ETAB$\mathcal{S}$ ®2016

Integrated Building Design Software

Project Report

Table of Contents

List of Tables

1 Structure Data

This chapter provides model geometry information, including items such as story levels, point coordinates, and element connectivity.

1.1 Story Data

Table 1.1 - Story Data

Name	Height mm	Elevation mm	Master Story	Similar To	Splice Story
Story1	4000	4000	Yes	None	No
Base	0	0	No	None	No

1.2 Grid Data

Table 1.2 - Grid Systems

Name	Type	Story Range	X Origin m	Y Origin m	Rotation deg	Bubble Size mm	Color
G1	Cartesian	Default	0	0	0	1250	ffa0a0a0

Table 1.3 - Grid Lines

Grid System	Grid Direction	Grid ID	Visible	Bubble Location	Ordinate m
G1	X	A	Yes	End	0
G1	X	B	Yes	End	9
G1	X	C	Yes	End	18
G1	X	D	Yes	End	27
G1	Y	1	Yes	Start	0
G1	Y	2	Yes	Start	4
G1	Y	3	Yes	Start	8
G1	Y	4	Yes	Start	12
G1	Y	5	Yes	Start	16

1.3 Point Coordinates

Table 1.4 - Joint Coordinates Data

Label	X mm	Y mm	ΔZ Below mm
2	9000	4000	0
6	18000	4000	0

1.4 Line Connectivity

Table 1.5 - Column Connectivity Data

Column	I-End Point	J-End Point	I-End Story
C2	2	2	Below
C4	6	6	Below

Table 1.6 - Beam Connectivity Data

Beam	I-End Point	J-End Point	Curve Type
B4	2	6	None

1.5 Mass

Table 1.7 - Mass Source

Name	Include Elements	Include Added Mass	Include Loads	Include Lateral	Include Vertical	Lump at Stories	IsDefault
MsSrc1	Yes	Yes	No	Yes	No	Yes	Yes

Table 1.8 - Mass Summary by Story

Story	UX kg	UY kg	UZ kg
Story1	1030.08	1030.08	0
Base	339.08	339.08	0

1.6 Groups

Table 1.9 - Group Definitions

Name	Color
All	Yellow

2 Properties

This chapter provides property information for materials, frame sections, shell sections, and links.

2.1 Materials

Table 2.1 - Material Properties - Summary

Name	Type	E MPa	v	Unit Weight kN/m³	Design Strengths
A416Gr270	Tendon	196500.6	0	76.9729	Fy=1689.91 MPa, Fu=1861.58 MPa
A572Gr50	Steel	200000	0.3	76.9729	Fy=344.74 MPa, Fu=448.16 MPa
A615Gr60	Rebar	199947.98	0.3	76.9729	Fy=413.69 MPa, Fu=620.53 MPa

2.2 Frame Sections

Table 2.2 - Frame Sections - Summary

Name	Material	Shape
W460X82	A572Gr50	Steel I/Wide Flange
W530X85	A572Gr50	Steel I/Wide Flange

2.3 Reinforcement Sizes

Table 2.3 - Reinforcing Bar Sizes

Name	Diameter mm	Area mm²
18	18	255

2.4 Tendon Sections

Table 2.4 - Tendon Section Properties

Name	Material	StrandArea mm²	Color
Tendon1	A416Gr270	99	Aqua

3 Assignments

This chapter provides a listing of the assignments applied to the model.

3.1 Joint Assignments

Table 3.1 - Joint Assignments - Summary

Story	Label	Unique Name	Diaphragm	Restraints
Story1	2	12	From Area	UX; UY; UZ
Story1	6	14	From Area	UX; UY; UZ
Base	2	11	From Area	UX; UY; UZ
Base	6	13	From Area	UX; UY; UZ

3.2 Frame Assignments

Table 3.2 - Frame Assignments - Summary

Story	Label	Unique Name	Design Type	Length mm	Analysis Section	Design Section	Max Station Spacing mm	Min Number Stations
Story1	C2	7	Column	4000	W530X85	N/A		3
Story1	C4	8	Column	4000	W530X85	N/A		3
Story1	B4	9	Beam	9000	W460X82	N/A	500	

4 Loads

This chapter provides loading information as applied to the model.

4.1 Load Patterns

Table 4.1 - Load Patterns

Name	Type	Self Weight Multiplier	Auto Load
Dead	Dead	1.67	
Live	Live	0	
Snow Load	Snow	0.41	
EQ	Seismic	0	NBCC 2015
Mass	Superimposed Dead	0	

4.2 Applied Loads

4.2.1 Point Loads

Table 4.2 - Joint Loads - Force

Story	Label	Unique Name	Load Pattern	FX kN	FY kN	FZ kN	MX kN-m	MY kN-m	MZ kN-m	XDim mm	YDim mm
Story1	2	12	Live	0	-75	0	0	0	0	0	0
Story1	6	14	Live	0	-75	0	0	0	0	0	0

4.2.2 Line Loads

Table 4.3 - Frame Loads - Distributed (Part 1 of 2)

Story	Label	Unique Name	Design Type	Load Pattern	LoadType	Direction	Relative Distance Start	Relative Distance End	Absolute Distance Start mm	Absolute Distance End mm
Story1	B4	9	Beam	Dead	Force	Gravity	0	1	0	9000

Table 4.3 - Frame Loads - Distributed (Part 2 of 2)

Story	Label	Unique Name	Force at Start kN/m	Force at End kN/m
Story1	B4	9	1.67	1.67

4.3 Load Cases

Table 4.4 - Load Cases - Summary

Name	Type
Dead	Linear Static
Live	Linear Static
Snow Load	Linear Static
EQ	Linear Static
Mass	Linear Static

5 Analysis Results

This chapter provides analysis results.

5.1 Structure Results

Table 5.1 - Base Reactions

Load Case/Combo	FX kN	FY kN	FZ kN	MX kN-m	MY kN-m	MZ kN-m	X m	Y m	Z m
Dead	0	0	37.4528	149.8113	-505.6131	0	0	0	0
Live	0	150	0	-600	0	2025	0	0	0
Snow Load	0	0	5.505	22.02	-74.3176	0	0	0	0
EQ	-2.5398	0	0	0	-10.1593	10.1593	0	0	0
Mass	0	0	0	0	0	0	0	0	0

5.2 Story Results

Table 5.2 - Story Forces

Story	Load Case/Combo	Location	P kN	VX kN	VY kN	T kN-m	MX kN-m	MY kN-m
Story1	Dead	Top	-5.5531	0	0	0	-22.2125	74.9673
Story1	Dead	Bottom	5.5531	0	0	0	22.2125	-74.9673
Story1	Live	Top	0	0	0	0	0	0
Story1	Live	Bottom	0	0	0	0	0	0
Story1	Snow Load	Top	-1.3633	0	0	0	-5.4534	18.4051
Story1	Snow Load	Bottom	1.3633	0	0	0	5.4534	-18.4051
Story1	EQ	Top	0	0	0	0	0	0
Story1	EQ	Bottom	0	0	0	0	0	0
Story1	Mass	Top	0	0	0	0	0	0
Story1	Mass	Bottom	0	0	0	0	0	0

5.3 Point Results

Table 5.3 - Joint Reactions

Story	Joint Label	Unique Name	Load Case/Combo	FX kN	FY kN	FZ kN	MX kN-m	MY kN-m	MZ kN-m
Story1	2	12	Dead	-4.0966	0	15.9498	0	0	0
Story1	2	12	Live	0	75	0	0	0	0
Story1	2	12	Snow Load	-0.4459	0	2.0708	0	0	0
Story1	2	12	EQ	-1.2699	0	0	0	0	0
Story1	2	12	Mass	0	0	0	0	0	0
Story1	6	14	Dead	4.0966	0	15.9498	0	0	0
Story1	6	14	Live	0	75	0	0	0	0
Story1	6	14	Snow Load	0.4459	0	2.0708	0	0	0
Story1	6	14	EQ	-1.2699	0	0	0	0	0
Story1	6	14	Mass	0	0	0	0	0	0
Base	2	11	Dead	4.0966	0	2.7766	0	0	0
Base	2	11	Live	0	0	0	0	0	0
Base	2	11	Snow Load	0.4459	0	0.6817	0	0	0
Base	2	11	EQ	0	0	0	0	0	0
Base	2	11	Mass	0	0	0	0	0	0
Base	6	13	Dead	-4.0966	0	2.7766	0	0	0
Base	6	13	Live	0	0	0	0	0	0
Base	6	13	Snow Load	-0.4459	0	0.6817	0	0	0
Base	6	13	EQ	0	0	0	0	0	0

Table 5.3 - Joint Reactions (continued)

Story	Joint Label	Unique Name	Load Case/Combo	FX kN	FY kN	FZ kN	MX kN-m	MY kN-m	MZ kN-m
Base	6	13	Mass	0	0	0	0	0	0