



SAP2000 Analysis Report

LETRAPOLE

2021

DESCRIPTION

In this report, calculations were made according to the AISC 360-16 specification and wind loads were defined according to the ASCE-7 standard. As can be seen in page 15, steel capacity utilization rates and stress values are at normal levels and there is no warning message.

LOCATION	USA/TOWN CENTER
WIND LOAD	153 km/h / 95 mile ASCE-7 Standard
MATERIALS	STEEL

FRAME	MATERIALS	Capacity Utilization Rates	TABLE
5	Ø38x2	45%	page 21
23	Ø38x2	47%	page 21
6	Spring Ø6.5CS	8%	page 21
7	Spring Ø6.5CS	5%	page 21
8	Spring Ø6.5CS	5%	page 21
9	Spring Ø6.5CS	8%	page 21
19	C55.35.10.2	75%	page 26

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1. Model geometry

This section provides model geometry information, including items such as joint coordinates, joint restraints, and element connectivity.

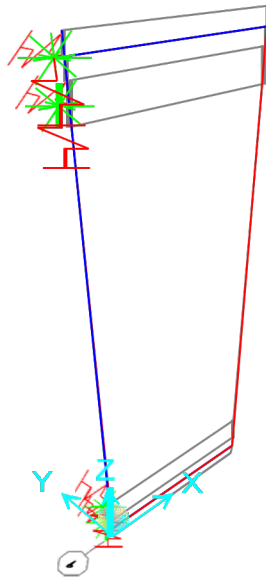


Figure 1: Finite element model

1.1. Joint coordinates

Table 1: Joint Coordinates

Joint	CoordSys	CoordType	GlobalX mm	GlobalY mm	GlobalZ mm
2	GLOBAL	Cartesian	0,	0,	0,
3	GLOBAL	Cartesian	0,	1,583E-13	2660,
4	GLOBAL	Cartesian	35,	0,	2585,
5	GLOBAL	Cartesian	35,	0,	2435,
6	GLOBAL	Cartesian	35,	0,	150,
7	GLOBAL	Cartesian	0,	0,	2585,
8	GLOBAL	Cartesian	900,	0,	2585,
9	GLOBAL	Cartesian	0,	0,	75,
10	GLOBAL	Cartesian	900,	0,	75,
11	GLOBAL	Cartesian	35,	0,	300,
14	GLOBAL	Cartesian	0,	0,	2435,
30	GLOBAL	Cartesian	0,	0,	150,
33	GLOBAL	Cartesian	0,	0,	300,

1.2. Joint restraints

Table 2: Joint Restraint Assignments

Joint	U1	U2	U3	R1	R2	R3
4	Yes	Yes	No	No	No	Yes
5	Yes	Yes	No	No	No	Yes
6	Yes	Yes	No	No	No	Yes
11	Yes	Yes	No	No	No	Yes

1.3. Element connectivity

Table 3: Connectivity - Frame

Frame	JointI	JointJ	Length mm
5	9	10	900,
6	4	7	35,
7	5	14	35,
8	11	33	35,
9	6	30	35,
19	3	2	2660,
23	7	8	900,

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
5	Ø38x2	Ø38x2	Default
6	Ø6.5CS	Ø6.5CS	Default
7	Ø6.5CS	Ø6.5CS	Default
8	Ø6.5CS	Ø6.5CS	Default
9	Ø6.5CS	Ø6.5CS	Default
19	C55.35.10.2	C55.35.10.2	Default
23	Ø38x2	Ø38x2	Default

Table 5: Connectivity - Area

Area	Joint1	Joint2	Joint3	Joint4
1	9	10	8	7

Table 6: Area Section Assignments

Area	Section	MatProp
1	Mbrn	Default

2. Material properties

This section provides material property information for materials used in the model.

Table 7: Material Properties 02 - Basic Mechanical Properties

Material	UnitWeight N/mm ³	UnitMass N-s ² /mm ⁴	E1 N/mm ²	G12 N/mm ²	U12	A1 1/C
A500GrB42	7,6973E-05	7,8490E-09	199947,98	76903,07	0,3	1,1700E-05
A615Gr60	7,6973E-05	7,8490E-09	199947,98			1,1700E-05
A653SQGr33	7,6973E-05	7,8490E-09	203395,36	78228,98	0,3	1,1700E-05

Table 8: Material Properties 03a - Steel Data

Material	Fy N/mm ²	Fu N/mm ²	FinalSlope	CoupModType
A500GrB42	289,58	399,9	-0,1	Von Mises

Table 9: Material Properties 03d - Cold Formed Data

Material	Fy N/mm ²	Fu N/mm ²	CoupModType
A653SQGr33	227,53	310,26	Von Mises

Table 10: Material Properties 03e - Rebar Data

Material	Fy N/mm ²	Fu N/mm ²	FinalSlope	CoupModType
A615Gr60	413,69	620,53	-0,1	Von Mises

3. Section properties

This section provides section property information for objects used in the model.

3.1. Frames

Table 11: Frame Section Properties 01 - General, Part 1 of 4

SectionName	Material	Shape	t3 mm	t2 mm	tw mm	Area mm2	TorsConst mm4	I33 mm4
C55.35.10.2	A653SQGr33	Cold Formed C	55	35	2	270,57	360,76	132753,6
Ø38x2	A500GrB42	Pipe	38		2	226,19	73513,27	36756,63
Ø6.5CS	A500GrB42	SD Section				1510,21	113501,55	1277335,2

Table 11: Frame Section Properties 01 - General, Part 2 of 4

SectionName	I22 mm4	I23 mm4	AS2 mm2	AS3 mm2
C55.35.10.2	44754,85	0	102,	124,
Ø38x2	36756,63	0	113,33	113,33
Ø6.5CS	211266,13	0	1167,53	486,49

Table 11: Frame Section Properties 01 - General, Part 3 of 4

SectionName	S33 mm3	S22 mm3	Z33 mm3	Z22 mm3	R33 mm	R22 mm
C55.35.10.2	4827,4	2055,92	4827,4	2055,92	22,151	12,861
Ø38x2	1934,56	1934,56	2594,67	2594,67	12,748	12,748
Ø6.5CS	23531,05	13204,13	38028,34	16964,17	29,083	11,828

Table 11: Frame Section Properties 01 - General, Part 4 of 4

SectionName	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
C55.35.10.2	1	1	1	1	1	1	1	1
Ø38x2	1	1	1	1	1	1	1	1
Ø6.5CS	1	1	1	1	1	1	1	1

Table 12: Frame Property Modifiers, Part 1 of 2

Frame	AMod	AS2Mod	AS3Mod	JMod	I22Mod	I33Mod	MassMod	WeightMod
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1

Table 12: Frame Property Modifiers, Part 2 of 2

Frame	EAModifier	EIModifier
5	0,8	0,8
6	0,8	0,8
7	0,8	0,8
8	0,8	0,8
9	0,8	0,8
23	0,8	0,8

3.2. Areas

Table 13: Area Section Properties, Part 1 of 5

Section	Material	MatAngle Degrees	AreaType	Type	DrillDOF	Thickness m
Mbrn	A653SQGr33	0	Shell	Shell-Thin	Yes	0,001

Table 13: Area Section Properties, Part 2 of 5

Section	BendThick m	Arc Degrees	InComp	CoordSys	Color	TotalWt Tonf
Mbrn	0,001				Green	0,0177

Table 13: Area Section Properties, Part 3 of 5

Section Tonf-s2/m	TotalMass	F11Mod	F22Mod	F12Mod	M11Mod	M22Mod
Mbrn	0,001808	1	1	1	1	1

Table 13: Area Section Properties, Part 4 of 5

Section	M12Mod	V13Mod	V23Mod	MMod	WMod	GUID
Mbrn	1	1	1	1	1	3bde7958-4f7a-46e5-ba59-

Table 13: Area Section Properties, Part 5 of 5

Section	Notes
Mbrn	Added 30.10.2021 00:29:30

Table 13: Area Section Property - Time Dependent

Section m	TypeSize	AutoSFSize	UserValSize
Mbrn	Auto	1	

Table 13: Area Section Property Design Parameters

Section	RebarMat	RebarOpt
Mbrn	None	Default

4. Load patterns

This section provides loading information as applied to the model.

Table 14: Load Pattern Definitions

LoadPat	DesignType	SelfWtMult	AutoLoad
D	Dead	1,	
W	Wind	0,	ASCE 7-16

5. Load cases

This section provides load case information.

5.1. Definitions

Table 15: Load Case Definitions, Part 1 of 2

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesActOpt
D	LinStatic	Zero				Prog Det
MODAL	LinModal	Zero				Prog Det
W	LinStatic	Zero				Prog Det

Table 15: Load Case Definitions, Part 2 of 2

Case	DesignAct
D	Non-Composite
MODAL	Other
W	Short-Term Composite

5.2. Static caseload assignments

Table 16: Case- Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
D	Load pattern	D	1,
W	Load pattern	W	1,

5.3. Responsespectrum caseload assignments

Table 17: Function - ResponseSpectrum - User

Name	Period Sec	Accel	FuncDamp
UNIFRS	0	1	0,05
UNIFRS	1	1	

6. Load combinations

This section provides load combination information.

Table 18: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
UDSTL1	Linear Add	D	1,4
UDSTL2	Linear Add	D	1,2
UDSTL2		W	1,
UDSTL3	Linear Add	D	1,2
UDSTL3		W	1,

7. Structure results

This section provides structure results, including items such as structural periods and base reactions.

7.1. Mass summary

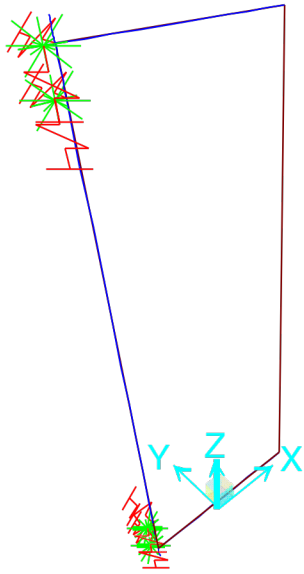


Figure 2: Deformed shape

Table 19: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1 N-s2/mm	U2 N-s2/mm	U3 N-s2/mm	R1 N-mm-s2	R2 N-mm-s2	R3 N-mm-s2	CenterX mm
2	MSSSRC1	7,964E-05	7,964E-05	7,964E-05	0,	0,	0,	0,
3	MSSSRC1	7,964E-05	7,964E-05	7,964E-05	0,	0,	0,	0,
4	MSSSRC1	2,074E-04	2,074E-04	2,074E-04	0,	0,	0,	35,
5	MSSSRC1	2,074E-04	2,074E-04	2,074E-04	0,	0,	0,	35,
6	MSSSRC1	2,074E-04	2,074E-04	2,074E-04	0,	0,	0,	35,
7	MSSSRC1	5,678E-03	5,678E-03	5,678E-03	0,	0,	0,	0,
8	MSSSRC1	5,232E-03	5,232E-03	5,232E-03	0,	0,	0,	900,
9	MSSSRC1	5,391E-03	5,391E-03	5,391E-03	0,	0,	0,	0,
10	MSSSRC1	5,232E-03	5,232E-03	5,232E-03	0,	0,	0,	900,
11	MSSSRC1	2,074E-04	2,074E-04	2,074E-04	0,	0,	0,	35,
14	MSSSRC1	2,634E-03	2,634E-03	2,634E-03	0,	0,	0,	0,
30	MSSSRC1	4,464E-04	4,464E-04	4,464E-04	0,	0,	0,	0,
33	MSSSRC1	2,634E-03	2,634E-03	2,634E-03	0,	0,	0,	0,
SumAccelU	MSSSRC1	0,028	0,	0,	0,	0,	0,	332,49
X								
SumAccelU	MSSSRC1	0,	0,028	0,	0,	0,	0,	332,49
Y								
SumAccelU	MSSSRC1	0,	0,	0,028	0,	0,	0,	332,49
Z								

Table 19: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY mm	CenterZ mm
2	MSSSRC1	0,	0,
3	MSSSRC1	1,583E-13	2660,
4	MSSSRC1	0,	2585,
5	MSSSRC1	0,	2435,
6	MSSSRC1	0,	150,
7	MSSSRC1	0,	2585,
8	MSSSRC1	0,	2585,
9	MSSSRC1	0,	75,
10	MSSSRC1	0,	75,
11	MSSSRC1	0,	300,
14	MSSSRC1	0,	2435,
30	MSSSRC1	0,	150,
33	MSSSRC1	0,	300,
SumAccelU	MSSSRC1	4,464E-16	1332,2
X			
SumAccelU	MSSSRC1	4,464E-16	1332,2
Y			
SumAccelU	MSSSRC1	4,464E-16	1332,2
Z			

7.2. Basereactions

Table 20: BaseReactions

OutputCase	GlobalFX N	GlobalFY N	GlobalFZ N	GlobalMX N-mm	GlobalMY N-mm	GlobalMZ N-mm
D	-1.531 E-14	9.068 E-17	250.02	6.496 E-14	9024,81	-6,050E-13
W	0.	-1384.77	4.931 E-16	1841740.11	-4,861E-12	-623145,15

8. Joint results

This section provides joint results, including items such as displacements and reactions.

Table 21: Joint Displacements

Joint	OutputCase	U1 mm	U2 mm	U3 mm	R1 Radians	R2 Radians	R3 Radians
2	D	-5,894E+11	1,305E-17	0,022334	0,	-0,000707	3,746E-19
2	W	0,000028	73,631168	-3,510E-16	0,002602	1,012E-17	2,538684
3	D	-5,894E+11	9,496E-17	0,013911	0,	-0,000401	2,725E-18
3	W	0,000028	62,836402	-7,648E-16	-0,00261	1,005E-17	1,790137
4	D	0,	0,	-5,894E+11	-2,700E-18	-0,0004	0,
4	W	0,	0,	0,000028	-1,78981	1,005E-17	0,
5	D	0,	0,	-5,894E+11	-2,666E-18	-0,000388	0,
5	W	0,	0,	0,000028	-1,754378	1,003E-17	0,
6	D	0,	0,	-5,894E+11	-3,942E-19	-0,000668	0,
6	W	0,	0,	0,000028	-1,706202	1,005E-17	0,
7	D	-0,013961	9,449E-17	-5,894E+11	-2,700E-18	-0,0004	0,
7	W	3,516E-16	62,640633	0,000028	-1,790137	1,005E-17	-0,00261
8	D	-5,894E+11	2,523E-15	0,519611	0,	-0,000722	2,698E-18
8	W	0,000028	1684,893484	-9,429E-15	-0,002021	1,012E-17	1,806587
9	D	-0,022373	1,328E-17	-5,894E+11	-3,778E-19	-0,000707	0,
9	W	3,510E-16	73,436037	0,000028	-2,538684	1,012E-17	0,002602
10	D	-5,894E+11	3,546E-16	0,516446	0,	-0,000393	3,797E-19
10	W	0,000028	2368,568379	-9,429E-15	0,003178	1,006E-17	2,5539
11	D	0,	0,	-5,894E+11	-4,438E-19	-0,000662	0,
11	W	0,	0,	0,000028	-1,673446	1,004E-17	0,
14	D	-0,01375	9,333E-17	-5,894E+11	-2,667E-18	-0,000387	0,
14	W	3,512E-16	61,412652	0,000028	-1,754395	1,003E-17	-0,002586
30	D	-0,023248	1,381E-17	-5,894E+11	-3,941E-19	-0,000669	0,
30	W	3,518E-16	59,714593	0,000028	-1,70651	1,005E-17	0,002515
33	D	-0,023077	1,553E-17	-5,894E+11	-4,440E-19	-0,000663	0,
33	W	3,515E-16	58,579521	0,000028	-1,673464	1,004E-17	0,002254

Table 22: Joint Reactions

Joint	OutputCase	F1 N	F2 N	F3 N	M1 N-mm	M2 N-mm	M3 N-mm
4	D	-69,29	-1,402E-15	0,	2,619E-13	0,	3,379E-13
4	W	2,720E-13	8115,62	0,	173611,61	0,	650965,55
5	D	461,19	2,599E-15	0,	2,586E-13	0,	7,344E-13
5	W	-1,741E-13	-8774,03	0,	170174,62	0,	644999,07
6	D	-376,81	-9,145E-15	0,	3,824E-14	0,	1,116E-12
6	W	1,063E-13	7541,95	0,	165501,55	0,	-627229,58
7	D	0,	0,	0,	0,	38,78	0,
7	W	0,	0,	0,	0,	-9,749E-13	0,
9	D	0,	0,	0,	0,	68,55	0,
9	W	0,	0,	0,	0,	-9,814E-13	0,
11	D	-265,11	8,039E-15	0,	4,305E-14	0,	1,619E-12
11	W	-2,046E-13	-8268,31	0,	162324,21	0,	-562080,39
14	D	0,	0,	0,	0,	37,52	0,
14	W	0,	0,	0,	0,	-9,731E-13	0,
30	D	0,	0,	0,	0,	64,91	0,
30	W	0,	0,	0,	0,	-9,751E-13	0,
33	D	0,	0,	0,	0,	64,29	0,
33	W	0,	0,	0,	0,	-9,738E-13	0,

9. Frame results

This section provides frame force results.

Table 23: Element Forces - Frames, Part 1 of 3

Frame	Station m	OutputCase	CaseType	P Tonf	V2 Tonf	V3 Tonf
5	0	D	LinStatic	0,0012	-0,0008122	0
5	0,45	D	LinStatic	0,0012	-1,329E-05	0
5	0,9	D	LinStatic	0,0012	0,0007856	0
5	0	W	LinStatic	-1,867E-19	0	-0,0693
5	0,45	W	LinStatic	-1,867E-19	0	-0,034
5	0,9	W	LinStatic	-1,867E-19	0	0,0013
5	0	UDSTL1	Combination	0,0017	-0,0011	0
5	0,45	UDSTL1	Combination	0,0017	-1,86E-05	0
5	0,9	UDSTL1	Combination	0,0017	0,0011	0
5	0	UDSTL2	Combination	0,0014	-0,0009747	-0,0693
5	0,45	UDSTL2	Combination	0,0014	-1,595E-05	-0,034
5	0,9	UDSTL2	Combination	0,0014	0,0009428	0,0013
5	0	UDSTL3	Combination	0,0014	-0,0009747	0,0693
5	0,45	UDSTL3	Combination	0,0014	-1,595E-05	0,034
5	0,9	UDSTL3	Combination	0,0014	0,0009428	-0,0013
6	0	D	LinStatic	0	0,045	0
6	0,035	D	LinStatic	0	0,0454	0
6	0	W	LinStatic	0	-9,455E-18	0,3027
6	0,035	W	LinStatic	0	-9,455E-18	0,3027
6	0	UDSTL1	Combination	0	0,0629	0
6	0,035	UDSTL1	Combination	0	0,0635	0
6	0	UDSTL2	Combination	0	0,0539	0,3027
6	0,035	UDSTL2	Combination	0	0,0544	0,3027
6	0	UDSTL3	Combination	0	0,0539	-0,3027
6	0,035	UDSTL3	Combination	0	0,0544	-0,3027
7	0	D	LinStatic	0	-0,034	-1,22E-20
7	0,035	D	LinStatic	0	-0,0335	-1,22E-20
7	0	W	LinStatic	0	9,857E-18	-0,3666
7	0,035	W	LinStatic	0	9,857E-18	-0,3666
7	0	UDSTL1	Combination	0	-0,0475	-1,709E-20
7	0,035	UDSTL1	Combination	0	-0,047	-1,709E-20
7	0	UDSTL2	Combination	0	-0,0408	-0,3666
7	0,035	UDSTL2	Combination	0	-0,0403	-0,3666
7	0	UDSTL3	Combination	0	-0,0408	0,3666
7	0,035	UDSTL3	Combination	0	-0,0403	0,3666
8	0	D	LinStatic	0	-0,0345	1,231E-20
8	0,035	D	LinStatic	0	-0,0341	1,231E-20
8	0	W	LinStatic	0	7,944E-18	-0,3525
8	0,035	W	LinStatic	0	7,944E-18	-0,3525
8	0	UDSTL1	Combination	0	-0,0483	1,724E-20
8	0,035	UDSTL1	Combination	0	-0,0477	1,724E-20
8	0	UDSTL2	Combination	0	-0,0414	-0,3525
8	0,035	UDSTL2	Combination	0	-0,0409	-0,3525
8	0	UDSTL3	Combination	0	-0,0414	0,3525
8	0,035	UDSTL3	Combination	0	-0,0409	0,3525
9	0	D	LinStatic	0	-0,0047	0
9	0,035	D	LinStatic	0	-0,0043	0
9	0	W	LinStatic	0	-8,347E-18	0,2752
9	0,035	W	LinStatic	0	-8,347E-18	0,2752
9	0	UDSTL1	Combination	0	-0,0066	0
9	0,035	UDSTL1	Combination	0	-0,006	0
9	0	UDSTL2	Combination	0	-0,0057	0,2752
9	0,035	UDSTL2	Combination	0	-0,0052	0,2752
9	0	UDSTL3	Combination	0	-0,0057	-0,2752
9	0,035	UDSTL3	Combination	0	-0,0052	-0,2752
19	0	D	LinStatic	-2,411E-12	0	0
19	0,075	D	LinStatic	-0,0001593	3,361E-19	0
19	0,075	D	LinStatic	-0,0449	-2,504E-20	0,0002992
19	0,225	D	LinStatic	-0,0452	-2,504E-20	0,0002992
19	0,225	D	LinStatic	-0,0117	-3,725E-20	0,0002992
19	1,33	D	LinStatic	-0,014	-3,725E-20	0,0002992
19	2,36	D	LinStatic	-0,0162	-3,725E-20	0,0002992
19	2,36	D	LinStatic	0,0179	-2,493E-20	0,0002992
19	2,51	D	LinStatic	0,0176	-2,493E-20	0,0002992
19	2,51	D	LinStatic	0,0219	-1,837E-20	0,0002992
19	2,585	D	LinStatic	0,0217	-1,837E-20	0,0002992
19	2,585	D	LinStatic	0,0001593	0	0
19	2,66	D	LinStatic	1,24E-14	0	0
19	0	W	LinStatic	0	1,855E-13	0
19	0,075	W	LinStatic	0	1,855E-13	0

Table 23: Element Forces - Frames, Part 1 of 3

Frame	Station m	OutputCase	CaseType	P Tonf	V2 Tonf	V3 Tonf
19	0,075	W	LinStatic	7,713E-18	0,3737	2,316E-17
19	0,225	W	LinStatic	7,713E-18	0,3737	2,316E-17
19	0,225	W	LinStatic	-2,144E-18	0,0071	7,121E-19
19	1,33	W	LinStatic	-2,144E-18	0,0071	7,121E-19
19	2,36	W	LinStatic	-2,144E-18	0,0071	7,121E-19
19	2,36	W	LinStatic	-1,009E-17	-0,3454	-2,087E-17
19	2,51	W	LinStatic	-1,009E-17	-0,3454	-2,087E-17
19	2,51	W	LinStatic	-1,742E-18	-0,0702	-4,021E-18
19	2,585	W	LinStatic	-1,742E-18	-0,0702	-4,021E-18
19	2,585	W	LinStatic	0	0	0
19	2,66	W	LinStatic	0	0	0
19	0	UDSTL1	Combination	-3,376E-12	0	0
19	0,075	UDSTL1	Combination	-0,000223	4,706E-19	0
19	0,075	UDSTL1	Combination	-0,0628	-3,506E-20	0,0004189
19	0,225	UDSTL1	Combination	-0,0633	-3,506E-20	0,0004189
19	0,225	UDSTL1	Combination	-0,0163	-5,215E-20	0,0004189
19	1,33	UDSTL1	Combination	-0,0196	-5,215E-20	0,0004189
19	2,36	UDSTL1	Combination	-0,0227	-5,215E-20	0,0004189
19	2,36	UDSTL1	Combination	0,0251	-3,491E-20	0,0004189
19	2,51	UDSTL1	Combination	0,0246	-3,491E-20	0,0004189
19	2,51	UDSTL1	Combination	0,0306	-2,572E-20	0,0004189
19	2,585	UDSTL1	Combination	0,0304	-2,572E-20	0,0004189
19	2,585	UDSTL1	Combination	0,000223	0	0
19	2,66	UDSTL1	Combination	1,735E-14	0	0
19	0	UDSTL2	Combination	-2,894E-12	1,855E-13	0
19	0,075	UDSTL2	Combination	-0,0001911	1,855E-13	0
19	0,075	UDSTL2	Combination	-0,0539	0,3737	0,0003591
19	0,225	UDSTL2	Combination	-0,0542	0,3737	0,0003591
19	0,225	UDSTL2	Combination	-0,014	0,0071	0,0003591
19	1,33	UDSTL2	Combination	-0,0168	0,0071	0,0003591
19	2,36	UDSTL2	Combination	-0,0194	0,0071	0,0003591
19	2,36	UDSTL2	Combination	0,0215	-0,3454	0,0003591
19	2,51	UDSTL2	Combination	0,0211	-0,3454	0,0003591
19	2,51	UDSTL2	Combination	0,0263	-0,0702	0,0003591
19	2,585	UDSTL2	Combination	0,0261	-0,0702	0,0003591
19	2,585	UDSTL2	Combination	0,0001911	0	0
19	2,66	UDSTL2	Combination	1,488E-14	0	0
19	0	UDSTL3	Combination	-2,894E-12	-1,855E-13	0
19	0,075	UDSTL3	Combination	-0,0001911	-1,855E-13	0
19	0,075	UDSTL3	Combination	-0,0539	-0,3737	0,0003591
19	0,225	UDSTL3	Combination	-0,0542	-0,3737	0,0003591
19	0,225	UDSTL3	Combination	-0,014	-0,0071	0,0003591
19	1,33	UDSTL3	Combination	-0,0168	-0,0071	0,0003591
19	2,36	UDSTL3	Combination	-0,0194	-0,0071	0,0003591
19	2,36	UDSTL3	Combination	0,0215	0,3454	0,0003591
19	2,51	UDSTL3	Combination	0,0211	0,3454	0,0003591
19	2,51	UDSTL3	Combination	0,0263	0,0702	0,0003591
19	2,585	UDSTL3	Combination	0,0261	0,0702	0,0003591
19	2,585	UDSTL3	Combination	0,0001911	0	0
19	2,66	UDSTL3	Combination	1,488E-14	0	0
23	0	D	LinStatic	-2,492E-05	-0,0008092	0
23	0,45	D	LinStatic	-2,492E-05	-1,028E-05	0
23	0,9	D	LinStatic	-2,492E-05	0,0007887	0
23	0	W	LinStatic	0	0	-0,0717
23	0,45	W	LinStatic	0	0	-0,0364
23	0,9	W	LinStatic	0	0	-0,0011
23	0	UDSTL1	Combination	-3,488E-05	-0,0011	0
23	0,45	UDSTL1	Combination	-3,488E-05	-1,439E-05	0
23	0,9	UDSTL1	Combination	-3,488E-05	0,0011	0
23	0	UDSTL2	Combination	-2,99E-05	-0,0009711	-0,0717
23	0,45	UDSTL2	Combination	-2,99E-05	-1,234E-05	-0,0364
23	0,9	UDSTL2	Combination	-2,99E-05	0,0009464	-0,0011
23	0	UDSTL3	Combination	-2,99E-05	-0,0009711	0,0717
23	0,45	UDSTL3	Combination	-2,99E-05	-1,234E-05	0,0364
23	0,9	UDSTL3	Combination	-2,99E-05	0,0009464	0,0011

Table 23: Element Forces - Frames, Part 2 of 3

Frame	Station m	OutputCase	T Tonf-m	M2 Tonf-m	M3 Tonf-m	FrameElem
5	0	D	0	0	-0,00012	5-1
5	0,45	D	0	0	6,202E-05	5-1
5	0,9	D	0	0	-0,00011	5-1
5	0	W	0,00034	-0,03073	0	5-1
5	0,45	W	0,00034	-0,0075	0	5-1
5	0,9	W	0,00034	-0,00017	0	5-1
5	0	UDSTL1	0	0	-0,00017	5-1
5	0,45	UDSTL1	0	0	8,683E-05	5-1
5	0,9	UDSTL1	0	0	-0,00016	5-1
5	0	UDSTL2	0,00034	-0,03073	-0,00015	5-1
5	0,45	UDSTL2	0,00034	-0,0075	7,443E-05	5-1
5	0,9	UDSTL2	0,00034	-0,00017	-0,00013	5-1
5	0	UDSTL3	-0,00034	0,03073	-0,00015	5-1
5	0,45	UDSTL3	-0,00034	0,0075	7,443E-05	5-1
5	0,9	UDSTL3	-0,00034	0,00017	-0,00013	5-1
6	0	D	0	0	0	6-1
6	0,035	D	0	0	-0,00158	6-1
6	0	W	-0,02913	-0,01742	0	6-1
6	0,035	W	-0,02913	-0,02802	3,309E-19	6-1
6	0	UDSTL1	0	0	0	6-1
6	0,035	UDSTL1	0	0	-0,00221	6-1
6	0	UDSTL2	-0,02913	-0,01742	0	6-1
6	0,035	UDSTL2	-0,02913	-0,02802	-0,0019	6-1
6	0	UDSTL3	0,02913	0,01742	0	6-1
6	0,035	UDSTL3	0,02913	0,02802	-0,0019	6-1
7	0	D	0	0	0	7-1
7	0,035	D	0	0	0,00118	7-1
7	0	W	-0,03137	-0,01736	0	7-1
7	0,035	W	-0,03137	-0,00453	-3,45E-19	7-1
7	0	UDSTL1	1,274E-20	0	0	7-1
7	0,035	UDSTL1	1,274E-20	0	0,00165	7-1
7	0	UDSTL2	-0,03137	-0,01736	0	7-1
7	0,035	UDSTL2	-0,03137	-0,00453	0,00142	7-1
7	0	UDSTL3	0,03137	0,01736	0	7-1
7	0,035	UDSTL3	0,03137	0,00453	0,00142	7-1
8	0	D	0	0	2,319E-14	8-1
8	0,035	D	0	0	0,0012	8-1
8	0	W	0,02042	-0,01682	0	8-1
8	0,035	W	0,02042	-0,00449	-2,78E-19	8-1
8	0	UDSTL1	1,208E-20	0	3,246E-14	8-1
8	0,035	UDSTL1	1,208E-20	0	0,00168	8-1
8	0	UDSTL2	0,02042	-0,01682	2,782E-14	8-1
8	0,035	UDSTL2	0,02042	-0,00449	0,00144	8-1
8	0	UDSTL3	-0,02042	0,01682	2,782E-14	8-1
8	0,035	UDSTL3	-0,02042	0,00449	0,00144	8-1
9	0	D	0	0	2,319E-14	9-1
9	0,035	D	0	0	0,00016	9-1
9	0	W	0,02695	-0,01688	0	9-1
9	0,035	W	0,02695	-0,02651	2,921E-19	9-1
9	0	UDSTL1	0	0	3,246E-14	9-1
9	0,035	UDSTL1	0	0	0,00022	9-1
9	0	UDSTL2	0,02695	-0,01688	2,782E-14	9-1
9	0,035	UDSTL2	0,02695	-0,02651	0,00019	9-1
9	0	UDSTL3	-0,02695	0,01688	2,782E-14	9-1
9	0,035	UDSTL3	-0,02695	0,02651	0,00019	9-1
19	0	D	0	0	0	19-1
19	0,075	D	0	0	-1,261E-20	19-1
19	0,075	D	0	-0,00018	3,005E-20	19-2
19	0,225	D	0	-0,00023	3,381E-20	19-2
19	0,225	D	0	0,00027	-3,088E-20	19-3
19	1,33	D	0	-5,999E-05	1,028E-20	19-3
19	2,36	D	0	-0,00037	4,864E-20	19-3
19	2,36	D	0	0,0001	-1,433E-20	19-4
19	2,51	D	0	5,734E-05	-1,059E-20	19-4
19	2,51	D	0	0,00194	-1,346E-19	19-5
19	2,585	D	0	0,00191	-1,332E-19	19-5
19	2,585	D	0	0	0	19-6
19	2,66	D	0	0	0	19-6
19	0	W	-1,132E-16	0	0	19-1
19	0,075	W	-1,132E-16	0	-1,391E-14	19-1

Table 23: Element Forces - Frames, Part 2 of 3

Frame	Station m	OutputCase	T Tonf-m	M2 Tonf-m	M3 Tonf-m	FrameElem
19	0,075	W	0,00012	1,8E-18	0,02965	19-2
19	0,225	W	0,00012	-1,674E-18	-0,02641	19-2
19	0,225	W	7,337E-05	7,124E-19	0,00496	19-3
19	1,33	W	7,337E-05	-7,447E-20	-0,00289	19-3
19	2,36	W	7,337E-05	-8,079E-19	-0,01021	19-3
19	2,36	W	-0,0001	-1,683E-18	-0,03063	19-4
19	2,51	W	-0,0001	1,448E-18	0,02119	19-4
19	2,51	W	-0,02998	-5,961E-19	-0,00577	19-5
19	2,585	W	-0,02998	-2,946E-19	-0,0005	19-5
19	2,585	W	-5,095E-16	0	-5,796E-15	19-6
19	2,66	W	-5,095E-16	0	-5,796E-15	19-6
19	0	UDSTL1	0	0	0	19-1
19	0,075	UDSTL1	0	0	-1,765E-20	19-1
19	0,075	UDSTL1	0	-0,00025	4,207E-20	19-2
19	0,225	UDSTL1	0	-0,00032	4,733E-20	19-2
19	0,225	UDSTL1	0	0,00038	-4,323E-20	19-3
19	1,33	UDSTL1	0	-8,398E-05	1,439E-20	19-3
19	2,36	UDSTL1	0	-0,00052	6,81E-20	19-3
19	2,36	UDSTL1	0	0,00014	-2,006E-20	19-4
19	2,51	UDSTL1	0	8,027E-05	-1,482E-20	19-4
19	2,51	UDSTL1	0	0,00271	-1,885E-19	19-5
19	2,585	UDSTL1	0	0,00268	-1,865E-19	19-5
19	2,585	UDSTL1	0	0	0	19-6
19	2,66	UDSTL1	0	0	0	19-6
19	0	UDSTL2	-1,132E-16	0	0	19-1
19	0,075	UDSTL2	-1,132E-16	0	-1,391E-14	19-1
19	0,075	UDSTL2	0,00012	-0,00022	0,02965	19-2
19	0,225	UDSTL2	0,00012	-0,00027	-0,02641	19-2
19	0,225	UDSTL2	7,337E-05	0,00032	0,00496	19-3
19	1,33	UDSTL2	7,337E-05	-7,199E-05	-0,00289	19-3
19	2,36	UDSTL2	7,337E-05	-0,00044	-0,01021	19-3
19	2,36	UDSTL2	-0,0001	0,00012	-0,03063	19-4
19	2,51	UDSTL2	-0,0001	6,881E-05	0,02119	19-4
19	2,51	UDSTL2	-0,02998	0,00232	-0,00577	19-5
19	2,585	UDSTL2	-0,02998	0,0023	-0,0005	19-5
19	2,585	UDSTL2	-5,095E-16	0	-5,796E-15	19-6
19	2,66	UDSTL2	-5,095E-16	0	-5,796E-15	19-6
19	0	UDSTL3	1,132E-16	0	0	19-1
19	0,075	UDSTL3	1,132E-16	0	1,391E-14	19-1
19	0,075	UDSTL3	-0,00012	-0,00022	-0,02965	19-2
19	0,225	UDSTL3	-0,00012	-0,00027	0,02641	19-2
19	0,225	UDSTL3	-7,337E-05	0,00032	-0,00496	19-3
19	1,33	UDSTL3	-7,337E-05	-7,199E-05	0,00289	19-3
19	2,36	UDSTL3	-7,337E-05	-0,00044	0,01021	19-3
19	2,36	UDSTL3	0,0001	0,00012	0,03063	19-4
19	2,51	UDSTL3	0,0001	6,881E-05	-0,02119	19-4
19	2,51	UDSTL3	0,02998	0,00232	0,00577	19-5
19	2,585	UDSTL3	0,02998	0,0023	0,0005	19-5
19	2,585	UDSTL3	5,095E-16	0	5,796E-15	19-6
19	2,66	UDSTL3	5,095E-16	0	5,796E-15	19-6
23	0	D	0	0	-0,00014	23-1
23	0,45	D	0	0	4,414E-05	23-1
23	0,9	D	0	0	-0,00013	23-1
23	0	W	0,00035	-0,0326	0	23-1
23	0,45	W	0,00035	-0,0083	0	23-1
23	0,9	W	0,00035	0,00012	0	23-1
23	0	UDSTL1	0	0	-0,0002	23-1
23	0,45	UDSTL1	0	0	6,179E-05	23-1
23	0,9	UDSTL1	0	0	-0,00018	23-1
23	0	UDSTL2	0,00035	-0,0326	-0,00017	23-1
23	0,45	UDSTL2	0,00035	-0,0083	5,296E-05	23-1
23	0,9	UDSTL2	0,00035	0,00012	-0,00016	23-1
23	0	UDSTL3	-0,00035	0,0326	-0,00017	23-1
23	0,45	UDSTL3	-0,00035	0,0083	5,296E-05	23-1
23	0,9	UDSTL3	-0,00035	-0,00012	-0,00016	23-1

Table 23: Element Forces - Frames, Part 3 of 3

Frame	Station m	OutputCase	FrameElem	ElemStation m
5	0	D	5-1	0
5	0,45	D	5-1	0,45
5	0,9	D	5-1	0,9
5	0	W	5-1	0
5	0,45	W	5-1	0,45
5	0,9	W	5-1	0,9
5	0	UDSTL1	5-1	0
5	0,45	UDSTL1	5-1	0,45
5	0,9	UDSTL1	5-1	0,9
5	0	UDSTL2	5-1	0
5	0,45	UDSTL2	5-1	0,45
5	0,9	UDSTL2	5-1	0,9
5	0	UDSTL3	5-1	0
5	0,45	UDSTL3	5-1	0,45
5	0,9	UDSTL3	5-1	0,9
6	0	D	6-1	0
6	0,035	D	6-1	0,035
6	0	W	6-1	0
6	0,035	W	6-1	0,035
6	0	UDSTL1	6-1	0
6	0,035	UDSTL1	6-1	0,035
6	0	UDSTL2	6-1	0
6	0,035	UDSTL2	6-1	0,035
6	0	UDSTL3	6-1	0
6	0,035	UDSTL3	6-1	0,035
7	0	D	7-1	0
7	0,035	D	7-1	0,035
7	0	W	7-1	0
7	0,035	W	7-1	0,035
7	0	UDSTL1	7-1	0
7	0,035	UDSTL1	7-1	0,035
7	0	UDSTL2	7-1	0
7	0,035	UDSTL2	7-1	0,035
7	0	UDSTL3	7-1	0
7	0,035	UDSTL3	7-1	0,035
8	0	D	8-1	0
8	0,035	D	8-1	0,035
8	0	W	8-1	0
8	0,035	W	8-1	0,035
8	0	UDSTL1	8-1	0
8	0,035	UDSTL1	8-1	0,035
8	0	UDSTL2	8-1	0
8	0,035	UDSTL2	8-1	0,035
8	0	UDSTL3	8-1	0
8	0,035	UDSTL3	8-1	0,035
9	0	D	9-1	0
9	0,035	D	9-1	0,035
9	0	W	9-1	0
9	0,035	W	9-1	0,035
9	0	UDSTL1	9-1	0
9	0,035	UDSTL1	9-1	0,035
9	0	UDSTL2	9-1	0
9	0,035	UDSTL2	9-1	0,035
9	0	UDSTL3	9-1	0
9	0,035	UDSTL3	9-1	0,035
19	0	D	19-1	0
19	0,075	D	19-1	0,075
19	0,075	D	19-2	0
19	0,225	D	19-2	0,15
19	0,225	D	19-3	0
19	1,33	D	19-3	1,105
19	2,36	D	19-3	2,135
19	2,36	D	19-4	0
19	2,51	D	19-4	0,15
19	2,51	D	19-5	0
19	2,585	D	19-5	0,075
19	2,585	D	19-6	0
19	2,66	D	19-6	0,075
19	0	W	19-1	0
19	0,075	W	19-1	0,075

Table 23: Element Forces - Frames, Part 3 of 3

Frame	Station m	OutputCase	FrameElem	ElemStation m
19	0,075	W	19-2	0
19	0,225	W	19-2	0,15
19	0,225	W	19-3	0
19	1,33	W	19-3	1,105
19	2,36	W	19-3	2,135
19	2,36	W	19-4	0
19	2,51	W	19-4	0,15
19	2,51	W	19-5	0
19	2,585	W	19-5	0,075
19	2,585	W	19-6	0
19	2,66	W	19-6	0,075
19	0	UDSTL1	19-1	0
19	0,075	UDSTL1	19-1	0,075
19	0,075	UDSTL1	19-2	0
19	0,225	UDSTL1	19-2	0,15
19	0,225	UDSTL1	19-3	0
19	1,33	UDSTL1	19-3	1,105
19	2,36	UDSTL1	19-3	2,135
19	2,36	UDSTL1	19-4	0
19	2,51	UDSTL1	19-4	0,15
19	2,51	UDSTL1	19-5	0
19	2,585	UDSTL1	19-5	0,075
19	2,585	UDSTL1	19-6	0
19	2,66	UDSTL1	19-6	0,075
19	0	UDSTL2	19-1	0
19	0,075	UDSTL2	19-1	0,075
19	0,075	UDSTL2	19-2	0
19	0,225	UDSTL2	19-2	0,15
19	0,225	UDSTL2	19-3	0
19	1,33	UDSTL2	19-3	1,105
19	2,36	UDSTL2	19-3	2,135
19	2,36	UDSTL2	19-4	0
19	2,51	UDSTL2	19-4	0,15
19	2,51	UDSTL2	19-5	0
19	2,585	UDSTL2	19-5	0,075
19	2,585	UDSTL2	19-6	0
19	2,66	UDSTL2	19-6	0,075
19	0	UDSTL3	19-1	0
19	0,075	UDSTL3	19-1	0,075
19	0,075	UDSTL3	19-2	0
19	0,225	UDSTL3	19-2	0,15
19	0,225	UDSTL3	19-3	0
19	1,33	UDSTL3	19-3	1,105
19	2,36	UDSTL3	19-3	2,135
19	2,36	UDSTL3	19-4	0
19	2,51	UDSTL3	19-4	0,15
19	2,51	UDSTL3	19-5	0
19	2,585	UDSTL3	19-5	0,075
19	2,585	UDSTL3	19-6	0
19	2,66	UDSTL3	19-6	0,075
23	0	D	23-1	0
23	0,45	D	23-1	0,45
23	0,9	D	23-1	0,9
23	0	W	23-1	0
23	0,45	W	23-1	0,45
23	0,9	W	23-1	0,9
23	0	UDSTL1	23-1	0
23	0,45	UDSTL1	23-1	0,45
23	0,9	UDSTL1	23-1	0,9
23	0	UDSTL2	23-1	0
23	0,45	UDSTL2	23-1	0,45
23	0,9	UDSTL2	23-1	0,9
23	0	UDSTL3	23-1	0
23	0,45	UDSTL3	23-1	0,45
23	0,9	UDSTL3	23-1	0,9

Table 24: Element Joint Forces - Frames, Part 1 of 2

Frame	Joint	OutputCase	CaseType	F1 Tonf	F2 Tonf	F3 Tonf
5	9	D	LinStatic	-0,0008122	0	-0,0012
5	10	D	LinStatic	0,0012	0	0,0007856
5	9	W	LinStatic	0	-0,0693	1,867E-19
5	10	W	LinStatic	-1,867E-19	-0,0013	0
5	9	UDSTL1	Combination	-0,0011	0	-0,0017
5	10	UDSTL1	Combination	0,0017	0	0,0011
5	9	UDSTL2	Combination	-0,0009747	-0,0693	-0,0014
5	10	UDSTL2	Combination	0,0014	-0,0013	0,0009428
5	9	UDSTL3	Combination	-0,0009747	0,0693	-0,0014
5	10	UDSTL3	Combination	0,0014	0,0013	0,0009428
6	4	D	LinStatic	0,045	0	-2,753E-18
6	7	D	LinStatic	-0,0454	0	2,778E-18
6	4	W	LinStatic	-9,455E-18	0,3027	0
6	7	W	LinStatic	9,455E-18	-0,3027	0
6	4	UDSTL1	Combination	0,0629	0	-3,854E-18
6	7	UDSTL1	Combination	-0,0635	0	3,889E-18
6	4	UDSTL2	Combination	0,0539	0,3027	-3,303E-18
6	7	UDSTL2	Combination	-0,0544	-0,3027	3,334E-18
6	4	UDSTL3	Combination	0,0539	-0,3027	-3,303E-18
6	7	UDSTL3	Combination	-0,0544	0,3027	3,334E-18
7	5	D	LinStatic	-0,034	-1,22E-20	2,08E-18
7	14	D	LinStatic	0,0335	1,22E-20	-2,054E-18
7	5	W	LinStatic	9,857E-18	-0,3666	0
7	14	W	LinStatic	-9,857E-18	0,3666	0
7	5	UDSTL1	Combination	-0,0475	-1,709E-20	2,912E-18
7	14	UDSTL1	Combination	0,047	1,709E-20	-2,876E-18
7	5	UDSTL2	Combination	-0,0408	-0,3666	2,496E-18
7	14	UDSTL2	Combination	0,0403	0,3666	-2,465E-18
7	5	UDSTL3	Combination	-0,0408	0,3666	2,496E-18
7	14	UDSTL3	Combination	0,0403	-0,3666	-2,465E-18
8	11	D	LinStatic	-0,0345	1,231E-20	2,113E-18
8	33	D	LinStatic	0,0341	-1,231E-20	-2,088E-18
8	11	W	LinStatic	7,944E-18	-0,3525	0
8	33	W	LinStatic	-7,944E-18	0,3525	0
8	11	UDSTL1	Combination	-0,0483	1,724E-20	2,959E-18
8	33	UDSTL1	Combination	0,0477	-1,724E-20	-2,923E-18
8	11	UDSTL2	Combination	-0,0414	-0,3525	2,536E-18
8	33	UDSTL2	Combination	0,0409	0,3525	-2,506E-18
8	11	UDSTL3	Combination	-0,0414	0,3525	2,536E-18
8	33	UDSTL3	Combination	0,0409	-0,3525	-2,506E-18
9	6	D	LinStatic	-0,0047	0	2,886E-19
9	30	D	LinStatic	0,0043	0	-2,632E-19
9	6	W	LinStatic	-8,347E-18	0,2752	0
9	30	W	LinStatic	8,347E-18	-0,2752	0
9	6	UDSTL1	Combination	-0,0066	0	4,04E-19
9	30	UDSTL1	Combination	0,006	0	-3,685E-19
9	6	UDSTL2	Combination	-0,0057	0,2752	3,463E-19
9	30	UDSTL2	Combination	0,0052	-0,2752	-3,158E-19
9	6	UDSTL3	Combination	-0,0057	-0,2752	3,463E-19
9	30	UDSTL3	Combination	0,0052	0,2752	-3,158E-19
19	3	D	LinStatic	-1,38E-12	0	-2,371E-12
19	7	D	LinStatic	-0,0001593	0	1,38E-12
19	3	W	LinStatic	0	1,623E-13	0
19	7	W	LinStatic	0	-1,623E-13	0
19	3	UDSTL1	Combination	-1,931E-12	0	-3,32E-12
19	7	UDSTL1	Combination	-0,000223	0	1,931E-12
19	3	UDSTL2	Combination	-1,655E-12	1,623E-13	-2,845E-12
19	7	UDSTL2	Combination	-0,0001911	-1,623E-13	1,655E-12
19	3	UDSTL3	Combination	-1,655E-12	-1,623E-13	-2,845E-12
19	7	UDSTL3	Combination	-0,0001911	1,623E-13	1,655E-12
19	7	D	LinStatic	0,0449	0	0,0002992
19	14	D	LinStatic	-0,0452	0	-0,0002992
19	7	W	LinStatic	-7,713E-18	0,3737	2,771E-19
19	14	W	LinStatic	7,713E-18	-0,3737	-2,771E-19
19	7	UDSTL1	Combination	0,0628	0	0,0004189
19	14	UDSTL1	Combination	-0,0633	0	-0,0004189
19	7	UDSTL2	Combination	0,0539	0,3737	0,0003591
19	14	UDSTL2	Combination	-0,0542	-0,3737	-0,0003591
19	7	UDSTL3	Combination	0,0539	-0,3737	0,0003591
19	14	UDSTL3	Combination	-0,0542	0,3737	-0,0003591

Table 24: Element Joint Forces - Frames, Part 1 of 2

Frame	Joint	OutputCase	CaseType	F1 Tonf	F2 Tonf	F3 Tonf
19	14	D	LinStatic	0,0117	-1,893E-20	0,0002992
19	33	D	LinStatic	-0,0162	1,893E-20	-0,0002992
19	14	W	LinStatic	2,144E-18	0,0071	2,771E-19
19	33	W	LinStatic	-2,144E-18	-0,0071	-2,771E-19
19	14	UDSTL1	Combination	0,0163	-2,65E-20	0,0004189
19	33	UDSTL1	Combination	-0,0227	2,65E-20	-0,0004189
19	14	UDSTL2	Combination	0,014	0,0071	0,0003591
19	33	UDSTL2	Combination	-0,0194	-0,0071	-0,0003591
19	14	UDSTL3	Combination	0,014	-0,0071	0,0003591
19	33	UDSTL3	Combination	-0,0194	0,0071	-0,0003591
19	33	D	LinStatic	-0,0179	0	0,0002992
19	30	D	LinStatic	0,0176	0	-0,0002992
19	33	W	LinStatic	1,009E-17	-0,3454	2,771E-19
19	30	W	LinStatic	-1,009E-17	0,3454	-2,771E-19
19	33	UDSTL1	Combination	-0,0251	0	0,0004189
19	30	UDSTL1	Combination	0,0246	0	-0,0004189
19	33	UDSTL2	Combination	-0,0215	-0,3454	0,0003591
19	30	UDSTL2	Combination	0,0211	0,3454	-0,0003591
19	33	UDSTL3	Combination	-0,0215	0,3454	0,0003591
19	30	UDSTL3	Combination	0,0211	-0,3454	-0,0003591
19	30	D	LinStatic	-0,0219	0	0,0002992
19	9	D	LinStatic	0,0217	0	-0,0002992
19	30	W	LinStatic	1,742E-18	-0,0702	2,771E-19
19	9	W	LinStatic	-1,742E-18	0,0702	-2,771E-19
19	30	UDSTL1	Combination	-0,0306	0	0,0004189
19	9	UDSTL1	Combination	0,0304	0	-0,0004189
19	30	UDSTL2	Combination	-0,0263	-0,0702	0,0003591
19	9	UDSTL2	Combination	0,0261	0,0702	-0,0003591
19	30	UDSTL3	Combination	-0,0263	0,0702	0,0003591
19	9	UDSTL3	Combination	0,0261	-0,0702	-0,0003591
19	9	D	LinStatic	-0,0001593	0	-1,148E-12
19	2	D	LinStatic	1,148E-12	0	1,699E-14
19	9	W	LinStatic	0	-4,637E-14	0
19	2	W	LinStatic	0	4,637E-14	0
19	9	UDSTL1	Combination	-0,000223	0	-1,607E-12
19	2	UDSTL1	Combination	1,607E-12	0	2,378E-14
19	9	UDSTL2	Combination	-0,0001911	-4,637E-14	-1,377E-12
19	2	UDSTL2	Combination	1,377E-12	4,637E-14	2,039E-14
19	9	UDSTL3	Combination	-0,0001911	4,637E-14	-1,377E-12
19	2	UDSTL3	Combination	1,377E-12	-4,637E-14	2,039E-14
23	7	D	LinStatic	-0,0008092	0	2,492E-05
23	8	D	LinStatic	-2,492E-05	0	0,0007887
23	7	W	LinStatic	0	-0,0717	0
23	8	W	LinStatic	0	0,0011	0
23	7	UDSTL1	Combination	-0,0011	0	3,488E-05
23	8	UDSTL1	Combination	-3,488E-05	0	0,0011
23	7	UDSTL2	Combination	-0,0009711	-0,0717	2,99E-05
23	8	UDSTL2	Combination	-2,99E-05	0,0011	0,0009464
23	7	UDSTL3	Combination	-0,0009711	0,0717	2,99E-05
23	8	UDSTL3	Combination	-2,99E-05	-0,0011	0,0009464

Table 24: Element Joint Forces - Frames, Part 2 of 2

Frame	Joint	OutputCase	M1 Tonf-m	M2 Tonf-m	M3 Tonf-m	FrameElem
5	9	D	0	-0,00012	0	5-1
5	10	D	0	0,00011	0	5-1
5	9	W	0,03073	0	-0,00034	5-1
5	10	W	0,00034	0	0,00017	5-1
5	9	UDSTL1	0	-0,00017	0	5-1
5	10	UDSTL1	0	0,00016	0	5-1
5	9	UDSTL2	0,03073	-0,00015	-0,00034	5-1
5	10	UDSTL2	0,00034	0,00013	0,00017	5-1
5	9	UDSTL3	-0,03073	-0,00015	0,00034	5-1
5	10	UDSTL3	-0,00034	0,00013	-0,00017	5-1
6	4	D	0	-4,916E-15	0	6-1
6	7	D	0	0,00158	0	6-1
6	4	W	0,01742	0	0,02913	6-1

Table 24: Element Joint Forces- Frames, Part 2 of 2

Frame	Joint	OutputCase	M1 Tonf-m	M2 Tonf-m	M3 Tonf-m	FrameElem
6	7	W	-0,02802	-3,309E-19	-0,02913	6-1
6	4	UDSTL1	0	-6,882E-15	0	6-1
6	7	UDSTL1	0	0,00221	0	6-1
6	4	UDSTL2	0,01742	-5,899E-15	0,02913	6-1
6	7	UDSTL2	-0,02802	0,0019	-0,02913	6-1
6	4	UDSTL3	-0,01742	-5,899E-15	-0,02913	6-1
6	7	UDSTL3	0,02802	0,0019	0,02913	6-1
7	5	D	0	-4,916E-15	0	7-1
7	14	D	0	-0,00118	0	7-1
7	5	W	0,01736	0	0,03137	7-1
7	14	W	-0,00453	3,45E-19	-0,03137	7-1
7	5	UDSTL1	0	-6,882E-15	-1,274E-20	7-1
7	14	UDSTL1	0	-0,00165	1,274E-20	7-1
7	5	UDSTL2	0,01736	-5,899E-15	0,03137	7-1
7	14	UDSTL2	-0,00453	-0,00142	-0,03137	7-1
7	5	UDSTL3	-0,01736	-5,899E-15	-0,03137	7-1
7	14	UDSTL3	0,00453	-0,00142	0,03137	7-1
8	11	D	0	1,827E-14	0	8-1
8	33	D	0	-0,0012	0	8-1
8	11	W	0,01682	0	-0,02042	8-1
8	33	W	-0,00449	2,78E-19	0,02042	8-1
8	11	UDSTL1	0	2,558E-14	-1,208E-20	8-1
8	33	UDSTL1	0	-0,00168	1,208E-20	8-1
8	11	UDSTL2	0,01682	2,192E-14	-0,02042	8-1
8	33	UDSTL2	-0,00449	-0,00144	0,02042	8-1
8	11	UDSTL3	-0,01682	2,192E-14	0,02042	8-1
8	33	UDSTL3	0,00449	-0,00144	-0,02042	8-1
9	6	D	0	1,827E-14	0	9-1
9	30	D	0	-0,00016	0	9-1
9	6	W	0,01688	0	-0,02695	9-1
9	30	W	-0,02651	-2,921E-19	0,02695	9-1
9	6	UDSTL1	0	2,558E-14	0	9-1
9	30	UDSTL1	0	-0,00022	0	9-1
9	6	UDSTL2	0,01688	2,192E-14	-0,02695	9-1
9	30	UDSTL2	-0,02651	-0,00019	0,02695	9-1
9	6	UDSTL3	-0,01688	2,192E-14	0,02695	9-1
9	30	UDSTL3	0,02651	-0,00019	-0,02695	9-1
19	3	D	0	-1,902E-14	0	19-1
19	7	D	0	-1,948E-06	1,272E-20	19-1
19	3	W	0	0	1,087E-15	19-1
19	7	W	1,087E-15	0	4,347E-15	19-1
19	3	UDSTL1	0	-2,663E-14	0	19-1
19	7	UDSTL1	0	-2,727E-06	1,781E-20	19-1
19	3	UDSTL2	0	-2,282E-14	1,087E-15	19-1
19	7	UDSTL2	1,087E-15	-2,338E-06	4,347E-15	19-1
19	3	UDSTL3	0	-2,282E-14	-1,087E-15	19-1
19	7	UDSTL3	-1,087E-15	-2,338E-06	-4,347E-15	19-1
19	7	D	0	0,00073	-1,47E-20	19-2
19	14	D	0	-0,00078	1,393E-20	19-2
19	7	W	-0,00469	-7,919E-20	0,02965	19-2
19	14	W	0,00469	3,762E-20	0,02641	19-2
19	7	UDSTL1	0	0,00102	-2,058E-20	19-2
19	14	UDSTL1	0	-0,00109	1,951E-20	19-2
19	7	UDSTL2	-0,00469	0,00088	0,02965	19-2
19	14	UDSTL2	0,00469	-0,00094	0,02641	19-2
19	7	UDSTL3	0,00469	0,00088	-0,02965	19-2
19	14	UDSTL3	-0,00469	-0,00094	-0,02641	19-2
19	14	D	0	-0,00013	-2,303E-20	19-3
19	33	D	0	-0,00057	-1,398E-20	19-3
19	14	W	-0,00016	-3,826E-19	0,00496	19-3
19	33	W	0,00016	-2,09E-19	0,01021	19-3
19	14	UDSTL1	0	-0,00018	-3,225E-20	19-3
19	33	UDSTL1	0	-0,00079	-1,957E-20	19-3
19	14	UDSTL2	-0,00016	-0,00015	0,00496	19-3
19	33	UDSTL2	0,00016	-0,00068	0,01021	19-3
19	14	UDSTL3	0,00016	-0,00015	-0,00496	19-3
19	33	UDSTL3	-0,00016	-0,00068	-0,01021	19-3

Table 24: Element Joint Forces- Frames, Part 2 of 2

Frame	Joint	OutputCase	M1 Tonf-m	M2 Tonf-m	M3 Tonf-m	FrameElem
19	33	D	0	-0,00032	0	19-4
19	30	D	0	0,00027	0	19-4
19	33	W	0,00433	-6,920E-20	-0,03063	19-4
19	30	W	-0,00433	2,764E-20	-0,02119	19-4
19	33	UDSTL1	0	-0,00045	0	19-4
19	30	UDSTL1	0	0,00038	0	19-4
19	33	UDSTL2	0,00433	-0,00039	-0,03063	19-4
19	30	UDSTL2	-0,00433	0,00033	-0,02119	19-4
19	33	UDSTL3	-0,00433	-0,00039	0,03063	19-4
19	30	UDSTL3	0,00433	0,00033	0,02119	19-4
19	30	D	0	-0,0022	0	19-5
19	9	D	0	0,00218	0	19-5
19	30	W	0,03083	2,644E-19	-0,00577	19-5
19	9	W	-0,03083	-2,852E-19	0,0005	19-5
19	30	UDSTL1	0	-0,00308	0	19-5
19	9	UDSTL1	0	0,00305	0	19-5
19	30	UDSTL2	0,03083	-0,00264	-0,00577	19-5
19	9	UDSTL2	-0,03083	0,00261	0,0005	19-5
19	30	UDSTL3	-0,03083	-0,00264	0,00577	19-5
19	9	UDSTL3	0,03083	0,00261	-0,0005	19-5
19	9	D	0	-1,948E-06	0	19-6
19	2	D	0	2,445E-14	0	19-6
19	9	W	1,449E-15	0	-2,898E-15	19-6
19	2	W	4,347E-15	0	1,449E-15	19-6
19	9	UDSTL1	0	-2,727E-06	0	19-6
19	2	UDSTL1	0	3,423E-14	0	19-6
19	9	UDSTL2	1,449E-15	-2,338E-06	-2,898E-15	19-6
19	2	UDSTL2	4,347E-15	2,934E-14	1,449E-15	19-6
19	9	UDSTL3	-1,449E-15	-2,338E-06	2,898E-15	19-6
19	2	UDSTL3	-4,347E-15	2,934E-14	-1,449E-15	19-6
23	7	D	0	-0,00014	0	23-1
23	8	D	0	0,00013	0	23-1
23	7	W	0,0326	0	-0,00035	23-1
23	8	W	0,00035	0	-0,00012	23-1
23	7	UDSTL1	0	-0,0002	0	23-1
23	8	UDSTL1	0	0,00018	0	23-1
23	7	UDSTL2	0,0326	-0,00017	-0,00035	23-1
23	8	UDSTL2	0,00035	0,00016	-0,00012	23-1
23	7	UDSTL3	-0,0326	-0,00017	0,00035	23-1
23	8	UDSTL3	-0,00035	0,00016	0,00012	23-1

10. Load Cases

This section provides load case information.

Table 25: Load CaseDefinitions, Part 1 of 3

Case	Type	InitialCond	ModalCase	BaseCase	MassSource
D	LinStatic	Zero			Prog
MODAL	LinModal	Zero			Prog
W	LinStatic	Zero			Prog

Table 25: Load CaseDefinitions, Part 2 of 3

Case	DesignType	DesActOpt	DesignAct	AutoType	RunCase	CaseStatus
D	Dead	Prog Det	Non-Composite	None	Yes	Finished
MODAL	Other	Prog Det	Other	None	No	Not Run
W	Wind	Prog Det	Short-Term Composite	None	Yes	Finished

Table 25: Load CaseDefinitions, Part 3 of 3

Case	GUID	Notes
D	9ab2fcf9-159a-4a46-81d5-34a504db371d	
MODAL	eec1cc8f-1542-466a-927b-6dac30331e0c	
W	2f388033-85ae-46b3-95b5-7527c33603ad	

11. Load Patterns

This section provides loading information as applied to the model.

Table 26: Load Pattern Definitions, Part 1 of 2

LoadPat	DesignType	SelfWtMult	AutoLoad	GUID
D	Dead	1		38258f71-72f9-4fd0-9225
W	Wind	0	ASCE 7-16	-d191852fb860 29fe21bb-8849-4fed-9f4f- 228bb6cb4fb5

Table 26: Load Pattern Definitions, Part 2 of 2

LoadPat	Notes
D	
W	Added 30.10.2021 00:38:47

12. Material Take-off

This section provides a material take-off.

Table 27: Material List - By Section Property

Section	ObjectType	NumPieces m	TotalLength	TotalWeight Tonf
C55.35.10.2	Frame	1	2,66	0,0056
Ø38x2	Frame	2	1,8	0,0032
Ø6.5CS	Frame	4	0,14	0,0017
Mbrn	Area			0,0177

Table 28: Material Properties 01 - General, Part 1 of 2

Material	Type	Grade	SymType	TempDepend	Color	GUID
4000Psi	Concrete	f'c 4000 psi	Isotropic	No	Blue	8e10a253-5b72-4bec- a613-7cab75d958b
A416Gr270	Tendon	Grade 270	Uniaxial	No	Green	37f2ef23-cc82-4e05-8373
A500GrB42	Steel	Grade B, Fy	Isotropic	No	Cyan	-7ba278415a8d 05054d9d-3de5- 49cc- 8e5b-993c8f173be2
A615Gr60	Rebar	42 (HSS Round) Grade 60	Uniaxial	No	Red	4946e693-28d9-486c-
A653SQGr33	ColdFormed	SQ Grade 33	Isotropic	No	Red	a56a-8052d6f037b5 de5eec09-9b08-407e- 9061-bffb7c1869e4

Table 28: Material Properties 01 - General, Part 2 of 2

Material	Notes
4000Psi	Customary f'c 4000 psi 13.11.2021
23:18:24	
A416Gr270	ASTM A416 Grade 270 13.11.2021
23:18:24	
A500GrB42	United States ASTM A500 Grade B, Fy 42 (HSS Round) added 30.10.2021 00:24:21
A615Gr60	ASTM A615 Grade 60 3.11.2021
17:58:42	
A653SQGr33	United States ASTM A653 SQ Grade 33 added 30.10.2021 00:24:35

Table 29: Material Properties 02 - Basic Mechanical Properties

Material	UnitWeight Tonf/m3	UnitMass Tonf-s2/m4	E1 Tonf/m2	G12 Tonf/m2	U12	A1 1/C
4000Psi	2,402769665 13304	0,245014307 299925	2534563,54	1056068,14	0,2	9,899999527 9E-02
A416Gr270	7,849047572 36607	0,800380070 68661	20037484,34			1,169999944 2E-01
A500GrB42	7,849047572 36607	0,800380070 68661	20389019,16	7841930,45	0,3	1,169999944 2E-01
A615Gr60	7,849047572 36607	0,800380070 68661	20389019,16			1,169999944 2E-01
Mbrn	7,849047572 36607	0,800380070 68661	20740553,97	7977136,14	0,3	1,169999944 2E-01

Table 30: Material Properties 03a - Steel Data, Part 1 of 2

Material	Fy Tonf/m2	Fu Tonf/m2	EffFy Tonf/m2	EffFu Tonf/m2	SSCurveOpt	SSHysType
A500GrB42	29528,92	40778,04	32481,82	44855,84	Simple	Kinematic

Table 30: Material Properties 03a - Steel Data, Part 2 of 2

Material	SHard	SMax	SRup	FinalSlope
A500GrB42	0,02	0,14	0,2	-0,1

Table 31: Material Properties 03b - Concrete Data, Part 1 of 2

Material	Fc Tonf/m2	eFc Tonf/m2	LtWtConc	SSCurveOpt	SSHysType	SFc
4000Psi	2812,28	2812,28	No	Mander	Takeda	0,002219

Table 31: Material Properties 03b - Concrete Data, Part 2 of 2

Material	SCap	FinalSlope	FAngle Degrees	DAngle Degrees
4000Psi	0,005	-0,1	0	0

Table 32: Material Properties 03d - Cold Formed Data

Material	Fy Tonf/m2	Fu Tonf/m2	SSHysType
A653SQGr33	23201,3	31638,13	Kinematic

Table 33: Material Properties 03e - Rebar Data, Part 1 of 2

Material	Fy Tonf/m2	Fu Tonf/m2	EffFy Tonf/m2	EffFu Tonf/m2	SSCurveOpt	SSHysType
A615Gr60	42184,18	63276,27	46402,6	69603,89	Simple	Kinematic

Table 33: Material Properties 03e - Rebar Data, Part 2 of 2

Material	SHard	SCap	FinalSlope	UseCTDef
A615Gr60	0,01	0,09	-0,1	No

Table 33: Material Properties 03f- Tendon Data

Material	Fy Tonf/m2	Fu Tonf/m2	SSCurveOpt	SSHysType	FinalSlope
A416Gr270	172322,37	189828,8	270 ksi	Kinematic	-0,1

Table 34: Material Properties 04 - User Stress-Strain Curves

Material	Point	Strain	Stress Tonf/m2	PointID
A653SQGr33	1	-0,111186	0	
A653SQGr33	2	-0,1	-23201,3	-E
A653SQGr33	3	-0,08	-31638,13	-D
A653SQGr33	4	-0,05	-31638,13	-C
A653SQGr33	5	-0,02	-23201,3	
A653SQGr33	6	-0,001119	-23201,3	-B
A653SQGr33	7	0	0	A
A653SQGr33	8	0,001119	23201,3	B
A653SQGr33	9	0,02	23201,3	
A653SQGr33	10	0,05	31638,13	C
A653SQGr33	11	0,08	31638,13	D
A653SQGr33	12	0,1	23201,3	E
A653SQGr33	13	0,111186	0	

Table 35: Material Properties 06 - Damping Parameters

Material	ModalRatio	VisMass 1/Sec	VisStiff Sec	HysMass 1/Sec2	HysStiff
4000Psi	0	0	0	0	0
A416Gr270	0	0	0	0	0
A500GrB42	0	0	0	0	0
A615Gr60	0	0	0	0	0
A653SQGr33	0	0	0	0	0

13. Design Summary

This section provides the design summary for each type of design, which highlights the controlling demand/capacity ratio and its associated combination and location in each member.

13.1. Steel design

Table 36: Steel Design 1 - Summary Data - AISC 360-16, Part 1 of 3

Frame	DesignSect	DesignType	Status	Ratio
5	Ø38x2	Beam	No Messages	0,445715
6	Ø6.5CS	Beam	No Messages	0,082878
7	Ø6.5CS	Beam	No Messages	0,049479
8	Ø6.5CS	Beam	No Messages	0,047945
9	Ø6.5CS	Beam	No Messages	0,075843
23	Ø38x2	Beam	No Messages	0,472843

Table 36: Steel Design 1 - Summary Data - AISC 360-16, Part 2 of 3

Frame	RatioType	Combo	Location m
5	PMM	UDSTL2	0
6	PMM	UDSTL2	0,035
7	PMM	UDSTL2	0
8	PMM	UDSTL2	0
9	PMM	UDSTL2	0,035
23	PMM	UDSTL2	0

Table 36: Steel Design 1 - Summary Data - AISC 360-16, Part 3 of 3

Frame	ErrMsg	WarnMsg
5	No Messages	No Messages
6	No Messages	No Messages
7	No Messages	No Messages
8	No Messages	No Messages
9	No Messages	No Messages
23	No Messages	No Messages

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 1 of 10

Frame	DesignSect	DesignType	Status	Combo
5	Ø38x2	Beam	No Messages	UDSTL2
6	Ø6.5CS	Beam	No Messages	UDSTL2
7	Ø6.5CS	Beam	No Messages	UDSTL2
8	Ø6.5CS	Beam	No Messages	UDSTL2
9	Ø6.5CS	Beam	No Messages	UDSTL2
23	Ø38x2	Beam	No Messages	UDSTL2

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 2 of 10

Frame	Location m	Pr Tonf	MrMajor Tonf-m	MrMinor Tonf-m	VrMajor Tonf	VrMinor Tonf
5	0	0,0014	-0,00015	-0,03073	-0,0009747	-0,0693
6	0,035	0	-0,0019	-0,02802	0,0544	0,3027
7	0	0	0	-0,01736	-0,0408	-0,3666
8	0	0	2,782E-14	-0,01682	-0,0414	-0,3525
9	0,035	0	0,00019	-0,02651	-0,0052	0,2752
23	0	-2,99E-05	-0,00017	-0,0326	-0,0009711	-0,0717

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 3 of 10

Frame	Tr Tonf-m	Equation	TotalRatio	PRatio	MMajRatio	MMinRatio
5	0,00034	(H1.2,H1-1b)	0,445715	0,000118	0,002153	0,445592
6	-0,02913	(H1-1b)	0,082878	0	0,003033	0,079845
7	-0,03137	(H1-1b)	0,049479	0	0	0,049479
8	0,02042	(H1-1b)	0,047945	0	0	0,047945
9	0,02695	(H1-1b)	0,075843	0	0,000303	0,075541
23	0,00035	(H1-1b)	0,472843	0	0,002441	0,472833

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 4 of 10

Frame	VMajRatio	VMinRatio	TorRatio	DCLimit	PrDsgn Tonf	PcComp Tonf
5				0,95	0,0014	4,426
6				0,95	0	40,1137
7				0,95	0	40,1137
8				0,95	0	40,1137
9				0,95	0	40,1137
23				0,95	-2,99E-05	4,426

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 5 of 10

Frame	PcTension Tonf	MrMajorDsg n Tonf-m	McMajor Tonf-m	MrMinorDsg n Tonf-m	McMinor Tonf-m	XLMajor
5	6,0114	-0,00015	0,06896	-0,03073	0,06896	1
6	40,1353	-0,0019	0,62536	-0,02802	0,35091	1
7	40,1353	0	0,62536	-0,01736	0,35091	1
8	40,1353	2,782E-14	0,62536	-0,01682	0,35091	1
9	40,1353	0,00019	0,62536	-0,02651	0,35091	1
23	6,0114	-0,00017	0,06896	-0,0326	0,06896	1

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 6 of 10

Frame	XLMinor	XLLTB	K1Major	K1Minor	K2Major	K2Minor
5	1	1	1	1	1	1
6	1	1	1	1	1	1
7	1	1	1	1	1	1
8	1	1	1	1	1	1
9	1	1	1	1	1	1
23	1	1	1	1	1	1

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 7 of 10

Frame	KLTB	CmMajor	CmMinor	Cb	B1Major	B1Minor
5		1	1	2,134606		1
6		1	0,6	0,848738	1,666667	1
7		1	0,6	0,704375	1,666667	1
8		1	0,6	0,706646	1,666667	1
9		1	0,6	0,854638	1,666667	1
23		1	1	2,186948		1

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 8 of 10

Frame	B2Major	B2Minor	Fy Tonf/m2	E Tonf/m2	Length m	MajAxisAng Degrees
5		1	29528,92	20389019,16	0,9	0
6		1	29528,92	20389019,16	0,035	0
7		1	29528,92	20389019,16	0,035	0
8		1	29528,92	20389019,16	0,035	0
9		1	29528,92	20389019,16	0,035	0
23		1	29528,92	20389019,16	0,9	0

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 9 of 10

Frame	RLLF	SectClass	FramingType	SDC	Omega0
5		1	Compact Ordinary Moment	D	3
6		1	Non-Compact Frame Ordinary Moment	D	3
7		1	Non-Compact Frame Ordinary Moment	D	3
8		1	Non-Compact Frame Ordinary Moment	D	3
9		1	Non-Compact Frame Ordinary Moment	D	3
23		1	Compact Frame Ordinary Moment Frame	D	3

Table 37: Steel Design 2 - PMM Details - AISC 360-16, Part 10 of 10

Frame	SystemCd	ErrMsg	WarnMsg
5	5,5	No Messages	No Messages
6	5,5	No Messages	No Messages
7	5,5	No Messages	No Messages
8	5,5	No Messages	No Messages
9	5,5	No Messages	No Messages
23	5,5	No Messages	No Messages

Table 38: Steel Design 3 - Shear Details - AISC 360-16, Part 1 of 5

Frame	DesignSect	DesignType	Status	VMajorCombo
5	Ø38x2	Beam	No Messages	UDSTL1
6	Ø6.5CS	Beam	No Messages	UDSTL1
7	Ø6.5CS	Beam	No Messages	UDSTL1
8	Ø6.5CS	Beam	No Messages	UDSTL1
9	Ø6.5CS	Beam	No Messages	UDSTL1
23	Ø38x2	Beam	No Messages	UDSTL2

Table 38: Steel Design 3 - Shear Details - AISC 360-16, Part 2 of 5

Frame	VMajorLoc m	VMajorRatio	VrMajDsgn Tonf	PhiVnMajor Tonf	TrMajor Tonf-m
5	0	0,000631	0,0011	1,8034	0
6	0,035	0,003412	0,0635	18,617	0
7	0	0,002554	0,0475	18,617	0
8	0	0,002595	0,0483	18,617	0
9	0	0,000354	0,0066	18,617	0
23	0	0,000628	0,0011	1,8034	0

Table 38: Steel Design 3 - Shear Details - AISC 360-16, Part 3 of 5

Frame	VMinorCombo	VMinorLoc m	VMinorRatio	VrMinDsgn Tonf	PhiVnMinor Tonf
5	UDSTL2	0	0,038404	0,0693	1,8034
6	UDSTL2	0	0,039025	0,3027	7,7573
7	UDSTL2	0	0,047263	0,3666	7,7573
8	UDSTL2	0	0,045446	0,3525	7,7573
9	UDSTL2	0	0,035481	0,2752	7,7573
23	UDSTL2	0	0,03974	0,0717	1,8034

Table 38: Steel Design 3 - Shear Details - AISC 360-16, Part 4 of 5

Frame	TrMinor Tonf-m	DCLimit	RLLF	FramingType
5	0	0,95	1	Ordinary Moment Frame
6	0	0,95	1	Ordinary Moment Frame Ordinary Moment
7	0	0,95	1	Frame Ordinary Moment
8	0	0,95	1	Frame Ordinary Moment Frame
9	0	0,95	1	Ordinary Moment Frame Ordinary Moment
23	0	0,95	1	Frame Ordinary Moment Frame

Table 38: Steel Design 3 - Shear Details - AISC 360-16, Part 5 of 5

Frame	ErrMsg	WarnMsg
5	No Messages	No Messages
6	No Messages	No Messages
7	No Messages	No Messages
8	No Messages	No Messages
9	No Messages	No Messages
23	No Messages	No Messages

Table 39: Steel Design 7 - Beam Shear Forces - AISC 360-16, Part 1 of 2

Frame	DesignSect	ComboLeft	VMajorLeft Tonf	ComboRight
5	Ø38x2	UDSTL1	0,0011	UDSTL1
6	Ø6.5CS	UDSTL1	0,0629	UDSTL1
7	Ø6.5CS	UDSTL1	0,0475	UDSTL1
8	Ø6.5CS	UDSTL1	0,0483	UDSTL1
9	Ø6.5CS	UDSTL1	0,0066	UDSTL1
23	Ø38x2	UDSTL1	0,0011	UDSTL1

Table 39: Steel Design 7 - Beam Shear Forces - AISC 360-16, Part 2 of 2

Frame	VMajorRight Tonf
5	0,0011
6	0,0635
7	0,047
8	0,0477
9	0,006
23	0,0011

Table 40: Steel Design 9 - Decision Parameters - AISC 360-16, Part 1 of 2

Frame	DesignSect	AlphaPrOPy	aPrOPyGT05	AlphaPrOPe L	aPrOPeGT01 5
5	Ø38x2	-0,000212	No	-0,000155	No
6	Ø6.5CS	0	No	0	No
7	Ø6.5CS	0	No	0	No
8	Ø6.5CS	0	No	0	No
9	Ø6.5CS	0	No	0	No
23	Ø38x2	5,223E-06	No	3,82E-06	No

Table 40: Steel Design 9 - Decision Parameters - AISC 360-16, Part 2 of 2

Frame	Taub	EAm modifier	Elmodifier
5	1	0,8	0,8
6	1	0,8	0,8
7	1	0,8	0,8
8	1	0,8	0,8
9	1	0,8	0,8
23	1	0,8	0,8

13.2. Cold Formed Design

Table 41: Cold Formed Design1 - Summary Data - AISI-ASD96, Part 1 of 3

Frame	DesignSect	DesignType	Status	Ratio
19	C55.35.10.2	Column	No Messages	0,751836

Table 41: Cold Formed Design1 - Summary Data - AISI-ASD96, Part 2 of 3

Frame	RatioType	Combo	Location m
19	PMM	UDSTL1	2,51

Table 41: Cold Formed Design1 - Summary Data - AISI-ASD96, Part 3 of 3

Frame	ErrMsg	WarnMsg
19	No Messages	No Messages

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 1 of 11

Frame	DesignSect	DesignType	Status	Combo
19	C55.35.10.2	Column	No Messages	UDSTL1

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 2 of 11

Frame	Location m	P Tonf	MMajor Tonf-m	MMinor Tonf-m	VMajor Tonf	VMinor Tonf
19	2,51	0,0306	-1,885E-19	0,00271	-2,572E-20	0,0004189

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 3 of 11

Frame	Torsion Tonf-m	Equation	TotalRatio	PRatio MMaiRatio	MMinRatio
19	0	(C5.1.1-2)	0,751836	0	0,75999

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 4 of 11

Frame	SRLimit	PDsgn Tonf	Pn Tonf	Pn0 Tonf	Tn Tonf	OmegaC
19	1	0,0306	1,6158	6,2775	6,2775	1,8

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 5 of 11

Frame	OmegaT	MMajDsgn Tonf-m	MnMajor Tonf-m	MnYieldMaj Tonf-m	MnLTBMaj Tonf-m	MntMaj Tonf-m
19	1,67	-1,885E-19	0,08273	0,112	0,08273	0,112

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 6 of 11

Frame	OmegaBMaj Tonf-m	OmegaByMaj Tonf-m	CmMajor	CtfMajor	AlphaMajor	Kmajor
19	0,17029	0,17029		1	1	1

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 7 of 11

Frame	LFactMajor	Cb	MMinDsgn Tonf-m	MnMinor Tonf-m	MnYieldMi n Tonf-m	MnLTBMin Tonf-m
19	1	1	0,00271	0,00595	0,04201	0,00595

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 8 of 11

Frame	MntMin Tonf-m	OmegaBMin Tonf-m	OmegaByMi Tonf-m	CmMinor	AlphaMinor	KMinor
19	0,07848	0,17029	0,17029		1	1

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 9 of 11

Frame	LFactMinor	Fy Tonf/m2	E Tonf/m2	Length m	MajAxisAn g Degrees	RLLF
19	0,802632	23201,3	20740553,97	2,66		1

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 10 of 11

Frame	SectClass	FramingType	ErrMsg
19	Non-Slender	Braced	No Messages

Table 42: Cold Formed Design2 - PMM Details - AISI-ASD96, Part 11 of 11

Frame	WarnMsg
19	No Messages

Table 43: Cold Formed Design3 - ShearDetails - AISI-ASD96, Part 1 of 5

Frame	DesignSect	DesignType	Status	VMajorCom
19	C55.35.10.2	Column	No Messages	UDSTL2

Table 43: Cold Formed Design3 - ShearDetails - AISI-ASD96, Part 2 of 5

Frame	VMajorLoc	VMajorRatio	VMajDsgn	VnMajor	OmegaVMajor	TorsionMajor
19	0,075	0,296112	0,3737	1,4199	1,5	0

Table 43: Cold Formed Design3 - ShearDetails - AISI-ASD96, Part 3 of 5

Frame	VMinorCombo	VMinorLoc Vm	MinorRatio	VMinDsgn Tonf	VnMinor Tonf
19	UDSTL1	0,225	0,000405	0,3737	1,7262

Table 43: Cold Formed Design3 - ShearDetails - AISI-ASD96, Part 4 of 5

Frame	OmegaVMinor	TorsionMin	SRLimit	RLLF
19	2	0	1	Braced

Table 43: Cold Formed Design3 - ShearDetails - AISI-ASD96, Part 5 of 5

Frame	ErrMsg	WarnMsg
19	No Messages	No Messages

SAP2000

Project _____
Job Number _____
Engineer _____

AISC 360-16 STEEL SECTION CHECK (Summary for Combo and Station)
Units : N, mm, C

Frame : 23 X Mid: 450. Combo: UDSTL3 Design Type: Beam
Length: 900. Y Mid: 0. Shape: S38x2 Frame Type: CMF
Loc : 0. Z Mid: 2585. Class: Compact Princpl Rot: 0. degrees

Provision: LRFD Analysis: Direct Analysis
D/C Limit=0.95 2nd Order: General 2nd Order Reduction: Tau-b Fixed
AlphaPr/Py=0. AlphaPr/Pe=0. Tau_b=1. EA factor=0.8 EI factor=0.8

PhiB=0.9 PhiC=0.9 PhiTY=0.9 PhiTF=0.75
PhiS=0.9 PhiS-RI=1. PhiST=0.9
A=226.195 I33=36756.634 r33=12.748 S33=1934.56 Av3=113.33
J=73513.268 I22=36756.634 r22=12.748 S22=1934.56 Av2=113.33
E=199947.979 Fy=289.58 Ry=1.1 z33=2594.667
RLFP=1. Fu=399.896 z22=2594.667

HSS Welding: ERW Reduce HSS Thickness? No

STRESS CHECK FORCES & MOMENTS (Combo UDSTL3)
Location Pu Mu33 Mu22 Vu2 Vu3 Tu
0. 23.438 1159.66 320102.051 -9.307 703.327 -3699.458

FORM DEMAND/CAPACITY RATIO (H1.2,H1-1b)
D/C Ratio: 0.474 = 0. + 0.002 + 0.473
= (1/2) (Pr/Pe) + (Mr33/Mc33) + (Mr22/Mc22)

COMPACTNESS
Slenderness Lambda Lambda p Lambda r Lambda s Compactness
Bending/Any 19. 48.333 214.048 310.714 Compact
Axial/Flange 19. 75.952 Compact

AXIAL FORCE & BIAXIAL MOMENT DESIGN (H1.2,H1-1b)
Factor L K1 K2 B1 B2 Cn
Major Bending 1. 1. 1. 1. 1. 1.
Minor Bending 1. 1. 1. 1. 1. 1.

Ltb Kltb Cb
1. 1. 1.186

Pu phi*Pnc phi*Pnt
Force Capacity Capacity
Axial 23.438 43404.52 58951.273

Mu phi*Mn phi*Mn phi*Mn
Moment Capacity No LTB Cb=1
Major Moment 1159.66 676226.822 676226.822 676226.822
Minor Moment 320102.051 676226.822

Tu Tn phi*Tn
Moment Capacity Capacity
Torsion -3699.458 707415.279 636673.751

SHEAR CHECK
Vu phi*Vn Stress Status
Force Capacity Ratio Check
Major Shear 9.307 17685.382 0.001 OK
Minor Shear 703.327 17685.382 0.04 OK

CONNECTION SHEAR FORCES FOR BEAMS
VMajor VMajor
Left Right
Major (V2) 10.859 11.079

SAP2000

Project _____
Job Number _____
Engineer _____

AISC 360-16 STEEL SECTION CHECK (Summary for Combo and Station)
Units : N, mm, C

Frame : 5 X Mid: 450. Combo: UDSTL3 Design Type: Beam
Length: 900. Y Mid: 0. Shape: Ø38x2 Frame Type: CMF
Loc : 0. Z Mid: 75. Class: Compact Princpl Rot: 0. degrees

Provision: LAFD Analysis: Direct Analysis
D/C Limit=0.95 2nd Order: General 2nd Order Reduction: Tau-b Fixed
AlphaPr/Py=0. AlphaPr/Pe=0. Tau_b=1. EA factor=0.8 EI factor=0.8

PhiB=0.9 PhiC=0.9 PhiTY=0.9 PhiTF=0.75
PhiS=0.9 PhiS-RI=1. PhiST=0.9
A=226.195 I33=36756.634 r33=12.748 S33=1934.56 Av3=113.33
J=73513.268 I22=36756.634 r22=12.748 S22=1934.56 Av2=113.33
B=199947.979 Fy=289.58 Ry=1.1 z33=2594.667
RLLF=1. Fu=399.896 z22=2594.667

HSS Welding: ERW Reduce HSS Thickness? No

STRESS CHECK FORCES & MOMENTS (Combo UDSTL3)
Location Pu Mu33 Mu22 Vu2 Vu3 Tu
0. 14.063 -3904.134 300945.425 -9.472 678.671 -3620.954

PMN DEMAND/CAPACITY RATIO (H1.2, H1-1b)
D/C Ratio: 0.445 = 0. + 0.006 + 0.445
= (1/2) (Pr/Pc) + (Mr33/Mc33) + (Mr22/Mc22)

COMPACTNESS
Slenderness Lambda Lambda p Lambda r Lambda s Compactness
Bending/Any 19. 48.333 214.048 310.714 Compact
Axial/Flange 19. 75.952 Compact

AXIAL FORCE & BIAXIAL MOMENT DESIGN (H1.2, H1-1b)
Factor L K1 K2 B1 B2 Cn
Major Bending 1. 1. 1. 1. 1. 1.
Minor Bending 1. 1. 1. 1. 1. 1.

Ltb Kltb Cb
1. 1. 1.449

Pu phi*Pnc phi*Pnt
Force Capacity Capacity
Axial 14.063 43404.52 58951.273

Mu phi*Mn phi*Mn phi*Mn
Moment Capacity No LTB Cb=1
Major Moment -3904.134 676226.822 676226.822 676226.822
Minor Moment 300945.425 676226.822

Tu Tn phi*Tn
Moment Capacity Capacity
Torsion -3620.954 707415.279 636673.751

SHEAR CHECK
Vu phi*Vn Stress Status
Force Capacity Ratio Check
Major Shear 9.472 17685.382 0.001 OK
Minor Shear 678.671 17685.382 0.038 OK

CONNECTION SHEAR FORCES FOR BEAMS
VMajor VMajor
Left Right
Major (V2) 11.051 10.897

SAP2000

Project _____
Job Number _____
Engineer _____

AISI-16 COLD-FORMED STEEL SECTION CHECK

Units : N, mm, C

Frame : 19	Design Sect : C55.35.10.2	Through-Fastened
To Deck: No	Design Type : Column	Fastener
X Mid : 0.	Frame Type : Braced	Fastening R Value
Eccentricity : N/A	2nd-Order Method: General 2nd-Order	Design Provision
Y Mid : 0.	LLRF : 1.	
I Mid : 1330.	Major Axis : 0. degrees	
: LRFD		
Length : 2660.		
Loc : 225.		

MATERIAL PROPERTIES	E	Fy	Fu	G	U
	203395.358	227.527	310.264	78228.984	0.3

ELEMENT/SEGMENT INFO	L	K	Lg	INet	iBraceLoc	jBraceLoc
LbRatio	Lh					
0.	Major	2660.	1.	2660.	0.	0.
0.	Minor	262.5	1.	262.5	0.	0.
0.	LTB	262.5	1.	262.5	0.	0.
0.	Distortional	262.5	1.	N/A	N/A	0.
N/A	N/A					

SECTION PROPERTIES	rxr	ryy	Sxx Top	Sxx Bot	Syy Left	Syy Right
GROSS	22.151	12.861	4827.404	4827.404	3382.53	2055.915

	Ax	Ay	Ixx	Iyy	J	x0
y0	Cw					
0. 31368674.6	GROSS	270.566	270.566	132753.602	44754.852	360.755
						-29.48

RESISTANCE FACTORS	PhiTy	PhiTr	PhiC	PhiB	PhiBPipe	PhiV
	0.9	0.75	0.85	0.9	0.95	0.95

STRESS CHECK FORCES & MOMENTS

COMB. RATIO EQUATION - (R2-1)- GOVERNS THE DESIGN

$$\text{COMB. RATIO} = \frac{0.95}{\sqrt{0.67^2 + 0.07^2 + 0.67^2 + 0.02^2}}$$

COMB. RATIO LIMIT 1.

	Combo	P	M33	M22	V2	V3
DEMANDS	UDSTL3	166.498	665237.53	-28593.75	-8812.412	393.75
CAPACITIES		25764.738	988528.263	420998.594	13228.42	16081.609
DEMAND/CAPACITY		0.003	0.673	0.068	0.666	0.024

EFFECTIVE WIDTH METHOD Applicability Limits

All limits are satisfied

AXIAL - TENSION	Area Ag	Area An	PhiTy*Yielding Tn	PhiTr*Rupture Tn
Phi*Tension Tn	270.566	270.566	55405.042	62960.275

AXIAL - COMPRESSION	Fcre	LambdaC	Fu	PhiC*Pne	Buckling Axes
GLOBAL BUCKLING					
Hole Effects	Flex	139.203	1.278	114.795	26400.811
Not Required	Flex-Tor	134.412	1.301	112.03	25764.738
Not Required					

	x0	y0	r0	beta	Sigma_ex	Sigma_ey
Sigma_t	-29.48	0.	39.053	0.43	139.203	4818.906

SAP2000

Project _____
 Job Number _____
 Engineer _____

AISC 360-16 STEEL SECTION CHECK (Summary for Combo and Station)

Units : N, mm, C

Frame : 6 X Mid: -17.5 Combo: UDSTL3 Design Type: Beam
 Length: 35. Y Mid: 0. Shape: Ø6.5CS Frame Type: CMF
 Loc : 35. Z Mid: 2585. Class: Non-Compact Princpl Rot: 0. degrees

Provision: LRFD Analysis: Direct Analysis
 D/C Limit=0.95 2nd Order: General 2nd Order Reduction: Tau-b Fixed
 AlphaPr/Py=0. AlphaPr/Fe=0. Tau_b=1. EA factor=0.8 EI factor=0.8

PhiB=0.9 PhiC=0.9 PhiTY=0.9 PhiTF=0.75
 PhiS=0.9 PhiS-RI=1. PhiST=0.9
 A=1510.207 I33=1277335.24 r33=29.083 S33=23531.046 Av3=486.486
 J=113501.547 I22=211266.135 r22=11.828 S22=13204.133 Av2=1167.531
 E=199947.979 Py=289.58 Ry=1.1 z33=38028.336
 RLLF=1. Pu=399.896 z22=16964.173

STRESS CHECK FORCES & MOMENTS (Combo UDSTL3)

Location	Pu	Mu33	Mu22	Vu2	Vu3	Tu
35.	0.	2824.913	457658.231	-78.271	-8115.618	650965.55

FORM DEMAND/CAPACITY RATIO (H1-1b)

D/C Ratio: $0.133 = 0. + 0. + 0.133$
 $= (1/2) (Pr/Pc) + (Mr33/Mc33) + (Mr22/Mc22)$

COMPACTNESS

	Flange	Web	Section
Major	Non-Compact	Non-Compact	Non-Compact
Minor	Non-Compact	Non-Compact	Non-Compact
Axial	Compact	Compact	Compact

AXIAL FORCE & BIAXIAL MOMENT DESIGN (H1-1b)

Factor	L	K1	K2	B1	B2	Cn
Major Bending	1.	1.	1.	1.	1.	0.6
Minor Bending	1.	1.	1.	1.	1.	0.752

	Lltb	Kltb	Cb
LTB	1.	1.	1.667

	Pu	phi*Pnc	phi*Pnt
Axial	Force	Capacity	Capacity
	0.	393381.39	393593.018

	Mu	phi*Mn	phi*Mn	phi*Mn
	Moment	Capacity	No LTB	Cb=1
Major Moment	2824.913	6132704.662	6132704.662	6132704.662
Minor Moment	457658.231	3441285.654		

SHEAR CHECK

	Vu	phi*Vn	Stress	Status
	Force	Capacity	Ratio	Check
Major Shear	78.271	182570.387	0.	OK
Minor Shear	8115.618	76073.303	0.107	OK

CONNECTION SHEAR FORCES FOR BEAMS

	VMajor	VMajor
	Left	Right
Major (V2)	97.012	91.316