Bracket Analysis Report for No Trees Switch - Andrews County South Switch 138kV Line

Bid Number: 20-16066

Customer: Oncor Electric Delivery Company Structure: 001 001-68104 dc sra 10-15d 90ft Model: 001-68104 dc sra 10-15d 90ft.pol



Engineer: DH

8653 E. Hwy 67 ~ Alvarado, TX 76009 ~ 866.254.3707

Date: 1/1/0001 12:00:00 AM

For Office Use Only

Arm ~ Al										
Label	Sides	Orientation	Tip OD (in)	Butt OD (in)	Thickness (in)	Length (ft)	Weight (lbs)	Yield (ksi)	Attach Label	Azimuth (deg)
AI	8	Flat-Flat	6.00	10.00	0.1875	6.50	109.9	65	pole:YVI	0

(8) 1	" Dia x 3	" Long - A3	25 Bolts		Brac	ket ~ YK	13-LG				Sti	ffeners	
Diameter (in)	Total Qty	Center Space	Grade	Usage	Thickness (in)	Opening (in)	Height (in)	Usage	Shear Rupture	Bearing	Qty	Thickness (in)	Width (in)
I	8	6	A325	54.20%	0.75	13.125	21	85.44%	45.39%	20.16%	0	0	0.00

Controlling Load Case (absolute value of reactions at pole face) Axial, Ft Shear, Fv Shear, FL Moment, My Torsion, Mt Moment, ML Description **Governing Element** (kips) (kips) (kips) (ft-kips) (ft-kips) (ft-kips) Construction - COND left ckt Bolt & Bracket A2:O 16.00 73.62 3 76 1.76 7.09 26.06

Arm ~ A2										
Label	Sides	Orientation	Tip OD (in)	Butt OD (in)	Thickness (in)	Length (ft)	Weight (lbs)	Yield (ksi)	Attach Label	Azimuth (deg)
A2	8	Flat-Flat	6.00	10.00	0.2500	10.25	231.2	65	pole:YVI	180

(8) I" Dia x 3" Long - A325 Bolts Bracket ~ YKI3-LG Stiffeners Diameter Total Center Thickness Opening Height Shear Thickness Width Grade Usage Usage **Bearing** Qty (in) <u>(in)</u> Rupture (in) Qty Space (in) (in) (in) A325 54.20% 8 0.75 13.125 85.44% 45.39% 20.16% 0 0 0.00

Controlling Load Case (absolute value of reactions at pole face) Joint Label Axial, Ft Shear, Fv Shear, FL Moment, Mv Torsion, Mt Moment, ML Description **Governing Element** (ft-kips) (ft-kips) (kips) (kips) (kips) (ft-kips) Construction - COND left ckt A2:O 3.76 1.76 7.09 26.06 16.00 73.62 Bolt & Bracket

ĺ	Arm ~ A3										
	Label	Sides	Orientation	Tip OD (in)	Butt OD (in)	Thickness (in)	Length (ft)	Weight (lbs)	Yield (ksi)	Attach Label	Azimuth (deg)
ĺ	A3	8	Flat-Flat	6.00	10.00	0.1875	6.50	109.9	65	pole:YV2	0

(8)	" Dia x 3	" Long - A3	25 Bolts		Brac	ket ~ YK	13-LG				Sti	ffeners	
Diameter (in)	Total Qty	Center Space	Grade	Usage	Thickness (in)	Opening (in)	Height (in)	Usage	Shear Rupture	Bearing	Qty	Thickness (in)	Width (in)
I	8	6	A325	45.78%	0.75	13.125	21	64.22%	38.33%	17.02%	0	0	0.00

Controlling Load Case (absolute value of reactions at pole face) Axial, Ft Shear, Fv Shear, FL Moment, Mv Torsion, Mt Moment, ML Description **Governing Element** (ft-kips) Bolt & Bracket TXU Heavy - left ckt A4:O 10.01 5.85 0.00 83.25 0.00 0.00

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Arm ~ A4										
Label	Sides	Orientation	Tip OD (in)	Butt OD (in)	Thickness (in)	Length (ft)	Weight (lbs)	Yield (ksi)	Attach Label	Azimuth (deg)
A4	8	Flat-Flat	6.00	10.00	0.2500	10.25	231.2	65	pole:YV2	180

(8)	I" Dia x 3	" Long - A3	25 Bolts		Brac	ket ~ YK	13-LG				Sti	ffeners	
Diameter (in)	Total Qty	Center Space	Grade	Usage	Thickness (in)	Opening (in)	Height (in)	Usage	Shear Rupture	Bearing	Qty	Thickness (in)	Width (in)
- 1	8	6	A325	45.78%	0.75	13.125	21	64.22%	38.33%	17.02%	0	0	0.00

Controlling Load Case (absolute value of reactions at pole face) Joint Label Axial, Ft Shear, Fv Moment, Mv Torsion, Mt Moment, ML Description **Governing Element** (kips) (kips) (kips) (ft-kips) (ft-kips) (ft-kips) TXU Heavy - left ckt A4:O 10.01 5.85 0.00 83.25 0.00 0.00 Bolt & Bracket

Arm ~ A5										
Label	Sides	Orientation	Tip OD (in)	Butt OD (in)	Thickness (in)	Length (ft)	Weight (lbs)	Yield (ksi)	Attach Label	Azimuth (deg)
A5	8	Flat-Flat	6.00	10.00	0.1875	6.50	109.9	65	pole:YV3	0

(8) 1	" Dia x 3	" Long - A3	25 Bolts		Brac	ket ~ YK	13-LG				Sti	ffeners	
Diameter (in)	Total Qty	Center Space	Grade	Usage	Thickness (in)	Opening (in)	Height (in)	Usage	Shear Rupture	Bearing	Qty	Thickness (in)	Width (in)
I	8	6	A325	46.10%	0.75	13.125	21	64.67%	38.60%	17.14%	0	0	0.00

Controlling Load Case (absolute value of reactions at pole face) Axial, Ft Shear, Fv Moment, Mv Torsion, Mt Moment, ML Shear, FL Description **Governing Element** (ft-kips) (kips) (kips) (kips) (ft-kips) (ft-kips) TXU Heavy - left ckt Bolt & Bracket A6:O 9.98 5.91 0.00 83.80 0.00 0.00

Arm ~ A6										
Label	Sides	Orientation	Tip OD (in)	Butt OD (in)	Thickness (in)	Length (ft)	Weight (lbs)	Yield (ksi)	Attach Label	Azimuth (deg)
A6	8	Flat-Flat	6.00	10.00	0.2500	10.25	231.2	65	pole:YV3	180

(8) 1	" Dia x 3	" Long - A3	25 Bolts		Brac	ket ~ YK	13-LG				Sti	ffeners	
Diameter (in)	Total Qty	Center Space	Grade	Usage	Thickness (in)	Opening (in)	Height (in)	Usage	Shear Rupture	Bearing	Qty	Thickness (in)	Width (in)
I	8	6	A325	46.10%	0.75	13.125	21	64.67%	38.60%	17.14%	0	0	0.00

Controlling Load Case (absolut	te valu	e of reac	tions at p	ole face)				
Description	Joint Label	Axial, Ft (kips)	Shear, Fv (kips)	Shear, FL (kips)	Moment, Mv (ft-kips)	Torsion, Mt (ft-kips)	Moment, ML (ft-kips)	Governing Element
TXU Heavy - left ckt	A6:O	9.98	5.91	0.00	83.80	0.00	0.00	Bolt & Bracket