MITEK Loading - Geometry Feature in MiTek Engineering software

There are cases where a truss profile (as built) does not represent the roof profile. This is an issue when designing trusses that have piggyback trusses that sit on top of them. The program loads the truss based on the truss profile, which can lead to conservative loading in the unbalanced load cases for the base truss of a piggyback system. For example, a hip truss will have a piggyback truss placed on top of it to form a common shape, in this case the load applied to the piggyback truss for unbalanced loading is typically less and the hip truss can be over loaded with parallel unbalanced load cases that are not required for snow loading.



Geometry tab in MiTek 20/20 Engineering and Loading - Geometry section in Structure with Truss Design will allow you to input additional geometric information about the roof plane so that the loading on that truss can be modified to match the roof, rather than truss, profile.

The <u>Use Transverse Pitch</u> is there to account for "rain on snow surcharge" and is only applicable to roofs with a flat section and a ground snow load of 20 psf or less. It tells the program that the flat section is not really flat because it has a pitch perpendicular to the truss and therefore this load is not applied. The value to enter in <u>Transverse Roof Pitch</u> is the pitch of the roof perpendicular to the truss.

Loading - IBC2018/TPI2014	×					
General Advanced Wind Geometry Snow						
☑ Use Transverse Pitch (for Construction LL warning) Transverse Roof Pitch 4.00	00					
Use the following Geometry information for creating unbalanced load cases.						
Truss Profile Ridge Line Truss	s Profile					
MiTek 20/20 Engineering						

Loading - Geometry Feature in MiTek Engineering software

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✓ General			^	
Is Unique to	Truss	Yes		
Building Co	de	IBC 2018		
Loading Sta	ndard	ASCE 7-16		
Design Code	2	TPI 2014		
Importance	Importance Factor Com			
Exposure Ca	Exposure Category B> Urban/ sub			
Y Loading - G	eometry			
Use Transve	rse Pitch	Yes		
Transverse F	Roof Pitch	4 /12		
Use Roof Pr	ofile	No		

Structure with Truss Design

If truss is to be capped and you are designing for snow loads, you should turn on <u>Use the</u> following Geometry information for creating unbalanced load cases in the "Geometry" tab of MiTek 20/20 Engineering or select "Yes" for Use Roof Profile in the "Loading – Geometry" section of Structure with Truss Design. Turning this on will tell the program that the truss in question is not a hip and is therefore not subjected to the drifts that accumulate on a hip end.

Truss Profile. In MiTek 20/20 Engineering there are three choices: NOT SET (the program will not modify the unbalanced loading), COMMON and HIP. In Structure with Truss Design choices are: Custom (could be used for any truss and gives full control of the input), Common and Hip. In most cases the COMMON shape can be used to get the desired loading changes.

Truss Profile Information. This section contains information about the truss profile. In MiTek 20/20 Engineering after the appropriate profile is selected from the Truss Profile dropdown menu, on the right side there will be a diagram to depict the Truss Profile and the Roof Plane the roof truss is contained in.

Truss Profile Information

RL= distance from the Left end of the truss to the Ridge line RR= distance from the Right end of the truss to the Ridge line SL= Slope of the roof profile on the Left side of the Ridge line SR= Slope of the roof profile on the Right side of the Ridge line

Roof Plane Information

W= Width of the roof parallel to the truss; it is measured from eave to eave. The program will use ERL and ERR to determine W ERL= the distance from the left Eave to the Ridge line ERR= the distance from the right Eave to the Ridge line



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MiTek 20/20 Engineering

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	Is Unique to Truss		Yes			
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	Loading Standard		ASCE 7-	16		
	Design Code		TPI 2014			
	Importance Factor		Comme	rcial		
	Exposure Category		B> Urba	n/ sub	urban a	91
~	Loading - Geometry					
	Use Transverse Pitch		No			
	Transverse Roof Pitch		0/12			
L	Use Roof Profile		Yes			
	Need to Verify Profile Information		Yes			
	Truss Profile		Com	mon		_
	(RL) Left end of truss to Ridge Line		8-10-	08		
	(RR) Right end of truss to Ridge Line		23-00	-08		_
	(SL) Left Roof Slope		6/12			_
	(SR) Right Roof Slope		6/12			_
	(W) Width of Roof Profile		33-03	-08		
	(ERL) Left Edge of the Roof to the Rid	ge	8-10-	08		
	(ERR) Right Edge of the Roof to the Ri	dge	24-05	-00		

Structure with Truss Design



The program will unbalance the truss about the ridgeline which is determined by the geometry information found in the Geometry Tab of MiTek 20/20 Engineering or Loading - Geometry section of Structure with Truss Design.

For additional information, or if you have questions, please contact the MiTek Engineering department.