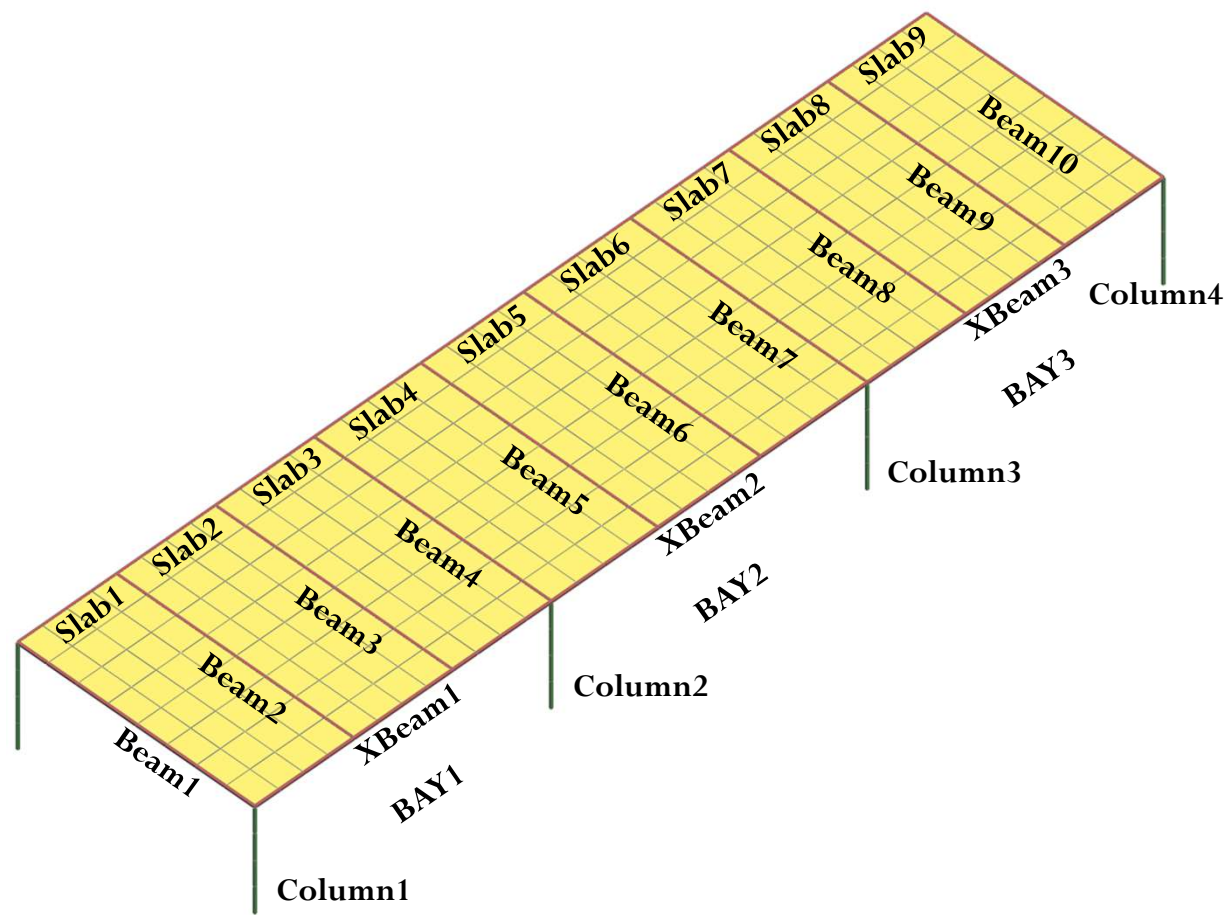
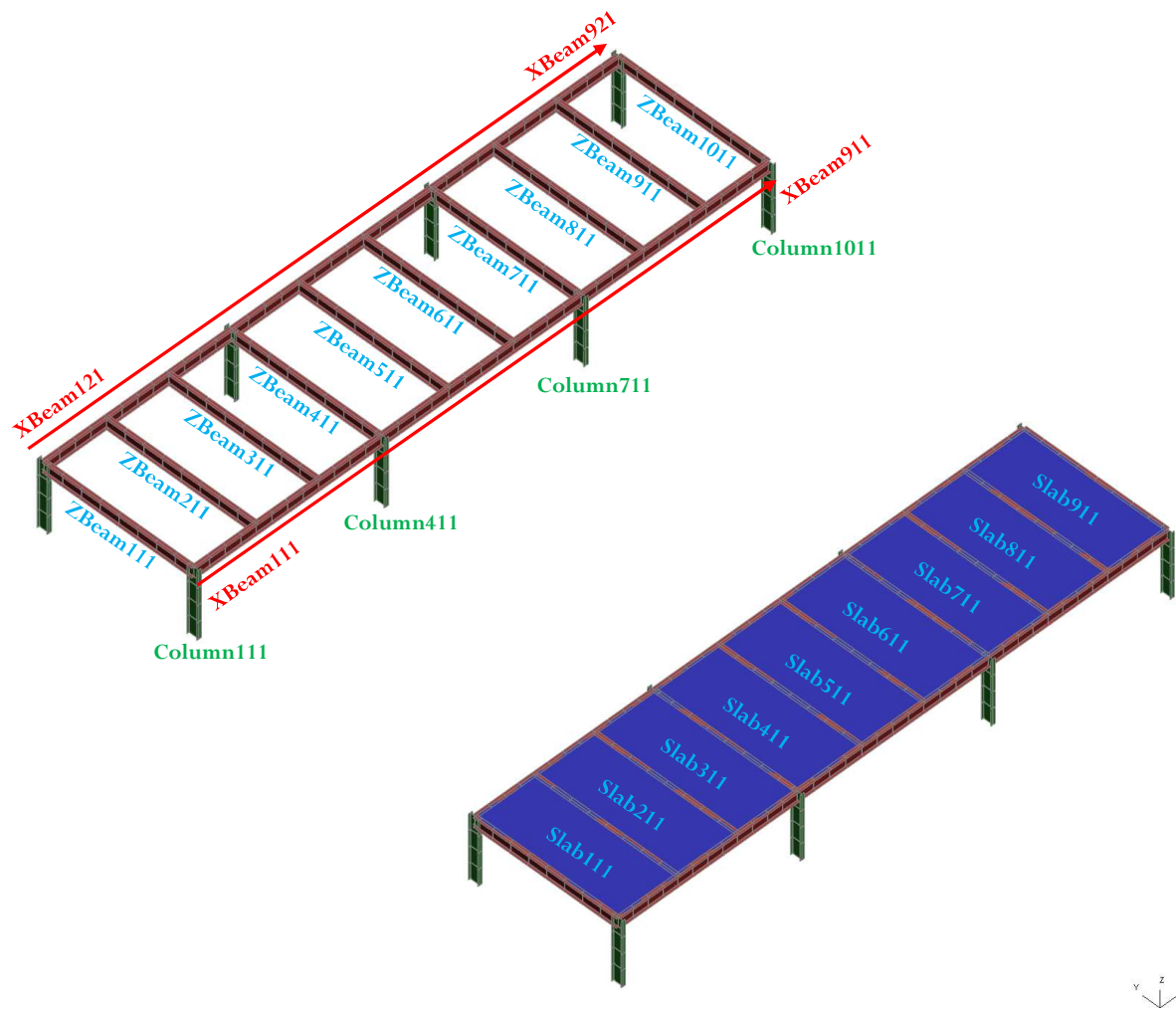


Schematic diagram



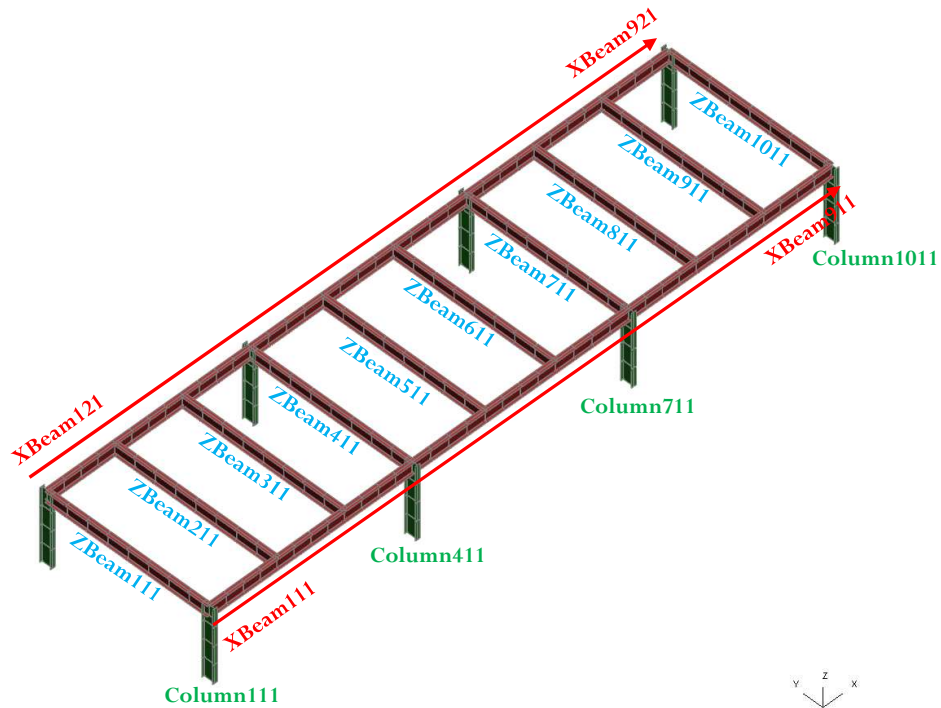
Set of Elements in LS-DYNA



SELECT SET_BEAM ? >>	
All None <> Opt	
Filter Vis Key_In Sk	
(M/L) SET_BEAM(s) (all Models)	
M1/S_BM1 (ZBeam1-1-1: 8 Beams)	
M1/S_BM2 (ZBeam2-1-1: 8 Beams)	
M1/S_BM3 (ZBeam3-1-1: 8 Beams)	
M1/S_BM4 (ZBeam4-1-1: 8 Beams)	
M1/S_BM5 (ZBeam5-1-1: 8 Beams)	
M1/S_BM6 (ZBeam6-1-1: 8 Beams)	
M1/S_BM7 (ZBeam7-1-1: 8 Beams)	
M1/S_BM8 (ZBeam8-1-1: 8 Beams)	
M1/S_BM9 (ZBeam9-1-1: 8 Beams)	
M1/S_BM10 (ZBeam10-1-1: 8 Beams)	
M1/S_BM11 (XBeam1-1/2-1: 8 Beams)	
M1/S_BM12 (XBeam2-1/2-1: 8 Beams)	
M1/S_BM13 (XBeam3-1/2-1: 8 Beams)	
M1/S_BM14 (XBeam4-1/2-1: 8 Beams)	
M1/S_BM15 (XBeam5-1/2-1: 8 Beams)	
M1/S_BM16 (XBeam6-1/2-1: 8 Beams)	
M1/S_BM17 (XBeam7-1/2-1: 8 Beams)	
M1/S_BM18 (XBeam8-1/2-1: 8 Beams)	
M1/S_BM19 (XBeam9-1/2-1: 8 Beams)	
M1/S_BM29 (SIFColumn1-1/2-1: 8 Beams)	
M1/S_BM32 (SIFColumn4-1/2-1: 8 Beams)	
M1/S_BM35 (SIFColumn7-1/2-1: 8 Beams)	
M1/S_BM38 (SIFColumn10-1/2-1: 8 Beams)	

SELECT SET_SHELL ? >>	
All None <> Opt	
Filter Vis Key_In Sk	
(M/L) SET_SHELL(s) (all Models)	
M1/S_SH1 (Shell1-1-1: 32 Shells)	
M1/S_SH2 (Shell2-1-1: 32 Shells)	
M1/S_SH3 (Shell3-1-1: 32 Shells)	
M1/S_SH4 (Shell4-1-1: 32 Shells)	
M1/S_SH5 (Shell5-1-1: 32 Shells)	
M1/S_SH6 (Shell6-1-1: 32 Shells)	
M1/S_SH7 (Shell7-1-1: 32 Shells)	
M1/S_SH8 (Shell8-1-1: 32 Shells)	
M1/S_SH9 (Shell9-1-1: 32 Shells)	
M1/S_SH60 (All shells: 288 Shells)	

## Thermal Load for structure in LS-DYNA



Thermal load generate by OpenSEES (i.e. .out file)

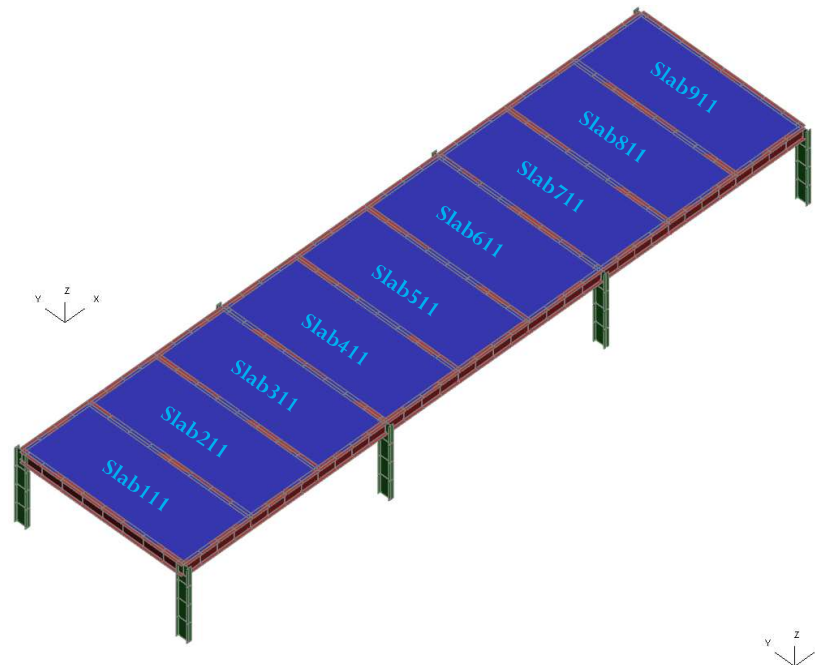
HT\_SIFZBeam\_i\_1\_1.out for ZBeam*i*11

HT\_SIFXBeam\_i\_1\_1.out for Xbeam*i*(1/2)1

HT\_SIFSlab\_i\_1\_1.out for Slab*i*11

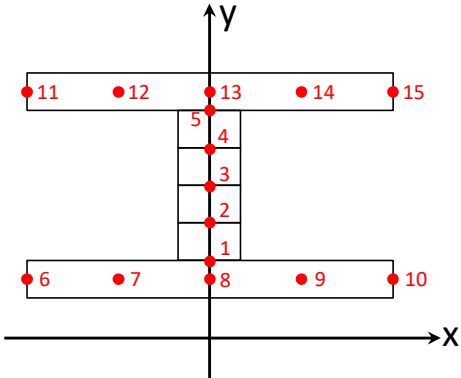
HT\_SIFZBeam\_1/4/7/10\_1\_1.out Node8(middle of lower flange)  
for Column 1/4/7/10(1/2)1

\*for column temperature factor is 0.7



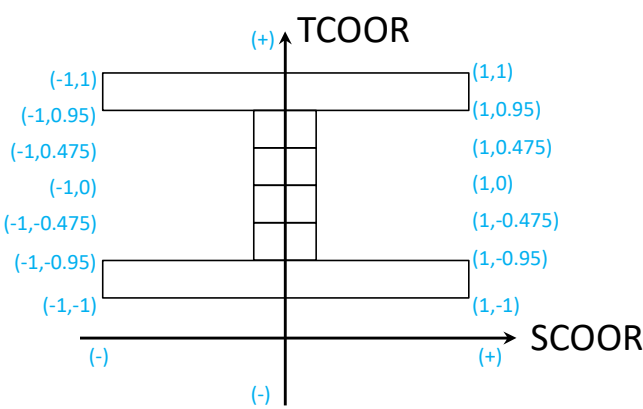
Sectional heat transfer definition - Beam

In SIFBuilder, considering SFRM, there are 15 output points in I-section the tag of points are shown as follow,



Example of beam heat transfer definition in LS-DYNAS (i.e. ZBeam111/Beam1)

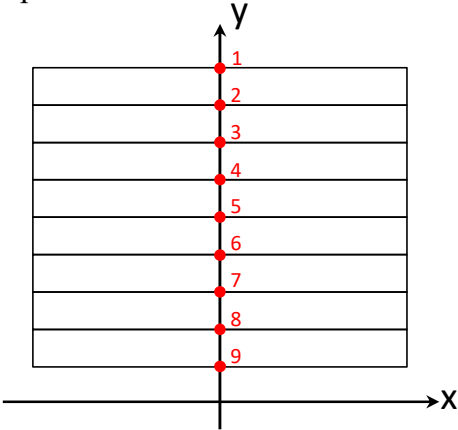
In LS-DYNA the coordinates for heat transfer analysis are shown as follow,



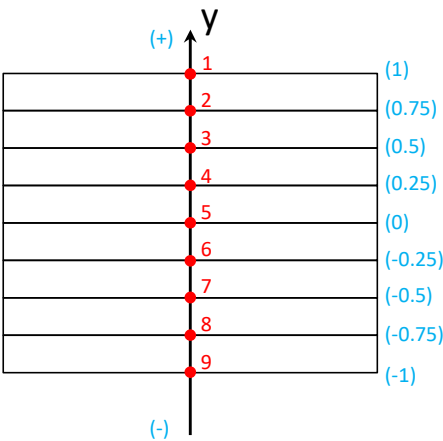
*LOAD_THERMAL_VARIABLE_BEAM_SET									
	1	1	0						
0.0	1.0	1226	Node8	0	-1.0	-1.0			
0.0	1.0	1226		0	1.0	-1.0			
0.0	1.0	1219	Node1	0	-1.0	-0.95			
0.0	1.0	1219		0	1.0	-0.95			
0.0	1.0	1220	Node2	0	-1.0	-0.475			
0.0	1.0	1220		0	1.0	-0.475			
0.0	1.0	1221	Node3	0	-1.0	0.0			
0.0	1.0	1221		0	1.0	0.0			
0.0	1.0	1222	Node4	0	-1.0	0.475			
0.0	1.0	1222		0	1.0	0.475			
0.0	1.0	1223	Node5	0	-1.0	0.95			
0.0	1.0	1223		0	1.0	0.95			
0.0	1.0	1231	Node13	0	-1.0	1.0			
0.0	1.0	1231		0	1.0	1.0			
TBASE	TSCALE	TCURVE	TCURDR	SCOOR	TCOOR				

Sectional heat transfer definition – Concrete Slab

In SIFBuilder, considering SFRM, there are 9 output points in cross-section the tag of points are shown as follow,



In LS-DYNA the coordinates for heat transfer analysis are shown as follow,



Example of beam heat transfer definition in LS-DYNAS (i.e. Slab111/Slab1)

*LOAD_THERMAL_VARIABLE_SHELL_SET					
	1	37			
0.0	1.0	1013	Node9	0	-1.0
0.0	1.0	1012		0	-0.75
0.0	1.0	1011		0	-0.5
0.0	1.0	1010		0	-0.25
0.0	1.0	1009		0	0.0
0.0	1.0	1008		0	0.25
0.0	1.0	1007		0	0.5
0.0	1.0	1006		0	0.75
0.0	1.0	1005	Node1	0	1.0