

STRUCTURAL CALCULATIONS FOR

FIDANZA'S FAMILY HOUSE

(REVISION-3, BY OWNER)

**11041 SW 77th Ave.,
Miami, FL 33156**

Submitted to:

Village of Pinecrest

Building Department

06-11-2024



**Alaym Aguilar, P.E.
FL. Lic. No. 92154**

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CALCULATIONS INCLUDED IN THIS BOOK (PAGES 1 THRU 12)*

Concrete Beam

Project File: NR134.ec6

LIC# : KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

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DESCRIPTION: RB-4 (8"x26")

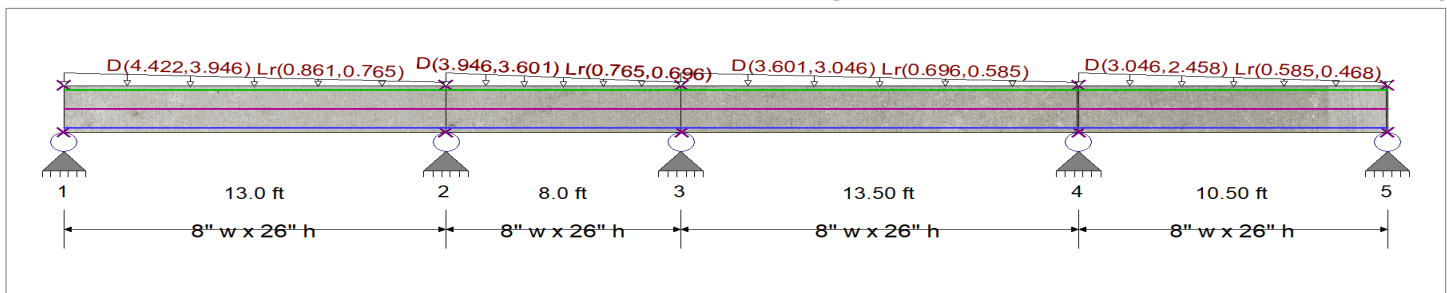
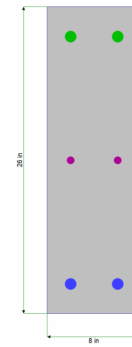
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

General Information

f'_c	=	5.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} \cdot 7.50$	=	530.33 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.80
λ LtWt Factor	=	1.0			
Elastic Modulus	=	4,030.51 ksi	Fy - Stirrups	=	40.0 ksi
f_y - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #	=	3
			Number of Resisting Legs Per Stirrup	=	2



Cross Section & Reinforcing Details

Rectangular Section, Width = 8.0 in, Height = 26.0 in

Span #1 Reinforcing....

2-#8 at 2.50 in from Bottom, from 0.0 to 13.0 ft in this span
 2-#5 at 13.0 in from Bottom, from 0.0 to 13.0 ft in this span

2-#8 at 2.50 in from Top, from 0.0 to 13.0 ft in this span

Span #2 Reinforcing....

2-#8 at 2.50 in from Bottom, from 0.0 to 8.0 ft in this span
 2-#5 at 13.0 in from Bottom, from 0.0 to 8.0 ft in this span

2-#8 at 2.50 in from Top, from 0.0 to 8.0 ft in this span

Span #3 Reinforcing....

2-#8 at 2.50 in from Bottom, from 0.0 to 13.5 ft in this span
 2-#5 at 13.0 in from Bottom, from 0.0 to 13.5 ft in this span

2-#8 at 2.50 in from Top, from 0.0 to 13.5 ft in this span

Span #4 Reinforcing....

2-#8 at 2.50 in from Bottom, from 0.0 to 10.5 ft in this span
 2-#5 at 13.0 in from Bottom, from 0.0 to 10.5 ft in this span

2-#8 at 2.50 in from Top, from 0.0 to 10.5 ft in this span

Beam self weight calculated and added to loads

Load for Span Number 1

Varying Uniform Load : D= 4.422->3.946, Lr= 0.8610->0.7650 k/ft, Extent = 0.0 -->> 13.0 ft, Trib Width = 1.0 ft

Load for Span Number 2

Varying Uniform Load : D= 3.946->3.601, Lr= 0.7650->0.6960 k/ft, Extent = 0.0 -->> 8.0 ft, Trib Width = 1.0 ft

Load for Span Number 3

Varying Uniform Load : D= 3.601->3.046, Lr= 0.6960->0.5850 k/ft, Extent = 0.0 -->> 13.5 ft, Trib Width = 1.0 ft

Load for Span Number 4

Varying Uniform Load : D= 3.046->2.458, Lr= 0.5850->0.4680 k/ft, Extent = 0.0 -->> 10.5 ft, Trib Width = 1.0 ft

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Concrete Beam

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DESCRIPTION: RB-4 (8"x26")

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio = **0.516** : 1
Section used for this span **Typical Section**
Mu : Applied 96.207 k-ft
Mn * Phi : Allowable 186.455 k-ft
Location of maximum on span 5.337 ft
Span # where maximum occurs Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.007 in	Ratio = 23625	>=360.0	Lr Only
Max Upward Transient Deflection	-0.001 in	Ratio = 80012	>=360.0	Lr Only
Max Downward Total Deflection	0.084 in	Ratio = 1863	>=180.0	Span: 4 : +D+Lr
Max Upward Total Deflection	-0.010 in	Ratio = 9269	>=180.0	Span: 4 : +D+Lr

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2	Support 3	Support 4	Support 5
Max Upward from all Load Conditions	28.047	64.080	40.971	53.016	12.242
Max Upward from Load Combinations	28.047	64.080	40.971	53.016	12.242
Max Upward from Load Cases	23.665	54.264	34.193	45.474	10.173
D Only	23.665	54.264	34.193	45.474	10.173
+D+Lr	28.047	64.080	40.971	53.016	12.242
+D+0.750Lr	26.942	61.711	39.179	51.138	11.740
+0.60D	14.540	31.583	21.091	27.478	5.968
Lr Only	4.493	9.725	6.391	8.234	1.746

Shear Stirrup Requirements

Between 0.00 to 3.83 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 3.97 to 6.84 ft, $V_u < \Phi^*V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 6.98 to 8.62 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 8.76 to 14.18 ft, $\Phi^*V_c < V_u$, Req'd Vs = 0.4977, use #3 stirrups spaced at 6.000 in
Between 14.26 to 16.03 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 16.12 to 19.74 ft, $V_u < \Phi^*V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 19.82 to 25.26 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 25.41 to 29.24 ft, $V_u < \Phi^*V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 29.38 to 38.70 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 38.81 to 44.12 ft, $V_u < \Phi^*V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 44.23 to 44.89 ft, $\Phi^*V_c / 2 < V_u \leq \Phi^*V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft) (in)	Vu (k) Actual	Vu (k) Design	Mu (k-ft)	d*Vu/Mu	Φ^*V_c (k)	Comment	Φ^*V_s (k)	Φ^*V_n (k)	Spacing (in) Req'd
+1.20D+1.60Lr	1	0.00 23.50	36.27	36.27	0.00	1.00	23.07	$\Phi^*V_c < V_u$	13.20	37.2	11.7
+1.20D+1.60Lr	1	0.82 23.50	30.59	30.59	27.45	1.00	23.07	$\Phi^*V_c < V_u$	7.525	37.2	11.8
+1.20D+1.60Lr	1	1.64 23.50	24.96	24.96	50.25	0.97	22.96	$\Phi^*V_c < V_u$	2.0	37.1	11.8
+1.20D+1.60Lr	1	2.46 23.50	19.36	19.36	68.44	0.55	21.23	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		35.3	11.8
+1.20D+1.60Lr	1	3.28 23.50	13.79	13.79	82.04	0.33	20.30	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		34.4	11.8
+1.20D+1.60Lr	1	4.11 23.50	8.27	8.27	91.09	0.18	19.94	$V_u < \Phi^*V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	4.93 23.50	2.78	2.78	95.63	0.06	19.94	$V_u < \Phi^*V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.75 23.50	-2.67	2.67	95.67	0.05	19.94	$V_u < \Phi^*V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.57 23.50	-8.08	8.08	91.25	0.17	19.94	$V_u < \Phi^*V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	7.39 23.50	-13.46	13.46	82.41	0.32	20.26	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		34.4	11.8
+1.20D+1.60Lr	1	8.21 23.50	-18.79	18.79	69.16	0.53	21.14	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		35.2	11.8
+1.20D+1.60Lr	1	9.03 23.50	-24.09	24.09	51.55	0.92	22.72	$\Phi^*V_c < V_u$	1.376	48.6	11.8
+1.20D+1.60Lr	1	9.85 23.50	-29.36	29.36	29.61	1.00	23.07	$\Phi^*V_c < V_u$	6.288	48.9	11.8
+1.20D+1.60Lr	1	10.67 23.50	-34.58	34.58	3.36	1.00	23.07	$\Phi^*V_c < V_u$	11.513	48.9	11.8
+1.20D+1.60Lr	1	11.49 23.50	-39.77	39.77	27.17	1.00	23.07	$\Phi^*V_c < V_u$	16.699	48.9	9.3
+1.20D+1.60Lr	1	12.32 23.50	-44.92	44.92	61.93	1.00	23.07	$\Phi^*V_c < V_u$	21.849	48.9	7.1
+1.20D+1.60Lr	2	13.08 23.50	29.02	29.02	91.66	0.62	21.50	$\Phi^*V_c < V_u$	7.522	47.4	11.8
+1.20D+1.60Lr	2	13.59 23.50	25.90	25.90	77.79	0.65	21.63	$\Phi^*V_c < V_u$	4.264	47.5	11.8
+1.20D+1.60Lr	2	14.09 23.50	22.79	22.79	65.49	0.68	21.75	$\Phi^*V_c < V_u$	1.033	47.6	11.8
+1.20D+1.60Lr	2	14.60 23.50	19.69	19.69	54.76	0.70	21.85	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		35.9	11.8
+1.20D+1.60Lr	2	15.11 23.50	16.62	16.62	45.59	0.71	21.89	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		36.0	11.8
+1.20D+1.60Lr	2	15.61 23.50	13.56	13.56	37.96	0.70	21.83	$\Phi^*V_c / 2 < V_u$ lin per 9.6.1		35.9	11.8

Project Title:
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Concrete Beam

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DESCRIPTION: RB-4 (8"x26")

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft) (in)	Vu (k) Actual Design	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in) Req'd
+1.20D+1.60Lr	2	16.12 23.50	10.51 10.51	31.88	0.65	21.61	Vu < Phi*Vc / 2 xt Req'd per		21.6	0.0
+1.20D+1.60Lr	2	16.62 23.50	7.49 7.49	27.34	0.54	21.16	Vu < Phi*Vc / 2 xt Req'd per		21.2	0.0
+1.20D+1.60Lr	2	17.13 23.50	4.48 4.48	24.31	0.36	20.43	Vu < Phi*Vc / 2 xt Req'd per		20.4	0.0
+1.20D+1.60Lr	2	17.63 23.50	1.48 1.48	22.81	0.13	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	2	18.14 23.50	-1.49 1.49	22.81	0.13	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	2	18.64 23.50	-4.45 4.45	24.31	0.36	20.42	Vu < Phi*Vc / 2 xt Req'd per		20.4	0.0
+1.20D+1.60Lr	2	19.15 23.50	-7.39 7.39	27.30	0.53	21.13	Vu < Phi*Vc / 2 xt Req'd per		21.1	0.0
+1.20D+1.60Lr	2	19.65 23.50	-10.32 10.32	31.78	0.64	21.57	Vu < Phi*Vc / 2 xt Req'd per		21.6	0.0
+1.20D+1.60Lr	2	20.16 23.50	-13.23 13.23	37.73	0.69	21.78	Phi*Vc / 2 < Vu lin per 9.6.:		35.9	11.8
+1.20D+1.60Lr	2	20.66 23.50	-16.12 16.12	45.15	0.70	21.83	Phi*Vc / 2 < Vu lin per 9.6.:		35.9	11.8
+1.20D+1.60Lr	3	21.28 23.50	32.75 32.75	41.36	1.00	23.07	Phi*Vc < Vu	9.685	37.2	11.8
+1.20D+1.60Lr	3	22.14 23.50	27.94 27.94	15.49	1.00	23.07	Phi*Vc < Vu	4.875	37.2	11.8
+1.20D+1.60Lr	3	22.99 23.50	23.18 23.18	6.30	1.00	23.07	Phi*Vc < Vu	0.1099	37.2	11.8
+1.20D+1.60Lr	3	23.84 23.50	18.46 18.46	24.05	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8
+1.20D+1.60Lr	3	24.69 23.50	13.78 13.78	37.79	0.71	21.89	Phi*Vc / 2 < Vu lin per 9.6.:		36.0	11.8
+1.20D+1.60Lr	3	25.55 23.50	9.16 9.16	47.57	0.38	20.50	Vu < Phi*Vc / 2 xt Req'd per		20.5	0.0
+1.20D+1.60Lr	3	26.40 23.50	4.57 4.57	53.42	0.17	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	3	27.25 23.50	0.04 0.04	55.38	0.00	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	3	28.11 23.50	-4.46 4.46	53.49	0.16	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	3	28.96 23.50	-8.90 8.90	47.79	0.36	20.45	Vu < Phi*Vc / 2 xt Req'd per		20.4	0.0
+1.20D+1.60Lr	3	29.81 23.50	-13.31 13.31	38.32	0.68	21.75	Phi*Vc / 2 < Vu lin per 9.6.:		35.8	11.8
+1.20D+1.60Lr	3	30.66 23.50	-17.66 17.66	25.12	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8
+1.20D+1.60Lr	3	31.52 23.50	-21.97 21.97	8.22	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8
+1.20D+1.60Lr	3	32.37 23.50	-26.24 26.24	12.34	1.00	23.07	Phi*Vc < Vu	3.169	37.2	11.8
+1.20D+1.60Lr	3	33.22 23.50	-30.46 30.46	36.51	1.00	23.07	Phi*Vc < Vu	7.389	37.2	11.8
+1.20D+1.60Lr	3	34.07 23.50	-34.63 34.63	64.26	1.00	23.07	Phi*Vc < Vu	11.563	37.2	11.8
+1.20D+1.60Lr	4	34.83 23.50	29.83 29.83	69.31	0.84	22.42	Phi*Vc < Vu	7.409	36.5	11.8
+1.20D+1.60Lr	4	35.49 23.50	26.65 26.65	50.59	1.00	23.07	Phi*Vc < Vu	3.586	37.2	11.8
+1.20D+1.60Lr	4	36.16 23.50	23.52 23.52	33.95	1.00	23.07	Phi*Vc < Vu	0.4494	37.2	11.8
+1.20D+1.60Lr	4	36.82 23.50	20.42 20.42	19.39	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8
+1.20D+1.60Lr	4	37.48 23.50	17.36 17.36	6.86	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8
+1.20D+1.60Lr	4	38.15 23.50	14.33 14.33	3.64	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8
+1.20D+1.60Lr	4	38.81 23.50	11.35 11.35	12.15	1.00	23.07	Vu < Phi*Vc / 2 xt Req'd per		23.1	0.0
+1.20D+1.60Lr	4	39.47 23.50	8.40 8.40	18.70	0.88	22.57	Vu < Phi*Vc / 2 xt Req'd per		22.6	0.0
+1.20D+1.60Lr	4	40.14 23.50	5.48 5.48	23.30	0.46	20.84	Vu < Phi*Vc / 2 xt Req'd per		20.8	0.0
+1.20D+1.60Lr	4	40.80 23.50	2.61 2.61	25.98	0.20	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	4	41.46 23.50	-0.23 0.23	26.77	0.02	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	4	42.13 23.50	-3.03 3.03	25.68	0.23	19.94	Vu < Phi*Vc / 2 xt Req'd per		19.9	0.0
+1.20D+1.60Lr	4	42.79 23.50	-5.79 5.79	22.76	0.50	21.00	Vu < Phi*Vc / 2 xt Req'd per		21.0	0.0
+1.20D+1.60Lr	4	43.45 23.50	-8.52 8.52	18.01	0.93	22.76	Vu < Phi*Vc / 2 xt Req'd per		22.8	0.0
+1.20D+1.60Lr	4	44.12 23.50	-11.20 11.20	11.47	1.00	23.07	Vu < Phi*Vc / 2 xt Req'd per		23.1	0.0
+1.20D+1.60Lr	4	44.78 23.50	-13.85 13.85	3.16	1.00	23.07	Phi*Vc / 2 < Vu lin per 9.6.:		37.2	11.8

Maximum Forces & Stresses for Load Combinations

Load Combination	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
Segment			Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	13.000	96.21	186.46	0.52
Span # 2	2	8.000	-94.13	186.46	0.50
Span # 3	3	13.500	-74.30	186.46	0.40
Span # 4	4	10.500	-79.47	186.46	0.43
+1.40D					
Span # 1	1	13.000	90.02	186.46	0.48
Span # 2	2	8.000	-88.08	186.46	0.47
Span # 3	3	13.500	-69.91	186.46	0.37
Span # 4	4	10.500	-74.77	186.46	0.40
+1.20D+0.50Lr					
Span # 1	1	13.000	83.11	186.46	0.45
Span # 2	2	8.000	-81.32	186.46	0.44
Span # 3	3	13.500	-64.42	186.46	0.35

Project Title:
 Engineer:
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 Project Descr:

Concrete Beam

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LIC# : KW-06011763, Build:20.24.05.02

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DESCRIPTION: RB-4 (8"x26")

Load Combination Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
			Mu : Max	Phi*Mnx	Stress Ratio
Span # 4	4	10.500	-68.89	186.46	0.37
+1.20D					
Span # 1	1	13.000	77.16	186.46	0.41
Span # 2	2	8.000	-75.50	186.46	0.40
Span # 3	3	13.500	-59.92	186.46	0.32
Span # 4	4	10.500	-64.08	186.46	0.34
+1.20D+1.60Lr					
Span # 1	1	13.000	96.21	186.46	0.52
Span # 2	2	8.000	-94.13	186.46	0.50
Span # 3	3	13.500	-74.30	186.46	0.40
Span # 4	4	10.500	-79.47	186.46	0.43
+0.90D					
Span # 1	1	13.000	57.87	186.46	0.31
Span # 2	2	8.000	-56.62	186.46	0.30
Span # 3	3	13.500	-44.94	186.46	0.24
Span # 4	4	10.500	-48.06	186.46	0.26

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+Lr	1	0.0837	5.816	+D+Lr	-0.0018	13.211
+D+Lr	2	0.0018	8.355	+D+Lr	-0.0104	3.158
+D+Lr	3	0.0271	6.750	+D+Lr	-0.0003	13.776
+D+Lr	4	0.0061	6.355	+D+Lr	-0.0006	0.829

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DESCRIPTION: RB-5 (8"x26")

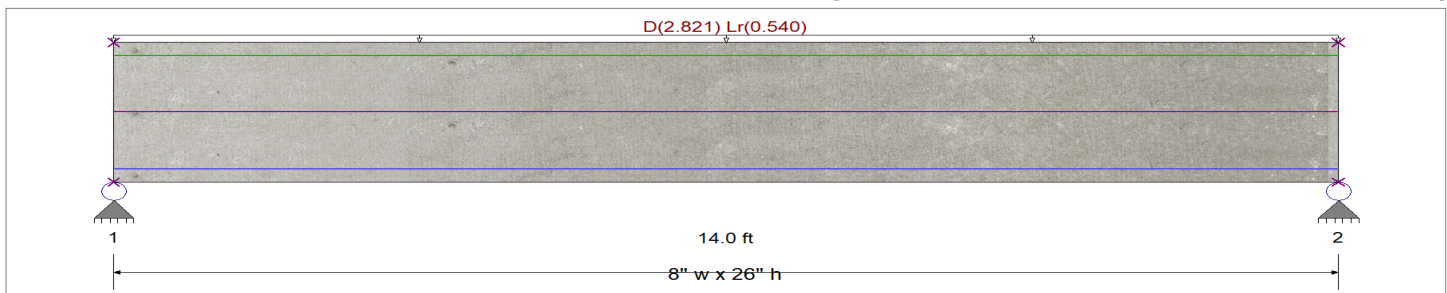
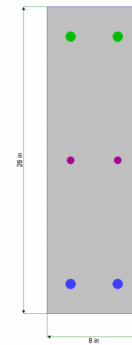
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

General Information

f'_c	=	5.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} \cdot 7.50$	=	530.33 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.80
λ LtWt Factor	=	1.0			
Elastic Modulus	=	4,030.51 ksi	Fy - Stirrups	=	40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #	=	3
			Number of Resisting Legs Per Stirrup	=	2



Cross Section & Reinforcing Details

Rectangular Section, Width = 8.0 in, Height = 26.0 in

Span #1 Reinforcing....

2-#7 at 2.50 in from Bottom, from 0.0 to 14.0 ft in this span

2-#5 at 13.0 in from Bottom, from 0.0 to 14.0 ft in this span

2-#7 at 2.50 in from Top, from 0.0 to 14.0 ft in this span

Beam self weight calculated and added to loads

Loads on all spans...

D = 2.821, Lr = 0.540

Uniform Load on ALL spans : D = 2.821, Lr = 0.540 k/ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.732 : 1
Section used for this span		Typical Section
Mu : Applied		110.263 k-ft
Mn * Phi : Allowable		150.657 k-ft
Location of maximum on span		6.987 ft
Span # where maximum occurs		Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.010 in	Ratio = 17003	>=360.0	Lr Only
Max Upward Transient Deflection	0.000 in	Ratio = 0	<360.0	Lr Only
Max Downward Total Deflection	0.180 in	Ratio = 935	>=180.0	Span: 1 : +D+Lr
Max Upward Total Deflection	0.000 in	Ratio = 0	<180.0	Span: 1 : +D+Lr

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	24.993	24.993
Max Upward from Load Combinations	24.993	24.993
Max Upward from Load Cases	21.213	21.213
D Only	21.213	21.213
+D+Lr	24.993	24.993

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: NR134.ec6

LIC#: KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

(c) ENERCALC INC 1983-2023

DESCRIPTION: RB-5 (8"x26")

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+0.750Lr	24.048	24.048
+0.60D	12.728	12.728
Lr Only	3.780	3.780

Shear Stirrup Requirements

Between 0.00 to 4.77 ft, $\Phi V_c / 2 < V_u \leq \Phi V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 4.79 to 9.21 ft, $V_u < \Phi V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 9.23 to 13.97 ft, $\Phi V_c < V_u$, Req'd Vs = 9.148, use #3 stirrups spaced at 11.000 in

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft)	(in)	Vu (k)	(k)	Mu (k-ft)	d*Vu/Mu	ΦV_c (k)	Comment	ΦV_s (k)	ΦV_n (k)	Spacing (in)
				Actual	Design							Req'd
+1.20D+1.60Lr	1	0.00	23.50	31.50	31.50	0.00	1.00	22.36	$\Phi V_c < V_u$	9.148	36.5	11.8
+1.20D+1.60Lr	1	0.15	23.50	30.82	30.82	4.77	1.00	22.36	$\Phi V_c < V_u$	8.459	36.5	11.8
+1.20D+1.60Lr	1	0.31	23.50	30.13	30.13	9.43	1.00	22.36	$\Phi V_c < V_u$	7.771	36.5	11.8
+1.20D+1.60Lr	1	0.46	23.50	29.44	29.44	13.99	1.00	22.36	$\Phi V_c < V_u$	7.082	36.5	11.8
+1.20D+1.60Lr	1	0.61	23.50	28.75	28.75	18.44	1.00	22.36	$\Phi V_c < V_u$	6.393	36.5	11.8
+1.20D+1.60Lr	1	0.77	23.50	28.06	28.06	22.78	1.00	22.36	$\Phi V_c < V_u$	5.705	36.5	11.8
+1.20D+1.60Lr	1	0.92	23.50	27.37	27.37	27.02	1.00	22.36	$\Phi V_c < V_u$	5.016	36.5	11.8
+1.20D+1.60Lr	1	1.07	23.50	26.68	26.68	31.16	1.00	22.36	$\Phi V_c < V_u$	4.328	36.5	11.8
+1.20D+1.60Lr	1	1.22	23.50	25.99	25.99	35.19	1.00	22.36	$\Phi V_c < V_u$	3.639	36.5	11.8
+1.20D+1.60Lr	1	1.38	23.50	25.31	25.31	39.12	1.00	22.36	$\Phi V_c < V_u$	2.950	36.5	11.8
+1.20D+1.60Lr	1	1.53	23.50	24.62	24.62	42.93	1.00	22.36	$\Phi V_c < V_u$	2.262	36.5	11.8
+1.20D+1.60Lr	1	1.68	23.50	23.93	23.93	46.65	1.00	22.36	$\Phi V_c < V_u$	1.573	36.5	11.8
+1.20D+1.60Lr	1	1.84	23.50	23.24	23.24	50.26	0.91	22.03	$\Phi V_c < V_u$	1.207	36.1	11.8
+1.20D+1.60Lr	1	1.99	23.50	22.55	22.55	53.76	0.82	21.75	$\Phi V_c < V_u$	0.8051	35.8	11.8
+1.20D+1.60Lr	1	2.14	23.50	21.86	21.86	57.16	0.75	21.50	$\Phi V_c < V_u$	0.3636	35.6	11.8
+1.20D+1.60Lr	1	2.30	23.50	21.17	21.17	60.45	0.69	21.28	$\Phi V_c / 2 < V_u$ lin per 9.6.1		35.4	11.8
+1.20D+1.60Lr	1	2.45	23.50	20.49	20.49	63.64	0.63	21.09	$\Phi V_c / 2 < V_u$ lin per 9.6.1		35.2	11.8
+1.20D+1.60Lr	1	2.60	23.50	19.80	19.80	66.72	0.58	20.93	$\Phi V_c / 2 < V_u$ lin per 9.6.1		35.0	11.8
+1.20D+1.60Lr	1	2.75	23.50	19.11	19.11	69.70	0.54	20.78	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.9	11.8
+1.20D+1.60Lr	1	2.91	23.50	18.42	18.42	72.57	0.50	20.64	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.7	11.8
+1.20D+1.60Lr	1	3.06	23.50	17.73	17.73	75.33	0.46	20.52	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.6	11.8
+1.20D+1.60Lr	1	3.21	23.50	17.04	17.04	77.99	0.43	20.40	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.5	11.8
+1.20D+1.60Lr	1	3.37	23.50	16.35	16.35	80.55	0.40	20.30	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.4	11.8
+1.20D+1.60Lr	1	3.52	23.50	15.67	15.67	83.00	0.37	20.20	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.3	11.8
+1.20D+1.60Lr	1	3.67	23.50	14.98	14.98	85.34	0.34	20.12	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.2	11.8
+1.20D+1.60Lr	1	3.83	23.50	14.29	14.29	87.58	0.32	20.03	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.1	11.8
+1.20D+1.60Lr	1	3.98	23.50	13.60	13.60	89.71	0.30	19.96	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.1	11.8
+1.20D+1.60Lr	1	4.13	23.50	12.91	12.91	91.74	0.28	19.94	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.0	11.8
+1.20D+1.60Lr	1	4.28	23.50	12.22	12.22	93.67	0.26	19.94	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.0	11.8
+1.20D+1.60Lr	1	4.44	23.50	11.53	11.53	95.48	0.24	19.94	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.0	11.8
+1.20D+1.60Lr	1	4.59	23.50	10.85	10.85	97.20	0.22	19.94	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.0	11.8
+1.20D+1.60Lr	1	4.74	23.50	10.16	10.16	98.80	0.20	19.94	$\Phi V_c / 2 < V_u$ lin per 9.6.1		34.0	11.8
+1.20D+1.60Lr	1	4.90	23.50	9.47	9.47	100.30	0.18	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.05	23.50	8.78	8.78	101.70	0.17	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.20	23.50	8.09	8.09	102.99	0.15	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.36	23.50	7.40	7.40	104.18	0.14	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.51	23.50	6.71	6.71	105.26	0.12	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.66	23.50	6.03	6.03	106.23	0.11	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.81	23.50	5.34	5.34	107.10	0.10	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	5.97	23.50	4.65	4.65	107.86	0.08	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.12	23.50	3.96	3.96	108.52	0.07	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.27	23.50	3.27	3.27	109.07	0.06	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.43	23.50	2.58	2.58	109.52	0.05	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.58	23.50	1.89	1.89	109.86	0.03	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.73	23.50	1.21	1.21	110.10	0.02	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	6.89	23.50	0.52	0.52	110.23	0.01	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	7.04	23.50	-0.17	0.17	110.26	0.00	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0
+1.20D+1.60Lr	1	7.19	23.50	-0.86	0.86	110.18	0.02	19.94	$V_u < \Phi V_c / 2$ xt Req'd per		19.9	0.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Concrete Beam

Project File: NR134.ec6

LIC#: KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

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DESCRIPTION: RB-5 (8"x26")

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft)	(in)	Vu (k)	(k)	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in) Req'd
+1.20D+1.60Lr	1	7.34	23.50	-1.55	1.55	110.00	0.03	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.50	23.50	-2.24	2.24	109.71	0.04	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.65	23.50	-2.93	2.93	109.31	0.05	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.80	23.50	-3.62	3.62	108.81	0.07	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.96	23.50	-4.30	4.30	108.21	0.08	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.11	23.50	-4.99	4.99	107.49	0.09	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.26	23.50	-5.68	5.68	106.68	0.10	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.42	23.50	-6.37	6.37	105.76	0.12	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.57	23.50	-7.06	7.06	104.73	0.13	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.72	23.50	-7.75	7.75	103.60	0.15	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.87	23.50	-8.44	8.44	102.36	0.16	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	9.03	23.50	-9.12	9.12	101.01	0.18	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	9.18	23.50	-9.81	9.81	99.57	0.19	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	9.33	23.50	-10.50	10.50	98.01	0.21	19.94	Phi*Vc / 2 < Vu	34.0	34.0	11.8
+1.20D+1.60Lr	1	9.49	23.50	-11.19	11.19	96.35	0.23	19.94	Phi*Vc / 2 < Vu	34.0	34.0	11.8
+1.20D+1.60Lr	1	9.64	23.50	-11.88	11.88	94.59	0.25	19.94	Phi*Vc / 2 < Vu	34.0	34.0	11.8
+1.20D+1.60Lr	1	9.79	23.50	-12.57	12.57	92.72	0.27	19.94	Phi*Vc / 2 < Vu	34.0	34.0	11.8
+1.20D+1.60Lr	1	9.95	23.50	-13.26	13.26	90.74	0.29	19.94	Phi*Vc / 2 < Vu	34.0	34.0	11.8
+1.20D+1.60Lr	1	10.10	23.50	-13.94	13.94	88.66	0.31	19.99	Phi*Vc / 2 < Vu	34.1	34.1	11.8
+1.20D+1.60Lr	1	10.25	23.50	-14.63	14.63	86.47	0.33	20.07	Phi*Vc / 2 < Vu	34.2	34.2	11.8
+1.20D+1.60Lr	1	10.40	23.50	-15.32	15.32	84.18	0.36	20.16	Phi*Vc / 2 < Vu	34.3	34.3	11.8
+1.20D+1.60Lr	1	10.56	23.50	-16.01	16.01	81.79	0.38	20.25	Phi*Vc / 2 < Vu	34.4	34.4	11.8
+1.20D+1.60Lr	1	10.71	23.50	-16.70	16.70	79.28	0.41	20.35	Phi*Vc / 2 < Vu	34.5	34.5	11.8
+1.20D+1.60Lr	1	10.86	23.50	-17.39	17.39	76.68	0.44	20.46	Phi*Vc / 2 < Vu	34.6	34.6	11.8
+1.20D+1.60Lr	1	11.02	23.50	-18.08	18.08	73.96	0.48	20.58	Phi*Vc / 2 < Vu	34.7	34.7	11.8
+1.20D+1.60Lr	1	11.17	23.50	-18.76	18.76	71.14	0.52	20.71	Phi*Vc / 2 < Vu	34.8	34.8	11.8
+1.20D+1.60Lr	1	11.32	23.50	-19.45	19.45	68.22	0.56	20.85	Phi*Vc / 2 < Vu	34.9	34.9	11.8
+1.20D+1.60Lr	1	11.48	23.50	-20.14	20.14	65.19	0.61	21.01	Phi*Vc / 2 < Vu	35.1	35.1	11.8
+1.20D+1.60Lr	1	11.63	23.50	-20.83	20.83	62.06	0.66	21.19	Phi*Vc / 2 < Vu	35.3	35.3	11.8
+1.20D+1.60Lr	1	11.78	23.50	-21.52	21.52	58.82	0.72	21.39	Phi*Vc < Vu	0.1306	35.5	11.8
+1.20D+1.60Lr	1	11.93	23.50	-22.21	22.21	55.47	0.78	21.62	Phi*Vc < Vu	0.5888	35.7	11.8
+1.20D+1.60Lr	1	12.09	23.50	-22.90	22.90	52.02	0.86	21.88	Phi*Vc < Vu	1.011	36.0	11.8
+1.20D+1.60Lr	1	12.24	23.50	-23.58	23.58	48.47	0.95	22.20	Phi*Vc < Vu	1.389	36.3	11.8
+1.20D+1.60Lr	1	12.39	23.50	-24.27	24.27	44.80	1.00	22.36	Phi*Vc < Vu	1.917	36.5	11.8
+1.20D+1.60Lr	1	12.55	23.50	-24.96	24.96	41.04	1.00	22.36	Phi*Vc < Vu	2.606	36.5	11.8
+1.20D+1.60Lr	1	12.70	23.50	-25.65	25.65	37.17	1.00	22.36	Phi*Vc < Vu	3.295	36.5	11.8
+1.20D+1.60Lr	1	12.85	23.50	-26.34	26.34	33.19	1.00	22.36	Phi*Vc < Vu	3.983	36.5	11.8
+1.20D+1.60Lr	1	13.01	23.50	-27.03	27.03	29.11	1.00	22.36	Phi*Vc < Vu	4.672	36.5	11.8
+1.20D+1.60Lr	1	13.16	23.50	-27.72	27.72	24.92	1.00	22.36	Phi*Vc < Vu	5.361	36.5	11.8
+1.20D+1.60Lr	1	13.31	23.50	-28.41	28.41	20.62	1.00	22.36	Phi*Vc < Vu	6.049	36.5	11.8
+1.20D+1.60Lr	1	13.46	23.50	-29.09	29.09	16.23	1.00	22.36	Phi*Vc < Vu	6.738	36.5	11.8
+1.20D+1.60Lr	1	13.62	23.50	-29.78	29.78	11.72	1.00	22.36	Phi*Vc < Vu	7.426	36.5	11.8
+1.20D+1.60Lr	1	13.77	23.50	-30.47	30.47	7.11	1.00	22.36	Phi*Vc < Vu	8.115	36.5	11.8
+1.20D+1.60Lr	1	13.92	23.50	-31.16	31.16	2.40	1.00	22.36	Phi*Vc < Vu	8.804	36.5	11.8

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXIMUM BENDING Envelope						
Span # 1		1	14.000	110.26	150.66	0.73
+1.40D		1	14.000	103.94	150.66	0.69
+1.20D+0.50Lr		1	14.000	95.71	150.66	0.64
+1.20D		1	14.000	89.09	150.66	0.59
+1.20D+1.60Lr		1	14.000	110.26	150.66	0.73
+0.90D		1	14.000	66.82	150.66	0.44

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: NR134.ec6

LIC# : KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

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DESCRIPTION: RB-5 (8"x26")

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+Lr	1	0.1797	7.000		0.0000	0.000

Concrete Beam

Project File: NR134.ec6

LIC# : KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

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DESCRIPTION: RB-6 (8"x26")

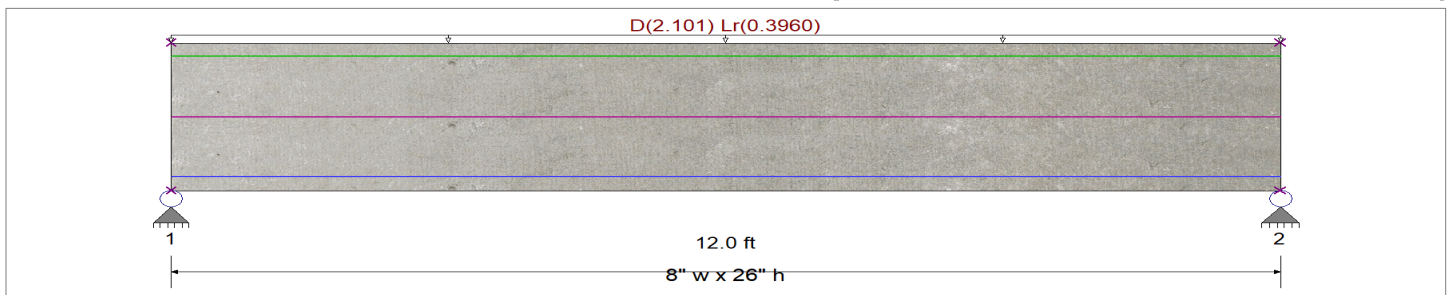
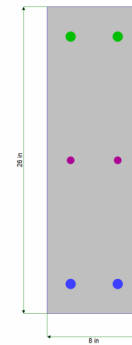
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : ASCE 7-16

General Information

f'_c	=	5.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} \cdot 7.50$	=	530.33 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.80
λ LtWt Factor	=	1.0			
Elastic Modulus	=	4,030.51 ksi	Fy - Stirrups	=	40.0 ksi
f_y - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #	=	3
		Number of Resisting Legs Per Stirrup	=	=	2



Cross Section & Reinforcing Details

Rectangular Section, Width = 8.0 in, Height = 26.0 in

Span #1 Reinforcing....

2-#7 at 2.50 in from Bottom, from 0.0 to 12.0 ft in this span

2-#5 at 13.0 in from Bottom, from 0.0 to 12.0 ft in this span

2-#7 at 2.50 in from Top, from 0.0 to 12.0 ft in this span

Beam self weight calculated and added to loads

Loads on all spans...

D = 2.101, Lr = 0.3960

Uniform Load on ALL spans : D = 2.101, Lr = 0.3960 k/ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.407	: 1
Section used for this span			
Mu : Applied		61.310	k-ft
Mn * Phi : Allowable		150.657	k-ft
Location of maximum on span		6.011	ft
Span # where maximum occurs		Span # 1	

Maximum Deflection

Max Downward Transient Deflection	0.004 in	Ratio = 36820	>=360.0	Lr Only
Max Upward Transient Deflection	0.000 in	Ratio = 0	<360.0	Lr Only
Max Downward Total Deflection	0.036 in	Ratio = 3990	>=180.0	Span: 1 : +D+Lr
Max Upward Total Deflection	0.000 in	Ratio = 0	<180.0	Span: 1 : +D+Lr

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	16.239	16.239
Max Upward from Load Combinations	16.239	16.239
Max Upward from Load Cases	13.863	13.863
D Only	13.863	13.863
+D+Lr	16.239	16.239

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: NR134.ec6

LIC#: KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

(c) ENERCALC INC 1983-2023

DESCRIPTION: RB-6 (8"x26")

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+0.750Lr	15.645	15.645
+0.60D	8.318	8.318
Lr Only	2.376	2.376

Shear Stirrup Requirements

Between 0.00 to 2.99 ft, $\Phi V_c / 2 < V_u \leq \Phi V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in
Between 3.02 to 8.98 ft, $V_u < \Phi V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.
Between 9.01 to 11.98 ft, $\Phi V_c / 2 < V_u \leq \Phi V_c$, Req'd Vs = Min per 9.6.3.1, use #3 stirrups spaced at 11.000 in

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft)	(in)	Vu Actual (k)	Design (k)	Mu (k-ft)	d*Vu/Mu	ΦV_c (k)	Comment	ΦV_s (k)	ΦV_n (k)	Spacing (in) Req'd
+1.20D+1.60Lr	1	0.00	23.50	20.44	20.44	0.00	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.13	23.50	19.99	19.99	2.65	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.26	23.50	19.54	19.54	5.24	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.39	23.50	19.10	19.10	7.78	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.52	23.50	18.65	18.65	10.25	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.66	23.50	18.20	18.20	12.67	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.79	23.50	17.76	17.76	15.03	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	0.92	23.50	17.31	17.31	17.33	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	1.05	23.50	16.86	16.86	19.57	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	1.18	23.50	16.42	16.42	21.75	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	1.31	23.50	15.97	15.97	23.87	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	1.44	23.50	15.52	15.52	25.94	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	1.57	23.50	15.08	15.08	27.94	1.00	22.36	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.5	11.8
+1.20D+1.60Lr	1	1.70	23.50	14.63	14.63	29.89	0.96	22.21	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.3	11.8
+1.20D+1.60Lr	1	1.84	23.50	14.18	14.18	31.78	0.87	21.93	$\Phi V_c / 2 < V_u$	in per 9.6.1	36.0	11.8
+1.20D+1.60Lr	1	1.97	23.50	13.74	13.74	33.61	0.80	21.67	$\Phi V_c / 2 < V_u$	in per 9.6.1	35.8	11.8
+1.20D+1.60Lr	1	2.10	23.50	13.29	13.29	35.38	0.74	21.45	$\Phi V_c / 2 < V_u$	in per 9.6.1	35.6	11.8
+1.20D+1.60Lr	1	2.23	23.50	12.84	12.84	37.10	0.68	21.26	$\Phi V_c / 2 < V_u$	in per 9.6.1	35.4	11.8
+1.20D+1.60Lr	1	2.36	23.50	12.40	12.40	38.75	0.63	21.08	$\Phi V_c / 2 < V_u$	in per 9.6.1	35.2	11.8
+1.20D+1.60Lr	1	2.49	23.50	11.95	11.95	40.35	0.58	20.92	$\Phi V_c / 2 < V_u$	in per 9.6.1	35.0	11.8
+1.20D+1.60Lr	1	2.62	23.50	11.50	11.50	41.89	0.54	20.78	$\Phi V_c / 2 < V_u$	in per 9.6.1	34.9	11.8
+1.20D+1.60Lr	1	2.75	23.50	11.06	11.06	43.37	0.50	20.65	$\Phi V_c / 2 < V_u$	in per 9.6.1	34.7	11.8
+1.20D+1.60Lr	1	2.89	23.50	10.61	10.61	44.79	0.46	20.53	$\Phi V_c / 2 < V_u$	in per 9.6.1	34.6	11.8
+1.20D+1.60Lr	1	3.02	23.50	10.16	10.16	46.15	0.43	20.41	$V_u < \Phi V_c / 2$	xt Req'd per	20.4	0.0
+1.20D+1.60Lr	1	3.15	23.50	9.72	9.72	47.45	0.40	20.31	$V_u < \Phi V_c / 2$	xt Req'd per	20.3	0.0
+1.20D+1.60Lr	1	3.28	23.50	9.27	9.27	48.70	0.37	20.22	$V_u < \Phi V_c / 2$	xt Req'd per	20.2	0.0
+1.20D+1.60Lr	1	3.41	23.50	8.82	8.82	49.88	0.35	20.13	$V_u < \Phi V_c / 2$	xt Req'd per	20.1	0.0
+1.20D+1.60Lr	1	3.54	23.50	8.38	8.38	51.01	0.32	20.04	$V_u < \Phi V_c / 2$	xt Req'd per	20.0	0.0
+1.20D+1.60Lr	1	3.67	23.50	7.93	7.93	52.08	0.30	19.96	$V_u < \Phi V_c / 2$	xt Req'd per	20.0	0.0
+1.20D+1.60Lr	1	3.80	23.50	7.48	7.48	53.09	0.28	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	3.93	23.50	7.04	7.04	54.04	0.25	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.07	23.50	6.59	6.59	54.94	0.23	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.20	23.50	6.14	6.14	55.77	0.22	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.33	23.50	5.70	5.70	56.55	0.20	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.46	23.50	5.25	5.25	57.27	0.18	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.59	23.50	4.80	4.80	57.93	0.16	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.72	23.50	4.36	4.36	58.53	0.15	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.85	23.50	3.91	3.91	59.07	0.13	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	4.98	23.50	3.46	3.46	59.55	0.11	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.11	23.50	3.02	3.02	59.98	0.10	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.25	23.50	2.57	2.57	60.34	0.08	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.38	23.50	2.12	2.12	60.65	0.07	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.51	23.50	1.68	1.68	60.90	0.05	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.64	23.50	1.23	1.23	61.09	0.04	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.77	23.50	0.78	0.78	61.22	0.03	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	5.90	23.50	0.34	0.34	61.29	0.01	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	6.03	23.50	-0.11	0.11	61.31	0.00	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0
+1.20D+1.60Lr	1	6.16	23.50	-0.56	0.56	61.26	0.02	19.94	$V_u < \Phi V_c / 2$	xt Req'd per	19.9	0.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Concrete Beam

Project File: NR134.ec6

LIC#: KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

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DESCRIPTION: RB-6 (8"x26")

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft)	(in)	Vu (k)	(k)	Mu (k-ft)	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Phi*Vn (k)	Spacing (in)
				Actual	Design							Req'd
+1.20D+1.60Lr	1	6.30	23.50	-1.01	1.01	61.16	0.03	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	6.43	23.50	-1.45	1.45	61.00	0.05	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	6.56	23.50	-1.90	1.90	60.78	0.06	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	6.69	23.50	-2.35	2.35	60.50	0.08	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	6.82	23.50	-2.79	2.79	60.17	0.09	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	6.95	23.50	-3.24	3.24	59.77	0.11	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.08	23.50	-3.69	3.69	59.32	0.12	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.21	23.50	-4.13	4.13	58.80	0.14	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.34	23.50	-4.58	4.58	58.23	0.15	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.48	23.50	-5.03	5.03	57.60	0.17	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.61	23.50	-5.47	5.47	56.91	0.19	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.74	23.50	-5.92	5.92	56.17	0.21	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	7.87	23.50	-6.37	6.37	55.36	0.23	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.00	23.50	-6.81	6.81	54.50	0.24	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.13	23.50	-7.26	7.26	53.58	0.27	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.26	23.50	-7.71	7.71	52.59	0.29	19.94	Vu < Phi*Vc / 2	19.9	19.9	0.0
+1.20D+1.60Lr	1	8.39	23.50	-8.15	8.15	51.55	0.31	20.00	Vu < Phi*Vc / 2	20.0	20.0	0.0
+1.20D+1.60Lr	1	8.52	23.50	-8.60	8.60	50.46	0.33	20.08	Vu < Phi*Vc / 2	20.1	20.1	0.0
+1.20D+1.60Lr	1	8.66	23.50	-9.05	9.05	49.30	0.36	20.17	Vu < Phi*Vc / 2	20.2	20.2	0.0
+1.20D+1.60Lr	1	8.79	23.50	-9.49	9.49	48.08	0.39	20.26	Vu < Phi*Vc / 2	20.3	20.3	0.0
+1.20D+1.60Lr	1	8.92	23.50	-9.94	9.94	46.81	0.42	20.36	Vu < Phi*Vc / 2	20.4	20.4	0.0
+1.20D+1.60Lr	1	9.05	23.50	-10.39	10.39	45.48	0.45	20.47	Phi*Vc / 2 < Vu	lin per 9.6.	34.6	11.8
+1.20D+1.60Lr	1	9.18	23.50	-10.83	10.83	44.08	0.48	20.59	Phi*Vc / 2 < Vu	lin per 9.6.	34.7	11.8
+1.20D+1.60Lr	1	9.31	23.50	-11.28	11.28	42.63	0.52	20.71	Phi*Vc / 2 < Vu	lin per 9.6.	34.8	11.8
+1.20D+1.60Lr	1	9.44	23.50	-11.73	11.73	41.13	0.56	20.85	Phi*Vc / 2 < Vu	lin per 9.6.	34.9	11.8
+1.20D+1.60Lr	1	9.57	23.50	-12.17	12.17	39.56	0.60	21.00	Phi*Vc / 2 < Vu	lin per 9.6.	35.1	11.8
+1.20D+1.60Lr	1	9.70	23.50	-12.62	12.62	37.93	0.65	21.17	Phi*Vc / 2 < Vu	lin per 9.6.	35.3	11.8
+1.20D+1.60Lr	1	9.84	23.50	-13.07	13.07	36.25	0.71	21.35	Phi*Vc / 2 < Vu	lin per 9.6.	35.5	11.8
+1.20D+1.60Lr	1	9.97	23.50	-13.51	13.51	34.51	0.77	21.56	Phi*Vc / 2 < Vu	lin per 9.6.	35.7	11.8
+1.20D+1.60Lr	1	10.10	23.50	-13.96	13.96	32.70	0.84	21.80	Phi*Vc / 2 < Vu	lin per 9.6.	35.9	11.8
+1.20D+1.60Lr	1	10.23	23.50	-14.41	14.41	30.84	0.91	22.06	Phi*Vc / 2 < Vu	lin per 9.6.	36.2	11.8
+1.20D+1.60Lr	1	10.36	23.50	-14.85	14.85	28.93	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	10.49	23.50	-15.30	15.30	26.95	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	10.62	23.50	-15.75	15.75	24.91	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	10.75	23.50	-16.19	16.19	22.82	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	10.89	23.50	-16.64	16.64	20.67	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.02	23.50	-17.09	17.09	18.45	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.15	23.50	-17.53	17.53	16.18	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.28	23.50	-17.98	17.98	13.86	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.41	23.50	-18.43	18.43	11.47	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.54	23.50	-18.87	18.87	9.02	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.67	23.50	-19.32	19.32	6.52	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.80	23.50	-19.77	19.77	3.95	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8
+1.20D+1.60Lr	1	11.93	23.50	-20.21	20.21	1.33	1.00	22.36	Phi*Vc / 2 < Vu	lin per 9.6.	36.5	11.8

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXIMUM BENDING Envelope						
Span # 1		1	12.000	61.31	150.66	0.41
+1.40D		1	12.000	58.22	150.66	0.39
+1.20D+0.50Lr		1	12.000	53.47	150.66	0.35
+1.20D		1	12.000	49.91	150.66	0.33
+1.20D+1.60Lr		1	12.000	61.31	150.66	0.41
+0.90D		1	12.000	37.43	150.66	0.25

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: NR134.ec6

LIC# : KW-06011763, Build:20.24.05.02

Arch-Deco Design & Construction Inc.

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DESCRIPTION: RB-6 (8"x26")

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+Lr	1	0.0361	6.000		0.0000	0.000