

Current Date: 13/10/2023 05:56 p.m.

Units system: Metric

File name: C:\Users\Toshiba\Desktop\JCYD\COBERTURA-COLISEO\PERNO Y PLACA DE ANCLAJE\PERNO Y PLACA DE ANCLAJE DE COBERTURA.

## Steel connections

### Detailed report

Connection name : COBERTURA CURVA METALICA  
Connection ID : 1  
Design code : AISC 360-2005 LRFD

Family : Base plate (BPI)  
Type : Column - Base (CB)  
Description : COBERTURA CURVA METALICA

### LOADS

Members	Load	Type	V2 [Ton]	V3 [Ton]	M33 [Ton*m]	M22 [Ton*m]	Axial [Ton]
Column	1 - CM	Design	1.01	0.00	0.00	--	--
	1 - CV	Design	0.31	0.00	0.12	--	--
	1 - Vx	Design	0.37	0.00	0.01	--	--
	1 - SDx	Design	0.23	0.00	0.01	--	--
	1 - id0	Design	1.42	0.00	0.00	--	--
	1 - id1	Design	1.71	0.01	0.19	--	--
	1 - id2	Design	1.51	0.00	0.01	--	--
	1 - id3	Design	2.11	0.01	0.14	--	--
	1 - id4	Design	1.76	0.01	0.13	--	--
	1 - id5	Design	1.50	0.01	0.02	--	--
	1 - id6	Design	1.14	0.00	0.01	--	--

### Design for major axis

### Base plate (AISC 360-05 LRFD)

### GEOMETRIC CONSIDERATIONS

Dimensions	Unit	Value	Min. value	Max. value	Sta.	References
<u>Base plate</u>						
Longitudinal dimension	[cm]	60.00	52.39	--	✓	Tables J3.4, J3.5 table J2.4
Transversal dimension	[cm]	30.00	21.91	--	✓	
Distance from anchor to edge	[cm]	7.50	2.86	--	✓	
Weld size	[1/16in]	5	2	--	✓	

### WARNINGS

⚠ There are anchors in invalid positions

### DESIGN CHECK

Verification	Unit	Capacity	Demand	Ctrl EQ	Ratio	References
<u>Pedestal</u>						
Axial bearing	[Ton/cm2]	0.12	0.00	1 - id1	0.01	
<u>Base plate</u>						
Flexural yielding (bearing interface)	[Ton*m/m]	0.23	0.03	1 - id1	0.13	DG1 Sec 3.1.2, DG1 Eq. 3.3.13
Flexural yielding (tension interface)	[Ton*m/m]	0.23	0.00	1 - id6	0.00	DG1 Eq. 3.3.13
<u>Column</u>						
Weld capacity	[Ton/m]	186.45	2.28	1 - id1	0.01	HSS Manual p. 7-10, p. 8-9, Sec. J2.5, Sec. J2.4
Elastic method weld shear capacity	[Ton/m]	124.30	2.28	1 - id3	0.02	p. 8-9, Sec. J2.5, Sec. J2.4
Elastic method weld axial capacity	[Ton/m]	186.45	1.03	1 - id1	0.01	p. 8-9, Sec. J2.5, Sec. J2.4

### Anchor (ACI 318-08)

#### GEOMETRIC CONSIDERATIONS

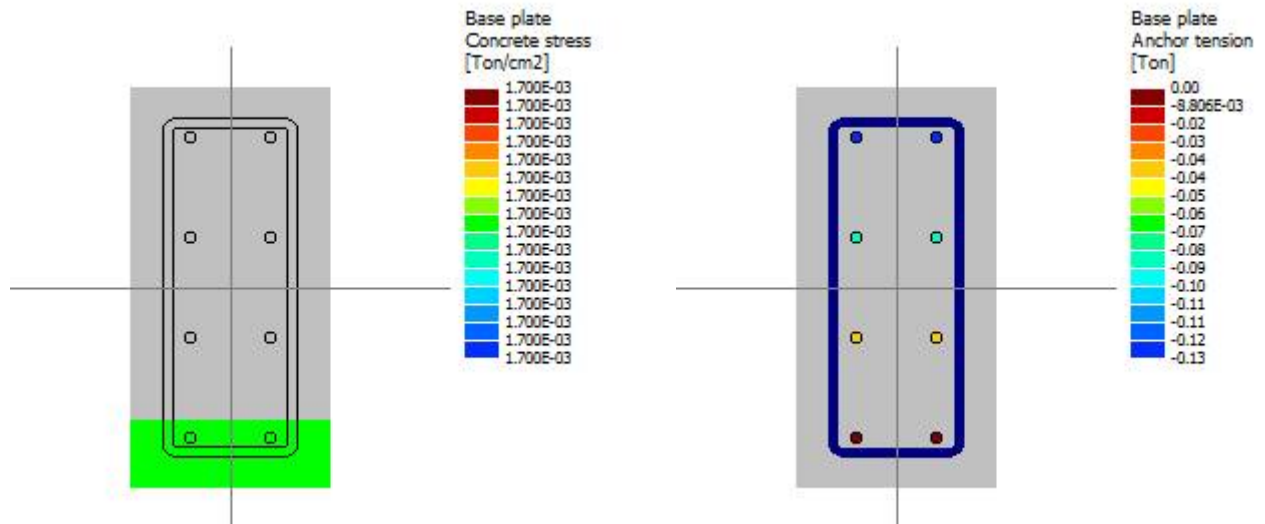
Dimensions	Unit	Value	Min. value	Max. value	Sta.	References
<u>Anchor</u>						
Anchor spacing	[cm]	12.00	6.35	--		Sec. D.8.1
Distance from anchor to edge	[cm]	9.00	7.62	--		Sec. D.7.7.1
Effective length	[cm]	28.07	--	98.41		

#### DESIGN CHECK

Verification	Unit	Capacity	Demand	Ctrl EQ	Ratio	References
Steel strength of anchor in tension	[Ton]	4.46	0.13	1 - id1	0.03	Eq. D-3
Breakout of anchor in tension	[Ton]	4.84	0.13	1 - id1	0.03	Eq. D-4, Sec. D.3.3.3
Breakout of group of anchors in tension	[Ton]	5.38	0.51	1 - id1	0.10	Eq. D-5, Sec. D.3.3.3
Pullout of anchor in tension	[Ton]	2.11	0.13	1 - id1	0.06	Sec. D.3.3.3
Steel strength of anchor in shear	[Ton]	1.86	0.26	1 - id3	0.14	Eq. D.20
Breakout of group of anchors in shear	[Ton]	2.99	2.11	1 - id3	0.71	Sec. D.3.3.3
Pryout of anchor in shear	[Ton]	9.67	0.26	1 - id3	0.03	Eq. D-4, Sec. D.3.3.3
Pryout of group of anchors in shear	[Ton]	10.77	1.59	1 - id3	0.15	Eq. D-5, Sec. D.3.3.3
Interaction of tensile and shear forces		1.20	0.00	1 - id6	0.00	Eq. D-32
<b>Critical strength ratio</b>	<b>0.71</b>					

### Major axis analysis

#### Maximum compression and tension (1 - id1)



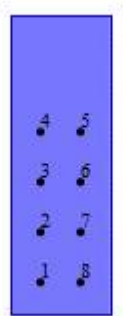
Maximum bearing pressure : 0.00170 [Ton/cm2]  
 Minimum bearing pressure : 0.00170 [Ton/cm2]  
 Maximum anchor tension : 0.13209 [Ton]  
 Minimum anchor tension : 0.00000 [Ton]  
 Neutral axis angle : 0.00000  
 Bearing length : 10.05008 [cm]

#### Anchors tensions

Anchor	Transverse [cm]	Longitudinal [cm]	Shear [Ton]	Tension [Ton]
1	-6.00	-22.50	0.21	0.00
2	-6.00	-7.50	0.21	0.04
3	-6.00	7.50	0.21	0.09
4	-6.00	22.50	0.21	0.13
5	6.00	22.50	0.21	0.13
6	6.00	7.50	0.21	0.09
7	6.00	-7.50	0.21	0.04
8	6.00	-22.50	0.21	0.00

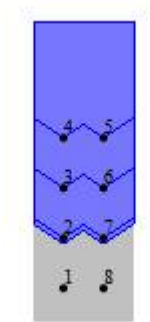
#### Major axis anchor groups

##### Results for tensile breakout (1 - id1)



Group	Area [cm2]	Tension [Ton]	Anchors
1	2700.00	0.51	2, 3, 4, 5, 6, 7

##### Results for shear breakout (1 - id3)



Group	Area [cm2]	Shear [Ton]	Anchors
1	30.00	2.11	1, 2, 3, 4, 5, 6, 7, 8
2	29.23	1.59	2, 3, 4, 5, 6, 7
3	22.48	1.06	3, 4, 5, 6
4	15.73	0.53	4, 5