पूर्वोत्तर रेलवे / NORTH EASTERN RAILWAY

कार्यालय
महाप्रबन्धक / इन्जी.
पूर्वोत्तररेलवे, गोरखपुर
OFFICE OF THE
GENERAL MANAGER/ ENGG.
N.E. RAILWAY, GORAKHPUR

CE CIRCULAR NO. 104 of 2022

GUIDELINES FOR CONSTRUCTION OF BOUNDARY WALL ON RAILWAY LAND

Boundary Wall is provided in Railways in terms of para 811 of IRWM for:-

(i) Prevention of encroachment of the Railway Land;
(ii) Prevent trespassing/ any right of way to outsiders on the Railway Land;
(iii) Prevent cattle run over by trains;
(iv) Safety of railway tracks mainly in the vicinity of a railway station.

Also boundary wall is also constructed to comply Railway Board's letter no. 2017/CE-II/TSC/1 Pt.-1 dated 08.09.2016 which states to provide fencing:-

(i) For speed above 130 KMPH and upto 160 KMPH – all along the track
(ii) For speed above 110 KMPH and upto 130 KMPH
Minimum – Need based
Recommended - All along the track

Provisions of para 811 of IRWM and para 1047 of Engineering Code have to be followed while constructing boundary wall. Accordingly following guidelines should be followed while planning the boundary wall: -

A. Identification of Locations

1. Boundary wall should be constructed at the outermost edge of the Railway land based on certified land plans. Due to unavoidable circumstances, or to stop encroachment, where boundary wall can't be constructed along the railway boundary, boundary posts or pillars should be ensured properly to mark the actual boundary of railway land. or temporary wall using released PSC sleepers may be provided. However, as and when these circumstances get changed, a new boundary wall should be constructed along the railway land boundaries.

2. Vulnerable locations along the tracks should be identified prominently within/ outside station area extending to the declared town development limits and industrial zones, which are likely to expand, in proximity of villages and where built-up areas are close to Railway Lines, so that outsiders do not find an easy access to the Stations or tracks directly. Needful suggestions from RPF may also be taken to firm up these locations.

3. Locations like on either side of level crossings to control encroachment and trespassing affecting safety of the gates and Canal Crossings should be identified for provision of boundary wall up to specified lengths. This should also be planned parallel to roads/ crossing so as to plug all gaps in the boundary wall. However in place of

Boundary wall, fencing should be provided in 30m length on either side of LC as it provides better visibility for road user

4. In the vicinity of water bodies such as rivers, lakes etc, the boundary wall shall be constructed only up to the high flood line. However, where high flood line is not known, the boundary wall should be constructed up to wing walls of bridges. At no instances, waterway shall be obstructed due to construction of boundary wall.

5. The boundary wall may be constructed over small drains having width not more than 600 mm but without any obstruction to flow of water.

6. In case of densely built-up areas opening towards track, locations may be surveyed for likely resistance from locals. If required, advance action may be taken for issuing notices, in coordination with RPF/GRP, for eviction of encroachment. Prior information may be given to the Local Bodies/ Panchayats/ Municipal Corporations or governing State Govt. for assistance required in the matter.

7. Openings of sufficient width with iron gates should be planned for the purpose of entry of men and materials for maintenance/ repairs of railway track and bridges, preferably near LC gates.

8. Sr. DEN should plan for single lane service road on one side of track wherever construction of boundary wall leads to blocking of the access of road vehicles required for maintenance/repairs/emergencies along with the provision of appropriate barrier at the entry point.

9. Height of wall shall normally be as specified in the drawings listed in Part C of this circular. However, in the vicinity of railway stations and densely populated areas, prone to trespassing and/or throwing of garbage/stones, increased height of wall can be provided with the approval of Sr. DEN. Views of RPF may also be taken in this regard.

10. An annual survey should be done to identify any gaps created in the boundary wall by outsiders, damage in the wall and to identify new locations where the boundary wall is required to be constructed. Timely action to plug these gaps be taken.

B. Construction of Boundary wall:

1. The area coming under construction of boundary wall shall be cleared of shrubs, rank vegetation, grass, brushwood, trees and sapling of girth up to 30cm measured at a height of one meter above ground level and rubbish removed. The roots of trees and saplings shall be removed to a depth of 60 cm. below ground level or 30 cm below formation level or 15cm below sub-grade level whichever is lower and holes or hollows filled up with earth, rammed and levelled. Trees in the area, where the boundary wall is to be constructed, should be trimmed that might damage or affect the structure in the years to come.

2. Thereafter, ground levels should be taken along the planned boundary wall location for deciding the foundation levels and height of the boundary wall.

3. Identified locations for construction of boundary wall should be plotted on index plan by concern SSE/P-way or SSE/works and duly verified by the concern ADEN at site before submission to Division for approval along with Land Boundary and Encroachment Registers as per Para 813 of IRWM.

4. The top edge of boundary wall should be kept level. If required, stepped construction shall be carried out on sloping ground with steps at columns. Height of column should be suitably increased on the basis of natural ground slope. Minimum stepping height of 300 mm should be maintained.

5. Preferably there should not be gap between lowermost edge of boundary wall and ground. At locations if some gap is required for seasonal water flow, the gap at such locations should not be more than 300mm. The gap should be preferably provided with pipes.

6. Boundary walls near the station limit should match the same colour scheme to maintain the aesthetic consistency of Station. 'IR' in red colour be marked at every 50m on boundary wall preferably on columns in white base colour.

7. Boundary wall should be normally precast wall for speedier construction. In situ construction should only be adopted as an exception provided curing is possible at such locations. In such cases, fast pace construction methods like RMC for concreting, should be used for construction of boundary wall to eliminate chances of disputes and claims. Work once started should be completed till closure of identified locations to eliminate any leeway for future. Sr. DEN/C should be the approving authority for permiting in-situ instruction of boundary wall.

8. The quality should be ensured through proper sampling system.

9. Construction methodology as detailed out in the typical plans and RDSO guidelines Doc. No. RDSO/WKS/2016/3 (Annexure-1) shall be strictly followed.

10. Priority of Division should be to provide boundary wall and funds allotted for this purpose should not be utilised for compound wall of indiviual houses/offices/units etc.

C. Type of Boundary wall:

1. Boundary walls must be built either as per the design and drawings provided by Research Design and Standard Organisation (RDSO) Regulations or the NER HQ Standard Type Plan for Boundary Wall.

2. Actual working construction drawing shall be prepared and approved by Division based on following typical drawings and also based on locations, levels and height of wall: -

(a) For "A and B" routes & High-Density routes

i. For densely built-up area with frequent trespassing - RCC boundary wall with Precast panel & Cast-in-Situ column – Drawing no. RDSO/WKS/2017/2 ALT-2 (4 sheets) (Annexure - 2).

ii. For lightly built-up area or non-built-up area with occasional trespassing – Drawing no. RDSO/WKS/2017/3 ALT-2 (2 sheets) (Annexure - 3).

(b) For areas prone to cattle run over by trains

i. Cattle fence with precast panel and precast column - Drawing no. RDSO/WKS/2019/3(Annexure - 4).

(c) For all other areas outside the station limits

i. Barbed wire cattle fence with precast column - Drawing no. RDSO/WKS/2019/2 (Annexure - 5).

(d) For construction of in-situ wall

i. For densely built up area with frequent trespassing – drawing no. RDSO/WKS/2017/1 ALT-2 (2 sheets) (Annexure - 6).

(e) For all other areas near the station limit

i. North Eastern Railway`s CE`s plan no.GML1-2022/T-903004.

3. Approved drawings and guidelines should be part of the tender document.
4. Where quantum of work involved is heavy and large commitment of funds is involved, the expenditure should be against the "Plan-heads" after sanction of works. In rest of cases, such works are to be done under "Revenue".

   This has the approval of PCE/NER.

CE/NER/Land Circular/275/Pt I/W-3(G) Dated: 22.03.2022

SPyadav 22.03.2022

(S. P. Yadav)
Chief Engineer Works
North Eastern Railway

Copy for Information and necessary action to-

1. CAO/Con, North Eastern Railway, Gorakhpur
2. DRM/Izzatnagar, Lucknow and Varanasi
3. Sr.DEN/Co-ord/Izzatnagar, Lucknow and Varanasi
4. Dy. CE/GA/GKP

Annexure - 1



GOVERNMENT OF INDIA
भारत सरकार

MINISTRY OF RAILWAYS
रेल मंत्रालय

CONSTRUCTION METHOD STATEMENT

FOR

RCC BOUNDRY WALL WITH PRECAST PANEL & COLUMN

Doc. No. RDSO/WKS/2016/3

Works Directorate
कार्य निदेशालय
Research Design and Standards Organization, Lucknow – 226011.
अनुसंधान अभिकल्प एवं मानक संगठन लखनऊ – 226011.

1.0 **Introduction** :

This work procedure is prepared to describe the work procedure for construction and erection of precast boundary wall.

2.0 **Scope:**

Construction Methodology for Pre-cast Panels as per relevant specification(s) and approved drawings.

3.0 **Construction Machinery:**

Sl.No.	DESCRIPTION	CAPACITY	NO.	STAND BY	Remarks
1.	Batching Plant / Transit Mixers	30/6 cum/hr.	1		Approved by Engineer in Charge
2.	Concrete Vibrators	3 HP	1	1	
3.	Concrete Needles	40/25mm dia.	1/1	1/1	
4.	Hydra F-15 Escort	8 ton	1		
5.	Welding Machine		1		

4.0 **Construction Methodology:**

4.1 **Panel Casting**

Panel Moulds:

10 Moulds for pre-cast panel casting shall be fabricated & erected as per drawing along with necessary supporting assembly for casting of Panels. Similarly adequate moulds for casting of columns should also be arranged as per the drawing followed. If required, depending upon the work progress and site requirement, further moulds may be fabricated.

1) Sequence of Casting Panels:

1. Clean the bottom shutter of the mould and apply shutter release oil.
2. Place the reinforcement cage in position for casting of Panel.
3. Fix the four sides formwork of mould.

4. If railing is to be provided, then fix the insert plate of size 2700×75×6 mm for railing as per the approved drawing.
5. Cast the Panel & column.
6. De-shutter the Panel by removing the four sides formwork of panel.
7. Carry out de-moulding operation with the help of Hydra.
8. Curing the cast panel for a period of 14 days in stacking yard. Process/steps will be repeated till the total required casting is completed.

2) Concreting:

The concrete required (M-25) shall be produced as per the approved design mix at the centralized batching plat and transported by transit mixers to the pouring location. Before pouring, concrete slump of 110+/-30mm shall be checked at pouring location. Concrete placement will commence from one end to another in the same manner till completion. Concrete should be poured by the use of chute ensuring that height of fall of Concrete is not more than 1.5 M. The concrete shall be vibrated using 40mm/25mm diameter needle vibrators. Concrete cubes shall be taken for testing of compressive strength as per IS:456-2000 at pouring location. Proper care shall be taken to see that concrete temperature shall not exceed 40 degree C.

3) De-shuttering :

The de-shuttering shall be commenced after the concrete has attained 7.5 MPA crushing Strength.

4) Lifting of Panels:

The Precast Panels shall be lifted from 2 nos. Lifting hooks provided for the purpose in the top surface of panel using suitable hydra crane and place in stacking yard.

4.2 **Column Casting**

Column Moulds:

Adequate moulds (Minimum 5) for pre-cast column casting shall be fabricated & erected as per drawing along with necessary supporting assembly for casting of column. If required, depending upon the work progress and site requirement, further moulds may be fabricated.

3) Sequence of Casting column:

1. Clean the bottom shutter of the mould and apply shutter release oil.
2. Place the reinforcement cage in position for casting of column.
3. Fix the all sides formwork of mould.
4. Cast the column.
5. De-shutter the column by removing the four sides formwork of column.
6. Carry out de-moulding operation.
7. Curing the cast panel for a period of 14 days in stacking yard. Process/steps will be repeated till the total required casting is completed.

4) Concreting:

The concrete required (M-25) shall be produced as per the approved design mix at the centralized batching plat and transported by transit mixers to the pouring location. Before pouring, concrete slump of 110+/-30mm shall be checked at pouring location. Concrete placement will commence from one end to another in the same manner till completion. Concrete should be poured by the use of chute ensuring that height of fall of Concrete is not more than 1.5 M. The concrete shall be vibrated using 40mm/25mm diameter needle vibrators. Concrete cubes shall be taken for testing of compressive strength as per IS:456-2000 at pouring location. Proper care shall be taken to see that concrete temperature shall not exceed 40 degree C.

3) De-shuttering :

The de-shuttering shall be commenced after the concrete has attained 7.5 MPA (OR 3 days) compressive strength.

4) Lifting of Panels:

The Precast Panels shall be lifted carefully by using suitable device to avoid corner damage purpose in the top surface of panel using suitable hydra crane and place in stacking yard.

4.2 **Panel Erection:**

Erection of pre-Cast Panel and columns shall involve the following steps:

1) Transportation

2) Pre-inspection
3) Lifting & fixing
4) Alignment
5) Reinforcement & shuttering
6) Concreting

1) Transportation of Panel**:**

Loading of Panel will be done by Hydra of suitable capacity in casting yard. It will be tied with the trailer with the help of rope/slings properly .Panel will be shifted to required location by trailer. Either Panel may be unloaded directly by hydra crane during lifting or unloaded at site on ground with the help of suitable capacity hydra crane. Panels will be lifted directly from trailer for launching. Care shall be taken to ensure that Panels will be unloaded on ground exactly below the Lifting location.

2) Pre-inspection of Panel:

Panels shall be checked against any damage during transportation. It should also be checked for status of reinforcement dowel.

2.1 Launching of Panel:

a) Lifting of Panel:

Lifting of Panel will be done with the help of hydra crane either from ground or from trailer. Crane will be positioned at the suitable location to accesses maximum length. Sling will be attached with lifting hook for lifting. Panels lifted will be brought in pre-determined location. Then it will be rest over deck in position required at respective location followed by fixing the Panels with U-bar. Lifting & fixing of Panels will be repeated as above procedure.

b) Alignment:

Panels alignment to be done by using suitable props. Then for final alignment it shall be checked with respect to centre line.

c) Reinforcement Fixing:

For fixing of reinforcement for columns, bar bending schedule shall be prepared as per the approved construction drawings. The re-bars should

be rust free, or if required, it may be cleaned with wire brush. The Reinforcement shall be cut using cutting machines or manually as required and bent. The reinforcement shall be transported to location in trailer/truck to the location or manually depending upon the lead.

d) Fixing of reinforcement**:**

The reinforcement shall be manually fixed into its position as shown in the construction drawing. Lap length of 50D should be provided. The reinforcement fixed shall be checked by Engineer in charge or his representative.

e) Shuttering

Before placing the shuttering, shuttering oil shall be applied on shutter face in contact with the concrete, to ensure easy removal of shuttering & proper concrete finish. For preventing leakages from joints, rubber strip/foam strip shall be provided at the joints of shuttering plates.

f) Concreting

The required grade of concrete, as per approved drawings shall be produced as per the approved design mix at the centralized batching plant and transported by transit mixers to the pouring location. Before pouring concrete, slump of 90mm to 125 mm shall be checked at pouring location. The concrete shall be placed by Concrete Bucket. Concrete placing will commence from one end to another in cascading manner till completion. The concrete shall be vibrated using 25mm/40mm diameter needle vibrators. Concrete cubes shall be taken for testing of compressive strength as per IS: 456-2000 at pouring location. Proper care shall be taken to see that concrete temperature shall not exceed 40^0C.

g) Miscellaneous works

Special care shall be taken for curing the concrete for 14 Days.

5.0 Safety, Health & Environment:

For Panels casting to be carried out in scheduled location, approved barricading shall be provided. All site personnel shall wear Personal Protective Equipment. For other activities such as handling of reinforcement, electrically operated equipment etc., safety devices/ precautions will be taken as per the approved safety plan. All precautions will be taken for carrying out the activity.

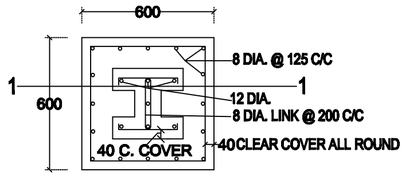
Precautions:

- Caution boards indicating danger will be fixed at proper place.
- Safe access should be provided.
- During night floodlight shall be used for lighting up the area.
- All the workers and supervisory staff's shall wear PPE s (Personal Protective Equipment) during the execution.
- The work methodology of the activity will be explained to all the key personnel and workmen involved in that activity and standing instruction will be given.
- Daily inspection checklist to be completed by site engineers and safety personnel before starting the work.
- The safety manager, through deputing safety personnel at the site, round the clock, will look after all safety aspects of the job.
- Tool Box meeting to be conducted before starting the work.
- All the workmen will follow the safety rules.
- All plants and lifting equipment used in work shall be tested by third party competent person wherever required.

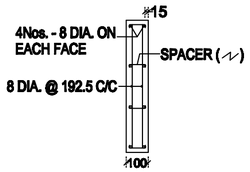
6.0 Quality Assurance and Quality Control

Quality control and assurance shall be strictly followed as per QAP approved by Engineer-in-charge.

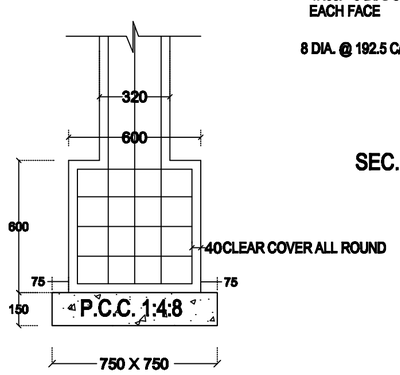
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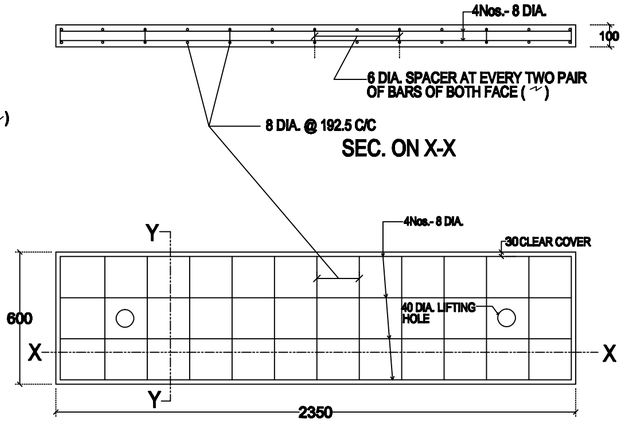
COLUMN FOUNDATION



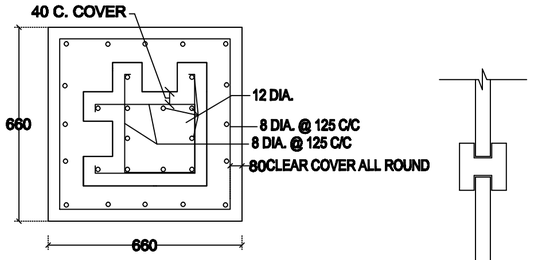
SEC. ON Y-Y



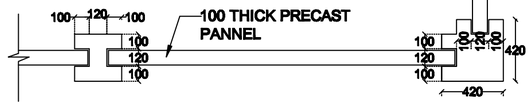
SEC ON 1 -1



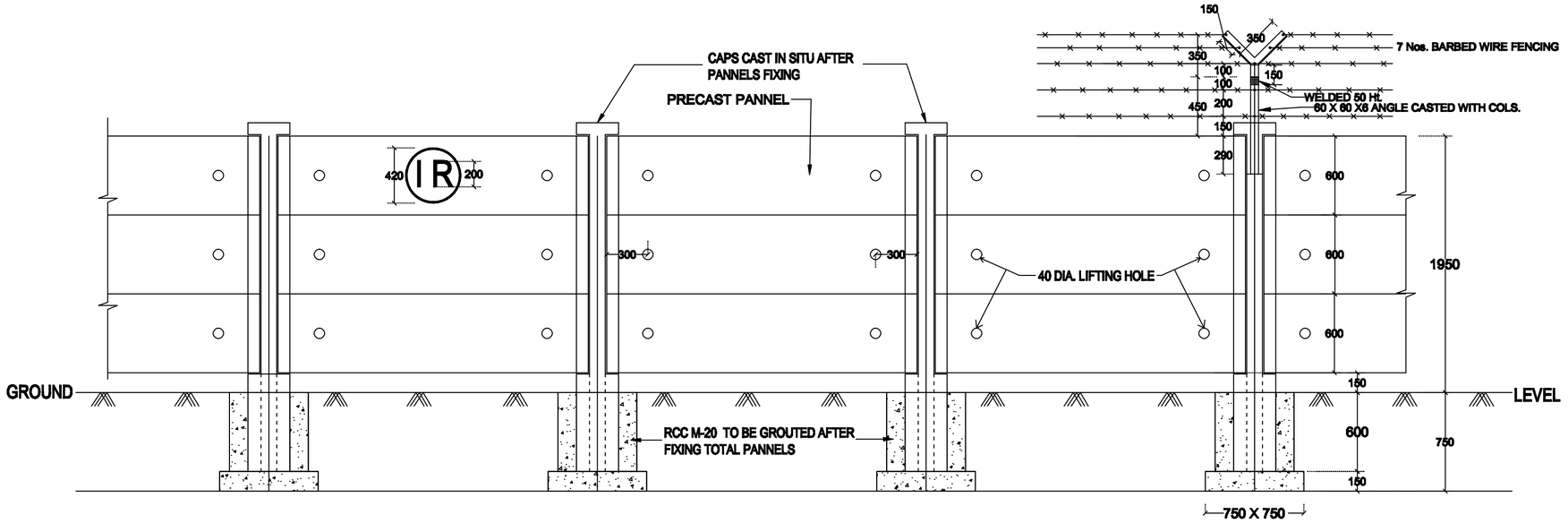
PRECAST PANNEL PLAN



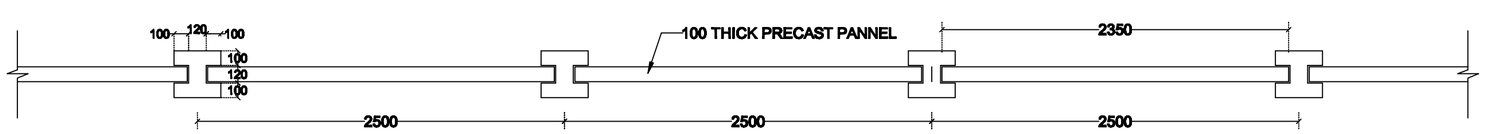
CORNER COLUMN FOUNDATION



CORNER COLUMN PLAN



FRONT ELEVATION



PLAN

NOTES:-

1- ALL DIAMENSION ARE IN MILIMETERS UNLESS STATED OTHERWISE.
2- COLUMNS & PANNELS SHOULD BE PRECASTED AND TO BE ERRECTED IN POSITION AFTER GAINING FULL STRENGTH
3- CAPS TO BE CAST IN SITU AFTER PANNEL LIFTING IN COLUMNS.
4- THE OUTER EDGE OF BOUNDARY WALL SHOULD BE AS PER THE PROVISION OF PARA 1047 OF INDIAN RAILWAY CODE FOR THE ENGINEERING DEPARTMENT.
5- ALL RCC WORK SHALL BE IN MIX M25 AS PER IS-456-2000.
6- PROPER CURING OF CONCRETE SHALL BE ENSURED.
7- ALL CONCRETE SHALL BE MECHANICALLY MIXED VIBRATED.
8- COVER TO REINFORCEMENT SHALL NO WHERE BE LESS THAN THAT SHOWN ON PLAN OR AS PER SPECIFIED IN IS-456-2000.
9- HEIGH WELD STRENGTH COLD TWISTED DEFORMED BARS SHALL CONFORM TO IS-1786-1985.
10- PARTTICULAR CARE MUST BE TAKEN TO ENSURE:-
   (i) NO SAG OCCURS IN REINFORCING BAR DURING CONSTRUCTION
   (ii) STIRRUPS ARE EFFECTIVLLY TIED WITH WIRE TO THE MAIN REINFORCING BAR.
11- ASSUMED SAFE BEARING CAPACITY OF SOIL 6 T/M ^{2}
12- THE POCKETS OF FOUNDATIONS SHALL BE MADE ROUGH TO BE CARE GOOD BOND WITH FRESH CEMENT GROUT WITH NOTHING SHRINKAGE ADDITIVE OR NON SHRINKING CEMENT GROUT SHALL BE USED WHERE STRUCTURALLY REQUIRE.
13- THE 40 MM DIA HOLES PROVIDED IN THE PRECAST PANNEL FOR LIFTING SHALL BE FILLED WITH CEMENT GROUT AFTER PLACING IN POSITION.
14- CONSTRUCTION METHOD STATEMENT DOC. NO. RDSO/WKS/2016/3 SHALL BE READ FOR CONSTRUCTION AND ERECTION OF RCC BOUNDRY WALL WITH PRECAST PANEL & COLUMN.

DIRECTOR WORKS	-Sd-
ASST. DESIGN ENGINEER	-Sd-

RCC BOUNDARY WALL WITH PRECAST PANEL & COLUMN

SCALE: NTS	DATE: 13.04.2016

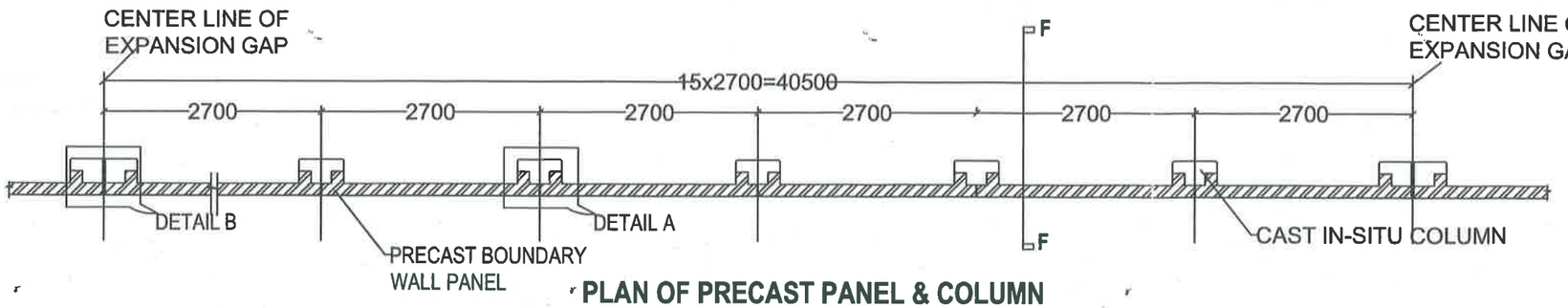
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FILE NO: WKS/103/B.W.

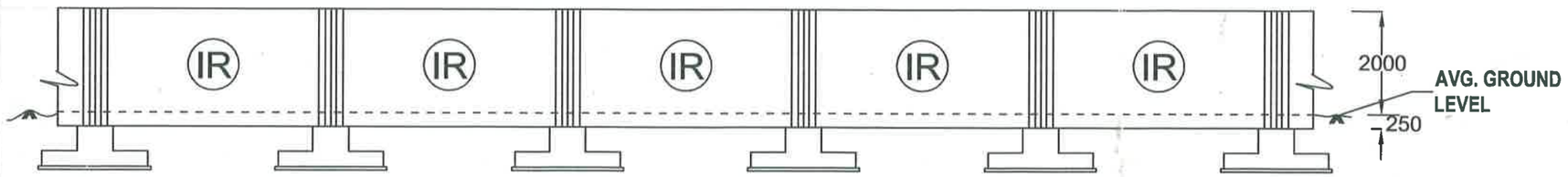
WORKS DIRECTORATE

R.D.S.O. LUCKNOW

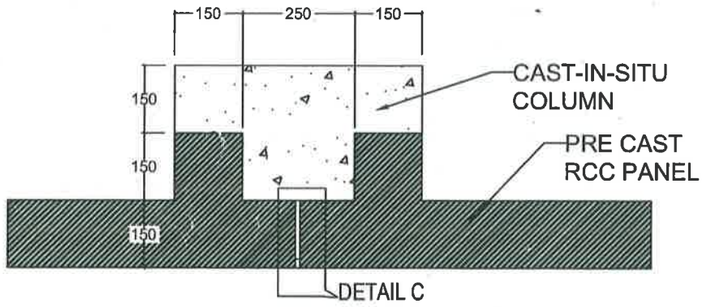
Annexure - 2



PLAN OF PRECAST PANEL & COLUMN



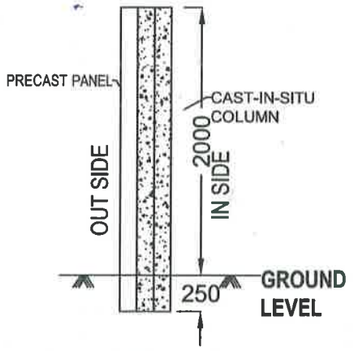
ELEVATION



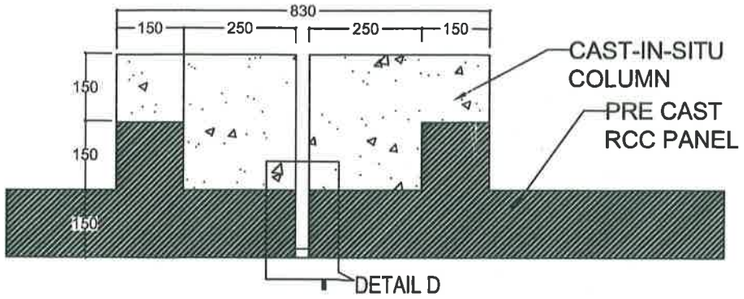
DETAIL A



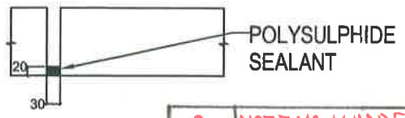
DETAIL C



DETAIL F-F



DETAIL B
(AT EXPENSION JOINT)



DETAIL D

SPECIAL NOTE:-

THIS DRAWING IS TO BE USED IN DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING WHERE WORK IS TO BE EXECUTED EXPEDITIOUSLY OR WHERE CAST-IN-SITU CONSTRUCTION IS NOT FEASIBLE AS PER SITE CONDITION. THIS DRAWING SHALL BE USED WITH THE PRIOR APPROVAL OF SR. DEN (Coordination) OF THE DIVISION.

NOTES:-

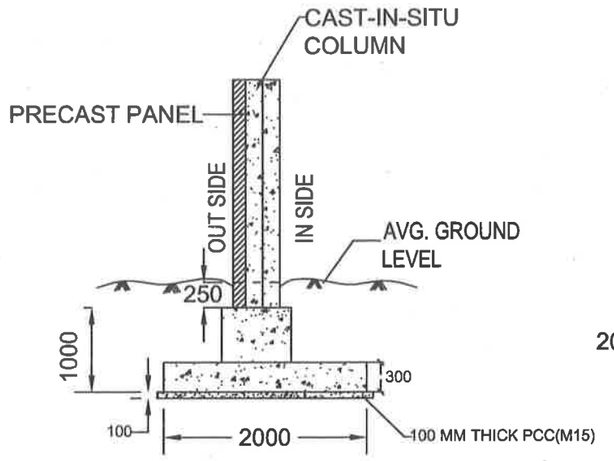
1- ALL DIMENSION ARE IN MILIMETERS UNLESS OTHERWISE STATED. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
2- CONCRETE MIX SHALL BE M 30 FOR PRECAST PANEL & M 25 FOR CAST IN SITU COLUMN.
3- NOMINAL COVER TO BE PROVIDED TO ALL STEEL REINFORCEMENT, INCLUDING LINKS SHALL BE AS PER IS:456 (LATEST).
4- ALL REINFORCEMENT BARS SHALL BE CONFORMING TO GRADE Fe 500/ 500D IS: 1786 (LATEST).
5- THIS DRAWING IS BASED ON SAFE BEARING CAPACITY OF 10 TONNES PER SQM. SUITABLE ADJUSTMENT IN FOUNDATION SIZE/DESIGN BE MADE AS PER SAFE BEARING CAPACITY OF SOIL AVAILABLE AT SITE.
6- IT IS A TYPICAL DRAWING. BASED ON SITE CONDITIONS, ACTUAL WORKING CONSTRUCTION DRAWING SHALL BE PREPARED BY EXECUTING DIVISION AND APPROVED BY SECTIONAL SR. DEN.
7- SR. DEN SHOULD PLAN FOR SINGLE LANE SERVICE ROAD ON ONE SIDE OF TRACK WHEREVER CONSTRUCTION OF BOUNDARY WALL LEADS TO BLOCKING OF THE ACCESS OF ROAD VEHICLES REQUIRED FOR MAINTENANCE/REPAIRES/EMERGENCIES ALONG WITH THE PROVISION OF APPROPRIATE BARRIER AT THE ENTRY POINT.
8- STEPPED CONSTRUCTION SHALL BE CARRIED OUT ON SLOPING GROUND WITH STEPS AT COLUMNS. HEIGHT OF RCC COLUMN BE SUITABLY INCREASED ON BASIS OF NATURAL GROUND SLOPE. TYPICAL ARRANGEMENT FOR CONSTRUCTION ON SLOPING GROUND ARE GIVEN IN SHEET 2.
9- THIS RCC WALL IS NOT DESIGNED FOR RESISTING ANY EARTH PRESSURE.
10. APPLICABLE FOR 'A ROUTES & HIGH DENSITY ROUTES'. (ALT: 1)
11. IS: 456 (LATEST) SHALL BE FOLLOWED IN ALL R.C.C & P.C.C. WORKS. (ALT: 2)

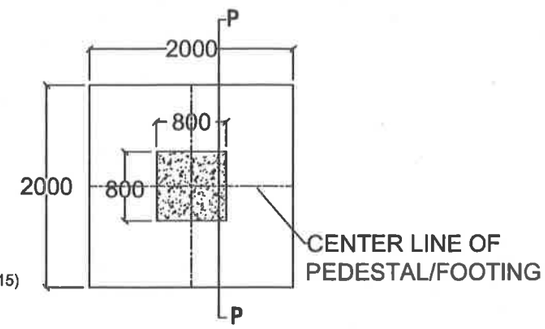
ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	

RCC BOUNDARY WALL WITH
PRECAST PANEL & CAST IN SITU COLUMN
(FOR DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING)

SCALE: NTS	DATE: 06 .12.2017
DRAWING NO: RDSO/WKS/2017/2 (Sheet 1 of 4)	
WORKS DIRECTORATE	
R.D.S.O. LUCKNOW	

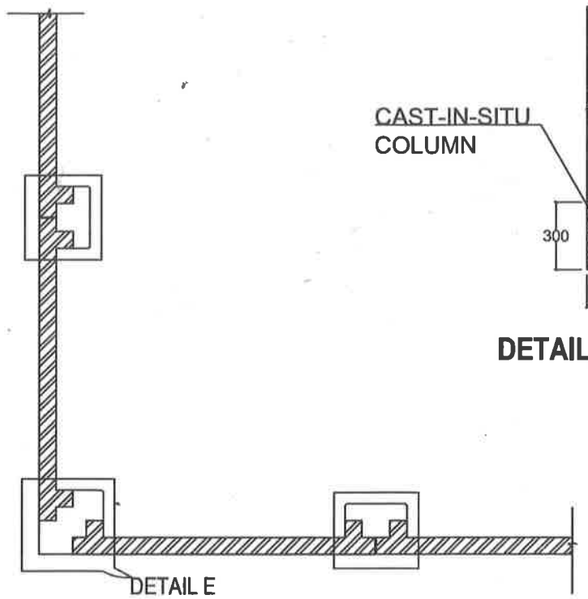
ALT:	DESCRIPTION	ADE/W	DIR/W	ED/W	DRAWN BY
2	NOTE NO. 11 ADDED	12/12/17	12/12/17	22-12	
1	NOTE NO. 10 ADDED		19/12	8/01	



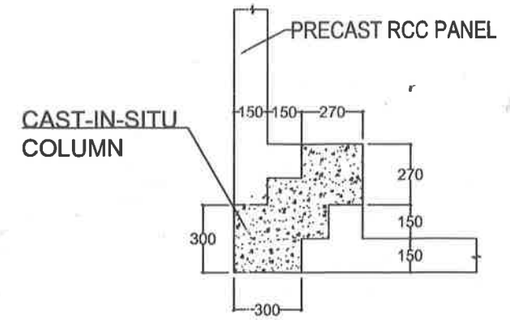


FOOTING PLAN

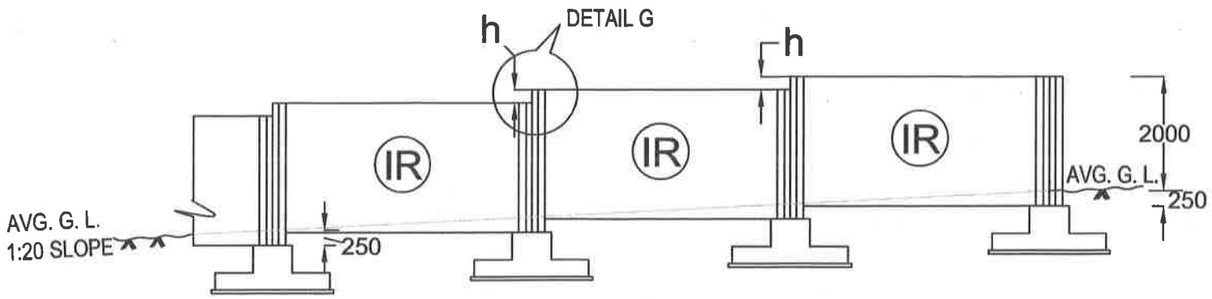
BOUNDARY WALL FOOTING PLAN SECTION P-P



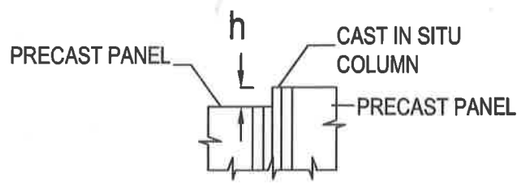
CORNER PLAN



DETAIL E (CORNER COLUMN)



FRONT ELEVATION OF BOUNDARY WALL FOR SLOPING GROUND



DETAIL G

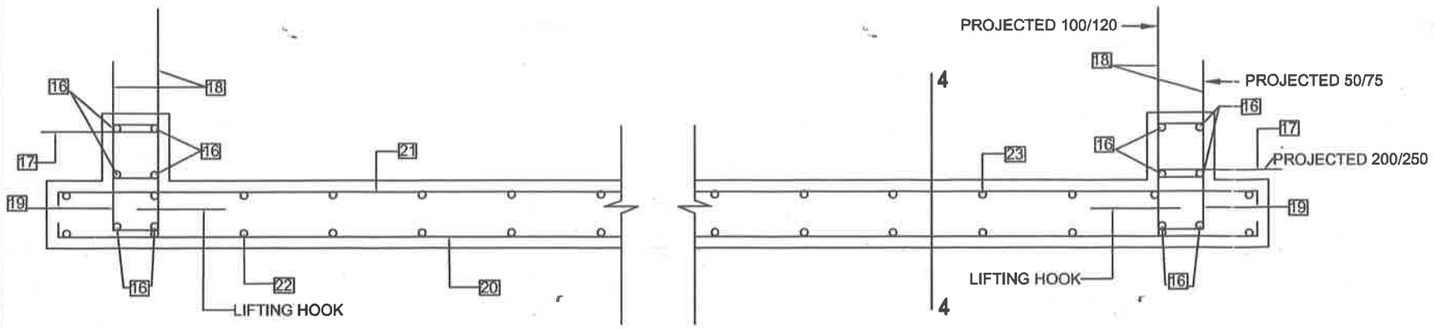
NOTES:-

IF SLOPE OF NATURAL GROUND IS 1 in x

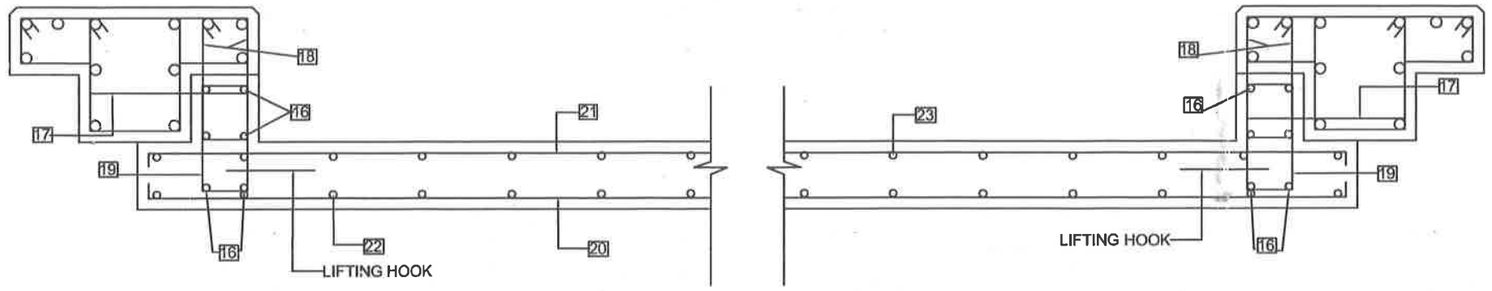
THE HEIGHT 'h' (AS SHOWN AT DETAIL 'G') in mm

WILL BE $h = \frac{2700}{x}$

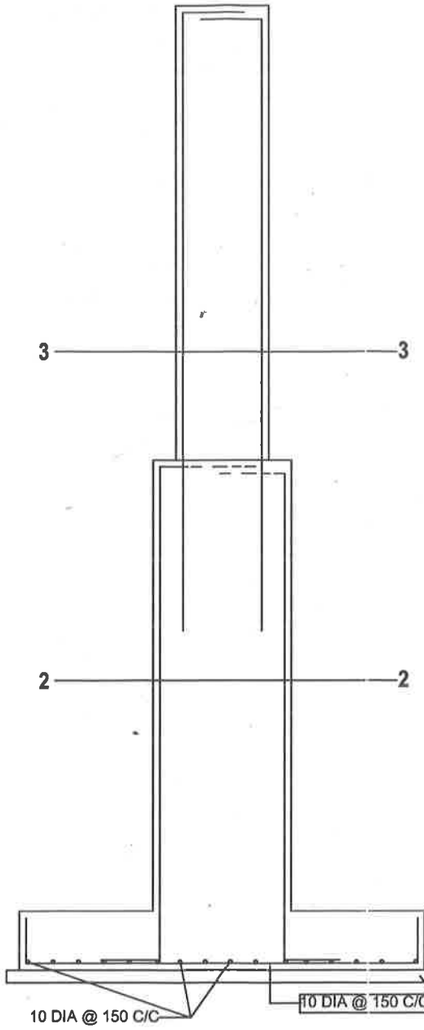
ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	
RCC BOUNDARY WALL WITH PRECAST PANEL & CAST IN SITU COLUMN (FOR DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING)	
SCALE: NTS	DATE: 06 .12.2017
DRAWING NO: RDSO/WKS/2017/2(Sheet 2 of 4)	
DRAWN BY	WORKS DIRECTORATE
	R.D.S.O. LUCKNOW



PRECAST PANEL REINFORCEMENT PLAN WITH REINFORCEMENT BAR PROJECTION FOR EMBEDDING WITH IN-SITU COLUMN

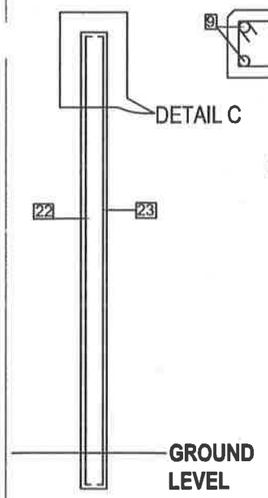


REINFORCEMENT PLAN OF CAST IN-SITU COLUMN EMBEDDING WITH REINFORCEMENT BAR PROJECTED FROM PRECAST PANEL

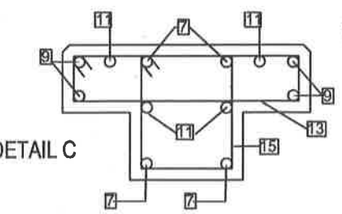


DETAILS OF COLUMN ABOVE FORMATION LEVEL

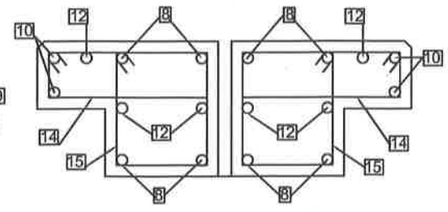
REINFORCEMENTS DETAILS		
BAR MARK	DIA OF BAR	SHAPE OF BAR
1	12 DIA -20 Nos	
2	8 DIA @ 150 C/C	
3	8 DIA @ 150 C/C	
4	8 DIA @ 150 C/C	
5	8 DIA @ 150 C/C	
6	8 DIA @ 150 C/C	
7	12 DIA -4Nos.	
8	12 DIA -8Nos.	
9	12 DIA -4Nos.	
10	12 DIA -4Nos.	
11	12 DIA -4Nos.	
12	12 DIA -6Nos.	
13	8 DIA @ 150 C/C	
14	8 DIA @ 150 C/C	
15	8 DIA @ 150 C/C	
16	10 DIA -6 Nos.	
17	12 DIA -5 Nos.	
18	10 DIA @ 150 C/C	
19	8 DIA @ 150 C/C	
20	8 DIA @ 150 C/C	
21	8 DIA @ 150 C/C	
22	8 DIA @ 200 C/C	
23	8 DIA @ 200 C/C	



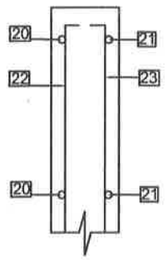
DETAIL 4-4



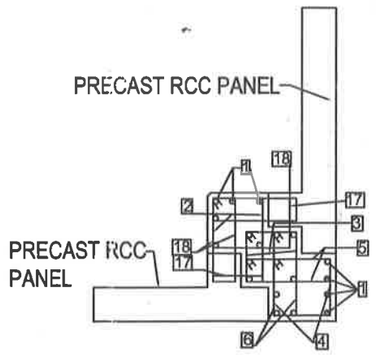
SECTION 3-3



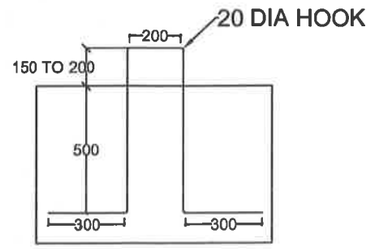
SECTION 3-3 (AT EXPENSION JOINT)



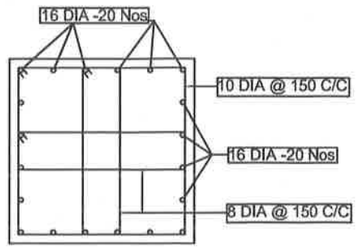
DETAIL C



DETAIL OF CORNER COLUMN

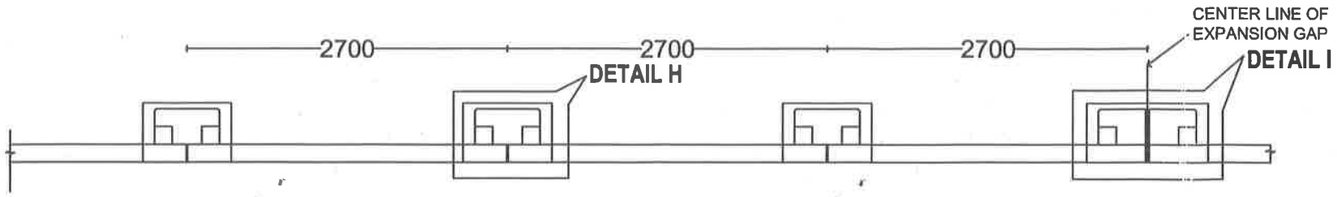


LIFTING HOOK DETAIL

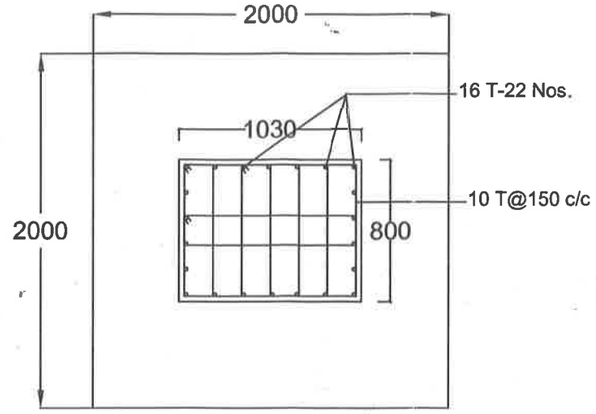


SECTION 2-2

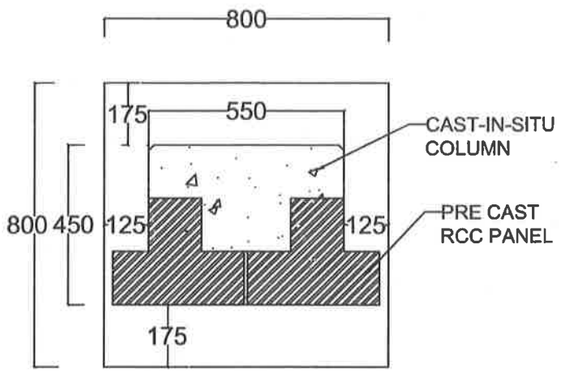
ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	
RCC BOUNDARY WALL WITH PRECAST PANEL & CAST IN SITU COLUMN (FOR DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING)	
SCALE: NTS	DATE: 06 .12.2017
DRAWING NO: RDSO/WKS/2017/2(Sheet 3 of 4)	
	WORKS DIRECTORATE
DRAWN BY	R.D.S.O. LUCKNOW



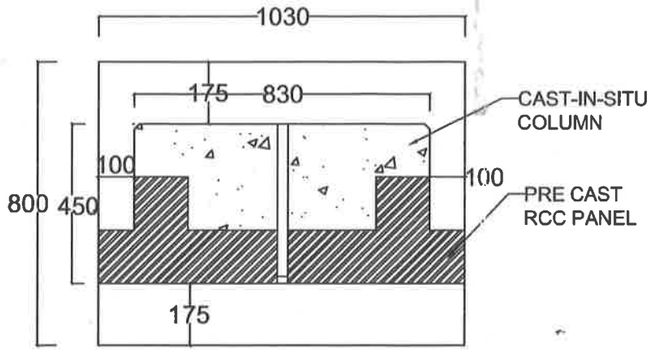
TYP. PLAN FOR BOUNDARY WALL OF PRECAST PANEL & CAST IN SITU COLUMN



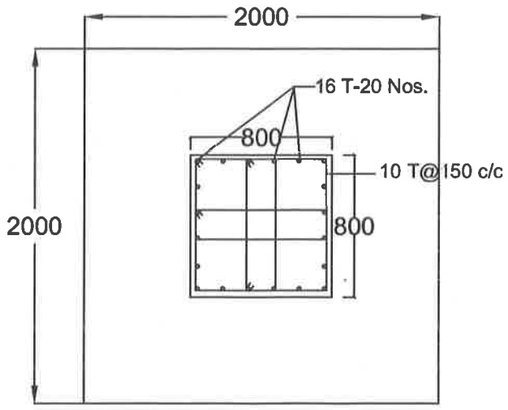
DETAIL I-I (BAR PLAN)



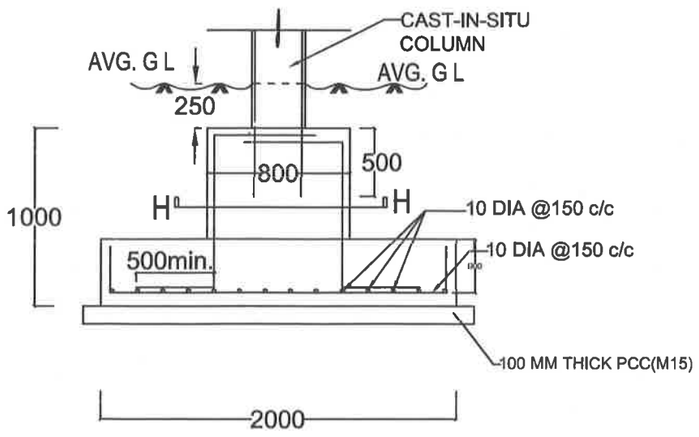
DETAIL H



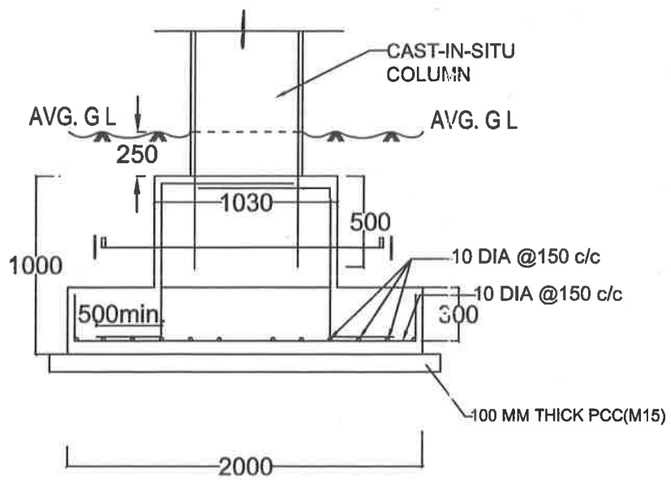
DETAIL I



DETAIL H-H (BAR PLAN)



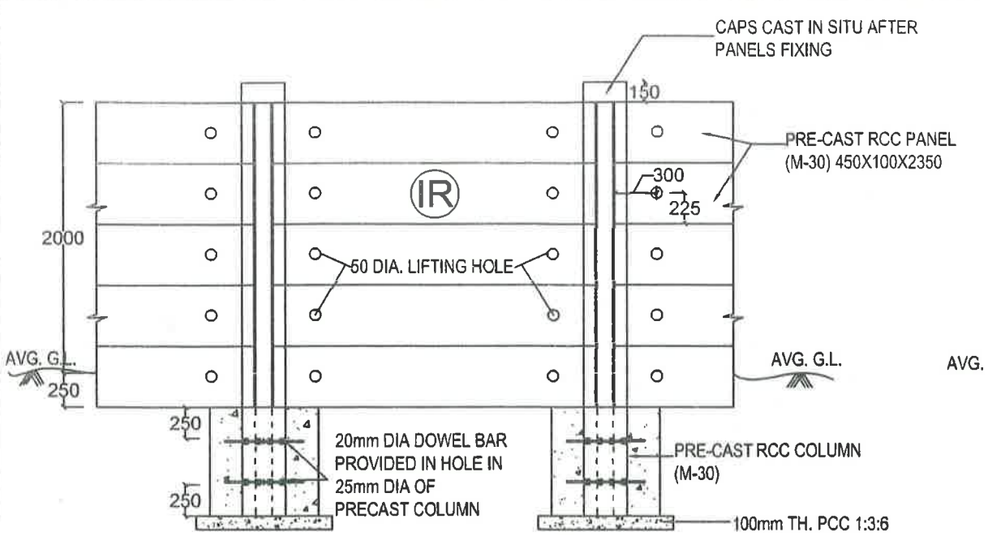
DETAIL H (FOOTING)



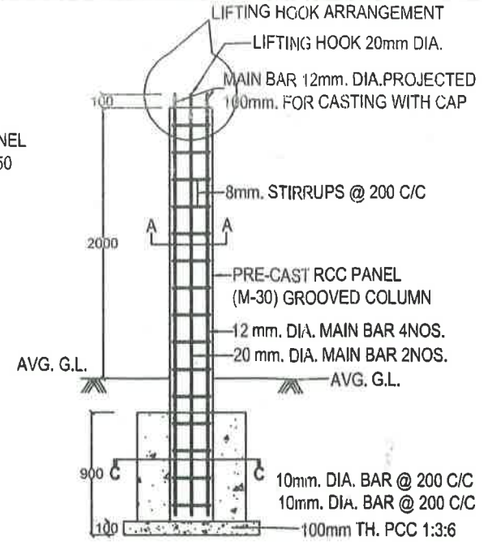
DETAIL I (FOOTING)

ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	
RCC BOUNDARY WALL WITH PRECAST PANEL & CAST IN SITU COLUMN (FOR DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING)	
SCALE: NTS	DATE: 06 .12.2017
DRAWING NO: RDSO/WKS/2017/2(Sheet 4 of 4)	
	WORKS DIRECTORATE
DRAWN BY	R.D.S.O. LUCKNOW

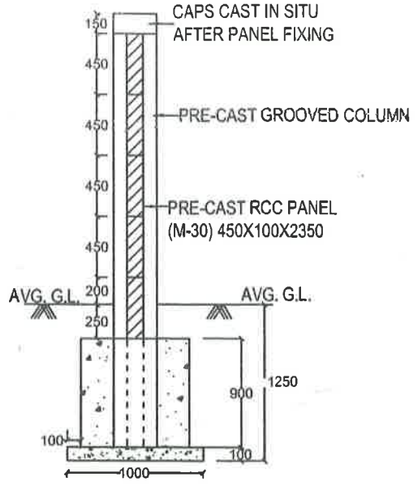
Annexure - 3



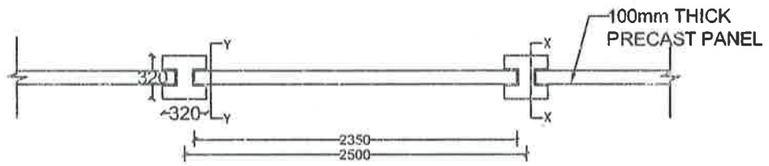
FRONT ELEVATION OF BOUNDARY WALL



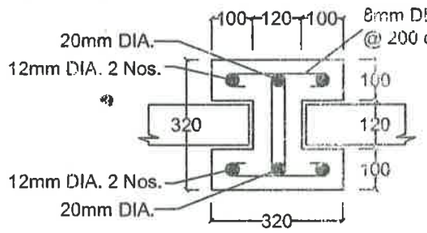
SEC. AT X-X



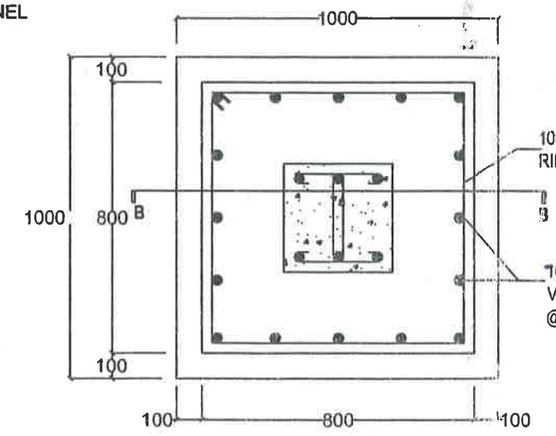
SEC. AT Y-Y



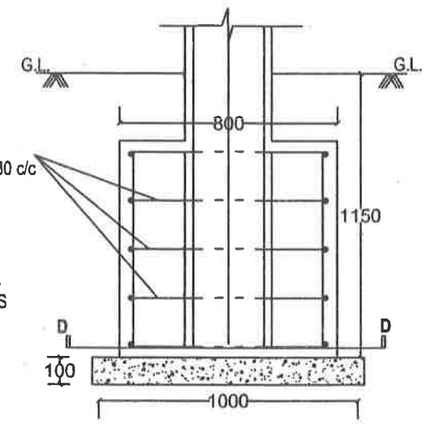
PLAN



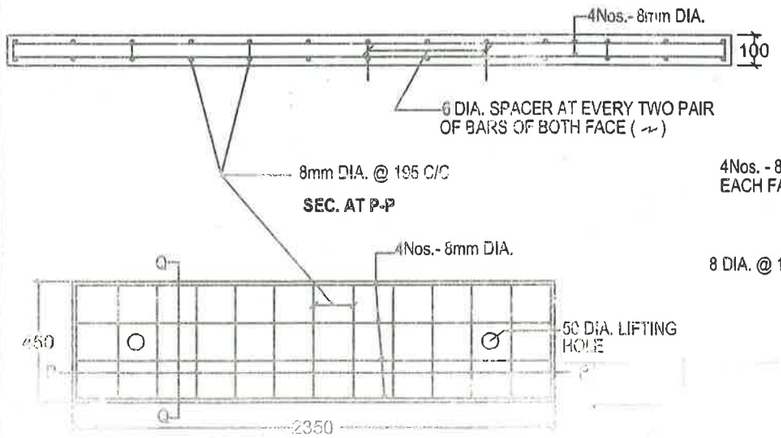
SEC. AT A-A



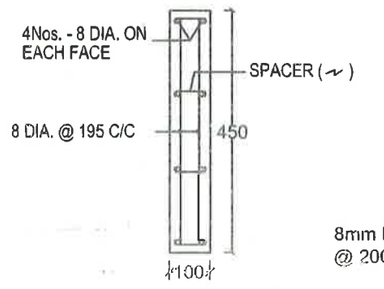
SEC. AT C-C



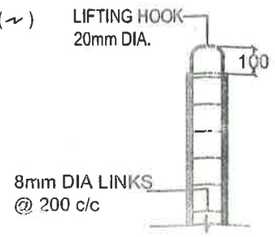
SEC. AT B-B



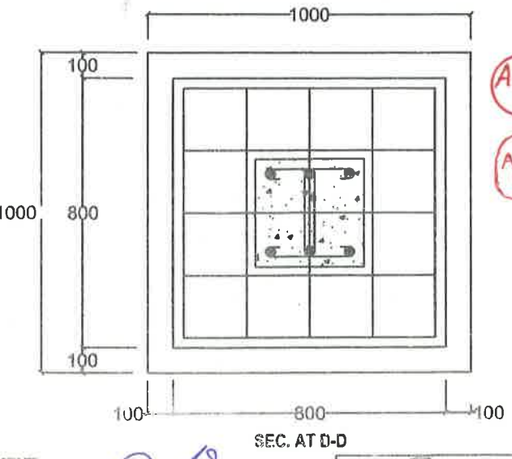
PRECAST PANEL PLAN



SEC. AT Q-Q



LIFTING HOOK ARRANGEMENT



SEC. AT D-D

ALT:	DESCRIPTION	ADE/W	DIR/W	ED/W
1	NOTE No16 ADDED		18/4/18	18/04
ALT:2	NOTE No.17 ADDED	24/04/18	24/04/18	24/4/18

DRAWN BY

NOTES:-

1. ALL DIMENSION ARE IN mm,UNLESS OTHERWISE STATED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. IT IS TYPICAL DRAWING. BASED ON SITE CONDITIONS, ACTUAL WORKING CONSTRUCTION DRAWING SHALL BE PREPARAED BY EXECUTING DIVISION AND APPROVED BY SECTIONAL SR. DEN.
3. TWO CIRCULAR HOLES OF 50mm DIA. SHALL BE PROVIDED IN THE PANNEL FOR HANDLING.
4. RCC COLUMN AND RCC PANEL WILL BE PRECAST WITH M-30 GRADE.
5. NOMINAL COVER TO BE PROVIDED TO ALL STEEL REINFORCEMENT, INCLUDING LINKS SHALL BE AS PER IS: 456 (LATEST).
6. TMT BARS OF GRADE FE-500/500D CONFIRMING TO IS: 1786(LATEST) SHALL BE USED.
7. RCC FOUNDATION SHALL BE IN M-25 GRADE.
8. 25mm DIA. HOLE SHALL BE PROVIDED IN COLUMN DURING PRECASTING, AS SHOWN. A DOWEL BAR DIA 20mm SHALL BE PROVIDED IN HOLES BEFORE CASTING WITH FOUNDATION.
9. PCC 100 mm THICK 1:3:6 TO BE DONE AT SITE AFTER PROPERLY COMPACTING SOIL BELOW.
10. THIS DRAWING IS BASED ON SAFE BEARING CAPACITY OF 10 TONNES PER SQM . SUITABLE ADJUSTMENT IN FOUNDATION SIZE/ DESIGN BE MADE AS PER SAFE BEARING CAPACITY OF SOIL AVAILABLE AT SITE.
11. SR. DEN SHOULD PLAN FOR SINGLE LANE SERVICE ROAD ON ONE SIDE OF TRACK WHEREVER CONSTRUCTION OF BOUNDARY WALL LEADS TO BLOCKING OF THE ACCESS OF ROAD VEHICLES REQUIRED FOR MAINTENANCE/ REPAIRS/ EMERGENCIES ALONG WITH THE PROVISION OF APPROPRIATE BARRIER AT THE ENTRY POINT.
12. STEPPED CONSTRUCTION SHALL BE CARRIED OUT ON SLOPING GROUND WITH STEPS AT COLUMNS. HEIGHT OF PRECAST COLUMN BE SUITABLY INCREASED ON BASIS OF NATURAL GROUND SLOPE. TYPICAL ARRANGEMENT FOR CONSTRUCTION ON SLOPING GROUND ARE GIVEN IN SHEET 2.
13. SEQUENCE OF CONSTRUCTION:
    a. IN FOUNDATION PIT, AFTER PCC, RAINFORCEMENT AS PER SEC. D-D AND B-B BE LAID.
    b. PRECAST COLUMN WITH TWO PANELS OUT OF FIVE PANELS, BE ERECTED AND ALIGNED.
    c. FOUNDATION BE CASTED.
    d. AFTER ACHIEVING SUITABLE STRENGTH OTHER THREE PANELS SHALL BE FIXED AND CAP SHALL BE CAST.
14. THIS WALL IS NOT DESIGNED FOR RESISTING ANY EARTH PRESSURE.
15. THIS DRAWING IS TO BE NORMALLY ADOPTED IN LIGHTLY BUILT UP OR NON-BUILT UP AREA WITH OCCASIONAL TRESPASSING .
16. APPLICABLE FOR 'A' ROUTES & HIGH DENSITY ROUTES.
17. IS:456(LATEST) SHALL BE FOLLOWED IN ALL R.C.C & P.C.C. WORKS

ALT: 1

ALT: 2

ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	

RCC BOUNDARY WALL WITH PRECAST PANEL & PRECAST COLUMN

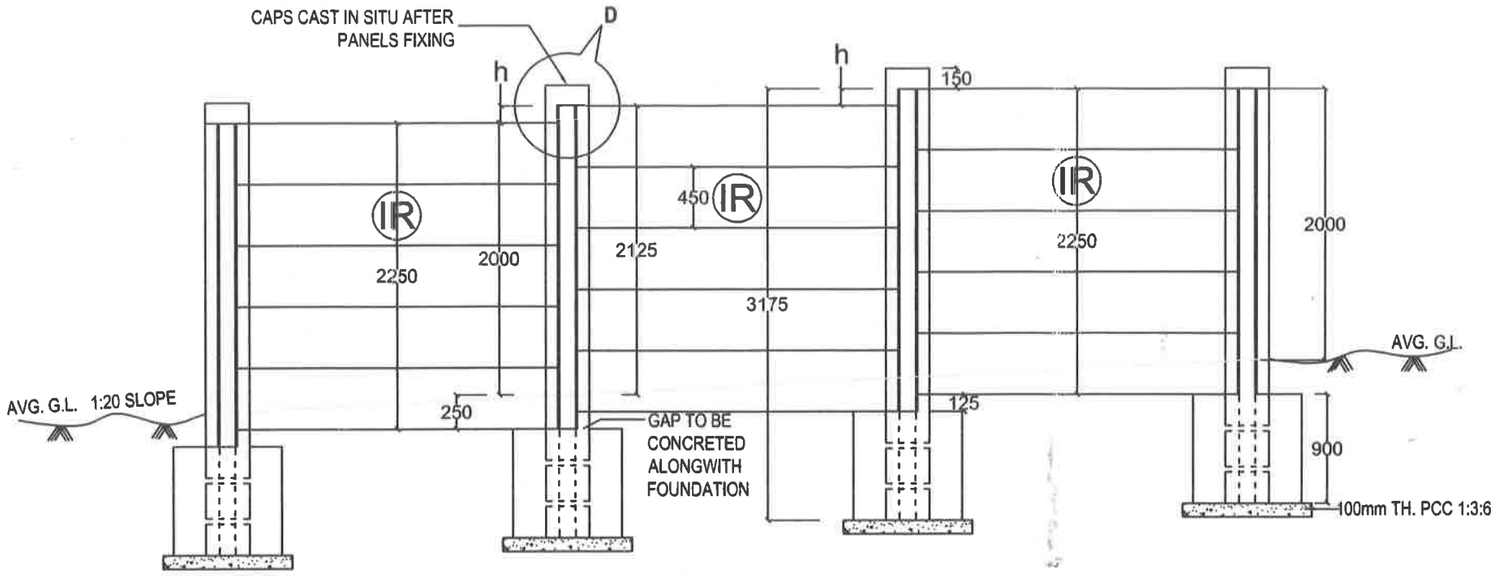
(FOR LIGHTLY BUILT UP OR NON-BUILT UP AREA WITH OCCASIONAL TRESPASSING)

SCALE: NTS | DATE: 06 .12.2017

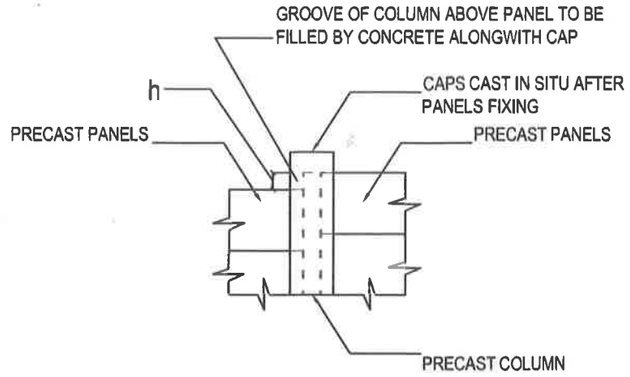
DRAWING NO: RDSO/WKS/2017/3 (Sheet 1 of 2)

WORKS DIRECTORATE

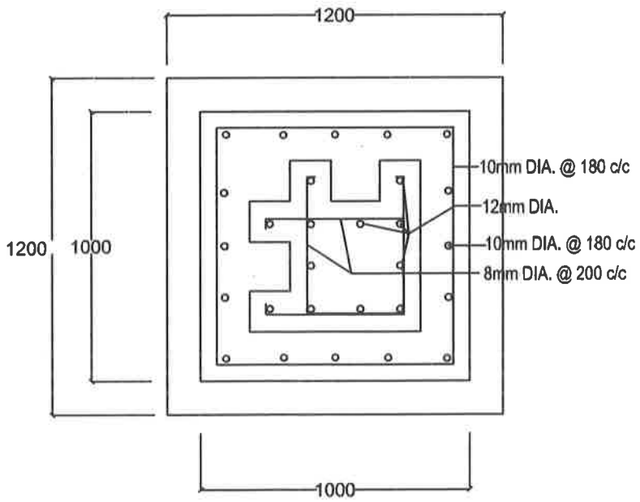
R.D.S.O. LUCKNOW



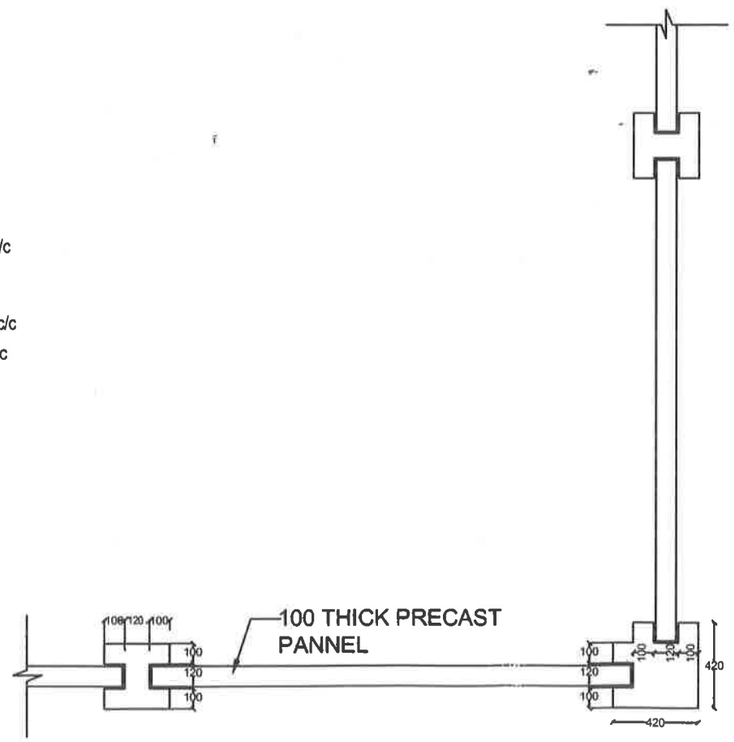
FRONT ELEVATION OF BOUNDARY WALL ON SLOPING GROUND



DETAIL D



CORNER COLUMN FOUNDATION



CORNER COLUMN PLAN

NOTE:

IF SLOPE OF NATURAL GROUND IS 1 in x

THE HEIGHT 'h' (AS SHOWN AT DETAIL 'D') in mm

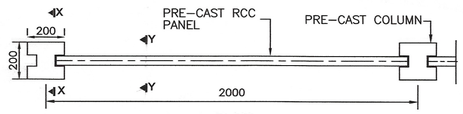
WILL BE $h = \frac{2500}{x}$

ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	
RCC BOUNDARY WALL WITH PRECAST PANEL & PRECAST COLUMN (FOR LIGHTLY BUILT UP OR NON-BUILT UP AREA WITH OCCASIONAL TRESPASSING)	
SCALE: NTS	DATE: 06 .12.2017
DRAWING NO: RDSO/WKS/2017/3 (Sheet 2 of 2)	

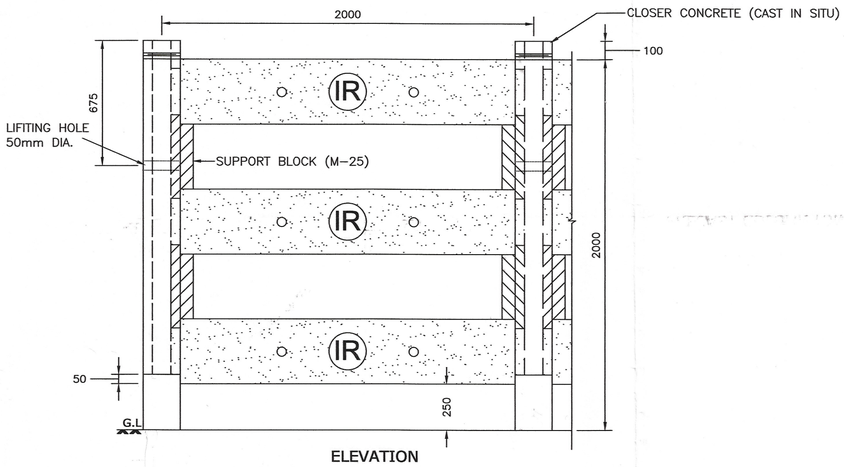
	WORKS DIRECTORATE
DRAWN BY	R.D.S.O. LUCKNOW

DETAILS OF FENCE WITH PANEL

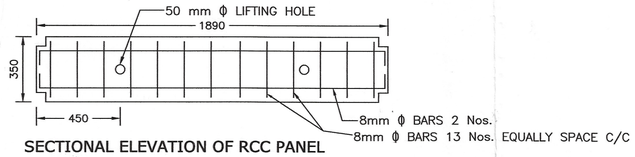
Annexure - 4



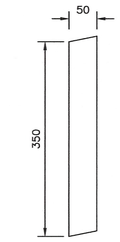
PLAN



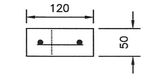
ELEVATION



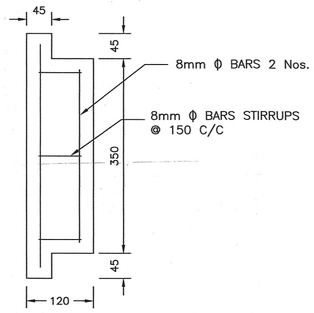
SECTIONAL ELEVATION OF RCC PANEL



SIDE ELEVATION OF PANEL (MID PART)



SUPPORT BLOCK PLAN

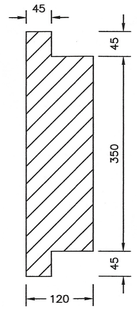


SUPPORT BLOCK ELEVATION

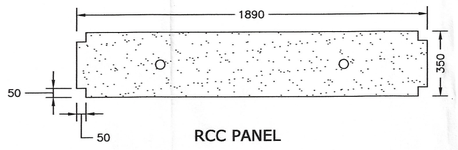
NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. M-25 GRADE CONCRETE SHALL BE USED IN PRECAST RCC COLUMN, RCC PANEL & SUPPORT BLOCK.
3. COMPONENTS/ MEMBERS SHALL BE CAST AT CENTRALIZED DEPOT./WORKSHOP UNDER CONTROLLED CONDITION AS PER IS: 456-2000. SPECIFIED EMPHASIS SHALL BE GIVEN ON COVER TO REINFORCEMENT, CURING OF MEMBERS. POTABLE WATER SHALL BE USED IN CONCRETE MIX AS WELL AS CURING OF MEMBERS.
4. TMT BARS OF GRADE FE 415/ 500 OF SPECIFIED DIA. SHALL BE USED. TMT BARS SHALL BE CONFIRMING TO IS: 1786 (LATEST).
5. TWO CIRCULAR HOLES OF 50 mm DIA. SHALL BE PROVIDED IN RCC PANEL FOR EASY HANDLING. 50mm DIA CIRCULAR HOLES SHALL BE PROVIDED IN RCC COLUMN FOR EASY HANDLING (AS SHOWN IN DRAWING).
6. 1:20 SLOPE SHALL BE PROVIDED ON TOP OF COLUMN AND PANEL AS DETAILED IN DRAWING.
7. AT EVERY 30 METRE TWO COLUMN SHALL BE GROUTED SIDE BY SIDE.
8. 6 mm DIA. AND 200 mm LENGTH M.S. WIRE PROVIDED ACROSS HOLE DIA. 15 MM SHALL BE BENT 25 mm BOTH SIDE BEFORE CASTING (AT SITE) TO PREVENT PANEL ANTITHEFT.
9. ZONAL RAILWAY MAY PAINT THEIR INITIALS (SUCH AS NR, SER etc.) ON PANEL/COLUMNN BY USING STENCIL.
10. FOUNDATION SHALL BE DUG USING AUGAR/ MECHANICAL BORING EARTH SHALL BE RAMMED PROPERLY AND 50 MM SAND SHALL BE PLACED BEFORE FOUNDATION CASTING. FOUNDATION SHALL BE CURED PROPERLY.
11. TO THE EXTENT POSSIBLE PANEL SHALL BE ALIGNED HORZENTALLY. IN UNDULATING AREA, COLUMN SHALL BE PLACED ACCORDINGLY SO THAT PANEL ARE ALIGNED HORIZENTAL. VERTICALITY OF COLUMN SHALL BE CHECKED DURING ERECTION.
12. THIS CATLE FENCE SHALL BE PROVIDED AT RAILWAY BOUNDARY.
13. DEPTH & SIZE OF FOUNDATION BE CHECKED BY ZONAL RAILWAYS AND BE CHANGED AS PER SITE CONDITION.

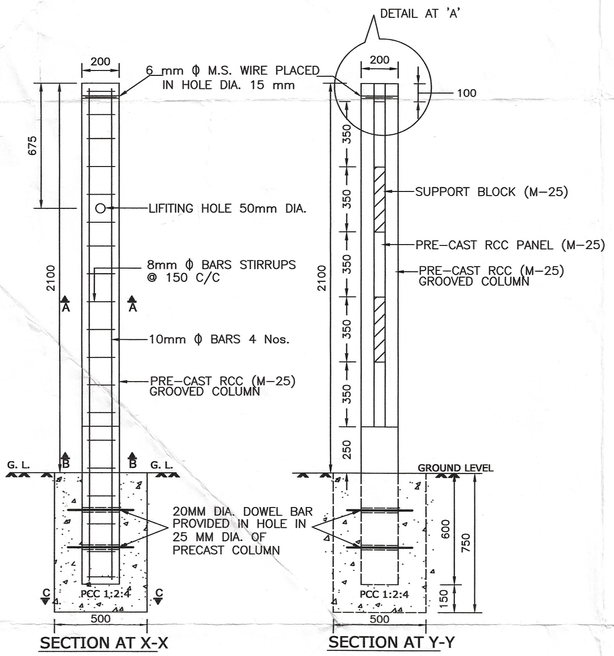
ALT:1 → 14. IS:456 (LATEST) SHALL BE FOLLOWED IN ALL R.C.C & P.C.C. WORKS.



SUPPORT BLOCK

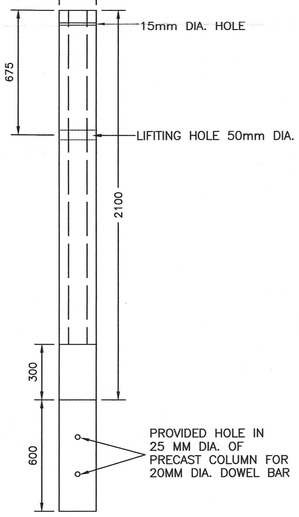


RCC PANEL

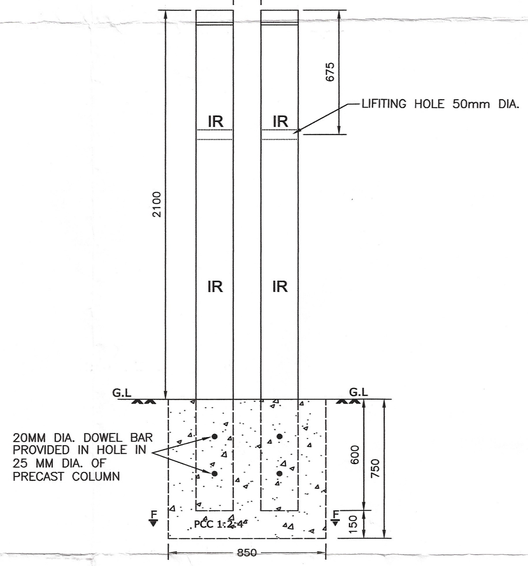


SECTION AT X-X

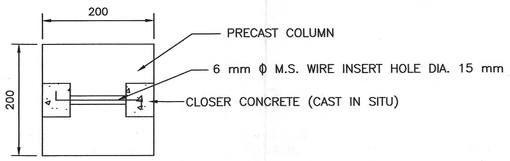
SECTION AT Y-Y



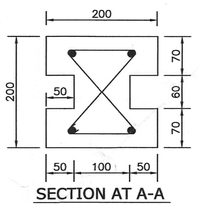
PRECAST COLUMN (ONLY)



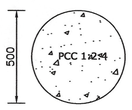
ADJACENT COLUMN AT EVERY 30 METRE



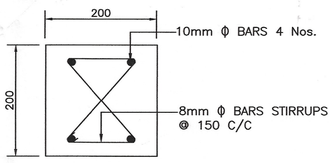
TOP PLAN OF COLUMN WITH PACKING



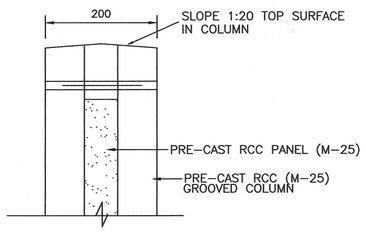
SECTION AT A-A



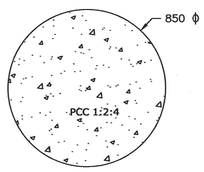
SECTION AT C-C



SECTION AT B-B



DETAIL AT 'A'



SECTION AT F-F

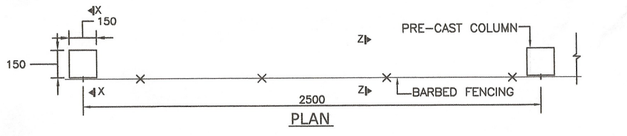
1.	NOTE NO. 14 ADDED	24/04/2020	23/04/2019	24/10/19	22-5-19		
ALT:	DESCRIPTION	ADE/W	DIR/W	ED/W	DRAWN BY	ALT	DESCRIPTION / DATE

ED/WORKS	22/05/19
DIR/WORKS	22.5.19
ADE/WORKS	

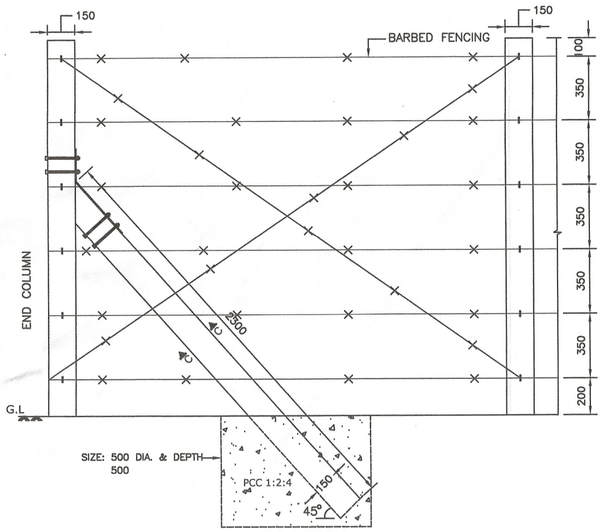
CATTLE FENCE ALONG THE TRACK WITH PRECAST PANEL AND PRECAST COLUMN

SCALE – N.T.S	DATE – .05.19
DRG. NO. – RDSO/WKS/2019/3	
WORKS DIRECTORATE / R.D.S.O.	

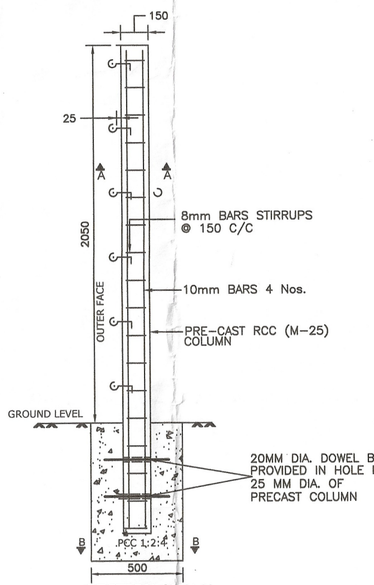
Annexure - 5



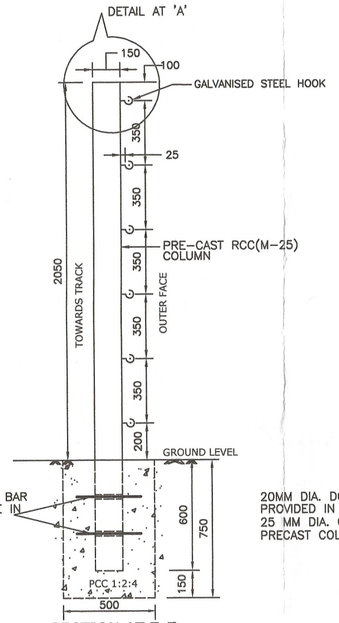
PLAN



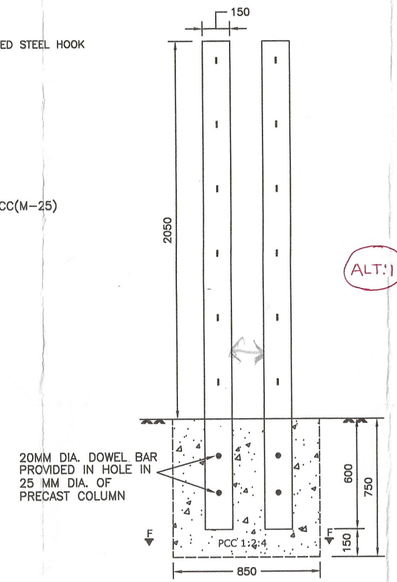
ELEVATION



SECTION AT X-X



SECTION AT Z-Z

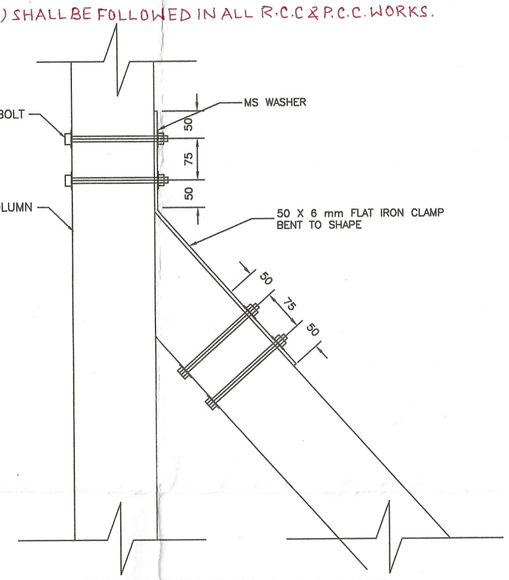


ADJACENT COLUMN AT
EVERY 30 METRE

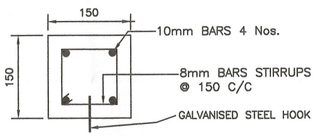
NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. BARBED FENCING SHALL BE MADE OF G.I. BARBED WIRES CONFIRMING TO IS: 278. THE WEIGHT OF G.I. BARBED WIRE SHALL BE AS PER SOR.
3. THE G.I BARBED WIRES SHALL BE FIXED TO THE COLUMNS WITH HOOKS MADE OF 6 mm DIA. GALVANIZED STEEL. ANOTHER END OF GALVANIZED STEEL HOOK SHALL BE PLACED BEHIND STIRRUPS AND TIED WITH STIRRUPS AS PER DRAWING TO PROVIDE STRENGTH.
4. FOR ERECTION OF WIRE FENCING, RECOMMENDATIONS GIVEN IN IS:4996-1984 SHALL BE FOLLOWED. FENCING WIRE SHALL BE TIED TO GALVANISED STEEL HOOKS WITH SHORT PIECE OF LIGHT WIRE.
5. M-25 GRADE CONCRETE SHALL BE USED IN PRECAST COLUMN/ STRUT. COLUMN/ STRUT SHALL BE CAST AT CENTRALIZED DEPOT UNDER CONTROLLED CONDITION AS PER IS :456-2000.
6. TMT BARS OF GRADE FE 415/ 500 OF SPECIFIED DIA. SHALL BE USED. TMT BAR SHALL BE CONFIRMING TO IS:1786 (LATEST).
7. ZONAL RAILWAY MAY PAINT THEIR INITIALS (SUCH AS NR, SER etc.) ON COLUMN AND STRUT.
8. STRUT OR BRACE SHALL BE FIXED WITH END RCC COLUMN BY SUITABLE ARRANGEMENT AS DETAILED IN DRAWING. 50 X 6 mm MS FLAT SHALL BE USED TO CONNECT STRUT/BRACE TO RCC COLUMN. 10 mm DIA. MS BOLT BLACK HEXAGONAL HEAD ROUND NECK WITH HEXAGONAL NUTS AND TWO WASHER SHALL BE USED. AFTER TIGHTING NUT, END OF BOLT SHALL BE HAMMERED TO MAKE ANTITHEFT.
9. SUPPORTING STRUT SHALL BE PROVIDED AT FIRST / END COLUMN OR CHANGE OF DIRECTION.
10. 1:20 SLOPE SHALL BE PROVIDED ON TOP OF COLUMN AT THE TIME OF CASTING.
11. AT EVERY 30 METRE TWO COLUMN SHALL BE GROUTED SIDE BY SIDE.
12. IN UNDULATING AREA, COLUMN SHALL BE PLACED ACCORDINGLY SO THAT BARBED WIRE ARE ALIGNED HORIZONTAL. VERTICALITY OF COLUMN SHALL BE CHECKED DURING ERECTION.
13. FOUNDATION SHALL BE DUG USING AUGAR/ MECHANICAL BORING EARTH SHALL BE RAMMED PROPERLY AND 50 MM SAND SHALL BE PLACED BEFORE FOUNDATION CASTING. FOUNDATION SHALL BE CURED PROPERLY.
14. THIS CATLE FENCE SHALL BE PROVIDED AT RAILWAY BOUNDARY.

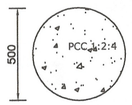
ALT:1 → 15. IS: 456 (LATEST) SHALL BE FOLLOWED IN ALL R.C.C & P.C.C. WORKS.



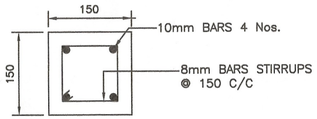
DETAIL OF JUNCTION OF PRECAST COLUMN AND STRUT



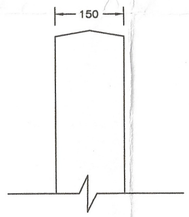
SECTION AT A-A



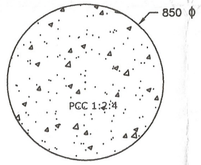
SECTION AT B-B



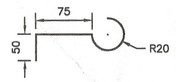
SECTION AT C-C



DETAIL AT 'A'



SECTION AT F-F



GALVANISED STEEL HOOK 6 mm DIA.
FOR HOLDING BARBED WIRE

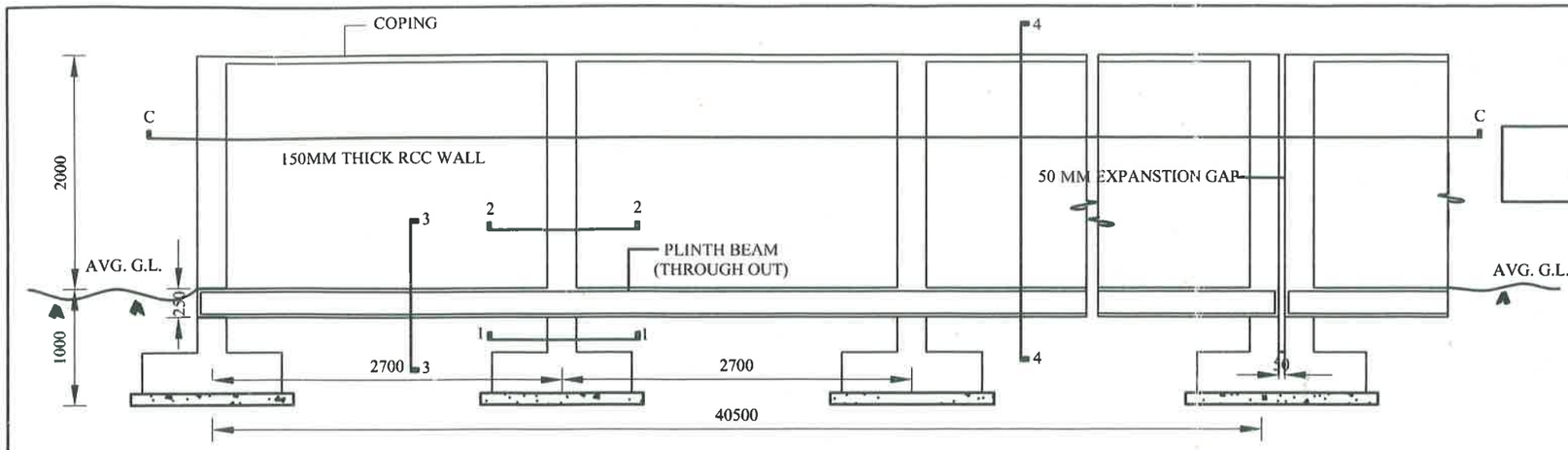
1	NOTE NO. 15 ADDED				8-5-19			
ALT:	DESCRIPTION	ADE/W	DIR/W	ED/W	DRAWN BY	ALT	DESCRIPTION	DATE

ED/WORKS	03/05/19
Jt. DIR/WORKS	08/5/19
ADE/WORKS	8/5/19

BARBED WIRE CATTLE FENCE ALONG THE TRACK WITH PRECAST COLUMN

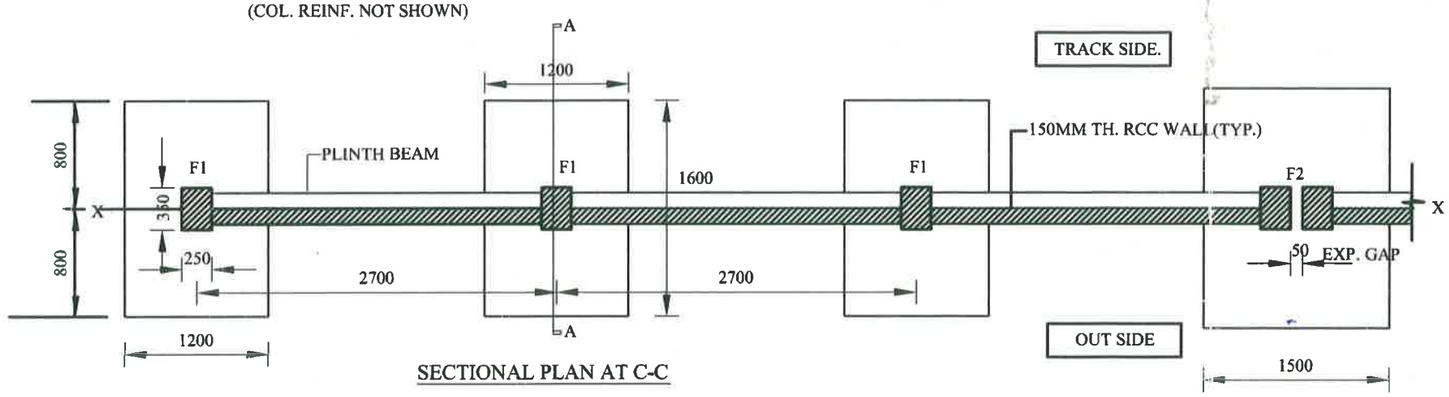
SCALE – N.T.S	DATE – 08.05.19
DRG. NO. – RDSO/WKS/2019/2	
WORKS DIRECTORATE / R.D.S.O.	

Annexure - 6

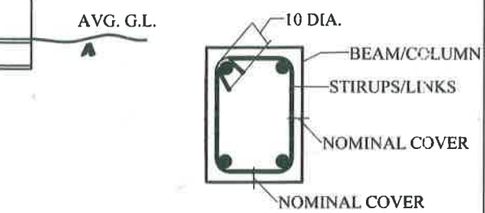


SECTION X-X

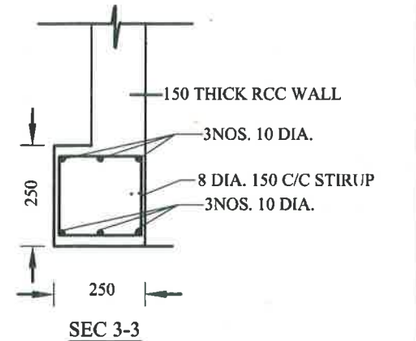
(COL. REINF. NOT SHOWN)



SECTIONAL PLAN AT C-C

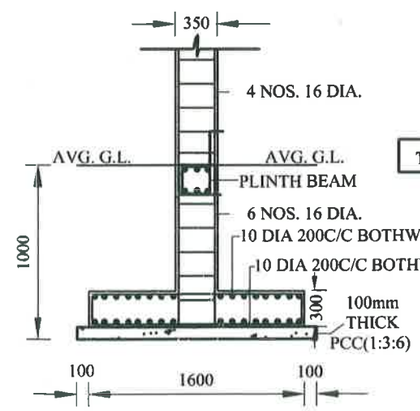


DETAIL AT (A)

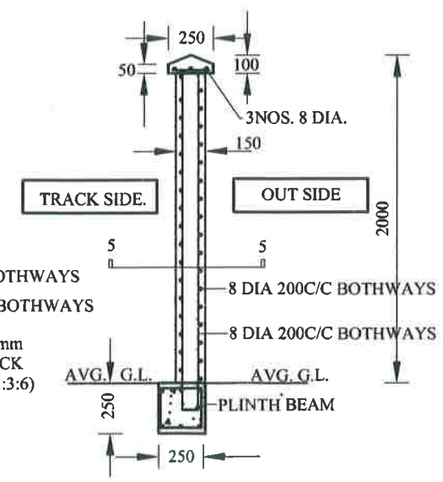


SEC 3-3

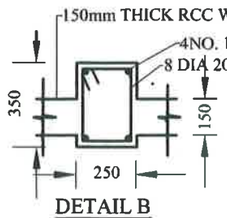
(SEC. OF PLINTH BEAM)



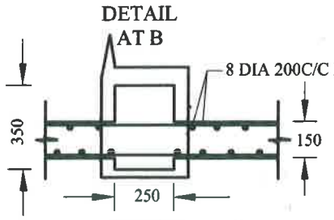
SEC A-A



SEC 4-4



DETAIL B

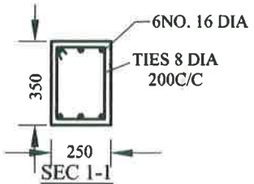


SEC 2-2

(SEC. OF COL.)

ABOVE PLINTH BEAM SHOWING

WALL REINFORCEMENT

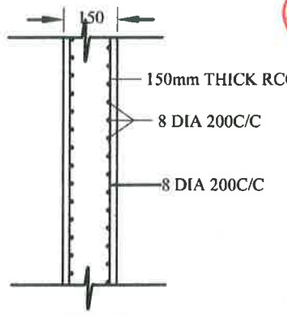


SEC 1-1

(SEC OF COL.)

FROM FOUNDATION TO

TOP OF PLINTH BEAM



SEC 5-5

(RCC WALL PLAN)

ALT: 1

ALT: 2

NOTE :-

1. ALL DIMENSIONS ARE IN MILI-METERS, UNLESS OTHERWISE STATED. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
2. IT IS TYPICAL DRAWING. BASED ON SITE CONDITIONS, ACTUAL WORKING CONSTRUCTION DRAWING SHALL BE PREPARED BY EXECUTING DIVISION AND APPROVED BY SECTIONAL SR. DEN.
3. THIS DRAWING IS BASED ON SAFE BEARING CAPACITY OF 10 TONNES PER SQM. SUITABLE ADJUSTMENT IN FOUNDATION SIZE/ DESIGN BE MADE AS PER SAFE BEARING CAPACITY OF SOIL AVILABLE AT SITE.
4. NOMINAL COVER TO BE PROVIDED TO ALL STEEL REINFORCEMENT, INCLUDING LINKS SHALL BE AS PER IS : 456 (LATEST).
5. TMT BARS OF GRADE FE-500/500D CONFIRMING TO IS:1786 (LATEST) SHALL BE USED.
6. LAPS, WHEREVER REQUIRED, ARE TO BE STAGGERED AS DIRECTED BY THE ENGINEER-IN-CHARGE. LAP LENGTH SHALL BE AS PER IS - 456 (LATEST). NOT MORE THAN 50PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION.
7. REINFORCEMENT BARS SHALL BE PROPERLY SUPPORTED, SO THAT THEY REMAIN IN CORRECT POSTION DURING CONCRETING.
8. EXPANSION JOINTS BE PROVIDED AT 40.50 m c/c.
9. THIS RCC WALL IS NOT DESIGNED FOR RESISTING ANY EARTH PRESSURE.
10. TYPICAL DETAILS OF SHEAR REINFORCEMENT (STIRRUPS), IN BEAM AND COLUMN TIES (LINKS) AND NOMINAL COVER IS SHOWN IN (A).
11. SR. DEN SHOULD PLAN FOR SINGLE LANE SERVICE ROAD ON ONE SIDE OF TRACK WHEREVER CONSTRUCTION OF BOUNDARY WALL LEADS TO BLOCKING OF THE ACCESS OF ROAD VEHICLES REQUIRED FOR MAINTENANCE/REPAIRS/EMERGENCIES ALONG WITH THE PROVISION OF APPROPRIATE BARRIER AT THE ENTRY POINT.
12. STEPPED CONSTRUCTION SHALL BE CARRIED OUT ON SLOPING GROUND WITH STEPS AT COLUMNS. HEIGHT OF RCC COLUMN BE SUITABLY INCREASED ON BASIS OF NATURAL GROUND SLOPE. TYPICAL ARRANGEMENT FOR CONSTRUCTION ON SLOPING GROUND ARE GIVEN IN SHEET 2.
13. THIS DRAWING IS TO BE NORMALLY ADOPTED IN DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING.
14. APPLICABLE FOR 'A ROUTES & HIGH DENSITY ROUTES'.
15. IS:456(LATEST) SHALL BE FOLLOWED IN ALL R.C.C & P.C.C. WORKS.

2	NOTE No.15 ADDED					
1	NOTE No.14 ADDED					
ALT:	DESCRIPTION	ADE/W	DIR/W	ED/W	DRAWN BY	

ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	

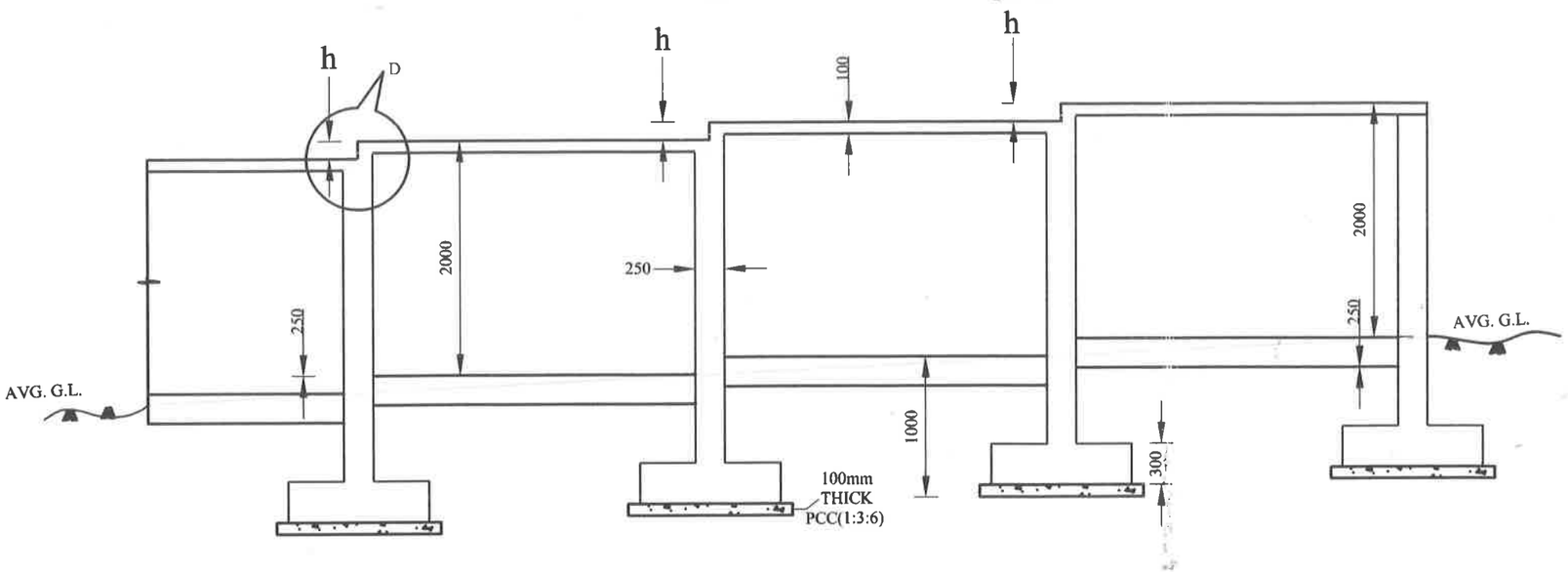
RCC BOUNDARY WALL CAST IN SITU

(FOR DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING)

SCALE - N.T.S.	DATE - 06 .12.2017
DRG. NOS. RDSO/WKS/2017/1(Sheet 1 of 2)	

WORKS DIRECTORATE

R. D. S. O. LUCKNOW



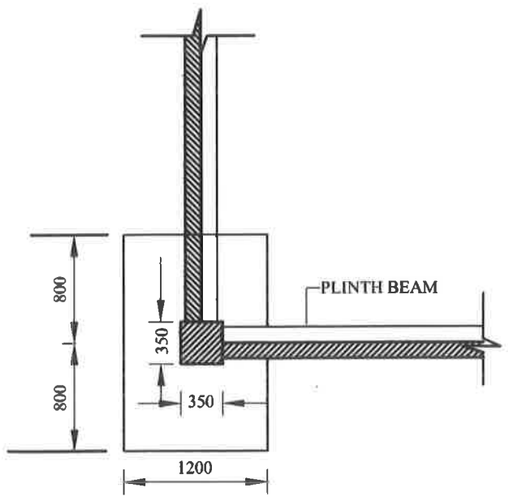
FRONT ELEVATION OF BOUNDARY WALL FOR SLOPING GROUND

NOTE :-

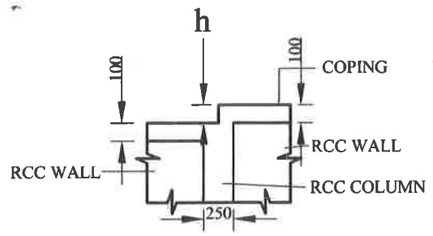
IF SLOPE OF NATURAL GROUND IS 1 in x

THE HEIGHT 'h' (as shown at detail 'D') in mm

WILL BE $h = \frac{2700}{x}$



CORNER COLUMN PLAN



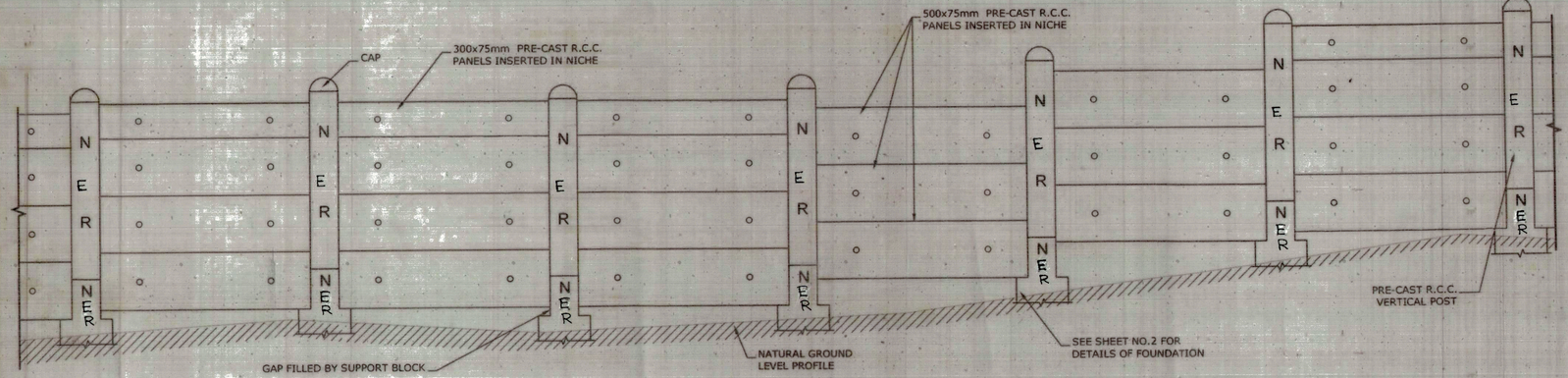
DETAIL D

ED/WORKS	06/12/17
DIR/WORKS	
ADE/WORKS	

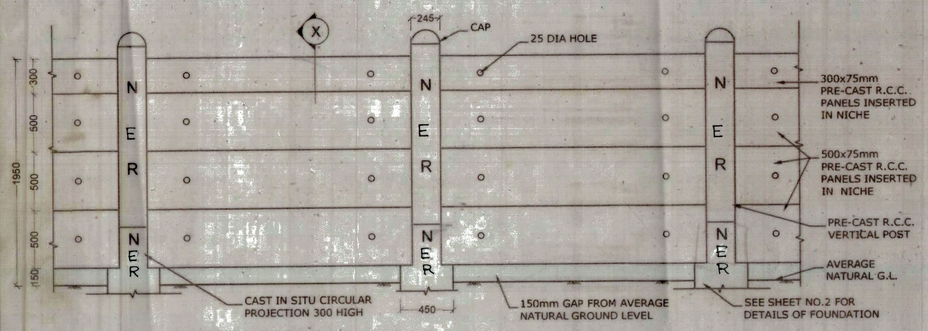
RCC BOUNDARY WALL CAST IN SITU

(FOR DENSELY BUILT UP AREA WITH FREQUENT TRESPASSING)

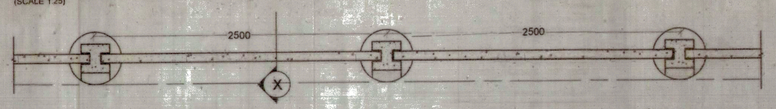
SCALE - N.T.S.	DATE - 06 .12.2017
DRG. NOS. RDSO/WKS/2017/1(Sheet 2 of 2)	
DRAWN BY	WORKS DIRECTORATE
	R. D. S. O. LUCKNOW



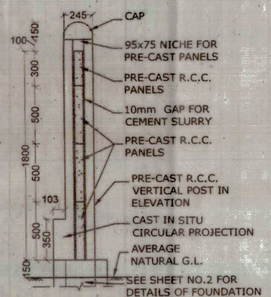
ELEVATION OF PRECAST BOUNDARY WALL ON SLOPING GROUND
(SCALE 1:25)



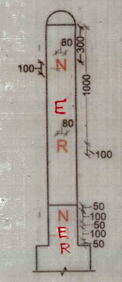
ELEVATION OF PRECAST BOUNDARY WALL
(SCALE 1:25)



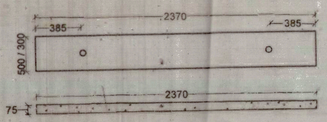
PLAN OF PRECAST BOUNDARY WALL
(SCALE 1:25)



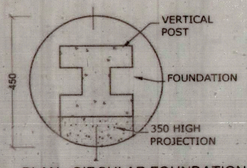
SECTION XX



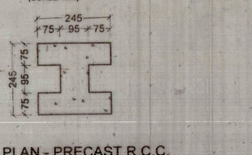
TEXT DETAILS
(SCALE 1:25)



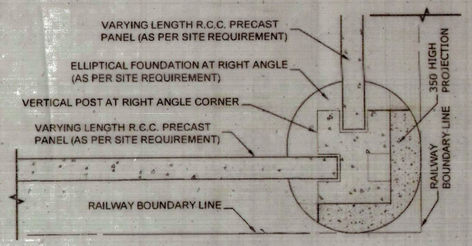
PANEL DETAILS
(SCALE 1:25)



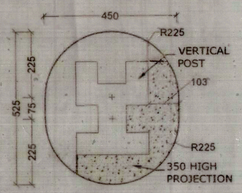
PLAN - CIRCULAR FOUNDATION
(SCALE 1:10)



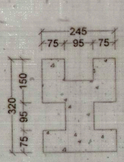
PLAN - PRECAST R.C.C. VERTICAL POST
(SCALE 1:10)



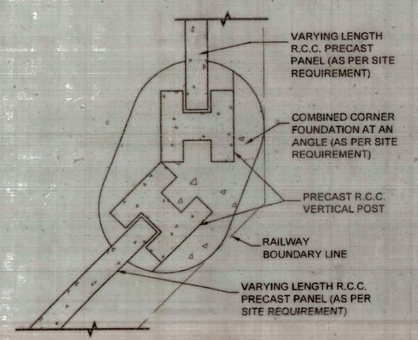
CORNER JUNCTION AT RIGHT ANGLE
(SCALE 1:10)



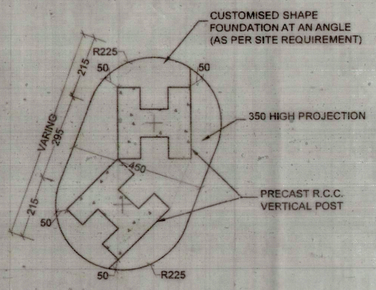
PLAN - ELLIPTICAL FOUNDATION (FOR CORNER JUNCTION AT RIGHT ANGLE)
(SCALE 1:10)



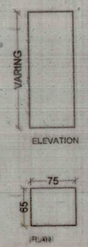
PLAN - VERTICAL POST (FOR CORNER JUNCTION AT RIGHT ANGLE)
(SCALE 1:10)



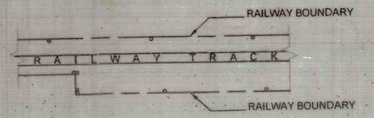
CORNER JUNCTION AT AN ANGLE
(SCALE 1:10)



PLAN - CUSTOMISED FOUNDATION (FOR CORNER JUNCTION AT AN ANGLE)
(SCALE 1:10)



SUPPORT BLOCK
(SCALE 1:10)



KEY PLAN
(NOT TO SCALE)

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. GENERAL ARRANGEMENT TAKES CARE OF PROVISIONS CONTAINED IN IRWM PARA NO. 809(a) AND ENGINEERING CODE PARA NO. 1047(d)
3. THIS PLAN SHALL BE USED FOR CONSTRUCTION OF BOUNDARY WALL ON P.P.P. MODEL.
4. FOR STRUCTURAL DETAILS & SCHEDULE OF REINFORCEMENT, REFER SHEET NO. 2.
5. TWO CIRCULAR HOLES OF 25mm DIA SHALL BE PROVIDED IN THE PLANK FOR EASY HANDLING.
6. MINIMUM HEIGHT OF PEDESTAL SHOULD BE 150mm FROM SURROUNDING NATURAL GROUND LEVEL.
7. GAP OF PEDESTAL & R.C.C. PANEL SHOULD BE FILLED WITH SUPPORT BLOCK.
8. MAXIMUM SLOPE / GRADIENT OF NATURAL GROUND SHOULD BE 1:10.

SHEET NO - 1/2

REVISIONS

Revision No.	Date	Description	Initial

(S.P.YADAV) CE/WORKS	22.3.22
(B.NAGESIA) XEN/WORKS	21.3.22
(DILIP KUMAR) AXEN/PL.	21/3/22

BOUNDARY WALL USING PRECAST R.C.C. COMPONENTS

GENERAL ARRANGEMENT PLAN

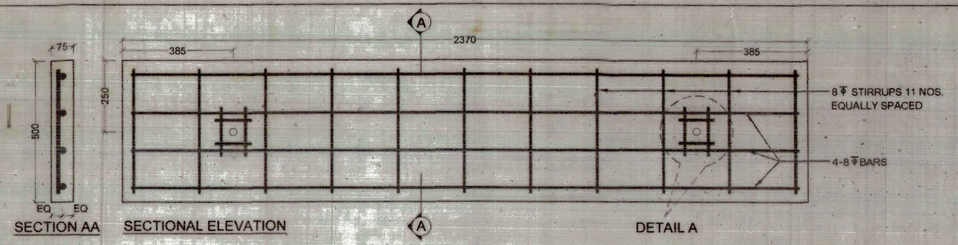
SCALE:- 1:25 & 1:10 @A1

HQ. CASE NO:

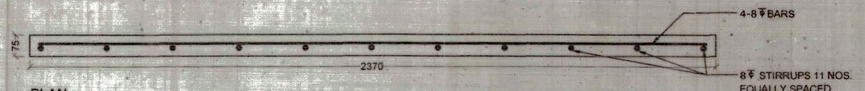
GMLI-2022/T-903004

IN SHEETS: 2
SHEET No. 1

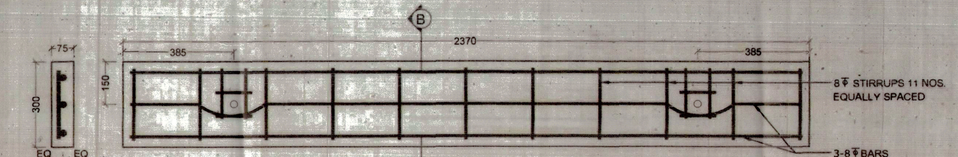
(ARVIND)	(RAHUL KR. SHARMA)	(RAJ KUMAR)
JE/DRG.	JE/WORKS	SSE/DRG./INCH.



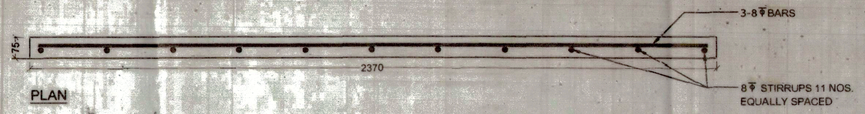
SECTION AA SECTIONAL ELEVATION DETAIL A



PLAN



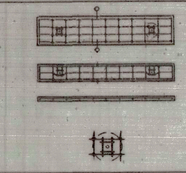
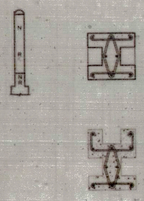
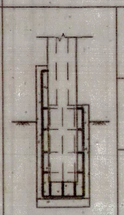
SECTION BB SECTIONAL ELEVATION

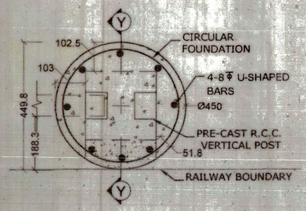


PLAN

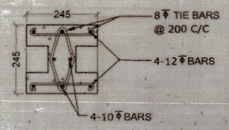
PRECAST R.C.C. PANEL DETAILS

SHAPE & SCHEDULE OF REINFORCEMENT

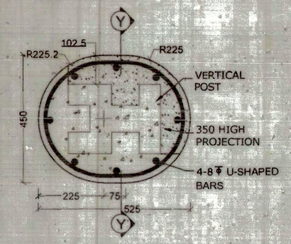
ITEM	SHAPE	REINFORCEMENT HORIZONTAL	REINFORCEMENT VERTICAL
PRE-CAST R.C.C. PANEL		LENGTH = 2320 NOS. = 4 (for 500 panel) = 3 (for 300 panel)	LENGTH, = 450 (for 500 panel) = 250 (for 300 panel) NOS. = 11
25 ϕ HOLE		LENGTH = 125 NOS. = 02	LENGTH, = 175 NOS. = 02
PRE-CAST VERTICAL POST		LENGTH = 250 NOS. = 26 LENGTH = 550 NOS. = 13 LENGTH = 250 NOS. = 13 LENGTH = 500 NOS. = 13 LENGTH = 550 NOS. = 13	LENGTH = 2600 NO. = 4 (12 ϕ BAR) = 4 (10 ϕ BAR) LENGTH = 2600 NO. = 6 (12 ϕ BAR) = 4 (10 ϕ BAR)
FOUNDATION		LENGTH = 400 NOS. = 02 LENGTH = 1300 NOS. = 04 LENGTH = 800 NOS. = 02 LENGTH = 1450 NOS. = 04 LENGTH = 1000 NOS. = 02 LENGTH = 2000 NOS. = 04	LENGTH = 2000 NOS. = 01 LENGTH = 2350 NOS. = 03 LENGTH = 2075 NOS. = 01 LENGTH = 2350 NOS: = 03 LENGTH = 2259 NOS. = 01 LENGTH = 2350 NOS. = 03



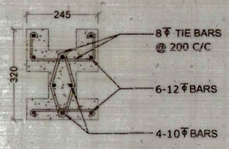
CIRCULAR FOUNDATION



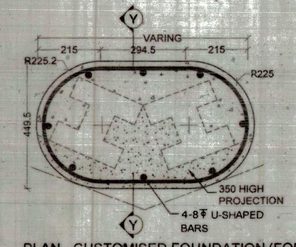
VERTICAL POST



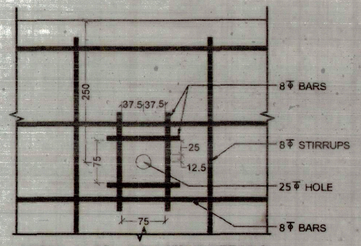
ELLIPTICAL FOUNDATION (FOR CORNER JUNCTION AT RIGHT ANGLE)



VERTICAL POST (FOR CORNER JUNCTION AT RIGHT ANGLE)

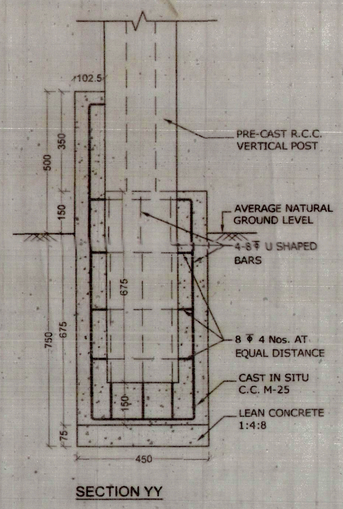


PLAN - CUSTOMISED FOUNDATION (FOR CORNER JUNCTION AT AN ANGLE)



DETAIL A : 25mm DIA HOLE DETAILS

(SCALE 1:5)



SECTION YY

IN SHEETS: 2
SHEET No. 2

NOTES:-

1. FOR GENERAL ARRANGEMENT SEE SHEET NO.1.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. R.C.C. WORK FOUNDATION SHALL BE IN MIX M-25 AS PER I.S: 456-2000.
4. CONCRETING SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS LAID DOWN IN I.S:456-2000.
5. PRECAST R.C.C. PANEL & VERTICAL POST SHALL BE IN MIX M-30 AS PER IS:456-2000.
6. U-SHAPED BARS SPACING TO BE ADJUSTED AS PER SITE REQUIREMENT.
7. CURING WILL BE DONE USING CURING COMPOUND.
8. PROPER CURING OF CONCRETE TO ACQUIRE HARDNESS, STRENGTH AND OTHER PROPERTIES, ESSENTIAL FOR SATISFACTORY SERVICE SHALL BE ENSURED.
9. ALL CONCRETE SHALL BE MECHANICALLY MIXED AND VIBRATED.
10. CAP SHOULD BE CAST AT SITE & BOUND WITH VERTICAL REINFORCEMENT BARS.
11. REINFORCEMENT WILL BE OF HIGH YIELD STRENGTH COLD TWISTED BARS CONFORMING TO IS: 1786-1985.
12. PARTICULAR CARE MUST BE TAKEN TO ENSURE THAT NO SAG OCCURS IN THE REINFORCING BARS DURING CONSTRUCTION.
13. STIRRUPS ARE EFFECTIVELY TIED WITH WIRE TO THE MAIN REINFORCING BARS.
14. THE NUMBER OF BARS SHOULD BE PROVIDED AS MENTIONED ON THE DRAWING.
15. ALL R.C.C. WORK MUST BE CARRIED OUT UNDER THE PERSONAL SUPERVISION OF AN EXPERIENCED CIVIL ENGINEER.
16. ASSUMED SAFE BEARING CAPACITY OF SOIL 10 Ton/m^2.
17. AFTER PLACING THE PRECAST PANEL IN POSITION THE GAP BETWEEN THE VERTICAL POST AND THE PRECAST PANEL WILL BE FILLED UP WITH CEMENT MORTAR TO ENSURE PROPER BOND BETWEEN THE TWO.
18. 25 Ø HOLES TO BE PROVIDED HORIZONTALLY AS SHOWN IN ELEVATION.
19. PRECAST WALL PANELS SHALL BE OF TWO SIZES i.e., 300 x 75 & 500 x 75.
20. TEXT SHOULD BE ENGRAVED IN STEEL SHUTTERING & SUBSEQUENTLY PAINTED IN RED.
21. SEQUENCE OF CONSTRUCTION:
    - 21.a. EXCAVATION FOR FOUNDATION SHALL BE DONE PREFERABLY USING MECHANICAL AUGER.
    - 21.b. LEAN CONCRETE SHALL BE LAID.
    - 21.c. THEN REINFORCEMENT FOR FOUNDATION SHALL BE LAID.
    - 21.d. PRECAST VERTICAL POST SHALL BE PLACED IN POSITION TRUE TO PLUMB & AT EXACT SPACING BY USING TEMPLATE MADE OF WOODEN/ PRE-LAMINATED BOARD.
    - 21.e. CONCRETING OF FOUNDATION WILL BE DONE.
    - 21.f. PRECAST PANELS SHALL BE INSERTED.
    - 21.g. WHEREVER REQUIRED SUITABLE PRECAST PCC SUPPORTING BLOCKS SHALL BE USED.
    - 21.h. CONCRETING OF TOP CAP SHALL BE DONE.
    - 21.i. GAP BETWEEN VERTICAL POST & PANEL WILL BE FILLED WITH 1:5 CEMENT SAND MORTAR.

REVISIONS

Revision No.	Date	Description	Initial

SHEETNO- 2/2

(S.P.YADAV) CE/WORKS	22.03.22
(DILIP KUMAR) AXEN/PL.	21/3/22
(B.NAGESIA) XEN/WORKS	21.3.22

NORTHERN RAILWAY

BOUNDARY WALL USING PRECAST R.C.C. COMPONENTS

STRUCTURAL DETAILS (CAST IN-SITU COLUMN FOUNDATION, PRECAST VERTICAL POST & PANELS.

HQ. CASE NO:

G.MLI-2022/T-903004

SHEET No. 2

(ARVIND)	Rahul RAHUL KR.SHARMA	Raj Kumar (RAJ KUMAR)
JE/DRG.	JE/WORKS	SSE/DRG./INCH.