PRECAST DESIGN & DETAIL

PRECAST

- Introduction
- Load bearing precast
- Facia precast
- Long span precast

1. Slabs
2. “double-T “ slabs

- Miscellaneous

INTRODUCTION

- ✓Plant-fabrication, Quality control.
- ✓Span/ depth for beam/ HCS : 15/35
- ✓Speed
- ✓Unmatched surface finishes and shapes
- ✓Maintenance free
- ✓Fire resistance and durability
- ✓Better stability under seismic, wind , thermal changes, acoustic , vibration as material is massive and heavy

INTRODUCTION

Construction speed

12 February 2008, 4 slabs

13 April 2008 , 11 slabs

STATUS OF IN SITU BUILDING ON CORRESPONDING DATES

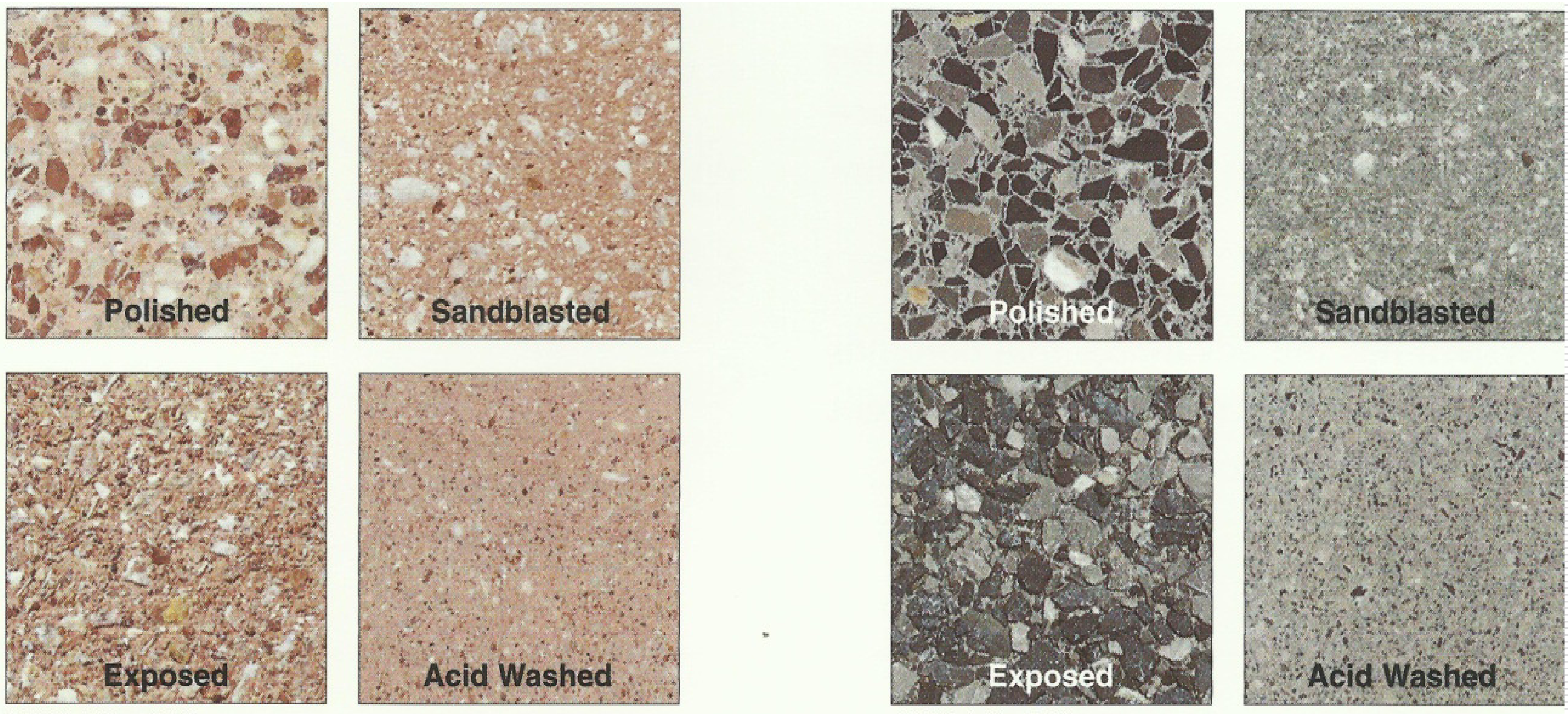
-*Control Tower for Drag race*

- 27th Dec. 2010 10th Jan. 2011

✓ *Greater span-to-depth ratios,*

Strands	Span	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0
4x12.5 + 6x15.7 mm Mur= 888 KN-M Vco= 331 KN	Quls	17.7	16.1	14.5	13.1	11.9	10.7	9.7	8.74	7.8	7.01	6.24	5.53	
	Qsls	8.96	8.0	7.1	6.3	5.6	4.95	4.35	3.8	3.27	2.8	2.4	1.95	
	C	-10.2	-9.7	-9.0	-8.1	-6.93	-5.6	-4.0	-2.1	0.0	2.44	5.20	8.2	
	U	2.76	3.14	3.57	4.04	4.55	5.1	5.7	6.38	7.1	7.87	8.7	9.62	
5x12.5 + 6x15.7 mm Mur= 926 KN-M Vco= 338 KN	Quls	18.8	17.1	15.6	14.1	12.8	11.6	10.6	9.5	8.5	7.7	6.87	6.13	5.43
	Qsls	9.60	8.60	7.7	6.87	6.12	5.43	4.8	4.21	3.7	3.18	2.72	2.3	1.90
	C	-11.9	-11.5	-10.9	-10.1	-9.10	-7.89	-6.4	-4.7	-2.7	-0.4	2.2	5.14	8.45
	U	2.76	3.14	3.57	4.04	4.55	5.11	5.7	6.4	7.1	7.8	8.7	9.62	10.59
3x12.5 + 8x15.7 mm Mur= 953 KN-M Vco= 341 KN	Quls	19.6	17.8	16.2	14.7	13.4	12.1	11.0	9.99	9.02	8.13	7.31	6.54	5.83
	Qsls	10.1	9.1	8.2	7.35	6.57	5.85	5.2	4.59	4.04	3.52	3.05	2.6	2.19
	C		-13.2	-12.7	-12.1	-11.2	-10.1	-8.7	-7.1	-5.31	-3.16	-0.7	2.1	5.27
	U		3.14	3.5	4.04	4.55	5.1	5.7	6.38	7.1	7.87	8.7	9.62	10.59

FINISHES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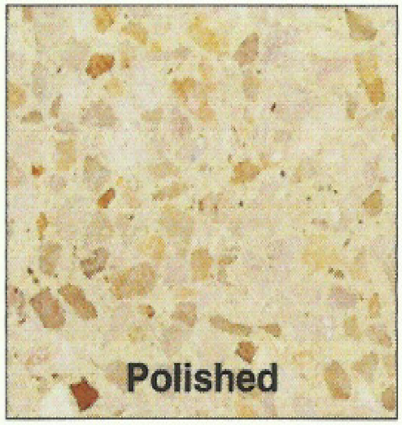
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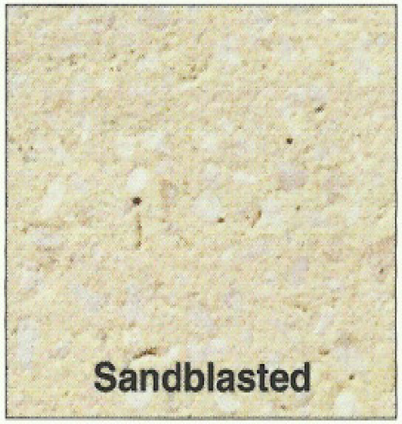
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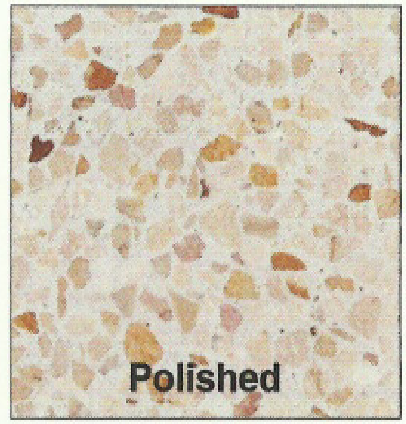
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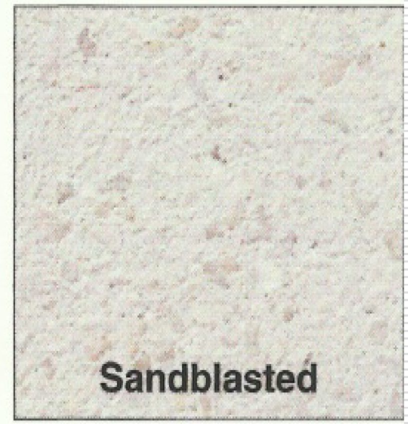
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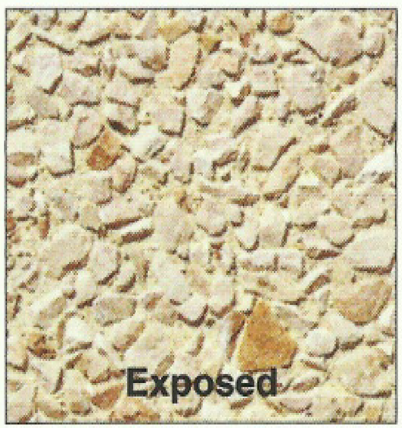
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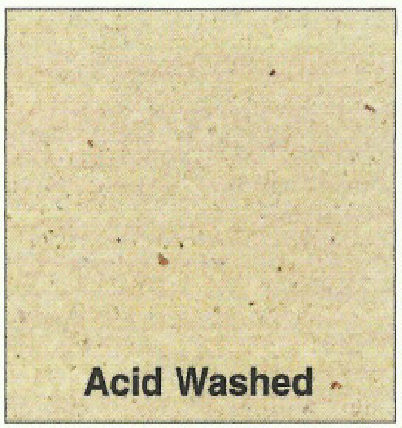
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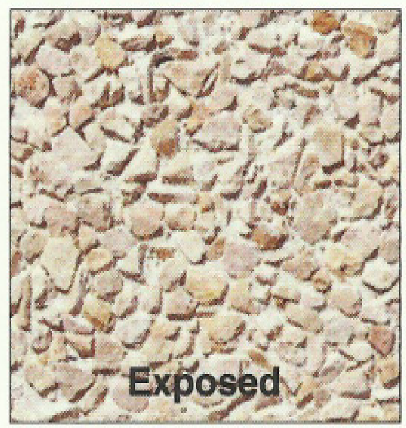
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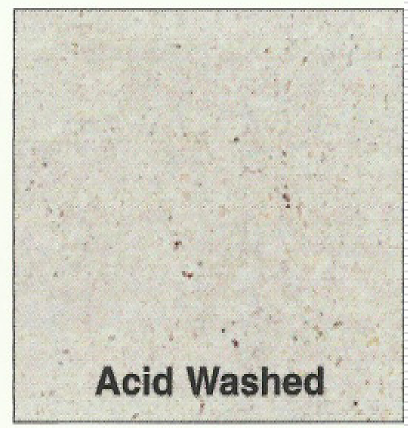
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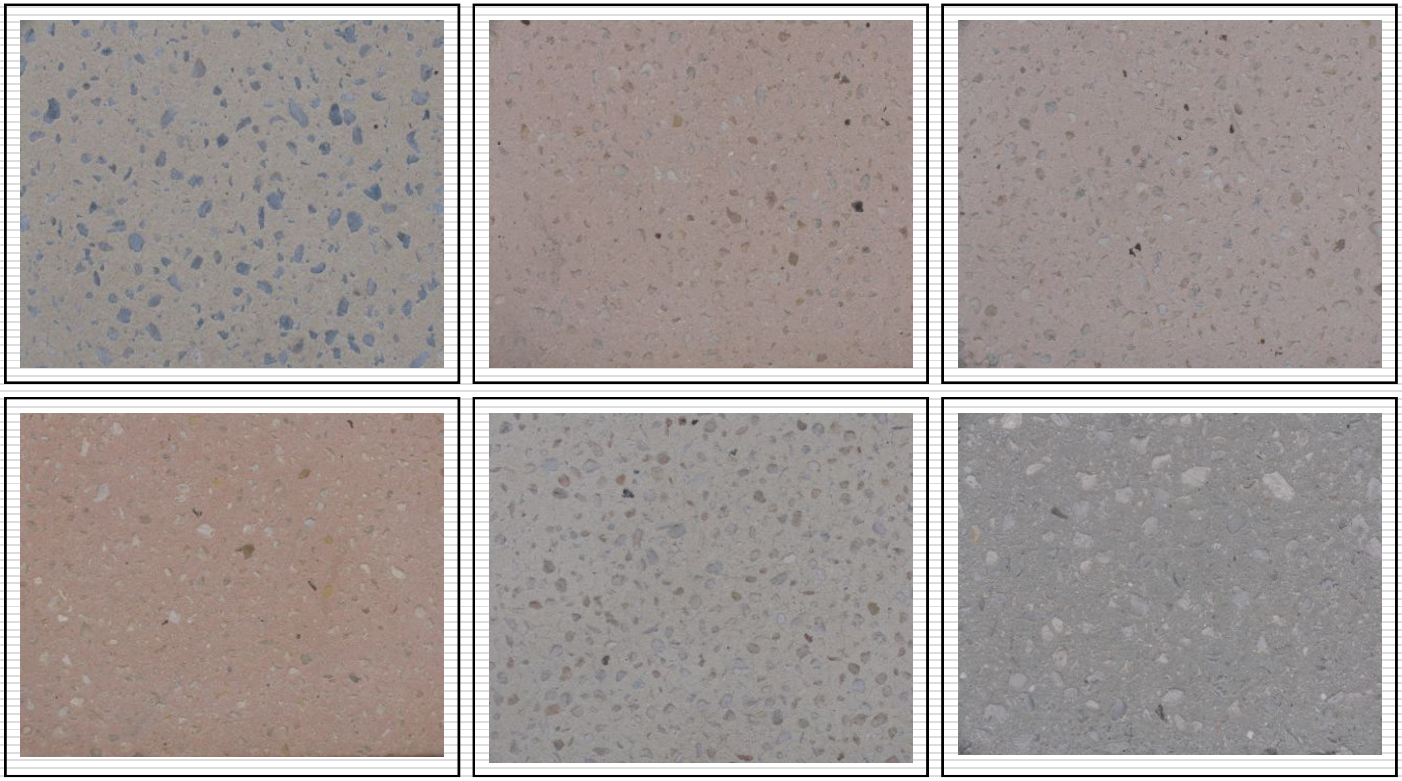
FINISHES






FINISHES



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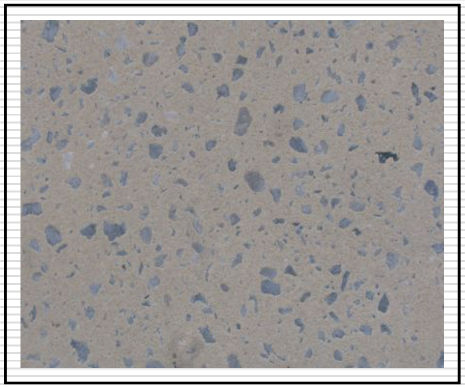
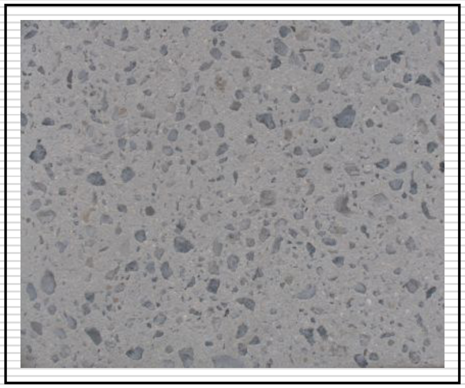
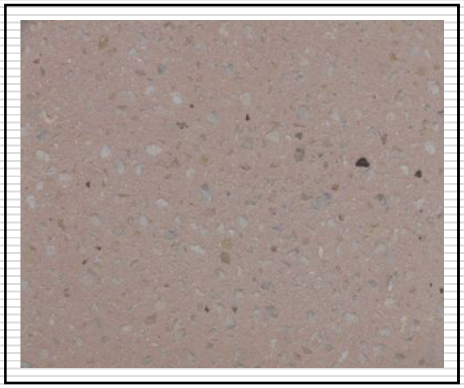
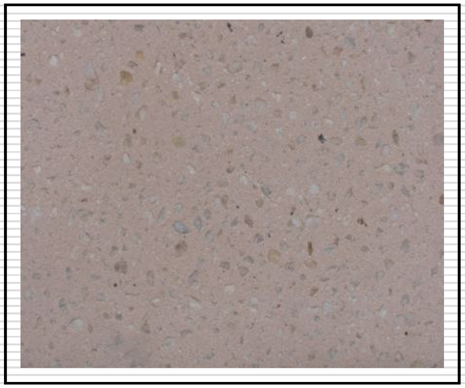
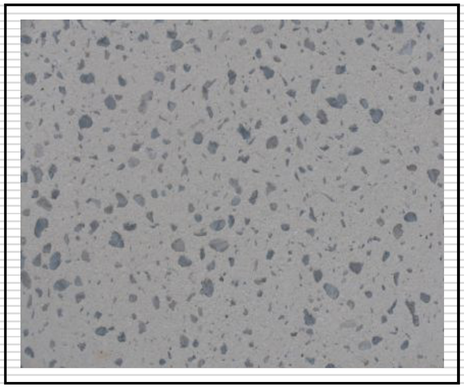
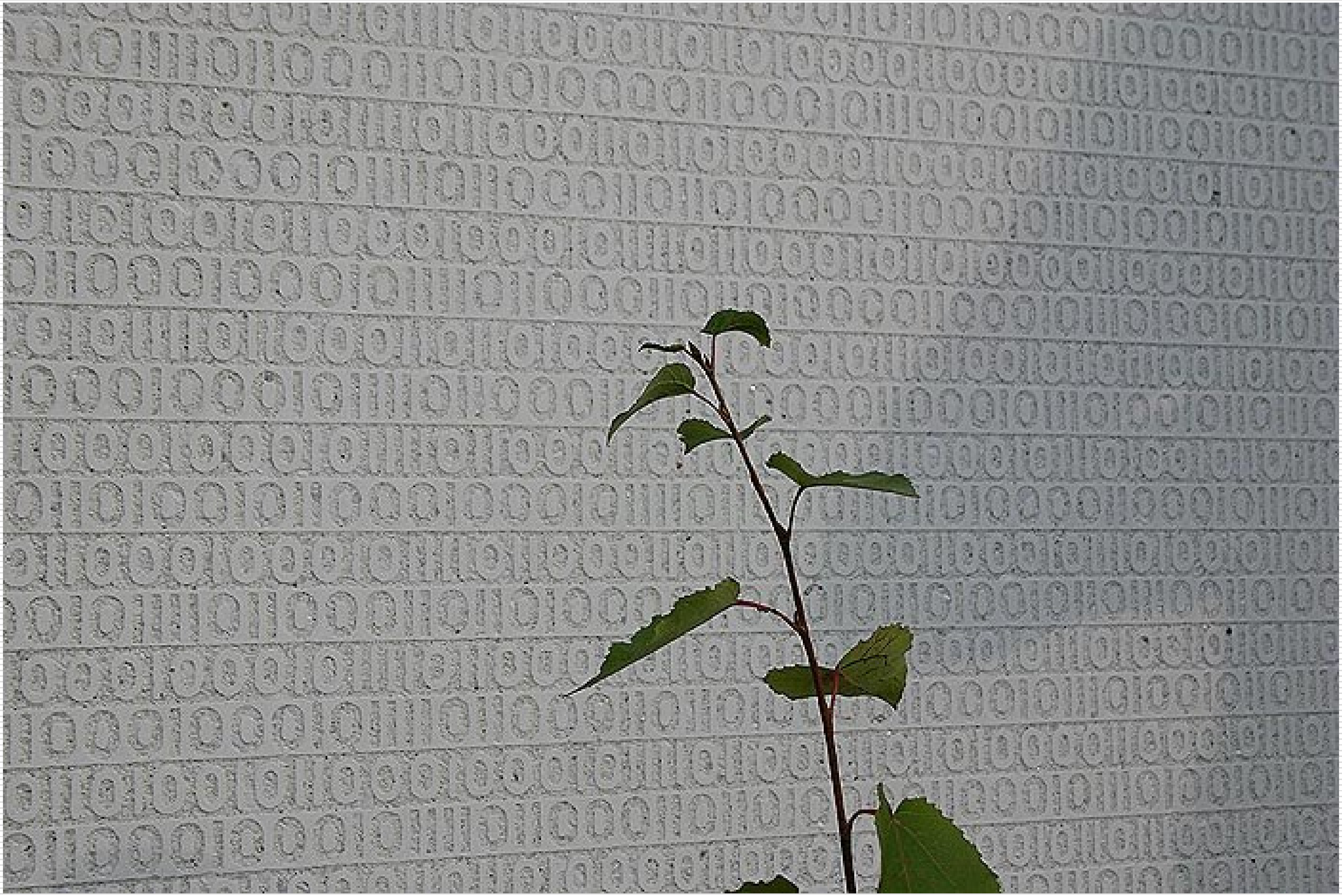
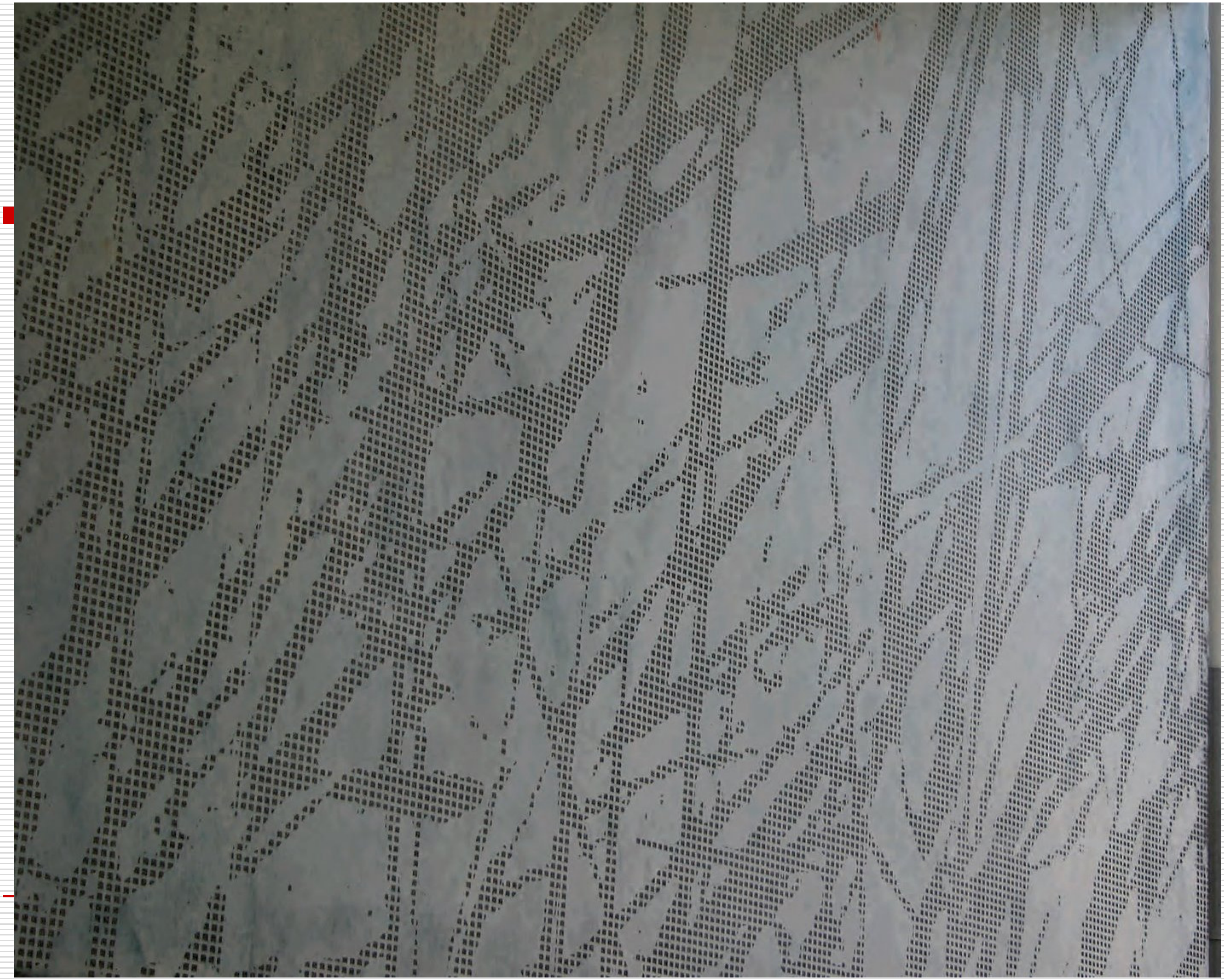
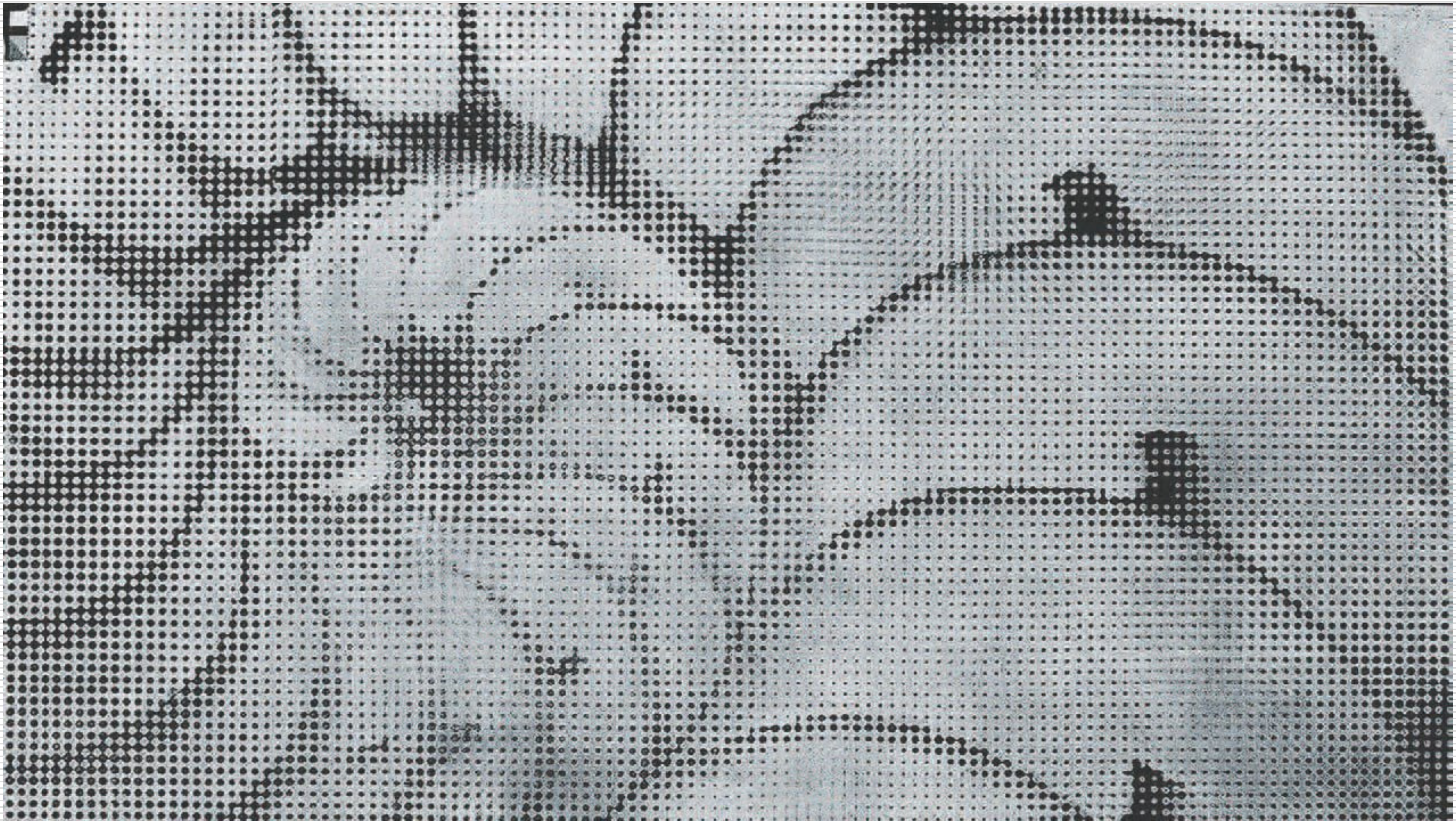













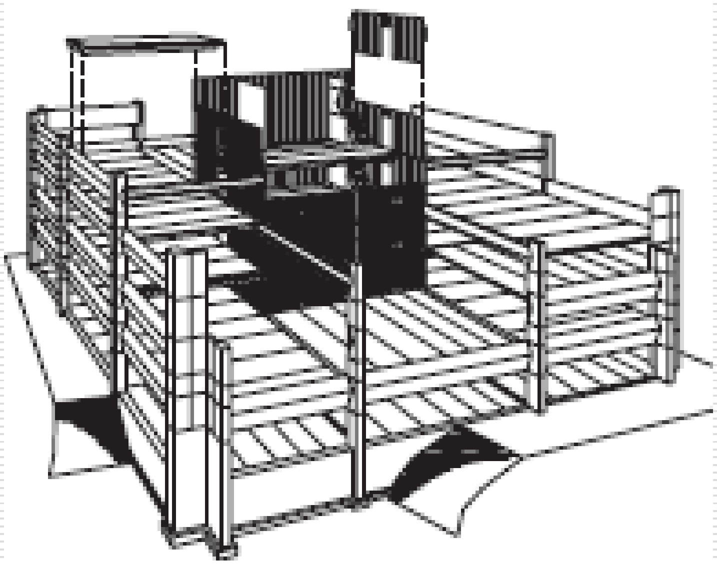
Tilting table

Battery Mould

Easy Maintenance

LOAD BEARING PRECAST

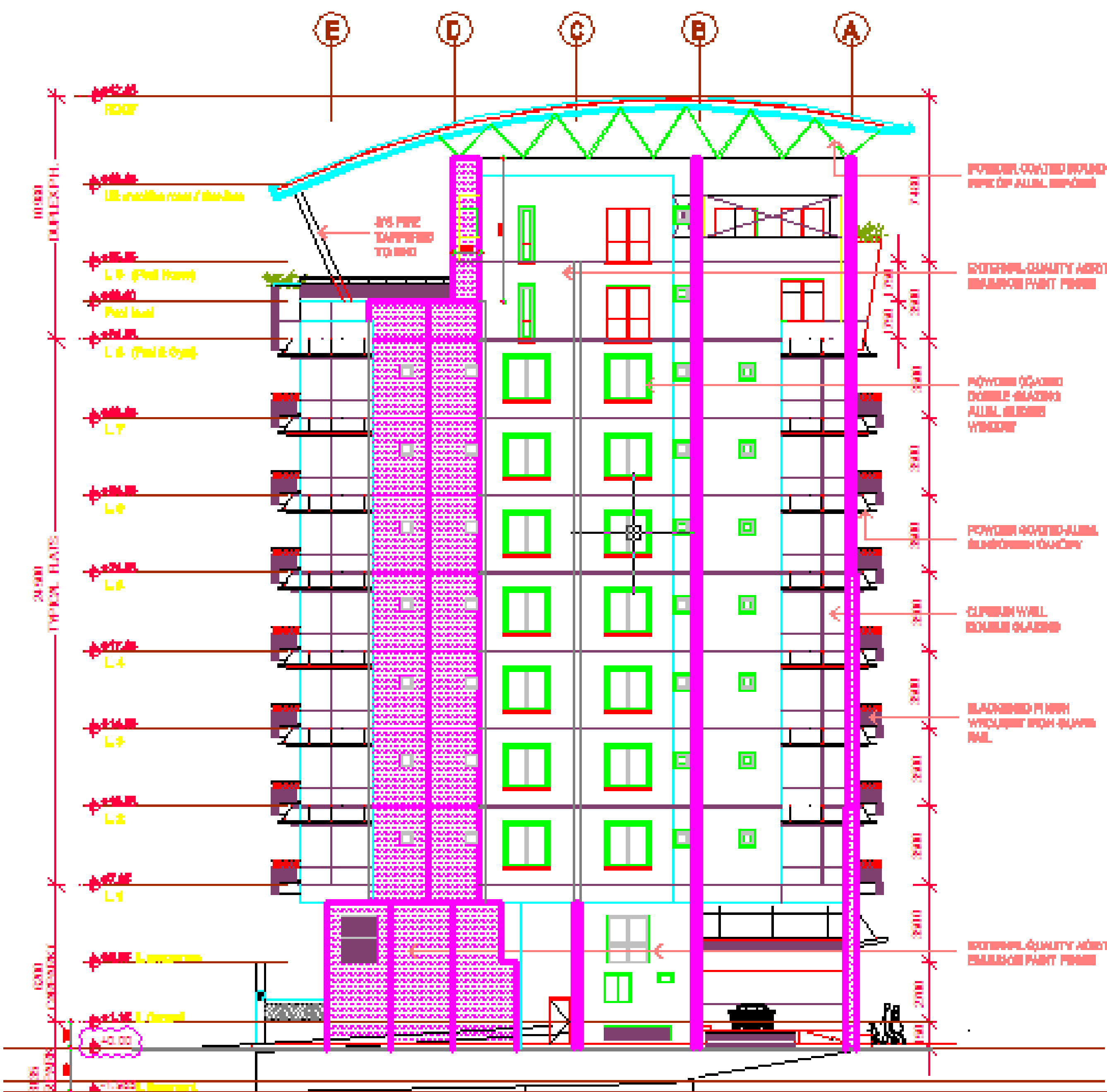
Column beam type



Interior shear wall system

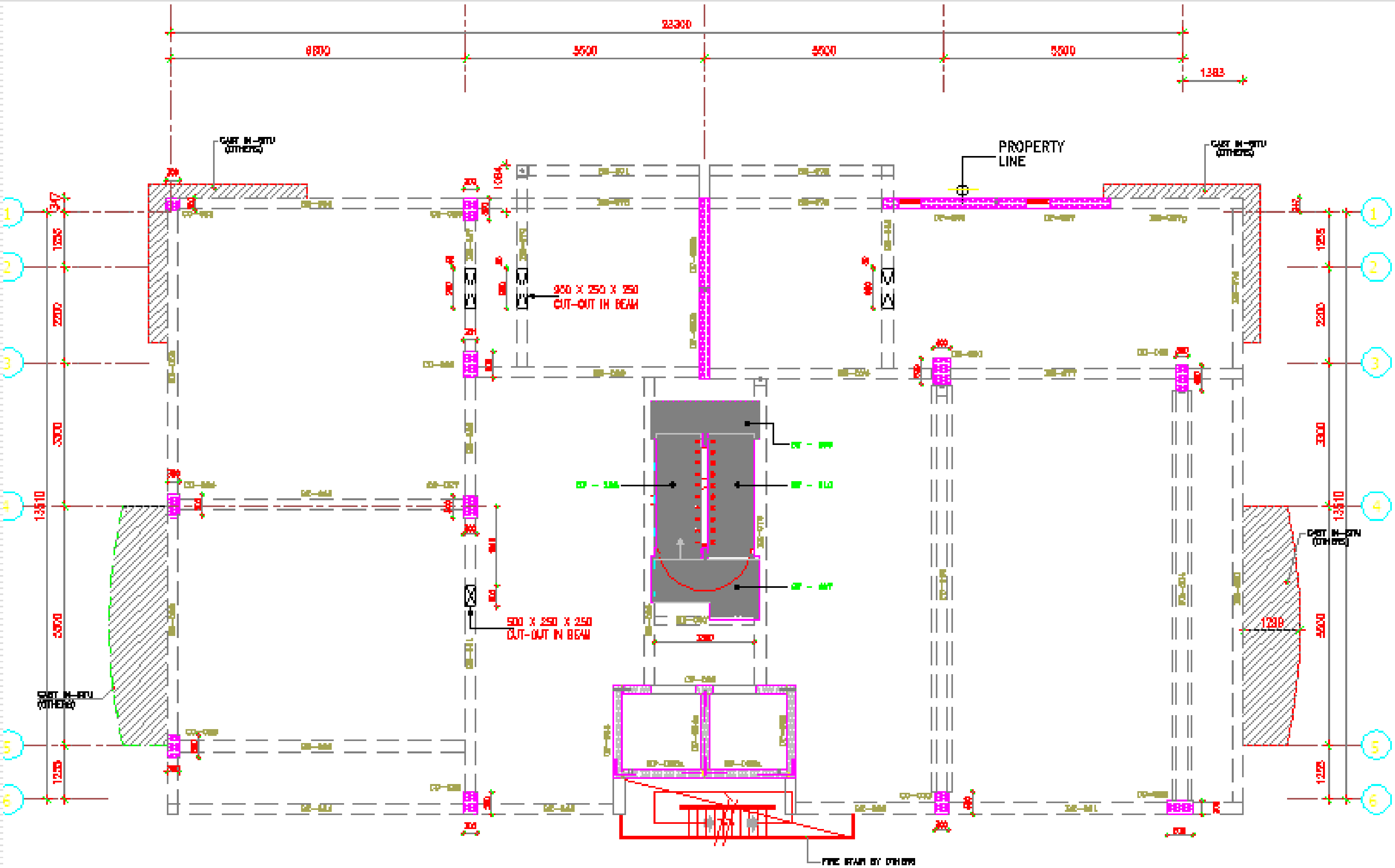
Or load bearing walls

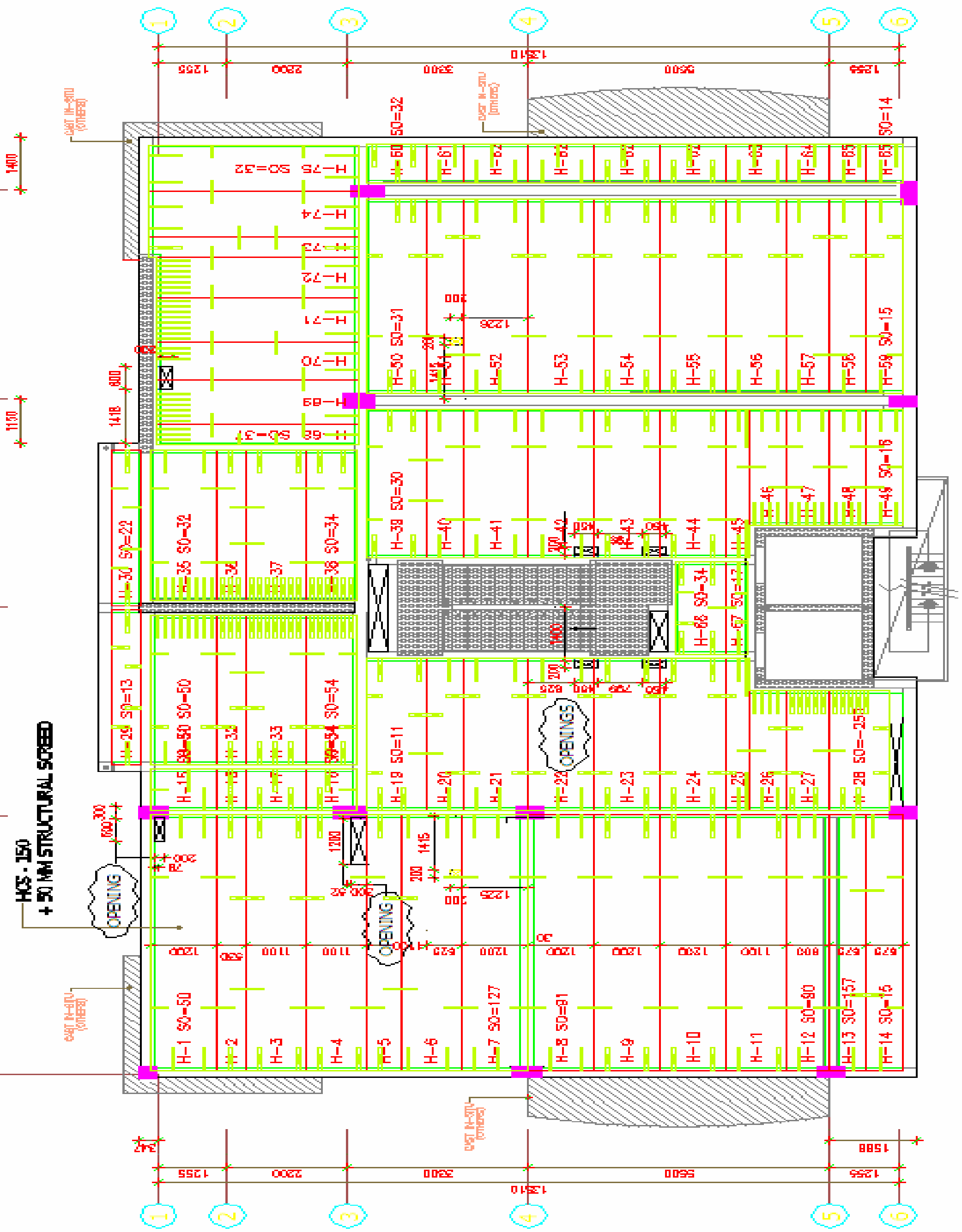
- .



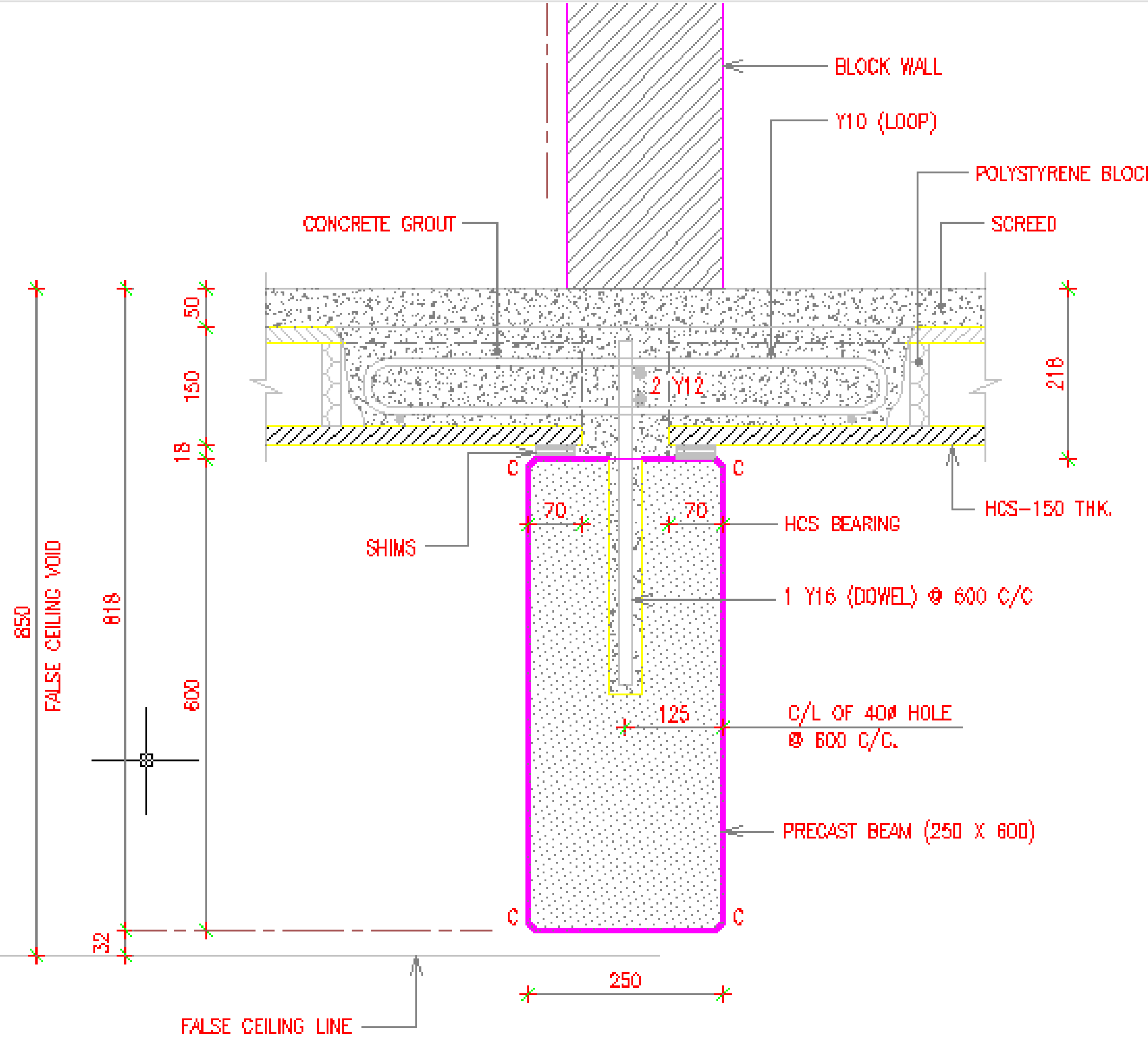
ELEVATION - C

Column Beam type



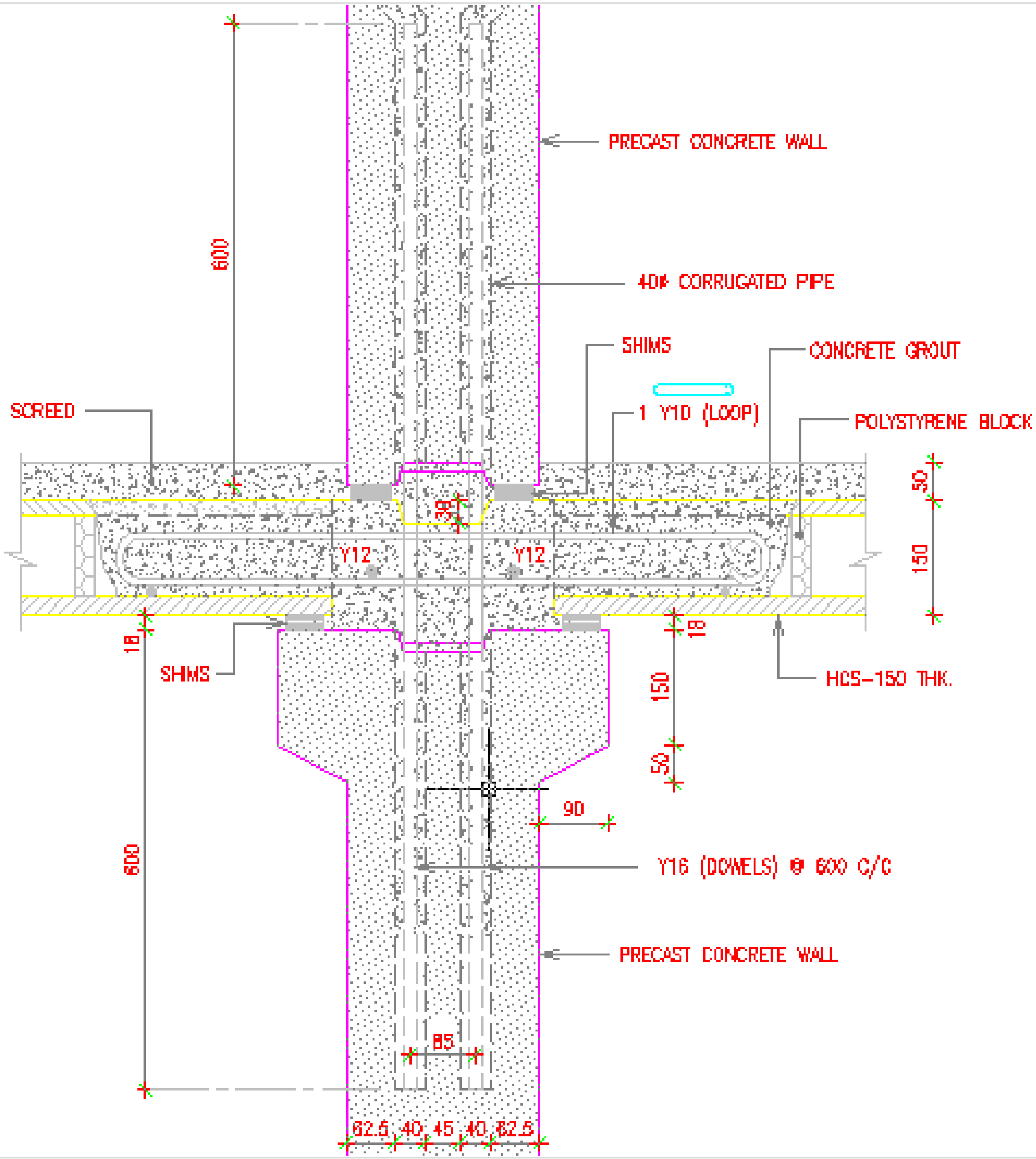

HCS - 150
+ 50 MM STRUCTURAL SCREED

ERECTION DETAILS



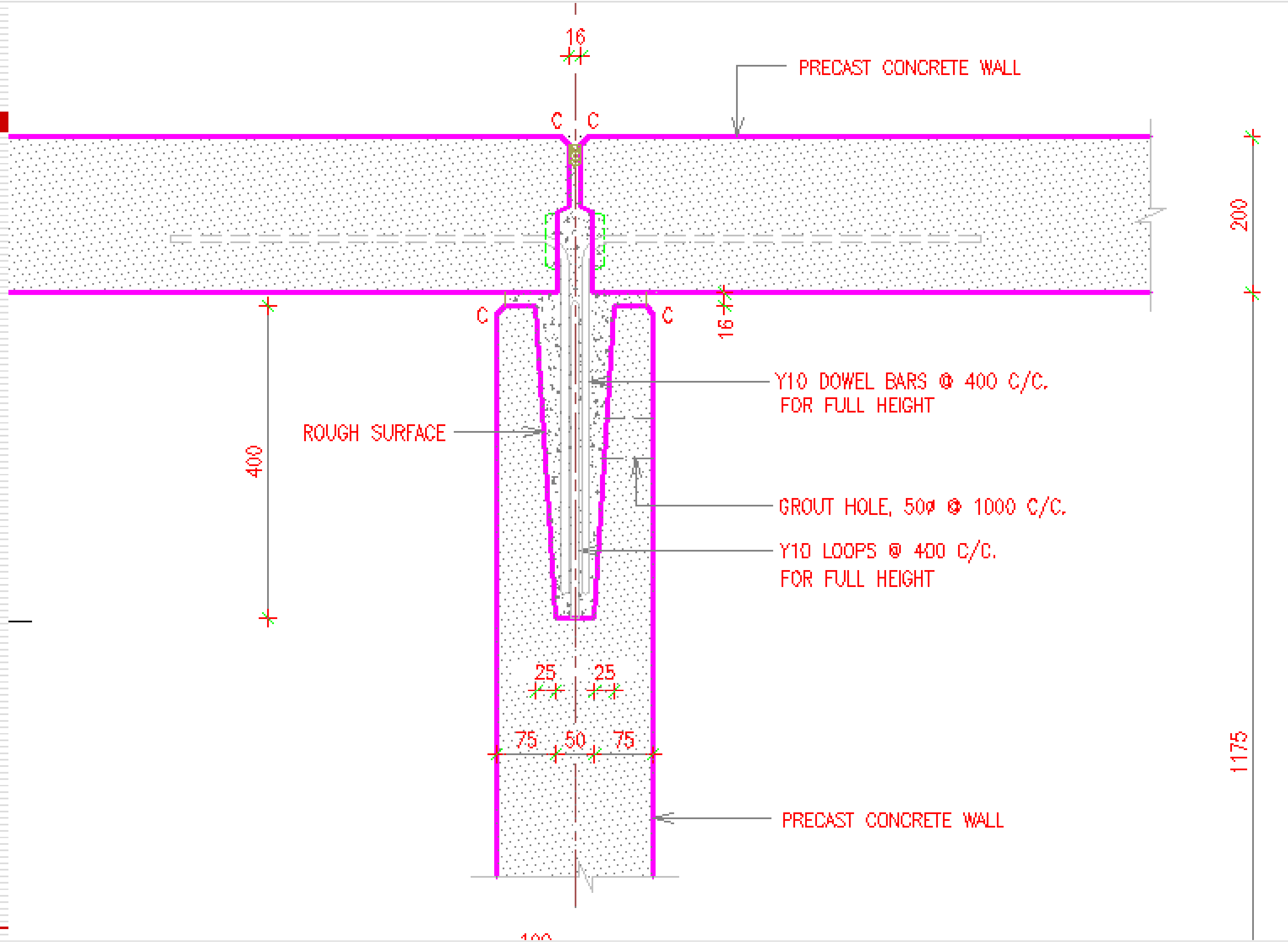
CONNECTION FOR BEAM, SLAB AND WALL

ERECTION DETAILS

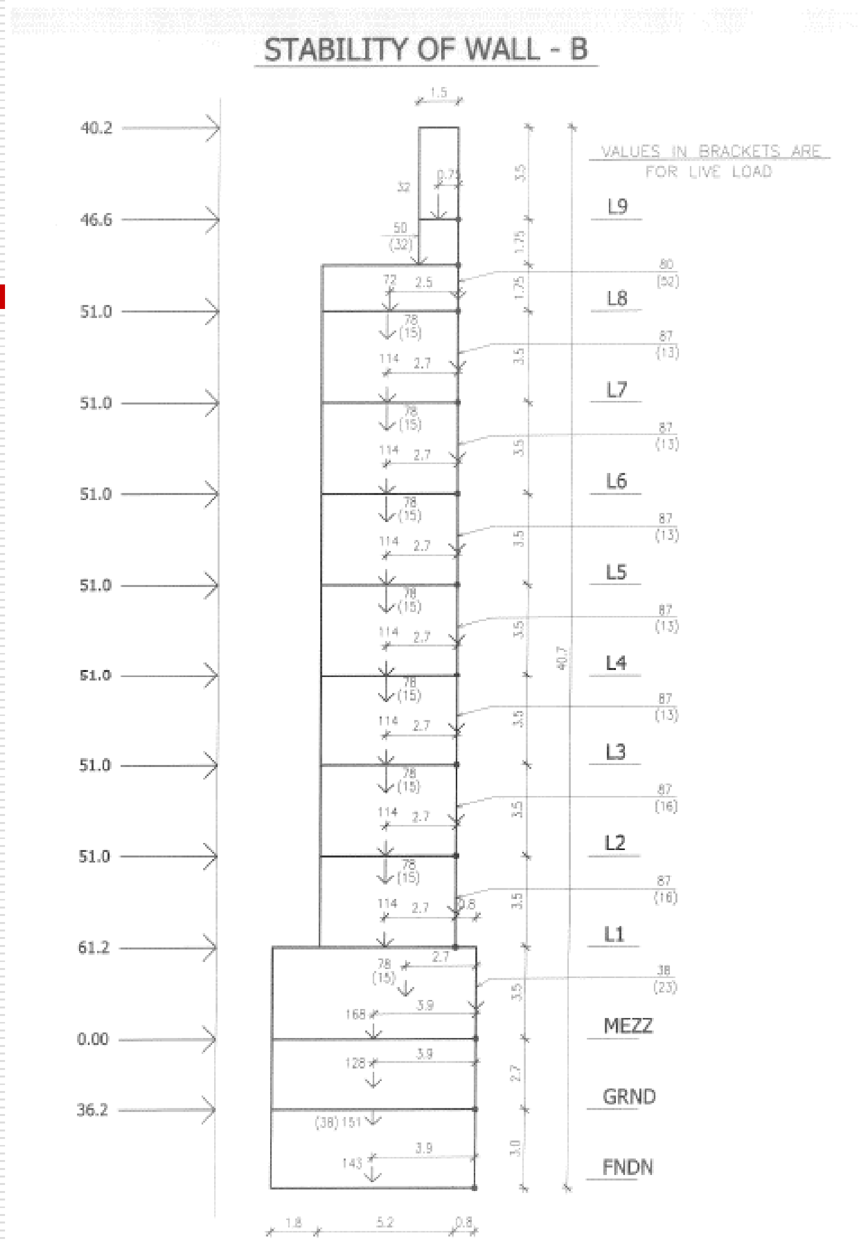


CONNECTION FOR WALL TO WALL AND SLAB

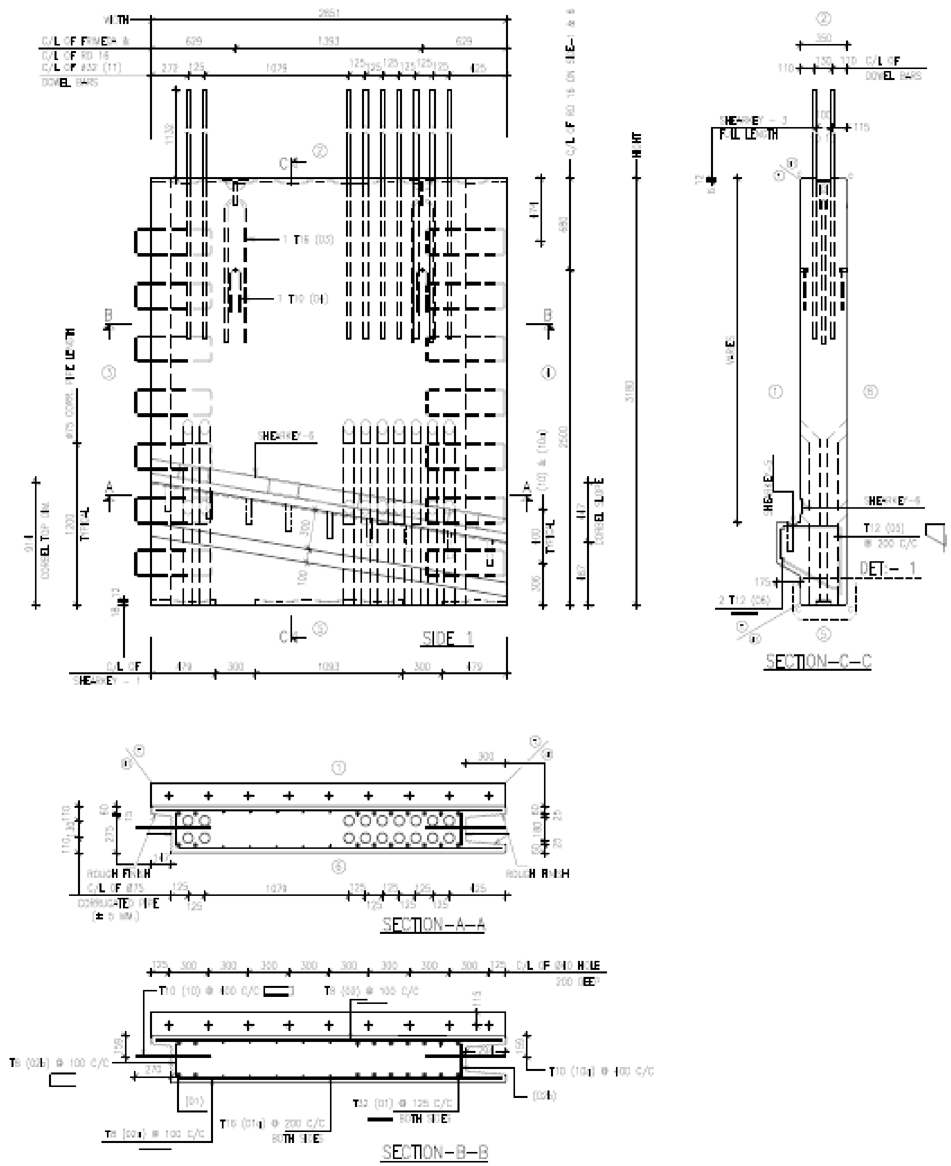
ERECTION DETAILS



CONNECTION BETWEEN WALL TO WALL



CALCULATION MODEL FOR STABILITY



TYPICAL SHEAR WALL

COMPLETED STRUCTURE

The method used to resist lateral forces;

- ✓Cantilever column for low-rise building
- ✓Shear wall
- ✓Steel or concrete X-bracing
- ✓Moment resisting frames

3.5 Shear Wall Systems

3.5.1 Introduction

Buildings which use shear walls as the lateral force resisting system provide a safe, serviceable and economical solution for wind and earthquake resistance. Shear walls make up most common lateral force resisting systems in the precast, prestressed concrete industry. The excellent performance of shear wall buildings throughout the world, that have been subjected to earthquakes, testifies to the effectiveness of this system. Experience in earthquakes worldwide shows that, in many cases, shear wall buildings continue to be used with full functions after an earthquake. The design of these buildings has typically followed principles used for cast-in-place structures, with modifications made as appropriate for the jointed nature of a precast concrete structural system. Design methods used to achieve successful performance of precast shear wall structures have been largely left to the ingenuity and judgment of the been largely left to the ingenuity and judgment of the design engineer. Observations of performance of structures in earthquakes show that where adequate strength and stiffness were provided to limit interstory drift to about 2%, the resulting displacements and damage were within acceptable levels. In regions of low and moderate seismicity, dry connections with small grout joints are generally used. In regions of high seismicity, connections to the foundation, and connections between precast walls, generally use details which emulate cast-in-place behavior (Section 3.1.2.1) and may include

1. Development of shear wall system

- ✓Provide at least three non-collinear walls to ensure torsional as well as direct lateral resistance.
- ✓Overturning will often be the governing criterion. Thus, the first choice is to use shear walls that also function as bearing walls.
- ✓Arrange shear walls so that they minimize restraint due to volume changes.
- ✓Consider whether the shear walls could be individual full height walls (vertical joints only).
- ✓Consider the practicality of shipping and erection when selecting the size of wall panels.

2. Determination of vertical and lateral loads.

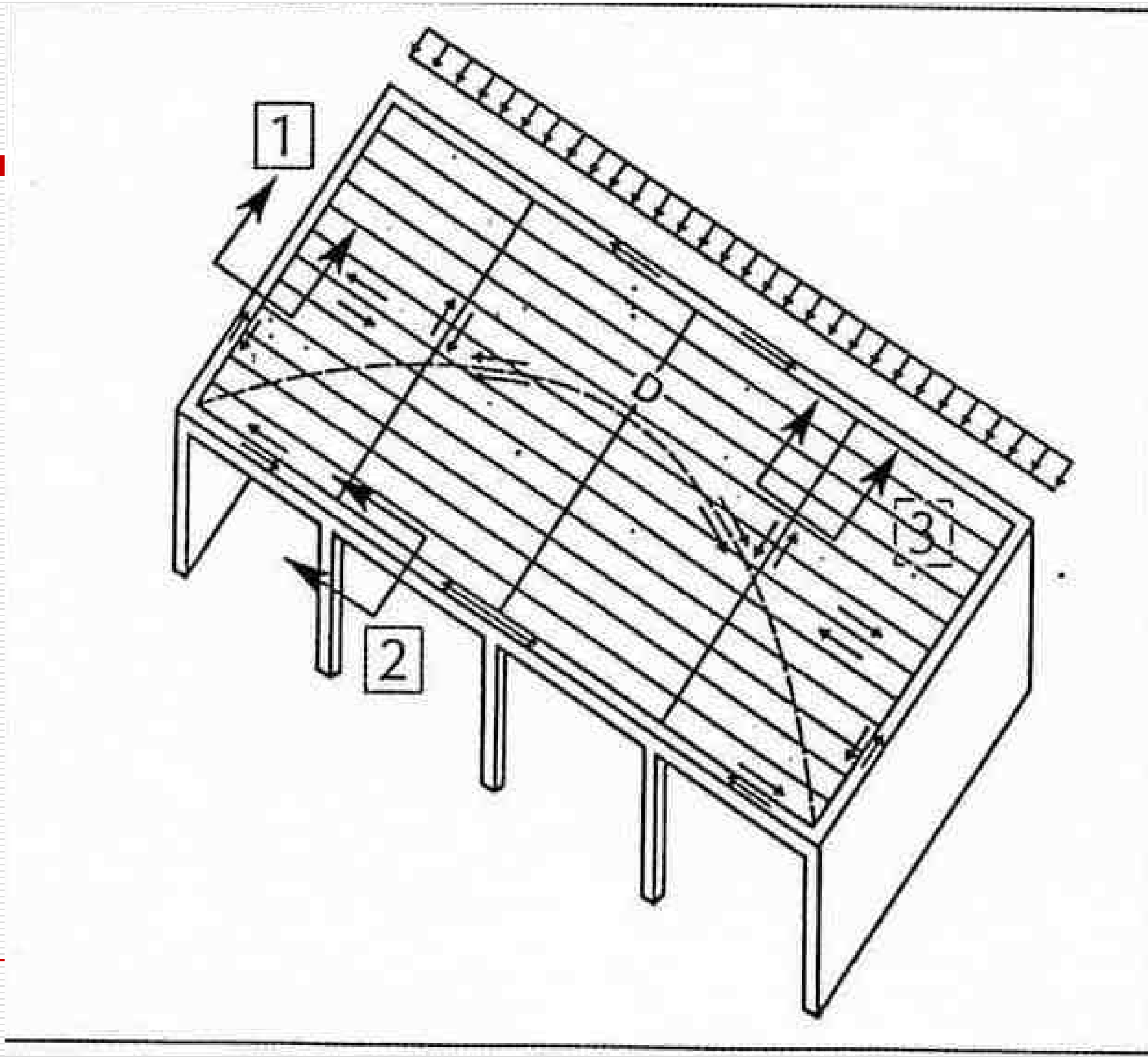
- ✓Determines the vertical gravity loads that are applicable to each of the shear walls.

- ✓Use the applicable seismic design criteria to determine the magnitude of lateral load at each floor, and compare with wind loading and lateral load induced by its own weight. Choose the critical conditions for design.

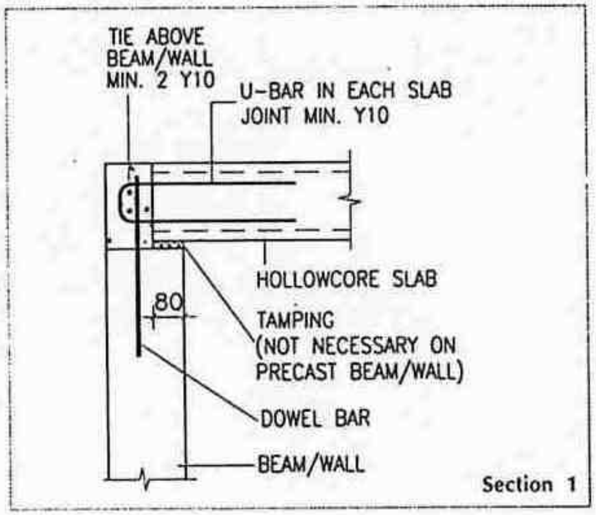
3. Diaphragm design

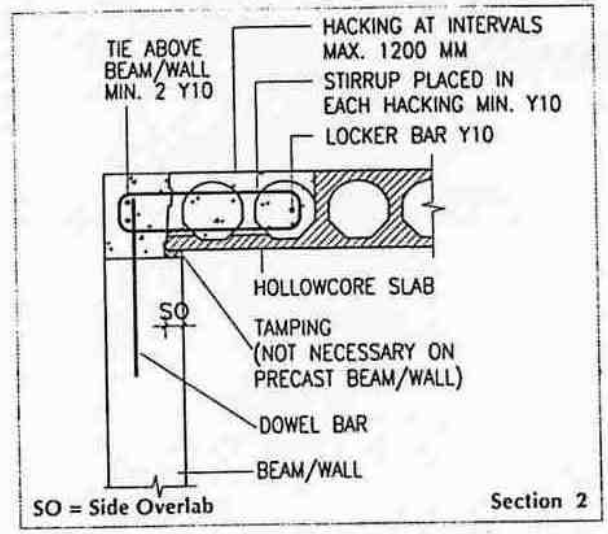
- ✓Design the diaphragms to respond elastically to applied lateral loads in order to prevent formation of plastic regions in any diaphragm.

- ✓Design the diaphragms as beams, provide the necessary tensile reinforcement, for each chord, and choose shear connectors . The diaphragms are flexible when leteral deflection is more than twice storey drift.

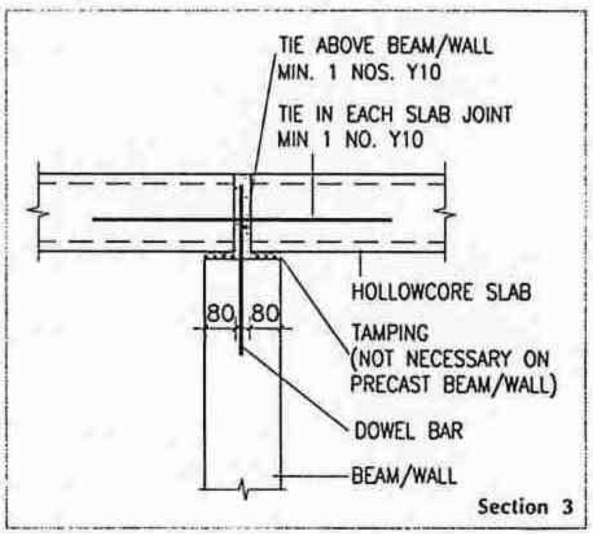

1
2
3
D

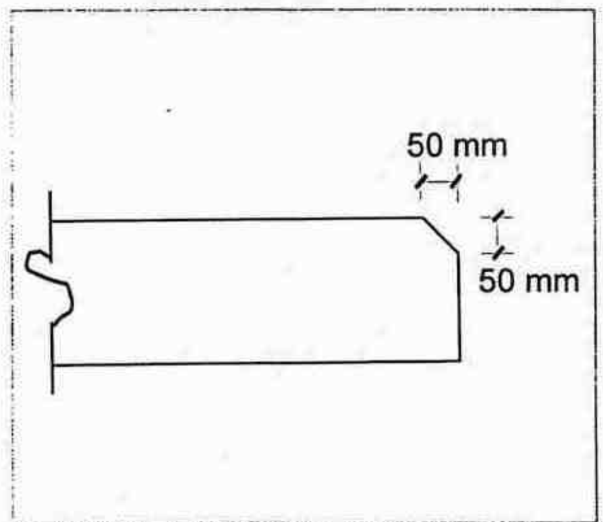
3·14·2





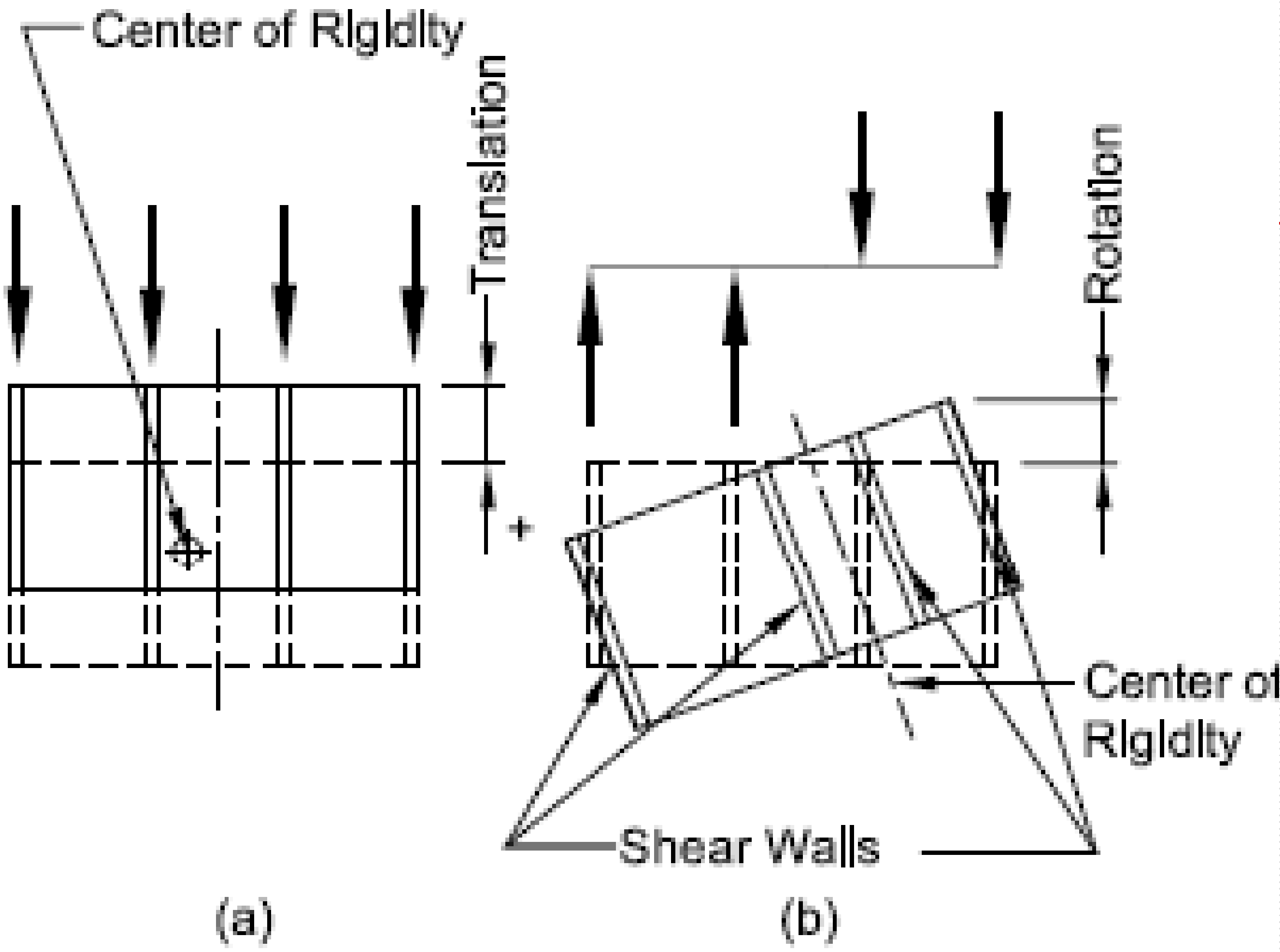
Standard Side Hacking Detail



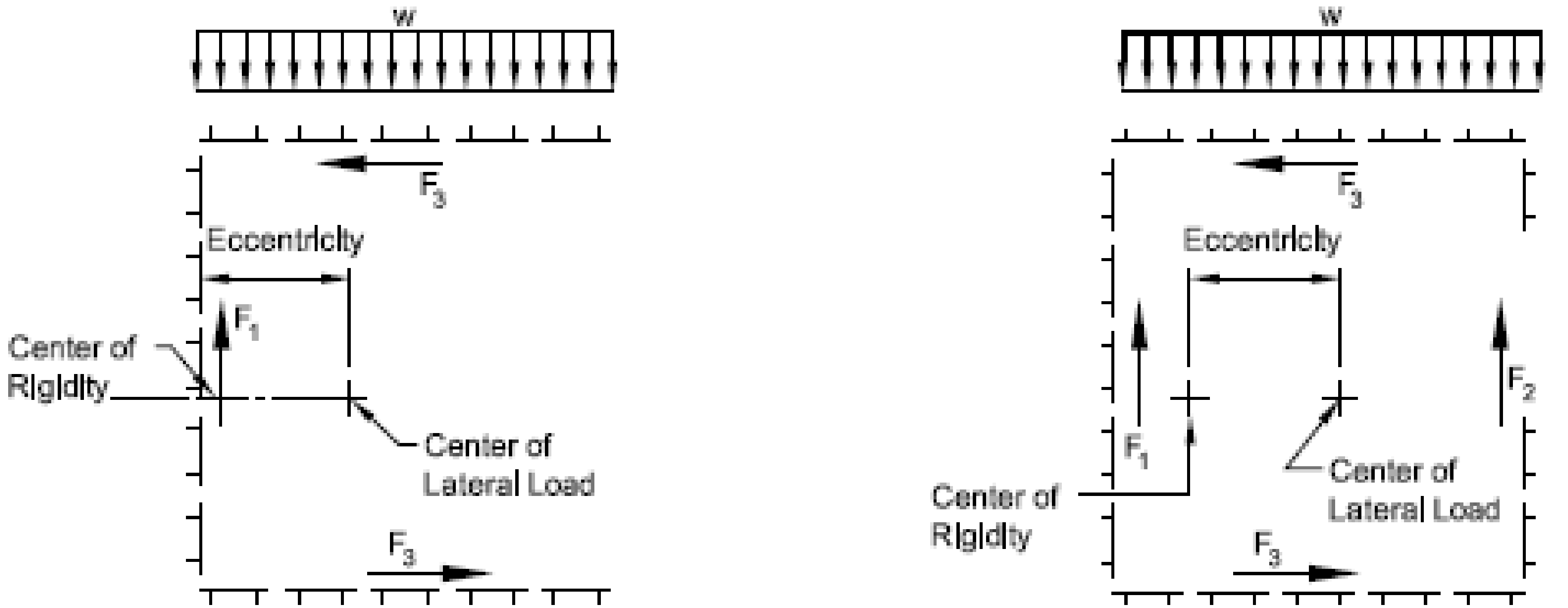


Standard End Recess

Minimum reinforcement is to be provided always as per FIB.



Translation and rotation of rigid diaphragms



(a) Frequently Occurs In Large Buildings
with Large Expansion Joints

(b) Frequently Occurs In Buildings
with Large Door Openings

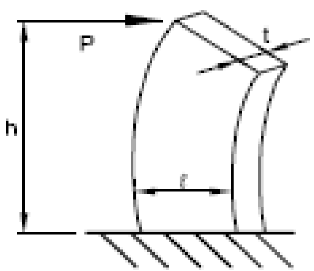
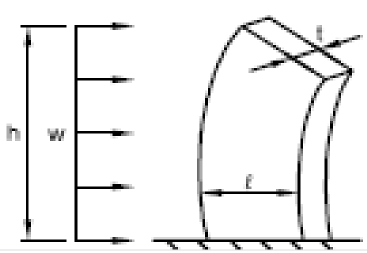
Unsymmetrical shear walls

1.Stiffness Analysis

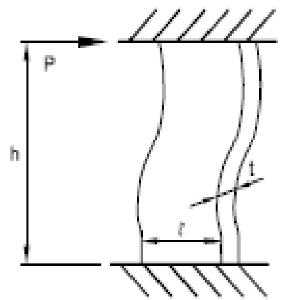
- ✓For a structure with rectangular shear walls of the same material, with a wall height-to-length ratio of less than about 0.3, the flexural stiffness can be neglected, and the distribution made in accordance with the cross-sectional area of the walls. If the height-to-length ratio is greater than about 3.0, the shear stiffness can be neglected, and the distribution made in accordance with the moments of inertia, based on the plan dimensions of the wall.

- ✓When the height-to-length ratio is between 0.3 and 3.0, the effects of both shear and flexural deformations should be considered. In terms of stiffnesses:

Figure 3.10.26 Shear wall deflection

Case	Deflection Due to		Equivalent Moment of Inertia I_{eq}	
	Flexure	Shear	Single Story	Multi-Story
	$\frac{Ph^3}{3\,E\,I}$	$\frac{2.78Ph}{A_wE}$ $(A_w = \ell t)$	$\frac{I}{1+\frac{8.34I}{A_wh^2}}$	$\frac{I}{1+\frac{13.4I}{A_wh^2}}$
	$\frac{Wh^3}{8\,E\,I}$ $W = wh$	$\frac{1.39Wh}{A_wE}$ $W = wh$	NA	$\frac{I}{1+\frac{23.6I}{A_wh^2}}$

INERTIA CALCULATIONS

	$\frac{Ph^3}{12\,E\,I}$	$\frac{2.78Ph}{A_wE}$	$\frac{I}{1+\frac{33.4I}{A_wh^2}}$	NA

INERTIA CALCULATIONS

Force in the y-direction is distributed to a given wall at a given level due to an applied force in the y-direction at that level:

$$F_y = \frac{V_y K_y}{\Sigma K_y} + \frac{TV_y(x)K_y}{\Sigma K_y(x^2) + \Sigma K_x(y^2)} \qquad \text{(Eq. 3.5.7.2)}$$

Force in the x-direction is distributed to a given wall at a given level due to an applied force in the y-direction at that level:

$$F_x = \frac{TV_y(y)K_x}{\Sigma K_y(x^2) + \Sigma K_x(y^2)} \qquad \text{(Eq. 3.5.7.3)}$$

where:

V_y = lateral force at the level being considered

K_x, K_y = rigidity in the x- and y-directions, respectively, of the wall under consideration

FORCES CALCULATION

ΣK_x, ΣK_y = summation of rigidities of all walls at the level in the x- and y-directions, respectively

x = distance of the wall from the center of stiffness in the x-direction

y = distance of the wall from the center of stiffness in the y-direction

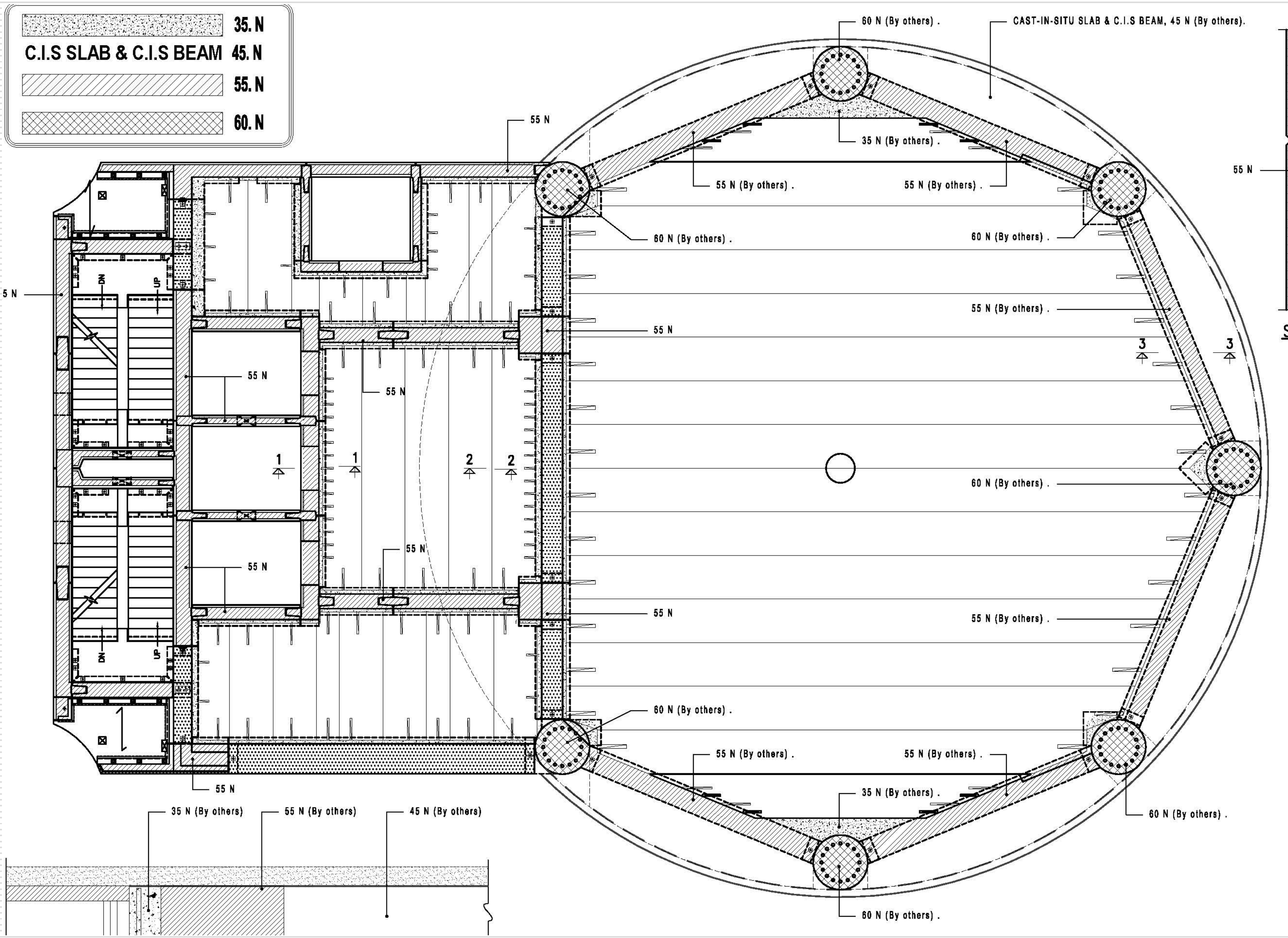
Figure 18: precast prototype at the end of the third test

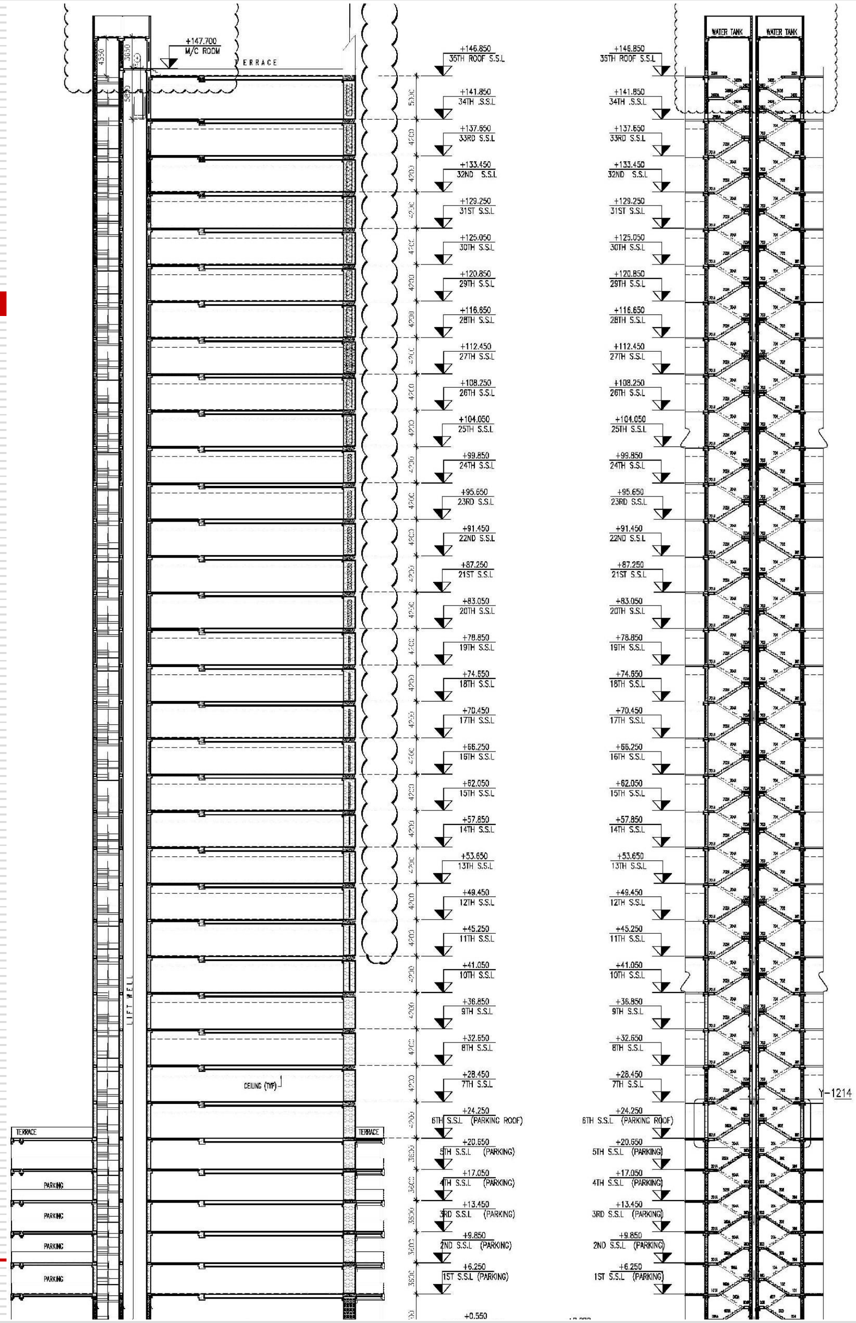
: cast-in-place prototype under maximum displacement attained during the third test

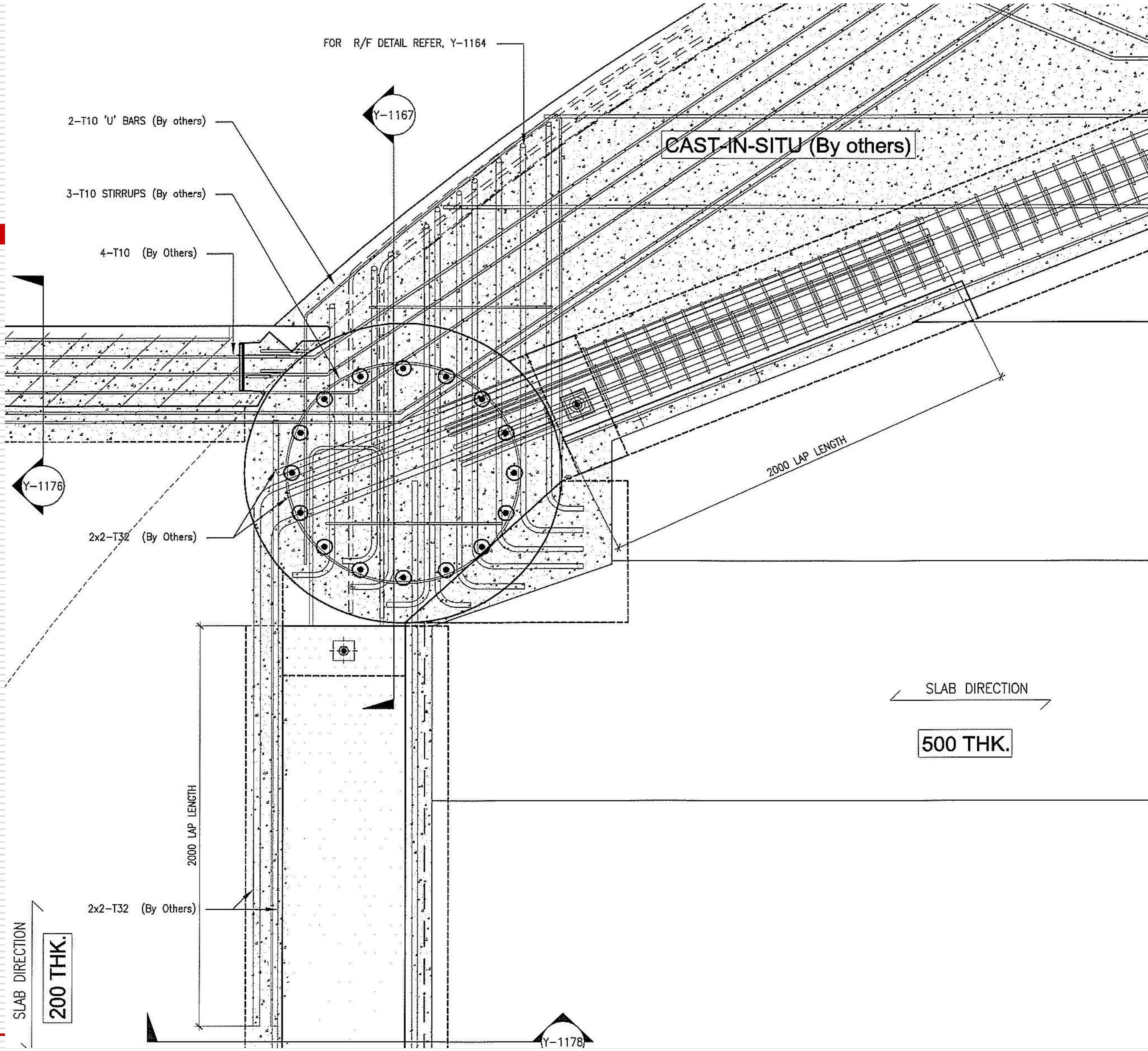
CONCLUSIONS

A prefabricated and a cast-in-place prototype of one storey reinforced concrete structures for industrial buildings have been submitted to pseudodynamic tests in order to assess their response under earthquake loading. Both structures were designed according to Eurocode 8 (draft May 2001) in order to withstand the same base shear force and assuming the same behaviour factor equal to $q = 4.95$. Results showed that precast concrete structures are able to resist to earthquake loading as reliably as analogous (in the sense above specified) cast-in place ones. Due to the cantilever behaviour of precast columns, their seismic resistance may only rely upon the flexural resistance of the bottom edge sections. By the way the energy dissipation in prefabricated columns occurs within a volume of material which is almost equal to that involved at top and bottom edge sections of cast-in-place columns designed to withstand the same base shear force. A further confirmation to these hypotheses, mainly to the true equivalence of the behaviour factor q, will come from currently undergoing analyses.

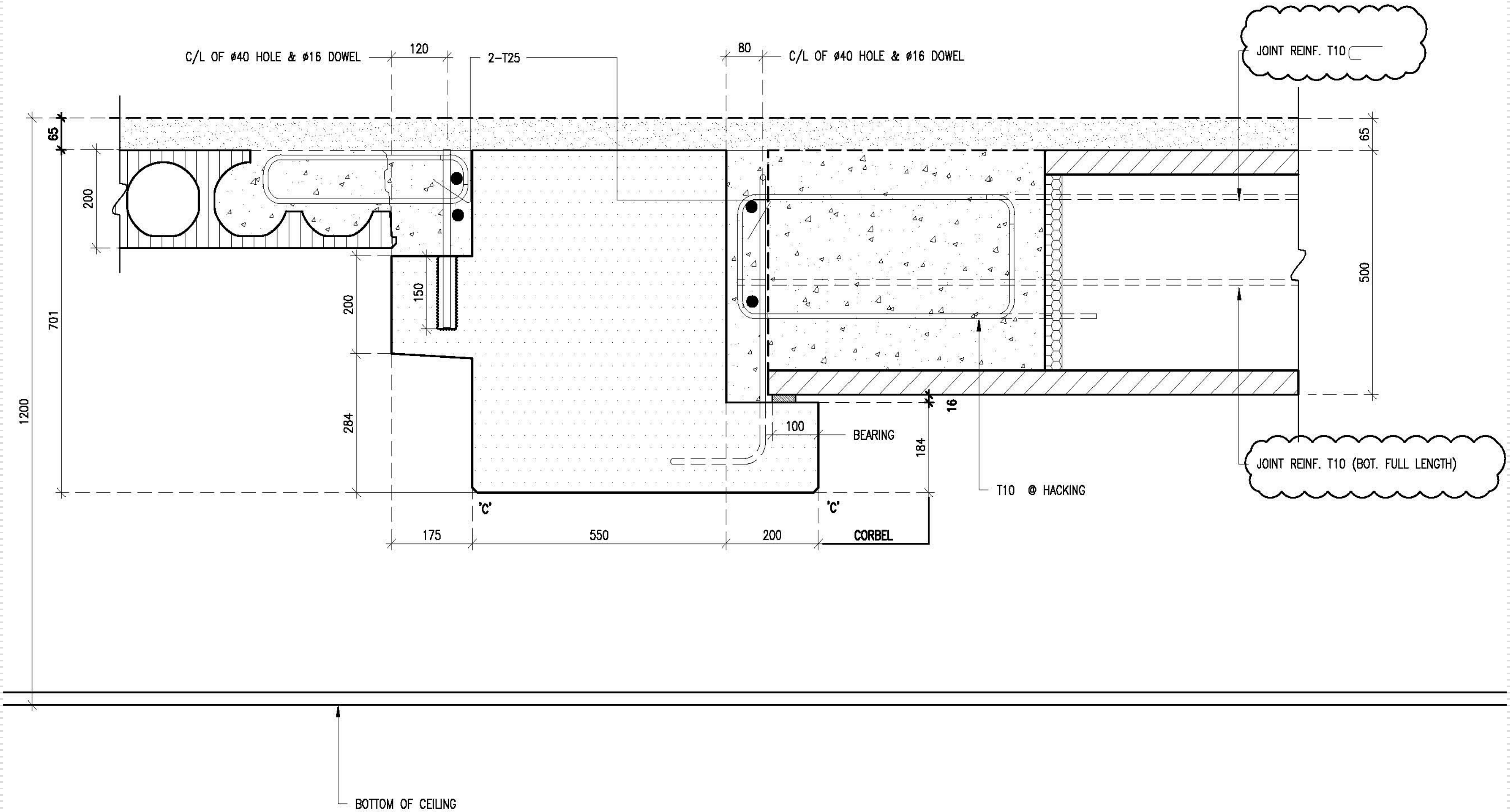
EXAMPLE-2 35-STOREY



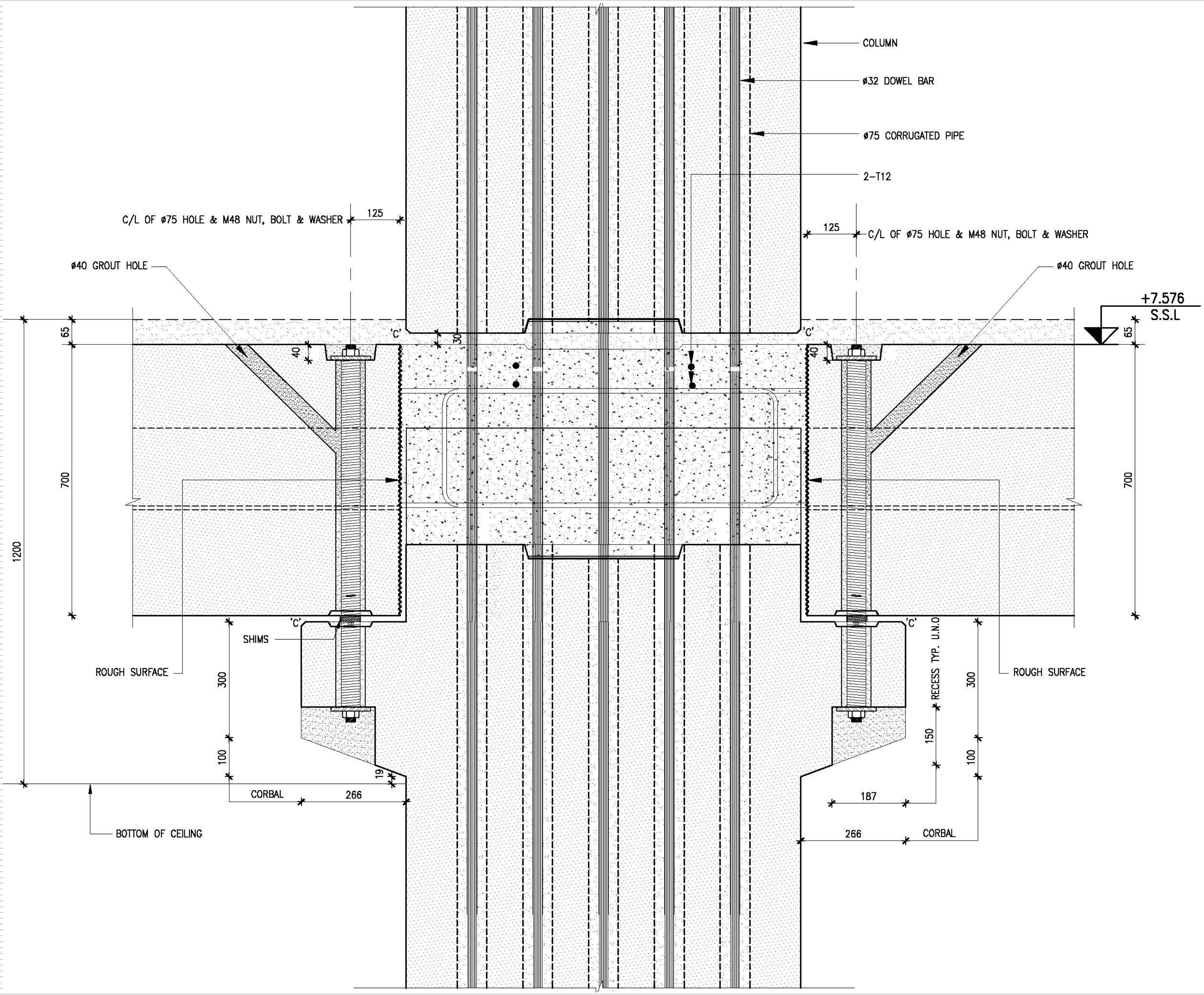

+147.700
M/C ROOM
+146.850
35TH ROOF S.S.L
+141.850
34TH S.S.L
+137.650
33RD S.S.L
+133.450
32ND S.S.L
+129.250
31ST S.S.L
+125.050
30TH S.S.L
+120.850
29TH S.S.L
+116.650
28TH S.S.L
+112.450
27TH S.S.L
+108.250
26TH S.S.L
+104.050
25TH S.S.L
+99.850
24TH S.S.L
+95.650
23RD S.S.L
+91.450
22ND S.S.L
+87.250
21ST S.S.L
+83.050
20TH S.S.L
+78.850
19TH S.S.L
+74.650
18TH S.S.L
+70.450
17TH S.S.L
+66.250
16TH S.S.L
+62.050
15TH S.S.L
+57.850
14TH S.S.L
+53.650
13TH S.S.L
+49.450
12TH S.S.L
+45.250
11TH S.S.L
+41.050
10TH S.S.L
+36.850
9TH S.S.L
+32.650
8TH S.S.L
+28.450
7TH S.S.L
+24.250
6TH S.S.L (PARKING ROOF)
+20.650
5TH S.S.L (PARKING)
+17.050
4TH S.S.L (PARKING)
+13.450
3RD S.S.L (PARKING)
+9.850
2ND S.S.L (PARKING)
+6.250
1ST S.S.L (PARKING)
+0.550
LIFT WELL
CEILING (TYP)
TERRACE
PARKING
WATER TANK
Y-1214



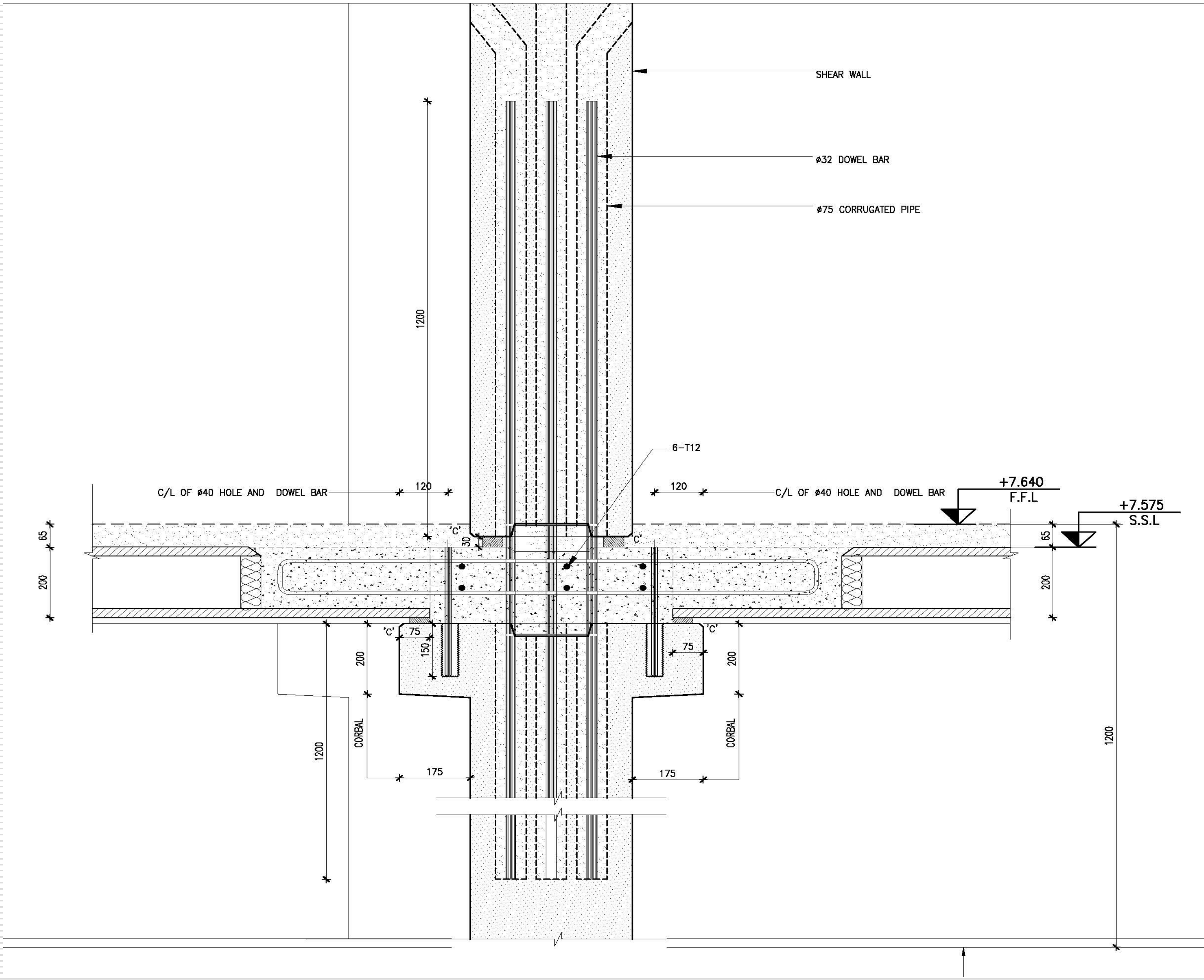
FOR R/F DETAIL REFER, Y-1164
Y-1167
2-T10 'U' BARS (By others)
3-T10 STIRRUPS (By others)
4-T10 (By Others)
CAST-IN-SITU (By others)
Y-1176
2x2-T32 (By Others)
2000 LAP LENGTH
SLAB DIRECTION
500 THK.
2000 LAP LENGTH
2x2-T32 (By Others)
SLAB DIRECTION
200 THK.
Y-1178



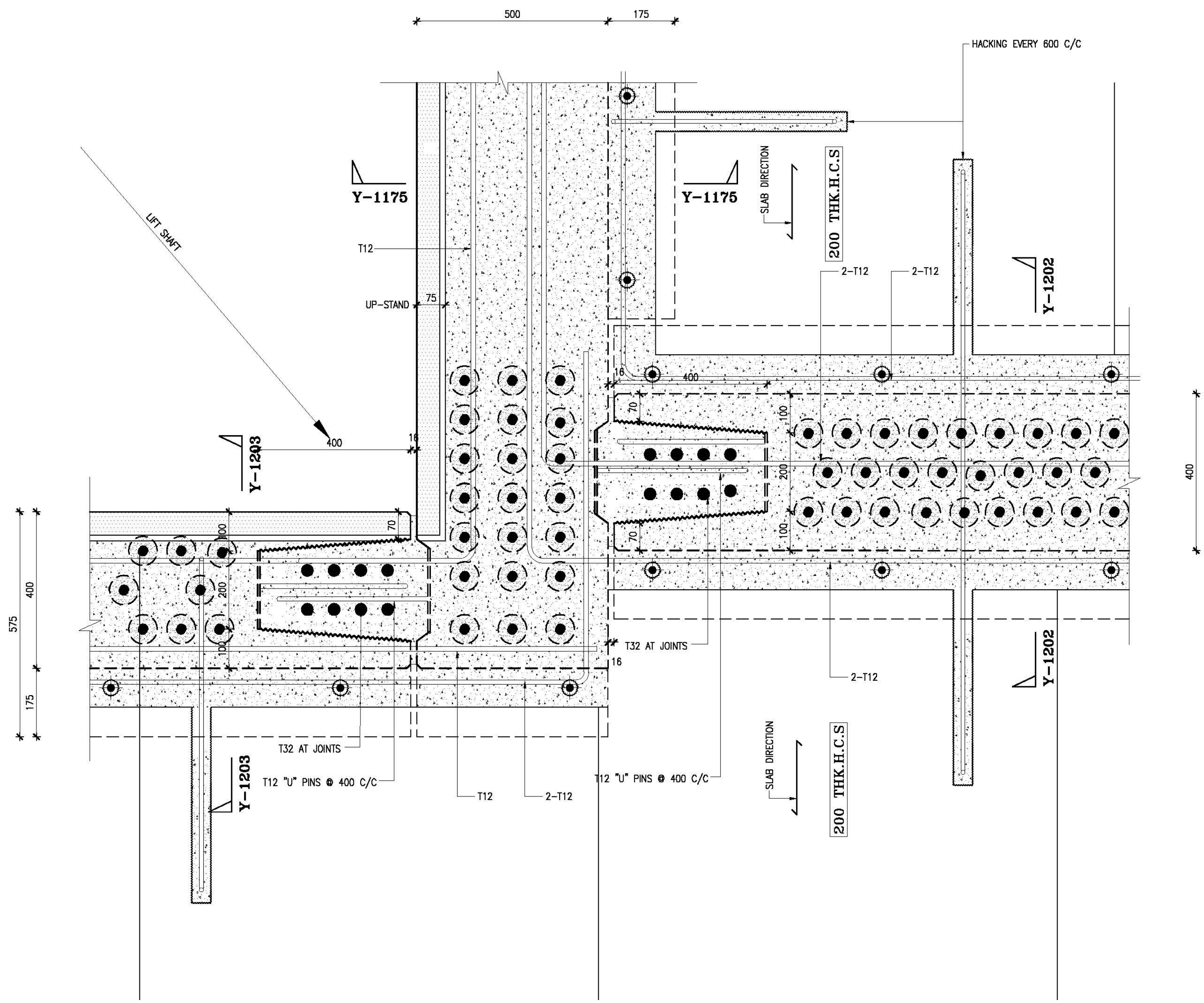
C/L OF ø40 HOLE & ø16 DOWEL
120
2-T25
80
C/L OF ø40 HOLE & ø16 DOWEL
JOINT REINF. T10
65
200
150
200
701
1200
284
65
500
16
100
BEARING
184
T10 @ HACKING
JOINT REINF. T10 (BOT. FULL LENGTH)
'C'
'C'
175
550
200
CORBEL
BOTTOM OF CEILING

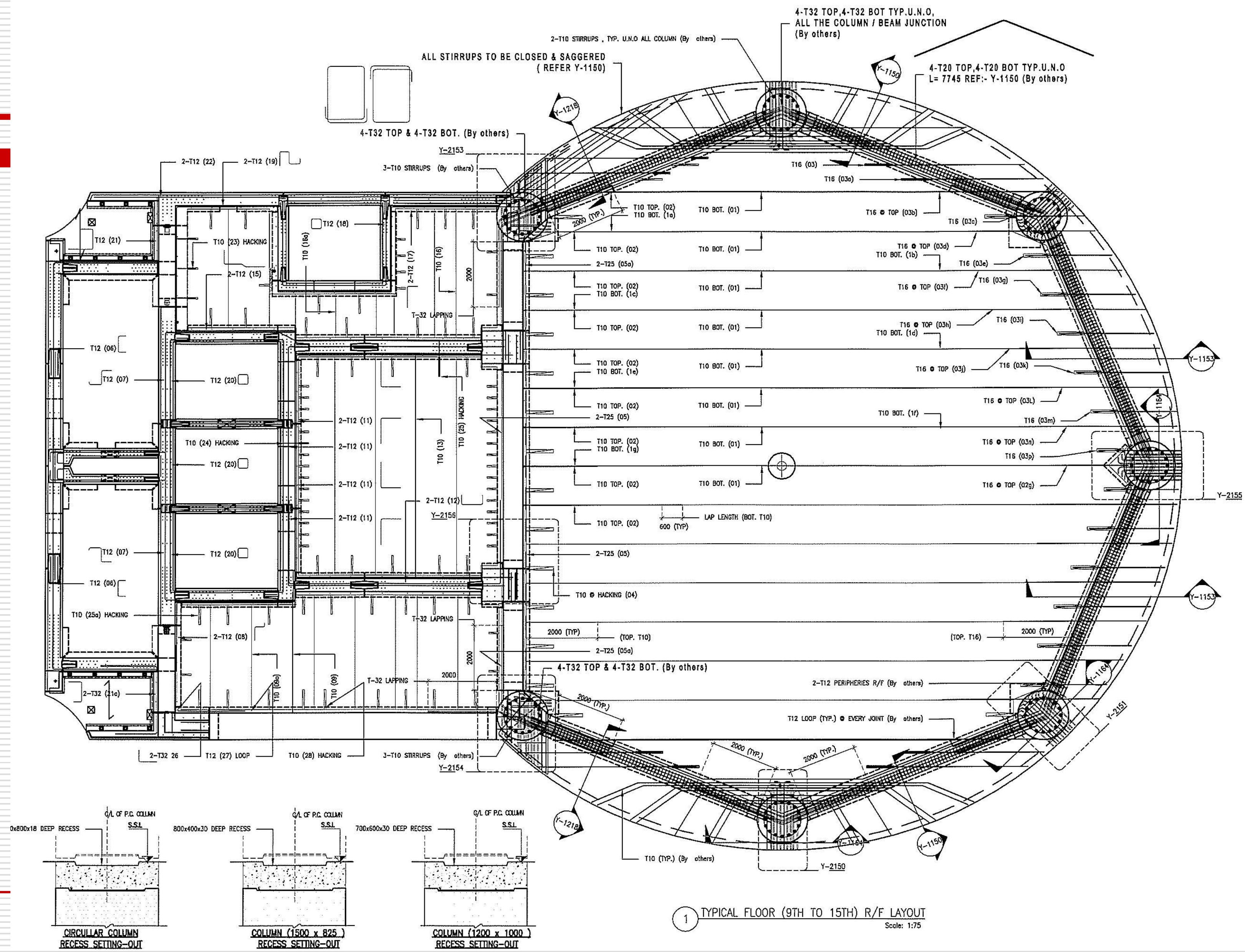


COLUMN
ø32 DOWEL BAR
ø75 CORRUGATED PIPE
2-T12
C/L OF ø75 HOLE & M48 NUT, BOLT & WASHER
125
ø40 GROUT HOLE
+7.576
S.S.L
65
40
30
'C'
700
1200
SHIMS
ROUGH SURFACE
RECESS TYP. U.N.O
300
150
100
19
187
266
CORBAL
BOTTOM OF CEILING

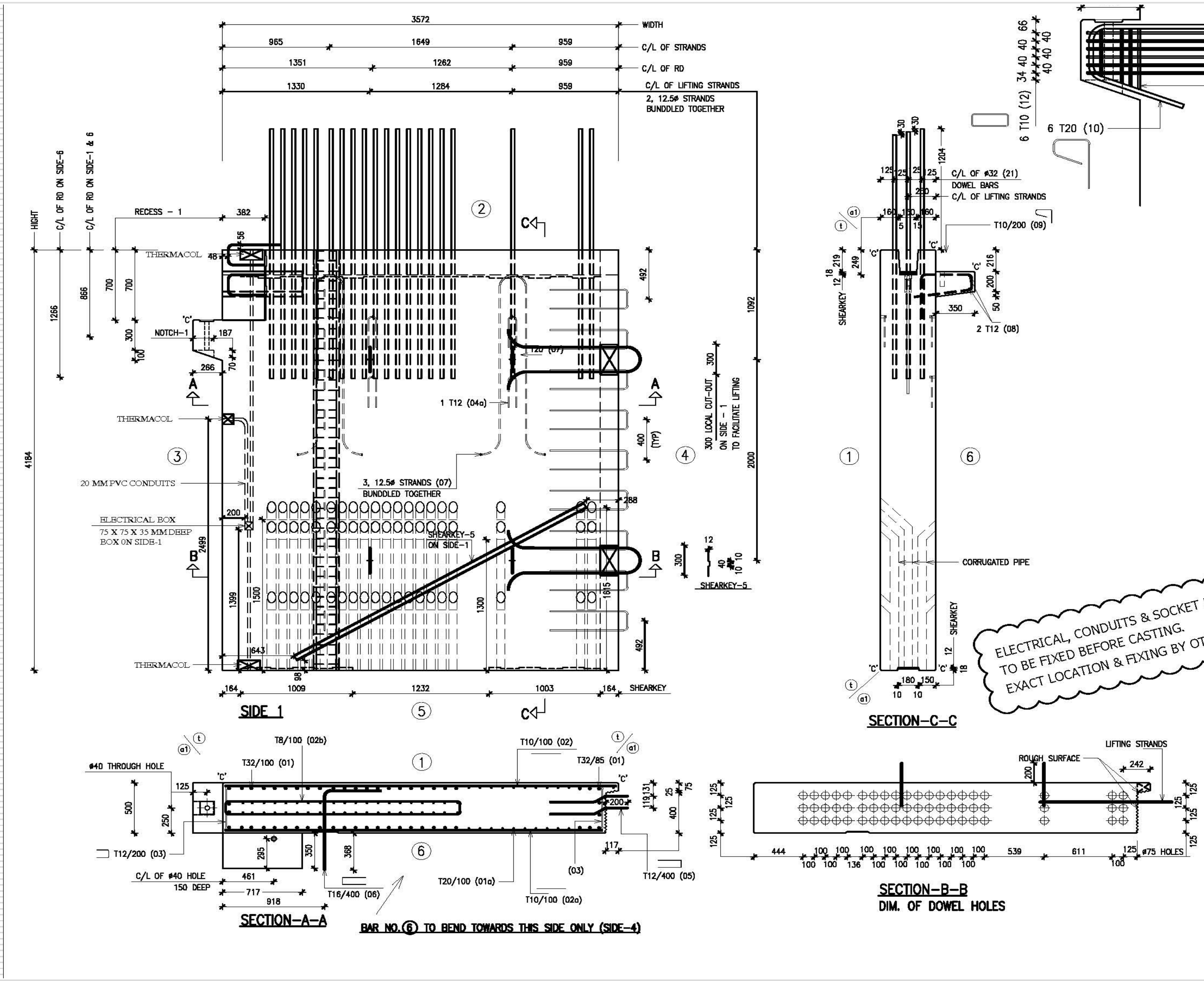


SHEAR WALL
ø32 DOWEL BAR
ø75 CORRUGATED PIPE
6-T12
C/L OF ø40 HOLE AND DOWEL BAR
120
120
C/L OF ø40 HOLE AND DOWEL BAR
+7.640
F.F.L
+7.575
S.S.L
1200
65
200
30
'C'
'C'
'C'
'C'
75
150
200
75
200
CORBAL
CORBAL
175
175
1200
1200
65
200


500
175
HACKING EVERY 600 C/C
Y-1175
Y-1175
SLAB DIRECTION
200 THK.H.C.S
LIFT SHAFT
T12
UP-STAND
75
2-T12
2-T12
Y-1202
16
400
70
100
200
100
400
Y-1203
400
16
575
400
175
70
100
200
100
T32 AT JOINTS
16
2-T12
Y-1202
T32 AT JOINTS
T12 "U" PINS @ 400 C/C
T12
2-T12
T12 "U" PINS @ 400 C/C
SLAB DIRECTION
200 THK.H.C.S
Y-1203



1 TYPICAL FLOOR (9TH TO 15TH) R/F LAYOUT
Scale: 1:75


SIDE 1
SECTION-A-A
BAR NO. 6 TO BEND TOWARDS THIS SIDE ONLY (SIDE-4)
SECTION-C-C
SECTION-B-B
DIM. OF DOWEL HOLES
ELECTRICAL, CONDUITS & SOCKET B
TO BE FIXED BEFORE CASTING.
EXACT LOCATION & FIXING BY OTH
WIDTH
C/L OF STRANDS
C/L OF RD
C/L OF LIFTING STRANDS
2, 12.5ø STRANDS BUNDDLED TOGETHER
RECESS - 1
THERMACOL
NOTCH-1
20 MM PVC CONDUITS
ELECTRICAL BOX 75 X 75 X 35 MM DEEP BOX ON SIDE-1
3, 12.5ø STRANDS (07) BUNDDLED TOGETHER
SHEARKEY-5 ON SIDE-1
300 LOCAL CUT-OUT ON SIDE - 1 TO FACILITATE LIFTING
CORRUGATED PIPE
C/L OF ø32 (21) DOWEL BARS
C/L OF LIFTING STRANDS
T10/200 (09)
2 T12 (08)
6 T20 (10)
6 T10 (12)
ø40 THROUGH HOLE
T8/100 (02b)
T32/100 (01)
T10/100 (02)
T32/85 (01)
T12/200 (03)
C/L OF ø40 HOLE 150 DEEP
T16/400 (06)
T20/100 (01a)
T10/100 (02a)
T12/400 (05)
ROUGH SURFACE
LIFTING STRANDS
ø75 HOLES


2013/03/14

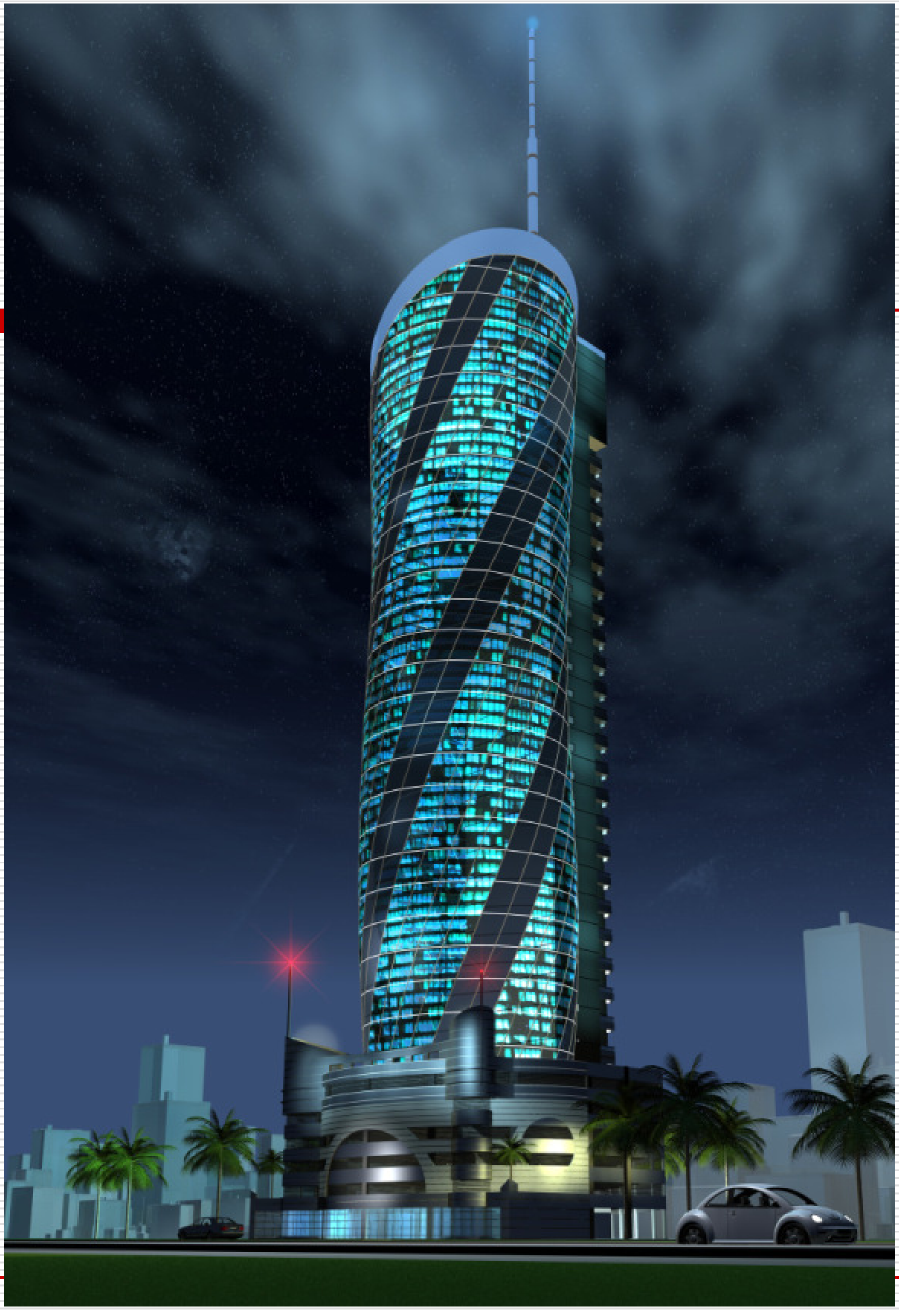

24
Bahrain
Precast
Concrete
2013/02/09


Bahrain
Precast
Concrete


2013/03/13


2010/4/21 10:53


BPC



35 Storey on completion

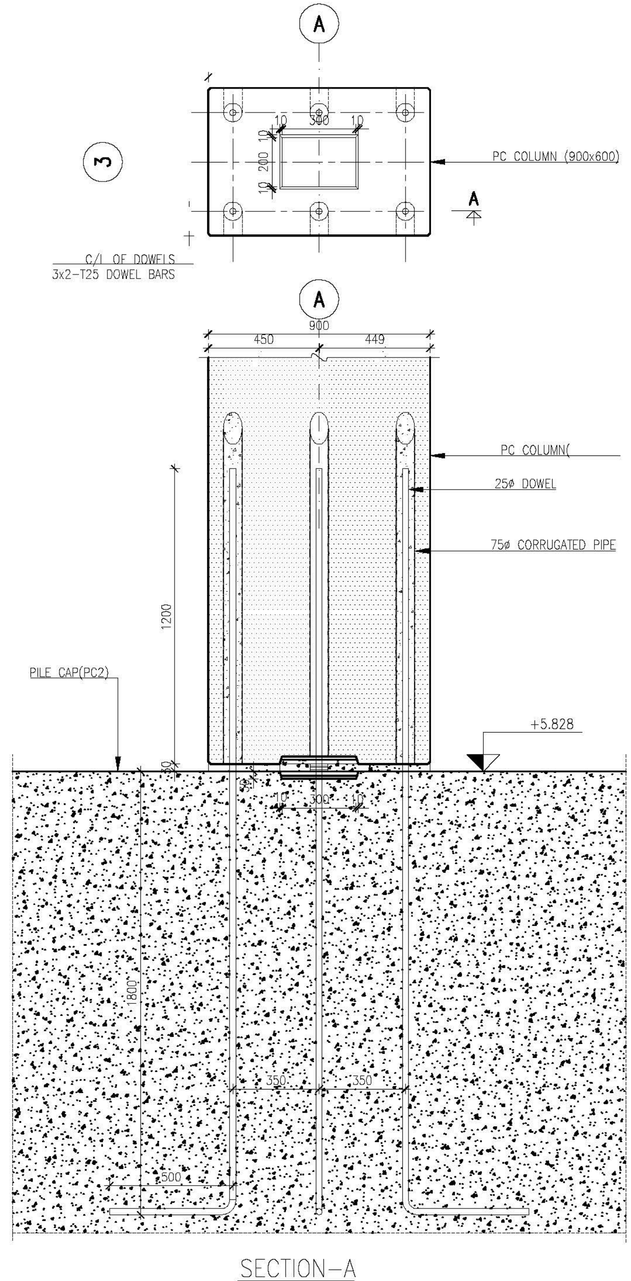

2008/3/10 10:38


Loose Dowels for connection between top and bottom shear walls
shear keys, both top and bottom of walls
2010/4/1 10:14


OFFICES
TO LET
CLUTTONS
1756 2860
MS CENTRE


Beams and slabs for sloping car Ramp
joint r/f in slabs, hacked in factory
2010/3/29 10:28


DG



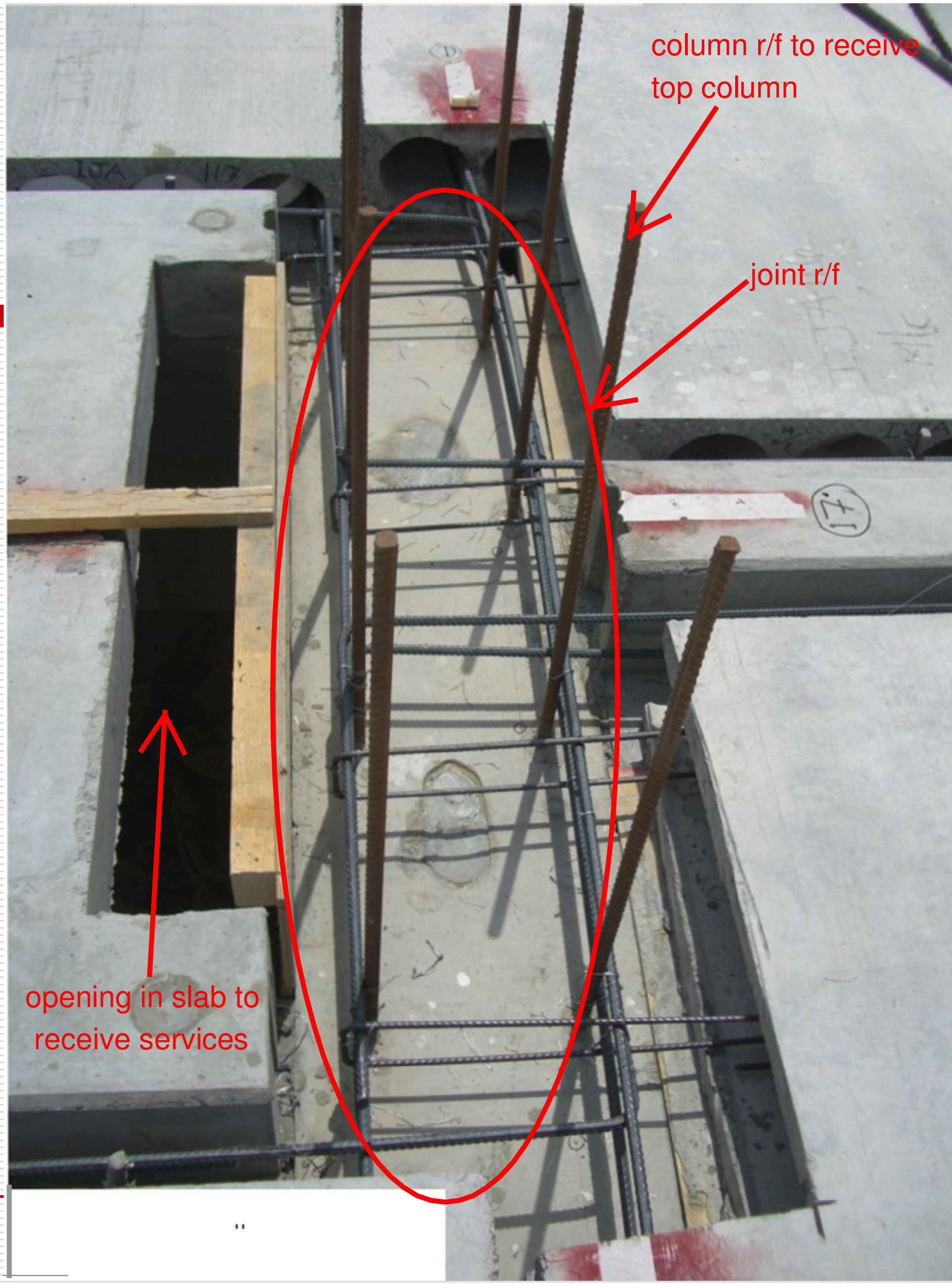
Column to Foundation Detail


column dowels cast
on pile caps
2010/2/1 11:27

Columns in erection on dowels cast in pile cap

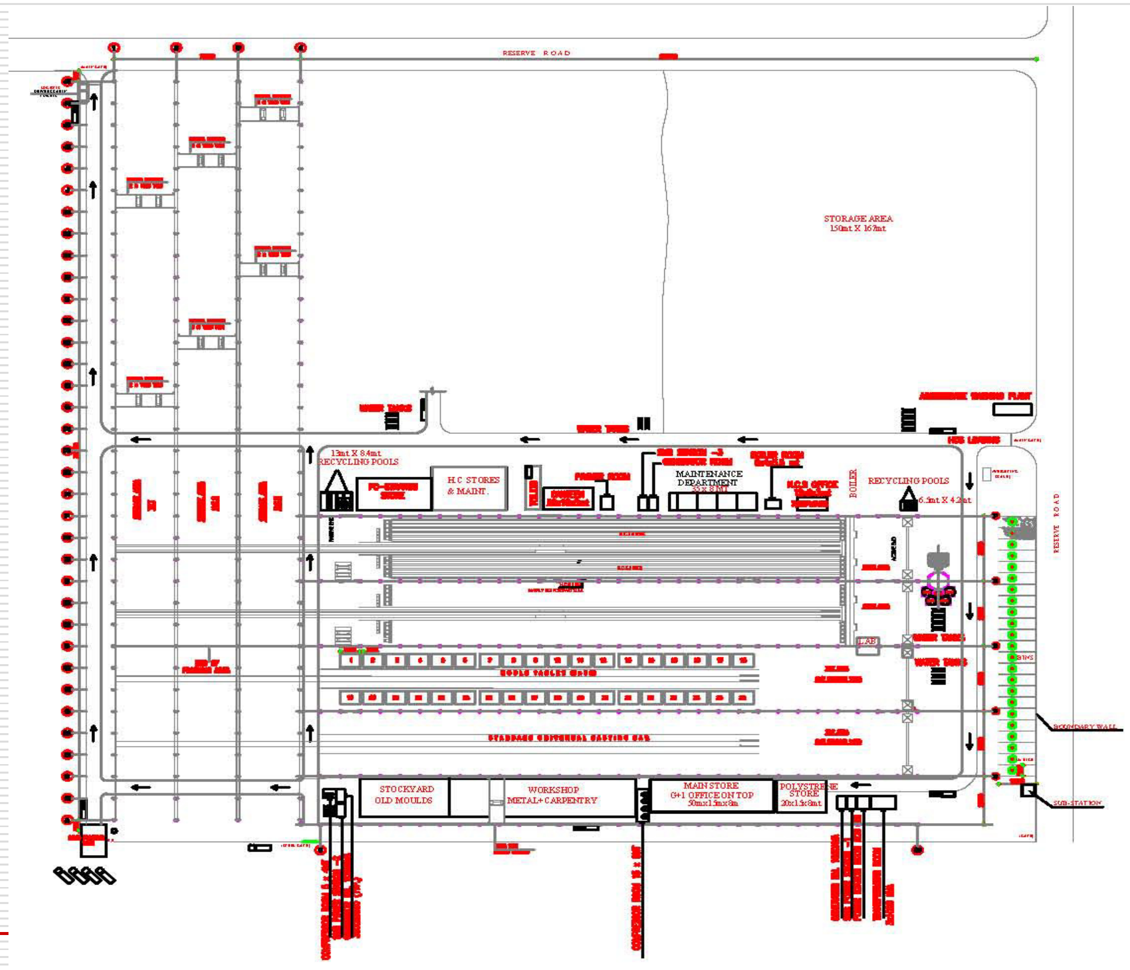

Three Floor height columns

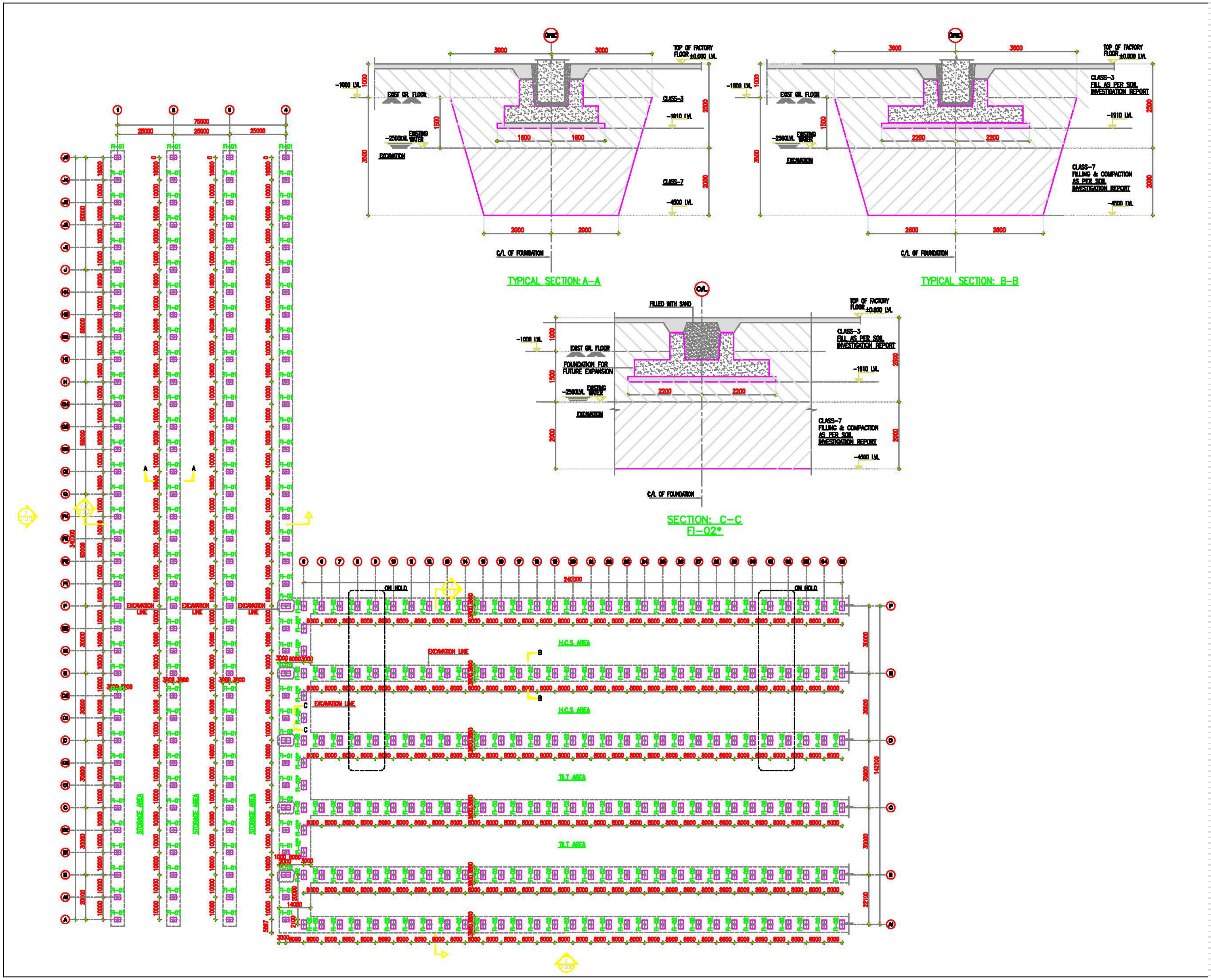

open internal construction
external column beam construction
to receive load bearing panels above
2007/8/12 11:18

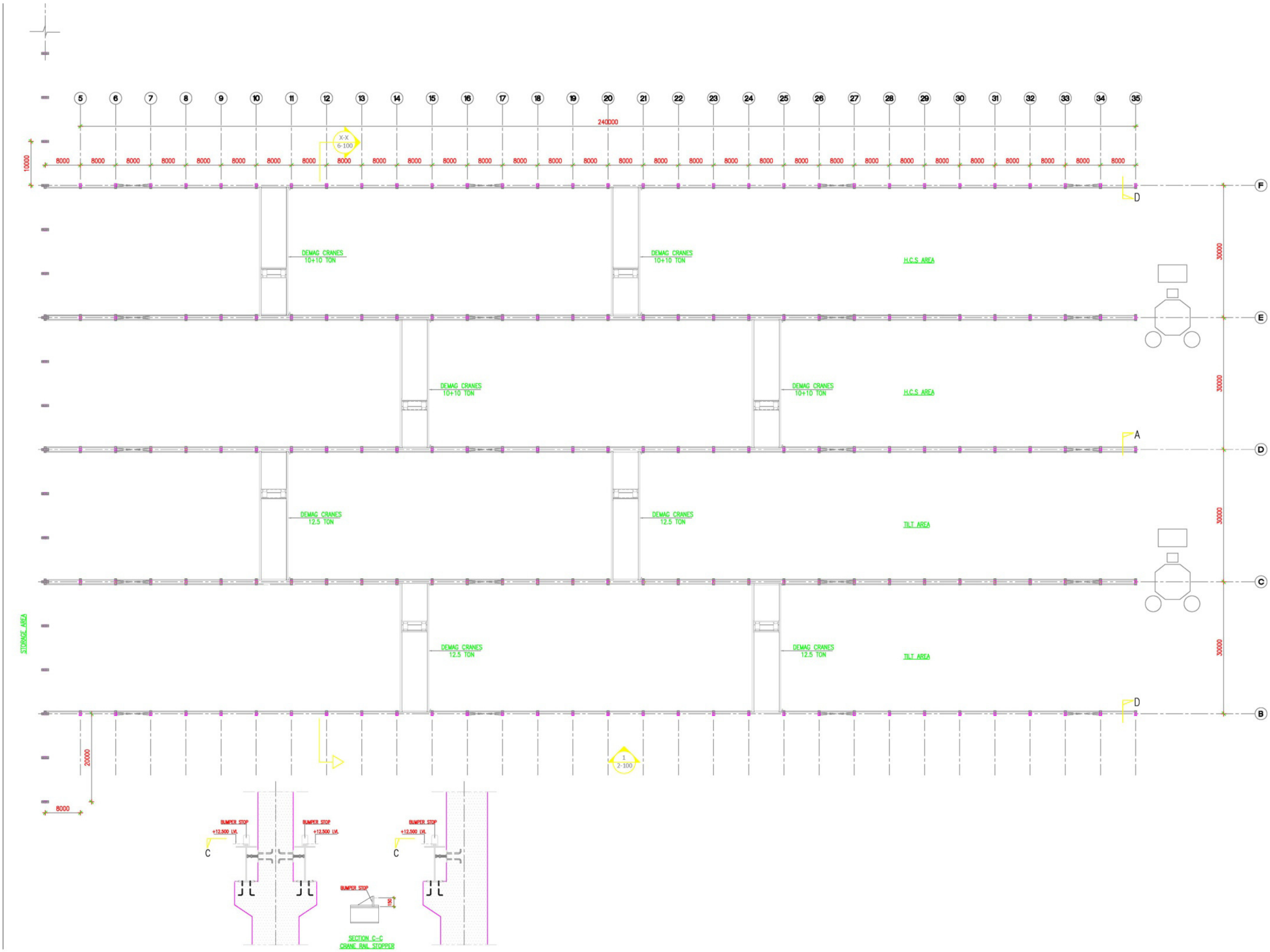

column r/f to receive
top column
joint r/f
opening in slab to
receive services

PRECAST FACTORIES

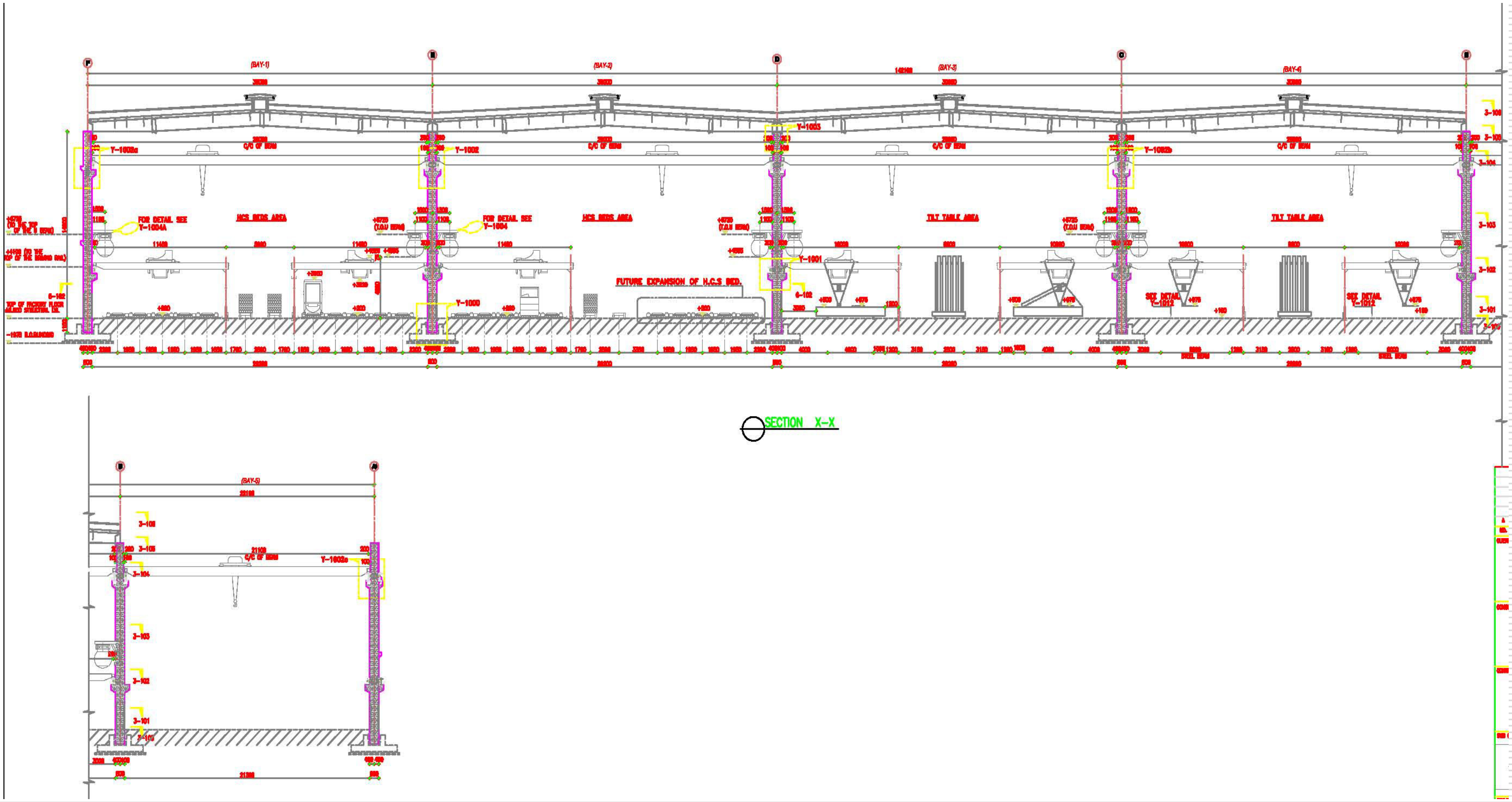
- .



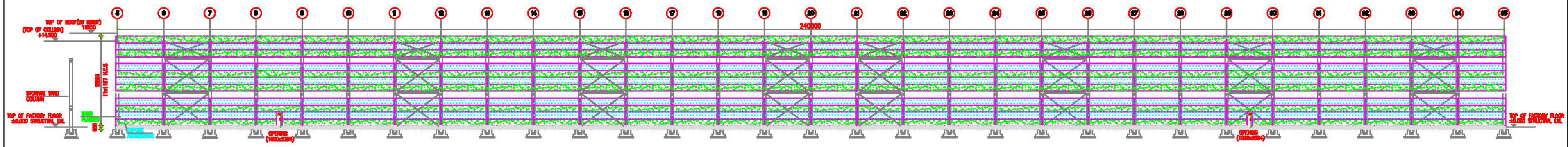

TOP OF FACTORY FLOOR ±0.000 LVL
-1000 LVL
EXIST GR. FLOOR
CLASS-3
-1910 LVL
-2500LVL EXISTING WATER
EXCAVATION
CLASS-7
-4500 LVL
C/L OF FOUNDATION
TYPICAL SECTION: A-A
CLASS-3 FILL AS PER SOIL INVESTIGATION REPORT
CLASS-7 FILLING & COMPACTION AS PER SOIL INVESTIGATION REPORT
TYPICAL SECTION: B-B
FILLED WITH SAND
FOUNDATION FOR FUTURE EXPANSION
SECTION: C-C
FI-02*
EXCAVATION LINE
ON HOLD
H.C.S AREA
TILT AREA
STORAGE AREA

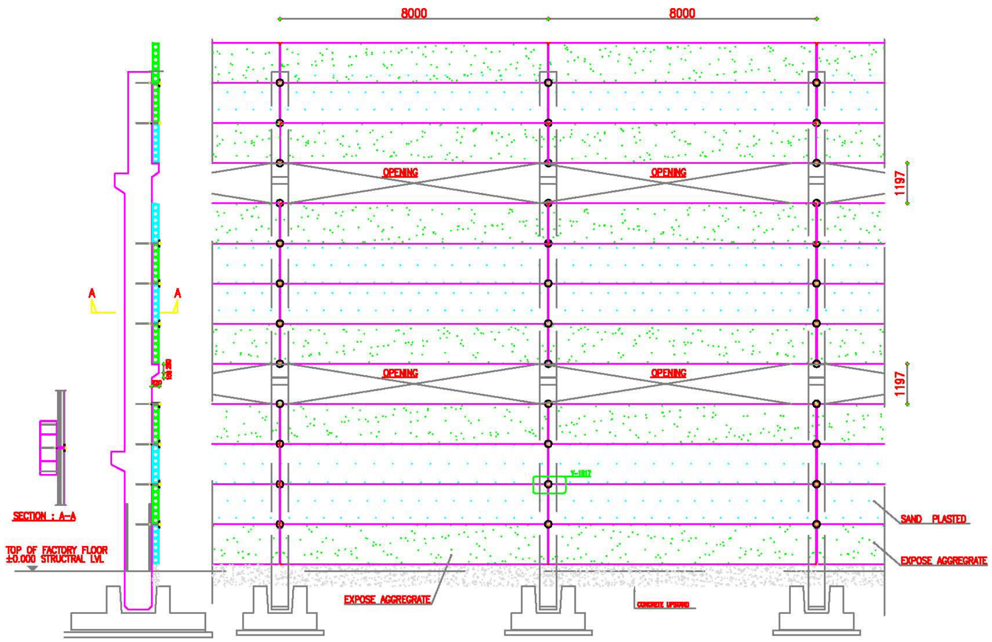


5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
240000
8000
10000
X-X
6-100
F
E
D
C
B
A
DEMAG CRANES
10+10 TON
DEMAG CRANES
12.5 TON
H.C.S AREA
TILT AREA
STORAGE AREA
30000
20000
1
2-100
BUMPER STOP
+12,500 LVL
150
SECTION C-C
CRANE RAIL STOPPER


(BAY-1)
(BAY-2)
(BAY-3)
(BAY-4)
(BAY-5)
HCS BEDS AREA
HCS BEDS AREA
TILT TABLE AREA
TILT TABLE AREA
FUTURE EXPANSION OF H.C.S BED.
FOR DETAIL SEE Y-1004A
FOR DETAIL SEE Y-1004
Y-1002
Y-1003
Y-1001
Y-1000
C/C OF BEAM
SEE DETAIL Y-1012

SECTION X-X





TYPICAL ELEVATION DETAIL

NO.	REVISIONS	DATE	APP.

CLIENT

CONSULTANT

CONTRACTOR

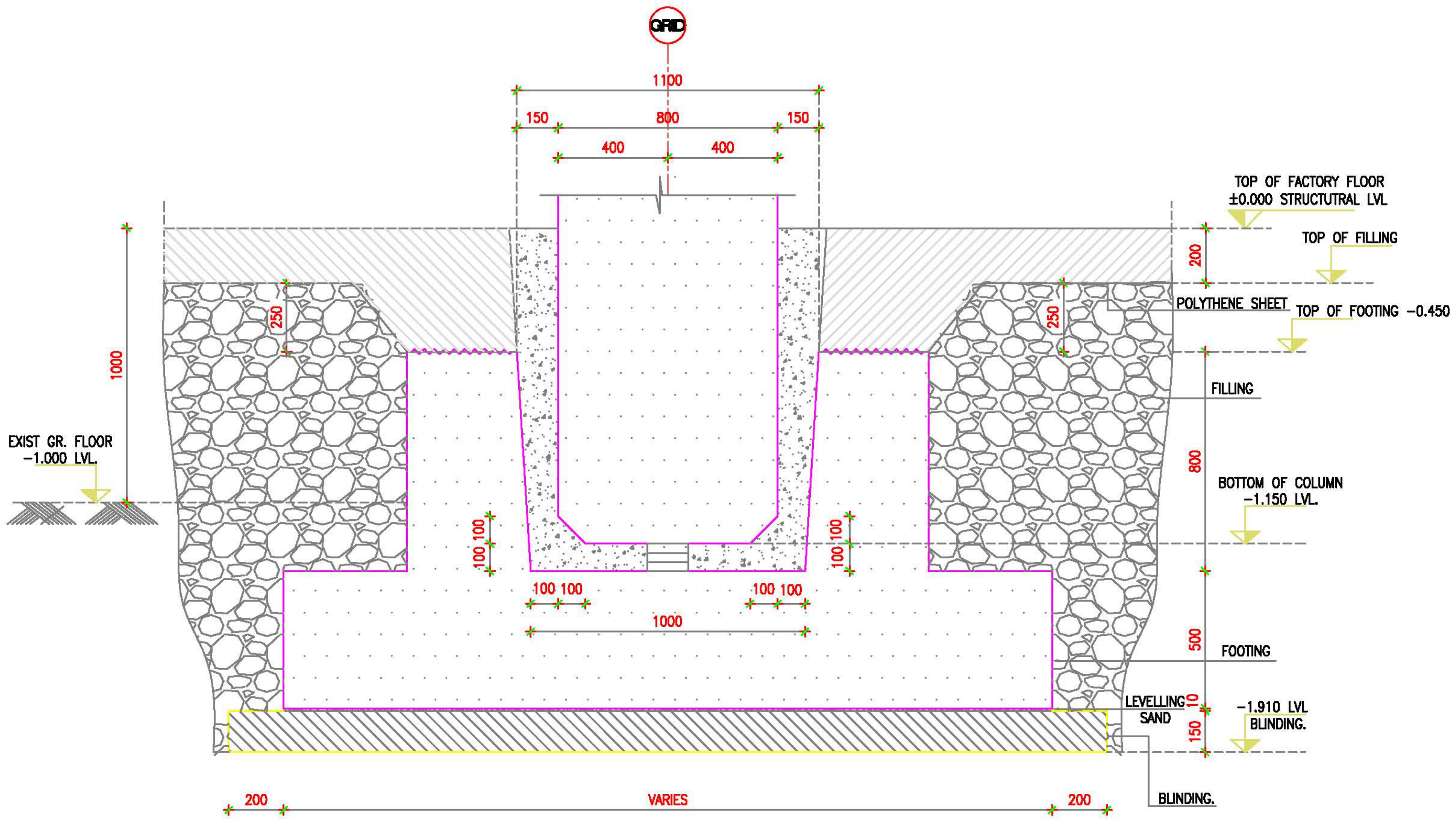
SUB CONTRACTOR

BAHRAIN PRECAST CONCRETE CO. W.L.L.
Email: bpc@bpc.bh, www.bpc.bh

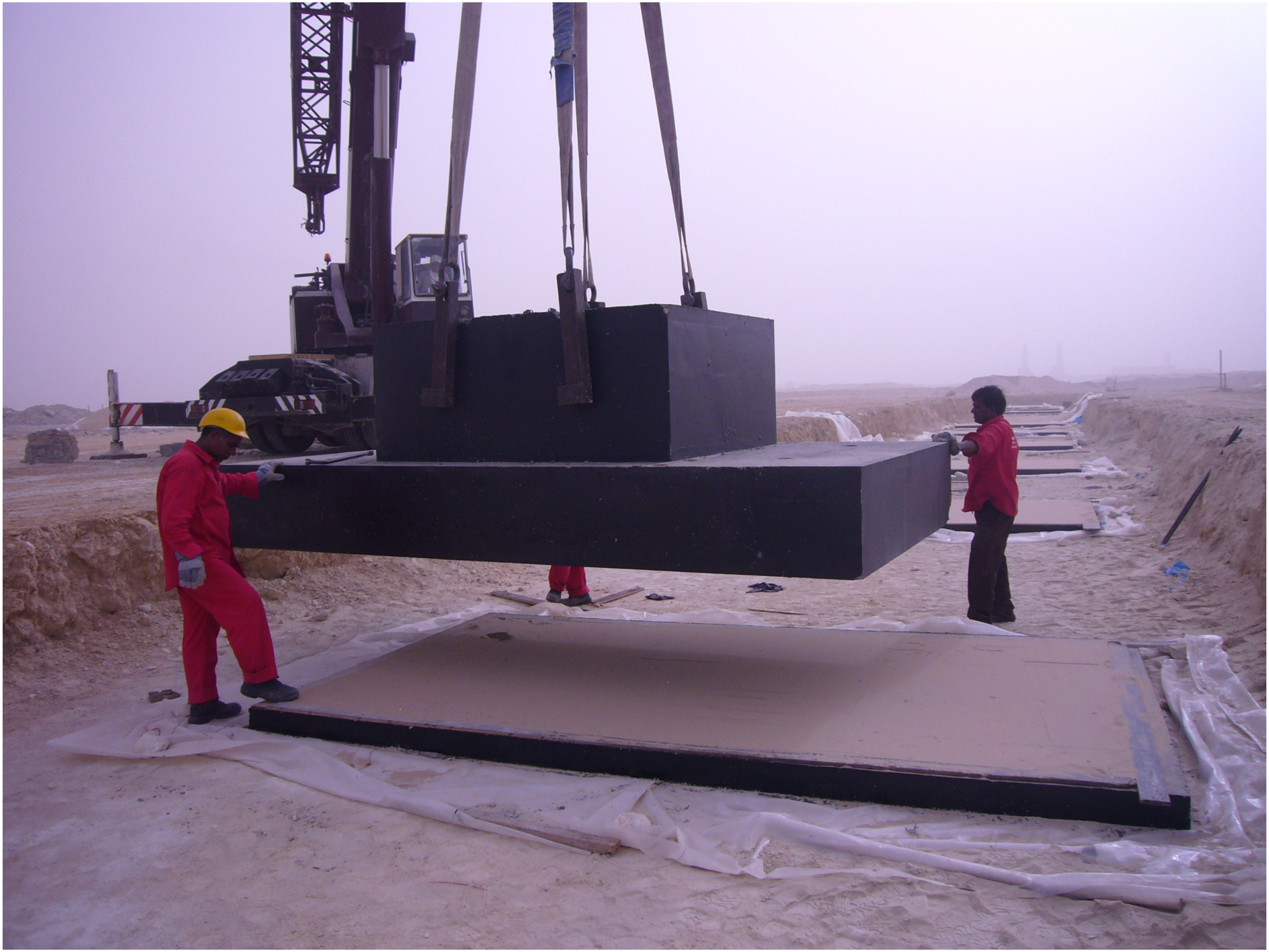
PROJECT: PC Works for BPC'S New Factory

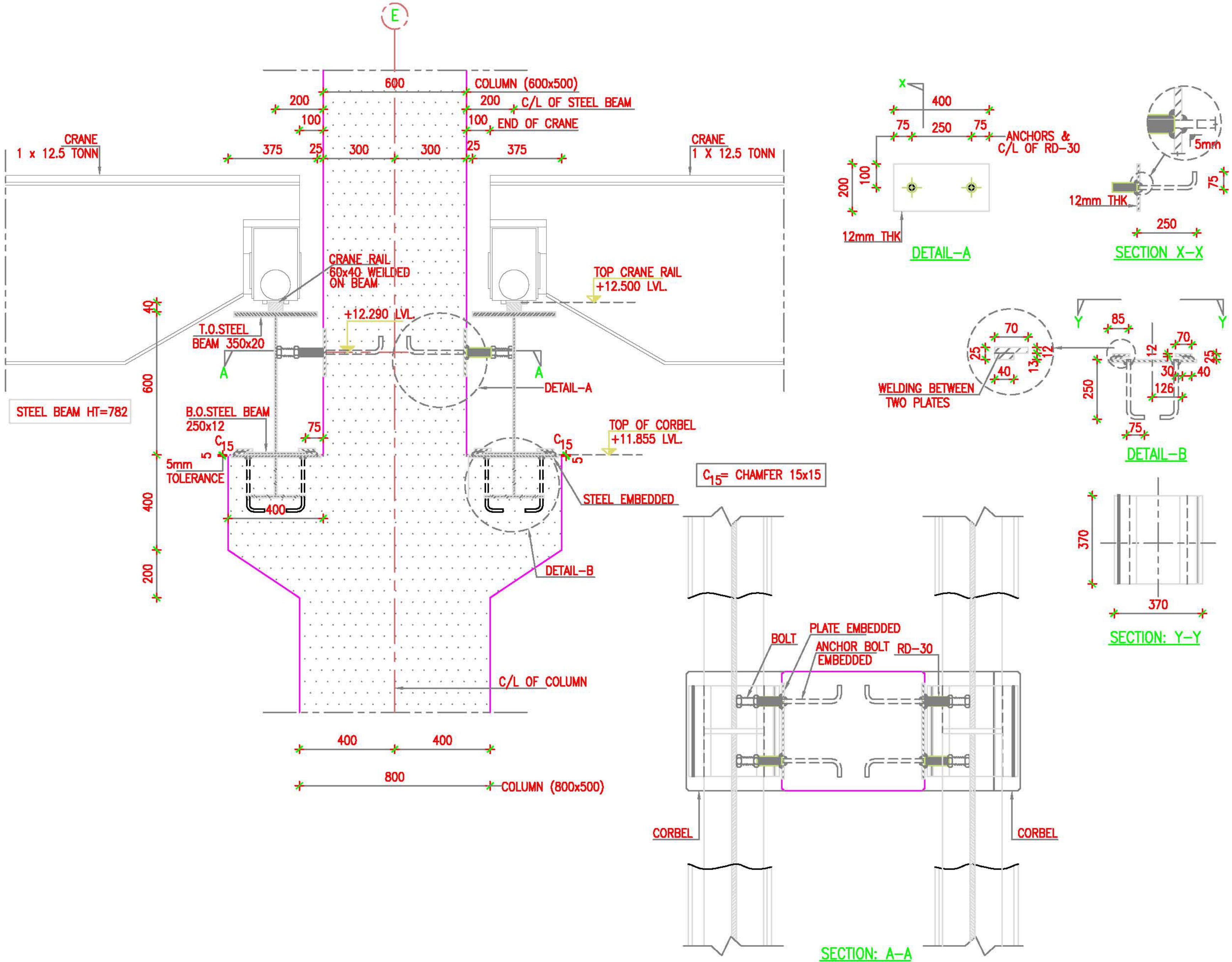
TITLE: ELEVATION - 1

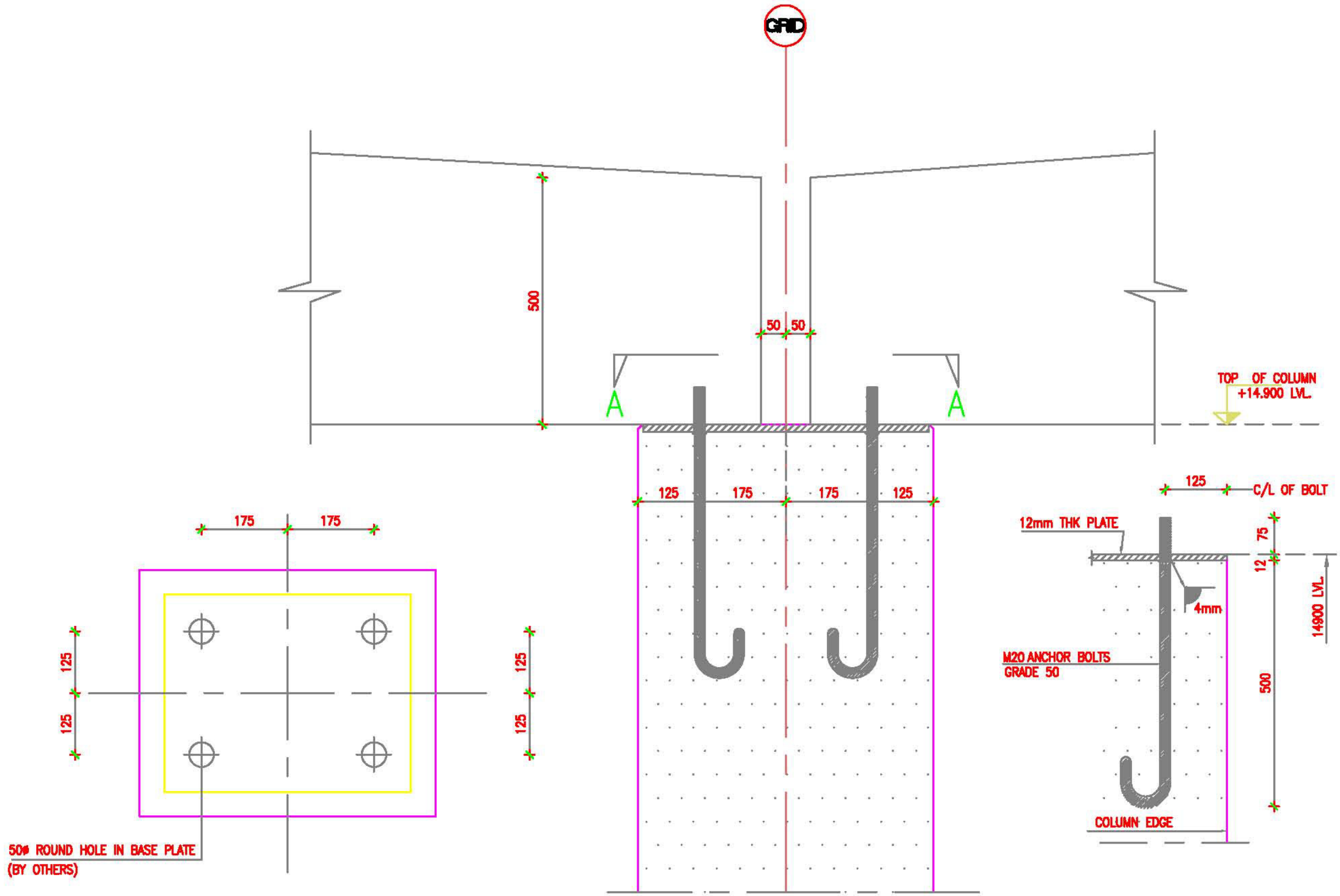
PROJECT No	DRAWING No	SCALE
770102	2-100	N.T.S
DESIGNER	CHECKED	REVISION
17-FEB-2008	AKR	0



GRID
1100
150
800
150
400
400
TOP OF FACTORY FLOOR
±0.000 STRUCTUTRAL LVL
TOP OF FILLING
200
POLYTHENE SHEET
TOP OF FOOTING -0.450 L
250
250
1000
FILLING
EXIST GR. FLOOR
-1.000 LVL.
800
BOTTOM OF COLUMN
-1.150 LVL.
100
100
100
100
100 100
100 100
1000
500
FOOTING
LEVELLING
SAND
10
150
-1.910 LVL
BLINDING.
200
VARIES
200
BLINDING.



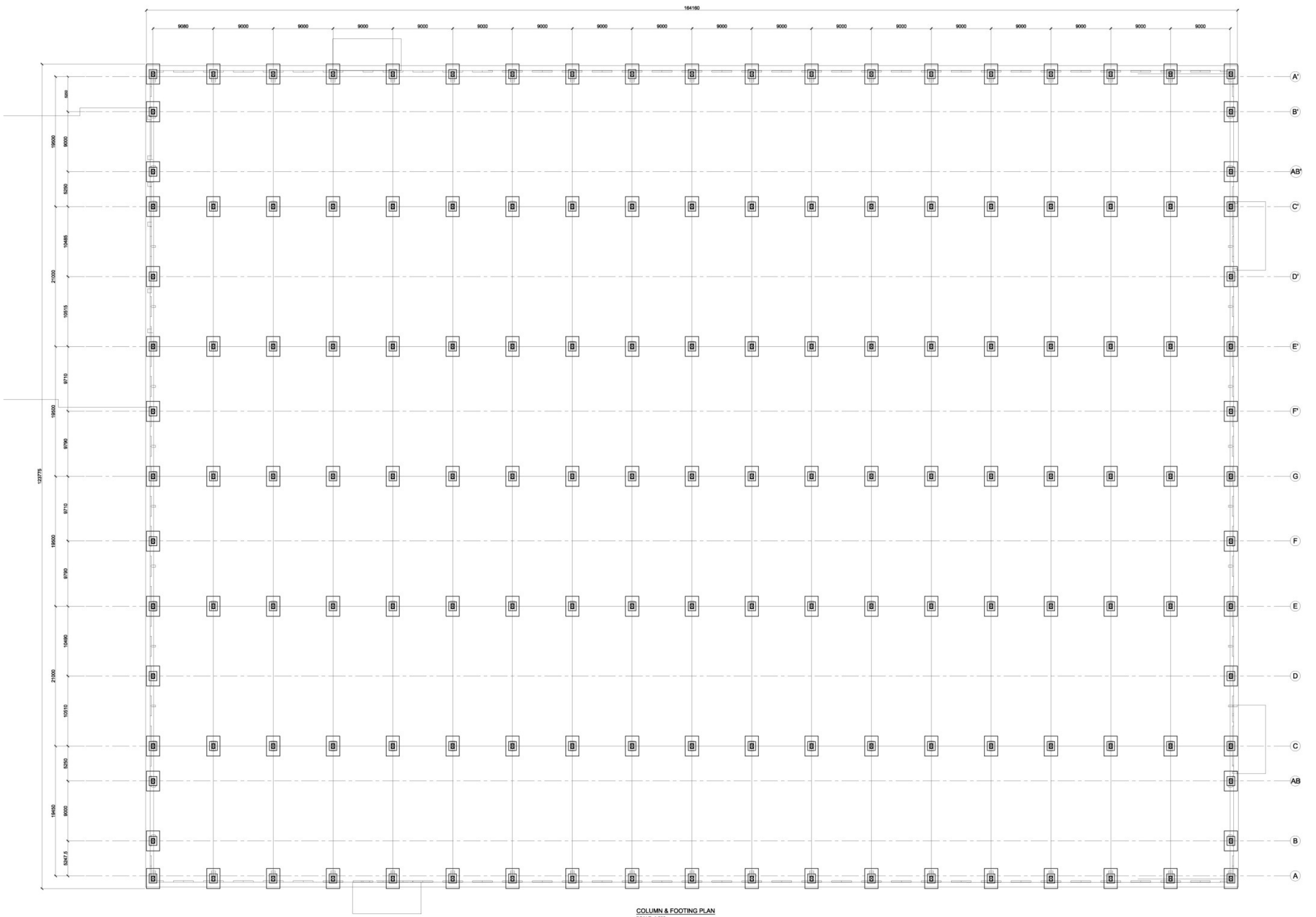

E
600
COLUMN (600x500)
200
200
C/L OF STEEL BEAM
100
100
END OF CRANE
CRANE
1 x 12.5 TONN
375
25
300
300
25
375
CRANE
1 X 12.5 TONN
CRANE RAIL
60x40 WEILDED
ON BEAM
TOP CRANE RAIL
+12.500 LVL.
40
+12.290 LVL
T.O.STEEL
BEAM 350x20
A
A
600
DETAIL-A
STEEL BEAM HT=782
B.O.STEEL BEAM
250x12
75
C_{15}
C_{15}
TOP OF CORBEL
+11.855 LVL.
5
5
5mm
TOLERANCE
400
STEEL EMBEDDED
C_{15}= CHAMFER 15x15
400
DETAIL-B
200
C/L OF COLUMN
400
400
800
COLUMN (800x500)
X
400
75
250
75
ANCHORS &
C/L OF RD-30
200
100
12mm THK
DETAIL-A
5mm
75
12mm THK
250
SECTION X-X
Y
Y
85
70
70
12
25
25
13
12
40
30
40
126
250
75
WELDING BETWEEN
TWO PLATES
DETAIL-B
370
370
SECTION: Y-Y
PLATE EMBEDDED
BOLT
ANCHOR BOLT
EMBEDDED
RD-30
CORBEL
CORBEL
SECTION: A-A



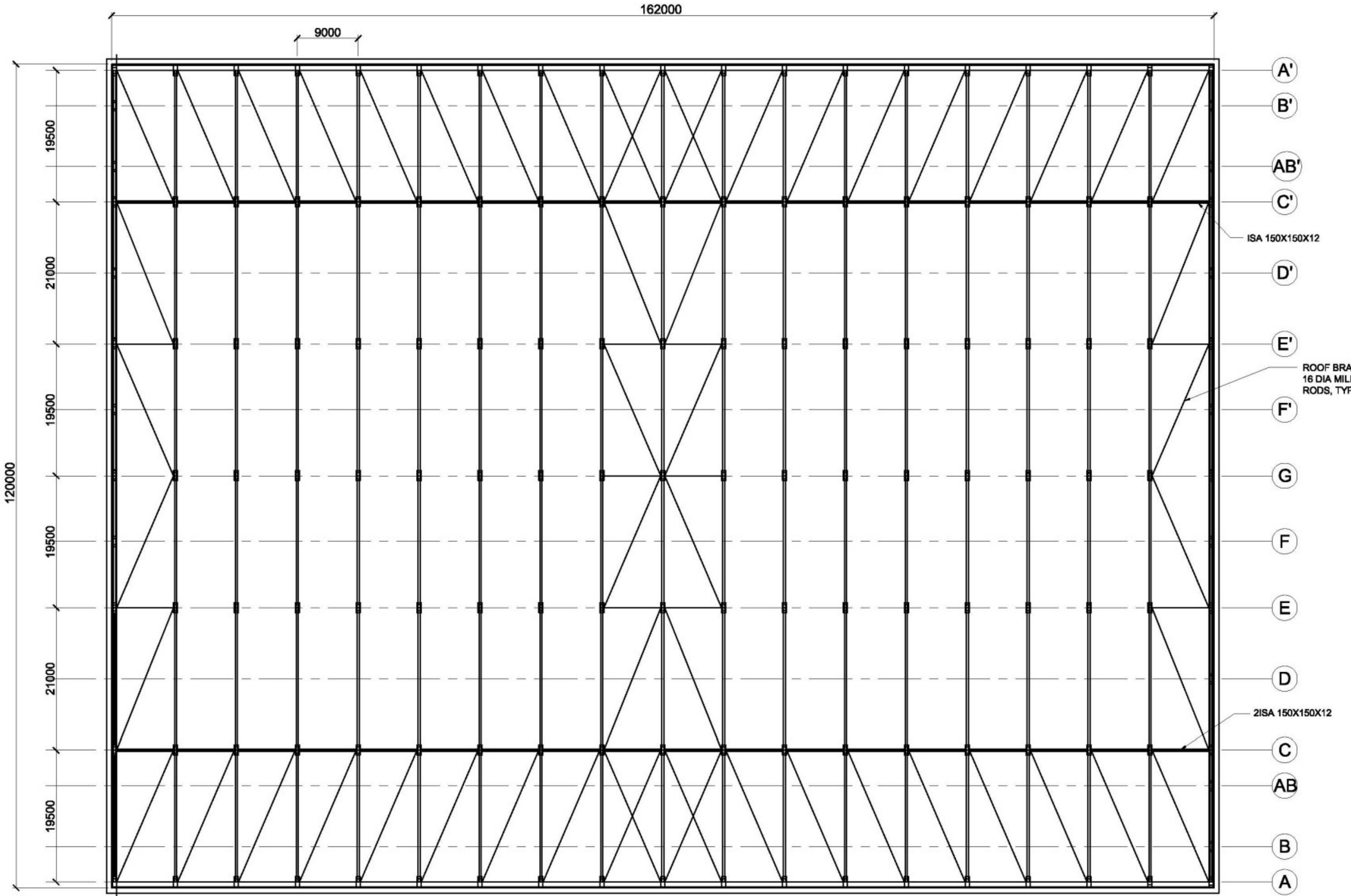
SECTION A–A

12MM THK STEEL PLATE
TO BE EMBEDDED AT THE TOP OF COLUMN

TYPICAL ANCHOR BOLT DETAIL

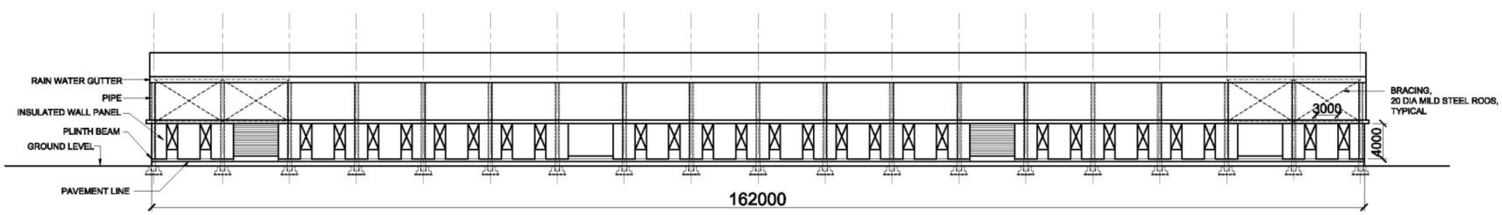


COLUMN & FOOTING PLAN
SCALE=1:200



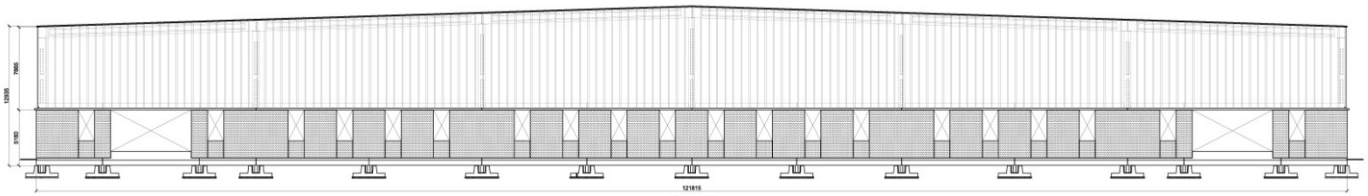
PLAN

SCALE =1:500

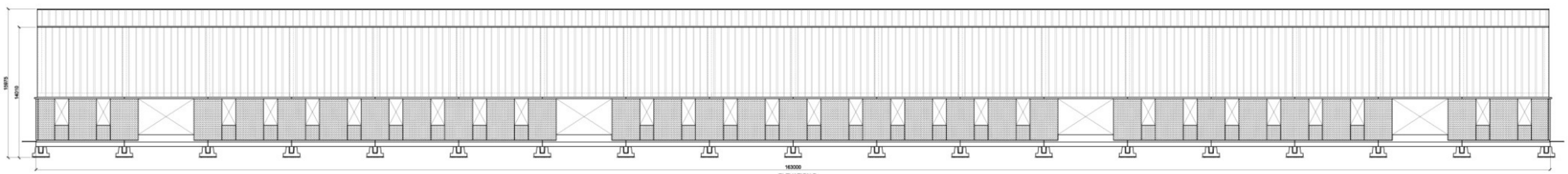


LONG SIDE ELEVATION

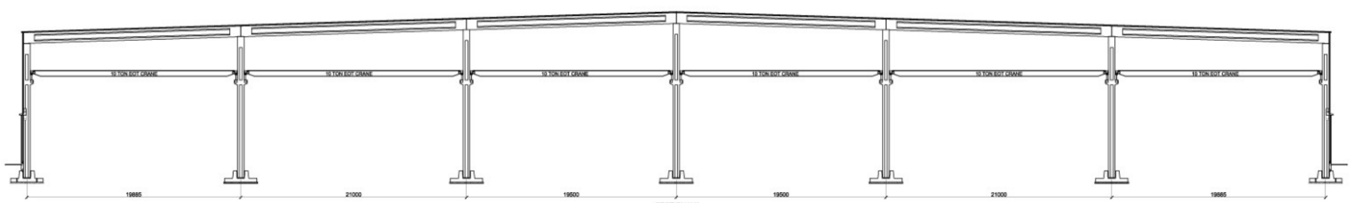
SCALE =1:500



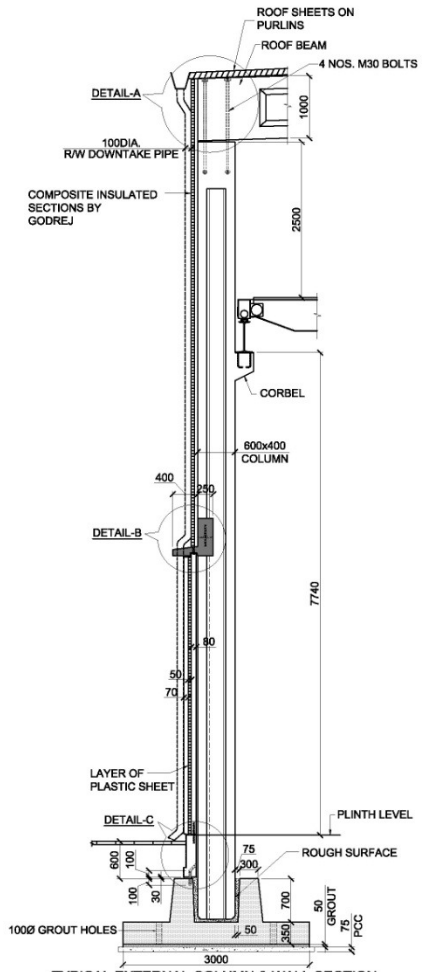
ELEVATION A
SCALE=1:150



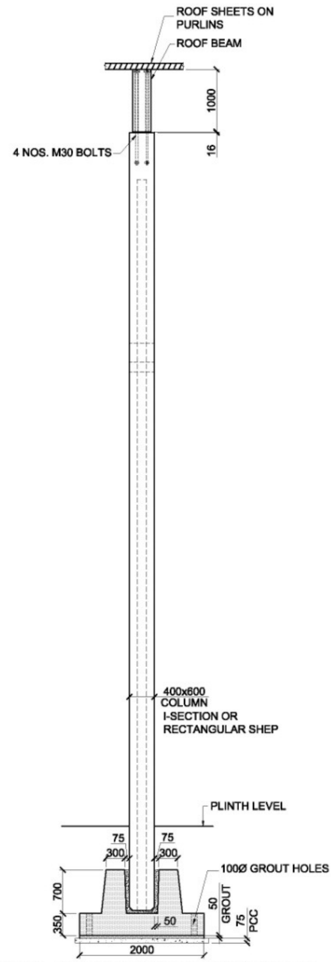
ELEVATION B
SCALE=1:150



SECTION X-X
SCALE=1:150



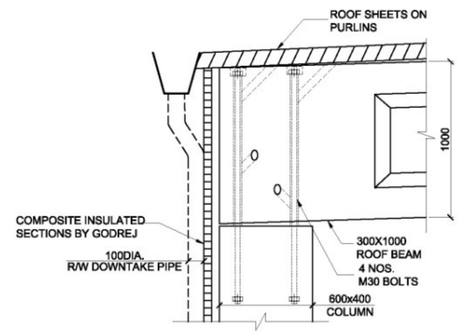
TYPICAL EXTERNAL COLUMN & WALL SECTION
SCALE=1:50



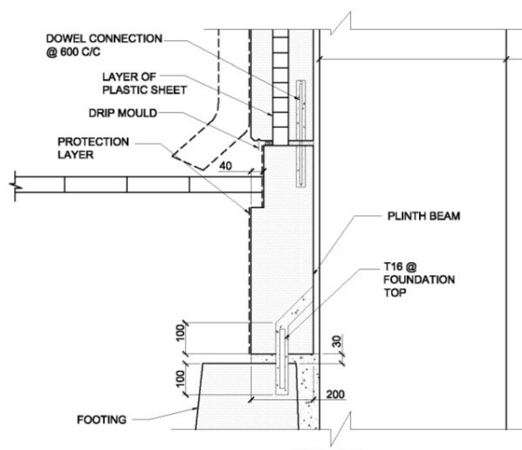
TYPICAL EXTERNAL COLUMN & WALL SECTION
SCALE=1:50

SUMMARY

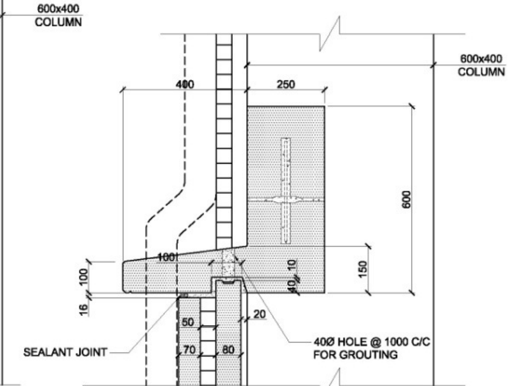
SR NO.	ELEMENTS	DIMENSIONS
1	FOOTING	3000 x 2000 x 700
2	COLUMN	400x600
3	PLINTH BEAM	TO BE DESIGNED
4	INSULATED PANEL WALL	3000x4000
5	PRESTRESSED BEAM (I - SECTION)	300 x1000 @ MID SPAN



DETAIL-A
SCALE=1:20



DETAIL-C
SCALE=1:10

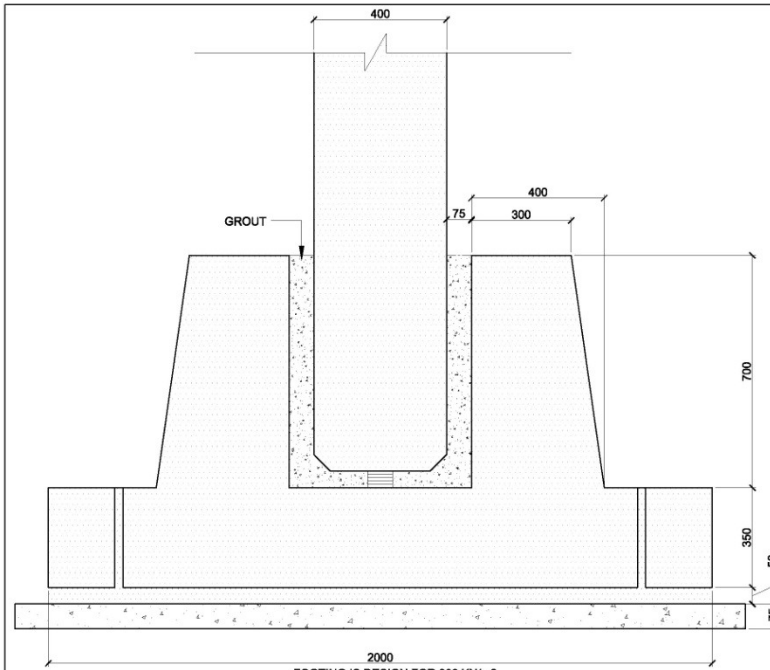


DETAIL-B
SCALE=1:10

ALL DIMENSIONS IN MM

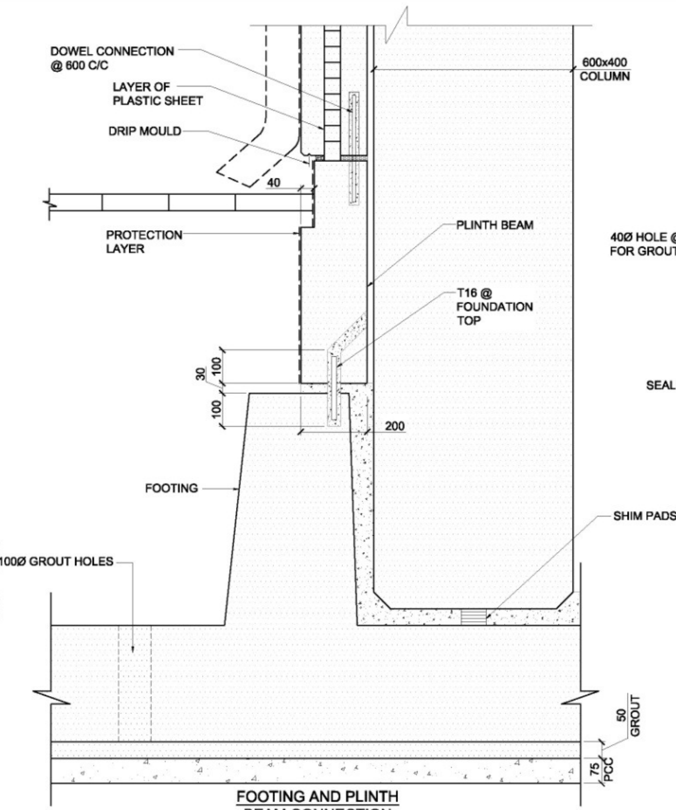
R3			R7		Drawn: PARAG	Designed: AR	Checked: KPP	FOR INFORMATION ONLY
R2			R6		Date: 28-JUNE-13	Date: 28-JUNE-13	Date: 28-JUNE-13	Project Name: GODREJ & BOYCE PROJECT
R1			R5		Weight: -	Concrete: -	Steel: -	Drawing Name: TYPICAL EXTERNAL COLUMN & WALL SECTION; Concrete: -
R0	-	28-JUNE-13	R4		Project No: PI-2013-44	Drawing No: SPL-PI-2013-44-MKT-R0		Steel: -

Simplex Prefab Infrastructure (India) Pvt. Ltd.
Sr. No. 40, Village Khambewadi, Gram Panchayat - Umbre, Khopoli Pali Road, Taluka - Khalapur, District - Raigad, Khopoli, Maharashtra, India - 410203
Board: +91 - 2192 - 277032 / 282290
Web. : www.simplexgroup.co.in

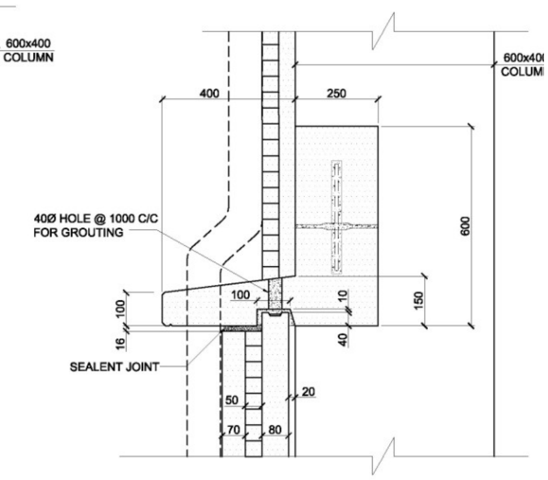


FOOTING IS DESIGN FOR 300 KN/m2
(SAFE SOIL BEARING CAPACITY)

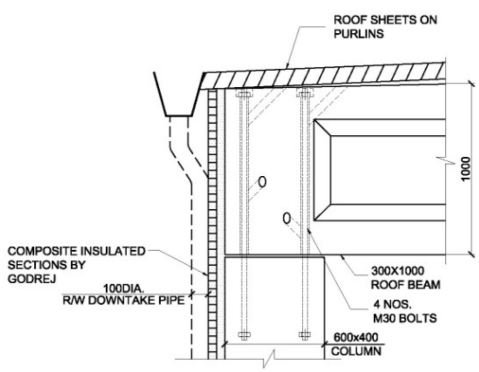
FOOTING
SCALE=1:10



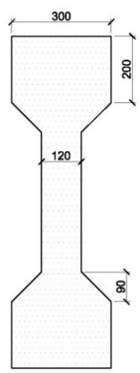
FOOTING AND PLINTH BEAM CONNECTION
SCALE=1:10



WALL AND CHAJJA CONNECTION
SCALE=1:10



SCALE=1:20



SCALE=1:10

SUMMARY

Sr. No	ELEMENTS	DIMENSION
1	FOOTING	3 m x 2 m x 0.7 m
2	COLUMN	0.4 m x 0.6 m
3	PLINTH BEAM	TO BE DESIGNED
4	INSULATED PANEL WALL	3 m x 4 m
5	CORBEL	0.25 m x 0.3 m
6	PRESTRESSED BEAM (I - SECTION)	0.3 m x 1 m

ALL DIMENSIONS IN MM

R3			R7		
R2			R6		
R1			R5		
R0	-	19-JUNE-13	R4		

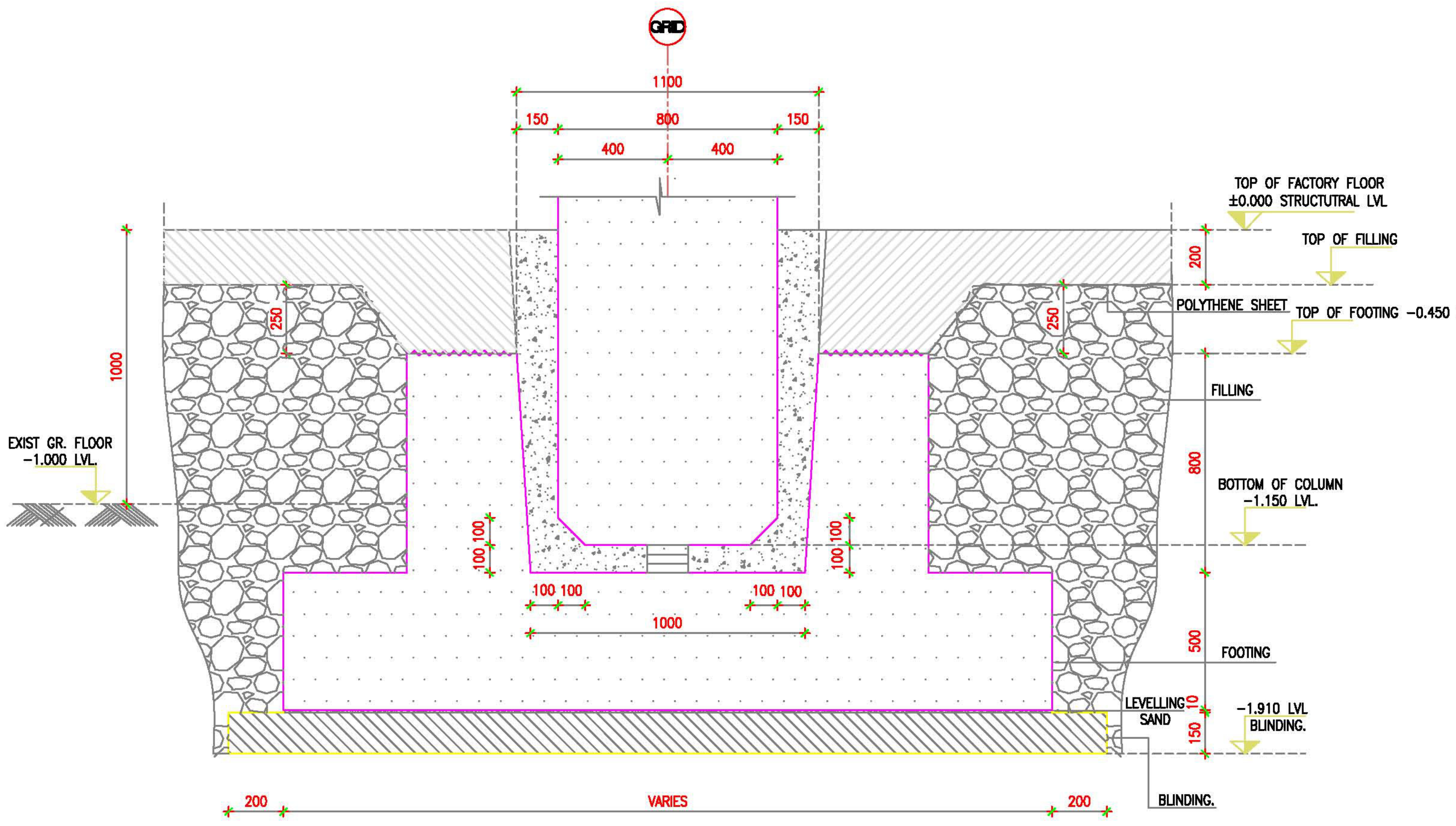
Drawn: VINAYAK	Designed: -	Checked: -
Date: 19-JUNE-13	Date: 19-JUNE-13	Date: 19-JUNE-13
Weight: -	Concrete: -	Steel: -
Project No: PI-2013-45	Drawing No: SPL-PI-2013-45-MKT-R0	

FOR INFORMATION ONLY

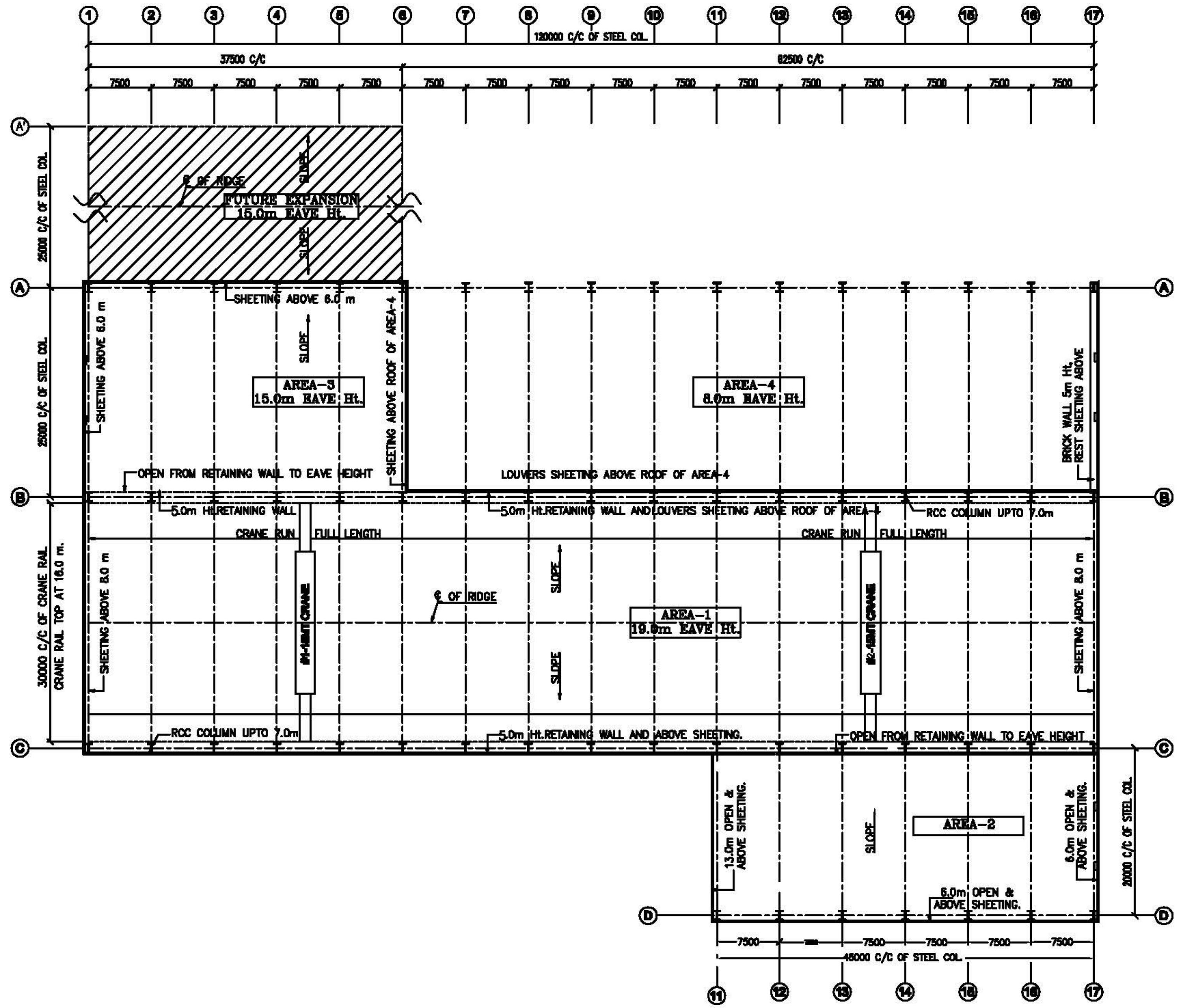
Project Name: GODREJ & BOYCE, KHALAPUR PROJECT

Drawing Name:	Concrete: -
EXTENAL COLUMN SECTION	Steel: -

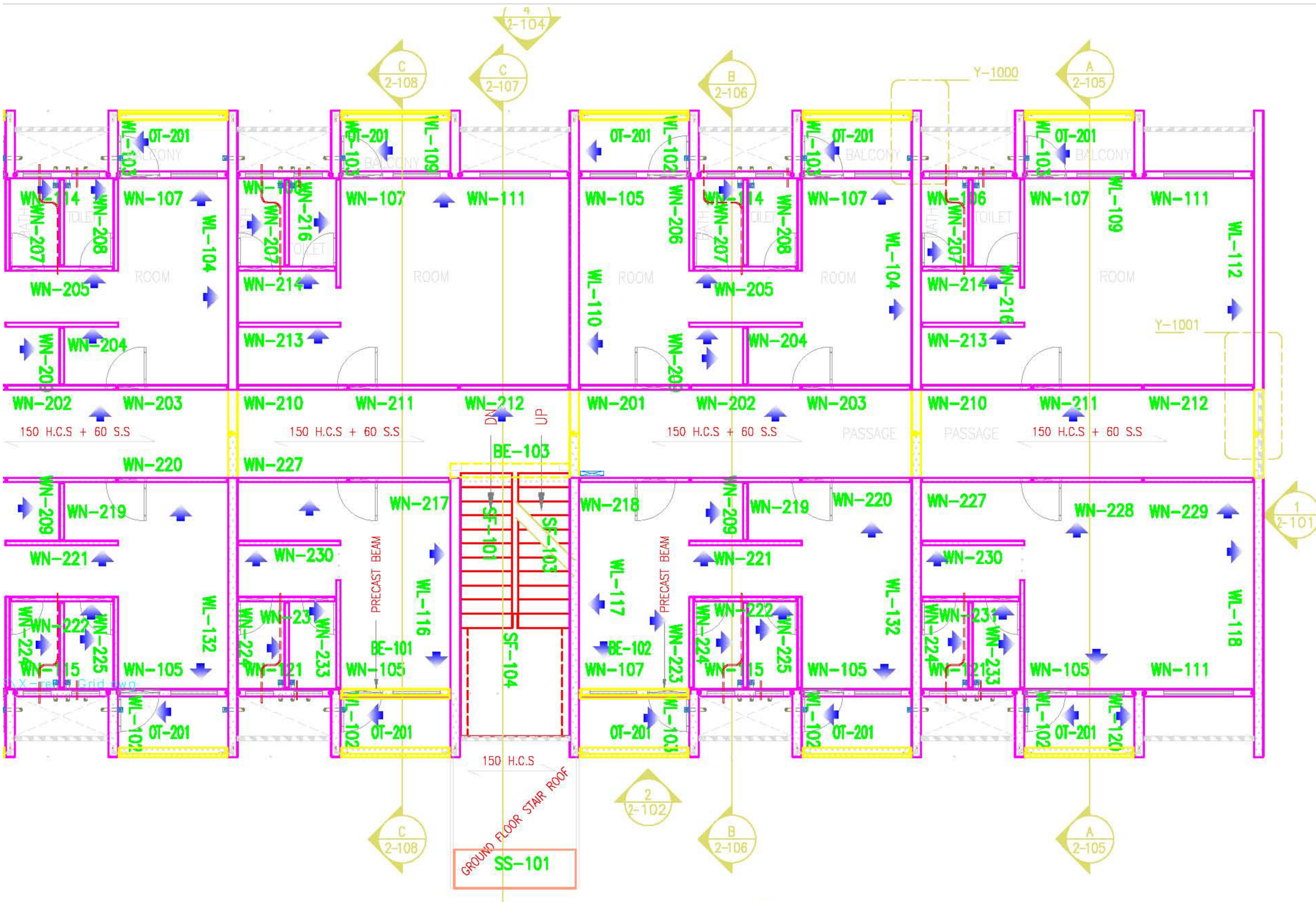
SIMPLEX
Simplex Prefab Infrastructure (India) Pvt. Ltd.
Sr. No. 40, Village Khambewadi, Gram Panchayat - Umbre
Khopoli Pali Road, Taluka - Khalapur, District - Raigad,
Khopoli, Maharashtra, India - 410203
Board: +91 - 2192 - 277032 / 282290
Web. : www.simplexgroup.co.in



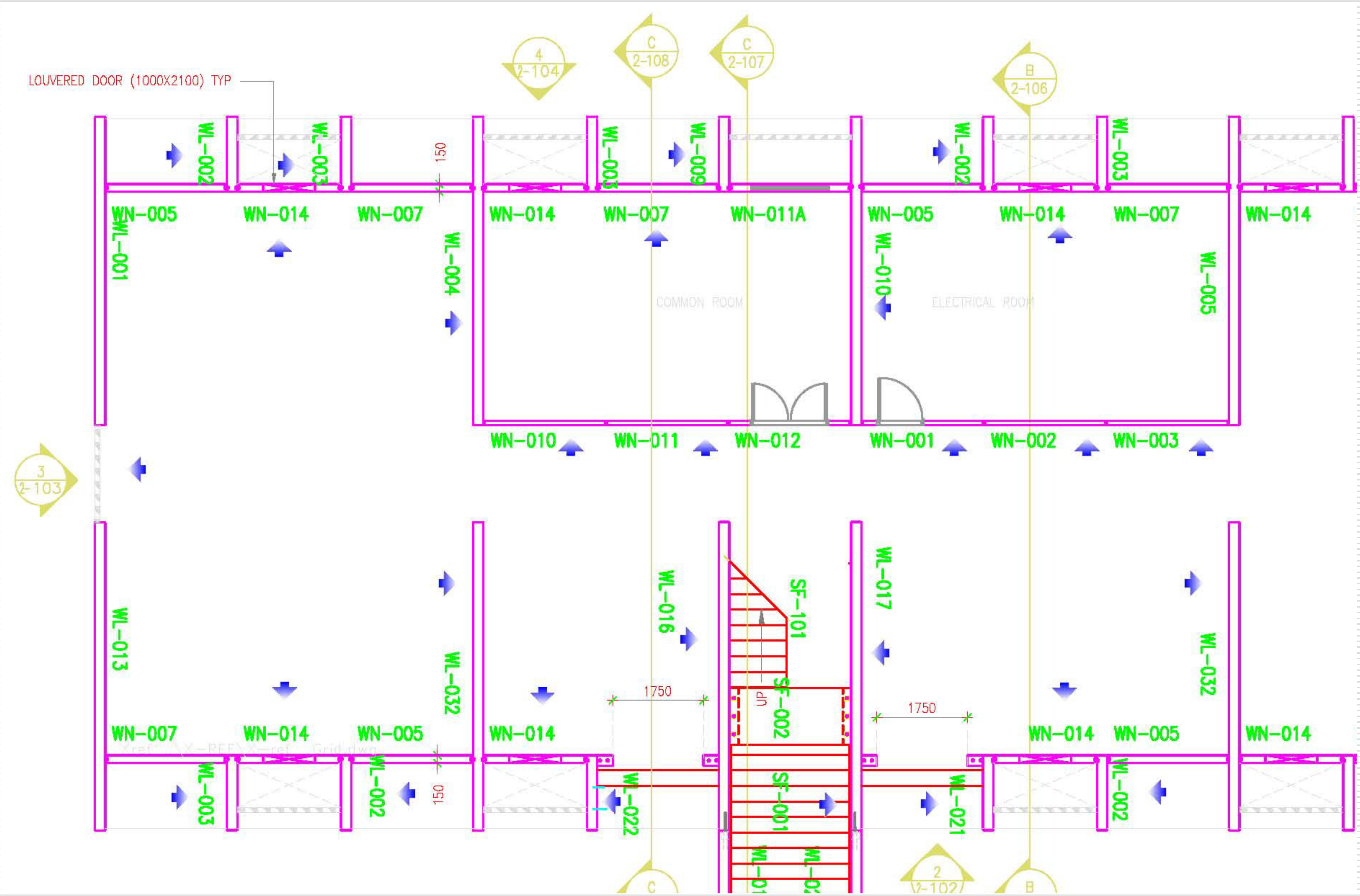
GRID
1100
150
800
150
400
400
TOP OF FACTORY FLOOR
±0.000 STRUCTUTRAL LVL
TOP OF FILLING
200
250
250
POLYTHENE SHEET
TOP OF FOOTING -0.450 L
1000
FILLING
EXIST GR. FLOOR
-1.000 LVL.
800
BOTTOM OF COLUMN
-1.150 LVL.
100 100
100 100
100
100
100 100
100 100
1000
500
FOOTING
LEVELLING SAND
10
-1.910 LVL
BLINDING.
150
200
VARIES
200
BLINDING.

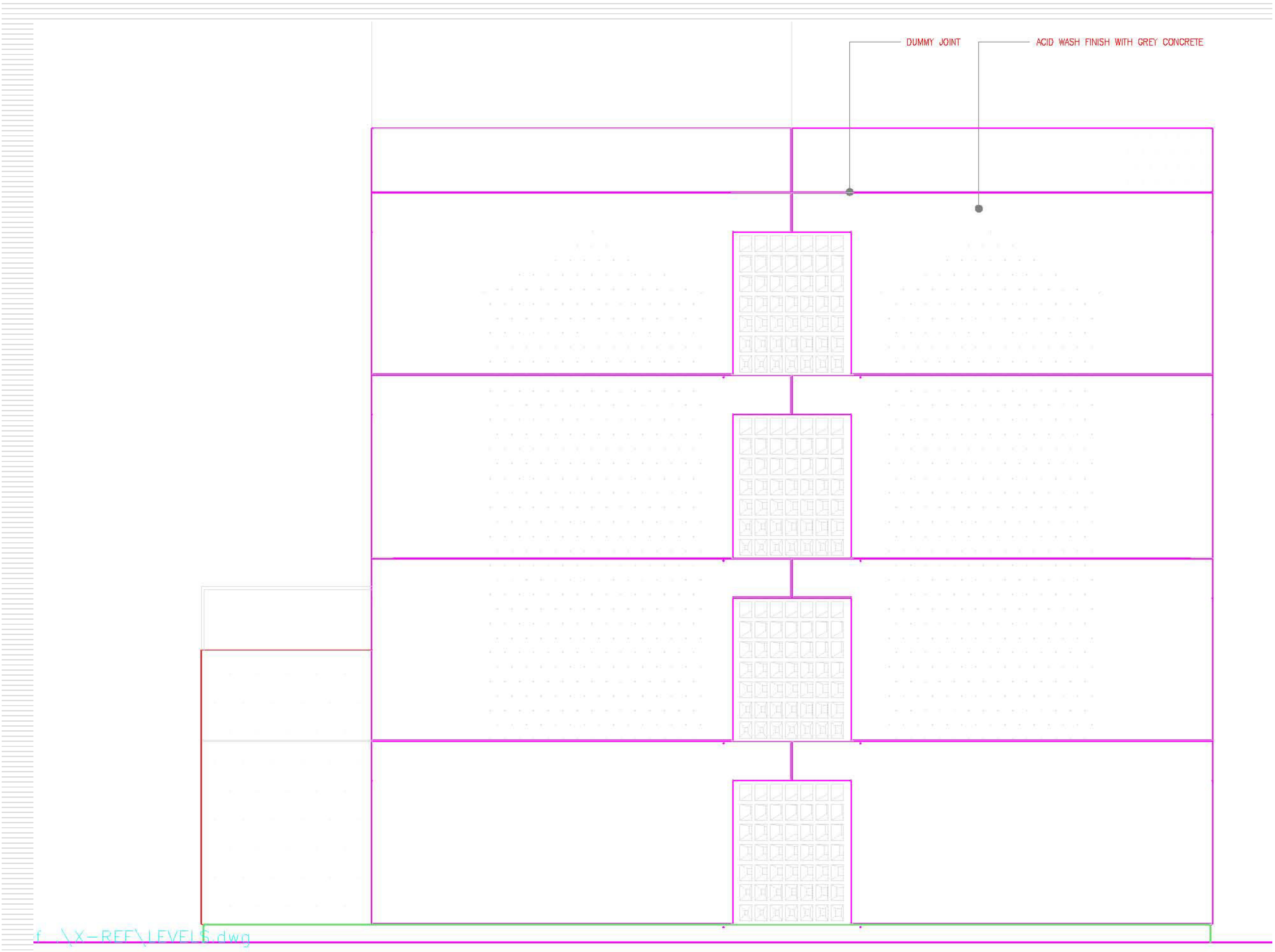

120000 C/C OF STEEL COL.
37500 C/C
82500 C/C
7500
FUTURE EXPANSION
15.0m EAVE Ht.
SLOPE
25000 C/C OF STEEL COL.
SHEETING ABOVE 6.0 m
AREA-3
15.0m EAVE Ht.
SHEETING ABOVE ROOF OF AREA-4
AREA-4
8.0m EAVE Ht.
BRICK WALL 5m Ht.
REST SHEETING ABOVE
OPEN FROM RETAINING WALL TO EAVE HEIGHT
LOUVERS SHEETING ABOVE ROOF OF AREA-4
5.0m Ht.RETAINING WALL
5.0m Ht.RETAINING WALL AND LOUVERS SHEETING ABOVE ROOF OF AREA-4
RCC COLUMN UPTO 7.0m
CRANE RUN FULL LENGTH
30000 C/C OF CRANE RAIL
CRANE RAIL TOP AT 16.0 m.
SHEETING ABOVE 8.0 m
AREA-1
19.0m EAVE Ht.
5.0m Ht.RETAINING WALL AND ABOVE SHEETING.
13.0m OPEN & ABOVE SHEETING.
AREA-2
6.0m OPEN & ABOVE SHEETING.
20000 C/C OF STEEL COL.
45000 C/C OF STEEL COL.

Load Bearing wall

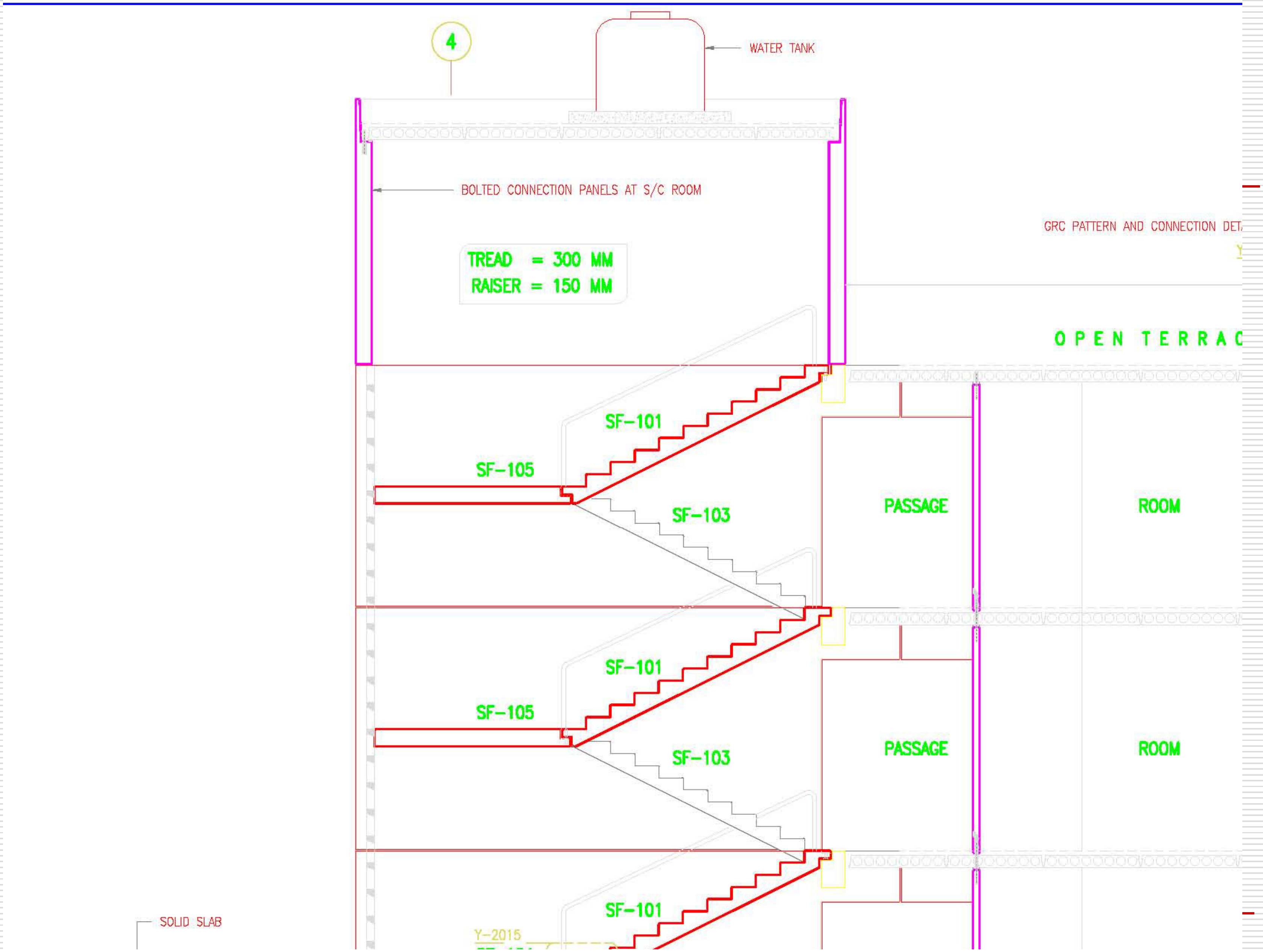



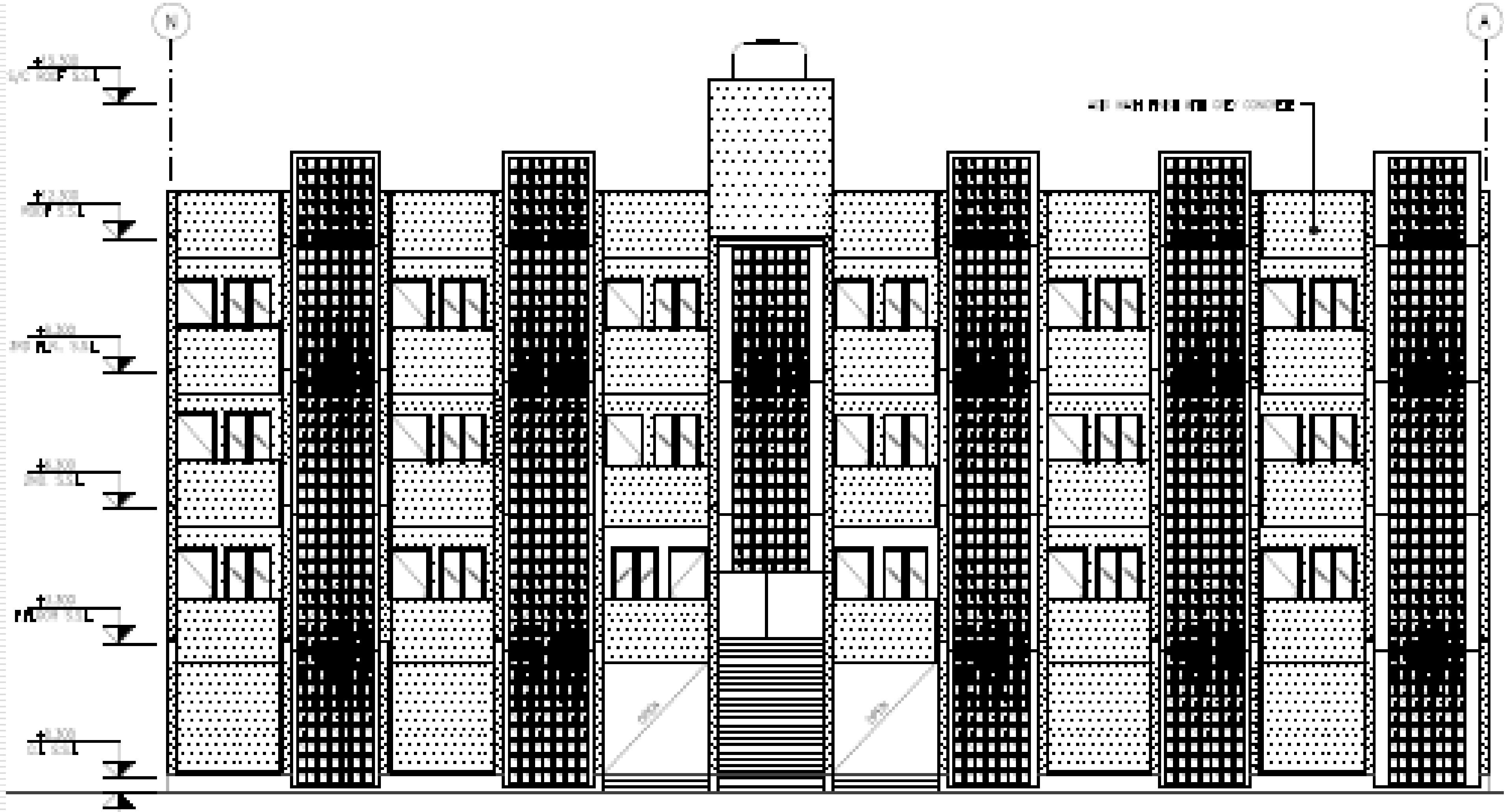
WN-107
WN-111
WN-105
ROOM
TOILET
BALCONY
PASSAGE
150 H.C.S + 60 S.S
BE-103
DN
UP
PRECAST BEAM
BE-101
BE-102
150 H.C.S
GROUND FLOOR STAIR ROOF
SS-101
Y-1000
Y-1001


LOUVERED DOOR (1000X2100) TYP
4
2-104
C
2-108
C
2-107
B
2-106
3
2-103
150
WL-002
WL-003
WL-003
WL-009
WL-002
WL-003
WN-005
WN-014
WN-007
WN-014
WN-007
WN-011A
WN-005
WN-014
WN-007
WN-014
WL-001
WL-004
WL-010
WL-005
COMMON ROOM
ELECTRICAL ROOM
WN-010
WN-011
WN-012
WN-001
WN-002
WN-003
WL-013
WL-016
SF-101
WL-017
WL-032
WL-032
UP
SF-002
1750
1750
WN-007
WN-014
WN-005
WN-014
WN-014
WN-005
WN-014
WL-003
WL-002
WL-022
SF-001
WL-021
WL-002
150
C
2
2-102
B



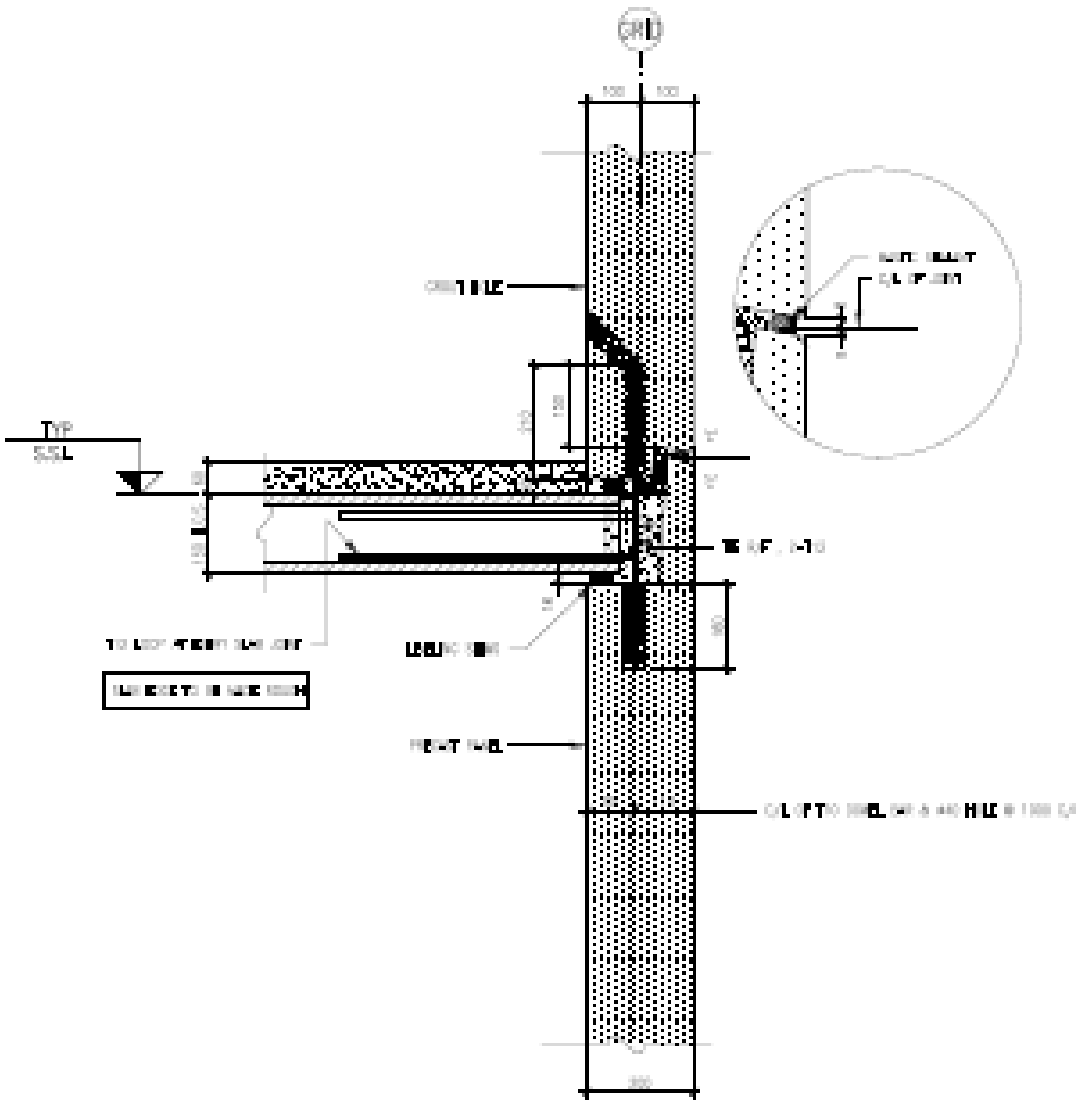
DUMMY JOINT
ACID WASH FINISH WITH GREY CONCRETE
f ..\X-REF\LEVELS.dwg

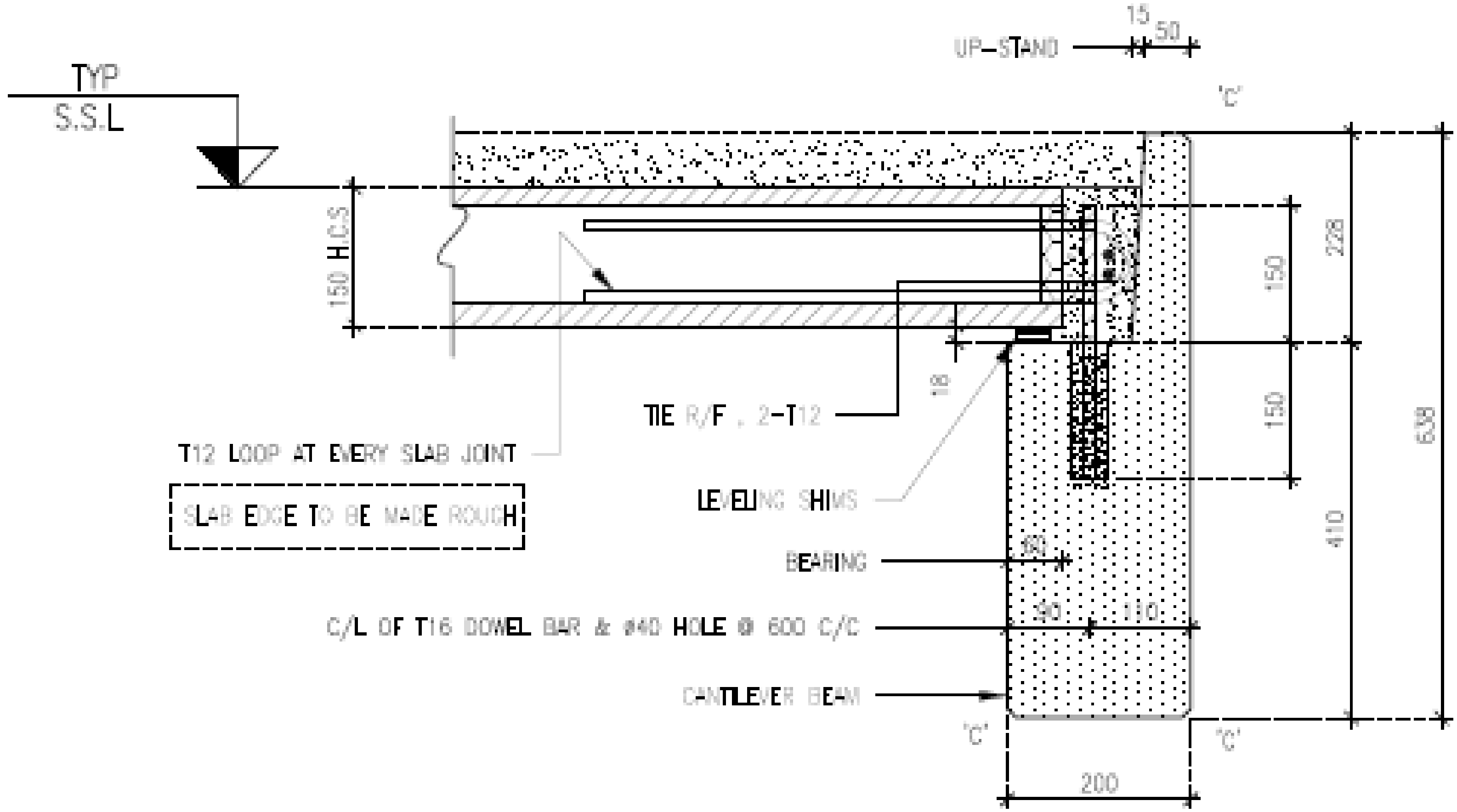

4
WATER TANK
BOLTED CONNECTION PANELS AT S/C ROOM
TREAD = 300 MM
RAISER = 150 MM
GRC PATTERN AND CONNECTION DET
OPEN TERRAC
SF-101
SF-105
SF-103
PASSAGE
ROOM
SF-101
SF-105
SF-103
PASSAGE
ROOM
SF-101
SOLID SLAB
Y-2015



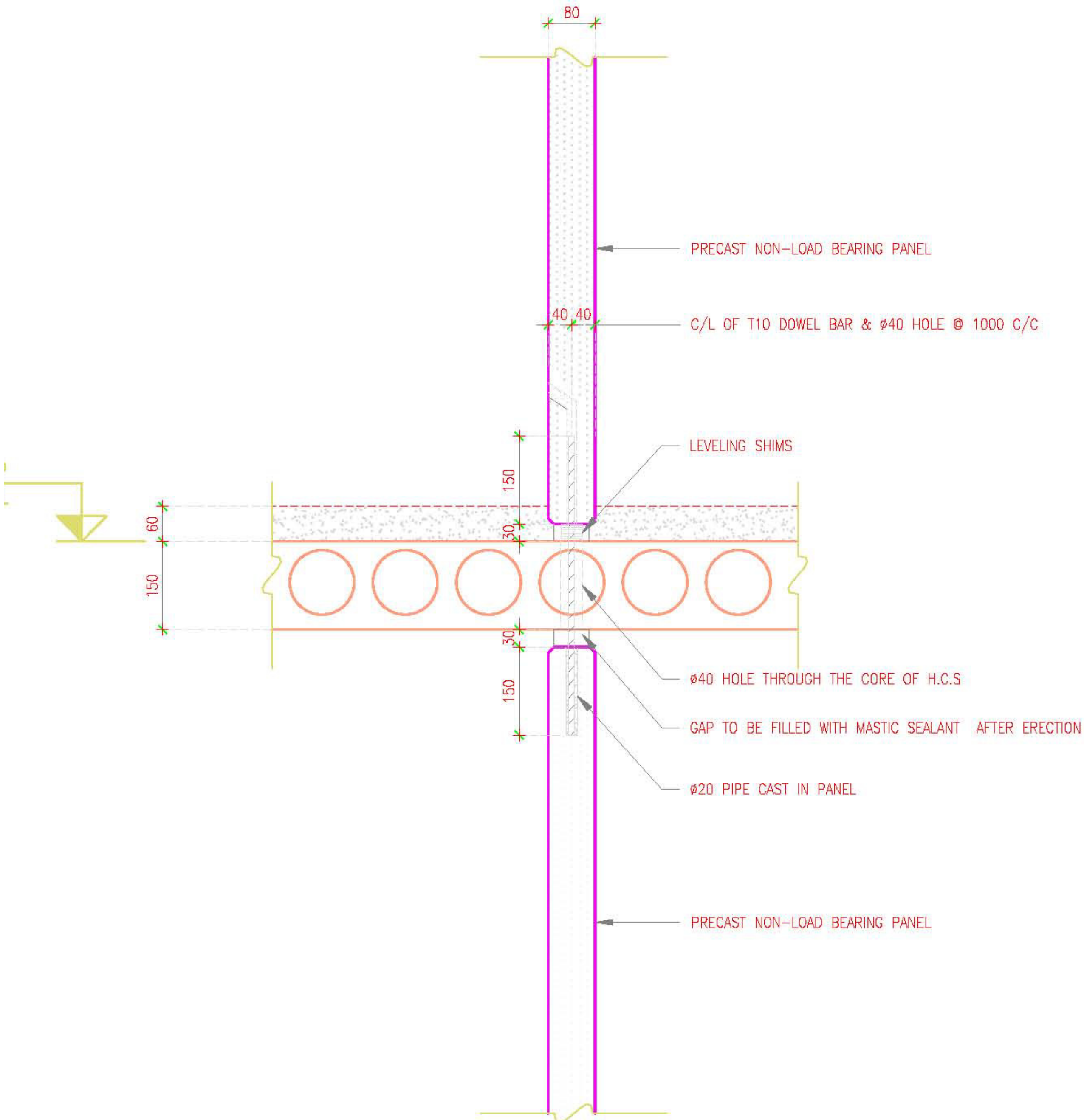
ELEVATION :- 2

Scale 1/100 (A3)


GRID
TYP
SSL



TYP
S.S.L
UP-STAND
15
50
'C'
150 H.C.S
228
150
150
638
410
18
TIE R/F , 2-T12
T12 LOOP AT EVERY SLAB JOINT
SLAB EDGE TO BE MADE ROUGH
LEVELING SHIMS
BEARING
80
C/L OF T16 DOWEL BAR & ø40 HOLE @ 600 C/C
90
110
CANTILEVER BEAM
'C'
'C'
200



REV.	REVISIONS
A	UPDATED AS PER COMMENT

CLIENT

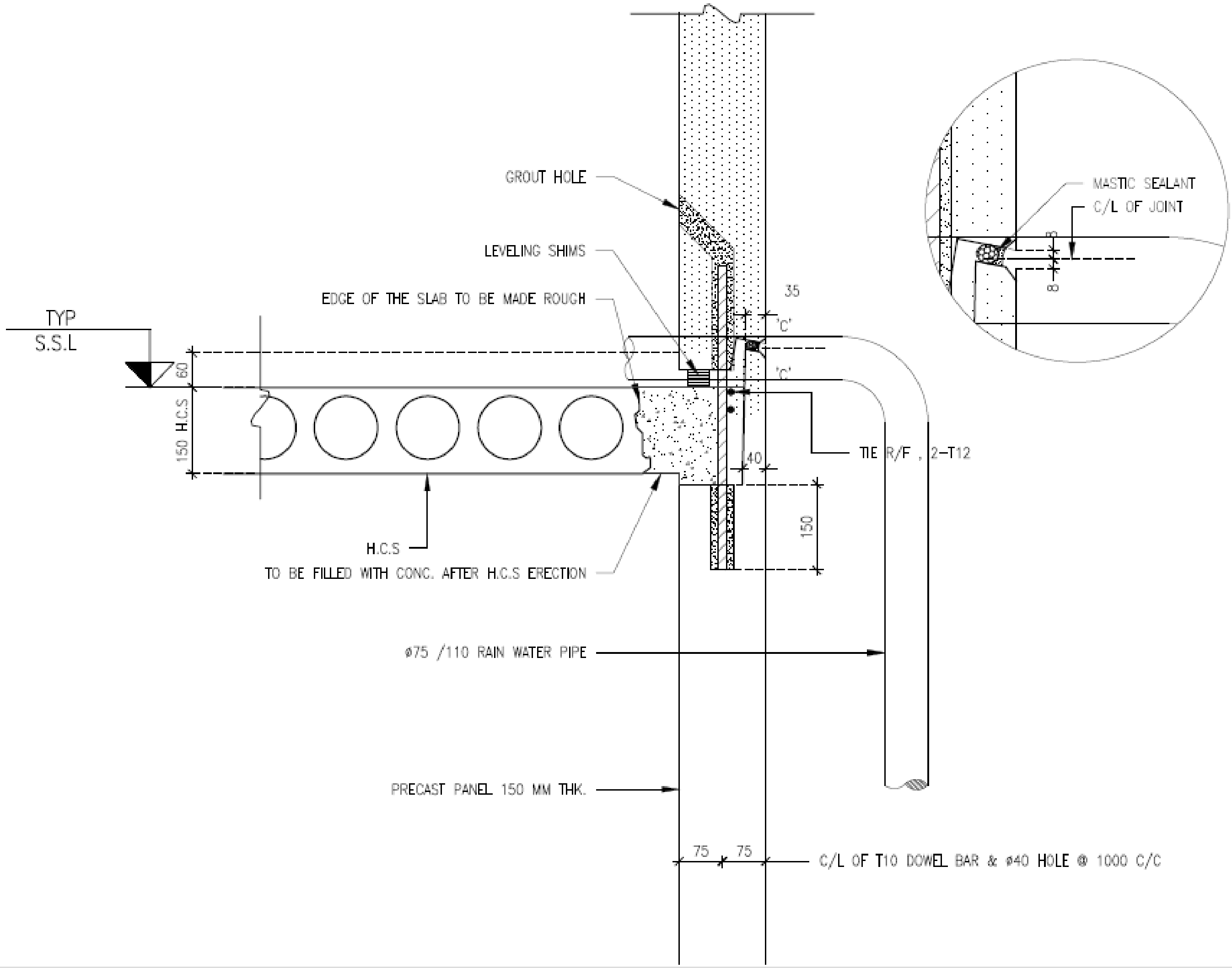
CONSULTANT

CONTRACTOR

SUB CONTRACTOR

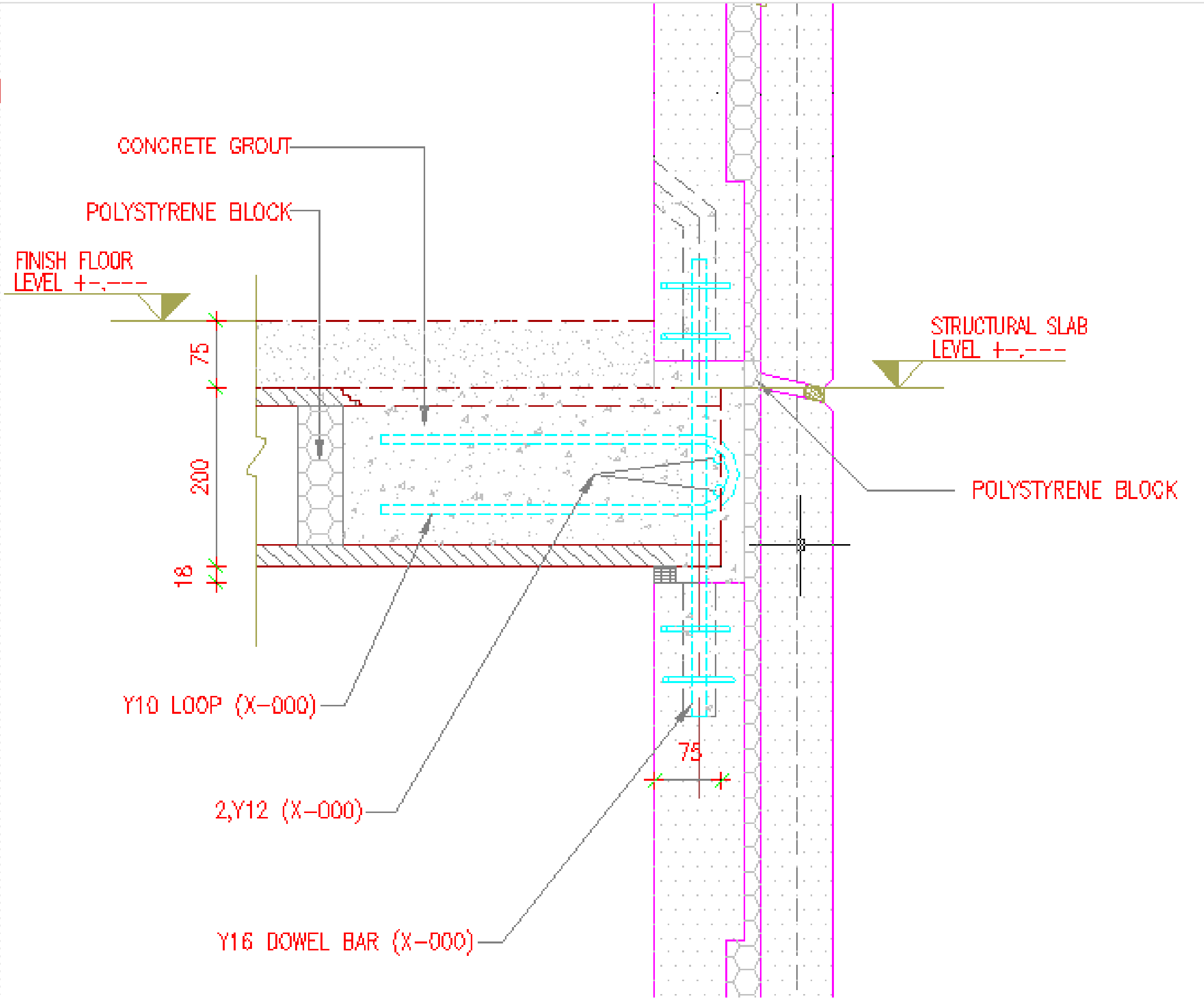
PROJECT NAME

SFkh-Workers A

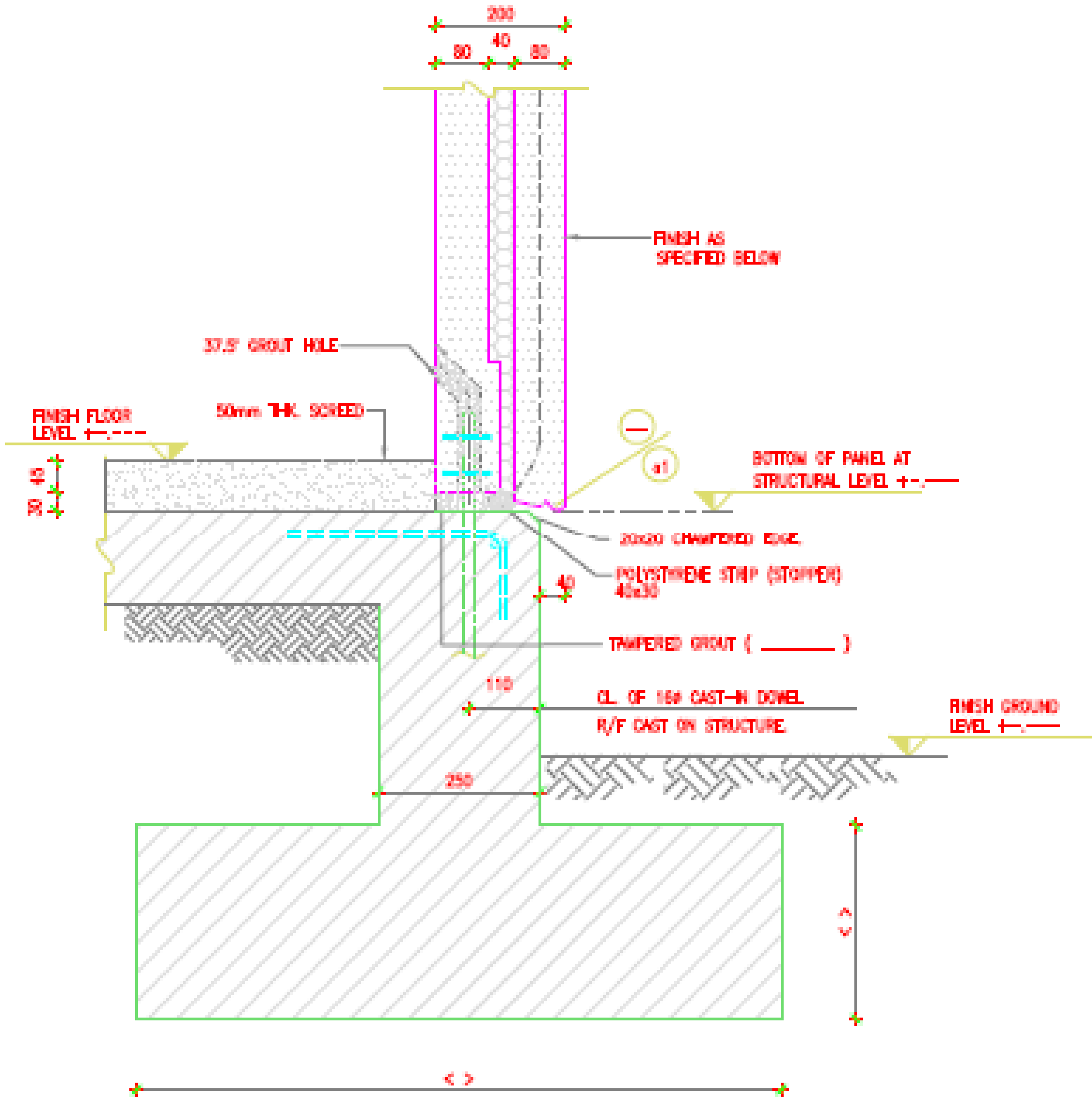


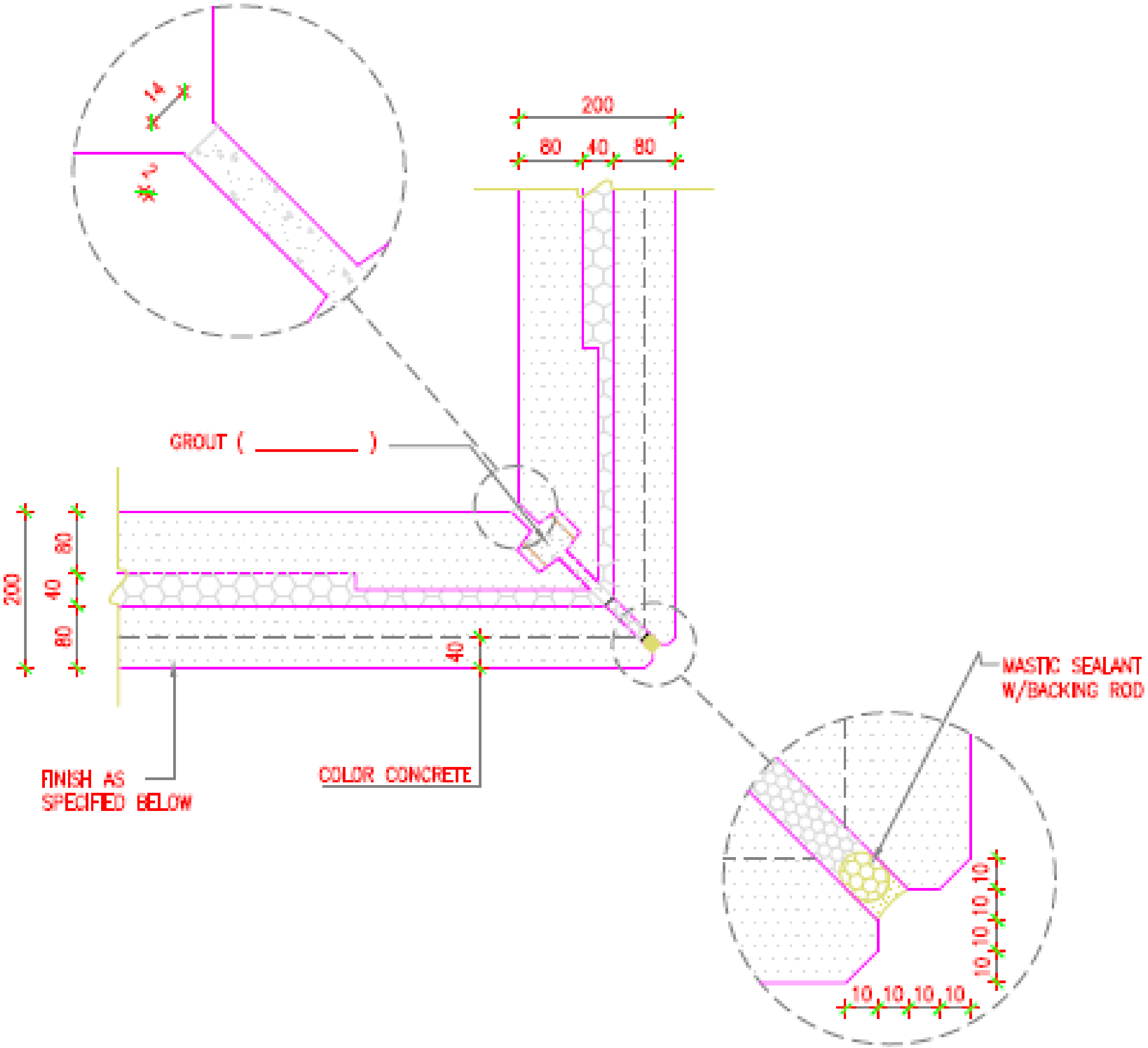
TYP
S.S.L
60
150 H.C.S
GROUT HOLE
LEVELING SHIMS
EDGE OF THE SLAB TO BE MADE ROUGH
35
'C'
'C'
TIE R/F , 2-T12
40
150
H.C.S
TO BE FILLED WITH CONC. AFTER H.C.S ERECTION
ø75 /110 RAIN WATER PIPE
PRECAST PANEL 150 MM THK.
75
75
C/L OF T10 DOWEL BAR & ø40 HOLE @ 1000 C/C
MASTIC SEALANT
C/L OF JOINT
8
8

LOAD BEARING PANELS



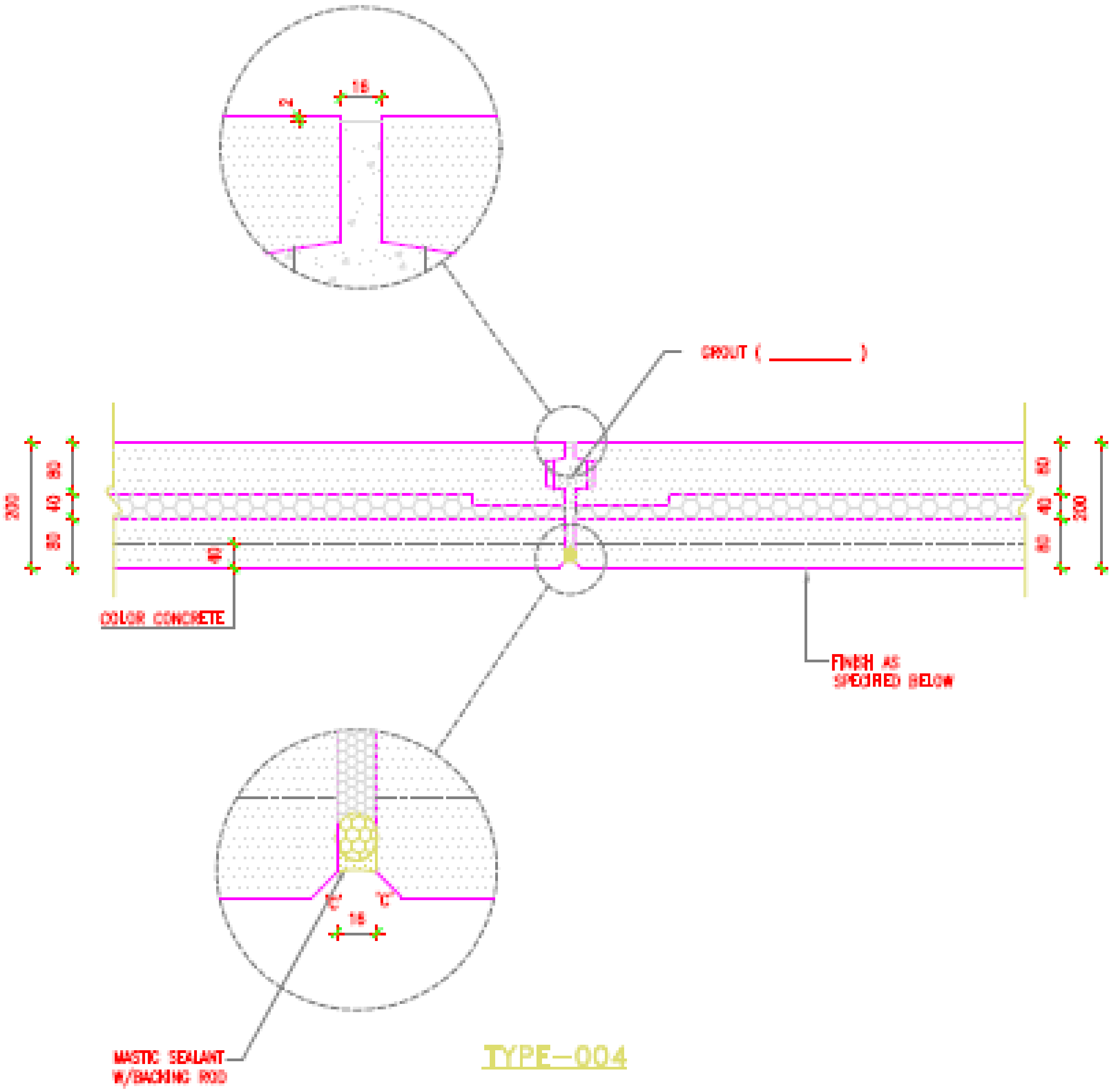
PANEL TO PANEL CONNECTIONS


200
80
40
80
FINISH AS
SPECIFIED BELOW
37.5° GROUT HOLE
50mm THK. SCREED
FINISH FLOOR
LEVEL +-.---
40
30
a1
BOTTOM OF PANEL AT
STRUCTURAL LEVEL +-.---
20x20 CHAMFERED EDGE.
POLYSTYRENE STRIP (STOPPER)
40x30
40
TAMPERED GROUT (
)
110
CL. OF 16ø CAST-IN DOWEL
R/F CAST ON STRUCTURE.
FINISH GROUND
LEVEL +-.---
250



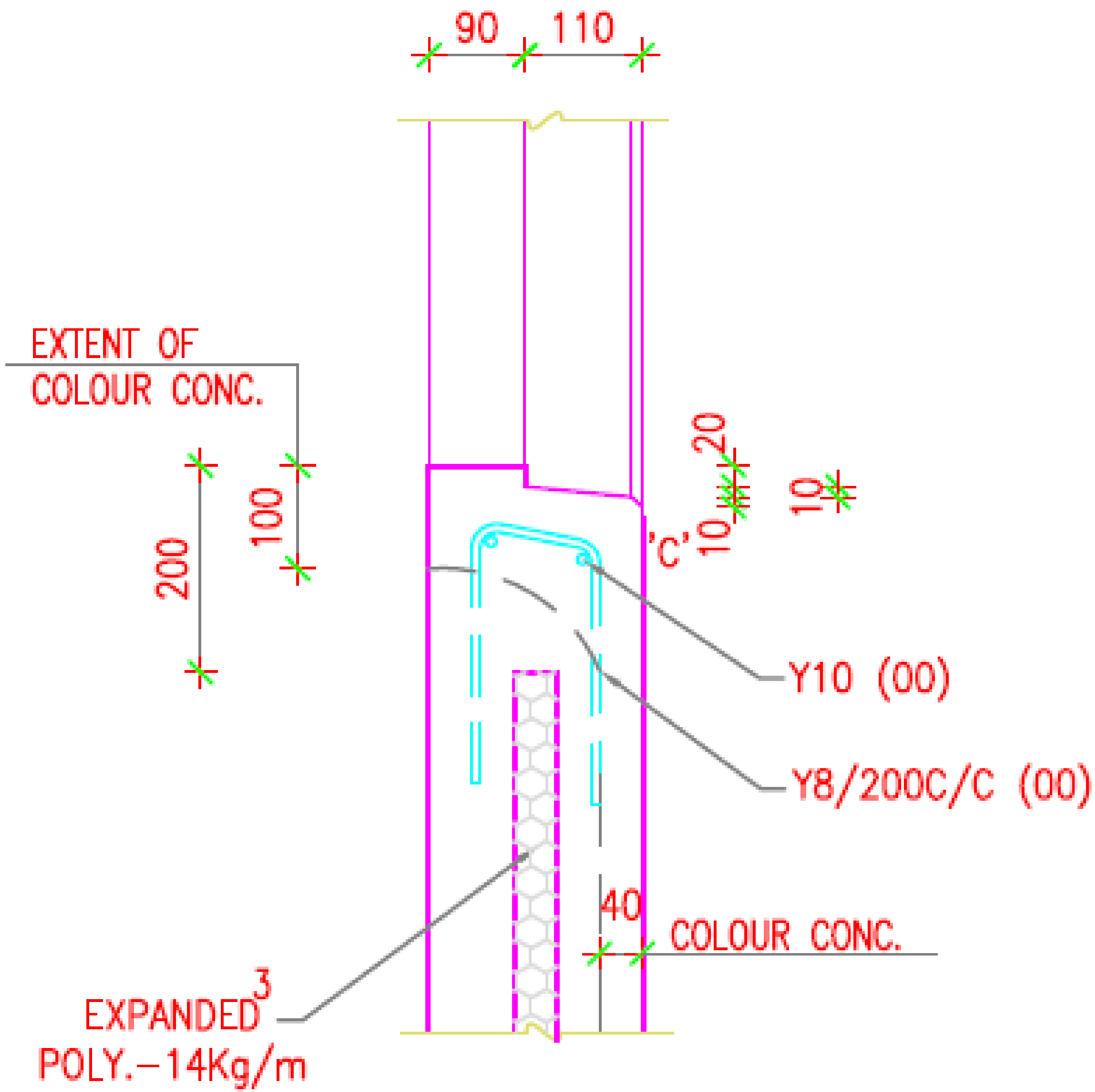
200
80
40
80
GROUT (
)
MASTIC SEALANT
W/BACKING ROD
FINISH AS
SPECIFIED BELOW
COLOR CONCRETE
10

TYPE-002

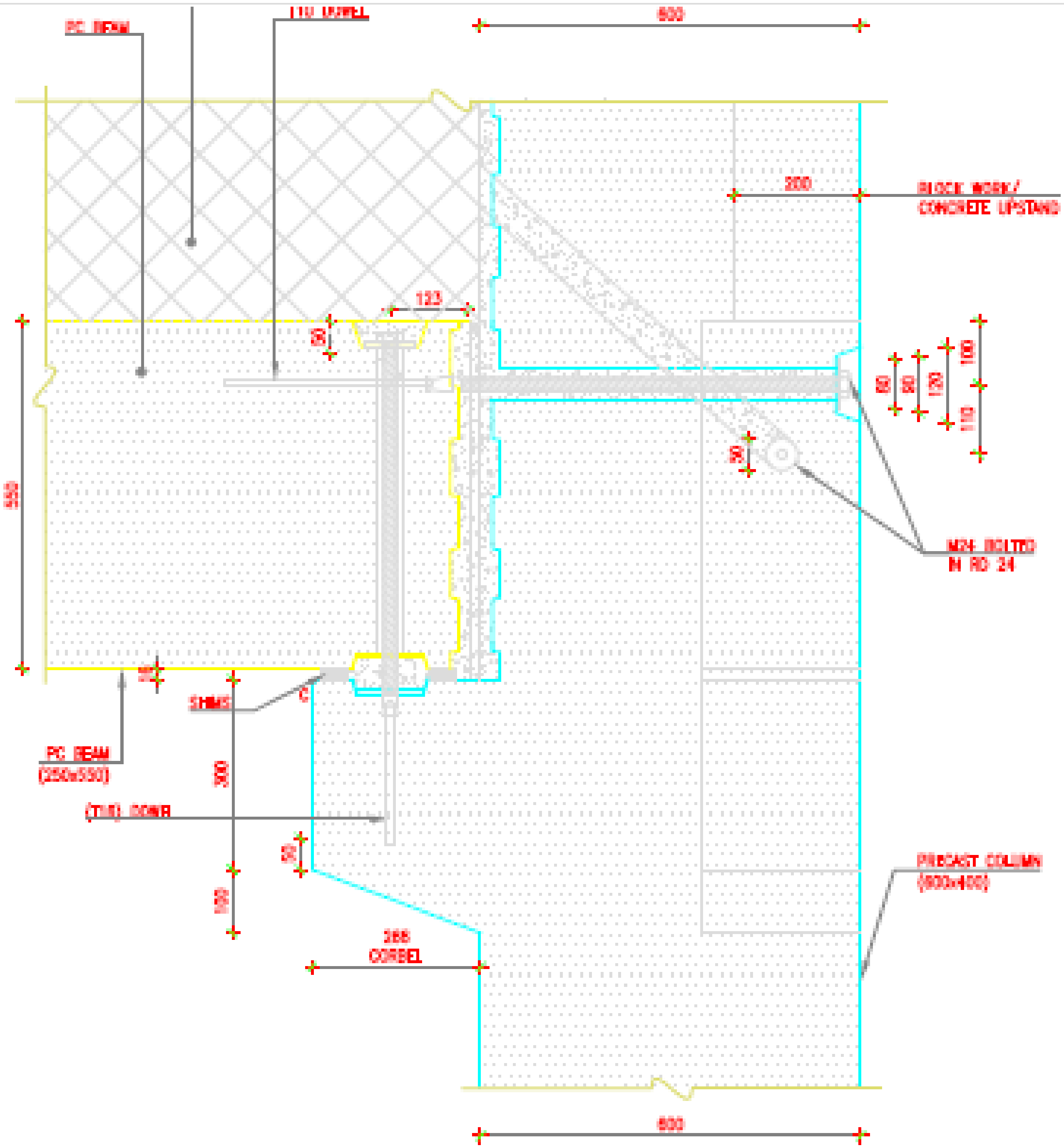


15
2
GROUT (________)
200
80
40
80
40
COLOR CONCRETE
FINISH AS
SPECIFIED BELOW
15
MASTIC SEALANT
W/BACKING ROD

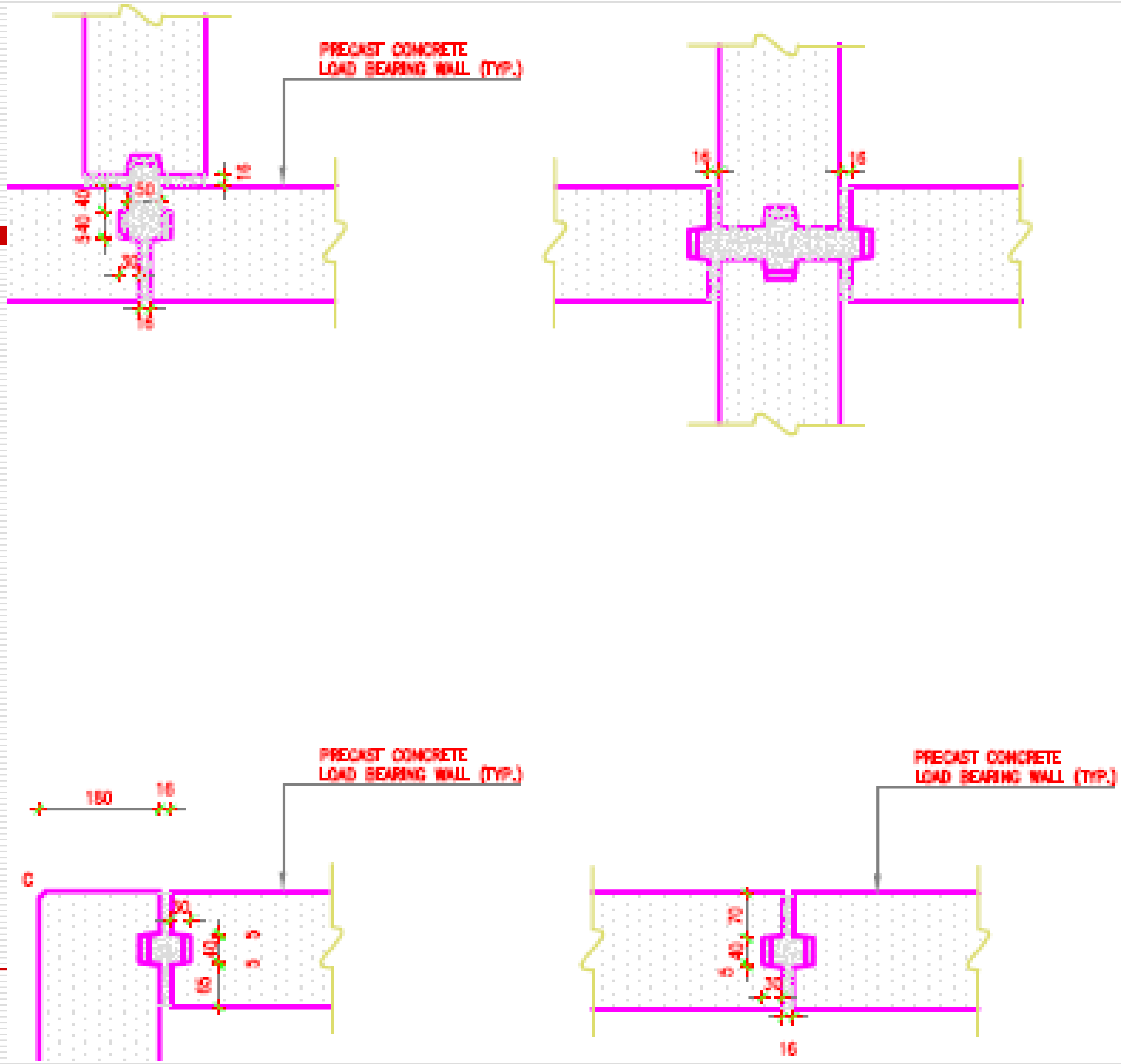
TYPE-004

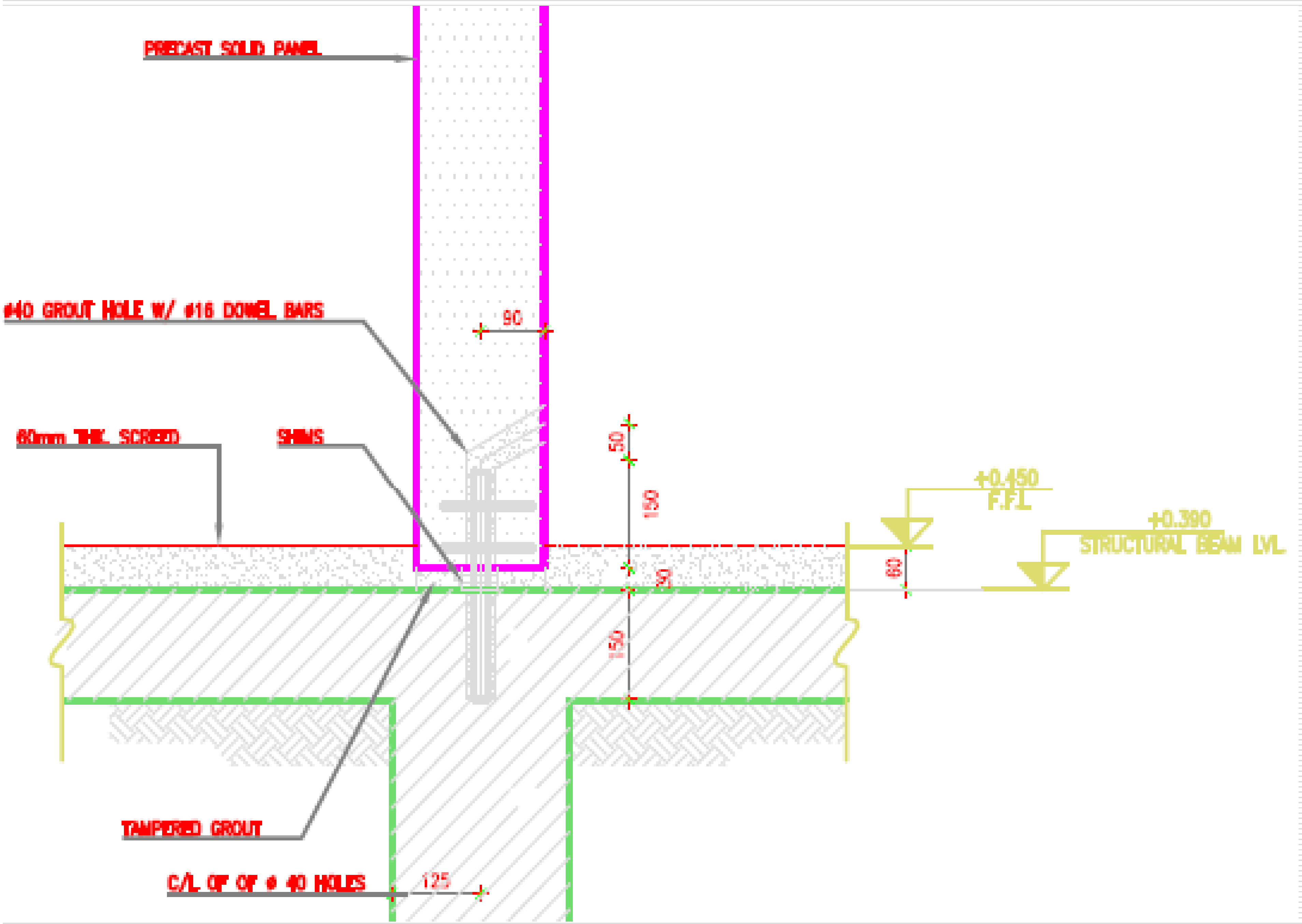


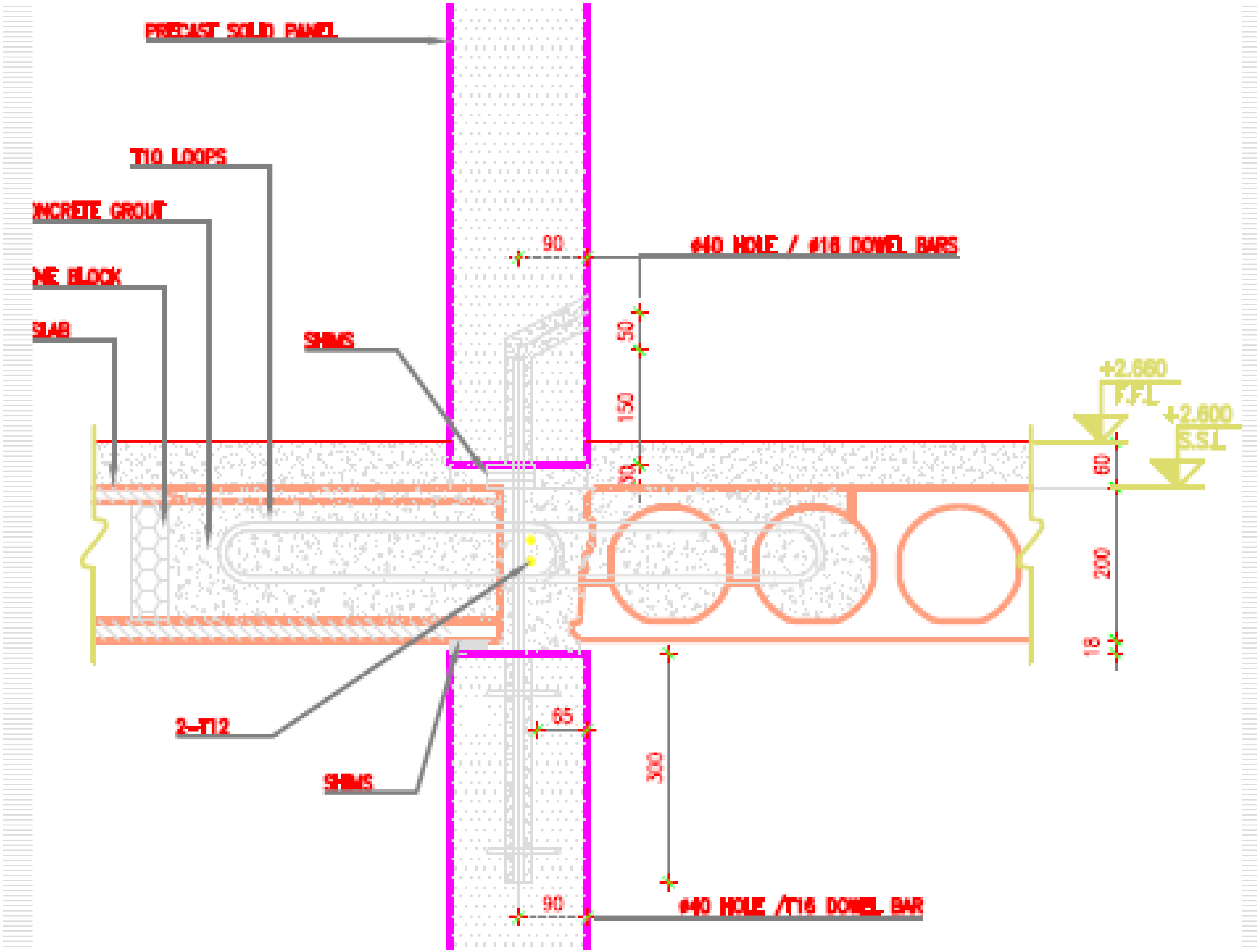
90
110
EXTENT OF
COLOUR CONC.
100
200
20
10
10
'C'
Y10 (00)
Y8/200C/C (00)
40
COLOUR CONC.
EXPANDED
3
POLY.-14Kg/m



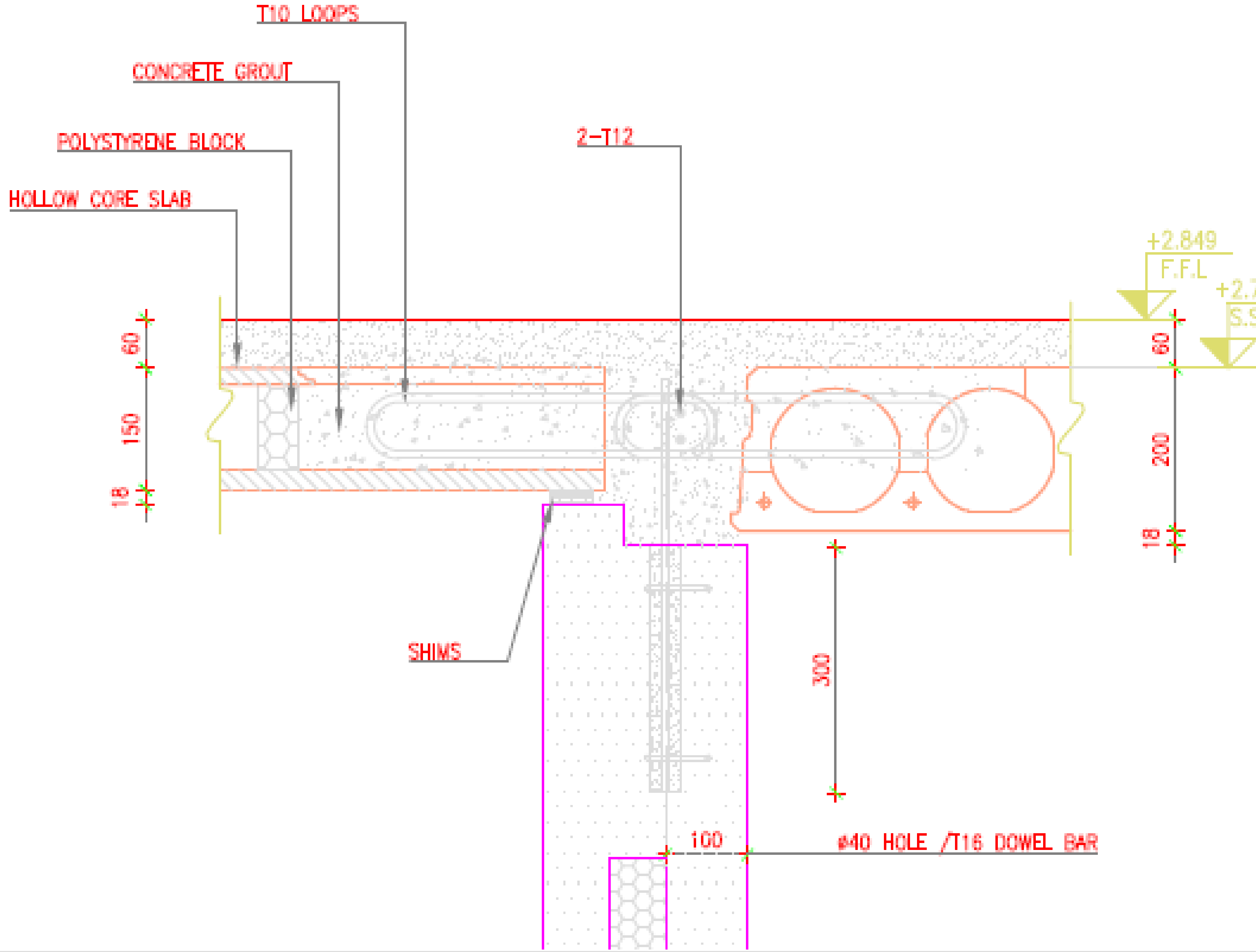
PC BEAM
T10 DOWEL
600
200
BLOCK WORK/
CONCRETE UPSTAND
123
M24 BOLTED
IN RD 24
PC BEAM
(250x550)
SHIMS
(T10) DOWR
388
CORBEL
PRECAST COLUMN
(600x400)
600


PRECAST CONCRETE
LOAD BEARING WALL (TYP.)
50
40
30
16
16
16
PRECAST CONCRETE
LOAD BEARING WALL (TYP.)
150
16
C
50
40
PRECAST CONCRETE
LOAD BEARING WALL (TYP.)
70
40
30
16

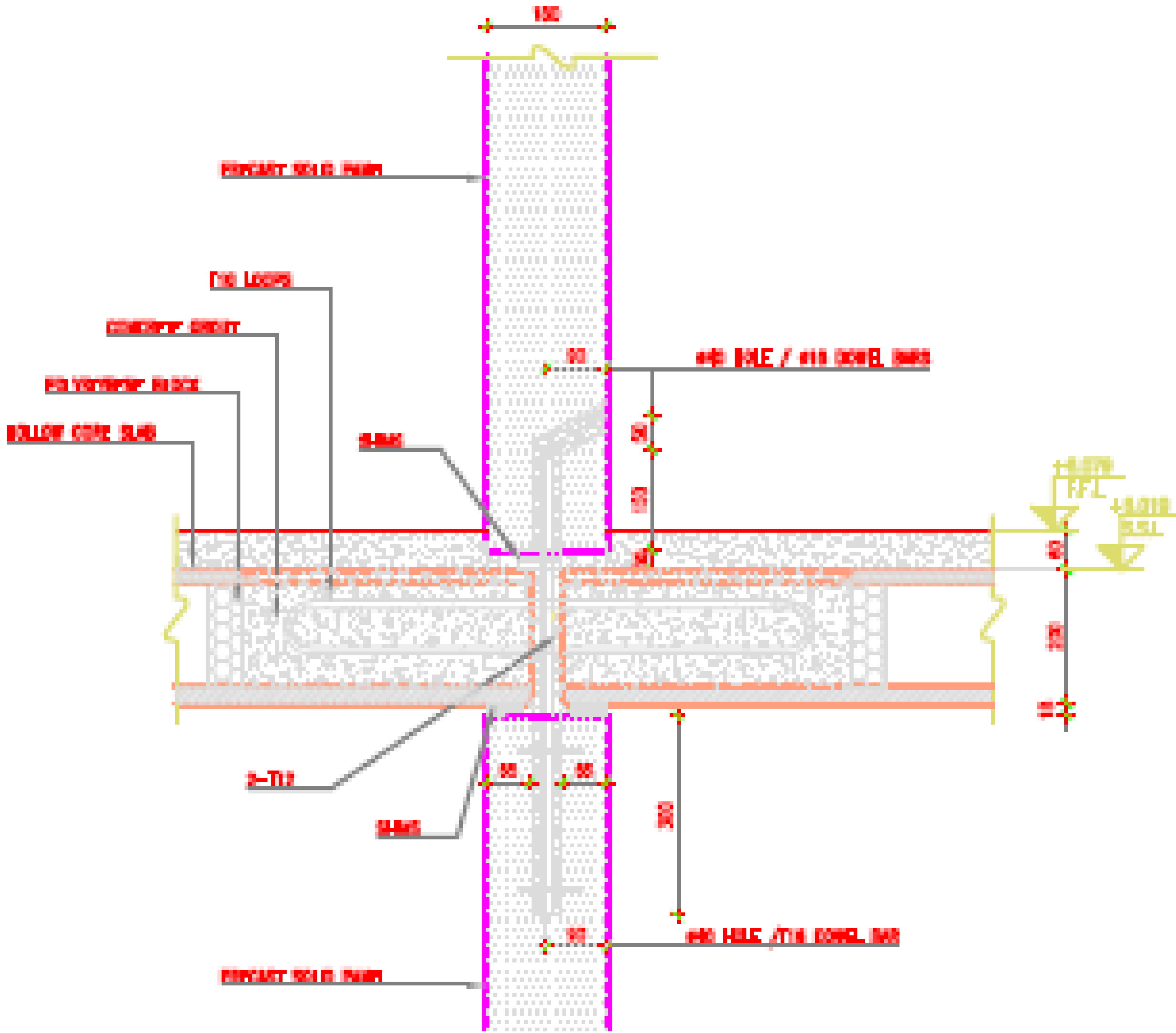

PRECAST SOLID PANEL
ø40 GROUT HOLE W/ ø16 DOWEL BARS
90
60mm THK. SCREED
SHIMS
50
150
+0.450
F.F.L
+0.390
STRUCTURAL BEAM LVL
60
30
150
TAMPERED GROUT
C/L OF OF ø 40 HOLES
125

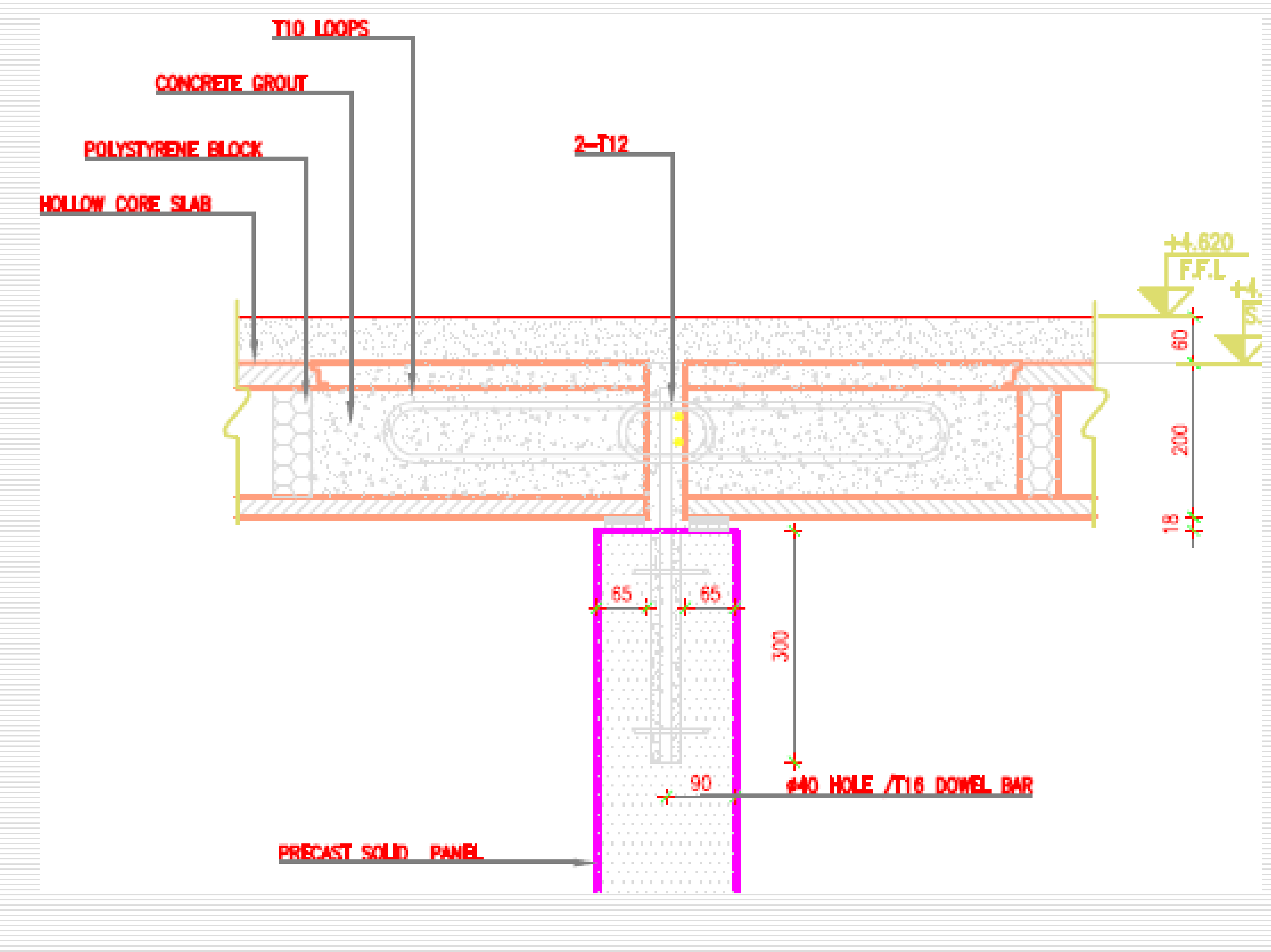


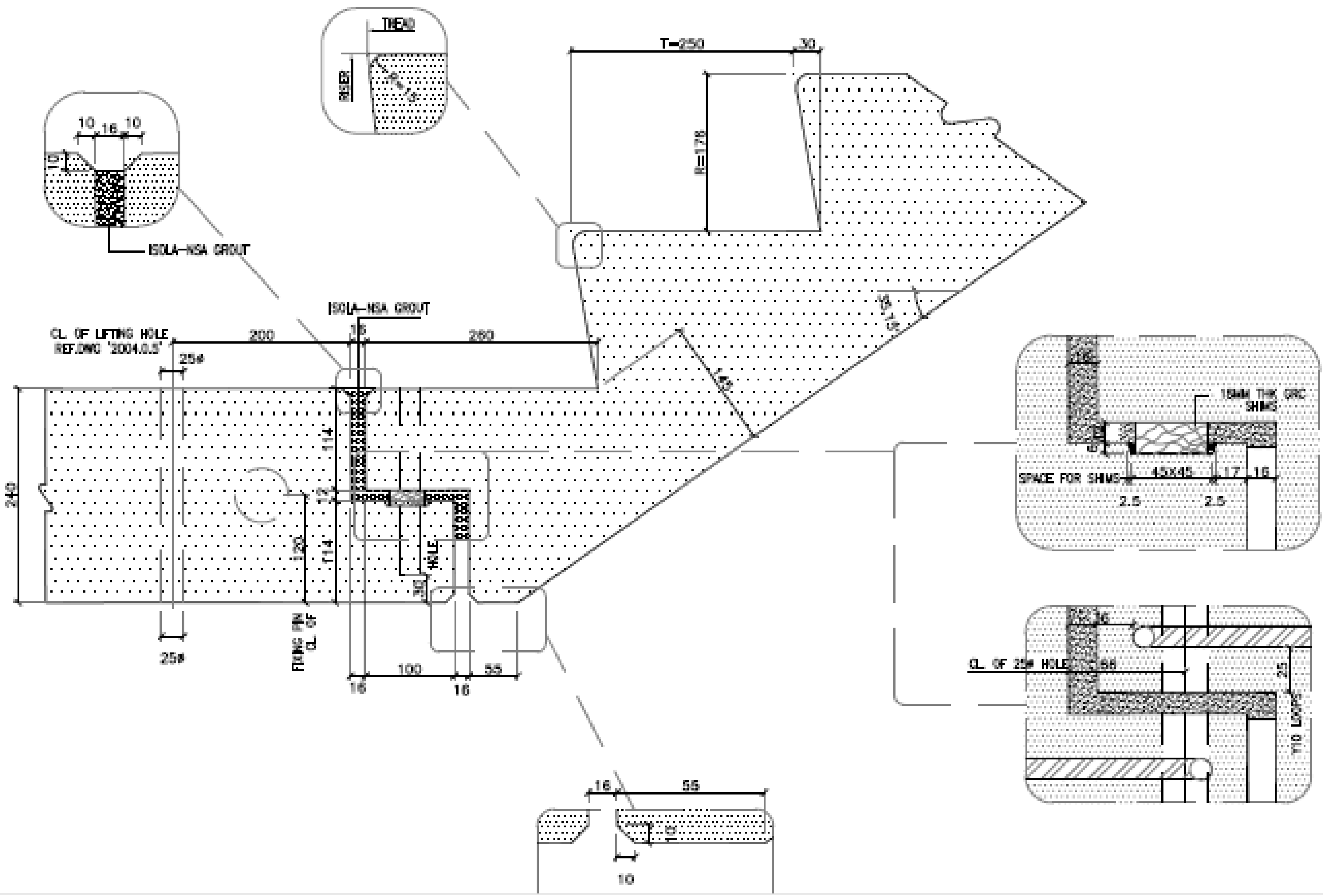
PRECAST SOLID PANEL
T10 LOOPS
NCRETE GROUT
NE BLOCK
SLAB
SHIMS
ø40 HOLE / ø16 DOWEL BARS
90
50
150
50
+2.660
F.F.L
+2.600
S.S.L
60
200
18
2-T12
65
SHIMS
300
90
ø40 HOLE /T16 DOWEL BAR



T10 LOOPS
CONCRETE GROUT
POLYSTYRENE BLOCK
HOLLOW CORE SLAB
2-T12
+2.849
F.F.L
+2.7
S.S
60
150
18
60
200
18
SHIMS
300
100
ø40 HOLE /T16 DOWEL BAR


150
HOLLOW CORE SLAB


T10 LOOPS
CONCRETE GROUT
POLYSTYRENE BLOCK
HOLLOW CORE SLAB
2-T12
+4.620
F.F.L
60
200
18
65
65
300
90
ø40 HOLE /T16 DOWEL BAR
PRECAST SOLID PANEL



TREAD
RISER
10
16
10
ISOLA-NSA GROUT
T=250
30
R=178
ISOLA-NSA GROUT
CL. OF LIFTING HOLE
REF.DWG '2004.0.5'
25ø
200
16
260
145
114
240
12
120
114
HOLE
30
FIXING PIN
CL. OF
25ø
100
55
16
16
15MM THK GRC
SHIMS
SPACE FOR SHIMS
45X45
17
16
2.5
2.5
CL. OF 25ø HOLE
16
25
T10 LOOPS
16
55
10
10


AL-IMAN SCHOOL


NISSAN
2009/9/28 11:19


2011/1/26 16:58

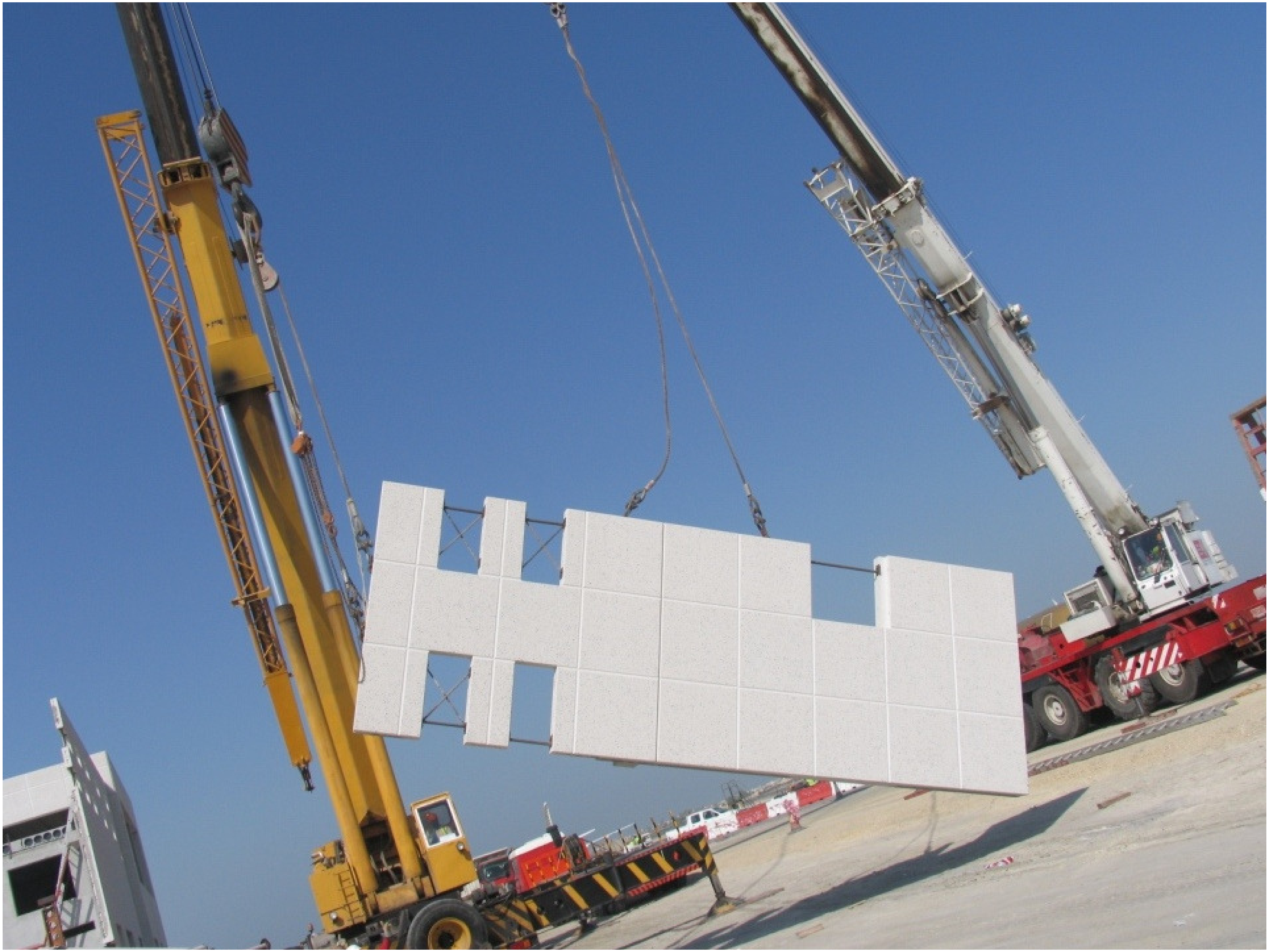

TOYOTA
EBRAHIM K. KANOO
Body & Paint
TOYOTA
LEXUS


bmi


2010/3/7 12:01


2010/3/7 12:00


UGC



MONUMENTS


ISA TOWN


FRONT
REAR


CLADDING

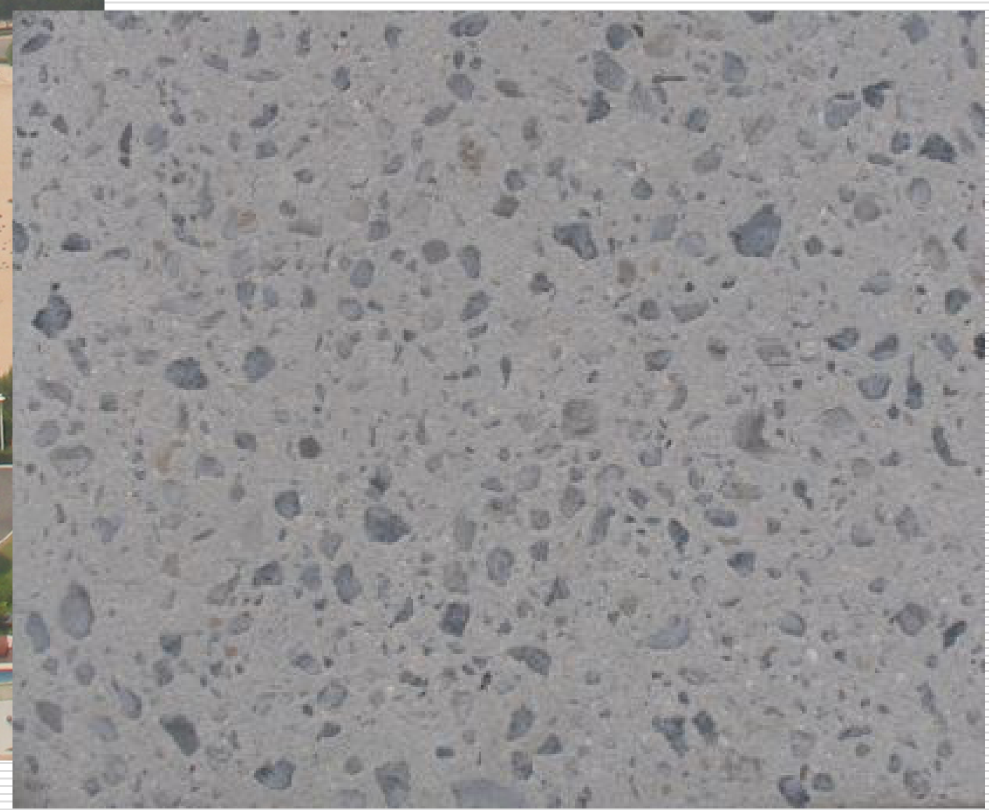
Shopping mall

Medical College

finish texture

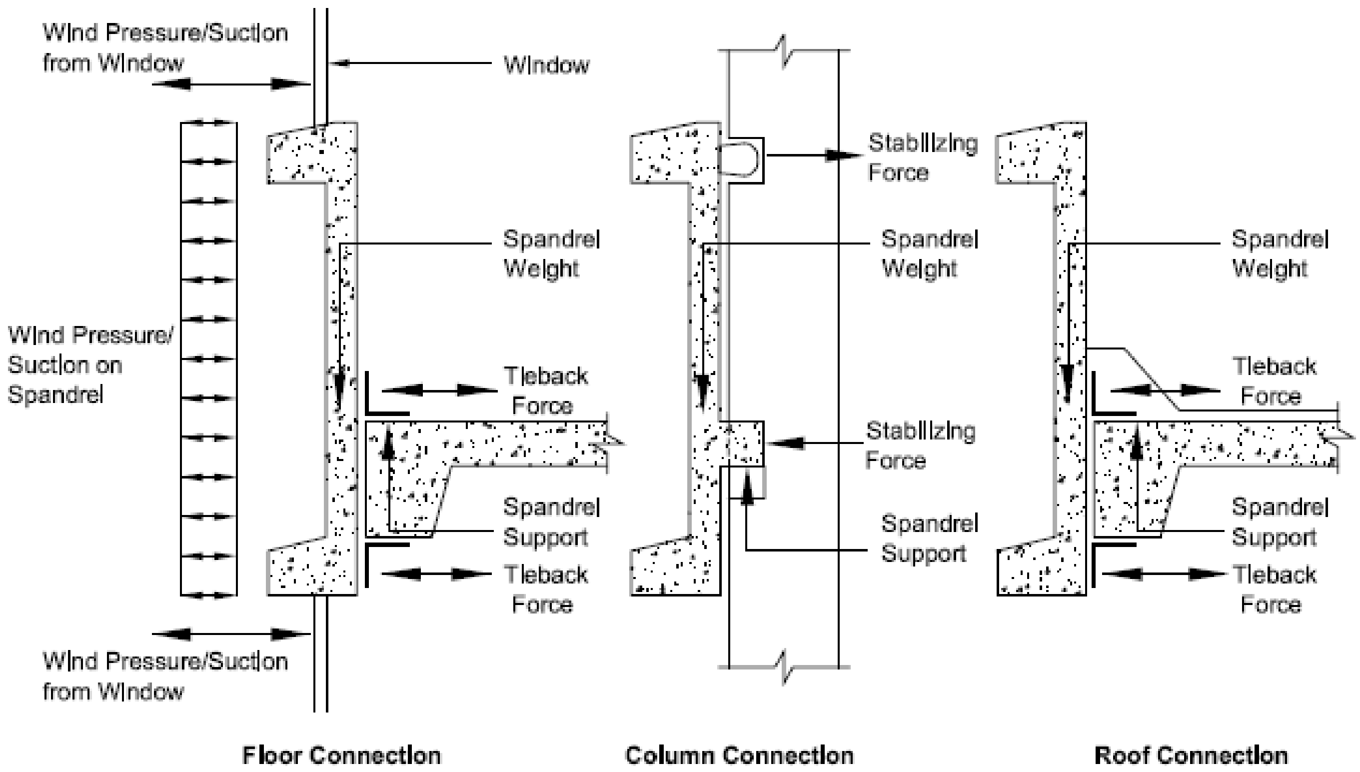
Details / embossing

Office building

CITIBANK Bahrain

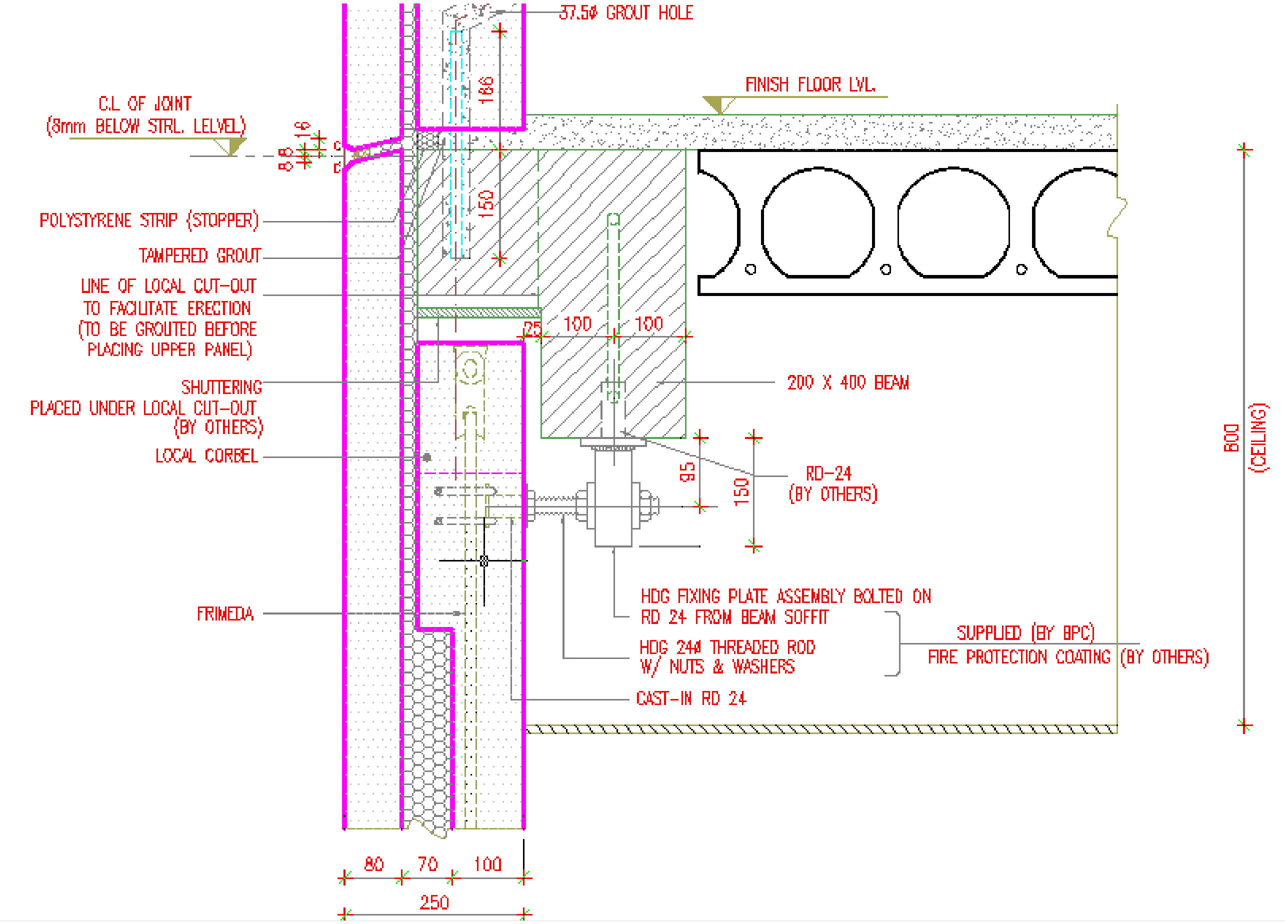
PRECAST PANELS



STRUCTURAL CALCULATIONS

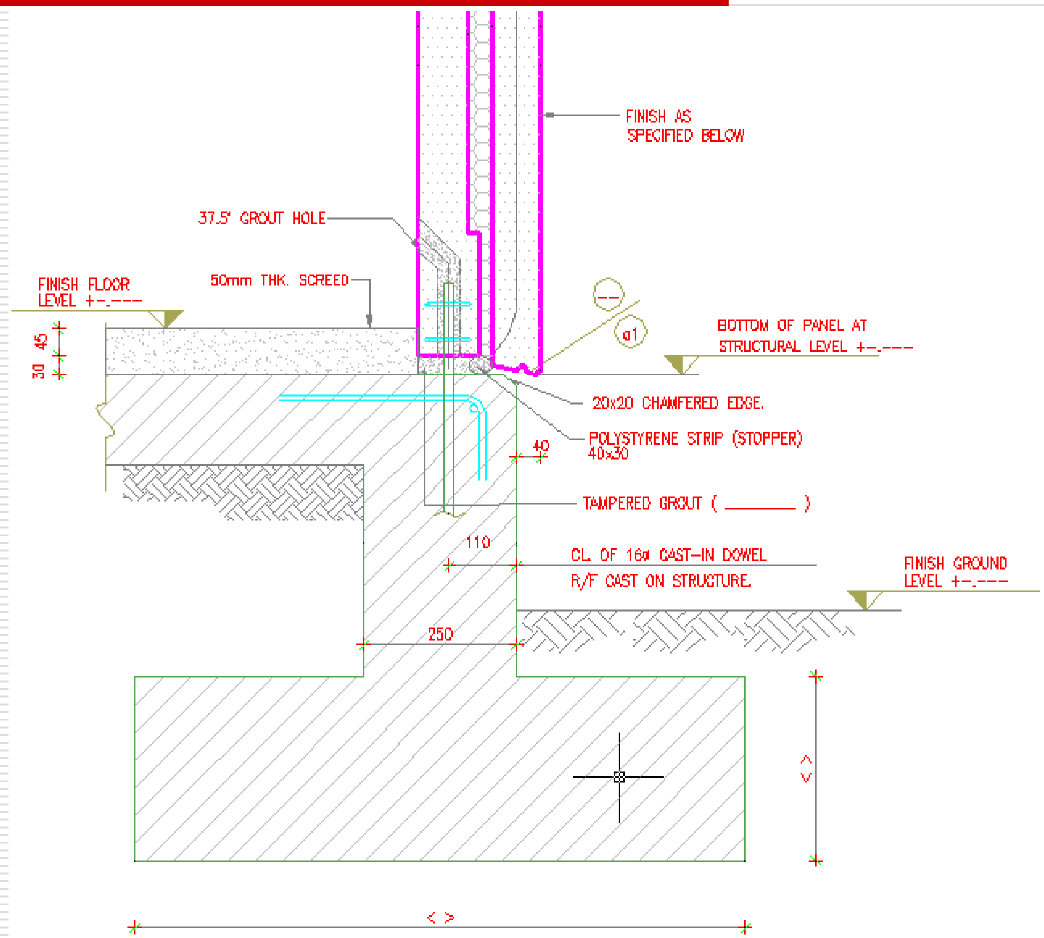
- Basis : Euro code, ACI, PCI
  - ✓ Vertical load bearing corbel of the panel: This could either be placed at top or bottom
  - ✓ Fixings to support horizontal force can either be at top or bottom
  - ✓ The cladding to be designed for gravity, wind , Seismic and movements forces such as ,thermal, shrinkage and movement of supporting structure
  - ✓ Allowances for tolerances for production, erection and supporting structure
  - ✓ Design details to stop for any air and water leakage and also stopping condensation

ERECTION DETAILS

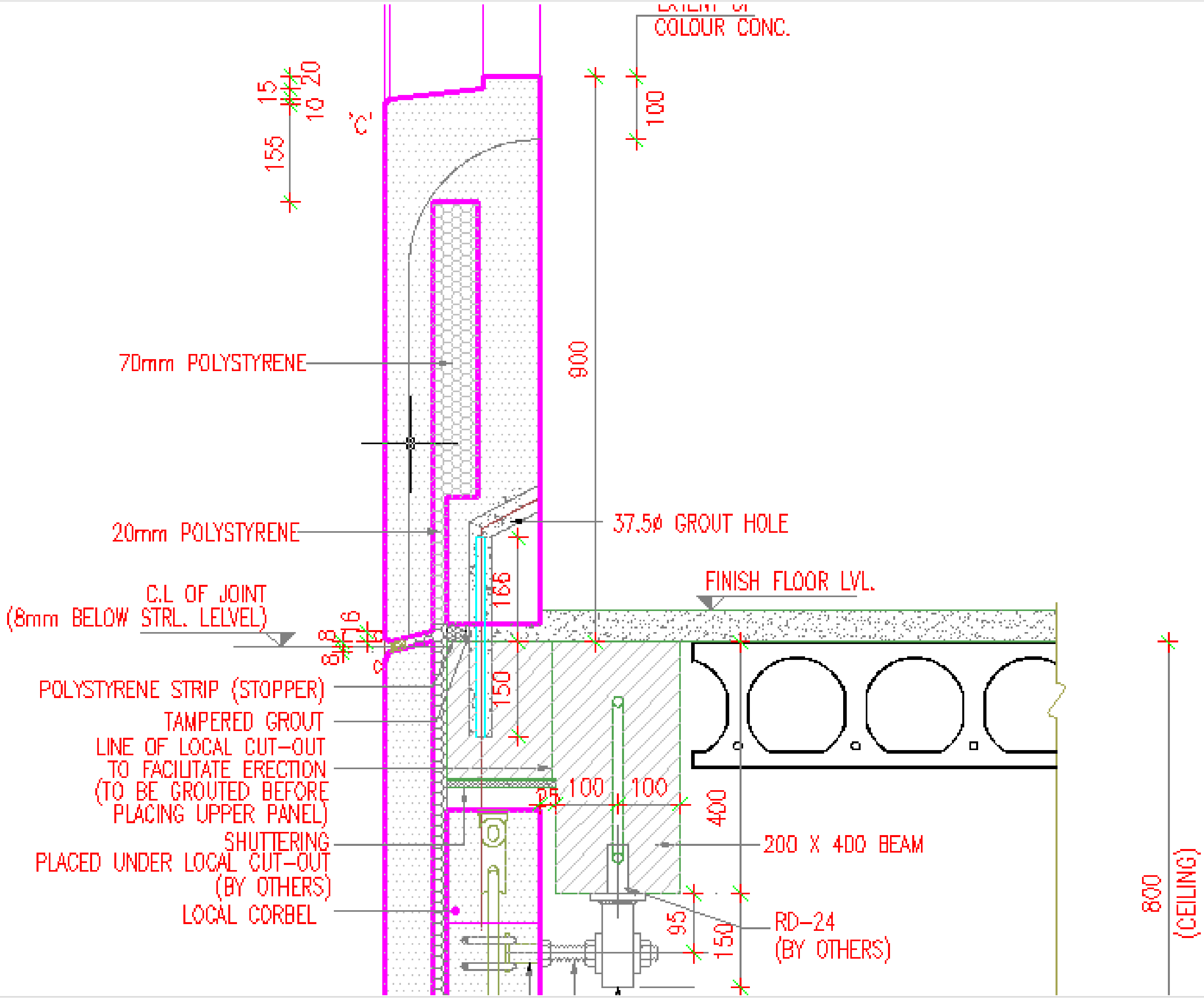


PANEL TO PANEL AND SLAB CONNECTION

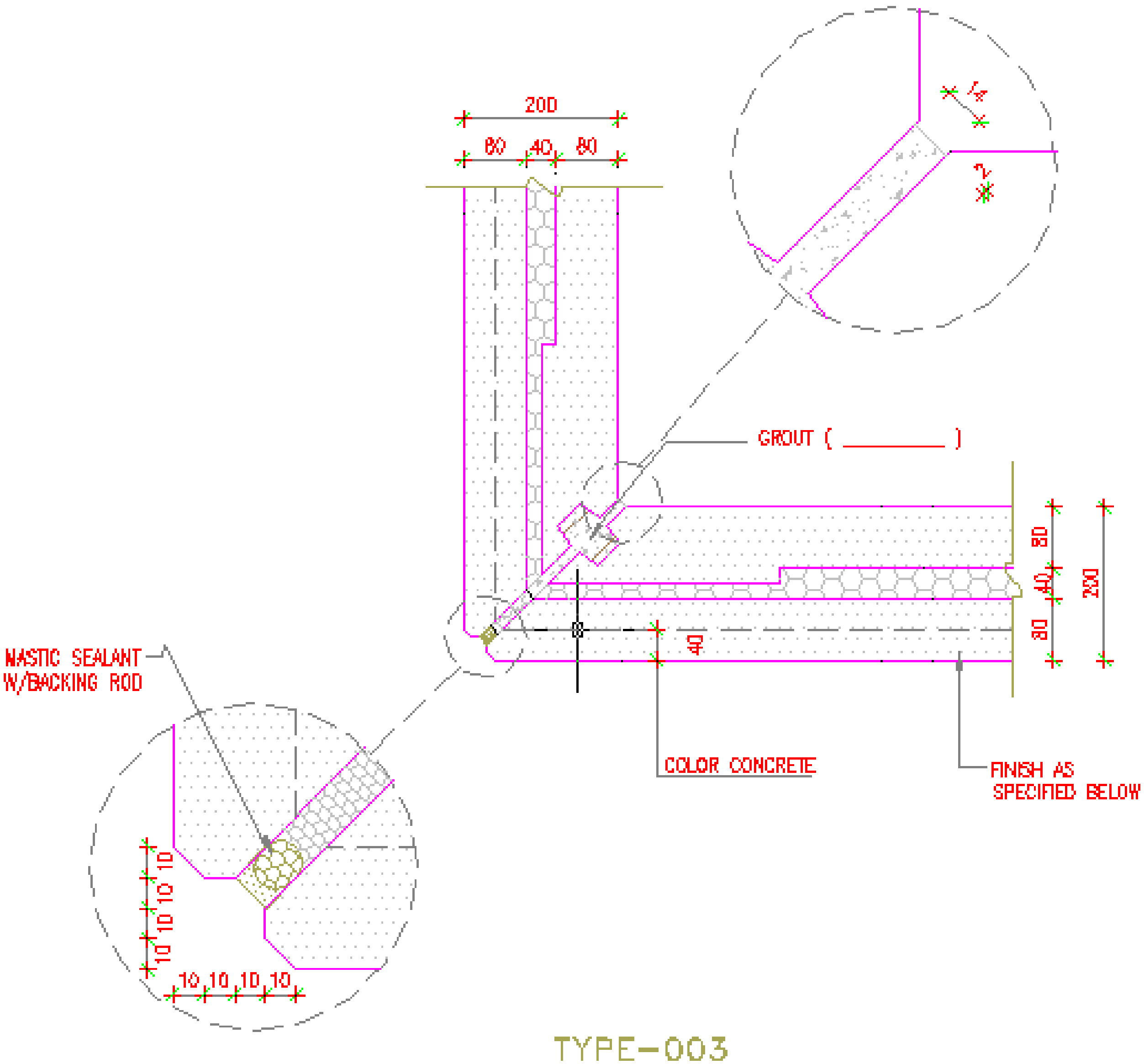
ERECTION DETAILS



PANEL TO GROUND BEAM CONNECTION

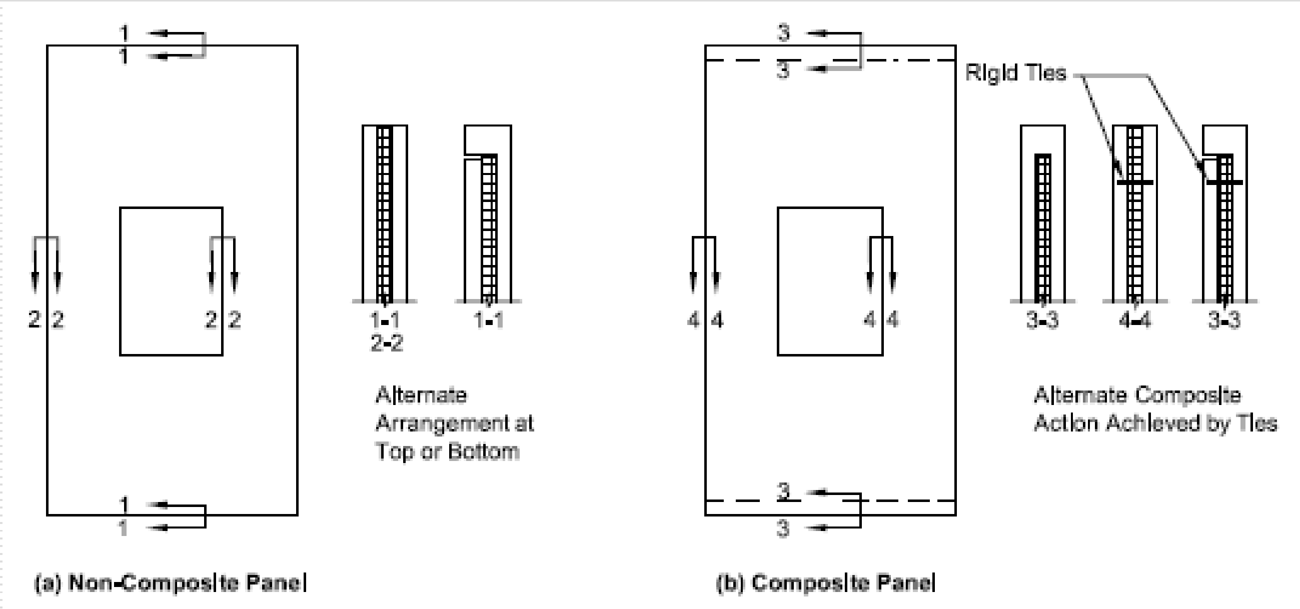


PANEL TO PANEL AND SLAB CONNECTION

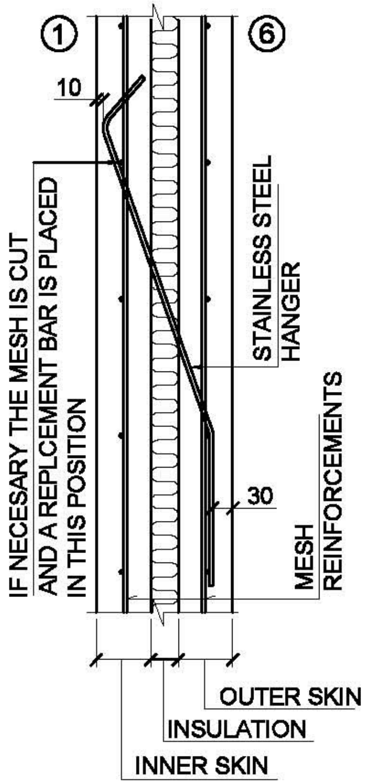


CORNER CONNECTIONS

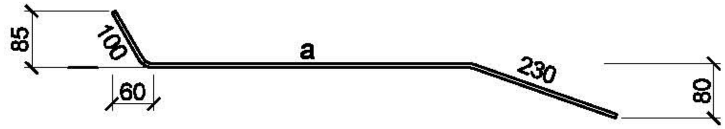
SANDWICH PANELS



Non-composite and composite panels



VERTICAL SECTION OF INSULATED PANEL.



MEASUREMENTS:

PANEL THICKNESS	a	CUTTING LENGTH
200 mm	500 mm	850 mm
250 mm	640 mm	940 mm
300 mm	780 mm	1030 mm

BENDING DIAMETER: 40-60 mm

QUALITY: STAINLESS STEEL TYPE REF. DRG. 18.01

DIMENSION: 6 MM, DEFORMED BAR

HINTS FOR MOULD WORK:

THE POSITION OF THE HANGER IS IMPORTANT, THE DISTANCES 10 AND 30 MM MUST BE KEPT. THE HANGER MUST NOT BE MOVED OR BEND AFTER CASTING THE OUTER SKIN. BY POSITIONING THE MESH IN THE INNER SKIN HANGER MIGHT BE PRESSED DOWN TO THE INSULATION. IN THAT CASE CUT SHALL BE MADE IN THE MESH TO BRING THE HANGER IN THE CORRECT POSITION. A REPLACEMENT BAR IS THEN PLACED AS SHOWN ON THE SECTION.

CAPACITY FOR ONE HANGER:

	40 mm INSULATION		80 mm INSULATION	
DIST. TO CENTER	MAX LOAD (SLS)	AREA OUTER SKIN*	MAX LOAD (SLS)	AREA OUTER SKIN*
0 mm	7.61 kN	3.80 m2	7.61 kN	3.80 m2
500 mm	6.83 kN	3.41 m2	7.42 kN	3.71 m2
1000 mm	6.04 kN	3.02 m2	7.22 kN	3.61 m2
1500 mm	5.26 kN	2.63 m2	7.03 kN	3.51 m2
2000 mm	4.47 kN	2.23 m2	6.83 kN	3.41 m2
2500 mm	3.69 kN	1.84 m2	6.64 kN	3.32 m2
3000 mm	2.90 kN	1.45 m2	6.44 kN	3.22 m2

*) AREA IS AREA PR HANGER FOR THICKNESS OF OUTER SKIN = 80 MM. IF THICKNESS IS BIGGER OR IF ANY LOAD IS ADDED TO THE OUTER SKIN THEN THE AREA PR HANGER IS SMALLER.


alba
ALBA HEALTHCARE CENTRE
مركز البا الصحي


مبنى مكاتب من خمس أدوار
FIVE STOREY OFFICE BUILDING
GEMAC
جيماك
AL MOAYYED CONSTRUCTION


BNH

-

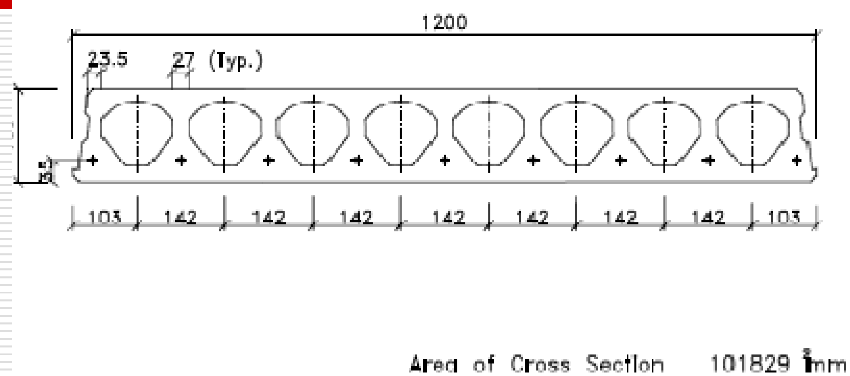
-

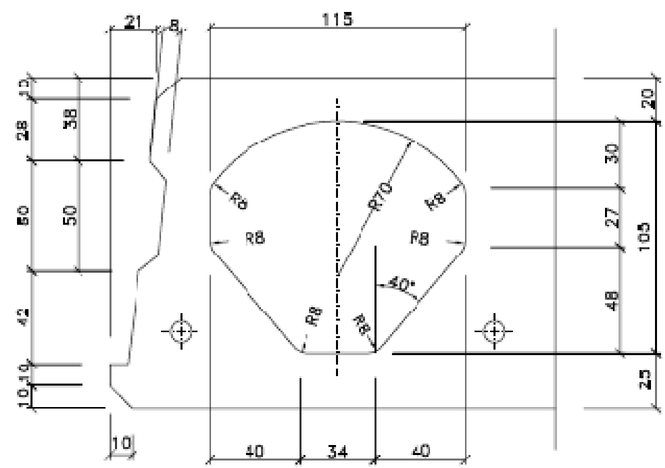

BAHRAIN INTERNATIONAL CIRCUIT
BAHRAIN INTERNATIONAL CIRC


SOFITEL

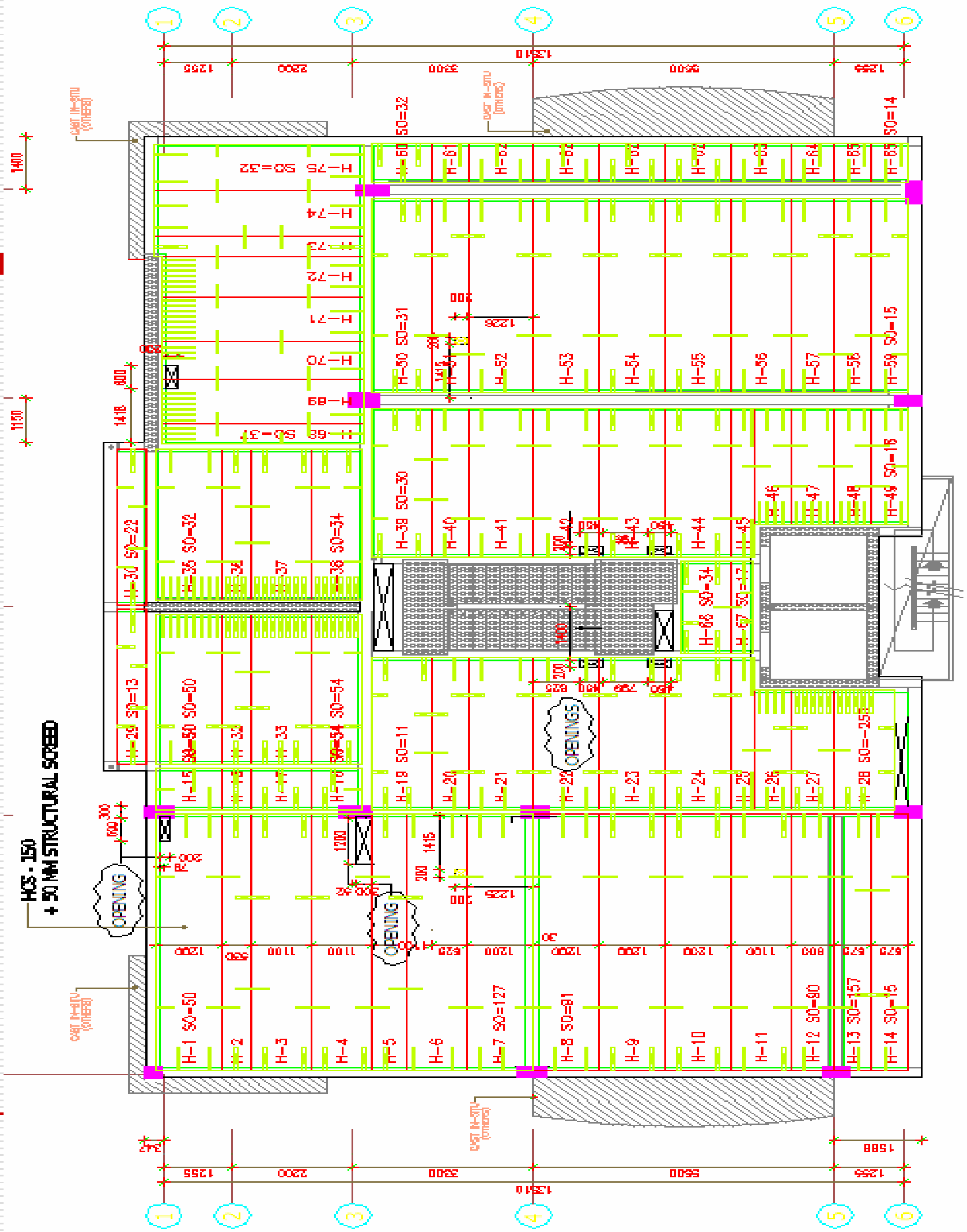
LONG SPAN ELEMENTS

Less material usage.





FOR PRODUCTION
TOLERANCES REFER TO
SEPARATE SHEETS.

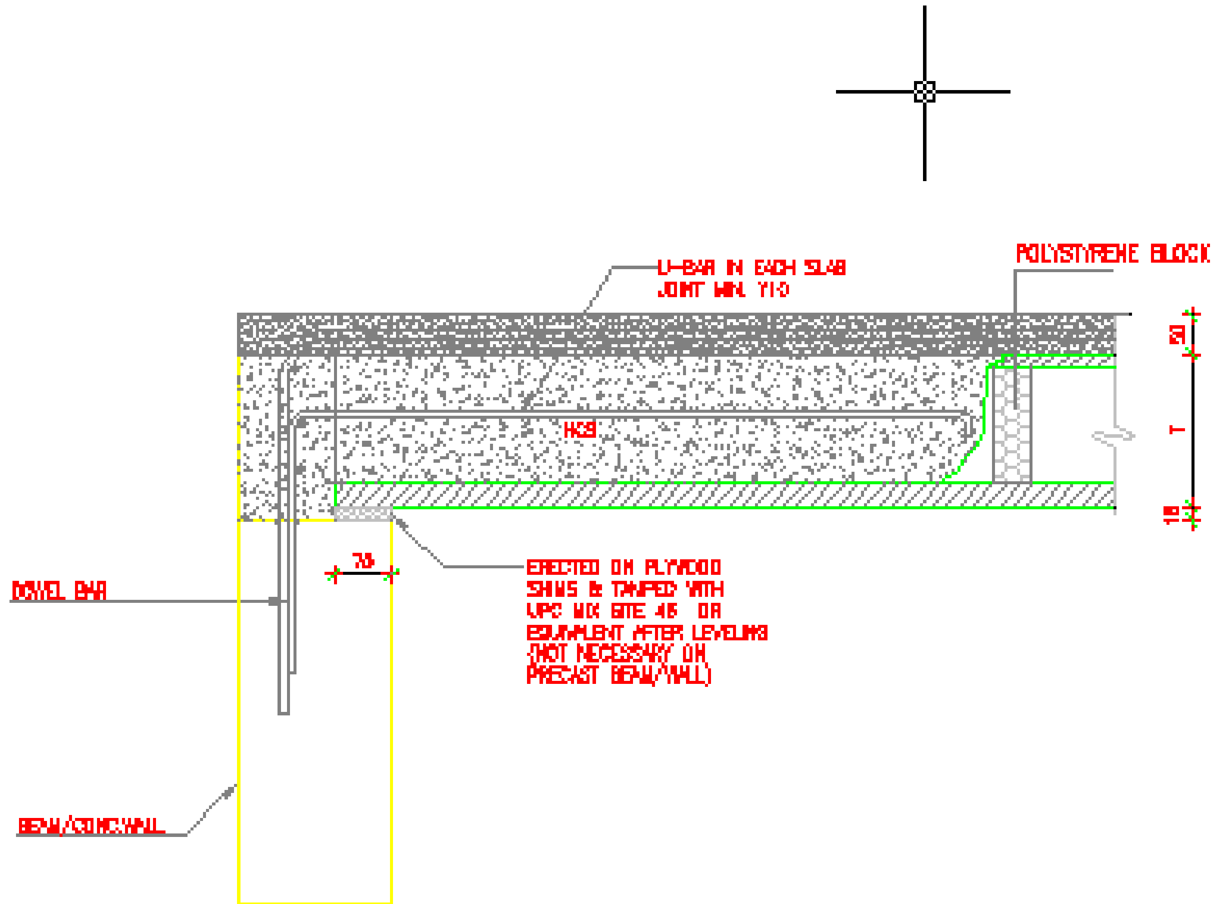

HCS - 150
+ 50 MM STRUCTURAL SCREED
OPENING
OPENING
OPENINGS
13510
1255
2200
3300
5500
1255
1588

✓ *Greater span-to-depth ratios,*

Strands \ Span		15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0
4x12.5 + 6x15.7 mm	Quls	17.7	16.1	14.5	13.1	11.9	10.7	9.7	8.74	7.8	7.01	6.24	5.53	
Mur= 888 KN-M	Qsls	8.96	8.0	7.1	6.3	5.6	4.95	4.35	3.8	3.27	2.8	2.4	1.95	
Vco= 331 KN	C	−10.2	−9.7	−9.0	−8.1	−6.93	−5.6	−4.0	−2.1	0.0	2.44	5.20	8.2	
	U	2.76	3.14	3.57	4.04	4.55	5.1	5.7	6.38	7.1	7.87	8.7	9.62	
5x12.5 + 6x15.7 mm	Quls	18.8	17.1	15.6	14.1	12.8	11.6	10.6	9.5	8.5	7.7	6.87	6.13	5.43
Mur= 926 KN-M	Qsls	9.60	8.60	7.7	6.87	6.12	5.43	4.8	4.21	3.7	3.18	2.72	2.3	1.90
Vco= 338 KN	C	−11.9	−11.5	−10.9	−10.1	−9.10	−7.89	−6.4	−4.7	−2.7	−0.4	2.2	5.14	8.45
	U	2.76	3.14	3.57	4.04	4.55	5.11	5.7	6.4	7.1	7.8	8.7	9.62	10.59
3x12.5 + 8x15.7 mm	Quls	19.6	17.8	16.2	14.7	13.4	12.1	11.0	9.99	9.02	8.13	7.31	6.54	5.83
Mur= 953 KN-M	Qsls	10.1	9.1	8.2	7.35	6.57	5.85	5.2	4.59	4.04	3.52	3.05	2.6	2.19
Vco= 341 KN	C		−13.2	−12.7	−12.1	−11.2	−10.1	−8.7	−7.1	−5.31	−3.16	−0.7	2.1	5.27
	U		3.14	3.5	4.04	4.55	5.1	5.7	6.38	7.1	7.87	8.7	9.62	10.59

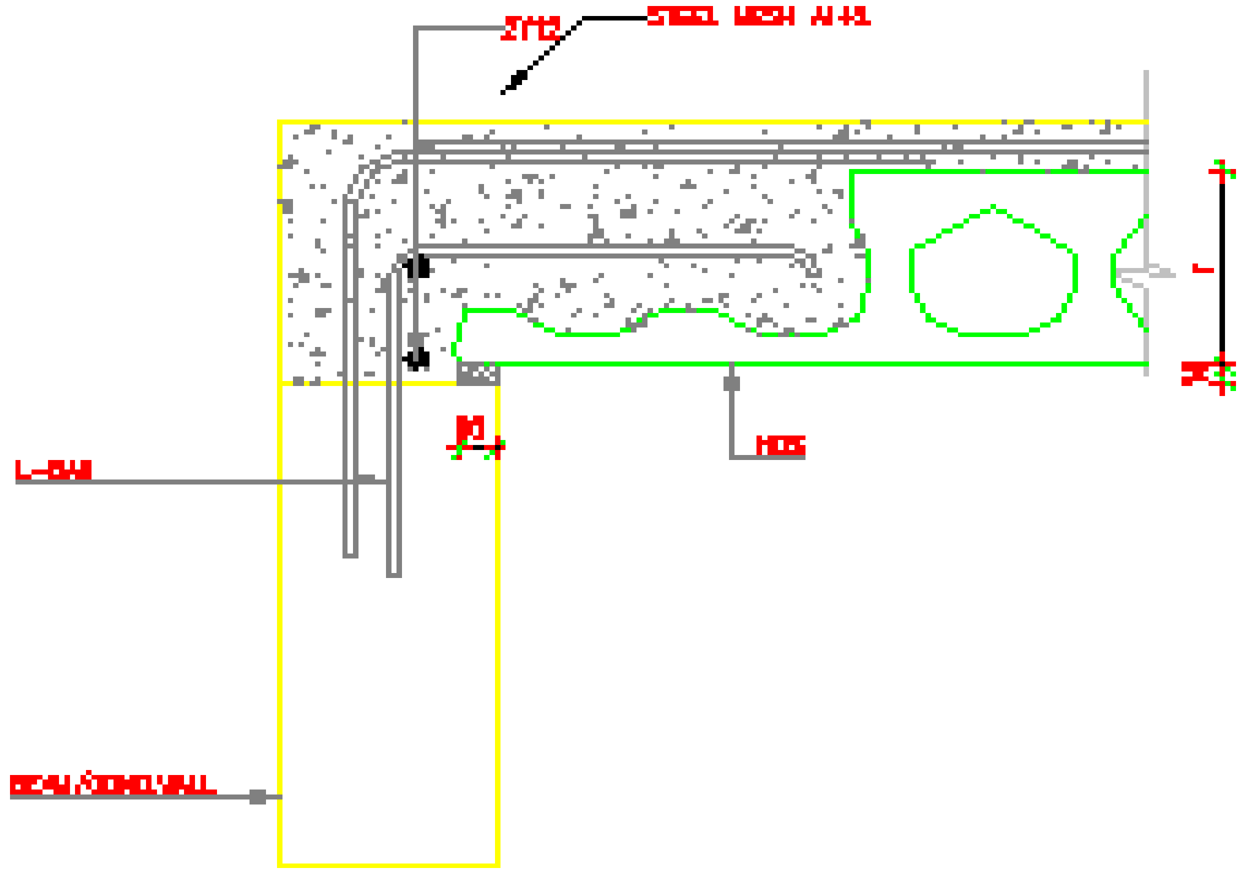

06/02/2006

ERECTION DETAILS

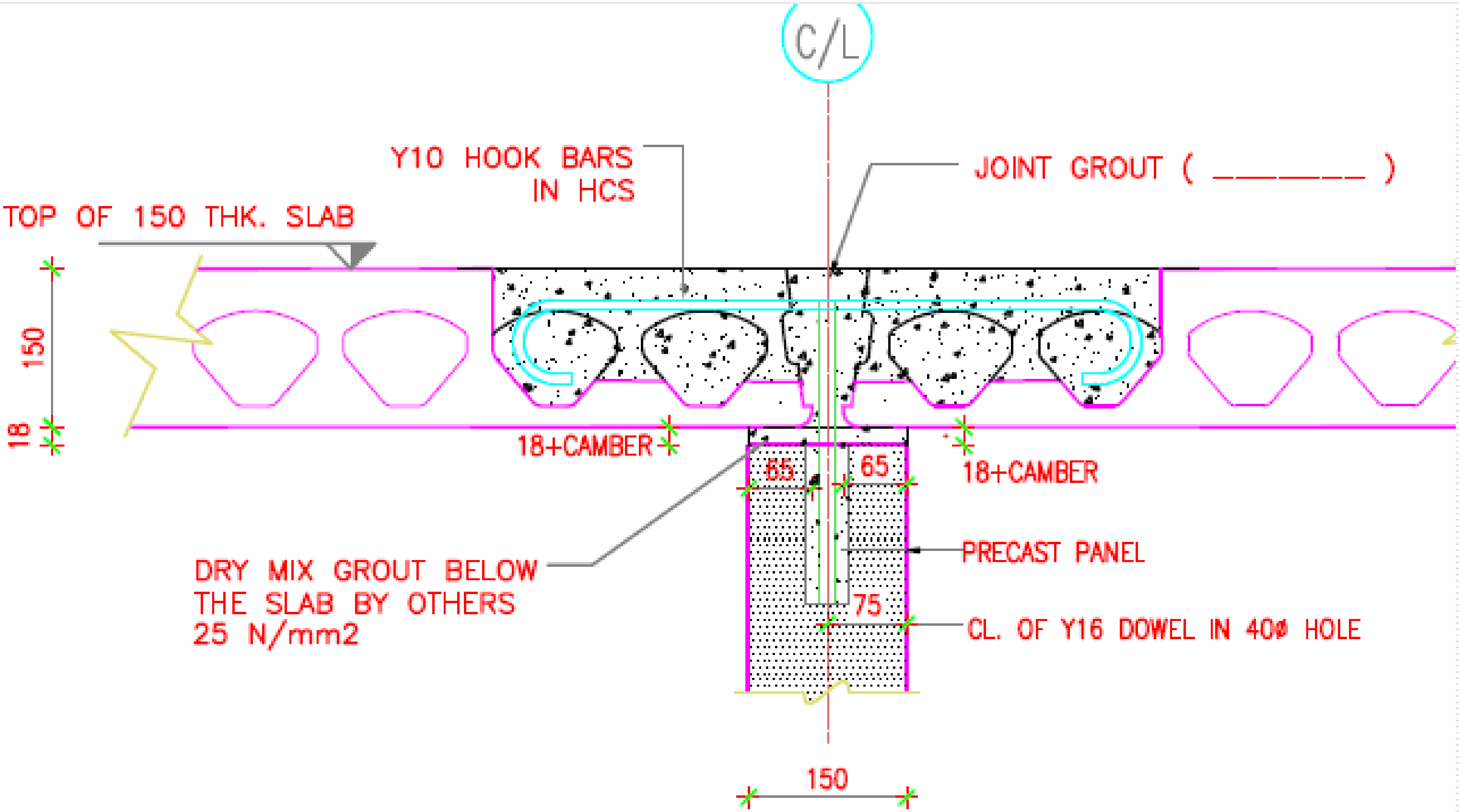


SLAB AND WALL CONNECTION

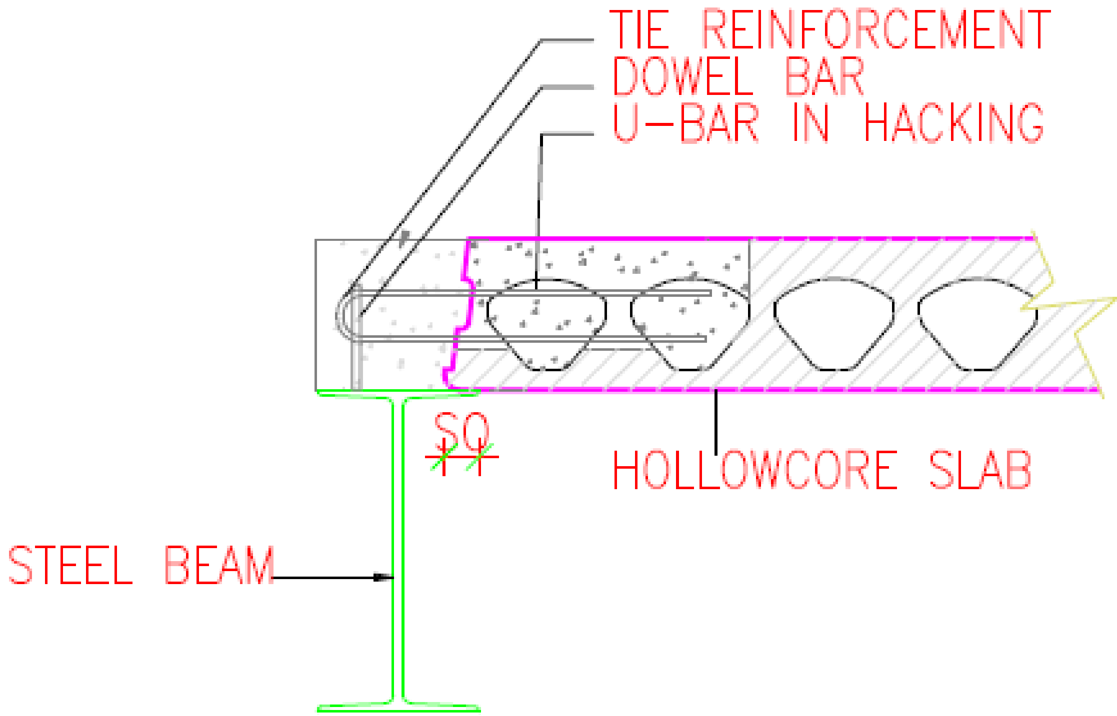
ERECTION DETAILS



SLAB AND WALL CONNECTION

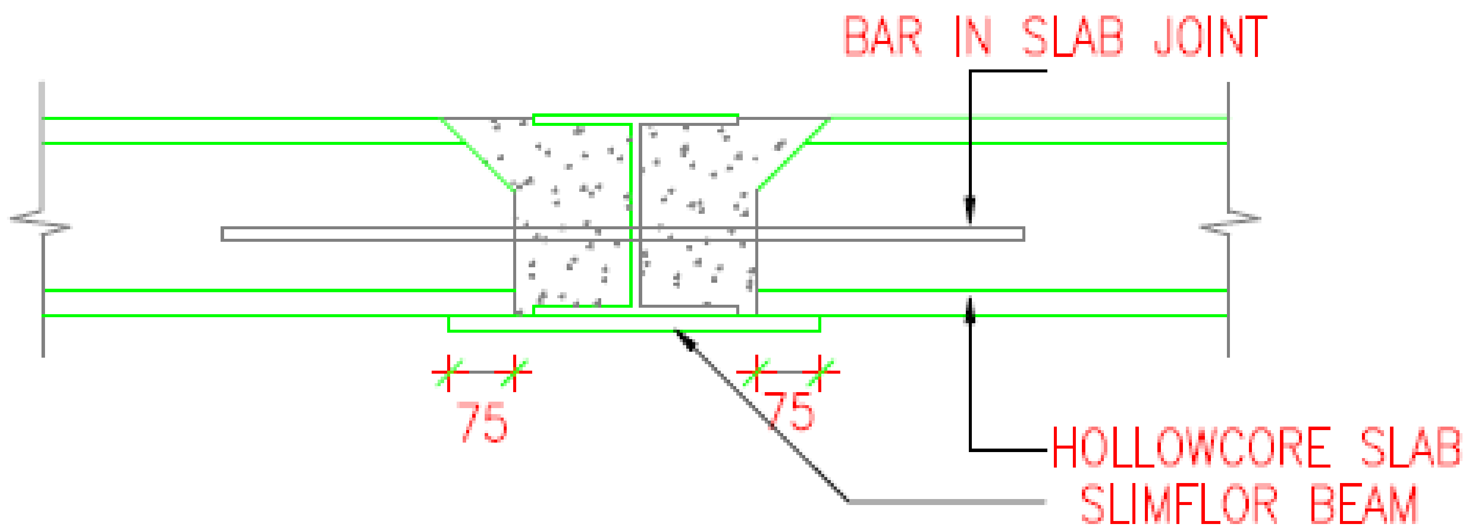

C/L
Y10 HOOK BARS
IN HCS
JOINT GROUT (_________)
TOP OF 150 THK. SLAB
150
18
18+CAMBER
18+CAMBER
65
65
PRECAST PANEL
DRY MIX GROUT BELOW
THE SLAB BY OTHERS
25 N/mm2
75
CL. OF Y16 DOWEL IN 40ø HOLE
150

ERECTION DETAILS



SLAB AND BEAM CONNECTION

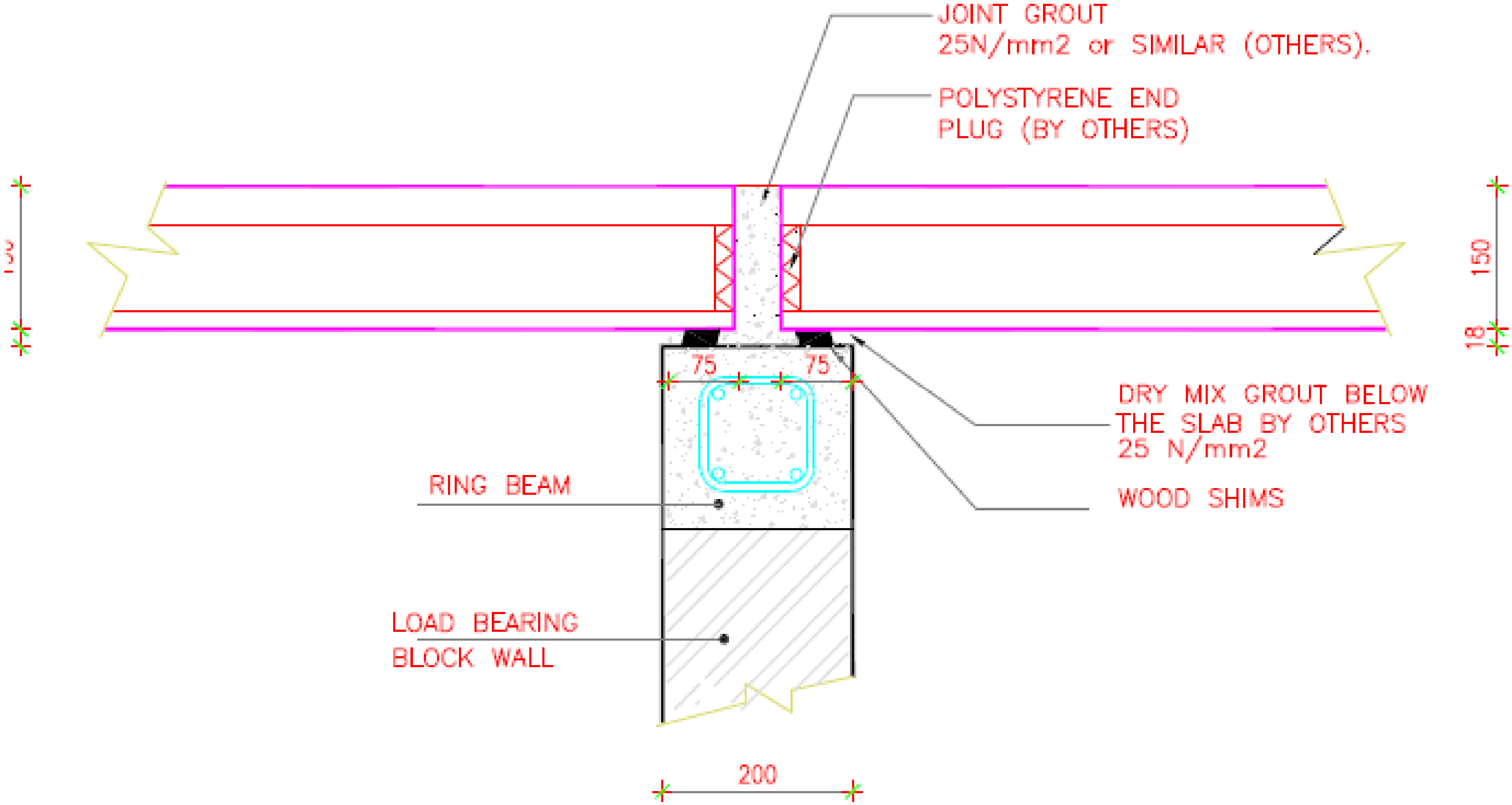
ERECTION DETAILS

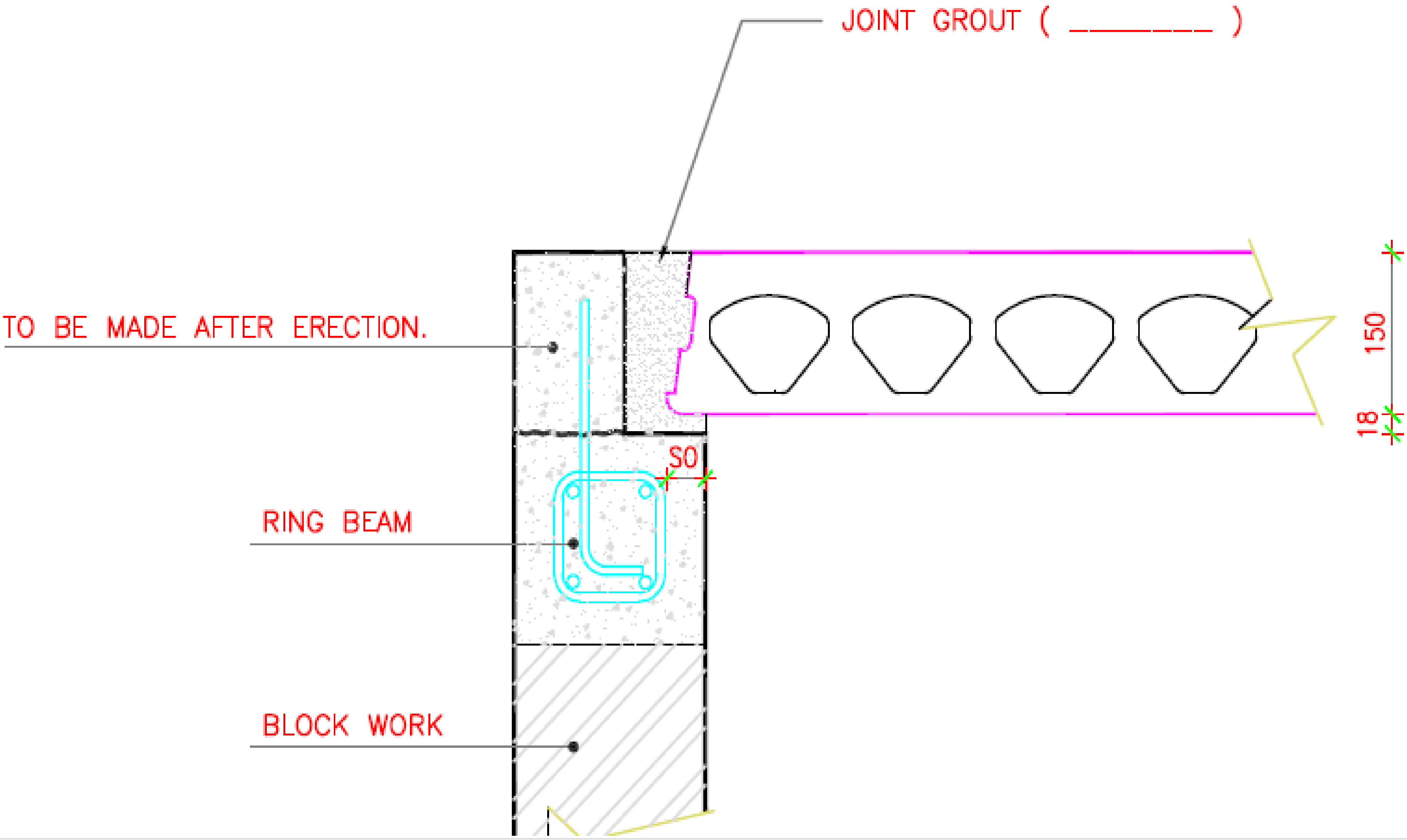


SLAB AND BEAM CONNECTION

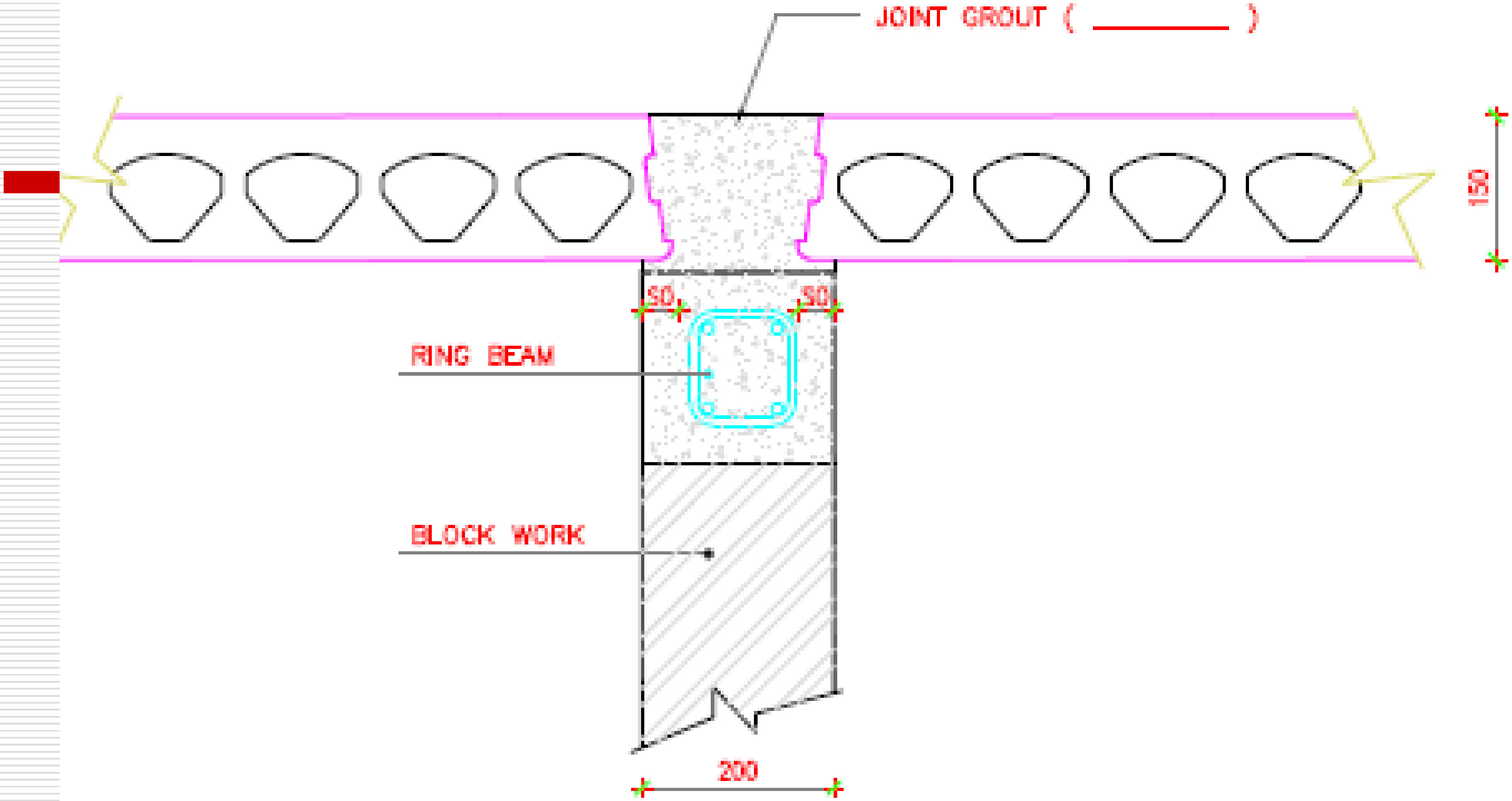

2010/9/8 11:50


2010/4/21 11:03

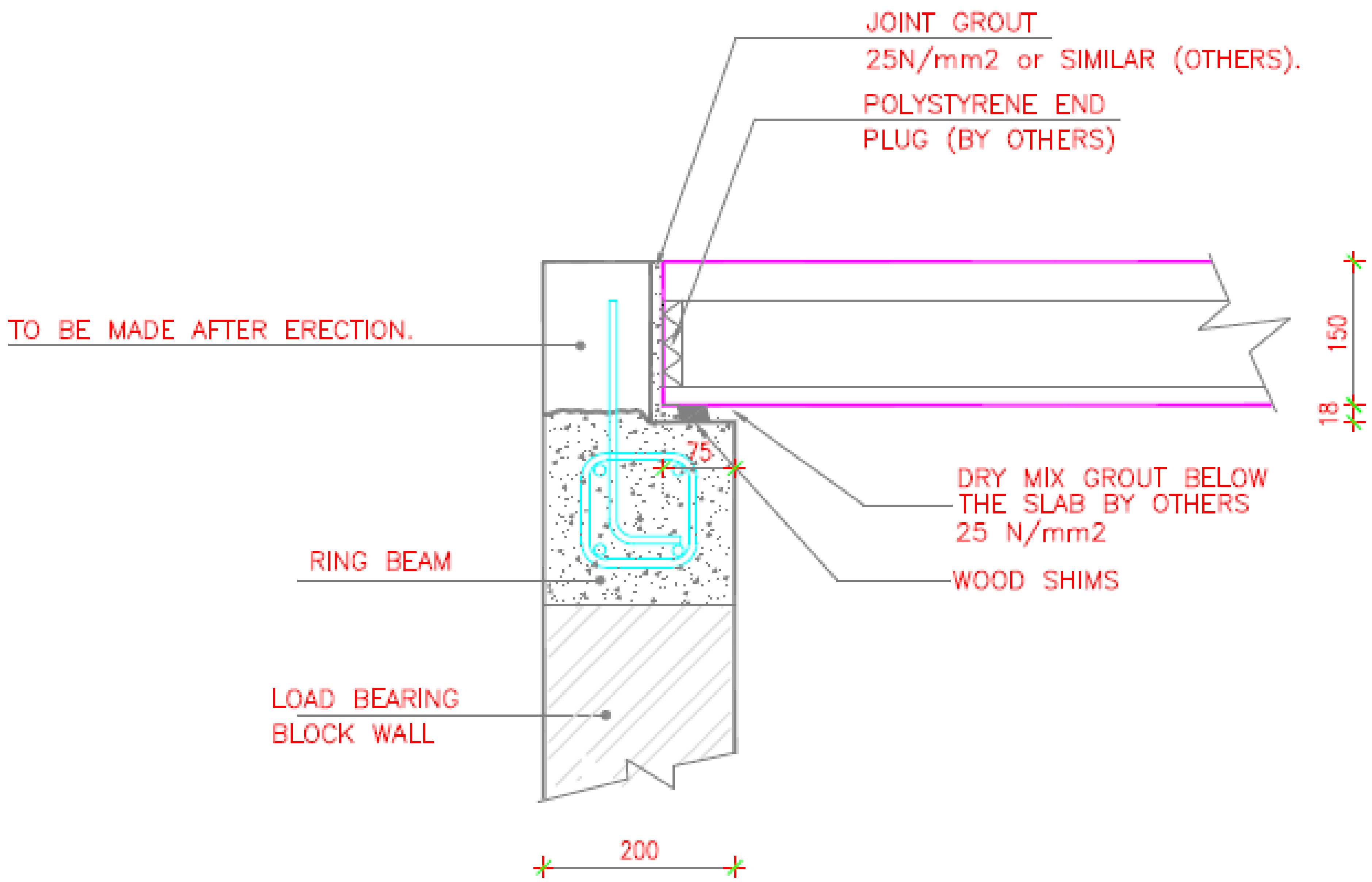

JOINT GROUT
25N/mm2 or SIMILAR (OTHERS).
POLYSTYRENE END
PLUG (BY OTHERS)
150
18
75
75
DRY MIX GROUT BELOW
THE SLAB BY OTHERS
25 N/mm2
WOOD SHIMS
RING BEAM
LOAD BEARING
BLOCK WALL
200

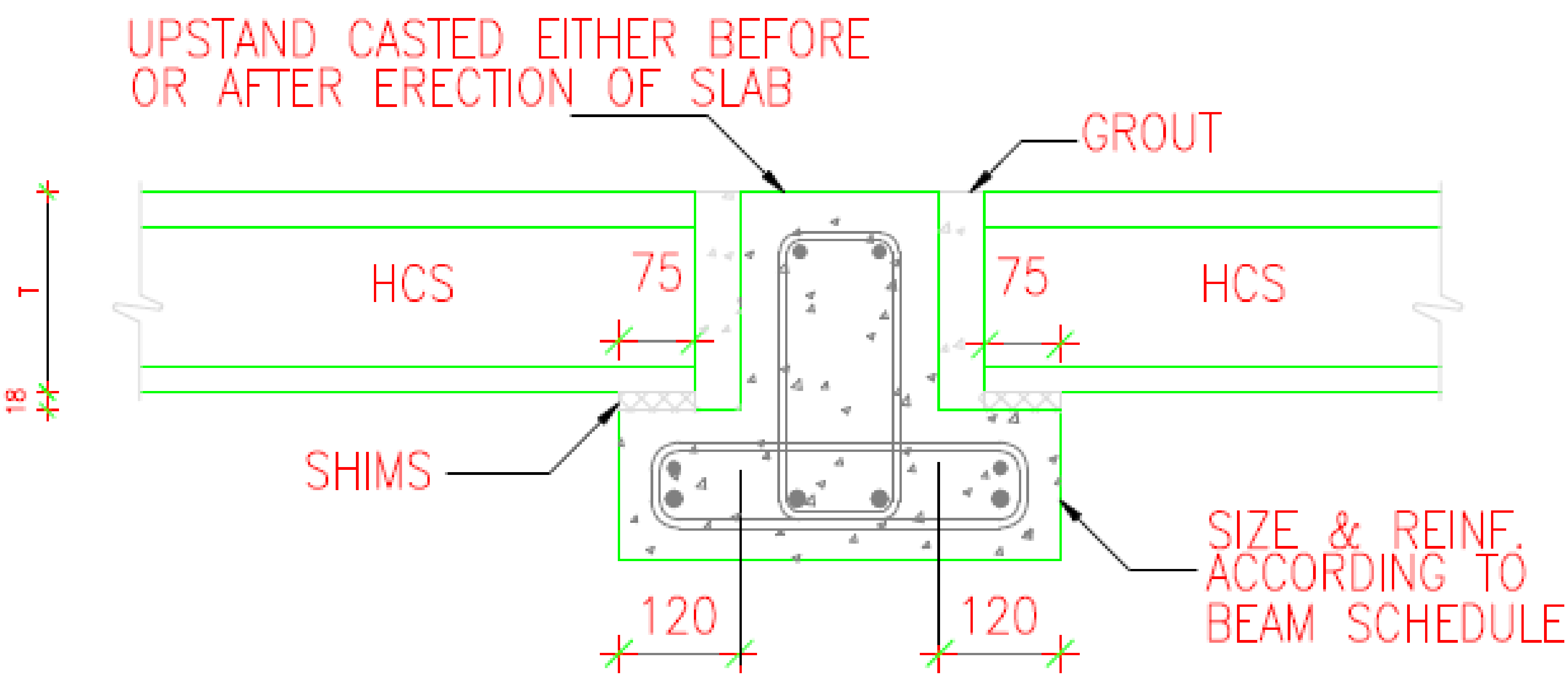


JOINT GROUT (________)
TO BE MADE AFTER ERECTION.
RING BEAM
BLOCK WORK
50
150
18

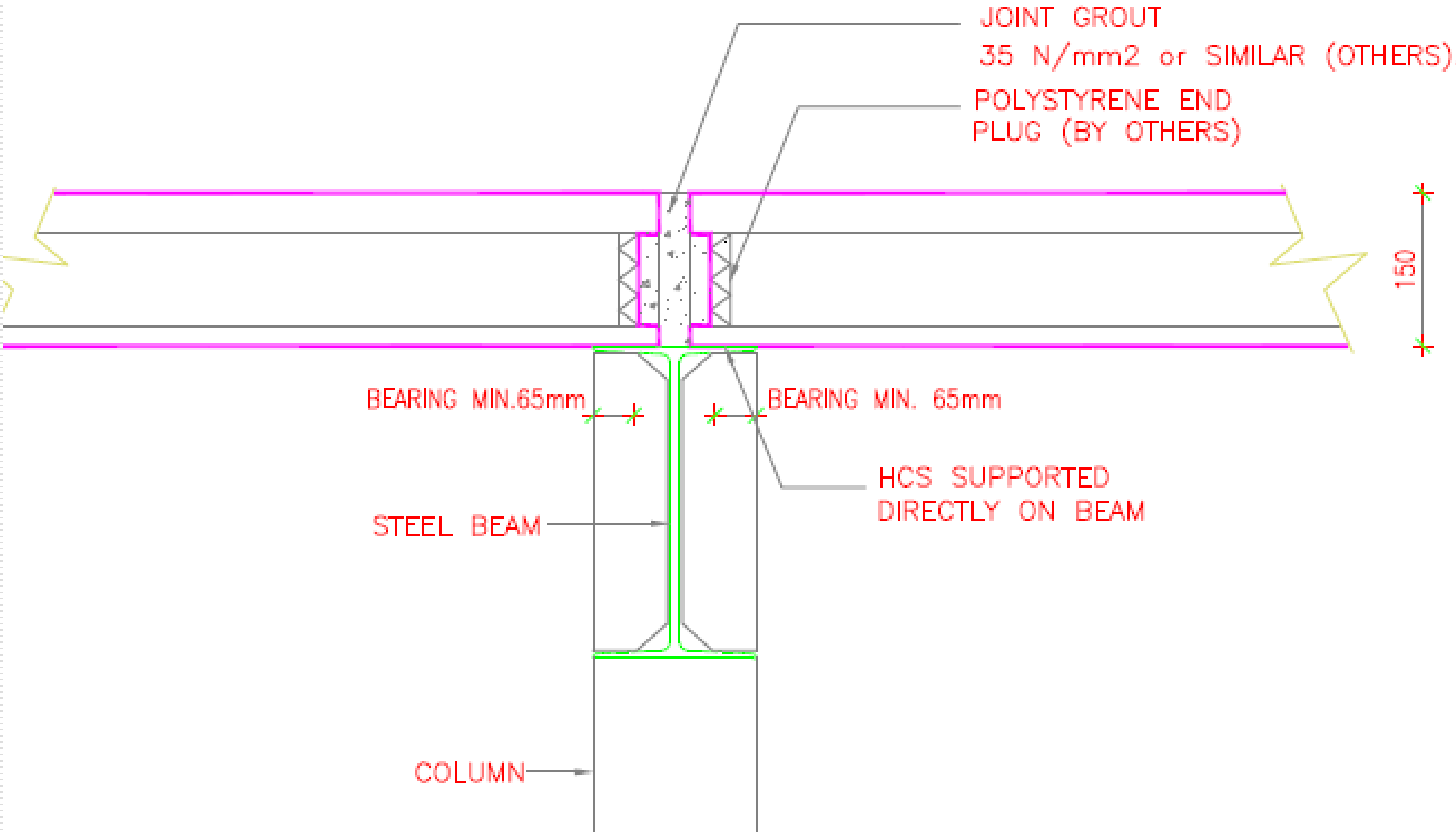


SLABS ARE NOT DESIGNED TO PROVIDE STABILITY TO STRUCTURE

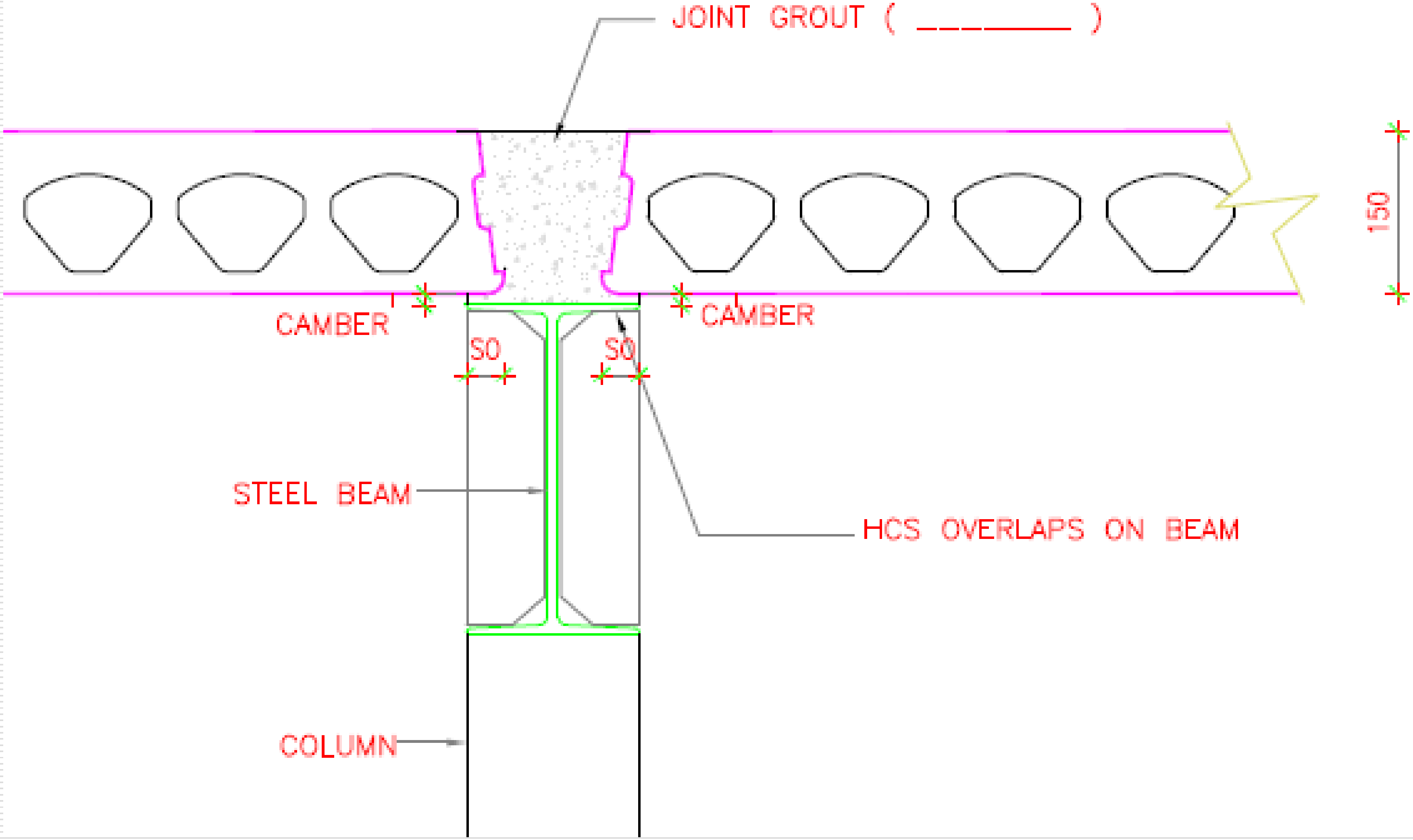

JOINT GROUT
25N/mm2 or SIMILAR (OTHERS).
POLYSTYRENE END
PLUG (BY OTHERS)
TO BE MADE AFTER ERECTION.
150
18
75
DRY MIX GROUT BELOW
THE SLAB BY OTHERS
25 N/mm2
WOOD SHIMS
RING BEAM
LOAD BEARING
BLOCK WALL
200

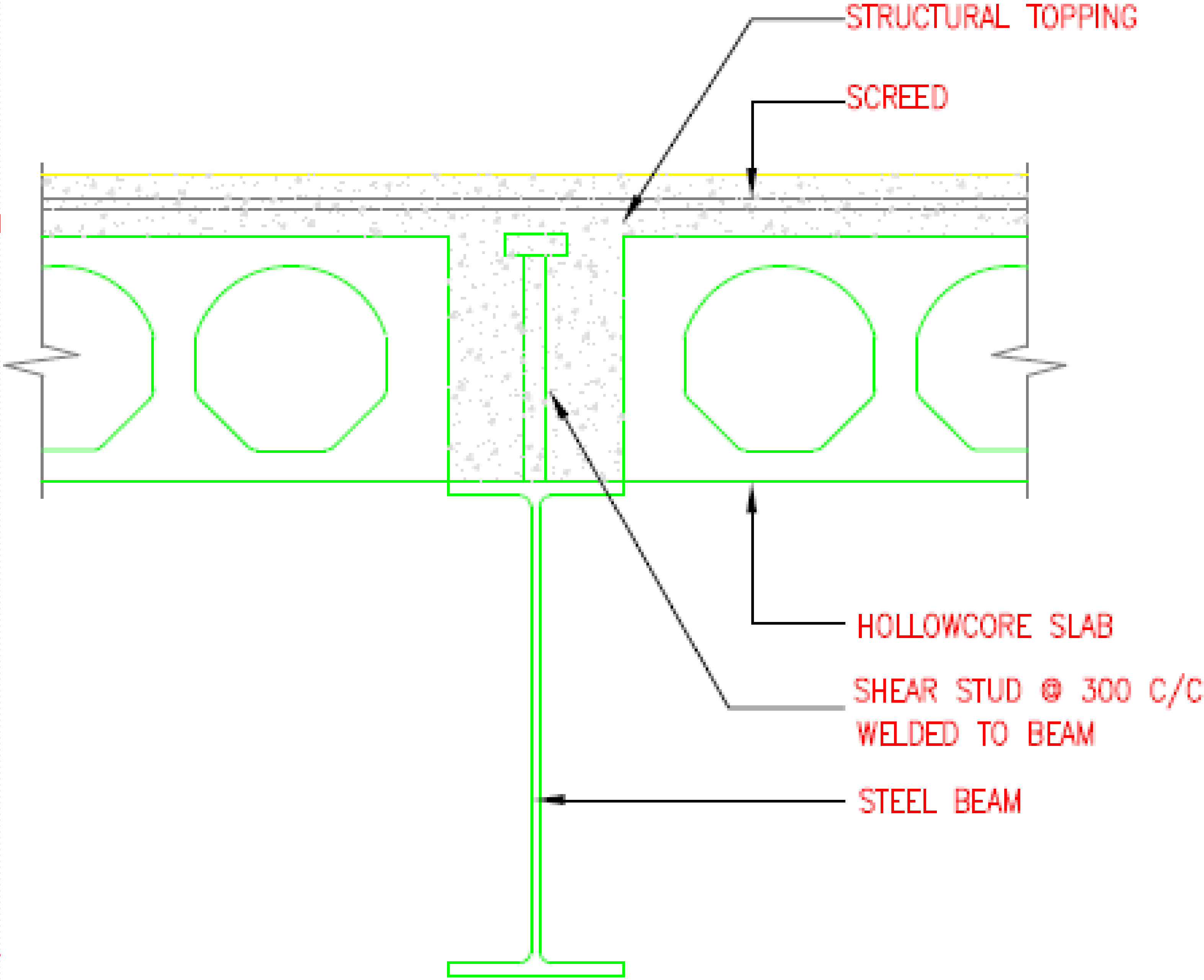


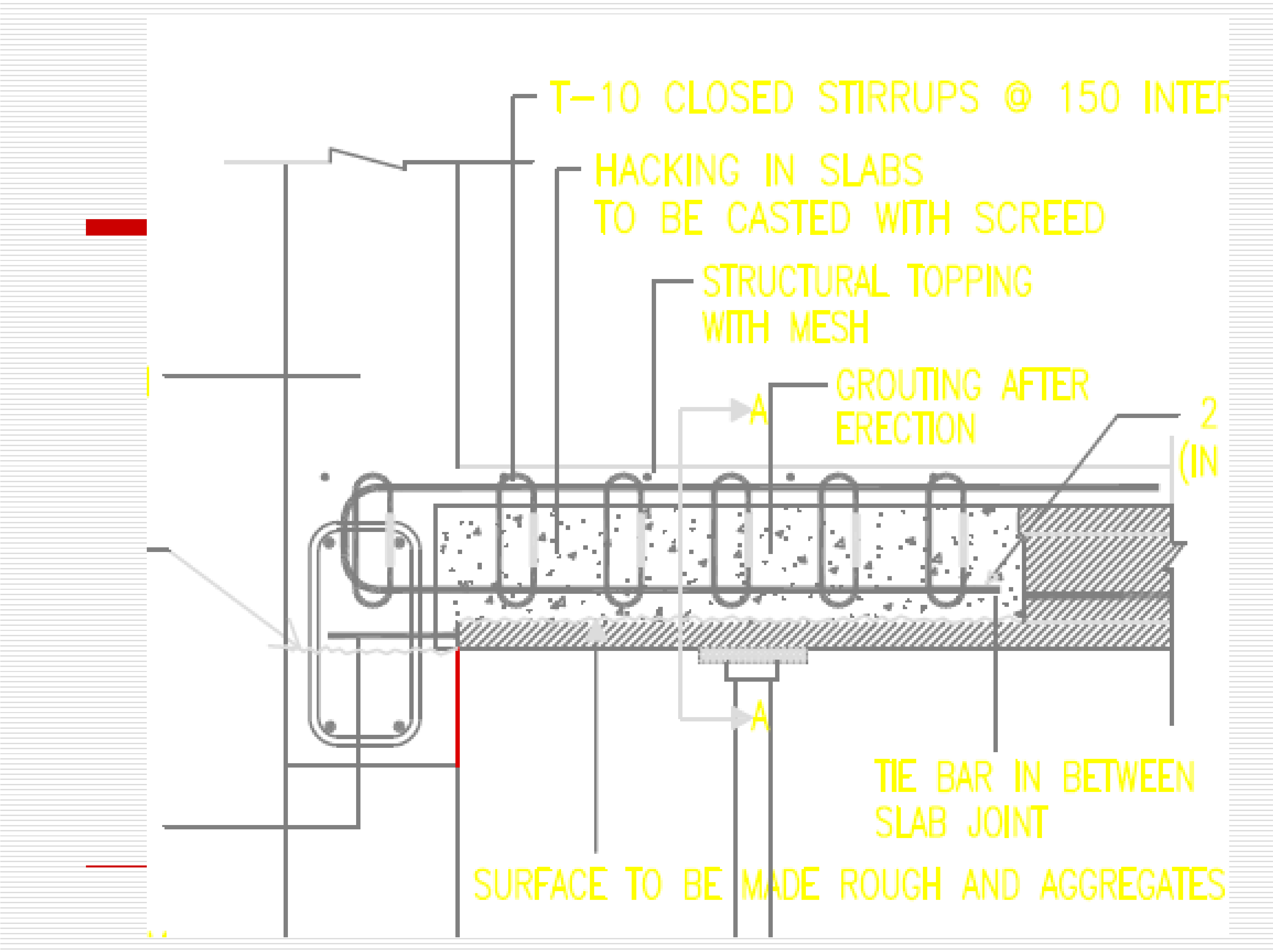
SLAB AND BEAM CONNECTION



JOINT GROUT
35 N/mm2 or SIMILAR (OTHERS).
POLYSTYRENE END
PLUG (BY OTHERS)
150
BEARING MIN.65mm
BEARING MIN. 65mm
HCS SUPPORTED
DIRECTLY ON BEAM
STEEL BEAM
COLUMN


JOINT GROUT (________)
150
CAMBER
CAMBER
SO
SO
STEEL BEAM
HCS OVERLAPS ON BEAM
COLUMN


STRUCTURAL TOPPING
SCREED
HOLLOWCORE SLAB
SHEAR STUD @ 300 C/C
WELDED TO BEAM
STEEL BEAM


T-10 CLOSED STIRRUPS @ 150 INTER
HACKING IN SLABS
TO BE CASTED WITH SCREED
STRUCTURAL TOPPING
WITH MESH
GROUTING AFTER
ERECTION
A
A
2
(IN
TIE BAR IN BETWEEN
SLAB JOINT
SURFACE TO BE MADE ROUGH AND AGGREGATES

STRUCTURAL CALCULATIONS

- **Basis , BS 8110:1997 & referred codes**

  - ✓ Designed as Class 2, service tensile stresses between 3.5 to 4.0 n/mm2 allowing tensile stress in concrete but no visible cracks
  - ✓ Concrete cover for 1 hour fire rating
  - ✓ Sections to meet requirements of spalling and bursting
  - ✓ On selecting the section , the element is checked as follows:

STRUCTURAL CALCULATIONS- continue

- **Ultimate limit state, where shear for un-cracked and cracked section is verified, and Bending resistance at centre is compared with applied moment**
- **Serviceability limit state, where service stresses at transfer and at service loading stage are calculated together with deflection and compared with limit set up in codes**

STRUCTURAL CALCULATIONS - continue

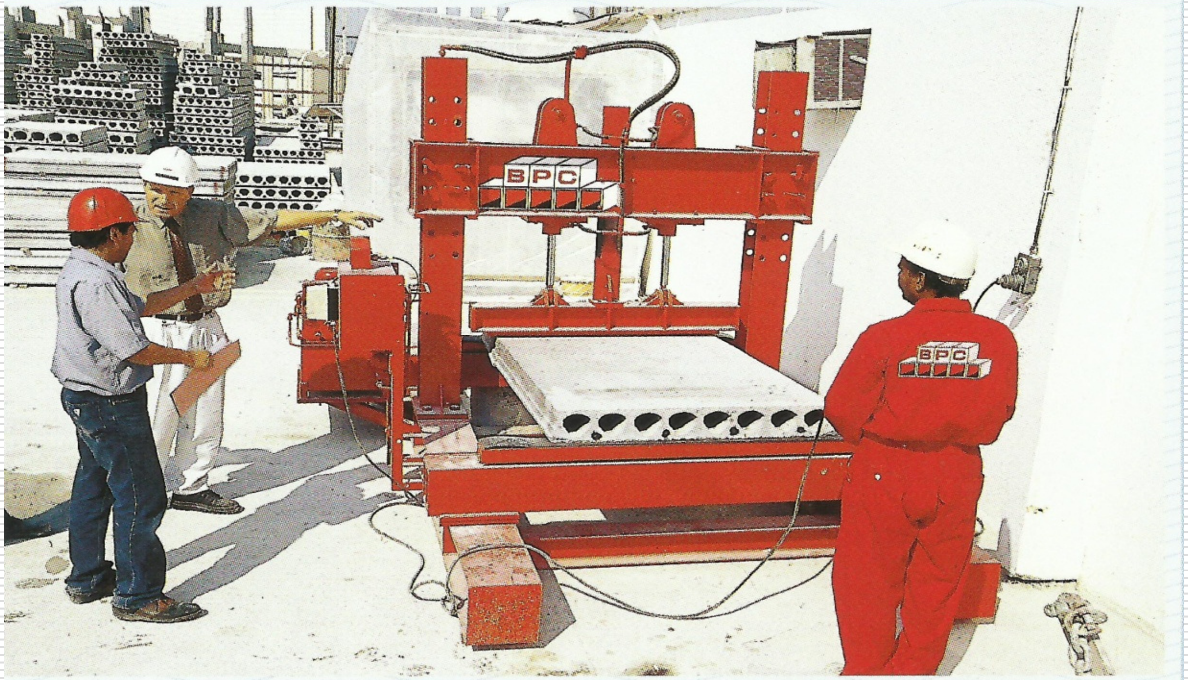
- The stresses at service stage are calculated after due consideration of losses (shrinkage strain of 0.0003, creep strain at imposed load of 1.4, elastic shortening and relaxation of strands at 1.25%)both immediate and time bound.

- The design should normally be validated by the load test in shear and bending.

  Since yield point for the strands is higher than rebar, the pre-stressed slabs will have higher factor of safety than the cast-in-situ structure, as is evident from the test slide

LOAD TEST

LOAD TEST



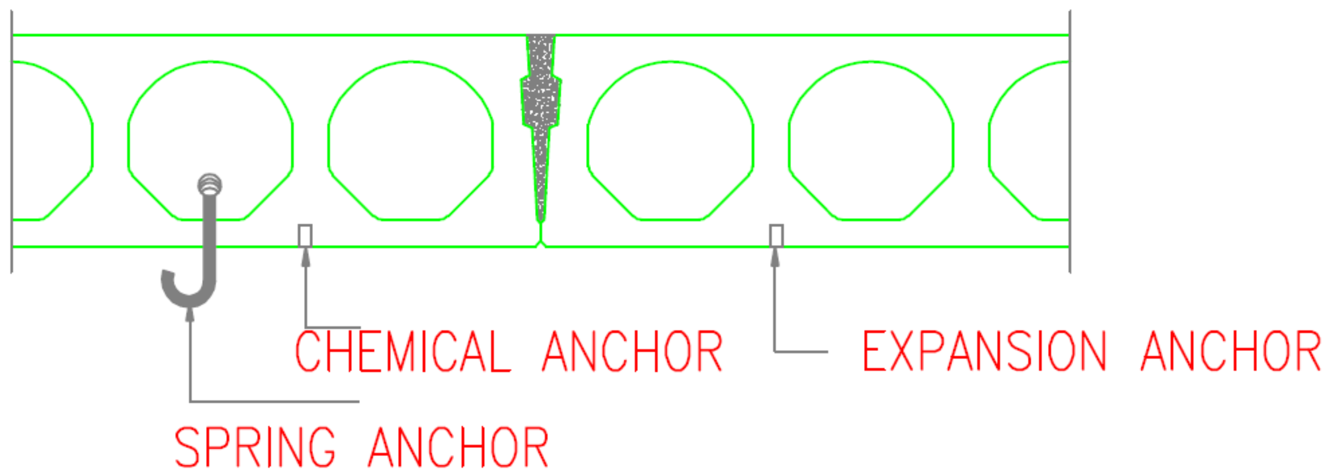
Shear Testing

TYPICAL MIX DESIGN

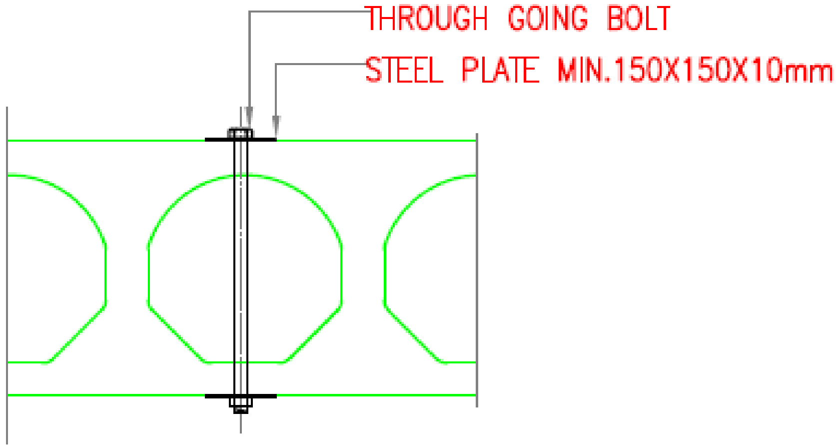
Mix Design General Specification – Hollow Core Slabs For details and specifications of mix design, please follow EDP link (T:\General\Production\MIX DESIGNS\MIX DESIGN\ACTUAL MIX DESIGNS\HOLLOW CORE)									
Mix no	28 days co. strength (N/mm^2)	Min. cement content (Kg/m^3)			Min. micro silica kg/m3 **Concrete**	Slu (mm)	Fresh concrete density (Kg/m^3)	W / C max	Rems
		Grey	MSRC	White					
198-60	60	390			0	25	2468	0.38	Hollow core slabs
1931-60	60	390			0	25	2468	0.38	Hollow core slab
199-60	60	390			0	25	2468	0.38	Hollow core slab
195-75	75	450			60	25	2468	0.32	Hollow core slabs

THERMAL AND ACOUSTIC PROPERTIES

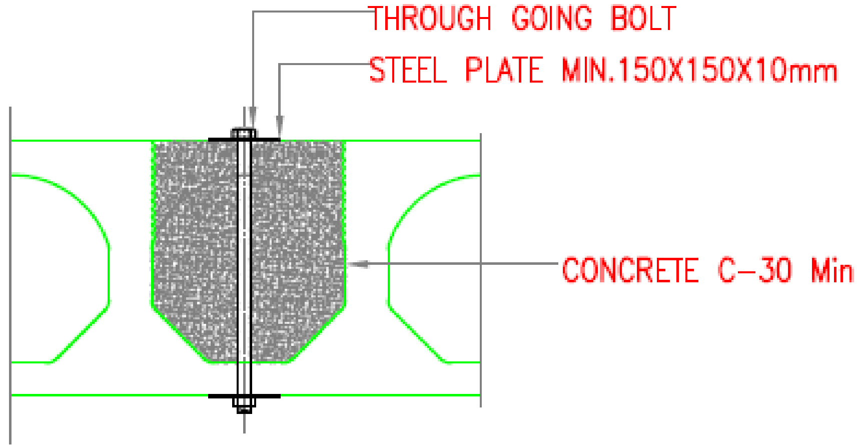
Slab type	R-value (m^2k/W)	U-Value ($W/m^2 °K$)	noise reduction
HCS 150	0.12	8.33	50
HCS 200	0.15	6.67	53
HCS 265	0.17	6.00	56
HCS 320	0.2	5.0	58
HCS 400	0.22	4.75	60
HCS 500	0.24	4.43	63
HCS 150+ 75	0.16	6.0	54
HCS 200+ 75	0.19	5.1	57
HCS 265+ 75	0.23	4.4	61
HCS 320+ 75	0.24	4.0	62
HCS 400+ 75	0.28	3.5	64
HCS 500+ 75	0.34	2.9	68
Solid slab t=225	0.13	6.2	56
Solid slab t=275	0.17	5.75	59
Solid slab t=315	0.2	4.92	60
Solid slab t=395	0.25	4.0	56
Solid slab t=475	0.3	3.25	66



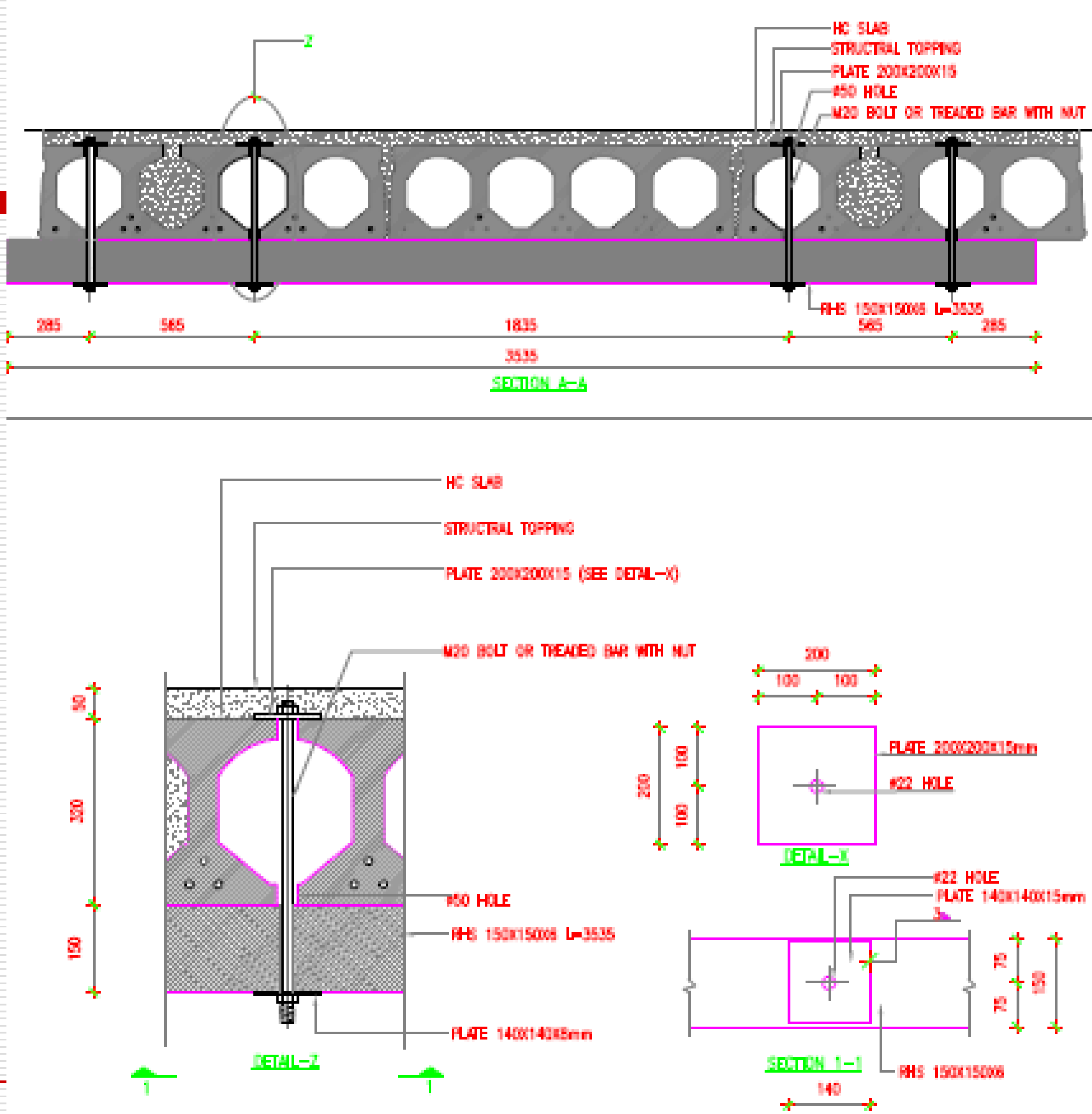
ANCHOR DETAILS



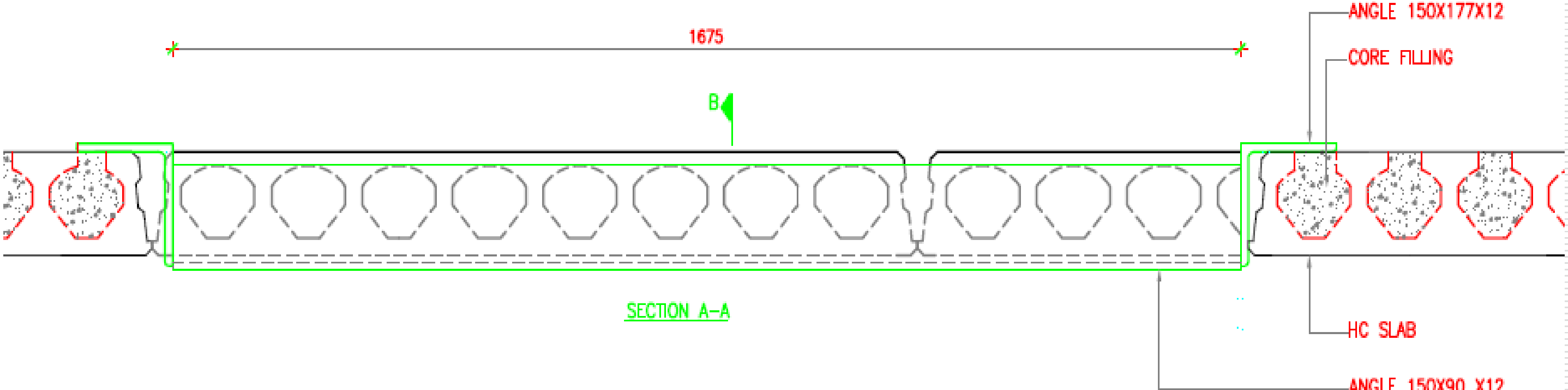
POSITION 1: 30Kn



POSITION 3: 30Kn

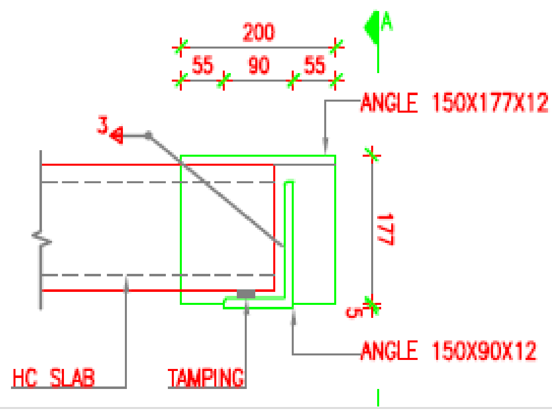


HC SLAB
STRUCTRAL TOPPING
PLATE 200X200X15
Ø50 HOLE
M20 BOLT OR TREADED BAR WITH NUT
RHS 150X150X6 L=3535
285
565
1835
565
285
3535
SECTION A-A
HC SLAB
STRUCTRAL TOPPING
PLATE 200X200X15 (SEE DETAIL-X)
M20 BOLT OR TREADED BAR WITH NUT
Ø50 HOLE
RHS 150X150X6 L=3535
PLATE 140X140X6mm
DETAIL-Z
PLATE 200X200X15mm
Ø22 HOLE
DETAIL-X
Ø22 HOLE
PLATE 140X140X15mm
RHS 150X150X6
SECTION 1-1
140

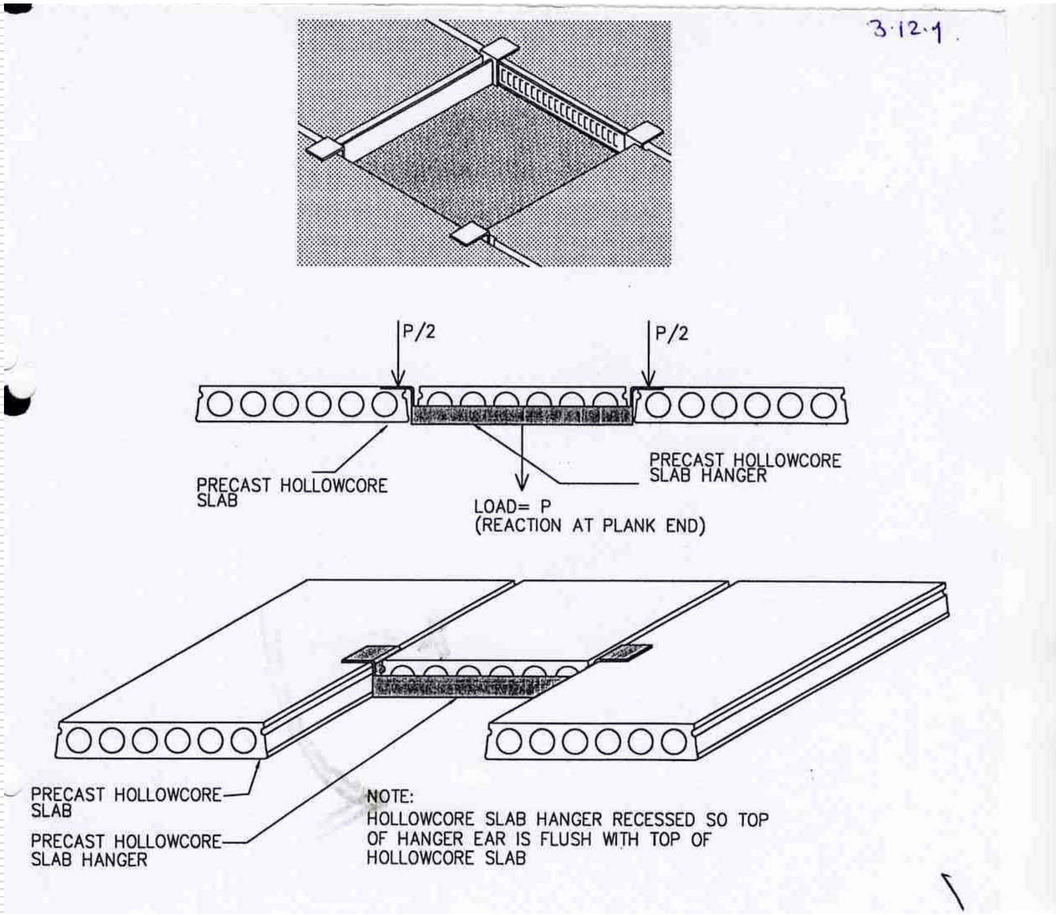


1675
B
ANGLE 150X177X12
CORE FILLING
HC SLAB
ANGLE 150X90 X12

SECTION A-A

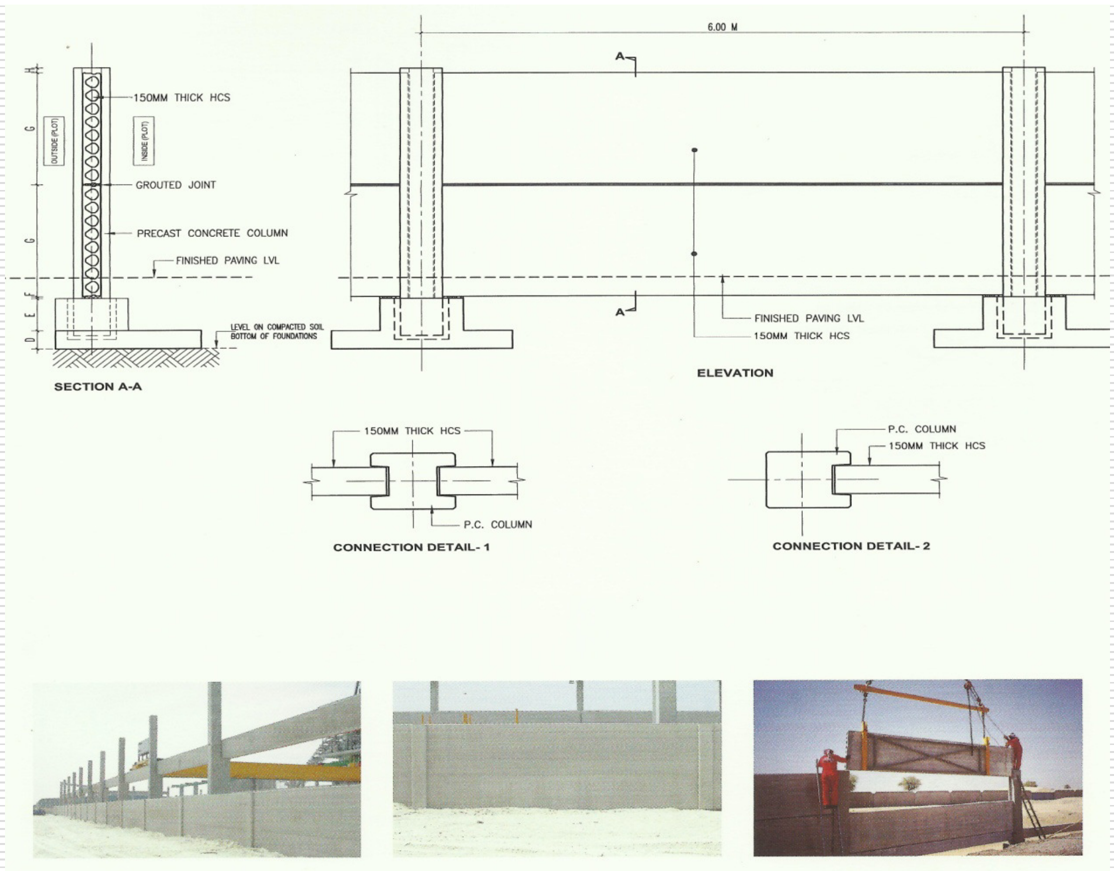


A
200
55
90
55
3
ANGLE 150X177X12
177
5
ANGLE 150X90X12
HC SLAB
TAMPING

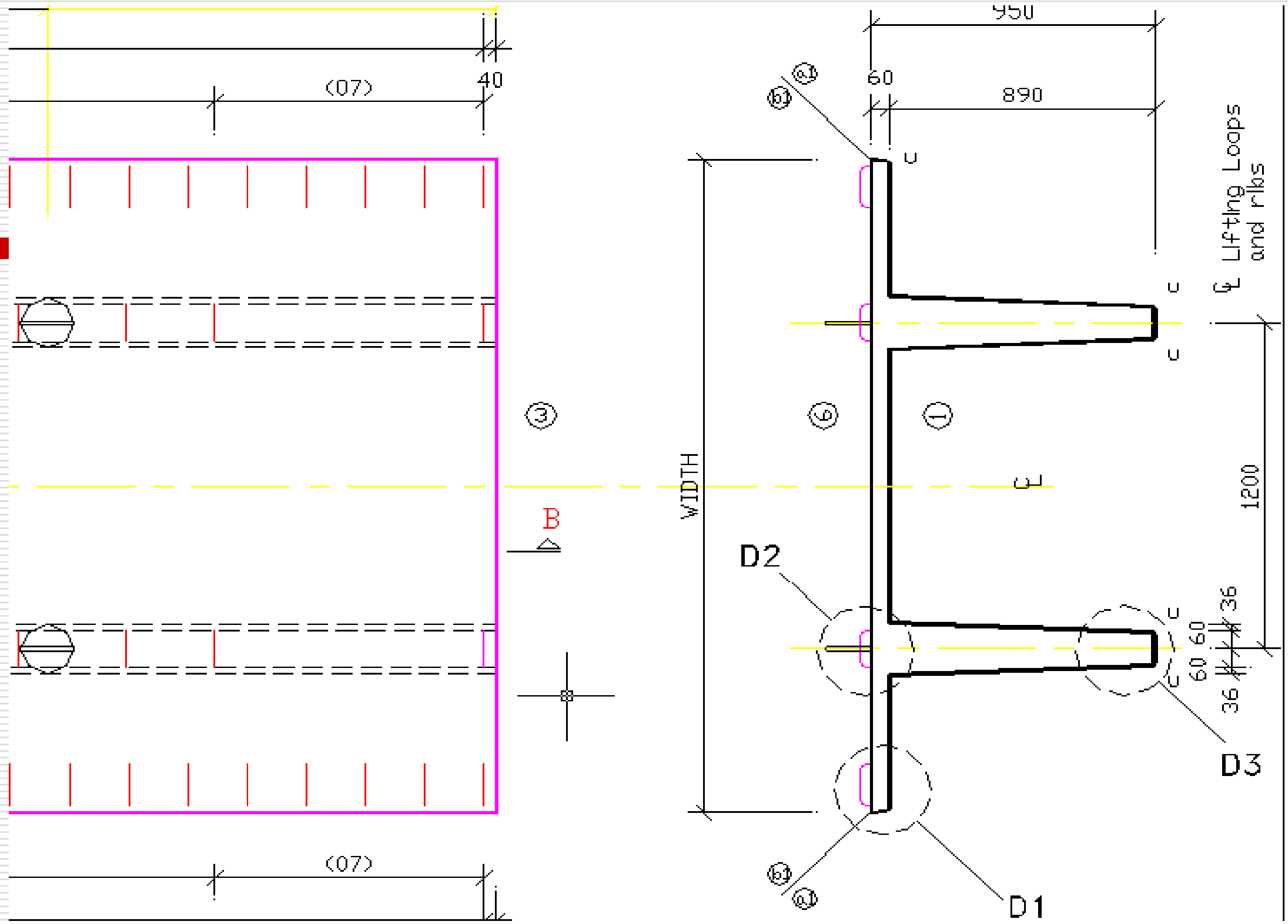

3.12.1
P/2
P/2
PRECAST HOLLOWCORE SLAB
PRECAST HOLLOWCORE SLAB HANGER
LOAD= P
(REACTION AT PLANK END)
PRECAST HOLLOWCORE SLAB
PRECAST HOLLOWCORE SLAB HANGER
NOTE:
HOLLOWCORE SLAB HANGER RECESSED SO TOP OF HANGER EAR IS FLUSH WITH TOP OF HOLLOWCORE SLAB

APPLICATIONS OF HCS

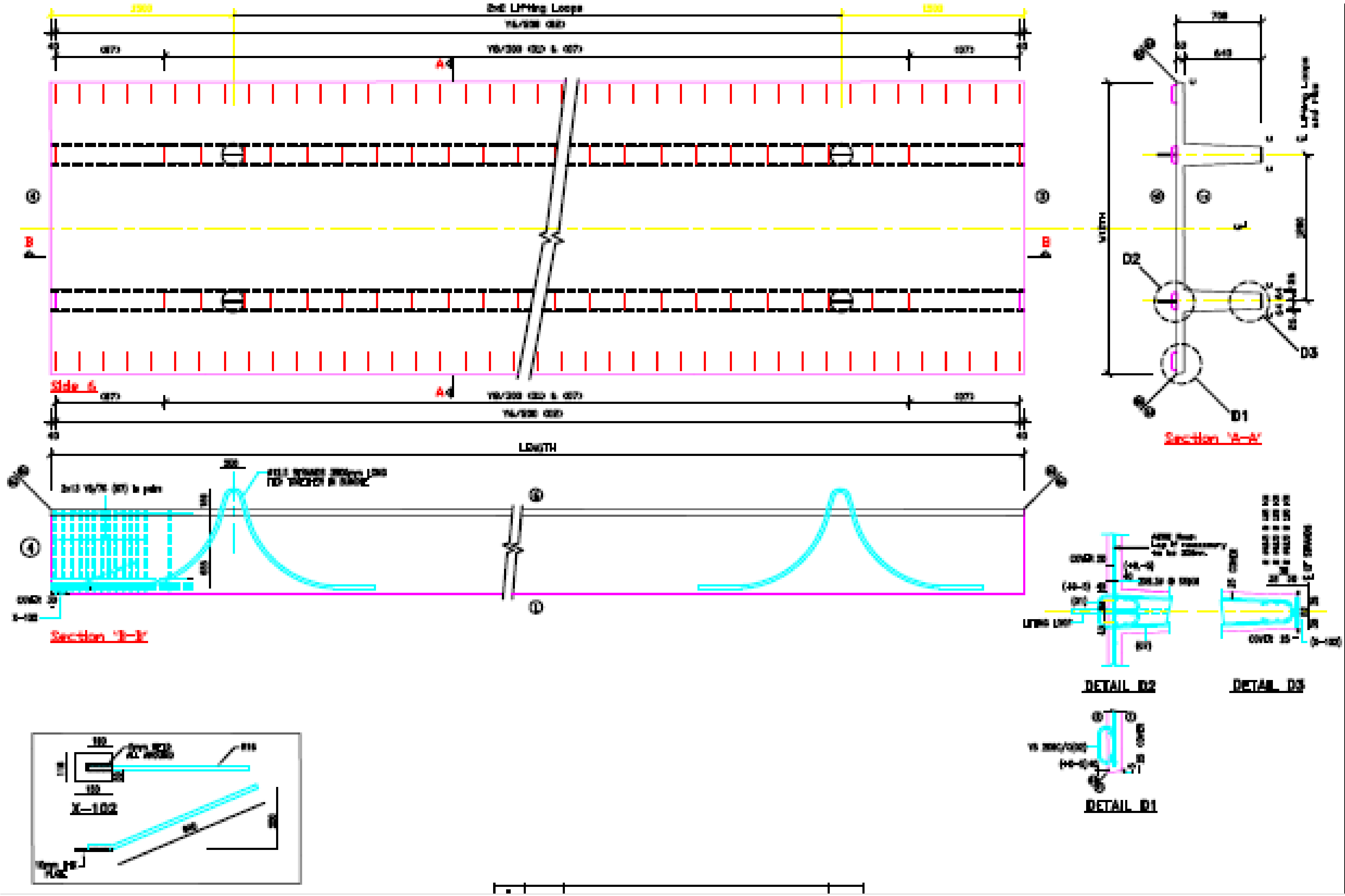
- ✓ **Boundary Wall**



FACADES

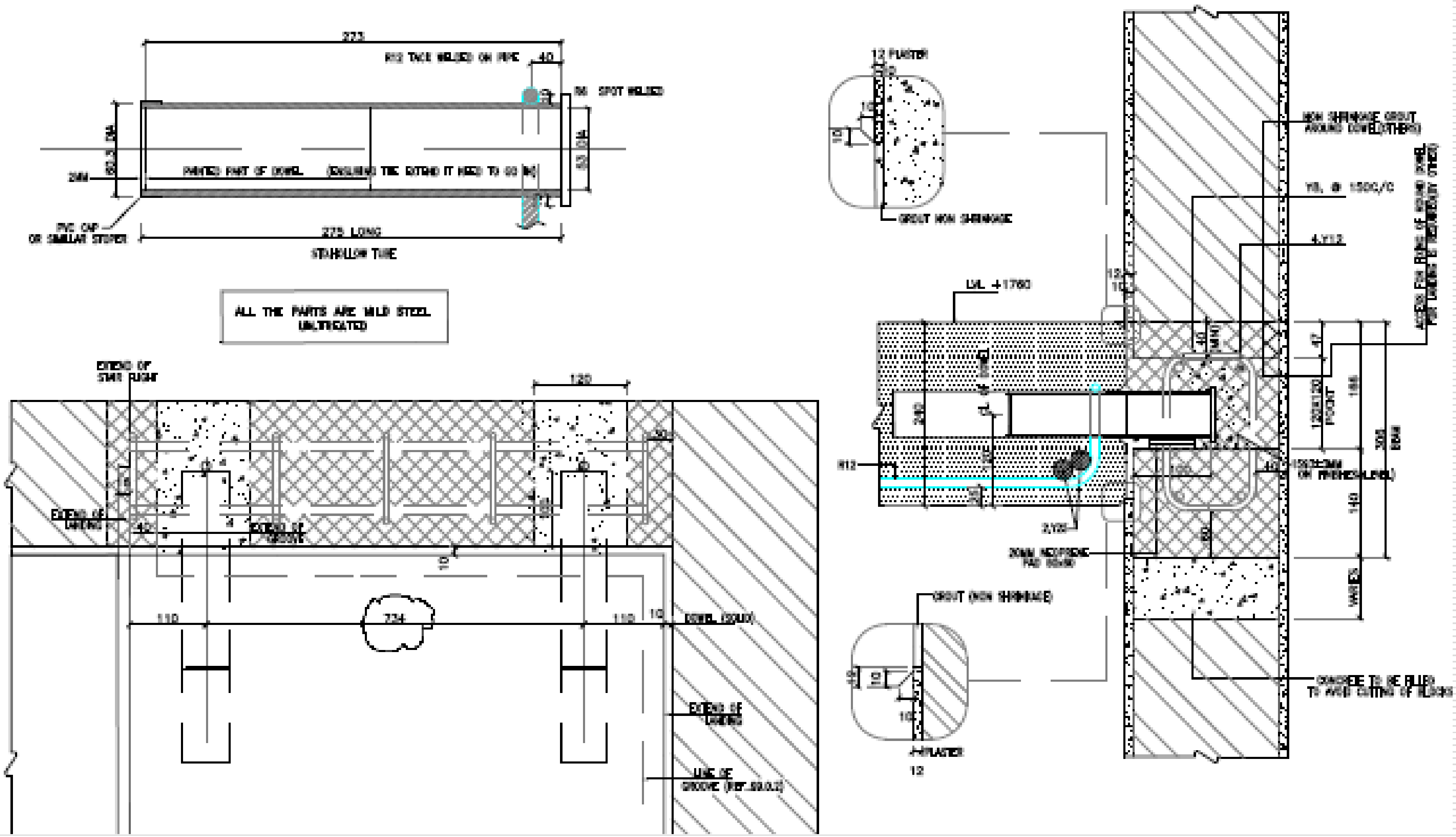


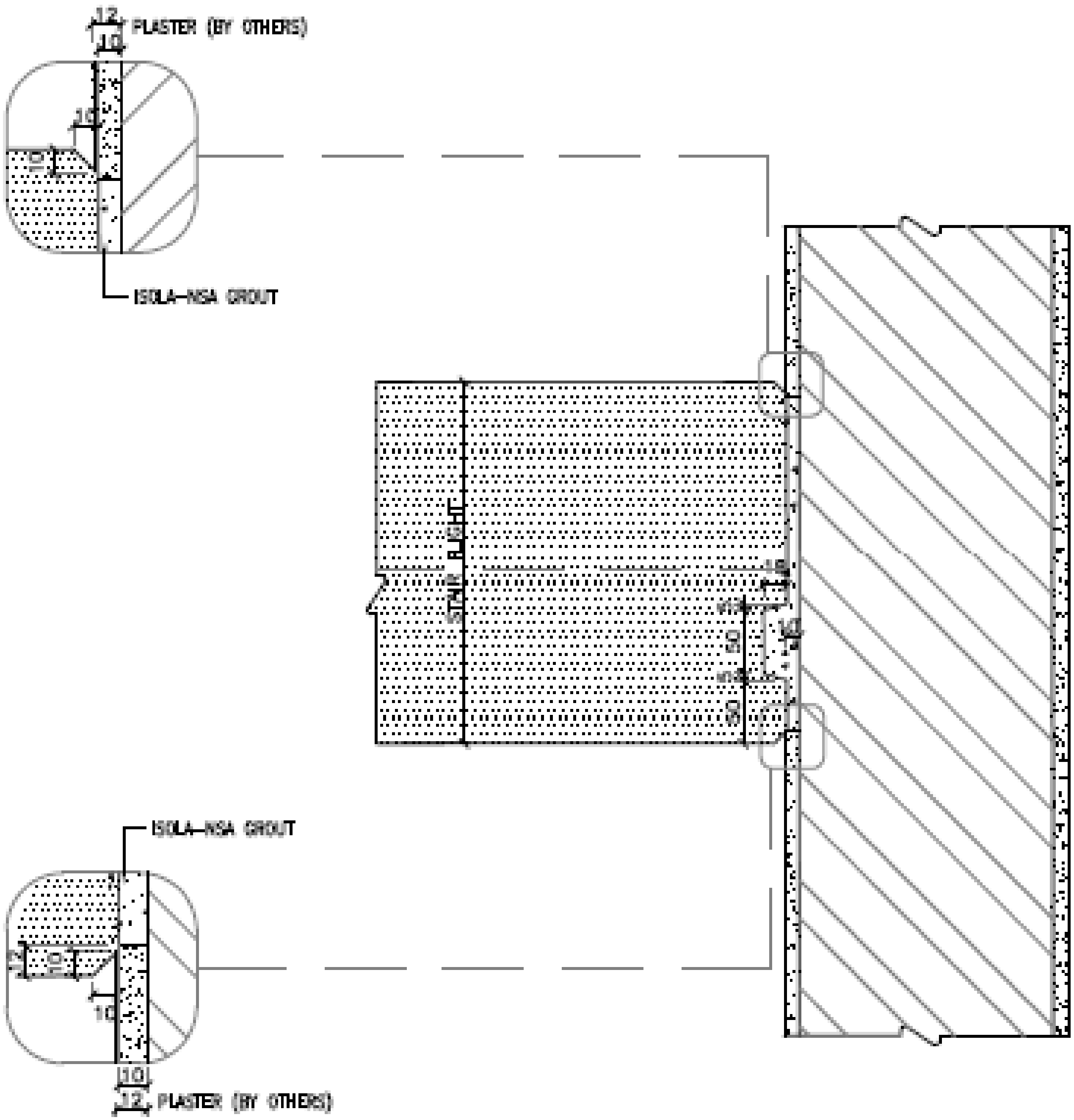
40
(07)
950
60
890
Lifting Loops and ribs
1200
WIDTH
B
D2
D3
D1
36
60
60
36
(07)



2x2 Lifting Loops
Side A
LENGTH
WIDTH
Section 'A-A'
Section 'B-B'
DETAIL D2
DETAIL D3
DETAIL D1
X-102

Miscellaneous




PLASTER (BY OTHERS)
ISOLA-NSA GROUT
STAIR FLIGHT
ISOLA-NSA GROUT
PLASTER (BY OTHERS)


Flight supported on main stairs
grout holes for shear walls
2007/9/26 15:05


2010/4/1 10:12

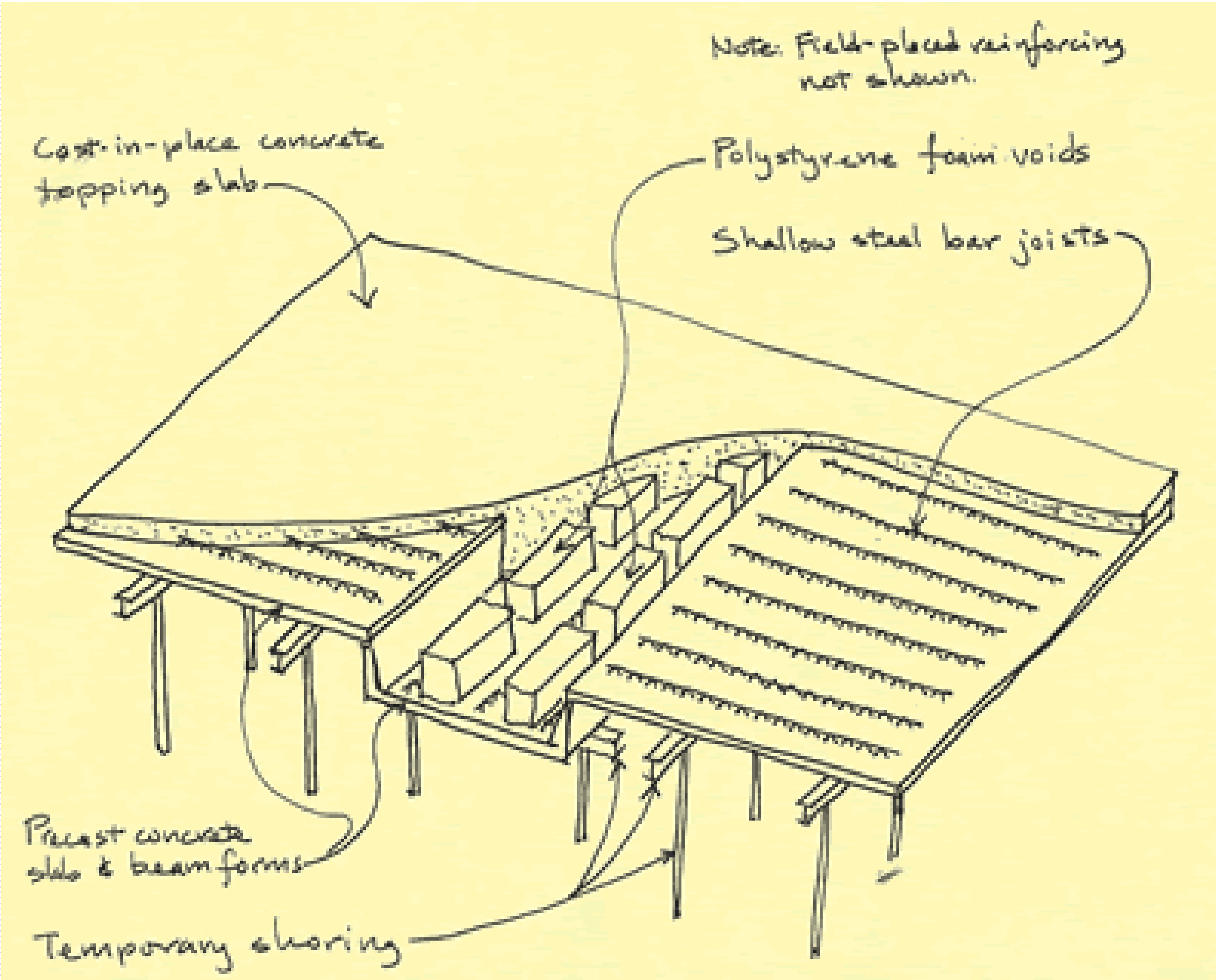

WDD

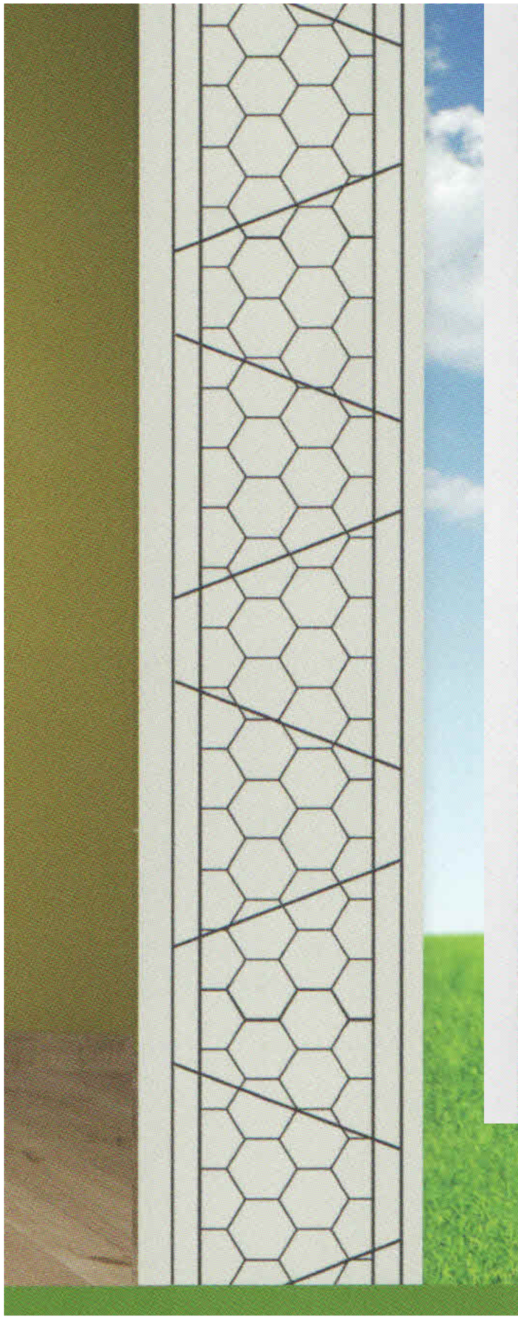
NEW CONSTRUCTION TECHNOLOGIES
(Precast / Mivan / Filigree / 3-D)

- **PRECAST:**
  - **New in Indian perspective, though extensively used in west and middle east.**
- **MIVAN :**
  - **In use**
- **FILIGREE and 3-D :**
  - **Never used as far as my knowledge goes**

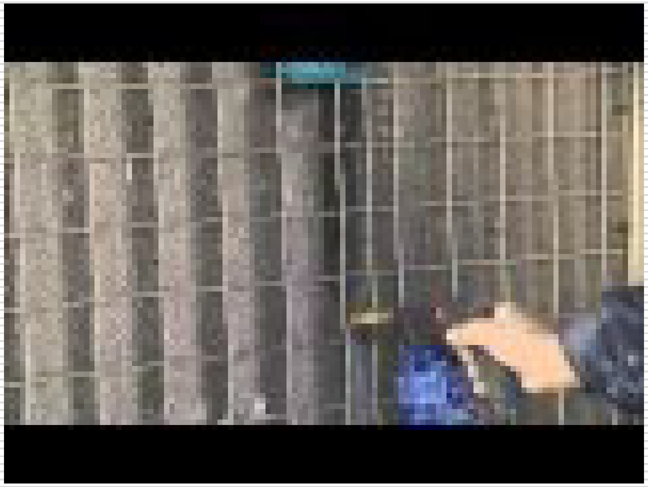
MIVAN

- .


Note: Field-placed reinforcing not shown.
Cast-in-place concrete topping slab
Polystyrene foam voids
Shallow steel bar joists
Precast concrete slab & beam forms
Temporary shoring



3-D Sandwich



DIFFERENT CONSTRUCTION METHODS