

Project Name: 19-23 The Corso
Project Number: 11401
Frame Description: Ground floor footing - GB1
Designer: SW
C:\Users\Simon\Documents\11401-FTG BEAM GB1.rpf

RAPT - Version: 6.5.4.0
Reinforced And Post-Tensioned Concrete Analysis & Design Package
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Licensee
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Input

General

Design Code	List	Australia - AS3600-2009*SAVED*
Material	List	Australia - Australian Materials - 2009*SAVED*
Reinforcement Type	List	Reinforced
Member Type	List	Beam
Panel Type	List	Internal
Strip Type	List	One way - Nominal Width
Column Stiffness	List	Equivalent Column
Concrete Type	List	Standard Concrete
Concrete - Spanning Members	List	32MPa
Concrete - Columns	List	40MPa
Top Reinforcement Cover	mm	40
Bottom Reinforcement Cover	mm	40
Top Reinforcement Axis Depth Limit	mm	30
Bottom Reinforcement Axis Depth Limit	mm	50
Concrete Unit Weight	kn/m3	25
Self Weight Definition	List	Program Calculated
Pattern Live Load	Y/N	Y
Earthquake Design	List	None
Moment Redistribution	%	0
Design Surface Levels	List	Extreme Surfaces

Span

Span	Span	Slab	Panel	Panel
	Length	Depth	Width	Width
	mm	mm	mm	mm
LC	600	200	600	600
1	7800	200	600	600
RC	600	200	600	600

Columns

Column	Column Grid Reference	Support Type	Transverse Column spacing	Transverse prestress (P/A)
	A	List	mm	MPa
1		1 Knife-Edge	600	
2		2 Knife-Edge	600	

Beams

Beam Number	Beam Depth	Beam Width at Slab	Beam Width	Effective Flange Width
	mm	mm	mm	mm
LC	750	600	600	600
1	750	600	600	600
RC	750	600	600	600

Load Cases

Load Case	Load Type	Load Definition	Live Load Deflection Case	Description
	List	List	Y/N	A
1	Self Weight	Applied Loads		
2	Live Load	Applied Loads	Y	
3	Extra Dead Load	Applied Loads		

1. Self Weight - Line

Load	Left End Reference Column	Left end of load from reference column	Load at left end	Right End reference column	Right end of load from reference column	Load at right end	Description
	#	mm	kN/m	#	mm	kN/m	A
1	0	0	11.25	2	600	11.25	

2. Live Load - Line

Load	Left End Reference Column	Left end of load from reference column	Load at left end	Right End reference column	Right end of load from reference column	Load at right end	Live Load reduction	Description
	#	mm	kN/m	#	mm	kN/m	##	A
1	1	6600	20	3	0	20	1	

2. Live Load - Panel

Load	Left End reference column	Left end of load from reference column	Load at left end	Right End reference column	Right end of load from reference column	Load at right end	Live Load reduction	Description
	#	mm	kN/m2	#	mm	kN/m2	##	A
1	0	0	10	2	600	10	1	

3. Extra Dead Load - Line

Load	Left End Reference Column	Left end of load from reference column	Load at left end	Right End reference column	Right end of load from reference column	Load at right end	Description
	#	mm	kN/m	#	mm	kN/m	A
1	1	6600	113	3	0	113	

3. Extra Dead Load - Point

Load	Reference column	Distance to Load from reference column	Load	Load Length	Description
	#	mm	kN	mm	A
1	1	1200	95	0.2	

Load Combinations : Ultimate

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Live Load	1.2	1.5	1.2
2	Live Load	0.9	1.5	0.9
3	Dead Load	1.35	0	1.35

Load Combinations : Short Term Service

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Live Load	1	0.7	1

Load Combinations : Permanent Service

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Live Load	1	0.4	1

Load Combinations : Deflection

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Short Term - Deflection	1	0.7	1
2	Permanent - Deflection	1	0.4	1
3	Initial - Deflection	1	0	0

Load Combinations : Transfer Prestress

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Transfer	1	0	0

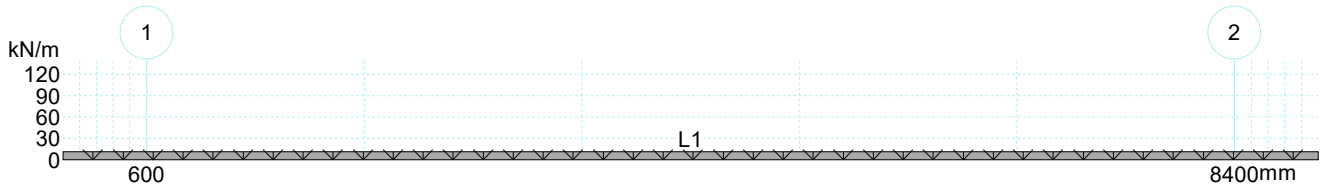
Load Combinations : Pre Existing

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Pre Existing	1	0	0

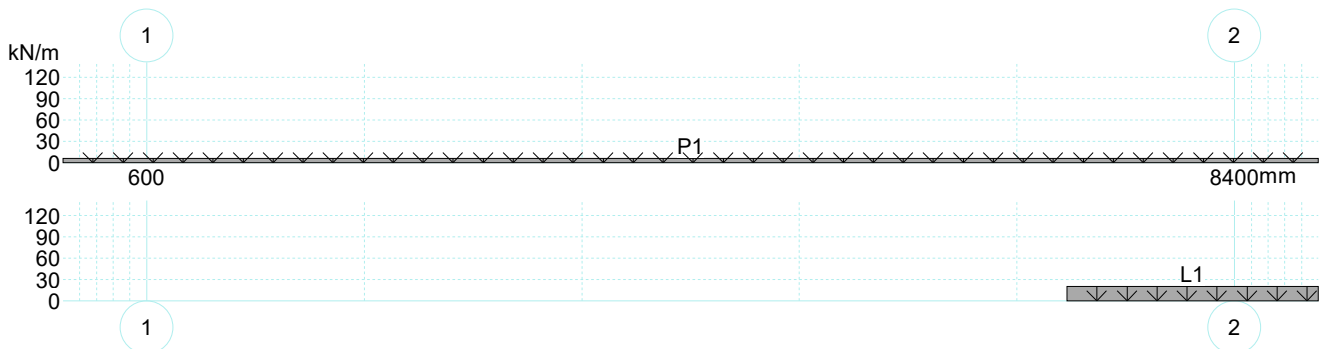
Load Combinations : Construction

Load Combination	Description	1. Self Weight	2. Live Load	3. Extra Dead Load
	A	##	##	##
1	Construction	1	0	0

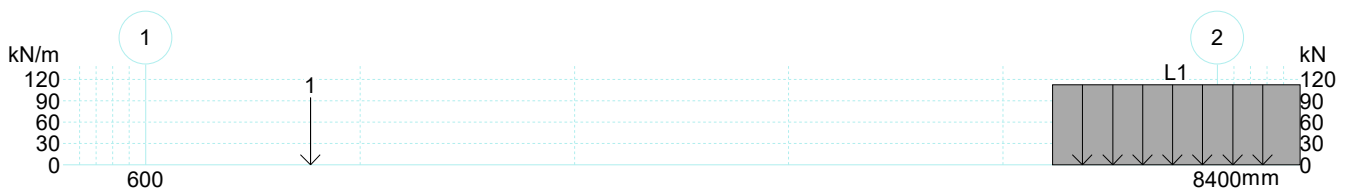
Load Case 1 : 1. Self Weight



Load Case 2 : 2. Live Load



Load Case 3 : 3. Extra Dead Load



Reinforcement

Reinforcement Use	Reinforcement Type	Preferred Bar Size	Number of Legs
	List	List	#
Flexural Bar	N 500MPa		
Flexural Mesh	F 450MPa		
Shear Option 1	N 500MPa	10	2
Shear Option 2	N 500MPa	12	2
Shear Option 3	N 500MPa	16	2
Punching Shear	N 500MPa	10	1

Reinforcement

	Maximum Bar Spacing	Minimum Bar Spacing	Minimum Continuous Reinforcement	Minimum Span Reinforcement into End Support	Minimum Span Reinforcement into Internal Support	Infill Bars	Stagger Bars
	mm	mm	##	##	##	Y/N	Y/N
Support Reinforcement	300	60	0			N	N
Span Reinforcement	300	60		0	0	N	N

Design Zones : Top

Layer Number	Steel type	Left End Reference Column	Distance to left end of bar	Bar stagger length at left end	Top Cover at left end	Right End Reference Column	Distance to right end of bar	Bar stagger length at right end	Top Cover at Right end	Maximum Bar Size	Minimum Bar Size	Preferred bar size
	List	#	mm	mm	mm	#	mm	mm	mm	List	List	List
1	Bar	1	-600	0	40	2	600	0	40	36	16	16

Layer Number	Minimum Number of Bars	Maximum Spacing of Bars	Minimum Steel area as %	% in Flange
	#	mm	%	%
1	0	0	0	0

Design Zones : Bottom

Layer Number	Steel type	Left End Reference Column	Distance to left end of bar	Bar stagger length at left end	Bottom Cover at left end	Right End Reference Column	Distance to right end of bar	Bar stagger length at right end	Bottom Cover at Right End	Maximum Bar Size	Minimum Bar Size
	List	#	mm	mm	mm	#	mm	mm	mm	List	List
1	Bar	1	-600	0	40	2	600	0	40	36	16

Layer Number	Preferred bar size	Minimum Number of Bars	Maximum Spacing of Bars	Minimum Steel area as %	% in Flange
	List	#	mm	%	%
1	20	0	0	0	0

User Defined : Top

Layer Number	Steel type	Left End Reference Column	Distance to left end of bar	Bar stagger length at left end	Top Cover at left end	% Development of Left End of Bar in Tension	% Development of Left End of Bar in Compression	Right End Reference Column	Distance to right end of bar	Bar stagger length at right end	Top Cover at Right end
	List	#	mm	mm	mm	%	%	#	mm	mm	mm
1	N 500MPa	0	0	0	40	50	50	2	600	0	40

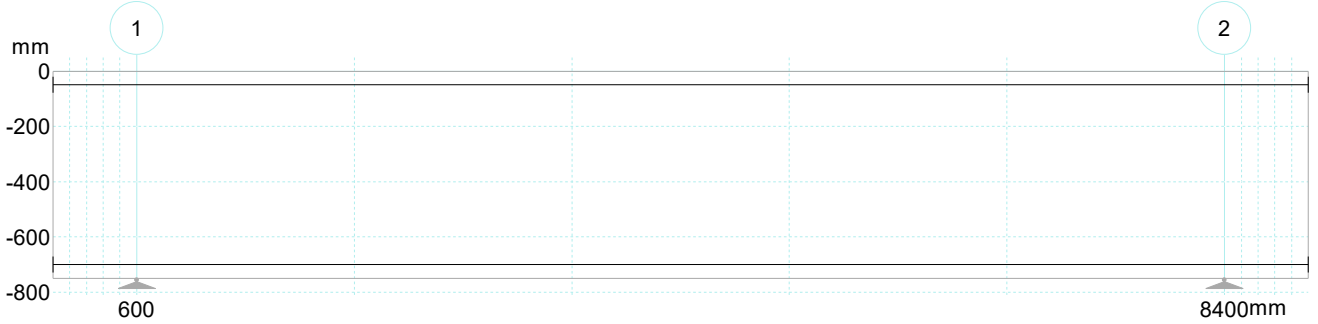
Layer Number	% Development of Right End of Bar in Tension	% Development of Right End of Bar in Compression	Bar Size	Number of Bars	Spacing of Bars	% in Flange	Layer attached after the PreExisting Load Case
	%	%	List	#	mm	%	Y/N
1	50	50	20	6	0	0	N

User Defined : Bottom

Layer Number	Steel type	Left End Reference Column	Distance to left end of bar	Bar stagger length at left end	Bottom Cover at Left end	% Development of Left End of Bar in Tension	% Development of Left End of Bar in Compression	Right End Reference Column	Distance to right end of bar	Bar stagger length at right end	Bottom Cover at Right End
	List	#	mm	mm	mm	%	%	#	mm	mm	mm
1	N 500MPa	0	0	0	50	50	50	2	600	0	50

Layer Number	% Development of Right End of Bar in Tension	% Development of Right End of Bar in Compression	Bar Size	Number of Bars	Spacing of Bars	% in Flange	Layer attached after the PreExisting Load Case
	%	%	List	#	mm	%	Y/N
1	50	50	20	6	0	0	N

Reinforcement Design Zones



Reinforcement Design Zones User Defined



Design Data

Capacity Reduction factor (phi) for Flexure	##	0.8
Capacity Reduction factor (phi) for Shear	##	0.7
Material Factor for Concrete in Flexure	##	1
Material Factor for Concrete in Shear	##	1
Material Factor for Reinforcement	##	1
Maximum Ratio of Neutral Axis Depth for Ductility	##	0.4
Ductility Limit - Strain	##	0
Ductility Check at Left End Column	Y/N	Y
Ductility Check at Right End Column	Y/N	Y
Minimum Reinforcement Strength Limit - ### x M*	##	0
Flexural Critical Section - Consider Transverse Beams	Y/N	Y
Flexural Critical Section - Distance from centre of Support	##	-1
Beam Left Sideface Cover (Internal)	mm	25
Beam Right Sideface cover	mm	40
Prestress Minimum Reinforcement Basis	List	Program Default
Shear Enhancement at Supports	Y/N	N
Ast Value in Shear Calculations	List	Calculated
Limit Reinforcement Strain	Y/N	Y
Include Strain Hardening of Reinforcement	Y/N	N
Beam Shear Critical Section Location	List	Code Critical Section

Maximum Service Stress Change - Prestressed Sections	MPa	0
Maximum Service Stress Change - Reinforced Sections	MPa	0
Relative Humidity	%	50
Average Temperature	C.	20
Prestress Losses Calculations based on	List	Program Default
Crack Width Calculations	List	Code default
AS3600 Shrinkage and Temperature Reinforcement	List	Moderate
Degree of Restraint in Primary Direction	%	0
Degree of Restraint in Secondary Direction	%	0
Concrete Strength Gain Rate	List	N

Concrete Tensile Strength for Deflection Calculations- ### x (Fc)n	##	-1
Maximum Value of leff/lgross for Deflection Calculations	##	0.6
Total Deflection Warning Limit - Maximum Span/Deflection	##	250
Total Deflection Warning Limit - Maximum Deflection	mm	25

Incremental Deflection Warning Limit - Maximum Span/Deflection	##	500
Incremental Deflection Warning Limit - Maximum Deflection	mm	25
Time of Loading in days	##	10
Age Adjustment Factor	##	0.76
Concrete Strength at Time of Loading	MPa	27.04
Loaded Period in years	##	30
Tension stiffening Approach	List	Modified Concrete Tensile Modulus Method

Live Load Pattern Factor	##	1
Pattern Live Load for Ultimate Strength	Y/N	Y
Pattern Live Load for Crack Control	Y/N	Y
Pattern Live Load For Deflections	Y/N	Y
Pattern Live Load for Deflection Permanent Load Combination	Y/N	N

Material Properties

Concrete

Designation	Shrinkage - Creep Model	Description	Set as Default

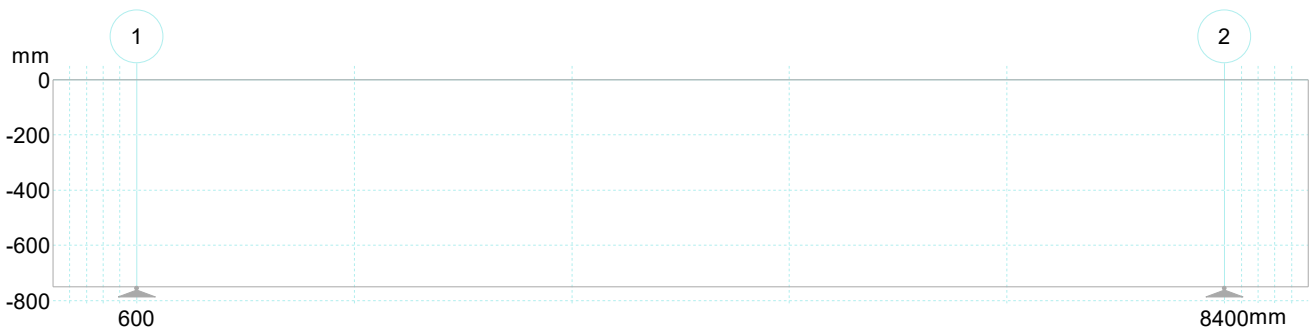
Reinforcement Bar

Designation	Type	Yield Stress	Elastic Modulus	Ductility	Peak Strain	Peak Stress	Design Strain Limit	Material Factor Flexure	Material Factor Shear	Material Capacity Reduction Factor - Flexure	Material Capacity Reduction Factor - Shear	Include as Flexural Reinforcement for Shear
N	Deformed	500	2e5	N	0.05	540	90	-1	-1	-1	-1	Y

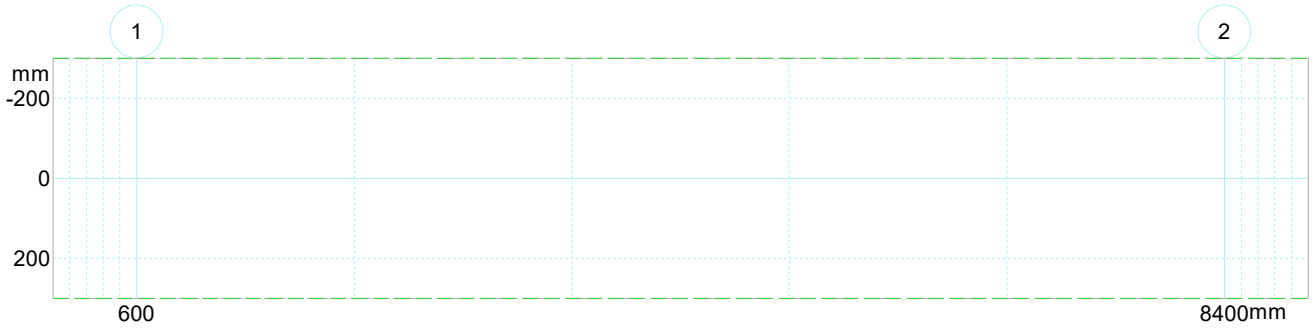
Description

Nominal Bar Size A	Bar Diameter mm	Bar Area mm ²	Bar Inertia mm ⁴	Bar Weight kg/m	Stock Length mm
10	10	78.5	491.07	0.62	12000
12	12	113	1018.29	0.89	12000
16	16	201	3218.29	1.58	12000
20	20	314	7857.14	2.47	12000
24	24	452	16292.6	3.55	12000
28	28	616	30184	4.83	12000
32	32	804	51492.6	6.31	12000
36	36	1020	82481.1	7.99	12000
40	40	1260	1.257e5	9.86	12000

Elevation view



Plan view



Warnings

Input

No errors or warnings were found.

Output

No errors or warnings were found.

Bending Moments

Load Cases

Column Actions

Col No. 1		Self Weight	Live Load	Extra Dead Load
Moment Above	kNm	-0	-0	-0
Moment Below	kNm	-0	-0	-0
Reaction	kN	50.63	28.38	88.17
Elastic Rotation	##	3.29e-4	1.96e-4	4.75e-4
Elastic Axial Shortening	mm	0	0	0

Col No. 2		Self Weight	Live Load	Extra Dead Load
Moment Above	kNm	-0	-0	-0
Moment Below	kNm	-0	-0	-0
Reaction	kN	50.63	61.62	210.19
Elastic Rotation	##	-3.29e-4	-2.1e-4	-4.21e-4
Elastic Axial Shortening	mm	0	0	0

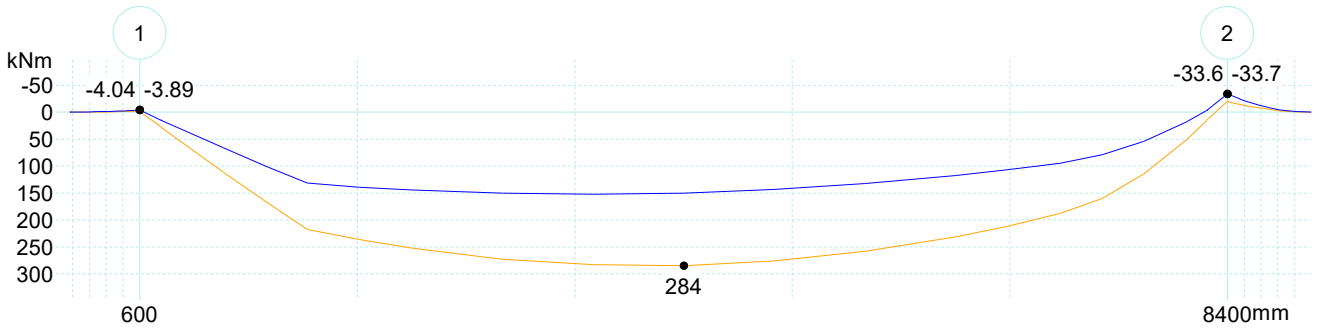
Load Combinations

Column Actions

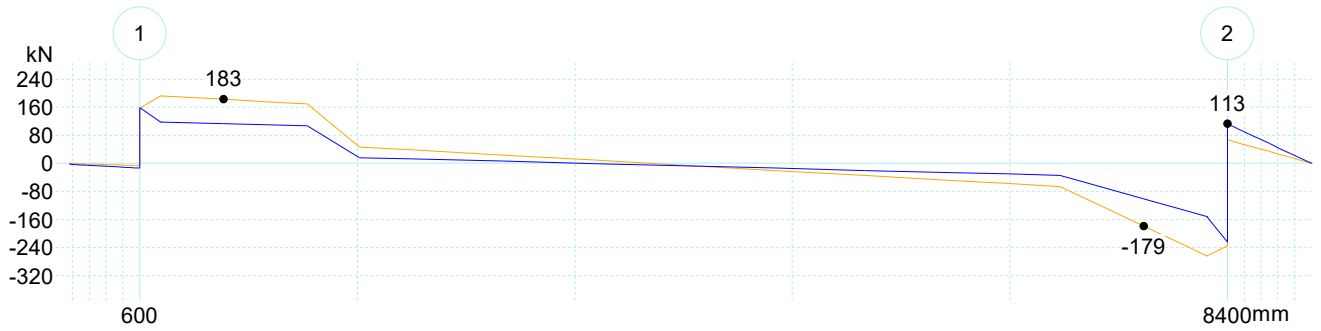
Col No. 1		Service	Service (Reversal)	Ultimate Flexure	Ultimate Flexure (Reversal)	Ultimate Shear	Ultimate Shear (Reversal)
Moment Above	kNm	0	0	0	0	0	0
Moment Below	kNm	0	0	0	0	0	0
Reaction	kN	158.67	158.67	209.13	209.13	126.26	210.03
Elastic Rotation	##	9.41e-4	9.41e-4	1.26e-3	1.26e-3	7.07e-4	1.27e-3
Elastic Axial Shortening	mm	0	0	0	0	0	0

Col No. 2		Service	Service (Reversal)	Ultimate Flexure	Ultimate Flexure (Reversal)	Ultimate Shear	Ultimate Shear (Reversal)
Moment Above	kNm	0	0	0	0	0	0
Moment Below	kNm	0	0	0	0	0	0
Reaction	kN	303.94	303.94	405.4	405.4	244.24	405.6
Elastic Rotation	##	-8.96e-4	-8.96e-4	-1.21e-3	-1.21e-3	-6.6e-4	-1.22e-3
Elastic Axial Shortening	mm	0	0	0	0	0	0

Ultimate Flexure

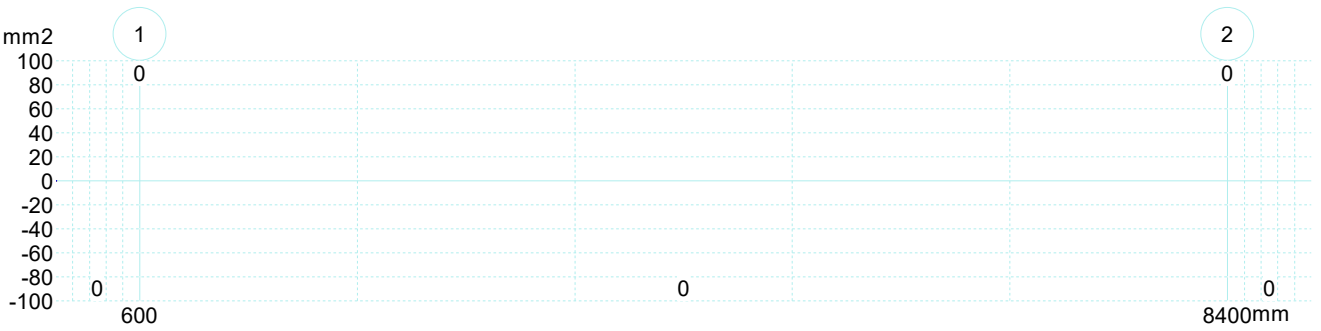


Moment Moment 1 Moment 2

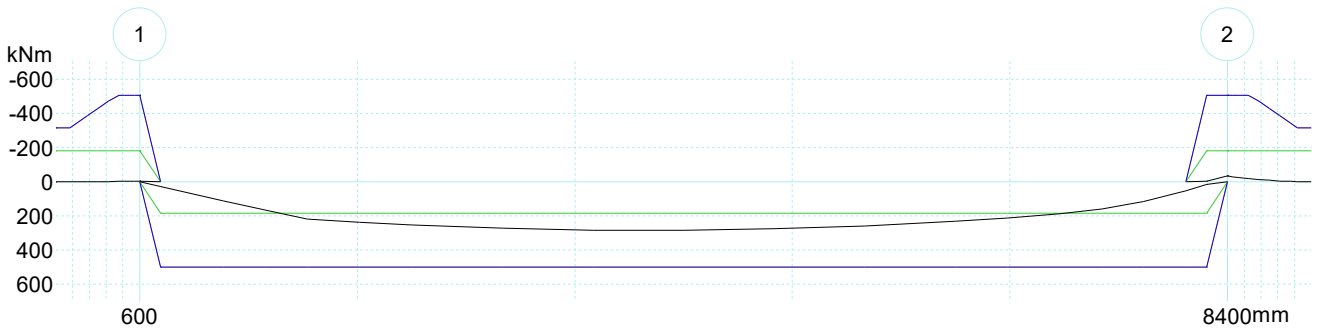


Shear Shear 1 Shear 2

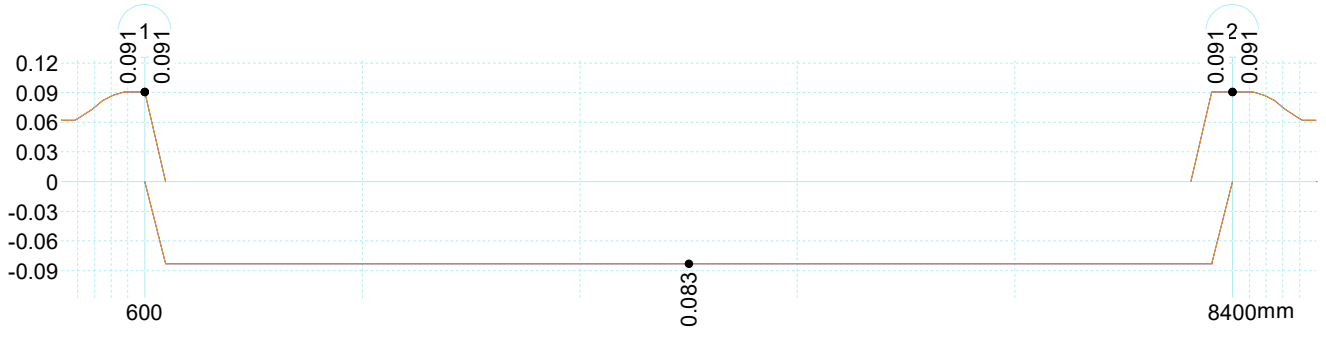
Flexural Design Ultimate



Reinforcement Top Total Bottom Total Top Ultimate Bottom Ultimate Min Top Min Bot



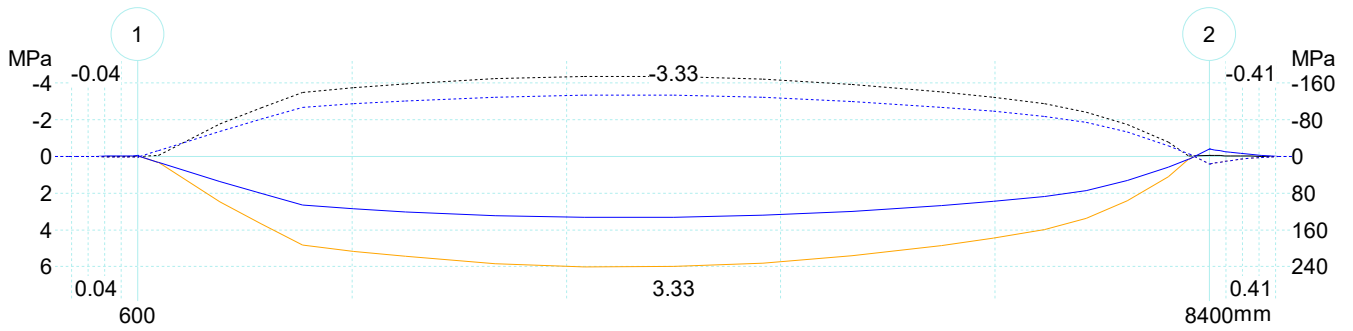
Capacity Minimum Ultimate Design Initial Final



Neutral Axis Depth Initial Final

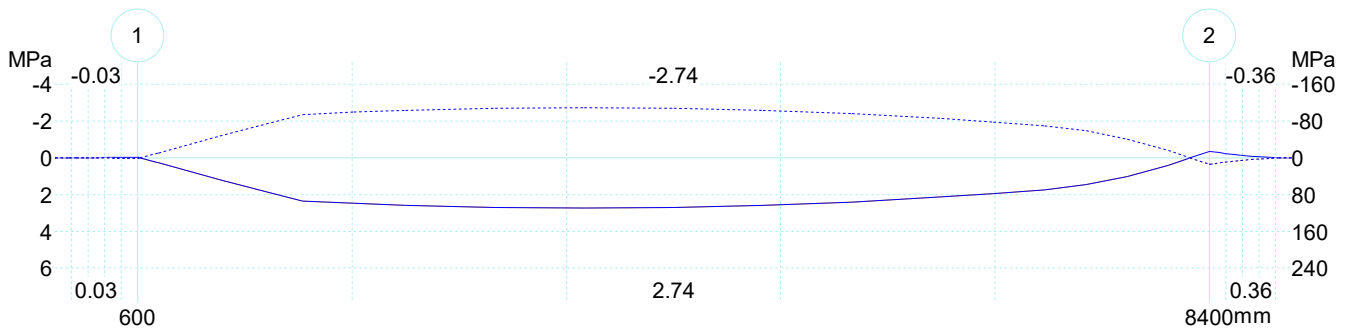
Service

Maximum Moment Condition



Gross Stress Top Gross Stress Bottom Cracked Compression Reinforcement Tension

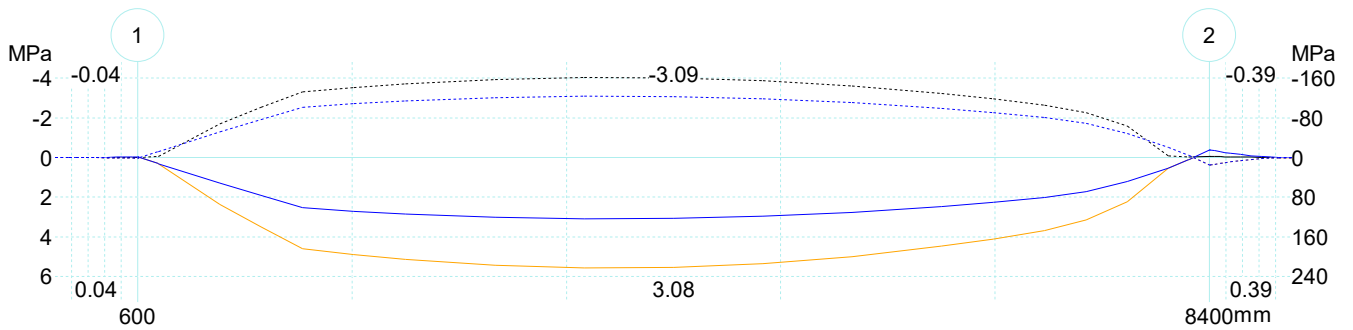
Reversal Moment Condition



Gross Stress Top Gross Stress Bottom Cracked Compression Reinforcement Tension

Permanent

Maximum Moment Condition



Gross Stress Top Gross Stress Bottom Cracked Compression Reinforcement Tension

Shear Comments
A
No shear steel
No shear steel
Minimum Steel
Minimum Steel

Span 2

Locat	V*	Mv*	Mdec	d	Ast	bv	phi Vuc	phi Vut	phi Vu	Phi Vumax	Asv/s	Spacing of Sets			Minimum Legs
												2 legs N10	2 legs N12	2 legs N16	
mm	kN	kNm	kNm	mm	mm2	mm	kN	kN	kN	kN	mm2/mm	mm	mm	mm	#
1	112.67	-33.75	0	700	0	600	152.4	99999	152.4	1881.6	0.42	373.8	500	500	2
38	105.71	-29.71	0	700	0	600	152.4	99999	152.4	1881.6	0.42	373.8	500	500	2
75	98.75	-25.92	0	700	0	600	152.4	99999	152.4	1881.6	0.42	373.8	500	500	2
112	91.79	-22.4	0	700	0	600	152.4	99999	152.4	1881.6	0.42	373.8	500	500	2
150	84.65	-19.05	0	700	0	600	152.4	99999	152.4	1881.6	0.42	373.8	500	500	2
225	70.54	-13.23	0	700	0	600	148.76	99999	148.76	1881.6	0	0	0	0	0
300	56.43	-8.46	0	700	0	600	144.02	99999	144.02	1881.6	0	0	0	0	0
375	42.32	-4.76	0	700	0	600	138.95	99999	138.95	1881.6	0	0	0	0	0
450	28.22	-2.12	0	700	0	600	133.49	99999	133.49	1881.6	0	0	0	0	0
500	18.81	-0.94	0	700	0	600	129.58	99999	129.58	1881.6	0	0	0	0	0

Shear Comments
A
Minimum Steel
Minimum Steel
Minimum Steel
Minimum Steel
Minimum Steel
No shear steel
No shear steel
No shear steel
No shear steel
No shear steel

Punching

Column Head Critical Section

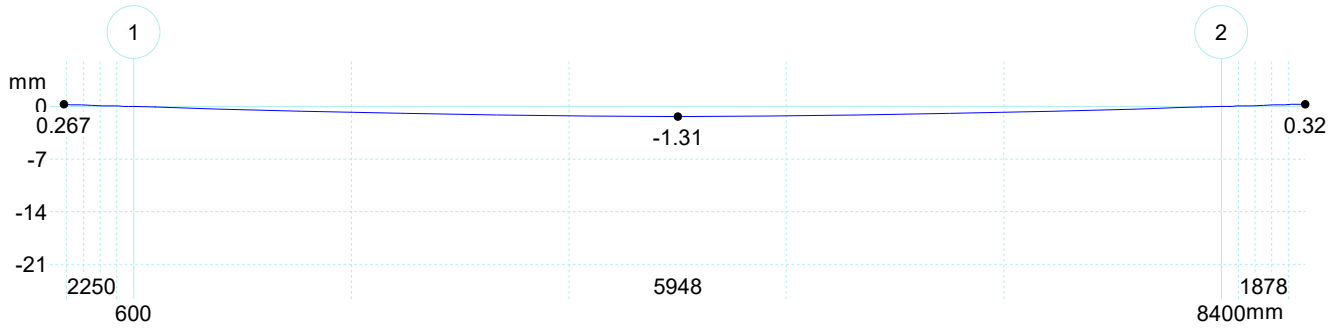
Column No.	Bh	a	at	u	d	fcv	P/A	Asw/s min	V*	Mv*	phi Vuo	phi Vu	phi Vumin	phi Vumax	side beam	Moment Transfer	Asw/s reqd
A	##	mm	mm	mm	mm	MPa	MPa	mm2/mm	kN	kNm	kN	kN	kN	kN	A	A	mm2/mm
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0

result
A
Check Not Carried Out!
Check Not Carried Out!

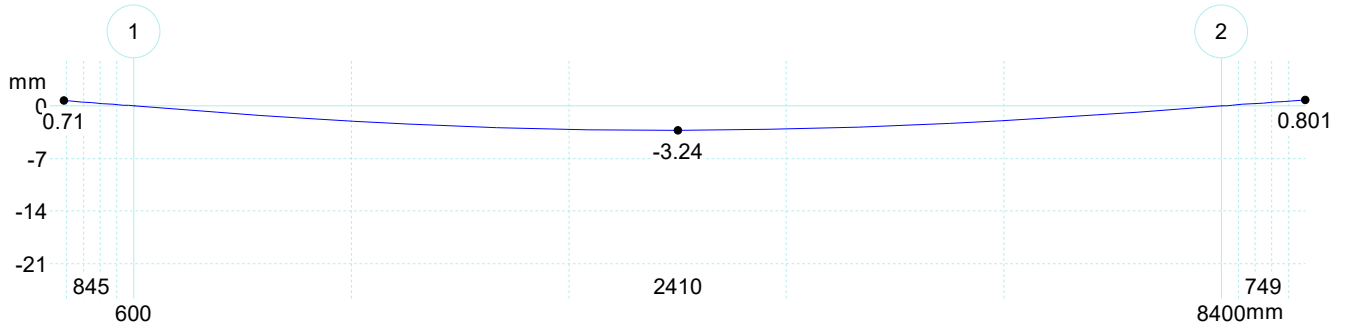
Deflections

All Spans Loaded

Transfer

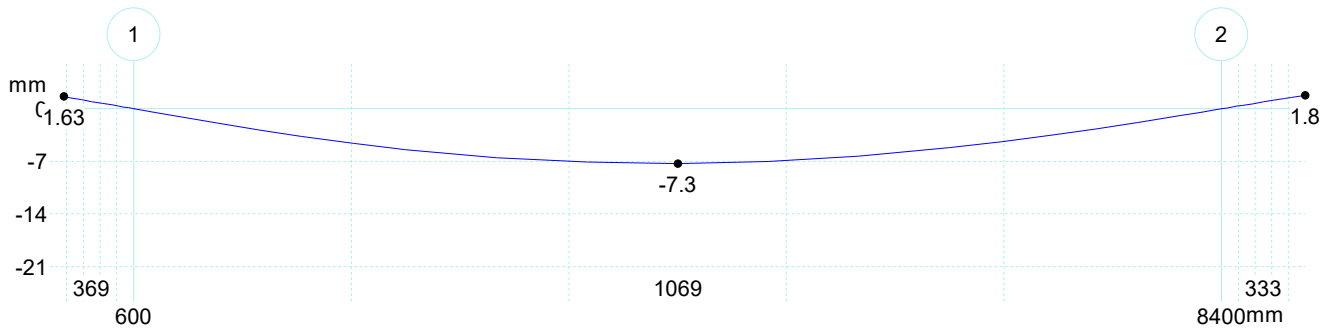


Short Term



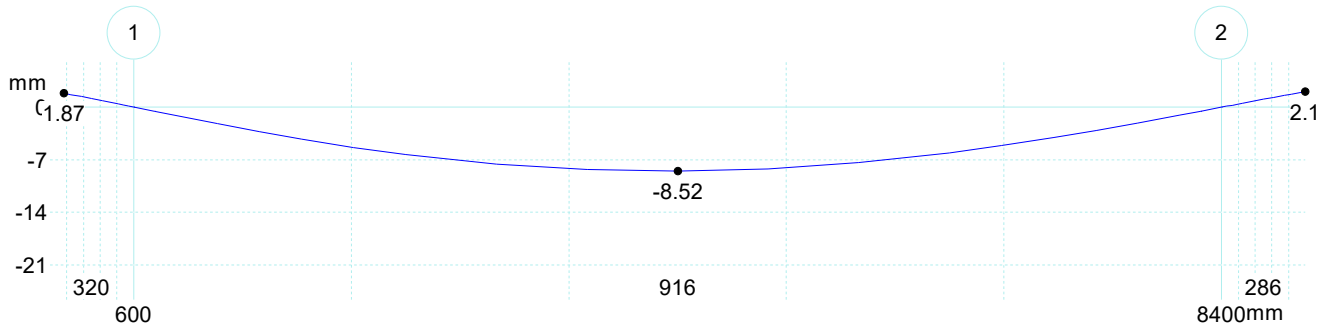
Even Spans Loaded Odd Spans Loaded All Spans Loaded

Incremental



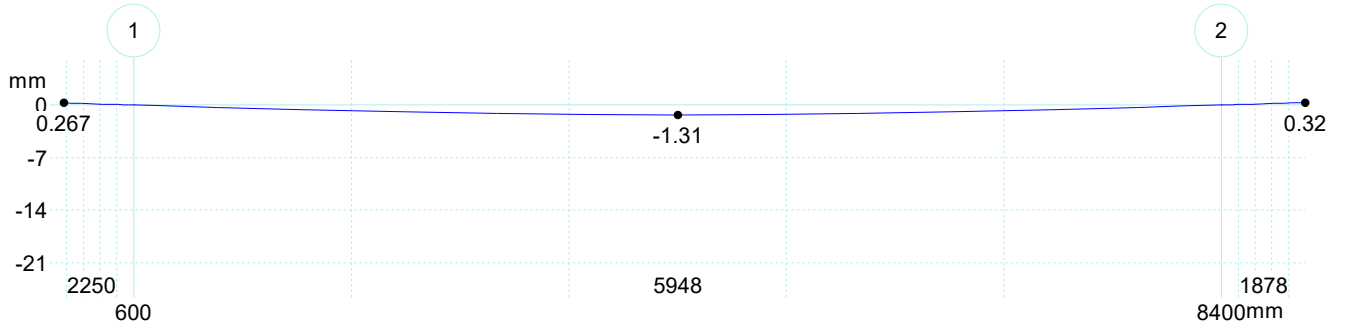
Even Spans Loaded Odd Spans Loaded All Spans Loaded

Total Long Term

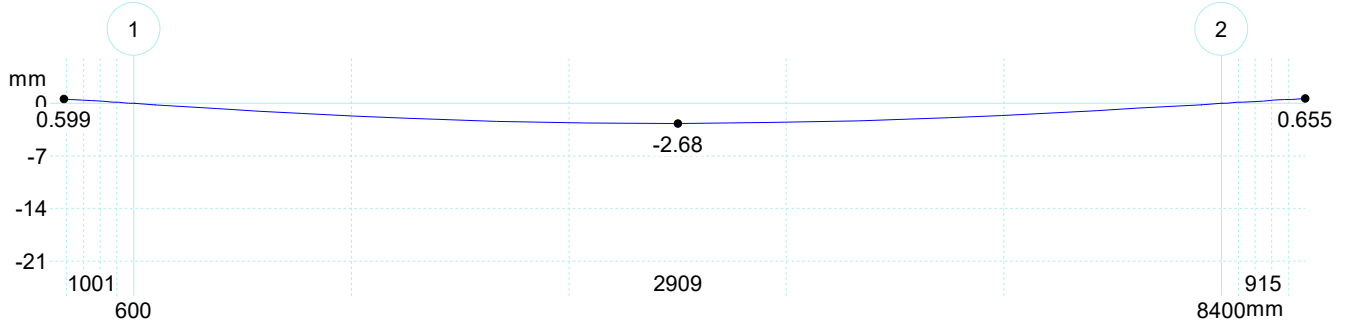


Even Spans Loaded Odd Spans Loaded All Spans Loaded

Even Spans Loaded Transfer

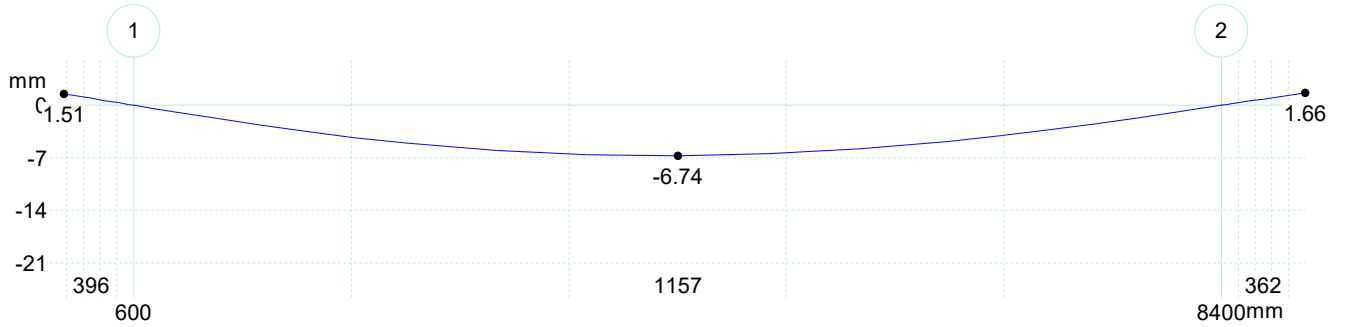


Short Term



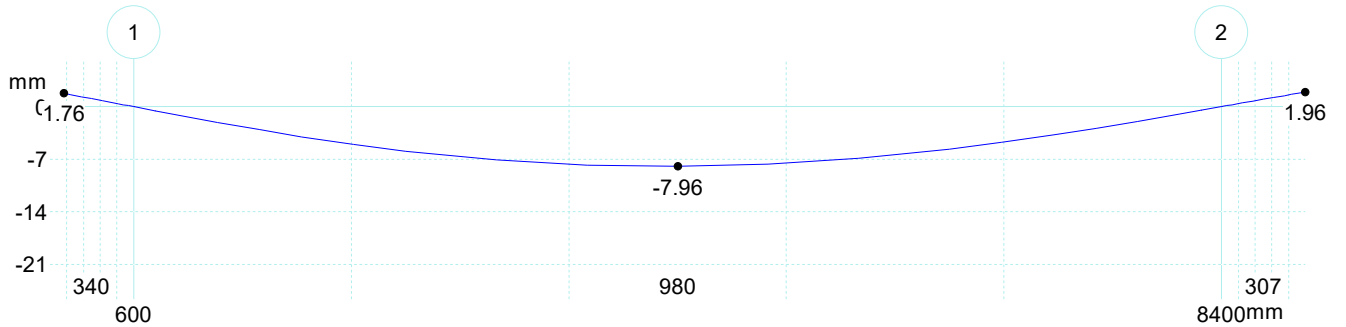
All Spans Loaded Odd Spans Loaded Even Spans Loaded

Incremental



All Spans Loaded Odd Spans Loaded Even Spans Loaded

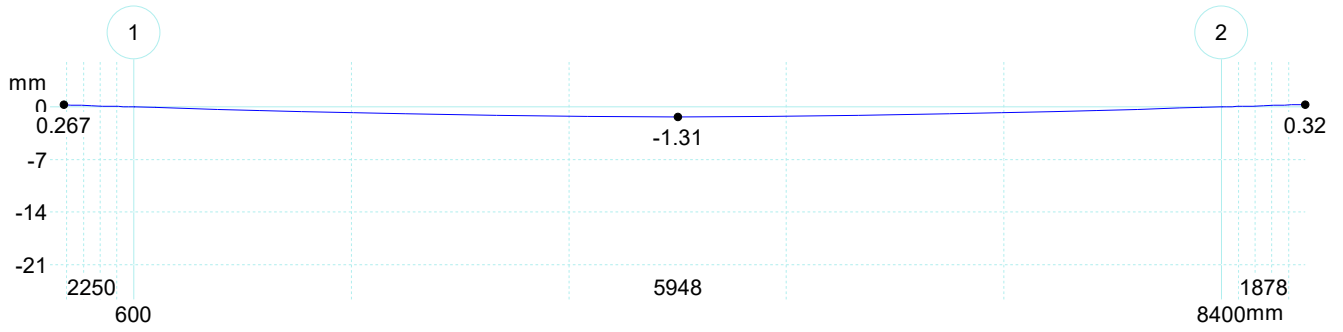
Total Long Term



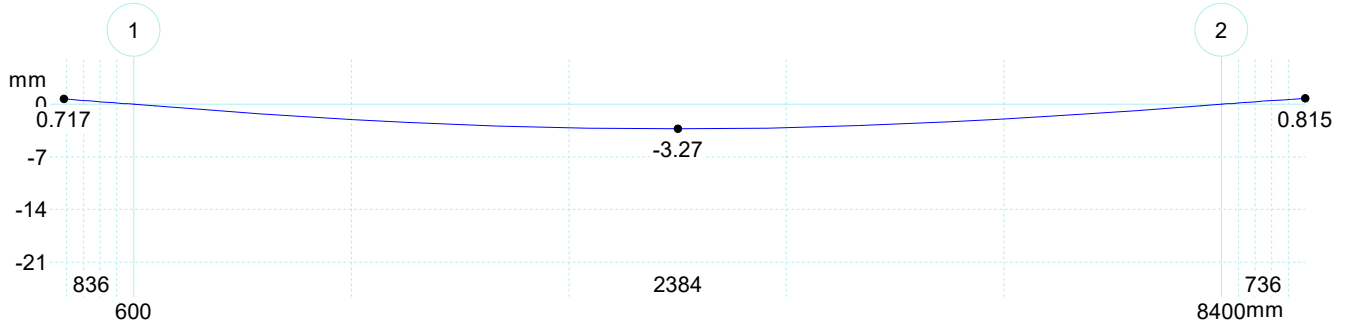
All Spans Loaded Odd Spans Loaded Even Spans Loaded

Odd Spans Loaded

Transfer

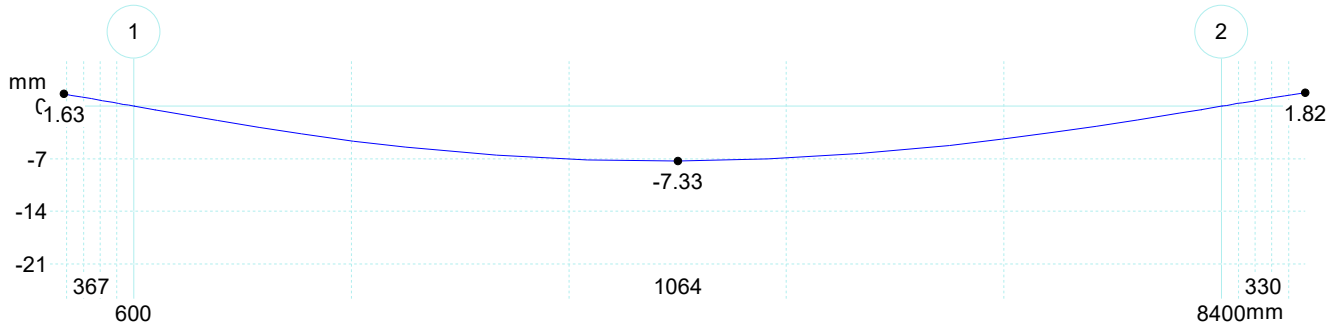


Short Term



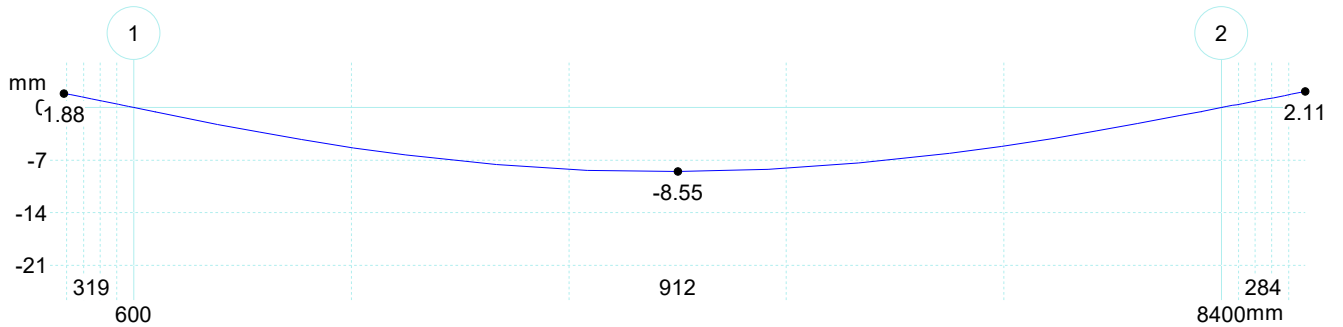
All Spans Loaded Even Spans Loaded Odd Spans Loaded

Incremental



All Spans Loaded Even Spans Loaded Odd Spans Loaded

Total Long Term



All Spans Loaded Even Spans Loaded Odd Spans Loaded

Detailed Reinforcement

Span 0

Locat mm	Top Reinforcement						Bottom Reinforcement					
	Max Size mm	Max Space mm	Area mm ²	Depth mm	Section Width mm	Rebar Req'd A	Max Size mm	Max Space mm	Area mm ²	Depth mm	Section Width mm	Rebar Req'd A
100	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
150	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
225	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
300	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added

Top Reinforcement							Bottom Reinforcement					
Locat	Max Size	Max Space	Area	Depth	Section Width	Rebar Req'd	Max Size	Max Space	Area	Depth	Section Width	Rebar Req'd
mm	mm	mm	mm ²	mm	mm	A	mm	mm	mm ²	mm	mm	A
375	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
450	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
488	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
525	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
562	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
599	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added

Shear Reinforcement				
Spacing of Sets				Shear Comments
Area	2 legs N10	2 legs N12	2 legs N16	
mm ² /mm	mm	mm	mm	A
0	0	0	0	No shear steel
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	

Design Comments:-

- - Span 0 - Required Bar Size is smaller than the Preferred Bar Size. Maintaining the same cover will require slightly less reinforcement than calculated.

Span 1

Top Reinforcement							Bottom Reinforcement					
Locat	Max Size	Max Space	Area	Depth	Section Width	Rebar Req'd	Max Size	Max Space	Area	Depth	Section Width	Rebar Req'd
mm	mm	mm	mm ²	mm	mm	A	mm	mm	mm ²	mm	mm	A
1	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added
149	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
151	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
600	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
899	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
1199.9	0	0	0	48	600	No Steel Added	36	300	0	700	600	No Steel Added
1574.9	0	0	0	48	600	No Steel Added	32	300	0	700	600	No Steel Added
1950	0	0	0	48	600	No Steel Added	32	300	0	700	600	No Steel Added
2600	0	0	0	48	600	No Steel Added	28	288.3	0	700	600	No Steel Added
3250	0	0	0	48	600	No Steel Added	28	281.7	0	700	600	No Steel Added
3900	0	0	0	48	600	No Steel Added	28	282	0	700	600	No Steel Added
4550	0	0	0	48	600	No Steel Added	28	289.3	0	700	600	No Steel Added
5200	0	0	0	48	600	No Steel Added	32	300	0	700	600	No Steel Added
5850	0	0	0	48	600	No Steel Added	32	300	0	700	600	No Steel Added
6225	0	0	0	48	600	No Steel Added	36	300	0	700	600	No Steel Added
6599	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
6900	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
7200	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
7500	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
7649	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
7651	0	0	0	48	600	No Steel Added	40	300	0	700	600	No Steel Added
7799	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added

Shear Reinforcement				
Spacing of Sets				Shear Comments
Area	2 legs N10	2 legs N12	2 legs N16	
mm ² /mm	mm	mm	mm	A
0	0	0	0	
0	0	0	0	
0	0	0	0	
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel

Shear Reinforcement				
Spacing of Sets				
Area	2 legs N10	2 legs N12	2 legs N16	Shear Comments
mm2/mm	mm	mm	mm	A
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	

Design Comments:-

- - Span 1 - Required Bar Size is smaller than the Preferred Bar Size. Maintaining the same cover will require slightly less reinforcement than calculated.

Span 2

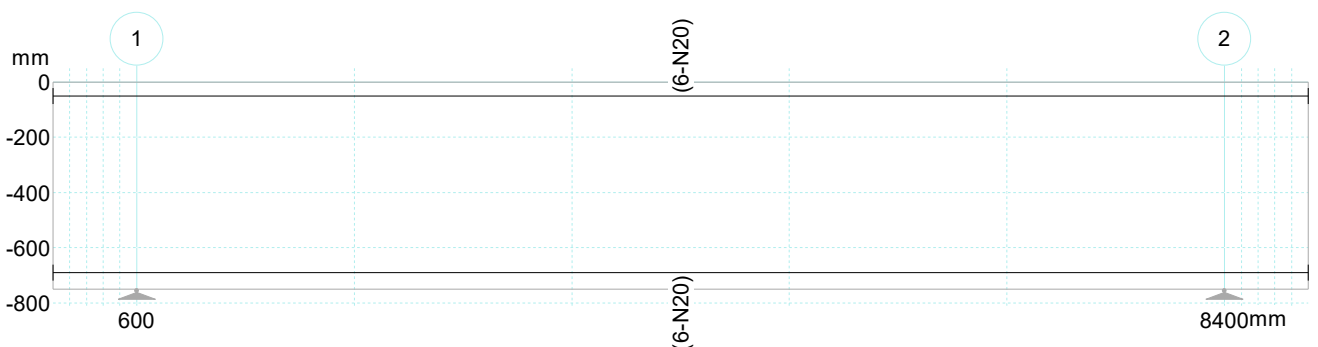
Top Reinforcement							Bottom Reinforcement						
Locat	Max Size	Max Space	Area	Depth	Section Width	Rebar Req'd	Max Size	Max Space	Area	Depth	Section Width	Rebar Req'd	
mm	mm	mm	mm2	mm	mm	A	mm	mm	mm2	mm	mm	A	
1	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
38	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
75	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
112	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
150	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
225	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
300	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
375	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
450	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	
500	40	300	0	48	600	No Steel Added	0	0	0	700	600	No Steel Added	

Shear Reinforcement				
Spacing of Sets				
Area	2 legs N10	2 legs N12	2 legs N16	Shear Comments
mm2/mm	mm	mm	mm	A
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0.42	373.8	500	500	Minimum Steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel
0	0	0	0	No shear steel

Design Comments:-

- - Span 2 - Required Bar Size is smaller than the Preferred Bar Size. Maintaining the same cover will require slightly less reinforcement than calculated.

Reinforcement Layout



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- - Span 0 - Required Bar Size is smaller than the Preferred Bar Size. Maintaining the same cover will require slightly less reinforcement than calculated.

 - - Span 1 - Required Bar Size is smaller than the Preferred Bar Size. Maintaining the same cover will require slightly less reinforcement than calculated.

 - - Span 2 - Required Bar Size is smaller than the Preferred Bar Size. Maintaining the same cover will require slightly less reinforcement than calculated.