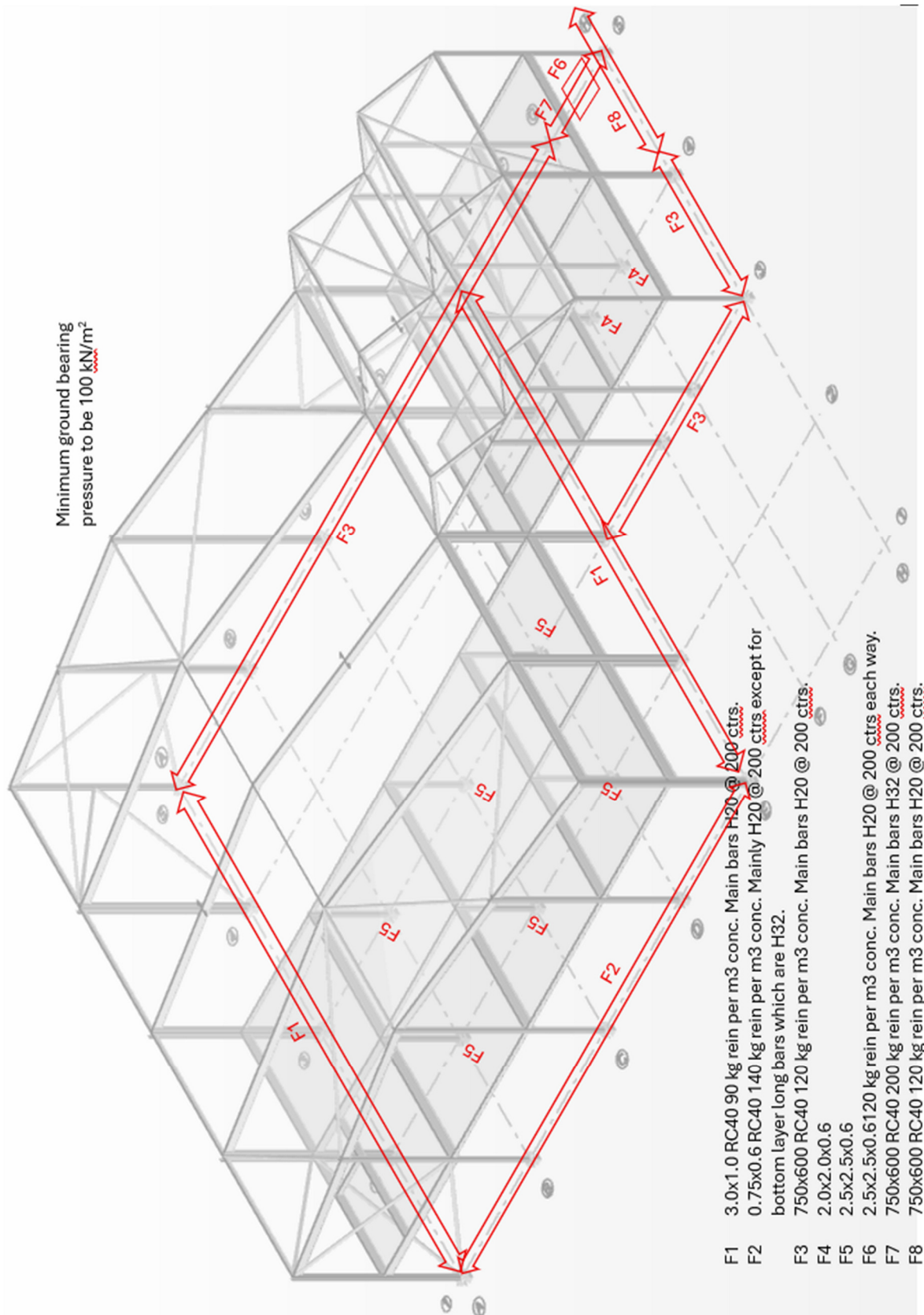
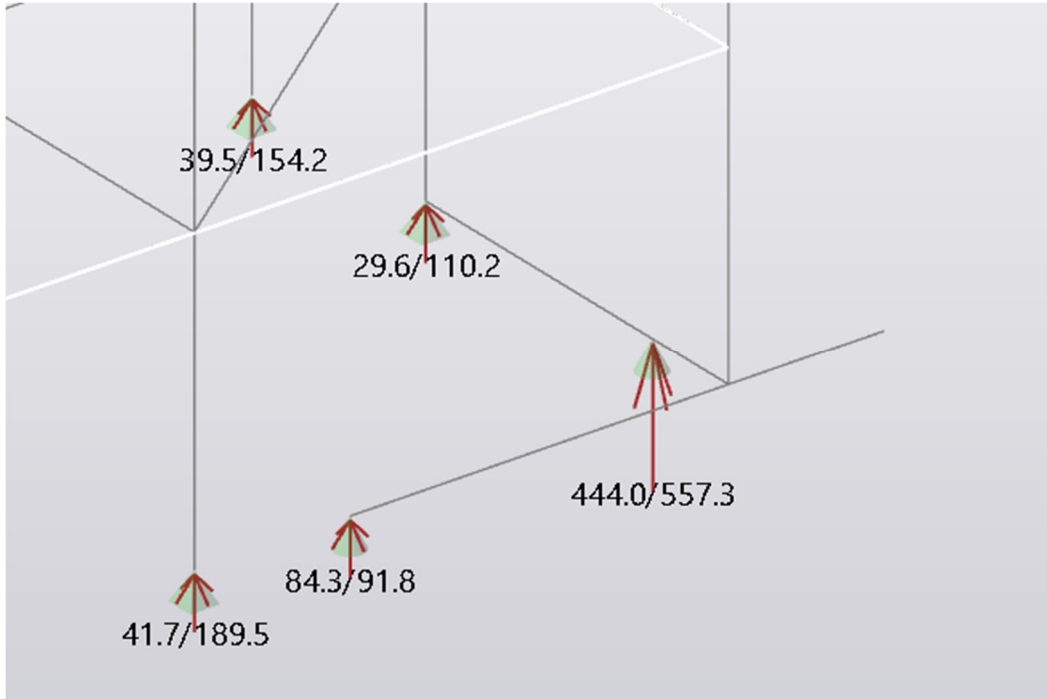


## Foundations



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### Foundation F6



SLS reaction envelope

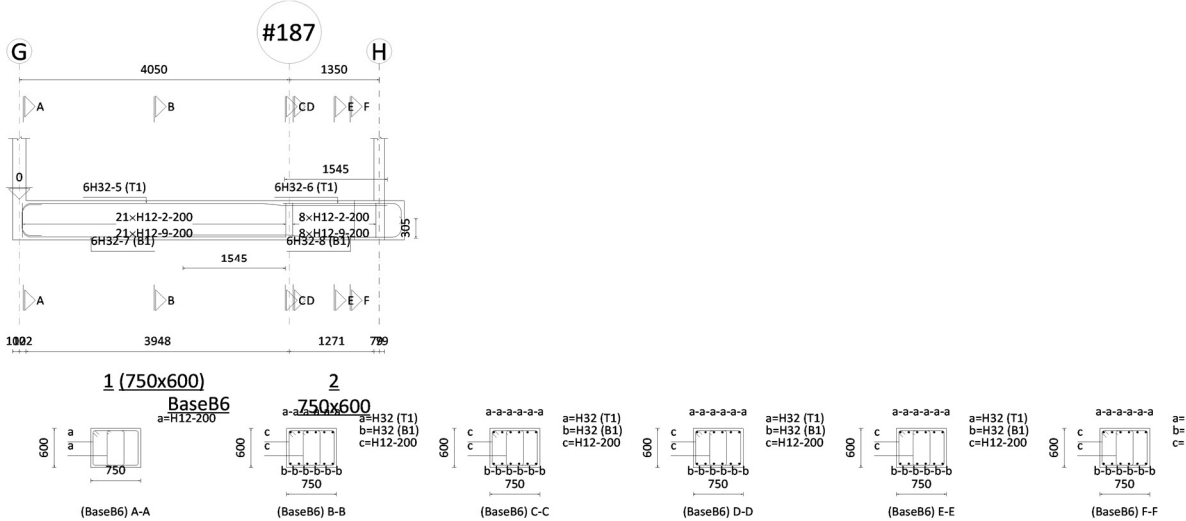
Minimum base size

$$D = (557 / 100)^{0.5} = 2.4\text{m}$$

**Use 2500x2500x600 RC40 pad with H20 bars each way top and bottom.  
 Minimum ground bearing pressure to be 100 kN/m<sup>2</sup>**

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## Foundation F7



### Static Design Summary

BaseB6 - 1 750x600 - Critical

Design summary bending top

Region	1	2	3
Analysis	3D Building Analysis	3D Building Analysis	3D Building Analysis
Combination	3 Cb <sub>3,2</sub> -1.2D+1.2I+1.2RI+1.2W	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI
M	41.1 kNm	383.9 kNm	644.4 kNm
d	542.0 mm	542.0 mm	542.0 mm
d'	58.0 mm	58.0 mm	58.0 mm
K / K'	<b>0.03</b>	<b>0.28</b>	<b>0.47</b>
z	514.9 mm	514.4 mm	493.7 mm
A <sub>s,reqd</sub>	184 mm <sup>2</sup>	1716 mm <sup>2</sup>	3001 mm <sup>2</sup>
A <sub>sT,reqd,face</sub>	0 mm <sup>2</sup>	0 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>s</sub> ' <sub>reqd</sub>	0 mm <sup>2</sup>	0 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>st,reqd</sub>	184 mm <sup>2</sup>	1716 mm <sup>2</sup>	3001 mm <sup>2</sup>
A <sub>s,min,tens</sub>	585 mm <sup>2</sup>	585 mm <sup>2</sup>	585 mm <sup>2</sup>
A <sub>s,prov</sub>	4825 mm <sup>2</sup>	4825 mm <sup>2</sup>	4825 mm <sup>2</sup>
Top bars	6H32	6H32	6H32

Design summary bending bottom

Region	1	2	3
Analysis	3D Building Analysis	3D Building Analysis	3D Building Analysis
Combination	5 Cb <sub>3,4</sub> -1.2D+1.2I+1.2RI+1.2W	9 Cb <sub>5,4</sub> -D+1.4W	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI
M	63.5 kNm	27.3 kNm	0.0 kNm
d	542.0 mm	542.0 mm	542.0 mm
d'	58.0 mm	58.0 mm	58.0 mm
K / K'	<b>0.05</b>	<b>0.02</b>	<b>0.00</b>
z	514.9 mm	514.9 mm	0.0 mm
A <sub>s,reqd</sub>	284 mm <sup>2</sup>	122 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>sT,reqd,face</sub>	0 mm <sup>2</sup>	0 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>s</sub> ' <sub>reqd</sub>	0 mm <sup>2</sup>	0 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>st,reqd</sub>	284 mm <sup>2</sup>	122 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>s,min,tens</sub>	585 mm <sup>2</sup>	585 mm <sup>2</sup>	41 mm <sup>2</sup>
A <sub>s,prov</sub>	4825 mm <sup>2</sup>	4825 mm <sup>2</sup>	4825 mm <sup>2</sup>

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					147 D	

Region	1	2	3
Bottom bars	6H32	6H32	6H32
Deflection check	-	$(L/d)_{actual} = 7.472 < 66.742$	-

Design summary shear and torsion

Region	Left	Centre	Right
Length	1.013 m	2.025 m	1.013 m
Analysis	3D Building Analysis	3D Building Analysis	3D Building Analysis
Combination	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI
V	114.2 kN	228.7 kN	255.3 kN
V <sub>max</sub>	2032.5 kN	2032.5 kN	2032.5 kN
V <sub>c</sub>	317.7 kN	317.7 kN	317.7 kN
$(A_{svs} / S_{vs})_{reqd}$	0 mm <sup>2</sup> /m	0 mm <sup>2</sup> /m	0 mm <sup>2</sup> /m
$(A_{sv} / S_v)_{prov}$	2262 mm <sup>2</sup> /m	2262 mm <sup>2</sup> /m	2262 mm <sup>2</sup> /m
T	9.88 kNm	9.88 kNm	9.88 kNm
T <sub>F,max</sub>	2032.5 kN	2032.5 kN	2032.5 kN
T <sub>F</sub>	40.6 kN	40.6 kN	40.6 kN
$(A_{svt} / S_{vt})_{reqd}$	0 mm <sup>2</sup> /m	0 mm <sup>2</sup> /m	0 mm <sup>2</sup> /m
Links	4H12-200	4H12-200	4H12-200

BaseB6 - 2 750x600 - Critical

Design summary bending top

Region	1	2
Analysis	3D Building Analysis	3D Building Analysis
Combination	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI
M	644.4 kNm	311.6 kNm
d	542.0 mm	542.0 mm
d'	58.0 mm	58.0 mm
K / K'	<b>0.47</b>	<b>0.23</b>
z	493.7 mm	514.9 mm
A <sub>s,reqd</sub>	3001 mm <sup>2</sup>	1391 mm <sup>2</sup>
A <sub>sIT,reqd,face</sub>	0 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>s'<sup>1</sup>,reqd</sub>	0 mm <sup>2</sup>	0 mm <sup>2</sup>
A <sub>st,reqd</sub>	3001 mm <sup>2</sup>	1391 mm <sup>2</sup>
A <sub>s,min,tens</sub>	585 mm <sup>2</sup>	585 mm <sup>2</sup>
A <sub>s,prov</sub>	4825 mm <sup>2</sup>	4825 mm <sup>2</sup>
Top bars	6H32	6H32

Design summary bending bottom

Region	1
Analysis	3D Building Analysis
Combination	7 Cb <sub>5.2</sub> -D+1.4W
M	40.5 kNm
d	542.0 mm
d'	58.0 mm
K / K'	<b>0.03</b>
z	514.9 mm
A <sub>s,reqd</sub>	181 mm <sup>2</sup>
A <sub>sIT,reqd,face</sub>	0 mm <sup>2</sup>
A <sub>s'<sup>1</sup>,reqd</sub>	0 mm <sup>2</sup>
A <sub>st,reqd</sub>	181 mm <sup>2</sup>
A <sub>s,min,tens</sub>	585 mm <sup>2</sup>
A <sub>s,prov</sub>	4825 mm <sup>2</sup>
Bottom bars	6H32
Deflection check	$(L/d)_{actual} = 1.799 < 66.742$

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Design summary shear and torsion

Region	Left	Centre	Right
Length	0.338 m	0.675 m	0.338 m
Analysis	3D Building Analysis	3D Building Analysis	3D Building Analysis
Combination	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI	1 Cb <sub>1</sub> -1.4D+1.6I+1.6RI
V	481.5 kN	481.5 kN	466.5 kN
V <sub>max</sub>	2032.5 kN	2032.5 kN	2032.5 kN
V <sub>c</sub>	317.7 kN	317.7 kN	317.7 kN
(A <sub>svs</sub> / S <sub>vs</sub> ) <sub>reqd</sub>	695 mm <sup>2</sup> /m	695 mm <sup>2</sup> /m	631 mm <sup>2</sup> /m
(A <sub>sv</sub> / S <sub>v</sub> ) <sub>prov</sub>	2262 mm <sup>2</sup> /m	2262 mm <sup>2</sup> /m	2262 mm <sup>2</sup> /m
T	9.88 kNm	9.88 kNm	9.88 kNm
T <sub>F,max</sub>	2032.5 kN	2032.5 kN	2032.5 kN
T <sub>F</sub>	40.6 kN	40.6 kN	40.6 kN
(A <sub>svt</sub> / S <sub>vt</sub> ) <sub>reqd</sub>	0 mm <sup>2</sup> /m	0 mm <sup>2</sup> /m	0 mm <sup>2</sup> /m
Links	4H12-200	4H12-200	4H12-200

**Use 750x600 RC40 ground beam with 6 H32 bars top and 6 H32 bars bottom, 4 No H12 shear legs @ 200mm ctrs**