Creating Custom Reports from PLS XML

PLS ATUG June 2015

Willie Thomas, SDGE & Alex Richards, ASEC

Project Drivers

- Greater CPUC Oversight
  - General Order 95 (CA Version of NESC)
- 2007 Southern CA Wildfires
- 2008 Electric Safety OIR
  - Focused on clearances, veg. management, visual inspections, intrusive pole inspection, joint-use and **pole loading**
- 2012 GO 95 Modified Rules – Reports Available Upon Request
- CA Fires & Other Events Caused by Overloaded Poles
  - 2013 $51.5M (Utility and Comm) Settlement Agreement
- 2015 CPUC implemented Safety Citation Program
  - Fines up to $50k per occurrence

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SDG&E Requirements

- Applicable to T&D
- Easy to Read & Duplicate
- Single Output Page Summarizing
  - Structure Information
  - Applicable GO95 Rules
  - Attachment Information
  - Loading
  - Structure Photos
- Bulk Output Sheet
  - Imported into database (PIDS – Pole Information Data System)
- Easily Created from PLS-CADD Models

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Solution

- Summary Sheet in EXCEL and PDF

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Summary Sheet

Structure Information

Structure Number	Z679076	**Embedment(ft)**	9.5	**Tie Line**	TL663
Height (ft)	75	**Ahead Span (ft)**	387.0	**Framing**	ZPI
Class	1	**Back Span (ft)**	312.0	**Tangent/DE**	Tangent
Material	DF	**Line Angle (deg)**	-9.6	**Latitude**	32.80036417
Groundline Circumference (in)*	52.5	**Elevation (ft)**	122.3	**Longitude**	-117.1132596

Wire Attachment Information

Voltage	Wire Type	Wire Diameter (in)	Attachment Height AGL (ft)	# Wires	Direction (deg) (0 ahead, 180 back)	Span Length	Ruling Span	60 Deg Tension (Creep RS) (lbs)
69	Ortolan Acsr Aw	1.21	67.1	1	5	312	328	1880
69	Ortolan Acsr Aw	1.21	61.1	1	3	312	328	1873
69	Ortolan Acsr Aw	1.21	55.2	1	5	312	328	1873
12	Rook Acsr Aw	0.98	42.2	1	5	312	343	1324
12	Rook Acsr Aw	0.98	42.2	1	5	313	343	1322
12	Rook Acsr Aw	0.98	42.2	1	5	313	343	1322
12	Rook Acsr Aw	0.98	42.2	1	5	313	343	1309
69	Ortolan Acsr Aw	1.21	67.1	1	176	387	328	1886
69	Ortolan Acsr Aw	1.21	61.1	1	176	387	328	1874
69	Ortolan Acsr Aw	1.21	55.2	1	176	387	328	1892
12	Rook Acsr Aw	0.98	42.2	1	175	387	351	1361
12	Rook Acsr Aw	0.98	42.2	1	175	387	351	1362
12	Rook Acsr Aw	0.98	42.2	1	175	388	351	1362
12	Rook Acsr Aw	0.98	42.2	1	175	387	351	1328

Guy Attachment Information

Type	Wire Size	Direction	Lead Length (ft)	Attachment Height (ft)	Origin Pole
Down	3/8" 7 Strand EHS	-91.29	38.0	66.9	Z679076
Down	3/8" 7 Strand EHS	-91.27	37.2	58.6	Z679076

Stub Pole Information

Height	Class	Direction

Crossarm and Equipment Information

Type	Attachment Height (ft)
12'x(2)3.625 x 5.625	42.3
10'x(1)3.625 x 5.625	39.1

Pole Loading Information

GO 95 Grade	B	**% Capacity Remaining-Intrusive Records**	99
GO 95 Load District	Light	**Date of Intrusive Record**	6/10/2012

Load Cases

Name	Required SF	Pole Utilization	Calculated SF
Extreme Wind Light 65	1.1	18.59	6.11
GO95 Light Grade B 1/3	2.0	26.81	7.46

Analysis Information

Program Used for Analysis	PLS-CADD
Company Performing Analysis	ASEC Inc.
Ruling Span or Finite Element	Finite Element
Linear or Non-Linear	Non-Linear
Date of Analysis	5/28/2015
File Name	tl663_mission-kearny_cable analysis_asec.xyz

Notes:

* Groundline circumference is from standard pole class and is not the measured circumference for the pole, unless modified in the Structure Specific Setup

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Structure Number	Z679076	**Embedment(ft)**	9.5	**Tie Line**	TL663
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Class	1	**Back Span (ft)**	312.0	**Tangent/DE**	Tangent
Material	DF	**Line Angle (deg)**	-9.6	**Latitude**	32.80036417
Groundline Circumference (in)*	52.5	**Elevation (ft)**	122.3	**Longitude**	-117.1132596

Wire Attachment Information

Voltage	Wire Type	Wire Diameter (in)	Attachment Height AGL (ft)	# Wires	Direction (deg) (0 ahead, 180 back)	Span Length	Ruling Span	60 Deg Tension (Creep RS) (lbs)
69	Ortolan Acsr Aw	1.21	67.1	1	5	312	320	1880
69	Ortolan Acsr Aw	1.21	61.1	1	3	312	320	1880
69	Ortolan Acsr Aw	1.21	55.2	1	5	312	320	1880
12	Rook Acsr Aw	0.98	42.2	1	5	312	296	1316
12	Rook Acsr Aw	0.98	42.2	1	5	313	296	1316
12	Rook Acsr Aw	0.98	42.2	1	5	313	296	1316
12	Rook Acsr Aw	0.98	42.2	1	5	313	296	1300
69	Ortolan Acsr Aw	1.21	67.1	1	176	387	320	1880
69	Ortolan Acsr Aw	1.21	61.1	1	176	387	320	1880
69	Ortolan Acsr Aw	1.21	55.2	1	176	387	320	1880
12	Rook Acsr Aw	0.98	42.2	1	175	387	351	1349
12	Rook Acsr Aw	0.98	42.2	1	175	387	351	1349
12	Rook Acsr Aw	0.98	42.2	1	175	388	351	1349
12	Rook Acsr Aw	0.98	42.2	1	175	387	351	1315

Guy Attachment Information

Type	Wire Size	Direction	Lead Length (ft)	Attachment Height (ft)	Origin Pole
Down	3/8" 7 Strand EHS	-91.29	38.0	66.9	Z679076
Down	3/8" 7 Strand EHS	-91.27	37.2	58.6	Z679076

Stub Pole Information

Height	Class	Direction

Crossarm and Equipment Information

Type	Attachment Height (ft)
12`x(2)3.625 x 5.625	42.3
10`x(1)3.625 x 5.625	39.1

Pole Loading Information

GO 95 Grade	B	**% Capacity Remaining-Intrusive Records**	95
GO 95 Load District	Light	**Date of Intrusive Record**	12/12/2012 0:00

Analysis Information

Program Used for Analysis	PLS-CADD
Company Performing Analysis	ASEC Inc.

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Summary Sheet

Pole Loading Information			
GO 95 Grade	B	% Capacity Remaining-Intrusive Records	95
GO 95 Load District	Light	Date of Intrusive Record	12/12/2012 0:00

Load Cases

Name	Required SF	Pole Utilization	Calculated SF
Extreme Wind Light 65	1.1	15.95	7.13
GO95 Light Grade B 1/3	2.0	23.20	8.62

Analysis Information	
Program Used for Analysis	PLS-CADD
Company Performing Analysis	ASEC Inc.
Ruling Span or Finite Element	Ruling Span
Linear or Non-Linear	Non-Linear
Date of Analysis	6/1/2015
File Name	tl663_prg_demoxyz.xyz

Notes:

* Groundline circumference is from standard pole class and is not the measured circumference for the pole, unless modified in the Structure Specific Setup

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Solution

- Summary Sheet in EXCEL and PDF
- Pole Report Generator (PRG)
  - Software developed by ASEC in C#
  - Executable file reads and filters XML data from PLS-CADD
  - Able to be customize by users for non-standard models

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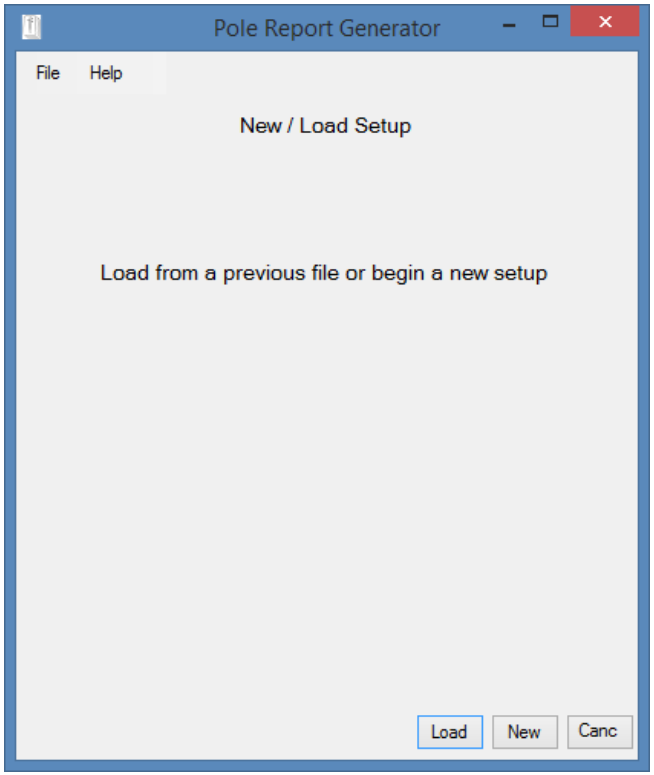
Software



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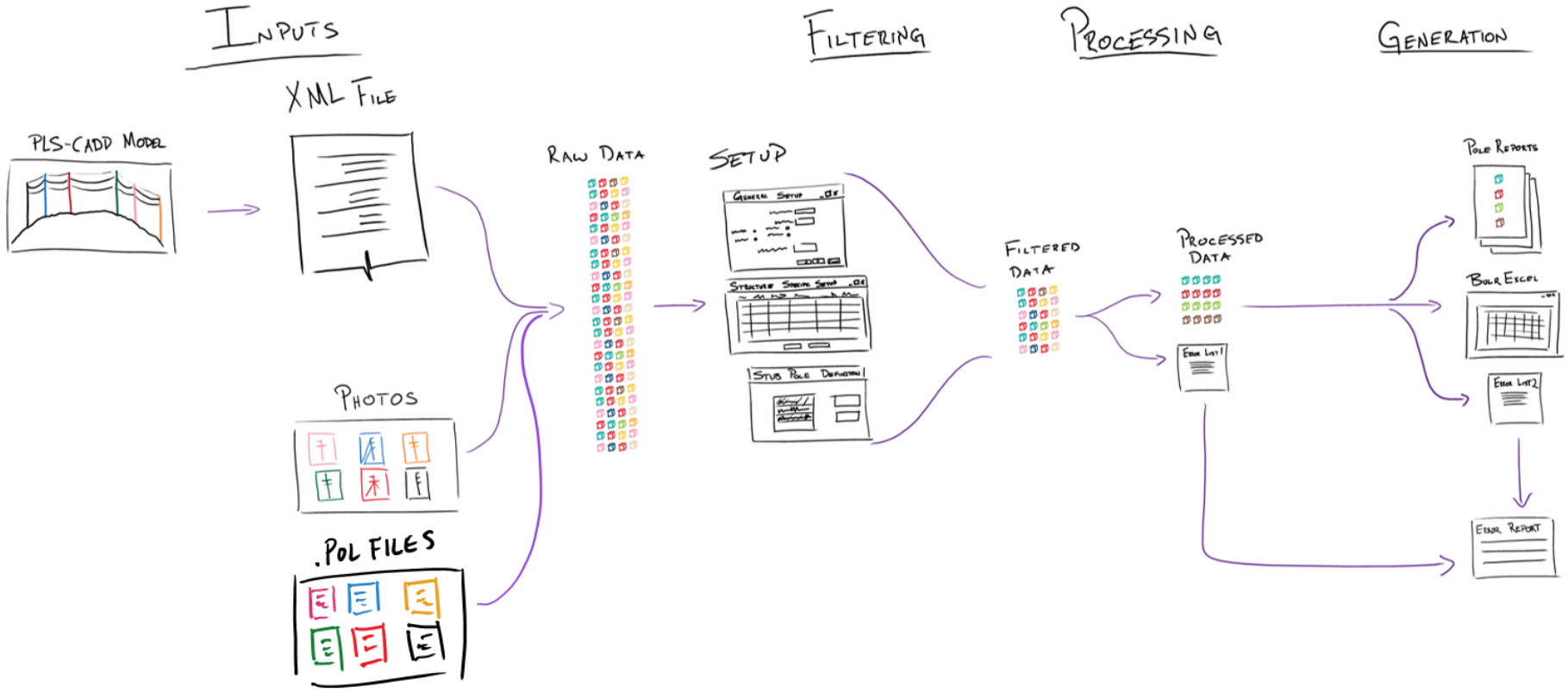
Overview



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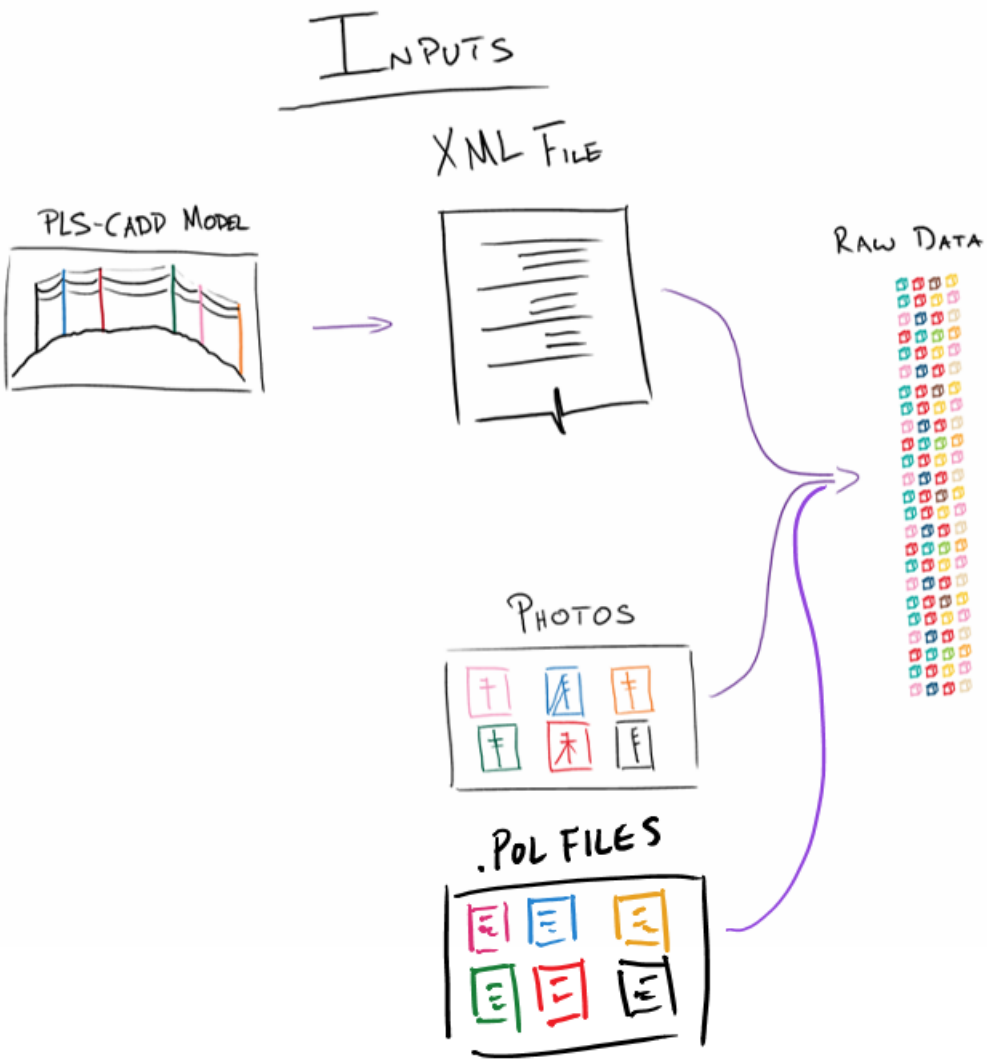
Inputs



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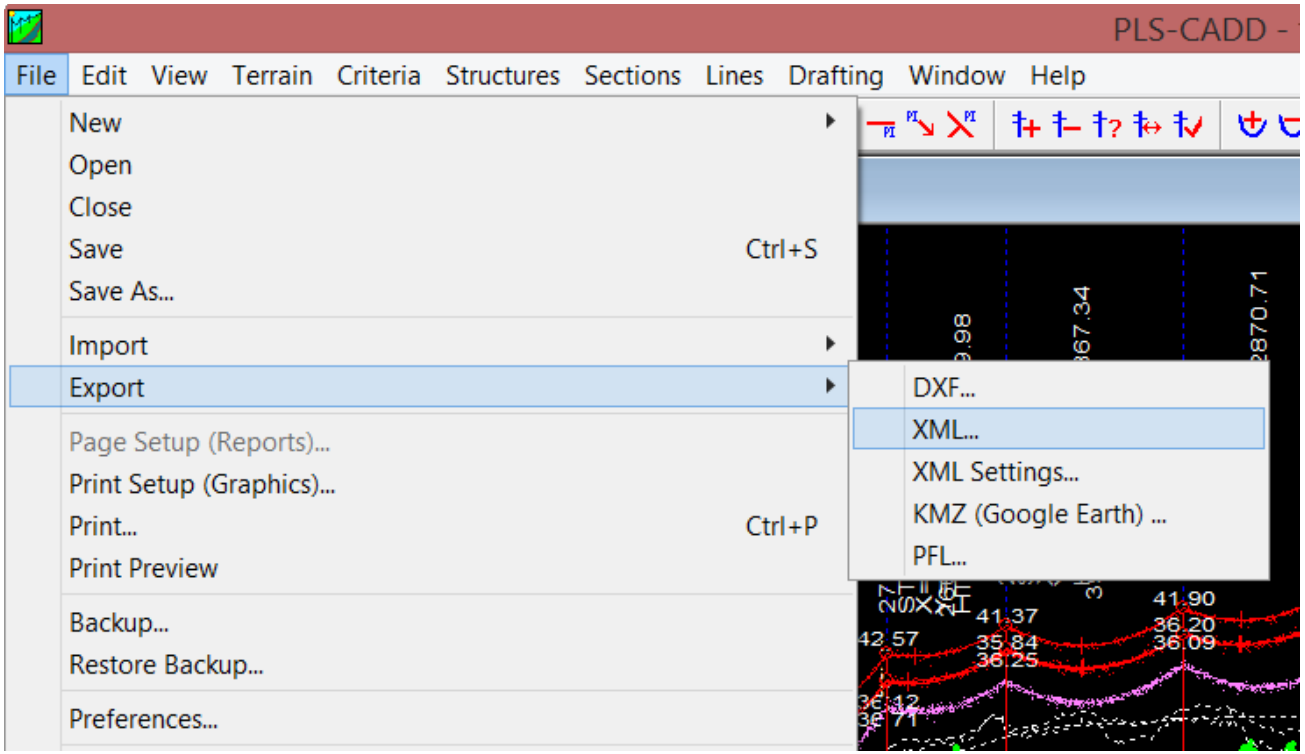
XML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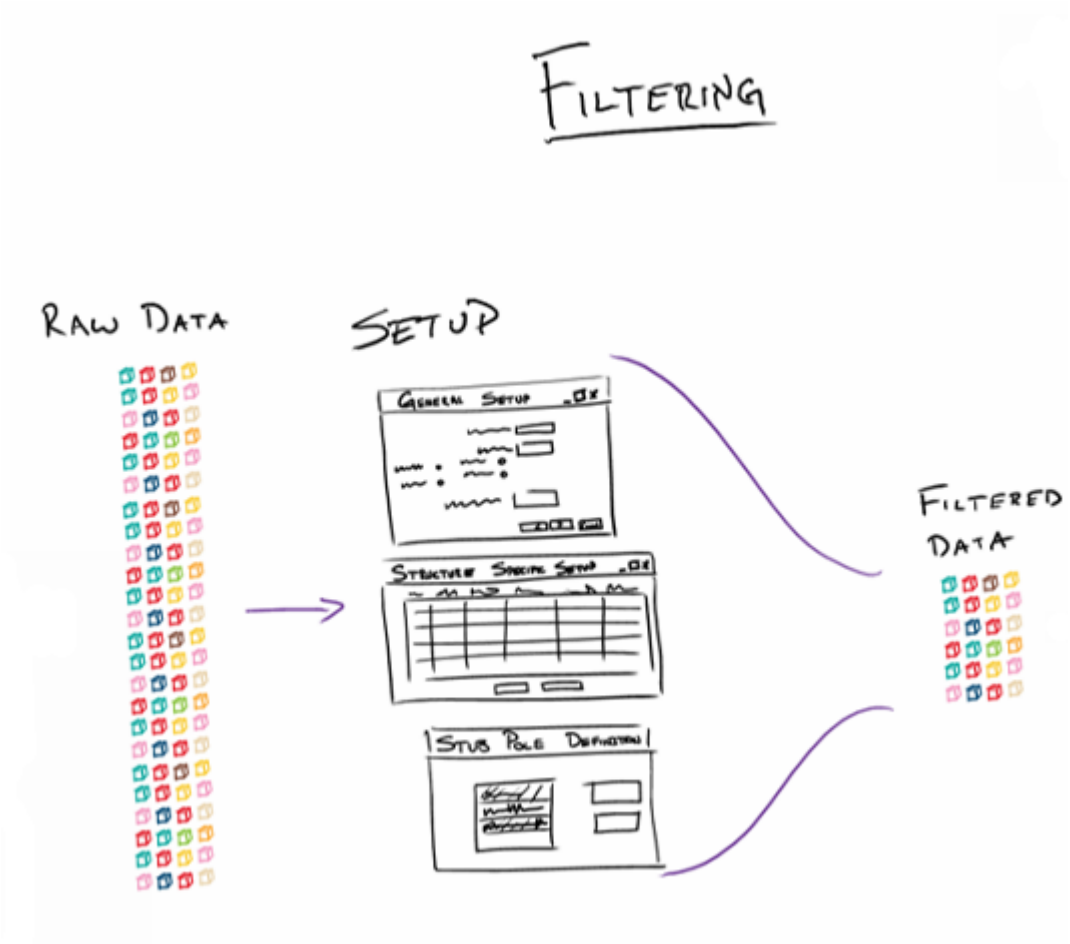
File
Edit
View
Terrain
Criteria
Structures
Sections
Lines
Drafting
Window
Help
New
Open
Close
Save
Ctrl+S
Save As...
Import
Export
Page Setup (Reports)...
Print Setup (Graphics)...
Print...
Ctrl+P
Print Preview
Backup...
Restore Backup...
Preferences...
DXF...
XML...
XML Settings...
KMZ (Google Earth) ...
PFL...

Filtering



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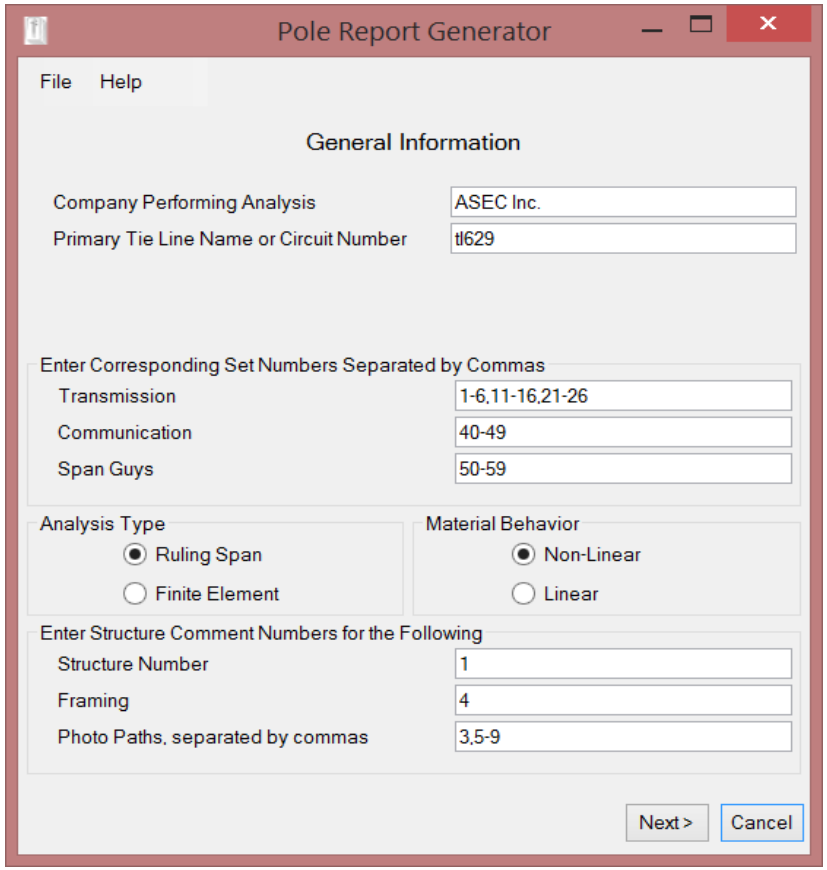
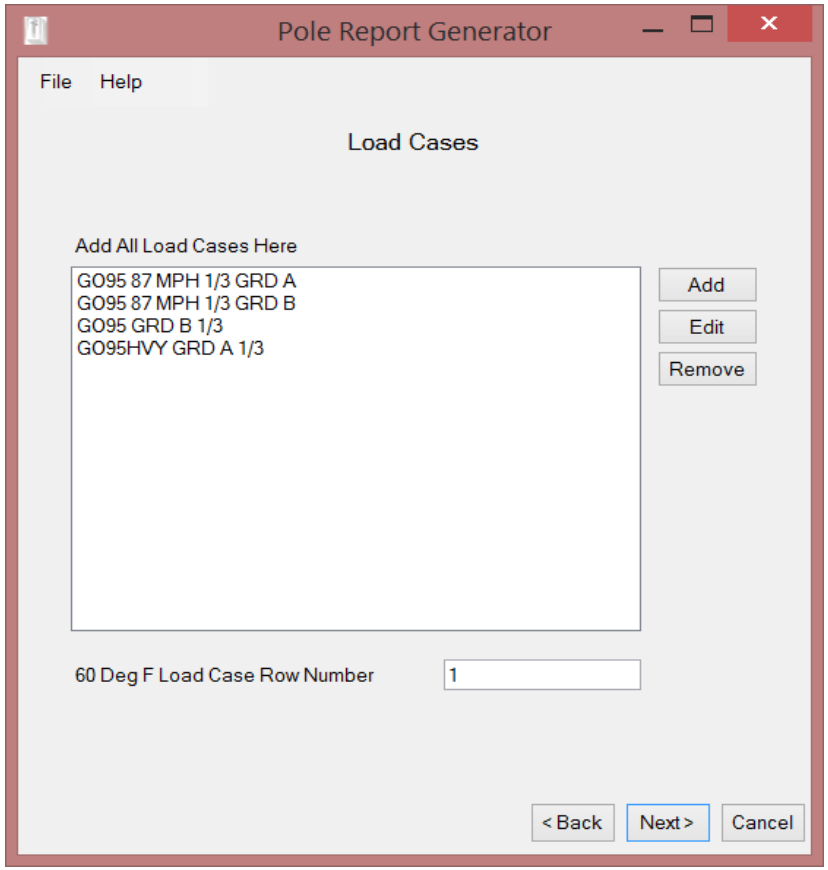
Filtering – General Setup





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Filtering – Structure Specific Setup

Pole Report Generator - Structure Specific Setup

	Structure Number	Tie Lines	Capacity Remaining Intrusive Records	Installation / Maintenance ('D'-Design, Preliminary / 'F'-Field Assessment, Existing Conditions / 'A'-As Built, New Construction)	Date Intrusive Records	Notes	GO95 87 MPH 1/3 GRD A Applicable Load Case (T/F)	GO95 87 MPH 1/3 GRD B Applicable Load Case (T/F)	GO95 GRD B 1/3 Applicable Load Case	GO95HVY GRD A 1/3 Applicable Load Case (T/F)
▸ 1	371494	tl629	100	F			T	T	T	T
2	273042	tl629	100	F			T	T	T	T
3	273043	tl629	100	F			T	T	T	T
4	273069	tl629	100	F			T	T	T	T
5	172738	tl629	100	F			T	T	T	T
6	172739	tl629	100	F			T	T	T	T
7	172740	tl629	100	F			T	T	T	T
8	172741	tl629	100	F			T	T	T	T
9	172742	tl629	100	F			T	T	T	T
10	172743	tl629	100	F			T	T	T	T
11	172744	tl629	100	F			T	T	T	T
12	172745	tl629	100	F			T	T	T	T
13	172746	tl629	100	F			T	T	T	T
14	172747	tl629	100	F			T	T	T	T
15	172748	tl629	100	F			T	T	T	T
16	172749	tl629	100	F			T	T	T	T
17	172750	tl629	100	F			T	T	T	T
18	172800	tl629	100	F			T	T	T	T
19	172801	tl629	100	F			T	T	T	T
20	172802	tl629	100	F			T	T	T	T
21	172803	tl629	100	F			T	T	T	T
22	172804	tl629	100	F			T	T	T	T
23	172805	tl629	100	F			T	T	T	T

Export As XLSX | Import XLSX | Run | Cancel

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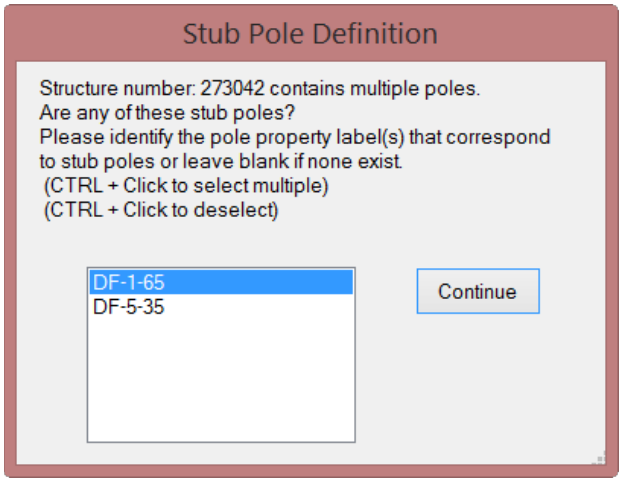
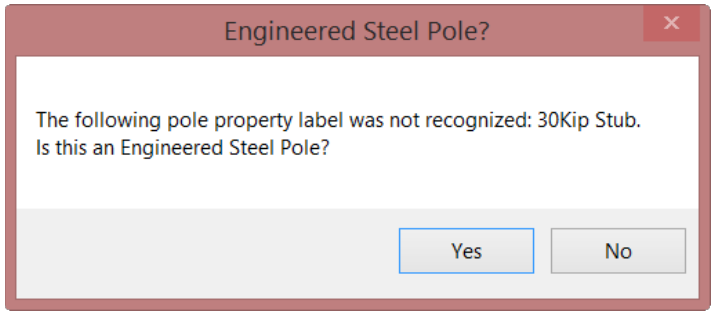
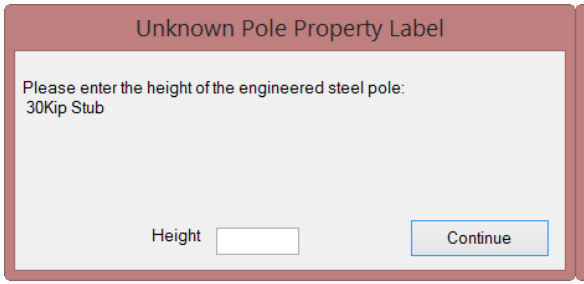
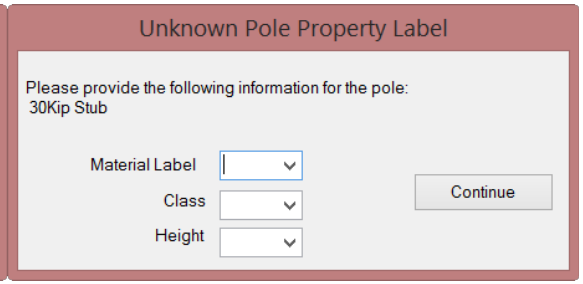
Filtering – Additional Structure Definition









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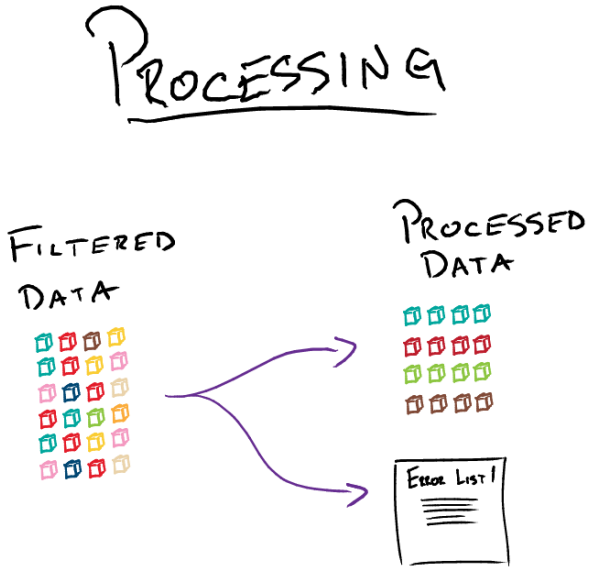
Processing

- Convert Filtered Data into Processed Data
  - Ordered Data Set
- Maintain running list of errors



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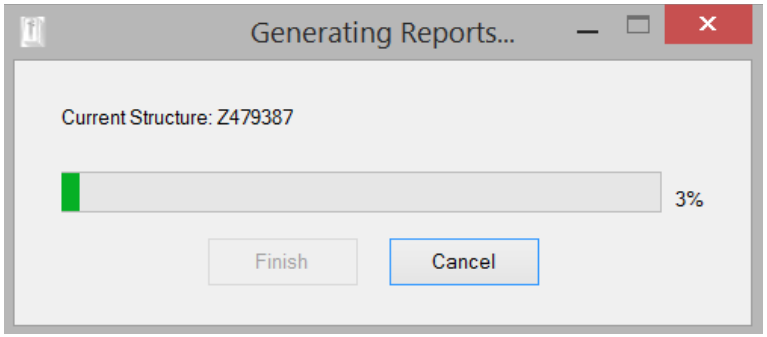
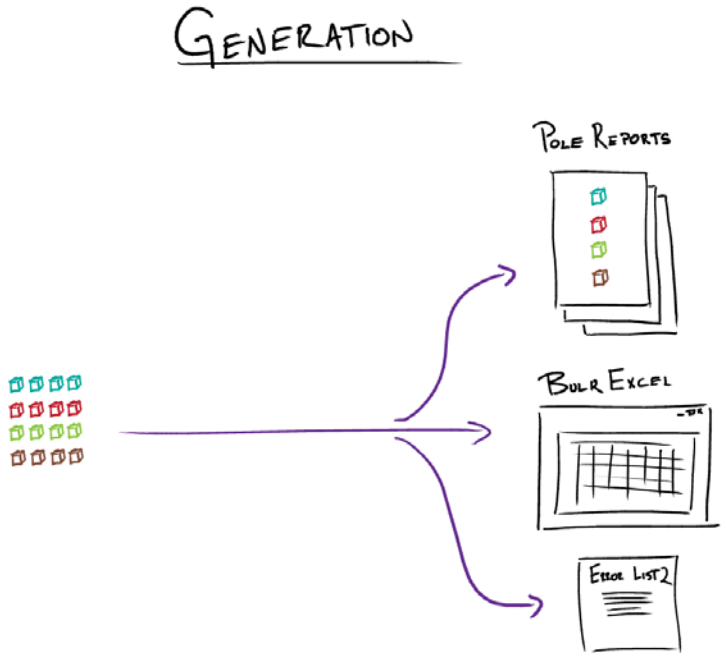
Report Generation

- Convert Processed Data into Human Readable Data
- Maintain running list of errors





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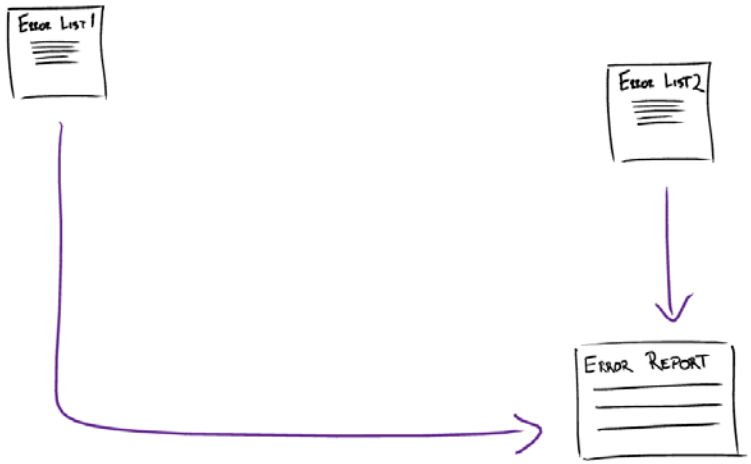
Error Reporting

- Report any errors caught during data processing and report generation



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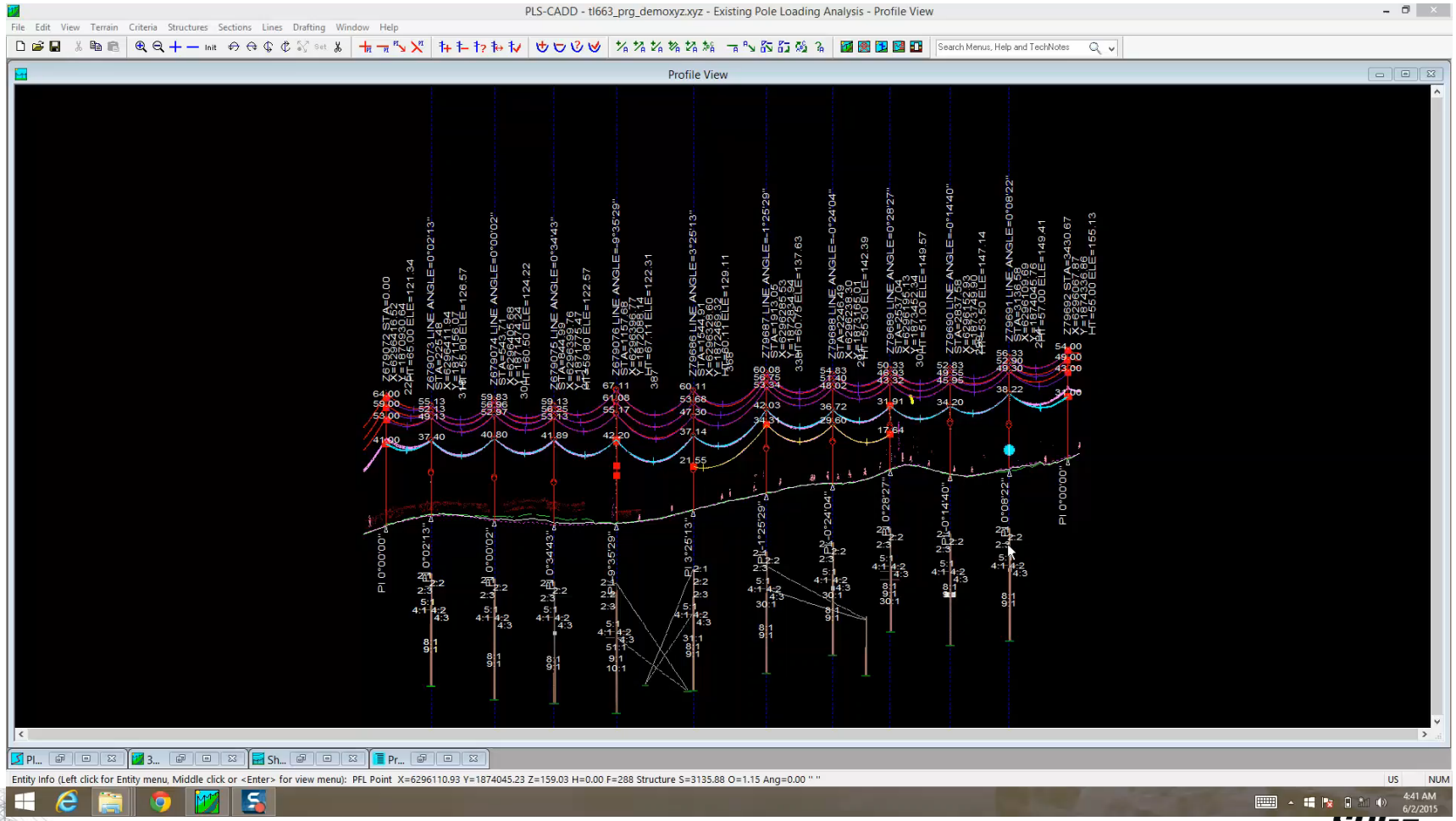
Demo



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Implementation Strategy

- Training to Include
  - PLS-CADD Standard
  - Direct Buried Pole Loading Standard
  - Pole Report Generator

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Questions

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