GRUPPO FS ITALIANE

Direzione Tecnica

ITINERARIO INTERNAZIONALE E78 S.G.C. GROSSETO – FANO
Tratto Selci Lama (E45) – S. Stefano di Gaifa
Adeguamento a 2 corsie della Galleria della Guinza (lotto 2) e del tratto Guinza – Mercatello Ovest (lotto 3)
1° stralcio

PROGETTO ESECUTIVO

COD. AN58

PROGETTAZIONE:
RAGGRUPPAMENTO TEMPORANEO PROGETTISTI

MANDATARIA: PRO ITER Progetto Infrastrutture Territorio s.r.l.

MANDANTI: errevia S.R.L. RICERCA VIABILITÀ AMBIENTE; sinergo

IL RESPONSABILE DELL'INTEGRAZIONE DELLE PRESTAZIONI SPECIALISTICHE:
Ing. Riccardo Formichi – Società Pro Iter Srl
Ordine Ingegneri Provincia di Milano n. 18045

IL GEOLOGO:
Dott. Geol. Massimo Mezzanzanica – Società Pro Iter Srl
Albo Geol. Lombardia n. A762

IL COORDINATORE PER LA SICUREZZA IN FASE DI PROGETTAZIONE:
Ing. Massimo Mangini – Società Erre.Vi.A Srl
Ordine Ingegneri Provincia di Varese n. 1502

VISTO: IL RESP. DEL PROCEDIMENTO:
Dott. ing. Vincenzo Catone

PROTOCOLLO: DATA:

OPERE D'ARTE MAGGIORI:
Ing. Enrico Maria Pizzarotti – Società Pro Iter Srl
Ordine Ingegneri Provincia di Milano n. A29470

ORDINE DEGLI INGEGNERI DELLA PROVINCIA DI MILANO – DOTT.ING. FORMICHI RICCARDO – Sez.A Settori: a) civile e ambientale b) industriale c) dell'informazione n° A 18045

ORDINE DEGLI INGEGNERI DELLA PROVINCIA DI MILANO – DOTT.ING. ENRICO MARIA PIZZAROTTI – Sez.A Settori a) civile e ambientale b) industriale c) dell'informazione n° A 29470

06 - OPERE D'ARTE MAGGIORI IN SOTTERRANEO
06.01 - GN.01 - GALLERIA GUINZA - GALLERIA NATURALE

Relazione di calcolo - Intervento Tipo C

CODICE PROGETTO	NOME FILE	REVISIONE	SCALA
PROGETTO: LO702M / LIV. PROG.: E / N. PROG.: 2101	T00GN01OSTRE04A.pdf		
	CODICE ELAB.: T00GN01OSTRE04	A	-

REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
D					
C					
B					
A	EMISSIONE	FEBBRAIO 2023	CICERI	MOJA	PIZZAROTTI

INDICE

1 PREMESSE

La presente relazione si occupa del dimensionamento dell'intervento Tipo C atto a sostenere i ventilatori della galleria Guinza, facente parte dell'Itinerario Internazionale E78 S.G.C. Grosseto – Fano – Tratto Selci Lama (E45) – S. Stefano di Gaifa - Adeguamento a 2 corsie della Galleria della Guinza (lotto 2) e del tratto Guinza – Mercatello Ovest (lotto 3).

L'intervento di tipo C è da realizzarsi in corrispondenza delle zone dove è previsto il fissaggio dei ventilatori in calotta e consiste nella scarifica di due fasce di rivestimento definitivo esistente e ricostruzione di cordoli in calcestruzzo armato

La Figura 1 mostra la sezione dell'intervento Tipo C.

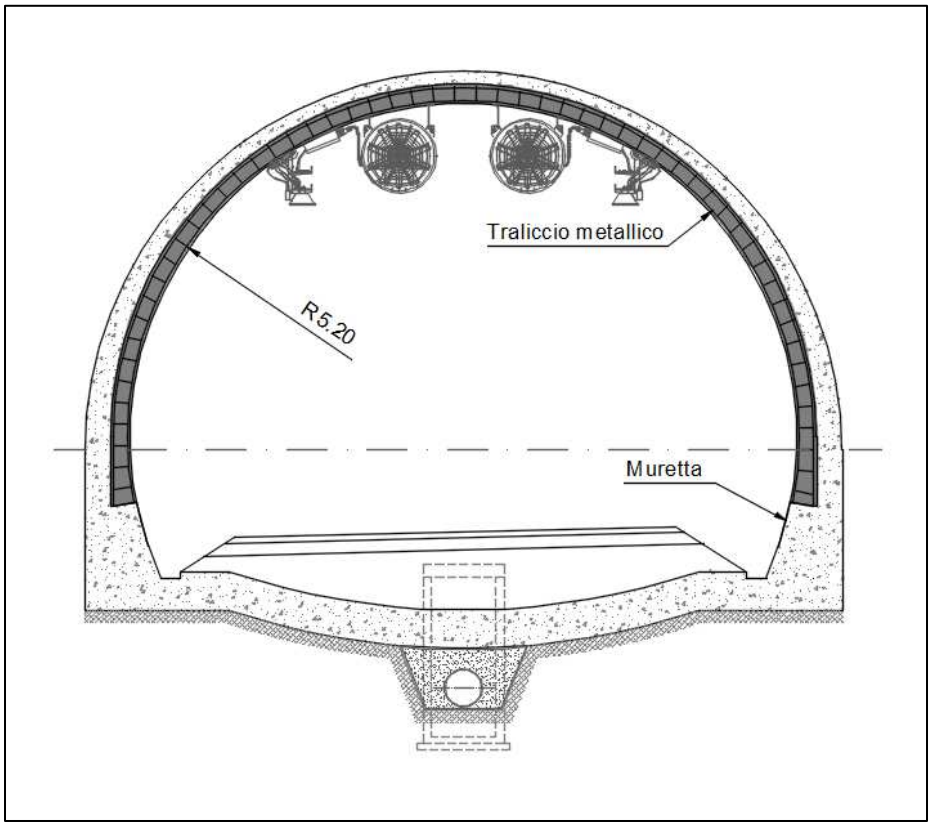


Figura 1 - Interventi Tipo C – Galleria Guinza

2 DOCUMENTI DI RIFERIMENTO

1.1 Normative

[1] Ministero dei LL.PP. - D.M. del 17.01.2018: Aggiornamento delle "Norme tecniche per le Costruzioni".
[2] Ministero dei LL.PP. - Circ. n.7 del 21.01.2019: Istruzioni per l'applicazione dell'"Aggiornamento delle "Norme tecniche per le costruzioni"" di cui al decreto ministeriale 17 gennaio 2018;

1.2 Documenti di progetto

[3] T00GN01OSTCA01A - Sezione corrente - Intervento tipo C – Carpenteria e Armatura
[4] T00GN01OSTSE01A - Sezione corrente – Intervento Tipo A – Fasi esecutive
[5] T00GN01OSTSL01A - Sezioni interpretative longitudinali delle indagini in galleria - Tav. 1/6
[6] T00GN01OSTSL03A - Sezioni interpretative longitudinali delle indagini in galleria - Tav. 3/6
[7] T00GN01OSTSL04A - Sezioni interpretative longitudinali delle indagini in galleria - Tav. 4/6
[8] T00GN01OSTSL06A - Sezioni interpretative longitudinali delle indagini in galleria - Tav. 6/6

2. MATERIALI

2.1 Calcestruzzo per cordolo intervento Tipo C

Classe di resistenza	**C32/40**					
Classe di esposizione	XC2-XA2					
Classe di consistenza	S4					
Diametro massimo aggregato	25 mm					
Massimo rapporto acqua/cemento	0.50					
Contenuto minimo di cemento	340 kg/mc					
Copriferro	50 mm					
Resistenza caratteristica a compressione cubica	R_{ck}	=			**40.00**	N/mm^2
Resistenza caratteristica a compressione cilindrica	f_{ck}	=	$0.83 \times R_{ck}$	=	33.2	N/mm^2
Resistenza media a compressione cilindrica	f_{cm}	=	$f_{ck}+8$	=	41.2	N/mm^2
Modulo elastico	E_c	=	$22000 \times (f_{cm}/10)^{0.3}$	=	33642.8	N/mm^2
Resistenza a trazione semplice	f_{ctm}	=	$0.30 \times f_{ck}^{2/3}$	=	3.1	N/mm^2
Resistenza a trazione caratteristica (frattile 5%)	f_{ctk}	=	$0.70 \times f_{ctm}$	=	2.17	N/mm^2
Stato Limite Ultimo						
Coefficiente parziale di sicurezza	γ_C	=			1.50	--
Coefficiente riduttivo per resistenze di lunga durata	α_{cc}	=			0.85	--
Resistenza a compressione di calcolo	f_{cd}	=	$\alpha_{cc} \times f_{ck}/\gamma_C$	=	18.81	N/mm^2
Resistenza a trazione di calcolo	f_{ctd}	=	f_{ctk}/γ_C	=	1.45	N/mm^2
Stato Limite di Esercizio						
Tensione max di compressione - Comb. rara	σ_c	<	$0.60 \times f_{ck}$	=	19.92	N/mm^2
Tensione max di compressione - Comb. quasi permanente	σ_c	<	$0.45 \times f_{ck}$	=	14.94	N/mm^2
Stato Limite di Fessurazione						
Valore limite di apertura delle fessure - Comb. frequente.	w	≤	w_2	=	0.3	mm
Valore limite di apertura delle fessure - Comb. quasi perm.	w	≤	w_1	=	0.2	mm

2.2 Acciaio per cemento armato tipo B450C

Tensione caratteristica di rottura (frattile 5%)	f_{tk}	=	540.00	N/mm^2
Tensione caratteristica di snervamento (frattile 5%)	f_{yk}	=	450.00	N/mm^2

Stato Limite Ultimo						
Coefficiente parziale di sicurezza	γ_S	=			1.15	-
Resistenza a trazione di calcolo	f_{yd}	=	f_{yk}/γ_S	=	391.30	N/mm^2
Stato Limite di Esercizio						
Tensione max di trazione	σ_s	<	$0.80 \times f_{yk}$	=	360.00	N/mm^2

3 CRITERI DI VERIFICA

3.1 Verifica per sollecitazioni di presso/tenso-flessione

Come previsto dal DM 17.01.2018 al § 4.1.2.3.4 con riferimento alla generica sezione la verifica di resistenza allo SLU si esegue controllando che:

$$M_{Rd} = M_{Rd}(N_{Ed}) \geq M_{Ed}$$

dove:

- MRd è il valore di calcolo del momento resistente corrispondente a NEd;
- NEd è il valore di calcolo della componente assiale (sforzo normale) dell'azione;
- MEd è il valore di calcolo della componente flettente dell'azione.

3.2 Verifica a taglio SLU

Si esegue dapprima la verifica degli *elementi senza armature resistenti a taglio* secondo quanto previsto nel DM 17.01.2018 al punto 4.1.2.3.5.1.

Indicato con V_{Ed} il valore di calcolo dello sforzo di taglio agente allo SLU, si verifica controllando che risulti:

$$V_{Ed} < V_{Rd} = \max\left\{\left(0.18 \cdot k \cdot \frac{\sqrt[3]{100 \cdot \rho_\ell \cdot f_{ck}}}{\gamma_c} + 0.15 \cdot \sigma_{cp}\right) \cdot b_w \cdot d ; \left(\nu_{min} + 0.15 \cdot \sigma_{cp}\right) \cdot b_w \cdot d\right\}$$

dove:

$$k = 1 + \sqrt{\frac{200}{d}} \leq 2$$ con *d* altezza utile della sezione espressa in mm

$$\nu_{min} = 0.035 \cdot \sqrt{k^3} \cdot \sqrt{f_{ck}}$$

$$\rho_\ell = \frac{A_{s\ell}}{b_w \cdot d} \leq 0.02$$ con b_w larghezza minima della sezione espressa in mm

$$\sigma_{cp} = \frac{N_{Ed}}{A_c} \le 0.2 \cdot f_{cd}$$ tensione media di compressione nella sezione

Qualora la verifica non andasse a buon fine è necessario ricorrere ad *elementi provvisti di armature resistenti a taglio* secondo quanto previsto al punto 4.1.2.3.5.1 del già citato D.M. 17.01.2018.

Con riferimento all'armatura trasversale, la resistenza di calcolo a "*taglio-trazione*" si calcola con:

$$V_{Rsd} = 0.9 \cdot d \cdot \frac{A_{sw}}{s} \cdot f_{yd} \cdot (\mathrm{ctg}\,\alpha + \mathrm{ctg}\,\vartheta) \cdot \sin\alpha$$

Con riferimento al calcestruzzo d'anima, la resistenza di calcolo a "*taglio-compressione*" si calcola con:

$$V_{Rcd} = 0.9 \cdot d \cdot b_w \cdot \alpha_c \cdot f'_{cd} \cdot \frac{\mathrm{ctg}\,\alpha + \mathrm{ctg}\,\vartheta}{1 + \mathrm{ctg}^2\vartheta}$$

La resistenza a taglio dell'elemento strutturale è la minore delle due sopra definite:

$$V_{Rd} = \min(V_{Rsd}; V_{Rcd})$$

Nelle precedenti espressioni, i nuovi parametri, introdotti rispetto al caso di elementi sprovvisti di armatura a taglio, assumono il seguente significato:

ϑ	inclinazione dei puntoni di calcestruzzo rispetto all'asse dell'elemento con la limitazione $1.0 \le \mathrm{ctg}\,\vartheta \le 2.5$;
α	inclinazione dell'armatura trasversale rispetto all'asse dell'elemento;
A_{sw}	area dell'armatura trasversale;
s	interasse tra due armature trasversali consecutive;
$f'_{cd} = 0.5 \cdot f_{cd}$	resistenza a compressione ridotta del calcestruzzo d'anima;
α_c	coefficiente maggiorativi pari a:

1	per membrature non compresse
$1 + \sigma_{cp}/f_{cd}$	per $0 \le \sigma_{cp} < 0.25 \times f_{cd}$
1.25	per $0.25\ f_{cd} \le \sigma_{cp} \le 0.5 \times f_{cd}$
$2.5 \times (1-\sigma_{cp}/f_{cd})$	per $0.5 \times f_{cd} < \sigma_{cp} < f_{cd}$

In presenza di significativo sforzo assiale, come ad esempio nel caso della precompressione, è necessario considerare un'ulteriore limitazione relativa all'inclinazione dei puntoni di calcestruzzo:

$$\operatorname{cotg}\vartheta_I \le \operatorname{cotg}\vartheta$$

in cui:

ϑ_I angolo di inclinazione della prima fessurazione ricavato come cotg ϑ_I/σ_I

τ tensione tangenziale sulla corda baricentrica della sezione interamente reagente

σ_I tensione principale di trazione sulla corda baricentrica della sezione interamente reagente

3.3 Verifiche di limitazione delle tensioni di esercizio

Le Verifiche di limitazione delle tensioni in condizioni di esercizio (SLE) sono svolte con riferimento ai valori caratteristici delle azioni e dei parametri di resistenza dei materiali e consistono nel controllare che i valori di tensione nei materiali strutturali siano inferiori ai limiti di normativa (punto 4.1.2.2.5 del D.M. 17/01/2018).

- Calcestruzzo compresso:
  - Combinazione caratteristica o rara $\sigma_c < 0.60 \cdot f_{ck} = 19.92\text{Mpa}$
  - Combinazione quasi permanente $\sigma_c < 0.45 \cdot f_{ck} = 14.94\text{Mpa}$
- Acciaio teso:
  - Combinazione caratteristica o rara $\sigma_s < 0.80 \cdot f_{yk} = 360\text{Mpa}$

3.4 Verifiche a fessurazione

Per poter procedere alle verifiche a fessurazione è necessario effettuare una valutazione relativa al grado di protezione delle armature metalliche contro la corrosione (in termini di condizioni ambientali e sensibilità delle armature stesse alla corrosione).

La Tabella 1 riassume le condizioni ambientali previste dalle NTC 2018 in funzione delle classi di esposizione.

Condizioni ambientali	Classe di esposizione
Ordinarie	X0, XC1, XC2, XC3, XF1
Aggressive	XC4, XD1, XS1, XA1, XA2, XF2, XF3
Molto Aggressive	XD2, XD3, XS2, XS3, XA3, XF4,

Tabella 1: Descrizione delle condizioni ambientali (da Tabella 4.1.III NTC 18).

Le armature possono essere distinte in:

- armature sensibili;
- armature poco sensibili.

I valori limite di apertura delle fessure ottenuti in base alle condizioni ambientali, alla sensibilità delle armature e alla combinazione di azioni sono riportati in Tabella 2.

Gruppi di esigenze	Condizioni ambientali	Combinazioni di azioni S.L.E.	Armature	w_d	Armature	
A	Ordinarie	frequente	Poco sensibili	$\leq w_3 = 0.4$mm	Sensibili	$\leq w_2 = 0.3$mm
		quasi permanente		$\leq w_2 = 0.3$mm		$\leq w_1 = 0.2$mm
B	Aggressive	frequente	Poco sensibili	$\leq w_2 = 0.3$mm	Sensibili	$\leq w_1 = 0.2$mm
		quasi permanente		$\leq w_1 = 0.2$mm		-
C	Molto aggressive	frequente	Poco sensibili	$\leq w_1 = 0.2$mm	Sensibili	-
		quasi permanente		$\leq w_1 = 0.2$mm		-

Tabella 2: Criteri di scelta dello stato limite di fessurazione (da Tabella 4.1.IV NTC 18).

Nel caso in oggetto, dal momento che sono previste armature poco sensibili e una classe di esposizione XC2-XA2, ovvero in condizioni ambientali aggressive, è necessario limitare l'ampiezza delle fessure a 0.3mm per la combinazione frequente e 0.2mm per la combinazione di carico quasi permanente.

Per eseguire le verifiche a fessurazione si segue l'approccio *senza calcolo diretto* descritto al paragrafo C4.1.2.2.4 della Circolare del 11.02.2019 secondo cui è possibile limitare l'ampiezza delle fessure limitando il valore della tensione nell'acciaio teso nella combinazione di carico SLE considerata.

Si riportano nelle seguenti figure le tabelle presenti al paragrafo sopra citato utilizzate per svolgere la verifica a fessurazione.

Tabella C4.1.II *Diametri massimi delle barre per il controllo di fessurazione*

Tensione nell'acciaio σ_s [MPa]	Diametro massimo ϕ delle barre (mm)		
	$w_3 = 0,4$ mm	$w_2 = 0,3$ mm	$w_1 = 0,2$ mm
160	40	32	25
200	32	25	16
240	20	16	12
280	16	12	8
320	12	10	6
360	10	8	-

Figura 2 – Diametri massimi delle barre per il controllo di fessurazione

Tabella C4.1.III *Spaziatura massima delle barre per il controllo di fessurazione*

Tensione nell'acciaio σ_s [MPa]	Spaziatura massima s delle barre (mm)		
	$w_3 = 0,4$ mm	$w_2 = 0,3$ mm	$w_1 = 0,2$ mm
160	300	300	200
200	300	250	150
240	250	200	100
280	200	150	50
320	150	100	-
360	100	50	-

Figura 3 – Spaziatura massima delle barre per il controllo di fessurazione

4 INTERVENTO TIPO C

4.1 Descrizione dell'intervento

L'intervento di tipo C è da realizzarsi in corrispondenza delle zone dove è previsto il fissaggio dei ventilatori in calotta.

L'intervento consiste nella scarifica di una fascia di rivestimento definitivo esistente di spessore 30cm e di larghezza 100cm per l'intera lunghezza trasversale della calotta fino alle due murette, che non verranno invece demolite. Verrà quindi realizzato un cordolo in calcestruzzo C32/40 (Figura 4). Ogni traliccio verrà collegato alla muretta mediante 2+2 inghisaggi verticali Φ16 mm con malta epossidica. Il collegamento tra il traliccio e la muretta è mostrato in Figura 5.

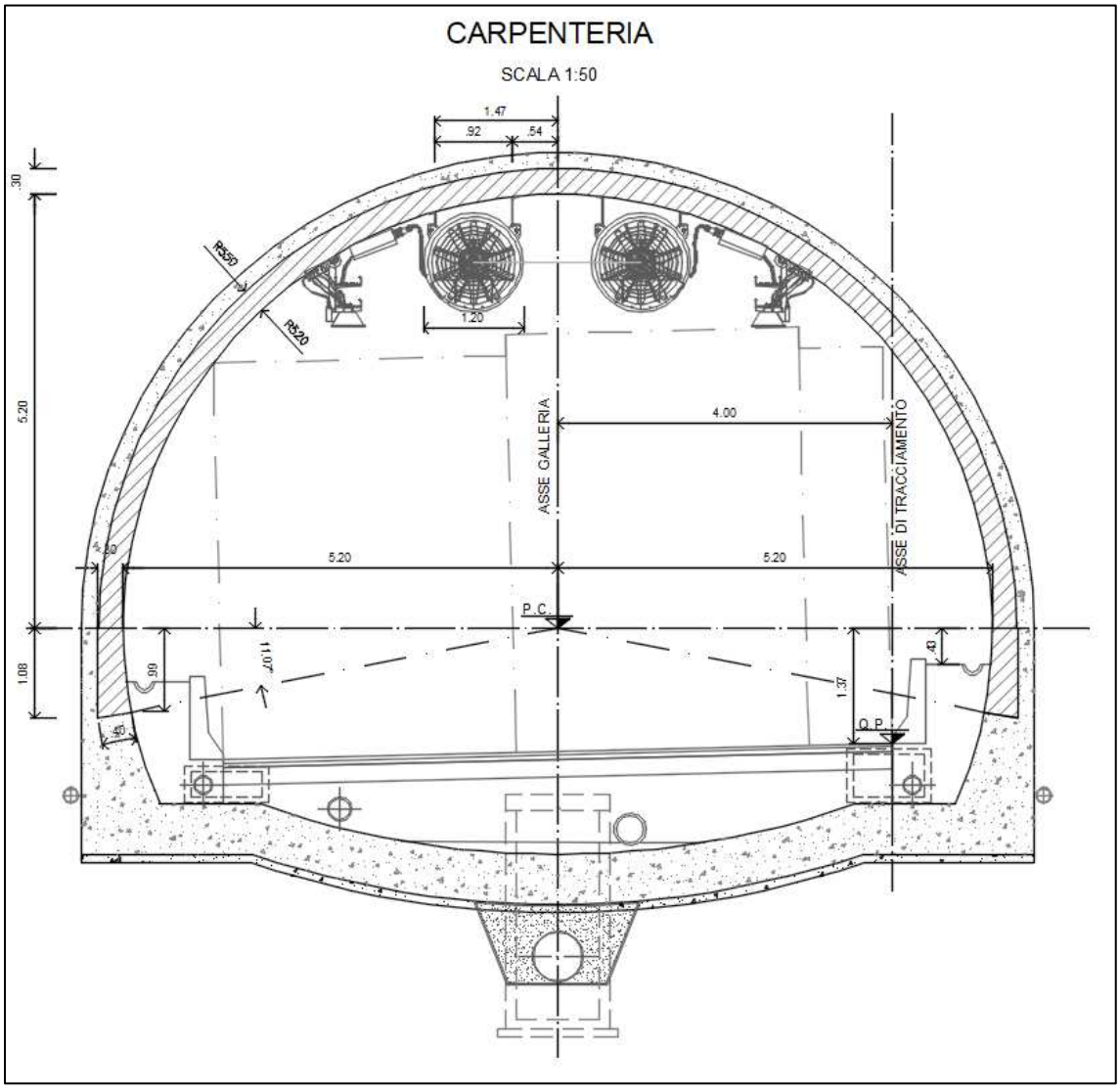


Figura 4 - Intervento tipo C [3]

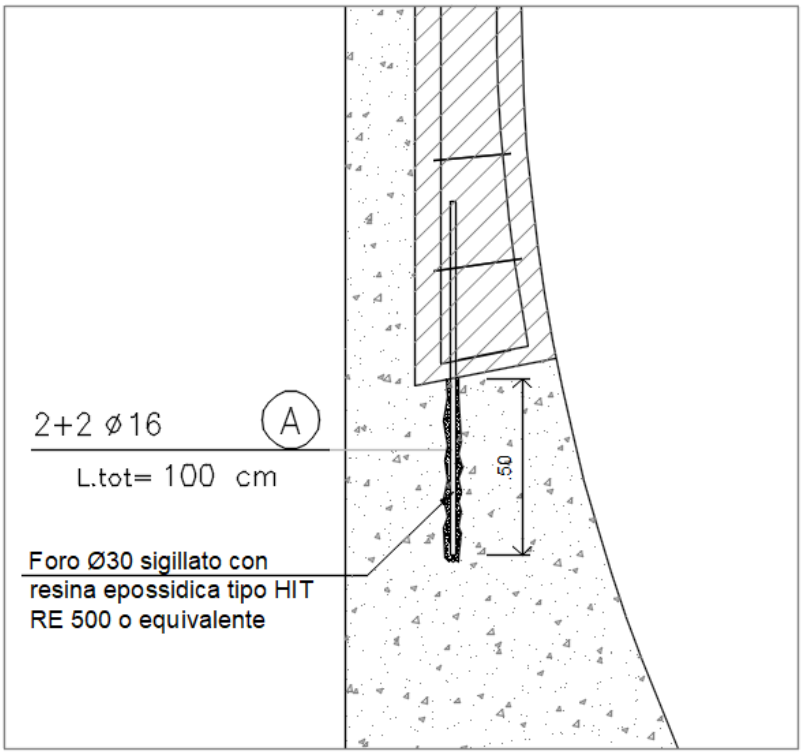


Figura 5 - Collegamento traliccio-muretta [3]

Si precisa che l'intervento tipo C può essere eseguito solo nel caso in cui il rivestimento definitivo allo stato di fatto abbia uno spessore maggiore o pari a 50 cm. In caso contrario, al fine di evitare di ridurre lo spessore del rivestimento esistente sotto i 20 cm durante la realizzazione dello stesso intervento aumentando il rischio di fenomeni di instabilità, si dovrà prevedere alla demolizione completa del rivestimento, ovvero ricorrere all'intervento Tipo A come illustrato in [4] per una lunghezza minima di 2 m.

Dall'analisi dei profili longitudinali del georadar della Galleria Guinza [5][6][7][8], in funzione della progressiva in cui sono posizionati le 12 coppie di ventilatori in progetto, è stato possibile stabilire tipologia di intervento da realizzare come mostra la Tabella 3. In definitiva, è necessario ricorrere all'interventi tipo A per 5 casi mentre è stato possibile prevedere l'intervento Tipo C nei rimanenti 7 casi.

Ventilatori	pk relativa (da inizio galleria naturale)	Tipo intervento
V1, V2	77.1	TIPO C
V3, V4	187.1	TIPO A_GN
V5, V6	287.1	TIPO C
V7, V8	387.1	TIPO C
V9, V10	2818.1	TIPO A_GN
V11, V12	2918.1	TIPO C
V13, V14	3018.1	TIPO C
V15, V16	3118.1	TIPO C
V17, V18	5550.1	TIPO A_GN
V19, V20	5650.1	TIPO A_GN
V21, V22	5750.1	TIPO A_GN
V23, V24	5850.1	TIPO C

Tabella 3: Progressive interventi Tipo C

4.2 Fasi esecutive

Di seguito si riportano, nel dettaglio, le fasi esecutive dell'intervento in esame:

4.2.1 Fase 1 – Scarifica fasce di rivestimento definitivo:

- Scarifica di una fascia di rivestimento definitivo esistente di spessore 30cm e di larghezza 100cm per l'intera lunghezza trasversale della calotta fino alle due murette che non verranno invece demolite.

4.2.2 Fase 2 - Armatura

- Posa delle armature con particolare cura all'ancoraggio delle stesse alla muretta.

4.2.3 Fasi 3 - Getto

- Getto del rivestimento definitivo di completamento della struttura (calotta e piedritti).

4.2.4 Fase 4 - Impianti

- Completamento delle finiture interne e si installazione delle dotazioni impiantistiche.

4.3 Verifica dell'intervento

4.3.1 Modello di calcolo

L'analisi strutturale del cordolo in ca è stata condotta tramite il programma a elementi finiti SAP2000. La struttura è stata discretizzata mediante elementi finiti piani di tipo trave (beam) di lunghezza pari a circa 50 cm, al fine di conseguire una sufficiente approssimazione delle componenti curve della sezione trasversale (si veda Figura 6). Le aste hanno uno spessore fuori piano di 100 cm e uno spessore nel piano di 30 cm (si veda Figura 7).

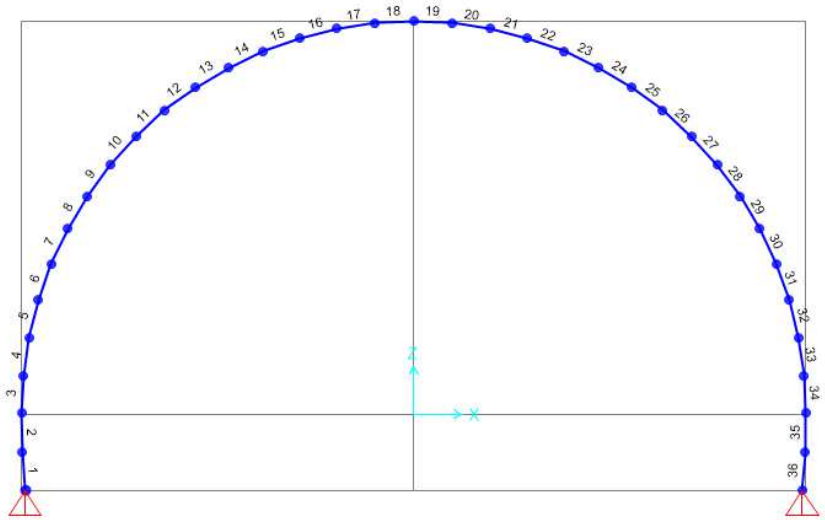


Figura 6: Modello sezione trasversale

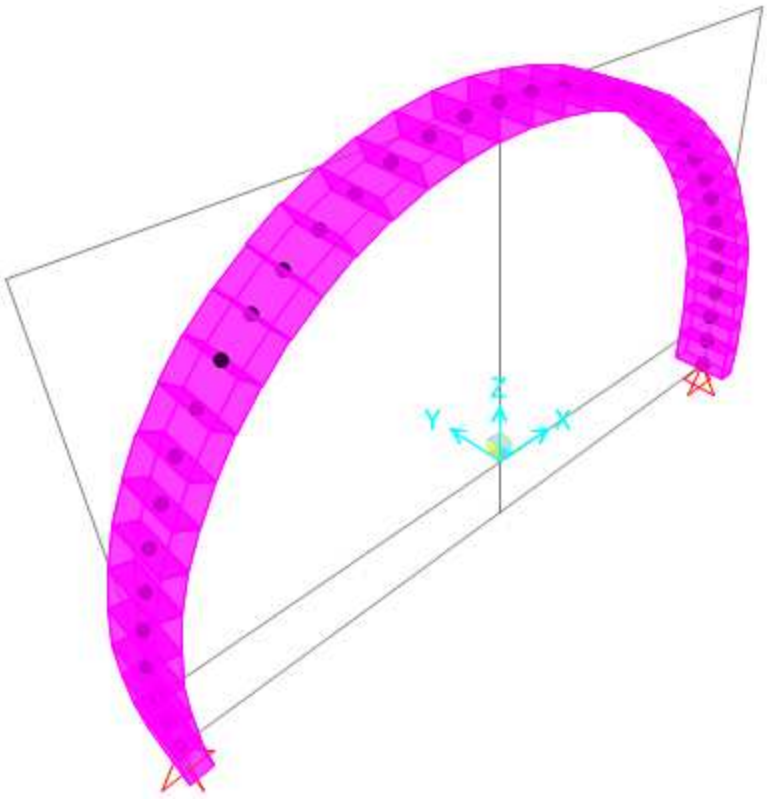


Figura 7: Modello sezione trasversale – Spessore aste

L'interazione cordolo-struttura esistente è stata simulata utilizzando delle molle lineari lungo gli elementi in grado di trasmettere al cordolo, solo se compressi, una reazione pari alla pressione di contatto cordolo-rivestimento esistente. La determinazione dei parametri di rigidezza delle molle è stata condotta mediante la formulazione proposta da Galerkin per le superfici curve.

$$k_G = \frac{E}{(1+\nu)\cdot R_{eq}} = 50\ 000\ \text{kN/m}^3 \quad [\text{F/L3}]$$

Essendo:

E	= 31 476 Mpa	modulo di elasticità del rivestimento esistente;
ν	= 0.2	coefficiente di Poisson del cls;
R_{eq}	= 5.5m	raggio di curvatura equivalente.

Il collegamento del cordolo con la muretta è stato schematizzato nel modello attraverso due cerniere alla base.

4.3.2 Analisi dei carichi

4.3.2.1 Peso proprio

Il peso proprio della struttura è valutato in ragione di 25.0 kN/m^3 ed è computato automaticamente dal programma di calcolo. Il peso proprio è parte della condizione di carico **PP**.

4.3.2.2 Peso dei ventilatori

Il peso di ciascun ventilatore è pari a stato assunto pari a 5 kN, corrispondente ad una stima cautelativa del peso di un ventilatore con le dimensioni e la potenza prevista in progetto [3].

Si assume che il collegamento del ventilatore al cordolo in cls avvenga attraverso dei tasselli posti a distanza trasversale di 92 cm come nell'esempio riportato in Figura 8.

All'interno del modello di calcolo, ciascun ventilatore è stato simulato come due forze verticali di 5kN/2=2.5kN concentrate sulla calotta in corrispondenza degli ancoraggi del ventilatore al rivestimento stesso. Il peso dei ventilatori è parte della condizione di carico **Pv**.

Figura 8: Esempio ancoraggio ventilatori al rivestimento definitivo

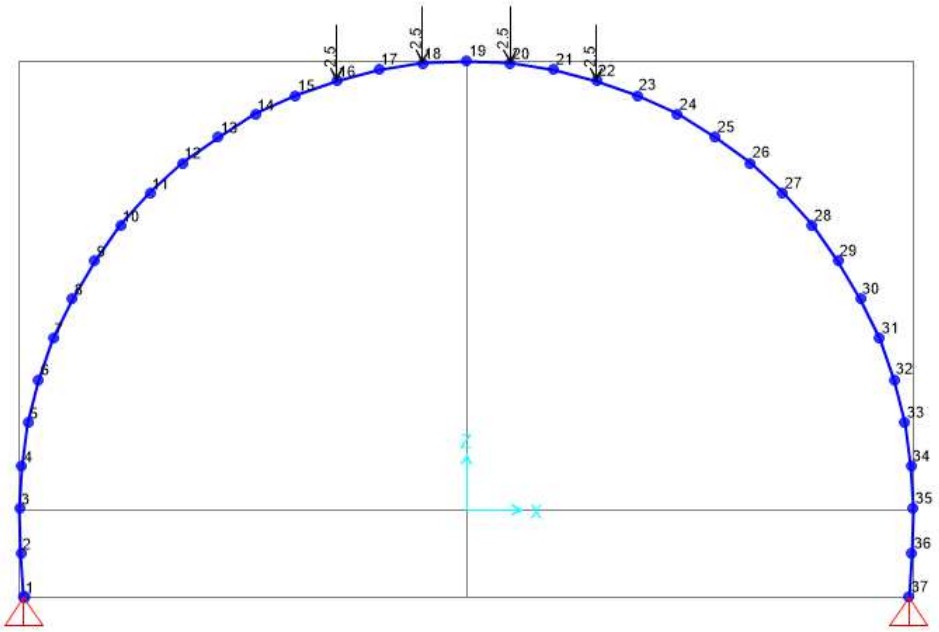


Figura 9: Modello di calcolo – Carico ventilatori

4.3.3 Quadro delle combinazioni adottate

Nella Tabella 4 sono riassunte le combinazioni di carico che sono state utilizzate per fare le verifiche agli stati limite ultimi e agli stati limite di esercizio secondo il D.M. 17 gennaio 2018 Par. 2.5.3.

Per quanto riguarda la combinazione agli Stati Limiti Ultimi, si considera la combinazione *fondamentale* (indicata come **SLU**) con i coefficienti A1(STR) che si trovano nella Tabella 6.2.I del D.M. 17 gennaio 2018.

Si nota che per quanto riguarda gli stati limite di Esercizio, non avendo considerato alcun carico accidentale, la combinazione *rara*, *frequente* e *quasi permanente* coincidono e vengono raggruppate nella combinazione chiamata **SLE**.

	PP	**Pv**
SLE	1	1
SLU	1,3	1,3

Tabella 4

4.3.4 Risultati delle analisi

Si riportano nel seguito i grafici degli spostamenti e delle sollecitazioni (azione assiale, momento flettente e taglio) e delle reazioni nelle combinazioni di carico SLE, SLU.

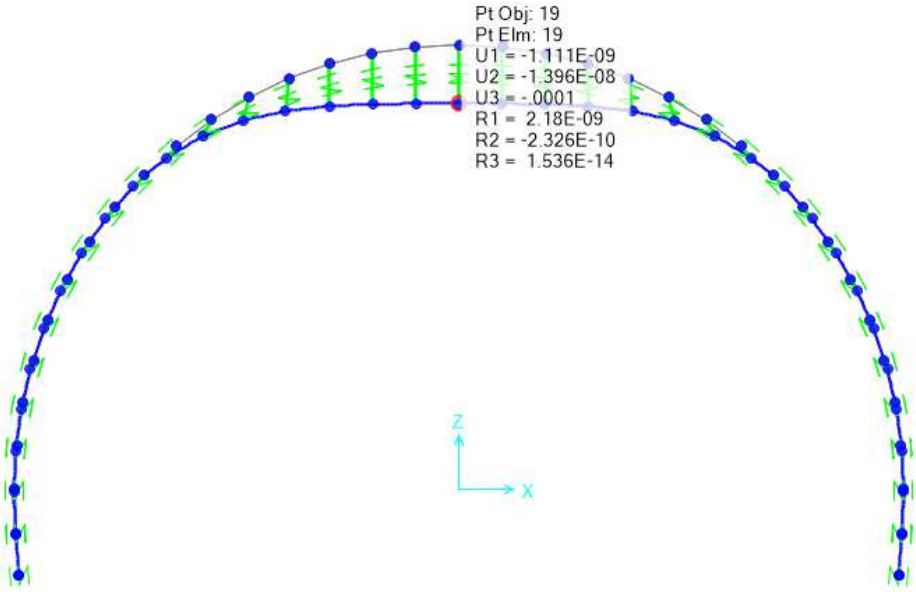


Figura 10: Deformata SLE.

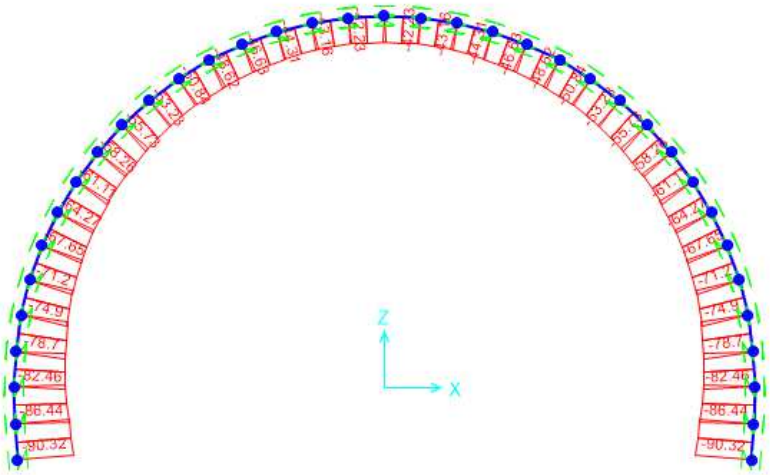


Figura 11: Andamento dell'azione assale nella combinazione SLE.

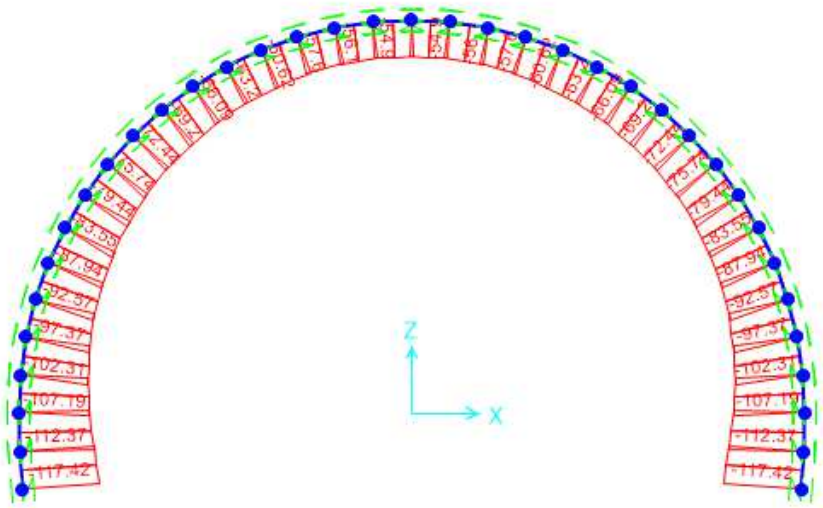


Figura 12: Andamento dell'azione assale nella combinazione SLU.

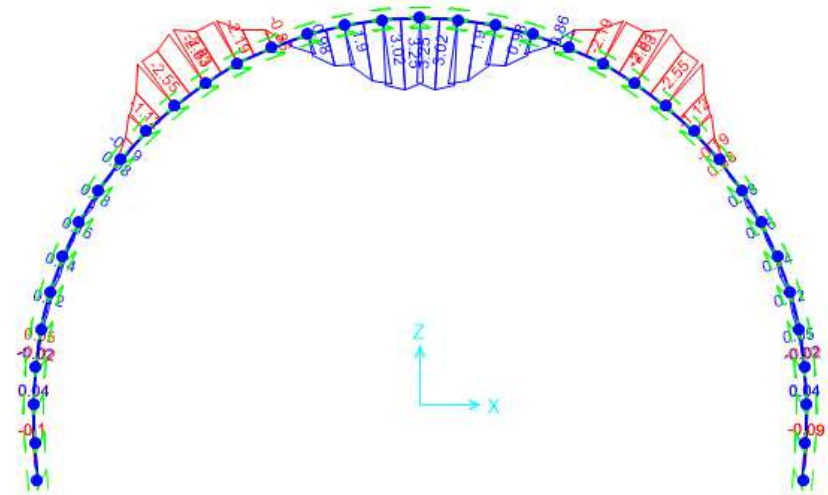


Figura 13: Andamento del momento flettente nella combinazione SLE.

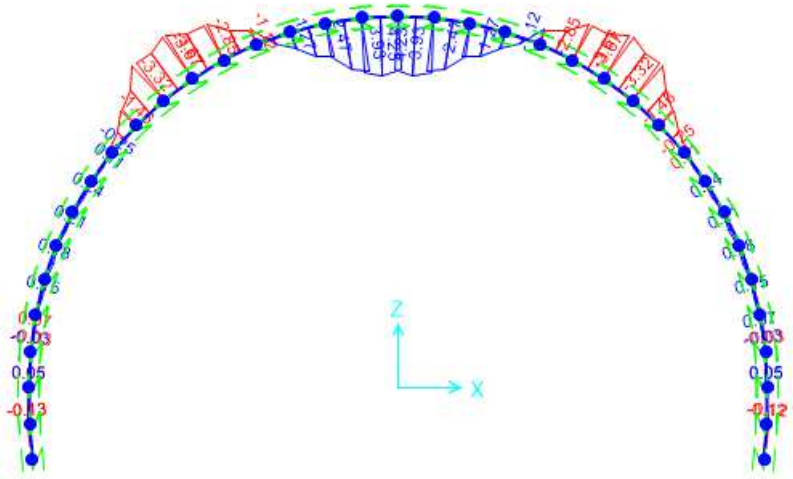


Figura 14: Andamento del momento flettente nella combinazione SLU.

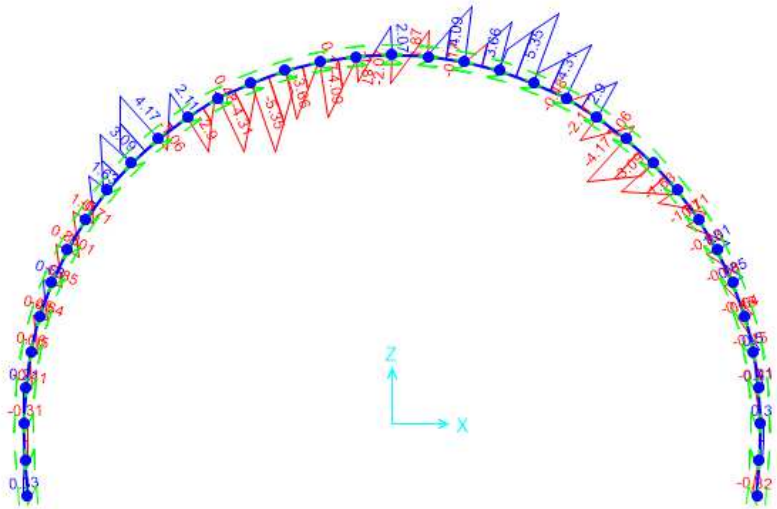


Figura 15: Andamento del taglio nella combinazione SLE.

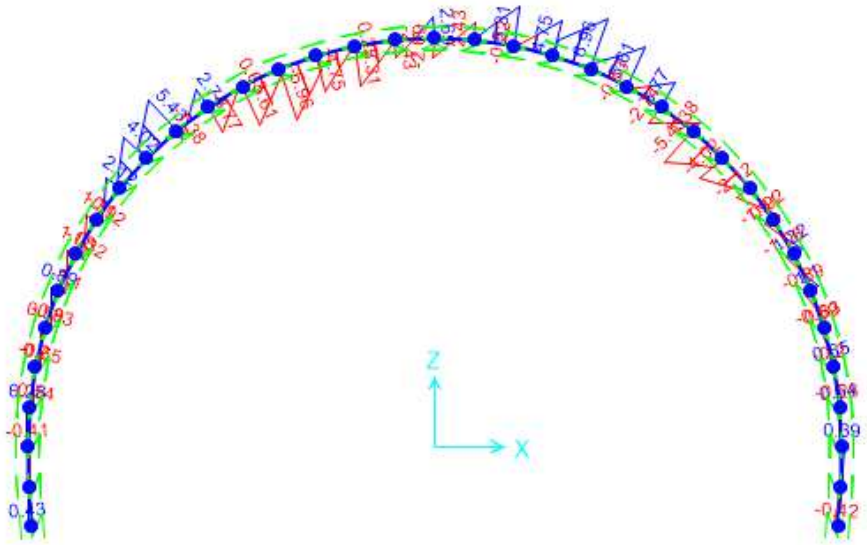


Figura 16: Andamento del taglio nella combinazione SLU.

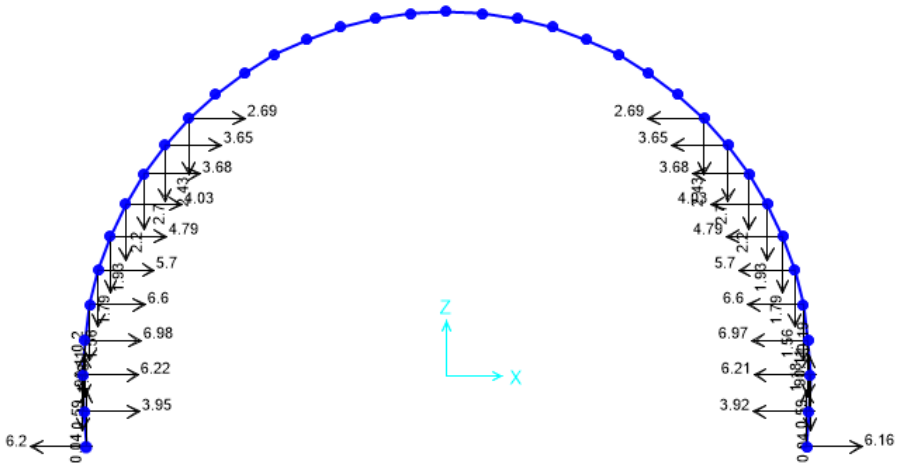


Figura 17: Reazioni nella combinazione SLE.

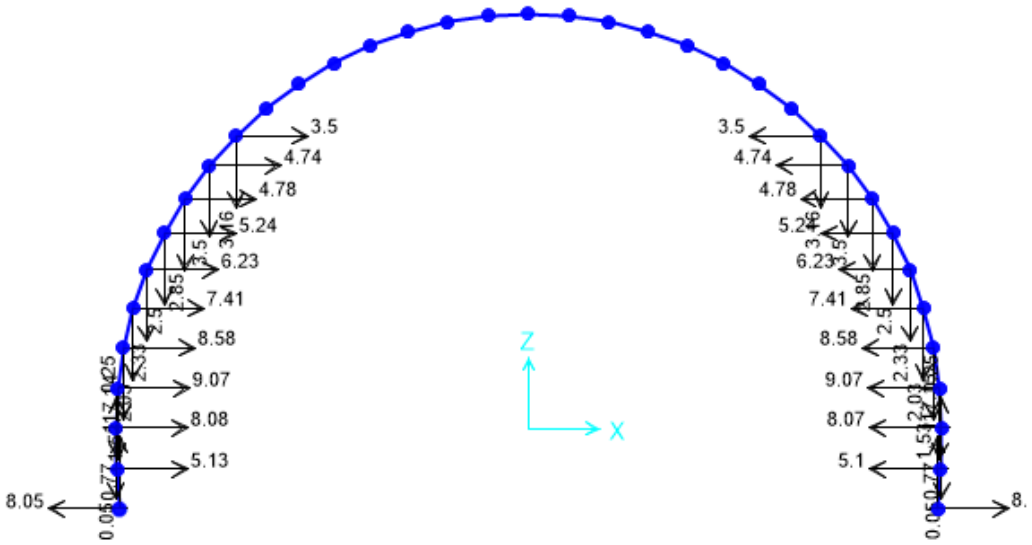


Figura 18: Reazioni nella combinazione SLU.

4.3.5 Verifiche del cordolo in cls

Nel seguente paragrafo si riportano le verifiche strutturali del cordolo 30cm x 100cm in calcestruzzo armato come indicato in Tabella 5.

Armatura longitudinale	Armatura trasversale
Φ12 /25cm simmetrica	Staffe Φ10 /20cm

Tabella 5: Armatura cordolo utilizzata nel dimensionamento

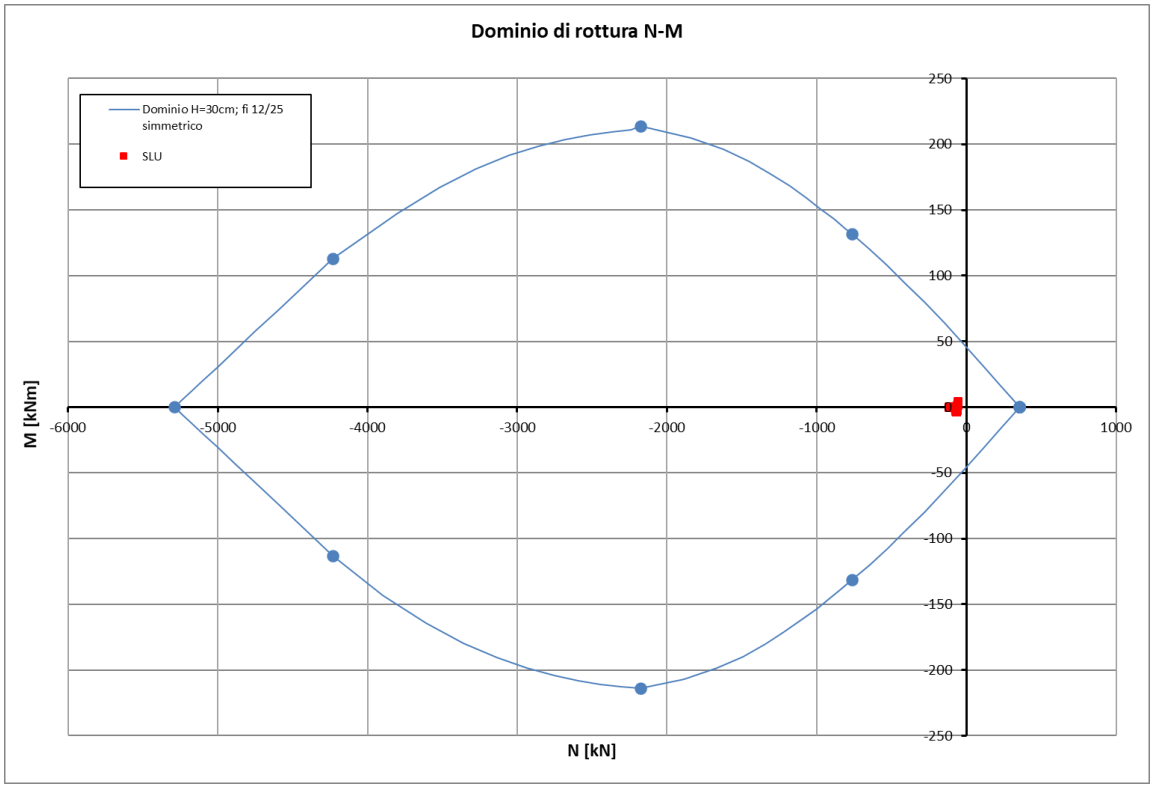
Cautelativamente negli elaborati progettuali è stata prevista la seguente configurazione dei ferri

Armatura longitudinale	Armatura trasversale
Φ16 /25cm simmetrica	Staffe Φ10 /30cm

Tabella 6: Armatura cordolo prevista in fase finale di progetto

4.3.5.1 Verifiche SLU a presso/tenso flessione

Le verifiche agli stati limite di presso/tenso flessione vengono effettuate verificando che tutte le coppie M-N delle combinazioni SLU, ricadano all'interno del dominio M-N limite ricavato in funzione dalla geometria della sezione e dalle armature riportate in Tabella 5.



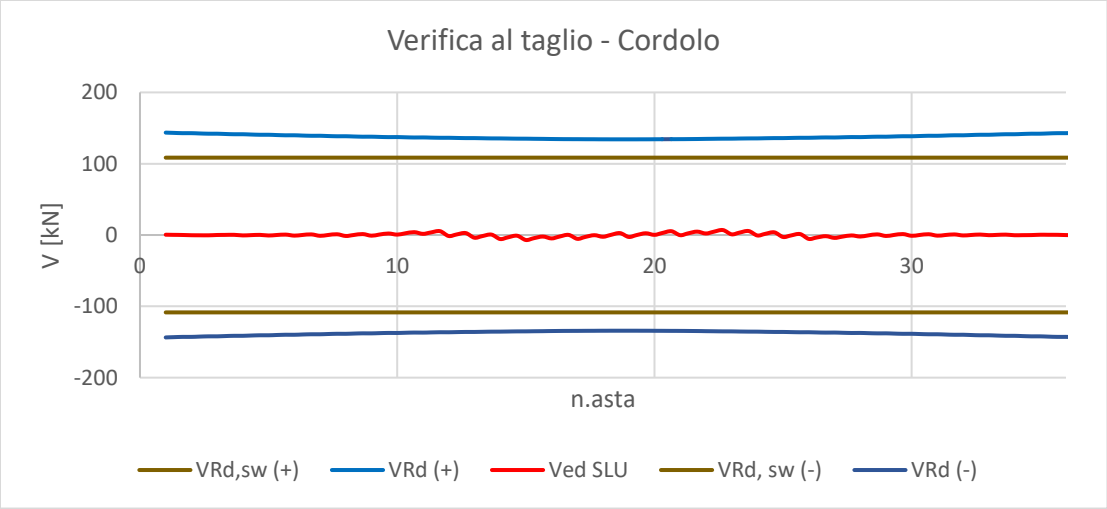
4.3.5.2 Verifiche SLU a taglio

Il grafico sottostante mostra l'andamento del taglio resistente e del taglio sollecitante lungo il cordolo nella combinazione di carico SLU.

Il taglio resistente è stato calcolato in accordo con la teoria illustrata al Par.**3.2** considerando una sezione in cls di altezza 30 cm e larghezza 1 m e le armature longitudinali definite al paragrafo precedente.

Sull'asse delle ascisse è riportato un numero delle aste del modello riscontrabili in Figura 6.

Le verifiche al taglio sono soddisfatte considerando il solo contributo delle armature longitudinali; si prevede comunque la messa in opera di staffe per ragioni costruttive.

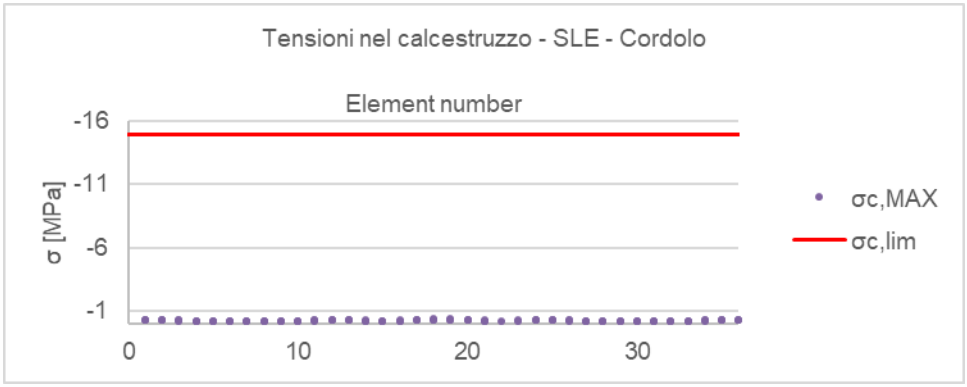


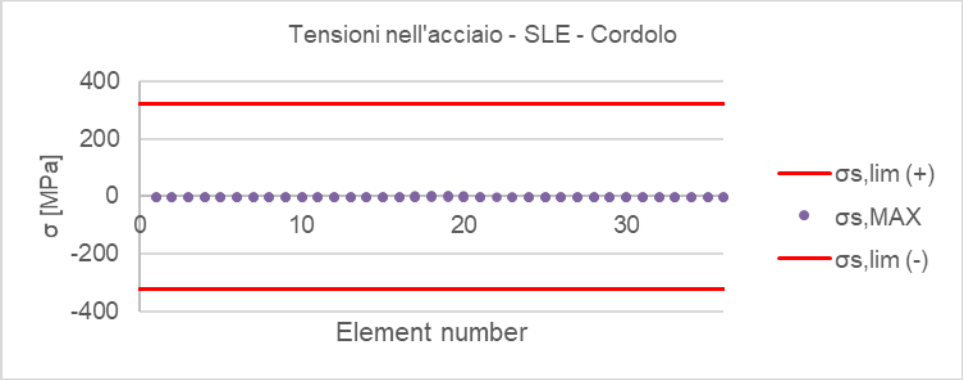
4.3.5.3 Verifiche SLE - Tensioni

Nel seguente paragrafo sono riportati dei grafici che mostrano l'andamento delle tensioni massime nel calcestruzzo nel cordolo nella combinazione SLE.

Le sollecitazioni sono state calcolate per ogni asta in funzione della geometria e quantità di armatura. Sull'asse delle ascisse è riportato un numero delle aste del modello riscontrabili in Figura 6. Negli stessi grafici sono riportate le sollecitazioni massime ammesse da normativa come riportate nel Par 3.3.

Le tensioni nel calcestruzzo e nell'acciaio sono tutte di compressione con valori inferiori a 5 kPa, quindi inferiori ai valori limite previsti da normativa. Le verifiche sono dunque soddisfatte.





4.3.5.4 Verifiche SLE - Fessurazione

Nella combinazione SLE, tutte le sezioni risultano interamente compresse dunque non si riscontrano problemi di fessurazione.

4.3.6 Verifica a compressione della muretta

Nel presente paragrafo viene riportata la verifica degli sforzi di compressione in corrispondenza della muretta esistente.

Lo sforzo di compressione σ_{Ed} è pari a:

$$\sigma_{Ed} = \frac{N}{A}$$

Dove:

- N [kN] reazione all'appoggio
- A = 0.3 x 1 = 0.3m^2 area di appoggio del cordolo sulla muretta

Tale sforzo è accettabile se confrontato con la tensione ammissibile di compressione nel calcestruzzo σ_{cd} = 0.45 * f_{ck} = 14.94 MPa.

La Tabella 7 mostra che le verifiche a compressione sono largamente soddisfatte.

	N [kN]	σ_{Ed} [Mpa]	σ_{lim} [Mpa]	Verifica
SLE	90.1	0.30	14.94	OK
SLU	117.1	0.39	14.94	OK

Tabella 7

4.3.7 Verifiche collegamento alla muretta

Nel presente paragrafo si verifica il collegamento del cordolo alla muretta esistente.

La Tabella 8 riassume le reazioni alla base del cordolo in corrispondenza del collegamento con la muretta (si veda Figura 17 e Figura 18).

	N [kN]	T [kN]
SLU	117.1	-8.1

Tabella 8

La verifica è effettuata sfruttando cautelativamente la sola resistenza attritiva del calcestruzzo, trascurando cioè il contributo resistente offerto dagli inghisaggio con malta epossidica. Si considera a favore di sicurezza un coefficiente attritivo del calcestruzzo di μ=0.2

$$T_{Ed} = -8.1\text{kN} < -23.0 = \text{N} \cdot \mu = T_{Rd}$$

La verifica risulta pertanto soddisfatta.

ALLEGATO 1: REPORT DI CALCOLO SAP 2000

License #2010*1MB68WA7FTWJVPU

SAP2000 Analysis Report

Prepared by

Pro Iter srl

Model Name: IntC_30x100_ce-ce.sdb

12 ottobre 2022

Contents

List of Figures

List of Tables

1. Model geometry

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

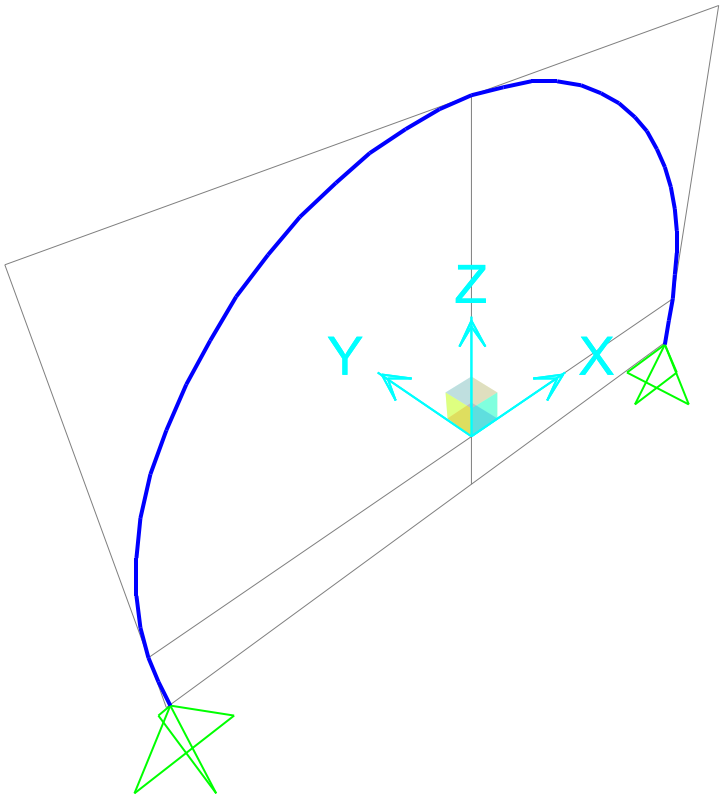


Figure 1: Finite element model

1.1. Joint coordinates

Table 1: Joint Coordinates

Table 1: Joint Coordinates

Joint	CoordSys	CoordType	GlobalX	GlobalY	GlobalZ
			m	m	m
1	GLOBAL	Cartesian	-5.30096	0.	-1.03845
2	GLOBAL	Cartesian	-5.33854	0.	-0.51983
3	GLOBAL	Cartesian	-5.35109	0.	0.01466
4	GLOBAL	Cartesian	-5.32666	0.	0.52539
5	GLOBAL	Cartesian	-5.25077	0.	1.04585
6	GLOBAL	Cartesian	-5.12416	0.	1.55635
7	GLOBAL	Cartesian	-4.94803	0.	2.05194
8	GLOBAL	Cartesian	-4.72408	0.	2.52785
9	GLOBAL	Cartesian	-4.4545	0.	2.97947
10	GLOBAL	Cartesian	-4.14187	0.	3.40243
11	GLOBAL	Cartesian	-3.78922	0.	3.79266
12	GLOBAL	Cartesian	-3.39997	0.	4.14637
13	GLOBAL	Cartesian	-2.97786	0.	4.46016
14	GLOBAL	Cartesian	-2.52698	0.	4.73098
15	GLOBAL	Cartesian	-2.05169	0.	4.95622
16	GLOBAL	Cartesian	-1.55658	0.	5.13371
17	GLOBAL	Cartesian	-1.04644	0.	5.26173

Table 1: Joint Coordinates

Joint	CoordSys	CoordType	GlobalX	GlobalY	GlobalZ
			m	m	m
18	GLOBAL	Cartesian	-0.52619	0.	5.33904
19	GLOBAL	Cartesian	-0.00086	0.	5.36489
20	GLOBAL	Cartesian	0.52447	0.	5.33904
21	GLOBAL	Cartesian	1.04472	0.	5.26173
22	GLOBAL	Cartesian	1.55486	0.	5.13371
23	GLOBAL	Cartesian	2.04997	0.	4.95622
24	GLOBAL	Cartesian	2.52526	0.	4.73098
25	GLOBAL	Cartesian	2.97614	0.	4.46016
26	GLOBAL	Cartesian	3.39825	0.	4.14637
27	GLOBAL	Cartesian	3.7875	0.	3.79266
28	GLOBAL	Cartesian	4.14015	0.	3.40243
29	GLOBAL	Cartesian	4.45278	0.	2.97947
30	GLOBAL	Cartesian	4.72236	0.	2.52785
31	GLOBAL	Cartesian	4.94631	0.	2.05194
32	GLOBAL	Cartesian	5.12244	0.	1.55635
33	GLOBAL	Cartesian	5.24905	0.	1.04585
34	GLOBAL	Cartesian	5.32494	0.	0.52539
35	GLOBAL	Cartesian	5.34937	0.	0.01466
36	GLOBAL	Cartesian	5.33682	0.	-0.51983
37	GLOBAL	Cartesian	5.29952	0.	-1.03838

1.2. Joint restraints

Table 2: Joint Restraint Assignments

Table 2: Joint Restraint Assignments

Joint	U1	U2	U3	R1	R2	R3
1	Yes	Yes	Yes	No	No	No
37	Yes	Yes	Yes	No	No	No

1.3. Element connectivity

Table 3: Connectivity - Frame

Table 3: Connectivity - Frame

Frame	JointI	JointJ	Length
			m
1	1	2	0.51998
2	2	3	0.53464
3	3	4	0.51132
4	4	5	0.52596
5	5	6	0.52596
6	6	7	0.52596
7	7	8	0.52596
8	8	9	0.52596
9	9	10	0.52596
10	10	11	0.52596
11	11	12	0.52596
12	12	13	0.52596
13	13	14	0.52596

Table 3: Connectivity - Frame

Frame	JointI	JointJ	Length m
14	14	15	0.52596
15	15	16	0.52596
16	16	17	0.52596
17	17	18	0.52596
18	18	19	0.52596
19	19	20	0.52596
20	20	21	0.52596
21	21	22	0.52596
22	22	23	0.52596
23	23	24	0.52596
24	24	25	0.52596
25	25	26	0.52596
26	26	27	0.52596
27	27	28	0.52596
28	28	29	0.52596
29	29	30	0.52596
30	30	31	0.52596
31	31	32	0.52596
32	32	33	0.52596
33	33	34	0.52596
34	34	35	0.51132
35	35	36	0.53464
36	36	37	0.51989

Table 4: Frame Section Assignments

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
1	C100x30	C100x30	Default
2	C100x30	C100x30	Default
3	C100x30	C100x30	Default
4	C100x30	C100x30	Default
5	C100x30	C100x30	Default
6	C100x30	C100x30	Default
7	C100x30	C100x30	Default
8	C100x30	C100x30	Default
9	C100x30	C100x30	Default
10	C100x30	C100x30	Default
11	C100x30	C100x30	Default
12	C100x30	C100x30	Default
13	C100x30	C100x30	Default
14	C100x30	C100x30	Default
15	C100x30	C100x30	Default
16	C100x30	C100x30	Default
17	C100x30	C100x30	Default
18	C100x30	C100x30	Default
19	C100x30	C100x30	Default
20	C100x30	C100x30	Default
21	C100x30	C100x30	Default
22	C100x30	C100x30	Default
23	C100x30	C100x30	Default
24	C100x30	C100x30	Default
25	C100x30	C100x30	Default
26	C100x30	C100x30	Default
27	C100x30	C100x30	Default

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
28	C100x30	C100x30	Default
29	C100x30	C100x30	Default
30	C100x30	C100x30	Default
31	C100x30	C100x30	Default
32	C100x30	C100x30	Default
33	C100x30	C100x30	Default
34	C100x30	C100x30	Default
35	C100x30	C100x30	Default
36	C100x30	C100x30	Default

2. Material properties

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

Table 5: Material Properties 02 - Basic Mechanical Properties

Table 5: Material Properties 02 - Basic Mechanical Properties

Material	UnitWeight	UnitMass	E1	G12	U12	A1
	KN/m3	KN-s2/m4	KN/m2	KN/m2		1/C
4000Psi	2.3563E+01	2.4028E+00	24855578.06	10356490.86	0.2	9.9000E-06
A416Gr270	7.6973E+01	7.8490E+00	196500599.9			1.1700E-05
A615Gr60	7.6973E+01	7.8490E+00	199947978.8			1.1700E-05
A992Fy50	7.6973E+01	7.8490E+00	199947978.8	76903068.77	0.3	1.1700E-05
C28/35	2.4993E+01	2.5485E+00	32308000.	13461666.67	0.2	1.0000E-05

Table 6: Material Properties 03a - Steel Data

Table 6: Material Properties 03a - Steel Data

Material	Fy	Fu	FinalSlope
	KN/m2	KN/m2	
A992Fy50	344737.89	448159.26	-0.1

Table 7: Material Properties 03b - Concrete Data

Table 7: Material Properties 03b - Concrete Data

Material	Fc	eFc	FinalSlope
	KN/m2	KN/m2	
4000Psi	27579.03	27579.03	-0.1
C28/35	28000.	28000.	-0.1

Table 8: Material Properties 03e - Rebar Data

Table 8: Material Properties 03e - Rebar Data

Material	Fy	Fu	FinalSlope
	KN/m2	KN/m2	
A615Gr60	413685.47	620528.21	-0.1

Table 9: Material Properties 03f - Tendon Data

Table 9: Material Properties 03f - Tendon Data

Material	Fy	Fu	FinalSlope
	KN/m2	KN/m2	
A416Gr270	1689905.16	1861584.63	-0.1

3. Section properties

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

3.1. Frames

Table 10: Frame Section Properties 01 - General, Part 1 of 4

Table 10: Frame Section Properties 01 - General, Part 1 of 4

SectionName	Material	Shape	t3	t2	tf	tw	t2b	tfb
			m	m	m	m	m	m
C100x30	C28/35	Rectangular	0.3	1.				
C60x30	C28/35	Rectangular	0.3	0.6				
W18X35	A992Fy50	I/Wide Flange	0.44958	0.1524	0.010795	0.00762	0.1524	0.010795

Table 10: Frame Section Properties 01 - General, Part 2 of 4

Table 10: Frame Section Properties 01 - General, Part 2 of 4

SectionName	Area	TorsConst	I33	I22	I23	AS2	AS3
	m2	m4	m4	m4	m4	m2	m2
C100x30	0.3	0.0073	0.00225	0.025	0.	0.25	0.25
C60x30	0.18	0.003708	0.00135	0.0054	0.	0.15	0.15
W18X35	0.006645	2.106E-07	0.000212	6.368E-06	0.	0.003426	0.002742

Table 10: Frame Section Properties 01 - General, Part 3 of 4

Table 10: Frame Section Properties 01 - General, Part 3 of 4

SectionName	S33	S22	Z33	Z22	R33	R22
	m3	m3	m3	m3	m	m
C100x30	0.015	0.05	0.0225	0.075	0.086603	0.288675
C60x30	0.009	0.018	0.0135	0.027	0.086603	0.173205
W18X35	0.000944	0.000084	0.00109	0.000132	0.178731	0.030957

Table 10: Frame Section Properties 01 - General, Part 4 of 4

Table 10: Frame Section Properties 01 - General, Part 4 of 4

SectionName	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
C100x30	1.	1.	1.	1.	1.	1.	1.	1.
C60x30	1.	1.	1.	1.	1.	1.	1.	1.
W18X35	1.	1.	1.	1.	1.	1.	1.	1.

Table 11: Frame Section Properties 02 - Concrete Column, Part 1 of 2

Table 11: Frame Section Properties 02 - Concrete Column, Part 1 of 2

SectionName	RebarMatL	RebarMatC	ReinfConfig	LatReinf	Cover	NumBars3Dir	NumBars2Dir
					m		
C100x30	A615Gr60	A615Gr60	Rectangular	Ties	0.04	3	3
C60x30	A615Gr60	A615Gr60	Rectangular	Ties	0.04	3	3

Table 11: Frame Section Properties 02 - Concrete Column, Part 2 of 2

Table 11: Frame Section Properties 02 - Concrete Column, Part 2 of 2

SectionName	BarSizeL	BarSizeC	SpacingC	NumCBars2	NumCBars3
			m		
C100x30	#9	#4	0.15	3	3
C60x30	#9	#4	0.15	3	3

3.2. Areas

Table 12: Area Section Properties, Part 1 of 3

Table 12: Area Section Properties, Part 1 of 3

Section	Material	AreaType	Type	DrillDOF	Thickness	BendThick	F11Mod
					m	m	
ASEC1	4000Psi	Shell	Shell-Thin	Yes	0.25	0.25	1.

Table 12: Area Section Properties, Part 2 of 3

Table 12: Area Section Properties, Part 2 of 3

Section	F22Mod	F12Mod	M11Mod	M22Mod	M12Mod	V13Mod	V23Mod
ASEC1	1.	1.	1.	1.	1.	1.	1.

Table 12: Area Section Properties, Part 3 of 3

Table 12: Area Section Properties, Part 3 of 3

Section	MMod	WMod
ASEC1	1.	1.

3.3. Solids

Table 13: Solid Property Definitions

Table 13: Solid Property Definitions

SolidProp	Material	MatAngleA	MatAngleB	MatAngleC
		Degrees	Degrees	Degrees
Solid1	4000Psi	0.	0.	0.

4. Load patterns

This section provides loading information as applied to the model.

4.1. Definitions

Table 14: Load Pattern Definitions

Table 14: Load Pattern Definitions

LoadPat	DesignType	SelfWtMult	AutoLoad
PP	Dead	1.	
Ventilatori	Dead	0.	

5. Load cases

This section provides load case information.

5.1. Definitions

Table 15: Load Case Definitions, Part 1 of 2

Table 15: Load Case Definitions, Part 1 of 2

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesActOpt
PP	NonStatic	Zero				Prog Det
Ventilatori	NonStatic	Zero				Prog Det
SLE	NonStatic	Zero				Prog Det
SLU	NonStatic	Zero				Prog Det

Table 15: Load Case Definitions, Part 2 of 2

Table 15: Load Case Definitions, Part 2 of 2

Case	DesignAct
PP	Non-Composite
Ventilatori	Non-Composite
SLE	Non-Composite

Table 15: Load Case Definitions, Part 2 of 2

Case	DesignAct
SLU	Non-Composite

5.2. Static case load assignments

Table 16: Case - Static 1 - Load Assignments

Table 16: Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
PP	Load pattern	PP	1.
Ventilatori	Load pattern	Ventilatori	1.
SLE	Load pattern	PP	1.
SLE	Load pattern	Ventilatori	1.
SLU	Load pattern	PP	1.3
SLU	Load pattern	Ventilatori	1.3

5.3. Response spectrum case load assignments

Table 17: Function - Response Spectrum - User

Table 17: Function - Response Spectrum - User

Name	Period	Accel	FuncDamp
	Sec		
UNIFRS	0.	1.	0.05
UNIFRS	1.	1.	

6. Structure results

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

6.1. Mass summary

Table 18: Assembled Joint Masses, Part 1 of 2

Table 18: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1	U2	U3	R1	R2	R3	CenterX
		KN-s2/m	KN-s2/m	KN-s2/m	KN-m-s2	KN-m-s2	KN-m-s2	m
1	MSSSRC1	0.2	0.2	0.2	0.	0.	0.	-5.30096
2	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-5.33854
3	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-5.35109
4	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-5.32666
5	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-5.25077
6	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-5.12416
7	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-4.94803
8	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-4.72408

Table 18: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1	U2	U3	R1	R2	R3	CenterX
		KN-s2/m	KN-s2/m	KN-s2/m	KN-m-s2	KN-m-s2	KN-m-s2	m
9	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-4.4545
10	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-4.14187
11	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-3.78922
12	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-3.39997
13	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-2.97786
14	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-2.52698
15	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-2.05169
16	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-1.55658
17	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-1.04644
18	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-0.52619
19	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	-0.00086
20	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	0.52447
21	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	1.04472
22	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	1.55486
23	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	2.04997
24	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	2.52526
25	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	2.97614
26	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	3.39825
27	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	3.7875
28	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	4.14015
29	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	4.45278
30	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	4.72236
31	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	4.94631
32	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	5.12244
33	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	5.24905
34	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	5.32494
35	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	5.34937
36	MSSSRC1	0.4	0.4	0.4	0.	0.	0.	5.33682
37	MSSSRC1	0.2	0.2	0.2	0.	0.	0.	5.29952
1~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-5.30096
2~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-5.33854
3~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-5.35109
4~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-5.32666
5~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-5.25077
6~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-5.12416
7~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-4.94803
8~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-4.72408
9~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-4.4545
10~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-4.14187
11~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-3.78922
12~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-3.39997
13~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-2.97786
14~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-2.52698
15~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-2.05169
16~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-1.55658
17~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-1.04644
18~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-0.52619
19~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	-0.00086
20~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	0.52447
21~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	1.04472
22~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	1.55486
23~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	2.04997
24~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	2.52526
25~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	2.97614
26~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	3.39825
27~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	3.7875
28~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	4.14015
29~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	4.45278

Table 18: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1	U2	U3	R1	R2	R3	CenterX
		KN-s2/m	KN-s2/m	KN-s2/m	KN-m-s2	KN-m-s2	KN-m-s2	m
30~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	4.72236
31~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	4.94631
32~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	5.12244
33~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	5.24905
34~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	5.32494
35~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	5.34937
36~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	5.33682
37~Link	MSSSRC1	0.	0.	0.	0.	0.	0.	5.29952
SumAccelUX	MSSSRC1	14.46	0.	0.	0.	0.	0.	-0.00088
SumAccelUY	MSSSRC1	0.	14.46	0.	0.	0.	0.	-0.00088
SumAccelUZ	MSSSRC1	0.	0.	14.46	0.	0.	0.	-0.00088

Table 18: Assembled Joint Masses, Part 2 of 2

Table 18: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY	CenterZ
		m	m
1	MSSSRC1	0.	-1.03845
2	MSSSRC1	0.	-0.51983
3	MSSSRC1	0.	0.01466
4	MSSSRC1	0.	0.52539
5	MSSSRC1	0.	1.04585
6	MSSSRC1	0.	1.55635
7	MSSSRC1	0.	2.05194
8	MSSSRC1	0.	2.52785
9	MSSSRC1	0.	2.97947
10	MSSSRC1	0.	3.40243
11	MSSSRC1	0.	3.79266
12	MSSSRC1	0.	4.14637
13	MSSSRC1	0.	4.46016
14	MSSSRC1	0.	4.73098
15	MSSSRC1	0.	4.95622
16	MSSSRC1	0.	5.13371
17	MSSSRC1	0.	5.26173
18	MSSSRC1	0.	5.33904
19	MSSSRC1	0.	5.36489
20	MSSSRC1	0.	5.33904
21	MSSSRC1	0.	5.26173
22	MSSSRC1	0.	5.13371
23	MSSSRC1	0.	4.95622
24	MSSSRC1	0.	4.73098
25	MSSSRC1	0.	4.46016
26	MSSSRC1	0.	4.14637
27	MSSSRC1	0.	3.79266
28	MSSSRC1	0.	3.40243
29	MSSSRC1	0.	2.97947
30	MSSSRC1	0.	2.52785
31	MSSSRC1	0.	2.05194
32	MSSSRC1	0.	1.55635
33	MSSSRC1	0.	1.04585
34	MSSSRC1	0.	0.52539
35	MSSSRC1	0.	0.01466
36	MSSSRC1	0.	-0.51983
37	MSSSRC1	0.	-1.03838
1~Link	MSSSRC1	0.	-1.03845
2~Link	MSSSRC1	0.	-0.51983
3~Link	MSSSRC1	0.	0.01466

Table 18: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY	CenterZ
		m	m
4~Link	MSSSRC1	0.	0.52539
5~Link	MSSSRC1	0.	1.04585
6~Link	MSSSRC1	0.	1.55635
7~Link	MSSSRC1	0.	2.05194
8~Link	MSSSRC1	0.	2.52785
9~Link	MSSSRC1	0.	2.97947
10~Link	MSSSRC1	0.	3.40243
11~Link	MSSSRC1	0.	3.79266
12~Link	MSSSRC1	0.	4.14637
13~Link	MSSSRC1	0.	4.46016
14~Link	MSSSRC1	0.	4.73098
15~Link	MSSSRC1	0.	4.95622
16~Link	MSSSRC1	0.	5.13371
17~Link	MSSSRC1	0.	5.26173
18~Link	MSSSRC1	0.	5.33904
19~Link	MSSSRC1	0.	5.36489
20~Link	MSSSRC1	0.	5.33904
21~Link	MSSSRC1	0.	5.26173
22~Link	MSSSRC1	0.	5.13371
23~Link	MSSSRC1	0.	4.95622
24~Link	MSSSRC1	0.	4.73098
25~Link	MSSSRC1	0.	4.46016
26~Link	MSSSRC1	0.	4.14637
27~Link	MSSSRC1	0.	3.79266
28~Link	MSSSRC1	0.	3.40243
29~Link	MSSSRC1	0.	2.97947
30~Link	MSSSRC1	0.	2.52785
31~Link	MSSSRC1	0.	2.05194
32~Link	MSSSRC1	0.	1.55635
33~Link	MSSSRC1	0.	1.04585
34~Link	MSSSRC1	0.	0.52539
35~Link	MSSSRC1	0.	0.01466
36~Link	MSSSRC1	0.	-0.51983
37~Link	MSSSRC1	0.	-1.03838
SumAccelUX	MSSSRC1	0.	2.97963
SumAccelUY	MSSSRC1	0.	2.97963
SumAccelUZ	MSSSRC1	0.	2.97963

6.2. Base reactions

Table 19: Base Reactions

Table 19: Base Reactions

OutputCase	StepType	GlobalFX	GlobalFY	GlobalFZ	GlobalMX	GlobalMY	GlobalMZ
		KN	KN	KN	KN-m	KN-m	KN-m
SLE	Max	1.098E-07	-2.596E-16	151.786	1.165E-15	0.1338	6.068E-17
SLE	Min	1.098E-07	-2.596E-16	151.786	1.165E-15	0.1338	6.068E-17
SLU	Max	1.427E-07	-3.407E-16	197.322	1.511E-15	0.1739	7.083E-17
SLU	Min	1.427E-07	-3.407E-16	197.322	1.511E-15	0.1739	7.083E-17

7. Joint results

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

Table 20: Joint Displacements, Part 1 of 2

Table 20: Joint Displacements, Part 1 of 2

Joint	OutputCase	StepType	U1	U2	U3	R1	R2
			m	m	m	Radians	Radians
1	SLE	Max	0.	0.	0.	2.332E-09	-3.217E-06
1	SLE	Min	0.	0.	0.	2.332E-09	-3.217E-06
1	SLU	Max	0.	0.	0.	3.032E-09	-4.182E-06
1	SLU	Min	0.	0.	0.	3.032E-09	-4.182E-06
2	SLE	Max	-1.271E-06	-1.210E-09	-4.846E-06	2.332E-09	-2.772E-06
2	SLE	Min	-1.271E-06	-1.210E-09	-4.846E-06	2.332E-09	-2.772E-06
2	SLU	Max	-1.652E-06	-1.572E-09	-6.300E-06	3.032E-09	-3.604E-06
2	SLU	Min	-1.652E-06	-1.572E-09	-6.300E-06	3.032E-09	-3.604E-06
3	SLE	Max	-2.489E-06	-2.456E-09	-9.533E-06	2.332E-09	-2.526E-06
3	SLE	Min	-2.489E-06	-2.456E-09	-9.533E-06	2.332E-09	-2.526E-06
3	SLU	Max	-3.236E-06	-3.193E-09	-0.000012	3.032E-09	-3.284E-06
3	SLU	Min	-3.236E-06	-3.193E-09	-0.000012	3.032E-09	-3.284E-06
4	SLE	Max	-4.053E-06	-3.647E-09	-0.000014	2.332E-09	-2.656E-06
4	SLE	Min	-4.053E-06	-3.647E-09	-0.000014	2.332E-09	-2.656E-06
4	SLU	Max	-5.268E-06	-4.742E-09	-0.000018	3.032E-09	-3.453E-06
4	SLU	Min	-5.268E-06	-4.742E-09	-0.000018	3.032E-09	-3.453E-06
5	SLE	Max	-6.067E-06	-4.861E-09	-0.000018	2.332E-09	-2.935E-06
5	SLE	Min	-6.067E-06	-4.861E-09	-0.000018	2.332E-09	-2.935E-06
5	SLU	Max	-7.888E-06	-6.320E-09	-0.000023	3.032E-09	-3.816E-06
5	SLU	Min	-7.888E-06	-6.320E-09	-0.000023	3.032E-09	-3.816E-06
6	SLE	Max	-8.687E-06	-6.052E-09	-0.000021	2.332E-09	-3.621E-06
6	SLE	Min	-8.687E-06	-6.052E-09	-0.000021	2.332E-09	-3.621E-06
6	SLU	Max	-0.000011	-7.868E-09	-0.000027	3.032E-09	-4.708E-06
6	SLU	Min	-0.000011	-7.868E-09	-0.000027	3.032E-09	-4.708E-06
7	SLE	Max	-0.000012	-7.208E-09	-0.000024	2.332E-09	-4.423E-06
7	SLE	Min	-0.000012	-7.208E-09	-0.000024	2.332E-09	-4.423E-06
7	SLU	Max	-0.000016	-9.370E-09	-0.000031	3.032E-09	-5.749E-06
7	SLU	Min	-0.000016	-9.370E-09	-0.000031	3.032E-09	-5.749E-06
8	SLE	Max	-0.000016	-8.318E-09	-0.000026	2.332E-09	-5.304E-06
8	SLE	Min	-0.000016	-8.318E-09	-0.000026	2.332E-09	-5.304E-06
8	SLU	Max	-0.000021	-1.081E-08	-0.000034	3.032E-09	-6.895E-06
8	SLU	Min	-0.000021	-1.081E-08	-0.000034	3.032E-09	-6.895E-06
9	SLE	Max	-0.00002	-9.371E-09	-0.000027	2.332E-09	-6.309E-06
9	SLE	Min	-0.00002	-9.371E-09	-0.000027	2.332E-09	-6.309E-06
9	SLU	Max	-0.000026	-1.218E-08	-0.000036	3.032E-09	-8.201E-06
9	SLU	Min	-0.000026	-1.218E-08	-0.000036	3.032E-09	-8.201E-06
10	SLE	Max	-0.000025	-1.036E-08	-0.000028	2.332E-09	-6.542E-06
10	SLE	Min	-0.000025	-1.036E-08	-0.000028	2.332E-09	-6.542E-06
10	SLU	Max	-0.000032	-1.346E-08	-0.000036	3.032E-09	-8.505E-06
10	SLU	Min	-0.000032	-1.346E-08	-0.000036	3.032E-09	-8.505E-06
11	SLE	Max	-0.000029	-1.127E-08	-0.000028	2.332E-09	-2.621E-06
11	SLE	Min	-0.000029	-1.127E-08	-0.000028	2.332E-09	-2.621E-06
11	SLU	Max	-0.000038	-1.465E-08	-0.000037	3.032E-09	-3.407E-06
11	SLU	Min	-0.000038	-1.465E-08	-0.000037	3.032E-09	-3.407E-06
12	SLE	Max	-0.000031	-1.209E-08	-0.000031	2.332E-09	9.749E-06
12	SLE	Min	-0.000031	-1.209E-08	-0.000031	2.332E-09	9.749E-06
12	SLU	Max	-0.00004	-1.572E-08	-0.00004	3.032E-09	0.000013
12	SLU	Min	-0.00004	-1.572E-08	-0.00004	3.032E-09	0.000013
13	SLE	Max	-0.000027	-1.282E-08	-0.00004	2.332E-09	0.000028
13	SLE	Min	-0.000027	-1.282E-08	-0.00004	2.332E-09	0.000028
13	SLU	Max	-0.000035	-1.667E-08	-0.000053	3.032E-09	0.000037

Table 20: Joint Displacements, Part 1 of 2

Joint	OutputCase	StepType	U1	U2	U3	R1	R2
			m	m	m	Radians	Radians
13	SLU	Min	-0.000035	-1.667E-08	-0.000053	3.032E-09	0.000037
14	SLE	Max	-0.000019	-1.346E-08	-0.000059	2.332E-09	0.000045
14	SLE	Min	-0.000019	-1.346E-08	-0.000059	2.332E-09	0.000045
14	SLU	Max	-0.000025	-1.749E-08	-0.000076	3.032E-09	0.000059
14	SLU	Min	-0.000025	-1.749E-08	-0.000076	3.032E-09	0.000059
15	SLE	Max	-9.951E-06	-1.398E-08	-0.000084	2.332E-09	0.000055
15	SLE	Min	-9.951E-06	-1.398E-08	-0.000084	2.332E-09	0.000055
15	SLU	Max	-0.000013	-1.818E-08	-0.00011	3.032E-09	0.000072
15	SLU	Min	-0.000013	-1.818E-08	-0.00011	3.032E-09	0.000072
16	SLE	Max	-2.266E-06	-1.440E-08	-0.000113	2.332E-09	0.000054
16	SLE	Min	-2.266E-06	-1.440E-08	-0.000113	2.332E-09	0.000054
16	SLU	Max	-2.945E-06	-1.871E-08	-0.000147	3.032E-09	0.00007
16	SLU	Min	-2.945E-06	-1.871E-08	-0.000147	3.032E-09	0.00007
17	SLE	Max	1.679E-06	-1.469E-08	-0.000139	2.332E-09	0.000042
17	SLE	Min	1.679E-06	-1.469E-08	-0.000139	2.332E-09	0.000042
17	SLU	Max	2.183E-06	-1.910E-08	-0.00018	3.032E-09	0.000055
17	SLU	Min	2.183E-06	-1.910E-08	-0.00018	3.032E-09	0.000055
18	SLE	Max	1.988E-06	-1.487E-08	-0.000157	2.332E-09	0.000023
18	SLE	Min	1.988E-06	-1.487E-08	-0.000157	2.332E-09	0.000023
18	SLU	Max	2.584E-06	-1.934E-08	-0.000204	3.032E-09	0.00003
18	SLU	Min	2.584E-06	-1.934E-08	-0.000204	3.032E-09	0.00003
19	SLE	Max	-1.185E-09	-1.493E-08	-0.000163	2.332E-09	-2.480E-10
19	SLE	Min	-1.185E-09	-1.493E-08	-0.000163	2.332E-09	-2.480E-10
19	SLU	Max	-1.540E-09	-1.942E-08	-0.000212	3.032E-09	-3.224E-10
19	SLU	Min	-1.540E-09	-1.942E-08	-0.000212	3.032E-09	-3.224E-10
20	SLE	Max	-1.990E-06	-1.487E-08	-0.000157	2.332E-09	-0.000023
20	SLE	Min	-1.990E-06	-1.487E-08	-0.000157	2.332E-09	-0.000023
20	SLU	Max	-2.587E-06	-1.934E-08	-0.000204	3.032E-09	-0.00003
20	SLU	Min	-2.587E-06	-1.934E-08	-0.000204	3.032E-09	-0.00003
21	SLE	Max	-1.682E-06	-1.469E-08	-0.000139	2.332E-09	-0.000042
21	SLE	Min	-1.682E-06	-1.469E-08	-0.000139	2.332E-09	-0.000042
21	SLU	Max	-2.186E-06	-1.910E-08	-0.00018	3.032E-09	-0.000055
21	SLU	Min	-2.186E-06	-1.910E-08	-0.00018	3.032E-09	-0.000055
22	SLE	Max	2.263E-06	-1.440E-08	-0.000113	2.332E-09	-0.000054
22	SLE	Min	2.263E-06	-1.440E-08	-0.000113	2.332E-09	-0.000054
22	SLU	Max	2.942E-06	-1.871E-08	-0.000147	3.032E-09	-0.00007
22	SLU	Min	2.942E-06	-1.871E-08	-0.000147	3.032E-09	-0.00007
23	SLE	Max	9.949E-06	-1.398E-08	-0.000084	2.332E-09	-0.000055
23	SLE	Min	9.949E-06	-1.398E-08	-0.000084	2.332E-09	-0.000055
23	SLU	Max	0.000013	-1.818E-08	-0.00011	3.032E-09	-0.000072
23	SLU	Min	0.000013	-1.818E-08	-0.00011	3.032E-09	-0.000072
24	SLE	Max	0.000019	-1.346E-08	-0.000059	2.332E-09	-0.000045
24	SLE	Min	0.000019	-1.346E-08	-0.000059	2.332E-09	-0.000045
24	SLU	Max	0.000025	-1.749E-08	-0.000076	3.032E-09	-0.000059
24	SLU	Min	0.000025	-1.749E-08	-0.000076	3.032E-09	-0.000059
25	SLE	Max	0.000027	-1.282E-08	-0.00004	2.332E-09	-0.000028
25	SLE	Min	0.000027	-1.282E-08	-0.00004	2.332E-09	-0.000028
25	SLU	Max	0.000035	-1.667E-08	-0.000053	3.032E-09	-0.000037
25	SLU	Min	0.000035	-1.667E-08	-0.000053	3.032E-09	-0.000037
26	SLE	Max	0.000031	-1.209E-08	-0.000031	2.332E-09	-9.750E-06
26	SLE	Min	0.000031	-1.209E-08	-0.000031	2.332E-09	-9.750E-06
26	SLU	Max	0.00004	-1.572E-08	-0.00004	3.032E-09	-0.000013
26	SLU	Min	0.00004	-1.572E-08	-0.00004	3.032E-09	-0.000013
27	SLE	Max	0.000029	-1.127E-08	-0.000028	2.332E-09	2.620E-06
27	SLE	Min	0.000029	-1.127E-08	-0.000028	2.332E-09	2.620E-06
27	SLU	Max	0.000038	-1.465E-08	-0.000037	3.032E-09	3.407E-06
27	SLU	Min	0.000038	-1.465E-08	-0.000037	3.032E-09	3.407E-06
28	SLE	Max	0.000025	-1.036E-08	-0.000028	2.332E-09	6.542E-06

Table 20: Joint Displacements, Part 1 of 2

Joint	OutputCase	StepType	U1	U2	U3	R1	R2
			m	m	m	Radians	Radians
28	SLE	Min	0.000025	-1.036E-08	-0.000028	2.332E-09	6.542E-06
28	SLU	Max	0.000032	-1.346E-08	-0.000036	3.032E-09	8.504E-06
28	SLU	Min	0.000032	-1.346E-08	-0.000036	3.032E-09	8.504E-06
29	SLE	Max	0.00002	-9.371E-09	-0.000027	2.332E-09	6.308E-06
29	SLE	Min	0.00002	-9.371E-09	-0.000027	2.332E-09	6.308E-06
29	SLU	Max	0.000026	-1.218E-08	-0.000036	3.032E-09	8.201E-06
29	SLU	Min	0.000026	-1.218E-08	-0.000036	3.032E-09	8.201E-06
30	SLE	Max	0.000016	-8.318E-09	-0.000026	2.332E-09	5.303E-06
30	SLE	Min	0.000016	-8.318E-09	-0.000026	2.332E-09	5.303E-06
30	SLU	Max	0.000021	-1.081E-08	-0.000034	3.032E-09	6.894E-06
30	SLU	Min	0.000021	-1.081E-08	-0.000034	3.032E-09	6.894E-06
31	SLE	Max	0.000012	-7.208E-09	-0.000024	2.332E-09	4.422E-06
31	SLE	Min	0.000012	-7.208E-09	-0.000024	2.332E-09	4.422E-06
31	SLU	Max	0.000016	-9.370E-09	-0.000031	3.032E-09	5.749E-06
31	SLU	Min	0.000016	-9.370E-09	-0.000031	3.032E-09	5.749E-06
32	SLE	Max	8.687E-06	-6.052E-09	-0.000021	2.332E-09	3.620E-06
32	SLE	Min	8.687E-06	-6.052E-09	-0.000021	2.332E-09	3.620E-06
32	SLU	Max	0.000011	-7.867E-09	-0.000027	3.032E-09	4.707E-06
32	SLU	Min	0.000011	-7.867E-09	-0.000027	3.032E-09	4.707E-06
33	SLE	Max	6.067E-06	-4.861E-09	-0.000018	2.332E-09	2.935E-06
33	SLE	Min	6.067E-06	-4.861E-09	-0.000018	2.332E-09	2.935E-06
33	SLU	Max	7.887E-06	-6.319E-09	-0.000023	3.032E-09	3.815E-06
33	SLU	Min	7.887E-06	-6.319E-09	-0.000023	3.032E-09	3.815E-06
34	SLE	Max	4.052E-06	-3.647E-09	-0.000014	2.332E-09	2.660E-06
34	SLE	Min	4.052E-06	-3.647E-09	-0.000014	2.332E-09	2.660E-06
34	SLU	Max	5.267E-06	-4.741E-09	-0.000018	3.032E-09	3.458E-06
34	SLU	Min	5.267E-06	-4.741E-09	-0.000018	3.032E-09	3.458E-06
35	SLE	Max	2.485E-06	-2.456E-09	-9.531E-06	2.332E-09	2.536E-06
35	SLE	Min	2.485E-06	-2.456E-09	-9.531E-06	2.332E-09	2.536E-06
35	SLU	Max	3.230E-06	-3.193E-09	-0.000012	3.032E-09	3.297E-06
35	SLU	Min	3.230E-06	-3.193E-09	-0.000012	3.032E-09	3.297E-06
36	SLE	Max	1.262E-06	-1.209E-09	-4.844E-06	2.332E-09	2.766E-06
36	SLE	Min	1.262E-06	-1.209E-09	-4.844E-06	2.332E-09	2.766E-06
36	SLU	Max	1.641E-06	-1.572E-09	-6.297E-06	3.032E-09	3.596E-06
36	SLU	Min	1.641E-06	-1.572E-09	-6.297E-06	3.032E-09	3.596E-06
37	SLE	Max	0.	0.	0.	2.332E-09	3.192E-06
37	SLE	Min	0.	0.	0.	2.332E-09	3.192E-06
37	SLU	Max	0.	0.	0.	3.032E-09	4.150E-06
37	SLU	Min	0.	0.	0.	3.032E-09	4.150E-06
1~Link	SLE	Max	0.	0.	0.	0.	0.
1~Link	SLE	Min	0.	0.	0.	0.	0.
1~Link	SLU	Max	0.	0.	0.	0.	0.
1~Link	SLU	Min	0.	0.	0.	0.	0.
2~Link	SLE	Max	0.	0.	0.	0.	0.
2~Link	SLE	Min	0.	0.	0.	0.	0.
2~Link	SLU	Max	0.	0.	0.	0.	0.
2~Link	SLU	Min	0.	0.	0.	0.	0.
3~Link	SLE	Max	0.	0.	0.	0.	0.
3~Link	SLE	Min	0.	0.	0.	0.	0.
3~Link	SLU	Max	0.	0.	0.	0.	0.
3~Link	SLU	Min	0.	0.	0.	0.	0.
4~Link	SLE	Max	0.	0.	0.	0.	0.
4~Link	SLE	Min	0.	0.	0.	0.	0.
4~Link	SLU	Max	0.	0.	0.	0.	0.
4~Link	SLU	Min	0.	0.	0.	0.	0.
5~Link	SLE	Max	0.	0.	0.	0.	0.
5~Link	SLE	Min	0.	0.	0.	0.	0.
5~Link	SLU	Max	0.	0.	0.	0.	0.

Table 20: Joint Displacements, Part 1 of 2

Joint	OutputCase	StepType	U1	U2	U3	R1	R2
			m	m	m	Radians	Radians
5~Link	SLU	Min	0.	0.	0.	0.	0.
6~Link	SLE	Max	0.	0.	0.	0.	0.
6~Link	SLE	Min	0.	0.	0.	0.	0.
6~Link	SLU	Max	0.	0.	0.	0.	0.
6~Link	SLU	Min	0.	0.	0.	0.	0.
7~Link	SLE	Max	0.	0.	0.	0.	0.
7~Link	SLE	Min	0.	0.	0.	0.	0.
7~Link	SLU	Max	0.	0.	0.	0.	0.
7~Link	SLU	Min	0.	0.	0.	0.	0.
8~Link	SLE	Max	0.	0.	0.	0.	0.
8~Link	SLE	Min	0.	0.	0.	0.	0.
8~Link	SLU	Max	0.	0.	0.	0.	0.
8~Link	SLU	Min	0.	0.	0.	0.	0.
9~Link	SLE	Max	0.	0.	0.	0.	0.
9~Link	SLE	Min	0.	0.	0.	0.	0.
9~Link	SLU	Max	0.	0.	0.	0.	0.
9~Link	SLU	Min	0.	0.	0.	0.	0.
10~Link	SLE	Max	0.	0.	0.	0.	0.
10~Link	SLE	Min	0.	0.	0.	0.	0.
10~Link	SLU	Max	0.	0.	0.	0.	0.
10~Link	SLU	Min	0.	0.	0.	0.	0.
11~Link	SLE	Max	0.	0.	0.	0.	0.
11~Link	SLE	Min	0.	0.	0.	0.	0.
11~Link	SLU	Max	0.	0.	0.	0.	0.
11~Link	SLU	Min	0.	0.	0.	0.	0.
12~Link	SLE	Max	0.	0.	0.	0.	0.
12~Link	SLE	Min	0.	0.	0.	0.	0.
12~Link	SLU	Max	0.	0.	0.	0.	0.
12~Link	SLU	Min	0.	0.	0.	0.	0.
13~Link	SLE	Max	0.	0.	0.	0.	0.
13~Link	SLE	Min	0.	0.	0.	0.	0.
13~Link	SLU	Max	0.	0.	0.	0.	0.
13~Link	SLU	Min	0.	0.	0.	0.	0.
14~Link	SLE	Max	0.	0.	0.	0.	0.
14~Link	SLE	Min	0.	0.	0.	0.	0.
14~Link	SLU	Max	0.	0.	0.	0.	0.
14~Link	SLU	Min	0.	0.	0.	0.	0.
15~Link	SLE	Max	0.	0.	0.	0.	0.
15~Link	SLE	Min	0.	0.	0.	0.	0.
15~Link	SLU	Max	0.	0.	0.	0.	0.
15~Link	SLU	Min	0.	0.	0.	0.	0.
16~Link	SLE	Max	0.	0.	0.	0.	0.
16~Link	SLE	Min	0.	0.	0.	0.	0.
16~Link	SLU	Max	0.	0.	0.	0.	0.
16~Link	SLU	Min	0.	0.	0.	0.	0.
17~Link	SLE	Max	0.	0.	0.	0.	0.
17~Link	SLE	Min	0.	0.	0.	0.	0.
17~Link	SLU	Max	0.	0.	0.	0.	0.
17~Link	SLU	Min	0.	0.	0.	0.	0.
18~Link	SLE	Max	0.	0.	0.	0.	0.
18~Link	SLE	Min	0.	0.	0.	0.	0.
18~Link	SLU	Max	0.	0.	0.	0.	0.
18~Link	SLU	Min	0.	0.	0.	0.	0.
19~Link	SLE	Max	0.	0.	0.	0.	0.
19~Link	SLE	Min	0.	0.	0.	0.	0.
19~Link	SLU	Max	0.	0.	0.	0.	0.
19~Link	SLU	Min	0.	0.	0.	0.	0.
20~Link	SLE	Max	0.	0.	0.	0.	0.

Table 20: Joint Displacements, Part 1 of 2

Joint	OutputCase	StepType	U1	U2	U3	R1	R2
			m	m	m	Radians	Radians
20~Link	SLE	Min	0.	0.	0.	0.	0.
20~Link	SLU	Max	0.	0.	0.	0.	0.
20~Link	SLU	Min	0.	0.	0.	0.	0.
21~Link	SLE	Max	0.	0.	0.	0.	0.
21~Link	SLE	Min	0.	0.	0.	0.	0.
21~Link	SLU	Max	0.	0.	0.	0.	0.
21~Link	SLU	Min	0.	0.	0.	0.	0.
22~Link	SLE	Max	0.	0.	0.	0.	0.
22~Link	SLE	Min	0.	0.	0.	0.	0.
22~Link	SLU	Max	0.	0.	0.	0.	0.
22~Link	SLU	Min	0.	0.	0.	0.	0.
23~Link	SLE	Max	0.	0.	0.	0.	0.
23~Link	SLE	Min	0.	0.	0.	0.	0.
23~Link	SLU	Max	0.	0.	0.	0.	0.
23~Link	SLU	Min	0.	0.	0.	0.	0.
24~Link	SLE	Max	0.	0.	0.	0.	0.
24~Link	SLE	Min	0.	0.	0.	0.	0.
24~Link	SLU	Max	0.	0.	0.	0.	0.
24~Link	SLU	Min	0.	0.	0.	0.	0.
25~Link	SLE	Max	0.	0.	0.	0.	0.
25~Link	SLE	Min	0.	0.	0.	0.	0.
25~Link	SLU	Max	0.	0.	0.	0.	0.
25~Link	SLU	Min	0.	0.	0.	0.	0.
26~Link	SLE	Max	0.	0.	0.	0.	0.
26~Link	SLE	Min	0.	0.	0.	0.	0.
26~Link	SLU	Max	0.	0.	0.	0.	0.
26~Link	SLU	Min	0.	0.	0.	0.	0.
27~Link	SLE	Max	0.	0.	0.	0.	0.
27~Link	SLE	Min	0.	0.	0.	0.	0.
27~Link	SLU	Max	0.	0.	0.	0.	0.
27~Link	SLU	Min	0.	0.	0.	0.	0.
28~Link	SLE	Max	0.	0.	0.	0.	0.
28~Link	SLE	Min	0.	0.	0.	0.	0.
28~Link	SLU	Max	0.	0.	0.	0.	0.
28~Link	SLU	Min	0.	0.	0.	0.	0.
29~Link	SLE	Max	0.	0.	0.	0.	0.
29~Link	SLE	Min	0.	0.	0.	0.	0.
29~Link	SLU	Max	0.	0.	0.	0.	0.
29~Link	SLU	Min	0.	0.	0.	0.	0.
30~Link	SLE	Max	0.	0.	0.	0.	0.
30~Link	SLE	Min	0.	0.	0.	0.	0.
30~Link	SLU	Max	0.	0.	0.	0.	0.
30~Link	SLU	Min	0.	0.	0.	0.	0.
31~Link	SLE	Max	0.	0.	0.	0.	0.
31~Link	SLE	Min	0.	0.	0.	0.	0.
31~Link	SLU	Max	0.	0.	0.	0.	0.
31~Link	SLU	Min	0.	0.	0.	0.	0.
32~Link	SLE	Max	0.	0.	0.	0.	0.
32~Link	SLE	Min	0.	0.	0.	0.	0.
32~Link	SLU	Max	0.	0.	0.	0.	0.
32~Link	SLU	Min	0.	0.	0.	0.	0.
33~Link	SLE	Max	0.	0.	0.	0.	0.
33~Link	SLE	Min	0.	0.	0.	0.	0.
33~Link	SLU	Max	0.	0.	0.	0.	0.
33~Link	SLU	Min	0.	0.	0.	0.	0.
34~Link	SLE	Max	0.	0.	0.	0.	0.
34~Link	SLE	Min	0.	0.	0.	0.	0.
34~Link	SLU	Max	0.	0.	0.	0.	0.

Table 20: Joint Displacements, Part 1 of 2

Joint	OutputCase	StepType	U1	U2	U3	R1	R2
			m	m	m	Radians	Radians
34~Link	SLU	Min	0.	0.	0.	0.	0.
35~Link	SLE	Max	0.	0.	0.	0.	0.
35~Link	SLE	Min	0.	0.	0.	0.	0.
35~Link	SLU	Max	0.	0.	0.	0.	0.
35~Link	SLU	Min	0.	0.	0.	0.	0.
36~Link	SLE	Max	0.	0.	0.	0.	0.
36~Link	SLE	Min	0.	0.	0.	0.	0.
36~Link	SLU	Max	0.	0.	0.	0.	0.
36~Link	SLU	Min	0.	0.	0.	0.	0.
37~Link	SLE	Max	0.	0.	0.	0.	0.
37~Link	SLE	Min	0.	0.	0.	0.	0.
37~Link	SLU	Max	0.	0.	0.	0.	0.
37~Link	SLU	Min	0.	0.	0.	0.	0.

Table 20: Joint Displacements, Part 2 of 2

Table 20: Joint Displacements, Part 2 of 2

Joint	R3
	Radians
1	1.643E-14
1	1.643E-14
1	2.136E-14
1	2.136E-14
2	1.643E-14
2	1.643E-14
2	2.136E-14
2	2.136E-14
3	1.643E-14
3	1.643E-14
3	2.136E-14
3	2.136E-14
4	1.643E-14
4	1.643E-14
4	2.136E-14
4	2.136E-14
5	1.643E-14
5	1.643E-14
5	2.136E-14
5	2.136E-14
6	1.643E-14
6	1.643E-14
6	2.136E-14
6	2.136E-14
7	1.643E-14
7	1.643E-14
7	2.136E-14
7	2.136E-14
8	1.643E-14
8	1.643E-14
8	2.136E-14
8	2.136E-14
9	1.643E-14
9	1.643E-14
9	2.136E-14
9	2.136E-14
10	1.643E-14

Table 20: Joint Displacements, Part 2 of 2

Joint	R3
	Radians
10	1.643E-14
10	2.136E-14
10	2.136E-14
11	1.643E-14
11	1.643E-14
11	2.136E-14
11	2.136E-14
12	1.643E-14
12	1.643E-14
12	2.136E-14
12	2.136E-14
13	1.643E-14
13	1.643E-14
13	2.136E-14
13	2.136E-14
14	1.643E-14
14	1.643E-14
14	2.136E-14
14	2.136E-14
15	1.643E-14
15	1.643E-14
15	2.136E-14
15	2.136E-14
16	1.643E-14
16	1.643E-14
16	2.136E-14
16	2.136E-14
17	1.643E-14
17	1.643E-14
17	2.136E-14
17	2.136E-14
18	1.643E-14
18	1.643E-14
18	2.136E-14
18	2.136E-14
19	1.643E-14
19	1.643E-14
19	2.136E-14
19	2.136E-14
20	1.643E-14
20	1.643E-14
20	2.136E-14
20	2.136E-14
21	1.643E-14
21	1.643E-14
21	2.136E-14
21	2.136E-14
22	1.643E-14
22	1.643E-14
22	2.136E-14
22	2.136E-14
23	1.643E-14
23	1.643E-14
23	2.136E-14
23	2.136E-14
24	1.643E-14
24	1.643E-14

Table 20: Joint Displacements, Part 2 of 2

Joint	R3
	Radians
24	2.136E-14
24	2.136E-14
25	1.643E-14
25	1.643E-14
25	2.136E-14
25	2.136E-14
26	1.643E-14
26	1.643E-14
26	2.136E-14
26	2.136E-14
27	1.643E-14
27	1.643E-14
27	2.136E-14
27	2.136E-14
28	1.643E-14
28	1.643E-14
28	2.136E-14
28	2.136E-14
29	1.643E-14
29	1.643E-14
29	2.136E-14
29	2.136E-14
30	1.643E-14
30	1.643E-14
30	2.136E-14
30	2.136E-14
31	1.643E-14
31	1.643E-14
31	2.136E-14
31	2.136E-14
32	1.643E-14
32	1.643E-14
32	2.136E-14
32	2.136E-14
33	1.643E-14
33	1.643E-14
33	2.136E-14
33	2.136E-14
34	1.643E-14
34	1.643E-14
34	2.136E-14
34	2.136E-14
35	1.643E-14
35	1.643E-14
35	2.136E-14
35	2.136E-14
36	1.643E-14
36	1.643E-14
36	2.136E-14
36	2.136E-14
37	1.643E-14
37	1.643E-14
37	2.136E-14
37	2.136E-14
1~Link	0.
1~Link	0.
1~Link	0.

Table 20: Joint Displacements, Part 2 of 2

Joint	R3
	Radians
1~Link	0.
2~Link	0.
2~Link	0.
2~Link	0.
2~Link	0.
3~Link	0.
3~Link	0.
3~Link	0.
3~Link	0.
4~Link	0.
4~Link	0.
4~Link	0.
4~Link	0.
5~Link	0.
5~Link	0.
5~Link	0.
5~Link	0.
6~Link	0.
6~Link	0.
6~Link	0.
6~Link	0.
7~Link	0.
7~Link	0.
7~Link	0.
7~Link	0.
8~Link	0.
8~Link	0.
8~Link	0.
8~Link	0.
9~Link	0.
9~Link	0.
9~Link	0.
9~Link	0.
10~Link	0.
10~Link	0.
10~Link	0.
10~Link	0.
11~Link	0.
11~Link	0.
11~Link	0.
11~Link	0.
12~Link	0.
12~Link	0.
12~Link	0.
12~Link	0.
13~Link	0.
13~Link	0.
13~Link	0.
13~Link	0.
14~Link	0.
14~Link	0.
14~Link	0.
14~Link	0.
15~Link	0.
15~Link	0.
15~Link	0.
15~Link	0.

Table 20: Joint Displacements, Part 2 of 2

Joint	R3
	Radians
16~Link	0.
16~Link	0.
16~Link	0.
16~Link	0.
17~Link	0.
17~Link	0.
17~Link	0.
17~Link	0.
18~Link	0.
18~Link	0.
18~Link	0.
18~Link	0.
19~Link	0.
19~Link	0.
19~Link	0.
19~Link	0.
20~Link	0.
20~Link	0.
20~Link	0.
20~Link	0.
21~Link	0.
21~Link	0.
21~Link	0.
21~Link	0.
22~Link	0.
22~Link	0.
22~Link	0.
22~Link	0.
23~Link	0.
23~Link	0.
23~Link	0.
23~Link	0.
24~Link	0.
24~Link	0.
24~Link	0.
24~Link	0.
25~Link	0.
25~Link	0.
25~Link	0.
25~Link	0.
26~Link	0.
26~Link	0.
26~Link	0.
26~Link	0.
27~Link	0.
27~Link	0.
27~Link	0.
27~Link	0.
28~Link	0.
28~Link	0.
28~Link	0.
28~Link	0.
29~Link	0.
29~Link	0.
29~Link	0.
29~Link	0.
30~Link	0.

Table 20: Joint Displacements, Part 2 of 2

Joint	R3
	Radians
30~Link	0.
30~Link	0.
30~Link	0.
31~Link	0.
31~Link	0.
31~Link	0.
31~Link	0.
32~Link	0.
32~Link	0.
32~Link	0.
32~Link	0.
33~Link	0.
33~Link	0.
33~Link	0.
33~Link	0.
34~Link	0.
34~Link	0.
34~Link	0.
34~Link	0.
35~Link	0.
35~Link	0.
35~Link	0.
35~Link	0.
36~Link	0.
36~Link	0.
36~Link	0.
36~Link	0.
37~Link	0.
37~Link	0.
37~Link	0.
37~Link	0.

Table 21: Joint Reactions, Part 1 of 2

Table 21: Joint Reactions, Part 1 of 2

Joint	OutputCase	StepType	F1	F2	F3	M1	M2
			KN	KN	KN	KN-m	KN-m
1	SLE	Max	-6.195	7.927E-16	90.111	0.	0.
1	SLE	Min	-6.195	7.927E-16	90.111	0.	0.
1	SLU	Max	-8.054	1.030E-15	117.145	0.	0.
1	SLU	Min	-8.054	1.030E-15	117.145	0.	0.
2	SLE	Max	3.948	-4.842E-16	0.195	0.	0.
2	SLE	Min	3.948	-4.842E-16	0.195	0.	0.
2	SLU	Max	5.132	-6.294E-16	0.254	0.	0.
2	SLU	Min	5.132	-6.294E-16	0.254	0.	0.
3	SLE	Max	6.217	-4.440E-16	-0.039	0.	0.
3	SLE	Min	6.217	-4.440E-16	-0.039	0.	0.
3	SLU	Max	8.082	-5.772E-16	-0.051	0.	0.
3	SLU	Min	8.082	-5.772E-16	-0.051	0.	0.
4	SLE	Max	6.976	0.	-0.593	0.	0.
4	SLE	Min	6.976	0.	-0.593	0.	0.
4	SLU	Max	9.068	0.	-0.771	0.	0.
4	SLU	Min	9.068	0.	-0.771	0.	0.
5	SLE	Max	6.603	0.	-1.177	0.	0.
5	SLE	Min	6.603	0.	-1.177	0.	0.

Table 21: Joint Reactions, Part 1 of 2

Joint	OutputCase	StepType	F1	F2	F3	M1	M2
			KN	KN	KN	KN-m	KN-m
5	SLU	Max	8.584	0.	-1.531	0.	0.
5	SLU	Min	8.584	0.	-1.531	0.	0.
6	SLE	Max	5.696	0.	-1.564	0.	0.
6	SLE	Min	5.696	0.	-1.564	0.	0.
6	SLU	Max	7.405	0.	-2.033	0.	0.
6	SLU	Min	7.405	0.	-2.033	0.	0.
7	SLE	Max	4.794	0.	-1.791	0.	0.
7	SLE	Min	4.794	0.	-1.791	0.	0.
7	SLU	Max	6.233	0.	-2.329	0.	0.
7	SLU	Min	6.233	0.	-2.329	0.	0.
8	SLE	Max	4.032	0.	-1.926	0.	0.
8	SLE	Min	4.032	0.	-1.926	0.	0.
8	SLU	Max	5.241	0.	-2.504	0.	0.
8	SLU	Min	5.241	0.	-2.504	0.	0.
9	SLE	Max	3.679	0.	-2.196	0.	0.
9	SLE	Min	3.679	0.	-2.196	0.	0.
9	SLU	Max	4.783	0.	-2.855	0.	0.
9	SLU	Min	4.783	0.	-2.855	0.	0.
10	SLE	Max	3.646	0.	-2.695	0.	0.
10	SLE	Min	3.646	0.	-2.695	0.	0.
10	SLU	Max	4.74	0.	-3.504	0.	0.
10	SLU	Min	4.74	0.	-3.504	0.	0.
11	SLE	Max	2.691	0.	-2.432	0.	0.
11	SLE	Min	2.691	0.	-2.432	0.	0.
11	SLU	Max	3.498	0.	-3.161	0.	0.
11	SLU	Min	3.498	0.	-3.161	0.	0.
12	SLE	Max	0.	0.	0.	0.	0.
12	SLE	Min	0.	0.	0.	0.	0.
12	SLU	Max	0.	0.	0.	0.	0.
12	SLU	Min	0.	0.	0.	0.	0.
13	SLE	Max	0.	0.	0.	0.	0.
13	SLE	Min	0.	0.	0.	0.	0.
13	SLU	Max	0.	0.	0.	0.	0.
13	SLU	Min	0.	0.	0.	0.	0.
14	SLE	Max	0.	0.	0.	0.	0.
14	SLE	Min	0.	0.	0.	0.	0.
14	SLU	Max	0.	0.	0.	0.	0.
14	SLU	Min	0.	0.	0.	0.	0.
15	SLE	Max	0.	0.	0.	0.	0.
15	SLE	Min	0.	0.	0.	0.	0.
15	SLU	Max	0.	0.	0.	0.	0.
15	SLU	Min	0.	0.	0.	0.	0.
16	SLE	Max	0.	0.	0.	0.	0.
16	SLE	Min	0.	0.	0.	0.	0.
16	SLU	Max	0.	0.	0.	0.	0.
16	SLU	Min	0.	0.	0.	0.	0.
17	SLE	Max	0.	0.	0.	0.	0.
17	SLE	Min	0.	0.	0.	0.	0.
17	SLU	Max	0.	0.	0.	0.	0.
17	SLU	Min	0.	0.	0.	0.	0.
18	SLE	Max	0.	0.	0.	0.	0.
18	SLE	Min	0.	0.	0.	0.	0.
18	SLU	Max	0.	0.	0.	0.	0.
18	SLU	Min	0.	0.	0.	0.	0.
19	SLE	Max	0.	0.	0.	0.	0.
19	SLE	Min	0.	0.	0.	0.	0.
19	SLU	Max	0.	0.	0.	0.	0.
19	SLU	Min	0.	0.	0.	0.	0.

Table 21: Joint Reactions, Part 1 of 2

Joint	OutputCase	StepType	F1	F2	F3	M1	M2
			KN	KN	KN	KN-m	KN-m
20	SLE	Max	0.	0.	0.	0.	0.
20	SLE	Min	0.	0.	0.	0.	0.
20	SLU	Max	0.	0.	0.	0.	0.
20	SLU	Min	0.	0.	0.	0.	0.
21	SLE	Max	0.	0.	0.	0.	0.
21	SLE	Min	0.	0.	0.	0.	0.
21	SLU	Max	0.	0.	0.	0.	0.
21	SLU	Min	0.	0.	0.	0.	0.
22	SLE	Max	0.	0.	0.	0.	0.
22	SLE	Min	0.	0.	0.	0.	0.
22	SLU	Max	0.	0.	0.	0.	0.
22	SLU	Min	0.	0.	0.	0.	0.
23	SLE	Max	0.	0.	0.	0.	0.
23	SLE	Min	0.	0.	0.	0.	0.
23	SLU	Max	0.	0.	0.	0.	0.
23	SLU	Min	0.	0.	0.	0.	0.
24	SLE	Max	0.	0.	0.	0.	0.
24	SLE	Min	0.	0.	0.	0.	0.
24	SLU	Max	0.	0.	0.	0.	0.
24	SLU	Min	0.	0.	0.	0.	0.
25	SLE	Max	0.	0.	0.	0.	0.
25	SLE	Min	0.	0.	0.	0.	0.
25	SLU	Max	0.	0.	0.	0.	0.
25	SLU	Min	0.	0.	0.	0.	0.
26	SLE	Max	0.	0.	0.	0.	0.
26	SLE	Min	0.	0.	0.	0.	0.
26	SLU	Max	0.	0.	0.	0.	0.
26	SLU	Min	0.	0.	0.	0.	0.
27	SLE	Max	-2.691	0.	-2.432	0.	0.
27	SLE	Min	-2.691	0.	-2.432	0.	0.
27	SLU	Max	-3.498	0.	-3.161	0.	0.
27	SLU	Min	-3.498	0.	-3.161	0.	0.
28	SLE	Max	-3.646	0.	-2.695	0.	0.
28	SLE	Min	-3.646	0.	-2.695	0.	0.
28	SLU	Max	-4.74	0.	-3.504	0.	0.
28	SLU	Min	-4.74	0.	-3.504	0.	0.
29	SLE	Max	-3.679	0.	-2.196	0.	0.
29	SLE	Min	-3.679	0.	-2.196	0.	0.
29	SLU	Max	-4.783	0.	-2.855	0.	0.
29	SLU	Min	-4.783	0.	-2.855	0.	0.
30	SLE	Max	-4.032	0.	-1.926	0.	0.
30	SLE	Min	-4.032	0.	-1.926	0.	0.
30	SLU	Max	-5.241	0.	-2.504	0.	0.
30	SLU	Min	-5.241	0.	-2.504	0.	0.
31	SLE	Max	-4.794	0.	-1.791	0.	0.
31	SLE	Min	-4.794	0.	-1.791	0.	0.
31	SLU	Max	-6.233	0.	-2.329	0.	0.
31	SLU	Min	-6.233	0.	-2.329	0.	0.
32	SLE	Max	-5.697	0.	-1.564	0.	0.
32	SLE	Min	-5.697	0.	-1.564	0.	0.
32	SLU	Max	-7.406	0.	-2.033	0.	0.
32	SLU	Min	-7.406	0.	-2.033	0.	0.
33	SLE	Max	-6.604	0.	-1.178	0.	0.
33	SLE	Min	-6.604	0.	-1.178	0.	0.
33	SLU	Max	-8.585	0.	-1.531	0.	0.
33	SLU	Min	-8.585	0.	-1.531	0.	0.
34	SLE	Max	-6.974	0.	-0.593	0.	0.
34	SLE	Min	-6.974	0.	-0.593	0.	0.

Table 21: Joint Reactions, Part 1 of 2

Joint	OutputCase	StepType	F1	F2	F3	M1	M2
			KN	KN	KN	KN-m	KN-m
34	SLU	Max	-9.067	0.	-0.77	0.	0.
34	SLU	Min	-9.067	0.	-0.77	0.	0.
35	SLE	Max	-6.206	-4.433E-16	-0.039	0.	0.
35	SLE	Min	-6.206	-4.433E-16	-0.039	0.	0.
35	SLU	Max	-8.068	-5.763E-16	-0.05	0.	0.
35	SLU	Min	-8.068	-5.763E-16	-0.05	0.	0.
36	SLE	Max	-3.921	-4.809E-16	0.193	0.	0.
36	SLE	Min	-3.921	-4.809E-16	0.193	0.	0.
36	SLU	Max	-5.097	-6.251E-16	0.251	0.	0.
36	SLU	Min	-5.097	-6.251E-16	0.251	0.	0.
37	SLE	Max	6.157	8.000E-16	90.113	0.	0.
37	SLE	Min	6.157	8.000E-16	90.113	0.	0.
37	SLU	Max	8.005	1.038E-15	117.147	0.	0.
37	SLU	Min	8.005	1.038E-15	117.147	0.	0.

Table 21: Joint Reactions, Part 2 of 2

Table 21: Joint Reactions, Part 2 of 2

Joint	M3
	KN-m
1	0.
1	0.
1	0.
1	0.
2	0.
2	0.
2	0.
2	0.
3	0.
3	0.
3	0.
3	0.
4	0.
4	0.
4	0.
4	0.
5	0.
5	0.
5	0.
5	0.
6	0.
6	0.
6	0.
6	0.
7	0.
7	0.
7	0.
7	0.
8	0.
8	0.
8	0.
8	0.
9	0.
9	0.
9	0.
9	0.

Table 21: Joint Reactions, Part 2 of 2

Joint	M3
	KN-m
10	0.
10	0.
10	0.
10	0.
11	0.
11	0.
11	0.
11	0.
12	0.
12	0.
12	0.
12	0.
13	0.
13	0.
13	0.
13	0.
14	0.
14	0.
14	0.
14	0.
15	0.
15	0.
15	0.
15	0.
16	0.
16	0.
16	0.
16	0.
17	0.
17	0.
17	0.
17	0.
18	0.
18	0.
18	0.
18	0.
19	0.
19	0.
19	0.
19	0.
20	0.
20	0.
20	0.
20	0.
21	0.
21	0.
21	0.
21	0.
22	0.
22	0.
22	0.
22	0.
23	0.
23	0.
23	0.
23	0.
24	0.

Table 21: Joint Reactions, Part 2 of 2

Joint	M3
	KN-m
24	0.
24	0.
24	0.
25	0.
25	0.
25	0.
25	0.
26	0.
26	0.
26	0.
26	0.
27	0.
27	0.
27	0.
27	0.
28	0.
28	0.
28	0.
28	0.
29	0.
29	0.
29	0.
29	0.
30	0.
30	0.
30	0.
30	0.
31	0.
31	0.
31	0.
31	0.
32	0.
32	0.
32	0.
32	0.
33	0.
33	0.
33	0.
33	0.
34	0.
34	0.
34	0.
34	0.
35	0.
35	0.
35	0.
35	0.
36	0.
36	0.
36	0.
36	0.
37	0.
37	0.
37	0.
37	0.

8. Frame results

This section provides frame force results.

Table 22: Element Forces - Frames, Part 1 of 2

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
1	0.	SLE	Max	-90.324	0.333	8.335E-16
1	0.25999	SLE	Max	-88.379	0.192	8.163E-16
1	0.51998	SLE	Max	-86.435	0.052	7.990E-16
1	0.	SLE	Min	-90.324	0.333	8.335E-16
1	0.25999	SLE	Min	-88.379	0.192	8.163E-16
1	0.51998	SLE	Min	-86.435	0.052	7.990E-16
1	0.	SLU	Max	-117.421	0.433	1.083E-15
1	0.25999	SLU	Max	-114.893	0.25	1.060E-15
1	0.51998	SLU	Max	-112.365	0.067	1.038E-15
1	0.	SLU	Min	-117.421	0.433	1.083E-15
1	0.25999	SLU	Min	-114.893	0.25	1.060E-15
1	0.51998	SLU	Min	-112.365	0.067	1.038E-15
2	0.	SLE	Max	-86.437	-0.218	2.848E-16
2	0.26732	SLE	Max	-84.433	-0.265	2.790E-16
2	0.53464	SLE	Max	-82.43	-0.312	2.733E-16
2	0.	SLE	Min	-86.437	-0.218	2.848E-16
2	0.26732	SLE	Min	-84.433	-0.265	2.790E-16
2	0.53464	SLE	Min	-82.43	-0.312	2.733E-16
2	0.	SLU	Max	-112.368	-0.283	3.681E-16
2	0.26732	SLU	Max	-109.763	-0.344	3.606E-16
2	0.53464	SLU	Max	-107.159	-0.406	3.531E-16
2	0.	SLU	Min	-112.368	-0.283	3.681E-16
2	0.26732	SLU	Min	-109.763	-0.344	3.606E-16
2	0.53464	SLU	Min	-107.159	-0.406	3.531E-16
3	0.	SLE	Max	-82.456	0.029	-1.354E-16
3	0.25566	SLE	Max	-80.542	0.121	-1.354E-16
3	0.51132	SLE	Max	-78.627	0.213	-1.354E-16
3	0.	SLE	Min	-82.456	0.029	-1.354E-16
3	0.25566	SLE	Min	-80.542	0.121	-1.354E-16
3	0.51132	SLE	Min	-78.627	0.213	-1.354E-16
3	0.	SLU	Max	-107.193	0.038	-1.736E-16
3	0.25566	SLU	Max	-104.704	0.157	-1.736E-16
3	0.51132	SLU	Max	-102.215	0.276	-1.736E-16
3	0.	SLU	Min	-107.193	0.038	-1.736E-16
3	0.25566	SLU	Min	-104.704	0.157	-1.736E-16
3	0.51132	SLU	Min	-102.215	0.276	-1.736E-16
4	0.	SLE	Max	-78.698	-0.413	-1.250E-16
4	0.26298	SLE	Max	-76.747	-0.129	-1.250E-16
4	0.52596	SLE	Max	-74.796	0.156	-1.250E-16
4	0.	SLE	Min	-78.698	-0.413	-1.250E-16
4	0.26298	SLE	Min	-76.747	-0.129	-1.250E-16
4	0.52596	SLE	Min	-74.796	0.156	-1.250E-16
4	0.	SLU	Max	-102.307	-0.537	-1.667E-16
4	0.26298	SLU	Max	-99.771	-0.167	-1.667E-16
4	0.52596	SLU	Max	-97.234	0.203	-1.667E-16
4	0.	SLU	Min	-102.307	-0.537	-1.667E-16
4	0.26298	SLU	Min	-99.771	-0.167	-1.667E-16
4	0.52596	SLU	Min	-97.234	0.203	-1.667E-16
5	0.	SLE	Max	-74.896	-0.497	-1.459E-16
5	0.26298	SLE	Max	-72.983	-0.022	-1.459E-16

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
5	0.52596	SLE	Max	-71.069	0.453	-1.459E-16
5	0.	SLE	Min	-74.896	-0.497	-1.459E-16
5	0.26298	SLE	Min	-72.983	-0.022	-1.459E-16
5	0.52596	SLE	Min	-71.069	0.453	-1.459E-16
5	0.	SLU	Max	-97.365	-0.646	-1.737E-16
5	0.26298	SLU	Max	-94.877	-0.029	-1.737E-16
5	0.52596	SLU	Max	-92.389	0.588	-1.737E-16
5	0.	SLU	Min	-97.365	-0.646	-1.737E-16
5	0.26298	SLU	Min	-94.877	-0.029	-1.737E-16
5	0.52596	SLU	Min	-92.389	0.588	-1.737E-16
6	0.	SLE	Max	-71.204	-0.637	-1.320E-16
6	0.26298	SLE	Max	-69.346	0.024	-1.320E-16
6	0.52596	SLE	Max	-67.488	0.684	-1.320E-16
6	0.	SLE	Min	-71.204	-0.637	-1.320E-16
6	0.26298	SLE	Min	-69.346	0.024	-1.320E-16
6	0.52596	SLE	Min	-67.488	0.684	-1.320E-16
6	0.	SLU	Max	-92.565	-0.828	-1.805E-16
6	0.26298	SLU	Max	-90.15	0.031	-1.805E-16
6	0.52596	SLU	Max	-87.734	0.889	-1.805E-16
6	0.	SLU	Min	-92.565	-0.828	-1.805E-16
6	0.26298	SLU	Min	-90.15	0.031	-1.805E-16
6	0.52596	SLU	Min	-87.734	0.889	-1.805E-16
7	0.	SLE	Max	-67.65	-0.845	-1.319E-16
7	0.26298	SLE	Max	-65.865	-5.748E-03	-1.319E-16
7	0.52596	SLE	Max	-64.081	0.834	-1.319E-16
7	0.	SLE	Min	-67.65	-0.845	-1.319E-16
7	0.26298	SLE	Min	-65.865	-5.748E-03	-1.319E-16
7	0.52596	SLE	Min	-64.081	0.834	-1.319E-16
7	0.	SLU	Max	-87.944	-1.099	-1.598E-16
7	0.26298	SLU	Max	-85.625	-7.472E-03	-1.598E-16
7	0.52596	SLU	Max	-83.306	1.084	-1.598E-16
7	0.	SLU	Min	-87.944	-1.099	-1.598E-16
7	0.26298	SLU	Min	-85.625	-7.472E-03	-1.598E-16
7	0.52596	SLU	Min	-83.306	1.084	-1.598E-16
8	0.	SLE	Max	-64.266	-1.013	-1.320E-16
8	0.26298	SLE	Max	-62.573	-2.314E-03	-1.320E-16
8	0.52596	SLE	Max	-60.88	1.008	-1.320E-16
8	0.	SLE	Min	-64.266	-1.013	-1.320E-16
8	0.26298	SLE	Min	-62.573	-2.314E-03	-1.320E-16
8	0.52596	SLE	Min	-60.88	1.008	-1.320E-16
8	0.	SLU	Max	-83.546	-1.317	-1.667E-16
8	0.26298	SLU	Max	-81.345	-3.008E-03	-1.667E-16
8	0.52596	SLU	Max	-79.144	1.311	-1.667E-16
8	0.	SLU	Min	-83.546	-1.317	-1.667E-16
8	0.26298	SLU	Min	-81.345	-3.008E-03	-1.667E-16
8	0.52596	SLU	Min	-79.144	1.311	-1.667E-16
9	0.	SLE	Max	-61.105	-0.71	-1.042E-16
9	0.26298	SLE	Max	-59.52	0.462	-1.042E-16
9	0.52596	SLE	Max	-57.934	1.634	-1.042E-16
9	0.	SLE	Min	-61.105	-0.71	-1.042E-16
9	0.26298	SLE	Min	-59.52	0.462	-1.042E-16
9	0.52596	SLE	Min	-57.934	1.634	-1.042E-16
9	0.	SLU	Max	-79.437	-0.923	-1.528E-16
9	0.26298	SLU	Max	-77.376	0.6	-1.528E-16
9	0.52596	SLU	Max	-75.314	2.124	-1.528E-16
9	0.	SLU	Min	-79.437	-0.923	-1.528E-16
9	0.26298	SLU	Min	-77.376	0.6	-1.528E-16
9	0.52596	SLU	Min	-75.314	2.124	-1.528E-16

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
10	0.	SLE	Max	-58.26	0.45	-1.111E-16
10	0.26298	SLE	Max	-56.797	1.772	-1.111E-16
10	0.52596	SLE	Max	-55.334	3.094	-1.111E-16
10	0.	SLE	Min	-58.26	0.45	-1.111E-16
10	0.26298	SLE	Min	-56.797	1.772	-1.111E-16
10	0.52596	SLE	Min	-55.334	3.094	-1.111E-16
10	0.	SLU	Max	-75.738	0.585	-1.250E-16
10	0.26298	SLU	Max	-73.836	2.303	-1.250E-16
10	0.52596	SLU	Max	-71.934	4.022	-1.250E-16
10	0.	SLU	Min	-75.738	0.585	-1.250E-16
10	0.26298	SLU	Min	-73.836	2.303	-1.250E-16
10	0.52596	SLU	Min	-71.934	4.022	-1.250E-16
11	0.	SLE	Max	-55.726	1.255	-1.112E-16
11	0.26298	SLE	Max	-54.4	2.714	-1.112E-16
11	0.52596	SLE	Max	-53.074	4.173	-1.112E-16
11	0.	SLE	Min	-55.726	1.255	-1.112E-16
11	0.26298	SLE	Min	-54.4	2.714	-1.112E-16
11	0.52596	SLE	Min	-53.074	4.173	-1.112E-16
11	0.	SLU	Max	-72.444	1.631	-1.389E-16
11	0.26298	SLU	Max	-70.72	3.528	-1.389E-16
11	0.52596	SLU	Max	-68.997	5.425	-1.389E-16
11	0.	SLU	Min	-72.444	1.631	-1.389E-16
11	0.26298	SLU	Min	-70.72	3.528	-1.389E-16
11	0.52596	SLU	Min	-68.997	5.425	-1.389E-16
12	0.	SLE	Max	-53.228	-1.059	-8.327E-17
12	0.26298	SLE	Max	-52.051	0.524	-8.327E-17
12	0.52596	SLE	Max	-50.875	2.106	-8.327E-17
12	0.	SLE	Min	-53.228	-1.059	-8.327E-17
12	0.26298	SLE	Min	-52.051	0.524	-8.327E-17
12	0.52596	SLE	Min	-50.875	2.106	-8.327E-17
12	0.	SLU	Max	-69.196	-1.376	-1.112E-16
12	0.26298	SLU	Max	-67.667	0.681	-1.112E-16
12	0.52596	SLU	Max	-66.137	2.738	-1.112E-16
12	0.	SLU	Min	-69.196	-1.376	-1.112E-16
12	0.26298	SLU	Min	-67.667	0.681	-1.112E-16
12	0.52596	SLU	Min	-66.137	2.738	-1.112E-16
13	0.	SLE	Max	-50.836	-2.899	-1.111E-16
13	0.26298	SLE	Max	-49.821	-1.209	-1.111E-16
13	0.52596	SLE	Max	-48.805	0.481	-1.111E-16
13	0.	SLE	Min	-50.836	-2.899	-1.111E-16
13	0.26298	SLE	Min	-49.821	-1.209	-1.111E-16
13	0.52596	SLE	Min	-48.805	0.481	-1.111E-16
13	0.	SLU	Max	-66.087	-3.769	-1.389E-16
13	0.26298	SLU	Max	-64.767	-1.572	-1.389E-16
13	0.52596	SLU	Max	-63.447	0.626	-1.389E-16
13	0.	SLU	Min	-66.087	-3.769	-1.389E-16
13	0.26298	SLU	Min	-64.767	-1.572	-1.389E-16
13	0.52596	SLU	Min	-63.447	0.626	-1.389E-16
14	0.	SLE	Max	-48.617	-4.313	-9.725E-17
14	0.26298	SLE	Max	-47.772	-2.531	-9.725E-17
14	0.52596	SLE	Max	-46.928	-0.749	-9.725E-17
14	0.	SLE	Min	-48.617	-4.313	-9.725E-17
14	0.26298	SLE	Min	-47.772	-2.531	-9.725E-17
14	0.52596	SLE	Min	-46.928	-0.749	-9.725E-17
14	0.	SLU	Max	-63.202	-5.607	-1.251E-16
14	0.26298	SLU	Max	-62.104	-3.291	-1.251E-16
14	0.52596	SLU	Max	-61.006	-0.974	-1.251E-16
14	0.	SLU	Min	-63.202	-5.607	-1.251E-16

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
14	0.26298	SLU	Min	-62.104	-3.291	-1.251E-16
14	0.52596	SLU	Min	-61.006	-0.974	-1.251E-16
15	0.	SLE	Max	-46.627	-5.354	-6.950E-17
15	0.26298	SLE	Max	-45.962	-3.497	-6.950E-17
15	0.52596	SLE	Max	-45.297	-1.641	-6.950E-17
15	0.	SLE	Min	-46.627	-5.354	-6.950E-17
15	0.26298	SLE	Min	-45.962	-3.497	-6.950E-17
15	0.52596	SLE	Min	-45.297	-1.641	-6.950E-17
15	0.	SLU	Max	-60.616	-6.96	-8.338E-17
15	0.26298	SLU	Max	-59.751	-4.547	-8.338E-17
15	0.52596	SLU	Max	-58.886	-2.134	-8.338E-17
15	0.	SLU	Min	-60.616	-6.96	-8.338E-17
15	0.26298	SLU	Min	-59.751	-4.547	-8.338E-17
15	0.52596	SLU	Min	-58.886	-2.134	-8.338E-17
16	0.	SLE	Max	-44.308	-3.656	-5.557E-17
16	0.26298	SLE	Max	-43.828	-1.744	-5.557E-17
16	0.52596	SLE	Max	-43.348	0.169	-5.557E-17
16	0.	SLE	Min	-44.308	-3.656	-5.557E-17
16	0.26298	SLE	Min	-43.828	-1.744	-5.557E-17
16	0.52596	SLE	Min	-43.348	0.169	-5.557E-17
16	0.	SLU	Max	-57.601	-4.753	-4.180E-17
16	0.26298	SLU	Max	-56.977	-2.267	-4.180E-17
16	0.52596	SLU	Max	-56.353	0.219	-4.180E-17
16	0.	SLU	Min	-57.601	-4.753	-4.180E-17
16	0.26298	SLU	Min	-56.977	-2.267	-4.180E-17
16	0.52596	SLU	Min	-56.353	0.219	-4.180E-17
17	0.	SLE	Max	-43.155	-4.088	-1.084E-19
17	0.26298	SLE	Max	-42.866	-2.138	-1.084E-19
17	0.52596	SLE	Max	-42.576	-0.188	-1.084E-19
17	0.	SLE	Min	-43.155	-4.088	-1.084E-19
17	0.26298	SLE	Min	-42.866	-2.138	-1.084E-19
17	0.52596	SLE	Min	-42.576	-0.188	-1.084E-19
17	0.	SLU	Max	-56.102	-5.315	-4.169E-17
17	0.26298	SLU	Max	-55.725	-2.779	-4.169E-17
17	0.52596	SLU	Max	-55.349	-0.244	-4.169E-17
17	0.	SLU	Min	-56.102	-5.315	-4.169E-17
17	0.26298	SLU	Min	-55.725	-2.779	-4.169E-17
17	0.52596	SLU	Min	-55.349	-0.244	-4.169E-17
18	0.	SLE	Max	-42.229	-1.87	-1.382E-17
18	0.26298	SLE	Max	-42.132	0.099	-1.382E-17
18	0.52596	SLE	Max	-42.035	2.069	-1.382E-17
18	0.	SLE	Min	-42.229	-1.87	-1.382E-17
18	0.26298	SLE	Min	-42.132	0.099	-1.382E-17
18	0.52596	SLE	Min	-42.035	2.069	-1.382E-17
18	0.	SLU	Max	-54.897	-2.431	-5.421E-20
18	0.26298	SLU	Max	-54.771	0.129	-5.421E-20
18	0.52596	SLU	Max	-54.645	2.689	-5.421E-20
18	0.	SLU	Min	-54.897	-2.431	-5.421E-20
18	0.26298	SLU	Min	-54.771	0.129	-5.421E-20
18	0.52596	SLU	Min	-54.645	2.689	-5.421E-20
19	0.	SLE	Max	-42.035	-2.069	5.562E-17
19	0.26298	SLE	Max	-42.132	-0.099	5.562E-17
19	0.52596	SLE	Max	-42.229	1.87	5.562E-17
19	0.	SLE	Min	-42.035	-2.069	5.562E-17
19	0.26298	SLE	Min	-42.132	-0.099	5.562E-17
19	0.52596	SLE	Min	-42.229	1.87	5.562E-17
19	0.	SLU	Max	-54.645	-2.689	5.557E-17
19	0.26298	SLU	Max	-54.771	-0.129	5.557E-17

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
19	0.52596	SLU	Max	-54.897	2.431	5.557E-17
19	0.	SLU	Min	-54.645	-2.689	5.557E-17
19	0.26298	SLU	Min	-54.771	-0.129	5.557E-17
19	0.52596	SLU	Min	-54.897	2.431	5.557E-17
20	0.	SLE	Max	-42.576	0.188	5.551E-17
20	0.26298	SLE	Max	-42.866	2.138	5.551E-17
20	0.52596	SLE	Max	-43.155	4.088	5.551E-17
20	0.	SLE	Min	-42.576	0.188	5.551E-17
20	0.26298	SLE	Min	-42.866	2.138	5.551E-17
20	0.52596	SLE	Min	-43.155	4.088	5.551E-17
20	0.	SLU	Max	-55.349	0.244	9.725E-17
20	0.26298	SLU	Max	-55.725	2.779	9.725E-17
20	0.52596	SLU	Max	-56.102	5.315	9.725E-17
20	0.	SLU	Min	-55.349	0.244	9.725E-17
20	0.26298	SLU	Min	-55.725	2.779	9.725E-17
20	0.52596	SLU	Min	-56.102	5.315	9.725E-17
21	0.	SLE	Max	-43.348	-0.169	6.944E-17
21	0.26298	SLE	Max	-43.828	1.744	6.944E-17
21	0.52596	SLE	Max	-44.308	3.656	6.944E-17
21	0.	SLE	Min	-43.348	-0.169	6.944E-17
21	0.26298	SLE	Min	-43.828	1.744	6.944E-17
21	0.52596	SLE	Min	-44.308	3.656	6.944E-17
21	0.	SLU	Max	-56.353	-0.219	1.111E-16
21	0.26298	SLU	Max	-56.977	2.267	1.111E-16
21	0.52596	SLU	Max	-57.601	4.753	1.111E-16
21	0.	SLU	Min	-56.353	-0.219	1.111E-16
21	0.26298	SLU	Min	-56.977	2.267	1.111E-16
21	0.52596	SLU	Min	-57.601	4.753	1.111E-16
22	0.	SLE	Max	-45.297	1.641	8.332E-17
22	0.26298	SLE	Max	-45.962	3.497	8.332E-17
22	0.52596	SLE	Max	-46.627	5.354	8.332E-17
22	0.	SLE	Min	-45.297	1.641	8.332E-17
22	0.26298	SLE	Min	-45.962	3.497	8.332E-17
22	0.52596	SLE	Min	-46.627	5.354	8.332E-17
22	0.	SLU	Max	-58.886	2.134	9.720E-17
22	0.26298	SLU	Max	-59.751	4.547	9.720E-17
22	0.52596	SLU	Max	-60.616	6.96	9.720E-17
22	0.	SLU	Min	-58.886	2.134	9.720E-17
22	0.26298	SLU	Min	-59.751	4.547	9.720E-17
22	0.52596	SLU	Min	-60.616	6.96	9.720E-17
23	0.	SLE	Max	-46.928	0.749	8.348E-17
23	0.26298	SLE	Max	-47.772	2.531	8.348E-17
23	0.52596	SLE	Max	-48.617	4.313	8.348E-17
23	0.	SLE	Min	-46.928	0.749	8.348E-17
23	0.26298	SLE	Min	-47.772	2.531	8.348E-17
23	0.52596	SLE	Min	-48.617	4.313	8.348E-17
23	0.	SLU	Max	-61.006	0.974	9.731E-17
23	0.26298	SLU	Max	-62.104	3.291	9.731E-17
23	0.52596	SLU	Max	-63.202	5.607	9.731E-17
23	0.	SLU	Min	-61.006	0.974	9.731E-17
23	0.26298	SLU	Min	-62.104	3.291	9.731E-17
23	0.52596	SLU	Min	-63.202	5.607	9.731E-17
24	0.	SLE	Max	-48.805	-0.481	8.338E-17
24	0.26298	SLE	Max	-49.821	1.209	8.338E-17
24	0.52596	SLE	Max	-50.836	2.899	8.338E-17
24	0.	SLE	Min	-48.805	-0.481	8.338E-17
24	0.26298	SLE	Min	-49.821	1.209	8.338E-17
24	0.52596	SLE	Min	-50.836	2.899	8.338E-17

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
24	0.	SLU	Max	-63.447	-0.626	9.720E-17
24	0.26298	SLU	Max	-64.767	1.572	9.720E-17
24	0.52596	SLU	Max	-66.087	3.769	9.720E-17
24	0.	SLU	Min	-63.447	-0.626	9.720E-17
24	0.26298	SLU	Min	-64.767	1.572	9.720E-17
24	0.52596	SLU	Min	-66.087	3.769	9.720E-17
25	0.	SLE	Max	-50.875	-2.106	6.939E-17
25	0.26298	SLE	Max	-52.051	-0.524	6.939E-17
25	0.52596	SLE	Max	-53.228	1.059	6.939E-17
25	0.	SLE	Min	-50.875	-2.106	6.939E-17
25	0.26298	SLE	Min	-52.051	-0.524	6.939E-17
25	0.52596	SLE	Min	-53.228	1.059	6.939E-17
25	0.	SLU	Max	-66.137	-2.738	8.338E-17
25	0.26298	SLU	Max	-67.667	-0.681	8.338E-17
25	0.52596	SLU	Max	-69.196	1.376	8.338E-17
25	0.	SLU	Min	-66.137	-2.738	8.338E-17
25	0.26298	SLU	Min	-67.667	-0.681	8.338E-17
25	0.52596	SLU	Min	-69.196	1.376	8.338E-17
26	0.	SLE	Max	-53.074	-4.173	8.338E-17
26	0.26298	SLE	Max	-54.4	-2.714	8.338E-17
26	0.52596	SLE	Max	-55.726	-1.255	8.338E-17
26	0.	SLE	Min	-53.074	-4.173	8.338E-17
26	0.26298	SLE	Min	-54.4	-2.714	8.338E-17
26	0.52596	SLE	Min	-55.726	-1.255	8.338E-17
26	0.	SLU	Max	-68.997	-5.425	1.251E-16
26	0.26298	SLU	Max	-70.72	-3.528	1.251E-16
26	0.52596	SLU	Max	-72.444	-1.631	1.251E-16
26	0.	SLU	Min	-68.997	-5.425	1.251E-16
26	0.26298	SLU	Min	-70.72	-3.528	1.251E-16
26	0.52596	SLU	Min	-72.444	-1.631	1.251E-16
27	0.	SLE	Max	-55.334	-3.094	9.720E-17
27	0.26298	SLE	Max	-56.797	-1.772	9.720E-17
27	0.52596	SLE	Max	-58.26	-0.45	9.720E-17
27	0.	SLE	Min	-55.334	-3.094	9.720E-17
27	0.26298	SLE	Min	-56.797	-1.772	9.720E-17
27	0.52596	SLE	Min	-58.26	-0.45	9.720E-17
27	0.	SLU	Max	-71.934	-4.022	1.250E-16
27	0.26298	SLU	Max	-73.836	-2.303	1.250E-16
27	0.52596	SLU	Max	-75.738	-0.585	1.250E-16
27	0.	SLU	Min	-71.934	-4.022	1.250E-16
27	0.26298	SLU	Min	-73.836	-2.303	1.250E-16
27	0.52596	SLU	Min	-75.738	-0.585	1.250E-16
28	0.	SLE	Max	-57.934	-1.634	7.641E-17
28	0.26298	SLE	Max	-59.52	-0.462	7.641E-17
28	0.52596	SLE	Max	-61.105	0.71	7.641E-17
28	0.	SLE	Min	-57.934	-1.634	7.641E-17
28	0.26298	SLE	Min	-59.52	-0.462	7.641E-17
28	0.52596	SLE	Min	-61.105	0.71	7.641E-17
28	0.	SLU	Max	-75.314	-2.124	1.250E-16
28	0.26298	SLU	Max	-77.376	-0.6	1.250E-16
28	0.52596	SLU	Max	-79.437	0.923	1.250E-16
28	0.	SLU	Min	-75.314	-2.124	1.250E-16
28	0.26298	SLU	Min	-77.376	-0.6	1.250E-16
28	0.52596	SLU	Min	-79.437	0.923	1.250E-16
29	0.	SLE	Max	-60.88	-1.008	1.181E-16
29	0.26298	SLE	Max	-62.573	2.257E-03	1.181E-16
29	0.52596	SLE	Max	-64.266	1.013	1.181E-16
29	0.	SLE	Min	-60.88	-1.008	1.181E-16

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
29	0.26298	SLE	Min	-62.573	2.257E-03	1.181E-16
29	0.52596	SLE	Min	-64.266	1.013	1.181E-16
29	0.	SLU	Max	-79.144	-1.311	1.389E-16
29	0.26298	SLU	Max	-81.345	2.934E-03	1.389E-16
29	0.52596	SLU	Max	-83.546	1.317	1.389E-16
29	0.	SLU	Min	-79.144	-1.311	1.389E-16
29	0.26298	SLU	Min	-81.345	2.934E-03	1.389E-16
29	0.52596	SLU	Min	-83.546	1.317	1.389E-16
30	0.	SLE	Max	-64.081	-0.834	1.111E-16
30	0.26298	SLE	Max	-65.865	5.719E-03	1.111E-16
30	0.52596	SLE	Max	-67.65	0.845	1.111E-16
30	0.	SLE	Min	-64.081	-0.834	1.111E-16
30	0.26298	SLE	Min	-65.865	5.719E-03	1.111E-16
30	0.52596	SLE	Min	-67.65	0.845	1.111E-16
30	0.	SLU	Max	-83.306	-1.084	1.459E-16
30	0.26298	SLU	Max	-85.625	7.435E-03	1.459E-16
30	0.52596	SLU	Max	-87.944	1.099	1.459E-16
30	0.	SLU	Min	-83.306	-1.084	1.459E-16
30	0.26298	SLU	Min	-85.625	7.435E-03	1.459E-16
30	0.52596	SLU	Min	-87.944	1.099	1.459E-16
31	0.	SLE	Max	-67.488	-0.684	1.181E-16
31	0.26298	SLE	Max	-69.346	-0.024	1.181E-16
31	0.52596	SLE	Max	-71.204	0.637	1.181E-16
31	0.	SLE	Min	-67.488	-0.684	1.181E-16
31	0.26298	SLE	Min	-69.346	-0.024	1.181E-16
31	0.52596	SLE	Min	-71.204	0.637	1.181E-16
31	0.	SLU	Max	-87.734	-0.889	1.389E-16
31	0.26298	SLU	Max	-90.15	-0.031	1.389E-16
31	0.52596	SLU	Max	-92.565	0.828	1.389E-16
31	0.	SLU	Min	-87.734	-0.889	1.389E-16
31	0.26298	SLU	Min	-90.15	-0.031	1.389E-16
31	0.52596	SLU	Min	-92.565	0.828	1.389E-16
32	0.	SLE	Max	-71.069	-0.452	1.181E-16
32	0.26298	SLE	Max	-72.983	0.023	1.181E-16
32	0.52596	SLE	Max	-74.896	0.497	1.181E-16
32	0.	SLE	Min	-71.069	-0.452	1.181E-16
32	0.26298	SLE	Min	-72.983	0.023	1.181E-16
32	0.52596	SLE	Min	-74.896	0.497	1.181E-16
32	0.	SLU	Max	-92.389	-0.588	1.598E-16
32	0.26298	SLU	Max	-94.877	0.029	1.598E-16
32	0.52596	SLU	Max	-97.365	0.646	1.598E-16
32	0.	SLU	Min	-92.389	-0.588	1.598E-16
32	0.26298	SLU	Min	-94.877	0.029	1.598E-16
32	0.52596	SLU	Min	-97.365	0.646	1.598E-16
33	0.	SLE	Max	-74.796	-0.155	1.181E-16
33	0.26298	SLE	Max	-76.747	0.13	1.181E-16
33	0.52596	SLE	Max	-78.698	0.414	1.181E-16
33	0.	SLE	Min	-74.796	-0.155	1.181E-16
33	0.26298	SLE	Min	-76.747	0.13	1.181E-16
33	0.52596	SLE	Min	-78.698	0.414	1.181E-16
33	0.	SLU	Max	-97.235	-0.201	1.528E-16
33	0.26298	SLU	Max	-99.771	0.169	1.528E-16
33	0.52596	SLU	Max	-102.308	0.539	1.528E-16
33	0.	SLU	Min	-97.235	-0.201	1.528E-16
33	0.26298	SLU	Min	-99.771	0.169	1.528E-16
33	0.52596	SLU	Min	-102.308	0.539	1.528E-16
34	0.	SLE	Max	-78.627	-0.213	1.250E-16
34	0.25566	SLE	Max	-80.542	-0.121	1.250E-16

Table 22: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	StepType	P	V2	V3
	m			KN	KN	KN
34	0.51132	SLE	Max	-82.456	-0.03	1.250E-16
34	0.	SLE	Min	-78.627	-0.213	1.250E-16
34	0.25566	SLE	Min	-80.542	-0.121	1.250E-16
34	0.51132	SLE	Min	-82.456	-0.03	1.250E-16
34	0.	SLU	Max	-102.215	-0.277	1.598E-16
34	0.25566	SLU	Max	-104.704	-0.157	1.598E-16
34	0.51132	SLU	Max	-107.193	-0.038	1.598E-16
34	0.	SLU	Min	-102.215	-0.277	1.598E-16
34	0.25566	SLU	Min	-104.704	-0.157	1.598E-16
34	0.51132	SLU	Min	-107.193	-0.038	1.598E-16
35	0.	SLE	Max	-82.429	0.301	-2.900E-16
35	0.26732	SLE	Max	-84.433	0.254	-2.957E-16
35	0.53464	SLE	Max	-86.437	0.207	-3.015E-16
35	0.	SLE	Min	-82.429	0.301	-2.900E-16
35	0.26732	SLE	Min	-84.433	0.254	-2.957E-16
35	0.53464	SLE	Min	-86.437	0.207	-3.015E-16
35	0.	SLU	Max	-107.158	0.391	-3.716E-16
35	0.26732	SLU	Max	-109.763	0.33	-3.791E-16
35	0.53464	SLU	Max	-112.368	0.269	-3.866E-16
35	0.	SLU	Min	-107.158	0.391	-3.716E-16
35	0.26732	SLU	Min	-109.763	0.33	-3.791E-16
35	0.53464	SLU	Min	-112.368	0.269	-3.866E-16
36	0.	SLE	Max	-86.435	-0.043	-8.053E-16
36	0.25994	SLE	Max	-88.379	-0.183	-8.224E-16
36	0.51989	SLE	Max	-90.323	-0.323	-8.395E-16
36	0.	SLE	Min	-86.435	-0.043	-8.053E-16
36	0.25994	SLE	Min	-88.379	-0.183	-8.224E-16
36	0.51989	SLE	Min	-90.323	-0.323	-8.395E-16
36	0.	SLU	Max	-112.365	-0.056	-1.044E-15
36	0.25994	SLU	Max	-114.893	-0.238	-1.067E-15
36	0.51989	SLU	Max	-117.42	-0.419	-1.089E-15
36	0.	SLU	Min	-112.365	-0.056	-1.044E-15
36	0.25994	SLU	Min	-114.893	-0.238	-1.067E-15
36	0.51989	SLU	Min	-117.42	-0.419	-1.089E-15

Table 22: Element Forces - Frames, Part 2 of 2

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
1	0.	SLE	Max	2.716E-20	-1.016E-20	2.223E-16
1	0.25999	SLE	Max	2.716E-20	-2.145E-16	-0.0683
1	0.51998	SLE	Max	2.716E-20	-4.244E-16	-0.1
1	0.	SLE	Min	2.716E-20	-1.016E-20	2.223E-16
1	0.25999	SLE	Min	2.716E-20	-2.145E-16	-0.0683
1	0.51998	SLE	Min	2.716E-20	-4.244E-16	-0.1
1	0.	SLU	Max	3.391E-20	0.	-2.220E-16
1	0.25999	SLU	Max	3.391E-20	-2.786E-16	-0.0888
1	0.51998	SLU	Max	3.391E-20	-5.513E-16	-0.13
1	0.	SLU	Min	3.391E-20	0.	-2.220E-16
1	0.25999	SLU	Min	3.391E-20	-2.786E-16	-0.0888
1	0.51998	SLU	Min	3.391E-20	-5.513E-16	-0.13
2	0.	SLE	Max	-2.023E-17	-4.228E-16	-0.1
2	0.26732	SLE	Max	-2.023E-17	-4.982E-16	-0.0355
2	0.53464	SLE	Max	-2.023E-17	-5.720E-16	0.0416
2	0.	SLE	Min	-2.023E-17	-4.228E-16	-0.1
2	0.26732	SLE	Min	-2.023E-17	-4.982E-16	-0.0355

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
2	0.53464	SLE	Min	-2.023E-17	-5.720E-16	0.0416
2	0.	SLU	Max	-2.629E-17	-5.522E-16	-0.13
2	0.26732	SLU	Max	-2.629E-17	-6.496E-16	-0.0462
2	0.53464	SLU	Max	-2.629E-17	-7.450E-16	0.0541
2	0.	SLU	Min	-2.629E-17	-5.522E-16	-0.13
2	0.26732	SLU	Min	-2.629E-17	-6.496E-16	-0.0462
2	0.53464	SLU	Min	-2.629E-17	-7.450E-16	0.0541
3	0.	SLE	Max	-6.138E-17	-5.782E-16	0.0416
3	0.25566	SLE	Max	-6.138E-17	-5.436E-16	0.0224
3	0.51132	SLE	Max	-6.138E-17	-5.090E-16	-0.0203
3	0.	SLE	Min	-6.138E-17	-5.782E-16	0.0416
3	0.25566	SLE	Min	-6.138E-17	-5.436E-16	0.0224
3	0.51132	SLE	Min	-6.138E-17	-5.090E-16	-0.0203
3	0.	SLU	Max	-7.975E-17	-7.484E-16	0.0541
3	0.25566	SLU	Max	-7.975E-17	-7.040E-16	0.0291
3	0.51132	SLU	Max	-7.975E-17	-6.596E-16	-0.0263
3	0.	SLU	Min	-7.975E-17	-7.484E-16	0.0541
3	0.25566	SLU	Min	-7.975E-17	-7.040E-16	0.0291
3	0.51132	SLU	Min	-7.975E-17	-6.596E-16	-0.0263
4	0.	SLE	Max	-1.108E-16	-5.018E-16	-0.0203
4	0.26298	SLE	Max	-1.108E-16	-4.690E-16	0.051
4	0.52596	SLE	Max	-1.108E-16	-4.361E-16	0.0474
4	0.	SLE	Min	-1.108E-16	-5.018E-16	-0.0203
4	0.26298	SLE	Min	-1.108E-16	-4.690E-16	0.051
4	0.52596	SLE	Min	-1.108E-16	-4.361E-16	0.0474
4	0.	SLU	Max	-1.440E-16	-6.512E-16	-0.0263
4	0.26298	SLU	Max	-1.440E-16	-6.073E-16	0.0663
4	0.52596	SLU	Max	-1.440E-16	-5.635E-16	0.0616
4	0.	SLU	Min	-1.440E-16	-6.512E-16	-0.0263
4	0.26298	SLU	Min	-1.440E-16	-6.073E-16	0.0663
4	0.52596	SLU	Min	-1.440E-16	-5.635E-16	0.0616
5	0.	SLE	Max	-1.528E-16	-4.220E-16	0.0474
5	0.26298	SLE	Max	-1.528E-16	-3.836E-16	0.1156
5	0.52596	SLE	Max	-1.528E-16	-3.452E-16	0.0591
5	0.	SLE	Min	-1.528E-16	-4.220E-16	0.0474
5	0.26298	SLE	Min	-1.528E-16	-3.836E-16	0.1156
5	0.52596	SLE	Min	-1.528E-16	-3.452E-16	0.0591
5	0.	SLU	Max	-1.987E-16	-5.470E-16	0.0616
5	0.26298	SLU	Max	-1.987E-16	-5.013E-16	0.1503
5	0.52596	SLU	Max	-1.987E-16	-4.557E-16	0.0768
5	0.	SLU	Min	-1.987E-16	-5.470E-16	0.0616
5	0.26298	SLU	Min	-1.987E-16	-5.013E-16	0.1503
5	0.52596	SLU	Min	-1.987E-16	-4.557E-16	0.0768
6	0.	SLE	Max	-1.865E-16	-3.334E-16	0.0591
6	0.26298	SLE	Max	-1.865E-16	-2.987E-16	0.1397
6	0.52596	SLE	Max	-1.865E-16	-2.640E-16	0.0467
6	0.	SLE	Min	-1.865E-16	-3.334E-16	0.0591
6	0.26298	SLE	Min	-1.865E-16	-2.987E-16	0.1397
6	0.52596	SLE	Min	-1.865E-16	-2.640E-16	0.0467
6	0.	SLU	Max	-2.424E-16	-4.376E-16	0.0768
6	0.26298	SLU	Max	-2.424E-16	-3.901E-16	0.1816
6	0.52596	SLU	Max	-2.424E-16	-3.426E-16	0.0607
6	0.	SLU	Min	-2.424E-16	-4.376E-16	0.0768
6	0.26298	SLU	Min	-2.424E-16	-3.901E-16	0.1816
6	0.52596	SLU	Min	-2.424E-16	-3.426E-16	0.0607
7	0.	SLE	Max	-2.116E-16	-2.448E-16	0.0467
7	0.26298	SLE	Max	-2.116E-16	-2.101E-16	0.1586
7	0.52596	SLE	Max	-2.116E-16	-1.754E-16	0.0497

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
7	0.	SLE	Min	-2.116E-16	-2.448E-16	0.0467
7	0.26298	SLE	Min	-2.116E-16	-2.101E-16	0.1586
7	0.52596	SLE	Min	-2.116E-16	-1.754E-16	0.0497
7	0.	SLU	Max	-2.752E-16	-3.195E-16	0.0607
7	0.26298	SLU	Max	-2.752E-16	-2.775E-16	0.2062
7	0.52596	SLU	Max	-2.752E-16	-2.355E-16	0.0646
7	0.	SLU	Min	-2.752E-16	-3.195E-16	0.0607
7	0.26298	SLU	Min	-2.752E-16	-2.775E-16	0.2062
7	0.52596	SLU	Min	-2.752E-16	-2.355E-16	0.0646
8	0.	SLE	Max	-2.276E-16	-1.493E-16	0.0497
8	0.26298	SLE	Max	-2.276E-16	-1.146E-16	0.1832
8	0.52596	SLE	Max	-2.276E-16	-7.994E-17	0.0509
8	0.	SLE	Min	-2.276E-16	-1.493E-16	0.0497
8	0.26298	SLE	Min	-2.276E-16	-1.146E-16	0.1832
8	0.52596	SLE	Min	-2.276E-16	-7.994E-17	0.0509
8	0.	SLU	Max	-2.960E-16	-1.945E-16	0.0646
8	0.26298	SLU	Max	-2.960E-16	-1.506E-16	0.2382
8	0.52596	SLU	Max	-2.960E-16	-1.068E-16	0.0662
8	0.	SLU	Min	-2.960E-16	-1.945E-16	0.0646
8	0.26298	SLU	Min	-2.960E-16	-1.506E-16	0.2382
8	0.52596	SLU	Min	-2.960E-16	-1.068E-16	0.0662
9	0.	SLE	Max	-2.340E-16	-5.558E-17	0.0509
9	0.26298	SLE	Max	-2.340E-16	-2.818E-17	0.0836
9	0.52596	SLE	Max	-2.340E-16	-7.780E-19	-0.1919
9	0.	SLE	Min	-2.340E-16	-5.558E-17	0.0509
9	0.26298	SLE	Min	-2.340E-16	-2.818E-17	0.0836
9	0.52596	SLE	Min	-2.340E-16	-7.780E-19	-0.1919
9	0.	SLU	Max	-3.047E-16	-7.640E-17	0.0662
9	0.26298	SLU	Max	-3.047E-16	-3.622E-17	0.1087
9	0.52596	SLU	Max	-3.047E-16	3.952E-18	-0.2495
9	0.	SLU	Min	-3.047E-16	-7.640E-17	0.0662
9	0.26298	SLU	Min	-3.047E-16	-3.622E-17	0.1087
9	0.52596	SLU	Min	-3.047E-16	3.952E-18	-0.2495
10	0.	SLE	Max	-2.316E-16	2.781E-17	-0.1919
10	0.26298	SLE	Max	-2.316E-16	5.704E-17	-0.484
10	0.52596	SLE	Max	-2.316E-16	8.626E-17	-1.1238
10	0.	SLE	Min	-2.316E-16	2.781E-17	-0.1919
10	0.26298	SLE	Min	-2.316E-16	5.704E-17	-0.484
10	0.52596	SLE	Min	-2.316E-16	8.626E-17	-1.1238
10	0.	SLU	Max	-3.007E-16	3.820E-17	-0.2495
10	0.26298	SLU	Max	-3.007E-16	7.108E-17	-0.6292
10	0.52596	SLU	Max	-3.007E-16	1.040E-16	-1.461
10	0.	SLU	Min	-3.007E-16	3.820E-17	-0.2495
10	0.26298	SLU	Min	-3.007E-16	7.108E-17	-0.6292
10	0.52596	SLU	Min	-3.007E-16	1.040E-16	-1.461
11	0.	SLE	Max	-2.225E-16	1.077E-16	-1.1238
11	0.26298	SLE	Max	-2.225E-16	1.369E-16	-1.6457
11	0.52596	SLE	Max	-2.225E-16	1.661E-16	-2.5513
11	0.	SLE	Min	-2.225E-16	1.077E-16	-1.1238
11	0.26298	SLE	Min	-2.225E-16	1.369E-16	-1.6457
11	0.52596	SLE	Min	-2.225E-16	1.661E-16	-2.5513
11	0.	SLU	Max	-2.889E-16	1.320E-16	-1.461
11	0.26298	SLU	Max	-2.889E-16	1.685E-16	-2.1394
11	0.52596	SLU	Max	-2.889E-16	2.050E-16	-3.3168
11	0.	SLU	Min	-2.889E-16	1.320E-16	-1.461
11	0.26298	SLU	Min	-2.889E-16	1.685E-16	-2.1394
11	0.52596	SLU	Min	-2.889E-16	2.050E-16	-3.3168
12	0.	SLE	Max	-2.053E-16	1.840E-16	-2.5513

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
12	0.26298	SLE	Max	-2.053E-16	2.059E-16	-2.481
12	0.52596	SLE	Max	-2.053E-16	2.278E-16	-2.8268
12	0.	SLE	Min	-2.053E-16	1.840E-16	-2.5513
12	0.26298	SLE	Min	-2.053E-16	2.059E-16	-2.481
12	0.52596	SLE	Min	-2.053E-16	2.278E-16	-2.8268
12	0.	SLU	Max	-2.673E-16	2.292E-16	-3.3168
12	0.26298	SLU	Max	-2.673E-16	2.584E-16	-3.2253
12	0.52596	SLU	Max	-2.673E-16	2.877E-16	-3.6749
12	0.	SLU	Min	-2.673E-16	2.292E-16	-3.3168
12	0.26298	SLU	Min	-2.673E-16	2.584E-16	-3.2253
12	0.52596	SLU	Min	-2.673E-16	2.877E-16	-3.6749
13	0.	SLE	Max	-1.836E-16	2.431E-16	-2.8268
13	0.26298	SLE	Max	-1.836E-16	2.723E-16	-2.2866
13	0.52596	SLE	Max	-1.836E-16	3.015E-16	-2.1909
13	0.	SLE	Min	-1.836E-16	2.431E-16	-2.8268
13	0.26298	SLE	Min	-1.836E-16	2.723E-16	-2.2866
13	0.52596	SLE	Min	-1.836E-16	3.015E-16	-2.1909
13	0.	SLU	Max	-2.388E-16	3.126E-16	-3.6749
13	0.26298	SLU	Max	-2.388E-16	3.491E-16	-2.9726
13	0.52596	SLU	Max	-2.388E-16	3.857E-16	-2.8482
13	0.	SLU	Min	-2.388E-16	3.126E-16	-3.6749
13	0.26298	SLU	Min	-2.388E-16	3.491E-16	-2.9726
13	0.52596	SLU	Min	-2.388E-16	3.857E-16	-2.8482
14	0.	SLE	Max	-1.529E-16	3.160E-16	-2.1909
14	0.26298	SLE	Max	-1.529E-16	3.416E-16	-1.2909
14	0.52596	SLE	Max	-1.529E-16	3.672E-16	-0.8596
14	0.	SLE	Min	-1.529E-16	3.160E-16	-2.1909
14	0.26298	SLE	Min	-1.529E-16	3.416E-16	-1.2909
14	0.52596	SLE	Min	-1.529E-16	3.672E-16	-0.8596
14	0.	SLU	Max	-1.986E-16	4.029E-16	-2.8482
14	0.26298	SLU	Max	-1.986E-16	4.358E-16	-1.6782
14	0.52596	SLU	Max	-1.986E-16	4.686E-16	-1.1174
14	0.	SLU	Min	-1.986E-16	4.029E-16	-2.8482
14	0.26298	SLU	Min	-1.986E-16	4.358E-16	-1.6782
14	0.52596	SLU	Min	-1.986E-16	4.686E-16	-1.1174
15	0.	SLE	Max	-1.162E-16	3.785E-16	-0.8596
15	0.26298	SLE	Max	-1.162E-16	3.968E-16	0.3043
15	0.52596	SLE	Max	-1.162E-16	4.151E-16	0.98
15	0.	SLE	Min	-1.162E-16	3.785E-16	-0.8596
15	0.26298	SLE	Min	-1.162E-16	3.968E-16	0.3043
15	0.52596	SLE	Min	-1.162E-16	4.151E-16	0.98
15	0.	SLU	Max	-1.512E-16	5.001E-16	-1.1174
15	0.26298	SLU	Max	-1.512E-16	5.220E-16	0.3956
15	0.52596	SLU	Max	-1.512E-16	5.440E-16	1.274
15	0.	SLU	Min	-1.512E-16	5.001E-16	-1.1174
15	0.26298	SLU	Min	-1.512E-16	5.220E-16	0.3956
15	0.52596	SLU	Min	-1.512E-16	5.440E-16	1.274
16	0.	SLE	Max	-7.472E-17	4.341E-16	0.98
16	0.26298	SLE	Max	-7.472E-17	4.487E-16	1.69
16	0.52596	SLE	Max	-7.472E-17	4.633E-16	1.8971
16	0.	SLE	Min	-7.472E-17	4.341E-16	0.98
16	0.26298	SLE	Min	-7.472E-17	4.487E-16	1.69
16	0.52596	SLE	Min	-7.472E-17	4.633E-16	1.8971
16	0.	SLU	Max	-9.735E-17	5.626E-16	1.274
16	0.26298	SLU	Max	-9.735E-17	5.736E-16	2.197
16	0.52596	SLU	Max	-9.735E-17	5.846E-16	2.4662
16	0.	SLU	Min	-9.735E-17	5.626E-16	1.274
16	0.26298	SLU	Min	-9.735E-17	5.736E-16	2.197

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
16	0.52596	SLU	Min	-9.735E-17	5.846E-16	2.4662
17	0.	SLE	Max	-2.947E-17	4.723E-16	1.8971
17	0.26298	SLE	Max	-2.947E-17	4.723E-16	2.7158
17	0.52596	SLE	Max	-2.947E-17	4.724E-16	3.0216
17	0.	SLE	Min	-2.947E-17	4.723E-16	1.8971
17	0.26298	SLE	Min	-2.947E-17	4.723E-16	2.7158
17	0.52596	SLE	Min	-2.947E-17	4.724E-16	3.0216
17	0.	SLU	Max	-3.842E-17	6.077E-16	2.4662
17	0.26298	SLU	Max	-3.842E-17	6.187E-16	3.5305
17	0.52596	SLU	Max	-3.842E-17	6.297E-16	3.9281
17	0.	SLU	Min	-3.842E-17	6.077E-16	2.4662
17	0.26298	SLU	Min	-3.842E-17	6.187E-16	3.5305
17	0.52596	SLU	Min	-3.842E-17	6.297E-16	3.9281
18	0.	SLE	Max	1.704E-17	4.793E-16	3.0216
18	0.26298	SLE	Max	1.704E-17	4.829E-16	3.2544
18	0.52596	SLE	Max	1.704E-17	4.865E-16	2.9694
18	0.	SLE	Min	1.704E-17	4.793E-16	3.0216
18	0.26298	SLE	Min	1.704E-17	4.829E-16	3.2544
18	0.52596	SLE	Min	1.704E-17	4.865E-16	2.9694
18	0.	SLU	Max	2.268E-17	6.216E-16	3.9281
18	0.26298	SLU	Max	2.268E-17	6.216E-16	4.2308
18	0.52596	SLU	Max	2.268E-17	6.217E-16	3.8602
18	0.	SLU	Min	2.268E-17	6.216E-16	3.9281
18	0.26298	SLU	Min	2.268E-17	6.216E-16	4.2308
18	0.52596	SLU	Min	2.268E-17	6.217E-16	3.8602
19	0.	SLE	Max	6.398E-17	4.758E-16	2.9694
19	0.26298	SLE	Max	6.398E-17	4.612E-16	3.2544
19	0.52596	SLE	Max	6.398E-17	4.465E-16	3.0216
19	0.	SLE	Min	6.398E-17	4.758E-16	2.9694
19	0.26298	SLE	Min	6.398E-17	4.612E-16	3.2544
19	0.52596	SLE	Min	6.398E-17	4.465E-16	3.0216
19	0.	SLU	Max	8.313E-17	6.112E-16	3.8602
19	0.26298	SLU	Max	8.313E-17	5.966E-16	4.2308
19	0.52596	SLU	Max	8.313E-17	5.820E-16	3.9281
19	0.	SLU	Min	8.313E-17	6.112E-16	3.8602
19	0.26298	SLU	Min	8.313E-17	5.966E-16	4.2308
19	0.52596	SLU	Min	8.313E-17	5.820E-16	3.9281
20	0.	SLE	Max	1.072E-16	4.410E-16	3.0216
20	0.26298	SLE	Max	1.072E-16	4.264E-16	2.7158
20	0.52596	SLE	Max	1.072E-16	4.118E-16	1.8971
20	0.	SLE	Min	1.072E-16	4.410E-16	3.0216
20	0.26298	SLE	Min	1.072E-16	4.264E-16	2.7158
20	0.52596	SLE	Min	1.072E-16	4.118E-16	1.8971
20	0.	SLU	Max	1.397E-16	5.695E-16	3.9281
20	0.26298	SLU	Max	1.397E-16	5.440E-16	3.5305
20	0.52596	SLU	Max	1.397E-16	5.184E-16	2.4662
20	0.	SLU	Min	1.397E-16	5.695E-16	3.9281
20	0.26298	SLU	Min	1.397E-16	5.440E-16	3.5305
20	0.52596	SLU	Min	1.397E-16	5.184E-16	2.4662
21	0.	SLE	Max	1.442E-16	3.855E-16	1.8971
21	0.26298	SLE	Max	1.442E-16	3.672E-16	1.69
21	0.52596	SLE	Max	1.442E-16	3.490E-16	0.98
21	0.	SLE	Min	1.442E-16	3.855E-16	1.8971
21	0.26298	SLE	Min	1.442E-16	3.672E-16	1.69
21	0.52596	SLE	Min	1.442E-16	3.490E-16	0.98
21	0.	SLU	Max	1.873E-16	5.071E-16	2.4662
21	0.26298	SLU	Max	1.873E-16	4.778E-16	2.197
21	0.52596	SLU	Max	1.873E-16	4.486E-16	1.274

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
21	0.	SLU	Min	1.873E-16	5.071E-16	2.4662
21	0.26298	SLU	Min	1.873E-16	4.778E-16	2.197
21	0.52596	SLU	Min	1.873E-16	4.486E-16	1.274
22	0.	SLE	Max	1.786E-16	3.369E-16	0.98
22	0.26298	SLE	Max	1.786E-16	3.149E-16	0.3043
22	0.52596	SLE	Max	1.786E-16	2.930E-16	-0.8596
22	0.	SLE	Min	1.786E-16	3.369E-16	0.98
22	0.26298	SLE	Min	1.786E-16	3.149E-16	0.3043
22	0.52596	SLE	Min	1.786E-16	2.930E-16	-0.8596
22	0.	SLU	Max	2.315E-16	4.306E-16	1.274
22	0.26298	SLU	Max	2.315E-16	4.051E-16	0.3956
22	0.52596	SLU	Max	2.315E-16	3.795E-16	-1.1174
22	0.	SLU	Min	2.315E-16	4.306E-16	1.274
22	0.26298	SLU	Min	2.315E-16	4.051E-16	0.3956
22	0.52596	SLU	Min	2.315E-16	3.795E-16	-1.1174
23	0.	SLE	Max	2.060E-16	2.709E-16	-0.8596
23	0.26298	SLE	Max	2.060E-16	2.489E-16	-1.2909
23	0.52596	SLE	Max	2.060E-16	2.270E-16	-2.1909
23	0.	SLE	Min	2.060E-16	2.709E-16	-0.8596
23	0.26298	SLE	Min	2.060E-16	2.489E-16	-1.2909
23	0.52596	SLE	Min	2.060E-16	2.270E-16	-2.1909
23	0.	SLU	Max	2.685E-16	3.577E-16	-1.1174
23	0.26298	SLU	Max	2.685E-16	3.321E-16	-1.6782
23	0.52596	SLU	Max	2.685E-16	3.066E-16	-2.8482
23	0.	SLU	Min	2.685E-16	3.577E-16	-1.1174
23	0.26298	SLU	Min	2.685E-16	3.321E-16	-1.6782
23	0.52596	SLU	Min	2.685E-16	3.066E-16	-2.8482
24	0.	SLE	Max	2.267E-16	2.049E-16	-2.1909
24	0.26298	SLE	Max	2.267E-16	1.830E-16	-2.2866
24	0.52596	SLE	Max	2.267E-16	1.610E-16	-2.8268
24	0.	SLE	Min	2.267E-16	2.049E-16	-2.1909
24	0.26298	SLE	Min	2.267E-16	1.830E-16	-2.2866
24	0.52596	SLE	Min	2.267E-16	1.610E-16	-2.8268
24	0.	SLU	Max	2.947E-16	2.639E-16	-2.8482
24	0.26298	SLU	Max	2.947E-16	2.384E-16	-2.9726
24	0.52596	SLU	Max	2.947E-16	2.128E-16	-3.6749
24	0.	SLU	Min	2.947E-16	2.639E-16	-2.8482
24	0.26298	SLU	Min	2.947E-16	2.384E-16	-2.9726
24	0.52596	SLU	Min	2.947E-16	2.128E-16	-3.6749
25	0.	SLE	Max	2.400E-16	1.389E-16	-2.8268
25	0.26298	SLE	Max	2.400E-16	1.207E-16	-2.481
25	0.52596	SLE	Max	2.400E-16	1.024E-16	-2.5514
25	0.	SLE	Min	2.400E-16	1.389E-16	-2.8268
25	0.26298	SLE	Min	2.400E-16	1.207E-16	-2.481
25	0.52596	SLE	Min	2.400E-16	1.024E-16	-2.5514
25	0.	SLU	Max	3.119E-16	1.806E-16	-3.6749
25	0.26298	SLU	Max	3.119E-16	1.587E-16	-3.2253
25	0.52596	SLU	Max	3.119E-16	1.367E-16	-3.3168
25	0.	SLU	Min	3.119E-16	1.806E-16	-3.6749
25	0.26298	SLU	Min	3.119E-16	1.587E-16	-3.2253
25	0.52596	SLU	Min	3.119E-16	1.367E-16	-3.3168
26	0.	SLE	Max	2.491E-16	7.642E-17	-2.5514
26	0.26298	SLE	Max	2.491E-16	5.450E-17	-1.6457
26	0.52596	SLE	Max	2.491E-16	3.257E-17	-1.1238
26	0.	SLE	Min	2.491E-16	7.642E-17	-2.5514
26	0.26298	SLE	Min	2.491E-16	5.450E-17	-1.6457
26	0.52596	SLE	Min	2.491E-16	3.257E-17	-1.1238
26	0.	SLU	Max	3.235E-16	1.007E-16	-3.3168

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
26	0.26298	SLU	Max	3.235E-16	6.783E-17	-2.1394
26	0.52596	SLU	Max	3.235E-16	3.494E-17	-1.461
26	0.	SLU	Min	3.235E-16	1.007E-16	-3.3168
26	0.26298	SLU	Min	3.235E-16	6.783E-17	-2.1394
26	0.52596	SLU	Min	3.235E-16	3.494E-17	-1.461
27	0.	SLE	Max	2.515E-16	8.674E-18	-1.1238
27	0.26298	SLE	Max	2.515E-16	-1.689E-17	-0.484
27	0.52596	SLE	Max	2.515E-16	-4.245E-17	-0.1919
27	0.	SLE	Min	2.515E-16	8.674E-18	-1.1238
27	0.26298	SLE	Min	2.515E-16	-1.689E-17	-0.484
27	0.52596	SLE	Min	2.515E-16	-4.245E-17	-0.1919
27	0.	SLU	Max	3.269E-16	1.389E-17	-1.461
27	0.26298	SLU	Max	3.269E-16	-1.897E-17	-0.6292
27	0.52596	SLU	Max	3.269E-16	-5.183E-17	-0.2495
27	0.	SLU	Min	3.269E-16	1.389E-17	-1.461
27	0.26298	SLU	Min	3.269E-16	-1.897E-17	-0.6292
27	0.52596	SLU	Min	3.269E-16	-5.183E-17	-0.2495
28	0.	SLE	Max	2.485E-16	-6.946E-17	-0.1919
28	0.26298	SLE	Max	2.485E-16	-8.955E-17	0.0836
28	0.52596	SLE	Max	2.485E-16	-1.096E-16	0.0509
28	0.	SLE	Min	2.485E-16	-6.946E-17	-0.1919
28	0.26298	SLE	Min	2.485E-16	-8.955E-17	0.0836
28	0.52596	SLE	Min	2.485E-16	-1.096E-16	0.0509
28	0.	SLU	Max	3.235E-16	-7.988E-17	-0.2495
28	0.26298	SLU	Max	3.235E-16	-1.128E-16	0.1087
28	0.52596	SLU	Max	3.235E-16	-1.456E-16	0.0662
28	0.	SLU	Min	3.235E-16	-7.988E-17	-0.2495
28	0.26298	SLU	Min	3.235E-16	-1.128E-16	0.1087
28	0.52596	SLU	Min	3.235E-16	-1.456E-16	0.0662
29	0.	SLE	Max	2.381E-16	-1.320E-16	0.0509
29	0.26298	SLE	Max	2.381E-16	-1.630E-16	0.1832
29	0.52596	SLE	Max	2.381E-16	-1.941E-16	0.0497
29	0.	SLE	Min	2.381E-16	-1.320E-16	0.0509
29	0.26298	SLE	Min	2.381E-16	-1.630E-16	0.1832
29	0.52596	SLE	Min	2.381E-16	-1.941E-16	0.0497
29	0.	SLU	Max	3.093E-16	-1.736E-16	0.0662
29	0.26298	SLU	Max	3.093E-16	-2.102E-16	0.2382
29	0.52596	SLU	Max	3.093E-16	-2.467E-16	0.0646
29	0.	SLU	Min	3.093E-16	-1.736E-16	0.0662
29	0.26298	SLU	Min	3.093E-16	-2.102E-16	0.2382
29	0.52596	SLU	Min	3.093E-16	-2.467E-16	0.0646
30	0.	SLE	Max	2.190E-16	-2.136E-16	0.0497
30	0.26298	SLE	Max	2.190E-16	-2.428E-16	0.1586
30	0.52596	SLE	Max	2.190E-16	-2.720E-16	0.0467
30	0.	SLE	Min	2.190E-16	-2.136E-16	0.0497
30	0.26298	SLE	Min	2.190E-16	-2.428E-16	0.1586
30	0.52596	SLE	Min	2.190E-16	-2.720E-16	0.0467
30	0.	SLU	Max	2.849E-16	-2.761E-16	0.0646
30	0.26298	SLU	Max	2.849E-16	-3.145E-16	0.2062
30	0.52596	SLU	Max	2.849E-16	-3.528E-16	0.0607
30	0.	SLU	Min	2.849E-16	-2.761E-16	0.0646
30	0.26298	SLU	Min	2.849E-16	-3.145E-16	0.2062
30	0.52596	SLU	Min	2.849E-16	-3.528E-16	0.0607
31	0.	SLE	Max	1.911E-16	-2.961E-16	0.0467
31	0.26298	SLE	Max	1.911E-16	-3.271E-16	0.1397
31	0.52596	SLE	Max	1.911E-16	-3.582E-16	0.0591
31	0.	SLE	Min	1.911E-16	-2.961E-16	0.0467
31	0.26298	SLE	Min	1.911E-16	-3.271E-16	0.1397

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
31	0.52596	SLE	Min	1.911E-16	-3.582E-16	0.0591
31	0.	SLU	Max	2.482E-16	-3.838E-16	0.0607
31	0.26298	SLU	Max	2.482E-16	-4.203E-16	0.1816
31	0.52596	SLU	Max	2.482E-16	-4.568E-16	0.0768
31	0.	SLU	Min	2.482E-16	-3.838E-16	0.0607
31	0.26298	SLU	Min	2.482E-16	-4.203E-16	0.1816
31	0.52596	SLU	Min	2.482E-16	-4.568E-16	0.0768
32	0.	SLE	Max	1.556E-16	-3.725E-16	0.0591
32	0.26298	SLE	Max	1.556E-16	-4.035E-16	0.1156
32	0.52596	SLE	Max	1.556E-16	-4.346E-16	0.0472
32	0.	SLE	Min	1.556E-16	-3.725E-16	0.0591
32	0.26298	SLE	Min	1.556E-16	-4.035E-16	0.1156
32	0.52596	SLE	Min	1.556E-16	-4.346E-16	0.0472
32	0.	SLU	Max	2.023E-16	-4.819E-16	0.0768
32	0.26298	SLU	Max	2.023E-16	-5.239E-16	0.1502
32	0.52596	SLU	Max	2.023E-16	-5.659E-16	0.0613
32	0.	SLU	Min	2.023E-16	-4.819E-16	0.0768
32	0.26298	SLU	Min	2.023E-16	-5.239E-16	0.1502
32	0.52596	SLU	Min	2.023E-16	-5.659E-16	0.0613
33	0.	SLE	Max	1.119E-16	-4.519E-16	0.0472
33	0.26298	SLE	Max	1.119E-16	-4.830E-16	0.0504
33	0.52596	SLE	Max	1.119E-16	-5.140E-16	-0.0211
33	0.	SLE	Min	1.119E-16	-4.519E-16	0.0472
33	0.26298	SLE	Min	1.119E-16	-4.830E-16	0.0504
33	0.52596	SLE	Min	1.119E-16	-5.140E-16	-0.0211
33	0.	SLU	Max	1.452E-16	-5.861E-16	0.0613
33	0.26298	SLU	Max	1.452E-16	-6.262E-16	0.0656
33	0.52596	SLU	Max	1.452E-16	-6.664E-16	-0.0275
33	0.	SLU	Min	1.452E-16	-5.861E-16	0.0613
33	0.26298	SLU	Min	1.452E-16	-6.262E-16	0.0656
33	0.52596	SLU	Min	1.452E-16	-6.664E-16	-0.0275
34	0.	SLE	Max	6.161E-17	-5.192E-16	-0.0211
34	0.25566	SLE	Max	6.161E-17	-5.512E-16	0.0216
34	0.51132	SLE	Max	6.161E-17	-5.831E-16	0.0408
34	0.	SLE	Min	6.161E-17	-5.192E-16	-0.0211
34	0.25566	SLE	Min	6.161E-17	-5.512E-16	0.0216
34	0.51132	SLE	Min	6.161E-17	-5.831E-16	0.0408
34	0.	SLU	Max	8.007E-17	-6.761E-16	-0.0275
34	0.25566	SLU	Max	8.007E-17	-7.170E-16	0.028
34	0.51132	SLU	Max	8.007E-17	-7.578E-16	0.0531
34	0.	SLU	Min	8.007E-17	-6.761E-16	-0.0275
34	0.25566	SLU	Min	8.007E-17	-7.170E-16	0.028
34	0.51132	SLU	Min	8.007E-17	-7.578E-16	0.0531
35	0.	SLE	Max	1.999E-17	-5.818E-16	0.0408
35	0.26732	SLE	Max	1.999E-17	-5.035E-16	-0.0334
35	0.53464	SLE	Max	1.999E-17	-4.237E-16	-0.095
35	0.	SLE	Min	1.999E-17	-5.818E-16	0.0408
35	0.26732	SLE	Min	1.999E-17	-5.035E-16	-0.0334
35	0.53464	SLE	Min	1.999E-17	-4.237E-16	-0.095
35	0.	SLU	Max	2.607E-17	-7.533E-16	0.0531
35	0.26732	SLU	Max	2.607E-17	-6.530E-16	-0.0434
35	0.53464	SLU	Max	2.607E-17	-5.506E-16	-0.1235
35	0.	SLU	Min	2.607E-17	-7.533E-16	0.0531
35	0.26732	SLU	Min	2.607E-17	-6.530E-16	-0.0434
35	0.53464	SLU	Min	2.607E-17	-5.506E-16	-0.1235
36	0.	SLE	Max	-3.393E-20	-4.285E-16	-0.095
36	0.25994	SLE	Max	-3.393E-20	-2.169E-16	-0.0657
36	0.51989	SLE	Max	-3.393E-20	-9.074E-19	-2.121E-16

Table 22: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	StepType	T	M2	M3
	m			KN-m	KN-m	KN-m
36	0.	SLE	Min	-3.393E-20	-4.285E-16	-0.095
36	0.25994	SLE	Min	-3.393E-20	-2.169E-16	-0.0657
36	0.51989	SLE	Min	-3.393E-20	-9.074E-19	-2.121E-16
36	0.	SLU	Max	-2.705E-20	-5.539E-16	-0.1235
36	0.25994	SLU	Max	-2.705E-20	-2.795E-16	-0.0854
36	0.51989	SLU	Max	-2.705E-20	6.428E-19	9.486E-17
36	0.	SLU	Min	-2.705E-20	-5.539E-16	-0.1235
36	0.25994	SLU	Min	-2.705E-20	-2.795E-16	-0.0854
36	0.51989	SLU	Min	-2.705E-20	6.428E-19	9.486E-17

9. Material take-off

This section provides a material take-off.

Table 23: Material List 2 - By Section Property

Table 23: Material List 2 - By Section Property

Section	ObjectType	NumPieces	TotalLength	TotalWeight
			m	KN
C100x30	Frame	36	18.91064	141.788

10. Design preferences

This section provides the design preferences for each type of design, which typically include material reduction factors, framing type, stress ratio limit, deflection limits, and other code specific items.

10.1. Steel design

Table 24: Preferences - Steel Design - AISC 360-10, Part 1 of 4

Table 24: Preferences - Steel Design - AISC 360-10, Part 1 of 4

THDesign	FrameType	PatLLF	SRatioLimit	MaxIter	SDC	SeisCode	SeisLoad	ImpFactor
Envelopes	SMF	0.75	0.95	1	D	Yes	Yes	1.

Table 24: Preferences - Steel Design - AISC 360-10, Part 2 of 4

Table 24: Preferences - Steel Design - AISC 360-10, Part 2 of 4

SystemRho	SystemSds	SystemR	SystemCd	Omega0	Provision	AMethod	SOMethod	SRMethod
1.	0.5	8.	5.5	3.	LRFD	Direct Analysis	General 2nd Order	Tau-b Fixed

Table 24: Preferences - Steel Design - AISC 360-10, Part 3 of 4

Table 24: Preferences - Steel Design - AISC 360-10, Part 3 of 4

NLCoeff	PhiB	PhiC	PhiTY	PhiTF	PhiV	PhiVRolledI	PhiVT	PlugWeld
0.002	0.9	0.9	0.9	0.75	0.9	1.	0.9	Yes

Table 24: Preferences - Steel Design - AISC 360-10, Part 4 of 4

Table 24: Preferences - Steel Design - AISC 360-10, Part 4 of 4

HSSWelding	HSSReduceT	CheckDefl	DLRat	SDLAndLLRat	LLRat	TotalRat	NetRat
ERW	No	No	120.	120.	360.	240.	240.

10.2. Concrete design

Table 25: Preferences - Concrete Design - ACI 318-14, Part 1 of 2

Table 25: Preferences - Concrete Design - ACI 318-14, Part 1 of 2

THDesign	NumCurves	NumPoints	MinEccen	PatLLF	UFLimit	SeisCat	Rho	Sds
Envelopes	24	11	Yes	0.75	0.95	D	1.	0.5

Table 25: Preferences - Concrete Design - ACI 318-14, Part 2 of 2

Table 25: Preferences - Concrete Design - ACI 318-14, Part 2 of 2

PhiT	PhiCTied	PhiCSpiral	PhiV	PhiVSeismic	PhiVJoint
0.9	0.65	0.75	0.75	0.6	0.85

10.3. Aluminum design

Table 26: Preferences - Aluminum Design - AA-ASD 2000

Table 26: Preferences - Aluminum Design - AA-ASD 2000

FrameType	SRatioLimit	LatFact	UseLatFact
Moment Frame	1.	1.333333	No

10.4. Cold formed design

Table 27: Preferences - Cold Formed Design - AISI-ASD96

Table 27: Preferences - Cold Formed Design - AISI-ASD96

FrameType	SRatioLimit	OmegaBS	OmegaBUS	OmegaBLTB	OmegaVS	OmegaVNS	OmegaT	OmegaC
Braced Frame	1.	1.67	1.67	1.67	1.67	1.5	1.67	1.8

11. Design overwrites

This section provides the design overwrites for each type of design, which are assigned to individual members of the structure.

11.1. Concrete design

Table 28: Overwrites - Concrete Design - ACI 318-14, Part 1 of 2

Table 28: Overwrites - Concrete Design - ACI 318-14, Part 1 of 2

Frame	DesignSect	FrameType	RLLF	XLMajor	XLMinor	XKMajor
1	Program Determined	Program Determined	0.	0.	0.	0.
2	Program Determined	Program Determined	0.	0.	0.	0.
3	Program Determined	Program Determined	0.	0.	0.	0.
4	Program Determined	Program Determined	0.	0.	0.	0.
5	Program Determined	Program Determined	0.	0.	0.	0.
6	Program Determined	Program Determined	0.	0.	0.	0.
7	Program Determined	Program Determined	0.	0.	0.	0.
8	Program Determined	Program Determined	0.	0.	0.	0.
9	Program Determined	Program Determined	0.	0.	0.	0.
10	Program Determined	Program Determined	0.	0.	0.	0.
11	Program Determined	Program Determined	0.	0.	0.	0.
12	Program Determined	Program Determined	0.	0.	0.	0.
13	Program Determined	Program Determined	0.	0.	0.	0.
14	Program Determined	Program Determined	0.	0.	0.	0.
15	Program Determined	Program Determined	0.	0.	0.	0.
16	Program Determined	Program Determined	0.	0.	0.	0.
17	Program Determined	Program Determined	0.	0.	0.	0.
18	Program Determined	Program Determined	0.	0.	0.	0.
19	Program Determined	Program Determined	0.	0.	0.	0.
20	Program Determined	Program Determined	0.	0.	0.	0.
21	Program Determined	Program Determined	0.	0.	0.	0.
22	Program Determined	Program Determined	0.	0.	0.	0.
23	Program Determined	Program Determined	0.	0.	0.	0.
24	Program Determined	Program Determined	0.	0.	0.	0.
25	Program Determined	Program Determined	0.	0.	0.	0.
26	Program Determined	Program Determined	0.	0.	0.	0.
27	Program Determined	Program Determined	0.	0.	0.	0.
28	Program Determined	Program Determined	0.	0.	0.	0.
29	Program Determined	Program Determined	0.	0.	0.	0.
30	Program Determined	Program Determined	0.	0.	0.	0.
31	Program Determined	Program Determined	0.	0.	0.	0.
32	Program Determined	Program Determined	0.	0.	0.	0.
33	Program Determined	Program Determined	0.	0.	0.	0.
34	Program Determined	Program Determined	0.	0.	0.	0.
35	Program Determined	Program Determined	0.	0.	0.	0.
36	Program Determined	Program Determined	0.	0.	0.	0.

Table 28: Overwrites - Concrete Design - ACI 318-14, Part 2 of 2

Table 28: Overwrites - Concrete Design - ACI 318-14, Part 2 of 2

Frame	XKMinor	CmMajor	CmMinor	DnsMajor	DnsMinor	DsMajor	DsMinor
1	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.

Table 28: Overwrites - Concrete Design - ACI 318-14, Part 2 of 2

Frame	XKMinor	CmMajor	CmMinor	DnsMajor	DnsMinor	DsMajor	DsMinor
5	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.
9	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.
11	0.	0.	0.	0.	0.	0.	0.
12	0.	0.	0.	0.	0.	0.	0.
13	0.	0.	0.	0.	0.	0.	0.
14	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.
16	0.	0.	0.	0.	0.	0.	0.
17	0.	0.	0.	0.	0.	0.	0.
18	0.	0.	0.	0.	0.	0.	0.
19	0.	0.	0.	0.	0.	0.	0.
20	0.	0.	0.	0.	0.	0.	0.
21	0.	0.	0.	0.	0.	0.	0.
22	0.	0.	0.	0.	0.	0.	0.
23	0.	0.	0.	0.	0.	0.	0.
24	0.	0.	0.	0.	0.	0.	0.
25	0.	0.	0.	0.	0.	0.	0.
26	0.	0.	0.	0.	0.	0.	0.
27	0.	0.	0.	0.	0.	0.	0.
28	0.	0.	0.	0.	0.	0.	0.
29	0.	0.	0.	0.	0.	0.	0.
30	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.
32	0.	0.	0.	0.	0.	0.	0.
33	0.	0.	0.	0.	0.	0.	0.
34	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.
36	0.	0.	0.	0.	0.	0.	0.