

CU Type: UC_ANCHR

CUs limited to 17 characters

Transmission Anchor 'TH' CU Coding Format and Naming Convention

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th
U	X1	P	T	-	T	H	-	0	1	-		X2		-	X3	

X1	OpCo
2	NYSEG
3	CMP
4	RG&E

X2	Anchor Type	MID	X3	Qualifier	MID
001	screw anchor single 14" helix 1" x 7' round screw anchor rod triple eye nut	30923756 30923748 30923766	A	no extension	
			B	3'-6" extension	30923747
			C	7'-0" extension	30923748
				coupling for B & C	30923746

X2	Anchor Type	MID	X3	Qualifier	MID
002	1-1/2" square shaft screw anchor double 10" - 12" helix triple eye adaptor for 1-1/2" rod	30923773 30923772	A	37" extension	30923770
			B	59" extension	30923771

X2	Anchor Type	MID	X3	Qualifier	MID
003	1-1/2" square shaft screw anchor triple 8" - 10" - 12" helix triple eye adaptor for 1-1/2" rod	30923769 30923772	A	37" extension	30923770
			B	59" extension	30923771
	1-1/2" square shaft screw anchor triple 10" - 12" - 14" helix triple eye adaptor for 1-1/2" rod	30923774 30923772	C	37" extension	30923770
			D	59" extension	30923771

X2	Anchor Type	MID	X3	Qualifier	MID
004	1-3/4" square shaft screw anchor quad 8" - 10" - 12" - 14" helix triple eye adaptor for 1-3/4" rod	30923768 30924129	A	no extension	
			B	37" extension	30923761
			C	59" extension	30923763
			D	48" extension with single 14" helix	30923762

X2	Anchor Type (CMP only)	MID	X3	Qualifier	MID
005	Log anchor - 6" x 8" twin eye 1" x 10' anchor rod flat square washer	- 30923799 30919367	A	4'-0" length	30923729
			B	8'-0" length	30923730

X2	Anchor Type	X3	Qualifier	MID
006	Auger Pile 1-1/4" anchor rod	A	15'-0" length	30923740
		B	20'-0" length	30923741
		C	25'-0" length	30923742

X2	Anchor Type	MID	X3	Qualifier	MID
007	24" crossplate anchor for 1" rod	30923781	A	1" anchor rod	30923749
	24" crossplate anchor for 1-1/4" rod	30923782	B	1-1/4" anchor rod	30923751

X2	Anchor Type	X3	Qualifier	MID
008	driven plate anchor (manta-ray)	A	type MR-2	30923724
		B	type MR-1	30923725
		C	type MR-SR	30923723


X2	Anchor Type	X3	Qualifier	MID
009	rock anchor 1" anchor rod	A	30" length	30923793
		B	53" length	30923794
		C	72" length	30923795
			96" length	30923731

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ANSI B 11" X 17"

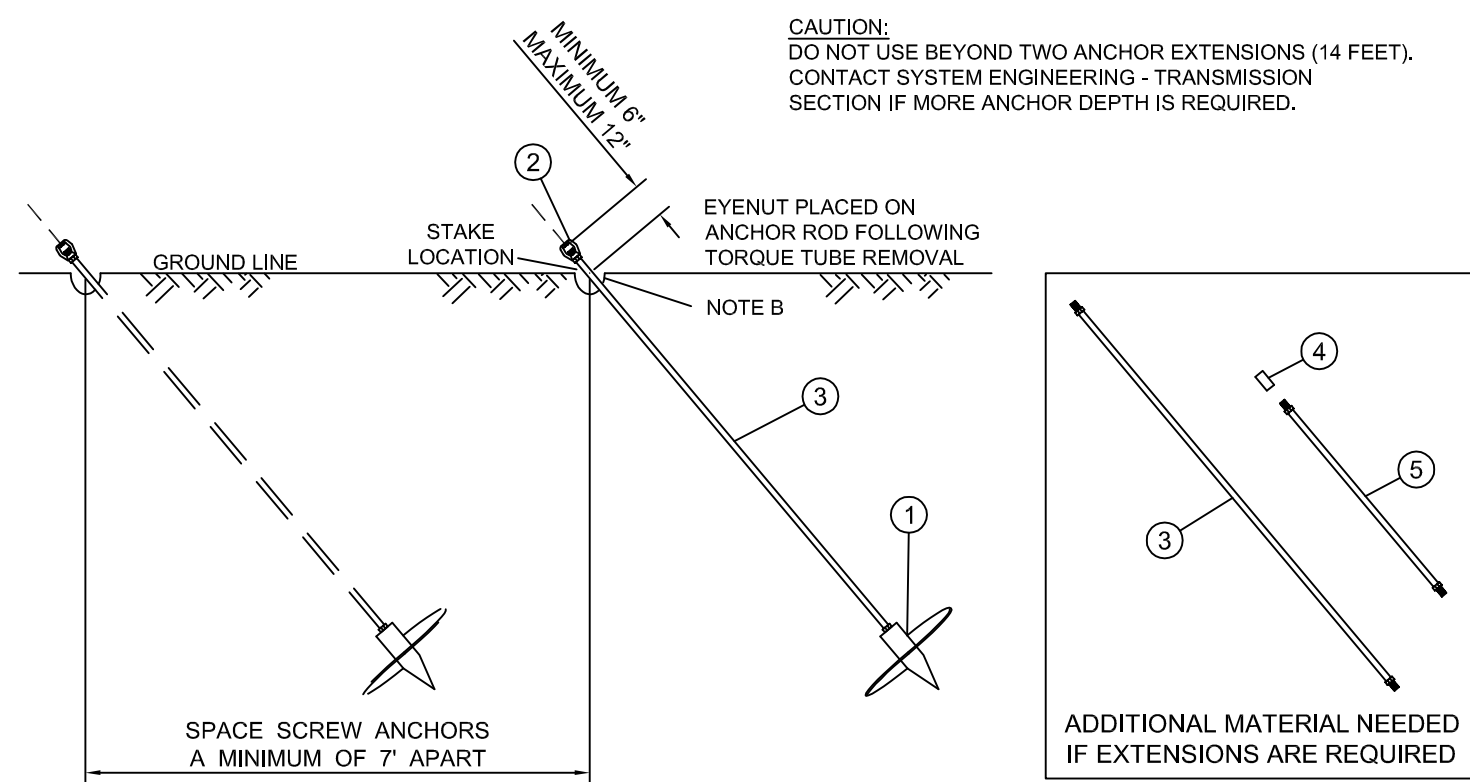
CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.					Drawing Scale: N/A	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHORS STANDARD CU FORMAT AND NAMING CONVENTION			Revision	
					01	
					Date	
					9/23/2015	
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:	TM2.23.TH-CU
L.A. Best	8/3/2015	Gauvin/Becken/Hart	9/23/2015	Barry R. Hart	9/23/2015	
						Sheet 1

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ANSI B 11" X 17"



CU Type:
UC_ANCHR

BILL OF MATERIAL - anchor assembly with no extension				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-001-A
1	1	ST	30923756	ANCH SCR 15K SGL 14 IN HLX
2	1	ST	30923766	ANCH SCR EYENT TRP 1 DIA ROD
3	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F

BILL OF MATERIAL - anchor assembly with 3'-6" extension				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-001-B
1	1	ST	30923756	ANCH SCR 15K SGL 14 IN HLX
2	1	ST	30923766	ANCH SCR EYENT TRP 1 DIA ROD
3	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F
4	1	ST	30923746	ANCH ROD SCR EXT CPLG 3/4-1 IN ROD
5	1	ST	30923747	ANCH ROD SCR THRD ENDS 36K 1 X 3F6

BILL OF MATERIAL - anchor assembly with 7'-0" extension				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-001-C
1	1	ST	30923756	ANCH SCR 15K SGL 14 IN HLX
2	1	ST	30923766	ANCH SCR EYENT TRP 1 DIA ROD
3	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F
4	1	ST	30923746	ANCH ROD SCR EXT CPLG 3/4-1 IN ROD
3	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F

TOUGH ONE 15K FT-LB ANCHOR APPLICATIONS	FOR DISTRIBUTION AND TRANSMISSION GUY LOADS, 3-1/2 AND 7 FOOT EXTENSIONS ARE USED.
INSTALL IN THESE SOIL CLASSES	CLASS 1, 2, 3, 4 AND 5 (300-1600 INCH-POUND WITH SOIL TEST PROBE)
INSTALLING EQUIPMENT REQUIRED	POWER DIGGER AND TOUGH ONE DRIVE END WRENCH ASSEMBLY
LIMITATIONS ON USE	DO NOT USE BEYOND TWO EXTENSIONS (14 FOOT). MAXIMUM INSTALLATION TORQUE IS 15,000 FOOT-POUND.

DATA IN ABOVE CHART USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION

- NOTE A: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE GUY ANGLE.
- NOTE B: DIG A SMALL HOLE AT THE ANCHOR ENTRY POINT TO PREVENT "WALKING".
- NOTE C: IF THE GROUND LINE SLOPES AWAY FROM THE POLE BEING ANCHORED, ANCHOR EXTENSIONS SHALL BE USED TO OBTAIN THE REQUIRED ROD LENGTH. REFER TO TM2.23.TH-02-001. ROD EXTENSIONS MAY ALSO BE USED TO PASS THROUGH SOFT SOILS AND REACH FIRMER LAYERS.
- NOTE D: IF GROUND CONDITIONS FORCE THE ROD LENGTH TO EXCEED 14 FEET, A DIFFERENT ANCHOR WILL HAVE TO BE USED. CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR TO BE USED.
- NOTE E: TORQUE AND DOWN-PRESSURE SHOULD BE CAREFULLY CONTROLLED DURING INSTALLATION TO AVOID HELIX DAMAGE OR CHURNING OF THE SOIL. THE APPLIED TORQUE AT ANY TIME DURING INSTALLATION SHALL NOT EXCEED THE MANUFACTURER'S RATING FOR THE ANCHOR AND TOOLING.
- NOTE F: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO TM2.23.TH-04-001. IF PULL TEST FAILS, CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR.
- NOTE G: REFER TO TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.
- NOTE H: REFER TO TM2.23.TH-02-001 FOR ROD LENGTH.
- NOTE I: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

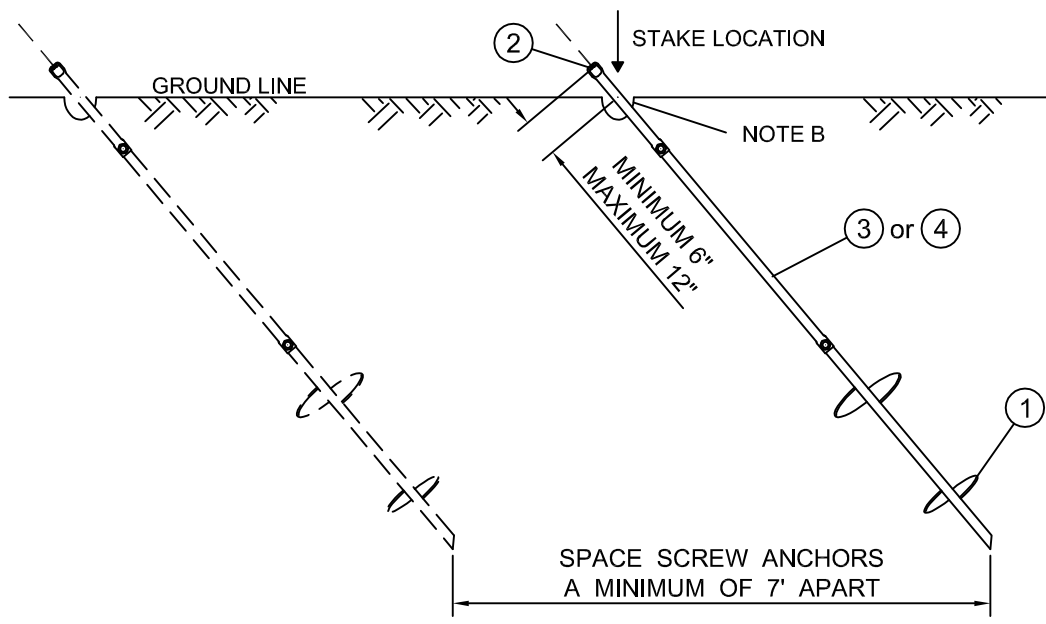
CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 3/8" = 1'-0"	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION			Revision
		SCREW ANCHOR INSTALLATION			01
			SINGLE HELIX ANCHOR		DATE
			1" ROUND ANCHOR ROD		10/21/2015
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/2/2011	Gauvin/Becken/Hart	11/15/2012	Barry R. Hart	12/13/2012
TM2.23.TH-01-001					Sheet 1

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ANSI B 11" X 17"



INSTALLATION TORQUE (FT-LB)									
1500	2000	2500	3000	3500	4000	4500	5000	5500	
18000	24000	30000	36000	42000	48000	54000	60000	66000	
LOAD CAPACITY ¹ BASED ON INSTALLATION TORQUE ² (LBS.)									

¹ Load capacities listed are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety (reference TM2,23-TC-01-001 for IUSA overload factors). More specific data on soils and anchor performance can be obtained by contacting Hubbell Power Systems.

² The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration.

MECHANICAL PROPERTIES FOR 1-1/2" SQUARE SHAFT
MAXIMUM INSTALLATION TORQUE: 7000 FT-LB.
MINIMUM ULTIMATE TENSION STRENGTH: 70,000 LBS.

- NOTE A: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE GUY ANGLE.
- NOTE B: DIG A SMALL HOLE AT THE ANCHOR ENTRY POINT TO PREVENT "WALKING".
- NOTE C: IF THE GROUND LINE SLOPES AWAY FROM THE POLE BEING ANCHORED, ANCHOR EXTENSIONS SHALL BE USED TO OBTAIN THE REQUIRED ROD LENGTH. REFER TO TM2.23.TH-02-001. ROD EXTENSIONS MAY ALSO BE USED TO PASS THROUGH SOFT SOILS AND REACH FIRMER LAYERS.
- NOTE D: IF GROUND CONDITIONS FORCE THE ROD LENGTH TO EXCEED 14 FEET, A DIFFERENT ANCHOR WILL HAVE TO BE USED. CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR TO BE USED.
- NOTE E: TORQUE AND DOWN-PRESSURE SHOULD BE CAREFULLY CONTROLLED DURING INSTALLATION TO AVOID HELIX DAMAGE OR CHURNING OF THE SOIL. THE APPLIED TORQUE AT ANY TIME DURING INSTALLATION SHALL NOT EXCEED THE MANUFACTURER'S RATING FOR THE ANCHOR AND TOOLING.
- NOTE F: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO TM2.23.TH-04-001. IF PULL TEST FAILS, CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR.
- NOTE G: REFER TO TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.
- NOTE H: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

CU Type:
UC_ANCHR

BILL OF MATERIAL - anchor assembly with 37" C-C extension				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-002-A
1	1	ST	30923773	ANCH SQS SCR 1-1/2 DBL HLX 10-12
2	1	ST	30923772	ANCH SQS GUY ADPR 1-1/2 ROD TRP EYE
3	1	ST	30923770	ANCH SQS EXT 1-1/2 ROD 37 C-C

BILL OF MATERIAL - anchor assembly with 59" C-C extension				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-002-B
1	1	ST	30923773	ANCH SQS SCR 1-1/2 DBL HLX 10-12
2	1	ST	30923772	ANCH SQS GUY ADPR 1-1/2 ROD TRP EYE
4	1	ST	30923771	ANCH SQS EXT 1-1/2 ROD 59 C-C

ANCHOR APPLICATIONS	FOR TRANSMISSION GUY LOADS, 3-1/2, 5, 7 AND 10 FOOT EXTENSIONS ARE USED.
INSTALL IN THESE SOIL CLASSES	CLASS 2, 3, 4, 5, AND 6 (200-750 INCH-POUND WITH SOIL TEST PROBE)
INSTALLING EQUIPMENT REQUIRED	POWER DIGGER AND DRIVE END WRENCH ASSEMBLY
LIMITATIONS ON USE	NOT NORMALLY RECOMMENDED FOR DEPTHS BEYOND 100 FEET. MAXIMUM INSTALLATION TORQUE IS 7000 FOOT-POUND.

DATA IN ABOVE CHARTS USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION

CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 1" = 30	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION			Revision
		SCREW ANCHOR INSTALLATION			01
		DOUBLE HELIX ANCHOR			Date
		1-1/2" SQUARE SHAFT ANCHOR ROD			10/21/2015
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/11/2012	Gauvin/Becken/Hart	12/13/2012	Barry R. Hart	12/13/2012
TM2.23.TH-01-002					Sheet 1

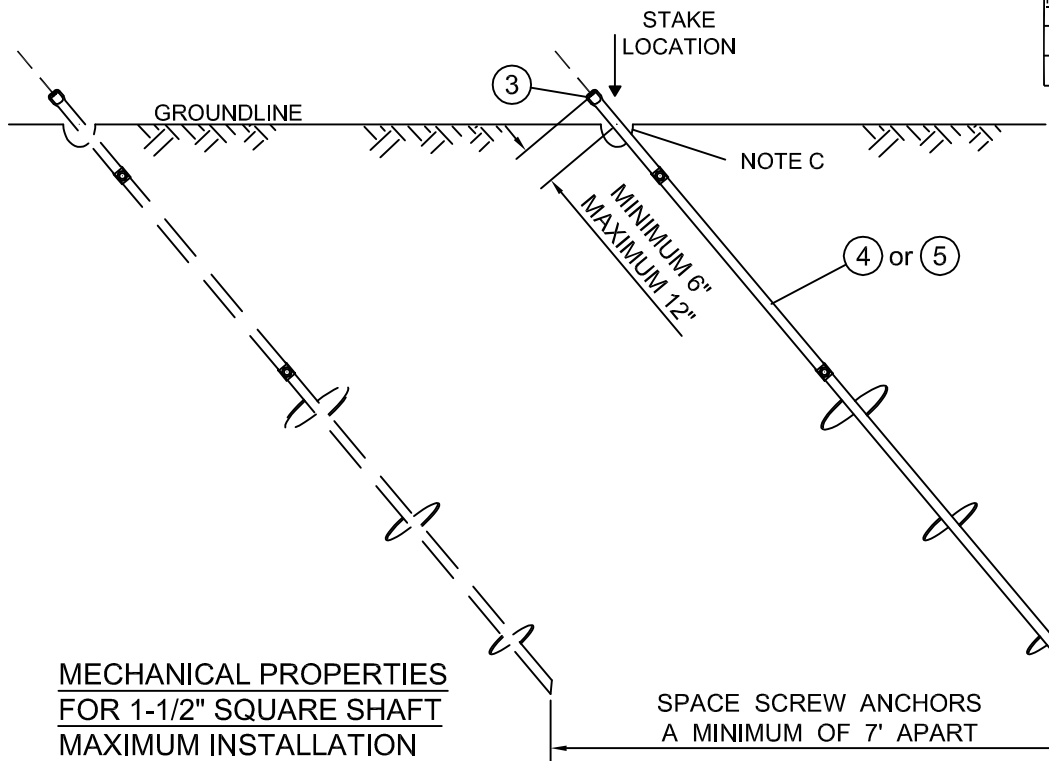
CU Type:
UC_ANCHR

ITEM NO.	1500	2000	2500	3000	3500	4000	4500	5000	5500
1	19000	25000	31000	38000	44000	50000	56000	62000	68000
2	20000	26000	32000	39000	46000	52000	58000	65000	70000

LOAD CAPACITY¹ BASED ON INSTALLATION TORQUE² (LBS.)

¹ Load capacities listed are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety (reference TM2,23-TC-01-001 for IUSA overload factors). More specific data on soils and anchor performance can be obtained by contacting Hubbell Power Systems.

² The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration.



MECHANICAL PROPERTIES FOR 1-1/2" SQUARE SHAFT
 MAXIMUM INSTALLATION TORQUE: 7000 FT-LB.
 MINIMUM ULTIMATE TENSION STRENGTH: 70,000 LBS.

- NOTE A: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE GUY ANGLE.
- NOTE B: DIG A SMALL HOLE AT THE ANCHOR ENTRY POINT TO PREVENT "WALKING".
- NOTE C: IF THE GROUND LINE SLOPES AWAY FROM THE POLE BEING ANCHORED, ANCHOR EXTENSIONS SHALL BE USED TO OBTAIN THE REQUIRED ROD LENGTH. REFER TO TM2.23.TH-02-001. ROD EXTENSIONS MAY ALSO BE USED TO PASS THROUGH SOFT SOILS AND REACH FIRMER LAYERS.
- NOTE D: IF GROUND CONDITIONS FORCE THE ROD LENGTH TO EXCEED 14 FEET, A DIFFERENT ANCHOR WILL HAVE TO BE USED. CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR TO BE USED.
- NOTE E: TORQUE AND DOWN-PRESSURE SHOULD BE CAREFULLY CONTROLLED DURING INSTALLATION TO AVOID HELIX DAMAGE OR CHURNING OF THE SOIL. THE APPLIED TORQUE AT ANY TIME DURING INSTALLATION SHALL NOT EXCEED THE MANUFACTURER'S RATING FOR THE ANCHOR AND TOOLING.
- NOTE F: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO TM2.23.TH-04-001. IF PULL TEST FAILS, CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR.
- NOTE G: REFER TO TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.
- NOTE H: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

BILL OF MATERIAL - anchor 8-10-12 assembly with 37" C-C extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-003-A
1	1	ST	30923769	ANCH SQS SCR 1-1/2 TPL HLX 8-10-12
3	1	ST	30923772	ANCH SQS GUY ADPR 1-1/2 ROD TRP EYE
4	1	ST	30923770	ANCH SQS EXT 1-1/2 ROD 37 C-C

BILL OF MATERIAL - anchor 8-10-12 assembly with 59" C-C extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-003-B
1	1	ST	30923769	ANCH SQS SCR 1-1/2 TPL HLX 8-10-12
3	1	ST	30923772	ANCH SQS GUY ADPR 1-1/2 ROD TRP EYE
5	1	ST	30923771	ANCH SQS EXT 1-1/2 ROD 59 C-C

BILL OF MATERIAL - anchor 10-12-14 assembly with 37" C-C extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-003-C
2	1	ST	30923774	ANCH SQS SCR 1-1/2 TPL HLX 10-12-14
3	1	ST	30923772	ANCH SQS GUY ADPR 1-1/2 ROD TRP EYE
4	1	ST	30923770	ANCH SQS EXT 1-1/2 ROD 37 C-C

BILL OF MATERIAL - anchor 10-12-14 assembly with 59" C-C extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-003-D
2	1	ST	30923774	ANCH SQS SCR 1-1/2 TPL HLX 10-12-14
3	1	ST	30923772	ANCH SQS GUY ADPR 1-1/2 ROD TRP EYE
5	1	ST	30923771	ANCH SQS EXT 1-1/2 ROD 59 C-C

ANCHOR APPLICATIONS	FOR TRANSMISSION GUY LOADS, 3-1/2, 5, 7 AND 10 FOOT EXTENSIONS ARE USED.
INSTALL IN THESE SOIL CLASSES	CLASS 2, 3, 4, 5, AND 6 (200-750 INCH-POUND WITH SOIL TEST PROBE)
INSTALLING EQUIPMENT REQUIRED	POWER DIGGER AND DRIVE END WRENCH ASSEMBLY
LIMITATIONS ON USE	NOT NORMALLY RECOMMENDED FOR DEPTHS BEYOND 100 FEET. MAXIMUM INSTALLATION TORQUE IS 7000 FOOT-POUND.

DATA IN ABOVE CHARTS USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION

CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

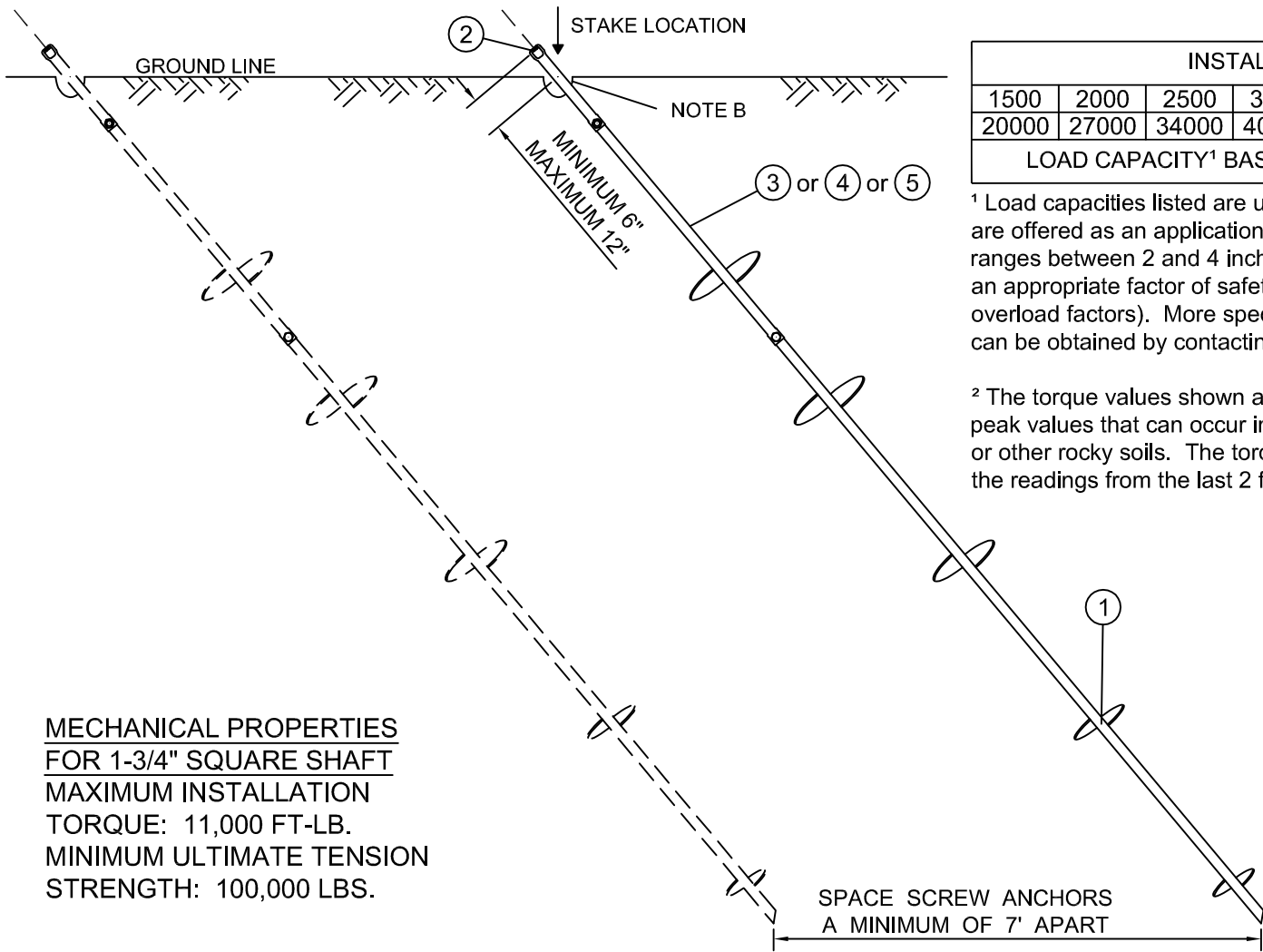
For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 1" = 30	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION			Revision
		SCREW ANCHOR INSTALLATION			01
1-1/2" SQUARE SHAFT ANCHOR ROD			Date	10/21/2015	
Drwn. By: L.A. Best	Date Dr.: 12/15/2011	Checked By: Gauvin/Becken/Hart	Date Ck.: 11/15/2012	Approved By: Barry R. Hart	Date App.: 12/13/2012
TM2.23.TH-01-003					Sheet 1

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ANSI B 11" X 17"

CU Type:
UC_ANCHR



INSTALLATION TORQUE (FT-LB)									
1500	2000	2500	3000	3500	4000	4500	5000	5500	
20000	27000	34000	40000	47000	54000	61000	68000	70000	
LOAD CAPACITY ¹ BASED ON INSTALLATION TORQUE ² (LBS.)									

¹ Load capacities listed are ultimate values based on average test data and are offered as an application guide. Typical deflection at ultimate load ranges between 2 and 4 inches. The listed values should be reduced by an appropriate factor of safety (reference TM2,23-TC-01-001 for IUSA overload factors). More specific data on soils and anchor performance can be obtained by contacting Hubbell Power Systems.

² The torque values shown are steady values in homogeneous soils, not peak values that can occur in non-homogeneous soils such as glacial till or other rocky soils. The torque values shown are obtained by averaging the readings from the last 2 feet of anchor penetration.

**MECHANICAL PROPERTIES
FOR 1-3/4" SQUARE SHAFT**
 MAXIMUM INSTALLATION
 TORQUE: 11,000 FT-LB.
 MINIMUM ULTIMATE TENSION
 STRENGTH: 100,000 LBS.

NOTE A: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE GUY ANGLE.

NOTE B: DIG A SMALL HOLE AT THE ANCHOR ENTRY POINT TO PREVENT "WALKING".

NOTE C: IF THE GROUND LINE SLOPES AWAY FROM THE POLE BEING ANCHORED, ANCHOR EXTENSIONS SHALL BE USED TO OBTAIN THE REQUIRED ROD LENGTH. REFER TO TM2.23.TH-02-001. ROD EXTENSIONS MAY ALSO BE USED TO PASS THROUGH SOFT SOILS AND REACH FIRMER LAYERS.

NOTE D: IF GROUND CONDITIONS FORCE THE ROD LENGTH TO EXCEED 14 FEET, A DIFFERENT ANCHOR WILL HAVE TO BE USED. CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR TO BE USED.

NOTE E: TORQUE AND DOWN-PRESSURE SHOULD BE CAREFULLY CONTROLLED DURING INSTALLATION TO AVOID HELIX DAMAGE OR CHURNING OF THE SOIL. THE APPLIED TORQUE AT ANY TIME DURING INSTALLATION SHALL NOT EXCEED THE MANUFACTURER'S RATING FOR THE ANCHOR AND TOOLING.

NOTE F: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO TM2.23.TH-04-001. IF PULL TEST FAILS, CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR.

NOTE G: REFER TO TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.

NOTE H: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

BILL OF MATERIAL - anchor 8-10-12-14 assembly with no extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-004-A
1	1	ST	30923768	ANCH SCR SQS 8-10-12-14 QD HLX 1-3/4 ROD
2	1	ST	30924129	GYNG ADPR TRP EYE GUY 1 3/4" DIA SCR ANC

BILL OF MATERIAL - anchor 8-10-12-14 assembly with 37" C-C extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-004-B
1	1	ST	30923768	ANCH SCR SQS 8-10-12-14 QD HLX 1-3/4 ROD
2	1	ST	30924129	GYNG ADPR TRP EYE GUY 1 3/4" DIA SCR ANC
3	1	ST	30923761	ANCH SCR EXT 1-3/4 ROD 37 C-C

BILL OF MATERIAL - anchor 8-10-12-14 assembly with 59" C-C extension

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-004-C
1	1	ST	30923768	ANCH SCR SQS 8-10-12-14 QD HLX 1-3/4 ROD
2	1	ST	30924129	GYNG ADPR TRP EYE GUY 1 3/4" DIA SCR ANC
4	1	ST	30923763	ANCH SCR EXT 1-3/4 ROD 59 C-C

BILL OF MATERIAL - anchor 8-10-12-14 assembly with 48" C-C extension 14" helix

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-004-D
1	1	ST	30923768	ANCH SCR SQS 8-10-12-14 QD HLX 1-3/4 ROD
2	1	ST	30924129	GYNG ADPR TRP EYE GUY 1 3/4" DIA SCR ANC
5	1	ST	30923762	ANCH EXT SQS 1-3/4 ROD 48 C-C 14 SGL HLX

ANCHOR APPLICATIONS	FOR TRANSMISSION GUY LOADS, 37" C-C, 59" C-C AND 48" C-C EXTENSIONS ARE USED.
INSTALL IN THESE SOIL CLASSES	CLASS 2, 3, 4, 5, AND 6 (200-750 INCH-POUND WITH SOIL TEST PROBE)
INSTALLING EQUIPMENT REQUIRED	POWER DIGGER AND DRIVE END WRENCH ASSEMBLY
LIMITATIONS ON USE	NOT NORMALLY RECOMMENDED FOR DEPTHS BEYOND 100 FEET. MAXIMUM INSTALLATION TORQUE IS 11,000 FOOT-POUND FOR 1-3/4" SQUARE SHAFT ANCHORS.

DATA IN ABOVE CHARTS USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION

CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

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

Drawing Scale: 1" = 30

	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION			Revision
		SCREW ANCHOR INSTALLATION			01
		QUAD HELIX ANCHOR			Date
		1-3/4" SQUARE SHAFT ANCHOR ROD			10/21/2015
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/11/2012	Gauvin/Becken/Hart	12/13/2012	Barry R. Hart	12/13/2012
TM2.23.TH-01-004					Sheet 1

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ANSI B 11" X 17"

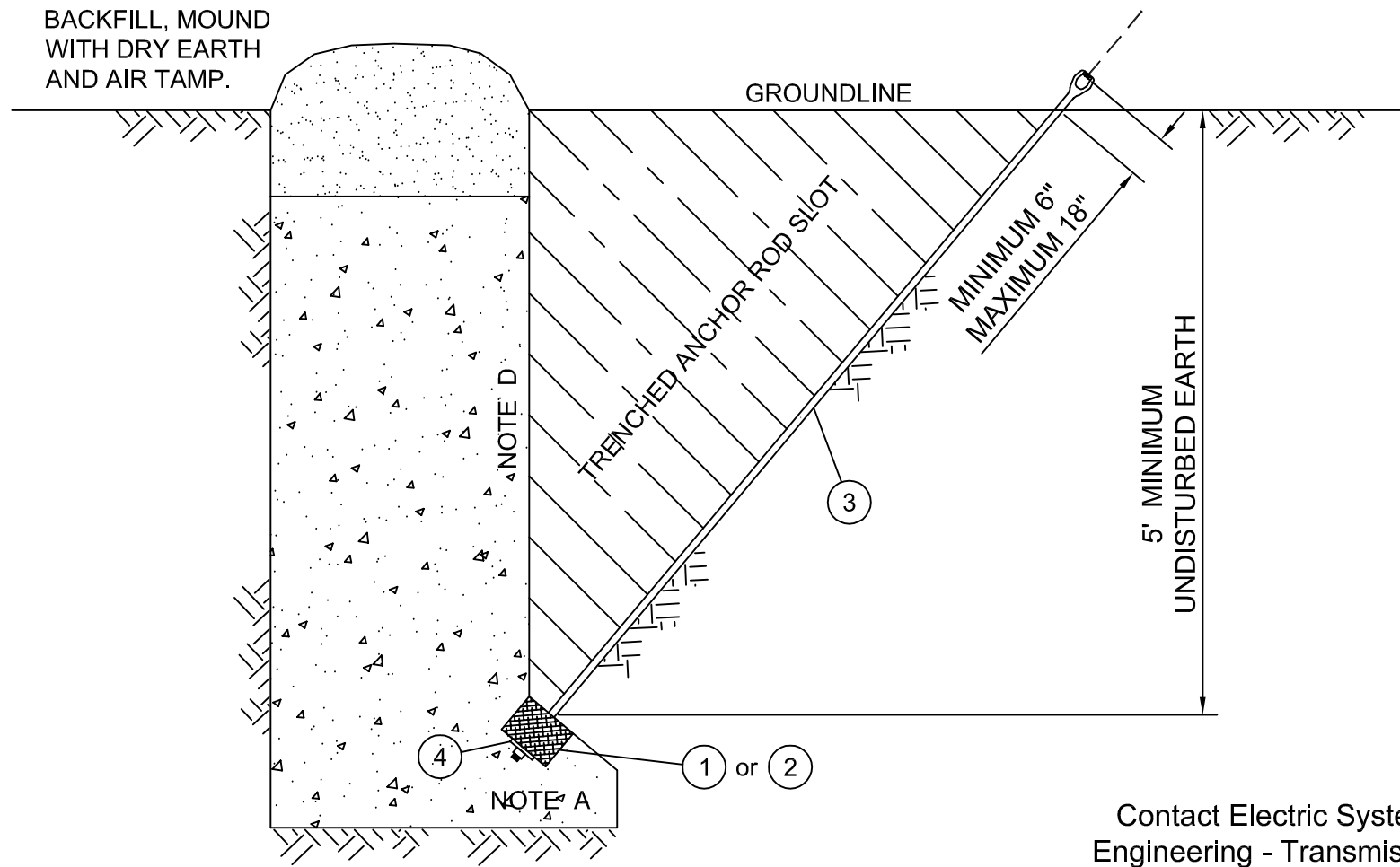
CU Type:
UC_ANCHR

BILL OF MATERIAL - anchor assembly with 4' log anchor

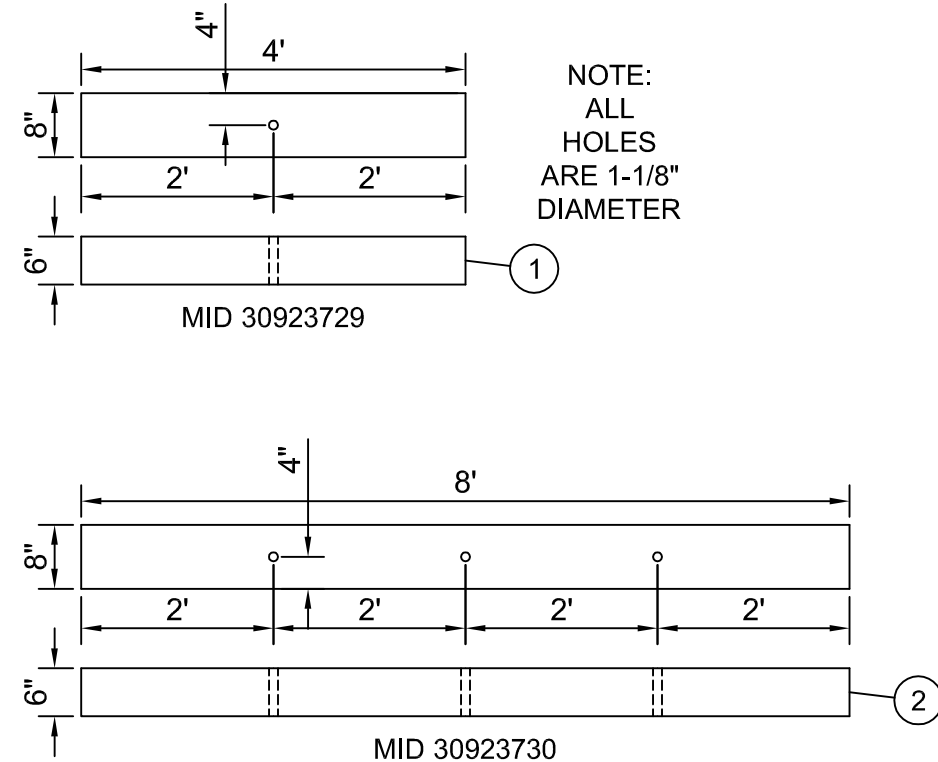
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-005-A
1	1	ST	30923729	ANCHR LOG 6 X 8 X 4F
3	1	ST	30923799	GYNG ROD ANC 1 X 10FT TWN EYE
4	1	ST	30919367	WSHR FLT 4 SQ 1/2 THK 1-1/8 H

BILL OF MATERIAL - anchor assembly with 8' log anchor

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-005-B
2	1	ST	30923730	ANCHR LOG 6 X 8 X 8F
3	1	ST	30923799	GYNG ROD ANC 1 X 10FT TWN EYE
4	1	ST	30919367	WSHR FLT 4 SQ 1/2 THK 1-1/8 H



Contact Electric System
Engineering - Transmission
Section for approval
to use this anchor.



NOTE:
ALL
HOLES
ARE 1-1/8"
DIAMETER

- NOTE A: UNDERCUT THE HOLE TO GET THE ENTIRE ANCHOR BEARING AGAINST UNDISTURBED EARTH.
- NOTE B: ANCHOR HOLES SHALL BE EXCAVATED USING ROTARY AUGER DRILLING EQUIPMENT OR VERTICAL LIFT EXCAVATORS (CLAMSHELLS). BACKHOES AND TRENCHING EQUIPMENT ARE UNACCEPTABLE FOR EXCAVATION OF THE ANCHOR HOLE,
- NOTE C: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE THE GUY ANGLE.
- NOTE D: BACKFILL SHALL BE CRUSHED ROCK AS SPECIFIED ON STANDARD TM2.23.TD-03-003. PLACE IN 6" TO 8" LAYERS AND AIR TAMP.
- NOTE E: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO STANDARD TM2.23.TH-04-001.
- NOTE F: REFER TO STANDARD TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.
- NOTE G: REFER TO STANDARD TM2.23.TH-02-001 FOR ROD LENGTH AND HOLE DEPTH
- NOTE H: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA..

CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV,
U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 1/2" = 1'-0"	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION LOG ANCHOR INSTALLATION SPECIAL APPLICATIONS FOR CMP USE ONLY			Revision
					01
				Date	10/21/2015
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/12/2011	Gauvin/Becken/Hart	11/15/2012	Barry R. Hart	12/13/2012
TM2.23.TH-01-005					Sheet 1

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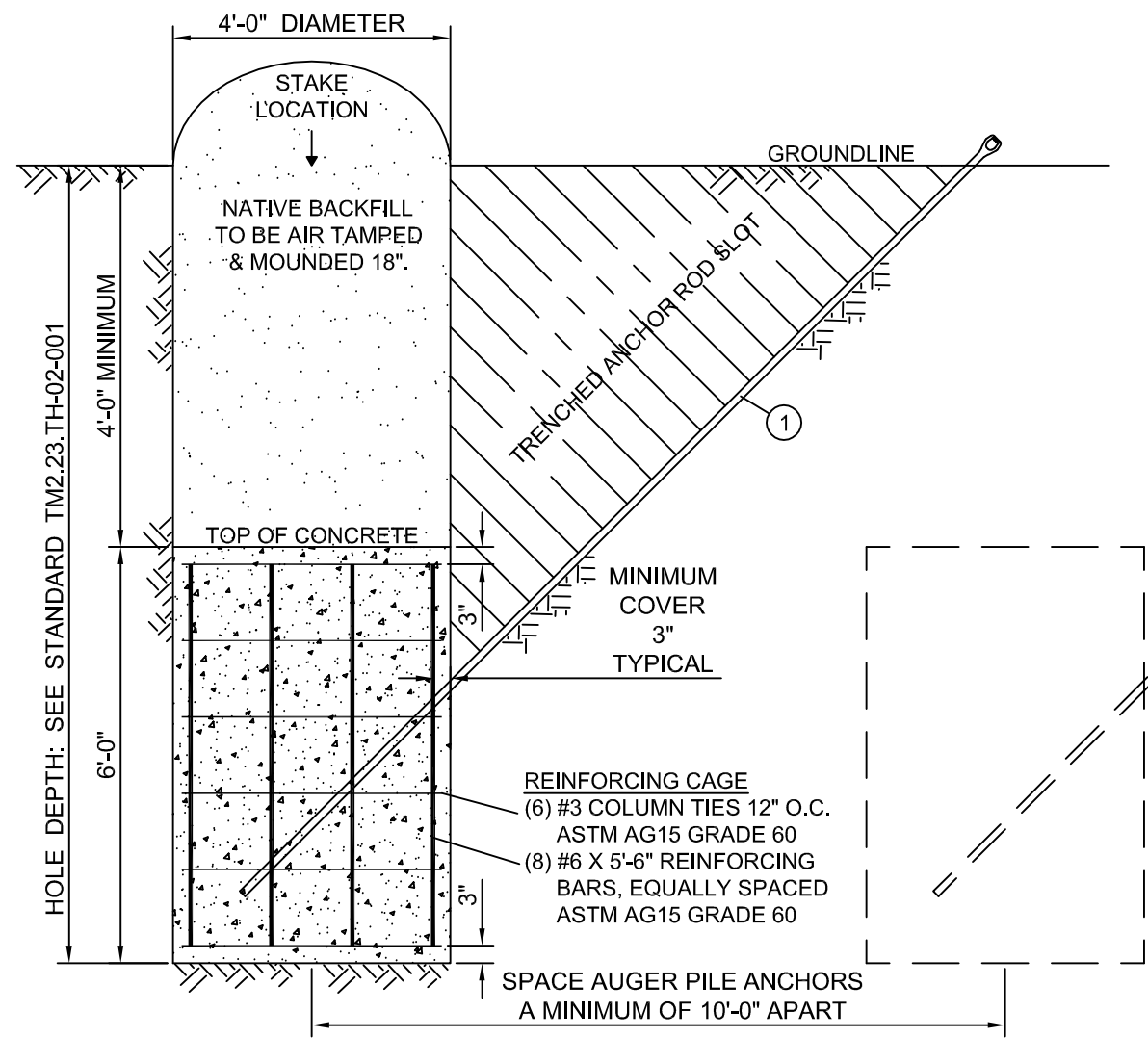
ANSI B
11" X 17"

CU Type:
UC_ANCHR

BILL OF MATERIAL - 15' anchor rod					
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-006-A	
1	1	ST	30923740	ANCH ROD GROUTED ROCK 1-1/4 X 15F	

BILL OF MATERIAL - 20' anchor rod					
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-006-B	
1	1	ST	30923741	ANCH ROD GROUTED ROCK 1-1/4 X 20F	

BILL OF MATERIAL - 25' anchor rod					
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-006-C	
1	1	ST	30923742	ANCH ROD GROUTED ROCK 1-1/4 X 25F	



Contact Electric
System Engineering
- Transmission
Section for approval
to use this anchor.

- NOTE A: AUGER PILE ANCHOR HOLES SHALL BE EXCAVATED USING ROTARY AUGER DRILLING EQUIPMENT OR VERTICAL LIFT EXCAVATORS (CLAMSHELLS). BACKHOES AND TRENCHING EQUIPMENT ARE UNACCEPTABLE FOR EXCAVATION OF THE AUGER PILE HOLE,
- NOTE B: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE THE GUY ANGLE.
- NOTE C: ALL CONCRETE SHALL BE CLASS GRADE 'A' PER STANDARD TM23.01 SECTION 31 63 29.
- NOTE D: ALLOW CONCRETE TO CURE 28 DAYS BEFORE TESTING & STRINGING GUY STRAND.
- NOTE E: ALLOW CONCRETE TO CURE 7 DAYS BEFORE BACKFILLING.
- NOTE F: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO STANDARD TM2.23.TH-04-001.
- NOTE G: REFER TO STANDARD TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.
- NOTE H: REFER TO STANDARD TM2.23.TH-02-001 FOR ROD LENGTH & HOLE DEPTH.

CU Function:
U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 3/8" = 1'-0"	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION AUGER PILE ANCHOR INSTALLATION SPECIAL APPLICATIONS			Revision
					00
				Date	10/21/2015
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/13/2011	Gauvin/Becken/Hart	10/21/2015	Barry R. Hart	10/21/2015
TM2.23.TH-01-006					Sheet 1

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 ANSIB
11" X 17"

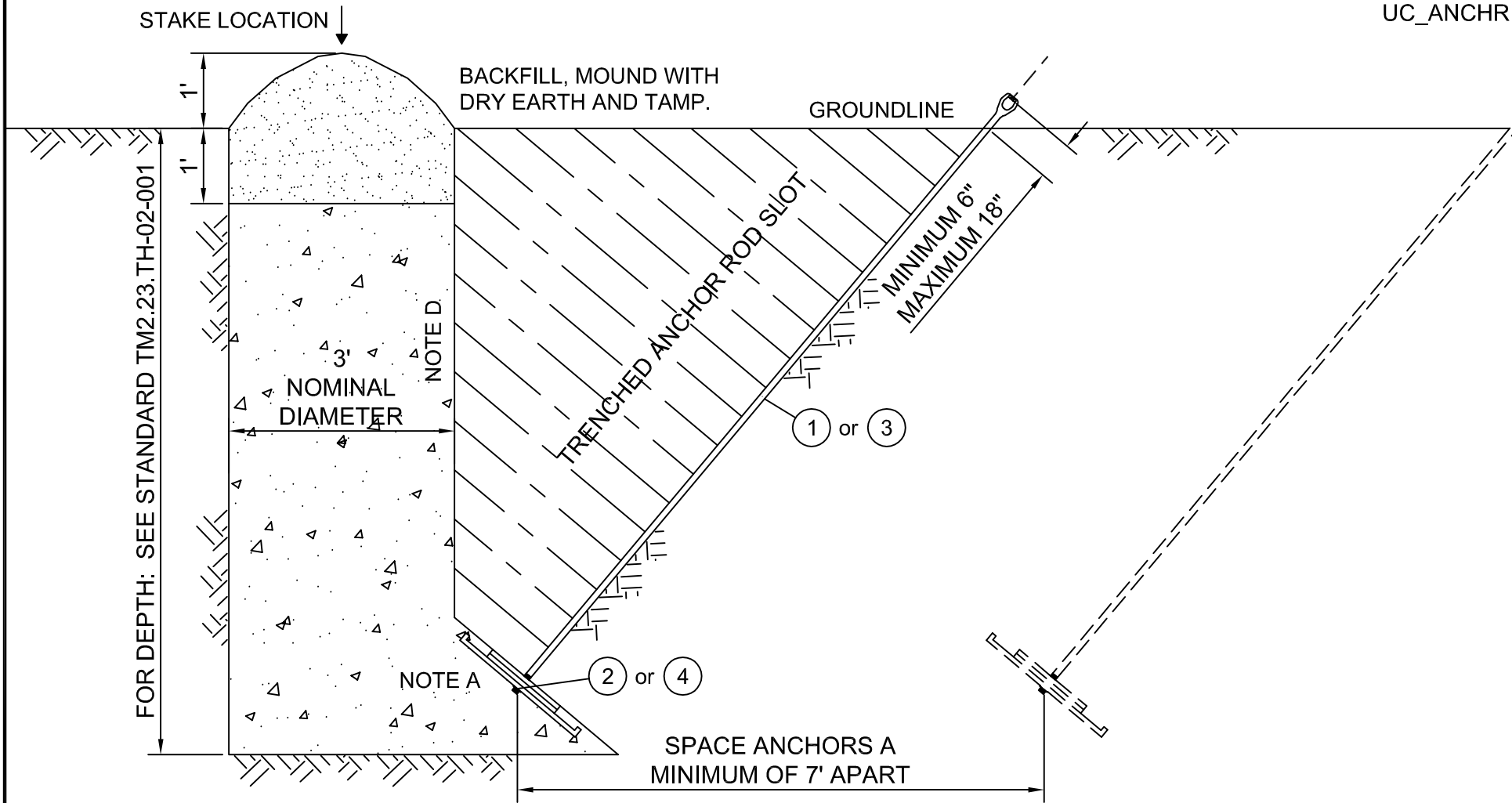
CU Type:
UC_ANCHR

BILL OF MATERIAL - anchor assembly with 1" diameter anchor rod

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-007-A
1	1	ST	30923749	ANCH ROD TRP EYE 1 X 10F
2	1	ST	30923781	ANCH XPLT 24 IN FOR 1 IN ROD

BILL OF MATERIAL - anchor assembly with 1-1/4" diameter anchor rod

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-007-B
3	1	ST	30923751	ANCH ROD TRP EYE 58K 1-1/4 X 10F
4	1	ST	30923782	ANCH XPLT 24 IN FOR 1-1/4 IN ROD



Contact Electric System
Engineering - Transmission
Section for approval
to use this anchor.

ANCHOR APPLICATIONS	FOR MEDIUM AND HEAVY TRANSMISSION GUYING. INSTALLED IN MACHINE BORED HOLES. LOAD-BASED ON USING 400 SQUARE INCH ANCHOR TO A 24" HOLE.
INSTALL IN THESE SOIL CLASSES	CLASS 3, 4, 5, 6 AND 7 (100-600 INCH-POUND WITH SOIL TEST PROBE)
INSTALLING EQUIPMENT REQUIRED	POWER DIGGER, ROD TRENCHING TOOL, SHOVEL AND TAMPING BAR
LIMITATIONS ON USE	NECESSITY OF UNDERCUTTING HOLE LIMITS ANCHOR DEPTH. ROD TRENCH SHOULD NOT BE LARGE OR HOLDING CAPACITY WILL BE REDUCED. BOTH ANCHOR HOLE AND ROD TRENCH MUST BE BACKFILLED AND TAMPED.

DATA IN ABOVE CHART USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION

NOTE A: UNDERCUT THE HOLE TO GET THE ENTIRE ANCHOR PLATE BEARING AGAINST UNDISTURBED EARTH.

NOTE B: CROSSPLATE ANCHOR HOLES SHALL BE EXCAVATED USING ROTARY AUGER DRILLING EQUIPMENT OR VERTICAL LIFT EXCAVATORS (CLAMSHELLS). BACKHOES AND TRENCHING EQUIPMENT ARE UNACCEPTABLE FOR EXCAVATION OF THE CROSSPLATE HOLE,

NOTE C: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE THE GUY ANGLE.

NOTE D: BACKFILL SHALL BE CRUSHED ROCK AS SPECIFIED ON STANDARD TM2.23.TD-03-003. PLACE IN 6" TO 8" LAYERS AND AIR TAMP.

NOTE E: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO STANDARD TM2.23.TH-04-001.

NOTE F: REFER TO STANDARD TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.

NOTE G: REFER TO STANDARD TM2.23.TH-02-001 FOR ROD LENGTH AND HOLE DEPTH.

NOTE H: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

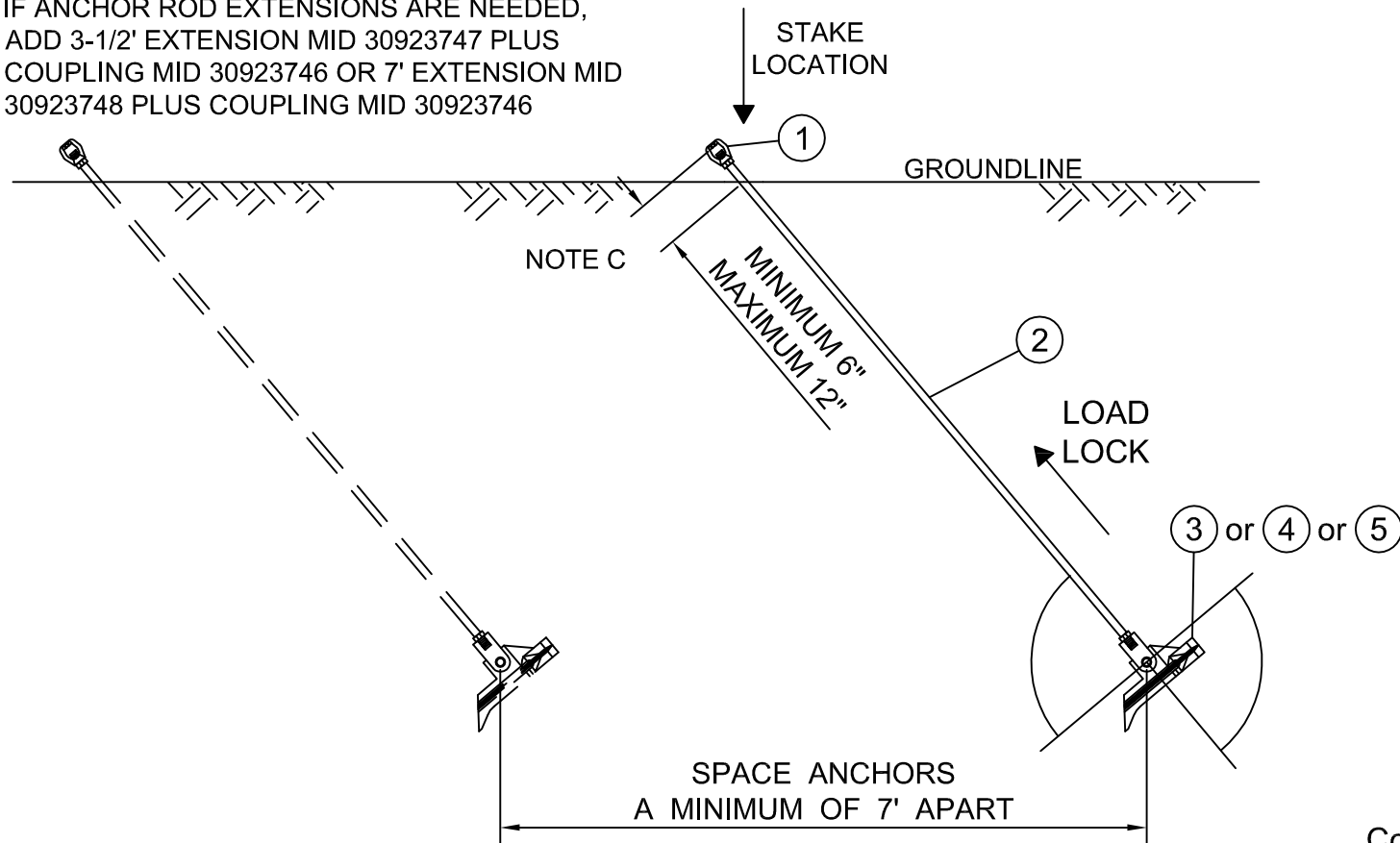
For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 1/2" = 1'-0"	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION CROSSPLATE ANCHOR INSTALLATION SPECIAL APPLICATIONS			Revision
					01
				Date	10/21/2015
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/13/2011	Gauvin/Becken/Hart	11/15/2012	Barry R. Hart	12/13/2012
TM2.23.TH-01-007					Sheet 1

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ANSI B 11" X 17"

IF ANCHOR ROD EXTENSIONS ARE NEEDED,
ADD 3-1/2' EXTENSION MID 30923747 PLUS
COUPLING MID 30923746 OR 7' EXTENSION MID
30923748 PLUS COUPLING MID 30923746



Contact Electric System
Engineering - Transmission
Section for approval
to use this anchor.

NOTE A: FOR DETAILED INSTRUCTIONS REFER TO THE VENDORS INSTALLATION PROCEDURES.

NOTE B: THE ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE THE GUY ANGLE.

NOTE C: IF THE GROUND LINE SLOPES AWAY FROM THE POLE BEING ANCHORED, ANCHOR ROD EXTENSIONS SHALL BE USED TO OBTAIN THE REQUIRED ROD LENGTH. REFER TO TM2.23.TH-02-001. ROD EXTENSIONS MAY ALSO BE USED TO PASS THROUGH SOFT SOILS TO REACH FIRMER LAYERS.

NOTE D: WHEN DRIVING THE ANCHOR, THE ROD SHALL BE COUNTERSUNK ONE ANCHOR LENGTH LESS 6" TO ACHIEVE PROPER EYENUT ELEVATION AFTER LOAD LOCKING. LOAD LOCK TO THE LOAD SPECIFIED BY THE GUY MATERIAL INDEX.

NOTE E: IF DURING INSTALLATION, THE ANCHOR STRIKES AN OBJECT AND MAKES NO PROGRESS FOR FIVE MINUTES, THE LOAD LOCKER MAY BE USED TO REMOVE THE ANCHOR BY PULLING ON THE ANCHOR ROD. THE DRIVE GADS MUST BE LEFT IN THE ANCHOR DURING THIS PROCEDURE TO PREVENT SETTING THE ANCHOR. THE ANCHOR MAY BE RELOCATED AND USED AGAIN UPON APPROVAL BY ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION.

NOTE F: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO STANDARD TM2.23.TH-04-001.

NOTE G: REFER TO STANDARD TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.

NOTE H: REFER TO STANDARD TM2.23.TH-02-001 FOR ROD LENGTH.

NOTE I: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

CU Type:
UC_ANCHR

BILL OF MATERIAL - Manta Ray anchor MR-2

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-008-A
1	1	ST	30923766	ANCH SCR EYENUT TRP 1 DIA ROD
2	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F
3	1	ST	30923724	ANCH DRIVEN PLT MR-2

BILL OF MATERIAL - Manta Ray anchor MR-1

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-008-B
1	1	ST	30923766	ANCH SCR EYENUT TRP 1 DIA ROD
2	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F
4	1	ST	30923725	ANCH DRIVEN PLT MR-1

BILL OF MATERIAL - Manta Ray anchor MR-SR (loose/wet soils)

ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-008-C
1	1	ST	30923766	ANCH SCR EYENUT TRP 1 DIA ROD
2	1	ST	30923748	ANCH ROD SCR THRD ENDS 36K 1 X 7F
5	1	ST	30923723	ANCH DRIVEN PLT MR-SR

ANCHOR APPLICATIONS		NO DIGGING	
ANCHOR INFORMATION	MR-2	DESIGNED FOR HARD/DENSE/COBBLE SOILS 40,000 ULTIMATE STRENGTH 20,000 LBS. WORKING LOAD	
	MR-1	DESIGNED FOR NORMAL/MEDIUM SOILS 40,000 ULTIMATE STRENGTH 20,000 LBS. WORKING LOAD	
	MR-SR	DESIGNED FOR SOFTER/LOOSE/WET SOILS 40,000 ULTIMATE STRENGTH 20,000 LBS. WORKING LOAD	
INSTALLING EQUIPMENT REQUIRED		CONVENTIONAL HYDRAULIC/PNEUMATIC EQUIPMENT	
LIMITATIONS ON USE		MANTA RAY DRIVE STEEL SET REQUIRED	

DATA IN ABOVE CHART FROM
MANTA RAY/FORESIGHT
PRODUCTS WEBSITE - MODELS

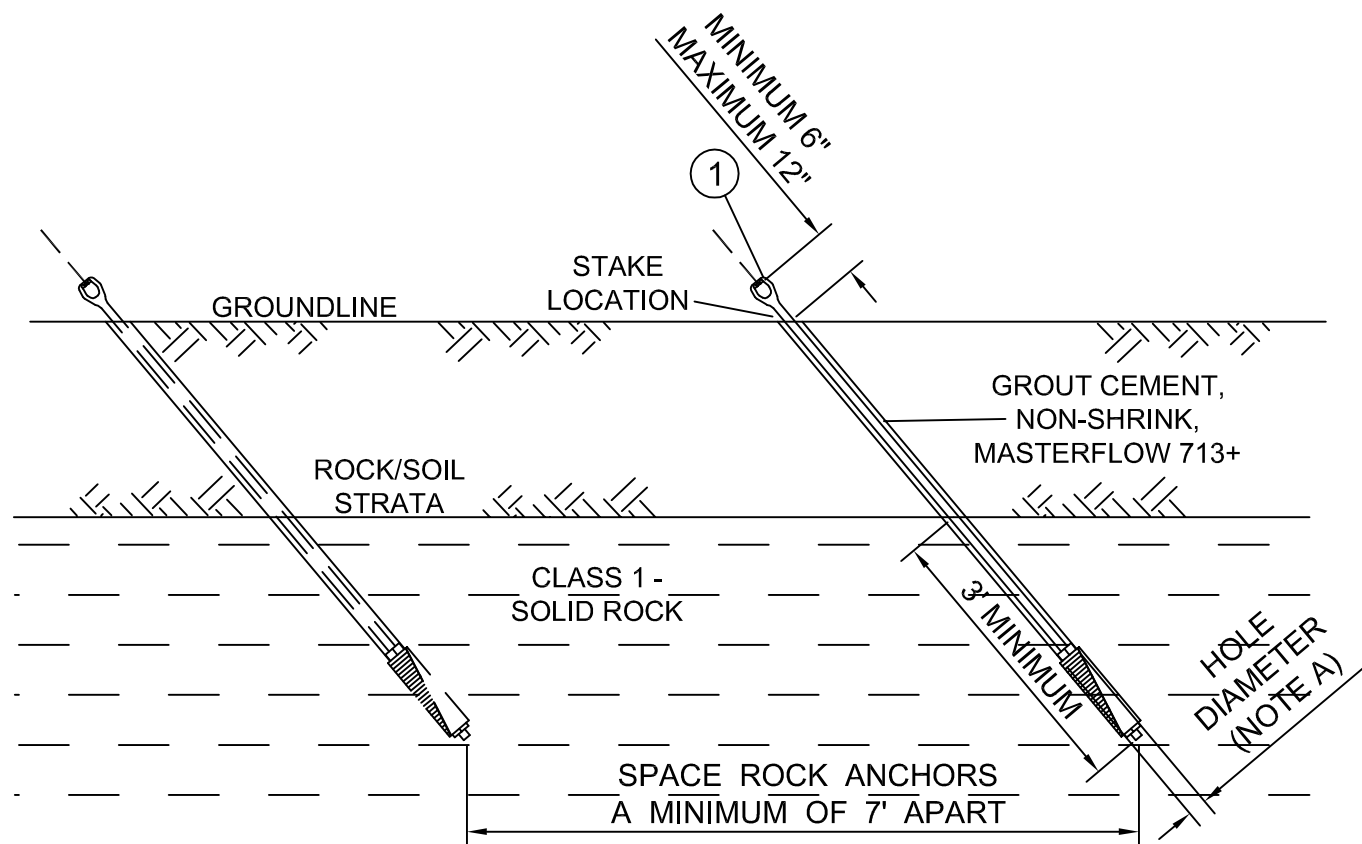
CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV,
U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 1/2" = 1'-0"	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION DRIVEN PLATE (MANTA RAY) ANCHOR INSTALLATION SPECIAL APPLICATIONS			Revision 00
					Date 10/21/2015
Drwn. By: L.A. Best	Date Dr.: 12/14/2011	Checked By: Gauvin/Becken/Hart	Date Ck.: 10/21/2015	Approved By: Barry R. Hart	Date App.: 10/21/2015
TM2.23.TH-01-008					Sheet 1

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ANSI B
11" X 17"



- NOTE A: BORE HOLE BY HAND OR WITH POWER DRILL. DIAMETER OF HOLE TO BE EQUAL TO DIAMETER OF UNEXPANDED BOLT PLUS 1/8" (2-3/8" DIAMETER HOLE FOR 1" ROD & 2-1/4" ROCK ANCHOR).
- NOTE B: SELECT ANCHOR WITH SUFFICIENT ROD LENGTH TO MEET 3' MINIMUM EMBEDMENT IN SOLID ROCK.
- NOTE C: BORED HOLE AND ANCHOR ROD SHALL BE SET IN ALIGNMENT WITH THE GUY STRAND. REFER TO THE STRUCTURE GUYING DETAIL ON THE PLAN & PROFILE TO CALCULATE GUY ANGLE.
- NOTE D: USING A BAR PASSED THROUGH THE EYE, TURN THE ROD UNTIL THE HEAD IS TIGHTLY EXPANDED AGAINST THE SIDES OF THE HOLE.
- NOTE E: SUPPORT THE ROD SUCH THAT IT IS CENTERED IN THE HOLE AND CANNOT MOVE. FILL THE ENTIRE HOLE WITH GROUT. GROUT SHALL BE MIXED ACCORDING TO MANUFACTURER'S REQUIREMENTS TO PRODUCE A FLOWABLE MIX.
- NOTE F: DO NOT REMOVE THE ROD SUPPORT FOR A MINIMUM OF 8 HOURS OR UNTIL THE GROUT HAS HARDENED. DO NOT STRING GUY STRAND OR APPLY ANY LOADS TO ANCHOR ROD FOR A MINIMUM OF 7 DAYS.
- NOTE G: ALL GUY ANCHORS SHALL BE PULL TESTED. REFER TO TH-04-001. IF PULL TEST FAILS, CONTACT ELECTRIC SYSTEM ENGINEERING - TRANSMISSION SECTION FOR ALTERNATE ANCHOR.
- NOTE H: REFER TO TM2.23.TG-03-001 IF GROUNDING IS REQUIRED.
- NOTE I: REFER TO TM2.23.TH-05-001 FOR SOIL CLASSIFICATION DATA.

CU Type:
UC_ANCHR

BILL OF MATERIAL - anchor with 1" diameter anchor rod - 30" length				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-009-A
1	1	ST	30923793	GYING ANC ROCK 30 X 1IN ROD

BILL OF MATERIAL - anchor with 1" diameter anchor rod - 53" length				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-009-B
1	1	ST	30923794	GYING ANC ROCK 53 X 1IN ROD

BILL OF MATERIAL - anchor with 1" diameter anchor rod - 72" length				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-009-C
1	1	ST	30923795	GYING ANC ROCK 72 X 1IN ROD

BILL OF MATERIAL - anchor with 1" diameter anchor rod - 96" length				
ITEM NO.	QTY	UOM	GLOBAL IUSA MID	CU: U*PT-TH-01-009-D
1	1	ST	30923731	ANCH ROCK ROD 1" X 96"

ADD 'CEMENT GROUT N-S MASTERFLOW 713+' AS REQUIRED

ANCHOR APPLICATIONS	FOR MEDIUM DUTY GUYING WHERE POLES ARE IN OR NEAR ROCKY AREAS
INSTALL IN THESE SOIL CLASSES	CLASS 0
INSTALLING EQUIPMENT REQUIRED	HAND OR POWER DRILL, TURNING BAR
LIMITATIONS ON USE	IN EXTREMELY SOFT ROCK, IT MAY BE NECESSARY TO USE GROUTING TO AVOID ROCK CRUMBLING WHICH WOULD AFFECT HOLDING CAPACITY. DRILLING CAN BE A TEDIOUS JOB IN SOME ROCK TYPES

DATA IN ABOVE CHART USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION

CU Function: U_TL69 for 35kV & 46kV, U_TG69 for 69kV through 344kV, U_T345 for 345kV & greater.

For correct CU: substitute 2 for NYSEG, 3 for CMP or 4 for RG&E in place of asterisk (U*_).

Contact Engineering Standards - Transmission for the creation of new standards and CUs.				Drawing Scale: 1/2" = 1'-0"	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION ANCHOR INFORMATION EXPANDING BOLT ROCK ANCHOR INSTALLATION SPECIAL APPLICATIONS			Revision
					01
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	12/13/2011	Gauvin/Becken/Hart	11/15/2012	Barry R. Hart	12/13/2012
TM2.23.TH-01-009					Sheet 1

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ANSI B 11" X 17"

GUY ANCHOR PULL TEST PROCEDURE

The holding strength shall be determined by a pull test of each anchor at each installation site. (except Manta ray anchors which are to be tested during load locking). Pull tests may be performed using either a bulldozer and a dynamometer, a Foresight Products hydraulic "load locker" powered by a portable hydraulic source, or equivalent method. The "load locker" is recommended due to the reduced amount of equipment and personnel required for each test. Refer to Foresight Products' "Manta Ray Equipment List and Installation Procedures" for detailed load locking (i.e. pull testing) procedure.

The test shall last three (3) minutes with no more than three (3) inches of movement, as measured along the anchor rod axis, while maintaining a load equal to the minimum tested holding strength stated on the guying detail as follows:

TR-01 (20m): 17,000 pounds ultimate strength rating

- One (1) guy to each anchor - pull test anchor to 12,000 pounds.
- Two (2) guys to each anchor - pull test anchor to 24,000 pounds.

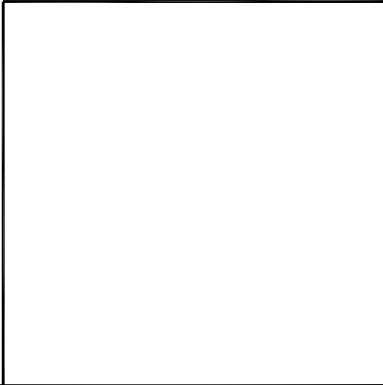
TR-02 (19#8): 36,000 pounds ultimate strength rating

- One (1) guy to each anchor - pull test anchor to 24,000 pounds.

For pull testing of anchors in unusual soil conditions (solid rock or swampy soils for example) contact Electric System Engineering - Transmission Section for the appropriate pull test load.


For each anchor pull tested, a log shall be kept noting the following:

- Date
- Name of Foreman
- Equipment used
- Type of anchor and size
- Rod diameter and length
- Load applied and creep over three minutes
- Structure number
- Line number



This information shall be recorded on drawing TM2.23.TH-04-002 and retained in project folder.

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Contact Engineering Standards - Transmission for the creation of new standards and CUs.						Drawing Scale: N/A	
	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL		TRANSMISSION ANCHOR INFORMATION GUY ANCHOR PULL TEST PROCEDURE			Revision 00	
						DATE 8/31/2015	
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved-By:	Date App.:	TM2.23.TH-04-001	
L.A. Best	8/14/2015	Gauvin/Becken/Hart	8/31/2015	Barry R. Hart	8/31/2015		

ANSI A 8-1/2" X 11"

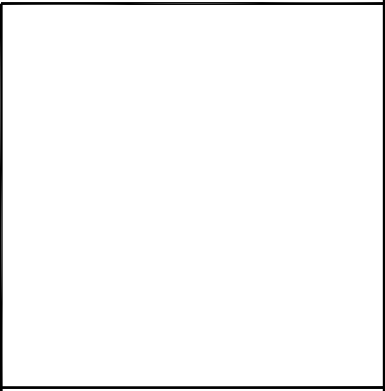
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Class	Common Soil - Type Description	Geological Soil Classification	Probe Values in.-lbs. (Nm)	Typical Blow Count "N" per ASTM-D1586
0	Sound hard rock, unweathered	Granite, Basalt, Massive Limestone	N/A	N/A
1	Very dense and/or cemented sands; coarse gravel and cobbles	Caliche, (Nitrate-bearing gravel/rock)	750-1600 (85-181)	60-100+
2	Dense fine sands; very hard silts and clays (may be preloaded)	Basal till; boulder clay; caliche; weathered laminated rock	600-750 (68-85)	45-60
3	Dense sands and gravel; hard silts and clays	Glacial till; weathered shales, schist, gneiss and siltstone	500-600 (56-68)	35-50
4	Medium dense sands and gravel; very stiff to hard silts and clays	Glacial till; hardpan; marls	400-500 (45-56)	24-40
5	Medium dense coarse sands and sandy gravel; stiff to very stiff silts and clays	Saprolites, residual soils	300-400 (34-45)	14-25
6	Loose to medium dense fine to coarse sands; stiff clays and silts	Dense hydraulic fill; compacted fill; residual soils	200-300 (23-34)	7-14
**7	Loose fine sands; Alluvium; loess; medium to stiff and varied clays; fill	Flood plain soils; lake clays; adobe; gumbo, fill	100-200 (11-23)	4-8
**8	Peat, organic silts; inundated silts, fly ash; very loose sands; very soft to soft clays	Miscellaneous fill, swamp marsh	less than 100 (11)	0-5

Class 1 soils are difficult to probe consistently and the ASTM blow count may be of questionable value.

** It is advisable to install anchors deep enough, by the use of extensions, to penetrate a Class 5 or 6, underlying the class 7 or 8 soils.

DATA IN ABOVE CHART USED BY PERMISSION FROM CHANCE ENCYCLOPEDIA OF ANCHORING - APPLICATION AND INSTALLATION



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

Drawing Scale: N/A



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL

TRANSMISSION ANCHOR INFORMATION
SOIL CLASSIFICATION DATA

Revision	00
DATE	10/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	3/12/2013	Gauvin/Becken/Hart	10/21/2015	Barry R. Hart	10/21/2015

TM2.23.TH-05-001

Sheet 1

ANSI A 8-1/2" X 11"