

CONEXIÓN IPE 270 A CONCRETO

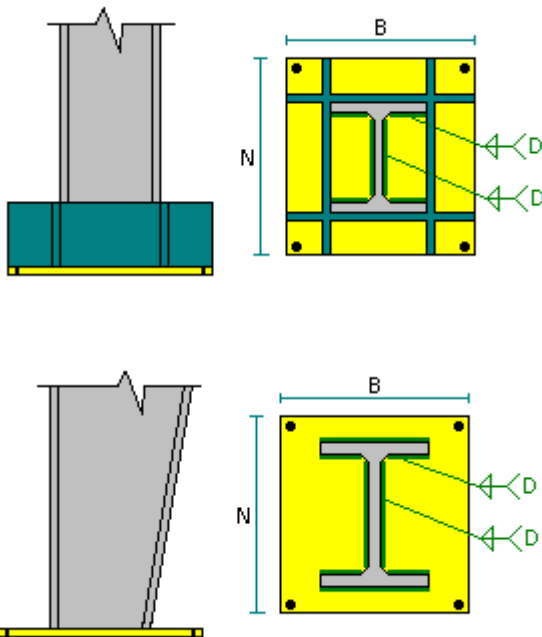
Data

Connection name : Fixed uniaxial both axis BP
Connection ID : 6

Family: Column - Base (CB)
Type: Base plate

GENERAL INFORMATION

Connector



MEMBERS

Column

Column type : Prismatic member
Section : IPE 270
Material : A572 Gr50

CONNECTOR

Base plate

Connection type : With stiffener plates
Position on the support : Center
N: Longitudinal dimension : 420 mm
B: Transversal dimension : 250 mm
Thickness : 25 mm
Material : A36
Column weld : E70XX
Outer welds flanges only : No
D: Column weld size (1/16 in) : 6
Override A2/A1 ratio : No
Include shear lug : No

Support

With pedestal : No
Longitudinal dimension : 500 mm
Transversal dimension : 1500 mm

Thickness	:	400 mm
Material	:	C 4-60
Include grouting	:	No

Anchor position : Customized

Coordinate

Transverse [mm]	Longitudinal [mm]
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90.00	170.00
-90.00	170.00
-30.00	170.00
90.00	-170.00
-90.00	-170.00
0.00	-170.00
90.00	-47.00
90.00	47.00
-90.00	-47.00
-90.00	47.00
30.00	170.00

Spacing between anchor rows	:	76.2 mm
Anchor type	:	Headed
Head type	:	Hexagonal
Include lock nut	:	No
Anchor	:	5/8"
Effective embedment depth	:	300 mm
Total length	:	345.96 mm
Material	:	F1554 Gr36
Fy	:	0.248 kN/mm2
Fu	:	0.4 kN/mm2
Cracked concrete	:	No
Brittle steel	:	No
Anchors welded to base plate	:	Yes

<u>Anchor reinforcement</u>		
Type of reinforcement	:	Primary
Tension reinforcement	:	Yes
Tension bar size	:	no. 7
Tension bar grade	:	0.4 kN/mm ²
Tension number of bars	:	6
Shear reinforcement	:	Yes
Shear bar size	:	no. 3
Shear bar grade	:	0.276 kN/mm ²
Shear number of bars in major axis direction	:	4
Shear number of bars in minor axis direction	:	4

Results

Connection name : Fixed uniaxial both axis BP
Connection ID : 6

Family: Column - Base (CB)
Type: Base plate
Design code: AISC 360-16 LRFD, ACI 318-08

DEMANDS

Description	Pu [KN]	Mu22 [KN*m]	Mu33 [KN*m]	Vu2 [KN]	Vu3 [KN]	Load type

Wu	-35.00	0.00	43.02	39.00	0.00	Design

GEOMETRIC CONSIDERATIONS

DESIGN CHECK

GEOMETRIC CONSIDERATIONS

DESIGN CHECK

GEOMETRIC CONSIDERATIONS

Dimensions	Unit	Value	Min. value	Max. value	Sta.	References
<div> <div> Anchors </div> </div>						

Anchor spacing	[mm]	65.00	63.50	--	✓	Sec. D.8.1
Concrete cover	[mm]	75.00	72.20	--	✓	Sec. 7.7.1
Effective length	[mm]	310.32	--	389.68	✓	

Ratio	1.11
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DESIGN CHECK						
Verification	Unit	Capacity	Demand	Ctrl EQ	Ratio	References
Anchor tension	[KN]	43.73	20.51	DL	0.47	Eq. D-3
Pullout of anchor in tension	[KN]	47.51	20.51	DL	0.43	Sec. D.3.3.3
Side-face blowout of anchor in tension	[KN]	53.74	20.51	DL	0.38	Eq. D-17, Sec. D.3.3.3
Side-face blowout of group of anchors in tension	[KN]	83.90	82.05	DL	0.98	Eq. D-17, Sec. D.3.3.3
Group of Anchors reinforcement in tension	[KN]	696.77	118.57	DL	0.17	Sec. D.5.2.9, D.6.2.9
Anchor shear	[KN]	24.41	3.55	DL	0.15	Eq. D-20, DG1 Sec 3.5.1
Pryout of anchor in shear	[KN]	151.46	3.55	DL	0.02	Eq. D-4, Sec. D.3.3.3
Pryout of group of anchors in shear	[KN]	167.73	28.36	DL	0.17	Eq. D-5, Sec. D.3.3.3
Group of Anchors reinforcement in shear	[KN]	58.72	39.00	DL	0.66	Sec. D.5.2.9, D.6.2.9
Interaction of tensile and shear forces	[KN]	1.20	0.00	DL	0.00	Eq. D-3, Sec. D.3.3.3, Eq. D-17, Eq. D-20, DG1 Sec 3.5.1, Eq. D-4, Eq. D-5, Sec. D.7

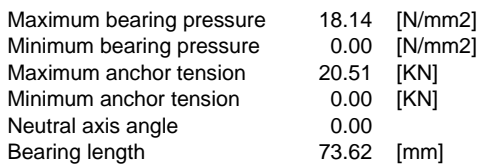
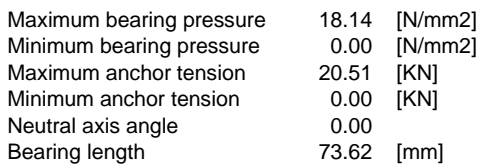
Minor axis Anchors

GEOMETRIC CONSIDERATIONS						
Dimensions	Unit	Value	Min. value	Max. value	Sta.	References
<u>Anchors</u>						
Anchor spacing	[mm]	65.00	63.50	--	✓	Sec. D.8.1
Concrete cover	[mm]	72.06	76.20	--	✓	Sec. 7.7.1
Effective length	[mm]	310.32	--	389.68	✓	

DESIGN CHECK						
Verification	Unit	Capacity	Demand	Ctrl EQ	Ratio	References
Anchor tension	[KN]	43.73	0.00	DL	0.00	Eq. D-3
Pullout of anchor in tension	[KN]	47.51	0.00	DL	0.00	Sec. D.3.3.3
Anchor shear	[KN]	24.41	0.00	DL	0.00	Eq. D-20, DG1 Sec 3.5.1
Pryout of anchor in shear	[KN]	151.46	0.00	DL	0.00	Eq. D-4, Sec. D.3.3.3
Ratio	0.00					

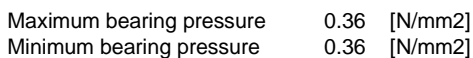
Global critical strength ratio	0.98
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Major axis
Maximum compression and tension (DL)



Anchor	Transverse [mm]	Longitudinal [mm]	Shear [KN]	Tension [KN]
1	90.00	170.00	3.55	20.51
2	-90.00	170.00	3.55	20.51
3	-30.00	170.00	3.55	20.51
4	90.00	-170.00	3.55	0.00
5	-90.00	-170.00	3.55	0.00
6	0.00	-170.00	3.55	0.00
7	90.00	-47.00	3.55	5.98
8	90.00	47.00	3.55	12.28
9	-90.00	-47.00	3.55	5.98
10	-90.00	47.00	3.55	12.28
11	30.00	170.00	3.55	20.51

Maximum bearing pressure	0.36	[N/mm ²]
Minimum bearing pressure	0.36	[N/mm ²]



Maximum anchor tension	0.00	[kN]
Minimum anchor tension	0.00	[kN]
Neutral axis angle	0.00	
Bearing length	1E33	[mm]

Anchors tensions

Anchor	Transverse [mm]	Longitudinal [mm]	Shear [kN]	Tension [kN]

1	90.00	170.00	0.00	0.00
2	-90.00	170.00	0.00	0.00
3	-30.00	170.00	0.00	0.00
4	90.00	-170.00	0.00	0.00
5	-90.00	-170.00	0.00	0.00
6	0.00	-170.00	0.00	0.00
7	90.00	-47.00	0.00	0.00
8	90.00	47.00	0.00	0.00
9	-90.00	-47.00	0.00	0.00
10	-90.00	47.00	0.00	0.00
11	30.00	170.00	0.00	0.00
