



RAM Structural System



RAM Concrete Column v17.02.00.130

Database: THAAD_TO4_BVMF

Building Code: IBC

Concrete Column Design

06/27/23 10:08:09

Concrete Code: ACI 318-14

COLUMN INFORMATION: (Check Design Warnings)

Level HIGH ROOF

Column Number: 25

Grid Location: (7-B)

Size: C1

Depth x Width (mm) 600.00x600.00

Reinforcement

Longitudinal: 12-F20 (4 x 2)

As (mm²) 3770.40 (1.05%)

Transverse: F10@300.00

0.00-2450.00

Confinement Tie

Clear Cover (mm) 40.00

Shear Legs Major 2

Shear Legs Minor 2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f_c (N/mm²): 35.00f_y Long (N/mm²): 420.00f_{ct} (N/mm²): 0.00f_{yt} Trans (N/mm²): 420.00Conc. Weight (kg/m³): 2350.00

Conc. Type: NWC

Conc. Modulus (N/mm²): 28805.58Reinf. Modulus (N/mm²): 199948.04

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (m)	1.65	1.75
K	0.89	0.87
Braced Against Sidesway	Yes	Yes

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (1) 1.400 D

Axial Load (kN) 556.73

Moment Top Major(kNm) -173.17

Minor(kNm) 280.67

Moment Bottom Major(kNm) 85.32

Minor(kNm) -1.08

Calculated Parameters (Angle = 58.33 degrees): L_d/Cap = 0.650.90 P_n(kN): 556.730.90 M_n Major(kNm): 266.730.90 M_n Minor(kNm): 432.31

Major

Minor

K_l/r 8.46

8.76

Slender No

No

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (1) 1.400 D

	LC	V _u (kN)	V _c (kN)	V _s (kN)	φ	φ (V _c + V _s) (kN)	L _d /Cap
1 Major:	1	156.66	354.02	0.00	0.75	265.52	0.59
1 Minor:	1	161.00	354.02	0.00	0.75	265.52	0.61

Design Warning:

Segment # 1:

Segment bar spacing larger than code limit per ACI 318-14 Sec. 10.6.2.2 , ACI 318-14 Sec. 10.7.6.5.2



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Page 2/3

06/27/23 10:08:09

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TORSION CAPACITY:

Controlling Load Combination: (2) 1.200 D + 1.600 Rfp

0.75 Tn (kNm)..... 26.16

Tu (kNm)..... 0.00



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Page 3/3

06/27/23 10:08:09

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COLUMN INFORMATION:

Level LOW ROOF

Column Number: 25

Size: C1

Grid Location: (7-B)

Depth x Width (mm) 600.00x600.00

Reinforcement

Longitudinal: 12-F20 (4 x 2)

As (mm²) 3770.40 (1.05%)

Transverse: F10@300.00

F10@225.00

0.00-4150.00

4150.00-5050.00

Confinement Tie

Clear Cover (mm) 40.00

Shear Legs Major 2

Shear Legs Minor 2

Longitudinal Bars Max Tension Stress Ratio: 1.00

MATERIAL PROPERTIES:

f_c (N/mm²): 35.00f_y Long (N/mm²): 420.00f_{ct} (N/mm²): 0.00f_{yt} Trans (N/mm²): 420.00Conc. Weight (kg/m³): 2350.00

Conc. Type: NWC

Conc. Modulus (N/mm²): 28805.58Reinf. Modulus (N/mm²): 199948.04

DESIGN PARAMETERS:

	Major	Minor
Unbraced Length (m)	4.65	4.75
K	0.90	0.90
Braced Against Sidesway	Yes	Yes

LONGITUDINAL REINFORCEMENT:

Controlling Load Combination: (1) 1.400 D

Axial Load (kN) 870.84

Moment Top Major(kNm) -42.51

Minor(kNm) -0.89

Moment Bottom Major(kNm) -0.00

Minor(kNm) 0.00

Calculated Parameters (Angle = 0.00 degrees): Ld/Cap = 0.14

0.65 P_n(kN): 870.840.65 M_n Major(kNm): 455.940.65 M_n Minor(kNm): 0.00

Major

Minor

Kl/r 24.16

24.68

Slender No

No

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (1) 1.400 D

	LC	V _u (kN)	V _c (kN)	V _s (kN)	φ	φ (V _c + V _s) (kN)	Ld/Cap
1 Major:	1	9.14	374.16	0.00	0.75	280.62	0.03
1 Minor:	2	0.19	369.37	0.00	0.75	277.03	0.00
2 Major:	1	9.14	374.16	158.26	0.75	399.32	0.02
2 Minor:	2	0.19	369.37	158.26	0.75	395.72	0.00

TORSION CAPACITY:

Controlling Load Combination: (2) 1.200 D + 1.600 R_{fp}0.75 T_n (kNm) 29.00T_u (kNm) 0.15



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07/10/23 14:55:38

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COLUMN INFORMATION: (Check Design Warnings)

Level HIGH ROOF

Column Number: 25

Grid Location: (7-B)

Size: C1

Depth x Width (mm) 600.00x600.00

Reinforcement

Longitudinal: 12-F20 (4 x 2)

As (mm²) 3770.40 (1.05%)

Transverse: F10@300.00

0.00-2450.00

Confinement Tie

Clear Cover (mm) 40.00

Shear Legs Major 2

Shear Legs Minor 2

Longitudinal Bars Max Tension Stress Ratio: 1.00

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Major Minor

K_l/r 8.46 8.76

Slender No No

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (1) 1.400 D

	LC	V _u (kN)	V _c (kN)	V _s (kN)	φ	φ (V _c + V _s) (kN)	L _d /Cap
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Page 2/4

07/10/23 14:55:38

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Page 3/4

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Moment Bottom Major(kNm) -0.00

Minor(kNm) 0.00

Calculated Parameters (Angle = 0.00 degrees): L_d/Cap = 0.140.65 P_n(kN): 870.840.65 M_n Major(kNm): 455.940.65 M_n Minor(kNm): 0.00

Major

Minor

K_l/r 24.16

24.68

Slender No

No

TRANSVERSE REINFORCEMENT:

Controlling Load Combination: (1) 1.400 D

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1 Minor:	2	0.19	369.37	0.00	0.75	277.03	0.00
2 Major:	1	9.14	374.16	0.00	0.75	280.62	0.03
2 Minor:	2	0.19	369.37	0.00	0.75	277.03	0.00

Design Warning:

Segment # 2:

Segment bar spacing larger than code limit per ACI 318-14 Sec. 10.6.2.2



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Page 4/4

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