

How to use the *Decompose Assemblies* option to bring order to your structure Material Lists

This Technical Note will demonstrate how to use the *Decompose Assemblies* option to help organize your material lists and, in some cases, find unexpected duplicate materials.¹

One of many valuable reports you can generate in PLS-CADD is the Bill of Material Report. To do this, navigate to **Lines/Reports/Bill of Material...** or, if you want your list to be organized by structure location, **Lines/Reports/Bill of Material by Structure Location...** In either case, you'll be presented with a dialog like this:

Bill of Material

Options | Structures

Report items with status:

☐ Retired ☐ Existing ☒ New ☐ Transferred

'New' Items to Report and Options:

☒ Parts

☒ Decompose Assemblies

☒ Decomposed Assemblies' Part Count Table

☒ Assemblies

☒ Cables in line that have stock numbers (from *.WIR files)

☐ Include Jumper Cables

☐ Include only insulator items that are attached to cables

☐ Concentrated Loads in line (marker balls, spacers, etc) that have stock numbers (from *.MAR files)

☐ Line-Specific Material List

☐ Include Structure Jumper Material

Sets for Insulators, Cables and Concentrated Loads
(does not apply to line-specific items)

Sets

Set 37
Set 38
Set 39
Set 40
Set 41
Set 42
Set 43
Set 44
Set 45

Phases

Phase 1
Phase 2
Phase 3

☐ Separate tables for 'Parts', 'Assemblies', 'Cables & Concentrated Loads', and 'Line-Specific Material List'

OK Cancel

¹ Additional information on managing material databases and creating assemblies is available in Section 8.5 and Appendix M of the PLS-CADD Manual

You'll see that the second report option is to *Decompose Assemblies*. This option will itemize any assemblies in your material list. We can demonstrate this using the WPL Demo model that ships with the software and is typically saved here: "C:\Users\Public\Documents\PLS\pls_cadd\examples\projects\wpl_demo.xyz". First, we show the result of running the Bill of Material report *without* decomposing assemblies for a line segment. We can see that there are several structures listed, along with deadend clamps for conductor and shield wire:

Bill of Material of New Items

Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Deadend_B_55	Type B 55ft Deadend Tower	3.00	Each	24868.50	74605.50	0.00	0.00	74605.50
TM-1E	138 kV Dead End	36.00	Each	133.00	4788.00	0.00	0.00	4788.00
TM-4A	OHGW Clamp	4.00	Each	12.20	48.80	0.00	0.00	48.80
TM-4G	OHGW Dead End Clamp	12.00	Each	13.00	156.00	0.00	0.00	156.00
Tangent_A1_70	Type A1 70ft Tangent Tower	1.00	Each	17040.00	17040.00	0.00	0.00	17040.00
Tangent_A2_55	Type A2 55ft Tangent Tower	1.00	Each	14790.00	14790.00	0.00	0.00	14790.00
Material Subtotal					111428.30			
Labor Subtotal								
Total					111428.30			

If we re-run this report with the option to *Decompose Assemblies* selected, we see that the items noted in the original report are separated further to display *each individual part* that comprises the assembly. So, whereas the first report shows a "TM-1E - 138 kV Dead End", the second shows the insulator, deadend clamp, anchor shackle and other applicable components:

Bill of Material of New Items

Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Anc_Sh	Anchor Shackle, 30 k	52.00	Each	1.00	52.00	0.00	0.00	52.00
Bolt_Eye_58	5/8" x 2" Eye Bolt, w 2 Nuts	4.00	Each	1.00	4.00	0.00	0.00	4.00
Clamp_DE556	Clamp, Bolted Dead End, Dove	36.00	Each	10.00	360.00	0.00	0.00	360.00
Clamp_DE716	Clamp, Bolted Dead End, 7/16	12.00	Each	10.00	120.00	0.00	0.00	120.00
Clamp_Tan716	Clamp, Suspension None, 30 Degree, 7/16	4.00	Each	10.00	40.00	0.00	0.00	40.00
Conn_556	Connector, Jumper Dove	36.00	Each	2.00	72.00	0.00	0.00	72.00
Conn_716	Connector, Jumper 7/16	12.00	Each	2.00	24.00	0.00	0.00	24.00
HSE	Hot Link Socket Eye, 30 k	36.00	Each	10.00	360.00	0.00	0.00	360.00
HYBC	Hot Link Y-Clevis Ball, 30 k	36.00	Each	10.00	360.00	0.00	0.00	360.00
Insu2	138 kV Suspension, 25 k SML	36.00	Each	100.00	3600.00	0.00	0.00	3600.00
Nut_MF_58	5/8" Lock Nut	4.00	Each	0.20	0.80	0.00	0.00	0.80
Steel	Tower Steel	70957.00	(lbs)	1.50	106435.50	0.00	0.00	106435.50
Deadend_B_55	Type B 55ft Deadend Tower	3.00	Each					
TM-1E	138 kV Dead End	36.00	Each					
TM-4A	OHGW Clamp	4.00	Each					
TM-4G	OHGW Dead End Clamp	12.00	Each					
Tangent_A1_70	Type A1 70ft Tangent Tower	1.00	Each					
Tangent_A2_55	Type A2 55ft Tangent Tower	1.00	Each					
Material Subtotal					111428.30			
Labor Subtotal								
Total						111428.30		

Taking this a step further, we can elect to report a *Decomposed Assemblies' Part Count Table* as well. In this third example of this report, in addition to seeing the full material list, you'll be presented with a separate table, organized by stock number, denoting the quantity of parts in each assembly:

Assemblies' Part Count of New Items

Assembly Stock Number	Assembly Description	Assembly Quantity	Part Stock Number	Part Description	Part Quantity	Unit of Measure
Deadend_B_55	Type B 55ft Deadend Tower	3.00	Steel	Tower Steel	49737.00	(lbs)
TM-1E	138 kV Dead End	36.00	Insu2	138 kV Suspension, 25 k SML	36.00	Each
TM-1E	138 kV Dead End	36.00	Clamp_DE556	Clamp, Bolted Dead End, Dove	36.00	Each
TM-1E	138 kV Dead End	36.00	HYBC	Hot Link Y-Clevis Ball, 30 k	36.00	Each
TM-1E	138 kV Dead End	36.00	HSE	Hot Link Socket Eye, 30 k	36.00	Each
TM-1E	138 kV Dead End	36.00	Conn_556	Connector, Jumper Dove	36.00	Each
TM-1E	138 kV Dead End	36.00	Anc_Sh	Anchor Shackle, 30 k	36.00	Each
TM-4A	OHGW Clamp	4.00	Anc_Sh	Anchor Shackle, 30 k	4.00	Each
TM-4A	OHGW Clamp	4.00	Clamp_Tan716	Clamp, Suspension None, 30 Degree, 7/16	4.00	Each
TM-4A	OHGW Clamp	4.00	Bolt_Eye_58	5/8" x 2" Eye Bolt, w 2 Nuts	4.00	Each
TM-4A	OHGW Clamp	4.00	Nut_MF_58	5/8" Lock Nut	4.00	Each
TM-4G	OHGW Dead End Clamp	12.00	Anc_Sh	Anchor Shackle, 30 k	12.00	Each
TM-4G	OHGW Dead End Clamp	12.00	Clamp_DE716	Clamp, Bolted Dead End, 7/16	12.00	Each
TM-4G	OHGW Dead End Clamp	12.00	Conn_716	Connector, Jumper 7/16	12.00	Each
Tangent_A1_70	Type A1 70ft Tangent Tower	1.00	Steel	Tower Steel	11360.00	(lbs)
Tangent_A2_55	Type A2 55ft Tangent Tower	1.00	Steel	Tower Steel	9860.00	(lbs)

These reporting options can be especially useful for keeping track of material needs, particularly on large-scale transmission line jobs. They can also be helpful for figuring out where material is stored in your structure model, if you find that your reported quantities don't match your expectations. For example, if you were to manually add three insulators to a structure that already included three insulator assemblies in its Bill of Materials, you would find your insulator count to be double what's required. Selecting the *Decompose Assemblies* option and the *Decomposed Assemblies' Part Count Table* would show not only the total insulator quantity, but the assemblies to which they belong. This would help you update your structure model appropriately.