

APPENDIX 10.8
EMF CALCULATIONS

10.8 EMF CALCULATIONS

This appendix includes the EMF calculations that were conducted for the typical structure cross-sections discussed in Section 9.2.3. Since many of the typical cross-sections include provisions for future 69-kV and distribution underbuild circuits, EMF analyses were conducted for various operating conditions (both initial and ultimate configurations) to determine the case which produces the maximum EMF level as shown in Table 9.5.5-1.

Appendix 10.8
Summary of EMF Calculations
(Note: Yellow shaded EMF case is the value shown in Table 9.5.5.1)

Figure	Description	Condition	Conductor	Maximum Design Current (Amps)	Maximum Design Temp (deg F)	Ground Clearance (Ft)	ROW Width (Ft)	E-Field		B-Field
								In ROW (kV/M)	ROW Edge (kV/M)	ROW Edge (mG)
	Florida EMF Limits							8	2	150
9.2.3-1	230 kV Single Circuit, Existing TEC ROW, w/69 kV U.B	All circuits energized	1590 ACSS - 230 KV	2560	392	50	100	0.4	0.2	53.4
			954 ACSR - 69 kV	1344	212	27				
		230 kV circuit energized	1590 ACSS - 230 KV	2560	392	50	100	1.1	0.5	76.1
		69 kV Not Installed	954 ACSR - 69 kV							
9.2.3-3	230 kV Single Circuit, Roadside, w/69 kV U.B	All circuits energized	1590 ACSS - 230 KV	2560	392	50	35	0.4	0.4	35.6
			954 ACSR - 69 kV	1344	212	27				
		230 kV circuit energized	1590 ACSS - 230 KV	2560	392	50	35	1.1	1.1	105.5
		69 kV Not Installed	954 ACSR - 69 kV							
9.2.3-5	230 kV Single Circuit, Existing TEC ROW, w/69 kV U.B and Dist. U.B	All circuits energized	1590 ACSS - 230 KV	2560	392		35	0.1	0.1	95.9
			954 ACSR - 69 kV	1344	212					
			336 ACSR	510	212					
9.2.3-7	230 kV Twin Circuits, New 230402, Existing TEC ROW, w/69 kV U.B.	All circuits energized	1590 ACSS	2560	392	50				
			1590 ACSR	1831	212	27	200	3.1	1.5	141.1
			954 ACSR - 69 kV	1344	212	27				
9.2.3-9	230 kV Twin Circuits, Single Poles, Existing TEC ROW, w/69 kV U.B.	All circuits energized, 110 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	50'	110	1.1	0.5	81.8
			954 ACSR - 69 kV	1344	212	27'				
		One 230 kV circuit energized, 110 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	50'	110	1.5	0.6	89.1
		69 kV Not Installed								
		All circuits energized, 140 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	50'	140	1.1	0.6	54.4
			954 ACSR - 69 kV	1344	212	27'				
9.2.3-12	230 kV Twin Circuits, H-Frames, Existing TEC ROW, w/69 kV U.B.	All circuits energized, 170 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	50'	170	2.6	1.2	119.0
			954 ACSR - 69 kV	1344	212	27'				

Appendix 10.8
Summary of EMF Calculations
(Note: Yellow shaded EMF case is the value shown in Table 9.5.5.1)

Figure	Description	Condition	Conductor	Maximum Design Current (Amps)	Maximum Design Temp (deg F)	Ground Clearance (Ft)	ROW Width (Ft)	E-Field		B-Field
								In ROW (kV/M)	ROW Edge (kV/M)	ROW Edge (mG)
	Florida EMF Limits							8	2	150
		One 230 kV circuit energized, 170 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	50'	170	1.4	1.1	114.8
		69 kV Not Installed								
		All circuits energized, 190 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	50'	190	2.6	1.0	90.3
			954 ACSR - 69 kV	1344	212	27'				
9.2.3-15	230 kV Twin Circuits, Double Ckt 230/69, Existing TEC ROW	All circuits energized, 140 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	40	140	1.9	0.5	73.7
			954 ACSR - 69 kV	1344	212	40				
		One 230 kV circuit energized, 140 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	40	140	2.1	0.5	104
		69 kV Not Installed								
		All circuits energized, 160 Ft. ROW	Bundled 795 ACSS- 230 kV	3000	392	40	160	1.9	0.3	56.0
			954 ACSR - 69 kV	1344	212	40				
9.2.3-18	230 kV Twin Circuits, New 230606, Existng TEC ROW, w/69 kV U.B.	All circuits energized	1590 ACSS	2560	392	50	150	1.7	0.2	78.4
			1590 ACSR	1831	212	40				
			954 ACSR - 69 kV	1344	212	27				
		Both 230 kV circuits energized	1590 ACSS	2560	392	50	150	2.3	0.7	119.4
			1590 ACSR	1831	212	40				
			954 ACSR - 69 kV							

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-1	100	1.1	35	0.5	0	76.1	0

Substations

None

Details for CrossSection: **Figure 9.2.3-1- PP - FS 230 kV Line**

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

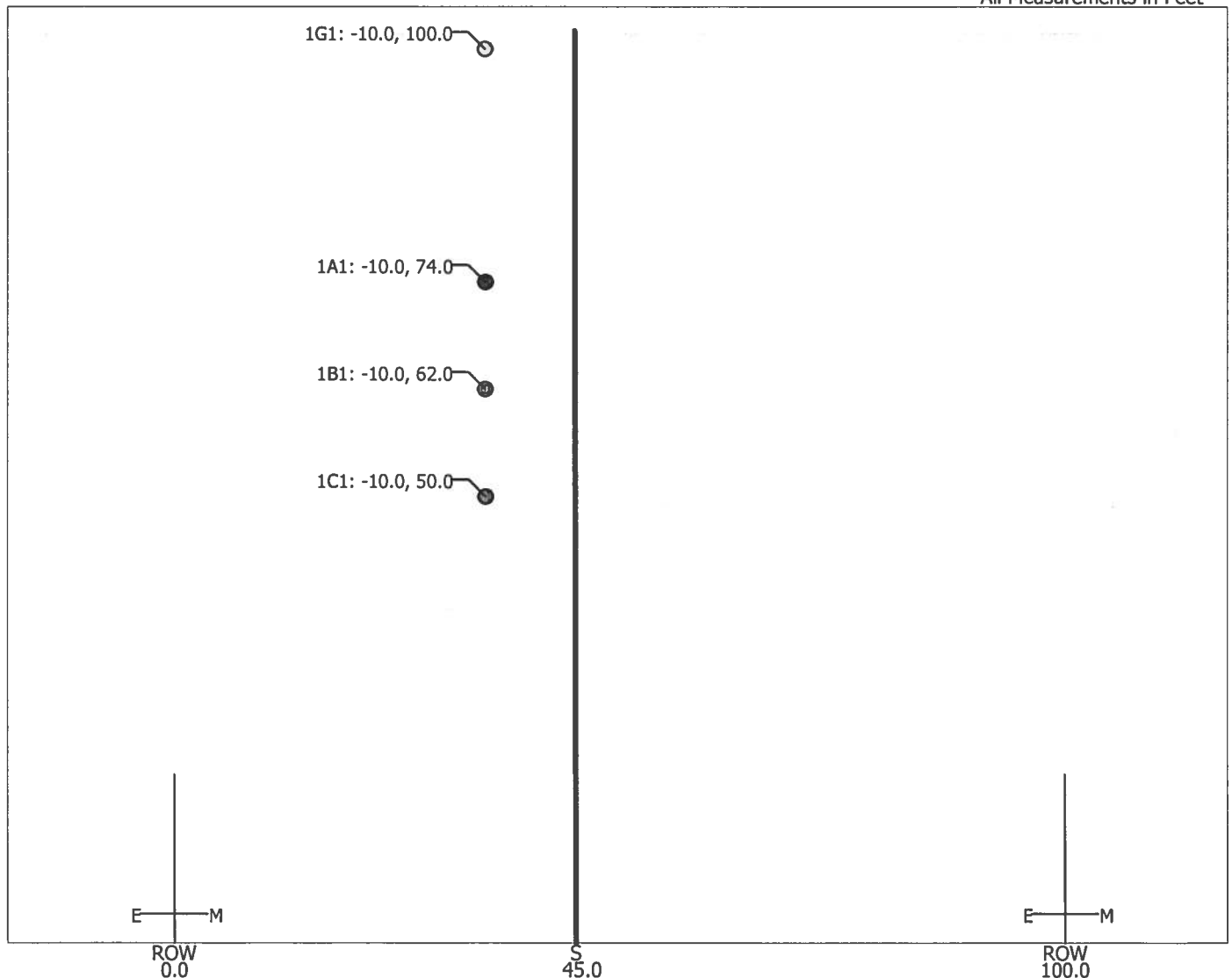
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	35.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	35.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	35.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	35.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



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Date


Signature and Seal of Professional Engineer
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Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-1	100	0.4	41	0.2	0	53.4	0

Substations

None

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Details for CrossSection: Figure 9.2.3-1- PP - FS 230 kV Line

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	35.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	35.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	35.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	35.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

69KVC1
Circuit Name

69 kV
Rated Voltage

NEW CIRCUIT
New/Existing

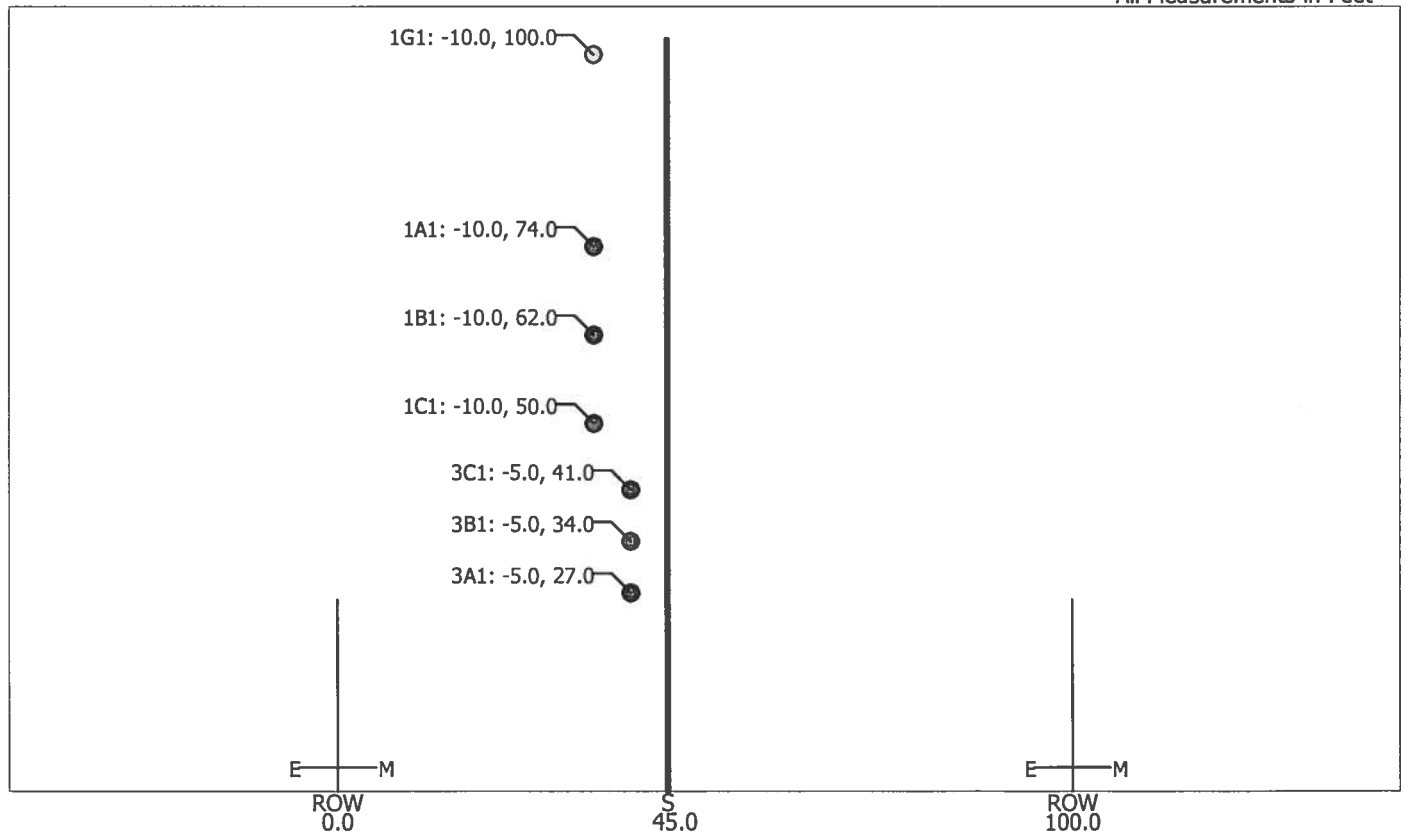
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	40.00	-5.00	27.00	1	1.20	0.00	72.0	0	1344
3B1	40.00	-5.00	34.00	1	1.20	0.00	72.0	120	1344
3C1	40.00	-5.00	41.00	1	1.20	0.00	72.0	240	1344

Points of Interest

None

Phase Configuration

All Measurements in Feet



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Signature of Authorized Agent

9-10-12

Date



Signature and Seal of Professional Engineer

9-10-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-3	35	1.1	-4	1.1	0	105.5	0

Substations

None

Details for CrossSection: **Figure 9.2.3-3- PP - FS 230 kV Line**

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

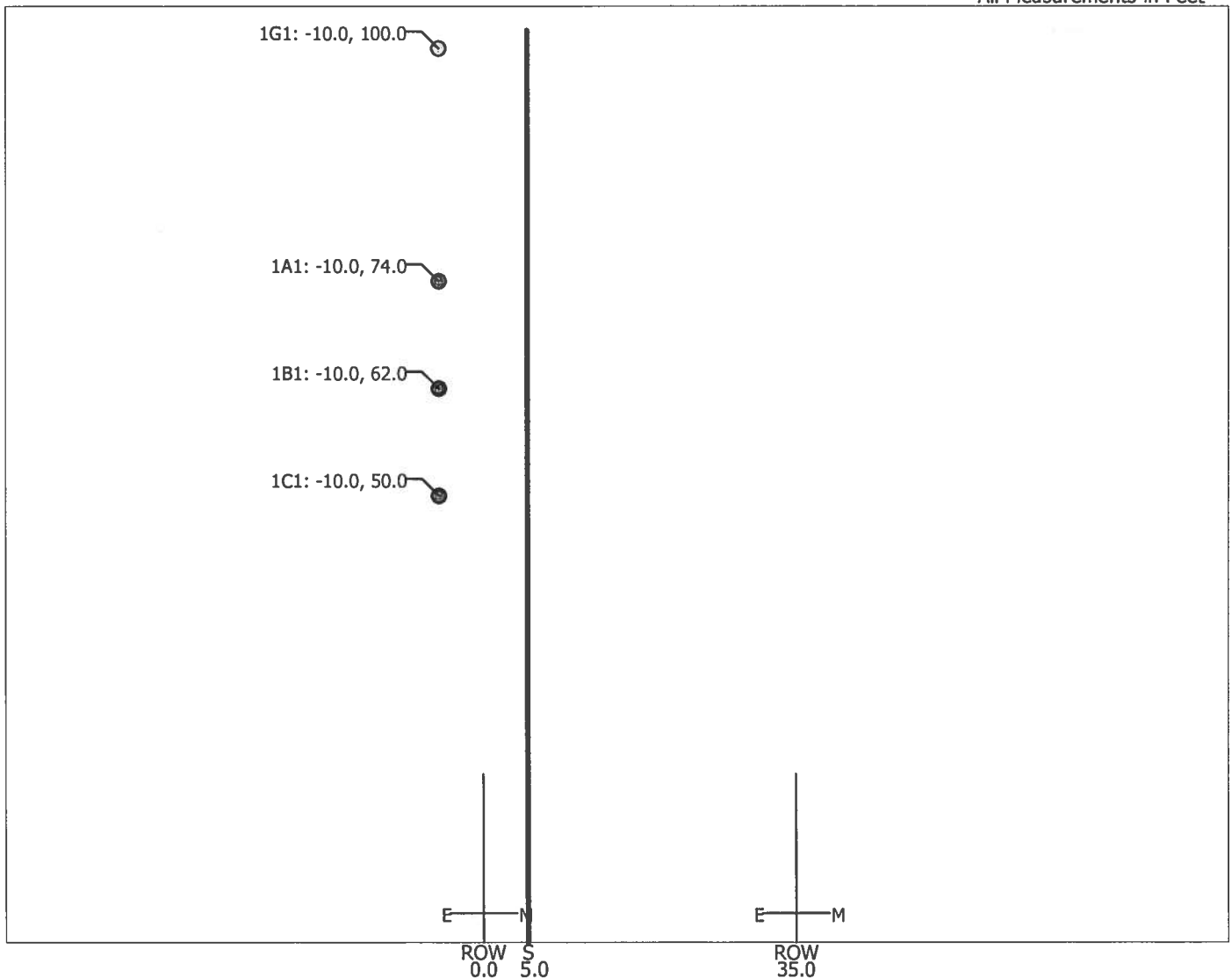
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	-5.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	-5.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	-5.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	-5.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



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Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-3	35	0.4	1	0.4	0	35.6	35

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: Figure 9.2.3-3- PP - FS 230 kV Line

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (MCR)
				# of	Diameter (in)	Spacing (in)			
1A1	-5.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	-5.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	-5.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	-5.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

69KVC1
Circuit Name

69 kV
Rated Voltage

NEW CIRCUIT
New/Existing

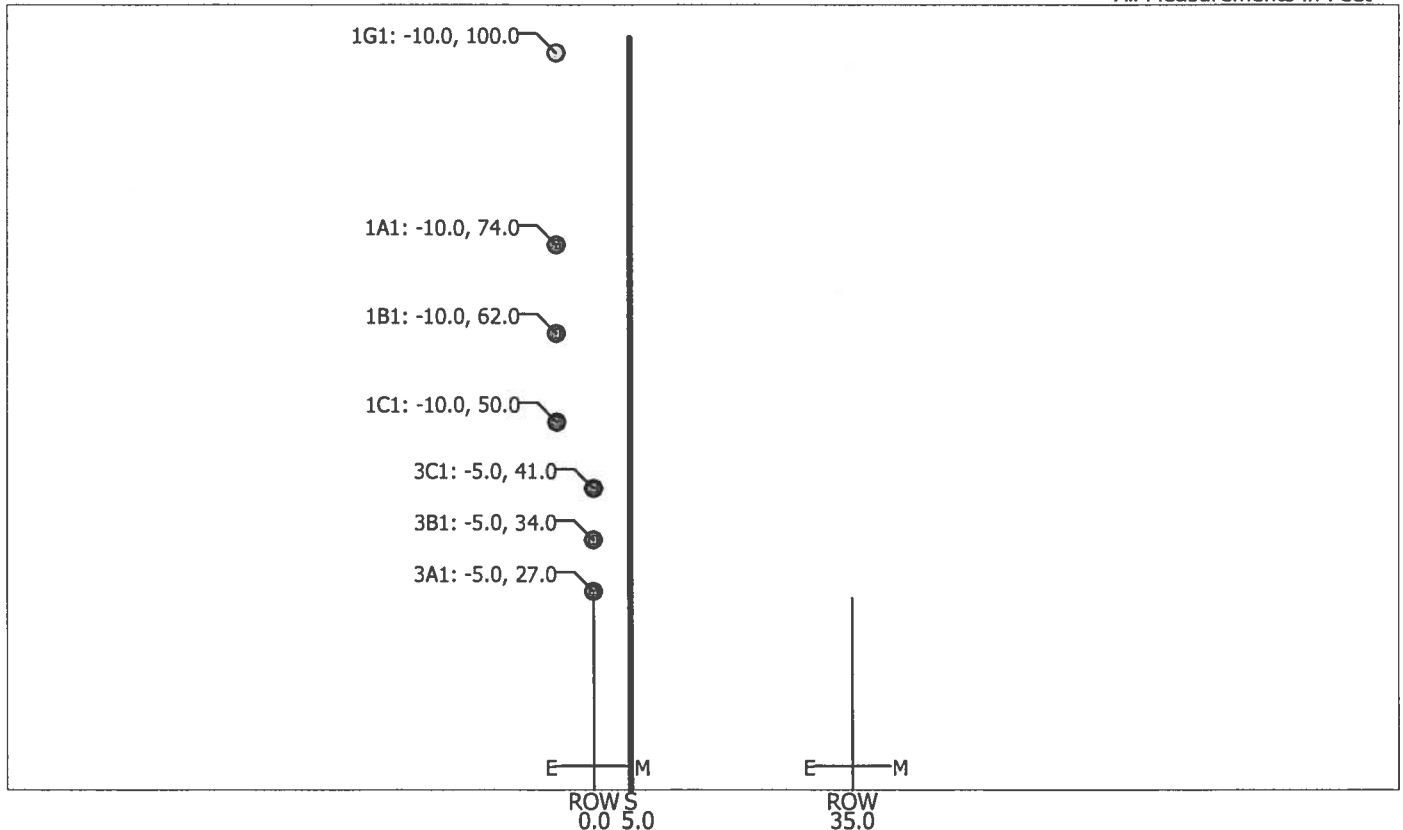
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	0.00	-5.00	27.00	1	1.20	0.00	72.0	0	1344
3B1	0.00	-5.00	34.00	1	1.20	0.00	72.0	120	1344
3C1	0.00	-5.00	41.00	1	1.20	0.00	72.0	240	1344

Points of Interest

None

Phase Configuration

All Measurements in Feet



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Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-5	35	0.1	4	0.1	0	95.9	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-5- Polk Power - FishHawk 230 kV Line**

230kV

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	-5.00	-10.00	107.00	1	1.50	0.00	241.0	0	2560
1B1	-5.00	-10.00	95.00	1	1.50	0.00	241.0	120	2560
1C1	-5.00	-10.00	83.00	1	1.50	0.00	241.0	240	2560
1G1	-5.00	-10.00	130.00	1	0.36	0.00	0.0	0	0

69 kV

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	0.00	-5.00	60.00	1	1.20	0.00	72.0	0	1344
2B1	0.00	-5.00	67.00	1	1.20	0.00	72.0	120	1344
2C1	0.00	-5.00	74.00	1	1.20	0.00	72.0	240	1344

Dist1

Circuit Name

0 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	7.00	2.00	26.00	1	0.68	0.00	15.0	0	510
3B1	7.00	2.00	23.00	1	0.68	0.00	15.0	120	510
3C1	7.00	2.00	20.00	1	0.68	0.00	15.0	240	510
3G1	7.00	2.00	18.00	1	0.72	0.00	0.0	0	0

Dist2

Circuit Name

0 kV

Rated Voltage

NEW CIRCUIT

New/Existing

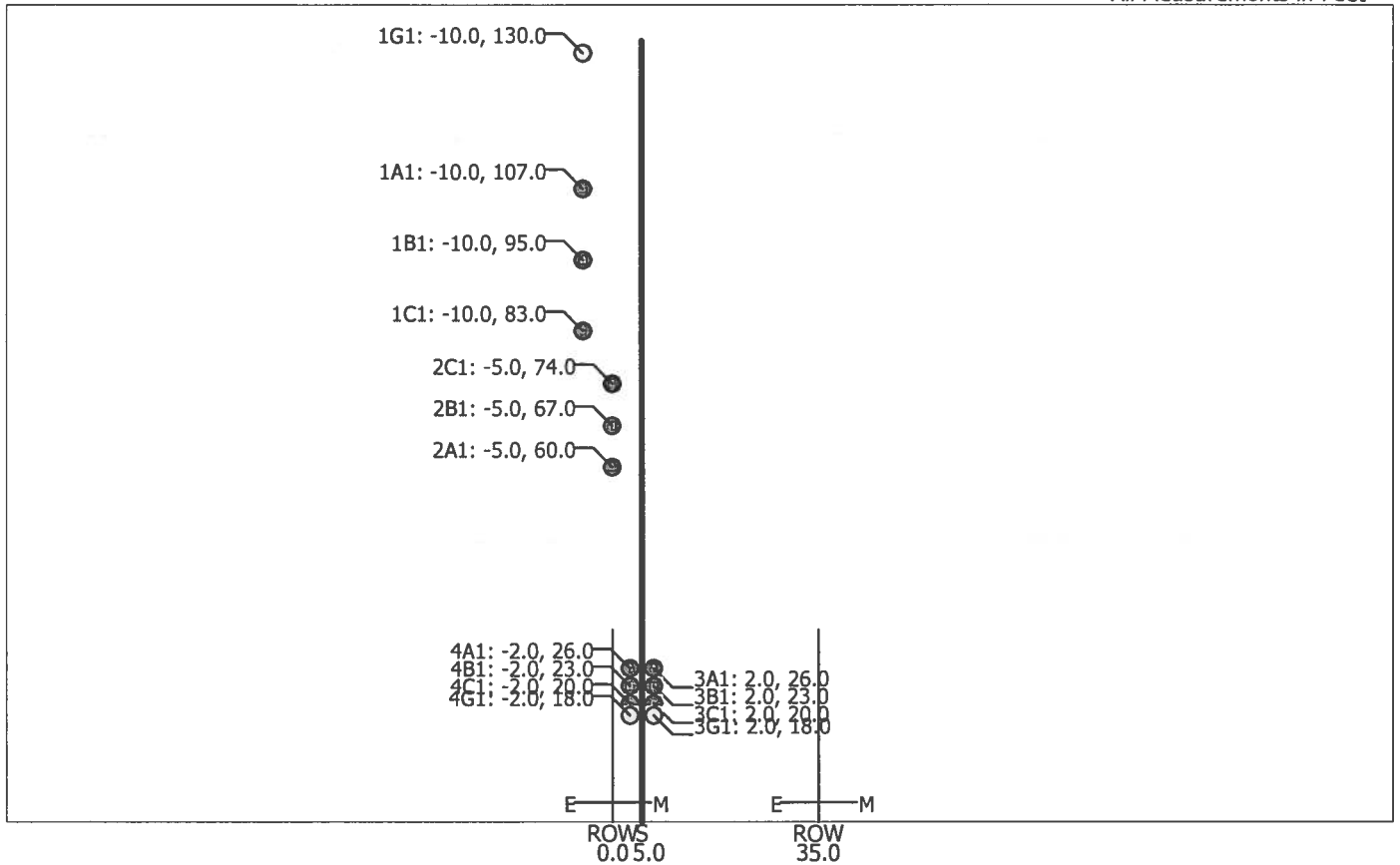
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	3.00	-2.00	26.00	1	0.68	0.00	15.0	0	510
4B1	3.00	-2.00	23.00	1	0.68	0.00	15.0	120	510
4C1	3.00	-2.00	20.00	1	0.68	0.00	15.0	240	510
4G1	3.00	-2.00	18.00	1	0.72	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



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Name of Transmission Line/Interest Point

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Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-7	200	3.1	176	1.5	200	141.1	200

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-7- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	95.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	95.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	95.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	95.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

69kV C1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	100.00	-5.00	27.00	1	1.20	0.00	72.0	0	1344
3B1	100.00	-5.00	34.00	1	1.20	0.00	72.0	120	1344
3C1	100.00	-5.00	41.00	1	1.20	0.00	72.0	240	1344

230kV C2

Circuit Name

230 kV

Rated Voltage

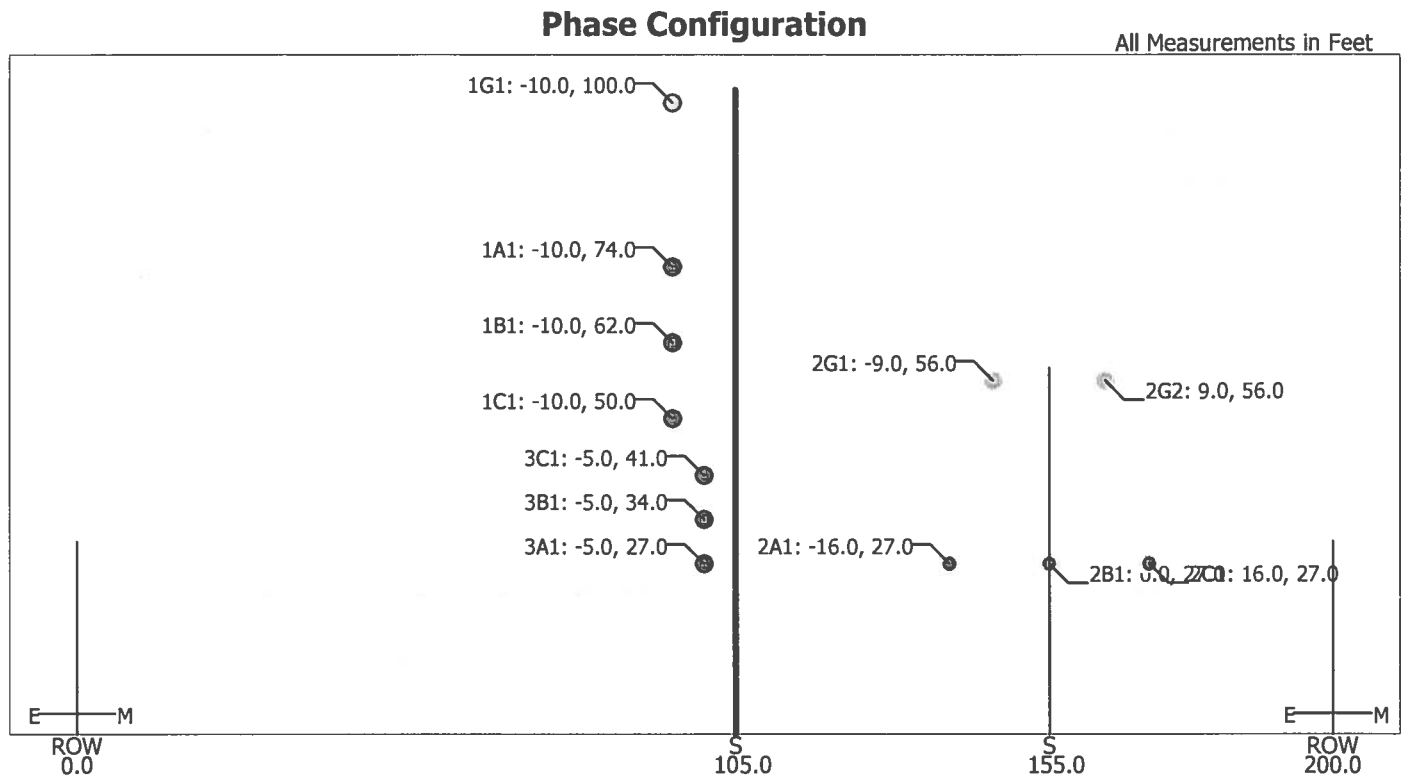
Existing Circuit

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	139.00	-16.00	27.00	1	1.50	0.00	246.0	0	1831
2B1	155.00	0.00	27.00	1	1.50	0.00	246.0	120	1831
2C1	171.00	16.00	27.00	1	1.50	0.00	246.0	240	1831
2G1	146.00	-9.00	56.00	1	0.46	0.00	0.0	0	0
2G2	164.00	9.00	56.00	1	0.46	0.00	0.0	0	0

Points of Interest

None



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October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer

Curtis W. Smith
Signature of Authorized Agent

9-12-12
Date

Curtis W. Smith
Signature and Seal of Professional Engineer

9-12-12
Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-9	110	1.5	35	0.6	0	89.1	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-9- PP - FS 230 kV Line**

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

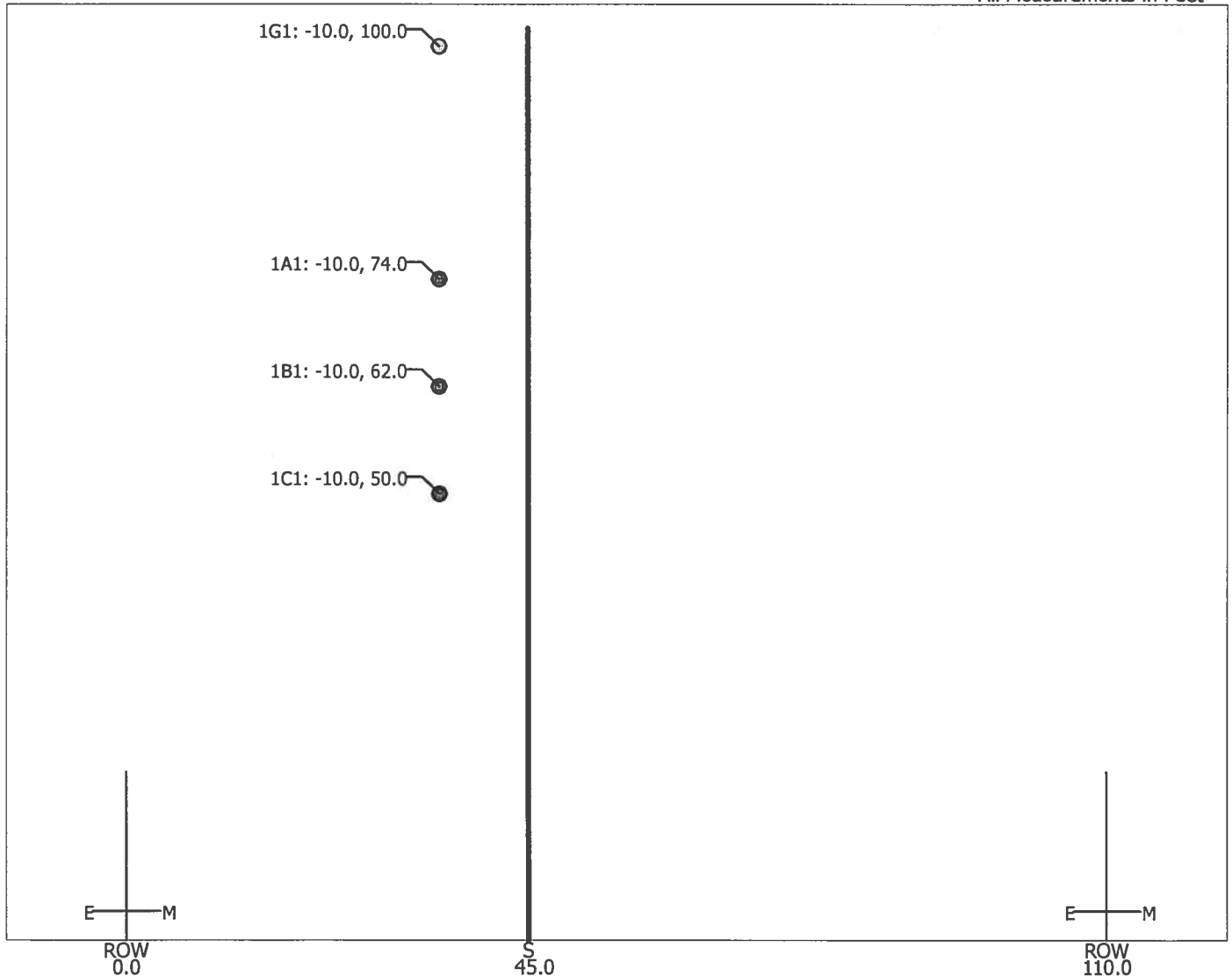
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	35.00	-10.00	74.00	2	1.11	18.00	246.0	0	3000
1B1	35.00	-10.00	62.00	2	1.11	18.00	246.0	120	3000
1C1	35.00	-10.00	50.00	2	1.11	18.00	246.0	240	3000
1G1	35.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer

Curtis W. Smith

Signature of Authorized Agent

9-12-12

Date

Curtis W. Smith

Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-9	110	1.1	77	0.5	110	81.8	110

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: Figure 9.2.3-9- PP - FS 230 kV Line

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	35.00	-10.00	74.00	2	1.11	18.00	246.0	0	3000
1B1	35.00	-10.00	62.00	2	1.11	18.00	246.0	120	3000
1C1	35.00	-10.00	50.00	2	1.11	18.00	246.0	240	3000
1G1	35.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

230kV C2

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	75.00	10.00	50.00	2	1.11	18.00	246.0	0	3000
2B1	75.00	10.00	62.00	2	1.11	18.00	246.0	120	3000
2C1	75.00	10.00	74.00	2	1.11	18.00	246.0	240	3000
2G1	75.00	10.00	100.00	1	0.46	0.00	0.0	0	0

69KVC1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	40.00	-5.00	41.00	1	1.20	0.00	72.0	0	1344
3B1	40.00	-5.00	34.00	1	1.20	0.00	72.0	120	1344
3C1	40.00	-5.00	27.00	1	1.20	0.00	72.0	240	1344

69KVC2

Circuit Name

69 kV

Rated Voltage

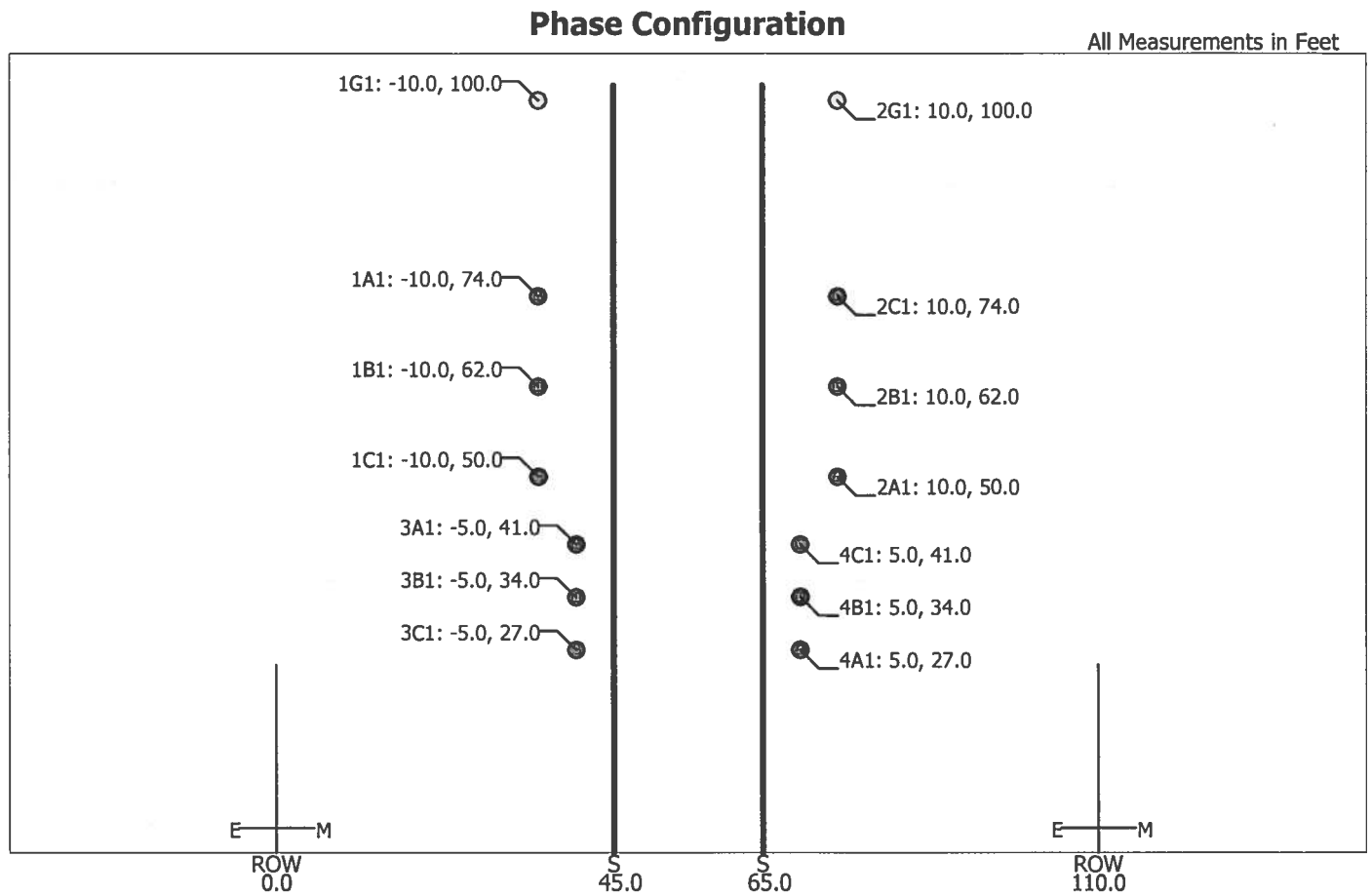
NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	70.00	5.00	27.00	1	1.20	0.00	72.0	0	1344
4B1	70.00	5.00	34.00	1	1.20	0.00	72.0	120	1344
4C1	70.00	5.00	41.00	1	1.20	0.00	72.0	240	1344

Points of Interest

None



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

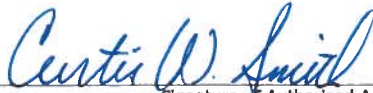
October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-9	140	1.1	92	0.2	140	54.4	140

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-9- PP - FS 230 kV Line**

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	50.00	-10.00	74.00	2	1.11	18.00	246.0	0	3000
1B1	50.00	-10.00	62.00	2	1.11	18.00	246.0	120	3000
1C1	50.00	-10.00	50.00	2	1.11	18.00	246.0	240	3000
1G1	50.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

230kV C2
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	90.00	10.00	50.00	2	1.11	18.00	246.0	0	3000
2B1	90.00	10.00	62.00	2	1.11	18.00	246.0	120	3000
2C1	90.00	10.00	74.00	2	1.11	18.00	246.0	240	3000
2G1	90.00	10.00	100.00	1	0.46	0.00	0.0	0	0

69KVC1
Circuit Name

69 kV
Rated Voltage

NEW CIRCUIT
New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	55.00	-5.00	41.00	1	1.20	0.00	72.0	0	1344
3B1	55.00	-5.00	34.00	1	1.20	0.00	72.0	120	1344
3C1	55.00	-5.00	27.00	1	1.20	0.00	72.0	240	1344

69KVC2
Circuit Name

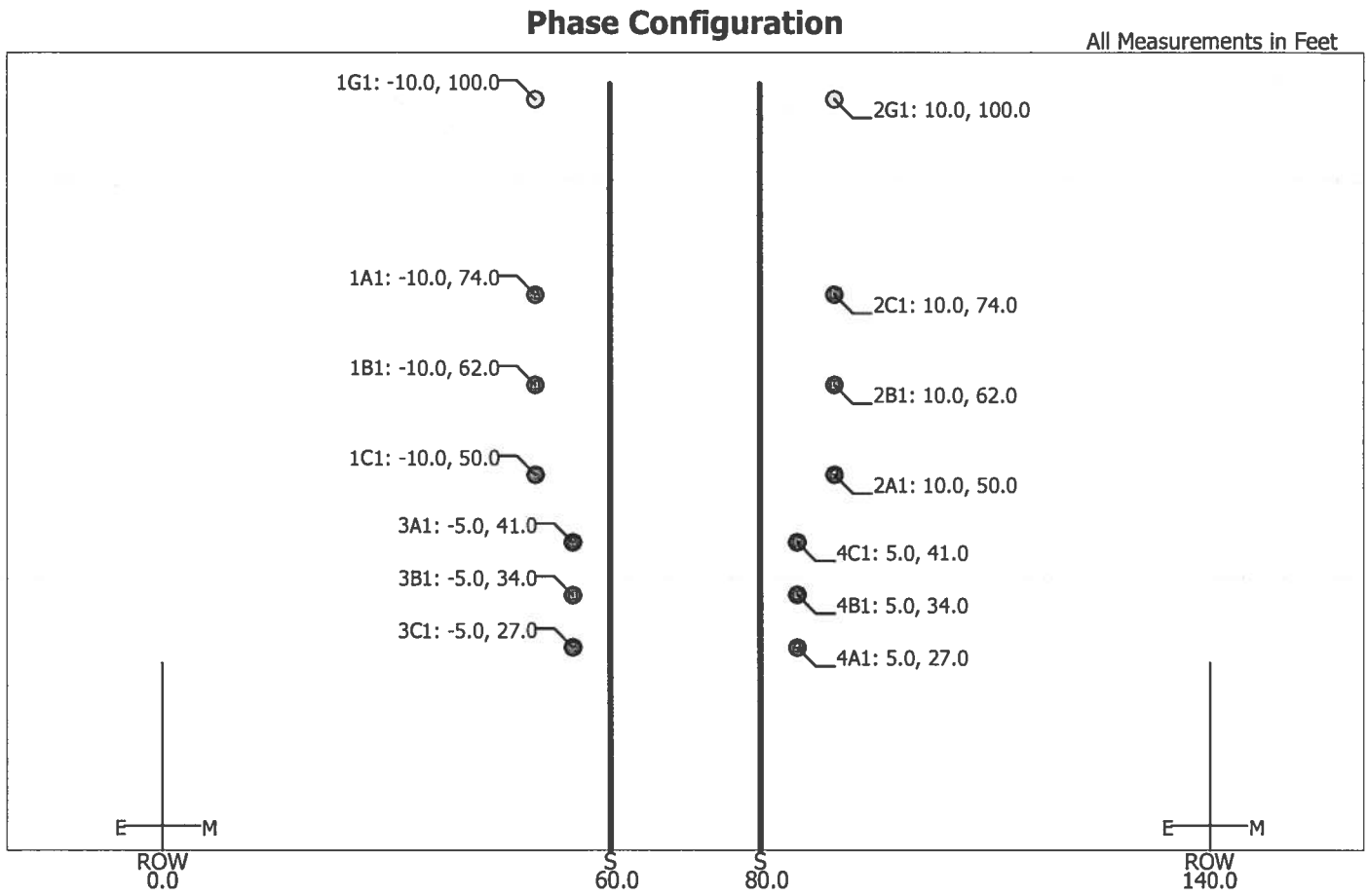
69 kV
Rated Voltage

NEW CIRCUIT
New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	85.00	5.00	27.00	1	1.20	0.00	72.0	0	1344
4B1	85.00	5.00	34.00	1	1.20	0.00	72.0	120	1344
4C1	85.00	5.00	41.00	1	1.20	0.00	72.0	240	1344

Points of Interest

None



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-12	170	2.6	85	1.2	0	119.0	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-12- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	39.00	-18.00	50.00	2	1.11	18.00	246.0	0	3000
1B1	57.00	0.00	50.00	2	1.11	18.00	246.0	120	3000
1C1	75.00	18.00	50.00	2	1.11	18.00	246.0	240	3000
1G1	39.00	-18.00	77.00	1	0.46	0.00	0.0	0	0
1G2	75.00	18.00	77.00	1	0.46	0.00	0.0	0	0

230kV C2

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	131.00	18.00	50.00	2	1.11	18.00	246.0	0	3000
2B1	113.00	0.00	50.00	2	1.11	18.00	246.0	120	3000
2C1	95.00	-18.00	50.00	2	1.11	18.00	246.0	240	3000
2G1	95.00	-18.00	77.00	1	0.46	0.00	0.0	0	0
2G2	131.00	18.00	77.00	1	0.46	0.00	0.0	0	0

69kVC1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	44.00	-13.00	27.00	1	1.20	0.00	72.0	0	1344
3B1	57.00	0.00	27.00	1	1.20	0.00	72.0	120	1344
3C1	70.00	13.00	27.00	1	1.20	0.00	72.0	240	1344

69kVC2

Circuit Name

69 kV

Rated Voltage

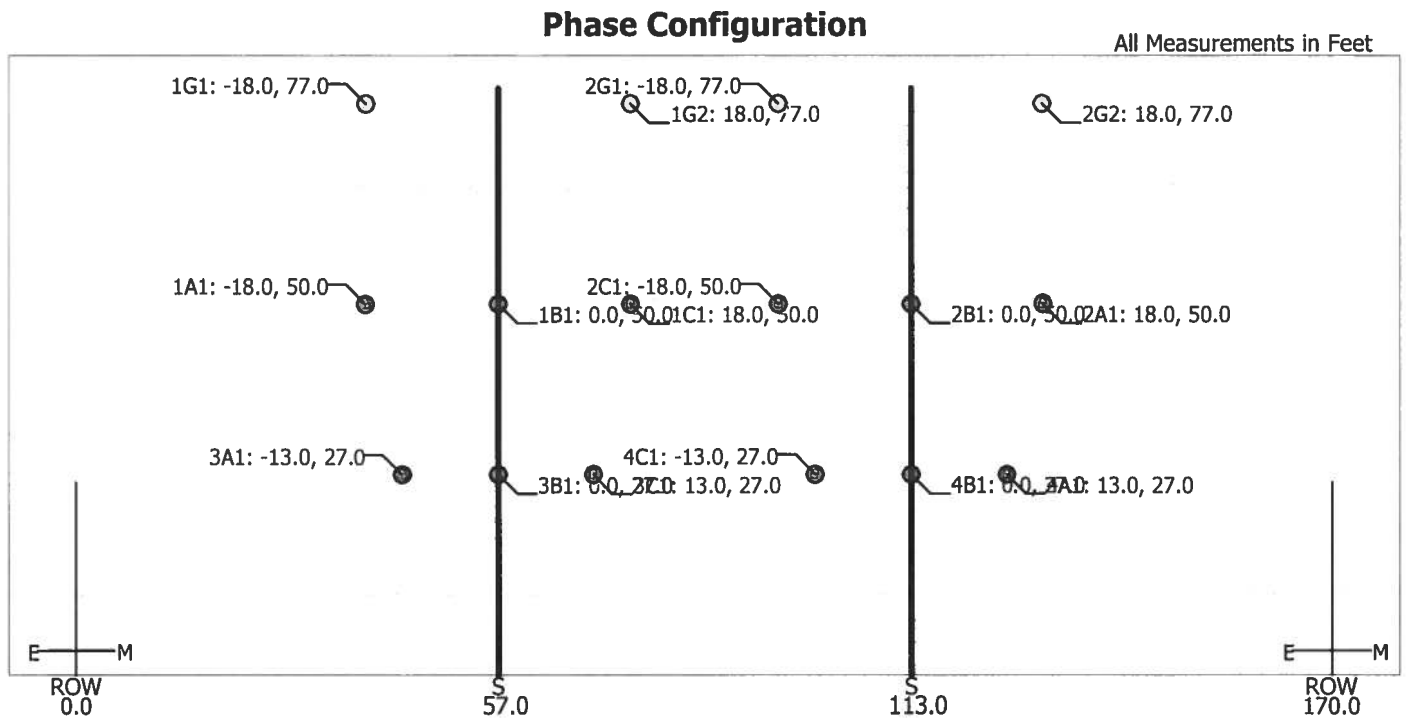
NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	126.00	13.00	27.00	1	1.20	0.00	72.0	0	1344
4B1	113.00	0.00	27.00	1	1.20	0.00	72.0	120	1344
4C1	100.00	-13.00	27.00	1	1.20	0.00	72.0	240	1344

Points of Interest

None



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-12	170	1.4	24	1.1	0	114.8	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-12- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

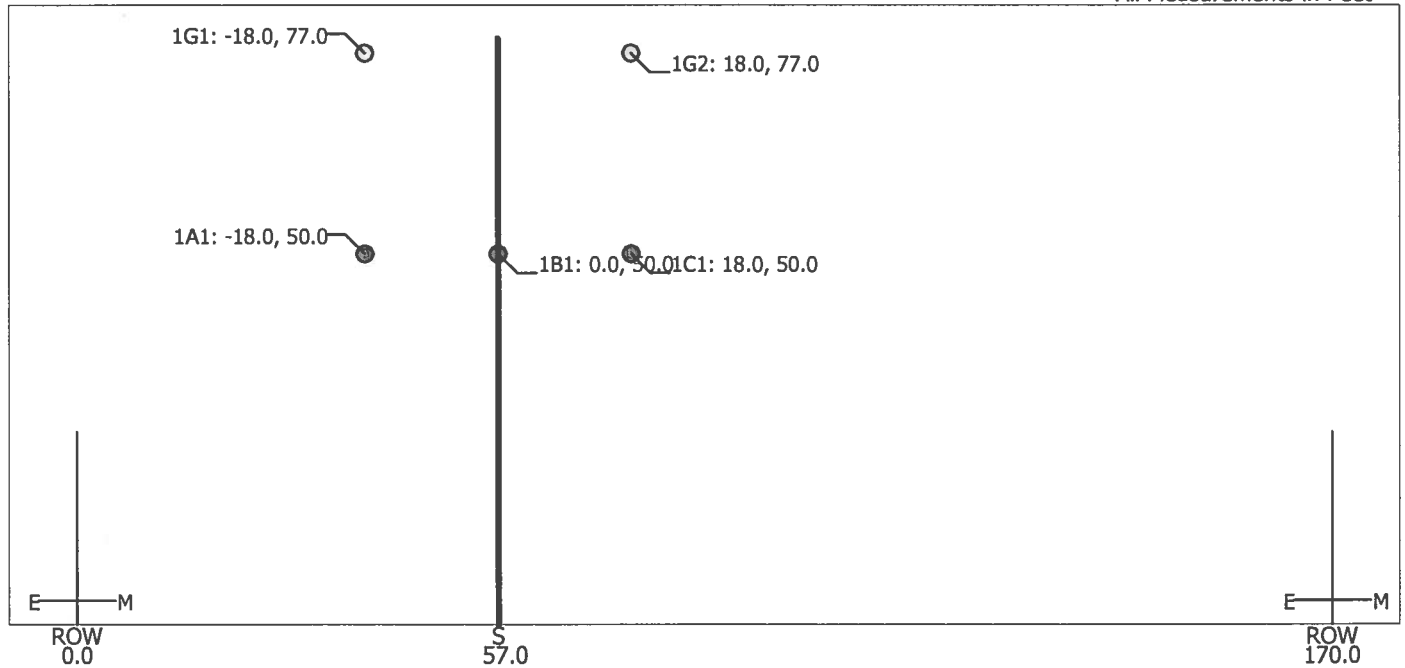
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	39.00	-18.00	50.00	2	1.11	18.00	246.0	0	3000
1B1	57.00	0.00	50.00	2	1.11	18.00	246.0	120	3000
1C1	75.00	18.00	50.00	2	1.11	18.00	246.0	240	3000
1G1	39.00	-18.00	77.00	1	0.46	0.00	0.0	0	0
1G2	75.00	18.00	77.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer


Signature of Authorized Agent
9-12-12
Date


Signature and Seal of Professional Engineer
9-12-12
Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-12	190	2.6	95	1.0	0	90.3	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-12- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	49.00	-18.00	50.00	2	1.11	18.00	246.0	0	3000
1B1	67.00	0.00	50.00	2	1.11	18.00	246.0	120	3000
1C1	85.00	18.00	50.00	2	1.11	18.00	246.0	240	3000
1G1	49.00	-18.00	77.00	1	0.46	0.00	0.0	0	0
1G2	85.00	18.00	77.00	1	0.46	0.00	0.0	0	0

230kV C2

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	141.00	18.00	50.00	2	1.11	18.00	246.0	0	3000
2B1	123.00	0.00	50.00	2	1.11	18.00	246.0	120	3000
2C1	105.00	-18.00	50.00	2	1.11	18.00	246.0	240	3000
2G1	105.00	-18.00	77.00	1	0.46	0.00	0.0	0	0
2G2	141.00	18.00	77.00	1	0.46	0.00	0.0	0	0

69KVC1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	54.00	-13.00	27.00	1	1.20	0.00	72.0	0	1344
3B1	67.00	0.00	27.00	1	1.20	0.00	72.0	120	1344
3C1	80.00	13.00	27.00	1	1.20	0.00	72.0	240	1344

69kVC2

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

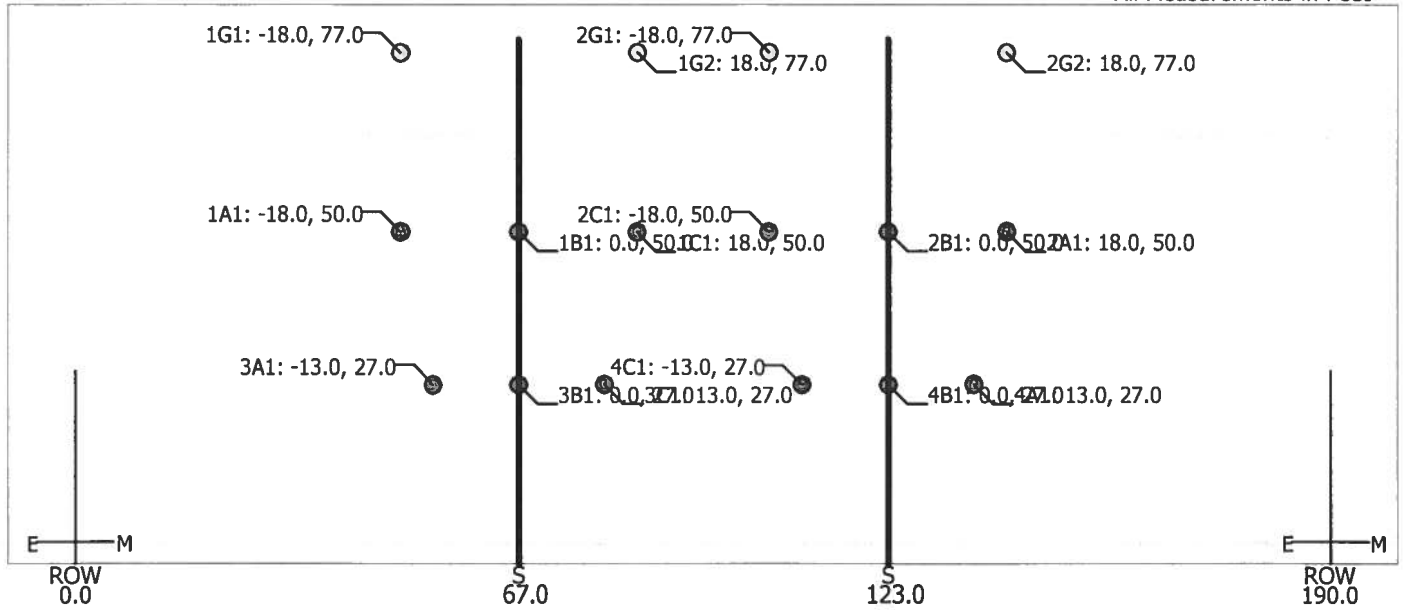
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	136.00	13.00	27.00	1	1.20	0.00	72.0	0	1344
4B1	123.00	0.00	27.00	1	1.20	0.00	72.0	120	1344
4C1	110.00	-13.00	27.00	1	1.20	0.00	72.0	240	1344

Points of Interest

None

Phase Configuration

All Measurements in Feet



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

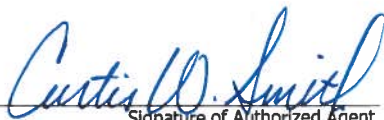
October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-15	140	2.1	40	0.5	0	104.0	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-15- PP - FS 230 kV Line**

230kV C1
Circuit Name

230 kV
Rated Voltage

NEW CIRCUIT
New/Existing

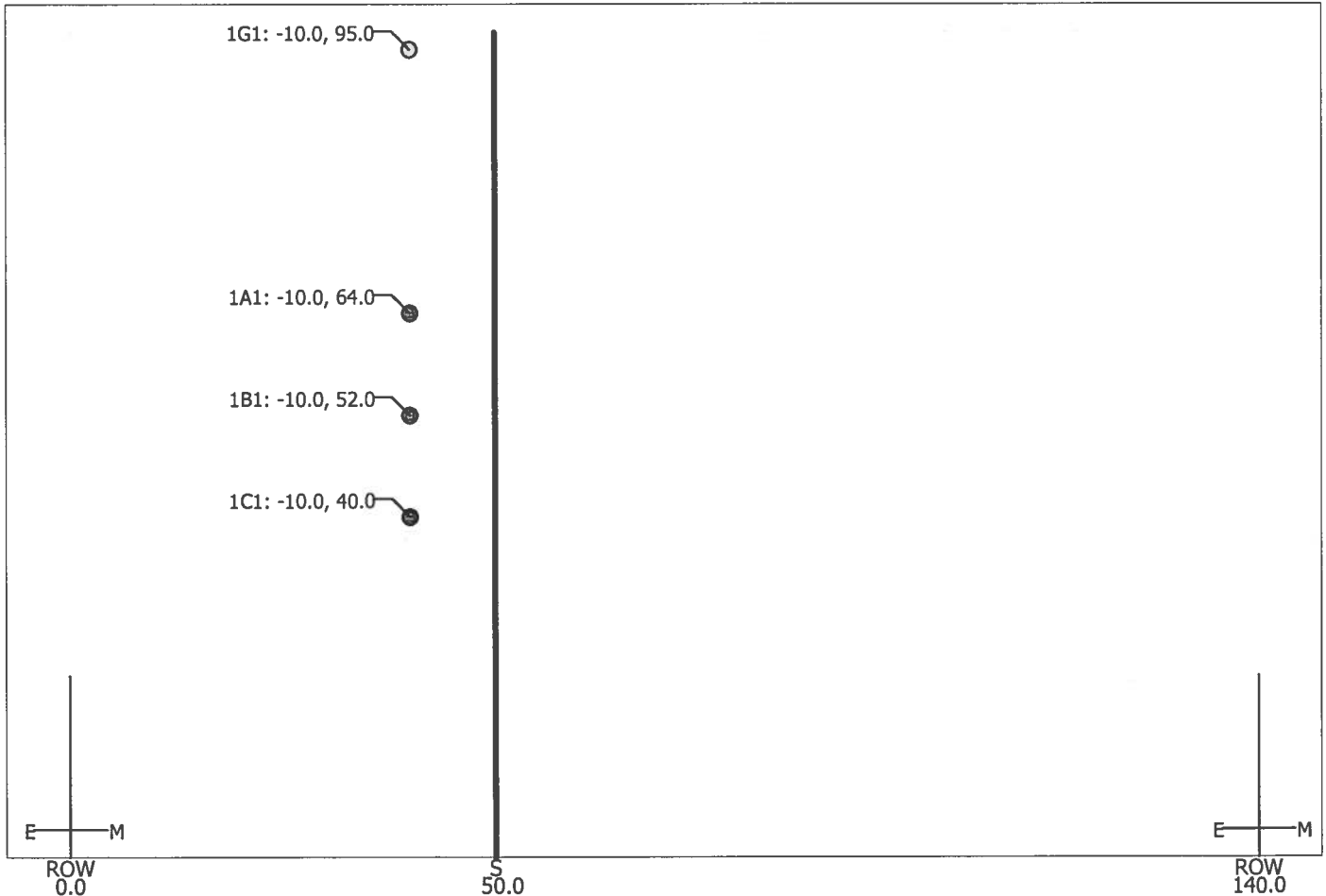
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	40.00	-10.00	64.00	2	1.11	18.00	246.0	0	3000
1B1	40.00	-10.00	52.00	2	1.11	18.00	246.0	120	3000
1C1	40.00	-10.00	40.00	2	1.11	18.00	246.0	240	3000
1G1	40.00	-10.00	95.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

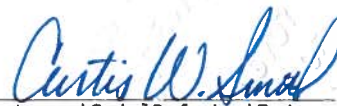
Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-15	140	1.9	102	0.5	140	73.7	140

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-15- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	40.00	-10.00	64.00	2	1.11	18.00	246.0	0	3000
1B1	40.00	-10.00	52.00	2	1.11	18.00	246.0	120	3000
1C1	40.00	-10.00	40.00	2	1.11	18.00	246.0	240	3000
1G1	40.00	-10.00	90.00	1	0.46	0.00	0.0	0	0

230kV C2

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	100.00	10.00	40.00	2	1.11	18.00	246.0	0	3000
2B1	100.00	10.00	52.00	2	1.11	18.00	246.0	120	3000
2C1	100.00	10.00	64.00	2	1.11	18.00	246.0	240	3000
2G1	100.00	10.00	90.00	1	0.46	0.00	0.0	0	0

69kVC1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	60.00	10.00	40.00	1	1.20	0.00	72.0	0	1344
3B1	60.00	10.00	52.00	1	1.20	0.00	72.0	120	1344
3C1	60.00	10.00	64.00	1	1.20	0.00	72.0	240	1344
3G1	60.00	10.00	90.00	1	0.46	0.00	0.0	0	0

69kVC2

Circuit Name

69 kV

Rated Voltage

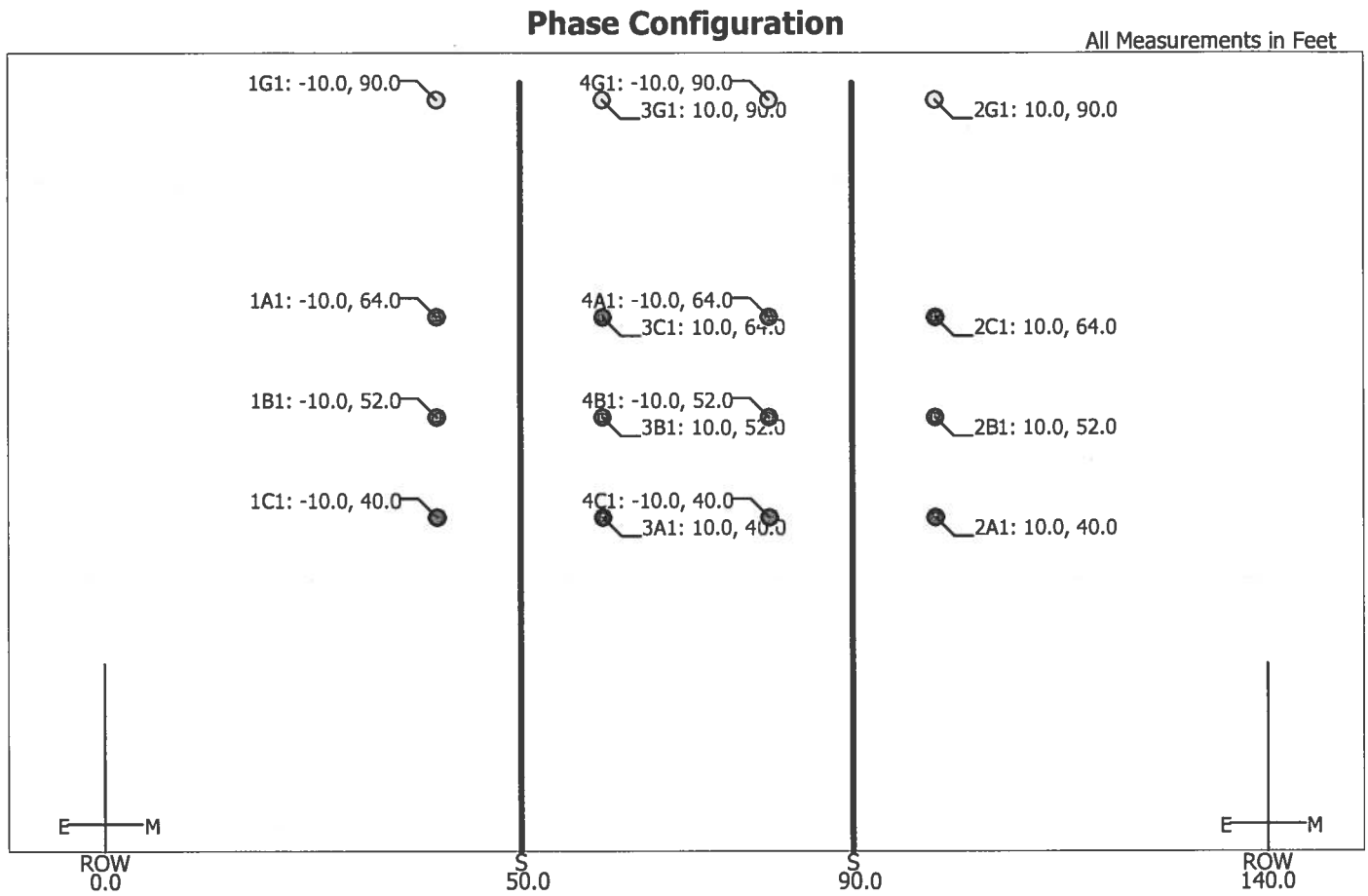
NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	80.00	-10.00	64.00	1	1.20	0.00	72.0	0	1344
4B1	80.00	-10.00	52.00	1	1.20	0.00	72.0	120	1344
4C1	80.00	-10.00	40.00	1	1.20	0.00	72.0	240	1344
4G1	80.00	-10.00	90.00	1	0.46	0.00	0.0	0	0

Points of Interest

None



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-15	160	1.9	112	0.3	160	56.0	160

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-15- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	50.00	-10.00	64.00	2	1.11	18.00	246.0	0	3000
1B1	50.00	-10.00	52.00	2	1.11	18.00	246.0	120	3000
1C1	50.00	-10.00	40.00	2	1.11	18.00	246.0	240	3000
1G1	50.00	-10.00	90.00	1	0.46	0.00	0.0	0	0

230kV C2

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	110.00	10.00	40.00	2	1.11	18.00	246.0	0	3000
2B1	110.00	10.00	52.00	2	1.11	18.00	246.0	120	3000
2C1	110.00	10.00	64.00	2	1.11	18.00	246.0	240	3000
2G1	110.00	10.00	90.00	1	0.46	0.00	0.0	0	0

69kVC1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	70.00	10.00	40.00	1	1.20	0.00	72.0	0	1344
3B1	70.00	10.00	52.00	1	1.20	0.00	72.0	120	1344
3C1	70.00	10.00	64.00	1	1.20	0.00	72.0	240	1344
3G1	70.00	10.00	90.00	1	0.46	0.00	0.0	0	0

69kVC2

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

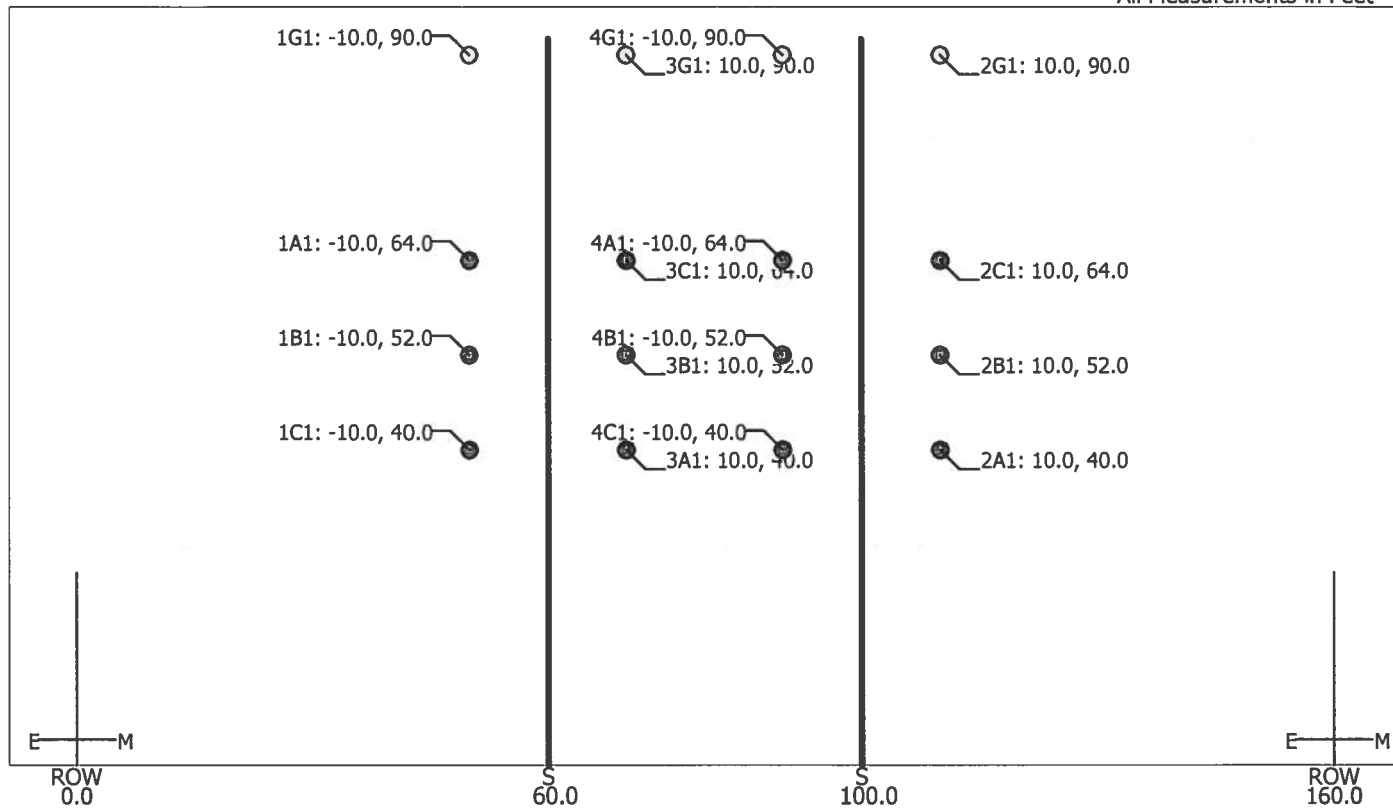
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
4A1	90.00	-10.00	64.00	1	1.20	0.00	72.0	0	1344
4B1	90.00	-10.00	52.00	1	1.20	0.00	72.0	120	1344
4C1	90.00	-10.00	40.00	1	1.20	0.00	72.0	240	1344
4G1	90.00	-10.00	90.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12

Date



Signature and Seal of Professional Engineer

9-12-12

Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-18	150	2.3	56	0.7	0	119.4	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-18- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	30.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	30.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	30.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	30.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

230kV C2

Circuit Name

230 kV

Rated Voltage

Existing Circuit

New/Existing

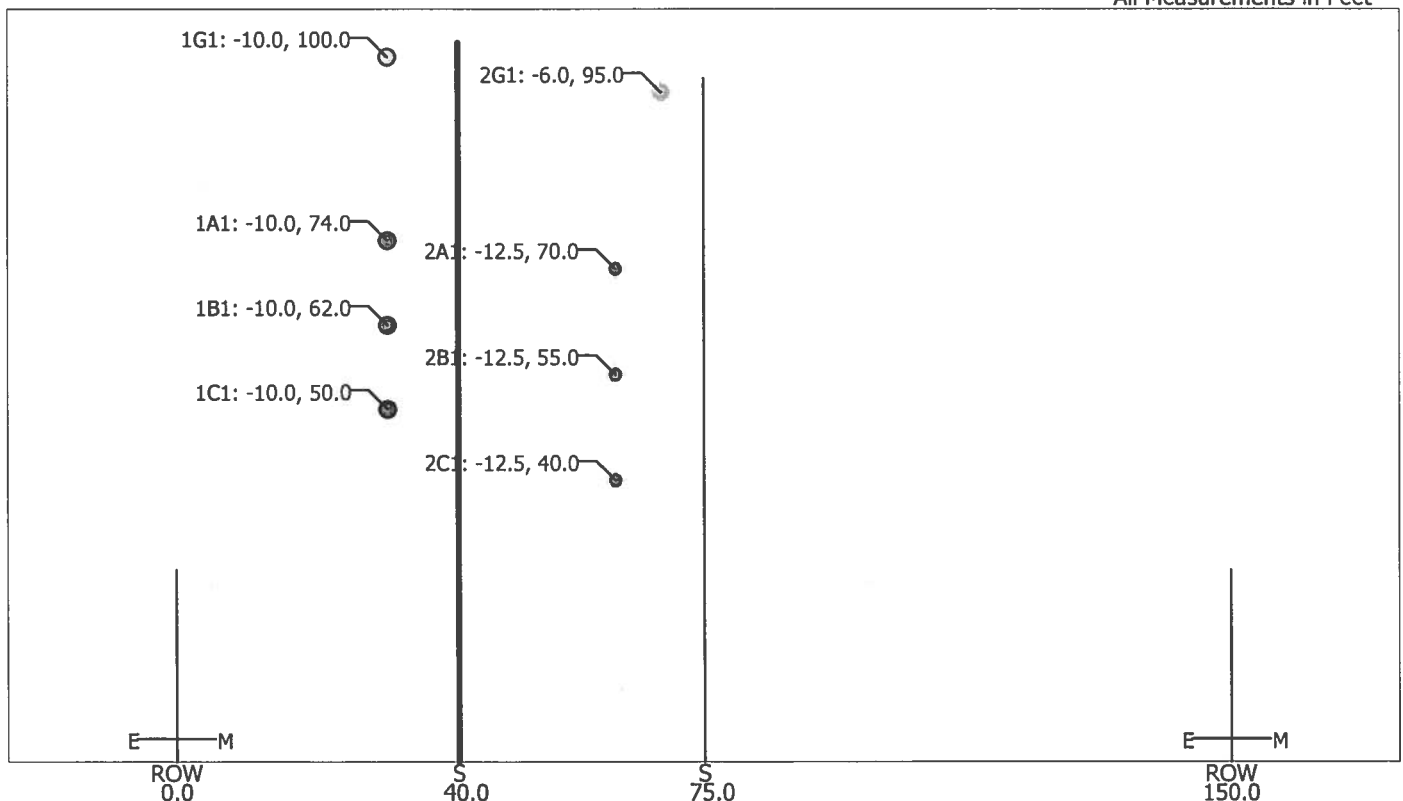
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	62.50	-12.50	70.00	1	1.50	0.00	246.0	0	1831
2B1	62.50	-12.50	55.00	1	1.50	0.00	246.0	120	1831
2C1	62.50	-12.50	40.00	1	1.50	0.00	246.0	240	1831
2G1	69.00	-6.00	95.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Report on Compliance with Electric and Magnetic Field (EMF) Standards

Agent/Facility Information

Polk Power - FishHawk 230 kV Line

Name of Transmission Line/InterestPoint

TECO

P.O. Box 111, Tampa, Florida 33601-0111

Name and Address of Facility (Utility) Owner

Black & Veatch

201 South Orange Avenue, Suite 500, Orlando, FL, 32801

Name and Address of Authorized Agent

October 01, 2014

Date of Proposed Construction

Curt W. Smith

201 South Orange Ave, Suite 500, Orlando, FL, 32801

Name and Address of Professional Engineer



Signature of Authorized Agent

9-12-12
Date



Signature and Seal of Professional Engineer

9-12-12
Date

Field Strength Information

Transmission Lines

Cross Section	Right-of-Way (ROW) Width (ft)	Maximum Calculated Fields and Distance From ROW Left					
		Electric				Magnetic	
		Within ROW		At Edge of ROW		At Edge of ROW	
		(kV/m)	(ft)	(kV/m)	(ft)	(mG)	(ft)
Figure 9.2.3-18	150	1.7	64	0.2	0	78.4	0

Substations

None

Florida Department of Environmental Protection

Twin Tower Office Bldg * 2600 Blair Stone Road * Tallahassee, Florida 32399-2400

Details for CrossSection: **Figure 9.2.3-18- PP - FS 230 kV Line**

230kV C1

Circuit Name

230 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
1A1	30.00	-10.00	74.00	1	1.50	0.00	246.0	0	2560
1B1	30.00	-10.00	62.00	1	1.50	0.00	246.0	120	2560
1C1	30.00	-10.00	50.00	1	1.50	0.00	246.0	240	2560
1G1	30.00	-10.00	100.00	1	0.46	0.00	0.0	0	0

69kV C1

Circuit Name

69 kV

Rated Voltage

NEW CIRCUIT

New/Existing

Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
3A1	35.00	-5.00	27.00	1	1.20	0.00	72.0	0	1344
3B1	35.00	-5.00	34.00	1	1.20	0.00	72.0	120	1344
3C1	35.00	-5.00	41.00	1	1.20	0.00	72.0	240	1344

230kV C2

Circuit Name

230 kV

Rated Voltage

Existing Circuit

New/Existing

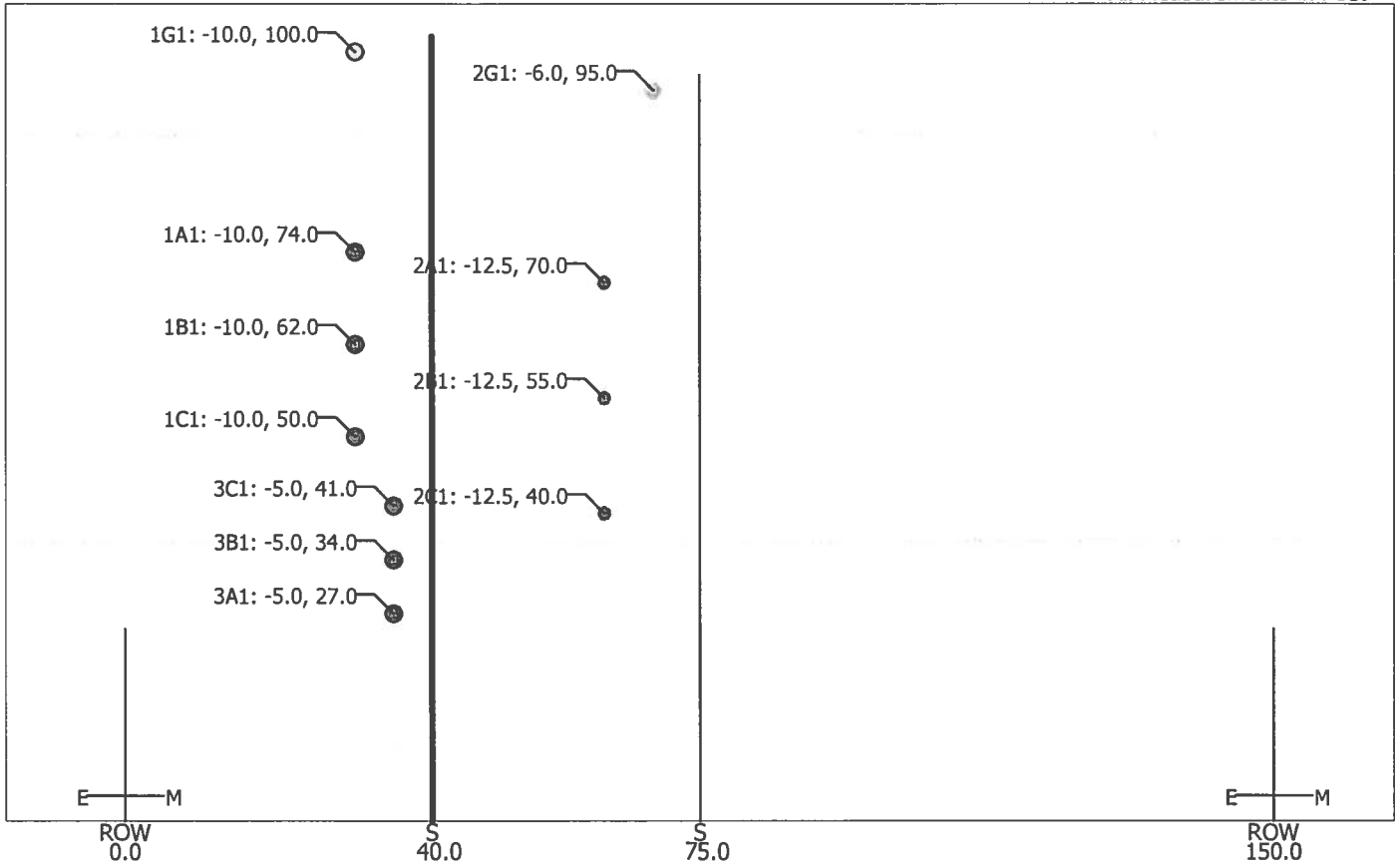
Id	Dist From Left ROW (ft)	Dist From Circuit CL (ft)	Minimum Height (ft)	SubConductors			Maximum Voltage (kV)	Angle (Degrees)	MCR (Amps)
				# of	Diameter (in)	Spacing (in)			
2A1	62.50	-12.50	70.00	1	1.50	0.00	246.0	0	1831
2B1	62.50	-12.50	55.00	1	1.50	0.00	246.0	120	1831
2C1	62.50	-12.50	40.00	1	1.50	0.00	246.0	240	1831
2G1	69.00	-6.00	95.00	1	0.46	0.00	0.0	0	0

Points of Interest

None

Phase Configuration

All Measurements in Feet



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