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Using the Automatic Pole Selector in PLS-CADD

PLS-CADD has a very unique, versatile, and time-saving tool programmed within the software that can look at all the poles in your line and automatically replace poles that are either failing or over-designed; the **Automatic Pole Selector**. This Technical Note breaks down everything you need to know to get the most out of this feature.

The Automatic Pole Selector can look at all the poles in your line and automatically replace any failing ones with stronger poles. It can also replace over-designed poles with less expensive ones. This feature can be used to analyze the based on the existing material (i.e. if you have a wood pole it will only consider other wood pole variants) or can be used to check for a different material (i.e. replacing a wood pole with a steel pole).

To access this feature you must have:

- the Optimum Spotting add-on license for PLS-CADD;
- a PLS-POLE license, and
- your structures modeled in PLS-POLE with alternative pole material libraries to consider.

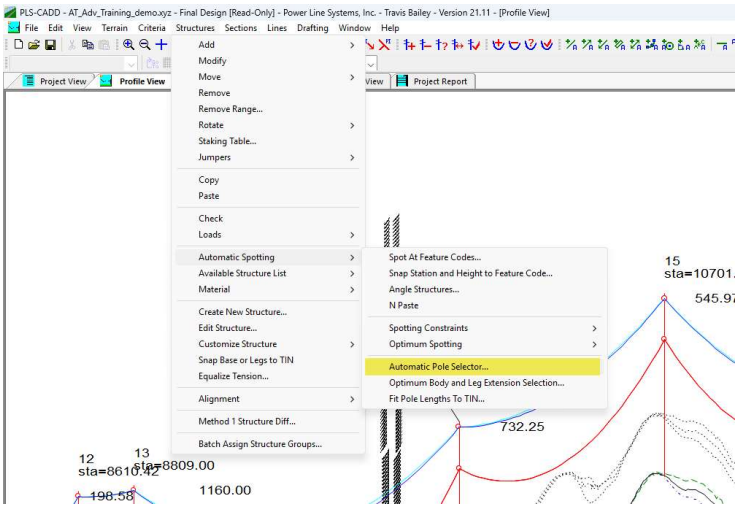

Figure 1: Automatic Pole Selector menu command

Consider a scenario where you are reconductoring a wood pole line. You can utilize the **Sections/Table...** function to perform a rapid, bulk replacement of your existing conductors. Once updated, you can run the Automatic Pole Selector to automatically identify any failing wood poles and replace them with the most cost-effective steel poles configured in your steel pole library. This feature is highly effective for projects, such as retrofitting existing distribution lines with new communication attachments and cables. Once the additional cables are modeled, simply run the Automatic Pole Selector. The software will identify any over-utilized structures and automatically generate a report of the most cost-effective replacement poles from your available pole library.

Next, we'll walk through a step-by-step process of how to use the Automatic Pole Selector. Once you have your structures modeled in PLS-POLE and spotted in your PLS-CADD line design, you are ready to begin.

Automatic Pole Selector Step-by Step Process

1. Start by navigating to **Structures/Automatic Spotting/Automatic Pole Selector...**

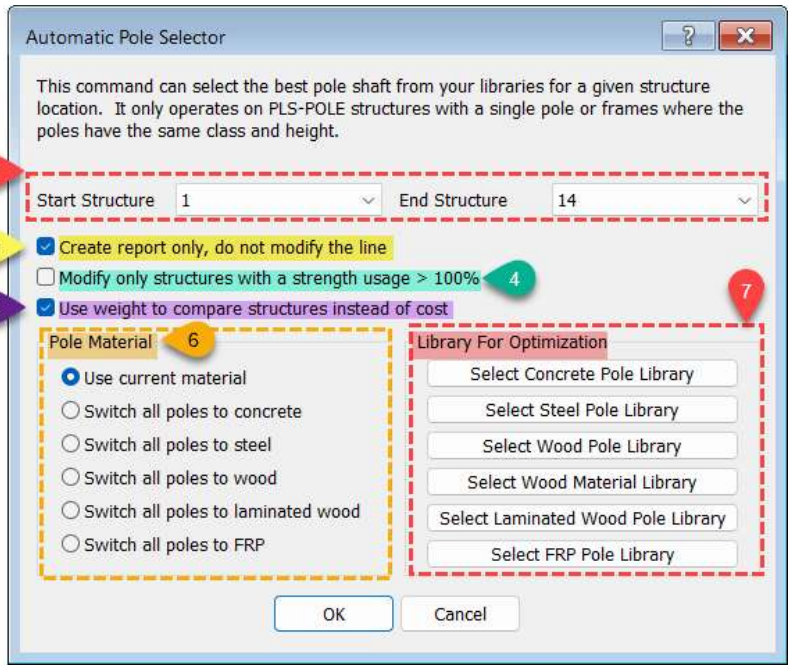

Figure 2: Automatic Pole Selector dialog

2. In the Automatic Pole Selector dialog box, you have the option to pick a range of structures to evaluate. The default structure selection is for the entire line, but you can change the range if you are only interested in a part of your line. Don't worry about picking non-PLS-POLE (TOWER or Method 1or 2 "Stick" structures) structures in your range. The Selector will give you a warning at the end that these structures cannot be modified and they will be skipped.

3. By default, the Automatic Pole Selector will have the option to "*Create report only, do not modify the line*" and will not modify any of your structures. If you uncheck this option, the Selector will not only create a report but will also create replacement models of the structures that it replaced poles on. *<u>NOTE:</u> Running this command WILL NOT replace your standard structure models; site specific models will be created.*

4. The "*Modify only structures with a strength usage > 100%*" option allows you to limit the Automatic Pole Selector to only replace structures where the existing pole is currently failing. This allows you to manage the scope of your upgrades depending on your specific project circumstances, so you can choose to select this option for targeted maintenance or leave it unchecked for a complete line rebuild.

5. You should select the "*Use weight to compare structures instead of cost*" option when your Parts Library does not have prices assigned to the parts and assemblies used in your pole model, or if your pole model doesn't reference any parts, assemblies, and/or costs. If you leave this option unchecked, the Automatic Pole Selector will use prices to find the most

economical replacement. It is highly recommended to use the weight option if your pricing isn't fully defined. Otherwise, if you have any poles missing a price, the system will read them as having zero cost and will always pick them—regardless of how massively over-designed they might be for your specific project.

6. The "*Pole Material*" setting allows you to define the material for your replacement poles. For most circumstances, you can simply choose to keep the existing material. If you want to switch materials, you will do that by selecting the material type you want to change to. In some instances, your project might require changing out one type of wood for another, or switching between steel pole manufacturers. In situations such as these, you do not want to use the "*Use Current Material*" option. Instead select the "*Switch all poles to…*" option for the material you're using (such as Wood or Steel) and then pick your new library in the next step (for example, the new wood pole library or the new steel pole library for a different manufacturer).

7. If you selected a "*Switch all poles to…*" option in the previous step, you must assign a corresponding pole library from the list in the "*Library for Optimization*" section. If you don't have an applicable library ready to go, you can easily keep your project moving by creating a new one in PLS-POLE, or by downloading one of the standard libraries available on our website here.

8. With your parameters set, just click **OK** and let the Automatic Pole Selector instantly optimize your structures. The speed and efficiency of this automated process is truly impressive. See the Appendix below for two sample reports, a wood pole to wood pole update and a wood pole to steel pole update.

That's all there is to it. For most lines, you can develop a complete pole replacement program in a matter of minutes. This allows you to save significant time and evaluate multiple design scenarios effortlessly. Beyond the upgrades mentioned earlier, this feature is highly effective for new construction where pole locations are predetermined—especially in distribution or urban environments. Simply place poles at your required heights without worrying about their initial class or size. Then, run the Automatic Pole Selector with the option to only replace poles above 100% usage turned off, and the software will automatically size and select the optimized pole for all locations. This is particularly beneficial in distribution and urban environments.

One last word of advice; when you pick a Pole Library in Step 7 above, any pole that is in the library that has the same length as the current pole will be evaluated. You may wish to go through your Pole Library and delete any poles that you do not wish to be considered for your optimization. When doing this, you may wish to use the *Save As* function and batch save a separate "optimization library" so that your standard library of all possible available poles is not affected.

The Automatic Pole Selector is a powerful tool that will streamline your design process and can make an immediate impact on your project timeline.

APPENDIX A

Automatic Pole Selection Report for a Wood Pole to Wood Pole Replacement

Total initial cost of poles: 120183.00
Total final cost of poles: 95861.00
Total initial weight of poles: 299.835 (kips)
Total final weight of poles: 269.976 (kips)

Automatic Pole Shaft Selection Results

Str. No.	Structure Name	Pole Label	Initial Property	Initial Cost	Initial Weight (kips)	Initial Usage %	Final Property	Final Cost	Final Weight (kips)	Final Usage %	Optimize Outcome
1	th-235-21.5_a.#2	LP	SP-3-70	900.00	2.777	269.78	SP-H4-70	0.00	6.127	87.58	Fixed Shaft
1	th-235-21.5_a.#2	CP	SP-3-70	900.00	2.777	147.64	SP-H4-70	0.00	6.127	21.83	Fixed Shaft
1	th-235-21.5_a.#2	RP	SP-3-70	900.00	2.777	243.76	SP-H4-70	0.00	6.127	60.72	Fixed Shaft
2	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	45.12	SP-3-75	1070.00	3.264	73.20	Reduced Cost
2	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	45.86	SP-3-75	1070.00	3.264	74.45	Reduced Cost
3	th-5g-15-1.#4.095	LP	SP-1-95	3295.00	6.096	58.26	SP-2-95	2600.00	5.412	72.10	Reduced Cost
3	th-5g-15-1.#4.095	CP	SP-1-95	3295.00	6.096	57.59	SP-2-95	2600.00	5.412	72.77	Reduced Cost
3	th-5g-15-1.#4.095	RP	SP-1-95	3295.00	6.096	57.78	SP-2-95	2600.00	5.412	71.55	Reduced Cost
4	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	44.54	SP-3-75	1070.00	3.264	71.95	Reduced Cost
4	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	44.51	SP-3-75	1070.00	3.264	71.91	Reduced Cost
5	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	32.56	SP-2-75	1340.00	3.740	62.35	Reduced Cost
5	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	32.92	SP-2-75	1340.00	3.740	63.27	Reduced Cost
6	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	39.58	SP-3-75	1070.00	3.264	63.57	Reduced Cost
6	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	39.57	SP-3-75	1070.00	3.264	63.55	Reduced Cost
7	th-230-1_doubSUS.075.pol	LP	SP-1-75	1722.00	4.311	44.52	SP-3-75	1070.00	3.264	72.88	Reduced Cost
7	th-230-1_doubSUS.075.pol	RP	SP-1-75	1722.00	4.311	44.74	SP-3-75	1070.00	3.264	73.33	Reduced Cost
8	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	40.05	SP-3-75	1070.00	3.264	65.26	Reduced Cost
8	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	40.74	SP-3-75	1070.00	3.264	66.53	Reduced Cost
9	th-235-21.5.#10.pol	LP	SP-3-70	900.00	2.777	155.75	SP-H1-70	1661.00	4.371	77.81	Fixed Shaft
9	th-235-21.5.#10.pol	CP	SP-3-70	900.00	2.777	150.10	SP-H1-70	1661.00	4.371	78.48	Fixed Shaft
9	th-235-21.5.#10.pol	RP	SP-3-70	900.00	2.777	161.86	SP-H1-70	1661.00	4.371	88.29	Fixed Shaft
10	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	31.76	SP-3-75	1070.00	3.264	47.43	Reduced Cost
10	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	33.38	SP-3-75	1070.00	3.264	50.68	Reduced Cost

Automatic Pole Selection Report for a Wood Pole to Steel Pole Replacement

Total initial cost of poles: 120183.00
Total final cost of poles: 183129.00
Total initial weight of poles: 291.241 (kips)
Total final weight of poles: 129.399 (kips)

Automatic Pole Shaft Selection Results

Str. No.	Structure Name	Pole Label	Initial Property	Initial Cost	Initial Weight (kips)	Initial Usage %	Final Property	Final Cost	Final Weight (kips)	Final Usage %	Optimize Outcome
1	th-235-21.5_a.#2	LP	SP-3-70	900.00	2.777	269.78	LD01-070	2815.50	1.830	81.01	Switched Material
1	th-235-21.5_a.#2	CP	SP-3-70	900.00	2.777	147.64	LD01-070	2815.50	1.830	30.88	Switched Material
1	th-235-21.5_a.#2	RP	SP-3-70	900.00	2.777	243.76	LD01-070	2815.50	1.830	54.64	Switched Material
2	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	45.12	DC04-075	2311.50	1.513	62.32	Switched Material
2	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	45.86	DC04-075	2311.50	1.513	62.81	Switched Material
3	th-5g-15-1.#4.095	LP	SP-1-95	3295.00	6.096	58.26	LD01-095	4167.00	2.713	36.65	Switched Material
3	th-5g-15-1.#4.095	CP	SP-1-95	3295.00	6.096	57.59	LD01-095	4167.00	2.713	32.22	Switched Material
3	th-5g-15-1.#4.095	RP	SP-1-95	3295.00	6.096	57.78	LD01-095	4167.00	2.713	36.34	Switched Material
4	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	44.54	DC04-075	2311.50	1.513	60.63	Switched Material
4	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	44.51	DC04-075	2311.50	1.513	60.62	Switched Material
5	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	32.56	DC04-075	2311.50	1.513	52.27	Switched Material
5	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	32.92	DC04-075	2311.50	1.513	52.67	Switched Material
6	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	39.58	DC04-075	2311.50	1.513	56.06	Switched Material
6	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	39.57	DC04-075	2311.50	1.513	56.03	Switched Material
7	th-230-1_doubSUS.075.pol	LP	SP-1-75	1722.00	4.311	44.52	DC04-075	2311.50	1.513	62.00	Switched Material
7	th-230-1_doubSUS.075.pol	RP	SP-1-75	1722.00	4.311	44.74	DC04-075	2311.50	1.513	62.06	Switched Material
8	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	40.05	DC04-075	2311.50	1.513	56.56	Switched Material
8	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	40.74	DC04-075	2311.50	1.513	56.96	Switched Material
9	th-235-21.5.#10.pol	LP	SP-3-70	900.00	2.777	155.75	DC04-070	2112.00	1.381	88.18	Switched Material
9	th-235-21.5.#10.pol	CP	SP-3-70	900.00	2.777	150.10	DC04-070	2112.00	1.381	87.83	Switched Material
9	th-235-21.5.#10.pol	RP	SP-3-70	900.00	2.777	161.86	DC04-070	2112.00	1.381	98.98	Switched Material
10	th-230-1.075.pol	LP	SP-1-75	1722.00	4.311	31.76	DC04-075	2311.50	1.513	46.90	Switched Material
10	th-230-1.075.pol	RP	SP-1-75	1722.00	4.311	33.38	DC04-075	2311.50	1.513	48.13	Switched Material