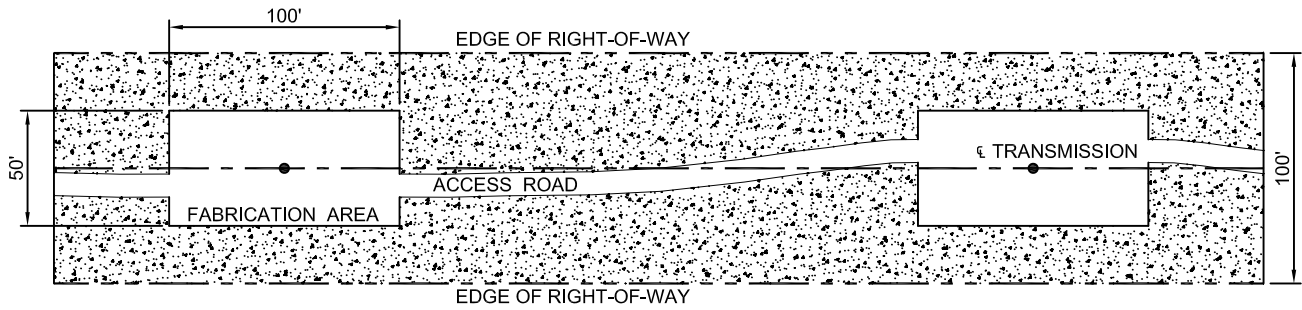


TYPE A CLEARING - SPANS WITH LESS THAN 40' GROUND CLEARANCE



TYPE B CLEARING - SPANS WITH 40' OR GREATER GROUND CLEARANCE


- - PROPOSED SINGLE POLE TANGENT STRUCTURE
- - CLEAR CUT AREA
- ▧ - TYPE A CLEARING
- ▨ - TYPE B CLEARING

NOTE A: DIMENSIONS SHOWN ARE TYPICAL. SEE PLAN AND PROFILE FOR SITE SPECIFIC DIMENSIONS.

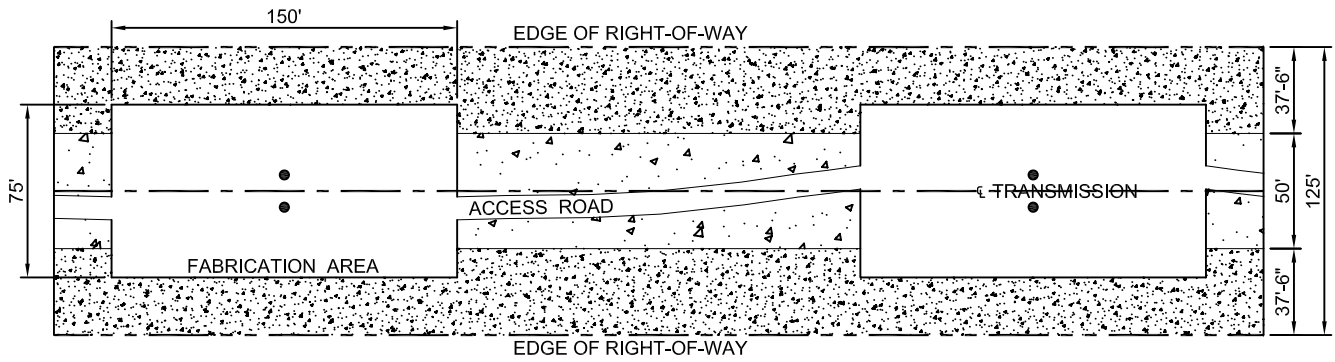
NOTE B: FOR STRUCTURE LOCATION WITHIN FABRICATION AREA AND ACCESS ROAD LOCATION, SEE PLAN AND PROFILE.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

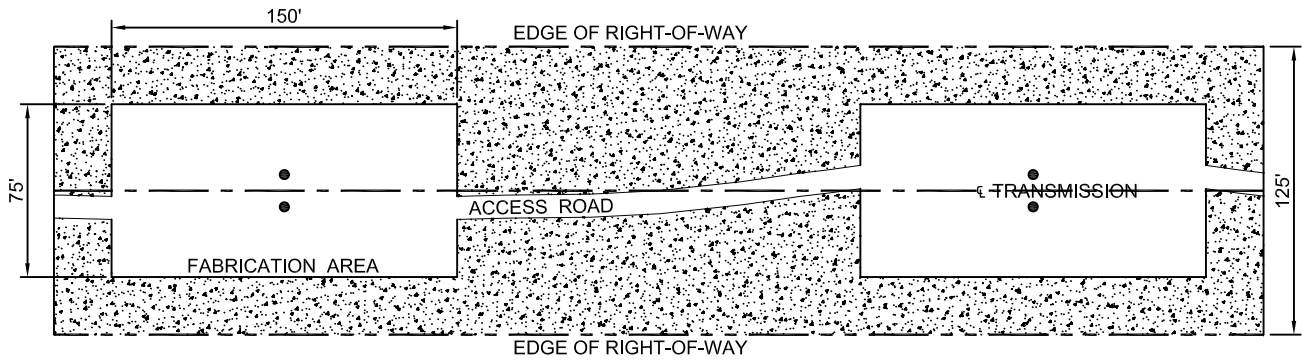
Contact Engineering Standards - Transmission for the creation of new standards and CUs. Drawing Scale: 1" = 1000

	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL		TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL RIGHT-OF-WAY CLEARING SINGLE POLE CONSTRUCTION 100' WIDTH			Revision 00
						DATE / /2014
Drwn. By: L.A. Best	Date Dr.: 1/2/2013	Checked By: Shepard/Becken/Hart	Date Ck.: / /2014	Approved By: Barry R. Hart	Date App.: / /2014	Sheet 1
TM2.23.TL-01-001						

ANSIA 8-1/2" X 11"



TYPE A CLEARING - SPANS WITH LESS THAN 40' GROUND CLEARANCE



TYPE B CLEARING - SPANS WITH 40' OR GREATER GROUND CLEARANCE

- - PROPOSED TANGENT H-FRAME STRUCTURE (12' OR 14' POLE SPACING)
- - CLEAR CUT AREA
- ▣ - TYPE A CLEARING
- ▨ - TYPE B CLEARING

NOTE A: DIMENSIONS SHOWN ARE TYPICAL. SEE PLAN AND PROFILE FOR SITE SPECIFIC DIMENSIONS.

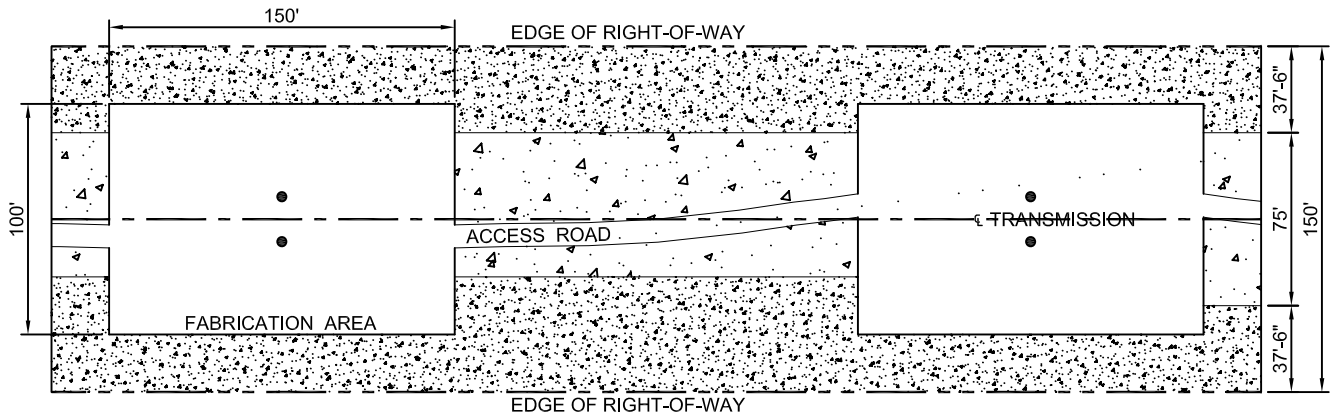
NOTE B: FOR STRUCTURE LOCATION WITHIN FABRICATION AREA AND ACCESS ROAD LOCATION, SEE PLAN AND PROFILE.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

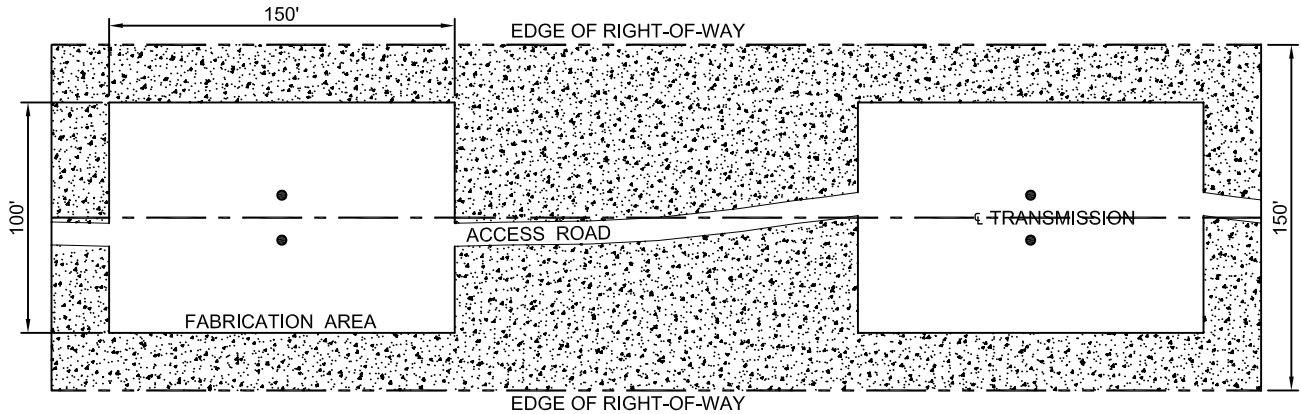
Contact Engineering Standards - Transmission for the creation of new standards and CUs. Drawing Scale: 1" = 1000

	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL		TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL RIGHT-OF-WAY CLEARING 115kV H-FRAME CONSTRUCTION 125' WIDTH			Revision 00
						DATE / /2014
Drwn. By: L.A. Best	Date Dr.: 1/2/2013	Checked By: Shepard/Becken/Hart	Date Ck.: / /2014	Approved By: Barry R. Hart	Date App.: / /2014	Sheet 1

ANSIA 8-1/2" X 11"



TYPE A CLEARING - SPANS WITH LESS THAN 40' GROUND CLEARANCE



TYPE B CLEARING - SPANS WITH 40' OR GREATER GROUND CLEARANCE

- PROPOSED TANGENT H-FRAME STRUCTURE
- CLEAR CUT AREA
- TYPE A CLEARING
- TYPE B CLEARING

NOTE A: DIMENSIONS SHOWN ARE TYPICAL. SEE PLAN AND PROFILE FOR SITE SPECIFIC DIMENSIONS.

NOTE B: FOR STRUCTURE LOCATION WITHIN FABRICATION AREA AND ACCESS ROAD LOCATION, SEE PLAN AND PROFILE.

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

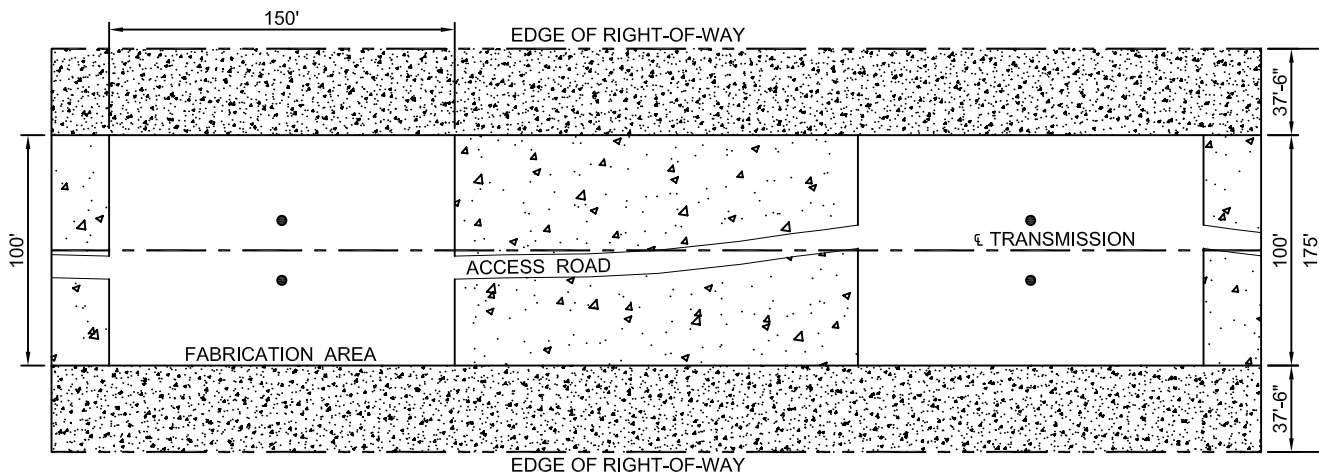
Contact Engineering Standards - Transmission for the creation of new standards and CUs. Drawing Scale: 1" = 1000

	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL RIGHT-OF-WAY CLEARING 230kV H-FRAME CONSTRUCTION 150' WIDTH				Revision
						00
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:	DATE
L.A. Best	1/2/2013	Shepard/Becken/Hart	/ /2014	Barry R. Hart	/ /2014	/ /2014

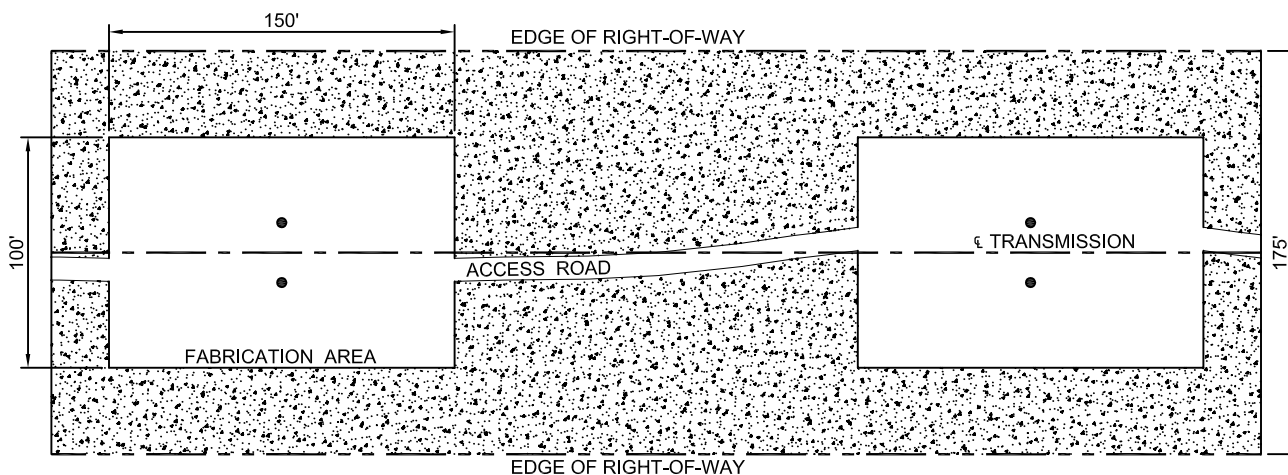
TM2.23.TL-01-003

Sheet 1

ANSIA 8-1/2" X 11"



TYPE A CLEARING - SPANS WITH LESS THAN 40' GROUND CLEARANCE



TYPE B CLEARING - SPANS WITH 40' OR GREATER GROUND CLEARANCE



- PROPOSED TANGENT H-FRAME STRUCTURE



- CLEAR CUT AREA



- TYPE A CLEARING



- TYPE B CLEARING

NOTE A: DIMENSIONS SHOWN ARE TYPICAL. SEE PLAN AND PROFILE FOR SITE SPECIFIC DIMENSIONS.

NOTE B: FOR STRUCTURE LOCATION WITHIN FABRICATION AREA AND ACCESS ROAD LOCATION, SEE PLAN AND PROFILE.

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" = 1000

	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL RIGHT-OF-WAY CLEARING 345kV H-FRAME CONSTRUCTION 175' WIDTH				Revision
						00
Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:	DATE
L.A. Best	1/2/2013	Shepard/Becken/Hart	/ /2014	Barry R. Hart	/ /2014	/ /2014

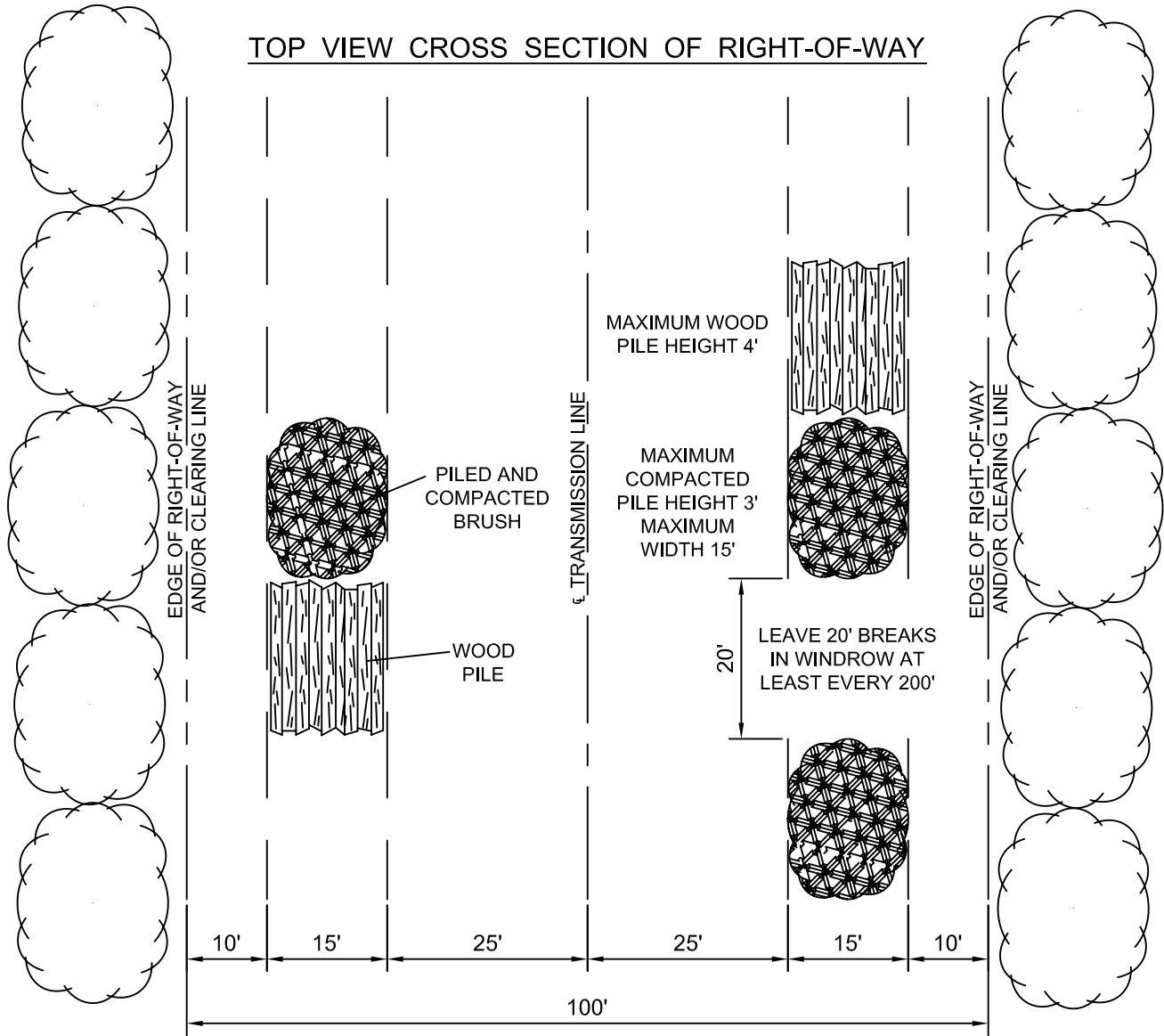
TM2.23.TL-01-004

Sheet 1

ANSIA 8-1/2" X 11"

THIS IS A COMPUTER GENERATED
DRAWING - DO NOT REVISE MANUALLY

TOP VIEW CROSS SECTION OF RIGHT-OF-WAY



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

Drawing Scale: 3/64" = 1'-0"



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL

TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL
RIGHT-OF-WAY CLEARING
PILING AND WINDROWING
100' WIDTH

Revision	00
DATE	/ /2014

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	1/2/2013	Shepard/Becken/Hart	/ /2014	Barry R. Hart	/ /2014

TM2.23.TL-01-005

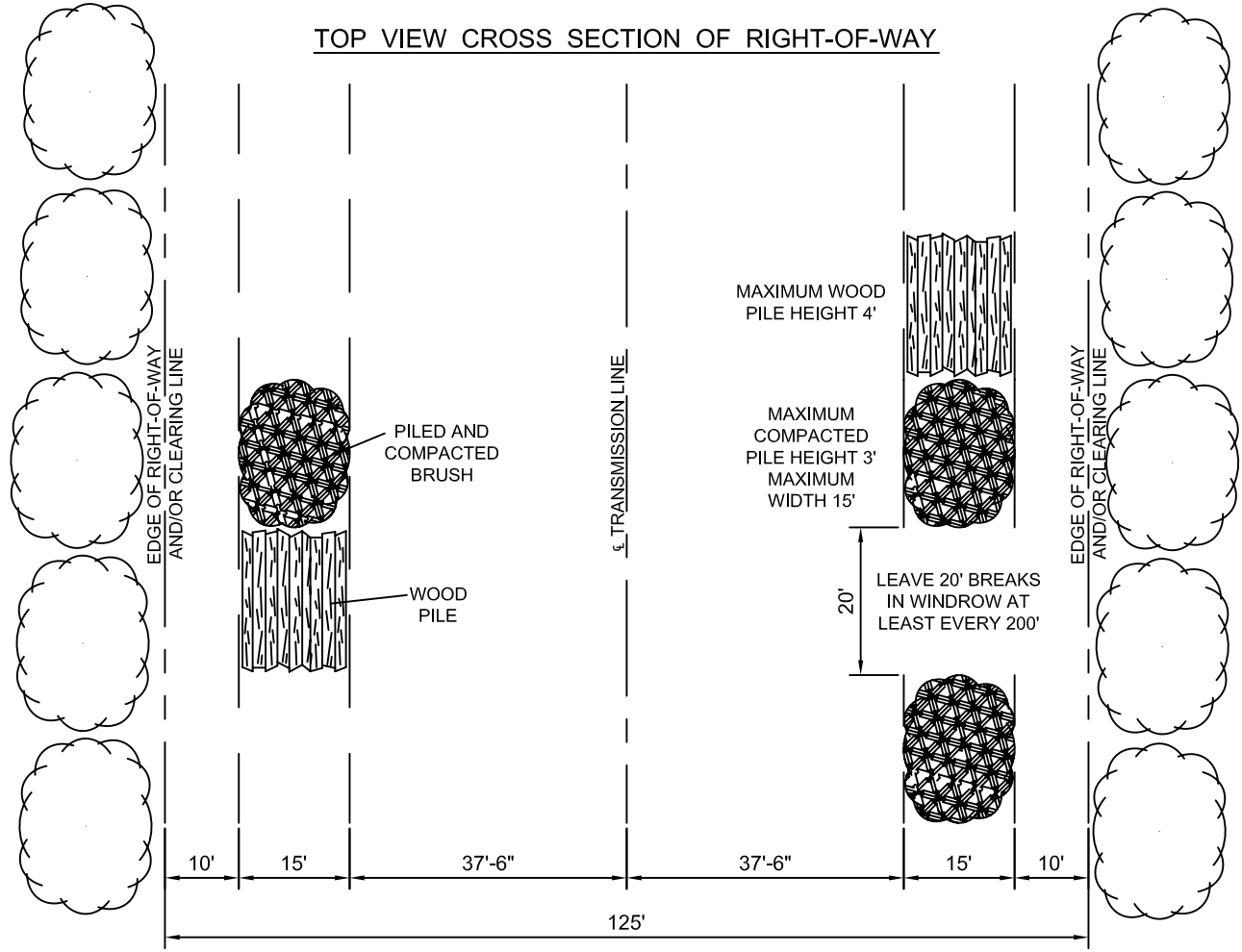
Sheet 1

ANSIA
8-1/2" X 11"

THIS IS A COMPUTER GENERATED
DRAWING - DO NOT REVISE MANUALLY


ANSIA
8-1/2" X 11"

TOP VIEW CROSS SECTION OF RIGHT-OF-WAY



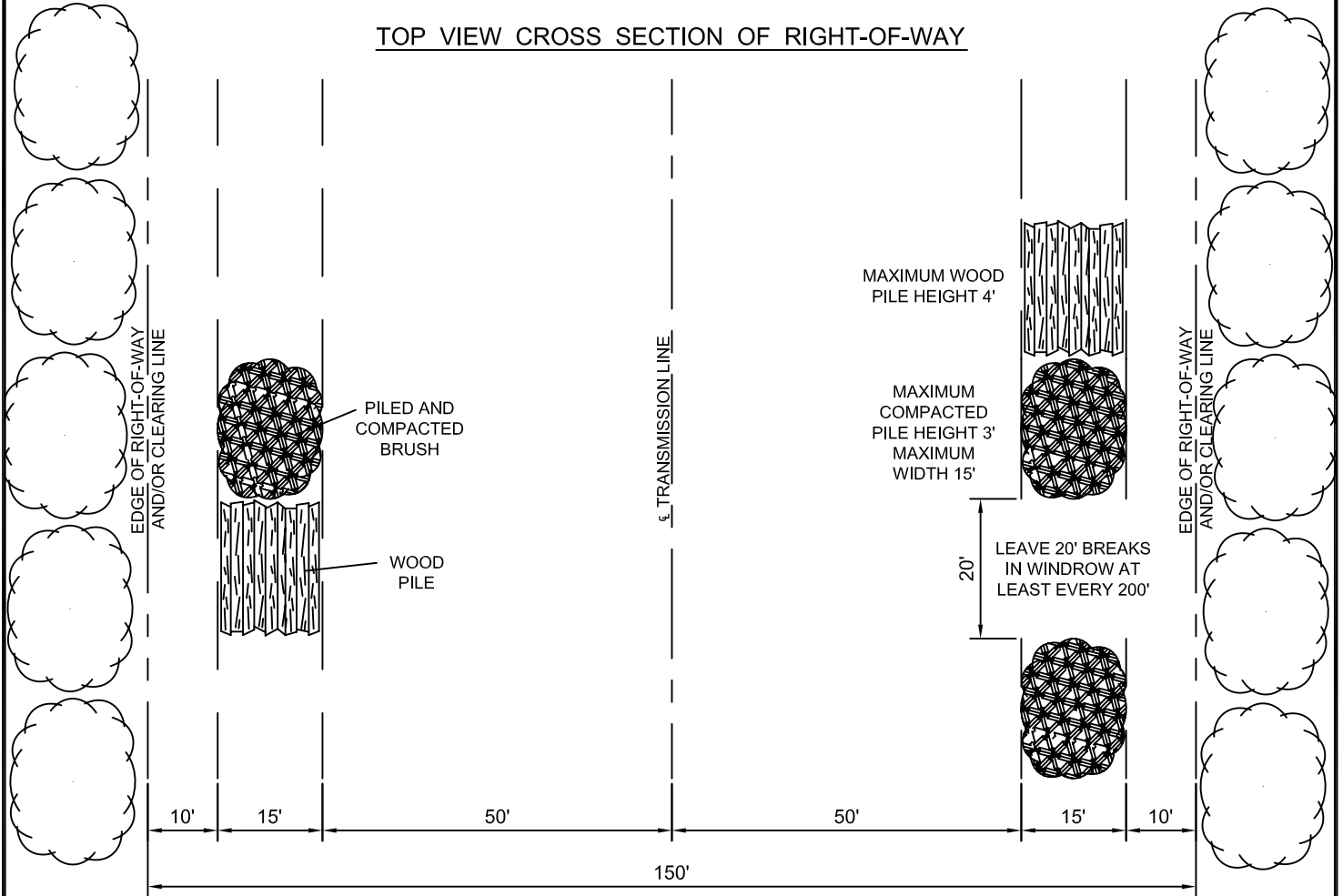
Contact Engineering Standards - Transmission for the creation of new standards and CUs.

Drawing Scale: 1" = 300

	IBERDROLA USA TRANSMISSION CONSTRUCTION STANDARDS MANUAL		TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL RIGHT-OF-WAY CLEARING PILING AND WINDROWING 125' WIDTH			Revision
						00
Drwn. By:		Date Dr.:		Checked By:		DATE
L.A. Best		1/2/2013		Shepard/Becken/Hart		/ /2014
Date Ck.:		Date App.:		Approved By:		TM2.23.TL-01-006
/ /2014		/ /2014		Barry R. Hart		
						Sheet 1

THIS IS A COMPUTER GENERATED
DRAWING - DO NOT REVISE MANUALLY

TOP VIEW CROSS SECTION OF RIGHT-OF-WAY



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

Drawing Scale: 1" = 300



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL

TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL
RIGHT-OF-WAY CLEARING
PILING AND WINDROWING
150' WIDTH

Revision
00
DATE
/ / 2014

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	1/2/2013	Shepard/Becken/Hart	/ / 2014	Barry R. Hart	/ / 2014

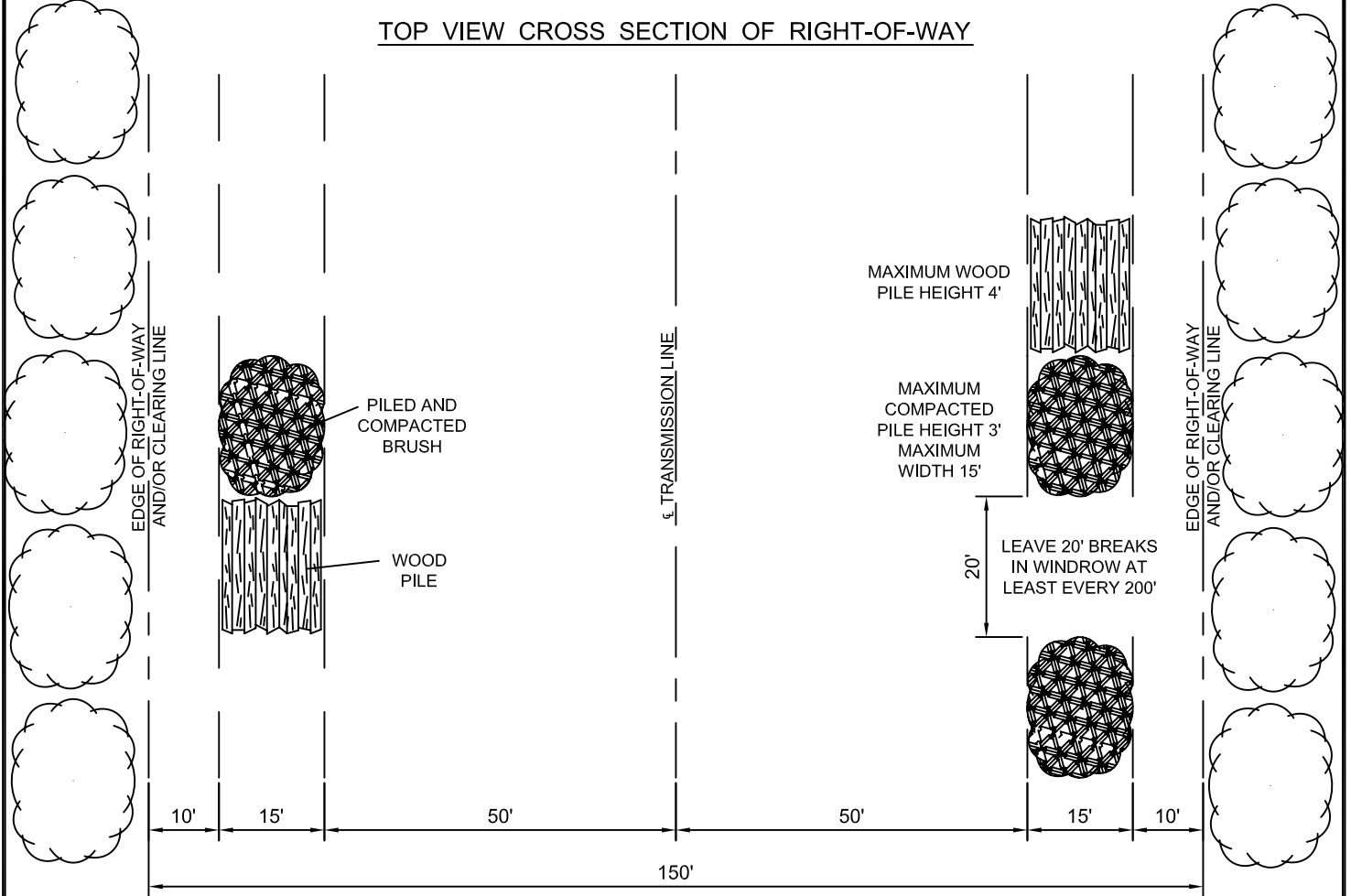
TM2.23.TL-01-007

Sheet 1

ANSIA
8-1/2" X 11"

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY

TOP VIEW CROSS SECTION OF RIGHT-OF-WAY



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

Drawing Scale: 1" = 300



IBERDROLA USA
TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL

TRANSMISSION RIGHT-OF-WAY & ENVIRONMENTAL
RIGHT-OF-WAY CLEARING
PILING AND WINDROWING
175' WIDTH

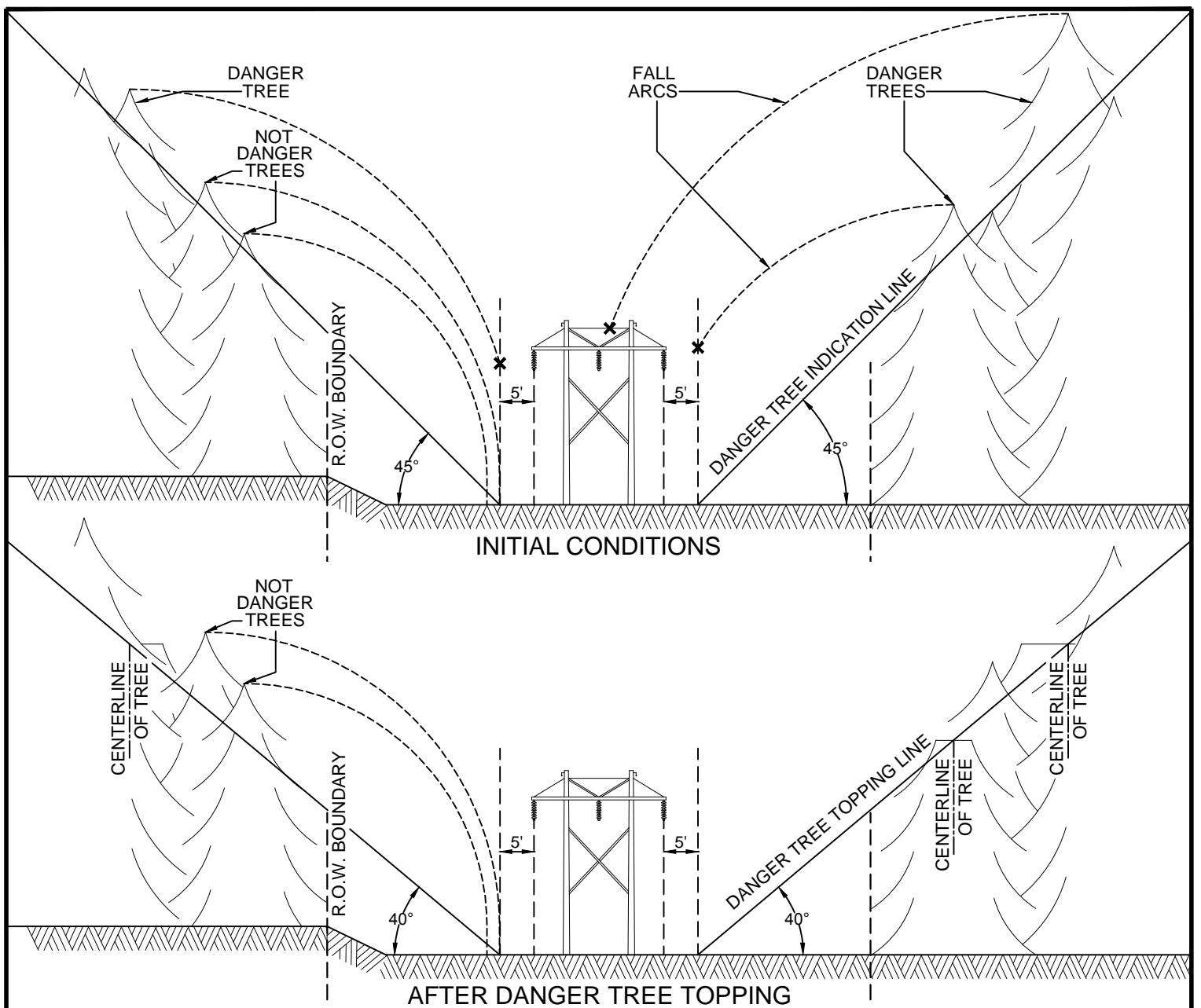
Revision	00
DATE	/ /2014

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
L.A. Best	1/2/2013	Shepard/Becken/Hart	/ /2014	Barry R. Hart	/ /2014

TM2.23.TL-01-008

Sheet 1

ANSIA
8-1/2" X 11"



DANGER TREES PRESENT A SIGNIFICANT DANGER TO TRANSMISSION LINES. MANY IBERDROLA USA TRANSMISSION LINES ARE IN AREAS WHERE TALL AND NUMEROUS TREES ARE OFTEN PRESENT. DANGER TREES CAN BE INSIDE OF THE IUSA RIGHT-OF-WAY OR OUTSIDE OF THE IUSA RIGHT-OF-WAY.

A DANGER TREE IS CONSIDERED AS ANY TREE THAT, IF IT FALLS, COULD IMPACT THE TRANSMISSION STRUCTURES, CONDUCTORS, OHGW OR COMMUNICATION CONDUCTORS IN ANY WAY. IN ORDER TO SUCCESSFULLY ELIMINATE ALL DANGER TREES FROM THE VICINITY OF THE TRANSMISSION LINE ALL TREES THAT CAN BE INTERSECTED BY A 45° VERTICAL ANGLE FROM A POINT 5' FROM THE POLE BASE CLOSEST TO THE RIGHT-OF-WAY EDGE OR 5' FROM A GROUND POINT BELOW THE CONDUCTOR NEAREST TO THE RIGHT-OF-WAY EDGE AS SHOWN ABOVE ARE TO BE CONSIDERED DANGER TREES AND SHALL BE REMOVED OR TOPPED. THIS IS BASED ON THE ASSUMPTION OF LEVEL GROUND. CONSIDERATION SHALL BE GIVEN TO TREES HIGHER IN ELEVATION THAN THE TRANSMISSION LINE.

IF DANGER TREES ARE TOPPED, THEN NO PORTION OF THE CENTERLINE OF THE REMAINING TREE OR ITS LIMBS SHALL REMAIN THAT CAN BE INTERSECTED BY A 40° VERTICAL ANGLE AS SHOWN ABOVE.

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: N/A



TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL

TRANSMISSION STANDARDS - RIGHT-OF-WAY
DANGER TREE CRITERIA

REVISION
00
DATE
5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	1/7/2013	Becken/Hart	11/20/2014	Barry R. Hart	12/24/2014

TM2.23.TL-01-010

Sheet 1

RIGHT-OF-WAY AND ENVIRONMENTAL BEST MANAGEMENT PRACTICES (BMP) LOG

LINE SECTION NAME:	CONSTRUCTION MANAGER:
CONTRACTOR:	WEEK ENDING:

SITE NO.	BMP DESCRIPTION	BETWEEN OR FROM/TO STRUCTURES	ACTION OR INSPECTION DATE/TIME	CONDITION OF BMP	ACTION TAKEN OR COMMENT

CONTRACTOR SIGNATURE:	DATE:
-----------------------	-------

THIS IS A COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY	
Contact System Engineering - Transmission Section for the creation of new standards and CUs.	Drawing Scale: N/A

	TRANSMISSION CONSTRUCTION STANDARDS MANUAL	RIGHT-OF-WAY AND ENVIRONMENTAL BEST MANAGEMENT PRACTICES (BMP) LOG FOR TRANSMISSION PROJECTS	REVISION 00				
			DATE 5/21/2015				
Drwn. By: B. Franklin	Date Dr.: 5/31/2012	Checked By: Becken/Hart	Date Ck.: 11/20/2014	Approved By: Barry R. Hart	Date App.: 12/24/2014	TM2.23.TL-06-001	Sheet 1

EDGE OF RIGHT OF WAY	50	75	50	80	85	75
34.5/46/69KV SINGLE POLE	35	60	50	70	75	65
115KV H-FRAME	65	60	75	85	75	
115KV SINGLE POLE		50	70	80	70	
230KV H-FRAME			85	95	85	
345KV H-FRAME				100	90	
345KV SINGLE POLE					80	

NOTE 1: MINIMUM STANDARD RIGHT-OF-WAY SPACINGS ARE CENTERLINE TO CENTERLINE IN FEET.


NOTE 2: DOUBLE CIRCUIT STRUCTURES SHALL USE THE SAME RIGHT-OF-WAY SPACING AS SINGLE CIRCUIT STRUCTURES.

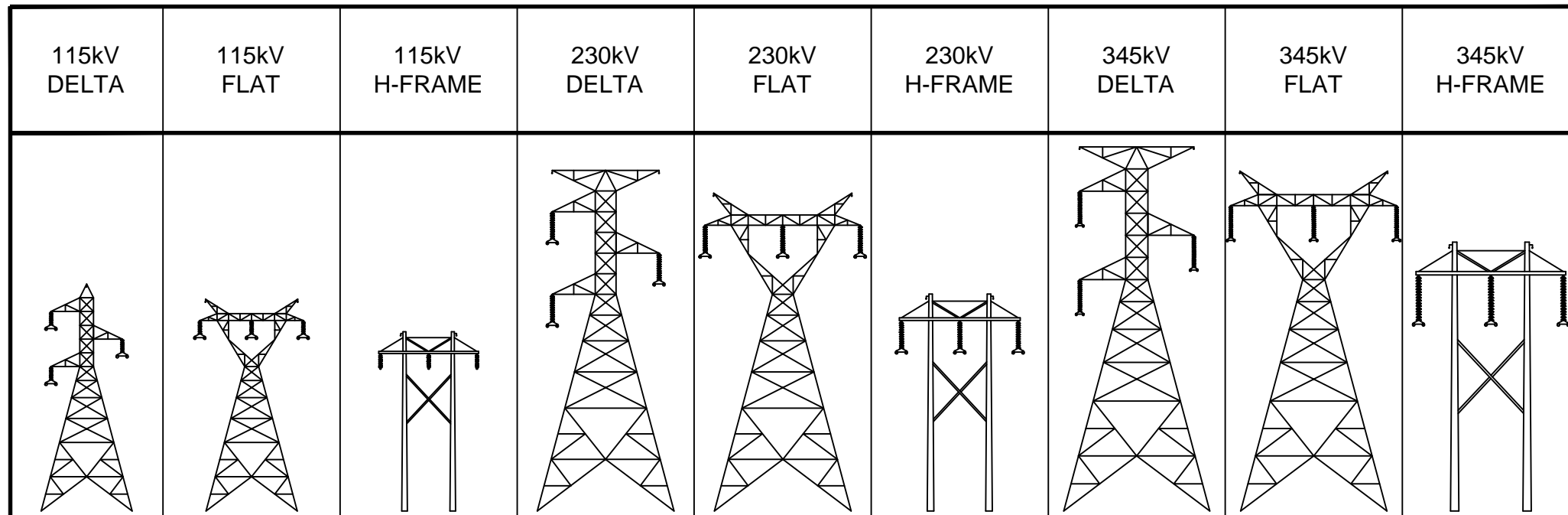
NOTE 3: CALCULATION ASSUMPTIONS ARE ON SHEET TL-09-003.

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: N/A

	TRANSMISSION CONSTRUCTION STANDARDS MANUAL	TRANSMISSION STANDARDS - RIGHT-OF-WAY STANDARD MINIMUM ROW SPACING	REVISION 01 DATE 9/11/2015 Sheet 1
	Drwn. By: B. Franklin Date Dr.: 11/19/2013 Checked By: Becken/Hart Date Ck.: 11/20/2014 Approved By: Barry R. Hart Date App.: 12/24/2014	TM2.23.TL-09-001	



EDGE OF RIGHT OF WAY	75	80	75	90	95	80	100	110	85
115kV DELTA	65	70	65	70	75	75	80	85	80
115kV FLAT		70	70	75	80	80	85	90	85
115kV H-FRAME			65	70	75	75	80	85	85
230kV DELTA				80	85	80	85	90	90
230kV FLAT					85	85	90	95	95
230kV H-FRAME						85	90	95	95
345kV DELTA							95	100	95
345kV FLAT								105	105
345kV H-FRAME									100

NOTE 1: MINIMUM STANDARD RIGHT-OF-WAY SPACINGS ARE CENTERLINE TO CENTERLINE IN FEET.

NOTE 2: DOUBLE CIRCUIT STRUCTURES SHALL USE THE SAME RIGHT-OF-WAY SPACING AS DELTA CONFIGURATION SINGLE CIRCUIT STRUCTURES.

NOTE 3: CALCULATION ASSUMPTIONS ARE ON SHEET TL-09-003.

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

Drawing Scale: N/A



TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL

TRANSMISSION STANDARDS - RIGHT-OF-WAY
STANDARD MINIMUM ROW SPACING
STEEL LATTICE TOWERS

REVISION	00
DATE	5/21/2015

Drwn. By:	Date Dr.:
B. Franklin	1/9/2014

Checked By:
Becken/Hart

Date Ck.:
11/20/2014

Approved By:
Barry R. Hart

Date App.:
12/21/2014

TM2.23.TL-09-002

Sheet 1

ROW SPACING DESIGN CONSIDERATIONS

THE ROW SPACING STANDARDS PRESENTED IN TM.2.20.00, TL-09-001 AND TL-09-002 ARE BASED OFF OF ASSUMPTIONS ON HOW IBERDROLA USA (IUSA) TRANSMISSION SYSTEM IS TO BE CONSTRUCTED.

THE ASSUMPTIONS INCLUDE:

- THE VOLTAGE OF THE LINE
- STRUCTURE CONFIGURATION
- TYPE AND SIZE OF CONDUCTOR USED
- TENSION OF CONDUCTOR
- LENGTH OF SPANS ON THE LINE
- WEATHER CONDITIONS

FOR NEW OR REBUILT TRANSMISSION LINES, THE DESIGN ENGINEER SHALL MAKE EVERY EFFORT TO MEET THE MINIMUM STANDARD ROW DIMENSIONS SPECIFIED IN IUSA'S ROW SPACING STANDARDS (TL-09-001 AND TL-09-002).

IN ADDITION, WHEN NEW OR REBUILT TRANSMISSION LINES ARE BEING DESIGNED THE DESIGN ENGINEER SHALL ALWAYS CHECK AND ENSURE IN THEIR DESIGN:

- NESC RULE 233 CLEARANCES ARE BEING CONTINUOUSLY MET BETWEEN A NEW OR REBUILT TRANSMISSION LINE AND ADJACENT TRANSMISSION OR DISTRIBUTION LINES. THIS SHALL INCLUDE BUT NOT BE LIMITED TO:
 - CONDITIONS WITH NO WIND PER NESC RULE 233 REQUIREMENTS
 - CONDITIONS WITH WIND PER NESC RULE 233 REQUIREMENTS
- NESC RULE 234 CLEARANCES ARE BEING CONTINUOUSLY MET BETWEEN A NEW OR REBUILT TRANSMISSION LINE AND THE ROW EDGE. THE DESIGN ENGINEER SHALL ASSUME TO FOLLOW THE NESC RULE 234 REQUIREMENTS FOR CLEARANCES TO BUILDING WALLS FOR THE SPACING TO THE ROW EDGE. THIS SHALL INCLUDE BUT NOT BE LIMITED TO:
 - CONDITIONS WITH NO WIND PER NESC RULE 234 REQUIREMENTS
 - CONDITIONS WITH WIND PER NESC RULE 234 REQUIREMENTS

VOLTAGE & STR. CONFIG.	<69kV SINGLE POLE	115kV H-FRAME	115kV SINGLE POLE	230kV H-FRAME	345kV H-FRAME	345kV SINGLE POLE	ALL LATTICE TOWERS
CONDUCTOR	477 ACSR "PELICAN"	1192 ACSR "BUNTING"	1192 ACSR "BUNTING"	1192 ACSR "BUNTING"	(2) 1590 ACSR "FALCON"	(2) 1590 ACSR "FALCON"	(2) 1590 ACSR "FALCON"
CONDUCTOR TENSION	3,000# @ NESC HEAVY	10,000# @ NESC HEAVY	8,000# @ NESC HEAVY	12,000# @ NESC HEAVY	14,000# @ NESC HEAVY	10,000# @ NESC HEAVY	14,000# @ NESC HEAVY
RULING SPAN (FT.)	300	800	450	1,000	1,000	800	1,000
MAX. SPAN LENGTH (FT.)	400	1,000	500	1,500	1,500	1,200	1,500

TABLE OF VALUES USED FOR MINIMUM STANDARD ROW SPACING CALCULATIONS

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

Drawing Scale: N/A



**TRANSMISSION
CONSTRUCTION
STANDARDS
MANUAL**

TRANSMISSION STANDARDS - RIGHT-OF-WAY
STANDARD MINIMUM ROW SPACING ASSUMPTIONS

REVISION

00

DATE

5/21/2015

Drwn. By:	Date Dr.:	Checked By:	Date Ck.:	Approved By:	Date App.:
B. Franklin	12/13/2013	Becken/Hart	12/24/2014	Barry R. Hart	12/24/2014

TM2.23.TL-09-003

Sheet 1