

CU Type: CNDO																
Transmission Specify 'TS' CU Coding Format and Naming Convention																
1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th
C	X1	C	T	-	T	S	-	X2	X3	X4	-	X5	X6			

X1	OpCo
5	NYSEG
6	CMP
9	RG&E

X2	Primary Clamp Type Used on Post Insulator
P1	3 post clamps
P2	6 post clamps
P3	12 post clamps
P5	5 post clamps

	Used on Suspension Insulator String
S1	3 suspension clamps 0°-28° over rods
S2	6 suspension clamps 0°-28° over rods
S3	12 suspension clamps 0°-28° over rods
S4	3 suspension clamps 29°-45° over rods
S5	6 suspension clamps 29°-45° over rods
S6	12 suspension clamps 29°-45° over rods

X1	3 suspension clamps 0°-28° no rods
X2	6 suspension clamps 0°-28° no rods
X3	12 suspension clamps 0°-28° no rods

	Used on Braced Post Insulator
B1	3 suspension clamps 0°-28° over rods
B2	6 suspension clamps 0°-28° over rods
B3	12 suspension clamps 0°-28° over rods
B4	3 suspension clamps 29°-45° over rods
B5	6 suspension clamps 29°-45° over rods
B6	12 suspension clamps 29°-45° over rods

	Used on Dead End Insulator Strings
C1	3 compression dead end assemblies
C2	6 compression dead end assemblies
C3	12 compression dead end assemblies
C4	24 compression dead end assemblies
C9	9 compression dead end assemblies

N1	3 strain clamps
N2	6 strain clamps
N3	12 strain clamps
N4	24 strain clamps
N9	9 strain clamps

X3	secondary clamp type
A1	3 preformed armor rods
A2	6 preformed armor rods
A3	12 preformed armor rods
P1	3 post clamps
P2	6 post clamps
P4	1 post clamp
S1	3 suspension clamps 0°-28° no rods
S2	6 suspension clamps 0°-28° no rods
S3	12 suspension clamps 0°-28° no rods
J1	3 dual post clamps - 6 bundled wires
J2	6 dual post clamps - 12 bundled wires

X4 qualifiers can be used in X3 location if secondary clamp type is not being used.

X4	additional qualifiers
	single string class 52-3 or 52-5 insulators
D1	3 triangle - 3 rectangle yokes
D2	6 triangle - 6 rectangle yokes
D3	12 triangle - 12 rectangle yokes

	single string class 52-8 or 52-11 insulators
E1	3 triangle - 3 rectangle yokes
E2	6 triangle - 6 rectangle yokes
E3	12 triangle - 12 rectangle yokes

	double string class 52-3 or 52-5 insulators
M1	3 triangle - 3 rectangle yokes
M2	6 triangle - 6 rectangle yokes
M3	12 triangle - 12 rectangle yokes

	double string class 52-8 or 52-11 insulators
N1	3 triangle - 3 rectangle yokes
N2	6 triangle - 6 rectangle yokes
N3	12 triangle - 12 rectangle yokes

X6	2nd Conductor Size
*	if 2nd conductor is used and is different than X5, choose X5 designation and place in X6 character position
blank	no 2nd conductor

X4	additional qualifiers
T1	3 terminal pads
T2	6 terminal pads
T3	12 terminal pads
T4	9 terminal pads
F1	3 fired-ons
F2	6 fired-ons
F3	12 fired-ons
L1	3 loop splices
L2	6 loop splices
L3	12 loop splices
R1	3 spacers
R2	6 spacers
R3	12 spacers
K1	3 turnbuckles
K2	6 turnbuckles
K3	12 turnbuckles
K4	9 turnbuckles
Y1	3 triangle yokes
Y2	6 triangle yokes
Y3	12 triangle yokes
Z1	3 angle yokes
Z2	6 angle yokes

EXAMPLES:

C*CT-TS-S2A2-B: specify with 6 suspension clamps 0°-28° & 6 sets of preformed armor rods for 477 ACSR 18/1 conductor on a double circuit suspension tangent or angle structure.


C*CT-TS-N2P1L1-F: specify with 6 strain clamps, 3 post clamps & 3 loop splices for 1033 ACSR 45/7 conductor on a single circuit angle dead end structure with jumper posts.

C*CT-TS-N3-F: specify with 12 strain clamps for 1033 ACSR 45/7 conductor on a double circuit tangent dead end.

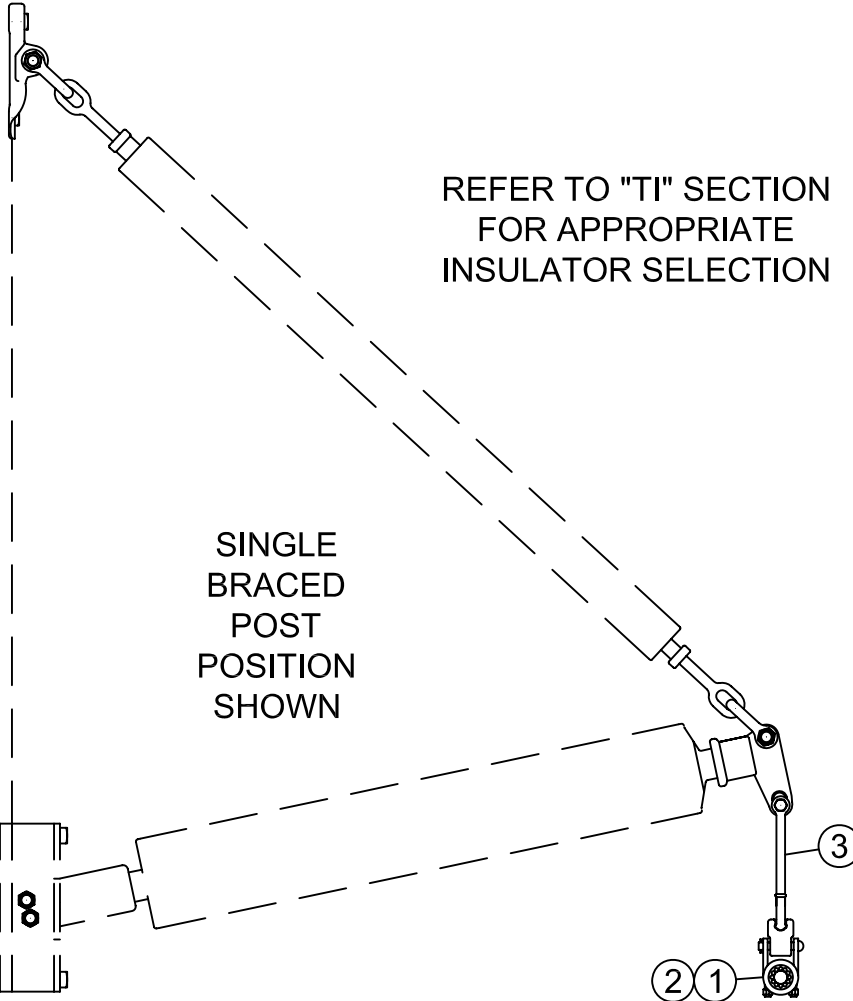
C*CT-TS-C1T1-K: specify containing 3 compression dead end assemblies & 3 additional terminal pads for 1192 ACSR 45/7 conductor at a single circuit substation bay or terminal structure.

X5	Conductor Size	Wire Code
A	4/0 AAAC 19	Amarillo
B	477 ACSR 18/1	Pelican
C	477 AAC 19	Cosmos
D	477 ACSR 30/7	Hen
E	1033 AAC 37	Bluebell
F	1033 ACSR 45/7	Ortolan
G	602.5 ACSR/TW-16 20/7	-
H	336.4 ACSR 30/7	Oriole
I	795 ACSR 45/7	Tern
J	1033 ACSR 54/7	Curlew
K	1192 ACSR 45/7	Bunting
L	1590 ACSR 54/19	Falcon
M	1280 ACAR 42/19	-
N	2156 ACSR 84/19	Bluebird
O	4/0 ACSR 6/1	Penguin
P	336.4 ACSR 18/1	Merlin
Q	2/0 CU 7	-
R	2A CWLD/CU 1/2	-
S	1/0 ACSR 6/1	Raven
T	3/0 ACSR 6/1	Pigeon
U	1590 AAC 61	Coreopsis
V	4/0 EK CWLD/CU	-
W	795 ACSR 36/1	Coot
X	795 ACSR 26/7	Drake
Y	1113 ACSR 45/7	Bluejay
Z	477 ACSR 26/7	Hawk
1	900 ACSR 54/7	Canary
2	1272 AAC 61	Narcissus
3	4/0 AAAC 7	Alliance
4	266.8 ACSR 6/7	Owl
5	1192 ACSR 54/19	Grackle
6		
7		
8		
9		
0		

CU Function:
TL69 for 35kV & 46kV, TL69 for 69kV thru 344kV,
T345 for 345kV and greater.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY					
Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: N/A	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL TM2.23.00		TRANSMISSION SPECIFY DETAILS STANDARD CU FORMAT AND NAMING CONVENTION		ISSUE
					0
				DATE	
				12/13/2012	
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/6/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012
TS-CU					Sheet 1

mark	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-B1A1-(mark)
1	3				SET	1007237020	6000220410	ROD ARMOR PREF AL 60IN 0.783-0.814
1		3			SET	1007237068	6000220470	ROD ARMOR PREF AL 1.099-1.139
1			3		SET	1007237075		ROD ARMOR PREF AL 60IN 1.209-1.269
1				3	SET	1007237077		ROD ARMOR PREF AL 60IN 1.270-1.327
2	3				EA	1036090149		CLMP BLT SUSP AL W/SOC 1.00-1.49
2		3			EA	1036090204	6000111464	CLMP BLT SUSP AL W/SOC 1.40-2.04
2			3		EA	1036090204	6000111480	CLMP BLT SUSP AL W/SOC 1.40-2.04
2				3	EA	1036090218	6000111480	CLMP BLT SUSP AL W/SOC 1.40-2.18
3	3	3	3	3	EA	1036427000	6000272910	FTTNG CLV-Y BALL SM HL 30K 3/4 BNK



CU Function:
 TL69 for 35kV & 46kV,
 TG69 for 69kV - 344kV,
 T345 for 345kV and greater.

For correct CU:
 substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).

ASSOCIATED STANDARD:
 TANGENT SUSPENSION
 BRACED POST

FOR OTHER WIRE SIZES: REFER TO TJ-01-001 FOR SUSPENSION CLAMPS
 AND ASSOCIATED PREFORMED ARMOR RODS.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
 TRANSMISSION
 CONSTRUCTION
 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT
 TANGENT SUSPENSION - BRACED POST
 3 SUSPENSION CLAMPS - 3 SETS ARMOR RODS

ISSUE
 0
 DATE
 12/13/2012

Drwn. By: L.A. Best Date Dr.: 6/17/2011 Checked By: Bartczak/Becken/Shepard Date Ck.: 11/17/2011 Approved By: Barry R. Hart Date App.: 12/13/2012

TS-B1A1-x

Sheet 1

For use with class 52-3 & 52-5 disc insulators

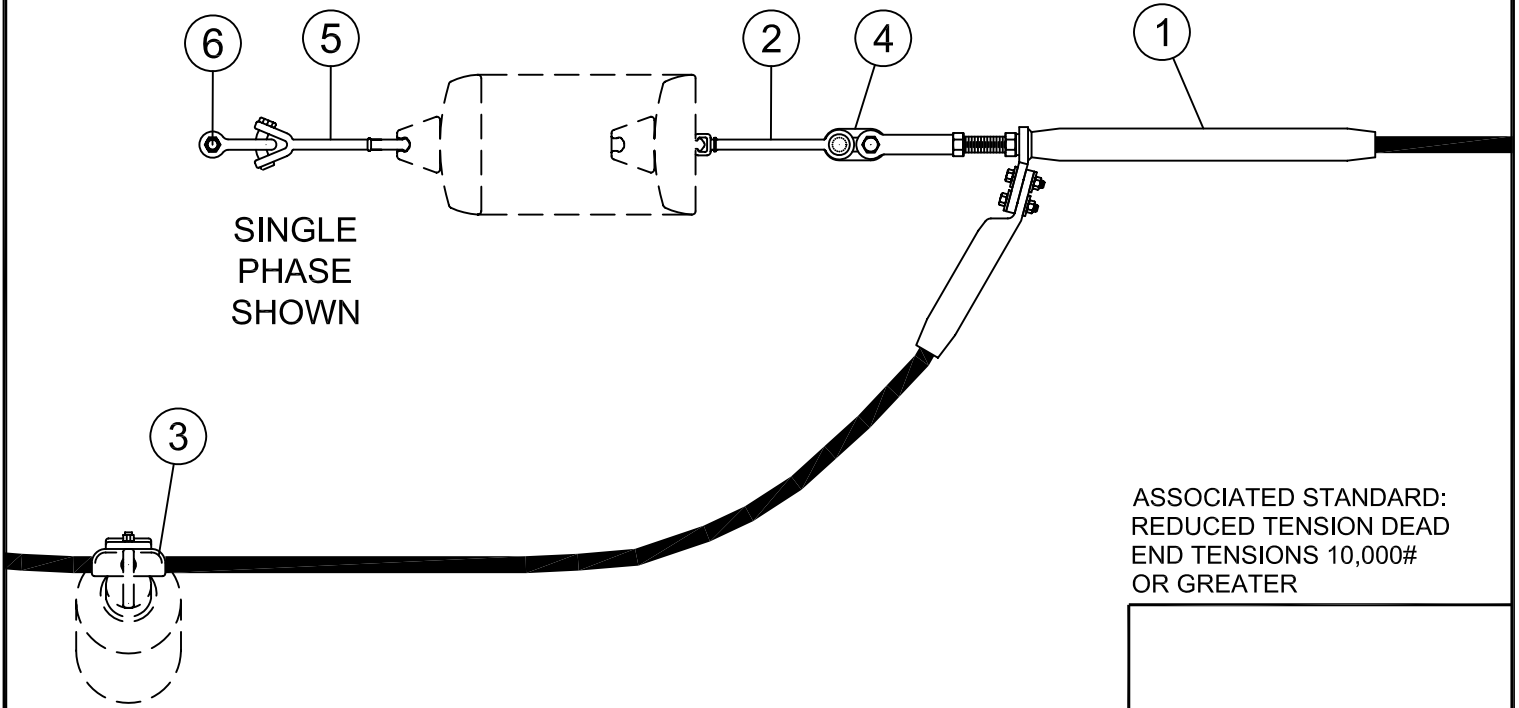
mark		-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-C1P1-(mark)
1		3			EA	1036346130		CDE ASSY AL SING TNG 1.108 DIA
1			3		EA	1036345156		CDE ASSY AL SING TNG 1.213 DIA
1				3	EA	1036345165		CDE ASSY AL SING TNG 1.302 DIA
2		3	3	3	EA	1036428000		FTTNG CLV-Y SOC SM HL 30K 3/4 BNK
3		3	3	3	EA	1036160150		CLMP BLT POST 1.00-1.50 AL TNGT
4*			3		EA	1036680025		LNK CHN 1 X 3-1/2 OPNG 3/4 STCK
5		3	3	3	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
6		3	3	3	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

ITEM 4 IS ONLY NEEDED IF THE COMPRESSION DEAD END HAS A CLEVIS END FITTING INSTEAD OF AN OVAL END FITTING

CU Function:
 TL69 for 35kV & 46kV,
 TG69 for 69kV thru 344kV,
 T345 for 345kV and greater.

For correct CU:
 substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).

REFER TO "TI" SECTION
 FOR APPROPRIATE
 INSULATOR SELECTION



FOR OTHER WIRE SIZES:
 REFER TO TJ-04-001 FOR COMPRESSION DEAD END ASSEMBLIES
 AND TJ-02-001 FOR POST INSULATOR CLAMPS (W/O RODS).

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 7/8" = 1'-0"



IBERDROLA USA
 TRANSMISSION
 CONSTRUCTION
 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT
 3 SINGLE INSULATOR STRINGS - 3 POST INSULATORS
 3 COMPRESSION DEAD END ASSEMBLIES - 3 POST CLAMPS

ISSUE
 0
 DATE
 12/13/2012

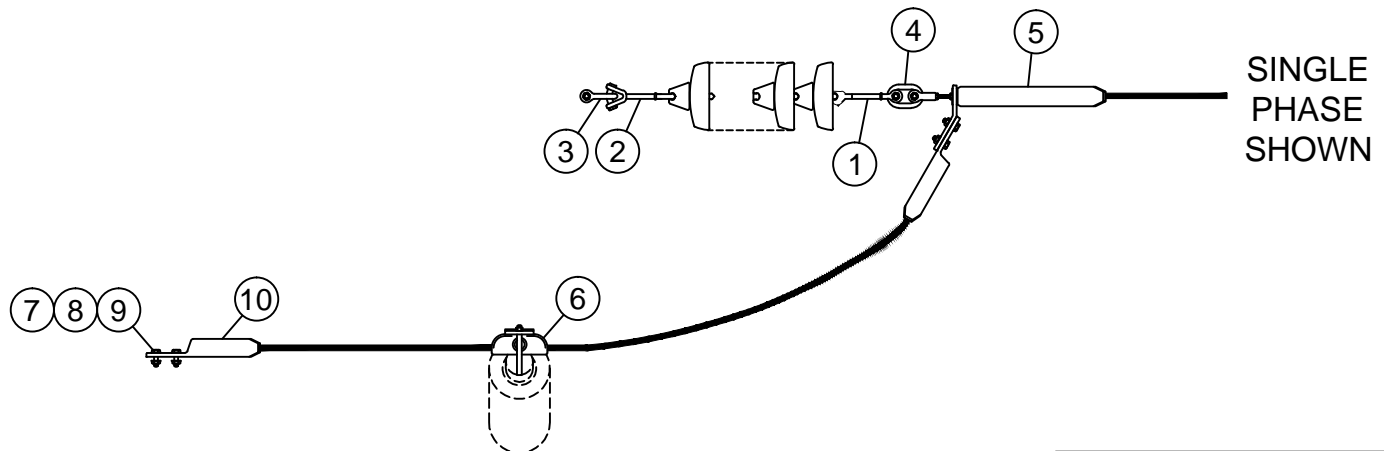
Drwn. By: L.A. Best | Date Dr.: 6/7/2011 | Checked By: Bartzczak/Becken/Shepard | Date Ck.: 12/5/2011 | Approved By: Barry R. Hart | Date App.: 12/13/2012

TS-C1P1-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	-L 1590 54/19	UOM	IUSA MID	CU: C*CT-TS-C1P1T1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	3	3	3	3	3	3	3	EA	6000272898	FITTING CLEV-Y SCKT HL 30K BNK
2	3	3	3	3	3	3	3	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	3	3	3	3	3	3	3	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
4			3		3			EA	1036680025	LNK CHN 1 X 3-1/2 OPNG 3/4 STK 60K
5	3							EA	1036350043	CDE ASSY AL SING TNG 1.063 DIA
5		3						EA	1036345135	CDE ASSY AL SING TNG 0.563 DIA
5			3					EA	1036346122	CDE ASSY AL SING TNG 0.814 DIA
5				3				EA	1036346130	CDE ASSY AL SING TNG 1.108 DIA
5					3			EA	1036345156	CDE ASSY AL SING TNG 1.213 DIA
5						3		EA	1036345165	CDE ASSY AL SING TNG 1.302 DIA
5							3	EA	6000111110	CDE ASSY AL SING TNG 1.544 DIA
6		3						EA	1036160084	CLMP BLT POST 0.35-0.84 TGNT
6			3					EA	1036160106	CLMP BLT POST 0.70-1.06 TGNT
6	3			3	3	3		EA	1036160150	CLMP BLT POST 1.00-1.50 TGNT
6							3	EA	1036160199	CLMP BLT POST 1.50-2.00 TGNT
7	12	12	12	12	12	12	12	EA	1080002004	BOLT AL BUS BAR HEX HD HVY SERIES
8	12	12	12	12	12	12	12	EA	1080002110	NUT AL BUS BAR HEX HD HVY SERIES
9	24	24	24	24	24	24	24	EA	1080002710	WSHR AL FLAT 7/8 OF FOR 1/2 BOLT
10		3						EA	1086050202	CONN COMP TERM 2H PAD 0.52 - 0.563
10			3					EA	1086050406	CONN COMP TERM 4H PAD 0.814
10	3			3				EA	6000117401	CONN COMP TERM 4H PAD 1.108
10					3			EA	1086050413	CONN COMP TERM 4H PAD 1.212
10						3		EA	1086050419	CONN COMP TERM 4H PAD 1.302
10							3	EA	6000117326	CONN COMP TERM 4H PAD 1.544



CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: FOR NESC HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

NOTE C: CHAIN LINK (ITEM #4) IS ONLY REQUIRED FOR COMPRESSION DEAD END ASSEMBLIES WITH CLEVIS FITTINGS.

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Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

**TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT**
3 DEAD END INSULATOR STRINGS - 3 POST INSULATORS
3 COMPRESSION DEAD END ASSEMBLIES - 3 POST CLAMPS - 3 TERMINAL PADS

REVISION
00
DATE
5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	10/01/2014	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TS-C1P1T1-X

Sheet 1

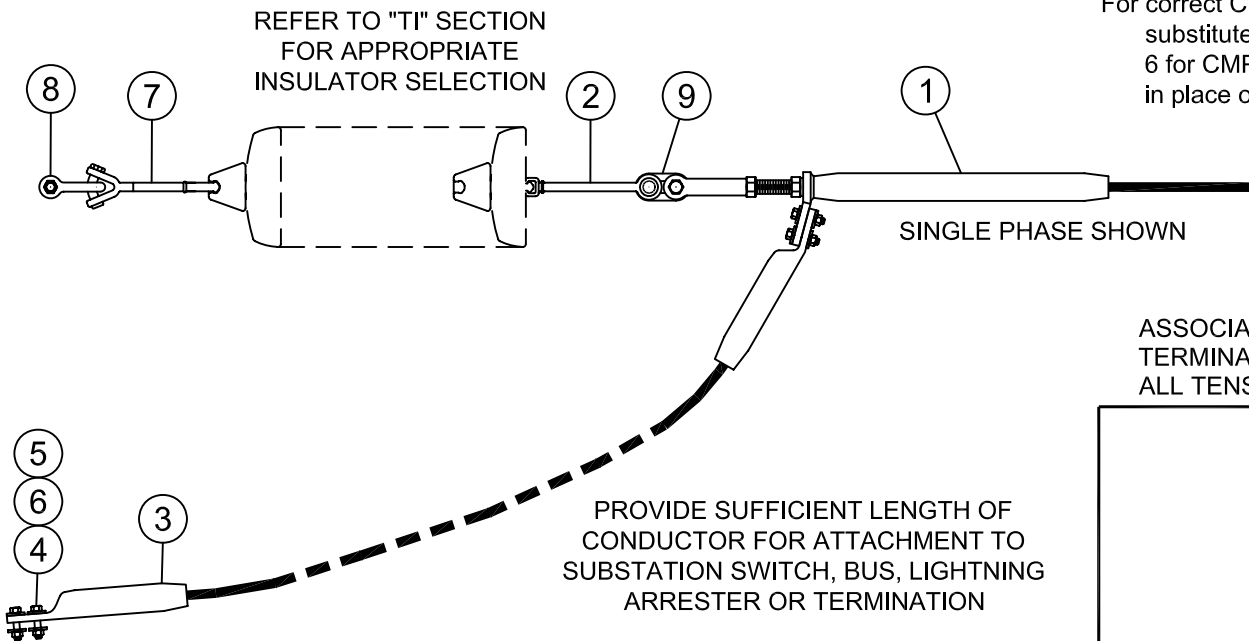
For use with class 52-3 & 52-5 disc insulators

mark	-I 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL		Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	MID	CU: C*CT-TS-C1T1-(mark)
1			3				EA	1036346122	CDE ASSY AL SING TNG 0.814 DIA
1				3			EA	1036346130	CDE ASSY AL SING TNG 1.108 DIA
1					3		EA	1036345156	CDE ASSY AL SING TNG 1.213 DIA
1						3	EA	1036345165	CDE ASSY AL SING TNG 1.302 DIA
1		3					EA	AFL E33705	CDE ASSY AL SING TNG 0.563 DIA
1	3						EA	1036350043	CDE ASSY AL SING TNG 1.063 DIA
2	3	3	3	3	3	3	EA	1036428000	FTTNG CLV-Y SOC SM HL 30K 3/4 BNK
3			3				EA	1086050406	CONN AL COMP TERM 4H PAD 0.814 DIA
3				3			EA	6000117401	CONN AL COMP TERM 4H PAD 1.108 DIA
3					3		EA	1086050413	CONN AL COMP TERM 4H PAD 1.212 DIA
3						3	EA	1086050419	CONN AL COMP TERM 4H PAD 1.302 DIA
3		3					EA	1086050202	CONN AL COMP TERM 2H PAD 0.563 DIA
3	3						EA	1086050408	CONN AL COMP TERM 4H PAD 1.063 DIA
4	12	6	12	12	12	12	EA	1080002004	BOLT AL BUS BAR HEX HD HVY SERIES
5	12	6	12	12	12	12	EA	1080002110	NUT AL BUS BAR HEX HD HVY SERIES
6	24	12	24	24	24	24	EA	1080002710	WSHR AL FLT 7/8 O.D. FOR 1/2
7	3	3	3	3	3	3	EA	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
8	3	3	3	3	3	3	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPNG
9*			3		3		EA	1036680025	LNK CHN 1 X 3-1/2 OPNG 3/4 STK 60K

ITEM 9 IS ONLY NEEDED IF THE COMPRESSION DEAD END HAS A CLEVIS END FITTING INSTEAD OF AN OVAL END FITTING.

CU Function:
 TL69 for 35kV & 46kV,
 TG69 for 69kV thru 344kV,
 T345 for 345kV and greater.

For correct CU:
 substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).



FOR OTHER WIRE SIZES: REFER TO TJ-04-001 FOR COMPRESSION DEAD END ASSEMBLIES, TJ-04-003 FOR COMPRESSION TERMINAL PADS.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



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 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT - 3 SINGLE INSULATOR STRINGS
 3 COMPRESSION DEAD END ASSEMBLIES
 3 TERMINAL PADS

ISSUE
 0
 DATE
 12/13/2012

Drwn. By: L.A. Best Date Dr.: 6/7/2011 Checked By: Bartczak/Becken/Shepard Date Ck.: 12/5/2011 Approved By: Barry R. Hart Date App.: 12/13/2012

TS-C1T1-x

Sheet 1

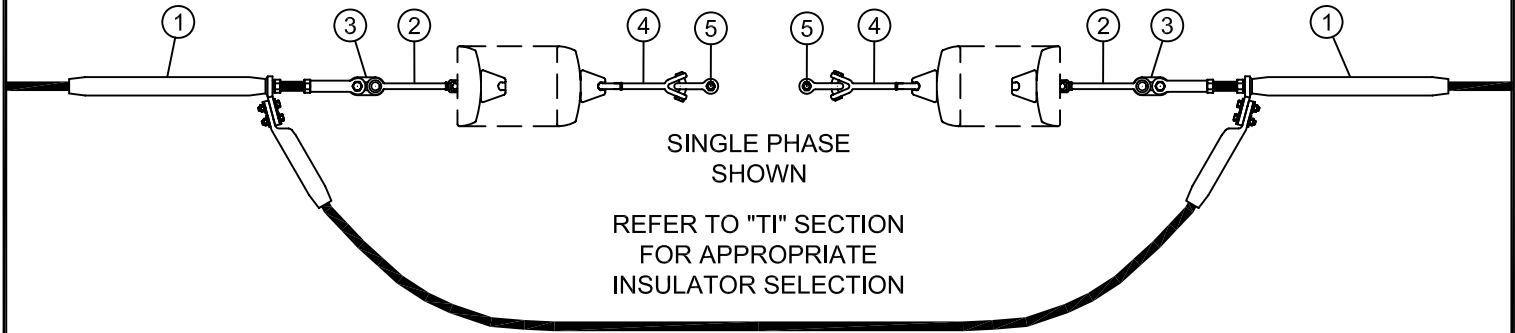
For use with class 52-3 & 52-5 disc insulators

mark		-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-C2-(mark)
1		6			EA	1036346130		CDE ASSY AL SING TNG 1.108 DIA
1			6		EA	1036345156		CDE ASSY AL SING TNG 1.213 DIA
1				6	EA	1036345165		CDE ASSY AL SING TNG 1.302 DIA
2		6	6	6	EA	1036428000		FTTNG CLV-Y SOC SM HL 30K 3/4 BNK
3*			6		EA	1036680025		LNK CHN 1 X 3-1/2 OPNG 3/4 STCK
4		6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
5		6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

ITEM 3 IS ONLY NEEDED IF THE COMPRESSION DEAD END HAS A CLEVIS END FITTING INSTEAD OF AN OVAL END FITTING

CU Function:
 TL69 for 35kV & 46kV,
 TG69 for 69kV thru 344kV,
 T345 for 345kV and greater.

For correct CU:
 substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).



ASSOCIATED STANDARD:
 TANGENT DEAD ENDS
 TENSIONS 10,000#
 OR GREATER

FOR OTHER WIRE SIZES:
 REFER TO TJ-04-001 FOR COMPRESSION DEAD END ASSEMBLIES.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1/2" = 1'-0"



IBERDROLA USA
 TRANSMISSION
 CONSTRUCTION
 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT
 6 SINGLE INSULATOR STRINGS
 6 COMPRESSION DEAD END ASSEMBLIES

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	12/5/2011	Barry R. Hart	12/13/2012

TS-C2-x

Sheet 1

For use with class 52-3 & 52-5 disc insulators

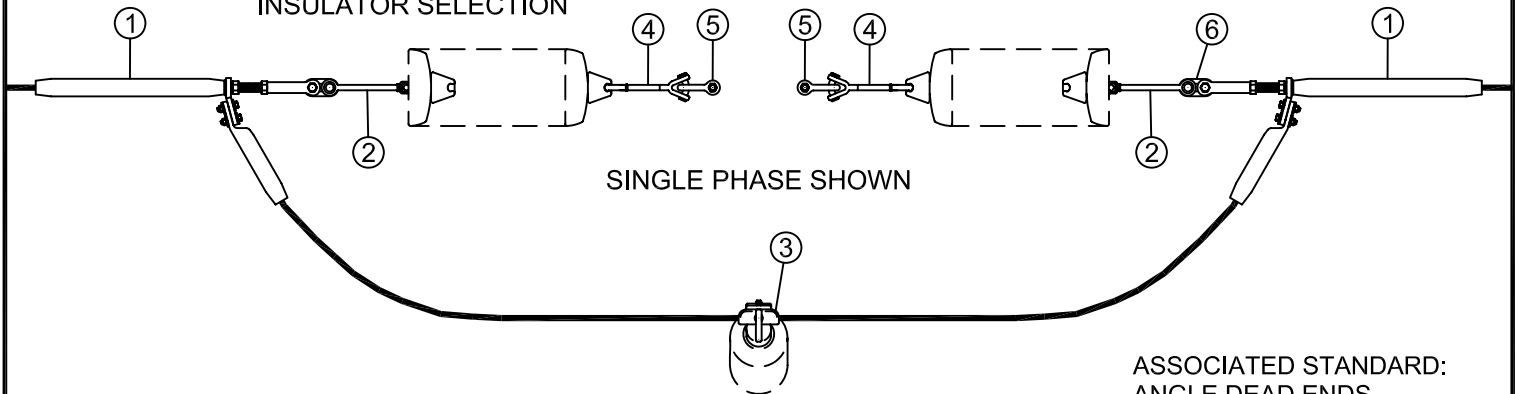
mark	-I 795 45/7	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.				UOM	NYSEG MID	CMP MID	CU: C*CT-TS-C2P1-(mark)
1		6			EA	1036346130		CDE ASSY AL SING TNG 1.108 DIA
1			6		EA	1036345156		CDE ASSY AL SING TNG 1.213 DIA
1				6	EA	1036345165		CDE ASSY AL SING TNG 1.302 DIA
1	6				EA	1036350043		CDE ASSY AL SING TNG 1.063 DIA
2	6	6	6	6	EA	1036428000		FTTNG CLV-Y SOC SM HL 30K 3/4 BNK
3	3	3	3	3	EA	1036160150		CLMP BLT POST 1.00-1.50 AL TNGT
4	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
5	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG
6*			6		EA	1036680025		LNK CHN 1 X 3-1/2 OPNG 3/4 STCK

ITEM 6 IS ONLY NEEDED IF THE COMPRESSION DEAD END HAS A CLEVIS END FITTING INSTEAD OF AN OVAL END FITTING

CU Function:
 TL69 for 35kV & 46kV,
 TG69 for 69kV thru 344kV,
 T345 for 345kV & greater.

For correct CU:
 substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).

REFER TO "TI" SECTION FOR APPROPRIATE INSULATOR SELECTION



ASSOCIATED STANDARD:
 ANGLE DEAD ENDS
 W/ JUMPER POST
 TENSIONS 10,000#
 OR GREATER

FOR OTHER WIRE SIZES:
 REFER TO TJ-04-001 FOR COMPRESSION DEAD END ASSEMBLIES
 AND TJ-02-001 FOR POST INSULATOR CLAMPS (W/O RODS).

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1" = 25



IBERDROLA USA
 TRANSMISSION
 CONSTRUCTION
 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT
 6 SINGLE INSULATOR STRINGS - 3 POST INSULATORS
 6 COMPRESSION DEAD END ASSEMBLIES - 3 POST CLAMPS

ISSUE
 0
 DATE
 12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	12/5/2011	Barry R. Hart	12/13/2012

TS-C2P1-x

Sheet 1

For use with class 52-3 & 52-5 disc insulators

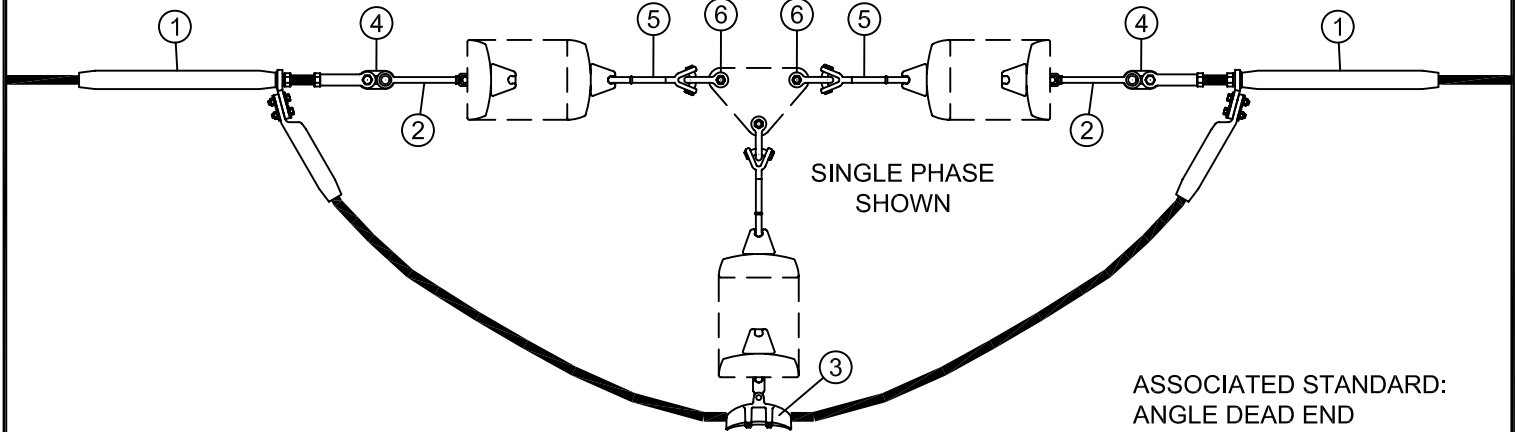
mark		-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-C2S1-(mark)
1		6			EA	1036346130		CDE ASSY AL SING TNG 1.108 DIA
1			6		EA	1036345156		CDE ASSY AL SING TNG 1.213 DIA
1				6	EA	1036345165		CDE ASSY AL SING TNG 1.302 DIA
2		6	6	6	EA	1036428000		FTTNG CLV-Y SOC SM HL 30K 3/4 BNK
3		3	3	3	EA	1036090136		CLMP BLT SUSP AL W/SOC 0.87-1.36
4*		6	6	6	EA	1036680025		LNK CHN 1 X 3-1/2 OPNG 3/4 STCK
5		6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
6		6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

ITEM 4 IS ONLY NEEDED IF THE COMPRESSION DEAD END HAS A CLEVIS END FITTING INSTEAD OF AN OVAL END FITTING

CU Function:
 TL69 for 35kV & 46kV,
 TG69 for 69kV thru 344kV,
 T345 for 345kV and greater.

For correct CU:
 substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).

REFER TO "TI" SECTION FOR APPROPRIATE INSULATOR SELECTION



ASSOCIATED STANDARD:
 ANGLE DEAD END
 W/ SUSP IDLER STRING
 TENSIONS 10,000#
 OR GREATER

FOR OTHER WIRE SIZES:
 REFER TO TJ-04-001 FOR COMPRESSION DEAD END ASSEMBLIES
 AND TJ-01-001 FOR SUSPENSION CLAMPS (W/O RODS).

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1/2" = 1'-0"



IBERDROLA USA
 TRANSMISSION
 CONSTRUCTION
 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT - 6 SINGLE INSULATOR STRINGS
 6 COMPRESSION DEAD END ASSEMBLIES
 3 IDLER STRINGS WITH 3 SUSPENSION CLAMPS

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	10/24/2011	Bartczak/Becken/Shepard	12/5/2011	Barry R. Hart	12/13/2012

TS-C2S1-x

Sheet 1

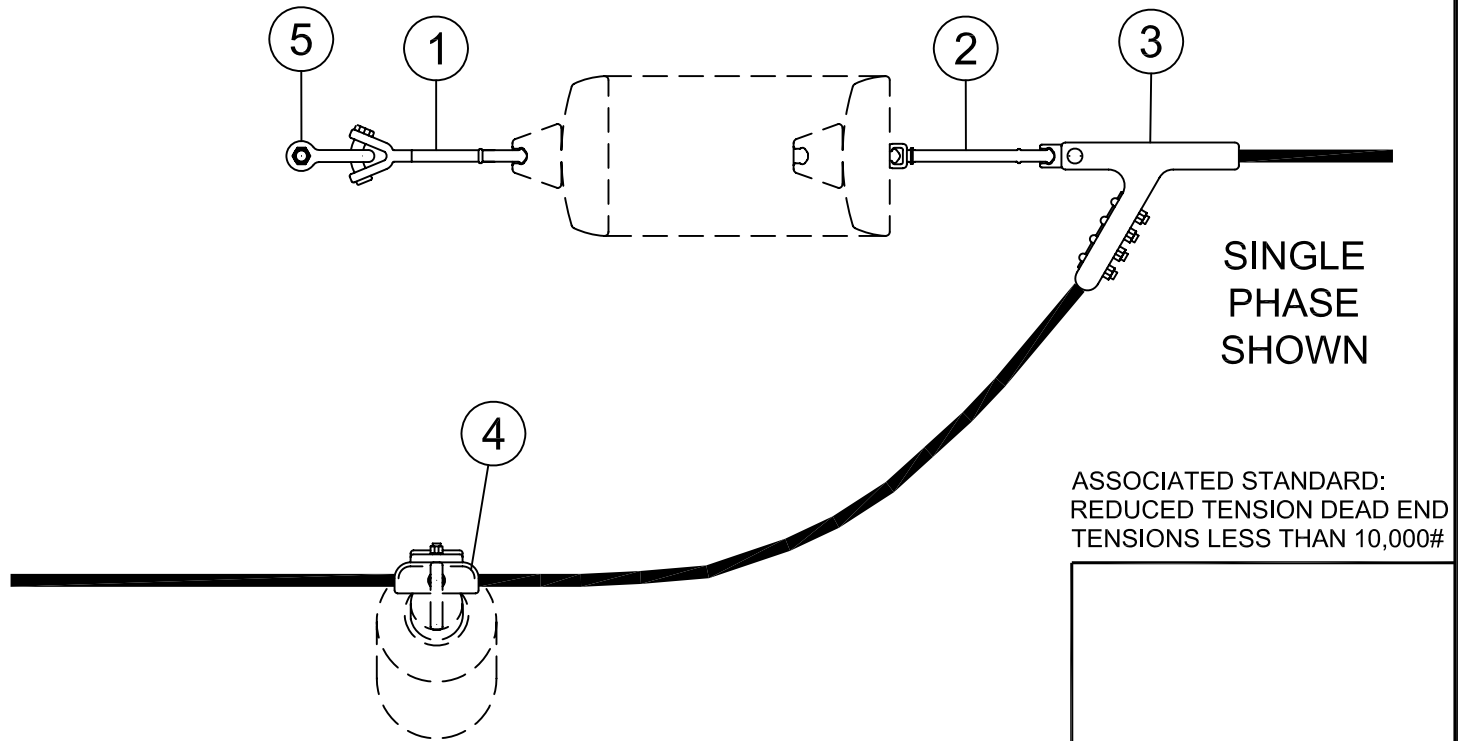
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N1P1-(mark)
1	3	3	3	3	3	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
2	3	3	3	3	3	EA	1036432000		FTTG SOC BALL SM HL 30K
3	3	3				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
3			3	3		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
3					3	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
4	3					EA	1036160084		CLMP BLT POST 0.35-0.84 TNGT
4		3				EA	1036160106		CLMP BLT POST 0.70-1.06 TNGT
4			3	3	3	EA	1036160150		CLMP BLT POST 1.00-1.50 TNGT
5	3	3	3	3	3	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



FOR OTHER WIRE SIZES: REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS AND TJ-02-001 FOR POST INSULATOR CLAMPS (W/O RODS).

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT

3 DEAD END INSULATOR STRINGS - 3 POST INSULATORS
3 BOLTED DEAD END STRAIN CLAMPS - 3 POST CLAMPS

ISSUE	0
DATE	12/13/2012

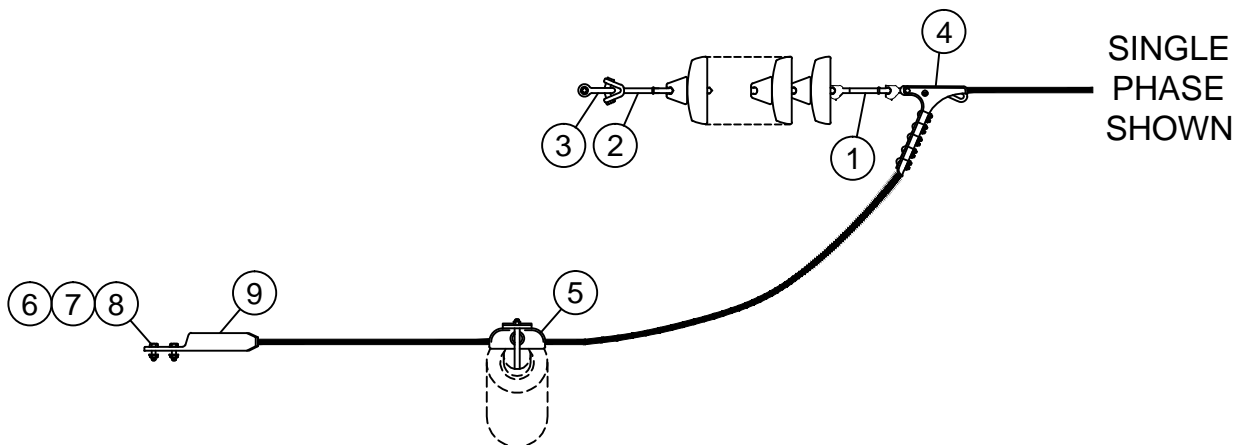
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N1P1-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	UOM	IUSA MID	CU: C*CT-TS-N1P1T1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	3	3	3	3	3	3	EA	1036432000	FITTING SCKT BALL HL 30K
2	3	3	3	3	3	3	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	3	3	3	3	3	3	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
4		3	3				EA	6000110984	CLMP STRN AL 23K 0.46-0.86
4	3			3	3	3	EA	6000111000	CLMP STRN AL 30K 0.71-1.31
5		3					EA	1036160084	CLMP BLT POST 0.35-0.84 TGNT
5			3				EA	1036160106	CLMP BLT POST 0.70-1.06 TGNT
5	3			3	3	3	EA	1036160150	CLMP BLT POST 1.00-1.50 TGNT
6	12	12	12	12	12	12	EA	1080002004	BOLT AL BUS BAR HEX HD HVY SERIES
7	12	12	12	12	12	12	EA	1080002110	NUT AL BUS BAR HEX HD HVY SERIES
8	24	24	24	24	24	24	EA	1080002710	WSHR AL FLAT 7/8 OF FOR 1/2 BOLT
9		3					EA	1086050202	CONN COMP TERM 2H PAD 0.52 - 0.563
9			3				EA	1086050406	CONN COMP TERM 4H PAD 0.814
9	3			3			EA	6000117401	CONN COMP TERM 4H PAD 1.108
9					3		EA	1086050413	CONN COMP TERM 4H PAD 1.212
9						3	EA	1086050419	CONN COMP TERM 4H PAD 1.302



CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS


NOTE B: FOR NESC HEAVY TENSIONS OF LESS THAN 10,000 LBS. PER SUBCONDUCTOR. FOR NESC HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

NOTE C: BOLTED STRAIN CLAMPS SHALL NOT BE USED FOR SUBSTATION DEADEND APPLICATIONS. ONLY COMPRESSION DEAD END ASSEMBLIES SHALL BE USED FOR SUBSTATION DEADEND ASSEMBLIES.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"

	TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION SPECIFY DETAILS SINGLE CIRCUIT 3 DEAD END INSULATOR STRINGS - 3 POST INSULATORS 3 STRAIN CLAMPS - 3 POST CLAMPS - 3 TERMINAL PADS				REVISION 00
						DATE 5/21/2015
Drwn. By: B. Franklin	Date Dr.: 10/01/2014	Checked By: Becken/Hart	Date Ck.: 12/24/2014	Approved By: Barry R. Hart	Date App.: 12/24/2014	TM2.23.TS-N1P1T1-X Sheet 1

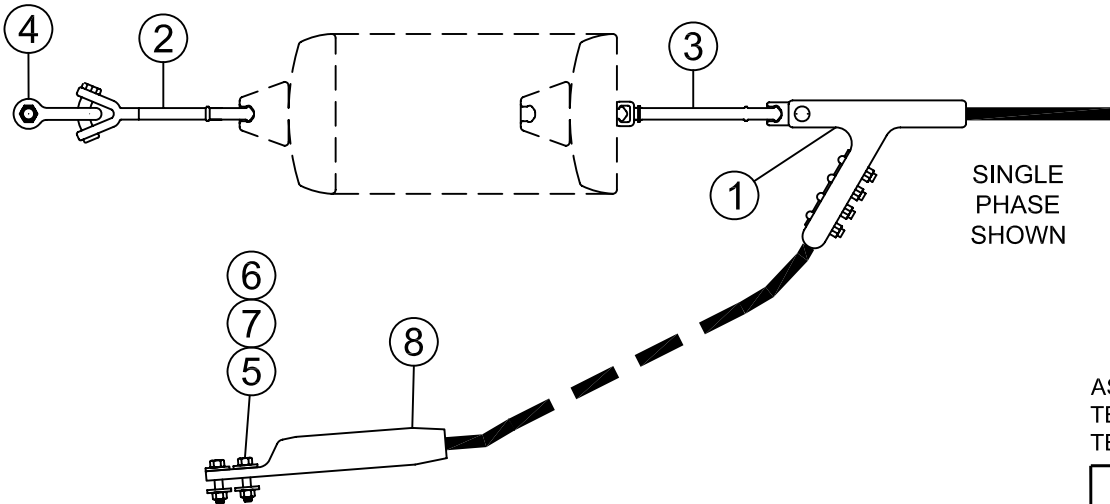
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N1T1-(mark)
1	3	3				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			3	3		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					3	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	3	3	3	3	3	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
3	3	3	3	3	3	EA	1036432000		FTTG SOC BALL SM HL 30K
4	3	3	3	3	3	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG
5	12	12	12	12	12	EA	1080002004		BOLT AL BUS BAR HEX HD HVY SERIES
6	12	12	12	12	12	EA	1080002110		NUT AL BUS BAR HEX HD HVY SERIES
7	24	24	24	24	24	EA	1080002710		WSHR AL FLAT 7/8 OD FOR 1/2 BOLT
8	3					EA	1086050202		CONN COMP TERM 2H PAD 0.52-0.563
8		3				EA	1086050406		CONN COMP TERM AL 4H PAD 0.814
8			3			EA	860-504-10	6000117401	CONN COMP TERM AL 4H PAD 1.108
8				3		EA	1086050413		CONN COMP TERM AL 4H PAD 1.212
8					3	EA	1086050419		CONN COMP TERM AL 4H PAD 1.302

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



ASSOCIATED STANDARD:
TERMINAL DEAD ENDS
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES: REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS
AND TJ-04-003 FOR COMPRESSION TERMINAL PADS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT
3 DEAD END INSULATOR STRINGS
3 BOLTED DEAD END STRAIN CLAMPS - 3 TERMINAL PADS

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N1T1-x

Sheet 1

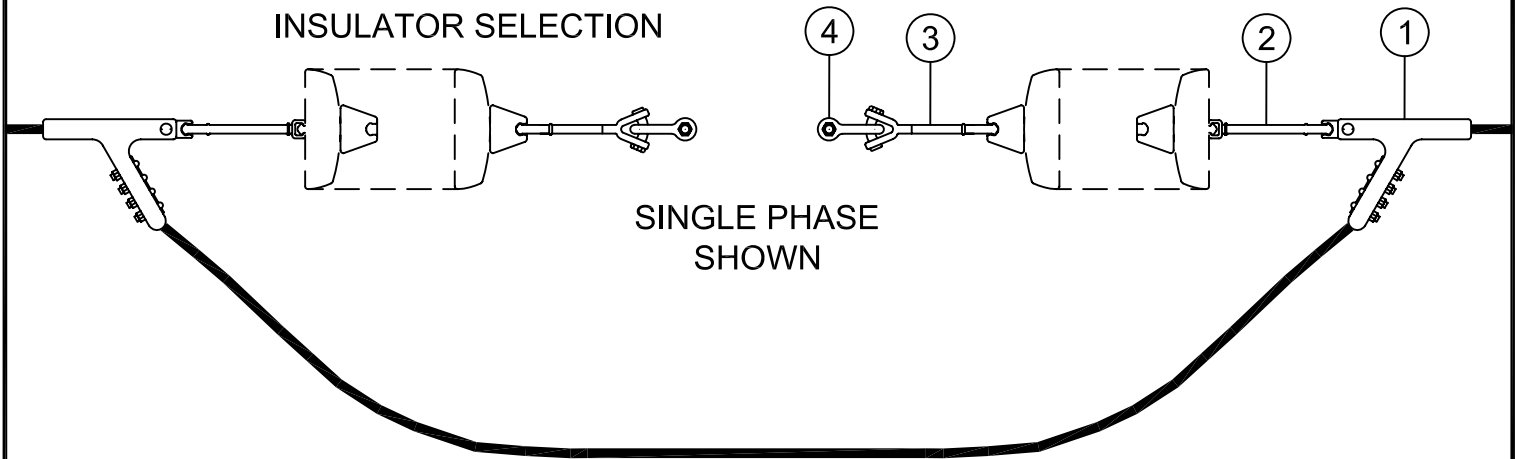
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
4	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



SINGLE PHASE
SHOWN

ASSOCIATED STANDARD:
TANGENT DEAD ENDS
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES: REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT

6 DEAD END INSULATOR STRINGS
6 BOLTED DEAD END STRAIN CLAMPS

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2-x

Sheet 1

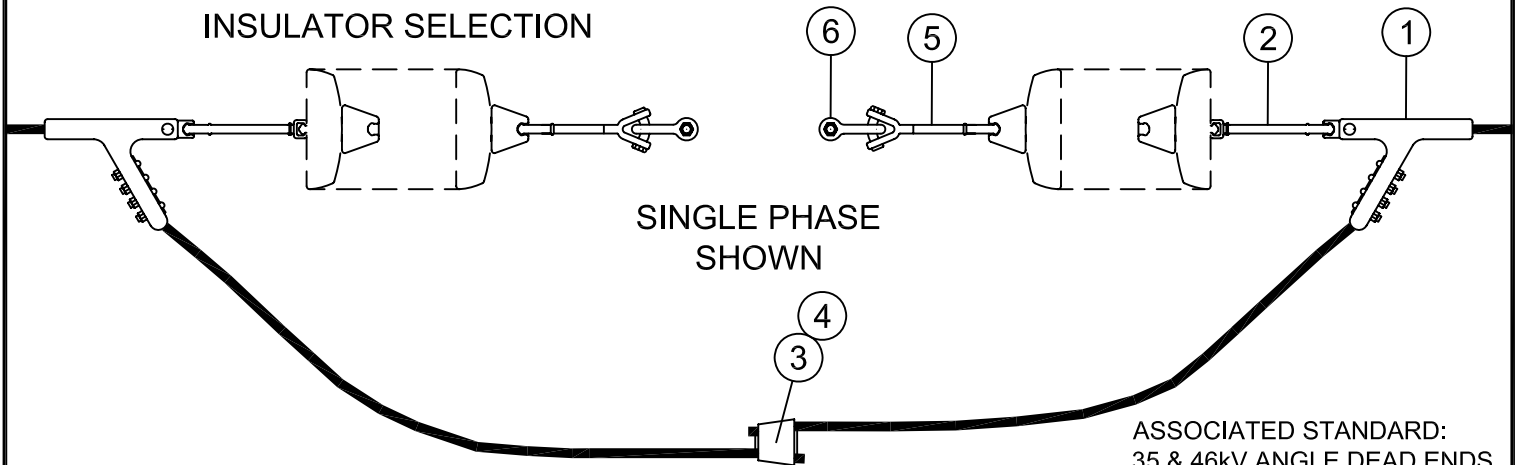
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2F1-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	3					EA	197122		CART TAP CNCTR BLU
3		3	3	3	3	EA	196185		CART TAP CNCTR YEL
4	3					EA	1003825700		CONN FRD WDG 4/0 TO 4/0
4		3				EA	1003832000		CONN FRD WDG 477 TO 477
4			3			EA	1003837000		CONN FRD WDG 795 TO 795
4				3		EA	1003842500		CONN FRD WDG 1033 TO 1033
4					3	EA	038-480-00		CONN FRD WDG 1192 TO 1192
5	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
6	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



ASSOCIATED STANDARD:
35 & 46kV ANGLE DEAD ENDS
W/O JUMPER POST
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES: REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS AND TJ-06-004 FOR FIRED-ON CONNECTORS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT - 6 DEAD END INSULATOR STRINGS
6 BOLTED DEAD END STRAIN CLAMPS
3 FIRED-ON CONNECTORS

ISSUE	0
DATE	12/13/2012

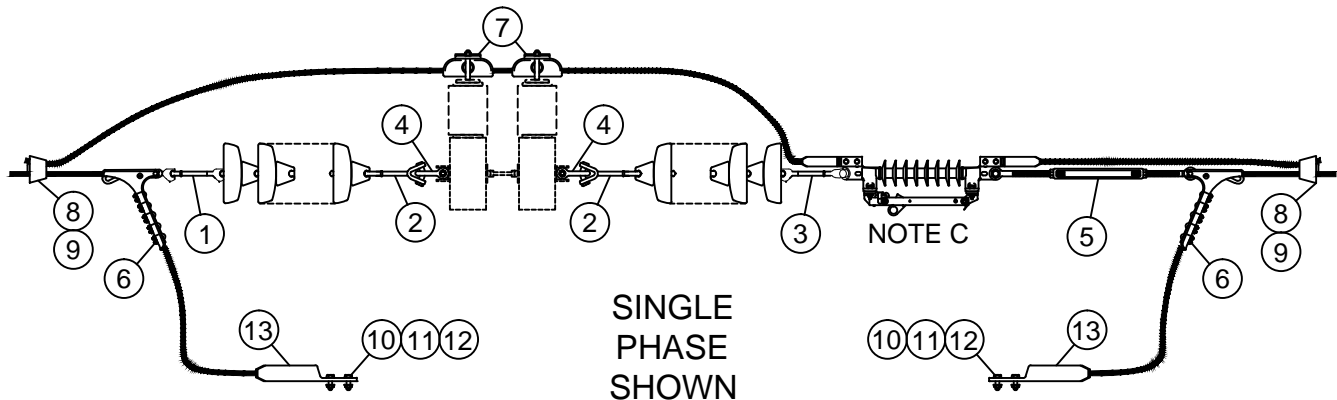
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/13/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2F1-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	UOM	IUSA MID	CU: C*CT-TS-N2F2T3-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	EA	1036432000	FITTING SCKT BALL HL 30K
2	6	6	6	6	6	6	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	3	3	3	3	3	3	EA	6000272898	FITTING CLEV-Y SCKT HL 30K BNK
4	6	6	6	6	6	6	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
5	3	3	3	3	3	3	EA	6000274527	TURNBUCKLE, 7/8 X 27 (+/- 6 IN), JAW-EYE, 30K
6		6	6				EA	6000110984	CLMP STRN AL 23K 0.46-0.86
6	6			6	6	6	EA	6000111000	CLMP STRN AL 30K 0.71-1.31
7		6					EA	1036160084	CLMP BLT POST 0.35-0.84 TGNT
7			6				EA	1036160106	CLMP BLT POST 0.70-1.06 TGNT
7	6			6	6	6	EA	1036160150	CLMP BLT POST 1.00-1.50 TGNT
8		6					EA	197122	CART TAP CNCTR BLU
8	6		6	6	6	6	EA	196185	CART TAP CNCTR YEL
9		6					EA	1003825700	CONN FRD WDG 4/0 TO 4/0
9			6				EA	1003832000	CONN FRD WDG 477 TO 477
9	6			6			EA	1003837000	CONN FRD WDG 795 TO 795
9					6		EA	1003842500	CONN FRD WDG 1033 TO 1033
9						6	EA	038-480-00	CONN FRD WDG 1192 TO 1192
10	48	48	48	48	48	48	EA	1080002004	BOLT AL BUS BAR HEX HD HVY SERIES
11	48	48	48	48	48	48	EA	1080002110	NUT AL BUS BAR HEX HD HVY SERIES
12	96	96	96	96	96	96	EA	1080002710	WSHR AL FLAT 7/8 OF FOR 1/2 BOLT
13		12					EA	1086050202	CONN COMP TERM 2H PAD 0.52 - 0.563
13			12				EA	1086050406	CONN COMP TERM 4H PAD 0.814
13	12			12			EA	6000117401	CONN COMP TERM 4H PAD 1.108
13					12		EA	1086050413	CONN COMP TERM 4H PAD 1.212
13						12	EA	1086050419	CONN COMP TERM 4H PAD 1.302



CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: FOR NESC HEAVY TENSIONS OF LESS THAN 10,000 LBS. PER SUBCONDUCTOR. FOR NESC HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

NOTE C: REFER TO SECTION TU FOR SWITCH AND IN-LINE DISCONNECT INFORMATION.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT - CONNECTION TO SWITCH AND IN-LINE DISCONNECT
6 DEAD END INSULATOR STRINGS - 6 POST INSULATORS
6 STRAIN CLAMPS - 6 POST CLAMPS - 6 FIRED-ON CONNECTORS - 12 TERMINAL PADS

REVISION
00
DATE
5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	10/10/2014	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TS-N2F2T3-X

Sheet 1

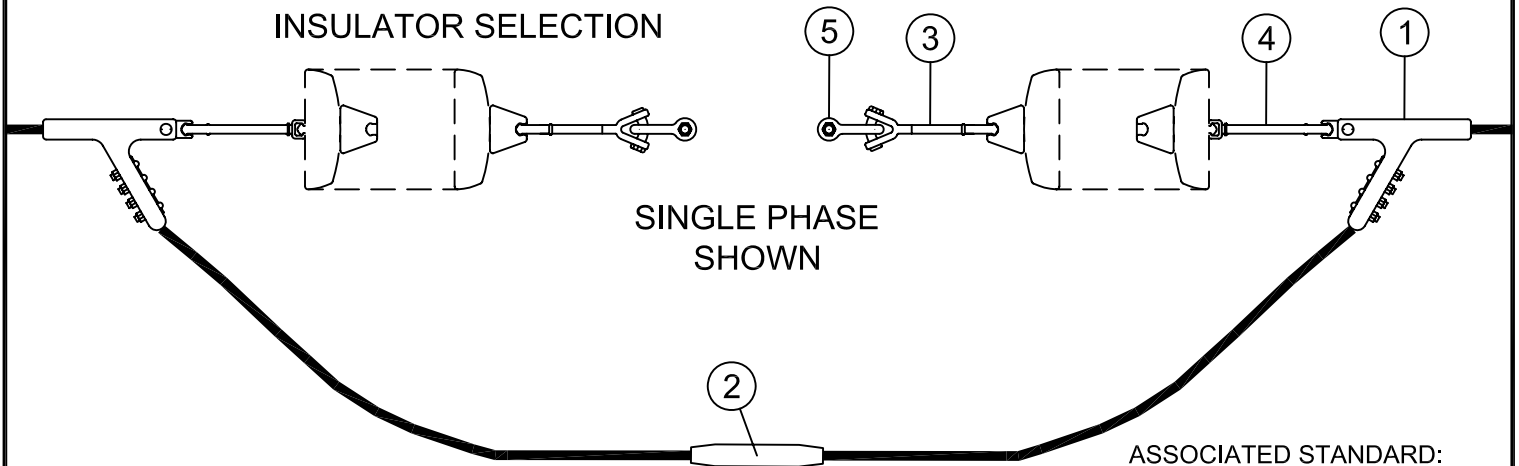
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2L1-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	3					EA	1039245005		SPLC LOOP 0.563-0.570
2		3				EA	1039244515		SPLC LOOP 0.518 DIA
2			3			EA	1039245035		SPLC LOOP 1.063-1.108
2				3		EA	1039245055		SPLC LOOP 1.212 DIA
2					3	EA	1039245065		SPLC LOOP 1.302 DIA
3	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
4	6	6	6	6	6	EA	1036432000		FTTG SOC BALL SM HL 30K
5	6	6	6	6	6	EA	1039220531		SHACKLE ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



SINGLE PHASE
SHOWN

ASSOCIATED STANDARD:
69-230kV ANGLE DEAD ENDS
W/O JUMPER POST
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES: REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS
AND TJ-07-002 FOR LOOP SPLICES.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS
6 BOLTED DEAD END STRAIN CLAMPS - 3 LOOP SPLICES

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2L1-x

Sheet 1

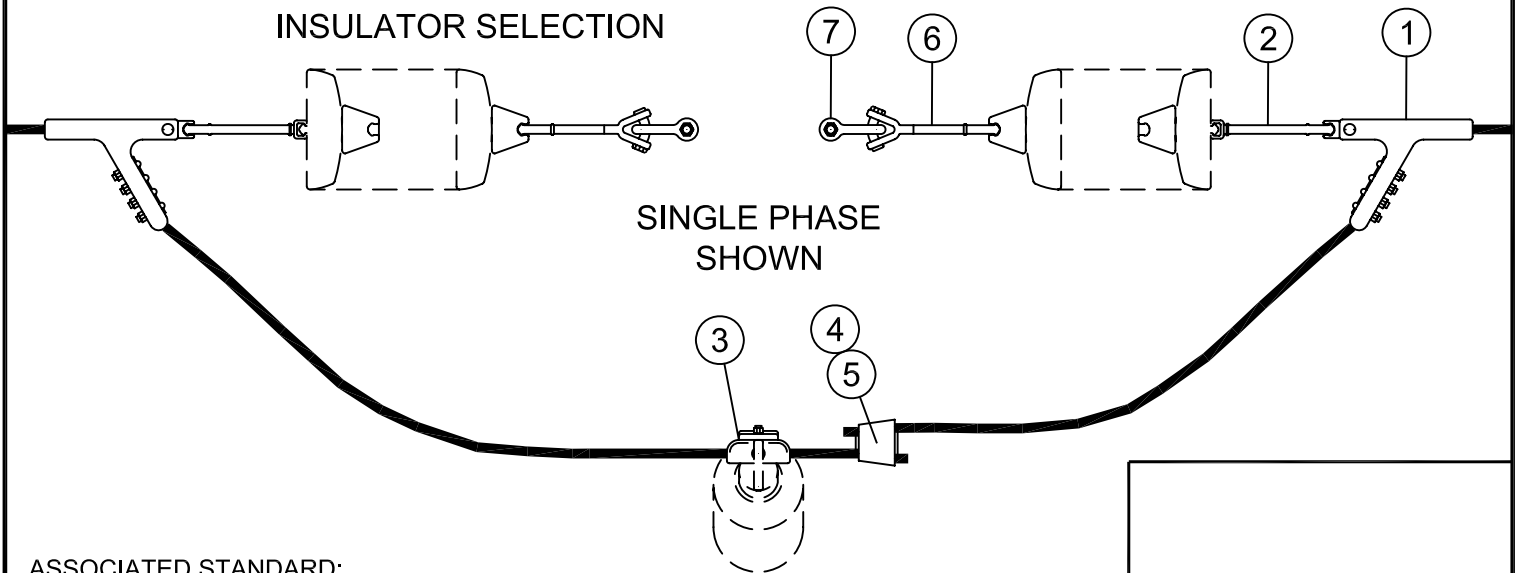
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2P1F1-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	3					EA	1036160084		CLMP BLT POST 0.35-0.84 TNGT
3		3				EA	1036160106		CLMP BLT POST 0.70-1.06 TNGT
3			3	3	3	EA	1036160150		CLMP BLT POST 1.00-1.50 TNGT
4	3					EA	197122		CART TAP CNCTR BLU
4		3	3	3	3	EA	196185		CART TAP CNCTR YEL
5	3					EA	1003825700		CONN FRD WDG 4/0 TO 4/0
5		3				EA	1003832000		CONN FRD WDG 477 TO 477
5			3			EA	1003837000		CONN FRD WDG 795 TO 795
5				3		EA	1003842500		CONN FRD WDG 1033 TO 1033
5					3	EA	038-480-00		CONN FRD WDG 1192 TO 1192
6	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
7	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



ASSOCIATED STANDARD:
35 & 46kV ANGLE DEAD END W/ JUMPER POST,
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES:
REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS, TJ-02-001 FOR POST
INSULATOR CLAMPS (W/O RODS) AND TJ-06-004 FOR FIRED-ON CONNECTORS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS - SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 3 POST INSULATORS
6 BOLTED DEAD END STRAIN CLAMPS
3 POST CLAMPS - 3 FIRED-ON CONNECTORS

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2013

TS-N2P1F1-x

Sheet 1

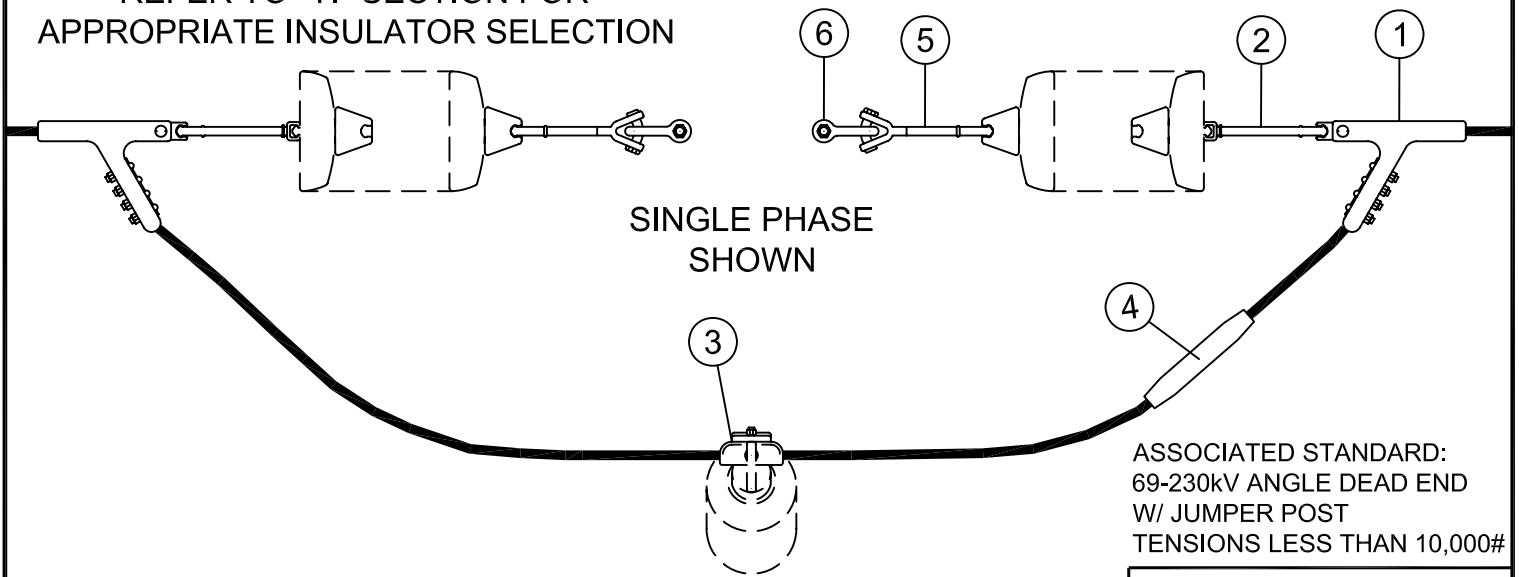
For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2P1L1-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	3					EA	1036160084		CLMP BLT POST 0.35-0.84 TNGT
3		3				EA	1036160106		CLMP BLT POST 0.70-1.06 TNGT
3			3	3	3	EA	1036160150		CLMP BLT POST 1.00-1.50 TNGT
4	3					EA	1039245005		SPLC LOOP 0.563-0.570
4		3				EA	1039244515		SPLC LOOP 0.518 DIA
4			3			EA	1039245035		SPLC LOOP 1.063-1.108
4				3		EA	1039245055		SPLC LOOP 1.212 DIA
4					3	EA	1039245065		SPLC LOOP 1.302 DIA
5	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
6	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION FOR APPROPRIATE INSULATOR SELECTION



ASSOCIATED STANDARD:
69-230kV ANGLE DEAD END
W/ JUMPER POST
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES:

REFER TO TJ-03-001 BOLTED STRAIN CLAMPS, TJ-02-001 FOR POST INSULATOR CLAMPS (W/O RODS) AND TJ-07-002 FOR LOOP SPLICES.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS - SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 3 POST INSULATORS
6 BOLTED DEAD END STRAIN CLAMPS
3 POST CLAMPS - 3 LOOP SPLICES

ISSUE	0
DATE	12/13/2012

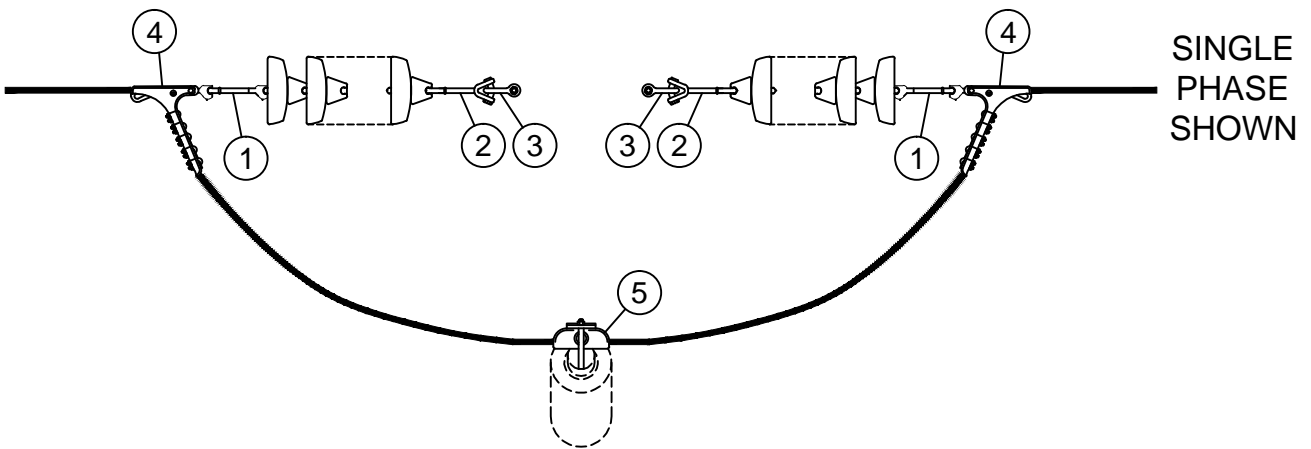
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2P1L1-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	UOM	IUSA MID	CU: C*CT-TS-N1P1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	EA	1036432000	FITTING SCKT BALL HL 30K
2	6	6	6	6	6	6	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	6	6	6	6	6	6	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
4		6	6				EA	6000110984	CLMP STRN AL 23K 0.46-0.86
4	6			6	6	6	EA	6000111000	CLMP STRN AL 30K 0.71-1.31
5		3					EA	1036160084	CLMP BLT POST 0.35-0.84 TGNT
5			3				EA	1036160106	CLMP BLT POST 0.70-1.06 TGNT
5	3			3	3	3	EA	1036160150	CLMP BLT POST 1.00-1.50 TGNT



CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: FOR NESC HEAVY TENSIONS OF LESS THAN 10,000 LBS. PER SUBCONDUCTOR. FOR NESC HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

**TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 3 POST INSULATORS
6 STRAIN CLAMPS - 3 POST CLAMPS**

REVISION
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DATE
5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	10/01/2014	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TS-N2P1-X

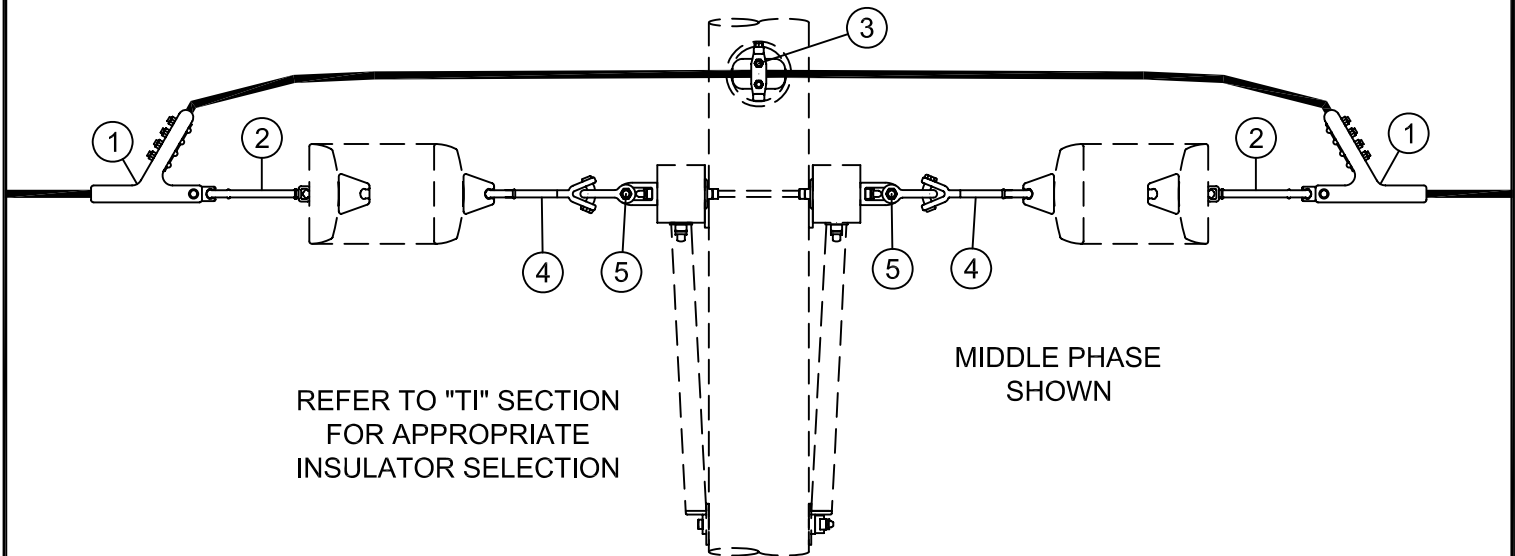
Sheet 1

For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2P4-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	1					EA	1036160084		CLMP BLT POST 0.35-0.84 TNGT
3		1				EA	1036160106		CLMP BLT POST 0.70-1.06 TNGT
3			1	1	1	EA	1036160150		CLMP BLT POST 1.00-1.50 TNGT
4	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
5	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).



ASSOCIATED STANDARD:
TANGENT DEAD ENDS
DOUBLE CROSSARM
TENSIONS LESS THAN 10,000#

FOR OTHER WIRE SIZES:
REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS AND
TJ-02-001 FOR POST INSULATOR CLAMPS (W/O RODS).

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 5/8" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 1 POST INSULATOR
6 BOLTED DEAD END STRAIN CLAMPS - 1 POST CLAMP

ISSUE
0
DATE
12/13/2012

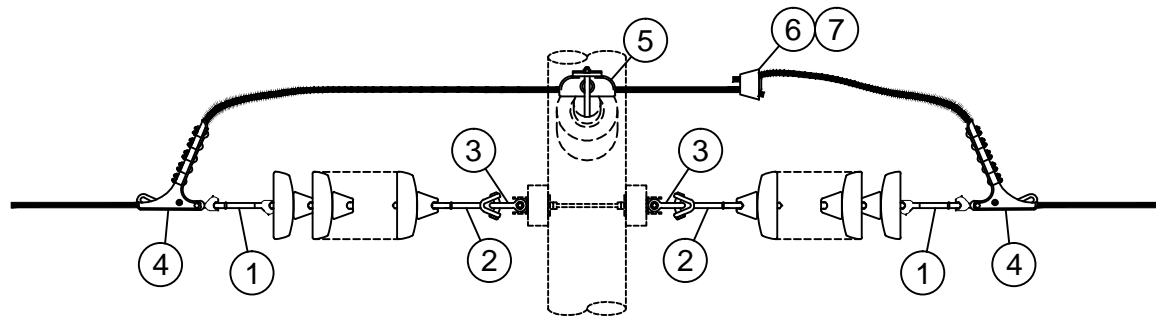
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2P4-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	UOM	IUSA MID	CU: C*CT-TS-N2P4F1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	EA	1036432000	FITTING SCKT BALL HL 30K
2	6	6	6	6	6	6	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	6	6	6	6	6	6	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
4		6	6				EA	6000110984	CLMP STRN AL 23K 0.46-0.86
4	6			6	6	6	EA	6000111000	CLMP STRN AL 30K 0.71-1.31
5		1					EA	1036160084	CLMP BLT POST 0.35-0.84 TGNT
5			1				EA	1036160106	CLMP BLT POST 0.70-1.06 TGNT
5	1			1	1	1	EA	1036160150	CLMP BLT POST 1.00-1.50 TGNT
6		3					EA	197122	CART TAP CNCTR BLU
6	3		3	3	3	3	EA	196185	CART TAP CNCTR YEL
7		3					EA	1003825700	CONN FRD WDG 4/0 TO 4/0
7			3				EA	1003832000	CONN FRD WDG 477 TO 477
7	3			3			EA	1003837000	CONN FRD WDG 795 TO 795
7					3		EA	1003842500	CONN FRD WDG 1033 TO 1033
7						3	EA	038-480-00	CONN FRD WDG 1192 TO 1192



**SINGLE
PHASE
SHOWN**

CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF
ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS
AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: FOR NESC HEAVY TENSIONS OF LESS THAN 10,000 LBS. PER SUBCONDUCTOR. FOR NESC
HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

NOTE C: THIS ASSEMBLY IS ONLY TO BE USED IN A SITUATION WHERE ONLY A SINGLE PHASE
JUMPER IS SUPPORTED BY A POST AND THE OTHER TWO PHASES DO NOT HAVE SUPPORTED
JUMPER LOOPS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

**TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 1 POST INSULATOR
6 STRAIN CLAMPS - 1 POST CLAMP - 3 FIRED-ON CONNECTORS**

REVISION
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DATE
5/21/2015

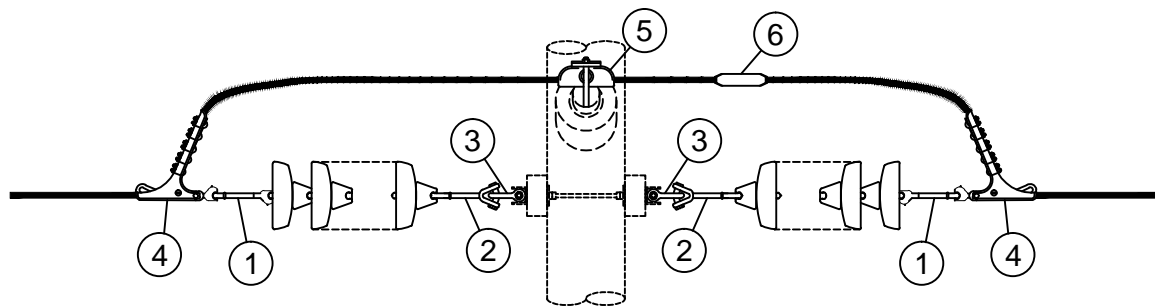
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	10/01/2014	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TS-N2P4F1-X

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	UOM	IUSA MID	CU: C*CT-TS-N2P4L1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	EA	1036432000	FITTING SCKT BALL HL 30K
2	6	6	6	6	6	6	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	6	6	6	6	6	6	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
4		6	6				EA	6000110984	CLMP STRN AL 23K 0.46-0.86
4	6			6	6	6	EA	6000111000	CLMP STRN AL 30K 0.71-1.31
5		1					EA	1036160084	CLMP BLT POST 0.35-0.84 TGNT
5			1				EA	1036160106	CLMP BLT POST 0.70-1.06 TGNT
5	1			1	1	1	EA	1036160150	CLMP BLT POST 1.00-1.50 TGNT
6		3					EA	1039245005	SPLC LOOP 4/0 AAAC 19
6			3				EA	6000580044	SPLC LOOP 0.518 DIA.
6	3			3			EA	1039245035	SPLC LOOP 1.063-1.108 DIA.
6					3		EA	1039245055	SPLC LOOP 1.212 DIA.
6						3	EA	1039245065	SPLC LOOP 1.302 DIA.



**SINGLE
PHASE
SHOWN**

CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF
ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS
AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: FOR NESC HEAVY TENSIONS OF LESS THAN 10,000 LBS. PER SUBCONDUCTOR. FOR NESC
HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

NOTE C: THIS ASSEMBLY IS ONLY TO BE USED IN A SITUATION WHERE ONLY A SINGLE PHASE
JUMPER IS SUPPORTED BY A POST AND THE OTHER TWO PHASES DO NOT HAVE SUPPORTED
JUMPER LOOPS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

**TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT**

**6 DEAD END INSULATOR STRINGS - 1 POST INSULATOR
6 STRAIN CLAMPS - 1 POST CLAMPS - 3 LOOP SPLICES**

REVISION
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DATE
5/21/2015

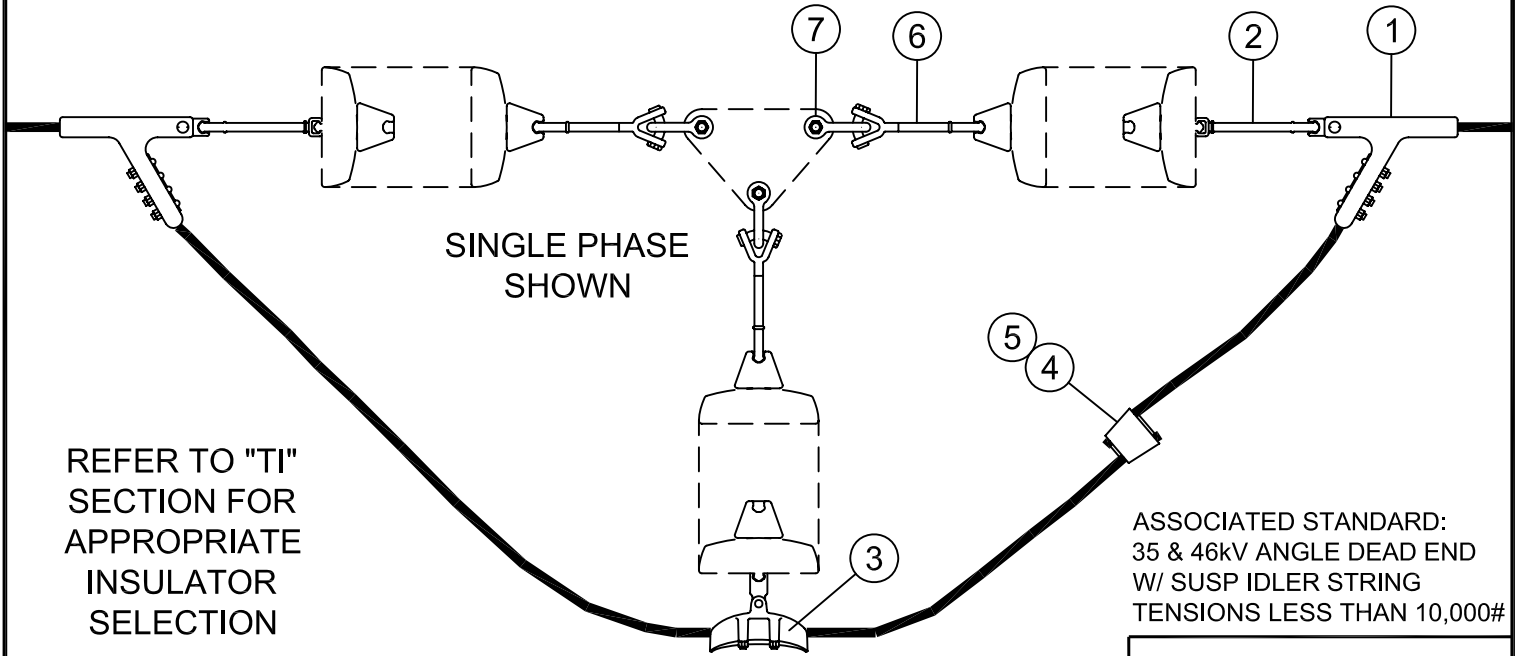
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	10/01/2014	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TS-N2P4L1-X

Sheet 1

For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2S1F1-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	3					EA	1036090070	6000111408	CLMP BLT SUSP AL W/SOC 0.20-0.70
3		3				EA	1036090085	6000111424	CLMP BLT SUSP AL W/SOC 0.40-0.85
3			3	3	3	EA	1036090136		CLMP BLT SUSP AL W/SOC 0.87-1.36
4	3					EA	197122		CART TAP CNCTR BLU
4		3	3	3	3	EA	196185		CART TAP CNCTR YEL
5	3					EA	1003825700		CONN FRD WDG 4/0 TO 4/0
5		3				EA	1003832000		CONN FRD WDG 477 TO 477
5			3			EA	1003837000		CONN FRD WDG 795 TO 795
5				3		EA	1003842500		CONN FRD WDG 1033 TO 1033
5					3	EA	038-480-00		CONN FRD WDG 1192 TO 1192
6	6	6	6	6	6	EA	1036427000	6000111424	FTTG CLEVIS-Y BALL SM HL 30K
7	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG



CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

FOR OTHER WIRE SIZES:

REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS, TJ-01-001 FOR SUSPENSION CLAMPS (W/O RODS) AND TJ-06-004 FOR FIRED-ON CONNECTORS.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS - SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 3 IDLER STRINGS
6 BOLTED DEAD END STRAIN CLAMPS
3 SUSPENSION CLAMPS - 3 FIRED-ON CONNECTORS

ISSUE	0
DATE	12/13/2012

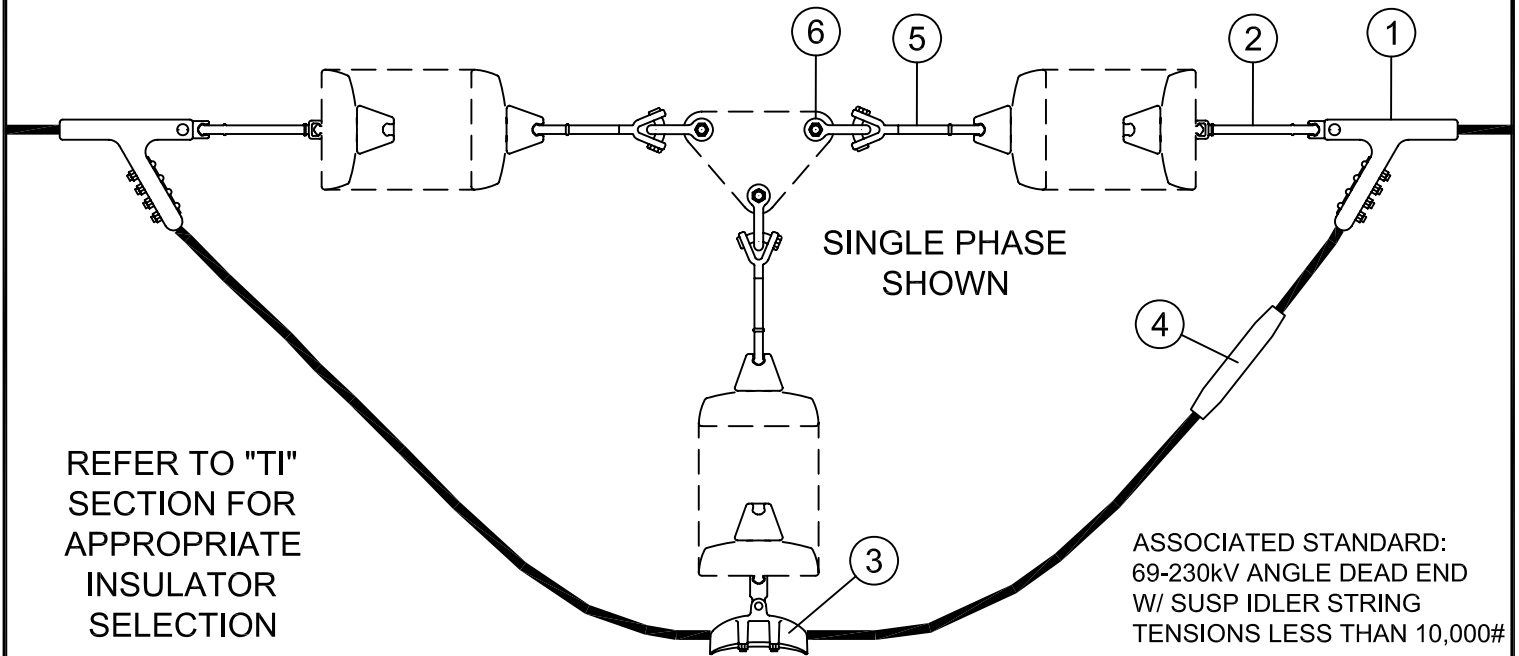
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	11/21/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2S1F1-x

Sheet 1

For use with class 52-3 & 52-5 disc insulators

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-N2S1L1-(mark)
1	6	6				EA	1036070086		CLMP BLT DE STRN AL 23K 0.46-0.86
1			6	6		EA	1036070130	6000111000	CLMP BLT DE STRN AL 30K 0.71-1.31
1					6	EA	1036080140	6000111000	CLMP BLT DE STRN AL 30K 0.90-1.40
2	6	6	6	6	6	EA	1036432000		FTTNG SOC BALL SM HL 30K
3	3					EA	1036090070	6000111408	CLMP BLT SUSP AL W/SOC 0.20-0.70
3		3				EA	1036090085	6000111424	CLMP BLT SUSP AL W/SOC 0.40-0.85
3			3	3	3	EA	1036090136		CLMP BLT SUSP AL W/SOC 0.87-1.36
4	3					EA	1039245005		SPLC LOOP 0.563-0.570
4		3				EA	1039244515		SPLC LOOP 0.518 DIA
4			3			EA	1039245035		SPLC LOOP 1.063-1.108
4				3		EA	1039245055		SPLC LOOP 1.212 DIA
4					3	EA	1039245065		SPLC LOOP 1.302 DIA
5	6	6	6	6	6	EA	1036427000	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
6	6	6	6	6	6	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG



CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

FOR OTHER WIRE SIZES:

REFER TO TJ-03-001 FOR BOLTED STRAIN CLAMPS, TJ-01-001 FOR SUSPENSION CLAMPS (W/O RODS) AND TJ-07-002 FOR LOOP SPLICES.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS - SINGLE CIRCUIT
6 DEAD END INSULATOR STRINGS - 3 IDLER STRINGS
6 BOLTED DEAD END STRAIN CLAMPS
3 SUSPENSION CLAMPS - 3 LOOP SPLICES

ISSUE
0
DATE
12/13/2012

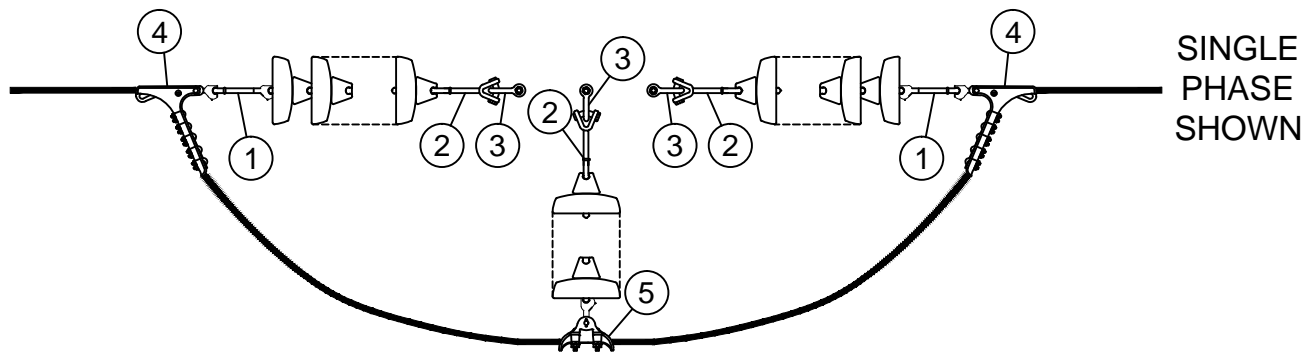
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	6/7/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-N2S1L1-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	UOM	IUSA MID	CU: C*CT-TS-N2S1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	EA	1036432000	FITTING SCKT BALL HL 30K
2	9	9	9	9	9	9	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
3	9	9	9	9	9	9	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
4		6	6				EA	6000110984	CLMP STRN AL 23K 0.46-0.86
4	6			6	6	6	EA	6000111000	CLMP STRN AL 30K 0.71-1.31
5		3	3				EA	6000111424	CLMP SUSP AL W/SCKT 17K 0.40 - 0.85
5	3			3	3	3	EA	6000111440	CLMP SUSP AL W/SCKT 25K 0.87 - 1.36



CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: FOR NESC HEAVY TENSIONS OF LESS THAN 10,000 LBS. PER SUBCONDUCTOR. FOR NESC HEAVY TENSIONS OF 10,000 LBS. OR GREATER USE COMPRESSION DEAD END ASSEMBLIES.

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Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 30"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

**TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT**

6 DEAD END INSULATOR STRINGS - 3 IDLER STRINGS
6 STRAIN CLAMPS - 3 SUSPENSION CLAMPS

REVISION
00
DATE
5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	10/01/2014	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

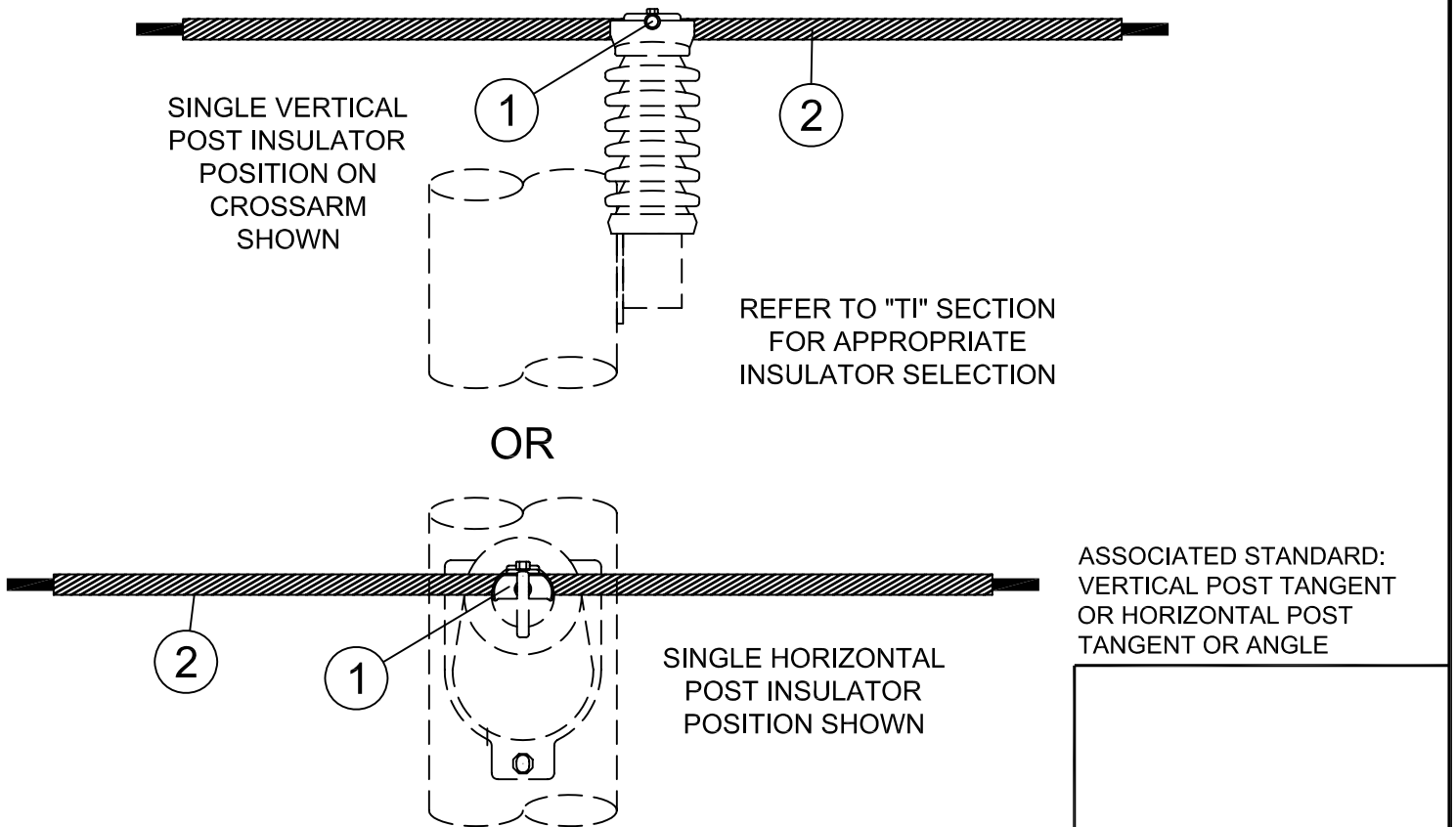
TM2.23.TS-N2S1-X

Sheet 1

mark	-1 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL		Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	MID	CU: C*CT-TS-P1A1-(mark)
1		3					SET	1007235505	ROD ARM PREFORM AL 0.552-0.585
1			3				SET	1007237020	ROD ARM PREFORM AL 0.783-0.814
1				3			SET	1007237068	ROD ARM PREFORM AL 1.099-1.139
1					3		SET	1007237075	ROD ARM PREFORM AL 1.209-1.269
1						3	SET	1007237077	ROD ARM PREFORM AL 1.270-1.327
1	3						SET	1007237065	ROD ARM PREFORM AL 1.036-1.064
2		3					EA	1036160106	CLMP BLT POST 0.70-1.06 TNGT
2			3				EA	1036160150	CLMP BLT POST 1.00-1.50 TNGT
2	3			3	3		EA	1036160199	CLMP BLT POST 1.50-2.00 TNGT
2						3	EA	1036160230	CLMP BLT POST 1.90-2.30 TNGT

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*).



FOR OTHER WIRE SIZES: REFER TO TJ-02-001 FOR POST INSULATOR CLAMPS AND TJ-05-001 FOR PREFORMED ARMOR RODS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT
HORIZONTAL OR VERTICAL POST INSULATORS
3 POST CLAMPS - 3 SETS ARMOR RODS

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	10/1/2011	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-P1A1-x

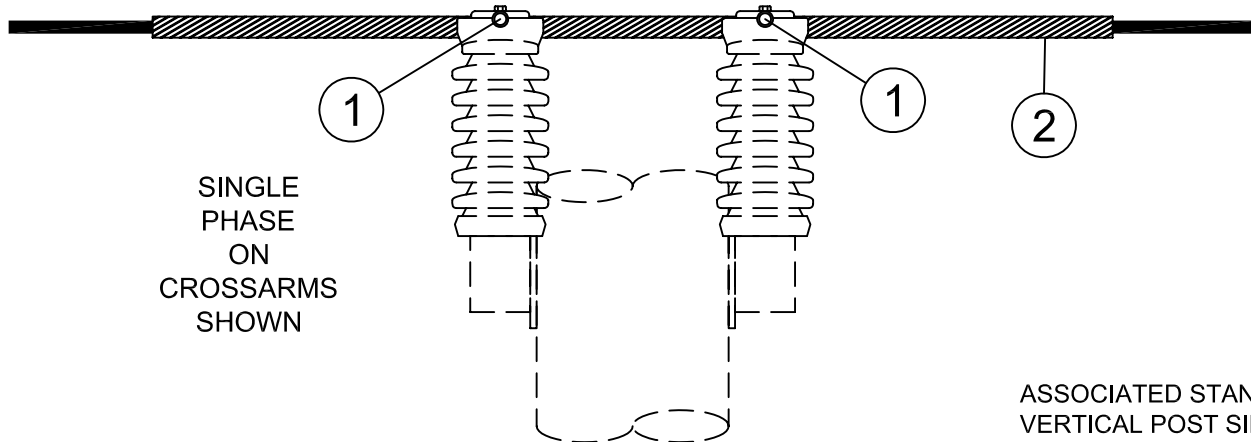
Sheet 1

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-P2A1-(mark)
1	3					SET	1007235505		ROD ARM PREFORM AL 0.552-0.585
1		3				SET	1007237020	6000220410	ROD ARM PREFORM AL 0.783-0.814
1			3			SET	1007237068	6000220470	ROD ARM PREFORM AL 1.099-1.139
1				3		SET	1007237075		ROD ARM PREFORM AL 1.209-1.269
1					3	SET	1007237077		ROD ARM PREFORM AL 1.270-1.327
2	6					EA	1036160106		CLMP BLT POST 0.70-1.06 TNGT
2		6				EA	1036160150		CLMP BLT POST 1.00-1.50 TNGT
2			6	6		EA	1036160199		CLMP BLT POST 1.50-2.00 TNGT
2					6	EA	1036160230		CLMP BLT POST 1.90-2.30 TNGT

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).

REFER TO "TI" SECTION
FOR APPROPRIATE
INSULATOR SELECTION



SINGLE
PHASE
ON
CROSSARMS
SHOWN

ASSOCIATED STANDARD:
VERTICAL POST SINGLE
CIRCUIT DOUBLE ARM
TANGENT STRUCTURE

FOR OTHER WIRE SIZES: REFER TO TJ-02-001 FOR POST INSULATOR CLAMPS
AND TJ-05-001 FOR PREFORMED ARMOR RODS.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT

6 VERTICAL POST INSULATORS
6 POST CLAMPS - 3 SETS ARMOR RODS

ISSUE
0
DATE
12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	10/1/2012	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

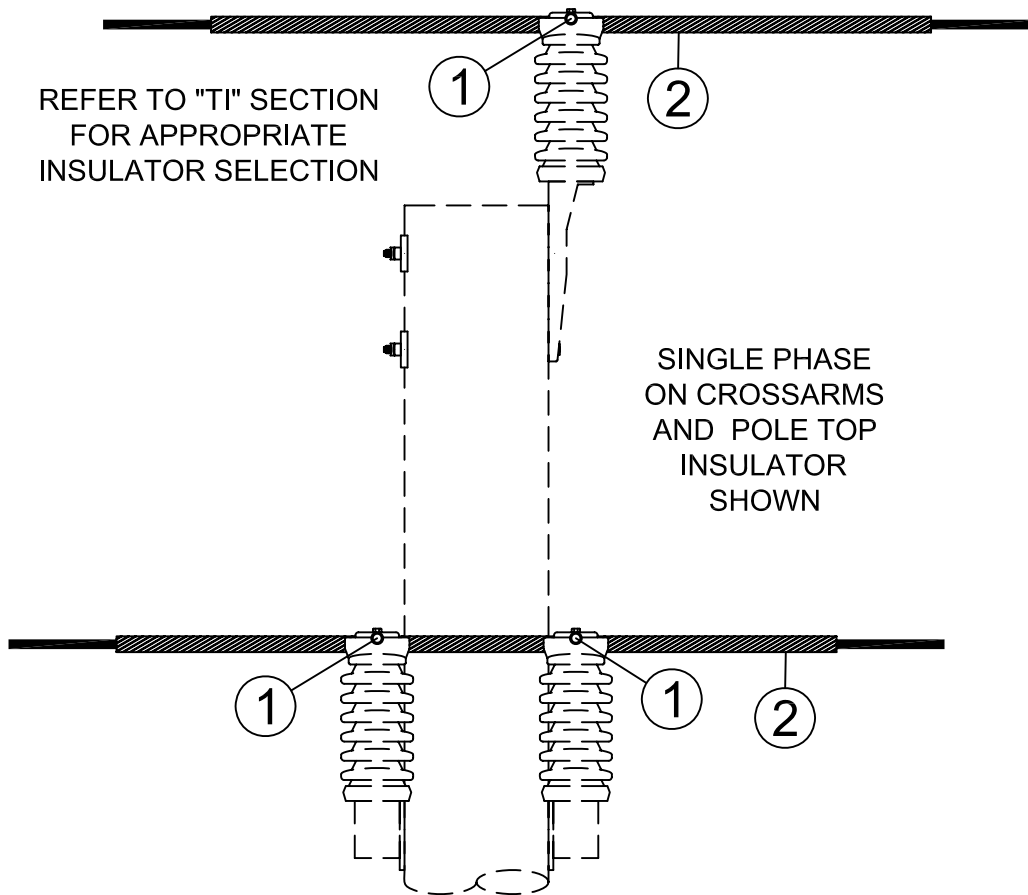
TS-P2A1-x

Sheet 1

mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-P5A1-(mark)
1	3					SET	1007235505		ROD ARM PREFORM AL 0.552-0.585
1		3				SET	1007237020	6000220410	ROD ARM PREFORM AL 0.783-0.814
1			3			SET	1007237068	6000220470	ROD ARM PREFORM AL 1.099-1.139
1				3		SET	1007237075		ROD ARM PREFORM AL 1.209-1.269
1					3	SET	1007237077		ROD ARM PREFORM AL 1.270-1.327
2	5	5				EA	1036160106		CLMP BLT POST 0.70-1.06 TNGT
2			5			EA	1036160150		CLMP BLT POST 1.00-1.50 TNGT
2				5		EA	1036160199		CLMP BLT POST 1.50-2.00 TNGT
2					5	EA	1036160230		CLMP BLT POST 1.90-2.30 TNGT

CU Function: TL69 for 35kV & 46kV, TG69 for 69kV thru 344kV, T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG, 6 for CMP or 9 for RG&E in place of asterisk (C*_).



FOR OTHER WIRE SIZES: REFER TO TJ-02-001 FOR POST INSULATOR CLAMPS AND TJ-05-001 FOR PREFORMED ARMOR RODS.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 3/4" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT

VERTICAL POST INSULATORS
5 POST CLAMPS - 3 SETS ARMOR RODS

ISSUE	0
DATE	12/13/2012

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	10/1/2012	Bartczak/Becken/Shepard	11/17/2011	Barry R. Hart	12/13/2012

TS-P5A1-x

Sheet 1

For use with class 52-3 & 52-5 disc insulators

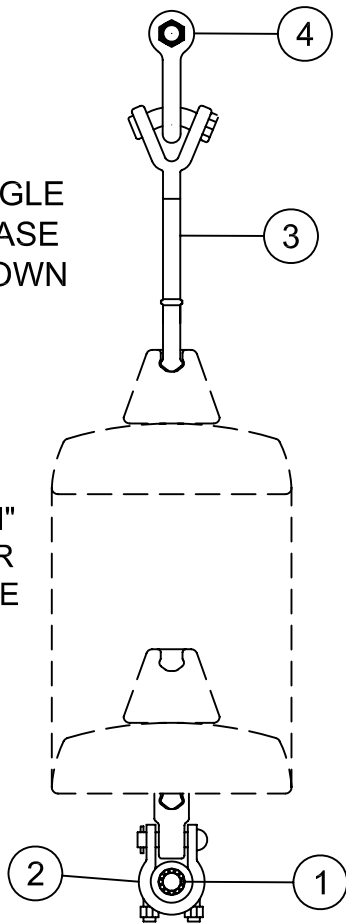
mark	-3 4/0 alliance	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	BILL OF MATERIAL			Type of CU: CNDO
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	UOM	NYSEG MID	CMP MID	CU: C*CT-TS-S1A1-(mark)
1	3					SET	1007235505		ROD ARM PREFORM AL 0.552-0.585
1		3				SET	1007237020	6000220410	ROD ARM PREFORM AL 0.783-0.814
1			3			SET	1007237068	6000220470	ROD ARM PREFORM AL 1.099-1.139
1				3		SET	1007237075		ROD ARM PREFORM AL 1.209-1.269
1					3	SET	1007237077		ROD ARM PREFORM AL 1.270-1.327
2	3					EA	1036090095		CLMP BLT SUSP AL W/SOC 0.50-1.04
2		3				EA	1036090149		CLMP BLT SUSP AL W/SOC 1.00-1.49
2			3	3		EA	1036090204	6000111464	CLMP BLT SUSP AL W/SOC 1.40-2.04
2					3	EA	1036090218	6000111480	CLMP BLT SUSP AL W/SOC 1.40-2.18
3	3	3	3	3	3	EA	1036427000-	6000272910	FTTG CLEVIS-Y BALL SM HL 30K
4	3	3	3	3	3	EA	1039220531		SHCKL ANCH 7/8 BNK 1-1/4 OPNG

CU Function: TL69 for 35kV & 46kV,
 TG69 for 69kV thru 344kV,
 T345 for 345kV and greater.

For correct CU: substitute 5 for NYSEG,
 6 for CMP or 9 for RG&E
 in place of asterisk (C*_).

SINGLE
 PHASE
 SHOWN

REFER TO "TI"
 SECTION FOR
 APPROPRIATE
 INSULATOR
 SELECTION



ASSOCIATED STANDARD:
 TANGENT OR ANGLE
 SUSPENSION 0° - 28°

FOR OTHER WIRE SIZES: REFER TO TJ-01-001 FOR SUSPENSION CLAMPS
 AND ASSOCIATED PREFORMED ARMOR RODS.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1-1/2" = 1'-0"



IBERDROLA USA
 TRANSMISSION
 CONSTRUCTION
 STANDARDS
 MANUAL TM2.23.00

TRANSMISSION SPECIFY DETAILS
 SINGLE CIRCUIT - 3 INSULATOR STRINGS
 TANGENT OR ANGLE SUSPENSION 0° - 28°
 3 SUSPENSION CLAMPS - 3 SETS ARMOR RODS

ISSUE
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 DATE
 12/13/2012

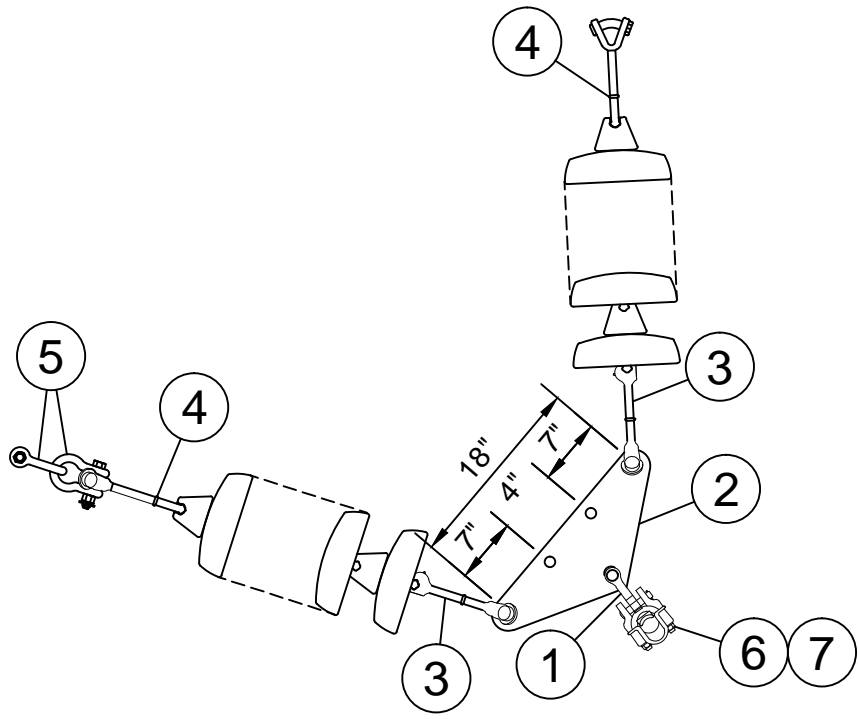
Drwn. By: L.A. Best | Date Dr.: 6/7/2011 | Checked By: Bartczak/Becken/Shepard | Date Ck.: 11/17/2011 | Approved By: Barry R. Hart | Date App.: 12/13/2012

TS-S1A1-x

Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	-L 1590 54/19	UOM	IUSA MID	CU: C*CT-TS-S1A1Y1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	6	EA	6000272940	FITTING Y-CLEVIS 11/16, 30K
2	3	3	3	3	3	3	3	EA	6000274071	YOKE AL TRIANGLE 40K
3	6	6	6	6	6	6	6	EA	6000272898	FITTING CLEV-Y SCKT HL 30K BNK
4	6	6	6	6	6	6	6	EA	6000272910	FITTING CLEV-Y BALL HL 30K BNK
5	6	6	6	6	6	6	6	EA	1039220531	SHCKL ANCH 7/8 BNK 1-1/4 OPG
6	3							EA	1007237065	ROD ARMOR PREF AL. 1.036-1.064
6		3						EA	1007235505	ROD ARMOR PREF AL. 0.552-0.585
6			3					EA	1007237020	ROD ARMOR PREF AL. 477 18/1
6				3				EA	6000220470	ROD ARMOR PREF AL. 1.099-1.139
6					3			EA	6000220490	ROD ARMOR PREF AL. 1.209-1.269
6						3		EA	6000220500	ROD ARMOR PREF AL. 1.27-1.327
6							3	EA	6000220510	ROD ARMOR PREF AL. EHV 1.509-1.578
7			3					EA	1036090149	CLMP SUSP AL W/ SCKT, 1.40-2.04
7		3						EA	1036090104	CLMP SUSP AL W/ SCKT, 0.50-1.04
7	3			3	3	3		EA	6000111470	CLMP SUSP AL W/ SCKT, 1.40-2.04
7							3	EA	6000111488	CLMP SUSP AL W/ SCKT, 1.50-2.13



**SINGLE
PHASE
SHOWN**

CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV OR T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF
ASTERISK (C*_)

NOTE A: FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS
AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

NOTE B: IF USED FOR TANGENT STRUCTURE MOVE 1 SHACKLE (PART #5) TO OTHER SIDE OF
ASSEMBLY CONNECTING Y-BALL CLEVIS (PART #4) TO STRUCTURE.

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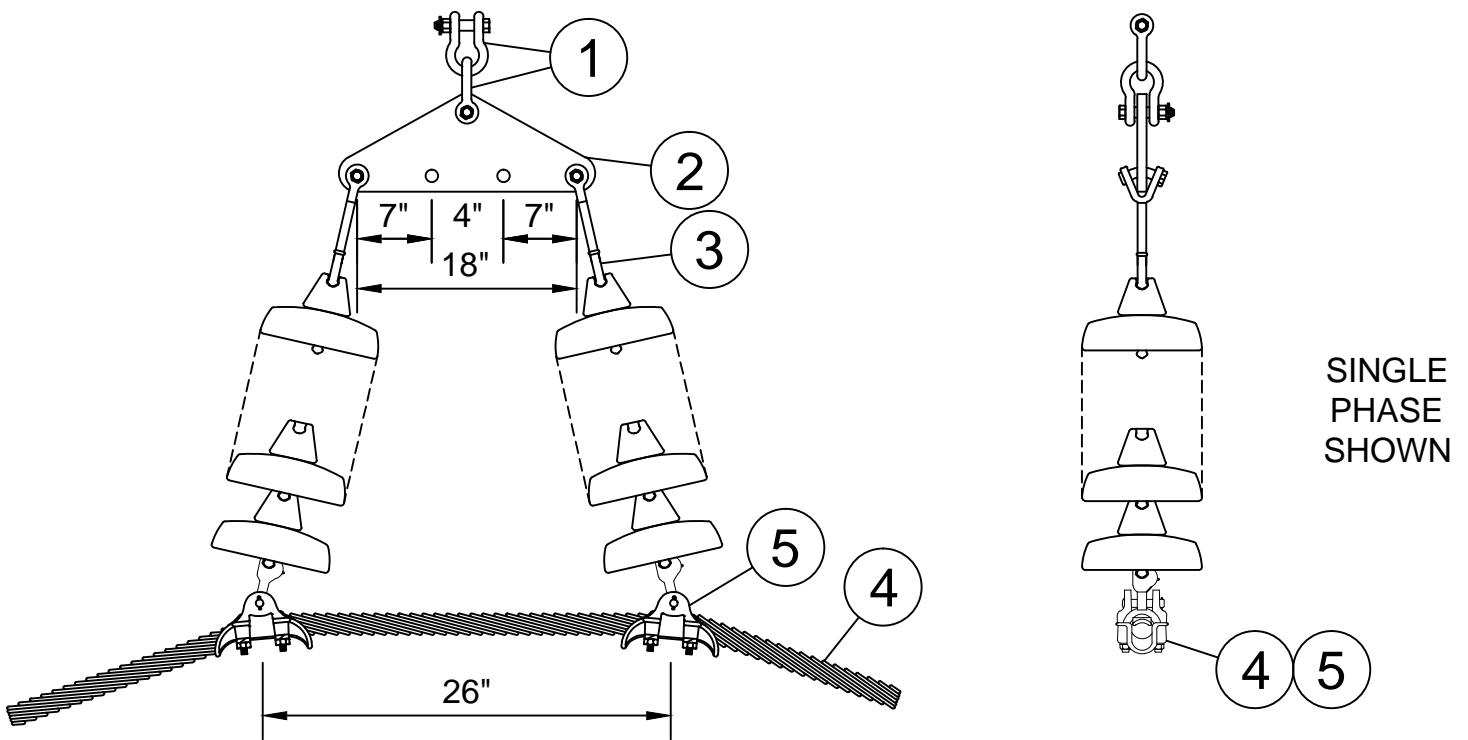
Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 15"

	TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION SPECIFY DETAILS SINGLE CIRCUIT 3 INSULATOR V-STRINGS - ANGLE SUSPENSION 3 SUSPENSION CLAMPS - 3 SETS ARMOR RODS - 3 YOKE PLATES				REVISION 00
		TM2.23.TS-S1A1Y1-X				DATE 5/21/2015
Drwn. By: B. Franklin	Date Dr.: 9/3/2013	Checked By: Becken/Hart	Date Ck.: 12/24/2014	Approved By: Barry R. Hart	Date App.: 12/24/2014	Sheet 1

BILL OF MATERIAL - ALL ASSEMBLIES (Type of CU: CNDO)

MARK	-J 795 45/7	-3 4/0 AAAC 7	-B 477 18/1	-X 795 26/7	-F 1033 45/7	-K 1192 45/7	-L 1590 54/19	UOM	IUSA MID	CU: C*CT-TS-S2A6Y1-(MARK)
ITEM NO.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.	QTY.			
1	6	6	6	6	6	6	6	EA	1039220531	SHCKL ANCH 3/4 BNK 1-1/16 OPNG
2	3	3	3	3	3	3	3	EA	6000274071	YOKE AL TRIANGLE 40K
3	6	6	6	6	6	6	6	EA	6000272910	FITTING CLEV-Y BALL HL 3/4" BNK
4	6							SET	1007237065	ROD ARMOR PREF AL. 1.036-1.064
4		6						SET	1007235505	ROD ARMOR PREF AL. 0.552-0.585
4			6					SET	1007237020	ROD ARMOR PREF AL. 477 18/1
4				6				SET	6000220470	ROD ARMOR PREF AL. 1.099-1.139
4					6			SET	6000220490	ROD ARMOR PREF AL. 1.209-1.269
4						6		SET	6000220500	ROD ARMOR PREF AL. 1.27-1.327
4							6	SET	6000220510	ROD ARMOR PREF AL. EHV 1.509-1.578
5		6						EA	1036090149	CLMP SUSP AL W/ SCKT, 1.40-2.04
5			6					EA	1036090149	CLMP SUSP AL W/ SCKT, 1.40-2.04
5	6			6	6	6		EA	6000111470	CLMP SUSP AL W/ SCKT, 1.40-2.04
5							6	EA	6000111488	CLMP SUSP AL W/ SCKT, 1.80-2.13



CU FUNCTION: TL69 FOR 35KV & 46KV, TG69 FOR 69KV THRU 344 KV, T345 FOR 345KV & GREATER

FOR CORRECT CU: SUBSTITUTE 5 FOR NYSEG, 6 FOR CMP OR 9 FOR RG&E IN PLACE OF ASTERISK (C*_)

FOR OTHER WIRE SIZES: REFER TO TJ-01-001 THRU TJ-01-003 FOR SUSPENSION CLAMPS AND TJ-05-001 THRU TJ-05-003 FOR PREFORMED ARMOR RODS

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

Contact Engineering Standards - Transmission Section for the creation of new standards and CUs.

Drawing Scale: 1" = 15"



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

TRANSMISSION SPECIFY DETAILS
SINGLE CIRCUIT - SINGLE CONDUCTOR
3 DOUBLE INSULATOR STRINGS - SUSPENSION
6 SUSPENSION CLAMPS - 3 SETS DOUBLE ARMOR RODS - 3 YOKE PLATES

REVISION
00
DATE
5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	11/16/2012	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TS-S2A6Y1-X

Sheet 1