


Project:
Project no:
Author:

Summary results

Check item	
DRM1	

Materials

Concrete

Name	f_c [ksi]	E_c [ksi]	ν [-]	Ψ_{pres}	Ψ_{perm}	Ψ_{trans}
6000	7.5	4463.1	0.15	2.5	2.5	1.5

Reinforcement

Name	f_y [ksi]	E_s [ksi]	Unit mass [lb/ft ³]	Surface
Grade 60	60.0	29000.0	490	Ribbed
	$\epsilon_{st} = 1000.0 \cdot 1e-4$, $\epsilon_{sc} = 1000.0 \cdot 1e-4$,			

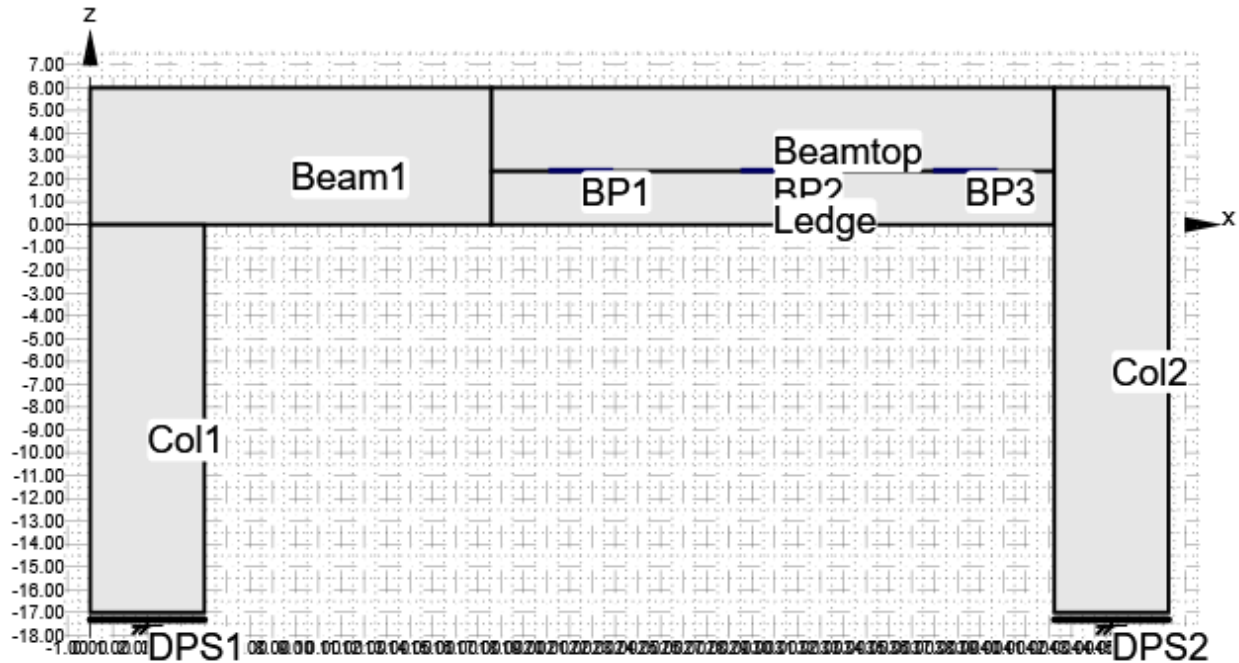
Steel

Name	E [ksi]
A709 Gr. 50	29007.5

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DRM1

Geometry



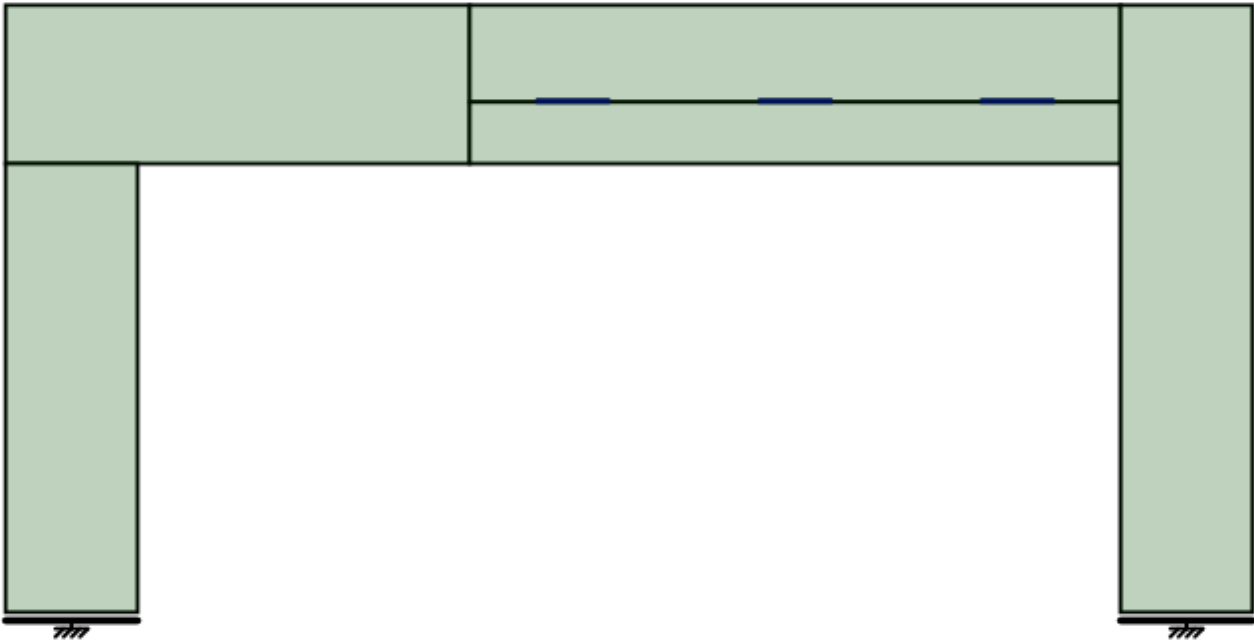
Overview table

Name	Type	Properties	Position
Beam1	Wall	Rectangular; W: 17.59 ft; H: 6.00 ft; T: 3.34 ft; Material: 6000	
Col1	Wall	Rectangular; W: 5.00 ft; H: 17.00 ft; T: 3.00 ft; Material: 6000	M: Beam1; IP: 4; MP: 1
Beamtop	Wall	Rectangular; W: 24.66 ft; H: 3.67 ft; T: 3.34 ft; Material: 6000	M: Beam1; IP: 4; MP: 3
Ledge	Wall	Rectangular; W: 24.66 ft; H: 2.33 ft; T: 6.00 ft; Material: 6000	M: Beam1; IP: 1; MP: 2
Col2	Wall	Rectangular; W: 5.00 ft; H: 23.00 ft; T: 3.00 ft; Material: 6000	M: Beamtop; IP: 4; MP: 3
DPS1	Distributed point support	X; Z; Ry; Local; W: 5.00 ft	M: Col1; Edge: 1; From beginning; X: 2.50 ft
DPS2	Distributed point support	X; Z; Ry; Local; W: 5.00 ft	M: Col2; Edge: 1; From beginning; X: 2.50 ft
BP1	Bearing plate	W: 2.67 ft; T: 0.08 ft; Material: A709 Gr. 50	M: Ledge, Edge 3; From end; X: 3.91 ft
BP2	Bearing plate	W: 2.67 ft; T: 0.08 ft; Material: A709 Gr. 50	M: Ledge, Edge 3; From end; X: 12.33 ft
BP3	Bearing plate	W: 2.67 ft; T: 0.08 ft; Material: A709 Gr. 50	M: Ledge, Edge 3; From end; X: 20.75 ft

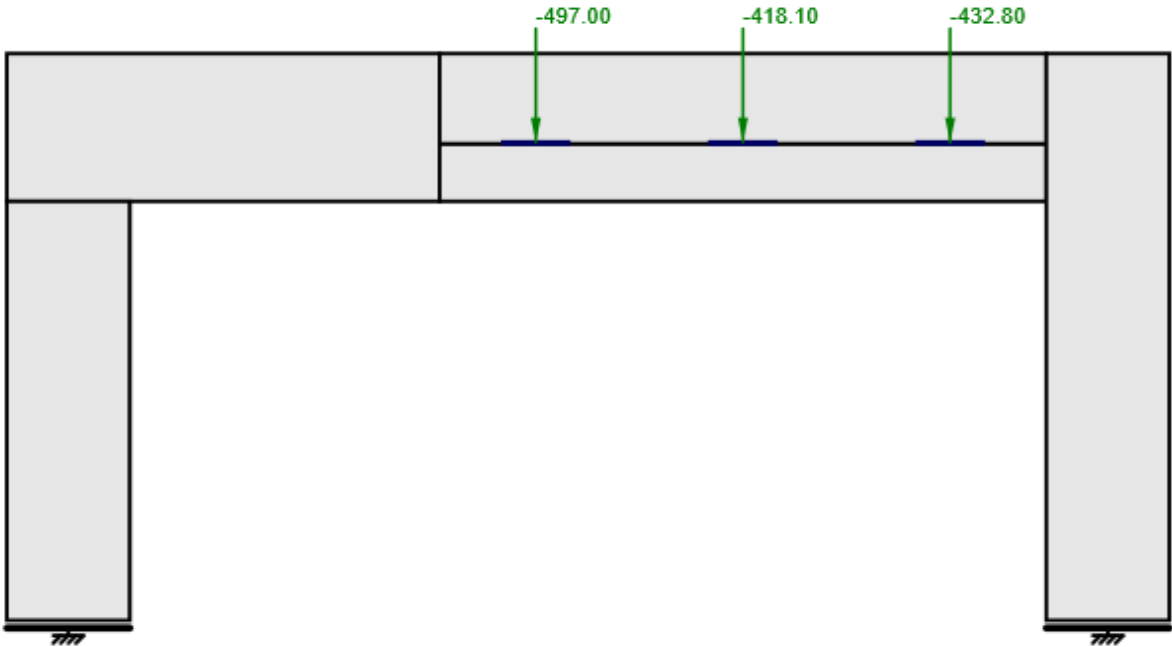
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Loads

LC1

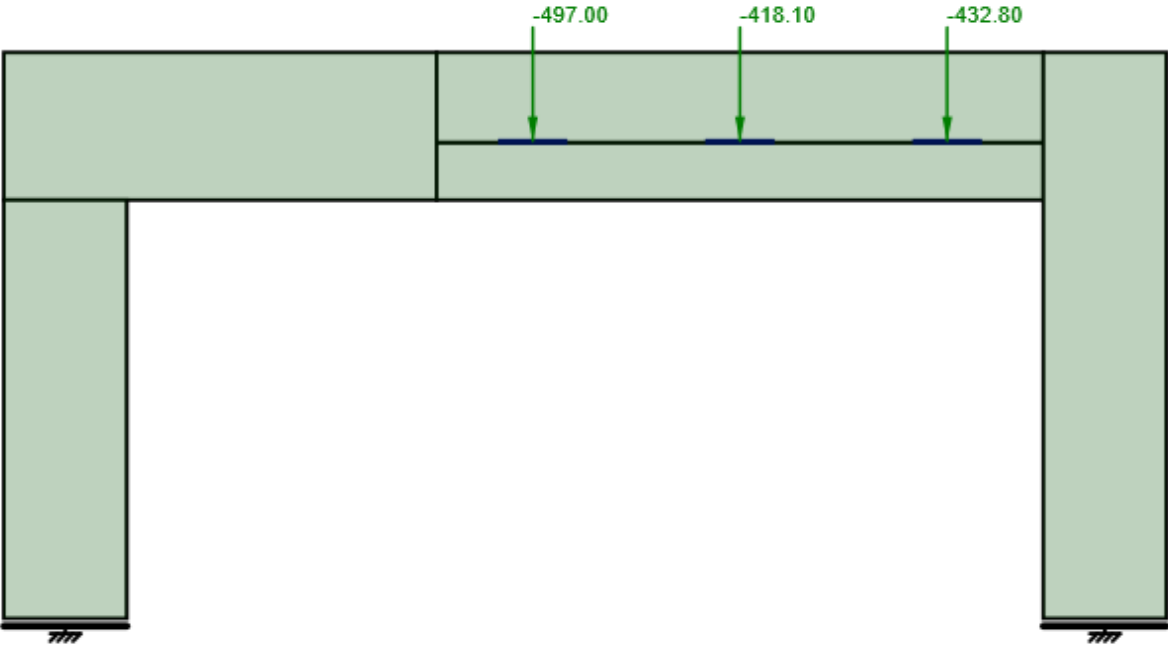


LC2

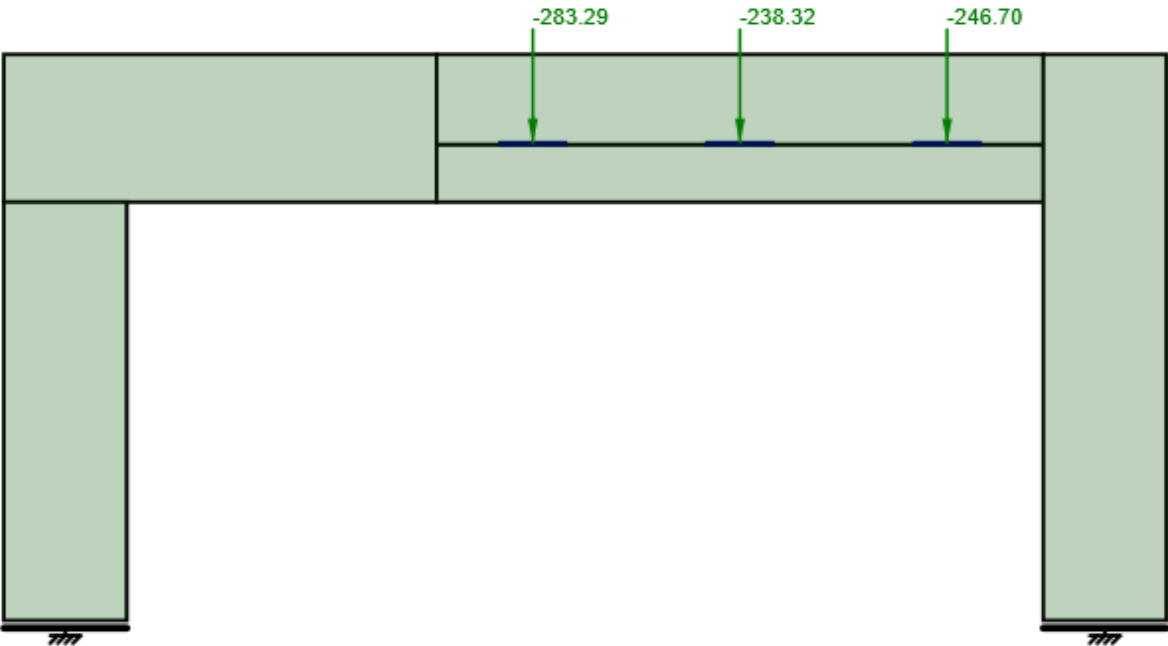


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C1



C2



Load case LC1 - Permanent

Surface loads

Name	f [kip/ft²]	Direction	Master
SW1		Global Z -	-

Project:
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Load case LC2 - Transient

Point loads

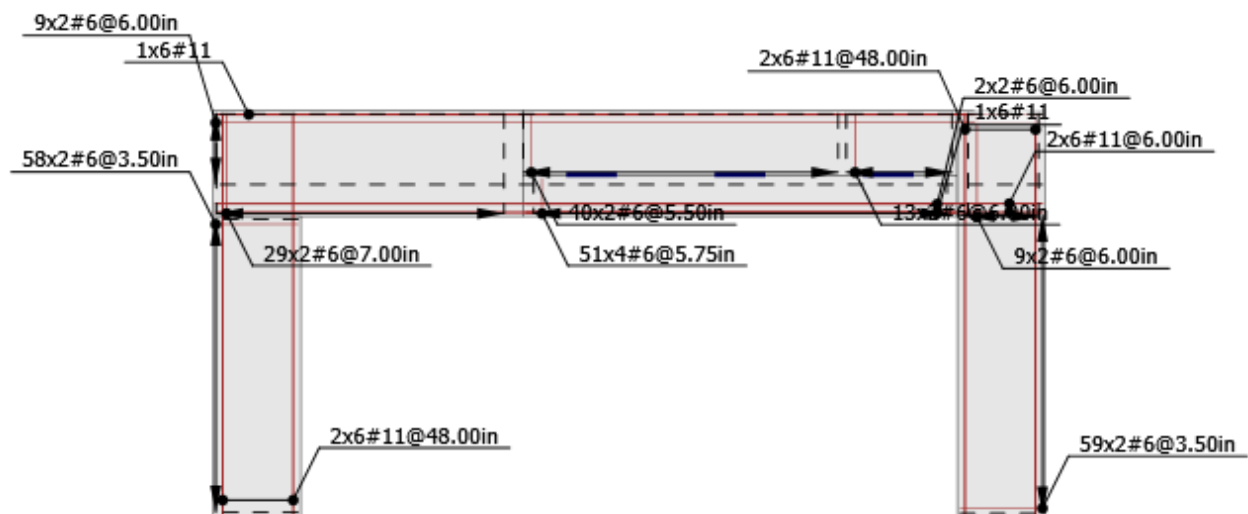
Name	F [kip]	Direction	Master	Position [X;Z]
Beam L1	-497.00	Global Z	BP1	-
Beam L2	-418.10	Global Z	BP2	-
Beam L3	-432.80	Global Z	BP3	-

Combination

Name	Type	Content	ξ [-]
C1	Strength	1.25*LC1 + LC2	-
C2	Serviceability - Total load	LC1 + 0.57*LC2	-

Reinforcement

Scheme of reinforcement



Concrete: 6000; Steel: Grade 60

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Results

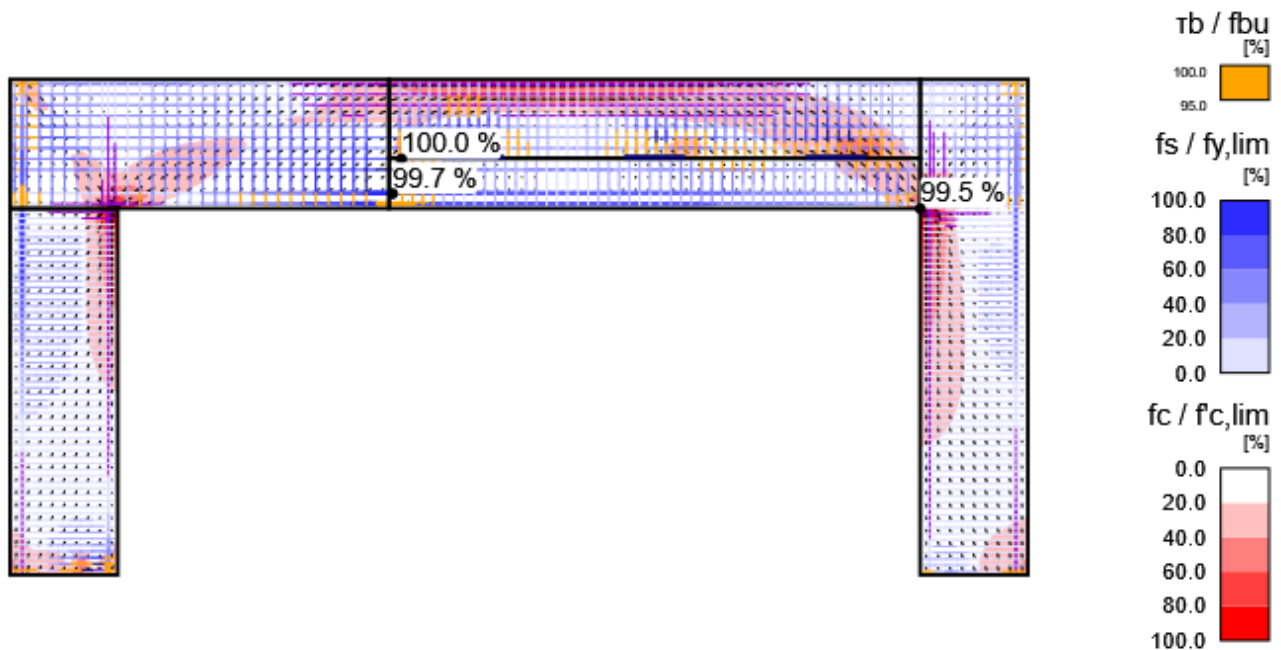
Summary

Overview table

Check item	Combination	Increment	Item			
Strength	C1	G100.0%, T100.0%	Strength of reinforcement	✓		
Check item		Item	Utilization			
Strength of concrete		Col2	fc/fc,lim: 99.5%	✓		
Strength of reinforcement			εs/εs,lim: 1.7%, fs/fy,lim: 100.0%	✓		
Anchorage length			tb/fbu: 99.7%	✓		
Serviceability	C2 (LT)	G100.0%, T100.0%	Crack width	✗		
Check item	Combination	Increment	Critical check	Item	Utilization	
Crack width	C2 (LT)	G100.0%, T100.0%	w/wlim	#6stirrup col1@3.5in	318.7%	✗
Deflection	C2	G100.0%, T100.0%	5.9.2.3.2a-1 (TL)	Ledge	61.3%	✓

Strength - Summary

Stress flow



Above yield	Compression	Explanation
		Thickness proportional to force

Summary of reactions and applied loads: C1, Load increment: G100.0%, T100.0%

Type	F _x [kip]	F _z [kip]	M _y [kip.ft]
Summary of reactions	0.00	1637.73	46769.25
Summary of applied load	0.00	-1637.91	-46775.53
Check of equilibrium	0.00	-0.18	-6.28

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Strength

Detailed concrete strength results: C1, Load increment: G100.0%, T100.0%

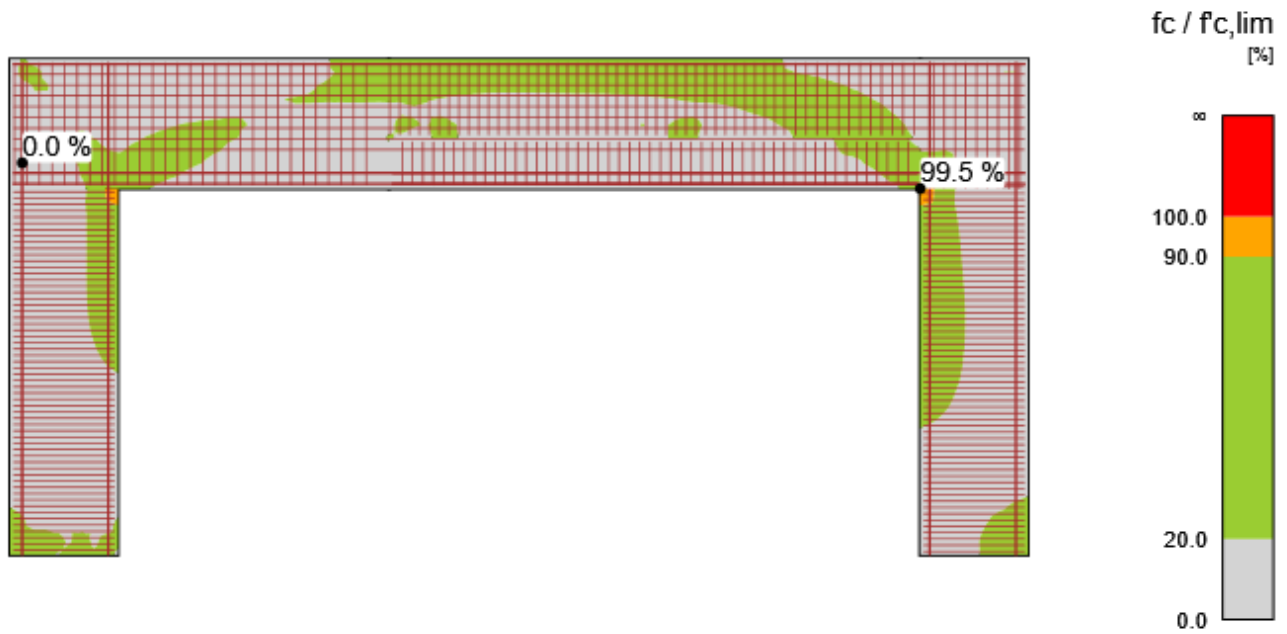
Member	X [ft]	Z [ft]	f_c [ksi]	ϵ_c [1e-4]	ϵ_{pl} [1e-4]	k_{c2} [-]	$f_c/f_{c,lim}$ [%]	
Col2	42.25	0.00	-3.2	-39.1	-30.6	1.00	99.5	OK
Col1	5.00	0.00	-3.2	-32.1	-23.6	1.00	99.5	OK
Beam1	5.00	0.00	-2.7	-10.6	-3.0	1.00	85.5	OK
Beamtop	23.46	6.00	-2.3	-8.6	-2.2	1.00	71.7	OK
Beamtop	22.87	6.00	-2.3	-8.6	-2.2	1.00	71.7	OK
Ledge	42.25	0.00	-1.6	-5.3	-0.8	1.00	49.8	OK
Col1	3.33	-17.00	-0.5	-4.0	-0.3	0.39	41.0	OK
Beamtop	19.94	2.94	-0.7	-3.0	0.0	0.69	33.7	OK
Col2	42.81	-17.00	-0.6	-1.8	0.0	0.97	19.8	OK
Beam1	17.59	2.33	-0.5	-1.7	0.0	0.83	18.7	OK
Ledge	18.18	2.33	-0.3	-1.2	0.0	0.82	13.2	OK

Detailed reinforcement strength results: C1, Load increment: G100.0%, T100.0%

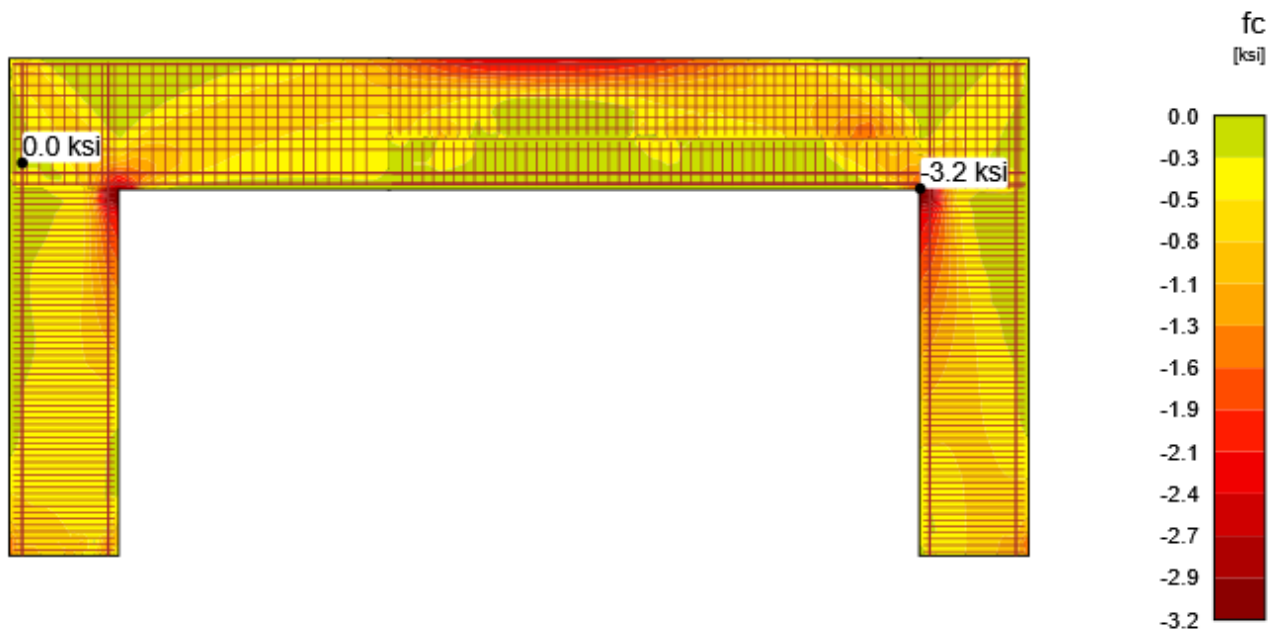
Member	X [ft]	Z [ft]	f_s [ksi]	ϵ_s [1e-4]	$f_s/f_{y,lim}$ [%]	$\epsilon_s/\epsilon_{s,lim}$ [%]	
Skin reinf	18.16	2.30	54.0	16.6	100.0	1.7	OK
Stirrup 2 leg	16.53	1.30	54.0	15.8	100.0	1.6	OK
Stirrup 2 leg1	18.08	3.05	54.0	18.1	100.0	1.8	OK
Stirrup 2 leg1	19.91	3.05	54.0	30.4	100.0	3.0	OK
Stirrup 2 leg2	37.95	3.05	54.0	17.0	100.0	1.7	OK
Stirrup 2 leg2	38.95	3.05	54.0	20.8	100.0	2.1	OK
#6stirrup col1@3.5in	3.80	-16.49	54.0	23.5	100.0	2.3	OK
#6stirrup col1@3.5in	3.80	-16.78	54.0	72.2	100.0	7.2	OK
Lower reinforcement	17.01	0.22	49.8	15.8	92.2	1.6	OK
Ledge stirrup	18.20	2.17	49.5	12.3	91.7	1.2	OK
Column 1 Vertical reinf	0.56	0.00	49.4	14.0	91.5	1.4	OK
Ledge skin reinf	21.23	0.70	38.6	10.0	71.5	1.0	OK
Ledge skin reinf	21.81	0.20	38.1	11.4	70.5	1.1	OK
Column 2Vertical reinf1	46.69	-1.01	36.9	9.7	68.3	1.0	OK
Ledge long reinf	21.81	0.22	36.8	11.3	68.2	1.1	OK
Stirrup 2 leg3	46.86	1.75	31.4	7.6	58.1	0.8	OK
#6stirrup col1@3.5in1	43.45	-16.84	26.8	7.0	49.6	0.7	OK
Upper reinforcement	23.90	5.78	-23.3	-8.0	43.1	0.8	OK
Upper reinforcement	5.39	5.78	21.3	5.4	39.4	0.5	OK

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Concrete stress/strength ratio

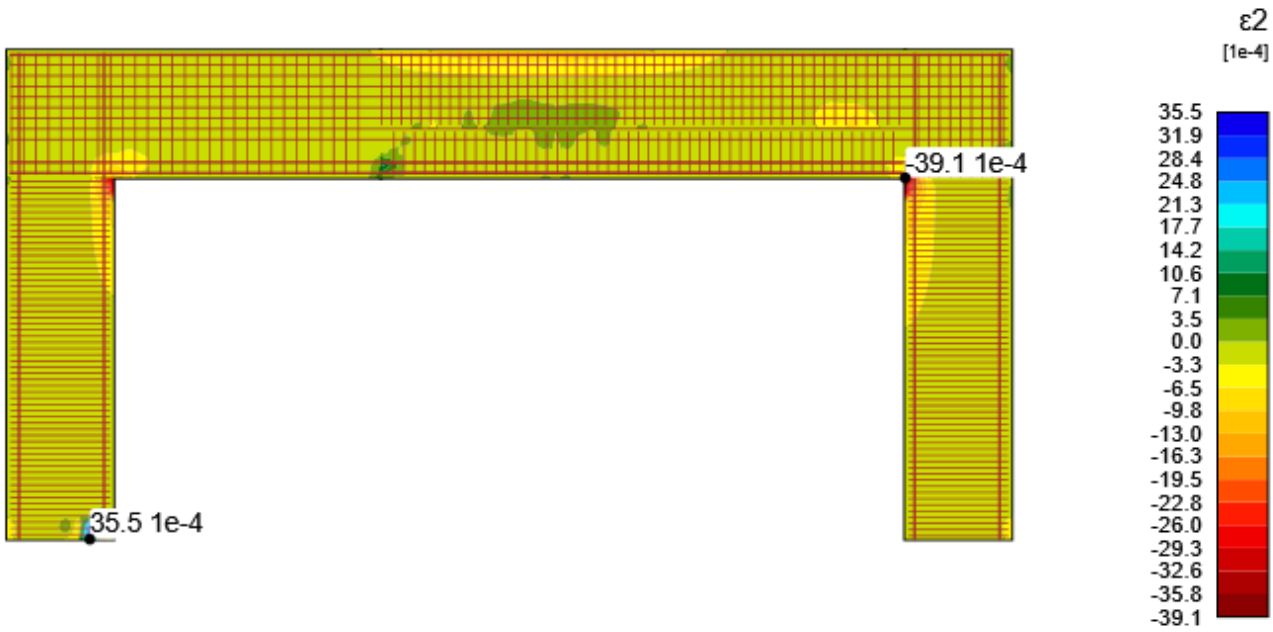


Concrete principal stress f_c

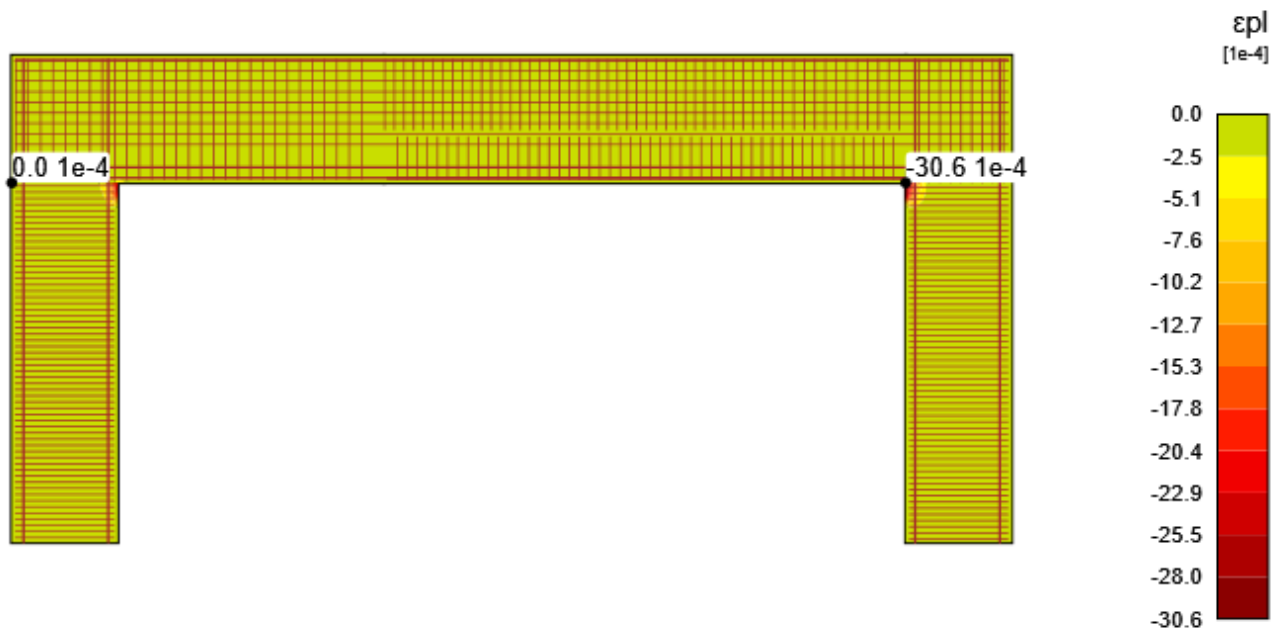


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Concrete principal strain ϵ_c

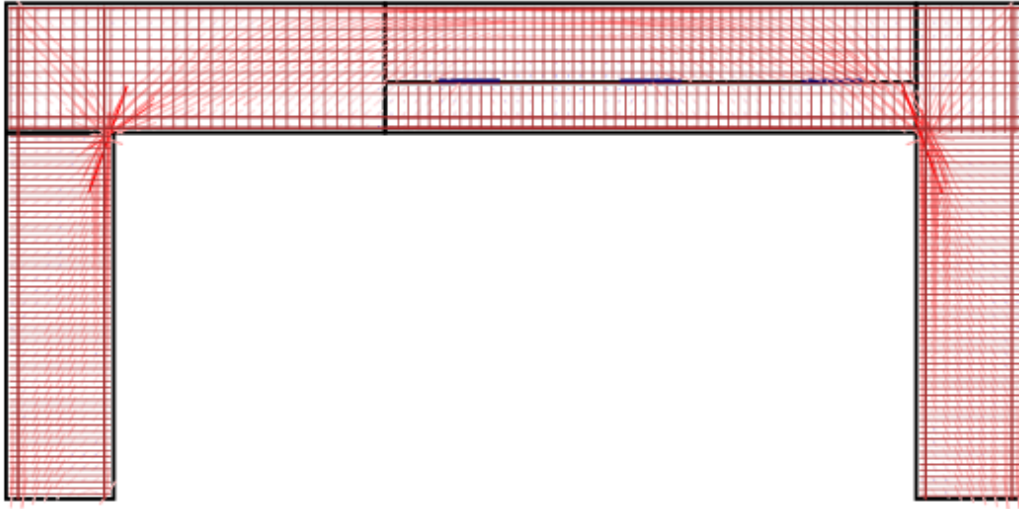


Concrete plastic strain ϵ_{pl}

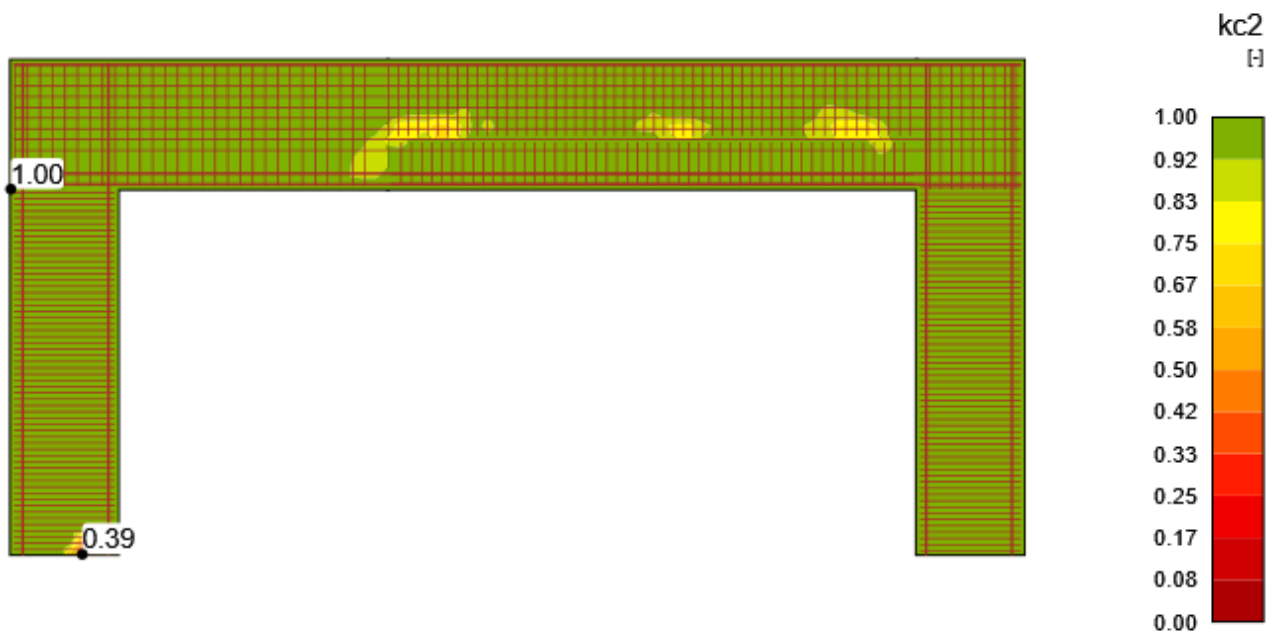


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Directions of principal stresses

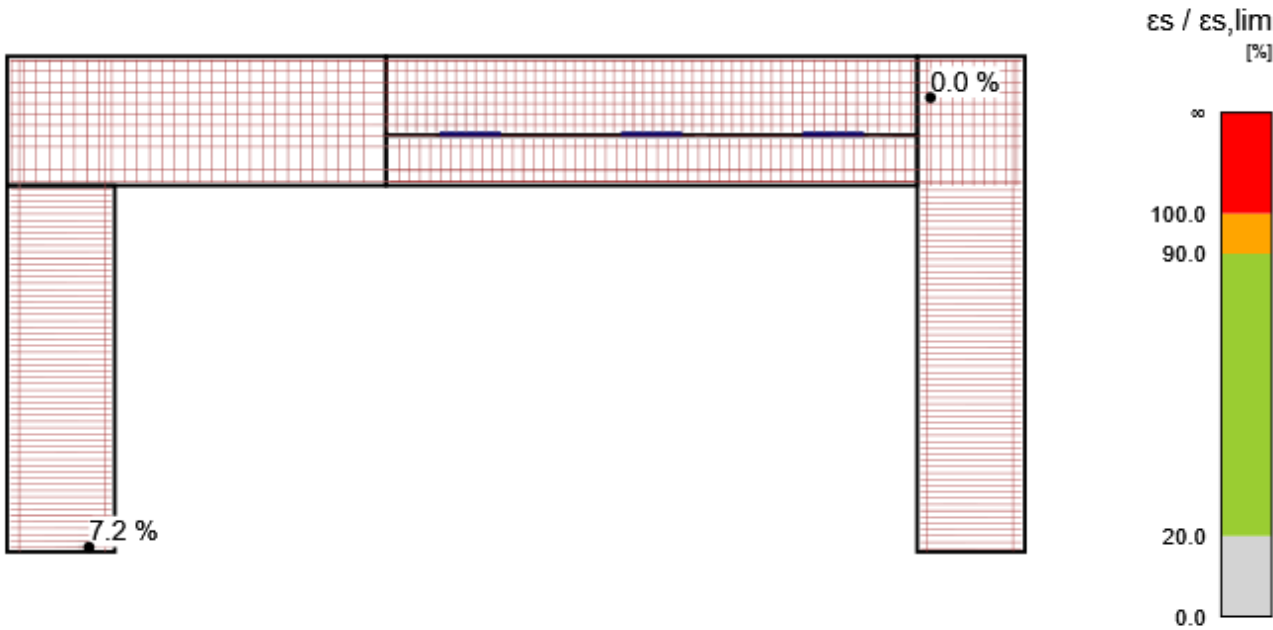


Compressive strength reduction factor

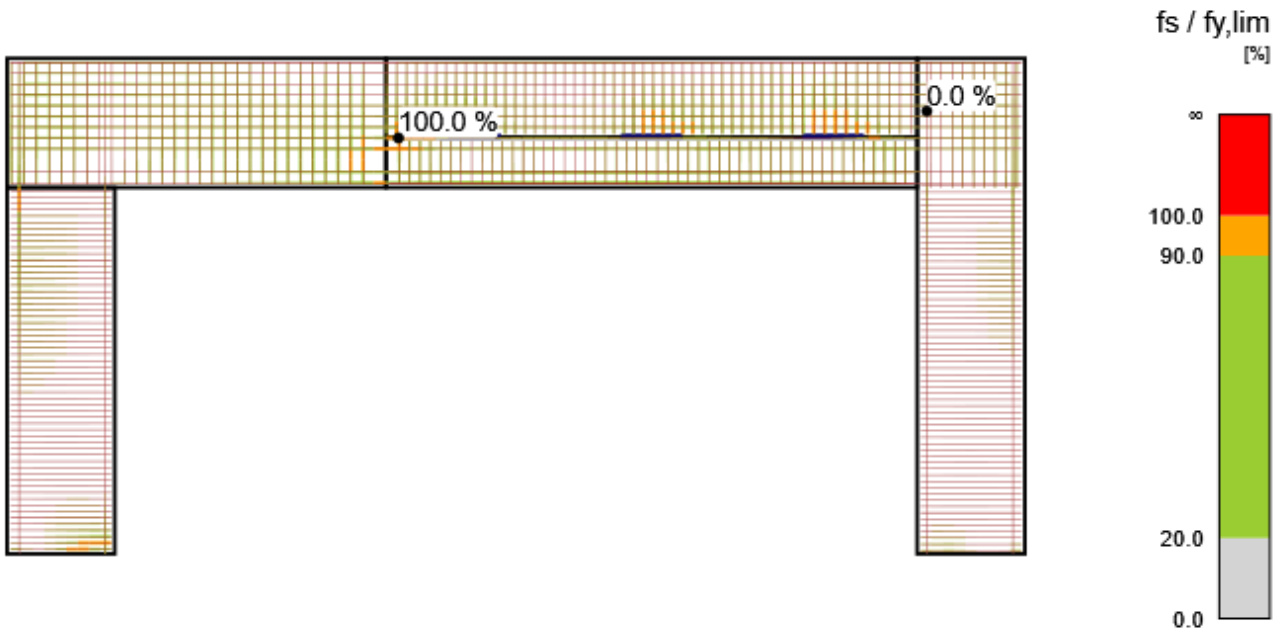


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Reinforcement strain/limit strain ratio - $\epsilon_s/\epsilon_{s,lim}$ [%]

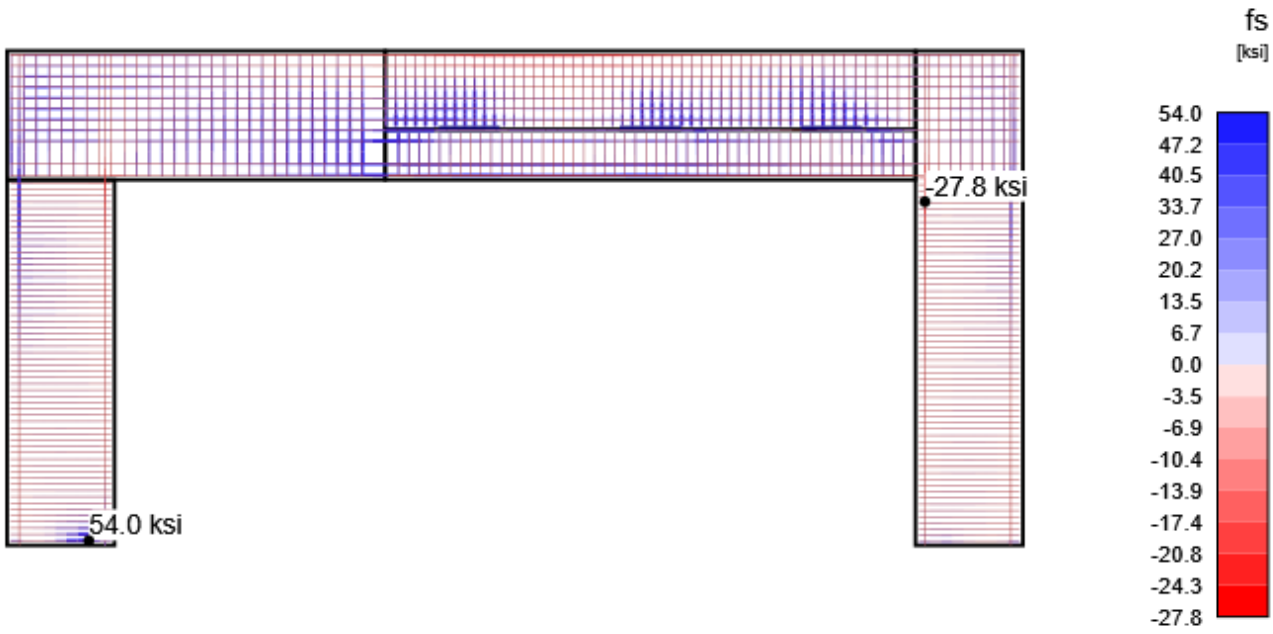


Reinforcement stress/strength ratio - $f_s/f_{y,lim}$ [%]

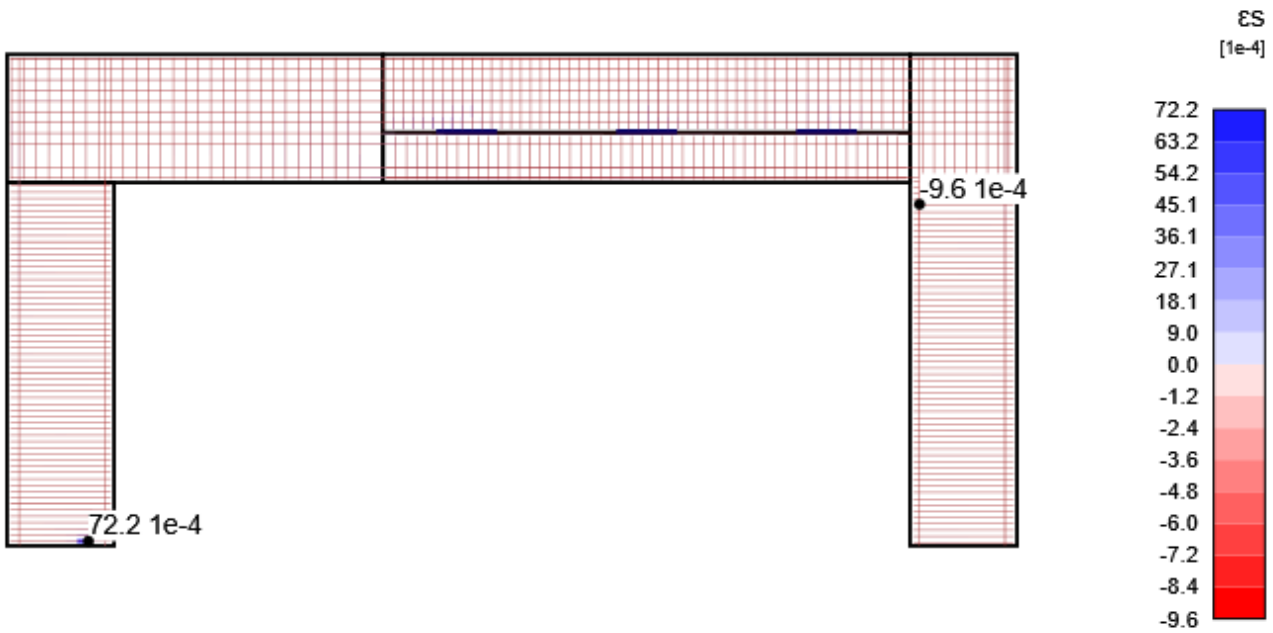


Project:
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Author:

Reinforcement stress - f_s [ksi]



Reinforcement strain - ϵ_s [1e-4]



Project:
Project no:
Author:

Strength - Anchorage

Detailed anchorage results - Reinforcement: C1, Load increment: G100.0%, T100.0%

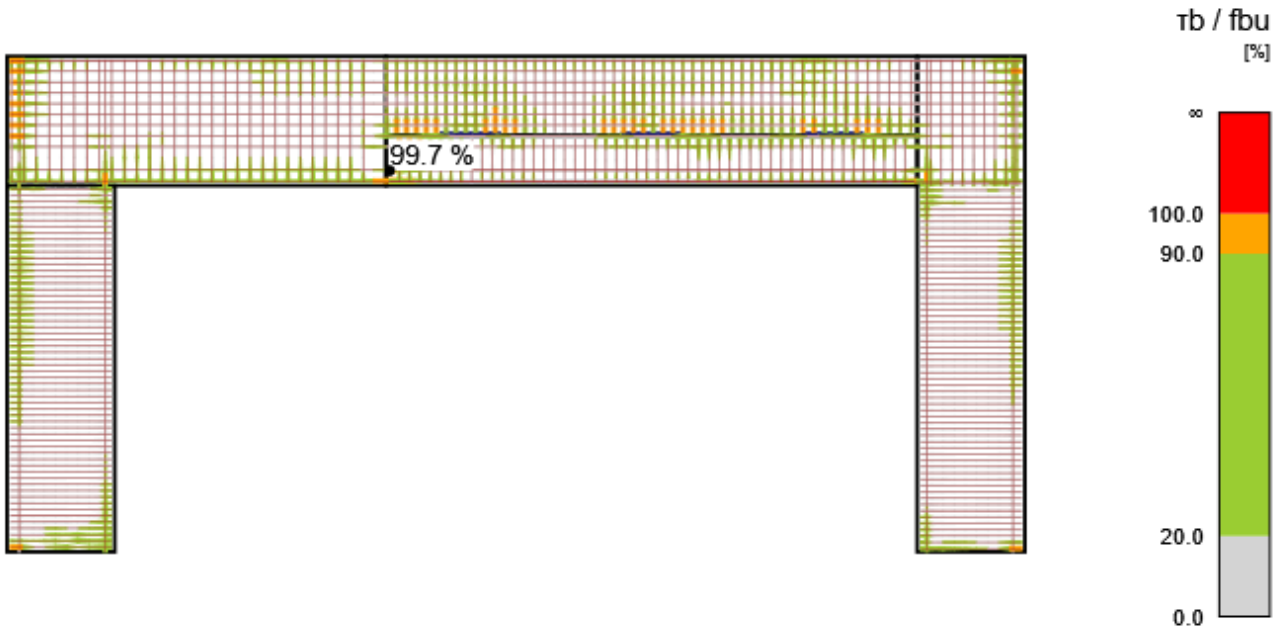
Member	X [ft]	Z [ft]	τ_b [ksi]	F_a [kip]	F_{tot} [kip]	F_{tot}/F_{lim} [%]	F_{lim} [kip]	τ_b/f_{bu} [%]	
Lower reinforcement	17.59	0.22	0.4	37.12	466.64	92.2	505.91	99.4	OK
Lower reinforcement	17.01	0.22	0.4	37.12	466.64	92.2	505.91	84.9	OK
Lower reinforcement	4.81	0.22	0.3	37.12	-121.28	24.0	-505.91	60.8	OK
Lower reinforcement	7.13	0.22	0.2	37.12	30.97	6.1	505.91	47.0	OK
Upper reinforcement	0.74	5.78	0.3	66.11	153.84	57.2	268.73	98.9	OK
Upper reinforcement	5.39	5.78	0.0	66.11	199.12	39.4	505.91	0.3	OK
Upper reinforcement	23.90	5.78	0.0	66.11	-217.85	43.1	-505.91	2.9	OK
Upper reinforcement	1.33	5.78	0.1	66.11	153.84	57.2	268.73	30.3	OK
Upper reinforcement	4.23	5.78	0.0	66.11	198.21	39.2	505.91	0.7	OK
Skin reinf	0.16	4.80	0.6	0.05	10.31	50.2	20.53	99.7	OK
Skin reinf	0.16	4.30	0.6	0.05	10.31	50.2	20.53	99.7	OK
Skin reinf	18.16	2.30	0.1	0.05	47.70	100.0	47.71	17.0	OK
Skin reinf	23.90	5.80	0.0	0.05	-21.02	44.0	-47.71	1.3	OK
Skin reinf	2.49	5.80	0.0	0.05	19.74	41.4	47.71	1.4	OK
Ledge long reinf	17.75	0.22	0.4	99.44	140.30	60.1	233.47	99.4	OK
Ledge long reinf	18.33	0.22	0.4	99.44	140.30	60.1	233.47	99.4	OK
Ledge long reinf	21.81	0.22	0.0	99.44	345.10	68.2	505.91	1.1	OK
Ledge long reinf	41.51	0.22	0.3	99.44	66.22	28.4	233.47	58.3	OK
Ledge long reinf	18.91	0.22	0.4	99.44	293.20	73.9	396.88	99.4	OK
Ledge long reinf	20.07	0.22	0.1	99.44	335.95	66.4	505.91	19.8	OK
Ledge skin reinf	17.75	0.70	0.6	0.05	10.29	50.2	20.47	99.7	OK
Ledge skin reinf	21.23	0.70	0.0	0.05	34.11	71.5	47.71	1.5	OK
Ledge skin reinf	41.51	0.20	0.1	0.05	6.00	29.3	20.47	22.8	OK
Ledge skin reinf	18.33	0.70	0.6	0.05	30.55	74.6	40.95	99.7	OK
Ledge skin reinf	18.91	0.20	0.0	0.05	30.62	64.2	47.71	5.0	OK
Stirrup 2 leg	0.20	0.16	0.6	29.69	27.48	57.6	47.71	99.7	OK
Stirrup 2 leg	16.53	0.16	0.6	29.69	39.71	83.2	47.71	99.7	OK
Stirrup 2 leg	16.53	1.30	0.0	29.69	47.70	100.0	47.71	1.2	OK
Stirrup 2 leg	4.86	0.73	0.3	29.69	-6.78	14.2	-47.71	46.7	OK
Stirrup 2 leg	0.20	0.73	0.0	29.69	27.48	57.6	47.71	6.0	OK
Stirrup 2 leg1	17.62	2.49	0.6	43.22	34.96	73.3	47.71	99.7	OK
Stirrup 2 leg1	18.08	2.49	0.6	43.22	47.70	100.0	47.71	99.7	OK
Stirrup 2 leg1	19.91	3.05	0.6	43.22	47.70	100.0	47.71	99.7	OK
Stirrup 2 leg1	25.87	3.05	0.0	43.22	0.62	1.3	47.71	6.5	OK
Stirrup 2 leg1	18.08	3.05	0.6	43.22	47.70	100.0	47.71	99.7	OK
Stirrup 2 leg1	17.62	3.05	0.5	43.22	34.96	73.3	47.71	74.5	OK
Stirrup 2 leg2	35.95	2.49	0.6	46.10	34.67	72.7	47.71	99.7	OK
Stirrup 2 leg2	39.95	3.05	0.6	46.10	32.90	68.9	47.71	99.7	OK
Stirrup 2 leg2	38.95	3.05	0.3	46.10	47.70	100.0	47.71	55.8	OK
Stirrup 2 leg2	41.95	4.17	0.0	46.10	2.56	5.4	47.71	8.0	OK
Stirrup 2 leg2	37.95	3.05	0.3	46.10	47.70	100.0	47.71	55.0	OK

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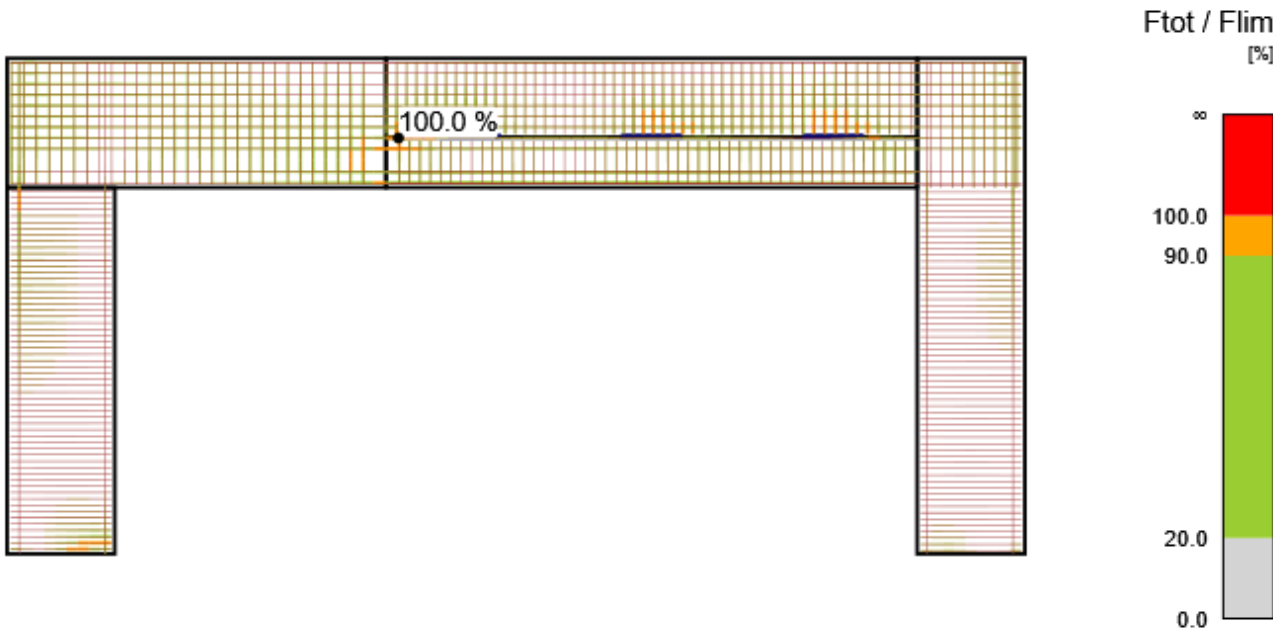
Member	X [ft]	Z [ft]	τ_b [ksi]	F_a [kip]	F_{tot} [kip]	F_{tot}/F_{lim} [%]	F_{lim} [kip]	τ_b/f_{bu} [%]	
Stirrup 2 leg2	35.95	3.05	0.4	46.10	34.67	72.7	47.71	60.4	OK
Stirrup 2 leg3	42.86	0.00	0.6	18.57	-8.72	18.3	-47.71	99.7	OK
Stirrup 2 leg3	46.86	1.75	0.1	18.57	27.71	58.1	47.71	19.0	OK
Stirrup 2 leg3	42.86	0.58	0.3	18.57	-8.72	18.3	-47.71	53.3	OK
Stirrup 2 leg3	42.86	4.09	0.0	18.57	0.03	0.1	47.71	0.6	OK
Ledge stirrup	18.20	0.16	0.6	79.24	54.45	57.1	95.43	99.7	OK
Ledge stirrup	18.20	2.17	0.6	79.24	87.55	91.7	95.43	99.7	OK
Ledge stirrup	25.87	2.17	0.0	79.24	0.28	0.3	95.43	0.2	OK
Ledge stirrup	18.20	0.66	0.2	79.24	54.45	57.1	95.43	24.1	OK
Column 1 Vertical reinf	0.56	0.53	0.4	250.22	358.87	70.9	505.91	99.4	OK
Column 1 Vertical reinf	4.56	0.00	0.4	250.22	-142.90	28.2	-505.91	99.4	OK
Column 1 Vertical reinf	0.56	0.00	0.2	250.22	463.03	91.5	505.91	48.9	OK
Column 1 Vertical reinf	4.56	0.00	0.4	250.22	-213.07	42.1	-505.91	99.4	OK
Column 2Vertical reinf1	46.69	5.84	0.4	77.23	90.41	38.9	232.28	99.4	OK
Column 2Vertical reinf1	42.69	0.13	0.4	77.23	-249.03	49.2	-505.91	99.4	OK
Column 2Vertical reinf1	46.69	-1.01	0.0	77.23	345.74	68.3	505.91	3.0	OK
Column 2Vertical reinf1	42.69	-1.01	0.3	77.23	-260.27	51.4	-505.91	74.9	OK
Column 2Vertical reinf1	46.69	0.13	0.3	77.23	289.50	57.2	505.91	77.1	OK
#6stirrup col1@3.5in	2.76	-16.78	0.6	37.74	43.46	91.1	47.71	99.7	OK
#6stirrup col1@3.5in	3.80	-16.78	0.4	37.74	47.70	100.0	47.71	60.9	OK
#6stirrup col1@3.5in	4.84	-0.16	0.4	37.74	-5.87	12.3	-47.71	99.4	OK
#6stirrup col1@3.5in	3.80	-16.49	0.4	37.74	47.70	100.0	47.71	69.6	OK
#6stirrup col1@3.5in	0.68	-0.16	0.0	37.74	7.64	16.0	47.71	9.2	OK
#6stirrup col1@3.5in1	42.41	-16.84	0.6	19.98	20.62	43.2	47.71	99.7	OK
#6stirrup col1@3.5in1	42.41	0.07	0.6	19.98	-7.90	16.6	-47.71	99.7	OK
#6stirrup col1@3.5in1	43.45	-16.84	0.5	19.98	23.67	49.6	47.71	82.0	OK

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Bond stress check value - τ_b/f_{bu} [%]

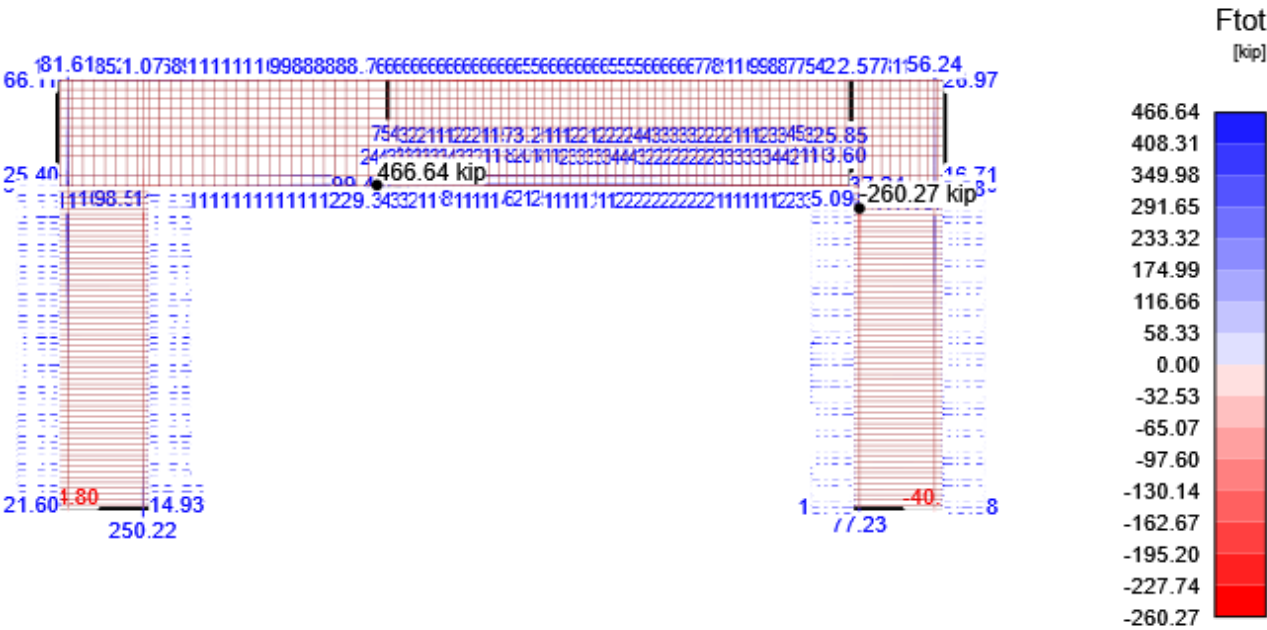


Force check value - F_{tot}/F_{lim} [%]

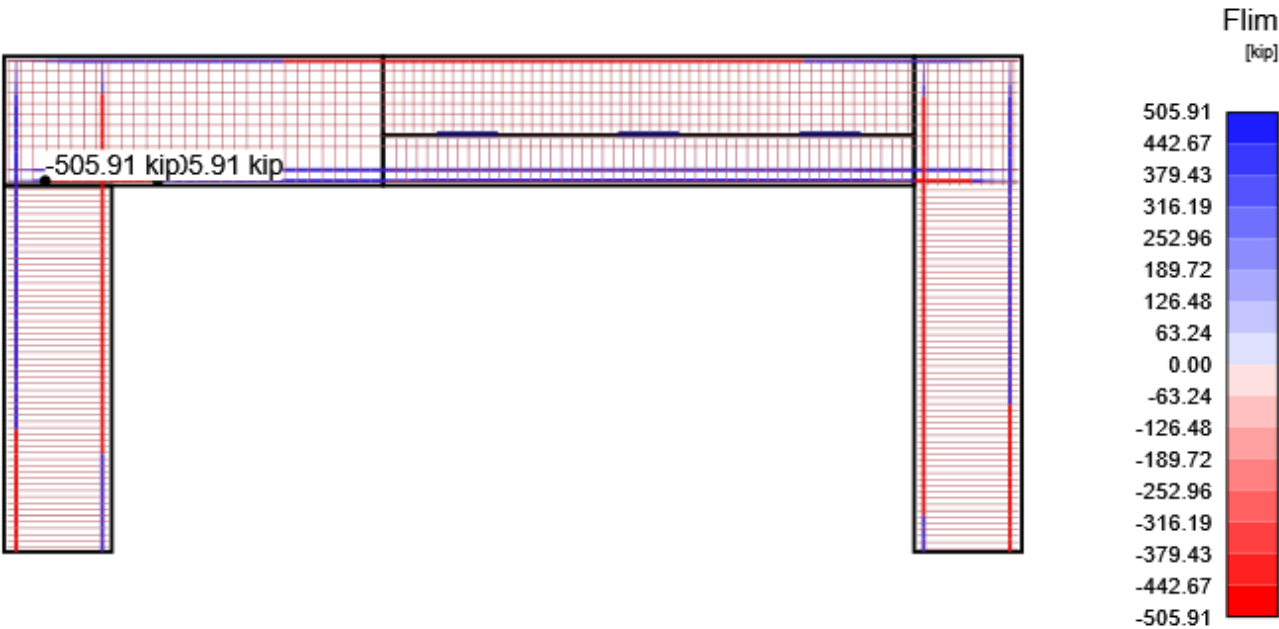


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Total force in the bar - F_{tot} [kip]

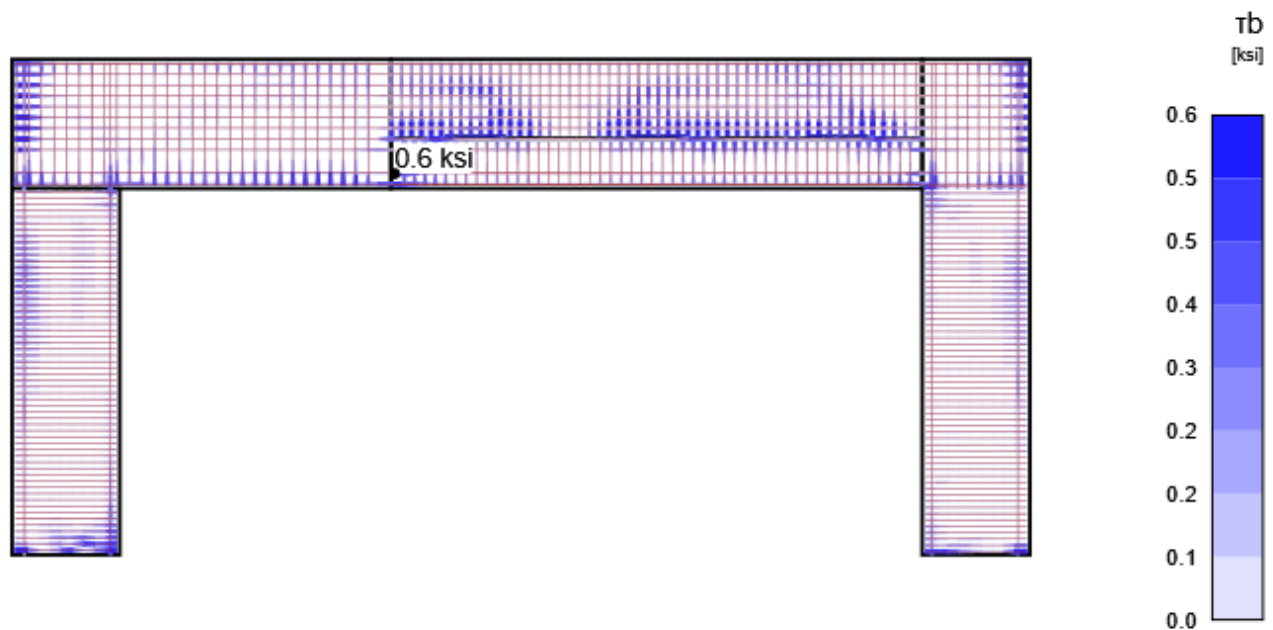


Limit force in the bar - F_{lim} [kip]



Project:
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Bond stress - τ_b [ksi]



Serviceability - Crack

Detailed crack results: C2, Load increment: G100.0%, T100.0%, $w_{lim}=0.0157$ in

Member	X [ft]	Z [ft]	w [in]	w/w _{lim} [%]	
#6stirrup col1@3.5in	3.80	-16.78	0.0502	318.7	NOT OK
Skin reinf	18.16	2.30	0.0179	113.6	NOT OK
Column 1 Vertical reinf	0.56	0.00	0.0132	84.1	OK
Stirrup 2 leg1	19.91	3.05	0.0118	75.1	OK
Lower reinforcement	17.01	0.72	0.0118	74.8	OK
Stirrup 2 leg	16.53	1.30	0.0116	73.6	OK
Ledge stirrup	18.20	2.17	0.0097	61.6	OK
Stirrup 2 leg2	38.95	3.05	0.0091	57.6	OK
Column 2 Vertical reinf1	46.69	-1.01	0.0088	55.6	OK
Ledge stirrup	18.20	1.17	0.0062	39.2	OK
Ledge skin reinf	18.33	0.70	0.0055	34.9	OK
Ledge skin reinf	18.91	0.70	0.0054	34.3	OK
Ledge long reinf	20.07	0.22	0.0048	30.2	OK
Skin reinf	41.68	2.30	0.0044	28.0	OK
Ledge long reinf	23.55	0.22	0.0044	28.0	OK
Stirrup 2 leg3	46.86	1.75	0.0037	23.3	OK
#6stirrup col1@3.5in	0.68	-16.78	0.0027	17.0	OK
Upper reinforcement	3.65	5.78	0.0027	16.8	OK
Upper reinforcement	4.23	5.78	0.0026	16.7	OK
#6stirrup col1@3.5in1	43.45	-16.84	0.0024	15.3	OK
#6stirrup col1@3.5in1	46.57	-16.84	0.0022	14.1	OK

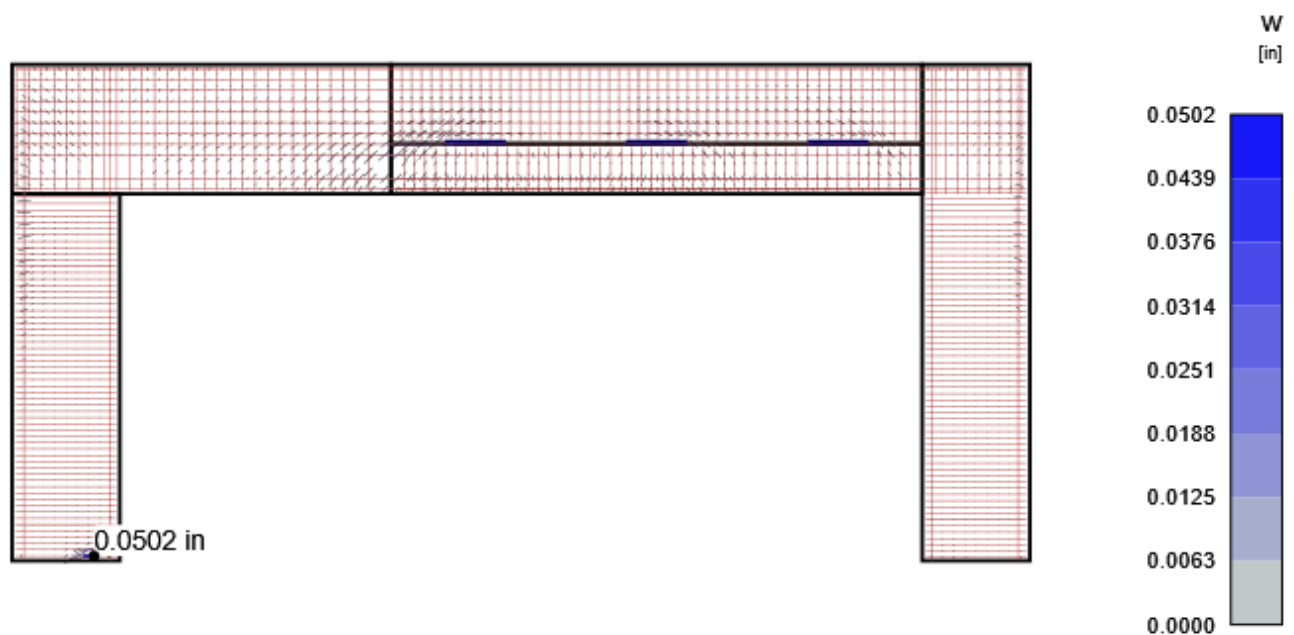
Project:
Project no:
Author:

Intermediate crack results

Member	ϵ_{cm} [1e-4]	ϵ_m [1e-4]	s_r [in]	Φ [in]	ρ_{eff} [%]	w_b [in]	θ_r [-]	θ_b [-]
#6stirrup col1@3.5in	0.0	14.6	8.82	0.75	2.08	0.0129	0.26	0.00
Skin reinf	0.0	6.3	17.81	0.75	1.04	0.0113	0.68	0.00
Column 1 Vertical reinf	0.0	6.8	19.46	1.41	1.78	0.0132	3.12	1.57
Stirrup 2 leg1	0.0	8.6	11.04	0.75	1.67	0.0095	0.63	1.57
Lower reinforcement	0.0	5.6	15.28	1.41	2.25	0.0086	0.82	0.00
Stirrup 2 leg	0.0	5.8	14.25	0.75	1.30	0.0083	0.78	1.57
Ledge stirrup	0.0	4.4	16.21	0.75	1.14	0.0072	0.73	1.57
Stirrup 2 leg2	0.0	6.9	11.40	0.75	1.62	0.0078	2.61	1.57
Column 2 Vertical reinf1	0.0	4.5	19.46	1.41	1.78	0.0088	0.01	1.57
Ledge stirrup	0.0	2.1	16.21	0.75	1.14	0.0035	0.98	1.57
Ledge skin reinf	0.0	4.1	10.98	0.75	1.68	0.0045	0.95	0.00
Ledge skin reinf	0.0	4.0	10.98	0.75	1.68	0.0044	0.95	0.00
Ledge long reinf	0.0	4.9	8.85	1.41	3.83	0.0044	1.16	0.00
Skin reinf	0.0	1.9	17.81	0.75	1.04	0.0034	2.27	0.00
Ledge long reinf	0.0	4.7	8.85	1.41	3.83	0.0042	1.88	0.00
Stirrup 2 leg3	0.0	3.3	10.73	0.75	1.72	0.0035	0.28	1.57
#6stirrup col1@3.5in	0.0	3.0	8.82	0.75	2.08	0.0027	1.64	0.00
Upper reinforcement	0.0	2.1	11.79	1.41	2.90	0.0024	1.99	0.00
Upper reinforcement	0.0	2.1	11.79	1.41	2.90	0.0025	1.87	0.00
#6stirrup col1@3.5in1	0.0	2.5	8.10	0.75	2.26	0.0020	2.14	0.00
#6stirrup col1@3.5in1	0.0	2.7	8.10	0.75	2.26	0.0022	1.44	0.00

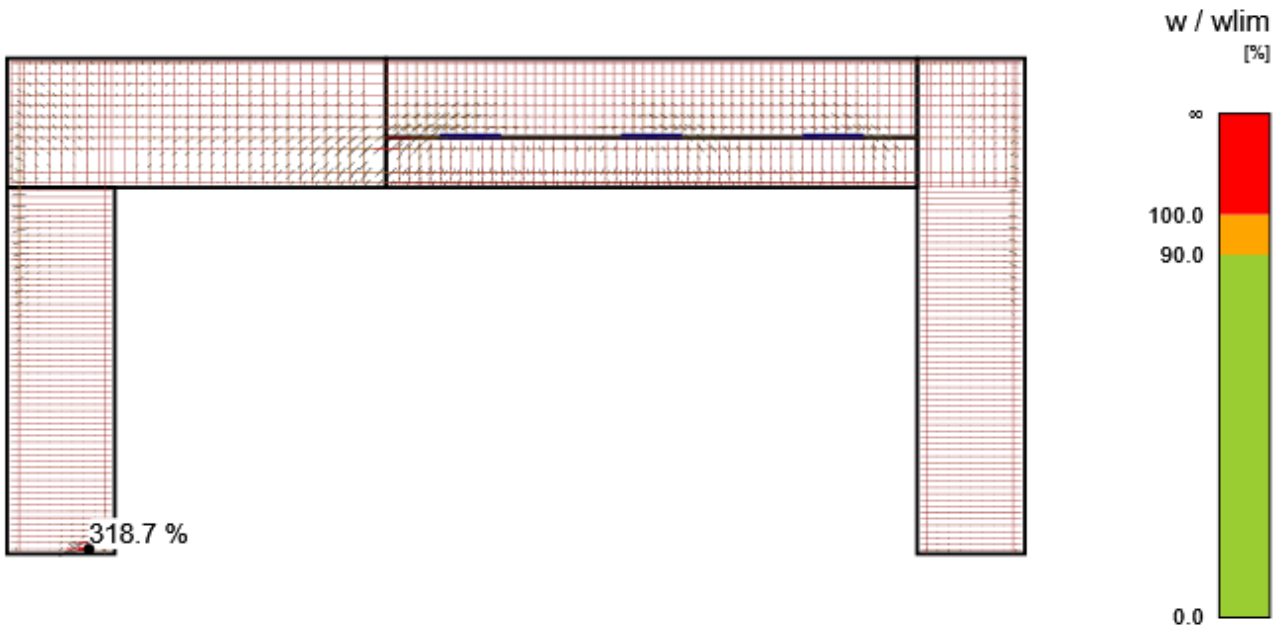
Note: There are TCM intermediate values displayed in the table above. Adequate POM values are not available in current version of the program.

Crack width - w [in]



Project:
Project no:
Author:

Crack width check



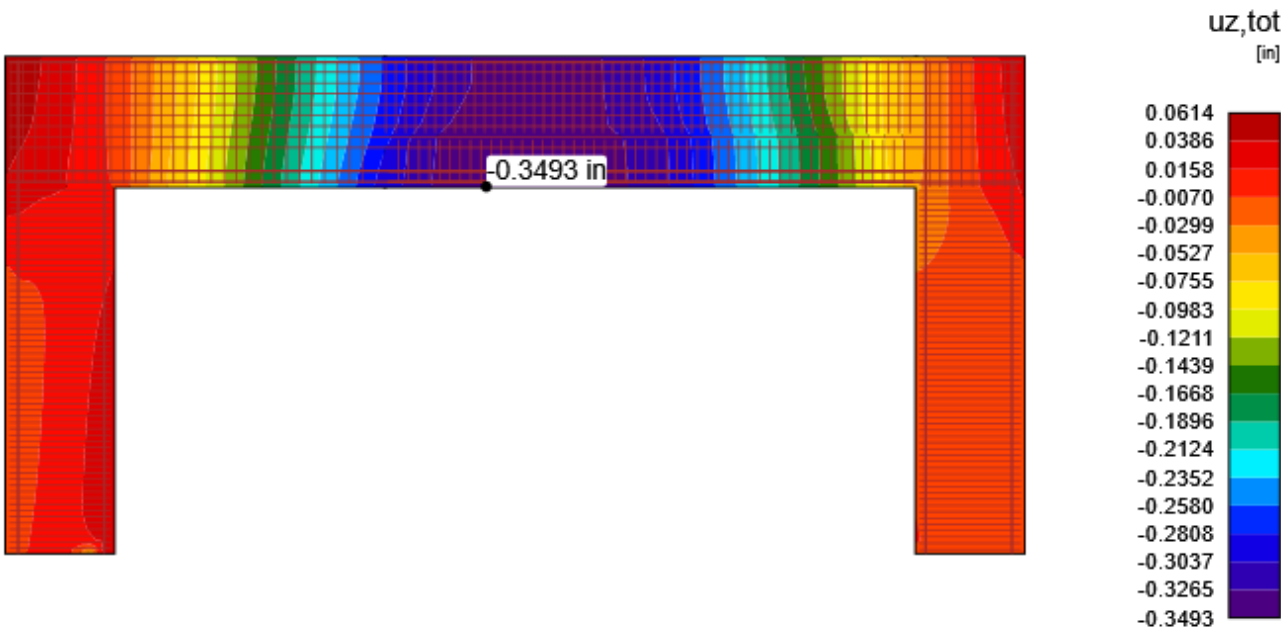
Serviceability - Deflection

Detailed deflection results: C2, Load increment: G100.0%, T100.0%

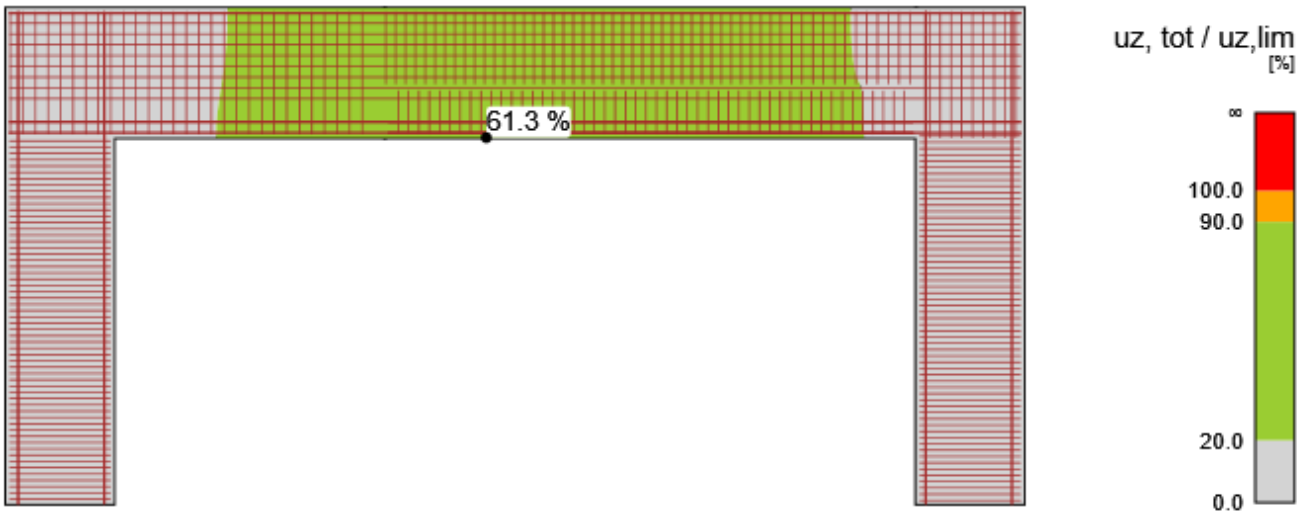
Member	X [ft]	Z [ft]	$u_{z,in}$ [in]	$u_{z,td}$ [in]	$u_{z,tot}$ [in]	$u_{z,tot}/u_{z,lim}$ [%]	
Ledge	22.29	0.00	-0.3220	-0.0273	-0.3493	61.3	
Beamtop	22.29	2.33	-0.3211	-0.0273	-0.3485	61.1	
Beam1	17.59	0.00	-0.2750	-0.0258	-0.3007	52.8	
Col1	3.89	-17.00	-0.0510	0.0001	-0.0510	8.9	
Col2	47.25	6.00	0.0428	-0.0022	0.0406	7.1	

Project:
Project no:
Author:

Deflection



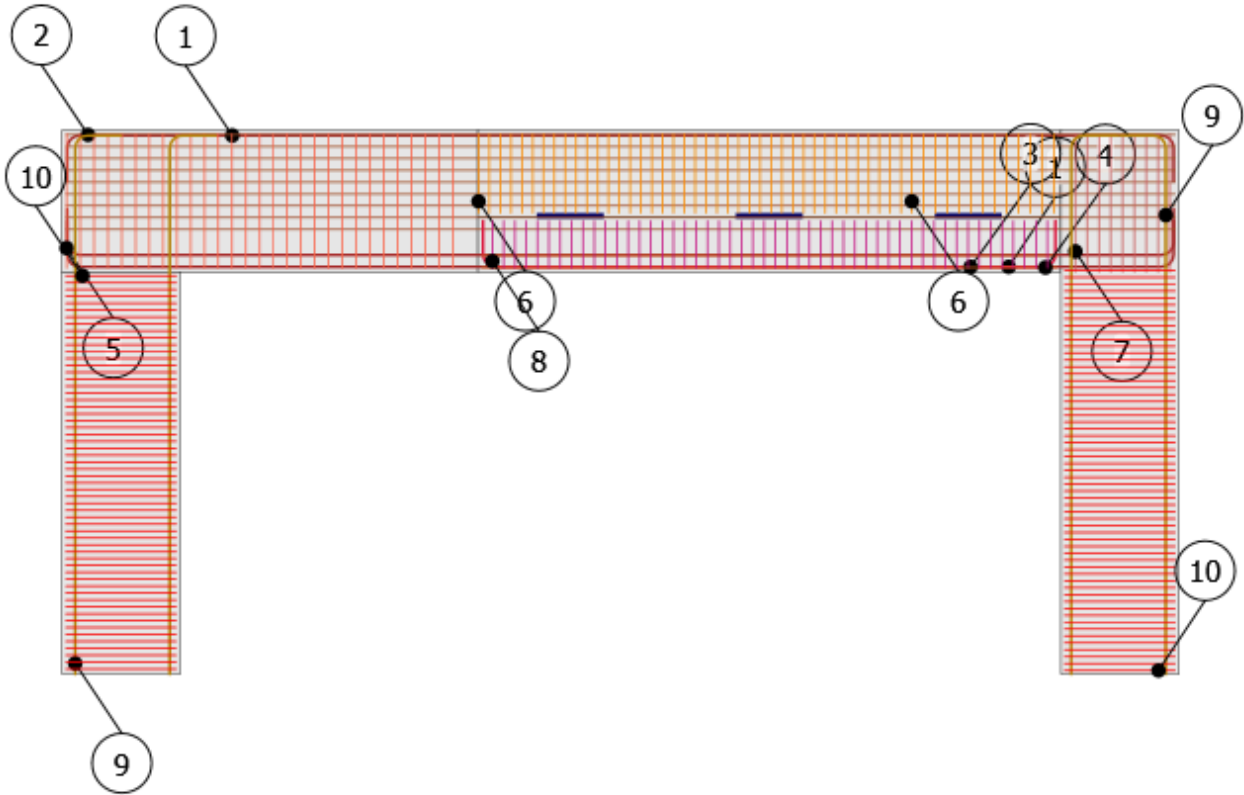
Deflection check



Project:
Project no:
Author:

Bill of material

Items numbering



Brief reinforcement bar table


Index	Φ [in]	Material	Items	Length [in]	Weight [lbm]	Total length [ft]
1	#11	Grade 60	18	602.74	267	904.10
2	#6	Grade 60	18	563.06	71	844.59
3	#11	Grade 60	6	331.66	147	165.83
4	#6	Grade 60	4	291.98	37	97.33
5	#6	Grade 60	58	68.06	9	328.97
6	#6	Grade 60	106	40.10	5	354.24
7	#6	Grade 60	18	70.03	9	105.05
8	#6	Grade 60	200	24.02	3	400.38
9	#11	Grade 60	24	293.84	130	587.70
10	#6	Grade 60	234	56.06	7	1093.23


Project:
Project no:
Author:


Detailed reinforcement bar tables


Parameter	Value	Shape
Index	1	
Φ [in]	#11	
Material	Grade 60	
Number of items	18	
Length [in]	602.74	
Weight [lbm]	267	
Total length [ft]	904.10	
Parameter	Value	Shape
Index	2	
Φ [in]	#6	
Material	Grade 60	
Number of items	18	
Length [in]	563.06	
Weight [lbm]	71	
Total length [ft]	844.59	
Parameter	Value	Shape
Index	3	
Φ [in]	#11	
Material	Grade 60	
Number of items	6	
Length [in]	331.66	
Weight [lbm]	147	
Total length [ft]	165.83	
Parameter	Value	Shape
Index	4	
Φ [in]	#6	
Material	Grade 60	
Number of items	4	
Length [in]	291.98	
Weight [lbm]	37	
Total length [ft]	97.33	
Parameter	Value	Shape
Index	5	
Φ [in]	#6	
Material	Grade 60	
Number of items	58	
Length [in]	68.06	
Weight [lbm]	9	
Total length [ft]	328.97	


Project:
Project no:
Author:

Parameter	Value	Shape
Index	6	
Φ [in]	#6	
Material	Grade 60	
Number of items	106	
Length [in]	40.10	
Weight [lbm]	5	
Total length [ft]	354.24	

Parameter	Value	Shape
Index	7	
Φ [in]	#6	
Material	Grade 60	
Number of items	18	
Length [in]	70.03	
Weight [lbm]	9	
Total length [ft]	105.05	

Parameter	Value	Shape
Index	8	
Φ [in]	#6	
Material	Grade 60	
Number of items	200	
Length [in]	24.02	
Weight [lbm]	3	
Total length [ft]	400.38	

Parameter	Value	Shape
Index	9	
Φ [in]	#11	
Material	Grade 60	
Number of items	24	
Length [in]	293.84	
Weight [lbm]	130	
Total length [ft]	587.70	

Parameter	Value	Shape
Index	10	
Φ [in]	#6	
Material	Grade 60	
Number of items	234	
Length [in]	56.06	
Weight [lbm]	7	
Total length [ft]	1093.23	

Project:
Project no:
Author:

Overview table

Φ [in]	#6	#11
Total length of Φ [ft]	3223.80	1657.64
Weight per meter of Φ [lbm/m]	11	38
Total weight of Φ [lbm]	4847	8809
Total weight of bars [lbm]	13655	
Volume of concrete [ft ³]	1599.53	
Reinforcement weight per volume unit of concrete [lbm/ft ³]	301	

Explanation

Symbol	Explanation
f_c'	Specified compressive strength of concrete.
E_c	Secant modulus of elasticity of concrete
ν	Poisson ratio
Ψ_{pres}	Final value of creep coefficient at time interval ($t_0 = 28$ days, t_{inf} = design working life) for prestress load
Ψ_{perm}	Final value of creep coefficient at time interval ($t_0 = 28$ days, t_{inf} = design working life) for permanent load
Ψ_{trans}	Final value of creep coefficient at time interval ($t_0 = 28$ days, t_{inf} = design working life) for prestress load
f_y	Specified yield strength of nonprestressed reinforcement.
E_s	Modulus of elasticity of reinforcement steel
Properties	W - Width; H - Height; T - Thickness; D - Depth; L - Length; r - Radius; α - Inclination
Position	M - Master; MP - Master point; IP - Insert point
ξ	Time-dependent factor for sustained loads
f_c	The extreme value of compressive stress
ϵ_c	Minimum compressive strain of concrete
ϵ_{pl}	Minimum compressive plastic strain of concrete
k_{c2}	Compressive strength reduction factor
$f_c/f_{c,lim}$	The ratio of concrete stress and concrete strength. It presents the level of material utilization with respect to concrete strength.
f_s	Maximum stress along the length of reinforcement bar.
ϵ_s	Maximum strain along the length of reinforcement bar.
$f_s/f_{y,lim}$	The ratio of stress and strength of the reinforcement. It presents the level of material utilization with respect to reinforcement strength.
$\epsilon_s/\epsilon_{s,lim}$	The ratio of strain and limit strain of the reinforcement. It presents the level of material utilization with respect to limit strain
τ_b	Bond stress on the surface of reinforcement bar.
F_a	The anchorage force. It is developed at the ends of the bars due to hooked anchorage.
F_{tot}	Total force developed along the length of the bar. It consists of the anchorage force due to hooked anchorage and bond force, which integrates bond stresses acting on the surface of the bar.
F_{tot}/F_{lim}	The ratio of total force in the bar and limit value of the force. It presents the level of utilization of the rebar. The limit value of the force is calculated as the minimum of two values: (a) the force calculated as the sum of ultimate anchorage force and the force developed from the end of the bar to the point of interest assuming ultimate bond strength, (b) the ultimate strength of the bar.
F_{lim}	The limit value of the force. The limit value of the force is calculated as the minimum of two values: (a) the force calculated as the sum of ultimate anchorage force and the force developed from the end of the bar to the point of interest assuming ultimate bond strength, (b) the ultimate strength of the bar.

Project:
Project no:
Author:

Symbol	Explanation
τ_b/f_{bu}	The ratio of bond stress and factored bond strength for selected (group of) bars and applied portion of the load. It shows the level of utilization with respect to factored bond strength between the rebar and adjacent concrete.
w	Total crack width including effect of creep.
ϵ_{cm}	the mean strain in the concrete between cracks
ϵ_m	the mean strain in the reinforcement under relevant combination of loads, including the effect of imposed deformations and taking into account the effects of tension stiffening. Only the additional tensile strain beyond the state of zero strain of the concrete at the same level is considered
s_r	maximal distance between stabilized cracks
Φ	diameter of reinforcing bar
ρ_{eff}	effective reinforcement ratio
w_b	calculated crack width
θ_r	inclination of the cracks (the angle between the global coordinate system and the crack direction)
θ_b	bar inclination (the angle between the global coordinate system and the axis of reinforcement bar)
$u_{z,in}$	The deflection caused by the defined load combination with the consideration of the mean Young's modulus of concrete (E_{cm}).
$u_{z,td}$	The deflection caused by the effect of creep and shrinkage.
$u_{z,tot}$	The deflection caused by the defined load combination, with the consideration of the effective Young's modulus ($E_{c,eff}$). Effective Young's modulus is calculated for each calculation step (prestressing, permanent and transient) separately. Creep coefficients are defined in the concrete material properties (Materials tab).

Calculation presumptions

- Minimum amount of reinforcement resisting at least the tensile stresses prior cracking has to be provided in cracked zones.
- It is assumed that a transverse rebar or adequate overlap is provided to enable full anchorage of the stirrups.
- The analysis and code checks are performed for support conditions as specified in the project. No change of supports in construction/service stages is considered.
- It is assumed that the user has included strength reduction factor (as its inverted value) into the load factors of all combinations
- The crack width is checked in the vicinity of the reinforcement only. No control of cracking is performed in non-reinforced zones.
- The presentation of crack spacing is schematic only. It does not represent the crack spacing computed for the calculations.