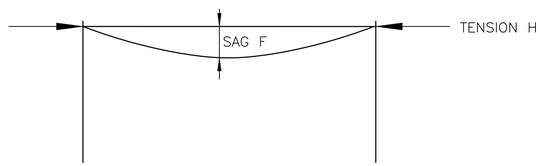
SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
59.1'	3179 lbf	2880 lbf	2455 lbf	2030 lbf	1607 lbf	1189 lbf	787 lbf	452 lbf	380 lbf
	0.39"	0.39"	0.79"	0.79"	0.79"	1.18"	1.97"	3.54"	3.94"
62.3'	3179 lbf	2880 lbf	2455 lbf	2030 lbf	1607 lbf	1191 lbf	791 lbf	461 lbf	389 lbf
	0.39"	0.39"	0.79"	0.79"	1.18"	1.57"	1.97"	3.54"	4.33"
65.6'	3179 lbf	2880 lbf	2455 lbf	2030 lbf	1607 lbf	1191 lbf	796 lbf	470 lbf	400 lbf
	0.79"	0.79"	0.79"	0.79"	1.18"	1.57"	2.36"	3.94"	4.72"
68.9'	3179 lbf	2880 lbf	2455 lbf	2030 lbf	1610 lbf	1194 lbf	800 lbf	479 lbf	409 lbf
	0.79"	0.79"	0.79"	1.18"	1.18"	1.57"	2.76"	4.33"	5.12"
72.2'	3179 lbf	2880 lbf	2455 lbf	2032 lbf	1610 lbf	1196 lbf	805 lbf	488 lbf	420 lbf
	0.79"	0.79"	0.79"	1.18"	1.57"	1.97"	2.76"	4.72"	5.51"
75.4'	3179 lbf	2880 lbf	2455 lbf	2032 lbf	1612 lbf	1198 lbf	809 lbf	497 lbf	429 lbf
	0.79"	0.79"	1.18"	1.18"	1.57"	1.97"	3.15"	5.12"	5.91"
78.7'	3179 lbf	2880 lbf	2455 lbf	2032 lbf	1612 lbf	1200 lbf	814 lbf	506 lbf	438 lbf
	0.79"	0.79"	1.18"	1.18"	1.57"	2.36"	3.15"	5.51"	6.30"
82.0'	3179 lbf	2880 lbf	2455 lbf	2032 lbf	1614 lbf	1203 lbf	818 lbf	515 lbf	450 lbf
	0.79"	1.18"	1.18"	1.57"	1.97"	2.36"	3.54"	5.91"	6.69"
85.3'	3179 lbf	2880 lbf	2457 lbf	2035 lbf	1614 lbf	1205 lbf	825 lbf	524 lbf	459 lbf
	1.18"	1.18"	1.18"	1.57"	1.97"	2.76"	3.94"	5.91"	7.09"
88.6'	3179 lbf	2880 lbf	2457 lbf	2035 lbf	1616 lbf	1207 lbf	830 lbf	531 lbf	468 lbf
	1.18"	1.18"	1.57"	1.57"	1.97"	2.76"	4.33"	6.30"	7.48"
91.9'	3179 lbf	2880 lbf	2457 lbf	2035 lbf	1619 lbf	1212 lbf	834 lbf	540 lbf	477 lbf
	1.18"	1.18"	1.57"	1.97"	2.36"	3.15"	4.33"	6.69"	7.87"
95.1'	3179 lbf	2880 lbf	2457 lbf	2037 lbf	1619 lbf	1214 lbf	839 lbf	549 lbf	486 lbf
	1.18"	1.18"	1.57"	1.97"	2.36"	3.15"	4.72"	7.09"	8.27"
98.4'	3179 lbf	2880 lbf	2457 lbf	2037 lbf	1621 lbf	1216 lbf	845 lbf	558 lbf	495 lbf
	1.18"	1.57"	1.57"	1.97"	2.76"	3.54"	5.12"	7.48"	8.66"
101.7'	3179 lbf	2882 lbf	2457 lbf	2037 lbf	1621 lbf	1218 lbf	850 lbf	567 lbf	504 lbf
	1.57"	1.57"	1.97"	2.36"	2.76"	3.54"	5.51"	7.87"	9.06"
105.0'	3179 lbf	2882 lbf	2457 lbf	2037 lbf	1623 lbf	1221 lbf	854 lbf	573 lbf	513 lbf
	1.57"	1.57"	1.97"	2.36"	3.15"	3.94"	5.51"	8.27"	9.45"
108.3'	3179 lbf	2882 lbf	2459 lbf	2039 lbf	1625 lbf	1225 lbf	861 lbf	582 lbf	522 lbf
	1.57"	1.97"	1.97"	2.36"	3.15"	4.33"	5.91"	8.66"	9.84"
111.5'	3179 lbf	2882 lbf	2459 lbf	2039 lbf	1625 lbf	1227 lbf	866 lbf	591 lbf	531 lbf
	1.57"	1.97"	2.36"	2.76"	3.15"	4.33"	6.30"	9.06"	10.24"
114.8'	3179 lbf	2882 lbf	2459 lbf	2041 lbf	1628 lbf	1230 lbf	872 lbf	598 lbf	540 lbf
	1.97"	1.97"	2.36"	2.76"	3.54"	4.72"	6.69"	9.45"	10.63"
118.1'	3179 lbf	2882 lbf	2459 lbf	2041 lbf	1630 lbf	1234 lbf	877 lbf	607 lbf	546 lbf
	1.97"	1.97"	2.36"	3.15"	3.54"	5.12"	7.09"	10.24"	11.02"
121.4'	3179 lbf	2882 lbf	2459 lbf	2041 lbf	1630 lbf	1236 lbf	884 lbf	614 lbf	555 lbf
	1.97"	2.36"	2.76"	3.15"	3.94"	5.12"	7.48"	10.63"	11.42"
124.7'	3179 lbf	2882 lbf	2459 lbf	2044 lbf	1632 lbf	1239 lbf	888 lbf	623 lbf	564 lbf
	1.97"	2.36"	2.76"	3.15"	4.33"	5.51"	7.48"	11.02"	12.20"
128.0'	3179 lbf	2882 lbf	2462 lbf	2044 lbf	1634 lbf	1243 lbf	895 lbf	629 lbf	573 lbf
	2.36"	2.36"	2.76"	3.54"	4.33"	5.91"	7.87"	11.42"	12.60"
131.2'	3179 lbf	2882 lbf	2462 lbf	2044 lbf	1637 lbf	1245 lbf	899 lbf	638 lbf	580 lbf
	2.36"	2.76"	3.15"	3.54"	4.72"	5.91"	8.27"	11.81"	12.99"
134.5'	3179 lbf	2882 lbf	2462 lbf	2046 lbf	1639 lbf	1250 lbf	906 lbf	645 lbf	589 lbf
	2.36"	2.76"	3.15"	3.94"	4.72"	6.30"	8.66"	12.20"	13.39"
137.8'	3179 lbf	2882 lbf	2462 lbf	2046 lbf	1639 lbf	1252 lbf	910 lbf	654 lbf	596 lbf
	2.76"	2.76"	3.54"	3.94"	5.12"	6.69"	9.06"	12.60"	13.78"
141.1'	3179 lbf	2882 lbf	2462 lbf	2048 lbf	1641 lbf	1257 lbf	917 lbf	661 lbf	605 lbf
	2.76"	3.15"	3.54"	4.33"	5.12"	7.09"	9.45"	12.99"	14.57"
144.4'	3177 lbf	2882 lbf	2462 lbf	2048 lbf	1641 lbf	1259 lbf	922 lbf	668 lbf	611 lbf
	2.76"	3.15"	3.54"	4.33"	5.51"	7.09"	9.84"	13.78"	14.96"
147.6'	3172 lbf	2878 lbf	2459 lbf	2044 lbf	1641 lbf	1259 lbf	924 lbf	674 lbf	618 lbf
	3.15"	3.15"	3.94"	4.72"	5.91"	7.48"	10.24"	14.17"	15.35"
151.0'	3170 lbf	2873 lbf	2455 lbf	2041 lbf	1639 lbf	1259 lbf	926 lbf	679 lbf	625 lbf
	3.15"	3.54"	3.94"	4.72"	5.91"	7.87"	10.63"	14.57"	15.75"

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
154.2'	3165 lbf	2871 lbf	2453 lbf	2039 lbf	1637 lbf	1259 lbf	931 lbf	686 lbf	629 lbf
	3.15"	3.54"	4.33"	5.12"	6.30"	8.27"	11.02"	14.96"	16.54"
157.5'	3161 lbf	2866 lbf	2448 lbf	2037 lbf	1634 lbf	1259 lbf	933 lbf	690 lbf	636 lbf
	3.54"	3.94"	4.33"	5.51"	6.69"	8.66"	11.42"	15.75"	16.93"
160.8'	3156 lbf	2862 lbf	2444 lbf	2032 lbf	1632 lbf	1259 lbf	935 lbf	697 lbf	643 lbf
	3.54"	3.94"	4.72"	5.51"	7.09"	9.06"	12.20"	16.14"	17.72"
164.0'	3152 lbf	2857 lbf	2441 lbf	2030 lbf	1632 lbf	1259 lbf	940 lbf	701 lbf	647 lbf
	3.54"	3.94"	4.72"	5.91"	7.09"	9.45"	12.60"	16.93"	18.11"
167.3'	3147 lbf	2853 lbf	2437 lbf	2026 lbf	1630 lbf	1259 lbf	942 lbf	708 lbf	654 lbf
	3.94"	4.33"	5.12"	5.91"	7.48"	9.84"	12.99"	17.32"	18.50"
170.6'	3143 lbf	2848 lbf	2432 lbf	2023 lbf	1628 lbf	1259 lbf	944 lbf	713 lbf	659 lbf
	3.94"	4.33"	5.12"	6.30"	7.87"	10.24"	13.39"	17.72"	19.29"
173.9'	3138 lbf	2844 lbf	2428 lbf	2021 lbf	1625 lbf	1259 lbf	946 lbf	717 lbf	665 lbf
	4.33"	4.72"	5.51"	6.69"	8.27"	10.63"	13.78"	18.50"	19.69"
177.2'	3134 lbf	2839 lbf	2426 lbf	2017 lbf	1623 lbf	1259 lbf	951 lbf	724 lbf	670 lbf
	4.33"	4.72"	5.51"	6.69"	8.27"	11.02"	14.57"	18.90"	20.47"
180.4'	3129 lbf	2835 lbf	2421 lbf	2014 lbf	1621 lbf	1259 lbf	953 lbf	728 lbf	677 lbf
	4.72"	5.12"	5.91"	7.09"	8.66"	11.42"	14.96"	19.69"	20.87"
183.7'	3125 lbf	2830 lbf	2417 lbf	2010 lbf	1619 lbf	1259 lbf	955 lbf	733 lbf	681 lbf
	4.72"	5.12"	5.91"	7.48"	9.06"	11.81"	15.35"	20.08"	21.65"
187.0'	3118 lbf	2826 lbf	2412 lbf	2008 lbf	1616 lbf	1259 lbf	958 lbf	737 lbf	688 lbf
	4.72"	5.51"	6.30"	7.48"	9.45"	12.20"	15.75"	20.87"	22.05"
190.3'	3114 lbf	2821 lbf	2408 lbf	2003 lbf	1614 lbf	1259 lbf	962 lbf	742 lbf	692 lbf
	5.12"	5.51"	6.69"	7.87"	9.84"	12.60"	16.54"	21.26"	22.83"
193.6'	3109 lbf	2817 lbf	2403 lbf	2001 lbf	1612 lbf	1259 lbf	964 lbf	749 lbf	697 lbf
	5.12"	5.91"	6.69"	8.27"	10.24"	12.99"	16.93"	22.05"	23.62"
196.8'	3105 lbf	2812 lbf	2399 lbf	1996 lbf	1610 lbf	1259 lbf	967 lbf	753 lbf	704 lbf
	5.51"	5.91"	7.09"	8.66"	10.63"	13.39"	17.32"	22.44"	24.02"
200.0'	3098 lbf	2808 lbf	2394 lbf	1992 lbf	1610 lbf	1259 lbf	969 lbf	758 lbf	708 lbf
	5.51"	6.30"	7.48"	8.66"	11.02"	13.78"	18.11"	23.23"	24.80"
203.4'	3093 lbf	2801 lbf	2390 lbf	1990 lbf	1607 lbf	1259 lbf	971 lbf	762 lbf	713 lbf
	5.91"	6.30"	7.48"	9.06"	11.42"	14.17"	18.50"	23.62"	25.20"
206.7'	3089 lbf	2797 lbf	2385 lbf	1985 lbf	1605 lbf	1259 lbf	976 lbf	767 lbf	719 lbf
	5.91"	6.69"	7.87"	9.45"	11.81"	14.96"	19.29"	24.41"	25.98"
210.0'	3082 lbf	2792 lbf	2381 lbf	1983 lbf	1603 lbf	1259 lbf	978 lbf	771 lbf	724 lbf
	6.30"	7.09"	8.27"	9.84"	12.20"	15.35"	19.69"	24.80"	26.77"
213.3'	3078 lbf	2785 lbf	2376 lbf	1978 lbf	1601 lbf	1259 lbf	980 lbf	776 lbf	728 lbf
	6.30"	7.09"	8.27"	10.24"	12.60"	15.75"	20.08"	25.59"	27.17"
216.5'	3071 lbf	2781 lbf	2372 lbf	1974 lbf	1598 lbf	1259 lbf	982 lbf	780 lbf	733 lbf
	6.69"	7.48"	8.66"	10.24"	12.99"	16.14"	20.87"	26.38"	27.95"
219.8'	3066 lbf	2776 lbf	2367 lbf	1972 lbf	1596 lbf	1259 lbf	985 lbf	785 lbf	737 lbf
	6.69"	7.48"	9.06"	10.63"	13.39"	16.93"	21.26"	26.77"	28.74"
223.1'	3060 lbf	2770 lbf	2363 lbf	1967 lbf	1594 lbf	1259 lbf	987 lbf	789 lbf	742 lbf
	7.09"	7.87"	9.06"	11.02"	13.78"	17.32"	22.05"	27.56"	29.13"
226.4'	3053 lbf	2765 lbf	2358 lbf	1963 lbf	1592 lbf	1259 lbf	989 lbf	794 lbf	746 lbf
	7.48"	8.27"	9.45"	11.42"	14.17"	17.72"	22.44"	28.35"	29.92"
229.7'	3048 lbf	2758 lbf	2352 lbf	1958 lbf	1589 lbf	1259 lbf	994 lbf	798 lbf	751 lbf
	7.48"	8.27"	9.84"	11.81"	14.57"	18.11"	23.23"	28.74"	30.71"

ACSR PENGUIN 4/0

DIAMETER :	14.3 MM (0.563 IN)
CROSS SECTION:	125.1 MM^2 (0.194 IN^2)
MODULUS OF ELASTICITY:	79.46 KN/MM^2 (11.5 x 10^6 LB/IN^2)
COEFF. OF THERM. EXP.:	0.0000191 1/KELVIN (10.6 x 10^{-6} 1/F)
WEIGHT:	4.25 N/M (0.291 LBF / FT)

NOTE:
USE FOR DETAILED EXAMINATION IN DETAIL DESIGN
EXAMPLE: USE IF STATIC WIRE IS IN THE MIDDLE OF UPPER AND LOWER CANTILEVER BRACKET



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

REDUCED SAG OF
ACSR PENGUIN 4/0
FIXED TERMINATION (INCH)

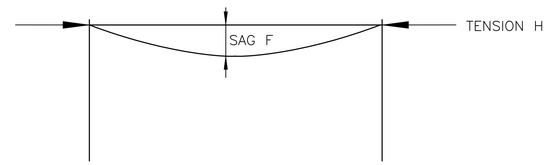
CADD FILE NAME: SD-W6012
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD-W6012

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
59.1'	1349 lbf	1061 lbf	670 lbf	378 lbf	238 lbf	180 lbf	148 lbf	128 lbf	124 lbf
	1.18"	1.57"	2.36"	3.94"	6.30"	8.66"	10.24"	11.81"	12.20"
62.3'	1347 lbf	1057 lbf	672 lbf	384 lbf	247 lbf	189 lbf	155 lbf	135 lbf	130 lbf
	1.18"	1.57"	2.36"	4.33"	6.69"	9.06"	11.02"	12.60"	12.99"
65.6'	1338 lbf	1050 lbf	668 lbf	389 lbf	256 lbf	196 lbf	164 lbf	142 lbf	137 lbf
	1.57"	1.97"	2.76"	4.72"	7.48"	9.45"	11.42"	13.39"	13.78"
68.9'	1326 lbf	1041 lbf	665 lbf	393 lbf	263 lbf	205 lbf	171 lbf	148 lbf	144 lbf
	1.57"	1.97"	3.15"	5.12"	7.87"	10.24"	12.20"	13.78"	14.57"
72.2'	1317 lbf	1032 lbf	661 lbf	398 lbf	272 lbf	211 lbf	178 lbf	155 lbf	148 lbf
	1.57"	2.36"	3.54"	5.51"	8.27"	10.63"	12.99"	14.57"	15.35"
75.4'	1306 lbf	1023 lbf	659 lbf	402 lbf	279 lbf	218 lbf	184 lbf	160 lbf	155 lbf
	1.97"	2.36"	3.94"	6.30"	9.06"	11.42"	13.39"	15.35"	16.14"
78.7'	1295 lbf	1014 lbf	654 lbf	407 lbf	286 lbf	225 lbf	189 lbf	166 lbf	162 lbf
	1.97"	2.76"	4.33"	6.69"	9.45"	12.20"	14.17"	16.14"	16.93"
82.0'	1284 lbf	1005 lbf	652 lbf	411 lbf	292 lbf	232 lbf	196 lbf	173 lbf	166 lbf
	2.36"	2.76"	4.33"	7.09"	10.24"	12.60"	14.96"	16.93"	17.72"
85.3'	1272 lbf	996 lbf	647 lbf	416 lbf	299 lbf	238 lbf	202 lbf	178 lbf	173 lbf
	2.36"	3.15"	4.72"	7.48"	10.63"	13.39"	15.75"	17.72"	18.50"
88.6'	1259 lbf	985 lbf	645 lbf	420 lbf	306 lbf	245 lbf	209 lbf	184 lbf	178 lbf
	2.76"	3.54"	5.51"	8.27"	11.42"	14.17"	16.54"	18.50"	19.29"
91.9'	1248 lbf	976 lbf	641 lbf	423 lbf	312 lbf	252 lbf	216 lbf	191 lbf	184 lbf
	3.15"	3.94"	5.91"	8.66"	11.81"	14.57"	17.32"	19.29"	20.08"
95.1'	1234 lbf	964 lbf	638 lbf	427 lbf	317 lbf	259 lbf	220 lbf	196 lbf	189 lbf
	3.15"	3.94"	6.30"	9.45"	12.60"	15.35"	17.72"	20.08"	20.87"
98.4'	1221 lbf	955 lbf	634 lbf	432 lbf	324 lbf	263 lbf	227 lbf	200 lbf	196 lbf
	3.54"	4.33"	6.69"	9.84"	12.99"	16.14"	18.50"	20.87"	21.65"
101.7'	1207 lbf	944 lbf	632 lbf	434 lbf	328 lbf	270 lbf	232 lbf	207 lbf	200 lbf
	3.54"	4.72"	7.09"	10.24"	13.78"	16.93"	19.29"	22.05"	22.44"
105.0'	1194 lbf	935 lbf	629 lbf	436 lbf	335 lbf	274 lbf	238 lbf	211 lbf	205 lbf
	3.94"	5.12"	7.48"	11.02"	14.57"	17.32"	20.08"	22.83"	23.23"
108.3'	1180 lbf	924 lbf	625 lbf	441 lbf	339 lbf	281 lbf	243 lbf	218 lbf	211 lbf
	4.33"	5.51"	8.27"	11.81"	14.96"	18.11"	20.87"	23.62"	24.41"
111.5'	1167 lbf	913 lbf	623 lbf	443 lbf	344 lbf	286 lbf	250 lbf	223 lbf	216 lbf
	4.72"	5.91"	8.66"	12.20"	15.75"	18.90"	21.65"	24.41"	25.20"
114.8'	1153 lbf	904 lbf	620 lbf	445 lbf	348 lbf	292 lbf	254 lbf	227 lbf	220 lbf
	5.12"	6.30"	9.45"	12.99"	16.54"	19.69"	22.83"	25.20"	25.98"
118.1'	1138 lbf	892 lbf	618 lbf	450 lbf	353 lbf	297 lbf	259 lbf	232 lbf	225 lbf
	5.51"	6.69"	9.84"	13.78"	17.32"	20.47"	23.62"	26.38"	27.17"
121.4'	1124 lbf	884 lbf	614 lbf	452 lbf	357 lbf	301 lbf	265 lbf	238 lbf	232 lbf
	5.91"	7.48"	10.63"	14.17"	18.11"	21.26"	24.41"	27.17"	27.95"
124.7'	1111 lbf	872 lbf	611 lbf	454 lbf	362 lbf	308 lbf	270 lbf	243 lbf	236 lbf
	6.30"	7.87"	11.02"	14.96"	18.90"	22.05"	25.20"	27.95"	28.74"
128.0'	1095 lbf	863 lbf	609 lbf	456 lbf	366 lbf	312 lbf	274 lbf	247 lbf	241 lbf
	6.69"	8.27"	11.81"	15.75"	19.29"	22.83"	25.98"	29.13"	29.92"
131.2'	1081 lbf	852 lbf	607 lbf	459 lbf	371 lbf	317 lbf	279 lbf	252 lbf	245 lbf
	7.09"	8.66"	12.20"	16.54"	20.08"	23.62"	27.17"	29.92"	30.71"
134.5'	1066 lbf	843 lbf	605 lbf	461 lbf	375 lbf	321 lbf	283 lbf	256 lbf	250 lbf
	7.48"	9.45"	12.99"	17.32"	20.87"	24.80"	27.95"	30.71"	31.50"
137.8'	1052 lbf	834 lbf	602 lbf	463 lbf	380 lbf	326 lbf	288 lbf	261 lbf	254 lbf
	7.87"	9.84"	13.78"	18.11"	22.05"	25.59"	28.74"	31.89"	32.68"
141.1'	1036 lbf	823 lbf	600 lbf	465 lbf	382 lbf	330 lbf	292 lbf	265 lbf	259 lbf
	8.27"	10.63"	14.57"	18.50"	22.83"	26.38"	29.53"	32.68"	33.46"
144.4'	1023 lbf	814 lbf	598 lbf	468 lbf	387 lbf	335 lbf	297 lbf	270 lbf	263 lbf
	9.06"	11.02"	15.35"	19.69"	23.62"	27.17"	30.71"	33.86"	34.65"
147.6'	1007 lbf	805 lbf	596 lbf	470 lbf	391 lbf	337 lbf	301 lbf	274 lbf	268 lbf
	9.45"	11.81"	16.14"	20.47"	24.41"	28.35"	31.50"	34.65"	35.83"
151.0'	994 lbf	796 lbf	596 lbf	470 lbf	393 lbf	342 lbf	306 lbf	279 lbf	272 lbf
	9.84"	12.60"	16.54"	21.26"	25.20"	29.13"	32.68"	35.83"	36.61"

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
154.2'	980 lbf	789 lbf	593 lbf	472 lbf	398 lbf	346 lbf	310 lbf	283 lbf	274 lbf
	10.63"	12.99"	17.32"	22.05"	25.98"	29.92"	33.46"	36.61"	37.80"
157.5'	967 lbf	780 lbf	591 lbf	474 lbf	400 lbf	351 lbf	315 lbf	286 lbf	279 lbf
	11.02"	13.78"	18.50"	22.83"	27.17"	31.10"	34.65"	37.80"	38.98"
160.8'	953 lbf	771 lbf	589 lbf	477 lbf	402 lbf	353 lbf	317 lbf	290 lbf	283 lbf
	11.81"	14.57"	19.29"	23.62"	27.95"	31.89"	35.43"	38.98"	39.76"
164.0'	940 lbf	764 lbf	589 lbf	477 lbf	407 lbf	357 lbf	321 lbf	295 lbf	288 lbf
	12.60"	15.35"	20.08"	24.80"	28.74"	33.07"	36.61"	39.76"	40.94"
167.3'	926 lbf	758 lbf	587 lbf	479 lbf	409 lbf	362 lbf	326 lbf	299 lbf	290 lbf
	13.39"	16.14"	20.87"	25.59"	29.92"	33.86"	37.40"	40.94"	42.13"
170.6'	915 lbf	749 lbf	585 lbf	481 lbf	411 lbf	364 lbf	328 lbf	301 lbf	295 lbf
	13.78"	16.93"	21.65"	26.38"	30.71"	35.04"	38.58"	42.13"	43.31"
173.9'	901 lbf	742 lbf	585 lbf	483 lbf	416 lbf	369 lbf	333 lbf	306 lbf	299 lbf
	14.57"	17.72"	22.44"	27.56"	31.89"	35.83"	39.76"	43.31"	44.09"
177.2'	890 lbf	735 lbf	582 lbf	483 lbf	418 lbf	371 lbf	337 lbf	310 lbf	301 lbf
	15.35"	18.50"	23.62"	28.35"	32.68"	37.01"	40.94"	44.49"	45.28"
180.4'	879 lbf	728 lbf	580 lbf	486 lbf	420 lbf	373 lbf	339 lbf	312 lbf	306 lbf
	16.14"	19.69"	24.41"	29.13"	33.86"	38.19"	41.73"	45.67"	46.46"
183.7'	866 lbf	724 lbf	580 lbf	486 lbf	423 lbf	378 lbf	344 lbf	317 lbf	310 lbf
	16.93"	20.47"	25.59"	30.31"	35.04"	38.98"	42.91"	46.46"	47.64"
187.0'	857 lbf	717 lbf	578 lbf	488 lbf	425 lbf	380 lbf	346 lbf	319 lbf	312 lbf
	17.72"	21.26"	26.38"	31.50"	35.83"	40.16"	44.09"	47.64"	48.82"
190.3'	845 lbf	710 lbf	578 lbf	488 lbf	427 lbf	384 lbf	351 lbf	324 lbf	317 lbf
	18.90"	22.05"	27.56"	32.28"	37.01"	41.34"	45.28"	48.82"	50.00"
193.6'	834 lbf	706 lbf	576 lbf	490 lbf	429 lbf	387 lbf	353 lbf	326 lbf	319 lbf
	19.69"	23.23"	28.35"	33.46"	38.19"	42.52"	46.46"	50.00"	51.18"
196.8'	825 lbf	699 lbf	576 lbf	490 lbf	432 lbf	389 lbf	355 lbf	330 lbf	324 lbf
	20.47"	24.02"	29.53"	34.65"	38.98"	43.31"	47.64"	51.18"	52.36"
200.0'	816 lbf	695 lbf	573 lbf	492 lbf	434 lbf	391 lbf	360 lbf	333 lbf	326 lbf
	21.65"	25.20"	30.31"	35.43"	40.16"	44.49"	48.82"	52.36"	53.54"
203.4'	807 lbf	690 lbf	573 lbf	492 lbf	436 lbf	396 lbf	362 lbf	335 lbf	328 lbf
	22.44"	26.38"	31.50"	36.61"	41.34"	45.67"	50.00"	53.94"	54.72"
206.7'	798 lbf	686 lbf	571 lbf	495 lbf	438 lbf	398 lbf	364 lbf	339 lbf	333 lbf
	23.23"	27.17"	32.68"	37.80"	42.52"	46.85"	51.18"	55.12"	56.30"
210.0'	789 lbf	681 lbf	571 lbf	495 lbf	441 lbf	400 lbf	369 lbf	342 lbf	335 lbf
	24.41"	28.35"	33.86"	38.98"	43.70"	48.03"	52.36"	56.30"	57.48"
213.3'	780 lbf	677 lbf	571 lbf	497 lbf	443 lbf	402 lbf	371 lbf	346 lbf	339 lbf
	25.59"	29.53"	35.04"	40.16"	44.88"	49.21"	53.54"	57.48"	58.66"
216.5'	773 lbf	672 lbf	569 lbf	497 lbf	445 lbf	405 lbf	373 lbf	348 lbf	342 lbf
	26.38"	30.31"	35.83"	41.34"	46.06"	50.39"	54.72"	58.66"	59.84"
219.8'	764 lbf	668 lbf	569 lbf	499 lbf	447 lbf	407 lbf	375 lbf	351 lbf	344 lbf
	27.56"	31.50"	37.01"	42.52"	47.24"	51.97"	56.30"	60.24"	61.42"
223.1'	758 lbf	665 lbf	567 lbf	499 lbf	447 lbf	409 lbf	380 lbf	353 lbf	346 lbf
	28.74"	32.68"	38.19"	43.70"	48.43"	53.15"	57.48"	61.42"	62.60"
226.4'	751 lbf	661 lbf	567 lbf	499 lbf	450 lbf	411 lbf	382 lbf	357 lbf	351 lbf
	29.92"	33.86"	39.37"	44.88"	49.61"	54.33"	58.66"	62.60"	63.78"
229.7'	744 lbf	656 lbf	567 lbf	501 lbf	452 lbf	414 lbf	384 lbf	360 lbf	353 lbf
	31.10"	35.04"	40.55"	46.06"	50.79"	55.51"	59.84"	64.17"	65.35"

ACSR PENGUIN 4/0

DIAMETER :	14.3 MM	(0.563 IN)
CROSS SECTION:	125.1 MM^2	(0.194 IN^2)
MODULUS OF ELASTICITY:	79.46 KN/MM^2	(11.5 x 10^6 LB/IN^2)
COEFF. OF THERM. EXP.:	0.0000191 1/KELVIN	(10.6 x 10^{-6} 1/F)
WEIGHT:	4.25 N/M	(0.291 LBF / FT)



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

STANDARD SAG OF
ACSR PENGUIN 4/0
FIXED TERMINATION (INCH)

CADD FILE NAME: SD-W6013

REV: | EDITION: SECOND

SCALE: N/A

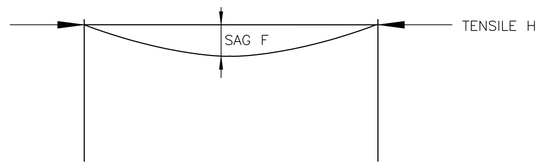
STANDARD DRAWING NO.: SD-W6013

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
59.1'	2870.81 lbf	2686.47 lbf	2423.44 lbf	2162.66 lbf	1899.64 lbf	1638.86 lbf	1380.33 lbf	1126.29 lbf	1052.11 lbf
	0.79 in	0.79 in	0.79 in	1.18 in	1.18 in	1.18 in	1.57 in	1.97 in	1.97 in
62.3'	2870.81 lbf	2686.47 lbf	2423.44 lbf	2160.41 lbf	1899.64 lbf	1638.86 lbf	1380.33 lbf	1128.54 lbf	1054.35 lbf
	0.79 in	0.79 in	0.79 in	1.18 in	1.18 in	1.57 in	1.57 in	1.97 in	2.36 in
65.6'	2868.56 lbf	2684.22 lbf	2421.19 lbf	2160.41 lbf	1897.39 lbf	1638.86 lbf	1382.58 lbf	1128.54 lbf	1056.6 lbf
	0.79 in	0.79 in	1.18 in	1.18 in	1.57 in	1.57 in	1.97 in	2.36 in	2.36 in
68.9'	2866.31 lbf	2681.97 lbf	2421.19 lbf	2158.17 lbf	1897.39 lbf	1638.86 lbf	1382.58 lbf	1130.79 lbf	1056.6 lbf
	1.18 in	1.18 in	1.18 in	1.18 in	1.57 in	1.97 in	1.97 in	2.76 in	2.76 in
72.2'	2864.07 lbf	2681.97 lbf	2418.94 lbf	2155.92 lbf	1897.39 lbf	1636.61 lbf	1382.58 lbf	1133.04 lbf	1058.85 lbf
	1.18 in	1.18 in	1.18 in	1.57 in	1.57 in	1.97 in	2.36 in	2.76 in	3.15 in
75.4'	2861.82 lbf	2679.72 lbf	2416.7 lbf	2155.92 lbf	1895.14 lbf	1636.61 lbf	1382.58 lbf	1133.04 lbf	1061.1 lbf
	1.18 in	1.18 in	1.57 in	1.57 in	1.97 in	1.97 in	2.36 in	3.15 in	3.15 in
78.7'	2861.82 lbf	2677.48 lbf	2414.45 lbf	2153.67 lbf	1895.14 lbf	1636.61 lbf	1382.58 lbf	1135.29 lbf	1063.35 lbf
	1.18 in	1.57 in	1.57 in	1.57 in	1.97 in	2.36 in	2.76 in	3.54 in	3.54 in
82.0'	2859.57 lbf	2675.23 lbf	2414.45 lbf	2151.42 lbf	1892.89 lbf	1636.61 lbf	1382.58 lbf	1137.53 lbf	1065.59 lbf
	1.57 in	1.57 in	1.57 in	1.97 in	2.36 in	2.36 in	3.15 in	3.54 in	3.94 in
85.3'	2857.32 lbf	2672.98 lbf	2412.2 lbf	2151.42 lbf	1892.89 lbf	1634.36 lbf	1382.58 lbf	1137.53 lbf	1067.84 lbf
	1.57 in	1.57 in	1.97 in	1.97 in	2.36 in	2.76 in	3.15 in	3.94 in	4.33 in
88.6'	2855.07 lbf	2670.73 lbf	2409.95 lbf	2149.17 lbf	1890.64 lbf	1634.36 lbf	1382.58 lbf	1139.78 lbf	1070.09 lbf
	1.57 in	1.97 in	1.97 in	2.36 in	2.36 in	2.76 in	3.54 in	4.33 in	4.33 in
91.9'	2852.83 lbf	2668.48 lbf	2407.7 lbf	2146.93 lbf	1888.4 lbf	1634.36 lbf	1382.58 lbf	1142.03 lbf	1072.34 lbf
	1.97 in	1.97 in	1.97 in	2.36 in	2.76 in	3.15 in	3.94 in	4.72 in	4.72 in
95.1'	2850.58 lbf	2666.23 lbf	2405.46 lbf	2146.93 lbf	1888.4 lbf	1632.11 lbf	1382.58 lbf	1142.03 lbf	1074.59 lbf
	1.97 in	1.97 in	2.36 in	2.76 in	2.76 in	3.54 in	3.94 in	4.72 in	5.12 in
98.4'	2848.33 lbf	2663.99 lbf	2403.21 lbf	2144.68 lbf	1886.15 lbf	1632.11 lbf	1382.58 lbf	1144.28 lbf	1076.84 lbf
	1.97 in	2.36 in	2.36 in	2.76 in	3.15 in	3.54 in	4.33 in	5.12 in	5.51 in
101.7'	2843.83 lbf	2661.74 lbf	2400.96 lbf	2142.43 lbf	1886.15 lbf	1632.11 lbf	1384.82 lbf	1146.53 lbf	1079.08 lbf
	2.36 in	2.36 in	2.76 in	3.15 in	3.54 in	3.94 in	4.72 in	5.51 in	5.91 in
105.0'	2841.59 lbf	2659.49 lbf	2398.71 lbf	2140.18 lbf	1883.9 lbf	1629.87 lbf	1384.82 lbf	1148.77 lbf	1081.33 lbf
	2.36 in	2.36 in	2.76 in	3.15 in	3.54 in	4.33 in	4.72 in	5.91 in	6.3 in
108.3'	2839.34 lbf	2657.24 lbf	2396.46 lbf	2137.93 lbf	1881.65 lbf	1629.87 lbf	1384.82 lbf	1151.02 lbf	1083.58 lbf
	2.36 in	2.76 in	3.15 in	3.54 in	3.94 in	4.33 in	5.12 in	6.3 in	6.69 in
111.5'	2837.09 lbf	2654.99 lbf	2394.22 lbf	2135.69 lbf	1881.65 lbf	1629.87 lbf	1384.82 lbf	1151.02 lbf	1085.83 lbf
	2.76 in	2.76 in	3.15 in	3.54 in	3.94 in	4.72 in	5.51 in	6.69 in	7.09 in
114.8'	2832.59 lbf	2650.5 lbf	2391.97 lbf	2133.44 lbf	1879.4 lbf	1627.62 lbf	1384.82 lbf	1153.27 lbf	1088.08 lbf
	2.76 in	3.15 in	3.54 in	3.94 in	4.33 in	5.12 in	5.91 in	7.09 in	7.48 in
118.1'	2830.35 lbf	2648.25 lbf	2389.72 lbf	2131.19 lbf	1877.16 lbf	1627.62 lbf	1384.82 lbf	1155.52 lbf	1090.32 lbf
	3.15 in	3.15 in	3.54 in	3.94 in	4.72 in	5.12 in	6.3 in	7.48 in	7.87 in
121.4'	2828.1 lbf	2646 lbf	2387.47 lbf	2128.94 lbf	1874.91 lbf	1627.62 lbf	1384.82 lbf	1157.77 lbf	1092.57 lbf
	3.15 in	3.54 in	3.94 in	4.33 in	4.72 in	5.51 in	6.69 in	7.87 in	8.27 in
124.7'	2823.6 lbf	2643.75 lbf	2382.98 lbf	2126.69 lbf	1874.91 lbf	1625.37 lbf	1384.82 lbf	1160.01 lbf	1094.82 lbf
	3.54 in	3.54 in	3.94 in	4.33 in	5.12 in	5.91 in	6.69 in	8.27 in	8.66 in
128.0'	2821.35 lbf	2639.26 lbf	2380.73 lbf	2124.45 lbf	1872.66 lbf	1625.37 lbf	1384.82 lbf	1160.01 lbf	1097.07 lbf
	3.54 in	3.94 in	4.33 in	4.72 in	5.51 in	6.3 in	7.09 in	8.66 in	9.06 in
131.2'	2819.1 lbf	2637.01 lbf	2378.48 lbf	2122.2 lbf	1870.41 lbf	1623.12 lbf	1387.07 lbf	1162.26 lbf	1099.32 lbf
	3.94 in	3.94 in	4.33 in	5.12 in	5.51 in	6.69 in	7.48 in	9.06 in	9.45 in
134.5'	2814.61 lbf	2632.51 lbf	2376.23 lbf	2119.95 lbf	1868.16 lbf	1623.12 lbf	1387.07 lbf	1164.51 lbf	1101.56 lbf
	3.94 in	4.33 in	4.72 in	5.12 in	5.91 in	6.69 in	7.87 in	9.45 in	10.24 in
137.8'	2812.36 lbf	2630.27 lbf	2371.73 lbf	2117.7 lbf	1865.91 lbf	1623.12 lbf	1387.07 lbf	1166.76 lbf	1103.81 lbf
	4.33 in	4.33 in	4.72 in	5.51 in	6.3 in	7.09 in	8.27 in	9.84 in	10.63 in
141.1'	2807.86 lbf	2625.77 lbf	2369.49 lbf	2115.45 lbf	1865.91 lbf	1620.87 lbf	1387.07 lbf	1169.01 lbf	1108.31 lbf
	4.33 in	4.72 in	5.12 in	5.91 in	6.69 in	7.48 in	8.66 in	10.63 in	11.02 in
144.4'	2803.37 lbf	2623.52 lbf	2367.24 lbf	2113.2 lbf	1863.67 lbf	1620.87 lbf	1387.07 lbf	1171.25 lbf	1110.56 lbf
	4.72 in	4.72 in	5.51 in	5.91 in	6.69 in	7.87 in	9.06 in	11.02 in	11.42 in
147.6'	2801.12 lbf	2619.02 lbf	2362.74 lbf	2110.96 lbf	1861.42 lbf	1618.62 lbf	1387.07 lbf	1173.5 lbf	1112.8 lbf
	4.72 in	5.12 in	5.51 in	6.3 in	7.09 in	8.27 in	9.45 in	11.42 in	12.2 in
151.0'	2796.62 lbf	2616.78 lbf	2360.49 lbf	2108.71 lbf	1859.17 lbf	1618.62 lbf	1387.07 lbf	1173.5 lbf	1115.05 lbf
	5.12 in	5.51 in	5.91 in	6.69 in	7.48 in	8.66 in	10.24 in	11.81 in	12.6 in

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
154.2'	2792.13 lbf	2612.28 lbf	2358.25 lbf	2104.21 lbf	1856.92 lbf	1616.38 lbf	1387.07 lbf	1175.75 lbf	1117.3 lbf
	5.12 in	5.51 in	6.3 in	7.09 in	7.87 in	9.06 in	10.63 in	12.6 in	12.99 in
157.5'	2789.88 lbf	2610.03 lbf	2353.75 lbf	2101.96 lbf	1854.67 lbf	1616.38 lbf	1389.32 lbf	1178 lbf	1119.55 lbf
	5.51 in	5.91 in	6.3 in	7.09 in	8.27 in	9.45 in	11.02 in	12.99 in	13.78 in
160.8'	2785.38 lbf	2605.54 lbf	2351.5 lbf	2099.72 lbf	1852.43 lbf	1614.13 lbf	1389.32 lbf	1180.25 lbf	1121.8 lbf
	5.51 in	5.91 in	6.69 in	7.48 in	8.66 in	9.84 in	11.42 in	13.39 in	14.17 in
164.0'	2780.89 lbf	2601.04 lbf	2347.01 lbf	2097.47 lbf	1850.18 lbf	1614.13 lbf	1389.32 lbf	1182.5 lbf	1124.05 lbf
	5.91 in	6.3 in	7.09 in	7.87 in	9.06 in	10.24 in	11.81 in	13.78 in	14.57 in
167.3'	2776.39 lbf	2598.79 lbf	2344.76 lbf	2092.97 lbf	1850.18 lbf	1611.88 lbf	1389.32 lbf	1184.74 lbf	1128.54 lbf
	6.3 in	6.69 in	7.48 in	8.27 in	9.45 in	10.63 in	12.2 in	14.57 in	15.35 in
170.6'	2771.89 lbf	2594.3 lbf	2340.26 lbf	2090.72 lbf	1847.93 lbf	1611.88 lbf	1389.32 lbf	1186.99 lbf	1130.79 lbf
	6.3 in	6.69 in	7.48 in	8.66 in	9.84 in	11.02 in	12.99 in	14.96 in	15.75 in
173.9'	2769.65 lbf	2589.8 lbf	2335.77 lbf	2088.48 lbf	1845.68 lbf	1611.88 lbf	1389.32 lbf	1189.24 lbf	1133.04 lbf
	6.69 in	7.09 in	7.87 in	9.06 in	10.24 in	11.42 in	13.39 in	15.75 in	16.54 in
177.2'	2765.15 lbf	2585.3 lbf	2333.52 lbf	2083.98 lbf	1843.43 lbf	1609.63 lbf	1389.32 lbf	1189.24 lbf	1135.29 lbf
	7.09 in	7.48 in	8.27 in	9.06 in	10.63 in	11.81 in	13.78 in	16.14 in	16.93 in
180.4'	2760.65 lbf	2580.81 lbf	2329.02 lbf	2081.73 lbf	1841.19 lbf	1609.63 lbf	1391.57 lbf	1191.49 lbf	1137.53 lbf
	7.09 in	7.87 in	8.66 in	9.45 in	11.02 in	12.6 in	14.17 in	16.93 in	17.72 in
183.7'	2756.16 lbf	2578.56 lbf	2326.77 lbf	2079.48 lbf	1838.94 lbf	1607.38 lbf	1391.57 lbf	1193.74 lbf	1139.78 lbf
	7.48 in	7.87 in	9.06 in	9.84 in	11.42 in	12.99 in	14.96 in	17.32 in	18.11 in
187.0'	2751.66 lbf	2574.06 lbf	2322.28 lbf	2074.99 lbf	1836.69 lbf	1607.38 lbf	1391.57 lbf	1195.98 lbf	1142.03 lbf
	7.87 in	8.27 in	9.06 in	10.24 in	11.81 in	13.39 in	15.35 in	18.11 in	18.9 in
190.3'	2747.17 lbf	2569.57 lbf	2317.78 lbf	2072.74 lbf	1834.44 lbf	1605.14 lbf	1391.57 lbf	1198.23 lbf	1144.28 lbf
	8.27 in	8.66 in	9.45 in	10.63 in	12.2 in	13.78 in	16.14 in	18.5 in	19.29 in
193.6'	2742.67 lbf	2565.07 lbf	2315.53 lbf	2070.49 lbf	1832.19 lbf	1605.14 lbf	1391.57 lbf	1200.48 lbf	1146.53 lbf
	8.27 in	9.06 in	9.84 in	11.02 in	12.6 in	14.17 in	16.54 in	19.29 in	20.08 in
196.8'	2735.93 lbf	2560.57 lbf	2311.04 lbf	2065.99 lbf	1829.95 lbf	1602.89 lbf	1391.57 lbf	1202.73 lbf	1148.77 lbf
	8.66 in	9.45 in	10.24 in	11.42 in	12.99 in	14.96 in	16.93 in	19.69 in	20.87 in
200.0'	2731.43 lbf	2556.08 lbf	2306.54 lbf	2063.75 lbf	1827.7 lbf	1602.89 lbf	1391.57 lbf	1204.98 lbf	1151.02 lbf
	9.06 in	9.45 in	10.63 in	11.81 in	13.39 in	15.35 in	17.72 in	20.47 in	21.26 in
203.4'	2726.93 lbf	2551.58 lbf	2302.04 lbf	2059.25 lbf	1825.45 lbf	1600.64 lbf	1393.82 lbf	1204.98 lbf	1155.52 lbf
	9.45 in	9.84 in	11.02 in	12.2 in	13.78 in	15.75 in	18.11 in	20.87 in	22.05 in
206.7'	2722.44 lbf	2547.09 lbf	2297.55 lbf	2057 lbf	1823.2 lbf	1600.64 lbf	1393.82 lbf	1207.22 lbf	1157.77 lbf
	9.45 in	10.24 in	11.42 in	12.6 in	14.57 in	16.54 in	18.9 in	21.65 in	22.83 in
210.0'	2717.94 lbf	2542.59 lbf	2295.3 lbf	2052.51 lbf	1818.7 lbf	1598.39 lbf	1393.82 lbf	1209.47 lbf	1160.01 lbf
	9.84 in	10.63 in	11.81 in	12.99 in	14.96 in	16.93 in	19.29 in	22.44 in	23.23 in
213.3'	2713.44 lbf	2538.09 lbf	2290.8 lbf	2050.26 lbf	1816.46 lbf	1596.14 lbf	1393.82 lbf	1211.72 lbf	1162.26 lbf
	10.24 in	11.02 in	12.2 in	13.78 in	15.35 in	17.32 in	20.08 in	23.23 in	24.02 in
216.5'	2706.7 lbf	2531.35 lbf	2286.31 lbf	2045.76 lbf	1814.21 lbf	1596.14 lbf	1393.82 lbf	1213.97 lbf	1164.51 lbf
	10.63 in	11.42 in	12.6 in	14.17 in	15.75 in	18.11 in	20.47 in	23.62 in	24.8 in
219.8'	2702.2 lbf	2526.85 lbf	2281.81 lbf	2043.51 lbf	1811.96 lbf	1593.9 lbf	1393.82 lbf	1216.22 lbf	1166.76 lbf
	11.02 in	11.81 in	12.99 in	14.57 in	16.54 in	18.5 in	21.26 in	24.41 in	25.59 in
223.1'	2697.71 lbf	2522.36 lbf	2277.32 lbf	2039.02 lbf	1809.71 lbf	1593.9 lbf	1393.82 lbf	1216.22 lbf	1169.01 lbf
	11.42 in	12.2 in	13.39 in	14.96 in	16.93 in	19.29 in	22.05 in	25.2 in	25.98 in
226.4'	2690.96 lbf	2517.86 lbf	2272.82 lbf	2036.77 lbf	1807.46 lbf	1591.65 lbf	1393.82 lbf	1218.46 lbf	1171.25 lbf
	11.81 in	12.6 in	13.78 in	15.35 in	17.32 in	19.69 in	22.44 in	25.98 in	26.77 in
229.7'	2686.47 lbf	2513.36 lbf	2268.32 lbf	2032.27 lbf	1805.22 lbf	1591.65 lbf	1396.06 lbf	1220.71 lbf	1173.5 lbf
	12.2 in	12.99 in	14.17 in	15.75 in	18.11 in	20.47 in	23.23 in	26.38 in	27.56 in

MID POINT ANCHOR WIRE BZ 70/19

DIAMETER :	10.5MM	(0.413")
CROSS SECTION:	65.81MM²	(0.1 inch²)
MODULUS OF ELASTICITY:	105 KN/MM²	(15228.96 KSI)
COEFF. OF THERM. EXP.:	0.000017 1/KELVIN	(9.44x10⁻⁶ 1/F)
WEIGHT:	5.96 N/M	(0.41 LBF/FT)



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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

STANDARD SAG OF BZ II 70/19
MID POINT ANCHOR WIRE
(INCH)

CADD FILE NAME: SD-W6014

REV: | EDITION: SECOND

SCALE: N/A

STANDARD DRAWING NO.: SD-W6014

TABLE 1: LATERAL CLAMPING POINT OFFSET "SV" [''] FROM ZERO POINT

DISTANCE BETWEEN MIDPOINTS (L1+L2)IN [']	TEMPERATUR RANGE 126°F (DIFFERENCE)							
	+82.4°F	+91.4°F OR +73.4°F	+100.4°F OR +64.4°F	+109.4°F OR +55.4°F	+118.4°F OR +46.4°F	+127.4°F OR +37.4°F	+136.4°F OR +28.4°F	+145.4°F OR +19.4°F
1312.34'	0	1.18''	2.76''	3.94''	5.51''	6.7''	7.87''	9.45''
1640.42'	0	1.57''	3.54''	5.12''	6.70''	8.27''	10.24''	11.81''
1968.5'	0	1.97''	3.94''	5.91''	7.87''	10.24''	12.20''	14.17''
2296.6'	0	2.36''	4.72''	7.09''	9.45''	11.81''	14.17''	16.54''
2624.7'	0	2.76''	5.51''	7.87''	10.63''	13.39''	16.14''	18.9''
2952.8'	0	3.15''	5.91''	9.06''	12.20''	14.96''	18.11''	21.26''
3280.8'	0	3.54''	6.70''	10.24''	13.39''	16.93''	20.08''	23.62''
3608.9'	0	3.54''	7.48''	11.02''	14.57''	18.50''	22.05''	25.59''
3937.0'	0	3.94''	7.87''	12.20''	16.14''	20.08''	24.02''	27.95''
4265.1'	0	4.33''	8.66''	13.00''	17.32''	21.65''	25.98''	30.32''
4593.2'	0	4.72''	9.45''	14.17''	18.90''	23.62''	27.95''	32.68''
4921.3'	0	5.12''	10.24''	14.96''	20.08''	25.2''	30.32	35.04''
5249.34'	0	5.51''	10.63''	16.14''	21.26''	26.77''	32.28''	37.40''
5577.43'	0	5.51''	11.42''	16.93''	22.83''	28.35''	34.25''	39.76''
5905.51'	0	5.91''	12.20''	18.11''	24.02''	30.31''	36.22''	42.13''
6233.59'	0	6.30''	12.60''	18.90''	25.59''	31.89''	38.19''	44.49''

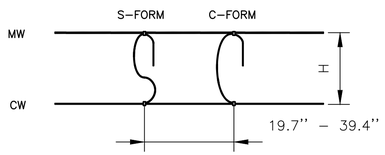
INTERMEDIATE VALUES OF MIDPOINT DISTANCE HAVE TO BE INTERPOLATED!

TABLE 2: DISTANCE "A" [''] AT TEMPERATURE RANGE 126°F (DIFFERENCE)

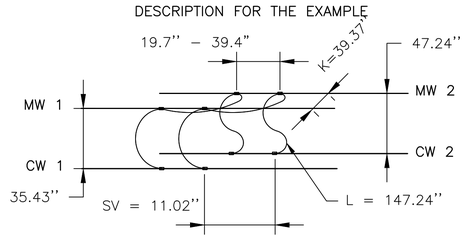
DISTANCE BETWEEN MIDPOINTS (L1+L2)IN [']	DIMENSION "K" ['] BETWEEN BOTH MESSENGER WIRES							
	7.87''	23.62''	39.37''	47.24''	55.12''	63''	78.74''	94.49''
1312.34'	12.2''	25.6''	40.6''	48.03''	55.9''	63.8''	79.1''	94.9''
1640.42'	14.17''	26.4''	40.9''	48.8''	56.3''	64.2''	79.5''	95.3''
1968.5'	16.14''	27.6''	41.7''	49.2''	57.1''	64.6''	79.9''	95.7''
2296.6'	18.50''	28.7''	42.9''	50.00''	57.5''	65.00''	80.3''	96.06''
2624.7'	20.47''	30.3''	43.7''	50.79''	58.27''	65.7''	81.1''	96.5''
2952.8'	22.83''	31.9''	44.9''	51.97''	59.1''	66.5''	81.5''	96.85''
3280.8'	24.80''	33.5''	46.1''	52.8''	59.8''	67.3''	82.3''	97.24''
3608.9'	26.77''	35.04''	46.9''	53.5''	60.6''	68.1''	82.7''	98.0''
3937.0'	29.13''	36.6''	48.4''	54.7''	61.81''	68.9''	83.5''	98.4''
4265.1'	31.5''	38.6''	49.6''	56.3''	63''	70.1''	84.25''	99.2''
4593.2'	33.46''	40.2''	51.2''	57.5''	64.2''	70.9''	85.43''	100.0''
4921.3'	35.83''	42.13''	52.8''	58.7''	65.35''	72.0''	86.22''	100.8''
5249.34'	38.19''	44.1''	54.3''	60.2''	66.5''	73.2''	87.0''	101.6''
5577.43'	40.55''	46.5''	55.9''	61.81''	68.1''	74.4''	88.2''	102.4''
5905.51'	42.91''	48.4''	57.5''	63.4''	69.29''	76.0''	89.4''	103.5''
6233.59'	45.28''	50.4''	59.4''	65.00''	70.9''	77.2''	90.6''	104.3''

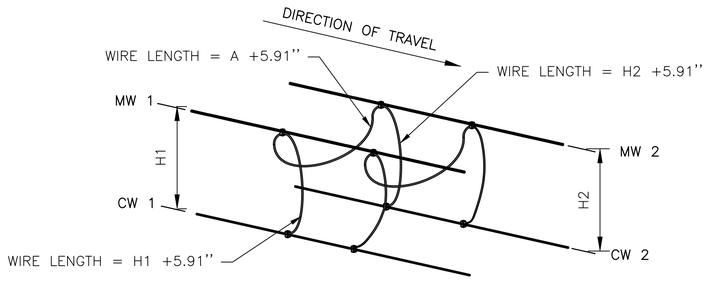
C– AND S– FORM CONNECTORS
CAN ONLY BE PLACED WHEN H>=31.5''

USE	
S – FORM	C – FORM
H > 39.4''	31.5'' <= H <= 39.4''



DESCRIPTION FOR THE EXAMPLE



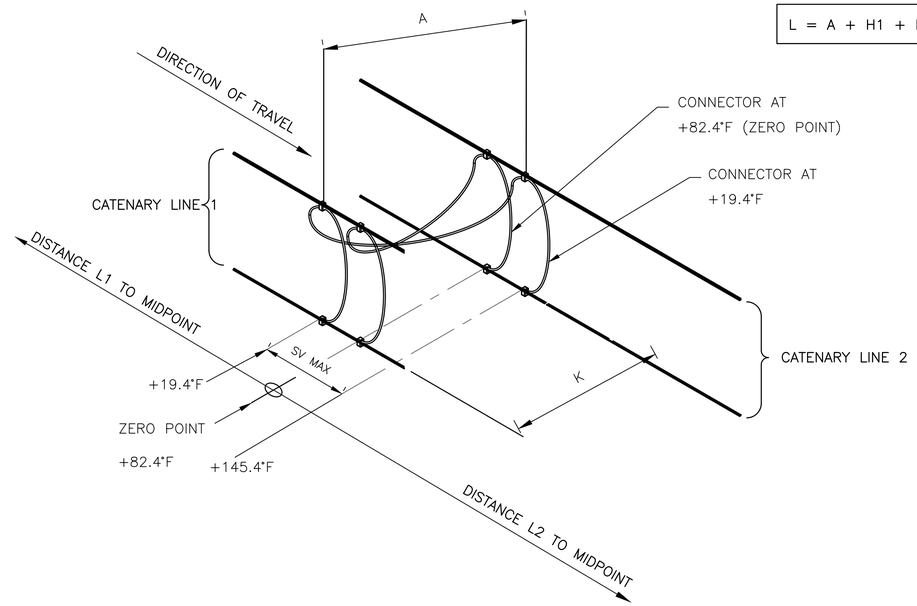


MW – MESSENGER WIRE
CW – CONTACT WIRE
H – DISTANCE BETWEEN MW AND CW
SV – LATERAL CLAMPING POINT OFFSET
SV VALUES – SEE TABLE 1
A – DIRECT DISTANCE BETWEEN TWO CLAMPS
A VALUES – SEE TABLE 2
K – DISTANCE BETWEEN BOTH MW

C– AND S– FORM CONNECTORS
CAN ONLY BE PLACED WHEN H>=31.5''

OVERALL LENGTH OF ELECTRICAL CONNECTION:

L = A + H1 + H2 + 17.72'' ['']



ADJUSTMENT / POSITION / LENGTH OF ELECTRICAL CONNECTION

NTS

EXAMPLE: HOW TO DETERMINE THE OVERALL LENGTH OF A ELECTRICAL CONNECTION WIRE:

DISTANCE FROM MIDPOINT L1 =1476.4'
DISTANCE FROM MIDPOINT L2 =2132.5'
} L1 + L2 = 3608.92'

DISTANCE MW 1 – CW 1 : H1 = 35.43''
DISTANCE MW 2 – CW 2 : H2 = 47.24''
DISTANCE BETWEEN MESSENGERS : K = 39.37''

ANSWER: NECESSARY LENGTH L = 46.9'' + 35.43'' + 47.24'' + 17.72'' = 147.24''

EXAMPLE: LATERAL CLAMPING POINT OFFSET SV AT MESSENGER AND CONTACT WIRE:

DISTANCE BETWEEN MIDPOINT SEE ABOVE
CW–TEMPERATURE = + 109.4°F

ANSWER: LATERAL OFFSET SV = 11.02''

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PENINSULA CORRIDOR JOINT POWERS BOARD

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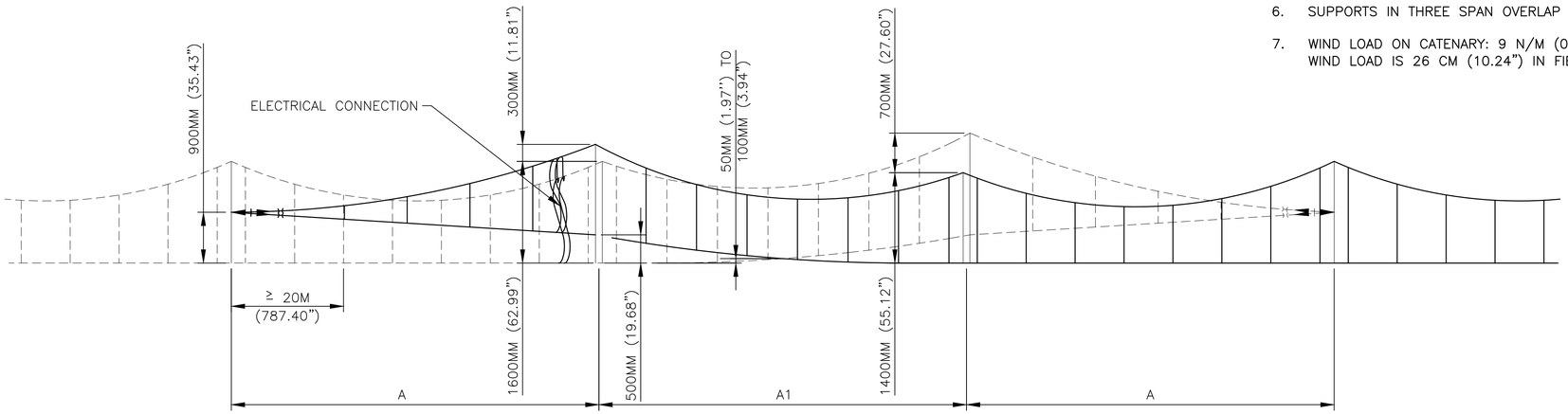
OVERHEAD CONTACT SYSTEM

ELEC. CONNECTION C–/S–FORM FOR TENSIONED CATENARY – INSTALLATION ENGLISH UNITS

CADD FILE NAME: SD–W6017
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6017

NOTES:

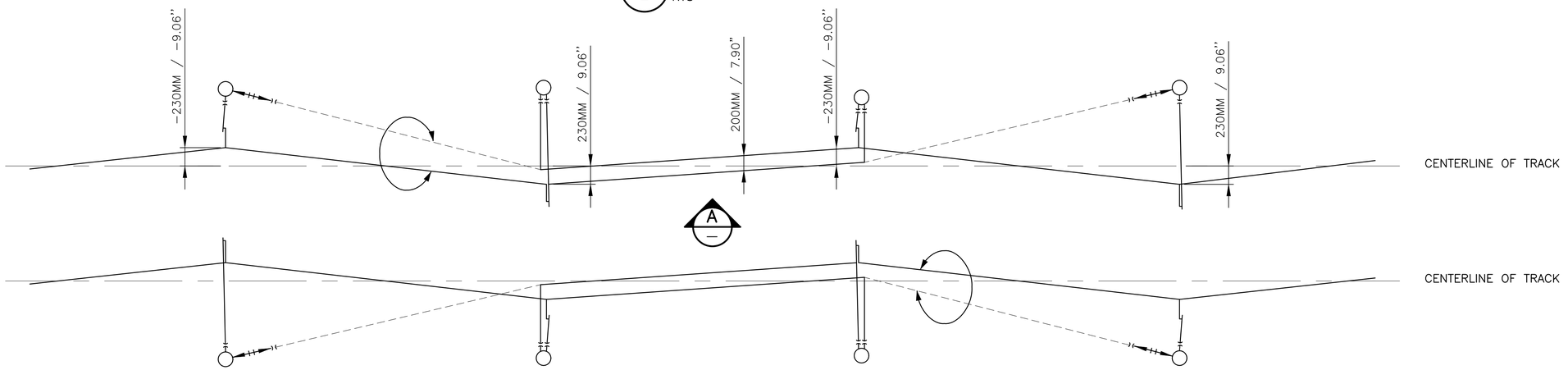
1. A = 55M / 180.4' (NORMAL)
2. A1 = 55M / 180.4' (NORMAL)
3. IN DETAIL DESIGN PHASE SPAN A CAN BE ENLARGED / REDUCED IF NECESSARY
   CHECK OF WIND DEVIATION AND RADIAL FORCE NECESSARY
4. AT INCREASING TEMPERATURES OVERLAPPING CANTILEVERS HAVE TO MOVE APART FROM EACH OTHER
5. FOR CHOICE OF CANTILEVER, SEE DRAWING SD–W6022
6. SUPPORTS IN THREE SPAN OVERLAP ARE ACCORDING TO: SD–W6022
7. WIND LOAD ON CATENARY: 9 N/M (0.0514 LBF/INCH) – MAXIMUM DISPLACEMENT OF CATENARY BY WIND LOAD IS 26 CM (10.24") IN FIELD A1 = 55M (180.4')



THREE SPAN OVERLAP

A ELEVATION

NTS



THREE SPAN OVERLAP

PLAN

NTS

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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

THREE SPAN OVERLAP
MINIMUM RADIUS
R = 7500M (24606')

CADD FILE NAME: SD–W6018

REV:

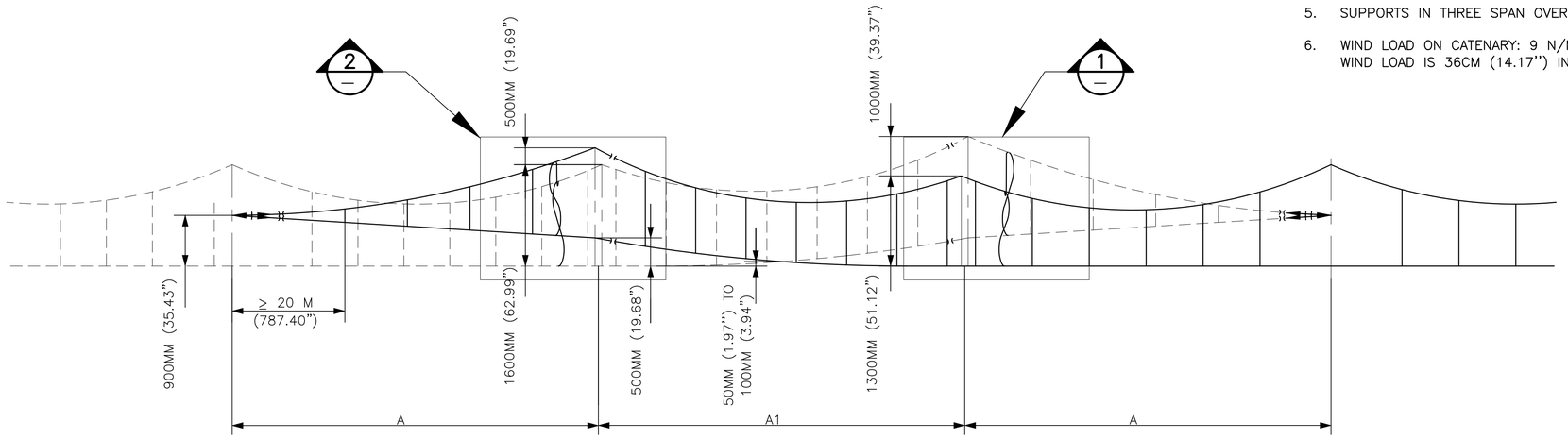
EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6018

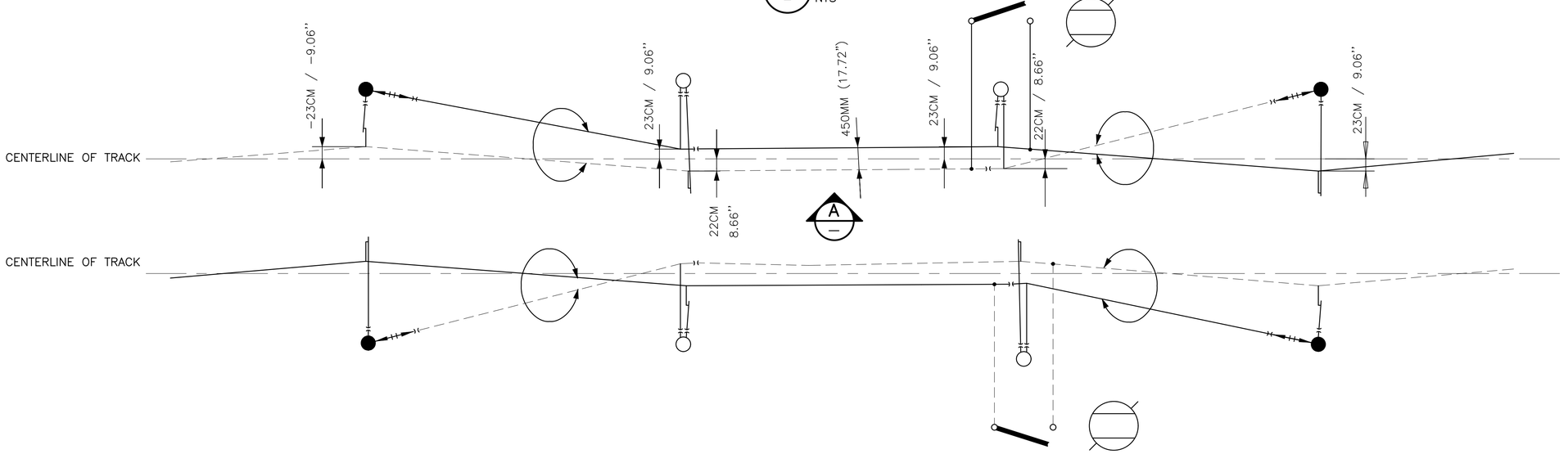
NOTES:

1. A = 55M / 180.4' (NORMAL)
2. A1 = 55M / 180.4' (NORMAL)
3. IN DETAIL DESIGN PHASE SPAN A CAN BE ENLARGED / REDUCED IF NECESSARY CHECK OF WIND DEVIATION AND RADIAL FORCE NECESSARY
4. FOR CHOICE OF CANTILEVER, SEE DRAWING SD–W6101
5. SUPPORTS IN THREE SPAN OVERLAP ARE ACCORDING TO: SD–W6101
6. WIND LOAD ON CATENARY: 9 N/M (0.0514 LBF/INCH) – MAXIMUM DISPLACEMENT OF CATENARY BY WIND LOAD IS 36CM (14.17'') IN FIELD A1 = 55M (180.4')



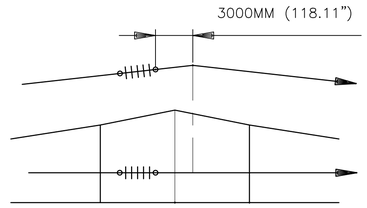
THREE SPAN INSULATED OVERLAP

A ELEVATION
NTS



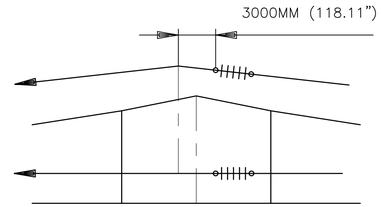
THREE SPAN INSULATED OVERLAP ISOLATOR

PLAN
NTS



INSULATION

1 DETAIL
NTS



INSULATION

2 DETAIL
NTS

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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

THREE SPAN INSULATED OVERLAP
STRAIGHT LINE / BIG CURVE

CADD FILE NAME: SD–W6019

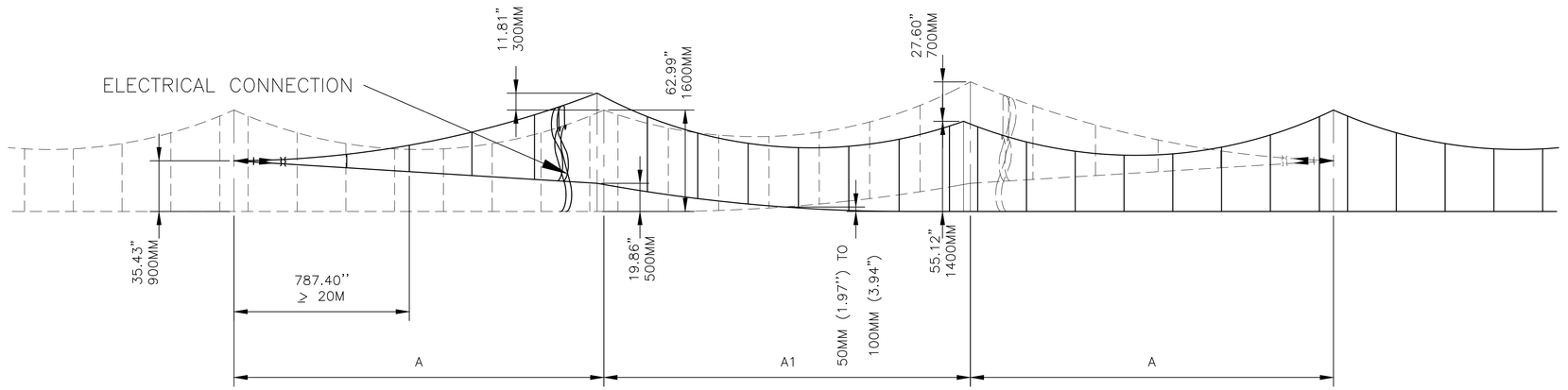
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6019

NOTES:

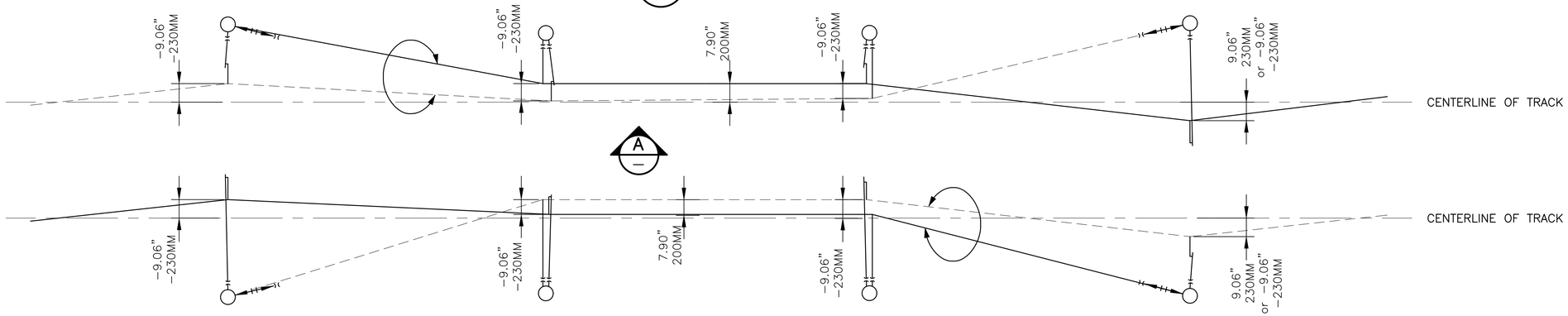
1. A = 55M / 180.4' (NORMAL)
2. A1 = 55M / 180.4' (NORMAL)
3. IN DETAIL DESIGN PHASE SPAN A CAN BE ENLARGED / REDUCED IF NECESSARY CHECK OF WIND DEVIATION AND RADIAL FORCE NECESSARY
4. FOR CHOICE OF CANTILEVER, SEE DRAWING SD–W6022
5. SUPPORTS IN THREE SPAN OVERLAP ARE ACCORDING TO: SD–W6022
6. WIND LOAD ON CATENARY: 9 N/M (0.0514 LBF/INCH) – MAXIMUM DISPLACEMENT OF CATENARY BY WIND LOAD IS 30CM (11.81') IN FIELD A1 = 55M (180.4')



THREE SPAN OVERLAP

A – ELEVATION

NTS



THREE SPAN OVERLAP

PLAN

NTS

NOTE:

FOR CURVED TRACK: R < 1900 M (6233.6') USE 5 SPAN OVERLAP

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

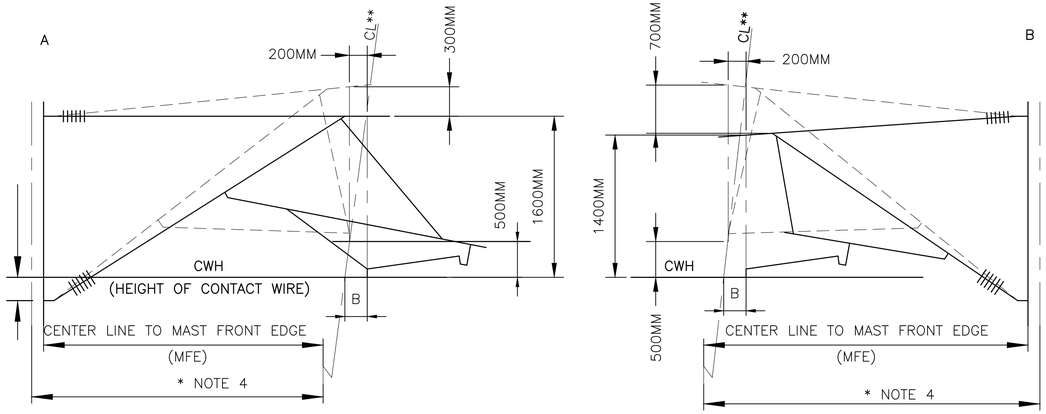
THREE SPAN OVERLAP
1900M (6233.6') <= R < 5900M (19357.0')

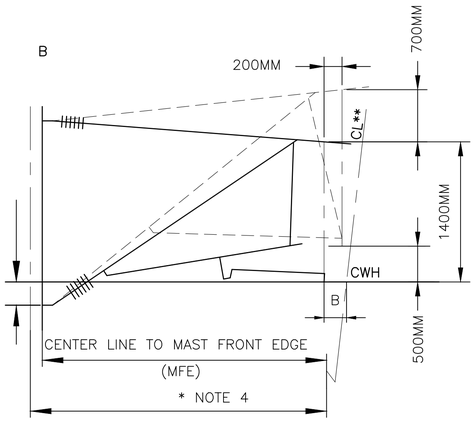
CADD FILE NAME: SD–W6020

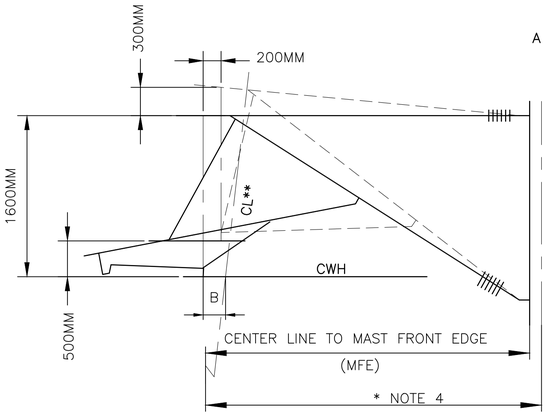
REV: | EDITION: SECOND

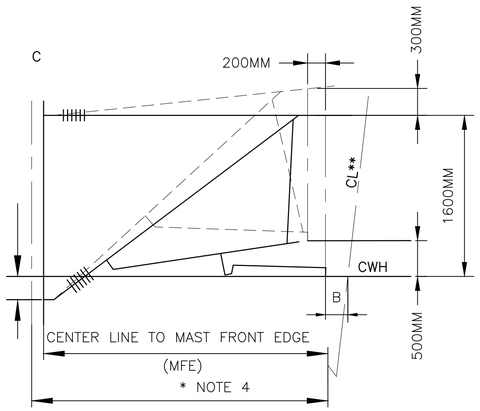
SCALE: NTS

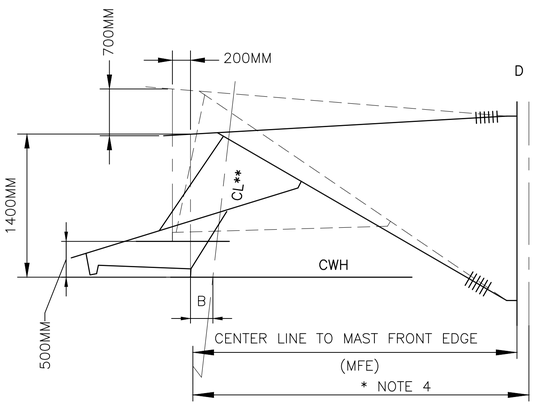
STANDARD DRAWING NO.: SD–W6020











CANTILEVER ARRANGEMENT FOR TANGENT LINE TO CURVE

CL** = CENTER LINE

ELEVATION
NTS

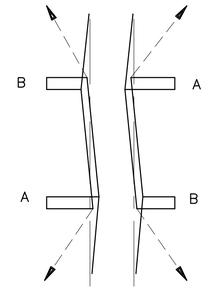
NOTES:

1. VALID FOR NON INSULATED OVERLAP.
2. STAGGER ARRANGEMENT ACC. TO SD–W6020 – 1900M <= R < 5900M PICTURE 3)
   SD–W6021– 5900M <= R < 7500M PICTURE 2)
   SD–W6018 – MIN. RADIUS 7500M PICTURE 1)
3. STEADY ARM IS ALWAYS TO BE INSTALLED WITH TENSION LOAD

* 4. DISTANCE CENTER OF POLE TO CENTER OF TRACK ABOUT 3.00M
(EDGE OF MAST TO CENTERLINE OF TRACK – 2.85M)

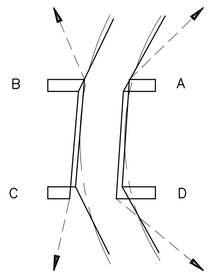
5. CONVERSION OF VALUES:

1600MM	:	62.99''	CONVERSION OF VALUES:		
1400MM	:	55.12''	7500M	:	24606.30'
700MM	:	27.56''	5900M	:	19356.96'
500MM	:	19.69''	1900M	:	6233.60'
300MM	:	11.81''	3,00M	:	9.84'
200MM	:	7.87''	2,85M	:	9.35'



PICTURE 1)
CANTILEVER CHOICE
TANGENT LINE TO CURVE 7500M

PLAN
NTS



PICTURE 2) 3)
CANTILEVER CHOICE
CURVE R < 7500M TO R = 1900M

PLAN
NTS

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CANTILEVERS IN 3–SPAN OVER–LAP STRAIGHT LINE / CURVE

CADD FILE NAME: SD–W6022

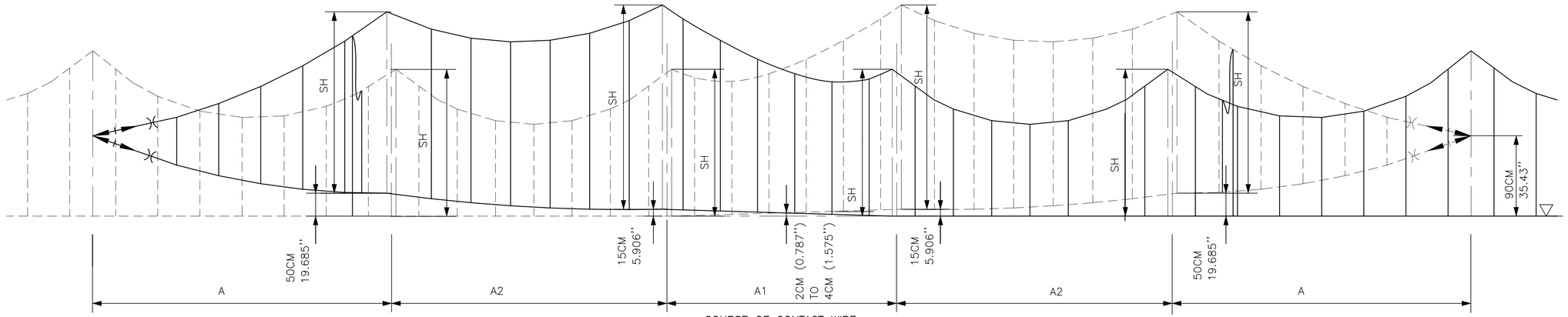
REV: EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6022

NOTES:

1. STAGGER ACC. TO SD–W6024
2. CANTILEVER ACC. TO SD–W6025



COURSE OF CONTACT WIRE
IS PARABOLIC COURSE

A2 = A1 + 32.81' (10M)

FIVE SPAN OVERLAP
ELEVATION
NTS

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

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OVERHEAD CONTACT SYSTEM

FIVE SPAN OVERLAP
VIEW TO CATENARY

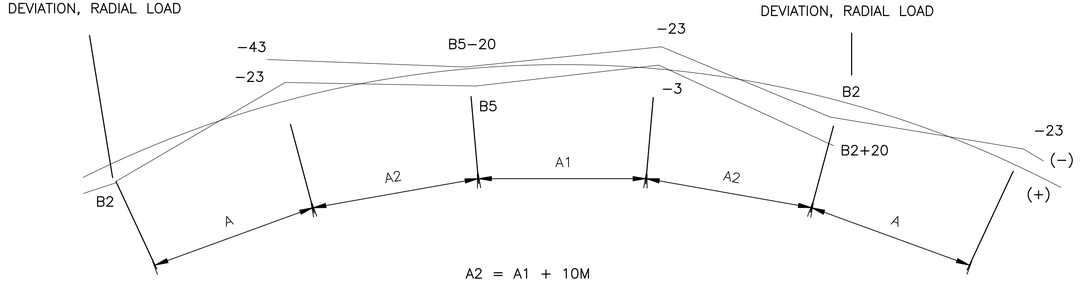
CADD FILE NAME: SD–W6023

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6023

STAGGER B IN CM



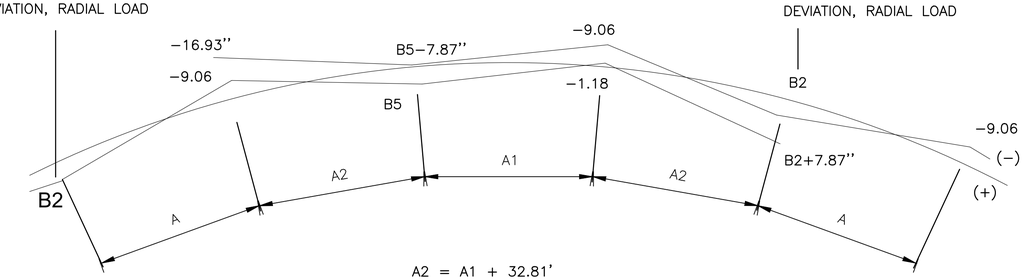
A2 = A1 + 10M

A1 [M]	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
RADIUS [M]																					
7500	–	–	–	–	–	–	–	–	–	–	–	–	+23	+23	+23	+23	+23	+23	+23	+23	+23
7000	–	–	–	–	–	–	–	–	–	–	–	–	–	+23	+23	+23	+23	+23	+23	+23	+23
6500	—	–	–	−1	−1	−2	−2	−3	−3	–	–	–	–	—	+23	+23	+23	+23	+23	+23	+23
6000	—	−1	−1	−2	−2	−3	−3	−3	−3	−3	−3	−3	—	—	—	—	+23	+23	+23	+23	+23
5500	−2	−2	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	–	–	+23	+23	+23
5000	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	+23	+23
4900	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	+23
4800	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	+23
4700	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	+23
4600	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
4500	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
4400	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
4300	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
4200	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
4100	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
4000	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3900	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3800	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3700	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3600	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3500	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3400	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3300	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3200	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3100	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
3000	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
2900	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
2800	–	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
2700	–	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
2600	–	–	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3
2500	–	–	–	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3	−3

B5 IN CM

NOTE:
7500M (24606.3')

STAGGER B IN INCH ('')



A2 = A1 + 32.81'

A1 [']	196.9	193.6	190.3	187	183.7	180.5	177.2	173.9	170.6	167.3	164.0	160.8	157.5	154.2	150.9	147.6	144.4	141.1	137.8	134.5	131.2
RADIUS [']																					
24606.30	–	–	–	–	–	–	–	–	–	–	–	–	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06
22965.88	–	–	–	–	–	–	–	–	–	–	–	–	–	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06
21325.46	–	–	–	−0.39	−0.39	−0.79	−0.79	−1.18	−1.18	–	–	–	–	–	9.06	9.06	9.06	9.06	9.06	9.06	9.06
19685.04	–	−0.39	−0.39	−0.79	−0.79	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	–	–	–	–	9.06	9.06	9.06	9.06	9.06
18044.62	−0.79	−0.79	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	–	–	9.06	9.06	9.06
16404.20	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	9.06	9.06
16076.11	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
15748.03	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
15419.95	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
15091.86	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
14763.78	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
14435.69	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
14107.61	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
13779.53	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
13451.44	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
13123.36	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
12795.28	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
12467.19	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
12139.11	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
11811.02	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
11482.94	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
11154.86	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
10826.77	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
10498.69	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
10170.60	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
9842.52	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
9514.44	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
9186.35	–	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
8858.27	–	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
8530.2	–	–	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18
8202.1	–	–	–	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18	−1.18

B5 IN INCH ('')

B5 IN INCH ('')

STAGGER TABLE FOR FIVE SPAN OVERLAP

NOTES:

1. CALCULATED WITH ALLOWED WIND DEVIATION: 30CM (11.81'')
2. MINIMUM RADIAL FORCE: 80 N (17.98 LBF)
3. CATENARY VIEW ACC. TO SD−W6023
4. CANTILEVER ACC. TO SD−W6025

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

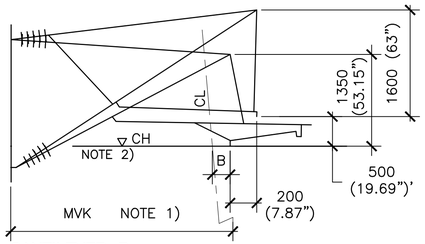
ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

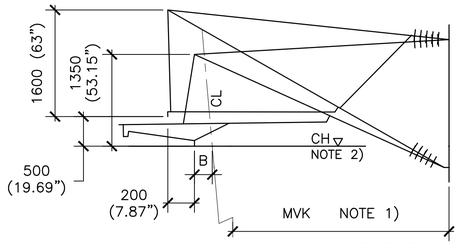
FIVE SPAN OVERLAP
FOR R < 7500M (24606.3')

CADD FILE NAME: SD−W6024
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD−W6024

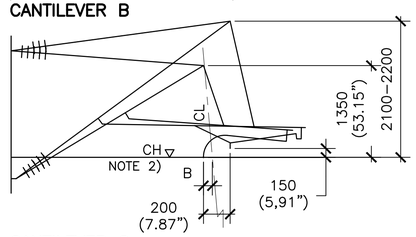
CANTILEVER A



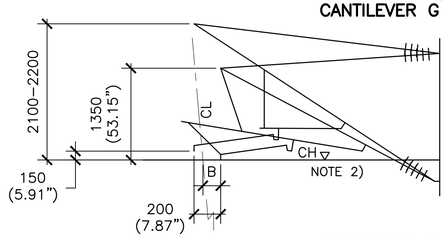
CANTILEVER H



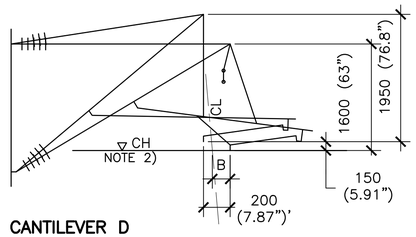
CANTILEVER B



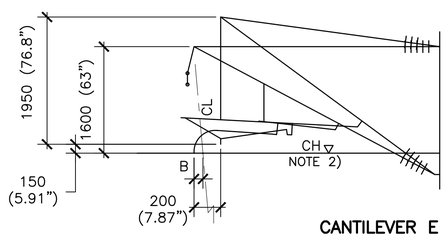
CANTILEVER G



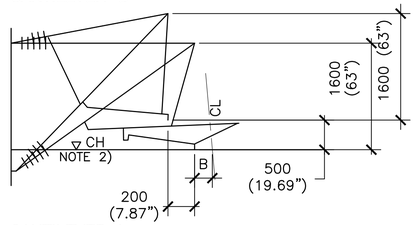
CANTILEVER C



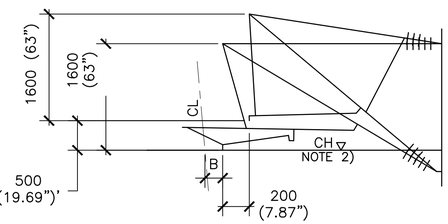
CANTILEVER F



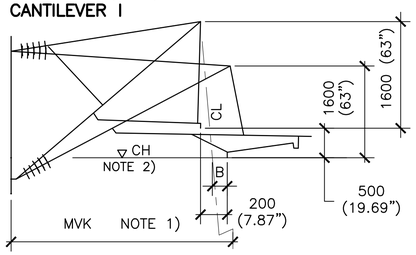
CANTILEVER D



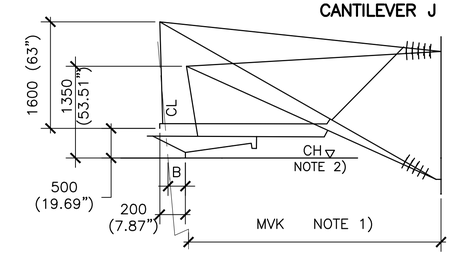
CANTILEVER E



CANTILEVER I



CANTILEVER J



CANTILEVER ARRANGEMENT FOR TANGENT LINE TO CURVE

ELEVATION

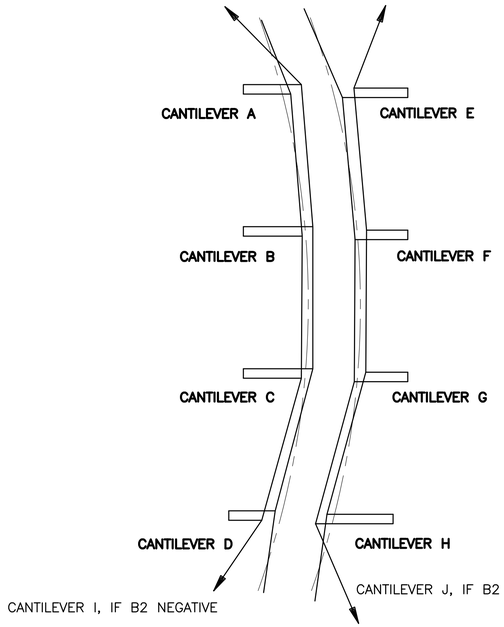
NTS

NOTES:

DEVIATIONS OF SYSTEM HEIGHT IN CURVE ARE POSSIBLE
STEADY ARM IS ALWAYS TO BE INSTALLED WITH MECH. TENSION
CATENARY VIEW ACC. TO SD–W6023
STAGGER ACC. TO SD–W6024

1) MVK: SURFACE OF MAST TO CENTER LINES

2) CH: CONTACT WIRE HEIGHT



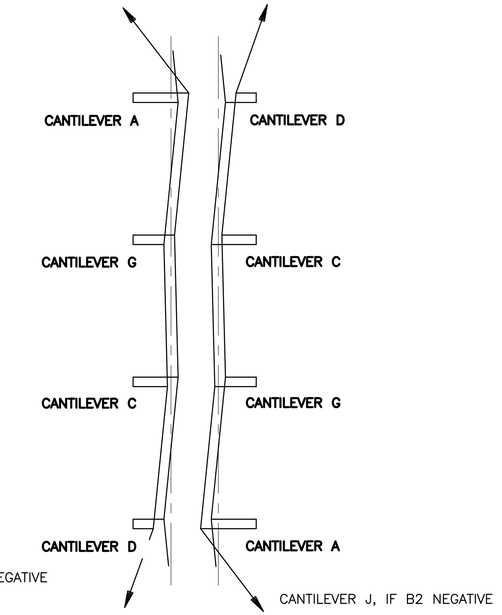
TO BE USED FOR
B5 = –1 CM (0.39")
TO –3 CM (1.18")

B2 ACC. TO DETAIL DESIGN

CANTILEVER CHOICE FIVE SPAN OVERLAP

PLAN

NTS



TO BE USED FOR
B5 = +23 CM (9.06")

B2 ACC. TO DETAIL DESIGN

CANTILEVER CHOICE FIVE SPAN OVERLAP

PLAN

NTS

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

FIVE SPAN OVERLAP CANTILEVER

CADD FILE NAME: SD–W6025

REV: | EDITION: SECOND

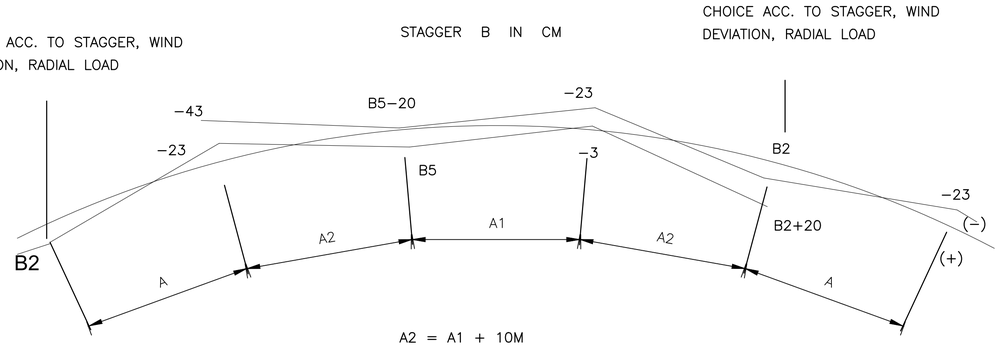
SCALE: NTS

STANDARD DRAWING NO.: SD–W6025

NOTES:

1. CALCULATED WITH ALLOWED WIND DEVIATION: 30CM (11.81'')
2. MINIMUM RADIAL FORCE: 80 N (17.98 LBF)
3. CATENARY VIEW ACC. TO SD-W6023
4. CANTILEVER ACC. TO SD-W6025
5. FOR R <= 1800M (5905.5') FIVE SPAN OVERLAP BECOMES ABSOLUTELY NECESSARY

STAGGER B IN CM

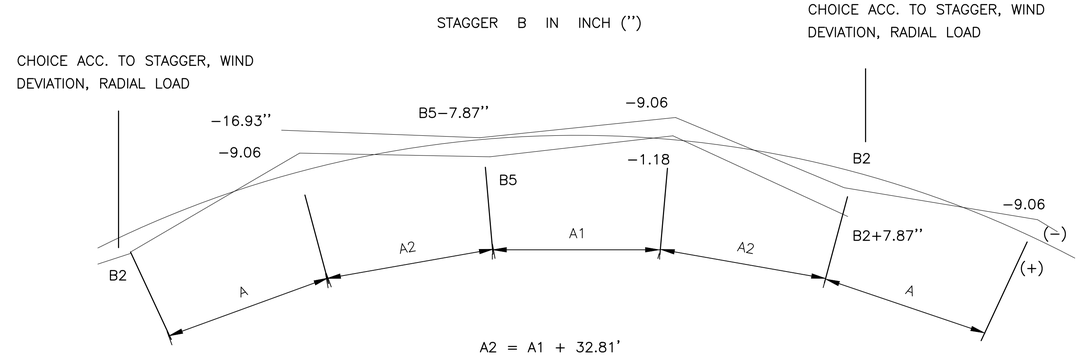


A1 [M]	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36
RADIUS [m]																									
2400	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
2300	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
2200	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
2100	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
2000	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
1900	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
1800	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
1700	–	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
1600	–	–	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3				
1500	–	–	–	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3	-3	-3				
1400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3	-3				
1300	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3	-3				
1200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3	-3	-3	-3	-3				
1100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3	-3	-3				
1000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3				
900	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3	–	–
800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-3

B5 IN CM

B5 IN CM

STAGGER B IN INCH ('')



A1 [']	196.9	193.6	190.3	187	183.7	180.5	177.2	173.9	170.6	167.3	164.0	160.8	157.5	154.2	150.9	147.6	144.4	141.1	137.8	134.5	131.2	128	124.7	121.4	118.1
RADIUS [']																									
7874.0	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
7545.93	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
7217.85	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
6889.76	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
6561.68	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
6233.60	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
5905.51	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
5577.43	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
5249.34	–	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
4921.26	–	–	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
4593.18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
4265.09	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18	-1.18				
3937.00	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18	-1.18				
3608.92	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18	-1.18	-1.18	-1.18				
3280.84	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18				
2952.76	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18	–	–
2624.67	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-1.18

B5 IN INCH ('')

B5 IN INCH ('')

STAGGER TABLE FOR FIVE SPAN OVERLAP

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

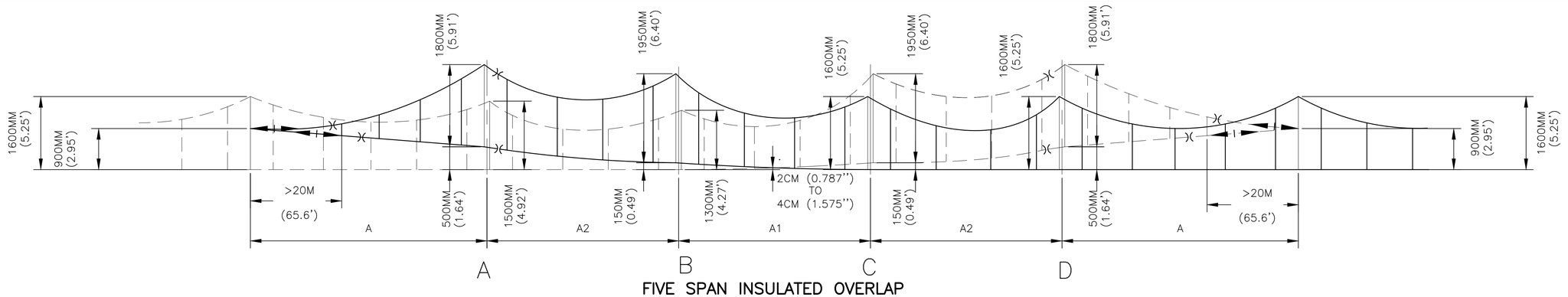
FIVE SPAN OVERLAP
FOR R < 2500M (8202.1')

CADD FILE NAME: SD-W6026

REV: | EDITION: SECOND

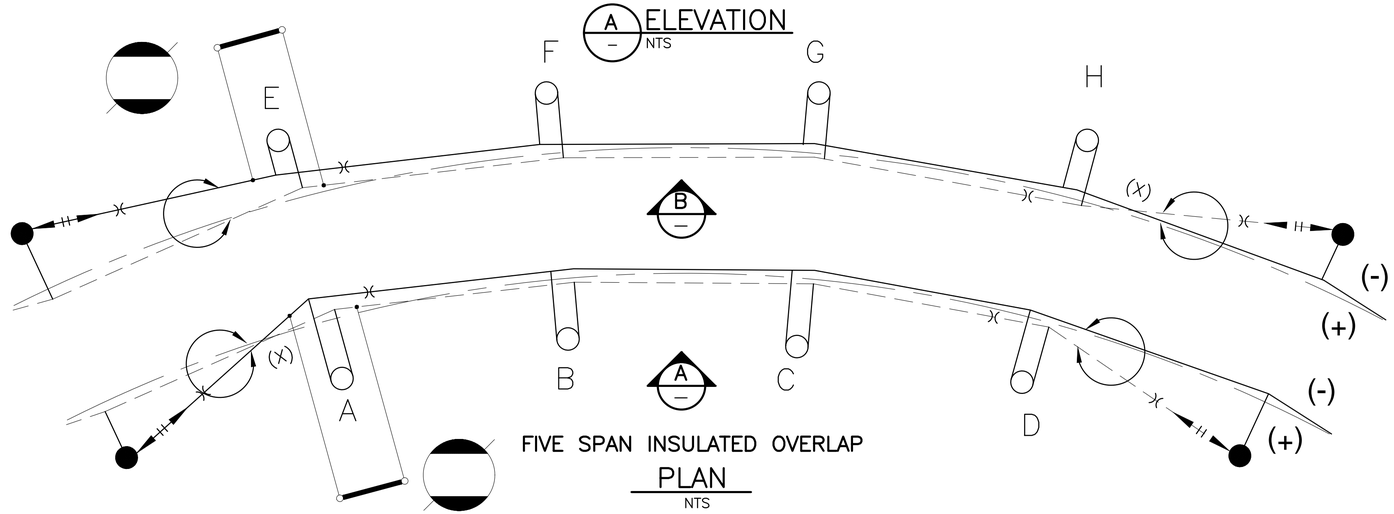
SCALE: NTS

STANDARD DRAWING NO.: SD-W6026



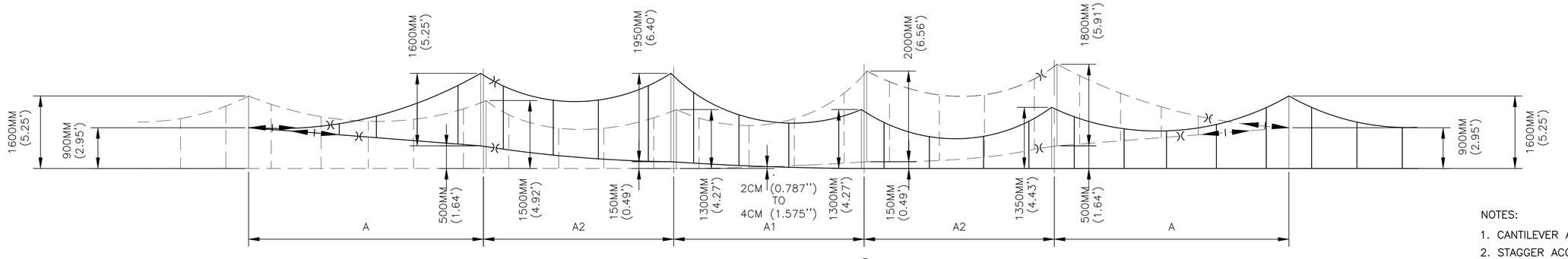
FIVE SPAN INSULATED OVERLAP

A ELEVATION
– NTS



FIVE SPAN INSULATED OVERLAP

PLAN
NTS



FIVE SPAN INSULATED OVERLAP

B ELEVATION
– NTS

NOTES:

1. CANTILEVER ACC. TO SD–W6029
2. STAGGER ACC. TO SD–W6028

NOTE:

DIMENSION: MM / FEET

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

FIVE SPAN INSULATED OVERLAP
R < 1000M (3280.8')

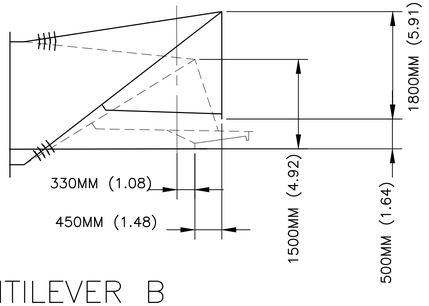
CADD FILE NAME: SD–W6027

REV: | EDITION: SECOND

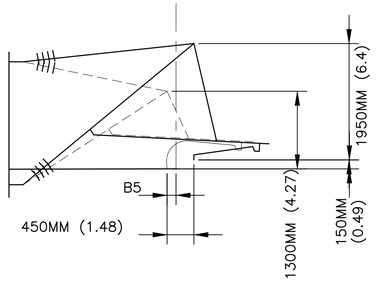
SCALE: NTS

STANDARD DRAWING NO.: SD–W6027

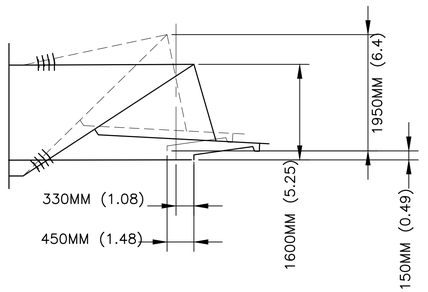
CANTILEVER A



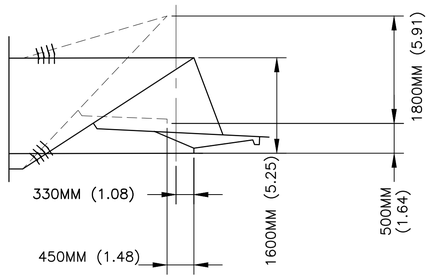
CANTILEVER B



CANTILEVER C



CANTILEVER D

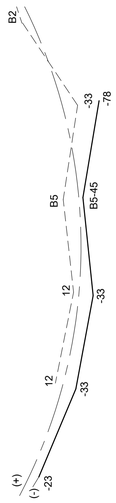


CANTILEVER A

CANTILEVER B

CANTILEVER C

CANTILEVER D



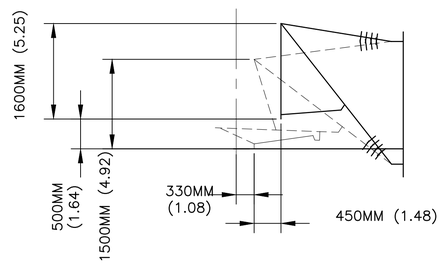
CANTILEVER E

CANTILEVER F

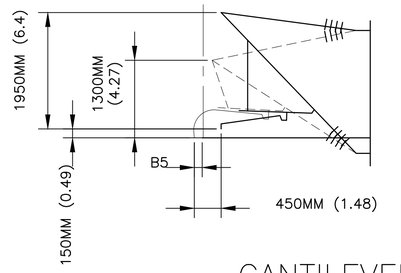
CANTILEVER G

CANTILEVER H

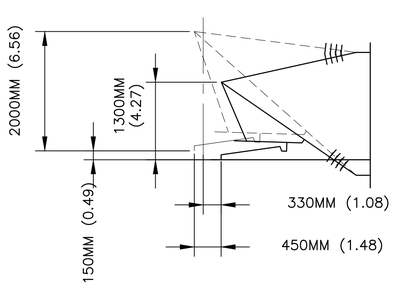
CANTILEVER E



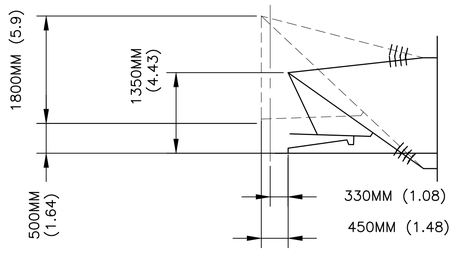
CANTILEVER F



CANTILEVER G



CANTILEVER H



NOTES:

1. INSULATED OVERLAP ACC. TO SD-W6027
2. STAGGER ACC. TO SD-W6028

NOTES:

DIMENSION: MM / [FEET]

CANTILEVER ARRANGEMENT FOR FIVE SPAN INSULATED OVERLAP

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

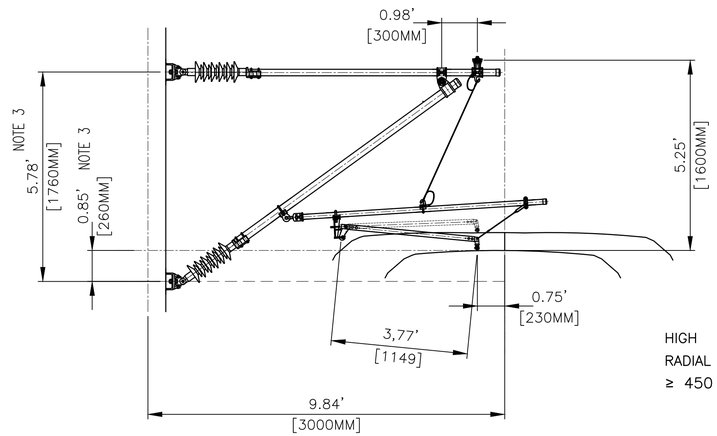
FIVE SPAN INSULATED OVERLAP
CANTILEVER R < 1000
(CANTILEVER R < 3280.8')

CADD FILE NAME:	SD-W6029
REV:	EDITION: SECOND
SCALE:	NTS
STANDARD DRAWING NO.:	SD-W6029

NOTES:

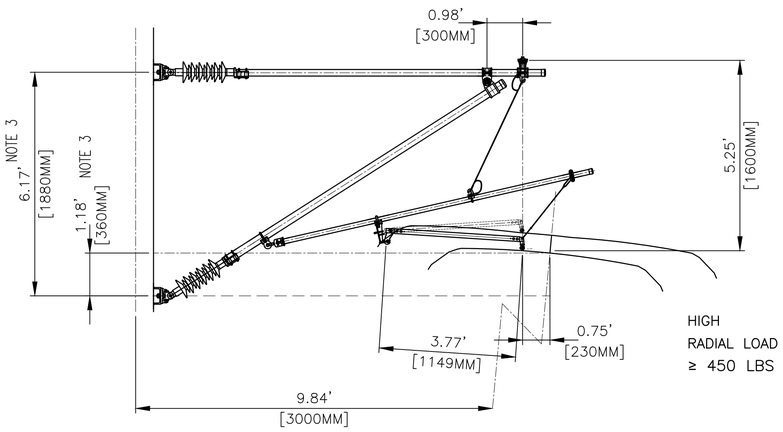
1. DIMENSION: FEET / [MM]
2. STANDARD LENGTH OF STEADY ARM: 1150MM / 3.773 FEET
3. DEVIATIONS OF HEIGHTS MAY OCCUR

STRAIGHT TRACK

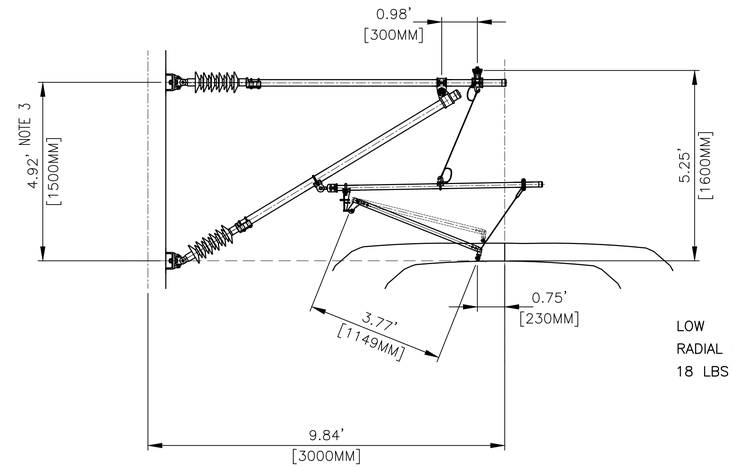


HIGH
RADIAL LOAD
≥ 450 LBS [2000 N]

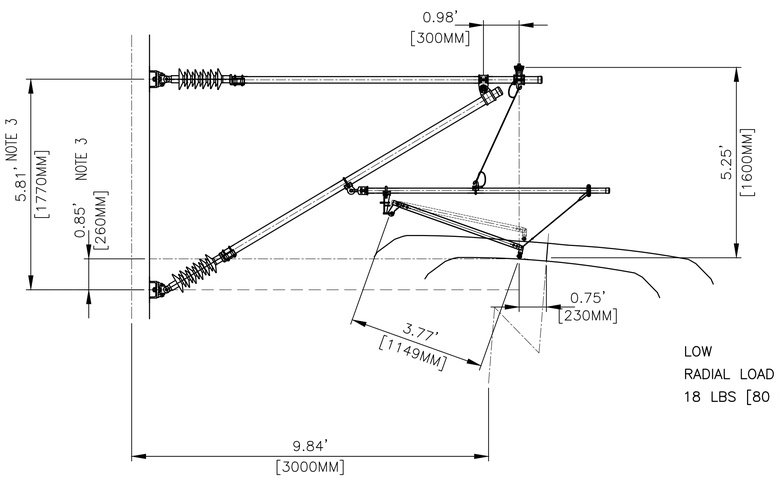
CURVE TRACK



HIGH
RADIAL LOAD
≥ 450 LBS [2000 N]



LOW
RADIAL LOAD
18 LBS [80 N] TO 449 LBS [1997 N]



LOW
RADIAL LOAD
18 LBS [80 N] TO 449 LBS [1997 N]

CANTILEVER GEOMETRY / STEADY ARM LENGTH FOR STRAIGHT TRACK
ELEVATION
NTS

CANTILEVER GEOMETRY / STEADY ARM LENGTH FOR CURVED TRACK
ELEVATION
NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

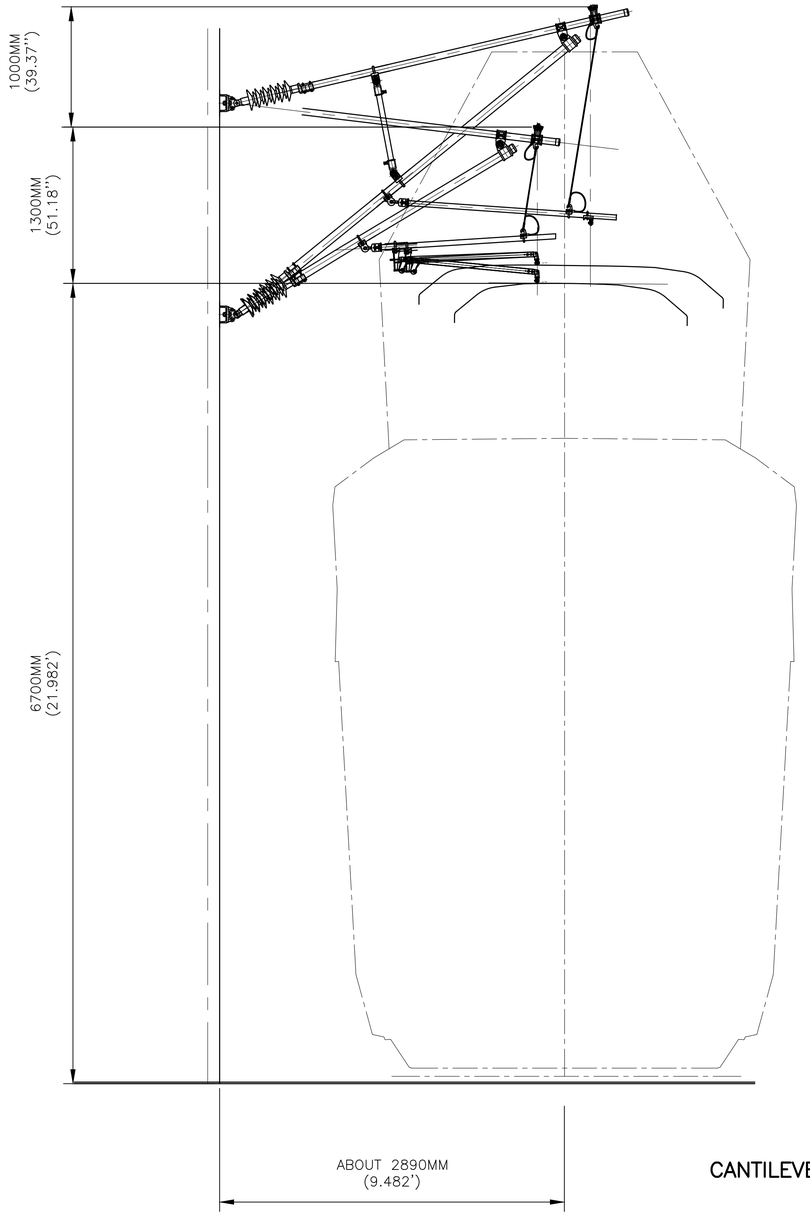
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

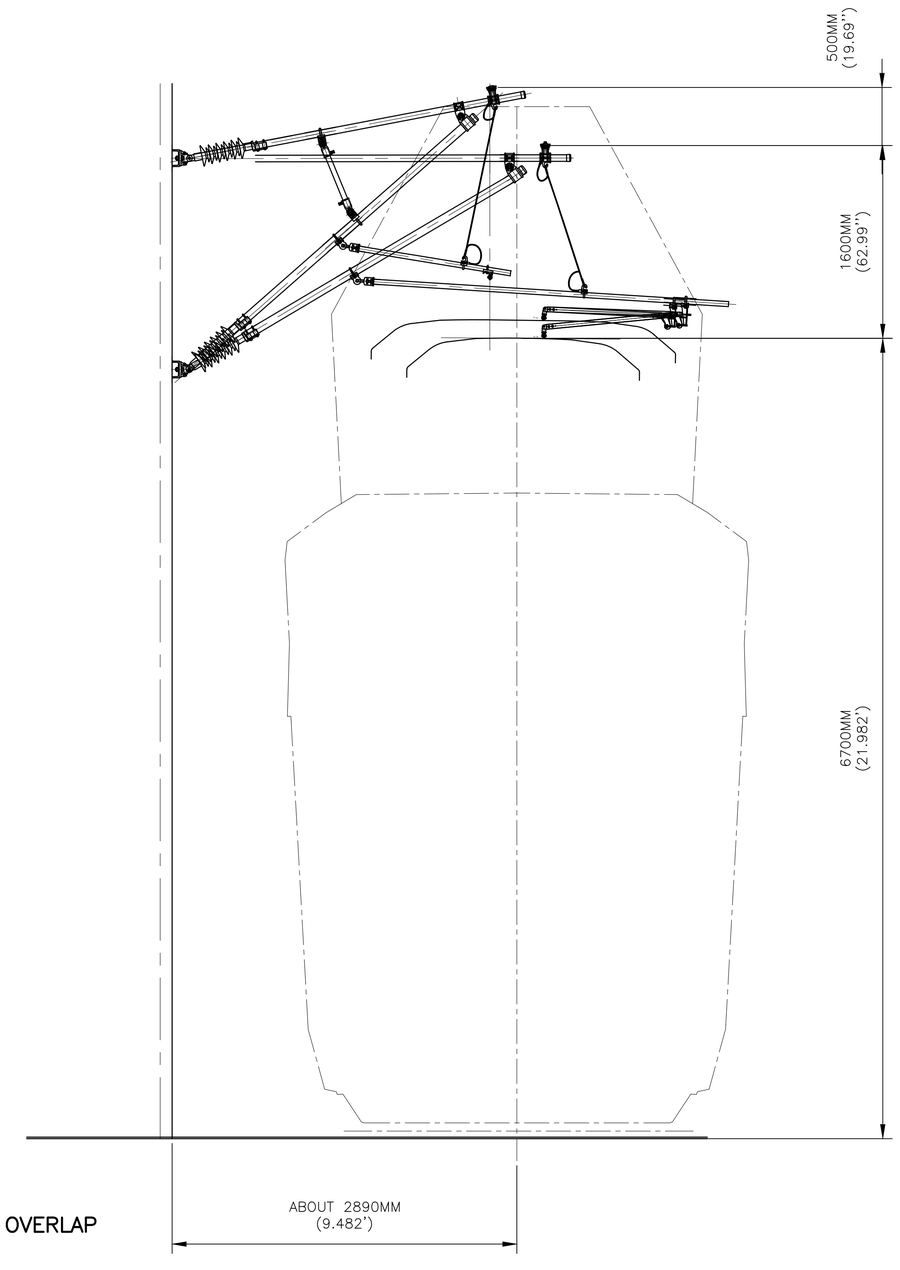
OVERHEAD CONTACT SYSTEM

LENGTH OF STEADY ARM
AND CANTILEVER GEOMETRY

CADD FILE NAME: SD-W6100
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD-W6100



NOTE:
TO BE USED FOR STRAIGHT LINE AND LARGE CURVE



CANTILEVER ARRANGEMENT IN 3–SPAN INSULATED OVERLAP
ELEVATION
NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

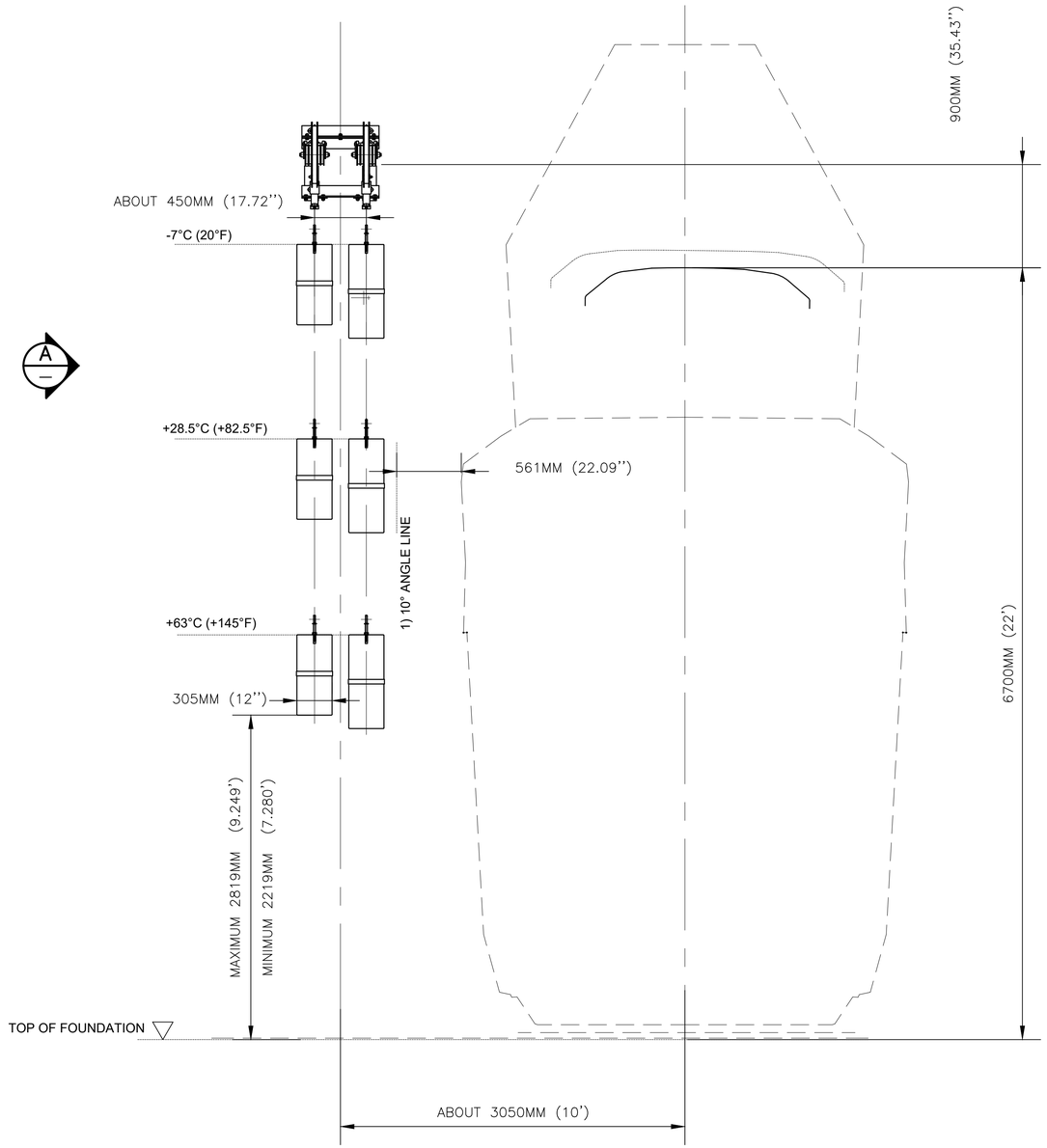
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER ARRANGEMENT FOR
3–SPAN INSULATED OVERLAP

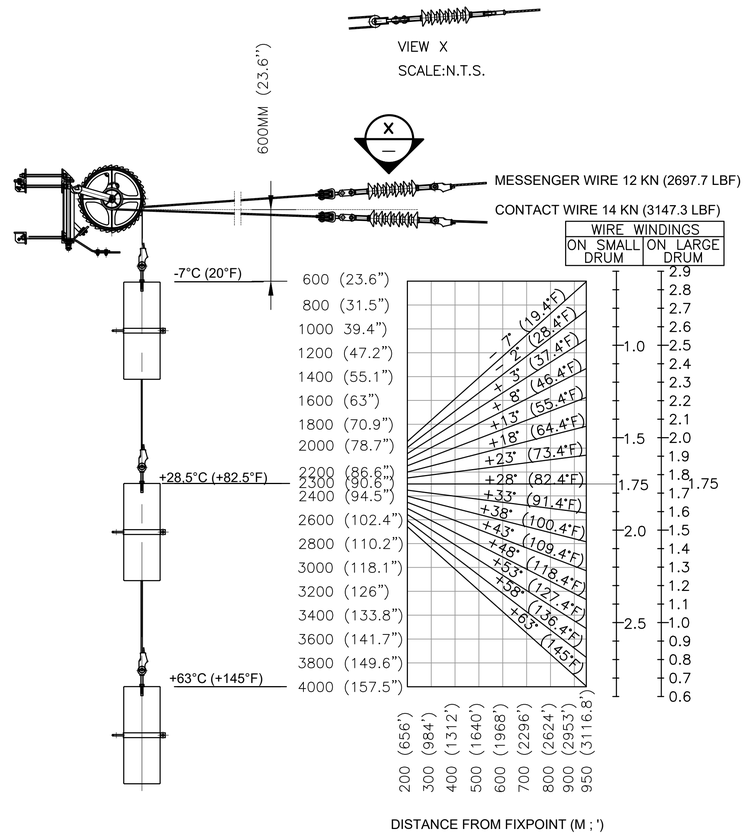
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REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6101



TENSIONING WHEEL DEVICE

ELEVATION

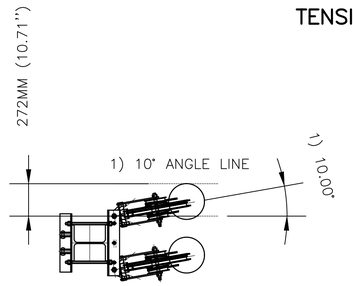
NTS



TENSIONING WHEEL DEVICE ADJUSTMENT

A — ELEVATION

NTS



TENSIONING WHEEL DEVICE ROTATION

PLAN

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

ADJUSTMENT OF WHEEL TENSIONING DEVICE

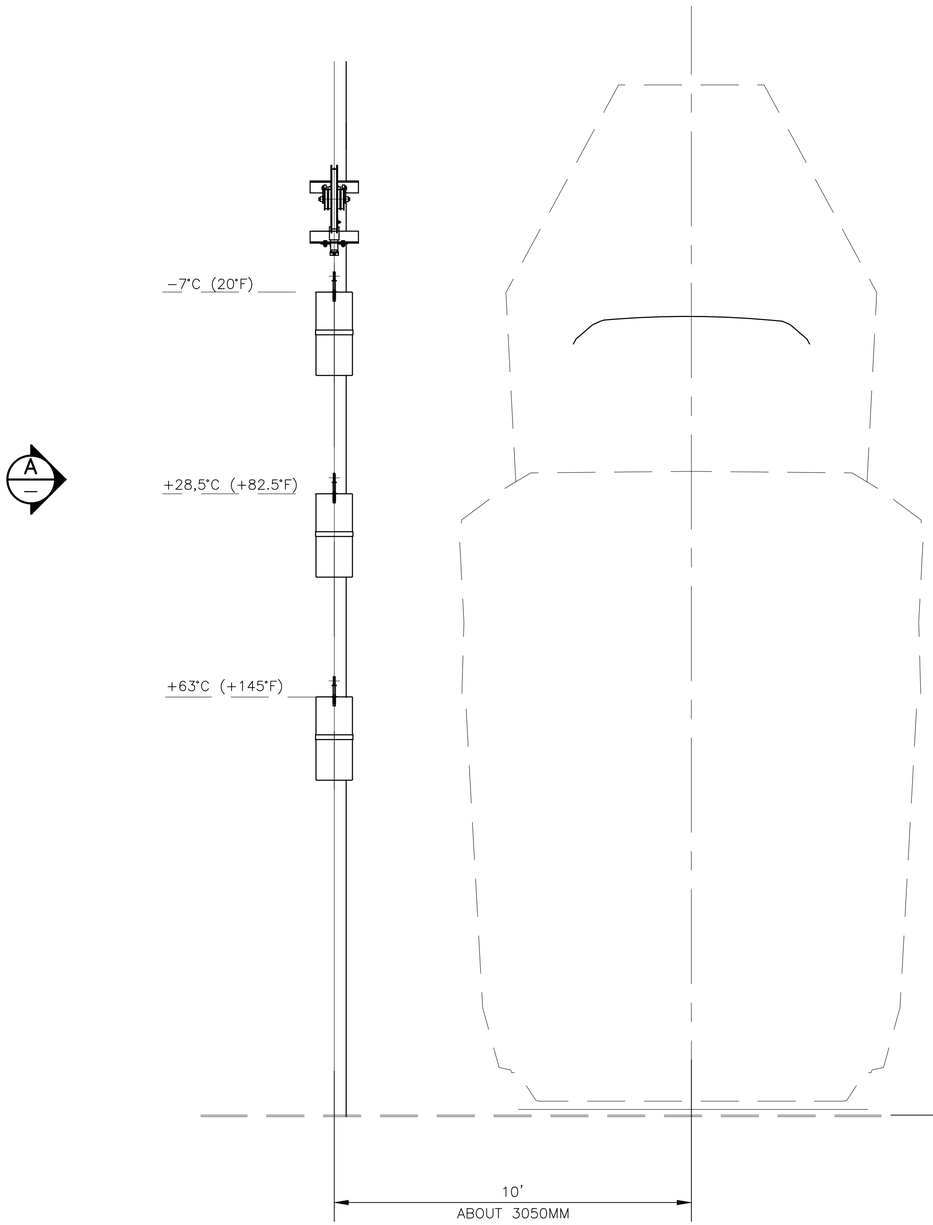
BW–01

CADD FILE NAME: SD–W6106

REV: | EDITION: SECOND

SCALE: NTS

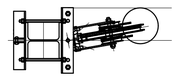
STANDARD DRAWING NO.: SD–W6106



SINGLE WHEEL TENSIONING DEVICE

ELEVATION

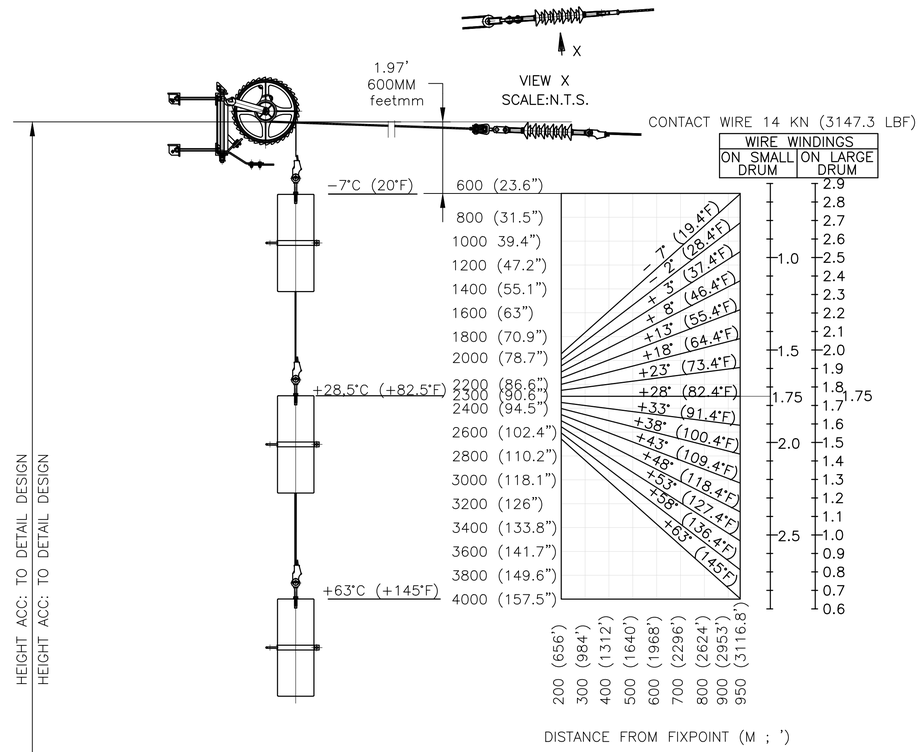
NTS



SINGLE WHEEL TENSIONING DEVICE ROTATION

PLAN

NTS



SINGLE WHEEL TENSIONING DEVICE ADJUSTMENT

A – ELEVATION

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

ADJUSTMENT OF WHEEL TENSIONING DEVICE – SINGLE CW

BW–02

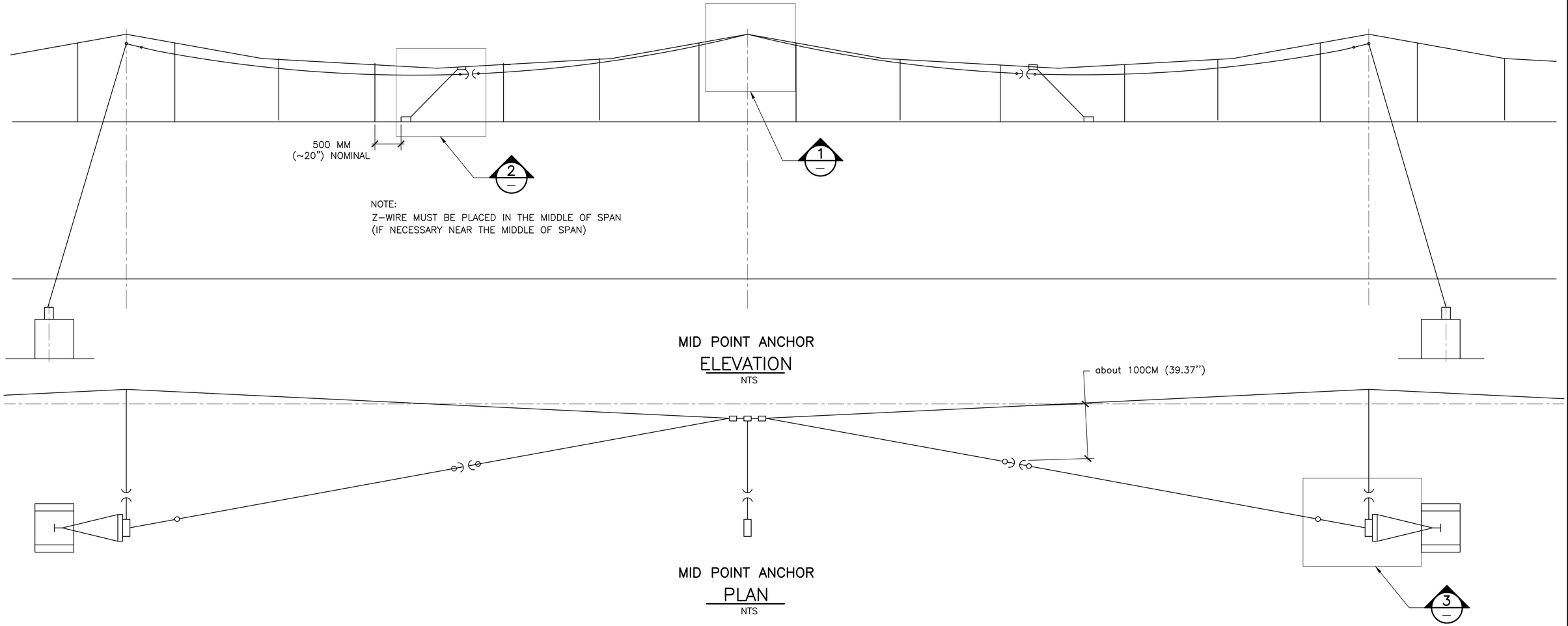
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REV:

EDITION: SECOND

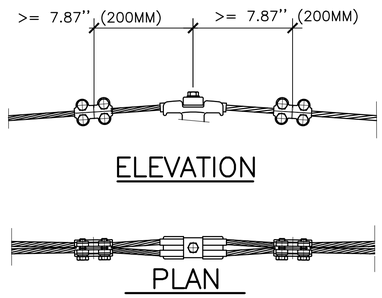
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STANDARD DRAWING NO.: SD–W6107

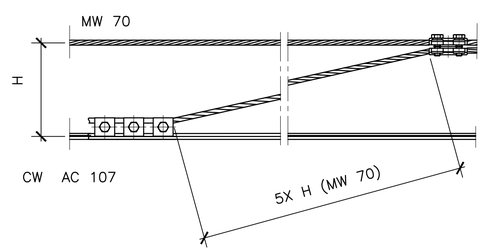


MID POINT ANCHOR
ELEVATION
NTS

MID POINT ANCHOR
PLAN
NTS



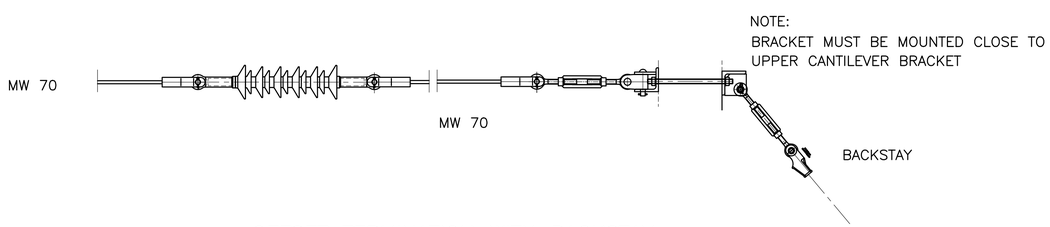
MESSENGER WIRE AREA
1 DETAIL
NTS



Z-WIRE ARRANGEMENT
2 DETAIL
NTS

NOTE:

ASSEMBLY DRAWING: SEE DWG SD-W6277 FOR BOM



OFFSET TERMINATION WITH BACKSTAY
3 DETAIL
NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

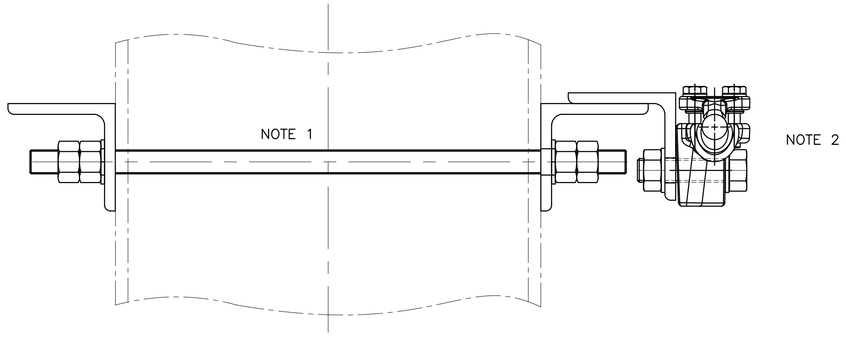
MID POINT ANCHOR

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REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6108



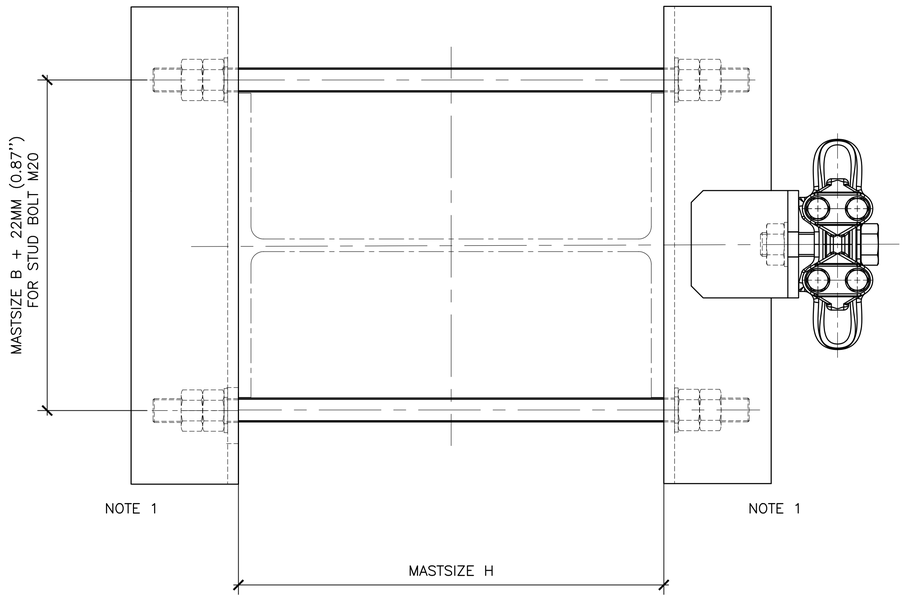
STATIC WIRE SUPPORT

ELEVATION

NTS

NOTES:

1. LENGTH OF PARTS ACC. TO MASTSIZE
2. ALTERNATE MOUNTING OF SW CLAMP DIRECTLY TO THE POLE WITH A PRE DRILLED HOLE IN THE FLANGE



VIEW FROM THE TOP

PLAN

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

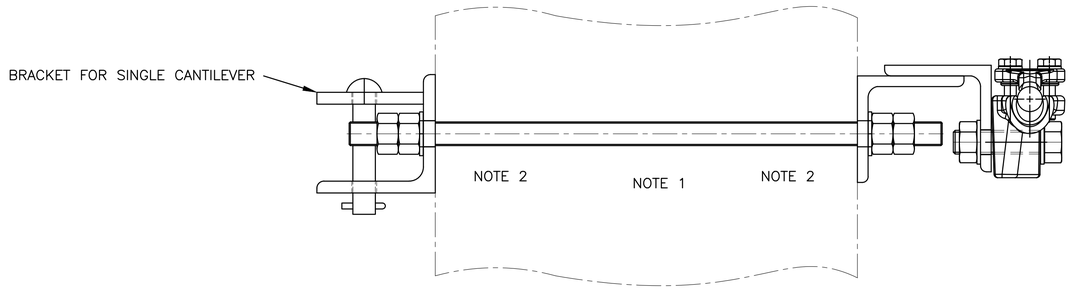
SINGLE SUPPORT
FOR STATIC WIRE

CADD FILE NAME: SD-W6112

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6112



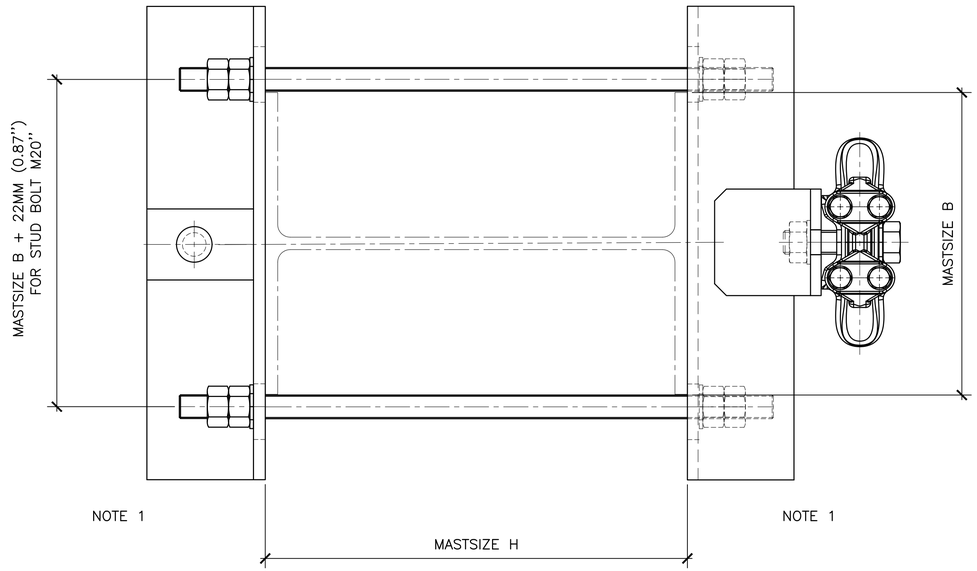
NOTES:

1. LENGTH OF PARTS ACC. TO MASTSIZE
2. LINDAPTER CLAMPS FOR BRACKET ATTACHMENTS CAN BE USED DESIGN OF BRACKETS ACCORDING TO LINDAPTER REQUIREMENTS
3. ON ALL FLANGE TYPE POLE, SW CLAMP IS DRILLED INTO THE FLANGES

STATIC WIRE / CANTILEVER SUPPORT COMBINATION

ELEVATION

NTS



BRACKET VIEW FROM THE TOP

PLAN

NTS

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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SUPPORT FOR STATIC WIRE / CANTILEVER COMBINATION

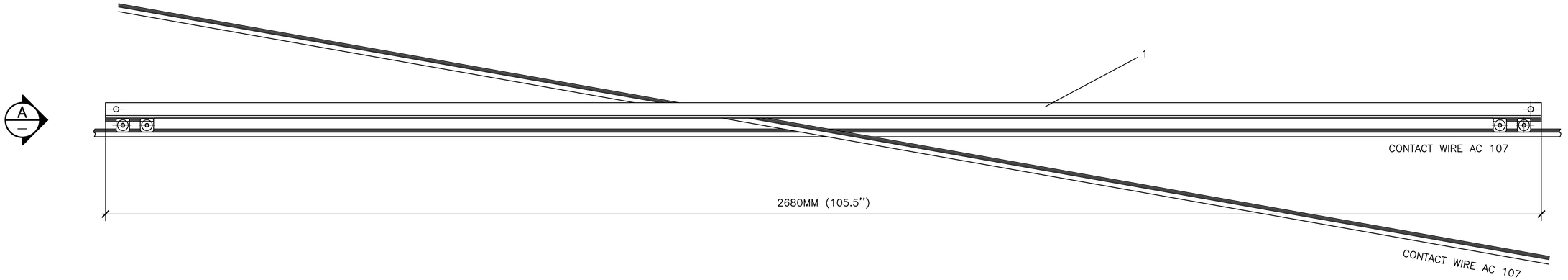
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REV:

EDITION: SECOND

SCALE: NTS

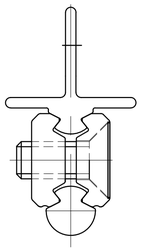
STANDARD DRAWING NO.: SD-W6113



CROSSING OF TWO SINGLE CONTACT WIRES

ELEVATION

NTS



PROFILE OF CROSSING

A – ELEVATION

NTS

B	A					
–	1	CW CROSSING		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

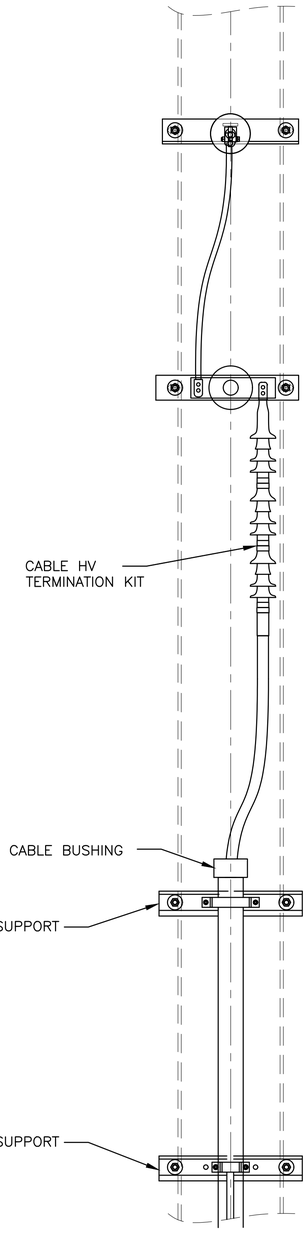
CROSSING OF TWO
SINGLE CONTACT WIRES

CADD FILE NAME: SD–W6115

REV: | EDITION: SECOND

SCALE: NTS

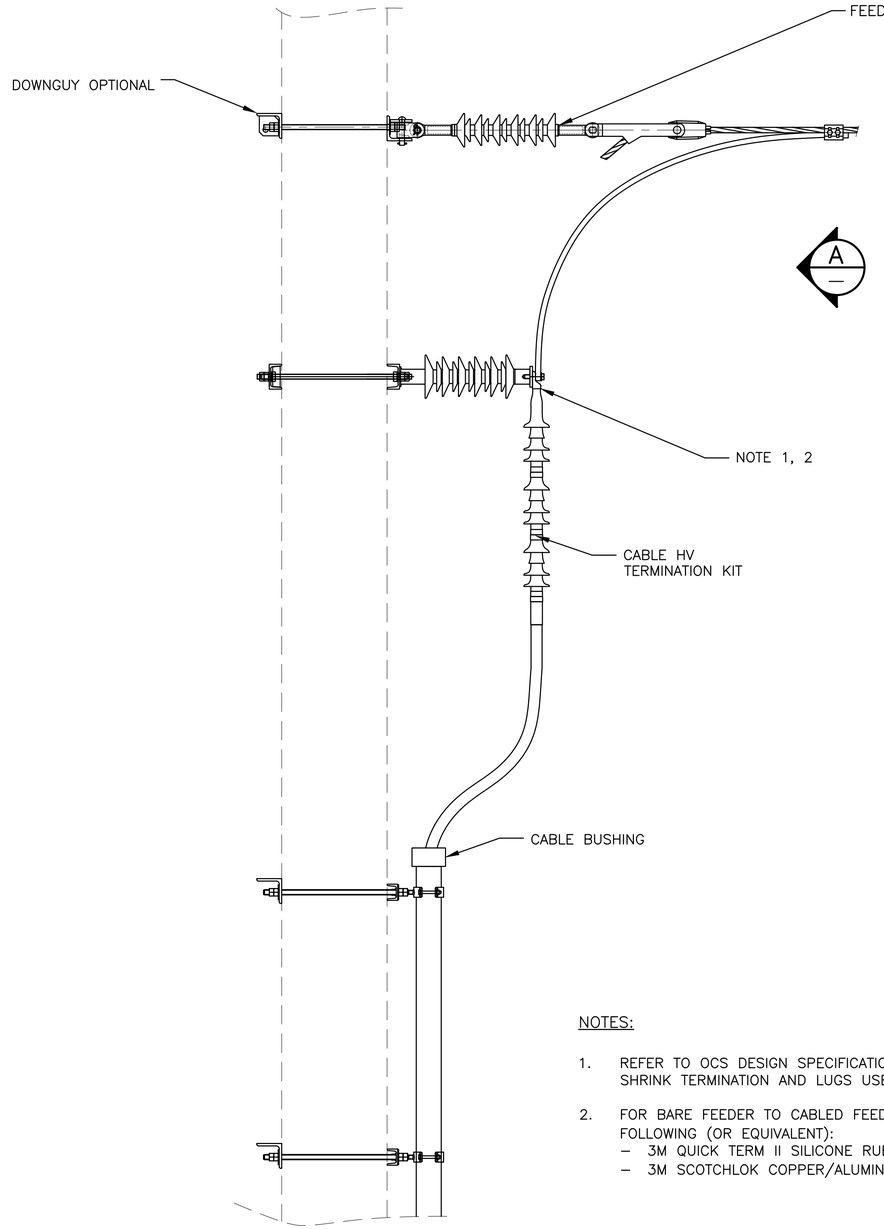
STANDARD DRAWING NO.: SD–W6115



FRONT SIDE

A — ELEVATION

NTS



FEEDER ARRANGEMENT WITH HV CABLE TERMINATION CONNECTION

ELEVATION

NTS

NOTES:

1. REFER TO OCS DESIGN SPECIFICATION 34 30 80 FOR HV CABLE COLD SHRINK TERMINATION AND LUGS USED.
2. FOR BARE FEEDER TO CABLED FEEDER WIRE TRANSITION, USE THE FOLLOWING (OR EQUIVALENT):
   - 3M QUICK TERM II SILICONE RUBBER TERMINATION KIT 4605, 46 KV
   - 3M SCOTCHLOK COPPER/ALUMINUM COMPRESSION LUGS, 40000 SERIES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

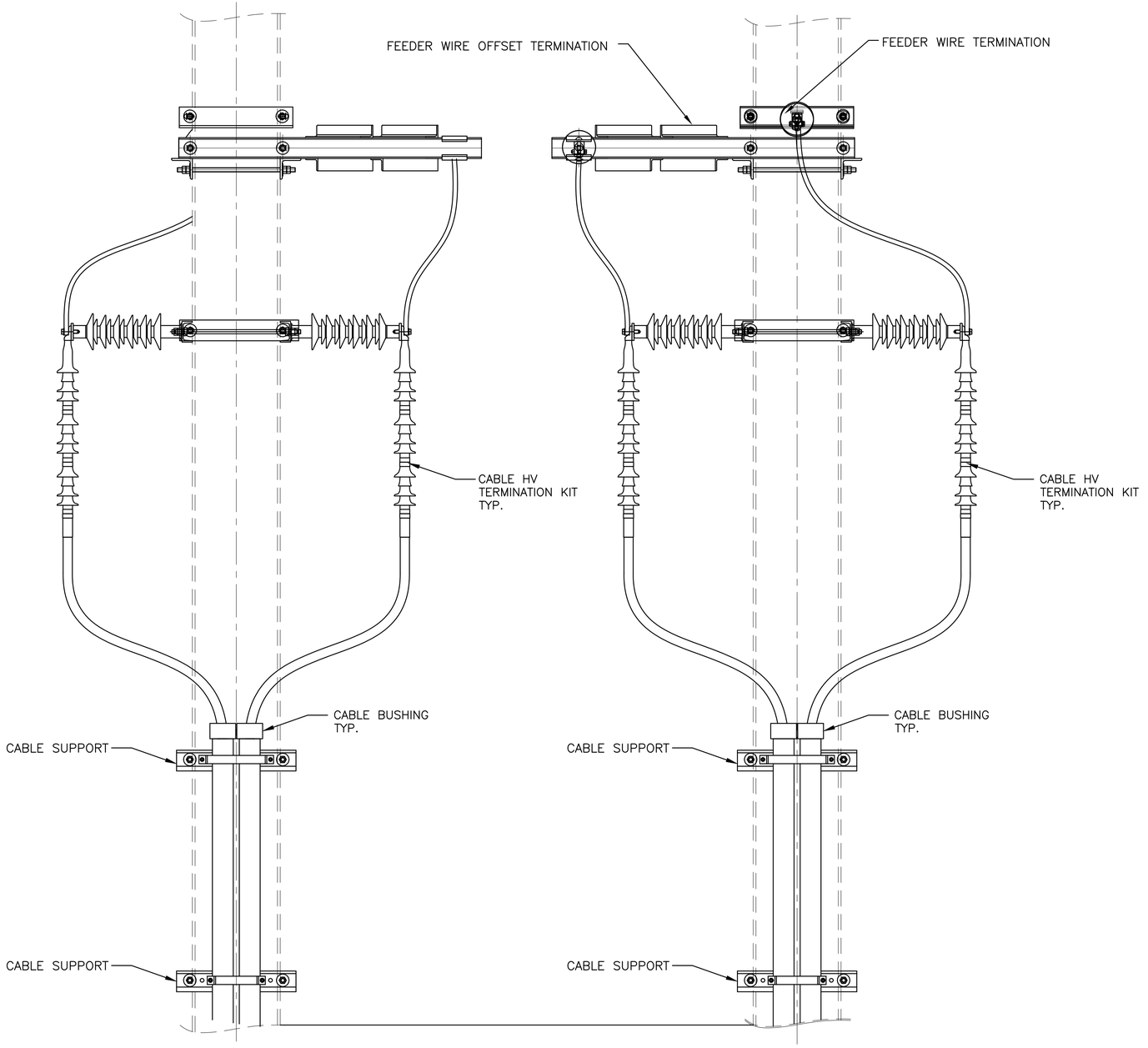
FEEDER ARRANGEMENT
AT RECTANGULAR MAST WITH
CABLE PLUG IN CONNECTION PH–01

CADD FILE NAME: SD–W6118

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6118

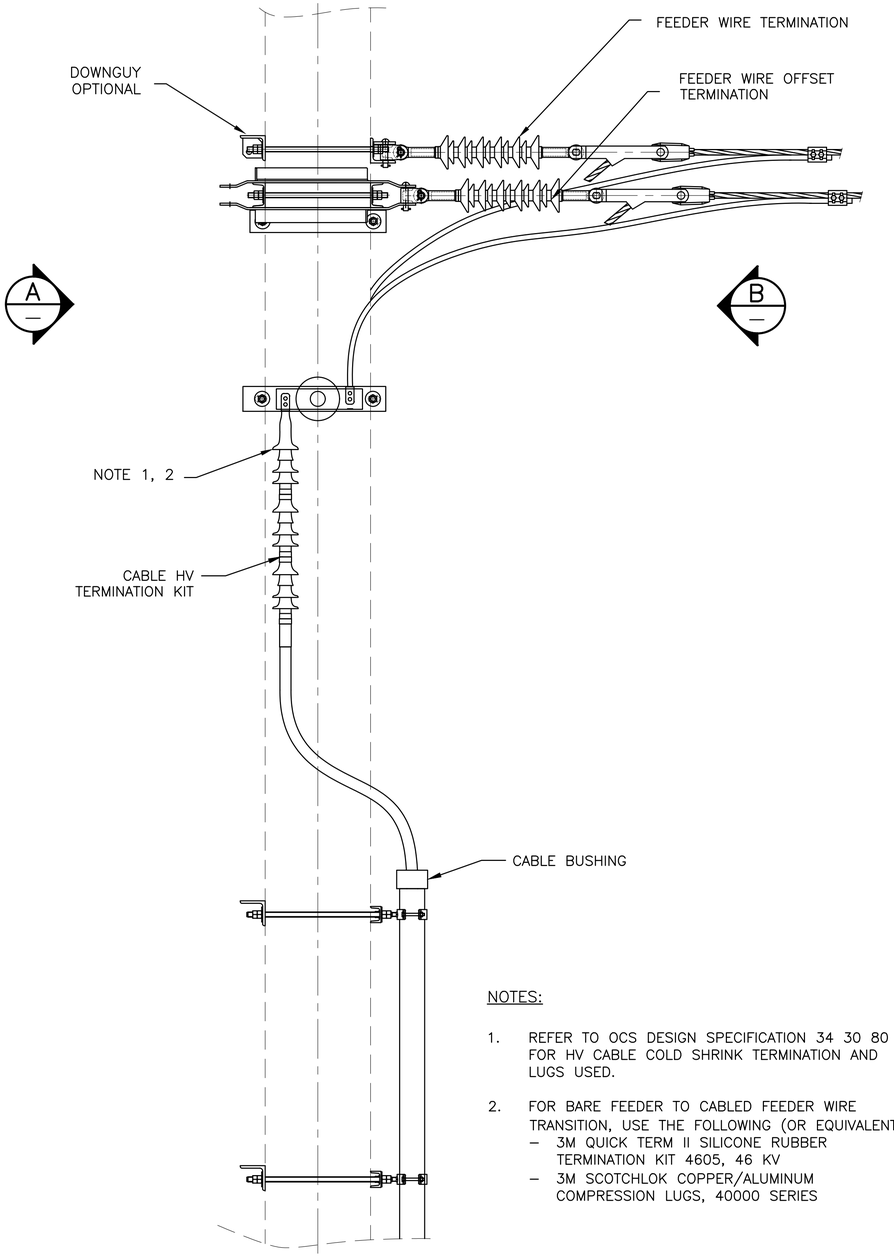


BACK SIDE

A ELEVATION
– NTS

FRONT SIDE

B ELEVATION
– NTS



NOTES:

1. REFER TO OCS DESIGN SPECIFICATION 34 30 80 FOR HV CABLE COLD SHRINK TERMINATION AND LUGS USED.
2. FOR BARE FEEDER TO CABLED FEEDER WIRE TRANSITION, USE THE FOLLOWING (OR EQUIVALENT):
   - 3M QUICK TERM II SILICONE RUBBER TERMINATION KIT 4605, 46 KV
   - 3M SCOTCHLOK COPPER/ALUMINUM COMPRESSION LUGS, 40000 SERIES

DOUBLE FEEDER ARRANGEMENT WITH HV CABLE TERMINATION CONNECTIONS

ELEVATION
NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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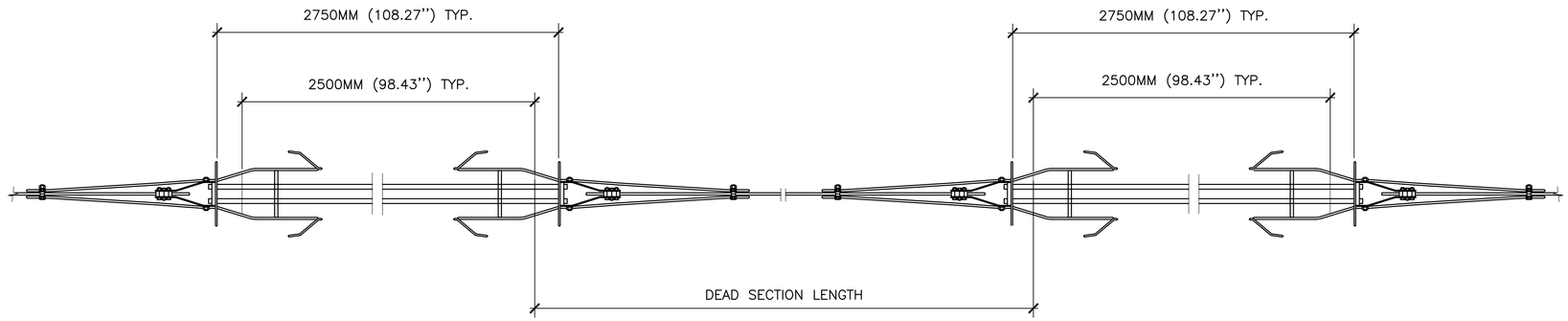
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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

DOUBLE FEEDER ARRANGEMENT AT RECTANGULAR MAST WITH CABLE PLUG IN CONNECTION PH–02

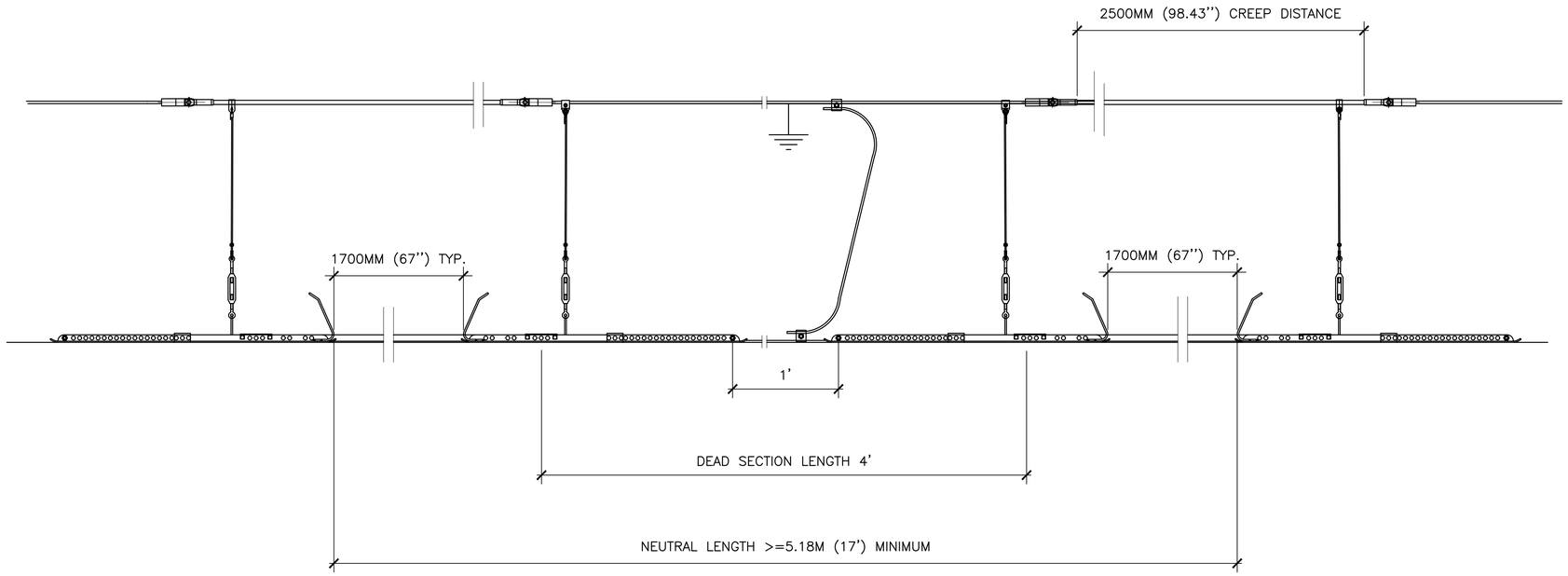
CADD FILE NAME:	SD–W6119
REV:	EDITION: SECOND
SCALE:	NTS
STANDARD DRAWING NO.:	SD–W6119



PHASE BREAK 25 KV

PLAN

NTS



PHASE BREAK 25 KV

ELEVATION

NTS

NOTES:

1. ALL DIMENSIONS ARE MILLIMETERS, UNLESS NOTED OTHERWISE.
2. MASS = 39kg (85.98 POUND) FOR ONE SECTION INSULATOR
3. BREAKING LOAD MIN.: 120 kN (26977 LBF)

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

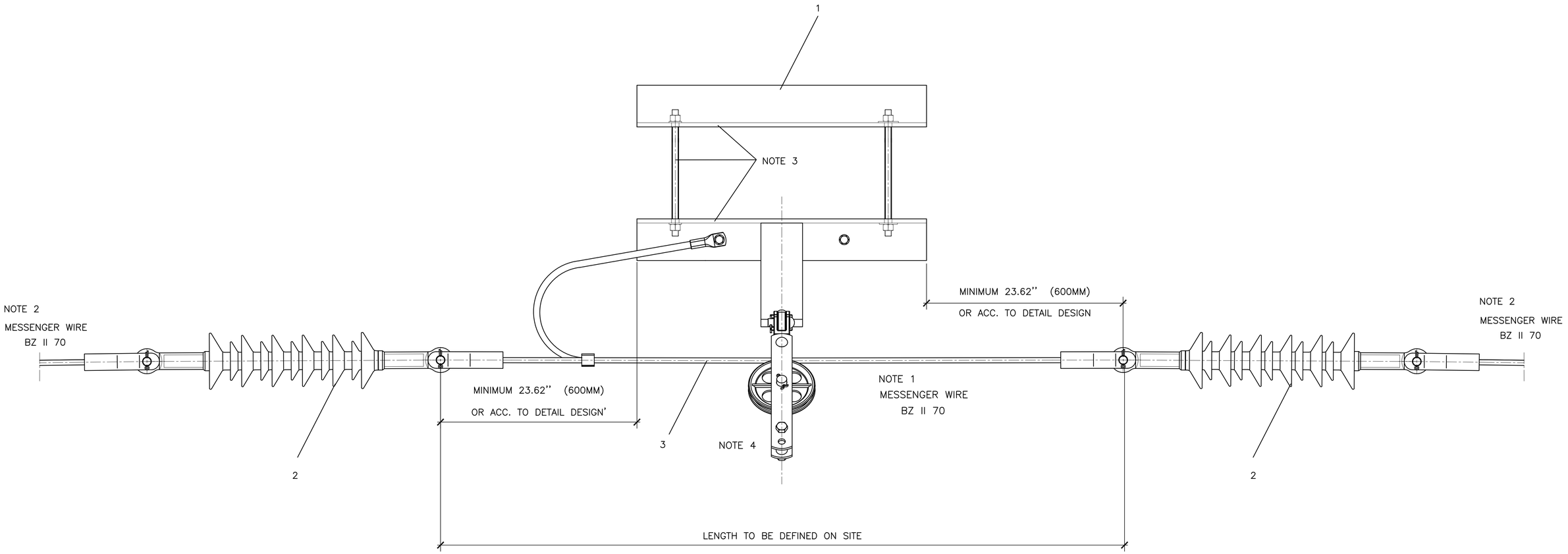
PHASE BREAK 25 KV
NEUTRAL LENGTH 17'
PB-01

CADD FILE NAME: SD-W6121

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6121



INSULATION ARRANGEMENT OF MID POINT ANCHOR WIRE WITH PULLEY SUPPORT

ELEVATION

NTS

NOTES:

1. LENGTH AS NEEDED
2. CONTINUING CONNECTION ACC. TO DETAIL DESIGN
3. LENGTH / DIMENSIONS ACC. TO PORTAL SIZE
4. PULLEY IS TILTED SEE DRAWING SD–W6123 FOR DETAILS

	A					
	1	MESSENGER WIRE BZ II 70/19	.	3	DIN 48201	NOTE 1
	2	CUT IN INSULATION FOR MW	.	2		TYPE A
	1	PULLEY SUPPORT , COMPLETE	.	1		SD–W6123
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

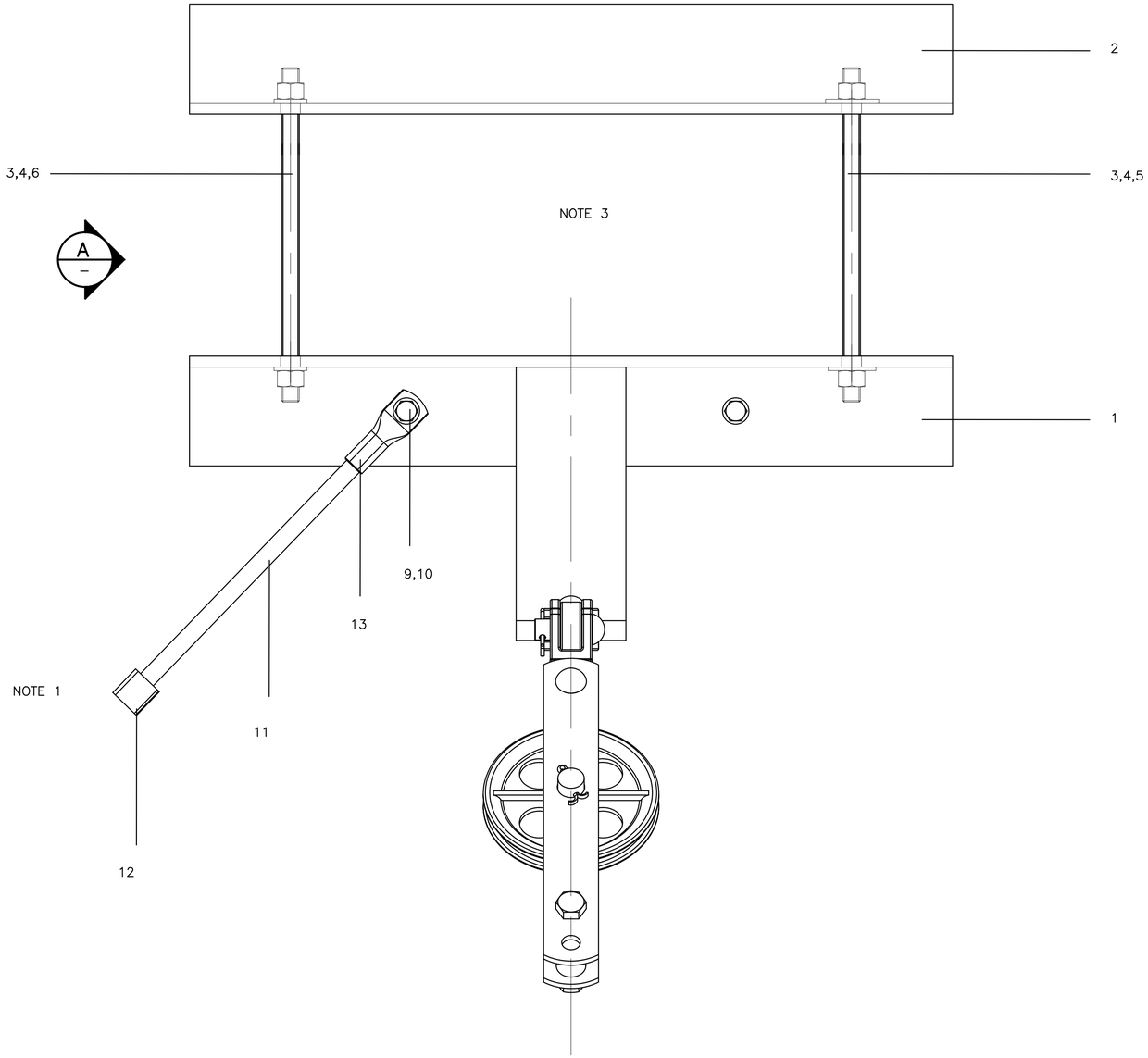
INSULATION ARRANGEMENT OF MID POINT ANCHOR WIRE WITH PULLEY SUPPORT

CADD FILE NAME: SD–W6122

REV: | EDITION: SECOND

SCALE: NTS

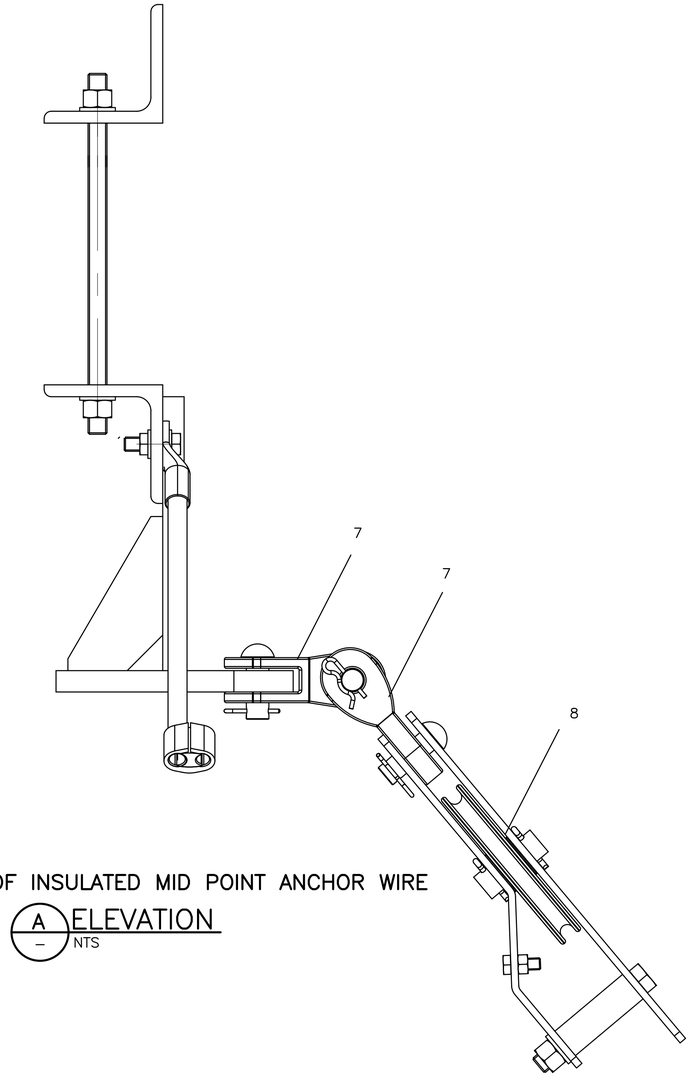
STANDARD DRAWING NO.: SD–W6122



PULLEY SUPPORT OF INSULATED MID POINT ANCHOR WIRE

ELEVATION

NTS



PULLEY SUPPORT OF INSULATED MID POINT ANCHOR WIRE

A – ELEVATION

NTS

NOTES:

1. CONNECTION TO INSULATED PIECE OF MID POINT WIRE BZ 70 II
2. COATING ACC. TO DIN EN ISO 10684–tZN–o
3. PORTALSIZE ACC. TO DETAIL DESIGN

	A						
	1	CABLE LUG 12–120	CU	13	DIN 46235		
	1	JUMPER WIRE 95x259 (LENGTH AS NEEDED)	E–CU	12			
	1	WIRE FEEDER CLAMP		11			.
	1	HEXAGON HEAD BOLT WITH NUT M12x40	ST5.6 2.	10	ISO 4017		.
	2	WASHER 12	200HV 2.	9	ISO 7089		
	1	PULLEY FOR BZ 70 II MID POINT WIRE		8			
	2	TWISTED CLEVIS EYE		7			
	2	WASHER FOR M16 (0.63")	200HV 2	6	ISO 7093		
	2	WASHER FOR M16 (0.63")	200HV 2	5	ISO 7089		
	8	NUT M16 (0.63")	8 2	4	ISO 4032		
	2	STUD BOLT M16 (0.63")	8.8 2	3	DIN 976–1		
	1	BACK ANGLE		2		PART 2	
	1	BASE CONSTRUCTION		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

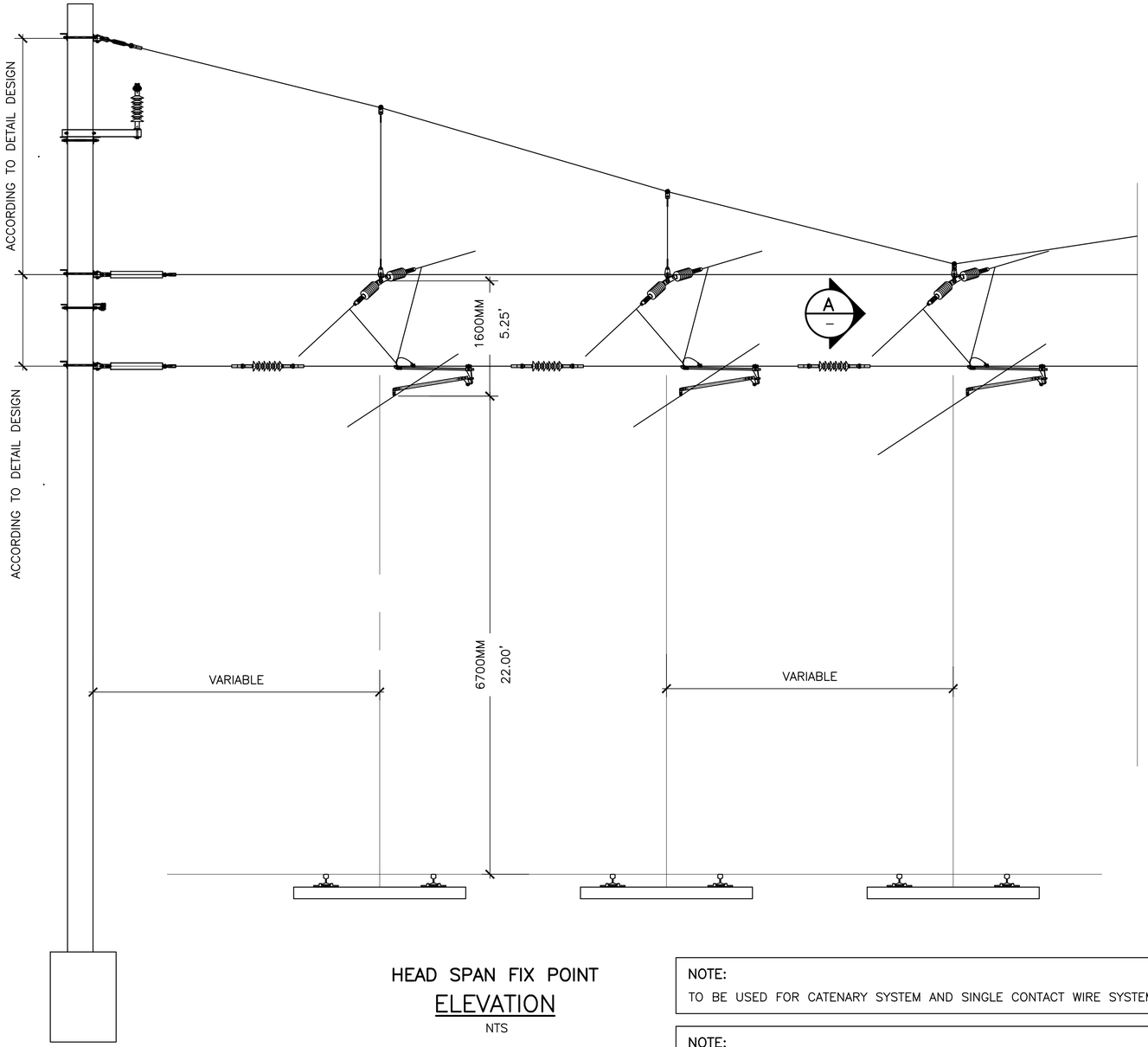
PULLEY SUPPORT, COMPLETE, OF INSULATED MID POINT ANCHOR WIRE

CADD FILE NAME: SD–W6123

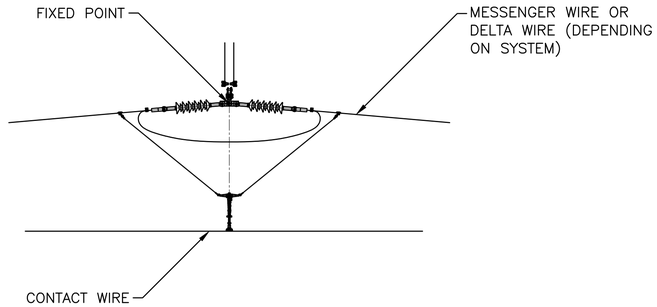
REV: EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6123



HEAD SPAN FIX POINT
ELEVATION
NTS



HEAD SPAN FIX POINT
A – ELEVATION
NTS

NOTE:
TO BE USED FOR CATENARY SYSTEM AND SINGLE CONTACT WIRE SYSTEM

NOTE:
HEAD SPAN WILL BE USED AS FIXPOINT !
CALCULATION OF MASTS AND FOUNDATIONS MUST BE DONE, RESPECTING BASIC CONDITIONS OF HEAD SPAN WITH FIXPOINT !

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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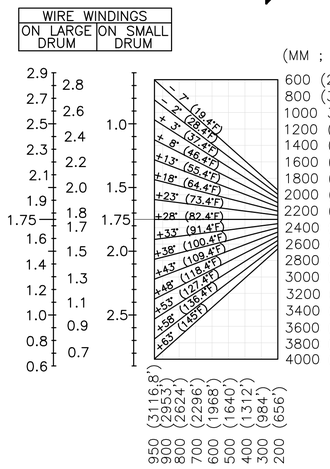
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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HEAD SPAN
FIX POINT

CADD FILE NAME: SD–W6124
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6124

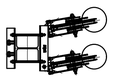


DISTANCE DEPENDING ON SPAN AND HEIGHT OF MESSENGER WIRE AT SUPPORT.
CONTACT WIRE HEIGHT AT RUNNING OUT CANTILEVER AND RAISING OF CONTACT WIRE MUST ALSO BE CONSIDERED. NOTE 1.

TENSION WHEELS VERTICALLY ARRANGED

ELEVATION

NTS



CONTACT WIRE 14 KN (3147.3 LBF)

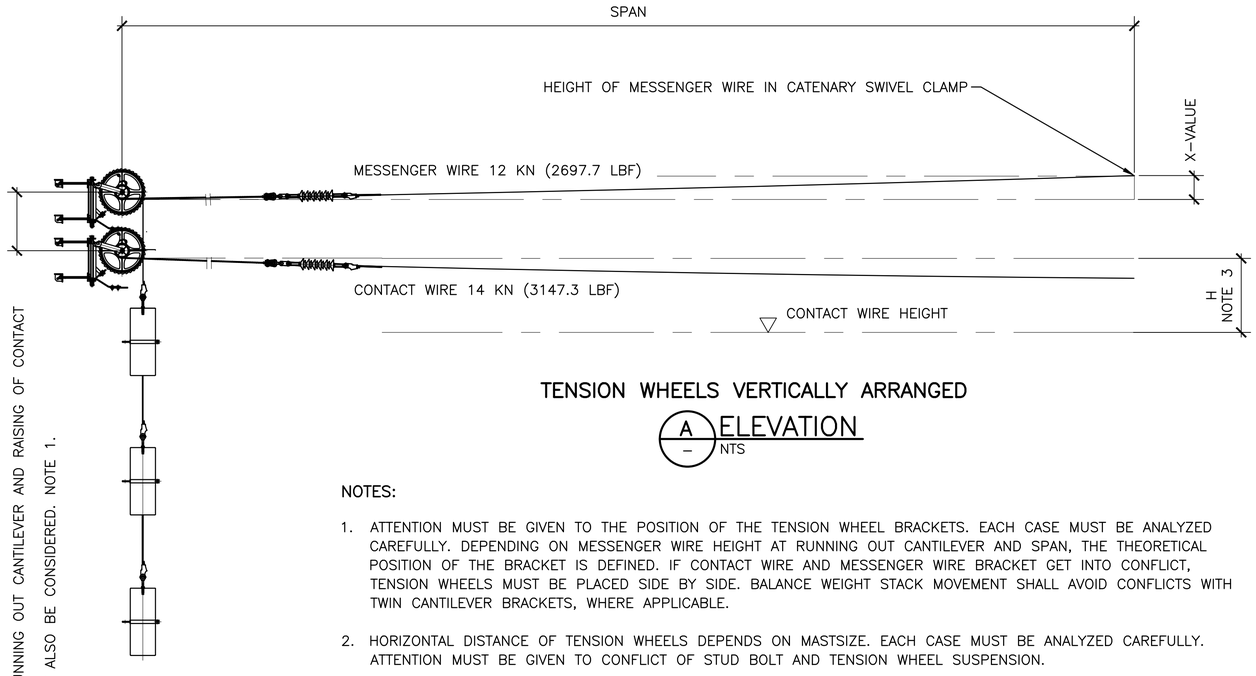
MESSENGER WIRE 12 KN (2697.7 LBF)

TENSION WHEELS VERTICALLY ARRANGED

PLAN

NTS

DISTANCE DEPENDING ON SPAN AND HEIGHT OF MESSENGER WIRE AT SUPPORT.
CONTACT WIRE HEIGHT AT RUNNING OUT CANTILEVER AND RAISING OF CONTACT WIRE MUST ALSO BE CONSIDERED. NOTE 1.



TENSION WHEELS VERTICALLY ARRANGED

A ELEVATION

NTS

NOTES:

1. ATTENTION MUST BE GIVEN TO THE POSITION OF THE TENSION WHEEL BRACKETS. EACH CASE MUST BE ANALYZED CAREFULLY. DEPENDING ON MESSENGER WIRE HEIGHT AT RUNNING OUT CANTILEVER AND SPAN, THE THEORETICAL POSITION OF THE BRACKET IS DEFINED. IF CONTACT WIRE AND MESSENGER WIRE BRACKET GET INTO CONFLICT, TENSION WHEELS MUST BE PLACED SIDE BY SIDE. BALANCE WEIGHT STACK MOVEMENT SHALL AVOID CONFLICTS WITH TWIN CANTILEVER BRACKETS, WHERE APPLICABLE.

2. HORIZONTAL DISTANCE OF TENSION WHEELS DEPENDS ON MASTSIZE. EACH CASE MUST BE ANALYZED CAREFULLY. ATTENTION MUST BE GIVEN TO CONFLICT OF STUD BOLT AND TENSION WHEEL SUSPENSION.

3. CONTACT WIRE RAISING FROM RUNNING OUT CANTILEVER TO TENSION WHEEL: 1CM/M (0.394''/39.4'')
CONTACT WIRE WHEEL POSITION DEPENDING ON END-SPAN LENGTH. MAXIMUM VALUE FOR H=900MM (35.43'').
EXAMPLE: IF THE CONTACT WIRE HEIGHT AT RUNNING OUT CANTILEVER IS 500MM (19.69'') AND END-SPAN HAS A LENGTH OF 20M (787.4''), THE HEIGHT OF TENSION WHEEL IS 50CM (19.69'') PLUS 1CMx20 (0.01x787.4''). IN TOTAL H=70CM (27.56'').

SPAN	MAXIMUM X-VALUE
10.00M (32.81')	0.23M (9.06'')
12.50M (41.01')	0.29M (11.42'')
15.00M (49.21')	0.36M (14.17'')
17.50M (57.41')	0.43M (16.93'')
20.00M (65.62')	0.50M (19.69'')
22.50M (73.82')	0.58M (22.83'')
25.00M (82.02')	0.66M (25.98'')
27.50M (90.22')	0.74M (29.13'')
30.00M (98.43')	0.83M (32.68'')
32.50M (106.63')	0.92M (36.22'')
35.00M (114.83')	1.01M (39.76'')

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	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

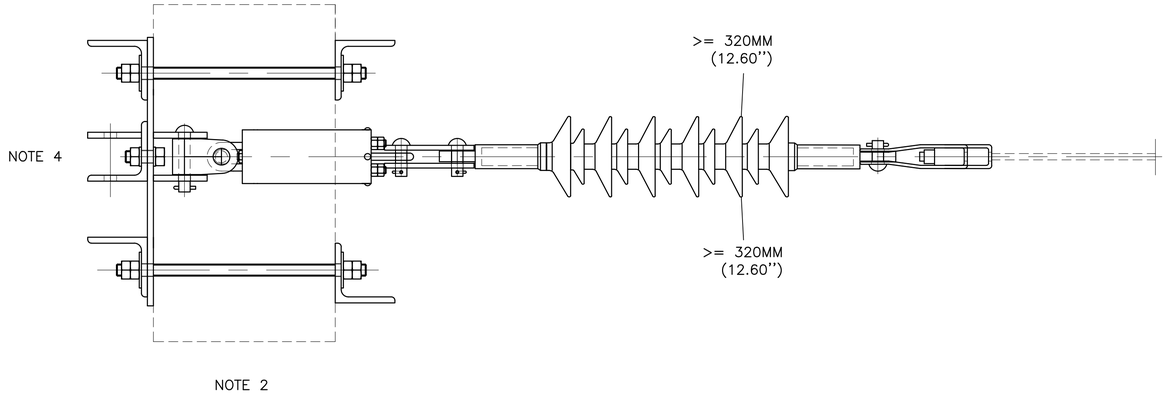
ADJUSTMENT OF MESSENGER WIRE WHEEL TENSIONING DEVICE FOR SHORT SPANS

CADD FILE NAME: SD-W6125

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6125



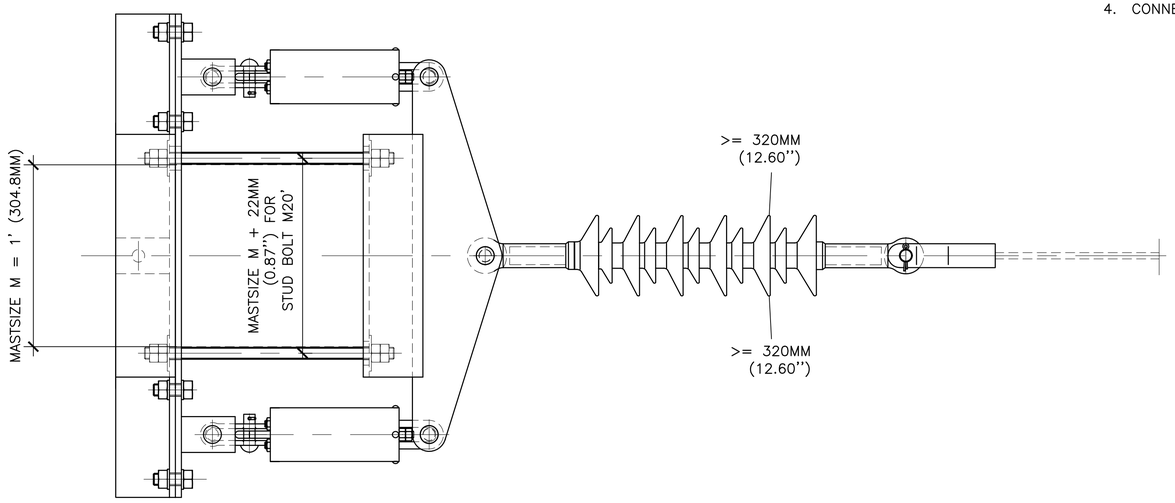
TERMINATION ARRANGEMENT FOR 2 SPAN WIRE SPRINGS BESIDE MAST

ELEVATION

NTS

NOTES:

1. LENGTH OF PARTS ACC. TO MASTSIZE
2. THIS DRAWING ONLY IS INTENDED FOR RECTANGULAR MAST WITH MASTSIZE M = 1' FOR OTHER MAST SIZES OR TYPES, THE DRAWINGS MUST BE CUSTOMIZED
3. TRAVEL OF SPRING MUST BE CHECKED
4. CONNECTION PART TO HEAD SPAN ON OTHER SIDE



TERMINATION ARRANGEMENT FOR 2 SPAN WIRE SPRINGS BESIDE MAST

PLAN

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TERMINATION ARRANGEMENT FOR 2 SPAN WIRE SPRINGS BESIDE THE MAST

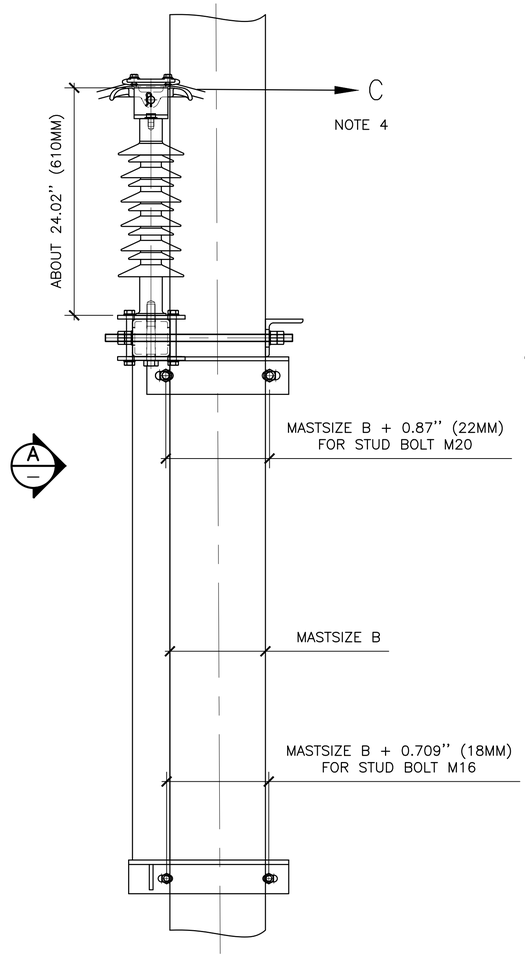
CADD FILE NAME: SD-W6126

REV:

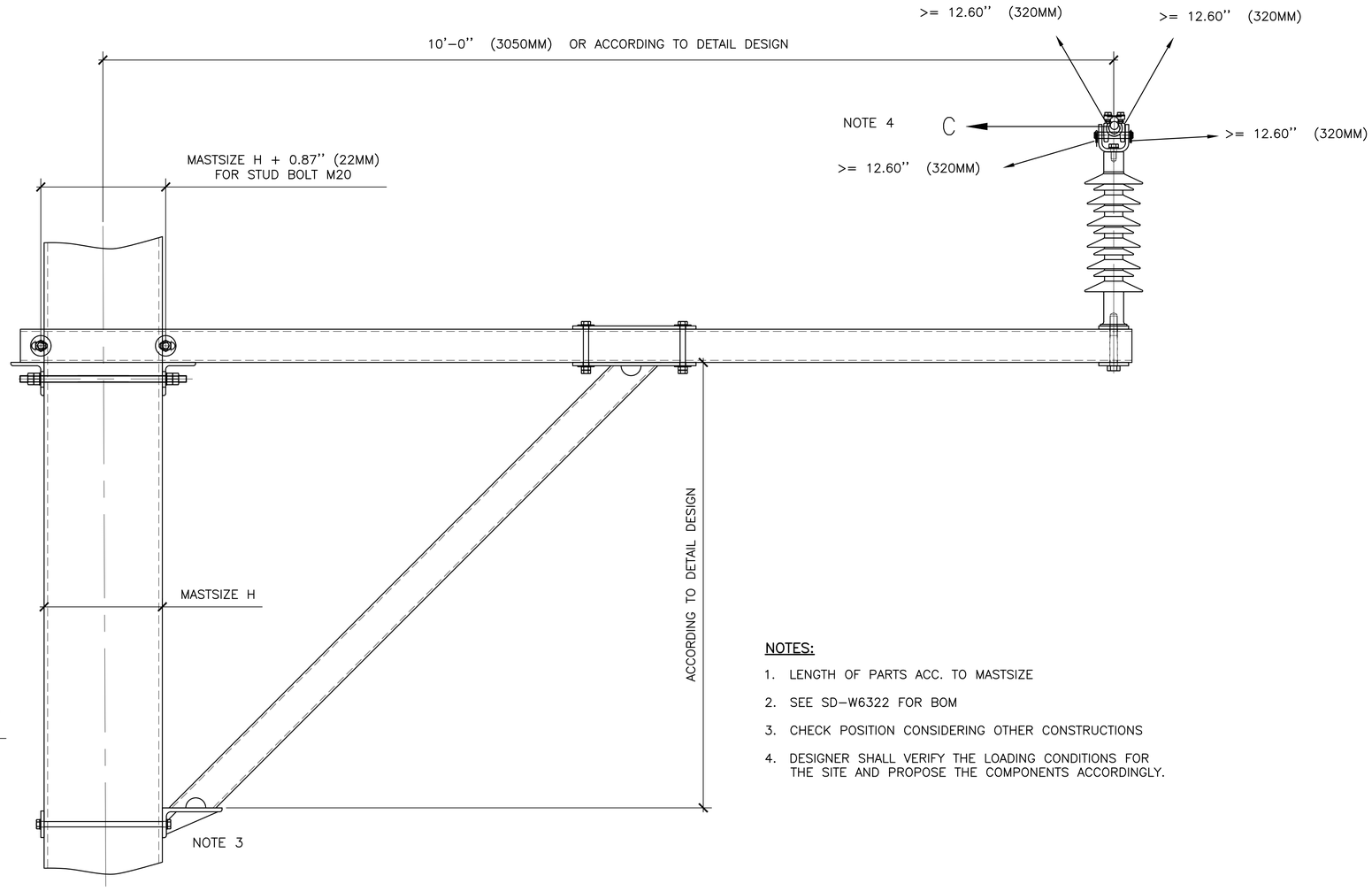
EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6126



FEEDER SUPPORT
ELEVATION
NTS



FEEDER SUPPORT
A
ELEVATION
NTS

NOTES:

1. LENGTH OF PARTS ACC. TO MASTSIZE
2. SEE SD–W6322 FOR BOM
3. CHECK POSITION CONSIDERING OTHER CONSTRUCTIONS
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

FEEDER SUPPORT WITH STRUT TUBE AT RECTANGULAR STEELMAST

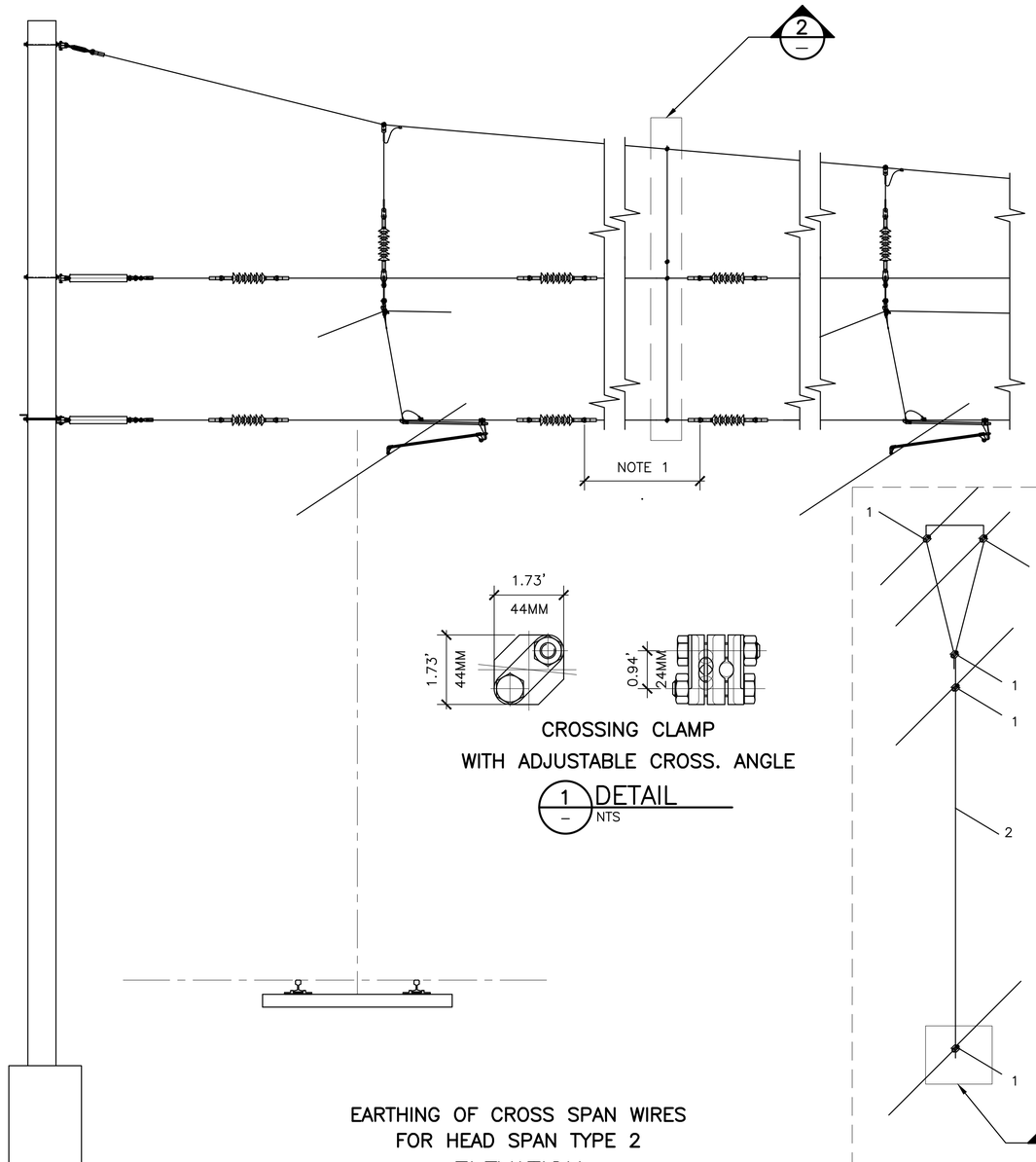
CADD FILE NAME: SD–W6130

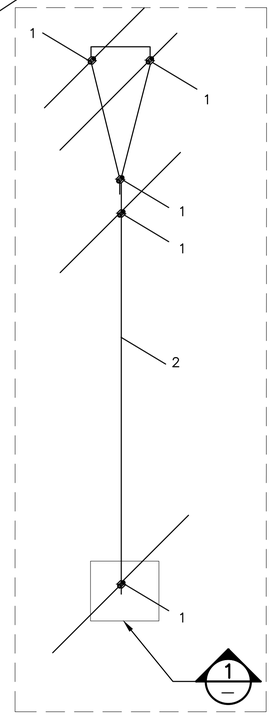
REV:

EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6130





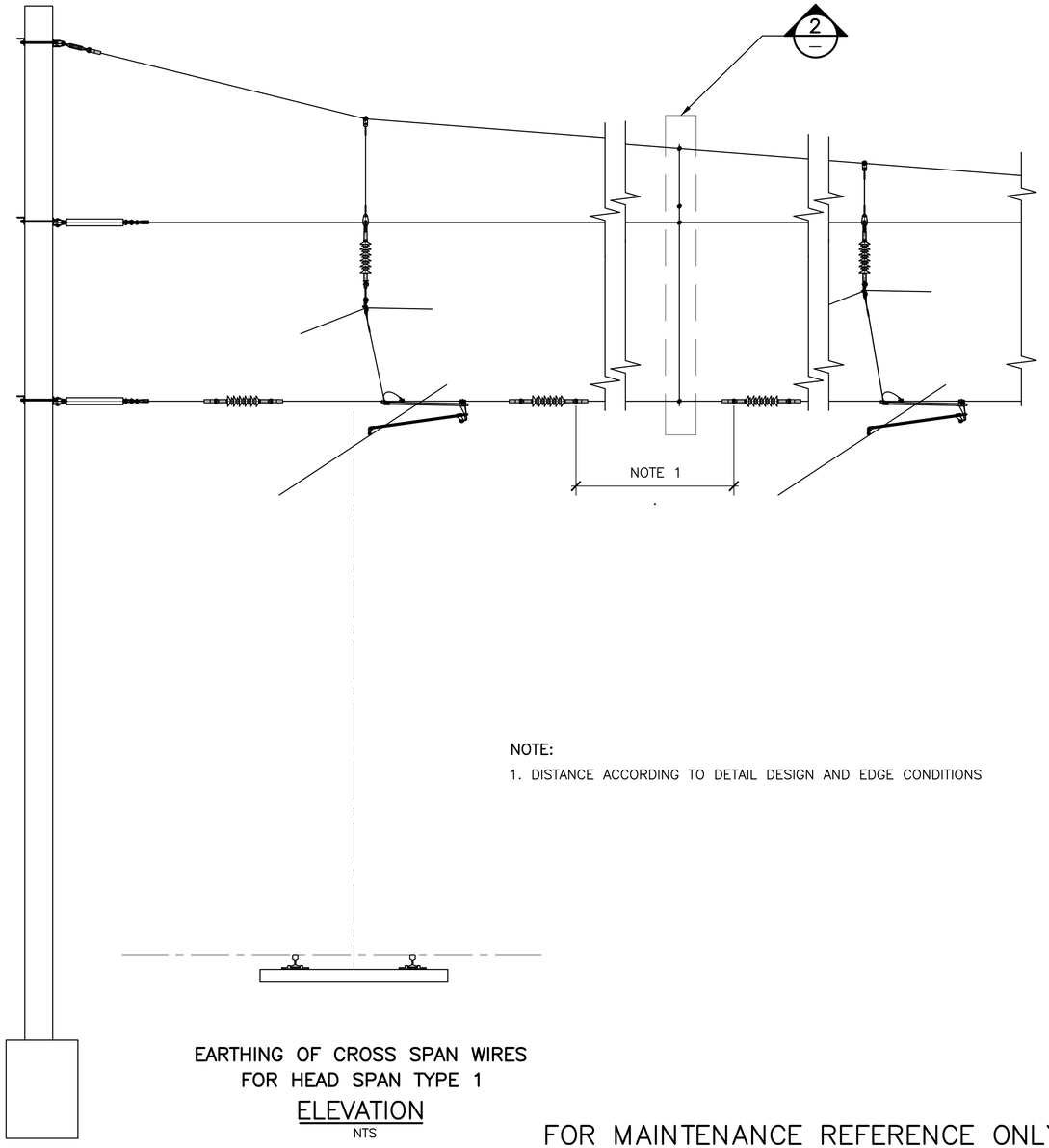
CROSSING CLAMP
WITH ADJUSTABLE CROSS. ANGLE

1 DETAIL
– NTS

EARTHING OF CROSS SPAN WIRES
FOR HEAD SPAN TYPE 2
ELEVATION
NTS

EARTHING OF CROSS SPAN WIRES

2 DETAIL
– NTS



EARTHING OF CROSS SPAN WIRES
FOR HEAD SPAN TYPE 1
ELEVATION
NTS

NOTE:
1. DISTANCE ACCORDING TO DETAIL DESIGN AND EDGE CONDITIONS

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS
– 1	BZ II 70/19		2		
– 5	CROSSING CLAMP FOR CATENARY SYSTEM		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

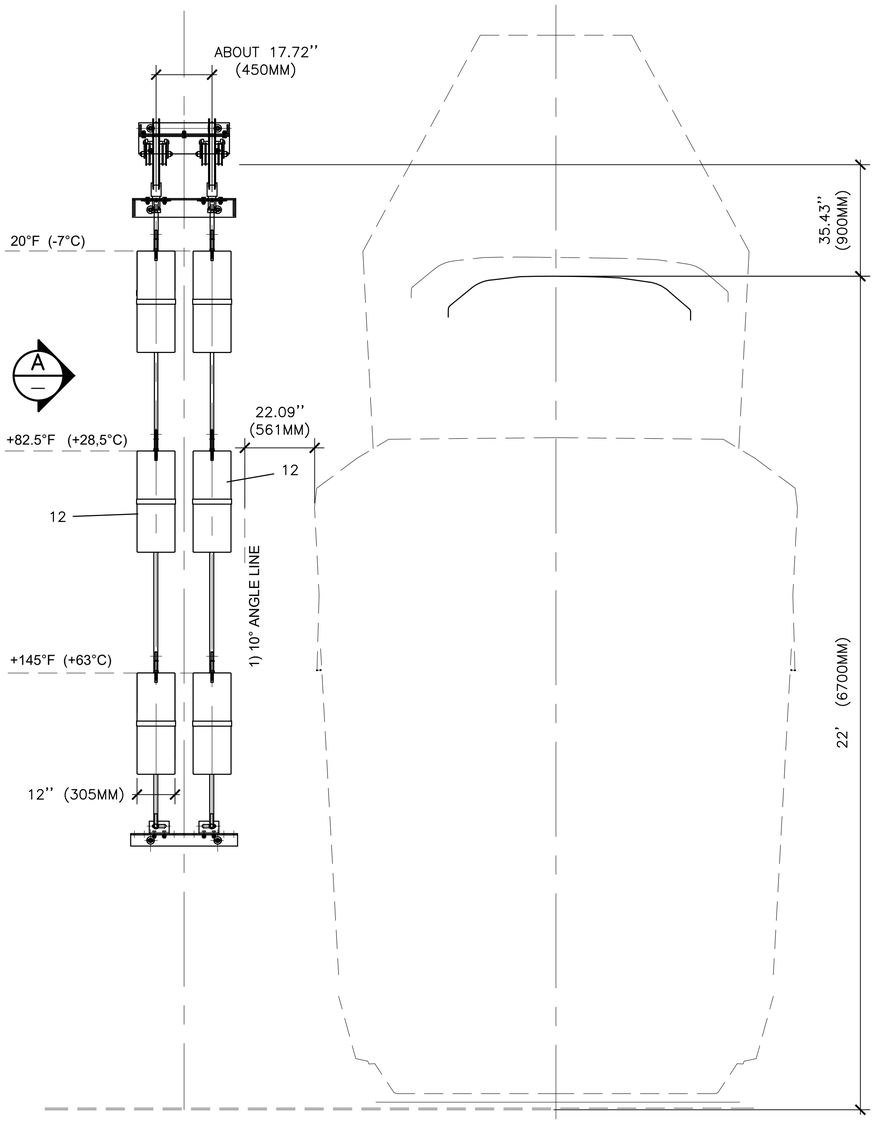
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

ARRANGEMENT AND EARTHING OF CROSS SPAN WIRES ABOVE PLATFORM AREAS / EQUAL SITUATIONS

CADD FILE NAME: SD–W6131
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6131



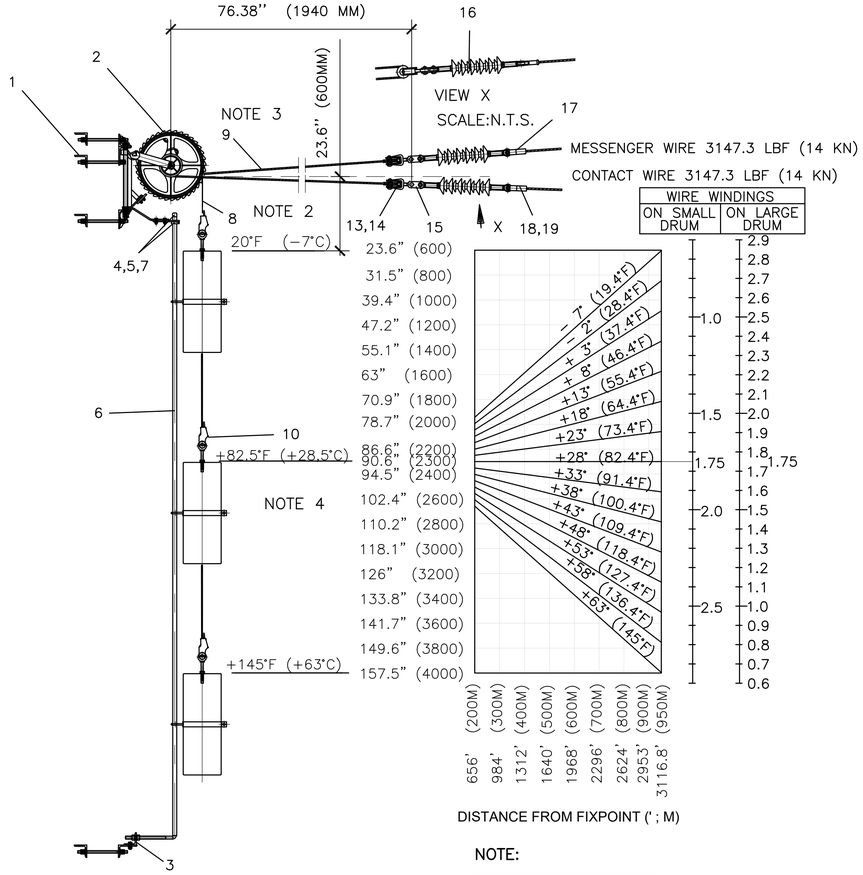
WHEEL TENSIONING DEVICE

ELEVATION

NTS

NOTE:

DESIGN HAS BEEN MADE FOR MASTSIZE 20.47'' (520MM).
AND TENSION WHEEL DISTANCE 17.72'' (450MM) DOUBLE.
FOR SMALLER MASTSIZE DESIGN MUST BE CHECKED
AND DRAWINGS MUST BE UPDATED !



DISTANCE FROM FIXPOINT (' ; M)

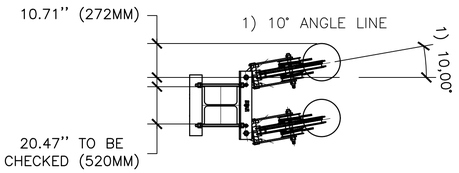
NOTE:

WITHOUT BACKSTAY

WHEEL TENSIONING DEVICE BW–04

A — ELEVATION

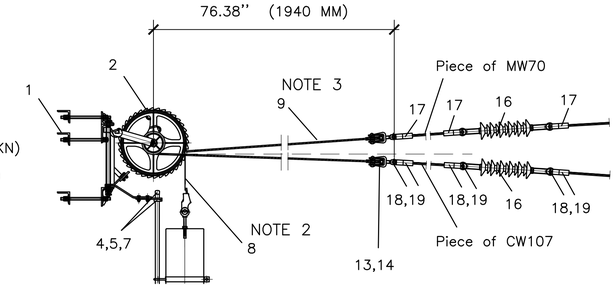
NTS



WHEEL TENSIONING DEVICE

PLAN

NTS



WHEEL TENSIONING DEVICE BW–04B

A — ELEVATION

NTS

NOTES:

1. DIMENSION: FEET OR INCH / (MM OR M)
2. ARRANGEMENT FOR BW–04 SHOWN, ONLY
3. TZN–O ACCORDING TO DIN EN ISO 1461
4. LENGTH 17.72' (5.40M)
5. LENGTH 20.34' (6.20M)
6. FOR RECTANGULAR MAST
7. POLE ORIENTATION ACC. TO LAYOUT PLANS

DOUBLE B	DOUBLE A	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
3	1	PIN 19X52 WITH ß–SPLINT PIN		19		
3	1	TERMINATION CLAMP FOR CONTACT WIRE		18		
3	1	TERMINATION CLAMP FOR MESSENGER WIRE		17		
2	2	INSULATOR		16		
–	2	LINK PLATE WITH BOLTS		15		
2	2	SWIVEL CLEVIS WITH EYE ROD		14		
2	2	PULLEY		13		
2	2	Balance weight set 14 kN – CW / MW		12		TYPE A
–	–	----------		11	----------	--------
2	2	WEDGE CLAMP FOR MULTI STRAND WIRE		10		
2	2	STEEL WIRE, MULTI STRAND 50MM²	NOTE 3	9		
2	2	STEEL WIRE, MULTI STRAND 50MM²	NOTE 2	8		
2	2	TUBE CAP FOR Ø32MM (1.26'')		7		
2	2	STEEL TUBE 32MMx3,5MM (1.26''x0.138'')	E355 NOTE 1	6	EN 10305–1(GB/T8161–1999)	L=5000MM
2	2	HEXAGON HEAD SCREW M8x16	A2	5	ISO 4017	
2	2	ADJUSTING COLLAR A 35		4		
1	1	BRACKET FOR WEIGHT GUIDE		3		
2	2	TENSIONING WHEEL ASSEMBLY 20 KN		2		
1	1	BRACKET FOR DOUBLE TENSIONING WHEEL		1		

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

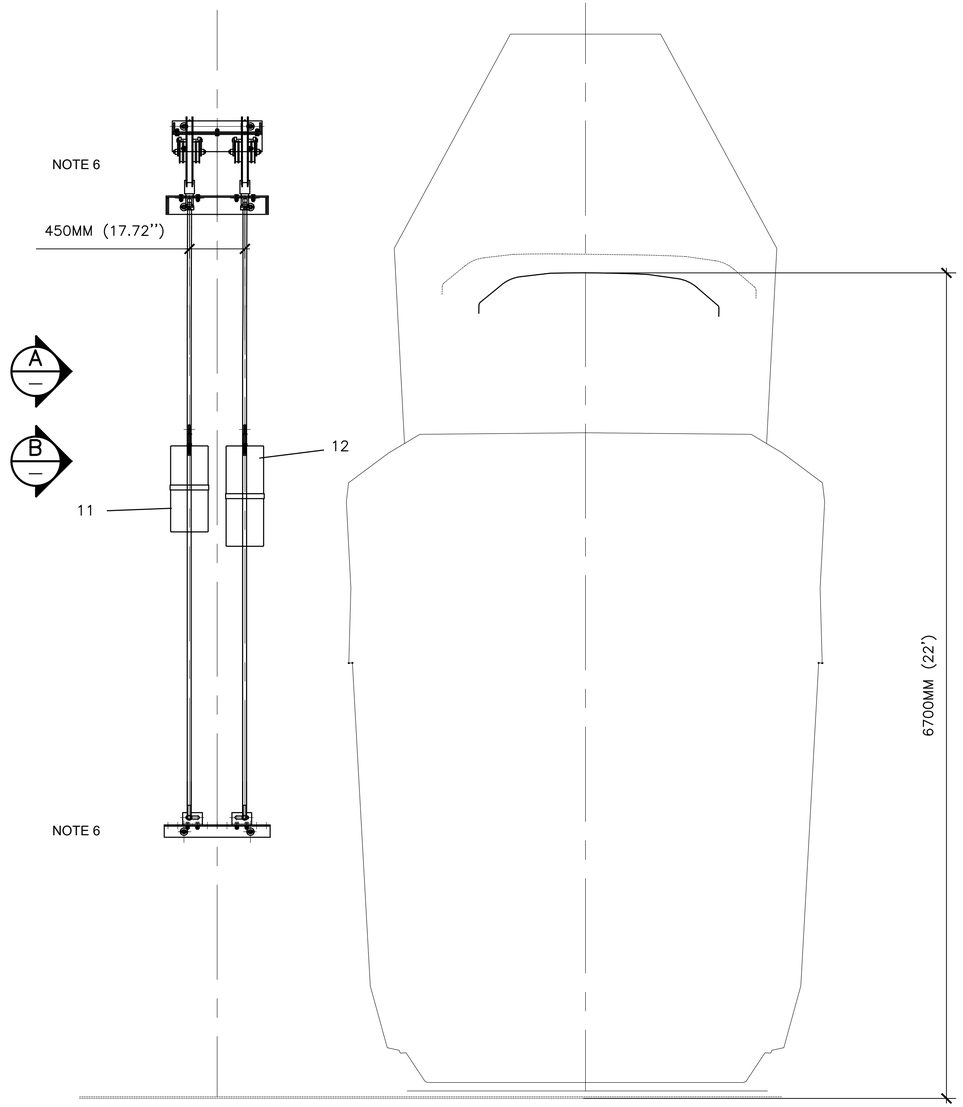
TENSIONING WHEEL ASSEMBLY
14 / 14 kN
BW – 04 / BW–04B

CADD FILE NAME: SD–W6132

REV: | EDITION: SECOND

SCALE: NTS

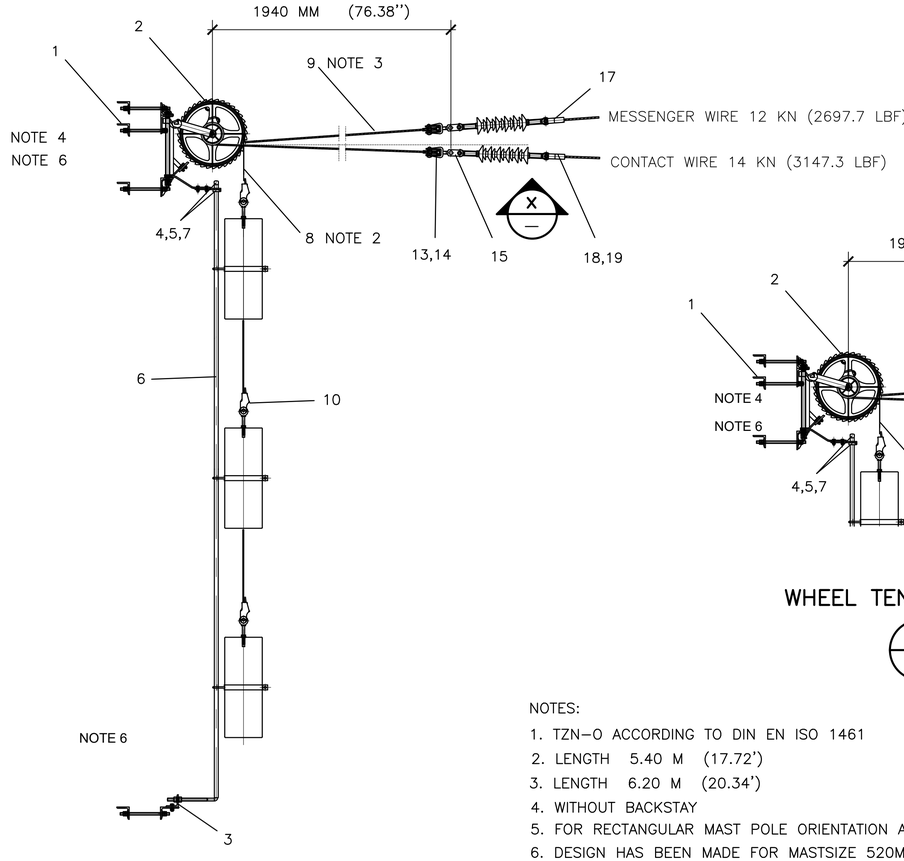
STANDARD DRAWING NO.: SD–W6132



WHEEL TENSIONING DEVICE

ELEVATION

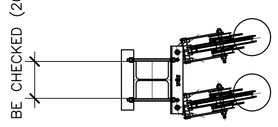
NTS



WHEEL TENSIONING DEVICE BW–01

A ELEVATION

NTS



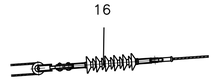
NOTE 5

NOTE 6

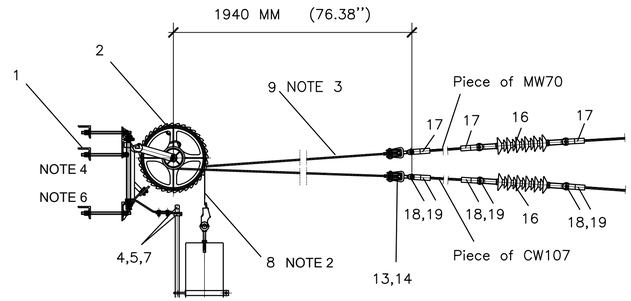
WHEEL TENSIONING DEVICE

PLAN

NTS



VIEW X
SCALE:N.T.S.



WHEEL TENSIONING DEVICE BW–01B

B ELEVATION

NTS

NOTES:

1. TZN–O ACCORDING TO DIN EN ISO 1461
2. LENGTH 5.40 M (17.72')
3. LENGTH 6.20 M (20.34')
4. WITHOUT BACKSTAY
5. FOR RECTANGULAR MAST POLE ORIENTATION ACC. TO LAYOUT PLANS.
6. DESIGN HAS BEEN MADE FOR MASTSIZE 520MM (20.47"). AND TENSION WHEEL DISTANCE 450MM (17.72") DOUBLE. FOR SMALLER MASTSIZE DESIGN MUST BE CHECKED AND DRAWINGS MUST BE UPDATED.
7. WHEREVER POSSIBLE USE–HARDWARE OF IMPERIAL SYSTEM (ENGLISH UNITS).

DOUBLE	DOUBLE						
B	A						
3	1	PIN 19X52 WITH B–SPLINT PIN		19			
3	1	TERMINATION CLAMP FOR CONTACT WIRE		18			
3	1	TERMINATION CLAMP FOR MESSENGER WIRE		17			
2	2	COMPOSITE INSULATOR		16			
–	2	LINK PLATE WITH BOLTS		15			
2	2	SWIVEL CLEVIS WITH EYE ROD		14			
2	2	PULLEY		13			
1	1	BALANCE WEIGHT SET 14 KN – CW		12			
1	1	BALANCE WEIGHT SET 12 KN – MW		11			
2	2	WEDGE CLAMP FOR MULTI STRAND WIRE		10			
2	2	STEEL WIRE, MULTI STRAND 50MM²	NOTE 3	9			
2	2	STEEL WIRE, MULTI STRAND 50MM²	NOTE 2	8			
2	2	TUBE CAP FOR Ø32MM (1.26")		7			
2	2	STEEL TUBE 32MMx3.5MM (1.26"x0.138")	E355 NOTE1	6	EN 10305–1(GB/T8161–1999)	L=5000MM	
2	2	HEXAGON HEAD SCREW M8x16	A2	5	ISO 4017		
2	2	ADJUSTING COLLAR A 35		4			
1	1	BRACKET FOR WEIGHT GUIDE		3			
2	2	TENSIONING WHEEL ASSEMBLY 20 KN		2			
1	1	BRACKET FOR DOUBLE TENSIONING WHEEL		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD		REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

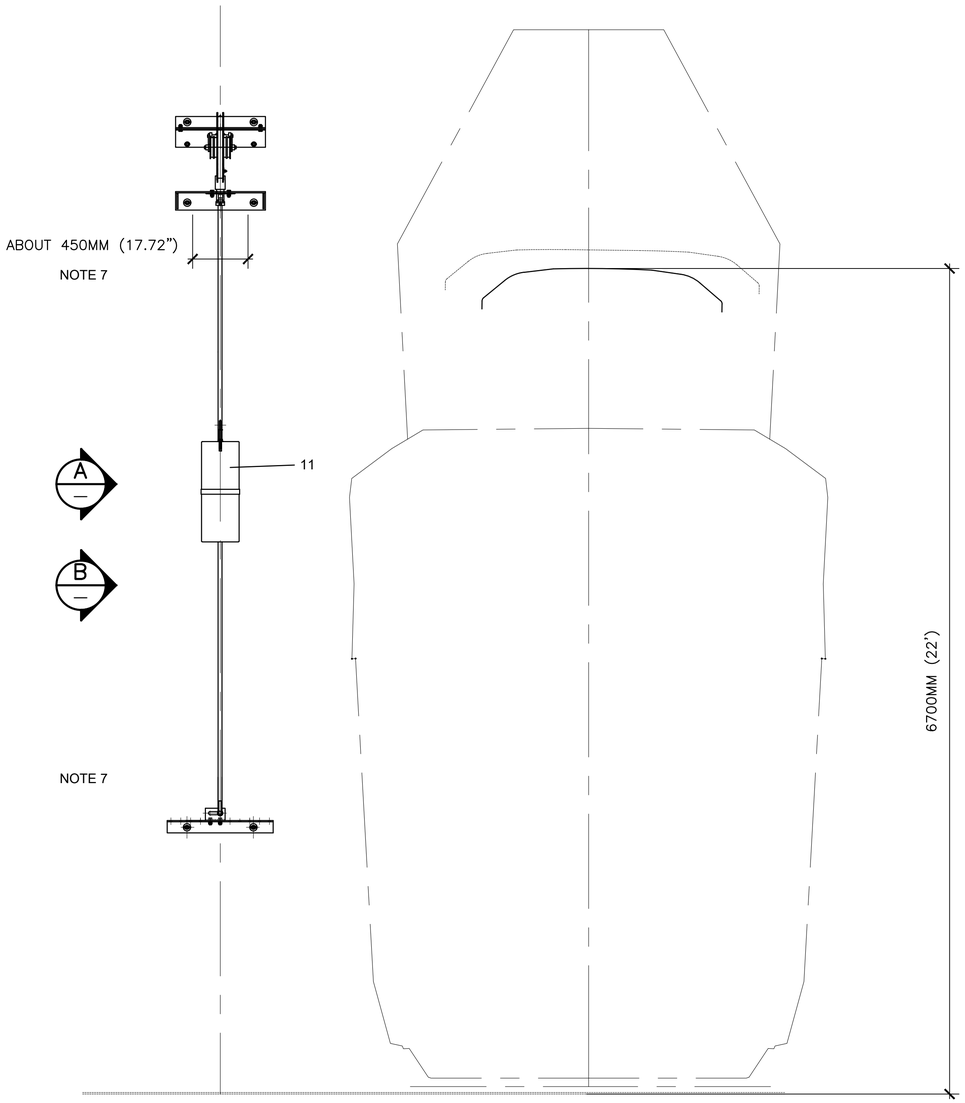
TENSIONING WHEEL ASSEMBLY
12 / 14 kN
BW–01 / BW–01B

CADD FILE NAME: SD–W6250

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6250



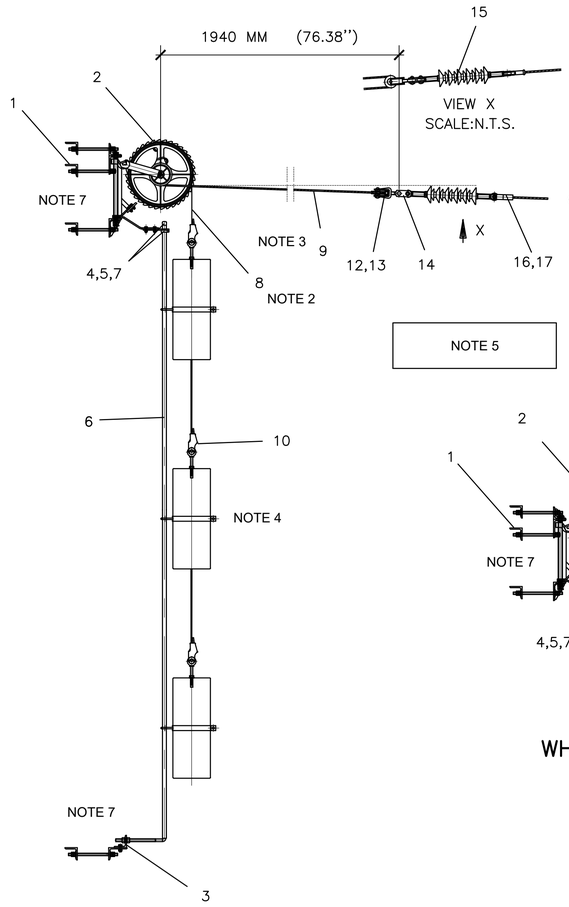
SINGLE WHEEL TENSIONING DEVICE

ELEVATION

NTS

NOTES:

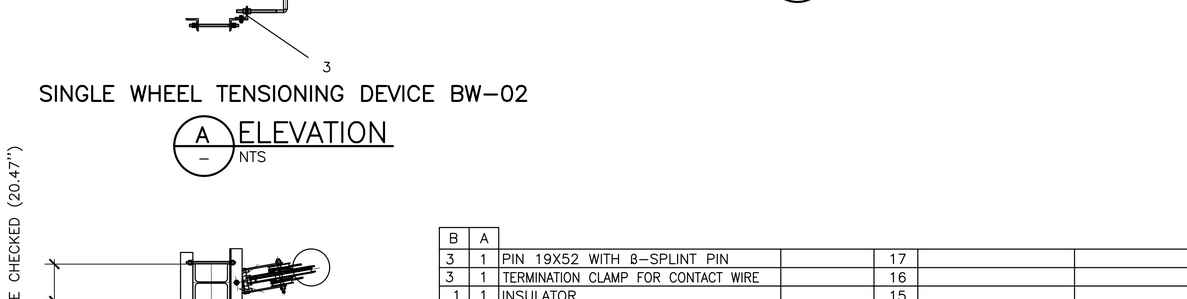
1. TZN–0 ACCORDING TO DIN EN ISO 1461
2. LENGTH 5.40 M (17.72')
3. LENGTH 6.20 M (20.34')
4. SEE DWG SD–W6107 FOR TENSIONING WHEEL DEVICE ADJUSTMENT
5. WITHOUT BACKSTAY
6. FOR RECTANGULAR MAST POLE ORIENTATION ACC. TO LAYOUT PLANS
7. DESIGN HAS BEEN MADE FOR MASTSIZE 520MM (20.47") AND ONE TENSION WHEEL SINGLE. FOR SMALLER MASTSIZE DESIGN MUST BE CHECKED AND DRAWINGS MUST BE UPDATED.



SINGLE WHEEL TENSIONING DEVICE BW–02

A ELEVATION

NTS

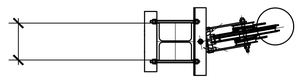


WHEEL TENSIONING DEVICE BW–02B

B ELEVATION

NTS

520MM TO BE CHECKED (20.47")



SINGLE WHEEL TENSIONING DEVICE

PLAN

NTS

B	A					
3	1	PIN 19X52 WITH ß–SPLINT PIN		17		
3	1	TERMINATION CLAMP FOR CONTACT WIRE		16		
1	1	INSULATOR		15		
–	1	LINK PLATE WITH BOLTS		14		
1	1	SWIVEL CLEVIS WITH EYE ROD		13		
1	1	PULLEY		12		
1	1	Balance weight set 14 kN – CW		11		TYPE A
1	1	WEDGE CLAMP FOR MULTI STRAND WIRE		10		
1	1	STEEL WIRE, MULTI STRAND 50MM²	NOTE 3	9		
1	1	STEEL WIRE, MULTI STRAND 50MM²	NOTE 2	8		
1	1	TUBE CAP FOR ø32MM (1.26")		7	EN 10305–1	
1	1	STEEL TUBE 32MMx3,5MM (1.26"x0.138")	E355 NOTE 1	6	(GB/T8161–1999)	L=5000MM
1	1	HEXAGON HEAD SCREW M8x16	A2	5	ISO 4017	
1	1	ADJUSTING COLLAR A 35		4		
1	1	BRACKET FOR WEIGHT GUIDE		3		
1	1	TENSIONING WHEEL ASSEMBLY 20 KN		2		
1	1	BRACKET FOR SINGLE TENSIONING WHEEL		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

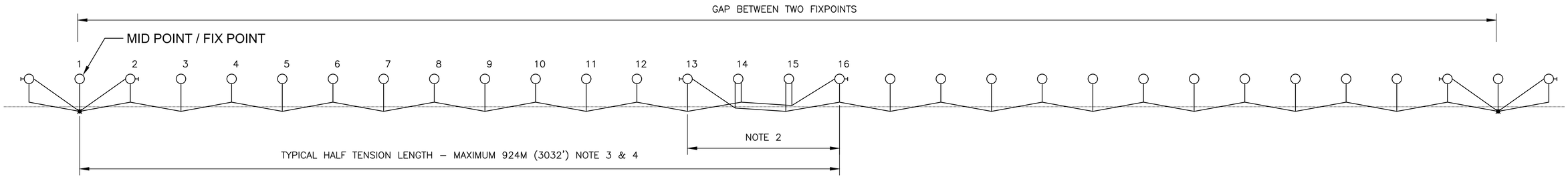
TENSIONING WHEEL ASSEMBLY FOR SINGLE CW – 14 kN
BW–02 / BW–02B

CADD FILE NAME: SD–W6251

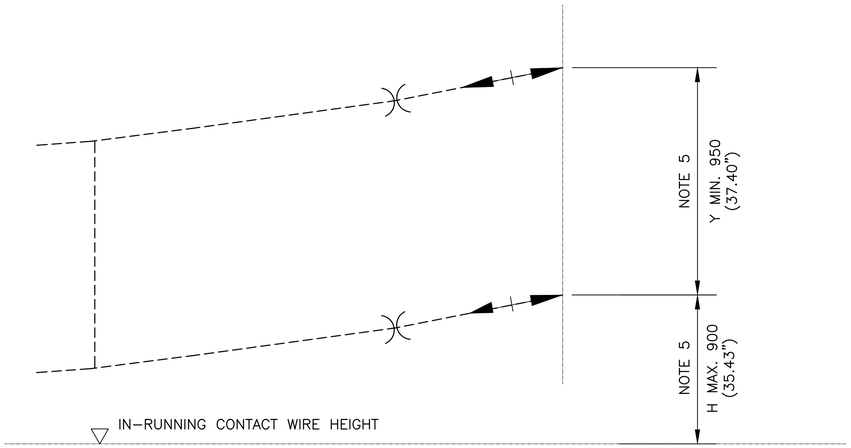
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6251



TYPICAL FULL TENSION LENGTH
PLAN
NTS



END SECTION OF TYPICAL FULL TENSION LENGTH
ELEVATION
NTS

TENSOREX TYPE	STYLE	MAX. HALF TENSION LENGTH
01/05	450–14/12 kN	378M/1240'
02/06	750–14/12 kN	630M/2067'
03/07	1000–14/12 kN	840M/2757'
04/08	1100–14/12 kN	924M/3032'

TENSOREX TYPE
TABLE–1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
2. FOR CANTILEVER ADJUSTMENT SCHEMATIC AND OVERLAP TYPES REFER OCS BASIC DESIGN DRAWING SD–W6002.
3. FOR TENSOREX SETTING CHART REFER DRAWING SD–W6845, SD–W6846, SD–W6847 & SD–W6848.
4. REFER TO TABLE–1 FOR MAXIMUM HALF TENSION LENGTH AND TENSOREX TYPE.
5. DIMENSION 'H' AND 'Y' ARE BASED ON ANCHOR SPAN AND OUT–OF–RUNNING WIRE HEIGHTS. REFER TO DRAWING SD–W6849 AND SD–W6850.

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSOREX C+ 14/12 kN
TYPICAL TENSION LENGTH

CADD FILE NAME: SD–W6252

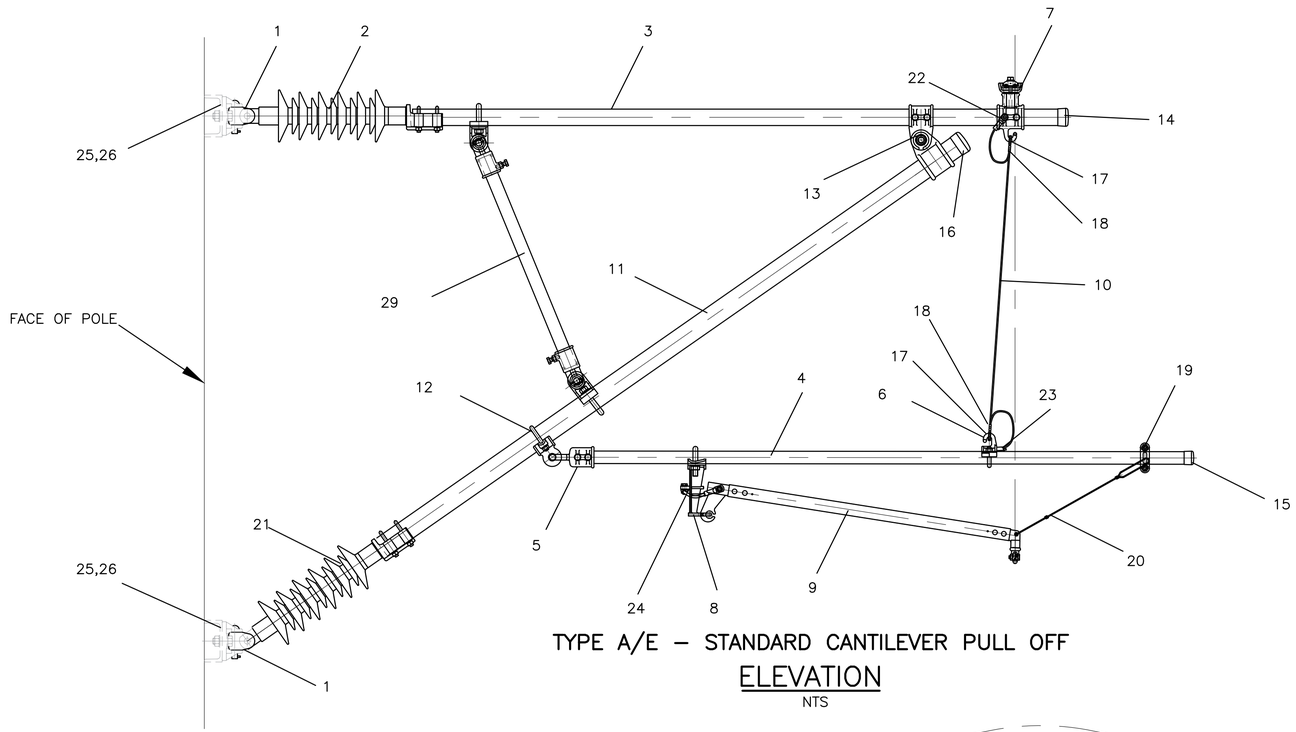
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6252

NOTES:

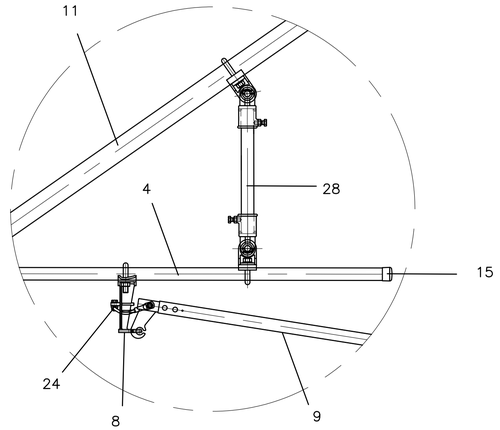
1. MAXIMUM DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK 5.20 M (17.06')
2. STANDARD DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK UP TO 3.50 M (11.48')
3. WHEREVER POSSIBLE USE HARDWARE OF IMPERIAL SYSTEM (ENGLISH UNITS)



TYPE A/E – STANDARD CANTILEVER PULL OFF

ELEVATION

NTS

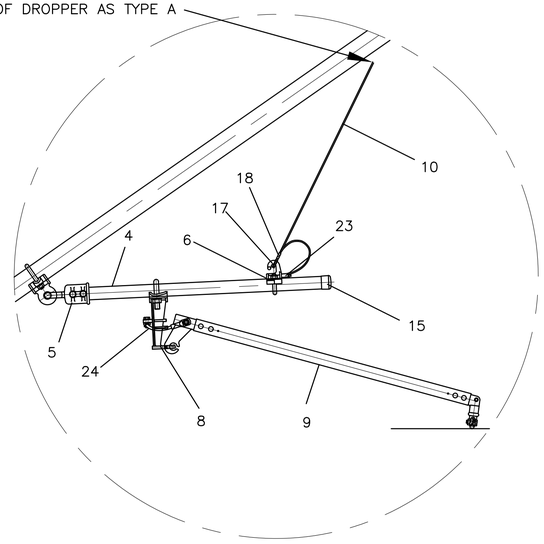


TYPE D/H – CANTILEVER PULL OFF
FOR HIGH RADIAL LOAD

ELEVATION

NTS

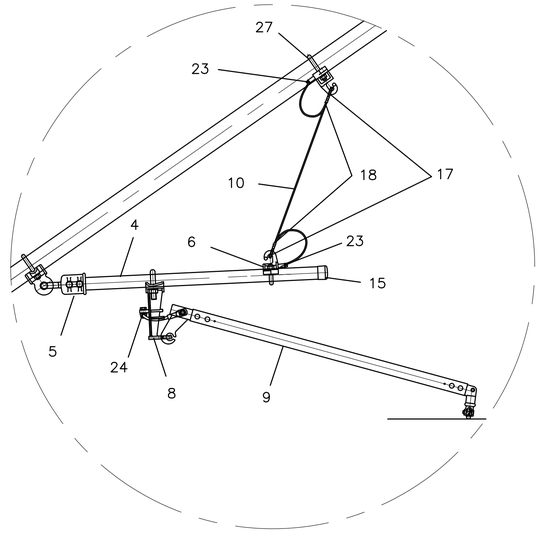
SUSPENSION OF DROPPER AS TYPE A



TYPE B/F – CANTILEVER PULL OFF WITHOUT WINDSTAY

ELEVATION

NTS



TYPE C/G – CANTILEVER PULL OFF WITHOUT WINDSTAY
AND DROPPER AT HOOK CLAMP

ELEVATION

NTS

NOTE	1.	1.	1.	1.	2.	2.	2.	2.					
	H	G	F	E	D	C	B	A					
	TYPE D WITH DIAGONAL TUBE	TYPE C WITH DIAGONAL TUBE	TYPE B WITH DIAGONAL TUBE	TYPE A WITH DIAGONAL TUBE	FOR HIGH RADIAL LOAD / STIFFENING NECESSARY	WITHOUT WINDSTAY, DROPPER AT HOOK CLAMP	WITHOUT WINDSTAY, DROPPER AT MW–CLAMP	WITH WINDSTAY, DROPPER AT MW–CLAMP					
1	1	1	1	–	–	–	–	DIAGONAL TUBE ø42		29			
1	–	–	–	1	–	–	–	DIAGONAL TUBE ø42		28			
–	1	–	–	–	1	–	–	HOOK CLAMP FOR TUBE ø70		27			
1	2	2	2	1	2	2	2	BETA–SPLINT PIN	1.4462	26			
1	2	2	2	1	2	2	2	PIN 19X100	A2	25			
1	1	1	1	1	1	1	1	ELECTRICAL CONNECTION		24			
–	2	1	1	–	2	1	1	CABLE LUG 10–25 S	CU TIN–PLATED	23			
–	–	1	1	–	–	1	1	CABLE LUG 12–25 S	CU TIN–PLATED	22			
1	1	1	1	1	1	1	1	COMPOSITE INSULATOR EYE/CAP ø70		21			
–	–	–	1	–	–	–	1	WIND STAY FOR STEADY ARM		20			
–	–	–	1	–	–	–	1	EYE CLAMP FOR WIND STAY ø42		19			
–	2	2	2	–	2	2	2	COMPRESS. SLEEVE B16	A2	18			
–	2	2	2	–	2	2	2	THIMBLE 35	A2	17			
1	1	1	1	1	1	1	1	TUBE CAP ø70	PVC	16			
1	1	1	1	1	1	1	1	TUBE CAP ø42	PVC	15			
1	1	1	1	1	1	1	1	TUBE CAP ø55	PVC	14			
1	1	1	1	1	1	1	1	TUBE CONNECTING BRACKET ø55/70		13			
1	1	1	1	1	1	1	1	EYE CLAMP FOR TUBE ø70		12			
1	1	1	1	1	1	1	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11			
–	1	1	1	–	1	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10			
1	1	1	1	1	1	1	1	STEADY ARM LENGTH AS NEEDED		9			
1	1	1	1	1	1	1	1	DROP BRACKET FOR ø42		8			
1	1	1	1	1	1	1	1	CATENARY SWIVEL CLAMP TUBE ø55		7			
–	1	1	1	–	1	1	1	HOOK CLAMP FOR TUBE ø42		6			
1	1	1	1	1	1	1	1	HOOK END FITTING FOR TUBE ø42		5			
1	1	1	1	1	1	1	1	TUBE ø42X4 LENGTH AS NEEDED	ALMGSI1F31	4			
1	1	1	1	1	1	1	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3			
1	1	1	1	1	1	1	1	COMPOSITE INSULATOR EYE/CAP ø55		2			
2	2	2	2	2	2	2	2	SWIVEL JOINT		1			
PIECES								DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

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Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

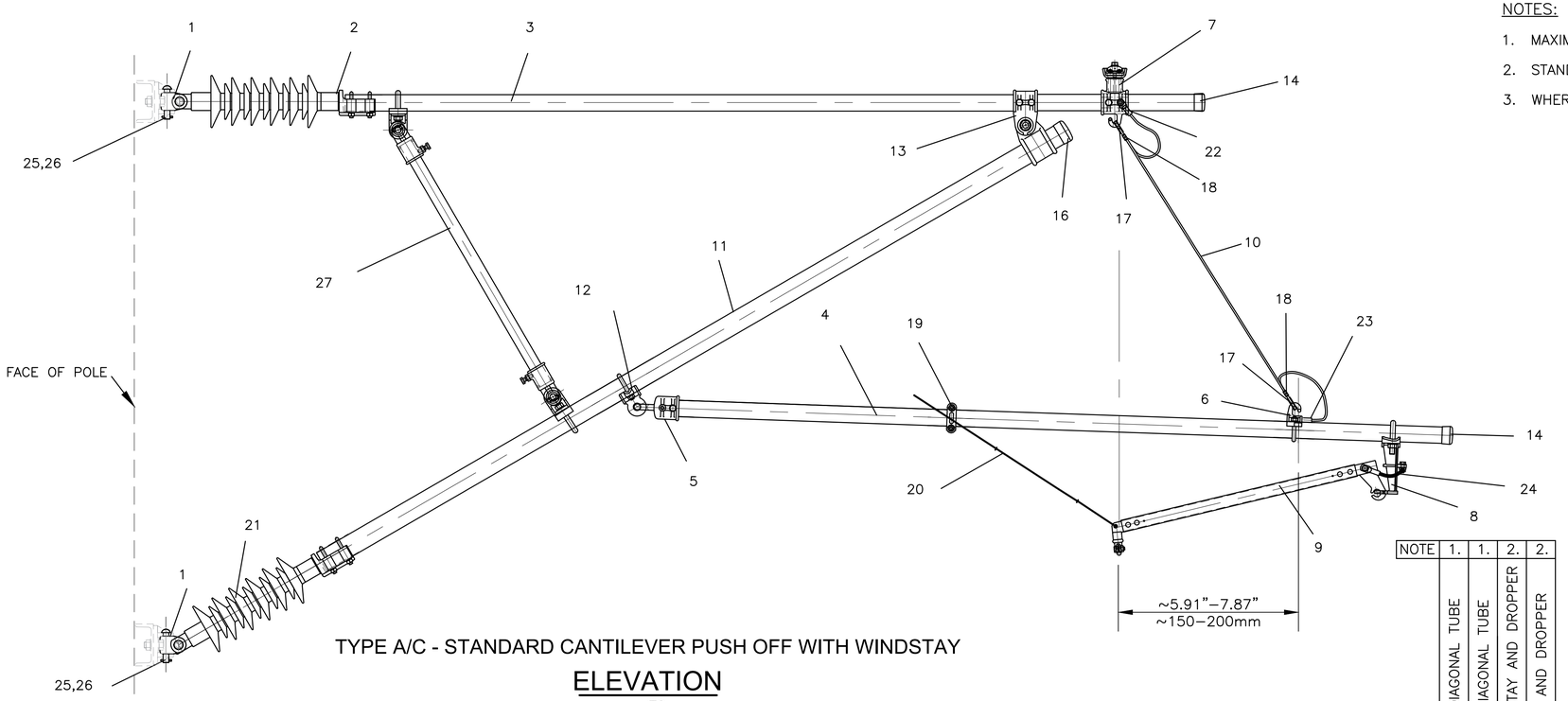
CANTILEVER PULL OFF
CA–01

CADD FILE NAME: SD–W6253

REV: | EDITION: SECOND

SCALE: NTS

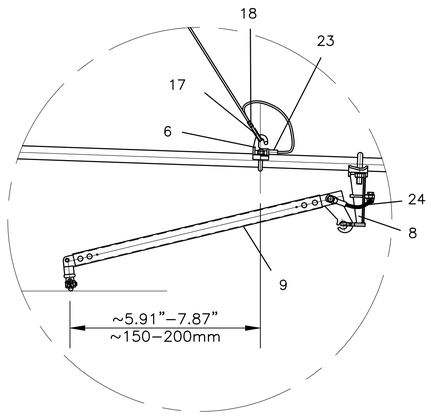
STANDARD DRAWING NO.: SD–W6253



TYPE A/C - STANDARD CANTILEVER PUSH OFF WITH WINDSTAY

ELEVATION

NTS



TYPE B/D - STANDARD CANTILEVER PUSH OFF WITHOUT WINDSTAY

ELEVATION

NTS

NOTES:

1. MAXIMUM DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK 5.20 M (17.06')
2. STANDARD DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK UP TO 3.50 M (11.48')
3. WHEREVER POSSIBLE USE HARDWARE OF IMPERIAL SYSTEM (ENGLISH UNITS)

NOTE	1.	1.	2.	2.					
	TYPE B WITH DIAGONAL TUBE	TYPE A WITH DIAGONAL TUBE	WITHOUT WINDSTAY AND DROPPER	WITH WINDSTAY AND DROPPER					
D	C	B	A						
1	1	–	–	DIAGONAL TUBE ø42		27			
2	2	2	2	BETA–SPLINT PIN	1.4462	26			
2	2	2	2	PIN 19X100	A2	25			
1	1	1	1	ELECTRICAL CONNECTION		24			
1	1	1	1	CABLE LUG 10–25 S	CU TIN–PLATED	23			
1	1	1	1	CABLE LUG 12–25 S	CU TIN–PLATED	22			
1	1	1	1	COMPOSITE INSULATOR EYE/CAP ø70		21			
–	1	–	1	WIND STAY FOR STEADY ARM		20			
–	1	–	1	EYE CLAMP FOR WIND STAY FOR TUBE ø55		19			
2	2	2	2	COMPRESS. SLEEVE B16	A2	18			
2	2	2	2	THIMBLE 35	A2	17			
1	1	1	1	TUBE CAP ø 70	PVC	16			
2	2	2	2	TUBE CAP ø55	PVC	14			
1	1	1	1	TUBE CONNECTING BRACKET ø 55 /ø70		13			
1	1	1	1	EYE CLAMP FOR TUBE ø70		12			
1	1	1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11			
1	1	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10			
1	1	1	1	STEADY ARM LENGTH AS USED		9			
1	1	1	1	DROP BRACKET FOR ø55		8			
1	1	1	1	CATENARY SWIVEL CLAMP FOR ø55		7			
1	1	1	1	HOOK CLAMP FOR TUBE ø55		6			
1	1	1	1	HOOK END FITTING FOR ø55		5			
1	1	1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4			
1	1	1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3			
1	1	1	1	COMPOSITE INSULATOR EYE/CAP ø55		2			
2	2	2	2	SWIVEL JOINT		1			
PIECES				DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

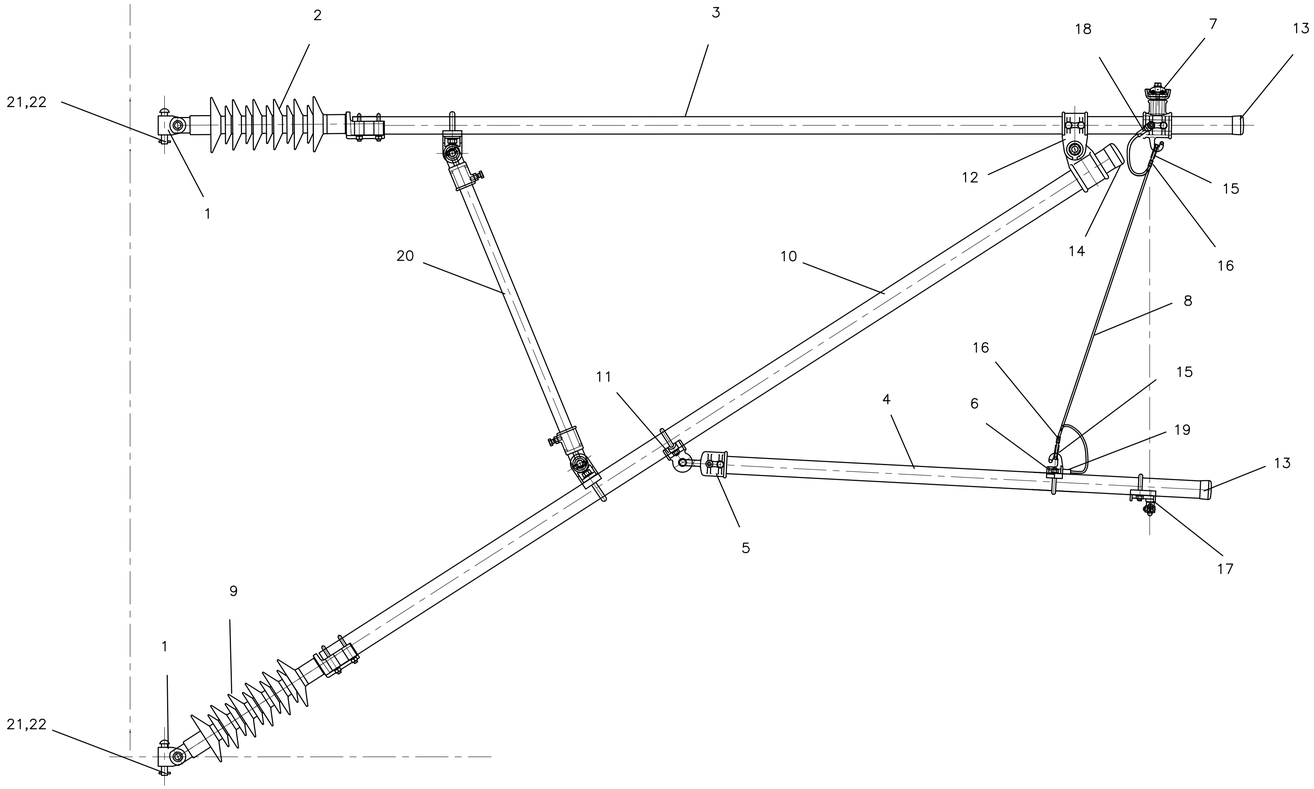
CANTILEVER PUSH OFF
CA–02

CADD FILE NAME: SD–W6254

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6254



STANDARD CANTILEVER OUT RUNNING

ELEVATION

NTS

CANTILEVER WITH DIAGONAL TUBE

A

PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	KG/PC.	REMARKS/ID-NO.
2	BETA-SPLINT PIN	1.4462	22			
2	PIN 19X100	A2	21			
1	DIAGONAL TUBE ø42		20			
1	CABLE LUG 10-25 S	CU TIN-PLATED	19	SHAPE DIN 46235		
1	CABLE LUG 12-25 S	CU TIN-PLATED	18	SHAPE DIN 46235		
1	CW-HOLDER FOR TUBE ø 55	G-Al	17			
2	COMPRESS. SLEEVE B16	A2	16			
2	THIMBLE 35	A2	15	DIN 43154		
1	TUBE CAP ø70	PVC	14			
2	TUBE CAP ø55	PVC	13			
1	TUBE CONNECTING BRACKET ø55/ø70	G-Al	12			
1	EYE CLAMP FOR TUBE ø70	G-Al	11			
1	TUBE ø70 X 6 LENGTH AS NEEDED	ALMGSI1F31	10			
1	COMPOSITE INSULATOR EYE/CAP ø70		9			
1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	8			
1	CATENARY SWIVEL CLAMP FOR TUBE ø55	G-Al	7			
1	HOOK CLAMP FOR TUBE ø55	G-Al	6			
1	HOOK END FITTING FOR TUBE ø55	G-Al	5			
1	TUBE ø55 X 6 LENGTH AS NEEDED	ALMGSI1F31	4			
1	TUBE ø55 X 6 LENGTH AS NEEDED	ALMGSI1F31	3			
1	COMPOSITE INSULATOR EYE/CAP ø55		2			
2	SWIVEL JOINT	ALSI7MG0,3	1			

REV	DATE	BY	CHK	APP	DESCRIPTION
A	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

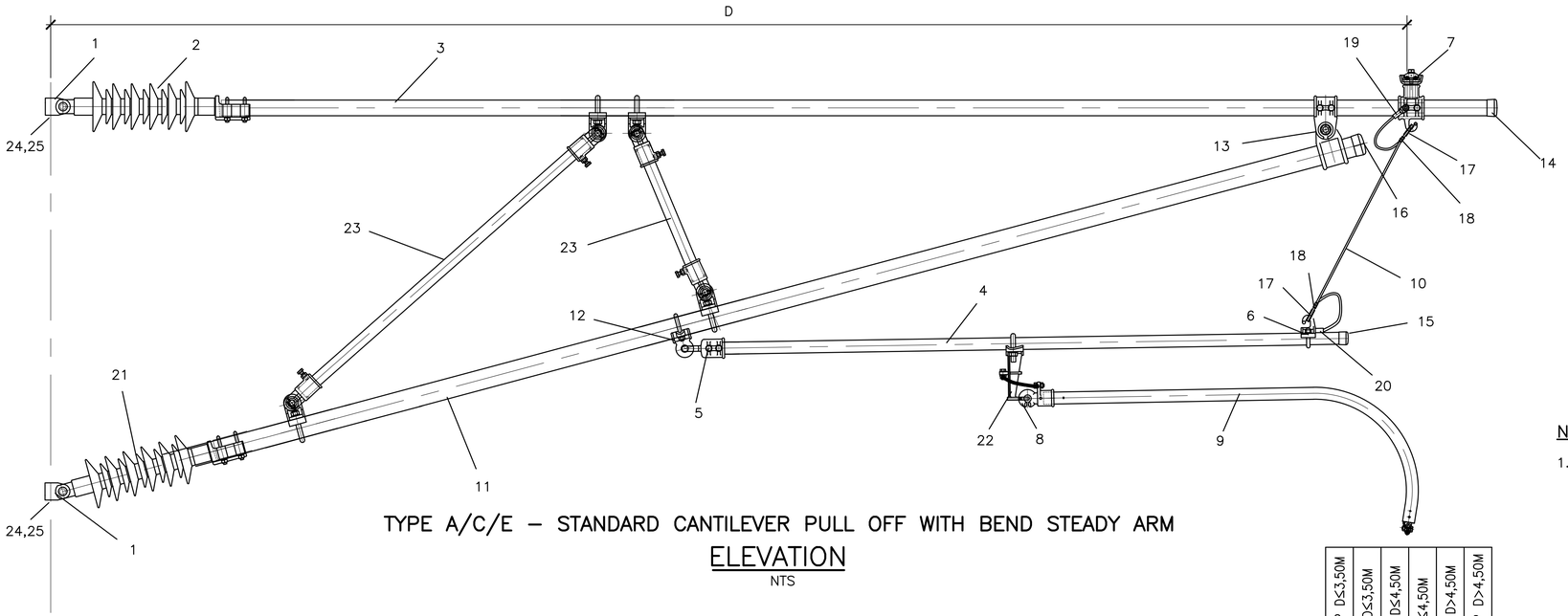
CANTILEVER
OUT OF RUNNING
CA-05

CADD FILE NAME: SD-W6255

REV: | EDITION: SECOND

SCALE: NTS

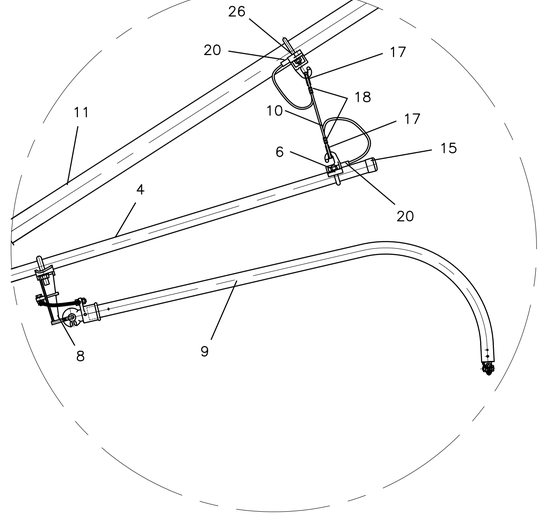
STANDARD DRAWING NO.: SD-W6255



TYPE A/C/E – STANDARD CANTILEVER PULL OFF WITH BEND STEADY ARM

ELEVATION

NTS



TYPE B/D/F – STANDARD CANTILEVER PULL OFF – DROPPER AT HOOK CLAMP WITH BEND STEADY ARM

ELEVATION

NTS

NOTES:

1. CANTILEVER TYPE SHALL BE USED AT OVERLAP LOCATIONS PER OCS BASIC DESIGN TO AVOID ADJACENT CONTACT WIPES WHERE APPLICABLE.

NO DIAGONAL TUBE, DROPPER AT HOOK CLAMP D≤3,50M	NO DIAGONAL TUBE, DROPPER AT MW–CLAMP D≤3,50M	1 DIAGONAL TUBE, DROPPER AT HOOK CLAMP D≤4,50M	1 DIAGONAL TUBE, DROPPER AT MW–CLAMP D≤4,50M	2 DIAGONAL TUBE, DROPPER AT HOOK CLAMP D>4,50M	2 DIAGONAL TUBE, DROPPER AT MW–CLAMP D>4,50M					
F	E	D	C	B	A	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
1	–	1	–	1	–	HOOK CLAMP FOR TUBE ø70		26		
2	2	2	2	2	2	BETA–SPLINT PIN	1.4462	25		
2	2	2	2	2	2	PIN 19X100	A2	24		
–	–	1	1	2	2	DIAGONAL TUBE ø42, COMPLETE		23		
1	1	1	1	1	1	ELECTRICAL CONNECTION		22		
1	1	1	1	1	1	COMPOSITE INSULATOR EYE/CAP ø70		21		
2	1	2	1	2	1	CABLE LUG 10–25 S	CU TIN–PLATED	20	shape DIN 46235	
–	1	–	1	–	1	CABLE LUG 12–25 S	CU TIN–PLATED	19	shape DIN 46235	
2	2	2	2	2	2	COMPRESS. SLEEVE B16	A2	18		
2	2	2	2	2	2	THIMBLE 35	A2	17	DIN 43154	
1	1	1	1	1	1	TUBE CAP ø70	PVC	16		
1	1	1	1	1	1	TUBE CAP ø42	PVC	15		
1	1	1	1	1	1	TUBE CAP ø55	PVC	14		
1	1	1	1	1	1	TUBE CONNECTING BRACKET ø55/ø70		13		
1	1	1	1	1	1	EYE CLAMP FOR TUBE ø70		12		
1	1	1	1	1	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
1	1	1	1	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	1	1	1	1	STEADY ARM BENT		9		
1	1	1	1	1	1	DROP BRACKET FOR ø42		8		
1	1	1	1	1	1	CATENARY SWIVEL CLAMP FOR TUBE ø55		7		
1	1	1	1	1	1	HOOK CLAMP FOR TUBE ø42		6		
1	1	1	1	1	1	HOOK END FITTING FOR TUBE ø42		5		
1	1	1	1	1	1	TUBE ø42X4 LENGTH AS NEEDED	ALMGSI1F31	4		
1	1	1	1	1	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
1	1	1	1	1	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
2	2	2	2	2	2	SWIVEL JOINT		1		

PIECES

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

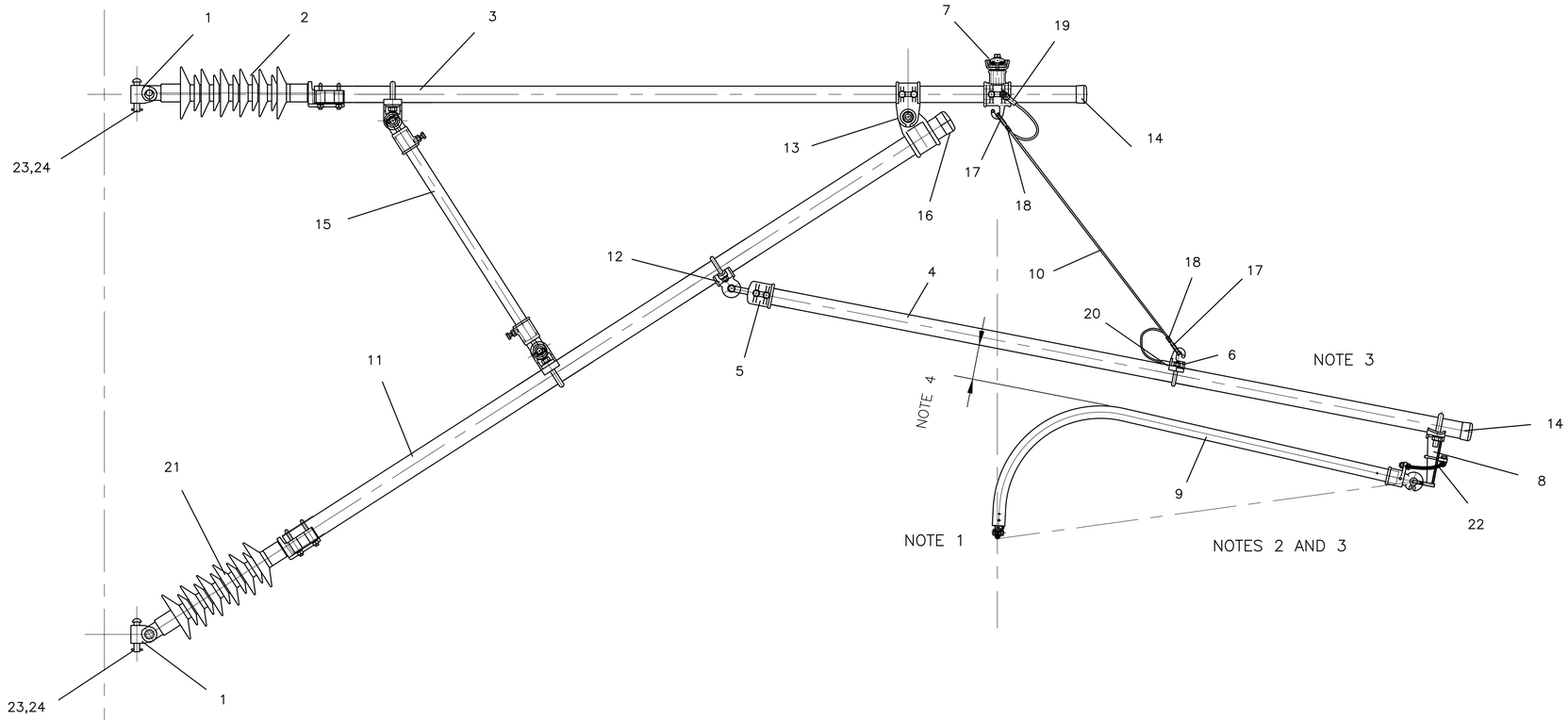
CANTILEVER PULL OFF
WITH BENT STEADY ARM
CA–10

CADD FILE NAME: SD–W6256

REV: | EDITION: SECOND

SCALE: NTS

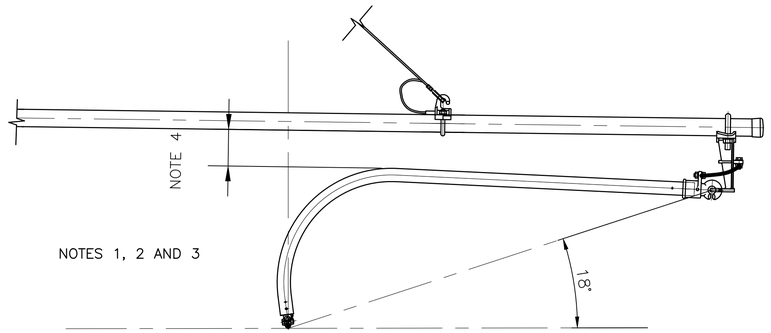
STANDARD DRAWING NO.: SD–W6256



STANDARD CANTILEVER PUSH OFF WITH BENT STEADY ARM

ELEVATION

NTS



STANDARD CANTILEVER PUSH OFF WITH BENT STEADY ARM
REGISTRATION TUBE WITH NEARLY NO INCLINATION

ELEVATION

NTS

NOTES:

1. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.
2. INCLINATION OF BENT STEADY ARM TO BE CALCULATED IN DETAIL DESIGN – DEPENDING ON RADIAL FORCE AND DROPPER DISTANCE. ACCORDING TO THIS RESULTING INCLINATION THE REGISTRATION TUBE MUST BE ADJUSTED.
3. THE REGISTRATION TUBE CAN BE INSTALLED WITH NO INCLINATION IN SPECIAL CIRCUMSTANCES TO ACHIEVE CLEARANCE FROM PASSING PANTOGRAPH.

   FOR THIS IT IS NECESSARY TO MAKE A CALCULATION OF BENT STEADY ARM INCLINATION DEPENDING ON RADIAL FORCE AND DROPPER DISTANCE. THIS INCLINATION MUST FIT TO INCLINATION TO REGISTRATION TUBE. THIS IS TO AVOID COLLISION BETWEEN REGISTRATION TUBE AND BENT STEADY ARM. IF NECESSARY CHANGE RADIAL FORCE AND DROPPER DISTANCE BY MODIFICATION IN DETAIL DESIGN.

   A REGISTRATION TUBE WITH NEARLY NO INCLINATION NEEDS TO HAVE A BENT STEADY ARM INCLINATION OF ABOUT 18°.
4. DISTANCE REGISTRATION TUBE TO BENT STEADY ARM IS TWO TIMES THE REAL UPLIFT PLUS 1.97'' (50MM) FOR SAFETY DISTANCE = 9.843'' (250MM)

	A					
	2	BETA–SPLINT PIN	1.4462	24		
	2	PIN 19X100	A2	23		
	1	ELECTRICAL CONNECTION		22		
	1	COMPOSITE INSULATOR EYE/CAP ø70		21		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	20	shape DIN 46235	
	1	CABLE LUG 12–25 S	CU TIN–PLATED	19	shape DIN 46235	
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17	DIN 43154	
	1	TUBE CAP ø70	PVC	16		
	1	DIAGONAL TUBE ø42, COMPLETE		15		
	2	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/ø70		13		
	1	EYE CLAMP FOR TUBE ø70	G–AI	12		
	1	TUBE ø70 X 6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM BENT		9		
	1	DROP BRACKET FOR ø55		8		
	1	CATENARY SWIVEL CLAMP FOR TUBE ø55	G–AI	7		
	1	HOOK CLAMP FOR TUBE ø55	G–AI	6		
	1	HOOK END FITTING FOR TUBE ø55	G–AI	5		
	1	TUBE ø55 X 6 LENGTH AS NEEDED	ALMGSI1F31	4		
	1	TUBE ø55 X 6 LENGTH AS NEEDED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
	2	SWIVEL JOINT	ALSI7MG0,3	1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

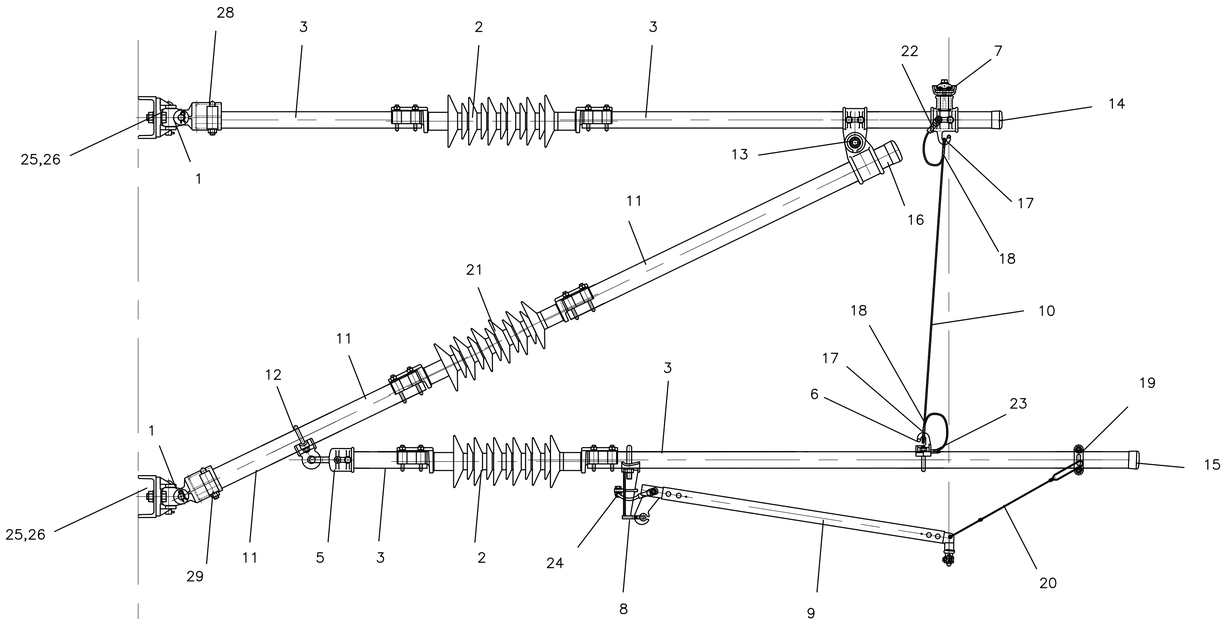
CANTILEVER PUSH OFF
WITH BENT STEADY ARM
CA–11

CADD FILE NAME: SD–W6257

REV: | EDITION: SECOND

SCALE: NTS

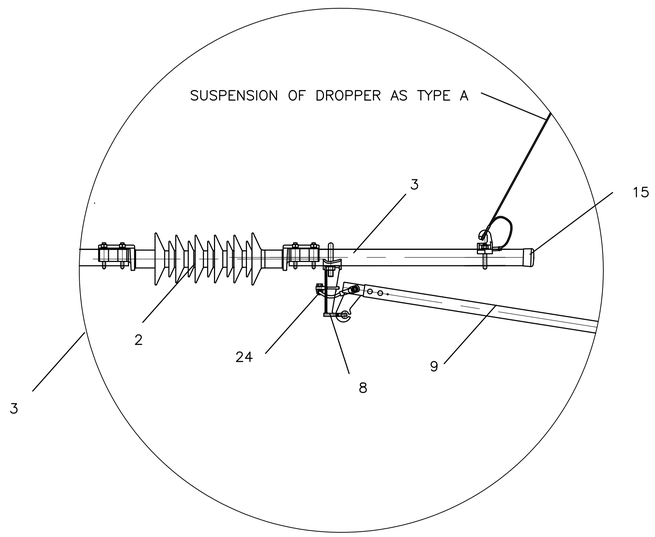
STANDARD DRAWING NO.: SD–W6257



TYPE A – CANTILEVER PULL OFF WITH OFFSET INSULATION

ELEVATION

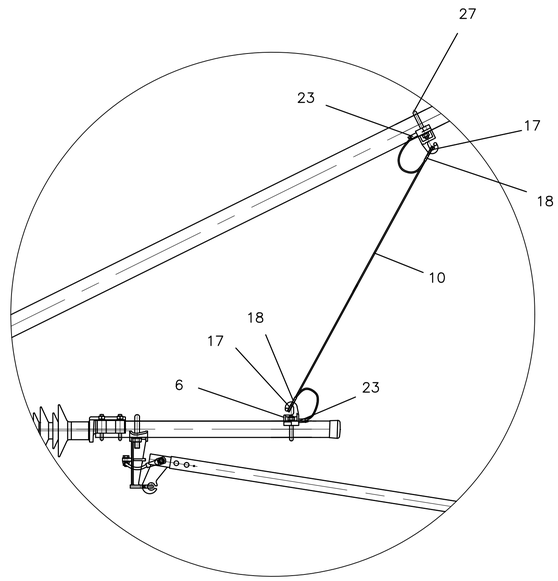
NTS



TYPE B – CANTILEVER PULL OFF WITH OFFSET INSULATION

ELEVATION

NTS



TYPE C – CANTILEVER PULL OFF WITH OFFSET INSULATION

ELEVATION

NTS

C	B	A					
WITHOUT WINDSTAY	WITHOUT WINDSTAY	WITH WINDSTAY, DROPPER AT HOOK CLAMP					
1	1	1	CLEVIS FOR TUBE ø70		29		
1	1	1	CLEVIS FOR TUBE ø55		28		
1	-	-	HOOK CLAMP FOR TUBE ø70		27		
2	2	2	BETA-SPLINT PIN	1.4462	26		
2	2	2	PIN 19X100	A2	25		
1	1	1	ELECTRICAL CONNECTION		24		
2	1	1	CABLE LUG 10-25 S	CU TIN-PLATED	23		
-	1	1	CABLE LUG 12-25 S	CU TIN-PLATED	22		
1	1	1	COMPOSITE INSULATOR CAP/CAP ø70		21		
-	-	1	WIND STAY FOR STEADY ARM		20		
-	-	1	EYE CLAMP FOR WIND STAY ø55		19		
2	2	2	COMPRESS. SLEEVE B16	A2	18		
2	2	2	THIMBLE 35	A2	17		
1	1	1	TUBE CAP ø70	PVC	16		
1	1	1	TUBE CAP ø55	PVC	15		
1	1	1	TUBE CAP ø55	PVC	14		
1	1	1	TUBE CONNECTING BRACKET ø55/70		13		
1	1	1	EYE CLAMP FOR TUBE ø70		12		
2	2	2	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
1	1	1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	10		
1	1	1	STEADY ARM LENGTH AS NEEDED		9		
1	1	1	DROP BRACKET FOR ø55		8		
1	1	1	CATENARY SWIVEL CLAMP TUBE ø55		7		
1	1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	1	HOOK END FITTING FOR TUBE ø55		5		
					4		
4	4	4	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
2	2	2	COMPOSITE INSULATOR CAP/CAP ø55		2		
2	2	2	SWIVEL JOINT		1		
PIECES			DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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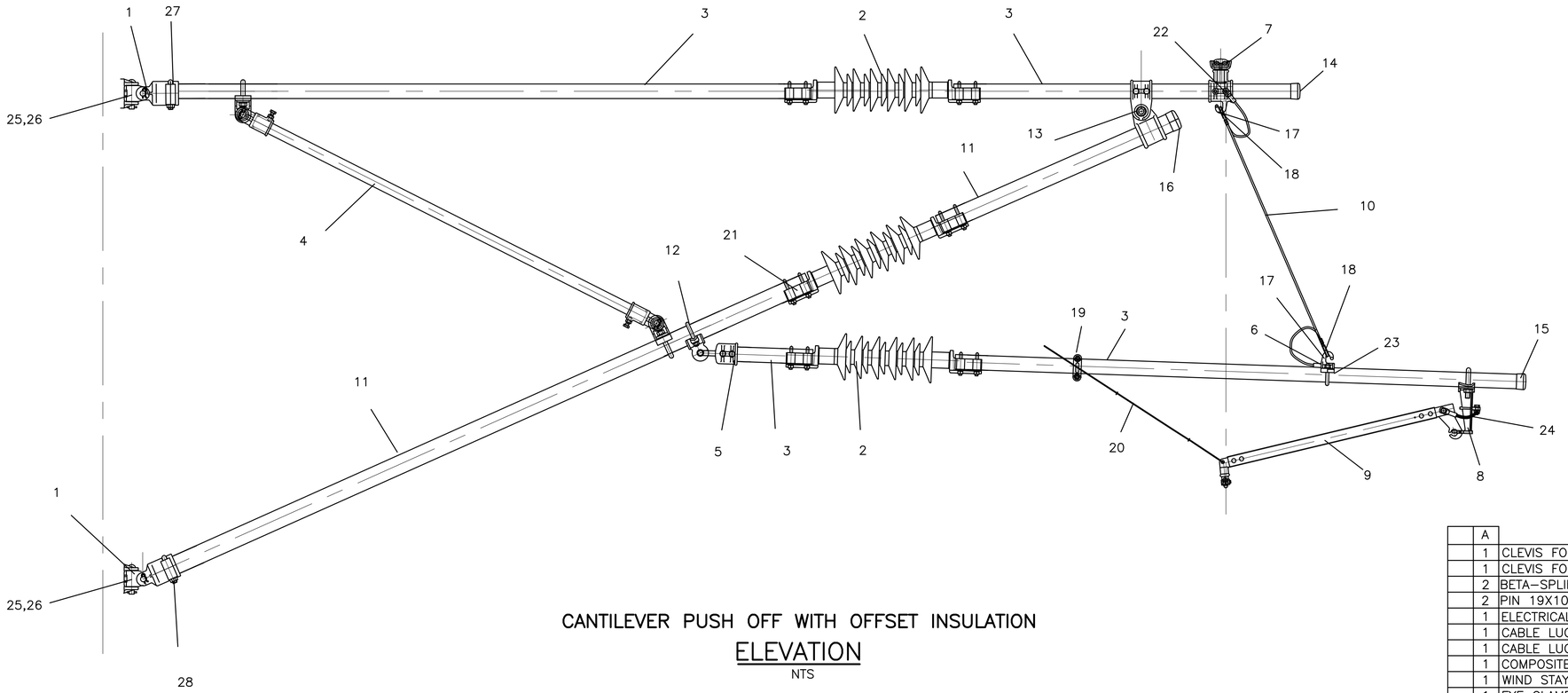
CANTILEVER WITH OFFSET INSULATION CA-12

CADD FILE NAME: SD-W6258

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6258



CANTILEVER PUSH OFF WITH OFFSET INSULATION

ELEVATION

NTS

	A					
	1	CLEVIS FOR TUBE ø70		28		
	1	CLEVIS FOR TUBE ø55		27		
	2	BETA-SPLINT PIN	1.4462	26		
	2	PIN 19X100	A2	25		
	1	ELECTRICAL CONNECTION		24		
	1	CABLE LUG 10-25 S	CU TIN-PLATED	23		
	1	CABLE LUG 12-25 S	CU TIN-PLATED	22		
	1	COMPOSITE INSULATOR CAP/CAP ø70		21		
	1	WIND STAY FOR STEADY ARM		20		
	1	EYE CLAMP FOR WIND STAY ø55		19		
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17		
	1	TUBE CAP ø70	PVC	16		
	1	TUBE CAP ø55	PVC	15		
	1	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	EYE CLAMP FOR TUBE ø70		12		
	2	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM LENGTH AS NEEDED		9		
	1	DROP BRACKET FOR ø55		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR TUBE ø55		5		
	1	DIAGONAL TUBE ø42		4		
	4	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	2	COMPOSITE INSULATOR CAP/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

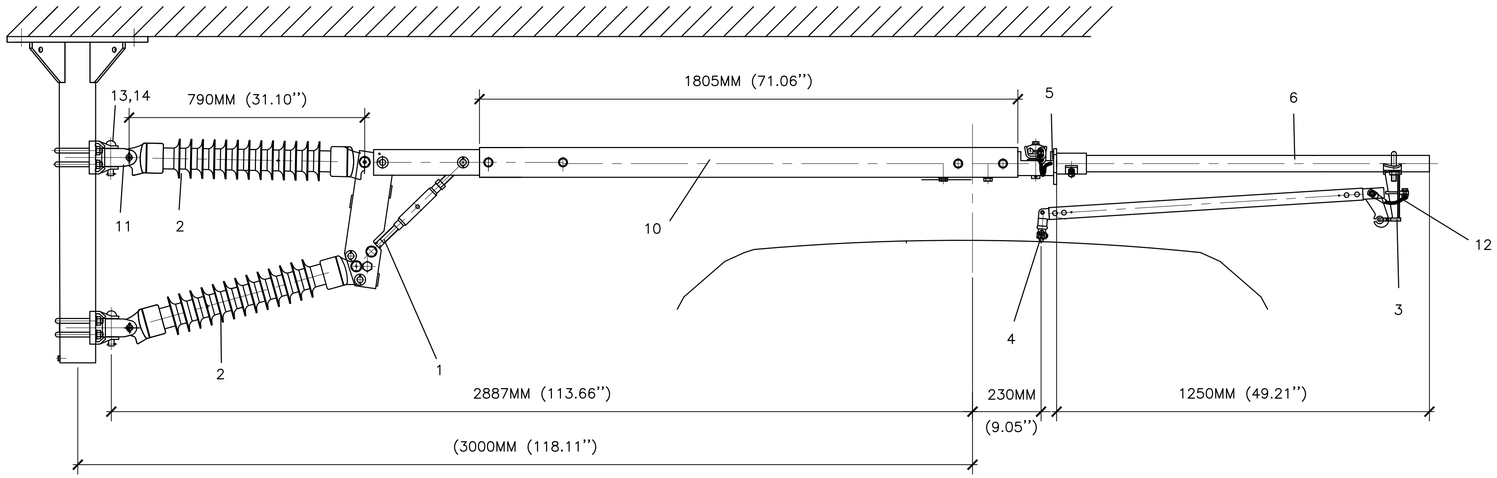
CANTILEVER WITH OFFSET INSULATION CA-13

CADD FILE NAME: SD-W6259

REV: | EDITION: SECOND

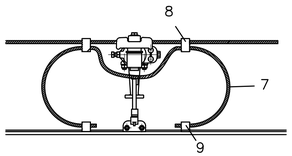
SCALE: NTS

STANDARD DRAWING NO.: SD-W6259



CANTILEVER PUSH OFF TYPE FOR UNDER BRIDGE SECTION

ELEVATION



ELECTRICAL CONNECTION AT CANTILEVER

ELEVATION

B	A					
	2	BETA–SPLINT PIN	1.4462	14		
	2	PIN 19X100	A2	13		
	1	ELECTRICAL CONNECTION		12		
	2	SWIVEL JOINT		11		
	1	CANTILEVER TUBE 100X100X6		10		
	2	CONTACT WIRE FEEDER CLAMP		9		
	2	WIRE FEEDER CLAMP		8		
	1	WIRE 95X259 L AS REQUIRED.		7		
	1	TUBE 55X6 L AS REQUIRED		6		
	1	CATENARY SWIVEL CLAMP		5		
	1	STEADY ARM L AS NEEDED		4		STANDARD L:1150MM
	1	DROP BRACKET		3		
	2	RODURFLEX–INSULATOR		2		
	1	CANTILEVER ARM, COMPL.		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

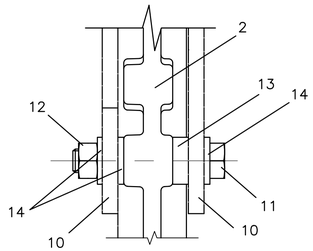
CANTILEVER UNDER BRIDGE SECTION
ASSEMBLY PUSH OFF
CA–14

CADD FILE NAME: SD–W6260

REV: | EDITION: SECOND

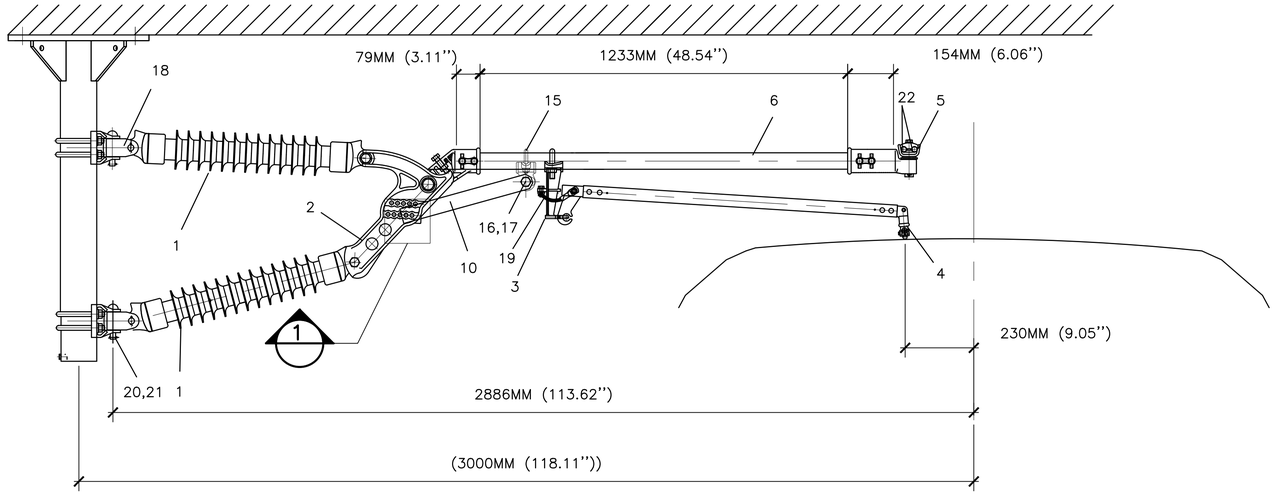
SCALE: NTS

STANDARD DRAWING NO.: SD–W6260

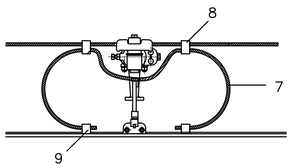


FRONT VIEW

1 DETAIL
– NTS



CANTILEVER PULL OFF TYPE FOR UNDER BRIDGE SECTION
ELEVATION



ELECTRICAL CONNECTION AT CANTILEVER
ELEVATION

NOTE:
1. COAT WITH LUBRICATION

	A					
	2	CUPAL SHEET		22		
	2	BETA–SPLINT PIN	1.4462	21		
	2	PIN 19X100	A2	20		
	1	ELECTRICAL CONNECTION		19		
	2	SWIVEL JOINT		18		
	1	HEX. HEAD NUT M20	A2 NO.2	17	DIN EN ISO 4032	
	1	HEX. HEAD SCREW M20X55	A2	16	DIN EN ISO 4017	
	1	EYE CLAMP FÜR TUBE Ø55		15		
	3	WASHER A12	A2	14	DIN EN ISO 7089	
	1	WASHER A14	A2	13	DIN 7989	
	1	HEX. HEAD NUT M12	A2	12	DIN EN ISO 4032	
	1	HEX. HEAD BOLT M12X80	A2 NO.2	11	DIN EN ISO 4014	
	2	SUPPORT CANTILEVER TUBE L=455MM		10		
	2	CONTACT WIRE FEEDER CLAMP		9		
	2	WIRE FEEDER CLAMP		8		
	1	WIRE 95X259 L AS REQUIRED.		7		
	1	TUBE 55X6 L AS REQUIRED		6		
	1	CATENARY SWIVEL CLAMP		5		
	1	STEADY ARM L AS NEEDED		4		STANDARD L:1150MM
	1	DROP BRACKET		3		
	1	CANTILEVER ARM		2		
	2	RODURFLEX–INSULATOR		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

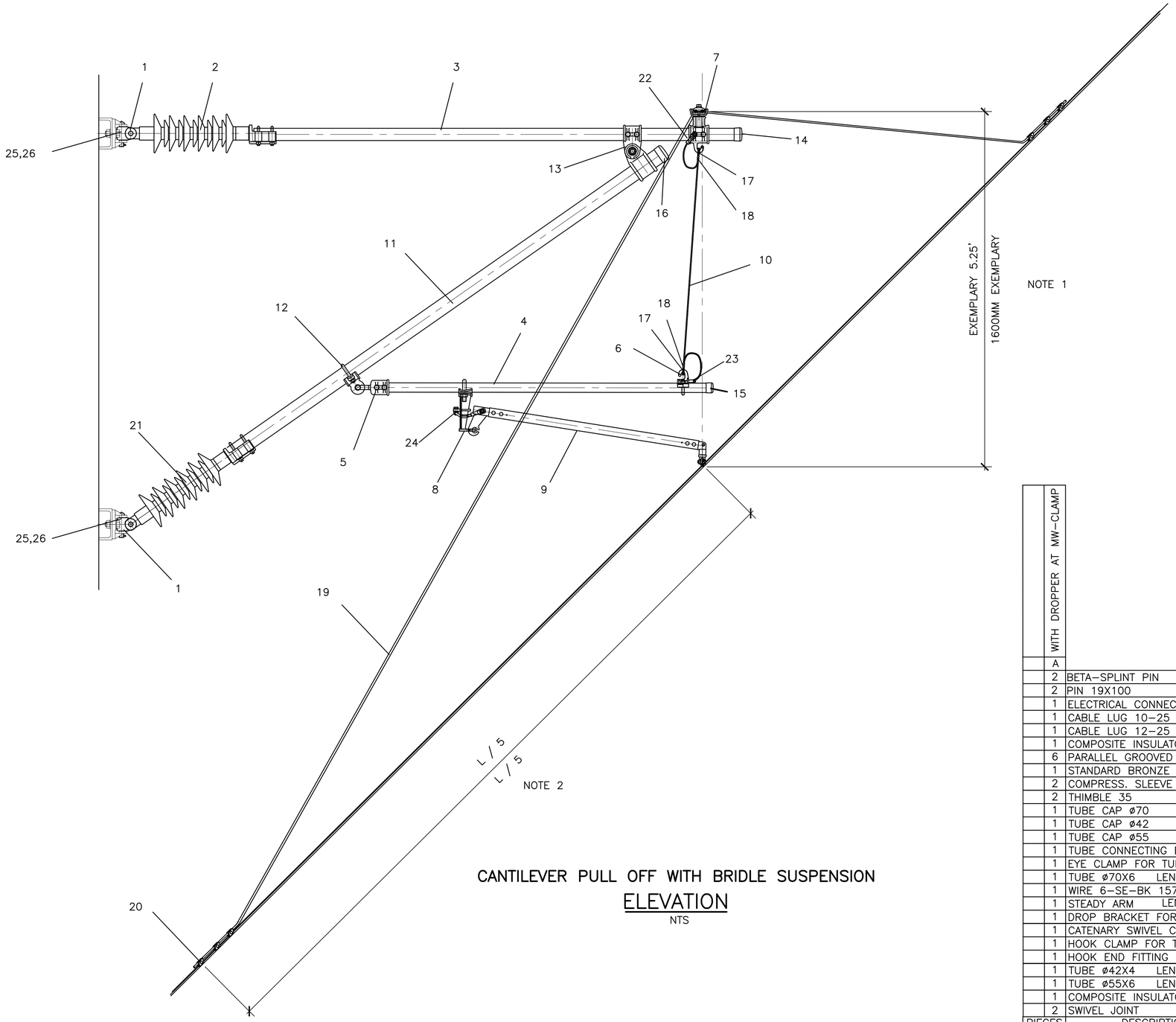
CANTILEVER UNDER BRIDGE SECTION
PULL OFF ASSEMBLY
CA–15

CADD FILE NAME: SD–W6261

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6261



CANTILEVER PULL OFF WITH BRIDLE SUSPENSION

ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN
2. L : DISTANCE FROM MAST TO MAST
3. USE FOR STANDARD CANTILEVER, DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.

	PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
		WITH DROPPER AT MW-CLAMP				
	A					
	2	BETA-SPLINT PIN	1.4462	26		
	2	PIN 19X100	A2	25		
	1	ELECTRICAL CONNECTION		24		
	1	CABLE LUG 10-25 S	CU TIN-PLATED	23		
	1	CABLE LUG 12-25 S	CU TIN-PLATED	22		
	1	COMPOSITE INSULATOR EYE/CAP ø70		21		
	6	PARALLEL GROOVED CLAMP		20		
	1	STANDARD BRONZE WIRE 70/19	BZ II	19	DIN 48201	LENGTH AS USED
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17		
	1	TUBE CAP ø70	PVC	16		
	1	TUBE CAP ø42	PVC	15		
	1	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	EYE CLAMP FOR TUBE ø70		12		
	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM LENGTH AS NEEDED		9		
	1	DROP BRACKET FOR ø42		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55	NOTE 3	7		
	1	HOOK CLAMP FOR TUBE ø42		6		
	1	HOOK END FITTING FOR TUBE ø42		5		
	1	TUBE ø42X4 LENGTH AS NEEDED	ALMGSI1F31	4		
	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
	2	SWIVEL JOINT		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

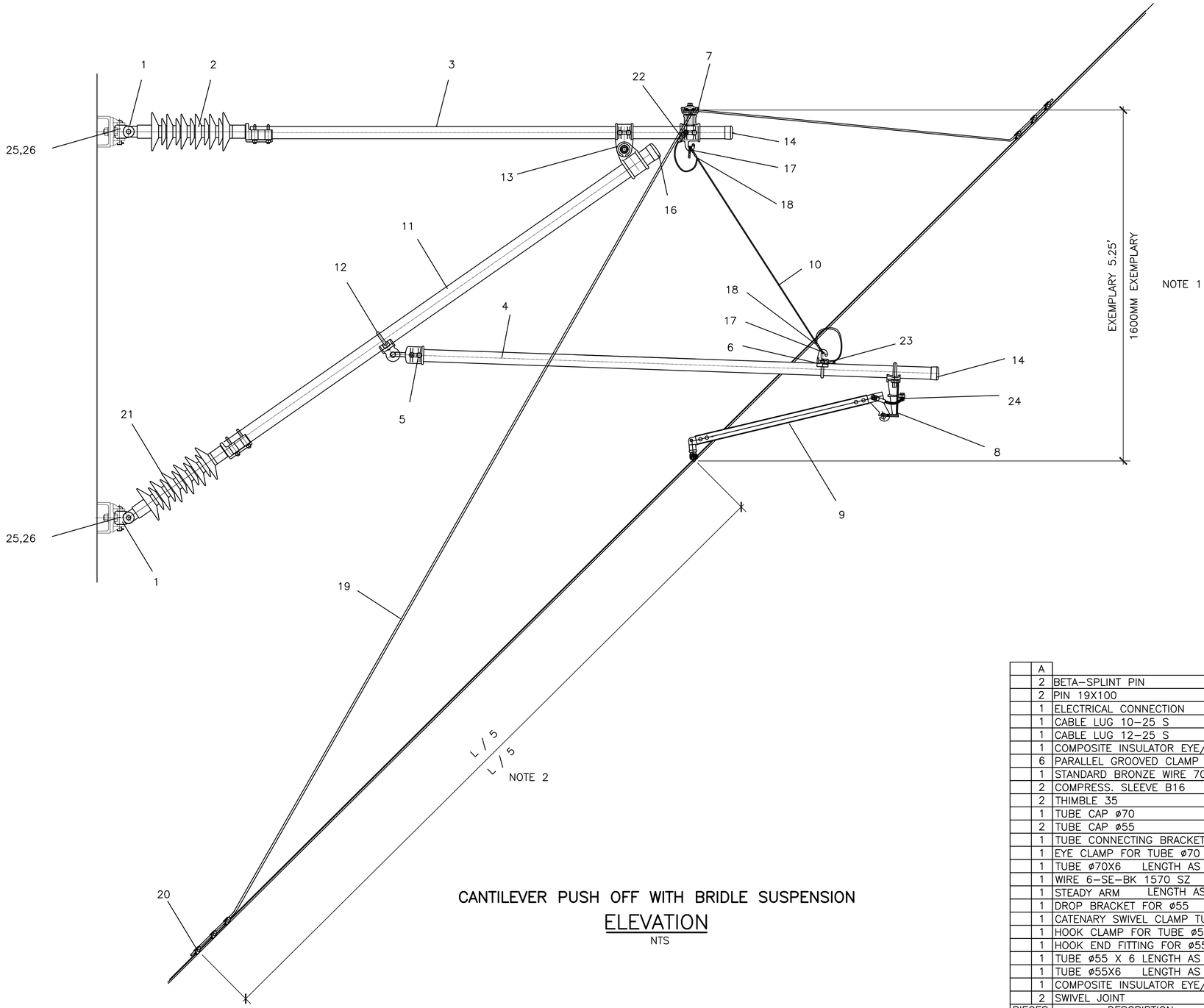
CANTILVER PULL OFF
WITH BRIDLE SUSPENSION
CA-20

CADD FILE NAME: SD-W6262

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6262



CANTILEVER PUSH OFF WITH BRIDLE SUSPENSION

ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN
2. L : DISTANCE FROM MAST TO MAST
3. USE FOR STANDARD CANTILEVER, DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.

	A					
	2	BETA–SPLINT PIN	1.4462	26		
	2	PIN 19X100	A2	25		
	1	ELECTRICAL CONNECTION		24		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	23		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	22		
	1	COMPOSITE INSULATOR EYE/CAP ø70		21		
	6	PARALLEL GROOVED CLAMP		20		
	1	STANDARD BRONZE WIRE 70/19	BZ II	19	DIN 48201	LENGTH AS USED
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17		
	1	TUBE CAP ø70	PVC	16		
	2	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	EYE CLAMP FOR TUBE ø70		12		
	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM LENGTH AS NEEDED		9		
	1	DROP BRACKET FOR ø55		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55	NOTE 3	7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR ø55		5		
	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER PUSH OFF
WITH BRIDLE SUSPENSION
CA–21

CADD FILE NAME: SD–W6263

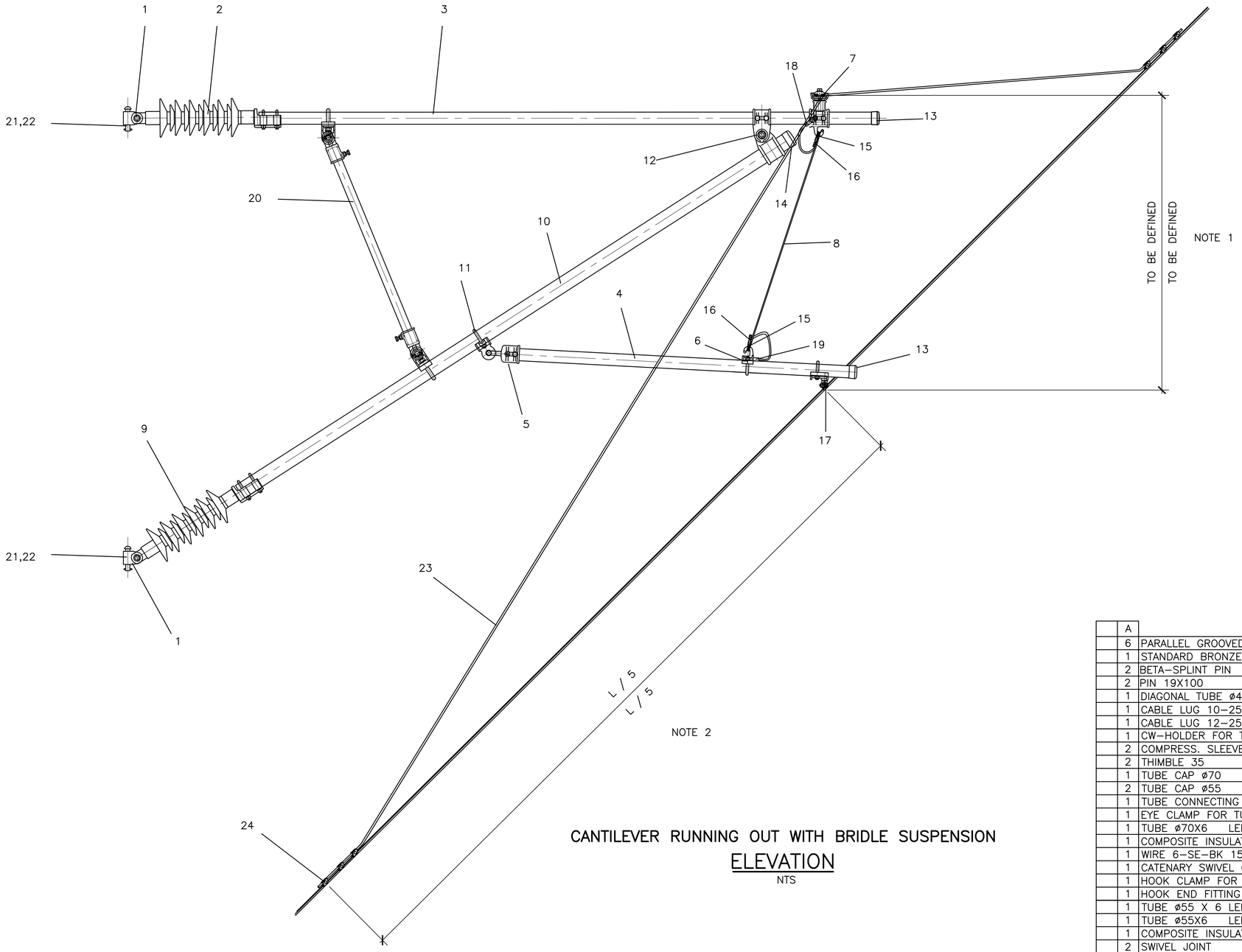
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6263

NOTES:

1. ACCORDING TO DETAIL DESIGN
2. L : DISTANCE FROM MAST TO MAST



CANTILEVER RUNNING OUT WITH BRIDLE SUSPENSION

ELEVATION

NTS

	A					
	6	PARALLEL GROOVED CLAMP		24		
	1	STANDARD BRONZE WIRE 70/19	BZ II	23	DIN 48201	LENGTH AS USED
	2	BETA-SPLINT PIN	1.4462	22		
	2	PIN 19X100	A2	21		
	1	DIAGONAL TUBE ø42		20		
	1	CABLE LUG 10-25 S	CU TIN-PLATED	19	shape DIN 46235	
	1	CABLE LUG 12-25 S	CU TIN-PLATED	18		
	1	CW-HOLDER FOR TUBE ø 55		17		
	2	COMPRESS. SLEEVE B16	A2	16		
	2	THIMBLE 35	A2	15	DIN 43154	
	1	TUBE CAP ø70	PVC	14		
	2	TUBE CAP ø55	PVC	13		
	1	TUBE CONNECTING BRACKET ø55/70		12		
	1	EYE CLAMP FOR TUBE ø70		11		
	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	10		
	1	COMPOSITE INSULATOR EYE/CAP ø70		9		
	1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	8		
	1	CATENARY SWIVEL CLAMP TUBE ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR ø55		5		
	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

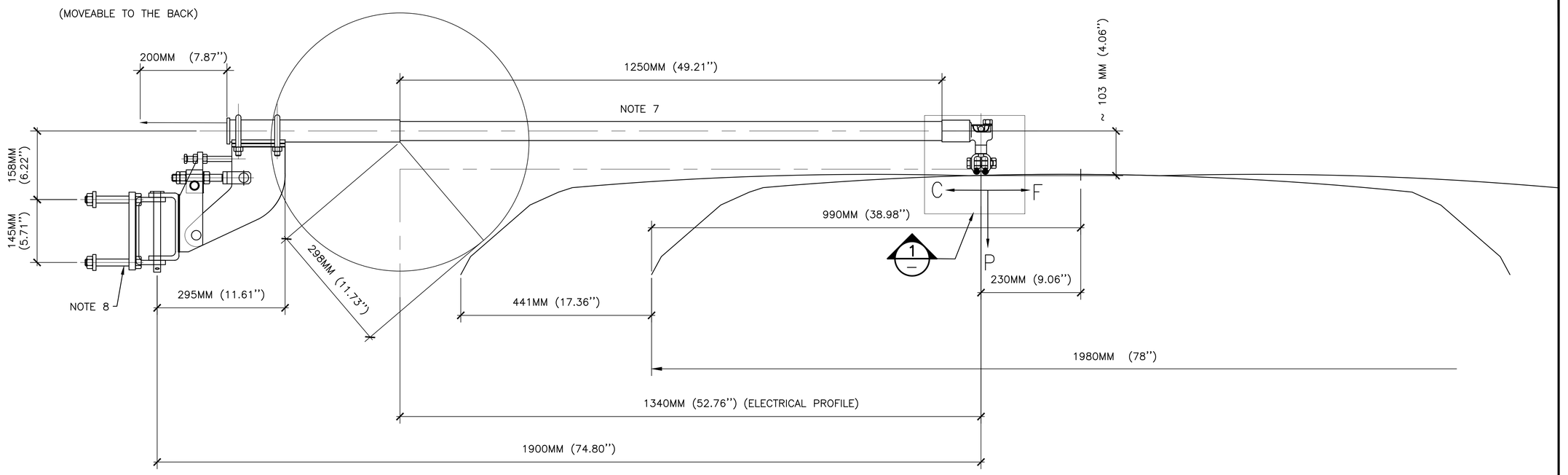
OVERLAP CANTILEVER RUNNING OUT WITH BRIDLE SUSPENSION
CA-22

CADD FILE NAME: SD-W6264

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6264



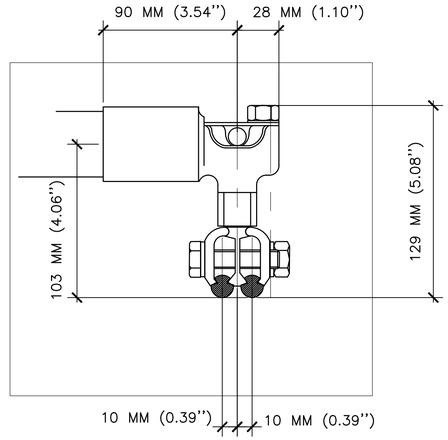
UNDERBRIDGE SUSPENSION FOR 2 CONTACT WIRES
ELEVATION
NTS

NOTES:

1. MAX. DEFLECTION OF INSULATING ARM		mm/N	0.3 (0.175 INCH/LBF)
2. MIN. BENDING BREAKING MOMENT OF THE INSULATING ARM		Nm	3500 (2581.47 LBF FT)
3. TENSILE BREAKING LOAD OF THE INSULATING ARM		kN	100 (22480.89 LBF)
4. MAX. WORKING LOAD:	P	N	175 (39.34 LBF)
	F	N	650 (146.13 LBF)
	C	N	250 (56.20 LBF)
5. IMPULSE WITHSTAND VOLTAGE		kV >	500
6. WET POWER FREQUENCY WITHSTAND VOLTAGE		kV	150

7. MATERIAL: GLASS FIBRE

8. CONNECTION DETAILS ON SEPARATE DRAWING:
   THE STRENGTH / LOAD CAPACITY OF THE
   DROP TUBE MUST BE CALCULATED / VERIFIED



DOUBLE CONTACT WIRE CLAMP

1/– DETAIL
NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

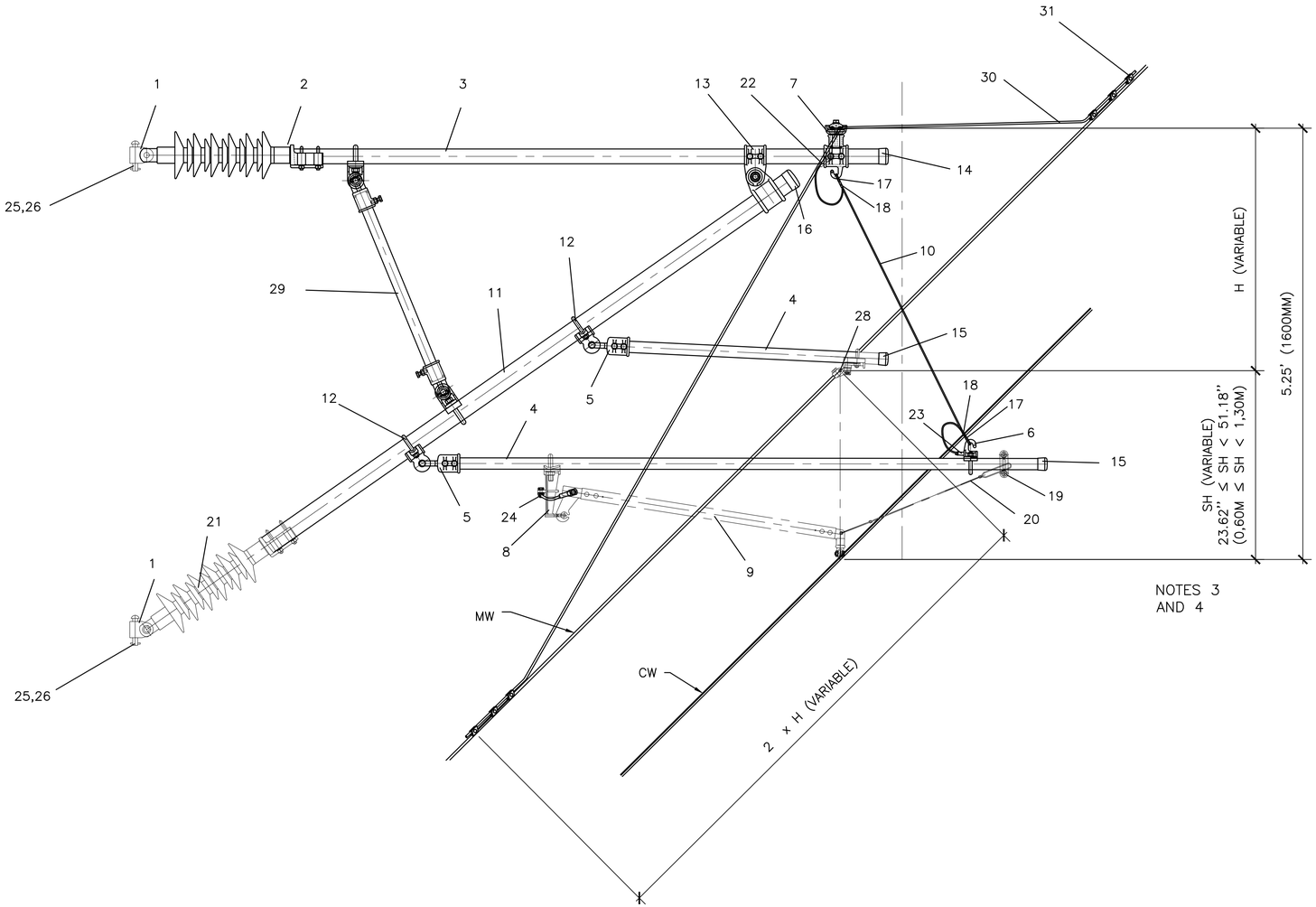
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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

UNDERBRIDGE SUSPENSION FOR
2 CONTACT WIRES
CA–23

CADD FILE NAME: SD–W6265
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6265



CANTILEVER PULL OFF – LOW SYSTEM HEIGHT

ELEVATION

NTS

NOTES:

1. MAXIMUM DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK 17.06' (5.20 M)
2. STANDARD DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK UP TO 11.48' (3.50 M)
3. IN SPECIAL CASES THE SYSTEM HEIGHT CAN BE REDUCED, SUBJECT TO SPECIFIC SITE CONDITIONS AND CANTILEVER CALCULATION
4. 1.97' (0.60M) ; 4.27' (1.30M)

NOTE 1	B	A	NOTE 2

WITH DIAGONAL TUBE	WITHOUT DIAGONAL TUBE	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
6	6		CONNECTION CLAMP		31		
1	1		STANDARD BRONZE WIRE 70/19	BZ II	30	DIN 48201	LENGTH AS USED
1	–		DIAGONAL TUBE ø42		29		
1	1		MW–HOLDER FOR TUBE ø 42		28		
2	2		BETA–SPLINT PIN	1.4462	26		
2	2		PIN 19X100	A2	25		
1	1		ELECTRICAL CONNECTION		24		
1	1		CABLE LUG 10–25 S	CU TIN–PLATED	23		
1	1		CABLE LUG 12–25 S	CU TIN–PLATED	22		
1	1		COMPOSITE INSULATOR EYE/CAP ø70		21		
1	1		WIND STAY FOR STEADY ARM		20		
1	1		EYE CLAMP FOR WIND STAY TUBE ø42		19		
2	2		COMPRESS. SLEEVE B16	A2	18		
2	2		THIMBLE 35	A2	17		
1	1		TUBE CAP ø70	PVC	16		
2	2		TUBE CAP ø42	PVC	15		
1	1		TUBE CAP ø55	PVC	14		
1	1		TUBE CONNECTING BRACKET ø 55/70		13		
2	2		EYE CLAMP FOR TUBE ø70		12		
1	1		TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	11		
1	1		WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1		STEADY ARM LENGTH AS REQUIRED		9		
1	1		DROP BRACKET FOR ø42		8		
1	1		CATENARY SWIVEL CLAMP FOR ø55		7		
1	1		HOOK CLAMP FOR TUBE ø42		6		
2	2		HOOK END FITTING FOR ø42		5		
2	2		TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	4		
1	1		TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
1	1		COMPOSITE INSULATOR EYE/CAP ø55		2		
2	2		SWIVEL JOINT		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

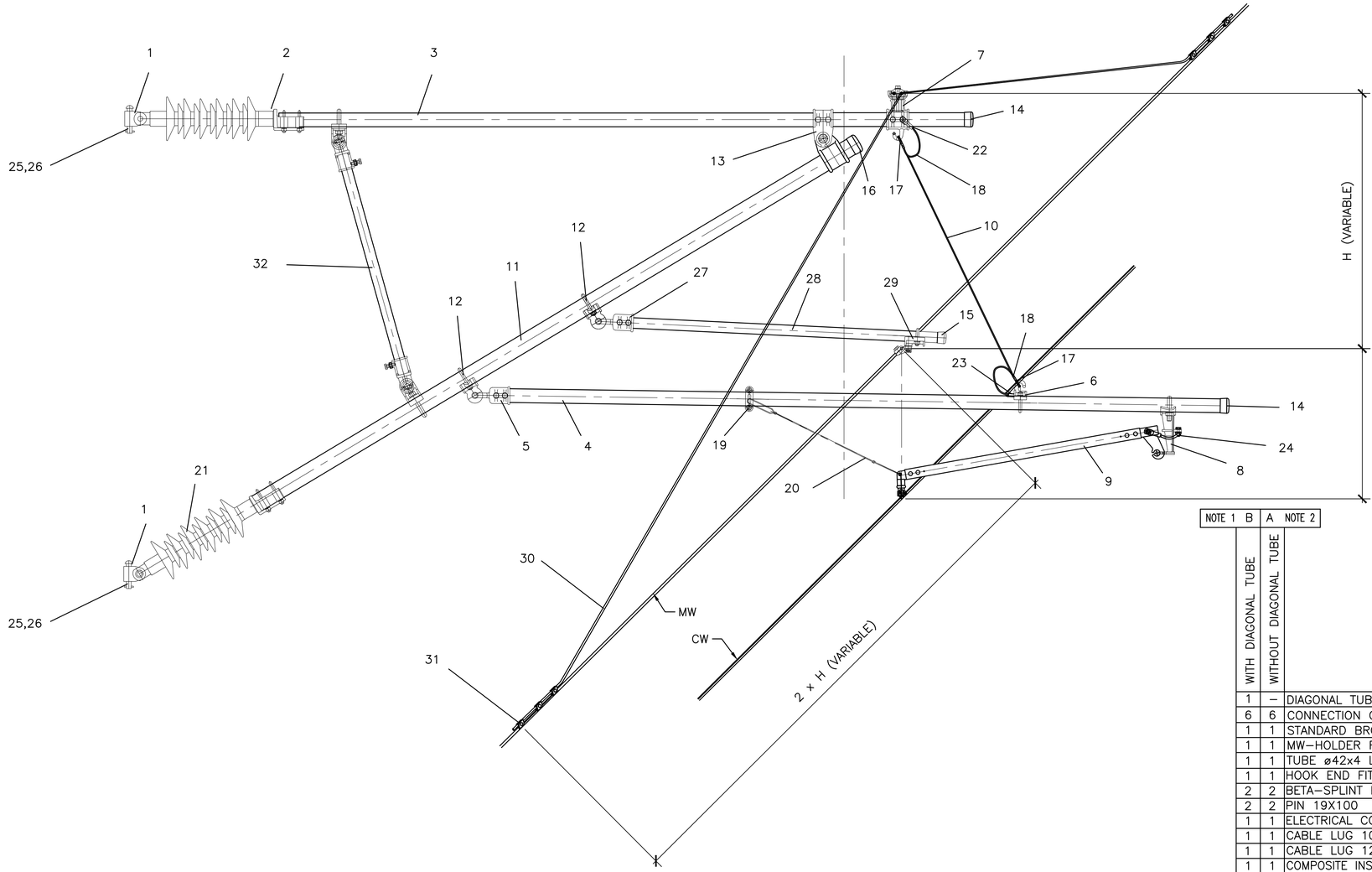
CANTILEVER PULL OFF
LOW SYSTEM HEIGHT
CA–24

CADD FILE NAME: SD–W6266

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6266



CANTILEVER PUSH OFF – LOW SYSTEM HEIGHT

ELEVATION

NTS

NOTES:

1. MAXIMUM DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK 17.06' (5.20 M)
2. STANDARD DISTANCE SURFACE OF MAST TO CENTERLINE OF TRACK UP TO 11.48' (3.50 M)
3. IN SPECIAL CASES THE SYSTEM HEIGHT CAN BE REDUCED. SUBJECT TO SPECIFIC SITE CONDITIONS AND CANTILEVER CALCULATION
4. 1.97' (0.60M) ; 4.27' (1.30M)

NOTE 1 B	A NOTE 2					
WITH DIAGONAL TUBE	WITHOUT DIAGONAL TUBE					
1	–	DIAGONAL TUBE ø42		32		
6	6	CONNECTION CLAMP		31		
1	1	STANDARD BRONZE WIRE 70/19	BZ II	30	DIN 48201	LENGTH AS USED
1	1	MW–HOLDER FOR TUBE ø 42		29		
1	1	TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	28		
1	1	HOOK END FITTING FOR ø42		27		
2	2	BETA–SPLINT PIN	1.4462	26		
2	2	PIN 19X100	A2	25		
1	1	ELECTRICAL CONNECTION		24		
1	1	CABLE LUG 10–25 S	CU TIN–PLATED	23		
1	1	CABLE LUG 12–25 S	CU TIN–PLATED	22		
1	1	COMPOSITE INSULATOR EYE/CAP ø70		21		
1	1	WIND STAY FOR STEADY ARM		20		
1	1	EYE CLAMP FOR WIND STAY TUBE ø55		19		
2	2	COMPRESS. SLEEVE B16	A2	18		
2	2	THIMBLE 35	A2	17		
1	1	TUBE CAP ø70	PVC	16		
1	1	TUBE CAP ø42	PVC	15		
2	2	TUBE CAP ø55	PVC	14		
1	1	TUBE CONNECTING BRACKET ø 55/70		13		
2	2	EYE CLAMP FOR TUBE ø70		12		
1	1	TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	11		
1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	STEADY ARM LENGTH AS REQUIRED		9		
1	1	DROP BRACKET FOR ø55		8		
1	1	CATENARY SWIVEL CLAMP FOR ø55		7		
1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	HOOK END FITTING FOR ø55		5		
1	1	TUBE ø55X6 LENGTH AS USED	ALMGSI1F31	4		
1	1	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
1	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
2	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

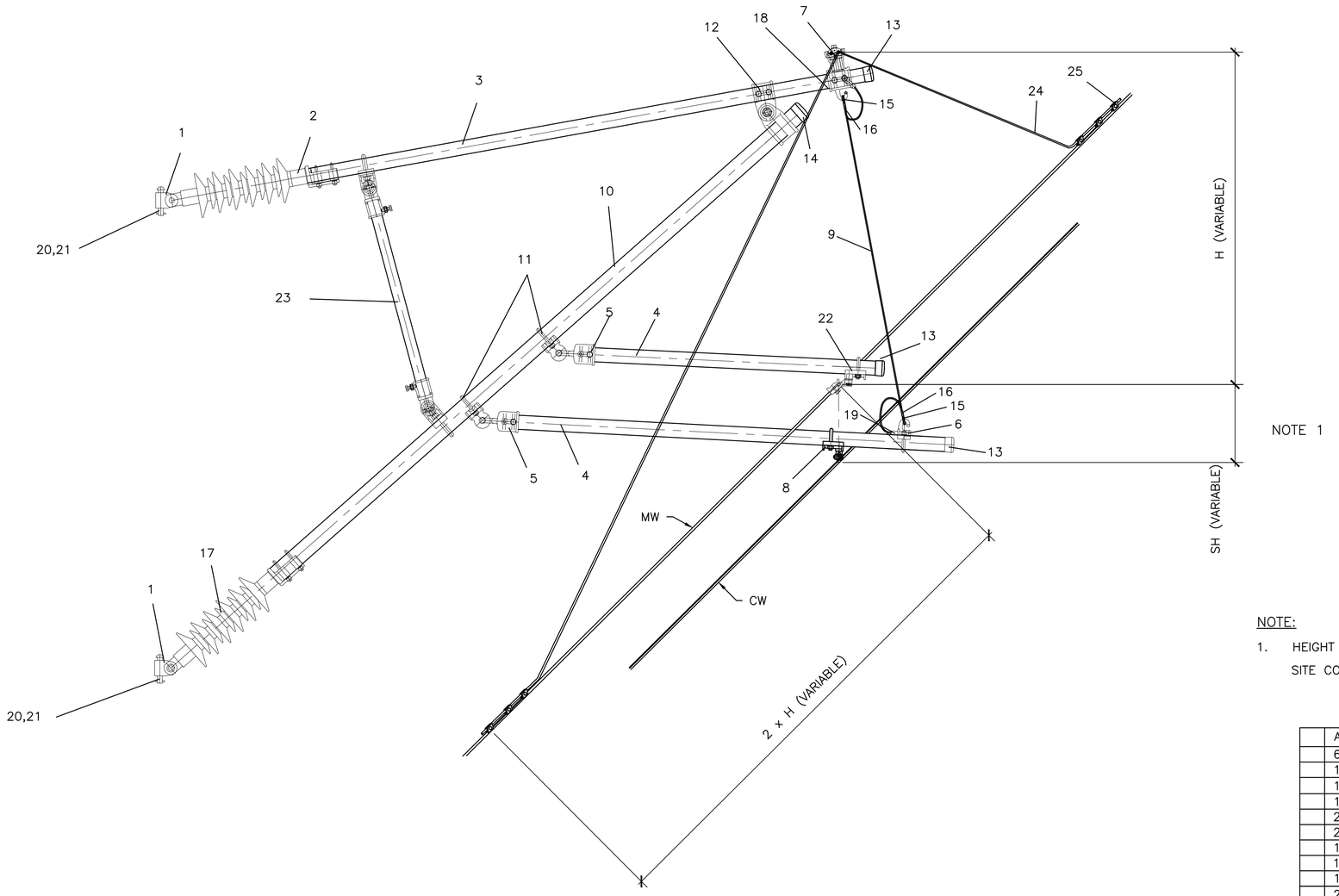
CANTILEVER PUSH OFF
LOW SYSTEM HEIGHT
CA–25

CADD FILE NAME: SD–W6267

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6267



CANTILEVER RUNNING OUT – LOW SYSTEM HEIGHT

ELEVATION

NTS

NOTE:

1. HEIGHT SH AND H IS SUBJECT TO SITE CONDITIONS AND CANTILEVER CALCULATION

	A					
	6	CONNECTION CLAMP		25		
	1	STANDARD BRONZE WIRE 70/19	BZ II	24	DIN 48201	LENGTH AS USED
	1	DIAGONAL TUBE ø42		23		
	1	MW–HOLDER FOR TUBE ø 55		22		
	2	BETA–SPLINT PIN	1.4462	21		
	2	PIN 19X100	A2	20		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	19		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	18		
	1	COMPOSITE INSULATOR EYE/CAP ø70		17		
	2	COMPRESS. SLEEVE B16	A2	16		
	2	THIMBLE 35	A2	15		
	1	TUBE CAP ø70	PVC	14		
	3	TUBE CAP ø55	PVC	13		
	1	TUBE CONNECTING BRACKET ø 55/70		12		
	2	EYE CLAMP FOR TUBE ø70		11		
	1	TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	10		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	9		
	1	CW–HOLDER FOR TUBE ø 55		8		
	1	CATENARY SWIVEL CLAMP FOR ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	2	HOOK END FITTING FOR ø55		5		
	2	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	4		
	1	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

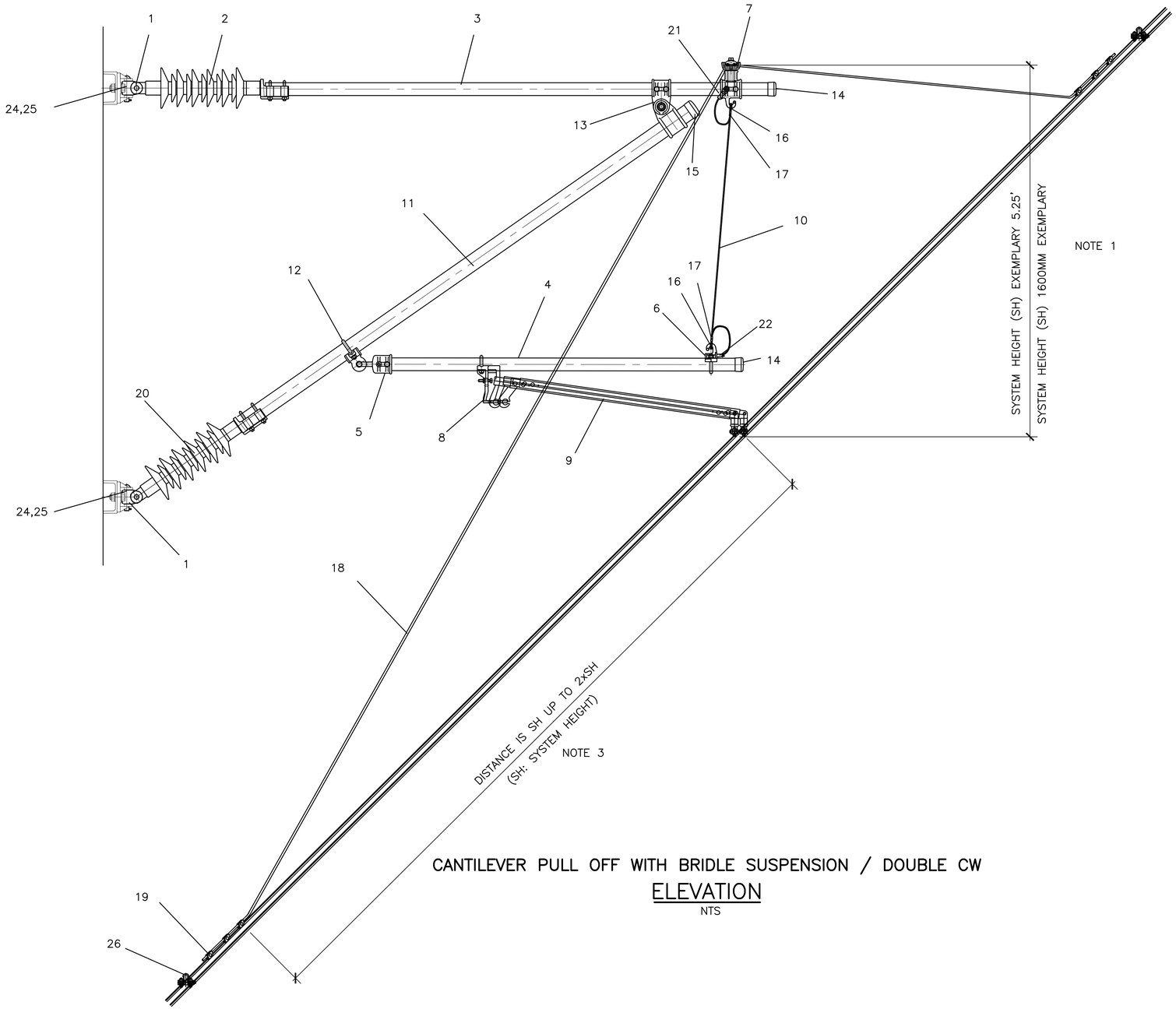
CANTILEVER RUNNING OUT
LOW SYSTEM HEIGHT
CA–26

CADD FILE NAME: SD–W6268

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6268



CANTILEVER PULL OFF WITH BRIDLE SUSPENSION / DOUBLE CW

ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN
2. USE FOR STANDARD CANTILEVER, DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.
3. DISTANCE: SH UP TO 2xSH

B	A						
		WITH DROPPER AT MW–CLAMP					
	2	DOUBLE CONTACT WIRE CLAMP	A2	26			
	2	BETA–SPLINT PIN	1.4462	25			
	2	PIN 19X100	A2	24			
				23			
	1	CABLE LUG 10–25 S	CU TIN–PLATED	22			
	1	CABLE LUG 12–25 S	CU TIN–PLATED	21			
	1	COMPOSITE INSULATOR EYE/CAP ø70		20			
	6	PARALLEL GROOVED CLAMP		19			
	1	STANDARD BRONZE WIRE 70/19	BZ II	18	DIN 48201	LENGTH AS USED	
	2	COMPRESS. SLEEVE B16	A2	17			
	2	THIMBLE 35	A2	16			
	1	TUBE CAP ø70	PVC	15			
	2	TUBE CAP ø55	PVC	14			
	1	TUBE CONNECTING BRACKET ø55/70		13			
	1	EYE CLAMP FOR TUBE ø70		12			
	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11			
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10			
	2	STEADY ARM LENGTH AS NEEDED		9			
	1	DOUBLE DROP BRACKET COMPLETE		8			
	1	CATENARY SWIVEL CLAMP TUBE ø55	NOTE 2	7			
	1	HOOK CLAMP FOR TUBE ø55		6			
	1	HOOK END FITTING FOR TUBE ø55		5			
	1	TUBE ø55X6 LENGTH AS USED	ALMGSI1F31	4			
	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3			
	1	COMPOSITE INSULATOR EYE/CAP ø55		2			
	2	SWIVEL JOINT		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER PULL OFF WITH BRIDLE SUSPENSION AND DOUBLE STEADY ARM / DOUBLE CW CA–27

CADD FILE NAME: SD–W6269

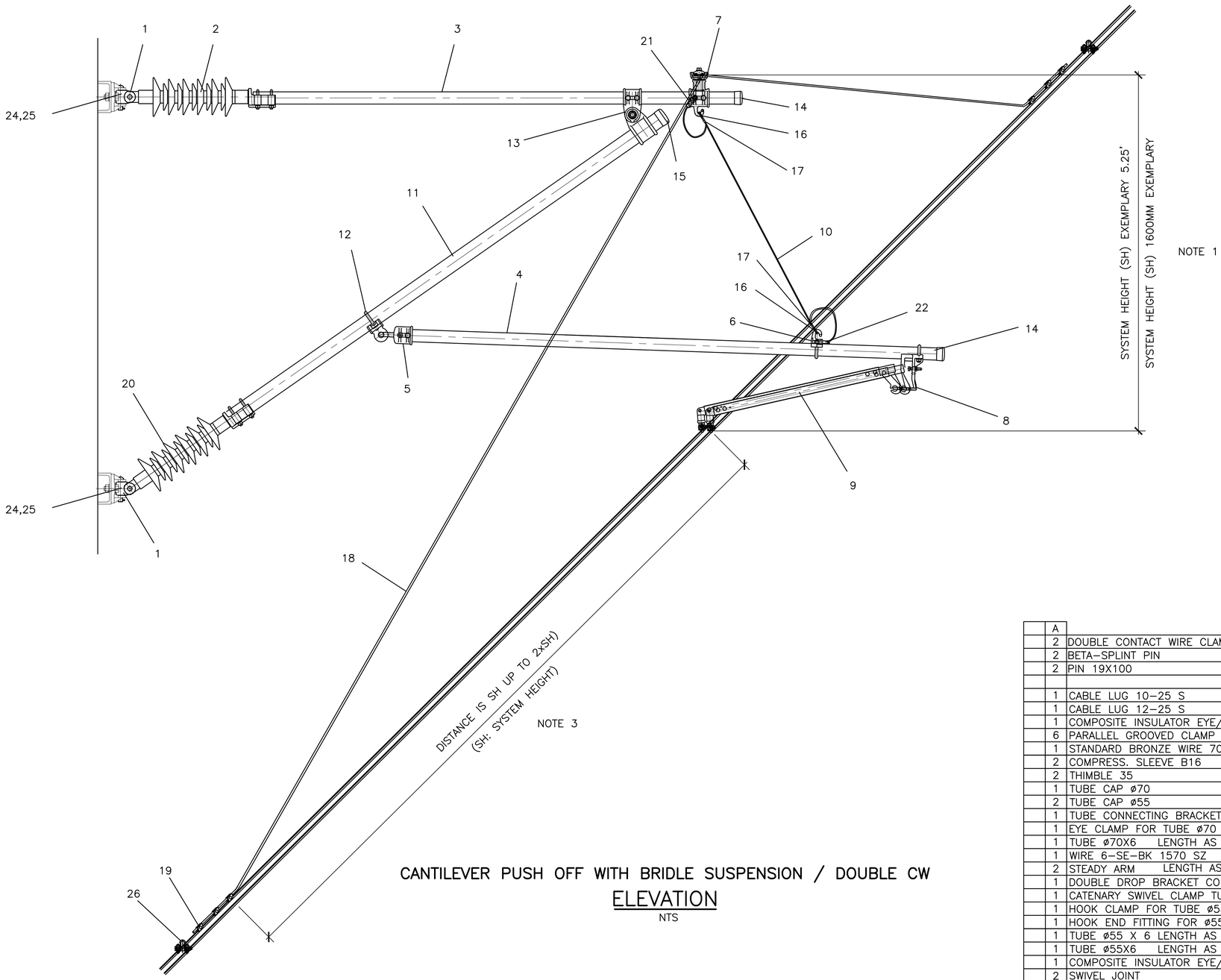
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6269

NOTES:

1. ACCORDING TO DETAIL DESIGN
2. USE FOR STANDARD CANTILEVER, DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.
3. DISTANCE: SH UP TO 2xSH



CANTILEVER PUSH OFF WITH BRIDLE SUSPENSION / DOUBLE CW

ELEVATION

NTS

	A					
	2	DOUBLE CONTACT WIRE CLAMP	A2	26		
	2	BETA–SPLINT PIN	1.4462	25		
	2	PIN 19X100	A2	24		
				23		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	22		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	21		
	1	COMPOSITE INSULATOR EYE/CAP ø70		20		
	6	PARALLEL GROOVED CLAMP		19		
	1	STANDARD BRONZE WIRE 70/19	BZ II	18	DIN 48201	LENGTH AS USED
	2	COMPRESS. SLEEVE B16	A2	17		
	2	THIMBLE 35	A2	16		
	1	TUBE CAP ø70	PVC	15		
	2	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	EYE CLAMP FOR TUBE ø70		12		
	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	2	STEADY ARM LENGTH AS NEEDED		9		
	1	DOUBLE DROP BRACKET COMPLETE		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55	NOTE 2	7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR ø55		5		
	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
	1	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR EYE/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER PUSH OFF WITH BRIDLE SUSPENSION AND DOUBLE STEADY ARM / DOUBLE CW CA–28

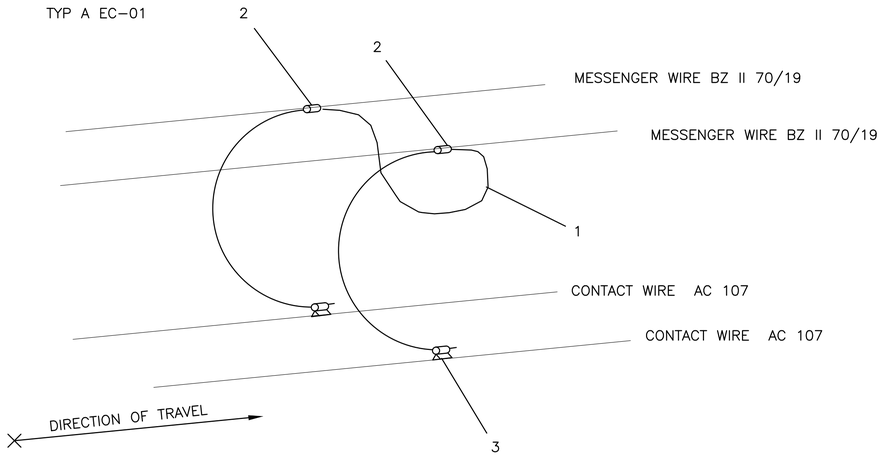
CADD FILE NAME: SD–W6270

REV: | EDITION: SECOND

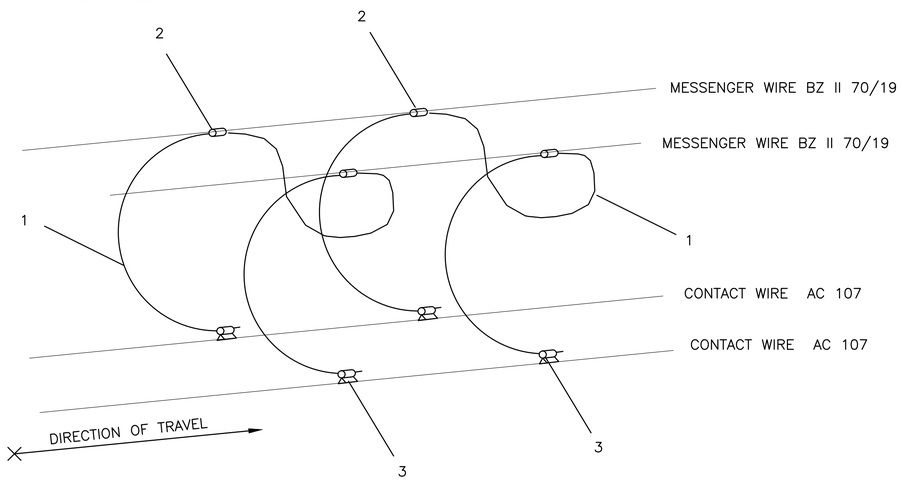
SCALE: NTS

STANDARD DRAWING NO.: SD–W6270

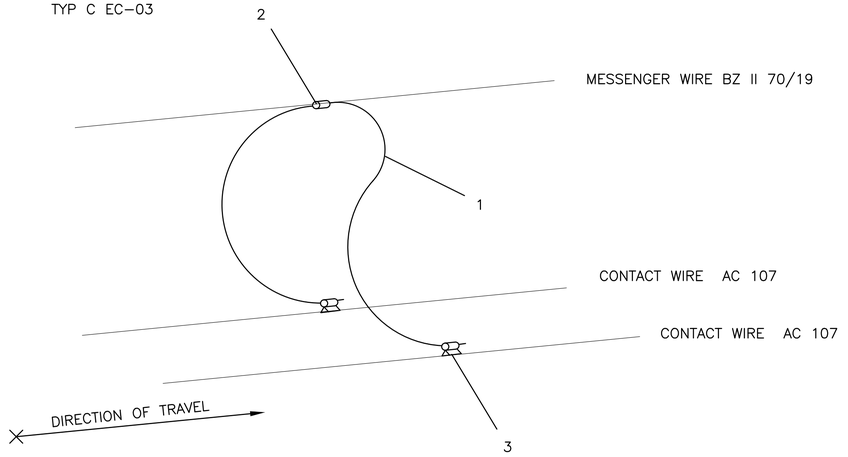
TYP A EC-01



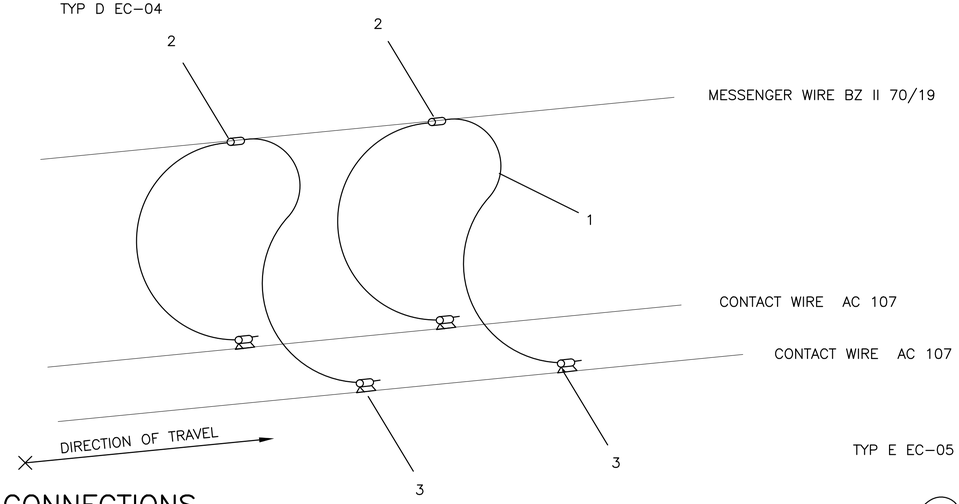
TYP B EC-02



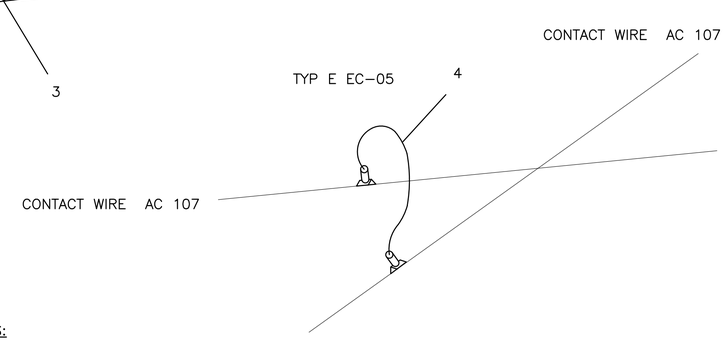
TYP C EC-03



TYP D EC-04



TYP E EC-05



TYPES OF ELECTRICAL CONNECTIONS

LENGTH OF JUMPER WIRE E-CU 95x259 ACC. TO SD-W6017

NOTES:

1. ELECTRICAL CONNECTION OF TWO CW SD-W6843

JUMPER CW TO CW	FULL FEEDING JUMPER	EQUALIZING JUMPER	FULL FEEDING JUMPER	EQUALIZING JUMPER					
E	D	C	B	A					
1	–	–	–	–	ELECTRICAL CONNECTION OF TWO CW		4		NOTE 1
–	4	2	4	2	CLAMP DUPLEX, Ø14.77MM DIA. JW TO 107MM² CW		3		
–	2	1	4	2	WIRE FEEDER CLAMP JW95f-MW70		2		
–	2	1	2	1	JUMPER WIRE E-CU 95x259	E-Cu	1	DIN 43138	
PIECES					DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

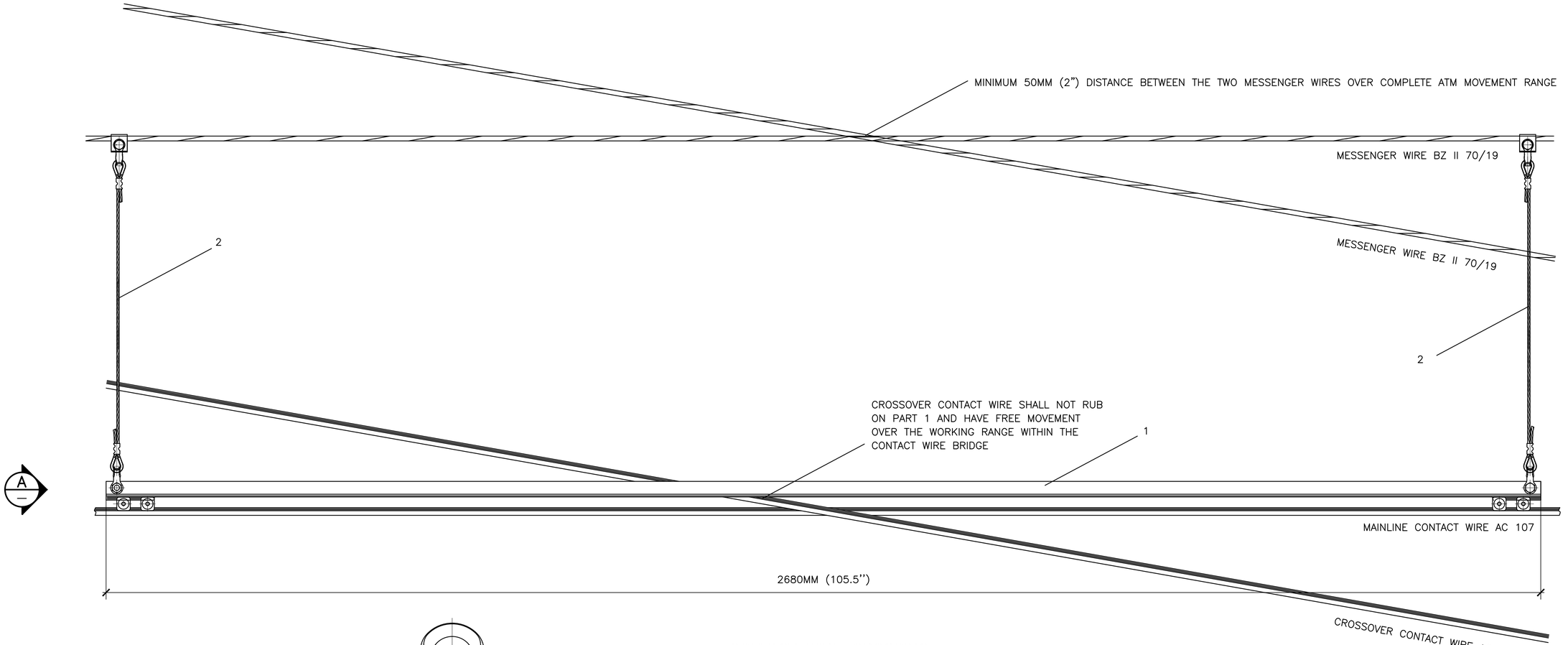
CONTACT AND MESSENGER WIRE JUMPERS
EC-XX

CADD FILE NAME: SD-W6271

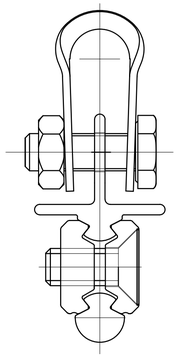
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6271



CONTACT WIRE CROSSING
ELEVATION
NTS



CONTACT WIRE CROSSING
A ELEVATION
NTS

PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
2	DROPPER FOR CROSSING		2		
1	CW CROSSING		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

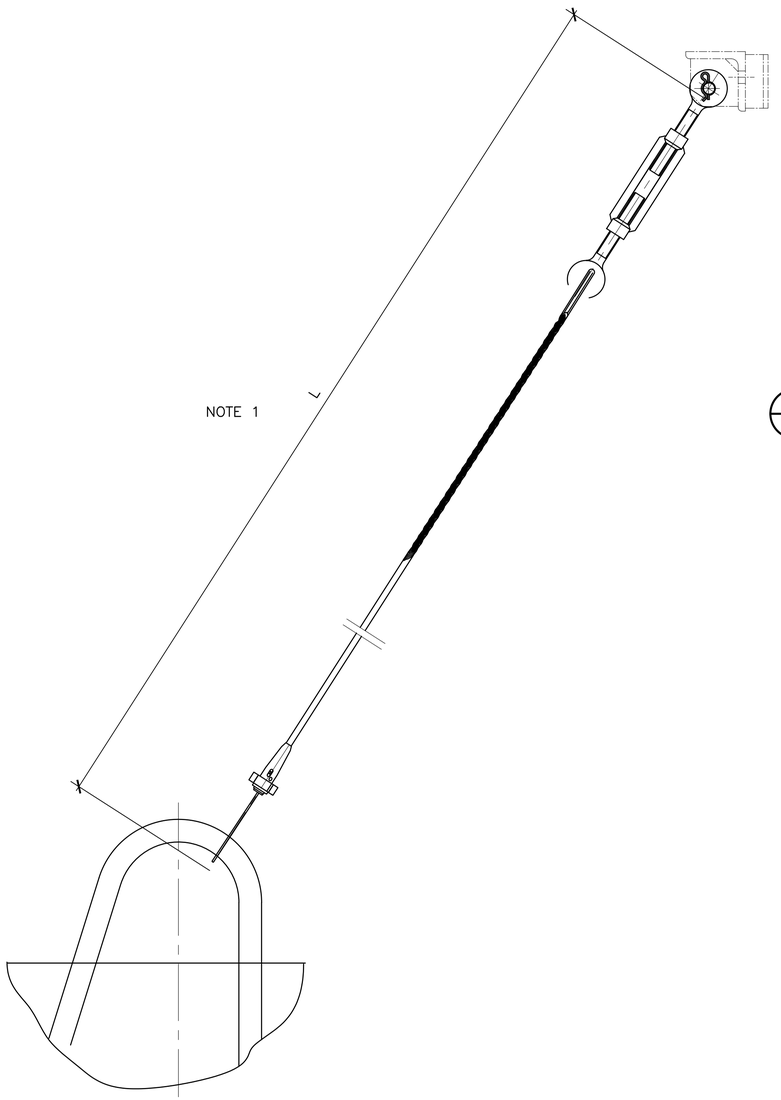
CONTACT WIRE CROSSING
WITH DROPPERS
CC–01

CADD FILE NAME: SD–W6272

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6272



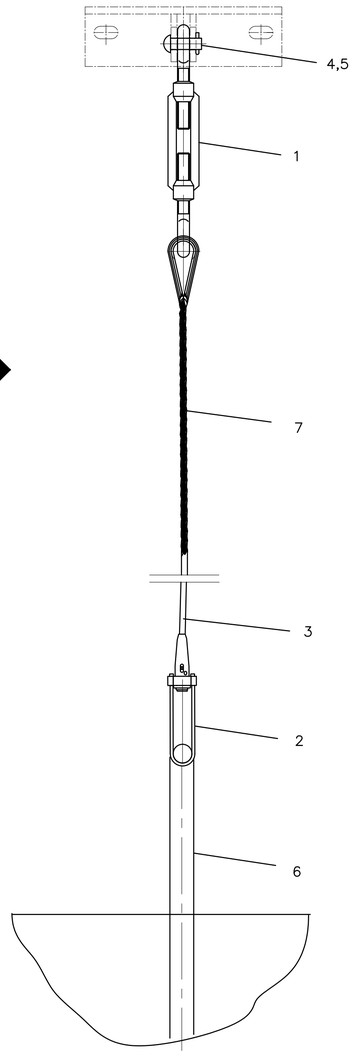
SINGLE / DOUBLE BACKSTAY

A — ELEVATION

NTS

NOTE 4
NOTE 5

TYPE A
DG–01
(2) DG–01



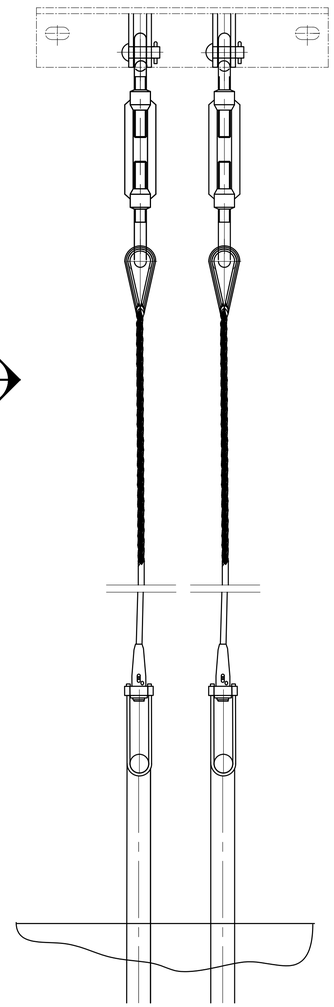
SINGLE BACKSTAY

ELEVATION

NTS

NOTE 3

TYPE B
DG–02



DOUBLE BACKSTAY

ELEVATION

NTS

NOTES:

1. L IS TO BE MEASURED
2. MIN. BREAKING LOAD 64,3 KN (14455.22 LBF)
3. DG–02 FOR TERMINATION WITH 2 WIRES:
   BWA
4. DG–01 FOR TERMINATION WITH 1 WIRE:
   1 x FW
   1 x SW
   TWA
   TERMINATION MID POINT (ONE SIDE)
5. (2)DG–01 FOR 2 TERMINATIONS WITH 1 WIRE:
   2 x FW
   2 x MID POINT
   FTA
6. BOM ITEM #2, 3 AND 7 OR APPROVED EQUIVALENT
7. REFER OCS DESIGN SPECIFICATION 34 30 73

B	A					
8	4	PREFORMED DEAD END	EHS STEEL	7		NOTE 7
2	1	THIMBLE	HOT DIP GALVANIZED STEEL	6		NOTE 7
2	1	BETA SPLINT	STAINLESS STEEL	5		
2	1	PIN ø19X52	A2	4	DIN 43161	
2	1	WIRE 18X7 D=10MM (1960N/MM²)	STEEL	3	DIN EN 12385–4	NOTE 2
2	1	STRANDVISE		2		NOTE 7
2	1	TURNBUCKLE M20 EYE/EYE		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

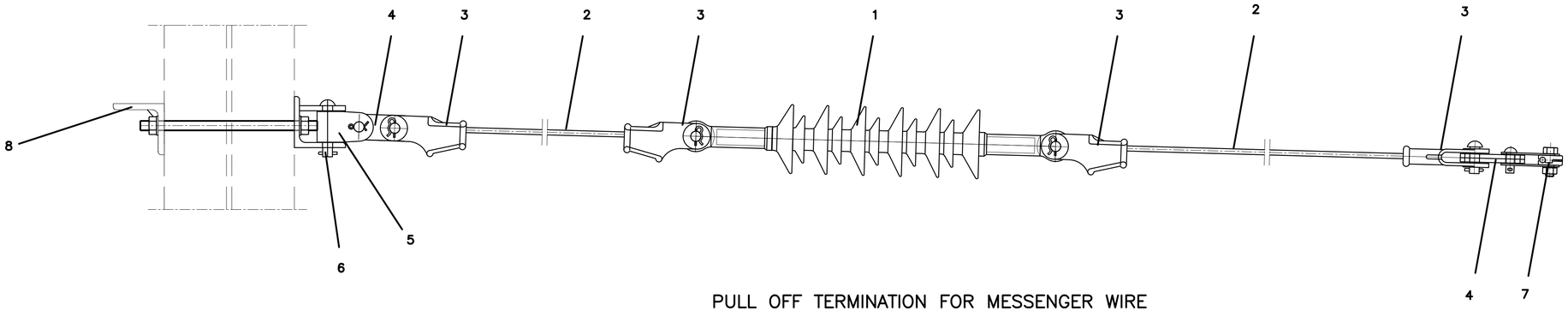
SINGLE / DOUBLE BACKSTAY
DG–01/(2)DG–01/DG–02

CADD FILE NAME: SD–W6273

REV: | EDITION: SECOND

SCALE: NTS

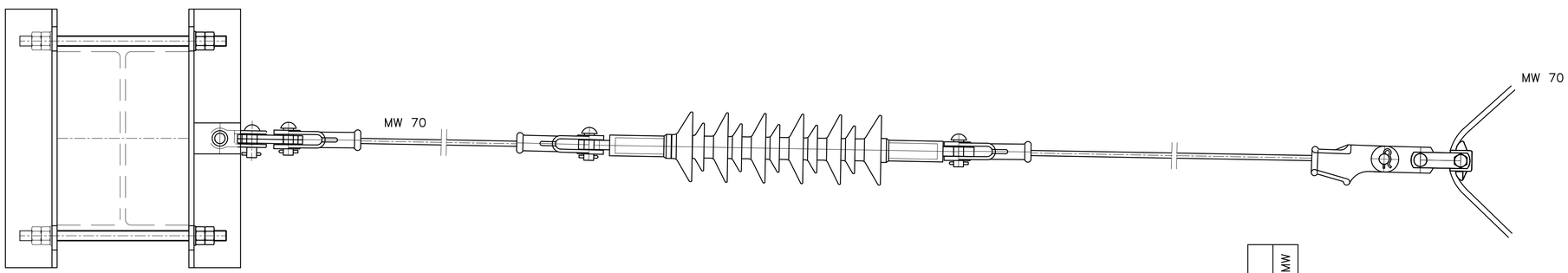
STANDARD DRAWING NO.: SD–W6273



PULL OFF TERMINATION FOR MESSENGER WIRE

ELEVATION

NTS



TOP VIEW FOR PULL OFF TERMINATION FOR MESSENGER WIRE

PLAN

NTS

POLE ORIENTATION ACCORDING TO LAYOUT PLANS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. PART#3 CAN USE FORKED COLLAR SOCKET.

SINGLE PULL OFF FOR MW

PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
A					
1	BRACKET FOR FIXED TERMINATION		8	TO BE DEFINED	NOTE 1
1	HEAD SPAN WIRE CLAMP FOR MW		7		
1	PIN ø19X100 WITH 8-SPLINT PIN	A2	6		
1	SWIVEL JOINT		5		
4	LINK PLATE	AL	4		
4	WEDGE TYPE DEAD END CLAMP		3		
2	MW BZ II 70/19		2	DIN 48201	NOTE 2
1	INSULATOR TYPE 3		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

PULL OFF TERMINATION
FOR MESSENGER WIRE BZ II 70/19
PO-01

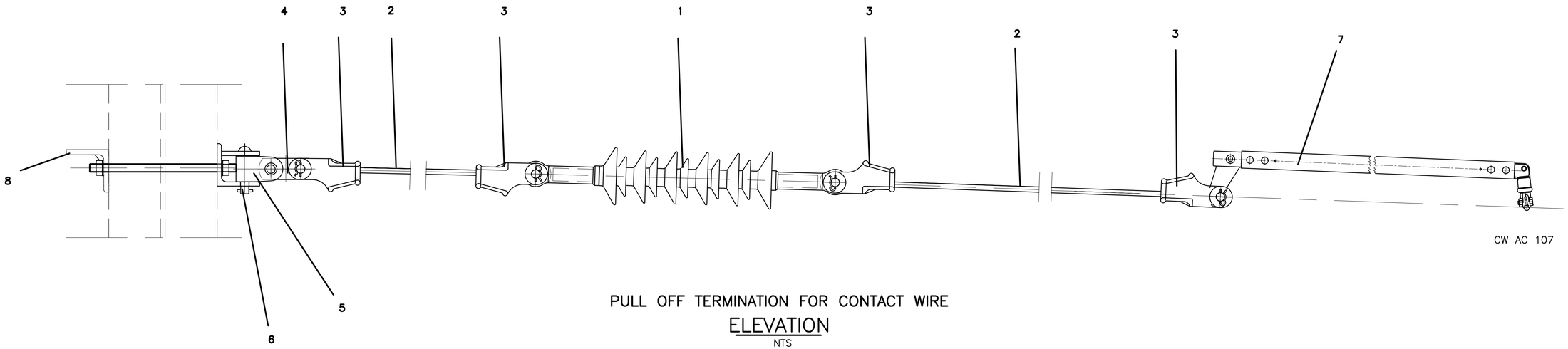
CADD FILE NAME: SD-W6274

REV:

EDITION: SECOND

SCALE: NTS

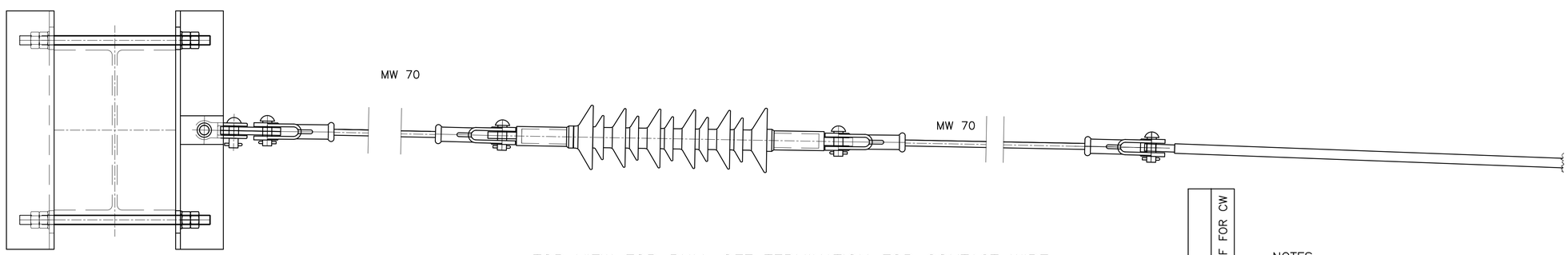
STANDARD DRAWING NO.: SD-W6274



PULL OFF TERMINATION FOR CONTACT WIRE

ELEVATION

NTS



TOP VIEW FOR PULL OFF TERMINATION FOR CONTACT WIRE

PLAN

NTS

NOTE:

POLE ORIENTATION ACCORDING TO LAYOUT PLANS

SINGLE PULL OFF FOR CW

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. STANDARD LENGTH 1150MM (45.3") OR LENGTH AS NEEDED ACC. TO DETAIL DESIGN
4. PART#3 CAN USE FORKED COLLAR SOCKET.

PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
A					
1	BRACKET FOR FIXED TERMINATION		8	TO BE DEFINED	NOTE 1
1	STEADY ARM	NOTE 3	7		
1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	SWIVEL JOINT		5		
2	LINK PLATE	AL	4		
4	WEDGE TYPE DEAD END CLAMP		3		
2	MW BZ II 70/19		2	DIN 48201	NOTE 2
1	INSULATOR TYPE 3		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

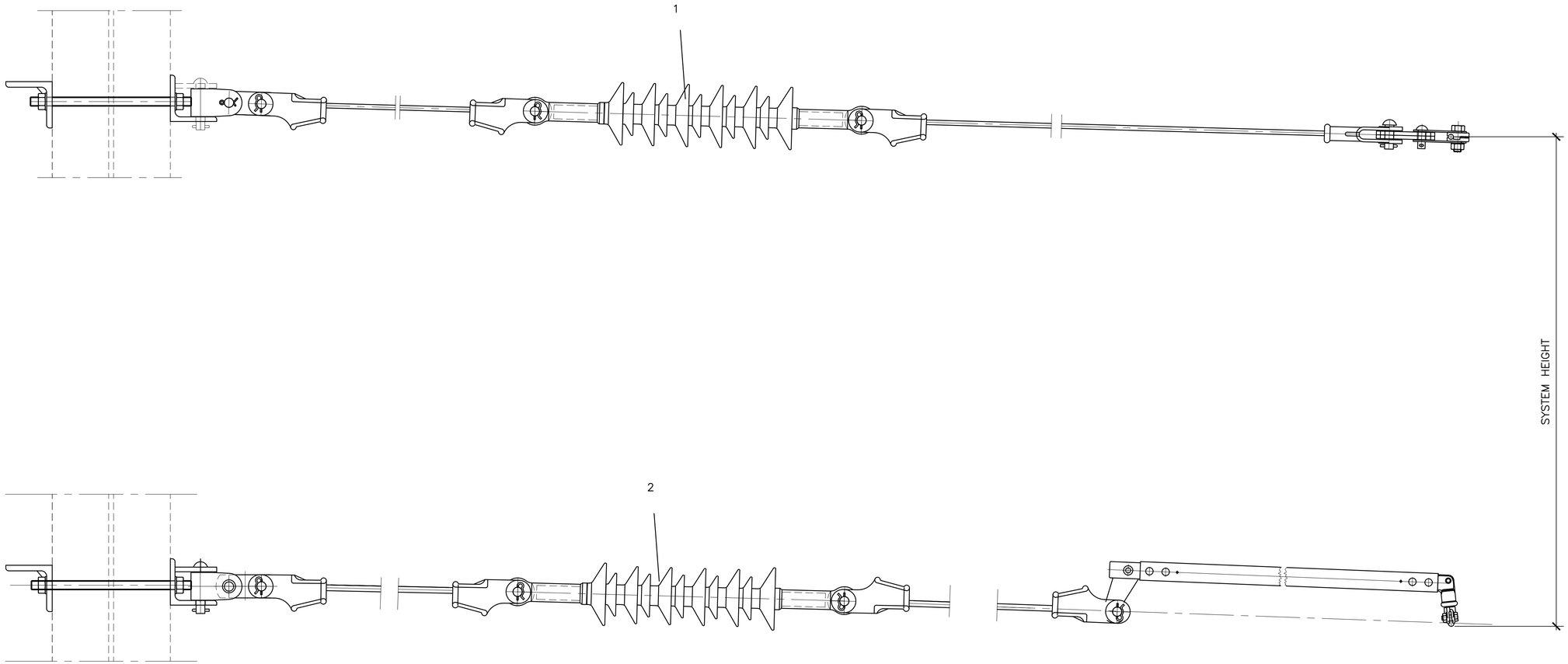
PULL OFF TERMINATION
FOR CONTACT WIRE AC 107
PO/02

CADD FILE NAME: SD–W6275

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6275



PULL OFF TERMINATION FOR CATENARY

ELEVATION

NTS

NOTES:

1. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
2. SD–W6276 IS A GENERAL ARRANGEMENT. IT SHOWS PULL OFF TERMINATION FOR MESSENGER AND CONTACT WIRE TOGETHER

	A					
	1	PULL OFF TERMINATION FOR CW		2		SD–W6275
	1	PULL OFF TERMINATION FOR MW		1		SD–W6274
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

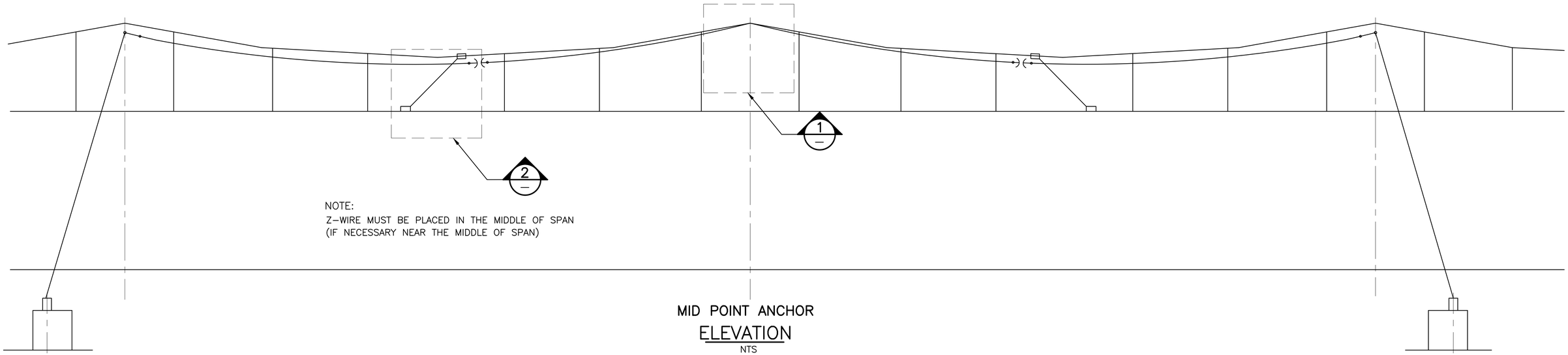
PULL OFF TERMINATION
FOR CONTACT AC 107 / CATENARY BZ II 70/19
PO–02/PO–01

CADD FILE NAME: SD–W6276

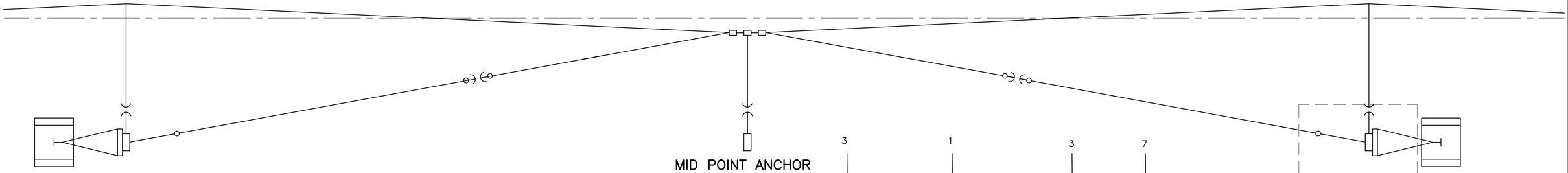
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SCALE: NTS

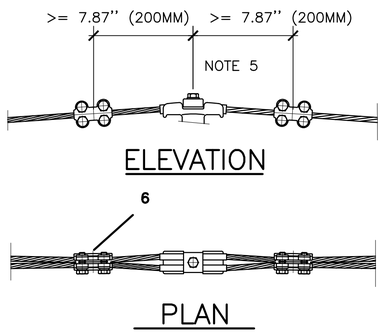
STANDARD DRAWING NO.: SD–W6276



MID POINT ANCHOR
ELEVATION
NTS



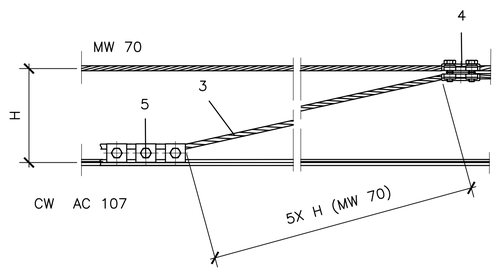
MID POINT ANCHOR
PLAN
NTS



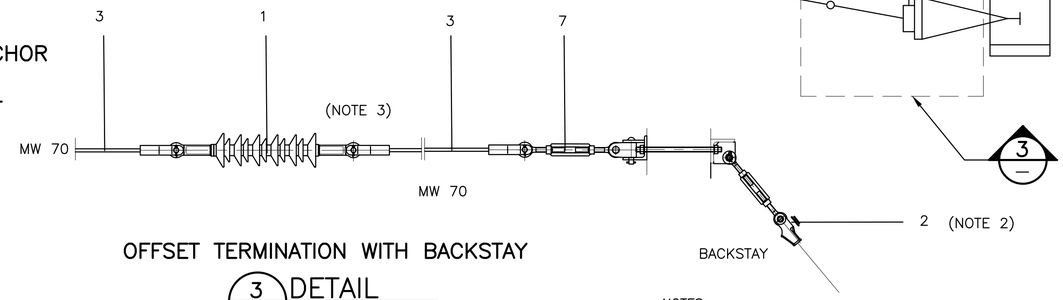
ELEVATION

PLAN

MESSENGER WIRE AREA
1 DETAIL
NTS



Z–WIRE ARRANGEMENT
2 DETAIL
NTS



OFFSET TERMINATION WITH BACKSTAY
3 DETAIL
NTS

NOTES:
1. IF POLE IS A SELF SUPPORTING POLE, NO DOWN GUY IS NECESSARY
2. DIFFERENT PIECES WITH DIFFERENT LENGTH
3. FT–03, WITHOUT PART 8
4. SEE DWG SD–W6108 FOR REST OF DETAILS
5. MESSENGER WIRE CLAMP MUST BE USED
6. WHEREVER POSSIBLE USE HARDWARE OF IMPERIAL SYSTEM (ENGLISH UNITS)

	A						
	2	TURNBUCKLE M20 EYE/EYE		7			
	2	CONNECTION CLAMP MID POINT TO MW WIRE		6			
	6	CONNECTION CLAMP Z TO CW WIRE		5			
	2	CONNECTION CLAMP Z TO MW WIRE		4			
	5	MW BZ II 70		3		SD–W6001	NOTE 2
	2	BACKSTAY		2		SD–W6273/A	NOTE 1
	2	FIXED TERMINATION WITH OFFSET INSULATION		1		SD–W6280/A	NOTE 3
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.

CDRL 34210

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

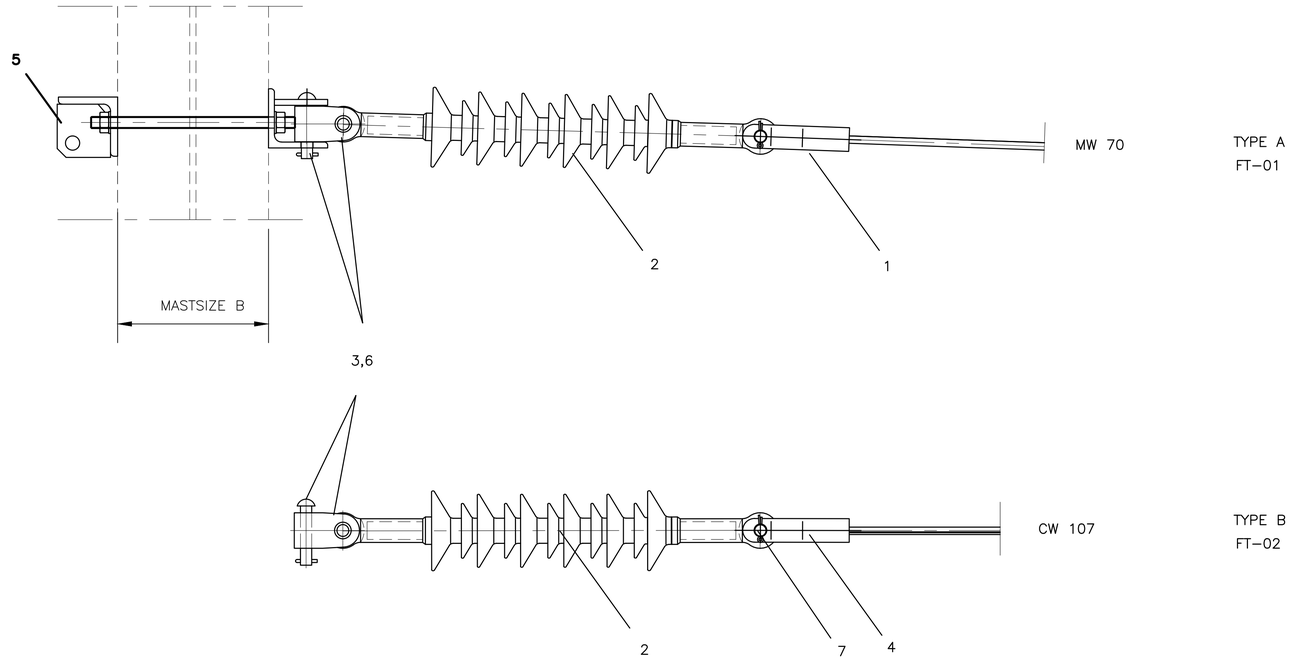
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

MID POINT ANCHOR
ASSEMBLY
MP–01

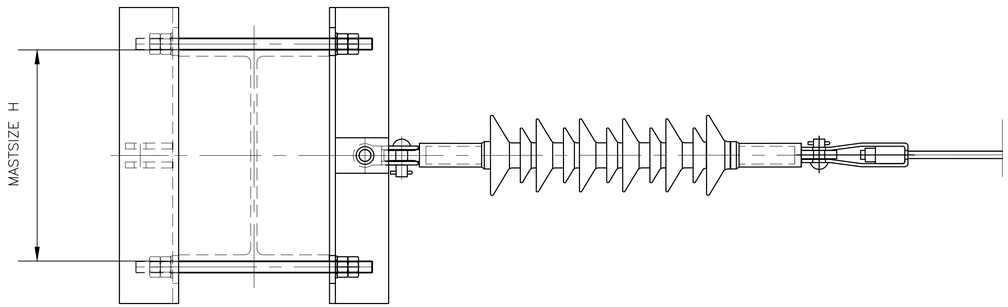
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REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6277



FIXED TERMINATION CW / MW

ELEVATION

NTS



VIEW FROM THE TOP

PLAN

NTS

NOTE:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE

FOR CW AC107	FOR MW 70/19					
B	A					
1	–	PIN ø19X52 WITH ß–SPLINT PIN	A2	7		
1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED	NOTE 1
1	–	TERMINATION CLAMP FOR CW		4		
1	1	SWIVEL JOINT		3		
1	1	COMPOSITE INSULATOR TYPE 3		2		
–	1	TERMINATION CLAMP FOR MW		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

FIXED TERMINATION FOR CONTACT AND MESSENGER WIRE

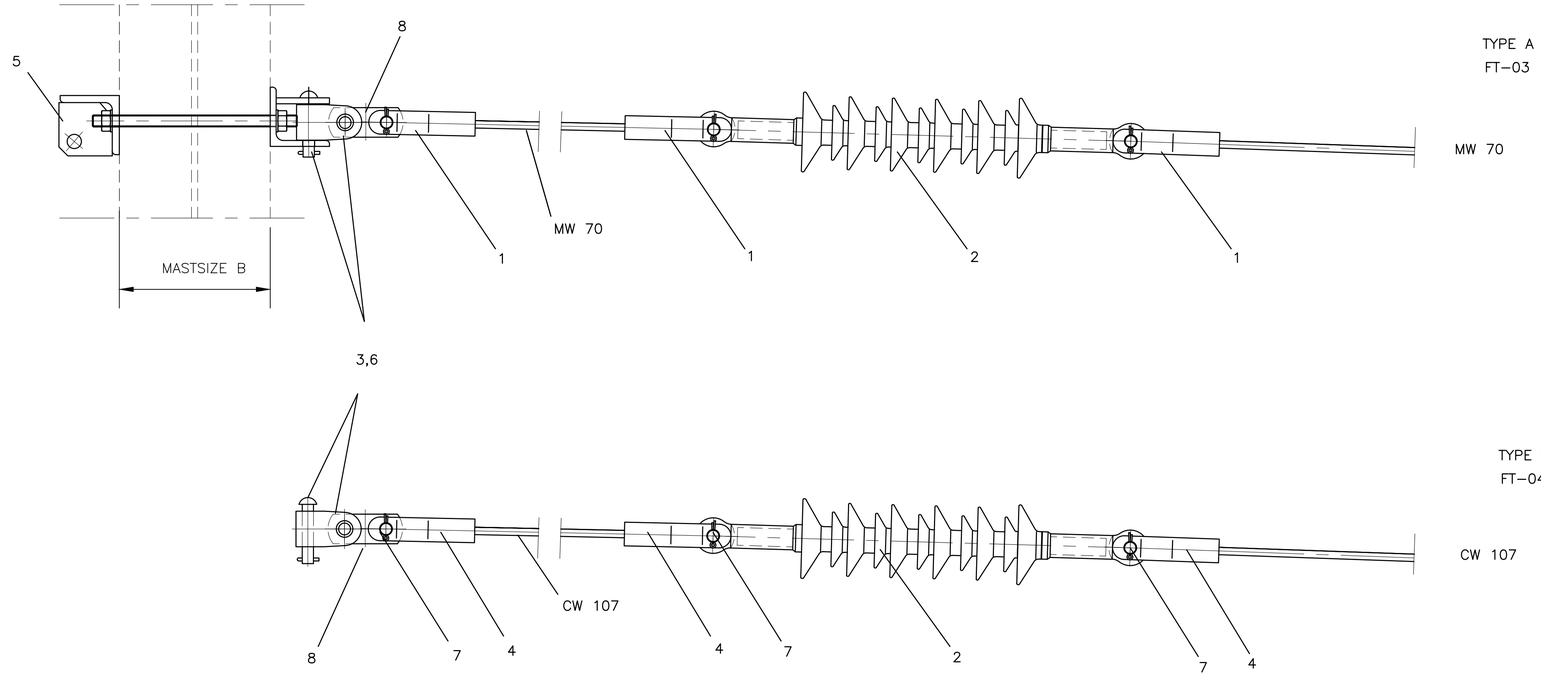
FT–02/FT–01

CADD FILE NAME: SD–W6279

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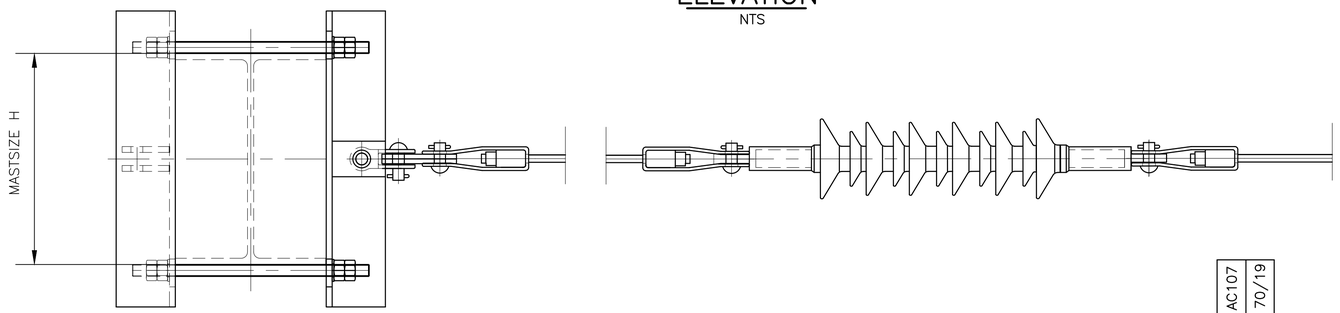
STANDARD DRAWING NO.: SD–W6279



FIXED TERMINATION CW / MW WITH OFFSET INSULATION

ELEVATION

NTS



VIEW FROM THE TOP

PLAN

NTS

NOTE:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE

FOR CW AC107	FOR MW 70/19	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
B	A					
2	2	LINK PLATE	AL	8		
3	–	PIN ø19X52 WITH ß–SPLINT PIN	A2	7		
1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED	NOTE 1
3	–	TERMINATION CLAMP FOR CW		4		
1	1	SWIVEL JOINT		3		
1	1	COMPOSITE INSULATOR TYPE 3		2		
–	3	TERMINATION CLAMP FOR MW		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

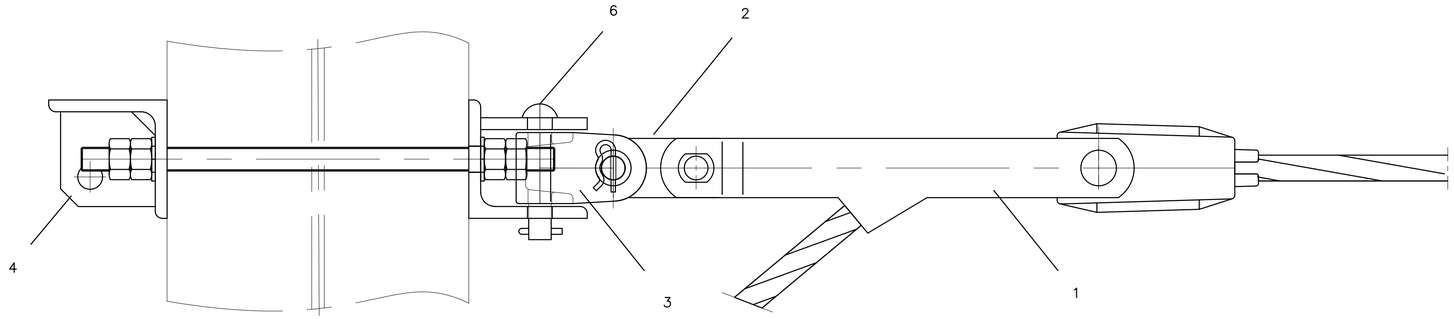
FIXED TERMINATION FOR CW / MW WITH OFFSET INSULATION FT–04/FT–03

CADD FILE NAME: SD–W6280

REV: | EDITION: SECOND

SCALE: NTS

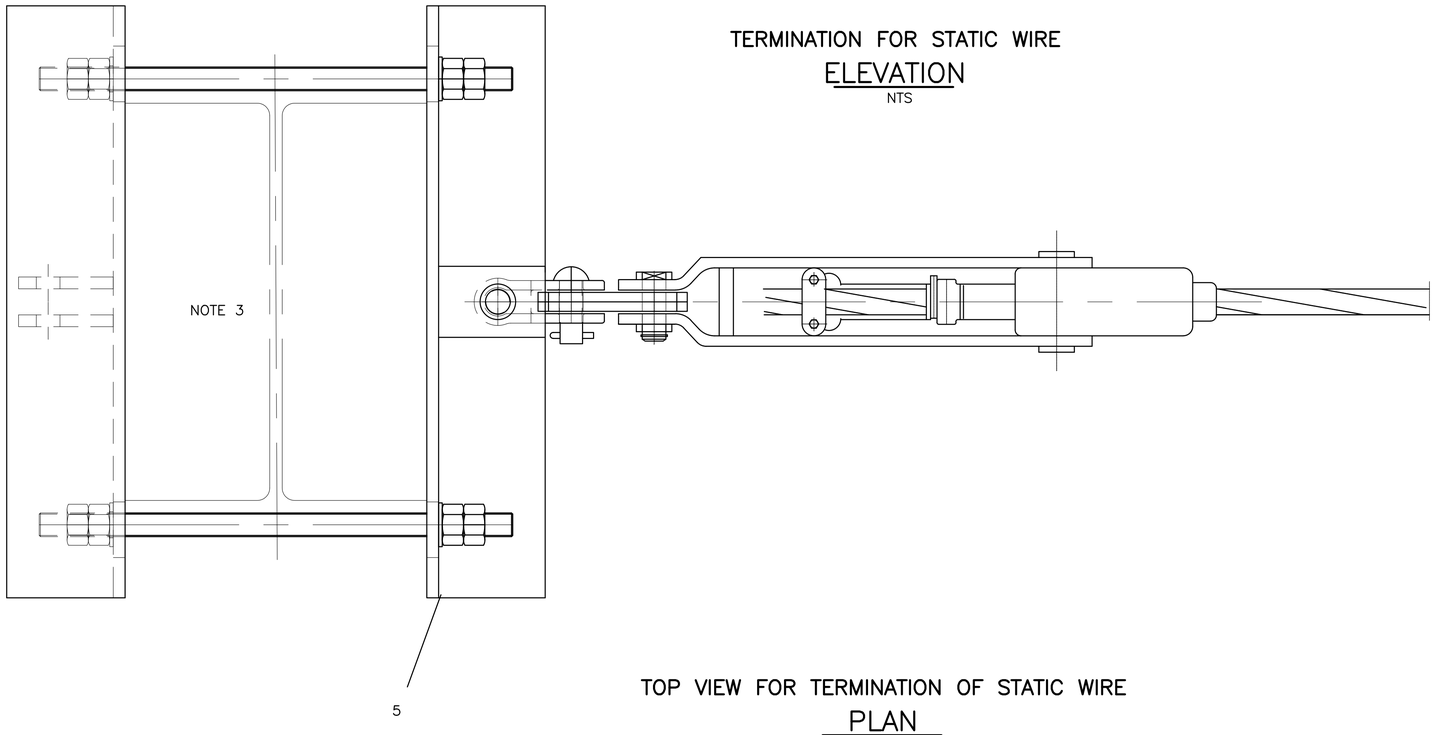
STANDARD DRAWING NO.: SD–W6280



TERMINATION FOR STATIC WIRE

ELEVATION

NTS



TOP VIEW FOR TERMINATION OF STATIC WIRE

PLAN

NTS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. PROVIDE BACKSTAY AS REQUIRED
3. POLE ORIENTATION ACC: TO DETAIL DESIGN

FOR STATIC WIRE WITHOUT BACKSTAY	FOR STATIC WIRE WITH BACKSTAY					
B	A					
1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED	NOTE 1
–	1	BACKSTAY ANCHOR		4		NOTE 2
1	1	SWIVEL JOINT		3		
2	2	LINK PLATE		2		
1	1	TERMINATION CLAMP FOR STATIC WIRE		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

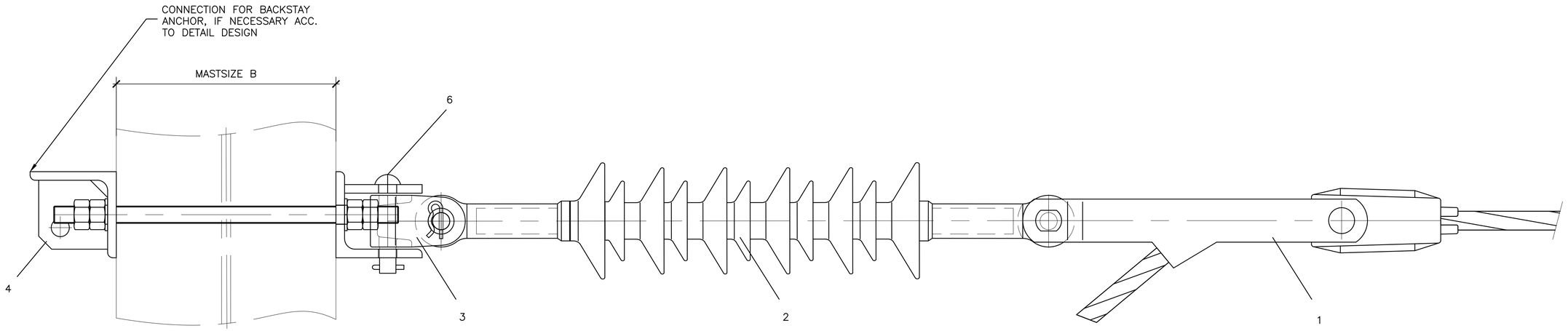
TERMINATION FOR STATIC WIRE
FT–05

CADD FILE NAME: SD–W6281

REV: | EDITION: SECOND

SCALE: NTS

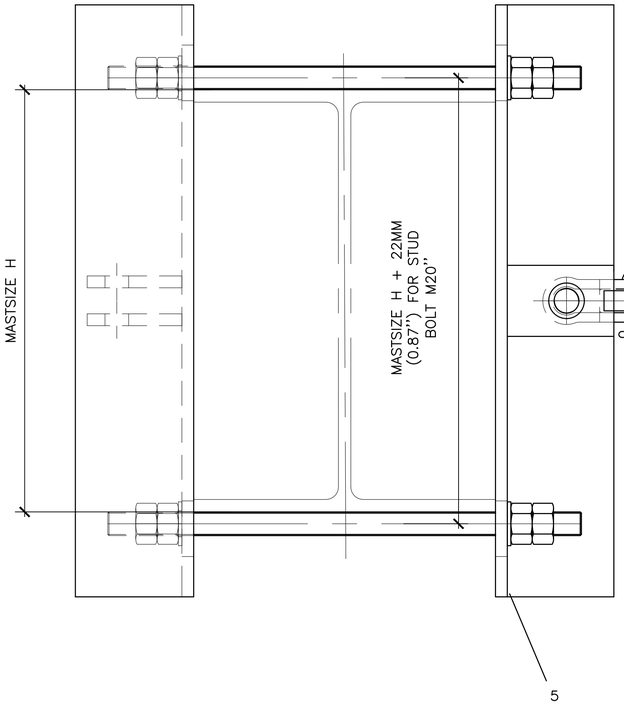
STANDARD DRAWING NO.: SD–W6281



TERMINATION FOR FEEDER WIRE

ELEVATION

NTS



TOP VIEW FOR TERMINATION OF FEEDER WIRE

PLAN

NTS

NOTE:

LENGTH OF PARTS ACC. TO MASTSIZE

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. PROVIDE BACKSTAY AS REQUIRED

FOR FEEDER WIRE WITHOUT BACKSTAY	FOR FEEDER WIRE WITH BACKSTAY	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
B	A						
1	1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED	NOTE 1
–	1	1	BACKSTAY ANCHOR		4		NOTE 2
1	1	1	SWIVEL JOINT		3		
1	1	1	COMPOSITE INSULATOR TYPE 3		2		
1	1	1	TERMINATION CLAMP F. FEEDER WIRE		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

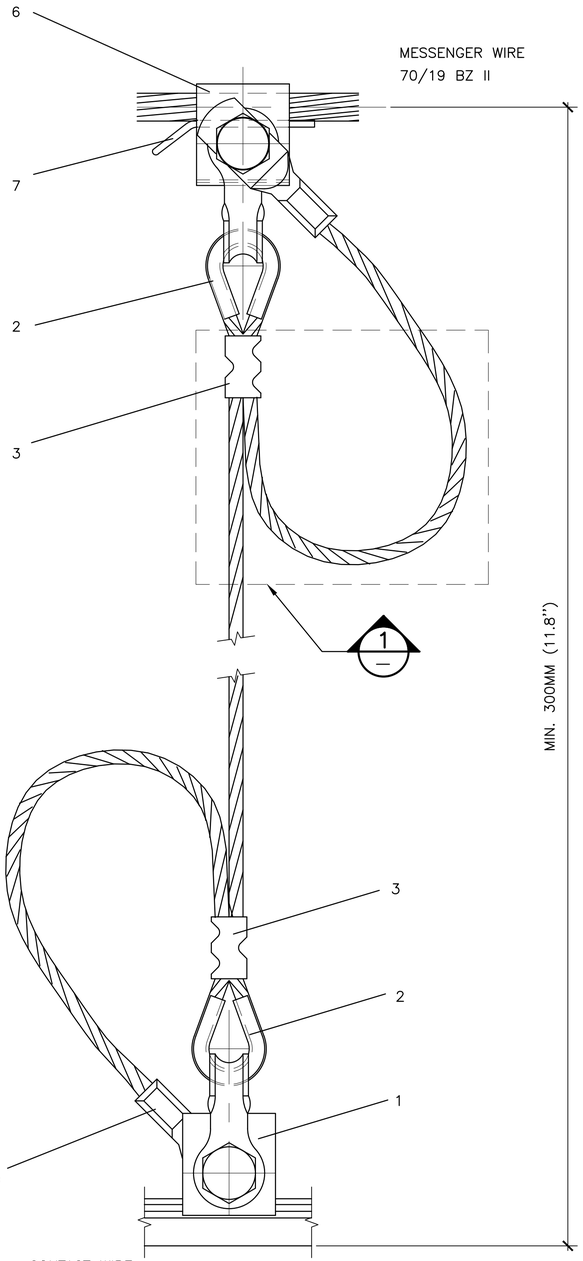
TERMINATION FOR FEEDER WIRE
FT–06

CADD FILE NAME: SD–W6282

REV: | EDITION: SECOND

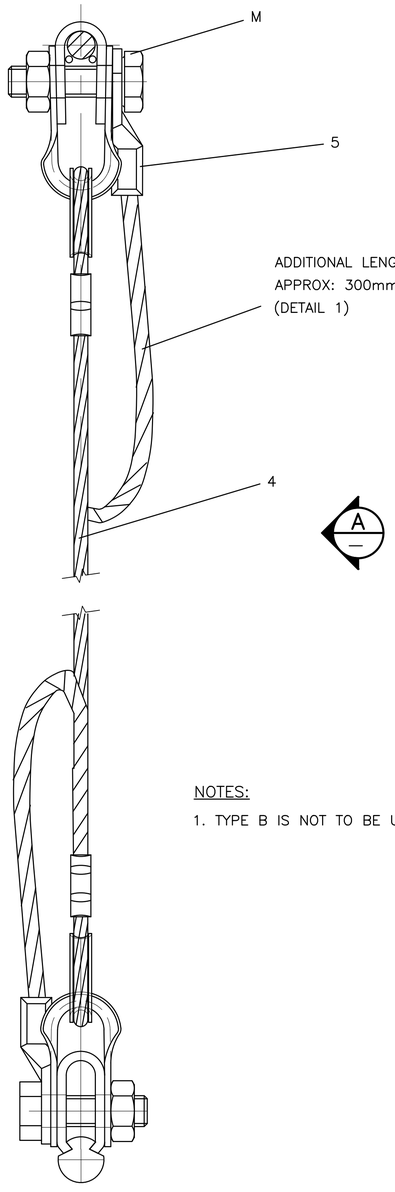
SCALE: NTS

STANDARD DRAWING NO.: SD–W6282



DROPPER 10x49 – TYPE A

A ELEVATION
– NTS



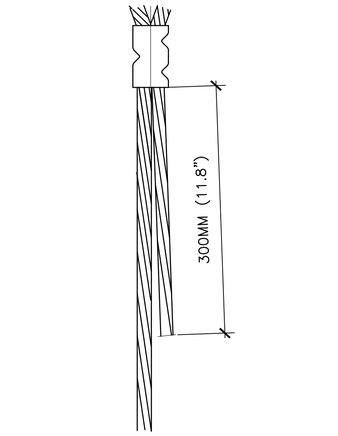
DROPPER 10x49 – TYPE A

ELEVATION

NTS

NOTES:

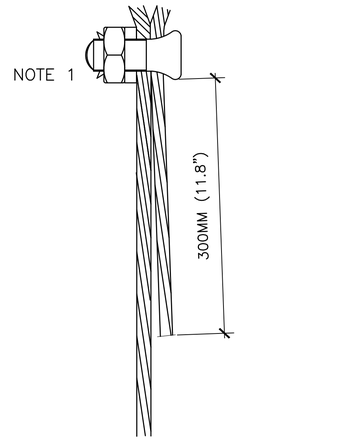
1. TYPE B IS NOT TO BE USED IN FUTURE.



END SECTION OF DROPPER

TYPE A

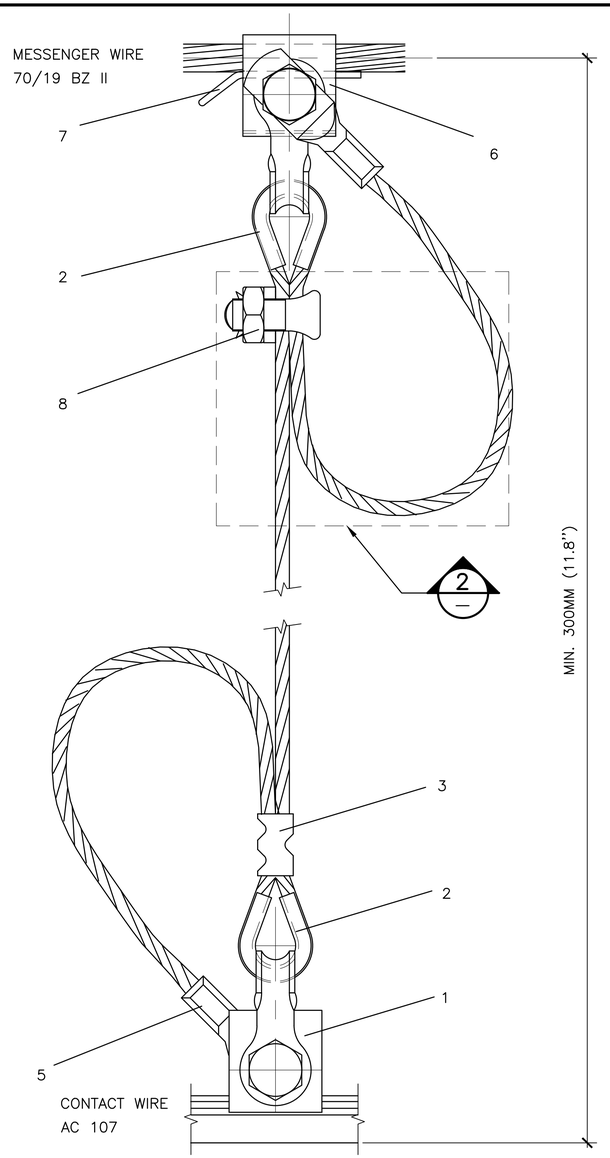
1 DETAIL
– NTS



END SECTION OF DROPPER

TYPE B

2 DETAIL
– NTS



DROPPER 10x49 – TYPE B

ELEVATION

NOTE 2

NTS

B	A					
1	–	SLOTTED BOLT CLAMP KS20	COPPER	8		
1	1	CLIP FOR 70MM²	BZ II	7	DIN 48300	
1	1	DROPPER CLAMP FOR MW 70MM²	A2	6		
2	2	CABLE LUG 10–16 FOR WIRE 10MM²	E–CUF20	5	DIN 46235	
1	1	WIRE BZ II 10X49 (LENGTH AS NEEDED)	CUMG0.4	4	DIN 43138	
1	2	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E–CUF20	3		
2	2	THIMBLE FOR WIRE 10X49	A2	2	DIN 43154	
1	1	DROPPER CLAMP FOR CW	A2	1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

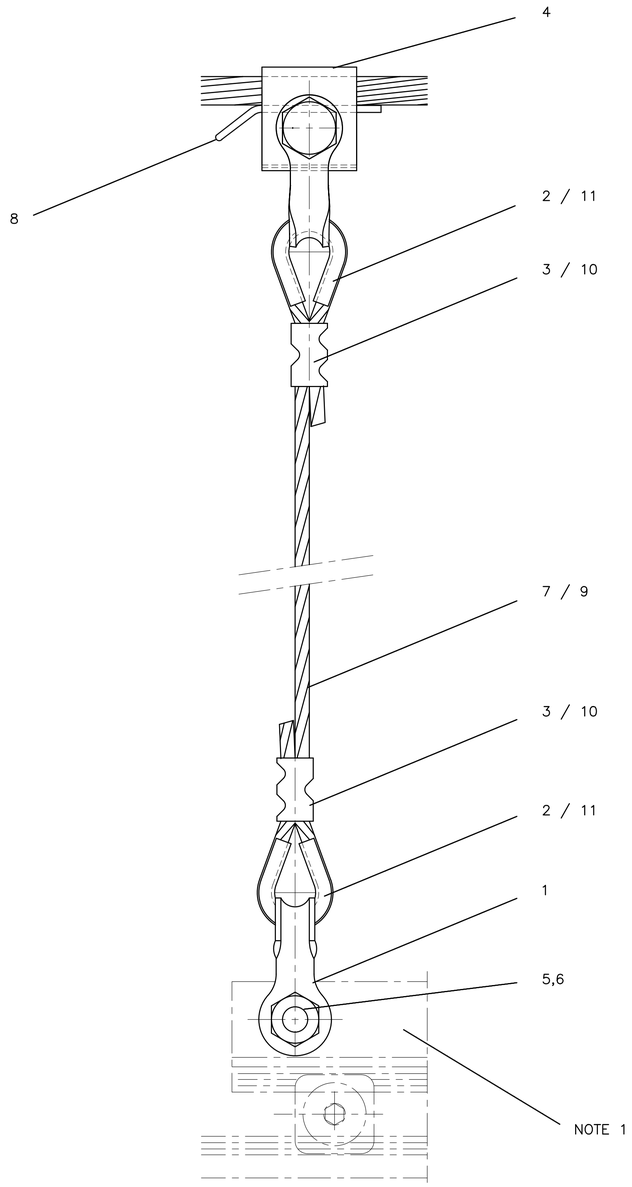
DROPPER 10X49
HA–01

CADD FILE NAME: SD–W6283

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6283



DROPPER FOR CONTACT WIRE CROSSING

ELEVATION

NTS

NOTE:

1. CW CROSSING IS ACCORDING TO: SD–W6272 (ARRANGEMENT / ASSEMBLY DRAWING)

STAINLESS STEEL DROPPER	BZ II 10X49 DROPPER					
B	A					
2	–	THIMBLE F. STAINLESS STEEL ROPE		11		
2	–	COMPRESSION SPLICE F. STAINLESS STEEL ROPE		10		
1	–	ROPE STAINLESS STEEL (LENGTH AS NEEDED)	A4	9		
1	1	CLIP FOR 70MM²	BZII	8	DIN 48300	
–	1	WIRE BZ II 10X49 (LENGTH AS NEEDED)	CUMG0.4	7	DIN 43138	
1	1	HEXAGON NUT M10	A2	6	DIN 4032	
1	1	HEXAGON HEAD BOLT M10X30	A2–70	5		
1	1	DROPPER CLAMP FOR MW 70/19	A2	4		
–	2	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E–CUF20	3		
–	2	THIMBLE FOR WIRE 10X49	A2	2		
1	1	DROPPER CLIP	A2	1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

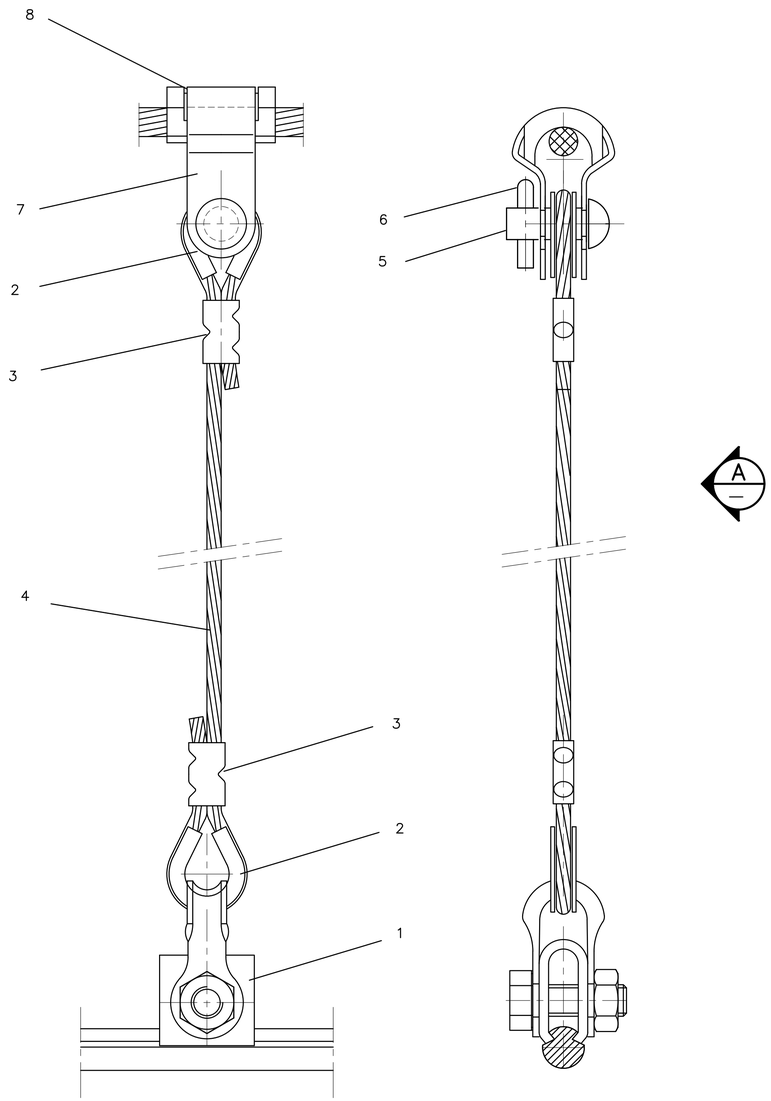
DROPPER FOR CONTACT WIRE CROSSING
HA–02

CADD FILE NAME: SD–W6284

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6284



SLIDING DROPPER 10x49

A
–
ELEVATION
NTS

SLIDING DROPPER 10x49

ELEVATION
NTS

B	A					
–	1	PLASTIC SLIDING INSERT	PA	8	DIN 43147–D1	
–	1	SLIDING DROPPER CLIP	A2	7	DIN 43147–D2	
–	1	SPLINT 5X29	A2	6	DIN EN ISO 1234	
–	1	BOLT 10X26	Cu	5	DIN 43161	
–	1	WIRE BZ II 10X49 (L AS REQUIRED)	CUMG0.4	4	DIN 43138	
–	2	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E–CUF20	3		
–	2	THIMBLE FOR WIRE 10X49	A2	2		
–	1	DROPPER CLAMP FOR CW AC 107		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SLIDING DROPPER 10x49
HA–03

CADD FILE NAME: SD–W6285

REV:

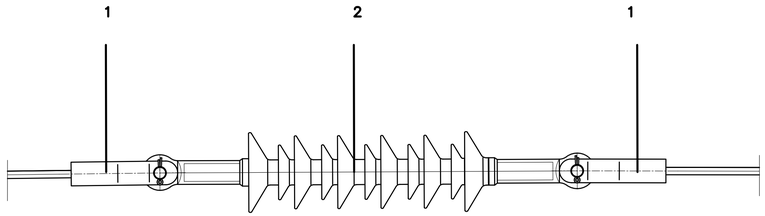
EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6285

TYPE A
IS–01

MW 70 / CROSS SPAN WIRE



MW 70 / CROSS SPAN WIRE

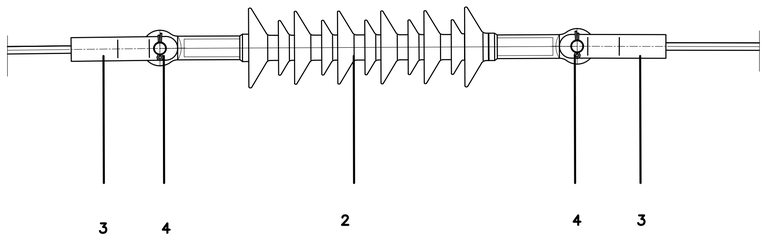
CUT IN INSULATION FOR MESSENGER WIRE / CROSS SPAN WIRE

ELEVATION

NTS

TYPE B
IS–02

CW 107

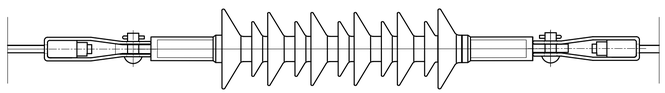


CW 107

CUT IN INSULATION FOR CONTACT WIRE

ELEVATION

NTS



CUT IN INSULATION FOR MW / CW / CROSS SPAN WIRE

PLAN

NTS

IS–02	IS–01					
FOR CW AC107	FOR MW 70/19 / CROSS SPAN WIRE					
B	A					
2	–	PIN ø19X52 WITH ß–SPLINT PIN	A2	4		
2	–	TERMINATION CLAMP FOR CW		3		
1	1	COMPOSITE INSULATOR TYPE 3		2		
–	2	TERMINATION CLAMP FOR MW		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

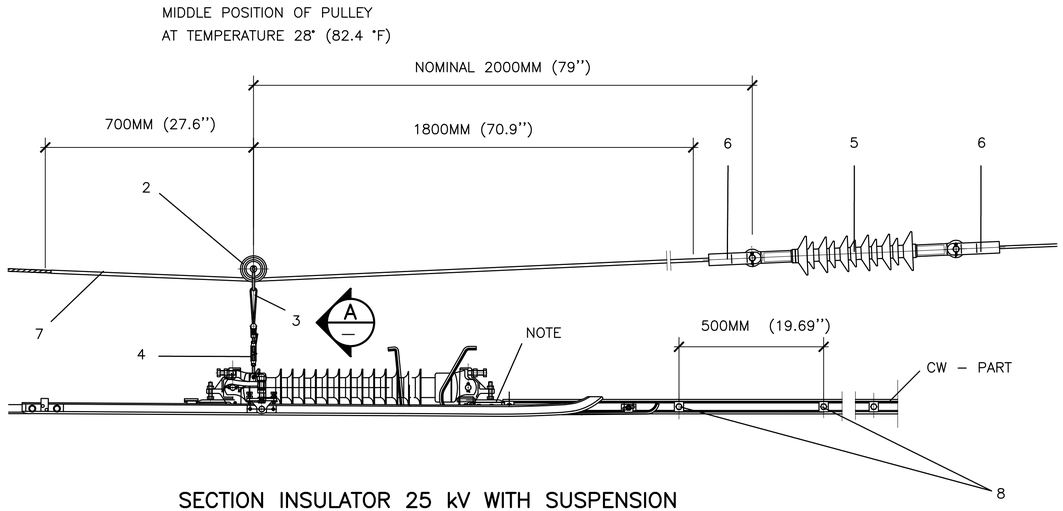
CUT IN INSULATION
FOR CW AND MW / HEAD SPAN
IS–01/IS–02

CADD FILE NAME: SD–W6286

REV: | EDITION: SECOND

SCALE: NTS

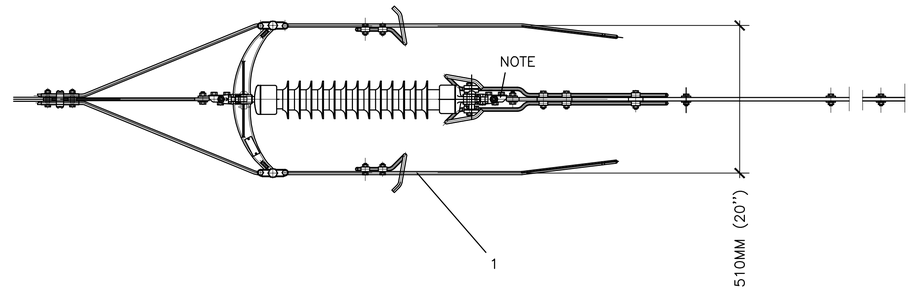
STANDARD DRAWING NO.: SD–W6286



SECTION INSULATOR 25 kV WITH SUSPENSION

ELEVATION

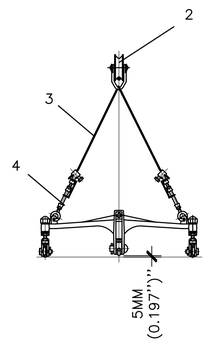
NTS



SECTION INSULATOR 25 kV

PLAN

NTS



SUSPENSION

A – ELEVATION

NTS

NOTE:
INSTRUCTIONS FOR MOUNTING:
TO MEET THE NECESSARY HOLDING STRENGTH, CONTACT WIRE TERMINATION CLAMPS ARE TO BE SECURED BY SCREWING DOWN THE FOUR ATTACHMENT SCREWS, M12, WITH A SPANNER WRENCH.
TIGHTENING TORQUE: 56 NM (41.3 LBF FT)

B	A						
–	4	PARALLEL GROOVED CLAMP		8			
–	1	SHRINKING HOSE FOR WIRE 70/19	POLYOLEFIN	7	FTMM 28/9-A/U		
–	2	TERMINATION CLAMP		6			
–	1	INSULATOR FOR SECTION INSULATOR		5			
–	2	TURNBUCKLE M8	G-CUSN	4			
–	2	COPPER WIRE ø4MM	E-CU F31	3			
–	1	SUPPORT WHEEL	G-CUSN	2			
–	1	SECTION INSULATOR 25KV		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD		REMARKS/ID-NO.

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SECTION INSULATOR 25 kV WITH SUSPENSION
SI-01

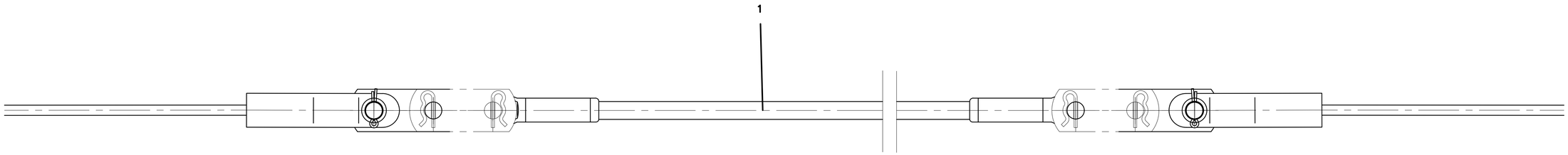
CADD FILE NAME: SD-W6287

REV:

EDITION: SECOND

SCALE: NTS

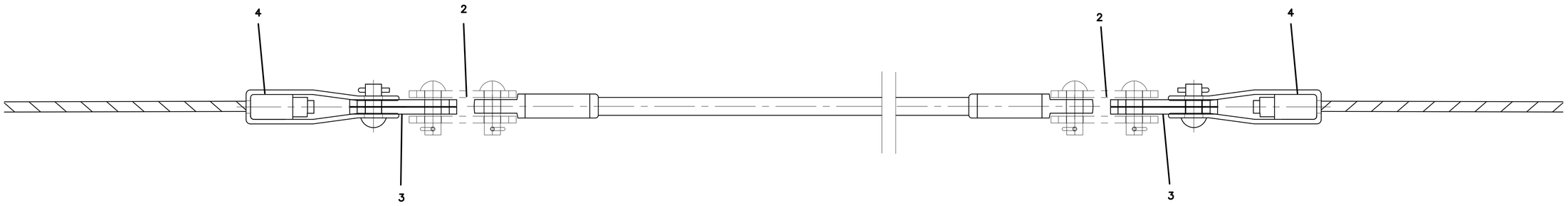
STANDARD DRAWING NO.: SD-W6287



TENSION ROD INSULATOR FOR MESSENGER WIRE WITH CLAMPS

ELEVATION

NTS



TENSION ROD INSULATOR FOR MESSENGER WIRE WITH CLAMPS

PLAN

NTS

–	2	TERMINATION CLAMP FOR MW		4	
–	4	LINK PLATE		3	
–	2	LINK PLATE WITH PINS		2	
–	1	TENSION ROD INSULATOR FOR MESSENGER WIRE		1	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD

REMARKS/ID–NO.
REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSION ROD INSULATOR FOR MESSENGER WIRE WITH CLAMPS

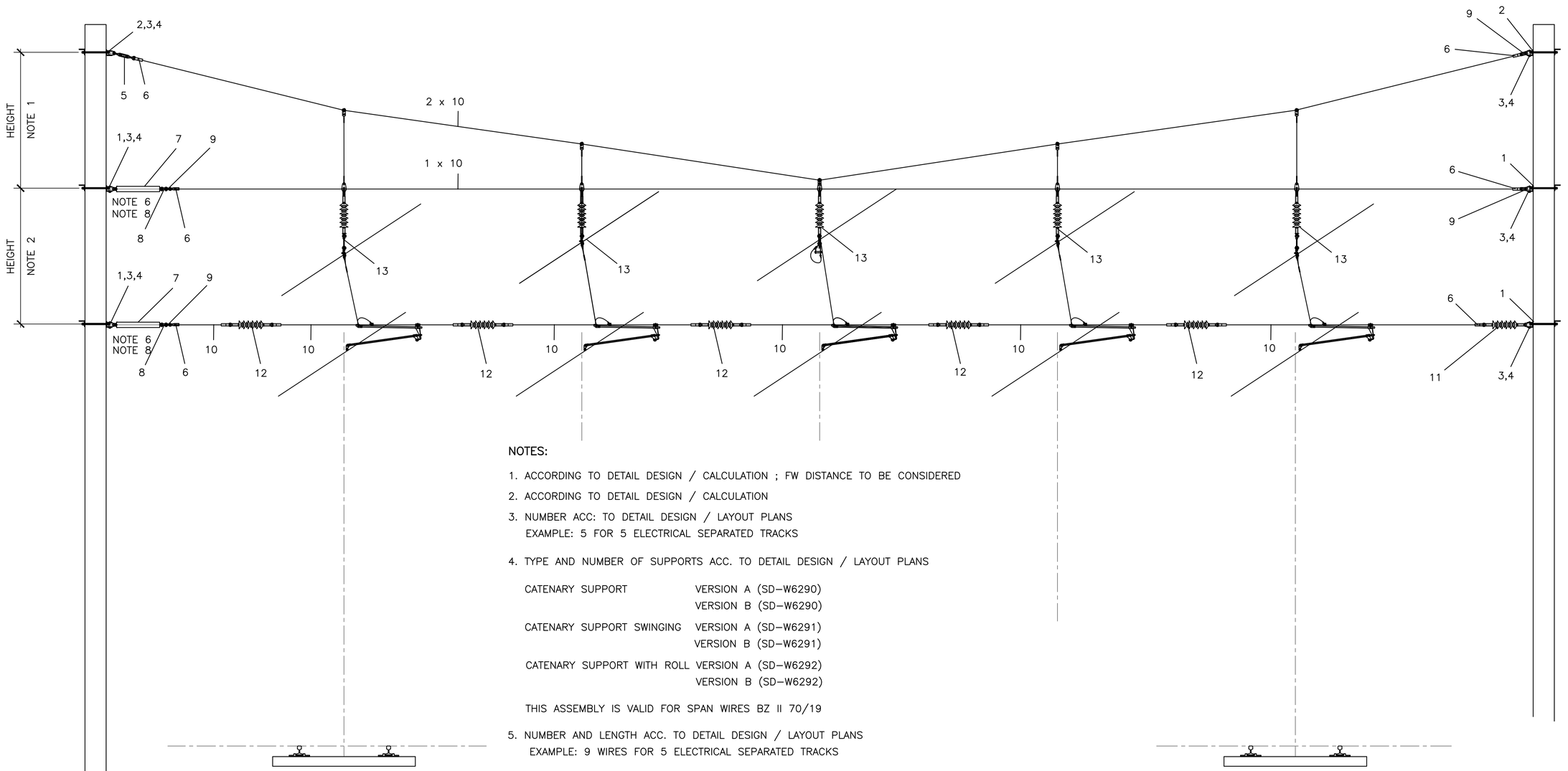
SI–02

CADD FILE NAME: SD–W6288

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6288



HEAD SPAN FOR CATENARY SYSTEM

ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN / CALCULATION ; FW DISTANCE TO BE CONSIDERED
2. ACCORDING TO DETAIL DESIGN / CALCULATION
3. NUMBER ACC: TO DETAIL DESIGN / LAYOUT PLANS
   EXAMPLE: 5 FOR 5 ELECTRICAL SEPARATED TRACKS
4. TYPE AND NUMBER OF SUPPORTS ACC. TO DETAIL DESIGN / LAYOUT PLANS

   CATENARY SUPPORT — VERSION A (SD–W6290), VERSION B (SD–W6290)

   CATENARY SUPPORT SWINGING — VERSION A (SD–W6291), VERSION B (SD–W6291)

   CATENARY SUPPORT WITH ROLL — VERSION A (SD–W6292), VERSION B (SD–W6292)

   THIS ASSEMBLY IS VALID FOR SPAN WIRES BZ II 70/19
5. NUMBER AND LENGTH ACC. TO DETAIL DESIGN / LAYOUT PLANS
   EXAMPLE: 9 WIRES FOR 5 ELECTRICAL SEPARATED TRACKS
6. SPRING ALWAYS MOUNTED ON NON–TENSIONED SIDE
7. USE, IF RADIAL LOAD IS SMALL AND THEREFORE THE UPPER INSULATOR CAN KEEP THE POSTULATED ELECTRICAL DISTANCE TO THE UPPER CROSS SPAN WIRE
8. IF NECESSARY, IN CASE OF INSUFFICIENT CLEARANCE BETWEEN MAST AND FIRST TRACK, THE TERMINATION ARRANGEMENT FOR 2 SPAN WIRE SPRINGS BESIDE

SEE DRAWING SD–W6126

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
–	NOTE 4		SUPPORTS		13		NOTE 4
–	NOTE 3		CUT IN INSULATION FOR MW		12		NOTE 3
–	1		COMPOSITE INSULATOR TYPE 3		11		
–	NOTE 5		WIRE BZ II 70/19		10	DIN 48201	LENGTH AS NEEDED
–	10		LINK PLATE		9		
–	2		LINK PLATE WITH PINS		8		
–	2		SPRING FOR INDICATORY WIRE		7		
–	8		MW TERMINATION CLAMP		6		
–	2		TURNBUCKLE		5		
–	8		PIN 19x100 WITH BETA SPLINT PIN		4		
–	8		SWIVEL JOINT		3		
–	2		DOUBLE TERMINATION BRACKET AT RECTANGULAR MAST		2		
–	4		SINGLE TERMINATION BRACKET AT RECTANGULAR MAST		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

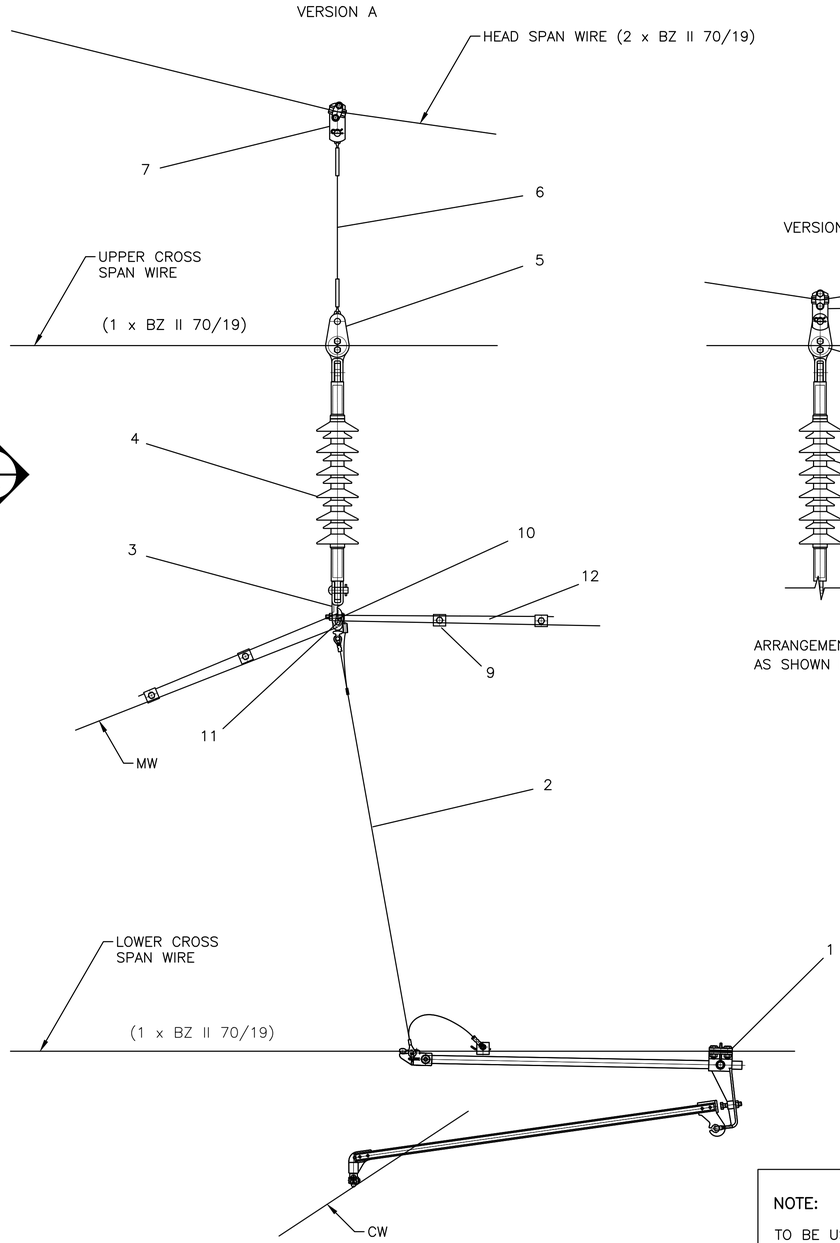
HEAD SPAN FOR CATENARY SYSTEM
ASSEMBLY 1 OF 4
HS–01

CADD FILE NAME: SD–W6289

REV: | EDITION: SECOND

SCALE: NTS

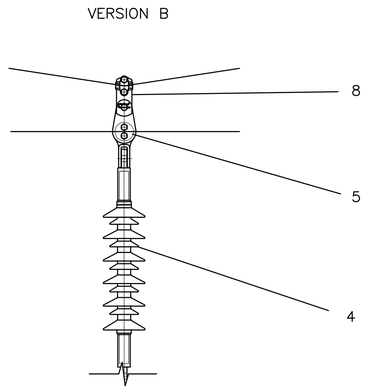
STANDARD DRAWING NO.: SD–W6289



HEAD SPAN CATENARY SUPPORT

ELEVATION

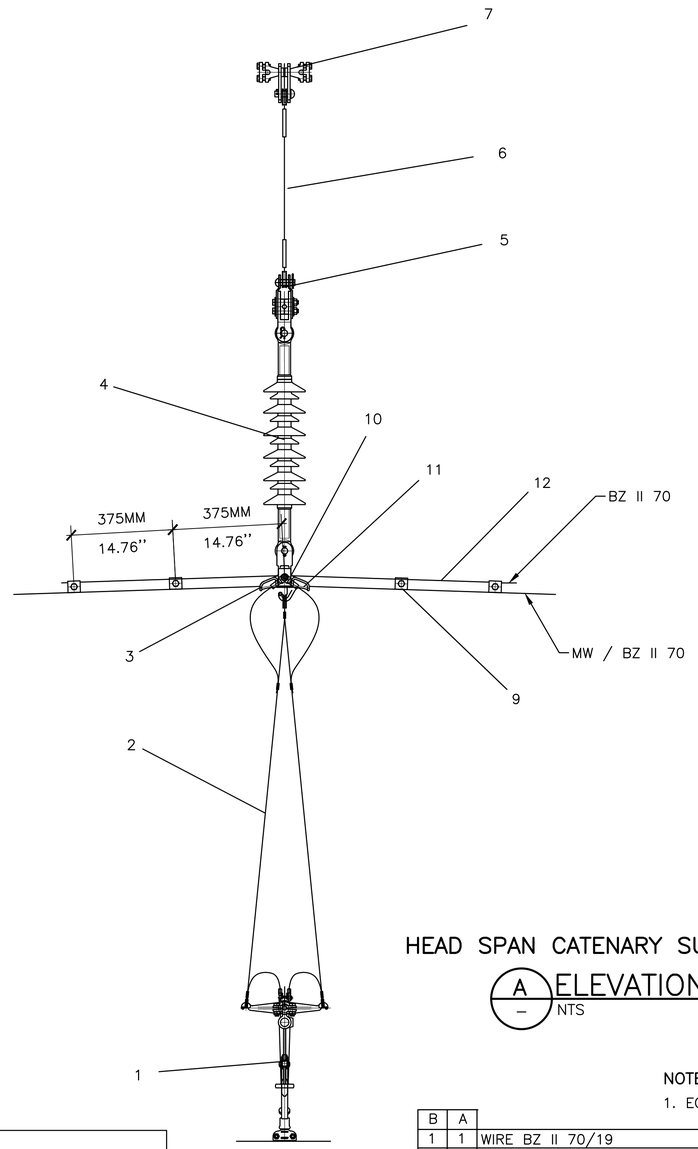
NTS



ARRANGEMENT BELOW
AS SHOWN BESIDE

NOTE:

TO BE USED FOR: DISTANCE TO THE FIXED POINT TO 787' (240M)



HEAD SPAN CATENARY SUPPORT

A ELEVATION

NTS

NOTE:

1. EQUAL TO PART 11 , BUT ORDER WITH LENGTH 40MM (1.57'')

B	A					
1	1	WIRE BZ II 70/19		12	DIN 48201	LENGTH AS NEEDED
1	1	PROTECTION SLEEVE 130MM LONG	E-CU F20	11		
1	1	PROTECTION SLEEVE 40MM LONG	E-CU F20	10		NOTE 1
4	4	PARALLEL CLAMP		9		
1	–	CROSSBAR CABLE CLAMP VERS. A		8		
–	1	CROSSBAR CABLE CLAMP VERS. B		7		
–	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
1	1	COMPOSITE INSULATOR TYPE 3		4		
1	1	SUPPORT CABLE CLAMP		3		
1	1	DROPPER		2		TYPE A
1	1	ARRANGEMENT STEADY ARM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

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NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

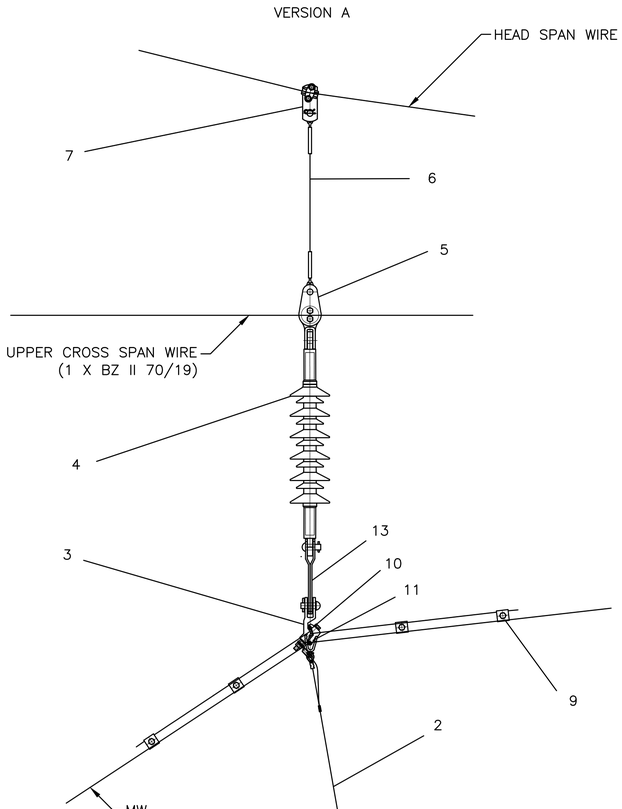
HEAD SPAN CATENARY SUPPORT
ASSEMBLY 2 OF 4
HR-01

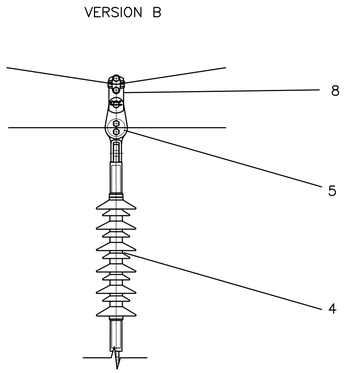
CADD FILE NAME: SD-W6290

REV: | EDITION: SECOND

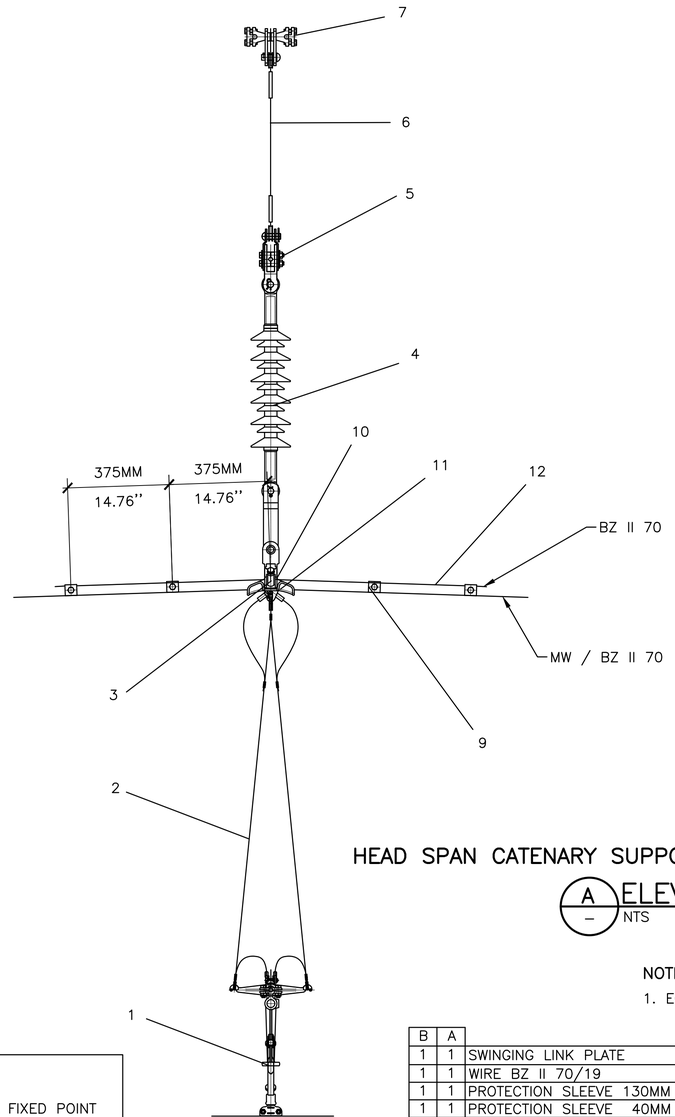
SCALE: NTS

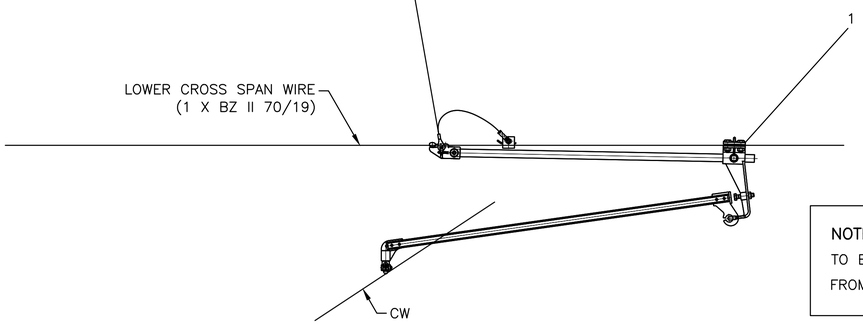
STANDARD DRAWING NO.: SD-W6290





ARRANGEMENT BELOW
AS SHOWN BESIDE





HEAD SPAN CATENARY SUPPORT WITH SWINGING PLATE
ELEVATION
NTS

NOTE:
TO BE USED FOR: DISTANCE TO THE FIXED POINT
FROM 787' (240M) TO 1150' (350M)

HEAD SPAN CATENARY SUPPORT WITH SWINGING PLATE
A/– ELEVATION
NTS

NOTE:
1. EQUAL TO PART 11 , BUT ORDER WITH LENGTH 40MM (1.57'')

B	A					
1	1	SWINGING LINK PLATE		13		
1	1	WIRE BZ II 70/19		12	DIN 48201	LENGTH AS NEEDED
1	1	PROTECTION SLEEVE 130MM LONG	E–CU F20	11		
1	1	PROTECTION SLEEVE 40MM LONG	E–CU F20	10		NOTE 1
4	4	PARALLEL CLAMP		9		
1	–	CROSSBAR CABLE CLAMP VERS. A		8		
–	1	CROSSBAR CABLE CLAMP VERS. B		7		
–	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
1	1	COMPOSITE INSULATOR TYPE 3		4		
1	1	SUPPORT CABLE CLAMP		3		
1	1	DROPPER		2		TYPE A
1	1	ARRANGEMENT STEADY ARM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

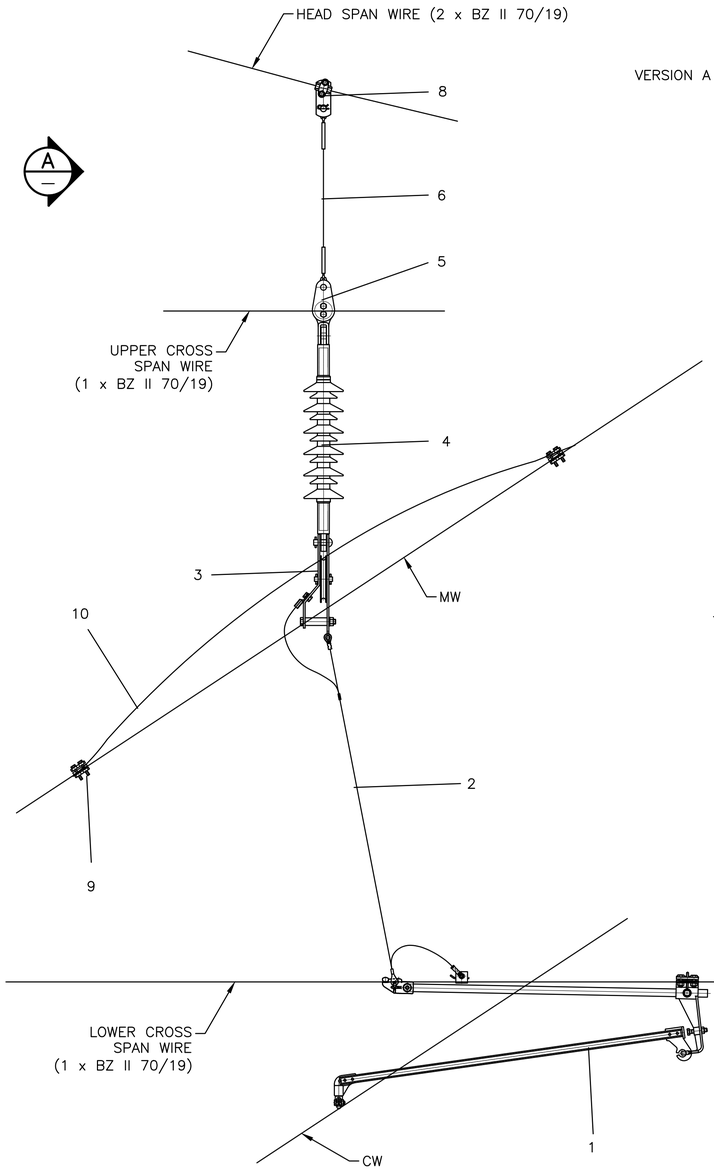
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HEAD SPAN CATENARY SUPPORT
WITH SWINGING PLATE
ASSEMBLY 3 OF 4 HR–02

CADD FILE NAME: SD–W6291
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6291

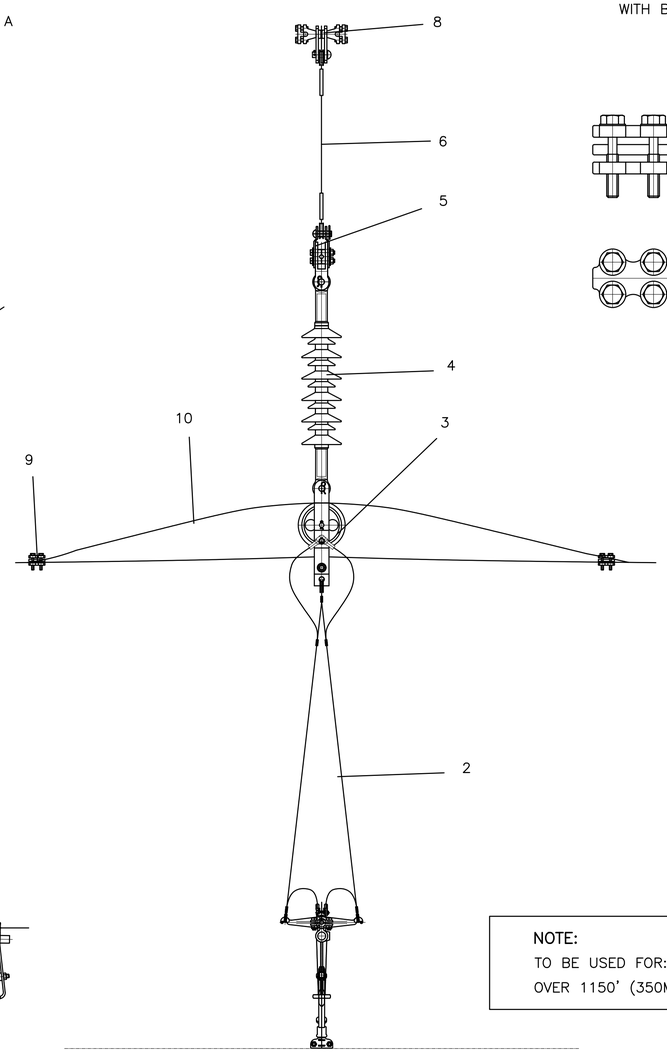


VERSION A

HEAD SPAN CATENARY SUPPORT WITH ROLL

ELEVATION

NTS



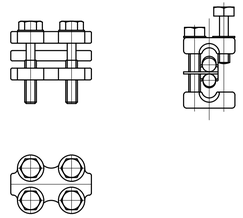
HEAD SPAN CATENARY SUPPORT WITH ROLL

A – ELEVATION

NTS

NOTE 1:

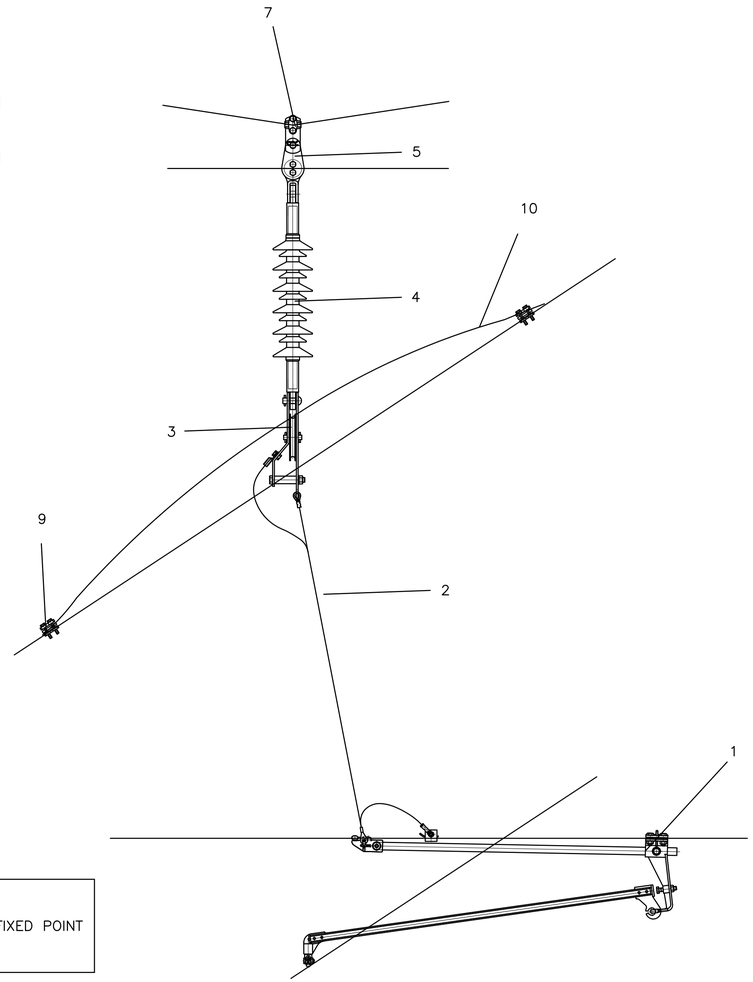
DETAIL PART 9 CONNECTION CLAMP FOR MW BZ II 70/19 WITH BZ II 70/19



NOTE:

TO BE USED FOR: DISTANCE TO THE FIXED POINT OVER 1150' (350M)

VERSION B



HEAD SPAN CATENARY SUPPORT WITH ROLL

ELEVATION

NTS

B	A					
1	1	WIRE BZ II 70/19		10	DIN 48201	LENGTH AS NEEDED
2	2	CONNECTION CLAMP		9	NOTE 1	
–	1	CROSSBAR CABLE CLAMP VERS. B		8		
1	–	CROSSBAR CABLE CLAMP VERS. A		7		
–	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
1	1	COMPOSITE INSULATOR TYPE 3		4		
1	1	ROLL FOR TENSIONED TRACTION CABLE		3		
1	1	DROPPER		2		TYPE B
1	1	ARRANGEMENT STEADY ARM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

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NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

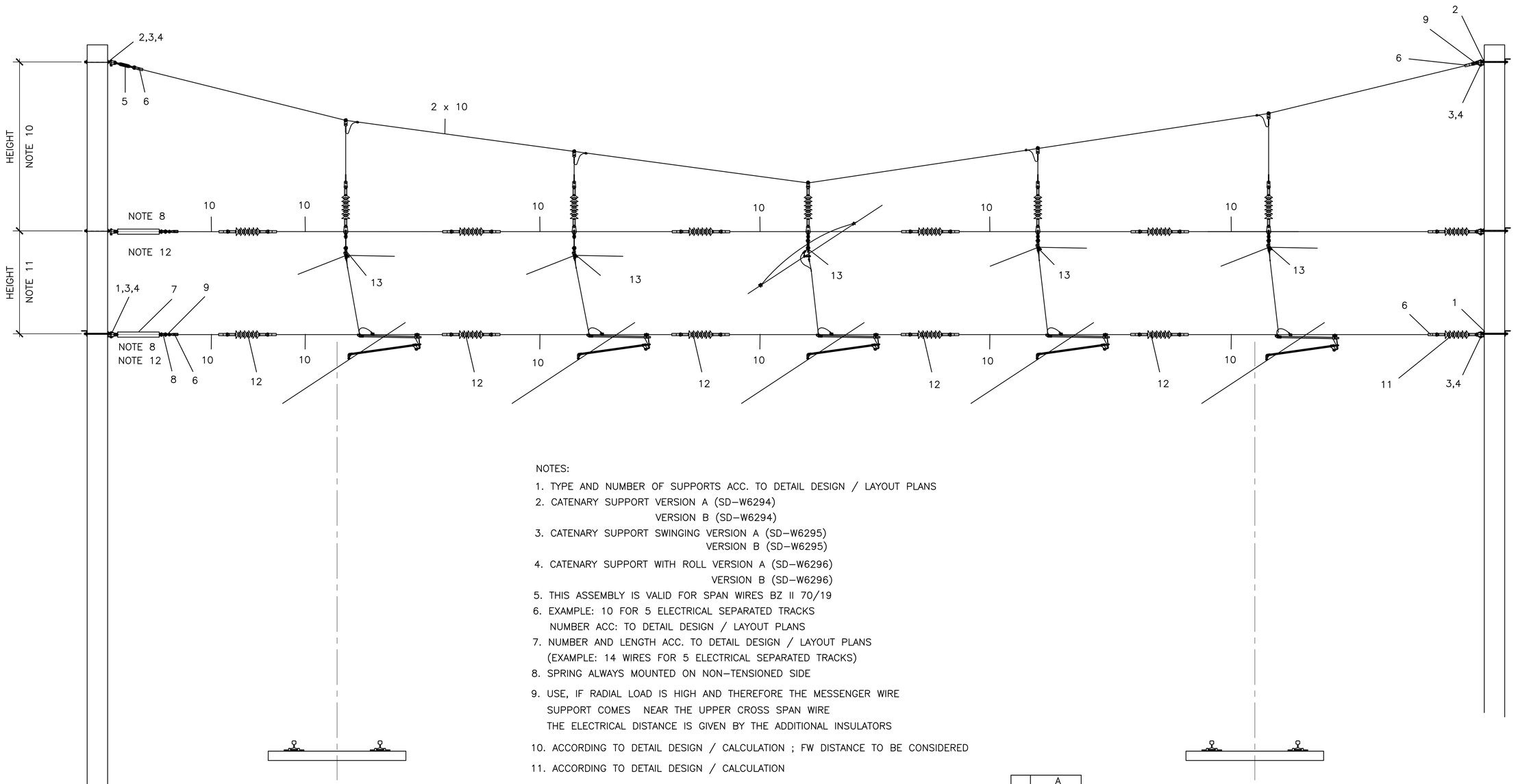
HEAD SPAN CATENARY SUPPORT WITH ROLL
ASSEMBLY 4 OF 4 HR–03

CADD FILE NAME: SD–W6292

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6292



NOTES:

1. TYPE AND NUMBER OF SUPPORTS ACC. TO DETAIL DESIGN / LAYOUT PLANS
2. CATENARY SUPPORT VERSION A (SD–W6294)
   VERSION B (SD–W6294)
3. CATENARY SUPPORT SWINGING VERSION A (SD–W6295)
   VERSION B (SD–W6295)
4. CATENARY SUPPORT WITH ROLL VERSION A (SD–W6296)
   VERSION B (SD–W6296)
5. THIS ASSEMBLY IS VALID FOR SPAN WIRES BZ II 70/19
6. EXAMPLE: 10 FOR 5 ELECTRICAL SEPARATED TRACKS
   NUMBER ACC: TO DETAIL DESIGN / LAYOUT PLANS
7. NUMBER AND LENGTH ACC. TO DETAIL DESIGN / LAYOUT PLANS
   (EXAMPLE: 14 WIRES FOR 5 ELECTRICAL SEPARATED TRACKS)
8. SPRING ALWAYS MOUNTED ON NON–TENSIONED SIDE
9. USE, IF RADIAL LOAD IS HIGH AND THEREFORE THE MESSENGER WIRE SUPPORT COMES NEAR THE UPPER CROSS SPAN WIRE THE ELECTRICAL DISTANCE IS GIVEN BY THE ADDITIONAL INSULATORS
10. ACCORDING TO DETAIL DESIGN / CALCULATION ; FW DISTANCE TO BE CONSIDERED
11. ACCORDING TO DETAIL DESIGN / CALCULATION
12. IF NECESSARY, IN CASE OF INSUFFICIENT CLEARANCE BETWEEN MAST AND FIRST TRACK, THE TERMINATION ARRANGEMENT FOR 2 SPAN WIRE SPRINGS BESIDE THE MAST MUST BE USED SEE DRAWING SD–W6126

HEAD SPAN FOR CATENARY SYSTEM
ELEVATION
NTS

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

	A				
NOTE 1,2,3,4		SUPPORTS	13		NOTE 1,2,3,4
	NOTE 6	CUT IN INSULATION FOR MW	12		NOTE 6
	2	COMPOSITE INSULATOR TYPE 3	11		
	NOTE 5,7	WIRE BZ II 70/19	10	DIN 48201	LENGTH AS NEEDED
	8	LINK PLATE	9		
	2	LINK PLATE WITH PINS	8		
	2	SPRING FOR INDICATORY WIRE	7		
	8	MW TERMINATION CLAMP	6		
	2	TURNBUCKLE	5		
	8	PIN 19x100 WITH BETA SPLINT PIN	4		
	8	SWIVEL JOINT	3		
	2	DOUBLE TERMINATION BRACKET (RECTANG. MAST)	2		
	4	SINGLE TERMINATION BRACKET (RECTANG. MAST)	1		
	PIECES	DESCRIPTION	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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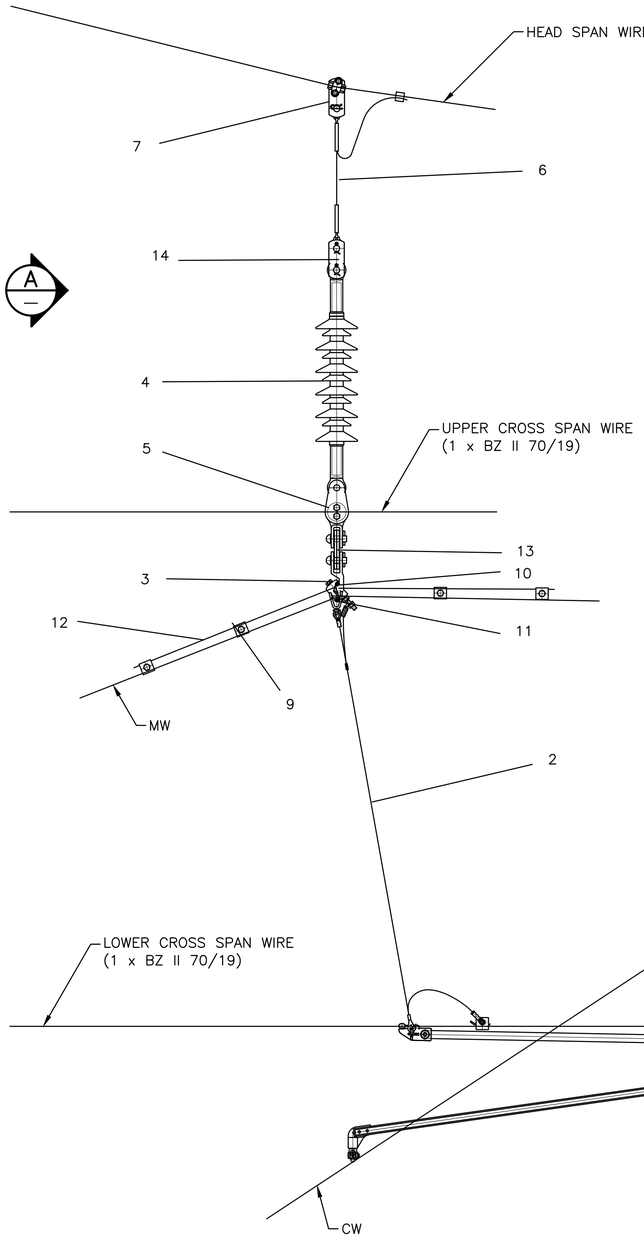
ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

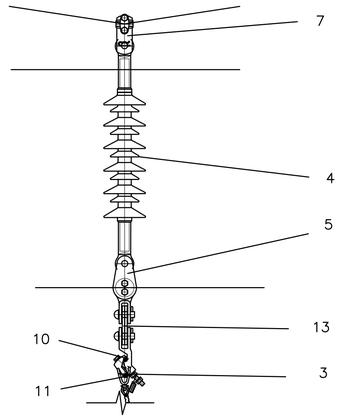
HEAD SPAN FOR CATENARY SYSTEM
ASSEMBLY 1 OF 4
HS–02

CADD FILE NAME: SD–W6293
REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6293

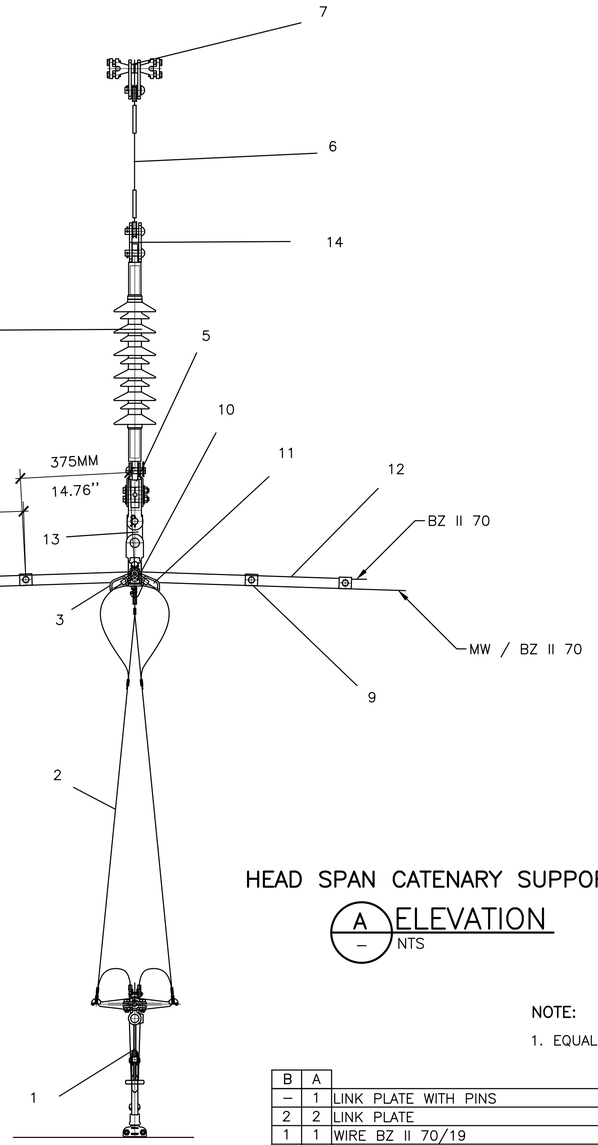
VERSION A



VERSION B



ARRANGEMENT BELOW
AS SHOWN BESIDE



HEAD SPAN CATENARY SUPPORT

A — ELEVATION

NTS

NOTE:

1. EQUAL TO PART 11 , BUT ORDER WITH LENGTH 40MM (1.57'')

B	A					
—	1	LINK PLATE WITH PINS		14		
2	2	LINK PLATE		13		
1	1	WIRE BZ II 70/19		12	DIN 48201	LENGTH AS NEEDED
1	1	PROTECTION SLEEVE 130MM LONG	E-CU F20	11		
1	1	PROTECTION SLEEVE 40MM LONG	E-CU F20	10		NOTE 1
4	4	PARALLEL CLAMP		9		
—	—	CROSSBAR CABLE CLAMP VERS. A		8		
1	1	CROSSBAR CABLE CLAMP VERS. B		7		
—	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
1	1	COMPOSITE INSULATOR TYPE 3		4		
1	1	SUPPORT CABLE CLAMP		3		
1	1	DROPPER		2		
1	1	ARRANGEMENT STEADY ARM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

NOTE:
TO BE USED FOR: DISTANCE TO THE FIXED POINT TO 787' (240M)

HEAD SPAN CATENARY SUPPORT

ELEVATION

NTS

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

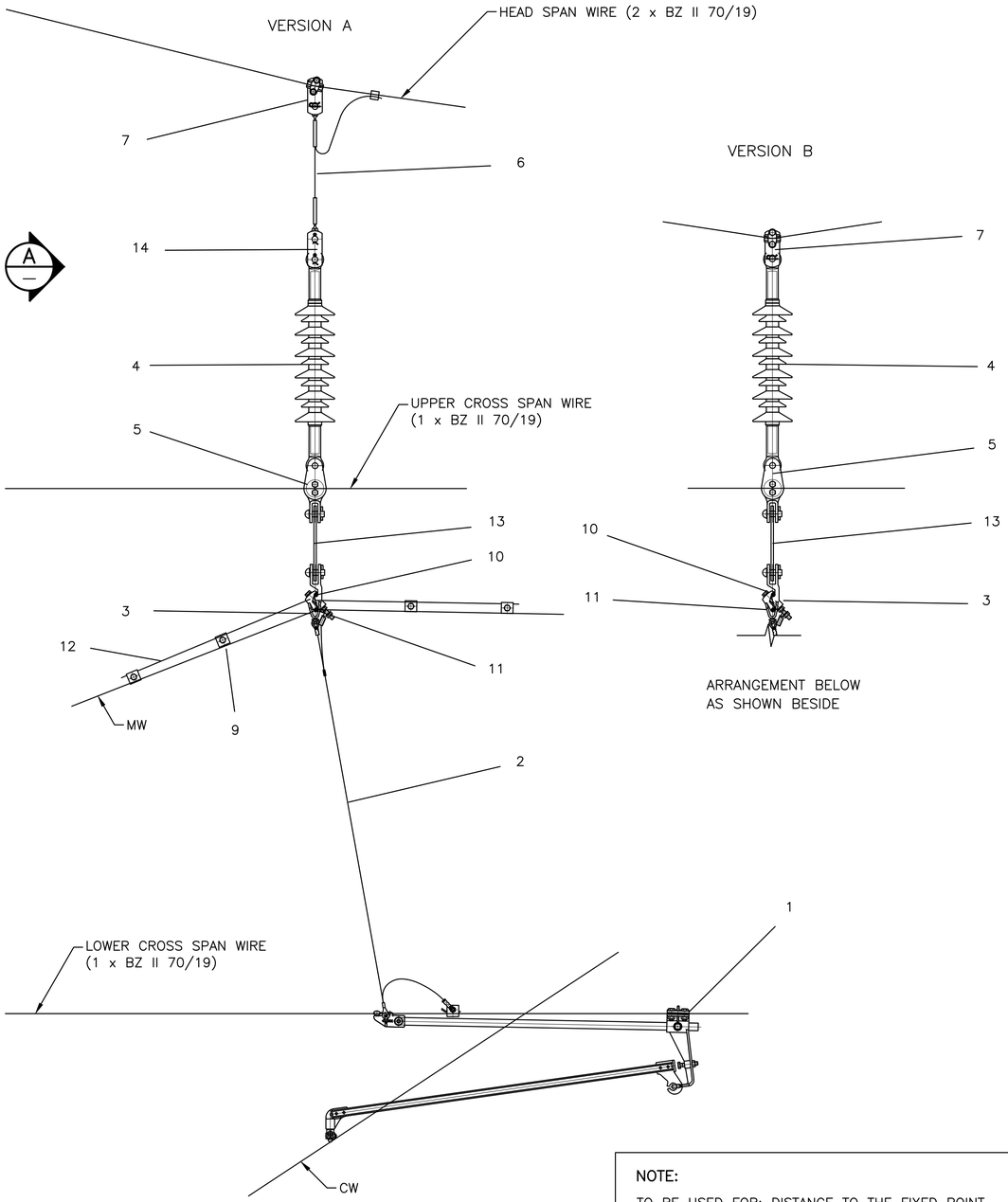
HEAD SPAN CATENARY SUPPORT
ASSEMBLY 2 OF 4
HR-04

CADD FILE NAME: SD-W6294

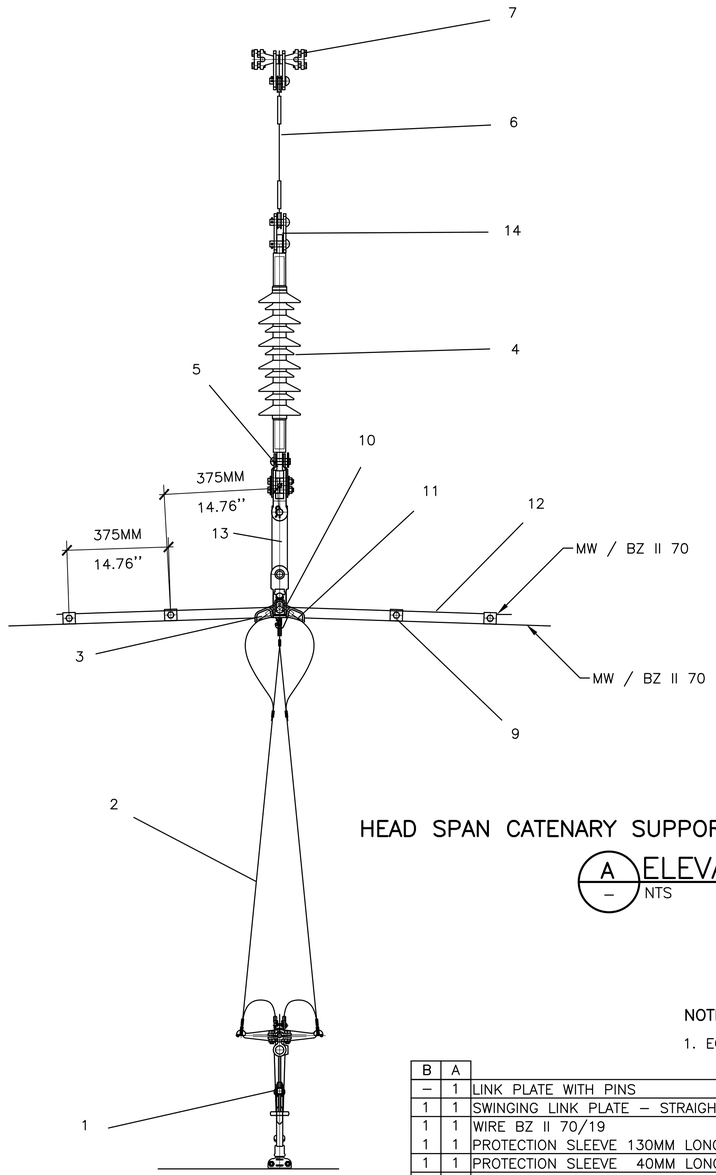
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6294



ARRANGEMENT BELOW
AS SHOWN BESIDE



HEAD SPAN CATENARY SUPPORT WITH SWINGING PLATE

A — ELEVATION

NTS

NOTE:

1. EQUAL TO PART 11 , BUT ORDER WITH LENGTH 40MM (1.57'')

B	A	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
–	1	LINK PLATE WITH PINS		14		
1	1	SWINGING LINK PLATE – STRAIGHT		13		
1	1	WIRE BZ II 70/19		12	DIN 48201	LENGTH AS NEEDED
1	1	PROTECTION SLEEVE 130MM LONG	E–CU F20	11		3EGF006960
1	1	PROTECTION SLEEVE 40MM LONG	E–CU F20	10		NOTE 1
4	4	PARALLEL CLAMP		9		
–	–	CROSSBAR CABLE CLAMP VERS. A		8		
1	1	CROSSBAR CABLE CLAMP VERS. B		7		
–	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
1	1	COMPOSITE INSULATOR TYPE 3		4		
1	1	SUPPORT CABLE CLAMP		3		
1	1	DROPPER		2		
1	1	ARRANGEMENT STEADY ARM		1		

HEAD SPAN CATENARY SUPPORT WITH SWINGING PLATE

ELEVATION

NTS

NOTE:

TO BE USED FOR: DISTANCE TO THE FIXED POINT – FROM 787' (240M) TO 1150' (350M)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HEAD SPAN CATENARY SUPPORT
WITH SWINGING PLATE
ASSEMBLY 3 OF 4 HR–05

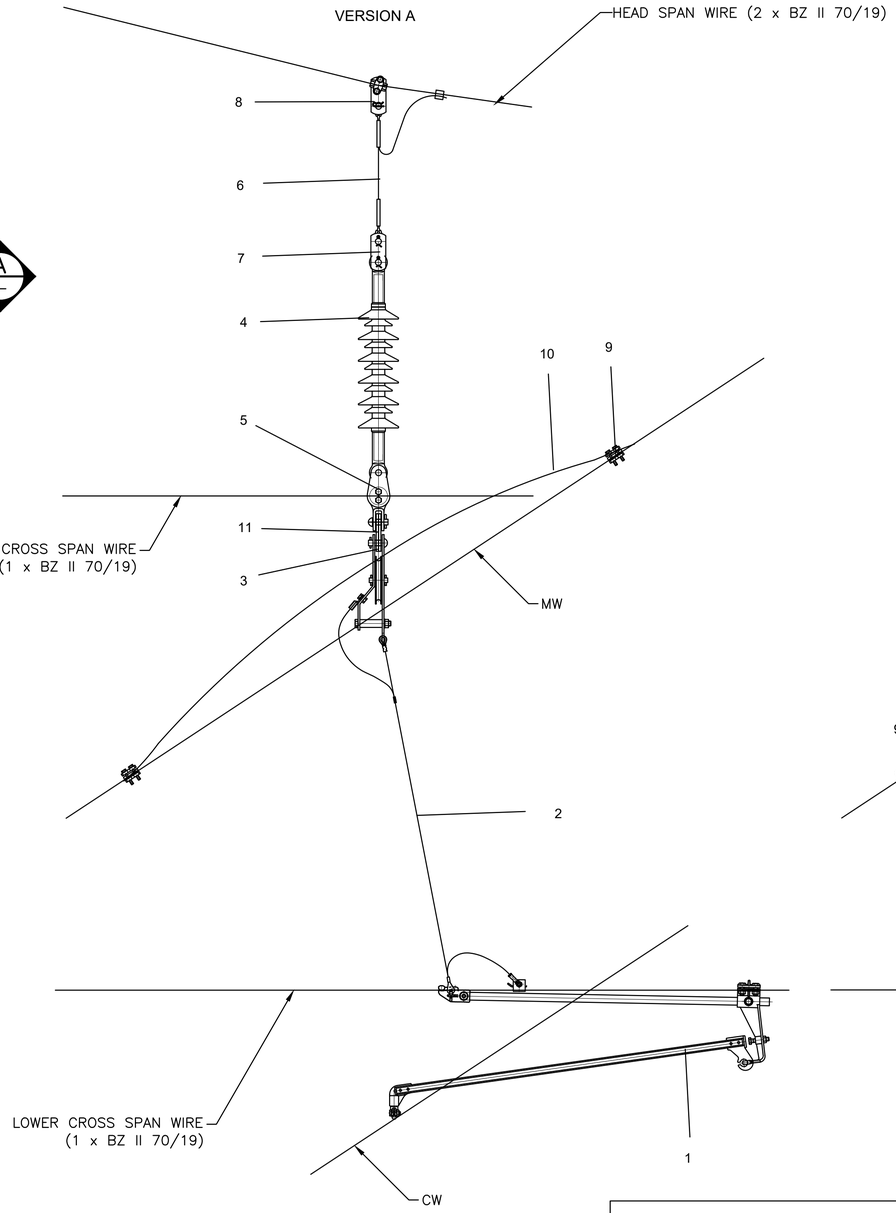
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REV: | EDITION: SECOND

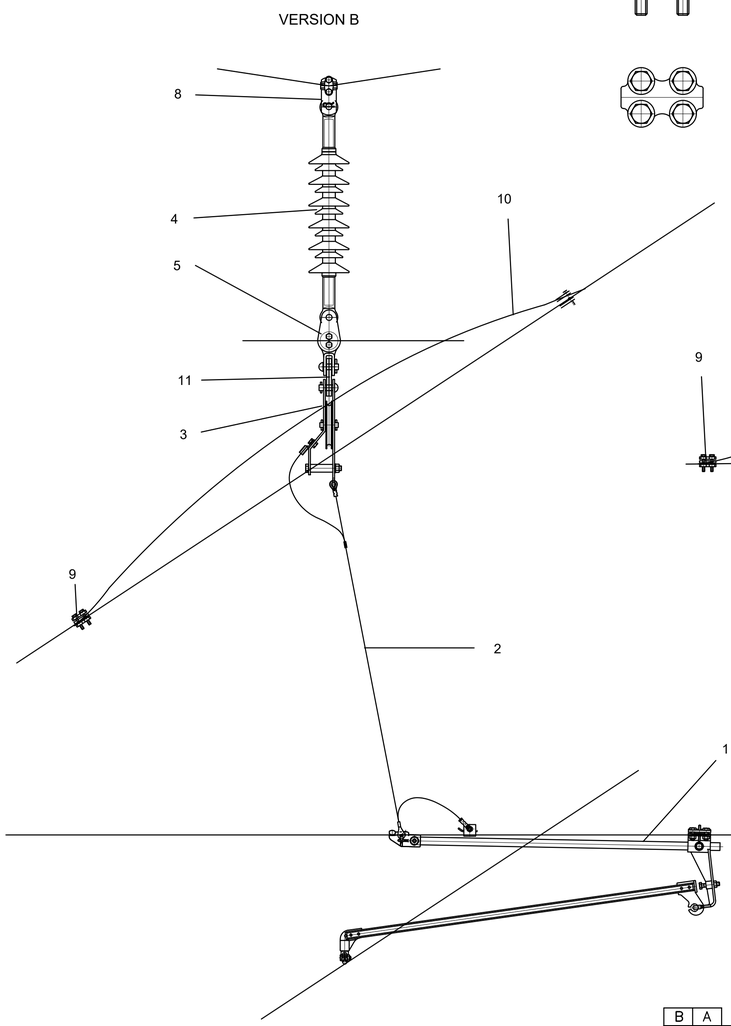
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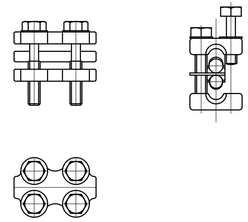
STANDARD DRAWING NO.: SD–W6295

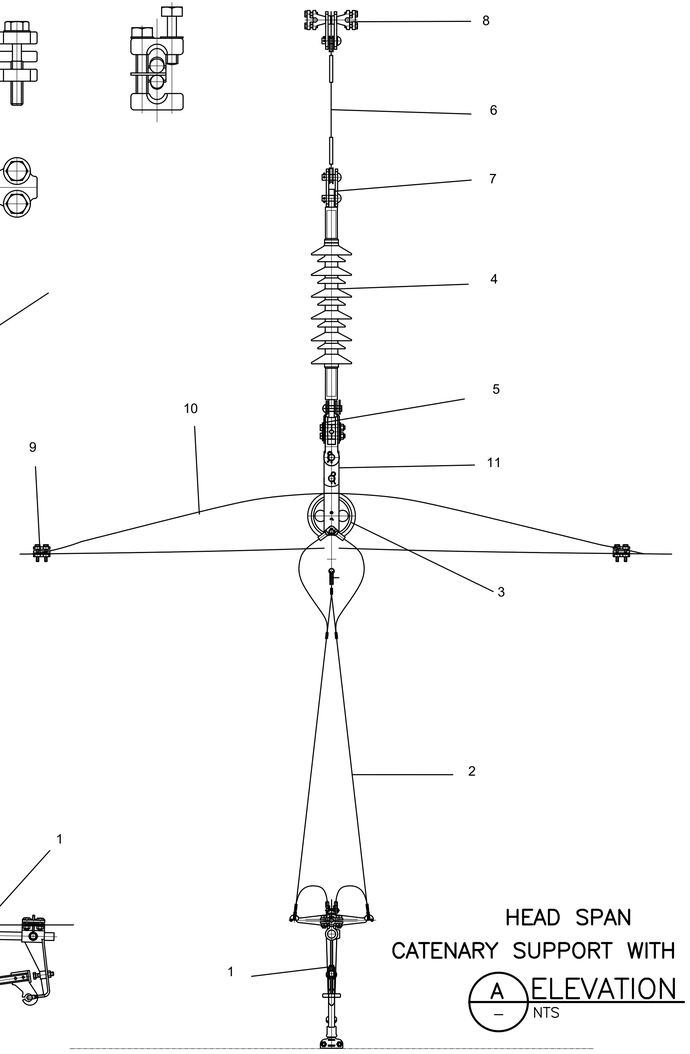
NOTE 1:
DETAIL PART 9 - CONNECTION CLAMP
FOR MW BZ II 70/19
WITH BZ II 70/19



HEAD SPAN CATENARY SUPPORT WITH ROLL
ELEVATION
NTS







HEAD SPAN
CATENARY SUPPORT WITH ROLL
A — ELEVATION
NTS

NOTE:
TO BE USED FOR: DISTANCE TO THE FIXED POINT OVER 1150' (350M)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
2	2	LINK PLATE		11		
1	1	WIRE BZ II 70/19		10	DIN 48201	LENGTH AS NEEDED
2	2	CONNECTION CLAMP		9	NOTE 1	
1	1	CROSSBAR CABLE CLAMP VERS. B		8		
–	1	LINK PLATE WITH PINS		7		
–	1	SPAN WIRE DROPPER		6		WIRE: BZ II 50/7
1	1	DIRECTIONAL CABLE CLAMP		5		
1	1	COMPOSITE INSULATOR TYPE 3		4		
1	1	ROLL FOR TENSIONED TRACTION CABLE		3		
1	1	DROPPER		2		TYPE B
1	1	ARRANGEMENT STEADY ARM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

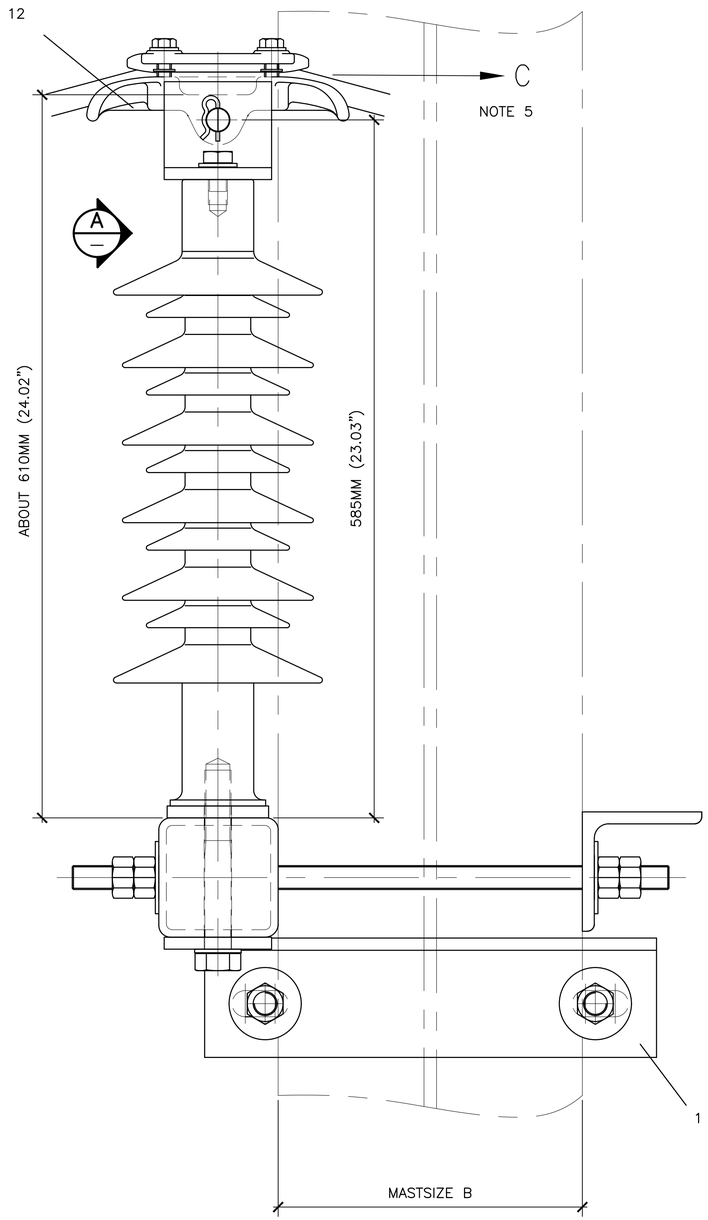
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HEAD SPAN CATENARY SUPPORT
WITH ROLL ASSEMBLY
4 OF 4 HR–06

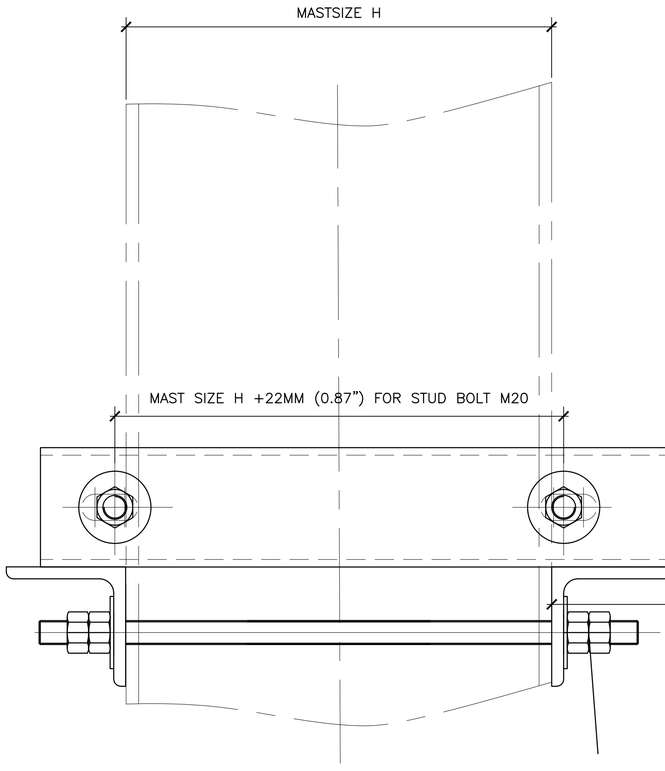
CADD FILE NAME: SD–W6296
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6296



FEEDER SUPPORT AT RECTANGULAR MAST

ELEVATION

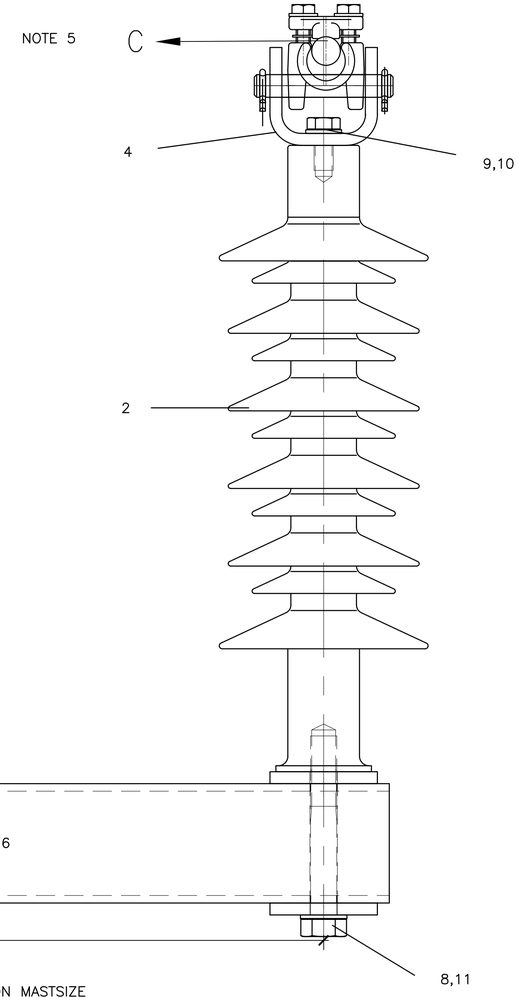
NTS



FEEDER SUPPORT AT RECTANGULAR MAST

A — ELEVATION

NTS



NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. SEE DWG SD–W6110 FOR REST OF DETAILS
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
6. THE MAXIMUM FW OFFSET LIMIT WITHOUT STRUT TUBE IS 6.5' OFFSET

	FOR RECTANGULAR MAST						
B	A						
–	1	FEEDER WIRE CLAMP	G–AL	12			
–	1	HEXAGON HEAD SCREW M22x150	8.8 NOTE 2	11	DIN EN ISO 4017		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE 2	10	DIN EN ISO 4017		
–	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089		
–	1	WASHER M22	200HV NO.2	8	DIN EN ISO 7089		
–	4	STUD BOLT 3/4"		7			
–	16	NUT 3/4"		6			
–	8	WASHER FOR 3/4"		5			
–	1	BRACKET FOR FEEDER WIRE CLAMP		4			
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 1	
–	1	COMPOSITE INSULATOR		2			
–	3	BACK ANGLE WITHOUT EARTHING		1		NOTE 1	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

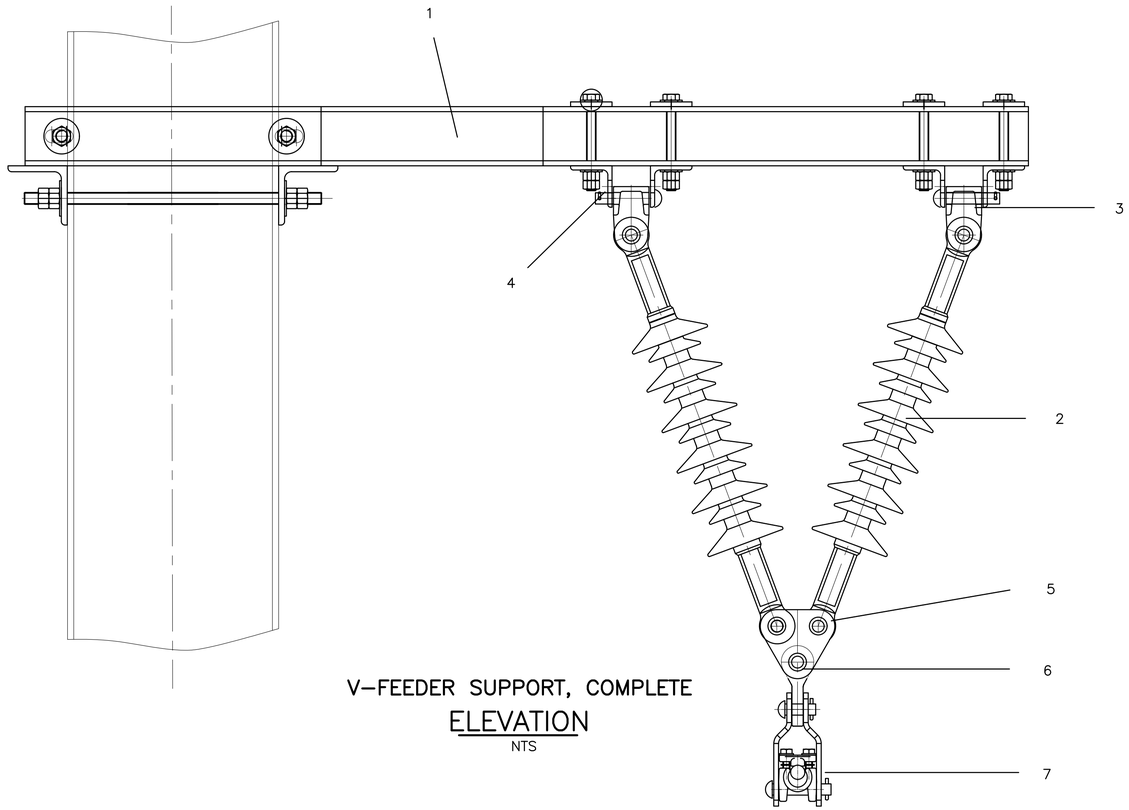
FEEDER WIRE SUPPORT, VERTICAL AT RECTANGULAR MAST

CADD FILE NAME: SD–W6297

REV: | EDITION: SECOND

SCALE: NTS

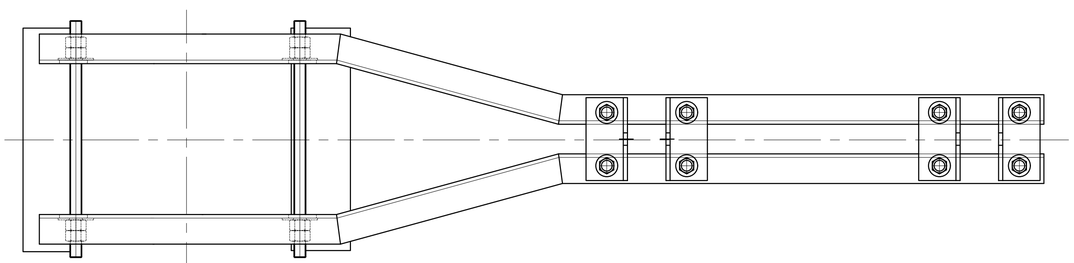
STANDARD DRAWING NO.: SD–W6297



V–FEEDER SUPPORT, COMPLETE

ELEVATION

NTS



V–FEEDER SUPPORT, COMPLETE – VIEW FROM THE TOP

PLAN

NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE AND DISTANCE
2. POLE ORIENTATION ACCORDING TO LAYOUT PLANS

FOR RECTANGULAR MAST						
B	A					
–	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	7		
–	1	TWISTED EYE–EYE CONNECTOR		6		
–	1	THREE HOLE TRIANGULAR CLEVIS LINK		5		
–	2	BOLT ø19x100 WITH ß–SPLINT		4		
–	2	SWIVEL JOINT		3		
–	2	COMPOSITE INSULATOR		2		
–	1	SUPPORTING STRUCTURE FOR V–FEEDER SUPPORT		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

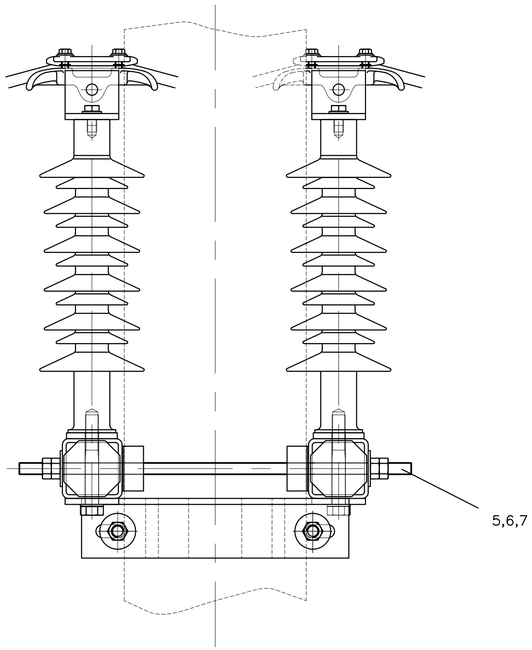
SUPPORTING STRUCTURE FOR V–FEEDER SUPPORT

CADD FILE NAME: SD–W6298

REV: | EDITION: SECOND

SCALE: NTS

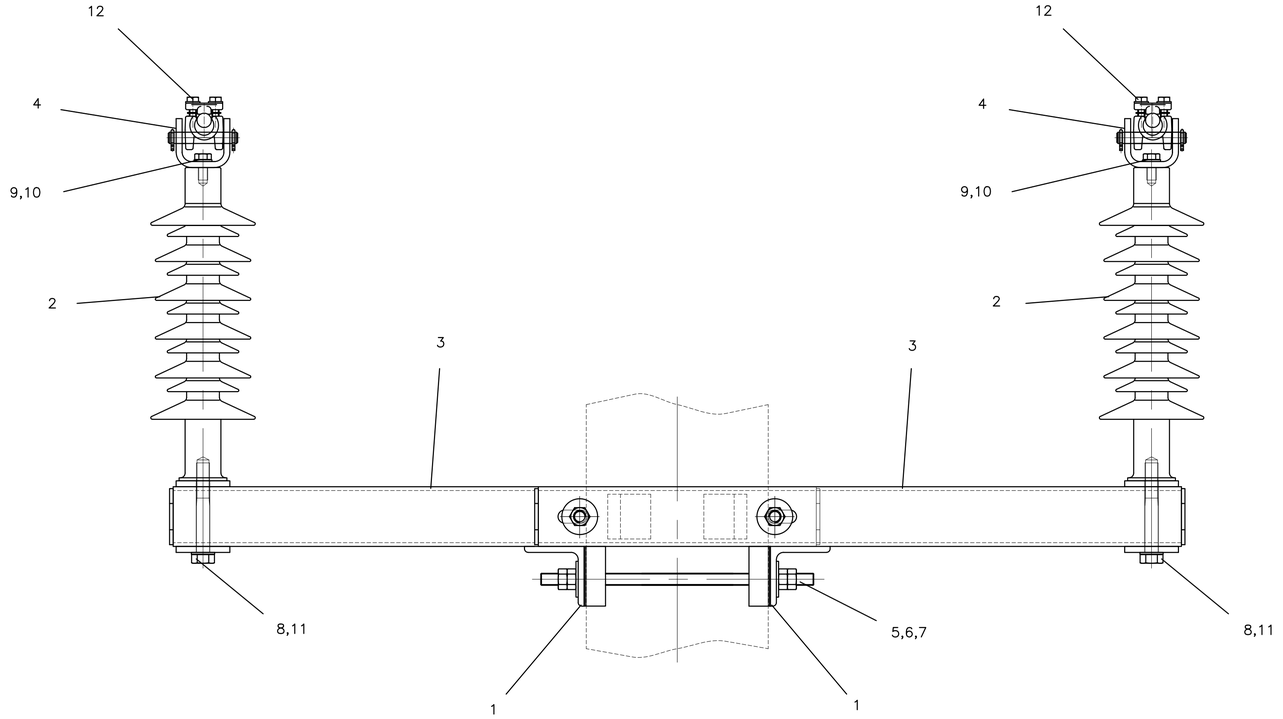
STANDARD DRAWING NO.: SD–W6298



DOUBLE FEEDER SUPPORT AT ROUND MAST

ELEVATION

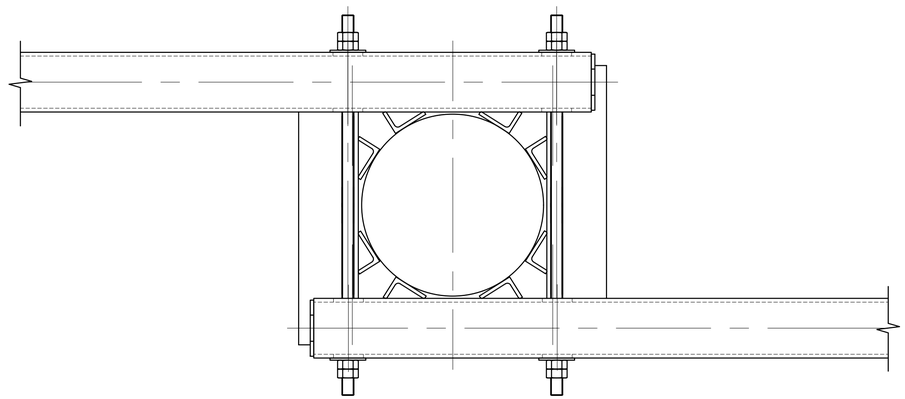
NTS



DOUBLE FEEDER SUPPORT AT ROUND MAST

A — ELEVATION

NTS



TOP VIEW DOUBLE FEEDER SUPPORT AT ROUND MAST

PLAN

NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O

FOR ROUND POLE						
B	A					
–	2	FEEDER WIRE CLAMP	G–AL	12		
–	2	HEXAGON HEAD SCREW M22x150	8.8 NOTE 2	11	DIN EN ISO 4017	
–	2	HEXAGON HEAD SCREW M16x35	8.8 NOTE 2	10	DIN EN ISO 4017	
–	2	WASHER M16	200HV NO.2	9	DIN EN ISO 7089	
–	2	WASHER M22	200HV NO.2	8	DIN EN ISO 7089	
–	4	STUD BOLT 3/4"		7		
–	16	NUT 3/4"		6		
–	8	WASHER FOR 3/4"		5		
–	2	BRACKET FOR FEEDER WIRE CLAMP		4		
–	2	SUPPORT STRUCTUR, COMPLETE		3		NOTE 1
–	2	COMPOSITE INSULATOR		2		
–	2	BACK BRACKET FOR CANTILEVER		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

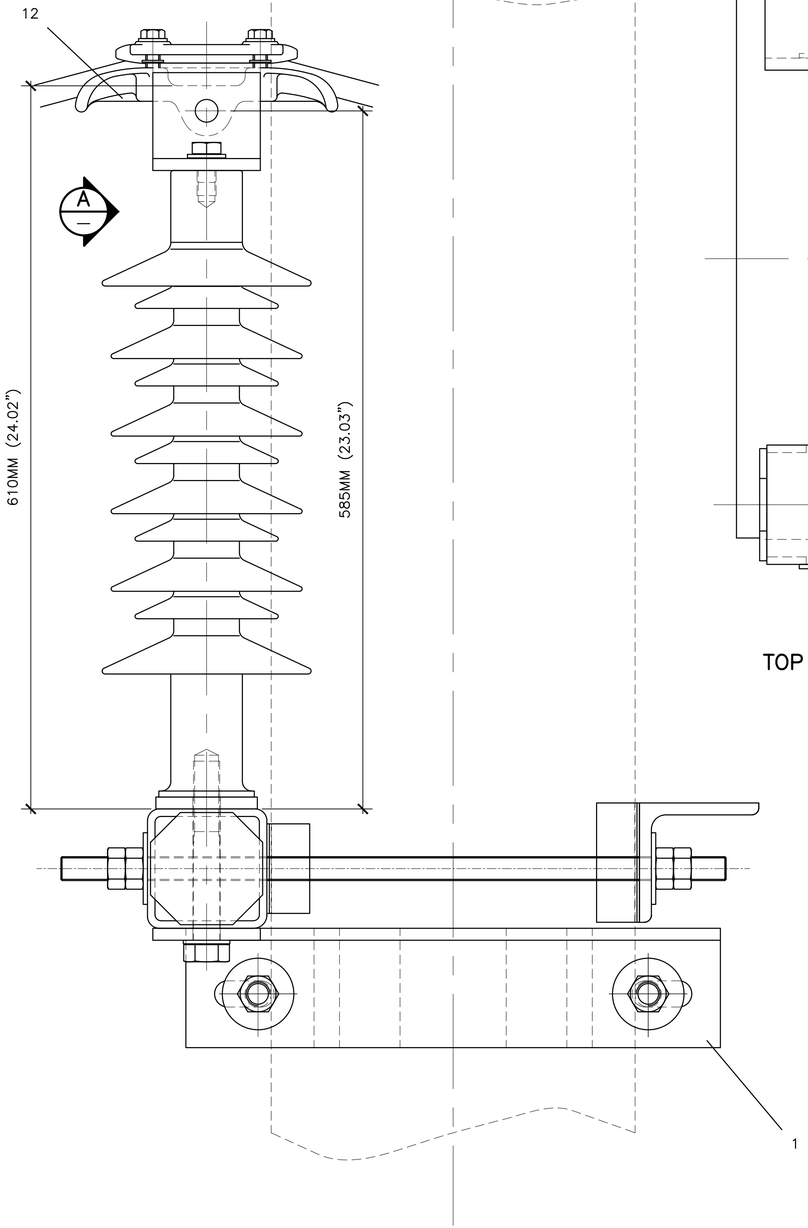
DOUBLE FEEDER WIRE SUPPORT
VERTICAL AT ROUND POLE
BACK TO BACK

CADD FILE NAME: SD–W6299

REV: EDITION: SECOND

SCALE: NTS

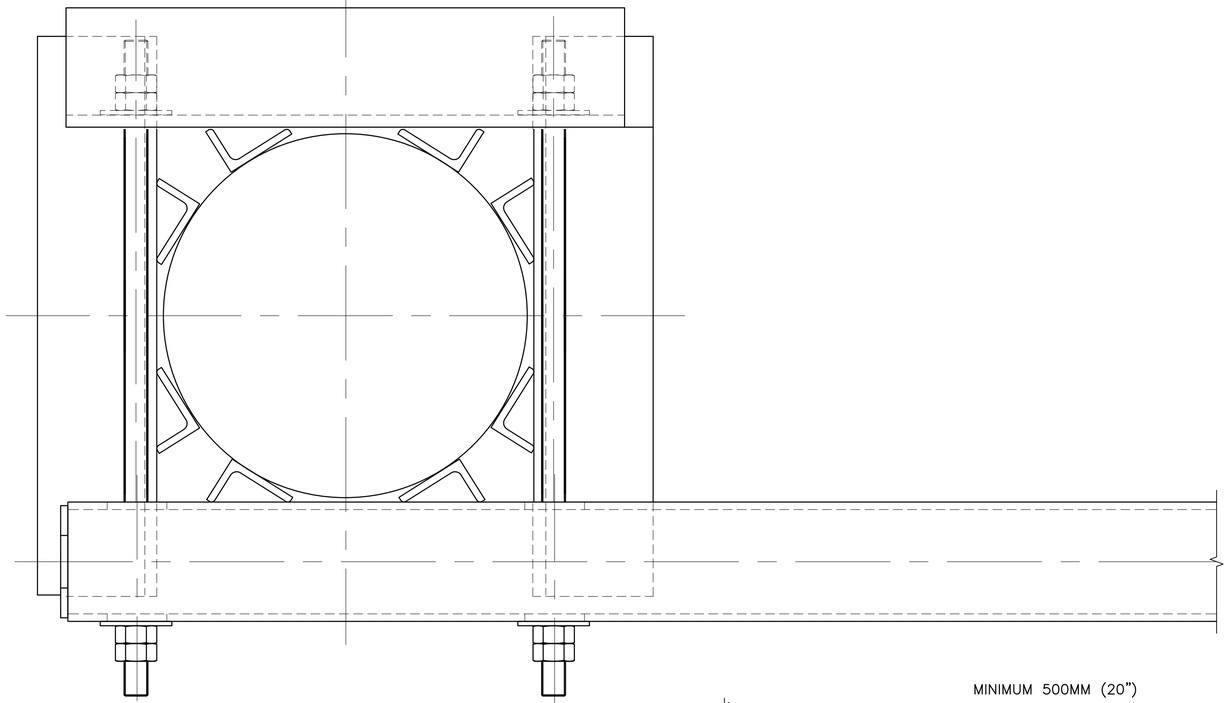
STANDARD DRAWING NO.: SD–W6299



SINGLE FEEDER SUPPORT AT ROUND POLE

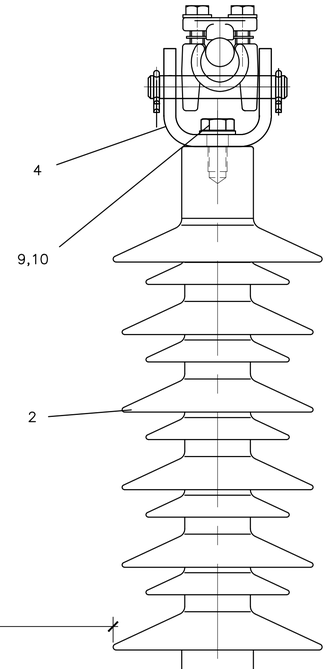
ELEVATION

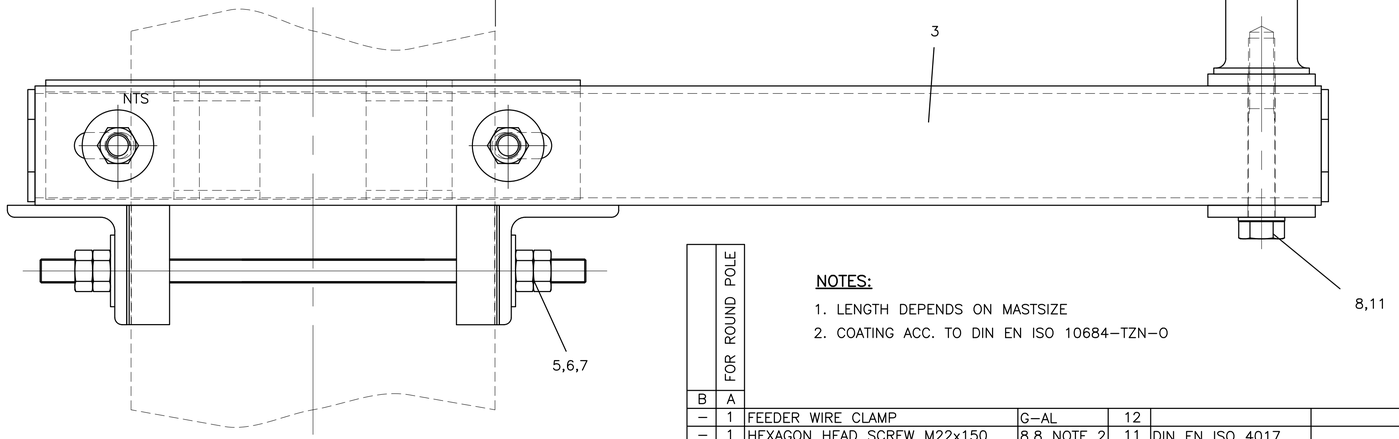
NTS



TOP VIEW SINGLE FEEDER SUPPORT AT ROUND MAST

PLAN





SINGLE FEEDER SUPPORT AT ROUND POLE

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O

B	A	FOR ROUND POLE					
–	1	FEEDER WIRE CLAMP	G–AL	12			
–	1	HEXAGON HEAD SCREW M22x150	8.8 NOTE 2	11	DIN EN ISO 4017		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE 2	10	DIN EN ISO 4017		
–	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089		
–	1	WASHER M22	200HV NO.2	8	DIN EN ISO 7089		
–	4	STUD BOLT 3/4"		7			
–	16	NUT 3/4"		6			
–	8	WASHER FOR 3/4"		5			
–	1	BRACKET FOR FEEDER WIRE CLAMP		4			
–	1	SUPPORT STRUCTUR, COMPLETE		3			NOTE 1
–	1	COMPOSITE INSULATOR		2			
–	3	BACK BRACKET FOR CANTILEVER		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD		REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

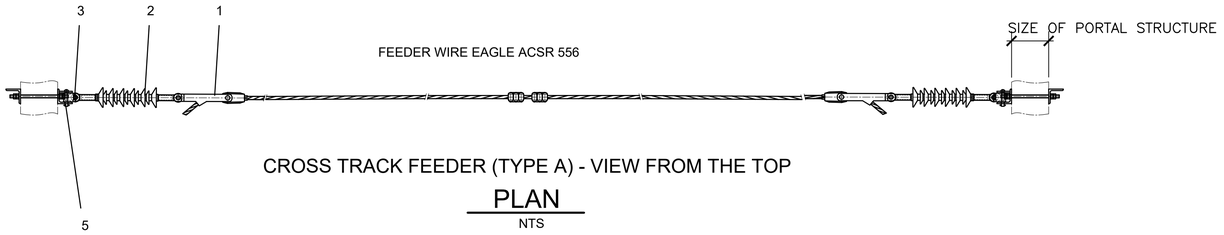
FEEDER WIRE SUPPORT, VERTICAL AT ROUND POLE

CADD FILE NAME: SD–W6300

REV: | EDITION: SECOND

SCALE: NTS

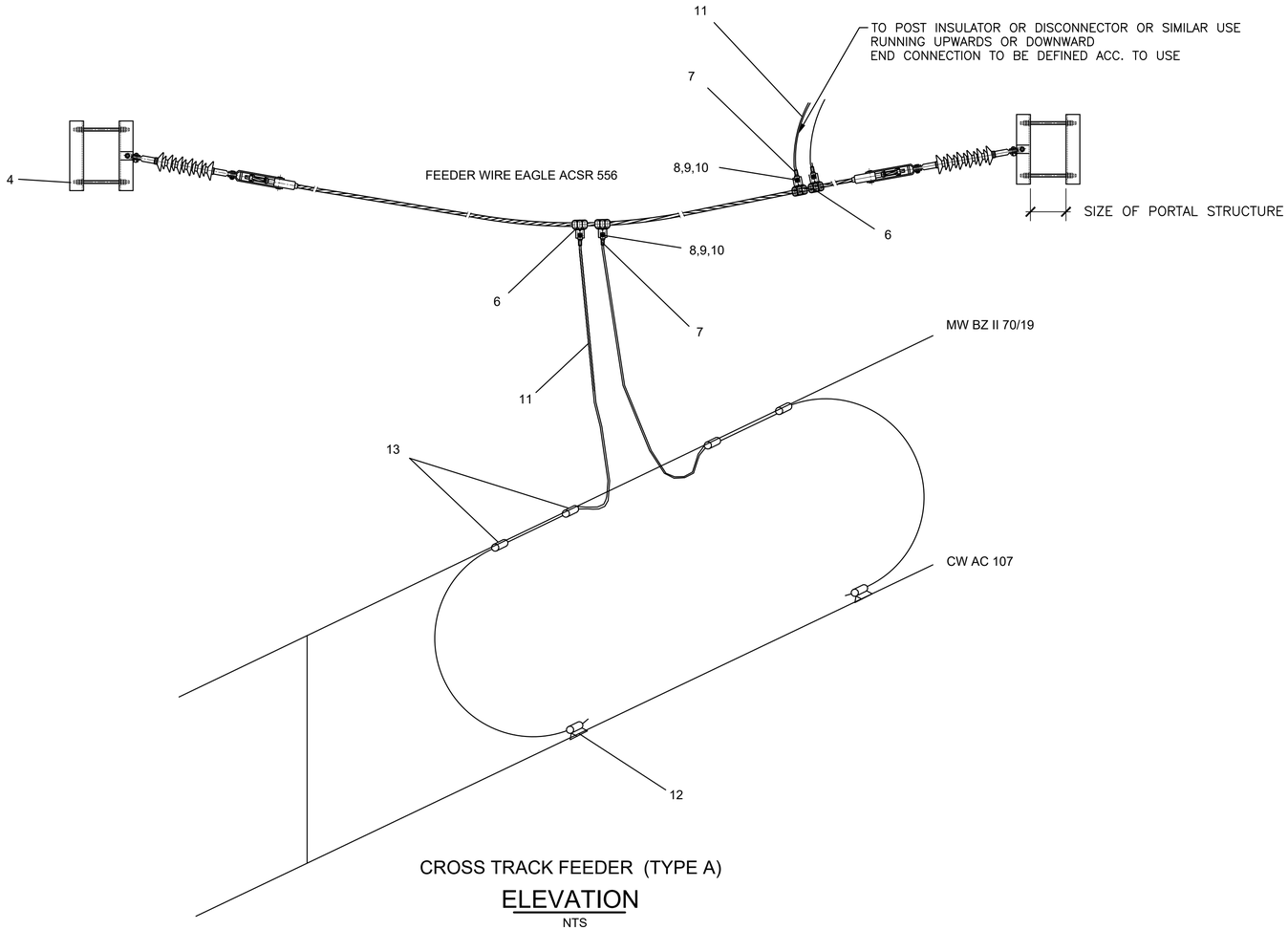
STANDARD DRAWING NO.: SD–W6300



CROSS TRACK FEEDER (TYPE A) - VIEW FROM THE TOP

PLAN

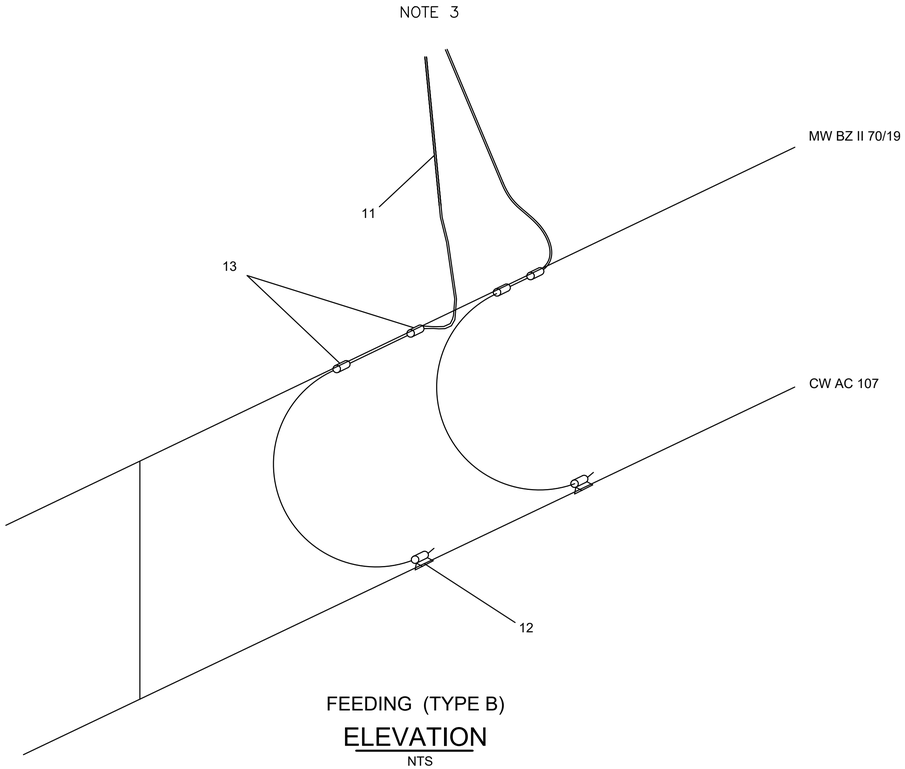
NTS



CROSS TRACK FEEDER (TYPE A)

ELEVATION

NTS



FEEDING (TYPE B)

ELEVATION

NTS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF STRUCTURE
2. LENGTH TO BE DEFINED
3. CABLE GOING TO MOD DISCONNECTOR CABLE LUG DELIVERY PART OF DISCONNECTOR
4. LOCAL SUPPLY MIGHT BE USED IF EQUIVALENT

FEEDING	CROSS TRACK FEEDER	PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
B	A						
4	4	4	WIRE FEEDER CLAMP JW95F-MW70		13		NOTE 4
2	2	2	CONTACT WIRE FEEDER CLAMP JW95F-CW AC 107		12		NOTE 4
2	4	2	WIRE E-CU 95x259 NOTE 2	E-CU	11	DIN 43138	NOTE 4
–	8	8	WASHER M12	A2	10	ISO 7089	NOTE 4
–	4	4	NUT M12	A2	9	ISO 4032	NOTE 4
–	4	4	HEXAGON HEAD SCREW M12x50	A2	8	ISO 4017	NOTE 4
–	4	4	COMPRESSION TYPE CABLE LUG 12x120 S	TIN PLATED	7	DIN 46235	NOTE 4
–	4	4	AL-T FLAT CONNECTOR		6		NOTE 4
–	2	2	PIN ø19X100 WITH 8-SPLINT PIN	A2	5		
–	2	2	BRACKET FOR FIXED TERMINATION		4	TO BE DEFINED	NOTE 1
–	2	2	SWIVEL JOINT		3		
–	2	2	COMPOSITE INSULATOR TYPE 3		2		
–	2	2	TERMINATION CLAMP F. FEEDER WIRE		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

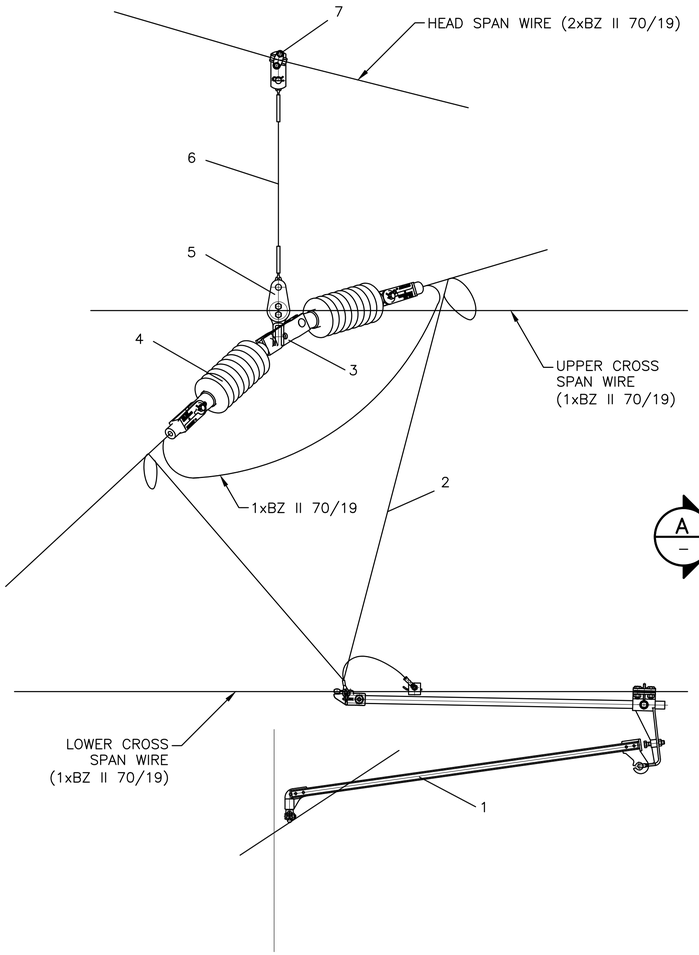
CROSS TRACK FEEDER AND FEEDING DETAIL CT-01

CADD FILE NAME: SD-W6301

REV: | EDITION: SECOND

SCALE: NTS

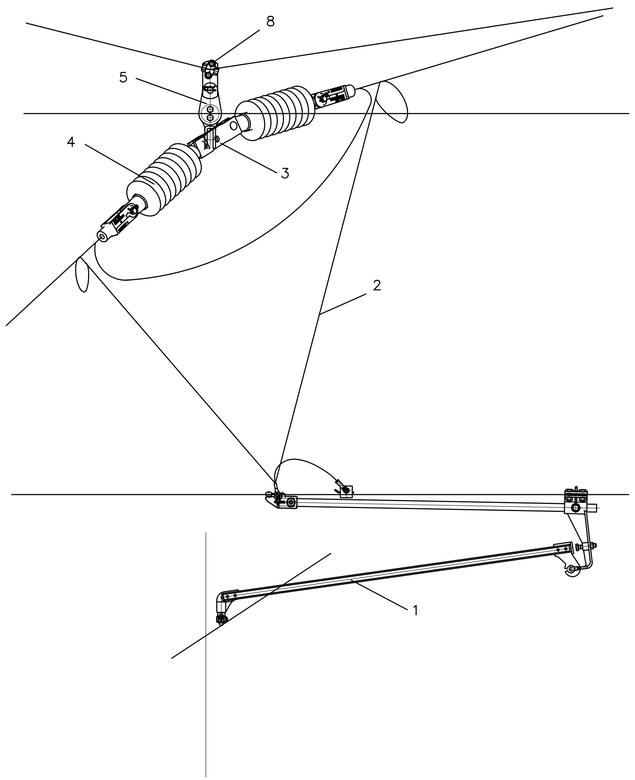
STANDARD DRAWING NO.: SD-W6301



CATENARY FIXPOINT FOR HEAD SPAN – TYP A

ELEVATION

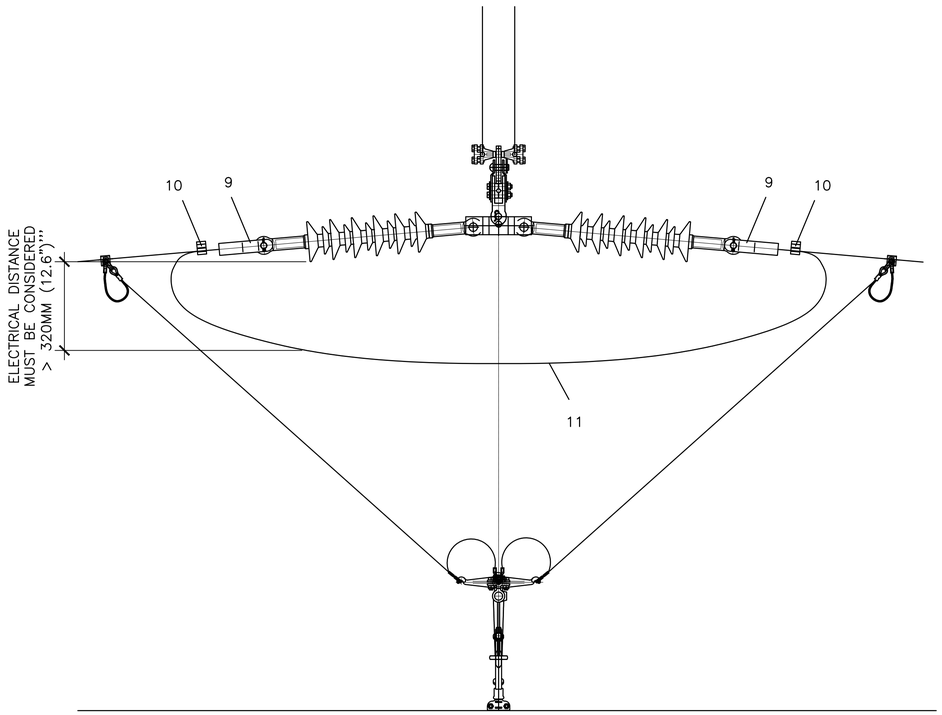
NTS



CATENARY FIXPOINT FOR HEAD SPAN – TYP B

ELEVATION

NTS



CATENARY FIXPOINT FOR HEAD SPAN – TYP B

A – ELEVATION

NTS

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
1	1	WIRE BZ II 70/19		11	DIN 48201	LENGTH AS NEEDED
2	2	ELECTRICAL CONNECTION CLAMP		10	NOTE 1	
2	2	MW TERMINATION CLAMP		9		
1	–	CROSSBAR CABLE CLAMP VERS. A		8		
–	1	CROSSBAR CABLE CLAMP VERS. B		7		
–	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
2	2	COMPOSITE INSULATOR TYPE 3		4		
1	1	CRANKED LINK PLATE FOR 2 INSULATORS		3		
1	1	DROPPER		2		
1	1	ARRANGEMENT STEADY ARM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

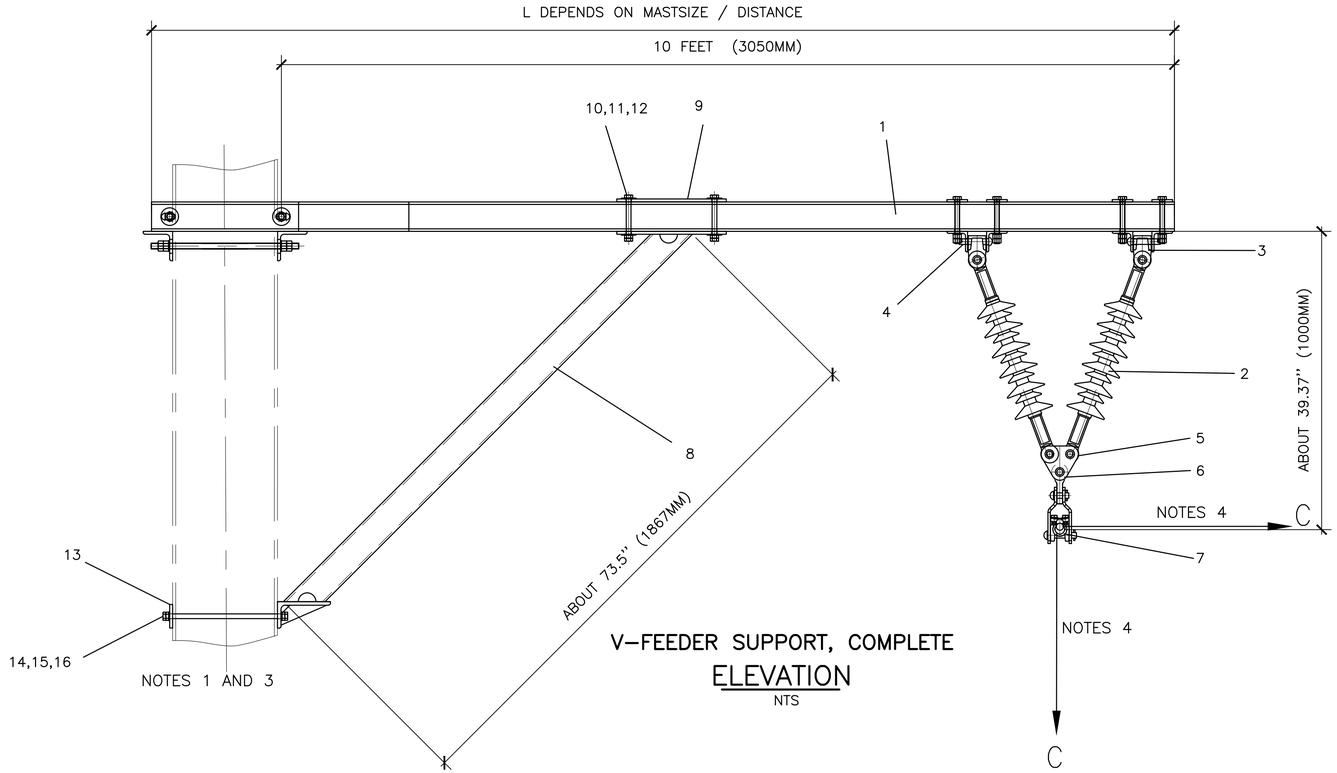
CATERNARY FIXPOINT
FOR HEAD SPAN
HR–07

CADD FILE NAME: SD–W6302

REV: | EDITION: SECOND

SCALE: NTS

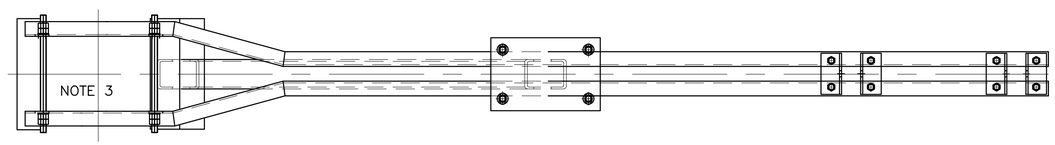
STANDARD DRAWING NO.: SD–W6302



V–FEEDER SUPPORT, COMPLETE
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.



V–FEEDER SUPPORT, COMPLETE – VIEW FROM THE TOP
PLAN
NTS

FOR ROUND MAST B	FOR RECTANGULAR MAST A					
8	8	HEXAGON NUT M16	8	16	DIN EN ISO 4032	NOTE 2
4	4	WASHER FOR M16	200HV	15	DIN EN ISO 7093	NOTE 2
2	2	STUD BOLT M16	8.8	14	DIN 976–1	NOTES 1 AND 2
1	1	BACK PLATE		13	3EGF023854Z3183	PART 2 NOTE 1
4	4	HEXAGON HEAD SCREW M16x160	8.8	12	DIN EN ISO 4017	NOTE 2
8	8	WASHER M16	200HV	11	DIN EN ISO 7093	NOTE 2
8	8	HEXAGON NUT M16	8	10	DIN EN ISO 4032	NOTE 2
1	1	FLAT STEEL / CLAMPING PLATE		9		PART 4
1	1	STRUT TUBE		8		
1	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	7		
1	1	TWISTED EYE–EYE CONNECTOR		6		
1	1	THREE HOLE TRIANGULAR CLEVIS LINK		5		
2	2	BOLT ø19x100 WITH ß–SPLINT		4		
2	2	SWIVEL JOINT		3		
2	2	COMPOSITE INSULATOR		2		
1	1	SUPPORTING STRUCTURE FOR 10' TYPE		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV DATE BY CHK APP

PENINSULA CORRIDOR JOINT POWERS BOARD

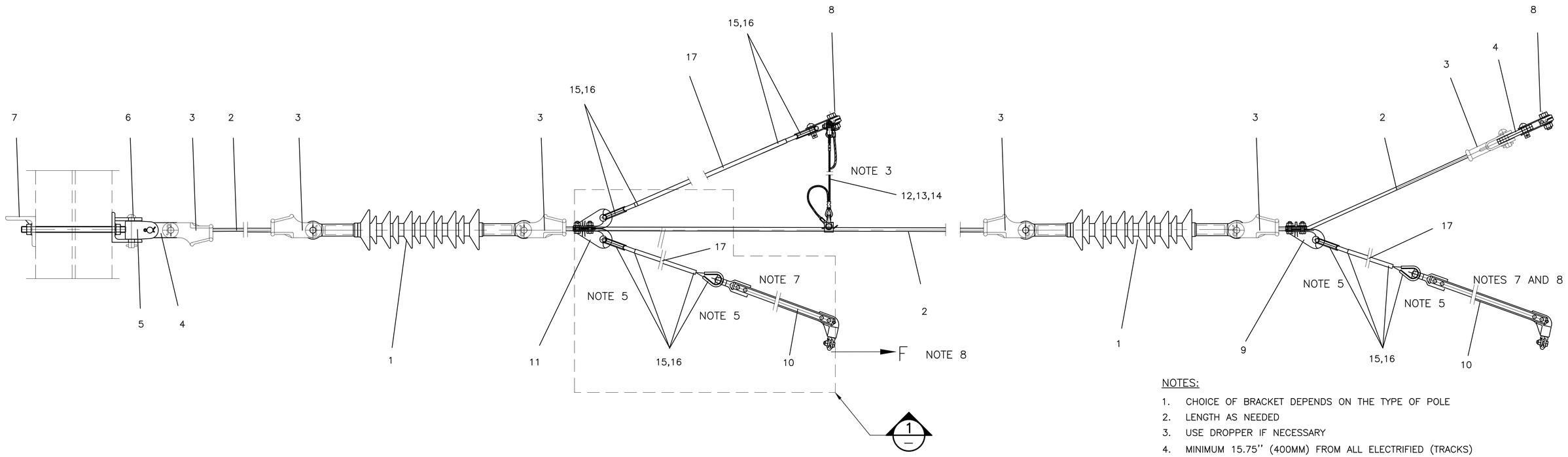
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

V–FEEDER SUPPORT WITH STRUT TUBE 10' TYPE AT ROUND POLE AND RECTANGULAR POLE

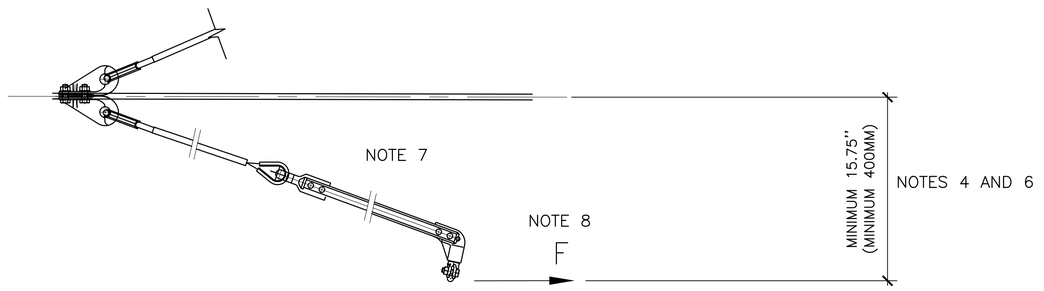
CADD FILE NAME: SD–W6310
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6310



PULL OFF TERMINATION FOR CATENARY FOR RADIAL FORCE LESS THAN 449.62 LBF (2KN)

ELEVATION

NTS



STEADY ARM OF PULL OFF TERMINATION FOR CATENARY FOR LOW RADIAL FORCE

1 — DETAIL

NTS

NOTE:

POLE ORIENTATION ACCORDING TO LAYOUT PLANS PRESENTATION FOR 2 TRACKS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. USE DROPPER IF NECESSARY
4. MINIMUM 15.75'' (400MM) FROM ALL ELECTRIFIED (TRACKS) CONTACT WIRES
5. PART 10,11,15,16,17 TO BE ASSEMBLED ON SITE
6. RADIAL FORCE AND DROPPER DISTANCE MUST BE CONSIDERED TO CREATE MINIMUM 15.75'' (400MM) DISTANCE
7. STEADY ARM LENGTH 3.94' (1200MM) IF NECESSARY DEFINITION OF ENLARGED STEADY ARM MUST BE DONE IN DETAIL DESIGN
8. STEADY ARM: MAXIMUM WORKING LOAD 449.62 LBF (2KN)
9. PART#3 CAN USE FORKED COLLAR SOCKET.
10. LOADING IS BASED ON THE EXISTING DESIGN. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.

FOR 3 TRACKS	FOR 2 TRACKS	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
B	A					
5	3	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	17		
10	6	COMPRESS. SLEEVE B16	A2	16		
10	6	THIMBLE 35	A2	15		
2	1	DROPPER CLAMP FOR MW 70		14		PART 6
2	1	DROPPER CLIP FOR 70		13		PART 7
2	1	DROPPER 10x49		12		WITHOUT PART 1
2	1	DOUBLE CROSS SPAN EYE CLAMP		11		
3	2	HEAD SPAN STEADY ARM		10		NOTE 7
1	1	CROSS SPAN EYE CLAMP		9		
3	2	HEAD SPAN WIRE CLAMP FOR MW		8		
1	1	BRACKET FOR FIXED TERMINATION		7	TO BE DEFINED	NOTE 1
1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	1	SWIVEL JOINT		5		
4	4	LINK PLATE	AL	4		
8	6	WEDGE TYPE DEAD END CLAMP		3		
4	3	MW BZ II 70/19		2	DIN 48201	NOTE 2
3	2	INSULATOR TYPE 3		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
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OVERHEAD CONTACT SYSTEM

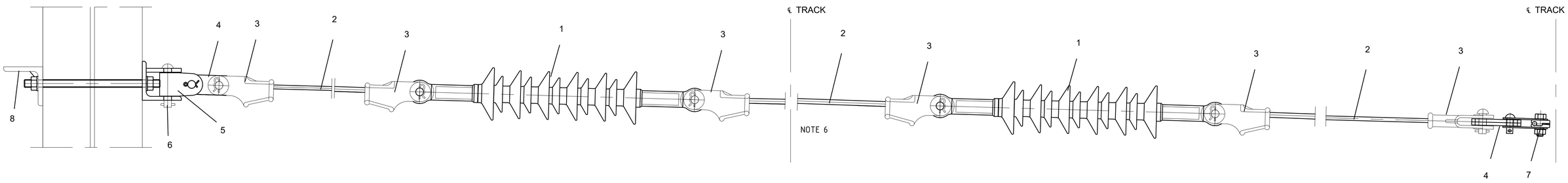
PULL OFF TERMINATION FOR CATENARY WITH LOW RADIAL FORCE OVER TWO/THREE TRACKS PO–04

CADD FILE NAME: SD–W6312

REV: EDITION: SECOND

SCALE: NTS

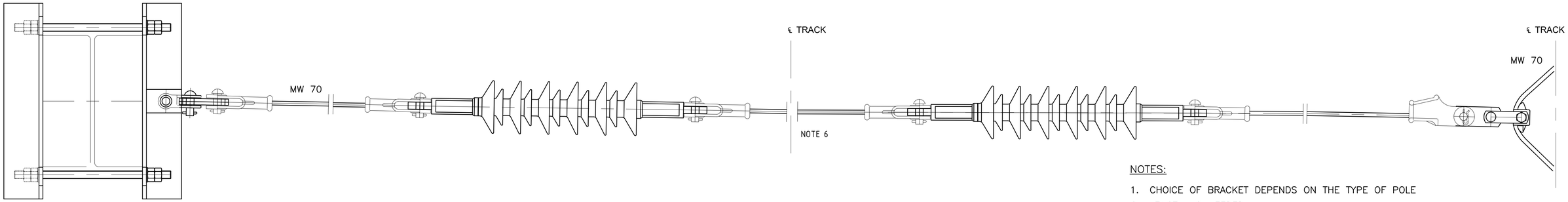
STANDARD DRAWING NO.: SD–W6312



PULL OFF TERMINATION FOR MESSENGER WIRE

ELEVATION

NTS



TOP VIEW FOR PULL OFF TERMINATION FOR MESSENGER WIRE

PLAN

NTS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. PRESENTATION FOR TWO TRACKS
5. PART#3 CAN USE FORKED COLLAR SOCKET.
6. INSULATION MUST BE LOCATED TO CLEAR PANTOGRAPH DYNAMIC ENVELOPE CLEARANCES AND TO PROVIDE POWER ISOLATION BETWEEN POWER SECTIONS OF ADJACENT TRACKS.

FOR 3 TRACKS	FOR 2 TRACKS							
B	A							
1	1	BRACKET FOR FIXED TERMINATION		8	TO BE DEFINED		NOTE 1
1	1	HEAD SPAN WIRE CLAMP FOR MW		7			
1	1	PIN ø19X100 WITH ß-SPLINT PIN	A2	6			
1	1	SWIVEL JOINT		5			
4	4	LINK PLATE	AL	4			
8	6	WEDGE TYPE DEAD END CLAMP		3			
4	3	MW BZ II 70/19		2	DIN 48201		NOTE 2
3	2	INSULATOR TYPE 3		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	KG/PC.	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

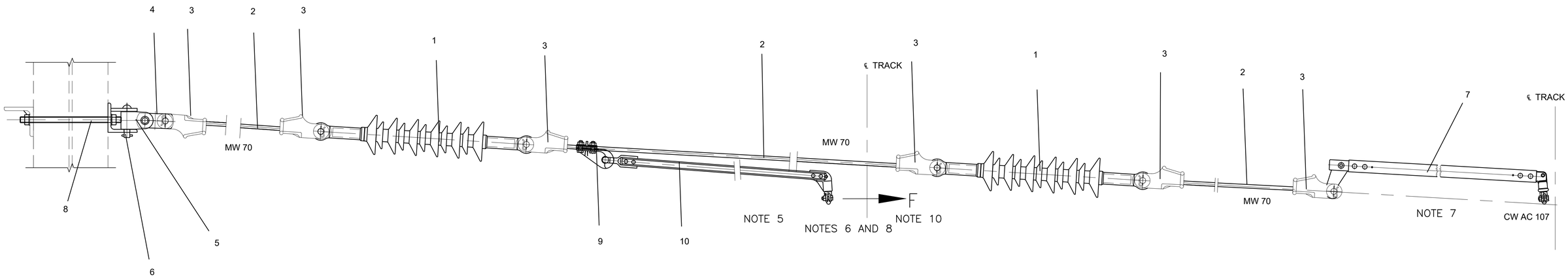
PULL OFF TERMINATION
FOR MESSENGER WIRE BZ II 70/19
OVER TWO/THREE TRACKS

CADD FILE NAME: SD-W6313

REV: | EDITION: SECOND

SCALE: NTS

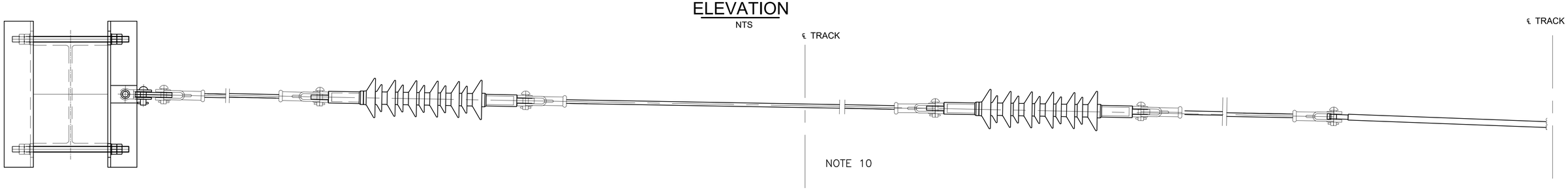
STANDARD DRAWING NO.: SD-W6313



PULL OFF TERMINATION FOR CONTACT WIRE

ELEVATION

NTS



NOTES 1 AND 3

TOP VIEW FOR PULL OFF TERMINATION FOR CONTACT WIRE

PLAN

NTS

NOTE 4

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. PRESENTATION FOR 2 TRACKS
5. STEADY ARM LENGTH 3.94' (1200MM) FOR STAGGER 0' TO 0.75' (0 TO 230MM) IF NECESSARY DEFINITION OF ENLARGED STEADY ARM MUST BE DONE IN DETAIL DESIGN
6. STEADY ARM: MAXIMUM WORKING LOAD 449.62 LBF (2KN)
7. STANDARD LENGTH 3.77' (1150 MM) FOR 0.75' (230 MM) STAGGER ACCORDING TO W6008. DIFFERENT LENGTH ACCORDING TO LIST
8. MINIMUM DISTANCE ACCORDING TO DRAWING TO SD–W6315
9. PART#3 CAN USE FORKED COLLAR SOCKET
10. INSULATION MUST BE LOCATED TO CLEAR PANTOGRAPH DYNAMIC ENVELOPE CLEARANCES AND PROVIDE POWER ISOLATION BETWEEN POWER SECTIONS OF ADJACENT TRACKS
11. LOADING IS BASED ON THE EXISTING DESIGN. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.

FOR 3 TRACKS	FOR 2 TRACKS					
B	A					
2	1	HEAD SPAN STEADY ARM	NOTES 5 AND 6	10		
2	1	CROSS SPAN EYE CLAMP		9		
1	1	BRACKET FOR FIXED TERMINATION		8	TO BE DEFINED	NOTE 1
1	1	STEADY ARM	NOTE 7	7		
1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
1	1	SWIVEL JOINT		5		
2	2	LINK PLATE	AL	4		
8	6	WEDGE TYPE DEAD END CLAMP		3		
4	3	MW BZ II 70/19		2	DIN 48201	NOTE 2
3	2	INSULATOR TYPE 3		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

PULL OFF TERMINATION
FOR CONTACT WIRE AC 107
OVER TWO / THREE TRACKS

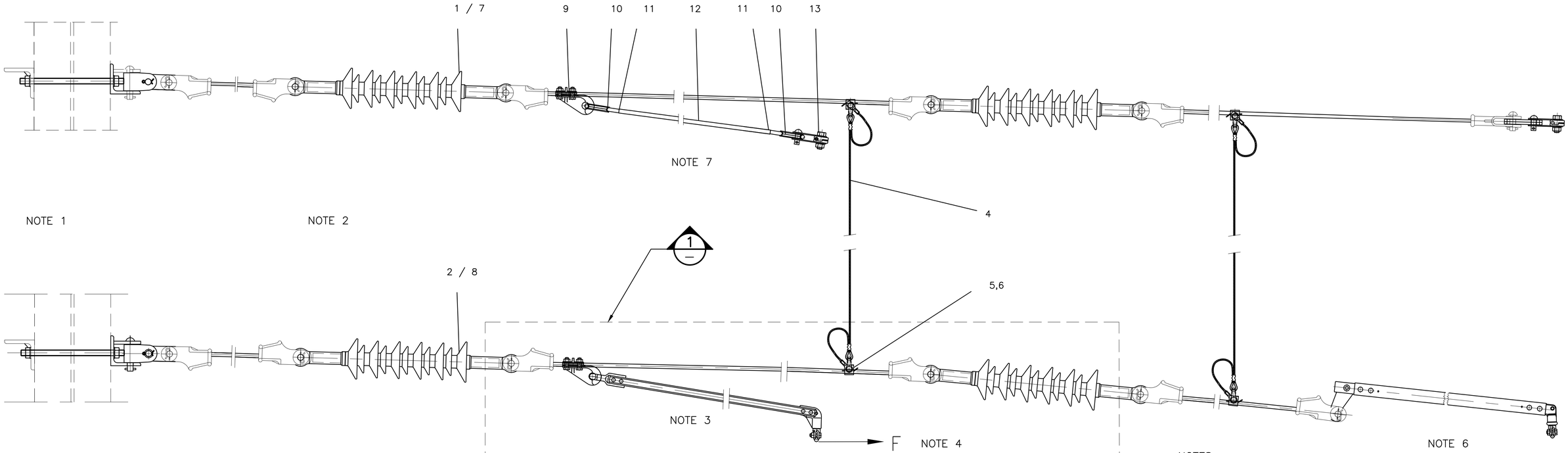
CADD FILE NAME: SD–W6314

REV:

EDITION: SECOND

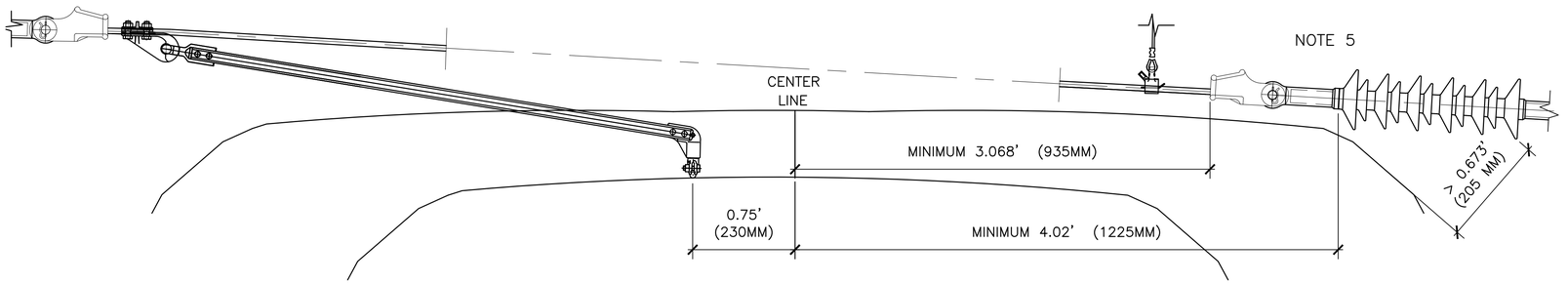
SCALE: NTS

STANDARD DRAWING NO.: SD–W6314



PULL OFF TERMINATION FOR CATENARY
FOR HIGH RADIAL FORCE

ELEVATION
NTS



INSUTATOR POSITION

1 DETAIL
– NTS

NOTES:

1. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
2. PRESENTATION FOR 2 TRACKS
3. STEADY ARM LENGTH 3.94' (1200MM) FOR STAGGER 0' TO 0.75' (0 TO 230MM) IF NECESSARY DEFINITION OF ENLARGED STEADY ARM MUST BE DONE IN DETAIL DESIGN
4. STEADY ARM:
   MAXIMUM WORKING LOAD 449.62 LBF (2KN)
5. CONSTRUCTION TO MAINTAIN NECESSARY CLEARANCES TO AVOID CLASH BETWEEN PANTOGRAPH AND INSULATOR
6. STANDARD LENGTH 3.77' (1150 MM) FOR 0.75' (230 MM) STAGGER ACCORDING TO SD–W6008. DIFFERENT LENGTH ACCORDING TO LIST
7. PART 9,10,11,12,13 TO BE ASSEMBLED ON SITE
8. FORKED COLLAR SOCKET CAN BE USED IN LIEU OF WEDGE TYPE DEAD END CLAMP
9. LOADING IS BASED ON THE EXISTING DESIGN. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.

FOR 3 TRACKS B	FOR 2 TRACKS A					
2	1	HEAD SPAN WIRE CLAMP FOR MW		13		
2	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	12		
4	2	COMPRESS. SLEEVE B16	A2	11		
4	2	THIMBLE 35	A2	10		
2	1	CROSS SPAN EYE CLAMP		9		
1	–	PULL OFF TERMINATION FOR CW		8		TYPE B
1	–	PULL OFF TERMINATION FOR MW		7		TYPE B
3	2	DROPPER CLAMP FOR MW 70		6		PART 6
3	2	DROPPER CLIP FOR 70		5		PART 7
3	2	DROPPER 10x49		4		WITHOUT PART 1
–	–	–		3		
–	1	PULL OFF TERMINATION FOR CW		2		TYPE A
–	1	PULL OFF TERMINATION FOR MW		1		TYPE A
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

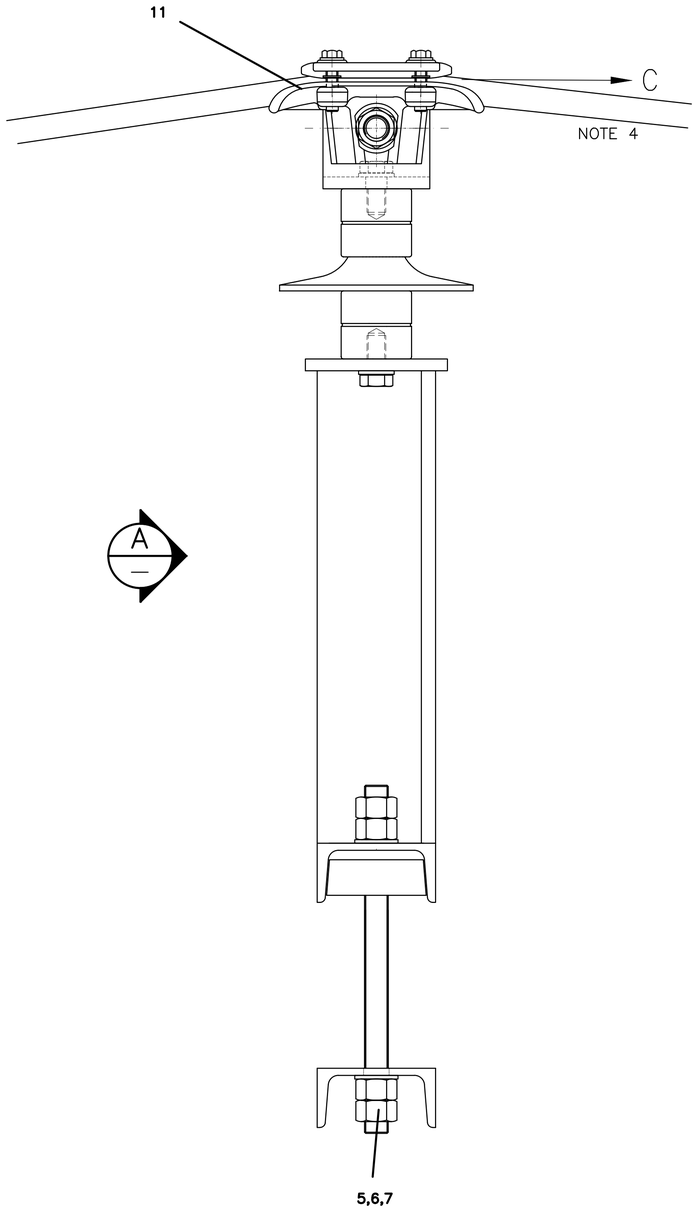
PULL OFF TERMINATION
FOR CATENARY
OVER TWO/THREE TRACKS PO–03

CADD FILE NAME: SD–W6315

REV: | EDITION: SECOND

SCALE: NTS

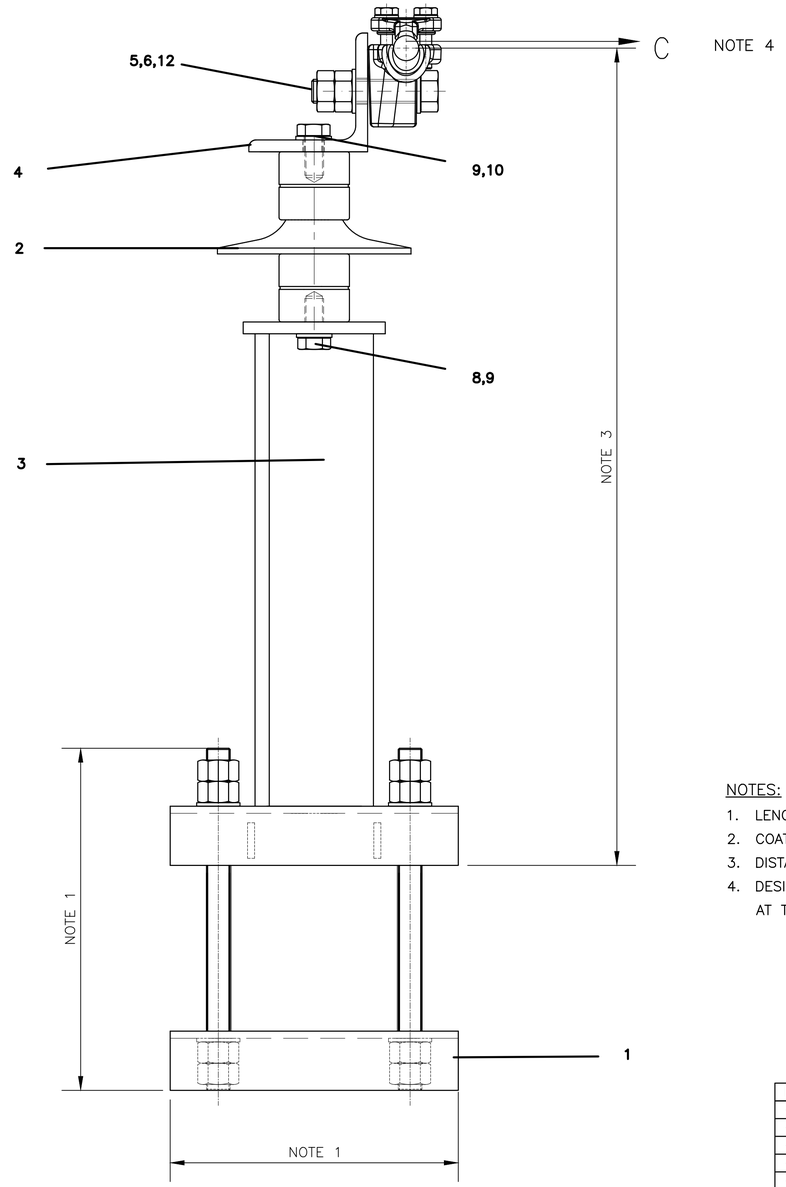
STANDARD DRAWING NO.: SD–W6315



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MULTIPLE TRACK CANTILEVER

ELEVATION

NTS



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MULTIPLE TRACK CANTILEVER

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON BEAM SIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	1	HEX. HEAD SCREW 3/4" X 4"	8.8 NOTE2	12	ISO 4017	
–	1	STATIC WIRE CLAMP	G–AL	11		
–	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017	
–	2	WASHER M16	200HV NOTE2	9	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	8	DIN EN ISO 4017	
–	2	STUD BOLT 3/4"		7		
–	10	NUT 3/4"		6		
–	6	WASHER FOR 3/4"		5		
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTES 1 AND 3
–	1	COMPOSITE INSULATOR 130MM		2		
–	1	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

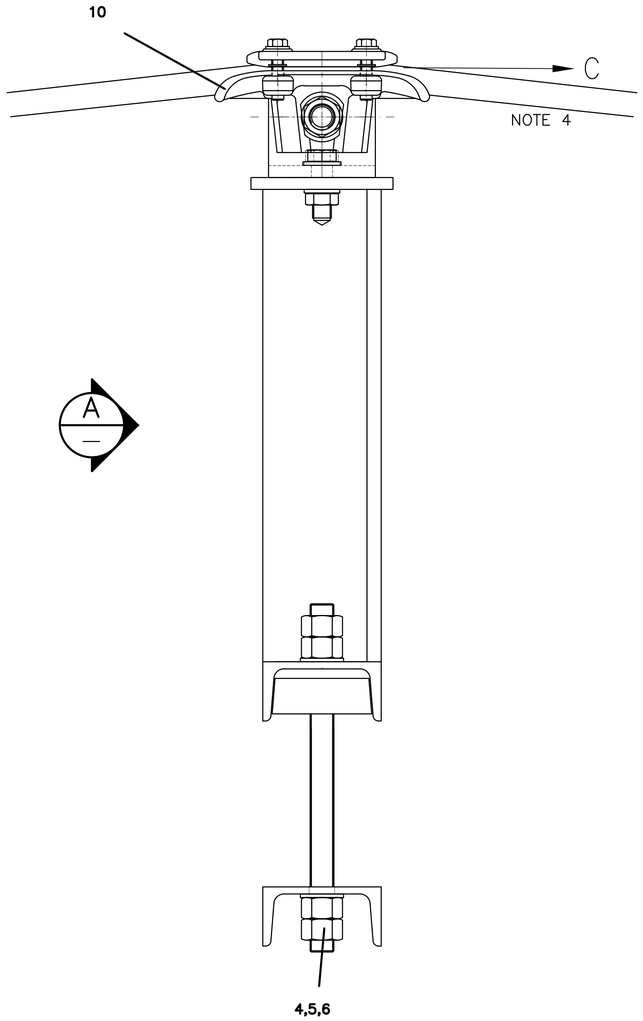
INSULATED STATIC WIRE SUPPORT
VERTICAL
AT MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6316

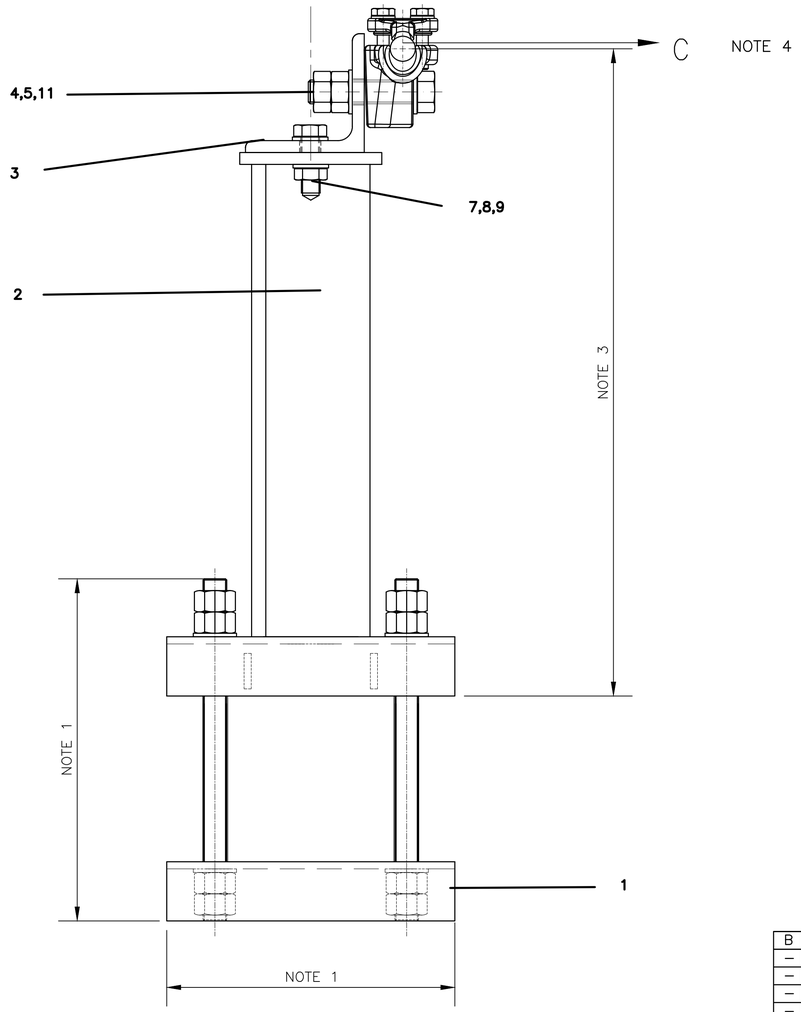
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6316



STATIC WIRE SUPPORT
VERTICAL AT MULTIPLE TRACK CANTILEVER
ELEVATION
NTS



STATIC WIRE SUPPORT
VERTICAL AT MULTIPLE TRACK CANTILEVER
A — ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON BEAMSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A						
–	1	HEX. HEAD SCREW 3/4" X 4"		11		
–	1	STATIC WIRE CLAMP	G–AL	10		
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	9	DIN EN ISO 4017	
–	2	WASHER M16	200HV NOTE2	8	DIN EN ISO 7089	
–	1	HEXAGON NUT M16	8 NOTE2	7	DIN EN ISO 4032	
–	2	STUD BOLT 3/4"		6		
–	10	NUT 3/4"		5		
–	6	WASHER FOR 3/4"		4		
–	1	ANGLE FOR STATIC WIRE SUPPORT		3		
–	1	SUPPORTING STRUCTURE – ADAPTER		2		NOTES 1 AND 3
–	1	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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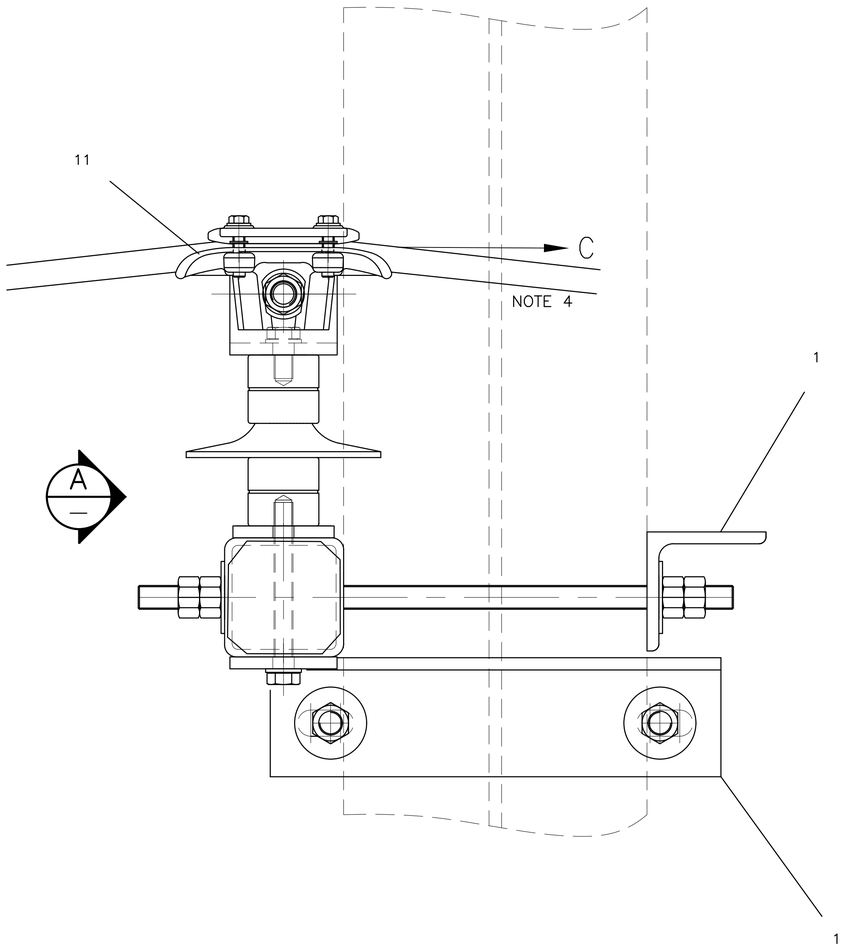
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ENGINEERING STANDARD DRAWINGS

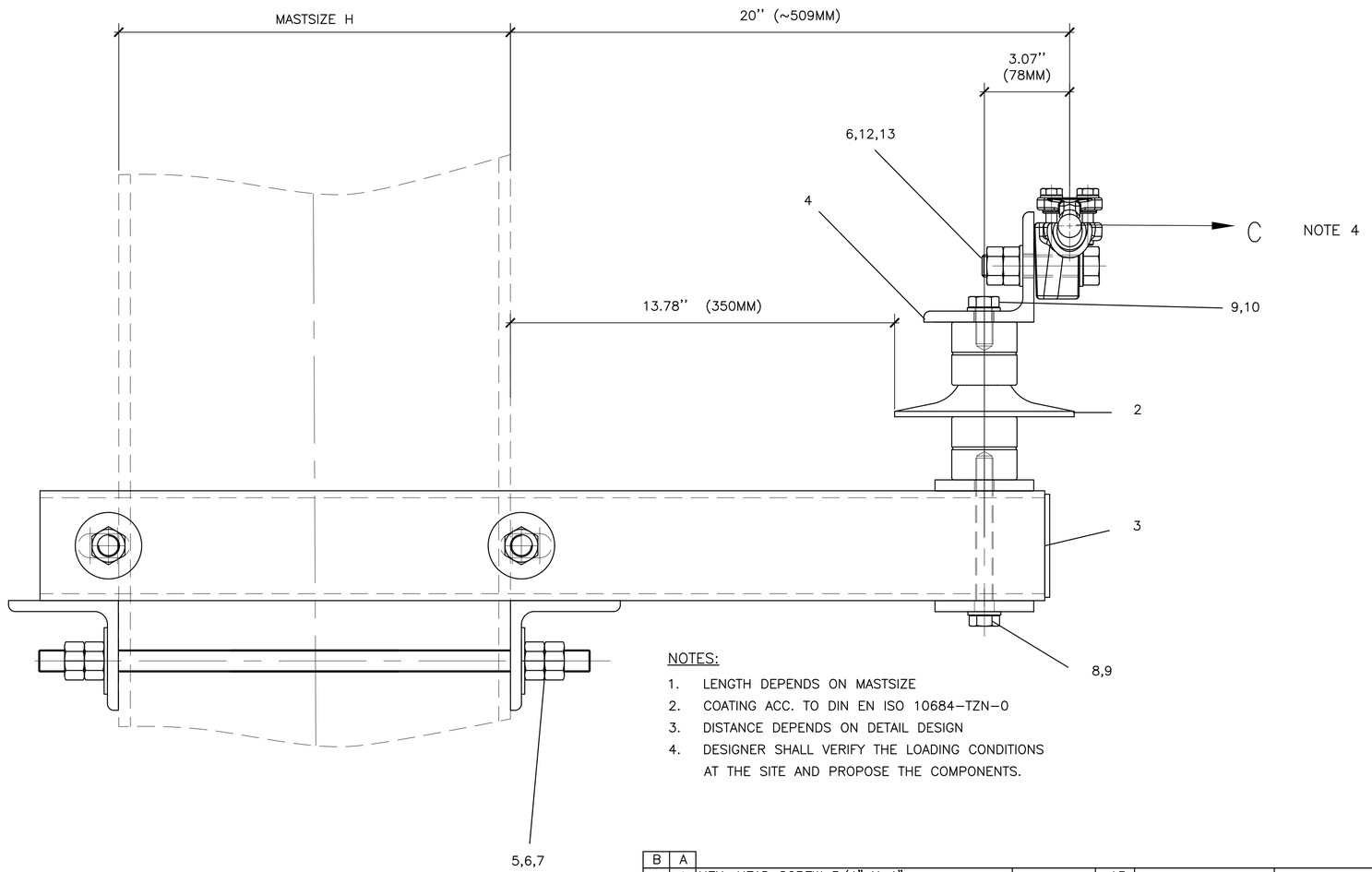
OVERHEAD CONTACT SYSTEM

STATIC WIRE SUPPORT
VERTICAL
AT MULTIPLE TRACK CANTILVER

CADD FILE NAME: SD–W6317
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6317



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MAST
ELEVATION
NTS



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MAST
A ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–0
3. DISTANCE DEPENDS ON DETAIL DESIGN
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	1	HEX. HEAD SCREW 3/4" X 4"		13		
–	2	WASHER FOR 3/4"		12		
–	1	STATIC WIRE CLAMP	G–AL	11		
–	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017	
–	1	WASHER M16	200HV NOTE2	9	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x140	8.8 NOTE2	8	DIN EN ISO 4017	
–	4	STUD BOLT 3/4"		7		NOTE 1
–	18	NUT 3/4"		6		
–	8	WASHER FOR 3/4"		5		
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR INSULATOR		3		NOTES 1 AND 3
–	1	COMPOSITE INSULATOR 130MM		2		
–	3	CLAMPING ANGLE		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

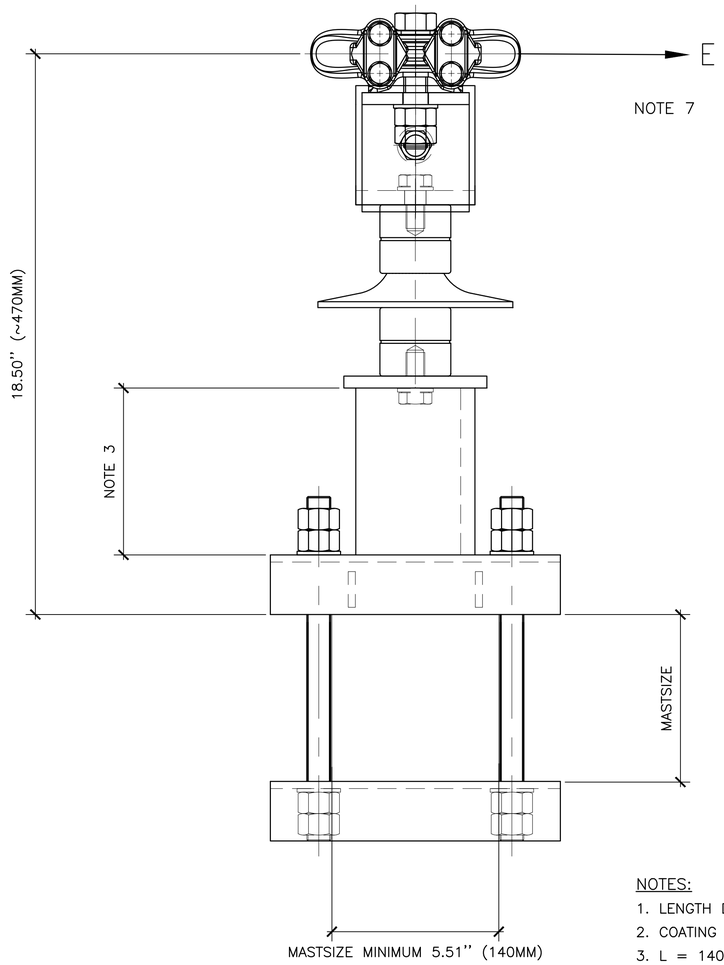
INSULATED STATIC WIRE SUPPORT, VERTICAL AT MAST

CADD FILE NAME: SD–W6318

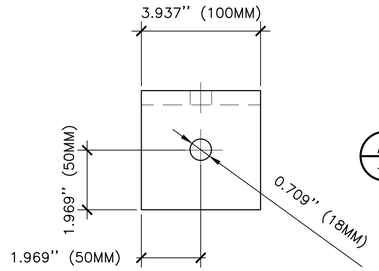
REV: EDITION: SECOND

SCALE: NTS

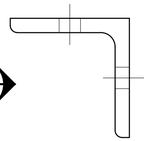
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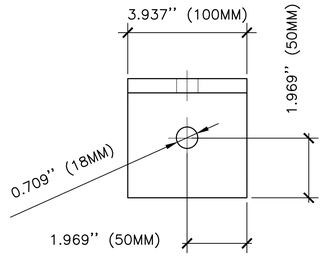
HORIZONTAL STATIC WIRE SUPPORT
PLAN
NTS



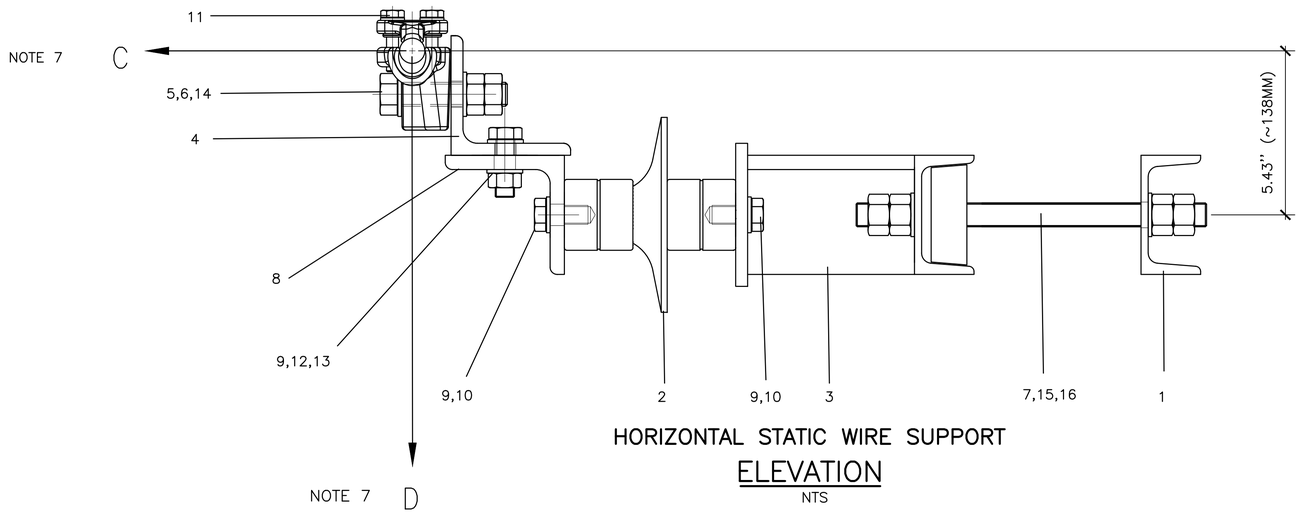
PART 8
PLAN
NTS



PART 8
ELEVATION
NTS



PART 8
A ELEVATION
– NTS



HORIZONTAL STATIC WIRE SUPPORT
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 140MM (5.51'') OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. ATTENTION: DIMENSIONS OF MAST MUST BE CONSIDERED, WHEN DESIGNING U–PROFILES
   (NOT DIMENSION OF MULTIPLE TRACK CANTILEVER)
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	1	HEX. HEAD SCREW 3/4" X 4"		14		
–	1	NUT M16	8 NOTE2	13	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	12	DIN EN ISO 4017	
–	1	STATIC WIRE CLAMP	G–AL	11		
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017	
–	4	WASHER M16	200HV NO.2	9	DIN EN ISO 7089	
–	1	ANGLE 100x100x12 NOTE 4		8	DIN EN 10056–1	NOTE 5
–	2	STUD BOLT 3/4"		7		NOTE 1
–	10	NUT 3/4"		6		
–	6	WASHER FOR 3/4"		5		
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 1 , 3 AND 6
–	1	COMPOSITE INSULATOR 130MM		2		
–	1	U–PROFILE FOR CLAMPING		1		NOTE 1 NOTE 6
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

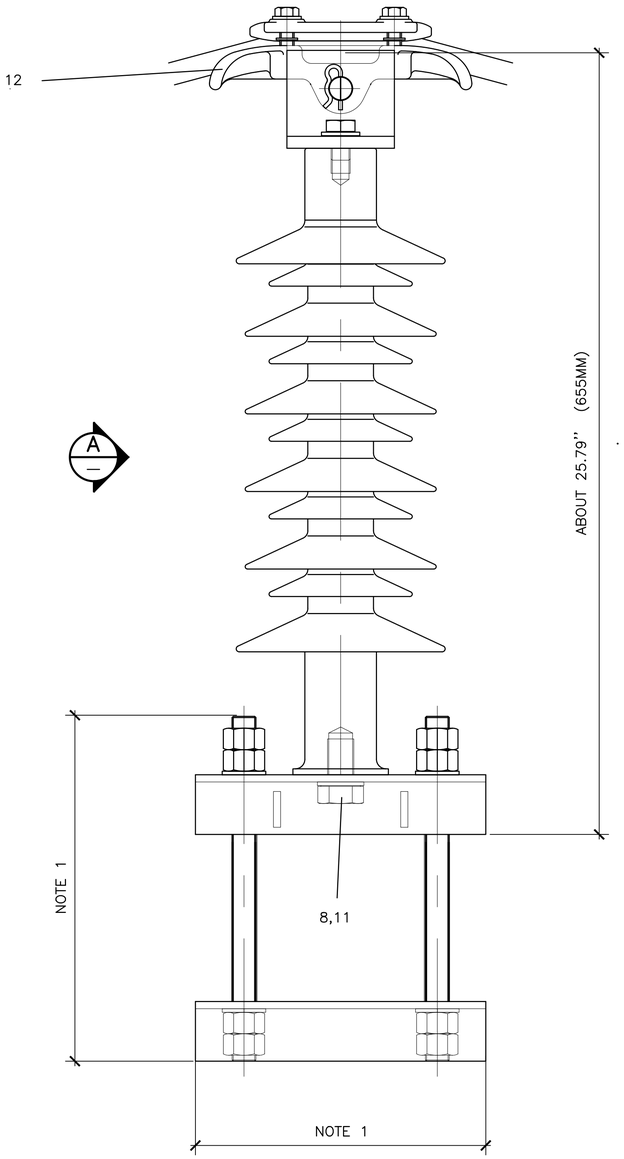
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

INSULATED STATIC WIRE SUPPORT HORIZONTAL AT MAST

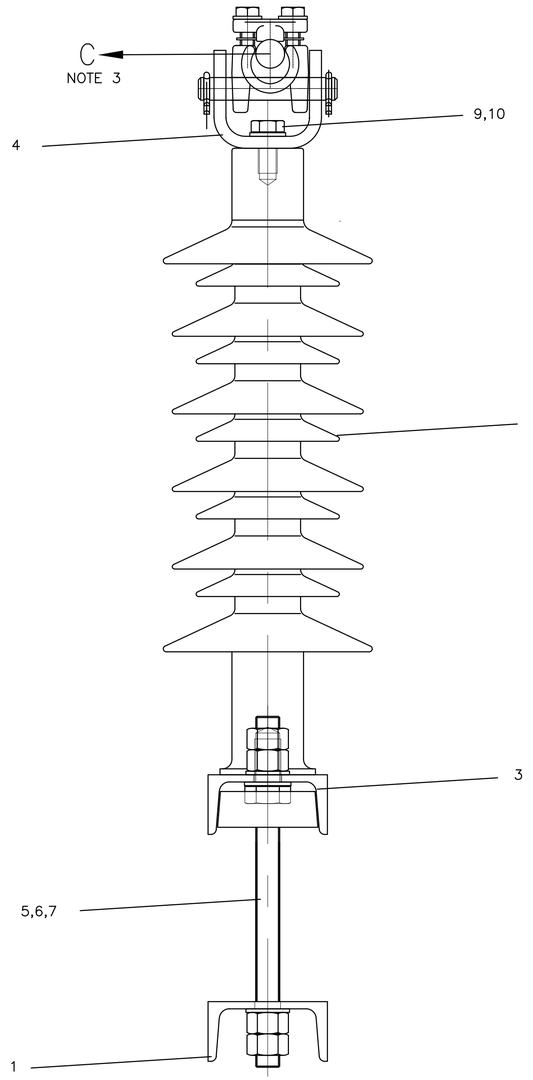
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REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6319



FEEDER WIRE SUPPORT, VERTICAL
FOR MULTIPLE TRACK CANTILEVER

ELEVATION

NTS



FEEDER WIRE SUPPORT, VERTICAL
FOR MULTIPLE TRACK CANTILEVER

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON SIZE OF STEEL PART PROFILE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
4. REFER OCS DESIGN SPECIFICATION 34 30 73

FOR RECTANGULAR STEEL PART PROFILE						
B	A					
–	1	FEEDER WIRE CLAMP	G–AL	12		
–	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE 2	11	DIN EN ISO 4017	
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE 2	10	DIN EN ISO 4017	
–	1	WASHER M16	200HV NOTE 2	9	DIN EN ISO 7089	
–	1	WASHER M22	200HV NOTE 2	8	DIN EN ISO 7089	
–	2	STUD BOLT 3/4"		7		NOTE 1 NOTE 4
–	8	NUT 3/4"		6		NOTE 4
–	4	WASHER FOR 3/4"		5		NOTE 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		4		
–	1	U–PROFILE FOR INSULATOR		3		NOTE 1
–	1	COMPOSITE INSULATOR		2		
–	1	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

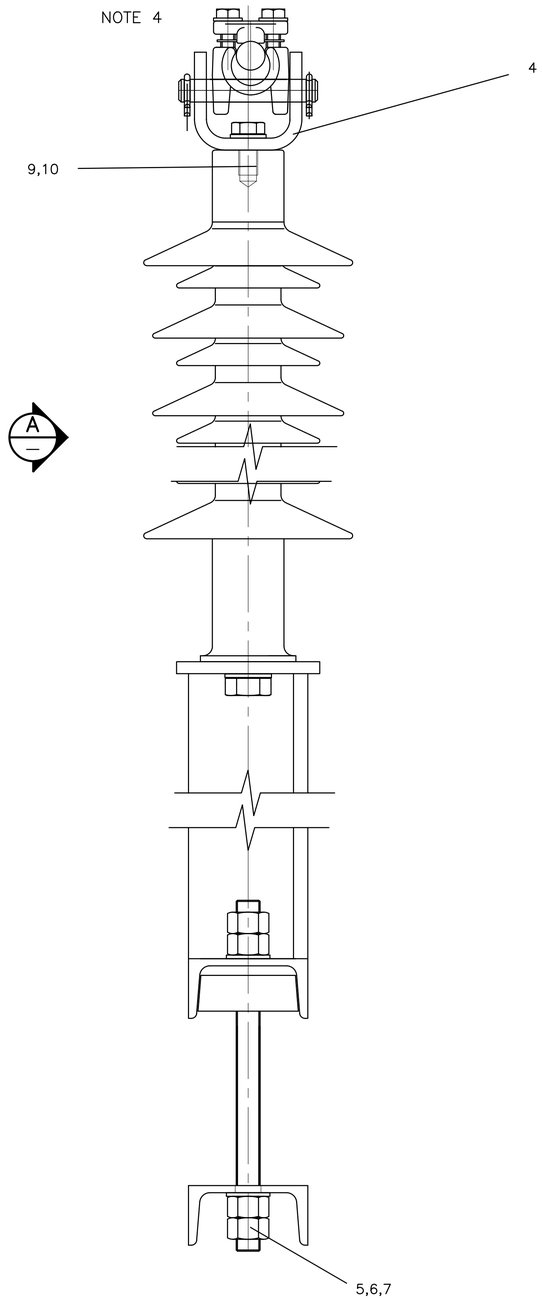
FEEDER WIRE SUPPORT, VERTICAL
FOR MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6320

REV: | EDITION: SECOND

SCALE: NTS

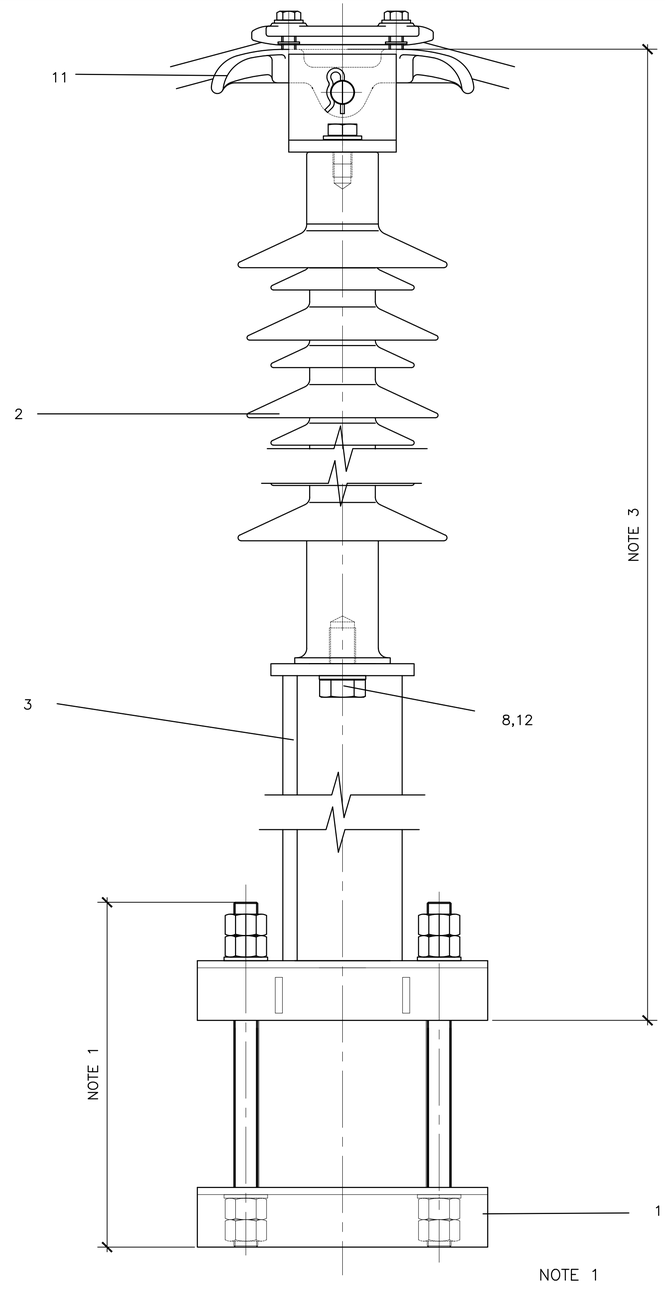
STANDARD DRAWING NO.: SD–W6320



SINGLE FEEDER SUPPORT FOR MULTIPLE TRACK CANTILEVER

ELEVATION

NTS



SINGLE FEEDER SUPPORT FOR MULTIPLE TRACK CANTILEVER

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON BEAMSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN ; MAXIMUM ABOUT 7'–5'' (2260MM)
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
5. TURN CLAMP IN CORRECT POSITION
6. REFER OCS DESIGN SPECIFICATION 34 30 73

B	A					
–	1	WASHER M22	200HV NO.2	12	DIN EN ISO 7089	
–	1	FEEDER WIRE CLAMP	G–AL	11		
–	1	HEXAGON HEAD SCREW M16x30	8.8 NO.2	10	DIN EN ISO 4017	
–	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M22x35	8.8 NO.2	8	DIN EN ISO 4017	
–	2	STUD BOLT 3/4"		7		NOTE 1 NOTE 6
–	8	NUT 3/4"		6		NOTE 6
–	4	WASHER FOR 3/4"		5		NOTE 6
–	1	BRACKET FOR FEEDER WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTES 1 AND 3
–	1	COMPOSITE INSULATOR		2		
–	1	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

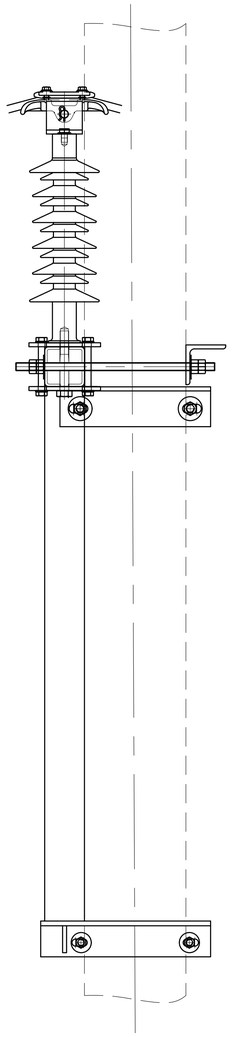
EXTENDED FEEDER WIRE SUPPORT VERTICAL AT MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6321

REV: | EDITION: SECOND

SCALE: NTS

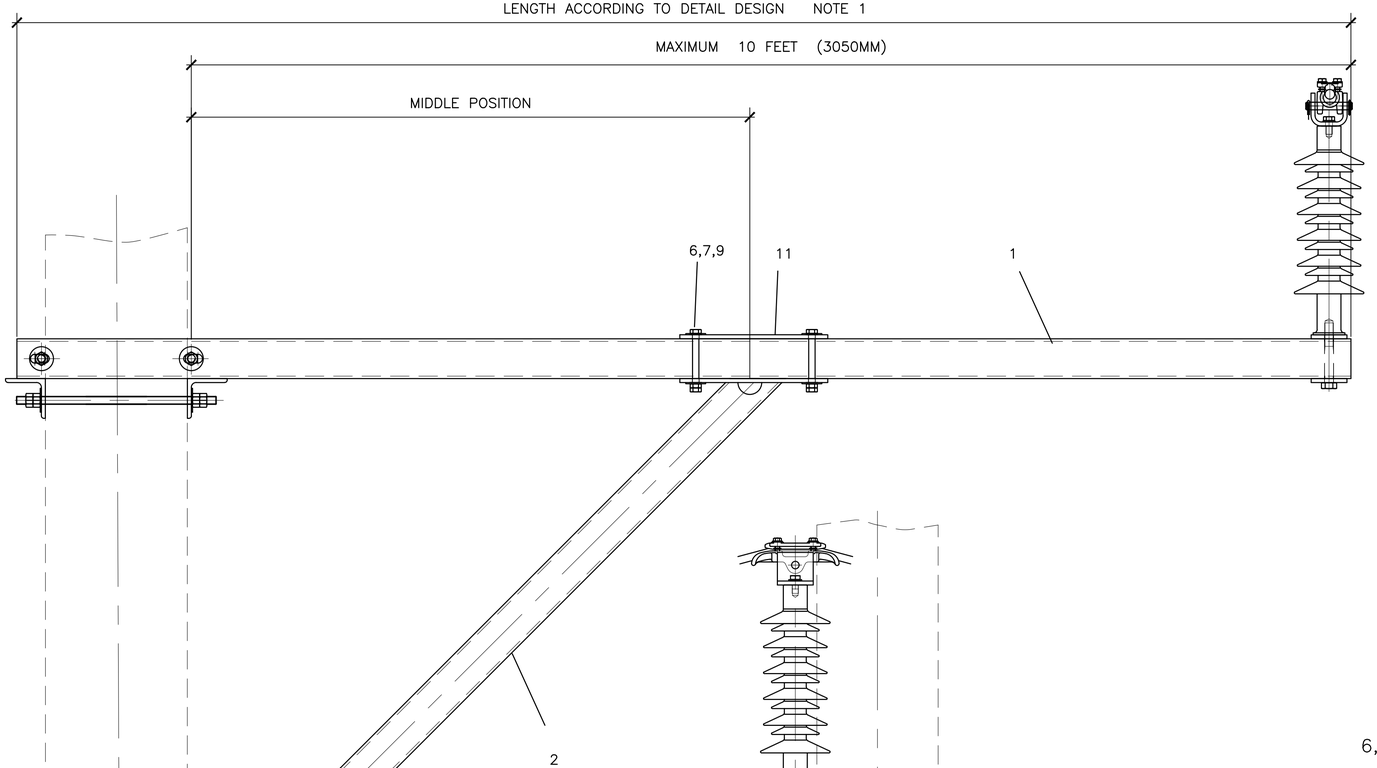
STANDARD DRAWING NO.: SD–W6321



FEEDER SUPPORT – TYPE A

ELEVATION

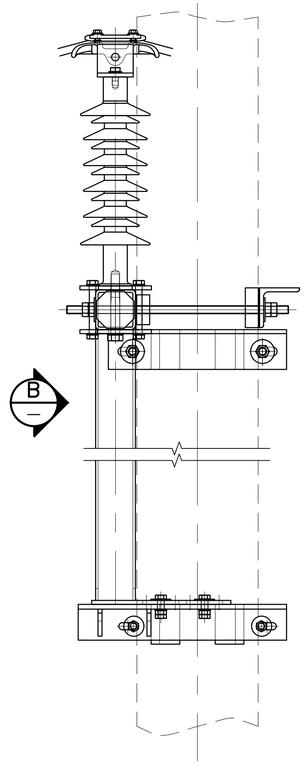
NTS



FEEDER SUPPORT – TYPE A

(A) ELEVATION

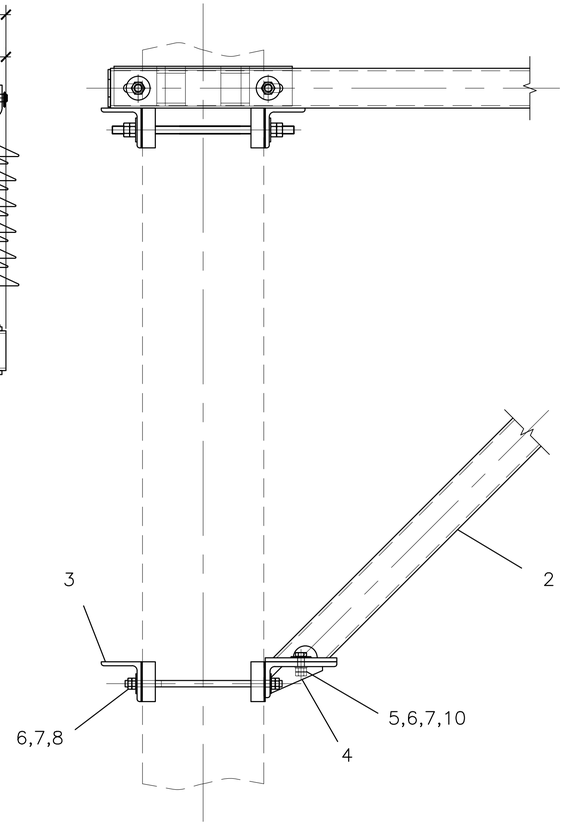
NTS



FEEDER SUPPORT – TYPE B

ELEVATION

NTS



FEEDER SUPPORT – TYPE B

(B) ELEVATION

NTS

FOR ROUND POLE	FOR RECTANGULAR POLE						
B	A						
1	1	FASTENING PLATE		11		PART 4
2	–	HEXAGON HEAD SCREW M16x65	8.8 NOTE 2	10	DIN EN ISO 4017	
4	4	HEXAGON HEAD SCREW M16x160	8.8 NOTE 2	9	DIN EN ISO 4017	
2	2	STUD BOLT M16	8.8 NOTE 2	8	DIN 976–1	NOTE 3
20	16	NUT M16	8 NOTE 2	7	DIN EN ISO 4032	
14	12	WASHER FOR M16	200HV NOTE 2	6	DIN EN ISO 7093	
2	–	WASHER FOR M16	200HV NOTE 2	5	DIN EN ISO 7089	
1	–	BRACKET FOR STRUT TUBE		4		NOTE 3
1	1	BACK ANGLE		3		NOTE 3
1	1	STRUT TUBE		2		NOTE 1
1	1	FEEDER WIRE SUPPORT		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. SEE SD–W6130 FOR DESIGN DETAILS
4. LENGTH DEPENDS ON MAST–SIZE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

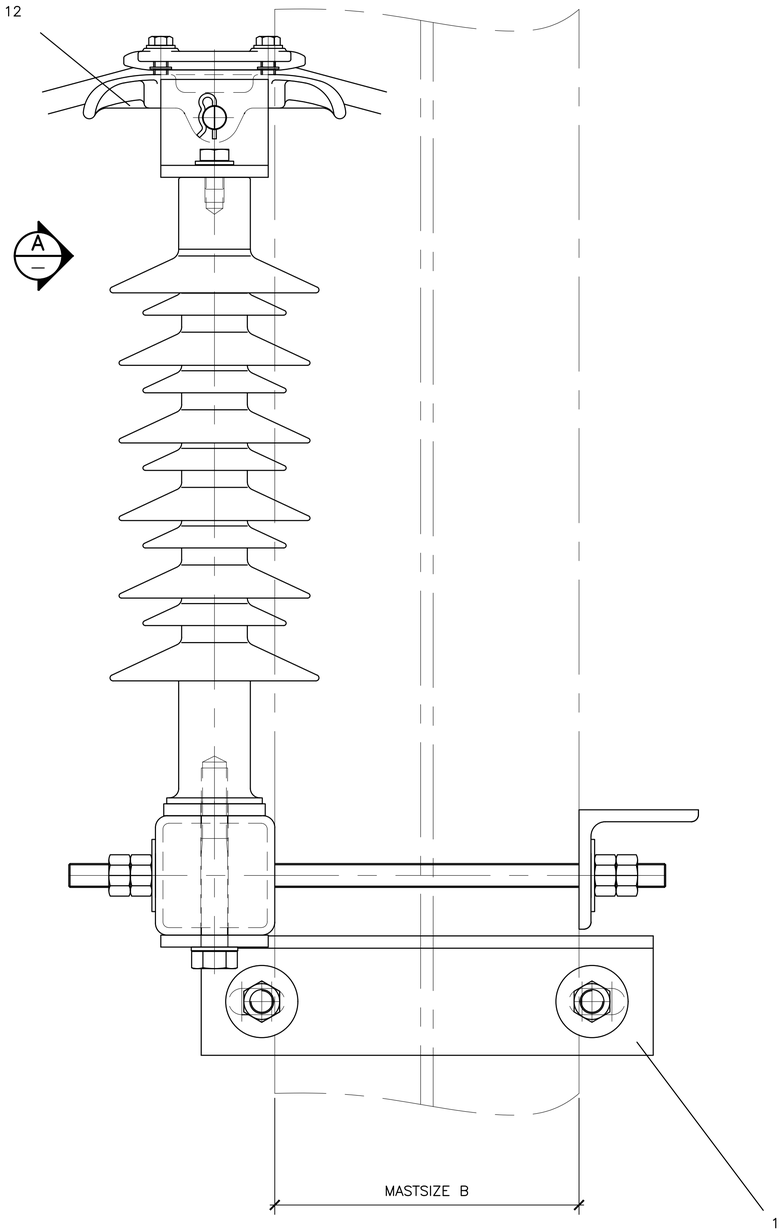
FEEDER SUPPORT WITH STRUT TUBE AT ROUND POLE AND RECTANGULAR STEELMAST

CADD FILE NAME: SD–W6322

REV: | EDITION: SECOND

SCALE: NTS

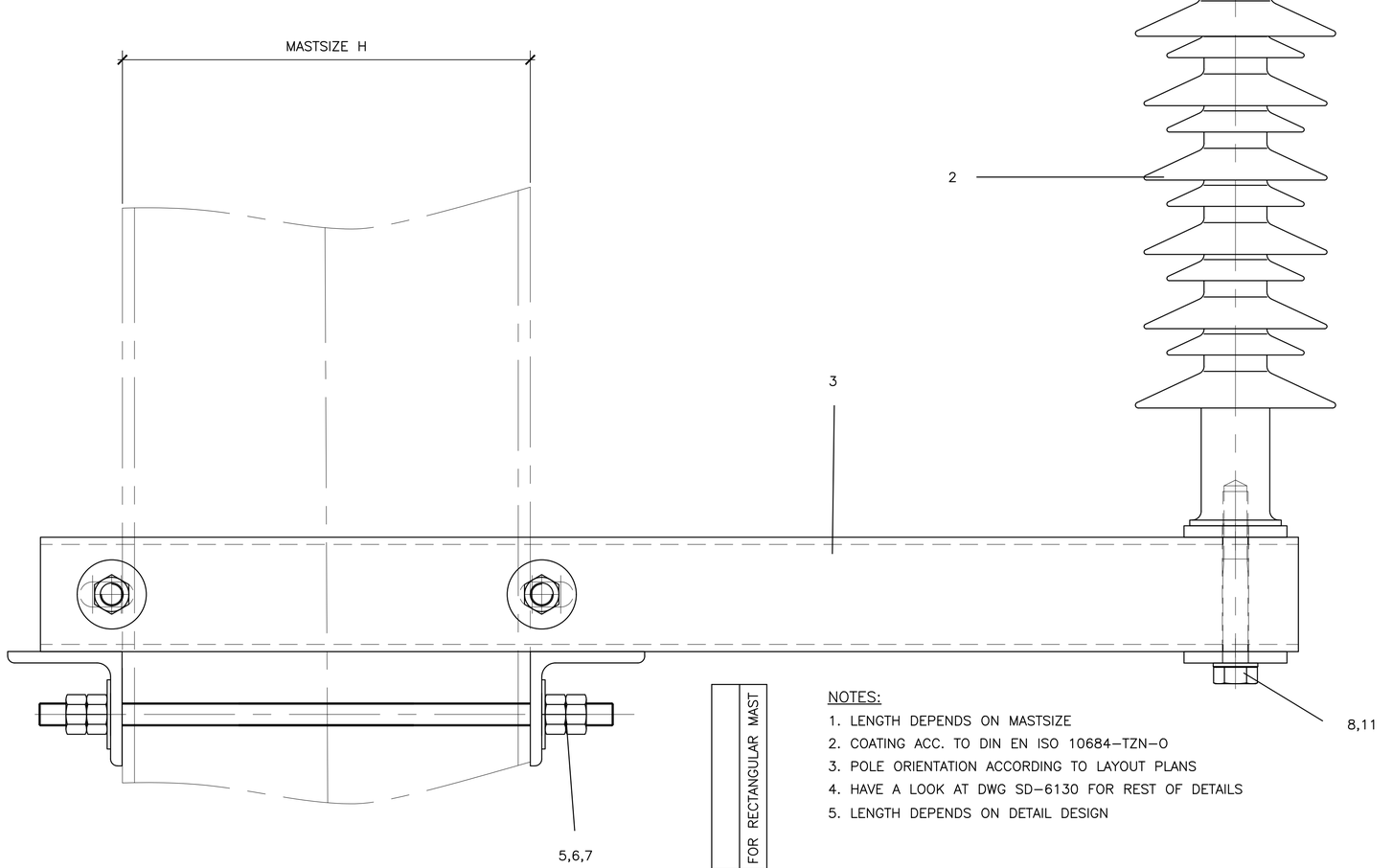
STANDARD DRAWING NO.: SD–W6322



FEEDER SUPPORT AT RECTANGULAR MAST

ELEVATION

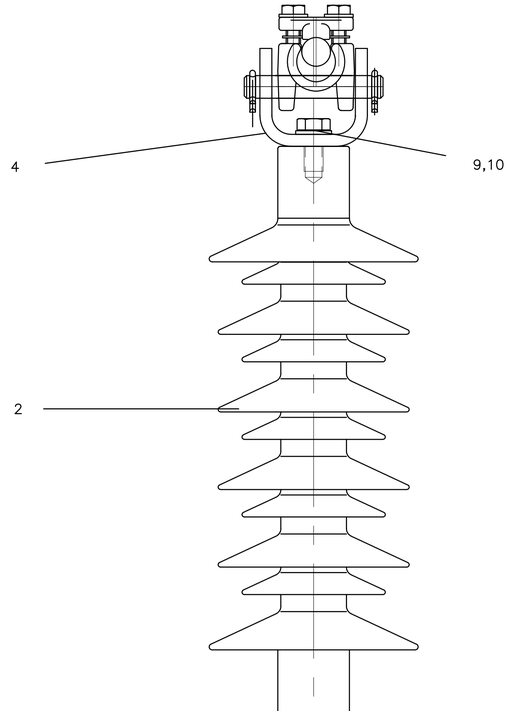
NTS



FEEDER SUPPORT AT RECTANGULAR MAST

A ELEVATION

NTS



NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. HAVE A LOOK AT DWG SD–6130 FOR REST OF DETAILS
5. LENGTH DEPENDS ON DETAIL DESIGN

	FOR RECTANGULAR MAST					
	A					
	1	FEEDER WIRE CLAMP	G–AL	12		
	1	HEXAGON HEAD SCREW M22x150	8.8 NO. 2	11	DIN EN ISO 4017	
	1	HEXAGON HEAD SCREW M16x35	8.8 NO. 2	10	DIN EN ISO 4017	
	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089	
	1	WASHER M22	200HV NO.2	8	DIN EN ISO 7089	
	4	STUD BOLT 3/4"		7		NOTE 1
	16	NUT 3/4"		6		
	8	WASHER FOR 3/4"		5		
	1	BRACKET FOR FEEDER WIRE CLAMP		4		
	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTES 1 AND 5
	1	COMPOSITE INSULATOR		2		
	3	BACK ANGLE WITHOUT EARTHING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

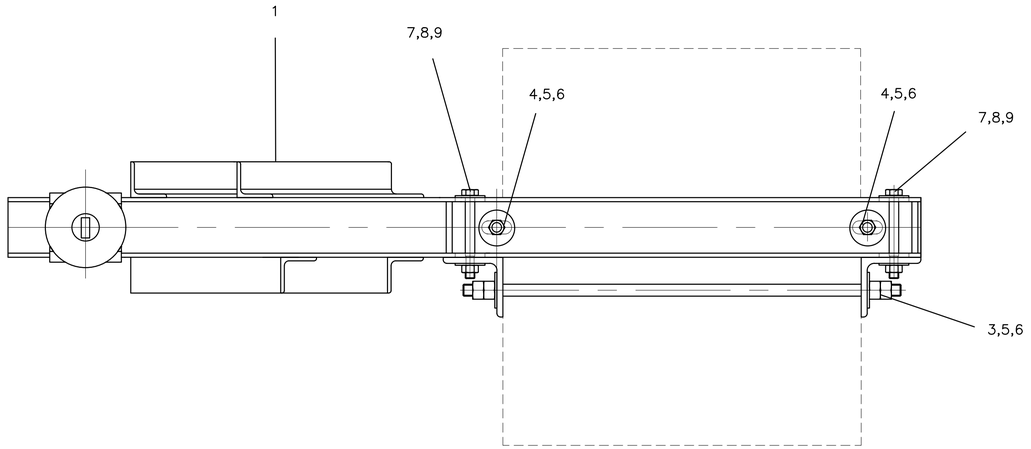
FEEDER WIRE SUPPORT, VERTICAL
AT RECTANGULAR MAST
USE FOR STRUT TUBE CONNECTION

CADD FILE NAME: SD–W6323

REV: | EDITION: SECOND

SCALE: NTS

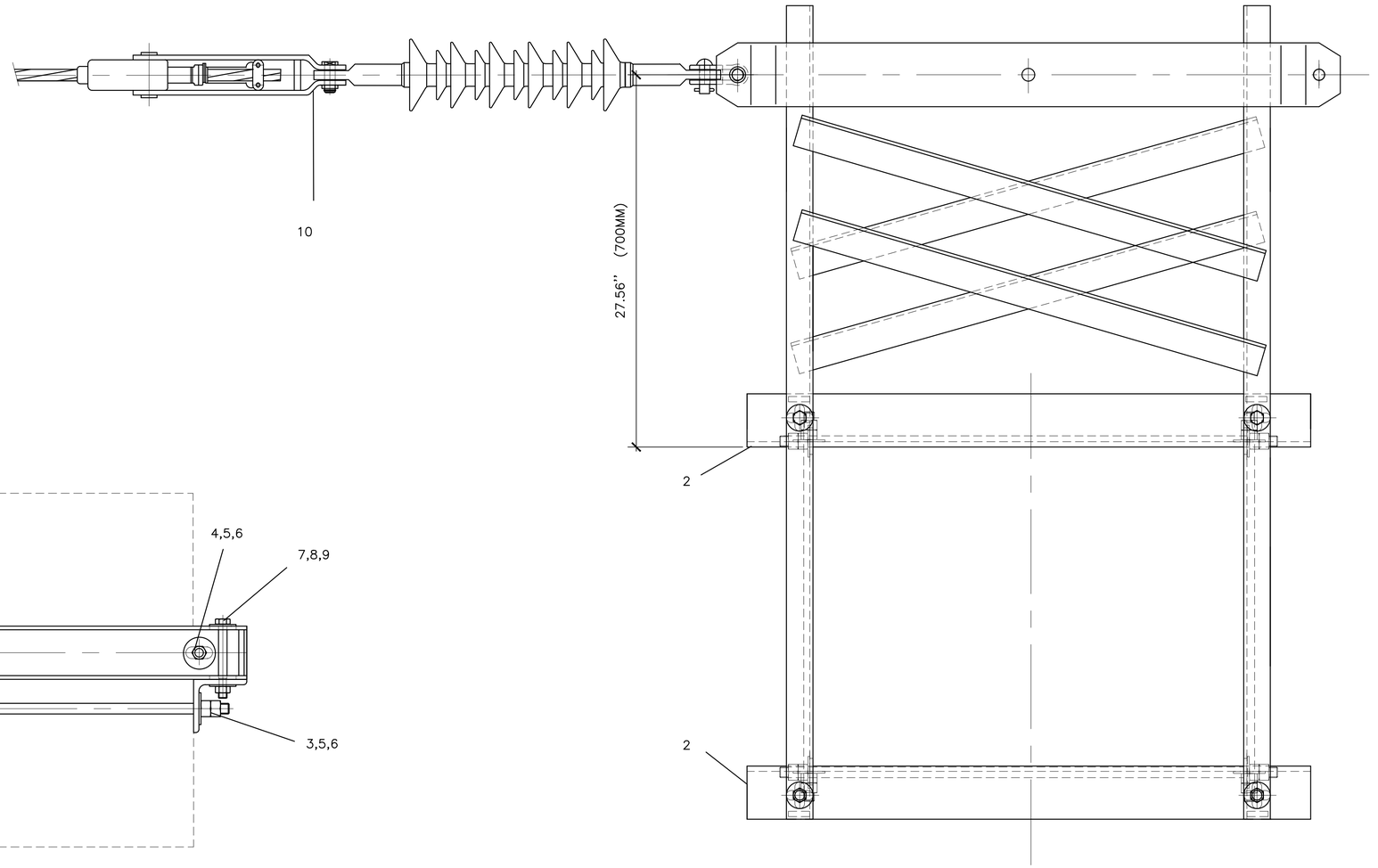
STANDARD DRAWING NO.: SD–W6323



SINGLE FEEDER WIRE TERMINATION TRAVERSE

ELEVATION

NTS



SINGLE FEEDER WIRE TERMINATION TRAVERSE

PLAN

NTS

NOTE:
1. LENGTH ACCORDING TO MASTSIZE
2. HOT DIP GALVANIZED ACCORDING TO DIN EN ISO 10684 tZn–o

	A					
	1	FEEDER TERMINATION		10		WITHOUT PART 5
	4	HEXAGON HEAD SCREW 5/8"		9		
	4	HEXAGON NUT 5/8"		8		
	8	WASHER FOR 5/8"		7		
	8	WASHER FOR 3/4"		6		
	16	HEXAGON NUT 3/4"		5		
	2	STUD BOLT 3/4"		4		NOTE 1
	2	STUD BOLT 3/4"		3		NOTE 1
	2	SUPPORTING ANGLE		2		NOTE 1
	1	TERMINATION TRAVERSE		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

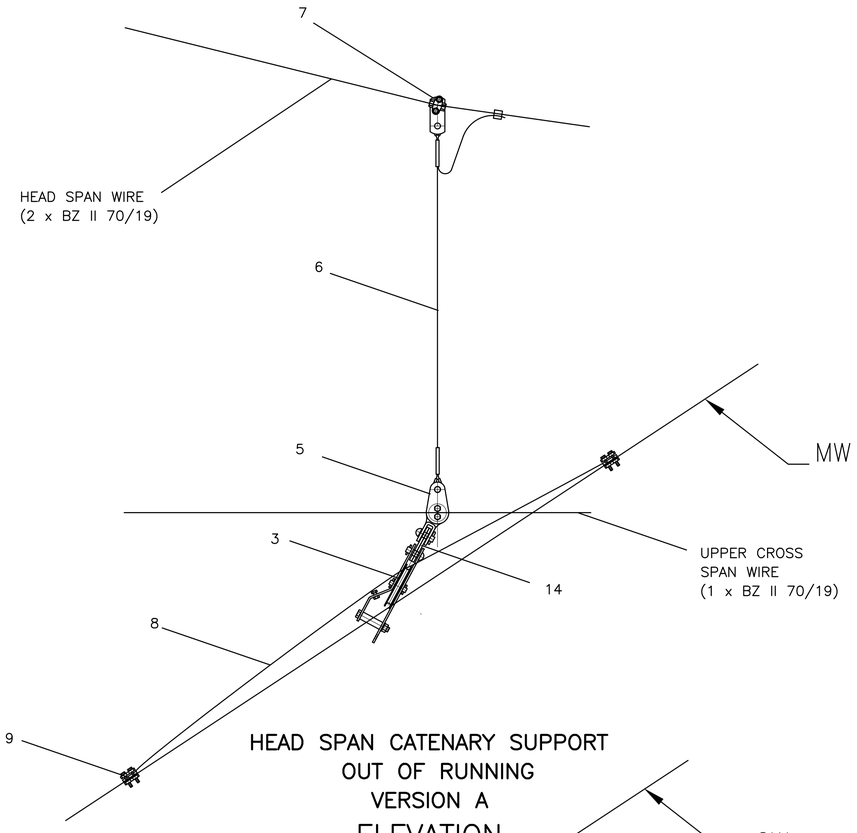
SINGLE TERMINATION TRAVERSE FOR FEEDER WIRE

CADD FILE NAME: SD–W6324

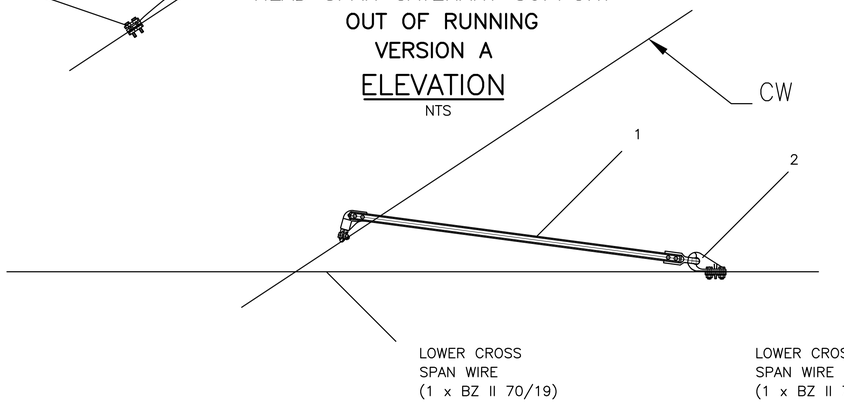
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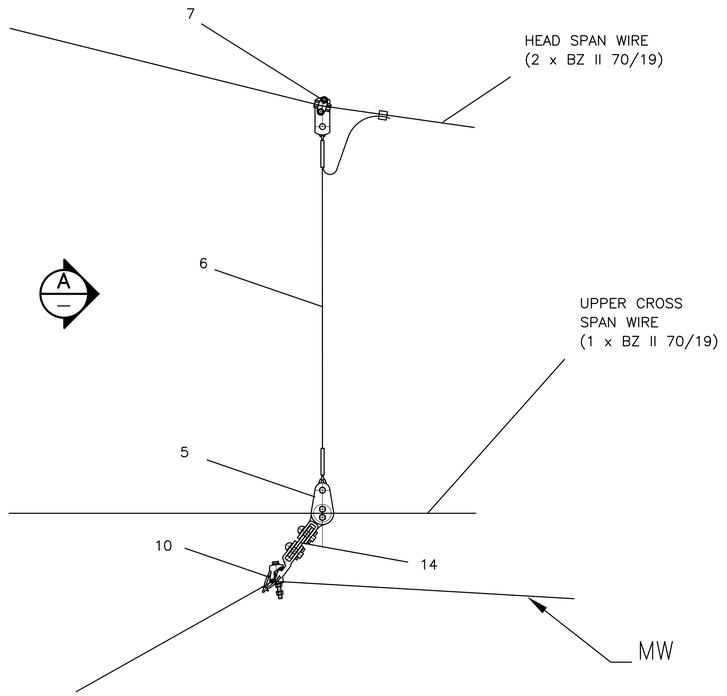
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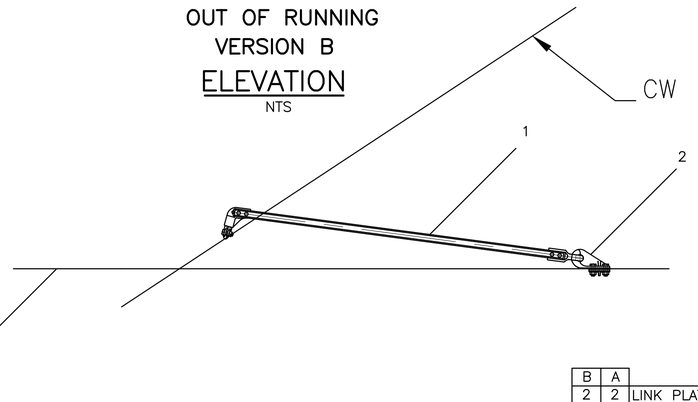


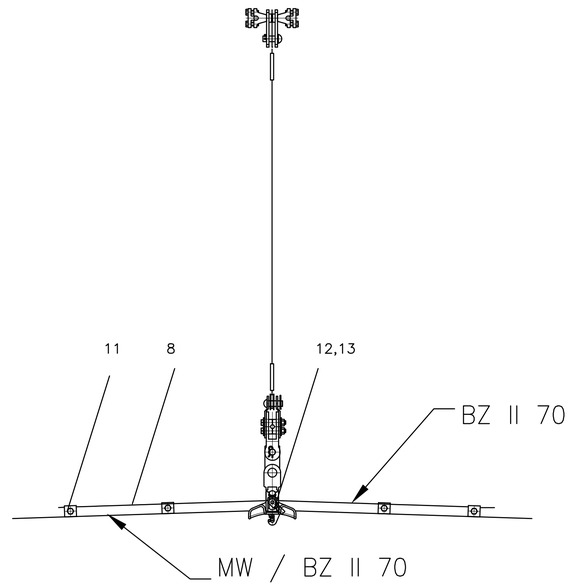
HEAD SPAN CATENARY SUPPORT
OUT OF RUNNING
VERSION A
ELEVATION
NTS



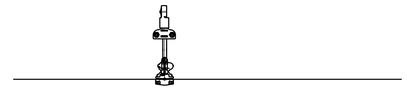


HEAD SPAN CATENARY SUPPORT
OUT OF RUNNING
VERSION B
ELEVATION
NTS





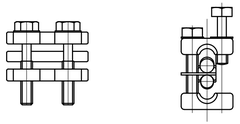
HEAD SPAN CATENARY SUPPORT
OUT OF RUNNING
VERSION B
A ELEVATION
NTS



NOTES:
1. OR ORDER ACC. TO DOSSERT
2. EQUAL TO PART 13 , BUT ORDER WITH LENGTH 40MM

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

DETAIL PART 9
CONNECTION CLAMP
FOR MW BZ II 70/19
WITH BZ II 70/19



ELECTRIFIED CROSS SPAN WIRES

VERSION A: DISTANCE TO THE FIXED POINT OVER 1150' (350M)
VERSION B: DISTANCE TO THE FIXED POINT TO 787' (240M)

B	A						
2	2	LINK PLATE		14		
1	–	PROTECTION SLEEVE 130MM LONG	E–CU F20	13		
1	–	PROTECTION SLEEVE 40MM LONG	E–CU F20	12		NOTE 2
4	–	PARALLEL CLAMP		11		DOSSERT
1	–	SUPPORT CABLE CLAMP		10		
–	2	CONNECTION CLAMP		9	NOTE 1	
1	1	WIRE BZ II 70/19		8	DIN 48201	LENGTH AS NEEDED
1	1	CROSSBAR CABLE CLAMP VERS. B		7		
1	1	SPAN WIRE DROPPER		6		
1	1	DIRECTIONAL CABLE CLAMP		5		
–	–	–		4		
–	1	ROLL FOR TENSIONED TRACTION CABLE		3		
1	1	CROSS–SPAN EYE CLAMP		2		
1	1	STEADY ARM AND CLAMP TYPE M16		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

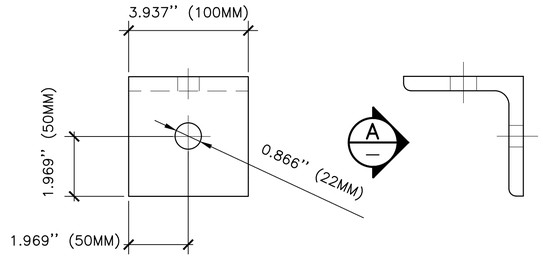
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

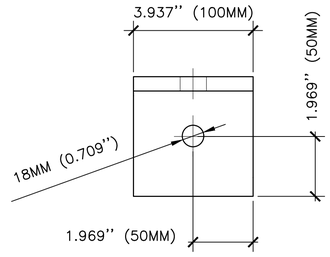
HEAD SPAN CATENARY SUPPORT
OUT OF RUNNING

CADD FILE NAME: SD–W6325
REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6325

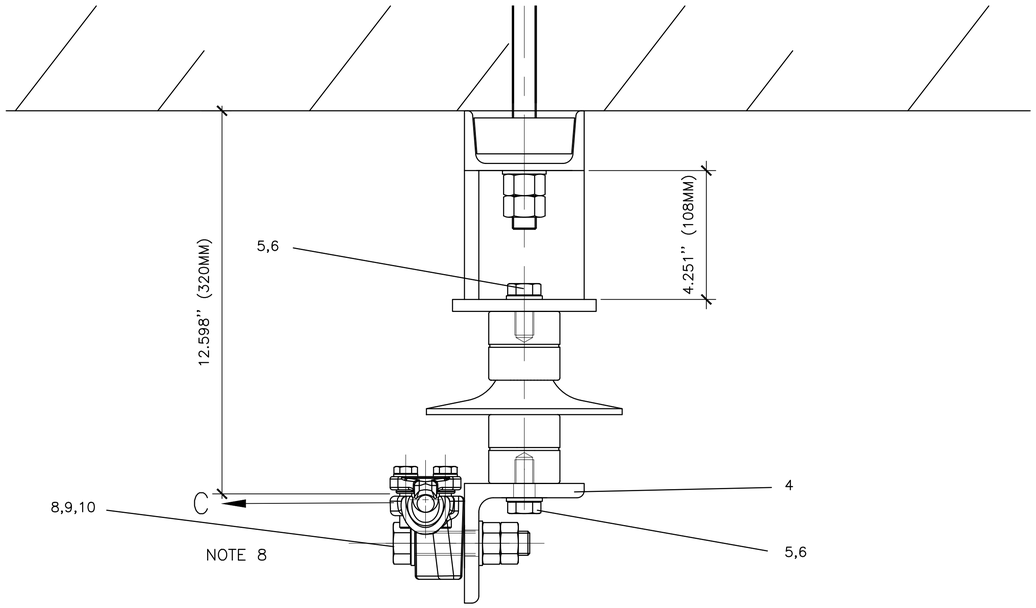


PART 4
PLAN
NTS

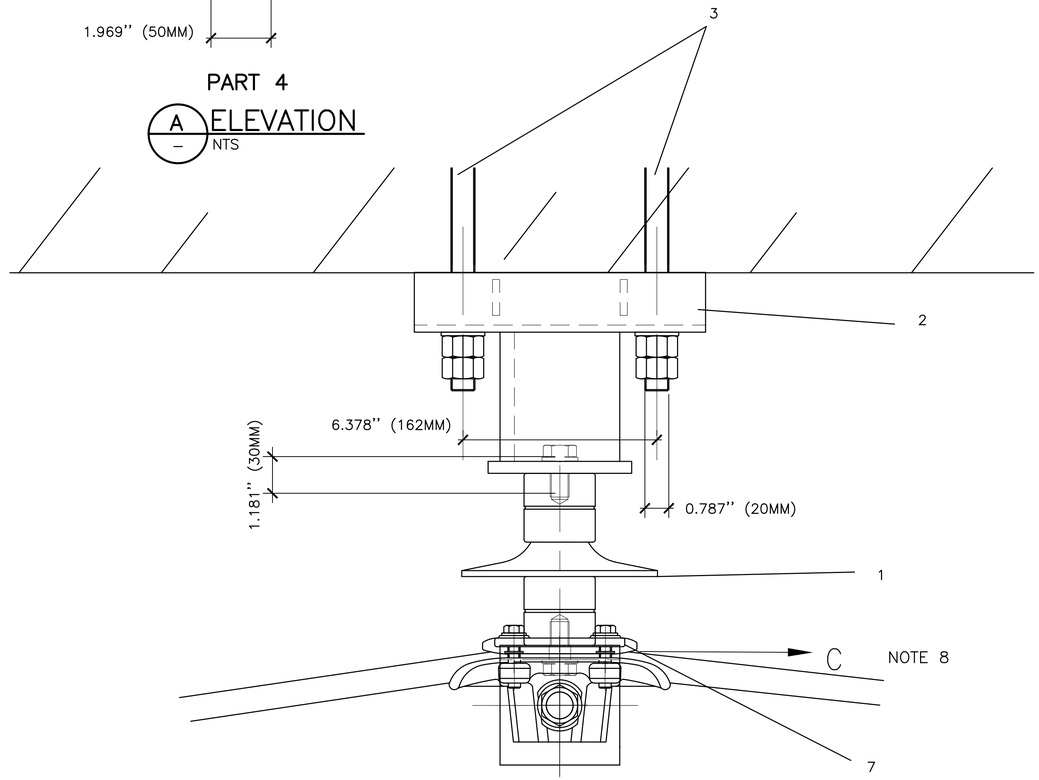
PART 4
ELEVATION
NTS



PART 4
A – ELEVATION
NTS



UPSIDE DOWN STATIC WIRE SUPPORT
PLAN
NTS



UPSIDE DOWN STATIC WIRE SUPPORT
ELEVATION
NTS

NOTES:

1. TYPE / LENGTH DEPENDS ON STATIC CALCULATION / CUSTOMER
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 108MM (4.251'')
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. STAINLESS STEEL A2
7. IF WANTED, LOCK WITH SECOND NUT
8. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
9. REFER OCS DESIGN SPECIFICATION 34 30 73

B	A						
–	2	WASHER 3/4"		10		NOTE 9
–	2	NUT 3/4"		9		NOTE 9
–	1	HEXAGON HEAD SCREW 3/4" X 4"		8		NOTE 9
–	1	STATIC WIRE CLAMP	G–AL	7		
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	6	DIN EN ISO 4017	
–	2	WASHER M16	200HV NOTE 2	5	DIN EN ISO 7089	
–	1	ANGLE 100x100x12 NOTE 4		4	DIN EN 10056–1	NOTE 5
–	2	ANCHOR 3/4"		3		NOTE 1, 7 & 9
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		2		NOTE 3
–	1	COMPOSITE INSULATOR 130MM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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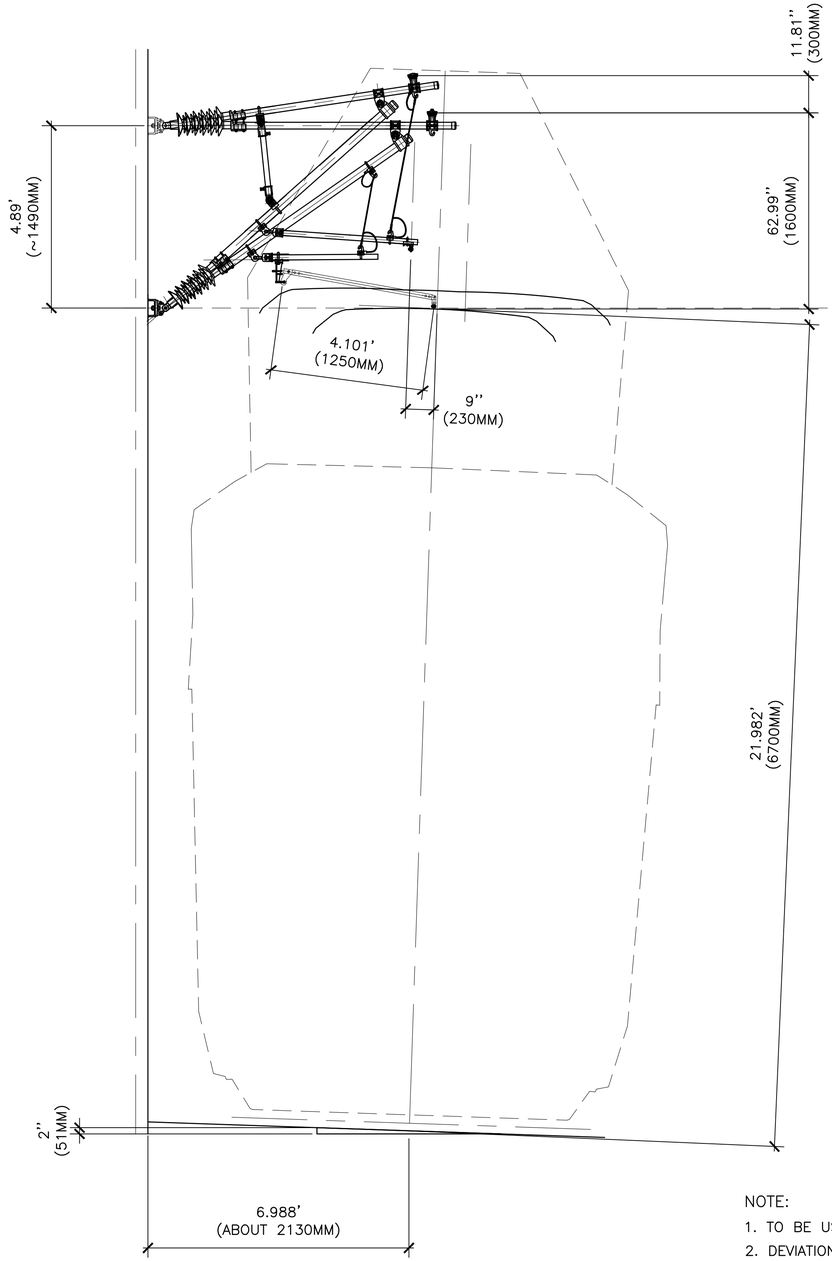
Caltrain

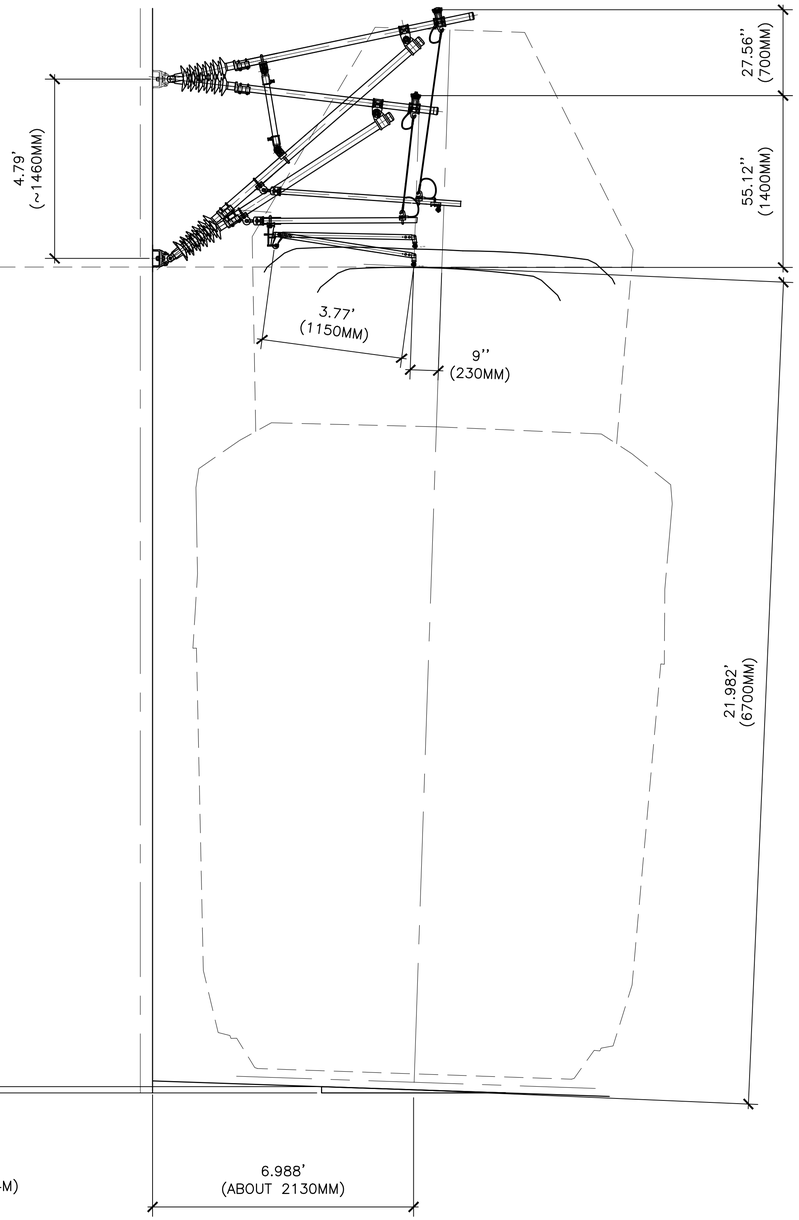
ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

INSULATED STATIC WIRE SUPPORT
UPSIDE DOWN
AT CEILING

CADD FILE NAME: SD–W6329
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6329





NOTE:
1. TO BE USED FOR SITUATION IN CURVE RADIUS 5295' (1614M)
2. DEVIATIONS OF VALUES POSSIBLE IN PROJECT PHASE

CANTILEVER ARRANGEMENT IN 3–SPAN OVERLAP
ELEVATION
NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

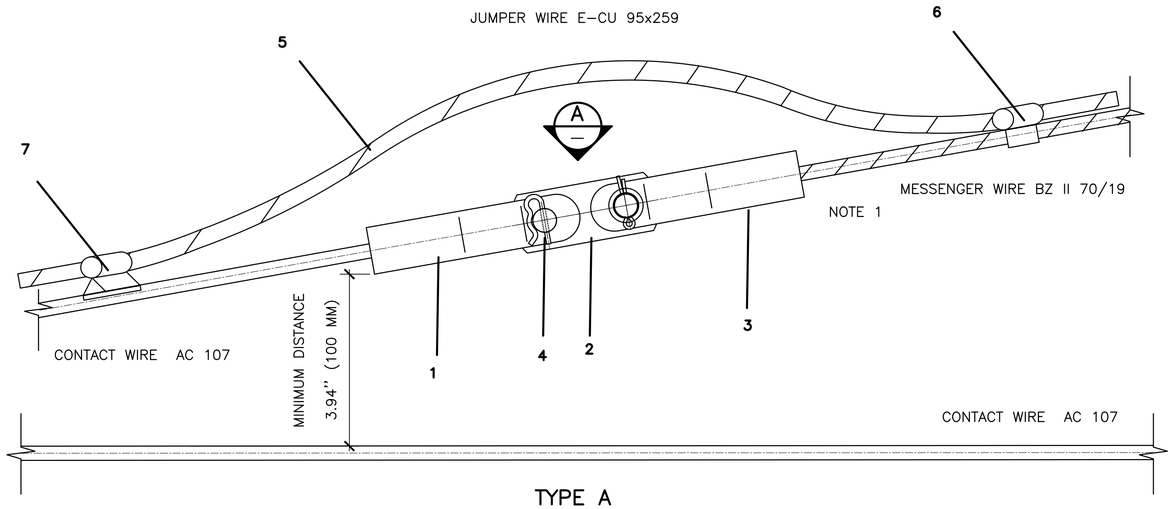
APPROVED BY:
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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER ARRANGEMENT FOR 3–SPAN OVERLAP CURVE–RADIUS = 5295'

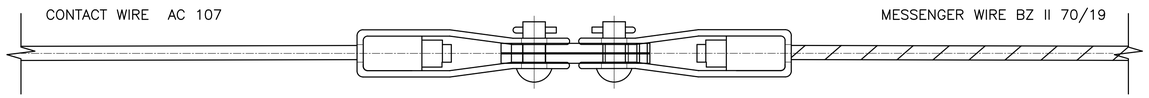
CADD FILE NAME: SD–W6330
REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6330



TYPE A

TRANSITION CATENARY CW/MW TO CATENARY CW/CW FOR UNDER BRIDGE AREA

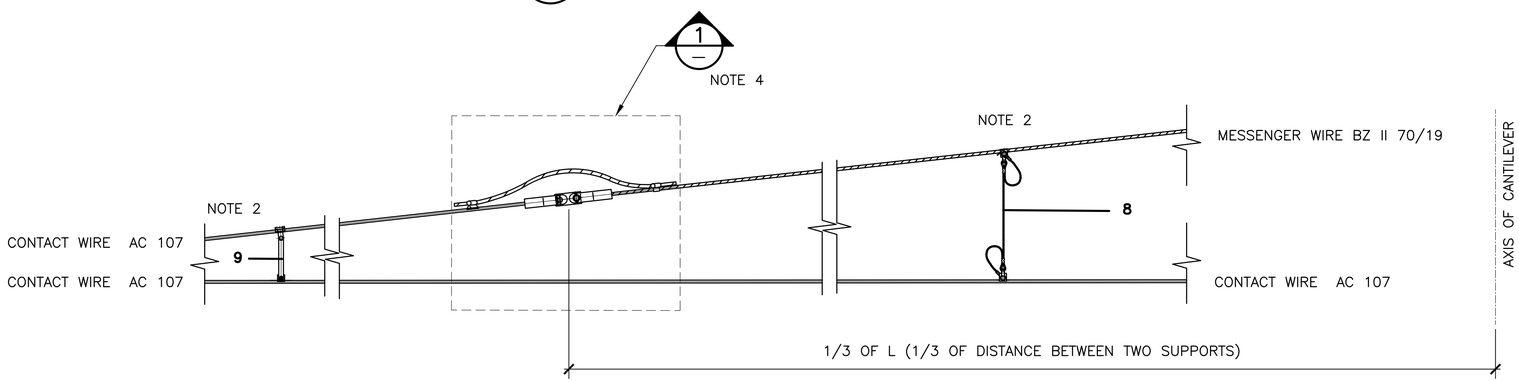
1 – DETAIL
NTS



TYPE A

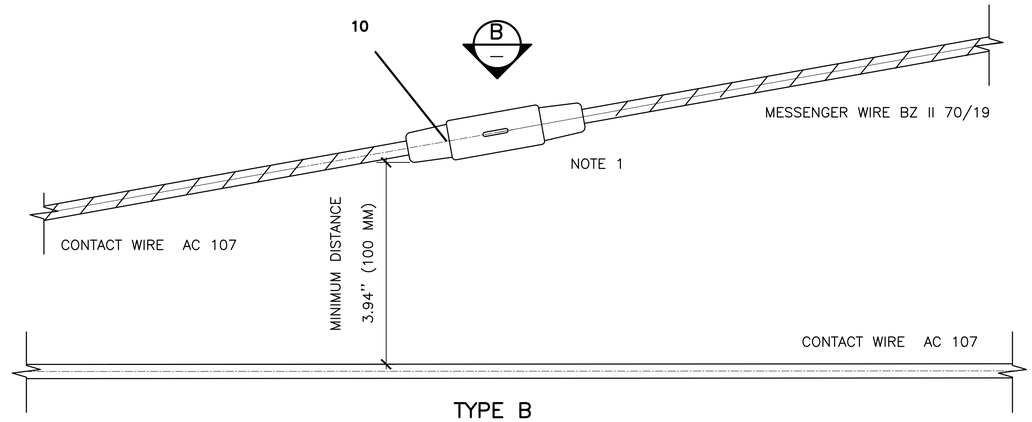
TOP VIEW – TRANSITION MW TO CW FOR UNDER BRIDGE AREA

A – PLAN
NTS



TRANSITION CATENARY CW/MW TO CATENARY CW/CW FOR UNDER BRIDGE AREA

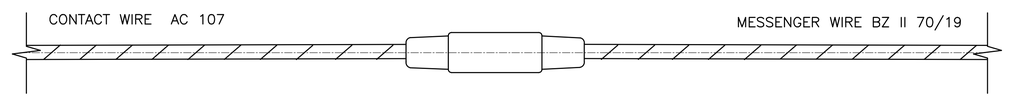
ELEVATION
NTS



TYPE B

CONICAL COUPLING OF TRANSITION CATENARY CW/MW
TO CATENARY CW/CW FOR UNDER BRIDGE AREA

1 – DETAIL
NTS



TYPE B

CONICAL COUPLING OF TRANSITION CATENARY CW/MW
TO CATENARY CW/CW FOR UNDER BRIDGE AREA

B – PLAN
NTS

NOTES:

1. INCLINATION OF MW/CW TRANSITION ACCORDING TO DETAIL DESIGN
2. NUMBER AND LENGTH ACCORDING TO DETAIL DESIGN / CANTILEVER-DROPPER CALCULATION
3. TYPE A OR TYPE B CAN BE USED

B	A	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
1	–	CONE CONNECTOR – CONICAL COUPLING		10	615.211.000	
x	x	SLIDING DROPPER LOW HEIGHT RIGID TYPE (HA-04)		9		NOTE 2
x	x	DROPPER 10x49 (HA-01)		8		NOTE 2
–	1	CONTACT WIRE FEEDER CLAMP 95F/CW AC107		7		
–	1	WIRE FEEDER CLAMP JW95f-MW70		6		
–	1	JUMPER WIRE E-CU 95x259	E-Cu	5	DIN 43138	
–	1	PIN ø19x52 WITH ß-SPLINT PIN	A2	4		
–	1	TERMINATION CLAMP FOR MW	.	3		
–	2	LINK PLATE	.	2		
–	1	TERMINATION CLAMP FOR CW	.	1		

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

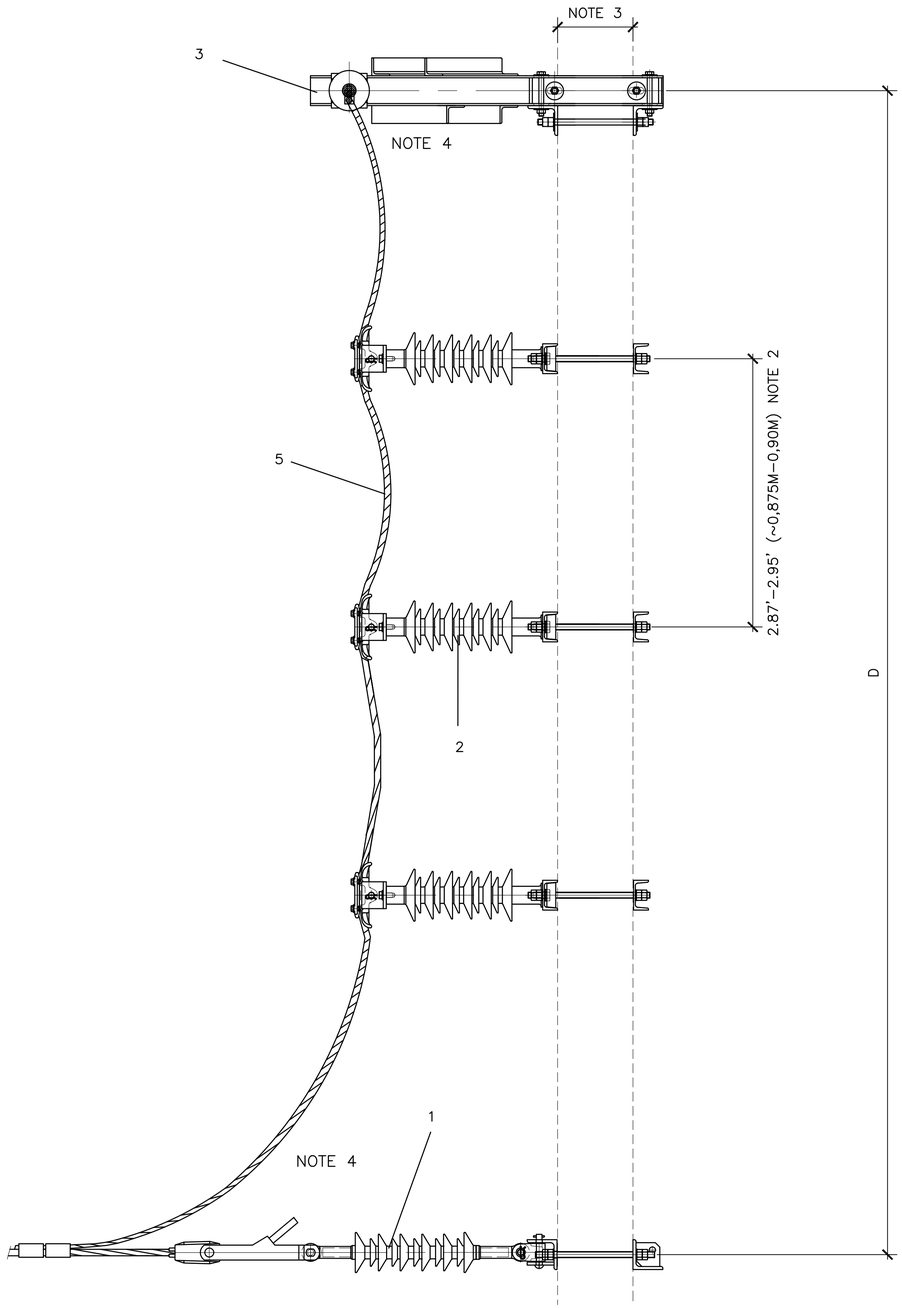
TRANSITION CATENARY CW / MW
TO CATENARY CW / CW
FOR UNDER BRIDGE AREA

CADD FILE NAME: SD-W6331

REV: | EDITION: SECOND

SCALE: NTS

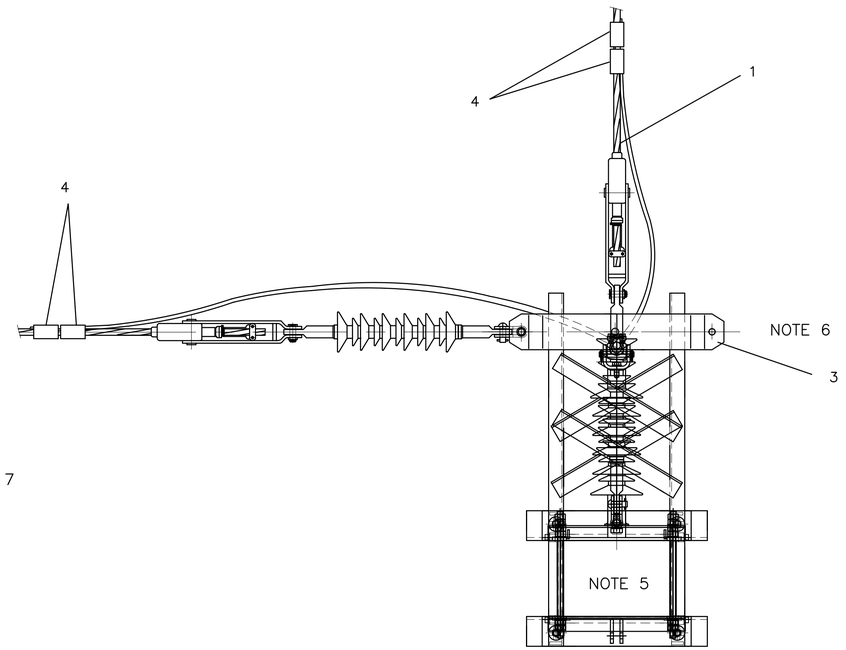
STANDARD DRAWING NO.: SD-W6331



ALLOCATION OF JUMPER FOR FEEDER ANCHOR TO CROSS FEEDER AT POLE

ELEVATION

NTS



ALLOCATION OF JUMPER FOR FEEDER ANCHOR TO CROSS FEEDER AT POLE

PLAN

NTS

NOTES:

1. LENGTH DEPENDING ON DISTANCE D
2. 2 SUPPORTS FOR DISTANCE D = 8.86' (2.70M)
   3 SUPPORTS FOR DISTANCE D = 11.48' (3.50M)
3. MASTSIZE TO BE CONSIDERED FOR CONSTRUCTIONS
4. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
5. RECTANGULAR MAST
6. TERMINATION CAN ALSO BE ON THE OTHER SIDE
7. DISTANCE D CAN BE FLEXIBLE; NEW QUANTITY OF COMPONENTS MUST BE DEFINED IN DETAIL DESIGN

	A					
	1	EAGLE ACSR 556		5		NOTE 1
	4	PARALLEL GROOVE CLAMP		4	LOCAL SUPPLIER	
	1	SINGLE TERMINATION TRAVERSE		3		
NOTE 3		FEEDER WIRE SUPPORT, VERTICAL		2		NOTE 7
	1	TERMINATION F. FEEDER WIRE FT–06		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

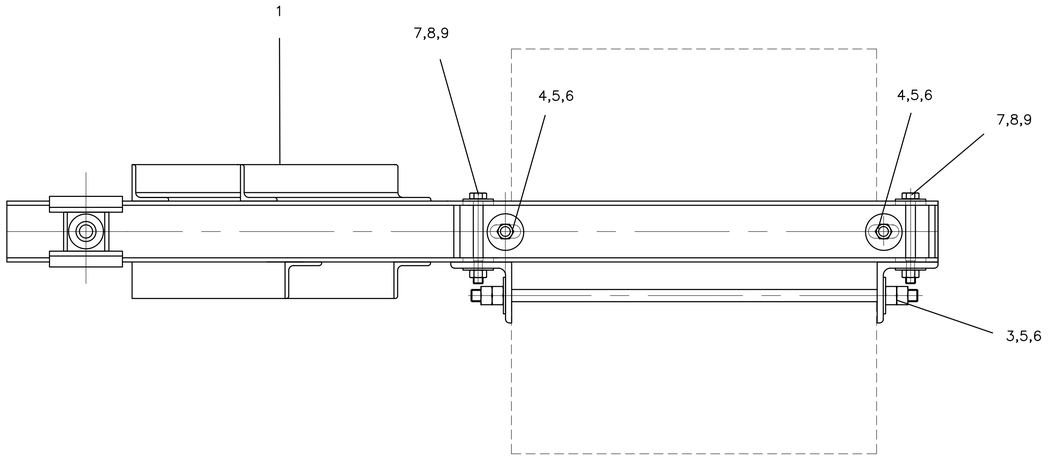
ALLOCATION OF JUMPER FOR FEEDER ANCHOR TO CROSS FEEDER AT POLE AT RECTANGULAR MAST

CADD FILE NAME: SD–W6332

REV: | EDITION: SECOND

SCALE: NTS

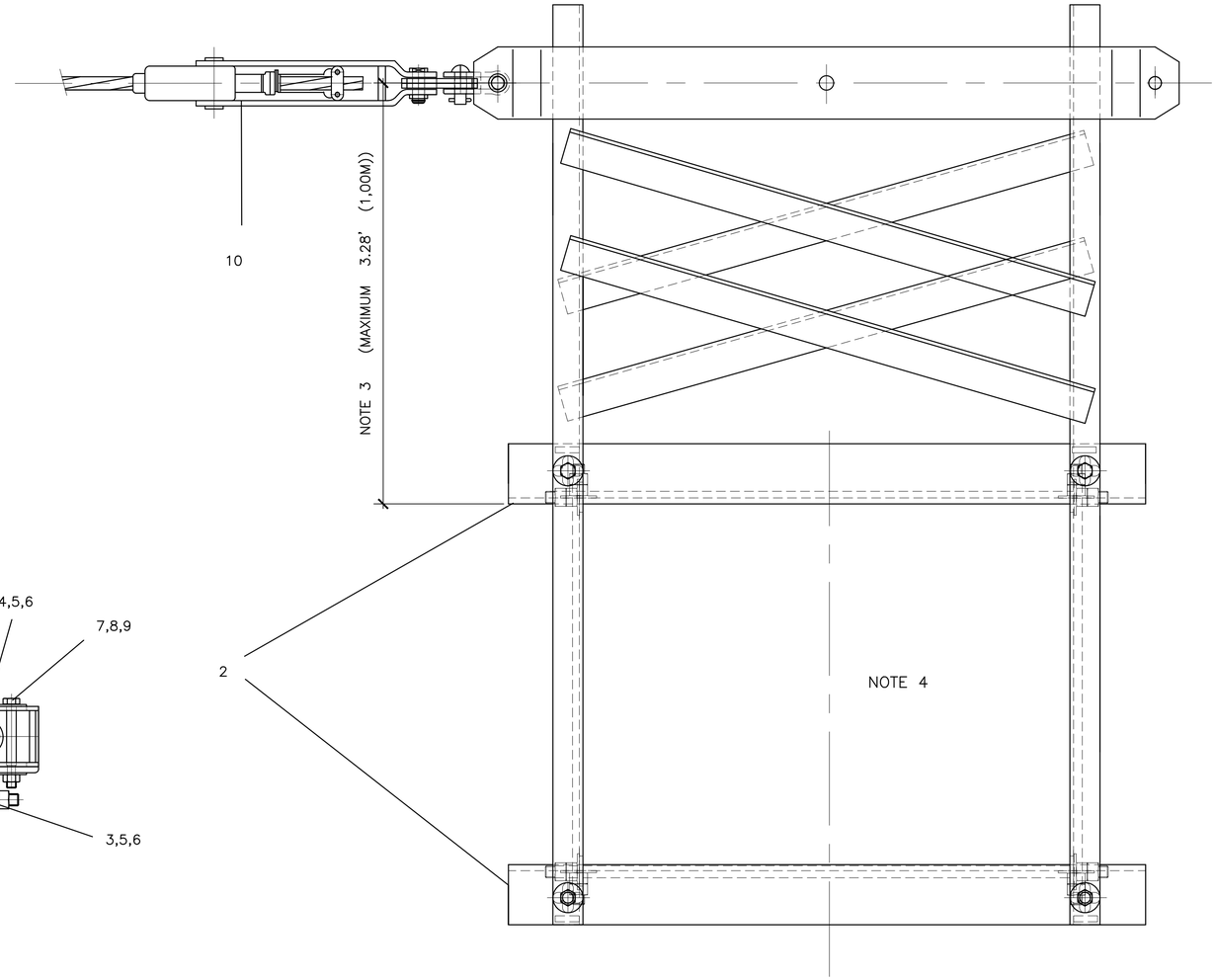
STANDARD DRAWING NO.: SD–W6332



SINGLE STATIC WIRE TERMINATION TRAVERSE

ELEVATION

NTS



SINGLE STATIC WIRE TERMINATION TRAVERSE

PLAN

NTS

NOTES:

1. LENGTH ACCORDING TO MASTSIZE
2. HOT DIP GALVANIZED ACCORDING TO DIN EN ISO 10684 tZn–o
3. VARIABLE LENGTH (DEPENDS ON DETAIL DESIGN) ; MAXIMUM 3.28' (1.00M)
4. MASTSIZE MUST BE CONSIDERED

	A					
	1	STATIC WIRE TERMINATION		10		
	4	HEXAGON HEAD SCREW M16x140	5.6 NOTE2	9	DIN EN ISO 4014	
	4	HEXAGON NUT M16	6 NOTE2	8	DIN EN ISO 4032	
	8	WASHER FOR M16	200HV NOTE2	7	DIN EN ISO 7093	
	8	WASHER FOR 3/4"		6		
	16	HEXAGON NUT 3/4"		5		
	2	STUD BOLT 3/4"		4		NOTE 1
	2	STUD BOLT 3/4"		3		NOTE 1
	2	SUPPORTING ANGLE		2		NOTE 1
	1	TERMINATION TRAVERSE		1		NOTE 1 NOTE 3
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
A	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

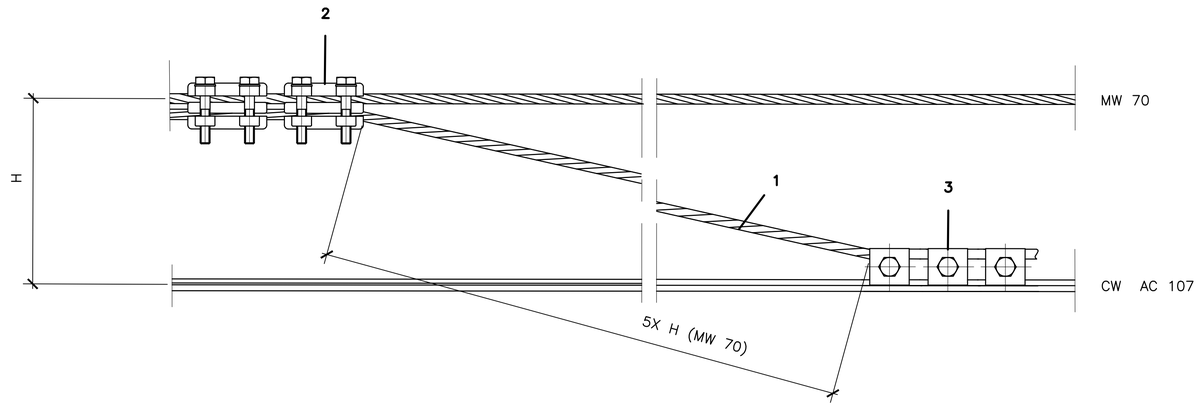
SINGLE TERMINATION TRAVERSE FOR STATIC WIRE

CADD FILE NAME: SD–W6333

REV: A EDITION: SECOND

SCALE: NTS

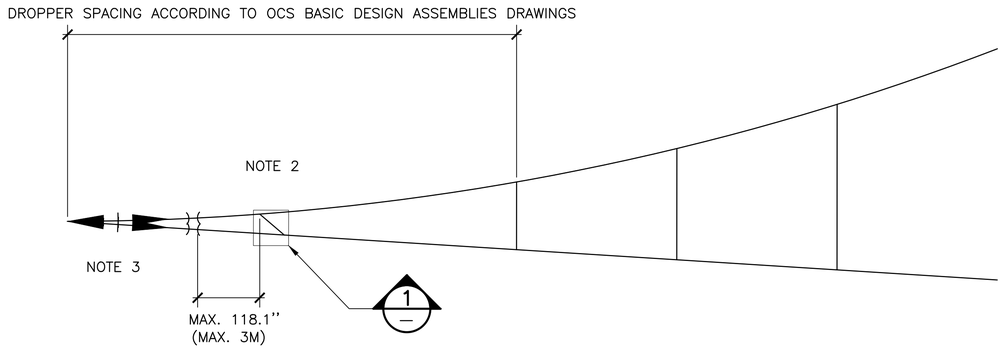
STANDARD DRAWING NO.: SD–W6333



SAFETY CATCH

1 — DETAIL

NTS



CATENARY END SECTION

ELEVATION

NTS

NOTES:
1. LENGTH AS NEEDED
2. AREA OF SAFETY CATCH
3. TENSION WHEEL TERMINATION OR FIXED TERMINATION

	A						
	3	CONNECTION CLAMP Z TO CW WIRE		3			
	2	CONNECTION CLAMP Z TO MW WIRE		2			
	1	MW BZ II 70		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	KG/PC.	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

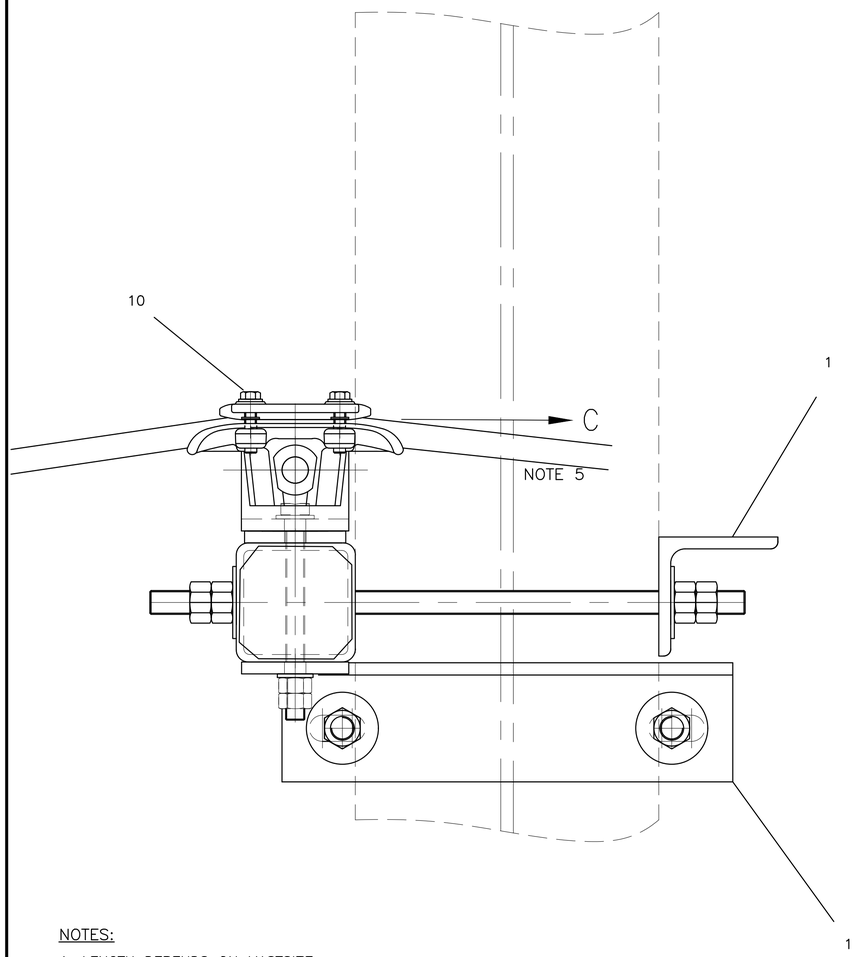
SAFETY CATCH
ASSEMBLY / ARRANGEMENT
SC-01

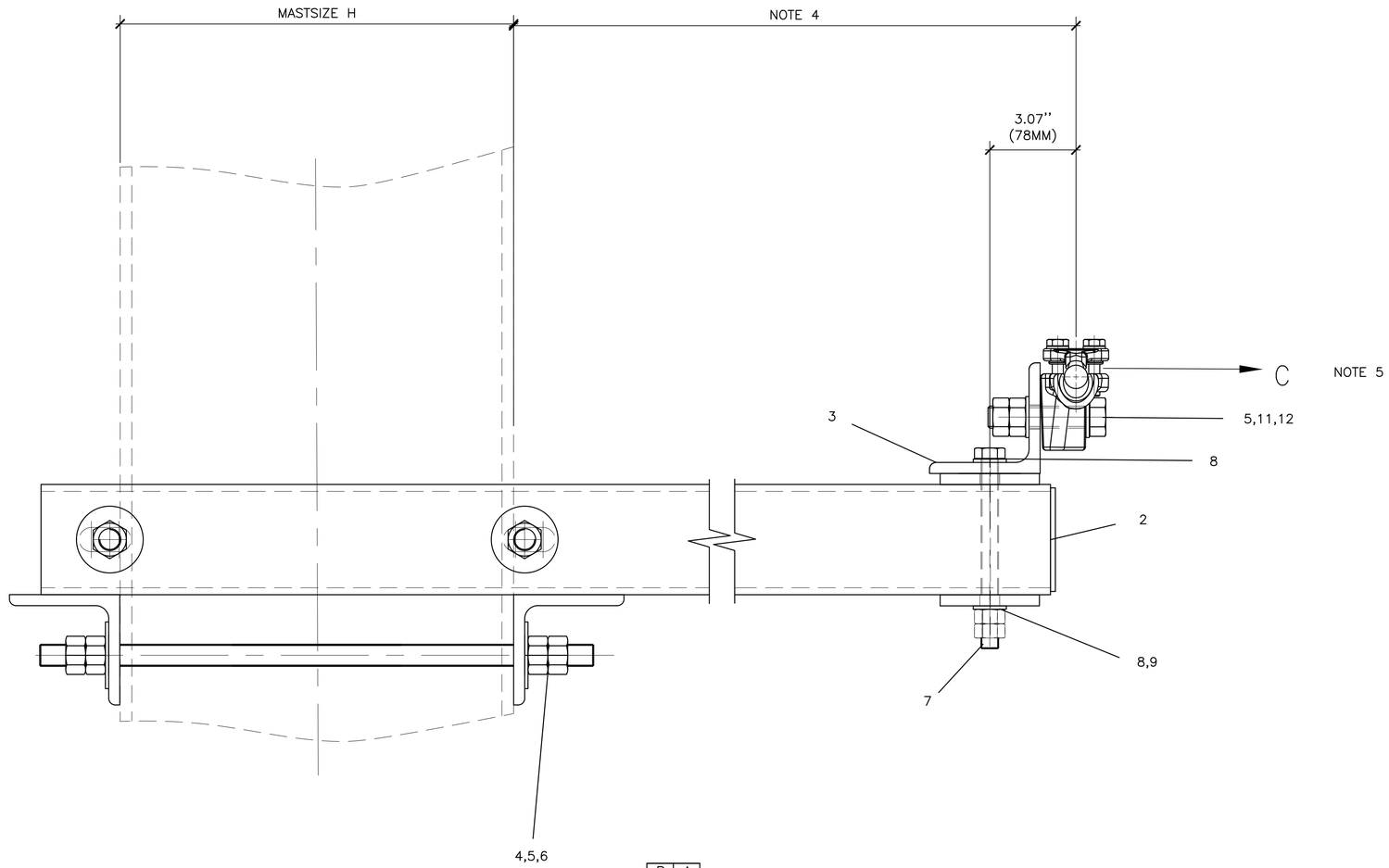
CADD FILE NAME: SD-W6334

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6334





NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN
4. EXACT DISTANCE ACCORDING TO DETAIL DESIGN, MAXIMUM SW OFFSET LIMIT WITHOUT STRUT TUBE IS 6.5'
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	2	WASHER FOR 3/4"		12		
–	1	HEX. HEAD SCREW 3/4" X 4"		11		
–	1	STATIC WIRE CLAMP	G–AL	10		
	2	HEXAGON HEAD NUT M16	8 NOTE 2	9	DIN EN ISO 4032	
–	2	WASHER M16	200HV NOTE 2	8	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x180	8.8 NOTE 2	7	DIN EN ISO 4017	
–	4	STUD BOLT 3/4"		6		NOTE 1
–	18	NUT 3/4"		5		
–	8	WASHER FOR 3/4"		4	DIN EN ISO 7093	
–	1	ANGLE FOR STATIC WIRE SUPPORT		3		
–	1	SUPPORTING STRUCTURE FOR INSULATOR		2		NOTES 1 AND 3
–	3	CLAMPING ANGLE		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

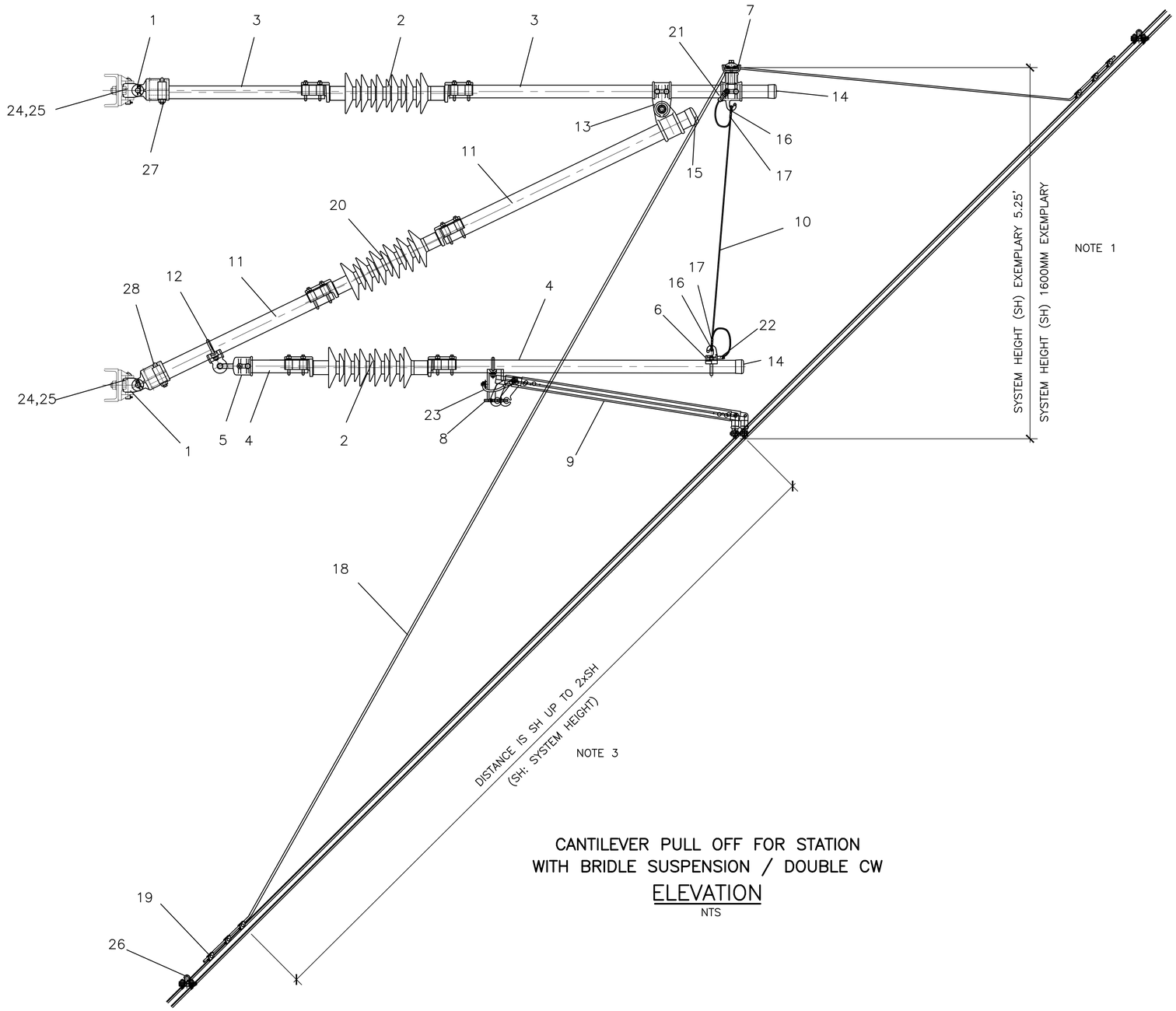
STATIC WIRE SUPPORT
VERTICAL AT MASS

CADD FILE NAME: SD–W6335

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6335



CANTILEVER PULL OFF FOR STATION
WITH BRIDLE SUSPENSION / DOUBLE CW

ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN
2. USE FOR STANDARD CANTILEVER ; DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT
3. DISTANCE: SH UP TO 2xSH
4. ARRANGEMENT SIMILAR TO SD–W6102

B	A	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
			WITH DROPPER AT MW–CLAMP				
	1	1	CLEVIS FOR TUBE ø70		28		
	1	1	CLEVIS FOR TUBE ø55		27		
	2	2	DOUBLE CONTACT WIRE CLAMP	A2	26		
	2	2	BETA–SPLINT PIN	1.4462	25		
	2	2	PIN 19X100	A2	24		
	1	1	ELECTRICAL CONNECTION		23		
	1	1	CABLE LUG 10–25 S	CU TIN–PLATED	22		
	1	1	CABLE LUG 12–25 S	CU TIN–PLATED	21		
	1	1	INSULATOR CAP / CAP ø70		20		
	6	1	PARALLEL GROOVED CLAMP		19		
	1	1	STANDARD BRONZE WIRE 70/19	BZ II	18	DIN 48201	LENGTH AS USED
	2	2	COMPRESS. SLEEVE B16	A2	17		
	2	2	THIMBLE 35	A2	16		
	1	1	TUBE CAP ø70	PVC	15		
	2	2	TUBE CAP ø55	PVC	14		
	1	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	1	EYE CLAMP FOR TUBE ø70		12		
	2	2	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	2	2	STEADY ARM LENGTH AS NEEDED		9		
	1	1	DOUBLE DROP BRACKET COMPLETE		8		
	1	1	CATENARY SWIVEL CLAMP TUBE ø55	NOTE 2	7		
	1	1	HOOK CLAMP FOR TUBE ø55		6		
	1	1	HOOK END FITTING FOR TUBE ø55		5		
	2	2	TUBE ø55X6 LENGTH AS USED	ALMGSI1F31	4		
	2	2	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	2	2	INSULATOR CAP / CAP ø55		2		
	2	2	SWIVEL JOINT		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

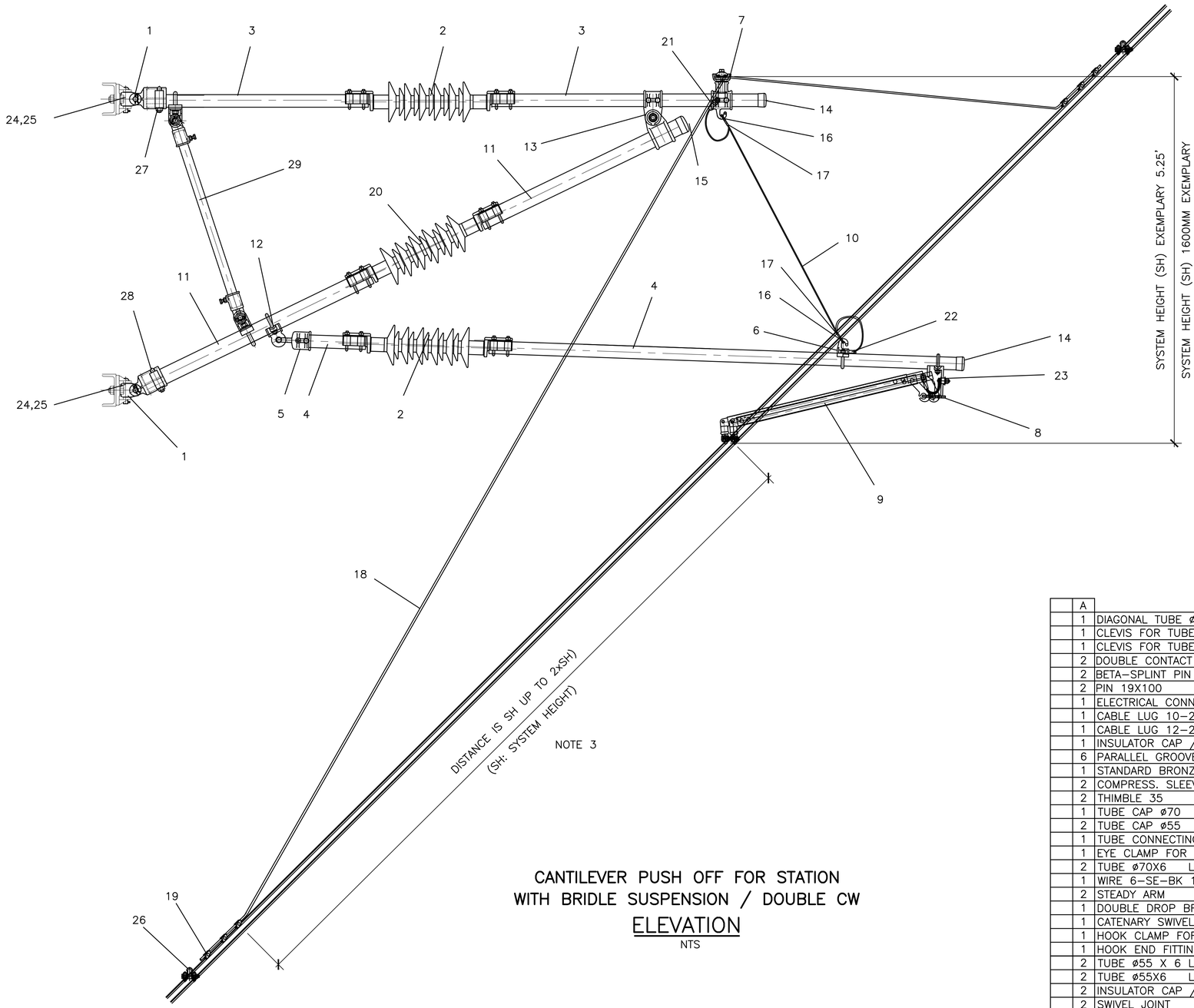
CANTILEVER PULL OFF FOR STATION WITH BRIDLE SUSPENSION AND DOUBLE STEADY ARM / DOUBLE CW CA–29

CADD FILE NAME: SD–W6336

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6336



NOTES:

1. ACCORDING TO DETAIL DESIGN
2. USE FOR STANDARD CANTILEVER ; DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT
3. DISTANCE: SH UP TO 2xSH
4. ARRANGEMENT SIMILAR TO SD–W6103

CANTILEVER PUSH OFF FOR STATION
WITH BRIDLE SUSPENSION / DOUBLE CW
ELEVATION
NTS

	A					
	1	DIAGONAL TUBE ø42		29		
	1	CLEVIS FOR TUBE ø70		28		
	1	CLEVIS FOR TUBE ø55		27		
	2	DOUBLE CONTACT WIRE CLAMP	A2	26		
	2	BETA–SPLINT PIN	1.4462	25		
	2	PIN 19X100	A2	24		
	1	ELECTRICAL CONNECTION		23		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	22		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	21		
	1	INSULATOR CAP / CAP ø70		20		
	6	PARALLEL GROOVED CLAMP		19		
	1	STANDARD BRONZE WIRE 70/19	BZ II	18	DIN 48201	LENGTH AS USED
	2	COMPRESS. SLEEVE B16	A2	17		
	2	THIMBLE 35	A2	16		
	1	TUBE CAP ø70	PVC	15		
	2	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	EYE CLAMP FOR TUBE ø70		12		
	2	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	2	STEADY ARM LENGTH AS NEEDED		9		
	1	DOUBLE DROP BRACKET COMPLETE		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55	NOTE 2	7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR ø55		5		
	2	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
	2	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	2	INSULATOR CAP / CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

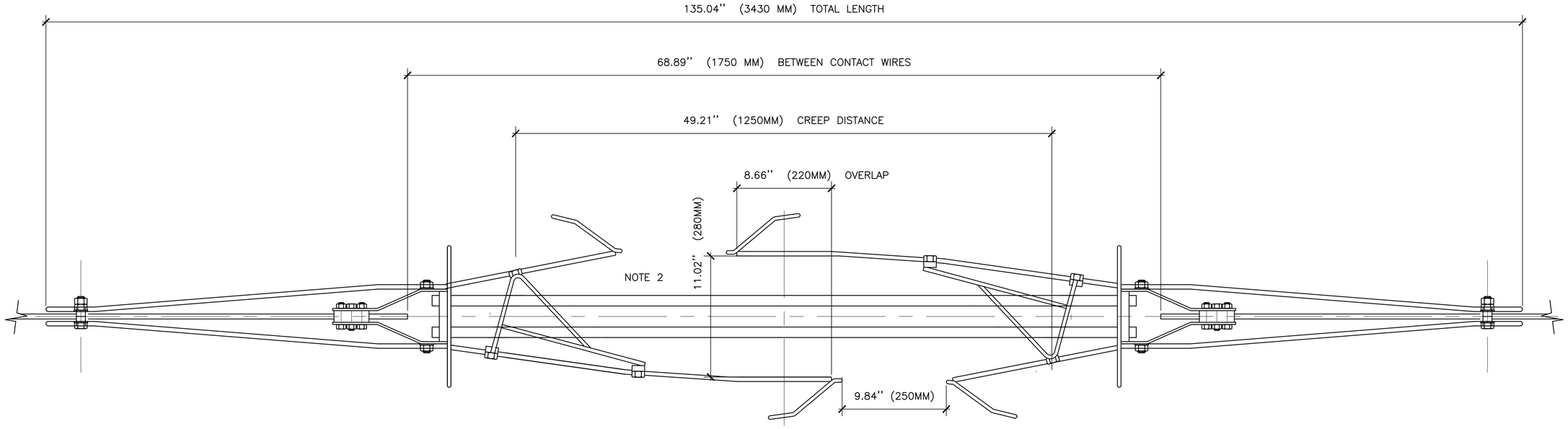
CANTILEVER PUSH OFF FOR STATION WITH BRIDLE SUSPENSION AND DOUBLE STEADY ARM / DOUBLE CW CA–30

CADD FILE NAME: SD–W6337

REV: | EDITION: SECOND

SCALE: NTS

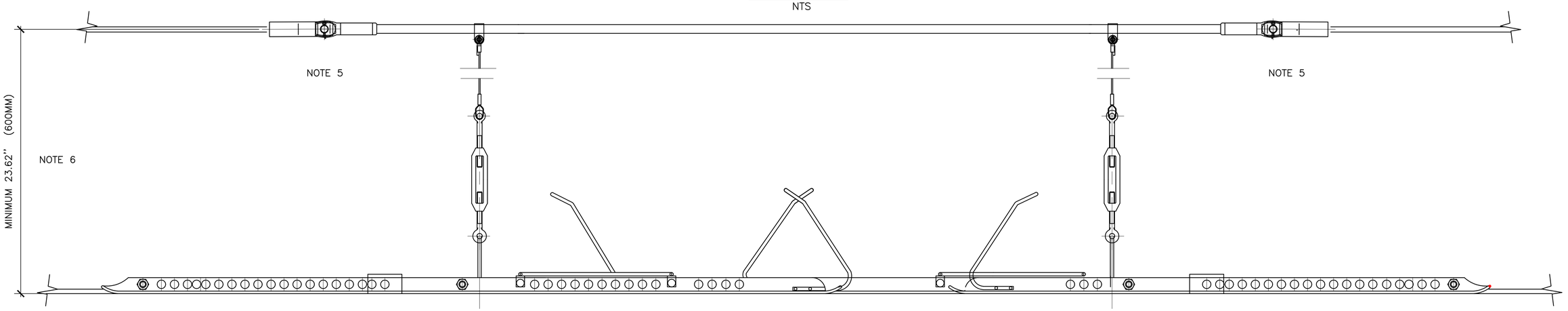
STANDARD DRAWING NO.: SD–W6337



SECTION INSULATOR 25 kV

PLAN

NTS



NOTE:

1. SECTION INSULATOR TO BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION
2. INSULATOR CREEPAGE PATH = 1250mm NOMINAL.
3. RESERVED
4. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
5. REDERVED
6. MINIMUM SYSTEM HEIGHT 23.62'' (600MM)

SECTION INSULATOR 25 kV WITH SUSPENSION FOR 200 KM/H

ELEVATION

NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

Caltrain

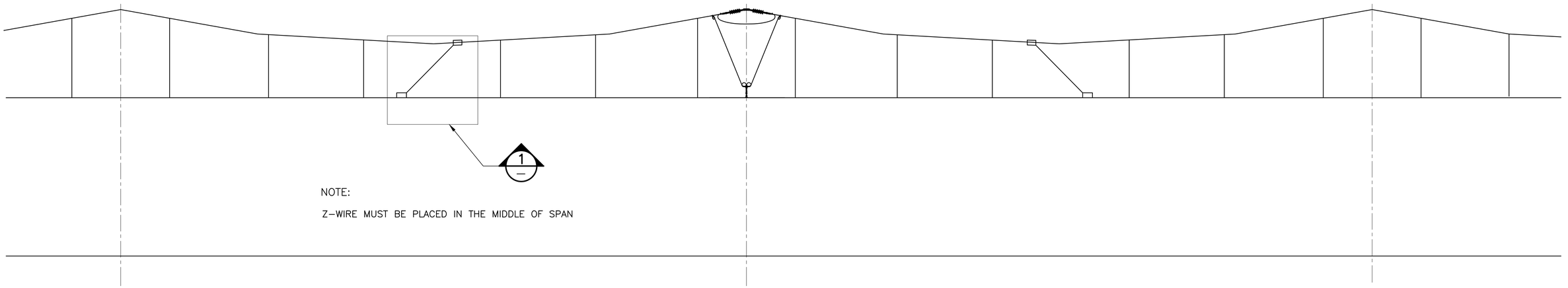
ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SECTION INSULATOR 25kV WITH SUSPENSION FOR 200 KM/H

SI–04

CADD FILE NAME:	SD–W6338
REV:	EDITION: SECOND
SCALE:	NTS
STANDARD DRAWING NO.:	SD–W6338



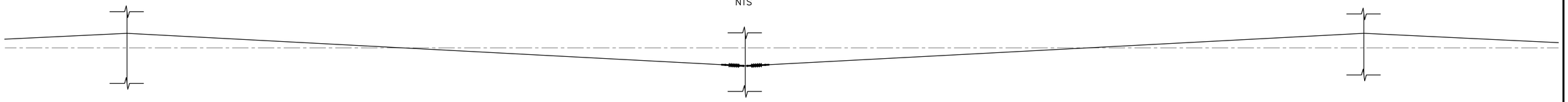
NOTE:

Z–WIRE MUST BE PLACED IN THE MIDDLE OF SPAN

MID POINT ANCHOR

ELEVATION

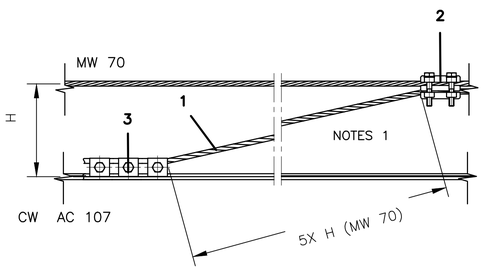
NTS



MID POINT ANCHOR

PLAN

NTS



Z–WIRE ARRANGEMENT

1 DETAIL

NTS

NOTES:

1. LENGTH TO BE DEFINED ON SITE

	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
	A					
	6	CONNECTION CLAMP Z TO CW WIRE		3		
	2	CONNECTION CLAMP Z TO MW WIRE		2		
	2	MW BZ II 70		1		NOTE 1

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

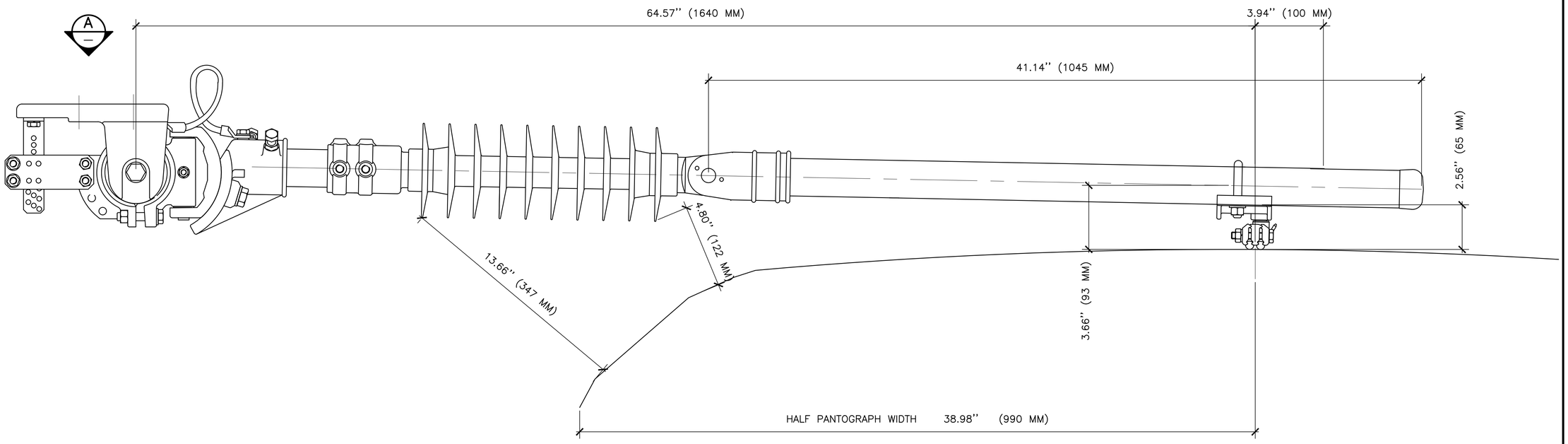
Z – WIRE FOR MID POINT OF HEAD SPAN

CADD FILE NAME: SD–W6339

REV: | EDITION: SECOND

SCALE: NTS

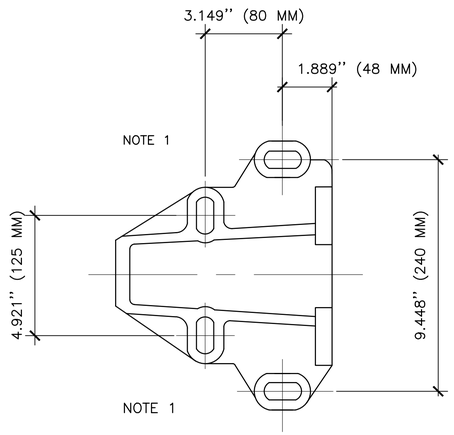
STANDARD DRAWING NO.: SD–W6339



ELASTIC SUPPORT 25 KV – DOUBLE CONTACT WIRE

ELEVATION

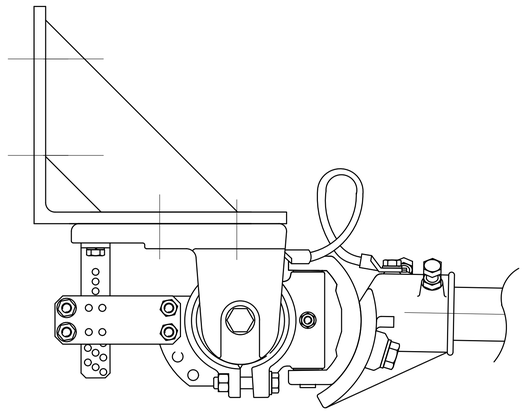
NTS



ELASTIC SUPPORT 25 KV – BASE PLATE

A – PLAN

NTS



ELASTIC SUPPORT 25 KV – POSSIBLE CONNECTION PART

ELEVATION

NTS

NOTES:

1. SLOTTED HOLES 0.709'' x 1.535'' (18MM x 39MM)

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

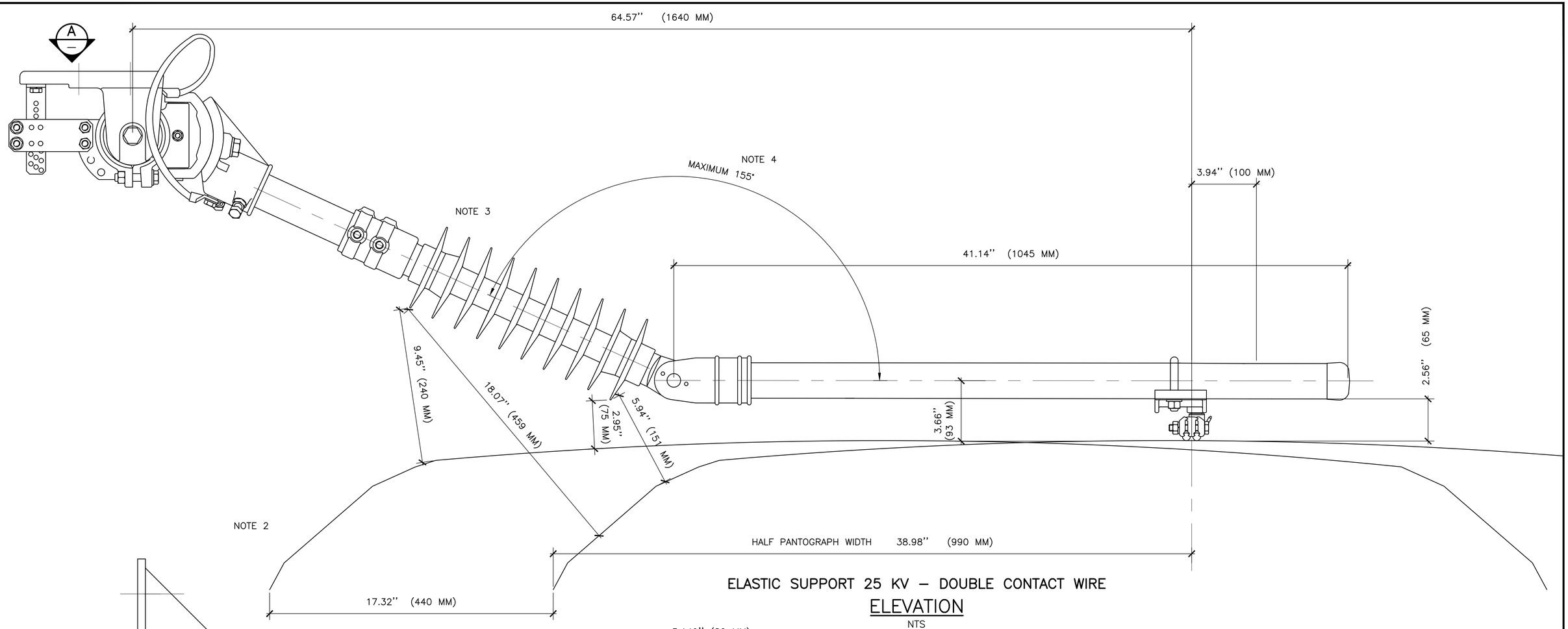
ELASTIC SUPPORT 25 KV AC
FOR DOUBLE CONTACT WIRE
STRAIGHT TYPE ADJUSTMENT

CADD FILE NAME: SD-W6341

REV: EDITION: SECOND

SCALE: NTS

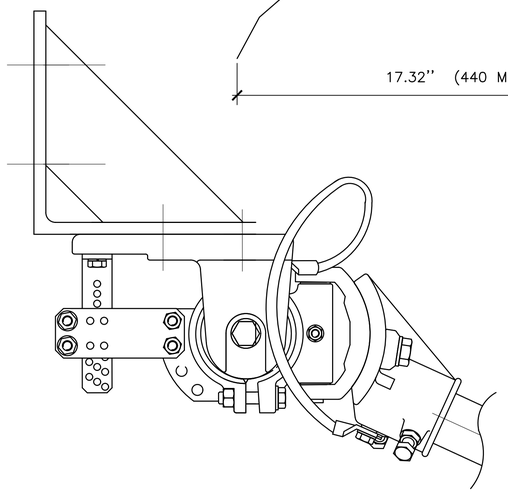
STANDARD DRAWING NO.: SD-W6341



ELASTIC SUPPORT 25 KV – DOUBLE CONTACT WIRE

ELEVATION

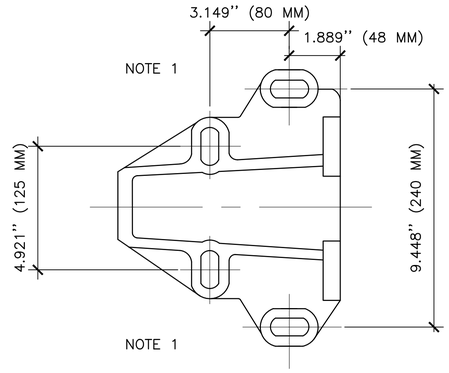
NTS



ELASTIC SUPPORT 25 KV – POSSIBLE CONNECTION PART

ELEVATION

NTS



ELASTIC SUPPORT 25 KV – BASE PLATE

A – PLAN

NTS

NOTES:

1. SLOTTED HOLES 0.709'' x 1.535'' (18MM x 39MM)
2. MOVEMENT (17.32'') 440MM CONSIDERED
3. MINIMUM CREEPAGE DISTANCE: 47.24'' (1200MM)
4. MAXIMUM DEGREE: 0.861111 x π (pi)

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

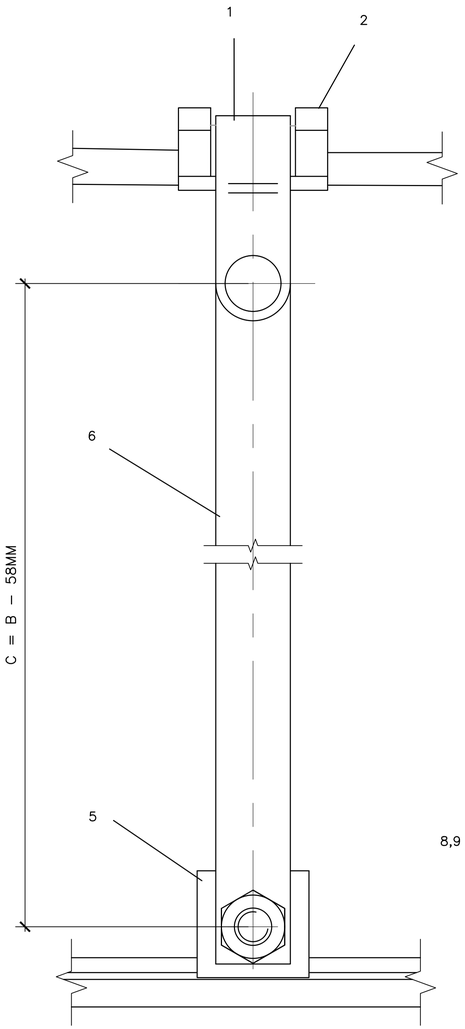
ELASTIC SUPPORT 25 KV AC FOR DOUBLE CONTACT WIRE CRANKED TYPE ADJUSTMENT

CADD FILE NAME: SD–W6342

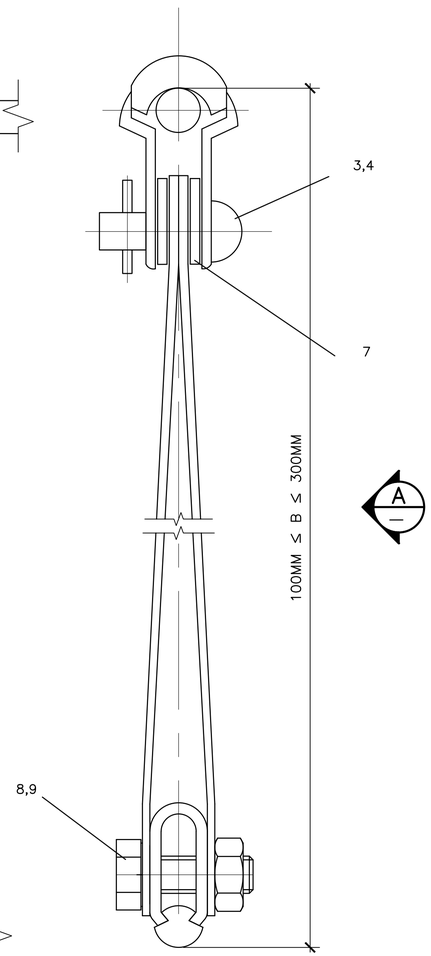
REV: EDITION: SECOND

SCALE: NTS

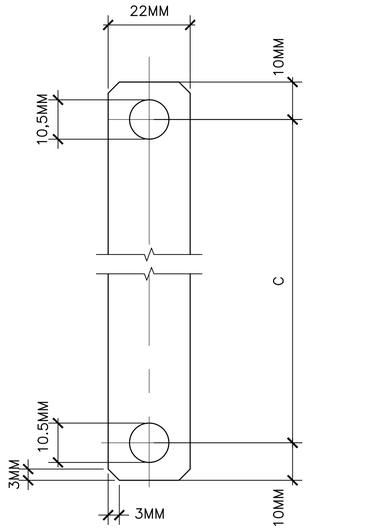
STANDARD DRAWING NO.: SD–W6342



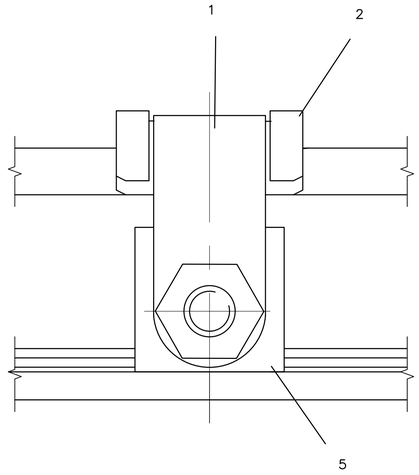
SLIDING DROPPER
TYPE A
A – ELEVATION
NTS



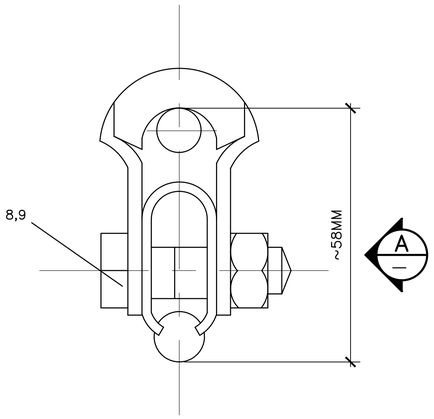
SLIDING DROPPER
TYPE A
ELEVATION
NTS



PART 6 – CLEVIS LINK 22MMX2MM
ELEVATION
NTS



SLIDING DROPPER – SHORT TYPE
TYPE B
A – ELEVATION
NTS



SLIDING DROPPER – SHORT TYPE
TYPE B
ELEVATION
NTS

NOTES:

1. LENGTH TO BE DEFINED IN DETAIL DESIGN
2. ALTERNATIVELY, ARTHUR FLURRY'S RIGID DROPPER CAN BE USED

B	A					
1	1	HEXAGON NUT M10	A2	9		
1	1	HEXAGON HEAD BOLT M10X30	A2–70	8		
–	2	WASHER 10	A2	7		
–	2	CLEVIS LINK 22MMX2MM	A2	6	NOTE 1	
1	1	DROPPER CLIP FOR CW	A2	5		
–	1	BOLT 10X26	CU	4		
–	1	SPLINT 5X29	A2	3		
1	1	PLASTIC SLIDING INSERT	PA	2		
1	1	SLIDING DROPPER CLIP	A2	1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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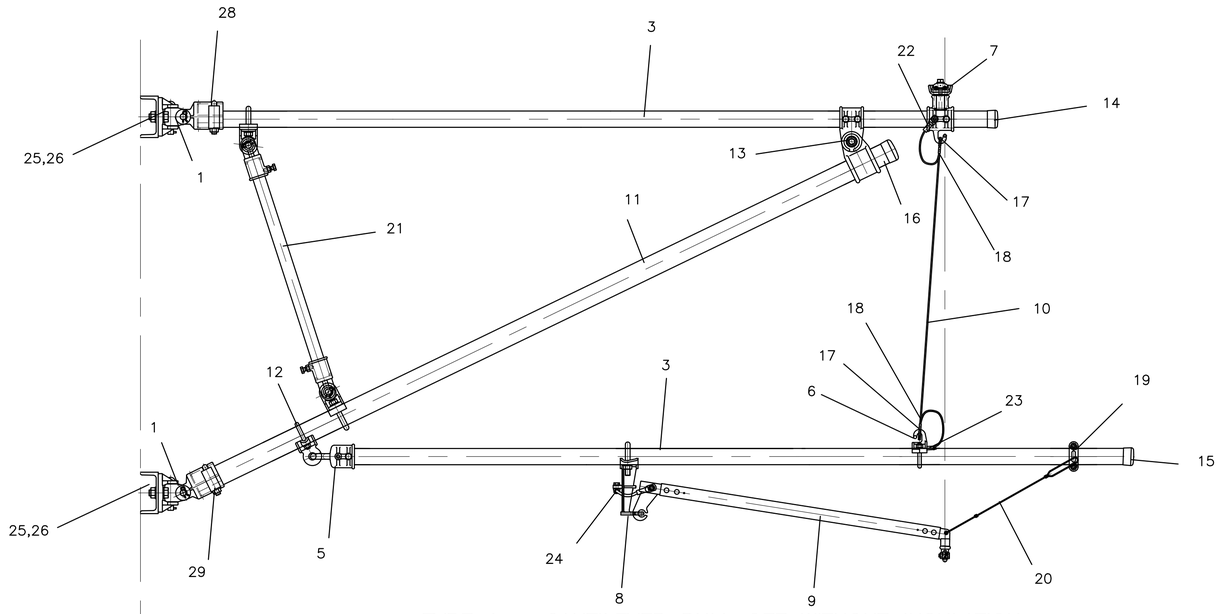
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SLIDING DROPPER – LOW HEIGHT
RIGID TYPE
HA–04

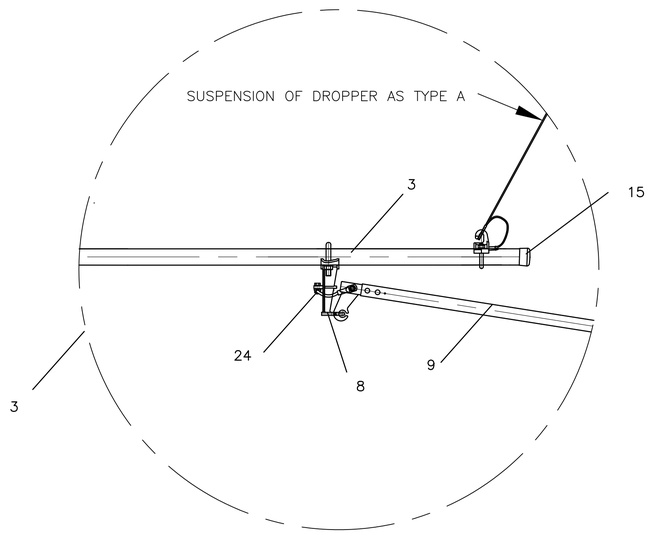
CADD FILE NAME: SD–W6343
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6343



TYPE A – CANTILEVER PULL OFF WITHOUT INSULATION

ELEVATION

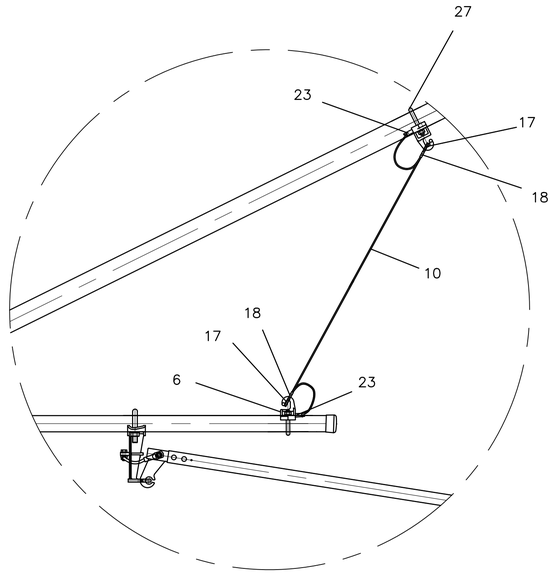
NTS



TYPE B – CANTILEVER PULL OFF WITHOUT INSULATION

ELEVATION

NTS



TYPE C – CANTILEVER PULL OFF WITHOUT INSULATION

ELEVATION

NTS

C	B	A					
WITHOUT WINDSTAY,	WITHOUT WINDSTAY,	WITH WINDSTAY, DROPPER AT HOOK CLAMP					
1	1	1	CLEVIS FOR TUBE ø70		29		
1	1	1	CLEVIS FOR TUBE ø55		28		
1	–	–	HOOK CLAMP FOR TUBE ø70		27		
2	2	2	BETA–SPLINT PIN	1.4462	26		
2	2	2	PIN 19X100	A2	25		
1	1	1	ELECTRICAL CONNECTION		24		
2	1	1	CABLE LUG 10–25 S	CU TIN–PLATED	23		
–	1	1	CABLE LUG 12–25 S	CU TIN–PLATED	22		
1	1	1	DIAGONAL TUBE ø42		21		
–	–	1	WIND STAY FOR STEADY ARM		20		
–	–	1	EYE CLAMP FOR WIND STAY ø55		19		
2	2	2	COMPRESS. SLEEVE B16	A2	18		
2	2	2	THIMBLE 35	A2	17		
1	1	1	TUBE CAP ø70	PVC	16		
1	1	1	TUBE CAP ø55	PVC	15		
1	1	1	TUBE CAP ø55	PVC	14		
1	1	1	TUBE CONNECTING BRACKET ø55/70		13		
1	1	1	EYE CLAMP FOR TUBE ø70		12		
1	1	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
1	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	1	STEADY ARM LENGTH AS NEEDED		9		
1	1	1	DROP BRACKET FOR ø55		8		
1	1	1	CATENARY SWIVEL CLAMP TUBE ø55		7		
1	1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	1	HOOK END FITTING FOR TUBE ø55		5		
–	–	–	–		4		
2	2	2	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
–	–	–	–		2		
2	2	2	SWIVEL JOINT		1		
PIECES			DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

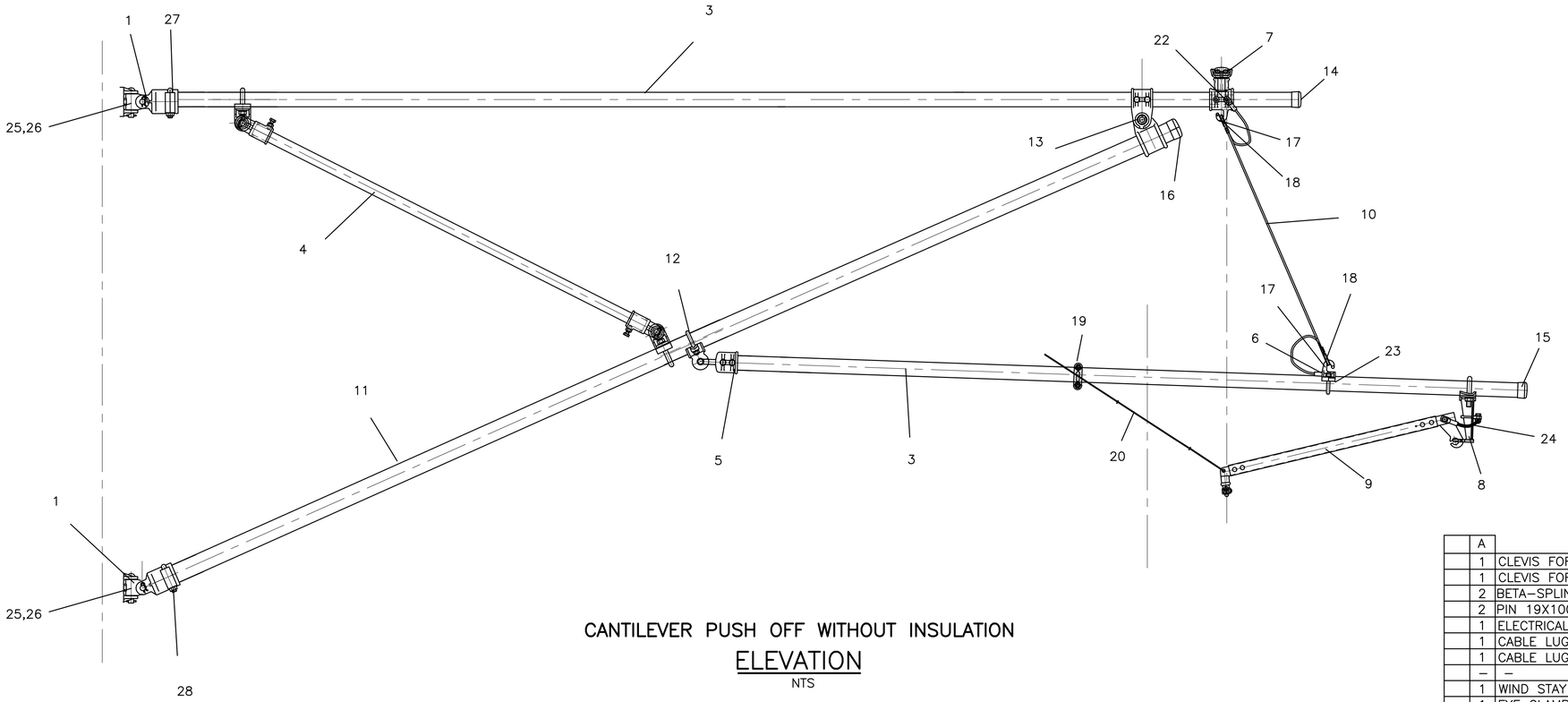
CANTILEVER PULL OFF
WITHOUT INSULATION
CA–31

CADD FILE NAME: SD–W6344

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6344



CANTILEVER PUSH OFF WITHOUT INSULATION

ELEVATION

NTS

	A					
	1	CLEVIS FOR TUBE ø70		28		
	1	CLEVIS FOR TUBE ø55		27		
	2	BETA–SPLINT PIN	1.4462	26		
	2	PIN 19X100	A2	25		
	1	ELECTRICAL CONNECTION		24		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	23		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	22		
	–	–		21		
	1	WIND STAY FOR STEADY ARM		20		
	1	EYE CLAMP FOR WIND STAY ø55		19		
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17		
	1	TUBE CAP ø70	PVC	16		
	1	TUBE CAP ø55	PVC	15		
	1	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø55/70		13		
	1	EYE CLAMP FOR TUBE ø70		12		
	1	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM LENGTH AS NEEDED		9		
	1	DROP BRACKET FOR ø55		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR TUBE ø55		5		
	1	DIAGONAL TUBE ø42		4		
	2	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	–	–		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

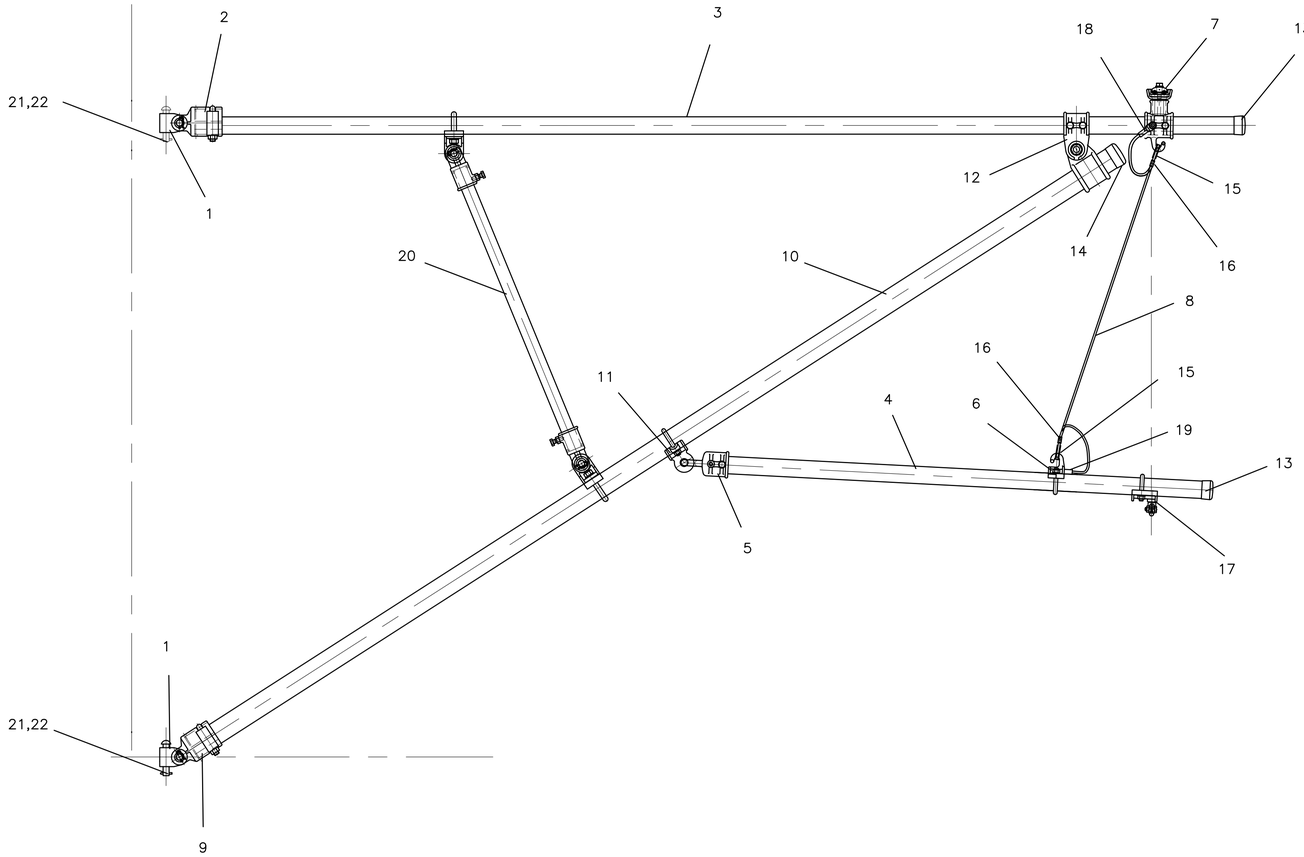
CANTILEVER PUSH OFF
WITHOUT INSULATION
CA–32

CADD FILE NAME: SD–W6345

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6345



CANTILEVER OUT OF RUNNING – WITHOUT INSULATION

ELEVATION

NTS

CANTILEVER WITH DIAGONAL TUBE

PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
A					
2	BETA–SPLINT PIN	1.4462	22		
2	PIN 19X100	A2	21		
1	DIAGONAL TUBE ø42		20		
1	CABLE LUG 10–25 S	CU TIN–PLATED	19	SHAPE DIN 46235	
1	CABLE LUG 12–25 S	CU TIN–PLATED	18	SHAPE DIN 46235	
1	CW–HOLDER FOR TUBE ø 55	G–Al	17		
2	COMPRESS. SLEEVE B16	A2	16		
2	THIMBLE 35	A2	15	DIN 43154	
1	TUBE CAP ø70	PVC	14		
2	TUBE CAP ø55	PVC	13		
1	TUBE CONNECTING BRACKET ø55/ø70	G–Al	12		
1	EYE CLAMP FOR TUBE ø70	G–Al	11		
1	TUBE ø70 X 6 LENGTH AS NEEDED	ALMGSI1F31	10		
1	CLEVIS FOR TUBE ø70		9		
1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	8		
1	CATENARY SWIVEL CLAMP FOR TUBE ø55	G–Al	7		
1	HOOK CLAMP FOR TUBE ø55	G–Al	6		
1	HOOK END FITTING FOR TUBE ø55	G–Al	5		
1	TUBE ø55 X 6 LENGTH AS NEEDED	ALMGSI1F31	4		
1	TUBE ø55 X 6 LENGTH AS NEEDED	ALMGSI1F31	3		
1	CLEVIS FOR TUBE ø55		2		
2	SWIVEL JOINT	ALSI7MG0,3	1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

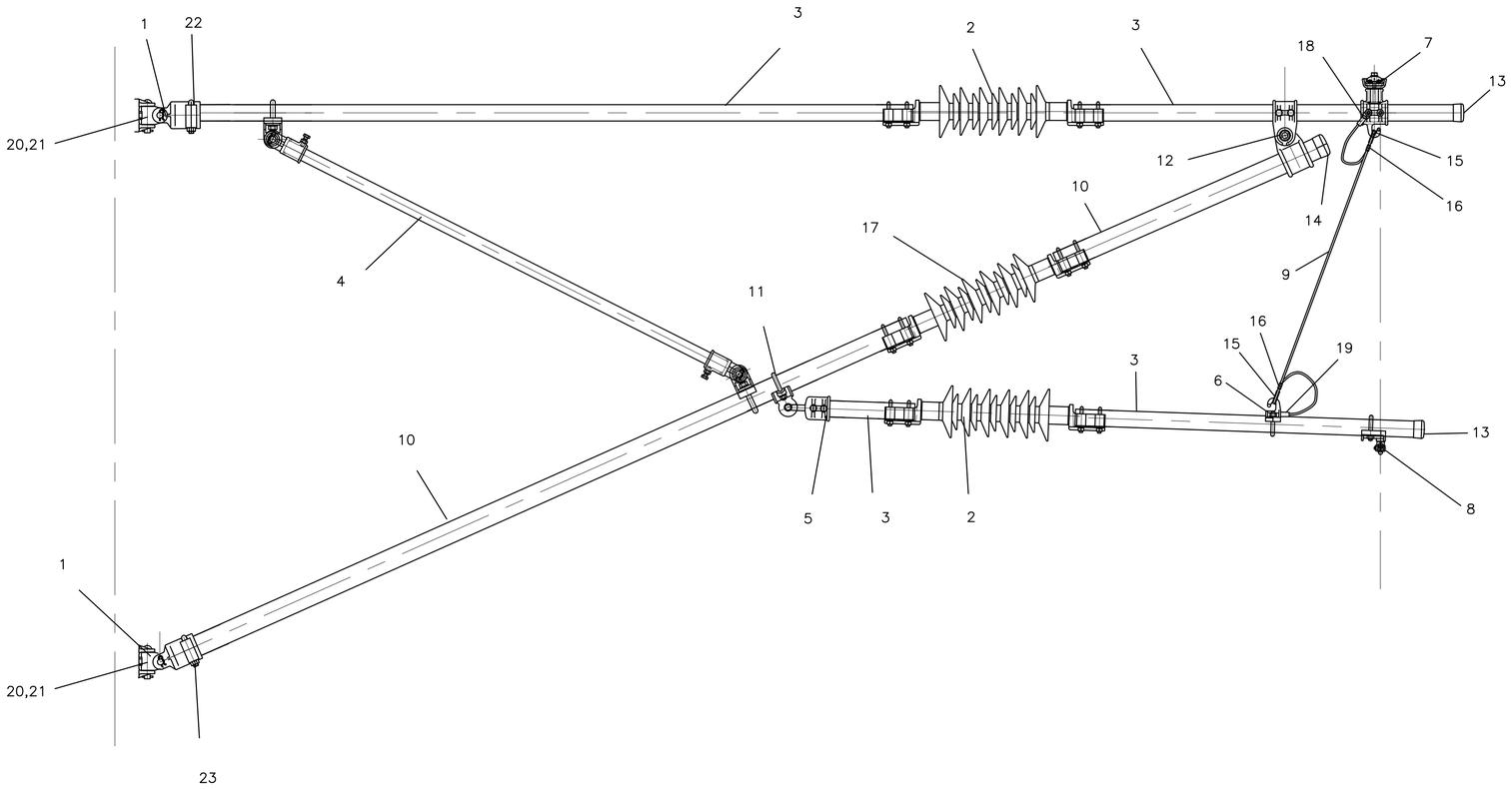
CANTILEVER WITHOUT INSULATION
OUT OF RUNNING
CA–33

CADD FILE NAME: SD–W6346

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6346



CANTILEVER RUNNING OUT WITH OFFSET INSULATION

ELEVATION

NTS

	A					
	1	CLEVIS FOR TUBE ø70		23		
	1	CLEVIS FOR TUBE ø55		22		
	2	BETA-SPLINT PIN	1.4462	21		
	2	PIN 19X100	A2	20		
	1	CABLE LUG 10-25 S	CU TIN-PLATED	19		
	1	CABLE LUG 12-25 S	CU TIN-PLATED	18		
	1	COMPOSITE INSULATOR CAP/CAP ø70		17		
	2	COMPRESS. SLEEVE B16	A2	16		
	2	THIMBLE 35	A2	15		
	1	TUBE CAP ø70	PVC	14		
	2	TUBE CAP ø55	PVC	13		
	1	TUBE CONNECTING BRACKET ø55/70		12		
	1	EYE CLAMP FOR TUBE ø70		11		
	2	TUBE ø70X6 LENGTH AS NEEDED	ALMGSI1F31	10		
	1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	9		
	1	CW-HOLDER FOR TUBE ø55		8		
	1	CATENARY SWIVEL CLAMP TUBE ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR TUBE ø55		5		
	1	DIAGONAL TUBE ø42		4		
	4	TUBE ø55X6 LENGTH AS NEEDED	ALMGSI1F31	3		
	2	COMPOSITE INSULATOR CAP/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER RUNNING OUT WITH OFFSET INSULATION

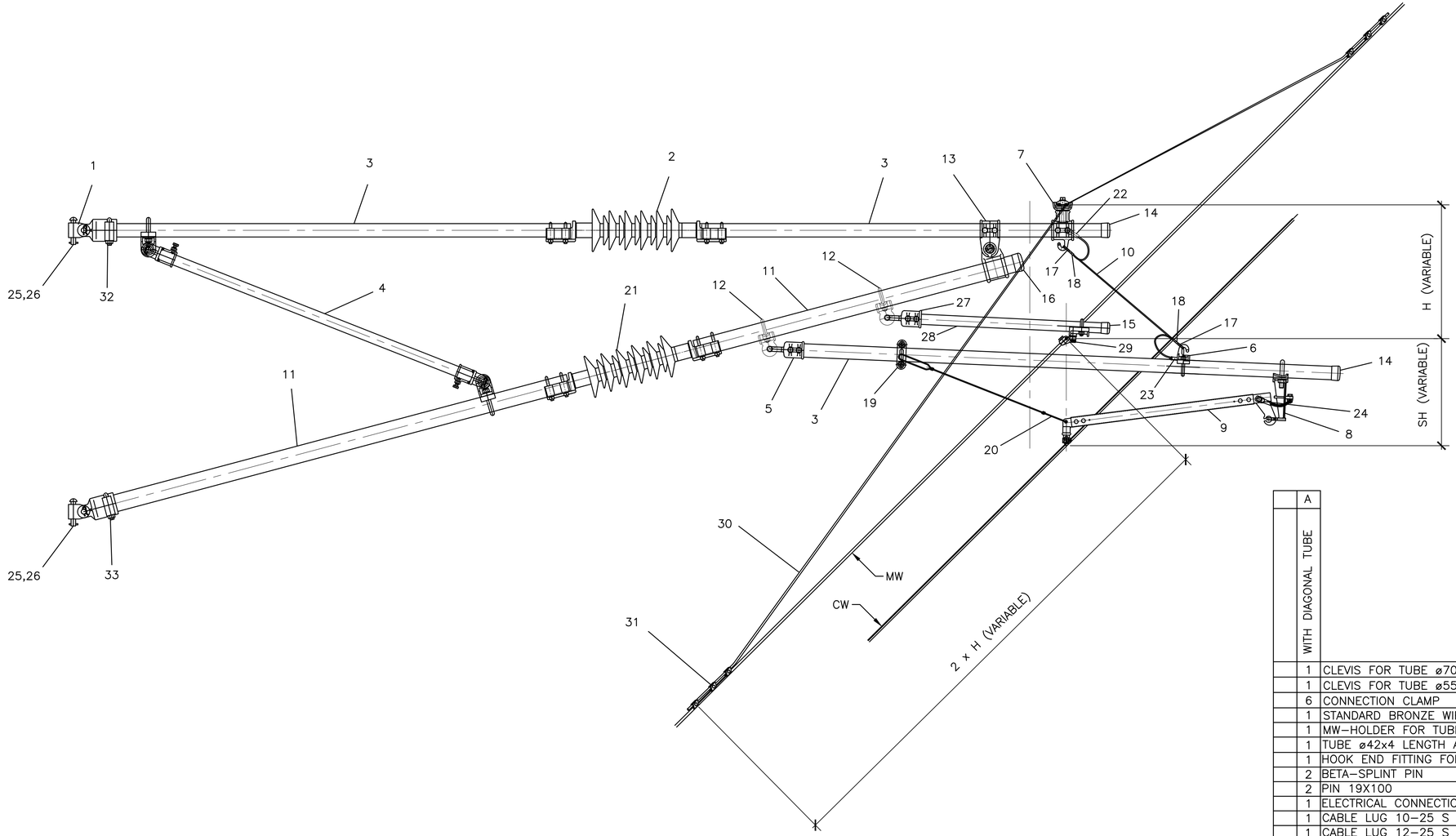
CA-34

CADD FILE NAME: SD-W6347

REV: EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6347



CANTILEVER PUSH OFF – LOW SYSTEM HEIGHT
OFFSET INSULATION – TWO INSULATORS

ELEVATION
NTS

	A	WITH DIAGONAL TUBE				
	1	CLEVIS FOR TUBE ø70		33		
	1	CLEVIS FOR TUBE ø55		32		
	6	CONNECTION CLAMP		31		
	1	STANDARD BRONZE WIRE 70/19	BZ II	30	DIN 48201	LENGTH AS USED
	1	MW–HOLDER FOR TUBE ø 42		29		
	1	TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	28		
	1	HOOK END FITTING FOR ø42		27		
	2	BETA–SPLINT PIN	1.4462	26		
	2	PIN 19X100	A2	25		
	1	ELECTRICAL CONNECTION		24		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	23		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	22		
	1	COMPOSITE INSULATOR CAP/CAP ø70		21		
	1	WIND STAY FOR STEADY ARM		20		
	1	EYE CLAMP FOR WIND STAY TUBE ø55		19		
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17		
	1	TUBE CAP ø70	PVC	16		
	1	TUBE CAP ø42	PVC	15		
	2	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø 55/70		13		
	2	EYE CLAMP FOR TUBE ø70		12		
	2	TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM LENGTH AS REQUIRED		9		
	1	DROP BRACKET FOR ø55		8		
	1	CATENARY SWIVEL CLAMP FOR ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR ø55		5		
	1	DIAGONAL TUBE ø42		4		
	3	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR CAP/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

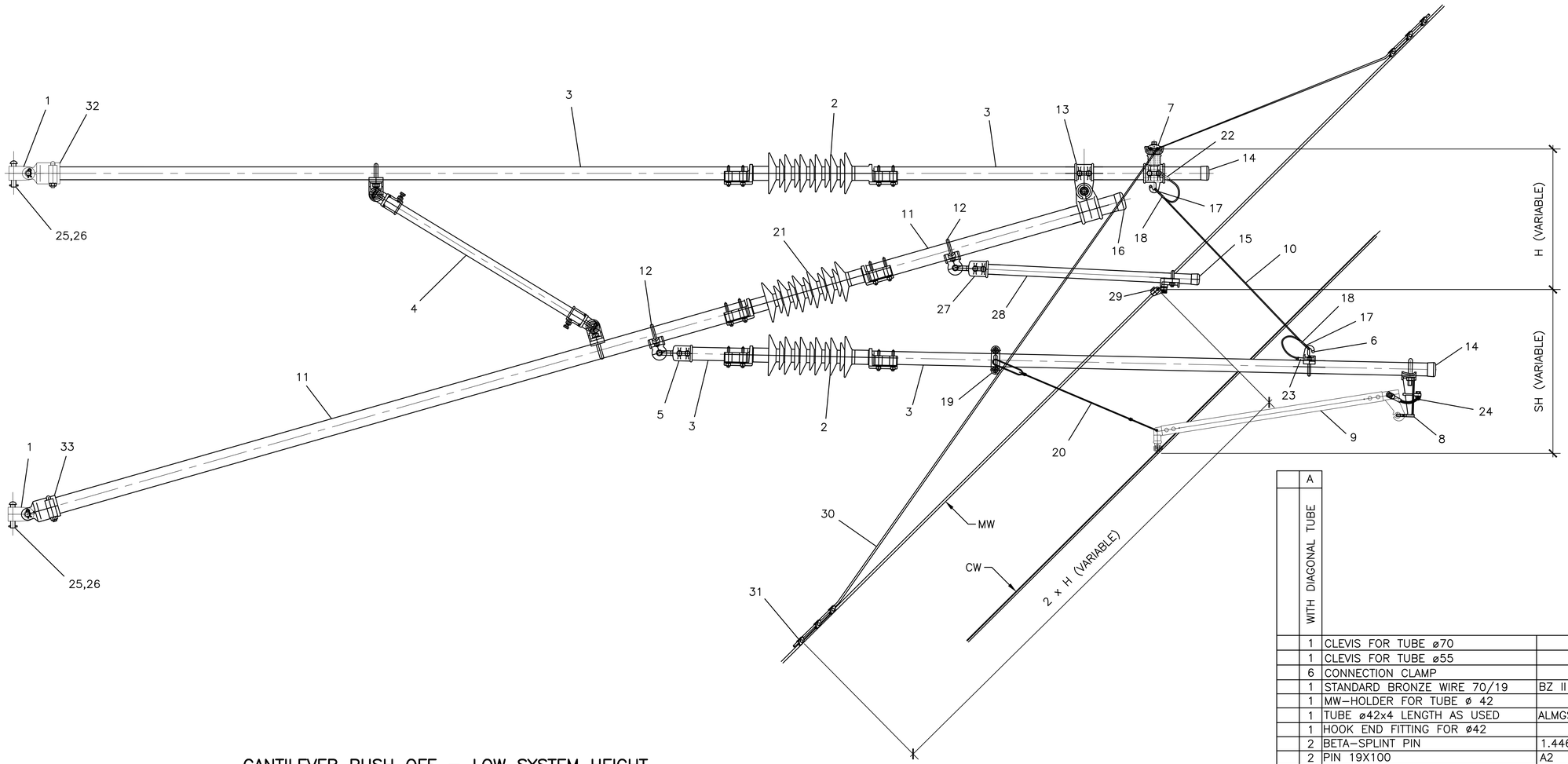
CANTILEVER PUSH OFF CA–35
LOW SYSTEM HEIGHT
OFFSET INSULATION / 2 INSULATORS

CADD FILE NAME: SD–W6348

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6348



CANTILEVER PUSH OFF – LOW SYSTEM HEIGHT
OFFSET INSULATION – THREE INSULATORS

ELEVATION
NTS

	A
	WITH DIAGONAL TUBE

PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
1	CLEVIS FOR TUBE ø70		33		
1	CLEVIS FOR TUBE ø55		32		
6	CONNECTION CLAMP		31		
1	STANDARD BRONZE WIRE 70/19	BZ II	30	DIN 48201	LENGTH AS USED
1	MW-HOLDER FOR TUBE ø 42		29		
1	TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	28		
1	HOOK END FITTING FOR ø42		27		
2	BETA-SPLINT PIN	1.4462	26		
2	PIN 19X100	A2	25		
1	ELECTRICAL CONNECTION		24		
1	CABLE LUG 10-25 S	CU TIN-PLATED	23		
1	CABLE LUG 12-25 S	CU TIN-PLATED	22		
1	COMPOSITE INSULATOR CAP/CAP ø70		21		
1	WIND STAY FOR STEADY ARM		20		
1	EYE CLAMP FOR WIND STAY TUBE ø55		19		
2	COMPRESS. SLEEVE B16	A2	18		
2	THIMBLE 35	A2	17		
1	TUBE CAP ø70	PVC	16		
1	TUBE CAP ø42	PVC	15		
2	TUBE CAP ø55	PVC	14		
1	TUBE CONNECTING BRACKET ø 55/70		13		
2	EYE CLAMP FOR TUBE ø70		12		
2	TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	11		
1	WIRE 6-SE-BK 1570 SZ	STAINLESS STEEL	10		
1	STEADY ARM LENGTH AS REQUIRED		9		
1	DROP BRACKET FOR ø55		8		
1	CATENARY SWIVEL CLAMP FOR ø55		7		
1	HOOK CLAMP FOR TUBE ø55		6		
1	HOOK END FITTING FOR ø55		5		
1	DIAGONAL TUBE ø42		4		
4	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
2	COMPOSITE INSULATOR CAP/CAP ø55		2		
2	SWIVEL JOINT		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

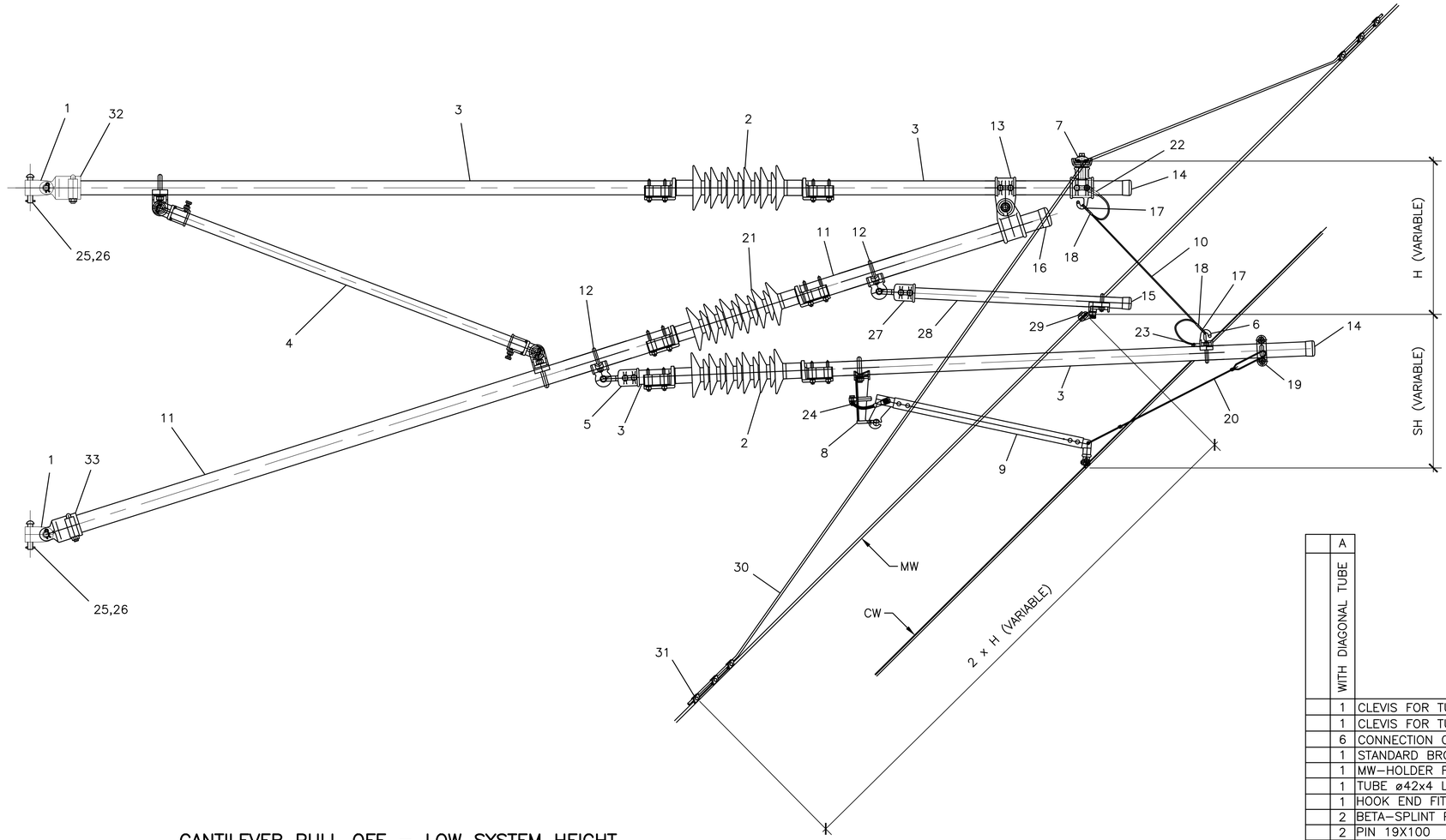
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

CANTILEVER PUSH OFF CA-36
LOW SYSTEM HEIGHT
OFFSET INSULATION / 3 INSULATORS

CADD FILE NAME: SD-W6349
REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD-W6349



CANTILEVER PULL OFF – LOW SYSTEM HEIGHT
OFFSET INSULATION – THREE INSULATORS

ELEVATION

NTS

	A					
	WITH DIAGONAL TUBE					
	1	CLEVIS FOR TUBE ø70		33		
	1	CLEVIS FOR TUBE ø55		32		
	6	CONNECTION CLAMP		31		
	1	STANDARD BRONZE WIRE 70/19	BZ II	30	DIN 48201	LENGTH AS USED
	1	MW–HOLDER FOR TUBE ø 42		29		
	1	TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	28		
	1	HOOK END FITTING FOR ø42		27		
	2	BETA–SPLINT PIN	1.4462	26		
	2	PIN 19X100	A2	25		
	1	ELECTRICAL CONNECTION		24		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	23		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	22		
	1	COMPOSITE INSULATOR CAP/CAP ø70		21		
	1	WIND STAY FOR STEADY ARM		20		
	1	EYE CLAMP FOR WIND STAY TUBE ø55		19		
	2	COMPRESS. SLEEVE B16	A2	18		
	2	THIMBLE 35	A2	17		
	1	TUBE CAP ø70	PVC	16		
	1	TUBE CAP ø42	PVC	15		
	2	TUBE CAP ø55	PVC	14		
	1	TUBE CONNECTING BRACKET ø 55/70		13		
	2	EYE CLAMP FOR TUBE ø70		12		
	2	TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	1	STEADY ARM LENGTH AS REQUIRED		9		
	1	DROP BRACKET FOR ø55		8		
	1	CATENARY SWIVEL CLAMP FOR ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	HOOK END FITTING FOR ø55		5		
	1	DIAGONAL TUBE ø42		4		
	4	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
	2	COMPOSITE INSULATOR CAP/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES	DESCRIPTION		MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

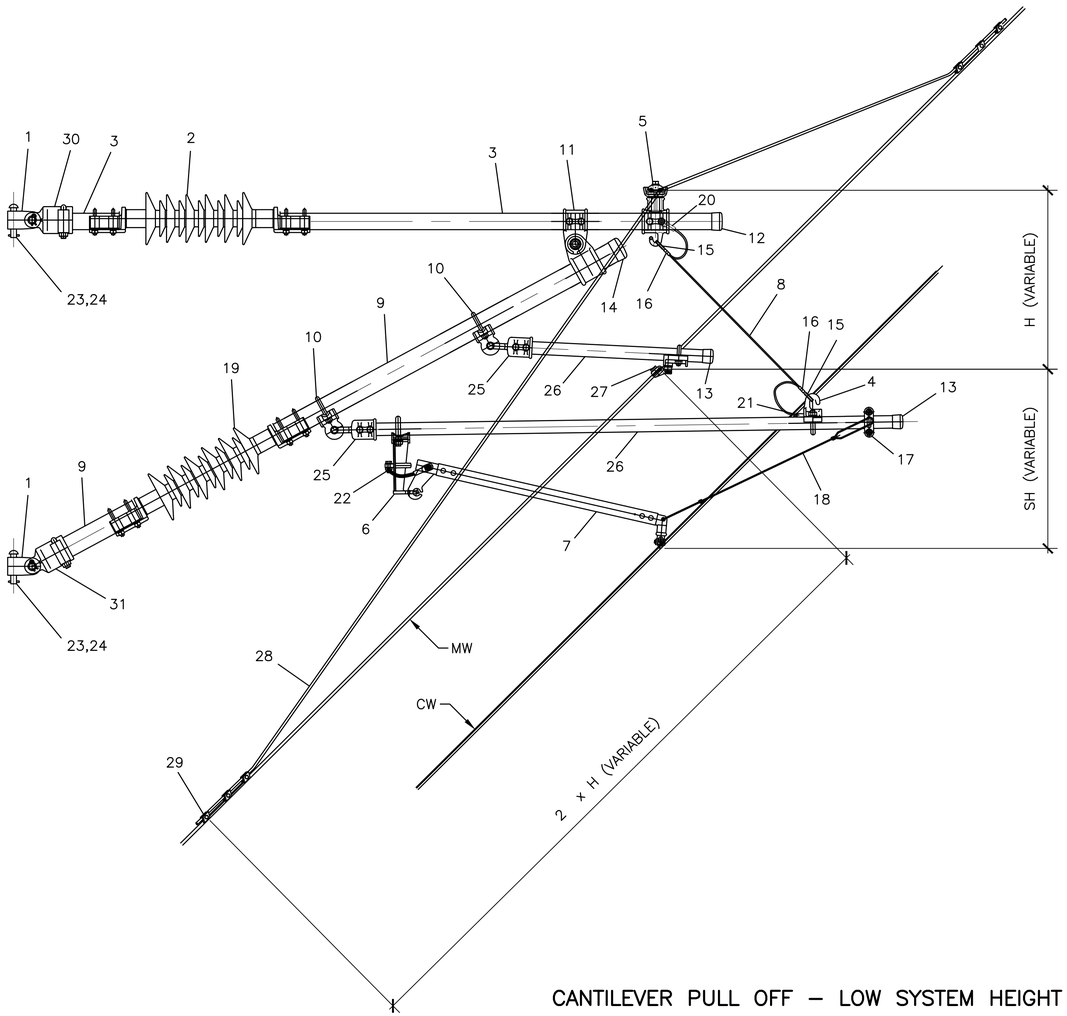
CANTILEVER PULL OFF CA–37
LOW SYSTEM HEIGHT
OFFSET INSULATION / 3 INSULATORS

CADD FILE NAME: SD–W6350

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6350



CANTILEVER PULL OFF – LOW SYSTEM HEIGHT
OFFSET INSULATION – TWO INSULATORS

ELEVATION

NTS

	A					
	1	CLEVIS FOR TUBE ø70		31		
	1	CLEVIS FOR TUBE ø55		30		
	6	CONNECTION CLAMP		29		
	1	STANDARD BRONZE WIRE 70/19	BZ II	28	DIN 48201	LENGTH AS USED
	1	MW–HOLDER FOR TUBE ø 42		27		
	2	TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	26		
	2	HOOK END FITTING FOR ø42		25		
	2	BETA–SPLINT PIN	1.4462	24		
	2	PIN 19X100	A2	23		
	1	ELECTRICAL CONNECTION		22		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	21		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	20		
	1	COMPOSITE INSULATOR CAP/CAP ø70		19		
	1	WIND STAY FOR STEADY ARM		18		
	1	EYE CLAMP FOR WIND STAY TUBE ø42		17		
	2	COMPRESS. SLEEVE B16	A2	16		
	2	THIMBLE 35	A2	15		
	1	TUBE CAP ø70	PVC	14		
	2	TUBE CAP ø42	PVC	13		
	1	TUBE CAP ø55	PVC	12		
	1	TUBE CONNECTING BRACKET ø 55/70		11		
	2	EYE CLAMP FOR TUBE ø70		10		
	2	TUBE ø70x6 LENGTH AS USED	ALMGSI1F31	9		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	8		
	1	STEADY ARM LENGTH AS REQUIRED		7		
	1	DROP BRACKET FOR ø42		6		
	1	CATENARY SWIVEL CLAMP FOR ø55		5		
	1	HOOK CLAMP FOR TUBE ø42		4		
	2	TUBE ø55x6 LENGTH AS USED	ALMGSI1F31	3		
	1	COMPOSITE INSULATOR CAP/CAP ø55		2		
	2	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

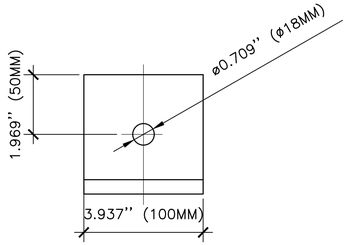
CANTILEVER PULL OFF CA–38
LOW SYSTEM HEIGHT
OFFSET INSULATION / 2 INSULATORS

CADD FILE NAME: SD–W6351

REV: | EDITION: SECOND

SCALE: NTS

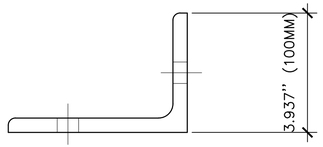
STANDARD DRAWING NO.: SD–W6351



PART 4

A — ELEVATION

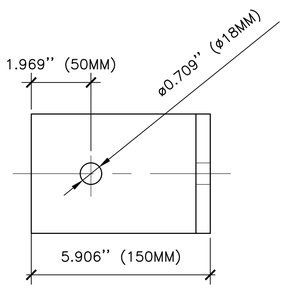
NTS



PART 4

ELEVATION

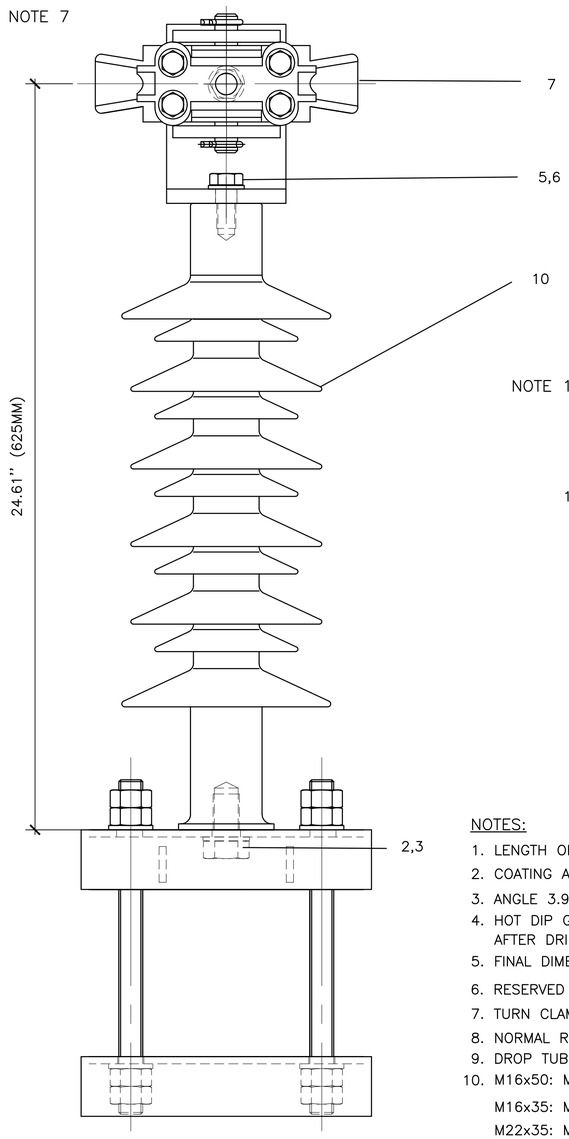
NTS



PART 4

PLAN

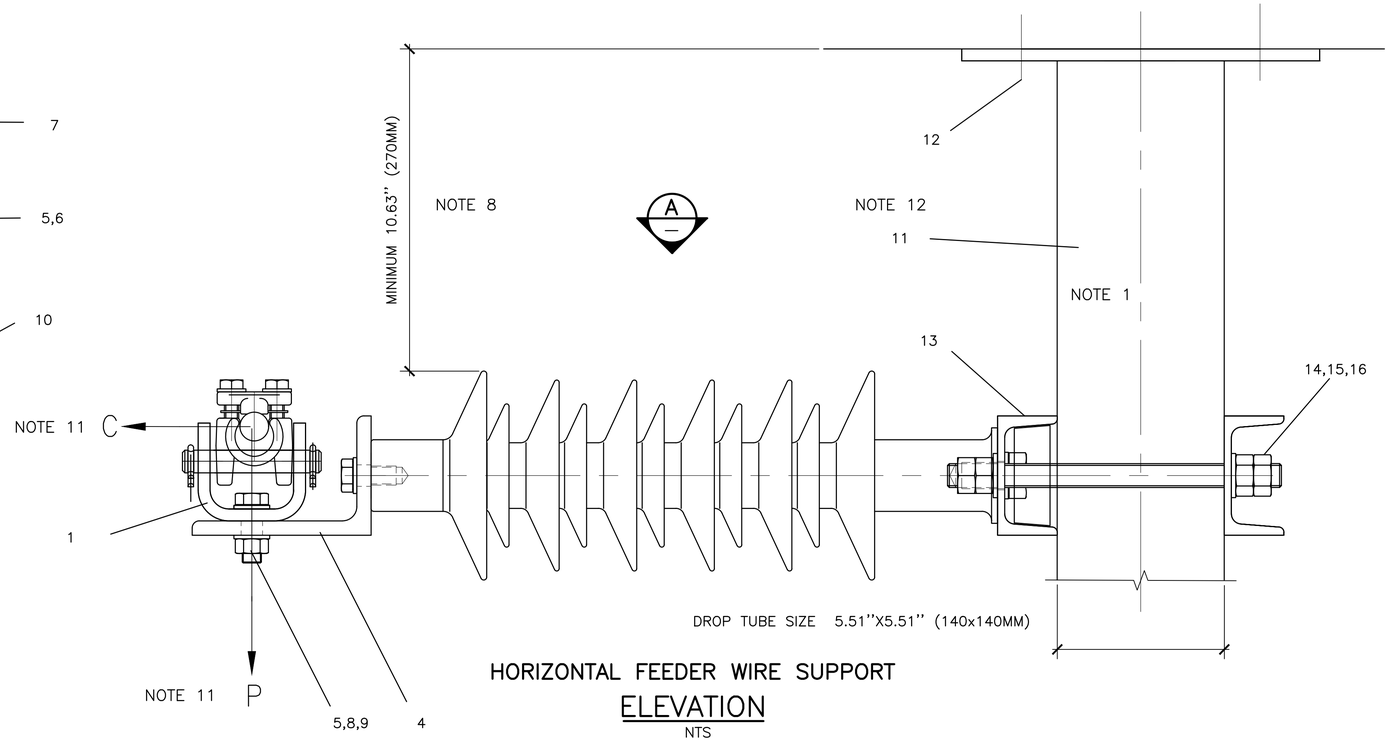
NTS



HORIZONTAL FEEDER WIRE SUPPORT

A — PLAN

NTS



HORIZONTAL FEEDER WIRE SUPPORT

ELEVATION

NTS

NOTES:

1. LENGTH OF DROP TUBE DEPENDS ON SITE CONDITIONS
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. ANGLE 3.937''x5.906''x0.472''
4. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
5. FINAL DIMENSIONING OF THE DROP TUBE BY DESIGNER
6. RESERVED
7. TURN CLAMP IN CORRECT POSITION
8. NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
9. DROP TUBE SIZE 5.51" (140MM)
10. M16x50: M0.629''x1.969''

    M16x35: M0.629''x1.378''

    M22x35: M0.866''x1.378''
11. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
12. PROVISION FOR EARTHING TO BE CONSIDERED AT DROP TUBE
13. REFER OCS DESIGN SPECIFICATION 34 30 73

B	A					
–	4	WASHER 3/4"		16		NOTE 13
–	8	NUT 3/4"		15		NOTE 13
–	2	STUD BOLT 3/4"		14		NOTE 13
–	1	BRACKET FOR HORIZONTAL FEEDER WIRE SUPPORT		13		
–	4	ANCHOR BOLTS		12		NOTE 6
–	1	DROP TUBE		11		NOTE 1,4,5,6,12
–	1	INSULATOR		10		
–	1	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 10
–	1	FEEDER WIRE CLAMP	G–AL	7		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 10
–	3	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	1	SUPPORT ANGLE 100x150x12		4	DIN EN 10056–1	NOTES 3 AND 4
–	1	HEXAGON HEAD SCREW M22X35	8.8 NOTE2	3	DIN EN ISO 7089	
–	1	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	1	BRACKET FOR FEEDER WIRE CLAMP		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

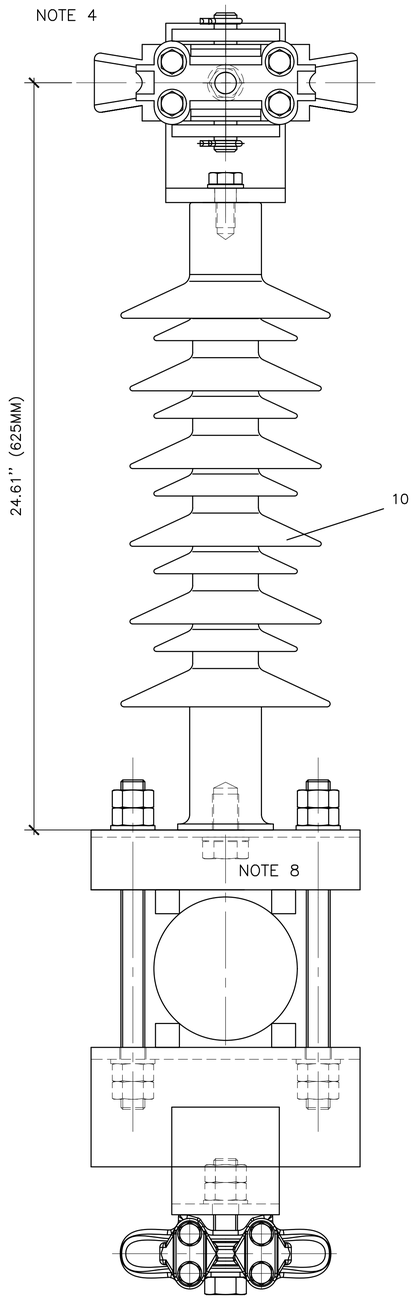
HORIZONTAL FEEDER WIRE SUPPORT UNDER STRUCTURE AT DROP TUBE

CADD FILE NAME: SD–W6353

REV: | EDITION: SECOND

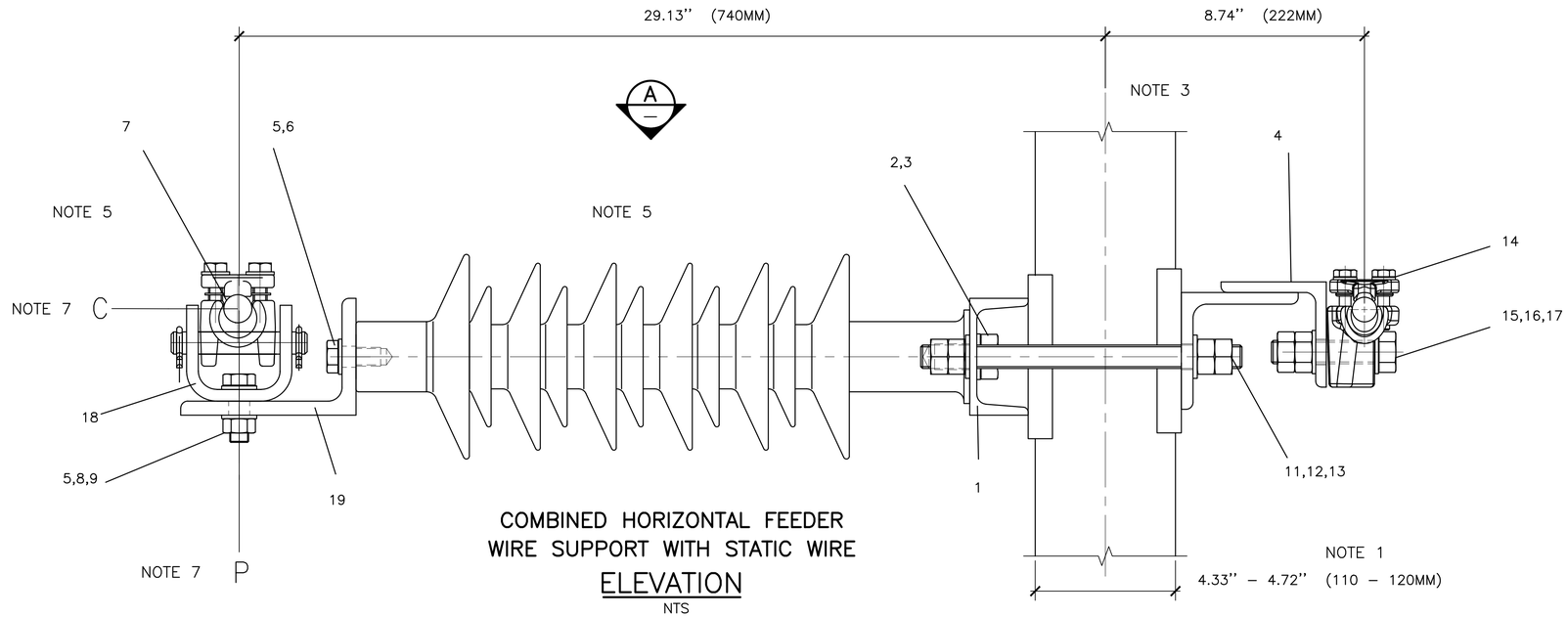
SCALE: NTS

STANDARD DRAWING NO.: SD–W6353



COMBINED HORIZONTAL FEEDER
WIRE SUPPORT WITH STATIC WIRE

A – PLAN
NTS



COMBINED HORIZONTAL FEEDER
WIRE SUPPORT WITH STATIC WIRE
ELEVATION
NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 11.02'' (280MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. FINAL DIMENSIONING OF THE DROP TUBE BY CONTRACTOR
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
   M22x100: M0.866''x3.94''
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
8. FOR INSTALLING PART 2 / 3 USE A RATCHET WITH LONGNUT BEFORE INSTALLING CONSTRUCTION TO DROP TUBE

B	A					
–	1	SUPPORT ANGLE		19		PART 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		18		
–	3	WASHER FOR 3/4"		17		
–	2	NUT 3/4"		16		
–	1	HEX. HEAD SCREW 3/4" X 4"		15		
–	1	ELECTRICAL CLAMP FOR STATIC WIRE		14	B681011AX	
–	4	WASHER 3/4"		13		
–	2	STUD BOLT 3/4"		12		
–	8	NUT 3/4"		11		
–	1	INSULATOR		10		
–	1	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 6
–	1	FEEDER WIRE CLAMP	G–AL	7		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 6
–	3	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	1	BACK ANGLE WITH EARTH ANGLE		4		
–	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	1	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	1	INSULATOR CONNECTION PART		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

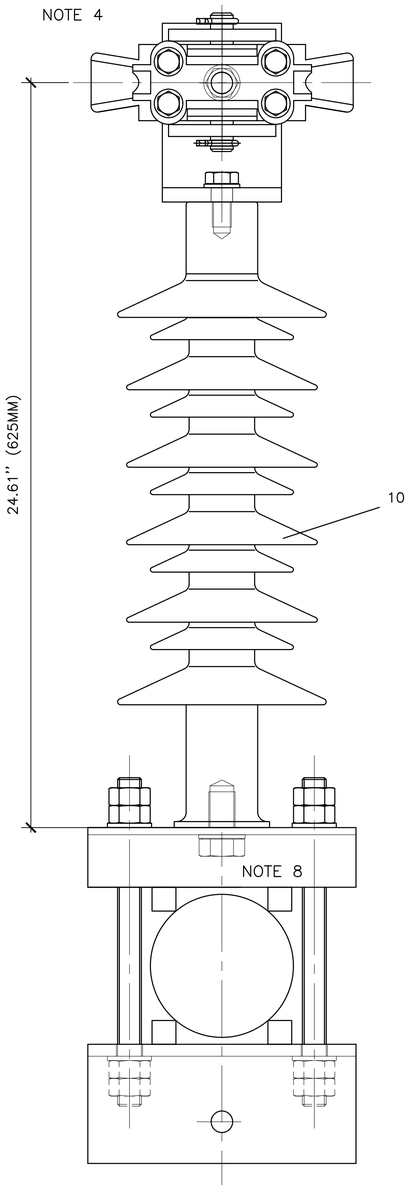
COMBINED FEEDER WIRE SUPPORT WITH STATIC WIRE AT ROUND DROP TUBE Ø4.33" – 4.72" (110–120MM)

CADD FILE NAME: SD–W6354

REV: | EDITION: SECOND

SCALE: NTS

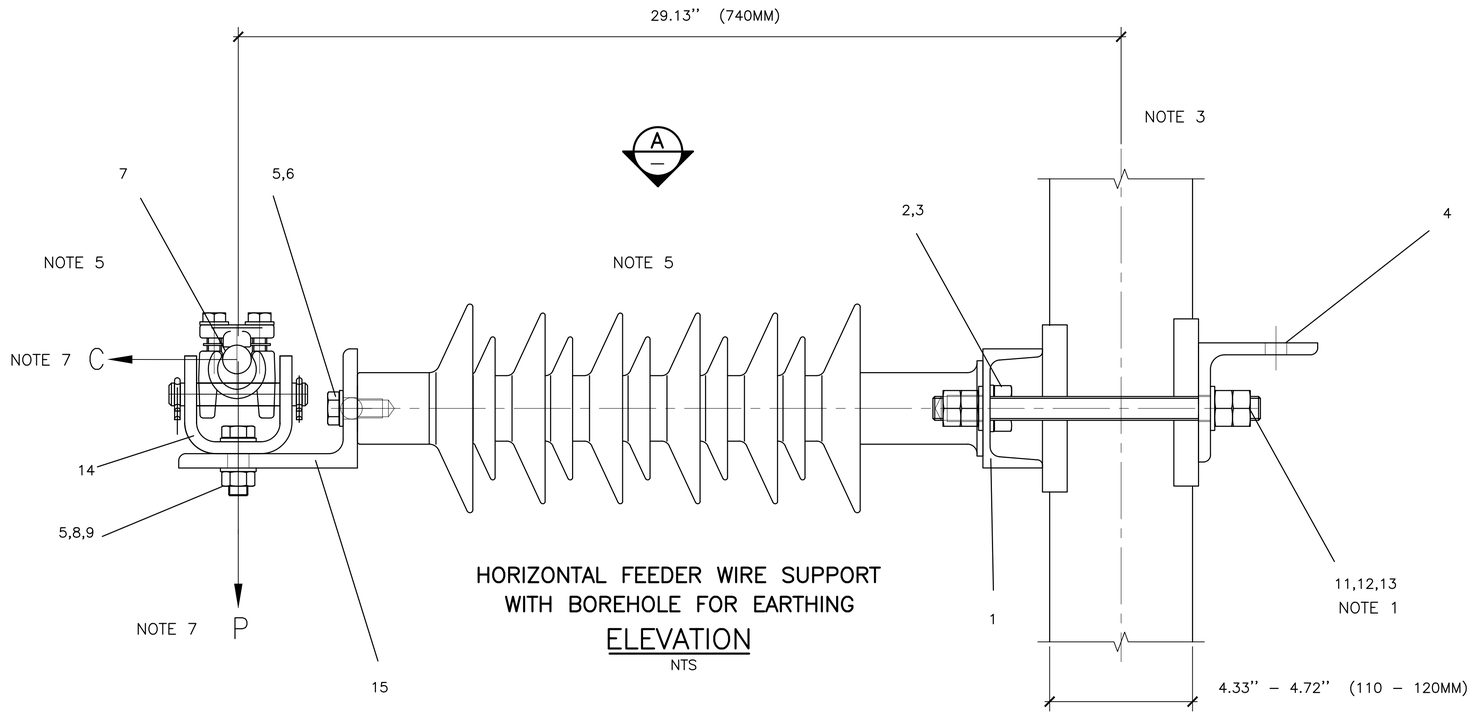
STANDARD DRAWING NO.: SD–W6354



HORIZONTAL FEEDER WIRE SUPPORT
WITH BOREHOLE FOR EARTHING

A – PLAN

NTS



HORIZONTAL FEEDER WIRE SUPPORT
WITH BOREHOLE FOR EARTHING

ELEVATION

NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 11.02'' (280MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. FINAL DIMENSIONING OF THE DROP TUBE BY CONTRACTOR
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
8. FOR INSTALLING PART 2 / 3 USE A RATCHET WITH LONGNUT BEFORE INSTALLING CONSTRUCTION TO DROP TUBE
9. DROP TUBE DIAMETER ACCORDING TO DRAWING SD–W6104 / SD–W6105 ø4.33'' – 4.72'' (110–120MM)

B	A					
–	1	SUPPORT ANGLE		15		PART 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		14		
–	4	WASHER 3/4"		13		
–	2	STUD BOLT 3/4"		12		
–	8	NUT 3/4"		11		
–	1	INSULATOR		10		
–	1	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 6
–	1	FEEDER WIRE CLAMP	G–AL	7		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 6
–	3	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	1	BACK ANGLE WITH BOREHOLE		4		
–	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	1	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	1	INSULATOR CONNECTION PART		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

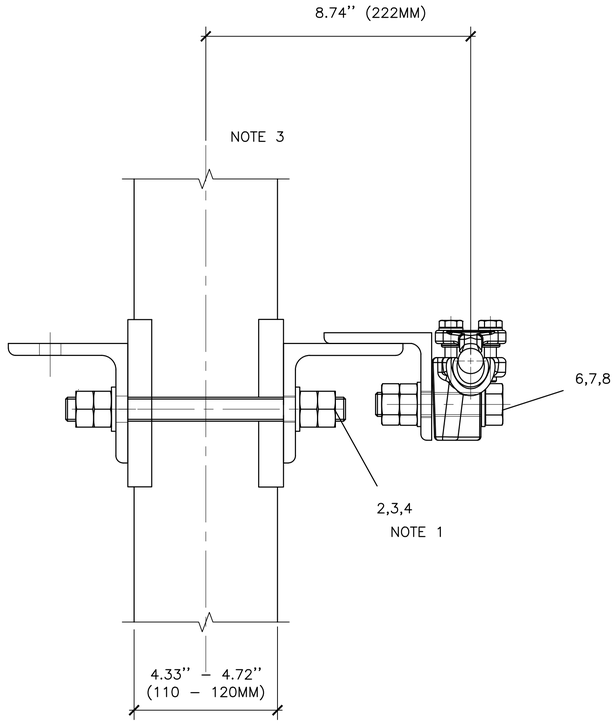
HORIZONTAL FEEDER WIRE SUPPORT
WITH BOREHOLE FOR EARTHING
TUBE Ø4.33" – 4.72" (110–120MM)

CADD FILE NAME: SD–W6355

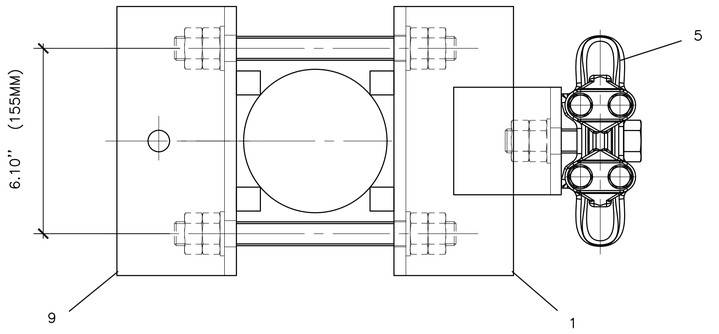
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6355



SINGLE STATIC
WIRE SUPPORT
ELEVATION
NTS



SINGLE STATIC
WIRE SUPPORT
PLAN
NTS

NOTES:
1. LENGTH OF ANCHOR BOLT 9.45'' (240 MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. FINAL DIMENSIONING OF THE DROP TUBE BY THE DESIGNER

B	A					
	1	BACK ANGLE WITH EARTHING BOREHOLE		9		
	3	WASHER FOR 3/4"		8		
	2	NUT 3/4"		7		
	1	HEX. HEAD SCREW 3/4" X 4"		6		
	1	ELECTRICAL CLAMP FOR STATIC WIRE		5	B681011AX	
	4	WASHER 3/4"		4		
	2	STUD BOLT 3/4"		3		
	8	NUT 3/4"		2		
	1	BACK ANGLE WITH EARTH ANGLE		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

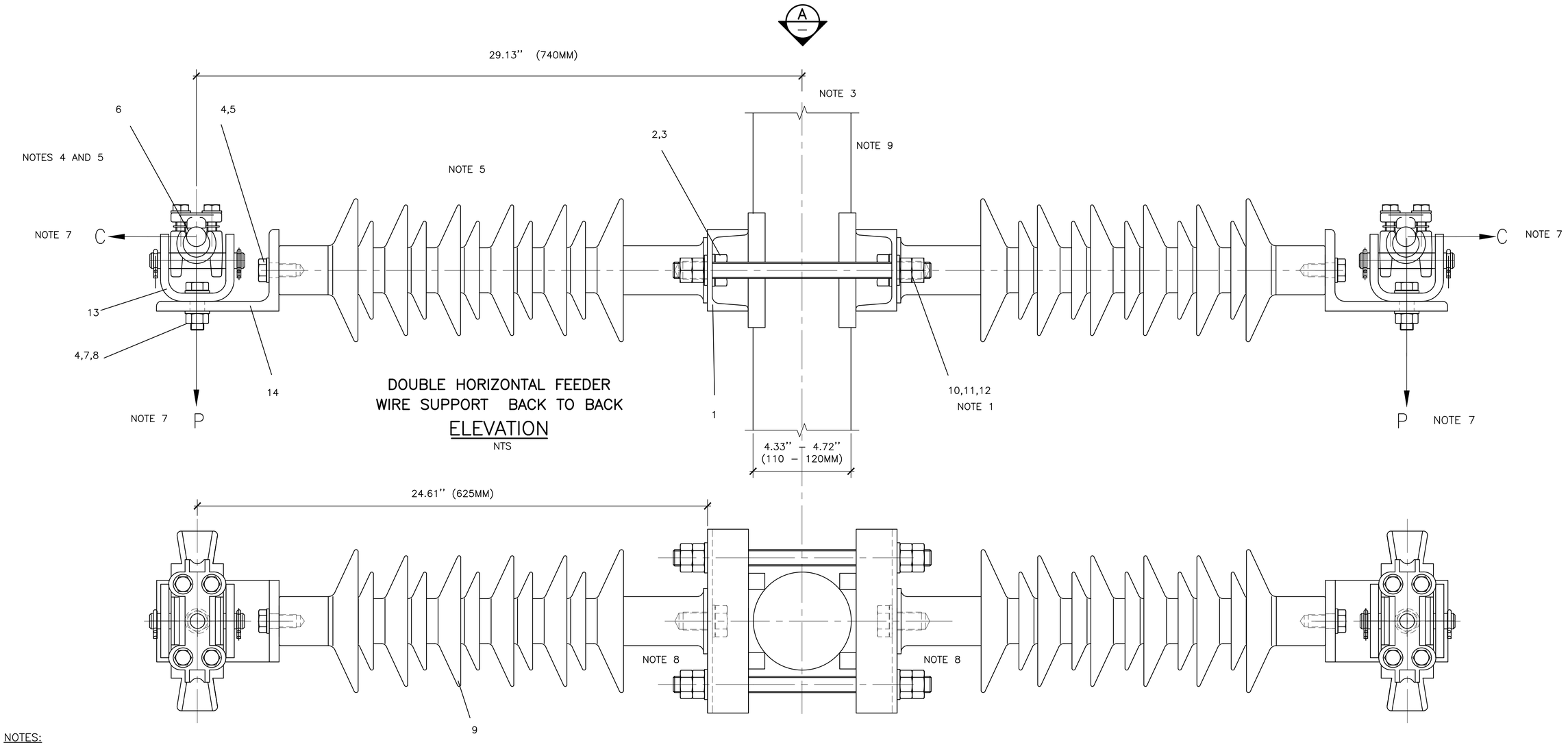
SINGLE STATIC
WIRE SUPPORT
TUBE ø4.33" – 4.72" (110–120MM)

CADD FILE NAME: SD–W6356

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6356



DOUBLE HORIZONTAL FEEDER
WIRE SUPPORT BACK TO BACK
ELEVATION
NTS

DOUBLE HORIZONTAL FEEDER
WIRE SUPPORT BACK TO BACK
A – PLAN
NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 12.60'' (320MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. FINAL DIMENSIONING OF THE DROP TUBE BY DESIGNER
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
8. FOR INSTALLING PART 2 / 3 USE A RATCHET WITH LONGNUT BEFORE INSTALLING CONSTRUCTION TO DROP TUBE
9. PROVISION FOR EARTHING TO BE CONSIDERED AT DROP TUBE

B	A						
–	2	SUPPORT ANGLE		14		PART 4
–	2	BRACKET FOR FEEDER WIRE CLAMP		13		
–	4	WASHER 3/4"		12		
–	2	STUD BOLT 3/4"		11		
–	8	NUT 3/4"		10		
–	2	INSULATOR		9		
–	2	NUT M16	8 NOTE2	8	DIN EN ISO 4032	
–	2	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	7	DIN EN ISO 4017	NOTE 6
–	2	FEEDER WIRE CLAMP	G–AL	6		
–	2	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	5	DIN EN ISO 4017	NOTE 6
–	6	WASHER M16	200HV NO.2	4	DIN EN ISO 7089	
–	2	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	2	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	2	INSULATOR CONNECTION PART		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

DOUBLE HORIZONTAL FEEDER
WIRE SUPPORT BACK TO BACK
TUBE ø4.33" – 4.72" (110–120MM)

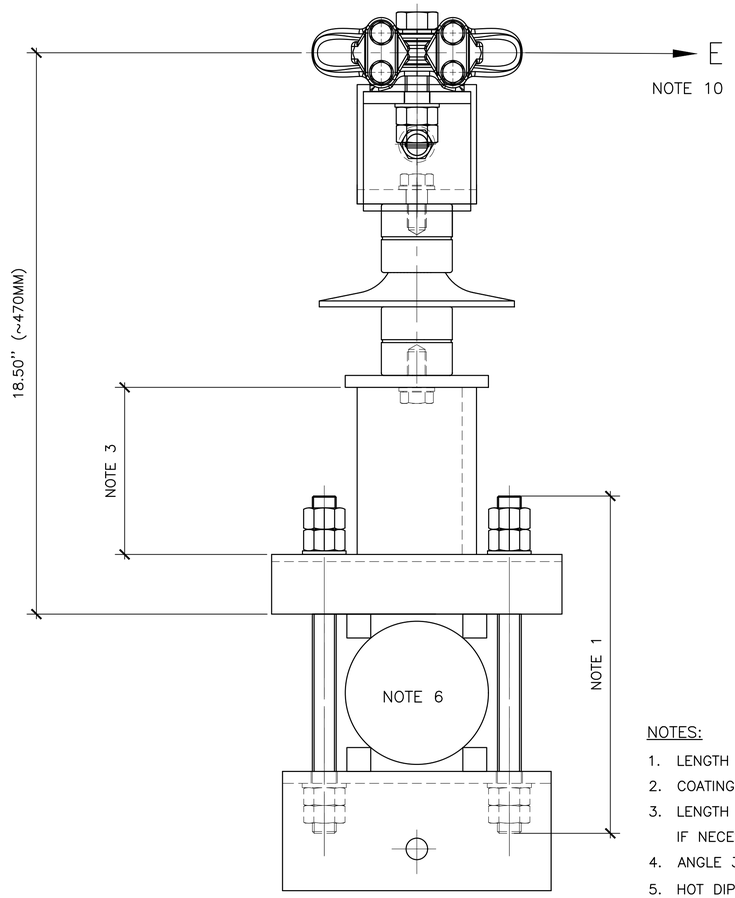
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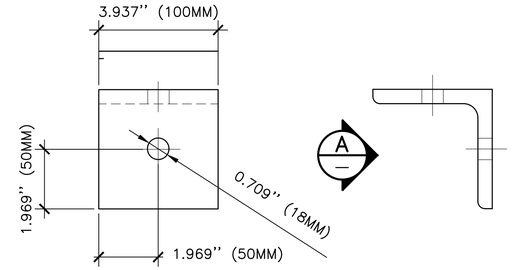
EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6357

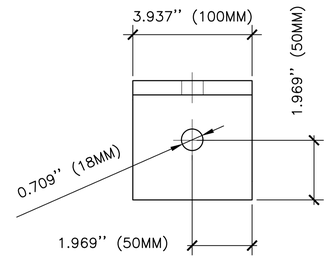


INSULATED HORIZONTAL
STATIC WIRE SUPPORT
PLAN
NTS

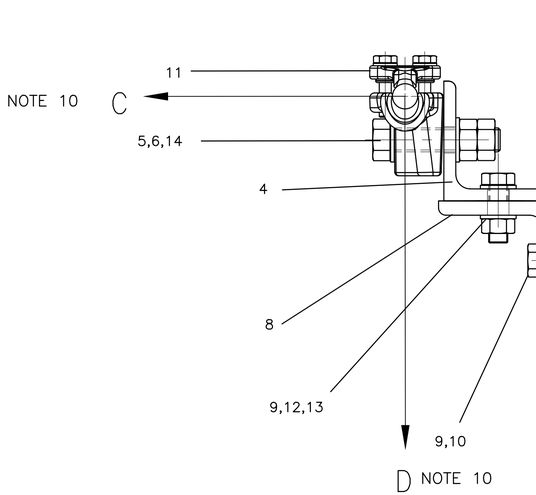


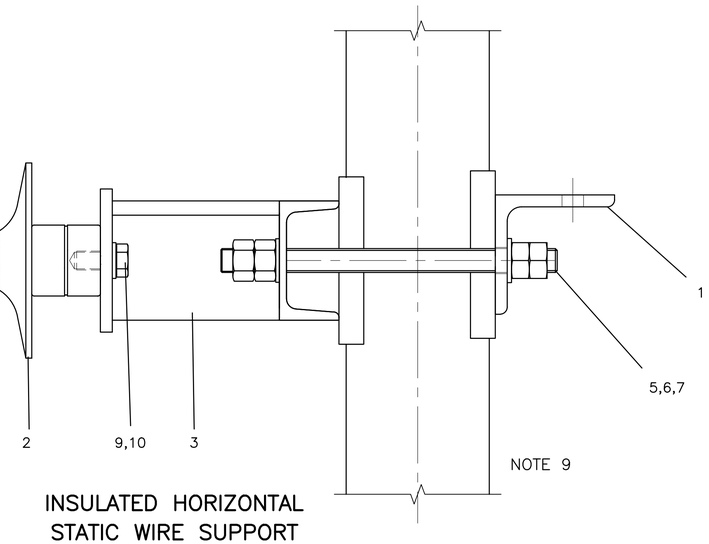
PART 8
PLAN
NTS

PART 8
ELEVATION
NTS



PART 8
A – ELEVATION
NTS





INSULATED HORIZONTAL
STATIC WIRE SUPPORT
ELEVATION
NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 280 MM (11.02'')
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. LENGTH OF ANGLE L = 140MM (5.51'') OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. DROP TUBE DIAMETER ø110–120MM (4.33'' – 4.72'')
7. ALL EDGES DEBURRED
8. TURN CLAMP IN CORRECT POSITION
9. FINAL DIMENSIONING OF THE DROP TUBE BY CONTRACTOR
10. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	1	HEX. HEAD SCREW 3/4" X 4"		14		
–	1	NUT M16	8 NOTE2	13	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	12	DIN EN ISO 4017	
–	1	STATIC WIRE CLAMP	G–AL	11		
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017	
–	4	WASHER M16	200HV NOTE 2	9	DIN EN ISO 7089	
–	1	ANGLE 100x100x12		8	DIN EN 10056–1	NOTES 4 AND 5 AND 7
–	2	STUD BOLT 3/4"		7		
–	10	NUT 3/4"		6		
–	6	WASHER FOR 3/4"		5		
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 3
–	1	COMPOSITE INSULATOR 130MM		2		
–	1	BACK ANGLE		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

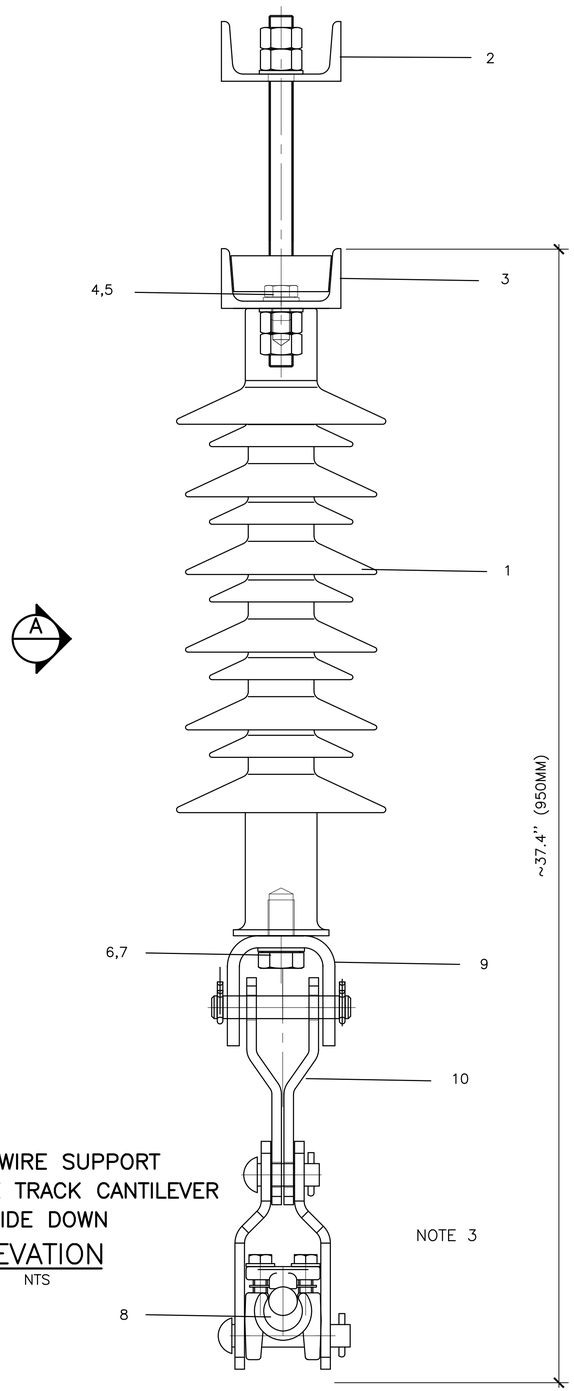
Caltrain

ENGINEERING STANDARD DRAWINGS

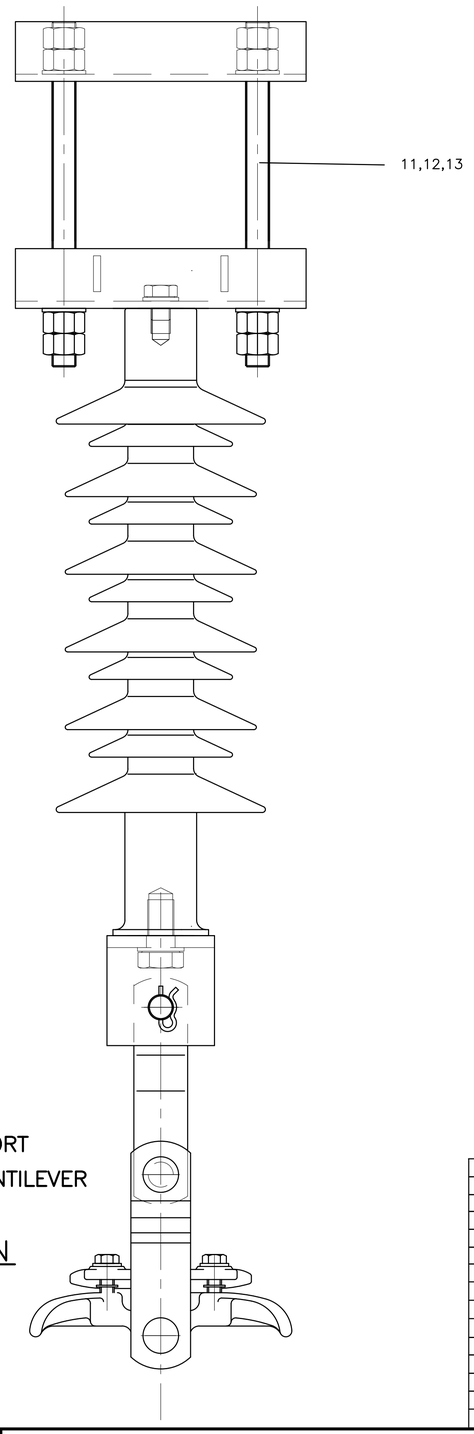
OVERHEAD CONTACT SYSTEM

INSULATED HORIZONTAL
STATIC WIRE SUPPORT
TUBE ø4.33" – 4.72" (110 – 120MM)

CADD FILE NAME: SD–W6358
REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6358



FEEDER WIRE SUPPORT
FOR MULTIPLE TRACK CANTILEVER
UPSIDE DOWN
ELEVATION
NTS



FEEDER WIRE SUPPORT
FOR MULTIPLE TRACK CANTILEVER
UPSIDE DOWN
A – ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON SIZE OF STEEL PART PROFILE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. USE ONLY FOR NO OR VERY LOW RADIAL FORCE.
   FOR LOW AND HIGH RADIAL FORCE V–ARRANGEMENT MUST BE DESIGNED IF NECESSARY

B	A					
–	4	WASHER FOR 3/4"		13		
–	8	NUT 3/4"		12		
–	2	STUD BOLT 3/4"		11		
–	2	CRANKED PLATE		10		
–	1	BRACKET FOR FEEDER WIRE CLAMP		9		
–	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	8		
–	1	WASHER M22	200HV NOTE2	7	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	6	DIN EN ISO 4017	
–	1	WASHER M16	200HV NOTE2	5	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	4	DIN EN ISO 4017	
	1	U–PROFILE FOR INSULATOR		3		NOTE 1
–	1	U–PROFILE FOR CLAMPING		2		NOTE 1 PART 2
–	1	COMPOSITE INSULATOR		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
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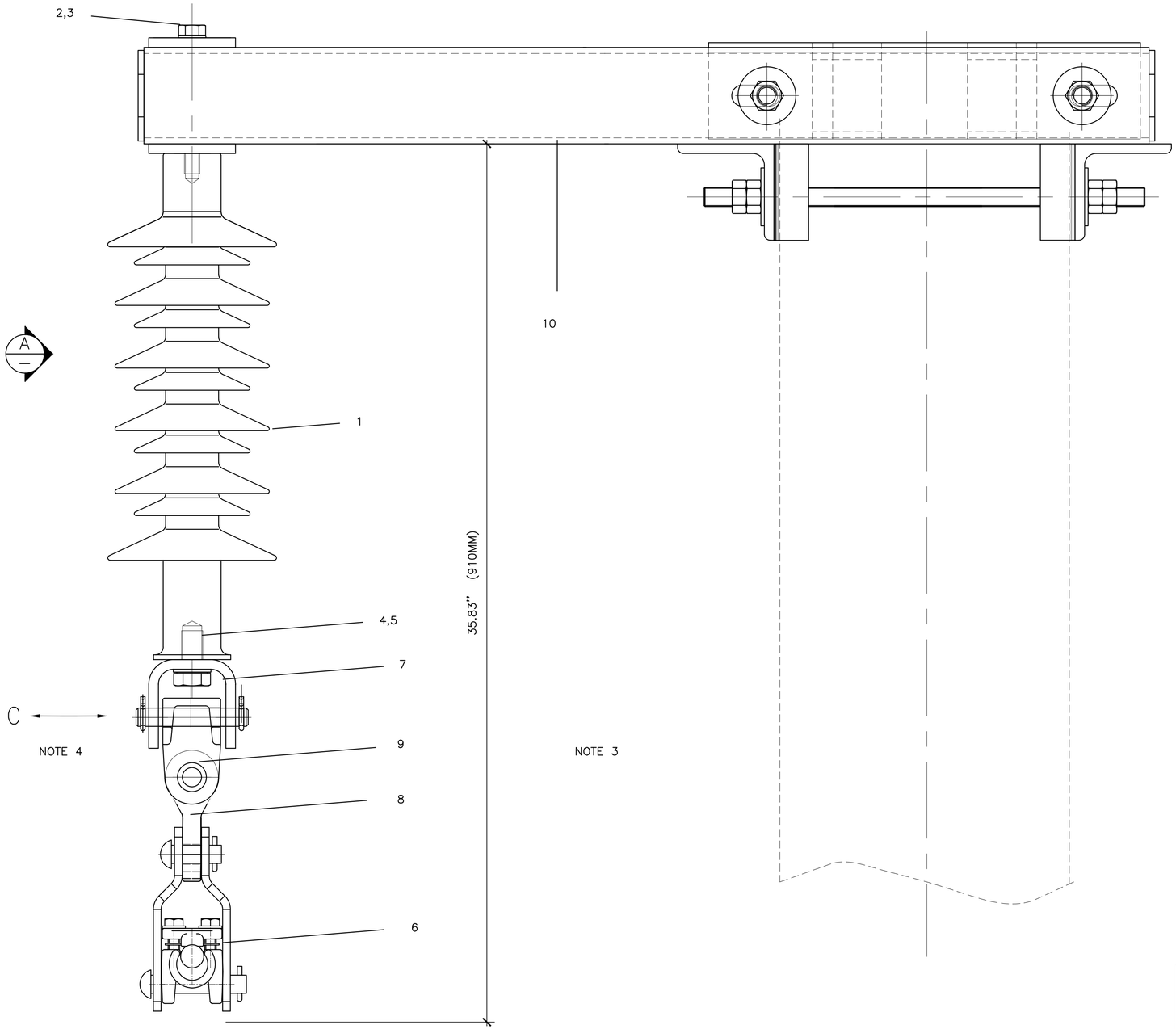
Caltrain

ENGINEERING STANDARD DRAWINGS

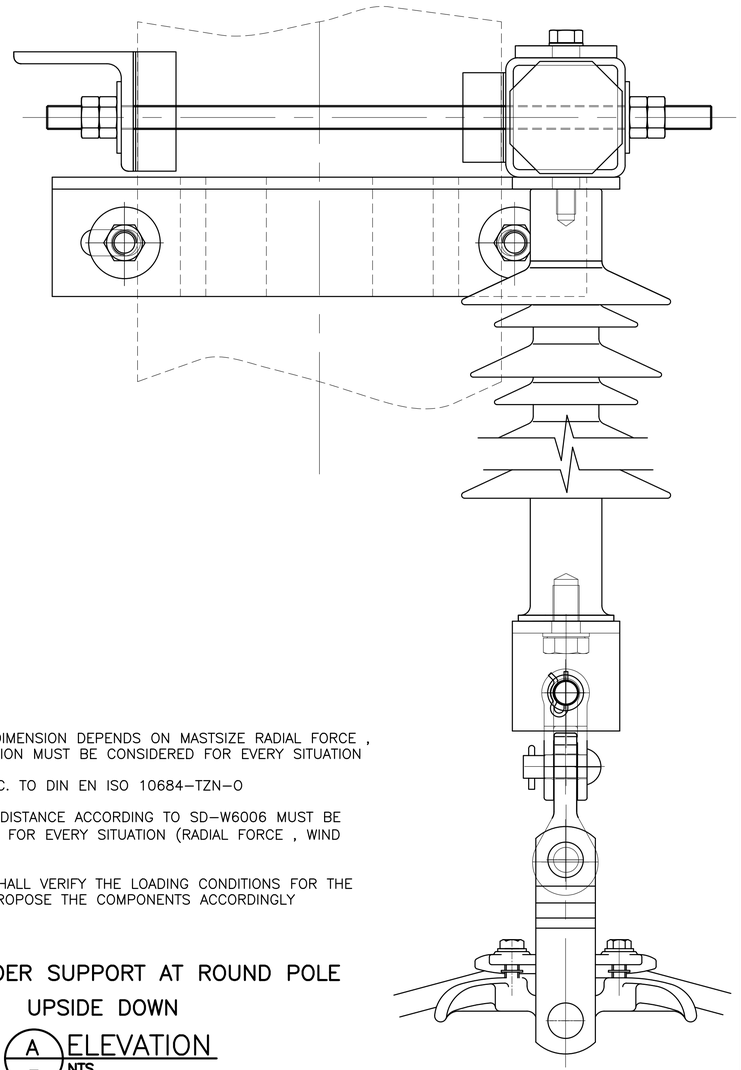
OVERHEAD CONTACT SYSTEM

FEEDER WIRE SUPPORT
FOR MULTIPLE TRACK CANTILEVER
UPSIDE DOWN

CADD FILE NAME: SD–W6359
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6359



SINGLE FEEDER SUPPORT AT ROUND POLE
UPSIDE DOWN
ELEVATION
NTS



NOTES:

1. LENGTH / DIMENSION DEPENDS ON MASTSIZE RADIAL FORCE , WIND DEVIATION MUST BE CONSIDERED FOR EVERY SITUATION
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. ELECTRICAL DISTANCE ACCORDING TO SD–W6006 MUST BE CONSIDERED FOR EVERY SITUATION (RADIAL FORCE , WIND DEVIATION)
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY

SINGLE FEEDER SUPPORT AT ROUND POLE
UPSIDE DOWN
A – ELEVATION
NTS

B	A					
–	1	SUPPORTING STRUCTURE		10		NOTE 1
–	1	SWIVEL JOINT		9		
–	1	TWISTED EYE–EYE CONNECTOR		8		
–	1	BRACKET FOR FEEDER WIRE CLAMP		7		
–	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	6		
–	1	WASHER M22	200HV NOTE2	5	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	4	DIN EN ISO 4017	
–	1	WASHER M16	200HV NOTE2	3	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x140	8.8 NOTE2	2	DIN EN ISO 4017	
–	1	COMPOSITE INSULATOR		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

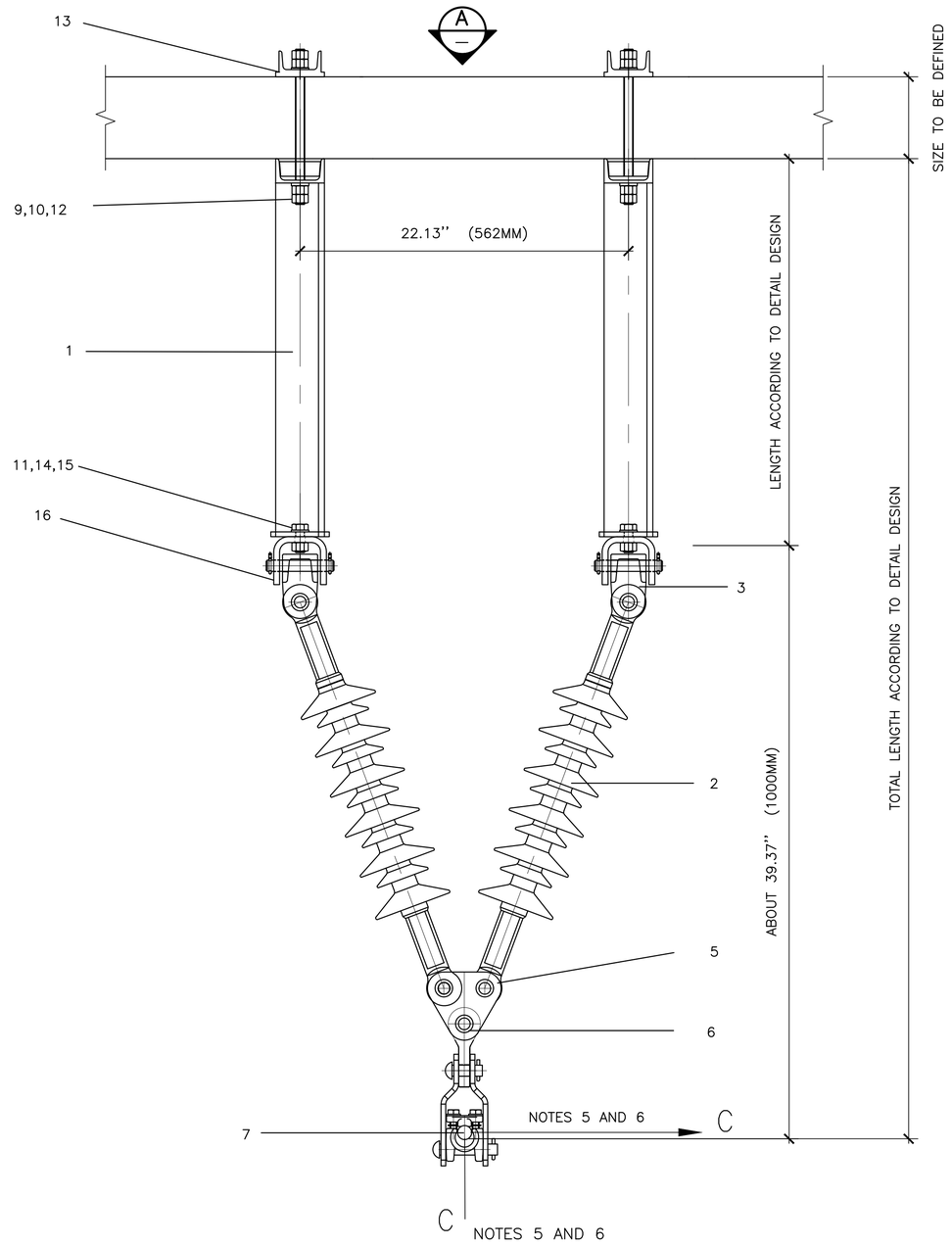
FEEDER WIRE SUPPORT
AT ROUND POLE
UPSIDE DOWN

CADD FILE NAME: SD–W6360

REV: | EDITION: SECOND

SCALE: NTS

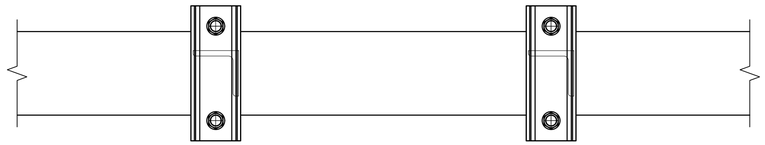
STANDARD DRAWING NO.: SD–W6360



OFFSET V–FEEDER SUPPORT, COMPLETE
FOR MULTIPLE TRACK CANTILEVER

ELEVATION

NTS



OFFSET V–FEEDER SUPPORT, COMPLETE
FOR MULTIPLE TRACK CANTILEVER

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON MULTIPLE TRACK CANTILEVER BEAM SIZE
2. LENGTH DEPENDS ON DETAIL DESIGN
3. COATING ACC. TO DIN EN ISO 10684–TZN–O
4. DESIGN DEPENDS ON MULTIPLE TRACK CANTILEVER BEAM SIZE
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
6. STRUCTURAL CHECK REQUIRED FOR LOADS > 1124 LBF (5 KN)

	FOR MULTIPLE TRACK CANTILEVER					
B	A					
–	2	SHACKLE, BOLTS AND PINS		16		
–	2	5/8"x2" HEXAGON NUT		15	HN625	
–	2	LOCK WASHER		14	W750L	
–	2	M50E U–PROFILE FOR FEEDER WIRE SUPPORT ON MULTIPLE TRACK CANTILEVER		13		NOTES 1
–	4	STUD BOLT 3/4"		12		NOTES 1
–	2	HEXAGON HEAD SCREW 5/8"		11	HB6252	NOTE 3
–	16	HEXAGON NUT 3/4"		10		
–	8	WASHER 3/4"		9		
–	0	SUPPORTING ANGLE		8		NOT USED
–	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	7		
–	1	TWISTED EYE–EYE CONNECTOR		6		
–	1	THREE HOLE TRIANGULAR CLEVIS LINK		5		
–	0	BOLT ø19x100 WITH B–SPLINT		4		NOT USED
–	2	SWIVEL JOINT		3		
–	2	COMPOSITE INSULATOR		2		
–	2	M60E FEEDER WIRE SUPPORT ADAPTER AT MULTIPLE TRACK CANTILEVER		1		NOTE 2,4
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

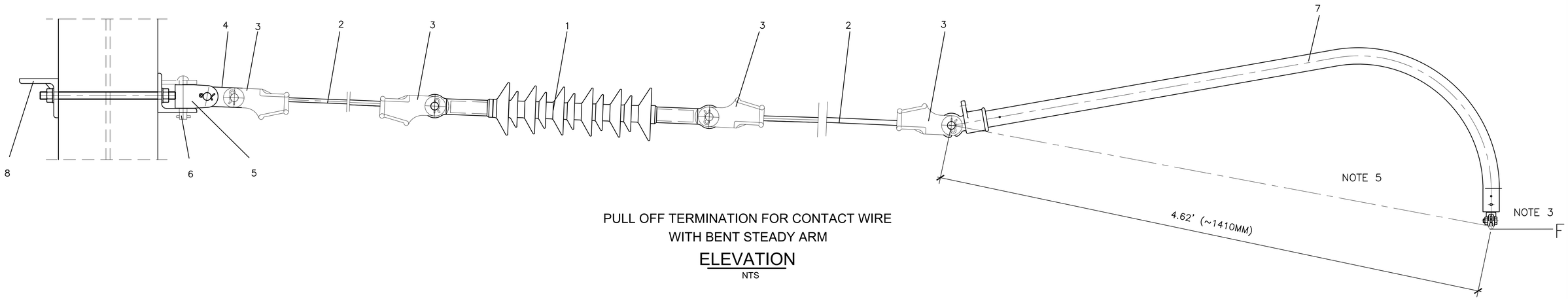
OFFSET V–FEEDER SUPPORT
COMPLETE
FOR MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6361

REV: | EDITION: SECOND

SCALE: NTS

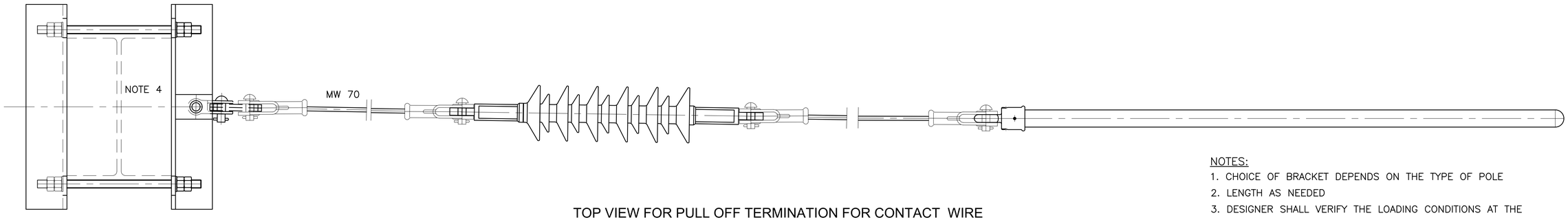
STANDARD DRAWING NO.: SD–W6361



PULL OFF TERMINATION FOR CONTACT WIRE
WITH BENT STEADY ARM

ELEVATION

NTS



TOP VIEW FOR PULL OFF TERMINATION FOR CONTACT WIRE
WITH BENT STEADY ARM

PLAN

NTS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
4. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
5. INCLINATION TO BE CALCULATED IN DETAIL DESIGN – DEPENDING ON RADIAL FORCE AND DROPPER DISTANCE
6. PART 3 MAY BE SUBSTITUTED FOR STRANDVISE

B	A					
	1	BRACKET FOR FIXED TERMINATION		8	TO BE DEFINED	NOTE 1
	1	BENT STEADY ARM		7		NOTE 3
	1	PIN ø19X100 WITH ß-SPLINT PIN	A2	6		
	1	SWIVEL JOINT		5		
	2	LINK PLATE	AL	4		
	4	WEDGE TYPE DEAD END CLAMP		3		
	2	MW BZ II 70/19		2	DIN 48201	NOTE 2
	1	INSULATOR TYPE 3		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

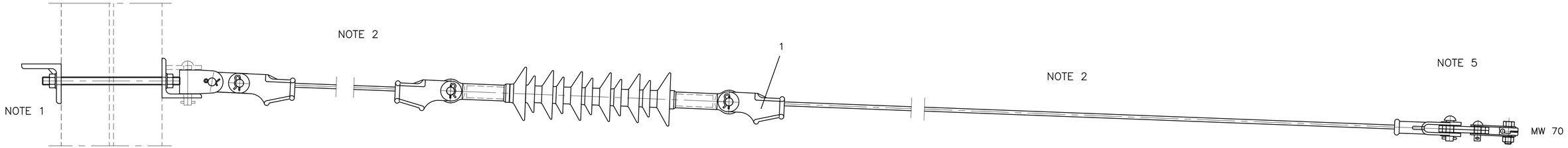
PULL OFF TERMINATION
FOR CONTACT WIRE
WITH BENT STEADY ARM

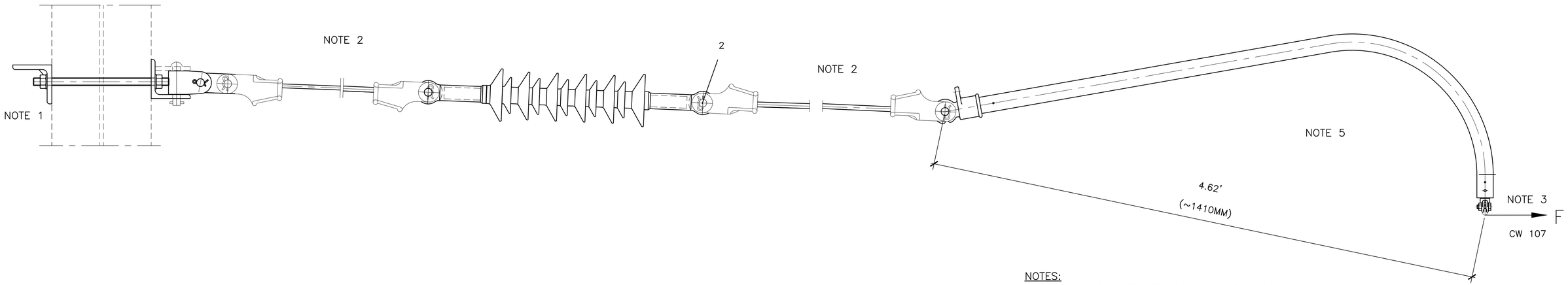
CADD FILE NAME: SD-W6362

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6362





PULL OFF TERMINATION FOR CATENARY
WITH BENT STEADY ARM FOR CONTACT WIRE
ELEVATION
NTS

NOTES:
1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. LENGTH AS NEEDED
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
4. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
5. INCLINATION TO BE CALCULATED IN DETAIL DESIGN – DEPENDING ON RADIAL FORCE AND DROPPER DISTANCE
6. PART 2 MAY BE SUBSTITUTED FOR STRANDVISE
7. REFER TO DWG. SD–W6274 AND SD–W6362 FOR BILL OF MATERIALS.

	A						
	1	PULL OFF TERMINATION FOR CW		2			
	1	PULL OFF TERMINATION FOR MW		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

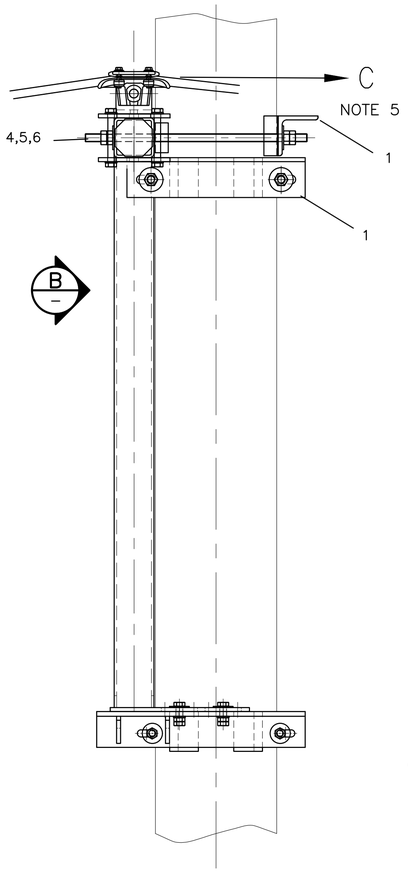
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

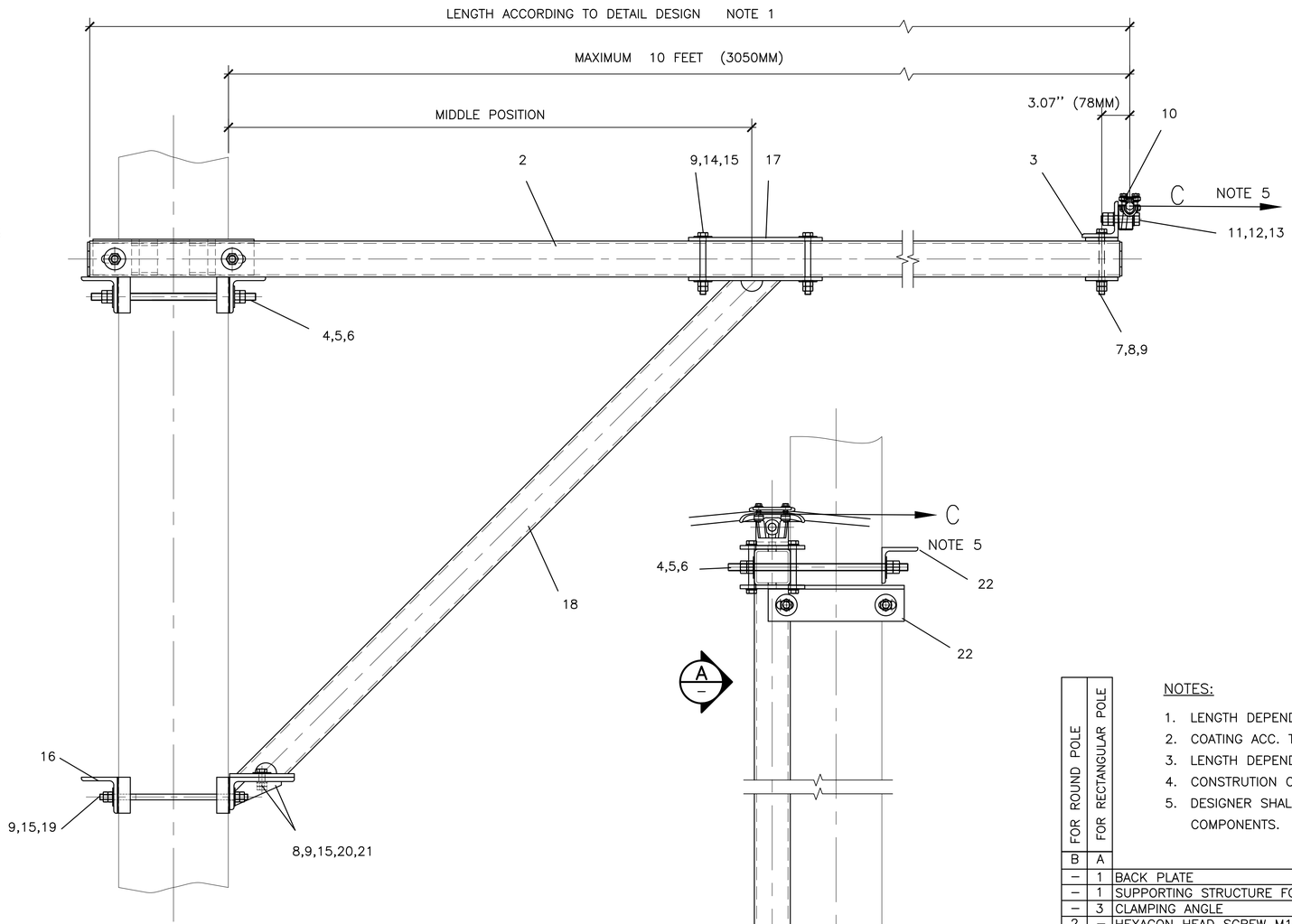
OVERHEAD CONTACT SYSTEM

PULL OFF TERMINATION
FOR CATENARY WITH
BENT STEADY ARM PO–05

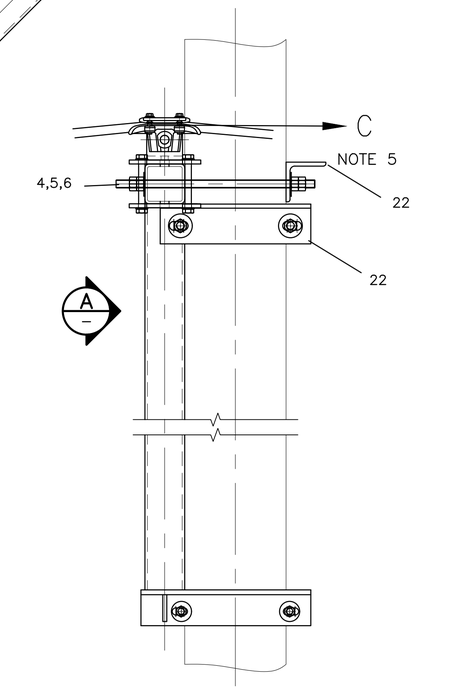
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STANDARD DRAWING NO.: SD–W6363



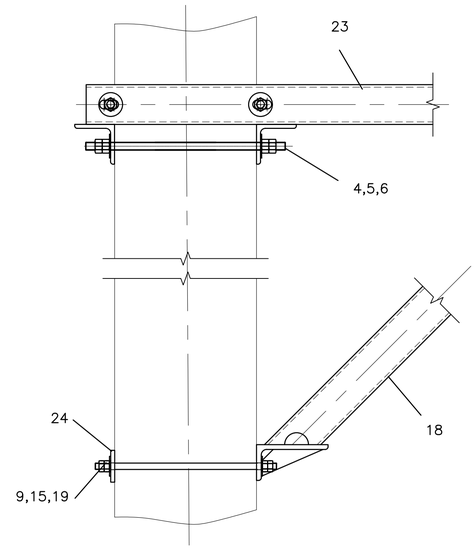
TYPE B
STATIC SUPPORT WITH STRUT TUBE
AT ROUND POLE
ELEVATION
NTS



TYPE B
STATIC SUPPORT WITH STRUT TUBE
AT ROUND POLE
B ELEVATION
NTS



TYPE A
STATIC WIRE SUPPORT WITH STRUT TUBE
AT RECTANGULAR POLE
ELEVATION
NTS



TYPE A
STATIC WIRE SUPPORT WITH STRUT TUBE
AT RECTANGULAR POLE
A ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. LENGTH DEPENDS ON MAST–SIZE
4. CONSTRUTION CAN ALSO BE USED FOR STATIC WIRE SUPPORT WITH STRUT TUBE
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

FOR ROUND POLE	FOR RECTANGULAR POLE	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
B	A					
–	1	BACK PLATE		24		PART 2 NOTES 1 AND 3
–	1	SUPPORTING STRUCTURE FOR STATIC WIRE		23		NOTES 1 AND 3
–	3	CLAMPING ANGLE		22		NOTES 1 AND 3
2	–	HEXAGON HEAD SCREW M16x65	8.8 NOTE 2	21	DIN EN ISO 4017	
1	–	BRACKET FOR STRUT TUBE		20		NOTES 1 AND 3
2	2	STUD BOLT M16	8.8 NOTE 2	19	DIN 976–1	NOTES 1 AND 3
1	1	STRUT TUBE		18		NOTES 1 AND 3
1	1	FASTENING PLATE		17		PART 4
1	–	BACK ANGLE		16		PART 2 NOTES 1 AND 3
14	12	WASHER M16	200HV NOTE 2	15	DIN EN ISO 7093	
4	4	HEXAGON HEAD SCREW M16x160	8.8 NOTE 2	14	DIN EN ISO 4017	
3	3	WASHER FOR 3/4"		13		
2	2	NUT 3/4"		12		
1	1	HEX. HEAD SCREW 3/4" x 4"		11		
1	1	STATIC WIRE CLAMP		10		
22	18	HEXAGON HEAD NUT M16	8 NOTE 2	9	DIN EN ISO 4032	
4	2	WASHER M16	200HV NOTE 2	8	DIN EN ISO 7089	
1	1	HEXAGON HEAD SCREW M16x180	8.8 NOTE 2	7	DIN EN ISO 4017	
4	4	STUD BOLT 3/4"		6		NOTES 1,3
16	16	NUT 3/4"		5		
8	8	WASHER FOR 3/4"		4		
1	1	ANGLE FOR STATIC WIRE SUPPORT		3		
1	–	SUPPORTING STRUCTURE AT ROUND POLE		2		NOTES 1 AND 3 AND 4
3	–	BACK BRACKET		1		NOTES 1 AND 3

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

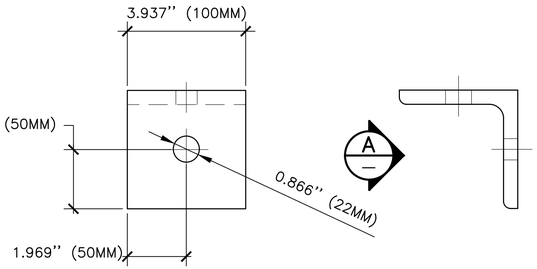
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

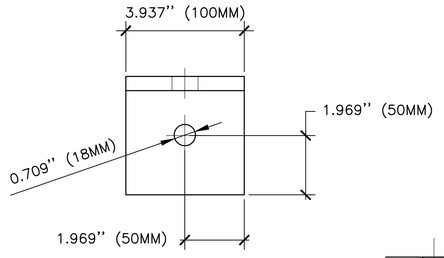
STATIC WIRE SUPPORT
WITH STRUT TUBE AT ROUND POLE
OR RECTANGULAR MAST

CADD FILE NAME: SD–W6364
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6364

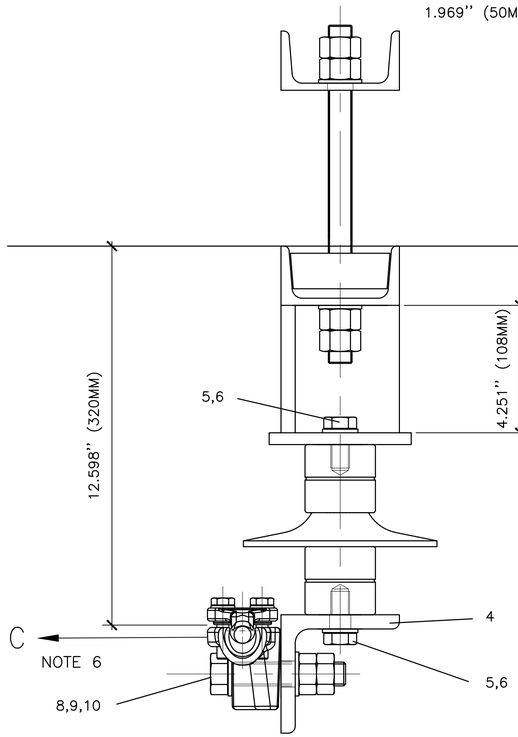


PART 4
PLAN
NTS

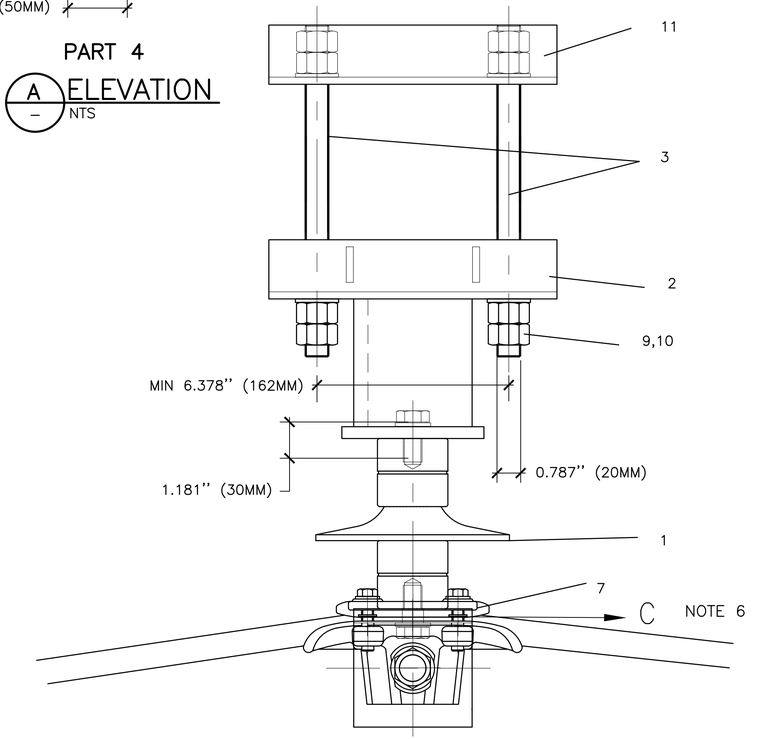
PART 4
ELEVATION
NTS



PART 4
A ELEVATION
NTS



UPSIDE DOWN STATIC WIRE SUPPORT
PLAN
NTS



UPSIDE DOWN STATIC WIRE SUPPORT
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN / BEAM SIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 108MM (4.251'') OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A							
–	1	U–PROFILE FOR CLAMPING		11			NOTE 1
–	6	WASHER 3/4"		10			
–	10	NUT 3/4"		9			
–	1	HEXAGON HEAD SCREW 3/4"x4"		8			
–	1	STATIC WIRE CLAMP	G–AL	7			
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	6	DIN EN ISO 4017		
–	2	WASHER M16	200HV NOTE 2	5	DIN EN ISO 7089		
–	1	ANGLE 100x100x12		4	DIN EN 10056–1		NOTES 4 AND 5
–	2	STUD BOLT 3/4"		3			NOTES 1, 2
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		2			NOTES 1 AND 3
–	1	COMPOSITE INSULATOR 130MM		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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PENINSULA CORRIDOR JOINT POWERS BOARD

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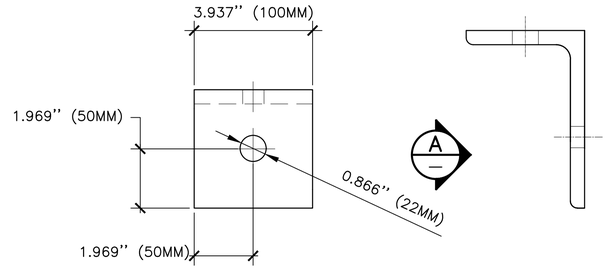
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

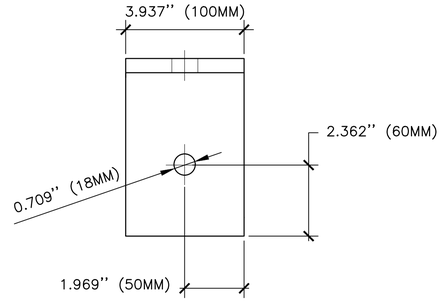
INSULATED STATIC WIRE SUPPORT AT MULTIPLE TRACK CANTILEVER OR PORTAL – UPSIDE DOWN

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REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6366

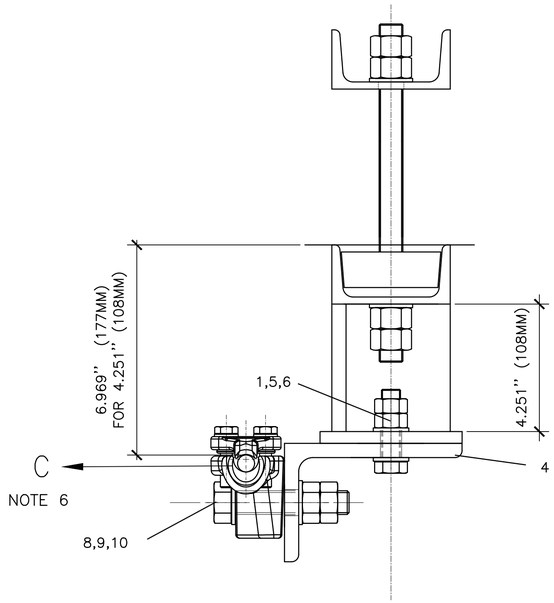


PART 4
PLAN
NTS

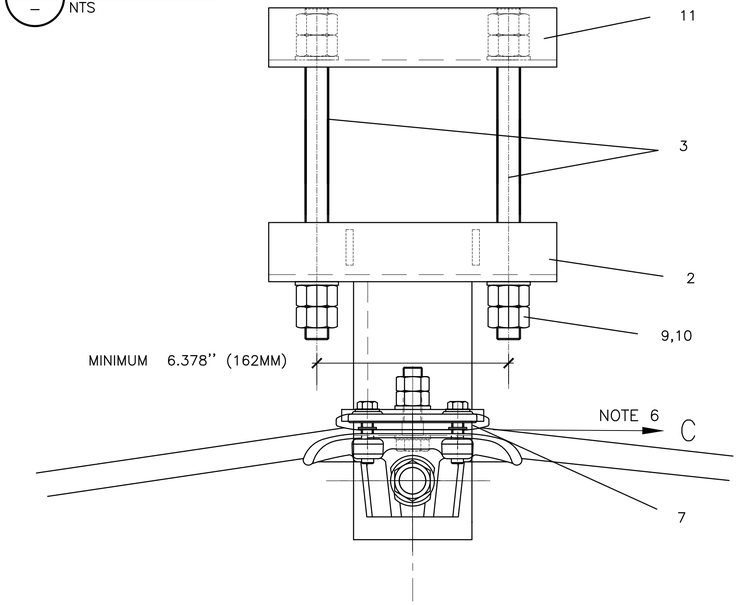
PART 4
ELEVATION
NTS



PART 4
A ELEVATION
NTS



UPSIDE DOWN STATIC WIRE SUPPORT
PLAN
NTS



UPSIDE DOWN STATIC WIRE SUPPORT
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN / BEAM SIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 108MM (4.251'') OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937''x5.906''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	1	U–PROFILE FOR CLAMPING		11		NOTE 1
–	6	WASHER 3/4"		10		
–	10	NUT 3/4"		9		
–	1	HEXAGON HEAD SCREW 3/4"x4"		8		
–	1	STATIC WIRE CLAMP	G–AL	7		
–	1	HEXAGON HEAD SCREW M16x60	8.8 NOTE2	6	DIN EN ISO 4017	
–	2	WASHER M16	200HV NOTE 2	5	DIN EN ISO 7089	
–	1	ANGLE 100x150x12		4	DIN EN 10056–1	NOTES 4 AND 5
–	2	STUD BOLT 3/4"		3		NOTES 1, 2
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		2		NOTES 1 AND 3
–	2	NUT M16	8 NOTE 2	1	DIN EN ISO 4032	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

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REV	DATE	BY	CHK	APP

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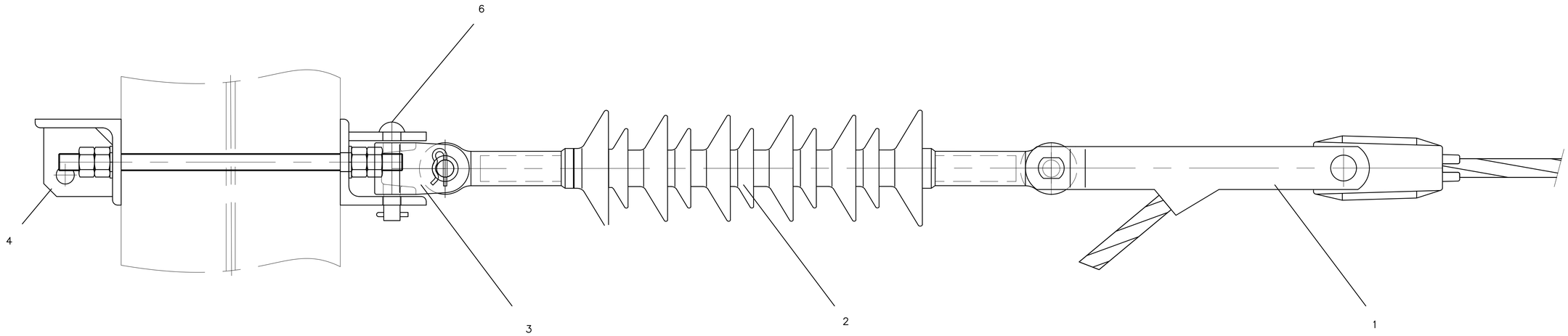
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

STATIC WIRE SUPPORT
AT MULTIPLE TRACK CANTILEVER
OR PORTAL – UPSIDE DOWN

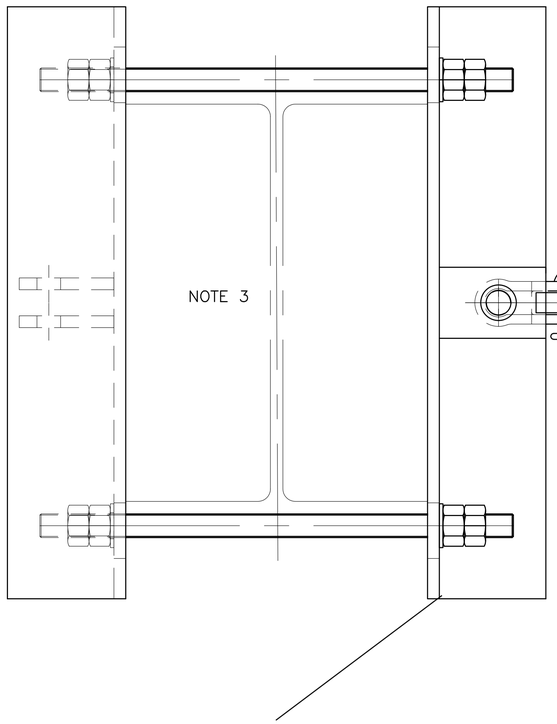
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REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6367



INSULATED TERMINATION FOR STATIC WIRE

ELEVATION

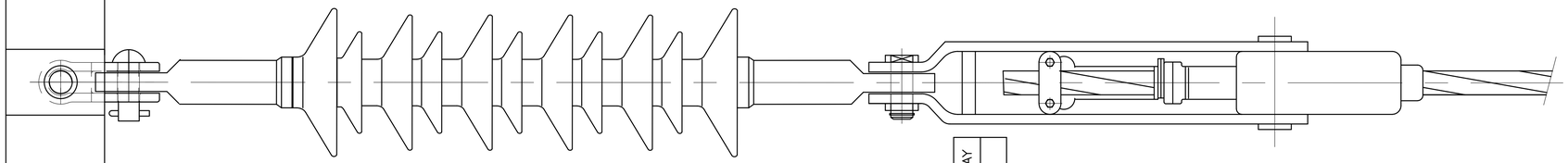
NTS



INSULATED TERMINATION FOR STATIC WIRE

PLAN

NTS



NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. PROVIDE BACKSTAY AS REQUIRED
3. POLE ORIENTATION ACC: TO DETAIL DESIGN

FOR STATIC WIRE WITHOUT BACKSTAY	FOR STATIC WIRE WITH BACKSTAY							
B	A							
1	1	PIN ø19X100 WITH 8–SPLINT PIN	A2	6				
1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED			NOTE 1
–	1	BACKSTAY ANCHOR		4				NOTE 2
1	1	SWIVEL JOINT		3				
1	1	COMPOSITE INSULATOR TYPE 3		2				
1	1	TERMINATION CLAMP FOR STATIC WIRE		1				
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD		KG/PC.	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

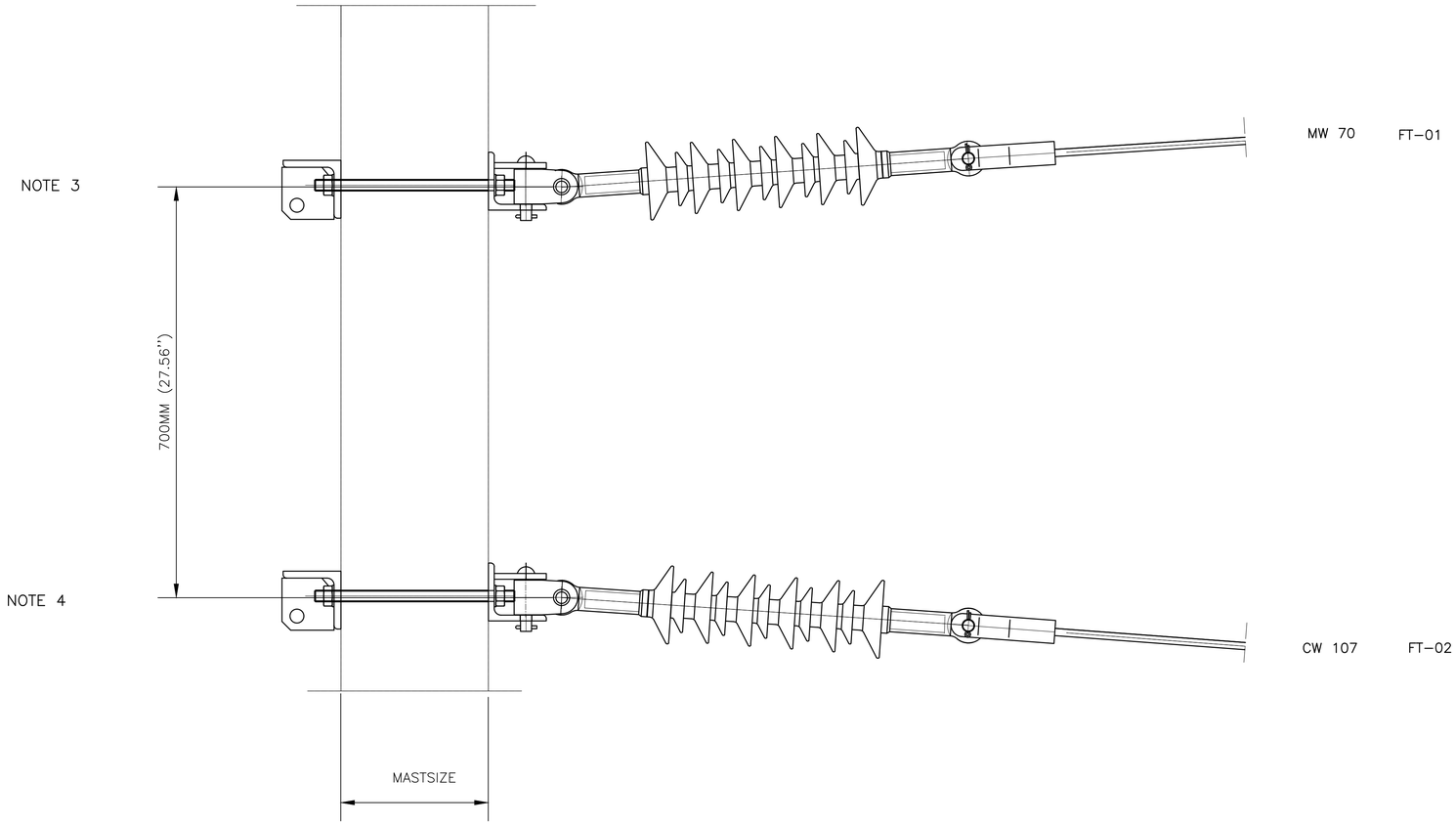
INSULATED TERMINATION
FOR STATIC WIRE
FT–07

CADD FILE NAME: SD–W6368

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6368



FIXED TERMINATION FOR CW AND MW

ELEVATION

NTS

NOTES:

1. DIFFERENT HEIGHT WILL BE POINTED OUT IN DETAIL DESIGN
2. ALSO APPLIES TO SINGLE CONTACT WIRE SYSTEM (ONLY FT-02)
3. HEIGHT: CONTACT WIRE HEIGHT + 1200MM (HEIGHT: CONTACT WIRE HEIGHT + 47.24")
4. HEIGHT: CONTACT WIRE HEIGHT + 500MM (HEIGHT: CONTACT WIRE HEIGHT + 19.69")
5. BACKSTAY ACCORDING TO DETAIL DESIGN

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

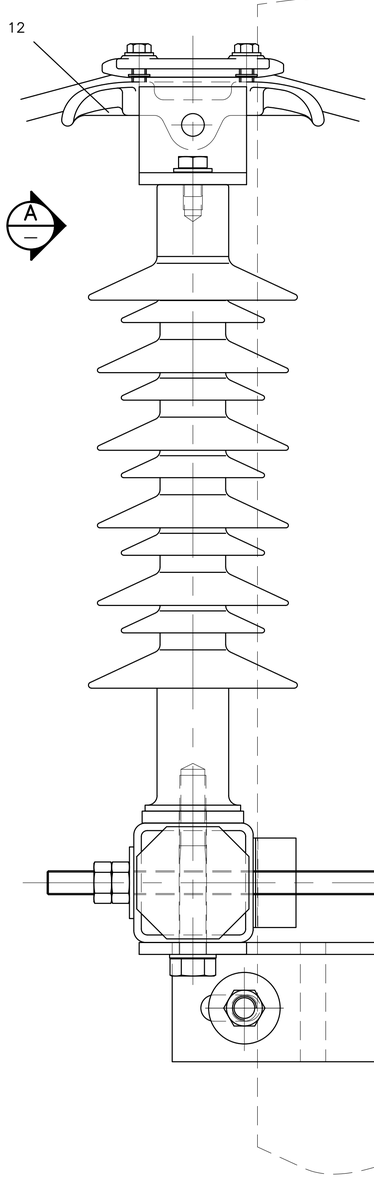
STANDARD HEIGHT FOR
FIXED TERMINATION OF CONTACT
AND MESSENGER WIRE

CADD FILE NAME: SD-W6369

REV: | EDITION: SECOND

SCALE: NTS

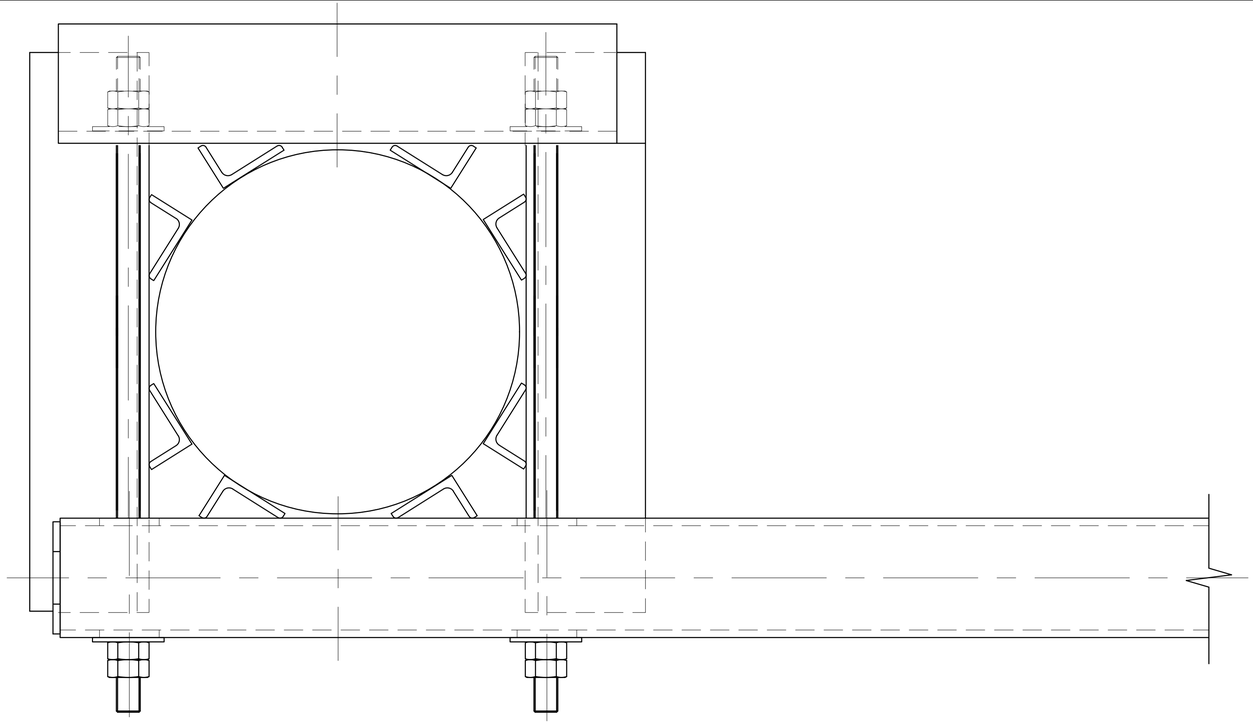
STANDARD DRAWING NO.: SD-W6369



SINGLE FEEDER SUPPORT AT ROUND POLE

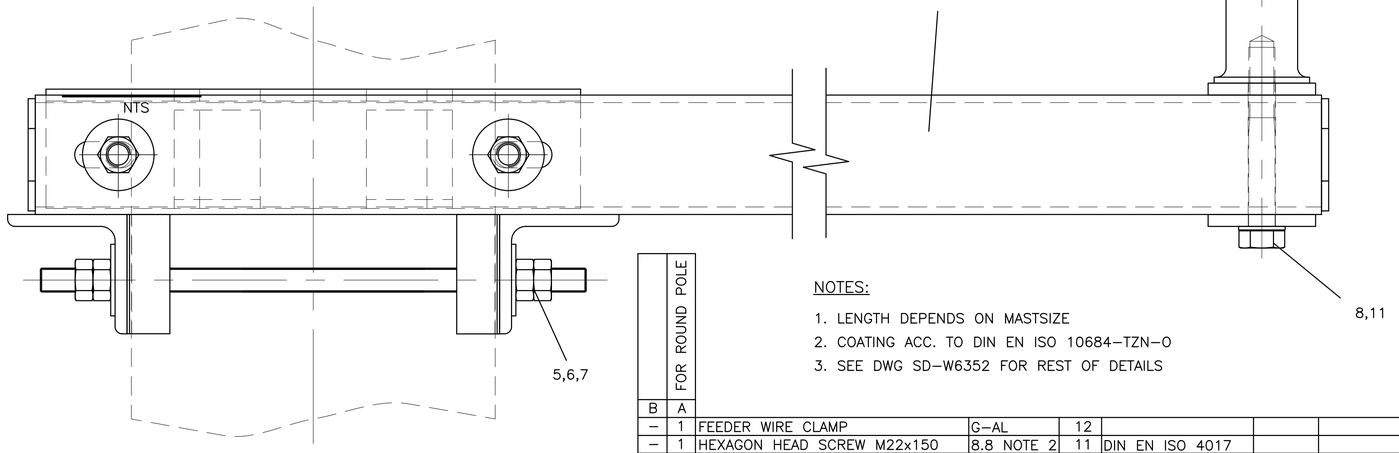
ELEVATION

NTS



TOP VIEW SINGLE FEEDER SUPPORT AT ROUND MAST

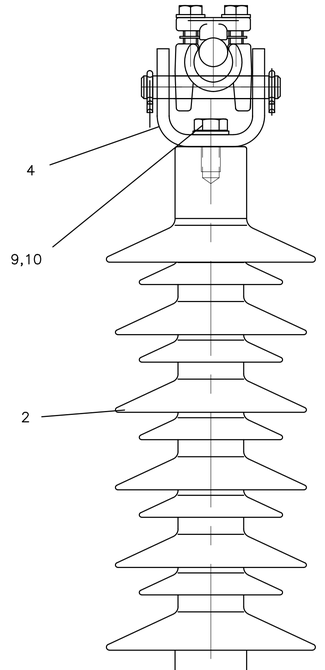
PLAN



SINGLE FEEDER SUPPORT AT ROUND POLE

A – ELEVATION

NTS



NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. SEE DWG SD–W6352 FOR REST OF DETAILS

B	A	FOR ROUND POLE						
–	1	FEEDER WIRE CLAMP	G–AL	12			
–	1	HEXAGON HEAD SCREW M22x150	8.8 NOTE 2	11	DIN EN ISO 4017		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE 2	10	DIN EN ISO 4017		
–	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089		
–	1	WASHER M22	200HV NO.2	8	DIN EN ISO 7089		
–	4	STUD BOLT M20	8.8 NO.2	7	DIN 976–1		NOTE 1
–	16	NUT M20	8 NO.2	6	DIN EN ISO 4032		
–	8	WASHER FOR M20	200HV NO.2	5	DIN EN ISO 7093		
–	1	BRACKET FOR FEEDER WIRE CLAMP		4			
–	1	SUPPORT STRUCTUR, COMPLETE		3			NOTE 1
–	1	COMPOSITE INSULATOR		2			
–	3	BACK BRACKET FOR CANTILEVER		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

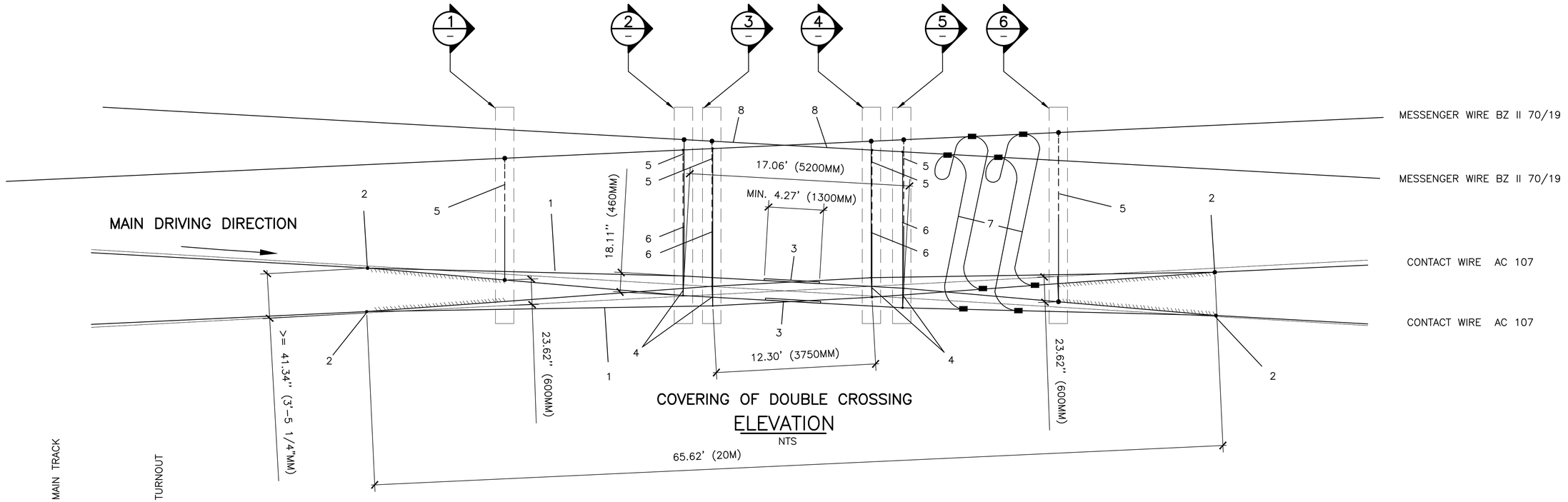
FEEDER WIRE SUPPORT, VERTICAL AT ROUND POLE WITH STRUT TUBE

CADD FILE NAME: SD–W6370

REV: | EDITION: SECOND

SCALE: NTS

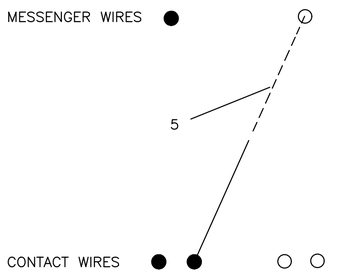
STANDARD DRAWING NO.: SD–W6370



COVERING OF DOUBLE CROSSING

ELEVATION

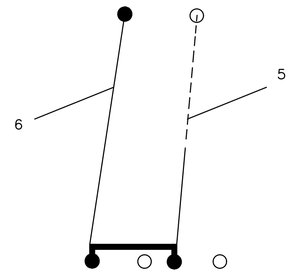
NTS



ELEVATION

DROPPER SITUATION

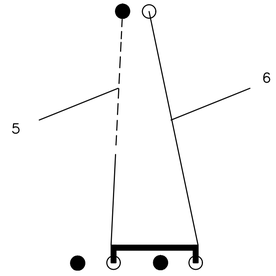
1 – DETAIL NTS



ELEVATION

DROPPER SITUATION

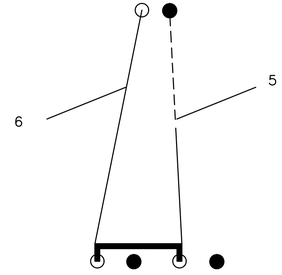
2 – DETAIL NTS



ELEVATION

DROPPER SITUATION

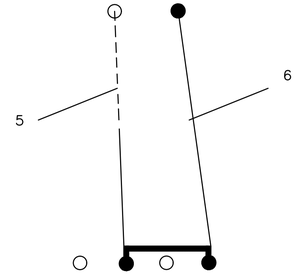
3 – DETAIL NTS



ELEVATION

DROPPER SITUATION

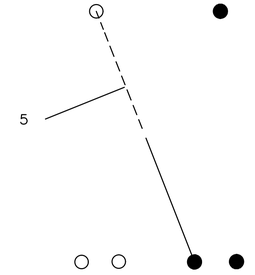
4 – DETAIL NTS



ELEVATION

DROPPER SITUATION

5 – DETAIL NTS



ELEVATION

DROPPER SITUATION

6 – DETAIL NTS

NOTES:

1. THE IN RUNNING CONTACT WIRE OF EITHER TRACK IN THE CROSSING IS THE LOWER ONE
2. THE SHADED AREA (\\\\\\\\), RAMP AREA OF PANTOGRAPH, NO CLAMPS ARE ALLOWED TO BE MOUNTED
3. ● MESSENGER WIRE AND CONTACT WIRE OF MAIN TRACK
4. ○ MESSENGER WIRE AND CONTACT WIRE OF TURNOUT
5. SPREADER – SD–W6372
6. WHEREVER POSSIBLE USE HARDWARE OF IMPERIAL SYSTEM (ENGLISH UNITS)

PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
–	2	SHRINKING HOSE FOR MESSEN. WIRE 70/19	POLYOLEFIN	8	FTMM 28/9–A/U	
–	1	ELECTRICAL CONNECTION		7		EC–02
–	4	DROPPER		6		
–	6	SLIDING DROPPER		5		
–	4	SPREADER FOR TWO CONTACT WIRES		4		
–	2	CROSSING OF 2 CONTACT WIRES		3		
–	8	ADDITIONAL CLAMP FOR 2 CONTACT WIRE		2		
–	2	CONTACT WIRE AC 107		1		

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

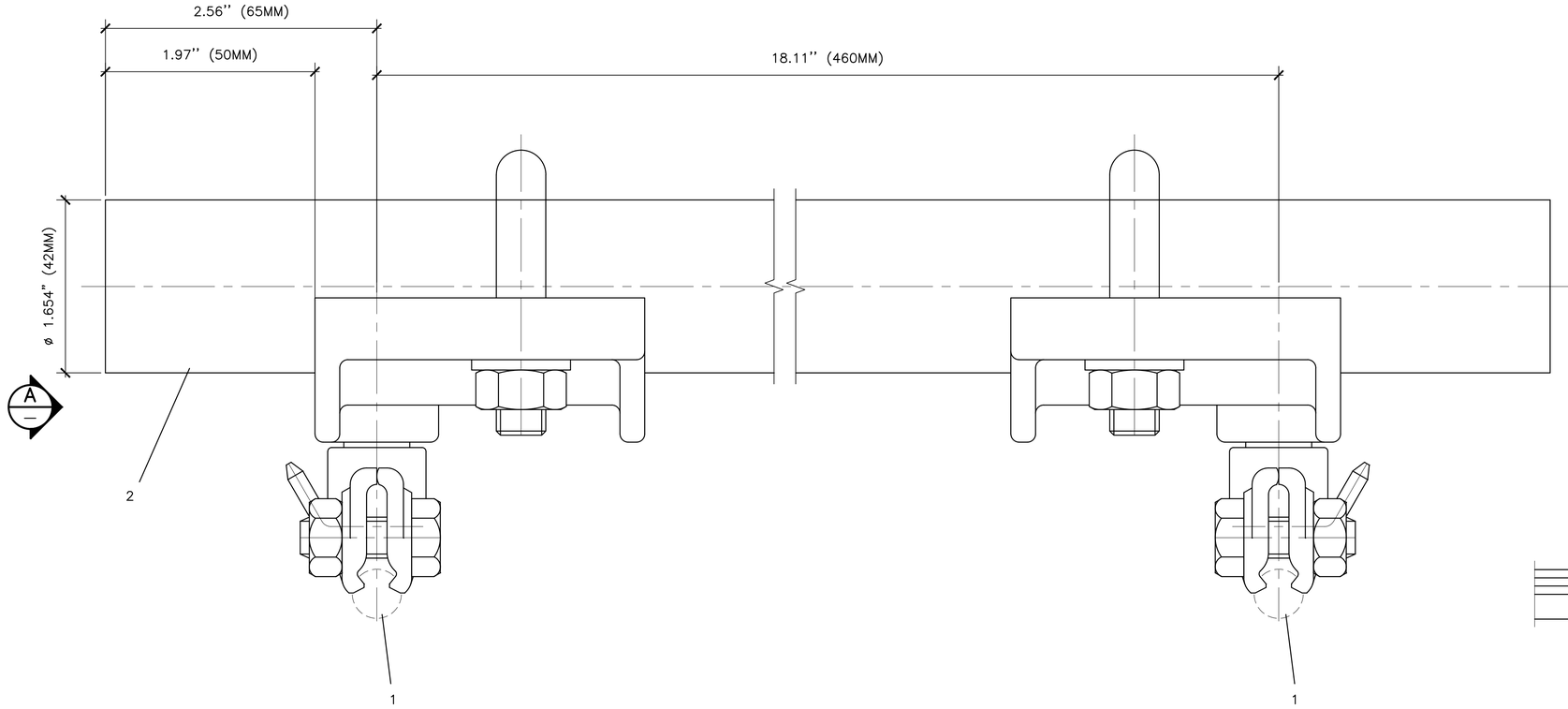
ARRANGEMENT AT DOUBLE SLIP

CADD FILE NAME: SD–W6371

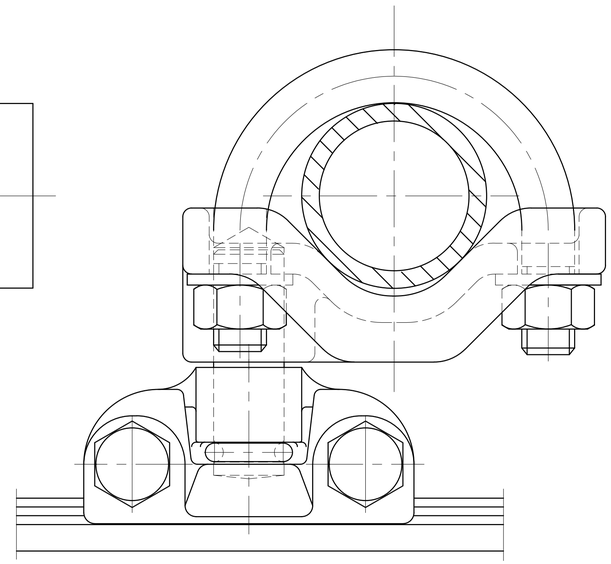
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6371



SPREADER FOR 2 CONTACT WIRES
ELEVATION
NTS



SPREADER FOR 2 CONTACT WIRES
A ELEVATION
NTS

NOTES:

1. TO BE USED FOR SD–W6371 – ARRANGEMENT AT DOUBLE SLIP

B	A					
	1	TUBE ø42x4 LENGTH AS USED	ALMGSI1F31	2		
	2	CONTACT WIRE HOLDER		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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Bin Zhang
DIRECTOR, ENGINEERING

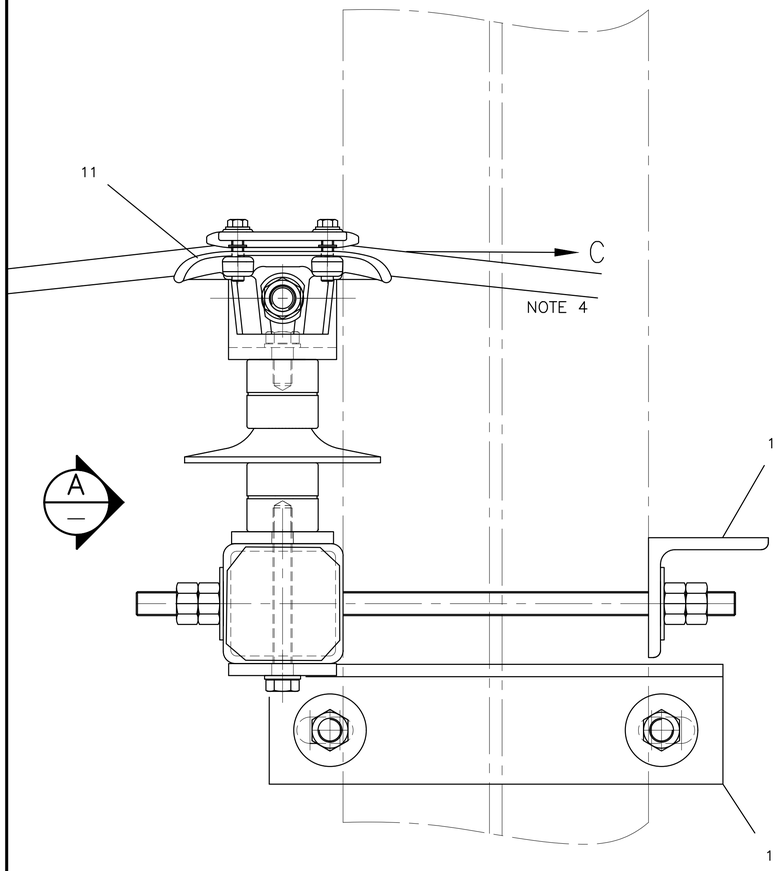
Caltrain

ENGINEERING STANDARD DRAWINGS

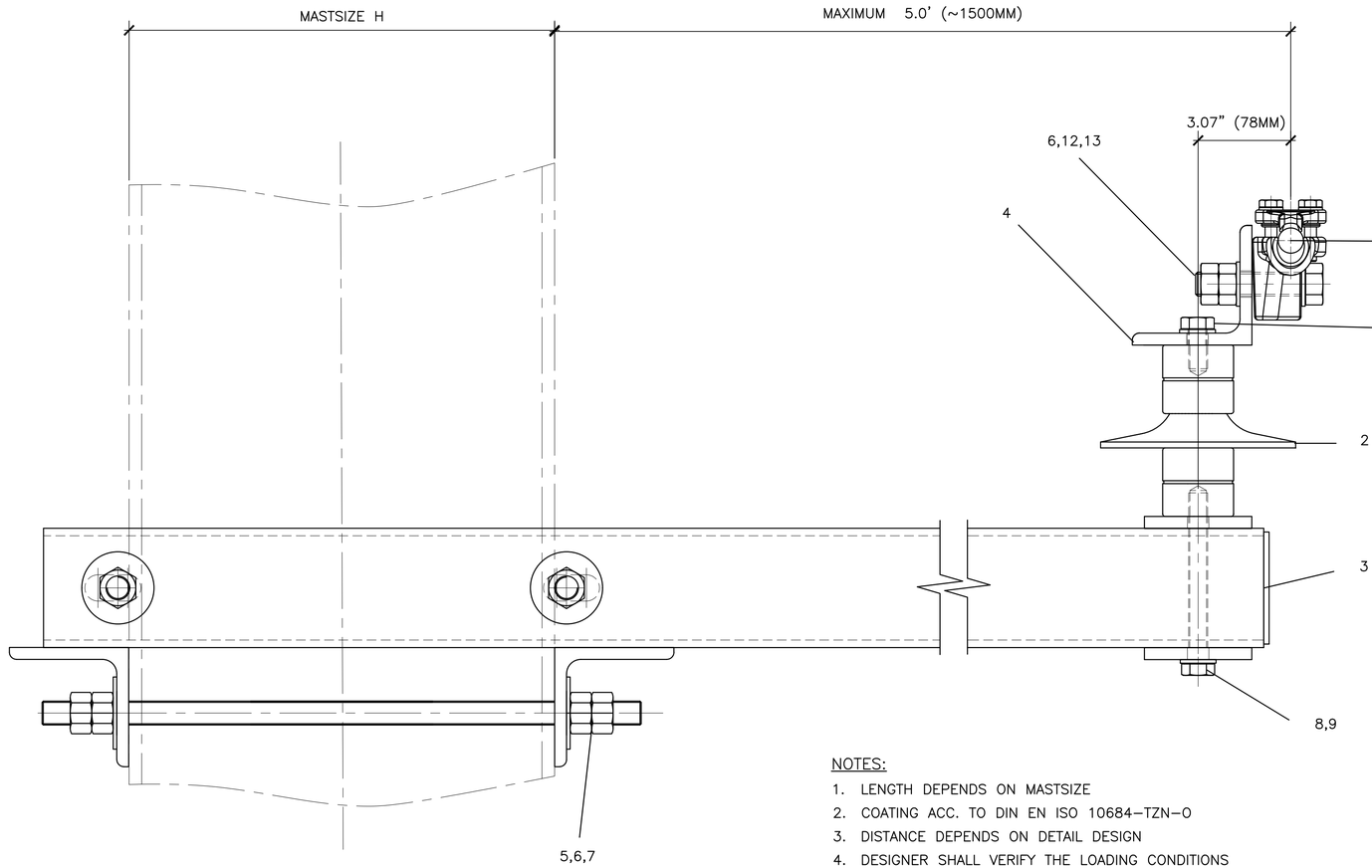
OVERHEAD CONTACT SYSTEM

SPREADER FOR
2 CONTACT WIRES
FOR TUBE ø42

CADD FILE NAME: SD–W6372
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6372



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MASTS
ELEVATION
NTS



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MASTS
A — ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A					
–	1	HEX. HEAD SCREW 3/4"x4"		13		
–	2	WASHER FOR 3/4"		12		
–	1	STATIC WIRE CLAMP	G–AL	11		
–	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017	
–	1	WASHER M16	200HV NOTE2	9	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x140	8.8 NOTE2	8	DIN EN ISO 4017	
–	4	STUD BOLT 3/4"		7		NOTE 1
–	18	NUT 3/4"		6		
–	8	WASHER FOR 3/4"		5		
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR INSULATOR		3		NOTES 1 AND 3
–	1	COMPOSITE INSULATOR 130MM		2		
–	3	CLAMPING ANGLE		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

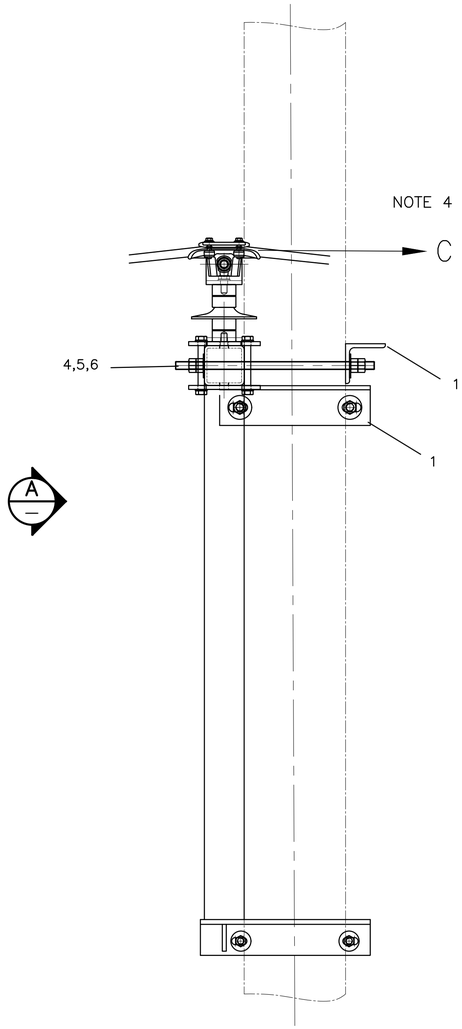
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

INSULATED STATIC WIRE SUPPORT,
VERTICAL AT MAST
MAXIMUM 5.0' (~1500MM)

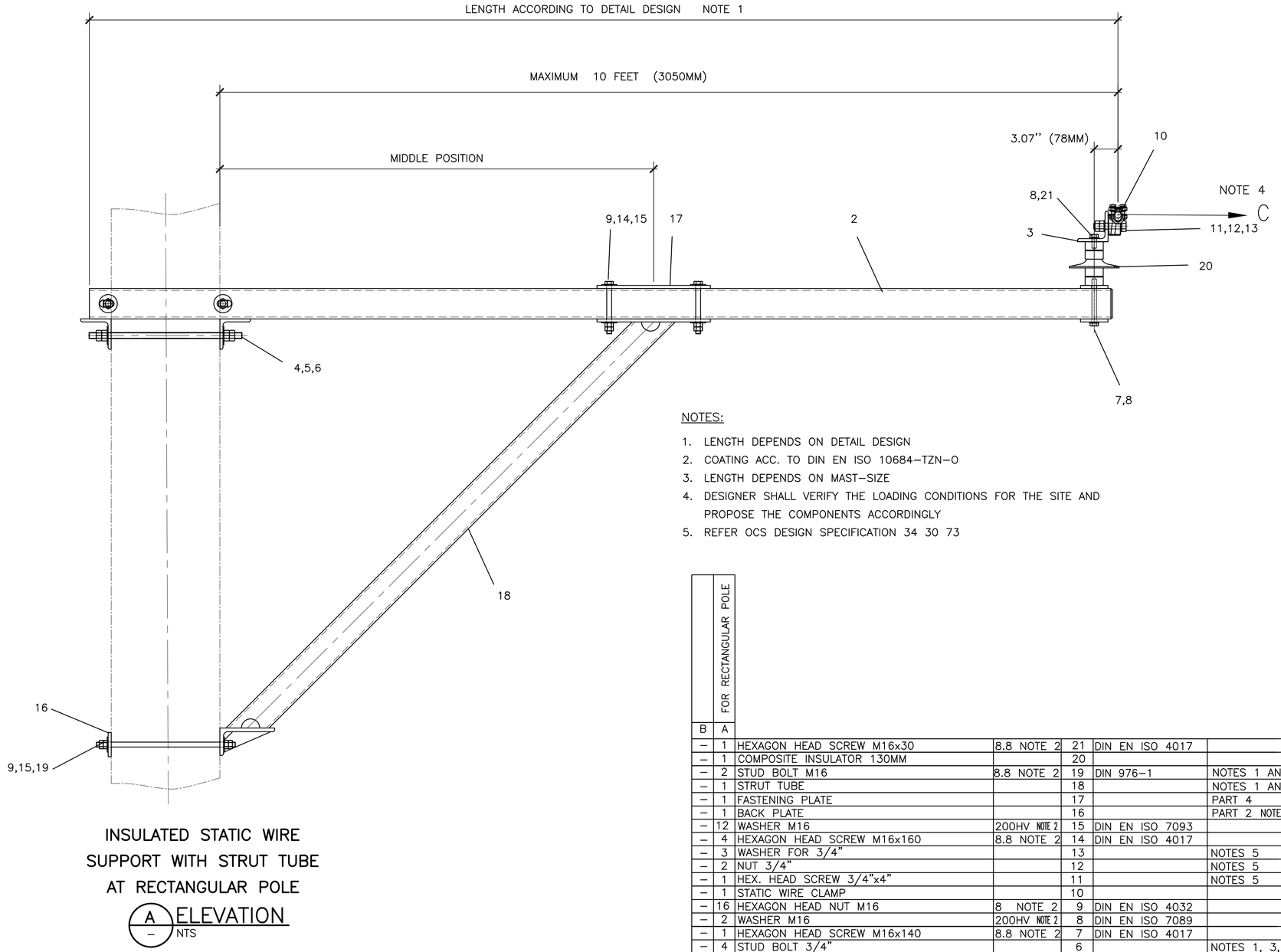
CADD FILE NAME: SD–W6373
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6373



INSULATED STATIC WIRE
SUPPORT WITH STRUT TUBE
AT RECTANGULAR POLE

ELEVATION

NTS



INSULATED STATIC WIRE
SUPPORT WITH STRUT TUBE
AT RECTANGULAR POLE

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. LENGTH DEPENDS ON MAST–SIZE
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
5. REFER OCS DESIGN SPECIFICATION 34 30 73

FOR RECTANGULAR POLE						
B	A					
–	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE 2	21	DIN EN ISO 4017	
–	1	COMPOSITE INSULATOR 130MM		20		
–	2	STUD BOLT M16	8.8 NOTE 2	19	DIN 976–1	NOTES 1 AND 3
–	1	STRUT TUBE		18		NOTES 1 AND 3
–	1	FASTENING PLATE		17		PART 4
–	1	BACK PLATE		16		PART 2 NOTES 1 AND 3
–	12	WASHER M16	200HV NOTE 2	15	DIN EN ISO 7093	
–	4	HEXAGON HEAD SCREW M16x160	8.8 NOTE 2	14	DIN EN ISO 4017	
–	3	WASHER FOR 3/4"		13		NOTES 5
–	2	NUT 3/4"		12		NOTES 5
–	1	HEX. HEAD SCREW 3/4"x4"		11		NOTES 5
–	1	STATIC WIRE CLAMP		10		
–	16	HEXAGON HEAD NUT M16	8 NOTE 2	9	DIN EN ISO 4032	
–	2	WASHER M16	200HV NOTE 2	8	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x140	8.8 NOTE 2	7	DIN EN ISO 4017	
–	4	STUD BOLT 3/4"		6		NOTES 1, 3, 5
–	16	NUT 3/4"		5		NOTES 5
–	8	WASHER FOR 3/4"		4		NOTES 5
–	1	ANGLE FOR STATIC WIRE SUPPORT		3		
–	1	SUPPORTING STRUCTURE FOR STATIC WIRE		2		NOTES 1 AND 3
–	3	CLAMPING ANGLE		1		NOTES 1 AND 3
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

INSULATED STATIC WIRE SUPPORT
WITH STRUT TUBE
AT RECTANGULAR MAST

CADD FILE NAME: SD–W6374

REV: | EDITION: SECOND

SCALE: NTS

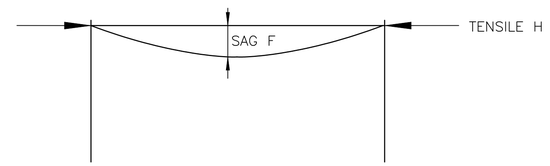
STANDARD DRAWING NO.: SD–W6374

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
59.1'	1557.93 lbf	1211.72 lbf	780.09 lbf	503.57 lbf	368.69 lbf	296.75 lbf	251.79 lbf	222.56 lbf	215.82 lbf
	1.57 in	1.97 in	3.15 in	5.12 in	6.69 in	8.27 in	9.84 in	11.02 in	11.42 in
62.3'	1544.44 lbf	1200.48 lbf	782.34 lbf	514.81 lbf	379.93 lbf	307.99 lbf	263.03 lbf	233.8 lbf	227.06 lbf
	1.97 in	2.36 in	3.54 in	5.51 in	7.48 in	9.06 in	10.63 in	11.81 in	12.2 in
65.6'	1530.95 lbf	1191.49 lbf	782.34 lbf	526.05 lbf	393.42 lbf	321.48 lbf	276.52 lbf	245.04 lbf	236.05 lbf
	1.97 in	2.76 in	3.94 in	5.91 in	7.87 in	9.45 in	11.02 in	12.6 in	12.99 in
68.9'	1515.21 lbf	1180.25 lbf	782.34 lbf	535.05 lbf	404.66 lbf	332.72 lbf	287.76 lbf	254.03 lbf	247.29 lbf
	2.36 in	2.76 in	4.33 in	6.3 in	8.27 in	10.24 in	11.81 in	13.39 in	13.78 in
72.2'	1499.48 lbf	1171.25 lbf	784.58 lbf	546.29 lbf	418.14 lbf	343.96 lbf	296.75 lbf	265.27 lbf	258.53 lbf
	2.36 in	3.15 in	4.72 in	6.69 in	9.06 in	10.63 in	12.6 in	14.17 in	14.57 in
75.4'	1483.74 lbf	1160.01 lbf	784.58 lbf	555.28 lbf	429.39 lbf	355.2 lbf	307.99 lbf	276.52 lbf	267.52 lbf
	2.76 in	3.54 in	5.12 in	7.48 in	9.45 in	11.42 in	12.99 in	14.57 in	15.35 in
78.7'	1468 lbf	1148.77 lbf	786.83 lbf	562.02 lbf	440.63 lbf	366.44 lbf	319.23 lbf	285.51 lbf	276.52 lbf
	3.15 in	3.94 in	5.51 in	7.87 in	10.24 in	12.2 in	13.78 in	15.35 in	16.14 in
82.0'	1452.27 lbf	1139.78 lbf	786.83 lbf	571.01 lbf	449.62 lbf	377.68 lbf	330.47 lbf	294.5 lbf	287.76 lbf
	3.15 in	4.33 in	6.3 in	8.27 in	10.63 in	12.6 in	14.57 in	16.14 in	16.93 in
85.3'	1436.53 lbf	1128.54 lbf	786.83 lbf	580.01 lbf	460.86 lbf	388.92 lbf	339.46 lbf	305.74 lbf	296.75 lbf
	3.54 in	4.72 in	6.69 in	9.06 in	11.42 in	13.39 in	15.35 in	16.93 in	17.72 in
88.6'	1418.54 lbf	1119.55 lbf	789.08 lbf	586.75 lbf	469.85 lbf	397.91 lbf	348.45 lbf	314.73 lbf	305.74 lbf
	3.94 in	5.12 in	7.09 in	9.45 in	11.81 in	14.17 in	16.14 in	17.72 in	18.5 in
91.9'	1402.81 lbf	1108.31 lbf	789.08 lbf	593.5 lbf	478.84 lbf	406.9 lbf	359.69 lbf	323.72 lbf	314.73 lbf
	4.33 in	5.51 in	7.48 in	10.24 in	12.6 in	14.96 in	16.93 in	18.5 in	19.29 in
95.1'	1384.82 lbf	1099.32 lbf	791.33 lbf	600.24 lbf	487.84 lbf	418.14 lbf	368.69 lbf	332.72 lbf	323.72 lbf
	4.72 in	5.91 in	8.27 in	10.63 in	13.39 in	15.35 in	17.72 in	19.29 in	20.08 in
98.4'	1369.09 lbf	1088.08 lbf	791.33 lbf	606.98 lbf	496.83 lbf	427.14 lbf	377.68 lbf	341.71 lbf	332.72 lbf
	5.12 in	6.3 in	8.66 in	11.42 in	13.78 in	16.14 in	18.5 in	20.08 in	20.87 in
101.7'	1351.1 lbf	1079.08 lbf	791.33 lbf	613.73 lbf	505.82 lbf	436.13 lbf	386.67 lbf	350.7 lbf	341.71 lbf
	5.51 in	6.69 in	9.45 in	12.2 in	14.57 in	16.93 in	19.29 in	21.26 in	21.65 in
105.0'	1333.12 lbf	1070.09 lbf	791.33 lbf	620.47 lbf	514.81 lbf	445.12 lbf	395.66 lbf	359.69 lbf	350.7 lbf
	5.91 in	7.48 in	9.84 in	12.6 in	15.35 in	17.72 in	20.08 in	22.05 in	22.44 in
108.3'	1317.38 lbf	1061.1 lbf	793.58 lbf	627.22 lbf	521.56 lbf	454.11 lbf	404.66 lbf	366.44 lbf	357.45 lbf
	6.3 in	7.87 in	10.63 in	13.39 in	16.14 in	18.5 in	20.87 in	22.83 in	23.23 in
111.5'	1299.4 lbf	1052.11 lbf	793.58 lbf	631.71 lbf	530.55 lbf	460.86 lbf	411.4 lbf	375.43 lbf	366.44 lbf
	6.69 in	8.27 in	11.02 in	14.17 in	16.93 in	19.29 in	21.65 in	23.62 in	24.41 in
114.8'	1283.66 lbf	1043.11 lbf	793.58 lbf	638.46 lbf	537.29 lbf	469.85 lbf	420.39 lbf	384.42 lbf	373.18 lbf
	7.48 in	9.06 in	11.81 in	14.96 in	17.72 in	20.08 in	22.44 in	24.41 in	25.2 in
118.1'	1267.92 lbf	1034.12 lbf	795.82 lbf	642.95 lbf	544.04 lbf	476.6 lbf	429.39 lbf	391.17 lbf	382.18 lbf
	7.87 in	9.45 in	12.6 in	15.35 in	18.11 in	20.87 in	23.23 in	25.59 in	25.98 in
121.4'	1252.19 lbf	1025.13 lbf	795.82 lbf	647.45 lbf	550.78 lbf	485.59 lbf	436.13 lbf	400.16 lbf	388.92 lbf
	8.27 in	10.24 in	13.39 in	16.14 in	18.9 in	21.65 in	24.02 in	26.38 in	27.17 in
124.7'	1236.45 lbf	1018.38 lbf	795.82 lbf	651.95 lbf	557.53 lbf	492.33 lbf	445.12 lbf	406.9 lbf	397.91 lbf
	9.06 in	11.02 in	13.78 in	16.93 in	20.08 in	22.44 in	25.2 in	27.17 in	27.95 in
128.0'	1220.71 lbf	1011.64 lbf	795.82 lbf	656.44 lbf	564.27 lbf	499.08 lbf	451.87 lbf	413.65 lbf	404.66 lbf
	9.45 in	11.42 in	14.57 in	17.72 in	20.87 in	23.23 in	25.98 in	28.35 in	28.74 in
131.2'	1207.22 lbf	1002.65 lbf	795.82 lbf	660.94 lbf	571.01 lbf	505.82 lbf	458.61 lbf	422.64 lbf	411.4 lbf
	10.24 in	12.2 in	15.35 in	18.5 in	21.65 in	24.41 in	26.77 in	29.13 in	29.92 in
134.5'	1191.49 lbf	995.9 lbf	798.07 lbf	665.43 lbf	577.76 lbf	512.56 lbf	465.35 lbf	429.39 lbf	418.14 lbf
	11.02 in	12.99 in	16.14 in	19.29 in	22.44 in	25.2 in	27.56 in	30.31 in	30.71 in
137.8'	1178 lbf	989.16 lbf	798.07 lbf	669.93 lbf	582.26 lbf	519.31 lbf	472.1 lbf	436.13 lbf	427.14 lbf
	11.42 in	13.78 in	16.93 in	20.08 in	23.23 in	25.98 in	28.74 in	31.1 in	31.89 in
141.1'	1164.51 lbf	982.42 lbf	798.07 lbf	674.43 lbf	589 lbf	526.05 lbf	478.84 lbf	442.87 lbf	433.88 lbf
	12.2 in	14.57 in	17.72 in	21.26 in	24.02 in	27.17 in	29.53 in	32.28 in	32.68 in
144.4'	1151.02 lbf	977.92 lbf	798.07 lbf	678.92 lbf	593.5 lbf	532.8 lbf	485.59 lbf	449.62 lbf	440.63 lbf
	12.99 in	15.35 in	18.5 in	22.05 in	25.2 in	27.95 in	30.71 in	33.07 in	33.86 in

SPAN \ DEGREE	19.4°F	32.0°F	50.0°F	68.0°F	86.0°F	104°F	122°F	140°F	145°F
147.6'	1139.78 lbf	971.17 lbf	798.07 lbf	681.17 lbf	600.24 lbf	539.54 lbf	492.33 lbf	456.36 lbf	447.37 lbf
	13.78 in	16.14 in	19.69 in	22.83 in	25.98 in	28.74 in	31.5 in	34.25 in	35.04 in
151.0'	1126.29 lbf	966.68 lbf	800.32 lbf	685.67 lbf	604.74 lbf	544.04 lbf	499.08 lbf	463.11 lbf	451.87 lbf
	14.57 in	16.93 in	20.47 in	23.62 in	26.77 in	29.92 in	32.68 in	35.04 in	35.83 in
154.2'	1115.05 lbf	959.93 lbf	800.32 lbf	687.92 lbf	609.23 lbf	550.78 lbf	505.82 lbf	467.6 lbf	458.61 lbf
	15.35 in	17.72 in	21.26 in	24.8 in	27.95 in	30.71 in	33.46 in	36.22 in	37.01 in
157.5'	1103.81 lbf	955.44 lbf	800.32 lbf	692.41 lbf	613.73 lbf	557.53 lbf	510.32 lbf	474.35 lbf	465.35 lbf
	16.14 in	18.5 in	22.05 in	25.59 in	28.74 in	31.89 in	34.65 in	37.4 in	38.19 in
160.8'	1094.82 lbf	950.94 lbf	800.32 lbf	694.66 lbf	620.47 lbf	562.02 lbf	517.06 lbf	481.09 lbf	472.1 lbf
	16.93 in	19.29 in	23.23 in	26.38 in	29.92 in	32.68 in	35.83 in	38.58 in	38.98 in
164.0'	1083.58 lbf	944.2 lbf	800.32 lbf	699.16 lbf	624.97 lbf	566.52 lbf	523.8 lbf	487.84 lbf	476.6 lbf
	17.72 in	20.47 in	24.02 in	27.56 in	30.71 in	33.86 in	36.61 in	39.37 in	40.16 in
167.3'	1074.59 lbf	939.7 lbf	800.32 lbf	701.4 lbf	629.47 lbf	573.26 lbf	528.3 lbf	492.33 lbf	483.34 lbf
	18.5 in	21.26 in	24.8 in	28.35 in	31.89 in	35.04 in	37.8 in	40.55 in	41.34 in
170.6'	1065.59 lbf	937.45 lbf	800.32 lbf	703.65 lbf	631.71 lbf	577.76 lbf	532.8 lbf	499.08 lbf	487.84 lbf
	19.69 in	22.05 in	25.98 in	29.53 in	32.68 in	35.83 in	38.98 in	41.73 in	42.52 in
173.9'	1056.6 lbf	932.96 lbf	800.32 lbf	708.15 lbf	636.21 lbf	582.26 lbf	539.54 lbf	503.57 lbf	494.58 lbf
	20.47 in	23.23 in	26.77 in	30.71 in	33.86 in	37.01 in	40.16 in	42.91 in	43.7 in
177.2'	1047.61 lbf	928.46 lbf	802.57 lbf	710.4 lbf	640.71 lbf	586.75 lbf	544.04 lbf	508.07 lbf	499.08 lbf
	21.26 in	24.02 in	27.95 in	31.5 in	35.04 in	38.19 in	41.34 in	44.09 in	44.88 in
180.4'	1038.62 lbf	923.96 lbf	802.57 lbf	712.64 lbf	645.2 lbf	591.25 lbf	548.53 lbf	514.81 lbf	505.82 lbf
	22.44 in	25.2 in	29.13 in	32.68 in	36.22 in	39.37 in	42.52 in	45.28 in	46.06 in
183.7'	1031.87 lbf	921.72 lbf	802.57 lbf	714.89 lbf	647.45 lbf	595.74 lbf	555.28 lbf	519.31 lbf	510.32 lbf
	23.23 in	26.38 in	29.92 in	33.86 in	37.01 in	40.55 in	43.31 in	46.46 in	47.24 in
187.0'	1022.88 lbf	917.22 lbf	802.57 lbf	717.14 lbf	651.95 lbf	600.24 lbf	559.77 lbf	523.8 lbf	514.81 lbf
	24.41 in	27.17 in	31.1 in	34.65 in	38.19 in	41.73 in	44.49 in	47.64 in	48.43 in
190.3'	1016.14 lbf	914.97 lbf	802.57 lbf	719.39 lbf	656.44 lbf	604.74 lbf	564.27 lbf	530.55 lbf	521.56 lbf
	25.59 in	28.35 in	32.28 in	35.83 in	39.37 in	42.91 in	45.67 in	48.82 in	49.61 in
193.6'	1009.39 lbf	910.48 lbf	802.57 lbf	721.64 lbf	658.69 lbf	609.23 lbf	568.77 lbf	535.05 lbf	526.05 lbf
	26.38 in	29.53 in	33.46 in	37.01 in	40.55 in	44.09 in	47.24 in	50 in	50.79 in
196.8'	1002.65 lbf	908.23 lbf	802.57 lbf	723.88 lbf	663.19 lbf	613.73 lbf	573.26 lbf	539.54 lbf	530.55 lbf
	27.56 in	30.31 in	34.65 in	38.19 in	41.73 in	45.28 in	48.43 in	51.18 in	52.36 in
200.0'	995.9 lbf	905.98 lbf	802.57 lbf	726.13 lbf	665.43 lbf	618.22 lbf	577.76 lbf	544.04 lbf	535.05 lbf
	28.74 in	31.5 in	35.43 in	39.37 in	42.91 in	46.46 in	49.61 in	52.76 in	53.54 in
203.4'	991.41 lbf	901.48 lbf	802.57 lbf	728.38 lbf	669.93 lbf	620.47 lbf	582.26 lbf	548.53 lbf	539.54 lbf
	29.92 in	32.68 in	36.61 in	40.55 in	44.09 in	47.64 in	50.79 in	53.94 in	54.72 in
206.7'	984.66 lbf	899.24 lbf	802.57 lbf	730.63 lbf	672.18 lbf	624.97 lbf	586.75 lbf	553.03 lbf	544.04 lbf
	31.1 in	33.86 in	37.8 in	41.73 in	45.28 in	48.82 in	51.97 in	55.12 in	55.91 in
210.0'	980.17 lbf	896.99 lbf	804.82 lbf	732.88 lbf	674.43 lbf	629.47 lbf	589 lbf	557.53 lbf	548.53 lbf
	32.28 in	35.04 in	39.37 in	42.91 in	46.85 in	50 in	53.54 in	56.3 in	57.48 in
213.3'	973.42 lbf	894.74 lbf	804.82 lbf	732.88 lbf	678.92 lbf	631.71 lbf	593.5 lbf	562.02 lbf	553.03 lbf
	33.46 in	36.22 in	40.55 in	44.09 in	48.03 in	51.57 in	54.72 in	57.87 in	58.66 in
216.5'	968.93 lbf	892.49 lbf	804.82 lbf	735.13 lbf	681.17 lbf	636.21 lbf	597.99 lbf	566.52 lbf	557.53 lbf
	34.65 in	37.4 in	41.73 in	45.67 in	49.21 in	52.76 in	55.91 in	59.06 in	60.24 in
219.8'	964.43 lbf	890.24 lbf	804.82 lbf	737.37 lbf	683.42 lbf	638.46 lbf	602.49 lbf	571.01 lbf	562.02 lbf
	35.83 in	38.98 in	42.91 in	46.85 in	50.39 in	53.94 in	57.48 in	60.63 in	61.42 in
223.1'	959.93 lbf	888 lbf	804.82 lbf	739.62 lbf	685.67 lbf	642.95 lbf	604.74 lbf	573.26 lbf	566.52 lbf
	37.01 in	40.16 in	44.09 in	48.03 in	51.97 in	55.51 in	58.66 in	61.81 in	62.99 in
226.4'	955.44 lbf	885.75 lbf	804.82 lbf	739.62 lbf	687.92 lbf	645.2 lbf	609.23 lbf	577.76 lbf	568.77 lbf
	38.19 in	41.34 in	45.67 in	49.61 in	53.15 in	56.69 in	60.24 in	63.39 in	64.17 in
229.7'	950.94 lbf	883.5 lbf	804.82 lbf	741.87 lbf	690.16 lbf	649.7 lbf	613.73 lbf	582.26 lbf	573.26 lbf
	39.76 in	42.52 in	46.85 in	50.79 in	54.33 in	58.27 in	61.42 in	64.57 in	65.75 in

DORKING ACSR 96

DIAMETER :	16MM (0.629'')
CROSS SECTION:	152.81MM^2 (0.237 inch^2)
MODULUS OF ELASTICITY:	103.26 KN/MM^2 (14508675 LB/IN^2)
COEFF. OF THERM. EXP.:	0.0000153 1/KELVIN (8.50 x 10^{-6} 1/F)
WEIGHT:	6.95 N/M (0.476 LBF / FT)



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

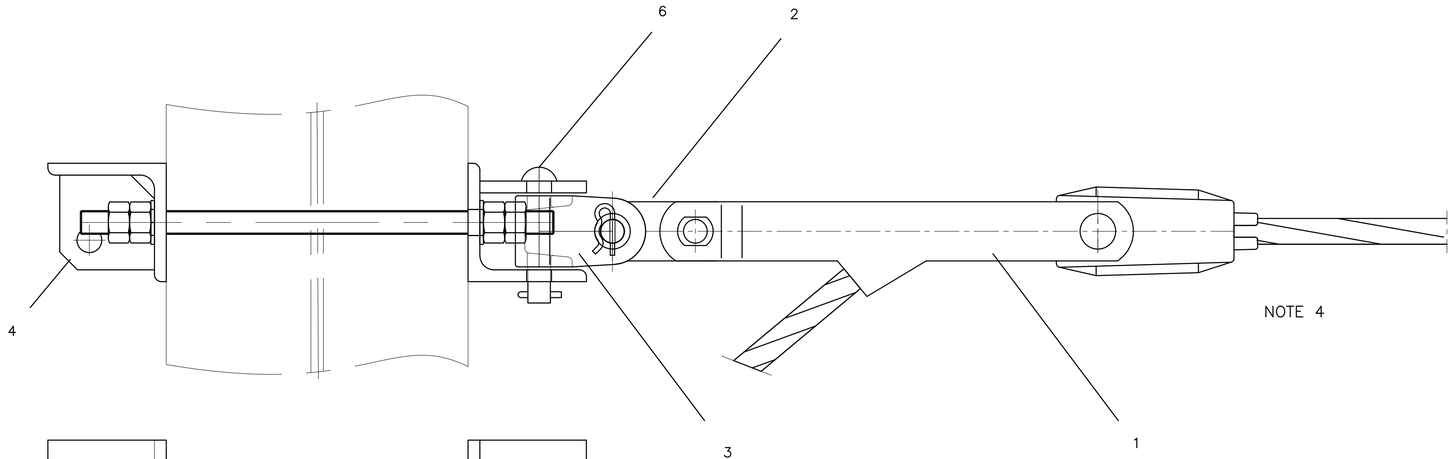
STANDARD SAG OF ACSR 96
FIXED TERMINATION
SHUNT WIRE

CADD FILE NAME: SD-W6375

REV: | EDITION: SECOND

SCALE: N/A

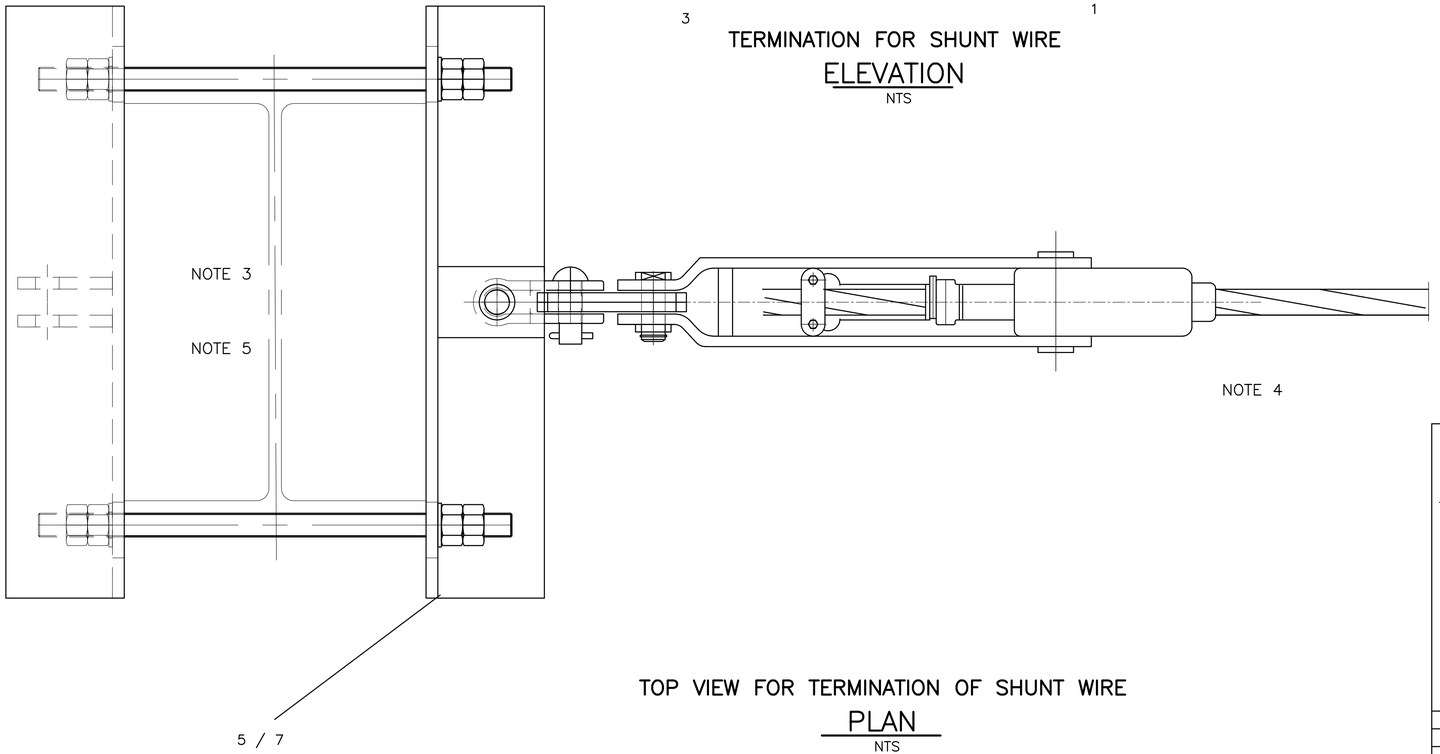
STANDARD DRAWING NO.: SD-W6375



TERMINATION FOR SHUNT WIRE

ELEVATION

NTS



TOP VIEW FOR TERMINATION OF SHUNT WIRE

PLAN

NTS

NOTE 6

PIECES			DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.
C	B	A						
1	–	–	BRACKET FOR TERMINATION AT ROUND POLE		7			
1	1	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6			
–	1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED		NOTE 1
–	–	1	BACKSTAY ANCHOR		4			NOTE 2
1	1	1	SWIVEL JOINT		3			
2	2	2	LINK PLATE		2			
1	1	1	TERMINATION CLAMP FOR SHUNT WIRE		1			

FOR SHUNT WIRE WITHOUT BACKSTAY / ROUND POLE

FOR SHUNT WIRE WITHOUT BACKSTAY

FOR SHUNT WIRE WITH BACKSTAY

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. CHOICE OF BACKSTAY DEPENDS ON CUSTOMER, IF NECESSARY
3. POLE ORIENTATION ACC: TO DETAIL DESIGN
4. GROUNDING OF SHUNT WIRE SIMILAR TO DRAWING SD–W5240
5. ARRANGEMENT FOR ROUND POLE NOT SHOWN
6. TYPE A AND B FOR RECTANGULAR POLE; TYPE C FOR ROUND POLE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

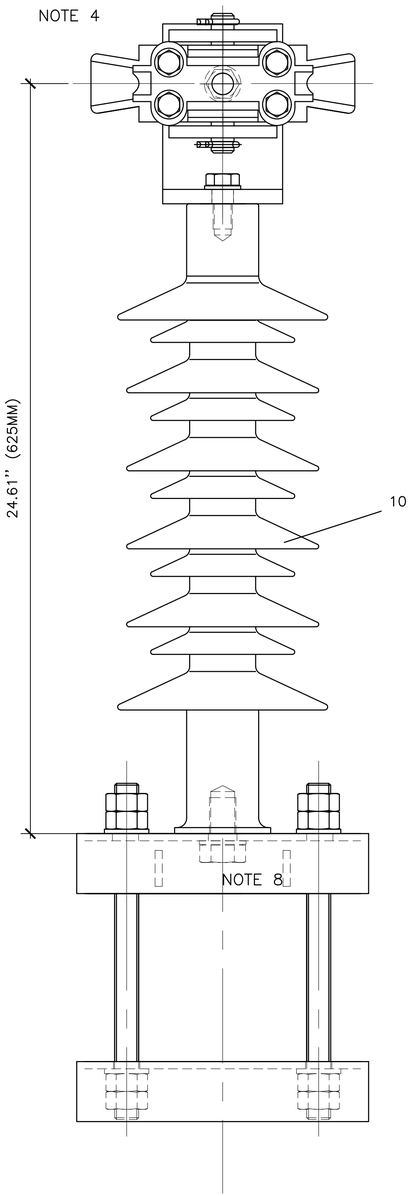
TERMINATION FOR SHUNT WIRE
AT RECTANGULAR / ROUND POLE
FT–08

CADD FILE NAME: SD–W6383

REV: | EDITION: SECOND

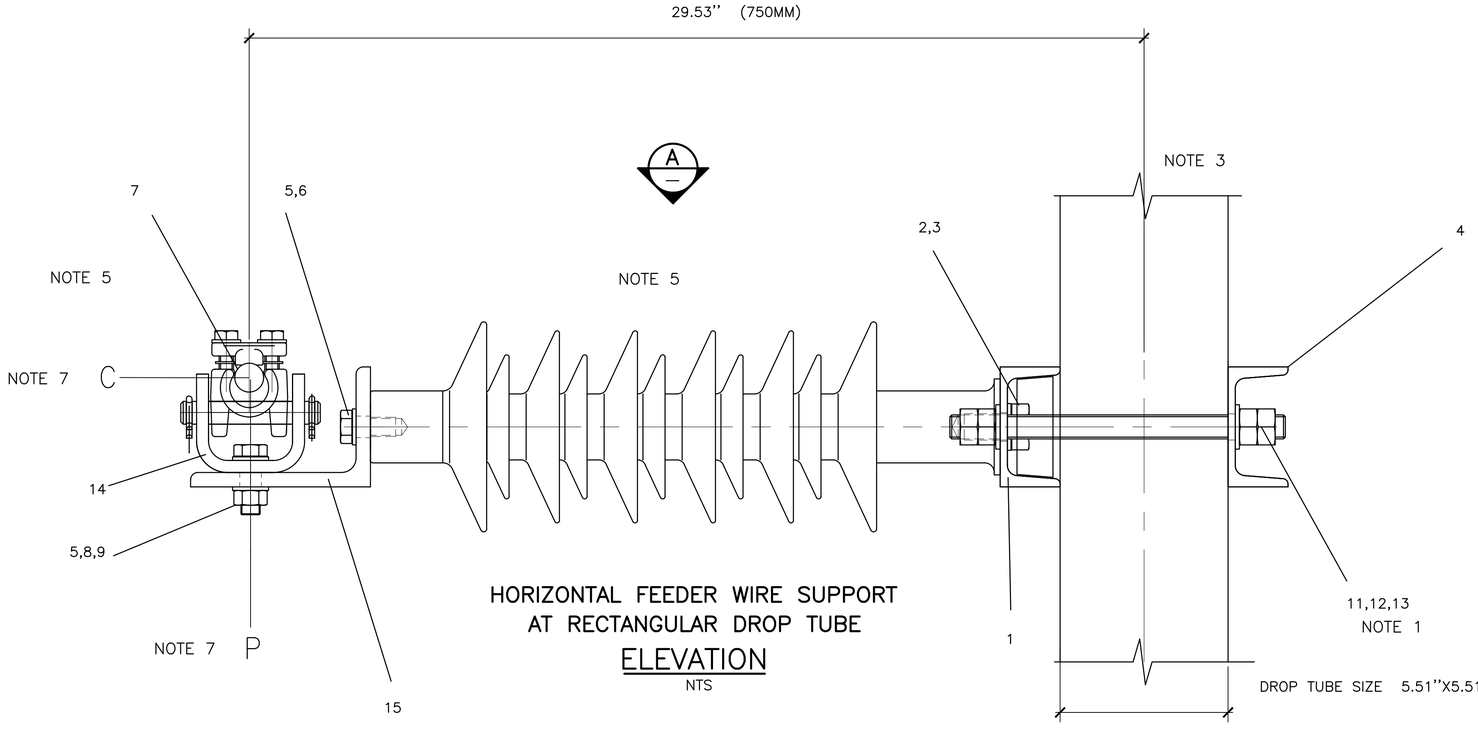
SCALE: NTS

STANDARD DRAWING NO.: SD–W6383



HORIZONTAL FEEDER WIRE SUPPORT
AT RECTANGULAR DROP TUBE

A – PLAN
NTS



HORIZONTAL FEEDER WIRE SUPPORT
AT RECTANGULAR DROP TUBE

ELEVATION
NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 11.81'' (300MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. FINAL DIMENSIONING OF THE DROP TUBE BY THE DESIGNER
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
8. FOR INSTALLING PART 2 / 3 USE A RATCHET WITH LONGNUT BEFORE INSTALLING CONSTRUCTION TO DROP TUBE
9. DROP TUBE SIZE 5.51'' (140MM)
10. ADAPTATION FOR DIFFERENT TUBE SIZE POSSIBLE; PART 1,4 AND 12 MUST BE MODIFIED FOR OTHER SIZE – PART 1 AND 4 ARE FLEXIBLE
11. IF DROP TUBE IS INSTALLED TO CONCRETE, EARTHING OF DROP TUBE NECESSARY

B	A					
–	1	SUPPORT ANGLE		15		PART 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		14		
–	4	WASHER 3/4"		13		
–	2	STUD BOLT 3/4"		12		NOTE 1
–	8	NUT 3/4"		11		
–	1	INSULATOR		10		
–	1	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 6
–	1	FEEDER WIRE CLAMP	G–AL	7		
–	1	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 6
–	3	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	1	BACK U–PROFILE		4		PART 2
–	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	1	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	1	BRACKET FOR HORIZONTAL FEEDER WIRE SUPPORT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

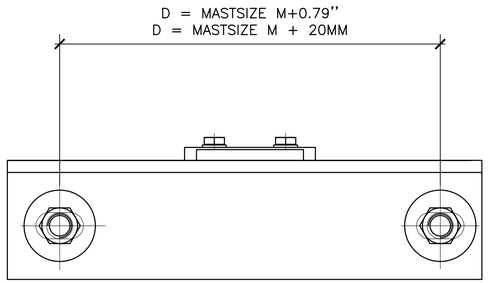
HORIZONTAL FEEDER WIRE SUPPORT
AT RECTANGULAR DROP TUBE
SIZE 5.51"X5.51" (140X140MM)

CADD FILE NAME: SD–W6384

REV: | EDITION: SECOND

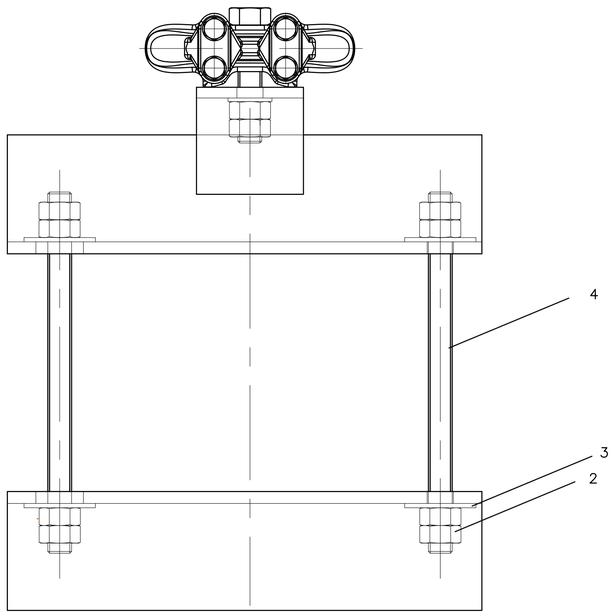
SCALE: NTS

STANDARD DRAWING NO.: SD–W6384



BRACKET WITH EARTHING CLAMP AT RECTANGULAR MAST
OR RECTANGULAR DROP TUBE

A – ELEVATION
NTS

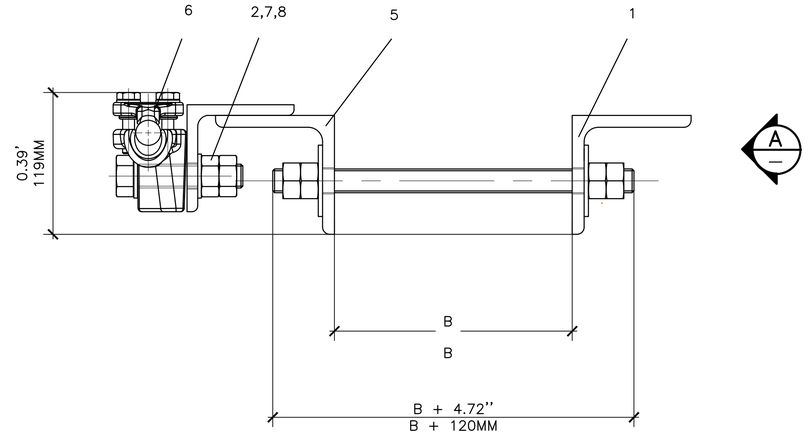


BRACKET WITH EARTHING CLAMP
AT RECTANGULAR MAST
OR RECTANGULAR DROP TUBE

PLAN
NTS

NOTES:

1. COATING ACC. TO DIN EN ISO 10684–tZN–o
2. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
3. DIMENSION: FEET / MM (IF NOTHING DIFFERENT IS MENTIONED)



BRACKET WITH EARTHING CLAMP
AT RECTANGULAR MAST
OR RECTANGULAR DROP TUBE

ELEVATION
NTS

B	A					
–	3	WASHER FOR 3/4"		8		
–	1	HEX. HEAD SCREW 3/4"x4"		7		
–	1	ELECTRICAL CLAMP FOR STATIC WIRE		6	B681011AX	
–	1	BACK ANGLE WITH EARTHING ANGLE		5		
–	2	STUD BOLT 3/4"		4		LENGTH AS REQUIRED
–	4	WASHER FOR 3/4"		3		
–	10	NUT 3/4"		2		
–	1	BACK BRACKET		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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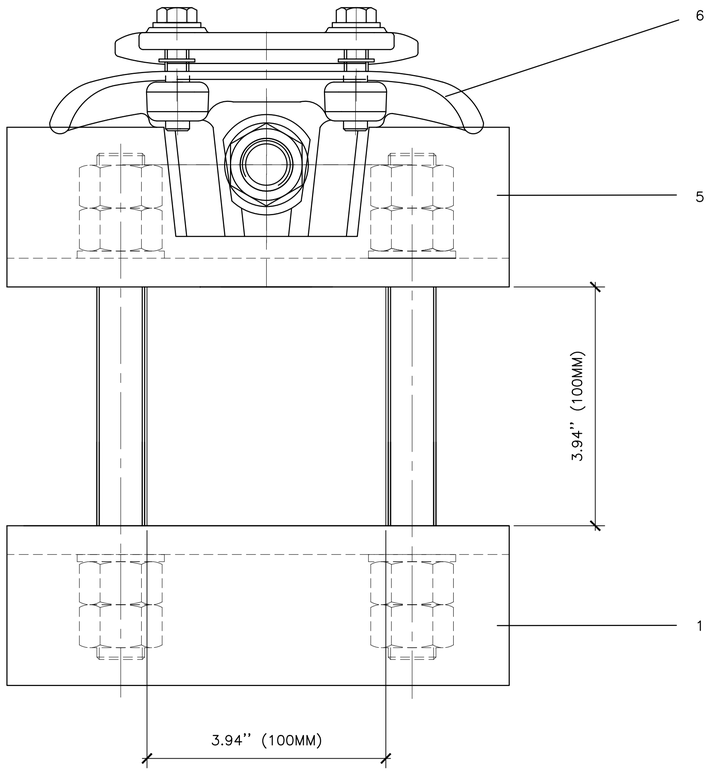
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

BRACKET WITH EARTHING CLAMP
AT RECTANGULAR MAST
OR RECTANGULAR DROP TUBE

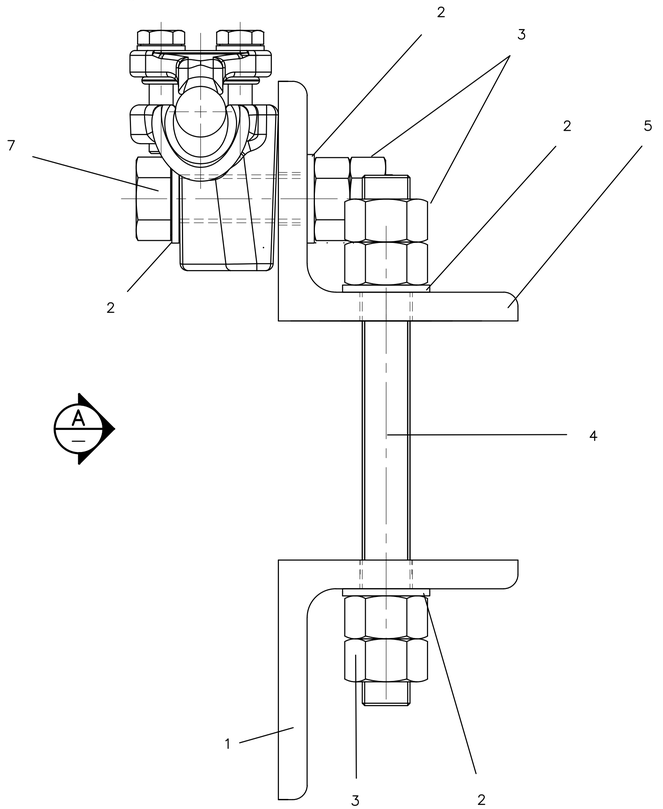
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EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6385



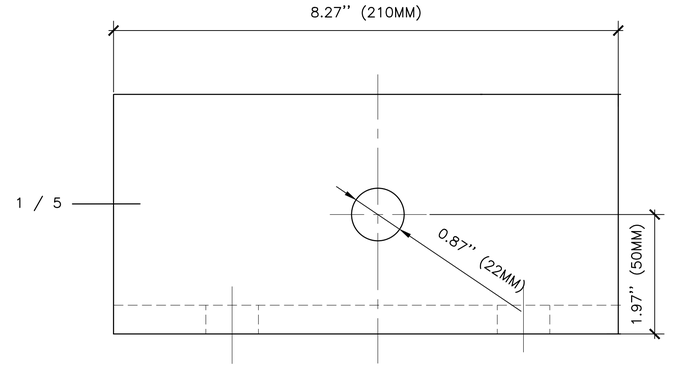
VERTICAL STATIC WIRE SUPPORT
WITHOUT INSULATION

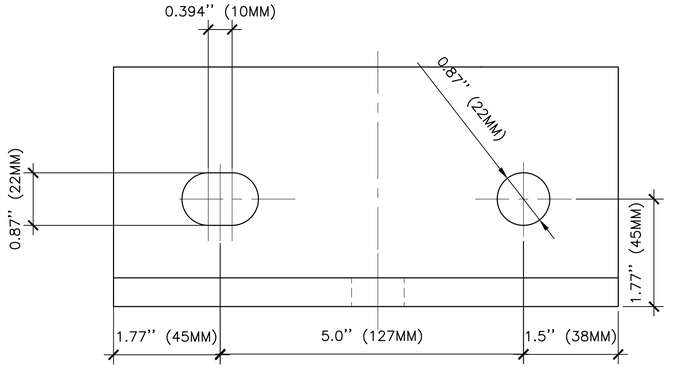
A — ELEVATION
NTS

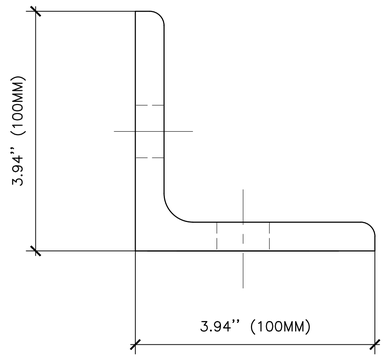
NOTE 6



VERTICAL STATIC WIRE SUPPORT
ELEVATION
NTS







NOTES:

1. LENGTH DEPENDS ON BEAMSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 8.66'' (220MM)
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING AND CUTTING
6. ELECTRICAL CLEARANCE TO FEEDER WIRE / INSULATOR TO BE OBSERVED

B	A					
–	1	HEX. HEAD SCREW M20x100	8.8 NOTE2	7	ISO 4017	
–	1	STATIC WIRE CLAMP	G–AL	6		
–	1	ANGLE 100x100x12 NOTE 4		5	DIN EN 10056–1	NOTE 5
–	2	STUD BOLT M20	8.8 NO.2	4	DIN 976–1	NOTE 3 NOTE 1
–	10	NUT M20	8 NO.2	3	DIN EN ISO 4032	
–	6	WASHER FOR M20	200HV NO.2	2	DIN EN ISO 7089	
–	1	ANGLE 100x100x12 NOTE 4		1	DIN EN 10056–1	NOTE 5
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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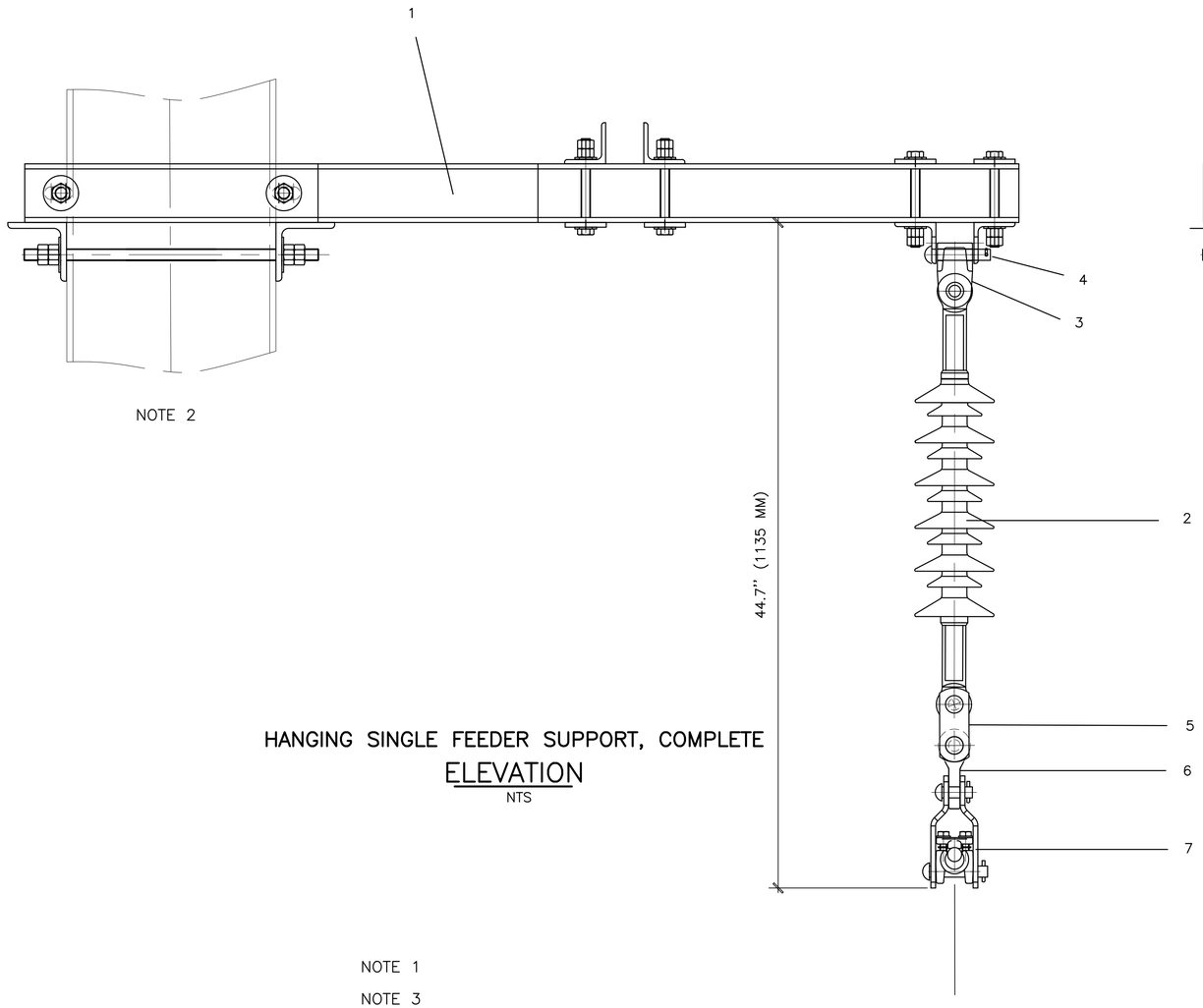
Caltrain

ENGINEERING STANDARD DRAWINGS

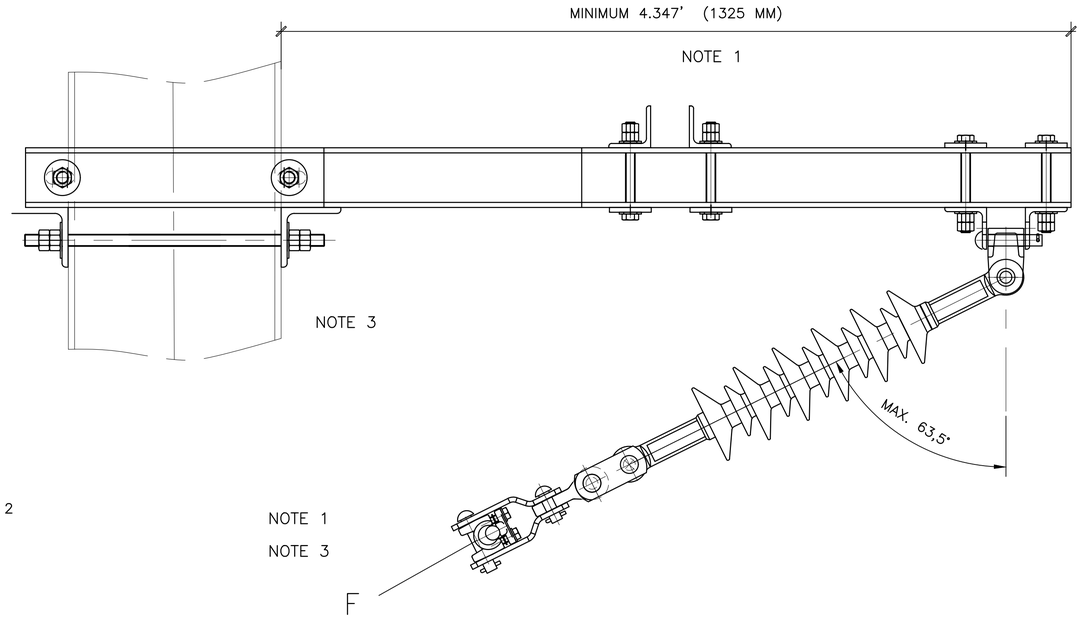
OVERHEAD CONTACT SYSTEM

STATIC WIRE SUPPORT
VERTICAL AT SQUARE PROFILE
3.94"X3.94" (100X100MM)

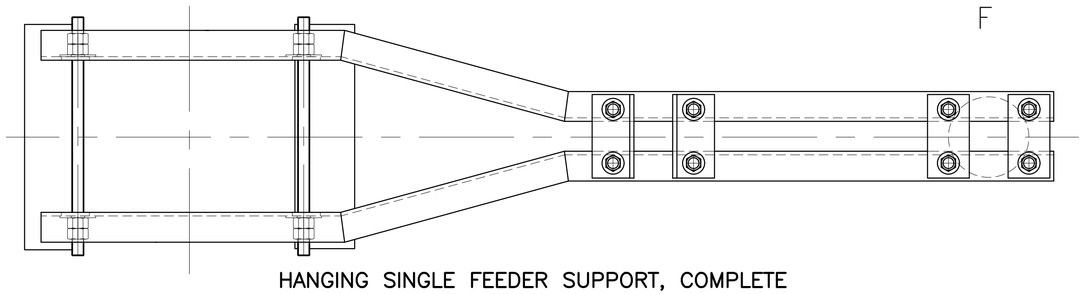
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REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6386



HANGING SINGLE FEEDER SUPPORT, COMPLETE
ELEVATION
NTS



HANGING SINGLE FEEDER SUPPORT, COMPLETE
SWIVELED OUT POSITION
ELEVATION
NTS



HANGING SINGLE FEEDER SUPPORT, COMPLETE
PLAN
NTS

NOTES:

1. LENGTH DEPENDS ON MAST SIZE AND NECESSARY DISTANCE
2. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
3. ELECTRICAL CLEARANCE ACCORDING TO SD–W6006
4. TO BE USED IN SPANS WITHOUT OBSTACLES ONLY. OTHERWISE USE V–FEEDER SD–W6109.
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
6. FOR F > 1124 LBF (5 KN) STEEL STRUCTURE TO BE CHECKED BY STATIC CALCULATION
7. SMALL PART STEEL USED M41 FOR SINGLE POST INSULATOR WITH U SHACKLE

	FOR RECTANGULAR MAST					
B	A					
–	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	7		
–	1	TWISTED EYE–EYE CONNECTOR		6		
–	1	LINK PLATE WITH BOLTS		5		
–	1	BOLT ø19x100 WITH ß–SPLINT		4		
–	1	SWIVEL JOINT		3		
–	1	COMPOSITE INSULATOR		2		
–	1	SUPPORTING STRUCTURE FOR V–FEEDER SUPPORT		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

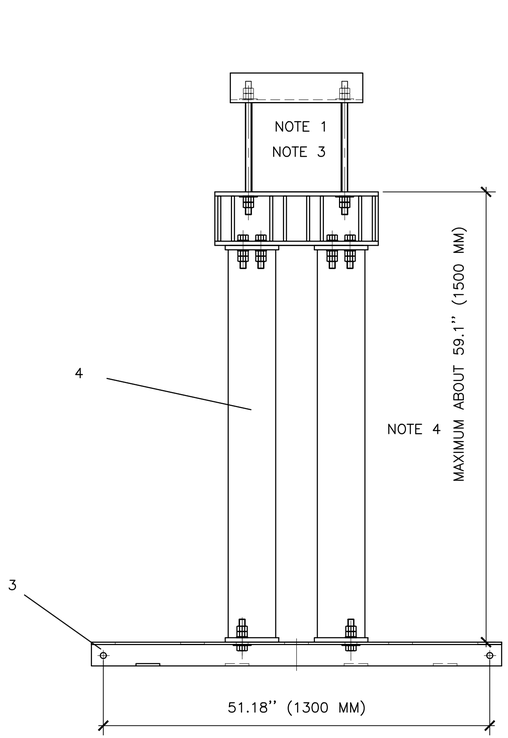
HANGING SINGLE FEEDER SUPPORT

CADD FILE NAME: SD–W6387

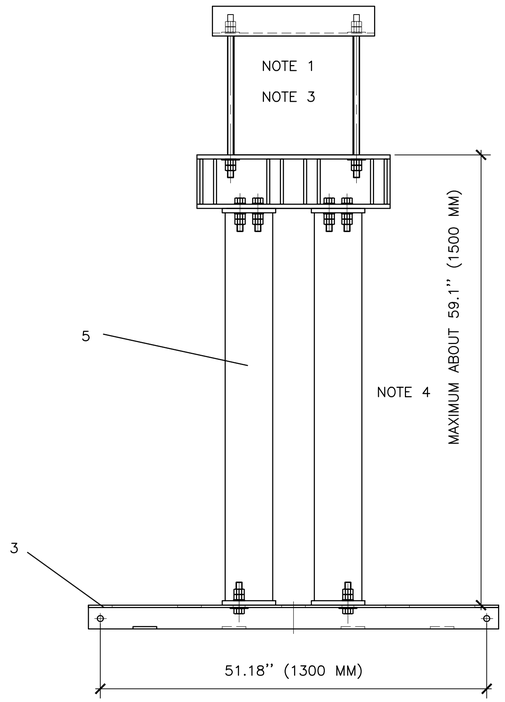
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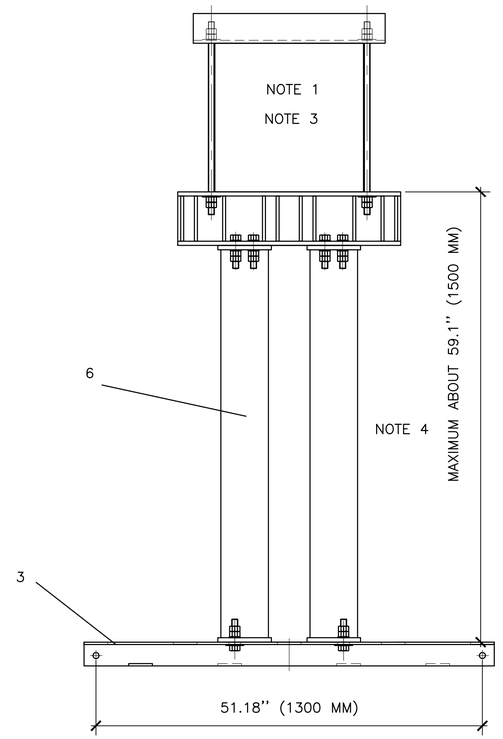
STANDARD DRAWING NO.: SD–W6387



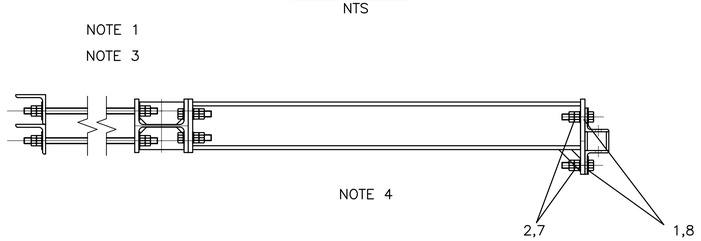
TYPE A
OFFSET DOUBLE CANTILEVER SUPPORT
FOR MAST SIZE 11.81'' (300 MM)
PLAN
NTS



TYPE B
OFFSET DOUBLE CANTILEVER SUPPORT
FOR MAST SIZE 15.75'' (400 MM)
PLAN
NTS



TYPE C
OFFSET DOUBLE CANTILEVER SUPPORT
FOR MAST SIZE 19.69'' (500 MM)
PLAN
NTS



OFFSET DOUBLE CANTILEVER SUPPORT
ELEVATION
NTS

NOTES:
1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE SIZE ACCORDING TO LAYOUT PLANS / DETAIL DESIGN IF DEVIATION, CHANGE DESIGN AND CHECK DESIGN
4. LENGTH DEPENDS DETAIL DESIGN

MAST WIDTH 19.69'' (500 MM)	MAST WIDTH 15.75'' (400 MM)	MAST WIDTH 11.81'' (300 MM)	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
C	B	A	PIECES				
4	4	4	HEXAGON HEAD SCREW M20 x 80 MM (L=3.15'')	8.8 NOTE 2	8	ISO 4017	
4	4	4	WASHER FOR M20	200HV NO.2	7	DIN EN ISO 7089	
1	–	–	CANTILEVER STAND OFF BRACKET		6		NOTE 1 NOTE 6
–	1	–	CANTILEVER STAND OFF BRACKET		5		NOTE 1 NOTE 6
–	–	1	CANTILEVER STAND OFF BRACKET		4		NOTE 1 NOTE 6
1	1	1	BRACKET FOR DOUBLE CANTILEVER		3		
8	8	8	NUT M20	8 NOTE 2	2	DIN EN ISO 4032	
4	4	4	WASHER FOR M20	200HV NO.2	1	DIN EN ISO 7093	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

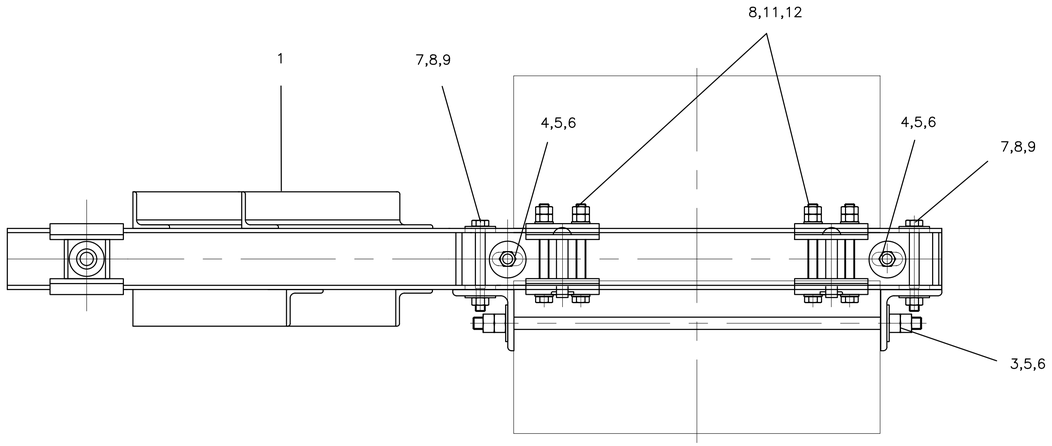
APPROVED BY:
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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

DOUBLE CANTILEVER STAND–OFF BRACKET
FOR DIFFERENT MAST SIZE

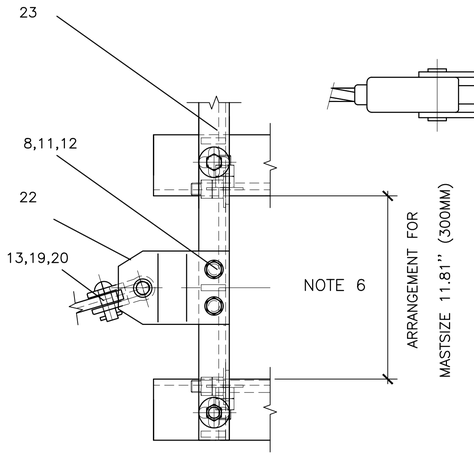
CADD FILE NAME: SD–W6388
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6388



TYPE A – SINGLE STATIC WIRE TERMINATION TRAVERSE WITH ADDITIONAL FW V–MIDDLE TERMINATION

ELEVATION

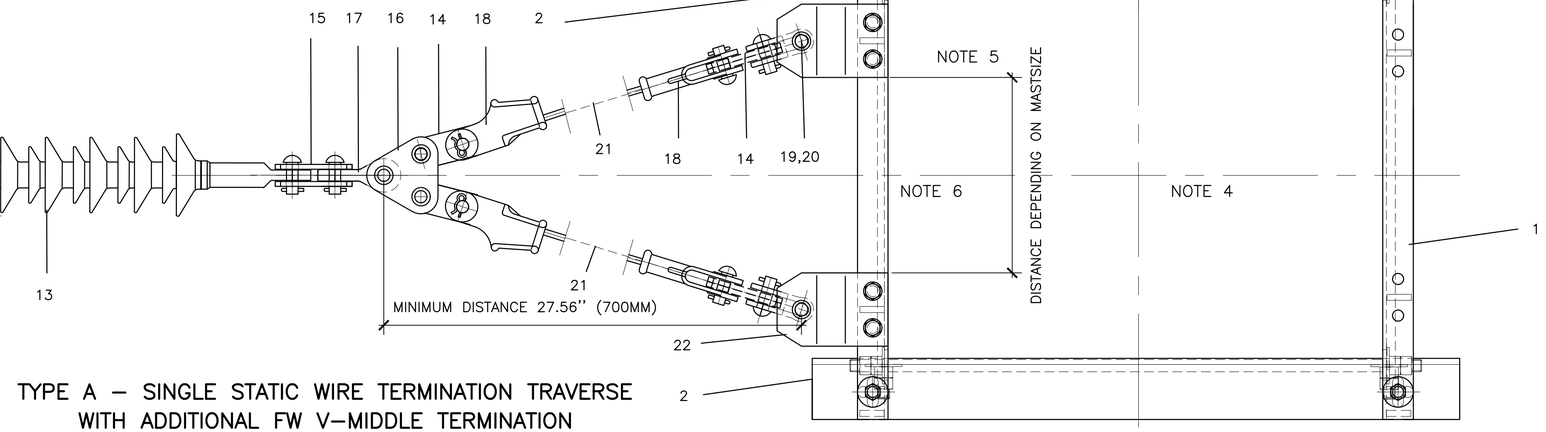
NTS



TYPE B – SINGLE STATIC WIRE TERMINATION TRAVERSE WITH ADDITIONAL FW MIDDLE TERMINATION MASTSIZE < 11.81'' (300MM)

PLAN

NTS



TYPE A – SINGLE STATIC WIRE TERMINATION TRAVERSE WITH ADDITIONAL FW V–MIDDLE TERMINATION MAST SIZE >= 11.81'' (300MM)

PLAN

NTS

NOTES:

1. LENGTH ACCORDING TO MASTSIZE
2. HOT DIP GALVANIZED ACCORDING TO DIN EN ISO 10684 tZn–o
3. VARIABLE LENGTH (DEPENDS ON DETAIL DESIGN) ; MAXIMUM 3.28' (1.00M)
4. MASTSIZE MUST BE CONSIDERED
5. MASTSIZE MUST BE CONSIDERED – MINIMUM MASTSIZE FOR V–TERMINATION 11.81'' (300MM)
6. FOR MASTSIZE < 11.81'' (300 MM) ONLY ONE TERMINATION MUST BE CONSIDERED IN THE MIDDLE OF THE U–PROFILE

B	A					
1	–	TERMINATION TRAVERSE – SINGLE		23		NOTE 1, 3 AND 6
2	4	TERMINATION PLATE		22		
–	2	MESSENGER WIRE BZ II 70/19		21		
1	2	SWIVEL JOINT		20		
1	2	PIN 19x100 WITH 8–SPLINT PiN		19		
–	4	WEDGE TYPE DEAD END CLAMP		18		
–	1	TWISTED EYE EYE CONNECTOR		17		
–	1	TRIANGULAR CLEVIS LINK		16		
–	1	LINK PLATES WITH PINS		15		
–	8	LINK PLATES		14		
1	1	FEEDER WIRE TERMINATION		13		WITHOUT PART 3,5,6
4	8	WASHER FOR M16	200HV NOTE2	12	DIN EN ISO 7089	
2	4	HEXAGON HEAD SCREW M16x150	5.6 NOTE2	11	DIN EN ISO 4014	
1	1	STATIC WIRE TERMINATION		10		WITHOUT PART 5
4	4	HEXAGON HEAD SCREW M16x140	5.6 NOTE2	9	DIN EN ISO 4014	
8	12	HEXAGON NUT M16	6 NOTE2	8	DIN EN ISO 4032	
8	8	WASHER FOR M16	200HV NOTE2	7	DIN EN ISO 7093	
8	8	WASHER FOR M20	200HV NOTE2	6	DIN EN ISO 7093	
16	16	HEXAGON NUT M20	6 NOTE2	5	DIN EN ISO 4032	
2	2	STUD BOLT M20	5.6 NOTE2	4	DIN 976–1	NOTE 1
2	2	STUD BOLT M20	5.6 NOTE2	3	DIN 976–1	NOTE 1
2	2	SUPPORTING ANGLE		2		NOTE 1
–	1	TERMINATION TRAVERSE – V		1		NOTE 1, 3 AND 5
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

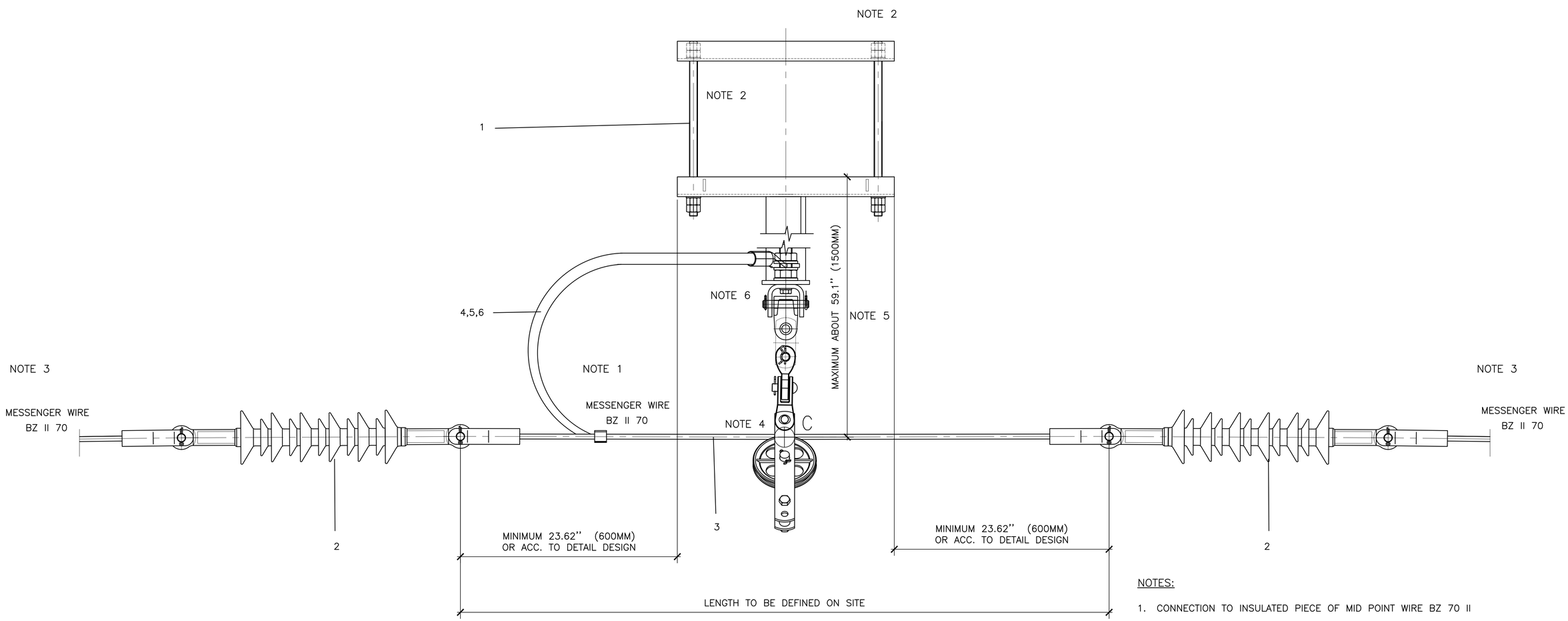
SINGLE SW TERMINATION TRAVERSE WITH ADDITIONAL FW MIDDLE TERMINATION

CADD FILE NAME: SD–W6389

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6389



INSULATION ARRANGEMENT OF OFFSET MID POINT ANCHOR WIRE WITH PULLEY SUPPORT

ELEVATION

NTS

NOTES:

1. CONNECTION TO INSULATED PIECE OF MID POINT WIRE BZ 70 II
2. PORTAL SIZE ACC. TO DETAIL DESIGN – LENGTH / DIMENSIONS ACC. TO PORTAL SIZE
3. CONTINUING CONNECTION ACC. TO PROJECT SPECIFIC DETAIL DESIGN
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
6. LENGTH ACC. TO DETAIL DESIGN
7. ADJUST CLAMP INTO NECESSARY POSITION

	A					
	1	CABLE LUG 16–120	CU	6	DIN 46235	
	1	JUMPER WIRE 95x259 (LENGTH AS NEEDED)	E–CU	5		
	1	ELECTRICAL CLAMP		4		
	1	MESSENGER WIRE BZ II 70/19		3	DIN 48201	NOTE 1
	2	CUT IN INSULATION FOR MW		2		TYPE A
	1	MID POINT ANCHOR WIRE OFFSET SUPPORT WITH PULLEY		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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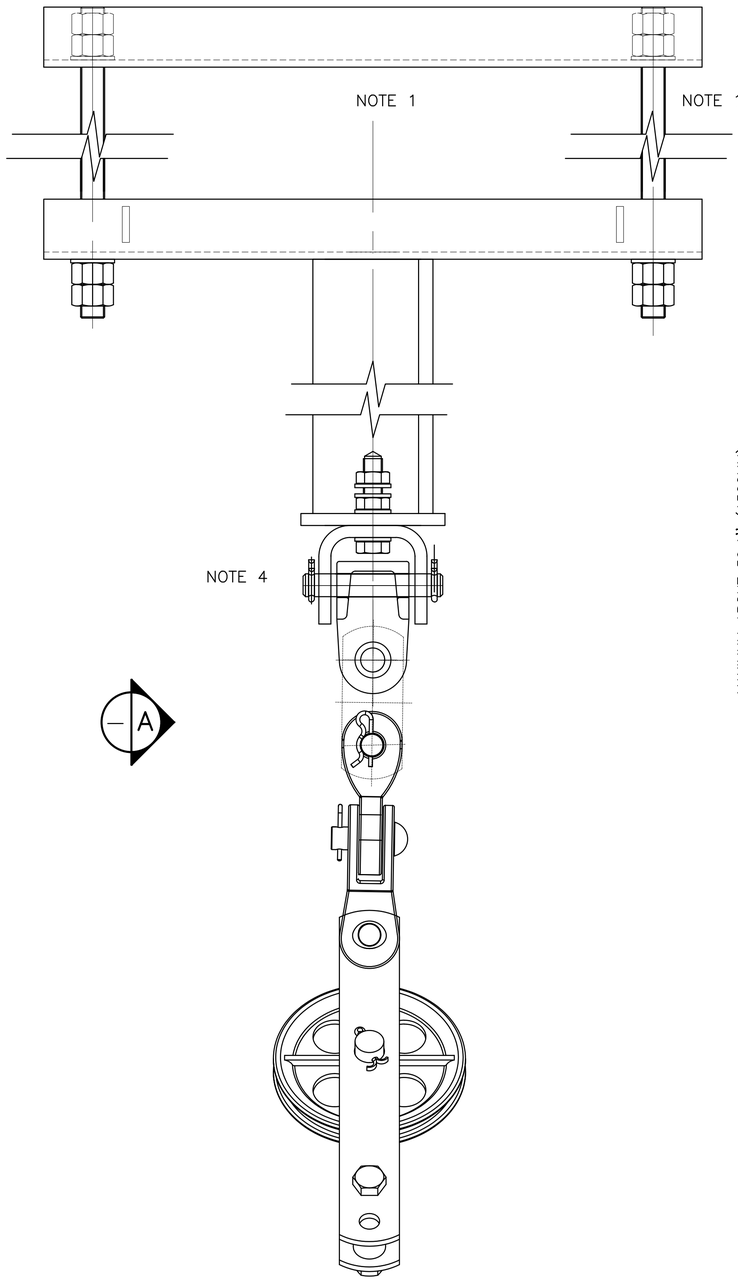
INSULATION ARRANGEMENT OF MPA WIRE WITH PULLEY SUPPORT OFFSET

CADD FILE NAME: SD–W6390

REV: | EDITION: SECOND

SCALE: NTS

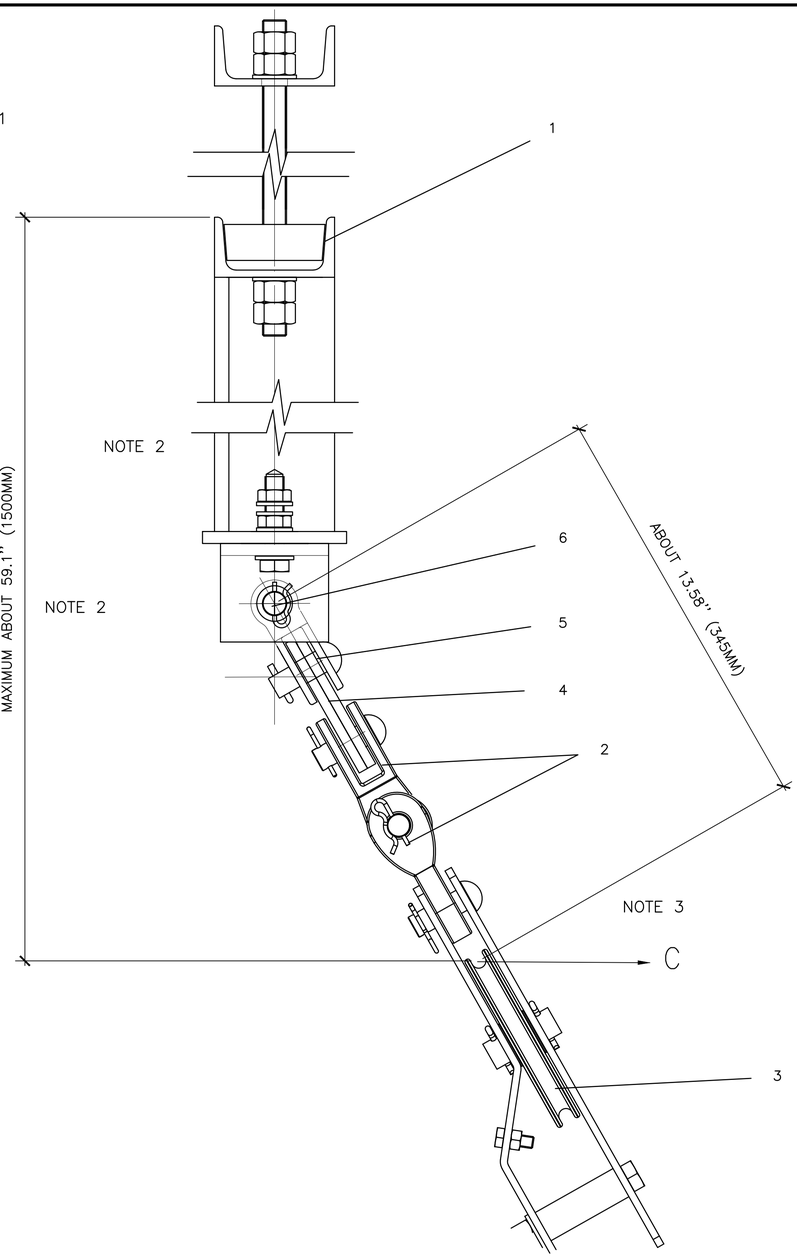
STANDARD DRAWING NO.: SD–W6390



MID POINT ANCHOR WIRE OFFSET
SUPPORT WITH PULLEY HANGING AT PORTAL

ELEVATION

NTS



MID POINT ANCHOR WIRE OFFSET
SUPPORT WITH PULLEY HANGING AT PORTAL

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON BEAM SIZE
2. DISTANCE DEPENDS ON DETAIL DESIGN ; MAXIMUM ABOUT 59.1" (1500MM)
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
4. TURN CLAMP IN NECESSARY POSITION

	A					
	1	PIN ø19X100 WITH ß–SPLINT PIN	A2	6		
	1	SWIVEL JOINT		5		
	2	LINK PLATE	AL	4		
	1	PULLEY FOR BZ 70 II MID POINT WIRE		3		
	2	TWISTED CLEVIS EYE		2		
	1	OFFSET SUPPORT STRUCTURE FOR MID POINT ANCHOR WIRE AT PORTAL		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

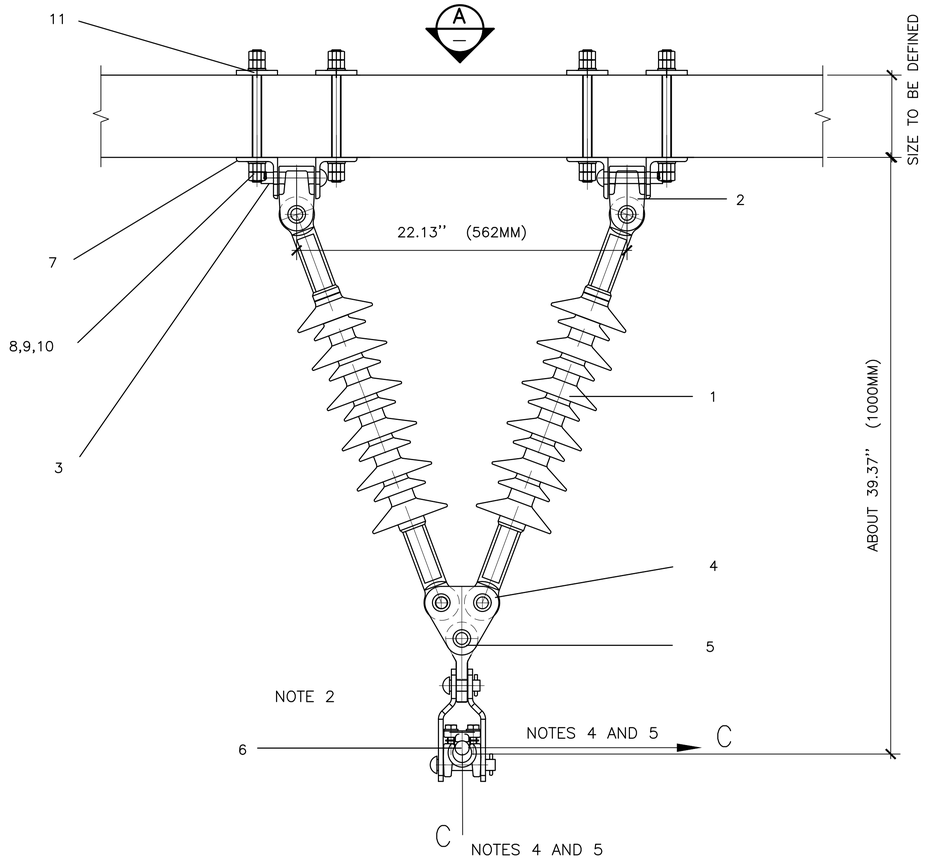
MID POINT ANCHOR WIRE SUPPORT WITH PULLEY OFFSET

CADD FILE NAME: SD–W6391

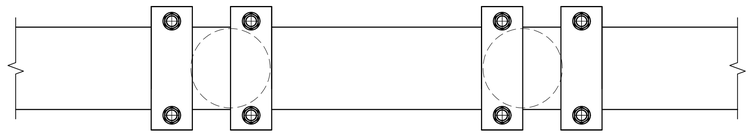
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6391



V–FEEDER SUPPORT, COMPLETE
AT STRUCTURE
ELEVATION
NTS



V–FEEDER SUPPORT, COMPLETE
AT STRUCTURE
A – ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MULTIPLE TRACK CANTILEVER BEAM SIZE / STRUCTURE
2. ELECTRICAL DISTANCE MUST BE CONSIDERED ACCORDING TO SD–W6006
3. COATING ACC. TO DIN EN ISO 10684–TZN–O
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
5. STRUCTURAL CHECK REQUIRED FOR LOADS > 1124 LBF (5 KN))

		FOR MULTIPLE TRACK CANTILEVER				
B	A					
–	4	CLAMPING PLATE		11		NOTE 1
–	8	STUD BOLT M16	8.8	10	DIN 976–1	NOTE 1 NOTE 3
–	32	HEXAGON NUT M16	8	9	DIN EN ISO 4032	NOTE 3
–	16	WASHER M16	200HV	8	DIN EN ISO 7089	NOTE 3
–	4	SUPPORTING ANGLE		7		NOTE 1
–	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	6		
–	1	TWISTED EYE–EYE CONNECTOR		5		
–	1	THREE HOLE TRIANGULAR CLEVIS LINK		4		
–	2	BOLT ø19x100 WITH B–SPLINT		3		
–	2	SWIVEL JOINT		2		
–	2	COMPOSITE INSULATOR		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

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OVERHEAD CONTACT SYSTEM

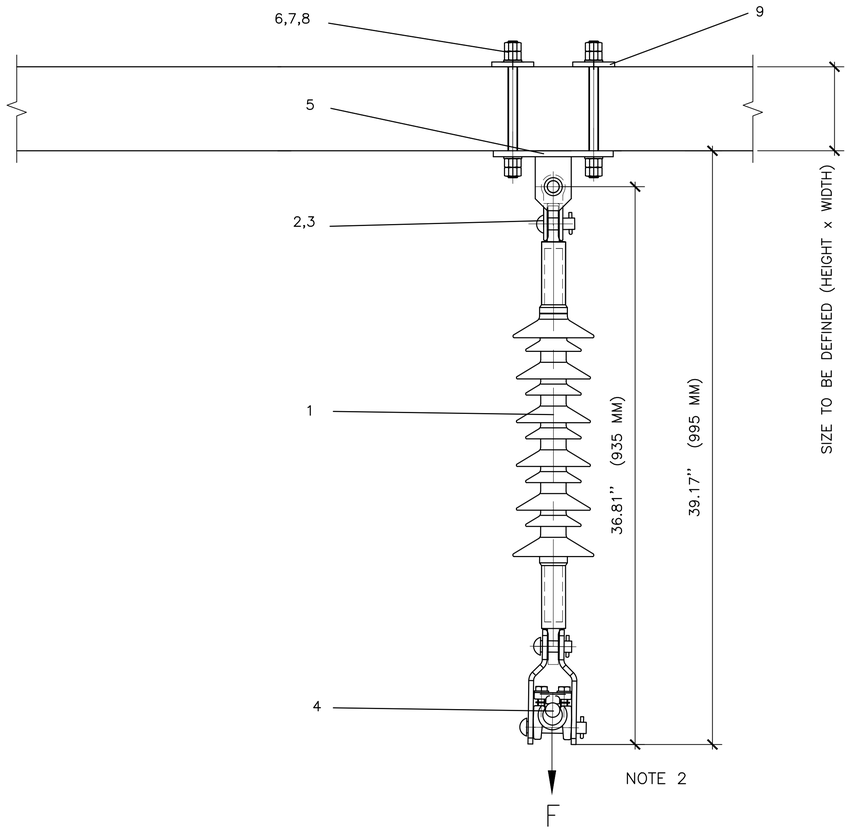
V–FEEDER SUPPORT
AT STRUCTURE

CADD FILE NAME: SD–W6392

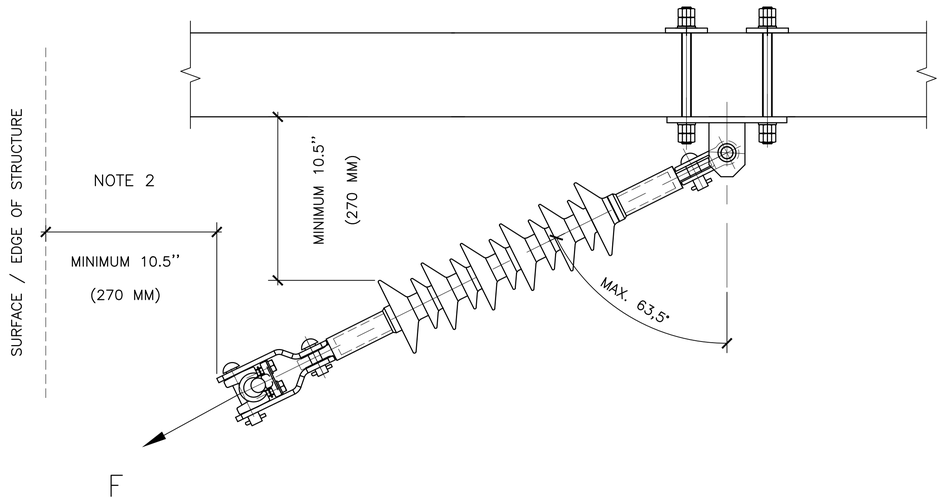
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6392



HANGING SINGLE FEEDER SUPPORT, COMPLETE
AT STRUCTURE
ELEVATION
NTS



HANGING SINGLE FEEDER SUPPORT, COMPLETE
SWIVELED OUT POSITION
AT STRUCTURE
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON BEAMSIZE
2. ELECTRICAL CLEARANCE ACCORDING TO SD–W6006 IS > 10.5 INCHES (270 MM)
3. TO BE USED IN SPANS WITHOUT OBSTACLES ONLY. OTHERWISE USE V–FEEDER SD–W6392
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
5. FOR F > 1124 LBF (5 KN) STEEL STRUCTURE TO BE CHECKED BY STATIC CALULATION
6. COATING ACC. TO DIN EN ISO 10684–TZN–O

FOR RECTANGULAR PROFILE						
B	A	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
–	2	2	CLAMPING PLATE		9		NOTE 1
–	4	4	STUD BOLT M16	8.8	8	DIN 976–1	NOTE 1 NOTE 6
–	16	16	HEXAGON NUT M16	8	7	DIN EN ISO 4032	NOTE 6
–	8	8	WASHER M16	200HV	6	DIN EN ISO 7089	NOTE 6
–	1	1	PLATE FOR SWIVEL JOINT CONNECTION		5		
–	1	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	4		
–	1	1	BOLT ø19x100 WITH ß–SPLINT		3		
–	1	1	SWIVEL JOINT		2		
–	1	1	COMPOSITE INSULATOR		1		

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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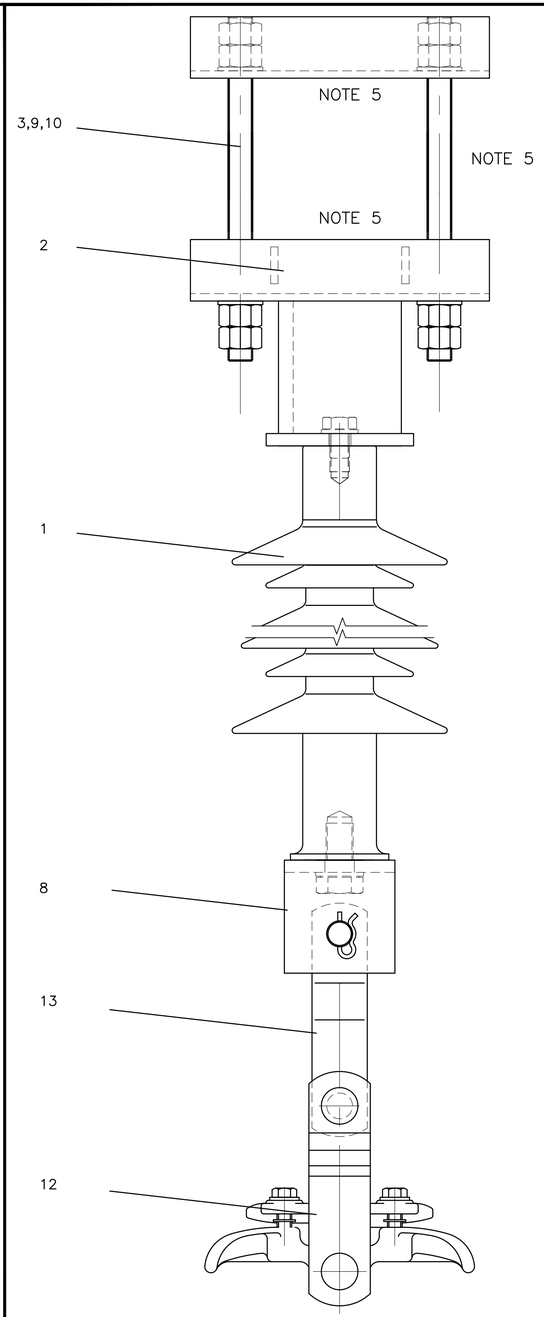
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OVERHEAD CONTACT SYSTEM

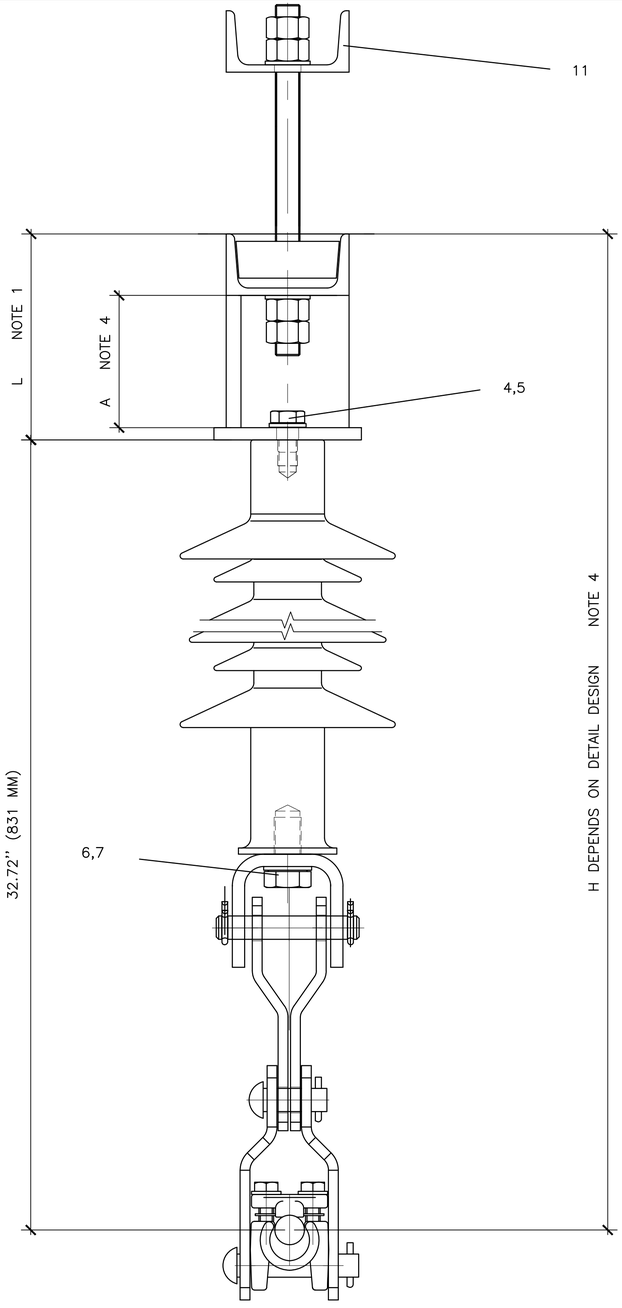
HANGING SINGLE FEEDER SUPPORT COMPLETE AT STRUCTURE

CADD FILE NAME: SD–W6393
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6393



EXTENDED FEEDER WIRE SUPPORT
AT STRUCTURE UPSIDE DOWN
A – ELEVATION
NTS

NOTE 3



EXTENDED FEEDER WIRE SUPPORT
AT STRUCTURE UPSIDE DOWN
ELEVATION
NTS

NOTES:

1. LENGTH L DEPENDS ON DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. USE ONLY FOR NO OR VERY LOW RADIAL FORCE. FOR LOW AND HIGH RADIAL FORCE V–ARRANGEMENT MUST BE USED, IF APPLICABLE
4. FOR H = 6'–10'' (2080 MM) L MUST BE 4.10' (1250 MM) THEREFORE A WOULD BE L – 2.36'' (60 MM) = 3.904' (1190 MM)
5. LENGTH DEPENDS ON BEAM SIZE

B	A	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
–	2	1	CRANKED PLATE		13		
–	1	1	FEEDER WIRE CLAMP, COMPLETE	G–AL	12		
–	1	1	U–PROFILE FOR CLAMPING		11		NOTE 5
–	4	1	WASHER M20	200HV NOTE 2	10	DIN EN ISO 7089	
–	8	1	NUT M20	8 NOTE 2	9	DIN EN ISO 4032	
–	1	1	BRACKET FOR FEEDER WIRE CLAMP		8		
–	1	1	WASHER M22	200HV NOTE2	7	DIN EN ISO 7089	
–	1	1	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	6	DIN EN ISO 4017	
–	1	1	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	5	DIN EN ISO 4017	
–	1	1	WASHER M16	200HV NOTE 2	4	DIN EN ISO 7089	
–	2	1	STUD BOLT M20	8.8 NOTE 2	3	DIN 976–1	NOTE 5
–	1	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		2		NOTES 1, 4 AND 5
–	1	1	COMPOSITE INSULATOR		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

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PENINSULA CORRIDOR JOINT POWERS BOARD

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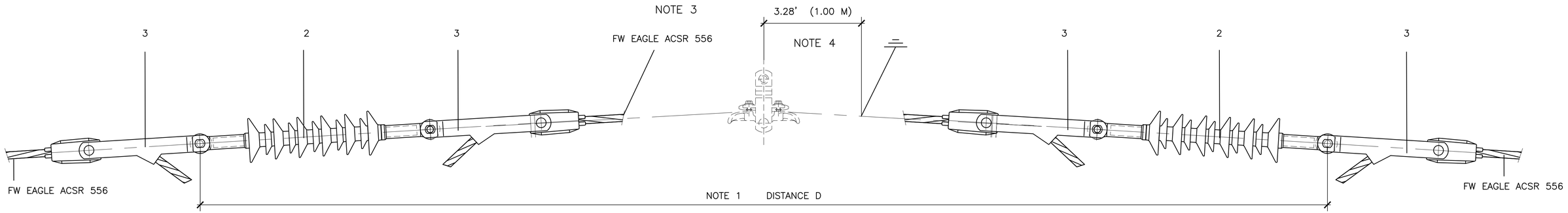
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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

EXTENDED FEEDER WIRE SUPPORT
AT STRUCTURE
– UPSIDE DOWN

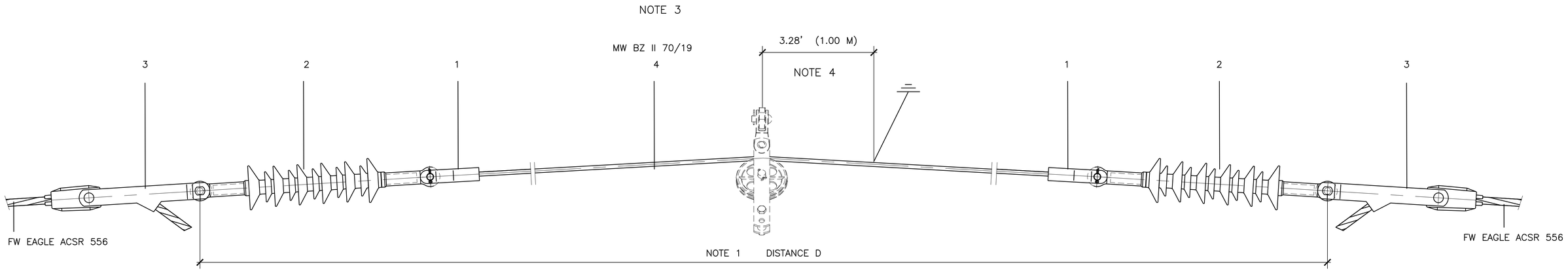
CADD FILE NAME: SD–W6395
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6395



TYPE A – FEEDER WIRE INSULATION
FOR PHASE BREAK – MIDDLE PART FW

ELEVATION

NTS



TYPE B – FEEDER WIRE INSULATION
FOR PHASE BREAK – MIDDLE PART MW

ELEVATION

NTS

NOTES:

1. DISTANCE D >= 30' (9.15 M)
2. LENGTH TO BE DEFINED ON SITE
3. ARRANGEMENT DRAWINGS SD–W6397 AND SD–W6398
4. MINIMUM DISTANCE

FOR PHASE BREAK – MIDDLE PART MW	FOR PHASE BREAK – MIDDLE PART FW					
B	A					
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
1	–	PIECE OF MESSENGER WIRE BZ II 70/19		4		NOTE 2
2	4	TERMINATION CLAMP F. FEEDER WIRE		3		
2	2	COMPOSITE INSULATOR TYPE 3		2		
2	–	TERMINATION CLAMP FOR MW		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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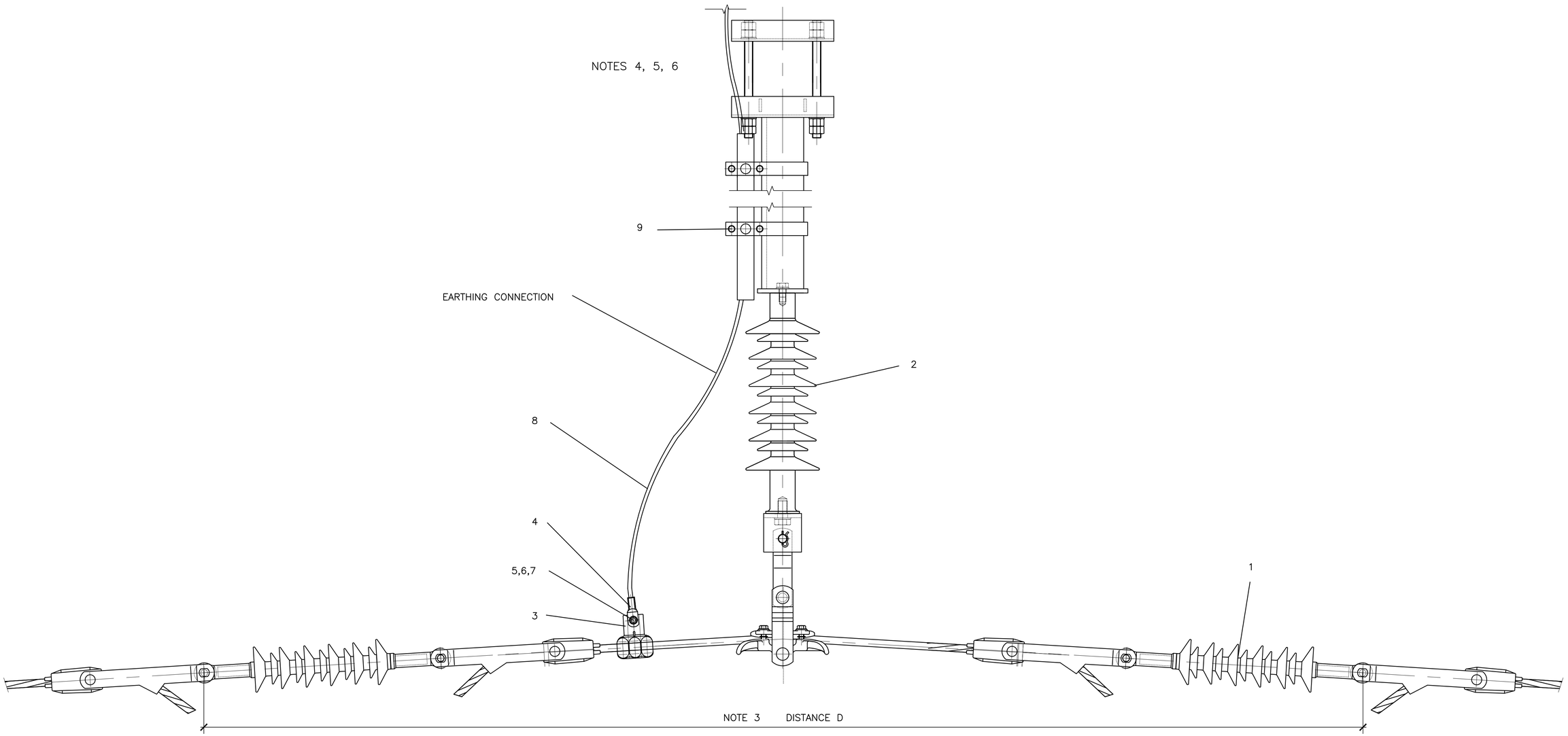
FEEDER WIRE
INSULATION
FOR PHASE BREAK

CADD FILE NAME: SD–W6396

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6396



EXTENDED FEEDER WIRE SUPPORT WITH FEEDER WIRE INSULATION FOR PHASE BREAK

ELEVATION

NTS

NOTES:

1. MIDDLE PART FW
2. LOCAL SUPPLY MAY BE USED IF EQUIVALENT
3. DISTANCE D >= 30' (9.15 M) ACCORDING TO SD-W6396
4. DESIGN OF EARTHING SHALL BE SIMILAR TO SD-W5240
5. FOR CONNECTION TO EARTHING, LOCAL SUPPLY SHALL BE USED
6. NUMBER AND TYPE AS NEEDED

B	A							
–	1	CABLE GUIDING		9			NOTES 2, 5, 6
–	1	WIRE E-CU 95x259 NOTE 2 E-CU		8	DIN 43138		NOTE 2
–	2	WASHER M12 A2		7	ISO 7089		NOTE 2
–	1	NUT M12 A2		6	ISO 4032		NOTE 2
–	1	HEXAGON HEAD SCREW M12x50 A2		5	ISO 4017		NOTE 2
–	1	COMPRESSION TYPE CABLE LUG 12x120 S	TIN PLATED	4	DIN 46235		NOTE 2
–	1	AL-T FLAT CONNECTOR		3			NOTE 2
–	1	EXTENDED FEEDER WIRE SUPPORT AT STRUCTURE - UPSIDE DOWN		2			.
–	1	FEEDER WIRE INSULATION FOR PHASE BREAK		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	KG/PC.	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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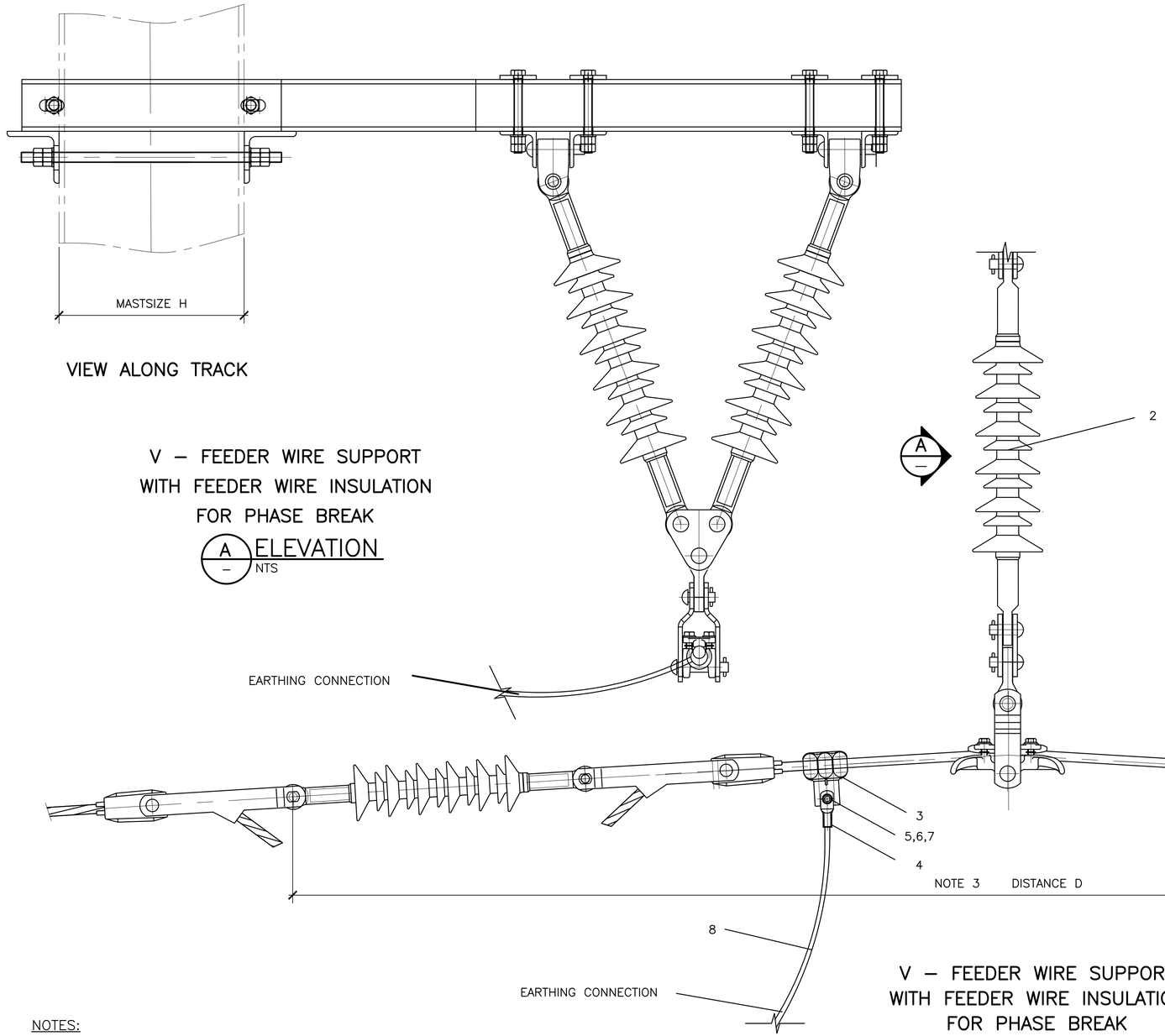
EXTENDED FEEDER WIRE SUPPORT WITH FEEDER WIRE INSULATION FOR PHASE BREAK

CADD FILE NAME: SD-W6397

REV: EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6397



V – FEEDER WIRE SUPPORT
WITH FEEDER WIRE INSULATION
FOR PHASE BREAK

ELEVATION

NTS

NOTES:

1. ACCORDING TO SD–W6396 TYPE A
2. LOCAL SUPPLY MAY BE USED IF EQUIVALENT
3. DISTANCE D >= 30' (9.15 M) ACCORDING TO SD–W6396
4. DESIGN OF EARTHING SHALL BE SIMILAR TO SD–W5240
5. FOR CONNECTION TO EARTHING, LOCAL SUPPLY SHALL BE USED
6. ACCORDING TO SD–W6109

B	A							
–	1	WIRE E–CU 95x259 NOTE 2 E–CU		8	DIN 43138		NOTE 2
–	2	WASHER M12	A2	7	ISO 7089		NOTE 2
–	1	NUT M12	A2	6	ISO 4032		NOTE 2
–	1	HEXAGON HEAD SCREW M12x50	A2	5	ISO 4017		NOTE 2
–	1	COMPRESSION TYPE CABLE LUG 12x120 S	TIN PLATED	4	DIN 46235		NOTE 2
–	1	AL–T FLAT CONNECTOR		3			NOTE 2
–	1	V – FEEDER WIRE SUPPORT AT RECTANGULAR MAST		2			NOTE 6
–	1	FEEDER WIRE INSULATION FOR PHASE BREAK		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

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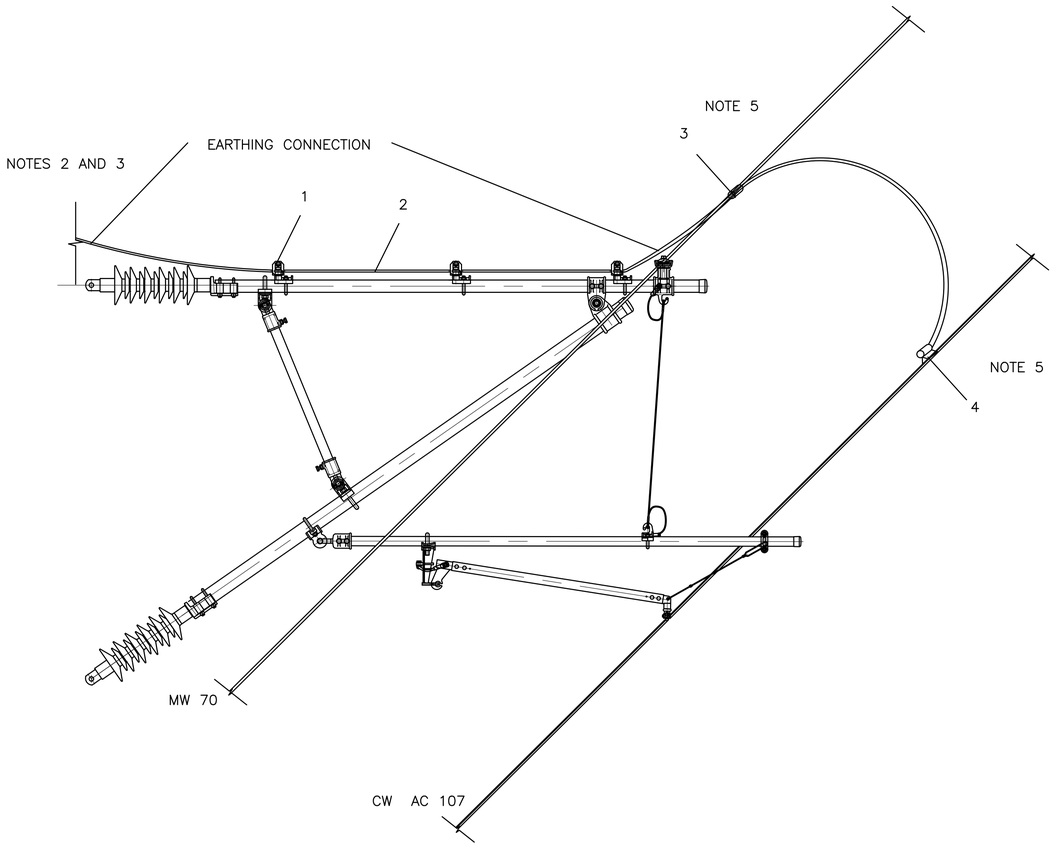
V – FEEDER WIRE SUPPORT
WITH FEEDER WIRE INSULATION
FOR PHASE BREAK

CADD FILE NAME: SD–W6398

REV: | EDITION: SECOND

SCALE: NTS

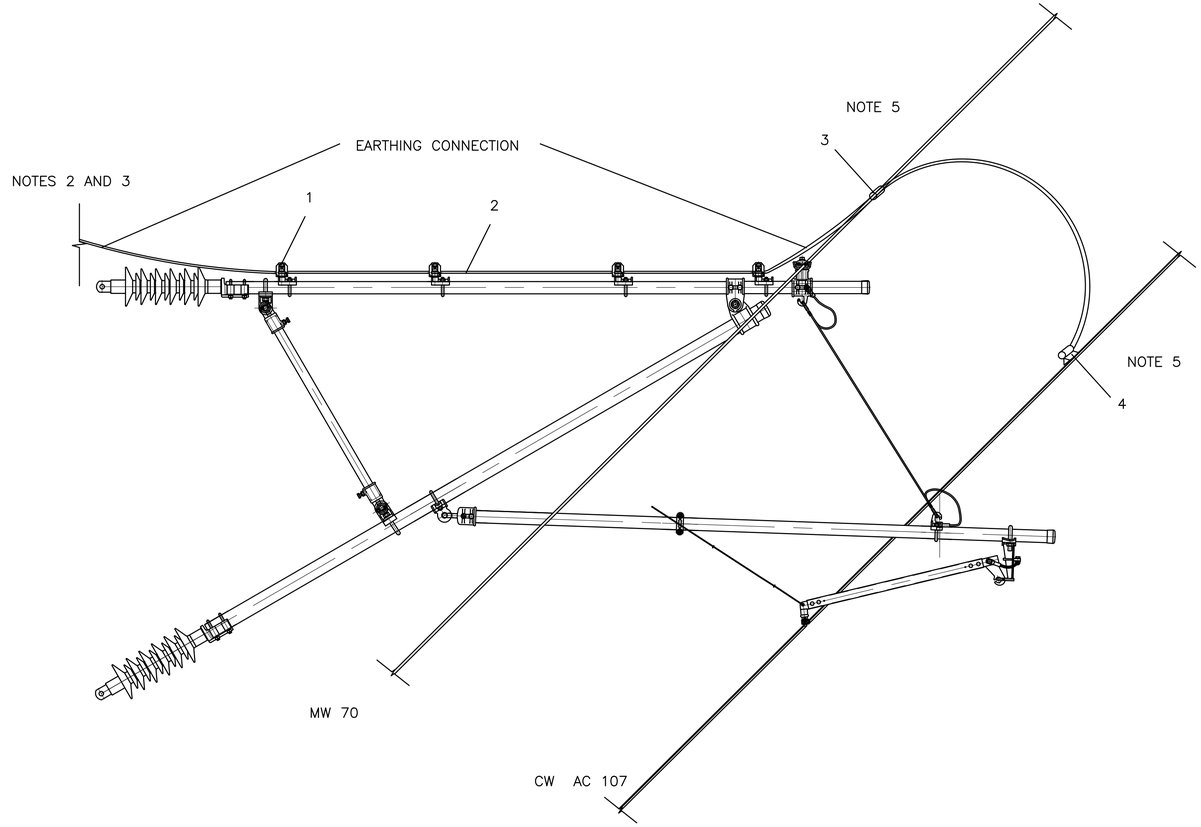
STANDARD DRAWING NO.: SD–W6398



TYPE A – ARRANGEMENT OF CLAMP HOLDER AT CANTILEVER PULL OFF FOR PHASE BREAK

ELEVATION

NTS



TYPE B – ARRANGEMENT OF CLAMP HOLDER AT CANTILEVER PUSH OFF FOR PHASE BREAK

ELEVATION

NTS

NOTES:

1. LOCAL SUPPLY MIGHT BE USED IF EQUIVALENT
2. DESIGN OF EARTHING SHALL BE SIMILAR TO SD–W5240
3. FOR CONNECTION TO EARTHING, LOCAL SUPPLY SHALL BE USED
4. LENGTH AS NEEDED
5. CLAMPS OF SD–W6271 FOR CONNECTION CW / MW TO E–CU 95x259 (IF E–CU 95x259 IS USED)
6. USE TYPE A OF SD–W6399

B	A					
1	1	CONTACT WIRE FEEDER CLAMP 95F/CW AC107		4		
1	1	WIRE FEEDER CLAMP JW95f–MW70		3		
1	1	WIRE E–CU 95x259		2	DIN 43138	NOTES 1 AND 4
4	3	CLAMP HOLDER FOR WIRE 95x259 E–CU		1		NOTES 1 AND 6
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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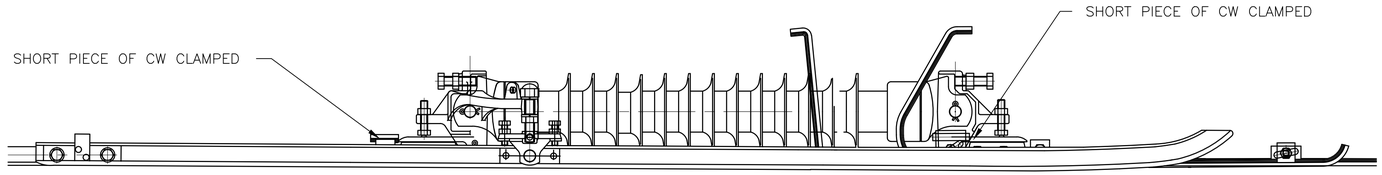
ARRANGEMENT OF CLAMP HOLDER AT CANTILEVER FOR PHASE BREAK

CADD FILE NAME: SD–W6400

REV: | EDITION: SECOND

SCALE: NTS

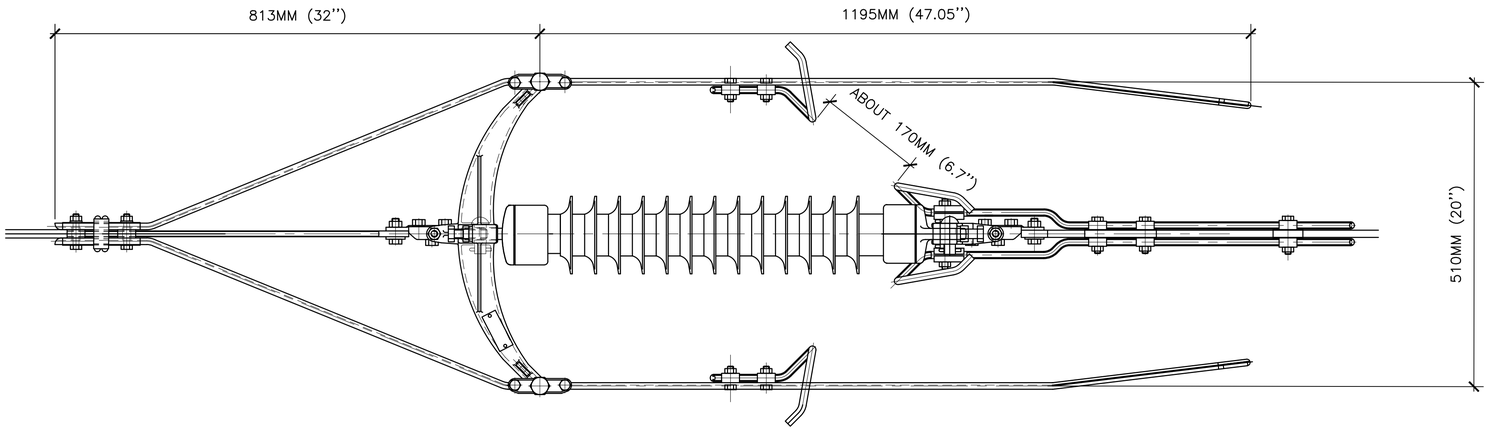
STANDARD DRAWING NO.: SD–W6400



SECTION INSULATOR 25 kV

ELEVATION

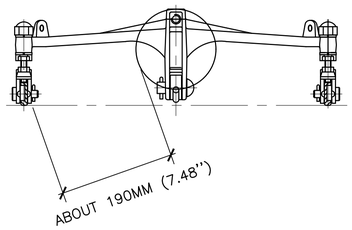
NTS



SECTION INSULATOR 25 kV

PLAN

NTS



SECTION INSULATOR 25 kV

A — ELEVATION

NTS

NOTES:

1. WEIGHT 35 KG (77.16 LBS)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

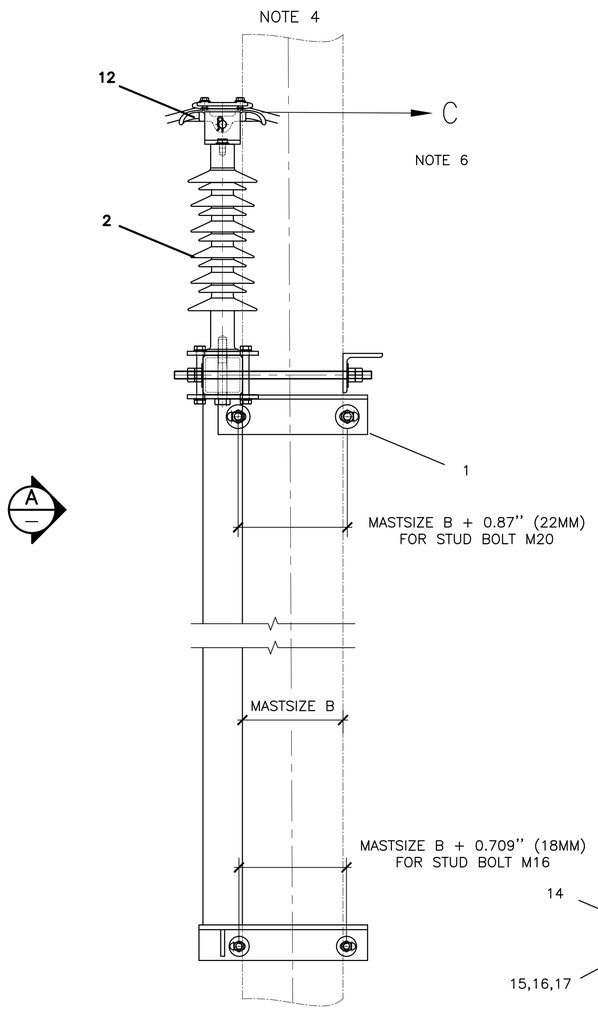
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

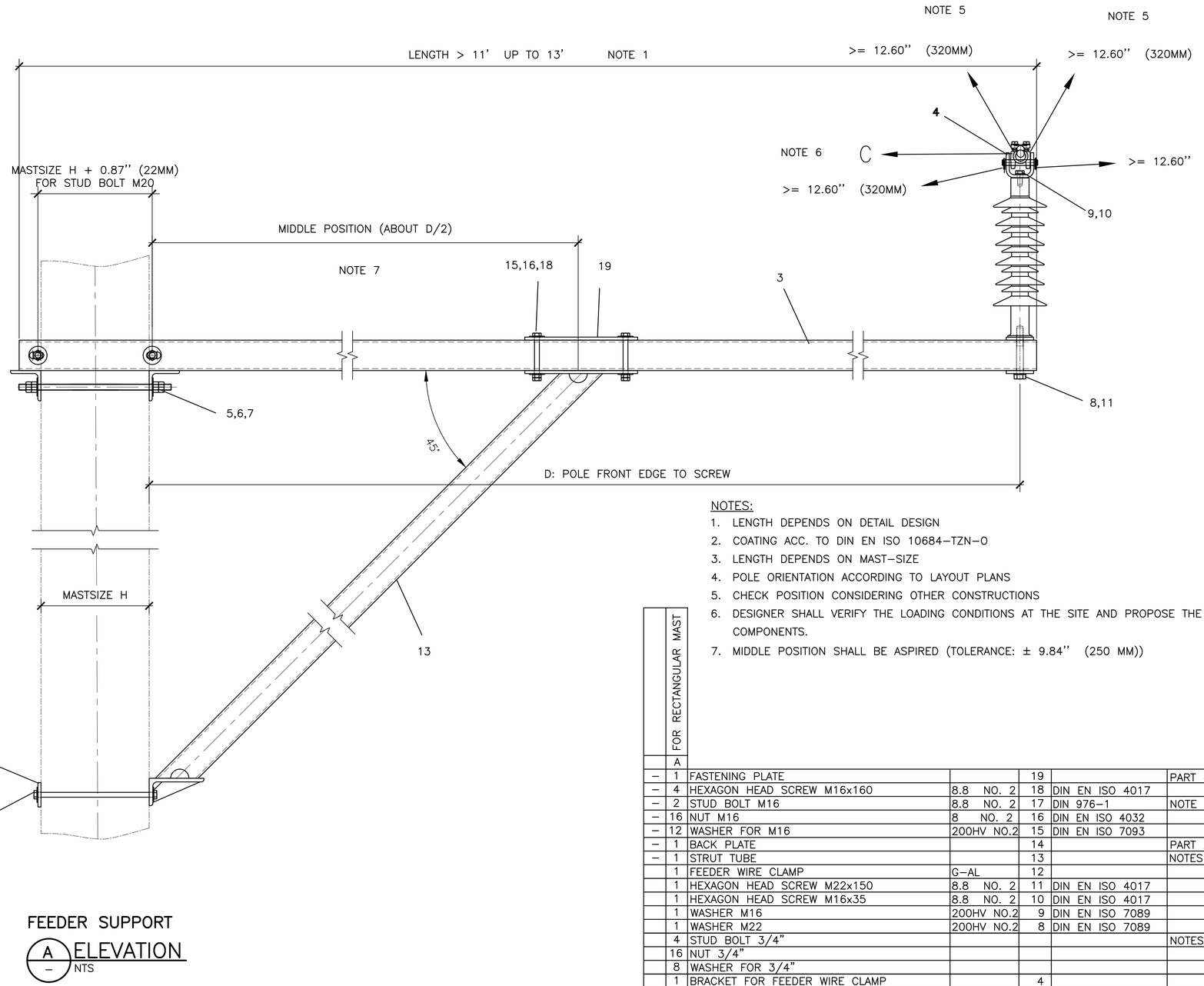
OVERHEAD CONTACT SYSTEM

SECTION INSULATOR 25KV
CREEPAGE PATH 1210 MM (47.6")

CADD FILE NAME:	SD-W6651
REV:	EDITION: SECOND
SCALE:	NTS
STANDARD DRAWING NO.:	SD-W6651



FEEDER SUPPORT
ELEVATION
NTS



FEEDER SUPPORT
A ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. LENGTH DEPENDS ON MAST–SIZE
4. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
5. CHECK POSITION CONSIDERING OTHER CONSTRUCTIONS
6. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
7. MIDDLE POSITION SHALL BE ASPIRED (TOLERANCE: ± 9.84'' (250 MM))

	FOR RECTANGULAR MAST					
	A					
–	1	FASTENING PLATE		19		PART 4
–	4	HEXAGON HEAD SCREW M16x160	8.8 NO. 2	18	DIN EN ISO 4017	
–	2	STUD BOLT M16	8.8 NO. 2	17	DIN 976–1	NOTE 3
–	16	NUT M16	8 NO. 2	16	DIN EN ISO 4032	
–	12	WASHER FOR M16	200HV NO.2	15	DIN EN ISO 7093	
–	1	BACK PLATE		14		PART 2 NOTE 3
–	1	STRUT TUBE		13		NOTES 1 AND 3
	1	FEEDER WIRE CLAMP	G–AL	12		
	1	HEXAGON HEAD SCREW M22x150	8.8 NO. 2	11	DIN EN ISO 4017	
	1	HEXAGON HEAD SCREW M16x35	8.8 NO. 2	10	DIN EN ISO 4017	
	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089	
	1	WASHER M22	200HV NO.2	8	DIN EN ISO 7089	
	4	STUD BOLT 3/4"				NOTES 1 AND 3
	16	NUT 3/4"				
	8	WASHER FOR 3/4"				
	1	BRACKET FOR FEEDER WIRE CLAMP		4		
	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTES 1 AND 3
	1	COMPOSITE INSULATOR		2		
	3	BACK ANGLE WITHOUT EARTHING		1		NOTES 1 AND 3
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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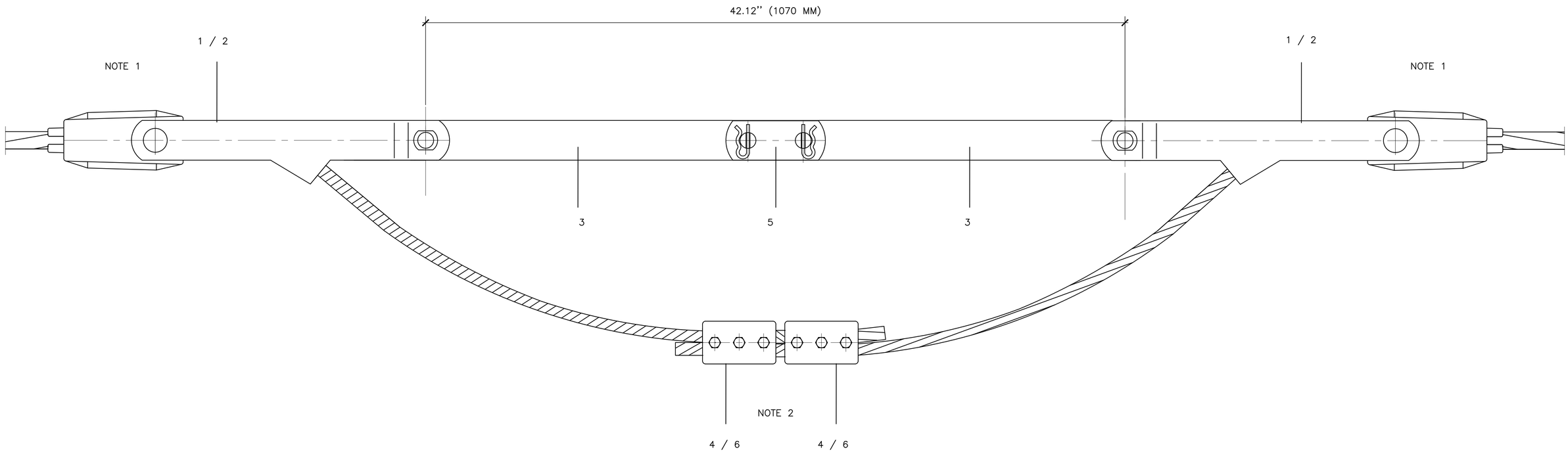
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

FEEDER SUPPORT WITH STRUT TUBE (OVERLENGTH TYPE) AT RECTANGULAR STEEL MAST

CADD FILE NAME: SD–W6668
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6668



FEEDER WIRE / STATIC WIRE CONNECTION

ELEVATION

NTS

NOTES:

1. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
2. ALTERNATIVE USE TENSION PROOF CRIMP CONNECTOR / CONNECTION
3. FOR FULL TENSION SPLICES USED – AFL PN#5075.609 FOR STATIC AND PN#5027.100 FOR FEEDER WIRE

FOR STATIC WIRE	FOR FEEDER WIRE	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
B	A	PIECES				
2	–	PARALLEL GROOVE CLAMP STATIC		6		NOTE 1
1	1	LINK PLATES WITH PINS		5		
–	2	PARALLEL GROOVE CLAMP FEEDER		4	LOCAL SUPPLIER	NOTE 1
4	4	LONG LINK PLATE 50x8x560MM	STEEL TZN	3		
2	–	TERINATION CLAMP FOR STATIC WIRE		2		
–	2	TERINATION CLAMP FOR FEEDER WIRE		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

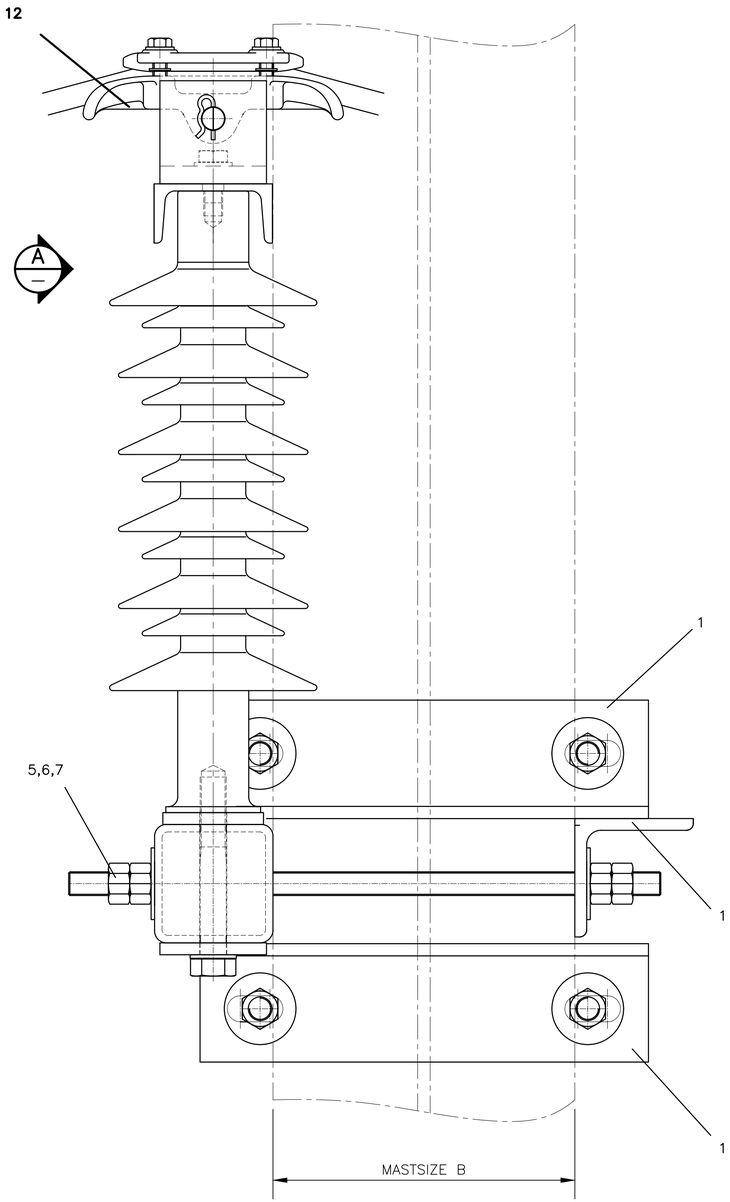
FEEDER WIRE / STATIC WIRE CONNECTION OF ENDINGS

CADD FILE NAME: SD–W6669

REV: | EDITION: SECOND

SCALE: NTS

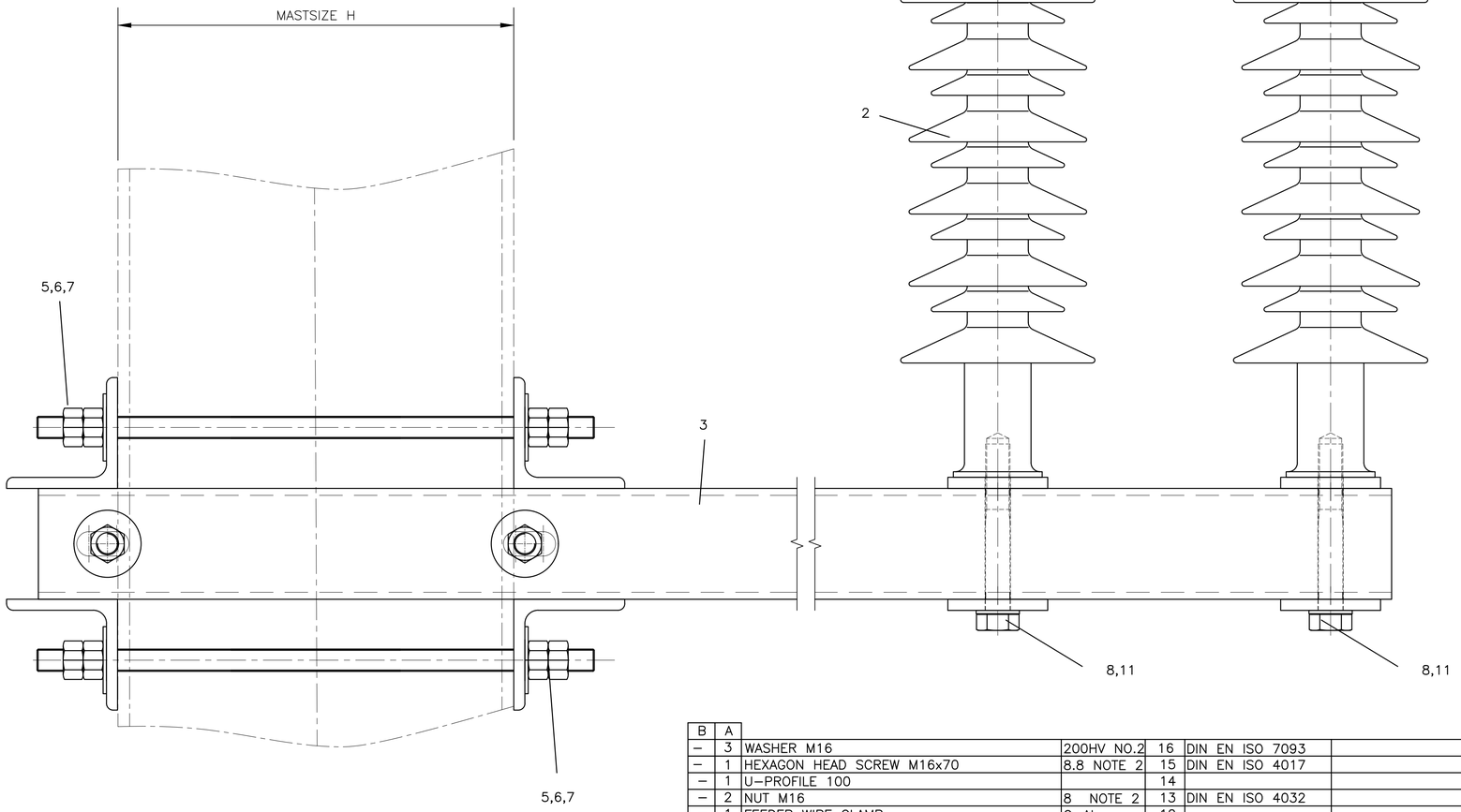
STANDARD DRAWING NO.: SD–W6669



FEEDER SUPPORT AT RECTANGULAR MAST
WITH DOUBLE INSULATOR
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE AND DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. REFER OCS SPECIFICATION 34 30 73



FEEDER SUPPORT AT RECTANGULAR MAST
WITH DOUBLE INSULATOR
A
– ELEVATION
NTS

B	A					
–	3	WASHER M16	200HV NO.2	16	DIN EN ISO 7093	
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	15	DIN EN ISO 4017	
–	1	U–PROFILE 100		14		
–	2	NUT M16	8 NOTE 2	13	DIN EN ISO 4032	
–	1	FEEDER WIRE CLAMP	G–AL	12		
–	2	HEXAGON HEAD SCREW M22x150	8.8 NOTE 2	11	DIN EN ISO 4017	
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE 2	10	DIN EN ISO 4017	
–	1	WASHER M16	200HV NO.2	9	DIN EN ISO 7089	
–	2	WASHER M22	200HV NO.2	8	DIN EN ISO 7089	
–	6	STUD BOLT 3/4"		7		NOTE 1 AND 4
–	24	NUT 3/4"		6		NOTE 4
–	12	WASHER FOR 3/4"		5		NOTE 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		4		
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 1
–	2	COMPOSITE INSULATOR		2		
–	5	BACK ANGLE WITHOUT EARTHING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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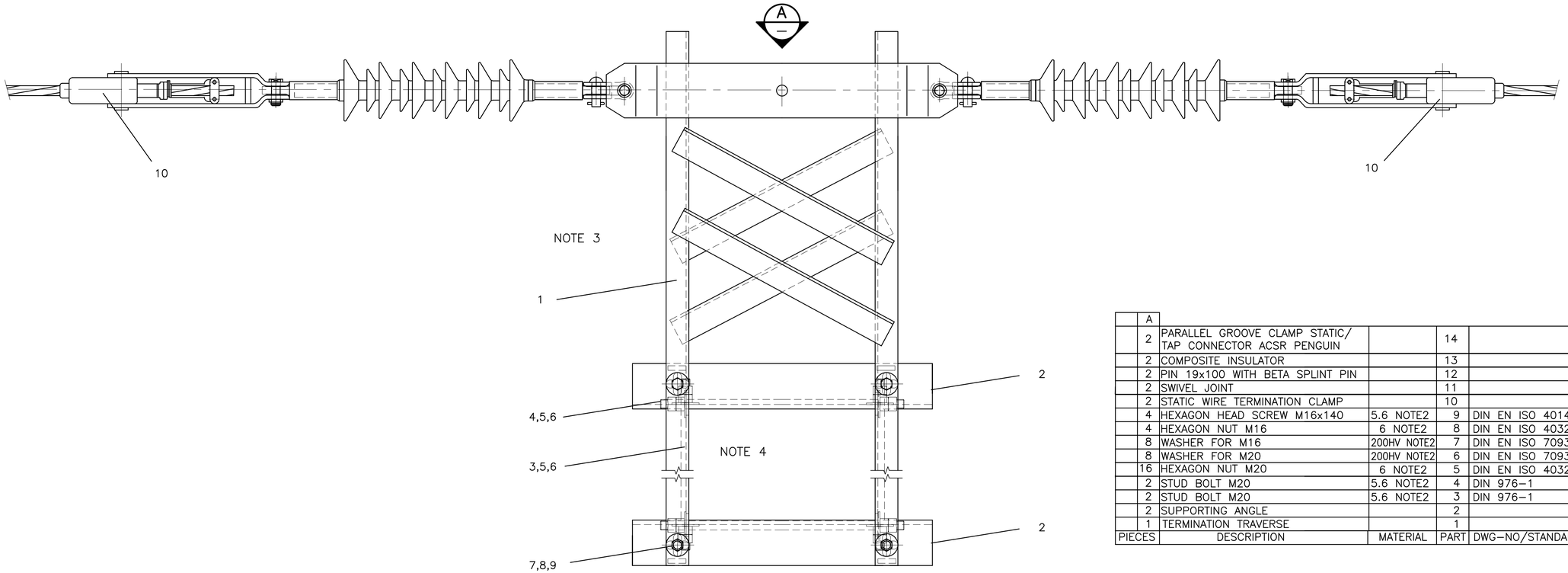
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

FEEDER SUPPORT
AT RECTANGULAR MAST
WITH DOUBLE INSULATOR

CADD FILE NAME: SD–W6830
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6830

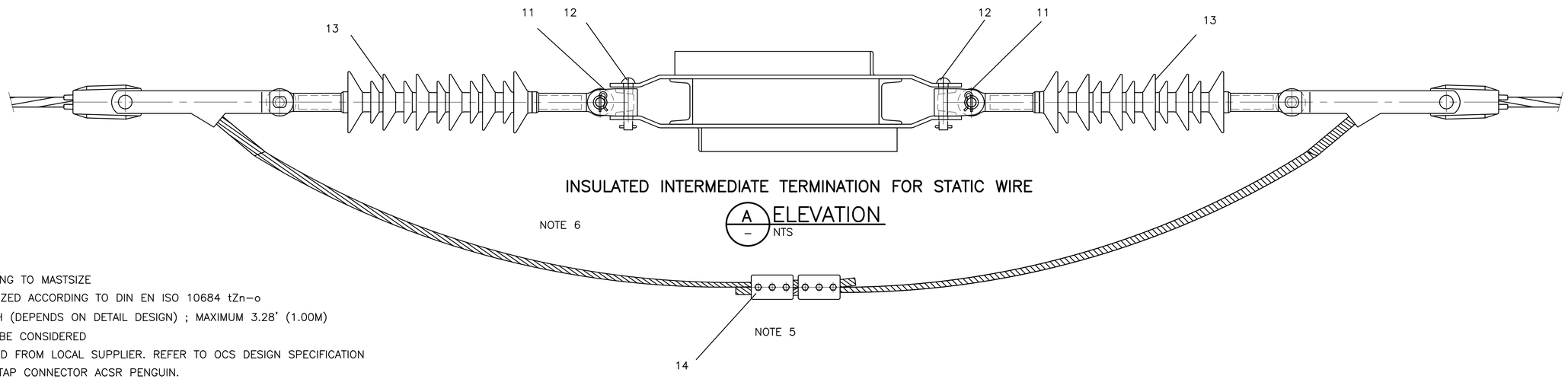


	A					
	2	PARALLEL GROOVE CLAMP STATIC/ TAP CONNECTOR ACSR PENGUIN		14		NOTE 5
	2	COMPOSITE INSULATOR		13		
	2	PIN 19x100 WITH BETA SPLINT PIN		12		
	2	SWIVEL JOINT		11		
	2	STATIC WIRE TERMINATION CLAMP		10		
	4	HEXAGON HEAD SCREW M16x140	5.6 NOTE2	9	DIN EN ISO 4014	
	4	HEXAGON NUT M16	6 NOTE2	8	DIN EN ISO 4032	
	8	WASHER FOR M16	200HV NOTE2	7	DIN EN ISO 7093	
	8	WASHER FOR M20	200HV NOTE2	6	DIN EN ISO 7093	
	16	HEXAGON NUT M20	6 NOTE2	5	DIN EN ISO 4032	
	2	STUD BOLT M20	5.6 NOTE2	4	DIN 976-1	NOTE 1
	2	STUD BOLT M20	5.6 NOTE2	3	DIN 976-1	NOTE 1
	2	SUPPORTING ANGLE		2		NOTE 1
	1	TERMINATION TRAVERSE		1		NOTE 1 NOTE 3
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

INSULATED INTERMEDIATE TERMINATION FOR STATIC WIRE

PLAN

NTS



INSULATED INTERMEDIATE TERMINATION FOR STATIC WIRE

A ELEVATION

NTS

NOTES:

1. LENGTH ACCORDING TO MASTSIZE
2. HOT DIP GALVANIZED ACCORDING TO DIN EN ISO 10684 tZn-o
3. VARIABLE LENGTH (DEPENDS ON DETAIL DESIGN) ; MAXIMUM 3.28' (1.00M)
4. MASTSIZE MUST BE CONSIDERED
5. TO BE ORGANIZED FROM LOCAL SUPPLIER. REFER TO OCS DESIGN SPECIFICATION 34 30 73 FOR TAP CONNECTOR ACSR PENGUIN.
6. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD-W6006

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	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

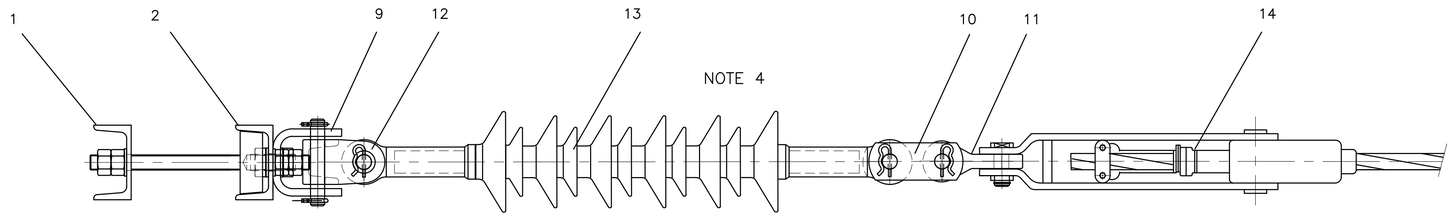
INSULATED INTERMEDIATE TERMINATION FOR STATIC WIRE AT TRAVERSE

CADD FILE NAME: SD-W6832

REV: EDITION: SECOND

SCALE: NTS

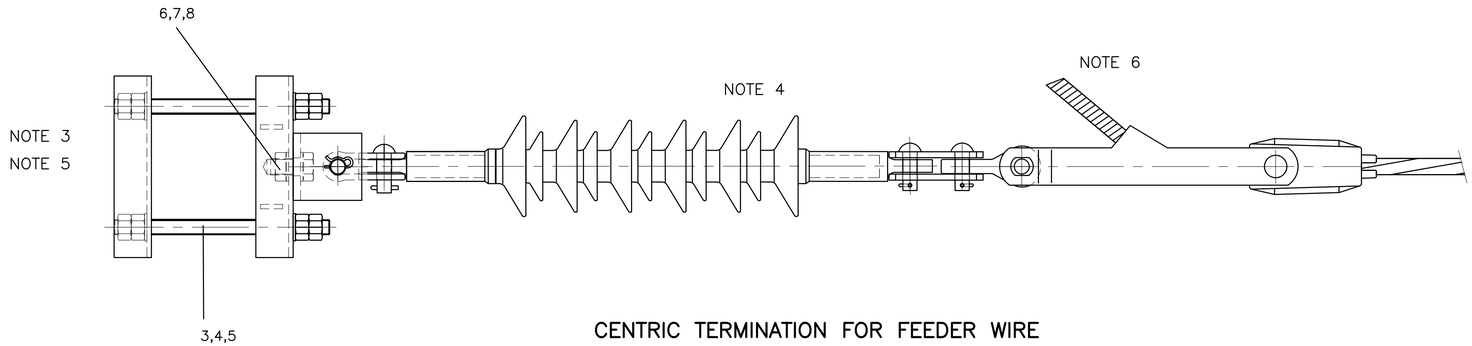
STANDARD DRAWING NO.: SD-W6832



CENTRIC TERMINATION FOR FEEDER WIRE
AT HORIZONTAL PORTAL BEAM

PLAN

NTS



CENTRIC TERMINATION FOR FEEDER WIRE
AT HORIZONTAL PORTAL BEAM

ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON SIZE OF STEEL PART PROFILE
2. HOT DIP GALVANIZED ACCORDING TO DIN EN ISO 10684 tZn–o
3. BEAMSIZE MUST BE CONSIDERED
4. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
5. ALTERNATIVE TO PART 1 – 9 : USE COMPONENTS OF SD–W6368 (PART 5 AND 6)
6. CONNECTION TO ADDITIONAL FEEDER SUPPORT

	A						
	1	TERMINATION CLAMP FOR FEEDER WIRE		14			
	1	COMPOSITE INSULATOR TYPE 3		13			
	1	SWIVEL JOINT		12			
	1	TWISTED EYE EYE CONNECTOR		11			
	1	LINK PLATES WITH PINS		10			
	1	BRACKET FOR FEEDER WIRE CLAMP		9			
	1	NUT M22	8 NOTE 2	8	DIN EN ISO 4032		
	1	HEXAGON HEAD SCREW M22x50	8.8 NOTE 2	7	DIN EN ISO 4017		
	2	WASHER M22	200HV NOTE 2	6	DIN EN ISO 7089		
	2	STUD BOLT M20	8.8 NOTE 2	5	DIN 976–1		NOTE 1
	8	NUT M20	8 NOTE 2	4	DIN EN ISO 4032		
	4	WASHER FOR M20	200HV NOTE 2	3	DIN EN ISO 7089		
	1	U–PROFILE FOR INSULATOR		2			NOTE 1
	1	U–PROFILE FOR CLAMPING		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	KG/PC.	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

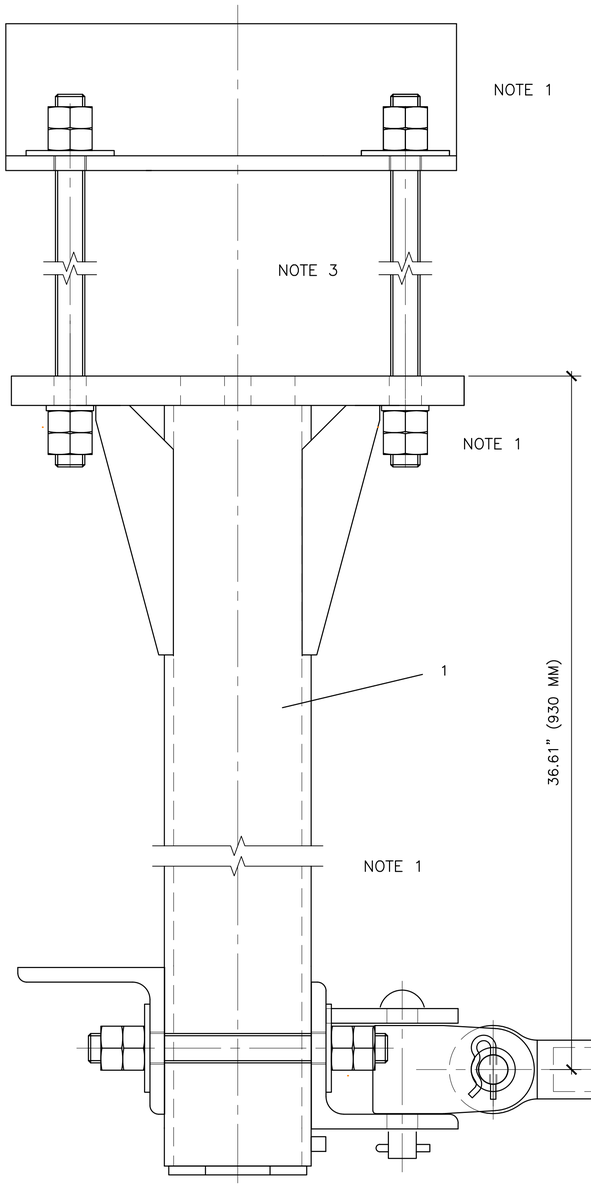
CENTRIC TERMINATION FOR FEEDER WIRE AT HORIZONTAL PORTAL BEAM

CADD FILE NAME: SD–W6833

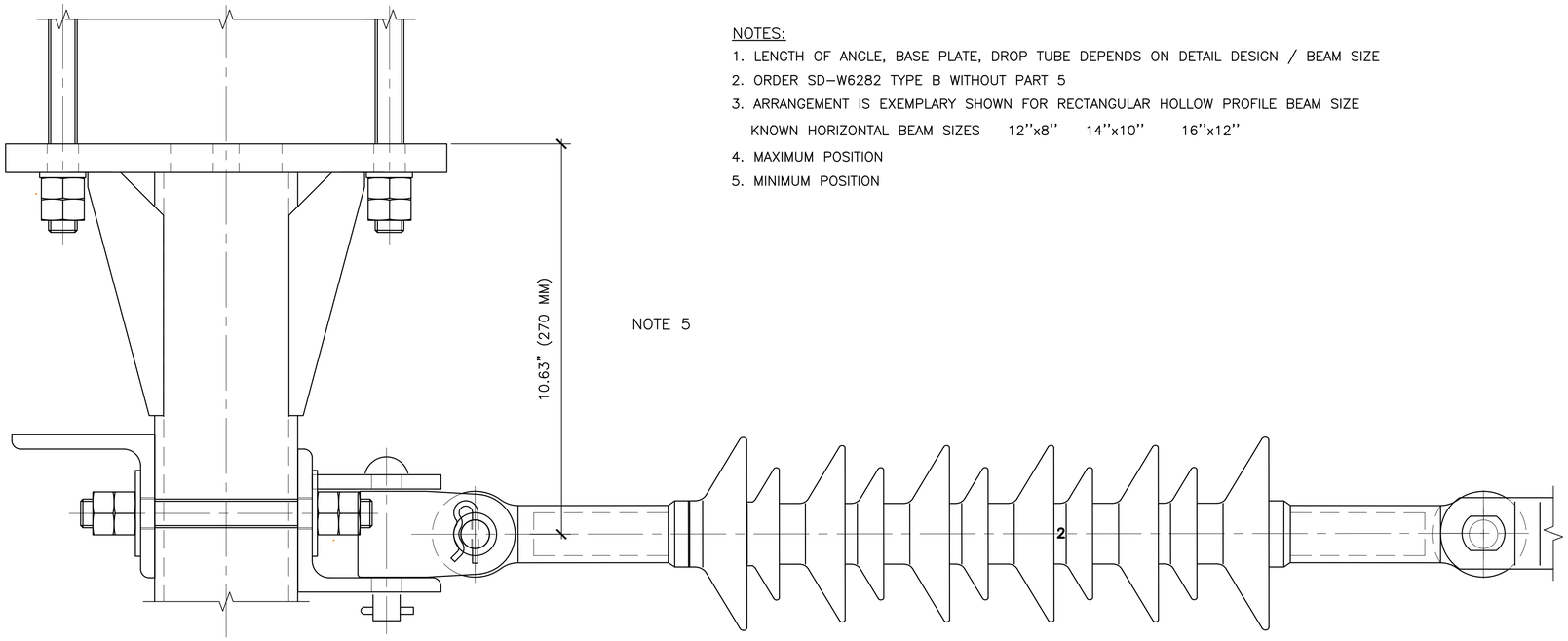
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6833



NOTE 4



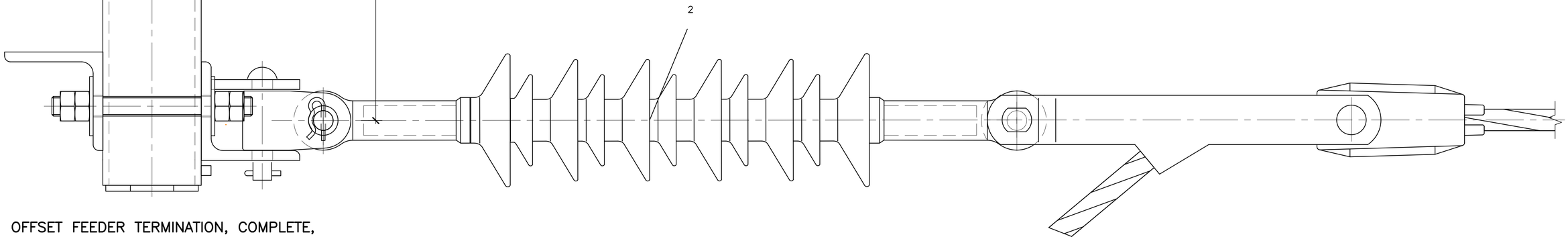
NOTES:

1. LENGTH OF ANGLE, BASE PLATE, DROP TUBE DEPENDS ON DETAIL DESIGN / BEAM SIZE
2. ORDER SD–W6282 TYPE B WITHOUT PART 5
3. ARRANGEMENT IS EXEMPLARY SHOWN FOR RECTANGULAR HOLLOW PROFILE BEAM SIZE
   KNOWN HORIZONTAL BEAM SIZES 12''x8'' 14''x10'' 16''x12''
4. MAXIMUM POSITION
5. MINIMUM POSITION

OFFSET FEEDER TERMINATION, COMPLETE,
AT HORIZONTAL PORTAL BEAM
MINIMUM POSITION

ELEVATION

NTS



OFFSET FEEDER TERMINATION, COMPLETE,
AT HORIZONTAL PORTAL BEAM
MAXIMUM POSITION

ELEVATION

NTS

	A					
	1	TERMINATION FOR FEEDER WIRE		2		NOTE 2
	1	DROP TUBE FOR FEEDER TERMINATION		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
A	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

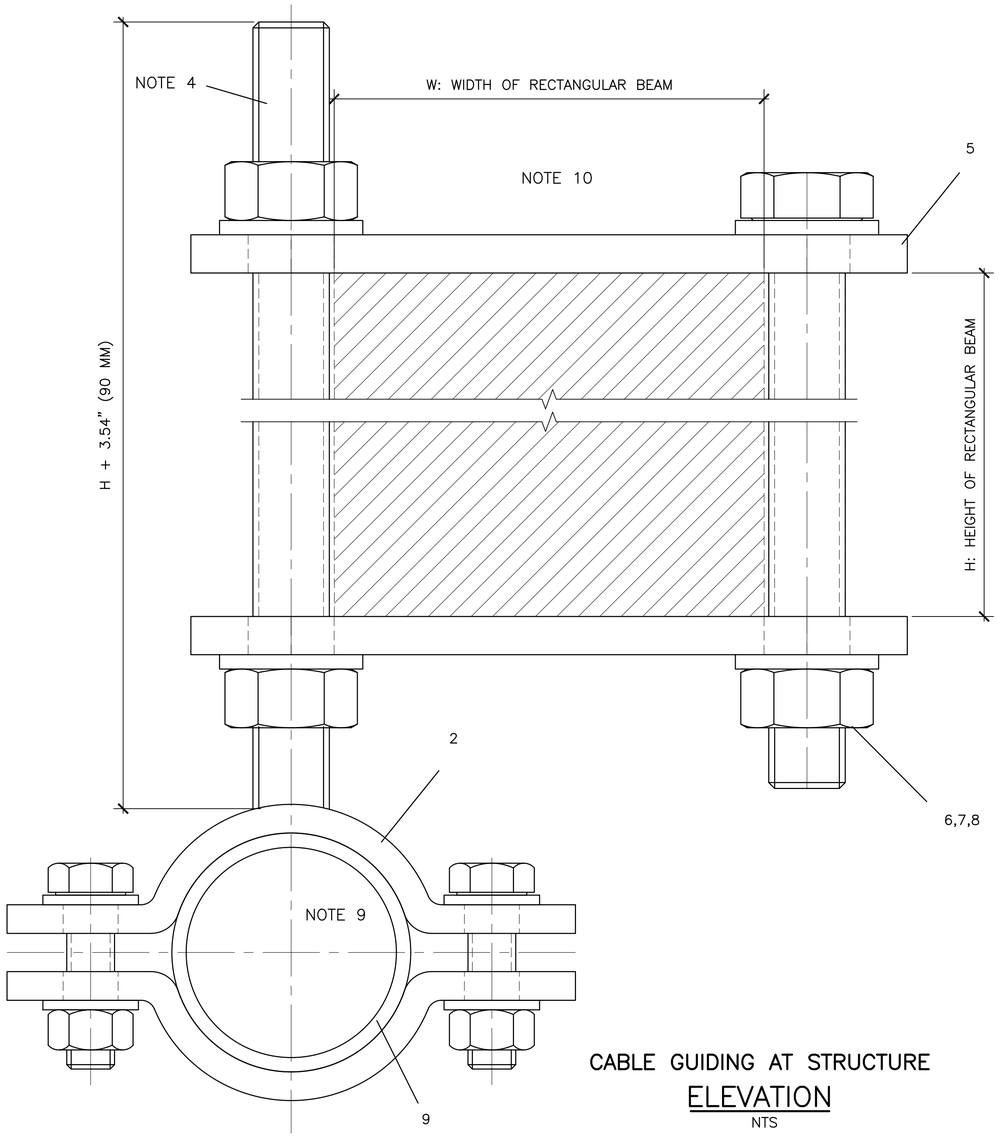
OFFSET FEEDER TERMINATION
COMPLETE
AT HORIZONTAL PORTAL BEAM

CADD FILE NAME: SD–W6834

REV: A EDITION: SECOND

SCALE: NTS

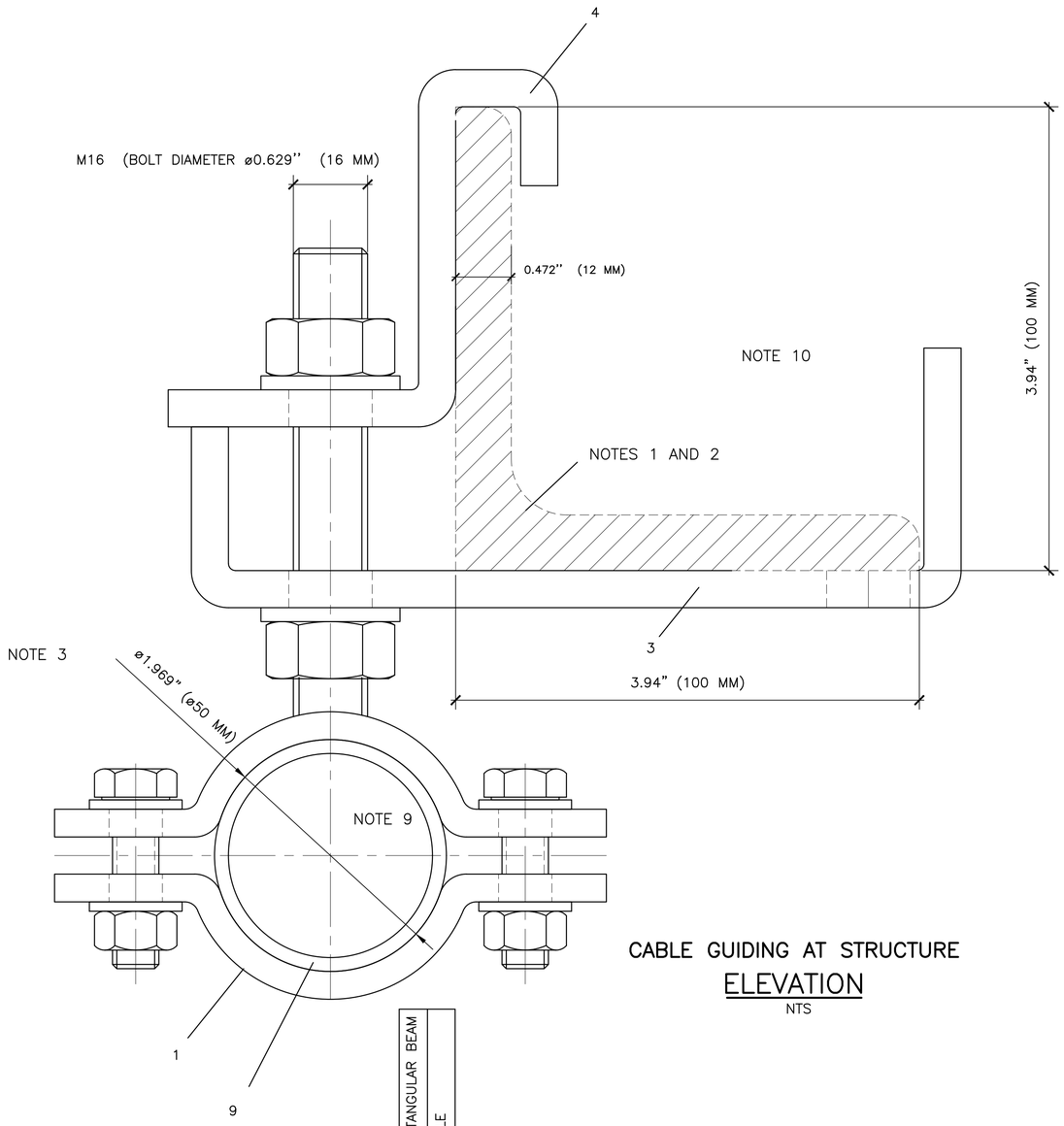
STANDARD DRAWING NO.: SD–W6834



CABLE GUIDING AT STRUCTURE

ELEVATION

NTS



CABLE GUIDING AT STRUCTURE

ELEVATION

NTS

NOTES:

1. CLAMPING TO ANGLE OF DRAWING SD–W6395 PART 2.
2. ANGLE 3.937''x3.937''x0.472'' (ANGLE 100MMx100MMx12MM)
3. TUBE DIAMETER ø1.969'' (ø50 MM)
4. M16 BOLT LENGTH TO BE DEFINED DEPENDING ON BEAM SIZE
5. LENGTH DEPENDING ON BEAM SIZE
6. STAINLESS STEEL
7. HALOGEN–FREE PLASTIC. FLAME RETARDANT. CORROSION RESISTANT. GREY COLOUR. WALL THICKNESS: 0.094'' (2.4 MM)
8. LENGTH AND NUMBER AS NEEDED
9. DIFFERENT SIZE POSSIBLE. WHEN USING INLAYS OR MODIFICATION OF CLIPS
10. LOCAL SUPPLY MIGHT BE USED IF EQUIVALENT

PIECES TO RECTANGULAR BEAM	PIECES TO ANGLE	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
B	A					
1	1	PVC TUBE ø1.969'' (ø50 MM)		9	DIN 49016–4	NOTES 7 AND 8
2	–	WASHER 16	A2–200HV	8	DIN EN ISO 7089	NOTE 6
1	–	NUT 16	A2	7	DIN EN IDSO 4032	NOTE 6
1	–	HEXAGON HEAD BOLT M16 x L	A2	6	DIN EN ISO 4017	NOTES 5 AND 6
2	–	FLAT STEEL		5		NOTE 5
–	1	CLAMPING PART – HOOK TYPE		4		
–	1	CLAMPING PART – U TYPE		3		
1	–	CLIP		2		NOTE 4
–	1	CLIP		1		

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

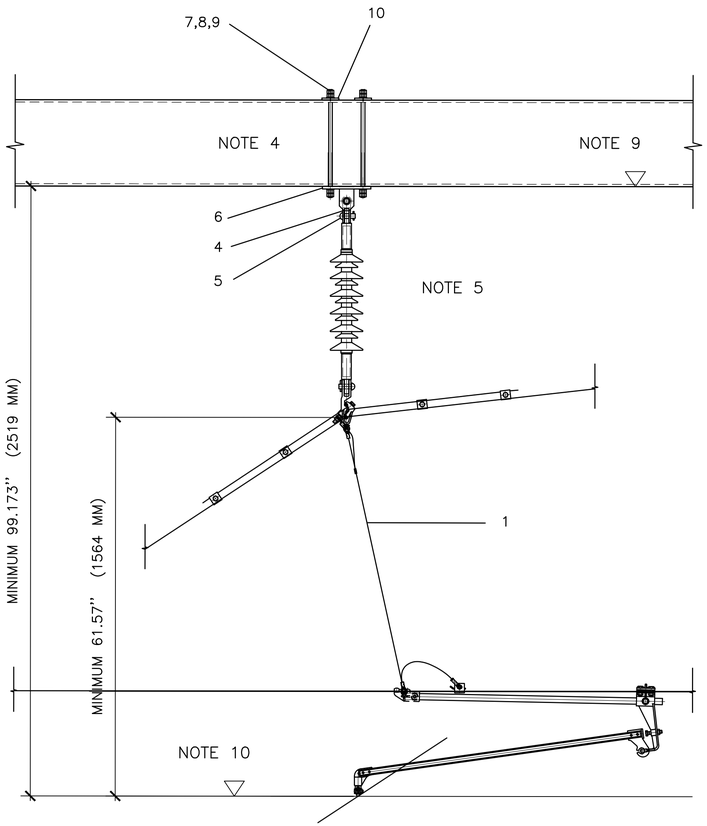
CABLE GUIDING AT EXTENDED FEEDER WIRE SUPPORT / AT STRUCTURE – UPSIDE DOWN

CADD FILE NAME: SD–W6835

REV: | EDITION: SECOND

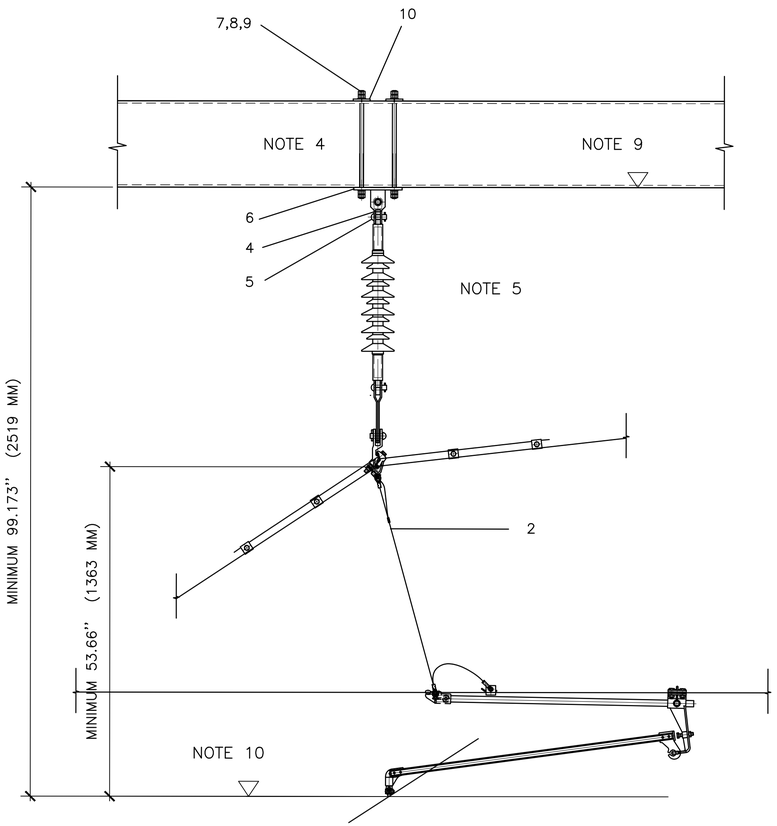
SCALE: NTS

STANDARD DRAWING NO.: SD–W6835



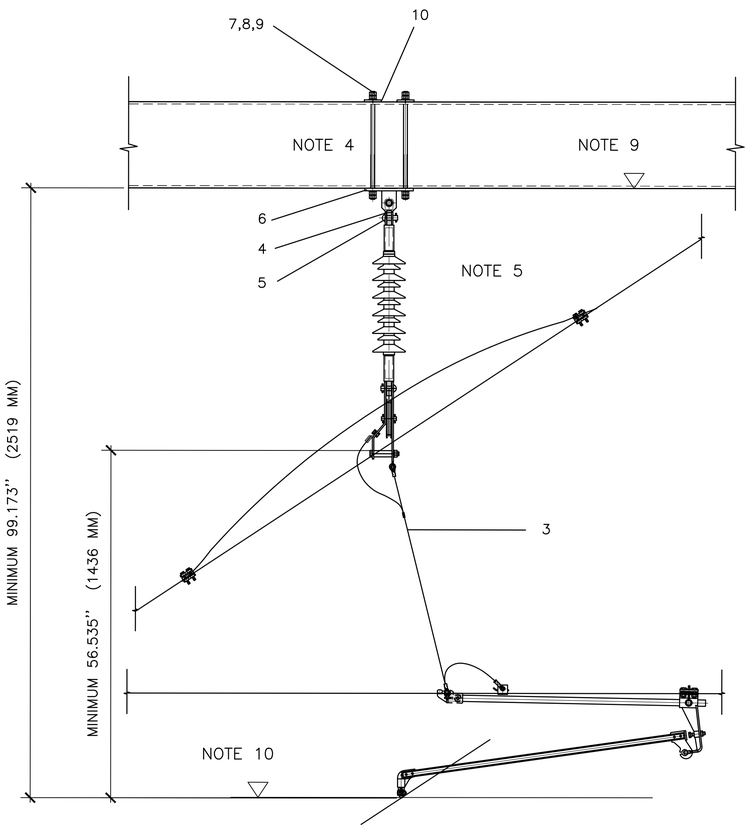
NOTE 6:
TO BE USED FOR: DISTANCE TO THE FIXED POINT TO 787' (240M)

HANGING CATENARY SUPPORT
TYPE A
ELEVATION
NTS



NOTE 7:
TO BE USED FOR: DISTANCE TO THE FIXED POINT
FROM 787' (240M) TO 1150' (350M)

HANGING CATENARY SUPPORT WITH SWINGING PLATE
TYPE B
ELEVATION
NTS



NOTE 8:
TO BE USED FOR: DISTANCE TO THE FIXED POINT
OVER 1150' (350M)

HANGING CATENARY SUPPORT WITH ROLL
TYPE C
ELEVATION
NTS

NOTES:

1. COATING ACC. TO DIN EN ISO 10684–TZN–O
2. ORDER WITHOUT PART 5, 6, 7
3. ORDER WITHOUT PART 5, 6, 8
4. LENGTH DEPENDS ON BEAMSIZE
5. ELECTRICAL CLEARANCE ACCORDING TO SD–W6006 IS > 10.5 INCHES (270 MM)
9. MINIMUM HEIGHT FROM TOP OF RAIL TO BOTTOM OF PORTAL BEAM 30'–3'' (9220 MM)
10. CONTACT WIRE HEIGHT FROM TOP OF RAIL TO CONTACT WIRE 22' (6700 MM)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

NOTE 7	NOTE 6	NOTE 5						
C	B	A						
2	2	2	CLAMPING PLATE		10			NOTE 4
4	4	4	STUD BOLT M16	8.8	9	DIN 976–1		NOTE 1 NOTE 4
16	16	16	HEXAGON NUT M16	8	8	DIN EN ISO 4032		NOTE 1
8	8	8	WASHER M16	200HV	7	DIN EN ISO 7089		NOTE 1
1	1	1	PLATE FOR SWIVEL JOINT CONNECTION		6			NOTE 4
1	1	1	BOLT ø19x100 WITH ß–SPLIT PIN		5			
1	1	1	SWIVEL JOINT		4			
1	–	–	W6292 HEAD SPAN CATENARY SUPPORT ROLL		3			NOTE 3
–	1	–	W6291 HEAD SPAN CATENARY SUPPORT PLATE		2			NOTE 2
–	–	1	W6290 HEAD SPAN CATENARY SUPPORT		1			NOTE 2
PIECES			DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD		REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

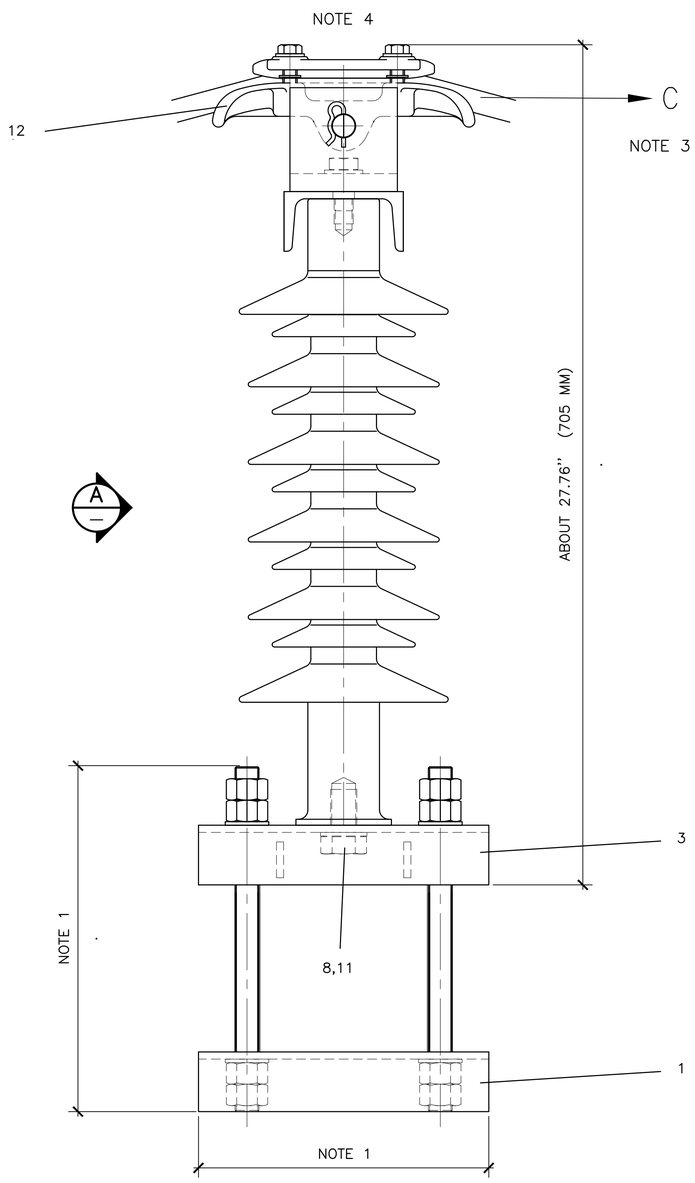
Caltrain

ENGINEERING STANDARD DRAWINGS

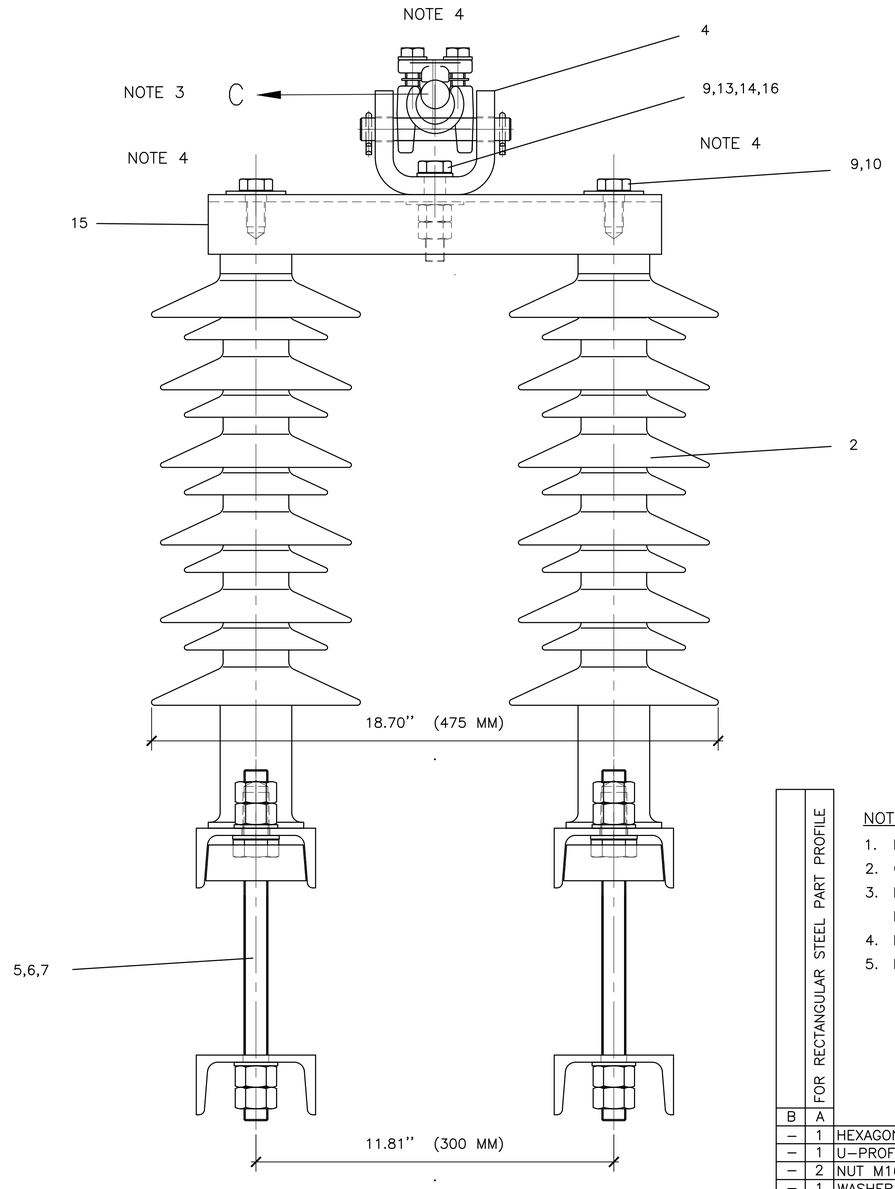
OVERHEAD CONTACT SYSTEM

HANGING CATENARY SUPPORTS
AT
HEADSPAN HYBRID PORTAL

CADD FILE NAME: SD–W6836
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6836



FEEDER WIRE SUPPORT, VERTICAL
AT STRUCTURE
WITH DOUBLE INSULATOR
ELEVATION
NTS



FEEDER WIRE SUPPORT, VERTICAL
AT STRUCTURE
WITH DOUBLE INSULATOR
A – ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON SIZE OF STEEL PART PROFILE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.
4. ELECTRICAL DISTANCE MUST BE CONSIDERED ACCORDING TO SD–W6006
5. REFER OCS DESIGN SPECIFICATION 34 30 73.

FOR RECTANGULAR STEEL PART PROFILE						
B	A					
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	16	DIN EN ISO 4017	
–	1	U–PROFILE 100		15		
–	2	NUT M16	8 NOTE 2	14	DIN EN ISO 4032	
–	1	WASHER M16	200HV NO.2	13	DIN EN ISO 7089	
–	1	FEEDER WIRE CLAMP	G–AL	12		
–	2	HEXAGON HEAD SCREW M22x35	8.8 NOTE 2	11	DIN EN ISO 4017	
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE 2	10	DIN EN ISO 4017	
–	3	WASHER M16	200HV NOTE 2	9	DIN EN ISO 7093	
–	2	WASHER M22	200HV NOTE 2	8	DIN EN ISO 7089	
–	4	STUD BOLT 3/4"		7		NOTE 1 AND 5
–	16	NUT 3/4"		6		NOTE 5
–	8	WASHER FOR 3/4"		5		NOTE 5
–	1	BRACKET FOR FEEDER WIRE CLAMP		4		
–	2	U–PROFILE FOR INSULATOR		3		NOTE 1
–	2	COMPOSITE INSULATOR		2		
–	2	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

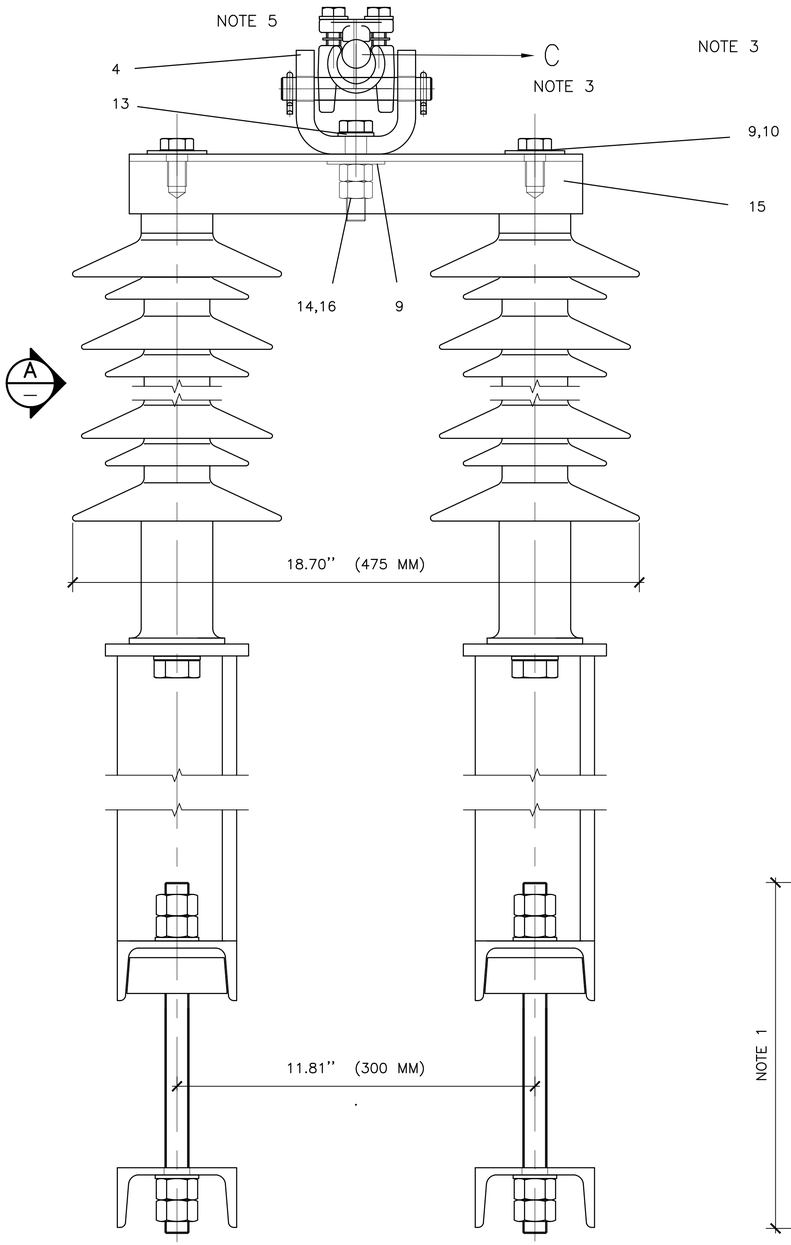
FEEDER WIRE SUPPORT, VERTICAL
AT STRUCTURE
WITH DOUBLE INSULATOR

CADD FILE NAME: SD–W6837

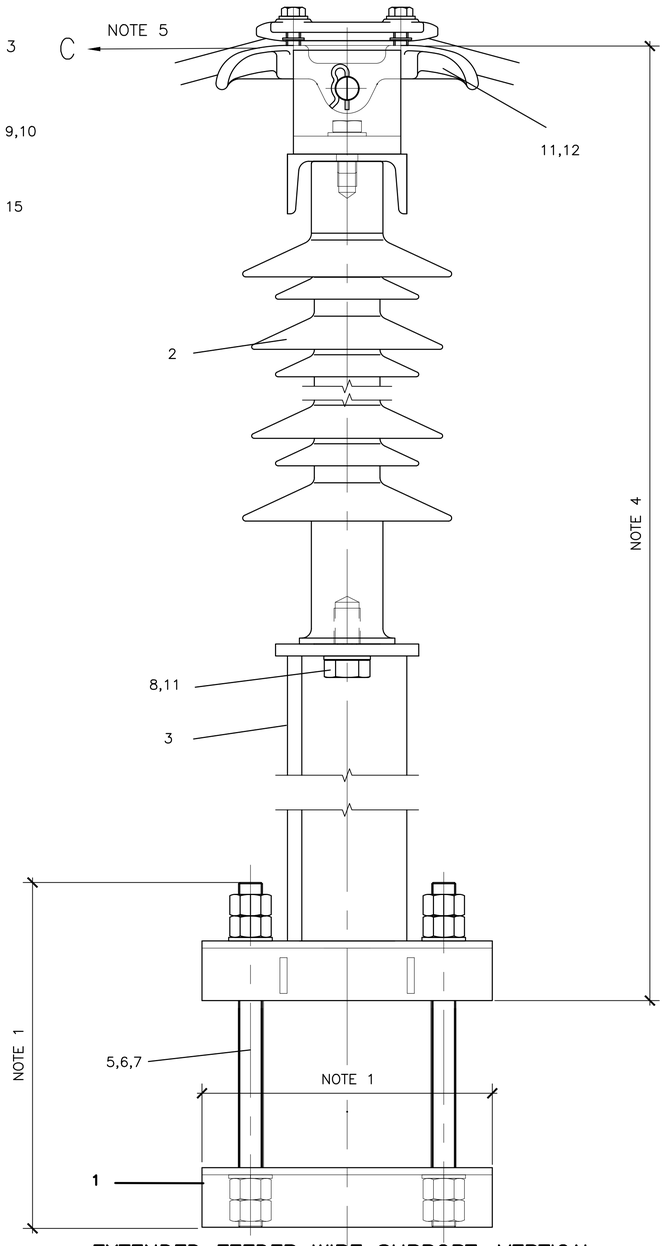
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6837



EXTENDED FEEDER WIRE SUPPORT, VERTICAL
AT STRUCTURE
WITH DOUBLE INSULATOR
ELEVATION
NTS



EXTENDED FEEDER WIRE SUPPORT, VERTICAL
AT STRUCTURE
WITH DOUBLE INSULATOR
A – ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON SIZE OF STEEL PART PROFILE AND DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.
4. DISTANCE DEPENDS ON DETAIL DESIGN ; MAXIMUM ABOUT 7'–5'' (2260MM)
5. TURN CLAMP IN CORRECT POSITION
6. REFER OCS DESIGN SPECIFICATION 34 30 73.

FOR RECTANGULAR STEEL PART PROFILE

B	A					
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	16	DIN EN ISO 4017	
–	1	U–PROFILE 100		15		
–	2	NUT M16	8 NOTE 2	14	DIN EN ISO 4032	
–	1	WASHER M16	200HV NO.2	13	DIN EN ISO 7089	
–	1	FEEDER WIRE CLAMP	G–AL	12		
–	2	HEXAGON HEAD SCREW M22x35	8.8 NOTE 2	11	DIN EN ISO 4017	
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE 2	10	DIN EN ISO 4017	
–	3	WASHER M16	200HV NOTE 2	9	DIN EN ISO 7093	
–	2	WASHER M22	200HV NOTE 2	8	DIN EN ISO 7089	
–	4	STUD BOLT 3/4"		7		NOTE 1 AND 6
–	16	NUT 3/4"		6		NOTE 6
–	8	WASHER FOR 3/4"		5		NOTE 6
–	1	BRACKET FOR FEEDER WIRE CLAMP		4		
–	2	SUPPORTING STRUCTURE FOR INSULATOR		3		NOTE 1
–	2	COMPOSITE INSULATOR		2		
–	2	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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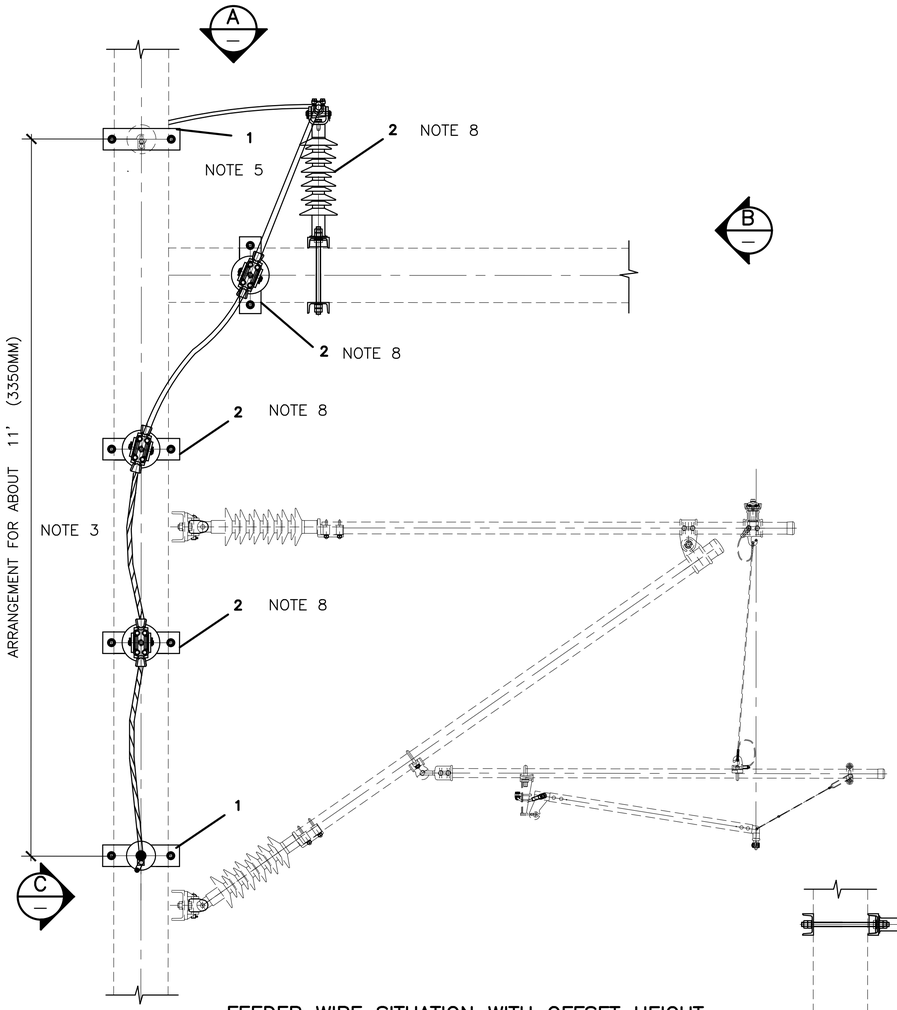
Caltrain

ENGINEERING STANDARD DRAWINGS

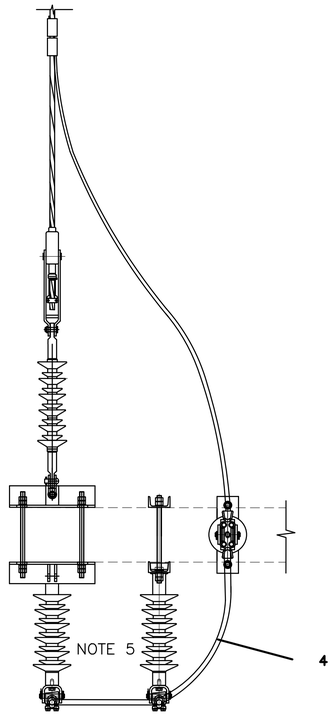
OVERHEAD CONTACT SYSTEM

EXTENDED FEEDER WIRE SUPPORT
VERTICAL AT STRUCTURE
WITH DOUBLE INSULATOR

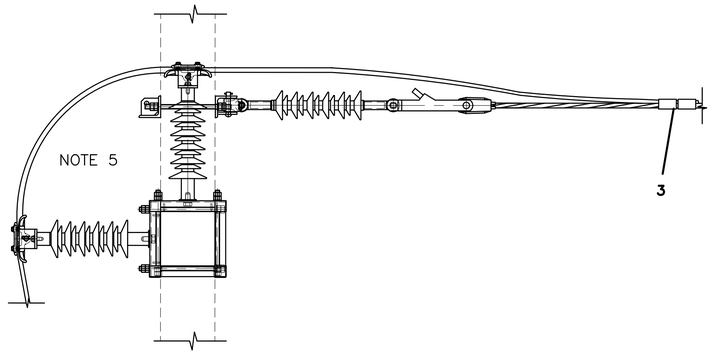
CADD FILE NAME: SD–W6838
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6838



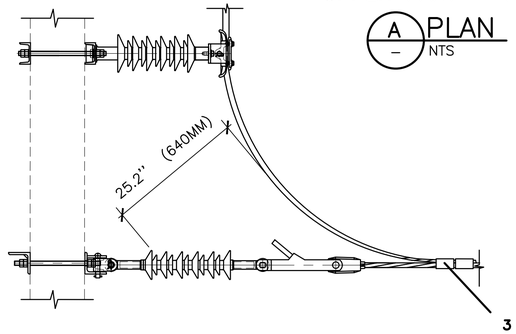
FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / CENTRIC
ELEVATION
NTS



FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / CENTRIC
UPPER PART – TOP VIEW
A PLAN
NTS



FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / CENTRIC
UPPER PART – SIDE VIEW
B ELEVATION
NTS



FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / CENTRIC
LOWER PART – SIDE VIEW
C ELEVATION
NTS

NOTES:

1. LENGTH OF CLAMPING PARTS DEPENDING ON BEAM SIZES
2. FOR RECTANGULAR MAST
3. NEW QUANTITY OF COMPONENTS MUST BE DEFINED IN DETAIL DESIGN FOR DIFFERENT DISTANCES
4. TO BE ORGANIZED FROM LOCAL SUPPLIER
5. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
6. MAST SIZE / BEAM SIZE TO BE CONSIDERED FOR CONSTRUCTIONS
7. ARRANGEMENT IS AN EXAMPLE – SIMILAR ARRANGEMENTS WITH SAME PARTS POSSIBLE (OTHER PORTAL SIDE OR OTHER SIDE OF MAST)
8. SEE SD–W6320 ; VERTICAL OR HORIZONTAL USE POSSIBLE

	A					
	1	EAGLE ACSR 556		4		
	4	PARALLEL GROOVE CLAMP		3	LOCAL SUPPLIER	NOTE 4
	4	FEEDER WIRE SUPPORT, VERTICAL		2		NOTES 1, 2, 3, 6, 8
	2	TERMINATION F. FEEDER WIRE FT–06		1		NOTES 1, 2, 6
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

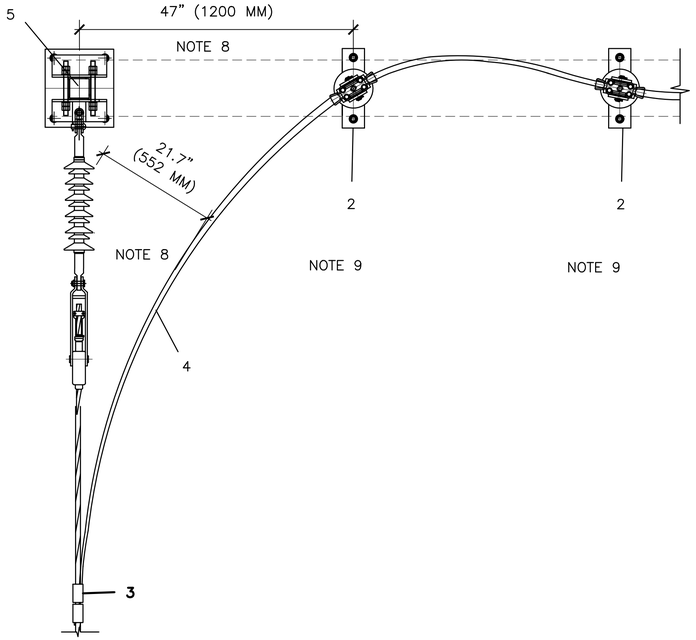
FEEDER WIRE SITUATION AT PORTAL
WITH OFFSET HEIGHT
TERMINATION CENTRIC / CENTRIC

CADD FILE NAME: SD–W6839

REV: | EDITION: SECOND

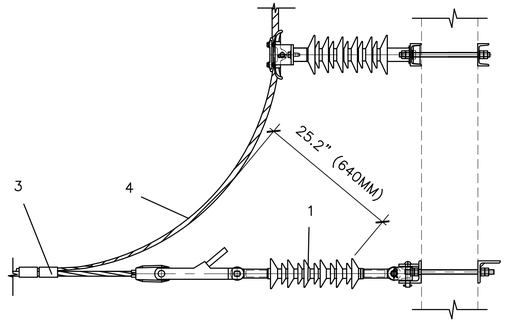
SCALE: NTS

STANDARD DRAWING NO.: SD–W6839



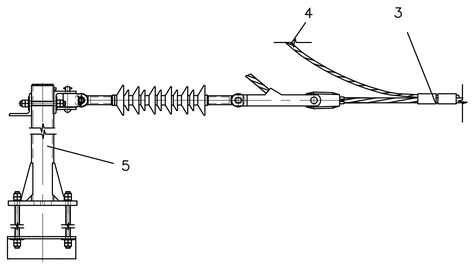
FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / DROP TUBE
UPPER PART – TOP VIEW

C – PLAN NTS



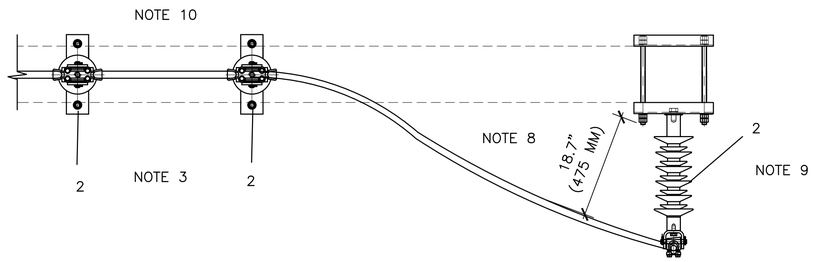
FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / DROP TUBE
LOWER PART – SIDE VIEW

B – ELEVATION NTS



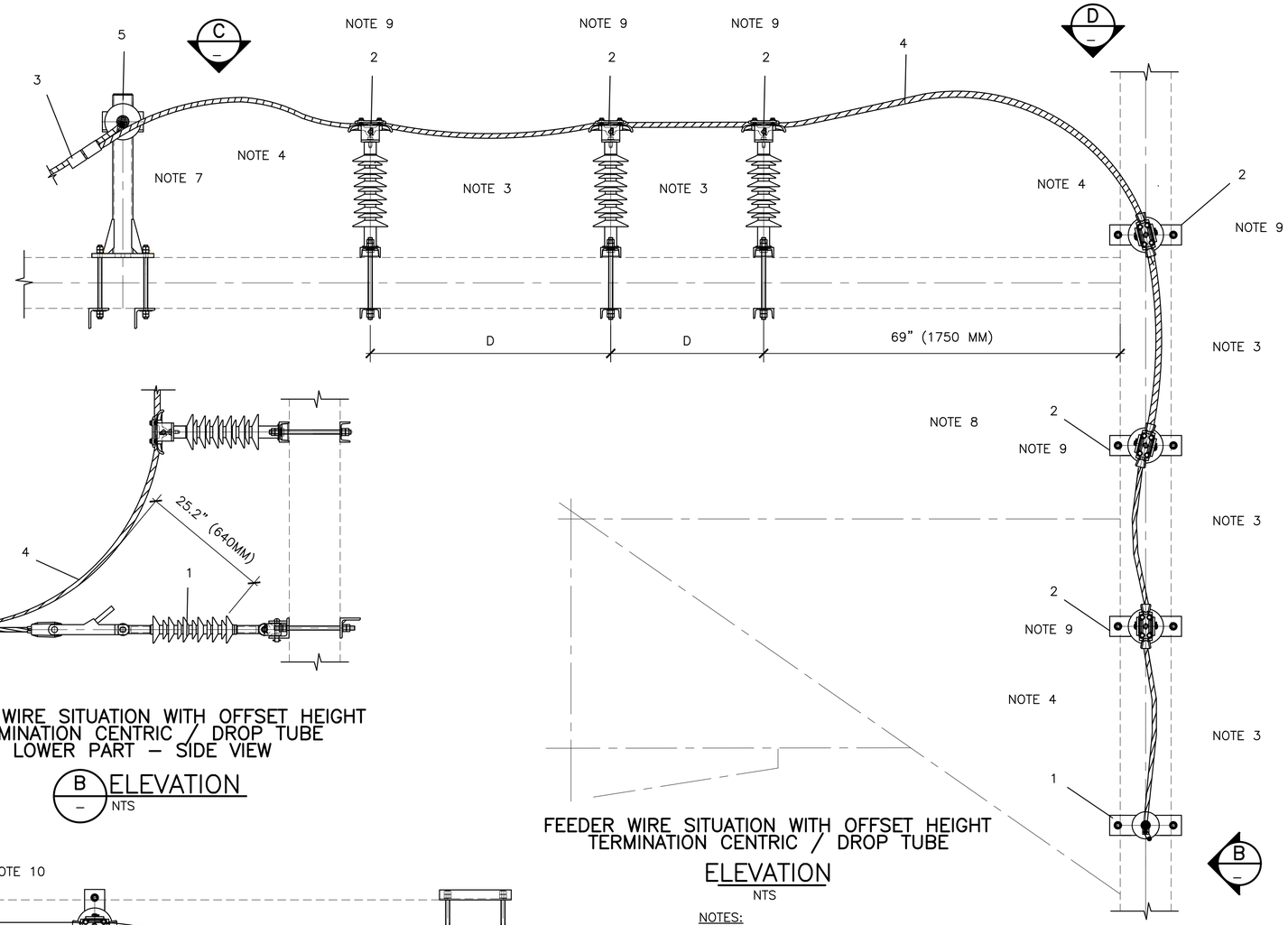
FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / DROP TUBE
UPPER PART – SIDE VIEW

A – ELEVATION NTS



FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / DROP TUBE
UPPER PART – TOP VIEW

D – PLAN NTS



FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION CENTRIC / DROP TUBE
ELEVATION NTS

NOTES:

1. LENGTH OF CLAMPING PARTS DEPENDING ON BEAM SIZES
2. FOR RECTANGULAR MAST
3. QUANTITY OF SUPPORTS TO BE DEFINED IN DETAIL DESIGN – DISTANCE D IS 3' TO 4'
4. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
5. MAST SIZE / BEAM SIZE TO BE CONSIDERED FOR CONSTRUCTIONS
6. ARRANGEMENT IS AN EXAMPLE – SIMILAR ARRANGEMENTS WITH SAME PARTS POSSIBLE (OTHER PORTAL SIDE OR OTHER DROP TUBE POSITION)
7. LENGTH OF DROP TUBE DEPENDS ON DETAIL DESIGN
8. POSITION: APPROXIMATELY THE DISTANCE THAT IS MENTIONED
9. SEE SD–W6320 ; VERTICAL OR HORIZONTAL USE POSSIBLE

	A					
	1	OFFSET FEEDER TERMINATION AT PORTAL BEAM		5		NOTES 1, 2, 5
	1	EAGLE ACSR 556		4		
	4	PARALLEL GROOVE CLAMP		3	LOCAL SUPPLIER	
NOTE 3		FEEDER WIRE SUPPORT, VERTICAL		2		NOTES 1, 2, 3, 5, 9
	1	TERMINATION F. FEEDER WIRE FT–06		1		NOTES 1, 2, 5
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

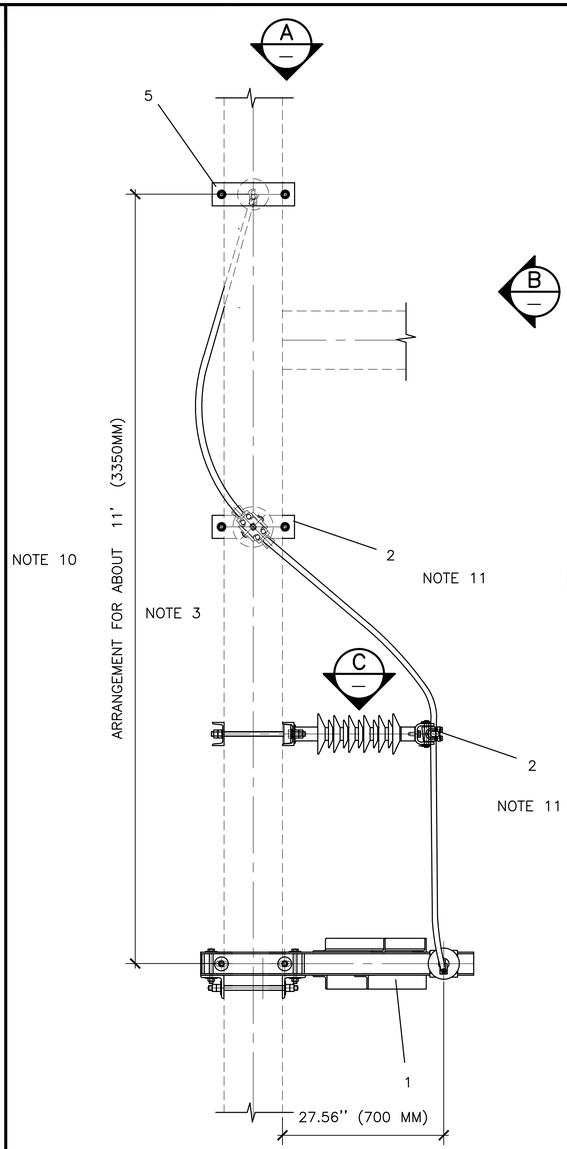
FEEDER WIRE SITUATION AT PORTAL WITH OFFSET HEIGHT TERMINATION CENTRIC / DROP TUBE

CADD FILE NAME: SD–W6840

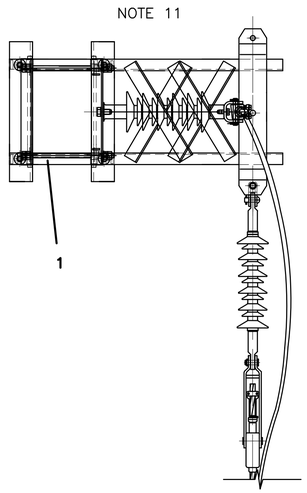
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6840

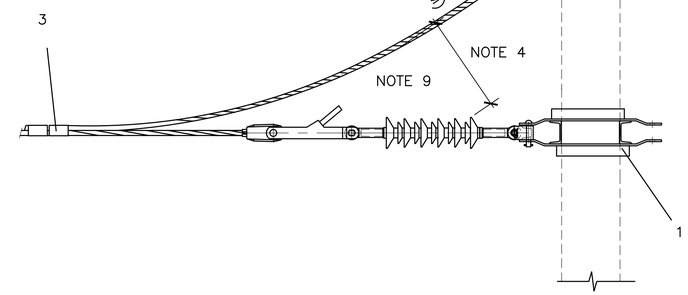


FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION TRAVERSE / CENTRIC
ELEVATION
NTS



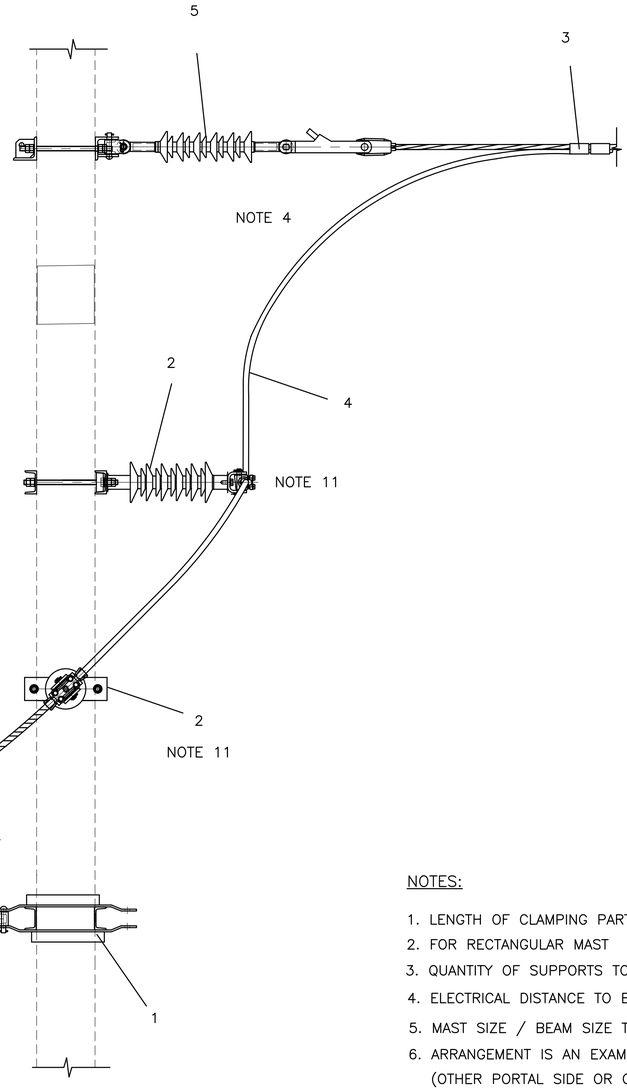
FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION TRAVERSE / CENTRIC
TOP VIEW

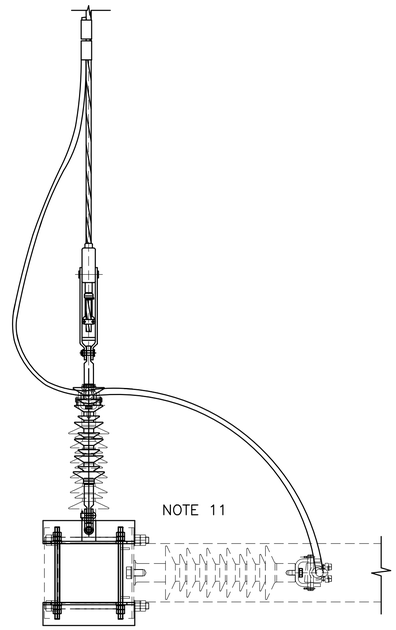
C PLAN
NTS



FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION TRAVERSE / CENTRIC
SIDE VIEW

B ELEVATION
NTS





FEEDER WIRE SITUATION WITH OFFSET HEIGHT
TERMINATION TRAVERSE / CENTRIC
TOP VIEW

A PLAN
NTS

NOTES:

1. LENGTH OF CLAMPING PARTS DEPENDING ON BEAM SIZES
2. FOR RECTANGULAR MAST
3. QUANTITY OF SUPPORTS TO BE DEFINED IN DETAIL DESIGN – DISTANCE D IS 3' TO 4'
4. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
5. MAST SIZE / BEAM SIZE TO BE CONSIDERED FOR CONSTRUCTIONS
6. ARRANGEMENT IS AN EXAMPLE – SIMILAR ARRANGEMENTS WITH SAME PARTS POSSIBLE (OTHER PORTAL SIDE OR OTHER SIDE OF MAST)
7. MINIMUM BENDING RADIUS 30 x DIAMETER
8. TRAVERSE DISTANCE OF SD–W6324 IS 27.56" (700 MM)
9. IF NECESSARY DISTANCE MUST BE ENLARGED BY PUSHING TERMINATION / FEEDER SUPPORT / CLAMPS
10. POSITION: APPROXIMATELY THE DISTANCE THAT IS MENTIONED
11. SEE SD–W6320 ; VERTICAL OR HORIZONTAL USE POSSIBLE

	A					
	1	TERMINATION F. FEEDER WIRE FT–06		5		NOTES 1, 2, 5
	1	EAGLE ACSR 556		4		NOTE 7
	4	PARALLEL GROOVE CLAMP		3	LOCAL SUPPLIER	
NOTE 3		FEEDER WIRE SUPPORT, VERTICAL		2		NOTES 1,2,3,5,11
	1	SINGLE TERMINATION TRAVERSE – FW		1		NOTES 1, 2, 5, 8
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

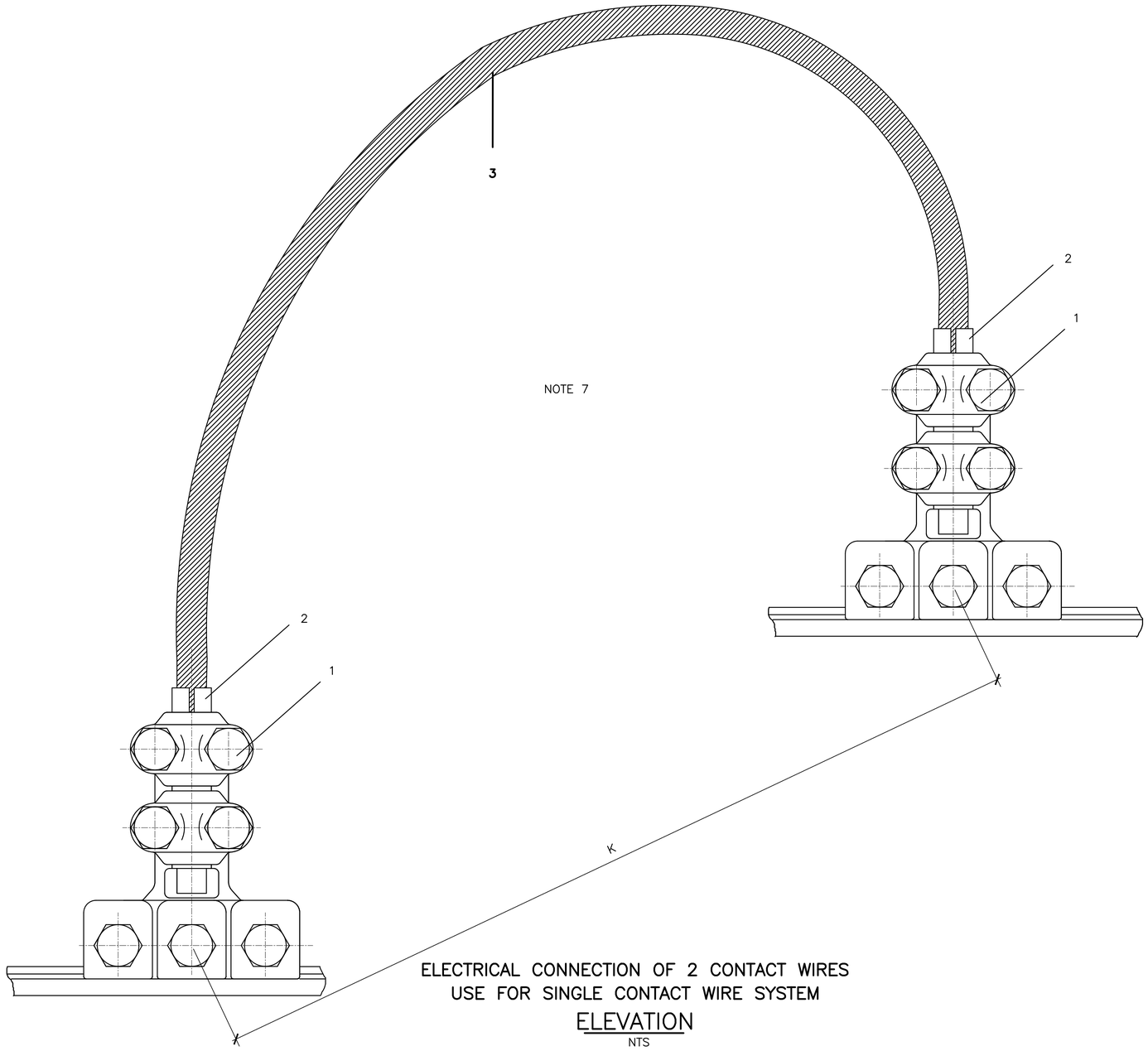
FEEDER WIRE SITUATION AT PORTAL
WITH OFFSET HEIGHT
TERMINATION TRAVERSE / CENTRIC

CADD FILE NAME: SD–W6841

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6841



ELECTRICAL CONNECTION OF 2 CONTACT WIRES
USE FOR SINGLE CONTACT WIRE SYSTEM

ELEVATION

NTS

NOTES 4, 5 AND 6

K = 0.25 M (9.84'')	SV = 0 M (0'')	L = 0.57 M (22.44'')
K = 0.50 M (19.69'')	SV = 0 M (0'')	L = 0.96 M (37.80'')
K = 0.75 M (29.53'')	SV = 0 M (0'')	L = 1.35 M (53.15'')
K = 1.00 M (39.40'')	SV = 0 M (0'')	L = 1.77 M (69.69'')
K = 1.25 M (49.21'')	SV = 0 M (0'')	L = 2.13 M (83.86'')
K = 1.50 M (59.06'')	SV = 0 M (0'')	L = 2.53 M (99.61'')
K = 1.75 M (68.90'')	SV = 0 M (0'')	L = 2.92 M (115'')
K = 2.00 M (78.74'')	SV = 0 M (0'')	L = 3.31 M (130.31'')

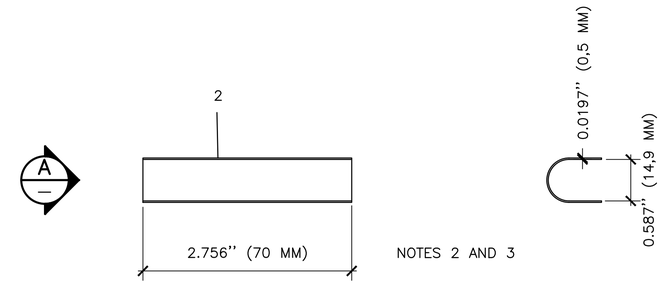
K : DIRECT DISTANCE OF CLAMPING POINTS TO CW

FOR MOVEMENT SV = 0 M (0'')

OR MAXIMUM DISTANCE K DURING MOVEMENT PHASE

MAXIMUM DISTANCE TO BE CALCULATED / MEASURED IN DETAIL DESIGN

L : TOTAL LENGTH OF PART 3



PROTECTION SLEEVE
BEFORE MOUNTING – PART 2

ELEVATION

NTS

PROTECTION SLEEVE
BEFORE MOUNTING – PART 2

A – ELEVATION

NTS

NOTES:

1. TO BE ORGANIZED FROM LOCAL SUPPLIER
2. SIZE, SEE DRAWING ABOVE
3. TOTAL WIDTH 1.81'' (46 MM)
4. LENGTH DEPENDS ON DISTANCE AND MOVEMENT OF CONTACT WIRES
5. MOVEMENT OF CONTACT WIRES IMPORTANT: MOVEMENT IN SAME DIRECTIONS OR MOVEMENT IN OPPOSITE DIRECTION OR NO MOVEMENT
6. MOVEMENTS OF CONTACT WIRES ACCORDING TO SD–W6003
7. DRAWING STANDS FOR EC–05 TYPE E OF DRAWING SD–W6271

	A					
	1	H07RN–F 120 FLEX. SW	COPPER	3	VDE 282–4	NOTES 1 AND 4
	2	PROTECTION SLEEVE 70x46x0,5 MM	COPPER	2	NOTE 3	NOTES 1 AND 2
	2	FEEDER CLAMP FOR CONTACT WIRE		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

ELECTRICAL CONNECTION
OF TWO CONTACT WIRES
EC–05

CADD FILE NAME: SD–W6843

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6843

SETTING CHART FOR TENSOREX C+ 450/14kN & 450/12kN TYPE 01 AND 05

DISTANCE FROM FIX POINT (FT)
TENSOREX SETTING VALUES IN INCHES

Temperature °F	165	330	495	660	825	990	1155	1240
19	9.9	11.1	12.3	13.4	14.6	15.8	17.0	17.7
28	9.8	10.8	11.8	12.8	13.8	14.8	15.8	16.4
37	9.6	10.4	11.3	12.1	12.9	13.8	14.6	15.2
46	9.4	10.1	10.8	11.4	12.1	12.8	13.4	13.9
55	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.7
64	9.1	9.4	9.8	10.1	10.4	10.8	11.1	11.4
73	8.9	9.1	9.3	9.4	9.6	9.8	9.9	10.1
82	**8.85**	**8.85**	**8.85**	**8.85**	**8.85**	**8.85**	**8.85**	**8.85**
91	8.7	8.5	8.3	8.2	8.0	7.8	7.7	7.6
100	8.5	8.2	7.8	7.5	7.2	6.8	6.5	6.3
109	8.3	7.8	7.3	6.8	6.3	5.8	5.3	5.1
118	8.2	7.5	6.8	6.2	5.5	4.8	4.2	3.8
127	8.0	7.2	6.3	5.5	4.7	3.8	3.0	2.5
136	7.8	6.8	5.8	4.8	3.8	2.8	1.8	1.3
145	7.7	6.5	5.3	4.2	3.0	1.8	0.6	0

DISTANCE FROM FIX POINT (M)
TENSOREX SETTING VALUES IN MM

TEMPERATURE °C	50	100	150	200	250	300	350	378
−7	254	284	314	344	373	403	433	450
−2	250	276	301	327	352	378	403	418
3	246	267	288	310	331	352	373	386
8	242	259	276	293	310	327	344	354
13	237	250	263	276	288	301	314	321
18	233	242	250	259	267	276	284	289
23	229	233	237	242	246	250	254	257
28	**225**	**225**	**225**	**225**	**225**	**225**	**225**	**225**
33	220	216	212	208	203	199	195	193
38	216	208	199	191	182	174	165	161
43	212	199	186	174	161	148	135	129
48	208	191	174	157	140	123	106	96
53	203	182	161	140	118	97	76	64
58	199	174	148	123	97	72	46	32
63	195	165	135	106	76	46	16	0

NOTES:

1. FOR TENSOREX TYPE REFER DRAWING NUMBER SD−W6854.
2. FOR TENSOREX ASSEMBLY REFER DRAWING NUMBER SD−W6851, SD−W6852 AND SD−W6853.
3. EXAMPLE:
   AMBIENT TEMPERATURE − 13°C/ 55°F
   HALF TENSION LENGTH − 300m/ 990'
   TENSOREX SETTING − 301mm/ 11.8"



INDICATIVE PICTURE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSOREX C+ SETTING CHART FOR 450/14 kN & 450/12 kN
SHEET 1 OF 4

CADD FILE NAME: SD−W6845
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD−W6845

SETTING CHART FOR TENSOREX C+ 750/14kN & 750/12kN TYPE 02 AND 06

DISTANCE FROM FIX POINT (FT)
TENSOREX SETTING VALUES IN INCHES

TEMPERATURE °F	165	330	495	660	825	990	1155	1320	1485	1650	1815	1980	2067
19	15.8	17.0	18.2	19.3	20.5	21.7	22.9	24.0	25.2	26.4	27.5	28.7	29.5
28	15.7	16.7	17.7	18.7	19.7	20.7	21.7	22.7	23.7	24.7	25.7	26.7	27.4
37	15.5	16.3	17.2	18.0	18.8	19.7	20.5	21.4	22.2	23.0	23.9	24.7	25.3
46	15.3	16.0	16.7	17.3	18.0	18.7	19.3	20.0	20.7	21.4	22.0	22.7	23.2
55	15.2	15.7	16.2	16.7	17.2	17.7	18.2	18.7	19.2	19.7	20.2	20.7	21.1
64	15.0	15.3	15.7	16.0	16.3	16.7	17.0	17.3	17.7	18.0	18.3	18.7	19.0
73	14.8	15.0	15.2	15.3	15.5	15.7	15.8	16.0	16.2	16.3	16.5	16.7	16.9
82	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**	**14.75**
91	14.6	14.4	14.2	14.1	13.9	13.7	13.6	13.4	13.2	13.1	12.9	12.7	12.7
100	14.4	14.1	13.7	13.4	13.1	12.7	12.4	12.1	11.7	11.4	11.1	10.7	10.5
109	14.2	13.7	13.2	12.7	12.2	11.7	11.2	10.7	10.2	9.7	9.2	8.7	8.4
118	14.1	13.4	12.7	12.1	11.4	10.7	10.1	9.4	8.7	8.0	7.4	6.7	6.3
127	13.9	13.1	12.2	11.4	10.6	9.7	8.9	8.0	7.2	6.4	5.5	4.7	4.2
136	13.7	12.7	11.7	10.7	9.7	8.7	7.7	6.7	5.7	4.7	3.7	2.7	2.1
145	13.6	12.4	11.2	10.1	8.9	7.7	6.5	5.4	4.2	3.0	1.9	0.7	0

DISTANCE FROM FIX POINT (M)
TENSOREX SETTING VALUES IN MM

TEMPERATURE °C	50	100	150	200	250	300	350	400	450	500	550	600	630
−7	404	434	464	494	523	553	583	613	642	672	702	732	750
−2	400	426	451	477	502	528	553	579	604	630	655	681	696
3	396	417	438	460	481	502	523	545	566	587	608	630	643
8	392	409	426	443	460	477	494	511	528	545	562	579	589
13	387	400	413	426	438	451	464	477	489	502	515	528	536
18	383	392	400	409	417	426	434	443	451	460	468	477	482
23	379	383	387	392	396	400	404	409	413	417	421	426	429
28	**375**	**375**	**375**	**375**	**375**	**375**	**375**	**375**	**375**	**375**	**375**	**375**	**375**
33	370	366	362	358	353	349	345	341	336	332	328	324	321
38	366	358	349	341	332	324	315	307	298	290	281	273	268
43	362	349	336	324	311	298	285	273	260	247	234	222	214
48	358	341	324	307	290	273	256	239	222	205	188	171	161
53	353	332	311	290	268	247	226	205	183	162	141	120	107
58	349	324	298	273	247	222	196	171	145	120	94	69	54
63	345	315	285	256	226	196	166	137	107	77	47	18	0

NOTES:

1. FOR TENSOREX TYPE REFER DRAWING NUMBER SD−W6854.
2. FOR TENSOREX ASSEMBLY REFER DRAWING NUMBER SD−W6851, SD−W6852 AND SD−W6853.
3. EXAMPLE:
   AMBIENT TEMPERATURE − 53°C/ 127°F
   HALF TENSION LENGTH − 350m/ 1155'
   TENSOREX SETTING − 226mm/ 8.9"



INDICATIVE PICTURE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSOREX C+ SETTING CHART
FOR 750/14 kN & 750/12 kN
SHEET 2 OF 4

CADD FILE NAME: SD−W6846
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD−W6846

SETTING CHART FOR TENSOREX C+ 1000/14kN & 1000kN TYPE 03 AND 07

DISTANCE FROM FIX POINT (FT)

TENSOREX SETTING VALUES IN INCHES

TEMPERATURE °F	165	330	495	660	825	990	1155	1320	1485	1650	1815	1980	2145	2310	2475	2640	2757
19	20.7	21.9	23.1	24.2	25.4	26.6	27.8	28.9	30.1	31.3	32.4	33.6	34.8	36.0	37.1	38.3	39.4
28	20.6	21.6	22.6	23.6	24.6	25.6	26.6	27.6	28.6	29.6	30.6	31.6	32.6	33.6	34.6	35.6	36.6
37	20.4	21.2	22.1	22.9	23.7	24.6	25.4	26.3	27.1	27.9	28.8	29.6	30.4	31.3	32.1	33.0	33.7
46	20.2	20.9	21.6	22.2	22.9	23.6	24.2	24.9	25.6	26.3	26.9	27.6	28.3	28.9	29.6	30.3	30.9
55	20.1	20.6	21.1	21.6	22.1	22.6	23.1	23.6	24.1	24.6	25.1	25.6	26.1	26.6	27.1	27.6	28.1
64	19.9	20.2	20.6	20.9	21.2	21.6	21.9	22.2	22.6	22.9	23.2	23.6	23.9	24.2	24.6	24.9	25.3
73	19.7	19.9	20.1	20.2	20.4	20.6	20.7	20.9	21.1	21.2	21.4	21.6	21.7	21.9	22.1	22.2	22.5
82	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**	**19.65**
91	19.5	19.3	19.1	19.0	18.8	18.6	18.5	18.3	18.1	18.0	17.8	17.6	17.5	17.3	17.1	17.0	16.9
100	19.3	19.0	18.6	18.3	18.0	17.6	17.3	17.0	16.6	16.3	16.0	15.6	15.3	15.0	14.6	14.3	14.1
109	19.1	18.6	18.1	17.6	17.1	16.6	16.1	15.6	15.1	14.6	14.1	13.6	13.1	12.6	12.1	11.6	11.2
118	19.0	18.3	17.6	17.0	16.3	15.6	15.0	14.3	13.6	12.9	12.3	11.6	10.9	10.3	9.6	8.9	8.4
127	18.8	18.0	17.1	16.3	15.5	14.6	13.8	12.9	12.1	11.3	10.4	9.6	8.8	7.9	7.1	6.2	5.6
136	18.6	17.6	16.6	15.6	14.6	13.6	12.6	11.6	10.6	9.6	8.6	7.6	6.6	5.6	4.6	3.6	2.8
145	18.5	17.3	16.1	15.0	13.8	12.6	11.4	10.3	9.1	7.9	6.8	5.6	4.4	3.2	2.1	0.9	0

DISTANCE FROM FIX POINT (M)

TENSOREX SETTING VALUES IN MM

TEMPERATURE °C	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	840
−7	529	559	589	619	648	678	708	738	767	797	827	857	886	916	946	976	1000
−2	525	551	576	602	627	653	678	704	729	755	780	806	831	857	882	908	929
3	521	542	563	585	606	627	648	670	691	712	733	755	776	797	818	840	857
8	517	534	551	568	585	602	619	636	653	670	687	704	721	738	755	772	786
13	512	525	538	551	563	576	589	602	614	627	640	653	665	678	691	704	714
18	508	517	525	534	542	551	559	568	576	585	593	602	610	619	627	636	643
23	504	508	512	517	521	525	529	534	538	542	546	551	555	559	563	568	571
28	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**
33	495	491	487	483	478	474	470	466	461	457	453	449	444	440	436	432	429
38	491	483	474	466	457	449	440	432	423	415	406	398	389	381	372	364	357
43	487	474	461	449	436	423	410	398	385	372	359	347	334	321	308	296	286
48	483	466	449	432	415	398	381	364	347	330	313	296	279	262	245	228	214
53	478	457	436	415	393	372	351	330	308	287	266	245	223	202	181	160	143
58	474	449	423	398	372	347	321	296	270	245	219	194	168	143	117	92	71
63	470	440	410	381	351	321	291	262	232	202	172	143	113	83	53	24	0

NOTES:

1. FOR TENSOREX TYPE REFER DRAWING NUMBER SD−W6854.
2. FOR TENSOREX ASSEMBLY REFER DRAWING NUMBER SD−W6851, SD−W6852 AND SD−W6853.
3. EXAMPLE:
   AMBIENT TEMPERATURE − 48°C/ 118°F
   HALF TENSION LENGTH − 800m/ 2640'
   TENSOREX SETTING − 228mm/ 8.9"



INDICATIVE PICTURE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSOREX C+ SETTING CHART FOR 1000/14 kN & 1000/12 kN

SHEET 3 OF 4

CADD FILE NAME: SD−W6847

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD−W6847

SETTING CHART FOR TENSOREX C+ 1100/14kN & 1000/12kN TYPE 04 AND 08

DISTANCE FROM FIX POINT (FT)
TENSOREX SETTING VALUES IN INCHES

TEMPERATURE °F	165	330	495	660	825	990	1155	1320	1485	1650	1815	1980	2145	2310	2475	2640	2805	2970	3032
19	22.7	23.9	25.1	26.2	27.4	28.6	29.8	30.9	32.1	33.3	34.4	35.6	36.8	38.0	39.1	40.3	41.5	42.7	43.3
28	22.6	23.6	24.6	25.6	26.6	27.6	28.6	29.6	30.6	31.6	32.6	33.6	34.6	35.6	36.6	37.6	38.6	39.6	40.2
37	22.4	23.2	24.1	24.9	25.7	26.6	27.4	28.3	29.1	29.9	30.8	31.6	32.4	33.3	34.1	35.0	35.8	36.6	37.1
46	22.2	22.9	23.6	24.2	24.9	25.6	26.2	26.9	27.6	28.3	28.9	29.6	30.3	30.9	31.6	32.3	32.9	33.6	34.0
55	22.1	22.6	23.1	23.6	24.1	24.6	25.1	25.6	26.1	26.6	27.1	27.6	28.1	28.6	29.1	29.6	30.1	30.6	30.9
64	21.9	22.2	22.6	22.9	23.2	23.6	23.9	24.2	24.6	24.9	25.2	25.6	25.9	26.2	26.6	26.9	27.2	27.6	27.8
73	21.7	21.9	22.1	22.2	22.4	22.6	22.7	22.9	23.1	23.2	23.4	23.6	23.7	23.9	24.1	24.2	24.4	24.6	24.7
82	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**	**21.65**
91	21.5	21.3	21.1	21.0	20.8	20.6	20.5	20.3	20.1	20.0	19.8	19.6	19.5	19.3	19.1	19.0	18.8	18.6	18.6
100	21.3	21.0	20.6	20.3	20.0	19.6	19.3	19.0	18.6	18.3	18.0	17.6	17.3	17.0	16.6	16.3	16.0	15.6	15.5
109	21.1	20.6	20.1	19.6	19.1	18.6	18.1	17.6	17.1	16.6	16.1	15.6	15.1	14.6	14.1	13.6	13.1	12.6	12.4
118	21.0	20.3	19.6	19.0	18.3	17.6	17.0	16.3	15.6	14.9	14.3	13.6	12.9	12.3	11.6	10.9	10.3	9.6	9.3
127	20.8	20.0	19.1	18.3	17.5	16.6	15.8	14.9	14.1	13.3	12.4	11.6	10.8	9.9	9.1	8.2	7.4	6.6	6.2
136	20.6	19.6	18.6	17.6	16.6	15.6	14.6	13.6	12.6	11.6	10.6	9.6	8.6	7.6	6.6	5.6	4.6	3.6	3.1
145	20.5	19.3	18.1	17.0	15.8	14.6	13.4	12.3	11.1	9.9	8.8	7.6	6.4	5.2	4.1	2.9	1.7	0.5	0

DISTANCE FROM FIX POINT (M)
TENSOREX SETTING VALUES IN MM

TEMPERATURE °C	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	924
−7	579	609	639	669	698	728	758	788	817	847	877	907	936	966	996	1026	1055	1085	1100
−2	575	601	626	652	677	703	728	754	779	805	830	856	881	907	932	958	983	1009	1021
3	571	592	613	635	656	677	698	720	741	762	783	805	826	847	868	890	911	932	943
8	567	584	601	618	635	652	669	686	703	720	737	754	771	788	805	822	839	856	864
13	562	575	588	601	613	626	639	652	664	677	690	703	715	728	741	754	766	779	786
18	558	567	575	584	592	601	609	618	626	635	643	652	660	669	677	686	694	703	707
23	554	558	562	567	571	575	579	584	588	592	596	601	605	609	613	618	622	626	629
28	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**	**550**
33	545	541	537	533	528	524	520	516	511	507	503	499	494	490	486	482	477	473	471
38	541	533	524	516	507	499	490	482	473	465	456	448	439	431	422	414	405	397	393
43	537	524	511	499	486	473	460	448	435	422	409	397	384	371	358	346	333	320	314
48	533	516	499	482	465	448	431	414	397	380	363	346	329	312	295	278	261	244	236
53	528	507	486	465	443	422	401	380	358	337	316	295	273	252	231	210	188	167	157
58	524	499	473	448	422	397	371	346	320	295	269	244	218	193	167	142	116	91	79
63	520	490	460	431	401	371	341	312	282	252	222	193	163	133	103	74	44	14	0

NOTES:

1. FOR TENSOREX TYPE REFER DRAWING NUMBER SD−W6854.
2. FOR TENSOREX ASSEMBLY REFER DRAWING NUMBER SD−W6851, SD−W6852 AND SD−W6853.
3. EXAMPLE:
   AMBIENT TEMPERATURE − 53°C/ 127°F
   HALF TENSION LENGTH − 750m/ 2475'
   TENSOREX SETTING − 231mm/ 9.1"



INDICATIVE PICTURE

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

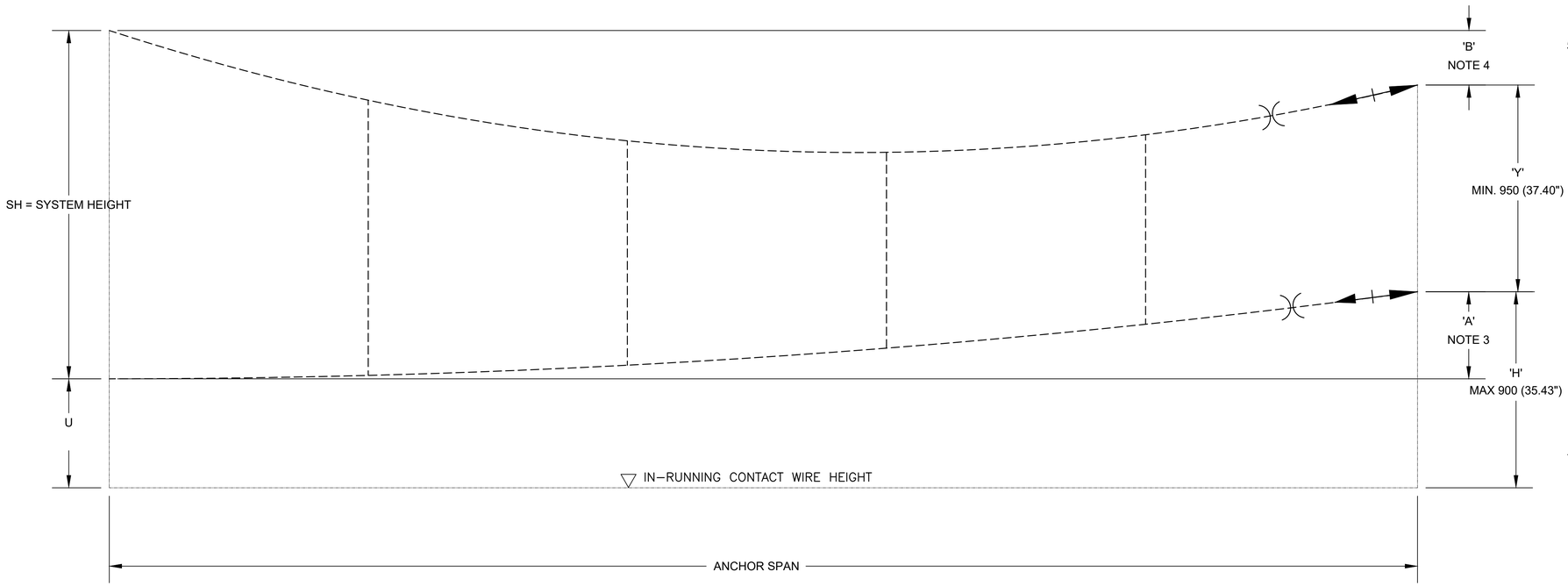
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSOREX C+ SETTING CHART FOR 1100/14 kN & 1100/12 kN
SHEET 4 OF 4

CADD FILE NAME: SD−W6848
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD−W6848



TYPICAL ANCHOR SPAN

ELEVATION

NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
2. U (DIFFERENCE BETWEEN IN RUNNING AND OUT OF RUNNING CONTACT WIRE) AND SH (SYSTEM HEIGHT) AS PER DETAIL DESIGN.
3. DIM 'A' (MAXIMUM CONTACT WIRE RAISING FROM RUNNING OUT CANTILEVER TO TENSOREX) REFER TABLE–1 ON DRAWING SD–W6850.
4. DIM 'B' (MAXIMUM CATENARY FALL OR FALL FROM RUNNING OUT CANTILEVER) AS PER TABLE–2 ON DRAWING SD–W6850.
5. FOR NON STANDARD DESIGN, DIM 'H' AND 'Y' TO BE CALCULATED BY DETAIL DESIGNER.

– DIM 'H' = U + DIM 'A' (MAXIMUM 900/35.43")
– DIM 'Y' = U + SH – H – B (MINIMUM 950/37.40")
– EXAMPLE

SPAN = 40M (131.2')
U = 20 (0.79") (EXAMPLE FOR TURNOUT CONTACT WIRE)
SH = 1700 (66.93")
DIM 'A' = 543 (21.38")
DIM 'B' = 363 (14.29")

H = 20 (0.79") + 543 (21.38")
= 563 (22.17") < 900 (35.43") ACCEPTABLE

DIM 'Y' = 20 (0.79") + 1700 (66.93") – 563 (22.17") – 363 (14.29")
= 794 (31.26") < 950 (37.40") NOT ACCEPTABLE
DIM 'Y' = 950 (37.40")

TO ACHIEVE DIM 'Y' = 950 (37.40") REDUCE DIM 'B'

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

TENSOREX C+ 12/14 kN
ADJUSTMENT OF TENSOREX C+ HEIGHT
SHEET 1 OF 2

CADD FILE NAME: SD–W6849
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6849

TABLE–1
DIMENSION 'A' AND 'H'

Anchor Span m(')	Dim–'A' Max. mm(")	H – mm(")			
		U 20(0.79")	U 400(15.75")	U 450(17.72")	U 500(19.69")
10(32.8)	34(1.34)	54(2.13)	434(17.09)	484(19.06)	534(21.02)
11(36.1)	41(1.61)	61(2.40)	441(17.36)	491(19.33)	541(21.30)
12(39.4)	49(1.93)	69(2.72)	449(17.68)	499(19.65)	549(21.61)
13(42.7)	57(2.24)	77(3.03)	457(17.99)	507(19.96)	557(21.93)
14(45.9)	67(2.64)	87(3.43)	467(18.39)	517(20.35)	567(22.32)
15(49.2)	76(2.99)	96(3.78)	476(18.74)	526(20.71)	576(22.68)
16(52.5)	87(3.43)	107(4.21)	487(19.17)	537(21.14)	587(23.11)
17(55.8)	98(3.86)	118(4.65)	498(19.61)	548(21.57)	598(23.54)
18(59.1)	110(4.33)	130(5.12)	510(20.08)	560(22.05)	610(24.02)
19.(62.3)	122(4.80)	142(5.59)	522(20.55)	572(22.52)	622(24.49)
20(65.6)	136(5.35)	156(6.14)	536(21.10)	586(23.07)	636(25.04)
21(68.9)	150(5.91)	170(6.69)	550(21.65)	600(23.62)	650(25.59)
22(72.2)	164(6.46)	184(7.24)	564(22.20)	614(24.17)	664(26.14)
23(75.5)	179(7.05)	199(7.83)	579(22.80)	629(24.76)	679(26.73)
24(78.7)	195(7.68)	215(8.46)	595(23.43)	645(25.39)	695(27.36)
25(82.0)	212(8.35)	232(9.13)	612(24.09)	662(26.06)	712(28.03)
26(85.3)	229(9.02)	249(9.80)	629(24.76)	679(26.73)	729(28.70)
27(88.6)	247(9.72)	267(10.51)	647(25.47)	697(27.44)	747(29.41)
28(91.9)	266(10.47)	286(11.26)	666(26.22)	716(28.19)	766(30.16)
29(95.1)	285(11.22)	305(12.01)	685(26.97)	735(28.94)	785(30.91)
30(98.4)	305(12.01)	325(12.80)	705(27.76)	755(29.72)	805(31.69)
31(101.7)	326(12.83)	346(13.62)	726(28.58)	776(30.55)	826(32.52)
32(105.0)	347(13.66)	367(14.45)	747(29.41)	797(31.38)	847(33.35)
33(108.3)	369(14.53)	389(15.31)	769(30.28)	819(32.24)	869(34.21)
34(111.5)	392(15.43)	412(16.22)	792(31.18)	842(33.15)	892(35.12)
35(114.8)	416(16.38)	436(17.17)	816(32.13)	866(34.09)	900(35.43)
36(118.1)	440(17.32)	460(18.11)	840(33.07)	890(35.04)	900(35.43)
37(121.4)	464(18.27)	484(19.06)	864(34.02)	900(35.43)	900(35.43)
38(124.7)	490(19.29)	510(20.08)	890(35.04)	900(35.43)	900(35.43)
39(128.0)	516(20.31)	536(21.10)	900(35.43)	900(35.43)	900(35.43)
40(131.2)	543(21.38)	563(22.17)	900(35.43)	900(35.43)	900(35.43)
41(134.5)	570(22.44)	590(23.23)	900(35.43)	900(35.43)	900(35.43)
42(137.8)	599(23.58)	619(24.37)	900(35.43)	900(35.43)	900(35.43)
43(141.1)	627(24.69)	647(25.47)	900(35.43)	900(35.43)	900(35.43)
44(144.4)	657(25.87)	677(26.65)	900(35.43)	900(35.43)	900(35.43)
45(147.6)	687(27.05)	707(27.83)	900(35.43)	900(35.43)	900(35.43)
46(150.9)	718(28.27)	738(29.06)	900(35.43)	900(35.43)	900(35.43)
47(154.2)	749(29.49)	769(30.28)	900(35.43)	900(35.43)	900(35.43)
48(157.5)	782(30.79)	802(31.57)	900(35.43)	900(35.43)	900(35.43)
49(160.8)	815(32.09)	835(32.87)	900(35.43)	900(35.43)	900(35.43)
50(164.0)	848(33.39)	868(34.17)	900(35.43)	900(35.43)	900(35.43)
51(167.3)	882(34.72)	900(35.43)	900(35.43)	900(35.43)	900(35.43)
52(170.6)	917(36.10)	900(35.43)	900(35.43)	900(35.43)	900(35.43)
>52(170.6)	>917(36.10)	900(35.43)	900(35.43)	900(35.43)	900(35.43)

TABLE–2
DIMENSION 'B' (MAXIMUM CATENARY FALL)

Anchor Span m(')	Dim–'B' Max. m(")	Anchor Span m(')	Dim–'B' Max. m(")
10(32.8)	23(0.91)	44(144.4)	440(17.32)
11(36.1)	27(1.06)	45(147.6)	460(18.11)
12(39.4)	33(1.30)	46(150.9)	481(18.94)
13(42.7)	38(1.50)	47(154.2)	502(19.76)
14(45.9)	45(1.77)	48(157.2)	523(20.59)
15(49.2)	51(2.01)	49(160.8)	545(21.46)
16(52.5)	58(2.28)	50(164.0)	568(22.36)
17(55.8)	66(2.60)	51(167.3)	591(23.27)
18(59.1)	74(2.91)	52(170.6)	614(24.17)
19(62.3)	82(3.23)	53(173.9)	638(25.12)
20(65.6)	91(3.58)	54(177.2)	662(26.06)
21(68.9)	100(3.94)	55(180.4)	687(27.05)
22(72.2)	110(4.33)	56(183.7)	712(28.03)
23(75.5)	120(4.72)	57(187.0)	738(29.06)
24(78.7)	131(5.16)	58(190.3)	764(30.08)
25(82.0)	142(5.59)	59(193.6)	791(31.14)
26(85.3)	154(6.06)	60(196.9)	818(32.20)
27(88.6)	166(6.54)	61(200.1)	845(33.27)
28(91.9)	178(7.01)	62(203.4)	873(34.37)
29(95.1)	191(7.52)	63(206.7)	902(35.51)
30(98.4)	204(8.03)	64(210.0)	930(36.61)
31(101.7)	218(8.58)	65(213.3)	960(37.80)
32(105.0)	233(9.17)		
33(108.3)	247(9.72)		
34(111.5)	263(10.35)		
35(114.8)	278(10.94)		
36(118.1)	294(11.57)		
37(121.4)	311(12.24)		
38(124.7)	328(12.91)		
39(128.0)	345(13.58)		
40(131.2)	363(14.29)		
41(134.5)	382(15.04)		
42(137.8)	401(15.79)		
43(141.1)	420(16.54)		

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PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

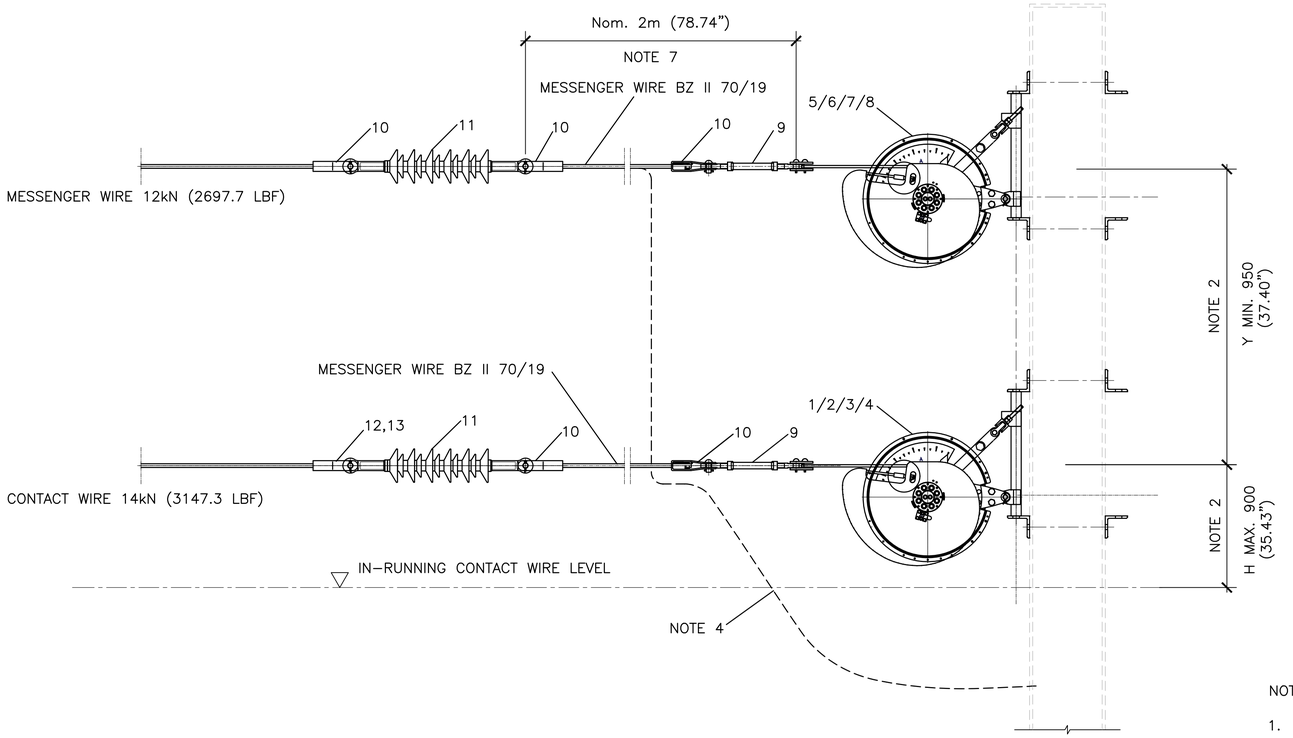
TENSOREX C+ 12/14 kN
ADJUSTMENT OF TENSOREX C+ HEIGHT
SHEET 2 OF 2

CADD FILE NAME: SD–W6850

REV: | EDITION: SECOND

SCALE: NTS

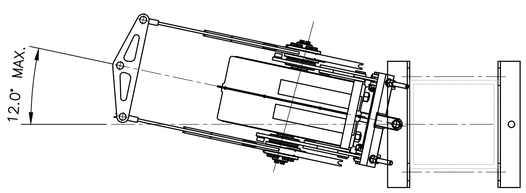
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TENSOREX C+ TERMINATIONS ARRANGEMENT BW-03A / BW-03B / BW-03C / BW-03D

ELEVATION

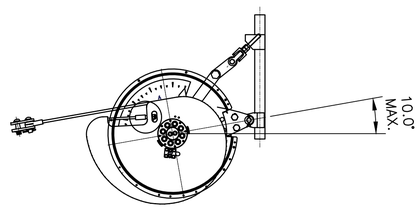
NTS



TENSOREX C+ MAXIMUM HORIZONTAL INSTALLATION ANGLE

PLAN

NTS



MAX. VERTICAL INSTALLATION ANGLE

ELEVATION

NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
2. FOR DIMENSION 'H' AND 'Y' REFER TO DRAWINGS SD-W6849 AND SD-W6850.
3. REFER DRAWING NUMBER SD-W6845, SD-W6846, SD-W6847 AND SD-W6848 FOR TENSOREX SETTING CHART.
4. IN TYPICAL SITUATIONS, EARTHING IS NOT REQUIRED SINCE THE TENSOREX IS SOLIDLY ATTACHED TO THE POLE, THUS PROVIDING A POSITIVE ELECTRICAL CONNECTION. HOWEVER, IN SITUATIONS WHERE THERE ARE LIVE WIRES OVER DEAD WIRES, EARTHING IS REQUIRED.
5. DOWN GUY NOT SHOWN FOR CLARITY, REFER DETAIL DESIGN AND OCS DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
6. FOR MAST AND TENSOREX MOUNTING, REFER DETAIL DESIGN.
7. INSULATOR DISTANCE CAN BE INCREASED ACCORDING TO DETAIL DESIGN.

MAX. HALF TENSION LENGTH 924M/3032'	MAX. HALF TENSION LENGTH 840M/2757'	MAX. HALF TENSION LENGTH 630M/2067'	MAX. HALF TENSION LENGTH 378M/1240'					
D	C	B	A	PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
1	1	1	1	PIN 19X52 WITH 8-SPLINT PIN		13		
1	1	1	1	TERMINATION CLAMP FOR CONTACT WIRE		12		
2	2	2	2	COMPOSITE INSULATOR TYPE-3		11		
5	5	5	5	TERMINATION CLAMP FOR MESSENGER WIRE		10		
2	2	2	2	TURNBUCKLE M20 EYE TO EYE		9		
1	–	–	–	TENSOREX C+ TYPE 08		8	SD-W6854/08	
–	1	–	–	TENSOREX C+ TYPE 07		7	SD-W6854/07	
–	–	1	–	TENSOREX C+ TYPE 06		6	SD-W6854/06	
–	–	–	1	TENSOREX C+ TYPE 05		5	SD-W6854/05	
1	–	–	–	TENSOREX C+ TYPE 04		4	SD-W6854/04	
–	1	–	–	TENSOREX C+ TYPE 03		3	SD-W6854/03	
–	–	1	–	TENSOREX C+ TYPE 02		2	SD-W6854/02	
–	–	–	1	TENSOREX C+ TYPE 01		1	SD-W6854/01	

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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

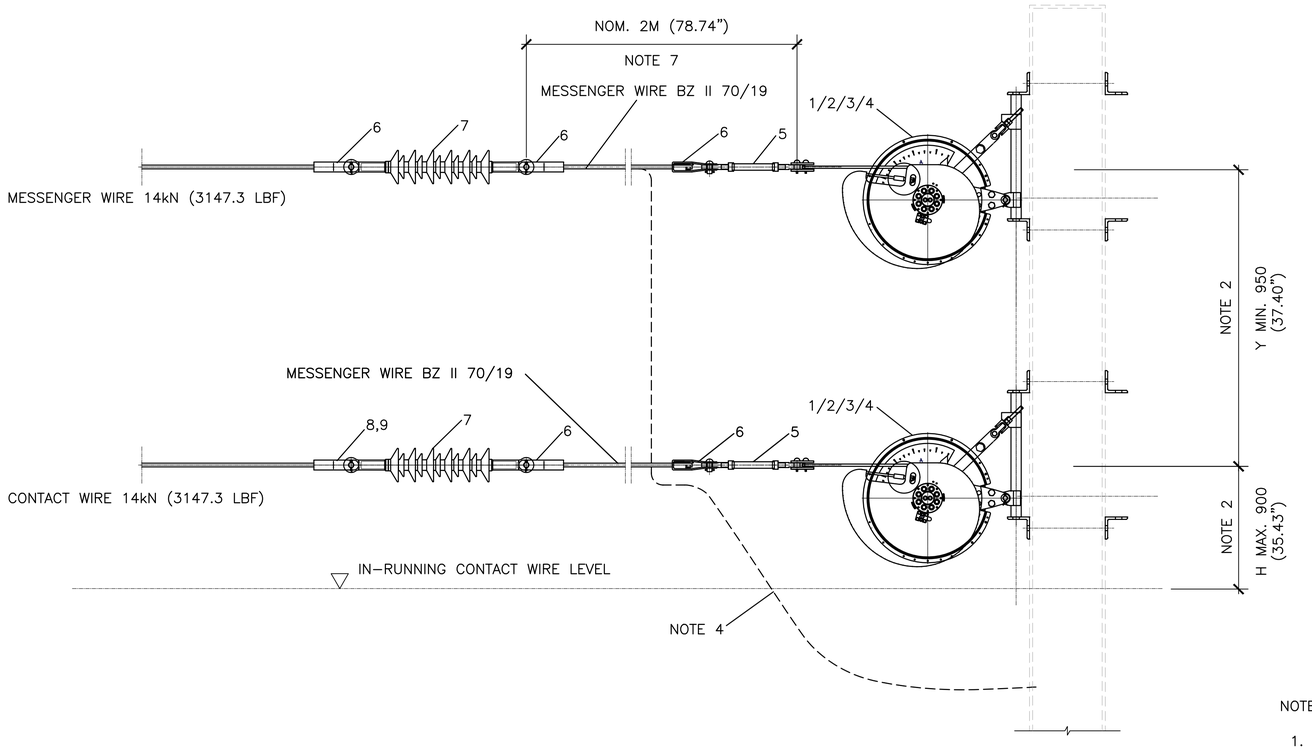
12/14 kN TENSOREX C+ TERMINATIONS
BW-03
SHEET 1 OF 3

CADD FILE NAME: SD-W6851

REV: | EDITION: SECOND

SCALE: NTS

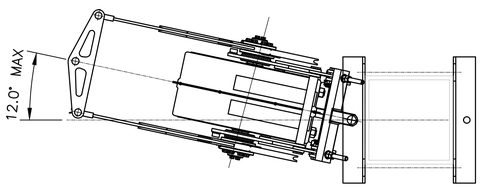
STANDARD DRAWING NO.: SD-W6851



TENSOREX C+ TERMINATIONS ARRANGEMENT BW-03E / BW-03F / BW-03G / BW-03H

ELEVATION

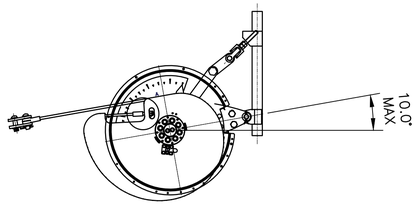
NTS



TENSOREX C+ MAXIMUM HORIZONTAL INSTALLATION ANGLE

PLAN

NTS



MAX. VERTICAL INSTALLATION ANGLE

ELEVATION

NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
2. FOR DIMENSION 'H' AND 'Y' REFER TO DRAWINGS SD-W6849 AND SD-W6850.
3. REFER DRAWING NUMBER SD-W6845, SD-W6846, SD-W6847 AND SD-W6848 FOR TENSOREX SETTING CHART.
4. IN TYPICAL SITUATIONS, EARTHING IS NOT REQUIRED SINCE THE TENSOREX IS SOLIDLY ATTACHED TO THE POLE, THUS PROVIDING A POSITIVE ELECTRICAL CONNECTION. HOWEVER, IN SITUATIONS WHERE THERE ARE LIVE WIRES OVER DEAD WIRES, EARTHING IS REQUIRED.
5. DOWN GUY NOT SHOWN FOR CLARITY, REFER DETAIL DESIGN AND OCS DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
6. FOR MAST AND TENSOREX MOUNTING, REFER DETAIL DESIGN.
7. INSULATOR DISTANCE CAN BE INCREASED ACCORDING TO DETAIL DESIGN.

MAX. HALF TENSION LENGTH 924M/3032'	MAX. HALF TENSION LENGTH 840M/2757'	MAX. HALF TENSION LENGTH 630M/2067'	MAX. HALF TENSION LENGTH 378M/1240'					
H	G	F	E	PIECES	DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.
1	1	1	1	PIN 19X52 WITH 8-SPLINT PIN		9		
1	1	1	1	TERMINATION CLAMP FOR CONTACT WIRE		8		
2	2	2	2	COMPOSITE INSULATOR TYPE-3		7		
5	5	5	5	TERMINATION CLAMP FOR MESSENGER WIRE		6		
2	2	2	2	TURNBUCKLE M20 EYE TO EYE		5		
2	–	–	–	TENSOREX C+ TYPE -04		4	SD-W6854/04	
–	2	–	–	TENSOREX C+ TYPE -03		3	SD-W6854/03	
–	–	2	–	TENSOREX C+ TYPE -02		2	SD-W6854/02	
–	–	–	2	TENSOREX C+ TYPE -01		1	SD-W6854/01	

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PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

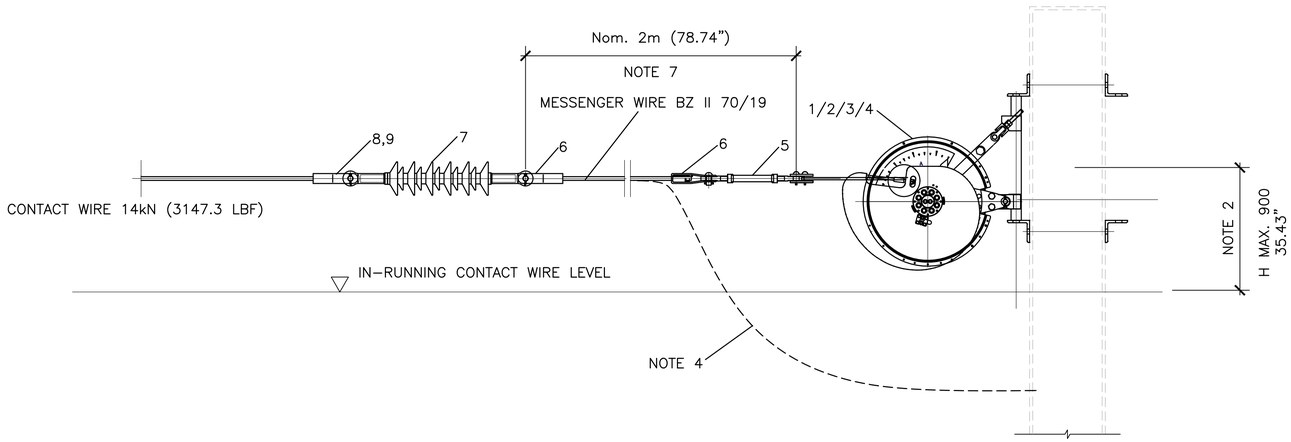
14/14 kN TENSOREX C+ TERMINATIONS
BW-03
SHEET 2 OF 3

CADD FILE NAME: SD-W6852

REV: | EDITION: SECOND

SCALE: NTS

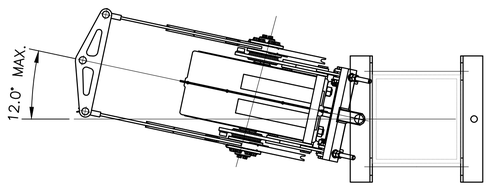
STANDARD DRAWING NO.: SD-W6852



TENSOREX C+ TERMINATIONS ARRANGEMENT BW-03I / BW-03J / BW-03K / BW-03L

ELEVATION

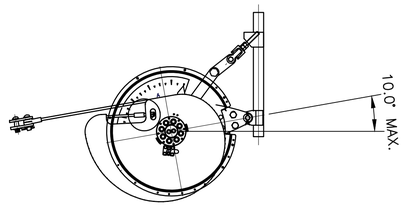
NTS



TENSOREX C+ MAXIMUM HORIZONTAL INSTALLATION ANGLE

PLAN

NTS



MAX. VERTICAL INSTALLATION ANGLE

ELEVATION

NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
2. FOR DIMENSION 'H' REFER TO DRAWINGS SD-W6849 AND SD-W6850.
3. REFER DRAWING NUMBER SD-W6845, SD-W6846, SD-W6847 AND SD-W6848 FOR TENSOREX SETTING CHART.
4. IN TYPICAL SITUATIONS, EARTHING IS NOT REQUIRED SINCE THE TENSOREX IS SOLIDLY ATTACHED TO THE POLE, THUS PROVIDING A POSITIVE ELECTRICAL CONNECTION. HOWEVER, IN SITUATIONS WHERE THERE ARE LIVE WIRES OVER DEAD WIRES, EARTHING IS REQUIRED.
5. DOWN GUY NOT SHOWN FOR CLARITY, REFER DETAIL DESIGN AND OCS DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
6. FOR MAST AND TENSOREX MOUNTING, REFER DETAIL DESIGN.
7. INSULATOR DISTANCE CAN BE INCREASED ACCORDING TO DETAIL DESIGN.

MAX. HALF TENSION LENGTH 924M/3032'	MAX. HALF TENSION LENGTH 840M/2757'	MAX. HALF TENSION LENGTH 630M/2067'	MAX. HALF TENSION LENGTH 378M/1240'					
L	K	J	I					
1	1	1	1	PIN 19X52 WITH 8-SPLINT PIN		9		
1	1	1	1	TERMINATION CLAMP FOR CONTACT WIRE		8		
1	1	1	1	COMPOSITE INSULATOR TYPE-3		7		
2	2	2	2	TERMINATION CLAMP FOR MESSENGER WIRE		6		
1	1	1	1	TURNBUCKLE M20 EYE TO EYE		5		
1	–	–	–	TENSOREX C+ TYPE-04		4	SD-W6854/04	
–	1	–	–	TENSOREX C+ TYPE-03		3	SD-W6854/03	
–	–	1	–	TENSOREX C+ TYPE-02		2	SD-W6854/02	
–	–	–	1	TENSOREX C+ TYPE-01		1	SD-W6854/01	
PIECES				DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

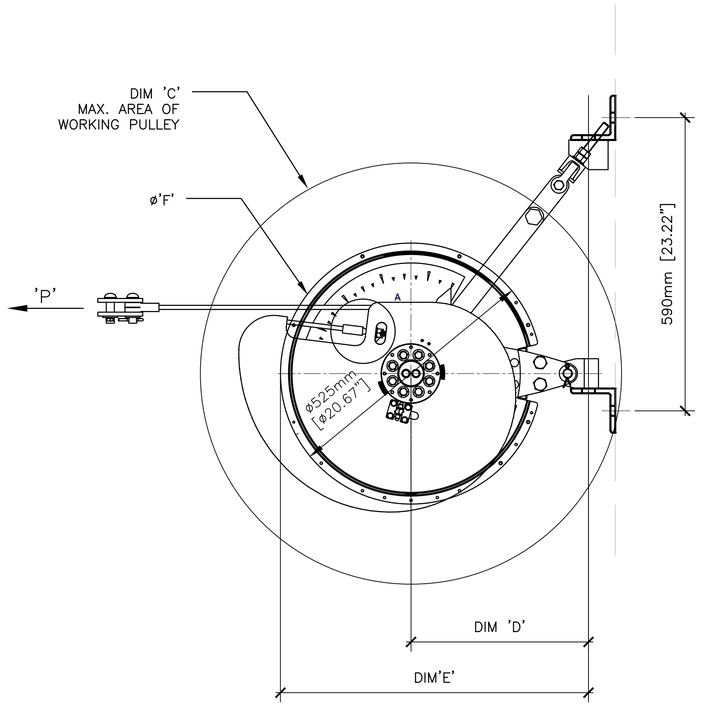
14 kN TENSOREX C+ TERMINATIONS
BW-03
SHEET 3 OF 3

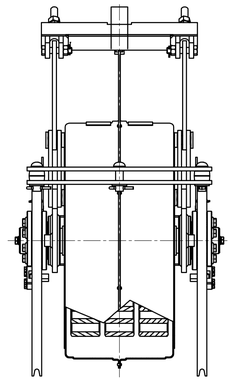
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REV: | EDITION: SECOND

SCALE: NTS

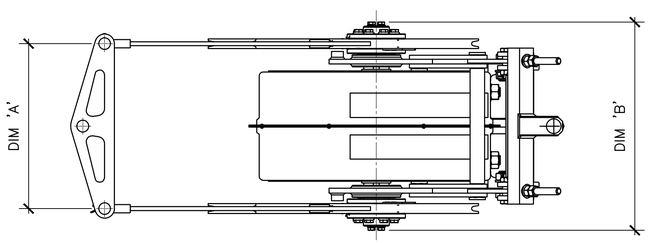
STANDARD DRAWING NO.: SD-W6853





NOTES;

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS SHOWN OTHERWISE.
2. TENSOREX TO BE PURCHASED AS A PROPRIETARY PRODUCT FROM PFISTERER.
3. FOR TENSOREX SETTING CHART REFER TO DRAWINGS SD–W6845, SD–W6846, SD–W6847 AND SD–W6848.
4. FOR INSTALLATION INSTRUCTION, REFER MANUFACTURER INSTRUCTIONS.



TYPE	STYLE	MANUFACTURER REFERENCE No.	REGULATION mm/in	PULL 'P' kg/lb	WEIGHT kg/lb	DIM 'A' mm/in	DIM 'B' mm/in	MAX. HALF TENSION LENGTH m/ft	ROPE ø(mm)xL(m)/ ø(in)xL(in)	DIM 'C' mm/in	DIM 'D' mm/in	DIM 'E' mm/in	ø 'F' mm/in
01	450/14 kN	000700859–12014	450/17.72	1425/3141	120/265	269.6/10.61	359/14.13	378/1240	8x2.1/ 0.31x82.68	700/27.56	357/14.06	619.5/24.39	525/20.67
02	750/14 kN	000700440–12014	750/29.53	1425/3141	150/331	339.6/13.37	429/16.89	630/2067	8x2.1/ 0.31x82.68	705/27.76	357/14.06	619.5/24.39	525/20.67
03	1000/14 kN	000700882–12014	1000/39.37	1425/3141	180/397	409.6/16.13	498.5/19.63	840/2757	8x2.5/ 0.31x98.43	730/28.74	357/14.06	619.5/24.39	525/20.67
04	1100/14 kN	000701341–12014	1100/43.31	1425/3141	235/518	409.6/16.13	498.5/19.63	924/3032	8x2.7/ 0.31x106.29	775/30.51	376/14.8	658.5/25.93	565/22.24
05	450/12 kN	000701097–12014	450/17.72	1225/2700	120/265	269.6/10.61	359/14.13	378/1240	8x2.1/ 0.31x82.68	700/27.56	357/14.06	619.5/24.39	525/20.67
06	750/12 kN	000701027–12014	750/29.53	1225/2700	150/331	339.6/13.37	429/16.89	630/2067	8x2.1/ 0.31x82.68	705/27.76	357/14.06	619.5/24.39	525/20.67
07	1000/12 kN	000700883–12014	1000/39.37	1225/2700	180/397	409.6/16.13	498.5/19.63	840/2757	8x2.5/ 0.31x98.43	730/28.74	357/14.06	619.5/24.39	525/20.67
08	1100/12 kN	000701203–12014	1100/43.31	1225/2700	180/397	409.6/16.13	498.5/19.63	924/3032	8x2.5/ 0.31x98.43	730/28.74	357/14.06	619.5/24.39	525/20.67

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

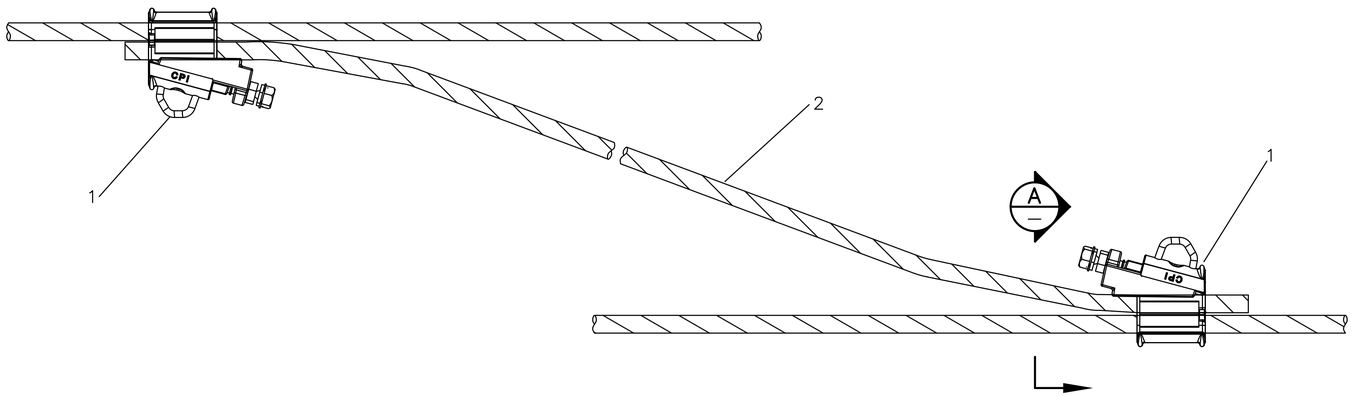
SPRING TENSIONING DEVICE
TENSOREX C+ 12/14 kN

CADD FILE NAME: SD–W6854

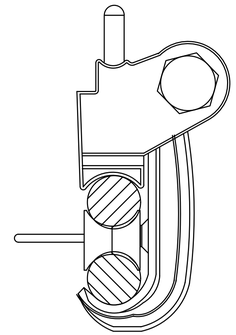
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6854



ELEVATION
NTS



A SECTION
NTS

NOTES:

1. LENGTH TO BE DEFINED AT SITE.

2. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		2	NOTE 1	
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

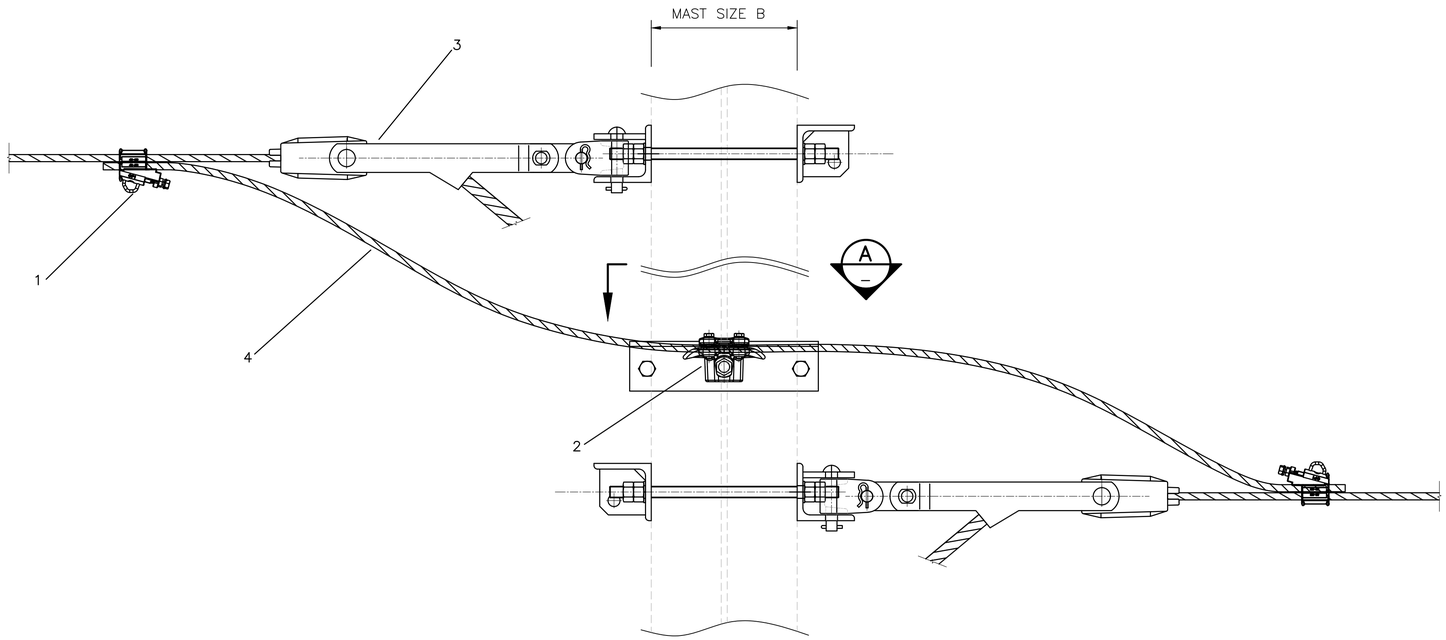
JUMPER ARRANGEMENT
STATIC WIRE TO STATIC WIRE
SW–07

CADD FILE NAME: SD–W6855

REV: | EDITION: SECOND

SCALE: NTS

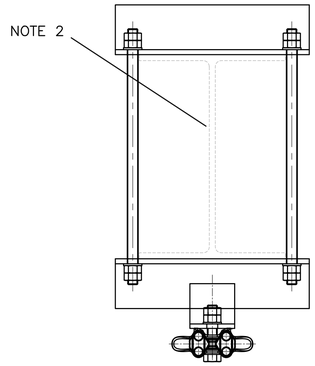
STANDARD DRAWING NO.: SD–W6855



STATIC WIRE BACK TO BACK ANCHOR

ELEVATION

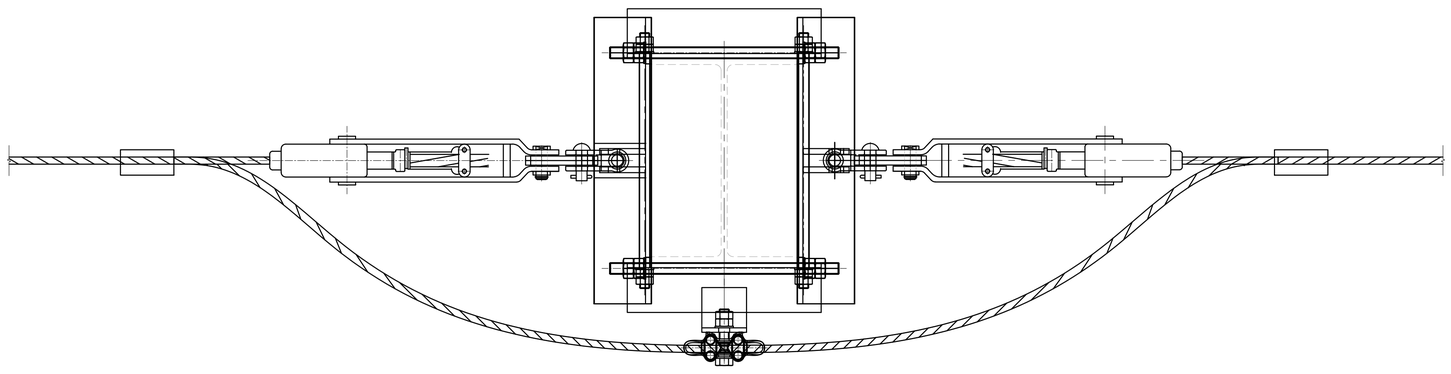
NTS



SINGLE SUPPORT FOR STATIC WIRE

A SECTION

NTS



PLAN

NTS

NOTES:

1. DOWN GUY NOT SHOWN FOR CLARITY, REFER TO DETAIL DESIGN, OCS BASIC DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
2. FOR MAST TYPE, REFER DETAIL DESIGN.
3. LENGTH TO BE DEFINED AT SITE.
4. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4	NOTE 3	
	2	TERMINATION ARRANGEMNT FOR STATIC WIRE FT–05		3		
	1	SINGLE SUPPORT FOR STATIC WIRE		2		SD–W6112
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

STATIC WIRE JUMPER
BACK TO BACK ANCHOR
SW–08

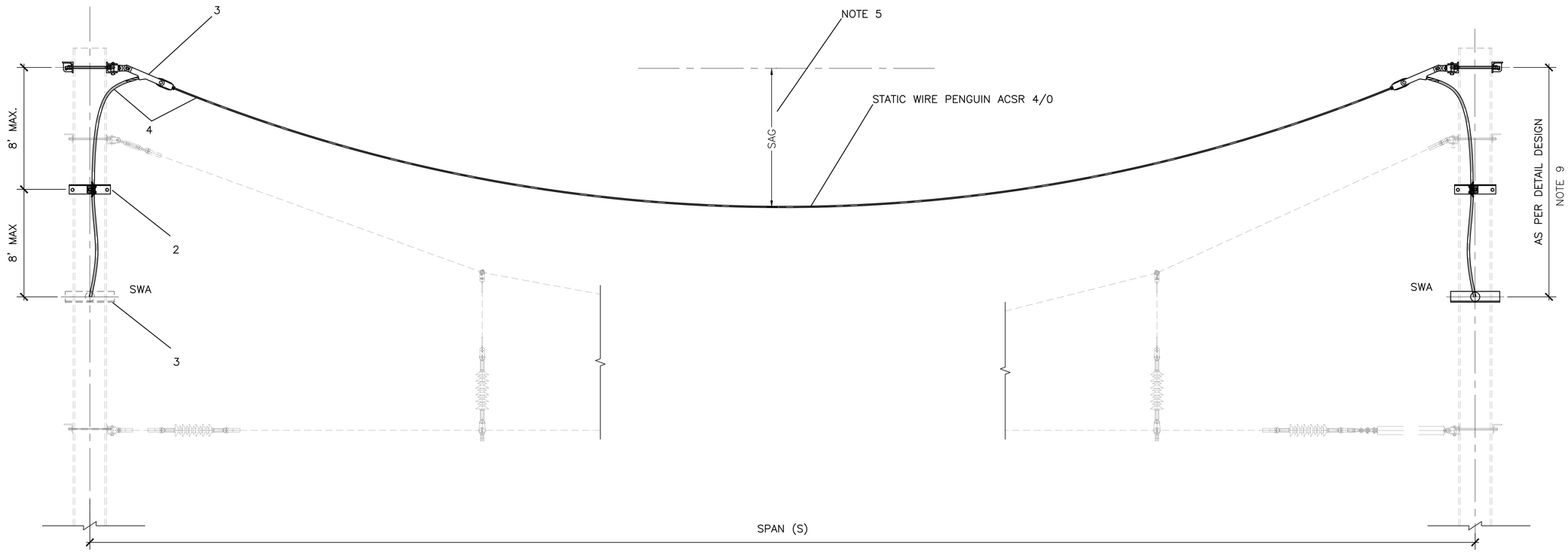
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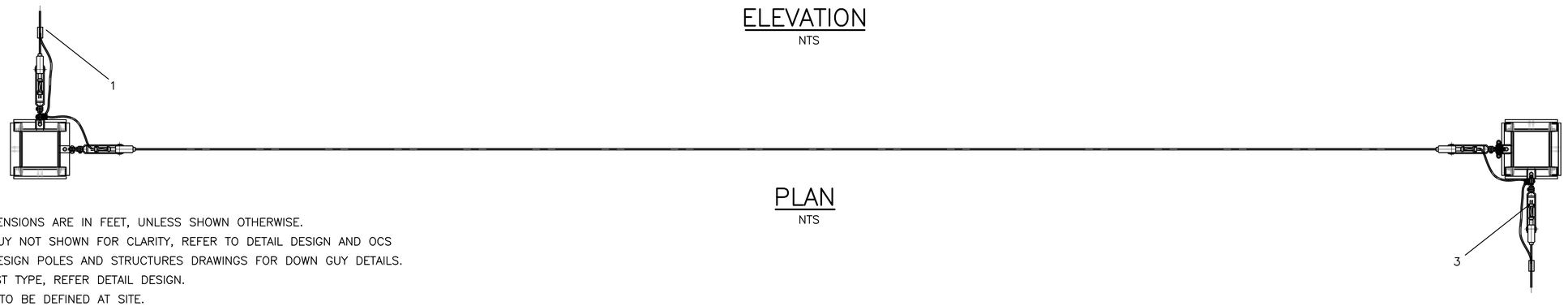
SCALE: NTS

STANDARD DRAWING NO.: SD–W6856

CROSS TRACK ARRANGEMENT FOR STATIC WIRE TERMINATION TO STATIC WIRE TERMINATION.



ELEVATION
NTS



PLAN
NTS

NOTES:

1. ALL DIMENSIONS ARE IN FEET, UNLESS SHOWN OTHERWISE.
2. DOWN GUY NOT SHOWN FOR CLARITY, REFER TO DETAIL DESIGN AND OCS BASIC DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
3. FOR MAST TYPE, REFER DETAIL DESIGN.
4. LENGTH TO BE DEFINED AT SITE.
5. FOR TENSION AND SAG IN CROSS SPAN WIRE REFER OCS BASIC DESIGN DRAWINGS SD–W6012 & SD–W6013.
6. SIMILAR ARRANGEMENT CAN BE USED FOR STC POLES.
7. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.
8. IF DISTANCE IS GREATER THAN 16', ADDITIONAL SUPPORTS SHALL BE INSTALLED AT SITE.

	A				
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4	NOTE 4	
	4	TERMINATION ARRANGEMNT FOR STATIC WIRE FT–05		3		
	2	SINGLE SUPPORT FOR STATIC WIRE		2		SD–W6112
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

JUMPER & CROSS TRACK ARRANGEMENT SWA TO SWA (SW–09A)
SHEET 1 OF 4

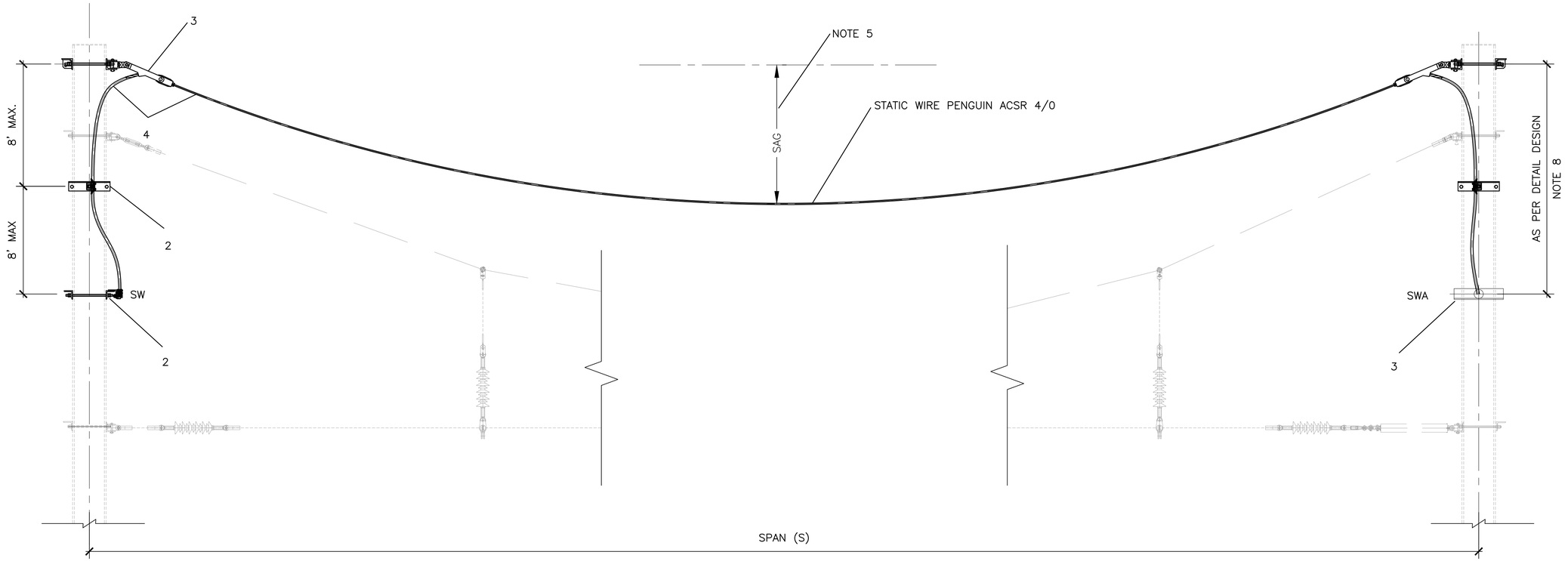
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REV: | EDITION: SECOND

SCALE: NTS

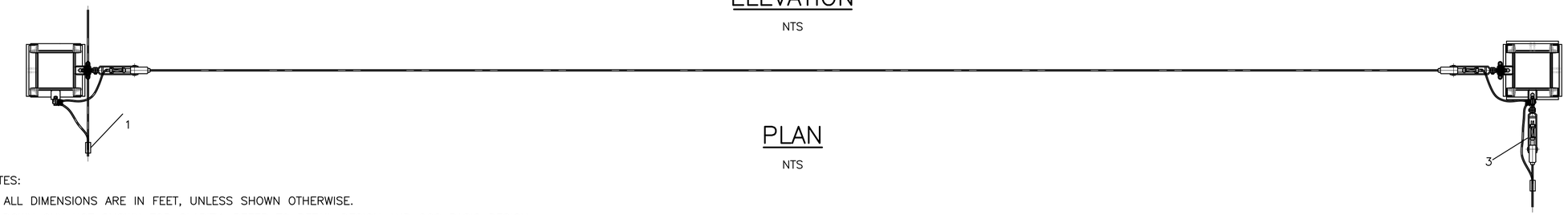
STANDARD DRAWING NO.: SD–W6857

JUMPER AND CROSS TRACK ARRANGEMENT FOR THROUGH STATIC WIRE TO STATIC WIRE TERMINATION.



ELEVATION

NTS



PLAN

NTS

NOTES:

1. ALL DIMENSIONS ARE IN FEET, UNLESS SHOWN OTHERWISE.
2. DOWN GUY NOT SHOWN FOR CLARITY, REFER TO DETAIL DESIGN AND OCS BASIC DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
3. FOR MAST TYPE, REFER DETAIL DESIGN.
4. LENGTH TO BE DEFINED AT SITE.
5. FOR TENSION AND SAG IN CROSS SPAN WIRE REFER OCS BASIC DESIGN DRAWINGS SD–W6012 & SD–W6013.
6. SIMILAR ARRANGEMENT CAN BE USED FOR STC POLES.
7. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.
8. IF DISTANCE IS GREATER THAN 16', ADDITIONAL SUPPORTS SHALL BE INSTALLED AT SITE.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4	NOTE 4	
	3	TERMINATION ARRANGEMNT FOR STATIC WIRE FT–05		3		
	3	SINGLE SUPPORT FOR STATIC WIRE		2		SD–W6112
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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OVERHEAD CONTACT SYSTEM

JUMPER & CROSS TRACK ARRANGEMENT
SW TO SWA (SW–09B)
SHEET 2 OF 4

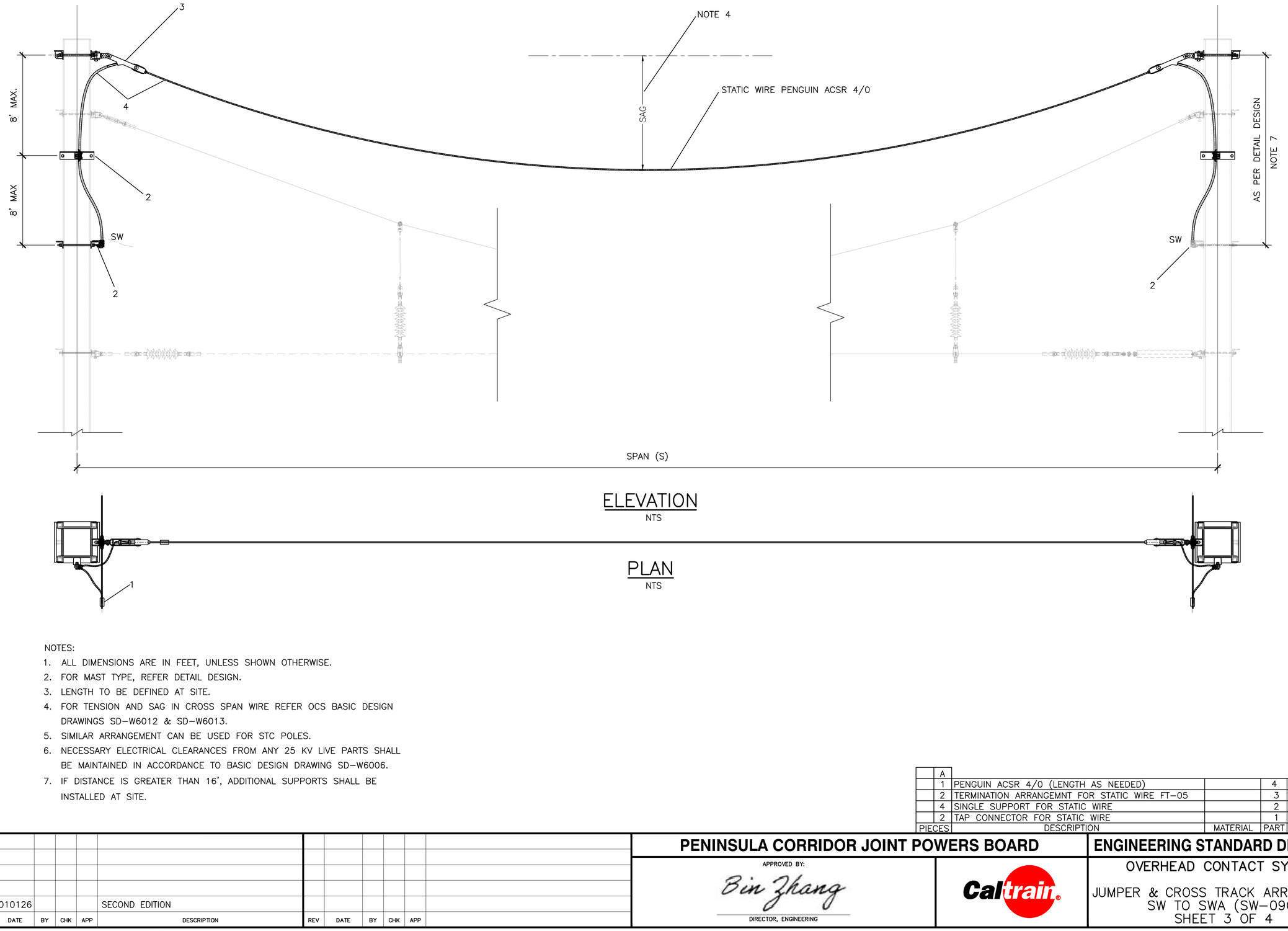
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REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6858

JUMPER AND CROSS TRACK ARRANGEMENT FOR THROUGH STATIC WIRE TO THROUGH STATIC WIRE SUPPORT.



ELEVATION
NTS

PLAN
NTS

NOTES:

1. ALL DIMENSIONS ARE IN FEET, UNLESS SHOWN OTHERWISE.
2. FOR MAST TYPE, REFER DETAIL DESIGN.
3. LENGTH TO BE DEFINED AT SITE.
4. FOR TENSION AND SAG IN CROSS SPAN WIRE REFER OCS BASIC DESIGN DRAWINGS SD–W6012 & SD–W6013.
5. SIMILAR ARRANGEMENT CAN BE USED FOR STC POLES.
6. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.
7. IF DISTANCE IS GREATER THAN 16', ADDITIONAL SUPPORTS SHALL BE INSTALLED AT SITE.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4	NOTE 4	
	2	TERMINATION ARRANGEMNT FOR STATIC WIRE FT–05		3		
	4	SINGLE SUPPORT FOR STATIC WIRE		2		SD–W6112
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

JUMPER & CROSS TRACK ARRANGEMENT
SW TO SWA (SW–09C)
SHEET 3 OF 4

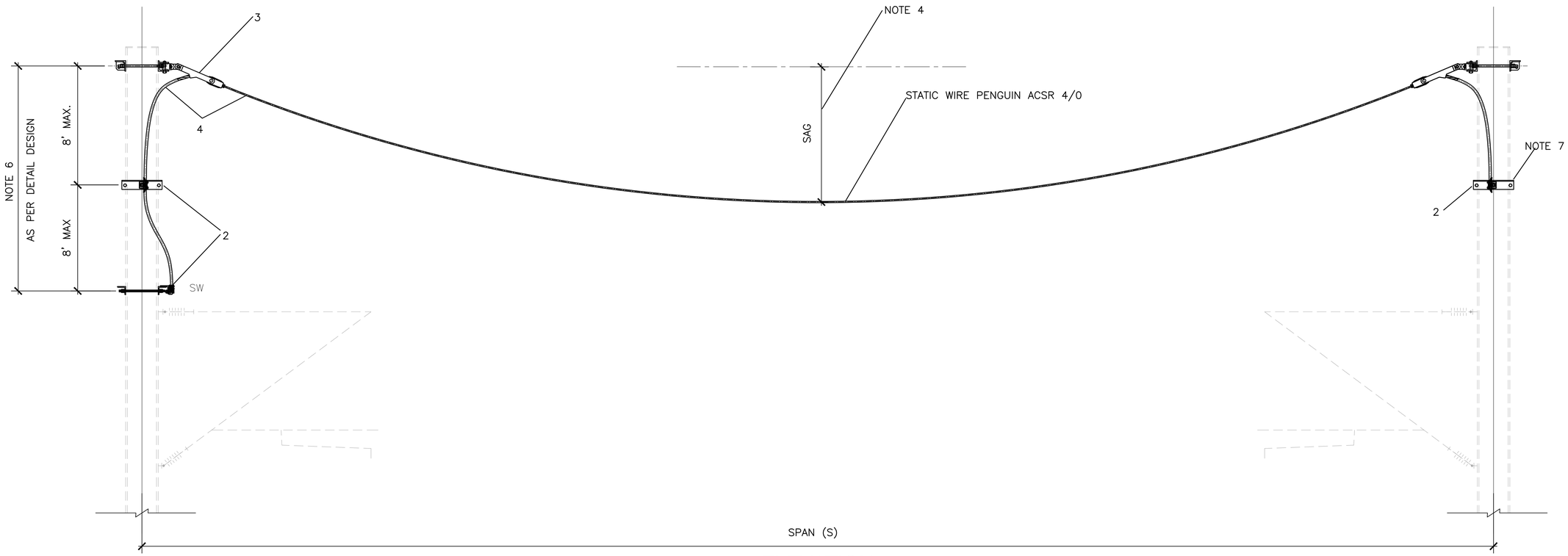
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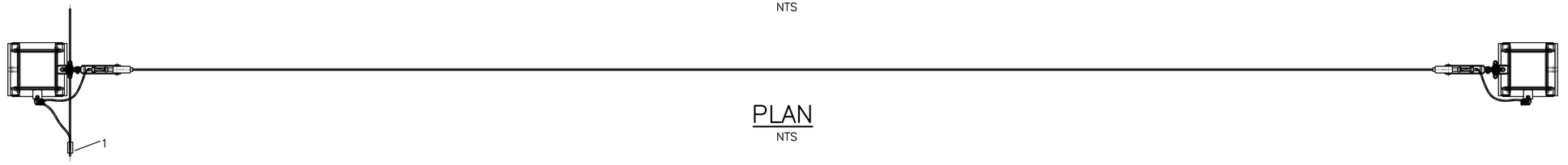
SCALE: NTS

STANDARD DRAWING NO.: SD–W6859

JUMPER AND CROSS TRACK ARRANGEMENT FOR STATIC WIRE TO POLE BONDING.



ELEVATION
NTS



PLAN
NTS

NOTES:

1. ALL DIMENSIONS ARE IN FEET, UNLESS SHOWN OTHERWISE.
2. FOR MAST TYPE, REFER DETAIL DESIGN.
3. LENGTH TO BE DEFINED AT SITE.
4. FOR TENSION AND SAG IN CROSS SPAN WIRE REFER OCS BASIC DESIGN DRAWINGS SD–W6012 & SD–W6013.
5. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.
6. IF DISTANCE IS GREATER THAN 16', ADDITIONAL SUPPORTS SHALL BE INSTALLED AT SITE.
8. SUPPORT PROVIDED TO ESTABLISH PROPER ELECTRICAL CONNECTION.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4		NOTE 3
	2	TERMINATION ARRANGEMNT FOR STATIC WIRE FT–05		3		
	3	SINGLE SUPPORT FOR STATIC WIRE		2		SD–W6112
	1	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

JUMPER & CROSS TRACK ARRANGEMENT
SW TO POLE BONDING (SW–09D)
SHEET 4 OF 4

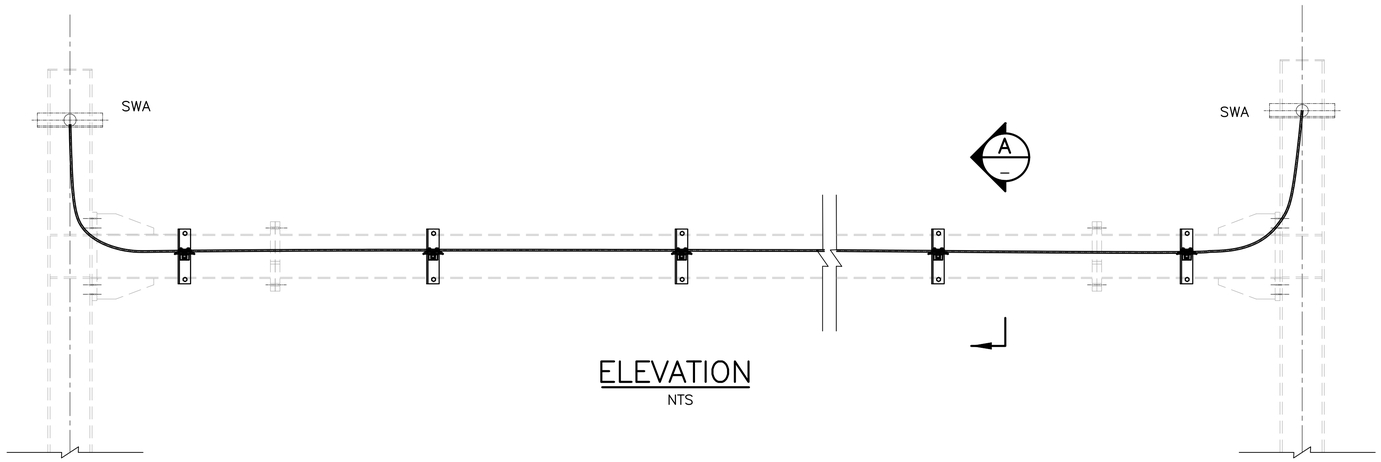
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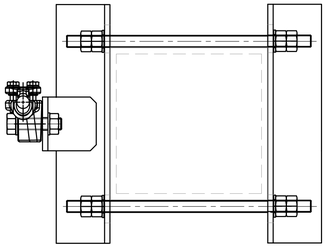
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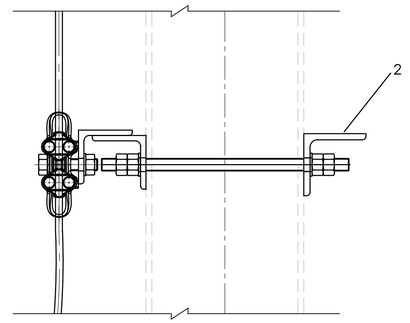
JUMPER AND CROSS TRACK ARRANGEMENT ON PORTAL FOR STATIC WIRE TERMINATION TO STATIC WIRE TERMINATION.



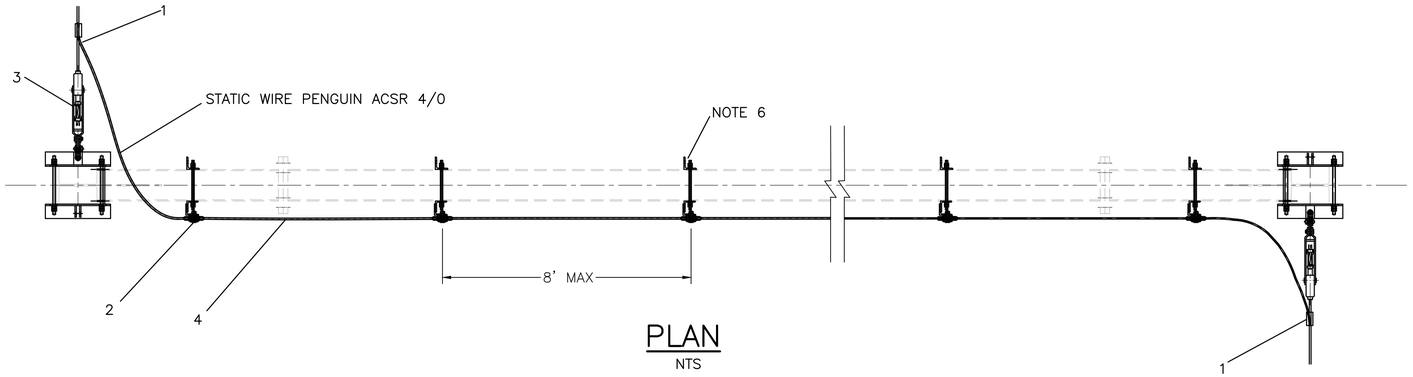
ELEVATION
NTS



A SECTION
NTS



PLAN
NTS



PLAN
NTS

NOTES:

1. ALL DIMENSIONS ARE IN FEET, UNLESS SHOWN OTHERWISE.
2. DOWN GUY NOT SHOWN FOR CLARITY, REFER TO DETAIL DESIGN AND OCS BASIC DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
3. FOR MAST TYPE, REFER DETAIL DESIGN.
4. LENGTH TO BE DEFINED AT SITE.
5. MAXIMUM SPACING BETWEEN SW SUPPORT CLAMP SHOULD NOT EXCEED 8'.
6. FINAL NUMBER AND ORIENTATION OF SW SUPPORT ON PORTAL BEAM SHALL BE DECIDED AT SITE.
7. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD–W6006.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4	NOTE 4	
	2	TERMINATION ARRANGEMENT FOR STATIC WIRE FT–05		3		
NOTE 6		STATIC WIRE SUPPORT ON PORTAL BEAM		2		SD–W6112 (NOTE 6)
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC–01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

JUMPER & CROSS TRACK ARRANGEMENT SWA TO SWA ON PORTAL (SW–10A) SHEET 1 OF 3

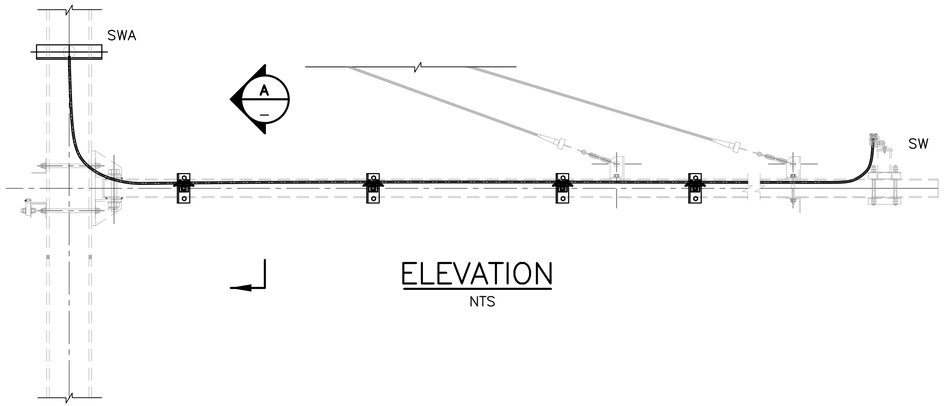
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REV: | EDITION: SECOND

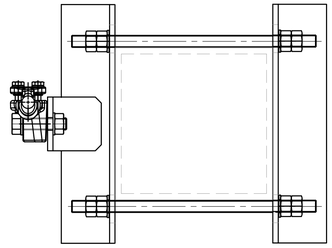
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STANDARD DRAWING NO.: SD–W6861

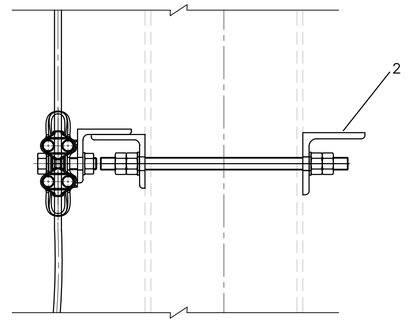
JUMPER AND CROSS TRACK ARRANGEMENT ON LRC FOR STATIC WIRE TERMINATION TO STATIC WIRE.



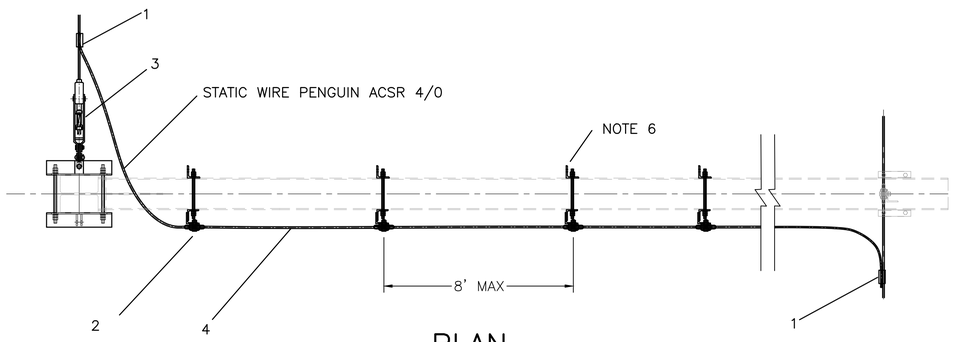
ELEVATION
NTS



A SECTION
NTS



PLAN
NTS



PLAN
NTS

NOTES:

1. ALL DIMENSIONS ARE IN FEET, UNLESS SHOWN OTHERWISE.
2. DOWN GUY NOT SHOWN FOR CLARITY, REFER TO DETAIL DESIGN AND OCS BASIC DESIGN POLES AND STRUCTURES DRAWINGS FOR DOWN GUY DETAILS.
3. FOR MAST TYPE, REFER DETAIL DESIGN.
4. LENGTH TO BE DEFINED AT SITE.
5. MAXIMUM SPACING BETWEEN SW SUPPORT CLAMP SHOULD NOT EXCEED 8'.
6. FINAL NUMBER AND ORIENTATION OF SW SUPPORT ON PORTAL BEAM SHALL BE DECIDED AT SITE.
7. NECESSARY ELECTRICAL CLEARANCES FROM ANY 25 KV LIVE PARTS SHALL BE MAINTAINED IN ACCORDANCE TO BASIC DESIGN DRAWING SD-W6006.

	A					
	1	PENGUIN ACSR 4/0 (LENGTH AS NEEDED)		4	NOTE 4	
	1	TERMINATION ARRANGEMENT FOR STATIC WIRE FT-05		3		
NOTE 6		STATIC WIRE SUPPORT ON LRC BEAM		2		SD-W6112
	2	TAP CONNECTOR FOR STATIC WIRE		1	WTC-01	
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

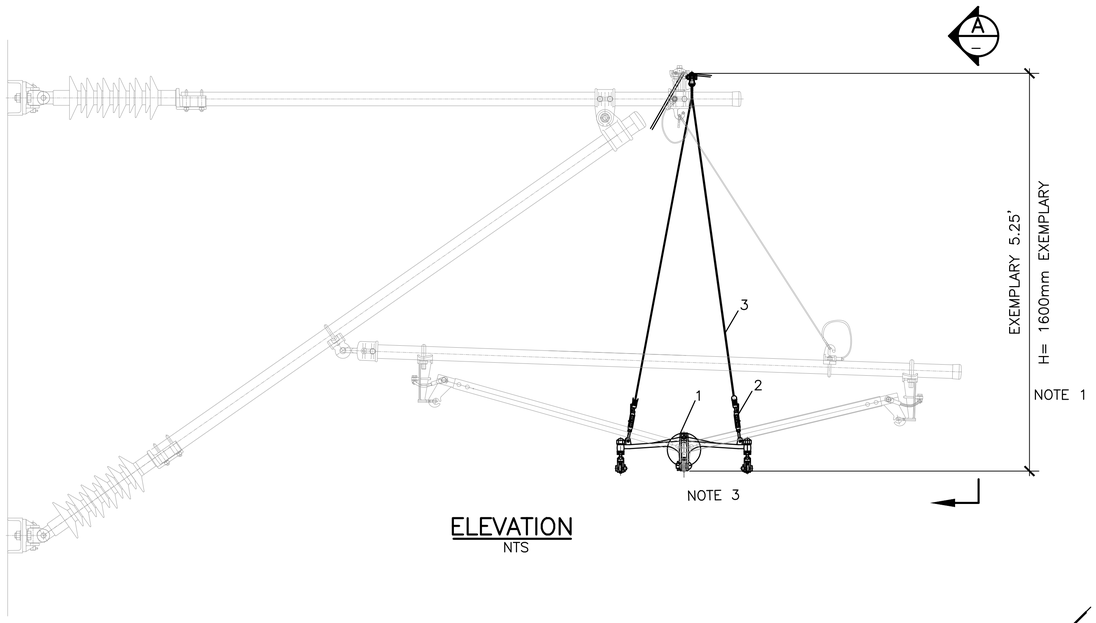
JUMPER & CROSS TRACK ARRANGEMENT ON LRC FOR SW TO SWA (SW-10C)
SHEET 3 OF 3

CADD FILE NAME: SD-W6863

REV: | EDITION: SECOND

SCALE: NTS

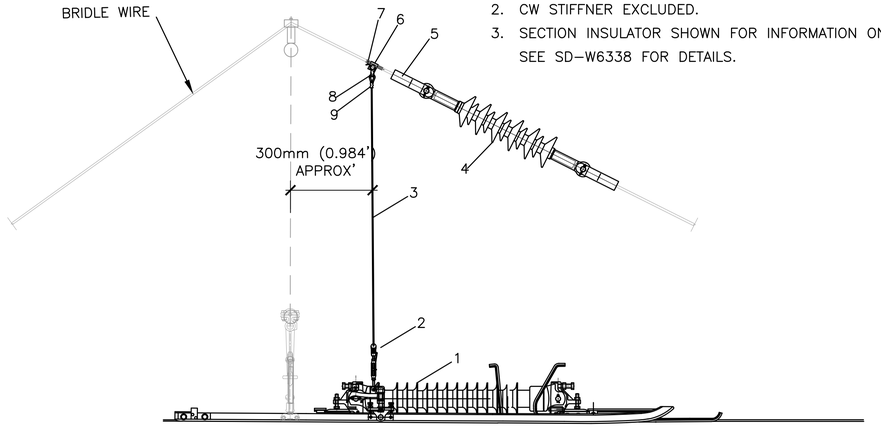
STANDARD DRAWING NO.: SD-W6863



ELEVATION
NTS

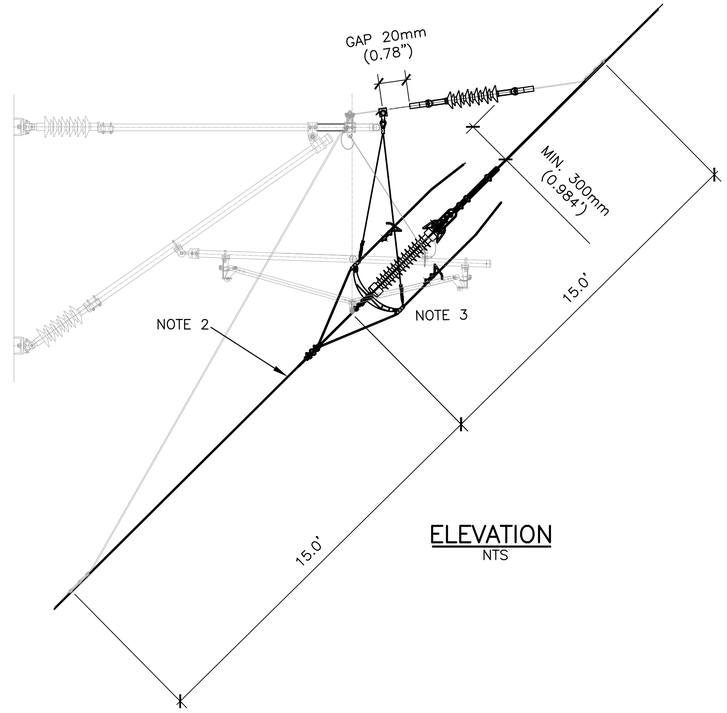
NOTES:

1. ACCORDING TO DETAIL DESIGN.
2. CW STIFFNER EXCLUDED.
3. SECTION INSULATOR SHOWN FOR INFORMATION ONLY, SEE SD–W6338 FOR DETAILS.



VIEW A
NTS

(CANTILEVER NOT SHOWN FOR CLARITY)



ELEVATION
NTS

	WITH DROPPER AT MW–CLAMP						
–	A						
	1	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E–CUF20	9			
	1	THIMBLE FOR WIRE 10X49	A2	8	DIN 43154		
	1	CLIP FOR 70MM²	BZ II	7	DIN 48300		
	1	DROPPER CLAMP FOR MW 70MM²	A2	6			
	2	MW TERMINATION CLAMP		5			
	1	CUT–IN INSULATOR FOR MW		4			
	1	COPPER WIRE ø4MM (LENGTH AS NEEDED)	E–CU F31	3			
	2	TURN BUCKLE MB	G–CUSN	2			
	1	SECTION INSULATOR 25kV (NOTE 2)		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD		REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

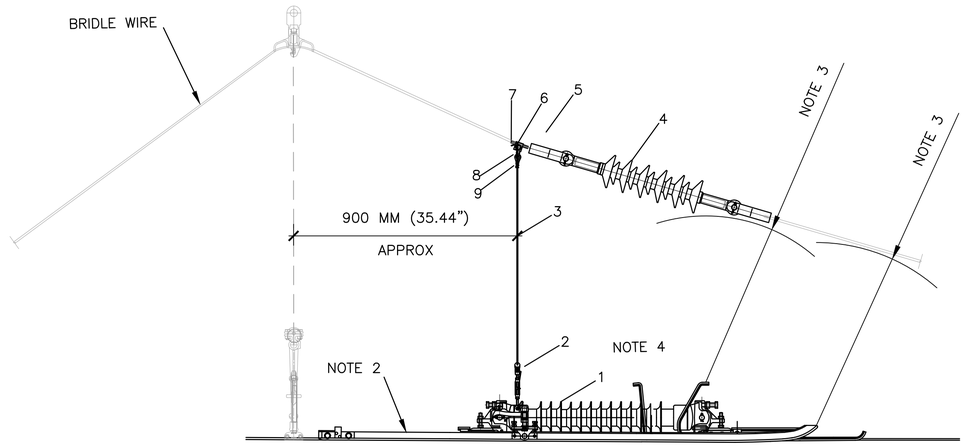
SECTION INSULATOR ARRANGEMENT ON CANTILEVER WITH BRIDLE SUSPENSION (SI–06)

CADD FILE NAME: SD–W6865

REV: | EDITION: SECOND

SCALE: NTS

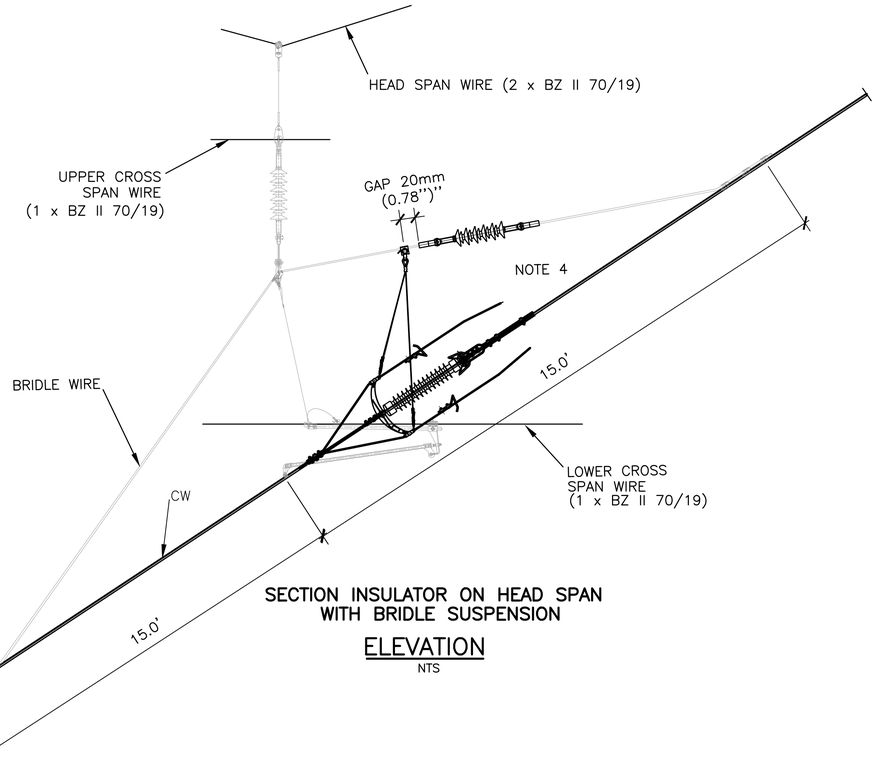
STANDARD DRAWING NO.: SD–W6865



(HEADSPAN SUPPORT NOT SHOWN FOR CLARITY)

VIEW A

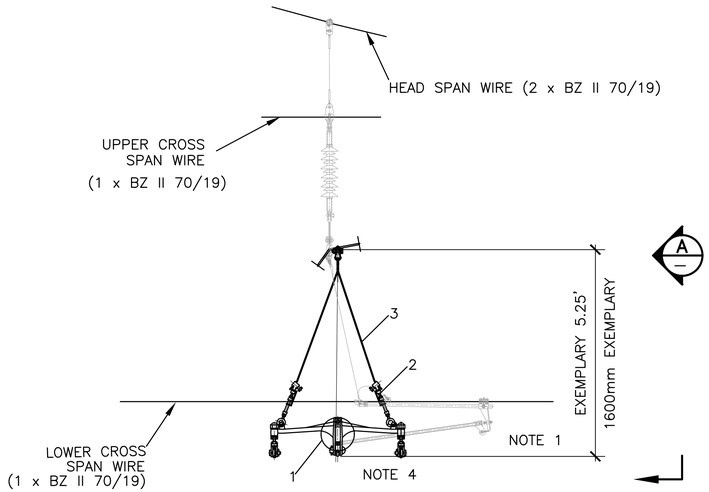
NTS



SECTION INSULATOR ON HEAD SPAN
WITH BRIDLE SUSPENSION

ELEVATION

NTS



SECTION INSULATOR ON HEAD SPAN

ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN.
2. CW STIFFENER EXCLUDED.
3. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
4. SECTION INSULATOR SHOWN FOR INFORMATION ONLY, SEE SD–W6338 FOR DETAILS.

–	A					
	1	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E–CUF20	9		
	1	THIMBLE FOR WIRE 10X49	A2	8	DIN 43154	
	1	CLIP FOR 70MM²	BZ II	7	DIN 48300	
	1	DROPPER CLAMP FOR MW 70MM²	A2	6		
–	2	MW TERMINATION CLAMP		5		
–	1	COMPOSITE INSULATOR TYPE 3		4		
–	1	COPPER WIRE ø4MM (LENGTH AS NEEDED)		3		
–	2	TURN BUCKLE MB		2		
–	1	SECTION INSULATOR 25 kV (NOTE 2)		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SECTION INSULATOR ARRANGEMENT ON HEADSPAN WITH BRIDLE SUSPENSION (SI–05)

CADD FILE NAME: SD–W6866

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6866

EQUIVALENT SPAN	AMBIENT TEMPERATURE								
	19.4°F	32°F	50°F	68°F	86°F	104°F	122°F	140°F	145°F
59.1	3523 lbf	3325 lbf	3069 lbf	2845 lbf	2650 lbf	2480 lbf	2332 lbf	2202 lbf	2169 lbf
	7.99"	8.47"	9.18"	9.90"	10.63"	11.36"	12.08"	12.79"	12.99"
62.3	3650 lbf	3451 lbf	3195 lbf	2969 lbf	2771 lbf	2597 lbf	2445 lbf	2312 lbf	2278 lbf
	8.60"	9.09"	9.82"	10.57"	11.33"	12.08"	12.84"	13.58"	13.78"
65.6	3778 lbf	3578 lbf	3320 lbf	3092 lbf	2891 lbf	2715 lbf	2559 lbf	2422 lbf	2387 lbf
	9.21"	9.72"	10.47"	11.25"	12.03"	12.81"	13.59"	14.36"	14.57"
68.9	3910 lbf	3709 lbf	3450 lbf	3219 lbf	3015 lbf	2834 lbf	2675 lbf	2534 lbf	2498 lbf
	9.81"	10.34"	11.11"	11.91"	12.72"	13.53"	14.33"	15.13"	15.35"
72.2	4037 lbf	3837 lbf	3575 lbf	3342 lbf	3135 lbf	2952 lbf	2789 lbf	2644 lbf	2607 lbf
	10.42"	10.97"	11.77"	12.59"	13.42"	14.26"	15.09"	15.91"	16.14"
75.5	4273 lbf	4064 lbf	3791 lbf	3546 lbf	3327 lbf	3133 lbf	2960 lbf	2805 lbf	2766 lbf
	10.76"	11.32"	12.13"	12.97"	13.82"	14.68"	15.54"	16.39"	16.63"
78.7	4293 lbf	4091 lbf	3827 lbf	3589 lbf	3376 lbf	3186 lbf	3017 lbf	2865 lbf	2826 lbf
	11.66"	12.24"	13.09"	13.95"	14.83"	15.72"	16.60"	17.48"	17.72"
82	4425 lbf	4222 lbf	3955 lbf	3715 lbf	3499 lbf	3306 lbf	3133 lbf	2978 lbf	2937 lbf
	12.28"	12.87"	13.74"	14.63"	15.53"	16.44"	17.35"	18.25"	18.50"
85.3	4553 lbf	4349 lbf	4081 lbf	3838 lbf	3619 lbf	3423 lbf	3246 lbf	3088 lbf	3047 lbf
	12.91"	13.51"	14.40"	15.31"	16.24"	17.17"	18.10"	19.03"	19.29"
88.6	4559 lbf	4361 lbf	4102 lbf	3866 lbf	3654 lbf	3463 lbf	3291 lbf	3137 lbf	3096 lbf
	13.90"	14.53"	15.45"	16.39"	17.34"	18.30"	19.26"	20.21"	20.47"
91.9	4689 lbf	4491 lbf	4228 lbf	3991 lbf	3775 lbf	3581 lbf	3406 lbf	3247 lbf	3206 lbf
	14.54"	15.18"	16.12"	17.08"	18.05"	19.03"	20.01"	20.99"	21.26"
95.1	4819 lbf	4619 lbf	4355 lbf	4114 lbf	3896 lbf	3699 lbf	3520 lbf	3358 lbf	3316 lbf
	15.17"	15.83"	16.79"	17.77"	18.77"	19.77"	20.77"	21.77"	22.05"
98.4	4951 lbf	4750 lbf	4483 lbf	4240 lbf	4019 lbf	3818 lbf	3636 lbf	3471 lbf	3427 lbf
	15.80"	16.47"	17.45"	18.46"	19.47"	20.50"	21.52"	22.55"	22.83"
101.7	5081 lbf	4878 lbf	4609 lbf	4363 lbf	4139 lbf	3935 lbf	3750 lbf	3581 lbf	3537 lbf
	16.44"	17.13"	18.13"	19.15"	20.19"	21.23"	22.28"	23.33"	23.62"
105	5102 lbf	4904 lbf	4641 lbf	4401 lbf	4181 lbf	3981 lbf	3799 lbf	3633 lbf	3590 lbf
	17.45"	18.15"	19.18"	20.23"	21.29"	22.36"	23.43"	24.50"	24.80"
108.3	5313 lbf	5110 lbf	4838 lbf	4589 lbf	4361 lbf	4153 lbf	3962 lbf	3789 lbf	3744 lbf
	17.82"	18.53"	19.57"	20.63"	21.71"	22.80"	23.89"	24.99"	25.29"
111.5	5362 lbf	5161 lbf	4893 lbf	4647 lbf	4422 lbf	4216 lbf	4027 lbf	3855 lbf	3810 lbf
	18.75"	19.47"	20.54"	21.63"	22.73"	23.84"	24.96"	26.07"	26.38"
114.8	5391 lbf	5194 lbf	4931 lbf	4690 lbf	4468 lbf	4265 lbf	4079 lbf	3909 lbf	3864 lbf
	19.76"	20.51"	21.60"	22.71"	23.84"	24.97"	26.11"	27.25"	27.56"
118.1	5521 lbf	5323 lbf	5058 lbf	4813 lbf	4589 lbf	4383 lbf	4193 lbf	4020 lbf	3975 lbf
	20.41"	21.17"	22.28"	23.41"	24.56"	25.71"	26.87"	28.03"	28.35"
121.4	5653 lbf	5453 lbf	5186 lbf	4938 lbf	4711 lbf	4501 lbf	4309 lbf	4132 lbf	4086 lbf
	21.05"	21.83"	22.95"	24.10"	25.27"	26.44"	27.62"	28.80"	29.13"
124.7	5688 lbf	5491 lbf	5228 lbf	4984 lbf	4760 lbf	4553 lbf	4363 lbf	4188 lbf	4142 lbf
	22.07"	22.86"	24.01"	25.19"	26.38"	27.57"	28.78"	29.98"	30.31"
128	5818 lbf	5620 lbf	5354 lbf	5107 lbf	4880 lbf	4670 lbf	4477 lbf	4299 lbf	4252 lbf
	22.73"	23.53"	24.70"	25.89"	27.10"	28.32"	29.54"	30.76"	31.10"
131.2	5857 lbf	5661 lbf	5399 lbf	5156 lbf	4931 lbf	4724 lbf	4532 lbf	4356 lbf	4309 lbf
	23.75"	24.57"	25.77"	26.98"	28.21"	29.45"	30.69"	31.94"	32.28"
134.5	5987 lbf	5790 lbf	5525 lbf	5279 lbf	5051 lbf	4841 lbf	4646 lbf	4467 lbf	4420 lbf
	24.41"	25.24"	26.45"	27.68"	28.93"	30.19"	31.45"	32.72"	33.07"
137.8	6029 lbf	5835 lbf	5573 lbf	5330 lbf	5105 lbf	4896 lbf	4703 lbf	4525 lbf	4478 lbf
	25.44"	26.29"	27.52"	28.77"	30.04"	31.32"	32.61"	33.89"	34.25"
141.1	6159 lbf	5963 lbf	5699 lbf	5453 lbf	5225 lbf	5013 lbf	4817 lbf	4636 lbf	4588 lbf
	26.10"	26.96"	28.21"	29.48"	30.77"	32.07"	33.37"	34.68"	35.04"
144.4	6204 lbf	6010 lbf	5749 lbf	5505 lbf	5279 lbf	5070 lbf	4875 lbf	4695 lbf	4647 lbf
	27.13"	28.01"	29.28"	30.57"	31.88"	33.20"	34.53"	35.85"	36.22"
147.6	6251 lbf	6060 lbf	5801 lbf	5560 lbf	5336 lbf	5127 lbf	4934 lbf	4755 lbf	4708 lbf
	28.16"	29.05"	30.35"	31.67"	33.00"	34.34"	35.68"	37.03"	37.40"
150.9	6381 lbf	6187 lbf	5926 lbf	5682 lbf	5455 lbf	5244 lbf	5048 lbf	4866 lbf	4817 lbf
	28.83"	29.73"	31.04"	32.38"	33.72"	35.08"	36.45"	37.81"	38.19"

EQUIVALENT SPAN	AMBIENT TEMPERATURE								
	19.4°F	32°F	50°F	68°F	86°F	104°F	122°F	140°F	145°F
154.2	6431 lbf	6239 lbf	5980 lbf	5738 lbf	5513 lbf	5303 lbf	5108 lbf	4926 lbf	4878 lbf
	29.86"	30.78"	32.12"	33.47"	34.84"	36.22"	37.60"	38.98"	39.37"
157.5	6483 lbf	6292 lbf	6035 lbf	5795 lbf	5571 lbf	5363 lbf	5169 lbf	4988 lbf	4940 lbf
	30.90"	31.84"	33.19"	34.56"	35.95"	37.35"	38.76"	40.16"	40.55"
160.8	6536 lbf	6347 lbf	6092 lbf	5854 lbf	5631 lbf	5424 lbf	5230 lbf	5050 lbf	5002 lbf
	31.94"	32.89"	34.26"	35.66"	37.07"	38.49"	39.91"	41.33"	41.73"
164	6665 lbf	6475 lbf	6217 lbf	5976 lbf	5751 lbf	5540 lbf	5344 lbf	5161 lbf	5112 lbf
	32.61"	33.57"	34.96"	36.37"	37.80"	39.23"	40.68"	42.12"	42.52"
167.3	6720 lbf	6531 lbf	6275 lbf	6036 lbf	5811 lbf	5602 lbf	5406 lbf	5223 lbf	5175 lbf
	33.65"	34.62"	36.04"	37.47"	38.91"	40.37"	41.83"	43.29"	43.70"
170.6	6777 lbf	6589 lbf	6334 lbf	6096 lbf	5873 lbf	5664 lbf	5469 lbf	5287 lbf	5238 lbf
	34.69"	35.68"	37.11"	38.57"	40.03"	41.51"	42.99"	44.47"	44.88"
173.9	6834 lbf	6648 lbf	6395 lbf	6157 lbf	5935 lbf	5727 lbf	5533 lbf	5351 lbf	5302 lbf
	35.74"	36.74"	38.19"	39.66"	41.15"	42.64"	44.14"	45.64"	46.06"
177.2	6893 lbf	6707 lbf	6456 lbf	6219 lbf	5998 lbf	5791 lbf	5597 lbf	5415 lbf	5367 lbf
	36.78"	37.80"	39.27"	40.76"	42.27"	43.78"	45.30"	46.82"	47.24"
180.4	6951 lbf	6766 lbf	6516 lbf	6281 lbf	6060 lbf	5854 lbf	5660 lbf	5479 lbf	5430 lbf
	37.84"	38.87"	40.36"	41.87"	43.40"	44.93"	46.47"	48.00"	48.43"
183.7	7012 lbf	6828 lbf	6579 lbf	6345 lbf	6125 lbf	5919 lbf	5725 lbf	5544 lbf	5496 lbf
	38.88"	39.93"	41.44"	42.97"	44.51"	46.07"	47.62"	49.18"	49.61"
187	7074 lbf	6891 lbf	6643 lbf	6410 lbf	6190 lbf	5984 lbf	5791 lbf	5610 lbf	5562 lbf
	39.93"	40.99"	42.52"	44.07"	45.63"	47.20"	48.78"	50.35"	50.79"
190.3	7137 lbf	6955 lbf	6707 lbf	6475 lbf	6256 lbf	6050 lbf	5857 lbf	5676 lbf	5628 lbf
	40.98"	42.05"	43.61"	45.17"	46.75"	48.34"	49.93"	51.53"	51.97"
193.6	7200 lbf	7019 lbf	6772 lbf	6540 lbf	6322 lbf	6117 lbf	5924 lbf	5743 lbf	5694 lbf
	42.03"	43.12"	44.69"	46.28"	47.87"	49.48"	51.09"	52.70"	53.15"
196.9	7265 lbf	7084 lbf	6838 lbf	6606 lbf	6388 lbf	6183 lbf	5991 lbf	5809 lbf	5761 lbf
	43.09"	44.18"	45.77"	47.38"	48.99"	50.62"	52.25"	53.88"	54.33"
200.1	7329 lbf	7149 lbf	6904 lbf	6673 lbf	6455 lbf	6250 lbf	6058 lbf	5876 lbf	5828 lbf
	44.14"	45.25"	46.86"	48.48"	50.12"	51.76"	53.41"	55.05"	55.51"
203.4	7395 lbf	7216 lbf	6971 lbf	6740 lbf	6523 lbf	6318 lbf	6125 lbf	5944 lbf	5895 lbf
	45.19"	46.32"	47.94"	49.58"	51.24"	52.90"	54.56"	56.23"	56.69"
206.7	7462 lbf	7283 lbf	7039 lbf	6808 lbf	6591 lbf	6386 lbf	6193 lbf	6012 lbf	5963 lbf
	46.25"	47.38"	49.03"	50.69"	52.36"	54.03"	55.72"	57.40"	57.87"
210	7468 lbf	7291 lbf	7051 lbf	6824 lbf	6610 lbf	6408 lbf	6218 lbf	6038 lbf	5990 lbf
	47.69"	48.84"	50.51"	52.19"	53.88"	55.57"	57.28"	58.98"	59.45"
213.3	7536 lbf	7360 lbf	7120 lbf	6893 lbf	6679 lbf	6477 lbf	6286 lbf	6107 lbf	6059 lbf
	48.74"	49.91"	51.59"	53.29"	55.00"	56.72"	58.43"	60.15"	60.63"
216.5	7605 lbf	7429 lbf	7189 lbf	6962 lbf	6748 lbf	6546 lbf	6355 lbf	6175 lbf	6127 lbf
	49.80"	50.98"	52.68"	54.40"	56.12"	57.86"	59.59"	61.33"	61.81"
219.8	7616 lbf	7442 lbf	7206 lbf	6982 lbf	6771 lbf	6571 lbf	6382 lbf	6205 lbf	6157 lbf
	51.25"	52.44"	54.16"	55.90"	57.64"	59.40"	61.15"	62.90"	63.39"
223.1	7686 lbf	7512 lbf	7276 lbf	7052 lbf	6841 lbf	6641 lbf	6452 lbf	6274 lbf	6226 lbf
	52.31"	53.51"	55.25"	57.01"	58.77"	60.54"	62.31"	64.08"	64.57"
226.4	7756 lbf	7583 lbf	7347 lbf	7123 lbf	6912 lbf	6711 lbf	6522 lbf	6343 lbf	6296 lbf
	53.37"	54.59"	56.34"	58.11"	59.89"	61.68"	63.46"	65.25"	65.75"
229.7	7776 lbf	7605 lbf	7371 lbf	7150 lbf	6940 lbf	6742 lbf	6555 lbf	6378 lbf	6330 lbf
	54.79"	56.02"	57.80"	59.59"	61.38"	63.19"	64.99"	66.80"	67.30"

1/2" GALVANIZED STEEL STRANDED WIRE (USED AS CARRIER WIRE)

DIAMETER : 12.573MM (0.495")
CROSS SECTION: 96.580MM^2 (0.150 inch^2)
MODULUS OF ELASTICITY: 206843 N/MM^2 (30 x 10^6 PSI)
COEFF. OF THERM. EXP.: 12.3 x 10^{-6}/°C (6.83 x 10^{-6}/°F)
WEIGHT: 7.545 N/M (0.517 LBF / FT)

1/C 46 KV 750 KCMIL COPPER CABLE

DIAMETER : 60.274MM (2.373")
WEIGHT: 69.695 N/M (4.774 LBF / FT)

46 KV 750 KCML CABLE BOUNDED TO 1/2" GALV STEEL MESS. WIRE

DIAMETER : 76.454MM (3.01")
WEIGHT: 78.586 N/M (5.383 LBF / FT)

NOTES:

1. WIND IMPACT IS NOT CONSIDERED IN THE TENSION/SAG CALCULATIONS. VARIATION IN TENSION DUE TO WIND TO BE CONSIDERED BY STRUCTURAL ENGINEER FOR STRUCTURES, SPS AND OTHER CONSTRUCTION LOADS.
2. CONSTRUCTION TO CALCULATE EQUIVALENT SPAN AND VERIFY AMBIENT TEMPERATURE. TO FIND INSTALLATION TENSION OF CARRIER WIRE.
   EQUIVALENT SPAN $=\sqrt{(\sum L^3 / \sum L)}$

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

STANDARD SAG TABLE OF INSULATED FEEDER CABLE
SHEET 1 OF 2

CADD FILE NAME: SD-W6868

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W6868

EQUIVALENT SPAN	AMBIENT TEMPERATURE								
	19.4°F	32°F	50°F	68°F	86°F	104°F	122°F	140°F	145°F
59.1	1540 lbf	1507 lbf	1463 lbf	1423 lbf	1385 lbf	1350 lbf	1317 lbf	1287 lbf	1279 lbf
	18.29"	18.69"	19.25"	19.8"	20.34"	20.87"	21.38"	21.89"	22.03"
62.3	1604 lbf	1570 lbf	1526 lbf	1484 lbf	1446 lbf	1410 lbf	1377 lbf	1346 lbf	1338 lbf
	19.57"	19.99"	20.57"	21.14"	21.7"	22.25"	22.79"	23.32"	23.47"
65.6	1667 lbf	1633 lbf	1588 lbf	1546 lbf	1507 lbf	1471 lbf	1437 lbf	1405 lbf	1396 lbf
	20.86"	21.29"	21.9"	22.49"	23.08"	23.65"	24.21"	24.76"	24.91"
68.9	1733 lbf	1699 lbf	1652 lbf	1609 lbf	1569 lbf	1532 lbf	1497 lbf	1465 lbf	1456 lbf
	22.12"	22.57"	23.21"	23.82"	24.43"	25.02"	25.61"	26.18"	26.34"
72.2	1797 lbf	1762 lbf	1715 lbf	1671 lbf	1630 lbf	1592 lbf	1557 lbf	1523 lbf	1514 lbf
	23.42"	23.89"	24.54"	25.18"	25.81"	26.43"	27.03"	27.63"	27.79"
75.5	1910 lbf	1871 lbf	1820 lbf	1773 lbf	1729 lbf	1688 lbf	1649 lbf	1613 lbf	1603 lbf
	24.08"	24.58"	25.26"	25.94"	26.6"	27.25"	27.89"	28.52"	28.69"
78.7	1924 lbf	1888 lbf	1840 lbf	1794 lbf	1752 lbf	1713 lbf	1675 lbf	1640 lbf	1631 lbf
	26.03"	26.52"	27.22"	27.91"	28.58"	29.24"	29.89"	30.53"	30.71"
82	1990 lbf	1953 lbf	1904 lbf	1857 lbf	1814 lbf	1774 lbf	1736 lbf	1700 lbf	1690 lbf
	27.31"	27.82"	28.55"	29.25"	29.95"	30.63"	31.31"	31.97"	32.15"
85.3	2053 lbf	2016 lbf	1966 lbf	1919 lbf	1875 lbf	1834 lbf	1795 lbf	1758 lbf	1748 lbf
	28.63"	29.15"	29.9"	30.63"	31.35"	32.05"	32.75"	33.43"	33.62"
88.6	2061 lbf	2025 lbf	1978 lbf	1933 lbf	1891 lbf	1852 lbf	1815 lbf	1779 lbf	1770 lbf
	30.76"	31.29"	32.05"	32.79"	33.51"	34.23"	34.93"	35.62"	35.81"
91.9	2125 lbf	2089 lbf	2041 lbf	1995 lbf	1952 lbf	1912 lbf	1874 lbf	1838 lbf	1828 lbf
	32.08"	32.63"	33.4"	34.16"	34.91"	35.65"	36.37"	37.09"	37.28"
95.1	2189 lbf	2153 lbf	2104 lbf	2057 lbf	2014 lbf	1972 lbf	1933 lbf	1897 lbf	1887 lbf
	33.4"	33.96"	34.76"	35.54"	36.31"	37.07"	37.82"	38.55"	38.76"
98.4	2255 lbf	2218 lbf	2167 lbf	2120 lbf	2075 lbf	2033 lbf	1994 lbf	1956 lbf	1946 lbf
	34.7"	35.29"	36.1"	36.91"	37.7"	38.48"	39.25"	40.01"	40.22"
101.7	2319 lbf	2281 lbf	2230 lbf	2182 lbf	2136 lbf	2093 lbf	2053 lbf	2014 lbf	2004 lbf
	36.03"	36.63"	37.47"	38.3"	39.11"	39.91"	40.7"	41.48"	41.7"
105	2332 lbf	2296 lbf	2247 lbf	2200 lbf	2156 lbf	2115 lbf	2075 lbf	2038 lbf	2028 lbf
	38.17"	38.77"	39.62"	40.46"	41.29"	42.1"	42.9"	43.69"	43.9"
108.3	2435 lbf	2396 lbf	2344 lbf	2295 lbf	2248 lbf	2204 lbf	2162 lbf	2123 lbf	2112 lbf
	38.89"	39.51"	40.4"	41.26"	42.12"	42.96"	43.79"	44.61"	44.83"
111.5	2461 lbf	2423 lbf	2372 lbf	2324 lbf	2278 lbf	2235 lbf	2194 lbf	2155 lbf	2144 lbf
	40.84"	41.48"	42.37"	43.25"	44.12"	44.97"	45.82"	46.65"	46.88"
114.8	2478 lbf	2441 lbf	2392 lbf	2345 lbf	2300 lbf	2258 lbf	2218 lbf	2180 lbf	2170 lbf
	42.98"	43.62"	44.53"	45.42"	46.3"	47.16"	48.02"	48.86"	49.09"
118.1	2542 lbf	2505 lbf	2455 lbf	2407 lbf	2361 lbf	2318 lbf	2277 lbf	2238 lbf	2228 lbf
	44.32"	44.98"	45.91"	46.82"	47.72"	48.6"	49.48"	50.34"	50.58"
121.4	2607 lbf	2570 lbf	2518 lbf	2469 lbf	2423 lbf	2379 lbf	2337 lbf	2297 lbf	2286 lbf
	45.65"	46.32"	47.27"	48.2"	49.13"	50.03"	50.93"	51.81"	52.06"
124.7	2627 lbf	2590 lbf	2540 lbf	2492 lbf	2447 lbf	2404 lbf	2363 lbf	2324 lbf	2313 lbf
	47.79"	48.47"	49.43"	50.38"	51.31"	52.23"	53.13"	54.03"	54.28"
128	2691 lbf	2653 lbf	2602 lbf	2554 lbf	2508 lbf	2464 lbf	2422 lbf	2382 lbf	2371 lbf
	49.14"	49.84"	50.82"	51.78"	52.74"	53.68"	54.61"	55.52"	55.77"
131.2	2712 lbf	2676 lbf	2625 lbf	2578 lbf	2533 lbf	2490 lbf	2448 lbf	2409 lbf	2398 lbf
	51.29"	51.99"	52.98"	53.96"	54.93"	55.88"	56.82"	57.74"	58"
134.5	2776 lbf	2739 lbf	2688 lbf	2640 lbf	2593 lbf	2549 lbf	2507 lbf	2467 lbf	2456 lbf
	52.64"	53.36"	54.37"	55.37"	56.36"	57.33"	58.29"	59.24"	59.5"
137.8	2799 lbf	2763 lbf	2713 lbf	2665 lbf	2620 lbf	2576 lbf	2535 lbf	2495 lbf	2485 lbf
	54.79"	55.52"	56.54"	57.55"	58.55"	59.53"	60.5"	61.46"	61.73"
141.1	2863 lbf	2826 lbf	2775 lbf	2726 lbf	2680 lbf	2636 lbf	2594 lbf	2553 lbf	2542 lbf
	56.15"	56.89"	57.93"	58.96"	59.98"	60.99"	61.98"	62.96"	63.23"
144.4	2887 lbf	2851 lbf	2800 lbf	2753 lbf	2707 lbf	2664 lbf	2622 lbf	2582 lbf	2571 lbf
	58.3"	59.05"	60.1"	61.15"	62.18"	63.19"	64.2"	65.19"	65.46"
147.6	2912 lbf	2876 lbf	2827 lbf	2780 lbf	2735 lbf	2692 lbf	2651 lbf	2611 lbf	2601 lbf
	60.46"	61.21"	62.28"	63.33"	64.37"	65.4"	66.42"	67.42"	67.7"
150.9	2976 lbf	2939 lbf	2889 lbf	2841 lbf	2795 lbf	2751 lbf	2709 lbf	2669 lbf	2658 lbf
	61.82"	62.59"	63.68"	64.75"	65.82"	66.86"	67.9"	68.93"	69.21"

EQUIVALENT SPAN	AMBIENT TEMPERATURE								
	19.4°F	32°F	50°F	68°F	86°F	104°F	122°F	140°F	145°F
154.2	3002 lbf	2966 lbf	2917 lbf	2869 lbf	2824 lbf	2780 lbf	2739 lbf	2699 lbf	2688 lbf
	63.97"	64.75"	65.85"	66.94"	68.01"	69.07"	70.12"	71.16"	71.45"
157.5	3029 lbf	2993 lbf	2945 lbf	2898 lbf	2853 lbf	2810 lbf	2769 lbf	2729 lbf	2718 lbf
	66.13"	66.92"	68.03"	69.13"	70.22"	71.29"	72.35"	73.4"	73.69"
160.8	3057 lbf	3022 lbf	2973 lbf	2927 lbf	2883 lbf	2840 lbf	2799 lbf	2760 lbf	2749 lbf
	68.29"	69.08"	70.21"	71.32"	72.42"	73.5"	74.58"	75.64"	75.93"
164	3120 lbf	3085 lbf	3035 lbf	2988 lbf	2943 lbf	2899 lbf	2858 lbf	2818 lbf	2807 lbf
	69.65"	70.46"	71.61"	72.74"	73.86"	74.97"	76.06"	77.14"	77.44"
167.3	3149 lbf	3113 lbf	3065 lbf	3018 lbf	2973 lbf	2930 lbf	2888 lbf	2849 lbf	2838 lbf
	71.81"	72.63"	73.79"	74.94"	76.07"	77.19"	78.29"	79.39"	79.69"
170.6	3178 lbf	3143 lbf	3094 lbf	3048 lbf	3003 lbf	2961 lbf	2920 lbf	2880 lbf	2869 lbf
	73.98"	74.81"	75.97"	77.13"	78.28"	79.41"	80.52"	81.63"	81.94"
173.9	3208 lbf	3173 lbf	3125 lbf	3079 lbf	3034 lbf	2992 lbf	2951 lbf	2912 lbf	2901 lbf
	76.14"	76.98"	78.16"	79.33"	80.48"	81.63"	82.76"	83.88"	84.19"
177.2	3238 lbf	3203 lbf	3155 lbf	3110 lbf	3066 lbf	3023 lbf	2983 lbf	2944 lbf	2933 lbf
	78.31"	79.15"	80.35"	81.53"	82.7"	83.85"	85"	86.13"	86.44"
180.4	3267 lbf	3233 lbf	3186 lbf	3141 lbf	3097 lbf	3055 lbf	3014 lbf	2975 lbf	2965 lbf
	80.49"	81.34"	82.55"	83.75"	84.93"	86.09"	87.25"	88.39"	88.71"
183.7	3299 lbf	3265 lbf	3218 lbf	3172 lbf	3129 lbf	3087 lbf	3047 lbf	3008 lbf	2997 lbf
	82.66"	83.52"	84.74"	85.94"	87.14"	88.32"	89.49"	90.64"	90.96"
187	3330 lbf	3296 lbf	3250 lbf	3205 lbf	3162 lbf	3120 lbf	3080 lbf	3041 lbf	3030 lbf
	84.82"	85.69"	86.92"	88.14"	89.35"	90.54"	91.72"	92.89"	93.22"
190.3	3362 lbf	3329 lbf	3282 lbf	3237 lbf	3194 lbf	3153 lbf	3113 lbf	3074 lbf	3063 lbf
	86.99"	87.87"	89.11"	90.35"	91.56"	92.77"	93.97"	95.15"	95.47"
193.6	3394 lbf	3361 lbf	3315 lbf	3270 lbf	3227 lbf	3186 lbf	3146 lbf	3107 lbf	3097 lbf
	89.16"	90.05"	91.31"	92.55"	93.78"	95"	96.21"	97.4"	97.74"
196.9	3427 lbf	3394 lbf	3348 lbf	3303 lbf	3260 lbf	3219 lbf	3179 lbf	3141 lbf	3130 lbf
	91.33"	92.23"	93.5"	94.75"	96"	97.23"	98.45"	99.66"	99.99"
200.1	3460 lbf	3427 lbf	3381 lbf	3337 lbf	3294 lbf	3253 lbf	3213 lbf	3174 lbf	3164 lbf
	93.5"	94.41"	95.69"	96.96"	98.22"	99.46"	100.7"	101.92"	102.26"
203.4	3493 lbf	3460 lbf	3414 lbf	3370 lbf	3328 lbf	3286 lbf	3247 lbf	3208 lbf	3198 lbf
	95.67"	96.59"	97.88"	99.17"	100.44"	101.69"	102.94"	104.17"	104.52"
206.7	3527 lbf	3494 lbf	3448 lbf	3404 lbf	3362 lbf	3320 lbf	3281 lbf	3242 lbf	3232 lbf
	97.84"	98.77"	100.07"	101.37"	102.65"	103.93"	105.19"	106.43"	106.78"
210	3532 lbf	3500 lbf	3455 lbf	3412 lbf	3370 lbf	3330 lbf	3291 lbf	3253 lbf	3243 lbf
	100.83"	101.76"	103.07"	104.37"	105.66"	106.94"	108.2"	109.46"	109.8"
213.3	3566 lbf	3534 lbf	3490 lbf	3446 lbf	3405 lbf	3365 lbf	3326 lbf	3288 lbf	3278 lbf
	103"	103.94"	105.27"	106.58"	107.89"	109.18"	110.45"	111.72"	112.07"
216.5	3601 lbf	3569 lbf	3524 lbf	3481 lbf	3440 lbf	3399 lbf	3360 lbf	3323 lbf	3312 lbf
	105.18"	106.13"	107.47"	108.79"	110.11"	111.41"	112.7"	113.98"	114.34"
219.8	3608 lbf	3577 lbf	3533 lbf	3491 lbf	3450 lbf	3411 lbf	3372 lbf	3335 lbf	3325 lbf
	108.17"	109.12"	110.47"	111.8"	113.12"	114.43"	115.73"	117.01"	117.37"
223.1	3643 lbf	3612 lbf	3568 lbf	3526 lbf	3485 lbf	3446 lbf	3408 lbf	3370 lbf	3360 lbf
	110.34"	111.3"	112.66"	114.01"	115.35"	116.67"	117.98"	119.28"	119.64"
226.4	3679 lbf	3647 lbf	3604 lbf	3562 lbf	3521 lbf	3481 lbf	3443 lbf	3406 lbf	3395 lbf
	112.52"	113.49"	114.86"	116.22"	117.57"	118.91"	120.23"	121.54"	121.91"
229.7	3690 lbf	3659 lbf	3616 lbf	3575 lbf	3535 lbf	3496 lbf	3458 lbf	3421 lbf	3411 lbf
	115.45"	116.42"	117.8"	119.17"	120.53"	121.87"	123.2"	124.52"	124.89"

1/2" GALVANIZED STEEL STRANDED WIRE (USED AS CARRIER WIRE)

DIAMETER : 12.573MM (0.495")
CROSS SECTION: 96.580MM^2 (0.150 inch^2)
MODULUS OF ELASTICITY: 206843 N/MM^2 (30 x 10^6 PSI)
COEFF. OF THERM. EXP.: 12.3 x 10^{-6}/°C (6.83 x 10^{-6}/°F)
WEIGHT: 7.545 N/M (0.517 LBF / FT)

1/C 46 KV 750 KCMIL COPPER CABLE

DIAMETER : 60.274MM (2.373")
WEIGHT: 69.695 N/M (4.774 LBF / FT)

46 KV 750 KCML CABLE BOUNDED TO 1/2" GALV STEEL MESS. WIRE

DIAMETER : 76.454MM (3.01")
WEIGHT: 78.586 N/M (5.383 LBF / FT)

NOTES:

1. WIND IMPACT IS NOT CONSIDERED IN THE TENSION/SAG CALCULATIONS. VARIATION IN TENSION DUE TO WIND TO BE CONSIDERED BY STRUCTURAL ENGINEER FOR STRUCTURES, SPS AND OTHER CONSTRUCTION LOADS.
2. CONSTRUCTION TO CALCULATE EQUIVALENT SPAN AND VERIFY AMBIENT TEMPERATURE. TO FIND INSTALLATION TENSION OF CARRIER WIRE.
   EQUIVALENT SPAN $=\sqrt{(\sum L^3 / \sum L)}$

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP	DESCRIPTION

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

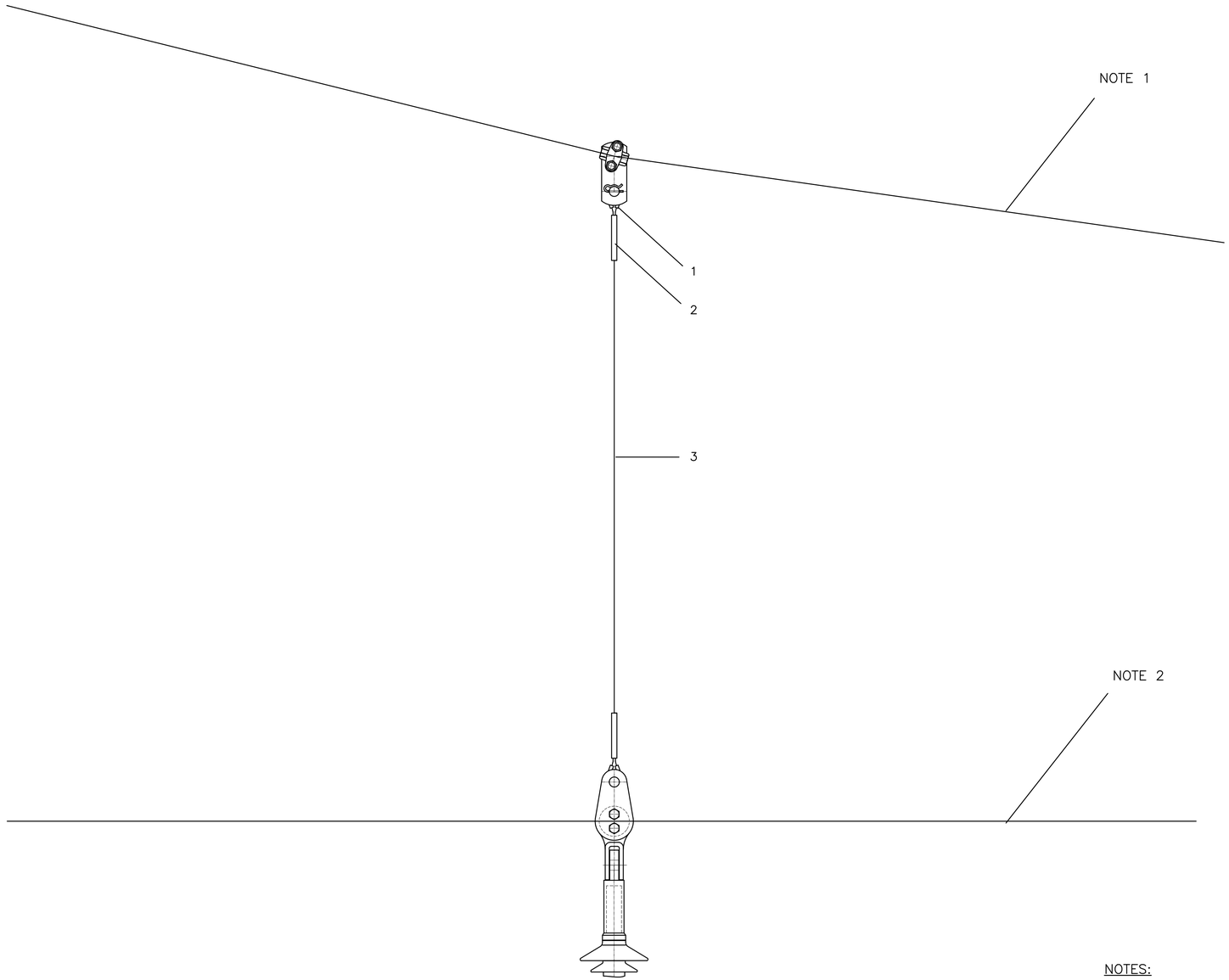
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

REDUCED TENSION TABLE OF INSULATED FEEDER CABLE
SHEET 2 OF 2

CADD FILE NAME: SD-W6870
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD-W6870



SPAN WIRE DROPPER
FOR HEAD SPAN
ELEVATION
NTS

NOTES:

1. ADOPTED WIRE: 2 x BZ II 70/19
2. UPPER SPAN WIRE
3. WEIGHT 1 x PART 1: 0.043 LBF (0.019 KG)
4. WEIGHT 1 x PART 2: 0.064 LBF (0.029 KG)
5. WEIGHT 1 x PART 3: 0.48 LBF (0.219 KG)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
	1	WIRE 25/7	BZ II	3	DIN 48201	
	2	CRIMP CONNECTOR B25	CU	2	DIN 48217	
	2	THIMBLE 35	CU	1	DIN 43154	
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

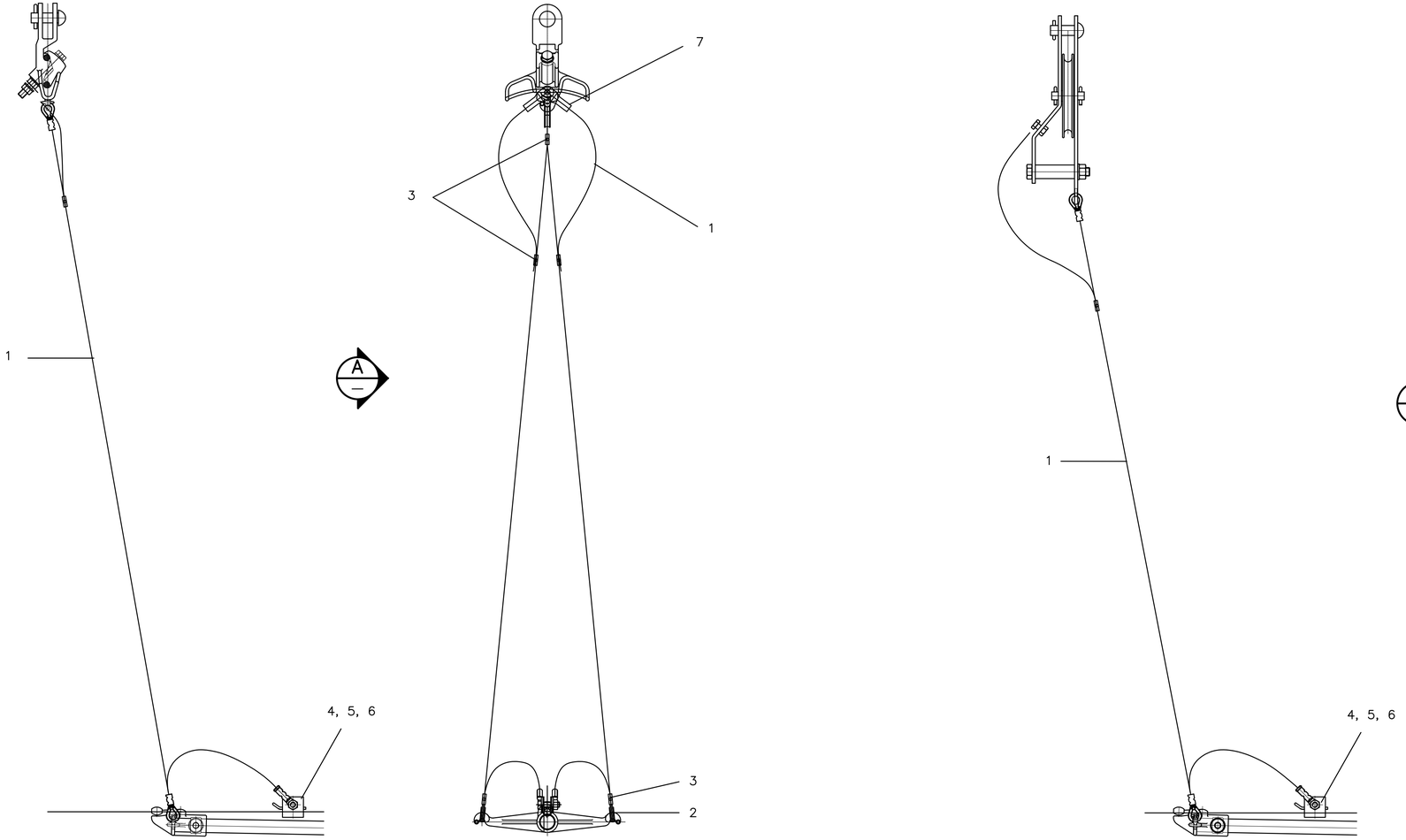
OVERHEAD CONTACT SYSTEM

SPAN WIRE DROPPER
FOR HEAD SPAN

CADD FILE NAME: SD-W6904
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD-W6904

DROPPER FOR HEAD SPAN
TYPE A
A ELEVATION
– NTS

DROPPER FOR HEAD SPAN
TYPE A
ELEVATION
NTS



DROPPER FOR HEAD SPAN
TYPE B
B ELEVATION
– NTS

DROPPER FOR HEAD SPAN
TYPE B
ELEVATION
NTS

NOTES:

1. LENGTH AND NUMBER AS NEEDED

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
–	2	CABLE LUG 12–25	CU	7	DIN 46235	
4	2	CABLE LUG 10–25	CU	6	DIN 46235	
1	1	CLIP FOR DROPPER CLAMP	BZ II	5		
1	1	DROPPER CLAMP FOR 70X19	A2	4		
5	5	COMPRESSION SPLICE F. WIRE 16X84 (D=6.2)	E–CUF20	3		
3	3	OPEN THIMBLE FOR WIRE 16X84	CU	2	DIN 43154	
1	1	WIRE 16X84 NOTE 1	BZ II	1	DIN 43138	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

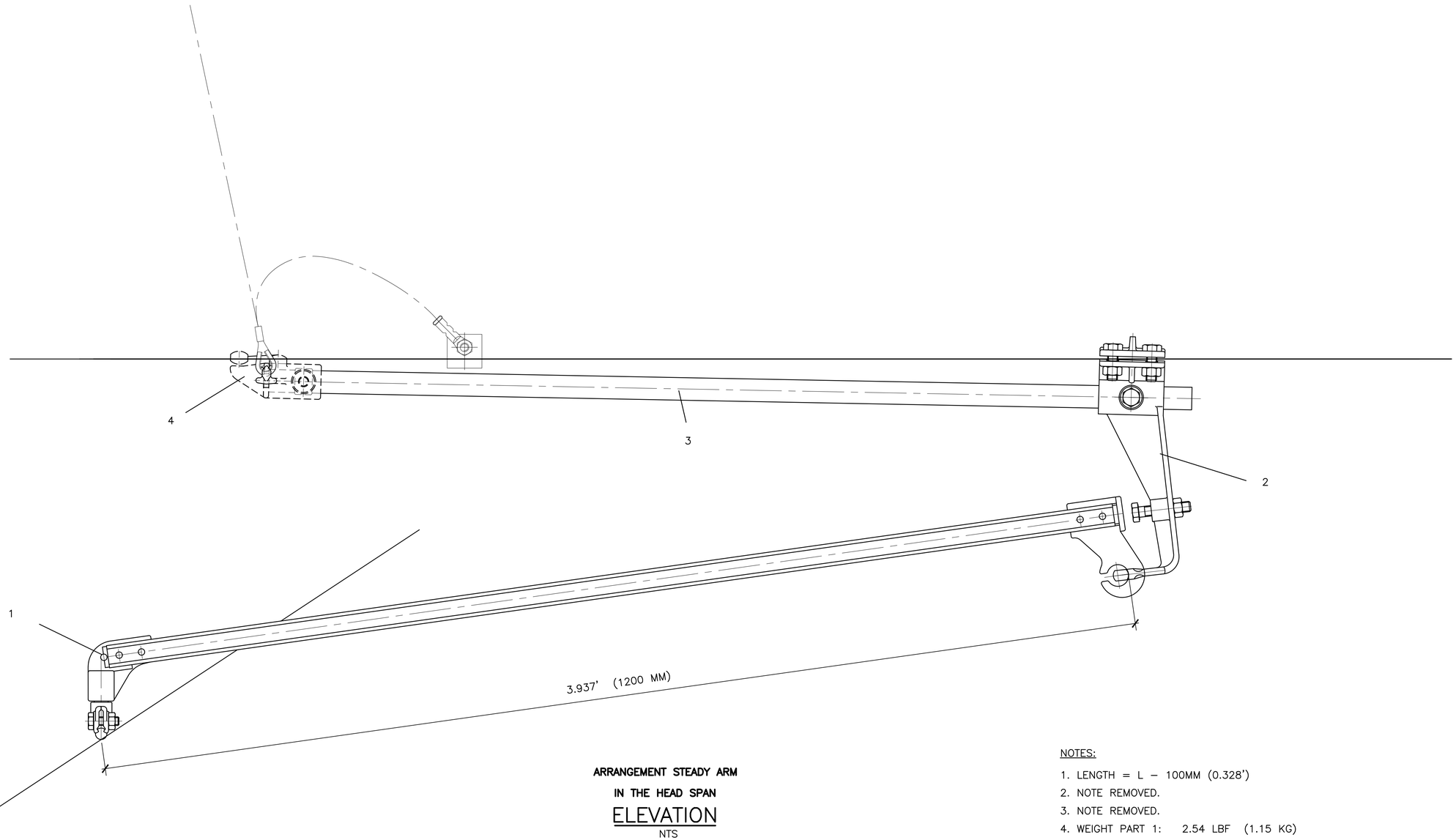
DROPPER
FOR HEAD SPAN

CADD FILE NAME: SD–W6905

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6905



ARRANGEMENT STEADY ARM

IN THE HEAD SPAN

ELEVATION

NTS

NOTES:

1. LENGTH = L – 100MM (0.328')
2. NOTE REMOVED.
3. NOTE REMOVED.
4. WEIGHT PART 1: 2.54 LBF (1.15 KG)
5. WEIGHT PART 2: 4.52 LBF (2.05 KG)
6. WEIGHT PART 3: 4.41 LBF/39.37'' (2.00 KG/M)
7. WEIGHT PART 4: 2.12 LBF (0.96 KG)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
	1	END CLAMP FOR TUBE ø26 (1")		4		
	1	TUBE Ø26 (1") NOTE 1		3	L=1100 (43,3")	
	1	CROSS SPAN DISTANCE BRACKET NOTE 3		2	EBS06.93.07/A	
	1	STEADY ARM L=1200mm NOTE 3		1	EBS05.95.23/B	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

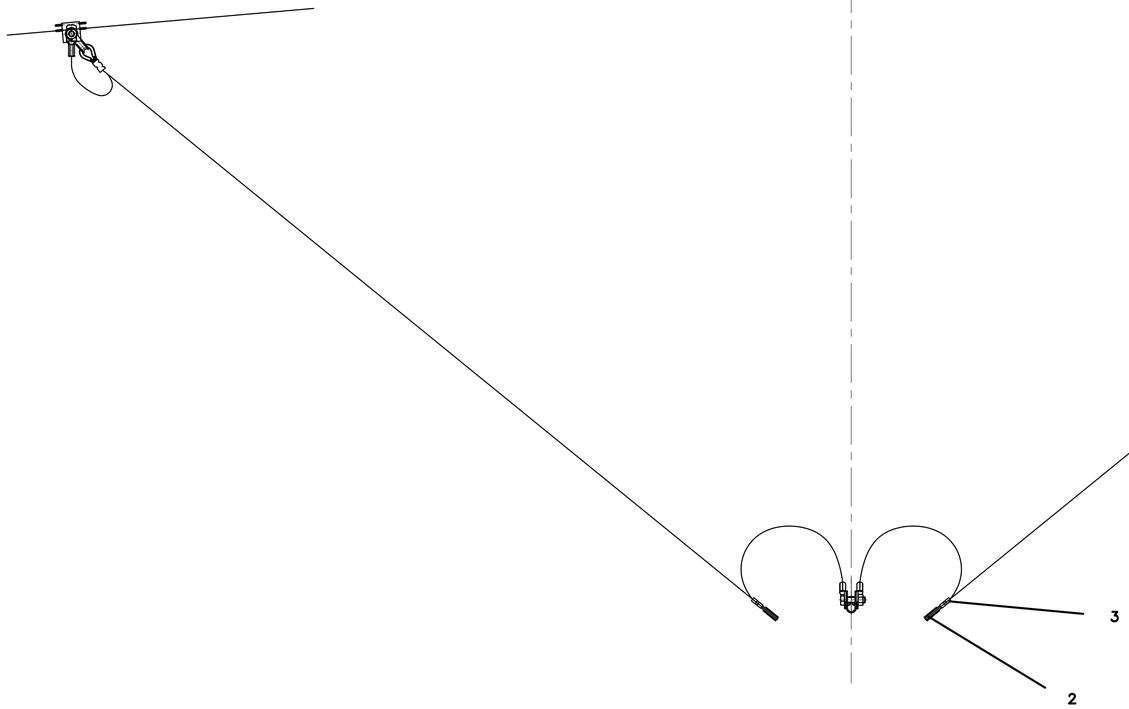
ARRANGEMENT STEADY ARM
IN THE HEAD SPAN

CADD FILE NAME: SD–W6906

REV: EDITION: SECOND

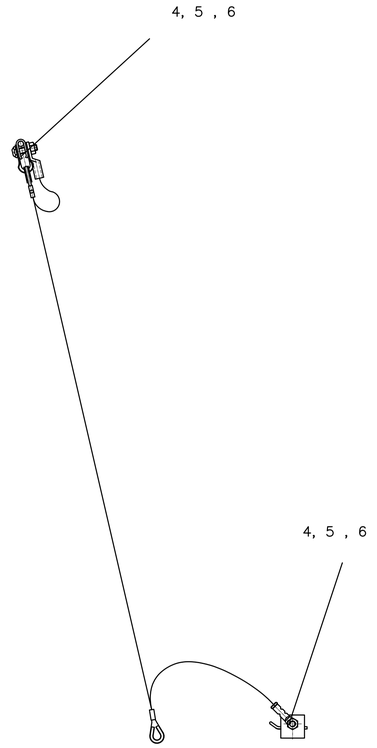
SCALE: NTS

STANDARD DRAWING NO.: SD–W6906



DROPPER FOR FIXED POINT
FOR HEAD SPAN

A — ELEVATION
NTS



DROPPER FOR FIXED POINT
FOR HEAD SPAN

ELEVATION
NTS

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
	4	CABLE LUG 10–16 FOR WIRE 10MM²	E–CUF20	6	DIN 46235	
	3	CLIP FOR 70MM²	BZ II	5	DIN 48300	
	3	DROPPER CLAMP FOR MW 70MM²	A2	4		
	4	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E–CUF20	3		
	4	THIMBLE FOR WIRE 10X49	A2	2	DIN 43154	
	2	WIRE BZ II 10X49 (LENGHT AS NEEDED)	CUMG0.4	1	DIN 43138	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

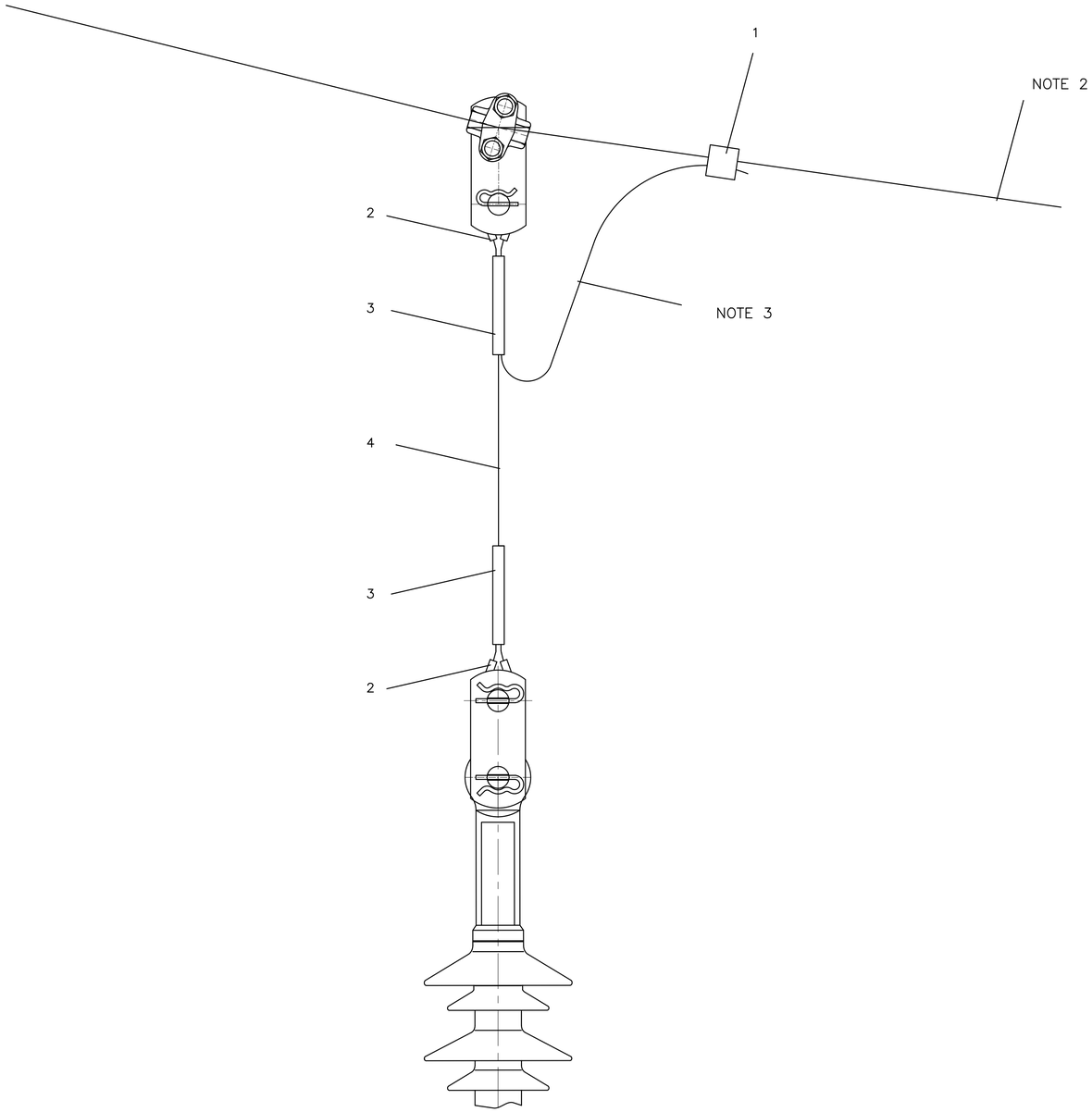
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

DROPPER FOR FIXED POINT
FOR HEAD SPAN

CADD FILE NAME: SD–W6909
REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6909



SPAN WIRE DROPPER FOR HEAD
SPAN WITH 2 ELECTRIFIED CROSS SPAN WIRES

ELEVATION

NTS

NOTES:

1. ALTERNATIVE – CHOICE ACCORDING TO DOSSERT
2. HEAD SPAN WIRE (2 x BZ II 70/19)
3. CONNECT ALTERNATELY WITH ONE OF THE TWO HEAD SPAN WIRES
4. WEIGHT 1 x PART 1: 0.43 LBF (0.195 KG)
5. WEIGHT 1 x PART 2: 0.06 LBF (0.027 KG)
6. WEIGHT 1 x PART 3: 0.15 LBF (0.068 KG)
7. WEIGHT 1 x PART 4: 0.99 LBF/39.37" (0.447 KG/M)

FOR MAINTENANCE REFERENCE ONLY
NOT FOR NEW CONSTRUCTION

B	A					
	1	WIRE 50/7	BZ II	4	DIN 48201	
	2	CRIMP CONNECTOR B50	E-CU	3	DIN 48217	
	2	THIMBLE 50	E-CU	2	DIN 43154	
	1	ELECTRICAL CLAMP		1	NOTE 1	
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD	REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

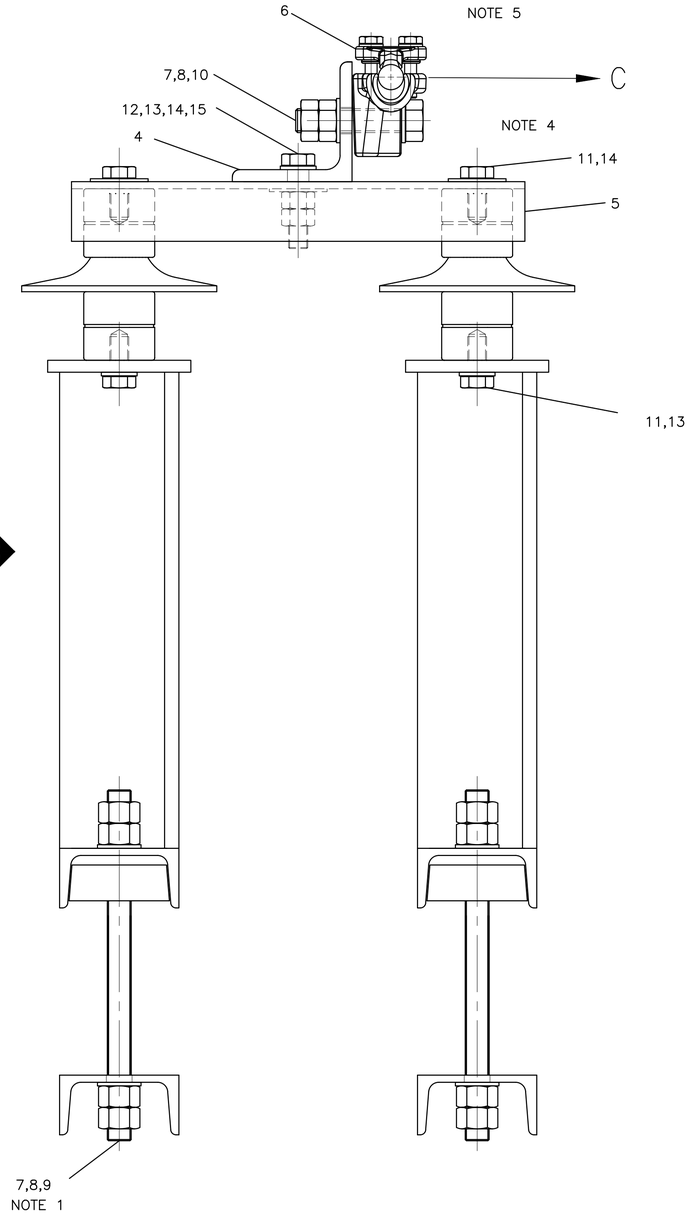
APPROVED BY:
Bin Zhang
DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SPAN WIRE DROPPER FOR HEAD SPAN WITH 2 ELECTRIFIED CROSS SPAN WIRES

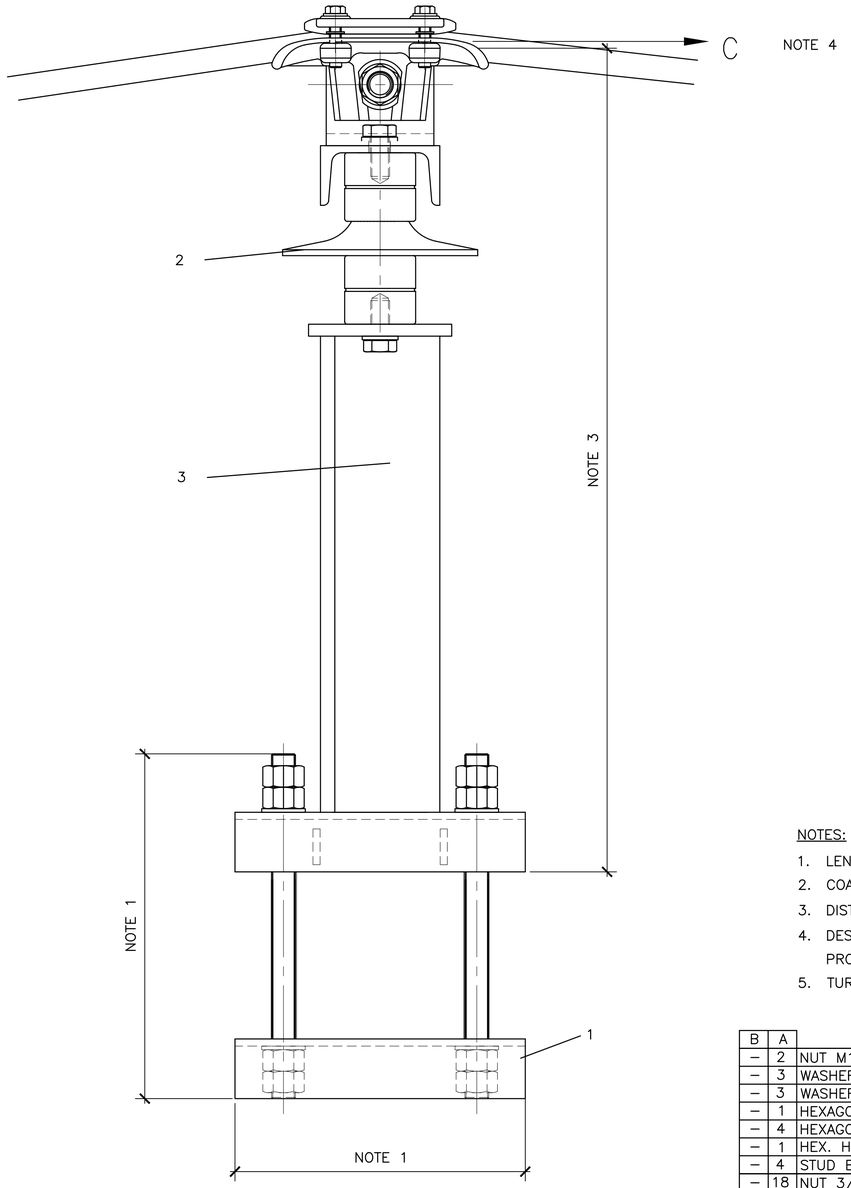
CADD FILE NAME: SD-W6911
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD-W6911



DOUBLE INSULATED STATIC WIRE EXTENDED SUPPORT
VERTICAL AT MULTIPLE TRACK CANTILEVER

ELEVATION

NTS



DOUBLE INSULATED STATIC WIRE EXTENDED SUPPORT
VERTICAL AT MULTIPLE TRACK CANTILEVER

A — ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON BEAMSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN, MAXIMUM ABOUT 7'–5" (2260MM)
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
5. TURN CLAMP IN CORRECT POSITION

B	A					
–	2	NUT M16	8 NOTE2	15	DIN EN ISO 4032	
–	3	WASHER M16 (LARGE)	200HV NOTE2	14	DIN EN ISO 7093	
–	3	WASHER M16	200HV NOTE2	13	DIN EN ISO 7089	
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE2	12	DIN EN ISO 4017	
–	4	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	11	DIN EN ISO 4017	
–	1	HEX. HEAD SCREW 3/4"x4"		10		
–	4	STUD BOLT 3/4"		9		NOTE 1
–	18	NUT 3/4"		8		
–	10	WASHER FOR 3/4"		7		
–	1	STATIC WIRE CLAMP		6		
–	1	U–PROFILE 100		5		
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	2	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTES 1 AND 3
–	2	COMPOSITE INSULATOR 130MM		2		
–	2	U–PROFILE FOR CLAMPING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

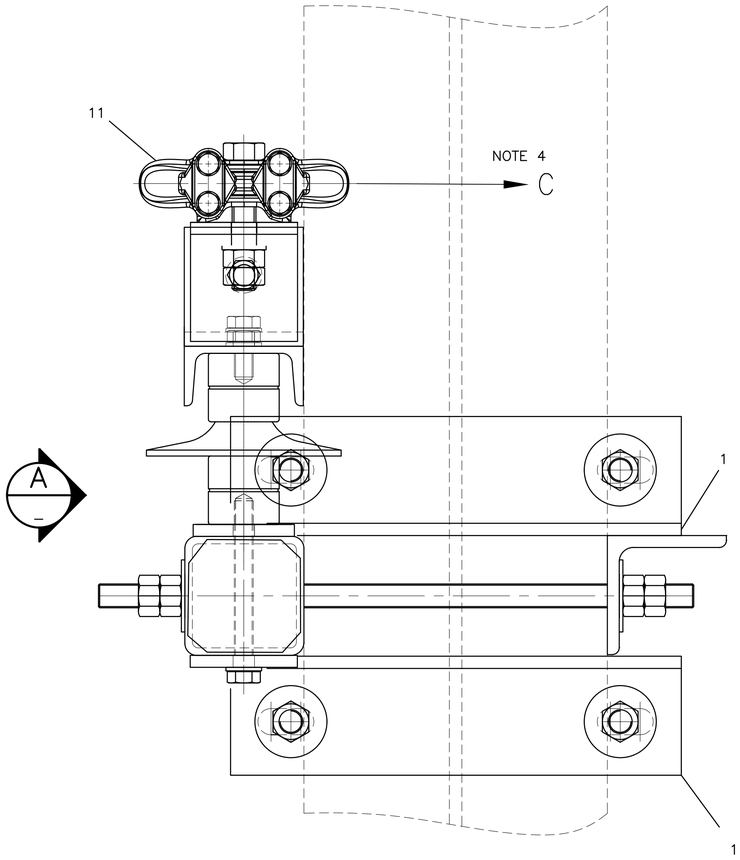
VERTICAL STATIC WIRE EXTENDED SUPPORT
WITH DOUBLE INSULATOR
AT MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6916

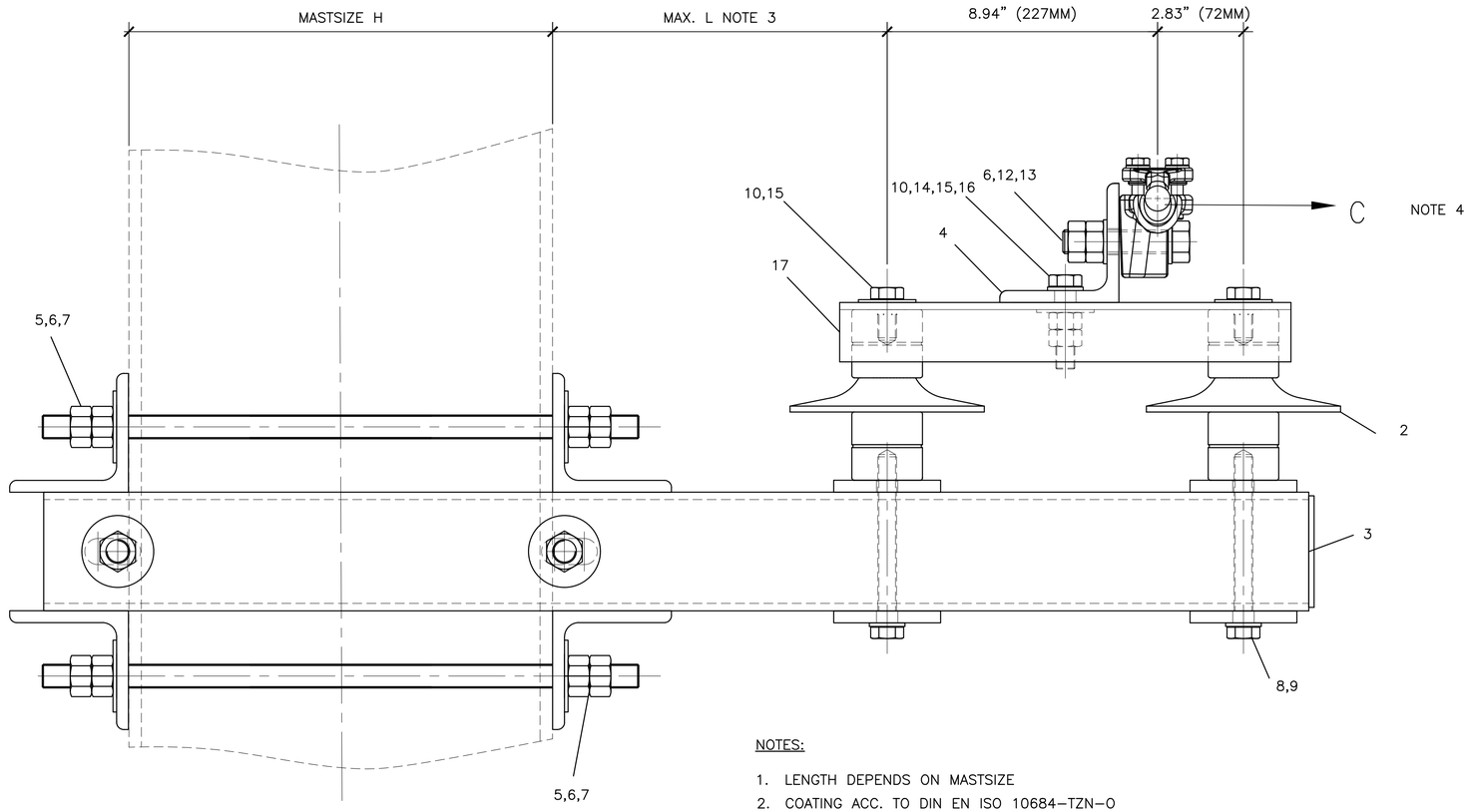
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6916



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MAST
ELEVATION
NTS



INSULATED STATIC WIRE SUPPORT
VERTICAL AT MAST
A – ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DISTANCE DEPENDS ON DETAIL DESIGN, MAXIMUM L = 3.28' (1000MM)
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

B	A						
–	1	U–PROFILE 100		17			
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE2	16	DIN EN ISO 4017		
–	3	WASHER M16 (LARGE)	200HV NO.2	15	DIN EN ISO 7093		
–	2	NUT M16	8 NOTE2	14	DIN EN ISO 4032		
–	1	HEX. HEAD SCREW 3/4"x4"		13			
–	2	WASHER FOR 3/4"		12			
–	1	STATIC WIRE CLAMP	G–AL	11			
–	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017		
–	3	WASHER M16	200HV NOTE2	9	DIN EN ISO 7089		
–	2	HEXAGON HEAD SCREW M16x140	8.8 NOTE2	8	DIN EN ISO 4017		
–	6	STUD BOLT 3/4"		7			NOTE 1
–	26	NUT 3/4"		6			
–	12	WASHER FOR 3/4"		5			
–	1	ANGLE FOR STATIC WIRE CLAMP		4			
–	1	SUPPORTING STRUCTURE FOR INSULATOR		3			NOTES 1 AND 3
–	2	COMPOSITE INSULATOR 130MM		2			
–	5	CLAMPING ANGLE		1			NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD		REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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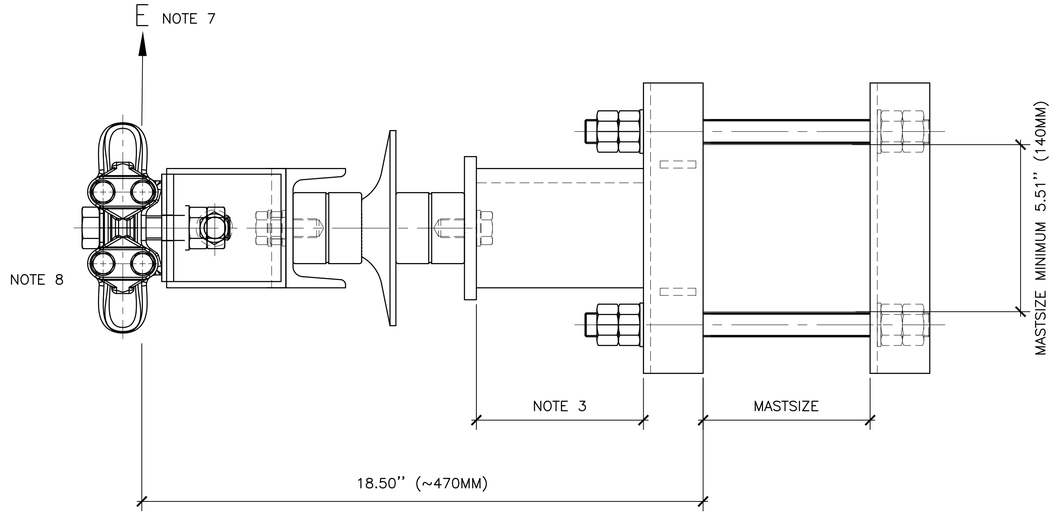
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

VERTICAL STATIC WIRE SUPPORT
WITH DOUBLE INSULATOR
AT RECTANGULAR MAST

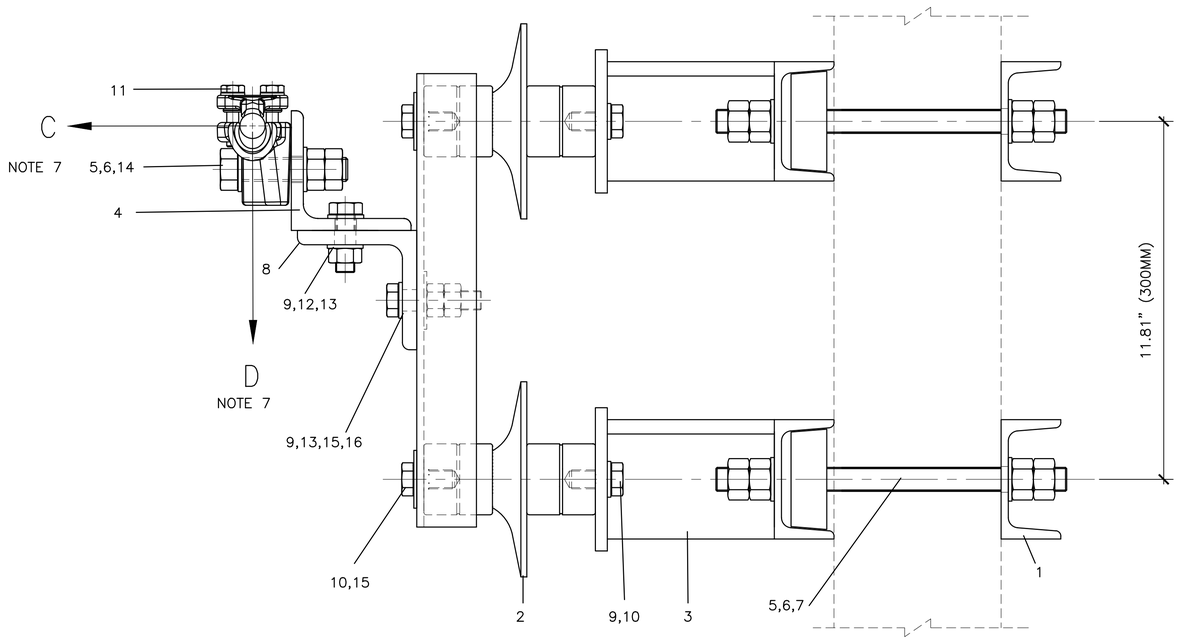
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REV: | EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6917



HORIZONTAL STATIC WIRE SUPPORT

PLAN

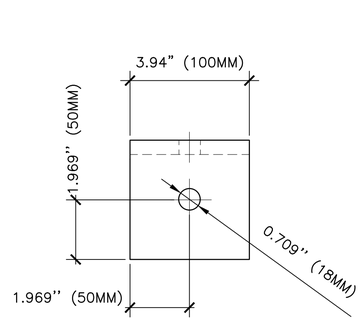
NTS



HORIZONTAL STATIC WIRE SUPPORT

ELEVATION

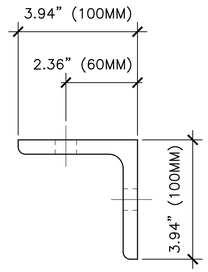
NTS



PART 8

PLAN

NTS



PART 8

ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 140MM (5.51'') OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. ATTENTION: DIMENSIONS OF MAST MUST BE CONSIDERED WHEN DESIGNING U–PROFILES
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
8. TURN CLAMP IN CORRECT POSITION

B	A						
–	1	U–PROFILE 100		17			
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE2	16	DIN EN ISO 4017		
–	3	WASHER M16 (LARGE)	200HV NO.2	15	DIN EN ISO 7093		
–	1	HEX. HEAD SCREW 3/4"x4"		14			
–	3	NUT M16	8 NOTE2	13	DIN EN ISO 4032		
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	12	DIN EN ISO 4017		
–	1	STATIC WIRE CLAMP	G–AL	11			
–	4	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017		
–	5	WASHER M16	200HV NOTE 2	9	DIN EN ISO 7089		
–	1	ANGLE 100x100x12 NOTE 4		8	DIN EN 10056–1	NOTE 5	
–	4	STUD BOLT 3/4"		7		NOTE 1	
–	18	NUT 3/4"		6			
–	10	WASHER FOR 3/4"		5			
–	1	ANGLE FOR STATIC WIRE CLAMP		4			
–	2	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 1 , 3 AND 6	
–	2	COMPOSITE INSULATOR 130MM		2			
–	2	U–PROFILE FOR CLAMPING		1		NOTE 1 AND 6	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

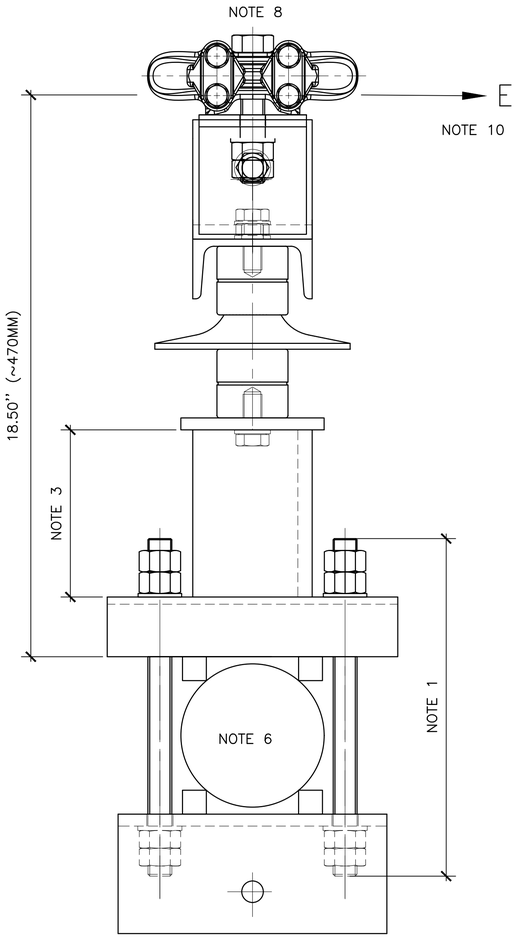
HORIZONTAL STATIC WIRE SUPPORT WITH DOUBLE INSULATOR AT MAST

CADD FILE NAME: SD–W6918

REV: | EDITION: SECOND

SCALE: NTS

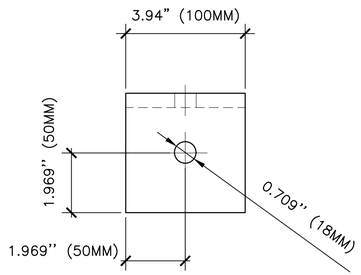
STANDARD DRAWING NO.: SD–W6918



INSULATED HORIZONTAL
STATIC WIRE SUPPORT

PLAN

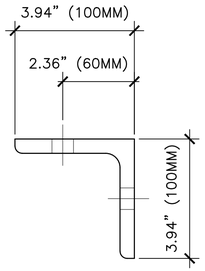
NTS



PART 8

PLAN

NTS



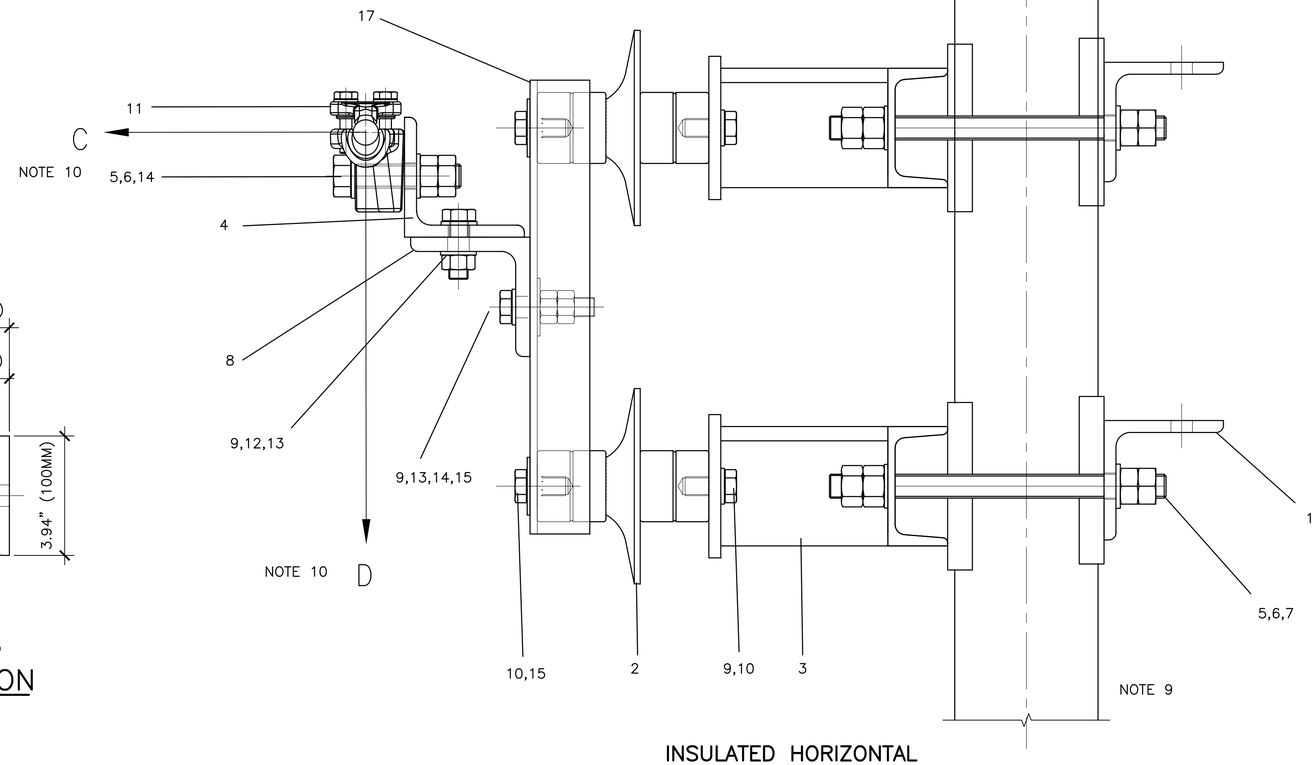
PART 8

ELEVATION

NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 280 MM (11.02'')
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. LENGTH OF ANGLE L = 140MM (5.51'') OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937''x3.937''x0.472''
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 µm) AFTER DRILLING
6. DROP TUBE DIAMETER ACCORDING TO DRAWING SD–W6104 / SD–W6105 ø110–120MM (4.33'' – 4.72'')
7. ALL EDGES DEBURRED
8. TURN CLAMP IN CORRECT POSITION
9. FINAL DIMENSIONING OF THE DROP TUBE TO BE CONFIRMED BY AMC
10. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
11. REFER OCS DESIGN SPECIFICATION 34 30 73



INSULATED HORIZONTAL
STATIC WIRE SUPPORT

ELEVATION

NTS

B	A					
–	1	U–PROFILE 100		17		
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE2	16	DIN EN ISO 4017	
–	3	WASHER M16 (LARGE)	200HV NO.2	15	DIN EN ISO 7093	
–	1	HEX. HEAD SCREW 3/4"x4"		14		NOTE 11
–	3	NUT M16	8 NOTE2	13	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	12	DIN EN ISO 4017	
–	1	STATIC WIRE CLAMP	G–AL	11		
–	4	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	10	DIN EN ISO 4017	
–	5	WASHER M16	200HV NOTE 2	9	DIN EN ISO 7089	
–	1	ANGLE 100x100x12		8	DIN EN 10056–1	NOTES 4 AND 5 AND 7
–	4	STUD BOLT 3/4"		7		NOTE 1 AND 11
–	18	NUT 3/4"		6		NOTE 11
–	10	WASHER FOR 3/4"		5		NOTE 11
–	1	ANGLE FOR STATIC WIRE CLAMP		4		
–	2	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 3
–	2	COMPOSITE INSULATOR 130MM		2		
–	2	BACK ANGLE		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HORIZONTAL STATIC WIRE SUPPORT WITH DOUBLE INSULATOR AT TUBE Ø110–120MM (4.33"–4.72")

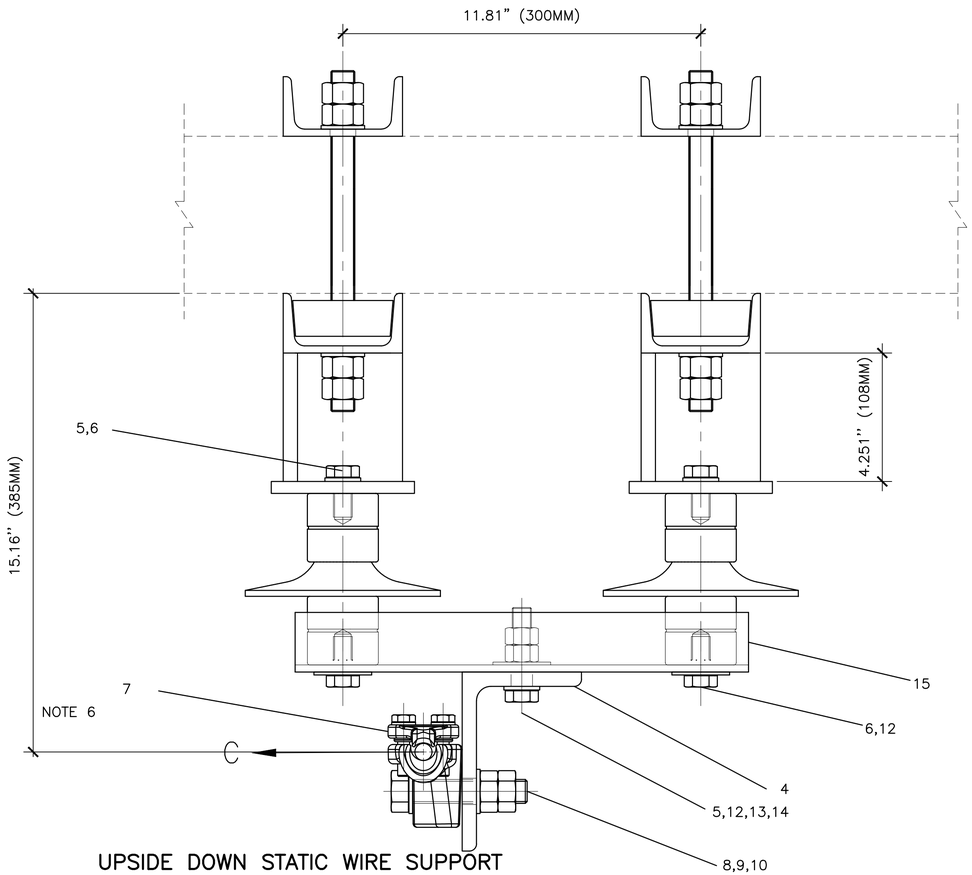
CADD FILE NAME: SD–W6919

REV:

EDITION: SECOND

SCALE: NTS

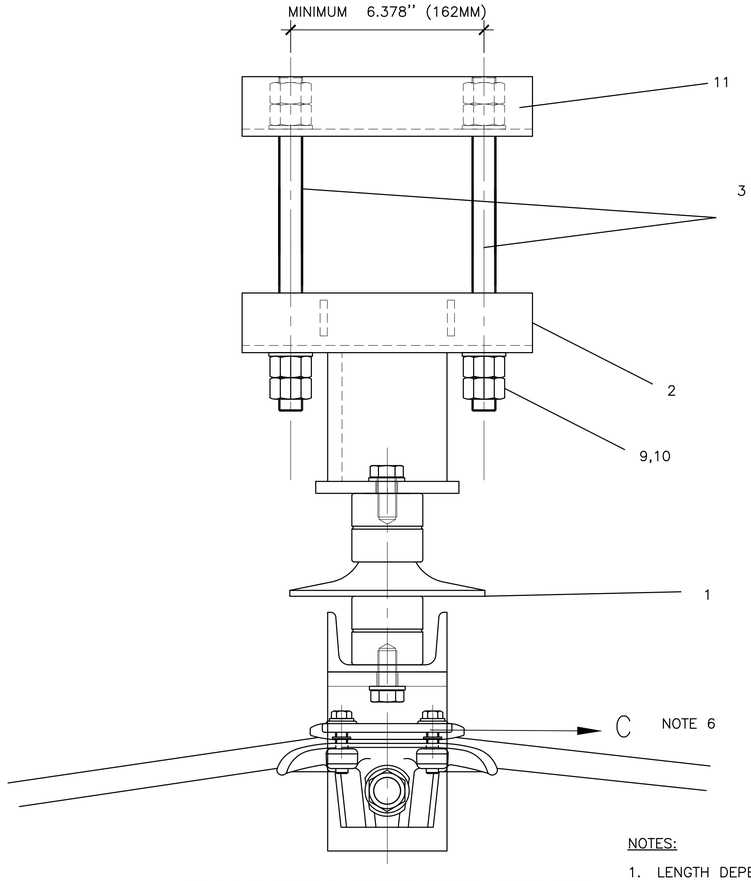
STANDARD DRAWING NO.: SD–W6919



UPSIDE DOWN STATIC WIRE SUPPORT

PLAN

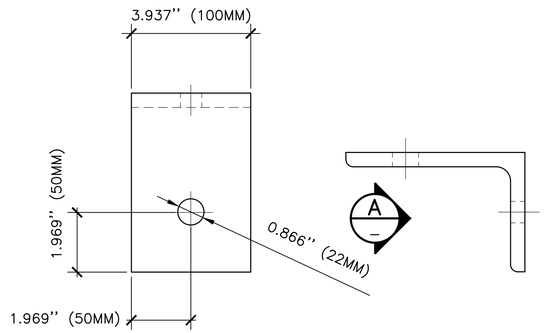
NTS



UPSIDE DOWN STATIC WIRE SUPPORT

ELEVATION

NTS



PART 4

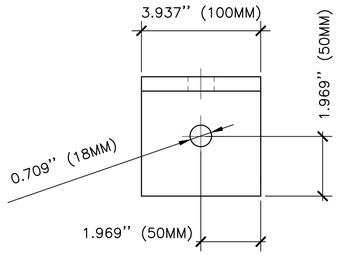
PLAN

NTS

PART 4

ELEVATION

NTS



PART 4

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN / BEAM SIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. L = 108MM (4.251") OR TO BE DEFINED IN DETAIL DESIGN IF NECESSARY
4. ANGLE 3.937"x3.937"x0.472"
5. HOT DIP GALVANIZED ACC. TO DIN EN ISO 1461 (MIN. THICKNESS: 85 μm) AFTER DRILLING
6. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
7. REFER OCS DESIGN SPECIFICATION 34 30 73

B	A					
–	1	U–PROFILE 100		15		
–	2	NUT M16	8 NOTE2	14	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE2	13	DIN EN ISO 4017	
–	3	WASHER M16 (LARGE)	200HV NO.2	12	DIN EN ISO 7093	
–	2	U–PROFILE FOR CLAMPING		11		NOTE 1
–	10	WASHER 3/4"		10		NOTE 7
–	18	NUT 3/4"		9		NOTE 7
–	1	HEXAGON HEAD SCREW 3/4"x4"		8		NOTE 7
–	1	STATIC WIRE CLAMP	G–AL	7		
–	4	HEXAGON HEAD SCREW M16x30	8.8 NOTE2	6	DIN EN ISO 4017	
–	3	WASHER M16	200HV NOTE 2	5	DIN EN ISO 7089	
–	1	ANGLE 150x100x12		4	DIN EN 10056–1	NOTES 4 AND 5
–	4	STUD BOLT 3/4"		3		NOTES 1, 2 AND 7
–	2	SUPPORTING STRUCTURE FOR POSTINSULATOR		2		NOTES 1 AND 3
–	2	COMPOSITE INSULATOR 130MM		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

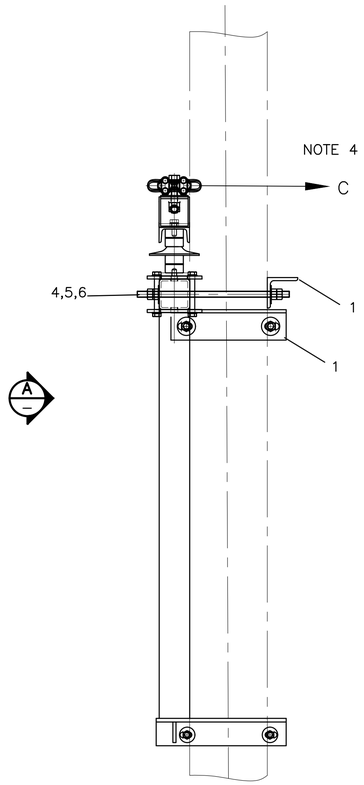
UPSIDE DOWN STATIC WIRE SUPPORT WITH DOUBLE INSULATOR AT MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6920

REV: | EDITION: SECOND

SCALE: NTS

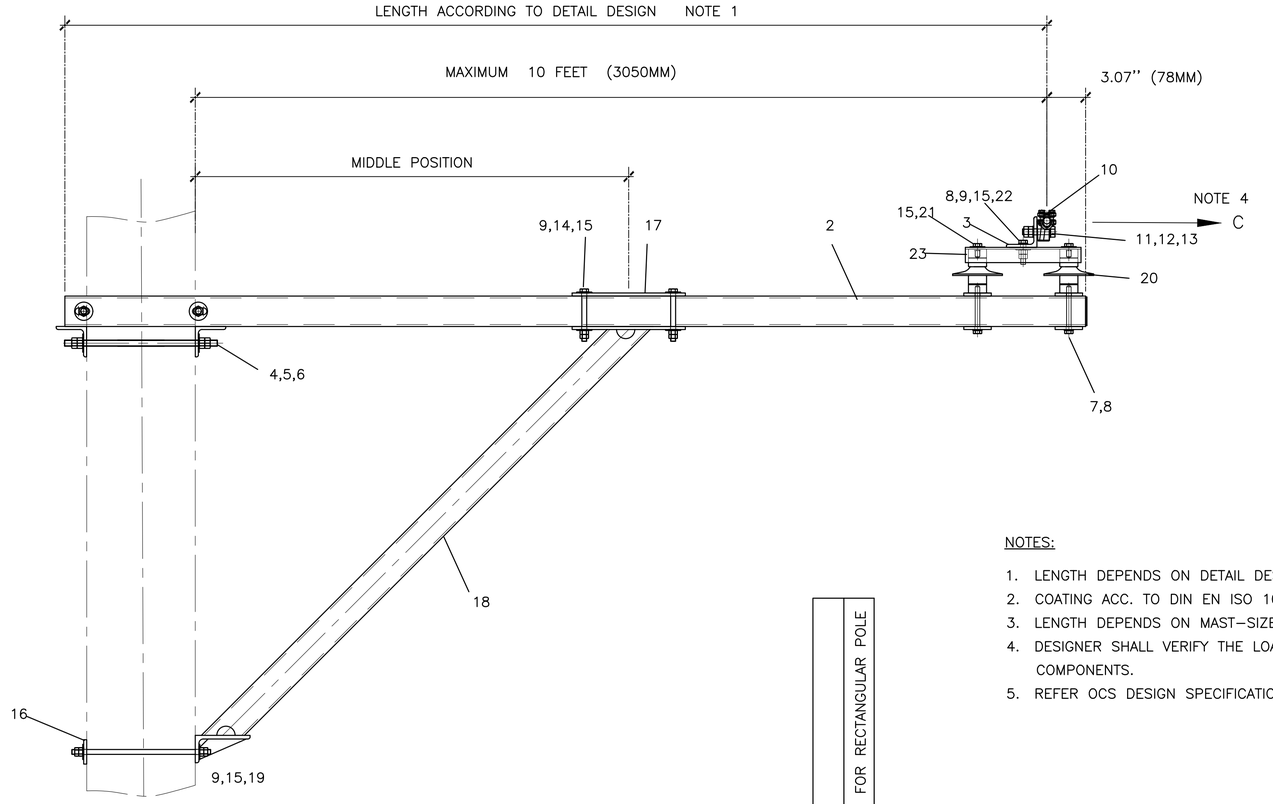
STANDARD DRAWING NO.: SD–W6920



INSULATED STATIC WIRE SUPPORT WITH STRUT TUBE AT RECTANGULAR POLE

ELEVATION

NTS



INSULATED STATIC WIRE SUPPORT WITH STRUT TUBE AT RECTANGULAR POLE

A – ELEVATION

NTS

NOTES:

1. LENGTH DEPENDS ON DETAIL DESIGN
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. LENGTH DEPENDS ON MAST–SIZE
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
5. REFER OCS DESIGN SPECIFICATION 34 30 73

FOR RECTANGULAR POLE						
B	A	PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
–	1	1	U–PROFILE 100		23		
–	1	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	22	DIN EN ISO 4017	
–	2	2	HEXAGON HEAD SCREW M16x30	8.8 NOTE 2	21	DIN EN ISO 4017	
–	2	2	COMPOSITE INSULATOR 130MM		20		
–	2	2	STUD BOLT M16	8.8 NOTE 2	19	DIN 976–1	NOTES 1 AND 3
–	1	1	STRUT TUBE		18		NOTES 1 AND 3
–	1	1	FASTENING PLATE		17		PART 4
–	1	1	BACK PLATE		16		PART 2 NOTES 1 AND 3
–	15	15	WASHER M16 (LARGE)	200HV NOTE 2	15	DIN EN ISO 7093	
–	4	4	HEXAGON HEAD SCREW M16x160	8.8 NOTE 2	14	DIN EN ISO 4017	
–	3	3	WASHER FOR 3/4"		13		NOTES 5
–	2	2	NUT 3/4"		12		NOTES 5
–	1	1	HEX. HEAD SCREW 3/4"x4"		11		NOTES 5
–	1	1	STATIC WIRE CLAMP		10		
–	18	18	HEXAGON HEAD NUT M16	8 NOTE 2	9	DIN EN ISO 4032	
–	3	3	WASHER M16	200HV NOTE 2	8	DIN EN ISO 7089	
–	2	2	HEXAGON HEAD SCREW M16x140	8.8 NOTE 2	7	DIN EN ISO 4017	
–	4	4	STUD BOLT 3/4"		6		NOTES 1 , 3 AND 5
–	16	16	NUT 3/4"		5		NOTES 5
–	8	8	WASHER FOR 3/4"		4		NOTES 5
–	1	1	ANGLE FOR STATIC WIRE SUPPORT		3		
–	1	1	SUPPORTING STRUCTURE FOR STATIC WIRE		2		NOTES 1 AND 3
–	3	3	CLAMPING ANGLE		1		NOTES 1 AND 3

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

VERTICAL STATIC WIRE SUPPORT DOUBLE INSULATOR WITH STRUT TUBE AT RECTANGULAR MAST

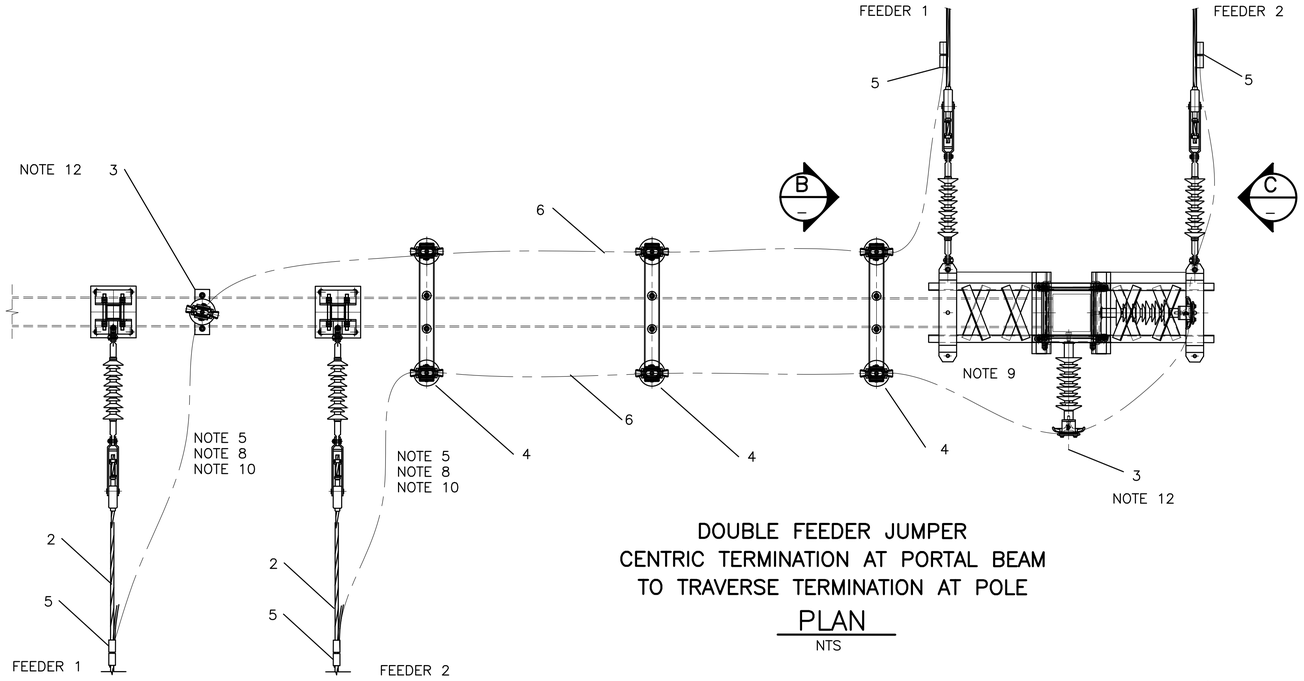
CADD FILE NAME: SD–W6921

REV:

EDITION: SECOND

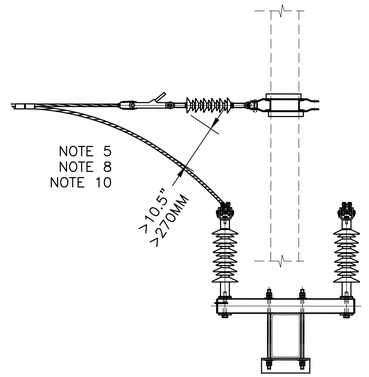
SCALE: NTS

STANDARD DRAWING NO.: SD–W6921



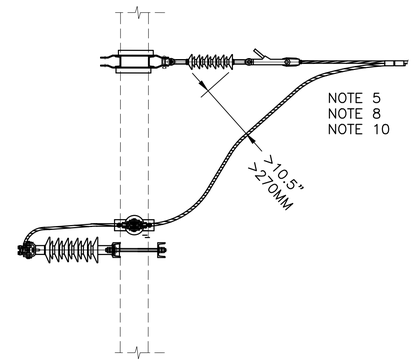
DOUBLE FEEDER JUMPER
CENTRIC TERMINATION AT PORTAL BEAM
TO TRAVERSE TERMINATION AT POLE

PLAN
NTS



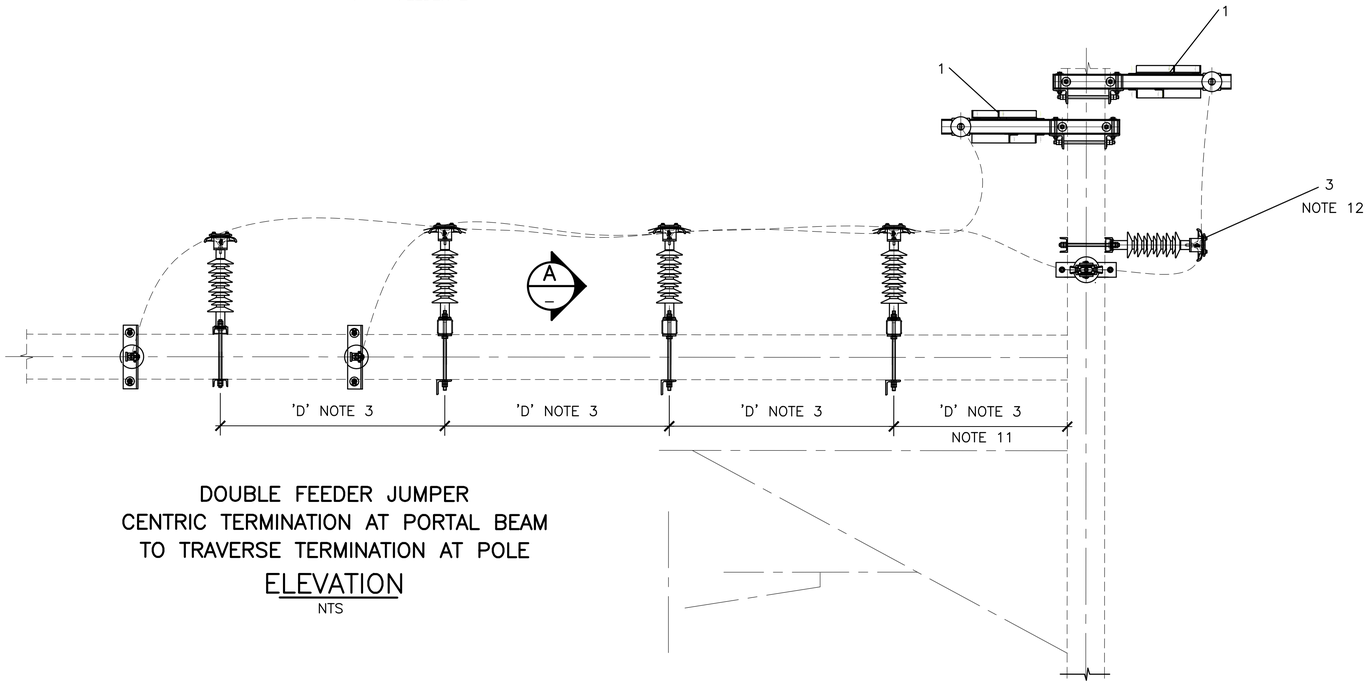
DOUBLE FEEDER JUMPER
JUMPER CONNECTION AT FEEDER 1
SIDE VIEW

B — ELEVATION
NTS



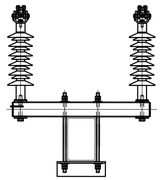
DOUBLE FEEDER JUMPER
JUMPER CONNECTION AT FEEDER 2
SIDE VIEW

C — ELEVATION
NTS



DOUBLE FEEDER JUMPER
CENTRIC TERMINATION AT PORTAL BEAM
TO TRAVERSE TERMINATION AT POLE

ELEVATION
NTS



DOUBLE FEEDER JUMPER
DOUBLE FEEDER SUPPORT – SIDE VIEW

A — ELEVATION
NTS

NOTES:

1. LENGTH OF CLAMPING PARTS DEPENDING ON BEAM SIZES
2. FOR RECTANGULAR MAST
3. QUANTITY OF SUPPORTS TO BE DEFINED IN DETAIL DESIGN – DISTANCE D IS 3' TO 4'
4. TO BE ORGANIZED FROM LOCAL SUPPLIER
5. ELECTRICAL DISTANCE TO BE CONSIDERED ACCORDING TO SD–W6006
6. MAST SIZE / BEAM SIZE TO BE CONSIDERED FOR CONSTRUCTIONS
7. ARRANGEMENT IS AN EXAMPLE – SIMILAR ARRANGEMENTS WITH SAME PARTS POSSIBLE (OTHER PORTAL SIDE OR OTHER SIDE OF MAST)
8. MINIMUM BENDING RADIUS 30 x DIAMETER
9. TRAVERSE DISTANCE OF SD–W6324 IS 27.56'' (700 MM)
10. IF NECESSARY DISTANCE MUST BE ENLARGED BY PUSHING TERMINATION / FEEDER SUPPORT / CLAMPS
11. POSITION: APPROXIMATELY THE DISTANCE THAT IS MENTIONED
12. SD–W6320 : VERTICAL OR HORIZONTAL USE POSSIBLE

	A				
	2	EAGLE ACSR 556		6		NOTE 8
	8	PARALLEL GROOVE CLAMP		5	LOCAL SUPPLIER	NOTE 4
	–	DOUBLE FW SUPPORT, VERTICAL		4	SD–W6924	NOTES 1, 2, 3, 6
	3	FEEDER WIRE SUPPORT, VERTICAL		3		NOTES 1, 2 ,6, 12
	2	FEEDER TERMINATION AT PORTAL BEAM		2		NOTES 1, 2, 6
	2	SINGLE TERMINATION TRAVERSE		1		NOTES 1, 2, 6, 9
PIECES	DESCRIPTION		MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

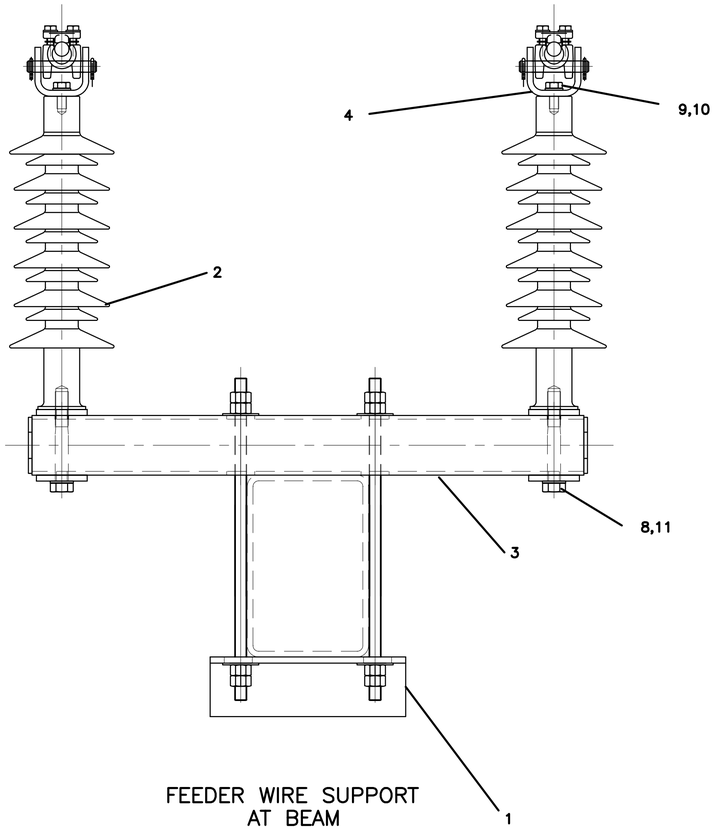
JUMPER ARRANGEMENT
FROM DOUBLE FWA AT PORTAL BEAM
TO ANCHOR AT POLE

CADD FILE NAME: SD–W6922

REV: | EDITION: SECOND

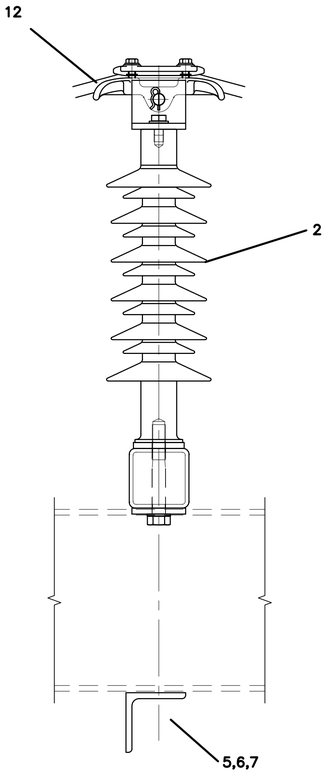
SCALE: NTS

STANDARD DRAWING NO.: SD–W6922



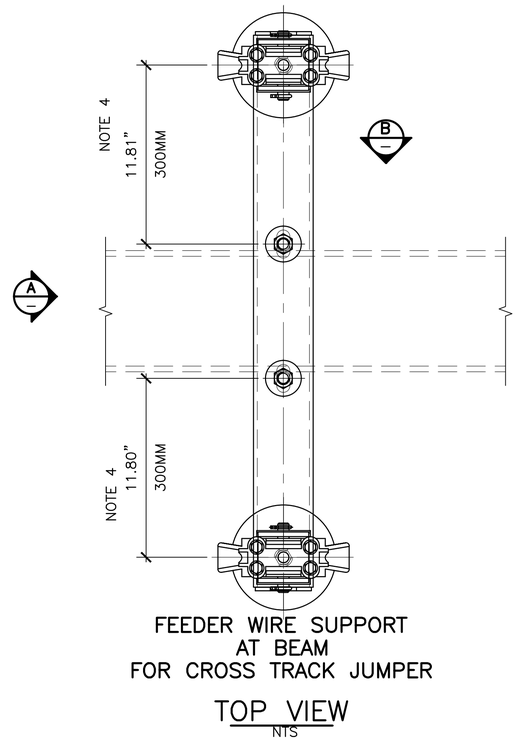
FEEDER WIRE SUPPORT
AT BEAM
FOR CROSS TRACK JUMPER

B ELEVATION
NTS



FEEDER WIRE SUPPORT
AT BEAM
FOR CROSS TRACK JUMPER

A ELEVATION
NTS



FEEDER WIRE SUPPORT
AT BEAM
FOR CROSS TRACK JUMPER

TOP VIEW
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. IN SPECIAL CASE DIMENSION CAN BE CHANGE SUBJECTED TO SPECIFIC SITE CONDITION.
5. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.

	FOR RECTANGULAR MAST						
B	A						
–	2	FEEDER WIRE CLAMP	G–AL	12			
–	2	HEXAGON HEAD SCREW M22x150	8.8 NOTE 2	11	DIN EN ISO 4017		
–	2	HEXAGON HEAD SCREW M16x35	8.8 NOTE 2	10	DIN EN ISO 4017		
–	2	WASHER M16	200HV NO.2	9	DIN EN ISO 7089		
–	2	WASHER M22	200HV NO.2	8	DIN EN ISO 7089		
–	2	STUD BOLT M20	8.8 NOTE 2	7	DIN 976–1	NOTE 1	
–	8	NUT M20	8 NOTE 2	6	DIN EN ISO 4032		
–	4	WASHER FOR M20	200HV NO.2	5	DIN EN ISO 7093		
–	2	BRACKET FOR FEEDER WIRE CLAMP		4			
–	2	SUPPORTING STRUCTURE FOR POSTINSULATOR		3		NOTE 1	
–	2	COMPOSITE INSULATOR		2			
–	1	BACK ANGLE WITHOUT EARTHING		1		NOTE 1	
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.	

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

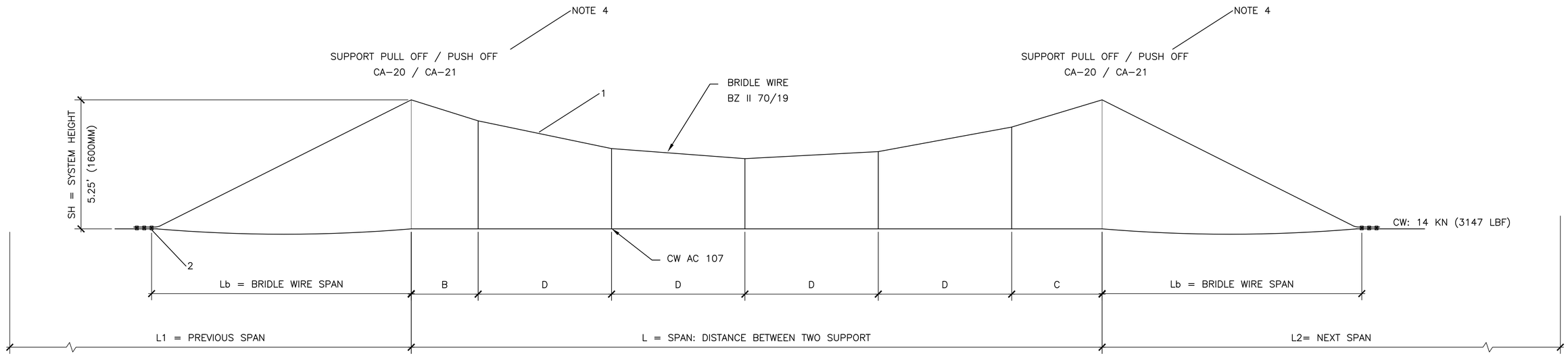
OVERHEAD CONTACT SYSTEM

DOUBLE FEEDER WIRE SUPPORT
VERTICAL AT BEAM
AT MULTIPLE TRACK CANTILEVER

CADD FILE NAME: SD–W6924
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6924

NOTES:

1. MAX. DISTANCE OF DROPPER D = 12M (39.4')
2. FOR NUMBER OF DROPPERS, DROPPER SPACING AND LENGTH OF DROPPER REFER DETAIL DESIGN.
3. TENSION IN THE BRIDLE WIRE DEPEND ON SECTION INSULATOR POSITION AND SPAN LENGTH, REFER DETAIL DESIGN.
4. FOR CANTILEVER ALLOCATION, REFER DETAIL DESIGN.



EXTENDED BRIDLE WIRE ARRANGEMENT

ELEVATION

NTS

CALCULAIONS:

Lb = Lavg / 5

Lavg = (L1 + L2) / 2

	A				
6	PARALLEL GROOVED CLAMP		2		
1	STANDARD BRONZE WIRE 70/19	BZ II	1	DIN 48201	LENGTH AS USED
PIECES	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

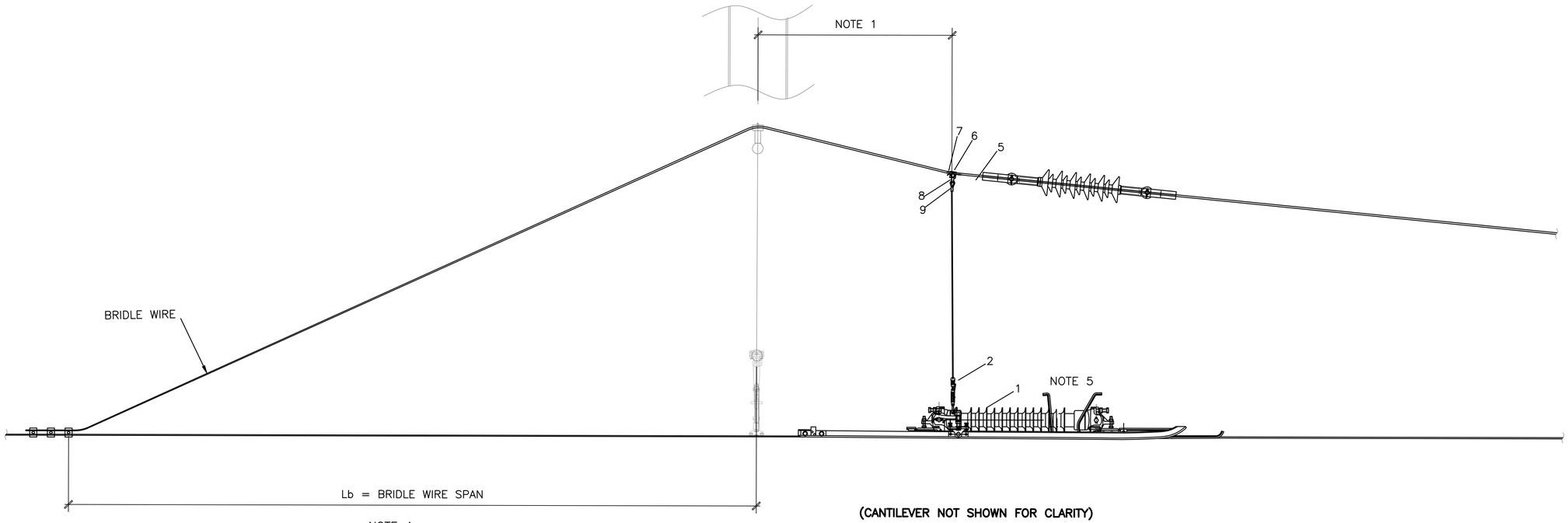
TYPICAL BRIDLE WIRE EXTENSION FOR SI–01 IN SRC

CADD FILE NAME: SD–W6925

REV: | EDITION: SECOND

SCALE: NTS

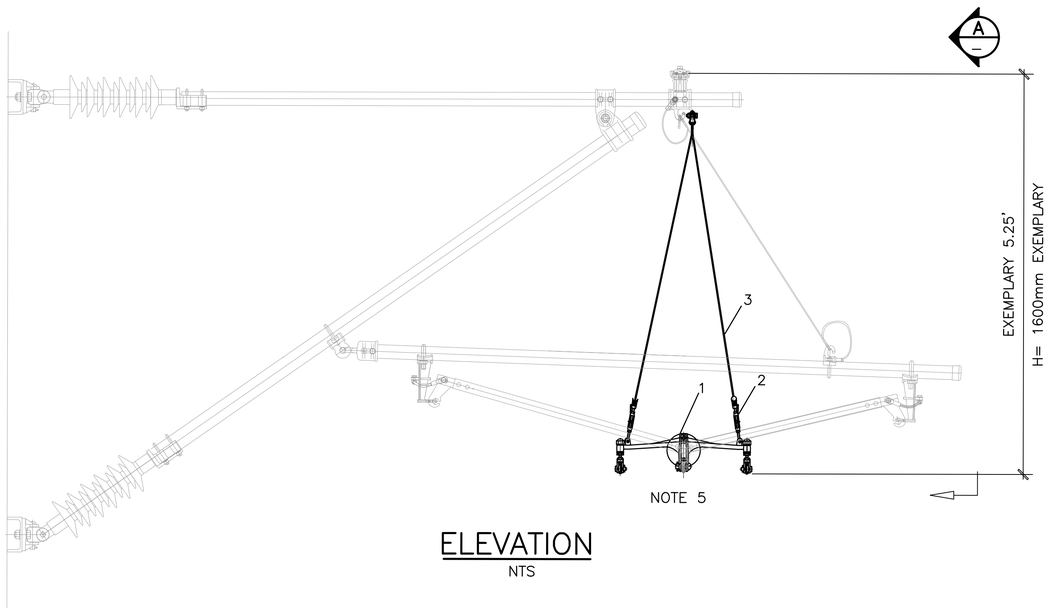
STANDARD DRAWING NO.: SD–W6925



(CANTILEVER NOT SHOWN FOR CLARITY)

VIEW A

NTS



ELEVATION

NTS

NOTES:

1. ACCORDING TO DETAIL DESIGN.
2. CW STIFFENER EXCLUDED.
3. FOR DETAILED JUMPER ARRANGEMENT, REFER SWITCHING DETAIL DESIGN.
4. REFER SD-W6925 FOR DETAILS
5. SECTION INSULATOR SHOWN FOR INFORMATION ONLY. SEE SD-W6338 FOR DETAILS

	FOR EXTENDED BRIDLE WIRE						
–	A						
	1	COMPRESSION SPLICE F. WIRE 10MM² (D=4.5MM)	E-CUF20	9			
	1	THIMBLE FOR WIRE 10X49	A2	8	DIN 43154		
	1	CLIP FOR 70MM²	BZ II	7	DIN 48300		
	1	DROPPER CLAMP FOR MW 70MM²	A2	6			
	2	MW TERMINATION CLAMP		5			
	1	CUT-IN INSULATOR FOR MW		4			
	1	COPPER WIRE ø4MM (LENGTH AS NEEDED)	E-CU F31	3			
	2	TURN BUCKLE MB	G-CUSN	2			
	1	SECTION INSULATOR 25kV (NOTE 2)		1			
PIECES		DESCRIPTION	MATERIAL	PART	DWG-NO/STANDARD		REMARKS/ID-NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

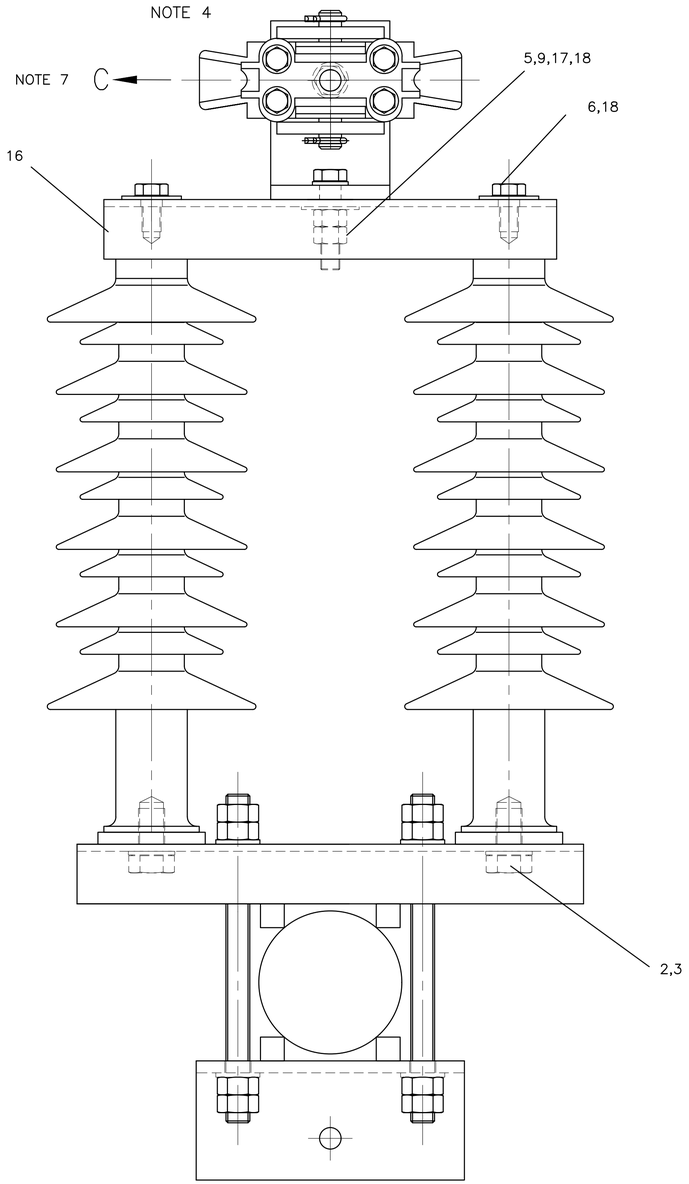
SECTION INSULATOR 25kV
WITH SUSPENSION SI-07
FOR SRC WITH EXTENDED BRIDLE WIRE

CADD FILE NAME: SD-W6926

REV: | EDITION: SECOND

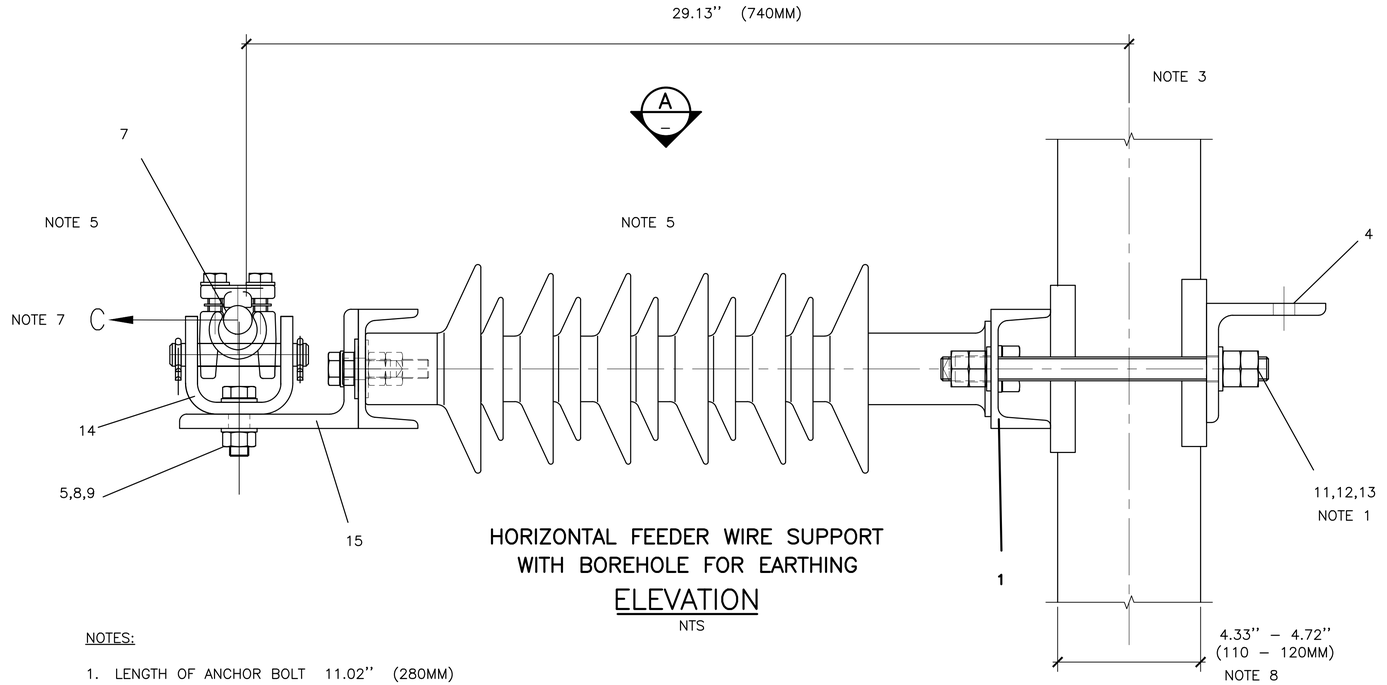
SCALE: NTS

STANDARD DRAWING NO.: SD-W6926



HORIZONTAL FEEDER WIRE SUPPORT
DOUBLE INSULATOR
WITH BOREHOLE FOR EARTHING

A – PLAN
NTS



HORIZONTAL FEEDER WIRE SUPPORT
WITH BOREHOLE FOR EARTHING

ELEVATION
NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 11.02'' (280MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DROP TUBE NOT IN THE SCOPE OF OCS BASIC DESIGN – FINAL DIMENSIONING OF THE DROP TUBE BY CONTRACTOR
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
6. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
7. DROP TUBE DIAMETER ACCORDING TO DRAWING SD–W6104 / SD–W6105 ø4.33'' – 4.72'' (110–120MM)

B	A					
–	3	WASHER M16 (LARGE)	200HV NO.2	18	DIN EN ISO 7093	
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	17	DIN EN ISO 4017	
–	1	U–PROFILE 100		16		
–	1	SUPPORT ANGLE		15		PART 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		14		
–	4	WASHER M20	200HV NO.2	13	ISO 7089	
–	2	STUD BOLT M20	8.8 NOTE2	12	DIN 976–1	NOTE 1
–	8	NUT M20	8 NOTE2	11	DIN EN ISO 4032	
–	2	INSULATOR		10		
–	3	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 6
–	1	FEEDER WIRE CLAMP	G–AL	7		
–	2	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 6
–	3	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	1	BACK ANGLE WITH BOREHOLE		4		
–	2	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	2	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	1	INSULATOR CONNECTION PART		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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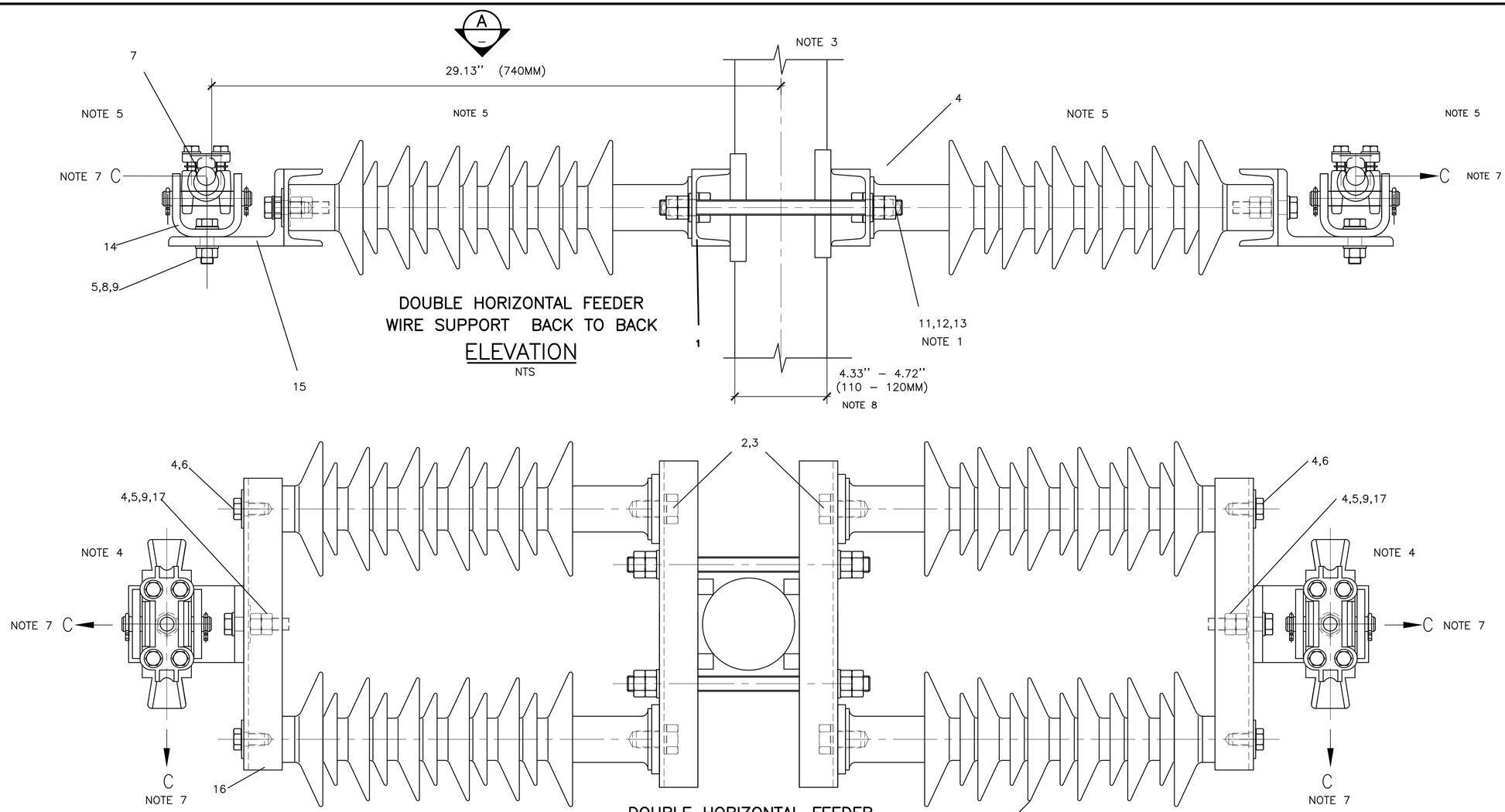
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HORIZONTAL FEEDER WIRE SUPPORT WITH DOUBLE INSULATOR AT TUBE ø110–120MM (4.33"–4.72")

CADD FILE NAME: SD–W6929
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6929



DOUBLE HORIZONTAL FEEDER
WIRE SUPPORT BACK TO BACK
ELEVATION
NTS

DOUBLE HORIZONTAL FEEDER
WIRE SUPPORT BACK TO BACK
A – PLAN
NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 12.6'' (320MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DROP TUBE NOT IN THE SCOPE OF OCS BASIC DESIGN – FINAL DIMENSIONING OF THE DROP TUBE BY CONTRACTOR
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS AT THE SITE AND PROPOSE THE COMPONENTS.
8. DROP TUBE DIAMETER ACCORDING TO DRAWING SD–W6104 / SD–W6105 ø4.33'' – 4.72'' (110–120MM)

B	A					
–	4	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	17	DIN EN ISO 4017	
–	4	U–PROFILE 100		16		
–	4	SUPPORT ANGLE		15		PART 4
–	4	BRACKET FOR FEEDER WIRE CLAMP		14		
–	4	WASHER M20	200HV NO.2	13	ISO 7089	
–	2	STUD BOLT M20	8.8 NOTE2	12	DIN 976–1	NOTE 1
–	8	NUT M20	8 NOTE2	11	DIN EN ISO 4032	
–	4	INSULATOR		10		
–	6	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	2	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 6
–	2	FEEDER WIRE CLAMP	G–AL	7		
–	4	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 6
–	6	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	6	WASHER M16 (LARGE)	200HV NO.2	4	DIN EN ISO 7093	
–	4	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	4	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	2	INSULATOR CONNECTION PART		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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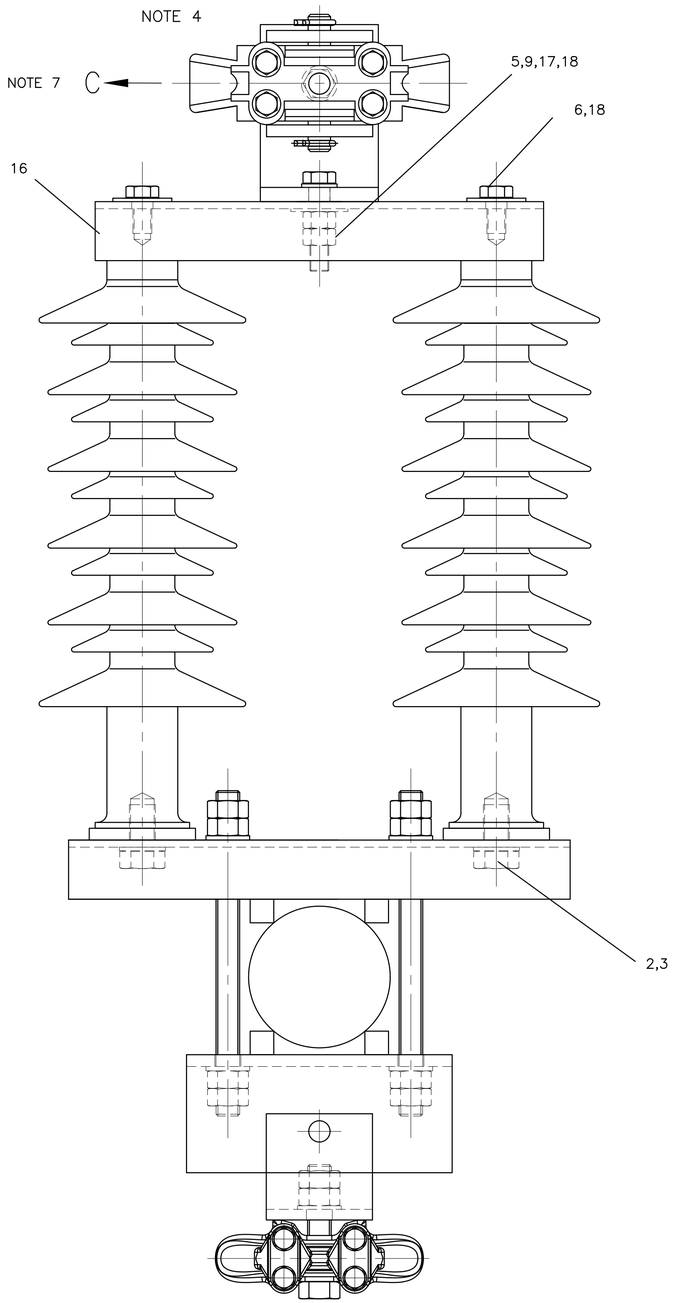
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

HORIZONTAL FEEDER WIRE SUPPORT BACK TO BACK, DOUBLE INSULATOR AT TUBE ø110–120MM (4.33"–4.72")

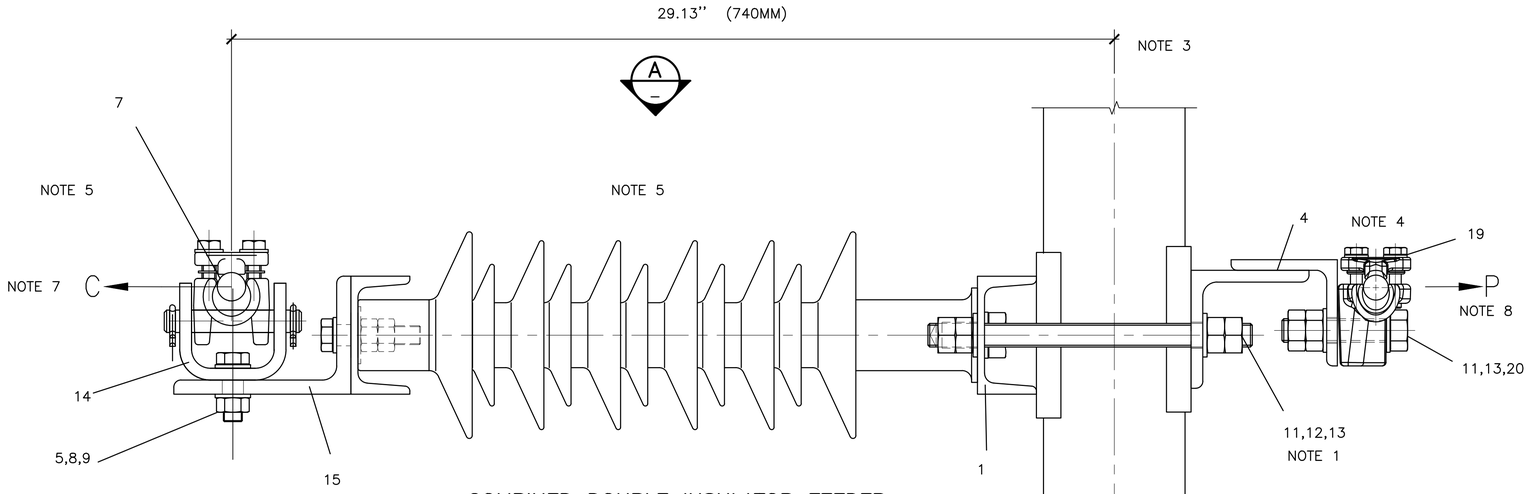
CADD FILE NAME: SD–W6930
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6930



COMBINED DOUBLE INSULATOR FEEDER
WIRE SUPPORT WITH STATIC WIRE

A – PLAN

NTS



COMBINED DOUBLE INSULATOR FEEDER
WIRE SUPPORT WITH STATIC WIRE

ELEVATION

NTS

NOTES:

1. LENGTH OF ANCHOR BOLT 11.02'' (280MM)
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. DROP TUBE NOT IN THE SCOPE OF OCS BASIC DESIGN – FINAL DIMENSIONING OF THE DROP TUBE BY CONTRACTOR
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. M16x50: M0.629''x1.969''
   M16x35: M0.629''x1.378''
   M22x35: M0.866''x1.378''
7. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
8. DROP TUBE DIAMETER ACCORDING TO DRAWING SD–W6104 / SD–W6105 ø4.33'' – 4.72'' (110–120MM)

B	A					
–	1	HEX. HEAD SCREW M20x100	8.8 NOTE2	20	ISO 4017	NOTE 6
–	1	ELECTRICAL CLAMP FOR STATIC WIRE		19	B681011AX	
–	3	WASHER M16 (LARGE)	200HV NO.2	18	DIN EN ISO 7093	
–	1	HEXAGON HEAD SCREW M16x70	8.8 NOTE 2	17	DIN EN ISO 4017	
–	1	U–PROFILE 100		16		
–	1	SUPPORT ANGLE		15		PART 4
–	1	BRACKET FOR FEEDER WIRE CLAMP		14		
–	6	WASHER M20	200HV NO.2	13	ISO 7089	
–	2	STUD BOLT M20	8.8 NOTE2	12	DIN 976–1	NOTE 1
–	10	NUT M20	8 NOTE2	11	DIN EN ISO 4032	
–	2	INSULATOR		10		
–	3	NUT M16	8 NOTE2	9	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	8	DIN EN ISO 4017	NOTE 6
–	1	FEEDER WIRE CLAMP	G–AL	7		
–	2	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	6	DIN EN ISO 4017	NOTE 6
–	3	WASHER M16	200HV NO.2	5	DIN EN ISO 7089	
–	1	BACK ANGLE WITH EARTH ANGLE		4		
–	2	HEXAGON HEAD SCREW M22x35	8.8 NOTE2	3	DIN EN ISO 4017	NOTE 6
–	2	WASHER FOR M22	200HV NO.2	2	DIN EN ISO 7089	
–	1	INSULATOR CONNECTION PART		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

COMBINED FEEDER WIRE SUPPORT
STATIC WIRE & DOUBLE FW INSULATOR
TUBE ø110–120MM (4.33"–4.72")

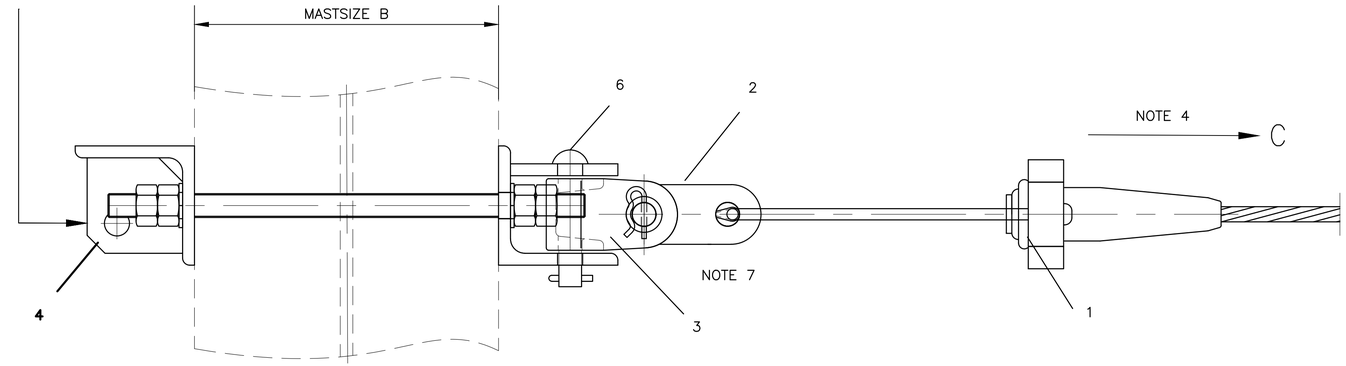
CADD FILE NAME: SD–W6931

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6931

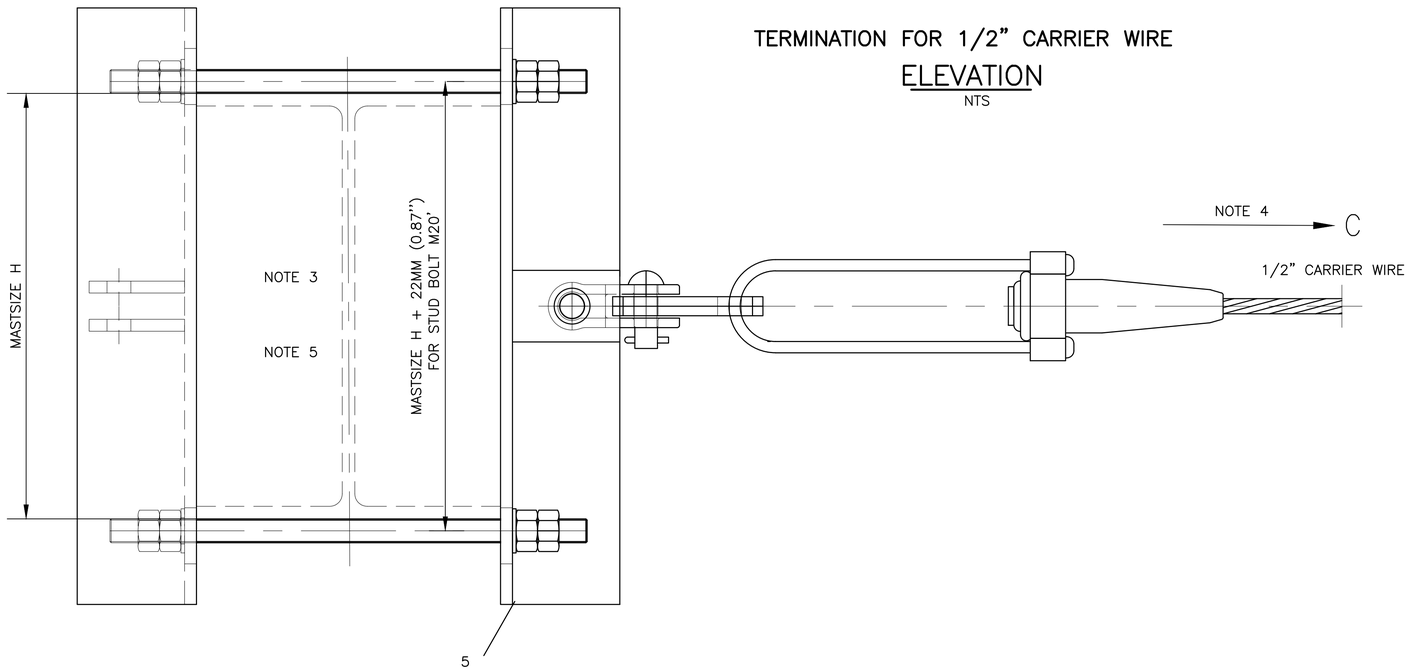
CONNECTION FOR BACKSTAY ANCHOR, IF NECESSARY ACC. TO DETAIL DESIGN



TERMINATION FOR 1/2" CARRIER WIRE

ELEVATION

NTS



TERMINATION FOR 1/2" CARRIER WIRE

PLAN

NTS

LENGTH OF PARTS ACC. TO MASTSIZE

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF POLE
2. CHOICE OF BACKSTAY DEPENDS ON DETAIL DESIGN, IF NECESSARY
3. POLE ORIENTATION ACC: TO DETAIL DESIGN
4. MAXIMUM WORKING LOAD: FORCE C = 7048 LBF (31.35 KN)
5. ARRANGEMENT FOR ROUND POLE NOT SHOWN
6. UNIVERSAL STRANDVISE TO CATALOG NUMBER 5204 FROM MACLEAN POWER SYSTEM. TO BE ARRANGE FROM LOCAL SUPPLIER.
7. FOR THIS ASSEMBLY, USE PART 2 THAT ALLOWS FOR A THIMBLE TO BE INSTALLED BETWEEN PART 1 AND PART 2 TO PREVENT STANDVISE BAIL WEAR OR USE A FORKED COLLAR SOCKET FOR THIS APPLICATION
8. LOADING IS BASED ON THE EXISTING DESIGN. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.

PIECES C: WITHOUT BACKSTAY / ROUND POLE	PIECES B: WITHOUT BACKSTAY / RECTANGULAR MAST	PIECES A: WITH BACKSTAY / RECTANGULAR MAST	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
1	1	1	PIN ø19X100 WITH 8–SPLINT PIN	A2	6		
1	1	1	BRACKET FOR FIXED TERMINATION		5	TO BE DEFINED	NOTE 1
–	–	1	BACKSTAY ANCHOR		4		NOTE 2
1	1	1	SWIVEL JOINT		3		
2	2	2	LINK PLATE		2		
1	1	1	TERMINATION CLAMP FOR 1/2" WIRE		1		NOTE 7

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

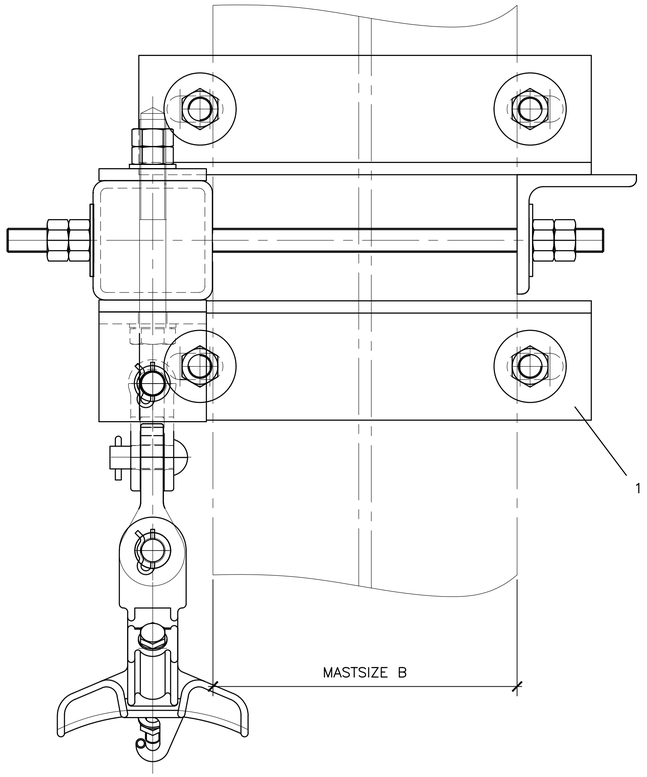
TERMINATION FOR 1/2" CARRIER WIRE AT RECTANGULAR / ROUND POLE FOR INSULATED FEEDER CABLE FT–09

CADD FILE NAME: SD–W6932

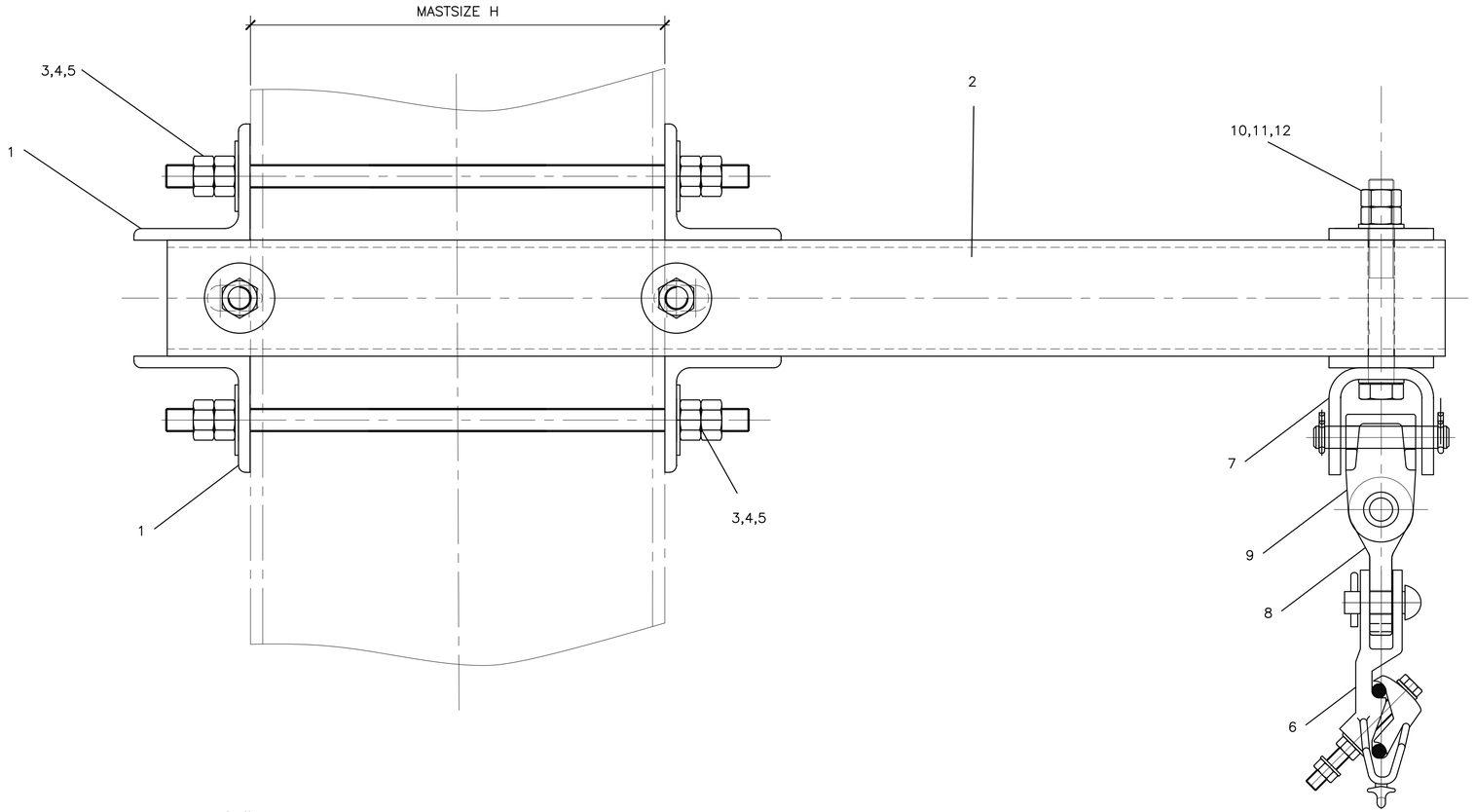
REV: | EDITION: SECOND

SCALE: NTS

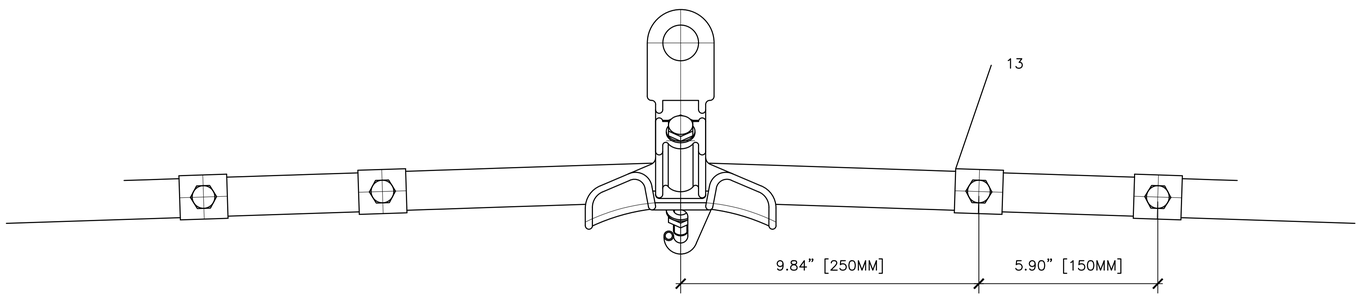
STANDARD DRAWING NO.: SD–W6932



1/2" SS WIRE SUPPORT AT RECTANGULAR MAST
ELEVATION
NTS



1/2" SS WIRE SUPPORT AT RECTANGULAR MAST
A
ELEVATION
NTS



CLAMPING ARRANGEMENT OF 1/2" SS WIRE
ELEVATION
NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. MAXIMUM WORKING LOAD: FORCE C = 1.574 LBF (7.0 KN)
   FORCE C CAN OPERATE IN EVERY HORIZONTAL DIRECTION AND CAN BE A RESULT OUT OF DIFFERENT FORCES (e.g. RADIAL LOAD, WIND LOAD)
5. THE MAXIMUM FW OFFSET LIMIT WITHOUT STRUT TUBE IS 6.5' OFFSET
6. LOADING IS BASED ON THE EXISTING DESIGN. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY.

FOR RECTANGULAR POLE						
B	A					
–	4	PARALLEL GROOVE CLAMP		13		
–	2	WASHER M22	200HV NOTE 2	12	DIN EN ISO 7089	
–	2	NUT M22	8 NOTE 2	11	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M22x175	8.8 NOTE 2	10	DIN EN ISO 4017	
–	1	SWIVEL JOINT		9		
–	1	TWISTED EYE–EYE CONNECTOR		8		
–	1	BRACKET FOR WIRE CLAMP		7		
–	1	SUPPORT CABLE CLAMP	G–AL	6		
–	6	STUD BOLT M20	8.8 NOTE 2	5	DIN 976–1	NOTE 1
–	24	NUT M20	8 NOTE 2	4	DIN EN ISO 4032	
–	12	WASHER FOR M20	200HV NOTE 2	3	DIN EN ISO 7093	
–	1	SUPPORTING STRUCTURE FOR POSTINSULATOR		2		NOTE 1
–	5	BACK ANGLE WITHOUT EARTHING		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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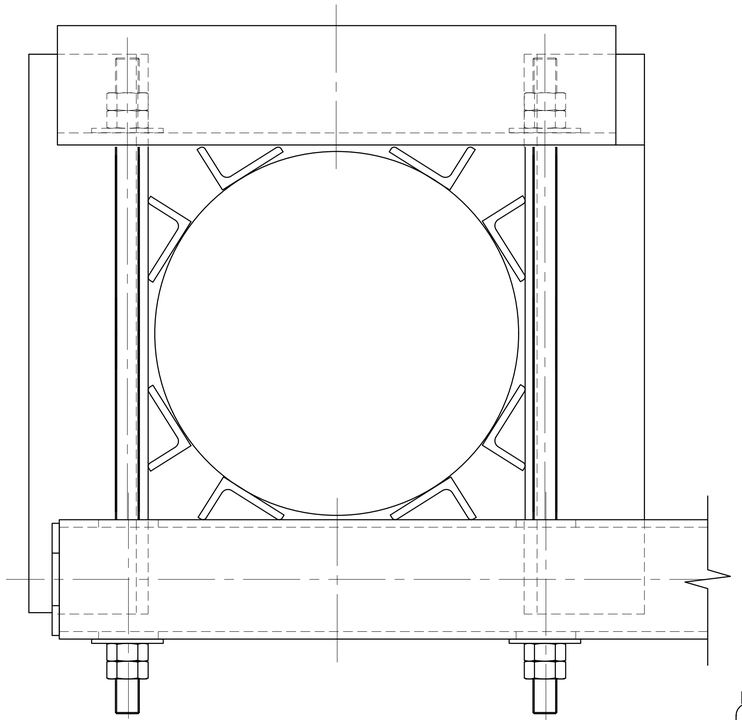
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

1/2" CARRIER WIRE SUPPORT
TO SUPPORT INSULATED FEEDER CABLE
AT RECTANGLE MAST

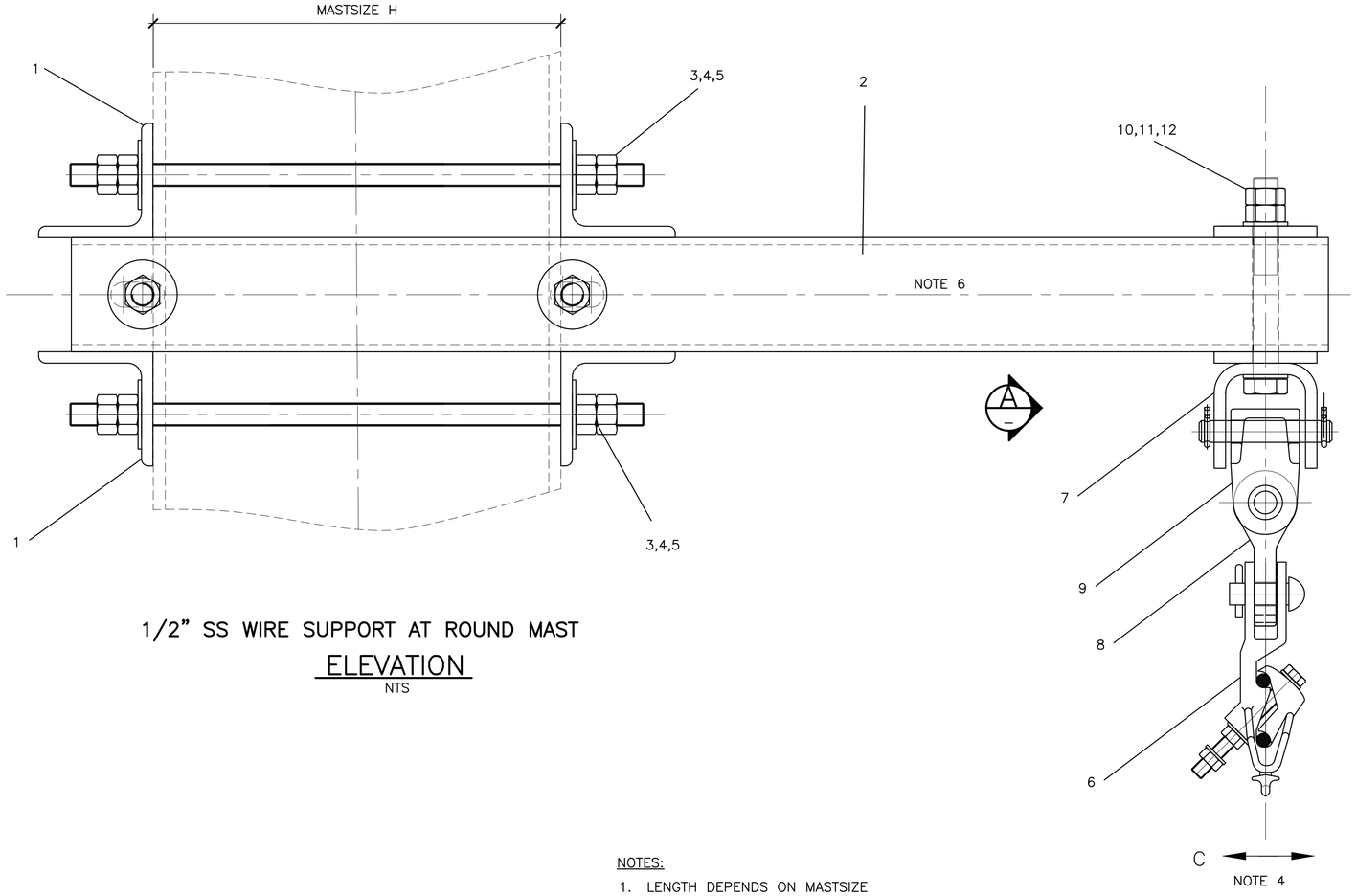
CADD FILE NAME: SD–W6933
REV: EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6933



1/2" SS WIRE SUPPORT AT ROUND MAST

PLAN

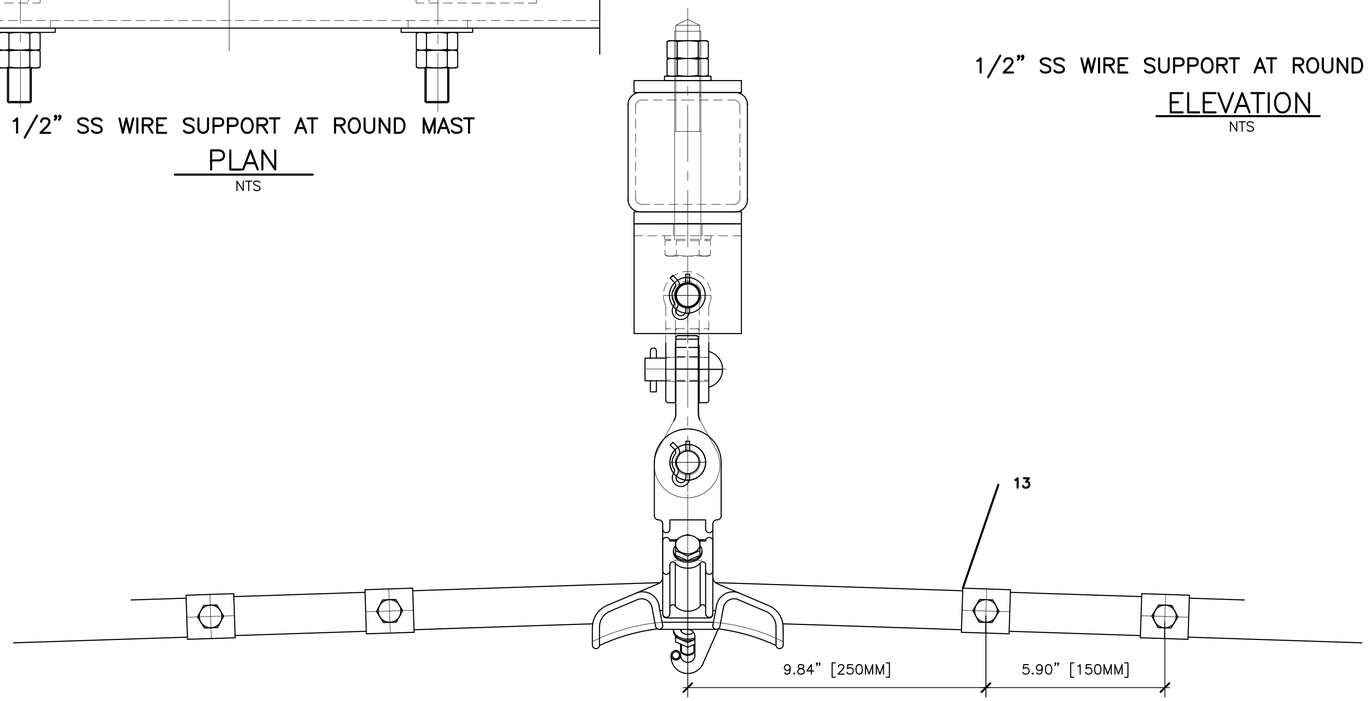
NTS



1/2" SS WIRE SUPPORT AT ROUND MAST

ELEVATION

NTS



CLAMPING ARRANGEMENT OF 1/2" SS WIRE

A – VIEW

NTS

NOTES:

1. LENGTH DEPENDS ON MASTSIZE
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. POLE ORIENTATION ACCORDING TO LAYOUT PLANS
4. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
5. THE MAXIMUM FW OFFSET LIMIT WITHOUT STRUT TUBE IS 6.5' OFFSET

FOR ROUND POLE						
B	A					
–	4	PARALLEL GROOVE CLAMP		13		
–	2	WASHER M22	200HV NOTE 2	12	DIN EN ISO 7089	
–	2	NUT M22	8 NOTE 2	11	DIN EN ISO 4032	
–	1	HEXAGON HEAD SCREW M22x175	8.8 NOTE 2	10	DIN EN ISO 4017	
–	1	SWIVEL JOINT		9		
–	1	TWISTED EYE–EYE CONNECTOR		8		
–	1	BRACKET FOR WIRE CLAMP		7		
–	1	SUPPORT CABLE CLAMP	G–AL	6		
–	6	STUD BOLT M20	8.8 NOTE 2	5	DIN 976–1	NOTE 1
–	24	NUT M20	8 NOTE 2	4	DIN EN ISO 4032	
–	12	WASHER FOR M20	200HV NOTE 2	3	DIN EN ISO 7093	
–	1	SUPPORT STRUCTUR, COMPLETE		2		NOTE 1
–	5	BACK BRACKET FOR CANTILEVER		1		NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

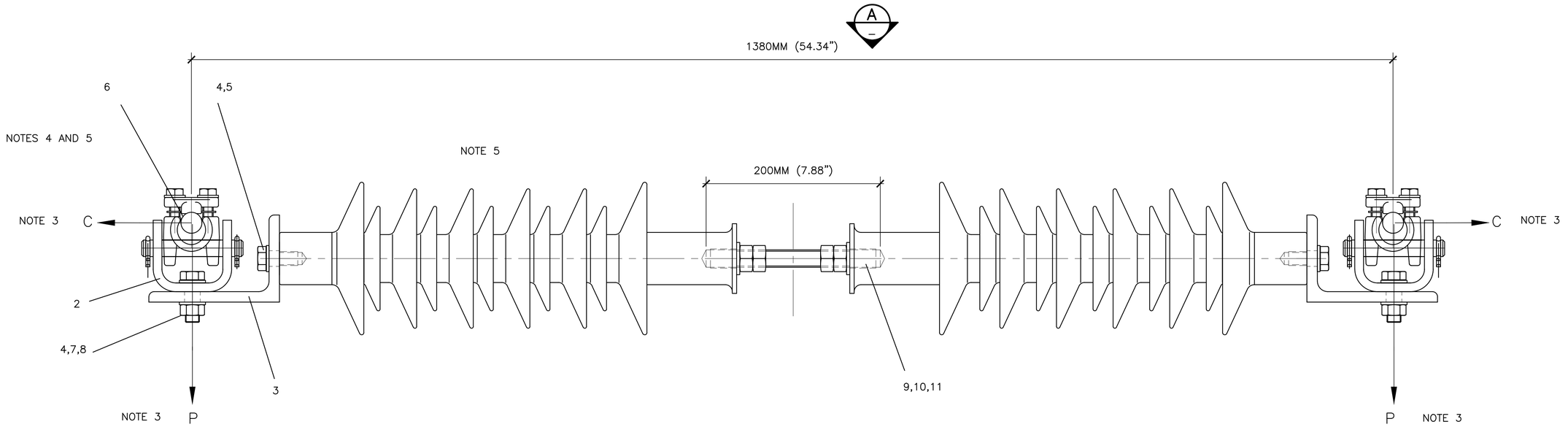
1/2" CARRIER WIRE SUPPORT TO SUPPORT INSULATED FEEDER CABLE AT ROUND MAST

CADD FILE NAME: SD–W6934

REV: SECOND EDITION

SCALE: NTS

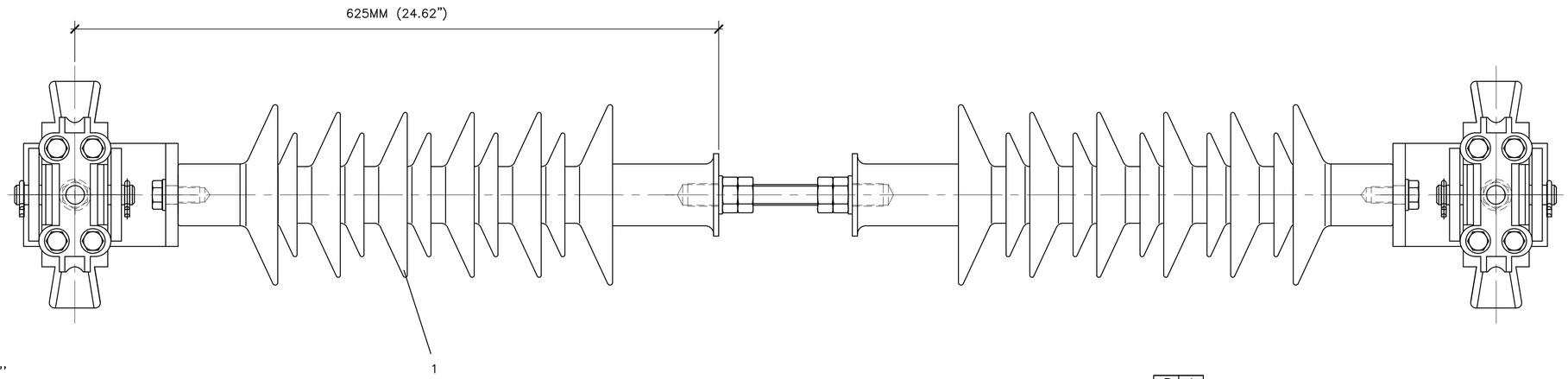
STANDARD DRAWING NO.: SD–W6934



SPACER FOR ACROSS TRACK FEEDER

ELEVATION

NTS



NOTES:

1. M20x200: M0.866"x7.87"
   M16x50: M0.629"x1.969"
   M16x35: M0.629"x1.378"
2. COATING ACC. TO DIN EN ISO 10684–TZN–O
3. FORCE C+P SHALL NOT OVERSTEP (562 LBF) 2.5 KN UNDER USE
4. TURN CLAMP IN CORRECT POSITION
5. CONSIDER NORMAL RECOMMENDED DISTANCE IN AIR – SD–W6006
6. LOADING IS BASED ON THE EXISTING DESIGN. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY

SPACER FOR ACROSS TRACK FEEDER

A – PLAN

NTS

B	A					
–	2	WASHER M20	200HV NO.2	11	ISO 7089	
–	1	STUD BOLT M20x200	8.8 NOTE2	10	DIN 976–1	NOTE 1
–	4	NUT M20	8 NOTE2	9	DIN EN ISO 4032	
–	2	NUT M16	8 NOTE2	8	DIN EN ISO 4032	
–	2	HEXAGON HEAD SCREW M16x50	8.8 NOTE2	7	DIN EN ISO 4017	NOTE 1
–	2	FEEDER WIRE CLAMP	G–AL	6		
–	2	HEXAGON HEAD SCREW M16x35	8.8 NOTE2	5	DIN EN ISO 4017	NOTE 1
–	6	WASHER M16	200HV NO.2	4	DIN EN ISO 7089	
–	2	SUPPORT ANGLE		3		PART 4
–	2	BRACKET FOR FEEDER WIRE CLAMP		2		
–	2	INSULATOR		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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Bin Zhang

DIRECTOR, ENGINEERING

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

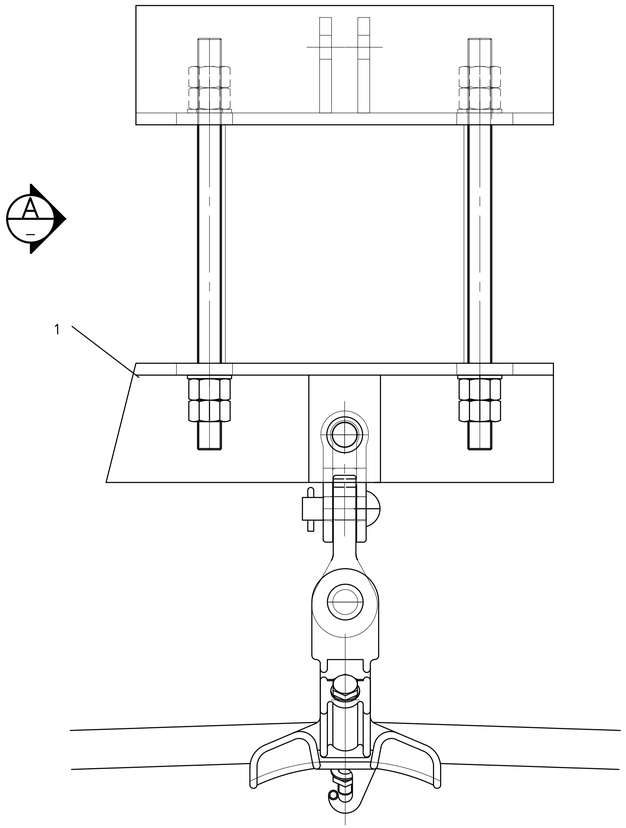
SEPARATOR
FOR CROSS TRACK FEEDER

CADD FILE NAME: SD–W6935

REV: | EDITION: SECOND

SCALE: NTS

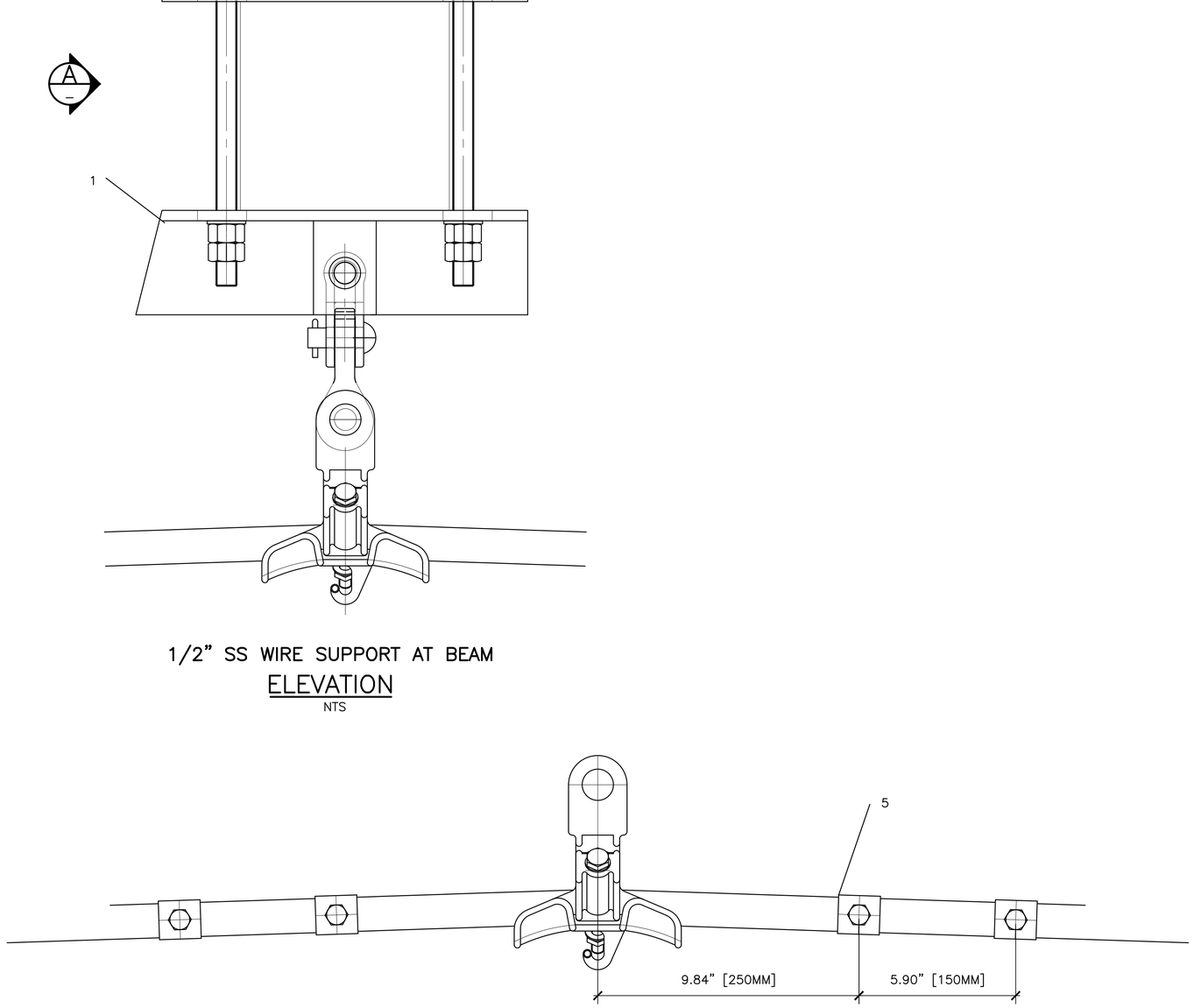
STANDARD DRAWING NO.: SD–W6935



1/2" SS WIRE SUPPORT AT BEAM

ELEVATION

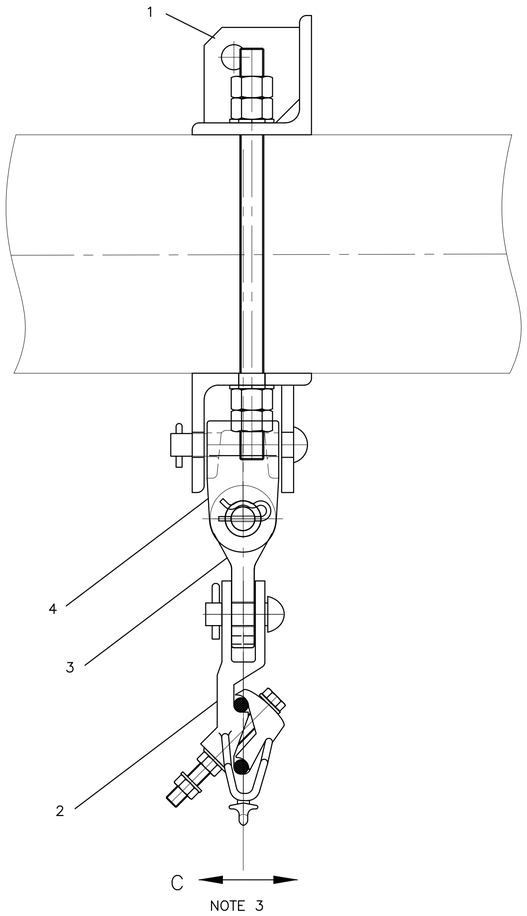
NTS



CLAMPING ARRANGEMENT OF 1/2" SS WIRE

ELEVATION

NTS



NOTE 3

1/2" SS WIRE SUPPORT AT BEAM

A ELEVATION

NTS

NOTES:

1. CHOICE OF BRACKET DEPENDS ON THE TYPE OF BEAM
2. BEAM SIZE ACCORDING TO DETAIL DESIGN.
3. DESIGNER SHALL VERIFY THE LOADING CONDITIONS FOR THE SITE AND PROPOSE THE COMPONENTS ACCORDINGLY
4. TO BE ORGANISED FROM LOCAL SUPPLIER.

B	A					
–	4	PARALLEL GROOVE CLAMP		5	LOCAL SUPPLIER	NOTE 4
–	1	SWIVEL JOINT		4		
–	1	TWISTED EYE–EYE CONNECTOR		3		
–	1	SUPPORT CABLE CLAMP	G–AL	2		
–	1	BRACKET FOR FIXED TERMINATION		1	TO BE DEFINED	NOTE 1
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

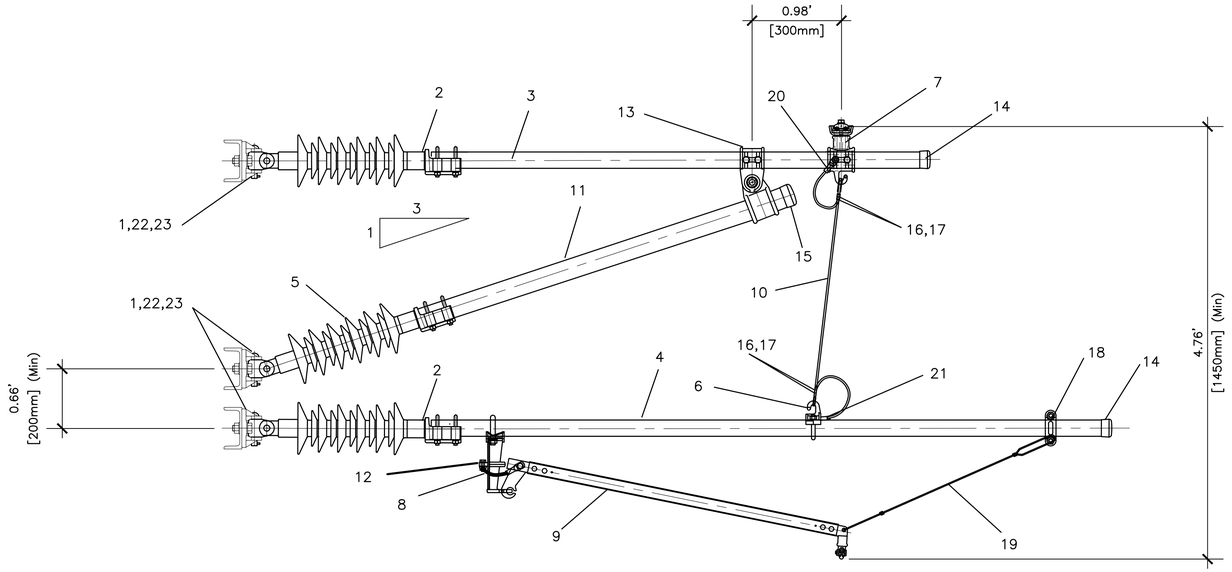
1/2" CARRIER WIRE SUPPORT TO SUPPORT AERIAL FEEDER CABLE AT BEAM

CADD FILE NAME: SD–W6936

REV: | EDITION: SECOND

SCALE: NTS

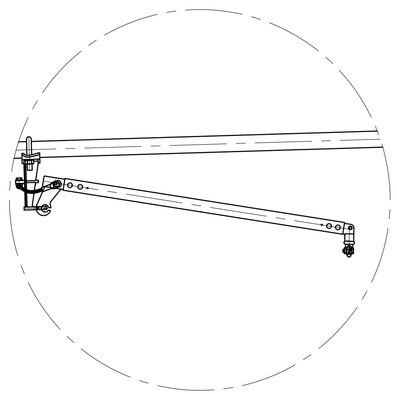
STANDARD DRAWING NO.: SD–W6936



TYPE A – SPLIT CANTILEVER, PULL OFF WITH WINDSTAY

ELEVATION

NTS



TYPE B – SPLIT CANTILEVER, PULL OFF WITHOUT WINDSTAY

ELEVATION

NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. USE FOR STANDARD CANTILEVER , DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.
4. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
5. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.

WITHOUT WINDSTAY	WITH WINDSTAY					
B	A					
3	3	BETA–SPLINT PIN	1.4462	23		
3	3	PIN 19X100	A2	22		
1	1	CABLE LUG 10–25 S	CU TIN–PLATED	21		
1	1	CABLE LUG 12–25 S	CU TIN–PLATED	20		
–	1	WIND STAY FOR STEADY ARM		19		
–	1	EYE CLAMP FOR WIND STAY FOR TUBE ø55		18		
2	2	COMPRESS. SLEEVE B16	A2	17		
2	2	THIMBLE 35	A2	16		
1	1	TUBE CAP ø 70	PVC	15		
2	2	TUBE CAP ø55	PVC	14		
1	1	TUBE CONNECTING BRACKET ø 55 /ø70		13		
1	1	ELECTRICAL CONNECTION		12		
1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	STEADY ARM LENGTH AS USED		9		
1	1	DROP BRACKET FOR ø55		8		
1	1	CATENARY SWIVEL CLAMP FOR ø55	NOTE 3	7		
1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

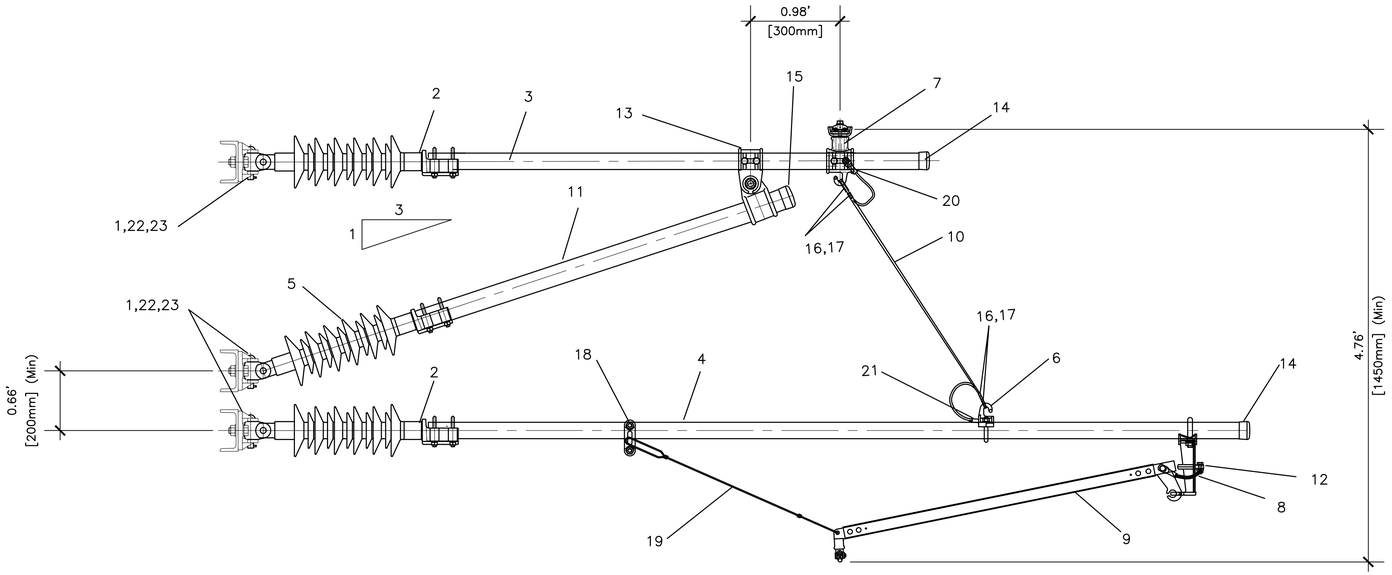
SPLIT CANTILEVER PULL OFF
STANDARD SYSTEM HEIGHT
CA–40

CADD FILE NAME: SD–W6937

REV: | EDITION: SECOND

SCALE: NTS

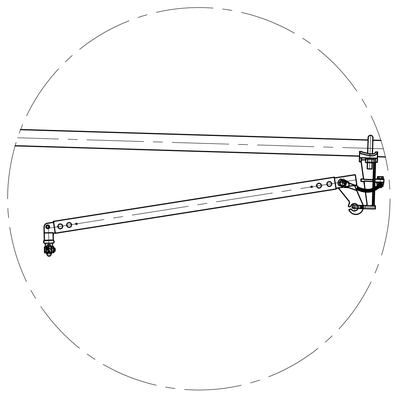
STANDARD DRAWING NO.: SD–W6937



TYPE A – SPLIT CANTILEVER, PUSH OFF WITH WINDSTAY

ELEVATION

NTS



TYPE B – SPLIT CANTILEVER, PUSH OFF WITHOUT WINDSTAY

ELEVATION

NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. USE FOR STANDARD CANTILEVER , DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.
4. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
5. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.

WITHOUT WINDSTAY	WITH WINDSTAY					
B	A					
3	3	BETA–SPLINT PIN	1.4462	23		
3	3	PIN 19X100	A2	22		
1	1	CABLE LUG 10–25 S	CU TIN–PLATED	21		
1	1	CABLE LUG 12–25 S	CU TIN–PLATED	20		
–	1	WIND STAY FOR STEADY ARM		19		
–	1	EYE CLAMP FOR WIND STAY FOR TUBE ø55		18		
2	2	COMPRESS. SLEEVE B16	A2	17		
2	2	THIMBLE 35	A2	16		
1	1	TUBE CAP ø 70	PVC	15		
2	2	TUBE CAP ø55	PVC	14		
1	1	TUBE CONNECTING BRACKET ø 55 /ø70		13		
1	1	ELECTRICAL CONNECTION		12		
1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	STEADY ARM LENGTH AS USED		9		
1	1	DROP BRACKET FOR ø55		8		
1	1	CATENARY SWIVEL CLAMP FOR ø55	NOTE 3	7		
1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

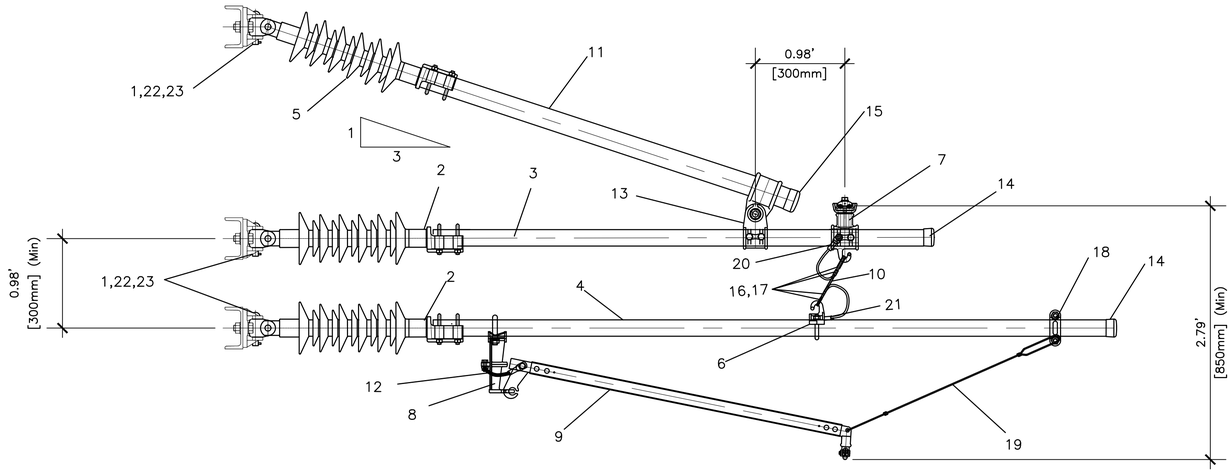
SPLIT CANTILEVER PUSH OFF
STANDARD SYSTEM HEIGHT
CA–41

CADD FILE NAME: SD–W6938

REV: | EDITION: SECOND

SCALE: NTS

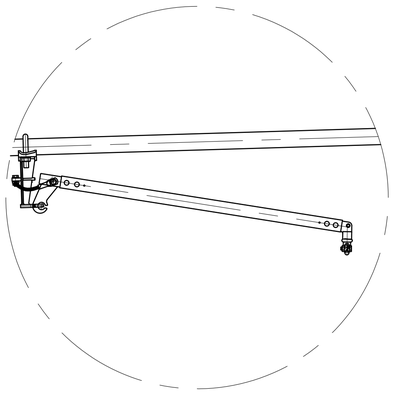
STANDARD DRAWING NO.: SD–W6938



TYPE A – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, PULL OFF WITH WINDSTAY

ELEVATION

NTS



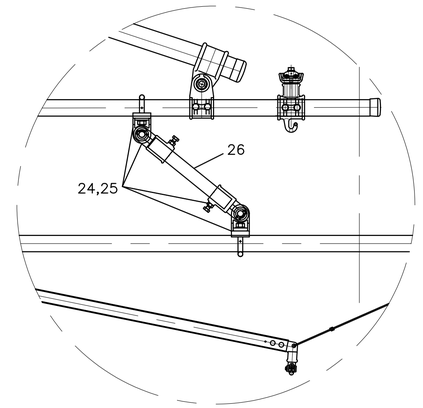
TYPE B – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, PULL OFF WITHOUT WINDSTAY

ELEVATION

NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. USE FOR STANDARD CANTILEVER , DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.
4. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
5. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.
6. TYPE C TO BE USED WHERE NOSE DROPPER CAN NOT BE INSTALLED DUE TO SPACE LIMITATION.



TYPE C – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, PULL OFF, WITH STIFFENING TUBE

ELEVATION

NTS

C	B	A	DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.
1	–	–	TUBE ø42 x 4 LENGTH AS USED	AL	26		
2	–	–	CLEVIS END FITTING FOR TUBE ø42	GAL/A2	25		
2	–	–	EYE CLAMP FOR TUBE ø55	GAL/A2	24		
3	3	3	BETA–SPLINT PIN	1.4462	23		
3	3	3	PIN 19X100	A2	22		
–	1	1	CABLE LUG 10–25 S	CU TIN–PLATED	21		
–	1	1	CABLE LUG 12–25 S	CU TIN–PLATED	20		
1	–	1	WIND STAY FOR STEADY ARM		19		
1	–	1	EYE CLAMP FOR WIND STAY FOR TUBE ø55		18		
–	2	2	COMPRESS. SLEEVE B16	A2	17		
–	2	2	THIMBLE 35	A2	16		
1	1	1	TUBE CAP ø 70	PVC	15		
2	2	2	TUBE CAP ø55	PVC	14		
1	1	1	TUBE CONNECTING BRACKET ø 55 /ø70		13		
1	1	1	ELECTRICAL CONNECTION		12		
1	1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
–	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	1	STEADY ARM LENGTH AS USED		9		
1	1	1	DROP BRACKET FOR ø55		8		
1	1	1	CATENARY SWIVEL CLAMP FOR ø55	NOTE 3	7		
–	1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	3	SWIVEL JOINT		1		
PIECES							

WITH STIFFENING TUBE | WITHOUT WINDSTAY | WITH WINDSTAY

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

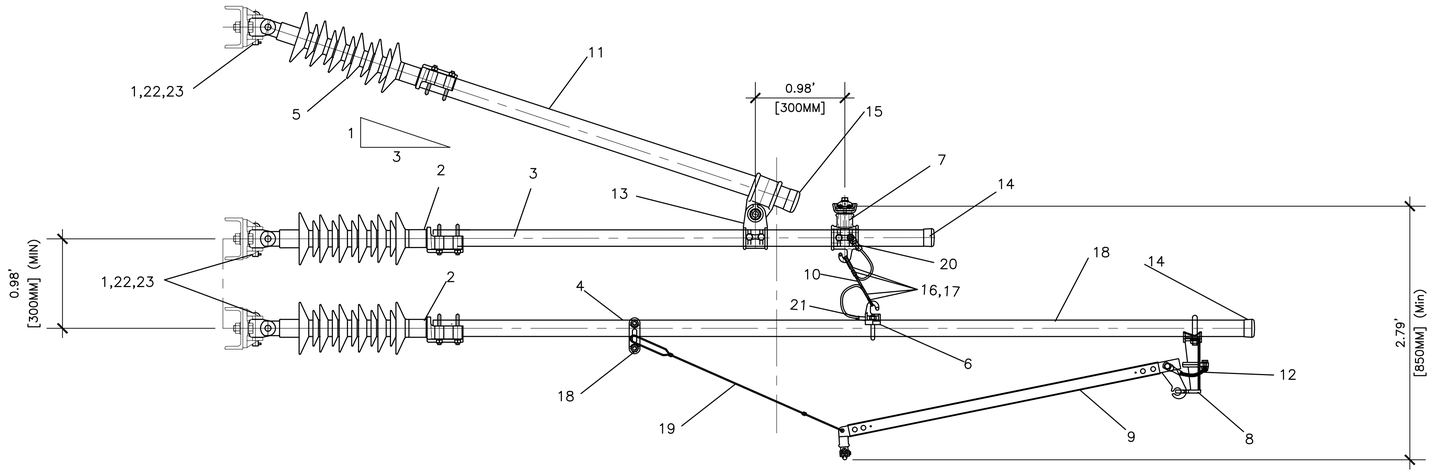
SPLIT CANTILEVER PULL OFF
LOW SYSTEM HEIGHT
CA–42

CADD FILE NAME: SD–W6939

REV: | EDITION: SECOND

SCALE: NTS

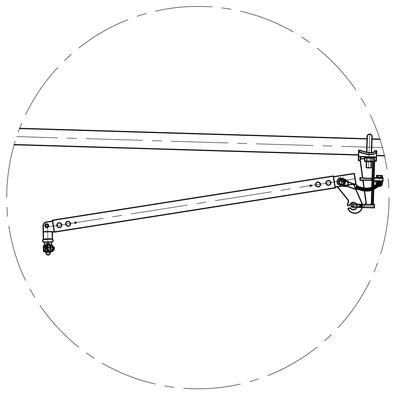
STANDARD DRAWING NO.: SD–W6939



TYPE A – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, PUSH OFF WITH WINDSTAY

ELEVATION

NTS



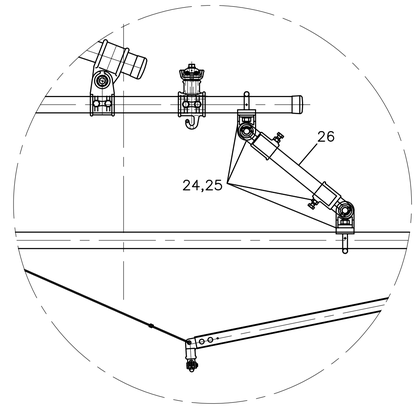
TYPE B – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, PUSH OFF WITHOUT WINDSTAY

ELEVATION

NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. USE FOR STANDARD CANTILEVER , DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT.
4. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
5. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.
6. TYPE C TO BE USED WHERE NOSE DROPPER CAN NOT BE INSTALLED DUE TO SPACE LIMITATION.



TYPE C – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, PUSH OFF, WITH STIFFENING TUBE

ELEVATION

NTS

WITH STIFFENING TUBE	WITHOUT WINDSTAY	WITH WINDSTAY					
C	B	A					
1	–	–	TUBE ø42 x 4 LENGTH AS USED	AL	26		
2	–	–	CLEVIS END FITTING FOR TUBE ø42	GAL/A2	25		
2	–	–	EYE CLAMP FOR TUBE ø55	GAL/A2	24		
3	3	3	BETA–SPLINT PIN	1.4462	23		
3	3	3	PIN 19X100	A2	22		
–	1	1	CABLE LUG 10–25 S	CU TIN–PLATED	21		
–	1	1	CABLE LUG 12–25 S	CU TIN–PLATED	20		
1	–	1	WIND STAY FOR STEADY ARM		19		
1	–	1	EYE CLAMP FOR WIND STAY FOR TUBE ø55		18		
–	2	2	COMPRESS. SLEEVE B16	A2	17		
–	2	2	THIMBLE 35	A2	16		
1	1	1	TUBE CAP ø 70	PVC	15		
2	2	2	TUBE CAP ø55	PVC	14		
1	1	1	TUBE CONNECTING BRACKET ø 55 /ø70		13		
1	1	1	ELECTRICAL CONNECTION		12		
1	1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
–	1	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	1	STEADY ARM LENGTH AS USED		9		
1	1	1	DROP BRACKET FOR ø55		8		
1	1	1	CATENARY SWIVEL CLAMP FOR ø55	NOTE 3	7		
–	1	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	3	SWIVEL JOINT		1		
PIECES			DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SPLIT CANTILEVER PUSH OFF
LOW SYSTEM HEIGHT
CA–43

CADD FILE NAME: SD–W6940

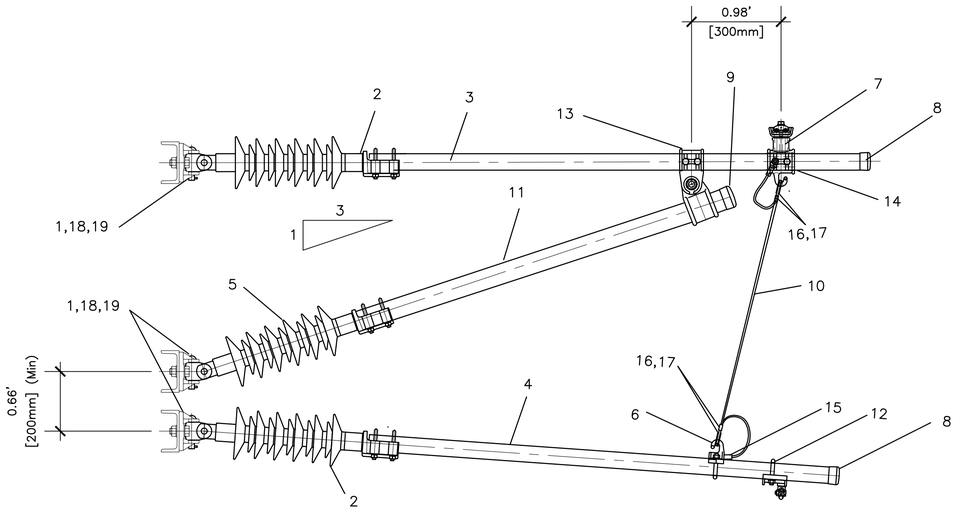
REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6940

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
4. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.



SPLIT CANTILEVER, RUNNING OUT

ELEVATION

NTS

B	A					
	3	BETA–SPLINT PIN	1.4462	19		
	3	PIN 19X100	A2	18		
	2	COMPRESS. SLEEVE B16	A2	17		
	2	THIMBLE 35	A2	16		
	1	CABLE LUG 10–25 S	CU TIN–PLATED	15		
	1	CABLE LUG 12–25 S	CU TIN–PLATED	14		
	1	TUBE CONNECTING BRACKET ø 55 /ø70		13		
	1	CW–HOLDER FOR TUBE ø 55	G–Al	12		
	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
	1	TUBE CAP ø 70	PVC	9		
	2	TUBE CAP ø55	PVC	8		
	1	CATENARY SWIVEL CLAMP FOR ø55		7		
	1	HOOK CLAMP FOR TUBE ø55		6		
	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
	3	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

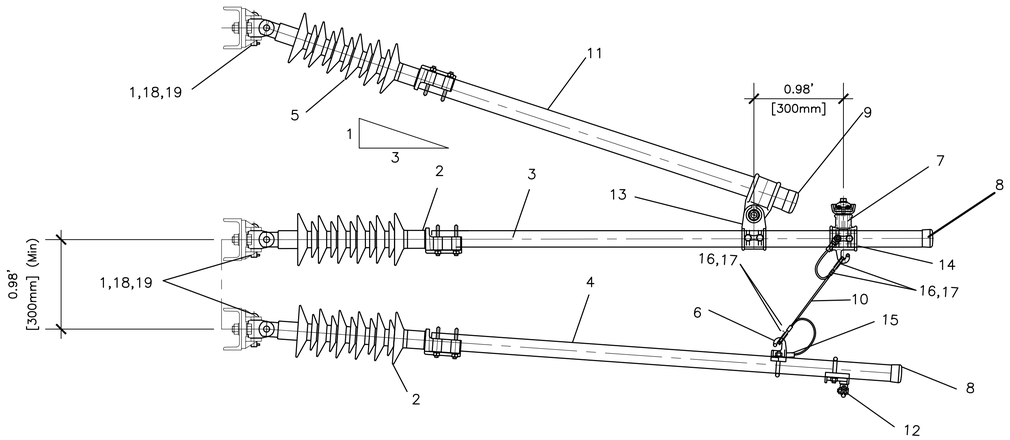
SPLIT CANTILEVER OUT OF RUNNING STANDARD SYSTEM HEIGHT CA–44

CADD FILE NAME: SD–W6941

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W6941



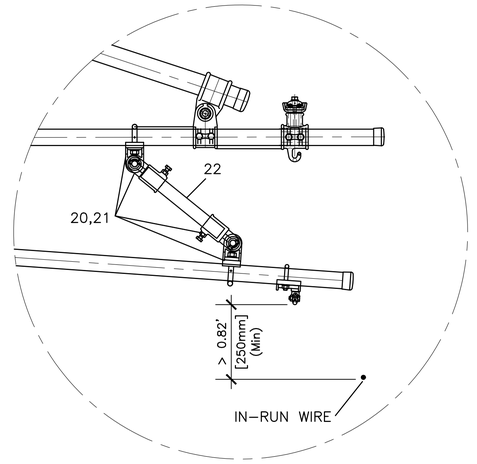
TYPE A – LOW SYSTEM HEIGHT, SPLIT CANTILEVER, RUNNING OUT

ELEVATION

NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
4. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.
5. TYPE B TO BE USED WHERE NOSE DROPPER CAN NOT BE INSTALLED DUE TO SPACE LIMITATION.



TYPE B – SYSTEM HEIGHT, SPLIT CANTILEVER, RUNNING OUT, WITH STIFFENING TUBE

ELEVATION

NTS

WITH STIFFENING TUBE	WITH NOSE DROPPER					
B	A					
1	–	TUBE ø42 x 4 LENGTH AS USED	AL	22		
2	–	CLEVIS END FITTING FOR TUBE ø42	GAL/A2	21		
2	–	EYE CLAMP FOR TUBE ø55	GAL/A2	20		
3	3	BETA–SPLINT PIN	1.4462	19		
3	3	PIN 19X100	A2	18		
–	2	COMPRESS. SLEEVE B16	A2	17		
–	2	THIMBLE 35	A2	16		
–	1	CABLE LUG 10–25 S	CU TIN–PLATED	15		
–	1	CABLE LUG 12–25 S	CU TIN–PLATED	14		
1	1	TUBE CONNECTING BRACKET ø 55 /ø70		13		
1	1	CW–HOLDER FOR TUBE ø 55	G–AI	12		
1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
–	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
1	1	TUBE CAP ø 70	PVC	9		
2	2	TUBE CAP ø55	PVC	8		
1	1	CATENARY SWIVEL CLAMP FOR ø55		7		
–	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SPLIT CANTILEVER OUT OF RUNNING LOW SYSTEM HEIGHT

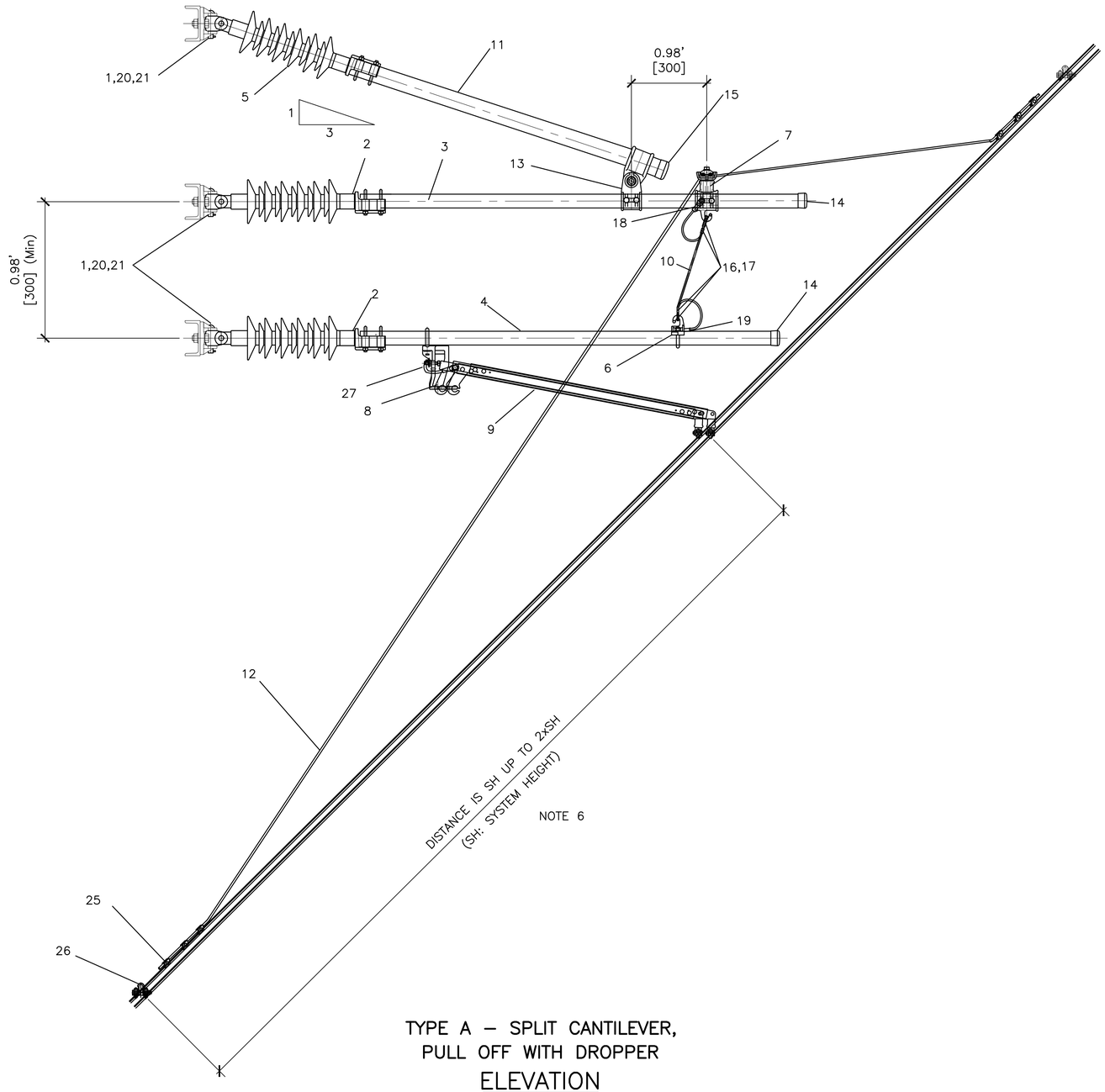
CA–45

CADD FILE NAME: SD–W6942

REV: | EDITION: SECOND

SCALE: NTS

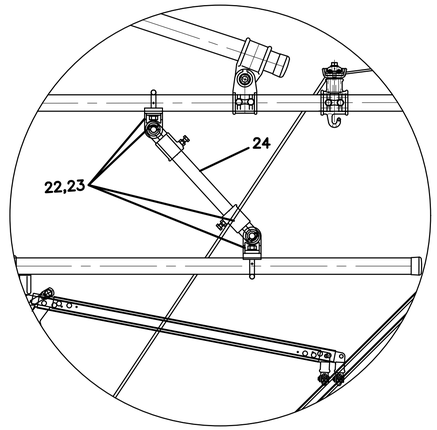
STANDARD DRAWING NO.: SD–W6942



TYPE A – SPLIT CANTILEVER,
PULL OFF WITH DROPPER
ELEVATION
NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. USE FOR STANDARD CANTILEVER , DESIGNER PROPOSE AS REQUIRED FOR MID POINT
4. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
5. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.
6. DISTANCE: SH UP TO 2xSH



TYPE B – SPLIT CANTILEVER,
PULL OFF WITH DIAGONAL TUBE
ELEVATION
NTS

WITH DIAGONAL TUBE	WITH DROPPER					
B	A					
1	1	ELECTRICAL CONNECTION		27		
2	2	DOUBLE CONTACT WIRE CLAMP	A2	26		
6	6	PARALLEL GROOVED CLAMP		25		
1	–	TUBE ø42 x 4 LENGTH AS NEEDED	AL	24		
2	–	CLEVIS END FITTING FOR TUBE ø42	GAL/A2	23		
2	–	EYE CLAMP FOR TUBE ø55	GAL/A2	22		
3	3	BETA–SPLINT PIN	1.4462	21		
3	3	PIN 19X100	A2	20		
–	1	CABLE LUG 10–25 S	CU TIN–PLATED	19		
–	1	CABLE LUG 12–25 S	CU TIN–PLATED	18		
–	2	COMPRESS. SLEEVE B16	A2	17		
–	2	THIMBLE 35	A2	16		
1	1	TUBE CAP ø 70	PVC	15		
2	2	TUBE CAP ø55	PVC	14		
1	1	TUBE CONNECTING BRACKET ø55/ø70		13		
1	1	STANDARD BRONZE WIRE 70/19	BZII	12	DIN 48201	LENGTH AS USED
1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
–	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
2	2	STEADY ARM LENGTH AS USED		9		
1	1	DOUBLE DROP BRACKET COMPLETE		8		
1	1	CATENARY SWIVEL CLAMP FOR ø55	NOTE 3	7		
–	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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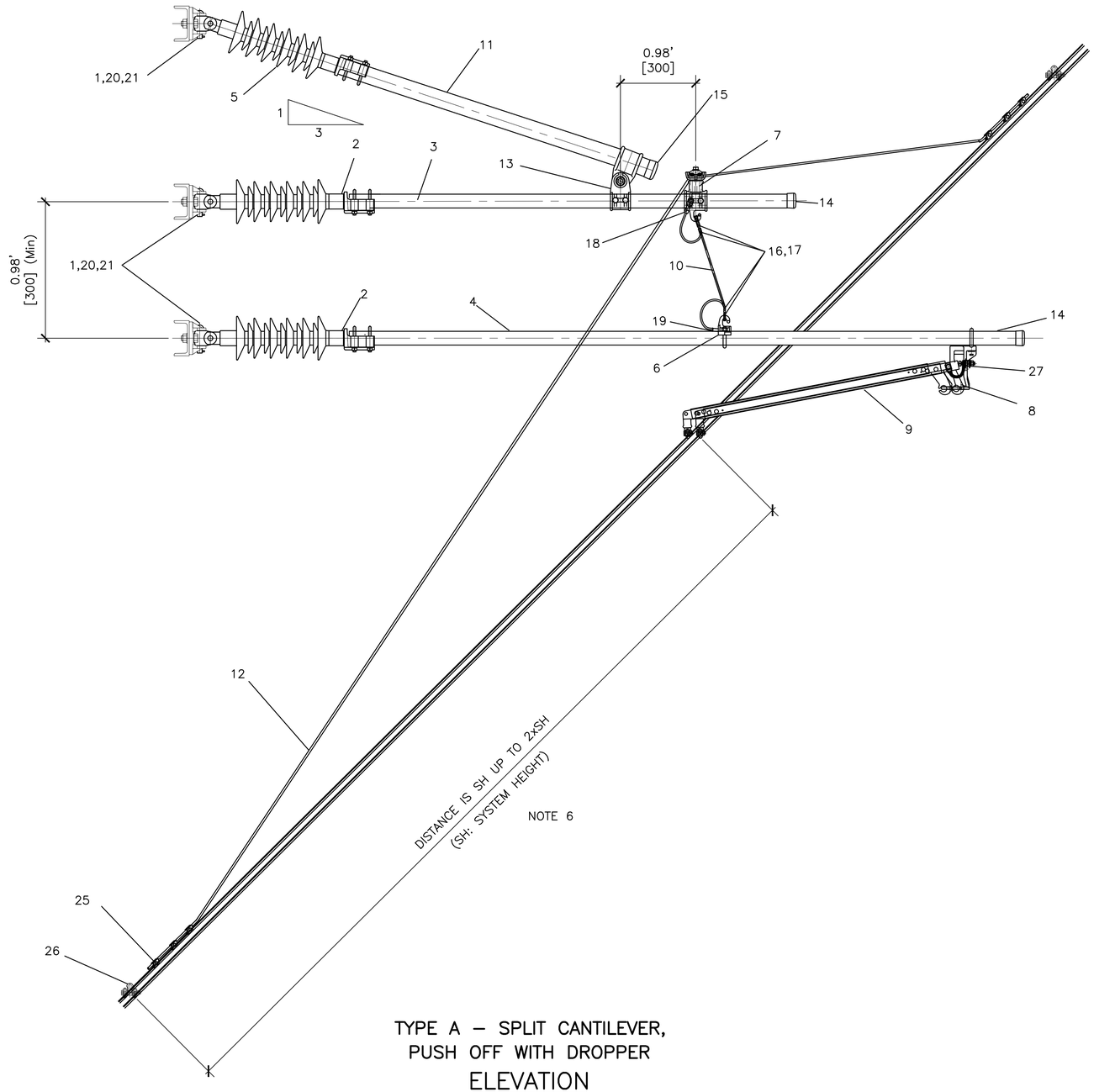
Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONTACT SYSTEM

SPLIT CANTILEVER PULL OFF WITH BRIDLE SUSPENSION AND DOUBLE STEADY ARM / DOUBLE CW CA–46

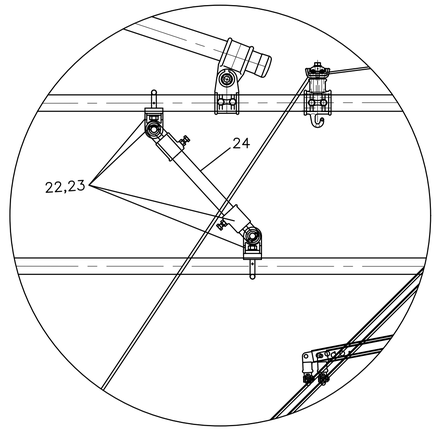
CADD FILE NAME: SD–W6943
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6943



TYPE A – SPLIT CANTILEVER,
PUSH OFF WITH DROPPER
ELEVATION
NTS

NOTES:

1. DIMENSION: FEET / MM.
2. THIS CANTILEVER SHALL ONLY BE USED WHEN THE AVAILABLE OFFSET IS LESS THAN 8'–10" (2700MM).
3. USE FOR STANDARD CANTILEVER , DESIGNER TO PROPOSE AS REQUIRED FOR MID POINT
4. THIS CANTILEVER CAN BE USED WHERE SHORT DROPTUBE REQUIRED TO CLEAR THE DYNAMIC ENVELOPE.
5. ONLY APPLICABLE FOR LOCATIONS WITH DROP TUBES.
6. DISTANCE: SH UP TO 2xSH



TYPE B – SPLIT CANTILEVER,
PUSH OFF WITH DIAGONAL TUBE
ELEVATION
NTS

WITH DIAGONAL TUBE	WITH DROPPER					
B	A					
1	1	ELECTRICAL CONNECTION		27		
2	2	DOUBLE CONTACT WIRE CLAMP	A2	26		
6	6	PARALLEL GROOVED CLAMP		25		
1	–	TUBE ø42 x 4 LENGTH AS NEEDED	AL	24		
2	–	CLEVIS END FITTING FOR TUBE ø42	GAL/A2	23		
2	–	EYE CLAMP FOR TUBE ø55	GAL/A2	22		
3	3	BETA–SPLINT PIN	1.4462	21		
3	3	PIN 19X100	A2	20		
–	1	CABLE LUG 10–25 S	CU TIN–PLATED	19		
–	1	CABLE LUG 12–25 S	CU TIN–PLATED	18		
–	2	COMPRESS. SLEEVE B16	A2	17		
–	2	THIMBLE 35	A2	16		
1	1	TUBE CAP ø 70	PVC	15		
2	2	TUBE CAP ø55	PVC	14		
1	1	TUBE CONNECTING BRACKET ø55/ø70		13		
1	1	STANDARD BRONZE WIRE 70/19	BZII	12	DIN 48201	LENGTH AS USED
1	1	TUBE ø70 X 6 LENGTH AS USED	ALMGSI1F31	11		
–	1	WIRE 6–SE–BK 1570 SZ	STAINLESS STEEL	10		
2	2	STEADY ARM LENGTH AS USED		9		
1	1	DOUBLE DROP BRACKET COMPLETE		8		
1	1	CATENARY SWIVEL CLAMP FOR ø55	NOTE 3	7		
–	1	HOOK CLAMP FOR TUBE ø55		6		
1	1	COMPOSITE INSULATOR EYE/CAP ø70		5		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	4		
1	1	TUBE ø55 X 6 LENGTH AS USED	ALMGSI1F31	3		
2	2	COMPOSITE INSULATOR EYE/CAP ø55		2		
3	3	SWIVEL JOINT		1		
PIECES		DESCRIPTION	MATERIAL	PART	DWG–NO/STANDARD	REMARKS/ID–NO.

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:
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DIRECTOR, ENGINEERING

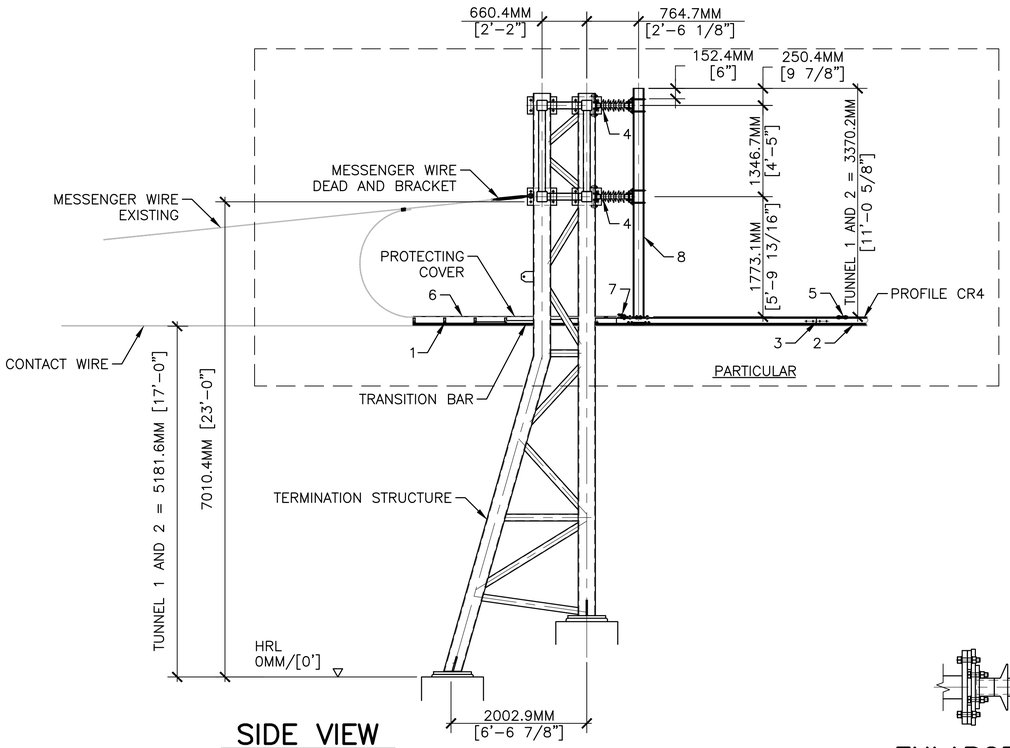
Caltrain

ENGINEERING STANDARD DRAWINGS

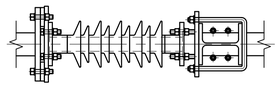
OVERHEAD CONTACT SYSTEM

SPLIT CANTILEVER PUSH OFF WITH BRIDLE SUSPENSION AND DOUBLE STEADY ARM / DOUBLE CW CA–47

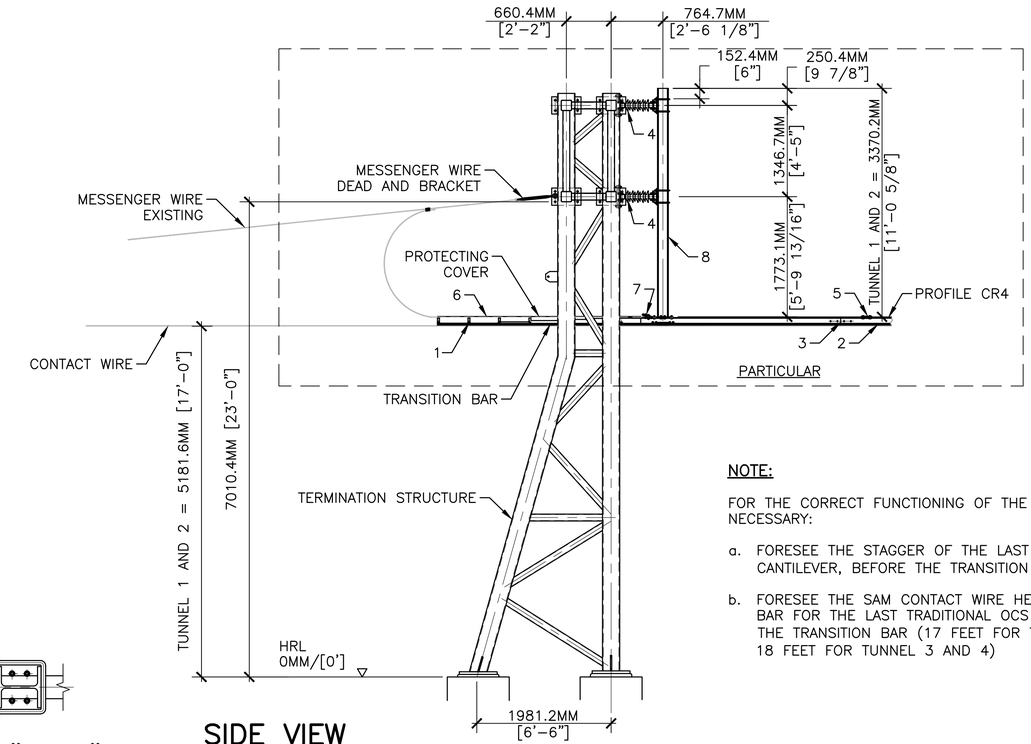
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REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W6944



SIDE VIEW
SCALE: NTS



ENLARGED VIEW "W-W"
SCALE: NTS



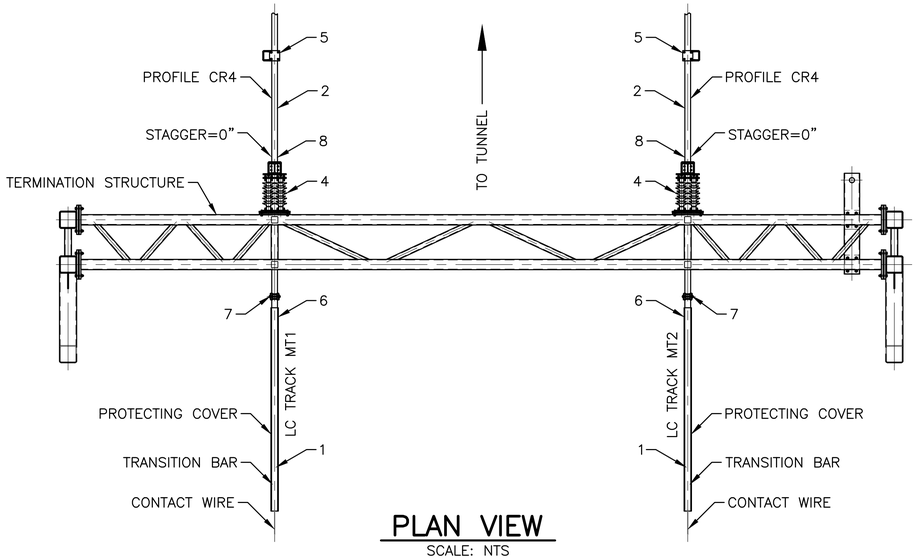
SIDE VIEW
SCALE: NTS

NOTE:

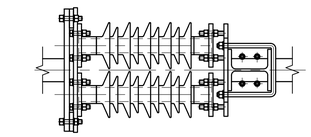
FOR THE CORRECT FUNCTIONING OF THE TRANSITION ZONE IT IS NECESSARY:

a. FORESEE THE STAGGER OF THE LAST TRADITIONAL OCS CANTILEVER, BEFORE THE TRANSITION BAR, AT "0" INCH

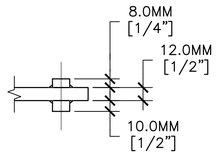
b. FORESEE THE SAM CONTACT WIRE HEIGHT OF TRANSITION BAR FOR THE LAST TRADITIONAL OCS CANTILEVER BEFORE THE TRANSITION BAR (17 FEET FOR TUNNEL 1 AND 2, AND 18 FEET FOR TUNNEL 3 AND 4)



PLAN VIEW
SCALE: NTS

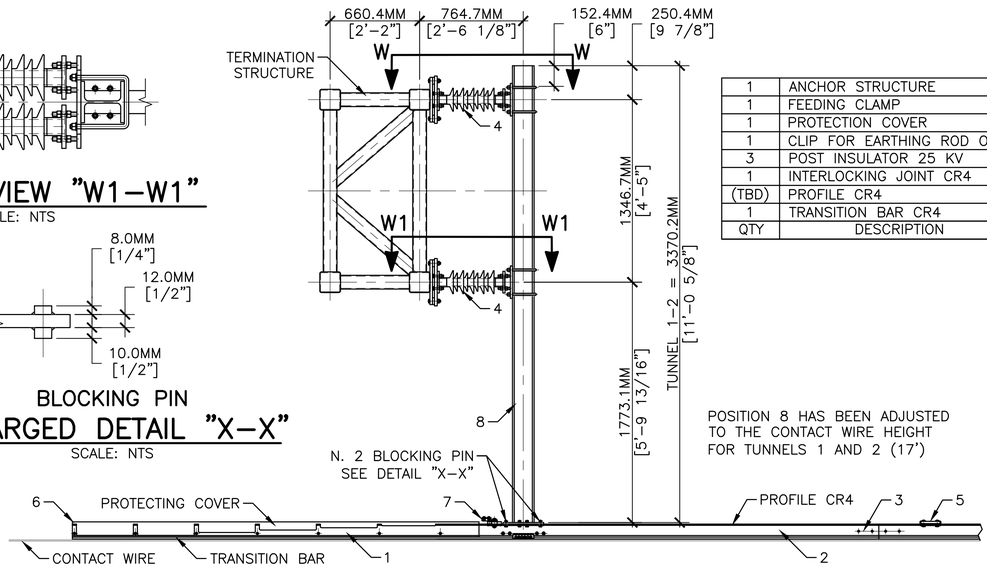


ENLARGED VIEW "W1-W1"
SCALE: NTS



BLOCKING PIN

ENLARGED DETAIL "X-X"
SCALE: NTS



PARTICULAR (ENLARGED VIEW)
SCALE: NTS

QTY	DESCRIPTION	POS.	F+F DRAWING
1	ANCHOR STRUCTURE	8	04640-5.0001-01
1	FEEDING CLAMP	7	04640-5.0013
1	PROTECTION COVER	6	04640-5.0012
1	CLIP FOR EARTHING ROD ON CR4	5	04640-5.0015
3	POST INSULATOR 25 KV	4	04640-5.0009
1	INTERLOCKING JOINT CR4	3	04640-5.0016
(TBD)	PROFILE CR4	2	04640-5.0017
1	TRANSITION BAR CR4	1	04640-5.0002

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

Bin Zhang

DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONDUCTOR RAIL

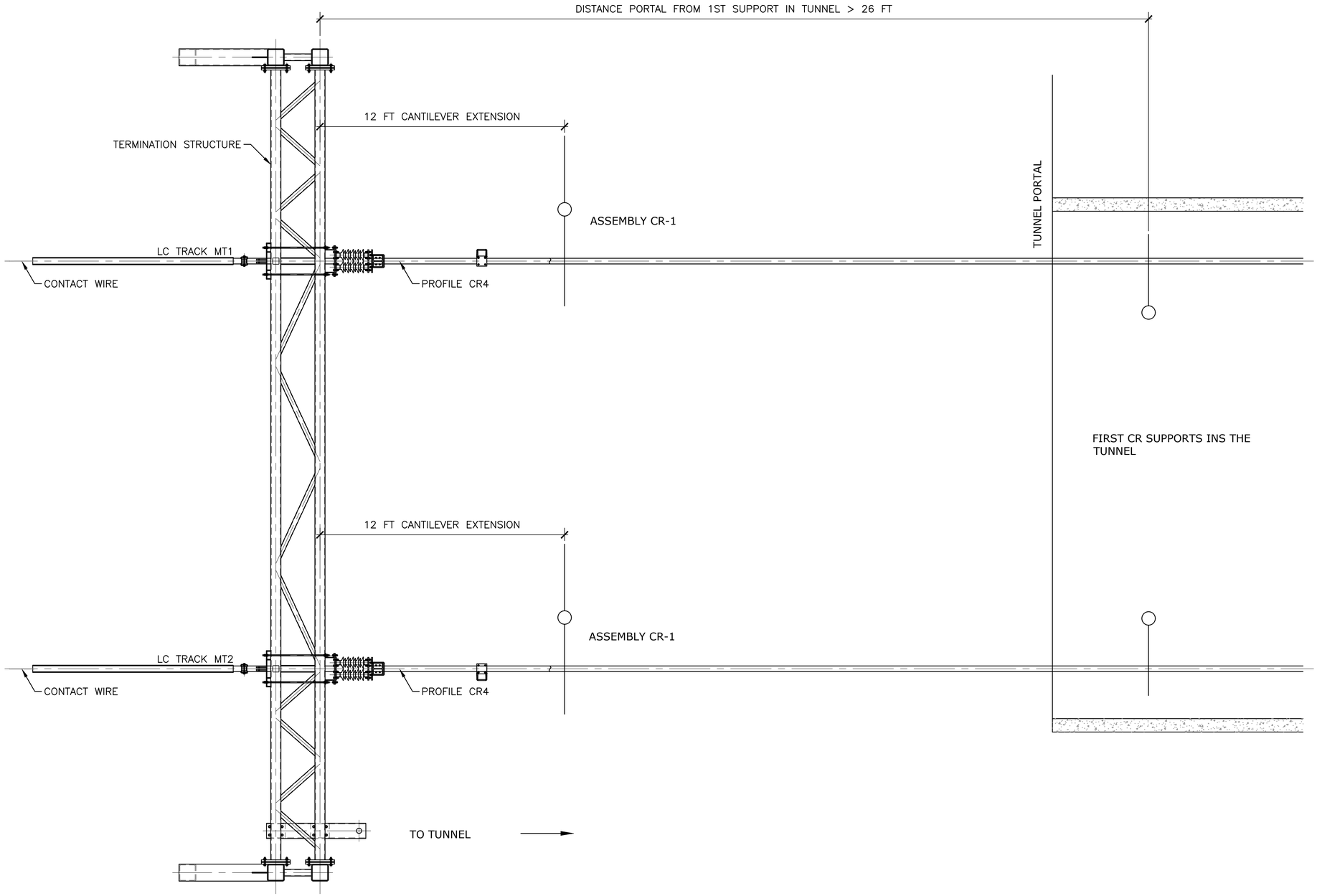
TYPICAL TUNNEL TRANSITION STRUCTURE

CADD FILE NAME: SD-W7001

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W7001



PLAN VIEW

SCALE: NTS

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONDUCTOR RAIL

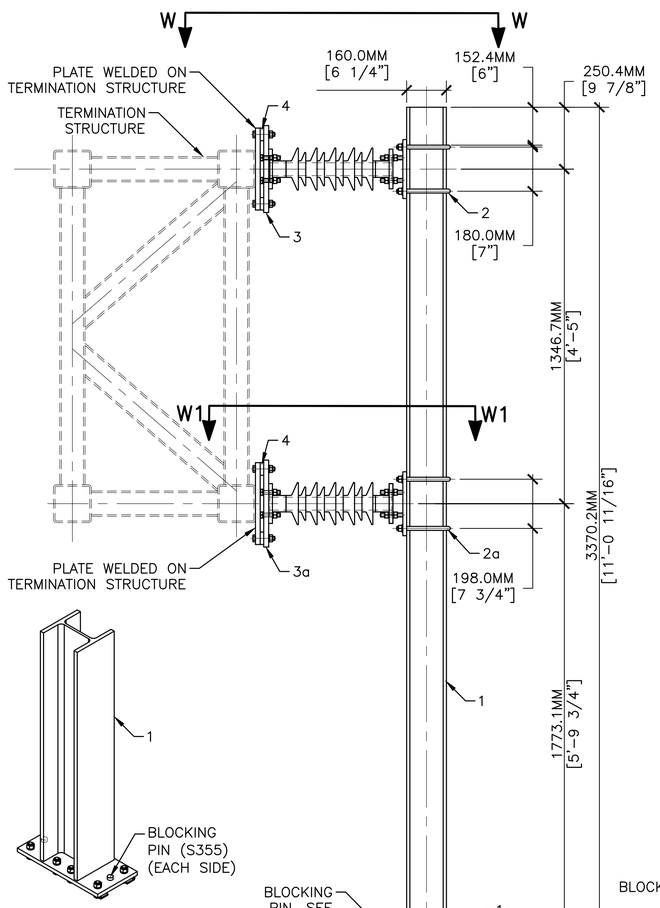
CANTILEVER EXTENSION SUPPORT

CADD FILE NAME: SD–W7002

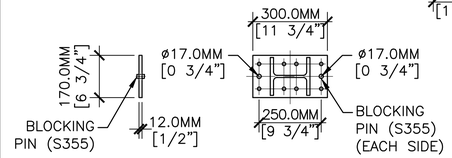
REV: | EDITION: SECOND

SCALE: NTS

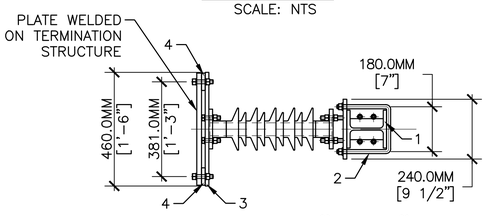
STANDARD DRAWING NO.: SD–W7002



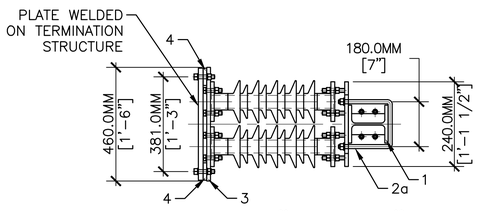
3D VIEW
SCALE: NTS



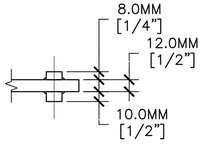
DETAIL
SCALE: NTS



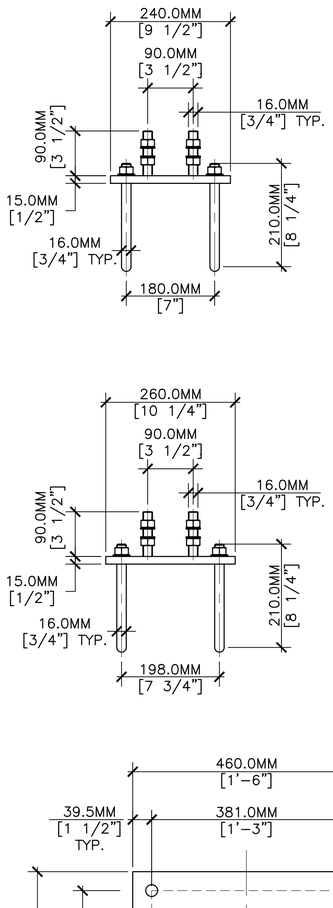
VIEW "W-W"
SCALE: NTS



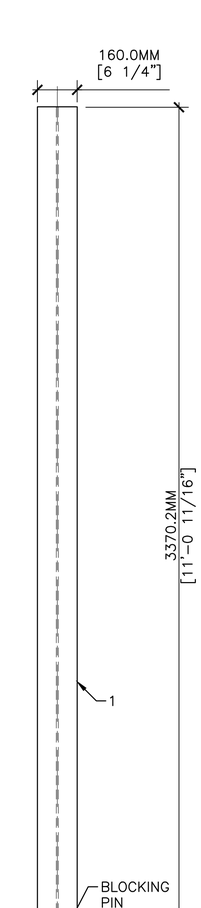
VIEW "W1-W1"
SCALE: NTS

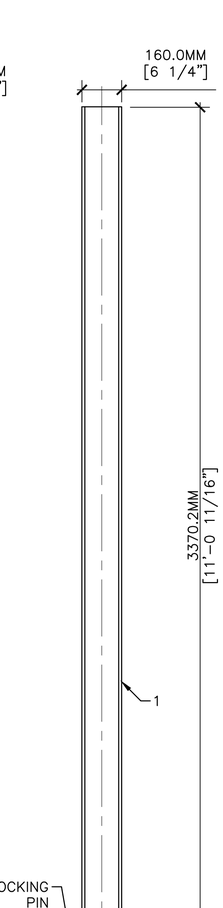


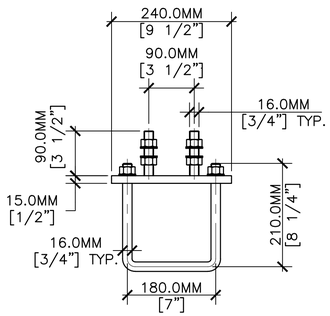
BLOCKING PIN
DETAIL "X-X"
SCALE: NTS

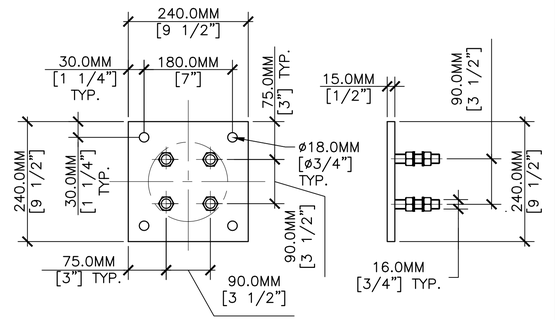


POSITION 1a
SCALE: NTS

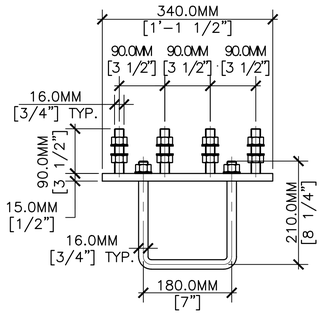


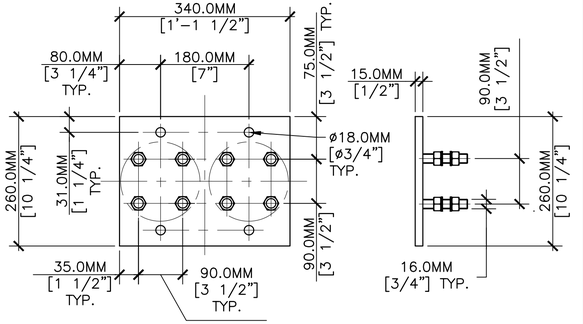




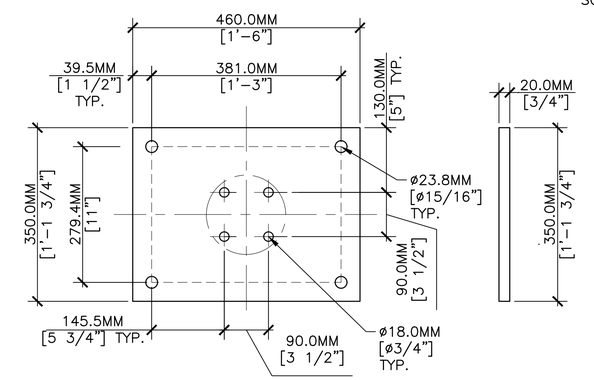


POSITION 2
SCALE: NTS

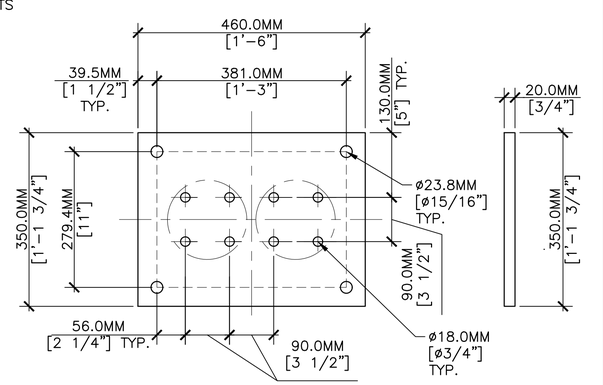




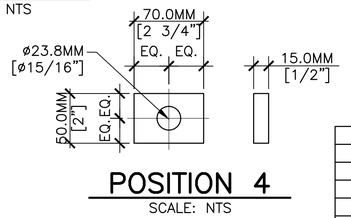
POSITION 2a
SCALE: NTS



POSITION 3
SCALE: NTS



POSITION 3a
SCALE: NTS



POSITION 4
SCALE: NTS

QTY	DESCRIPTION	POS.	MATERIAL
8	FLA 50/15 – 70	4	S355
1	FLA 460/20 – 350 FOR TWO INSULATORS	3a	S355
1	FLA 460/20 – 350 FOR ONE INSULATOR	3	S355
1	HEB BEAM ATTACHMENT – 2 INSULATORS	2a	PLATE:1.4301/U-B0LT:S235/PIN:A2-70
1	HEB BEAM ATTACHMENT – 1 INSULATOR	2	PLATE:1.4301/U-B0LT:S235/PIN:A2-70
1	FLA 170/10 – 300	1a	S355
1	HEB 160 – 3370.2	1	S355

REV	DATE	BY	CHK	APP	DESCRIPTION
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REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

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DIRECTOR, ENGINEERING

Caltrain

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONDUCTOR RAIL

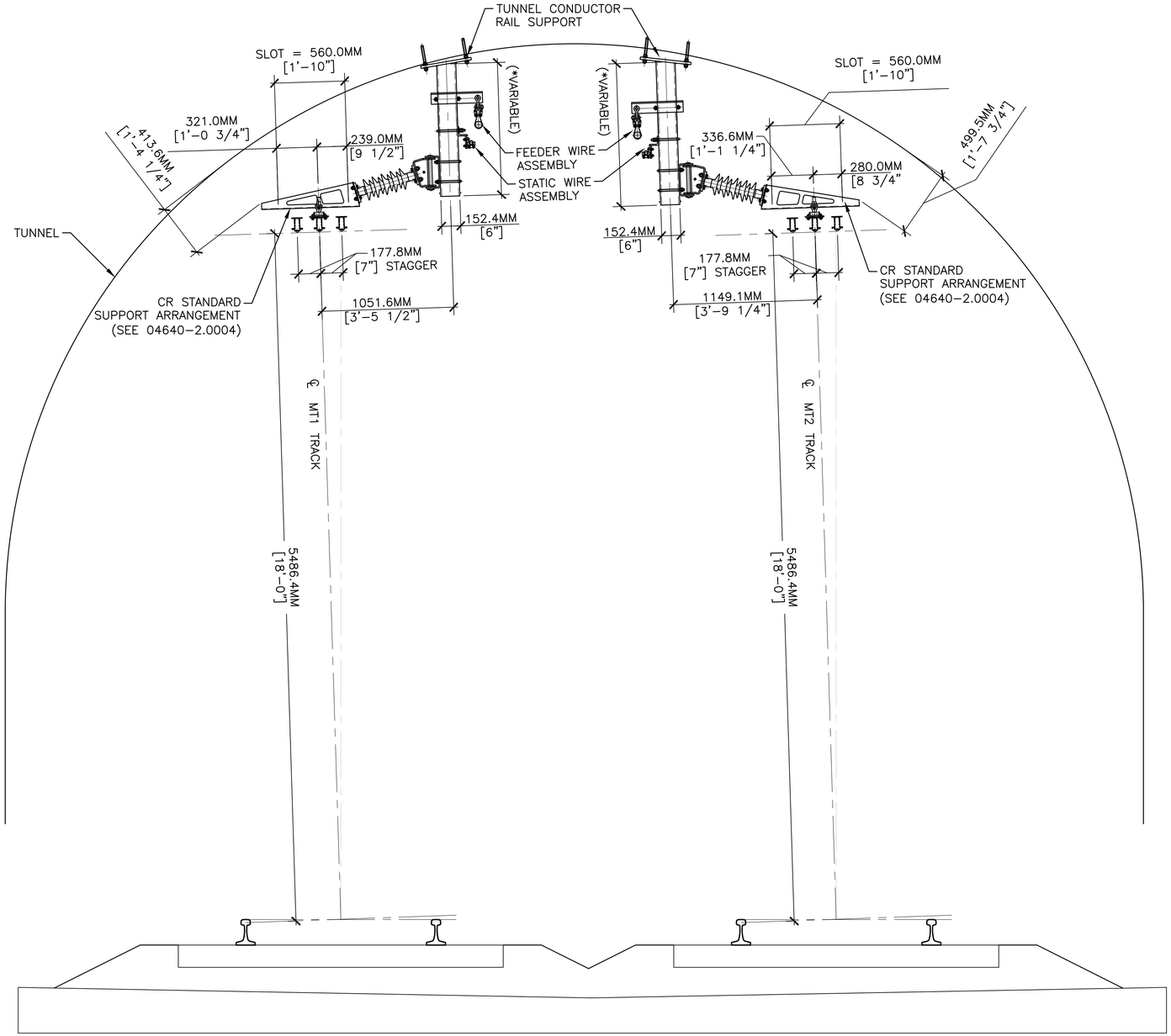
TYPICAL ANCHOR STRUCTURE DETAILS

CADD FILE NAME: SD-W7003

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W7003



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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TYPICAL TUNNEL CROSS SECTION

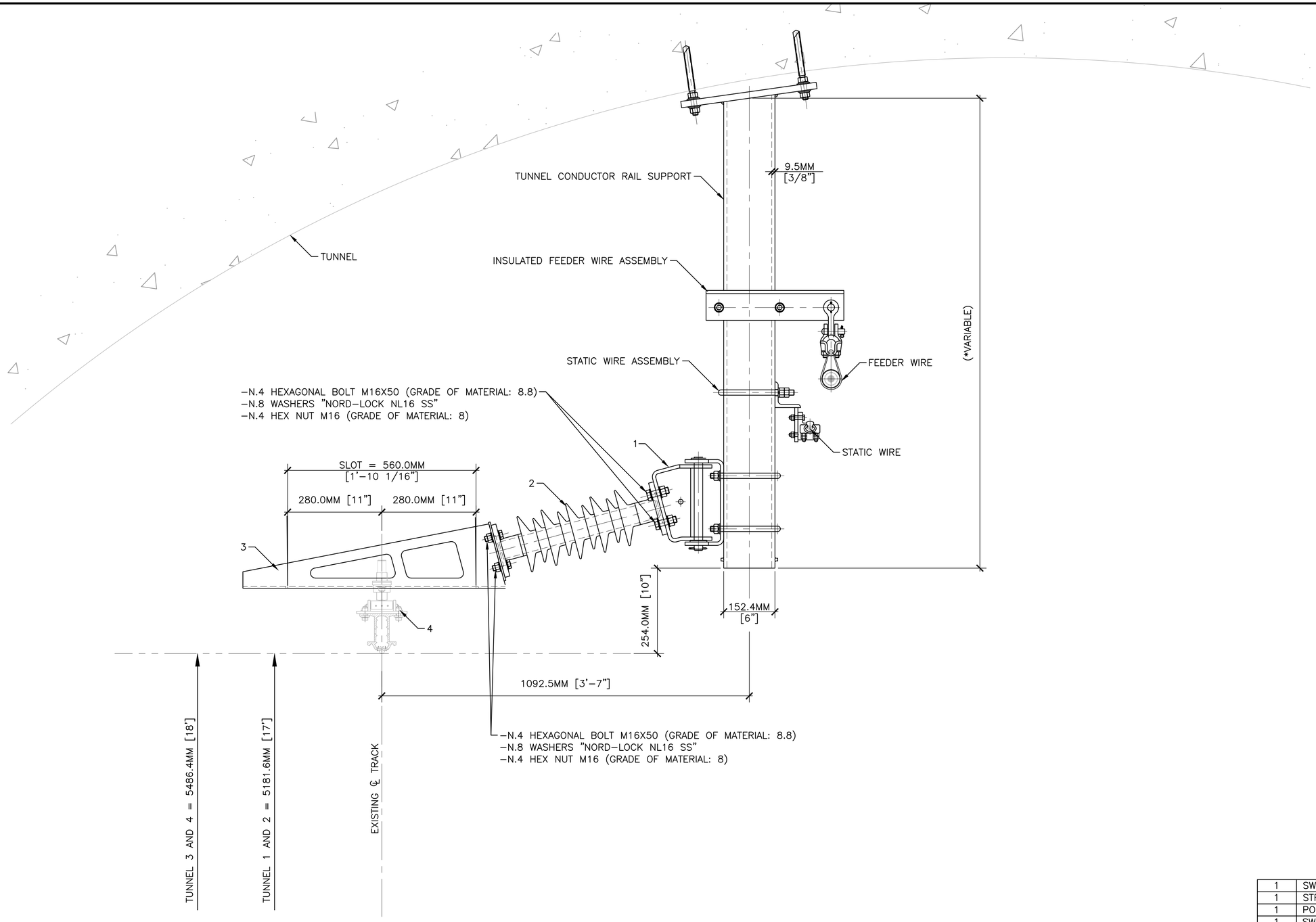
CADD FILE NAME: SD-W7004

REV:

EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W7004



QTY	DESCRIPTION	POS.	F+F DRAWING
1	SWIVEL HEAD	4	04640-5.0003
1	STRUCTURAL CONSOLE	3	04640-5.0019
1	POST INSULATOR 25 KV	2	04640-5.0009
1	SWIVEL ARM	1	04640-5.0018

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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OVERHEAD CONDUCTOR RAIL

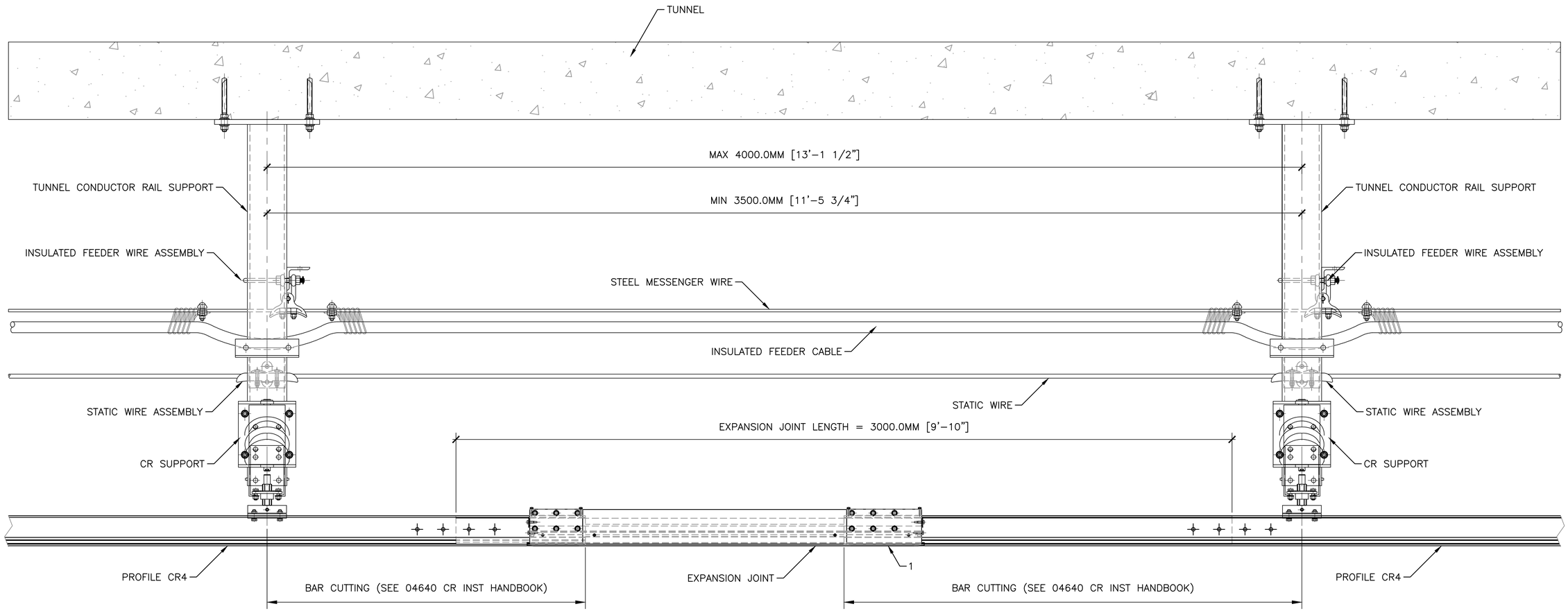
TYPICAL TUNNEL SUPPORT

CADD FILE NAME: SD-W7005

REV: | EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W7005



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONDUCTOR RAIL

TYPICAL EXPANSION JOINT ARRANGEMENT

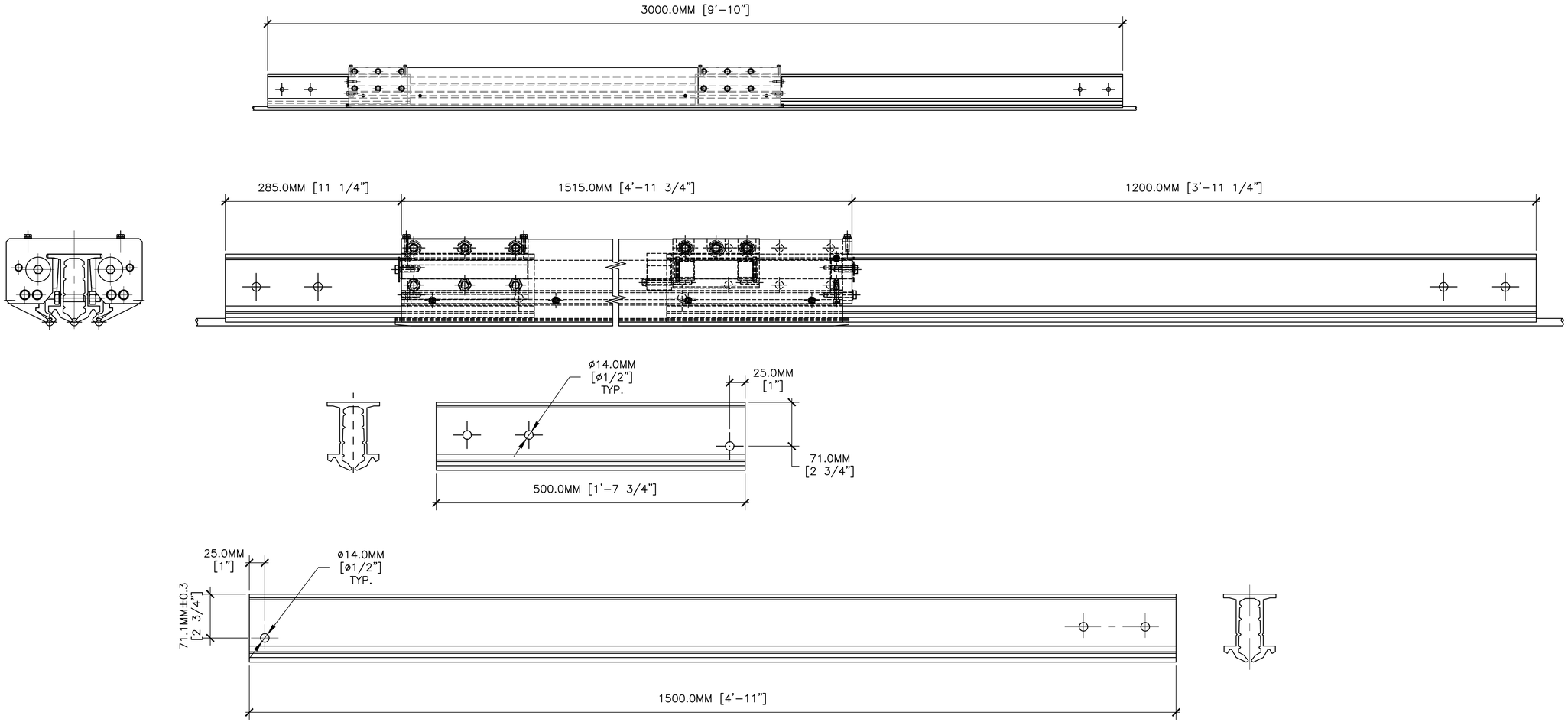
CADD FILE NAME: SD–W7006

REV:

EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD–W7006



REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

REV	DATE	BY	CHK	APP

PENINSULA CORRIDOR JOINT POWERS BOARD

APPROVED BY:

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DIRECTOR, ENGINEERING

ENGINEERING STANDARD DRAWINGS

OVERHEAD CONDUCTOR RAIL

TYPICAL EXPANSION JOINT DETAILS

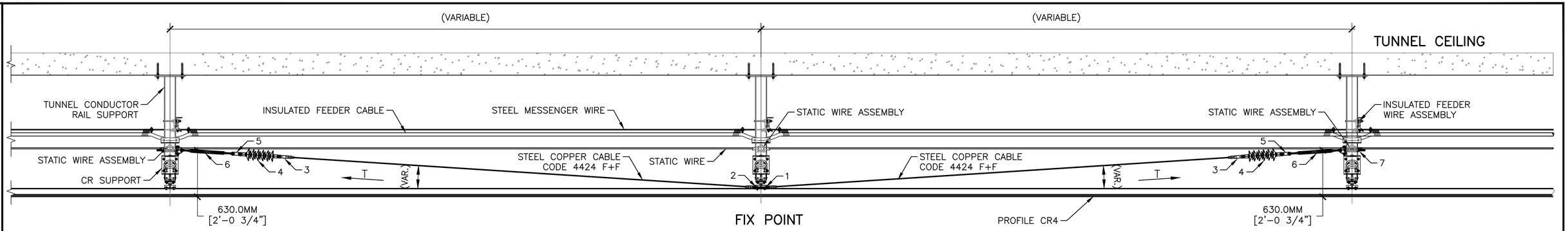
CADD FILE NAME: SD-W7007

REV:

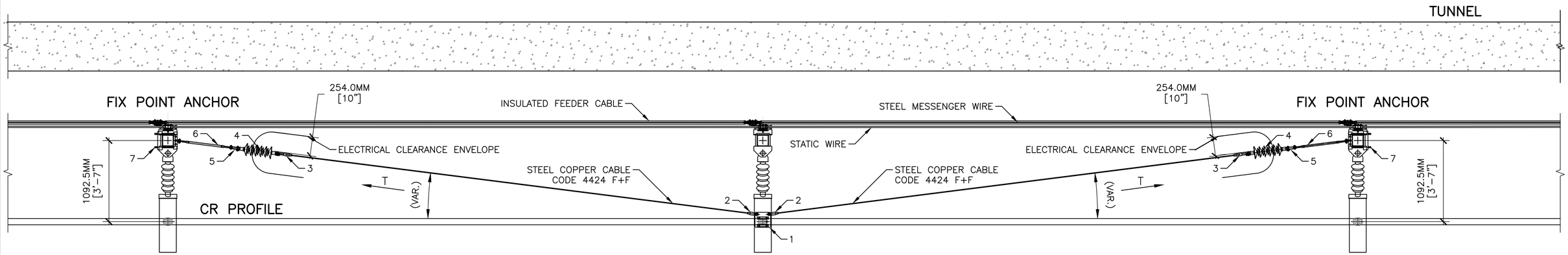
EDITION: SECOND

SCALE: NTS

STANDARD DRAWING NO.: SD-W7007



ELEVATION
SCALE: NTS



PLAN
SCALE: NTS

"STEEL COPPER CABLE" TECHNICAL FEATURES:

- MATERIAL: COPPER–COVERED STEEL ROPE
- DIAMETER: 12.3 MM (0.484 IN)
- FORMATION: 7 X 4.10 MM (7 X 0.161 IN)
- T : 150 N (33.722 LBF) (INSTALLATION TENSILE FORCE)
- Fu : 42.4 KN (9531.944 LBF) (ULTIMATE BREAKING LOAD)
- E–MODULE 124KN/MM2
- THERMAL EXPANSIONN COEFFICIENT 13X10–6 K–1

QTY	DESCRIPTION	POS.	F+F DRAWING
2	TERMINATION BRACKET	7	04640–5.0011
2	TURNBUCKLE LONG	6	04640–5.0005
2	TWO PIN LINK	5	04640–5.0006
2	TENSION INSULATOR 25 KV	4	04640–5.0010
2	DEAD END CLEVIS TYPE LONG	3	04640–5.0007
2	DEAD END CLEVIS TYPE SHORT	2	04640–5.0008
1	MIDPOINT ANCHOR PLATE	1	04640–5.0014

REV	DATE	BY	CHK	APP	DESCRIPTION
	010126				SECOND EDITION

PENINSULA CORRIDOR JOINT POWERS BOARD

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ENGINEERING STANDARD DRAWINGS

OVERHEAD CONDUCTOR RAIL

TYPICAL MID–POINT ANCHOR ARRANGEMENT

CADD FILE NAME: SD–W7008
REV:
EDITION: SECOND
SCALE: NTS
STANDARD DRAWING NO.: SD–W7008