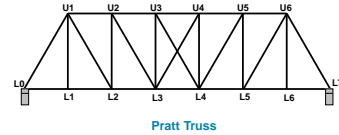


STRUCTURAL CONSIDERATIONS FOR TRUSSES

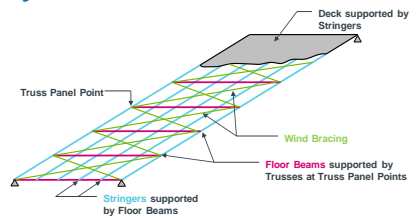
Introduction



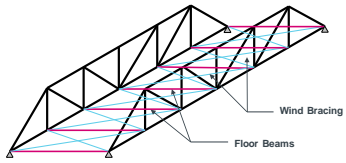
Truss Types

- Three types of trusses in Alberta:
 - Pony trusses
 - Through trusses
 - Deck trusses
- Traffic loads are transferred to the trusses by a floor system.

Floor System



Pony Truss

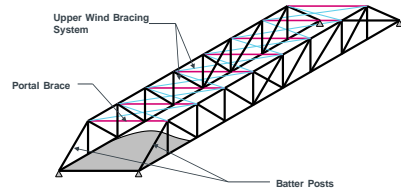


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Through Truss

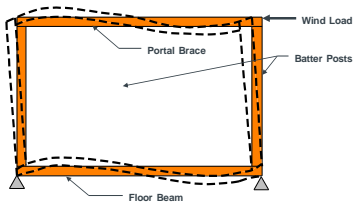


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Portal Brace & Batter Posts

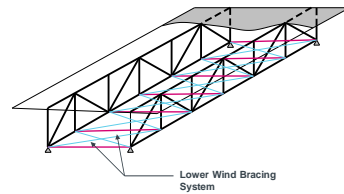


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Deck Truss

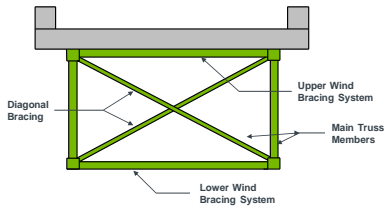


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Deck Truss – Wind Bracing



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Truss Configurations

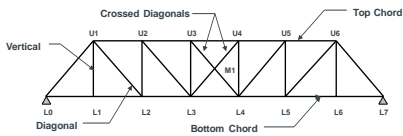
- The way truss members carry loads depends on the configuration of the truss.
- Most trusses in Alberta are either Pratt or Warren trusses.

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Pratt Truss

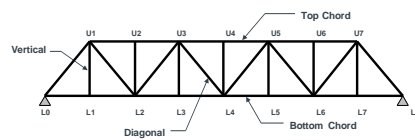


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Warren Truss

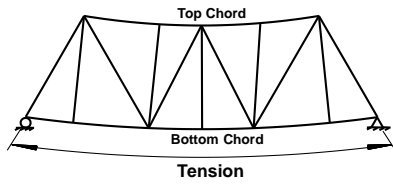


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Truss Curvature

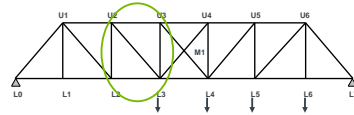


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Loads in Diagonals

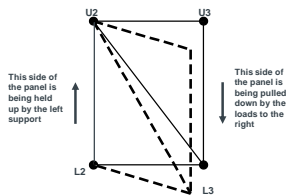


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Loads in Diagonals

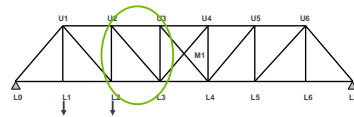


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Loads in Diagonals

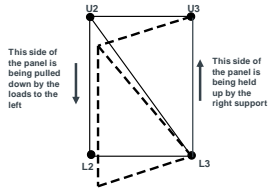


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Loads in Diagonals

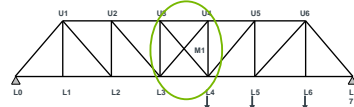


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Loads in Diagonals

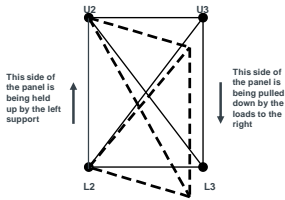


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Loads in Diagonals

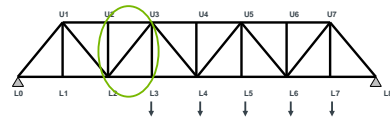


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Loads in Diagonals

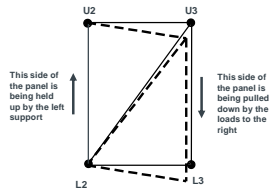


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Loads in Diagonals

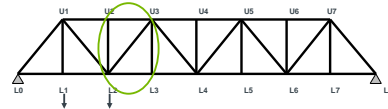


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Loads in Diagonals

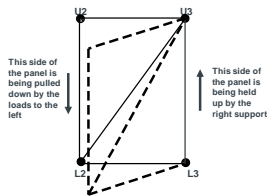


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Loads in Diagonals



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Summary – Loads in Diagonals




- Diagonals that slope away from the nearest support as they approach the bottom chord are primarily tension members.
- Some diagonals near the center of the truss may go into compression.
- Diagonals that slope towards the nearest support as they approach the bottom chord are primarily compression members.
- Crossed diagonals are tension members.

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Summary – Loads in Diagonals

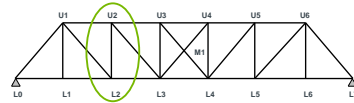
Diagonals		
Slope away from nearest support approaching BC 	Slope towards nearest support approaching BC 	Crossed 
Tension	Compression	Tension

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Loads in Verticals

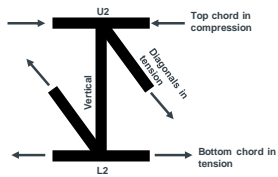


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Loads in Verticals

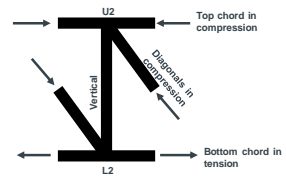


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Loads in Verticals

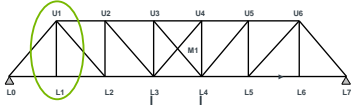


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Loads in Verticals

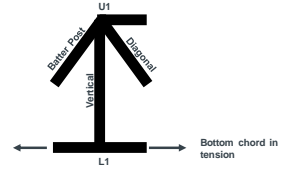


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Loads in Verticals

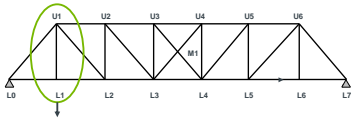


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Loads in Verticals

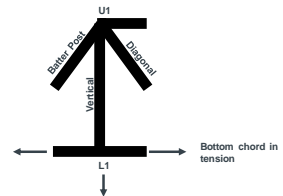


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Loads in Verticals

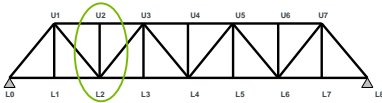


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Loads in Verticals

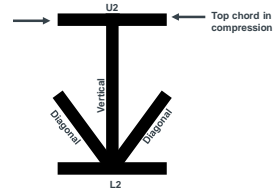


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Loads in Verticals



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Summary – Loads in Verticals

- Verticals connected to diagonals at both ends will be in compression if the diagonals are in tension and in tension if the diagonals are in compression.
- Verticals connected to diagonals at the top chord only will be in tension for pony and through trusses and will be unloaded for deck trusses.
- Verticals connected to diagonals at the bottom chord only will be in compression for deck trusses and will be unloaded for pony and through trusses.

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Summary – Loads in Verticals

Vertical Connected to					
Diagonals at both ends		Diagonals at top chord		Diagonals at bottom chord	
Diagonals in tension	Diagonals in compression	For pony & through trusses	For deck truss	For pony & through trusses	For deck truss
Compression	Tension	Tension	Zero	Zero	Compression

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Summary – Loads in TC, BC & BP

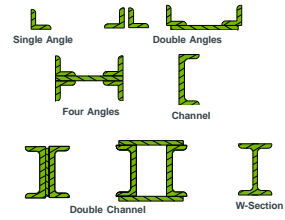
- Top chords are in compression.
- Bottom chords are in tension.
- Batter posts are in compression.

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Steel Sections

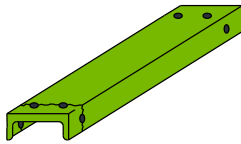


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Tension Member

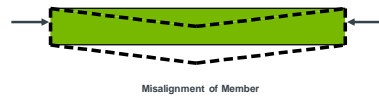


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Compression Member



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Compression Member



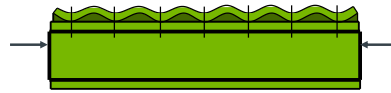
Bent Member

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Compression Member



Rippling of Plate

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Compression Member



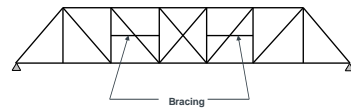
Rippling of Plate

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Compression Member



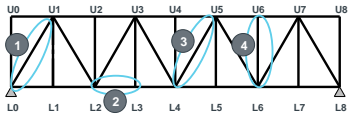
Bracing

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Class Exercise

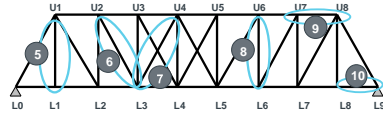


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Class Exercise

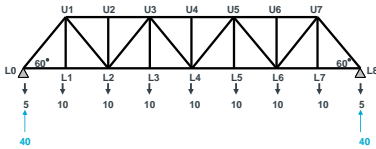


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Truss Loads

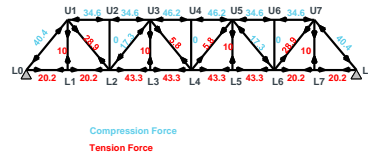


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Truss Loads



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Questions?



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