ATTACHMENT D

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

COX COMMUNICATIONS LAS VEGAS, INC., *Complainant*, v. NV ENERGY, INC., *Respondent*.	File No.

DECLARATION OF GLENDA MILLS

I, GLENDA MILLS, declare as follows:

1. I am Manager, Construction Services – Las Vegas for Cox Communications Las Vegas ("CCI-LV"), with a general office address of 1700 Vegas Drive, Las Vegas, Nevada 89106. I make this Declaration in support of CCI-LV's Pole Attachment Complaint in the above-captioned case. I know the following of my own personal knowledge, and if called as a witness in this action, I could and would testify competently to these facts under oath.

2. I have been employed by CCI-LV for 20 years and have served as Manager, Construction Services for 1.5 years. In this role, I have responsibility for plant construction in the Las Vegas area.

3. I have reviewed the allegations made in the Pole Attachment Complaint filed in this proceeding as well as the exhibits and verify that they are true and correct to the best of my knowledge, information and belief.

4. In December 2012, NVE sought to unilaterally impose on CCI-LV new pole attachment and engineering standards and application requirements in a document entitled "Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS" ("2012 License Application Requirements"). Attached hereto as Exhibit 1 is a true and correct copy of correspondence from NVE to CCI-LV, notifying CCI-LV of the 2012 License Application Requirements. NVE informed CCI-LV that the 2012 License Application Requirements were being imposed pursuant to Section 4.1.10 of the 1997 Agreement between CCI-LV and NVE, which states that pole attachments are subject to "[a]ny additional specifications of Licensor, as reasonably required in Licensor's sole judgment as may be required from time to time." (*See* Exhibit 1 to Declaration of Michael Bolognini dated December 17, 2014.)

5. Beginning August 20, 2014 and through November 14, 2014, CCI-LV submitted applications to NVE to overlash its previously permitted facilities attached to 137 NVE poles. Specifically, CCI-LV submitted applications on the following dates: August 19, 2014 (Ramirez Group, 531 7th Street, Garces & 8th); September 12, 2014 (Western Mailing, 530 E. Pamalyn, Pamalyn & Bermuda); September 16, 2014 (VZW DOT Koval & Flamingo 144ct, Koval & Flamingo); September 16, 2014 (CLV Derfelt SR CTR, 3343 W Washington, Washington & Rancho); October 29, 2014 (RRP96, 9112 Washington, Yale & Iowa, part 2); October 29, 2014 (RRP96, 9112 Washington, Washington & Decatur); October 14, 2014 (Cox, NFAA 10, Warm Springs, Pollock to Placid, Part 1 of 2); October 14, 2014 (Cox, NFAA 10, Warm Springs, Placid to Haven, Part 2); November 5, 2014 (3295 Fremont, Fremont/Sahara); November 5, 2014 (Marisa USA Inc., 3745 Losee Rd, Losee & Colton); November 5, 2014 (3660 Cinder Lane, Cinder Lane & Highland Dr); November 20, 2014 (COX, Nellis & Tropicana); November 19, 2014 (COX, United Health Care- 540 N Nellis Blvd, Nellis & Stewart); November 19, 2014

(Goodwill Industries, 2509 E Lake Mead Blvd, Lake Mead & Eastern). Attached hereto as Exhibit 2 are true and correct copies of the applications.

6. In the Loading Analyses conducted by PAR Electrical Contractors, Inc. ("PAR") on each of the 137 poles included in CCI-LV's applications to NVE (*see* Declaration of Gary Auvil dated December 17, 2014 ¶ 5), PAR applied the NESC strength and loading criteria for Grades B and C construction using O-Calc Pro, Structural Analysis Software for Utility Poles, licensed by Osmose Utilities Services, Inc. Attached hereto as Exhibit 3 are true and correct copies of the Loading Analyses.

7. The Loading Analysis revealed that 68 of the 137 poles (approximately half) included in CCI-LV's Applications currently fail the strength and loading requirements using the Grade B construction standard, prior to CCI-LV overlashing facilities attached to these poles. Eleven of the poles failed NESC required strength and loading requirements for Grade C construction standards.

8. The Loading Analysis shows that the average incremental load increase added by CCI-LV's proposed overlashing on the applications is less than 1 percent. Moreover, in no instance would CCI-LV's proposed overlashing cause any of the poles included on CCI-LV's application to come out of compliance with the strength and loading requirements for either Grade C or Grade B construction standards. In other words, CCI-LV could overlash all of its plant attached to NVE poles in its applications without causing the poles to come out of compliance with existing NESC Grade C or Grade B construction standards, yet NVE would hold up work on almost all of the applications until approximately half the poles are replaced.

9. On June 25, 2014, Patricia Ortwein (NVE's "Manager, Rule 9 Contract and Joint Use Administration") sent me a letter acknowledging the parties' "several opportunities to meet .

. . to discuss ways in which [NVE] and [CCI-LV] can move the pole attachment application process forward and still meet each company's goals and expectations" and reaffirming NVE's Grade B construction standard requirements set forth in the 2012 License Application Requirements. Attached hereto as Exhibit 4 is a true and correct copy of the June 25, 2014 letter.

10. NVE will not allow CCI-LV's proposed overlashing until *after* NVE replaces any poles that fail Grade B construction standards, with or without CCI-LV's proposed overlashing. Attached hereto as Exhibit 5 is a true and correct copy of a November 20, 2014 email from Ms. Ortwein to me stating that NVE "will not allow attachments to our facilities where the pole has failed analysis."

11. NVE will not commit to a timeframe for upgrading any of its poles that it contends must be replaced prior to CCI-LV attaching.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

By: _____
Glenda Mills

Dated: December 17, 2014

GLENDA MILLS
EXHIBIT 1

Christopher S Miller
Energy Delivery - Joint Use
NV Energy
P.O. Box 98910 m/s B54RN
Las Vegas, NV 89151
(702) 402-6778 o
(206) 930-0003 m
ChrisMiller@nvenergy.com

Monday, December 10, 2012

Glenda Mills
Fiber Construction Supervisor
Cox Communications
1700 Vegas Drive
Las Vegas, NV 89106

David Hanzel
Director of Construction Services
Cox Communications
1700 Vegas Drive
Las Vegas, NV 89106

Elton Toll
Senior Project Manager
Cox Communications
1700 Vegas Drive
Las Vegas, NV 89106

Via: US Postal Mail and Email

Re: Time extension for PE certification of Pole Attachment License Applications to March 31, 2013
Agreement: Pole Attachment Contract Between Nevada Power Company and Community Cable TV
Dated 6/1/97 NVE Contract File # 97-00009

Ladies and Gentlemen:

NV Energy (NVE) has extensively revamped its Pole Attachment processes. This activity is motivated as much by internal concern regarding system safety and reliability as in response to the most recent FCC Report & Order (11-50). Along with these issues, matters of efficiency, cost effectiveness and accounting are vital parts of the processes going forward.

Throughout this difficult transition, your patience and responsiveness has been particularly noteworthy. Further, audit of completed attachment jobs indicated a high level of client commitment to quality assurance in their installations.

Our initial correspondence to you in April of this year was a first step in transitioning to a new process that would be responsive to these internal and external concerns. Subsequently, it became apparent that further development was merited, as the field data collection, analysis, administrative effort and turn-around times were proving costly for all concerned. Consequently, NVE is transitioning to a more "client driven" process. Pursuant to this, you are hereby notified that NVE is turning over to you as the Licensee, the structural engineering aspect of Distribution Pole attachment licensing as of March 31, 2013.

The attached guidance document: Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS 11.19.2012 sets forth NVE requirements for Attachment License Applications going forward. As you will note, it will be necessary for your company to retain the services of a Civil Engineer with a Nevada Professional Engineer (PE) license who must certify the structural integrity and NESC compliance of your company's proposed pole attachments to NVE infrastructure.

This process will integrate your existing make-ready assessment and pole data collection work with the final step, which is the application of this information in an authoritative assessment as to whether your proposed attachment will jeopardize the structural integrity of the NVE pole.

Existing NVE resources are insufficient to accommodate the desired Licensee time frames for survey, license processing and issuance. Deferring these functions to you will lead to improved efficiency and cost reduction through task integration. For its part, NVE will confine itself to validation of License Applications through audit of a sampling of those submissions received. This should shorten turn-around times while giving you more direct cost control.

The engineering review of Transmission structures will remain with the NVE Transmission Engineering Department. This is largely due to the fact that the steel transmission poles are engineered structures whose designs are proprietary to the pole vendors.

Revised Pole Attachment Agreements incorporating this new licensing process for both, poles subject to FCC access mandate and those FERC registered Transmission pole assets not subject to FCC Rule, will be sent to you for execution within sixty (60) days. These agreements are intended to wholly supersede the current master agreement under which all past licenses were issued.

NVE is most interested in a realistic and constructive discussion and resolution of any issues at your earliest convenience. Prior to then, you may contact me if you have any questions or need further information.

Respectfully,

Joint Use Agent

Enclosure

Cc: Patricia Ortwein, Mngr. Rule 9 Joint Use Contract Admin.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS

11.19.2012

All Applications

To ensure the integrity of NV Energy's overhead plant, a structural analysis must be performed for each pole in the application. For all applications, it is the Applicant's responsibility to:

- Gather all pole data related to performing a complete structural analysis for each pole. This includes field information for facilities in the power space and communications space, alike. See ***Appendix A*** for a detailed list of the pole data requirements.
- Determine conventional, industry recognized make-ready solutions for facilities in both the power space and communications space. Applicant is encouraged to favor the common, power space make-ready solutions listed in ***Appendix B***, as doing so will facilitate acceptance by NV Energy and speed cost estimation. ***Appendix C*** lists anchor and down-guy sharing guidelines to assist in the make-ready determinations.
- Submit all pole data and make-ready notes for audit purposes. See ***Audit Process (page F2)*** for more details.

Distribution Applications

APPLICANT must submit a complete structural analysis report for each Distribution pole in the application. The report must be stamped by a Civil Engineer with a Nevada State Professional Engineer (PE) license. The PE assumes full responsibility for the content and conclusions of the structural analysis report, as required by Nevada State Law.

Structural Analysis Requirements

The analyses must abide by all applicable standards outlined in the 2012 NESC edition. Load analyses must reflect make-ready solutions, apply overload and strength reduction factors for Grade B construction, and include calculations and results specifying "pass" or "fail" for:

- Overturning moment of the pole at ground line
- Down-guy strengths (***Appendices D and E)*** list typical working strengths for NV Energy conductors used in Northern and Southern Nevada, respectively.]
- Buckling using the Euler Method (for anchored poles and as necessary for tangent poles)

The analyses must also include verification of the following:

- Compliance with all applicable NESC clearances
- Summation of down-guy tensions does not exceed the ultimate holding strength of the anchor(s). ***Appendices F and G*** list typical holding strengths for NV Energy anchors used in Northern Nevada and Southern Nevada, respectively. Also, see ***Appendix C*** for anchor and down-guy sharing guidelines.

All pole data used and any assumptions made must be included.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS, CON'T

Sample Report

Structural analysis reports must be submitted in a standardized format, such as those produced by the following programs: PLS-CADD, LineDesign Engineering, O-Calc, and Spida Calc. Other formats will not be accepted without prior approval. Applicant must be familiar with their chosen analysis program as NV Energy cannot provide instructional guidance in this regard. ***Appendix H*** shows sample templates for submitting pole data, make-ready notes, and structural analysis reports.

Transmission Applications

NV ENERGY will perform the structural analysis for each Transmission pole in the application. The pole data and make-ready solutions submitted by the Applicant will be used in the analysis. ***Appendix I*** shows a sample template for submitting the pole data and make-ready notes.

Audit Process

The validity of the information submitted in the application is subject to verification by NV Energy. Audits will be performed on an Applicant's weekly submissions. All of the submissions received during a given week will be treated as one batch. If the sampled applications are found to contain pervasive errors or omissions, then the entire week's batch will be rejected and returned to the Applicant with a brief explanation as to nature of the denial. The explanation will be sufficient to guide the Applicant in their corrections; however, detailed information will not be provided as the Applicant is responsible for the quality assurance of its submissions. The Applicant will be required to reevaluate all of the applications submitted in a rejected batch before they can resubmit at a later date. Applicant is advised that rejected applications will constitute an increase in the auditing frequency, which may cause processing delays for future submissions.

Exhibit F, – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix A – Pole Data Requirements

Applicant must submit the following information for each pole in the application:

- Pole Information
  - Route map
    - Must show pole locations in relationship to streets, roads, and other geographical landmarks
    - Pole data list in application shall match and be in the same order as those appearing in the map
  - Pole number
  - Pole type (Transmission, Distribution, Wood, Steel)
    - For wood poles, wood species (e.g. Western Red Cedar, Douglas Fir, etc.)
    - For steel poles, data on name plate (welded ~ 5' above ground)
  - Pole length*
  - Height of top of pole* *(feet and inches)*
  - Pole class
  - Ground line circumference *(inches)*
  - Pictures of pole
    - Must provide a minimum of one picture showing pole from ground line to top that can be utilized to scale attachment and equipment locations on pole
- Existing Attachment Information (for ALL attachments on pole, NVE and 3rd Party)
  - Cable Information
    - Size
      - i. For 3rd Party Lines, specify the Owner and the Effective (cable + strand) Bundle Diameter (e.g. "TEL 1 inch overall diameter")
    - Span lengths, ahead and back *(feet)*
    - Attachment height* *(feet and inches)*
    - Direction of attachment**
  - Riser Information
    - i. Riser thickness out from face of pole (e.g. "3 inch u-guard")
    - ii. Distance from grade to the top of riser* *(feet and inches)*
    - iii. Location on pole**
  - Equipment Information
    - NVE Equipment
      - i. Type and Name (e.g. "75 KVA transformer number HHH1234")
      - ii. Distance from grade to the top of equipment* *(feet and inches)*
      - iii. Location on pole**
    - 3rd Party Equipment
      - i. Owner and Type (e.g. "CATV Splice Can")
      - ii. Dimensions: length, width, and height *(inches)*
      - iii. Distance from grade to the top of equipment *(feet and inches)*
      - iv. Location on pole**

Exhibit F, – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix A – Pole Data Requirements Con't

- Existing Anchor/Guying Information (for all guys/anchors, NVE and 3rd Party)
    - D-guy diameter *(inches)*
    - Height of D-guy attachment* *(feet and inches)*
    - Lead from pole to anchor *(feet and inches)*
    - Direction of D-guy lead**
    - Anchor rod diameter *(inches)*
- Proposed Attachment and Additional Attachment (Overlash) Information
    - Cable Information
        - Effective (cable + strand) bundle diameter *(inches)*
        - Weight *(lb/ft)*
        - Total line tension under NESC loading conditions *(lbs)*
            - i. For Southern Nevada (NESC Light Loading District) these are 30 deg Fahrenheit with no ice and a 9 # wind load
            - ii. For Northern Nevada (NESC Medium Loading District) these are 15 deg Fahrenheit with ¼" radial ice and a 4 # wind load
        - Attachment height *(feet and inches)*
        - Direction of attachment**
    - Equipment Information
        - Total "projected area" of the equipment *(square feet)*
        - Distance from grade to the top of equipment *(feet and inches)*
        - Location on pole**
    - Riser Information
        - Riser thickness out from face of pole (e.g. "3 inch u-guard")
        - Distance from grade to the top of riser *(feet and inches)*
        - Location on pole**
- Anchoring-Guying Information (for each proposed guy and anchor)
    - D-guy diameter *(inches)*
    - Height of D-guy attachment *(feet and inches)*
    - Lead from pole to anchor *(feet and inches)*
    - Direction of D-guy lead**
    - Anchor Assembly (e.g. "24 inch plate, 1 inch rod triple eye")

***All measurements above the communications space must be made by remote means, such as optical surveying or laser range finding. In <u>no event</u> shall mechanical devices, such as measuring sticks, be used to collect power space data. Applicant is expected to follow these guidelines. NV Energy will not be held responsible for the acts or omissions of Applicant in completing its survey. Applicant proceeds in its survey assuming all risks of injury, death, or other damages.**

****Use compass directions:**

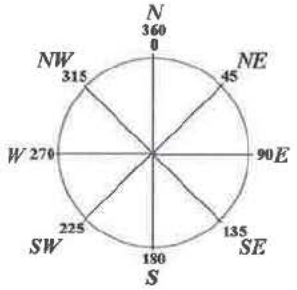


Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix B – Common NV Energy Make-Ready Solutions for Telecom Attachments

General Pole Issues

- Reframe 3 phase Delta Primary [tangent] to a horizontal configuration with Neutral and phases up on arm.

Primary on Pole

- Move [tangent] power Neutral higher up on pole without need of other power facilities reframing.
  + Move transformer higher up on pole.
  + Move fused cut-out assembly higher up on pole.

Secondary on Pole

- Move up Secondary power [triplex] dead-end.
- Fold up and tape in-place Secondary drip loops [to increase separation above communications attachment].

Primary in Span

- Re-sag Primary and Neutral to achieve increased separation from communications cables below (30" radial separation needed).

Secondary in Span

- Retire open Secondary and replace with triplex, including replacement of 3-spool rack with single dead-end spool, shackle & eyebolt.
- Retire/remove abandoned span of secondary.
- Re-sag Secondary to achieve increased separation from communications cables below (30" radial separation needed).

Risers

- Extend/add U-guard over Secondary riser cable.
  + If possible, splice and extend Secondary riser cable to allow such upward extension of U- guard cover below transformer, drip loops, etc.
  + Otherwise, change-out secondary riser cable to allow such upward extension of U-guard cover below new splice connectors, transformer, etc.

Grounding

- Replace/reattach lower [6'-10'] segment of pole ground wire [stolen] and cover with ¾" WOOD U-guard, heavily stapled to pole.

Anchoring & Down Guys

- Install NVE spec plate anchor w 3-knuckle eye [in open ground].
  + Pull up sidewalk slab and then re-pour it.
  + Relocate down-guy(s) to new anchor.
- Re-tension down guy(s).

Note:

- Highlighted items usually occur together
- Cost estimates are available for these items; however, Applicant Purchase Orders must commit to payment of ACTUAL NV Energy cost incurred, not the estimated values.
- Applicant is in no way restricted to these make-ready options. Other make-ready solutions may be appropriate but will require a specific design and cost estimate.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix C – Anchor & Down-Guy Sharing Guidelines

Anchor Guidelines:

To minimize repeated disruption of NV Energy and public infrastructure, NV Energy reserves the right to require installation of anchors with holding strength in excess of that needed for Applicant's attachments alone. All new anchor installations shall be of current NV Energy standard specification [3-knuckle eye, 1"x10' rod, 24" plate] absent specific NV Energy authorization to the contrary. NV Energy authorization for lesser capacity anchors shall not be unreasonably withheld for those locations where it is unlikely that other users will request attachment space in the future, and where there is no significant risk of undermining adjacent anchor installations or necessity of demolishing and reconstructing paved surfaces.

Down-Guy Sharing Guidelines:

Telecommunications down-guy load sharing through strand upgrade and rearrangement of existing down-guy attachments on the pole will be approved subject to case specific, documented, engineering design, and concurrence among the affected telecommunications users. Installation of more than 4 telecommunications down-guys or more than two anchors in any lead is to be avoided, as is the use of bolt-on auxiliary anchor eyes. However, NV Energy approval of such will not be unreasonably withheld.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix D – Typical Working Strengths for NV Energy Conductors (Northern Nevada)

Conductor Strengths			
Conductor AWG or KCMIL	Code Name	Breaking Strength (lbs.)	Working Strength (lbs.)
Primary Conductors			
#2 ACSR	Sparrow	2,850	1,425
1/0 ACSR	Raven	4,380	2,190
2/0 AA	Aster	2,510	1,255
2/0 ACSR	Quail	5,310	2,655
4/0 AA	Oxlip	3,830	1,915
4/0 ACSR	Penguin	8,350	4,175
397.5 AA	Canna	7,110	3,555
397.5 ACSR	Ibis	16,300	8,150
477 ACSR	Hawk	19,430	9,715
636 AA	Orchid	11,400	5,700
636 ACSR	Grosbeak	25,200	12,600
795 AA	Arbutus	13,900	6,950
Secondary Conductors			
#2 TRIPLEX	Cockle	1,860	930
#2 QUADRUPLEX	Palomino	2,850	1,425
2/0 TRIPLEX	Clio	3,550	1,775
2/0 TRIPLEX	Runcina	5,310	2,655
2/0 QUADRUPLEX	Grullo	5,310	2,655
4/0 TRIPLEX	Zuzara	8,350	4,175
4/0 QUADRUPLEX	Appaloosa	8,350	4,175

Note:
These values are only approximations and will vary based on field conditions. The Professional Engineer in the hire of the Applicant is responsible for determining the appropriate working strengths for their analyses.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix E – Typical Working Strengths for NV Energy Conductors (Southern Nevada)

Total Line Tension Under Maximum Loading Conditions									
Type and Size of Conductors			NESC Light Loading District						
			Short Span 225' ruling Span – 300' max				Long Span (a) unless otherwise noted (a) 350' Ruling Span – 550' max (b) 500' ruling Span – 625' max (c) 800' ruling span – 1000' max		
			Number of Conductors						
			1	2	3	4	1	2	3
Bare Primary Conductors	ACSR	4	282	564	846		603	1,206	1,809
		2	397	794	1,191		822	1,644	2,466
		2/0	1,355 (a)	2,710	4,065		1,355	2,710	4,065
		4/0	1,000	2,000	3,000		2,500	5,000	7,500
		336.4	1,470	2,940	4,410		3,850	7,700	11,550
		477	1,965	3,930	5,895		5,250	10,500	15,750
		636					6,963 (b)	13,926	20,888 (b)
		9000					9,000 (c)	18,000 (c)	27,000 (c)
	AA	2	460	920	1,380				
		2/0	565	1,130	1,695				
		4/0	811	1,622	2,433		1,060	2,120	3,180
		336.4	1,165	2,330	3,495		1,450	2,900	4,350
		477	1,540	3,080	4,620		1,865	3,730	5,595
		*556.5	*3,390	6,780	10,170				
		636	2,204	4,408	6,612		2,310	4,620	6,930
		*715.5	*2,401	4,802	7,203		*3,110	6,220	9,330
		954	3,068	6,136	9,204		6,509 (b)	13,118 (b)	19,527 (b)
	CU	6	275	550	825		520	1,040	1,560
		4	420	840	1,260		880	1,760	2,640
		2	625	1,250	1,875		1,130	2,260	3,390
		2/0	1,180	2,360	3,540		2,030	4,060	6,090
		4/0	1,825	3,650	5,475		3,000	6,000	9,000
Secondary Conductors	Multiplex	4			585	826			
		2			774	1,098			
		2/0			1,507	1,872			
		4/0			1,803	2,645			
* Formerly C.P. National: Henderson & Laughlin Service Areas									

Note:
These values are only approximations and will vary based on field conditions. The Professional Engineer in the hire of the Applicant is responsible for determining the appropriate working strengths for their analyses.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix F – Typical Holding Strengths for NV Energy Anchors (Northern Nevada)

TABLE 1 ANCHOR ROD STRENGTHS		
Rod Size	Breaking Strength	Working Strength
1" x 7'	36,000	18,000
1" x 8'	36,000	18,000

TABLE 2 ANCHOR HOLDING POWER					
Anchor @ 7'-0" Depth	Soil Type Classification*				
	1 thru 3	4	5	6	7
Expanding 12" – 8 Way w/ 1 ¼" Rod	20,000	17,000	13,250	10,750	8,000
Crossplate 20" w/ 1" Rod	17,000	14,500	12,000	9,500	7,000
Crossplate 24" w/ 1" Rod	22,500	18,500	15,000	11,750	9,000
Rock ¾"x 30" No Rod Required	11,500	N/A	N/A	N/A	N/A
Rock 1" x 53" No Rod Required	18,000	N/A	N/A	N/A	N/A
* For Soil Classification Descriptions, Refer To Table 4					

TABLE 3-A MID-STRENGTH SCREW ANCHORS				
Installing Torque	Shear Pins Required	Twin 4" Helices	Twin 8" Helices	Twin 10" Helices
1,500	3	*	18,000	18,000
2,000	4	*	20,000	20,000
3,000	6	26,000	26,000	26,000
4,000	8	33,000	33,000	33,000
5,000	10	36,000	36,000	36,000
6,000	12	36,000	36,000	36,000

* Do Not Use This Anchor At This Torque

The above screw anchors are used with 7' x 1" galvanized steel rod with a triple strand-eye nut. 3-½' x 1" rod extensions with couplings are used to set anchors deeper.

Anchor holding power of 36,000 pounds is limited only by minimum yield strength of the 1" anchored rod.

Note:

- These values are only approximations and will vary based on field conditions. The Professional Engineer in the hire of the Applicant is responsible for determining the appropriate holding strengths for their anchor analyses.
- New installations utilize helix anchors, but older installations may have utilized cross plate, rock anchors, or other types.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix F – Typical Holding Strengths for NV Energy Anchors (Northern Nevada) Con't.

TABLE 3-B HIGH-STRENGTH SCREW ANCHORS

Installing Torque	Shear Pins Required	6" Helix	8" Helix	10" Helix	12" Helix	14" Helix
1,500	3	*	11,500	12,500	16,000	16,000
2,000	4	*	14,000	15,000	20,000	20,000
3,000	6	18,500	20,000	22,500	24,000	24,000
4,000	8	25,000	27,000	28,000	30,000	30,000
4,500	9	28,000	29,000	32,000	33,000	33,000
5,000	10	31,000	32,000	34,000	36,000	36,000
5,500	11	35,000	36,000	36,000	*	*
6,000	12	36,000	*	*	*	*

* Do Not Use This Anchor At This Torque

The above screw anchors are used with 7' x 1" galvanized steel rod with a triple strand-eye nut. 3-½' x 1" rod extensions with couplings are used to set anchors deeper.

Anchor holding power of 36,000 pounds is limited only by minimum yield strength of the 1" anchored rod.

Note:

- These values are only approximations and will vary based on field conditions. The Professional Engineer in the hire of the Applicant is responsible for determining the appropriate holding strengths for their anchor analyses.
- New installations utilize helix anchors, but older installations may have utilized cross plate, rock anchors, or other types.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix F – Typical Holding Strengths for NV Energy Anchors (Northern Nevada) Con't.

TABLE 4 SOIL CLASSIFICATIONS		
Class	Usual Consistency	Possible Soil Characteristics or Composition
1	Solid	Hard Rock
2	Solid or In Layers	Laminated Rock, Shale, Sandstone, Slate
3	Hard, Dry	Hard Pan, Broken Bedrock, Compact Clay-Gravel Mixture
4	Crumbly, Damp	Clay Pan, Compact Sand-Gravel Mixture
5	Firm, Moist	Firm Clay, Loose Sand-Gravel Mixture, Compact Coarse Sand
6	Plastic, Wet	Soft Plastic Clay, Clayey Silt, Loose Coarse Sand, Compact Fine Sand. Areas Seasonally Wet And Usually Fairly Flat
7	Loose Dry or Loose Wet	Wet Clay, Silt, Mud, Loose Fine Sand
8	Marshy	Marshes And Swamps. Install Anchor Deep Enough To Penetrate Class 5, 6, Or 7 Soils.

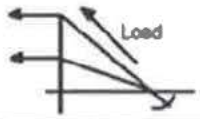
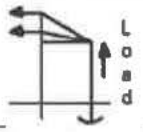
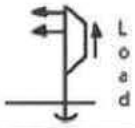
TABLE 5 STRUT SELECTION CHART			
Total Pull (Ps) Exerted On Pole (lbs.)	Length of Strut	I.D. Size Of Strut	
		2"	2½"
Under 6,000	6' - 12'	X	
6,000 - 8,000	6' - 10'	X	
	10' - 12'		X
8,000 - 10,000	6' - 8'	X	
	8' - 12'		X
10,000 - 12,000	6' - 8'	X	
	8' - 12'		X

Note:

- These values are only approximations and will vary based on field conditions. The Professional Engineer in the hire of the Applicant is responsible for determining the appropriate holding strengths for their anchor analyses.
- New installations utilize helix anchors, but older installations may have utilized cross plate, rock anchors, or other types.

• Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

• Appendix G – Typical Holding Strengths for NV Energy Anchors (Southern Nevada)

Ultimate Holding Strength of Anchors and Strut Guys in Pounds						
Soil Classification						Owner
	Anchor Assembly			Sidewalk	Strut-Guy	
	1 16" plate, 3/4" or 5/8" rod twin eye	2* 20" plate, 3/4" CW rod twin eye	3 24" plate, 1" rod triple eye	24" plate, 1" rod triple eye	24" plate, 1" rod	
3 HARD PAN Dry, requires use of a digging bar; dense clayey sands & gravel hard silts & clays	12,000	15,900	27,000	27,000	4,440	NVE
	8,000	10,600	18,800	18,800	2,960	Century Link
	20,000 (16,000)**	26,500	45,000 (36,000)**	45,000 (36,000)**	***7,400	Not joint use
5 AVG. FIRM Predominant type in L.V.; md dense coarse sand, sandy gravels stiff silts & clays	12,000	15,900	21,000	21,000	4,440	NVE
	8,000	10,600	14,000	14,000	2,960	Century Link
	20,000 (16,000)**	26,500	35,000	35,000	***7,400	Not joint use
7 LOOSE DRY Loose, fine sand & gravel; lack of clay or bonding material	6,600	8,400	11,400	11,400	4,400	NVE
	4,400	5,600	7,600	7,600	2,960	Century Link
	11,000	14,000	19,000	19,000	***7,400	Not joint use

* Anchor size no longer used, but may be encountered in the field.

** Limiting factor: Rated breaking strength of galvanized anchor eyes used with CU plated (CW) rods prior to 96.

*** Limiting factor: Rated breaking strength of struts. Use of strut guys is generally not recommended as they only keep the pole (class 3 max.) straight and do not add to the strength of the pole.

Note:

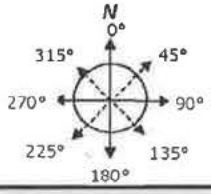
- Joint use anchor holding strength allocation: NVE – 60%, Century Link – 40%.
- These values are only approximations and will vary based on field conditions. The Professional Engineer in the hire of the Applicant is responsible for determining the appropriate holding strengths for their anchor analyses.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix H – Distribution Sample Report

Pole Inspection Sheet

Pole # *In Field*	*P12345*
Class	4
Length	40
Wood	Western Ponderosa Pine
Gl. Circum	42"
Type	Distribution



Pole # *In License*	*P12345*
Date	6/7/2012
Job Name	CATV Attachment
Location	ABC Street and XYZ Way

Guy #	Entity	Attachments					Span Length		Direction		Bundle diameter
		Type	# of wires	Size	Height		Ahead	Back	Ahead	Back	
					ft	in	ft	ft	deg	deg	in
				Top of Pole	32	11					
	NVE	Pri- Tri	3	954 aa	32	4	158'	182'	270°	90°	
1	NVE	Pri- 1 Ø	1	#4 acsr	30	11	155'		0°		
	NVE	2Ø Cutout Brkt		1/0 ug	27	8			270°		
	NVE	Riser		4" u-guard	25	6			45°		
	NVE	Pri- neut	1	#4 acsr	24	5	155'		0°		
	NVE	Pri- neut	1	2/0 acsr	24	5	158'	182'	270°	90°	
	NVE	Sec- svc	1	#4 triplex	24	5	158'		270°		
	NVE	Pal light			23	7			0°		
	COM	3 bolt		5/16"ehs, 144ct	19	0	158'	182'	270°	90°	1.06"
	CATV	3 bolt		1/4 ehs, 2-750cx, 48ct	18	0	158'	182'	270°	90°	1.50"
2	CATV	DE		1/4"ehs, 500cx	18	0	155'		0°		0.75"
	CATV	Proposed		ADD 48ct	18	0	155'		0°		0.98"
	CATV	Riser		2" u-guard	17	0				135°	
	TEL	3 bolt		5/16"ehs, 2.50"cu	14	5	158'	182'	270°	90°	2.82"

Entity	Equipment							Make-Ready Notes (Communications Space)
	Type	Description	Dimensions		Height		Location	
			in	in	ft	in	deg	
CATV	LE	-	12	8	18	0	270°	Extend CATV riser, trim trees off CATV midspan, reframe CATV.

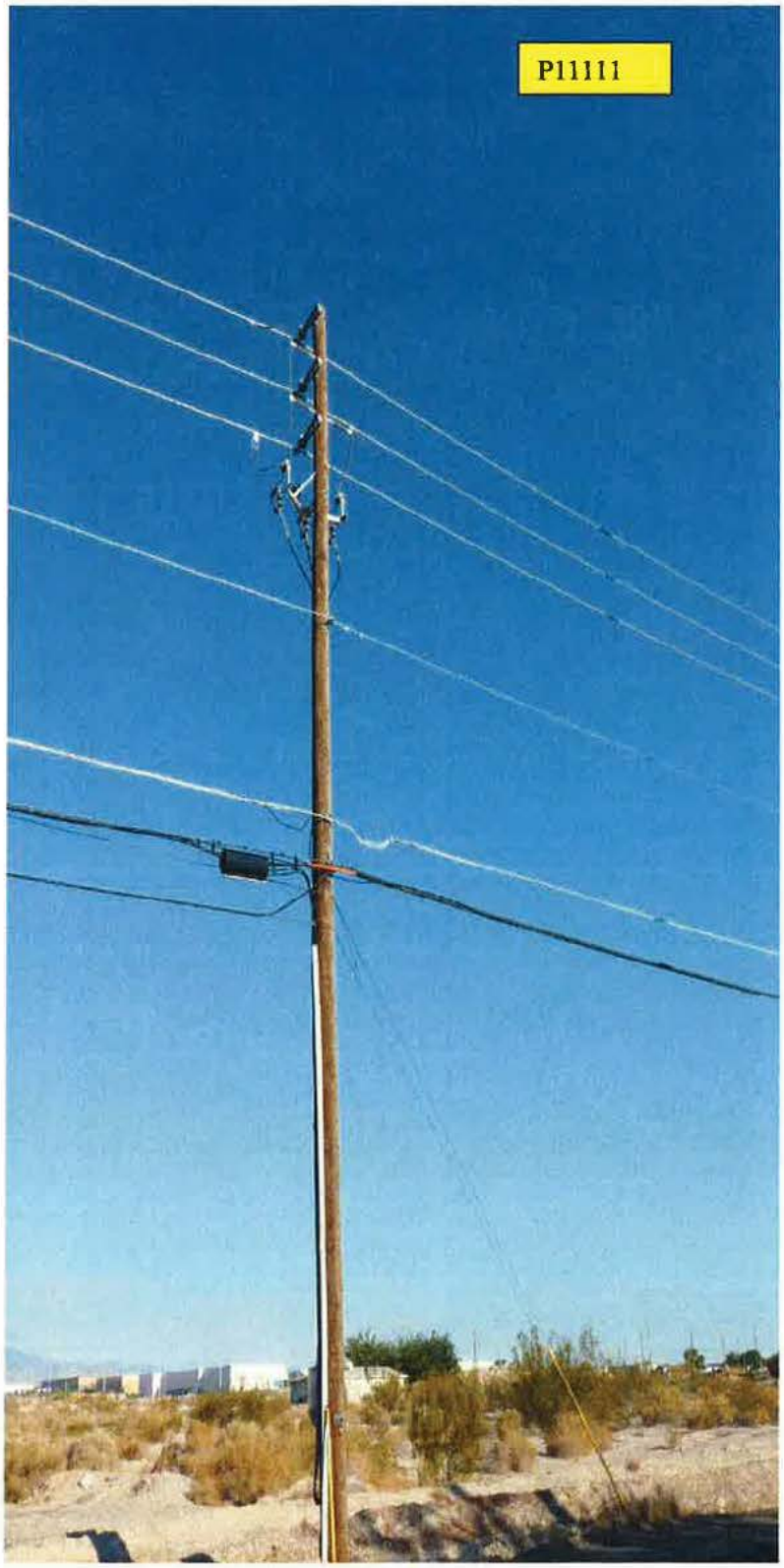
Guy #	Entity	Guy Size	Anchor						Make-Ready Notes (Power Space)
			#	Size & Description	Location	Height		Lead	
					deg	ft	in	ft	in	
1	NVE	5/16"	1	3 eye, 1" rod	180°	30	11	20	0	
2	CATV	5/16"	1	3 eye, 1" rod	180°	18	0	20	0	

Additional Comments:

See attached for picture of pole.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix H – Distribution Sample Report Con't.



LICENSEE: [redacted]
APPLICATION: [redacted]
MAP NUMBER: 1 THRU 10

JOB DETAIL (MAKE READY) WORK SHEET
PREPARED BY: [redacted]
CONTACT #: [redacted]
FIELDED BY: CRA
DATA ENTRY: CRA

POLE NUMBER	LEAD CODE / MAX GR / POLE ID	LOCATION	POWER WORK	CATV WORK	TELCO WORK	OTHER WORK	OWNER			
							PWR	TEL	JP	CATV
17	273798 45	39 DEG 7.469' N 119 DEG 47.570' W	PRI = 29' 0". 3/8" DG TO 5/8" ANC 19' S. 3/8" DG TO 5/8" ANC 19' S. POWER FAILS WIND LOAD.	ATTACH CATV @ HOA 23' 0". PL 1/4" DG TO NEW 5/8" ANC 15' S. P=16. PL GUY GUARD.			X			
18	36945 40	39 DEG 7.472' N 119 DEG 47.677' W	PRI = 26' 0".	ATTACH CATV @ HOA 21' 0". CATV FAILS WIND LOAD.			X			
19	36946 40	39 DEG 7.475' N 119 DEG 47.766' W	PRI = 24' 0".	ATTACH CATV @ HOA 20' 6".			X			
20	36947 40	39 DEG 7.477' N 119 DEG 47.807' W	PRI = 23' 0".	ATTACH CATV @ HOA 19' 6".			X			
21	36948 40	39 DEG 7.479' N 119 DEG 47.891' W	PRI = 25' 6". EXISTING POLE TOP EXTENSION. TOP OF POLE = 31' 0".	ATTACH CATV @ HOA 21' 0".			X			
22	273797 50	39 DEG 7.481' N 119 DEG 47.977' W	PRI = 31' 6".	ATTACH CATV @ HOA 26' 0". CATV FAILS WIND LOAD.			X			
23	273796 50	39 DEG 7.484' N 119 DEG 48.078' W	PRI = 32' 0". POWER FAILS WIND LOAD.	ATTACH CATV @ HOA 26' 0". PL VGR.			X			
24	273795 50	39 DEG 7.487' N 119 DEG 48.168' W	PRI = 32' 0".	ATTACH CATV @ HOA 26' 0".			X			
25	273794 55	39 DEG 7.490' N 119 DEG 48.226' W	PRI = 29' 9". 3/8" DG TO 1" ANC 30' SE.	ATTACH CATV @ HOA 26' 3".			X			
26	36953 40	39 DEG 7.492' N 119 DEG 48.309' W	PRI = 25' 4".	ATTACH CATV @ HOA 21' 0".			X			

[redacted]

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix H – Distribution Sample Report Con't.

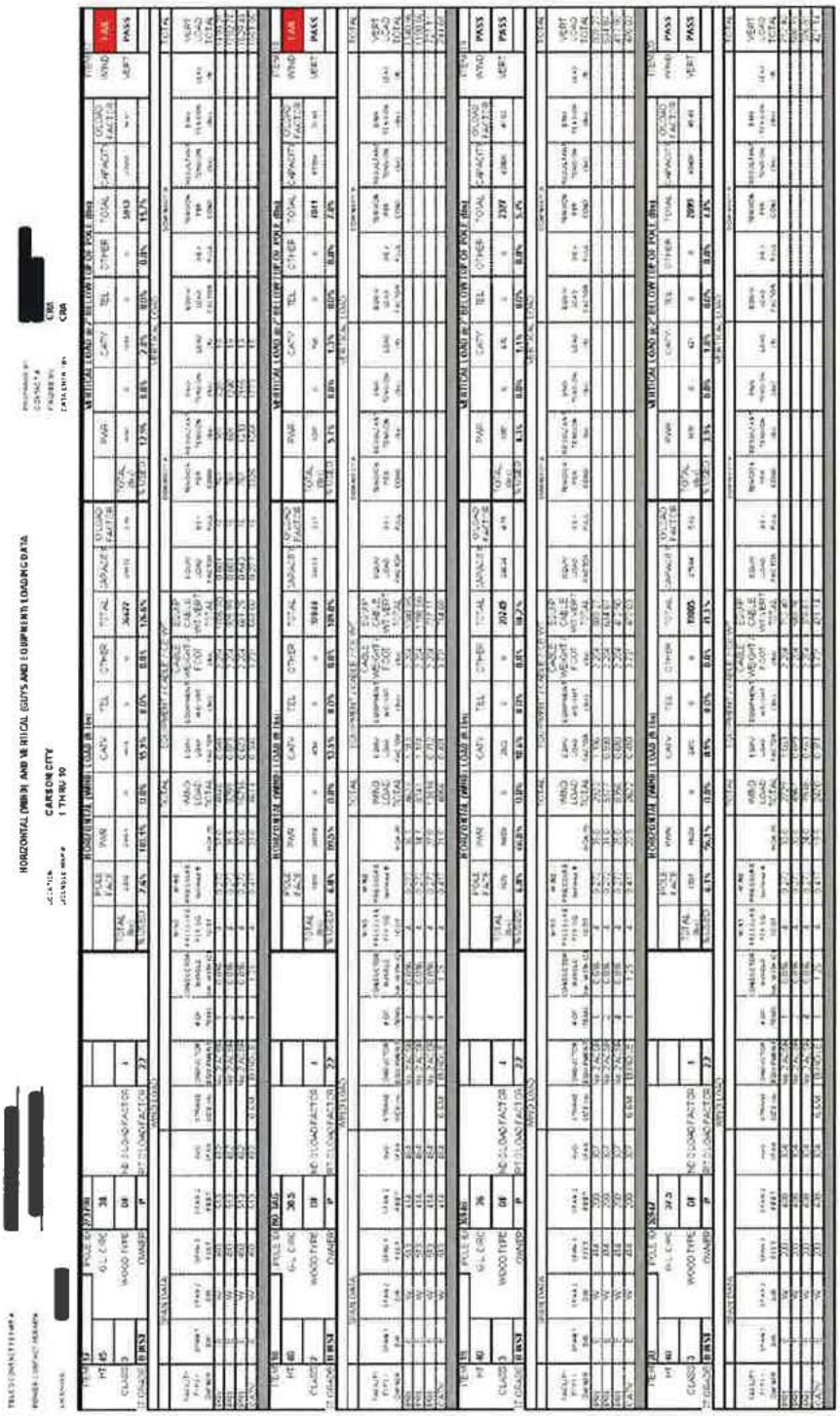


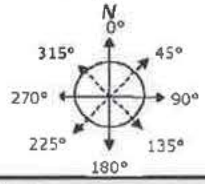
Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix I – Transmission Sample Templates

Pole Inspection Sheet

Page 1 *of* 1

Pole # *In Field*	*X12345*
Class	N/A
Length	
Wood	
GL Circum	11'11"
Type	Steel Transmission



Pole # *In License*	*X12345*
Date	6/7/2012
Job Name	CATV Attachment
Location	ABC Street and XYZ Way

Guy #	Entity	Attachments					Span Length		Direction		Bundle diameter
		Type	# of wires	Size	Height		Ahead	Back	Ahead	Back	
					ft	in	ft	ft	deg	deg	in
				Top of Pole	128	5					
	NVE	Static	2	West arm- 5/16" ehs, East arm- 5/16" ehs	128	5	474'	499'	270°	90°	
	NVE	Trans- 230 KV	2	West strut post- 954 acsr	118	1	474'	499'	270°	90°	
	NVE	Trans- 230 KV	1	East strut post- 954 acsr	118	1	474'	499'	270°	90°	
	NVE	Trans- 230 KV	2	West strut post- 954 acsr	105	1	474'	499'	270°	90°	
	NVE	Trans- 230 KV	1	East strut post- 954 acsr	105	1	474'	499'	272°	90°	
	NVE	Trans- 230 KV	2	West strut post- 954 acsr	92	1	474'	499'	270°	90°	
	NVE	Trans- 230 KV	1	East strut post- 954 acsr	92	1	474'	499'	270°	90°	
	NVE	Trans- 138 KV	1	West post ins- 954 acsr	76	6	474'	499'	270°	90°	
	NVE	Trans- 138 KV	1	West post ins- 954 acsr	70	6	474'	499'	270°	90°	
	NVE	Trans- 138 KV	1	West post ins- 954 acsr	64	6	474'	499'	270°	90°	
	NVE	Pri- X arm	3	954 acsr	54	6	474'	499'	270°	90°	
	NVE	3Ø Cutout Brkt		1/0 ug, jckt	51	4			180°		
	NVE	Riser		3" u-guard	46	5			225°		
	NVE	Pri- neut	1	West side, shoe- 2/0 acsr, 48 ct	44	2	474'	499'	270°	90°	
	NVE	Sec	1	East side, DE- 2/0 triplex	41	5		499'		90°	
	NVE	Riser		2" u-guard	38	3				45°	
	ZFS	ADSS Block		ADSS 144ct	38	4	474'	499'	270°	90°	0.76"
	COX	Tangent		1/4" ehs, 72 ct, 750cx	37	0	474'	499'	270°	90°	1.25"
	COX	Proposed		ADD 144ct, REMOVE 72ct	37	0	474'	499'	270°	90°	1.55"

Entity	Equipment							Make-Ready Notes (Communications Space)
	Type	Description	Dimensions		Height		Location	
			in	in	ft	in	deg	Adjust existing communications vangs for 40" clearance.

Guy #	Entity	Guy Size	Anchor							Make-Ready Notes (Power Space)
			#	Size & Description	Location	Height		Lead		
					deg	ft	in	ft	in	Weld new NVE spec vang, add rod & shoe.

Additional Comments:

See attached for picture of pole.

Exhibit F – NVE LICENSE APPLICATION REQUIREMENTS CON'T.

Appendix I – Transmission Sample Templates Con't.

GLENDA MILLS

EXHIBIT 2

EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor **indicating** final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **Ramirez Group, 531 S 7th St, Garces & 8th**

Date of Application: **8/19/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p9542		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
2	p9541		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
3	p9574		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
4	p9572		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
5	p9573		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
6	p91046		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
7	p9105		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
8	p9103		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
9	p9106		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
10	p9108		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
11	p9109		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
12	p55814		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
13	p57631		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
14	p57630		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
15	p57629		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
Ramirez Group, 531 S 7th St, Garces & 8th	**8/19/2014**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telecomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	48 ct fiber	FO on Messeng	48	.546" dia		.102#/ft.					
2											

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Job Name, Location & Major Cross Streets: **Ramirez Group, 531 S 7th St, Garces & 8th**

Date of Application: **8/19/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **David Wood**

By (Print Name): **David Wood**

Title: **Project Planner**

Phone: **(702) 204-4714**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **CLV Derfelt SR CTR, 3343 W Washington, Washington & Rancho**

Date of Application: **9/16/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p5960		Wood Dist.		COAX		Video	OVERLASH		1	
2	p87690		Wood Dist.		COAX		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
CLV Derfelt SR CTR, 3343 W Washington, Washington & Rancho	**9/16/2014**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	750 Coax	COAX	1	.750"		.164#/ft.					
2											

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Job Name, Location & Major Cross Streets: **CLV Derfelt SR CTR, 3343 W Washington, Washington & Rancho**

Date of Application: **9/16/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Bob Miller**

By (Print Name): **Bob Miller**

Title: **Planner**

Phone: **(702) 210-7011**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **Western Mailing, 530 E Pamalyn, Pamalyn & Bermuda**

Date of Application: **9/11/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p80283		Wood Dist.		FO on Messenger		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
Western Mailing, 530 E Pamalyn, Pamalyn & Bermuda	**9/11/2014**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	48 ct fiber	FO on Messeng	48	.546"		.102#/ft.					
2											

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Job Name, Location & Major Cross Streets: **Western Mailing, 530 E Pamalyn, Pamalyn & Bermuda**

Date of Application: **9/11/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **W. Erik Eklof**

By (Print Name): **W. Erik Eklof**

Title: **Construction Planner I**

Phone: **702.265.2962**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **VZW DOT Koval & Flamingo 144ct, Koval & Flamingo**

Date of Application: **9/16/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p80133		Wood Dist.		FO on Messenger		Video	OVERLASH		1,2	
2	p92556		Wood Dist.		FO on Messenger		Video	OVERLASH		1,2	
3	p68068		Steel Dist.		FO on Messenger		Video	OVERLASH		1,2	
4	p83453		Steel Dist.		FO on Messenger		Video	OVERLASH		1,2	
5	p83454		Steel Dist.		FO on Messenger		Video	OVERLASH		1,2	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
VZW DOT Koval & Flamingo 144ct, Koval & Flamingo	**9/16/2014**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	Remove 72ct	FO on Messeng	72	.546"		.102#/ft.					
2	Add 144ct	FO on Messeng	144	.757"		.191#/ft.					

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Job Name, Location & Major Cross Streets: **VZW DOT Koval & Flamingo 144ct, Koval & Flamingo**

Date of Application: **9/16/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Mike Ferguson**

By (Print Name): **Mike Ferguson**

Title: **Planner**

Phone: **(702) 296-5564**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

RRP96, 9112 Washington, Washington & Decatur

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p25869		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
2	p24738		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
3	p24737		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
4	p24736		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
5	p24735		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
6	p24734		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
7	p24605		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
8	p24604		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
9	p24602		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
10	p24603		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
11	p57803		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
12	p57804		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
13	p24926		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
14	p29039		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
15	p52684		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
16	p52681		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
17	p66467		Wood Dist.		FO on Messenger		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

RRP96, 9112 Washington, Washington & Decatur

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
18	p25199		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
19	p29817		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
20	p25201		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
21	p28008		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
22	p25202		Wood Dist.		FO on Messenger		Video	OVERLASH		2	

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Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

RRP96, 9112 Washington, Washington & Decatur

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	48 ct fiber	FO on Messeng	48	.546"		.102#/ft.					
2	24 ct fiber	FO on Messeng	24	.546"		.102#/ft.					

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Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

RRP96, 9112 Washington, Washington & Decatur

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Jerome Meadows**

By (Print Name): **Jerome Meadows**

Title: **Fiber Network Planner** *Phone:* **(702) 287-9133**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **RRP96, 9112 Washington, Yale & Iowa, part 2**

Date of Application: **10.29.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p18627		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
2	p12712		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
3	p21135		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
4	p21140		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
5	p21146		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
6	p21145		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
7	p30189		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
8	p30190		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
9	p30211		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
10	p30212		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
11	p30213		Wood Dist.		FO on Messenger		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
RRP96, 9112 Washington, Yale & Iowa, part 2	**10.29.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	24ct fiber	FO on Messeng	24	.546"		.102#/ft.					
2											

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Job Name, Location & Major Cross Streets: **RRP96, 9112 Washington, Yale & Iowa, part 2**

Date of Application: **10.29.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Jerome Meadows**

By (Print Name): **Jerome Meadows**

Title: **Fiber Network Planner**

Phone: **(702) 287-9133**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **COX, NFAA 10 - Warm Springs, Pollock to Placid, part 1 of 2**

Date of Application: **10/14/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p82150		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
2	p82149		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
3	p82147		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
4	p82146		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
5	p82145		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
6	p82144		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
7	p82142		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
8	p82141		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
9	p82140		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
10	p82139		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
11	p82138		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
12	p82137		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
13	p82136		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
14	p82135		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
15	p82134		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
16	p82133		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
17	p82132		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	

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Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

COX, NFAA 10 - Warm Springs, Pollock to Placid, part 1 of 2 **10/14/2014**

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
18	p82131		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
19	p82130		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	
20	p82129		Wood Dist.		FO on Messenger		Info Services	OVERLASH		1	

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Job Name, Location & Major Cross Streets: | *Date of Application:* | *NVE Lic. # Assigned:*

COX, NFAA 10 - Warm Springs, Pollock to Placid, part 1 of 2 | **10/14/2014**

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	432 ct fiber	FO on Messeng	432	.83"		.159#/ft.					
2											

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Job Name, Location & Major Cross Streets: **COX, NFAA 10 - Warm Springs, Pollock to Placid, part 1 of 2**

Date of Application: **10/14/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Shawn Gunn**

By (Print Name): **Shawn Gunn**

Title: **Planner**

Phone: **(702) 591-7820**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **COX, NFAA 10, Warm Springs- Placid to Haven, part 2**

Date of Application: **10/14/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p82128		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
2	p82127		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
3	p82126		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
4	p82125		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
5	p82124		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
6	p82123		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
7	p82122		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
8	p82121		Steel Dist.		FO on Messenger		Video	OVERLASH		1	
9	p82120		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
10	p98621		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
11	p22425		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
12	p62991		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
13	p76068		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
14	p76067		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
15	p76066		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
16	p76064		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
17	p82578		Wood Dist.		FO on Messenger		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
COX, NFAA 10, Warm Springs- Placid to Haven, part 2	**10/14/2014**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	432 ct fiber	FO on Messeng	432	.83"		.159#/ft.					
2											

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Job Name, Location & Major Cross Streets: **COX, NFAA 10, Warm Springs- Placid to Haven, part 2**

Date of Application: **10/14/2014**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Shawn Gunn**

By (Print Name): **Shawn Gunn**

Title: **Planner**

Phone: **(702) 591-7820**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **3295 Fremont , Fremont / Sahara**

Date of Application: **11.05.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	P66845	1	Wood Dist.	22.2	COAX			OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
3295 Fremont , Fremont / Sahara	**11.05.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	.75" coax	COAX		.750"		.164#/ft.					
2											

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Job Name, Location & Major Cross Streets: **3295 Fremont , Fremont / Sahara**

Date of Application: **11.05.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Dan Risso**

By (Print Name): **Dan Risso**

Title: **CB Construction Planner**

Phone: **702-604-8057**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **Marisa USA Inc, 3745 Losee Rd, Losee & Colton**

Date of Application: **11.05.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p75252		Wood Dist.		COAX		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
Marisa USA Inc, 3745 Losee Rd, Losee & Colton	**11.05.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	750 Coax	COAX	1	.750"		.164#/ft.					
2											

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Job Name, Location & Major Cross Streets: **Marisa USA Inc, 3745 Losee Rd, Losee & Colton**

Date of Application: **11.05.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Bob Miller**

By (Print Name): **Bob Miller**

Title: **Planner**

Phone: **(702) 210-7011**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **3660 Cinder Lane, Cinder Lane & Highland Dr**

Date of Application: **11.05.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p50584		Wood Dist.		Both COAX & FO		Video	OVERLASH		1	
2	p81532		Wood Dist.		Both COAX & FO		Video	OVERLASH		1	
3	p65689		Wood Dist.		Both COAX & FO		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
3660 Cinder Lane, Cinder Lane & Highland Dr	**11.05.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	.50" coax	COAX		.500" dia		.072#/ft.					
2											

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Job Name, Location & Major Cross Streets: **3660 Cinder Lane, Cinder Lane & Highland Dr**

Date of Application: **11.05.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telecomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **James "Corey" D'Ambra #938**

By (Print Name): **James "Corey" D'Ambra #938**

Title: **Planner II**

Phone: **(702) 357-6960**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **Nellis & Tropicana O/B 144ct**

Date of Application: **11.20.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p75431		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
2	p66592		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
3	p87951		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
4	p28697		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
5	p28699		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
6	p28700		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
7	p28701		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
8	p74984		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
9	p27879		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
10	p27886		Wood Dist.		FO on Messenger		Video	OVERLASH		1,3	
11	p63220		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
12	p27885		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
13	p27884		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
14	p27883		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
15	p27790		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
16	p27882		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
17	p55291		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	

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Job Name, Location & Major Cross Streets: | *Date of Application:* | *NVE Lic. # Assigned:*

Nellis & Tropicana O/B 144ct | **11.20.14**

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
18	p6068		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
19	p55289		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
20	p25588		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
21	p55287		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
22	p55286		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
23	p101684		Steel Dist.		FO on Messenger		Video	OVERLASH		2,3	
24	p101683		Steel Dist.		FO on Messenger		Video	OVERLASH		2,3	
25	p101808		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
26	p101638		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
27	p101639		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	
28	p101404		Steel Dist.		FO on Messenger		Video	OVERLASH		2,3	
29	p71927		Wood Dist.		FO on Messenger		Video	OVERLASH		2,3	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
Nellis & Tropicana O/B 144ct	**11.20.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	Remove (2) 48c	FO on Messeng	48	.546"		.102#/ft.					
2	Remove (1) 48c	FO on Messeng	48	.546"		.102#/ft.					
3	Add 144ct fiber	FO on Messeng	144	.757"		.191#/ft.					

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Job Name, Location & Major Cross Streets: **Nellis & Tropicana O/B 144ct**

Date of Application: **11.20.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Mike Ferguson**

By (Print Name): **Mike Ferguson**

Title: **Planner**

Phone: **(702) 296-5564**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

United Health Care- 540 N Nellis Blvd, Nellis & Stewart

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p90698		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
2	p75097		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
3	p74874		Wood Dist.		FO on Messenger		Video	OVERLASH		1	

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Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

United Health Care- 540 N Nellis Blvd, Nellis & Stewart

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	48 ct fiber	FO on Messeng	48	.546"		.102#/ft.					
2											

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Job Name, Location & Major Cross Streets: *Date of Application:* *NVE Lic. # Assigned:*

United Health Care- 540 N Nellis Blvd, Nellis & Stewart

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Riche Radke**

By (Print Name): **Riche Radke**

Title: **Planner III** *Phone:* **(702) 210-5594**

Notes and Comments:

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EXHIBIT A: LICENSE APPLICATION / NOTICE for ***OVERLASH***

For each pole where attachments are to be added, modified, or removed; this form, together an inventory of existing Licensee attachments, a detail sheet for each new pole attachment, and a street map with route and poles plotted; shall be submitted to License Administrator by Licensee IN ADVANCE of any such changes.

Accordingly, and as per the terms and conditions of the Contract between NV Energy and **Cox Communications** indexed as NVE Contract # **97-00009** application is hereby made for permission to make the following Attachments to Licensor's Poles for this location and job :

A copy of this application shall be returned to Licensor indicating final status of each attachment applied for herein.

Job Name, Location & Major Cross Streets: **Goodwill Industries, 2509 E. Lake Mead Blvd., Lake Mead & Eastern**

Date of Application: **11.19.14**

NVE Lic. # Assigned:

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights
1	p88766		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
2	p88767		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
3	p88768		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
4	p88769		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
5	p88770		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
6	p88771		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
7	p88772		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
8	p88773		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
9	p88774		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
10	p40284		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
11	p66758		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
12	p40282		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
13	p40281		Wood Dist.		FO on Messenger		Video	OVERLASH		1	
14	p40280	1	Wood Dist.		FO on Messenger		Video	OVERLASH		1, 2	

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
Goodwill Industries, 2509 E. Lake Mead Blvd., Lake Mead & Eastern	**11.19.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

List of All Major Attachment/Component Items Used in this Project

(Physical parameters & dimensions as appropriate for each item.
Do not need to list mounting hardware, brackets, clamps, grounding wire & other minor ancillary items)

Component Reference #	Name & Model # of Attachment	General Description	Cable Parameters & Riser Size				Equipment, Antenna, RF Transceiver, Power Supply, Cabinet, Support Arms, Risers, etc			Power Consumption:	
			Conductor Count	Cable or Riser Diameter (inches)	Sagging Tension Initial / Final - lbs)	Weight (n.nn lbs / foot)	Dimensions height-width-depth nn.n feet	Wind Loading "Sail" Area square-feet	Gross Weight (nnn.n lbs)	Maximum Monthly Usage (kWh/month)	Maximum Watts or Connected Load Name Plate Rating (Watts)
1	24 ct fiber	FO on Messeng	24	.546"		.102#/ft.					
2	2" u-guard	Riser		2"							

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Job Name, Location & Major Cross Streets:	*Date of Application:*	*NVE Lic. # Assigned:*
Goodwill Industries, 2509 E. Lake Mead Blvd., Lake Mead & Eastern	**11.19.14**	

	Licensor Pole #	Detail Sheet #	Pole Type	Attachment Height (nn.n')	Primary Attachment	Second Attachment	Service Type (Telcomm New or Existing?)	Attachment Activity	Third Attachment	Identify attachments by Component Reference # listed below. Cite construction needs & final status of attachments	Licensee Requests Sharing Licensor's Easement Rights

Application for Licensee : **Cox Communications**

By Signature: **Arthur Lloyd, Jr.**

By (Print Name): **Arthur Lloyd, Jr.**

Title: **Project Planner II** *Phone:* **(702) 545-1627**

Notes and Comments:

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GLENDA MILLS

EXHIBIT 3

August 19, 2014 (Ramirez Group, 531 7th Street, Garces & 8th)

COX, Garces & 8th

Grade B - light	1 - p9542		2 - p9541		3 - p9574		4 - p9572		5 - p9573	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Maximum Pole Capacity Utilization Percent	141.2%	141.2%	87.2%	87.2%	135.8%	136.3%	153.8%	155.9%	142.6%	150.8%

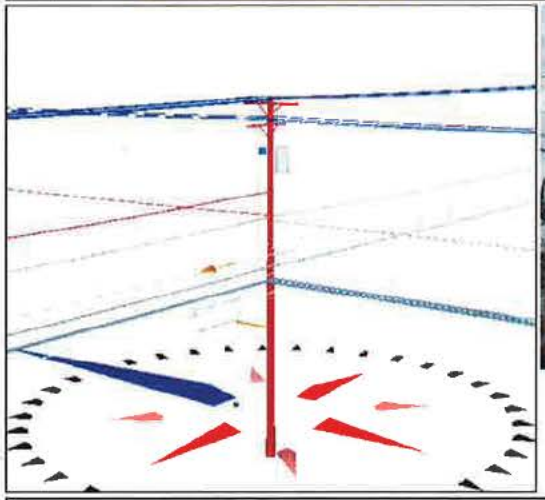
Grade B - light	6 - p91046		7 - p9105		8 - p9103		9 - p6106		10 - p9108	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Maximum Pole Capacity Utilization Percent	81.9%	82.7%	170.0%	170.9%	101.6%	102.5%	327.6%	327.6%	99.3%	100.0%

Grade B - light	11 - p9109		12 - p55814		13 - p57631		14 - p57630		15 - p57629	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Maximum Pole Capacity Utilization Percent	120.1%	121.8%	141.1%	143.2%	179.5%	179.4%	70.6%	70.6%	114.9%	114.9%

O-Calc® Pro *Analysis Report*

Monday, August 11, 2014 4:50:58 PM

File Name:	1 - p9542 Existing	Pole Length / Class:	55 / H1	Code:	NESC	Structure Type:	Guyed
Pole Num:	1 - p9542	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	6.80	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	52.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.65
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	141.2%	0.0 ft	267.0°
Groundline:	141.2%	0.0 ft	267.0°
Vertical:	5.8%	27.8 ft	180.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	201,292 ft-lb	259.1°	267.0°
Groundline:	201,292 ft-lb	259.1°	267.0°

Guys Capacity Summary: Strut Fail

Guy Summary		Guy Tensions		Maximum Guy Tensions	
	Attach Height (ft)	% Allowable Tension	Wind Angle	% Allowable Tension	Wind Angle
Guy 1	39.1	47.1%	267.0°	77.7%	170.0°
Guy 2	30.2	30.1%	267.0°	49.7%	350.0°
Guy 3	26.0	72.9%	267.0°	120.3%	240.0°

Anchor Summary

	Lead Length (ft)	Lead Angle	Max. % Allow. Capacity
Anchor 1	111.0	0.0°	11.3%
Anchor 2	89.0	180.0°	7.2%
Anchor 3	6.2	0.0°	29.4%

Strut Summary

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

	Attach Height (ft)	Lead Angle	% Allowed Capacity
Strut 1	13.7	0.0°	121.7%

GROUNDLINE LOAD SUMMARY:*Wind at 267.0°, Applied Moment 201,292 ft-lb at 259.1°, Allowable Moment 144,692 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	2,828	40.8	103,097	51.2	71.3	2,779	983	5	2,783	71.4
Comms:	2,426	35.0	58,466	29.0	40.4	1,576	1,550	7	1,583	40.6
Guys/Braces:	9	0.1	-8,257	-4.1	-5.7	-223	9,656	45	-178	-4.6
Generic Equipment:	15	0.2	642	0.3	0.4	17	22	0	17	0.4
Power Equipment:	175	2.5	7,175	3.6	5.0	193	960	4	198	5.1
Pole:	1,154	16.7	25,178	12.5	17.4	679	3,365	16	694	17.8
Crossarms:	136	2.0	6,542	3.3	4.5	176	238	1	177	4.5
Risers:	5	0.1	53	0.0	0.0	1	56	0	2	0.0
Insulators:	181	2.6	8,397	4.2	5.8	226	330	2	228	5.8
Pole Load:	6,926	100.0	201,292	100.0	139.1	5,426	17,160	80	5,505	141.2
Pole Reserve Capacity:			-56,600		-39.1	-1,526			-1,605	-41.2

LOAD SUMMARY BY OWNER

NVE:	4,490	150,493	4,056	5,828	27	4,083	104.7
EXT:	1,322	26,479	714	9,709	45	759	19.5
COX:	8	134	4	130	1	4	0.1
CTL:	1,107	24,186	652	1,493	7	659	16.9
Totals	6,926	201,292	5,426	17,160	80	5,505	141.2

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,439	-36	24	-142,451
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,439	-45	31	142,425
Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,439	-25	24	-142,440
Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,439	-32	31	142,438
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,439	-15	24	-142,429
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,439	-18	31	142,451
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,439	15	24	-142,400
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,439	18	31	142,488
Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,439	25	24	-142,389

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,439	32	31	142,502
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,439	36	24	-142,379
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,439	45	31	142,515
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,416	-97	3,070	-13,443
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,416	-78	2,462	18,800
Neutral	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,416	-41	3,070	-13,387
Neutral	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,416	-33	2,462	18,845
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,416	36	3,070	-13,310
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,416	29	2,462	18,907
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,416	92	3,070	-13,254
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,416	74	2,462	18,952
Secondary	TRIPLEX 1/0	NVE	34.42	7.91	1.0300	1.64	0.399	133.0	270.0	133.0	1,507	84,044	26	43	84,113
Secondary	TRIPLEX 4 AWG	NVE	30.83	8.18	0.6800	1.37	0.164	111.0	0.0	111.0	585	-5,626	-2	2,139	-3,488
Neutral	#6 COPPER SOLID	NVE	30.83	8.18	0.1620	0.99	0.079	106.0	90.0	106.0	275	-13,737	1	5	-13,731
Neutral	#6 COPPER SOLID	NVE	30.83	8.18	0.1620	1.46	0.079	133.0	270.0	133.0	275	13,737	1	6	13,744
Neutral	#4 COPPER 3 STRAND	NVE	30.67	8.20	0.2543	1.16	0.128	106.0	90.0	106.0	420	-20,871	-7	8	-20,870
Neutral	#4 COPPER 3 STRAND	NVE	30.67	8.20	0.2543	1.64	0.128	133.0	270.0	133.0	420	20,871	9	10	20,889
											Totals:	78,418	8	24,671	103,097

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	26.67	8.75	0.2500	0.46	0.121	106.0	90.0	106.0	1,500	-64,818	-7	8	-64,816
Telco	24ct Fiber	EXT	26.64	8.75	0.3900	-	0.049	106.0	90.0	106.0		0	-3	8	6
Bundle	1/4" EHS	EXT	26.67	8.75	0.2500	0.72	0.121	133.0	270.0	133.0	1,500	64,818	9	11	64,837
Telco	24ct Fiber	EXT	26.64	8.75	0.3900	-	0.049	133.0	270.0	133.0		0	3	11	14
Bundle	1/4" EHS	EXT	26.00	8.80	0.2500	0.33	0.121	89.0	200.0	89.0	1,500	33,043	3	561	33,608
Telco	24ct Fiber	EXT	25.98	8.80	0.3900	-	0.049	89.0	200.0	89.0		0	1	561	562
Bundle	1/4" EHS	COX	25.17	8.86	0.2500	0.93	0.121	106.0	90.0	106.0	1,500	-61,173	1	8	-61,163
Telco	P3-500CA	COX	25.15	8.77	0.5000	-	0.072	106.0	90.0	106.0		0	1	8	9
Telco	P3-750CA	COX	25.14	9.02	0.7500	-	0.161	106.0	90.0	106.0		0	2	8	10
Telco	24ct Fiber	COX	25.12	8.84	0.3900	-	0.049	106.0	90.0	106.0		0	1	8	8
Bundle	1/4" EHS	COX	25.17	8.86	0.2500	1.34	0.121	133.0	270.0	133.0	1,500	61,173	2	13	61,187
Telco	P3-500CA	COX	25.15	8.77	0.5000	-	0.072	133.0	270.0	133.0		0	1	13	14
Telco	P3-750CA	COX	25.14	9.00	0.7500	-	0.161	133.0	270.0	133.0		0	3	13	16
Bundle	5/16" EHS	CTL	23.42	9.00	0.3125	2.01	0.205	106.0	90.0	106.0	1,500	-56,919	2	20	-56,897
Telco	26 GA 600 PR (1.52)	CTL	23.35	9.00	1.5200	-	1.330	106.0	90.0	106.0		0	15	20	35
Bundle	5/16" EHS	CTL	23.42	9.00	0.3125	3.15	0.205	133.0	270.0	133.0	1,500	56,919	3	20	56,942
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	23.40	8.89	0.5160	-	0.097	133.0	270.0	133.0		0	1	20	21
Telco	26 GA 600 PR (1.52)	CTL	23.36	9.26	1.5200	-	1.330	133.0	270.0	133.0		0	26	20	45
Bundle	3/8" EHS	CTL	22.83	9.04	0.3750	0.67	0.273	111.0	0.0	111.0	1,500	-10,682	-3	980	-9,705

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Bundle	3/8" EHS	CTL	22.83	9.04	0.3750	0.44	0.273	89.0	180.0	89.0	1,500	10,682	3	785	11,470
Bundle	3/8" EHS	CTL	22.25	9.09	0.3750	0.61	0.273	106.0	90.0	106.0	1,500	-54,076	3	9	-54,064
Bundle	3/8" EHS	CTL	22.25	9.09	0.3750	0.92	0.273	133.0	270.0	133.0	1,500	54,076	4	11	54,091
Bundle	1/4" EHS	CTL	21.50	9.14	0.2500	0.26	0.121	106.0	90.0	106.0	1,500	-52,253	1	6	-52,246
Bundle	1/4" EHS	CTL	21.50	9.14	0.2500	6.78	0.121	133.0	270.0	133.0	1,500	52,253	2	38	52,293
Telco	19 GA 400 PR (2.73)	CTL	21.38	9.14	2.7300	-	4.172	133.0	270.0	133.0		0	60	38	98
Bundle	1/4" EHS	CTL	21.50	9.14	0.2500	3.19	0.121	89.0	180.0	89.0	1,500	10,059	1	2,545	12,606
Telco	19 GA 400 PR (2.73)	CTL	21.38	9.14	2.7300	-	4.172	89.0	180.0	89.0		0	40	2,532	2,572
Bundle	1/4" EHS	CTL	21.17	9.17	0.2500	3.19	0.121	89.0	180.0	89.0	1,500	9,905	6	2,506	12,417
Telco	19 GA 400 PR (2.73)	CTL	21.05	9.17	2.7300	-	4.172	89.0	180.0	89.0		0	209	2,492	2,701
Bundle	1/4" EHS	CTL	21.17	9.17	0.2500	0.61	0.121	111.0	0.0	111.0	1,500	-9,905	8	829	-9,069
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.14	9.17	0.5160	-	0.097	111.0	0.0	111.0		0	6	827	834
Bundle	1/4" EHS	CTL	19.42	9.30	0.2500	0.76	0.121	106.0	90.0	106.0	1,500	-47,198	1	7	-47,190
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	19.40	9.40	0.5160	-	0.097	106.0	90.0	106.0		0	1	7	8
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	19.40	9.21	0.5160	-	0.097	106.0	90.0	106.0		0	1	7	7
Bundle	1/4" EHS	CTL	19.42	9.30	0.2500	0.40	0.121	133.0	270.0	133.0	1,500	47,198	2	7	47,206
											Totals:	43,103	409	14,955	58,466

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	40.58	21.19	270.0	0.0	15.00	12.00	-	8.00	-	-	39	603	642
											Totals:	0	39	603	642

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Transformer	1PH-50KVA	NVE	39.08	23.31	180.0	180.0	640.00	47.00	-	24.00	-	-	352	6,822	7,175
											Totals:	0	352	6,822	7,175

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	47.17	6.44	270.0	270.0	53.00	4.50	-	0.00	-	-	168	6,247	6,415
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	44.17	6.67	0.0	0.0	53.00	4.50	-	0.00	-	-	-8	136	127
											Totals:	0	159	6,383	6,542

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 90.0°	Riser	COX	24.67	8.49	90.0	90.0	3.08	296.04	-	2.00	-	-	-25	78	53
											Totals:	0	-25	78	53

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	47.36	44.00	351.7	0.0	10.00	9.50	7.50	-	-	-	-21	1,049	1,028
Pin	Pin Insulator - 15 kV	NVE	47.36	31.00	348.3	0.0	10.00	9.50	7.50	-	-	-	-15	1,049	1,034
Pin	Pin Insulator - 15 kV	NVE	47.36	18.00	340.3	0.0	10.00	9.50	7.50	-	-	-	-9	1,049	1,040
Pin	Pin Insulator - 15 kV	NVE	47.36	-18.00	199.7	0.0	10.00	9.50	7.50	-	-	-	9	1,049	1,057
Pin	Pin Insulator - 15 kV	NVE	47.36	-31.00	191.7	0.0	10.00	9.50	7.50	-	-	-	15	1,049	1,064
Pin	Pin Insulator - 15 kV	NVE	47.36	-44.00	188.3	0.0	10.00	9.50	7.50	-	-	-	21	1,049	1,070
Pin	Pin Insulator - 15 kV	NVE	44.36	44.00	81.4	0.0	10.00	9.50	7.50	-	-	-	-56	491	436
Pin	Pin Insulator - 15 kV	NVE	44.36	18.00	69.7	0.0	10.00	9.50	7.50	-	-	-	-24	491	468
Pin	Pin Insulator - 15 kV	NVE	44.36	-18.00	290.3	0.0	10.00	9.50	7.50	-	-	-	21	491	512
Pin	Pin Insulator - 15 kV	NVE	44.36	-44.00	278.6	0.0	10.00	9.50	7.50	-	-	-	52	491	544
Spool	Spool Insulator - 20 kV	NVE	34.42	5.66	270.0	270.0	1.00	2.12	2.50	-	-	-	1	28	29
Spool	Spool Insulator - 20 kV	NVE	30.83	5.93	0.0	0.0	1.00	2.12	2.50	-	-	-	0	25	25
Spool	Spool Insulator - 20 kV	NVE	30.83	5.93	180.0	180.0	1.00	2.12	2.50	-	-	-	0	25	25
Spool	Spool Insulator - 20 kV	NVE	30.67	5.95	90.0	90.0	1.00	2.12	2.50	-	-	-	-1	25	24
Spool	Spool Insulator - 20 kV	NVE	30.67	5.95	270.0	270.0	1.00	2.12	2.50	-	-	-	1	25	26
Bolt	Single Bolt	EXT	26.67	6.25	90.0	90.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Single Bolt	EXT	26.67	6.25	270.0	270.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Single Bolt	EXT	26.00	6.30	200.0	200.0	5.00	0.00	3.00	-	-	-	3	0	3
Bolt	Three Bolt	COX	25.17	6.36	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	23.42	6.50	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Single Bolt	CTL	22.83	6.54	0.0	0.0	5.00	0.00	3.00	-	-	-	-1	0	-1
Bolt	Single Bolt	CTL	22.83	6.54	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	22.25	6.59	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	21.50	6.64	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	21.17	6.67	270.0	270.0	5.00	0.00	3.00	-	-	-	6	0	6
Bolt	Three Bolt	CTL	19.42	6.80	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	8	8,388	8,397

Guy Wire and Brace:		Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Dia. (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
Guy 1: EHS 1/4	Span/Head	NVE	39.08	39.08	111.00	0.250	75.0	0.0	0.0	0.121	110.56	0.77
Guy 2: EHS 1/4	Span/Head	NVE	30.17	30.17	89.00	0.250	75.0	180.0	0.0	0.121	88.50	0.33
Guy 3: EHS 5/16	Sidewalk	EXT	26.00	-	6.17	0.312	75.0	0.0	64.1	0.205	27.16	1.67

Guy Wire and Brace (Loads and Reactions)		Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Required Tension[1] (lbs)	Required Tension[2] (lbs)	Applied Tension[3] (lbs)	Vertical Load[3] (lbs)	Shear Load in Guy Dir[3] (lbs)	Shear Load at Report Angle[3] (lbs)	Moment at GL[3] (ft-lb)*
Guy 1: EHS 1/4	Span/Head	23,000,000	6,650	0.90	5,985	700	4,649	2,818	492	0	492	-93	-2,645

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Guy 2: EHS 1/4	Span/Head	23,000,000	6,650	0.90	5,985	700	2,973	1,802	264	0	264	50	2,122
Guy 3: EHS 5/16	Sidewalk	23,000,000	11,200	0.90	10,080	700	12,125	7,348	7,138	6,418	3,123	-590	-7,734
									Totals:	6,418	3,880	-633	-8,257

Anchor/Rod Load Summary:

	Owner	Rod Length AGL (in)	Rod Diameter (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2]
GUY POLE	NVE	0.00	1.000	111.00	0.0	25,000	1.00	25,000	2,818	492	11.3
GUY POLE	NVE	0.00	1.000	89.00	180.0	25,000	1.00	25,000	1,802	264	7.2
Single - 12" - Soil Class 4	EXT	0.00	1.000	6.17	0.0	25,000	1.00	25,000	7,348	7,138	29.4

Pole Buckling

Buckling [illegible]	Buckling [illegible] (ft)	Buckling Section [illegible] (% Buckling Col. Hgt.)	Buckling [illegible] (in)	Min. Buckling [illegible] (in)	Diameter [illegible] (in)	Diameter [illegible] (in)	Modulus of [illegible] (psi)	Pole [illegible] (pcf)	Ice [illegible] (pcf)	Pole Tip [illegible] (ft)	Buckling Load [illegible] (lbs)	Buckling Load [illegible] (lbs)	Buckling Load [illegible]
0.71	27.84	33.83	15.12	24.81	9.24	16.56	1,000,000	50.00	57.00	48.20	295,030	17,160	17.19

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

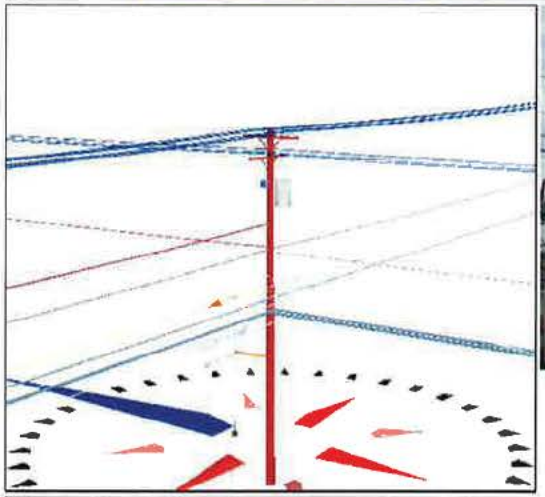
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Monday, August 11, 2014 4:55:32 PM

File Name:	1 - p9542 Proposed	Pole Length / Class:	55 / H1	Code:	NESC	Structure Type:	Guyed
Pole Num:	1 - p9542	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	6.80	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	52.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.65
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	141.2%	0.0 ft	267.0°
Groundline:	141.2%	0.0 ft	267.0°
Vertical:	5.8%	27.8 ft	180.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	201,286 ft-lb	259.1°	267.0°
Groundline:	201,286 ft-lb	259.1°	267.0°

Guys Capacity Summary: Strut Fail

Guy Summary		Guy Tensions		Maximum Guy Tensions	
	Attach Height (ft)	% Allowable Tension	Wind Angle	% Allowable Tension	Wind Angle
Guy 1	39.1	47.1%	267.0°	77.7%	170.0°
Guy 2	30.2	30.1%	267.0°	49.7%	350.0°
Guy 3	26.0	72.9%	267.0°	120.3%	240.0°

Anchor Summary

	Lead Length (ft)	Lead Angle	Max. % Allow. Capacity
Anchor 1	111.0	0.0°	11.3%
Anchor 2	89.0	180.0°	7.2%
Anchor 3	6.2	0.0°	29.4%

Strut Summary

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

	Attach Height (ft)	Lead Angle	% Allowed Capacity
Strut 1	13.7	0.0°	121.6%

GROUNDLINE LOAD SUMMARY:*Wind at 267.0°, Applied Moment 201,286 ft-lb at 259.1°, Allowable Moment 144,692 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	2,828	40.8	103,104	51.2	71.3	2,779	983	5	2,784	71.4
Comms:	2,425	35.0	58,451	29.0	40.4	1,575	1,562	7	1,583	40.6
Guys/Braces:	9	0.1	-8,257	-4.1	-5.7	-223	9,650	45	-178	-4.6
Generic Equipment:	15	0.2	642	0.3	0.4	17	22	0	17	0.4
Power Equipment:	175	2.5	7,174	3.6	5.0	193	960	4	198	5.1
Pole:	1,154	16.7	25,178	12.5	17.4	679	3,365	16	694	17.8
Crossarms:	136	2.0	6,542	3.3	4.5	176	238	1	177	4.5
Risers:	5	0.1	53	0.0	0.0	1	56	0	2	0.0
Insulators:	181	2.6	8,397	4.2	5.8	226	330	2	228	5.8
Pole Load:	6,926	100.0	201,286	100.0	139.1	5,425	17,166	80	5,505	141.2
Pole Reserve Capacity:			-56,594		-39.1	-1,525			-1,605	-41.2

LOAD SUMMARY BY OWNER

NVE:	4,489	150,489	4,056	5,828	27	4,083	104.7
EXT:	1,322	26,483	714	9,702	45	759	19.5
COX:	8	135	4	142	1	4	0.1
CTL:	1,107	24,178	652	1,493	7	659	16.9
Totals	6,926	201,286	5,425	17,166	80	5,505	141.2

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,443	-36	24	-142,455
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,443	-45	31	142,429
Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,443	-25	24	-142,444
Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,443	-32	31	142,442
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,443	-15	24	-142,434
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,443	-18	31	142,455
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,443	15	24	-142,404
Primary	4/0 COPPER 7 STRAND	NVE	48.15	18.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,443	18	31	142,492
Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,443	25	24	-142,393

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

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Primary	4/0 COPPER 7 STRAND	NVE	48.15	31.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,443	32	31	142,506
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.10	0.654	106.0	90.0	106.0	1,825	-142,443	36	24	-142,383
Primary	4/0 COPPER 7 STRAND	NVE	48.15	44.00	0.5217	1.57	0.654	133.0	270.0	133.0	1,825	142,443	45	31	142,519
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,404	-97	3,071	-13,431
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,404	-78	2,462	18,788
Neutral	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,404	-41	3,071	-13,375
Neutral	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,404	-33	2,462	18,833
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,404	36	3,071	-13,297
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	19.20	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,404	29	2,462	18,895
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.55	0.316	111.0	0.0	111.0	1,165	-16,404	92	3,071	-13,241
Primary	AAC 336.4 KCM 19 STRAND	NVE	45.15	44.50	0.6660	1.18	0.316	89.0	180.0	89.0	1,165	16,404	74	2,462	18,939
Secondary	TRIPLEX 1/0	NVE	34.42	7.91	1.0300	1.64	0.399	133.0	270.0	133.0	1,507	84,046	26	43	84,115
Secondary	TRIPLEX 4 AWG	NVE	30.83	8.18	0.6800	1.37	0.164	111.0	0.0	111.0	585	-5,621	-2	2,139	-3,484
Neutral	#6 COPPER SOLID	NVE	30.83	8.18	0.1620	0.99	0.079	106.0	90.0	106.0	275	-13,737	1	5	-13,732
Neutral	#6 COPPER SOLID	NVE	30.83	8.18	0.1620	1.46	0.079	133.0	270.0	133.0	275	13,737	1	6	13,744
Neutral	#4 COPPER 3 STRAND	NVE	30.67	8.20	0.2543	1.16	0.128	106.0	90.0	106.0	420	-20,872	-7	8	-20,871
Neutral	#4 COPPER 3 STRAND	NVE	30.67	8.20	0.2543	1.64	0.128	133.0	270.0	133.0	420	20,872	9	10	20,890
											Totals:	78,425	8	24,671	103,104

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	26.67	8.75	0.2500	0.46	0.121	106.0	90.0	106.0	1,500	-64,820	-7	8	-64,818
Telco	24ct Fiber	EXT	26.64	8.75	0.3900	-	0.049	106.0	90.0	106.0		0	-3	8	6
Bundle	1/4" EHS	EXT	26.67	8.75	0.2500	0.72	0.121	133.0	270.0	133.0	1,500	64,820	9	11	64,839
Telco	24ct Fiber	EXT	26.64	8.75	0.3900	-	0.049	133.0	270.0	133.0		0	4	11	14
Bundle	1/4" EHS	EXT	26.00	8.80	0.2500	0.33	0.121	89.0	200.0	89.0	1,500	33,035	3	561	33,599
Telco	24ct Fiber	EXT	25.98	8.80	0.3900	-	0.049	89.0	200.0	89.0		0	1	561	562
Bundle	1/4" EHS	COX	25.17	8.86	0.2500	0.93	0.121	106.0	90.0	106.0	1,500	-61,174	1	8	-61,165
Telco	P3-500CA	COX	25.15	8.77	0.5000	-	0.072	106.0	90.0	106.0		0	1	8	8
Telco	P3-750CA	COX	25.14	9.02	0.7500	-	0.161	106.0	90.0	106.0		0	2	8	10
Telco	24ct Fiber	COX	25.12	8.84	0.3900	-	0.049	106.0	90.0	106.0		0	1	8	8
Bundle	1/4" EHS	COX	25.17	8.86	0.2500	1.53	0.121	133.0	270.0	133.0	1,500	61,174	2	10	61,186
Telco	P3-500CA	COX	25.15	8.97	0.5000	-	0.072	133.0	270.0	133.0		0	1	10	11
Telco	P3-750CA	COX	25.14	8.73	0.7500	-	0.161	133.0	270.0	133.0		0	2	10	12
Telco	48ct Fiber	COX	25.10	8.87	0.5130	-	0.121	133.0	270.0	133.0		0	2	10	11
Bundle	5/16" EHS	CTL	23.42	9.00	0.3125	2.01	0.205	106.0	90.0	106.0	1,500	-56,921	2	20	-56,898
Telco	26 GA 600 PR (1.52)	CTL	23.35	9.00	1.5200	-	1.330	106.0	90.0	106.0		0	15	20	35
Bundle	5/16" EHS	CTL	23.42	9.00	0.3125	3.15	0.205	133.0	270.0	133.0	1,500	56,921	3	20	56,944
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	23.40	8.89	0.5160	-	0.097	133.0	270.0	133.0		0	1	20	21
Telco	26 GA 600 PR (1.52)	CTL	23.36	9.26	1.5200	-	1.330	133.0	270.0	133.0		0	26	20	45

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

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Bundle	3/8" EHS	CTL	22.83	9.04	0.3750	0.67	0.273	111.0	0.0	111.0	1,500	-10,673	-3	980	-9,697
Bundle	3/8" EHS	CTL	22.83	9.04	0.3750	0.44	0.273	69.0	180.0	69.0	1,500	10,673	3	786	11,461
Bundle	3/8" EHS	CTL	22.25	9.09	0.3750	0.61	0.273	106.0	90.0	106.0	1,500	-54,077	3	9	-54,065
Bundle	3/8" EHS	CTL	22.25	9.09	0.3750	0.92	0.273	133.0	270.0	133.0	1,500	54,077	4	11	54,093
Bundle	1/4" EHS	CTL	21.50	9.14	0.2500	0.26	0.121	106.0	90.0	106.0	1,500	-52,255	1	6	-52,247
Bundle	1/4" EHS	CTL	21.50	9.14	0.2500	6.78	0.121	133.0	270.0	133.0	1,500	52,255	2	38	52,294
Telco	19 GA 400 PR (2.73)	CTL	21.38	9.14	2.7300	-	4.172	133.0	270.0	133.0		0	60	38	98
Bundle	1/4" EHS	CTL	21.50	9.14	0.2500	3.19	0.121	89.0	180.0	89.0	1,500	10,052	1	2,545	12,598
Telco	19 GA 400 PR (2.73)	CTL	21.38	9.14	2.7300	-	4.172	89.0	180.0	89.0		0	40	2,532	2,572
Bundle	1/4" EHS	CTL	21.17	9.17	0.2500	3.19	0.121	89.0	180.0	89.0	1,500	9,897	6	2,506	12,410
Telco	19 GA 400 PR (2.73)	CTL	21.05	9.17	2.7300	-	4.172	89.0	180.0	89.0		0	209	2,493	2,701
Bundle	1/4" EHS	CTL	21.17	9.17	0.2500	0.61	0.121	111.0	0.0	111.0	1,500	-9,897	8	829	-9,061
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.14	9.17	0.5160	-	0.097	111.0	0.0	111.0		0	6	828	834
Bundle	1/4" EHS	CTL	19.42	9.30	0.2500	0.76	0.121	106.0	90.0	106.0	1,500	-47,199	1	7	-47,191
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	19.40	9.40	0.5160	-	0.097	106.0	90.0	106.0		0	1	7	8
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	19.40	9.21	0.5160	-	0.097	106.0	90.0	106.0		0	1	7	7
Bundle	1/4" EHS	CTL	19.42	9.30	0.2500	0.40	0.121	133.0	270.0	133.0	1,500	47,199	2	7	47,208
											Totals:	43,087	409	14,955	58,451

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	40.58	21.19	270.0	0.0	15.00	12.00	-	8.00	-	-	39	603	642
											Totals:	0	39	603	642

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Transformer	1PH-50KVA	NVE	39.08	23.31	180.0	180.0	640.00	47.00	-	24.00	-	-	352	6,822	7,174
											Totals:	0	352	6,822	7,174

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	47.17	6.44	270.0	270.0	53.00	4.50	-	0.00	-	-	168	6,247	6,415
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	44.17	6.67	0.0	0.0	53.00	4.50	-	0.00	-	-	-8	136	127
											Totals:	0	159	6,383	6,542

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 90.0°	Riser	COX	24.67	8.49	90.0	90.0	3.08	296.04	-	2.00	-	-	-25	78	53
											Totals:	0	-25	78	53

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

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Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	47.36	44.00	351.7	0.0	10.00	9.50	7.50	-	-	-	-21	1,049	1,028
Pin	Pin Insulator - 15 kV	NVE	47.36	31.00	348.3	0.0	10.00	9.50	7.50	-	-	-	-15	1,049	1,034
Pin	Pin Insulator - 15 kV	NVE	47.36	18.00	340.3	0.0	10.00	9.50	7.50	-	-	-	-9	1,049	1,040
Pin	Pin Insulator - 15 kV	NVE	47.36	-18.00	199.7	0.0	10.00	9.50	7.50	-	-	-	9	1,049	1,057
Pin	Pin Insulator - 15 kV	NVE	47.36	-31.00	191.7	0.0	10.00	9.50	7.50	-	-	-	15	1,049	1,064
Pin	Pin Insulator - 15 kV	NVE	47.36	-44.00	188.3	0.0	10.00	9.50	7.50	-	-	-	21	1,049	1,070
Pin	Pin Insulator - 15 kV	NVE	44.36	44.00	81.4	0.0	10.00	9.50	7.50	-	-	-	-56	491	436
Pin	Pin Insulator - 15 kV	NVE	44.36	18.00	69.7	0.0	10.00	9.50	7.50	-	-	-	-24	491	468
Pin	Pin Insulator - 15 kV	NVE	44.36	-18.00	290.3	0.0	10.00	9.50	7.50	-	-	-	21	491	512
Pin	Pin Insulator - 15 kV	NVE	44.36	-44.00	278.6	0.0	10.00	9.50	7.50	-	-	-	52	491	544
Spool	Spool Insulator - 20 kV	NVE	34.42	5.66	270.0	270.0	1.00	2.12	2.50	-	-	-	1	28	29
Spool	Spool Insulator - 20 kV	NVE	30.83	5.93	0.0	0.0	1.00	2.12	2.50	-	-	-	0	25	25
Spool	Spool Insulator - 20 kV	NVE	30.83	5.93	180.0	180.0	1.00	2.12	2.50	-	-	-	0	25	25
Spool	Spool Insulator - 20 kV	NVE	30.67	5.95	90.0	90.0	1.00	2.12	2.50	-	-	-	-1	25	24
Spool	Spool Insulator - 20 kV	NVE	30.67	5.95	270.0	270.0	1.00	2.12	2.50	-	-	-	1	25	26
Bolt	Single Bolt	EXT	26.67	6.25	90.0	90.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Single Bolt	EXT	26.67	6.25	270.0	270.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Single Bolt	EXT	26.00	6.30	200.0	200.0	5.00	0.00	3.00	-	-	-	3	0	3
Bolt	Three Bolt	COX	25.17	6.36	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	23.42	6.50	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Single Bolt	CTL	22.83	6.54	0.0	0.0	5.00	0.00	3.00	-	-	-	-1	0	-1
Bolt	Single Bolt	CTL	22.83	6.54	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	22.25	6.59	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	21.50	6.64	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	21.17	6.67	270.0	270.0	5.00	0.00	3.00	-	-	-	6	0	6
Bolt	Three Bolt	CTL	19.42	6.80	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	8	8,389	8,397

Guy Wire and Brace:		Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Dia. (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
Guy 1: EHS 1/4	Span/Head	NVE	39.08	39.08	111.00	0.250	75.0	0.0	0.0	0.121	110.56	0.77
Guy 2: EHS 1/4	Span/Head	NVE	30.17	30.17	89.00	0.250	75.0	180.0	0.0	0.121	88.50	0.33
Guy 3: EHS 5/16	Sidewalk	EXT	26.00	-	6.17	0.312	75.0	0.0	64.1	0.205	27.16	1.67

Guy Wire and Brace (Loads and Reactions)		Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Required Tension[1] (lbs)	Required Tension[2] (lbs)	Applied Tension[3] (lbs)	Vertical Load[3] (lbs)	Shear Load in Guy Dir[3] (lbs)	Shear Load at Report Angle[3] (lbs)	Moment at GL[3] (ft-lb)*
Guy 1: EHS 1/4	Span/Head	23,000,000	6,650	0.90	5,985	700	4,649	2,818	494	0	494	-93	-2,650

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Guy 2: EHS 1/4	Span/Head	23,000,000	6,650	0.90	5,985	700	2,973	1,802	264	0	264	50	2,115
Guy 3: EHS 5/16	Sidewalk	23,000,000	11,200	0.90	10,080	700	12,125	7,348	7,132	6,413	3,121	-590	-7,722
									Totals:	6,413	3,878	-633	-8,257

Anchor/Rod Load Summary:

	Owner	Rod Length AGL (in)	Rod Diameter (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2]
GUY POLE	NVE	0.00	1.000	111.00	0.0	25,000	1.00	25,000	2,818	494	11.3
GUY POLE	NVE	0.00	1.000	89.00	180.0	25,000	1.00	25,000	1,802	264	7.2
Single - 12" - Soil Class 4	EXT	0.00	1.000	6.17	0.0	25,000	1.00	25,000	7,348	7,132	29.4

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
0.71	27.84	33.63	15.12	24.81	9.24	16.56	1,000,000	50.00	57.00	48.20	295,059	17,166	17.19

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 267.0°

(Guy LF)

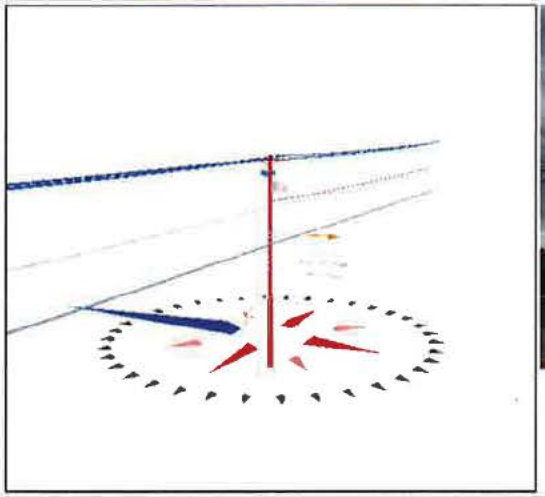
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Monday, August 11, 2014 5:35:27 PM

File Name:	**2 - p9541 Existing**	Pole Length / Class:	**50 / 1**	Code:	**NESC**	Structure Type:	**Guyed**
Pole Num:	**2 - p9541**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**7.50**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**50.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.65**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**87.2%**	0.0 ft	179.3°
Groundline:	**87.2%**	0.0 ft	179.3°
Vertical:	**5.0%**	20.9 ft	90.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**108,289 ft-lb**	174.1°	179.3°
Groundline:	**108,289 ft-lb**	174.1°	179.3°

Guys Capacity Summary: Near Cap

Guy Summary		Guy Tensions		Maximum Guy Tensions	
	Attach Height (ft)	% Allowable Tension	Wind Angle	% Allowable Tension	Wind Angle
Guy 1	19.8	**91.4%**	179.3°	**150.8%**	90.0°
Guy 2	18.3	**85.4%**	179.3°	**141.0%**	90.0°
Guy 3	16.7	**73.7%**	179.3°	**121.6%**	90.0°

Anchor Summary

	Lead Length (ft)	Lead Angle	Max. % Allow. Capacity
Anchor 1	17.0	270.0°	**74.9%**

GROUNDLINE LOAD SUMMARY:*Wind at 179.3°, Applied Moment 108,289 ft-lb at 174.1°, Allowable Moment 128,630 ft-lb

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 179.3°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	1,240	33.0	**47,991**	44.3	**37.3**	**1,455**	842	4	**1,459**	**37.4**
Comms:	2,223	59.2	**47,996**	44.3	**37.3**	**1,455**	1,016	5	**1,460**	**37.4**
Guys/Braces:	-1,074	-28.6	**-20,605**	-19.0	**-16.0**	**-625**	18,011	91	**-534**	**-13.7**
Generic Equipment:	45	1.2	**1,683**	1.6	**1.3**	**51**	68	0	**51**	**1.3**
Power Equipment:	128	3.4	**5,586**	5.2	**4.3**	**169**	525	3	**172**	**4.4**
Pole:	973	25.9	**18,609**	17.2	**14.5**	**564**	2,689	14	**578**	**14.8**
Crossarms:	5	0.1	**194**	0.2	**0.2**	**6**	159	1	**7**	**0.2**
Risers:	101	2.7	**1,938**	1.8	**1.5**	**59**	65	0	**59**	**1.5**
Insulators:	113	3.0	**4,897**	4.5	**3.8**	**148**	165	1	**149**	**3.8**
Pole Load:	3,754	100.0	**108,289**	100.0	**84.2**	**3,283**	23,538	118	**3,402**	**87.2**
Pole Reserve Capacity:			**20,341**		**15.8**	**617**			**498**	**12.8**

LOAD SUMMARY BY OWNER

NVE:	2,605		**80,881**			**2,452**	4,466	22	**2,475**	**63.5**
ETX:	158		**3,980**			**121**	41	0	**121**	**3.1**
COX:	404		**9,722**			**295**	94	0	**295**	**7.6**
CTL:	587		**13,705**			**416**	18,938	95	**511**	**13.1**
Totals	3,754		**108,289**			**3,283**	23,538	118	**3,402**	**87.2**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	41.41	47.88	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-12,802	-22	2,538	-10,285
Primary	4/0 COPPER 7 STRAND	NVE	41.41	36.30	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-12,802	-20	2,538	-10,284
Primary	4/0 COPPER 7 STRAND	NVE	41.41	26.09	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-12,802	-17	2,538	-10,281
Primary	4/0 COPPER 7 STRAND	NVE	41.41	47.88	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	12,802	-21	2,679	15,460
Primary	4/0 COPPER 7 STRAND	NVE	41.41	36.30	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	12,802	-19	2,679	15,462
Primary	4/0 COPPER 7 STRAND	NVE	41.41	26.09	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	12,802	-15	2,679	15,466
Primary	4/0 COPPER 7 STRAND	NVE	42.48	18.00	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-13,140	92	2,605	-10,443
Primary	4/0 COPPER 7 STRAND	NVE	42.48	18.00	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	13,140	97	2,750	15,987
Primary	4/0 COPPER 7 STRAND	NVE	42.48	31.00	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-13,140	159	2,605	-10,376
Primary	4/0 COPPER 7 STRAND	NVE	42.48	31.00	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	13,140	168	2,750	16,057
Primary	4/0 COPPER 7 STRAND	NVE	42.48	44.00	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-13,140	225	2,605	-10,310
Primary	4/0 COPPER 7 STRAND	NVE	42.48	44.00	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	13,140	238	2,750	16,128
Secondary	TRIPLEX 1/0	NVE	32.00	7.45	1.0300	1.57	0.399	133.0	90.0	133.0	1,507	8,170	3	4,088	12,260
Neutral	#6 COPPER SOLID	NVE	31.08	7.53	0.1620	0.91	0.079	126.0	270.0	126.0	275	-1,448	5	592	-852

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 179.3°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Neutral	#6 COPPER SOLID	NVE	31.08	7.53	0.1620	1.01	0.079	133.0	90.0	133.0	275	1,448	5	624	2,077
Neutral	#4 COPPER 3 STRAND	NVE	31.08	7.53	0.2543	1.18	0.128	126.0	270.0	126.0	420	-2,211	8	929	-1,275
Neutral	#4 COPPER 3 STRAND	NVE	31.08	7.53	0.2543	1.29	0.128	133.0	90.0	133.0	420	2,211	8	980	3,200
											Totals:	8,170	893	38,929	47,991

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	ETX	25.00	8.30	0.2500	0.28	0.121	126.0	270.0	126.0	1,500	-6,353	8	962	-5,383
Telco	24ct Fiber	ETX	24.98	8.30	0.3900	-	0.049	126.0	270.0	126.0		0	3	961	964
Bundle	1/4" EHS	ETX	25.00	8.30	0.2500	0.31	0.121	133.0	90.0	133.0	1,500	6,353	8	1,015	7,377
Telco	24ct Fiber	ETX	24.98	8.30	0.3900	-	0.049	133.0	90.0	133.0		0	3	1,014	1,018
Bundle	1/4" EHS	COX	23.92	8.40	0.2500	0.72	0.121	126.0	270.0	126.0	1,500	-6,078	8	1,433	-4,637
Telco	P3-750CA	COX	23.89	8.55	0.7500	-	0.161	126.0	270.0	126.0		0	11	1,431	1,442
Telco	P3-750CA	COX	23.89	8.26	0.7500	-	0.161	126.0	270.0	126.0		0	10	1,431	1,442
Bundle	1/4" EHS	COX	23.92	8.40	0.2500	0.80	0.121	133.0	90.0	133.0	1,500	6,078	8	1,789	7,875
Telco	P3-750CA	COX	23.89	8.55	0.7500	-	0.161	133.0	90.0	133.0		0	11	1,786	1,798
Telco	P3-750CA	COX	23.89	8.26	0.7500	-	0.161	133.0	90.0	133.0		0	11	1,786	1,797
Bundle	1/4" EHS	CTL	22.58	8.51	0.2500	6.01	0.121	126.0	270.0	126.0	1,500	-5,738	8	2,877	-2,852
Telco	19 GA 400 PR (2.73)	CTL	22.48	8.98	2.7300	-	4.172	126.0	270.0	126.0		0	288	2,865	3,153
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	22.56	8.41	0.5160	-	0.097	126.0	270.0	126.0		0	6	2,875	2,881
Bundle	1/4" EHS	CTL	22.58	8.51	0.2500	6.68	0.121	133.0	90.0	133.0	1,500	5,738	9	3,037	8,784
Telco	19 GA 400 PR (2.73)	CTL	22.48	8.98	2.7300	-	4.172	133.0	90.0	133.0		0	304	3,024	3,329
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	22.56	8.41	0.5160	-	0.097	133.0	90.0	133.0		0	7	3,034	3,041
Bundle	5/16" EHS	CTL	19.75	8.76	0.3125	0.42	0.205	133.0	90.0	133.0	1,500	5,019	2	858	5,879
Bundle	1/4" EHS	CTL	18.25	8.89	0.2500	0.22	0.121	133.0	90.0	133.0	1,500	4,638	1	634	5,273
Bundle	1/4" EHS	CTL	16.67	9.02	0.2500	0.22	0.121	133.0	90.0	133.0	1,500	4,236	1	580	4,817
											Totals:	13,892	708	33,396	47,996

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	38.42	20.65	0.0	0.0	15.00	12.00	-	8.00	-	-	-39	574	535
Box	Fuse Cutout	NVE	38.42	20.65	90.0	0.0	15.00	12.00	-	8.00	-	-	4	574	578
Box	Fuse Cutout	NVE	38.42	20.65	270.0	0.0	15.00	12.00	-	8.00	-	-	-4	574	570
											Totals:	0	-39	1,722	1,683

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	1200 KVAR Cap Bank	NVE	35.58	27.39	180.0	180.0	350.00	25.00	-	33.00	-	-	1,018	4,568	5,586
											Totals:	0	1,018	4,568	5,586

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 179.3°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	41.50	6.13	270.0	270.0	53.00	4.50	-	0.00	-	-	-17	210	194
											Totals:	0	-17	210	194

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 250.0°	Riser	NVE	28.67	8.26	250.0	250.0	3.58	344.04	-	2.00	-	-	7	1,932	1,938
											Totals:	0	7	1,932	1,938

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Deadend	Deadend Insulator - 15 kV	NVE	41.50	44.00	352.1	0.0	3.00	12.75	3.80	-	-	-	-17	313	296
Deadend	Deadend Insulator - 15 kV	NVE	41.50	31.00	348.8	0.0	3.00	12.75	3.80	-	-	-	-12	313	301
Deadend	Deadend Insulator - 15 kV	NVE	41.50	18.00	341.2	0.0	3.00	12.75	3.80	-	-	-	-7	313	305
Deadend	Deadend Insulator - 15 kV	NVE	41.50	44.00	7.9	180.0	3.00	12.75	3.80	-	-	-	-16	313	297
Deadend	Deadend Insulator - 15 kV	NVE	41.50	31.00	11.2	180.0	3.00	12.75	3.80	-	-	-	-11	313	302
Deadend	Deadend Insulator - 15 kV	NVE	41.50	18.00	18.8	180.0	3.00	12.75	3.80	-	-	-	-6	313	307
Pin	Pin Insulator - 15 kV	NVE	41.69	-18.00	198.8	0.0	10.00	9.50	7.50	-	-	-	45	929	974
Pin	Pin Insulator - 15 kV	NVE	41.69	-31.00	191.2	0.0	10.00	9.50	7.50	-	-	-	77	929	1,006
Pin	Pin Insulator - 15 kV	NVE	41.69	-44.00	187.9	0.0	10.00	9.50	7.50	-	-	-	109	929	1,038
Spool	Spool Insulator - 20 kV	NVE	32.00	5.20	90.0	90.0	1.00	2.12	2.50	-	-	-	0	26	26
Spool	Spool Insulator - 20 kV	NVE	31.08	5.28	180.0	180.0	1.00	2.12	2.50	-	-	-	1	26	27
Bolt	Three Bolt	ETX	25.00	5.80	180.0	180.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Three Bolt	COX	23.92	5.90	180.0	180.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Three Bolt	CTL	22.58	6.01	180.0	180.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Single Bolt	CTL	19.75	6.26	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Single Bolt	CTL	18.25	6.39	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Single Bolt	CTL	16.67	6.52	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	180	4,716	4,897

Guy Wire and Brace:		Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Dia. (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
Guy 1: EHS 5/16	Down	CTL	19.75	-	17.00	0.312	75.0	270.0	49.3	0.205	25.72	1.84
Guy 2: EHS 1/4	Down	CTL	18.25	-	17.00	0.250	75.0	270.0	47.0	0.121	24.58	1.53
Guy 3: EHS 1/4	Down	CTL	16.67	-	17.00	0.250	75.0	270.0	44.4	0.121	23.42	1.26

Guy Wire and Brace (Loads and Reactions)	Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Required Tension[1] (lbs)	Required Tension[2] (lbs)	Applied Tension[3] (lbs)	Vertical Load[3] (lbs)	Shear Load in Guy Dir[3] (lbs)	Shear Load at Report Angle[3] (lbs)	Moment at GL[3] (ft-lb)*

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 179.3°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Guy 1: EHS 5/16	Down	23,000,000	11,200	0.90	10,080	700	15,205	9,215	7,890	5,980	5,147	-528	-10,426
Guy 2: EHS 1/4	Down	23,000,000	6,650	0.90	5,985	700	8,438	5,114	4,381	3,206	2,986	-307	-5,573
Guy 3: EHS 1/4	Down	23,000,000	6,650	0.90	5,985	700	7,276	4,410	3,782	2,648	2,700	-277	-4,607
									Totals:	11,833	10,834	-1,112	-20,605

Anchor/Rod Load Summary:

	Owner	Rod Length AGL (in)	Rod Diameter (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2]
Single - 12" - Soil Class 4	CTL	0.00	1.000	17.00	270.0	25,000	1.00	25,000	18,727	16,043	74.9

Pole Buckling

Buckling Constant	Buckling Out of Plane Hgt (ft)	Buckling Section Height (% Buckling Col. Hgt.)	Buckling Section Diam. (in)	Min. Buckling Diam. at Ctr (in)	Diameter at Top (in)	Diameter at Ctr (in)	Modulus of Elasticity (psi)	Pole Density (pcf)	Ice Density (pcf)	Pole Tip Height (ft)	Buckling Load Capacity at Hgt (lbs)	Buckling Load Applied at Hgt (lbs)	Buckling Load Factor of Safety
0.71	20.93	33.40	14.71	25.13	8.60	15.92	1,000,000	50.00	57.00	42.50	467,707	23,538	19.87

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 179.3°

(Guy LF)

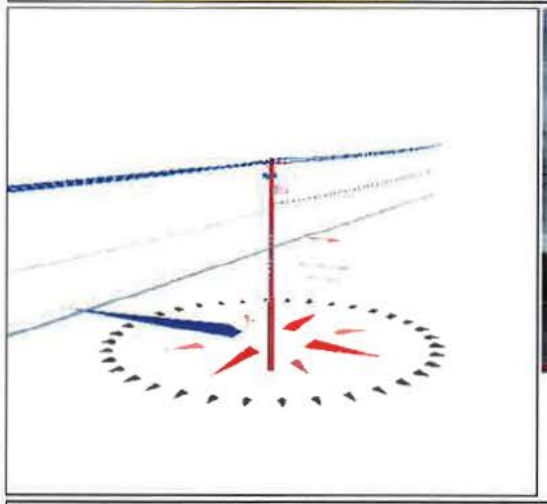
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Monday, August 11, 2014 5:34:53 PM

File Name:	2 - p9541 Proposed	Pole Length / Class:	50 / 1	Code:	NESC	Structure Type:	Guyed
Pole Num:	2 - p9541	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	7.50	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	50.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.65
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	87.2%	0.0 ft	180.0°
Groundline:	87.2%	0.0 ft	180.0°
Vertical:	5.0%	20.9 ft	90.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	108,301 ft-lb	174.1°	180.0°
Groundline:	108,301 ft-lb	174.1°	180.0°

Guys Capacity Summary: Near Cap

Guy Summary		Guy Tensions		Maximum Guy Tensions	
	Attach Height (ft)	% Allowable Tension	Wind Angle	% Allowable Tension	Wind Angle
Guy 1	19.8	91.4%	180.0°	150.8%	90.0°
Guy 2	18.3	85.4%	180.0°	141.0%	90.0°
Guy 3	16.7	73.7%	180.0°	121.6%	90.0°

Anchor Summary

	Lead Length (ft)	Lead Angle	Max. % Allow. Capacity
Anchor 1	17.0	270.0°	74.9%

GROUNDLINE LOAD SUMMARY:*Wind at 180.0°, Applied Moment 108,301 ft-lb at 174.1°, Allowable Moment 128,630 ft-lb

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	1,240	33.0	**48,000**	44.3	**37.3**	**1,455**	842	4	**1,460**	**37.4**
Comms:	2,224	59.2	**48,020**	44.3	**37.3**	**1,456**	1,040	5	**1,461**	**37.5**
Guys/Braces:	-1,073	-28.6	**-20,572**	-19.0	**-16.0**	**-624**	17,970	90	**-533**	**-13.7**
Generic Equipment:	45	1.2	**1,681**	1.6	**1.3**	**51**	68	0	**51**	**1.3**
Power Equipment:	128	3.4	**5,580**	5.2	**4.3**	**169**	525	3	**172**	**4.4**
Pole:	971	25.9	**18,587**	17.2	**14.4**	**564**	2,689	14	**577**	**14.8**
Crossarms:	5	0.1	**186**	0.2	**0.1**	**6**	159	1	**6**	**0.2**
Risers:	100	2.7	**1,928**	1.8	**1.5**	**58**	65	0	**59**	**1.5**
Insulators:	113	3.0	**4,891**	4.5	**3.8**	**148**	165	1	**149**	**3.8**
Pole Load:	3,754	100.0	**108,301**	100.0	**84.2**	**3,284**	23,521	118	**3,402**	**87.2**
Pole Reserve Capacity:			**20,330**		**15.8**	**616**			**498**	**12.8**

LOAD SUMMARY BY OWNER

NVE:	2,603		**80,836**			**2,451**	4,466	22	**2,473**	**63.4**
ETX:	158		**3,981**			**121**	41	0	**121**	**3.1**
COX:	303		**7,309**			**222**	94	0	**222**	**5.7**
<Undefined>:	101		**2,426**			**74**	24	0	**74**	**1.9**
CTL:	589		**13,750**			**417**	18,897	95	**512**	**13.1**
Totals	3,754		**108,301**			**3,284**	23,521	118	**3,402**	**87.2**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	41.41	47.88	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-12,811	-22	2,538	-10,294
Primary	4/0 COPPER 7 STRAND	NVE	41.41	36.30	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-12,811	-20	2,538	-10,293
Primary	4/0 COPPER 7 STRAND	NVE	41.41	26.09	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-12,811	-17	2,538	-10,290
Primary	4/0 COPPER 7 STRAND	NVE	41.41	47.88	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	12,811	-21	2,679	15,469
Primary	4/0 COPPER 7 STRAND	NVE	41.41	36.30	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	12,811	-19	2,679	15,471
Primary	4/0 COPPER 7 STRAND	NVE	41.41	26.09	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	12,811	-15	2,679	15,476
Primary	4/0 COPPER 7 STRAND	NVE	42.48	18.00	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-13,149	92	2,605	-10,452
Primary	4/0 COPPER 7 STRAND	NVE	42.48	18.00	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	13,149	97	2,750	15,997
Primary	4/0 COPPER 7 STRAND	NVE	42.48	31.00	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-13,149	159	2,605	-10,385
Primary	4/0 COPPER 7 STRAND	NVE	42.48	31.00	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	13,149	168	2,750	16,067
Primary	4/0 COPPER 7 STRAND	NVE	42.48	44.00	0.5217	1.29	0.654	126.0	270.0	126.0	1,825	-13,149	225	2,605	-10,319
Primary	4/0 COPPER 7 STRAND	NVE	42.48	44.00	0.5217	1.41	0.654	133.0	90.0	133.0	1,825	13,149	238	2,750	16,137
Secondary	TRIPLEX 1/0	NVE	32.00	7.45	1.0300	1.57	0.399	133.0	90.0	133.0	1,507	8,175	3	4,088	12,266

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Neutral	#6 COPPER SOLID	NVE	31.08	7.53	0.1620	0.91	0.079	126.0	270.0	126.0	275	-1,449	5	592	-853
Neutral	#6 COPPER SOLID	NVE	31.08	7.53	0.1620	1.00	0.079	133.0	90.0	133.0	275	1,449	5	624	2,078
Neutral	#4 COPPER 3 STRAND	NVE	31.08	7.53	0.2543	1.18	0.128	126.0	270.0	126.0	420	-2,213	8	929	-1,277
Neutral	#4 COPPER 3 STRAND	NVE	31.08	7.53	0.2543	1.29	0.128	133.0	90.0	133.0	420	2,213	8	980	3,201
											Totals:	8,175	893	38,932	48,000

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	ETX	25.00	8.30	0.2500	0.27	0.121	126.0	270.0	126.0	1,500	-6,357	8	962	-5,387
Telco	24ct Fiber	ETX	24.98	8.30	0.3900	-	0.049	126.0	270.0	126.0		0	3	961	964
Bundle	1/4" EHS	ETX	25.00	8.30	0.2500	0.31	0.121	133.0	90.0	133.0	1,500	6,357	8	1,015	7,381
Telco	24ct Fiber	ETX	24.98	8.30	0.3900	-	0.049	133.0	90.0	133.0		0	3	1,014	1,018
Bundle	1/4" EHS	COX	23.92	8.40	0.2500	0.89	0.121	126.0	270.0	126.0	1,500	-6,083	8	1,075	-5,000
Telco	P3-750CA	COX	23.89	8.55	0.7500	-	0.161	126.0	270.0	126.0		0	11	1,074	1,084
Telco	P3-750CA	COX	23.89	8.26	0.7500	-	0.161	126.0	270.0	126.0		0	10	1,074	1,084
Telco	48ct Fiber		23.85	8.40	0.5130	-	0.121	126.0	270.0	126.0		0	8	1,072	1,080
Bundle	1/4" EHS	COX	23.92	8.40	0.2500	0.99	0.121	133.0	90.0	133.0	1,500	6,083	8	1,342	7,433
Telco	P3-750CA	COX	23.89	8.55	0.7500	-	0.161	133.0	90.0	133.0		0	11	1,340	1,351
Telco	P3-750CA	COX	23.89	8.26	0.7500	-	0.161	133.0	90.0	133.0		0	11	1,340	1,351
Telco	48ct Fiber		23.85	8.40	0.5130	-	0.121	133.0	90.0	133.0		0	8	1,338	1,346
Bundle	1/4" EHS	CTL	22.58	8.51	0.2500	6.01	0.121	126.0	270.0	126.0	1,500	-5,742	8	2,878	-2,856
Telco	19 GA 400 PR (2.73)	CTL	22.48	8.98	2.7300	-	4.172	126.0	270.0	126.0		0	288	2,865	3,154
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	22.56	8.41	0.5160	-	0.097	126.0	270.0	126.0		0	6	2,875	2,881
Bundle	1/4" EHS	CTL	22.58	8.51	0.2500	6.68	0.121	133.0	90.0	133.0	1,500	5,742	9	3,037	8,788
Telco	19 GA 400 PR (2.73)	CTL	22.48	8.98	2.7300	-	4.172	133.0	90.0	133.0		0	304	3,025	3,329
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	22.56	8.41	0.5160	-	0.097	133.0	90.0	133.0		0	7	3,035	3,041
Bundle	5/16" EHS	CTL	19.75	8.76	0.3125	0.42	0.205	133.0	90.0	133.0	1,500	5,022	2	858	5,882
Bundle	1/4" EHS	CTL	18.25	8.89	0.2500	0.22	0.121	133.0	90.0	133.0	1,500	4,641	1	635	5,276
Bundle	1/4" EHS	CTL	16.67	9.02	0.2500	0.22	0.121	133.0	90.0	133.0	1,500	4,239	1	580	4,820
											Totals:	13,902	725	33,393	48,020

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	38.42	20.65	0.0	0.0	15.00	12.00	-	8.00	-	-	-39	573	535
Box	Fuse Cutout	NVE	38.42	20.65	90.0	0.0	15.00	12.00	-	8.00	-	-	4	573	577
Box	Fuse Cutout	NVE	38.42	20.65	270.0	0.0	15.00	12.00	-	8.00	-	-	-4	573	569
											Totals:	0	-39	1,720	1,681

PowerEquipment:	Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Box	1200 KVAR Cap Bank	NVE	35.58	27.39	180.0	180.0	350.00	25.00	-	33.00	-	-	1,018	4,562	5,580
											Totals:	0	1,018	4,562	5,580

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	41.50	6.13	270.0	270.0	53.00	4.50	-	0.00	-	-	-17	203	186
											Totals:	0	-17	203	186

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 250.0°	Riser	NVE	28.67	8.26	250.0	250.0	3.58	344.04	-	2.00	-	-	7	1,921	1,928
											Totals:	0	7	1,921	1,928

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Deadend	Deadend Insulator - 15 kV	NVE	41.50	44.00	352.1	0.0	3.00	12.75	3.80	-	-	-	-17	313	295
Deadend	Deadend Insulator - 15 kV	NVE	41.50	31.00	348.8	0.0	3.00	12.75	3.80	-	-	-	-12	313	300
Deadend	Deadend Insulator - 15 kV	NVE	41.50	18.00	341.2	0.0	3.00	12.75	3.80	-	-	-	-7	313	305
Deadend	Deadend Insulator - 15 kV	NVE	41.50	44.00	7.9	180.0	3.00	12.75	3.80	-	-	-	-16	313	297
Deadend	Deadend Insulator - 15 kV	NVE	41.50	31.00	11.2	180.0	3.00	12.75	3.80	-	-	-	-11	313	302
Deadend	Deadend Insulator - 15 kV	NVE	41.50	18.00	18.8	180.0	3.00	12.75	3.80	-	-	-	-6	313	307
Pin	Pin Insulator - 15 kV	NVE	41.69	-18.00	198.8	0.0	10.00	9.50	7.50	-	-	-	45	928	973
Pin	Pin Insulator - 15 kV	NVE	41.69	-31.00	191.2	0.0	10.00	9.50	7.50	-	-	-	77	928	1,005
Pin	Pin Insulator - 15 kV	NVE	41.69	-44.00	187.9	0.0	10.00	9.50	7.50	-	-	-	109	928	1,037
Spool	Spool Insulator - 20 kV	NVE	32.00	5.20	90.0	90.0	1.00	2.12	2.50	-	-	-	0	26	26
Spool	Spool Insulator - 20 kV	NVE	31.08	5.28	180.0	180.0	1.00	2.12	2.50	-	-	-	1	26	27
Bolt	Three Bolt	ETX	25.00	5.80	180.0	180.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Three Bolt	COX	23.92	5.90	180.0	180.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Three Bolt	CTL	22.58	6.01	180.0	180.0	5.00	0.00	3.00	-	-	-	5	0	5
Bolt	Single Bolt	CTL	19.75	6.26	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Single Bolt	CTL	18.25	6.39	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Single Bolt	CTL	16.67	6.52	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	180	4,711	4,891

Guy Wire and Brace:		Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Dia. (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
Guy 1: EHS 5/16	Down	CTL	19.75	-	17.00	0.312	75.0	270.0	49.3	0.205	25.72	1.83
Guy 2: EHS 1/4	Down	CTL	18.25	-	17.00	0.250	75.0	270.0	47.0	0.121	24.58	1.52
Guy 3: EHS 1/4	Down	CTL	16.67	-	17.00	0.250	75.0	270.0	44.4	0.121	23.42	1.26

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Guy Wire and Brace (Loads and Reactions)		Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Required Tension[1] (lbs)	Required Tension[2] (lbs)	Applied Tension[3] (lbs)	Vertical Load[3] (lbs)	Shear Load in Guy Dir[3] (lbs)	Shear Load at Report Angle[3] (lbs)	Moment at GL[3] (ft-lb)*
Guy 1: EHS 5/16	Down	23,000,000	11,200	0.90	10,080	700	15,205	9,215	7,862	5,959	5,129	-527	-10,396
Guy 2: EHS 1/4	Down	23,000,000	6,650	0.90	5,985	700	8,438	5,114	4,373	3,200	2,981	-306	-5,566
Guy 3: EHS 1/4	Down	23,000,000	6,650	0.90	5,985	700	7,276	4,410	3,782	2,648	2,700	-277	-4,610
									Totals:	11,806	10,810	-1,111	-20,572

Anchor/Rod Load Summary:	Owner	Rod Length AGL (in)	Rod Diameter (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2]
Single - 12" - Soil Class 4	CTL	0.00	1.000	17.00	270.0	25,000	1.00	25,000	18,727	16,007	74.9

Pole Buckling

Buckling [illegible]	Buckling [illegible] (ft)	Buckling Section [illegible] (% Buckling Col. Hgt.)	Buckling [illegible] (in)	Min. Buckling [illegible] (in)	Diameter [illegible] (in)	Diameter [illegible] (in)	Modulus of [illegible] (psi)	Pole [illegible] (pcf)	Ice [illegible] (pcf)	Pole Tip [illegible] (ft)	Buckling Load [illegible] (lbs)	Buckling Load [illegible] (lbs)	Buckling Load [illegible]
0.71	20.93	33.40	14.71	25.13	8.60	15.92	1,000,000	50.00	57.00	42.50	467,409	23,521	19.87

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

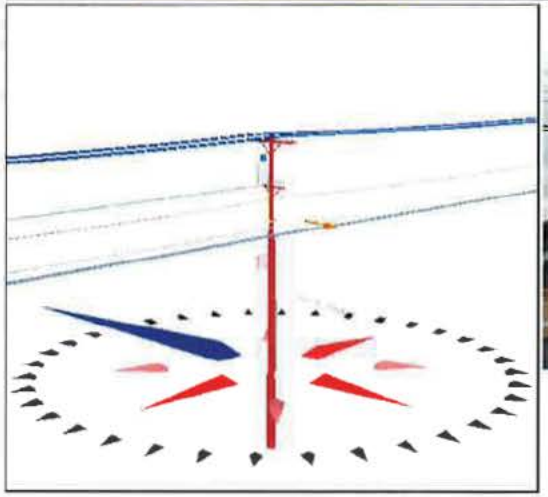
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Monday, August 11, 2014 6:12:09 PM

File Name:	3 - p9574 Existing	Pole Length / Class:	50 / 4	Code:	NESC	Structure Type:	Unguyed
Pole Num:	3 - p9574	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	13.08	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	42.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.10
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	135.8%	0.0 ft	194.8°
Groundline:	135.8%	0.0 ft	194.8°
Vertical:	29.5%	25.2 ft	194.8°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	102,841 ft-lb	213.2°	194.8°
Groundline:	102,841 ft-lb	213.2°	194.8°

GROUNDLINE LOAD SUMMARY:*Wind at 194.8°, Applied Moment 102,841 ft-lb at 213.2°, Allowable Moment 76,240 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	881	21.3	30,518	29.7	40.0	1,561	813	6	1,567	40.2
Comms:	2,068	50.0	47,743	46.4	62.6	2,442	1,022	7	2,450	62.8
Generic Equipment:	14	0.3	445	0.4	0.6	23	22	0	23	0.6
Power Equipment:	218	5.3	5,421	5.3	7.1	277	802	6	283	7.3
Pole:	658	15.9	10,802	10.5	14.2	553	1,575	11	564	14.5
Crossarms:	30	0.7	1,077	1.0	1.4	55	276	2	57	1.5

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.8°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Risers:	123	3.0	**1,865**	1.8	**2.4**	**95**	114	1	**96**	**2.5**
Insulators:	138	3.3	**4,970**	4.8	**6.5**	**254**	226	2	**256**	**6.6**
Pole Load:	4,132	100.0	**102,841**	100.0	**134.9**	**5,261**	4,851	35	**5,295**	**135.8**
Pole Reserve Capacity:			**-26,601**		**-34.9**	**-1,361**			**-1,395**	**-35.8**

LOAD SUMMARY BY OWNER

NVE:	1,859	**52,246**	**2,673**	3,377	24	**2,697**	**69.1**
EXT:	130	**3,154**	**161**	116	1	**162**	**4.2**
ELW:	971	**22,663**	**1,159**	25	0	**1,159**	**29.7**
COX:	433	**9,010**	**461**	423	3	**464**	**11.9**
CTL:	641	**14,420**	**738**	864	6	**744**	**19.1**
TWT:	96	**1,348**	**69**	47	0	**69**	**1.8**
Totals	4,132	**102,841**	**5,261**	4,851	35	**5,295**	**135.8**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,633	-201	1,957	42,388
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,633	-189	1,840	-38,982
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,633	-142	1,957	42,448
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,633	-133	1,840	-38,926
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,633	-82	1,957	42,507
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,633	-77	1,840	-38,870
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,633	82	1,957	42,672
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,633	77	1,840	-38,715
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,633	142	1,957	42,732
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,633	133	1,840	-38,659
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,633	201	1,957	42,791
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,633	189	1,840	-38,603
Service	#6 COPPER SOLID	NVE	29.98	20.83	0.1620	1.15	0.079	134.0	270.0	134.0	275	4,973	9	494	5,475
Neutral	#6 COPPER SOLID	NVE	27.33	6.46	0.1620	1.15	0.079	134.0	270.0	134.0	275	4,532	4	450	4,986
Neutral	#6 COPPER SOLID	NVE	27.33	6.46	0.1620	1.03	0.079	126.0	90.0	126.0	275	-4,532	3	423	-4,106
Neutral	#4 COPPER 3 STRAND	NVE	27.33	6.46	0.2543	1.41	0.128	134.0	270.0	134.0	420	6,922	6	706	7,634
Neutral	#4 COPPER 3 STRAND	NVE	27.33	6.46	0.2543	1.28	0.128	126.0	90.0	126.0	420	-6,922	5	664	-6,253
											Totals:	**4,973**	**27**	**25,518**	**30,518**

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	24.08	15.70	0.2500	0.42	0.121	134.0	270.0	134.0	1,500	21,782	15	801	22,597

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.8°

(Guy LF)

Version: 4.11,1/4,11

* includes Load Factor(s)

Telco	24ct Fiber	EXT	24.05	15.70	0.3900	-	0.049	134.0	270.0	134.0		0	6	800	806
Bundle	1/4" EHS	EXT	24.08	15.70	0.2500	0.37	0.121	126.0	90.0	126.0	1,500	-21,782	14	753	-21,015
Telco	24ct Fiber	EXT	24.05	15.70	0.3900	-	0.049	126.0	90.0	126.0		0	6	753	758
Bundle	1/4" EHS	ELW	23.33	7.07	0.2500	0.42	0.121	134.0	270.0	134.0	1,500	21,103	4	776	21,883
Telco	24ct Fiber	ELW	23.30	7.07	0.3900	-	0.049	134.0	270.0	134.0		0	2	775	777
Bundle	1/4" EHS	COX	22.92	7.11	0.2500	0.91	0.121	126.0	90.0	126.0	1,500	-20,732	6	1,129	-19,598
Telco	P3-750CA	COX	22.89	7.26	0.7500	-	0.161	126.0	90.0	126.0		0	8	1,127	1,135
Telco	P3-750CA	COX	22.89	6.97	0.7500	-	0.161	126.0	90.0	126.0		0	7	1,127	1,134
Bundle	1/4" EHS	COX	22.92	7.11	0.2500	1.52	0.121	134.0	270.0	134.0	1,500	20,732	6	1,021	21,760
Telco	P3-750CA	COX	22.89	7.26	0.7500	-	0.161	134.0	270.0	134.0		0	8	1,020	1,029
Telco	P3-750CA	COX	22.89	6.97	0.7500	-	0.161	134.0	270.0	134.0		0	8	1,020	1,028
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.83	7.11	0.8900	-	0.289	134.0	270.0	134.0		0	14	1,018	1,032
Bundle	1/4" EHS	CTL	21.75	7.22	0.2500	6.84	0.121	134.0	270.0	134.0	1,500	19,674	6	2,397	22,077
Telco	19 GA 400 PR (2.73)	CTL	21.65	7.69	2.7300	-	4.172	134.0	270.0	134.0		0	242	2,386	2,628
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.73	7.12	0.5160	-	0.097	134.0	270.0	134.0		0	5	2,394	2,399
Bundle	1/4" EHS	CTL	21.75	7.22	0.2500	6.07	0.121	126.0	90.0	126.0	1,500	-19,674	6	2,254	-17,415
Telco	19 GA 400 PR (2.73)	CTL	21.65	7.69	2.7300	-	4.172	126.0	90.0	126.0		0	228	2,244	2,471
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.73	7.12	0.5160	-	0.097	126.0	90.0	126.0		0	4	2,251	2,256
											Totals:	21,103	593	26,047	47,743

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	33.42	19.66	0.0	0.0	15.00	12.00	-	8.00	-	-	-31	475	445
											Totals:	0	-31	475	445

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Transformer	1PH-15KVA	NVE	31.17	20.86	270.0	270.0	335.00	34.00	-	22.00	-	-	479	3,455	3,934
Box	Power Supply	COX	17.17	25.63	0.0	0.0	200.00	25.00	-	29.00	-	-	-358	1,845	1,487
											Totals:	0	121	5,300	5,421

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	35.92	5.18	270.0	270.0	53.00	4.50	-	0.00	-	-	75	821	896
Normal	CROSSARM 3-1/2 X 4-1/2 X 4	NVE	29.00	5.81	90.0	90.0	28.00	4.50	-	0.00	-	-	-11	194	183
Standoff	Crossarm	EXT	24.08	5.25	90.0	90.0	50.00	4.50	-	0.00	-	-	-18	16	-2
											Totals:	0	46	1,031	1,077

Riser:	Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.8°

(Guy LF)

Version: 4.11,1/4.11

* includes Load Factor(s)

Riser 0.0°	Riser	NVE	29.83	7.51	0.0	0.0	3.73	357.96	-	2.00	-	-	-21	538	517
Riser 135.0°	Riser	TWT	20.92	7.51	135.0	135.0	2.62	251.04	-	3.00	-	-	4	1,345	1,348
											Totals:	0	-17	1,883	1,865

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.11	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	-92	767	675
Pin	Pin Insulator - 15 kV	NVE	36.11	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	-65	767	702
Pin	Pin Insulator - 15 kV	NVE	36.11	18.00	343.9	0.0	10.00	9.50	7.50	-	-	-	-38	767	729
Pin	Pin Insulator - 15 kV	NVE	36.11	-18.00	196.1	0.0	10.00	9.50	7.50	-	-	-	38	767	805
Pin	Pin Insulator - 15 kV	NVE	36.11	-31.00	189.5	0.0	10.00	9.50	7.50	-	-	-	65	767	832
Pin	Pin Insulator - 15 kV	NVE	36.11	-44.00	186.7	0.0	10.00	9.50	7.50	-	-	-	92	767	859
Pin	Pin Insulator - 15 kV	NVE	29.19	20.00	163.8	0.0	10.00	9.50	7.50	-	-	-	17	310	327
Spool	Spool Insulator - 20 kV	NVE	27.33	4.21	180.0	180.0	1.00	2.12	2.50	-	-	-	1	21	22
Bolt	Three Bolt	EXT	24.08	6.00	180.0	180.0	5.00	0.00	3.00	-	-	-	9	0	9
Bolt	Single Bolt	ELW	23.33	4.57	270.0	270.0	5.00	0.00	3.00	-	-	-	2	0	2
Bolt	Three Bolt	COX	22.92	4.61	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	21.75	4.72	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
											Totals:	0	36	4,933	4,970

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.24	35.13	11.76	21.15	6.69	13.38	1,000,000	50.00	57.00	36.92	16,435	4,851	3.39

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.8°

(Guy LF)

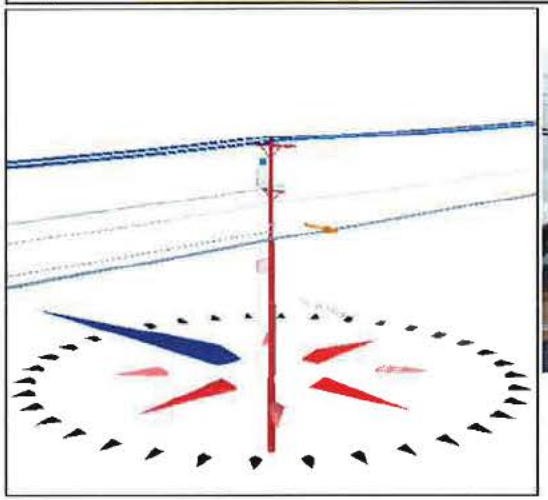
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Monday, August 11, 2014 6:14:07 PM

File Name:	**3 - p9574 Proposed**	Pole Length / Class:	**50 / 4**	Code:	**NESC**	Structure Type:	**Unguyed**
Pole Num:	**3 - p9574**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**13.08**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**42.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.10**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**136.3%**	0.0 ft	194.1°
Groundline:	**136.3%**	0.0 ft	194.1°
Vertical:	**29.6%**	25.2 ft	194.1°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**103,234 ft-lb**	212.9°	194.1°
Groundline:	**103,234 ft-lb**	212.9°	194.1°

GROUNDLINE LOAD SUMMARY:*Wind at 194.1°, Applied Moment 103,234 ft-lb at 212.9°, Allowable Moment 76,240 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	885	21.3	**30,660**	29.7	**40.2**	**1,568**	813	6	**1,574**	**40.4**
Comms:	2,084	50.3	**48,123**	46.6	**63.1**	**2,462**	1,045	7	**2,469**	**63.3**
Generic Equipment:	14	0.3	**444**	0.4	**0.6**	**23**	22	0	**23**	**0.6**
Power Equipment:	218	5.3	**5,404**	5.2	**7.1**	**276**	802	6	**282**	**7.2**
Pole:	657	15.8	**10,782**	10.4	**14.1**	**552**	1,575	11	**563**	**14.4**
Crossarms:	29	0.7	**1,032**	1.0	**1.4**	**53**	276	2	**55**	**1.4**

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.1°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Risers:	121	2.9	**1,827**	1.8	**2.4**	**93**	114	1	**94**	**2.4**
Insulators:	138	3.3	**4,961**	4.8	**6.5**	**254**	226	2	**255**	**6.5**
Pole Load:	4,146	100.0	**103,234**	100.0	**135.4**	**5,281**	4,875	35	**5,316**	**136.3**
Pole Reserve Capacity:			**-26,994**		**-35.4**	**-1,381**			**-1,416**	**-36.3**

LOAD SUMMARY BY OWNER

NVE:	1,859	**52,276**	**2,674**	3,377	24	**2,698**	**69.2**
EXT:	131	**3,178**	**163**	116	1	**163**	**4.2**
ELW:	962	**22,455**	**1,149**	25	0	**1,149**	**29.5**
COX:	452	**9,461**	**484**	447	3	**487**	**12.5**
CTL:	646	**14,527**	**743**	864	6	**749**	**19.2**
TWT:	96	**1,336**	**68**	47	0	**69**	**1.8**
Totals	4,146	**103,234**	**5,281**	4,875	35	**5,316**	**136.3**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,211	-202	1,972	41,980
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,211	-190	1,854	-38,547
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,211	-143	1,972	42,040
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,211	-134	1,854	-38,491
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,211	-83	1,972	42,100
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,211	-78	1,854	-38,435
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,211	83	1,972	42,265
Primary	4/0 COPPER 7 STRAND	NVE	36.90	18.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,211	78	1,854	-38,279
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,211	143	1,972	42,325
Primary	4/0 COPPER 7 STRAND	NVE	36.90	31.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,211	134	1,854	-38,223
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.47	0.654	134.0	270.0	134.0	1,825	40,211	202	1,972	42,385
Primary	4/0 COPPER 7 STRAND	NVE	36.90	44.00	0.5217	1.33	0.654	126.0	90.0	126.0	1,825	-40,211	190	1,854	-38,167
Service	#6 COPPER SOLID	NVE	29.98	20.83	0.1620	1.15	0.079	134.0	270.0	134.0	275	4,921	9	497	5,427
Neutral	#6 COPPER SOLID	NVE	27.33	6.46	0.1620	1.15	0.079	134.0	270.0	134.0	275	4,485	4	453	4,942
Neutral	#6 COPPER SOLID	NVE	27.33	6.46	0.1620	1.03	0.079	126.0	90.0	126.0	275	-4,485	3	426	-4,056
Neutral	#4 COPPER 3 STRAND	NVE	27.33	6.46	0.2543	1.40	0.128	134.0	270.0	134.0	420	6,850	6	711	7,567
Neutral	#4 COPPER 3 STRAND	NVE	27.33	6.46	0.2543	1.27	0.128	126.0	90.0	126.0	420	-6,850	5	669	-6,176
											Totals:	**4,921**	**27**	**25,712**	**30,660**

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	24.08	15.70	0.2500	0.42	0.121	134.0	270.0	134.0	1,500	21,555	15	807	22,377

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.1°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	24ct Fiber	EXT	24.05	15.70	0.3900	-	0.049	134.0	270.0	134.0		0	6	806	812
Bundle	1/4" EHS	EXT	24.08	15.70	0.2500	0.37	0.121	126.0	90.0	126.0	1,500	-21,555	14	759	-20,783
Telco	24ct Fiber	EXT	24.05	15.70	0.3900	-	0.049	126.0	90.0	126.0		0	6	758	764
Bundle	1/4" EHS	ELW	23.33	7.07	0.2500	0.42	0.121	134.0	270.0	134.0	1,500	20,884	4	782	21,670
Telco	24ct Fiber	ELW	23.30	7.07	0.3900	-	0.049	134.0	270.0	134.0		0	2	781	783
Bundle	1/4" EHS	COX	22.92	7.11	0.2500	1.08	0.121	126.0	90.0	126.0	1,500	-20,517	6	844	-19,668
Telco	P3-750CA	COX	22.89	7.26	0.7500	-	0.161	126.0	90.0	126.0		0	8	843	851
Telco	P3-750CA	COX	22.89	6.97	0.7500	-	0.161	126.0	90.0	126.0		0	7	843	850
Telco	48ct Fiber	COX	22.85	7.11	0.5130	-	0.121	126.0	90.0	126.0		0	6	841	847
Bundle	1/4" EHS	COX	22.92	7.11	0.2500	1.71	0.121	134.0	270.0	134.0	1,500	20,517	6	907	21,430
Telco	P3-750CA	COX	22.88	7.12	0.7500	-	0.161	134.0	270.0	134.0		0	8	906	914
Telco	P3-750CA	COX	22.92	6.93	0.7500	-	0.161	134.0	270.0	134.0		0	7	907	915
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.97	7.12	0.8900	-	0.289	134.0	270.0	134.0		0	15	909	924
Telco	48ct Fiber	COX	22.92	7.27	0.5130	-	0.121	134.0	270.0	134.0		0	6	907	914
Bundle	1/4" EHS	CTL	21.75	7.22	0.2500	6.84	0.121	134.0	270.0	134.0	1,500	19,470	6	2,415	21,891
Telco	19 GA 400 PR (2.73)	CTL	21.65	7.69	2.7300	-	4.172	134.0	270.0	134.0		0	243	2,404	2,647
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.73	7.12	0.5160	-	0.097	134.0	270.0	134.0		0	5	2,413	2,417
Bundle	1/4" EHS	CTL	21.75	7.22	0.2500	6.07	0.121	126.0	90.0	126.0	1,500	-19,470	6	2,271	-17,193
Telco	19 GA 400 PR (2.73)	CTL	21.65	7.69	2.7300	-	4.172	126.0	90.0	126.0		0	228	2,261	2,489
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.73	7.12	0.5160	-	0.097	126.0	90.0	126.0		0	4	2,269	2,273
											Totals:	20,884	606	26,633	48,123

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	33.42	19.66	0.0	0.0	15.00	12.00	-	8.00	-	-	-31	475	444
											Totals:	0	-31	475	444

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Transformer	1PH-15KVA	NVE	31.17	20.86	270.0	270.0	335.00	34.00	-	22.00	-	-	474	3,449	3,923
Box	Power Supply	COX	17.17	25.63	0.0	0.0	200.00	25.00	-	29.00	-	-	-360	1,841	1,482
											Totals:	0	114	5,290	5,404

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	35.92	5.18	270.0	270.0	53.00	4.50	-	0.00	-	-	75	783	858
Normal	CROSSARM 3-1/2 X 4-1/2 X 4	NVE	29.00	5.81	90.0	90.0	28.00	4.50	-	0.00	-	-	-11	187	176
Standoff	Crossarm	EXT	24.08	5.25	90.0	90.0	50.00	4.50	-	0.00	-	-	-18	16	-2
											Totals:	0	46	986	1,032

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.1"

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 0.0°	Riser	NVE	29.83	7.51	0.0	0.0	3.73	357.96	-	2.00	-	-	-21	512	491
Riser 135.0°	Riser	TWT	20.92	7.51	135.0	135.0	2.62	251.04	-	3.00	-	-	4	1,333	1,336
											Totals:	0	-17	1,844	1,827

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.11	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	-92	765	673
Pin	Pin Insulator - 15 kV	NVE	36.11	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	-65	765	700
Pin	Pin Insulator - 15 kV	NVE	36.11	18.00	343.9	0.0	10.00	9.50	7.50	-	-	-	-38	765	728
Pin	Pin Insulator - 15 kV	NVE	36.11	-18.00	196.1	0.0	10.00	9.50	7.50	-	-	-	38	765	803
Pin	Pin Insulator - 15 kV	NVE	36.11	-31.00	189.5	0.0	10.00	9.50	7.50	-	-	-	65	765	831
Pin	Pin Insulator - 15 kV	NVE	36.11	-44.00	186.7	0.0	10.00	9.50	7.50	-	-	-	92	765	858
Pin	Pin Insulator - 15 kV	NVE	29.19	20.00	163.8	0.0	10.00	9.50	7.50	-	-	-	17	310	327
Spool	Spool Insulator - 20 kV	NVE	27.33	4.21	180.0	180.0	1.00	2.12	2.50	-	-	-	1	21	22
Bolt	Three Bolt	EXT	24.08	6.00	180.0	180.0	5.00	0.00	3.00	-	-	-	9	0	9
Bolt	Single Bolt	ELW	23.33	4.57	270.0	270.0	5.00	0.00	3.00	-	-	-	2	0	2
Bolt	Three Bolt	COX	22.92	4.61	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	21.75	4.72	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
											Totals:	0	37	4,924	4,961

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.23	35.13	11.76	21.20	6.69	13.38	1,000,000	50.00	57.00	36.92	16,453	4,875	3.38

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 194.1°

(Guy LF)

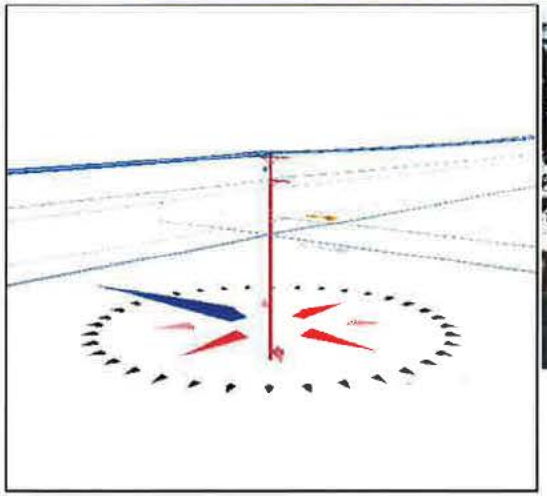
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 10:06:47 AM

File Name:	4 - p9572 Existing	Pole Length / Class:	45 / 4	Code:	NESC	Structure Type:	Junction
Pole Num:	4 - p9572	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	7.58	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	38.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.65
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	153.8%	0.0 ft	178.4°
Groundline:	153.8%	0.0 ft	178.4°
Vertical:	36.1%	25.2 ft	178.4°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	86,278 ft-lb	179.2°	178.4°
Groundline:	86,278 ft-lb	179.2°	178.4°

GROUNDLINE LOAD SUMMARY:*Wind at 178.4°, Applied Moment 86,278 ft-lb at 179.2°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	907	27.3	33,084	38.3	58.6	2,285	824	7	2,292	58.8
Comms:	1,589	47.8	35,851	41.6	63.5	2,476	1,527	13	2,489	63.8
Generic Equipment:	15	0.5	468	0.5	0.8	32	22	0	33	0.8
Pole:	659	19.8	11,142	12.9	19.7	770	1,387	12	782	20.0
Crossarms:	7	0.2	324	0.4	0.6	22	201	2	24	0.6
Risers:	3	0.1	38	0.0	0.1	3	67	1	3	0.1

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulators:	146	4.4	**5,371**	6.2	**9.5**	**371**	249	2	**373**	**9.6**
Pole Load:	3,326	100.0	**86,278**	100.0	**152.8**	**5,959**	4,277	37	**5,996**	**153.8**
Pole Reserve Capacity:			**-29,812**		**-52.8**	**-2,059**			**-2,096**	**-53.8**

LOAD SUMMARY BY OWNER

NVE:	1,737		**50,410**			**3,482**	2,698	23	**3,505**	**89.9**
EXT:	160		**4,094**			**283**	68	1	**283**	**7.3**
ELW:	171		**4,210**			**291**	57	0	**291**	**7.5**
COX:	434		**10,156**			**701**	240	2	**704**	**18.0**
CTL:	824		**17,408**			**1,202**	1,214	11	**1,213**	**31.1**
Totals	3,326		**86,278**			**5,959**	4,277	37	**5,996**	**153.8**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,527	-228	2,323	568
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,527	-241	2,451	3,737
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,527	-161	2,323	636
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,527	-170	2,451	3,808
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,527	-93	2,323	703
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,527	-99	2,451	3,880
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,527	93	2,323	890
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,527	99	2,451	4,077
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,527	161	2,323	957
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,527	170	2,451	4,148
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,527	228	2,323	1,025
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,527	241	2,451	4,219
Service	#6 COPPER SOLID	NVE	32.48	44.34	0.1620	0.93	0.079	127.0	270.0	127.0	275	-200	28	626	454
Service	#6 COPPER SOLID	NVE	32.48	44.34	0.1620	1.03	0.079	134.0	90.0	134.0	275	200	29	661	890
Neutral	#6 COPPER SOLID	NVE	30.17	6.12	0.1620	0.93	0.079	127.0	270.0	127.0	275	-185	4	582	400
Neutral	#6 COPPER SOLID	NVE	30.17	6.12	0.1620	1.03	0.079	134.0	90.0	134.0	275	185	4	614	803
Neutral	#4 COPPER 3 STRAND	NVE	30.17	6.12	0.2543	1.20	0.128	127.0	270.0	127.0	420	-283	6	913	636
Neutral	#4 COPPER 3 STRAND	NVE	30.17	6.12	0.2543	1.31	0.128	134.0	90.0	134.0	420	283	7	963	1,253
											Totals:	**0**	**77**	**33,007**	**33,084**

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	26.00	6.67	0.2500	0.25	0.121	118.0	180.0	118.0	1,500	64,344	0	0	64,345
Telco	24ct Fiber	EXT	25.98	6.67	0.3900	-	0.049	118.0	180.0	118.0		0	0	0	0

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Bundle	1/4" EHS	EXT	26.00	6.67	0.2500	0.02	0.121	33.0	0.0	33.0	1,500	-64,344	0	0	-64,344
Telco	24ct Fiber	EXT	25.98	6.67	0.3900	-	0.049	33.0	0.0	33.0		0	0	0	0
Bundle	1/4" EHS	EXT	25.42	6.71	0.2500	0.29	0.121	127.0	270.0	127.0	1,500	-852	6	991	145
Telco	24ct Fiber	EXT	25.40	6.71	0.3900	-	0.049	127.0	270.0	127.0		0	3	990	992
Bundle	1/4" EHS	EXT	25.42	6.71	0.2500	0.32	0.121	134.0	90.0	134.0	1,500	852	7	1,045	1,904
Telco	24ct Fiber	EXT	25.40	6.71	0.3900	-	0.049	134.0	90.0	134.0		0	3	1,044	1,047
Bundle	5/16" EHS	ELW	24.42	6.78	0.3125	0.48	0.205	127.0	270.0	127.0	1,500	-819	11	1,017	209
Telco	24ct Fiber	ELW	24.39	6.78	0.3900	-	0.049	127.0	270.0	127.0		0	3	1,016	1,018
Bundle	5/16" EHS	ELW	24.42	6.78	0.3125	0.54	0.205	134.0	90.0	134.0	1,500	819	12	1,073	1,904
Telco	24ct Fiber	ELW	24.39	6.78	0.3900	-	0.049	134.0	90.0	134.0		0	3	1,072	1,075
Bundle	1/4" EHS	COX	24.00	6.81	0.2500	0.03	0.121	33.0	0.0	33.0	1,500	-59,395	0	0	-59,394
Telco	P3-500CA	COX	23.98	6.59	0.5000	-	0.072	33.0	0.0	33.0		0	0	0	0
Telco	24ct Fiber	COX	23.98	7.01	0.3900	-	0.049	33.0	0.0	33.0		0	0	0	0
Bundle	1/4" EHS	COX	24.00	6.81	0.2500	1.03	0.121	118.0	180.0	118.0	1,500	59,395	0	0	59,395
Telco	P3-750CA	COX	23.95	6.85	0.7500	-	0.161	118.0	180.0	118.0		0	0	0	0
Telco	P3-500CA	COX	23.99	7.20	0.5000	-	0.072	118.0	180.0	118.0		0	0	0	0
Telco	P3-500CA	COX	24.03	7.07	0.5000	-	0.072	118.0	180.0	118.0		0	0	0	0
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	24.03	6.60	0.5160	-	0.097	118.0	180.0	118.0		0	0	0	0
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	23.99	6.29	0.7560	-	0.208	118.0	180.0	118.0		0	0	0	1
Bundle	1/4" EHS	COX	23.17	6.87	0.2500	1.05	0.121	127.0	270.0	127.0	1,500	-777	7	1,147	377
Telco	P3-750CA	COX	23.15	7.04	0.7500	-	0.161	127.0	270.0	127.0		0	9	1,146	1,155
Telco	P3-500CA	COX	23.15	6.78	0.5000	-	0.072	127.0	270.0	127.0		0	4	1,146	1,150
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	23.09	6.85	0.8900	-	0.289	127.0	270.0	127.0		0	16	1,144	1,159
Bundle	1/4" EHS	COX	23.17	6.87	0.2500	1.63	0.121	134.0	90.0	134.0	1,500	777	7	913	1,697
Telco	P3-750CA	COX	23.13	6.93	0.7500	-	0.161	134.0	90.0	134.0		0	9	911	920
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	23.17	6.68	0.8900	-	0.289	134.0	90.0	134.0		0	16	912	929
Telco	24ct Fiber	COX	23.22	6.73	0.3900	-	0.049	134.0	90.0	134.0		0	3	914	917
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	23.21	6.94	0.7560	-	0.208	134.0	90.0	134.0		0	12	914	926
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	23.17	7.12	0.5160	-	0.097	134.0	90.0	134.0		0	6	913	918
Bundle	5/16" EHS	CTL	20.50	7.07	0.3125	6.92	0.205	134.0	90.0	134.0	1,500	687	12	2,796	3,496
Telco	19 GA 400 PR (2.73)	CTL	20.40	7.54	2.7300	-	4.172	134.0	90.0	134.0		0	261	2,783	3,044
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.48	6.96	0.5160	-	0.097	134.0	90.0	134.0		0	6	2,793	2,799
Bundle	5/16" EHS	CTL	20.50	7.07	0.3125	6.59	0.205	127.0	270.0	127.0	1,500	-687	11	2,123	1,447
Telco	19 GA 400 PR (2.73)	CTL	20.38	7.07	2.7300	-	4.172	127.0	270.0	127.0		0	234	2,110	2,344
Telco	26 GA 100 PR (0.74)	CTL	20.51	6.89	0.7400	-	0.270	127.0	270.0	127.0		0	15	2,124	2,139
Telco	26 GA 25 PR (0.50)	CTL	20.50	7.23	0.5000	-	0.100	127.0	270.0	127.0		0	6	2,124	2,129
Bundle	1/4" EHS	CTL	19.92	7.11	0.2500	3.32	0.121	118.0	180.0	118.0	1,500	49,297	0	1	49,299
Telco	26 GA 1200 PR (2.08)	CTL	19.82	7.13	2.0800	-	2.540	118.0	180.0	118.0		0	2	1	3
Bundle	1/4" EHS	CTL	19.92	7.11	0.2500	0.27	0.121	33.0	0.0	33.0	1,500	-49,297	0	0	-49,297
Telco	22 GA 300 PR (1.72)	CTL	19.87	6.30	1.7200	-	1.640	33.0	0.0	33.0		0	1	0	2

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	26 GA 200 PR (0.94)	CTL	19.89	7.51	0.9400	-	0.480	33.0	0.0	33.0		0	0	0	0
Telco	26 GA 100 PR (0.74)	CTL	19.82	7.29	0.7400	-	0.270	33.0	0.0	33.0		0	0	0	0
											Totals:	0	684	35,167	35,851

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	33.67	19.61	0.0	0.0	15.00	12.00	-	8.00	-	-	-37	505	468
											Totals:	0	-37	505	468

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.42	5.16	270.0	270.0	53.00	4.50	-	0.00	-	-	-2	181	179
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	NVE	31.50	5.52	90.0	90.0	28.00	4.50	-	0.00	-	-	67	78	144
											Totals:	0	65	259	324

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Riser 0.0°	Riser	NVE	29.75	6.31	0.0	0.0	3.72	357.00	-	2.00	-	-	-22	60	38
											Totals:	0	-22	60	38

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.61	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	-110	820	710
Pin	Pin Insulator - 15 kV	NVE	36.61	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	-77	820	742
Pin	Pin Insulator - 15 kV	NVE	36.61	18.00	344.0	0.0	10.00	9.50	7.50	-	-	-	-45	820	775
Pin	Pin Insulator - 15 kV	NVE	36.61	-18.00	196.0	0.0	10.00	9.50	7.50	-	-	-	45	820	865
Pin	Pin Insulator - 15 kV	NVE	36.61	-31.00	189.5	0.0	10.00	9.50	7.50	-	-	-	77	820	897
Pin	Pin Insulator - 15 kV	NVE	36.61	-44.00	186.7	0.0	10.00	9.50	7.50	-	-	-	110	820	930
Pin	Pin Insulator - 15 kV	NVE	31.69	44.00	172.8	0.0	10.00	9.50	7.50	-	-	-	55	355	410
Spool	Spool Insulator - 20 kV	NVE	30.17	3.87	180.0	180.0	1.00	2.12	2.50	-	-	-	1	25	26
Bolt	Three Bolt	EXT	26.00	4.17	90.0	90.0	5.00	0.00	3.00	-	-	-	0	0	0
Bolt	Three Bolt	EXT	25.42	4.21	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	ELW	24.42	4.28	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	COX	24.00	4.31	90.0	90.0	5.00	0.00	3.00	-	-	-	0	0	0
Bolt	Three Bolt	COX	23.17	4.37	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	20.50	4.57	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	19.92	4.61	90.0	90.0	5.00	0.00	3.00	-	-	-	0	0	0
											Totals:	0	73	5,298	5,371

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.23	34.52	10.84	19.87	6.69	12.10	1,000,000	50.00	57.00	37.42	11,839	**4,277**	**2.77**

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

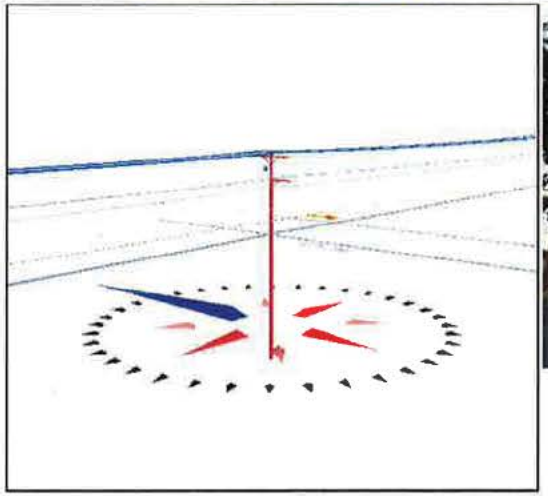
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 10:10:17 AM

File Name:	**4 - p9572 Proposed**	Pole Length / Class:	**45 / 4**	Code:	**NESC**	Structure Type:	**Junction**
Pole Num:	**4 - p9572**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**7.58**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**38.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.65**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**155.9%**	0.0 ft	178.4°
Groundline:	**155.9%**	0.0 ft	178.4°
Vertical:	**36.3%**	25.2 ft	178.4°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**87,500 ft-lb**	179.2°	178.4°
Groundline:	**87,500 ft-lb**	179.2°	178.4°

GROUNDLINE LOAD SUMMARY:*Wind at 178.4°, Applied Moment 87,500 ft-lb at 179.2°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	907	26.8	**33,085**	37.8	**58.6**	**2,285**	824	7	**2,292**	**58.8**
Comms:	1,641	48.6	**37,073**	42.4	**65.7**	**2,561**	1,550	13	**2,574**	**66.0**
Generic Equipment:	15	0.4	**468**	0.5	**0.8**	**32**	22	0	**33**	**0.8**
Pole:	659	19.5	**11,142**	12.7	**19.7**	**770**	1,387	12	**782**	**20.0**
Crossarms:	7	0.2	**324**	0.4	**0.6**	**22**	201	2	**24**	**0.6**
Risers:	3	0.1	**38**	0.0	**0.1**	**3**	67	1	**3**	**0.1**

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulators:	146	4.3	**5,371**	6.1	**9.5**	**371**	249	2	**373**	**9.6**
Pole Load:	3,378	100.0	**87,500**	100.0	**155.0**	**6,044**	4,300	37	**6,081**	**155.9**
Pole Reserve Capacity:			**-31,035**		**-55.0**	**-2,144**			**-2,181**	**-55.9**

LOAD SUMMARY BY OWNER

NVE:	1,737	**50,410**	**3,482**	2,698	23	**3,505**	**89.9**
EXT:	160	**4,094**	**283**	68	1	**283**	**7.3**
ELW:	171	**4,210**	**291**	57	0	**291**	**7.5**
COX:	486	**11,379**	**786**	264	2	**788**	**20.2**
CTL:	824	**17,408**	**1,202**	1,214	11	**1,213**	**31.1**
Totals	3,378	**87,500**	**6,044**	4,300	37	**6,081**	**155.9**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,513	-228	2,323	582
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,513	-241	2,451	3,724
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,513	-161	2,323	650
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,513	-170	2,451	3,795
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,513	-93	2,323	717
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,513	-99	2,451	3,866
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,513	93	2,323	904
Primary	4/0 COPPER 7 STRAND	NVE	37.40	18.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,513	99	2,451	4,063
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,513	161	2,323	971
Primary	4/0 COPPER 7 STRAND	NVE	37.40	31.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,513	170	2,451	4,134
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.31	0.654	127.0	270.0	127.0	1,825	-1,513	228	2,323	1,039
Primary	4/0 COPPER 7 STRAND	NVE	37.40	44.00	0.5217	1.43	0.654	134.0	90.0	134.0	1,825	1,513	241	2,451	4,205
Service	#6 COPPER SOLID	NVE	32.48	44.34	0.1620	0.93	0.079	127.0	270.0	127.0	275	-198	28	626	456
Service	#6 COPPER SOLID	NVE	32.48	44.34	0.1620	1.03	0.079	134.0	90.0	134.0	275	198	29	661	888
Neutral	#6 COPPER SOLID	NVE	30.17	6.12	0.1620	0.93	0.079	127.0	270.0	127.0	275	-184	4	582	402
Neutral	#6 COPPER SOLID	NVE	30.17	6.12	0.1620	1.03	0.079	134.0	90.0	134.0	275	184	4	614	802
Neutral	#4 COPPER 3 STRAND	NVE	30.17	6.12	0.2543	1.20	0.128	127.0	270.0	127.0	420	-281	6	913	639
Neutral	#4 COPPER 3 STRAND	NVE	30.17	6.12	0.2543	1.31	0.128	134.0	90.0	134.0	420	281	7	963	1,251
											Totals:	**0**	**77**	**33,007**	**33,085**

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	26.00	6.67	0.2500	0.25	0.121	118.0	180.0	118.0	1,500	64,344	0	0	64,345
Telco	24ct Fiber	EXT	25.98	6.67	0.3900	-	0.049	118.0	180.0	118.0		0	0	0	0

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Bundle	1/4" EHS	EXT	26.00	6.67	0.2500	0.02	0.121	33.0	0.0	33.0	1,500	-64,344	0	0	-64,344
Telco	24ct Fiber	EXT	25.98	6.67	0.3900	-	0.049	33.0	0.0	33.0		0	0	0	0
Bundle	1/4" EHS	EXT	25.42	6.71	0.2500	0.29	0.121	127.0	270.0	127.0	1,500	-845	6	991	152
Telco	24ct Fiber	EXT	25.40	6.71	0.3900	-	0.049	127.0	270.0	127.0		0	3	990	992
Bundle	1/4" EHS	EXT	25.42	6.71	0.2500	0.32	0.121	134.0	90.0	134.0	1,500	845	7	1,045	1,897
Telco	24ct Fiber	EXT	25.40	6.71	0.3900	-	0.049	134.0	90.0	134.0		0	3	1,044	1,047
Bundle	5/16" EHS	ELW	24.42	6.78	0.3125	0.48	0.205	127.0	270.0	127.0	1,500	-812	11	1,017	217
Telco	24ct Fiber	ELW	24.39	6.78	0.3900	-	0.049	127.0	270.0	127.0		0	3	1,016	1,018
Bundle	5/16" EHS	ELW	24.42	6.78	0.3125	0.54	0.205	134.0	90.0	134.0	1,500	812	12	1,073	1,896
Telco	24ct Fiber	ELW	24.39	6.78	0.3900	-	0.049	134.0	90.0	134.0		0	3	1,072	1,075
Bundle	1/4" EHS	COX	24.00	6.81	0.2500	0.03	0.121	33.0	0.0	33.0	1,500	-59,395	0	0	-59,395
Telco	P3-500CA	COX	23.98	6.59	0.5000	-	0.072	33.0	0.0	33.0		0	0	0	0
Telco	24ct Fiber	COX	23.98	7.01	0.3900	-	0.049	33.0	0.0	33.0		0	0	0	0
Bundle	1/4" EHS	COX	24.00	6.81	0.2500	1.03	0.121	118.0	180.0	118.0	1,500	59,395	0	0	59,395
Telco	P3-750CA	COX	23.95	6.85	0.7500	-	0.161	118.0	180.0	118.0		0	0	0	0
Telco	P3-500CA	COX	23.99	7.20	0.5000	-	0.072	118.0	180.0	118.0		0	0	0	0
Telco	P3-500CA	COX	24.03	7.07	0.5000	-	0.072	118.0	180.0	118.0		0	0	0	0
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	24.03	6.60	0.5160	-	0.097	118.0	180.0	118.0		0	0	0	0
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	23.99	6.29	0.7560	-	0.208	118.0	180.0	118.0		0	0	0	1
Bundle	1/4" EHS	COX	23.17	6.87	0.2500	1.23	0.121	127.0	270.0	127.0	1,500	-770	7	945	182
Telco	P3-750CA	COX	23.16	7.07	0.7500	-	0.161	127.0	270.0	127.0		0	9	945	954
Telco	P3-500CA	COX	23.17	6.73	0.5000	-	0.072	127.0	270.0	127.0		0	4	945	949
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	23.22	6.87	0.8900	-	0.289	127.0	270.0	127.0		0	16	947	963
Telco	48ct Fiber	COX	23.14	6.85	0.5130	-	0.121	127.0	270.0	127.0		0	7	944	950
Bundle	1/4" EHS	COX	23.17	6.87	0.2500	1.82	0.121	134.0	90.0	134.0	1,500	770	7	934	1,711
Telco	P3-750CA	COX	23.13	6.93	0.7500	-	0.161	134.0	90.0	134.0		0	9	933	942
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	23.16	6.68	0.8900	-	0.289	134.0	90.0	134.0		0	16	934	950
Telco	24ct Fiber	COX	23.21	6.61	0.3900	-	0.049	134.0	90.0	134.0		0	3	936	939
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	23.22	6.79	0.7560	-	0.208	134.0	90.0	134.0		0	12	937	948
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	23.21	7.03	0.5160	-	0.097	134.0	90.0	134.0		0	6	936	942
Telco	48ct Fiber	COX	23.17	7.09	0.5130	-	0.121	134.0	90.0	134.0		0	7	934	942
Bundle	5/16" EHS	CTL	20.50	7.07	0.3125	6.92	0.205	134.0	90.0	134.0	1,500	681	12	2,796	3,490
Telco	19 GA 400 PR (2.73)	CTL	20.40	7.54	2.7300	-	4.172	134.0	90.0	134.0		0	261	2,783	3,044
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.48	6.96	0.5160	-	0.097	134.0	90.0	134.0		0	6	2,793	2,799
Bundle	5/16" EHS	CTL	20.50	7.07	0.3125	6.59	0.205	127.0	270.0	127.0	1,500	-681	11	2,123	1,453
Telco	19 GA 400 PR (2.73)	CTL	20.38	7.07	2.7300	-	4.172	127.0	270.0	127.0		0	234	2,110	2,344
Telco	26 GA 100 PR (0.74)	CTL	20.51	6.89	0.7400	-	0.270	127.0	270.0	127.0		0	15	2,124	2,139
Telco	26 GA 25 PR (0.50)	CTL	20.50	7.23	0.5000	-	0.100	127.0	270.0	127.0		0	6	2,124	2,129
Bundle	1/4" EHS	CTL	19.92	7.11	0.2500	3.32	0.121	118.0	180.0	118.0	1,500	49,298	0	1	49,299
Telco	26 GA 1200 PR (2.08)	CTL	19.82	7.13	2.0800	-	2.540	118.0	180.0	118.0		0	2	1	3

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Bundle	1/4" EHS	CTL	19.92	7.11	0.2500	0.27	0.121	33.0	0.0	33.0	1,500	-49,298	0	0	-49,297
Telco	22 GA 300 PR (1.72)	CTL	19.87	6.30	1.7200	-	1.640	33.0	0.0	33.0		0	1	0	2
Telco	26 GA 200 PR (0.94)	CTL	19.89	7.51	0.9400	-	0.480	33.0	0.0	33.0		0	0	0	0
Telco	26 GA 100 PR (0.74)	CTL	19.82	7.29	0.7400	-	0.270	33.0	0.0	33.0		0	0	0	0
											Totals:	0	697	36,376	37,073

GenericEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Box	Fuse Cutout	NVE	33.67	19.61	0.0	0.0	15.00	12.00	-	8.00	-	-	-37	505	468
											Totals:	0	-37	505	468

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.42	5.16	270.0	270.0	53.00	4.50	-	0.00	-	-	-2	181	179
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	NVE	31.50	5.52	90.0	90.0	28.00	4.50	-	0.00	-	-	67	78	144
											Totals:	0	65	259	324

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 0.0"	Riser	NVE	29.75	6.31	0.0	0.0	3.72	357.00	-	2.00	-	-	-22	60	38
											Totals:	0	-22	60	38

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.61	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	-110	820	710
Pin	Pin Insulator - 15 kV	NVE	36.61	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	-77	820	742
Pin	Pin Insulator - 15 kV	NVE	36.61	18.00	344.0	0.0	10.00	9.50	7.50	-	-	-	-45	820	775
Pin	Pin Insulator - 15 kV	NVE	36.61	-18.00	196.0	0.0	10.00	9.50	7.50	-	-	-	45	820	865
Pin	Pin Insulator - 15 kV	NVE	36.61	-31.00	189.5	0.0	10.00	9.50	7.50	-	-	-	77	820	897
Pin	Pin Insulator - 15 kV	NVE	36.61	-44.00	186.7	0.0	10.00	9.50	7.50	-	-	-	110	820	930
Pin	Pin Insulator - 15 kV	NVE	31.69	44.00	172.8	0.0	10.00	9.50	7.50	-	-	-	55	355	410
Spool	Spool Insulator - 20 kV	NVE	30.17	3.87	180.0	180.0	1.00	2.12	2.50	-	-	-	1	25	26
Bolt	Three Bolt	EXT	26.00	4.17	90.0	90.0	5.00	0.00	3.00	-	-	-	0	0	0
Bolt	Three Bolt	EXT	25.42	4.21	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	ELW	24.42	4.28	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	COX	24.00	4.31	90.0	90.0	5.00	0.00	3.00	-	-	-	0	0	0
Bolt	Three Bolt	COX	23.17	4.37	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	20.50	4.57	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	19.92	4.61	90.0	90.0	5.00	0.00	3.00	-	-	-	0	0	0
											Totals:	0	73	5,298	5,371

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.22	34.52	10.84	19.92	6.69	12.10	1,000,000	50.00	57.00	37.42	11,851	4,300	2.76

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 178.4°

(Guy LF)

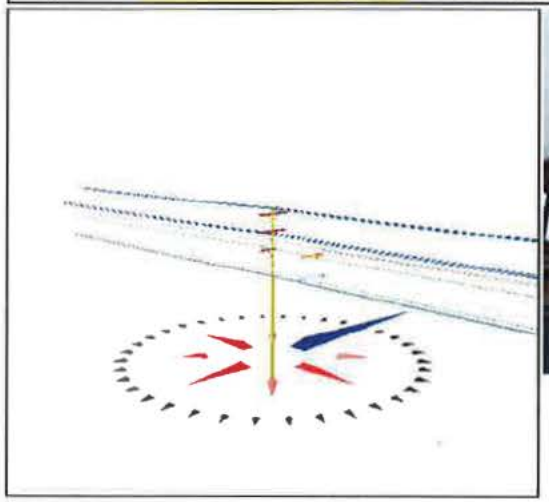
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Friday, August 15, 2014 11:21:34 AM

File Name:	5 - p9573 Existing	Pole Length / Class:	45 / 4	Code:	NESC	Structure Type:	Unguyed
Pole Num:	5 - p9573	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	7.17	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	38.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.10
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	147.4%	0.0 ft	7.9°
Groundline:	147.4%	0.0 ft	7.9°
Vertical:	30.1%	24.9 ft	7.9°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	82,787 ft-lb	22.3°	7.9°
Groundline:	82,787 ft-lb	22.3°	7.9°

GROUNDLINE LOAD SUMMARY:*Wind at 7.9°, Applied Moment 82,787 ft-lb at 22.3°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	1,042	31.7	35,049	42.3	62.1	2,421	685	6	2,427	62.2
Comms:	1,448	44.1	31,668	38.3	56.1	2,187	1,113	10	2,197	56.3
Pole:	645	19.7	11,030	13.3	19.5	762	1,402	12	774	19.8
Crossarms:	27	0.8	776	0.9	1.4	54	360	3	57	1.5
Insulators:	120	3.7	4,265	5.2	7.6	295	164	1	296	7.6
Pole Load:	3,282	100.0	82,787	100.0	146.6	5,718	3,723	32	5,750	147.4

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Reserve Capacity:		-26,322	-46.6	-1,818			-1,850	-47.4

LOAD SUMMARY BY OWNER

NVE:	1,835	51,136	3,532	2,580	22	3,554	91.1
EXT:	211	5,061	350	74	1	350	9.0
ELW:	130	2,996	207	49	0	207	5.3
COX:	395	8,702	601	162	1	602	15.4
CTL:	712	14,893	1,029	858	7	1,036	26.6
Totals	3,282	82,787	5,718	3,723	32	5,750	147.4

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.81	44.00	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-28,818	150	1,526	-27,142
Primary	4/0 COPPER 7 STRAND	NVE	37.81	44.00	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	28,818	211	2,154	31,182
Primary	4/0 COPPER 7 STRAND	NVE	37.81	31.00	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-28,818	105	1,526	-27,186
Primary	4/0 COPPER 7 STRAND	NVE	37.81	31.00	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	28,818	149	2,154	31,120
Primary	4/0 COPPER 7 STRAND	NVE	37.81	18.00	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-28,818	61	1,526	-27,230
Primary	4/0 COPPER 7 STRAND	NVE	37.81	18.00	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	28,818	86	2,154	31,058
Primary	4/0 COPPER 7 STRAND	NVE	32.58	25.61	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-24,816	-13	1,314	-23,514
Primary	4/0 COPPER 7 STRAND	NVE	32.58	35.95	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-24,816	-14	1,314	-23,515
Primary	4/0 COPPER 7 STRAND	NVE	32.58	47.62	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-24,816	-14	1,314	-23,515
Primary	4/0 COPPER 7 STRAND	NVE	32.58	25.61	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	24,816	-7	1,854	26,663
Primary	4/0 COPPER 7 STRAND	NVE	32.58	35.95	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	24,816	-12	1,854	26,659
Primary	4/0 COPPER 7 STRAND	NVE	32.58	47.62	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	24,816	-14	1,854	26,657
Neutral	#6 COPPER SOLID	NVE	30.33	6.13	0.1620	0.52	0.079	90.0	270.0	90.0	275	-3,481	-3	380	-3,104
Neutral	#6 COPPER SOLID	NVE	30.33	6.13	0.1620	0.99	0.079	127.0	90.0	127.0	275	3,481	-4	536	4,014
Neutral	#4 COPPER 3 STRAND	NVE	30.33	6.13	0.2543	0.72	0.128	90.0	90.0	90.0	420	5,317	-4	596	5,909
Neutral	#4 COPPER 3 STRAND	NVE	30.33	6.13	0.2543	1.25	0.128	127.0	90.0	127.0	420	5,317	-6	842	6,153
Service	#6 COPPER SOLID	NVE	29.23	44.38	0.1620	0.52	0.079	90.0	270.0	90.0	275	-3,356	-17	366	-3,007
Service	#6 COPPER SOLID	NVE	29.23	44.38	0.1620	0.99	0.079	127.0	90.0	127.0	275	3,356	-24	517	3,848
											Totals:	10,634	633	23,782	35,049

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	24.25	6.81	0.2500	0.38	0.121	90.0	270.0	90.0	1,500	-15,183	-4	1,059	-14,128
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.21	6.81	0.8900	-	0.289	90.0	270.0	90.0		0	-10	1,057	1,046
Bundle	1/4" EHS	EXT	24.25	6.81	0.2500	0.75	0.121	127.0	90.0	127.0	1,500	15,183	-6	1,494	16,671
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.21	6.81	0.8900	-	0.289	127.0	90.0	127.0		0	-14	1,491	1,477
Bundle	5/16" EHS	ELW	23.17	6.89	0.3125	0.27	0.205	90.0	270.0	90.0	1,500	-14,507	-7	627	-13,887

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	24ct Fiber	ELW	23.14	6.89	0.3900	-	0.049	90.0	270.0	90.0		0	-2	626	624
Bundle	5/16" EHS	ELW	23.17	6.89	0.3125	0.53	0.205	127.0	90.0	127.0	1,500	14,507	-10	885	15,381
Telco	24ct Fiber	ELW	23.14	6.89	0.3900	-	0.049	127.0	90.0	127.0		0	-2	884	881
Bundle	1/4" EHS	COX	22.25	6.96	0.2500	0.83	0.121	90.0	270.0	90.0	1,500	-13,931	-4	607	-13,328
Telco	P3-750CA	COX	22.20	6.95	0.7500	-	0.161	90.0	270.0	90.0		0	-6	606	600
Telco	P3-500CA	COX	22.24	6.83	0.5000	-	0.072	90.0	270.0	90.0		0	-3	607	605
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.30	6.80	0.8900	-	0.289	90.0	270.0	90.0		0	-10	609	599
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.29	7.11	0.7560	-	0.208	90.0	270.0	90.0		0	-8	609	601
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.24	7.11	0.5160	-	0.097	90.0	270.0	90.0		0	-4	607	603
Bundle	1/4" EHS	COX	22.25	6.96	0.2500	1.60	0.121	127.0	90.0	127.0	1,500	13,931	-6	857	14,782
Telco	P3-750CA	COX	22.20	6.95	0.7500	-	0.161	127.0	90.0	127.0		0	-8	855	847
Telco	P3-500CA	COX	22.24	6.83	0.5000	-	0.072	127.0	90.0	127.0		0	-4	857	853
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.30	6.80	0.8900	-	0.289	127.0	90.0	127.0		0	-14	859	845
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.29	7.11	0.7560	-	0.208	127.0	90.0	127.0		0	-11	859	848
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.24	7.11	0.5160	-	0.097	127.0	90.0	127.0		0	-5	857	851
Bundle	5/16" EHS	CTL	21.58	7.00	0.3125	3.71	0.205	90.0	270.0	90.0	1,500	-13,511	-7	1,274	-12,244
Telco	19 GA 400 PR (2.73)	CTL	21.45	7.03	2.7300	-	4.172	90.0	270.0	90.0		0	-153	1,267	1,114
Telco	26 GA 200 PR (0.94)	CTL	21.59	6.77	0.9400	-	0.480	90.0	270.0	90.0		0	-16	1,275	1,259
Telco	26 GA 100 PR (0.74)	CTL	21.63	7.03	0.7400	-	0.270	90.0	270.0	90.0		0	-10	1,277	1,267
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.59	7.18	0.5160	-	0.097	90.0	270.0	90.0		0	-4	1,275	1,271
Bundle	5/16" EHS	CTL	21.58	7.00	0.3125	7.24	0.205	127.0	90.0	127.0	1,500	13,511	-11	1,798	15,299
Telco	19 GA 400 PR (2.73)	CTL	21.45	7.03	2.7300	-	4.172	127.0	90.0	127.0		0	-216	1,788	1,572
Telco	26 GA 200 PR (0.94)	CTL	21.59	6.77	0.9400	-	0.480	127.0	90.0	127.0		0	-23	1,800	1,777
Telco	26 GA 100 PR (0.74)	CTL	21.63	7.03	0.7400	-	0.270	127.0	90.0	127.0		0	-14	1,802	1,788
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.59	7.18	0.5160	-	0.097	127.0	90.0	127.0		0	-5	1,799	1,794
											Totals:	0	-598	32,266	31,668

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.83	5.16	270.0	270.0	53.00	4.50	-	0.00	-	-	-52	425	373
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	32.67	5.46	270.0	270.0	53.00	4.50	-	0.00	-	-	-55	377	322
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	NVE	28.25	5.78	90.0	90.0	28.00	4.50	-	0.00	-	-	-33	113	80
											Totals:	0	-140	916	776

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	37.02	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	102	803	905
Pin	Pin Insulator - 15 kV	NVE	37.02	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	72	803	874
Pin	Pin Insulator - 15 kV	NVE	37.02	18.00	344.0	0.0	10.00	9.50	7.50	-	-	-	42	803	844
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-18.00	196.9	0.0	3.00	12.75	3.80	-	-	-	-9	240	231

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Deadend	Deadend Insulator - 15 kV	NVE	32.67	-31.00	190.0	0.0	3.00	12.75	3.80	-	-	-	-13	240	226
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-44.00	187.1	0.0	3.00	12.75	3.80	-	-	-	-18	240	222
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-18.00	163.1	180.0	3.00	12.75	3.80	-	-	-	-4	240	236
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-31.00	170.0	180.0	3.00	12.75	3.80	-	-	-	-8	240	231
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-44.00	172.9	180.0	3.00	12.75	3.80	-	-	-	-13	240	227
Spool	Spool Insulator - 20 kV	NVE	30.33	3.88	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	24	24
Pin	Pin Insulator - 15 kV	NVE	28.44	44.00	172.5	0.0	10.00	9.50	7.50	-	-	-	-48	309	261
Bolt	Three Bolt	EXT	24.25	4.31	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	ELW	23.17	4.39	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	COX	22.25	4.46	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	CTL	21.58	4.50	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
											Totals:	0	86	4,179	4,265

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	24.86	34.41	10.87	18.46	6.69	12.10	1,000,000	50.00	57.00	37.83	12,360	3,723	3.32

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

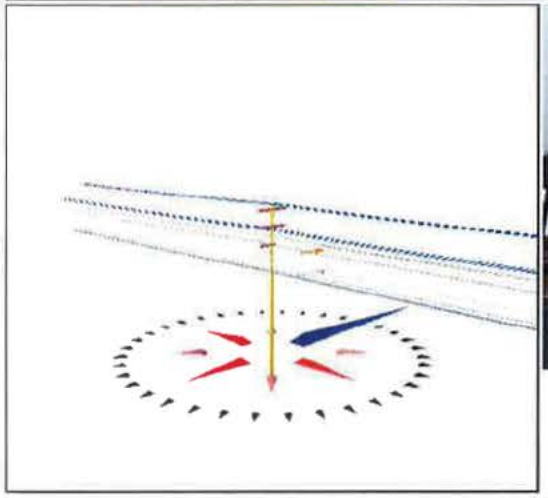
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Friday, August 15, 2014 11:20:29 AM

File Name:	**5 - p9573 Proposed**	Pole Length / Class:	**45 / 4**	Code:	**NESC**	Structure Type:	**Unguyed**
Pole Num:	**5 - p9573**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**7.17**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**38.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.10**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**147.1%**	0.0 ft	7.9°
Groundline:	**147.1%**	0.0 ft	7.9°
Vertical:	**30.2%**	24.8 ft	7.9°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**82,584 ft-lb**	22.4°	7.9°
Groundline:	**82,584 ft-lb**	22.4°	7.9°

GROUNDLINE LOAD SUMMARY:*Wind at 7.9°, Applied Moment 82,584 ft-lb at 22.4°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	1,043	31.8	**35,065**	42.5	**62.1**	**2,422**	685	6	**2,428**	**62.3**
Comms:	1,439	43.9	**31,451**	38.1	**55.7**	**2,172**	1,132	10	**2,182**	**56.0**
Pole:	645	19.7	**11,027**	13.4	**19.5**	**762**	1,402	12	**774**	**19.8**
Crossarms:	27	0.8	**777**	0.9	**1.4**	**54**	360	3	**57**	**1.5**
Insulators:	120	3.7	**4,263**	5.2	**7.6**	**294**	164	1	**296**	**7.6**
Pole Load:	3,274	100.0	**82,584**	100.0	**146.3**	**5,704**	3,743	33	**5,737**	**147.1**

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Reserve Capacity:		-26,118	-46.3	-1,804			-1,837	-47.1

LOAD SUMMARY BY OWNER

NVE:	1,835	51,149	3,533	2,580	22	3,555	91.2
EXT:	210	5,059	349	74	1	350	9.0
ELW:	130	2,994	207	49	0	207	5.3
COX:	386	8,495	587	181	2	588	15.1
CTL:	712	14,887	1,028	858	7	1,036	26.6
Totals	3,274	82,584	5,704	3,743	33	5,737	147.1

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.81	44.00	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-28,889	150	1,525	-27,213
Primary	4/0 COPPER 7 STRAND	NVE	37.81	44.00	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	28,889	211	2,153	31,252
Primary	4/0 COPPER 7 STRAND	NVE	37.81	31.00	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-28,889	105	1,525	-27,258
Primary	4/0 COPPER 7 STRAND	NVE	37.81	31.00	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	28,889	149	2,153	31,190
Primary	4/0 COPPER 7 STRAND	NVE	37.81	18.00	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-28,889	61	1,525	-27,302
Primary	4/0 COPPER 7 STRAND	NVE	37.81	18.00	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	28,889	86	2,153	31,128
Primary	4/0 COPPER 7 STRAND	NVE	32.58	25.61	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-24,877	-13	1,314	-23,576
Primary	4/0 COPPER 7 STRAND	NVE	32.58	35.95	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-24,877	-14	1,314	-23,577
Primary	4/0 COPPER 7 STRAND	NVE	32.58	47.62	0.5217	0.76	0.654	90.0	270.0	90.0	1,825	-24,877	-14	1,314	-23,577
Primary	4/0 COPPER 7 STRAND	NVE	32.58	25.61	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	24,877	-7	1,854	26,723
Primary	4/0 COPPER 7 STRAND	NVE	32.58	35.95	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	24,877	-12	1,854	26,719
Primary	4/0 COPPER 7 STRAND	NVE	32.58	47.62	0.5217	1.33	0.654	127.0	90.0	127.0	1,825	24,877	-14	1,854	26,717
Neutral	#6 COPPER SOLID	NVE	30.33	6.13	0.1620	0.52	0.079	90.0	270.0	90.0	275	-3,490	-3	380	-3,113
Neutral	#6 COPPER SOLID	NVE	30.33	6.13	0.1620	0.99	0.079	127.0	90.0	127.0	275	3,490	-4	536	4,022
Neutral	#4 COPPER 3 STRAND	NVE	30.33	6.13	0.2543	0.72	0.128	90.0	90.0	90.0	420	5,330	-4	596	5,922
Neutral	#4 COPPER 3 STRAND	NVE	30.33	6.13	0.2543	1.25	0.128	127.0	90.0	127.0	420	5,330	-6	841	6,166
Service	#6 COPPER SOLID	NVE	29.23	44.38	0.1620	0.52	0.079	90.0	270.0	90.0	275	-3,364	-17	366	-3,015
Service	#6 COPPER SOLID	NVE	29.23	44.38	0.1620	0.99	0.079	127.0	90.0	127.0	275	3,364	-24	517	3,857
											Totals:	10,660	633	23,772	35,065

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	24.25	6.81	0.2500	0.38	0.121	90.0	270.0	90.0	1,500	-15,220	-4	1,058	-14,166
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.21	6.81	0.8900	-	0.289	90.0	270.0	90.0		0	-10	1,056	1,046
Bundle	1/4" EHS	EXT	24.25	6.81	0.2500	0.75	0.121	127.0	90.0	127.0	1,500	15,220	-6	1,493	16,707
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.21	6.81	0.8900	-	0.289	127.0	90.0	127.0		0	-14	1,491	1,476
Bundle	5/16" EHS	ELW	23.17	6.89	0.3125	0.27	0.205	90.0	270.0	90.0	1,500	-14,542	-7	627	-13,923

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	24ct Fiber	ELW	23.14	6.89	0.3900	-	0.049	90.0	270.0	90.0		0	-2	626	624
Bundle	5/16" EHS	ELW	23.17	6.89	0.3125	0.53	0.205	127.0	90.0	127.0	1,500	14,542	-10	884	15,416
Telco	24ct Fiber	ELW	23.14	6.89	0.3900	-	0.049	127.0	90.0	127.0		0	-2	883	881
Bundle	1/4" EHS	COX	22.25	6.96	0.2500	0.92	0.121	90.0	270.0	90.0	1,500	-13,965	-4	508	-13,461
Telco	P3-750CA	COX	22.20	6.97	0.7500	-	0.161	90.0	270.0	90.0		0	-6	507	501
Telco	P3-500CA	COX	22.25	7.11	0.5000	-	0.072	90.0	270.0	90.0		0	-3	508	506
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.25	6.76	0.8900	-	0.289	90.0	270.0	90.0		0	-10	508	498
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.30	6.94	0.7560	-	0.208	90.0	270.0	90.0		0	-7	509	502
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.22	7.22	0.5160	-	0.097	90.0	270.0	90.0		0	-4	508	504
Telco	48ct Fiber	COX	22.29	7.20	0.5130	-	0.121	90.0	270.0	90.0		0	-5	509	505
Bundle	1/4" EHS	COX	22.25	6.96	0.2500	1.77	0.121	127.0	90.0	127.0	1,500	13,965	-6	719	14,678
Telco	P3-750CA	COX	22.20	6.95	0.7500	-	0.161	127.0	90.0	127.0		0	-8	717	709
Telco	P3-500CA	COX	22.25	7.11	0.5000	-	0.072	127.0	90.0	127.0		0	-4	719	715
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.25	6.74	0.8900	-	0.289	127.0	90.0	127.0		0	-14	719	705
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.30	6.93	0.7560	-	0.208	127.0	90.0	127.0		0	-11	721	710
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.29	7.19	0.5160	-	0.097	127.0	90.0	127.0		0	-5	720	715
Telco	48ct Fiber	COX	22.21	7.20	0.5130	-	0.121	127.0	90.0	127.0		0	-7	718	711
Bundle	5/16" EHS	CTL	21.58	7.00	0.3125	3.71	0.205	90.0	270.0	90.0	1,500	-13,544	-7	1,274	-12,278
Telco	19 GA 400 PR (2.73)	CTL	21.45	7.03	2.7300	-	4.172	90.0	270.0	90.0		0	-153	1,267	1,113
Telco	26 GA 200 PR (0.94)	CTL	21.59	6.77	0.9400	-	0.480	90.0	270.0	90.0		0	-16	1,275	1,259
Telco	26 GA 100 PR (0.74)	CTL	21.63	7.03	0.7400	-	0.270	90.0	270.0	90.0		0	-10	1,277	1,267
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.59	7.18	0.5160	-	0.097	90.0	270.0	90.0		0	-4	1,274	1,271
Bundle	5/16" EHS	CTL	21.58	7.00	0.3125	7.24	0.205	127.0	90.0	127.0	1,500	13,544	-11	1,798	15,331
Telco	19 GA 400 PR (2.73)	CTL	21.45	7.03	2.7300	-	4.172	127.0	90.0	127.0		0	-216	1,787	1,571
Telco	26 GA 200 PR (0.94)	CTL	21.59	6.77	0.9400	-	0.480	127.0	90.0	127.0		0	-23	1,799	1,776
Telco	26 GA 100 PR (0.74)	CTL	21.63	7.03	0.7400	-	0.270	127.0	90.0	127.0		0	-14	1,802	1,788
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.59	7.18	0.5160	-	0.097	127.0	90.0	127.0		0	-5	1,798	1,793
											Totals:	0	-609	32,060	31,451

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.83	5.16	270.0	270.0	53.00	4.50	-	0.00	-	-	-52	426	374
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	32.67	5.46	270.0	270.0	53.00	4.50	-	0.00	-	-	-55	378	323
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	NVE	28.25	5.78	90.0	90.0	28.00	4.50	-	0.00	-	-	-33	113	80
											Totals:	0	-140	917	777

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	37.02	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	102	803	904
Pin	Pin Insulator - 15 kV	NVE	37.02	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	72	803	874

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pin	Pin Insulator - 15 kV	NVE	37.02	18.00	344.0	0.0	10.00	9.50	7.50	-	-	-	42	803	844
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-18.00	196.9	0.0	3.00	12.75	3.80	-	-	-	-9	239	231
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-31.00	190.0	0.0	3.00	12.75	3.80	-	-	-	-13	239	226
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-44.00	187.1	0.0	3.00	12.75	3.80	-	-	-	-18	239	222
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-18.00	163.1	180.0	3.00	12.75	3.80	-	-	-	-4	239	236
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-31.00	170.0	180.0	3.00	12.75	3.80	-	-	-	-8	239	231
Deadend	Deadend Insulator - 15 kV	NVE	32.67	-44.00	172.9	180.0	3.00	12.75	3.80	-	-	-	-13	239	227
Spool	Spool Insulator - 20 kV	NVE	30.33	3.88	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	24	24
Pin	Pin Insulator - 15 kV	NVE	28.44	44.00	172.5	0.0	10.00	9.50	7.50	-	-	-	-48	309	261
Bolt	Three Bolt	EXT	24.25	4.31	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	ELW	23.17	4.39	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	COX	22.25	4.46	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	CTL	21.58	4.50	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
											Totals:	0	86	4,178	4,263

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	24.85	34.41	10.87	18.50	6.69	12.10	1,000,000	50.00	57.00	37.83	12,376	3,743	3.31

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

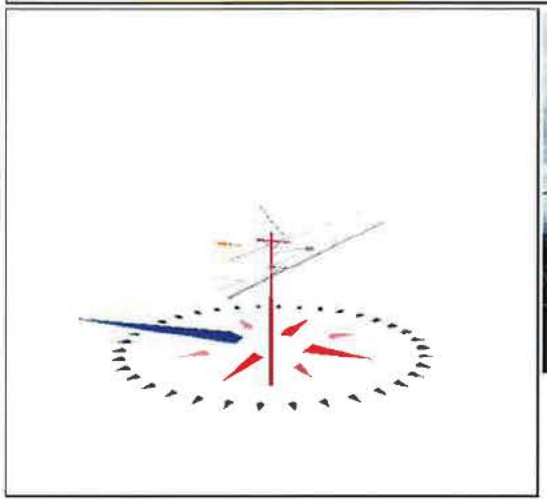
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 1:42:01 PM

File Name:	6 - p91046 Existin	Pole Length / Class:	40 / 4	Code:	NESC	Structure Type:	Unguyed
Pole Num:	6 - p91046	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	10.67	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	35.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.10
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	81.9%	0.0 ft	7.9°
Groundline:	81.9%	0.0 ft	7.9°
Vertical:	9.2%	17.3 ft	7.9°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	35,903 ft-lb	21.3°	7.9°
Groundline:	35,903 ft-lb	21.3°	7.9°

GROUNDLINE LOAD SUMMARY:*Wind at 7.9°, Applied Moment 35,903 ft-lb at 21.3°, Allowable Moment 44,120 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	425	23.0	11,781	32.8	26.7	1,041	17	0	1,042	26.7
Comms:	781	42.3	14,306	39.8	32.4	1,265	605	6	1,271	32.6
Pole:	477	25.8	6,410	17.9	14.5	567	973	10	577	14.8
Crossarms:	10	0.5	210	0.6	0.5	19	122	1	20	0.5
Streetlights:	74	4.0	2,099	5.8	4.8	186	60	1	186	4.8
Risers:	69	3.7	910	2.5	2.1	80	44	0	81	2.1

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulators:	11	0.6	**188**	0.5	**0.4**	**17**	45	0	**17**	**0.4**
Pole Load:	1,846	100.0	**35,903**	100.0	**81.4**	**3,174**	1,866	19	**3,193**	**81.9**
Pole Reserve Capacity:			**8,217**		**18.6**	**726**			**707**	**18.1**

LOAD SUMMARY BY OWNER

NVE:	1,061	**21,609**	**1,910**	1,189	12	**1,922**	**49.3**
COX:	195	**4,046**	**358**	82	1	**358**	**9.2**
ELW:	77	**1,503**	**133**	72	1	**134**	**3.4**
EXT:	117	**2,311**	**204**	44	0	**205**	**5.2**
CTL:	397	**6,434**	**569**	478	5	**574**	**14.7**
Totals	1,846	**35,903**	**3,174**	1,866	19	**3,193**	**81.9**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Service	#6 COPPER SOLID	NVE	27.81	44.32	0.1620	0.52	0.079	90.0	90.0	90.0	436	4,839	-17	351	5,172
Secondary	TRIPLEX 4 AWG	NVE	27.81	44.32	0.6800	0.32	0.164	30.0	270.0	30.0	436	-4,842	-12	491	-4,363
Secondary	TRIPLEX 4 AWG	NVE	27.81	44.32	0.6800	0.74	0.164	67.0	60.0	67.0	436	10,411	-27	587	10,971
											Totals:	10,408	-56	1,429	11,781

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	COX	21.00	6.48	0.2500	0.08	0.121	30.0	270.0	30.0	1,500	-12,574	-1	186	-12,389
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	20.95	6.49	0.8900	-	0.289	30.0	270.0	30.0		0	-3	185	182
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	21.00	6.30	0.7560	-	0.208	30.0	270.0	30.0		0	-2	186	183
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	21.03	6.49	0.5160	-	0.097	30.0	270.0	30.0		0	-1	186	185
Telco	24ct Fiber	COX	21.00	6.60	0.3900	-	0.049	30.0	270.0	30.0		0	-1	186	185
Bundle	1/4" EHS	COX	21.00	6.48	0.2500	0.75	0.121	90.0	90.0	90.0	1,500	12,574	-4	632	13,201
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	20.95	6.49	0.8900	-	0.289	90.0	90.0	90.0		0	-10	630	620
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	21.00	6.29	0.7560	-	0.208	90.0	90.0	90.0		0	-7	632	625
Telco	P3-750CA	COX	21.04	6.49	0.7500	-	0.161	90.0	90.0	90.0		0	-5	633	628
Telco	P3-500CA	COX	21.00	6.63	0.5000	-	0.072	90.0	90.0	90.0		0	-3	632	629
Bundle	5/16" EHS	ELW	20.61	18.29	0.3125	0.03	0.205	30.0	270.0	30.0	1,500	-12,339	-6	187	-12,157
Telco	24ct Fiber	ELW	20.58	18.29	0.3900	-	0.049	30.0	270.0	30.0		0	-1	187	186
Bundle	5/16" EHS	ELW	20.61	18.29	0.3125	0.27	0.205	90.0	90.0	90.0	1,500	12,339	-18	562	12,882
Telco	24ct Fiber	ELW	20.58	18.29	0.3900	-	0.049	90.0	90.0	90.0		0	-4	561	557
Bundle	1/4" EHS	EXT	20.61	31.17	0.2500	0.04	0.121	30.0	270.0	30.0	1,500	-12,339	-6	302	-12,043
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	20.56	31.17	0.8900	-	0.289	30.0	270.0	30.0		0	-15	301	286
Bundle	1/4" EHS	EXT	20.61	31.17	0.2500	0.38	0.121	90.0	90.0	90.0	1,500	12,339	-19	906	13,226

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	20.56	31.17	0.8900	-	0.289	90.0	90.0	90.0		0	-45	904	859
Bundle	5/16" EHS	CTL	20.61	48.11	0.3125	0.47	0.205	30.0	270.0	30.0	1,500	-12,339	-17	409	-11,947
Telco	19 GA 400 PR (2.73)	CTL	20.48	48.13	2.7300	-	4.172	30.0	270.0	30.0		0	-341	406	65
Telco	26 GA 200 PR (0.94)	CTL	20.62	47.90	0.9400	-	0.480	30.0	270.0	30.0		0	-39	409	370
Telco	26 GA 100 PR (0.74)	CTL	20.65	48.13	0.7400	-	0.270	30.0	270.0	30.0		0	-22	410	387
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.61	48.25	0.5160	-	0.097	30.0	270.0	30.0		0	-8	409	401
Bundle	5/16" EHS	CTL	20.61	48.11	0.3125	3.71	0.205	90.0	90.0	90.0	1,500	12,339	-50	1,226	13,514
Telco	19 GA 400 PR (2.73)	CTL	20.48	48.13	2.7300	-	4.172	90.0	90.0	90.0		0	-1,023	1,218	195
Telco	26 GA 200 PR (0.94)	CTL	20.62	47.90	0.9400	-	0.480	90.0	90.0	90.0		0	-116	1,227	1,110
Telco	26 GA 100 PR (0.74)	CTL	20.65	48.13	0.7400	-	0.270	90.0	90.0	90.0		0	-66	1,229	1,162
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.61	48.25	0.5160	-	0.097	90.0	90.0	90.0		0	-24	1,226	1,202
											Totals:	0	-1,858	16,164	14,306

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	26.83	5.28	90.0	90.0	53.00	4.50	-	0.00	-	-	13	151	164
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	ELW	20.42	5.77	90.0	90.0	28.00	4.50	-	0.00	-	-	-35	81	46
											Totals:	0	-22	232	210

Streetlight:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Can Diam. (in)	Can Height (in)	Arm Diam. (in)	Arm Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
General	Streetlight	NVE	23.75	3.77	180.0	180.0	40.00	22.00	9.00	3.00	96.00	-	344	1,755	2,099
											Totals:	0	344	1,755	2,099

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 80.0°	Riser	NVE	19.75	6.08	80.0	80.0	2.47	237.00	-	2.00	-	-	7	903	910
											Totals:	0	7	903	910

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	27.02	44.00	173.2	0.0	10.00	9.50	7.50	-	-	-	-49	295	246
Bolt	Three Bolt	COX	21.00	3.98	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	ELW	20.61	18.00	162.2	180.0	5.00	0.00	3.00	-	-	-	-10	0	-10
Bolt	Three Bolt	EXT	20.61	31.00	169.5	180.0	5.00	0.00	3.00	-	-	-	-17	0	-17
Bolt	Three Bolt	CTL	20.61	48.00	173.1	180.0	5.00	0.00	3.00	-	-	-	-27	0	-27
											Totals:	0	-107	295	188

Pole Buckling

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	17.26	33.53	10.26	11.02	6.69	11.15	1,000,000	50.00	57.00	29.33	20,341	**1,866**	**10.90**

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.9°

(Guy LF)

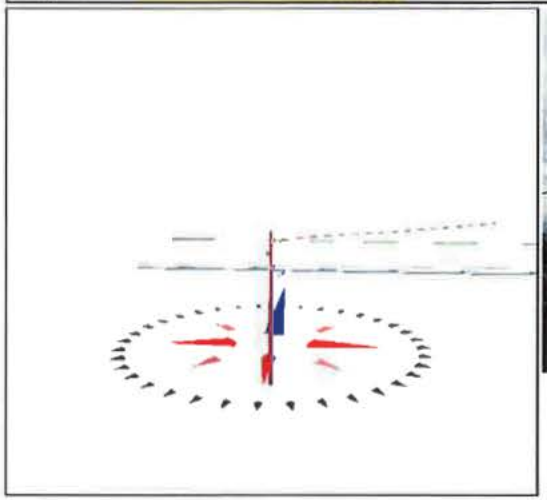
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 1:37:46 PM

File Name:	6 - p91046 Propose	Pole Length / Class:	40 / 4	Code:	NESC	Structure Type:	Unguyed
Pole Num:	6 - p91046	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	10.67	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	35.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.10
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	82.7%	0.0 ft	7.7°
Groundline:	82.7%	0.0 ft	7.7°
Vertical:	9.3%	17.3 ft	7.7°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	36,277 ft-lb	21.0°	7.7°
Groundline:	36,277 ft-lb	21.0°	7.7°

GROUNDLINE LOAD SUMMARY:*Wind at 7.7°, Applied Moment 36,277 ft-lb at 21.0°, Allowable Moment 44,120 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	424	22.7	11,745	32.4	26.6	1,038	17	0	1,038	26.6
Comms:	801	42.9	14,714	40.6	33.3	1,301	615	6	1,307	33.5
Pole:	477	25.6	6,413	17.7	14.5	567	973	10	577	14.8
Crossarms:	9	0.5	205	0.6	0.5	18	122	1	19	0.5
Streetlights:	74	4.0	2,100	5.8	4.8	186	60	1	186	4.8
Risers:	69	3.7	911	2.5	2.1	81	44	0	81	2.1

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.7°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulators:	11	0.6	188	0.5	0.4	17	45	0	17	0.4
Pole Load:	1,865	100.0	36,277	100.0	82.2	3,207	1,877	19	3,226	82.7
Pole Reserve Capacity:			7,843		17.8	693			674	17.3

LOAD SUMMARY BY OWNER

NVE:	1,060		21,577			1,907	1,189	12	1,920	49.2
COX:	213		4,430			392	93	1	393	10.1
ELW:	77		1,505			133	72	1	134	3.4
EXT:	118		2,316			205	44	0	205	5.3
CTL:	397		6,449			570	478	5	575	14.7
Totals	1,865		36,277			3,207	1,877	19	3,226	82.7

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Service	#6 COPPER SOLID	NVE	27.81	44.32	0.1620	0.52	0.079	90.0	90.0	90.0	436	4,776	-17	352	5,111
Secondary	TRIPLEX 4 AWG	NVE	27.81	44.32	0.6800	0.32	0.164	30.0	270.0	30.0	436	-4,780	-12	493	-4,300
Secondary	TRIPLEX 4 AWG	NVE	27.81	44.32	0.6800	0.75	0.164	67.0	60.0	67.0	436	10,369	-27	592	10,934
											Totals:	10,366	-56	1,436	11,745

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	COX	21.00	6.48	0.2500	0.09	0.121	30.0	270.0	30.0	1,500	-12,412	-1	164	-12,249
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	20.94	6.49	0.8900	-	0.289	30.0	270.0	30.0		0	-3	163	160
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	20.99	6.28	0.7560	-	0.208	30.0	270.0	30.0		0	-2	164	161
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	21.03	6.39	0.5160	-	0.097	30.0	270.0	30.0		0	-1	164	163
Telco	24ct Fiber	COX	21.03	6.57	0.3900	-	0.049	30.0	270.0	30.0		0	-1	164	163
Telco	48ct Fiber	COX	20.99	6.66	0.5130	-	0.121	30.0	270.0	30.0		0	-1	164	162
Bundle	1/4" EHS	COX	21.00	6.48	0.2500	0.85	0.121	90.0	90.0	90.0	1,500	12,412	-4	582	12,990
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	20.94	6.49	0.8900	-	0.289	90.0	90.0	90.0		0	-10	581	571
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	20.99	6.28	0.7560	-	0.208	90.0	90.0	90.0		0	-7	582	575
Telco	P3-750CA	COX	21.05	6.36	0.7500	-	0.161	90.0	90.0	90.0		0	-5	584	578
Telco	P3-500CA	COX	21.03	6.59	0.5000	-	0.072	90.0	90.0	90.0		0	-3	583	581
Telco	48ct Fiber	COX	20.99	6.66	0.5130	-	0.121	90.0	90.0	90.0		0	-4	582	578
Bundle	5/16" EHS	ELW	20.61	18.29	0.3125	0.03	0.205	30.0	270.0	30.0	1,500	-12,180	-6	188	-11,998
Telco	24ct Fiber	ELW	20.58	18.29	0.3900	-	0.049	30.0	270.0	30.0		0	-1	187	186
Bundle	5/16" EHS	ELW	20.61	18.29	0.3125	0.27	0.205	90.0	90.0	90.0	1,500	12,180	-18	563	12,725
Telco	24ct Fiber	ELW	20.58	18.29	0.3900	-	0.049	90.0	90.0	90.0		0	-4	562	558
Bundle	1/4" EHS	EXT	20.61	31.17	0.2500	0.04	0.121	30.0	270.0	30.0	1,500	-12,180	-6	303	-11,883

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.7°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	20.56	31.17	0.8900	-	0.289	30.0	270.0	30.0		0	-15	302	287
Bundle	1/4" EHS	EXT	20.61	31.17	0.2500	0.38	0.121	90.0	90.0	90.0	1,500	12,180	-19	908	13,069
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	20.56	31.17	0.8900	-	0.289	90.0	90.0	90.0		0	-45	906	861
Bundle	5/16" EHS	CTL	20.61	48.11	0.3125	0.47	0.205	30.0	270.0	30.0	1,500	-12,180	-17	410	-11,787
Telco	19 GA 400 PR (2.73)	CTL	20.48	48.13	2.7300	-	4.172	30.0	270.0	30.0		0	-342	407	65
Telco	26 GA 200 PR (0.94)	CTL	20.62	47.90	0.9400	-	0.480	30.0	270.0	30.0		0	-39	410	371
Telco	26 GA 100 PR (0.74)	CTL	20.65	48.13	0.7400	-	0.270	30.0	270.0	30.0		0	-22	410	388
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.61	48.25	0.5160	-	0.097	30.0	270.0	30.0		0	-8	410	402
Bundle	5/16" EHS	CTL	20.61	48.11	0.3125	3.71	0.205	90.0	90.0	90.0	1,500	12,180	-50	1,229	13,358
Telco	19 GA 400 PR (2.73)	CTL	20.48	48.13	2.7300	-	4.172	90.0	90.0	90.0		0	-1,025	1,221	196
Telco	26 GA 200 PR (0.94)	CTL	20.62	47.90	0.9400	-	0.480	90.0	90.0	90.0		0	-117	1,229	1,113
Telco	26 GA 100 PR (0.74)	CTL	20.65	48.13	0.7400	-	0.270	90.0	90.0	90.0		0	-66	1,231	1,165
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.61	48.25	0.5160	-	0.097	90.0	90.0	90.0		0	-24	1,229	1,205
											Totals:	0	-1,868	16,582	14,714

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	26.83	5.28	90.0	90.0	53.00	4.50	-	0.00	-	-	13	148	161
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	ELW	20.42	5.77	90.0	90.0	28.00	4.50	-	0.00	-	-	-35	80	44
											Totals:	0	-23	228	205

Streetlight:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Can Diam. (in)	Can Height (in)	Arm Diam. (in)	Arm Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
General	Streetlight	NVE	23.75	3.77	180.0	180.0	40.00	22.00	9.00	3.00	96.00	-	345	1,755	2,100
											Totals:	0	345	1,755	2,100

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 80.0°	Riser	NVE	19.75	6.08	80.0	80.0	2.47	237.00	-	2.00	-	-	7	904	911
											Totals:	0	7	904	911

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	27.02	44.00	173.2	0.0	10.00	9.50	7.50	-	-	-	-49	295	246
Bolt	Three Bolt	COX	21.00	3.98	180.0	180.0	5.00	0.00	3.00	-	-	-	-4	0	-4
Bolt	Three Bolt	ELW	20.61	18.00	162.2	180.0	5.00	0.00	3.00	-	-	-	-10	0	-10
Bolt	Three Bolt	EXT	20.61	31.00	169.5	180.0	5.00	0.00	3.00	-	-	-	-17	0	-17
Bolt	Three Bolt	CTL	20.61	48.00	173.1	180.0	5.00	0.00	3.00	-	-	-	-27	0	-27
											Totals:	0	-107	295	188

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.7°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	17.29	33.54	10.26	11.05	6.69	11.15	1,000,000	50.00	57.00	29.33	20,274	**1,877**	**10.80**

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 7.7°

(Guy LF)

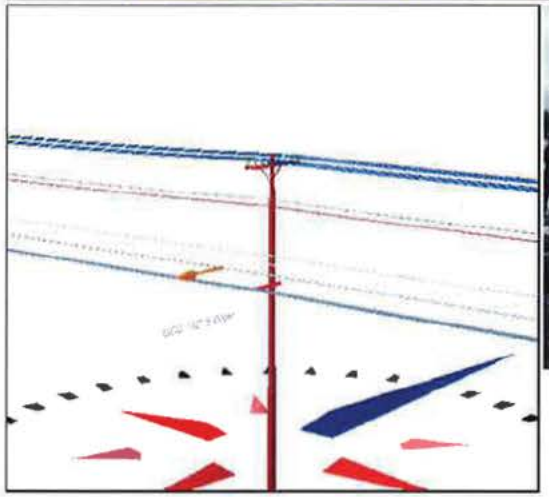
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 2:14:19 PM

File Name:	7 - p9105 Existing	Pole Length / Class:	45 / 4	Code:	NESC	Structure Type:	Unguyed
Pole Num:	7 - p9105	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	7.42	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	38.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.10
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	170.0%	0.0 ft	180.0°
Groundline:	170.0%	0.0 ft	180.0°
Vertical:	33.4%	25.6 ft	180.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	95,508 ft-lb	179.9°	180.0°
Groundline:	95,508 ft-lb	179.9°	180.0°

GROUNDLINE LOAD SUMMARY:*Wind at 180.0°, Applied Moment 95,508 ft-lb at 179.9°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	999	28.3	35,699	37.4	63.2	2,466	811	7	2,473	63.4
Comms:	1,727	48.9	43,292	45.3	76.7	2,990	1,206	10	3,001	76.9
Pole:	662	18.7	11,238	11.8	19.9	776	1,393	12	788	20.2
Crossarms:	7	0.2	297	0.3	0.5	21	201	2	22	0.6
Insulators:	135	3.8	4,982	5.2	8.8	344	213	2	346	8.9
Pole Load:	3,530	100.0	95,508	100.0	169.1	6,597	3,824	33	6,630	170.0

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Reserve Capacity:		-39,042	-69.1	-2,697			-2,730	-70.0

LOAD SUMMARY BY OWNER

NVE:	1,800	52,054	3,595	2,546	22	3,617	92.8
EXT:	267	6,777	468	85	1	469	12.0
ELW:	165	4,011	277	56	0	277	7.1
COX:	402	9,270	640	152	1	642	16.5
CTL:	895	23,396	1,616	986	9	1,625	41.7
Totals	3,530	95,508	6,597	3,824	33	6,630	170.0

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-122	-237	2,400	2,041
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	122	-216	2,182	2,088
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-122	-167	2,400	2,111
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	122	-152	2,182	2,151
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-122	-97	2,400	2,181
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	122	-88	2,182	2,215
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-122	97	2,400	2,375
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	122	88	2,182	2,392
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-122	167	2,400	2,445
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	122	152	2,182	2,455
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-122	237	2,400	2,515
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	122	216	2,182	2,519
Neutral	#6 COPPER SOLID	NVE	32.08	5.99	0.1620	0.99	0.079	132.0	270.0	132.0	275	-16	4	643	631
Neutral	#6 COPPER SOLID	NVE	32.08	5.99	0.1620	0.83	0.079	120.0	90.0	120.0	275	16	4	585	604
Neutral	#4 COPPER 3 STRAND	NVE	32.08	5.99	0.2543	1.27	0.128	132.0	270.0	132.0	420	-24	6	1,010	992
Neutral	#4 COPPER 3 STRAND	NVE	32.08	5.99	0.2543	1.09	0.128	120.0	90.0	120.0	420	24	6	918	948
Secondary	TRIPLEX 4 AWG	NVE	31.25	6.05	0.6800	1.59	0.164	132.0	270.0	132.0	585	-33	8	2,630	2,605
Secondary	TRIPLEX 4 AWG	NVE	31.25	6.05	0.6800	1.42	0.164	120.0	90.0	120.0	585	33	7	2,391	2,431
											Totals:	0	35	35,664	35,699

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	25.25	6.73	0.2500	0.72	0.121	132.0	270.0	132.0	1,500	-68	7	1,764	1,703
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	25.21	6.73	0.8900	-	0.289	132.0	270.0	132.0		0	16	1,761	1,777
Bundle	1/4" EHS	EXT	25.25	6.73	0.2500	0.59	0.121	120.0	90.0	120.0	1,500	68	6	1,604	1,678
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	25.21	6.73	0.8900	-	0.289	120.0	90.0	120.0		0	15	1,601	1,615
Bundle	5/16" EHS	ELW	24.08	6.81	0.3125	0.51	0.205	132.0	270.0	132.0	1,500	-65	12	1,043	989

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	24ct Fiber	ELW	24.05	6.81	0.3900	-	0.049	132.0	270.0	132.0		0	3	1,042	1,044
Bundle	5/16" EHS	ELW	24.08	6.81	0.3125	0.42	0.205	120.0	90.0	120.0	1,500	65	10	948	1,023
Telco	24ct Fiber	ELW	24.05	6.81	0.3900	-	0.049	120.0	90.0	120.0		0	3	947	949
Bundle	1/4" EHS	COX	22.83	6.90	0.2500	1.31	0.121	132.0	270.0	132.0	1,500	-61	7	962	907
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.78	6.92	0.8900	-	0.289	132.0	270.0	132.0		0	17	960	977
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.83	6.73	0.7560	-	0.208	132.0	270.0	132.0		0	12	962	974
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.86	6.92	0.5160	-	0.097	132.0	270.0	132.0		0	6	963	969
Telco	24ct Fiber	COX	22.83	7.03	0.3900	-	0.049	132.0	270.0	132.0		0	3	962	965
Bundle	1/4" EHS	COX	22.83	6.90	0.2500	1.08	0.121	120.0	90.0	120.0	1,500	61	6	875	942
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.78	6.92	0.8900	-	0.289	120.0	90.0	120.0		0	15	873	888
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.83	6.73	0.7560	-	0.208	120.0	90.0	120.0		0	10	875	885
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.86	6.92	0.5160	-	0.097	120.0	90.0	120.0		0	5	876	881
Telco	24ct Fiber	COX	22.83	7.03	0.3900	-	0.049	120.0	90.0	120.0		0	3	875	877
Bundle	5/16" EHS	CTL	21.86	48.15	0.3125	7.40	0.205	132.0	270.0	132.0	1,500	-59	81	2,556	2,578
Telco	19 GA 400 PR (2.73)	CTL	21.76	48.56	2.7300	-	4.172	132.0	270.0	132.0		0	1,669	2,545	4,215
Telco	26 GA 200 PR (0.94)	CTL	21.83	48.00	0.9400	-	0.480	132.0	270.0	132.0		0	189	2,552	2,742
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.77	48.05	0.5160	-	0.097	132.0	270.0	132.0		0	38	2,545	2,584
Bundle	5/16" EHS	CTL	21.86	48.15	0.3125	6.14	0.205	120.0	90.0	120.0	1,500	59	74	2,324	2,456
Telco	19 GA 400 PR (2.73)	CTL	21.76	48.56	2.7300	-	4.172	120.0	90.0	120.0		0	1,518	2,314	3,831
Telco	26 GA 200 PR (0.94)	CTL	21.83	48.00	0.9400	-	0.480	120.0	90.0	120.0		0	172	2,320	2,492
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.77	48.05	0.5160	-	0.097	120.0	90.0	120.0		0	35	2,314	2,349
											Totals:	0	3,930	39,362	43,292

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.17	5.19	270.0	270.0	53.00	4.50	-	0.00	-	-	0	178	178
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	CTL	21.67	6.24	90.0	90.0	28.00	4.50	-	0.00	-	-	66	53	119
											Totals:	0	66	231	297

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.36	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	-110	814	704
Pin	Pin Insulator - 15 kV	NVE	36.36	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	-77	814	737
Pin	Pin Insulator - 15 kV	NVE	36.36	18.00	343.9	0.0	10.00	9.50	7.50	-	-	-	-45	814	769
Pin	Pin Insulator - 15 kV	NVE	36.36	-18.00	196.1	0.0	10.00	9.50	7.50	-	-	-	45	814	859
Pin	Pin Insulator - 15 kV	NVE	36.36	-31.00	189.5	0.0	10.00	9.50	7.50	-	-	-	77	814	892
Pin	Pin Insulator - 15 kV	NVE	36.36	-44.00	186.7	0.0	10.00	9.50	7.50	-	-	-	110	814	924
Spool	Spool Insulator - 20 kV	NVE	32.08	3.74	180.0	180.0	1.00	2.12	2.50	-	-	-	1	27	27
Spool	Spool Insulator - 20 kV	NVE	31.25	3.80	180.0	180.0	1.00	2.12	2.50	-	-	-	1	26	27
Bolt	Three Bolt	EXT	25.25	4.23	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Bolt	Three Bolt	ELW	24.08	4.31	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	COX	22.83	4.40	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	21.86	48.00	172.6	180.0	5.00	0.00	3.00	-	-	-	30	0	30
											Totals:	0	44	4,937	4,982

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.59	34.57	10.82	18.95	6.69	12.10	1,000,000	50.00	57.00	37.58	11,454	3,824	3.00

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

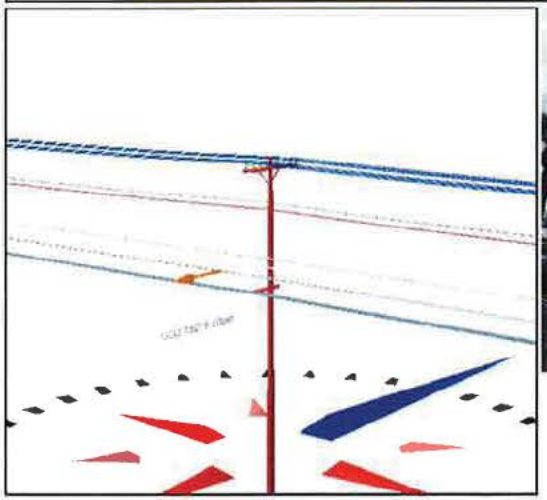
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 2:15:30 PM

File Name:	**7 - p9105 Proposed**	Pole Length / Class:	**45 / 4**	Code:	**NESC**	Structure Type:	**Unguyed**
Pole Num:	**7 - p9105**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**7.42**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**38.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.10**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**170.9%**	0.0 ft	180.0°
Groundline:	**170.9%**	0.0 ft	180.0°
Vertical:	**33.5%**	25.6 ft	180.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**96,036 ft-lb**	179.9°	180.0°
Groundline:	**96,036 ft-lb**	179.9°	180.0°

GROUNDLINE LOAD SUMMARY:*Wind at 180.0°, Applied Moment 96,036 ft-lb at 179.9°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	999	28.1	**35,699**	37.2	**63.2**	**2,466**	811	7	**2,473**	**63.4**
Comms:	1,750	49.3	**43,820**	45.6	**77.6**	**3,027**	1,229	11	**3,037**	**77.9**
Pole:	662	18.6	**11,238**	11.7	**19.9**	**776**	1,393	12	**788**	**20.2**
Crossarms:	7	0.2	**297**	0.3	**0.5**	**21**	201	2	**22**	**0.6**
Insulators:	135	3.8	**4,982**	5.2	**8.8**	**344**	213	2	**346**	**8.9**
Pole Load:	3,553	100.0	**96,036**	100.0	**170.1**	**6,633**	3,847	33	**6,667**	**170.9**

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pole Reserve Capacity:		-39,570	-70.1	-2,733			-2,767	-70.9

LOAD SUMMARY BY OWNER

NVE:	1,800	52,054		3,595	2,546	22	3,617	92.8
EXT:	267	6,777		468	85	1	469	12.0
ELW:	165	4,011		277	56	0	277	7.1
COX:	425	9,797		677	175	2	678	17.4
CTL:	895	23,396		1,616	986	9	1,625	41.7
Totals	3,553	96,036		6,633	3,847	33	6,667	170.9

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-121	-237	2,400	2,042
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	121	-216	2,182	2,087
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-121	-167	2,400	2,112
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	121	-152	2,182	2,151
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-121	-97	2,400	2,182
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	121	-88	2,182	2,214
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-121	97	2,400	2,376
Primary	4/0 COPPER 7 STRAND	NVE	37.15	18.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	121	88	2,182	2,391
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-121	167	2,400	2,446
Primary	4/0 COPPER 7 STRAND	NVE	37.15	31.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	121	152	2,182	2,455
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.39	0.654	132.0	270.0	132.0	1,825	-121	237	2,400	2,516
Primary	4/0 COPPER 7 STRAND	NVE	37.15	44.00	0.5217	1.19	0.654	120.0	90.0	120.0	1,825	121	216	2,182	2,518
Neutral	#6 COPPER SOLID	NVE	32.08	5.99	0.1620	0.99	0.079	132.0	270.0	132.0	275	-16	4	643	631
Neutral	#6 COPPER SOLID	NVE	32.08	5.99	0.1620	0.83	0.079	120.0	90.0	120.0	275	16	4	585	604
Neutral	#4 COPPER 3 STRAND	NVE	32.08	5.99	0.2543	1.27	0.128	132.0	270.0	132.0	420	-24	6	1,010	992
Neutral	#4 COPPER 3 STRAND	NVE	32.08	5.99	0.2543	1.09	0.128	120.0	90.0	120.0	420	24	6	918	948
Secondary	TRIPLEX 4 AWG	NVE	31.25	6.05	0.6800	1.59	0.164	132.0	270.0	132.0	585	-33	8	2,630	2,605
Secondary	TRIPLEX 4 AWG	NVE	31.25	6.05	0.6800	1.42	0.164	120.0	90.0	120.0	585	33	7	2,391	2,431
											Totals:	0	35	35,664	35,699

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	25.25	6.73	0.2500	0.72	0.121	132.0	270.0	132.0	1,500	-68	7	1,764	1,703
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	25.21	6.73	0.8900	-	0.289	132.0	270.0	132.0		0	16	1,761	1,777
Bundle	1/4" EHS	EXT	25.25	6.73	0.2500	0.59	0.121	120.0	90.0	120.0	1,500	68	6	1,604	1,677
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	25.21	6.73	0.8900	-	0.289	120.0	90.0	120.0		0	15	1,601	1,615
Bundle	5/16" EHS	ELW	24.08	6.81	0.3125	0.51	0.205	132.0	270.0	132.0	1,500	-64	12	1,043	990

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	24ct Fiber	ELW	24.05	6.81	0.3900	-	0.049	132.0	270.0	132.0		0	3	1,042	1,044
Bundle	5/16" EHS	ELW	24.08	6.81	0.3125	0.42	0.205	120.0	90.0	120.0	1,500	64	10	948	1,023
Telco	24ct Fiber	ELW	24.05	6.81	0.3900	-	0.049	120.0	90.0	120.0		0	3	947	949
Bundle	1/4" EHS	COX	22.83	6.90	0.2500	1.50	0.121	132.0	270.0	132.0	1,500	-61	7	847	792
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.77	6.92	0.8900	-	0.289	132.0	270.0	132.0		0	17	845	861
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.82	6.70	0.7560	-	0.208	132.0	270.0	132.0		0	11	846	858
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.86	6.82	0.5160	-	0.097	132.0	270.0	132.0		0	5	848	853
Telco	24ct Fiber	COX	22.86	7.00	0.3900	-	0.049	132.0	270.0	132.0		0	3	848	850
Telco	48ct Fiber	COX	22.82	7.08	0.5130	-	0.121	132.0	270.0	132.0		0	7	846	853
Bundle	1/4" EHS	COX	22.83	6.90	0.2500	1.25	0.121	120.0	90.0	120.0	1,500	61	6	770	837
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.77	6.92	0.8900	-	0.289	120.0	90.0	120.0		0	15	768	783
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.82	6.70	0.7560	-	0.208	120.0	90.0	120.0		0	10	769	780
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.86	6.82	0.5160	-	0.097	120.0	90.0	120.0		0	5	771	776
Telco	24ct Fiber	COX	22.86	7.00	0.3900	-	0.049	120.0	90.0	120.0		0	3	771	773
Telco	48ct Fiber	COX	22.82	7.08	0.5130	-	0.121	120.0	90.0	120.0		0	6	769	776
Bundle	5/16" EHS	CTL	21.86	48.15	0.3125	7.40	0.205	132.0	270.0	132.0	1,500	-58	81	2,556	2,579
Telco	19 GA 400 PR (2.73)	CTL	21.76	48.56	2.7300	-	4.172	132.0	270.0	132.0		0	1,669	2,545	4,215
Telco	26 GA 200 PR (0.94)	CTL	21.83	48.00	0.9400	-	0.480	132.0	270.0	132.0		0	189	2,552	2,742
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.77	48.05	0.5160	-	0.097	132.0	270.0	132.0		0	38	2,545	2,584
Bundle	5/16" EHS	CTL	21.86	48.15	0.3125	6.14	0.205	120.0	90.0	120.0	1,500	58	74	2,324	2,456
Telco	19 GA 400 PR (2.73)	CTL	21.76	48.56	2.7300	-	4.172	120.0	90.0	120.0		0	1,518	2,314	3,831
Telco	26 GA 200 PR (0.94)	CTL	21.83	48.00	0.9400	-	0.480	120.0	90.0	120.0		0	172	2,320	2,492
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.77	48.05	0.5160	-	0.097	120.0	90.0	120.0		0	35	2,314	2,349
											Totals:	0	3,943	39,877	43,820

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.17	5.19	270.0	270.0	53.00	4.50	-	0.00	-	-	0	178	178
Offset	CROSSARM 3-1/2 X 4-1/2 X 4	CTL	21.67	6.24	90.0	90.0	28.00	4.50	-	0.00	-	-	66	53	119
											Totals:	0	66	231	297

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.36	44.00	353.3	0.0	10.00	9.50	7.50	-	-	-	-110	814	704
Pin	Pin Insulator - 15 kV	NVE	36.36	31.00	350.5	0.0	10.00	9.50	7.50	-	-	-	-77	814	737
Pin	Pin Insulator - 15 kV	NVE	36.36	18.00	343.9	0.0	10.00	9.50	7.50	-	-	-	-45	814	769
Pin	Pin Insulator - 15 kV	NVE	36.36	-18.00	196.1	0.0	10.00	9.50	7.50	-	-	-	45	814	859
Pin	Pin Insulator - 15 kV	NVE	36.36	-31.00	189.5	0.0	10.00	9.50	7.50	-	-	-	77	814	892
Pin	Pin Insulator - 15 kV	NVE	36.36	-44.00	186.7	0.0	10.00	9.50	7.50	-	-	-	110	814	924
Spool	Spool Insulator - 20 kV	NVE	32.08	3.74	180.0	180.0	1.00	2.12	2.50	-	-	-	1	27	27

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Spool	Spool Insulator - 20 kV	NVE	31.25	3.80	180.0	180.0	1.00	2.12	2.50	-	-	-	1	26	27
Bolt	Three Bolt	EXT	25.25	4.23	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	ELW	24.08	4.31	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	COX	22.83	4.40	180.0	180.0	5.00	0.00	3.00	-	-	-	4	0	4
Bolt	Three Bolt	CTL	21.86	48.00	172.6	180.0	5.00	0.00	3.00	-	-	-	30	0	30
											Totals:	0	44	4,937	4,982

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.57	34.57	10.82	19.00	6.69	12.10	1,000,000	50.00	57.00	37.58	11,472	3,847	2.98

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 180.0°

(Guy LF)

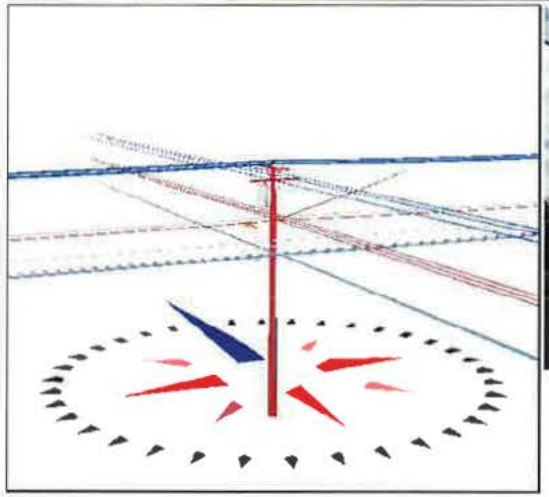
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 3:14:40 PM

File Name:	**8 - p9103 Existing**	Pole Length / Class:	**45 / H1**	Code:	**NESC**	Structure Type:	**Unguyed**
Pole Num:	**8 - p9103**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**7.33**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**53.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.10**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**101.6%**	0.0 ft	5.6°
Groundline:	**101.6%**	0.0 ft	5.6°
Vertical:	**15.0%**	25.0 ft	5.6°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**154,444 ft-lb**	8.6°	5.6°
Groundline:	**154,444 ft-lb**	8.6°	5.6°

GROUNDLINE LOAD SUMMARY:*Wind at 5.6°, Applied Moment 154,444 ft-lb at 8.6°, Allowable Moment 153,201 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	2,736	46.4	**83,526**	54.1	**54.5**	**2,126**	913	4	**2,130**	**54.6**
Comms:	1,792	30.4	**39,519**	25.6	**25.8**	**1,006**	1,745	8	**1,014**	**26.0**
Power Equipment:	176	3.0	**6,678**	4.3	**4.4**	**170**	960	4	**174**	**4.5**
Pole:	921	15.6	**15,648**	10.1	**10.2**	**398**	2,699	12	**410**	**10.5**
Crossarms:	73	1.2	**2,485**	1.6	**1.6**	**63**	238	1	**64**	**1.6**
Risers:	15	0.3	**192**	0.1	**0.1**	**5**	47	0	**5**	**0.1**

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulators:	177	3.0	**6,395**	4.1	**4.2**	**163**	276	1	**164**	**4.2**
Pole Load:	5,890	100.0	**154,444**	100.0	**100.8**	**3,932**	6,879	31	**3,962**	**101.6**
Pole Reserve Capacity:			**-1,243**		**-0.8**	**-32**			**-62**	**-1.6**

LOAD SUMMARY BY OWNER

NVE:	4,083	**114,752**	**2,921**	5,042	23	**2,944**	**75.5**
EXT:	269	**6,473**	**165**	87	0	**165**	**4.2**
TWT:	167	**3,844**	**98**	57	0	**98**	**2.5**
COX:	458	**9,916**	**252**	255	1	**254**	**6.5**
CTL:	914	**19,459**	**495**	1,439	6	**502**	**12.9**
Totals	5,890	**154,444**	**3,932**	6,879	31	**3,962**	**101.6**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,248	224	2,285	-8,739
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,248	235	2,393	13,876
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,248	158	2,285	-8,805
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,248	165	2,393	13,806
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,248	92	2,285	-8,871
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,248	96	2,393	13,737
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,248	-92	2,285	-9,055
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,248	-96	2,393	13,545
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,248	-158	2,285	-9,121
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,248	-165	2,393	13,476
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,248	-224	2,285	-9,187
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,248	-235	2,393	13,406
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	44.50	0.2500	0.65	0.057	82.0	180.0	82.0	282	-10,939	-4	10	-10,932
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	44.50	0.2500	1.09	0.057	122.0	0.0	122.0	282	10,939	-6	15	10,948
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	19.20	0.2500	0.65	0.057	82.0	180.0	82.0	282	-10,939	-1	10	-10,930
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	19.20	0.2500	1.09	0.057	122.0	0.0	122.0	282	10,939	-2	15	10,952
Primary	ACSR 4 AWG 6/1 SWAN	NVE	34.58	48.09	0.2500	0.65	0.057	82.0	180.0	82.0	282	-10,607	0	10	-10,597
Primary	ACSR 4 AWG 6/1 SWAN	NVE	34.58	44.42	0.2500	1.09	0.057	122.0	0.0	122.0	282	10,607	1	14	10,622
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.50	7.80	0.2920	0.37	0.062	82.0	180.0	82.0	460	-14,261	-2	9	-14,254
Neutral	#6 COPPER SOLID	NVE	28.50	7.80	0.1620	0.95	0.079	126.0	270.0	126.0	275	-1,282	-5	537	-750
Neutral	#6 COPPER SOLID	NVE	28.50	7.80	0.1620	1.04	0.079	132.0	90.0	132.0	275	1,282	-5	562	1,839
Neutral	#4 COPPER 3 STRAND	NVE	28.50	7.80	0.2543	1.22	0.128	126.0	270.0	126.0	420	-1,958	-8	843	-1,124
Neutral	#4 COPPER 3 STRAND	NVE	28.50	7.80	0.2543	1.22	0.128	126.0	0.0	126.0	420	13,021	-8	12	13,025
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.50	7.80	0.2920	0.74	0.062	122.0	0.0	122.0	460	14,261	4	14	14,278

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.00	7.85	0.2920	0.37	0.062	82.0	180.0	82.0	460	-14,010	-2	9	-14,004
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.00	7.85	0.2920	0.74	0.062	122.0	0.0	122.0	460	14,010	4	14	14,028
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	29.00	7.74	0.2920	0.37	0.062	82.0	180.0	82.0	460	-14,511	-2	9	-14,504
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	29.00	7.74	0.2920	0.74	0.062	122.0	0.0	122.0	460	14,511	4	14	14,529
Secondary	TRIPLEX 4 AWG	NVE	27.83	7.86	0.6800	1.51	0.164	126.0	270.0	126.0	585	-2,664	-10	2,200	-474
Secondary	TRIPLEX 4 AWG	NVE	27.83	7.86	0.6800	1.59	0.164	132.0	90.0	132.0	585	2,664	-11	2,305	4,958
Secondary	TRIPLEX 1/0	NVE	27.67	7.88	1.0300	1.05	0.399	93.0	45.0	93.0	1,507	36,897	15	936	37,848
											Totals:	47,959	-40	35,607	83,526

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	24.33	8.47	0.2500	0.72	0.121	126.0	270.0	126.0	1,500	-5,971	-8	1,597	-4,382
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.29	8.47	0.8900	-	0.289	126.0	270.0	126.0		0	-19	1,594	1,575
Bundle	1/4" EHS	EXT	24.33	8.47	0.2500	0.78	0.121	132.0	90.0	132.0	1,500	5,971	-8	1,673	7,635
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.29	8.47	0.8900	-	0.289	132.0	90.0	132.0		0	-20	1,670	1,650
Bundle	5/16" EHS	TWT	23.33	8.57	0.3125	0.51	0.205	126.0	270.0	126.0	1,500	-5,725	-14	949	-4,790
Telco	24ct Fiber	TWT	23.30	8.57	0.3900	-	0.049	126.0	270.0	126.0		0	-3	948	945
Bundle	5/16" EHS	TWT	23.33	8.57	0.3125	0.55	0.205	132.0	90.0	132.0	1,500	5,725	-14	994	6,705
Telco	24ct Fiber	TWT	23.30	8.57	0.3900	-	0.049	132.0	90.0	132.0		0	-3	993	990
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	1.55	0.121	132.0	90.0	132.0	1,500	5,460	-9	836	6,288
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.19	8.70	0.8900	-	0.289	132.0	90.0	132.0		0	-21	834	813
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.24	8.48	0.7560	-	0.208	132.0	90.0	132.0		0	-14	836	821
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.60	0.5160	-	0.097	132.0	90.0	132.0		0	-7	837	830
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.80	0.5160	-	0.097	132.0	90.0	132.0		0	-7	837	830
Telco	24ct Fiber	COX	22.24	8.81	0.3900	-	0.049	132.0	90.0	132.0		0	-4	836	832
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	1.41	0.121	126.0	270.0	126.0	1,500	-5,460	-8	798	-4,670
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.19	8.70	0.8900	-	0.289	126.0	270.0	126.0		0	-20	796	776
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.24	8.48	0.7560	-	0.208	126.0	270.0	126.0		0	-14	798	784
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.60	0.5160	-	0.097	126.0	270.0	126.0		0	-6	799	793
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.80	0.5160	-	0.097	126.0	270.0	126.0		0	-7	799	792
Telco	24ct Fiber	COX	22.24	8.81	0.3900	-	0.049	126.0	270.0	126.0		0	-3	798	794
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	0.15	0.121	82.0	180.0	82.0	1,500	-36,304	1	9	-36,294
Telco	P3-500CA	COX	22.22	8.68	0.5000	-	0.072	82.0	180.0	82.0		0	0	9	10
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	0.19	0.121	82.0	0.0	82.0	1,500	36,304	1	7	36,312
Telco	P3-500CA	COX	22.23	8.46	0.5000	-	0.072	82.0	0.0	82.0		0	0	7	8
Telco	24ct Fiber	COX	22.23	8.87	0.3900	-	0.049	82.0	0.0	82.0		0	0	7	8
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	6.29	0.205	126.0	270.0	126.0	1,500	-5,379	-14	1,616	-3,778
Telco	26 GA 1200 PR (2.08)	CTL	21.81	8.81	2.0800	-	2.540	126.0	270.0	126.0		0	-175	1,608	1,433
Telco	22 GA 300 PR (1.72)	CTL	21.92	8.35	1.7200	-	1.640	126.0	270.0	126.0		0	-104	1,615	1,512
Telco	24ct Fiber	CTL	21.95	8.65	0.3900	-	0.049	126.0	270.0	126.0		0	-3	1,618	1,614

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	24ct Fiber	CTL	21.95	8.80	0.3900	-	0.049	126.0	270.0	126.0		0	-3	1,618	1,615
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.92	8.89	0.5160	-	0.097	126.0	270.0	126.0		0	-7	1,615	1,609
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	6.88	0.205	132.0	90.0	132.0	1,500	5,379	-15	1,693	7,057
Telco	26 GA 1200 PR (2.08)	CTL	21.81	8.81	2.0800	-	2.540	132.0	90.0	132.0		0	-183	1,684	1,501
Telco	22 GA 300 PR (1.72)	CTL	21.92	8.35	1.7200	-	1.640	132.0	90.0	132.0		0	-109	1,692	1,584
Telco	24ct Fiber	CTL	21.95	8.65	0.3900	-	0.049	132.0	90.0	132.0		0	-3	1,695	1,691
Telco	24ct Fiber	CTL	21.95	8.80	0.3900	-	0.049	132.0	90.0	132.0		0	-4	1,695	1,691
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.92	8.89	0.5160	-	0.097	132.0	90.0	132.0		0	-7	1,692	1,685
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	2.36	0.205	82.0	180.0	82.0	1,500	-35,766	1	15	-35,750
Telco	26 GA 200 PR (0.94)	CTL	21.86	8.53	0.9400	-	0.480	82.0	180.0	82.0		0	3	15	18
Telco	26 GA 200 PR (0.94)	CTL	21.89	9.32	0.9400	-	0.480	82.0	180.0	82.0		0	4	15	19
Telco	26 GA 1200 PR (2.08)	CTL	22.02	9.34	2.0800	-	2.540	82.0	180.0	82.0		0	21	15	36
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.95	8.41	0.5160	-	0.097	82.0	180.0	82.0		0	1	15	15
Telco	24ct Fiber	CTL	21.91	8.35	0.3900	-	0.049	82.0	180.0	82.0		0	0	15	15
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	4.34	0.205	122.0	0.0	122.0	1,500	35,766	2	27	35,795
Telco	26 GA 1200 PR (2.08)	CTL	21.85	7.73	2.0800	-	2.540	122.0	0.0	122.0		0	14	27	41
Telco	26 GA 100 PR (0.74)	CTL	21.89	9.07	0.7400	-	0.270	122.0	0.0	122.0		0	3	27	30
Telco	26 GA 100 PR (0.74)	CTL	21.83	9.01	0.7400	-	0.270	122.0	0.0	122.0		0	3	27	30
											Totals:	0	-779	40,299	39,519

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Transformer	1PH-50KVA	NVE	31.67	23.22	315.0	315.0	640.00	47.00	-	24.00	-	-	1,104	5,575	6,678
											Totals:	0	1,104	5,575	6,678

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.67	6.47	270.0	270.0	53.00	4.50	-	0.00	-	-	-25	250	224
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	34.67	6.67	180.0	180.0	53.00	4.50	-	0.00	-	-	-44	2,304	2,261
											Totals:	0	-69	2,554	2,485

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Riser 180.0°	Riser	COX	20.92	8.77	180.0	180.0	2.62	251.04	-	4.00	-	-	-22	214	192
											Totals:	0	-22	214	192

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Pin	Pin Insulator - 15 kV	NVE	36.86	44.00	351.6	0.0	10.00	9.50	7.50	-	-	-	109	824	933
Pin	Pin Insulator - 15 kV	NVE	36.86	31.00	348.2	0.0	10.00	9.50	7.50	-	-	-	77	824	901

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pin	Pin Insulator - 15 kV	NVE	36.86	18.00	340.2	0.0	10.00	9.50	7.50	-	-	-	44	824	869
Pin	Pin Insulator - 15 kV	NVE	36.86	-18.00	199.8	0.0	10.00	9.50	7.50	-	-	-	-44	824	780
Pin	Pin Insulator - 15 kV	NVE	36.86	-31.00	191.8	0.0	10.00	9.50	7.50	-	-	-	-77	824	748
Pin	Pin Insulator - 15 kV	NVE	36.86	-44.00	188.4	0.0	10.00	9.50	7.50	-	-	-	-109	824	715
Pin	Pin Insulator - 15 kV	NVE	34.86	44.00	261.4	0.0	10.00	9.50	7.50	-	-	-	-16	390	373
Pin	Pin Insulator - 15 kV	NVE	34.86	-18.00	110.3	0.0	10.00	9.50	7.50	-	-	-	-5	390	385
Deadend	Deadend Insulator - 15 kV	NVE	34.67	-44.00	98.6	0.0	3.00	12.75	3.80	-	-	-	-5	262	257
Deadend	Deadend Insulator - 15 kV	NVE	34.67	-44.00	98.6	180.0	3.00	12.75	3.80	-	-	-	5	262	267
Spool	Spool Insulator - 20 kV	NVE	28.50	5.55	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	24	23
Spool	Spool Insulator - 20 kV	NVE	28.50	5.55	0.0	0.0	1.00	2.12	2.50	-	-	-	1	24	25
Spool	Spool Insulator - 20 kV	NVE	28.00	5.60	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	23	22
Spool	Spool Insulator - 20 kV	NVE	28.00	5.60	0.0	0.0	1.00	2.12	2.50	-	-	-	1	23	24
Spool	Spool Insulator - 20 kV	NVE	29.00	5.49	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	24	23
Spool	Spool Insulator - 20 kV	NVE	29.00	5.49	0.0	0.0	1.00	2.12	2.50	-	-	-	1	24	25
Spool	Spool Insulator - 20 kV	NVE	27.83	5.61	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	23	22
Spool	Spool Insulator - 20 kV	NVE	27.67	5.63	45.0	45.0	1.00	2.12	2.50	-	-	-	1	23	24
Bolt	Three Bolt	EXT	24.33	5.97	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	TWT	23.33	6.07	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	COX	22.25	6.18	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	COX	22.25	6.18	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	21.92	6.21	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	CTL	21.92	6.21	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	-41	6,437	6,395

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	25.00	34.51	15.12	25.17	9.24	16.88	1,000,000	50.00	57.00	37.67	45,732	6,879	6.65

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

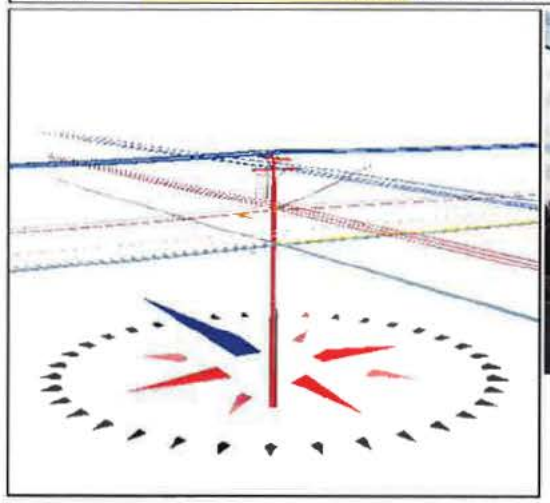
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 3:18:50 PM

File Name:	8 - p9103 Proposed	Pole Length / Class:	45 / H1	Code:	NESC	Structure Type:	Unguyed
Pole Num:	8 - p9103	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	7.33	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	53.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.10
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	102.5%	0.0 ft	5.6°
Groundline:	102.5%	0.0 ft	5.6°
Vertical:	15.1%	25.0 ft	5.6°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	155,805 ft-lb	8.5°	5.6°
Groundline:	155,805 ft-lb	8.5°	5.6°

GROUNDLINE LOAD SUMMARY:*Wind at 5.6°, Applied Moment 155,805 ft-lb at 8.5°, Allowable Moment 153,201 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	2,735	46.0	83,520	53.6	54.5	2,126	913	4	2,130	54.6
Comms:	1,854	31.1	40,884	26.2	26.7	1,041	1,765	8	1,049	26.9
Power Equipment:	176	3.0	6,680	4.3	4.4	170	960	4	174	4.5
Pole:	921	15.5	15,648	10.0	10.2	398	2,699	12	410	10.5
Crossarms:	73	1.2	2,485	1.6	1.6	63	238	1	64	1.6
Risers:	15	0.3	192	0.1	0.1	5	47	0	5	0.1

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Insulators:	177	3.0	**6,396**	4.1	**4.2**	**163**	276	1	**164**	**4.2**
Pole Load:	5,952	100.0	**155,805**	100.0	**101.7**	**3,966**	6,899	31	**3,997**	**102.5**
Pole Reserve Capacity:			**-2,604**		**-1.7**	**-66**			**-97**	**-2.5**

LOAD SUMMARY BY OWNER

NVE:	4,083	**114,748**	**2,921**	5,042	23	**2,944**	**75.5**
EXT:	269	**6,474**	**165**	87	0	**165**	**4.2**
TWT:	167	**3,845**	**98**	57	0	**98**	**2.5**
COX:	519	**11,278**	**287**	275	1	**288**	**7.4**
CTL:	915	**19,460**	**495**	1,439	6	**502**	**12.9**
Totals	5,952	**155,805**	**3,966**	6,899	31	**3,997**	**102.5**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,174	224	2,285	-8,665
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,174	235	2,394	13,803
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,174	158	2,285	-8,732
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,174	165	2,394	13,733
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,174	92	2,285	-8,798
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,174	96	2,394	13,664
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,174	-92	2,285	-8,981
Primary	4/0 COPPER 7 STRAND	NVE	37.65	18.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,174	-96	2,394	13,472
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,174	-158	2,285	-9,047
Primary	4/0 COPPER 7 STRAND	NVE	37.65	31.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,174	-165	2,394	13,403
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.30	0.654	126.0	270.0	126.0	1,825	-11,174	-224	2,285	-9,113
Primary	4/0 COPPER 7 STRAND	NVE	37.65	44.00	0.5217	1.41	0.654	132.0	90.0	132.0	1,825	11,174	-235	2,394	13,333
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	44.50	0.2500	0.65	0.057	82.0	180.0	82.0	282	-10,940	-4	10	-10,934
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	44.50	0.2500	1.09	0.057	122.0	0.0	122.0	282	10,940	-6	15	10,949
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	19.20	0.2500	0.65	0.057	82.0	180.0	82.0	282	-10,940	-1	10	-10,931
Primary	ACSR 4 AWG 6/1 SWAN	NVE	35.65	19.20	0.2500	1.09	0.057	122.0	0.0	122.0	282	10,940	-2	15	10,953
Primary	ACSR 4 AWG 6/1 SWAN	NVE	34.58	48.09	0.2500	0.65	0.057	82.0	180.0	82.0	282	-10,608	0	10	-10,599
Primary	ACSR 4 AWG 6/1 SWAN	NVE	34.58	44.42	0.2500	1.09	0.057	122.0	0.0	122.0	282	10,608	1	14	10,623
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.50	7.80	0.2920	0.37	0.062	82.0	180.0	82.0	460	-14,263	-2	9	-14,256
Neutral	#6 COPPER SOLID	NVE	28.50	7.80	0.1620	0.95	0.079	126.0	270.0	126.0	275	-1,274	-5	537	-742
Neutral	#6 COPPER SOLID	NVE	28.50	7.80	0.1620	1.04	0.079	132.0	90.0	132.0	275	1,274	-5	562	1,831
Neutral	#4 COPPER 3 STRAND	NVE	28.50	7.80	0.2543	1.22	0.128	126.0	270.0	126.0	420	-1,946	-8	843	-1,111
Neutral	#4 COPPER 3 STRAND	NVE	28.50	7.80	0.2543	1.22	0.128	126.0	0.0	126.0	420	13,022	-8	12	13,027
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.50	7.80	0.2920	0.74	0.062	122.0	0.0	122.0	460	14,263	4	14	14,280

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.00	7.85	0.2920	0.37	0.062	82.0	180.0	82.0	460	-14,012	-2	9	-14,006
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	28.00	7.85	0.2920	0.74	0.062	122.0	0.0	122.0	460	14,012	4	14	14,030
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	29.00	7.74	0.2920	0.37	0.062	82.0	180.0	82.0	460	-14,513	-2	9	-14,506
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	29.00	7.74	0.2920	0.74	0.062	122.0	0.0	122.0	460	14,513	4	14	14,531
Secondary	TRIPLEX 4 AWG	NVE	27.83	7.86	0.6800	1.51	0.164	126.0	270.0	126.0	585	-2,646	-10	2,200	-456
Secondary	TRIPLEX 4 AWG	NVE	27.83	7.86	0.6800	1.59	0.164	132.0	90.0	132.0	585	2,646	-11	2,305	4,941
Secondary	TRIPLEX 1/0	NVE	27.67	7.88	1.0300	1.05	0.399	93.0	45.0	93.0	1,507	36,870	15	938	37,823
											Totals:	47,947	-40	35,612	83,520

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	EXT	24.33	8.47	0.2500	0.72	0.121	126.0	270.0	126.0	1,500	-5,932	-8	1,597	-4,343
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.29	8.47	0.8900	-	0.289	126.0	270.0	126.0		0	-19	1,594	1,575
Bundle	1/4" EHS	EXT	24.33	8.47	0.2500	0.78	0.121	132.0	90.0	132.0	1,500	5,932	-8	1,673	7,597
Telco	BELOPTIX DT288 - 288 FIBERS -	EXT	24.29	8.47	0.8900	-	0.289	132.0	90.0	132.0		0	-20	1,670	1,650
Bundle	5/16" EHS	TWT	23.33	8.57	0.3125	0.51	0.205	126.0	270.0	126.0	1,500	-5,688	-14	949	-4,753
Telco	24ct Fiber	TWT	23.30	8.57	0.3900	-	0.049	126.0	270.0	126.0		0	-3	948	945
Bundle	5/16" EHS	TWT	23.33	8.57	0.3125	0.55	0.205	132.0	90.0	132.0	1,500	5,688	-14	994	6,668
Telco	24ct Fiber	TWT	23.30	8.57	0.3900	-	0.049	132.0	90.0	132.0		0	-3	993	990
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	1.74	0.121	132.0	90.0	132.0	1,500	5,425	-9	911	6,327
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.20	8.72	0.8900	-	0.289	132.0	90.0	132.0		0	-21	909	888
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.24	8.48	0.7560	-	0.208	132.0	90.0	132.0		0	-14	910	896
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.29	8.50	0.5160	-	0.097	132.0	90.0	132.0		0	-7	913	906
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.69	0.5160	-	0.097	132.0	90.0	132.0		0	-7	912	905
Telco	24ct Fiber	COX	22.29	8.89	0.3900	-	0.049	132.0	90.0	132.0		0	-4	912	909
Telco	48ct Fiber	COX	22.25	8.86	0.5130	-	0.121	132.0	90.0	132.0		0	-9	911	902
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	1.41	0.121	126.0	270.0	126.0	1,500	-5,425	-8	798	-4,635
Telco	BELOPTIX DT288 - 288 FIBERS -	COX	22.19	8.70	0.8900	-	0.289	126.0	270.0	126.0		0	-20	796	776
Telco	BELOPTIX DT144 - 144 FIBERS -	COX	22.24	8.48	0.7560	-	0.208	126.0	270.0	126.0		0	-14	798	784
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.60	0.5160	-	0.097	126.0	270.0	126.0		0	-6	799	793
Telco	BELOPTIX DT096 - 72 FIBERS -	COX	22.28	8.80	0.5160	-	0.097	126.0	270.0	126.0		0	-7	799	793
Telco	24ct Fiber	COX	22.24	8.81	0.3900	-	0.049	126.0	270.0	126.0		0	-3	798	794
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	0.24	0.121	82.0	180.0	82.0	1,500	-36,310	1	8	-36,300
Telco	P3-500CA	COX	22.23	8.44	0.5000	-	0.072	82.0	180.0	82.0		0	0	8	9
Telco	48ct Fiber	COX	22.23	8.91	0.5130	-	0.121	82.0	180.0	82.0		0	1	8	9
Bundle	1/4" EHS	COX	22.25	8.68	0.2500	0.19	0.121	82.0	0.0	82.0	1,500	36,310	1	7	36,318
Telco	P3-500CA	COX	22.23	8.46	0.5000	-	0.072	82.0	0.0	82.0		0	0	7	8
Telco	24ct Fiber	COX	22.23	8.87	0.3900	-	0.049	82.0	0.0	82.0		0	0	7	8
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	6.29	0.205	126.0	270.0	126.0	1,500	-5,344	-14	1,616	-3,742
Telco	26 GA 1200 PR (2.08)	CTL	21.81	8.81	2.0800	-	2.540	126.0	270.0	126.0		0	-175	1,608	1,433

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	22 GA 300 PR (1.72)	CTL	21.92	8.35	1.7200	-	1.640	126.0	270.0	126.0		0	-104	1,616	1,512
Telco	24ct Fiber	CTL	21.95	8.65	0.3900	-	0.049	126.0	270.0	126.0		0	-3	1,618	1,615
Telco	24ct Fiber	CTL	21.95	8.80	0.3900	-	0.049	126.0	270.0	126.0		0	-3	1,618	1,615
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.92	8.89	0.5160	-	0.097	126.0	270.0	126.0		0	-7	1,616	1,609
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	6.88	0.205	132.0	90.0	132.0	1,500	5,344	-15	1,693	7,022
Telco	26 GA 1200 PR (2.08)	CTL	21.81	8.81	2.0800	-	2.540	132.0	90.0	132.0		0	-183	1,684	1,501
Telco	22 GA 300 PR (1.72)	CTL	21.92	8.35	1.7200	-	1.640	132.0	90.0	132.0		0	-109	1,693	1,584
Telco	24ct Fiber	CTL	21.95	8.65	0.3900	-	0.049	132.0	90.0	132.0		0	-3	1,695	1,692
Telco	24ct Fiber	CTL	21.95	8.80	0.3900	-	0.049	132.0	90.0	132.0		0	-4	1,695	1,692
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.92	8.89	0.5160	-	0.097	132.0	90.0	132.0		0	-7	1,693	1,686
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	2.36	0.205	82.0	180.0	82.0	1,500	-35,771	1	15	-35,755
Telco	26 GA 200 PR (0.94)	CTL	21.86	8.53	0.9400	-	0.480	82.0	180.0	82.0		0	3	15	18
Telco	26 GA 200 PR (0.94)	CTL	21.89	9.32	0.9400	-	0.480	82.0	180.0	82.0		0	4	15	19
Telco	26 GA 1200 PR (2.08)	CTL	22.02	9.34	2.0800	-	2.540	82.0	180.0	82.0		0	21	15	36
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	21.95	8.41	0.5160	-	0.097	82.0	180.0	82.0		0	1	15	15
Telco	24ct Fiber	CTL	21.91	8.35	0.3900	-	0.049	82.0	180.0	82.0		0	0	15	15
Bundle	5/16" EHS	CTL	21.92	8.71	0.3125	4.34	0.205	122.0	0.0	122.0	1,500	35,771	2	27	35,800
Telco	26 GA 1200 PR (2.08)	CTL	21.85	7.73	2.0800	-	2.540	122.0	0.0	122.0		0	14	27	41
Telco	26 GA 100 PR (0.74)	CTL	21.89	9.07	0.7400	-	0.270	122.0	0.0	122.0		0	3	27	30
Telco	26 GA 100 PR (0.74)	CTL	21.83	9.01	0.7400	-	0.270	122.0	0.0	122.0		0	3	27	30
											Totals:	0	-788	41,672	40,884

PowerEquipment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Transformer	1PH-50KVA	NVE	31.67	23.22	315.0	315.0	640.00	47.00	-	24.00	-	-	1,105	5,575	6,680
											Totals:	0	1,105	5,575	6,680

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.67	6.47	270.0	270.0	53.00	4.50	-	0.00	-	-	-25	249	224
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	34.67	6.67	180.0	180.0	53.00	4.50	-	0.00	-	-	-44	2,305	2,261
											Totals:	0	-69	2,554	2,485

Riser:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*
Riser 180.0°	Riser	COX	20.92	8.77	180.0	180.0	2.62	251.04	-	4.00	-	-	-22	214	192
											Totals:	0	-22	214	192

Insulator/Attachment:	Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft lb)*	Moment at GL (ft-lb)*

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Pin	Pin Insulator - 15 kV	NVE	36.86	44.00	351.6	0.0	10.00	9.50	7.50	-	-	-	109	824	933
Pin	Pin Insulator - 15 kV	NVE	36.86	31.00	348.2	0.0	10.00	9.50	7.50	-	-	-	77	824	901
Pin	Pin Insulator - 15 kV	NVE	36.86	18.00	340.2	0.0	10.00	9.50	7.50	-	-	-	45	824	869
Pin	Pin Insulator - 15 kV	NVE	36.86	-18.00	199.8	0.0	10.00	9.50	7.50	-	-	-	-45	824	780
Pin	Pin Insulator - 15 kV	NVE	36.86	-31.00	191.8	0.0	10.00	9.50	7.50	-	-	-	-77	824	748
Pin	Pin Insulator - 15 kV	NVE	36.86	-44.00	188.4	0.0	10.00	9.50	7.50	-	-	-	-109	824	715
Pin	Pin Insulator - 15 kV	NVE	34.86	44.00	261.4	0.0	10.00	9.50	7.50	-	-	-	-16	390	374
Pin	Pin Insulator - 15 kV	NVE	34.86	-18.00	110.3	0.0	10.00	9.50	7.50	-	-	-	-5	390	385
Deadend	Deadend Insulator - 15 kV	NVE	34.67	-44.00	98.6	0.0	3.00	12.75	3.80	-	-	-	-5	262	257
Deadend	Deadend Insulator - 15 kV	NVE	34.67	-44.00	98.6	180.0	3.00	12.75	3.80	-	-	-	5	262	267
Spool	Spool Insulator - 20 kV	NVE	28.50	5.55	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	24	23
Spool	Spool Insulator - 20 kV	NVE	28.50	5.55	0.0	0.0	1.00	2.12	2.50	-	-	-	1	24	25
Spool	Spool Insulator - 20 kV	NVE	28.00	5.60	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	23	22
Spool	Spool Insulator - 20 kV	NVE	28.00	5.60	0.0	0.0	1.00	2.12	2.50	-	-	-	1	23	24
Spool	Spool Insulator - 20 kV	NVE	29.00	5.49	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	24	23
Spool	Spool Insulator - 20 kV	NVE	29.00	5.49	0.0	0.0	1.00	2.12	2.50	-	-	-	1	24	25
Spool	Spool Insulator - 20 kV	NVE	27.83	5.61	180.0	180.0	1.00	2.12	2.50	-	-	-	-1	23	22
Spool	Spool Insulator - 20 kV	NVE	27.67	5.63	45.0	45.0	1.00	2.12	2.50	-	-	-	1	23	24
Bolt	Three Bolt	EXT	24.33	5.97	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	TWT	23.33	6.07	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	COX	22.25	6.18	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	COX	22.25	6.18	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	21.92	6.21	180.0	180.0	5.00	0.00	3.00	-	-	-	-5	0	-5
Bolt	Three Bolt	CTL	21.92	6.21	90.0	90.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	-41	6,437	6,396

Pole Buckling

Buckling	Buckling (ft)	Buckling Section (% Buckling Col. Hgt.)	Buckling (in)	Min. Buckling (in)	Diameter (in)	Diameter (in)	Modulus of (psi)	Pole (pcf)	Ice Density (pcf)	Pole Tip (ft)	Buckling Load (lbs)	Buckling Load (lbs)	Buckling Load
2.00	24.99	34.51	15.12	25.20	9.24	16.88	1,000,000	50.00	57.00	37.67	45,765	6,899	6.63

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 5.6°

(Guy LF)

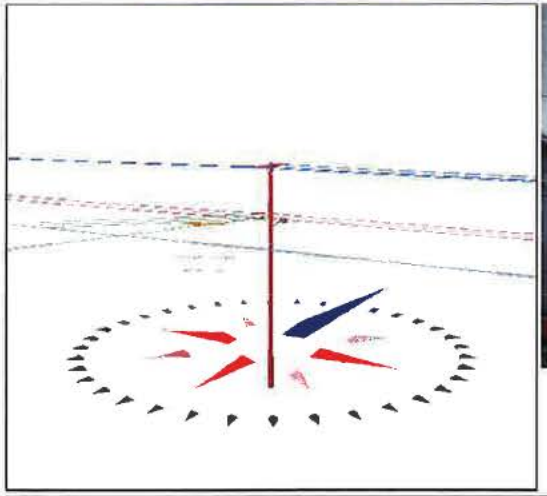
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 4:14:04 PM

File Name:	**9 - p9106 Existing**	Pole Length / Class:	**45 / 4**	Code:	**NESC**	Structure Type:	**Guyed**
Pole Num:	**9 - p9106**	Pole Species:	**WESTERN RED CEDAR**	NESC Rule:	**Rule 250B**	Status:	**N/A**
Permit #:	**Unset**	Setting Depth (ft):	**8.08**	Const. Grade:	**B**	Pole Strength Factor:	**0.65**
Owner:	**Unset**	G/L Circumference (in):	**38.00**	Load District:	**Light**	Transverse Wind LF:	**2.50**
Latitude:	**Unset**	G/L Fiber Stress (psi):	**6,000**	Ice Thickness (in):	**0.00**	Wire Tension LF:	**1.65**
Longitude:	**Unset**	Allowable Stress (psi):	**3,900**	Wind Speed (mph):	**59.29**	Vertical LF:	**1.50**
Emp #:	**Unset**	Fiber Stress Ht. Reduction:	**No**	Wind Pressure (psf):	**9.00**		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	**327.6%**	0.0 ft	247.0°
Groundline:	**327.6%**	0.0 ft	247.0°
Vertical:	**1.5%**	20.2 ft	90.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	**184,657 ft-lb**	256.4°	247.0°
Groundline:	**184,657 ft-lb**	256.4°	247.0°

Guys Capacity Summary: Adequate

Guy Summary		Guy Tensions		Maximum Guy Tensions	
	Attach Height (ft)	% Allowable Tension	Wind Angle	% Allowable Tension	Wind Angle
Guy 1	35.2	**0.0%**	247.0°	**0.0%**	0.0°

Anchor Summary

	Lead Length (ft)	Lead Angle	Max. % Allow. Capacity
Anchor 1	18.5	270.0°	**0.0%**

GROUNDLINE LOAD SUMMARY:*Wind at 247.0°, Applied Moment 184,657 ft-lb at 256.4°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	6,376	87.4	**165,341**	89.5	**292.8**	**11,420**	178	2	**11,421**	**292.9**

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 247.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Comms:	66	0.9	**1,389**	0.8	**2.5**	**96**	604	5	**101**	**2.6**
Guys/Braces:	1	0.0	**38**	0.0	**0.1**	**3**	5	0	**3**	**0.1**
Pole:	641	8.8	**10,703**	5.8	**19.0**	**739**	1,369	12	**751**	**19.3**
Crossarms:	121	1.7	**4,518**	2.4	**8.0**	**312**	159	1	**313**	**8.0**
Streetlights:	47	0.6	**1,184**	0.6	**2.1**	**82**	60	1	**82**	**2.1**
Insulators:	42	0.6	**1,484**	0.8	**2.6**	**102**	46	0	**103**	**2.6**
Pole Load:	7,295	100.0	**184,657**	100.0	**327.0**	**12,754**	2,421	21	**12,775**	**327.6**
Pole Reserve Capacity:			**-128,191**		**-227.0**	**-8,854**			**-8,875**	**-227.6**

LOAD SUMMARY BY OWNER

NVE:	7,229		**183,266**			**12,658**	1,802	16	**12,674**	**325.0**
COX:	13		**277**			**19**	36	0	**19**	**0.5**
CTL:	53		**1,113**			**77**	582	5	**82**	**2.1**
Totals	7,295		**184,657**			**12,754**	2,421	21	**12,775**	**327.6**

Detailed Load Components

Power:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Primary	ACSR 4 AWG 6/1 SWAN	NVE	36.08	47.50	0.2500	0.79	0.057	82.0	90.0	82.0	282	-16,314	-1	64	-16,251
Primary	ACSR 4 AWG 6/1 SWAN	NVE	36.08	25.38	0.2500	0.79	0.057	82.0	90.0	82.0	282	-16,314	-1	64	-16,251
Primary	ACSR 4 AWG 6/1 SWAN	NVE	36.08	47.50	0.2500	0.79	0.057	82.0	90.0	82.0	282	-16,314	0	64	-16,250
Primary	ACSR 4 AWG 6/1 SWAN	NVE	36.08	25.38	0.2500	1.26	0.057	117.0	270.0	117.0	282	16,314	1	91	16,406
Primary	ACSR 4 AWG 6/1 SWAN	NVE	36.08	47.50	0.2500	1.26	0.057	117.0	270.0	117.0	282	16,314	1	91	16,406
Neutral	AAC 2 AWG 7 STRAND IRIS	NVE	26.58	6.35	0.2920	0.64	0.062	82.0	90.0	82.0	460	-19,606	-2	55	-19,553
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	27.08	6.31	0.2920	0.64	0.062	82.0	90.0	82.0	460	-19,975	-2	56	-19,921
Secondary	AAC 2 AWG 7 STRAND IRIS	NVE	26.08	6.39	0.2920	0.64	0.062	82.0	90.0	82.0	460	-19,237	-2	54	-19,185
Neutral	2/0 COPPER 7 STRAND WP	NVE	26.58	6.35	0.4137	1.10	0.411	117.0	270.0	117.0	1,390	59,244	19	111	59,373
Neutral	#6 COPPER SOLID	NVE	26.58	6.35	0.1620	0.16	0.079	39.0	225.0	39.0	275	10,298	1	31	10,330
Service	TRIPLEX 2 AWG	NVE	26.58	6.35	0.8060	0.74	0.248	64.0	330.0	64.0	774	9,566	6	1,224	10,796
Service	TRIPLEX 2 AWG	NVE	26.58	6.35	0.8060	1.23	0.248	100.0	200.0	100.0	774	18,801	10	1,224	20,034
Secondary	2/0 COPPER 7 STRAND WP	NVE	27.08	6.31	0.4137	1.10	0.411	117.0	270.0	117.0	1,390	60,358	18	113	60,490
Service	#6 COPPER SOLID	NVE	27.08	6.31	0.1620	0.16	0.079	39.0	225.0	39.0	275	10,492	1	31	10,524
Secondary	2/0 COPPER 7 STRAND WP	NVE	26.08	6.39	0.4137	1.10	0.411	117.0	270.0	117.0	1,390	58,130	19	109	58,257
Service	#6 COPPER SOLID	NVE	26.08	6.39	0.1620	0.16	0.079	39.0	225.0	39.0	275	10,104	1	30	10,136
											Totals:	161,861	70	3,411	165,341

Comm:		Owner	Height (ft)	Horiz. Offset (in)	Cable Dia. (in)	Sag at Max Temp	Cable Weight (lbs/ft)	Lead / Span Length	Span Angle (deg)	Wire Length (ft)	Tension (lbs)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Bundle	1/4" EHS	COX	21.17	7.00	0.2500	0.61	0.121	117.0	270.0	117.0	1,500	50,920	1	80	51,001

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 247.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Telco	P3-500CA	COX	21.14	7.00	0.5000	-	0.072	117.0	270.0	117.0		0	1	80	81
Bundle	1/4" EHS	COX	21.17	7.00	0.2500	0.30	0.121	82.0	90.0	82.0	1,500	-50,920	1	56	-50,863
Telco	P3-500CA	COX	21.14	7.00	0.5000	-	0.072	82.0	90.0	82.0		0	1	56	57
Bundle	5/16" EHS	CTL	20.08	7.08	0.3125	4.79	0.205	117.0	270.0	117.0	1,500	48,298	3	104	48,405
Telco	26 GA 200 PR (0.94)	CTL	20.05	6.90	0.9400	-	0.480	117.0	270.0	117.0		0	4	104	108
Telco	26 GA 200 PR (0.94)	CTL	20.06	6.67	0.9400	-	0.480	117.0	270.0	117.0		0	1	104	105
Telco	26 GA 1200 PR (2.08)	CTL	20.18	6.85	2.0800	-	2.540	117.0	270.0	117.0		0	19	105	123
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.11	7.21	0.5160	-	0.097	117.0	270.0	117.0		0	1	104	106
Telco	24ct Fiber	CTL	20.12	6.62	0.3900	-	0.049	117.0	270.0	117.0		0	0	104	104
Bundle	5/16" EHS	CTL	20.08	7.08	0.3125	2.48	0.205	82.0	90.0	82.0	1,500	-48,298	2	73	-48,223
Telco	26 GA 200 PR (0.94)	CTL	20.05	6.90	0.9400	-	0.480	82.0	90.0	82.0		0	3	73	76
Telco	26 GA 200 PR (0.94)	CTL	20.06	6.67	0.9400	-	0.480	82.0	90.0	82.0		0	1	73	74
Telco	26 GA 1200 PR (2.08)	CTL	20.18	6.85	2.0800	-	2.540	82.0	90.0	82.0		0	13	73	87
Telco	BELOPTIX DT096 - 72 FIBERS -	CTL	20.11	7.21	0.5160	-	0.097	82.0	90.0	82.0		0	1	73	74
Telco	24ct Fiber	CTL	20.12	6.62	0.3900	-	0.049	82.0	90.0	82.0		0	0	73	73
											Totals:	0	51	1,338	1,389

Crossarm:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Unit Height (in)	Unit Depth (in)	Unit Diameter (in)	Unit Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Normal	CROSSARM 3-1/2 X 4-1/2 X 8	NVE	36.17	5.15	270.0	270.0	53.00	4.50	-	0.00	-	-	133	4,386	4,518
											Totals:	0	133	4,386	4,518

Streetlight:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Can Diam. (in)	Can Height (in)	Arm Diam. (in)	Arm Length (in)	Tension Moment (ft-lb)*	Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
General	Streetlight	NVE	24.25	4.27	0.0	0.0	40.00	22.00	9.00	3.00	36.00	-	40	1,144	1,184
											Totals:	0	40	1,144	1,184

Insulator/Attachment:		Owner	Height (ft)	Horiz. Offset (in)	Offset Angle (deg)	Rotate Angle (deg)	Unit Weight (lbs)	Dim 1[4] (in)	Dim 2[4] (in)				Offset Moment (ft-lb)*	Wind Moment (ft-lb)*	Moment at GL (ft-lb)*
Deadend	Deadend Insulator - 15 kV	NVE	36.17	44.00	6.7	180.0	3.00	12.75	3.80	-	-	-	-10	270	260
Deadend	Deadend Insulator - 15 kV	NVE	36.17	-18.00	164.0	180.0	3.00	12.75	3.80	-	-	-	-5	270	265
Deadend	Deadend Insulator - 15 kV	NVE	36.17	-44.00	173.3	180.0	3.00	12.75	3.80	-	-	-	-3	270	268
Deadend	Deadend Insulator - 15 kV	NVE	36.17	-18.00	196.0	0.0	3.00	12.75	3.80	-	-	-	8	270	278
Deadend	Deadend Insulator - 15 kV	NVE	36.17	-44.00	186.7	0.0	3.00	12.75	3.80	-	-	-	10	270	281
Spool	Spool Insulator - 20 kV	NVE	26.58	4.10	90.0	90.0	1.00	2.12	2.50	-	-	-	-1	22	21
Spool	Spool Insulator - 20 kV	NVE	27.08	4.06	90.0	90.0	1.00	2.12	2.50	-	-	-	-1	22	21
Spool	Spool Insulator - 20 kV	NVE	26.08	4.14	90.0	90.0	1.00	2.12	2.50	-	-	-	-1	21	21
Spool	Spool Insulator - 20 kV	NVE	26.58	4.10	270.0	270.0	1.00	2.12	2.50	-	-	-	1	22	22
Spool	Spool Insulator - 20 kV	NVE	27.08	4.06	270.0	270.0	1.00	2.12	2.50	-	-	-	1	22	23
Spool	Spool Insulator - 20 kV	NVE	26.08	4.14	270.0	270.0	1.00	2.12	2.50	-	-	-	1	21	22

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 247.0°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)

Bolt	Three Bolt	COX	21.17	4.50	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
Bolt	Three Bolt	CTL	20.08	4.58	180.0	180.0	5.00	0.00	3.00	-	-	-	1	0	1
											Totals:	0	3	1,481	1,484

Guy Wire and Brace:		Owner	Attach Height (ft)	End Height (ft)	Lead/Span Length (ft)	Wire Dia. (in)	Percent Solid (%)	Lead Angle (deg)	Incline Angle (deg)	Wire Weight (lbs/ft)	Rest Length (ft)	Stretch Length (in)
Guy 1: EHS 5/16	Down	NVE	35.17	-	18.50	0.312	75.0	270.0	62.3	0.205	39.61	0.00

Guy Wire and Brace (Loads and Reactions)		Elastic Modulus (psi)	Rated Tensile Strength (lbs)	Guy Strength Factor	Allowable Tension (lbs)	Initial Tension (lbs)	Required Tension[1] (lbs)	Required Tension[2] (lbs)	Applied Tension[3] (lbs)	Vertical Load[3] (lbs)	Shear Load in Guy Dir[3] (lbs)	Shear Load at Report Angle[3] (lbs)	Moment at GL[3] (ft-lb)*
Guy 1: EHS 5/16	Down	23,000,000	11,200	0.90	10,080	700		0	0	0	0	0	38
									Totals:	0	0	0	38

Anchor/Rod Load Summary:	Owner	Rod Length AGL (in)	Rod Diameter (in)	Lead Length (ft)	Lead Angle (deg)	Strength of Assembly (lbs)	Anchor/Rod Strength Factor	Allowable Load (lbs)	Max Load[2] (lbs)	Load at Pole MCU[3] (lbs)	Max Required Capacity[2]
Single - 12" - Soil Class 4	NVE	0.00	1.000	18.50	270.0	25,000	1.00	25,000		0	0.0

Pole Buckling

Buckling [illegible]	Buckling [illegible] (ft)	Buckling Section [illegible] (% Buckling Col. Hgt.)	Buckling [illegible] (in)	Min. Buckling [illegible] (in)	Diameter [illegible] (in)	Diameter [illegible] (in)	Modulus of [illegible] (psi)	Pole [illegible] (pcf)	Ice [illegible] (pcf)	Pole Tip [illegible] (ft)	Buckling Load [illegible] (lbs)	Buckling Load [illegible] (lbs)	Buckling Load [illegible]
0.71	20.17	33.67	11.10	8.11	6.69	12.10	1,000,000	50.00	57.00	36.92	163,329	2,421	67.47

Legend

Insulators/Attachment dimensions

	Dimension 1	Dimension 2
Pin	Body Length	Diameter
Post	Body Length	Diameter
Underhung	Body Length	Diameter

[1] Worst Wind Per Guy Wire

(Guy LF)

[2] Worst Wind per Guy Wire

(Pole LF)

[4] See Legend

[3] Wind at 247.0°

(Guy LF)

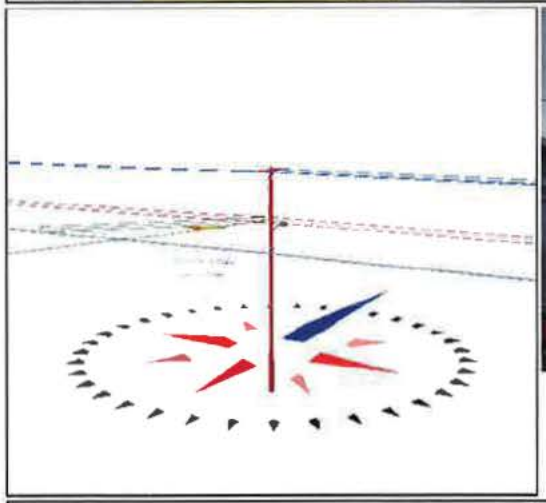
Version: 4.11.1/4.11

* includes Load Factor(s)

O-Calc® Pro *Analysis Report*

Tuesday, August 12, 2014 4:13:23 PM

File Name:	9 - p9106 Proposed	Pole Length / Class:	45 / 4	Code:	NESC	Structure Type:	Guyed
Pole Num:	9 - p9106	Pole Species:	WESTERN RED CEDAR	NESC Rule:	Rule 250B	Status:	N/A
Permit #:	Unset	Setting Depth (ft):	8.08	Const. Grade:	B	Pole Strength Factor:	0.65
Owner:	Unset	G/L Circumference (in):	38.00	Load District:	Light	Transverse Wind LF:	2.50
Latitude:	Unset	G/L Fiber Stress (psi):	6,000	Ice Thickness (in):	0.00	Wire Tension LF:	1.65
Longitude:	Unset	Allowable Stress (psi):	3,900	Wind Speed (mph):	59.29	Vertical LF:	1.50
Emp #:	Unset	Fiber Stress Ht. Reduction:	No	Wind Pressure (psf):	9.00		



Pole Capacity Utilization		Height	Wind Angle
Maximum:	327.6%	0.0 ft	245.6°
Groundline:	327.6%	0.0 ft	245.6°
Vertical:	1.5%	20.2 ft	90.0°

Pole Moments		Load Angle	Wind Angle
Max Capac. Util:	184,657 ft-lb	256.1°	245.6°
Groundline:	184,657 ft-lb	256.1°	245.6°

Guys Capacity Summary: Adequate

Guy Summary		Guy Tensions		Maximum Guy Tensions	
	Attach Height (ft)	% Allowable Tension	Wind Angle	% Allowable Tension	Wind Angle
Guy 1	35.2	0.0%	245.6°	0.0%	0.0°

Anchor Summary

	Lead Length (ft)	Lead Angle	Max. % Allow. Capacity
Anchor 1	18.5	270.0°	0.0%

GROUNDLINE LOAD SUMMARY:*Wind at 245.6°, Applied Moment 184,657 ft-lb at 256.1°, Allowable Moment 56,466 ft-lb

	Shear Load (lbs)*	Percent Applied Load	Bending Moment (ft-lb)	Percent of Applied Moment	Percent of Pole Capacity	Bending Stress (+/- psi)	Vertical Load (lbs)	Vertical Stress (psi)	Total Stress (psi)	Percent of Pole Capacity
Powers:	6,375	87.4	165,323	89.5	292.8	11,419	178	2	11,420	292.8

¹ Worst Wind Per Guy Wire

(Guy LF)

² Worst Wind per Guy Wire

(Pole LF)

⁴ See Legend

³ Wind at 245.6°

(Guy LF)

Version: 4.11.1/4.11

* includes Load Factor(s)