



Project: Post System	Contract: 1388-4
Subject: General Wind Load	Sheet No. 1
Date: 08/05/2020	By: R.F.

Concorde Glass Ltd.,
Linx House,
104 Waterloo Rd,
Mablethorpe,
LN12 1LE,
UK.

General Wind Load

1388-4 Post System

Analysis By	Checked By
R.F.	T.S.

0	08/05/2020	T.S.	Issued
Revision	Date	Issued By	Comment



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Introduction/Actions/Result Summary:

Introduction:

TSA was instructed by Concorde Glass Ltd to provide a matrix of wind load for top fix and side fix post system.

Actions:

Infill load = 1.0kN (Table NA.5 IS1991-1-1:2002)
Infill load = 1.5kN (Table NA.5 IS1991-1-1:2002)
Infill load = 2.0kN (Table NA.5 IS1991-1-1:2002)

Assumption:

Concrete Grade = C30/37

Result Summary:

Glass in all cases 10mm toughened glass.

For connection requirements see sheets 9 to 13



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Glass Strength

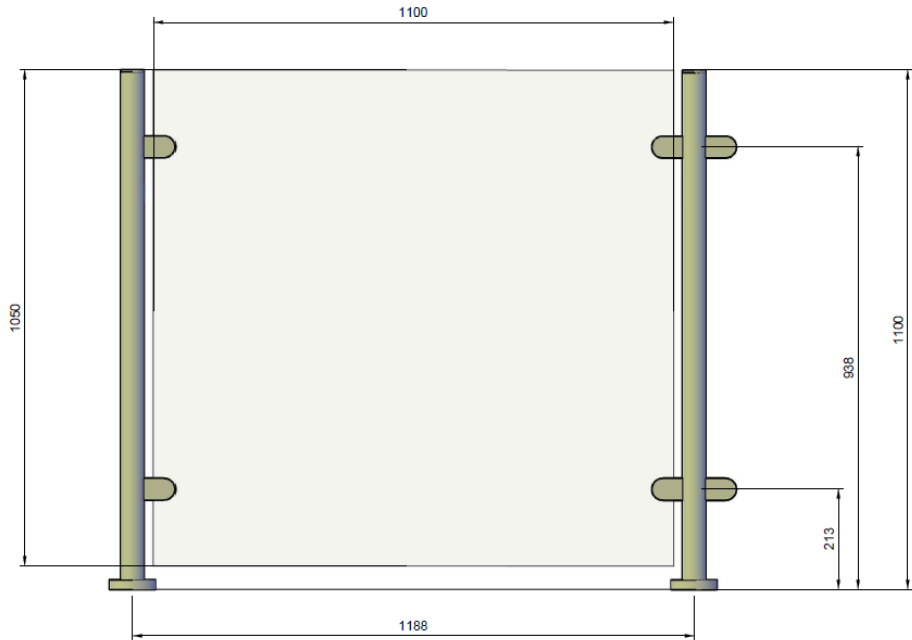
Wind Loading: 10min duration, Multiple Gust Storm => $k_{mod} = 0.74$

$$f_{gd} = (k_{mod})(k_{sp})(f_{gk}) / \gamma_{ma} + k_v(f_{bk} - f_{gk}) / \gamma_{mv}$$
$$f_{gd} = (0.74)(1.0)(45) / 1.6 + 1.0(120 - 45) / 1.2$$

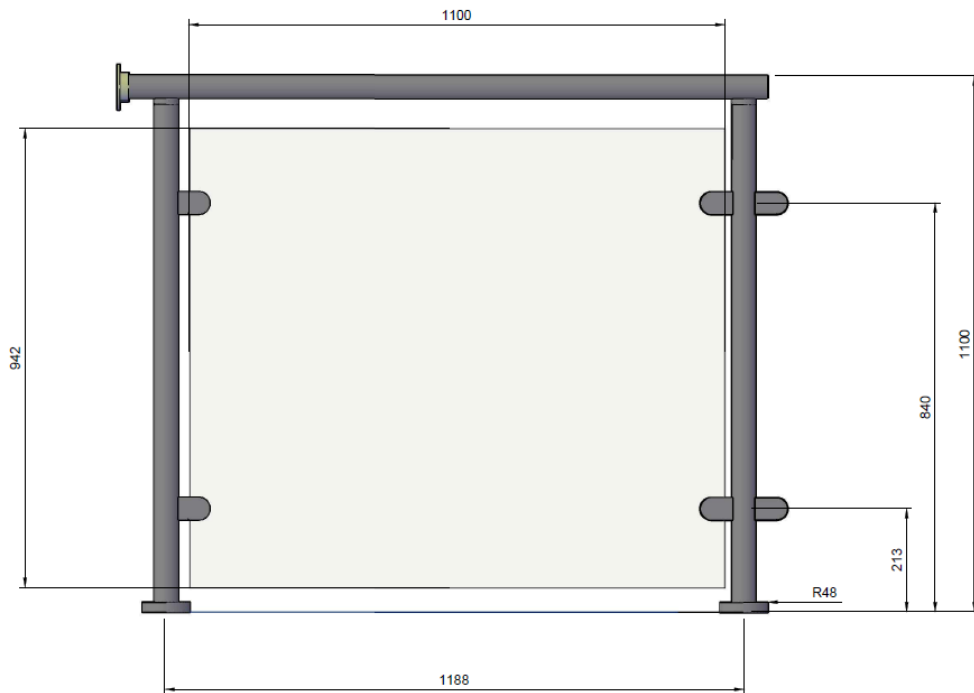
$$f_{gd} = 83.3 \text{ N/mm}^2$$

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System Sketch:

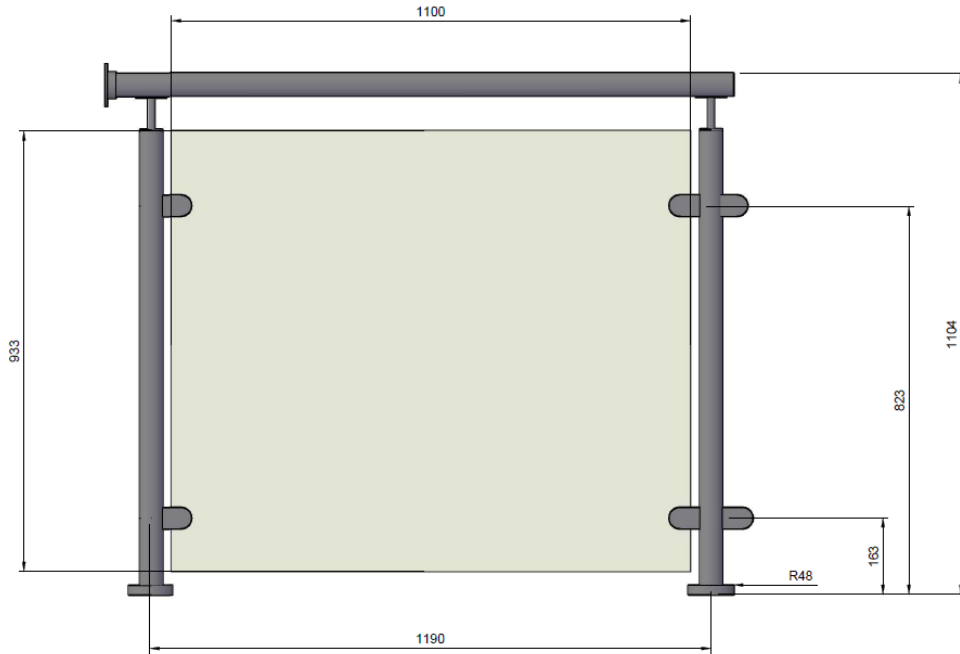


Top Fix Post, No Handrail

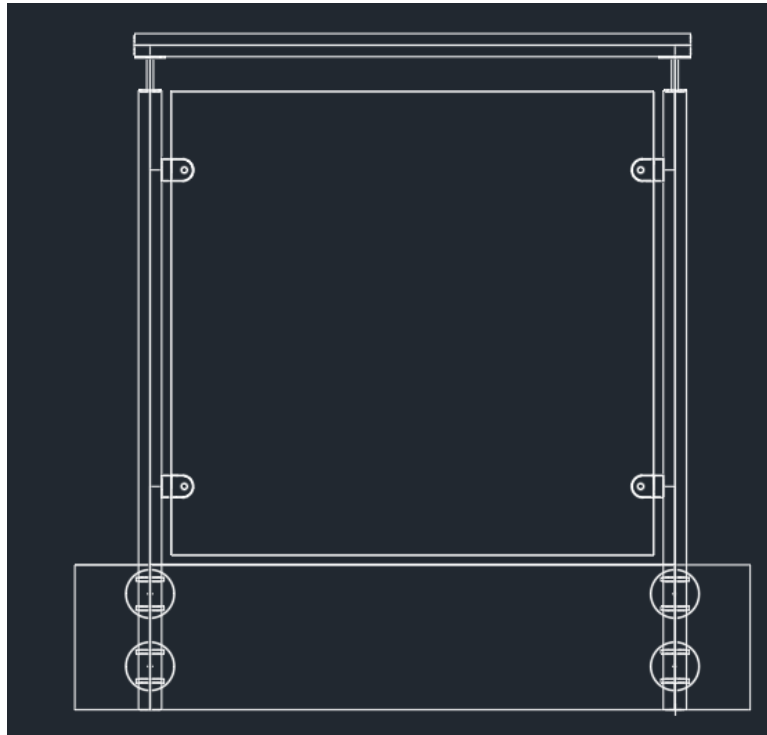


Top Fix Post, Cradle System

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Top Fix Post, Saddle System



Side Fix Post

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Glass Analysis:

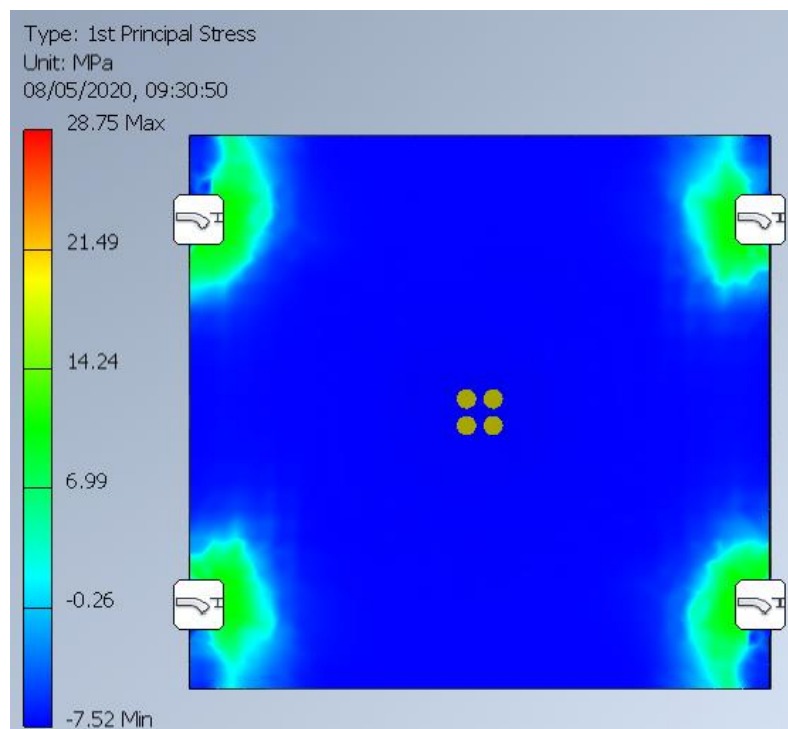
Glass Analysis - Bending Stress of Glass Panel due to 2.0kN/m² Infill Loading:

- Analysis Software was used to determine maximum bending stress of the glass due to 2.0N/m² Infill Loading
- 10mm Tough Glass analysed
- Bending Stress analysed based on glass panel of 1100mm X 1050mm

Result:

Max. Bending Stress = 28.75N/mm² x1.5 = 43.125N/mm² < 83.3N/mm²

OK in Bending



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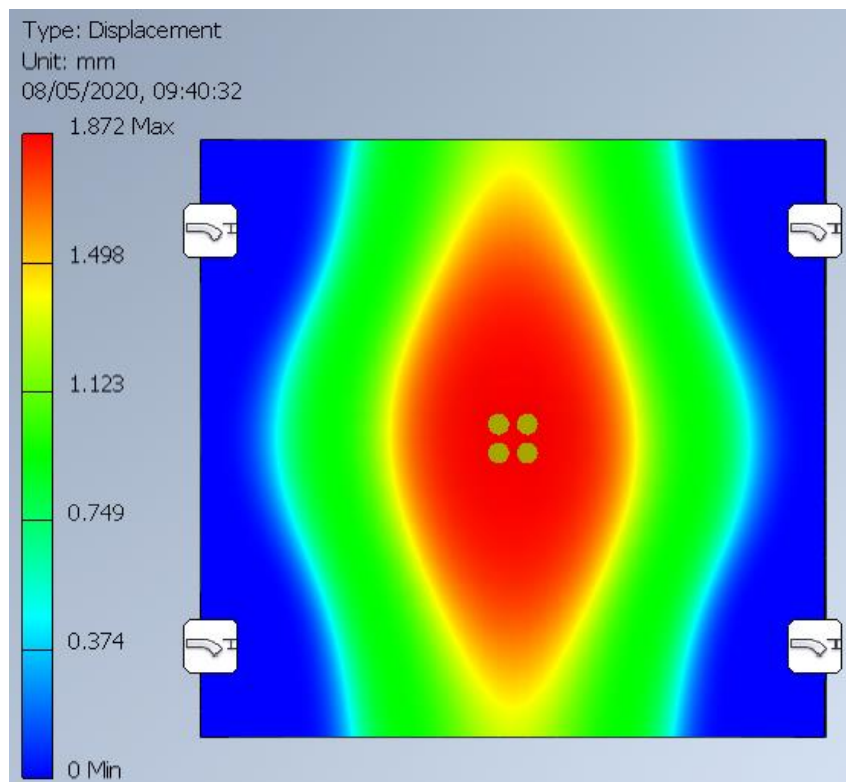
Glass Analysis - Deflection of Glass Panel due to 2.0kN/m² Infill Loading:

- Analysis Software was used to determine maximum bending stress of the glass due to 2.0kN/m² Infill Loading
- 15mm Tough Glass analysed, horizontally toughened Laminated
- Deflection analysed based on glass panel of 1100mm X 1050mm

Result:

Max. Deflection = 1.8mm < 25mm {BS6180:2011 cl. 6.4.1}

OK in Deflection (Glass Only)



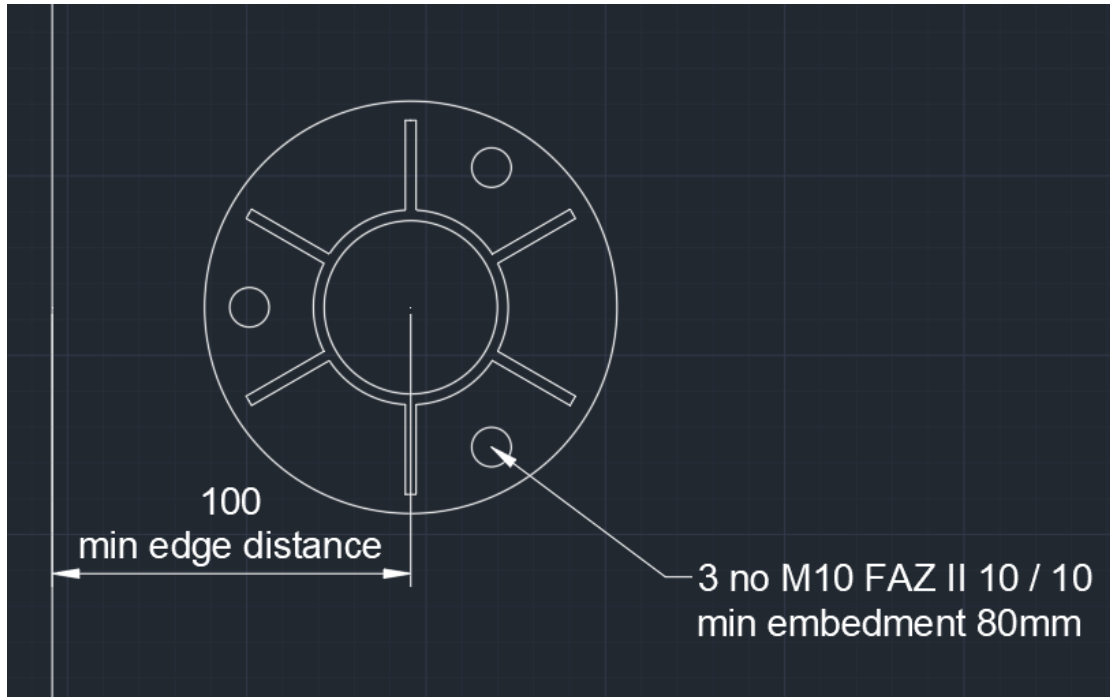
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Connection Design:

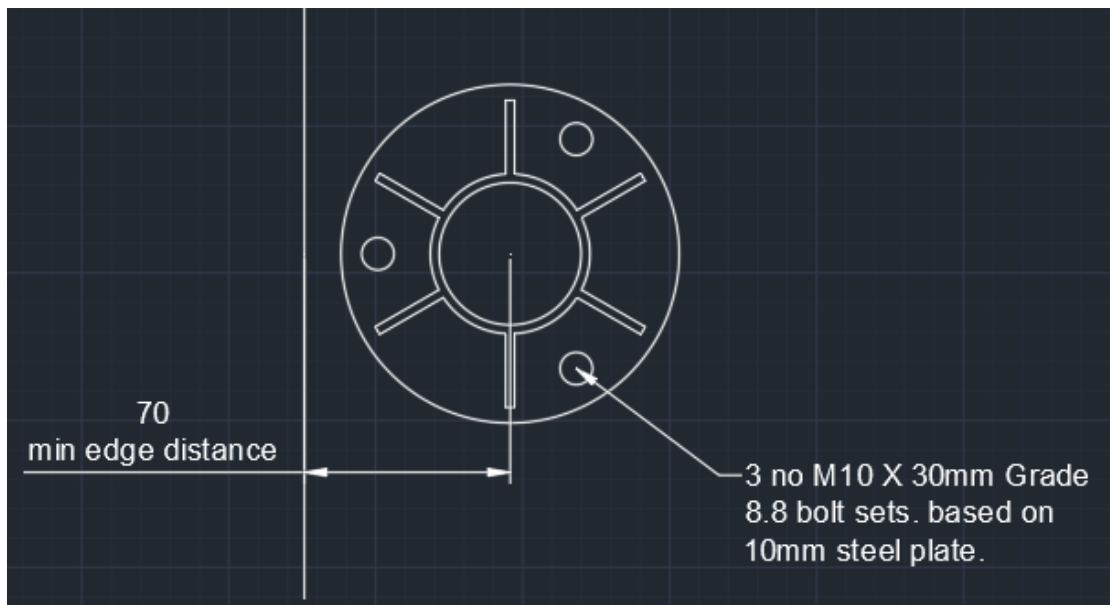
Top Fix Post (all systems)

$M_{(max)} = 0.74 \text{ kN/m} \times 1.19\text{m} \times 1.1\text{m} \times 1.5 = 1.45 \text{ kNm}$ (balustrade load most onerous)

Connection to Concrete

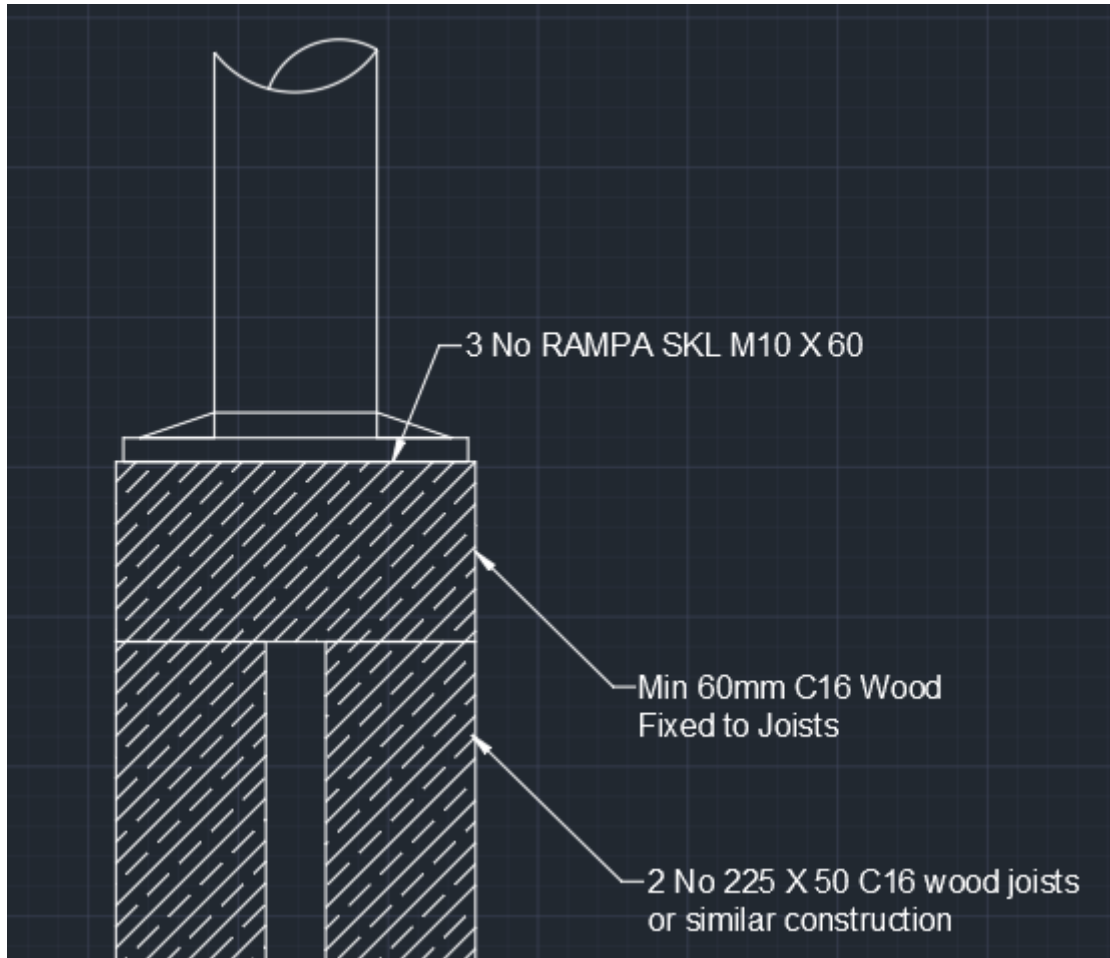


Connection to steel



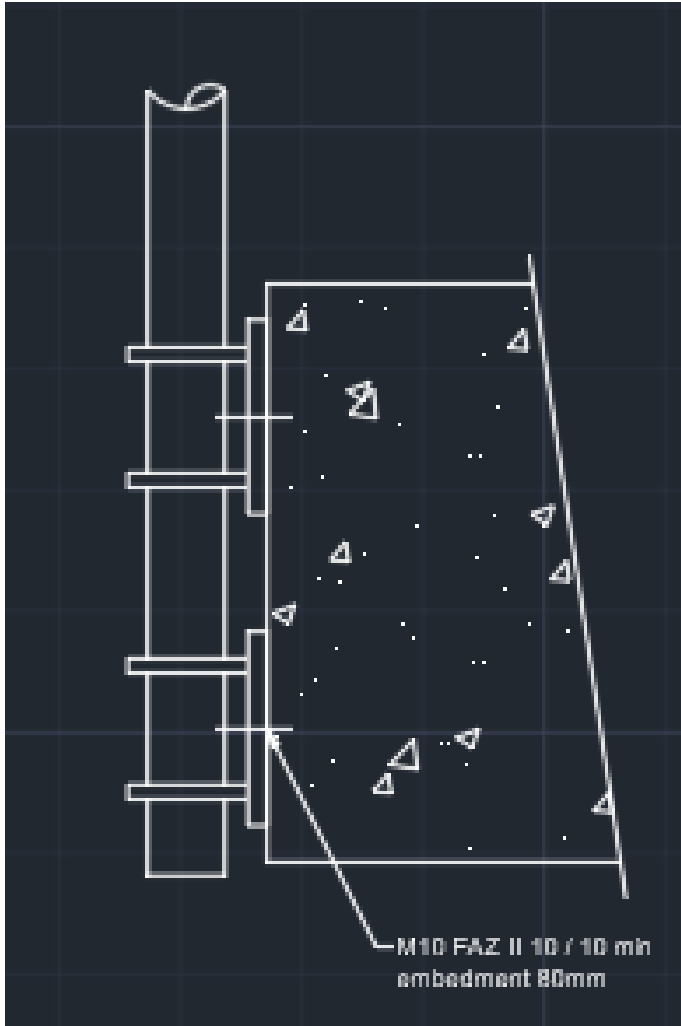
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Connection to Wood



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Side Fix Post (all systems)
Connection to Concrete



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Connection to steel





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Connection to Wood

