

Project Name : IDLP

Project Notes: PGCB 132 KV Issurdi-Ruppur Pole

Project File : f:\ishurdi-rooppur\design\csi\ldlp-csl-final-submitted-23-06-2016\ldlp-c-wind-cross arm.pol

Date run : 9:46:50 AM Monday, June 27, 2016

by : PLS-POLE Version 12.50

Licensed to : Confidence Steel - Bangladesh

Successfully performed nonlinear analysis

The model has 0 warnings.

Power Grid Company of Bangladesh
Contract Name: Design, Supply, Erection, Testing
& Commissioning of Ishurdi-Rooppur Double Circuit
Transmission Line on Turnkey Basis.
Contract No: PGCB/132KV/POLE/TJI-R
Contractor: Joint Venture of ZTT and SINOTEC

POWER GRID COMPANY OF BANGLADESH
APPROVED

This approval is general only and does not
Release the manufacturer/contractor/supplier
From compliance with specification and
Standards for Design workmanship and
Performance as stipulated in the contract

Loads from file: f:\ishurdi-rooppur\design\csi\ldlp-csl-final-submitted-23-06-2016\ldlp-pgcb-shoeb-wind-c-revised.lca

*** Analysis Results:

Maximum element usage is 89.90% for Steel Pole "P-1" in load case "LC-1-NC(Max)Dev.1 deg (0) "

Maximum insulator usage is 44.23% for Suspens "IS-2" in load case "LC-34-BWC(Max)Dev.1 deg-TLC Broken (0) "

Maximum pole deflection usage is 99.26% for "P-1" in load case "LC-1-NC(Max)Dev.1 deg (0) "

Summary of Joint Support Reactions For All Load Cases:

POLE TYPE: IDLP

Load Case Joint		Long.		Tran.		Vert.		Shear		Tran.		Long. Bending		Vert. Found.	
Label		Force		Force		Force		Force		Moment		Moment		Usage	
		(kN)		(kN)		(kN)		(kN)		(kN-m)		(kN-m)		%	
LC-1-NC(Max)Dev.1 deg (0)		P-1:g	-11.45	-203.42	-139.58	203.75	3701.47	-274.24	3711.62	-0.12	0.00				
LC-2-NC(Min)Dev.1 deg (0)		P-1:g	-11.45	-203.43	-120.30	203.75	3687.18	-273.05	3697.28	-0.11	0.00				
LC-3-NC(Max)Dev.1 deg-One circuit strung(RC) (0)		P-1:g	-6.18	-162.06	-119.07	162.18	2775.36	-149.81	2779.40	14.60	0.00				
LC-4-NC(Max)Dev.1 deg-One circuit strung(LC) (0)		P-1:g	-6.19	-162.10	-118.82	162.21	2675.59	-151.18	2679.85	-14.96	0.00				
LC-5-NC(Max)Dev.1 deg (30)		P-1:g	-76.12	-169.08	-138.48	185.42	3035.23	-1237.20	3277.69	-0.14	0.00				
LC-6-NC(Min)Dev.1 deg (30)		P-1:g	-76.12	-169.08	-119.21	185.43	3023.57	-1232.60	3265.16	-0.14	0.00				
LC-7-NC(Max)Dev.1 deg-One circuit strung(RC) (30)		P-1:g	-70.82	-136.50	-118.34	153.78	2317.72	-1108.87	2569.32	15.36	0.00				
LC-8-NC(Max)Dev.1 deg-One circuit strung(LC) (30)		P-1:g	-70.88	-136.54	-118.19	153.84	2214.50	-1111.59	2477.83	-15.71	0.00				
LC-9-NC(Max)Dev.1 deg (45)		P-1:g	-107.28	-131.87	-138.10	169.99	2329.61	-1739.18	2907.20	-0.14	0.00				

Project Name : IDLP

Project Notes: PGCB 132 KV Isurdi-Ruppur Pole

Project File : C:\Users\abubakkar\Dropbox\CSL-Ishurdi-Rooppur\IDLP\Design\ldlp-c-wind-cross arm.pol

Date run : 9:04:23 AM Monday, August 1, 2016

by : PLS-POLE Version 12.50

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Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: c:\users\abubakkar\dropbox\csl-ishurdi-rooppur\ldlp\design\ldlp-pgcb-shoeb-wind-c-revised.lea

*** Analysis Results:

Maximum element usage is 91.36% for Steel Pole "P-1" in load case "LC-1-NC(Max)Dev.3 deg (0)"

Maximum insulator usage is 26.01% for Suspend "IS-2" in load case "LC-50-BWC(Max)Dev.3 deg-TLC Broken (0)"

Maximum pole deflection usage is 97.11% for "P-1" in load case "LC-81-BWC(Max)Dev.3 deg (0)-TLC Broken Rotation"

Summary of Joint Support Reactions For All Load Cases:

POLE TYPE: IDIP

Load Case Joint		Long.	Tran.	Vert.	Shear	Tran.	Long.	Bending	Vert.
Label		Force	Force	Force	Force	Moment	Moment	Moment	Usage
		(kN)	(kN)	(kN)	(kN)	(kN-m)	(kN-m)	(kN-m)	%
LC-1-NC(Max)Dev.3 deg (0)		P-1:g	-11.46	-238.25	-150.97	238.52	4372.94	-273.39	4381.47
								-0.12	0.00
LC-2-NC(Min)Dev.3 deg (0)		P-1:g	-11.46	-238.25	-131.70	238.52	4360.84	-272.54	4369.35
								-0.12	0.00
LC-3-NC(Max)Dev.3 deg-One circuit strung(RC) (0)		P-1:g	-6.18	-190.72	-130.43	190.82	3308.60	-149.62	3311.98
								14.78	0.00
LC-4-NC(Max)Dev.3 deg-One circuit strung(IC) (0)		P-1:g	-6.19	-190.74	-130.22	190.84	3207.20	-150.72	3210.74
								-15.06	0.00
LC-5-NC(Min)Dev.3 deg-One circuit strung(RC) (0)		P-1:g	-6.18	-190.72	-120.21	190.82	3278.06	-149.36	3281.46
								14.73	0.00
LC-6-NC(Min)Dev.3 deg-One circuit strung(IC) (0)		P-1:g	-6.19	-190.73	-120.11	190.83	3228.48	-150.46	3231.98
								-15.01	0.00
LC-7-NC(Max)Dev.3 deg (30)		P-1:g	-86.84	-201.04	-149.99	218.99	3660.65	-1416.70	3925.23
								-0.15	0.00
LC-8-NC(Min)Dev.3 deg (30)		P-1:g	-86.84	-201.04	-130.73	219.00	3650.56	-1412.91	3914.45
								-0.15	0.00
LC-9-NC(Max)Dev.3 deg-One circuit strung(RC) (30)		P-1:g	-81.55	-162.31	-129.80	181.64	2804.01	-1289.81	3086.43
								15.39	0.00

Signature

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Signature

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(Abdur Rashid Khan)
Superintending Engineer(TLD)
Design & Quality Control
PGCB Ltd

04 AUG 2016

Power Grid Company of Bangladesh
Contract Name: Design, Supply, Erection, Testing
& Commissioning of Ishurdi-Rooppur Double Circuit
Transmission Line on Turnkey Basis.
Contract No: PGCB/132KV/POLE/TJA-R
Contractor: Joint Venture of ZTT and SINOTEC



Project Name : 1D25P

Project Notes: PGCB 132 KV Issurdi-Ruppur Pole

Project File : C:\Users\abubakkar\Dropbox\CSL-Ishurdi-Rooppur\1D25P\Design\1d25p-c-wind-cross arm.pol

Date run : 5:10:26 PM Wednesday, August 10, 2016

by : PLS-POLE Version 12.50

Licensed to : Confidence Steel - Bangladesh

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: c:\users\abubakkar\dropbox\csl-ishurdi-rooppur\1d25p\design\1d25p-pgcb-shoeb-wind-c-revised update.1ca

*** Analysis Results:

Maximum element usage is 98.38% for Steel Pole "P-1" in load case "LC-1-NC(Max)Dev.25 deg (0)"

Maximum insulator usage is 44.41% for Strain "I-2" in load case "LC-49-BWC(Max)Dev.25 deg-GW & TLC Broken (0)"

Maximum pole deflection usage is 99.58% for "P-1" in load case "LC-103-BWC(Max)Dev.25 deg-GW & TLC Broken (0)-Rotation"

Summary of Joint Support Reactions For All Load Cases:

POLE TYPE: 1D25P

Load Case	Joint Label	Long.		Tran.		Vert.		Shear		Tran.		Long. Bending		Vert. Found.	
		Force (kN)	Moment (kN-m)	Force (kN)	Moment (kN-m)	Force (kN)	Moment (kN-m)	Force (kN)	Moment (kN-m)	Force (kN)	Moment (kN-m)	Force (kN)	Moment (kN-m)	Force (kN)	Moment (kN-m)

LC-1-NC (Max) Dev. 25 deg (0)	P-1:g	-126.38	-405.07	-214.75	424.33	7700.16	-2766.84	8182.16	-1.95	0.00					
	P-1:g	-126.38	-405.07	-178.21	424.33	7681.01	-2759.44	8161.65	-1.93	0.00					
LC-2-NC (Min) Dev. 25 deg (0)	P-1:g	-126.38	-405.07	-178.21	424.33	7681.01	-2759.44	8161.65	-1.93	0.00					
	P-1:g	-126.38	-405.07	-178.21	424.33	7681.01	-2759.44	8161.65	-1.93	0.00					
LC-3-NC (Max) Dev. 25 deg-OCS (RC) (0)	P-1:g	-68.21	-286.18	-186.89	294.19	5242.69	-1528.27	5460.90	166.55	0.00					
	P-1:g	-68.21	-286.18	-186.89	294.19	5242.69	-1528.27	5460.90	166.55	0.00					
LC-4-NC (Max) Dev. 25 deg-OCS (LC) (0)	P-1:g	-68.23	-286.19	-186.73	294.21	5110.29	-1539.18	5337.05	-170.89	0.00					
	P-1:g	-68.23	-286.19	-186.73	294.21	5110.29	-1539.18	5337.05	-170.89	0.00					
LC-5-NC (Min) Dev. 25 deg-OCS (RC) (0)	P-1:g	-68.22	-286.18	-167.54	294.20	5185.73	-1525.93	5405.58	166.05	0.00					
	P-1:g	-68.22	-286.18	-167.54	294.20	5185.73	-1525.93	5405.58	166.05	0.00					
LC-6-NC (Min) Dev. 25 deg-OCS (LC) (0)	P-1:g	-68.23	-286.19	-167.51	294.21	5153.80	-1536.79	5378.05	-170.36	0.00					
	P-1:g	-68.23	-286.19	-167.51	294.21	5153.80	-1536.79	5378.05	-170.36	0.00					
LC-7-NC (Max) Dev. 25 deg (30)	P-1:g	-209.27	-366.15	-214.42	421.73	7003.35	-4000.89	8065.61	-2.01	0.00					
	P-1:g	-209.27	-366.15	-214.42	421.73	7003.35	-4000.89	8065.61	-2.01	0.00					
LC-8-NC (Min) Dev. 25 deg (30)	P-1:g	-209.27	-366.15	-177.87	421.73	6985.93	-3990.61	8045.39	-2.00	0.00					
	P-1:g	-209.27	-366.15	-177.87	421.73	6985.93	-3990.61	8045.39	-2.00	0.00					
LC-9-NC (Max) Dev. 25 deg-OCS (RC) (30)	P-1:g	-150.98	-256.04	-186.62	297.24	4734.27	-2758.11	5479.09	167.09	0.00					
	P-1:g	-150.98	-256.04	-186.62	297.24	4734.27	-2758.11	5479.09	167.09	0.00					

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Power Grid Company of Bangladesh
Contract Name: Design, Supply, Erection, Testing
& Commissioning of Ishurdi-Rooppur Double Circuit
Transmission Line on Turnkey Basis.
Contract No: PGCB/132KV/POLE/TLA-R
Contractor: Joint Venture of ZTT and SINOTEC

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PGCB Ltd

14 AUG 2015



Project Name : 1DT6P

Project Notes: PGCB 132 KV Issurdi-Ruppur Pole

Project File : C:\Users\abubakkar\Dropbox\CSL-Ishurdi-Rooppur\1DT6P-Angle\Design\1dt6p-c-wind-cross arm.pol

Date run : 6:54:40 PM Monday, September 5, 2016

by : PLS-POLE Version 12.50

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Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: c:\users\abubakkar\dropbox\csl-ishurdi-rooppur\1dt6p-angle\design\1dt6p-pgcb-shoeb-wind-c-revised-final.lea

*** Analysis Results:

Maximum element usage is 95.71% for Steel Pole "P-1" in load case "LC-1-NC(Max)Dev.60 deg (0)"

Maximum insulator usage is 64.36% for Strain "I-1" in load case "LC-1-NC(Max)Dev.60 deg (0)"

Maximum pole deflection usage is 80.15% for "P-1" in load case "LC-101-NC(Max)Dev.60 deg (0)-Rotation"

Summary of Joint Support Reactions For All Load Cases:

Load Case Joint		Long.	Tran.	Vert.	Shear	Tran.	Long.	Bending	Vert.	Found.
Label		Force	Force	Force	Force	Moment	Moment	Moment	Moment	Usage
		(kN)	(kN)	(kN)	(kN)	(kN-m)	(kN-m)	(kN-m)	(kN-m)	%
LC-1-NC (Max) Dev. 60 deg (0)		P-1:g -126.47	-665.18	-307.44	677.09	13198.92	-2749.47	13482.25	39.88	0.00
LC-2-NC (Min) Dev. 60 deg (0)		P-1:g -126.47	-665.18	-270.89	677.09	13183.05	-2745.79	13465.96	39.90	0.00
LC-3-NC (Max) Dev. 60 deg-OCS (RC)		P-1:g -68.32	-443.19	-275.13	448.43	8597.75	-1515.33	8730.26	251.04	0.00
LC-4-NC (Max) Dev. 60 deg-OCS (LC)		P-1:g -68.22	-443.21	-275.01	448.42	8416.47	-1524.53	8553.43	-170.72	0.00
LC-5-NC (Min) Dev. 60 deg-OCS (RC)		P-1:g -68.32	-443.20	-255.79	448.43	8529.79	-1514.13	8663.13	250.73	0.00
LC-6-NC (Min) Dev. 60 deg-OCS (LC)		P-1:g -68.22	-443.20	-255.76	448.42	8474.29	-1523.36	8610.12	-170.38	0.00
LC-7-NC (Max) Dev. 60 deg (30)		P-1:g -219.08	-618.68	-306.45	656.33	12360.77	-4120.47	13029.46	28.74	0.00
LC-8-NC (Min) Dev. 60 deg (30)		P-1:g -219.08	-618.68	-269.90	656.33	12345.93	-4115.19	13013.72	28.75	0.00

WARNING:

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Md. Shoeb Hasan
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(Engr. S.M. Zafrul Hasan)
Executive Engineer (TL-1)
Design & Quality Control
PGCB

(Abdur Rashid Khan)
Superintending Engineer (TLD)
Design & Quality Control
PGCB Ltd



05 SEP 2016

Project Name : ID9P

Project Notes: PGCB 132 KV Issurdi-Ruppur Pole

Project File : C:\Users\abubakkar\Dropbox\CSL-Ishurdi-Rooppur\ID9P\Design\ID9P-c-wind-cross arm.pol

Date run : 4:13:33 PM Tuesday, September 6, 2016

by : PLS-POLE Version 12.50

Licensed to : Confidence Steel - Bangladesh

Successfully performed nonlinear analysis

The model has 0 warnings.

Loads from file: c:\users\abubakkar\dropbox\csl-ishurdi-rooppur\ID9P\design\ID9P-pgcb-shoeb-wind-c-revised-final.lca

*** Analysis Results:

Maximum element usage is 95.88% for Steel Pole "P-1" in load case "LC-1-NC(Max)Dev.90 deg (0)"

Maximum insulator usage is 84.01% for Strain "I-1" in load case "LC-1-NC(Max)Dev.90 deg (0)"

Maximum pole deflection usage is 79.56% for "P-1" in load case "IC-99-NC(Max)Dev.90 deg (0)-Rotation"

Summary of Joint Support Reactions For All Load Cases:

POLE TYPE : ID9P

Load Case		Joint		Long.		Tran.		Vert.		Shear		Force		Force		Moment		Bending		Moment		Vert.		Found.	
Label		Force		(kN)		Force		(kN)		Force		(kN)		Force		(kN-m)		(kN-m)		(kN-m)		(kN-m)		Usage	
LC-1-NC(Max)Dev.90 deg (0)		P-1:g		-126.44		-804.44		-341.14		814.31		16203.73		-2758.99		16436.93		-10.16		0.00		0.00		0.00	
LC-2-NC(Min)Dev.90 deg (0)		P-1:g		-126.45		-804.44		-304.59		814.31		16189.54		-2755.99		16422.45		-10.13		0.00		0.00		0.00	
LC-3-NC(Max)Dev.90 deg-OCS(RC)		P-1:g		-68.24		-509.40		-308.67		513.95		10071.79		-1524.00		10186.44		233.14		0.00		0.00		0.00	
LC-4-NC(Max)Dev.90 deg-OCS(LC)		P-1:g		-68.26		-509.41		-308.57		513.96		9880.10		-1537.06		9998.95		-248.62		0.00		0.00		0.00	
LC-5-NC(Min)Dev.90 deg-OCS(RC)		P-1:g		-68.24		-509.40		-289.34		513.95		9996.36		-1523.03		10111.72		232.85		0.00		0.00		0.00	
LC-6-NC(Min)Dev.90 deg-OCS(LC)		P-1:g		-68.26		-509.41		-289.32		513.96		9947.93		-1536.07		10065.83		-248.29		0.00		0.00		0.00	
LC-7-NC(Max)Dev.90 deg (30)		P-1:g		-222.48		-763.25		-340.11		795.02		15403.29		-4185.12		16038.93		-10.70		0.00		0.00		0.00	
LC-8-NC(Min)Dev.90 deg (30)		P-1:g		-222.48		-763.25		-303.57		795.02		15469.80		-4180.77		16024.78		-10.68		0.00		0.00		0.00	
LC-9-NC(Max)Dev.90 deg-OCS(RC)		P-1:g		-164.08		-476.96		-308.00		504.40		9538.73		-2945.32		9983.10		233.36		0.00		0.00		0.00	

POWER GRID COMPANY OF BANGLADESH
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[Signature]

Md. Shueb Hasan
Assistant Engineer
Design & QC (TLD-1)
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PGCB Ltd

06 SEP 2016

