



STRUCTURAL CALCULATIONS FOR

Vivero Residence

9601 SW 67th Ave,
Pinecrest, FL 33156

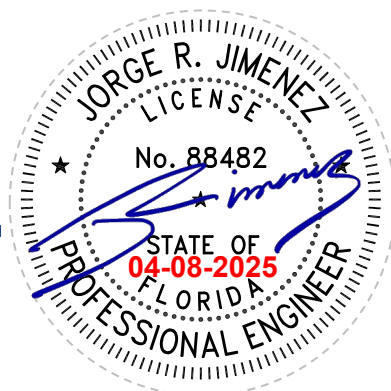
SUPPLEMENT-4

Submitted to:

Pinecrest

Building Department

03-28-2025



Jorge R Jimenez, P.E.

FL. Lic. No. 88482

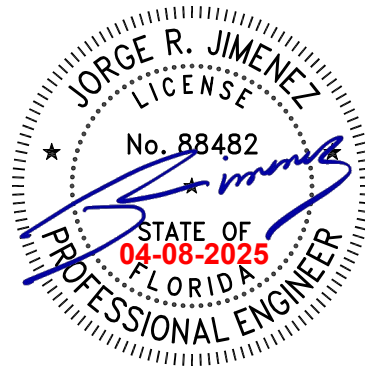


PROJECT NAME: Vivero Residence

PROYECT ADDRESS: 9601 SW 67th Ave, Pinecrest FL 33156

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ENGINEER OF RECORD ASSUMES RESPONSIBILITY FOR BOTH MANUAL AND COMPUTER-GENERATED CALCULATIONS INCLUDED IN THIS BOOK (PAGES 1 THRU 12).



CONCRETE BEAM DESIGN

(ACI 318-14)



PROJECT:

Vivero Residence

SUBJECT:

Concrete Beam Design

4616 SW 139th Ct Unit-B, Miami FL 33175

JOB No:

21036-NR

Rev-4

DSGN. BY:

D.H

DATE:

CHKD. BY:

J.J

DATE:

SHEET:

OF

Tel: (786) 930-7392

email: engineering@ktizogroup.com

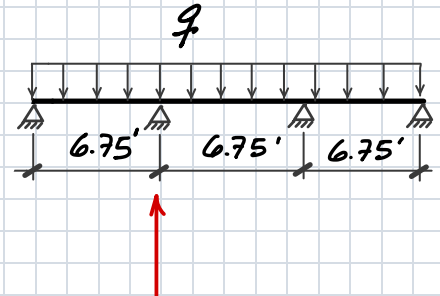
• RB-6 (12x22)

Reaction J-1 $\frac{U = -836 \text{ Lb}}{G = 605 \text{ Lb}}$

$SDL = 605 \text{ Lb} / 2 \text{ ft} \times 0.45 = 137 \text{ plf}$

$L_r = 605 \text{ Lb} / 2 \text{ ft} \times 0.55 = 166 \text{ plf}$

$Uplif = -836 \text{ Lb (ASD)} / 0.6 = -1393.3 \text{ Lb (LRFD)} / 2 \text{ ft} = -696.6 \text{ plf}$



Extreme Reactions (kips)

	D	Lr	L	S	W	E	H
Support #1	1.09	0.45			-1.88		
Support #2	2.99	1.23			-5.18		
Support #3	2.99	1.23			-5.18		
Support #4	1.09	0.45			-1.88		

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: ktizo _21036-nr_ vivero residence_018712.EC6

LIC# : KW-06018712, Build:20.24.12.17

KTIZO ENGINEERING INC

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: RB-6 (REV-4)

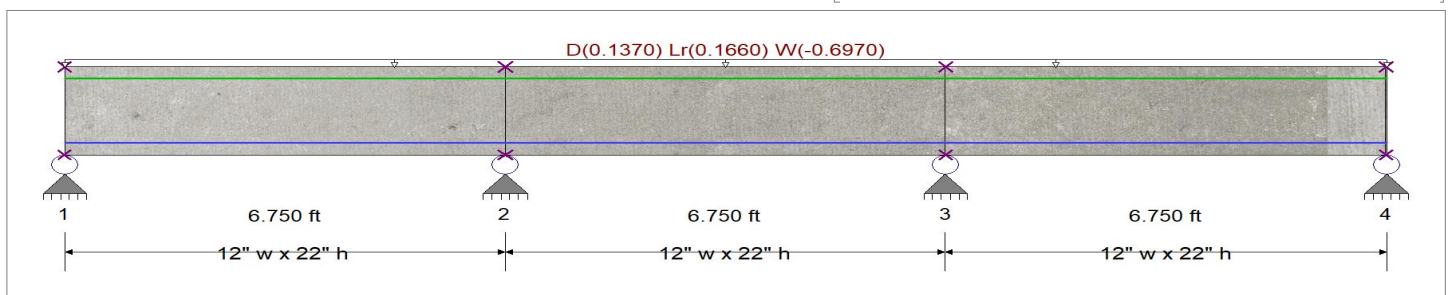
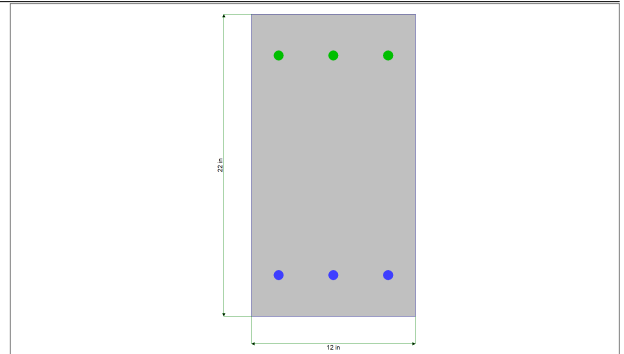
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019

Load Combination Set : ASCE 7-16

General Information

f'_c	=	4.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = 7.5 \cdot \lambda \cdot f'_c^{1/2}$	=	474.342 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.850
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,644.15 ksi	Fy - Stirrups	=	60.0 ksi
f_y - Main Rebar	=	60.0	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 = 12.0 in, Height = 22.0 in

Span #1 Reinforcing...

3-#6 at 3.0 in from Bottom, from 0.0 to 6.750 ft in this span

3-#6 at 3.0 in from Top, from 0.0 to 6.750 ft in this span

Span #2 Reinforcing...

3-#6 at 3.0 in from Bottom, from 0.0 to 6.750 ft in this span

3-#6 at 3.0 in from Top, from 0.0 to 6.750 ft in this span

Span #3 Reinforcing...

3-#6 at 3.0 in from Bottom, from 0.0 to 6.750 ft in this span

3-#6 at 3.0 in from Top, from 0.0 to 6.750 ft in this span

Beam self weight calculated and added to loads

Loads on all spans...

D = 0.1370, Lr = 0.1660, W = -0.6970

Uniform Load on ALL spans : D = 0.1370, Lr = 0.1660, W = -0.6970 k/ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio = 0.032 : 1

Section used for this span

Typical Section

Mu : Applied -3.413 k-ft

Mn * Phi : Allowable 108.012 k-ft

Location of maximum on span 0.000 ft

Span # where maximum occurs Span # 3

Maximum Deflection

Max Downward Transient Deflection 0.000 in Ratio = 0 < 360.0 +0.60W

Max Upward Transient Deflection 0.000 in Ratio = 0 < 360.0 Lr Only

Max Downward Total Deflection 0.000 in Ratio = 0 < 240.0 Span: 3 : +D+Lr

Max Upward Total Deflection 0.000 in Ratio = 0 < 240.0 Span: 3 : +D+Lr

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions	1.536	4.224	4.224	1.536
Max Upward from Load Combinations	1.536	4.224	4.224	1.536

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Concrete Beam

Project File: ktizo _21036-nr_ vivero residence_018712.EC6

LIC#: KW-06018712, Build:20.24.12.17

KTIZO ENGINEERING INC

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: RB-6 (REV-4)

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from Load Cases	1.088	2.991	2.991	1.088
Max Downward from all Load Conditions (Resisting Uplift)	-1.882	-5.175	-5.175	-1.882
Max Downward from Load Combinations (Resisting Uplift)	-0.477	-1.311	-1.311	-0.477
Max Downward from Load Cases (Resisting Uplift)	-1.882	-5.175	-5.175	-1.882
D Only	1.088	2.991	2.991	1.088
+D+Lr	1.536	4.224	4.224	1.536
+D+0.750Lr	1.424	3.915	3.915	1.424
+D+0.60W	-0.041	-0.114	-0.114	-0.041
+D+0.750Lr+0.450W	0.577	1.587	1.587	0.577
+D+0.450W	0.241	0.662	0.662	0.241
+0.60D+0.60W	-0.477	-1.311	-1.311	-0.477
+0.60D	0.653	1.795	1.795	0.653
Lr Only	0.448	1.233	1.233	0.448
W Only	-1.882	-5.175	-5.175	-1.882

Shear Stirrup Requirements

Entire Beam Span Length : $V_u < \Phi V_c / 2$, Req'd Vs = Not Req'd per 9.6.3.1, Stirrups are not required.

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	6.750	-3.28	108.01	0.03
Span # 2	2	6.750	-3.41	108.01	0.03
Span # 3	3	6.750	-3.41	108.01	0.03
+1.40D					
Span # 1	1	6.750	-2.47	108.01	0.02
Span # 2	2	6.750	-2.57	108.01	0.02
Span # 3	3	6.750	-2.57	108.01	0.02
+1.20D+0.50Lr					
Span # 1	1	6.750	-2.48	108.01	0.02
Span # 2	2	6.750	-2.58	108.01	0.02
Span # 3	3	6.750	-2.58	108.01	0.02
+1.20D					
Span # 1	1	6.750	-2.11	108.01	0.02
Span # 2	2	6.750	-2.20	108.01	0.02
Span # 3	3	6.750	-2.20	108.01	0.02
+1.20D+1.60Lr					
Span # 1	1	6.750	-3.28	108.01	0.03
Span # 2	2	6.750	-3.41	108.01	0.03
Span # 3	3	6.750	-3.41	108.01	0.03
+1.20D+1.60Lr+0.50W					
Span # 1	1	6.750	-1.75	108.01	0.02
Span # 2	2	6.750	-1.82	108.01	0.02
Span # 3	3	6.750	-1.82	108.01	0.02
+1.20D+0.50W					
Span # 1	1	6.750	-0.59	108.01	0.01
Span # 2	2	6.750	-0.61	108.01	0.01
Span # 3	3	6.750	-0.61	108.01	0.01
+1.20D+0.50Lr+W					
Span # 1	1	6.750	0.57	108.01	0.01
Span # 2	2	6.750	0.60	108.01	0.01
Span # 3	3	6.750	0.60	108.01	0.01
+1.20D+W					
Span # 1	1	6.750	0.93	108.01	0.01
Span # 2	2	6.750	0.97	108.01	0.01
Span # 3	3	6.750	0.97	108.01	0.01
+0.90D+W					
Span # 1	1	6.750	1.46	108.01	0.01
Span # 2	2	6.750	1.52	108.01	0.01
Span # 3	3	6.750	1.52	108.01	0.01
+0.90D					
Span # 1	1	6.750	-1.59	108.01	0.01
Span # 2	2	6.750	-1.65	108.01	0.02
Span # 3	3	6.750	-1.65	108.01	0.02

Project Title:
Engineer:
Project ID:
Project Descr:

Concrete Beam

Project File: ktizo _21036-nr_ vivero residence_018712.EC6

LIC# : KW-06018712, Build:20.24.12.17

KTIZO ENGINEERING INC

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: RB-6 (REV-4)

Overall Maximum Deflections

Span	Load Combination	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
1	+D+Lr	0.0004	3.105	+D+Lr	-0.0000	6.885
2	+D+Lr	0.0000	3.375	+D+Lr	-0.0000	6.075
3	+D+Lr	0.0004	3.645		0.0000	6.075



STEEL COLUMN DESIGN



PROJECT:
Vivero Residence

SUBJECT:
Steel Column Design

4616 SW 139th Ct Unit-B, Miami FL 33175

JOB No: 21036-NR Rev-4

DSGN. BY: D.H DATE: _____

CHKD. BY: J.J DATE: _____

SHEET: _____ OF _____

Tel: (786) 930-7392

email: engineering@ktizogroup.com

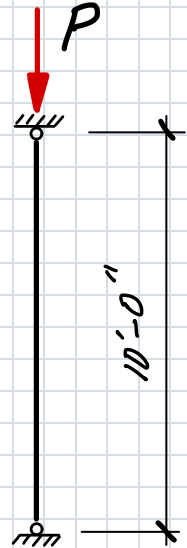
HSS5 x 5 x 1/4

SC
3

- REACTION RB-6 Support 2 From EVERCALC.

Extreme Reactions (kips)

	D	Lr	L	S	W	E	H
Support #1	1.09	0.45			-1.88		
Support #2	2.99	1.23			-5.18		
Support #3	2.99	1.23			-5.18		
Support #4	1.09	0.45			-1.88		



- REACTION 20-25 Support 2 From EVERCALC.

Extreme Reactions (kips)

	D	Lr	L	S	W	E	H
Support #1	4.27		0.97				
Support #2	11.75		2.67				
Support #3	11.75		2.67				
Support #4	4.27		0.97				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: ktizo _21036-nr_ vivero residence_018712.EC6

LIC# : KW-06018712, Build:20.24.12.17

KTIZO ENGINEERING INC

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: STL. COLUMN SC-3 (REV-4)

Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019
 Load Combinations Used : ASCE 7-16

General Information

Steel Section Name :	HSS5x5x1/4	Overall Column Height	10 ft
Analysis Method :	Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade		Brace condition :	
Fy : Steel Yield	46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 10 ft, K = 1.0	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 10 ft, K = 1.0	

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 156.20 lbs * Dead Load Factor
 AXIAL LOADS . . .
 Axial Load at 10.0 ft, Xecc = 1.0 in, D = 14.740, LR = 1.230, L = 2.670 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.1951 : 1	Maximum Load Reactions . .	
Load Combination	+D+0.750Lr+0.750L	Top along X-X	0.1472 k
Location of max.above base	0.0 ft	Bottom along X-X	0.1472 k
At maximum location values are . . .		Top along Y-Y	0.0 k
Pa : Axial	17.821 k	Bottom along Y-Y	0.0 k
Pn / Omega : Allowable	91.321 k	Maximum Load Deflections . . .	
Ma-x : Applied	0.0 k-ft	Along Y-Y	0.0 in at 0.0ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination :	
Ma-y : Applied	0.0 k-ft	Along X-X	-0.03547 in at 5.839ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+0.750Lr+0.750L	
PASS Maximum Shear Stress Ratio	0.004444 : 1		
Load Combination	+D+0.750Lr+0.750L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1472 k		
Vn / Omega : Allowable	33.124 k		

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.163	PASS	0.00 ft	1.00	1.00	62.18	62.18	0.004	PASS	0.00 ft
+D+L	0.192	PASS	0.00 ft	1.00	1.00	62.18	62.18	0.004	PASS	0.00 ft
+D+Lr	0.177	PASS	0.00 ft	1.00	1.00	62.18	62.18	0.004	PASS	0.00 ft
+D+0.750Lr+0.750L	0.195	PASS	0.00 ft	1.00	1.00	62.18	62.18	0.004	PASS	0.00 ft
+D+0.750L	0.185	PASS	0.00 ft	1.00	1.00	62.18	62.18	0.004	PASS	0.00 ft
+0.60D	0.098	PASS	0.00 ft	1.00	1.00	62.18	62.18	0.002	PASS	0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction			k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	14.896	0.123	0.123							
+D+L	17.566	0.145	0.145							
+D+Lr	16.126	0.133	0.133							
+D+0.750Lr+0.750L	17.821	0.147	0.147							
+D+0.750L	16.899	0.140	0.140							
+0.60D	8.938	0.074	0.074							
Lr Only	1.230	0.010	0.010							
L Only	2.670	0.022	0.022							

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: ktizo _21036-nr_ vivero residence_018712.EC6

LIC# : KW-06018712, Build:20.24.12.17

KTIZO ENGINEERING INC

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: STL. COLUMN SC-3 (REV-4)

Extreme Reactions

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	17.821	0.147	0.147								
"	Minimum	1.230	0.010	0.010								
Reaction, X-X Axis Base	Maximum	17.821	0.147	0.147								
"	Minimum	1.230	0.010	0.010								
Reaction, Y-Y Axis Base	Maximum	14.896	0.123	0.123								
"	Minimum	14.896	0.123	0.123								
Reaction, X-X Axis Top	Maximum	17.821	0.147	0.147								
"	Minimum	1.230	0.010	0.010								
Reaction, Y-Y Axis Top	Maximum	2.670	0.022	0.022								
"	Minimum	14.896	0.123	0.123								
Moment, X-X Axis Base	Maximum	14.896		0.123								
"	Minimum	14.896		0.123								
Moment, Y-Y Axis Base	Maximum	14.896	0.123	0.123								
"	Minimum	14.896	0.123	0.123								
Moment, X-X Axis Top	Maximum	14.896	0.123	0.123								
"	Minimum	14.896	0.123	0.123								
Moment, Y-Y Axis Top	Maximum	14.896	0.123	0.123								
"	Minimum	14.896	0.123	0.123								

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0296 in	5.839 ft	0.000 in	0.000 ft
+D+L	-0.0350 in	5.839 ft	0.000 in	0.000 ft
+D+Lr	-0.0321 in	5.839 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L	-0.0355 in	5.839 ft	0.000 in	0.000 ft
+D+0.750L	-0.0336 in	5.839 ft	0.000 in	0.000 ft
+0.60D	-0.0178 in	5.839 ft	0.000 in	0.000 ft
Lr Only	-0.0025 in	5.839 ft	0.000 in	0.000 ft
L Only	-0.0054 in	5.839 ft	0.000 in	0.000 ft

Steel Section Properties : HSS5x5x1/4

Depth	=	5.000 in	I xx	=	16.00 in^4	J	=	25.800 in^4
Design Thick	=	0.233 in	S xx	=	6.41 in^3			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in^3			
Area	=	4.300 in^2	I yy	=	16.000 in^4	C	=	10.500 in^3
Weight	=	15.620 plf	S yy	=	6.410 in^3			
			R yy	=	1.930 in			

Ycg = 0.000 in

Steel Column

Project File: ktizo _21036-nr_ vivero residence_018712.EC6

LIC# : KW-06018712, Build:20.24.12.17

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DESCRIPTION: STL. COLUMN SC-3 (REV-4)

Sketches

