

Project:
Project no:
Author:

Project data

Project name
Project number
Author
Description
Date 10/01/2019
Design code AISC 360-16

Material

Steel A572 Gr.50, A500, Gr. C

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Project item CON1

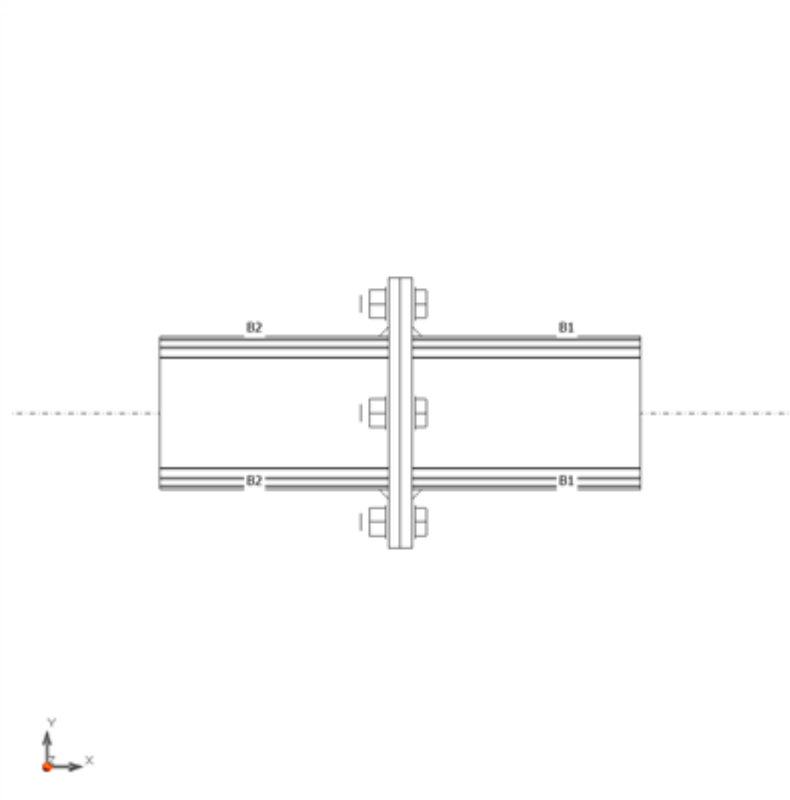
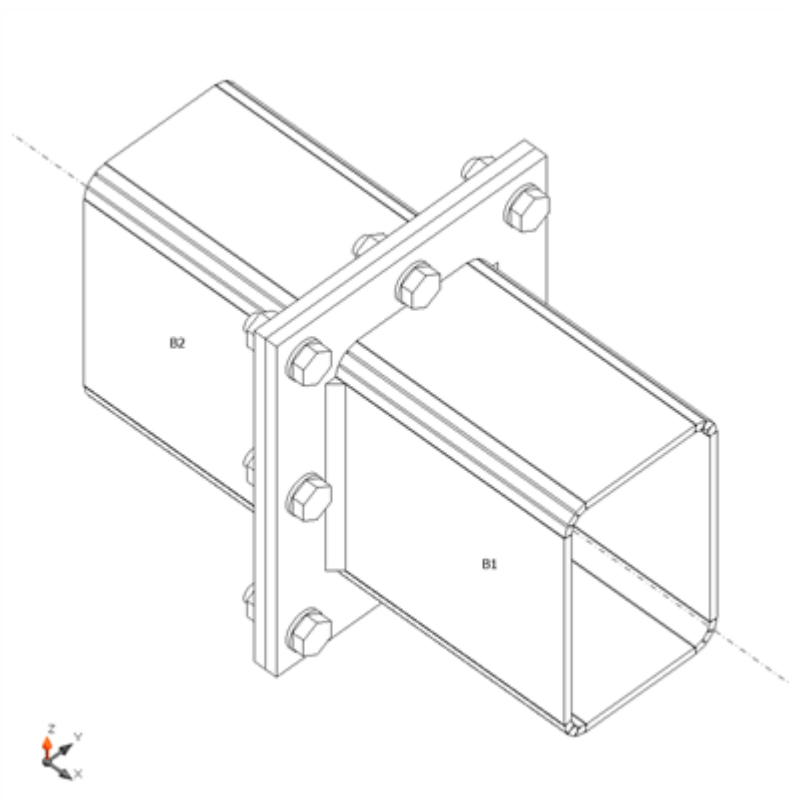
Design

Name CON1
Description
Analysis Stiffness
Design code AISC - LRFD

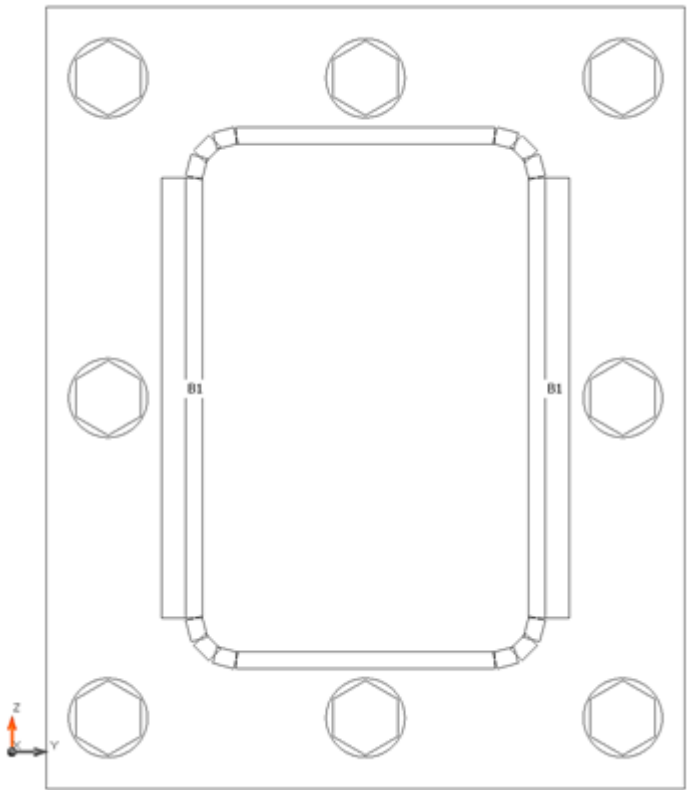
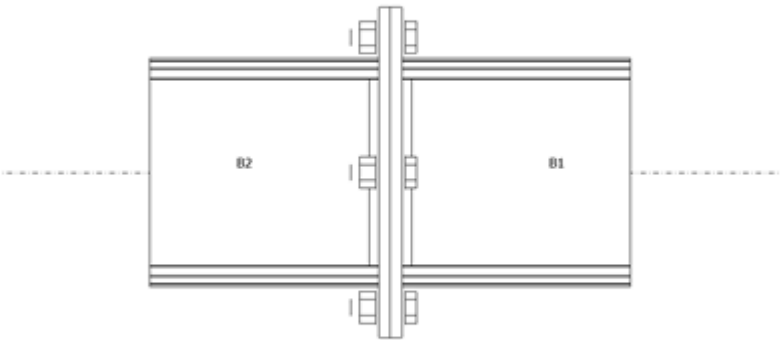
Beams and columns

Name	Cross-section	β - Direction [°]	γ - Pitch [°]	α - Rotation [°]	Offset ex [mm]	Offset ey [mm]	Offset ez [mm]	Forces in
B1	1 - HSS(Im)12X8X3/8	0.0	0.0	0.0	0	0	0	Node
B2	2 - HSS(Im)12X8X3/8	180.0	0.0	0.0	0	0	0	Node

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Cross-sections

Name	Material
1 - HSS(Imp)12X8X3/8	A500, Gr. C
2 - HSS(Imp)12X8X3/8	A500, Gr. C

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Bolts

Name	Bolt assembly	Diameter [mm]	fu [MPa]	Gross area [mm ²]
7/8 A325	7/8 A325	22	825.0	388

Load effects

Name	Member	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
LE1	B2	0.0	0.0	0.0	0.0	10.0	0.0

Check

Rotational stiffness

Name	Comp.	Loads	Mj,Rd [kNm]	Sj,ini [MNm/rad]	Φc [mrad]	L [m]	Sj,R [MNm/rad]	Sj,P [MNm/rad]	Class.
B2	My	LE1	59.1	4.7	54.8	6.00	72.7	7.3	Pinned

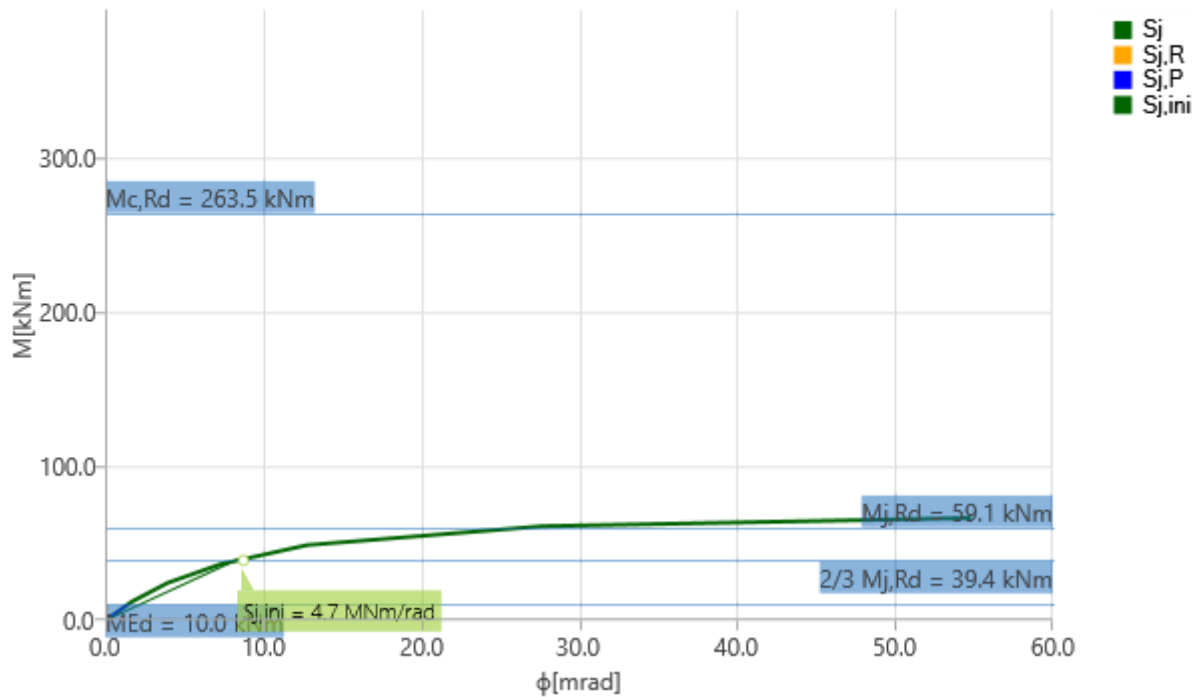
Secant rotational stiffness

Name	Comp.	Loads	M [kNm]	Sjs [MNm/rad]	Φ [mrad]
B2	My	LE1	10.0	7.2	1.4

Symbol explanation

Mj,Rd	Bending resistance
Sj,ini	Initial rotational stiffness
Sj,s	Secant rotational stiffness
Φ	Rotational deformation
Φc	Rotational capacity
Sj,R	Limit value - rigid joint
Sj,P	Limit value - nominally pinned joint

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Stiffness diagram $M_y - \phi_y$, LE1

Bill of material

Manufacturing operations

Name	Plates [mm]	Shape	Nr.	Welds [mm]	Length [mm]	Bolts	Nr.
PP1	P15.0x360.0-440.0 (A572 Gr.50)		1			7/8 A325	8
	P15.0x360.0-440.0 (A572 Gr.50)		1				

Welds

Type	Material	Throat thickness [mm]	Leg size [mm]	Length [mm]
Fillet	E70xx	9.5	13.4	992.0

Bolts

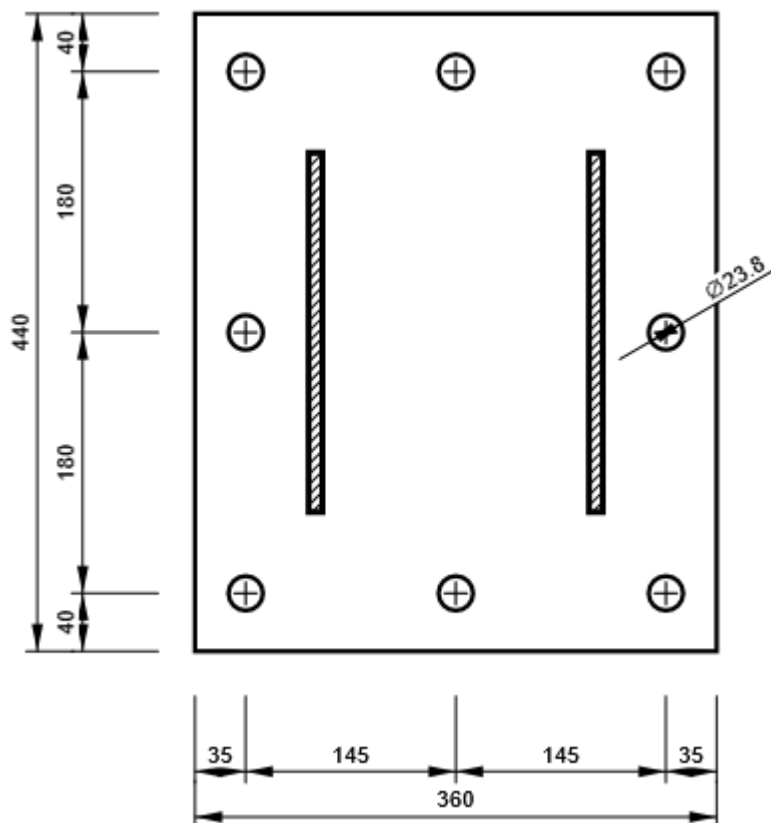
Name	Grip length [mm]	Count
7/8 A325	30	8

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Drawing

PP1 - 1

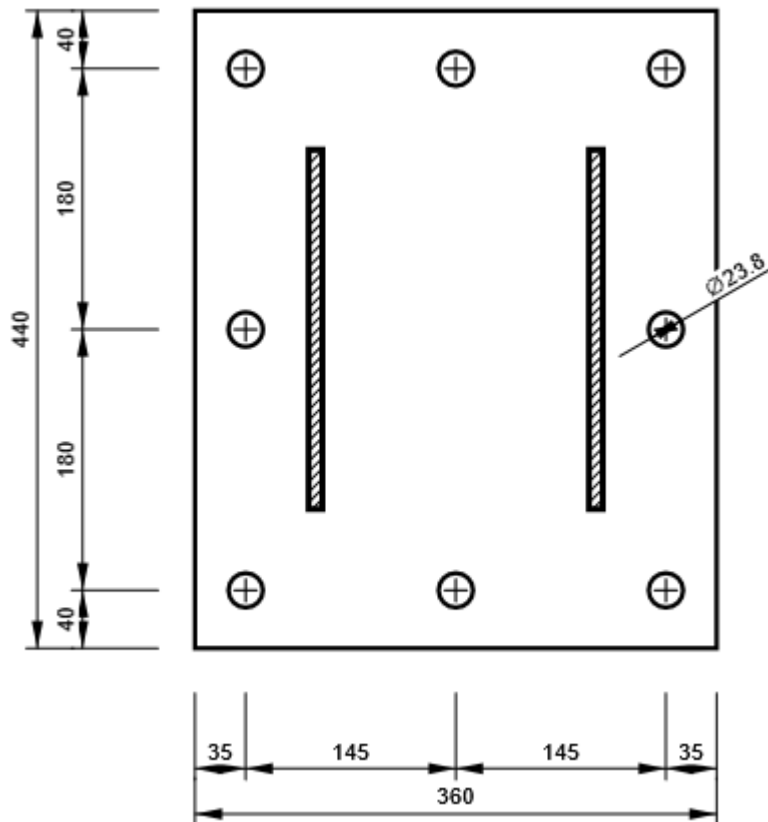
P15.0x440-360 (A572 Gr.50)



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PP1 - 2

P15.0x440-360 (A572 Gr.50)



Code settings

Item	Value	Unit	Reference
Friction coefficient - concrete	0.40	-	ACI 349 – B.6.1.4
Friction coefficient in slip-resistance	0.30	-	AISC 360-16 – J3.8
Limit plastic strain	0.05	-	
Weld stress evaluation	Plastic redistribution		
Detailing	No		
Distance between bolts [d0]	2.66	-	AISC 360-16 – J3.3
Distance between bolts and edge [d0]	1.25	-	AISC 360-16 – J.3.4
Concrete breakout resistance	Yes		
Base metal capacity check at weld fusion face	No		AISC 360-16 – J2-2
Cracked concrete	Yes		