

EXHIBIT C
Engineering Specifications for an Overhead Transmission Line
Segment 1 of 2

PRINCIPAL CIRCUIT

1. Name of Petitioner: ITC Midwest, LLC
2. Name or Circuit Number of Line: Lafayette Substation - Midway 69kV
3. Length of Segment: 1.88 miles
4. Segment is located in the following sections, townships, and ranges: Sections 8, 16 and 17 in T85N, R7W
5. Segment will be rebuilt in 2013.
6. Segment will be rebuilt and maintained in accordance with the Iowa Electrical Safety Code and the 2007 Edition of the National Electrical Safety Code.
7. Maximum *Capable of Operating* Voltage: 72.5 kVAC Nominal Operating Voltage: 34.5 kVAC
8. Construction Grade: B Typical Span: 275 ft. Maximum Span: 300 ft.

Vertical Overhead Clearance Requirement* for the Phase Conductors

	<i>Surface</i>	<i>Basic Clearance</i>	<i>+</i>	<i>Voltage Adder</i>	<i>+</i>	<i>Additional Adders</i>	<i>=</i>	<i>Clearance</i>
9.	<i>Open Ground</i>	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
10.	<i>Roads</i>	18.5 ft.	+	0.7 ft.	+	ft.	=	19.2 ft.
11.	<i>(no RR crossings)</i>	ft.	+	ft.	+	ft.	=	ft.
12.	<i>(no water surfaces)</i>	ft.	+	ft.	+	ft.	=	ft.

* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

Phase Conductors:

13. Code Word: T2 Penguin Size: 2 4/0 Stranding: 2-6/1 Material: ACSR

Shield Wire(s):

14. Size: 3/8" Stranding: 7 Material: EHS
15. Frequency of Shield Wire Grounding (if applicable): At each structure

Typical Insulators

		<i>Post Type</i>	<i>Suspension Type</i>	
			<i>Tan. / Ang. Single Piece Unit</i>	<i>Strain Single Piece Unit</i>
17.	<i>Manufacturer</i>	Ohio Brass	Ohio Brass	Ohio Brass
18.	<i>Catalog number</i>	80S0690600 or Equivalent	S025036S2010 or Equivalent	S025036S2010 or Equivalent
19.	<i>Dry Flashover</i>	230 kV	385 kV	385 kV
20.	<i>Wet Flashover</i>	180 kV	365 kV	365 kV
21.	<i>Impulse Flashover, +</i>	360 kV	635 kV	635 kV
22.	<i>Impulse Flashover, -</i>	415 kV	620 kV	620 kV

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Typical Structures:

- 23. Structures Typically are: Wood Poles
- 24. Typical Height After Installation: 56.5-74.5 ft.

Typical Wood Pole:

- 25. Species: Pacific Coast Douglas Fir Treatment: Penta Class: 1-H2 Length: 65-85 ft.

Steel Structures:

- 26. Steel Pole or Tower Material: N/A
- 27. H-Frame Structure Bracing Type: N/A Spacing Between H-Frame Poles: N/A ft.
- 28. Support Arm Type: N/A Material: N/A Dimensions: N/A
- 29. Guys are: Insulated Guy Markers are: Orange

SECOND TRANSMISSION CIRCUIT (if applicable)

- 30. Name of Owner: N/A
- 31. Name or Circuit Number of Line: _____
- 32. If Franchised Separately, Docket Number of Order Granting Franchise: _____
- 33. Maximum *Capable of Operating* Voltage: _____ Nominal Operating Voltage: _____

Vertical Overhead Clearance Requirement* for the Phase Conductors

	<i>Surface</i>	<i>Basic Clearance</i>	+	<i>Voltage Adder</i>	+	<i>Additional Adders</i>	=	<i>Clearance</i>
34.	<i>Open Ground</i>	ft.	+	ft.	+	ft.	=	ft.
35.	<i>Roads</i>	ft.	+	ft.	+	ft.	=	ft.
36.	<i>Railroads</i>	ft.	+	ft.	+	ft.	=	ft.
37.	<i>Water</i>	ft.	+	ft.	+	ft.	=	ft.

* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

Phase Conductors:

- 35. Code Word: _____ Size: _____ Stranding: _____ Material: _____

Typical Insulators

	<i>Post Type</i>	<i>Suspension Type</i>	
		<i>Tan. / Ang.</i> (<i>select</i>)	<i>Strain</i> (<i>select</i>)
36.	<i>Manufacturer</i>		
37.	<i>Catalog number</i>		
38.	<i>Dry Flashover</i>	kV	kV
39.	<i>Wet Flashover</i>	kV	kV
40.	<i>Impulse Flashover, +</i>	kV	kV
41.	<i>Impulse Flashover, -</i>	kV	kV
42.			

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- 43. Support Arm Type: _____ Material: _____ Dimensions: _____

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DISTRIBUTION UNDERBUILD (if applicable)

44. Name of Owner: N/A
45. Nominal Voltage: _____
46. Number of Distribution Phase Conductors: _____
47. Neutral is _____ Multi-Grounding Frequency: _____

Vertical Overhead Clearance Requirement* for the Phase Conductors

	<i>Surface</i>	<i>Basic Clearance</i>	+	<i>Additional Adders</i>	=	<i>Clearance</i>
48.	<i>Open Ground</i>	ft.	+	ft.	=	ft.
49.	<i>Roads</i>	ft.	+	ft.	=	ft.
50.	<i>Railroads</i>	ft.	+	ft.	=	ft.
51.	<i>Water</i>	ft.	+	ft.	=	ft.

* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

Vertical Overhead Clearance Requirement* for the Neutral Conductor (if applicable)

	<i>Surface</i>	<i>Basic Clearance</i>	+	<i>Additional Adders</i>	=	<i>Clearance</i>
52.	<i>Open Ground</i>	ft.	+	ft.	=	ft.
53.	<i>Roads</i>	ft.	+	ft.	=	ft.
54.	<i>Railroads</i>	ft.	+	ft.	=	ft.
55.	<i>Water</i>	ft.	+	ft.	=	ft.

* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply.

56. Support Arm Type: _____ Material: _____ Dimensions: _____

TYPICAL STRUCTURE DRAWING

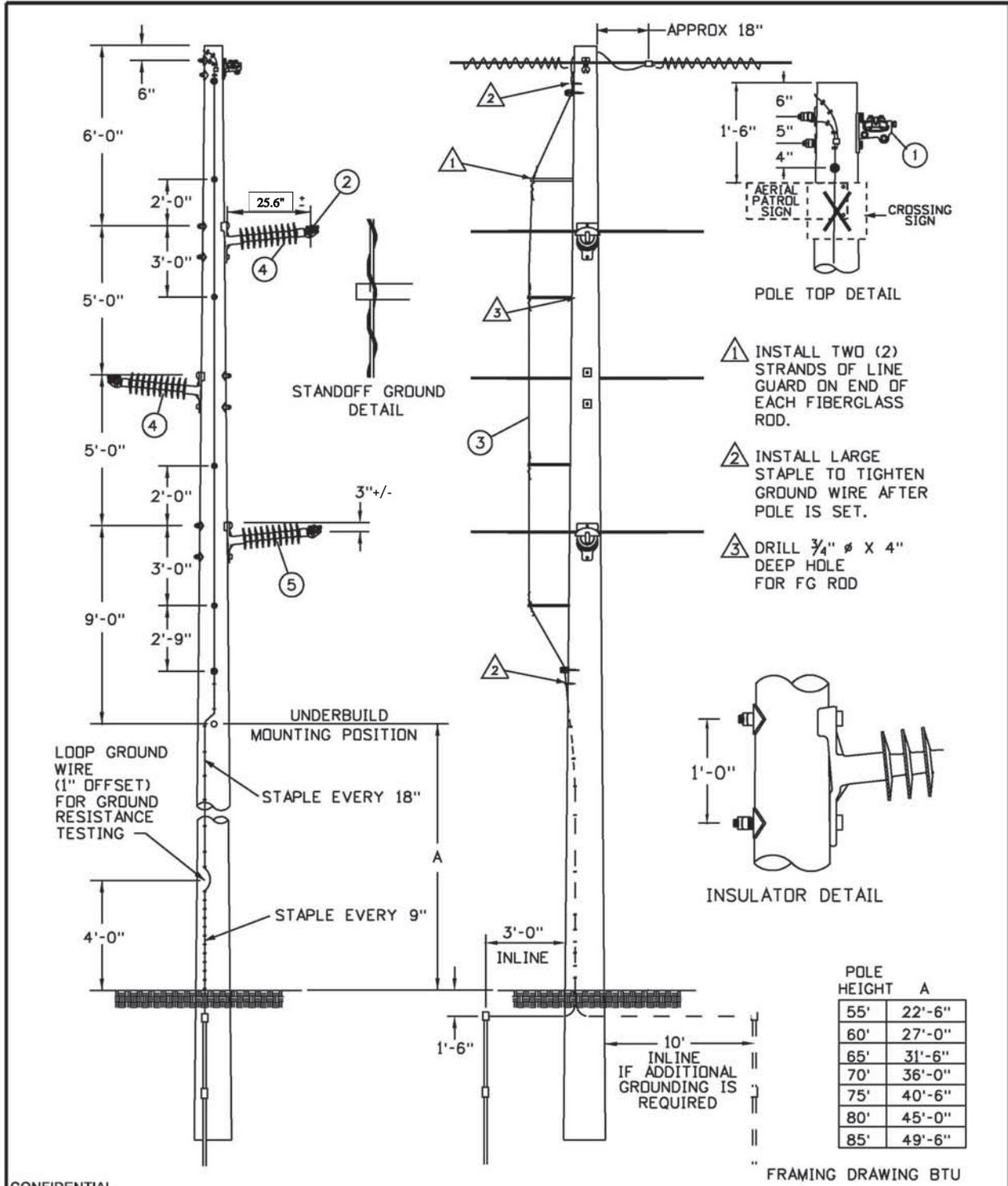
57. A drawing of a typical tangent structure, as described in the instructions, has been attached.

ADDITIONAL DRAWINGS REQUIRED FOR NEW CONSTRUCTION

58. Angle structures will be used in this segment of line. A drawing of a typical angle structure, as described in the instructions, has been attached.
59. Dead-end structures will be used in this segment of line. A drawing of a typical dead-end structure, as described in the instructions, has been attached.
60. There are no grain bins along this segment of line. Drawings showing the clearance envelope for each grain bin in relation to the proposed line are not required.

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ITC Midwest

NO.	DATE	REVISION	BY	CHK'D	APP'D
3	10-17-08	CHANGE TO ITC BORDER	RAH		
2	11-10-05	GROUNDING CHANGES	RT		
1	02-13-04	STANDARD CHANGES	SDL		DD
0	09-01-99	ORIGINAL ISSUE	SJK		



69KV TANGENT W/ HPI & STANDOFF GND

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Scale: NONE

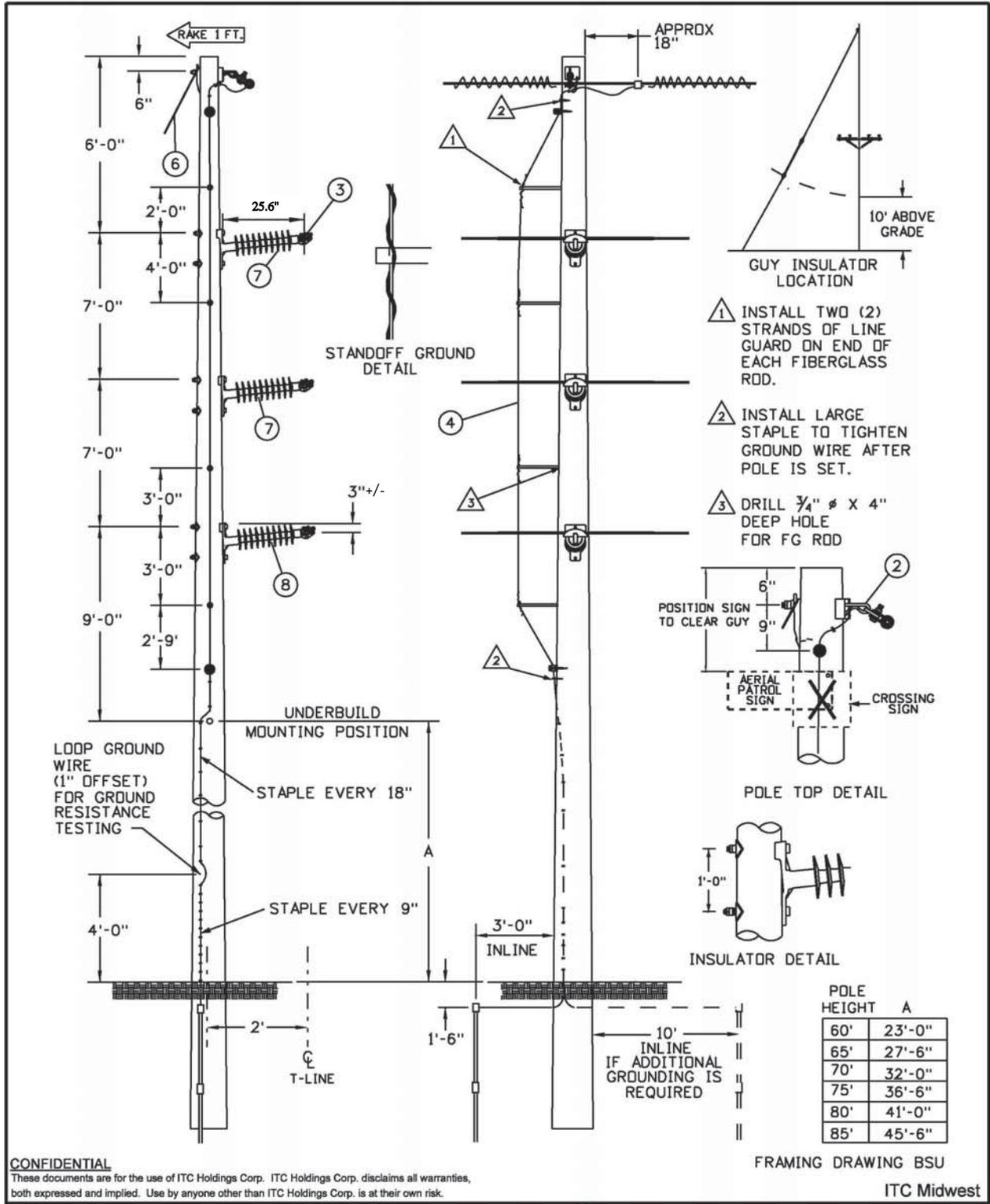
DWG. NO.

June 4, 2013 69TGSP

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(Amendment No. 14)





NO.	DATE	REVISION	BY	CHK'D	APP'D
3	10-17-08	CHANGE TO ITC BORDER	RAH		
2	11-10-05	GROUNDING CHANGES	RT		
1	02-13-04	STANDARD CHANGES	SDL		DO
0	09-01-99	ORIGINAL ISSUE	SJK		



69KV SMALL ANGLE 1-5 DEG. W/ HPI & STANDOFF GROUND

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